5 YEARS WARRANTY*

NEW PRODUCTS INSIDE

PRODUCT CATALOG

85 YEARS OF INNOVATION IN INDUSTRIAL INSTRUMENT MANUFACTURING

NIVELCO

2026

NIVELCO

NEW

PiloTREK

WT–300

NON-CONTACT RADAR LEVEL TRANSMITTER FOR BULK SOLIDS

REQUEST AN OFFER

60 m measuring range

5 YEARS WARRANTY

NIVELCO.COM

SUBSIDIARY & REPRESENTATIVE NETWORK

To find a local NIVELCO representation, please check distribution page on NIVELCO website!

GET IN TOUCH WITH NIVELCO

To contact NIVELCO, please use contact page on NIVELCO website!

SALES & APPLICATION SUPPORT

sales@nivelco.com

NIVELCO PROCESS CONTROL CO.

H–1043 Budapest, Dugonics u. 11.
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E-mail: sales@nivelco.com

NEXT.NIVELCO.COM

NIVELCO.COM

*5 years warranty for the majority of NIVELCO products. Detailed information on page 254 and product price sheets.

NIVELCO stands as a leading manufacturer of precision-engineered level measurement devices, with over one million units sold worldwide. Represented across three continents through subsidiaries and distributors, our products serve a wide range of industrial applications.

We build lasting partnerships by delivering top-tier quality, unmatched reliability in both products and services, reduced costs, streamlined manufacturing, and enhanced productivity.

Decades of rigorous quality policies have yielded consistently excellent results. In 2010, we extended our standard warranty from two to three years; since 2018, most of our devices have featured an industry-leading five-year full warranty.

Positive feedback from clients and partners continues to inspire our pursuit of ever-improving products and services.

Tamás Szőllős

THE STORY OF A FAMILY VENTURE

After training as an engineer at the *"ITT Standard"* telephone company, Endre Szőllős founded his business in 1939, designing and producing telephone systems. Despite the challenges of World War II, the company grew steadily while also training Endre's sons. Following their studies in electrical engineering and economics, respectively — *and after Endre's passing in 1969* — Tamás and András Szőllős took over the business.

Endre Szőllős

Tamás Szőllős and András Szőllős

By 1982, the production of industrial controllers led to specialization in level measurement, giving birth to NIVELCO. By the time Hungary's market liberalization arrived in 1989, NIVELCO already offered a full product range supported by advanced in-house manufacturing. That same year, the company launched the world's first *"compact"* ultrasonic level transmitter — *a sensor and transmitter combined in one unit* — securing its position as a global leader.

Today, Tamás Szőllős and Péter Szőllős lead the company, with the next generation actively participating in management, ensuring ongoing innovation and the continuation of its family-driven excellence.

NIVELCO seized the opportunities presented by newly opened markets, establishing trade relationships with notable foreign distributors and sales agents. Building on existing channels in neighboring countries, the company invested in sales organizations and offices in Austria and Poland, later expanding to the Czech Republic, Romania, India, the USA, Croatia, and Greece. This success demonstrates that by maintaining its core business principles and continuously improving its expertise, NIVELCO competes effectively with leading global suppliers through:

- Manufacturing a comprehensive range of products for diverse applications;
- Investing in advanced technology, expertise, and product development;
- Enforcing stringent quality management and control systems;
- Developing a global network for marketing, sales, and service support;
- Providing fast, flexible in-house production and order logistics;
- Utilizing an integrated IT system for product design and production data;
- Maintaining fair and sustainable pricing to support future growth and innovation;
- Continuously investing in employees and workplace relations.

Despite globalization favoring large multinational corporations, NIVELCO — *as a medium-sized family company* — remains dedicated to maximizing customer satisfaction through high-value, knowledge-based products, demonstrating that flexible, independent firms can continue to prosper.

NIVELCO PROCESS CONTROL CO.
Hungary – 1982

- **NIVELCO Messtechnik GmbH**
  Austria – 1991
- **NIVELCO-Poland Sp. z.o.o.**
  Poland – 1995
- **NIVELCO Bohemia s.r.o**
  Czech Republic – 2004
- **SC NIVELCO Tehnica Masurarii SRL.**
  Romania – 2005
- **NIVELCO Instruments India Pvt. Ltd.**
  India – 2007
- **NIVELCO USA LLC**
  USA – 2008
- **NIVELCO Mjerna Tehnika d.o.o.**
  Croatia – 2012
- **NIVELCO Greece LLC.**
  Greece – 2020

1982	■ NIVELCO is founded ■ NIVOSONAR – the first Ultrasonic level transmitter
1984	■ NIVOCONT – Vibrating rod level switch
1986	■ NIVOCAP – Capacitive level transmitter
1989	■ NIVOSONAR – Compact Ultrasonic level transmitter: A WORLD FIRST!
1991	■ NIVELCO Messtechnik (Austria) is established
1992	■ New factory is opened in Budapest
1994	■ NIVOPOINT – Float level switch ■ NIVOMAG – Magnetic coupling level switch
1995	■ NIVELCO becomes ISO 9001 certified ■ NIVELCO Poland is founded
1996	■ NIVELCO Trade Center ■ NIVOSWITCH – Vibrating fork level switch
1999	■ NIVOPRESS – Hydrostatic level transmitter
2000	■ Budapest Factory expansion
2001	■ NIVOTRACK – Magnetostrictive level transmitter
2002	■ Standardized mechanical and electronic construction ■ HART® – Digital Communication in transmitters
2003	■ ATEX Hazardous Area Certificates
2004	■ MultiCONT – The new system concept ■ NIVELCO Bohemia (Czech Republic) is founded
2005	■ MicroTREK – Radar-based level transmitter ■ NIVELCO T.M. Company in Romania
2007	■ NIVELCO Instruments (India) is created
2008	■ NIVELCO USA is established
2009	■ AnaCONT – pH, ORP & conductivity transmitter
2010	■ AnaCONT – Dissolved oxygen transmitter ■ The first SIL product certification
2012	■ PiloTREK – Non-contact radar level transmitter ■ NIVELCO Mjerna Tehnika d.o.o. (Croatia)
2013	■ NIVOCAP CK – RF-capacitive level switch
2016	■ The first FM certificate
2017	■ EasyTREK SP–500 ■ UNICOMM HART®-USB / Bluetooth® modem
2018	■ NIPRESS – product family is expanded
2019	■ Planar antenna version of PiloTREK
2020	■ NIVOTRACK – Magnetostrictive integrated level transmitter
2021	■ Redesigned aluminum housings ■ Introduction of ISO 14001 ■ MicroTREK HT–700
2022	■ NIVOFLIP MAK–200 level switch ■ EasyTREK SP–500 Pro level transmitter
2023	■ PiloTREK W–200 non-contact, 80 GHz (W-band) radar ■ MobileEView – Configuration App
2024	■ MonoCONT – Smart Field Controller & Display ■ NIVOPRESS NBB – Detachable submersible hydrostatic level transmitter
2026	■ PiloTREK W–300 non-contact, 80 GHz (W-band) radar for solids

TIMELINE

Efficient industrial production relies on high-tech sensors and instrumentation. In the 1980s, microprocessors and electronics revolutionized sensor manufacturing—NIVELCO captured and sustains significant market share by embracing these advances.

Recognizing rising demand, NIVELCO excels with level transmitters, pragmatic practices, and continuous tech investments, securing substantial global presence. For years, it produces every 20th ultrasonic transmitter, every 50th vibrating level switch, and every 100th radar level transmitter sold worldwide.

With over 1.5 million level measurement and control units sold, NIVELCO ranks among the world's largest ultrasonic level transmitter producers, maintaining a respected global position.

HEADQUARTERS

From modest 1982 beginnings—with 15 employees in 150 m^2 in Budapest—NIVELCO invested in facilities enabling full production control. By 2000, expansion to a 10,000 m^2 complex supported future growth, now housing the NIVELCO Trade Center. Air-conditioned offices and relaxed conditions foster high productivity and team harmony; excess space is leased to other firms.

Engineering and production remain in Hungary, while foreign subsidiaries manage regional sales, marketing, consulting, installation, and maintenance. With our own solar power plant, we contribute to sustainability, and we pursue these efforts within our *"Industrial Automation for a Smarter Future"* initiative. The facilities feature energy-efficient designs and modern automation systems, promoting sustainable manufacturing. Continuous investments in research and development laboratories keep NIVELCO at the forefront of level measurement innovation. This comprehensive approach delivers reliable, forward-looking products worldwide.

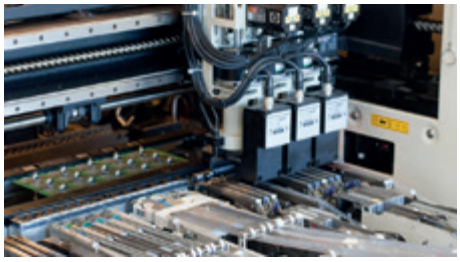
ADVANCED MANUFACTURING PROCESSES

NIVELCO invests significant resources in the continuous development of production technology. The production of high-tech devices is supported by production preparation and logistics by in-house developed IT system. Quantitative and qualitative requirements are met by a technologically advanced CNC machine and surface-mounted electronic technology. The reliability of the equipment produced is guaranteed by climatic treatment and testing, computer control, the ISO 9001 quality control system, and the complementary quality models TQM and EFQM implemented a few years ago. Additionally, our environmental management program is fully certified to ISO 14001:2021 standards.

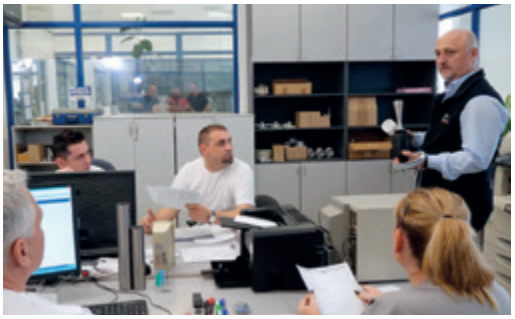
ISO CERTIFIED 9001 & 14001

Industrial automation for a smarter future.







TECHNICAL & SALES SUPPORT

Providing exemplary technical and sales support to customers, contractors, and distributors remains core to NIVELCO's approach. The sales team's amassed knowledge and experience drive one of the company's key strengths. Feedback from the Hungarian team, subsidiaries in Poland, the Czech Republic, Romania, India, the USA, Croatia, and Greece, plus export distributors and agents, informs product planning and development.

NIVELCO shares this expertise via website articles, application stories, reference sites, and the biannual NIVELCO Magazine. Hands-on training at the Budapest center equips customers, installers, and distributors.

CORPORATE COMMUNICATION

The PR team creates unified marketing materials—brochures, ads, presentations. They manage the NIVELCO website, Selector tool, myNIVELCO, downloadable docs, and product videos on YouTube showcasing our portfolio, manufacturing, and applications. The team also oversees online/social channels *(web, Facebook, LinkedIn, Instagram, YouTube, NewsLine)*, trade shows, conferences, and partner training. The PR team actively collects photos, videos, and written stories about successful applications to enhance marketing efforts and demonstrate real-world performance. These materials are regularly updated and shared across multiple channels to support customer engagement and showcase NIVELCO's solutions in action.

GLOBAL PRESENCE

NIVELCO began its operations in 1982 as a company producing almost exclusively for the domestic market, since at that time even the countries of the former socialist bloc were not open to us. Later, foreign sales slowly started to develop, but by the late 1980s they were still limited to the Eastern Bloc. It was only from 1990 onwards that we were able to break into the global market — this year marked the beginning of our successful export activity. Today, at least 79% of our sales come from products sold abroad *(see Geographic Distribution of Sales chart)*, and we are proud to say that NIVELCO has grown into a truly export-oriented company.

Thanks to our extensive partner network and subsidiaries in Poland, the Czech Republic, Romania, the United States, India, Croatia, and Greece, our products are available in more than 80 countries worldwide. We regularly organize professional training for our partners' and subsidiaries' staff to ensure they gain first-hand knowledge of our latest developments. Twice a year, we host the Technical & Marketing Training, an event where partners from all around the world exchange information, experiences, and ideas. We also organize the NIVELCO Professional Days *(NSZN)* twice a year, providing focused support and opportunities for our domestic partners.

RESEARCH & DEVELOPMENT

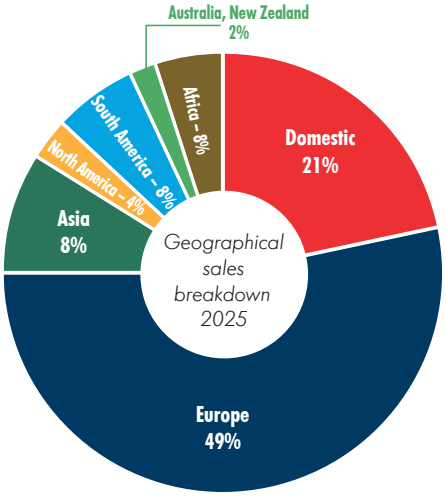
NIVELCO's Research and Development department focuses on the continual enhancement of all products and technologies, including mechanics, hardware, and software, while designing new solutions tailored to customer needs. The team is dedicated to modernizing and optimizing the entire product range, improving both quality and design elegance.

To build an exceptionally versatile product portfolio that addresses even the most complex industrial challenges, the R&D team navigates strict approval processes such as ATEX and PED, and obtains performance and accuracy certifications like OIML, GOST, and SIL. Close collaboration with international certification bodies—including BKI, TÜV, DNV, BV, and OMH—ensures compliance and reliability.

Our goal is to develop sophisticated, thoroughly tested devices that meet specifications and maintain competitive pricing. NIVELCO maintains strong partnerships with academic institutions and suppliers to incorporate the latest advancements. Collaborations with Budapest University of Technology and Economics, Óbuda University, and others have enabled us to recruit many young, talented engineers.

COMPANY STATISTICS & OUR DEVELOPMENT

Since its foundation, NIVELCO has shown continuous growth, characterized by increases in production, turnover, and company value. Over the past five years, we have invested several million euros in technological developments, including new production lines, R&D laboratories, and digital infrastructure. These investments were funded entirely from our own net profits, without the use of external loans. Our balance sheet reflects outstanding financial stability, boasting a solid equity ratio of 75%, which enables long-term, risk-free expansion.



MARKET PRESENCE & PRODUCT EVOLUTION

Domestically, 21% of our products are sold, while 49% are sold in Europe. The remainder show remarkable development in international markets, including Asia, America, and Africa. We began our global expansion in 1990 with the introduction of ultrasonic level transmitters and evolved into a systematic, market-driven product development strategy. This process has led to advanced instruments that now account for a significant share of our sales. These include 80 GHz radar level transmitters (PiloTREK), vibrating fork level switches (NIVOSWITCH), and signal processing units. These units are available in ATEX dust explosion-proof, high-temperature, and IoT-enabled variants.

RECOGNITION & INNOVATION COMMITMENT

Building on this foundation, NIVELCO has solidified its reputation as a globally recognized leader in process control. This is evidenced by awards such as the 2025 Millennium Award. Our commitment to innovation is evident in our extensive product portfolio, which has expanded beyond ultrasonic transmitters to include sophisticated systems, including data loggers and remote monitoring solutions. This diversification aligns perfectly with our strategic goal of providing comprehensive, reliable solutions for a wide range of industrial challenges, including water and wastewater treatment, chemicals, food processing, and power generation.

FUTURE FOCUS ON SUSTAINABILITY

Looking ahead, we prioritize sustainable innovation. This includes continuing to optimize production, achieving zero-waste targets, and making systems wireless where possible through wireless communication and easy installation. For nearly 45 years, we have ensured reliable industrial automation with partners in over 80 countries.

REFERENCES

IN NEARLY ALL INDUSTRIES AND ALMOST EVERYWHERE IN THE WORLD

Our devices serve nearly all industries requiring level measurement and control—from oil & gas, cement & aggregates, food & beverages, and pharmaceuticals to chemicals, clean water treatment, and sewage systems. Applications are virtually limitless. Explore our successful case studies by industry, device type, and operating principle on our website. Our robust solutions ensure reliable performance across diverse conditions and challenging environments worldwide.


Safe Chemical Storage – Turkey


Tyre manufacturing – USA


Pharmaceutical industry – Hungary


Grain elevator – Poland


Cellulose plant – Hungary


Milk processing – Hungary


Brewery – Hungary

LEVEL TRANS MITTERS

Since its founding, NIVELCO has manufactured industrial measuring devices. Our primary focus has remained consistent, developing a wide range of devices across various operating principles over decades. Our ultrasonic level transmitters offer one of the market's widest selections, including integrated, compact, 2- and 4-wire models for liquids and solids.

Most transmitters are available in PFA-coated versions for aggressive media. All transmitter families include explosion-proof models for hazardous environments.

PiloTREK WP–200
NON-CONTACT INTEGRATED RADAR

page 15

- 2-wire, 80 GHz (W-band) radar
- Measurement range up to 30 m
- Accuracy of ±2 mm
- 1", 1½" encapsulated horn antenna
- Submersible – integrated design with IP66 / IP68 protection
- Configuration via Bluetooth® with MobileEView app
- PACTware™ compatible
- Ex versions

PiloTREK WE–200
NON-CONTACT COMPACT RADAR

page 21

- 2-wire 80 GHz (W-band) radar
- Measurement range up to 30 m
- Accuracy of ±2 mm
- Plug-in graphic display module
- Horn and plastic encapsulated antennas
- High-temperature version
- Compact design with IP66/IP67 protection
- Configuration via Bluetooth®
- NIFLANGE weldable stainless steel flange variants
- Ex variant

PiloTREK WT–300
NON-CONTACT COMPACT RADAR

NEW

page 28

- 2-wire 80 GHz (W-band) radar
- Plug-in graphic display module
- Tiltable flanged design
- Measurement range up to 60 m
- Max. 25 bar, +200 °C
- Configuration via Bluetooth®
- ε_r > 1.4
- Compact design with IP66/IP67 protection
- Ex variant

MicroTREK
GUIDED WAVE RADAR

page 32

- 2-wire compact transmitter
- TDR principle
- ±5 mm or ±20 mm accuracy
- ε_r > 1.4
- Measurement range up to 30 m
- 4…20 mA + HART® communication
- Up to 40 bar and +200 °C
- Rod, cable, or coaxial probe
- Plug-in graphic display module
- Explosion-proof variants

NIVOCAP
CAPACITIVE

page 42

- 2-wire compact transmitter
- Rod or cable probe up to 20 m
- ε_r > 1.5
- Partially or fully insulated probe
- 32-point linearization
- High sensitivity
- 4…20 mA + HART® communication
- Explosion-proof variants

NIVOPRESS N
SUBMERSIBLE HYDROSTATIC

page 47

- 2 or 3-wire submersible transmitter
- Stainless steel or fully plastic body
- Up to 350 m measurement range
- 4…20 mA + HART® communication
- Linearity error: 0.25%
- Integrated Pt100 temperature sensor
- Venting tube in cable
- Detachable variants
- IP68
- Explosion-proof variants

NIVOTRACK
MAGNETOSTRICTIVE INTEGRATED

page 55

- 1 mm resolution
- Distance and level measurement
- Normal and mini rigid guide tube versions
- Stainless steel or titanium floats
- IP65
- HART® communication
- Chemicals, solvents, hydrocarbons
- Tank level monitoring
- Interface measurement

NIVOTRACK
MAGNETOSTRICTIVE COMPACT

page 60

- 2-wire compact or mini compact transmitter
- 0.1 mm or 1 mm resolution
- Up to 15 m measurement range
- For liquids with min. 0.4 kg/dm^3 density
- Distance, level and volume measurement
- Rigid or flexible probe
- OIML R 85 certificate
- Explosion-proof variants

NIVOFLIP
BYPASS LEVEL INDICATORS

page 67

- Operation without power supply
- 500…5500 mm measurement range
- ±10 mm accuracy
- Stainless steel or titanium float
- Optional strap-on level switches
- Up to 100 bar process pressure
- DIN and ANSI flanges
- High-temp. version up to +250 °C
- PED certified
- Explosion-proof

EasyTREK for liquids
INTEGRATED ULTRASONIC

page 76

- For liquid level measurement
- 2-wire integrated transmitter
- Narrow, 5° beam angle
- Up to 25 m measurement range
- PP, PVDF, PTFE transducers
- 32-point linearization
- 4…20 mA + HART® communication
- Open-channel flow metering
- IP68
- Explosion-proof variants

EchoTREK for liquids
COMPACT ULTRASONIC

page 83

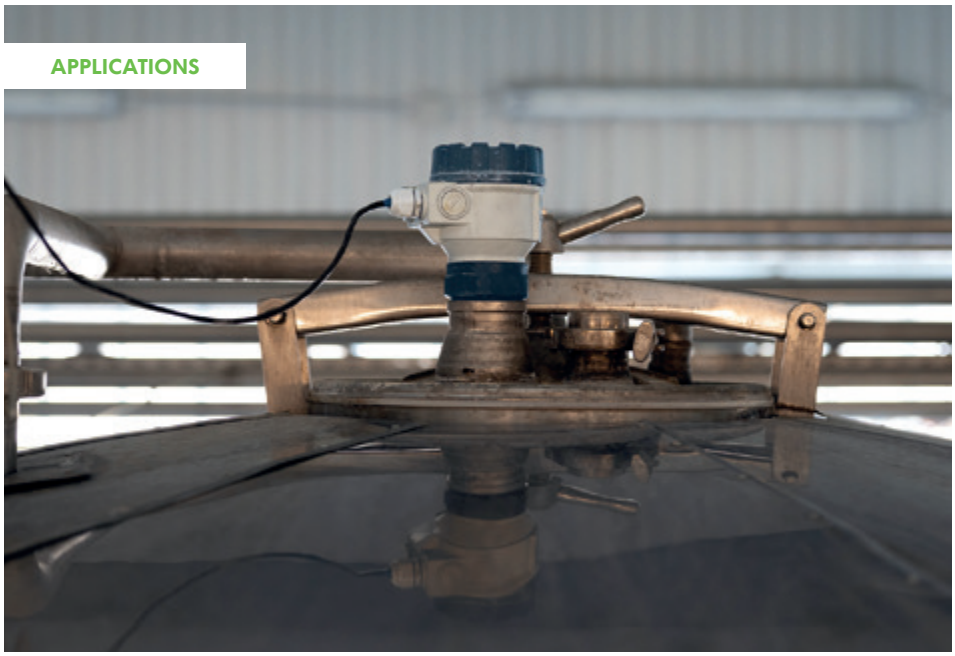
- For liquid level measurement
- 2 and 4-wire compact transmitter
- Narrow, 5° beam angle
- Up to 25 m measurement range
- PP, PVDF, PTFE and SS transducers
- 32-point linearization
- Plug-in display module
- 4…20 mA + HART® communication
- IP67
- Explosion-proof variants

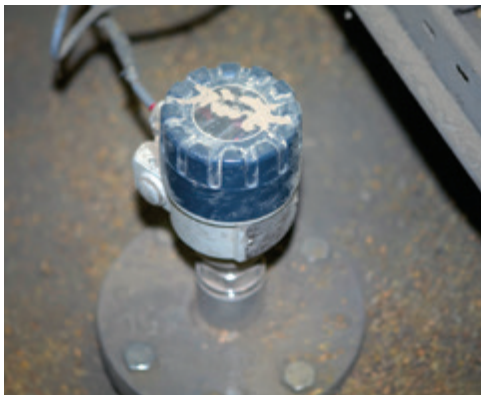
EasyTREK for solids
INTEGRATED ULTRASONIC

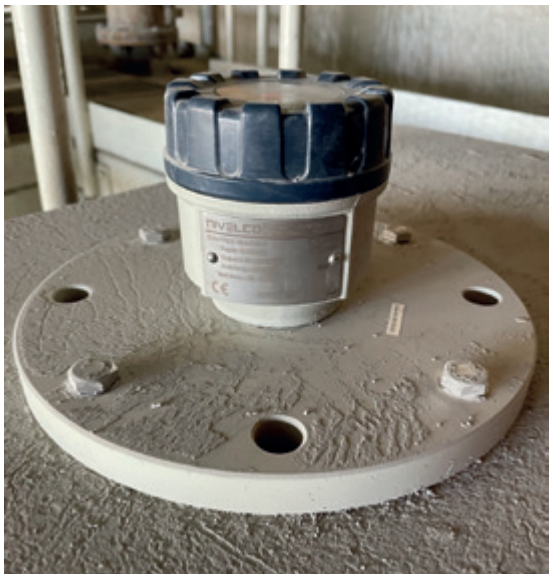
page 92

- For free-flowing solids
- 4-wire integrated transmitter
- Narrow, 5° beam angle
- Up to 60 m measurement range
- PP sensor
- Configuration via Bluetooth®
- Joystick aiming device
- 4…20 mA + HART® communication
- IP65
- Explosion-proof variants

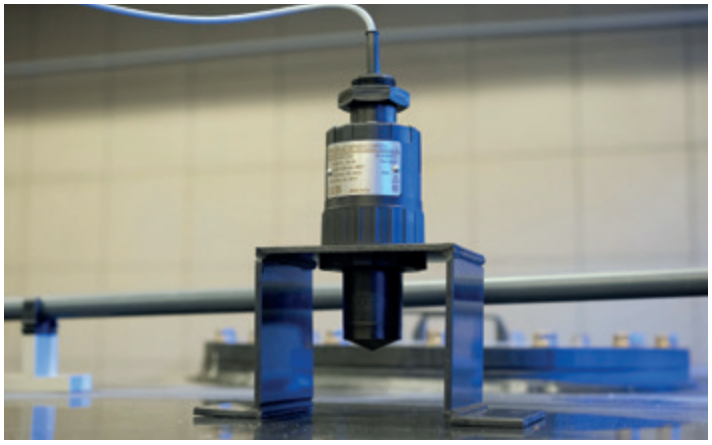
APPLICATIONS







APPLICATIONS







The **PiloTREK WP–200** non-contact radar level transmitters use the most advanced industrial measurement technology, the 80 GHz FMCW radar. The most fundamental advantage of 80 GHz radars compared to lower frequencies *(5…12 GHz and 25 GHz)* is the smaller antenna size, better focusability, and narrow beam angle.

It uses the latest technology for measuring liquids, masses, emulsions, and other chemicals widely used in, for example, the water industry, food industry, energy industry, pharmaceutical industry, and chemical industry, which provides measurement results with millimeter accuracy. It is also excellent for measuring substances prone to vapor formation and liquids with gas blanket or large-particle bulk solids. In addition to the level, volume, and weight measurement functions, this product family also inherits the open-channel flow measurement functions and the threshold functions to eliminate false and interfering echoes. Since no medium is required for millimeter waves to propagate, it can also be used in a vacuum. The device can also be operated with HART® compliant **NIVELCO EView2**, **MultiCONT** universal process controller, and PACT*ware*™ software, or programmed via Bluetooth® communication with the new **MobileEView** app.

FEATURES

- 2-wire 80 GHz *(W-band)* radar
- Accuracy of ±2 mm
- Easy to install due to small antenna diameter
- 1", 1½" encapsulated horn antenna
- Submersible – integrated design with IP66/IP68 protection
- User-friendly threshold management
- Configuration via Bluetooth® with MobileEView app
- PACT*ware*™ compatible
- 5 years warranty
- Ex variant

APPLICATIONS

- For measuring the level of liquids, emulsions, and other media
- For free flowing solids
- Storage tanks, chemical tanks, open pits, sumps, wells
- Measurement through a plastic tank roof
- For material prone to vapor formation
- For measuring liquids with a gas blanket
- It can also be used in a vacuum
- Open-channel flow measurement

CERTIFICATES

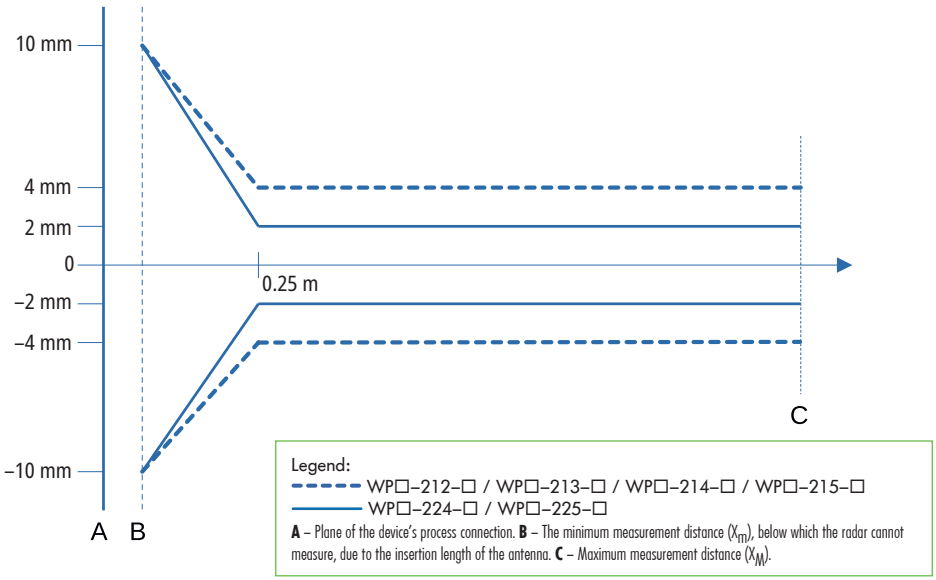
- ATEX *(Ex ia GD)*
- IECEx *(Ex ia GD) (in prep.)*
- INMETRO *(Ex ia GD)*,
- ANATEL

AREAS OF APPLICATION

- Water and wastewater industry
- Energy industry / Plant utilities
- Food & Beverage
- Pharmaceutical industry
- Chemical industry
- Marine applications
- Agriculture
- Construction materials
- Heavy industry
- Packaging industry

WP☐–2☐4–4

LINEARITY ERROR



Legend:
- – – – – WP☐–212–☐ / WP☐–213–☐ / WP☐–214–☐ / WP☐–215–☐
- ——— WP☐–224–☐ / WP☐–225–☐

A – Plane of the device's process connection. **B** – The minimum measurement distance (X_m), below which the radar cannot measure, due to the insertion length of the antenna. **C** – Maximum measurement distance (X_M).

WP☐–2☐2–4

OPERATING PRINCIPLE

The reflection of the millimeter-waves is highly dependent on the dielectric constant of the medium. Therefore, the measured medium's dielectric constant (ε_r) must be over 1.9 for millimeter-wave level measurement. The measurement principle of a level transmitter with a millimeter-waves signal is based on measuring the reflection's time of flight.

Informative ε_r values							
Butane (C_4H_{10})	1.4	Ethers	4.4	Gasoline	2.3	Methyl alcohol (CH_3OH)	33.1
LP gas	1.6…1.9	Acetic acid (CH_3COOH)	6.2	Bitumen	2.6	Glycol ($C_2H_6O_2$)	37
Kerosene	2.1	Limestone	6.1…9.1	Carbon disulfide (CS_2)		Nitrobenzene ($C_6H_5NO_2$)	40
Crude Oil		Ammonia (NH_3)	17…26	Clinker	2.7	Glycerin ($C_3H_8O_3$)	41.1
Diesel Oil		Acetone (C_3H_6O)	21	Resin	2.4…3.6	Water (H_2O)	80
Benzol (C_6H_6)	2.2	Ethyl alcohol (C_2H_5OH)	24	Cereal Grain	3…5	Sulphuric acid (H_2SO_4) (T = 20 °C)	84

The speed of propagation of millimeter-waves signals in the air, gases, and vacuum is almost constant regardless of temperature and medium pressure, so the measured distance does not depend on the physical parameters of the intermediate medium. The **PiloTREK WP–200** level transmitter is a continuous-wave frequency modulated radar *(FMCW)* operating at 80 GHz *(W-band)*. The most obvious advantages of 80 GHz radars over lower frequency *(5…12 & 25 GHz)* radars are smaller antenna size, better focus, and smaller beam angle. A portion of the millimeter-wave continuous wave energy radiated by the level transmitter antenna is reflected from the measured surface, depending on the material to be measured. The distance of the reflecting surface is calculated with high accuracy by the electronics from the frequency shift of the reflected signal and converted into a distance, level, or volume signal by the electronics.

TECHNICAL DATA

		PVDF housing WPB, WPT–2□□–□	PP housing WPA–2□□–□
Measured values		Distance; Calculated values: level, volume, mass, flow	
Signal frequency		77…81 GHz (W-band)	
Measurement range[1]		0…30 m	
Lowest ε_r of medium		1.9	
Resolution		0.1 mm	
Supply voltage		12…36 V DC	
Output	Analog	4…20 mA (3.9…20.5 mA); $R_{Lmax} = (U_S - 12\ V) / 0.02\ A$	
	Digital	Bluetooth® LE 5.1 (optional), HART® interface (loop resistance ≥250 Ω)	
	Service interface	SAT–504–3 compatible; galvanically isolated; 3.3 V LVDS; max. 100 mA	
	Relay *(optional)*	SPDT 30 V / 1 A DC; 42 V / 0.5 A AC	
Measuring frequency		~1/s	
Antenna material[1]		Encapsulated horn antenna (PP / PVDF / PTFE)	
Process temperature		–40…+80 °C	–30…+80 °C
Ambient temperature			
Process pressure		–1…3 bar	
Seal		FPM (Viton®)	EPDM
		Optional: EPDM, FFKM Perfluoroelastomer (Kalrez® 6375)	
Process connection		1", 1½" BSP / NPT	
Ingress protection		IP66 / IP68	
Electrical connection		4× 0.5 mm² shielded Ø6 mm cable × 5 m (up to 30 m); For relay option: 7× 0.5 mm² shielded cable	
Electrical protection		Overvoltage Class 1; (Class III [SELV])	
Weight		~ 600 g	

[1] *Depending on order code.*

TYPE-DEPENDENT DATA

	WP□–212–□ WP□–213–□	WP□–214–□ WP□–215–□	WP□–224–□ WP□–225–□
Dead zone[1]	0 m		
Maximum measurement range[2]	10 m		20 m
Accuracy[3]	±4 mm		±2 mm
Beam angle *(–3 dB)*	12°	7°	
Antenna insertion length[4]	56 mm	70 mm	
Lower process connection	1" BSP / NPT	1½" BSP / NPT	
Upper process connection	1" BSP		

[1] *Measured from the tip of the antenna.*
[2] May be limited in the case of low dielectric constant or non-perpendicular or non-planar media.
[3] *In the case of an ideal reflecting surface.*
[4] *Measured from the seal plane of the process connection.*

Ex INFORMATION

	WP□–2□□–8 Ex, WP□–2□□–E Ex	
ATEX certificate number	BKI24ATEX001 X	
Ex marking (ATEX)	⟨Ex⟩ II 1 G Ex ia IIC T5 Ga	⟨Ex⟩ II 1 D Ex ia IIIC T95°C Da
INMETRO certificate number	DNV 24.0166 X	
Ex marking (INMETRO)	Ex ia IIC T5 Ga	Ex ia IIIC T95°C Da
Ex power supply, intrinsically safety data[5]	U_i = 30 V, I_i = 100 mA, P_i = 0.75 W	U_i = 30 V, I_i = 140 mA, P_i = 1 W
	C_i ≤ 12 nF + 0.12 nF/m cable, L_i ≤ 238 µH + 0.65 µH/m cable with standard 5 m cable: C_i ≤ 12.5 nF, Li ≤ 242 µH	
Supply voltage	12…30 V DC	

[5] *In IIB applications, Ex power supply data for IIIC can be used.*

TEMPERATURE DATA FOR Ex CERTIFIED MODELS

	WP□–2□□–8 Ex, WP□–2□□–E Ex	
	Hazardous gas atmospheres	Explosive dust atmospheres
Temperature data	Ex ia IIC	Ex ia IIIC
Temperature class	**T5**	**T95°C**
Highest ambient temperature	+80 °C	
Highest surface temperature of the device[6]		

[6] *Conducted or radiated heat transferred by medium, ambient or process connection.*

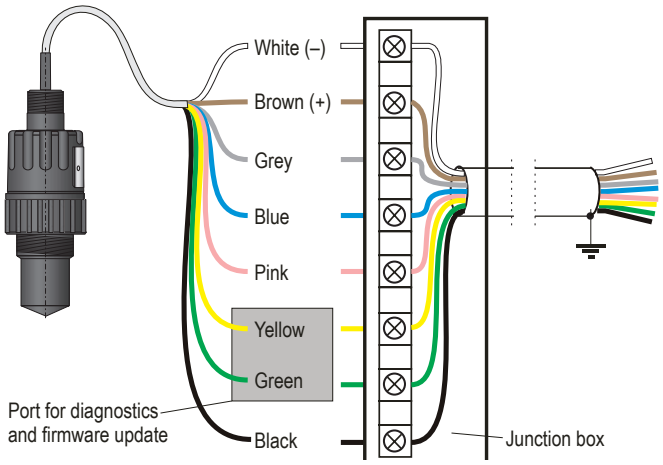
POLARIZATION

The **PiloTREK W–200** 80 GHz radar is much less sensitive to installation conditions, both in terms of polarization and clutter sensitivity, due to its narrow and nearly circular beamwidth.

BACKGROUND MAPPING

Thanks to its 80 GHz FMCW technology, it is much less sensitive to the presence of clutter than previous generation radars. It now has an easy-to-use, flexible threshold management *(EView2)* that allows echoes from clutter in the tank to be easily masked if necessary. The threshold curve is designed to mask unwanted echoes from the measurement. Echo peaks below the threshold are not included in the evaluation.

WIRING



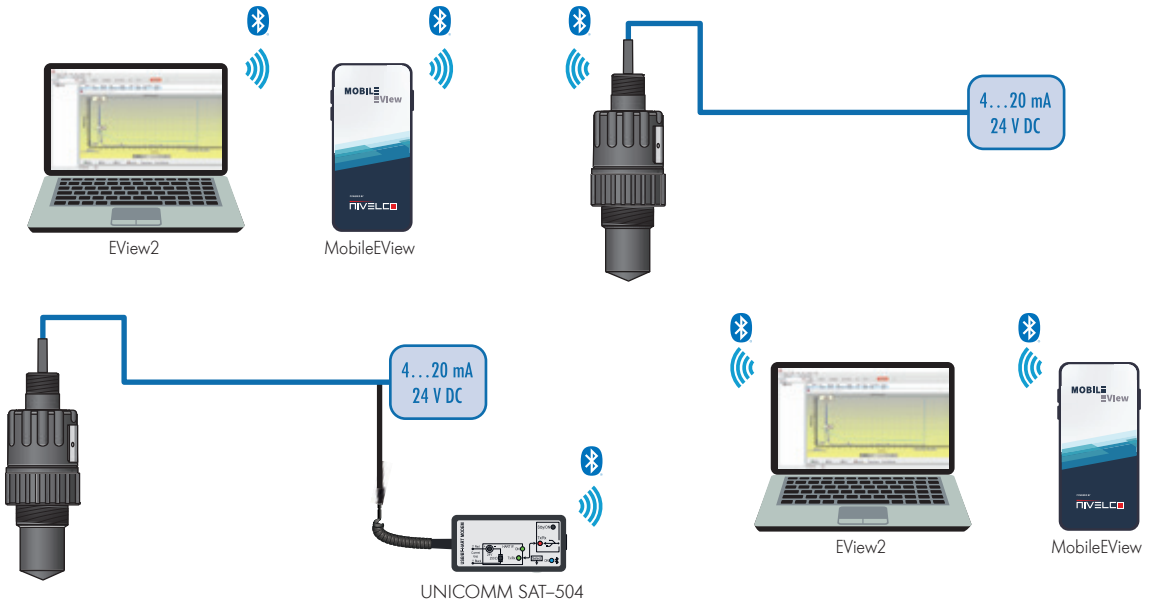
The **BROWN** (+) / **WHITE** (–) wires are the 4…20 mA output or power supply. The **GREY**, **BLUE** and **PINK** wires are for relay output and are only available in relay version. The **YELLOW** and **GREEN** wires are for servicing purposes only and are hidden by default. The **BLACK** is the cable shielding.

MOUNTING

The device must be mounted far as possible from interfering objects inside the tank and sources of interference, such as waves, vortex or strong vibrations. The antenna cover must be parallel to the measured surface within ±2…3°. In regions with extremely hot climates, we recommend protecting the device from direct sunlight to avoid exceeding the ambient temperature limits of the housing.

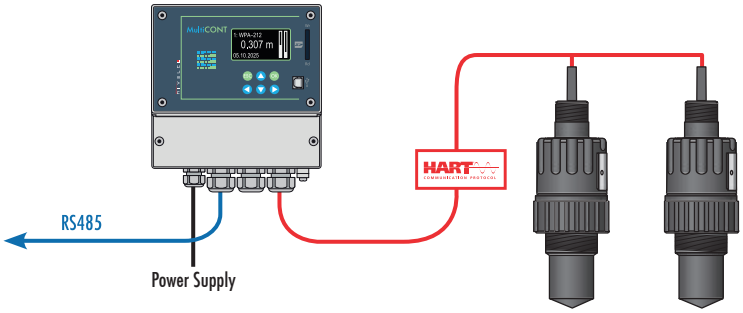
Bluetooth® CONNECTIVITY

The Bluetooth® option on the **PiloTREK W–200** Series allows for convenient device setup and diagnostics via the NIVELCO **MobileEView** app for Android or iOS or the free **EView2** software download for laptops.

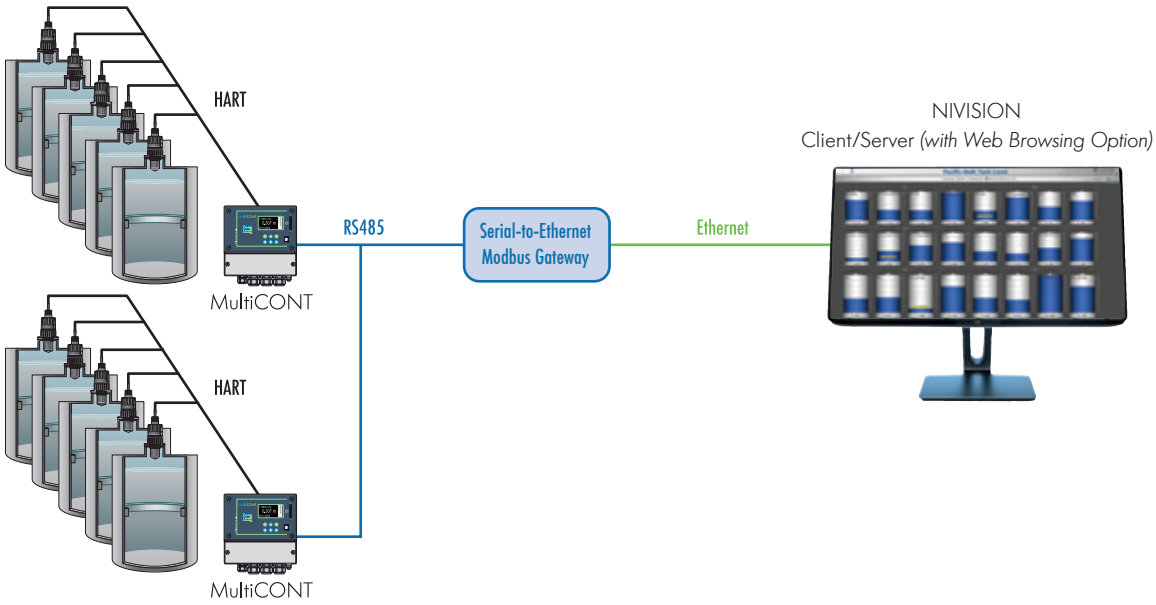


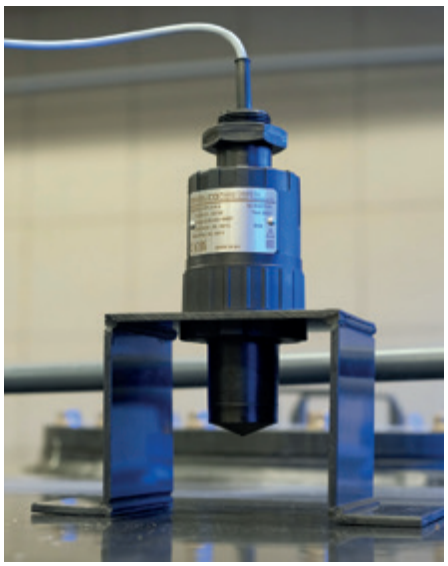
PiloTREK TRANSMITTERS IN HART® MULTIDROP LOOP

MultiCONT multi-channel remote controllers process, display, and transmit data from NIVELCO's HART®-equipped transmitters in a multidrop loop. Up to 15 of these connected transmitters can be programmed and maintained from MultiCONT, which supports data-logging tasks. MultiCONT provides programmable relay outputs, while 4…20 mA outputs are available through remote I/O modules.



MultiCONT can send measurement data via RS485 to PLCs, computers running third-party SCADA systems, or the NIVELCO **NIVISON** inventory monitoring system.





PiloTREK WP–200 80 GHz Integrated — 5 years

2-wire integrated non-contact radar level transmitter with PP or PVDF sensor, ingress protection: IP66/IP68

Version

W ☐ ■ – 2 ■ ■ – ■

P		Integrated transmitter

Antenna / Housing

W P ☐ – 2 ■ ■ – ■

A		PP / PP
B		PVDF / PVDF
T		PTFE / PVDF

Measurement range

W P ■ – 2 ☐ ■ – ■

1		10 m
2		20 m
3	*	30 m

Process connection – lower / upper

W P ■ – 2 ■ ☐ – ■

2		1" BSP / 1" BSP (only for 10 m measurement range)
3		1" NPT / 1" BSP (only for 10 m measurement range)
4		1½" BSP / 1" BSP (only for 10 m or 20 m measurement range)
5		1½" NPT / 1" BSP (only for 10 m or 20 m measurement range)
6	*	2" BSP / 1" BSP (only for 20 m measurement range)
7	*	2" NPT / 1" BSP (only for 20 m measurement range)
8	*	Ø75 mm (2½") / 1" BSP (only for 30 m measurement range)

Output / Certificates

W P ■ – 2 ■ ■ – ☐

4	4...20 mA + HART®
8	4...20 mA + HART® / Ex ia GD
H	4...20 mA + HART® + SPDT Relay
B	4...20 mA + HART® + Bluetooth®
E	4...20 mA + HART® + Bluetooth® / Ex ia GD
R	4...20 mA + HART® + SPDT Relay + Bluetooth®
T	4...20 mA + HART® + Bluetooth®, with 10 m cable

* Under development

Cable

Maximum length 30 m; sold by the meter over the standard 5 m

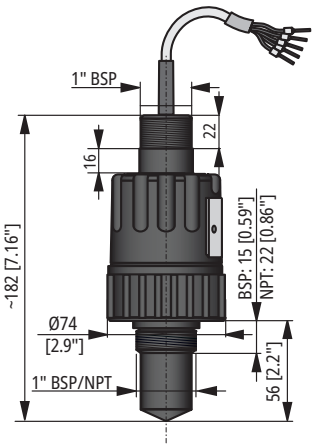
Accessories sold separately; see relevant page for details

S F A – 3 ■ ■ – 0	Flanges
S A T – 5 0 4 – ■	HART®-USB/Bluetooth® modem
S A K – 3 0 5 – ■	HART®-USB/RS485 modem
S A C – 1 ■ 1 – 0	Mounting brackets
P ■ F – ■ 1 ■ – ■	Smart Field Display and Data Logger
P ■ F – ■ 0 1 – ■	Loop Display
S A A – 1 ■ 2 – 0	Joystick aiming device

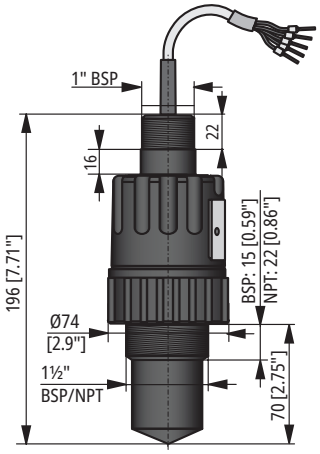
Process seal material

- Factory default: EPDM for PP housing, FPM for PVDF and PTFE housing
- Optional: EPDM, FPM, FFKM available for all types

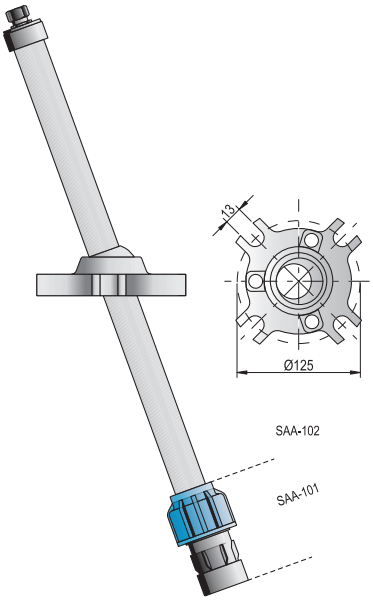
Process seals are ordered separately and must be specified in the text part of the order. Other seals are also available.



WP☐–212–☐, WP☐–213–☐



WP☐–2☐4–☐, WP☐–2☐5–☐



SAA–102

NIV24

WPA–212–4
WPA–214–4, WPA–214–B, WPA–214–T
WPA–224–4

NEW

Compact Non-Contact Radar Level Transmitter

PiloTREK WE–200

The **PiloTREK WE–200** non-contact radar level transmitters use the most advanced industrial measurement technology, the 80 GHz FMCW radar. The most fundamental advantage of 80 GHz radar compared to lower frequencies *(5…12 GHz and 25 GHz)* is the smaller antenna size, better focusability, and narrow beam angle. It uses the latest technology to measure liquids, masses, emulsions and other chemicals widely used in the water, food, energy, pharmaceutical and chemical industries, providing measurement results with millimeter accuracy. It is also excellent for measuring substances that tend to vaporize and liquids with a gas blanket or for free flowing solids.

In addition to the level, volume, and weight measurement functions, this product family also inherits the open channel flow measurement functions and the threshold functions to eliminate false and interfering echoes. Since no medium is required for millimeter waves to propagate, it can also be used in a vacuum.

The device can also be operated with HART®-compliant NIVELCO **EView2**, **MultiCONT** universal process controller, and PACT*ware*™ software, or programmed via Bluetooth® communication with the **MobileEView** app.

FEATURES

- 2-wire 80 GHz *(W-band)* radar
- Accuracy of ±2 mm
- Small antenna diameter for easy installation
- Plug-in graphic display module
- Horn and plastic encapsulated antennas
- Compact design with IP66/IP67 protection
- User-friendly threshold management
- Configuration via Bluetooth® with MobileEView app
- PACTware™ compatible
- NIFLANGE welded stainless steel flange design
- High-temperature version
- 5 years warranty
- Ex versions

APPLICATIONS

- For level measurement of liquids, emulsions and other media
- For free flowing solids
- Storage tanks, chemical tanks, open pits, sumps, wells
- Measurement through a plastic tank roof
- For materials that tend to vaporize
- For measuring liquids with a gas blanket
- It can also be used in a vacuum
- Open-channel flow measurement

CERTIFICATES

- ATEX *(Ex ia GD)*
- IECEx *(Ex ia GD) (in prep.)*
- INMETRO *(Ex ia GD)*, ANATEL
- FM Class I, Division 1 *(XP) (in prep.)*

AREAS OF APPLICATION

- Water and Wastewater Industry
- Energy / Utilities
- Food & Beverage
- Chemical & Pharmaceutical
- Agriculture
- Construction Materials
- Heavy Industry
- Packaging Industry


WES–214–4


WGS–215–B


WEP–214–4

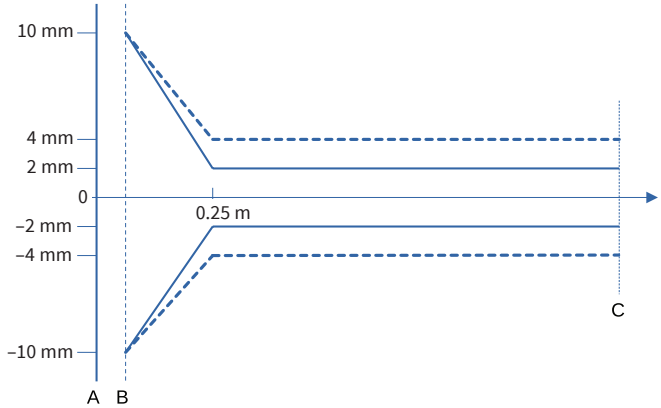

WGB–225–B


WGT–214–8 Ex


WHS–214–B


WEK–224–E

LINEARITY ERROR



Legend:
- W□□–21□–□
- W□□–22□–□ / W□□–238–□

A – Plane of the device's process connection.

B – Minimum measurement distance (X_m) is at the position of the tip of the antenna.

C – Maximum measurement distance (X_M).

OPERATING PRINCIPLE

The reflection of the millimeter-waves is highly dependent on the dielectric constant of the medium. Therefore relative dielectric constant of the measured media (ε_r) must be over 1,9 for measurement using millimeter wave length measuring signal. The measurement principle of a level transmitter with a millimeter-waves signal is based on the measurement of the total

Informative ε_r values							
Butane (C_4H_{10})	1.4	Ethers	4.4	Gasoline	2.3	Methyl alcohol (CH_3OH)	33.1
LP gas	1.6…1.9	Acetic acid (CH_3COOH)	6.2	Bitumen	2.6	Glycol ($C_2H_6O_2$)	37
Kerosene	2.1	Limestone	6.1…9.1	Carbon disulfide (CS_2)		Nitrobenzene ($C_6H_5NO_2$)	40
Crude Oil		Ammonia (NH_3)	17…26	Clinker	2.7	Glycerin ($C_3H_8O_3$)	41.1
Diesel Oil		Acetone (C_3H_6O)	21	Resin	2.4…3.6	Water (H_2O)	80
Benzol (C_6H_6)	2.2	Ethyl alcohol (C_2H_5OH)	24	Cereal Grain	3…5	Sulphuric acid (H_2SO_4) (T = 20 °C (68 °F)	84

time of flight of the measuring microwave signal. The speed of propagation of millimeter-waves signals in the air, gases, and vacuum is almost constant regardless of temperature and medium pressure, so the measured distance does not depend on the physical parameters of the intermediate medium. The **PiloTREK WE–200** level transmitter works on continuous-wave frequency modulated radar *(FMCW) principle* operating at 80 GHz *(W-band)*. A portion of the millimeter-wave continuous wave energy radiated by the level transmitter antenna is reflected from the measured surface, depending on the material to be measured. The distance of the reflecting surface is calculated with high accuracy by the electronics from the frequency shift of the reflected signal and converted into a distance, level, mass or volume signal by the electronics.

TECHNICAL DATA

		PiloTREK W□□–200		
Measured values		Distance; calculated values: level, volume, mass, flow		
Signal frequency		77…81 GHz (W-band)		
Measurement range[1]		0…30 m		
Lowest ε_r of medium		1.9		
Resolution		0.1 mm		
Supply voltage		12…36 V DC		
Output	Analog	4…20 mA (3.9…20.5 mA); $R_{Lmax} = (U_S - 12\ V) / 0.02\ A$		
	Digital	Bluetooth® LE 5.1 (optional), HART® interface (loop resistance ≥250 Ω)		
	Display	SAP–300 – graphic display unit		
	Service interface	Compatible with SAT–506–0		
	Relay *(optional)*	SPDT 30 V / 1 A DC; 42 V / 0.5 A AC		
Measuring frequency		~1/s		
Antenna material[1]		1.4571/1.4404 stainless steel, or plastic antenna enclosure (PP / PVDF / PTFE)		
Standard version	Process temperature	–40…+80 °C		
	Ambient temperature	–40…+70 °C, with display –20…+70 °C		
High-temperature version	Process temperature	–40…+200 °C[2]		
	Ambient temperature	–40…+60 °C, with display –20…+60 °C		
Process pressure		PP, PVDF, PTFE antenna: –1…3 bar; Stainless steel antenna: –1…40 bar		
Seal		EPDM for PP and stainless steel (1.4571/1.4404) antenna, FPM (Viton®) for PVDF and PTFE antenna. Optional: EPDM, FFKM Perfluoroelastomer (Kalrez® 6375)		
Process connection		1", 1½" BSP / NPT, TriClamp, prepared for welded flange (NIFLANGE)		
Ingress protection		IP66 / IP67		
Electrical connection		2× M20×1.5 cable glands + 2× internally threaded ½" NPT connection, cable outer diameter: Ø6…12 mm (shielded cable is recommended), wire cross section: 0.5…1.5 mm^2		
Electrical protection		Overvoltage Class 1; (Class III [SELV])		
Housing material[1]		Fiberglass-reinforced plastic (PBT)	Painted aluminum	Stainless steel 1.4571/1.4404
Weight		0.6…0.8 kg	1.1…2 kg	2.4…2.9 kg

[1] *According to order code.*

[2] *High temperature version with metal housing and stainless steel or PTFE encapsulated antenna only.*

TYPE-DEPENDENT DATA

	W□□–212–□ W□□–213–□	W□□–214–□ W□□–215–□	W□□–224–□ W□□–225–□
Dead zone[1]	0 m		
Maximum measurement range[2]	10 m		20 m
Accuracy[3]	±4 mm		±2 mm
Beam angle *(–3 dB)*	12°	7°	
Antenna insertion length[4]	80 mm	90 mm	
Process connection	1" BSP / NPT	1½" BSP / NPT	

[1] *Measured from the tip of the antenna.*
[2] May be limited in the case of low dielectric constant or non-perpendicular or non-planar media.
[3] *In the case of an ideal reflecting surface.*
[4] *Measured from the seal plane of the process connection.*

Ex INFORMATION

Application group		IIC	IIIC
Standard version		**WE□–2□□–8 Ex, WG□–2□□–8 Ex**	
Ex marking (ATEX)		⟨Ex⟩ II 1G Ex ia IIC T6 Ga	⟨Ex⟩ II 1D Ex ia IIIC T85°C Da
Ex marking (INMETRO)		Ex ia IIC T6 Ga	Ex ia IIIC T85°C Da
High-temperature version		**WH□–2□□–8 Ex, WJ□–2□□–8 Ex[6]**	
Ex marking (ATEX)		⟨Ex⟩ II 1G Ex ia IIC T6…T3 Ga	⟨Ex⟩ II 1D Ex ia IIIC T85°C…T180°C Da
Ex marking (INMETRO)		Ex ia IIC T6…T3 Ga	Ex ia IIIC T85°C…T180°C Da
Ex power supply, intrinsically safety data[7]		U_i = 30 V, I_i = 100 mA, P_i = 0.75 W C_i ≤ 12 nF, L_i ≤ 250 µH	U_i = 30 V, I_i = 140 mA, P_i = 1 W C_i ≤ 12 nF, L_i ≤ 250 µH
Supply voltage		12…30 V DC	
Electrical connection	Cable entry	2× M20×1.5 cable glands + 2× internally threaded ½" NPT connection	
	Cable outer diameter	Ø6…12 mm	
	Wire cross-section	0.5…1.5 mm²	

[6] *Under development*
[7] *In IIB applications, Ex power supply data for IIIC can be used.*

TEMPERATURE DATA FOR Ex CERTIFIED MODELS

	Standard version WE□–2□□ / 3□□–8 Ex, WG□–2□□ / 3□□–8 Ex	High-temperature version WH□–2□□–8 Ex / WH□–3□□–8 Ex, WJ□–2□□–8 Ex / WJ□–3□□–8 Ex			
Temperature data	Ex ia IIC, Ex ia IIIC	Ex ia IIC, Ex ia IIIC			
Temperature class	**T6 T85°C**	**T6 T85°C**	**T5 T100°C**	**T4 T135°C**	**T3 T180°C**
Highest process temperature	+80 °C		+100 °C	+135 °C	+180 °C
Highest surface temperature at the process connection	+70 °C			+135 °C	
Highest ambient temperature	+70 °C			+60 °C	

POLARIZATION

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BACKGROUND MAPPING

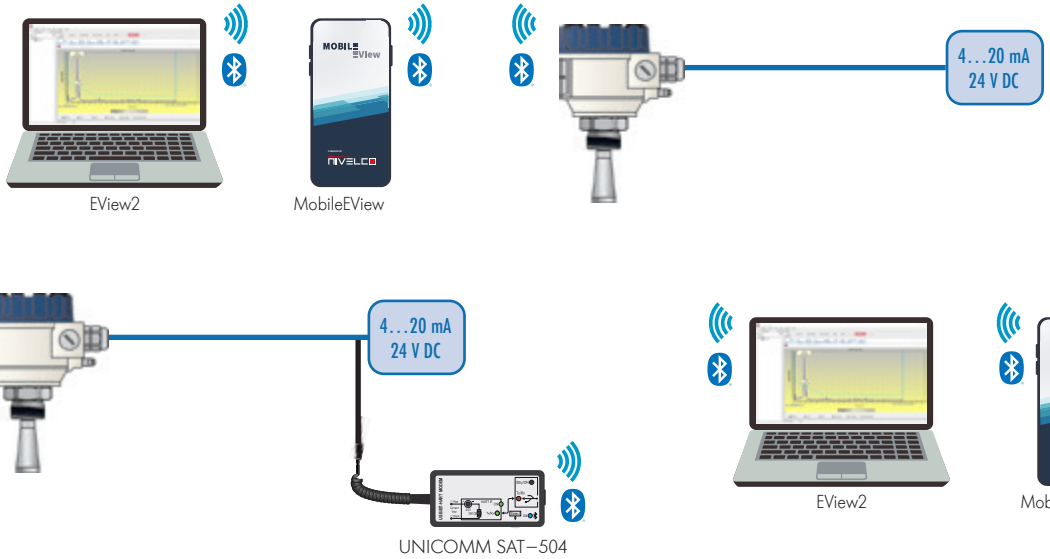
Thanks to its 80 GHz FMCW technology, it is much less sensitive to the presence of clutter than previous generation radars. It now has an easy-to-use, flexible threshold management *(EView2)* that allows echoes from clutter in the tank to be easily masked if necessary. The threshold curve is designed to mask unwanted echoes from the measurement. Echo peaks below the threshold are not included in the evaluation.

NEW

Compact Non-Contact Radar Level Transmitter

Bluetooth® CONNECTIVITY

The Bluetooth® option on the **PiloTREK W–200 Series** allows for convenient device setup and diagnostics via the NIVELCO **MobileEView** app for Android or iOS or the free **EView2** software download for laptops.



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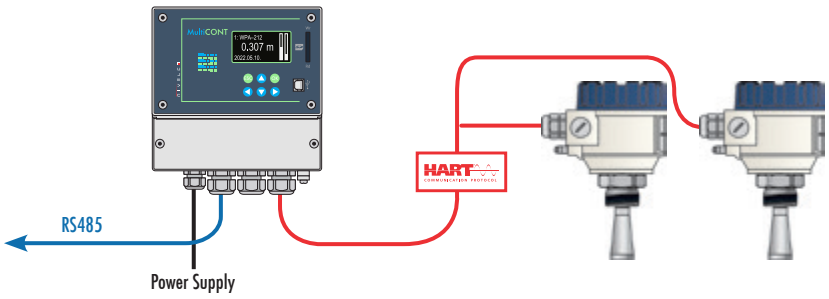

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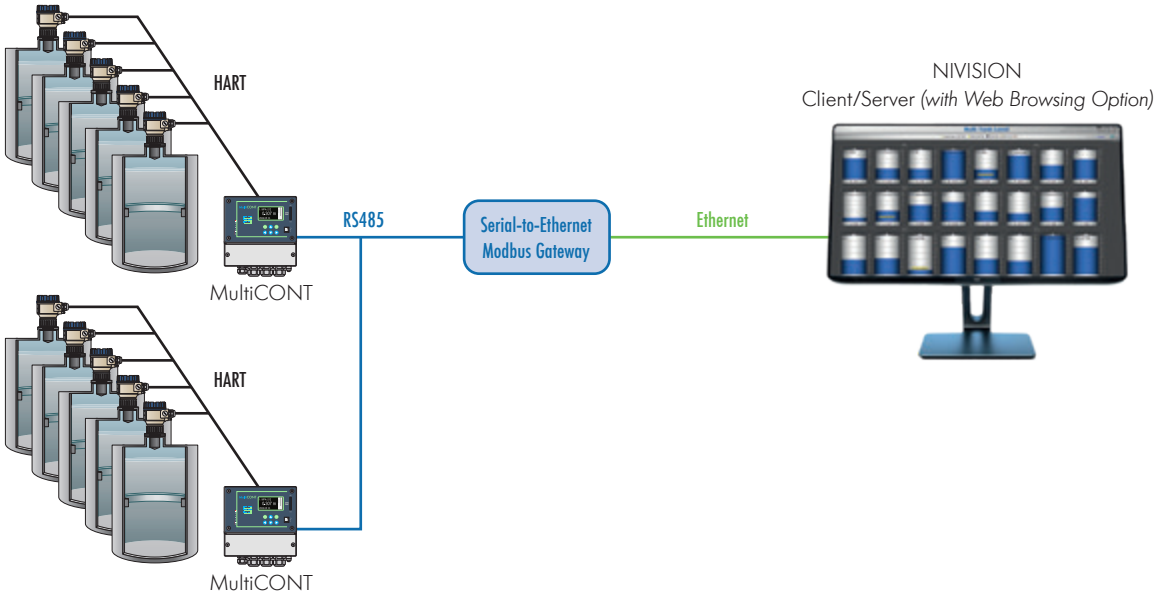


WIRING

WJT–215–B

PROGRAMMING, ECHO MAP

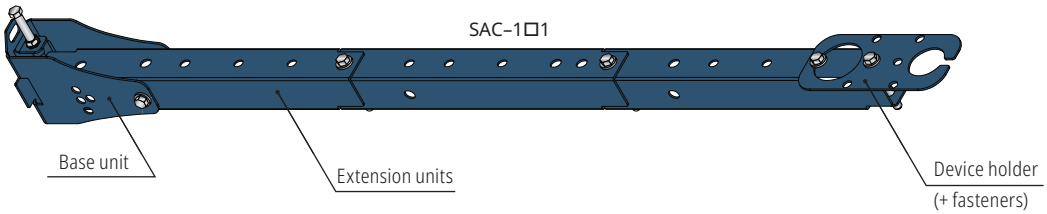
All parameters can be programmed via the optional **UNIDISP SAP–300** plug-in display; measurement and output parameters can be set using a text-based menu system. Measured values are displayed as numbers and bar graphs on the dot-matrix screen. The echo map helps detect false reflections and optimizes measurement configuration.

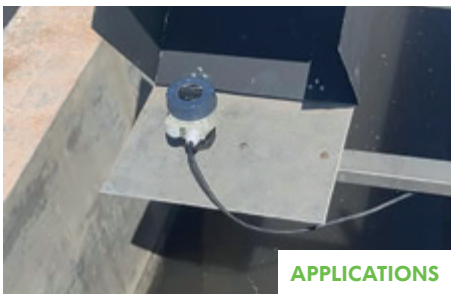
MOUNTING

The device must be mounted far as possible from interfering objects inside the tank and from sources of interference, such as waves, vortices or strong vibrations. The antenna axis must be perpendicular to the surface of the measured medium within ±2…3°. For outdoor use, we recommend using an aluminum housing. In regions with extremely hot climates, we recommend protecting the device from direct sunlight to avoid exceeding the ambient temperature limits of the housing. For this purpose, we recommend using the UNIMOUNT SAB sunshield.

SAC–1□1 – MOUNTING ASSEMBLY

We recommend our new universal mounting bracket designed for level transmitters and level switches. The complete set includes the base unit, one or more extension modules, the 1" suspension element, adapter plates for 1", 1½" and 2" process connections, as well as the full fastening screw kit. All components can be assembled according to the user's installation requirements. The bracket is manufactured from painted aluminum and stainless steel and is rated for a maximum load of 5 kg. It features a length adjustable between 250…1000 mm, leveling possibility, and both horizontal and vertical pivoting options, ensuring broad applicability in industrial environments.





APPLICATIONS

PiloTREK WE–200 80 GHz Compact — 5 years

2-wire compact non-contact radar level transmitter with stainless steel horn antenna or plastic encapsulated antenna

Version

W□■ – 2■■ – ■

E		Transmitter
G		Transmitter with plug-in display
H	*	Transmitter, high-temperature version (max. +200 °C)
J	*	Transmitter with plug-in display, high-temperature version (max. +200 °C)

* High-temperature version with metal housing and stainless steel or PTFE encapsulated antenna only.

Antenna / Housing

W■□ – 2■■ – ■

P		PP / Fiberglass-reinforced plastic (PBT)
A		PP / Painted aluminum
D		PP / Stainless steel
M		1.4571/1.4404 / Fiberglass-reinforced plastic (PBT)
S		1.4571/1.4404 / Painted aluminum
K		1.4571/1.4404 / Stainless steel
V		PVDF / Fiberglass-reinforced plastic (PBT)
B		PVDF / Painted aluminum
W		PVDF / Stainless steel
F		PTFE / Fiberglass-reinforced plastic (PBT)
T		PTFE / Painted aluminum
L		PTFE / Stainless steel

Antenna type

W■■ – □■■ – ■

2		Horn

Measurement range

W■■ – 2□■ – ■

1		10 m
2		20 m
3	**	30 m

** Under development

Process connection

W■■ – 2■□ – ■

2		1" BSP (only for 10 m measurement range)
3		1" NPT (only for 10 m measurement range)
4		1½" BSP (only for 10 m or 20 m measurement range)
5		1½" NPT (only for 10 m or 20 m measurement range)
C		1½" TriClamp (only for PTFE antenna and only for 10 m measurement range)
D		2" TriClamp (only for PTFE antenna version)
E		3" TriClamp (only for PTFE antenna version)
F		4" TriClamp (only for PTFE antenna version)
8	**	Ø75 mm (2½") prepared for flange (only 30 m and encapsulated types, flanges available from size DN80 should be ordered separately)
S		Prepared for welded flange (only for 10 and 20 m ranges, with 1½" stainless steel antenna, flange type MF_–___–L to be ordered separately)

** Under development

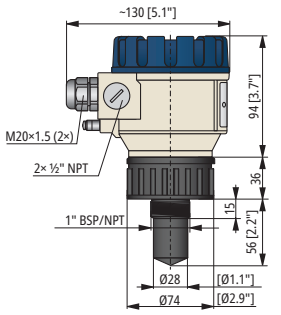
Output / Certificates

W■■ – 2■■ – □

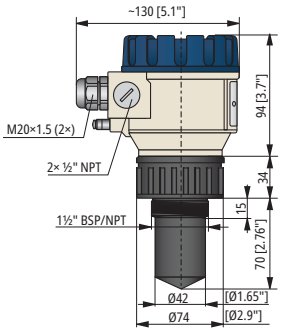
4		4...20 mA + HART®
5	**	4...20 mA + HART® / Ex ta D
8		4...20 mA + HART® / Ex ia GD
B		4...20 mA + HART® + Bluetooth®
C	**	4...20 mA + HART® + Bluetooth® / Ex ta D
E		4...20 mA + HART® + Bluetooth® / Ex ia GD
H		4...20 mA + HART® + SPDT Relay
F	**	4...20 mA + HART® + SPDT Relay / Ex ta D
R		4...20 mA + HART® + SPDT Relay + Bluetooth®
J	**	4...20 mA + HART® + SPDT Relay + Bluetooth® / Ex ta D

** Under development

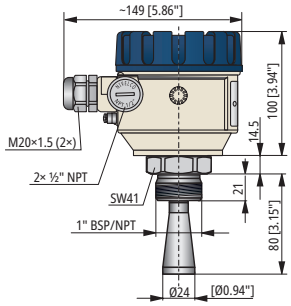
Need of IEC Ex is to be specified in the text part of the order



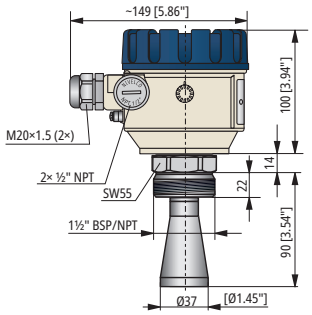
WEP–212–□, WEP–213–□



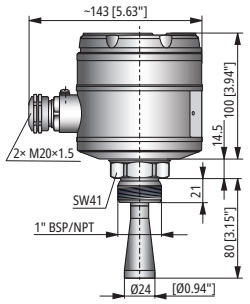
WEP–2□4–□, WEP–2□5–□



WEM–212–□, WEM–213–□



WES–2□4–□, WES–2□5–□



W□K–212–□, W□K–213–□

Accessories sold separately; see relevant page for details

SAP–300–0	Graphic plug-in display module
SAT–504–■	HART®-USB/Bluetooth® modem
SAK–305–■	HART®-USB/RS485 modem
SAT–506–■	eLink Module
MF–■■■–■	Mounting flange
SAC–1■1–0	Mounting brackets

Process seal material

- Factory default: EPDM for PP and 1.4571/1.4404 antenna, FPM for PVDF and PTFE antenna
- Optional: EPDM, FPM, FFKM available for all types

Process seals are ordered separately and must be specified in the text part of the order. Other seals are also available.

UNIMOUNT SAC mounting bracket — 5 years

Mounting bracket available separately for level transmitters, level switches, 1" suspension elements, 1", 1½" and 2" connections, and nameplates. Made of painted aluminum and stainless steel, for loads up to 5 kg.

Type

SAC–1■1–0

Type

□AC–1■1–0

S	Mounting brackets

Extension element

SAC–1□1–0

0	None
1	1×
2	2×
3	3×

Accessories sold separately

SAC–100–0	Basic unit
SAC–210–0	Extension element, 300 mm (×1)
SAC–201–0	Accessory set (1" suspension element + plate for 1", 1½" and 2" connection damping gland sponge washer + screw set)

UNIMOUNT SAB shielding cap — 5 years

Sun protection shielding cap designed for installation on the top cover of the instrument housing. Available in stainless steel or plastic.

Type

SAB–112–0	3D printed plastic shielding cap, snap-on design for plastic cover
SAB–113–0	3D printed plastic shielding cap, snap-on design for aluminum cover
SAB–211–2	Stainless steel shielding cap, clamp-type design, for all instrument covers

NIFLANGE MFT — 5 years

Available in carbon steel, PTFE lined carbon steel, polypropylene (PP), and stainless steel, DIN, ANSI, and JIS flanges

Prices on request

Type

□F■–■■■–■

M	Mounting flange

Version

MF□–■■■–■

A	Flat Face (A)
T	Raised Face (B1)
C	Tongue (C)
D	Groove (D)

Standard / Flange material / Form

MF■–□■■–■

1	DIN / Carbon steel / EN 1092 (B1)
2	DIN / Stainless steel / EN 1092 (B1)
3	DIN / Polypropylene / EN 1092 (A)
5	ANSI / Carbon steel / ASME B16.5 (RF)
6	ANSI / Stainless steel / ASME B16.5 (RF)
7	ANSI / PP/ ASME B16.5 (FF)
A	JIS / Carbon steel / B 2220 (RF)
B	JIS / Stainless steel / B 2220 (RF)
C	JIS / PP / B 2220 (FF)

Dimension DIN / ANSI / JIS

MF■–■□■–■

D	DN15 / ½" / 15A
A	DN20 / ¾" / 20A
B	DN25 / 1" / 25A
C	DN32 / 1¼" / 32A
7	DN40 / 1½" / 40A
0	DN50 / 2" / 50A
1	DN65 / 2½" / 65A
2	DN80 / 3" / 80A
3	DN100 / 4" / 100A
4	DN125 / 5" / 125A
5	DN150 / 6" / 150A
6	DN200 / 8" / 200A
8	DN250 / 10" / 250A
9	DN300 / 12" / 300A

Pressure DIN / ANSI / JIS

MF■–■■□–■

5	PN6 / - / 5K
6	PN10 / - / 10K
1	PN16 / 150 psi / 16K
2	PN25 / 300 psi / 30K
3	PN40 / 600 psi / 40K
4	PN63 / 900 psi / 63K

Internal dimension

MF■–■■■–□

2	1" BSP
5	1" NPT
7	1½" BSP
8	1½" NPT
L	Weldable to WE (stainless steel only)

NEW

Compact Non-Contact Radar Level Transmitter for Solids

PiloTREK WT–300

The new **PiloTREK WT–300** non-contact radar level transmitters utilize 80 GHz FMCW radar technology—the most advanced in industrial measurement—for bulk solids in food processing, agriculture, construction materials, chemicals, and mining. They deliver millimeter accuracy across light powders to large-particle solids.

Beyond level, volume, and weight measurement, the family includes threshold functions to eliminate false echoes. Compatible with HART®-enabled NIVELCO **EView2**, **MultiCONT** controller, and PACTware™ software, or programmable via Bluetooth® with the **MobileEView** app.

FEATURES

- 2-wire 80 GHz (W-band) radar
- 60 m measurement range
- Accuracy of ±2 mm
- Easy installation
- Plug-in graphic display module
- User-friendly threshold management
- Tiltable flanged design
- Compatible with the NIFLANGE tiltable flange
- Prepared for compressed air dust blowing
- Compact design with IP66/IP67 protection
- Configuration via Bluetooth® with MobileEView app
- PACTware™ compatible
- High-temperature version (under development)
- 5 years warranty

APPLICATIONS

- For free flowing solids
- Wide range of applications, from light powders to bulk solids with large particle sizes
- Measurement through a plastic tank roof
- It can also be used in a vacuum

CERTIFICATES

- ATEX (in prep.)

AREAS OF APPLICATION

- For level measurement of powders and granular materials with a minimum dielectric constant (ε_r) of 1.4
- Agriculture
- Construction Materials
- Chemical Industry
- Food Industry
- Mining
- Energy Production
- Packaging Industry
- Recycling
- Plastics Industry

OPERATING PRINCIPLE

The reflection of the millimeter-waves is highly dependent on the dielectric constant of the medium. The actual measurable distance achievable with microwave level measurement is limited when the dielectric constant (ε_r) is low.

Informative ε_r values					
Granulated plastic	1.1…2.8	Corn, cereals, grain, sunflower seed	2.0…5.0	Flour	2.4
Cement	1.5…10			Ground stone, gravel, sand,	2.5…5.0
Powdered lime *(CaO)*	1.6…2.2	Seed-corn, granulated fodder mixture	2.0…3.0	Sodium chloride *(NaCl)*, Table salt, rock salt	3.3
Powdered milk	1.6…2.2	Malt *(dry)*	2.2…3.0	Sodium carbonate, Soda *(Na_2CO_3)*	5.3…8.4
Granule fertilizers *(Nitrates, Phosphates)*	1.6…6.4	Coal, coal powder, metal ore	2.3…15	Sodium bicarbonate, Baking soda *($NaHCO_3$)*	5.7
Powdered sugar	1.8	Coal dust	2.3		

The measurement principle of a level transmitter using a millimeter-wave signal is based on measuring the total time of flight of the measuring microwave signal. The speed of propagation of millimeter-wave signals in the air, gases, and vacuum is almost constant regardless of temperature and medium pressure, so the measured distance does not depend on the physical parameters of the intermediate medium.

The **PiloTREK WT–300** level transmitter operates on a continuous-wave frequency-modulated radar (FMCW) principle, utilizing the 80 GHz (W-band) frequency. A portion of the millimeter-wave continuous wave energy radiated by the level transmitter antenna is reflected from the measured surface, depending on the material to be measured. The distance of the reflecting surface is calculated with high accuracy by the electronics from the frequency shift of the reflected signal and converted into a distance, level, mass, or volume signal by the electronics.

TECHNICAL DATA

		PiloTREK W□□–3□□–□
Measured values		Distance; calculated values: level, volume, mass, flow
Signal frequency		77…81 GHz (W-band)
Measurement range[1]		0…60 m
Lowest ε_r of medium		1.4
Resolution		0.1 mm
Supply voltage		12…36 V DC
Output	Analog	4…20 mA (3.9…20.5 mA); $R_{Lmax} = (U_S - 12\ V) / 0.02\ A$
	Digital	HART® interface, HART® loop resistance ≥250 Ω
	Display	SAP–300 – graphic display unit
	Service interface	Compatible with SAT–506–0
	Relay *(optional)*	SPDT 30 V / 1 A DC; 42 V / 0.5 A AC
Connectivity		Bluetooth® LE 5.1 (optional)
Measuring frequency		~1/s
Antenna material[1]		PTFE
Standard version	Process temperature	–40…+80 °C
	Ambient temperature	–40…+70 °C, with display –20…+70 °C
High-temperature version	Process temperature	–40…+200 °C[2]
	Ambient temperature	–40…+60 °C, with display –20…+60 °C
Seal		FPM (Viton®), Optional: EPDM, FFKM Perfluoroelastomer (Kalrez® 6375)
Maximum pressure of the pneumatic system		8 bar
Process connection		DIN, ANSI, JIS flanges, prepared for tiltable flange (NIFLANGE)
Ingress protection		IP66 / IP67
Electrical connection		2× M20×1.5 cable glands + 2× internally threaded ½" NPT connection, cable outer diameter: Ø6…12 mm (shielded cable is recommended), wire cross section: 0.5…1.5 mm²
Electrical protection		Overvoltage Class 1; (Class III [SELV])
Housing material[1]		Painted aluminum / Stainless steel 1.4571/1.4404
Weight		1.5…2.5 kg / 2.5…3.5 kg

[1] *According to order code.*

[2] *High-temperature version with PTFE antenna only.*

ANTENNA ADATOK

	W□□-33□-□	W□□-36□-□
Dead zone[3]	0 m	
Maximum measurement range[4]	30 m	60 m
Accuracy[5]	±2 mm	
Beam angle (–3 dB)	3°	
Antenna insertion length[6]	17 mm	

[1]*Measured from the tip of the antenna.*
[2]*May be limited in the case of low dielectric constant or non-perpendicular or non-planar media.*
[3]*In the case of an ideal reflecting surface.*
[4]*Measured from the seal plane of the process connection.*

POLARIZATION

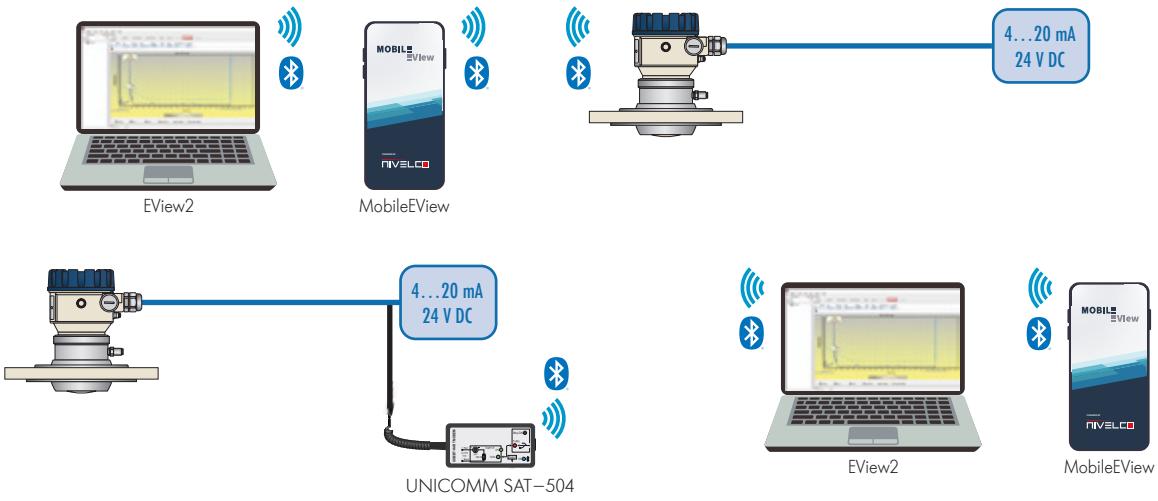
The **PiloTREK W–300** 80 GHz radar is much less sensitive to installation conditions, both in terms of polarization and clutter sensitivity, due to its narrow and nearly circular beamwidth.

BACKGROUND MAPPING

Thanks to its 80 GHz FMCW technology, it is much less sensitive to the presence of clutter than previous-generation radars. It now has an easy-to-use, flexible threshold management ***(EView2)*** that allows echoes from clutter in the tank to be easily masked if necessary. The threshold curve is designed to mask unwanted echoes from the measurement. Echo peaks below the threshold are not included in the evaluation.

Bluetooth® CONNECTIVITY

The Bluetooth® option on the **PiloTREK W–300** Series allows for convenient device setup and diagnostics via the NIVELCO MobileEView app for Android or iOS or the free **EView2** software download for laptops.



PiloTREK TRANSMITTERS IN HART® MULTIDROP LOOP

MultiCONT multi-channel remote controllers process, display, and transmit data from NIVELCO's HART®-equipped transmitters in a multidrop loop. Up to 15 of these connected transmitters can be programmed and maintained from MultiCONT, which supports data-logging tasks. MultiCONT provides programmable relay outputs, while 4…20 mA outputs are available through remote I/O modules.
MultiCONT can send measurement data via RS485 to PLCs, computers running third-party SCADA systems, or the NIVELCO **NIVISON** inventory monitoring system.

PROGRAMMING, ECHO MAP

All parameters can be programmed via the optional **UNIDISP SAP–300** plug-in display; measurement and output parameters can be set using a text-based menu system. Measured values are displayed as numbers and bar graphs on the dot-matrix screen. The echo map helps detect false reflections and optimizes measurement configuration..

PiloTREK WT–300 80 GHz Compact — 5 years

2-wire compact non-contact radar level transmitter with plastic lens antenna and tiltable flange

Version

W□■ – 3 ■■ – ■

T		Transmitter
B		Transmitter with plug-in display
K	*	Transmitter, high-temperature version (max. +200 °C)
L	*	Transmitter with plug-in display, high-temperature version (max. +200 °C)
C		Transmitter with air purge
D		Transmitter with plug-in display and air purge
M	*	Transmitter with air purge, high-temperature version (max. +200 °C)
N	*	Transmitter with plug-in display and air purge, high-temperature version (max. +200 °C)

* High-temperature version only with metal housing and stainless steel flange, under development

Antenna / Housing

W■□ – 3 ■■ – ■

F	PTFE / Fiberglass-reinforced plastic (PBT)
T	PTFE / Painted aluminum
L	PTFE / Stainless steel

Measurement range

W■■ – 3 □■ – ■

3	30 m
6	60 m

Process connection / Material

W■■ – 3 ■□ – ■

DIN flanges: stainless steel (1.4571/1.4404)		
1		DN100 PN25, Flange / 1.4571/1.4404
2		DN125 PN25, Flange / 1.4571/1.4404
3		DN150 PN25, Flange / 1.4571/1.4404
RF ANSI flanges: Polypropylene (PP)		
4		4" RF 150 psi, Flange / 1.4571/1.4404
5		5" RF 150 psi, Flange / 1.4571/1.4404
6		6" RF 150 psi, Flange / 1.4571/1.4404
JIS flanges: stainless steel (1.4571/1.4404)		
7		JIS 10K 100A, Flange / 1.4571/1.4404
8		JIS 10K 125A, Flange / 1.4571/1.4404
9		JIS 10K 150A, Flange / 1.4571/1.4404
DIN flanges: Polypropylene (PP)		
A		DN100 (as per PN25), Flange / PP
B		DN125 (as per PN25), Flange / PP
C		DN150 (as per PN25), Flange / PP
FF ANSI flanges: Polypropylene (PP)		
D		4" FF (as per 150 psi), Flange / PP
E		5" FF (as per 150 psi), Flange / PP
F		6" FF (as per 150 psi), Flange / PP
JIS flanges: Polypropylene (PP)		
G		JIS 100A (as per 10K), Flange / PP
H		JIS 125A (as per 10K), Flange / PP
J		JIS 150A (as per 10K), Flange / PP
Prepared for tiltable flange		
U	**	Ø100 mm / prepared for tiltable flange

** Flange type MF_–___–W from size DN100 to be ordered separately

Output / Certificates

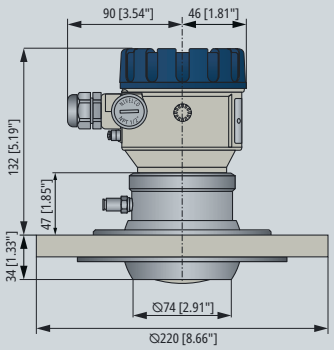
W■■ – 3 ■■ – □

4		4...20 mA + HART®
5	***	4...20 mA + HART® / Ex ta D
8	***	4...20 mA + HART® / Ex ia GD
B		4...20 mA + HART® + Bluetooth®
C	***	4...20 mA + HART® + Bluetooth® / Ex ta D
E	***	4...20 mA + HART® + Bluetooth® / Ex ia GD
H		4...20 mA + HART® + Relay
F	***	4...20 mA + HART® + Relay / Ex ta D
R		4...20 mA + HART® + Relay + Bluetooth®
J	***	4...20 mA + HART® + Relay + Bluetooth® / Ex ta D

*** Under development

Available on request (see relevant page for details)

SAP–300–0	Graphic plug-in display module
SAT–504–■	HART®-USB/Bluetooth® modem
SAK–305–■	HART®-USB/RS485 modem
SAT–506–■	eLink Module
MF■–■■■–■	Mounting flange



W□T–369

COMING SOON

NEW

Guided Wave Radar Level Transmitter (GWR) — MicroTREK

The **MicroTREK H–700** series guided microwave level transmitter measures continuous level and interface of conductive/non-conductive liquids, pulps, and solids. It uses Time Domain Reflectometry (TDR), measuring the time-of-flight of radar pulses guided via probe (GWR – Guided Wave Radar). This preserves radar energy through challenging environments, with reflection occurring at material impedance changes—typically at the air interface ($\varepsilon_r = 1$). Products with dielectric constants as low as 1.4 can be measured.

In interface measurement mode two levels can be measured simultaneously. A low dielectric material on the top ($\varepsilon_r = 1.4…10$) and a higher dielectric one ($\varepsilon_r > 20$)) under it.

FEATURES

- The measurement is not affected by temperature, pressure and medium properties (e.g. density, dielectric constant, humidity, etc.)
- Measurement range up to 30 m
- Maximum tracking speed: 2000 m/h (555 mm/s)
- Accuracy: ±5 mm
- Rod, flexible, or coaxial probes
- Segmented or segmented coaxial probe version
- Lowest $\varepsilon_r \geq 1.4$
- Interface measurement *(optional)*
- Dual current output for interface measurement *(optional)*
- Plug-in display
- Advanced threshold management
- False echo suppression
- Output Conversion Table *(OCT, VMT)* with up to 100 point pairs for accurate output linearization
- PACT*ware*™ compatible
- 4…20 mA + HART® output + relay *(optional)*
- Process temperature range: –30… +200 °C
- Highest process pressure: 40 bar
- IP67
- 5 years warranty

HHA / HHB–7□□–□

HTD / HTE–7□□–□

HTK / HTL–7□□–□

CERTIFICATES

- ATEX (Ex ia G)
- ATEX (Ex ia D)
- ATEX (Ex ta/tb D)
- IEC Ex (Ex ia G)
- IEC Ex (Ex ia D)
- INMETRO (Ex ia G)
- INMETRO (Ex ia D)
- UKCA Ex (Ex ia G)
- UKCA Ex (Ex ia D)
- UKCA Ex (Ex ta/tb D)
- FM Clas I, Div. 1 *(pending)*
- FM Clas I, Div. 2 *(pending)*

APPLICATIONS

Mono cable / Mono rod Mono segmented rod	Twin cable	Twin rod	Coaxial pipe
■ Cement, limestone, fly ash, alumina, soot ■ All high-viscosity liquids ■ Mineral powders ■ Clean and contaminated liquids ■ For stilling wells and bypass applications (calibration required) ■ With plastic-coated probe for chemically aggressive substances ■ Slightly conductive foams ■ High-temperature applications	■ Tank plants with solvents, oil and fuels ■ Water storage tanks ■ Plastic granules ■ For products with low dielectric constant ($\varepsilon_r > 1.8$) ■ For all liquids, light granules without any conductive sediments ■ For narrow tanks ■ Where minimum dead zone is requested ■ Mounting close to tank wall is possible	■ Plastic granules ■ Clean and moderately contaminated liquids ■ Where minimum dead zone is needed ■ For grains and fine powders in small hoppers ■ For small size and narrow tanks ■ For low dielectric media and slightly moving products	■ Up to 6 m high small vessels and tanks ■ Solvents, liquefied gases ■ LPG, LNG ■ For clean liquids with low dielectric constant ■ Agitated or flowing liquids – the probe acts as a stilling well ■ Liquid or vapor spray near the probe ■ Can be heated ■ Contact possible with metallic object or tank wall ■ Where no dead zone allowed

TECHNICAL DATA

Version		Plastic housing	Aluminum housing	Stainless steel housing
Measured values / calculated values		Distance / Level, Volume, Weight		
Measurement range		Depending on probe version and dielectric constant (ε_r) of the medium		
Probe versions		Mono cable, twin cable, mono rod, twin rod, coaxial pipe, segmented coaxial pipe and segmented rod		
Accuracy	Linearity error[1]	For liquids: ±5 mm, if probe length ≥ 10 m: ±0.05% of the probe length. For solids: ±20 mm, if probe length ≥ 10 m: ±0.2% of the probe length		
	Resolution	1 mm		
Lowest ε_r of medium		1.4 (depending on probe version)		
Supply voltage		12[3]…36 V DC, nominal 24 V DC, Ex version: 12[3]…30 V DC, transient overvoltage protection		
Output	Communication	4…20 mA + HART®		
	Display (optional)	SAP–300 graphic display unit		
	Relay (optional)	SPDT 30 V / 1 A DC; 48 V / 0.5 A AC		
Process temperature		–30…+90 °C; high-temperature version: –30…+200 °C		
		For plastic-coated probes, coated: see "Probe Properties"		
Highest process pressure		40 bar; with plastic lined flange: maximum 25 bar		
Ambient temperature		–30…+65 °C, with display: –20…+65 °C		
Process connection		Threaded, flanged or sanitary connections (as per order code)		
Ingress protection		IP67		
Electrical connection		2× M20×1.5 cable glands + 2× internally threaded ½" NPT connection, cable outer diameter: Ø6…12 mm (shielded cable is recommended), wire cross section: 0.5…1.5 mm²		
Electrical protection		Class III		
Housing material		Plastic (PBT)	Painted aluminum	Stainless steel (1.4571/1.4404)
Seal		FPM (Viton®), optional: FFKM (Kalrez®), EPDM		
Explosion protection		—	See "Ex Information"	
Weight (head unit)		1.3 kg	2.2 kg	3.9 kg

[1] Under reference conditions and constant temperature. *[2] The use of SAP–300 graphic displays is limited in hazardous environment. For further information, see "Ex Information".*
[3] Stable HART® communication can be guaranteed with terminal voltage > 13 V DC.

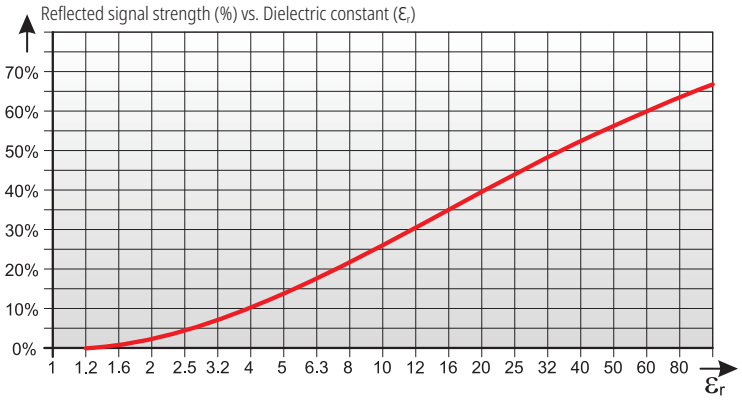
Ex INFORMATION

		H□□–7□□–8 Ex / H□□–9□□–8 Ex		H□□–7□□–6 Ex H□□–9□□–6 Ex	H□□–7□□–5 Ex H□□–9□□–5 Ex	H□□–7□□–9 Ex H□□–9□□–9 Ex
		Without probe coating, without display	With coated probe and/or display			
Protection		Ex ia G		Ex ia D	Ex ta/tb D	Ex ta D[4]
Ex marking[5]	ATEX	⟨Ex⟩ II 1 G Ex ia IIC T6…T3 Ga	⟨Ex⟩ II 1 G Ex ia IIB T6…T3 Ga	⟨Ex⟩ II 1 D Ex ia IIIC T85°C…T180°C Da	⟨Ex⟩ II 1/2 D Ex ta/tb IIIC T85°C… T180°C Da/Db	⟨Ex⟩ II 1D Ex ta IIIC T105°C Da
	IEC Ex[6]	Ex ia IIC T6…T3 Ga	Ex ia IIB T6…T3 Ga	Ex ia IIIC T85°C…T180°C Da	Ex ta/tb IIIC T85°C…T180°C Da/Db	Ex ta IIIC T105°C Da
Ex supply voltage and intrinsic safety data		C_i ≤ 25 nF, L_i ≤ 300 µH, U_i ≤ 30 V, I_i ≤ 100 mA, P_i ≤ 0.75 W	C_i ≤ 25 nF, L_i ≤ 300 µH, U_i ≤ 30 V, I_i ≤ 140 mA, P_i ≤ 1 W		U_i = 30 V DC, I_i = 1 A	
Supply voltage		12[7]…30 V DC				
Electrical connection		2× M20×1.5 metal cable glands, cable outer diameter: Ø6…Ø12 mm, wire cross section: maximum 1.5 mm²				
Ambient temperature		–30…+65 °C, with display: –20…+65 °C				

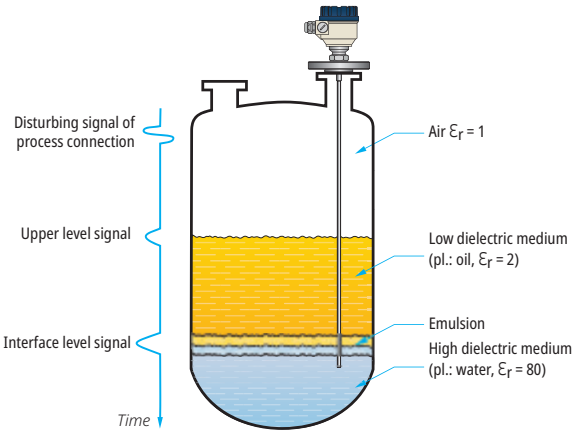
[4] Ex ta D protection class devices are available only with a windowless cap.
[5] In IIC environment SAP–300 graphic display must not be used!
[6] IEC Ex compliance is optional; must be requested in the order.
[7] In an industrial environment, reliable operation can be guaranteed with a terminal voltage >13 V.

MEASURABILITY OF THE MEDIUM

The measurability of the medium and the reflected signal strength depends on the relative dielectric constant of the medium.



Informative ε_r values			
Butane	1.4	Grain	3…5
Cement	1.5…10	Cooking oil	3.9
LPG	1.6…1.9	Limestone	6.1…9.1
Kerosene	1.8…2.1	Acetone	21
Crude oil	2.1	Ethanol	24
Diesel oil	2.1	Methanol	33.1
Gasoline	2.3	Glycol	37
Asphalt	2.6	Nitrobenzene	40
Clinker	2.7	Water	80
Resin	2.4…3.6	Sulphuric acid (T = 20 °C)	84



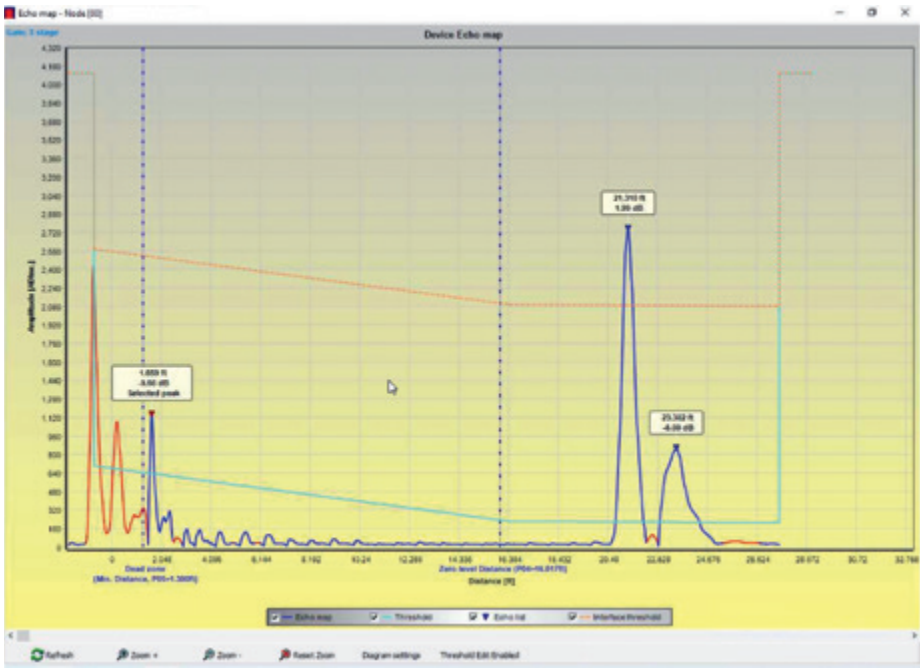
INTERFACE MEASUREMENT OF LIQUIDS

Low dielectric materials are semi-transparent to the microwave signal. Such materials only partially reflect the energy of the microwave signal. The non-reflected part of the emitted measuring signal energy passes through the low dielectric medium and is reflected from the impedance boundary of the two materials. MicroTREK level transmitters equipped with the interface measurement option measure and process these two reflections simultaneously.

TYPICAL APPLICATIONS FOR INTERFACE MEASUREMENT

Typical applications are separator or storage tanks. Containing water, oils or other low dielectric, non-conductive and water-insoluble liquid chemicals. Most widespread use of the device is in oil industry.

MicroTREK H–700 devices ordered with interface measurement option can measure the upper level of already separated liquids, the phase boundary (interface) level, or the thickness of the upper liquid layer. Depending on the setting, any of listed measured values can be assigned to the 4…20 mA and HART® outputs. MicroTREK H–700 series with interface option are suitable for phase boundary *(interface)* measurement with any NIVELCO made probe. The use of more sensitive probes *(twin and coaxial)* is recommended for more critical applications.



The basic criteria for interface measurement

- The upper liquid layer must be electrically non-conductive
- The value of relative dielectric constant of the upper liquid layer must be known
- The upper liquid layer must be homogeneous, its composition and material structure must not change
- The upper layer of the fluid can only be measured if its layer thickness exceeds 120 mm
- The lower and upper liquids must be separated from each other, free from emulsion transition
- The lower liquid layer must be electrically conductive, or if it is not, than the difference in the relative dielectric constants of the two liquids must be greater than 10.*

**In the case of clean separation of the liquids and use of a most sensitive coaxial probe.*

PROBES

Reliable measurement with microwaves depends on selecting the appropriate probes and taking the medium's properties and other vessel conditions into consideration.

Probe	ε_r min.	Process connection	Max. measurement range	Dead zone[1]	
				Upper (t) / lower (b) ε_r = 80	Upper (t) / lower (b) ε_r = 2.4
Mono cable Ø4 mm	2.1	1"; 1½"	30 m	250 mm / 20 mm	350 mm / 100 mm
Mono cable Ø8 mm		1½"			
Mono rod Ø8 mm		1"	3 m		
Mono / segmented rod Ø14 mm		1½"	6 m		
Twin cable Ø4 mm	1.8		30 m	150 mm / 20 mm	300 mm / 100 mm
Twin rod Ø8 mm			3 m		
Coaxial pipe Ø28 mm	1.4	1"; 1½"	6 m	0 / 10 mm	0 / 100 mm
Segmented coaxial pipe Ø14 mm	1.6	1½"			
Coated cable Ø6 mm	2.4	1"; 1½" TriClamp; DN40 MILCH, DN50	30 m	250 mm / 20 mm	350 mm / 100 mm
Coated rod Ø12 / Ø16 mm		DN50	3 m		

[1] The unmeasurable upper and lower part of the tank. The lower dead zone is extended with the length of the counterweight (cable versions only)

PROBE PROPERTIES

Probe	Ø4 mm cable	Rod	Rod / segmented rod	Ø8 mm cable	Ø4 mm twin cable	Twin rod	Coaxial
Type	H□K, H□L H□V, H□W	H□R, H□P	H□S, H□Z	H□N, H□J	H□T, H□U	H□D, H□E	H□A, H□B H□C, H□H
Maximum measuring distance	30 m	3 m	6 m	30 m		3 m	6 m
Min. meas. dist. (ε_r = 80 / ε_r = 2.4)	250 mm / 350 mm				150 mm / 300 mm		0 m
Lowest ε_r of medium	2.1				1.8		1.4
Sensing area around probe	Ø600 mm				Ø200 mm		0 mm
Process connection	1" BSP / NPT	1" BSP	1½" BSP				1" BSP / NPT
	1½" BSP / NPT	1" NPT	1½" NPT				1½" BSP / NPT
Probe material	1.4401	1.4571/1.4404		1.4401		1.4571/1.4404	
Probe nominal diameter	4 mm	8 mm	14 mm	8 mm	2× 4 mm	2× 8 mm	28 mm
Weight	0.12 kg/m	0.4 kg/m	1.2 kg/m	0.4 kg/m	0.24 kg/m	0.8 kg/m	1.3 kg/m
Separator material[2]	–				PFA, welded onto the cable	PTFE-GF25	PTFE
Weight dimensions	Ø25 × 100 mm	–		Ø40 × 260 mm	Ø40 × 80 mm	–	
Weight material	1.4571/1.4404	–		1.4571/1.4404		–	

[2] *There is no separator mounted up to 1.5 m probe length.*

COATED PROBE PROPERTIES

Probe	Ø4 mm FEP-coated cable			Ø4 mm fully FEP/PFA-coated cable	Fully PFA-coated rod		Fully PP-coated rod
Type	H□F, H□G	H□X	H□Y	H□M	H□Q	H□O	H□I
Maximum measuring distance	30 m				3 m		
Min. meas. dist. (ε_r = 80 / ε_r = 2.4)	250 mm / 350 mm						
Lowest ε_r of medium	2.1						
Sensing area around probe	Ø600 mm						
Process connection	1" BSP / NPT	1½" TriClamp	DN40 MILCH	DN50 PN25 flange		1½" TriClamp	DN50 PN25
Highest process temperature	+200 °C			+150 °C			+60 °C
Probe material	1.4401				1.4571/1.4404		
Probe coating	FEP				PFA		PP
Probe nominal diameter	6 mm				12 mm		16 mm
Probe coating	–			FEP / PFA	PFA		PP
Weight material	1.4571/1.4404			1.4571/1.4404 + PFA-coating	–		
Weight dimensions	Ø25 × 100 mm				–		
Weight	0.16 kg/m				0.5 kg/m		0.6 kg/m

MicroTREK H-700 with cable probe — 5 years

2-wire compact guided wave radar level transmitter (GWR) for liquids and free-flowing solids with stainless steel mono or twin cable probe with or without plastic coating

Version / Temperature

H □■ – ■■■ – ■

T	Transmitter / Flange temperature max. +90 °C
H	High-temperature transmitter / Flange temp. max. +200 °C (M type only up to +150 °C)
B	Transmitter with plug-in display / Flange temperature max. +90 °C
P	High-temperature transmitter with plug-in display / Flange temp. max. +200 °C (M type only up to +150 °C)

Probe / Process connection

H ■□ – ■■■ – ■

K		Mono cable, Ø4 mm, 1.4401 / 1" BSP / max. 30 m
L		Mono cable, Ø4 mm, 1.4401 / 1" NPT / max. 30 m
V		Mono cable, Ø4 mm, 1.4401 / 1½" BSP / max. 30 m
W		Mono cable, Ø4 mm, 1.4401 / 1½" NPT / max. 30 m
1		Mono cable, Ø4 mm, 1.4401 / 1½" TriClamp / max. 30 m
2		Mono cable, Ø4 mm, 1.4401 / 2" TriClamp / max. 30 m
N		Mono cable, Ø8 mm, 1.4401 / 1½" BSP / max. 30 m
J		Mono cable, Ø8 mm, 1.4401 / 1½" NPT / max. 30 m
T		Twin cable, 2x Ø4 mm, 1.4401 / 1½" BSP / max. 30 m
U		Twin cable, 2x Ø4 mm, 1.4401 / 1½" NPT / max. 30 m
F	*	Mono cable, Ø4 mm, + FEP-coated / 1" BSP / max. 30 m
G	*	Mono cable, Ø4 mm, + FEP-coated / 1" NPT / max. 30 m
X	*	Mono cable, Ø4 mm, + FEP-coated / TriClamp 1½" / max. 30 m
Y	*	Mono cable, Ø4 mm, + FEP-coated / Sanitary DN40 / max. 30 m
M		Mono cable, Ø4 mm, + PFA/FEP fully coated / DN50, PN25, 1.4571/1.4404 + PFA/FEP lining

* Only the cable probe is coated

Housing

H ■■ – □■■ – ■

7	Painted aluminum
8	Fiberglass-reinforced plastic (PBT) (Ex version not available)
9	Stainless steel

Probe length / Material

H ■■ – ■□□ – ■

n n	1.0...30.0 m (sold by the meter), for mono cable, Ø4 mm / 1.4401
n n	1.0...30.0 m (sold by the meter), for mono cable, Ø8 mm / 1.4401
n n	1.0...30.0 m (sold by the meter), for twin cable / 1.4401
n n	1.0...30.0 m (sold by the meter), for mono cable, Ø4 mm / 1.4401 + FEP

nn = 01...30 : 1.0...30.0 m

Output / Certificates

H ■■ – ■■■ – □

4	4...20 mA + HART®
5	4...20 mA + HART® / Ex ta/tb D (only for uncoated probe versions)
6	4...20 mA + HART® / Ex ia D (only for uncoated probe versions)
8	4...20 mA + HART® / Ex ia G (plastic-coated probes Ex ia IIB only)
9	4...20 mA + HART® / Ex ta D (only for uncoated probe versions)
H	4...20 mA + HART® + SPDT Relay

Need of IEC Ex is to be specified in the text part of the order

Available on request (see relevant page for details)

S A P – 3 0 0 – 0	Graphic plug-in display module
S A T – 5 0 4 – ■	HART®-USB/Bluetooth® modem
S A K – 3 0 5 – ■	HART®-USB/RS485 modem
S A B – 1 1 2 – 0	3D printed plastic shielding cap, snap-on design for plastic cover
S A B – 1 1 3 – 0	3D printed plastic shielding cap, snap-on design for aluminum cover
S A B – 2 1 1 – 2	Stainless steel shielding cap, clamp-type design, for all instrument covers

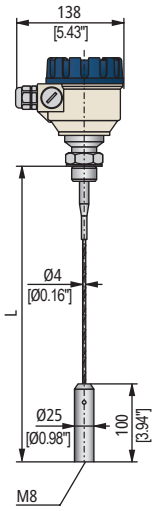
Process connections (price information on request)

- DIN and ANSI flanges
- DN40 Pipe coupling (DIN 11851)

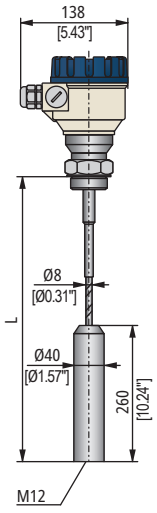
Process seal material (factory default: FPM)

- EPDM
- FFKM

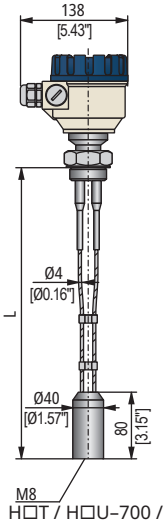
The above process connections and process seals are ordered separately and must be specified in the text part of the order!



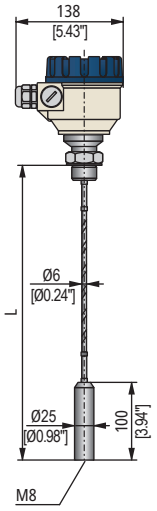
H□K / H□L / H□V / H□W-700 / 800



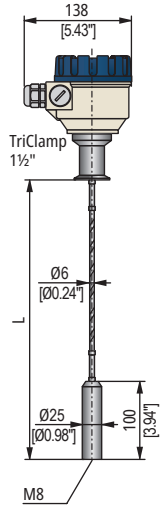
H□N / H□J-700 / 800



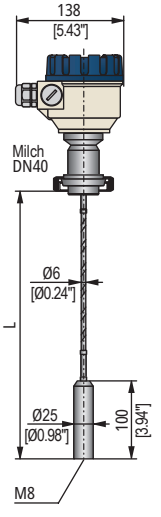
H□T / H□U-700 / 800



H□F / H□G-700 / 800



H□X-700 / 800



H□Y-700 / 800

MicroTREK H–700 with Ø8 mm rod probe — 5 years

2-wire compact guided wave radar level transmitter (GWR) for liquids and free-flowing solids with stainless steel mono or twin rod probe with or without plastic coating

Version / Temperature

H □■ – ■■■ – ■

T	Transmitter / Flange temperature max. +90 °C
H	High-temperature transmitter / Flange temp. max. +200 °C (up to +150 °C with plastic-coated probes)
B	Transmitter with plug-in display / Flange temperature max. +90 °C
P	High-temperature transmitter with plug-in display / Flange temp. max. +200 °C (up to +150 °C with plastic-coated probes)

Probe / Process connection

H ■□ – ■■■ – ■

R	Mono rod, Ø8 mm, 1.4571/1.4404 / 1" BSP / max. 3 m
P	Mono rod, Ø8 mm, 1.4571/1.4404 / 1" NPT / max. 3 m
3	Mono rod, Ø8 mm, 1.4571/1.4404 / 1½" TriClamp / max. 3 m
D	Twin rod, 1.4571/1.4404 / 1½" BSP / max. 3 m
E	Twin rod, 1.4571/1.4404 / 1½" NPT / max. 3 m
Q	Mono rod + PFA-coated / DN50, PN25, 1.4571/1.4404 + PFA lining
I	Mono rod + PP-coated / DN50, PN25, 1.4571/1.4404 + PP lining (up to a maximum flange temperature of +60 °C)
O	Mono rod + PFA-coated / 1½" TriClamp PFA-coated
7	Mono rod + PFA-coated / 2" TriClamp PFA-coated

Housing

H ■■ – □■■ – ■

7	Painted aluminum
8	Fiberglass-reinforced plastic (PBT) (Ex version not available)
9	Stainless steel

Probe length / Material

H ■■ – ■□□ – ■

n n	1.0...3.0 m (each 0.1 m), for mono rod / 1.4571/1.4404
n n	1.0...3.0 m (each 0.1 m), for mono rod / 1.4571/1.4404, PP-coated
n n	1.0...3.0 m (each 0.1 m), for mono rod / 1.4571/1.4404, PFA-coated
n n	1.0...3.0 m (each 0.1 m), for twin rod / 1.4571/1.4404

nn = 10...30 : 1.0...3.0 m

Output / Certificates

H ■■ – ■■■ – □

4	4...20 mA + HART®
5	4...20 mA + HART® / Ex ta/tb D (only for uncoated probe versions)
6	4...20 mA + HART® / Ex ia D (only for uncoated probe versions)
8	4...20 mA + HART® / Ex ia G (in the case of plastic-coated probes, only Ex ia IIB)
9	4...20 mA + HART® / Ex ta D (only for uncoated probe versions)
H	4...20 mA + HART® + SPDT Relay

Need of IEC Ex is to be specified in the text part of the order

Available on request (see relevant page for details)

SAP–300–0	Graphic plug-in display module
SAT–504–■	HART®-USB/Bluetooth® modem
SAK–305–■	HART®-USB/RS485 modem
SAB–112–0	3D printed plastic shielding cap, snap-on design for plastic cover
SAB–113–0	3D printed plastic shielding cap, snap-on design for aluminum cover
SAB–211–2	Stainless steel shielding cap, clamp-type design, for all instrument covers

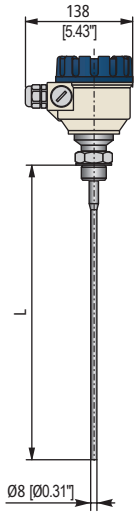
Process connections (price information on request)

- DIN and ANSI flanges
- DN40 Pipe coupling (DIN 11851)

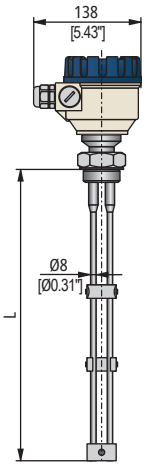
Process seal material (factory default: FPM)

- EPDM
- FFKM

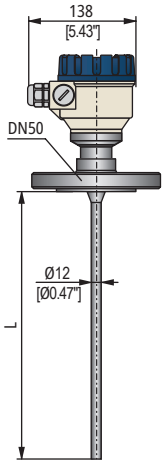
The above process connections and process seals are ordered separately and must be specified in the text part of the order!



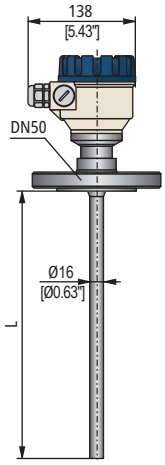
H□R / H□P–
700 / 800



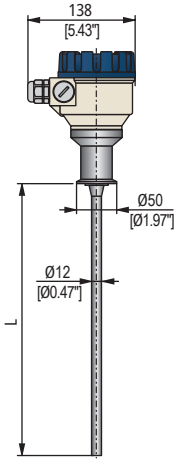
H□D / H□E–
700 / 800



H□Q–700 / 800



H□I–700 / 800



H□O–700 / 800

MicroTREK H–700 with Ø14 mm rod or coaxial probe — 5 years

2-wire compact guided wave radar level transmitter (GWR) for liquids and free-flowing solids with stainless steel Ø14 mm rod or coaxial probe

Version / Temperature

H □■ – ■■■ – ■

T		Transmitter / Flange temperature max. +90 °C
H		High-temperature transmitter / Flange temp. max. +200 °C
B		Transmitter with plug-in display / Flange temperature max. +90 °C
P		High-temperature transmitter with plug-in display / Flange temp. max. +200 °C

Probe / Process connection

H ■□ – ■■■ – ■

S	*	Mono rod, Ø14 mm, 1.4571/1.4404 / 1½" BSP / max. 6 m
Z	*	Mono rod, Ø14 mm, 1.4571/1.4404 / 1½" NPT / max. 6 m
4		Mono rod, Ø14 mm, 1.4571/1.4404 / 2" TriClamp / max. 6 m
A		Coaxial, 1.4571/1.4404 / 1" BSP / max. 6 m
B		Coaxial, 1.4571/1.4404 / 1" NPT / max. 6 m
C	*	Coaxial, 1.4571/1.4404 / 1½" BSP / max. 6 m
H	*	Coaxial, 1.4571/1.4404 / 1½" NPT / max. 6 m
5		Coaxial, 1.4571/1.4404 / 1½" TriClamp / max. 6 m
6		Coaxial, 1.4571/1.4404 / 2" TriClamp / max. 6 m

* Can be ordered with segmented probe which must be specified in the text of the order. The length of a probe section is 1 m.

Housing

H ■■ – □■■ – ■

7	Painted aluminum
8	Fiberglass-reinforced plastic (PBT) (Ex version not available)
9	Stainless steel

Probe length / Material

H ■■ – ■□□ – ■

0 0	
n n	1.0...6.0 m (each 0.1 m), for mono rod / 1.4571/1.4404
n n	1.0...6.0 m (each 0.1 m), for coaxial / 1.4571/1.4404
n n	1.0...6.0 m (each 0.1 m), for segmented mono rod / 1.4571/1.4404
n n	1.0...6.0 m (each 0.1 m), for segmented coaxial / 1.4571/1.4404

nn = 10...60 : 1.0...6.0 m

Output / Certificates

H ■■ – ■■■ – □

4	4...20 mA + HART®
5	4...20 mA + HART® / Ex ta/tb D
6	4...20 mA + HART® / Ex ia D
8	4...20 mA + HART® / Ex ia G
9	4...20 mA + HART® / Ex ta D
H	4...20 mA + HART® + SPDT Relay

Need of IEC Ex is to be specified in the text part of the order

Available on request (see relevant page for details)

S A P – 3 0 0 – 0	Graphic plug-in display module
S A T – 5 0 4 – ■	HART®-USB/Bluetooth® modem
S A K – 3 0 5 – ■	HART®-USB/RS485 modem
S A B – 1 1 2 – 0	3D printed plastic shielding cap, snap-on design for plastic cover
S A B – 1 1 3 – 0	3D printed plastic shielding cap, snap-on design for aluminum cover
S A B – 2 1 1 – 2	Stainless steel shielding cap, clamp-type design, for all instrument covers

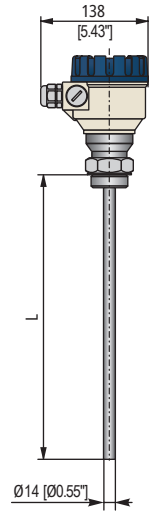
Process connections (price information on request)

- DIN and ANSI flanges
- DN40 Pipe coupling (DIN 11851)

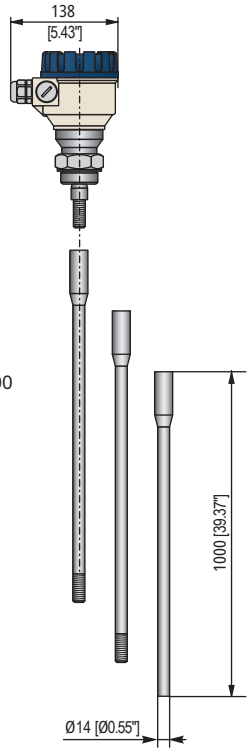
Process seal material (factory default: FPM)

- EPDM
- FFKM

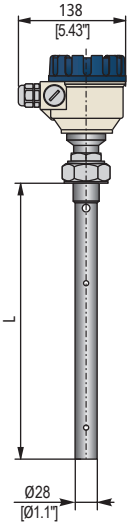
The above process connections and process seals are ordered separately and must be specified in the text part of the order!



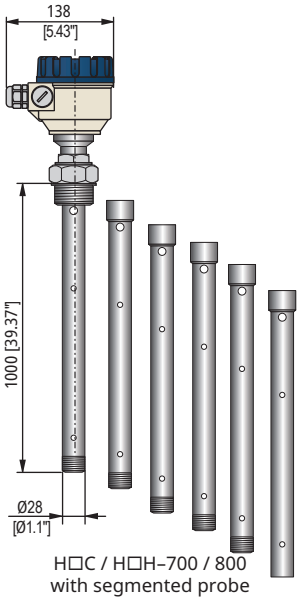
H□S / H□Z–700 / 800



H□S / H□Z–700 / 800
with segmented probe



H□A / H□B / H□C / H□H–700 / 800



H□C / H□H–700 / 800
with segmented probe

MicroTREK H–700 with cable probe, with interface function — 5 years

2-wire compact guided wave radar level transmitters (GWR) with interface function
with stainless steel mono or twin cable probe with or without plastic coating

Version / Temperature

H □■ – ■■■ – ■

C		Transmitter / Flange temperature max. +90 °C
E		High-temperature transmitter / Flange temp. max. +200 °C (M type only up to +150 °C)
D		Transmitter with plug-in display / Flange temperature max. +90 °C
F		High-temperature transmitter with plug-in display / Flange temp. max. +200 °C (M type only up to +150 °C)

Probe / Process connection

H ■□ – ■■■ – ■

K		Mono cable, Ø4 mm, 1.4401 / 1" BSP / max. 30 m
L		Mono cable, Ø4 mm, 1.4401 / 1" NPT / max. 30 m
V		Mono cable, Ø4 mm, 1.4401 / 1½" BSP / max. 30 m
W		Mono cable, Ø4 mm, 1.4401 / 1½" NPT / max. 30 m
1		Mono cable, Ø4 mm, 1.4401 / 1½" TriClamp / max. 30 m
2		Mono cable, Ø4 mm, 1.4401 / 2" TriClamp / max. 30 m
N		Mono cable, Ø8 mm, 1.4401 / 1½" BSP / max. 30 m
J		Mono cable, Ø8 mm, 1.4401 / 1½" NPT / max. 30 m
T		Twin cable, 2x Ø4 mm, 1.4401 / 1½" BSP / max. 30 m
U		Twin cable, 2x Ø4 mm, 1.4401 / 1½" NPT / max. 30 m
F	*	Mono cable, Ø4 mm, + FEP-coated / 1" BSP / max. 30 m
G	*	Mono cable, Ø4 mm, + FEP-coated / 1" NPT / max. 30 m
X	*	Mono cable, Ø4 mm, + FEP-coated / TriClamp 1½" / max. 30 m
Y	*	Mono cable, Ø4 mm, + FEP-coated / Sanitary DN40 / max. 30 m
M		Mono cable, Ø4 mm, + PFA/FEP fully coated / DN50, PN25, 1.4571/1.4404 + PFA/FEP lining

* Only the cable probe is coated

Housing

H ■■ – □■■ – ■

7	Painted aluminum
8	Fiberglass-reinforced plastic (PBT) (Ex version not available)
9	Stainless steel

Probe length / Material

H ■■ – ■□□ – ■

n n	1.0...30.0 m (sold by the meter), for mono cable, Ø4 mm / 1.4401
n n	1.0...30.0 m (sold by the meter), for mono cable, Ø8 mm / 1.4401
n n	1.0...30.0 m (sold by the meter), for twin cable / 1.4401
n n	1.0...30.0 m (sold by the meter), for mono cable, Ø4 mm / 1.4401 + FEP

nn = 01...30 : 1,0...30,0 m

Output / Certificates

H ■■ – ■■■ – □

4		4...20 mA + HART®
8		4...20 mA + HART® / Ex ia G (plastic-coated probes Ex ia IIB only)
H		4...20 mA + HART® + SPDT Relay
T	**	2x 4...20 mA + HART®
U	**	2x 4...20 mA + HART® / Ex ia G (plastic-coated probes Ex ia IIB only)

** Under development

Need of IEC Ex is to be specified in the text part of the order

Available on request (see relevant page for details)

SAP–300–0	Graphic plug-in display module
SAT–504–■	HART®-USB/Bluetooth® modem
SAK–305–■	HART®-USB/RS485 modem
SAB–112–0	3D printed plastic shielding cap, snap-on design for plastic cover
SAB–113–0	3D printed plastic shielding cap, snap-on design for aluminum cover
SAB–211–2	Stainless steel shielding cap, clamp-type design, for all instrument covers

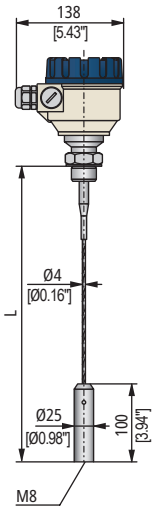
Process connections (price information on request)

- DIN and ANSI flanges
- DN40 Pipe coupling (DIN 11851)

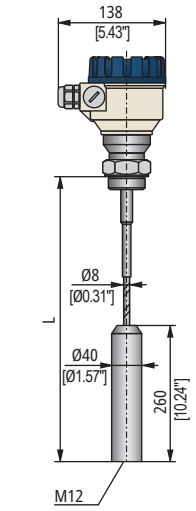
Process seal material (factory default: FPM)

- EPDM
- FFKM

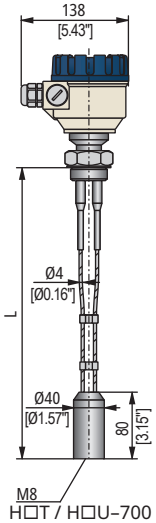
The above process connections and process seals are ordered separately and must be specified in the text part of the order!



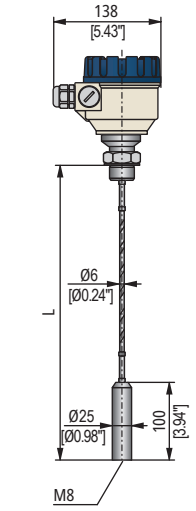
H□K / H□L / H□V / H□W–700 / 800



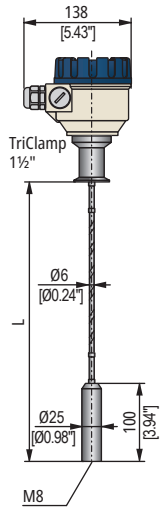
H□N / H□J–700 / 800



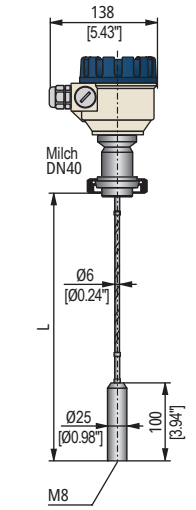
H□T / H□U–700 / 800



H□F / H□G–700 / 800



H□X–700 / 800



H□Y–700 / 800

MicroTREK H-700 with Ø8 mm rod probe, with interface function — 5 years

2-wire compact guided wave radar level transmitter (GWR) with interface function
with stainless steel mono or twin rod probe with or without plastic coating

Version / Temperature

H □■ – ■■■ – ■

C	Transmitter / Flange temperature max. +90 °C
E	High-temperature transmitter / Flange temp. max. +200 °C (M type only up to +150 °C)
D	Transmitter with plug-in display / Flange temperature max. +90 °C
F	High-temperature transmitter with plug-in display / Flange temp. max. +200 °C (up to +150 °C with plastic-coated probes)

Probe / Process connection

H ■□ – ■■■ – ■

R	Mono rod, Ø8 mm, 1.4571/1.4404 / 1" BSP / max. 3 m
P	Mono rod, Ø8 mm, 1.4571/1.4404 / 1" NPT / max. 3 m
3	Mono rod, Ø8 mm, 1.4571/1.4404 / 1½" TriClamp / max. 3 m
D	Twin rod, 1.4571/1.4404 / 1½" BSP / max. 3 m
E	Twin rod, 1.4571/1.4404 / 1½" NPT / max. 3 m
Q	Mono rod + PFA-coated / DN50, PN25, 1.4571/1.4404 + PFA lining
I	Mono rod + PP-coated / DN50, PN25, 1.4571/1.4404 + PP lining (up to a maximum flange temperature of +60 °C)
O	Mono rod + PFA-coated / 1½" TriClamp PFA-coated
7	Mono rod + PFA-coated / 2" TriClamp PFA-coated

Housing

H ■■ – □■■ – ■

7	Painted aluminum
8	Fiberglass-reinforced plastic (PBT) (Ex version not available)
9	Stainless steel

Probe length / Material

H ■■ – ■□□ – ■

n n	1.0...3.0 m (each 0.1 m), for mono rod / 1.4571/1.4404
n n	1.0...3.0 m (each 0.1 m), for mono rod / 1.4571/1.4404, PP-coated
n n	1.0...3.0 m (each 0.1 m), for mono rod / 1.4571/1.4404, PFA-coated
n n	1.0...3.0 m (each 0.1 m), for twin rod / 1.4571/1.4404

nn = 10...30 : 1.0...3.0 m

Output / Certificates

H ■■ – ■■■ – □

4		4...20 mA + HART®
8		4...20 mA + HART® / Ex ia G (plastic-coated probes Ex ia IIB only)
H		4...20 mA + HART® + SPDT Relay
T	*	2x 4...20 mA + HART®
U	*	2x 4...20 mA + HART® / Ex ia G (plastic-coated probes Ex ia IIB only)

* Under development

Need of IEC Ex is to be specified in the text part of the order

Available on request (see relevant page for details)

SAP-300-0	Graphic plug-in display module
SAT-504-■	HART®-USB/Bluetooth® modem
SAK-305-■	HART®-USB/RS485 modem
SAB-112-0	3D printed plastic shielding cap, snap-on design for plastic cover
SAB-113-0	3D printed plastic shielding cap, snap-on design for aluminum cover
SAB-211-2	Stainless steel shielding cap, clamp-type design, for all instrument covers

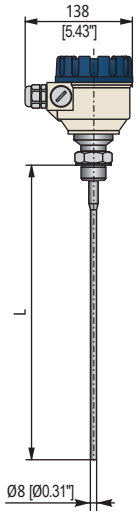
Process connections (price information on request)

- DIN and ANSI flanges
- DN40 Pipe coupling (DIN 11851)

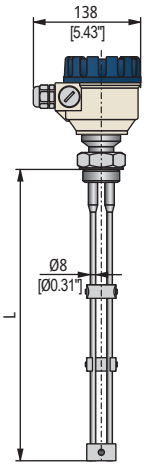
Process seal material (factory default: FPM)

- EPDM
- FFKM

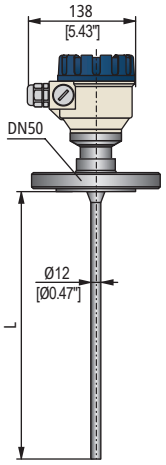
The above process connections and process seals are ordered separately and must be specified in the text part of the order!



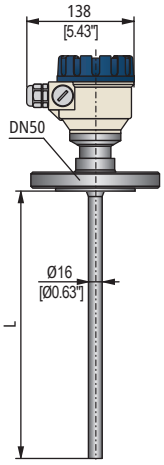
H□R / H□P–
700 / 800



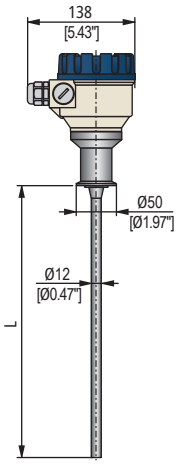
H□D / H□E–
700 / 800



H□Q–700 / 800



H□I–700 / 800



H□O–700 / 800

MicroTREK H–700 with Ø14 mm rod or coaxial probe, with interface function

5 years

2-wire compact guided wave radar level transmitter (GWR) with interface function
with stainless steel Ø14 mm rod or coaxial probe

Version / Temperature

H □■ – ■■■ – ■

C	Transmitter / Flange temperature max. +90 °C
E	High-temperature transmitter / Flange temp. max. +200 °C
D	Transmitter with plug-in display / Flange temperature max. +90 °C
F	High-temperature transmitter with plug-in display / Flange temp. max. +200 °C

Probe / Process connection

H ■□ – ■■■ – ■

S	*	Mono rod, Ø14 mm, 1.4571/1.4404 / 1½" BSP / max. 6 m
Z	*	Mono rod, Ø14 mm, 1.4571/1.4404 / 1½" NPT / max. 6 m
4		Mono rod, Ø14 mm, 1.4571/1.4404 / 2" TriClamp / max. 6 m
A		Coaxial, 1.4571/1.4404 / 1" BSP / max. 6 m
B		Coaxial, 1.4571/1.4404 / 1" NPT / max. 6 m
C	*	Coaxial, 1.4571/1.4404 / 1½" BSP / max. 6 m
H	*	Coaxial, 1.4571/1.4404 / 1½" NPT / max. 6 m
5		Coaxial, 1.4571/1.4404 / 1½" TriClamp / max. 6 m
6		Coaxial, 1.4571/1.4404 / 2" TriClamp / max. 6 m

* Can be ordered with segmented probe which must be specified in the text of the order. The length of a probe section is 1 m.

Housing

H ■■ – □■■ – ■

7	Painted aluminum
8	Fiberglass-reinforced plastic (PBT) (Ex version not available)
9	Stainless steel

Probe length / Material

H ■■ – ■□□ – ■

n n	1.0...6.0 m (each 0.1 m), for mono rod / 1.4571/1.4404
n n	1.0...6.0 m (each 0.1 m), for coaxial / 1.4571/1.4404
n n	1.0...6.0 m (each 0.1 m), for segmented mono rod / 1.4571/1.4404
n n	1.0...6.0 m (each 0.1 m), for segmented coaxial / 1.4571/1.4404

nn = 10...60 : 1.0...6.0 m

Output / Certificates

H ■■ – ■■■ – □

4		4...20 mA + HART®
8		4...20 mA + HART® / Ex ia G
H		4...20 mA + HART® + SPDT Relay
T	**	2x 4...20 mA + HART®
U	**	2x 4...20 mA + HART® / Ex ia G

** Under development

Need of IEC Ex is to be specified in the text part of the order

Available on request (see relevant page for details)

SAP–300–0	Graphic plug-in display module
SAT–504–■	HART®-USB/Bluetooth® modem
SAK–305–■	HART®-USB/RS485 modem
SAB–112–0	3D printed plastic shielding cap, snap-on design for plastic cover
SAB–113–0	3D printed plastic shielding cap, snap-on design for aluminum cover
SAB–211–2	Stainless steel shielding cap, clamp-type design, for all instrument covers

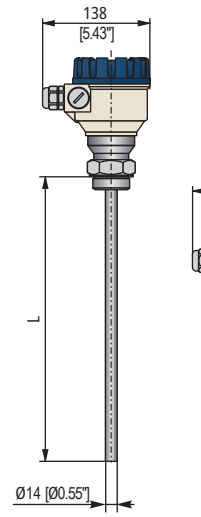
Process connections (price information on request)

- DIN and ANSI flanges
- DN40 Pipe coupling (DIN 11851)

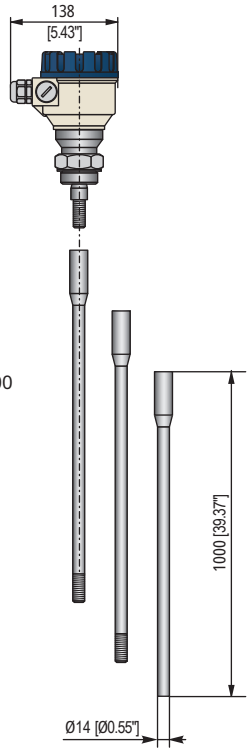
Process seal material (factory default: FPM)

- EPDM
- FFKM

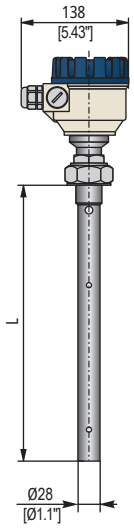
The above process connections and process seals are ordered separately and must be specified in the text part of the order!



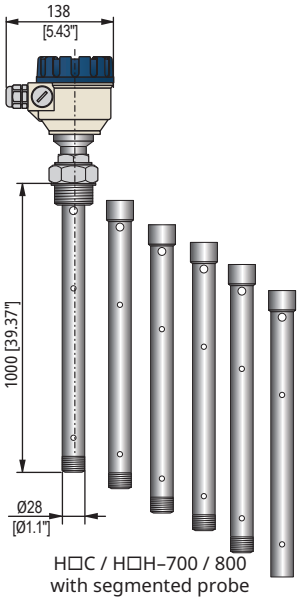
H□S / H□Z–700 / 800



H□S / H□Z–700 / 800
with segmented probe



H□A / H□B / H□C / H□H–700 / 800



H□C / H□H–700 / 800
with segmented probe

Capacitive Level Transmitters

NIVOCAP

The **NIVOCAP** 2-wire capacitive level transmitter provides an ideal solution for distance, level, and volume measurement of conductive and non-conductive liquids, pastes, powders, and bulk solids with a relative dielectric constant (ε_r) greater than 1.5. The device's probe and the reference probe *(either the tank's metal wall or a separate probe)* operate as the opposing plates of a capacitor. The air between these plates is replaced by a medium with a higher dielectric constant, which changes the capacitance proportionally to the level of the material. The electronic circuitry incorporated into the device measures the capacitance difference and converts it to an output signal.

FEATURES

- Up to 20 m measurement range
- Vertical mounting
- Rod or cable probe versions
- –30…+200 °C process temperature
- Up to 40 bar process pressure
- 32-point linearization table
- Indirect assignment of 0% and 100%
- IP67
- 4…20 mA + HART® output
- PACTware™ compatible
- Ex version
- 5 years warranty

CERTIFICATES

- ATEX (Ex ia G)

APPLICATIONS

- Distance, level, and volume measurement of liquids, pastes, powders, and bulk solids with a relative dielectric constant (ε_r) greater than 1.5
- For conductive and non-conductive materials
- For high pressures and high-temperature mediums
- Chemical Industry
- Food and Beverage Industry
- Power Plants
- Oil & Gas Industry
- Water/Wastewater Industry

SAP–202
display

CHR–200

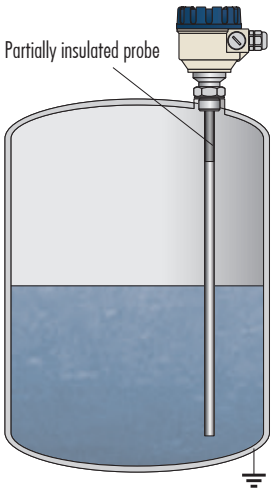
CAF–110

CFR–100

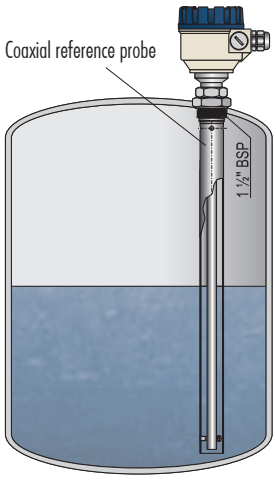
CBC–203–6 Ex

CTK–200

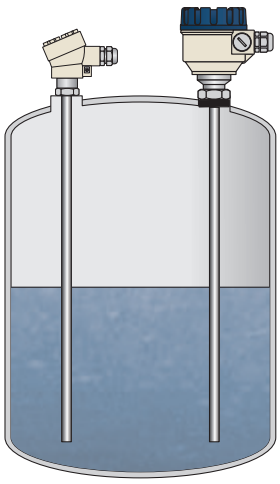
ARRANGEMENTS



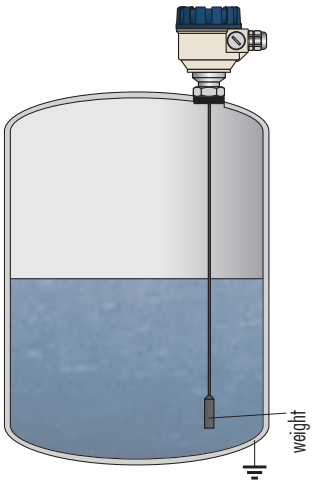
Rod probe
Metal tank and non-conductive medium. The rod probe is partially insulated at the process connection.



Rod probe
With coaxial tube reference probe



Rod probe
With reference rod probe



Cable probe with weight
Metal tank

TECHNICAL DATA

Version		Rod probe	High-temperature rod probe	Cable probe
Measurement range (Ln)		0.2…3 m		1…20 m
Capacitance range		0 pF…5 nF		
Min. transmittable capacity range		Max. (I_{out}) SPAN: 10 pF / 10% FS		
Saturation capacitance of the insulated probe		~600 pF/m		~200 pF/m
Relative dielectric constant		ε_r min. 1.5		
Process connection		As per order code		
Material of wetted parts	Threaded part	1.4571/1.4404 stainless steel		
	Probe	Fully or partially PFA-coated 1.4301 stainless steel		Fully / partially FEP-coated steel cable
Housing material		Plastic (PBT), painted aluminum / stainless steel		
Process temperature		–30…+130 °C	–30…+200 °C	–30…+130 °C
Ambient temperature		–25…+70 °C		
Process pressure		Maximum 40 bar		Maximum 16 bar
Supply voltage / consumption		12…36 V DC / maximum 800 mW, transient overvoltage protection		
Output properties	Output signals	Analog: 4…20 mA (3.9…20.5 mA) $R_{max} = (U_S–11.4\ V)/0.02\ A$ Error indication: 3.8 mA or 22 mA		
		Digital communication: HART®		
		Display module: SAP–202, 6-digit LCD, dimensions, bargraph		
		Current loop test: 10 mV / 1 mA via resistor in series		
	Damping time	0, 3, 6…300 s (selectable)		
	Linearity error	±0.3% FS		
	Temperature error	±0.02% / °C FS		
Electrical connection		2× M20×1.5 cable glands + 2× internally threaded ½" NPT connection, cable outer diameter: Ø6…12 mm (shielded cable is recommended), wire cross section: 0.5…1.5 mm²		
Electrical protection		Class III		
Ingress protection		Probe: IP68. Housing: IP67		
Weight		~2.5 kg with 0.5 m probe	~3 kg with 0.5 m probe	~2 kg with 3 m probe

Ex INFORMATION

C□□–2□□–□ Ex / C□□–3□□–□ Ex		
Protection		Intrinsic safety
Ex marking		⟨Ex⟩ II 1 G Ex ia IIB T6…T3 Ga
Intrinsic safety data		$C_i \leq 15$ nF, $L_i \leq 200$ µH, Ui ≤ 30 V, $I_i \leq 140$ mA, $P_i \leq 1.0$ W
Temperature classification	T6…T4 temperature class	$T_{ambient}$: –25…+70 °C; T_{medium}: maximum +80…+120 °C
	T3 temperature class	$T_{ambient}$: –25…+45 °C; T_{medium}: maximum +190 °C

SELECTING THE APPROPRIATE PROBE

The device uses the capacitive operating principle; therefore, if the dielectric constant of the measured material changes or it is too low, or the wrong probes are selected for the job, measurement accuracy will suffer.

	Material				Reference probe		
	Conductive	Non-conductive			Rod	Tube	Tank wall
		$\varepsilon_r > 2$	$2 > \varepsilon_r > 1.5$				
Insulated probe, reference probe	■	■	–	Conductive tank	■	■	■
Partially insulated probe, reference probe	–	■	■	Non-conductive tank	■	■	–

NIVOCAP C-200 with rod probe — 5 years

2-wire compact capacitive level transmitter for distance, level and volume measurement of liquids, powders, granules, with er > 1.5 relative dielectric constant, with partially or fully plastic-coated stainless steel rod probe

Version / Max. temperature

C □■ – ■■■ – ■

T		Transmitter / max. +130 °C
B		Transmitter with plug-in display / max. +130 °C
H		High-temperature transmitter / max. +200 °C
P		High-temperature transmitter with plug-in display / max. +200 °C

Process connection size / Insulation

C ■□ – ■■■ – ■

M		¾" BSP / Fully PFA-insulated stainless steel
Z		¾" NPT / Fully PFA-insulated stainless steel
R		1" BSP / Fully PFA-insulated stainless steel
P		1" BSP / Partially PFA-insulated stainless steel
A		1" NPT / Fully PFA-insulated stainless steel
C		1" NPT / Partially PFA-insulated stainless steel
S		1½" BSP / Fully PFA-insulated stainless steel
T		1½" BSP / Partially PFA-insulated stainless steel
B		1½" NPT / Fully PFA-insulated stainless steel
D		1½" NPT / Partially PFA-insulated stainless steel
1	*	1" TriClamp / Fully PFA-insulated steel
2	*	1½" TriClamp / Fully PFA-insulated steel
3	*	2" TriClamp / Fully PFA-insulated steel

Housing

C ■■ – □■■ – ■

2		Painted aluminum
3		Fiberglass-reinforced plastic (PBT)
4	*	Stainless steel

* Ex version under approval

Probe length

C ■■ – ■□□ – ■

Fully PFA-insulated	
0 2	0.2 m
n n	0.3...3 m; sold by the 100 mm
Partially PFA insulated	
0 2	0.2 m
n n	0.3...3 m; sold by the 100 mm
nn = 03...30 : 0.3...3 m	

Output / Certificates

C ■■ – ■■■ – □

2	4...20 mA
4	4...20 mA + HART®
6	4...20 mA / Ex ia G
8	4...20 mA + HART® / Ex ia G

Available on request: special process connections (should be given in the text of the order)

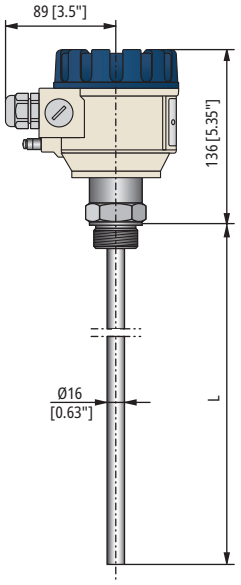
X12	DN40 Pipe coupling (DIN 11851)
X12	DN50 Pipe coupling (DIN 11851)

Accessories sold separately; see relevant page for details

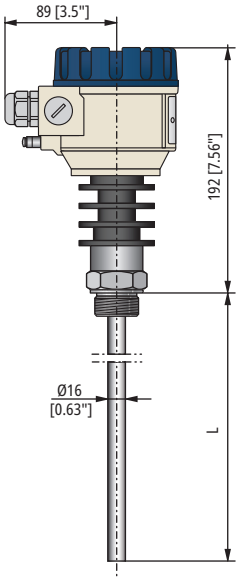
S A P – 2 0 2 – 0	Plug-in display module
S A T – 5 0 4 – ■	HART®-USB/Bluetooth® modem
S A K – 3 0 5 – ■	HART®-USB/RS485 modem
S A B – 1 1 2 – 0	3D printed plastic shielding cap, snap-on design for plastic cover
S A B – 1 1 3 – 0	3D printed plastic shielding cap, snap-on design for aluminum cover
S A B – 2 1 1 – 2	Stainless steel shielding cap, clamp-type design, for all instrument covers

Adapters

E A A – 1 8 6 – 0	1" BSP / ¾" NPT (1.4571/1.4404)
E A A – 1 8 D – 0	1" BSP / 2" BSP (1.4571/1.4404)



CTR–200 / 300



CHR–200 / 300

NIVOCAP C coaxial reference probe — 5 years

For use with NIVOCAP rod probe capacitive level transmitters
Internal process connection for NIVOCAP: 1" BSP, process connection: 1½" BSP/NPT

Connection type

C □ F – 1 ■■ – 0

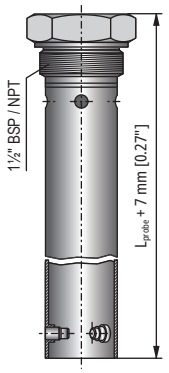
A	BSP
D	NPT

Probe length

C ■ F – 1 □□ – 0

0 2	0.2 m
n n	0.3...3 m; sold by the 0.1 m

nn = 03...30 : 0.3...3 m



CAF–100

NIVOCAP C reference rod probe — 5 years

Reference rod probes for NIVOCAP rod probe type capacitance level transmitters
Process connection 1" BSP/NPT

Connection type

C □■ – 1 ■■ – 0

F	BSP thread
E	NPT thread

Connection size / Insulation

C ■□ – 1 ■■ – 0

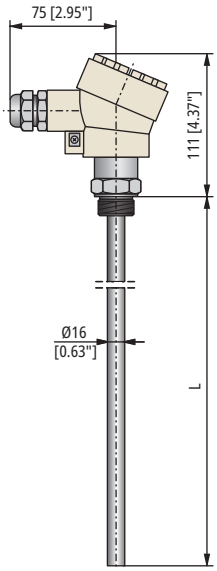
R	1" / Fully PFA-insulated stainless steel
P	1" / Partially-PFA insulated stainless steel

Probe length

C ■■ – 1 □□ – 0

Fully PFA-insulated	
0 2	0.2 m
n n	0.3...3 m; sold by the 100 mm
Partially PFA-insulated	
0 2	0.2 m
n n	0.3...3 m; sold by the 100 mm

nn = 03...30 : 0.3...3 m



CFR–100

NIVOCAP C-200 with cable probe — 5 years

2-wire compact capacitive level transmitter for distance, level and volume measurement of liquids, powders, granules, with er > 1.5 relative dielectric constant, with partially of fully plastic-coated stainless steel cable probe

Version / Max. temperature

C □■ – ■■■ – ■

T		Transmitter / max. +130 °C
B		Transmitter with plug-in display / max. +130 °C

Process connection / Cable type

C ■□ – ■■■ – ■

K		1" BSP / Fully FEP-insulated stainless steel
V		1½" BSP / Fully FEP-insulated stainless steel
E		1" NPT / Fully FEP-insulated stainless steel
F		1½" NPT / Fully FEP-insulated stainless steel
4	*	1" TriClamp / Fully FEP-insulated stainless steel
5	*	1½" TriClamp / Fully FEP-insulated stainless steel
6	*	2" TriClamp / Fully FEP-insulated stainless steel

Housing

C ■■ – □■■ – ■

2		Painted aluminum
3		Fiberglass-reinforced plastic (PBT)
4	*	Stainless steel

* Ex version under approval

Probe length

C ■■ – ■□□ – ■

Fully FEP-insulated

0 1	1 m
n n	2...20 m; sold by the meter

nn = 02...20 : 2...20 m

Output / Certificates

C ■■ – ■■■ – □

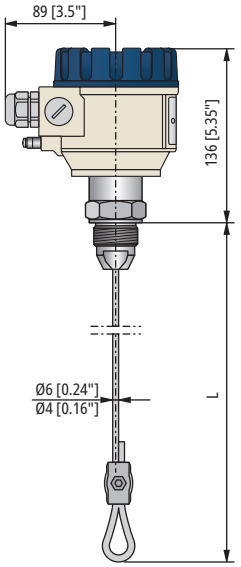
2	4...20 mA
4	4...20 mA + HART®
6	4...20 mA / Ex ia G
8	4...20 mA + HART® / Ex ia G

Accessories sold separately; see relevant page for details

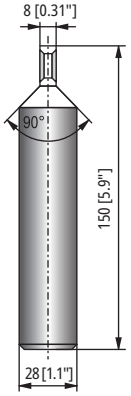
CTK–103–0M–400–01	Stainless steel counterweight Ø28 x 150 mm
S A P – 2 0 2 – 0	Plug-in display module
S A T – 5 0 4 – ■	HART®-USB/Bluetooth® modem
S A K – 3 0 5 – ■	HART®-USB/RS485 modem
S A B – 1 1 2 – 0	3D printed plastic shielding cap, snap-on design for plastic cover
S A B – 1 1 3 – 0	3D printed plastic shielding cap, snap-on design for aluminum cover
S A B – 2 1 1 – 2	Stainless steel shielding cap, clamp-type design, for all instrument covers

Adapters

E A A – 1 8 6 – 0	1" BSP / ¾" NPT (1.4571/1.4404)
E A A – 1 8 D – 0	1" BSP / 2" BSP (1.4571/1.4404)



CTK–200 / 300



CTK–103-0M–400-01

NEW

Submersible Hydrostatic Level Transmitters

NIVOPRESS N submersible hydrostatic level transmitters are designed to measure the level of clean and contaminated liquids. The pressure sensor at the end of the probe measures the sum of the hydrostatic pressure (P_{hydr}) of the liquid column above and the atmospheric pressure (P_{atm}). Atmospheric pressure is channeled to the sensor through a breathing capillary equipped with a moisture filter that prevents moisture from damaging the electronics. The atmospheric pressure is subtracted from the overall measured pressure to get the hydrostatic pressure, which is proportional to the height of the liquid column *(h)*, then the sensor's signal is converted into an output signal. If both the level and the temperature of the liquid needs to be measured, a combined *(level & temperature)* transmitters are available. There is a wide variety of accessories for the transmitters.

The new NBB–400 detachable head unit versions are particularly ideal for marine applications such as ships and floating docks. The separated head design allows for quick sensor replacement without the need for complex wiring disassembly, minimizing downtime and technical maintenance.

A sewage adapter operating on the diving bell principle can be snapped into the protective cap's place to avoid direct contact between the sensor and the measured contaminated liquid. A mechanical filter is built into NZ type transmitters as a measure of extra protection. N–500 devices can be used in hazardous environments. NZ screw-in type transmitters are recommended for applications where there is a risk of flooding. NB/NG plastic housing types, are designed for those applications where aggressive mediums *(e.g., saline solutions or seawater)* may corrode stainless steel.

FEATURES

- Measurement range up to 350 m
- Remotely programmable
- IP68
- Submersible or screw-in versions
- Ø22 / Ø24 mm tube
- HART® communication
- PACTware™ compatible
- 2 or 3-wire versions
- Ex versions
- 2× 4…20 mA output *(level + temperature)*
- Built-in Pt100 temperature sensor
- Overvoltage and inverse polarity protection
- Wide range of accessories
- Detachable variants
- Approved for potable water
- Available with capacitance ceramic, piezoresistive stainless steel or ceramic sensor
- 5 years warranty

APPLICATIONS

- Level and temperature measurement of potable water wells, tanks, pools
- Submersible pump control
- Screw-in submersible version with IP68 protection for applications with risk of flooding
- Clean or slightly polluted, contaminated liquids
- Sewage
- Draw-down protection
- Sewage lift station control
- Saline solutions, seawater

CERTIFICATES

- ATEX (Ex ia G)
- UKCA Ex (Ex ia G)
- Bureau Veritas (BV) *(pending)*

NP / NK

NP / NK + NAW–104 sewage adapter

NZ / ND

NZ / ND + NAZ–103 sewage adapter

NC

NB

NB + NAW–107 sewage adapter

NBB–400 + NA□–400

TECHNICAL DATA

		2-wire					3-wire
		NBB + NAB / NAG	**NBK, NBP, NGK, NGP**	**NK□, NN□, ND□, NH□**	**NC□, NT□**	**NP□, NF□, NZ□, NR□**	**NPH, NFH, NZH, NRH**
Sensor	Principle	Piezoresistive			Capacitive	Piezoresistive	
	Material	Ceramic				Stainless steel	
Housing		Plastic		Stainless steel			
Measurement range[1]		0…200 mH_2O			0…20 mH_2O	0…350 mH_2O	0…200 mH_2O
		As per order code; current output can be customized within 2…130% pressure range; remotely programmable					
Overload allowed (versus range)		3× (≤ 20 mH_2O) 2× (> 20 mH_2O)			20× (≤ 3 mH_2O) 10× (> 3 mH_2O)	3x	
Output		4…20 mA + HART®			4…20 mA	4…20 mA + HART®	0…10 V (0 V ≤ 100 mV) measured to the negative supply voltage
Supply voltage		12…30 V DC, nominal voltage: 24 V DC					18…30 V DC / 6 mA
Linearity error (level)		±0.45% (≤20 mH_2O); ±0.25% (>20 mH_2O)			±0.25% (≤200 mH_2O); ±0.5% (>200 mH_2O)		
Temperature error		≤ ±0.1% / 10 K					≤ ±0.2% / 10 K
Process temperature		Normal: −30…+60 °C; extended temperature range: −40…+80 °C, only with FEP cable					
Process connection		NAA–209 cable mounting wedge clamp, threaded types with ¾" BSP thread					
Ingress protection		IP68					
Electrical protection		Class III					
Electrical connection		Shielded cable with breathing capillary Ø7 mm					
Wire cross-section		Ø7 mm; wire cross-section: 0.34 mm^2					
Cable length[2]		0…450 m	0…300 m			NP, NF, NZ, NR: 0…450 m NPH, NFH, NZH, NRH: 0…110 m	
Dimensions		Ø34 × 205 mm	Ø24 × 212 mm	NK, NN: Ø22 × 173 mm ND, NH: Ø38 × 174 mm	Ø40 × 146 mm	NP, NF: Ø22 × 173 mm NZ, NR: Ø38 × 174 mm	
Weight		Probe: 205 g Connector head: 65 g	Probe: 200 g	NK, NN: probe: 200 g ND, NH: probe: 300 g	Probe: 400 g	NP, NF: probe: 200 g NZ, NR: probe: 300 g	
Temperature measurement		–	NPD, NFD, NZD, NRD types: additional 2-wire transmitter; Output: 4…20 mA; supply voltage: 12…30 V DC; Operating range: 0…+60 °C; accuracy: ±3 °C				–
			N□P types: Pt100 sensor, 4-wire output; Resistance of the colorless insulated wires: 57 mΩ/m ±10%.				
		For HART® types: can be queried as a secondary value, accuracy: ±3 °C					
Material of wetted parts	Sensor	Al_2O_3 ceramic				1.4404, 1.4571 / 1.4435	
	Housing	POM-C		1.4571/1.4404			
	Cable coating	Polyurethane (PUR) / FEP					
	Seals	Viton® (FKM)					
	Protective cap	POM-C		1.4571/1.4404	–	1.4571/1.4404	

[1] mH_2O means: 1 meter of water column, 1 mH_2O ~0.1 bar

[2] As order code.

Ex INFORMATION

Type	N□□–5□□–□[1] Ex	
Variant	Standard	Detachable
Supply voltage	12…30 V DC	
Ex marking	**up to 100 m cable length:** ⟨Ex⟩ II 1G Ex ia IIC T6 Ga; **100…300 m cable length:** ⟨Ex⟩ II 1G Ex ia IIB T6 Ga	NBB–5□0–0 Ex: ⟨Ex⟩ II 1G Ex ia IIC T6 Ga
Reference document	npk411hu22h08-b	
Operation temperature	–30…+60 °C	
Intrinsically safe data	Ui = 30 V; Ii = 100 mA; Pi = 0,8 W	
	for IIC gas group: Ci ≤ 52 nF; Li ≤ 1.4 mH (calculated with 100 m integrated cable), **for IIB gas group:** Ci ≤ 132 nF; Li ≤ 1.6 mH (calculated with 300 m integrated cable)	NBB–5□0–0 Ex: Ci<12 nF + 0.4 nF/m cable, Li<1.3 mH + 0.9 µH/m cable (only to be used with NAB/NAG–40□–□ cable set)

[1] *Except: NCH / NTH / NBH / NGH / NCD / NTD / NBD / NGD.*

TECHNICAL PROPERTIES OF ACCESSORIES

NAA–101 – Cable terminal box	
Dimensions	93 × 93 × 55 mm
Ingress protection	IP65
Process temperature range	–40…+70 °C
Material	Polycarbonate
Cable gland	M20×1.5 (cable outer diameter: Ø5…Ø10 mm)
Electrical connection	Terminal block (for max. 2.5 mm² wire cross section)
NAA–102 – Cable terminal box with overvoltage protection	
Data	See NAA-101
Electrical Properties	See OVP

NAA–101 / NAA–102
cable terminal box

NAA–209 – Cable mounting wedge clamp	
Max. mechanical load	300 m cable
Material	Polyamide, stainless steel wedge clamp
Process temperature range	–20… + 60 °C

NAA–209 cable
mounting unit

Overvoltage protection		
	OVP–22 / –33[2]	OVP–32 / –33[2]
Version	Field use	Rail-mountable (EN 60715)
Dimensions	72 × 42 × 19 mm	62 × 65 × 18 mm
Ingress protection	IP54	IP20
Breakdown voltage	33 V	
Absorbed energy	600 W / 1 ms	
Serial resistance	13 Ω	
Leakage current	≤ 10 µA	

[2] *Applicable only for one 2-wire 4…20 mA (HART®) device!*

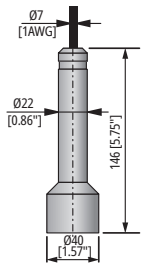
NAA–105
cable-holding sliding sleeve

OVP–32 / 33
Overvoltage Protection Unit

OVP–22 / 33
Overvoltage Protection Unit

NIVOPRESS N-200 with capacitive ceramic sensor — 5 years

2-wire submersible hydrostatic level transmitter for liquids
with capacitive ceramic sensor; humidity filter: fixed to breathing cable



NC□ / NT□-200

Type / Cable material

N □■ – 2 ■■ – ■

C	Capacitive ceramic sensor / PUR
T	Capacitive ceramic sensor / FEP

Output

N ■□ – 2 ■■ – ■

K	2-wire, 4...20 mA output
P	Level: 4...20 mA + Temperature: Pt100 sensor

Version

N ■■ – □■■ – ■

2	Standard

Range

N ■■ – 2 □■ – ■

1	0...1 mH_2O (0...100 mbar)
2	0...2 mH_2O (0...200 mbar)
3	0...5 mH_2O (0...500 mbar)
4	0...10 mH_2O (0...1000 mbar)
5	0...20 mH_2O (0...2000 mbar)

Breathing cable length

N ■■ – 2 ■□ – □

PUR cable		
n	n	1...99 m; sold by the meter
o	o	100...190 m; sold by the meter
p	p	200...290 m; sold by the meter
r	r	300...390 m; sold by the meter
s	s	400...450 m; sold by the meter
FEP cable		
n	n	1...99 m; each started 1 m
o	o	100...190 m; each started 1 m
p	p	200...290 m; each started 1 m
r	r	300...390 m; sold by the meter
s	s	400...450 m; sold by the meter

nn = 01...99 : 1...99 m
oo = A0...A9 : 100...190 m
pp = B0...B9 : 200...290 m
rr = C0...C9 : 300...390 m
ss = D0...D5 : 400...450 m

Available on request (must be specified in the text of the order)

High-temperature (up to +80 °C) version
Custom 4...20 mA output calibration

NIVOPRESS N–400 stainless steel sensor — 5 years

2 or 3-wire submersible hydrostatic level transmitter for liquids
with stainless steel piezoresistive sensor; humidity filter: fixed to breathing cable

Sensor / Cable material

N □■ – ■■■ – ■

P		Piezoresistive stainless steel sensor / PUR
F		Piezoresistive stainless steel sensor / FEP
Z		Piezoresistive stainless steel sensor, ¾" BSP process connection / PUR
R		Piezoresistive stainless steel sensor, ¾" BSP process connection / FEP

Output

N ■□ – ■■■ – ■

K		2-wire, 4...20 mA + HART
H	*	3-wire, 0...10 V DC output (up to 200 mH2O)
D	*	Level: 4...20 mA + HART + Temperature: 4...20 mA (electronic temp. sensor)
P		Level: 4...20 mA + HART + Temperature: Pt100 sensor

* Ex version not available

Version

N ■■ – □■■ – ■

4	Standard
5	Ex ia G

Range

N ■■ – ■□■ – ■

1	0...1 mH₂O (0...100 mbar)
2	0...2 mH₂O (0...200 mbar)
3	0...5 mH₂O (0...500 mbar)
4	0...10 mH₂O (0...1000 mbar)
5	0...20 mH₂O (0...2000 mbar)
6	0...50 mH₂O (0...5000 mbar)
7	0...100 mH₂O (0...10000 mbar)
8	0...200 mH₂O (0...20000 mbar)
9	0...350 mH₂O (0...35000 mbar)

Breathing cable length

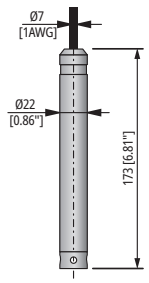
N ■■ – ■■□ – □

PUR cable		
n	n	1...99 m; sold by the meter
o	o	100...190 m; sold by the meter
p	p	200...290 m; sold by the meter
r	r	300...390 m; sold by the meter
s	s	400...450 m; sold by the meter
FEP cable		
n	n	1...99 m; sold by the meter
o	o	100...190 m; sold by the meter
p	p	200...290 m; sold by the meter
r	r	300...390 m; sold by the meter
s	s	400...450 m; sold by the meter

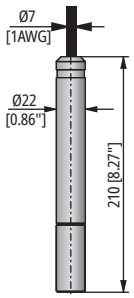
nn = 01...99 : 1...99 m
oo = A0...A9 : 100...190 m
pp = B0...B9 : 200...290 m
rr = C0...C9 : 300...390 m
ss = D0...D5 : 400...450 m

Available on request (must be specified in the text of the order)

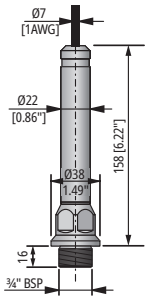
High temperature (up to +80 °C) version (Ex version not available)
Custom 4...20 mA output calibration



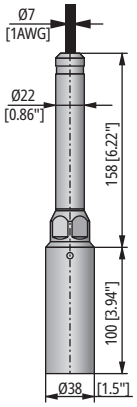
NP□ / NF□–400 / 500



NP□ / NF□–400 / 500
+ NAW–104



NZ□ / NR□–400 / 500



NZ□ / NR□–400 / 500
+ NAZ–103

NIVOPRESS N-400 piezoresistive ceramic sensor — 5 years

2-wire submersible hydrostatic level transmitter for liquids
with piezoresistive ceramic sensor; humidity filter: fixed to breathing cable

Sensor / Cable material / Housing material

N □■ – ■■■ – ■

K	Piezoresistive ceramic sensor / PUR / 1.4571/1.4404
N	Piezoresistive ceramic sensor / FEP / 1.4571/1.4404
B	Piezoresistive ceramic sensor / PUR / POM
G	Piezoresistive ceramic sensor / FEP / POM
D	Piezoresistive ceramic sensor, ¾" BSP process connection / PUR / 1.4571/1.4404
H	Piezoresistive ceramic sensor, ¾" BSP process connection / FEP / 1.4571/1.4404

Output

N ■□ – ■■■ – ■

K	2-wire, 4...20 mA + HART
P	Level: 4...20 mA + HART + Temperature: Pt100 sensor

Version

N ■■ – □■■ – ■

4	Standard
5	Ex ia G

Range

N ■■ – ■□■ – ■

1	0...1 mH₂O (0...100 mbar)
2	0...2 mH₂O (0...200 mbar)
3	0...5 mH₂O (0...500 mbar)
4	0...10 mH₂O (0...1 000 mbar)
5	0...20 mH₂O (0...2 000 mbar)
6	0...50 mH₂O (0...5000 mbar)
7	0...100 mH₂O (0...10000 mbar)
8	0...200 mH₂O (0...20000 mbar)

Breathing cable length

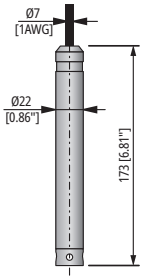
N ■■ – ■■□ – □

PUR cable		
n	n	1...99 m; each started 1 m
o	o	100...190 m; sold by the meter
p	p	200...290 m; sold by the meter
C	0	300 m; sold by the meter
FEP cable		
n	n	1...99 m; sold by the meter
o	o	100...190 m; sold by the meter
p	p	200...290 m; sold by the meter
C	0	300 m; sold by the meter

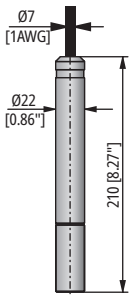
nn = 01...99 : 1...99 m
oo = A0...A9 : 100...190 m
pp = B0...B9 : 200...290 m

Available on request (must be specified in the text of the order)

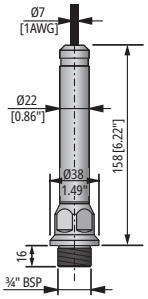
High temperature (up to +80 °C) version (Ex version not available)
Custom 4...20 mA output calibration



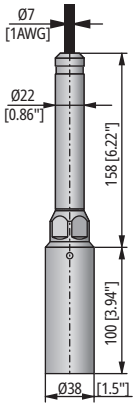
NK□ / NN□-400



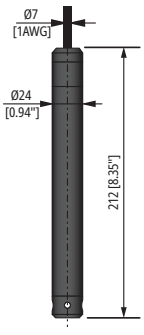
NK□ / NN□-400
+ NAW-104



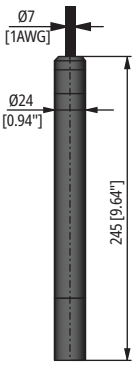
ND□ / NH□-400



ND□ / NH□-400
+ NAZ-103



NB□ / NG□-400



NB□ / NG□-400
+ NAW-107

NIV24
NPK-431-0
NPK-441-0

NIVOPRESS N-400 separated head unit — 5 years

2-wire submersible hydrostatic level transmitter for liquids
with piezoresistive ceramic sensor; separated head unit

Sensor / Housing material

N □ B – ■■ 0 – 0

B	Piezoresistive ceramic sensor / POM

Output / Version

N B □ – ■■ 0 – 0

B	2-wire, 4...20 mA + HART

Version

N B B – □■ 0 – 0

4	Standard
5	Ex ia G

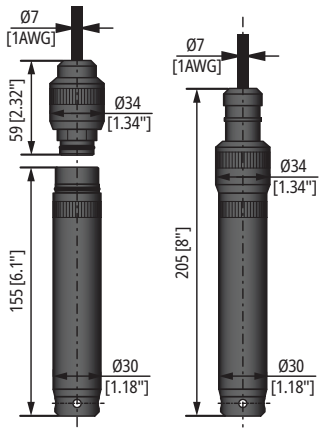
Range

N B B – ■□ 0 – 0

1	0...1 mH₂O (0...100 mbar)
2	0...2 mH₂O (0...200 mbar)
3	0...5 mH₂O (0...500 mbar)
4	0...10 mH₂O (0...1 000 mbar)
5	0...20 mH₂O (0...2 000 mbar)
6	0...50 mH₂O (0...5000 mbar)
7	0...100 mH₂O (0...10000 mbar)
8	0...200 mH₂O (0...20000 mbar)

Available on request (must be specified in the text of the order)

High temperature (up to +75 °C) version (Ex version not available)
Custom 4...20 mA output calibration



NBB-□□0
+ NA□-40□

NIVOPRESS N-400 Detachable cable set — 5 years

Detachable cable set for 2-wire submersible hydrostatic level transmitter with connector; with humidity filter: fixed to breathing cable

Cable material

N A □ – 4 0 ■ – ■

B	PUR
G	FEP

Cable length

N A ■ – 4 0 □ – □

PUR cable	
n n	1...99 m; sold by the meter
o o	100...190 m; sold by the meter
P P	200...290 m; sold by the meter
r r	300...390 m; sold by the meter
s s	400...450 m; sold by the meter
FEP cable	
n n	1...99 m; sold by the meter
o o	100...190 m; sold by the meter
p p	200...290 m; sold by the meter
r r	300...390 m; sold by the meter
s s	400...450 m; sold by the meter

nn = 01...99 : 1...99 m
oo = A0...A9 : 100...190 m
pp = B0...B9 : 200...290 m
rr = C0...C9 : 300...390 m
ss = D0...D5 : 400...450 m

NIVOPRESS N accessories (sold separately) — 5 years

Terminal boxes and cable mounting units

N A A – 1 0 □ – 0	
1	Terminal box with filter without OVP
2	Terminal box with filter with OVP-12/33 (only for N_K versions)
5	Sliding sleeve 1½" BSP
6	Sliding sleeve 1½" NPT
N A A – 2 0 9 – 0	Cable mounting wedge clamp

Overvoltage protection units

O V P – □ 2 S – L	
2	OVP-22/33, outdoor, IP54
3	OVP-32/33, IP20, DIN rail mounting

Sewage adapters

N A W – 1 0 □ – 0	
4	Can be mounted in the place of the protective cap / 1.4571/1.4404
7	Can be mounted in the place of the protective cap / POM
8	Can be mounted in the place of the protective cap / POM (for NBB type)
N A Z – 1 0 3 – 0	Sewage adapter (for ¾" threaded process connection) / 1.4571/1.4404

Detachable sensor accessories

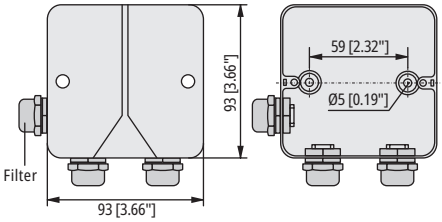
N A S – 1 0 □ – 0	
0	Separating ring
1	Protective cap for sensor head
2	Protective cap for cable set

Adapters

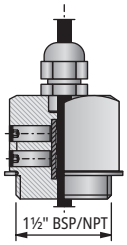
E A A – 1 5 3 – 0	¾" BSP / ½" BSP (1.4571/1.4404)
E A A – 1 5 7 – 0	¾" BSP / M20x1.5 (1.4571/1.4404)
E A A – 1 5 8 – 0	¾" BSP / 1" BSP (1.4571/1.4404)
E A A – 1 5 9 – 0	¾" BSP / 1" NPT (1.4571/1.4404)

Accessories (sold separately; see relevant page for details)

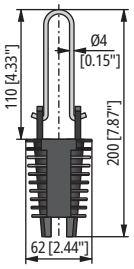
NAA–102–0M–100–00	Breathing cable gland
S A T – 5 0 4 – ■	HART®-USB/Bluetooth® modem
S A K – 3 0 5 – ■	HART®-USB/RS485 modem



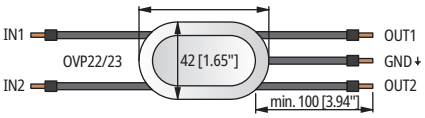
NAA–101 / 102



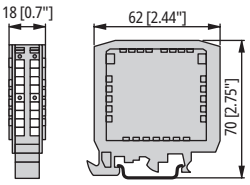
NAA–105/106



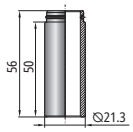
NAA–209



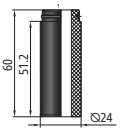
OVP–22 / 33



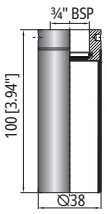
OVP–32 / 33



NAW–104



NAW–107



NAZ–103

NIV24
NAA-209-0
OVP-22 / 33
OVP-32 / 33
NAA-101-0

NIVOTRACK MI□–, MX□–, MY□–5□□ magnetostrictive level transmitters are an ideal solution for high-accuracy measurement of clean fluids. Integrating the transmitter into a process control system is easy due to the intelligent signal processing and communication software and the wide range of accessories.

MIA–513

OPERATING PRINCIPLE

The float, containing a magnetic disc, moves along the stem with a magnetostrictive wire in it. A pulse generated by the electronics travels along the magnetostrictive wire. When the pulse reaches the float's magnetic field, torsion develops. Reflected from the torsion point, the pulse creates an acoustic wave, which travels back along the wire. The transmitter's 4…20 mA output is proportional to the time between the excitation and detection.

FEATURES

- 2-wire integrated transmitter
- 1 mm resolution
- Distance and level measurement
- Standard and mini versions
- Stainless steel or Titanium floats
- IP65
- HART® communication
- Level monitoring of tanks
- Interface measurement
- 5 years warranty

APPLICATIONS

- Level measurement of liquids, with min. 0.4 kg/dm^3 density
- Chemical industry
- Power plants
- Oil industry
- Water industry
- Chemicals, solvents, hydrocarbons

TECHNICAL DATA

		Rigid probe version		
		Standard (MI□)	Mini (MY□)	Plastic-coated (MX□)
Measured process value		Liquid level, distance		
Nominal length (L)		0.3…3.5 m	0.3…1.5 m	0.3…3 m
Material of the tube		1.4571/1.4404 (316Ti) stainless steel		PFA-coated stainless steel 1.4571/1.4404 (316Ti)
Highest process pressure[1]		25 bar	16 bar	3 bar
Process temperature[1]		–40…+90 °C		
Standard float diameter / material[1]		Ø54 × 60 mm cylindrical / 1.4404	Ø28 × 29 mm / 1.4404	Ø76 × 87 mm cylindrical / PVDF or PP
Medium density		See "Floats"		
Material of wetted parts		Titanium, Stainless Steel	Stainless Steel	PFA, PVDF, PP
Ambient temperature		–40…+70 °C		
Output	Analog	4…20 mA (limit values: 3.9…20.5 mA)		
	Digital communication	HART® (lowest loop resistance: 250 Ω)		
Error indication		Output signal = 22 mA / 3.8 mA		
Output load		$R_L = (U_S - 12.5\ V) / 0.02\ A$, U_S = supply voltage		
Supply voltage		12.5…36 V DC		
Electrical protection		Class III		
Ingress protection		IP65		
Process connection		As per order code		
Electric connection (M□□–5□□–M types)		Hirschmann EN 175 301-803-A (DIN 43650)		
Weight		2.9 kg + measuring probe (0.6 kg/m)	2.9 kg + measuring probe (0.3 kg/m)	2.9 kg + measuring probe (0.7 kg/m)

[1] *Properties of non-standard floats can be found in "Floats."*

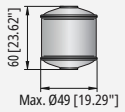
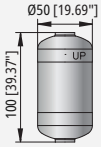
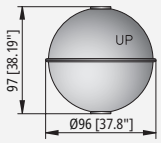
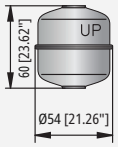
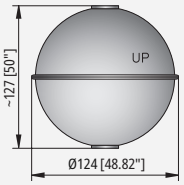
MEASUREMENT DATA

M□□-5□□-□	
Resolution (on HART® transmitted value)	1 mm
Nonlinearity (on HART® transmitted value)[1]	±2 mm or ±0.085% F.S. whichever is greater
Hysteresis (under reference conditions)	±0.25 mm
Zero span (in LEVEL mode)	Anywhere within the active range
Measurement range (reducing)[2]	Minimal distance: 32 mm; Maximum distance: see "Dimensions"
Temperature error	0.04 mm / 10 °C (–25…+50 °C)
Current output resolution	0.4 µA
Current output accuracy	33 µA
Current output temperature error	6 ppm / °C

[1] Under reference conditions, accuracy data only valid in case of factory setting. When used with a bypass float, the values given are not valid. With factory-calibrated float for NIVOFLIP, accuracy is 4…5 mm.

[2] Accuracy data is only valid with factory default settings!

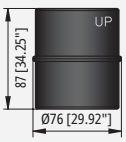
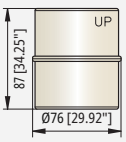
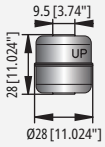
FLOATS

	MBA-505-2X-0C7-10	MBA-505-2M-600-00[3]	MBK-530-2M-400-00[4]	MBA-505-2M-800-00[3]	MBA-505-2M-200-00[3]	MBA-505-2M-900-00[4]
Type	MI□					
Dimensions						
Medium density (min.)	0.61 kg/dm³	0.45 kg/dm³	0.55 kg/dm³	0.55 kg/dm³	0.8 kg/dm³	0.4 kg/dm³
Material	Titanium		Austenitic stainless steel[5]	Titanium	Austenitic stainless steel[5]	
Process pressure	16 bar			25 bar		

[3] Designed for min. 2" process connection, order only with rigid probe.

[4] Flange is ordered separately.

[5] 1.4401, 1.4404, 1.4435, 1.4571, etc.

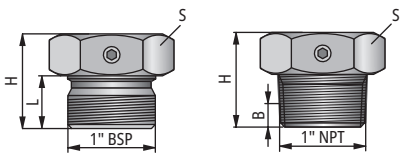
	MGU-505-2M-200-00	MGU-506-1M-200-00	4w34bs16yyyyy[6]
Type	MX□		MY□
Dimensions			
Medium density (min.)	0.7 kg/dm³	0.4 kg/dm³	0.8 kg/dm³
Material	PVDF	PP	Austenitic stainless steel[5]
Process pressure	3 bar		10 bar

[6] Designed for min. 1" process connection, order only with mini version.

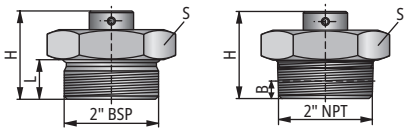
ACCESSORIES

Threaded sliding sleeve

Type	Process connection	S (mm)	H (mm)	L (mm)	B (mm)
MBH-105-2M-300-00	1" BSP	41	36	20	–
MBK-105-2M-300-00	2" BSP	60	55	24	–
MBL-105-2M-300-00	1" NPT	41	37	–	~10
MBN-105-2M-300-00	2" NPT	60	44,5	–	~11



MBH / MBL-105-2M-300-000



MBK / MBN-105-2M-300-000

NIVOTRACK M-500 Integrated with rigid probe — 5 years

2-wire integrated magnetostrictive level transmitter for liquids
with Ø54 mm stainless steel float and rod probe, 1 mm resolution

Version

M □ ■ – 5 ■ ■ – ■

I		Transmitter

Process connection

M I □ – 5 ■ ■ – ■

A		1" BSP
B		1" BSP, lower connection
C		2" BSP
F		2" BSP, lower connection
D		1" NPT
E		1" NPT, lower connection
G		2" NPT
H		2" NPT, lower connection
O		2½" TriClamp
S		2½" TriClamp, lower connection
P		3" TriClamp
R		4" TriClamp
U	*	Without process connection, threaded sliding sleeve to be ordered separately.
L	**	Without float, for NIVOFLIP (max. 3.5 m, max. +90 °C)

* For bypass level indicators other than NIVOFLIP, only if calibrated with the bypass' own float.
** Probe length = center to center of NIVOFLIP +300 mm

Housing

M I ■ – □ ■ ■ – ■

5	Stainless steel

Probe length***

M I ■ – 5 □ □ – ■

n n	0.3...1 m
o o	1.1...3 m; sold by the 0.1 m

nn = 03...10 : 0.3...1 m
oo = 11...30 : 1.1...3 m, *** 3...3.5 m as per special offer

Output / Resolution / Certificates / Electric connection

M I ■ – 5 ■ ■ – □

L	****	4...20 mA + HART® / 1 mm / Ex ia G / cable
M		4...20 mA + HART® / 1 mm / DIN connector

**** Under development

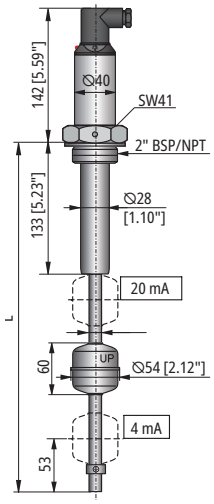
Need of IEC Ex is to be specified in the text part of the order.

Available on request (must be specified in the text of the order)

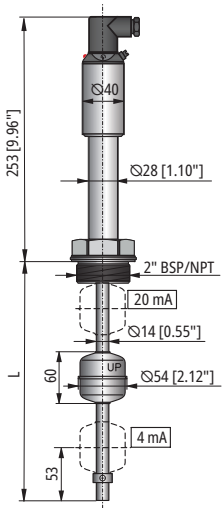
MBK-530-2M-400-00	Ø96 mm stainless steel ball float (for min. 0.55 kg/dm³ liquids)
MBA-505-2M-900-00	Ø124 mm stainless steel ball float (for min. 0.4 kg/dm³ liquids)
MBA-505-2M-800-00	Ø54 mm titanium float (for min. 0.55 kg/dm³ liquids)
MBA-505-2X-0C7-10	Ø49x60 mm titanium float (min. 0.61 kg/dm³)
MBA-505-2M-600-00	Ø50x100 mm titanium float (min. 0.45 kg/dm³)

Accessories sold separately; see relevant page for details

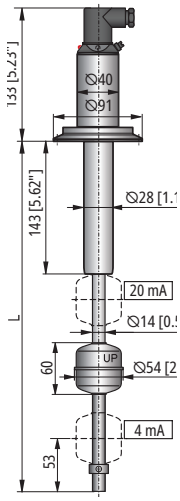
MBH-105-2M-300-00	Sliding sleeve, 1.4571/1.4404, 1" BSP
MBK-105-2M-300-00	Sliding sleeve, 1.4571/1.4404, 2" BSP
MBL-105-2M-300-00	Sliding sleeve, 1.4571/1.4404, 1" NPT
MBN-105-2M-300-00	Sliding sleeve, 1.4571/1.4404, 2" NPT
S A T – 5 0 4 – ■	HART®-USB/Bluetooth® modem
S A K – 3 0 5 – ■	HART®-USB/RS485 modem
P ■ F – ■ 1 ■ – ■	Smart Field Display and Data Logger
P ■ F – ■ 0 1 – ■	Loop Display



MIC / MIG-5□□-M



MIF / MIH-5□□-M



MIP-5□□-M

NIVOTRACK M-500 Integrated mini version with rigid probe — 5 years

2-wire integrated magnetostrictive level transmitter for liquids, mini version,
with Ø28 mm stainless steel float and rod probe, 1 mm resolution

Version

M □ ■ – 5 ■ ■ – ■

Y	Transmitter mini

Process connection

M Y □ – 5 ■ ■ – ■

A	1" BSP
B	1" BSP, lower connection
C	2" BSP
F	2" BSP, lower connection
D	1" NPT
E	1" NPT, lower connection
G	2" NPT
H	2" NPT, lower connection
J	1½" TriClamp
K	1½" TriClamp, lower connection
M	2" TriClamp
N	2" TriClamp, lower connection
O	2½" TriClamp
S	2½" TriClamp, lower connection
P	3" TriClamp
R	4" TriClamp

Housing

M Y ■ – □ ■ ■ – ■

5	Stainless steel

Probe length

M Y ■ – 5 □ □ – ■

n n	0.3...1 m
o o	1.1...1.5 m; sold by the 0.1 m

nn = 03...10 : 0.3...1 m
oo = 11...15 : 1.1...1.5 m

Output / Resolution / Certificates / Electric connection

M Y ■ – 5 ■ ■ – □

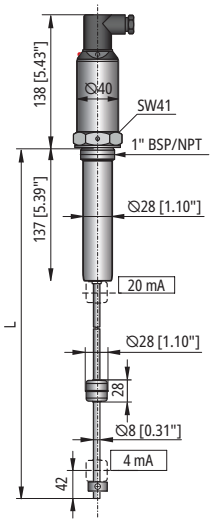
K	*	4...20 mA + HART® / 1 mm / cable
L	*	4...20 mA + HART® / 1 mm / Ex ia G / cable
M		4...20 mA + HART® / 1 mm / DIN connector
N	*	4...20 mA + HART® / 1 mm / Ex ia G / DIN connector
O	*	4...20 mA + HART / 1 mm / M12x1 connector
P	*	4...20 mA + HART® / 1 mm / Ex ia G / M12x1 connector

* Under development

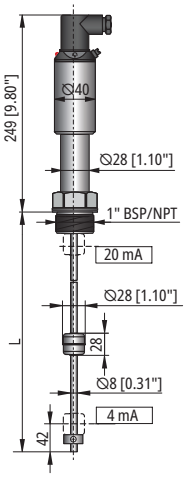
IEC Ex compliance is optional; it must be specified in the order.

Accessories sold separately; see relevant page for details

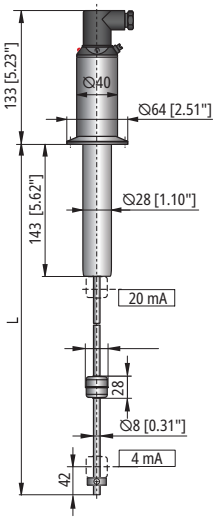
S A T – 5 0 4 – ■	HART®-USB/Bluetooth® modem
S A K – 3 0 5 – ■	HART®-USB/RS485 modem
P ■ F – ■ 1 ■ – ■	Smart Field Display and Data Logger
P ■ F – ■ 0 1 – ■	Loop Display



MYA / MYD–5□□–M



MYB / MYE–5□□–M



MYM–5□□–M

NIVOTRACK M-500 Integrated with plastic-coated rigid probe — 5 years

2-wire integrated magnetostrictive level transmitter for liquids
with Ø76 mm PVDF float and plastic-coated stainless steel rod probe, 1 mm resolution

Version

M □ U – 5 ■ ■ – ■

X	Transmitter

Process connection

M X □ – 5 ■ ■ – ■

U	Without process connection for sliding sleeve

Housing

M X U – □ ■ ■ – ■

5	Stainless steel

Probe length

M X U – 5 □ □ – ■

n n	0.3...1 m
o o	1.1...3 m; sold by the 0.1 m

nn = 03...10 : 0.3...1 m
oo = 11...30 : 1.1...3 m

Output / Resolution / Certificates / Electric connection

M X U – 5 ■ ■ – □

K	*	4...20 mA + HART® / 1 mm / cable
L	*	4...20 mA + HART® / 1 mm / Ex ia G / cable
M		4...20 mA + HART® / 1 mm / DIN connector
N	*	4...20 mA + HART® / 1 mm / Ex ia G / DIN connector
O	*	4...20 mA + HART® / 1 mm / M12x1 connector
P	*	4...20 mA + HART® / 1 mm / Ex ia G / M12x1 connector

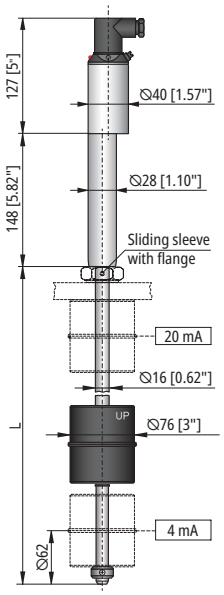
* Under development

Available on request (must be specified in the text of the order)

MGH-105-2M-300-00	Sliding sleeve: 1" BSP, PVDF
MGL-105-2M-300-00	Sliding sleeve: 1" NPT, PVDF
MGU-506-1M-200-00	Ø76x87 mm PP float (for min. 0.4 kg/dm³ liquids)
M F A – 3 2 1 – 2	PP flange DN80, PN16 + 1" BSP sliding sleeve must be ordered
M F A – 3 3 1 – 2	PP flange DN100, PN16 + 1" BSP sliding sleeve must be ordered

Accessories sold separately; see relevant page for details)

S A T – 5 0 4 – ■	HART®-USB/Bluetooth® modem
S A K – 3 0 5 – ■	HART®-USB/RS485 modem
P ■ F – ■ 1 ■ – ■	Smart Field Display and Data Logger
P ■ F – ■ 0 1 – ■	Loop Display



MXU-5□□

Compact Magnetostrictive Level Transmitters

NIVOTRACK magnetostrictive level transmitters are an ideal solution for high-accuracy measurement of clean fluids. Their level of precision makes them an excellent choice for the custody transfer measurement of liquids such as fuels, solvents, and alcohol derivatives. Flexible tube units make accurate measurements possible in tanks as high as 15 meters. Models with plastic coating can be used with aggressive materials. Integrating the transmitter into a process control system is easy due to the intelligent signal processing and communication software and the wide range of accessories offered.

FEATURES

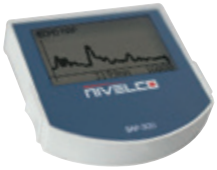
- 0.1 mm or 1 mm resolution
- Insertion length up to 15 m
- Compact model
- Rigid or flexible guide tube
- Plastic-coated version for chemicals
- 4…20 mA and HART® output
- Graphic display
- 99-point linearization table
- Measurement optimization
- Volume measurement
- PACTware™ compatible
- Interface measurement
- ATEX certified variants
- IP67 (IP68)
- 5 years warranty

MCA–500
mini version

MTA–500
rigid probe

MG☐–500
plastic-coated
version

MTK–500
flexible probe
version



SAP–300
plug-in display

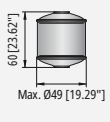
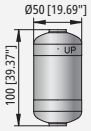
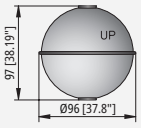
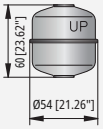
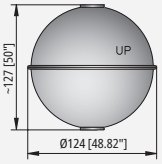
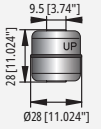
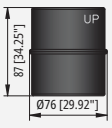
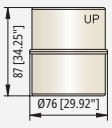
APPLICATIONS

- Custody transfer measurement
- Oil, gas and chemical industry
  (ATG – Automatic Tanking Gauge)
- Fuels and gasoline products
- Pharmaceutical industry
- Alcohols and beverages, food industry
- Installation in bypass tubes possible
- Supplementary level transmitter for
  NIVOFLIP magnetic flip indicator

CERTIFICATES

- ATEX (Ex ia G)
- ATEX (Ex db G)
- ATEX (Ex db ia G)
- OIML R 85
- IEC Ex (Ex ia G)
- IEC Ex (Ex db G)
- IEC Ex (Ex db ia G)

FLOATS

	MBA–505–		MBK–530–2M –400–00	MBA–505–2M–		MBA–505– 2M–900–00	MGU–505– 2M–200–00	MGU–506– 1M–200–00	4w34bs– 16yyyyy[2]
	2X–0C7–10	2M–600–00[1]		800–00[1]	200–00[1]				
Dimensions									
Medium density (min.) [kg/dm³]	0.61	0.45	0.55	0.55	0.8	0.4	0.7	0.4	0.8
Material	Titanium		Austenitic stainless steel[3]	Titanium	Austenitic stainless steel[3]		PVDF	PP	Austenitic stainless steel[3]
Process pressure	16 bar			25 bar			3 bar		10 bar

[1] *Designed for min. 2" process connection*

[2] *Designed for min. 1" process connection, only order with mini version.*

[3] *1.4401, 1.4404, 1.4435, 1.4571, etc.*

TECHNICAL DATA

		Rigid probe	Flexible probe	Plastic-coated rigid probe	Mini version with rigid probe
Measured process value		Liquid level, distance, volume			
Nominal length (L)		0.3…4.5 m	2…15 m	0.3…3 m	0.3…1.5 m
Material of the tube		1.4571/1.4404 (316Ti) stainless steel		PFA-coated stainless steel	1.4571/1.4404 stainless steel
Highest process pressure[1]		25 bar	16 bar	3 bar	10 bar
Process temperature		–40…+90 °C, see temperature diagram			
Standard float (see: Floats table)[2]		MBA–505–2M–200–00	MBK–530–2M–400–00	MGU–505–2M–200–00	4w34bs16yyyyy
Medium density		See "Floats"			
Material of wetted parts		Titanium, Stainless steel		PFA, PVDF, PP	Stainless steel
Ambient temperature		–40…+70 °C (SAP plug-in display: minimum temperature –25 °C)			
Output	Analog	4…20 mA (limit values: 3.9…20.5 mA)			
	Digital	HART® (lowest loop resistance: 250 Ω)			
	Display	Graphic display (SAP–300)			
Damping time		Adjustable 0…99 s			
Error indication		22 mA or 3.8 mA or holding			
Output load		$R_L = (U_s – 12.5\ V)/0.02\ A$, U_s = supply voltage			
Supply voltage		12.5…36 V DC			
Electrical protection		Class III			
Ingress protection		IP67			
Process connection		As per order code			
Electric connection		2× M20×1.5 cable glands + 2× internally threaded ½" NPT connection, cable outer diameter: Ø6…12 mm (shielded cable is recommended), wire cross section: 0.5…1.5 mm²			
Housing		Plastic (PBT) or painted aluminum or stainless steel			
Weight		1.7 kg + measuring probe: 0.6 kg/m	2.9 kg + m. probe: 0.3 kg/m + counterweight 3.5 kg	1.7 kg + m. probe: 0.7 kg/m	1.7 kg + m. probe: 0.25 kg/m

[1] Depends on selected float, with sliding sleeve connection the highest process pressure is 3 bar (0.3 MPa)

[2] Requested float version must be specified in the order

MEASUREMENT DATA

	M□□–□□□–2/4/6/8	M□□–□□□–1/3/5/7, M□□–□□□–A/B/C/D
Resolution[3]	1 mm	0.1 mm
Nonlinearity[3][4] (up to 10 m order length)	±2 mm or ±0.02% F.S. whichever is greater	±1 mm or ±0.01% F.S. whichever is greater
Nonlinearity[3][4] (above 10 m order length)	±3 mm or ±0.02% F.S. whichever is greater	
Hysteresis	±1 mm	±0.25 mm (up to 10 m length)
		±1 mm (above 10 m length)
Zero span (in LEVEL mode)	Anywhere within the active range	
Measurement range (reducing)	Minimum distance: 200 mm; maximum distance: as per probe length	
Temperature error	0.04 mm / 10 °C between (–25…+50 °C)	
Current Output Properties	Resolution: 2 µA, accuracy: 10 µA, temperature error: 200 ppm/ °C	

[3] For displayed and HART® transmitted values

[4] Under reference conditions, accuracy data only valid in case of factory setting. When used with a bypass float, the values given are not valid. With factory-calibrated float for NIVOFLIP, accuracy is 3…4 mm.

Ex INFORMATION

	M□□–5/7□□–5 Ex, 6 Ex, 7 Ex, 8 Ex	M□□–5/7□□–C Ex, D Ex	M□□–5/7□□–A Ex, B Ex
Ex marking (ATEX)	⟨Ex⟩ II 1 G Ex ia IIB T6…T5 Ga	⟨Ex⟩ II 1/2 G Ex db ia IIB T6…T5 Ga/Gb	⟨Ex⟩ II 2 G Ex db IIB T6…T5 Gb
Ex marking (IECEx)	Ex ia IIB T6…T5 Ga	Ex db ia IIB T6 Ga/Gb	Ex db IIB T6…T5 Gb
Nominal length (L)	0.3…15 m	0.3…10 m	
Cable entry	M20×1.5 cable gland	Metal M20×1.5 cable gland Ex d certification	
Cable outer diameter	Ø7…Ø13 mm	Ø9…Ø11 mm	
Ex supply voltage, Intrinsically safety data	U_i = 30 V I_i = 140 mA P_i = 1 W C_i < 15 nF L_i < 200 µH		U_s: 12.5…36 V DC I_i = 140 mA

TECHNICAL DATA FOR DEVICES MOUNTED ON NIVOFLIP LEVEL INDICATORS

	NIVOTRACK devices for NIVOFLIP bypass chamber MTU– / MBU– / MTL– / MBL– / MTT– / MBT–□□□–□
Nominal length (L)	0.5…6 m
Material of the probe	1.4571/1.4404 stainless steel
Process temperature[1]	MTU– / MBU– / MTL– / MBL–□□□–□: –40…+90 °C MTT– / MBT–□□□–□: –40…+200 °C (equipped with the required thermal insulation)
Ambient temperature[1]	–40…+70 °C (SAP plug-in display: min. –25 °C)
Ingress protection	IP67
Process connection[2]	MTU– / MBU–□□□–□: none; MTL– / MBL–□□□–□: with AWAB clamp; MTT– / MBT–□□□–□: with AWAB clamp and ceramic thermal insulation
Housing	Plastic (PBT) / painted aluminum / stainless steel
Weight	1,7 kg + probe: 0,6 kg/m

[1] *See the ambient and process temperature diagram in sections.*

[2] *See the Order Codes..*

MEASUREMENT DATA FOR DEVICES MOUNTED ON NIVOFLIP LEVEL INDICATORS

(MSZ EN 60770-1:2011, MSZ EN 61298-1:2009, MSZ EN 61298-3:2009)

	M□L–, M□U– –□□□–2/4/6/8	M□L–□□□–1/3/5/7/9/A/B/C/D M□U–□□□–1/3/5/7/9/A/B/C/D	M□T–□□□– –2/4/6/8	M□T–□□□– –1/3/5/7/9/A/B/C/D
Resolution[3]	1 mm	0.1 mm	1 mm	0.1 mm
Nonlinearity[3][4]	±3 mm or ±0.07% F.S. whichever is greater		±4 mm or ±0.09% F.S. whichever is greater	
Hysteresis[4]	±1 mm		±2 mm	

[3] *For the displayed and transmitted value of the HART® line.*

[4] *Under reference conditions, only with the original float calibrated at the factory for the device.*

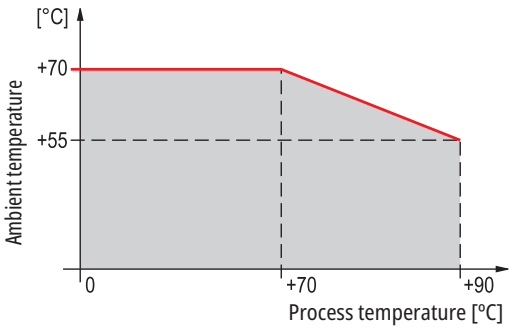
TEMPERATURE LIMIT DATA FOR ATEX (Ex ia, Ex db ia, Ex db) APPROVED MODELS

Device probe version	Temperature class	Ambient temperature[2]	Process temperature
Rigid probe (Rod)	T6	–40…+70 °C	+80 °C
Flexible probe (Cable)			+70 °C
Rigid probe (Rod)	T5	–40…+55 °C	+90 °C

[2] *For models equipped with an SAP display, the lower limit of the ambient temperature is restricted to –25 °C.*

AMBIENT, PROCESS TEMPERATURE DIAGRAM

For process temperatures above +70 °C, the permissible ambient temperature is shown in the diagram below:



NIVOTRACK M-500 Compact with rigid probe — 5 years

2-wire compact magnetostrictive level transmitter for liquids
with Ø54 mm stainless steel float and rod probe, 0.1 mm or 1 mm resolution

Version

M □■ – ■■■ – ■

T		Transmitter
B		Transmitter with plug-in display

Process connection

M ■□ – ■■■ – ■

A		1" BSP
C		2" BSP
D		1" NPT
G		2" NPT
O		2½" TriClamp
P		3" TriClamp
R		4" TriClamp
U	*	Without process connection, threaded sliding sleeve to be ordered separately.
L	**	Without float, for NIVOFLIP (max. 5.8 m, max. +90 °C)
T	**	Without float, for NIVOFLIP (max. 5.8 m, max. +200 °C)

* For bypass level indicators other than NIVOFLIP, only if calibrated with the bypass' own float.
** Probe length = center to center of NIVOFLIP +300 mm

Housing

M ■■ – □■■ – ■

5		Painted aluminum
6	***	Fiberglass-reinforced plastic (PBT)
7		Stainless steel
E		Painted aluminum, Side viewed "B" head position model
F	***	Fiberglass-reinforced plastic (PBT), Side viewed "B" head position model
G		Stainless steel, Side viewed "B" head position model

*** Ex version not available

Probe length****

M ■■ – ■□□ – ■

n n		0.5...1 m
o o		1.1...3 m; sold by the 100 mm

nn = 05...10 : 0.5...1 m, oo = 11...30 : 1.1...3 m, **** 3...4.5 m as per special offer

Output / Resolution / Certificates

M ■■ – ■■■ – □

1	4...20 mA / 0.1 mm
2	4...20 mA / 1 mm
3	4...20 mA + HART® / 0.1 mm
4	4...20 mA + HART® / 1 mm
5	4...20 mA / 0.1 mm / Ex ia G
6	4...20 mA / 1 mm / Ex ia G
7	4...20 mA + HART® / 0.1 mm / Ex ia G
8	4...20 mA + HART® / 1 mm / Ex ia G
A	4...20 mA / 0.1 mm / Ex d G
B	4...20 mA + HART® / 0.1 mm / Ex d G
C	4...20 mA / 0.1 mm / Ex d ia G
D	4...20 mA + HART® / 0.1 mm / Ex d ia G

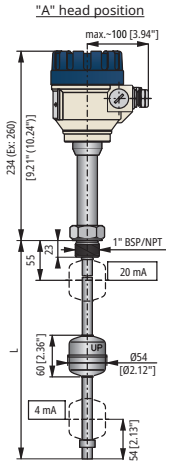
For custody transfer only models with HART output, 0.1 mm resolution, local display unit can be ordered, with up to 10 m probe length. Need of IEC Ex is to be specified in the text part of the order.

Available on request (must be specified in the text of the order)

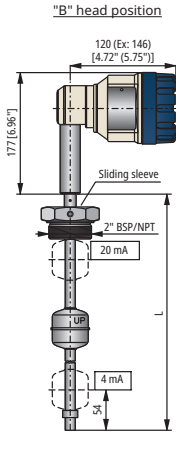
MBK-530-2M-400-00	Ø96 mm stainless steel ball float (for min. 0.55 kg/dm³ liquids)
MBA-505-2M-900-00	Ø124 mm stainless steel ball float (for min. 0.4 kg/dm³ liquids)
MBA-505-2M-800-00	Ø54 mm titanium float (for min. 0.55 kg/dm³ liquids)
MBA-505-2X-0C7-10	Ø49x60 mm titanium float (min. 0.61 kg/dm³)
MBA-505-2M-600-00	Ø50x100 mm titanium float (min. 0.45 kg/dm³)

Accessories sold separately; see relevant page for details

MBH-105-2M-300-00	Sliding sleeve, 1.4571/1.4404, 1" BSP
MBK-105-2M-300-00	Sliding sleeve, 1.4571/1.4404, 2" BSP
MBL-105-2M-300-00	Sliding sleeve, 1.4571/1.4404, 1" NPT
MBN-105-2M-300-00	Sliding sleeve, 1.4571/1.4404, 2" NPT
S A P – 3 0 0 – 0	Graphic plug-in display module
S A T – 5 0 4 – ■	HART®-USB/Bluetooth® modem
S A K – 3 0 5 – ■	HART®-USB/RS485 modem
S A B – 1 1 2 – 0	3D printed plastic shielding cap, snap-on design for plastic cover
S A B – 1 1 3 – 0	3D printed plastic shielding cap, snap-on design for aluminum cover
S A B – 2 1 1 – 2	Stainless steel shielding cap, clamp-type design, for all instrument covers



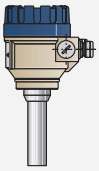
MTA / MTD-500 / 600



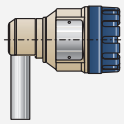
MTU-500 / 600

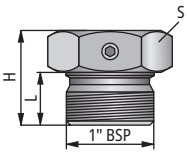
Head position

"A"

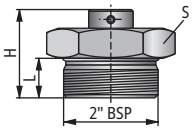


"B"





MBH / MBL-105-2M-300-000



MBK / MBN-105-2M-300-000

Type	Material	Proc. conn.	Dimensions S (mm)	H (mm)	L (mm)	B (mm)
MBH-105-2M-300-00	1.4571/1.4404	1" BSP	41	36	20	–
MBK-105-2M-300-00		2" BSP	60	55	24	–
MBL-105-2M-300-00		1" NPT	41	37	–	10
MBN-105-2M-300-00		2" NPT	60	44.5	–	11

NIVOTRACK M–500 Compact with flexible probe — 5 years

2-wire compact magnetostrictive level transmitter for liquids
with stainless steel float, stainless steel cable probe
and weight with 0.1 mm or 1 mm resolution

Version

M □ ■ – ■ ■ ■ – ■

T		Transmitter
B		Transmitter with plug-in display

Process connection

M ■ □ – ■ ■ ■ – ■

K		2" BSP, Ø96 mm float
N		2" NPT, Ø96 mm float

Housing

M ■ ■ – □ ■ ■ – ■

5		Painted aluminum
6	*	Fiberglass-reinforced plastic (PBT)
7		Stainless steel
E		Painted aluminum, Side viewed "B" head position model
F	*	Fiberglass-reinforced plastic (PBT), Side viewed "B" head position model
G		Stainless steel, Side viewed "B" head position model

* Ex version not available

Probe length

M ■ ■ – ■ □ □ – ■

n n	2...3 m
o o	3.1...15 m; sold by the 100 mm

nn = 20...30 : 2...3 m
oo = 31...F0 : 3.1...15 m

Output / Resolution / Certificates

M ■ ■ – ■ ■ ■ – □

1	4...20 mA / 0.1 mm
2	4...20 mA / 1 mm
3	4...20 mA + HART® / 0.1 mm
4	4...20 mA + HART® / 1 mm
5	4...20 mA / 0.1 mm / Ex ia G
6	4...20 mA / 1 mm / Ex ia G
7	4...20 mA + HART® / 0.1 mm / Ex ia G
8	4...20 mA + HART® / 1 mm / Ex ia G
A	4...20 mA / 0.1 mm / Ex d G (up to 10 m)
B	4...20 mA + HART® / 0.1 mm / Ex d G (up to 10 m)
C	4...20 mA / 0.1 mm / Ex d ia G (up to 10 m)
D	4...20 mA + HART® / 0.1 mm / Ex d ia G (up to 10 m)

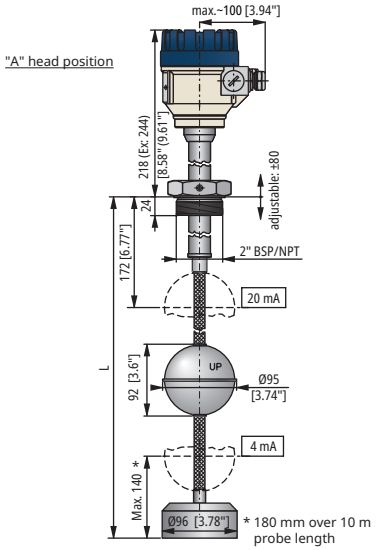
For custody transfer only models with HART output, 0.1 mm resolution, local display unit can be ordered, with up to 10 m probe length.
Need of IEC Ex is to be specified in the text part of the order.

Available on request (must be specified in the text of the order)

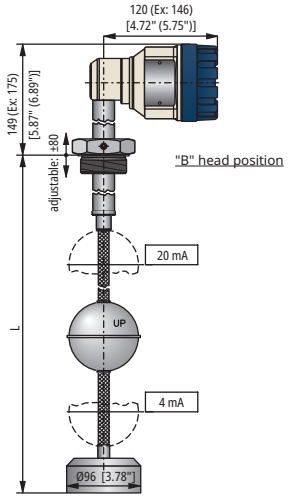
MBA–505–2M–900–00	Ø124 mm stainless steel ball float (for min. 0.4 kg/dm³ liquids)
MBA–505–2M–600–00	Ø50x100 mm titanium float (min. 0.45 kg/dm³), only available with MBK–530–2M–000–11 narrow weight

Accessories sold separately; see relevant page for details

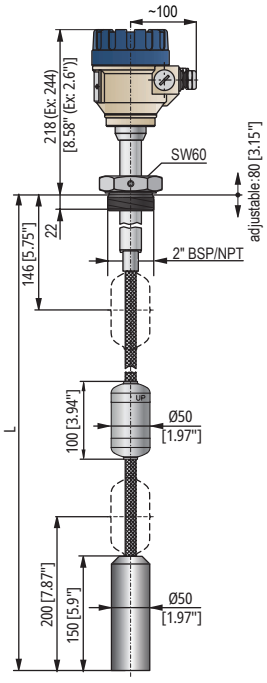
S A P – 3 0 0 – 0	Graphic plug-in display module
S A T – 5 0 4 – ■	HART®-USB/Bluetooth® modem
S A K – 3 0 5 – ■	HART®-USB/RS485 modem
S A B – 1 1 2 – 0	3D printed plastic shielding cap, snap-on design for plastic cover
S A B – 1 1 3 – 0	3D printed plastic shielding cap, snap-on design for aluminum cover
S A B – 2 1 1 – 2	Stainless steel shielding cap, clamp-type design, for all instrument covers
MBK–530–2M–000–01	Ø96x45 mm standard counterweight
MBK–530–2M–000–11	Ø50x150 mm counterweight for 2" connection



MTK / MTN–500 / 600



MTK / MTN–500 / 600



MTK / MTN–500 / 600
with Ø50×100 titanium float

NIVOTRACK M–500 Compact with plastic-coated rigid probe — 5 years

2-wire compact magnetostrictive level transmitter for liquids
with Ø76 mm PVDF float and plastic-coated stainless steel rod probe,
0.1 mm or 1 mm resolution

Version

M □ U – ■■■ – ■

E		Transmitter
G		Transmitter with plug-in display

Process connection

M ■□ – ■■■ – ■

U		Without process connection for sliding sleeve

Housing

M ■ U – □■■ – ■

5		Painted aluminum
6	*	Fiberglass-reinforced plastic (PBT)
7		Stainless steel
E		Painted aluminum, Side viewed "B" head position model
F	*	Fiberglass-reinforced plastic (PBT), Side viewed "B" head position model
G		Stainless steel, Side viewed "B" head position model

* Ex version not available

Probe length

M ■ U – ■□□ – ■

n n	0,5...1 m
o o	1.1...3 m; sold by the 100 mm

nn = 05...10 : 0.5...1 m
oo = 11...30 : 1.1...3 m

Output / Resolution / Certificates

M ■ U – ■■■ – □

1	4...20 mA / 0,1 mm
2	4...20 mA / 1 mm
3	4...20 mA + HART® / 0,1 mm
4	4...20 mA + HART® / 1 mm
5	4...20 mA / 0,1 mm / Ex ia G
6	4...20 mA / 1 mm / Ex ia G
7	4...20 mA + HART® / 0,1 mm / Ex ia G
8	4...20 mA + HART® / 1 mm / Ex ia G
A	4...20 mA / 0,1 mm / Ex d G
B	4...20 mA + HART® / 0,1 mm / Ex d G
C	4...20 mA / 0,1 mm / Ex d ia G
D	4...20 mA + HART® / 0,1 mm / Ex d ia G

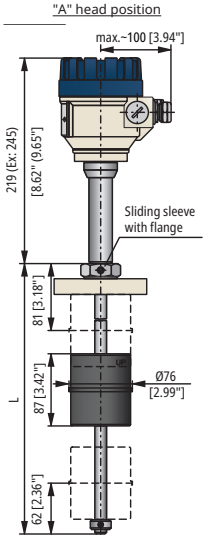
For custody transfer only models with HART output, 0.1 mm resolution, local display unit can be ordered, with up to 10 m probe length.
Need of IEC Ex is to be specified in the text part of the order.

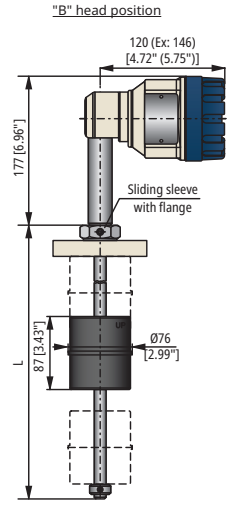
Available on request (must be specified in the text of the order)

MGH–105–2M–300–00	Sliding sleeve: 1" BSP
MGL–105–2M–300–00	Sliding sleeve: 1" NPT
MGU–506–1M–200–00	Ø76x87 mm PP float (for min. 0.4 kg/dm³ liquids)
M F A – 3 2 1 – 2	PP flange DN80, PN16 + 1" BSP sliding sleeve must be ordered
M F A – 3 3 1 – 2	PP flange DN100, PN16 + 1" BSP sliding sleeve must be ordered

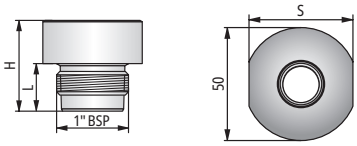
Accessories sold separately; see relevant page for details

S A P – 3 0 0 – 0	Graphic plug-in display module
S A T – 5 0 4 – ■	HART®-USB/Bluetooth® modem
S A K – 3 0 5 – ■	HART®-USB/RS485 modem
S A B – 1 1 2 – 0	3D printed plastic shielding cap, snap-on design for plastic cover
S A B – 1 1 3 – 0	3D printed plastic shielding cap, snap-on design for aluminum cover
S A B – 2 1 1 – 2	Stainless steel shielding cap, clamp-type design, for all instrument covers





MEU–500 / 600



MGH-105-2M-300-000

	Material	Proc. conn.	Dimensions		
			S (mm)	H (mm)	L (mm)
MGH-105-2M-300-00	PVDF	1" BSP	46	42	22
MGL-105-2M-300-00		1" NPT			25

NIVOTRACK M–500 Compact mini version with rigid probe — 5 years

2-wire integrated magnetostrictive level transmitter for liquids, mini version, with Ø28 mm stainless steel float and rod probe, 0.1 mm or 1 mm resolution

Version

M □ ■ – ■ ■ ■ – ■

M		Transmitter
C		Transmitter with plug-in display

Process connection

M ■ □ – ■ ■ ■ – ■

A		1" BSP
D		1" NPT
J		1½" TriClamp
M		2" TriClamp
O		2½" TriClamp
P		3" TriClamp
R		4" TriClamp

Housing

M ■ ■ – □ ■ ■ – ■

5		Painted aluminum
6	*	Fiberglass-reinforced plastic (PBT)
7		Stainless steel
E		Painted aluminum, Side viewed "B" head position model
F	*	Fiberglass-reinforced plastic (PBT), Side viewed "B" head position model
G		Stainless steel, Side viewed "B" head position model

* Ex version not available

Probe length

M ■ ■ – ■ □ □ – ■

n n	0.5...1 m
o o	1.1...1.5 m; sold by the 100 mm

nn = 05...10 : 0.5...1 m
oo = 11...15 : 1.1...1.5 m

Output / Resolution / Certificates

M ■ ■ – ■ ■ ■ – □

1	4...20 mA / 0.1 mm
2	4...20 mA / 1 mm
3	4...20 mA + HART® / 0.1 mm
4	4...20 mA + HART® / 1 mm
5	4...20 mA / 0.1 mm / Ex ia G
6	4...20 mA / 1 mm / Ex ia G
7	4...20 mA + HART® / 0.1 mm / Ex ia G
8	4...20 mA + HART® / 1 mm / Ex ia G

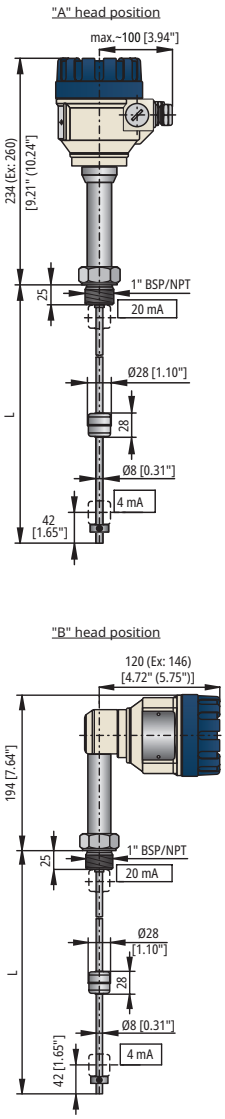
Need of IEC Ex is to be specified in the text part of the order

Accessories sold separately; see relevant page for details)

S A P – 3 0 0 – 0	Graphic plug-in display module
S A T – 5 0 4 – ■	HART®-USB/Bluetooth® modem
S A K – 3 0 5 – ■	HART®-USB/RS485 modem
S A B – 1 1 2 – 0	3D printed plastic shielding cap, snap-on design for plastic cover
S A B – 1 1 3 – 0	3D printed plastic shielding cap, snap-on design for aluminum cover
S A B – 2 1 1 – 2	Stainless steel shielding cap, clamp-type design, for all instrument covers

Accessories sold separately (floats)

MBA–505–2M–200–00	Ø54x60 mm stainless steel (1.4401) ball float (for min. 0.8 kg/dm³ liquids)
MBK–530–2M–400–00	Ø96 mm stainless steel (1.4404) (for min. 0.55 kg/dm³ liquids)
MBA–505–2M–900–00	Ø124 mm stainless steel (1.4401) ball float (for min. 0.4 kg/dm³ liquids)
MBA–505–2M–800–00	Ø54x60 mm titanium float (for min. 0.55 kg/dm³ liquids)
MBA–505–2X–0C7–10	Ø49x60 mm titanium float (for min. 0.61 kg/dm³ liquids)
MBA–505–2M–600–00	Ø50x100 mm titanium float (for min. 0.45 kg/dm³ liquids)
MGU–505–2M–200–00	Ø76x87 mm PVDF float (for min. 0.7 kg/dm³ liquids)
MGU–506–1M–200–00	Ø76x87 mm PP float (for min. 0.4 kg/dm³ liquids)
4w34bs16yyyy	Ø28x28 mm stainless steel (1.4404) ball float (for min. 0.8 kg/dm³ liquids)



MMA / MMD–500 / 600

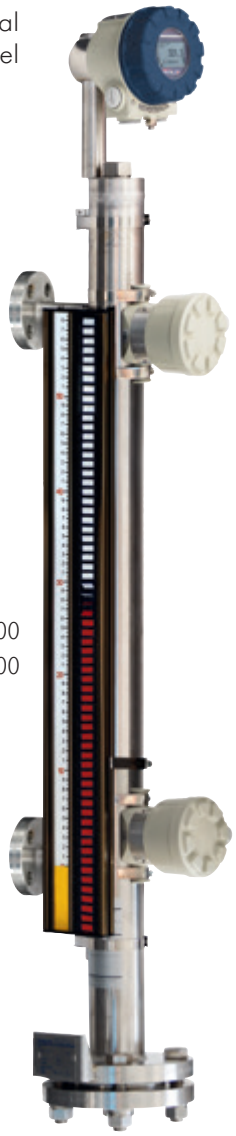
NIVOFLIP is a bypass level indicator for pressurized vessels with up to 5.5 m flange distance containing liquids. The device has the international PED *(Pressure Equipment Directive)* certificate, so it can be used for level indication of pressurized vessels up to 100 bar process pressure. The high-temperature versions are applicable up to +250 °C process temperature. **NIVOFLIP** can be equipped with optional limit switches or with NIVELCO's **NIVOTRACK** high-precision magnetostrictive level transmitter if level transmission is needed.

FEATURES

- Clearly visible display
- Measurement range: 500…5500 mm
- ±10 mm accuracy
- Up to 100 bar process pressure
- High-temperature version
- Aluminum or stainless steel indicator housing
- Bypass measuring chamber version without indicator
- Optional level switches
- Optional magnetostrictive level transmitter
- Explosion-proof
- 5 years warranty

APPLICATIONS

- Oil & Gas
- Chemical industry
- Power generation
- Boilers
- Pressurized vessels
- Tanks



NIVOFLIP ML□–100 + MAK–100
+ NIVOTRACK M□L–500/600

CERTIFICATES

- PED certificate
- ATEX (Ex d e m Gb): MAK–100 level switches
- ATEX (Ex h Ga/Gb): ML–100 bypass level indicator

OPERATION

The fluid level in the bypass chamber is the same as in the tank. The welded bypass chamber and the tank form one pressurized system, so the float containing a magnet rises and descends with the fluid level. The properly polarized magnet in the float topples the two-toned plates with the colored magnetic caps through the stainless steel tube's wall, indicating the fluid level. The plates with different color codes on the 100 mm under the lower stem provide a visual error message when fluid levels drop below the device's lower connecting point.

NIVOFLIP LEVEL INDICATING SYSTEM

NIVOFLIP bypass liquid level indicator can be equipped with positionable MAK–100/200 external level switches to provide level limit switching. For MAK–100 level switches, the minimal liquid density must exceed the default value specified in the datasheet by 0.1 kg/dm^3. For jobs requiring more accuracy than that of the magnetic flaps, high-precision **NIVOTRACK M–500** magnetostrictive level transmitters are recommended to use. Equipped with OIML R 85 certified **NIVOTRACK**, the measurement system is suitable for custody transfer measurements. The floatless rigid probe magnetostrictive transmitter can be mounted externally to the bypass chamber with clamps. All optional units are operated via magnetic coupling, there is no direct contact with the measured material.

PROPERTIES

NIVOFLIP	Standard version	High-temperature version
Titanium float	■	■
PED certificate	■	■
Maximum 100 bar process pressure	■	–
Maximum +250 °C process temperature	–	■
Optional level switch	■	■
Optional level transmitter	■	■

TECHNICAL DATA

		Standard version	High-temperature version
Display type		Two-toned magnetic flaps	
Display	scale	cm / inch	
	accuracy	±10 mm	
	resolution	5 mm	
	error indication	Lower 100 mm, inversely polarized flaps	
Tube diameter		Ø60.3 mm	
Material of wetted parts		1.4571/1.4404 stainless steel, float: TiGr2 titanium	
Flange distance (center to center)		500…5500 mm (as per order code)	
Process connection		DIN, ANSI flanges, ¾", 1" BSP/NPT (as per order code)	
Vent connection		M20×1.5	
Process pressure		Max. 100 bar	Max. 88 bar
Process temperature		–60…+130 °C	–60…+250 °C
Ambient temperature		–60…+60 °C	
Min. medium density [1]		0.7 kg/dm^3	
Level switch		Optional, freely adjustable MAK–100/200 level switches [2]	
PED (2014/68/EU) certificate		Category I, II & III, Module B+C2	
Level transmitter		Optional NIVOTRACK M□L–500 / 600 / 700 magnetostrictive level transmitter [2]	
Weight		About 25 kg for 1 m center to center distance	

[1] In case of MAK–100 level switches, the minimal medium density must exceed the default value by 0.1 kg/dm^3. The minimum media density is influenced by the type of float!
[2] For NIVOTRACK level transmitters and MAK level switches, the highest temperature values are shown in the diagram below.

Ex INFORMATION

ATEX certificate	ML□–□□□–□ Ex, MH□–□□□–□ Ex	Ex marking: ⟨Ex⟩ II 1/2 G Ex h IIC T6…T2 Ga/Gb

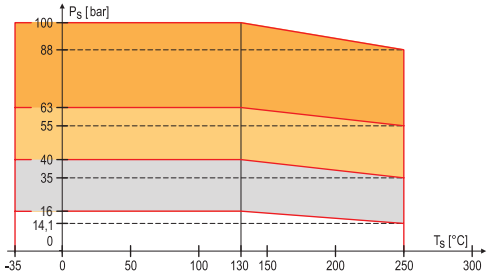
Temperature data for Ex certified models	Hazardous gas atmospheres			
	Standard [ML□–□□□–□ Ex]			High-temperature [MH□–□□□–□ Ex]
Highest process temperature	+80 °C	+95 °C	+130 °C	+250 °C
Highest ambient temperature	+60 °C			
Highest surface temperature	+80 °C	+95 °C	+130 °C	+250 °C
Temperature class	**T6**	**T5**	**T4**	**T2**

Lowest ambient and process temperature: –60 °C

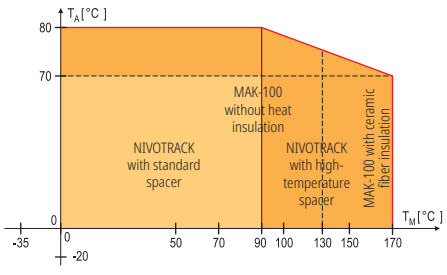
Highest process pressure		Highest process temperature	
Process connection	Flange rating	T_{max} = 130 °C	T_{max} = 250 °C
		Standard version	High-temperature version
		Maximum process pressure	
DIN flanges DN15 – DN50	PN16	16 bar	14.1 bar
	PN40	40 bar	35 bar
	PN63	63 bar	55 bar
	PN100	100 bar	88 bar
ANSI flanges ½" – 1"	150 Class	232 psi	204 psi
	400 Class	580 psi	500 psi
	600 Class	930 psi	800 psi
	900 Class	1440 psi	1275 psi

TEMPERATURE DIAGRAM

Temperature (T_S) – Pressure (P_S) diagram



Process temperature (T_M) – Ambient temperature (T_A) diagram when NIVOTRACK level transmitter or MAK–100/MAK–200 level switch is mounted on NIVOFLIP



MAK–100/200 MAGNETIC LEVEL SWITCHES

The **MAK** magnetic level switches are optional accessories for **NIVOFLIP** bypass level indicators. The float in the stainless steel bypass tube follows the level of the measured liquid. The float *(permanent magnet)* operates the positionable MAK–100/200 level switch via magnetic coupling and provides a non-contact signal transfer to the switch. There must be at least 100 mm distance for MAK–100 and 60 mm distance for MAK–200 between two switching points.

TECHNICAL DATA

	MAK–100–0	MAK–100–7 Ex	MAK–100–6 Ex	MAK–2□0–□
Process temperature	up to +130 °C	See temperature classes table		up to +130 °C
Ambient temperature	–20…+80 °C			–25…+90 °C
Material of the switch-housing	Painted aluminum			Stainless steel (1.4571/1.4404)
Bracket material	–			Aluminum
Switch	1 microswitch, with NO, NC contacts			1 bistable reed switch, with NO, NC contacts[1]
Switching data	250 V 2.5 A AC12, 220 V 0.3 A DC13		Only Ex ia certified and approved contact isolator should be used for supply	120 W / VA, 250 V AC/DC, 3 A
Switching hysteresis	up to Δ 35 mm			up to Δ 20 mm
Electrical connection	M20×1.5 cable gland, terminal for max. 2.5 mm² wire cross section			M12 cable gland: cable diameter: Ø4…6 mm, max 0.75 mm² wire cross section
Ingress protection	IP65			
Electrical protection	Class I			Class II
Overvoltage protection	–			Class II (Pollution Degree 2)
Ex marking	–	⟨Ex⟩ II 2 G Ex db eb mb IIC T6…T4	⟨Ex⟩ II 1 G	–
Weight	1.5 kg			~0.15 kg

[1] *The contact type must be specified in the order code.*

MAK–100

MAK–200

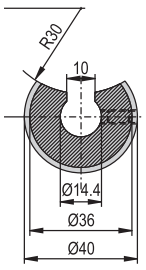
TEMPERATURE DATA FOR Ex CERTIFIED MODELS

	MAK–100–6 Ex		MAK–100–7 Ex	
Classes	Process temperature	Ambient temperature	Process temperature	Ambient temperature
T6	max. +80 °C	–20…+60 °C	max. +70 °C	–20…+60 °C
T5	max. +95 °C	–20…+70 °C	max. +85 °C	–20…+70 °C
T4	max. +130 °C	–20…+80 °C	max. +120 °C	–20…+80 °C

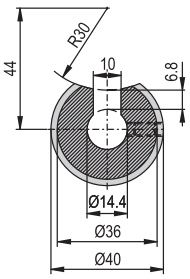
NIVOTRACK MOUNTED ON NIVOFLIP

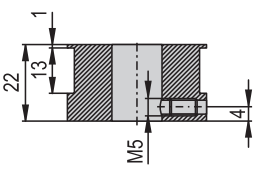
The length of the magnetostrictive level transmitter's probe must be 300 mm longer than the center to center distance of the bypass tube, depending on float version. The level transmitter is placed onto the bypass tube so that the top of the magnetostrictive probe is at the same height as the bypass tube's top. The end of the magnetostrictive probe must extend at least 100 mm below the lower process connection stub. The aluminum spacers that come with the level transmitter are held to the probe stem by grub screws, and the assembly is clamped onto the bypass tube. High-temperature versions have ceramic fiber insulator fabric between the bypass tube and the probe of the level transmitter.

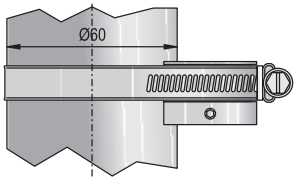
Standard version

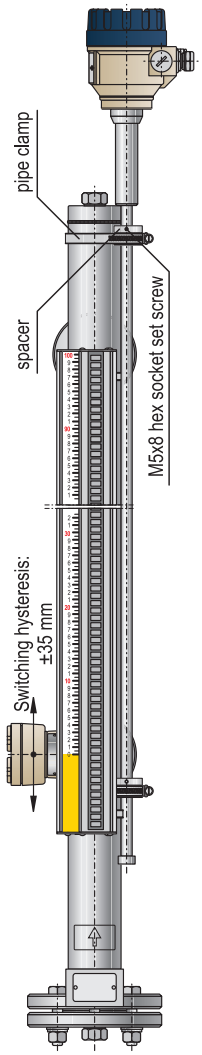


High-temperature version, heat-resistant design, 1.4301 (304) stainless steel plate housing









NIVOFLIP ML 16/40 bar process pressure — 5 years

Bypass level indicator with optical display and magnetic float for liquids with titanium float and for max. 16 or 40 bar process pressure.
The device can be equipped with NIVOTRACK M_L-500 and M_T-500 magnetostrictive level transmitter up to +90 °C / +200 °C process temperature! (Center to center distance +300 mm).

Version

M□■ – ■■■ – ■

L	Standard version, max. +130 °C
H	High-temperature version, max. +250 °C, as per pressure diagram

Process connection

M■□ – ■■■ – ■

A	DN15 (B form)
B	DN20 (B form)
C	DN25 (B form)
D	DN40 (B form)
E	DN50 (B form)
F	ANSI ½" RF
G	ANSI ¾" RF
H	ANSI 1" RF
J	ANSI 1½" RF
K	ANSI 2" RF
X	¾" BSPT
Y	¾" NPT
1	1" BSPT
2	1" NPT

Bypass tube / Pressure / Lamella housing material

M■■ – □■■ – ■

5	60.3 mm tube diameter / PN16; Class 150 / Aluminum
1	60.3 mm tube diameter / PN40; Class 400 / Aluminum
9	60.3 mm tube diameter / PN16; Class 150 / Stainless steel
6	60.3 mm tube diameter / PN40; Class 400 / Stainless steel

Measurement range (center to center)

M■■ – ■□□ – ■

For aluminum lamella housing

0 5	0.5 m
n n	0.6...5.5 m; sold by the 0.1 m

For stainless steel lamella housing

0 5	0.5 m
n n	0.6...5.5 m; sold by the 0.1 m

nn = 06...55 : 0.6...5.5 m

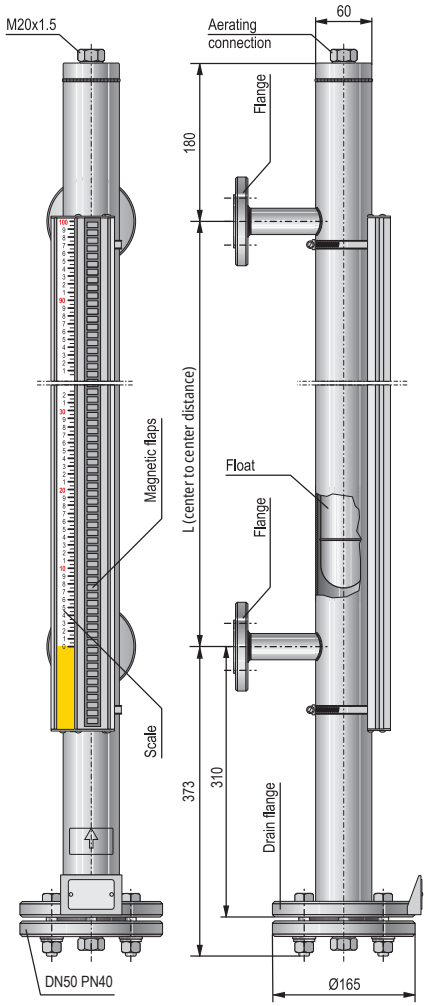
Scale

M■■ – ■■■ – □

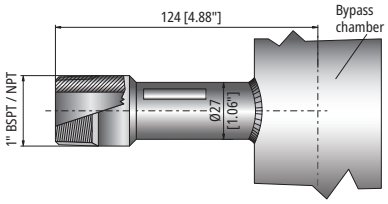
1	mm scale
3	Feet/inch scale

Available on request (must be specified in the text of the order)

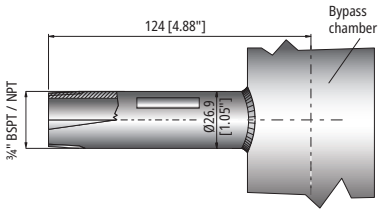
Float specific gravity adjustment (net price)
Drain Plug: M20x1.5 / ½" M-BSP
Vent Plug: M20x1.5 / ½" M-BSP
Drain Plug: M20x1.5 / ½" M-NPT
Vent Plug: M20x1.5 / ½" M-NPT
Drain Plug: M20x1.5 / ¾" M-BSP
Vent Plug: M20x1.5 / ¾" M-BSP
Drain Plug: M20x1.5 / ¾" M-NPT
Vent Plug: M20x1.5 / ¾" M-NPT
Drain Plug: M20x1.5 / ½" M-BSP, high-temperature version
Vent Plug: M20x1.5 / ½" M-BSP, high-temperature version
Drain Plug: M20x1.5 / ½" M-NPT, high-temperature version
Vent Plug: M20x1.5 / ½" M-NPT, high-temperature version
Drain Plug: M20x1.5 / ¾" M-BSP, high-temperature version
Vent Plug: M20x1.5 / ¾" M-BSP, high-temperature version
Drain Plug: M20x1.5 / ¾" M-NPT, high-temperature version
Vent Plug: M20x1.5 / ¾" M-NPT, high-temperature version



ML□–□□□–□ for 16/40 bar pressure



M□X–□□□–□ (¾" BSPT), M□Y–□□□–□ (¾" NPT)
Threaded connection



M□1–□□□–□ (1" BSPT), M□2–□□□–□ (1" NPT)
Threaded connection

NIVOFLIP ML 63/100 bar process pressure — 5 years

Bypass level indicator with optical display and magnetic float for liquids with titanium float and for max. 63 or 100 bar process pressure.
The device can be equipped with NIVOTRACK M_L-500 and M_T-500 magnetostrictive level transmitter up to +90 °C / +200 °C process temperature! (Center to center distance +300 mm).

Version

M □■ – ■■■ – ■

L	Standard version, max. +130 °C
H	High-temperature version, max. +250 °C, as per pressure diagram

Process connection

M ■□ – ■■■ – ■

A	DN15 (B form)
B	DN20 (B form)
C	DN25 (B form)
D	DN40 (B form)
E	DN50 (B form)
F	ANSI ½" RF
G	ANSI ¾" RF
H	ANSI 1" RF
J	ANSI 1½" RF
K	ANSI 2" RF

Bypass tube / Pressure / Lamella housing material

M ■■ – □■■ – ■

3	60.3 mm tube diameter / PN63; Class 600 / Aluminum
4	60.3 mm tube diameter / PN100; Class 900 / Aluminum
7	60.3 mm tube diameter / PN63; Class 600 / Stainless steel
8	60.3 mm tube diameter / PN100; Class 900 / Stainless steel

Measurement range (center to center)

M ■■ – ■□□ – ■

For aluminum lamella housing	
0 5	0.5 m
n n	0.6...5.5 m; sold by the 0.1 m
For stainless steel lamella housing	
0 5	0.5 m
n n	0.6...5.5 m; sold by the 0.1 m
nn = 06...55 : 0.6...5.5 m	

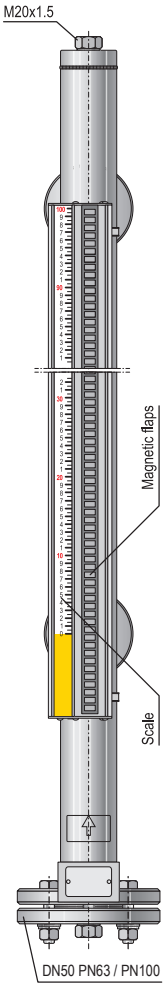
Scale

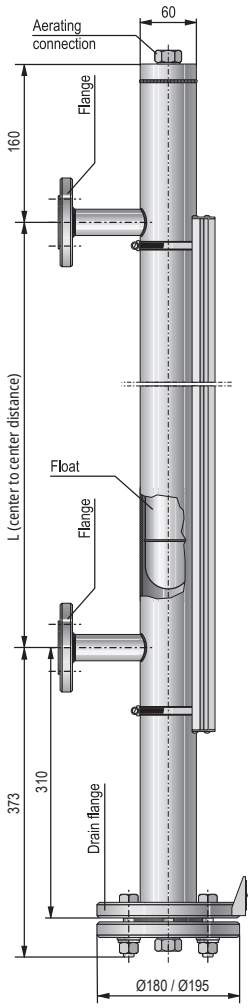
M ■■ – ■■■ – □

1	mm scale
3	Feet/inch scale

Available on request (must be specified in the text of the order)

Float specific gravity adjustment (net price)
Drain Plug: M20x1.5 / ½" M-BSP
Vent Plug: M20x1.5 / ½" M-BSP
Drain Plug: M20x1.5 / ½" M-NPT
Vent Plug: M20x1.5 / ½" M-NPT
Drain Plug: M20x1.5 / ¾" M-BSP
Vent Plug: M20x1.5 / ¾" M-BSP
Drain Plug: M20x1.5 / ¾" M-NPT
Vent Plug: M20x1.5 / ¾" M-NPT
Drain Plug: M20x1.5 / ½" M-BSP, high-temperature version
Vent Plug: M20x1.5 / ½" M-BSP, high-temperature version
Drain Plug: M20x1.5 / ½" M-NPT, high-temperature version
Vent Plug: M20x1.5 / ½" M-NPT, high-temperature version
Drain Plug: M20x1.5 / ¾" M-BSP, high-temperature version
Vent Plug: M20x1.5 / ¾" M-BSP, high-temperature version
Drain Plug: M20x1.5 / ¾" M-NPT, high-temperature version
Vent Plug: M20x1.5 / ¾" M-NPT, high-temperature version





MLO-OOO-O
for 63/100 bar pressure

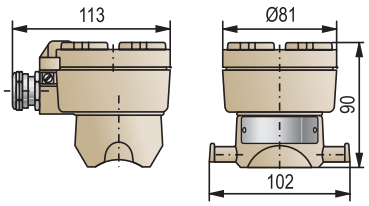
NIVOFLIP MAK-100 with 35 mm hysteresis — 5 years

Magnetic coupling limit switch for NIVOFLIP ML bypass level indicator
with contact output, with 35 mm hysteresis, factory positioned at intervals specified in the order

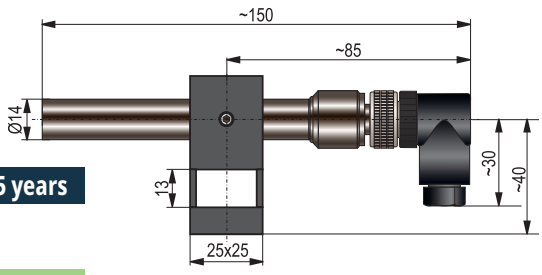
Ex certificate

M A K – 1 0 0 – □

0		None
6		Ex ia
7		Ex d e m Gb



MAK–100



MAK–200

NIVOFLIP MAK-200 with 20 mm hysteresis — 5 years

Magnetic coupling limit switch for NIVOFLIP ML bypass level indicator
with contact output, with 20 mm hysteresis, factory positioned at intervals specified in the order

Output

M A K – 2 □ 0 – ■

0		1 bistable reed, NO
1		1 bistable reed, NC

Electrical connection

M A K – 2 ■ □ – ■

0		M12x1 connector

Ex certificate

M A K – 2 ■ 0 – □

0		None
6	*	Ex ia

* Under development

NIVOFLIP ML Bypass measuring chamber, 16/40 bar — 5 years

Bypass measuring chamber for liquid level measurement or level switching, stainless steel, 16 or 40 bar

Prices on request

Version

M□■ – ■■■ – ■

L	Standard version, max. +130 °C
H	High-temperature version, max. +250 °C, as per pressure diagram

Process connection

M■□ – ■■■ – ■

A	DN15 (B form)
B	DN20 (B form)
C	DN25 (B form)
D	DN40 (B form)
E	DN50 (B form)
F	ANSI ½" RF
G	ANSI ¾" RF
H	ANSI 1" RF
J	ANSI 1½" RF
K	ANSI 2" RF
X	¾" BSPT
Y	¾" NPT
1	1" BSPT
2	1" NPT

Bypass tube / Pressure

M■■ – □■■ – ■

5	60.3 mm tube diameter / PN16; Class 150
1	60.3 mm tube diameter / PN40; Class 400

Measurement range (center to center)

M■■ – ■□□ – ■

0 5	0.5 m
n n	0.6...5.5 m; sold by the 0.1 m

nn = 06...55 : 0.6...5.5 m

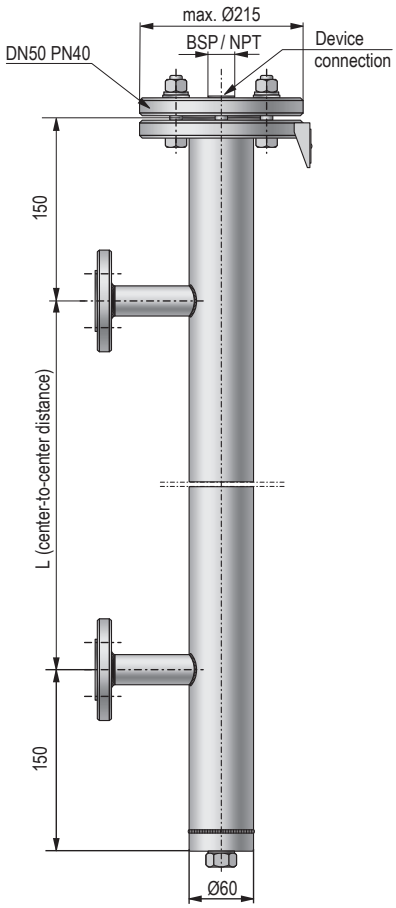
Device connection

M■■ – ■■■ – □

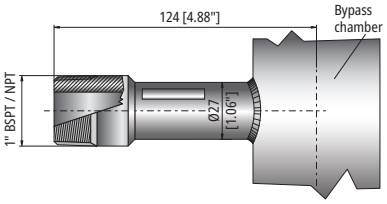
A	¾" BSP
B	¾" NPT
C	1" BSP
D	1" NPT
E	1½" BSP
F	1½" NPT
G	2" BSP
H	2" NPT

Available on request (must be specified in the text of the order)

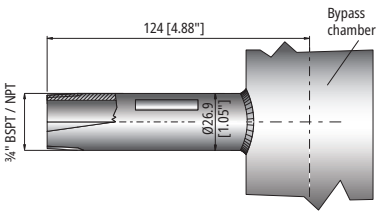
Drain Plug: M20x1.5 / ½" M-BSP
Drain Plug: M20x1.5 / ½" M-NPT
Drain Plug: M20x1.5 / ¾" M-BSP
Drain Plug: M20x1.5 / ¾" M-NPT
Drain Plug: M20x1.5 / ½" M-BSP, high-temperature version
Drain Plug: M20x1.5 / ½" M-NPT, high-temperature version
Drain Plug: M20x1.5 / ¾" M-BSP, high-temperature version
Drain Plug: M20x1.5 / ¾" M-NPT, high-temperature version



ML□–100 / 500,
MH□–100 / 500



M□X–□□□–□ (¾" BSPT), M□Y–□□□–□ (¾" NPT)
Threaded connection



M□1–□□□–□ (1" BSPT), M□2–□□□–□ (1" NPT)
Threaded connection

NIVOFLIP ML Bypass measuring chamber, 63/100 bar process pressure — 5 years

Bypass measuring chamber for liquid level measurement or level switching, stainless steel, 63 or 100 bar

Prices on request

Version

M□■ – ■■■ – ■

L	Standard version, max. +130 °C
H	High-temperature version, max. +250 °C, as per pressure diagram

Process connection

M■□ – ■■■ – ■

A	DN15 (B form)
B	DN20 (B form)
C	DN25 (B form)
D	DN40 (B form)
E	DN50 (B form)
F	ANSI ½" RF
G	ANSI ¾" RF
H	ANSI 1" RF
J	ANSI 1½" RF
K	ANSI 2" RF

Bypass tube / Pressure

M■■ – □■■ – ■

3	60.3 mm tube diameter / PN63; Class 600
4	60.3 mm tube diameter / PN100; Class 900

Measurement range (center to center)

M■■ – ■□□ – ■

0 5	0.5 m
n n	0.6...5.5 m; sold by the 0.1 m

nn = 06...55 : 0.6...5.5 m

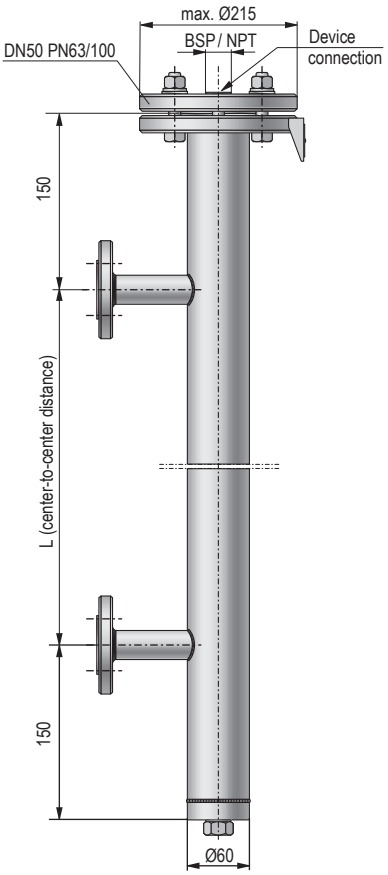
Device connection

M■■ – ■■■ – □

A	¾" BSP
B	¾" NPT
C	1" BSP
D	1" NPT
E	1½" BSP
F	1½" NPT
G	2" BSP
H	2" NPT

Available on request (must be specified in the text of the order)

Drain Plug: M20x1.5 / ½" M-BSP
Drain Plug: M20x1.5 / ½" M-NPT
Drain Plug: M20x1.5 / ¾" M-BSP
Drain Plug: M20x1.5 / ¾" M-NPT
Drain Plug: M20x1.5 / ½" M-BSP, high-temperature version
Drain Plug: M20x1.5 / ½" M-NPT, high-temperature version
Drain Plug: M20x1.5 / ¾" M-BSP, high-temperature version
Drain Plug: M20x1.5 / ¾" M-NPT, high-temperature version



MLO–300 / 400,
MHO–300 / 400

Accessories sold separately — 5 years

Drain/Vent Plug	
MLD–105–0M–611–00	Drain/Vent Plug: M20x1.5 / ½" M-BSP
MLD–105–0M–621–00	Drain/Vent Plug: M20x1.5 / ½" M-NPT
MLD–105–0M–631–00	Drain/Vent Plug: M20x1.5 / ¾" M-BSP
MLD–105–0M–641–00	Drain/Vent Plug: M20x1.5 / ¾" M-NPT
MHD–105–0M–611–00	Drain/Vent Plug: M20x1.5 / ½" M-BSP, high-temp. version
MHD–105–0M–621–00	Drain/Vent Plug: M20x1.5 / ½" M-NPT, high-temp. version
MHD–105–0M–631–00	Drain/Vent Plug: M20x1.5 / ¾" M-BSP, high-temp. version
MHD–105–0M–641–00	Drain/Vent Plug: M20x1.5 / ¾" M-NPT, high-temp. version

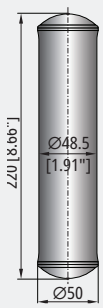
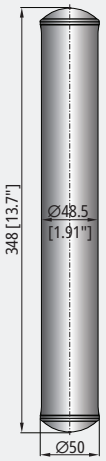
Ball valve	
MLD–105–0M–711–00	Ball valve ½" BSP MF 63 bar / 914 psi (max. +180 °C)
MLD–105–0M–721–00	Ball valve ½" NPT MF 63 bar / 914 psi (max. +180 °C)

Floats	
MLC–105–1M–700–00	Ø50x200 mm titan float
MLC–405–1M–200–00	Ø50x350 mm titan float

NIVOTRACK level transmitter for NIVOFLIP (see relevant page for details)

M I ■ – 5 ■■ – ■
M ■■ – ■■■ – ■

FLOATS

	MLC–105–1M–700–00	MLC–405–1M–200–00
Dimensions		
Medium density (min.) [kg/dm³]	0.7…1.1	
Material	Titanium	
Process pressure	63 bar	100 bar

Integrated Ultrasonic Level Transmitters for Liquids

The **EasyTREK SP–500 Pro** series level transmitters embody four decades of NIVELCO's experience in ultrasonic level measurement. **EasyTREK** devices are IP68 rated, their transducer and processing electronics are incorporated into a single unit. **EasyTREK** transmitters utilize HART® 7 communication, they can be used in multidrop systems connected to **MultiCONT** process controller/display, or a PC via a **UNICOMM** HART®–USB modem or similar. Transmitters can be programmed remotely with Handheld Field Communicator as well; they can be connected wirelessly to a computer via an **SAT–504** Bluetooth® HART® modem. The EasyTREK SP–500 Pro devices are smaller in size, their maximum measurement range has been extended, and their minimum measurement range decreased.

FEATURES

- 2-wire integrated transmitter
- Non-contact level measurement
- Can be powered by a 12 V battery
- Up to 18 m measurement range
- Narrow (5°) beam angle
- Temperature compensation
- HART® 7
- PACTware™ compatible
- Handheld compatibility
- Advanced threshold management
- Quick start mode
- Faster measurement cycle
- IP68 protection
- PP, PVDF transducer
- Service Interface
- 5 years warranty

SPA–590

APPLICATIONS

- For liquid level measurement, open-channel flow metering
- Wide application area from wastewater to aggressive chemicals
- Level measurement in basins, wells, sumps, lift-stations
- Measuring of hydrocarbons, acids, water-based liquids

MŰSZAKI ADATOK

EasyTREK SP–500 Pro		
System		2-wire
Supply voltage		12…36 V DC
Accuracy[1]		± (0.1% of measured distance +0.025% of range) or ± (0.05% of range), whichever is greater
Resolution		Depending on measured distance: < 2 m: 1 mm, 2…5 m: 2 mm, 5…10 m: 5 mm, >10 m: 10 mm
Output	Analog	4…20 mA
	Relay	SPDT, 30 V DC, 1 A DC
	Digital communication	HART® 7
Ambient temperature		–30…+80 °C
Process temperature		PP, PVDF transducers –30…+90 °C
Pressure (absolute)		0.5…3 bar
Housing		PP or PVDF same as the transducer material
Electrical connection		LiYCY 4× 0.5 mm² (relay version: 7× 0.5 mm²) shielded Ø6 mm cable; standard cable length: 5 m (available up to 30 m)
Electrical protection		Class III
Ingress protection		IP68
Seal		PP transducers: EPDM; all other transducers: FPM (Viton®)

[1] *Under optimal conditions and constant transducer temperature.*

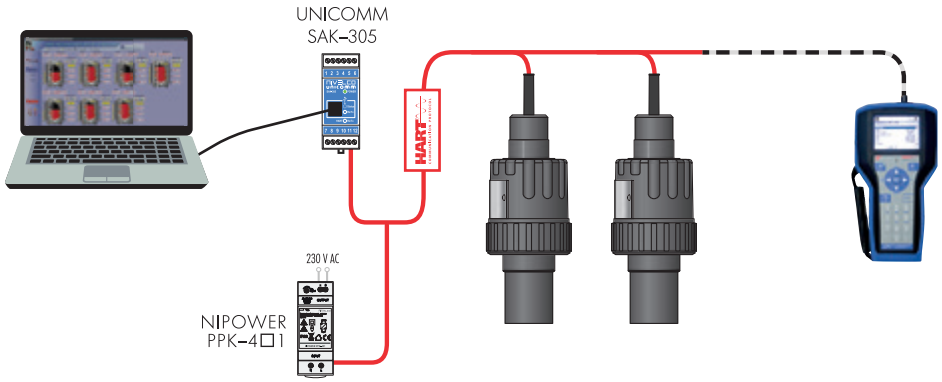
SPB–540

TRANSDUCER DETAILS

	SP□–					
	5A□–□	59□–□	58□–□	57□–□	56□–□	54□–□
Beam angle	5°	6°	5°	7°	5°	5°
Transducer material	PP, PVDF					
Upper process connection	1" BSP					
Lower process connection	1" BSP / NPT	1½" BSP / NPT	2" BSP / NPT		–	
Max. measurement range[1]	3 m	5 m	8 m	10 m	12 m	18 m
Min. measurement range[1]	0.15 m	0.18 m	0.2 m	0.25 m	0.25 m	0.35 m

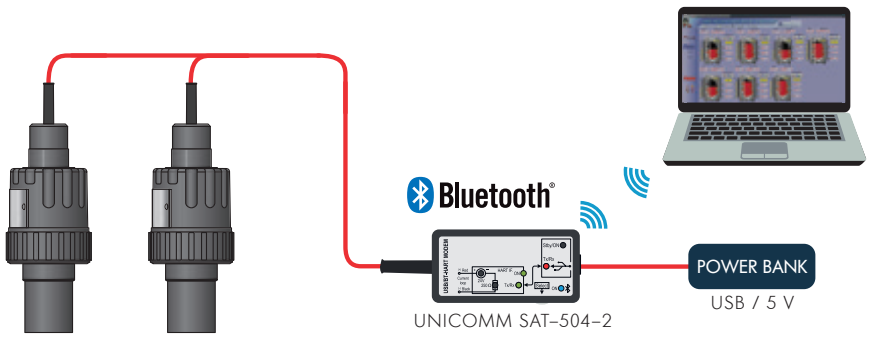
[1] *Under optimal conditions and constant transducer temperature.*

PC CONNECTION



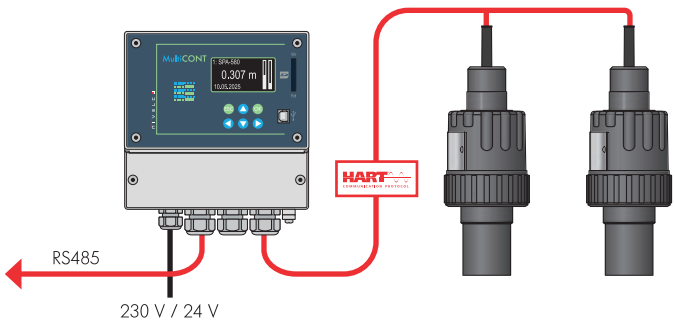
Devices with HART® connectivity can be linked to a PC using a **UNICOMM** SAK–305 HART®–USB modem. All measured values of **EasyTREK** level transmitters can be visualized, and the devices can be remotely programmed via HART®. Applicable software for PC: **EView2** configuration tool or **NIVISION** process visualization program.

Bluetooth® CONNECTIVITY



Devices with HART® connectivity can be linked to a PC via Bluetooth® using a **UNICOMM** HART®–USB/Bluetooth® modem (SAT–504). The USB power bank connected to the **UNICOMM** modem can power the entire setup.

HART® MULTIDROP LOOP



MultiCONT Multichannel Process Controllers process and display measurement data supplied by **NIVELCO**'s HART® compatible transmitters in a Multidrop loop. Connected transmitters can be programmed through **MultiCONT**, and it can also perform data logging tasks. Processed data may be sent to a computer via RS485 and displayed in **NIVISON**.

EasyTREK SP-500 Pro — 5 years

2-wire integrated ultrasonic level transmitters for liquids
with PP or PVDF transducer; Ingress protection: IP68

Range / Frequency

S P ■ – 5 □ ■ – ■

A	0.15...3 m / 120 kHz (only for 1" process connection)
9	0.18...5 m / 80 kHz (only for 1" or 1½" process connection)
8	0.2...8 m / 80 kHz (only for 1" or 2" process connection)
7	0.25...10 m / 60 kHz (only for 1" or 2" process connection)
6	0.25...12 m / 60 kHz (only for 1" process connection)
4	0.35...18 m / 40 kHz (only for 1" process connection)

Transducer material

S P □ – 5 ■ ■ – ■

A	PP
B	PVDF

Process connection

S P ■ – 5 ■ □ – ■

0	BSP thread
N	1", 1½", 2" NPT and 1" BSP (only for SP-5A/59/58/57)

Output

S P ■ – 5 ■ ■ – □

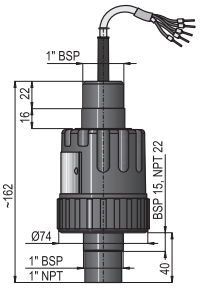
4	4...20 mA + HART®
H	4...20 mA + HART® + SPDT Relay
Q	4...20 mA + HART®, with 10 m cable

Cable

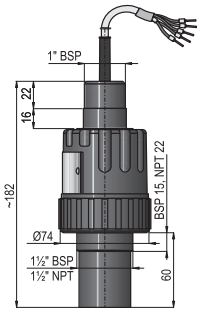
Maximum length 30 m; sold by the meter over the standard 5 m

Accessories sold separately; see relevant page for details

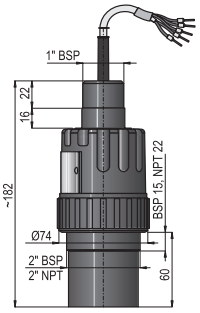
S F A – 3 ■ ■ – 0	Flanges
S A T – 5 0 4 – ■	HART®-USB/Bluetooth® modem
S A K – 3 0 5 – ■	HART®-USB/RS485 modem
S A C – 1 ■ 1 – 0	Mounting brackets
S A A – 1 0 1 – 0	Quick-connect gland for pipe-mounting devices with 1" process connection, PP
S A A – 1 0 6 – 0	Damping gland for mounting SP devices to thin metal roofs, PP
P ■ F – ■ 1 ■ – ■	Smart Field Display and Data Logger
P ■ F – ■ 0 1 – ■	Loop Display



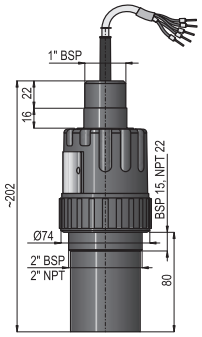
SP□-5A□



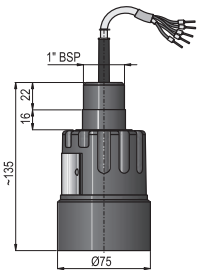
SP□-59□



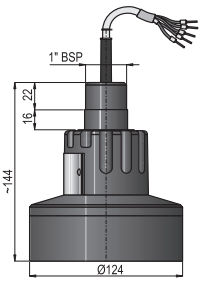
SP□-58□



SP□-57□



SP□-56□



SP□-54□

NIV24
SPA–5A0–4
SPA–590–4
SPA–580–4, SPA–580–Q
SPA–540–4
SAA–107–0
SAA–108–0

EasyTREK high performance level transmitters embody four decades of NIVELCO's experience in ultrasonic level measurement. Whether measuring the level of sump tanks or open-channel flows, EasyTREK transmitters are the best choice. Installed on the tank's roof or above the liquid's surface, the transmitter produces an output signal *(analog or HART® digital)* proportional to the liquid level. The **EasyTREK** is an integrated blind transmitter with equal measuring performance to that of EchoTREK; it is also readable and programmable remotely through HART® protocol.

There are two mounting options for **EasyTREK**: a 1½" and a 2" process connection. Its 1" threaded neck facilitates suspending it above the medium, a typical water/wastewater application.

FEATURES

- 2-wire integrated level transmitter
- Non-contact level measurement
- Up to 25 m measurement range
- Narrow (5°) beam angle
- Full temperature compensation
- IP68
- HART® communication
- Ex version
- 5 years warranty

APPLICATIONS

- For most liquids, including flammable liquids
- Open-channel flow metering
- Wide application range from wastewater to aggressive chemicals
- Level measurement in basins, wells, sumps, lift-stations
- Measuring hydrocarbons, acids, aggressive liquids, any water-based mediums

CERTIFICATES

- ATEX (Ex ia G)
- INMETRO (Ex ia G)
- UKCA Ex (Ex ia G)

SPA-380-4

TRANSDUCERS

Transducer material	EasyTREK SP–300
PP	■
PVDF	■
PTFE	■

PROPERTIES

Functions	EasyTREK SP–300
Relay	■
HART®	■
IrDA	■
Logger	■
Intrinsic safety	■

PROGRAMMING

Devices with HART® output can be connected to a PC using a **UNICOMM** HART–USB modem. All measured values can be visualized on the PC screen, and the devices can be programmed remotely via HART® modem. Up to 15 (non-Ex) devices can be connected to a single HART® loop. Applicable software: **EView2** configuration software or **NIVISION** process visualization software.

Programmable features via HART® communication:

- Assign 4 mA to low level
- Assign 20 mA to high level
- Error indication on current value output
- Power relay switch points
- Damping time
- Measurement configuration (Units, function, close-end blocking)
- Measurement optimization *(Damping, tracking speed, sound velocity correction)*
- Tank contents profiles: 14 different shapes
- Open-Channel Flow Metering: 21 different profiles
- Relay functions *(differential, flow pulse etc.)*
- 32-point linearization, measurement simulation
- Information / diagnostics *(Echo map and signal / noise)*

TECHNICAL DATA

		EasyTREK SP-300
System		2-wire
Accuracy [1]		± (0.2% of measured distance +0.05% of range)
Resolution		Depending on measured distance: <2 m: 1 mm; 2…5 m: 2 mm; 5…10 m: 5 mm; >10 m: 10 mm
Output	Analog	4…20 mA
	Relay	SPDT, 30 V DC, 1 A DC
	Digital Communication	HART®
Ambient temperature		–30…+80 °C
		Ex version: see "Ex Information"
Process temperature		See Transducer Details, Ex version: see "Ex Information"
Pressure (absolute)		0.5…3 bar
Supply voltage		12…36 V DC / 48…720 mW
Electrical protection		Class III
Housing		Polypropylene (PP) or (PVDF) same as the transducer material; PTFE transducer housing is made of PP;
Seal		PP transducers: EPDM; all other transducers: FPM (Viton®)
Electrical connection		LiYCY 6× 0.5 mm² shielded Ø6 mm cable; standard cable length: 5 m (available up to 30 m)
Ingress protection		IP68
Explosion protection		See "Ex Information"
Weight		1.2…2 kg

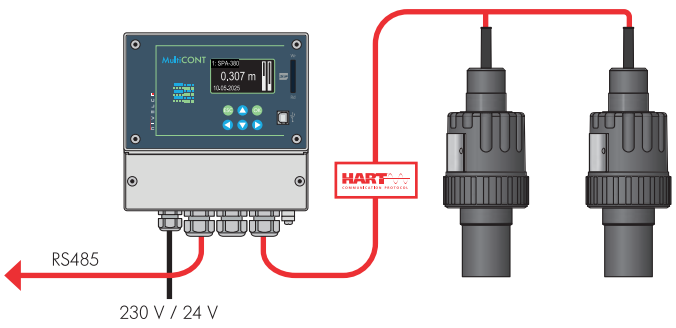
[1] *Under optimal conditions and constant transducer temperature*

Ex INFORMATION

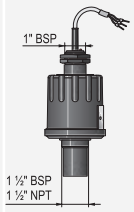
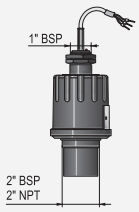
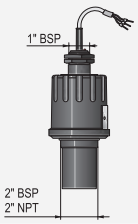
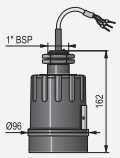
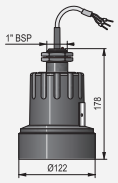
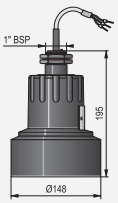
	EasyTREK SP-300
Protection	Intrinsic safety
Ex marking	Ex II 1 G Ex ia IIB T6…T5 Ga
Intrinsic safety data	$C_i \leq 28$ nF, $L_i \leq 200$ µH, $U_i \leq 30$ V, $I_i \leq 140$ mA, $P_i \leq 1$ W
Ambient temperature	–20…+70 °C
Process temperature	With PP transducer: –20…+70 °C, with PVDF transducer: –20…+80 °C Temperature class T6; with PTFE transducer: –30…+90 °C Temperature class T5
Electrical connection	6× 0.5 mm² shielded Ø6 mm cable

HART® MULTIDROP LOOP

MultiCONT Multichannel Process Controllers process and display measurement data supplied by **NIVELCO**'s HART® equipped transmitters in a Multidrop loop. Connected transmitters can be programmed through **MultiCONT**, and it can also perform data logging tasks. Processed data may be sent to a computer via RS485 and displayed in **NIVISON**.



TRANSDUCER DETAILS

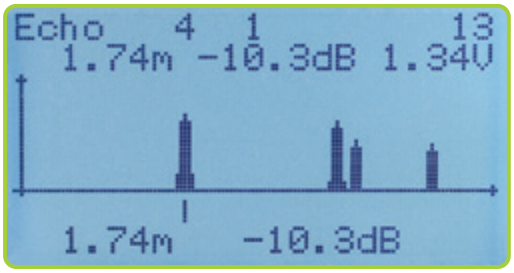
	SP□–39	SP□–38	SP□–37	SP□–36	SP□–34	SP□–32
Beam angle	6°	5°	7°	5°		7°
Transducer material	PP or PVDF					
EasyTREK SP 2-wire						
Upper process connection	1" BSP					
Lower process connection	1½" BSP / NPT	2" BSP / NPT		–		
Max. measurement range [1]	4 m	6 m	8 m	10 m	15 m	25 m
Min. measurement range [1]	0.2 m	0.25 m	0.35 m		0.45 m	0.6 m
Process temperature	–30… +90 °C					
Recommended applications	Small vessels with 1½" or 2" process connection			Small vessels with flange	Medium-sized vessels with flange	Tall vessels with flange

Transducer material	PTFE		
Max. measurement range[1]	3 m	5 m	6 m
Min. measurement range [1]	0.25 m		0.35 m
Process temperature	–30…+90 °C		

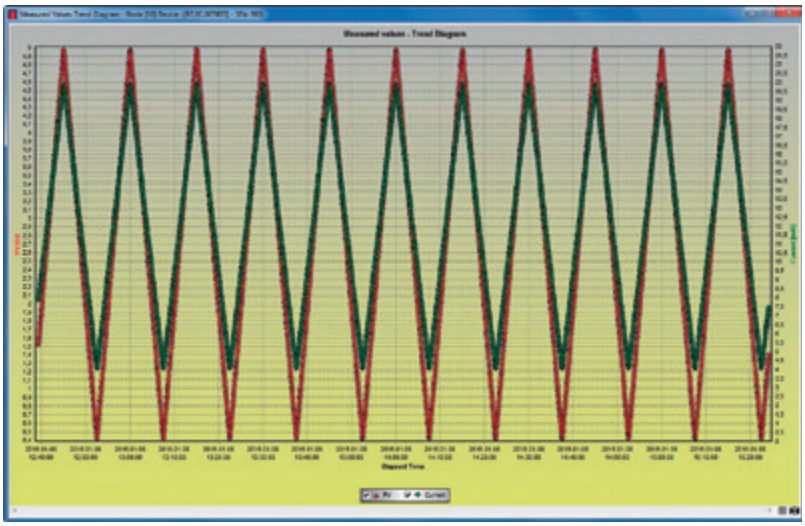
[1] Under optimal conditions and constant transducer temperature

SPA–360–4

ECHO MAP IN MultiCONT



DISPLAY MEASUREMENT VALUE IN EView2



SPA–340–4

EasyTREK SP-300 — 5 years

2-wire integrated ultrasonic level transmitters for liquids
with PP, PVDF or PTFE transducer; Ingress protection: IP68

Range / Frequency

S P ■ – 3 □ ■ – ■

9	0.2...4 m / 80 kHz (only for 1" or 1½" process connection)
8	0.25...6 m / 80 kHz (only for 1" or 2" process connection)
7	0.35...8 m / 60 kHz (only for 1" or 2" process connection)
6	0.35...10 m / 60 kHz (only for 1" process connection)
4	0.45...15 m / 40 kHz (only for 1" process connection)
2	0.6...25 m / 20 kHz (only for 1" process connection)

Transducer material

S P □ – 3 ■ ■ – ■

A	PP
B	PVDF
T	PTFE (only for SP-39/38/37)

Process connection

S P ■ – 3 ■ □ – ■

0	BSP thread
N	1½" or 2" NPT and 1" BSP (only for SP-39/38/37)

Output / Certificates

S P ■ – 3 ■ ■ – □

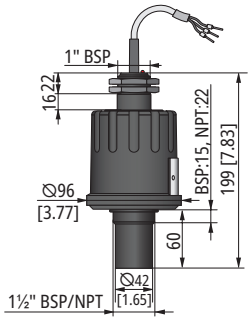
3	4...20 mA + HART® + Data logging feature
4	4...20 mA + HART®
7	4...20 mA + HART® + Data logging feature / Ex ia G
8	4...20 mA + HART® / Ex ia G
A	4...20 mA + HART® + Data logging feature + SPDT Relay
H	4...20 mA + HART® + SPDT Relay
Q	4...20 mA + HART®, with 10 m cable

Cable

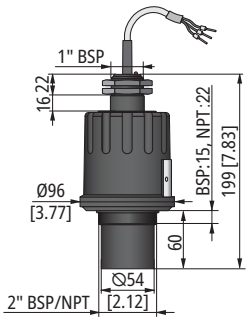
Maximum length 30 m; sold by the meter over the standard 5 m

Accessories sold separately; see relevant page for details

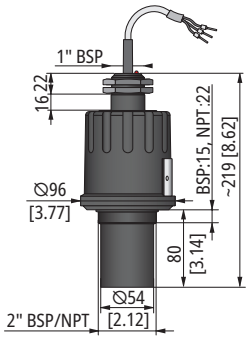
S F A – 3 ■ ■ – 0	Flanges
S A T – 5 0 4 – ■	HART®-USB/Bluetooth® modem
S A K – 3 0 5 – ■	HART®-USB/RS485 modem
S A C – 1 ■ 1 – 0	Mounting brackets
S A A – 1 0 1 – 0	Quick-connect gland for pipe-mounting devices with 1" process connection, PP
S A A – 1 0 6 – 0	Damping gland for mounting SP devices to thin metal roofs, PP
P ■ F – ■ 1 ■ – ■	Smart Field Display and Data Logger
P ■ F – ■ 0 1 – ■	Loop Display



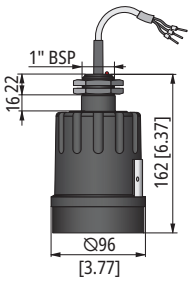
SP□–39□



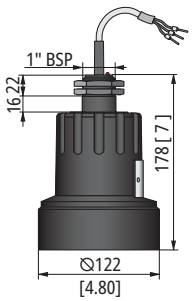
SP□–38□



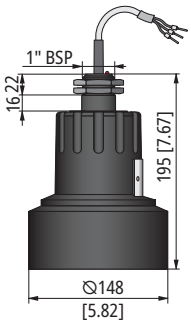
SP□–37□



SP□–36□



SP□–34□



SP□–32□

NIV24
SPA–380–4, SPA–380–Q
SPA–360–4
SPA–340–4, SPA–340–Q
SAA–107–0
SAA–108–0

EchoTREK SE–300 high-performance level transmitters embody four decades of **NIVELCO**'s experience in ultrasonic level measurement.Whether measuring the level of sump tanks or open-channel flows, EchoTREK transmitters are the best choice. Installed on the tank's roof above the liquid's surface, the transmitter produces an analog signal proportional to the liquid's level, transmitted via HART®. The EchoTREK is an intelligent compact ultrasonic level transmitter with 4…20 mA output and optional HART® protocol. An optional removable plug-in display provides localized reading. Programming is performed via four buttons, both the display and the buttons have a removable cover. EchoTREK transmitters utilize HART® 7 communication, they can be used in multidrop systems connected to **MultiCONT** process controller/display or a PC via a **UNICOMM** HART–USB / RS485 modem or similar. **EchoTREK** transmitters are available with measurement range up to 25 meters, making them fit for a wide range of applications. These ultrasonic level transmitters use NIVELCO's SenSonic range transducers with a full beam angle 5…7 degrees, connected to the intelligent electronics featuring QUEST+ advanced signal processing algorithm.

FEATURES

- 2 or 4-wire compact level transmitter
- Non-contact level measurement
- Up to 25 m measurement range
- Narrow (5°) beam angle
- Full temperature compensation
- IP67
- Plug-in display unit
- HART® communication
- PACTware™ compatible
- Ex version
- 5 years warranty

APPLICATIONS

- For most liquids, including flammable liquids
- Open-channel flow metering
- Wide application range from wastewater to aggressive chemicals
- Level measurement in basins, wells, sumps, lift-stations
- Measuring hydrocarbons, acids, aggressive liquids, any water-based mediums

SG□–380–4
(2-wire)

CERTIFICATES

- ATEX (Ex ia G)
- INMETRO (Ex ia G)
- UKCA Ex (Ex ia G)

SBA–46G–1 (4-wire)

TRANSDUCERS

Transducer material	EchoTREK	
	SE / SG–300	ST / SB–400
PP (Polypropylene)	■	■
PVDF	■	■
PTFE	■	■
1.4571/1.4404 (316Ti) stainless steel	■	■

PROPERTIES

Functions	EchoTREK	
	SE / SG–300	ST/SB–400
Relay	■	■
HART®	■	■
IrDA	■	■
Logger	■	■
Ex ia (Intrinsic safety)	■	–
Display	SAP-200	

OPERATION

Ultrasonic level metering is based on the principle of measuring the travel time of ultrasound pulses from the sensor to the measured surface and back. The reflected signal's time of travel is measured and processed by the electronics, then it is converted to data proportional to distance, level, volume, or flow, considering the tank dimensions or the pre-programmed flume/weir parameters. QUEST+ intelligent signal processing software oversees the measurement and ensures reliable level monitoring.

TECHNICAL DATA

		SE / SG–300	ST / SB–400
System		2-wire	4-wire
Accuracy [1]		± (0.2% of measured distance +0.05% of range)	
Resolution		Depending on measured distance: <2 m: 1 mm; 2…5 m: 2 mm; 5…10 m: 5 mm; >10 m: 10 mm	
Output	Analog	4…20 mA	
	Relay [2]	SPDT, 30 V DC, 1 A DC	#1 SPDT, 250 V AC, 3 A AC1 #2 SPDT, 30 V DC, 1 A DC
	Display	SAP–200: 6-digit plug-in display	
	Digital communication	HART®	
Ambient temperature		With plastic housing: –25…+70 °C with metal housing: –30…+70 °C with display: –25…+70 °C	
		Ex version: see "Ex Information"	
Process temperature		See Transducer Details / Ex version: see "Ex Information"	
Pressure[3] (absolute)		0.5…3 bar, with stainless steel transducer: 0.9…1.1 bar	
Supply voltage		12[4]…36 V DC / 48…720 mW	85…255 V AC / 2 VA 20…28 V AC/DC / 3 VA / 3 W
Electrical protection		DC power supply: Class III	
			AC power supply: with metal housing: Class I with plastic housing: Class II
Housing		Plastic (PBT), painted aluminum or stainless steel	Plastic (PBT), painted aluminum
Seal		In the case of a PP transducer: EPDM; all the other transducers: FPM (Viton®)	
Electrical connection		2× M20×1.5 cable glands + 2× internally threaded ½" NPT connection, cable outer diameter: Ø6…12 mm (shielded cable is recommended), wire cross section: 0.5…1.5 mm²	
Ingress protection		Transducer: IP68, Housing: IP67	
Explosion protection		see "Ex Information"	–
Weight		1.3…2.3 kg	

[1] Under optimal conditions and constant transducer temperature *[2] 4-wire EchoTREK transmitters have two parallel operating relays*
[3] For pressures below 0.5 bar, ask NIVELCO.
[4] At 12 V, only partial operation is possible. For unrestricted, reliable operation, 13.4 V is required.

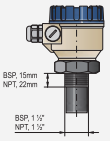
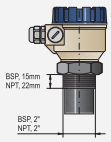
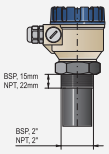
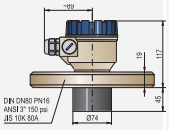
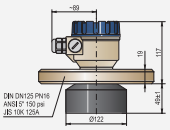
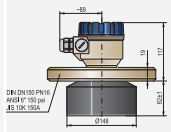
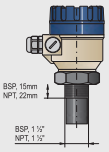
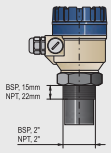
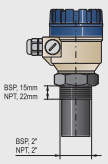
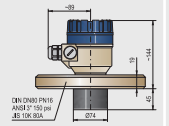
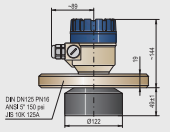
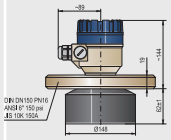
Ex INFORMATION

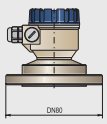
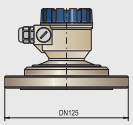
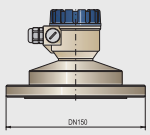
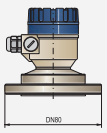
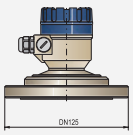
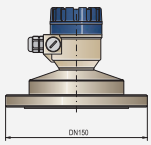
	SE / SG–300
Protection	Intrinsic safety
Ex marking (ATEX)	⟨Ex⟩ II 1 G Ex ia IIB T6…T4 Ga
Intrinsic safety data	C_i ≤ 15 nF, L_i ≤ 200 µH, U_i ≤ 30 V, I_i ≤ 140 mA, P_i ≤ 1 W
Ambient temperature	With plastic housing: –20…+70 °C with metal housing: –30…+70 °C with display: –25…+70 °C
Process temperature	With PP transducer: –20…+70 °C, with PVDF transducer: –20…+80 °C, with PTFE transducer: –30…+90 °C
	With Stainless Steel transducer: –30…+100 °C
Electrical connection	2× M20×1.5 metal cable glands

SEV–390–8 Ex
+ SFA–3□6

SAP–200
display

TRANSDUCER DETAILS

	S□□–39 / 49	S□□–38 / 48	S□□–37 / 47	S□□–36 / 46	S□□–34 / 44	S□□–32 / 42
Beam angle	6°	5°	7°	5°		7°
Transducer material	PP or PVDF					
EchoTREK SE / SG 2-wire						
EchoTREK ST / SB 4-wire						
Process connection	1½" BSP / NPT	2" BSP / NPT		DN80 flange	DN125 flange	DN150 flange
Maximum measurement range[1]	4 m	6 m	8 m	10 m	15 m	25 m
Minimum measurement range[1]	0.2 m	0.25 m	0.35 m		0.45 m	0.6 m
Process temperature	–30…+90 °C					
Recommended applications	Small vessels with 1½" or 2" process connection			Small vessels with flange	Medium-sized vessels with flange	Tall vessels with flange

Transducer material	**PTFE**			**Stainless steel**		
Maximum measurement range [1]	3 m	5 m	6 m	7 m	12 m	15 m
Minimum measurement range [1]	0.25 m		0.35 m	0.4 m	0.55 m	0.65 m
Process temperature	–30…+90 °C			–30…+100 °C (CIP +120 °C for max. 2 hours)		
EchoTREK S□S / S□M 2-wire						
EchoTREK S□S / S□M 4-wire						

[1] *Under optimal conditions and constant transducer temperature*

SEA–370

SGP–370–8Ex

EchoTREK ST-400 - 4-wire, max. 8 m — 5 years

4-wire compact ultrasonic level transmitters for liquids with 2 SPDT relays
with PP, PVDF or PTFE transducer; Ingress protection: IP67

Range / Frequency

S ■■ – 4 □■ – ■

9	0.2...4 m / 80 kHz (only for 1½" process connection)
8	0.25...6 m / 80 kHz (only for 2" process connection)
7	0.35...8 m / 60 kHz (only for 2" process connection)

Version

S □■ – 4 ■■ – ■

T	Transmitter
B	Transmitter with plug-in display

Housing / Transducer material

S ■□ – 4 ■■ – ■

P	Fiberglass-reinforced plastic (PBT) / Polypropylene (PP)
V	Fiberglass-reinforced plastic (PBT) / PVDF
F	Fiberglass-reinforced plastic (PBT) / PTFE
A	Painted aluminum / Polypropylene (PP)
B	Painted aluminum / PVDF
T	Painted aluminum / PTFE

Process Connection

S ■■ – 4 ■□ – ■

0	BSP thread
N	NPT thread

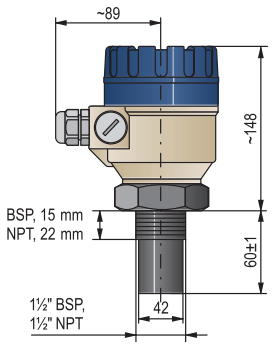
Supply voltage / Output

S ■■ – 4 ■■ – □

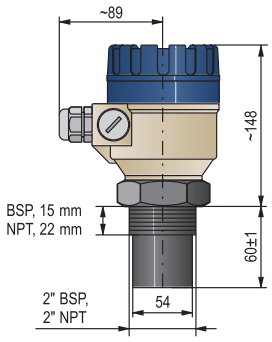
1	85...255 V AC / 4...20 mA + SPDT Relay
3	85...255 V AC / 4...20 mA + HART® + SPDT Relay
G	85...255 V AC / 4...20 mA + HART® + SPDT Relay + Data logging feature
K	85...255 V AC / 4...20 mA + SPDT + Data logging feature
2	24 V AC/DC / 4...20 mA + SPDT Relay
4	24 V AC/DC / 4...20 mA + HART® + SPDT Relay
H	24 V AC/DC / 4...20 mA + HART® + SPDT Relay + Data logging feature
L	24 V AC/DC / 4...20 mA + SPDT Relay + Data logging feature

Accessories sold separately; see relevant page for details

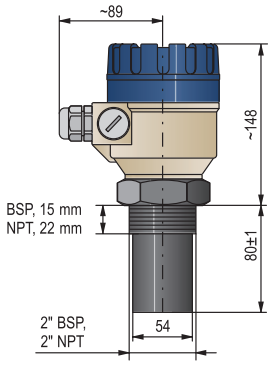
S A P – 2 0 0 – 0	Plug-in programmer/display module
S A T – 5 0 4 – ■	HART®-USB/Bluetooth® modem
S A K – 3 0 5 – ■	HART®-USB/RS485 modem
S A C – 1 ■ 1 – 0	Mounting brackets
S A B – 1 1 2 – 0	3D printed plastic shielding cap, snap-on design for plastic cover
S A B – 1 1 3 – 0	3D printed plastic shielding cap, snap-on design for aluminum cover
S A B – 2 1 1 – 2	Stainless steel shielding cap, clamp-type design, for all instrument covers



ST□-49□



ST□-48□



ST□-47□

NIV24
SAP-200-0
SAA-107-0
SAA-108-0

EchoTREK ST-400 - 4-wire, max. 25 m — 5 years

4-wire compact ultrasonic level transmitters for liquids with 2 SPDT Relays with PP or PVDF transducer; Ingress protection: IP67

Range / Frequency

S ■■ – 4 □■ – ■

6	0.35...10 m / 60 kHz (Min. required flange size: DN80)
4	0.45...15 m / 40 kHz (Min. required flange size: DN125)
2	0.6...25 m / 20 kHz (Min. required flange size: DN150)

Version

S □■ – 4 ■■ – ■

T	Transmitter
B	Transmitter with plug-in display

Housing / Transducer material

S ■□ – 4 ■■ – ■

P	Fiberglass-reinforced plastic (PBT) / Polypropylene (PP)
V	Fiberglass-reinforced plastic (PBT) / PVDF
A	Painted aluminum / Polypropylene (PP)
B	Painted aluminum / PVDF

Process Connection

S ■■ – 4 ■□ – ■

DIN flanges: Polypropylene (PP), PN16	
2	DN80 PN16
3	DN100 PN16
4	DN125 PN16
5	DN150 PN16
6	DN200 PN16
FF ANSI flanges: Polypropylene (PP), 150 psi	
A	3" FF 150 psi
B	4" FF 150 psi
C	5" FF 150 psi
D	6" FF 150 psi
E	8" FF 150 psi
JIS flanges: Polypropylene (PP), 10K	
G	80A (as per 10K)
H	100A (as per 10K)
P	125A (as per 10K)
R	150A (as per 10K)
S	200A (as per 10K)
Mounting brackets	
K	200 mm mounting bracket, powder-coated steel
L	500 mm mounting bracket, powder-coated steel
M	700 mm mounting bracket, powder-coated steel

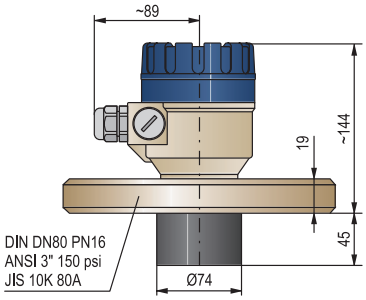
Supply voltage / Output

S ■■ – 4 ■■ – □

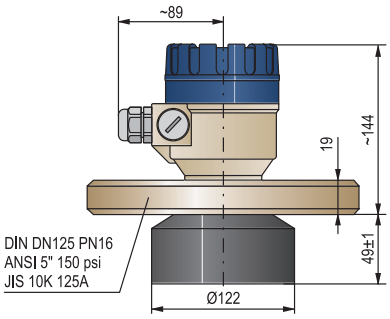
1	85...255 V AC / 4...20 mA + SPDT Relay
3	85...255 V AC / 4...20 mA + HART® + SPDT Relay
G	85...255 V AC / 4...20 mA + HART® + SPDT Relay + Data logging feature
K	85...255 V AC / 4...20 mA + SPDT Relay + Data logging feature
2	24 V AC/DC / 4...20 mA + SPDT Relay
4	24 V AC/DC / 4...20 mA + HART® + SPDT Relay
H	24 V AC/DC / 4...20 mA + HART® + SPDT Relay + Data logging feature
L	24 V AC/DC / 4...20 mA + SPDT Relay + Data logging feature

Accessories sold separately; see relevant page for details

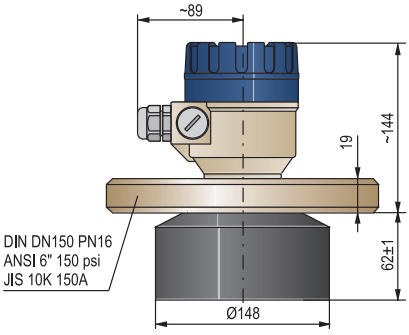
SAP-2000-0	Plug-in programmer/display module
SAT-5040-■	HART®-USB/Bluetooth® modem
SAK-3050-■	HART®-USB/RS485 modem
SAB-1120-0	3D printed plastic shielding cap, snap-on design for plastic cover
SAB-1130-0	3D printed plastic shielding cap, snap-on design for aluminum cover
SAB-2112-2	Stainless steel shielding cap, clamp-type design, for all instrument covers



ST□-46□



ST□-44□



ST□-42□

EchoTREK ST-400 - 4-wire with stainless steel transducer — 5 years

4-wire compact ultrasonic level transmitters for liquids with 2 SPDT Relays
with stainless steel transducer face; Ingress protection: IP67

Range / Frequency

S ■■ – 4 □■ – ■

6	0.4...7 m / 60 kHz (flange size: DN80)
4	0.55...12 m / 40 kHz (flange size: DN125)
2	0.65...15 m / 20 kHz (flange size: DN150)

Version

S □■ – 4 ■■ – ■

T	Transmitter
B	Transmitter with plug-in display

Housing / Transducer material

S ■□ – 4 ■■ – ■

M	Fiberglass-reinforced plastic (PBT) / stainless steel (1.4571/1.4404)
S	Painted aluminum / stainless steel (1.4571/1.4404)

Process Connection / Material

S ■■ – 4 ■□ – ■

2	DN80 PN16 (only for S-46), PP-coated steel
4	DN125 PN16 (only for S-44), PP-coated steel
5	DN150 PN16 (only for S-42), PP-coated steel

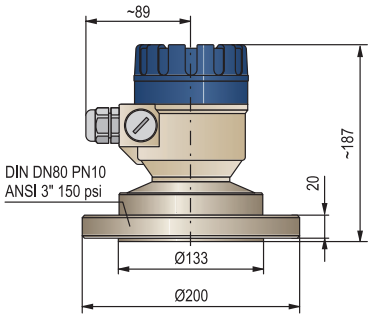
Supply voltage / Output

S ■■ – 4 ■■ – □

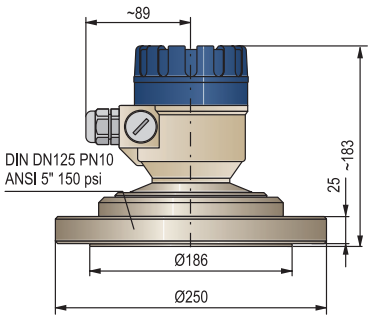
1	85...255 V AC / 4...20 mA + SPDT Relay
3	85...255 V AC / 4...20 mA + HART® + SPDT Relay
G	85...255 V AC / 4...20 mA + HART® + SPDT Relay+ Data logging feature
K	85...255 V AC / 4...20 mA + SPDT Relay+ Data logging feature
2	24 V AC/DC / 4...20 mA + SPDT Relay
4	24 V AC/DC / 4...20 mA + HART® + SPDT Relay
H	24 V AC/DC / 4...20 mA + HART® + SPDT Relay+ Data logging feature
L	24 V AC/DC / 4...20 mA + SPDT Relay+ Data logging feature

Accessories sold separately; see relevant page for details

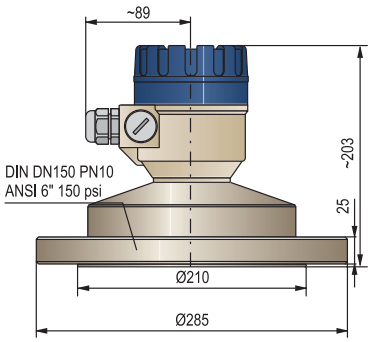
S A P – 2 0 0 – 0	Plug-in programmer/display module
S A T – 5 0 4 – ■	HART®-USB/Bluetooth® modem
S A K – 3 0 5 – ■	HART®-USB/RS485 modem
S A B – 1 1 2 – 0	3D printed plastic shielding cap, snap-on design for plastic cover
S A B – 1 1 3 – 0	3D printed plastic shielding cap, snap-on design for aluminum cover
S A B – 2 1 1 – 2	Stainless steel shielding cap, clamp-type design, for all instrument covers



STM / STS-462



STM / STS-444



STM / STS-425

EchoTREK SE-300 - 2-wire, max. 8 m — 5 years

2-wire compact ultrasonic level transmitters for liquids
with PP, PVDF or PTFE transducer; Ingress protection: IP67

Range / Frequency

S ■■ – 3 □■ – ■

9	0.2...4 m / 80 kHz (only for 1½" process connection)
8	0.25...6 m / 80 kHz (only for 2" process connection)
7	0.35...8 m / 60 kHz (only for 2" process connection)

Version

S □■ – 3 ■■ – ■

E	Transmitter
G	Transmitter with plug-in display

Housing / Transducer material

S ■□ – 3 ■■ – ■

P	Fiberglass-reinforced plastic (PBT) / Polypropylene (PP)
V	Fiberglass-reinforced plastic (PBT) / PVDF
F	Fiberglass-reinforced plastic (PBT) / PTFE
A	Painted aluminum / Polypropylene (PP)
B	Painted aluminum / PVDF
T	Painted aluminum / PTFE
K	Stainless steel / Polypropylene (PP)
W	Stainless steel / PVDF
L	Stainless steel / PTFE

Process Connection

S ■■ – 3 ■□ – ■

0	BSP thread
N	NPT thread

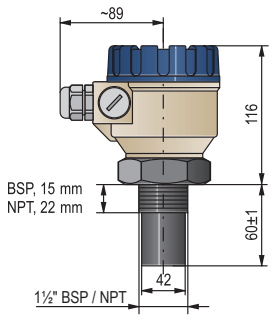
Output / Certificates

S ■■ – 3 ■■ – □

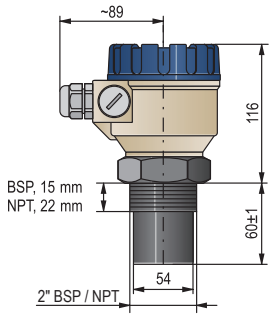
1	4...20 mA + Data logging feature
2	4...20 mA
3	4...20 mA + HART® + Data logging feature
4	4...20 mA + HART®
5	4...20 mA + Data logging feature / Ex ia G
6	4...20 mA / Ex ia G
7	4...20 mA + HART® + Data logging feature / Ex ia G
8	4...20 mA + HART® / Ex ia G
L	4...20 mA + Data logging feature + SPDT Relay
R	4...20 mA + SPDT Relay
A	4...20 mA + HART® + Data logging feature + SPDT Relay
H	4...20 mA + HART® + SPDT Relay

Accessories sold separately; see relevant page for details

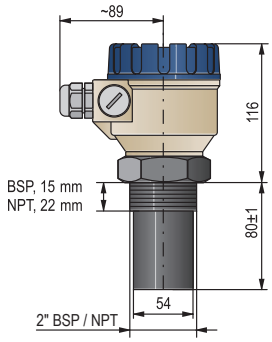
S F A – 3 ■■ – 0	Flanges
S A P – 2 0 0 – 0	Plug-in programmer/display module
S A T – 5 0 4 – ■	HART®-USB/Bluetooth® modem
S A K – 3 0 5 – ■	HART®-USB/RS485 modem
S A C – 1 ■ 1 – 0	Mounting brackets
S A B – 1 1 2 – 0	3D printed plastic shielding cap, snap-on design for plastic cover
S A B – 1 1 3 – 0	3D printed plastic shielding cap, snap-on design for aluminum cover
S A B – 2 1 1 – 2	Stainless steel shielding cap, clamp-type design, for all instrument covers



SE□-39□



SE□-38□



SE□-37□

NIV24
SEP-380-2
SAP-200-0
SAA-107-0
SAA-108-0

EchoTREK SE-300 - 2-wire, max. 25 m — 5 years

2-wire compact ultrasonic level transmitters for liquids
with PP or PVDF transducer; Ingress protection: IP67

Range / Frequency

S ■■ – 3 □■ – ■

6	0.35...10 m / 60 kHz (min. required flange size: DN80)
4	0.45...15 m / 40 kHz (min. required flange size: DN125)
2	0.6...25 m / 20 kHz (min. required flange size: DN150)

Version

S □■ – 3 ■■ – ■

E	Transmitter
G	Transmitter with plug-in display

Housing / Transducer material

S ■□ – 3 ■■ – ■

P	Fiberglass-reinforced plastic (PBT) / Polypropylene (PP)
V	Fiberglass-reinforced plastic (PBT) / PVDF
A	Painted aluminum / Polypropylene (PP)
B	Painted aluminum /PVDF
K	Stainless steel / Polypropylene (PP)
W	Stainless steel / PVDF

Process Connection

S ■■ – 3 ■□ – ■

DIN flanges: Polypropylene (PP), PN16	
2	DN80 PN16
3	DN100 PN16
4	DN125 PN16
5	DN150 PN16
6	DN200 PN16
FF ANSI flanges: Polypropylene (PP), 150 psi	
A	3" FF 150 psi
B	4" FF 150 psi
C	5" FF 150 psi
D	6" FF 150 psi
E	8" FF 150 psi
JIS flanges: Polypropylene (PP), 10K	
G	80A (as per 10K)
H	100A (as per 10K)
P	125A (as per 10K)
R	150A (as per 10K)
S	200A (as per 10K)
Mounting brackets	
K	200 mm mounting bracket, powder-coated steel
L	500 mm mounting bracket, powder-coated steel
M	700 mm mounting bracket, powder-coated steel

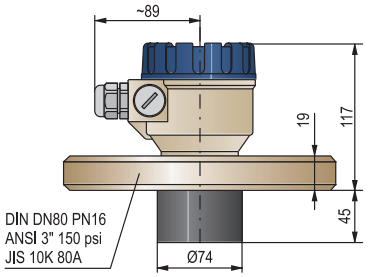
Output / Certificates

S ■■ – 3 ■■ – □

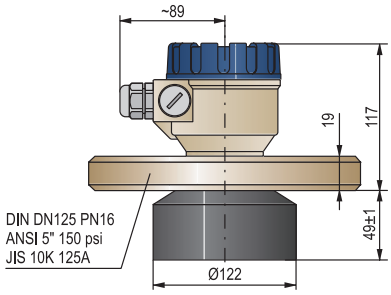
1	4...20 mA + Data logging feature
2	4...20 mA
3	4...20 mA + HART® + Data logging feature
4	4...20 mA + HART®
5	4...20 mA + Data logging feature / Ex ia G
6	4...20 mA / Ex ia G
7	4...20 mA + HART + Data logging feature / Ex ia G
8	4...20 mA + HART® / Ex ia G
L	4...20 mA + Data logging feature + SPDT Relay
R	4...20 mA + SPDT Relay
A	4...20 mA + HART® + Data logging feature + SPDT Relay
H	4...20 mA + HART® + SPDT Relay

Accessories sold separately; see relevant page for details

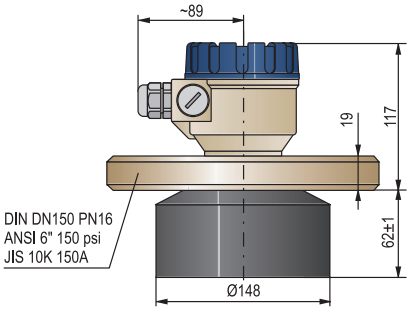
SAP-200-0	Plug-in programmer/display module
SAT-504-■	HART®-USB/Bluetooth® modem
SAK-305-■	HART®-USB/RS485 modem
SAB-112-0	3D printed plastic shielding cap, snap-on design for plastic cover
SAB-113-0	3D printed plastic shielding cap, snap-on design for aluminum cover
SAB-211-2	Stainless steel shielding cap, clamp-type design, for all instrument covers



SE□-36□



SE□-34□



SE□-32□

EchoTREK SE-300 - 2-wire with stainless steel transducer — 5 years

2-wire compact ultrasonic level transmitters for liquids
with stainless steel transducer face; Ingress protection: IP67

Range / Frequency

S ■■ – 3 □■ – ■

6	0.4...7 m / 60 kHz (flange size: DN80)
4	0.55...12 m / 40 kHz (flange size: DN125)
2	0.65...15 m / 20 kHz (flange size: DN150)

Version

S □■ – 3 ■■ – ■

E	Transmitter
G	Transmitter with plug-in display

Housing / Transducer material

S ■□ – 3 ■■ – ■

M	Fiberglass-reinforced plastic (PBT) / stainless steel (1.4571/1.4404)
S	Painted aluminum / stainless steel (1.4571/1.4404)
N	Stainless steel / stainless steel (1.4571/1.4404)

Process Connection / Material

S ■■ – 3 ■□ – ■

2	DN80 PN16 (only for S-36), PP-coated steel
4	DN125 PN16 (only for S-34), PP-coated steel
5	DN150 PN16 (only for S-32), PP-coated steel

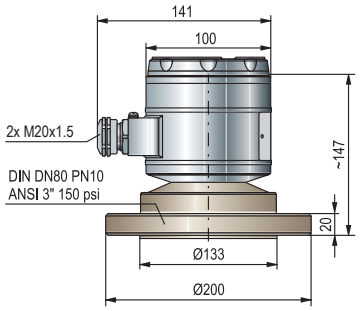
Output / Certificates

S ■■ – 3 ■■ – □

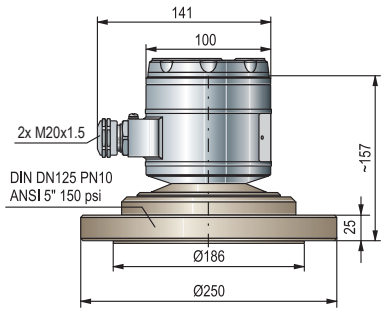
1	4...20 mA + Data logging feature
2	4...20 mA
3	4...20 mA + HART® + Data logging feature
4	4...20 mA + HART®
5	4...20 mA + Data logging feature / Ex ia G
6	4...20 mA / Ex ia G
7	4...20 mA + HART® + Data logging feature / Ex ia G
8	4...20 mA + HART® / Ex ia G
L	4...20 mA + Data logging feature + Relay
R	4...20 mA + Relay
A	4...20 mA + HART® + Data logging feature + SPDT Relay
H	4...20 mA + HART® + SPDT Relay

Accessories sold separately; see relevant page for details

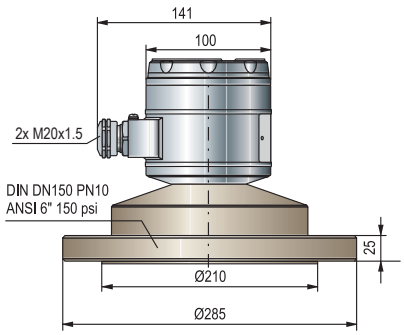
SAP-2000-0	Plug-in programmer/display module
SAT-504-■	HART®-USB/Bluetooth® modem
SAK-305-■	HART®-USB/RS485 modem
SAB-211-2	Stainless steel shielding cap, clamp-type design, for all instrument covers



SEN-362



SEN-344



SEN-325

NEW

Integrated Ultrasonic Level Transmitters for Solids

EasyTREK

The new 4-wire **EasyTREK** ultrasonic level transmitters are designed for solids level monitoring — an area where previously only more complex, two-part systems could perform adequately. Equipped with SenSonic narrow-beam transducers for superb signal transmission, EasyTREK effortlessly handles filling noise, dust, and irregular surface profiles. When combined with QUEST+, our advanced adaptive signal processing software, it delivers world-class performance and reliability.

FEATURES

- Non-contact level measurement
- 4-wire integrated (blind) level transmitter
- Up to 60 m measurement range
- Narrow (5°) beam angle
- Full temperature compensation
- IP65
- HART® communication
- Service interface
- Configuration via Bluetooth® *(in prep.)*
- Dust Ex variant *(in prep.)*
- 5 years warranty

APPLICATIONS

- Level, volume and weight calculation
- Wide application range: light powders to coarse bulk solid materials
- Reliable operation in challenging environments (e. g. dust)

CERTIFICATES

- ATEX *(in prep.)*

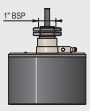
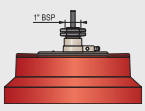
SCD–53J–4

SCD–51J–4

TECHNICAL DATA

		SCD–500
System		4-wire
Accuracy [1]		± (0.2% of measured distance + 0.1% of range)
Resolution		10 mm
Output	Analog	4…20 mA
	Service interface	Compatible with SAT–504–3/4
	Digital communication	Bluetooth® LE 5.1 *(in prep.)*, HART® interface (loop resistance ≥250 Ω)
Ambient temperature		–30… +60 °C
Process temperature		
Process pressure		0.7…1.1 bar $P_{absolute}$ and ±0.1 bar difference between ambient and tank pressure
Supply voltage		24 V DC / 2.5 W
Electrical protection		Class III
Inrush current		0.6 A
Housing		Same as the transducer housing material
Electrical connection		LiYCY type 6× 0.5 mm² shielded Ø7.5 mm cable; standard cable length: 5 m (available up to 30 m)
Ingress protection		IP65
Weight		~3…3.5 kg, or 6.5 kg

TRANSDUCER PROPERTIES

	SCD–54□	SCD–53□	SCD–51□
Recommended applications	Small tanks, hoppers, conveyor belts. Both for powders and granules.	Medium-sized silos with solids.	Large silos with solids. Recommended in dusty environments due to its power and low frequency.
EasyTREK			
Transducer Material	PP + Painted aluminum		
Transducer Surface	Closed-cell PVC foam		
Beam Angle	5°		
Max. measurement range [1]	15 m	30 m	60 m
Min. measurement range [1]	0.6 m		1 m

[1] *Under optimal conditions and constant transducer temperature.*

EasyTREK SC-500 — 5 years

4-wire integrated ultrasonic level transmitters for solids
with PP sensor housing with PVC foam face

Range / Frequency

S C D – 5 □ ■ – ■

4	0.6...15 m (40 kHz)
3	0.6...30 m (30 kHz)
1	1...60 m (15 kHz)

Process connection

S C D – 5 ■ □ – ■

0	1" BSP thread
J	Joystick aiming device (total length ~610 mm)

Output / Ex Certificate

S C D – 5 ■ ■ – □

4		4...20 mA + HART®
8	*	4...20 mA + HART® / Ex ma ta IIIC
B	*	4...20 mA + HART® + Bluetooth
E	*	4...20 mA + HART® + Bluetooth / Ex ma ta IIIC

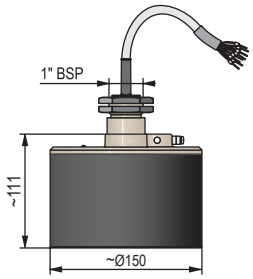
* Under development

Cable

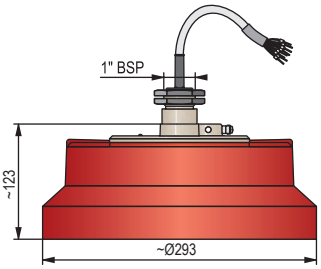
Maximum length 30 m; sold by the meter over the standard 5 m

Accessories sold separately; see relevant page for details

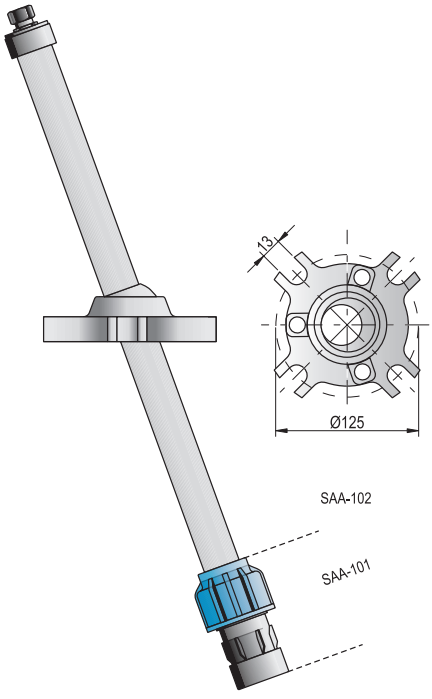
S F A – 3 ■ ■ – 0	Flanges
S A T – 5 0 4 – ■	HART®-USB/Bluetooth® modem
S A K – 3 0 5 – ■	HART®-USB/RS485 modem
S A A – 1 0 1 – 0	Quick-connect gland for pipe-mounting devices with 1" process connection, PP
S A A – 1 ■ 2 – 0	Joystick aiming device
P ■ F – ■ 1 ■ – ■	Smart Field Display and Data Logger
P ■ F – ■ 0 1 – ■	Loop Display



SCD–530 / 540



SCD–510



SAA-102

NIVOSONAR SFA — 5 years

Plastic flanges for ultrasonic level transmitters
Material: Polypropylene (PP)

Type

□ F A – 3 ■ ■ – 0

S	Flanges

Flange size

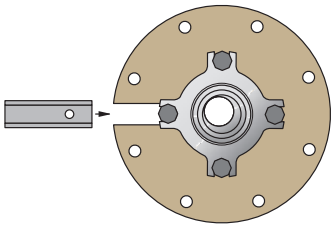
S F A – 3 □ ■ – 0

DIN flanges, PN16	
2	DN80 PN16
3	DN100 PN16
4	DN125 PN16
5	DN150 PN16
6	DN200 PN16
7	DN250 PN16
8	DN300 PN16
9	DN350 PN16
FF ANSI flanges, 150 psi	
A	3" FF 150 psi
B	4" FF 150 psi
C	5" FF 150 psi
D	6" FF 150 psi
E	8" FF 150 psi
Y	12" FF 150 psi
K	14" FF 150psi
JIS flanges, 10K	
G	80A (as per 10K)
H	100A (as per 10K)
P	125A (as per 10K)
R	150A (as per 10K)
S	200A (as per 10K)
Z	300A (as per 10K)
W	350A (as per 10K)

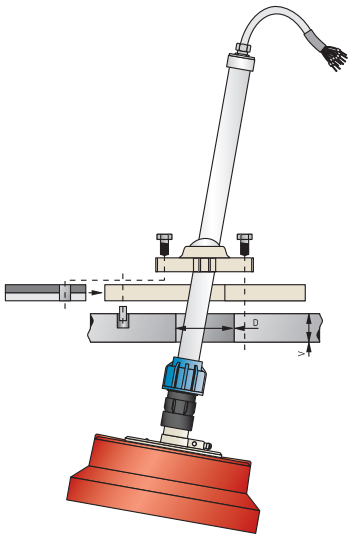
Flange type

S F A – 3 ■ □ – 0

1	Ø35 mm hole (for units with 1" BSP process connection)
3	For units with 2" BSP process connection
4	For units with 2" NPT process connection
5	For mounting to SAA-102 aiming device
6	For units with 1½" BSP process connection
7	For units with 1½" NPT process connection



SFA-3□5



SCD-51J + SFA-3□5

Diameter of the opening (D)	Max. thickness of the roof (V)
160 mm	110 mm
190 mm	150 mm
230 mm	200 mm
300 mm	280 mm
340 mm	300 mm

UNIMOUNT SAC mounting bracket — 5 years

Mounting bracket available separately for level transmitters, level switches, 1" suspension elements, 1", 1½" and 2" connections, and nameplates. Made of painted aluminum and stainless steel, for loads up to 5 kg.

Type

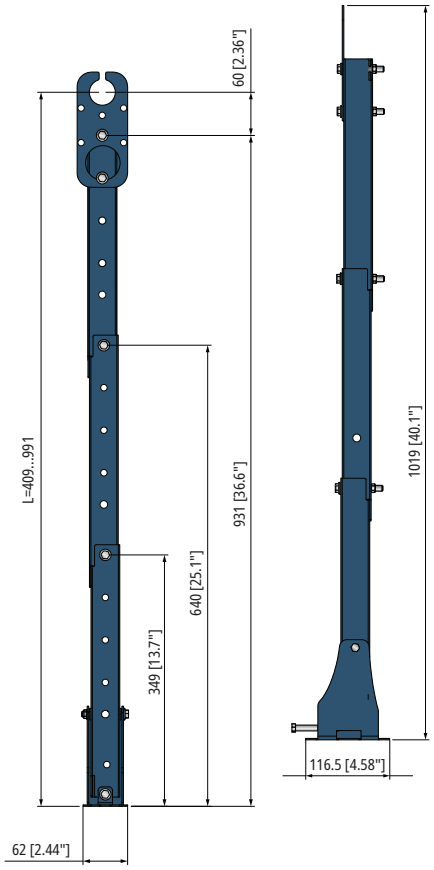
□ A C – 1 ■ 1 – 0	
S	Mounting brackets

Extension element

S A C – 1 □ 1 – 0	
0	None
1	1×
2	2×
3	3×

Accessories sold separately

S A C – 1 0 0 – 0	Basic unit
S A C – 2 1 0 – 0	Extension element, 300 mm (×1)
S A C – 2 0 1 – 0	Accessory set (1" suspension element + plate for 1", 1½" and 2" connection damping gland sponge washer + screw set)



SAC–131

UNIMOUNT SAA Joystick aiming device — 5 years

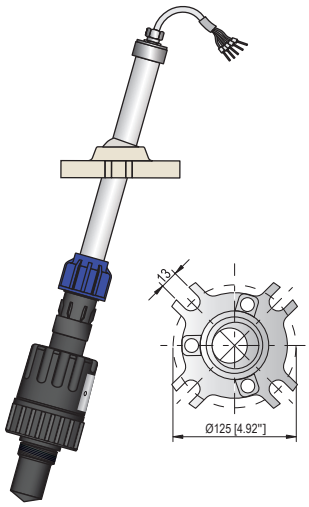
Joystick aiming device for adjusting the measuring angle of the level transmitter, with PG9-type cable gland, DN50 PN16 flange mounting design, 1" BSP device connection

Type

□ A A – 1 ■ 2 – 0	
S	Joystick aiming device

Pipe length / total length

S A A – 1 □ 2 – 0	
2	200 mm / ~260 mm
3	300 mm / ~360 mm
4	400 mm / ~460 mm
0	550 mm / ~610 mm



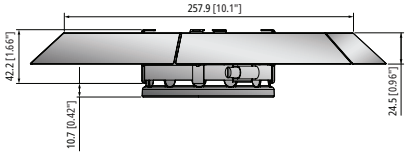
SAA–102

UNIMOUNT SAB shielding cap — 5 years

Sun protection shielding cap designed for installation on the top cover of the instrument housing. Available in stainless steel or plastic.

Type

S A B – 1 1 2 – 0	3D printed plastic shielding cap, snap-on design for plastic cover
S A B – 1 1 3 – 0	3D printed plastic shielding cap, snap-on design for aluminum cover
S A B – 2 1 1 – 2	Stainless steel shielding cap, clamp-type design, for all instrument covers



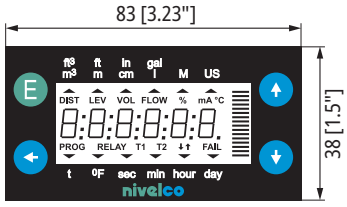
SAB–211–2

Accessories for all transmitters

UNIDISP SAP-100 — 5 years

Plug-in programming and display module for 4-wire EchoTREK ST–300
Field indications: 6-digits LCD, icons and bargraph display

Type	
S A P – 1 0 0 – 0	Plug-in programmer/display module

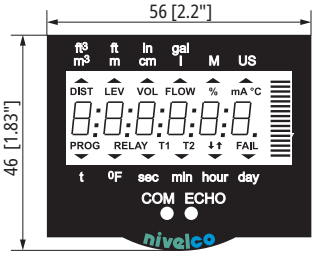


SAP–100

UNIDISP SAP-200 — 5 years

Plug-in display module for the listed 2-wire transmitters
Field indications: 6-digits LCD, icons and bargraph display

Label	
S A P – 2 0 □ – 0	
0	Module with label for 2-wire and S-400 EchoTREK
2	Module with label for NIVOCAP, THERMOCONT, UNICONT PD
3	Module with label for NIVOPRESS



SAP–200

UNIDISP SAP-300 — 5 years

Plug-in dot matrix (128 x 64) graphic display for 2-wire transmitters
Field indications: measured value, bargraph display

Type	
S A P – 3 0 0 – 0	Graphic plug-in display module

UNICOMM SAT-305 — 5 years

Infrared interface module with datalogger readout function, equipped with type "B" mini USB connector

Type	
S A T – 3 0 5 – 0	IRDA module

UNICOMM SAT-506 — 5 years

eLINK unit for software/firmware updates for datalogger reading with type "B" mini USB connector. Can be plugged in the socket of the SAP display module. Provides galvanically isolated power and communication to the device, capable of high-speed program loading.

Type	
S A T – 5 0 6 – ■	eLink Module
0	eLink plug-in unit
1	eLink plug-in unit, for data logger readout only

SAP–300

EView2 — 1 year

EView2 HART configuration software package for remote programming and viewing of primary measurement values in HART multidrop systems. Downloadable from our website free of charge.

MobileEView

MobileEView is NIVELCO's mobile phone application that communicates with devices via Bluetooth®.
The MobileEView application allows easy management of transmitter settings.

SENSONAR — 5 years

Mounting nuts

Type	
SIA–340–0M–020–05	1" BSP female nut / PP
SIB–340–9M–020–05	1" BSP female nut / PVDF
SSA–390–9M–020–01	1½" BSP female nut / PP
SSB–390–9M–020–01	1½" BSP female nut / PVDF
SSA–380–9M–020–02	2" BSP female nut / PP
SSB–380–9M–020–02	2" BSP female nut / PVDF

NIV24
SAP-100-0
SAP-200-0
SAP-300-0

LEVEL SWITCHES

The most frequent level instrumentation task is level control and limit-switching. NIVELCO offers reliable level control and limit level switching solutions for most mediums, from potable water to sewage, aggressive alkalis and acids, free-flowing, powdered, bulk, or granular solids.

Most of our level switches have explosion-proof *(ATEX or IEC Ex compliant)* versions.

We offer suitable solutions for industries with special requirements, for example, shipbuilding that requires DNV, Bureau Veritas (BV), or SIL certificates.

NIVOFLOAT
FLOAT SWITCHES

page 101

- Air-tight design, double-chamber
- Adjustable switch differential
- Up to 20 m cable length
- Max. +50 °C process temperature
- Max. 2 bar process pressure
- Level switch from potable water to sewage
- Fail-safe indication and pump control
- Suitable for tanks and basins

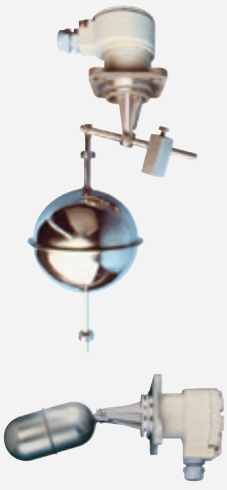
NIVOCONT K
CONDUCTIVE LEVEL SWITCHES

page 103

- Affordable choice
- Limit switch or differential switch versions
- Adjustable sensitivity
- Adjustable delay
- All wetted parts stainless steel
- Compact and separated variants
- For liquids with minimum 10 µS/cm conductivity
- Rod probes up to 3 m

NIVOMAG
MAGNETIC COUPLING SWITCHES

page 108



- Operation without power supply
- Micro-switch separated from the process
- All wetted parts stainless steel
- Fixed or adjustable switch differential
- Submersible versions
- For liquids with minimum 0.7 kg/dm^3 density
- Flame-proof variants available
- Marine certificates, SIL certificate

NIVOPOINT
MAGNETIC TRACKING SWITCHES

page 113

- Operation without power supply
- Reed switch connection
- Stainless steel or titanium floats
- PFA-coated probe version with plastic float
- Up to 5 switching points
- For liquids with minimum 0.4 kg/dm^3 density
- Multi-point level switch in sealed tanks
- Flame-proof variants available

NIVOSWITCH for LIQUIDS
VIBRATING FORK LEVEL SWITCHES

page 118

- For most liquids with minimum 0.7 kg/dm^3 density and maximum 10^4 mm^2/s viscosity
- No moving parts
- Self-cleaning in most mediums
- Stainless steel and plastic-coated forks
- Rigid pipe length up to 3 m
- Explosion-proof variants available
- IP67, IP68

NIVOSWITCH for SOLIDS
VIBRATING FORK LEVEL SWITCHES

page 130

- For powdered solids with minimum 0.01 kg/dm^3 density
- No moving parts
- Stainless steel fork
- Self-cleaning in most mediums
- Rigid pipe length up to 3 m
- IP67, IP68
- Explosion-proof variants available

NIVOCONT R
VIBRATING ROD LEVEL SWITCHES

page 144

- For granular solids with min. 0.05 kg/dm^3 density
- Insertion length up to 20 m
- Stainless steel vibrating section
- Selectable density
- Plastic or aluminum housing
- Relay or electronic switch output
- IP67
- Explosion-proof variants available

NIVOROTA
ROTARY PADDLE LEVEL SWITCHES

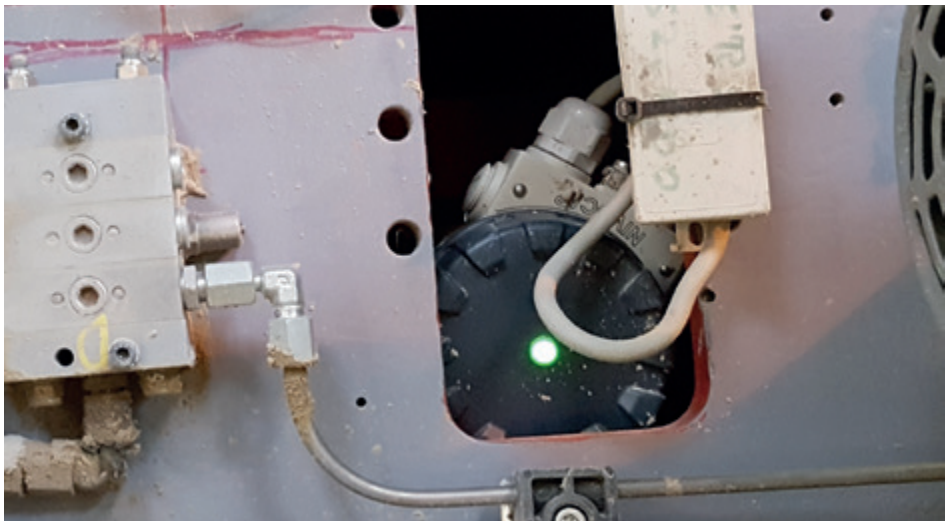
page 150

- For granular solids with minimum 0.1 kg/dm^3 density
- Plastic or aluminum housing
- Stainless steel wetted parts
- Motor shut-off feature
- Single or 3-blade paddle
- Insertion length up to 3 m
- High-temperature version
- IP67
- Explosion-proof variants available
- Rotary force independent of the supply voltage
- Low supply voltage is indicated by a blinking LED

NIVOCAP CK
RF-CAPACITANCE LEVEL SWITCHES

page 156

- For solids with $\varepsilon_r \geq 1.5$ and liquids
- For viscous, sticky materials
- Easy calibration
- Selectable sensitivity
- Immune to material deposits
- Insertion length up to 10 m
- High-temperature version
- IP67
- Explosion-proof variants available



The **NIVOFLOAT NL–100** float level switch is suitable for clean or slightly contaminated water. The **NIVOFLOAT NW–100** tilting-float level switch is for sewage, tanks, basins, or cisterns. The waterproof dual-chambered float is injection-molded polypropylene, and the microswitch is incorporated into the float.

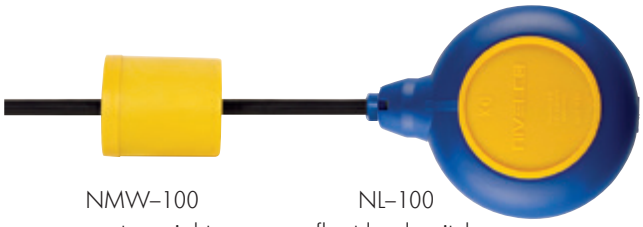
The cable is lead through a waterproof sealed entry point into the monolithic structure of the injection-molded plastic housing. It uses three copper wires of 1 mm^2 cross-section, insulated with PVC or Neoprene. The double-walled design provides outstanding safety for users in terms of life and touch protection. In addition, the **NIVOFLOAT** is suitable for various control tasks, such as liquid level monitoring and pump control. These devices serve reliably provided their operating conditions are appropriately selected.

FEATURES

- Dual-chambered float
- Switching differential is adjustable by counterweight (NL–100)
- Special float shape (NW–100)
- Up to 30 m cable length
- Process temperature up to +50 °C
- Process pressure maximum NL–100: 1 bar; NW–100: 2 bar
- Variants for potable water available
- IP68

APPLICATIONS

- Suitable for drinking water
- Industrial and communal sewage
- Tank filling/emptying control
- Overfill protection



NMW–100
counterweight

NL–100
float level switch

NW–100
float level switch

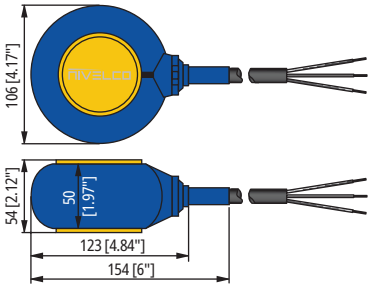
TECHNICAL DATA

	NL□–1□□–1	NW□–1□□–1
Switching angle	+20/–45	±45°
Process temperature	0…+50 °C	
Process pressure	up to 1 bar	up to 2 bar
Material of the float / counterweight	Non-toxic polypropylene (PP) / Polystyrene	Non-toxic polypropylene (PP)
Float volume	384 cm^3	1000 cm^3
Rating of the microswitch	16(4)A, 250 V AC, AC1 20(8)A, 250 V AC, AC1	10(3) A, 250 V AC, AC1
Electrical life-span	10^7 switches	
Ingress protection	IP68	IP68
Cable	Ø9 mm / 3 × 1 mm^2	
Cable length	5 m, 10 m, 20 m, 30 m	5 m, 10 m, 20 m
Weight (without cable)	235 g	1100 g

NIVOFLOAT NLP–100 with PVC cable — 3 years

Double-chamber float level switch with PVC cable for clean liquids, without counterweight

Cable length	
N L P – 1 □□ – 1	
0 5	5 m
1 0	10 m
2 0	20 m
3 0	30 m



NL□–100

NIVOFLOAT NLN–100 with Neoprene cable — 3 years

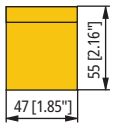
Double-chamber float level switch with Neoprene cable for clean liquids, without counterweight

Cable length	
N L N – 1 □□ – 1	
0 5	5 m
1 0	10 m
2 0	20 m

NIVOFLOAT NMW–100 — 3 years

Counterweight for NL type float level switch
Material: polystyrene

N M W – 1 0 0 – 0	Counterweight



NMW–100

NIVOFLOAT NWP–100 with PVC cable — 3 years

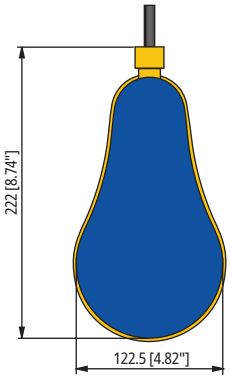
Double-chamber float level switch with PVC cable for contaminated liquids, without counterweight

Cable length	
N W P – 1 □□ – 1	
0 5	5 m
1 0	10 m
2 0	20 m

NIVOFLOAT NWN–100 with Neoprene cable — 3 years

Double-chamber float level switch with Neoprene cable for contaminated liquids, without counterweight

Cable length	
N W N – 1 □□ – 1	
0 5	5 m
1 0	10 m
2 0	20 m



NW□–100

NIV24
NLP–105–1, NWP–105–1
NLP–110–1, NWP–110–1
NLP–120–1, NLP–130–1, NWP–120–1
NLN–105–1, NWN–105–1
NLN–110–1, NWN–110–1
NLN–120–1, NWN–120–1
NMW–100–0

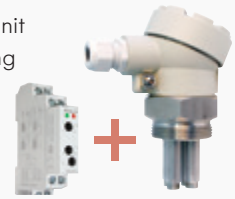
NIVOCONT K conductive level switches can be used in liquids whose conductivity exceeds 10 µS/cm. The level of the liquid is detected by a probe that is immersed in the medium. Single and multiple rod type probes are available. They *(and the tank wall, if conductive)* act as electrodes, and the measured liquid is used as conductive material between them. Up to 4 rods can be fitted in a multiple-probe socket with an additional reference probe if the tank wall is not conductive. The probe's length must correspond with the measured level. When the liquid level reaches the probe, it changes the loop's conductivity, and the output relay is activated. The device senses the change in conductivity between the probes and the reference probe. KLP separators must be used every 0.5 m to provide appropriate distance between the probes.

FEATURES

Level Switches		Compact Level Switches
KRK–512	KRK–622	KKH–2□2
▪ Level switching ▪ Filling-emptying control ▪ Selectable NO/NC relay function ▪ Adjustable sensitivity ▪ Adjustable ON/OFF delay ▪ Delay time indication ▪ AC/DC versions ▪ 5 years warranty	▪ Available functions: – Monitoring of 2 independent levels in 2 tanks – Monitoring of 2 independent levels in 1 tank – Pumping from one tank to another ▪ DIP switch on front panel (8 functions) ▪ Adjustable sensitivity (for each probe separately) ▪ Adjustable relay switching delay (for each probe separately) ▪ AC/DC versions ▪ 5 years warranty	▪ Probe and relay in one unit ▪ 1 or 2 incorporated KRK–512 electronics ▪ 1 or 2 independent relay outputs for pump control or differential level switching ▪ Selectable NO/NC relay function ▪ Adjustable sensitivity ▪ Adjustable ON/OFF delay ▪ Delay time indication ▪ AC/DC versions ▪ 5 years warranty

VERSIONS

Level Switch and Probe	Compact Level Switch
▪ DIN-rail-mounted 1 or 2 channel switching unit ▪ Probe socket with aluminum or plastic housing featuring 1½" BSP/NPT process connection ▪ Probe-rods up to 3 m	▪ 1 or 2 channel switching unit in plastic housing with 1½" BSP process connection ▪ Probe-rods up to 3 m



APPLICATIONS

- For conductive liquids with at least 10 µS/cm conductivity
- For empting/filling control or level switching
- Fail-safe indication and pump control
- Water inrush indicator

KRK–512–5

KRK–622–□

KSH–2□□

KSH–302

KKH–2□2–5

TECHNICAL DATA

Features \ Type	Level Switches		
	KRK–512–5	KRK–622–1	KRK–622–4
Supply voltage (U_n)	24…240 V AC/DC (AC 50…60 Hz)	230 V AC	24 V AC/DC
	–15…+10%		
Power consumption	1.5 W / max. 2 VA	2.5 W / 5 VA	1.4 W / 2 VA
Ambient temperature	–20…+55 °C		
Probe voltage	Max. 3.5 V AC		
Probe current	Max. 0.1 mA AC	Max. 1 mA AC	
Sensitivity	Adjustable: 5…100 kΩ		
Cable capacitance	100 nF (100 kΩ sensitivity) 800 nF (5 kΩ sensitivity)		
Fixed ON delay	1.5 s	–	
ON/OFF delay	0.5…10 s		
Relay output	1× SPDT 250 V 8 A, AC1 24 V DC 8 A	2× SPDT 250 V 16 A, AC1 24 V DC 16 A	
Electrical connection	Terminal block, max. 2.5 mm^2		
Electrical protection	Class II		Class III
Mechanical connection	EN 60715 rail		
Ingress protection	IP20		
Weight	72 g	248 g	147 g

Features \ Type	Compact Level Switches	
	KKH–212–5	KKH–222–5
Supply voltage (U_n)	24…240 V AC/DC (AC 50…60 Hz)	
	–15…+10%	
Power consumption	Max. 2 VA	Max. 4 VA
Ambient temperature	–20…+50 °C	
Process temperature	–20…+80 °C	
Process pressure	1 bar	
Number of probes	2+s*	4+s*
Probe voltage	Max. 3.5 V AC	
Probe current	Max. 0.1 mA	
Sensitivity	Adjustable: 5…100 kΩ	
Fixed ON delay	1.5 s	
ON/OFF delay	0.5…10 s	
Relay output	1× SPDT 250 V 8 A AC1 / DC 24 V 8 A	2× SPDT 250 V 8 A, AC1 / DC 24 V 8 A
Electrical connection	Cable gland: 2× M20×1.5 Ø6…12 mm cables, Terminal block, max. 2.5 mm^2	
Electrical protection	Class II	
Process connection	1½" BSP	
Material of probe socket	PP	
Housing material	Polycarbonate	
Ingress protection	IP67	
Weight (without probe)	660 g	800 g

s=reference probe*

PROBES, ACCESSORIES

KS□–201
Single-probe socket

KSK–201
Submersible probe

KLN–2□□
Probe

KLP–201–0 Separator for KSH–300 and KKH–200

KLP–204–0
Separator for KSH–200

Features \ Probes	Single-probe			Multi-probe							Submersible
				Aluminum housing			Plastic housing				
	KSP–201	KSS–201	KSN–201	KSH– 202/402	KSH– 203/403	KSH– 204/404	KSH– 301/501	KSH– 302/502	KSH– 303/503	KSH– 304/504	KSK–201
Number of probes	1			2+s*	3+s*	4+s*	1+s*	2+s*	3+s*	4+s*	1
Process connection	⅜" BSP			1½" BSP/NPT as per order code							Cable-mountable
Probe socket material	PP	Carbon steel	1.4571/1.4404				PP				–
Housing	–			Cast aluminum			PBT				ABS
Probe material	1.4571/1.4404										1.4401
Insulation of socket	PP	PFA					PP				ABS
Process temperature	max. +80 °C	maximum +200 °C					maximum +80 °C				
Ambient temperature		maximum +200 °C		maximum +80 °C							
Process pressure	max. 3 bar	maximum 16 bar					maximum 3 bar				–
Electrical connection	M4 nut, protected by rubber cap			M20×1.5 cable gland, cable diameter: Ø6…Ø12 mm							Pg7[1]
Ingress protection	IP20			IP65			IP67				IP68
Weight (without probe)	100 g			400 g			200 g				50 g

s = reference probe* [1] *Cable: Ø4…7 mm*

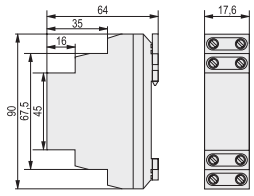
NIVOCONT KRK-512 1x output — 5 years

Conductive level control switch for KS sockets and KL probes
with 1x SPDT relay output for limit switching or differential switching with time delay

Type

□ R K – 5 1 2 – 5

K	Conductive level switch



KRK–512–5

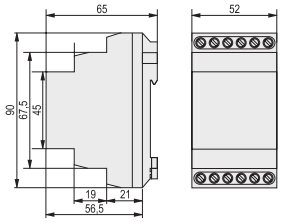
NIVOCONT KRK-622 2x outputs — 5 years

Conductive level control switch for KS sockets and KL probes
with 2x SPDT relay outputs for limit switching or differential switching with time delay

Supply voltage

K R K – 6 2 2 – □

1	230 V AC
4	24 V AC/DC



KRK–622–□

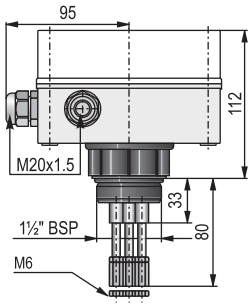
NIVOCONT KKH Compact — 5 years

Compact conductive level switch with single or dual channel probe socket
including 1 or 2 KRK-512 level control switches

Type

K K H – 2 □ 2 – 5

1	Single channel (3 probes)
2	Dual channel (5 probes)



KKH–2□2–5

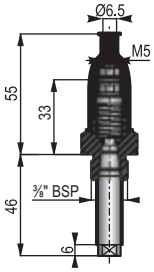
NIVOCONT KS Single-probe socket — 5 years

Single-probe socket for level detection of electrically conductive liquids
For level detection with KL electrodes and KR level control unit

Socket- / Insulation material

K S □ – 2 0 1 – 0

P	PP / PP
S	Carbon Steel / PFA
N	Stainless steel / PFA



KS□–201

NIVOCONT KSH Multi-probe socket — 5 years

Multi-probe socket for level detection of electrically conductive liquids
For level detection with KL electrodes and KR level control unit

Type / Process connection

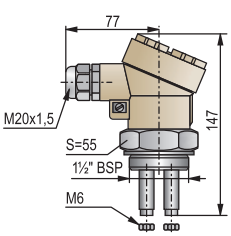
K S H – □ 0 ■ – 0

2	Aluminum housing / 1½" BSP
3	Plastic housing / 1½" BSP
4	Aluminum housing / 1½" NPT
5	Plastic housing / 1½" BSP, with titanium screws

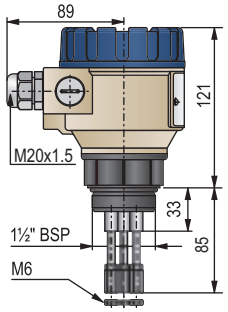
Probes

K S H – ■ 0 □ – 0

2	2-probes + reference electrode
3	3-probes + reference electrode
4	4-probes + reference electrode



KSH–202

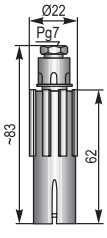


KSH–303

NIVOCONT KSK Submersible probe — 5 years

Submersible probe for conductive liquids, to connect to KR level control unit

K S K – 2 0 1 – 0 Submersible probe



KSK–201

Accessories sold separately; see relevant page for details

EAM–702–0	1½" female nut / 1.4571/1.4404
SSA–390–9M–020–01	1½" BSP female nut / PP

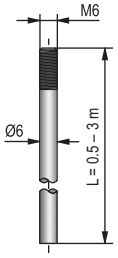
NIV24

KRK–512–5, KRK–622–1, KRK–622–4, KKH–212–5,
KKH–222–5, KSP–201–0, KSS–201–0, KSN–201–0,
KSH–202–0, KSH–302–0, KSK–201–0,
KSH–203–0, KSH–303–0, KSH–204–0, KSH–304–0,
KSH–303–0, KSH–304–0

NIVOCONT KLN Stainless steel probe — 5 years

Stainless steel probe stem with M6 thread for KS and KKH probe socket

Length	
K L N – 2 □□ – 0	
0 5	0.5 m
1 0	1.0 m
1 5	1.5 m
2 0	2.0 m
2 5	2.5 m
3 0	3.0 m



KLN–200

NIVOCONT KLB Coated probe stem — 5 years

Stainless steel (1.4571/1.4404) threaded (M6) probe stem for KS and KKH probe heads
Probe stem coated with plastic tube, 10 mm uninsulated length at the end.
Special version: PE-coated (up to +100 °C).

Length	
K L B – 2 □□ – 0	
0 5	0.5 m
1 0	1.0 m
1 5	1.5 m
2 0	2.0 m
2 5	2.5 m
3 0	3.0 m

NIVOCONT KLC PFA-coated probe stem — 5 years

Stainless steel (1.4571/1.4404) threaded (M6) probe stem for KS and KKH probe heads
Probe stem coated with plastic tube, 10 mm uninsulated length at the end.
Special version: PFA-coated (up to +200 °C).

Length	
K L C – 2 □□ – 0	
0 5	0.5 m
1 0	1.0 m
1 5	1.5 m
2 0	2.0 m
2 5	2.5 m
3 0	3.0 m

NIVOCONT KLE Probe extension — 5 years

Stainless steel electrode with M6 thread for KS and KKH probe socket
Special version: probe extension for KLN

Length	
K L E – 2 □□ – 0	
0 5	0.5 m
1 0	1.0 m
1 5	1.5 m
2 0	2.0 m
2 5	2.5 m

NIV24
KLN–205-0, KLN–210-0, KLN–215-0
KLN–220-0, KLN–230-0
KLP–204-0, KLP–201-0

Length	
3 0	3.0 m

NIVOCONT KLT Titanium probe — 5 years

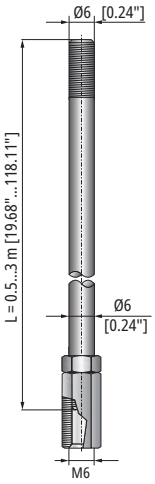
Titanium probe stem with M6 thread for KSH–5__ probe socket

Length	
K L T – 2 □□ – 0	
0 5	0.5 m
1 0	1.0 m
1 5	1.5 m
2 0	2.0 m
2 5	2.5 m
3 0	3.0 m

NIVOCONT KLF Probe extension — 5 years

Titanium probe stem with M6 thread for KSH–5__ probe socket
Special version: probe extension for KLT

Length	
K L F – 2 □□ – 0	
0 5	0.5 m
1 0	1.0 m
1 5	1.5 m
2 0	2.0 m
2 5	2.5 m
3 0	3.0 m



KLE/KLF–200

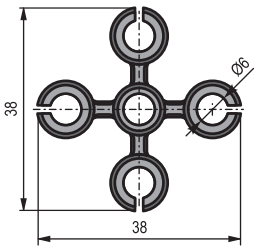
NIVOCONT KLP — 5 years

Separator for NIVOCONT K probes.
Separator does not fit coated probes.

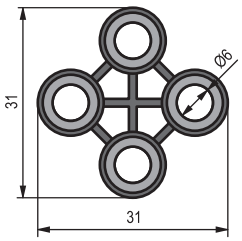
Type	
K L P – 2 0 4 – 0	For KSH-200
K L P – 2 0 1 – 0	For KSH-300 and KKH-200

Accessories sold separately; see relevant page for details

S A C – 1 ■ 1 – 0	Mounting brackets



KLP–201



KLP–204

NIV24
KLP–204-0, KLP–201-0

Magnetic Coupling Level Switches

The **NIVOMAG MK** magnetic float level switches are used for point-level detection and level control of liquids in all types of containers. Operating principle: the float's magnet activates the output switch via a non-contact coupling system. The device is available in numerous side and top-mounted versions, further widening the applicability of the device. For simpler jobs, fixed hysteresis models offer an affordable solution, while for a more complex level control application, the best choice is the adjustable hysteresis variants. Models with rubber and silicone sleeves can be used with contaminated liquids. The **NIVOMAG** switch can be fitted with an **MMK** tester to check functionality even when the liquid levels are not changing.

FEATURES

- Magnetic coupling between switch and float
- Operation w/o external power supply
- Side and top mounted versions
- Submersible version
- Fixed or variable hysteresis
- NIFLANGE weldable stainless steel flange variants
- Max. +250 °C process temperature
- Flame-proof version
- Aluminum or stainless steel housing
- Variants with 2× microswitches
- IP65 / IP68
- 5 years warranty

APPLICATIONS

- Overflow protection
- Level controls
- Supplementary fail-safe switch if combined with other devices
- Water tanks, feedwater tanks
- Fuel tanks
- Power plants

CERTIFICATES

- ATEX (Ex db eb mb G)
- IEC Ex (Ex db eb mb G)
- INMETRO (Ex db eb mb G)
- DNV
- Bureau Veritas (BV)
- SIL 1 (Safety Integrity Level)

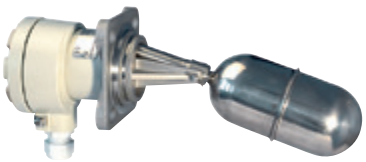
VARIANTS

The following tables and diagrams help select the appropriate model for the job. When selecting a model, liquid density, mounting position, process connection, and the need for adjustable or fixed hysteresis or a rubber sleeve must be considered.

Additional technical data				
Lever length (mm)	0…100	200	300	1000…3000
Maximum float Ø (mm)	Minimum liquid density (kg/dm³)			
52	0.7	0.8	0.85	–
64			0.8	–
124	–	–	–	0.7

	MK□–		
	–□1□	–□2□	–□3□
Fixed switching differential	■	–	–
Adjustable switching differential	–	■	■
Straight lever	■	■	■
"L" or "Z" lever	■	■	–
Side mounted	■	■	–
Top mounted	■(1)	■(1)	■
Submersible	■	■	■
Protective Rubber Sleeve	■	–	–
Flanged process connection	■	■	■(2)
Threaded process connection	■	–	–
Ex variant	■	■	■
Tester	■	■(3)	–
Stainless steel housing	■	■	■
2× microswitches	■	■	■

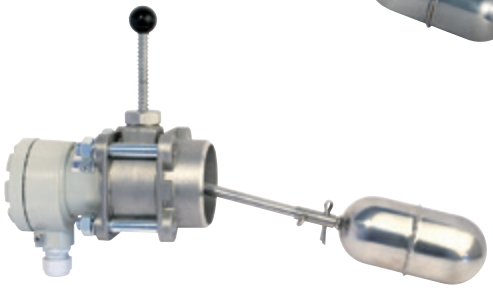
(1) With "L" lever. (2) Only with 92 × 92 flange. (3) Only with special counter flange.



MKA–210–□

MKA–220–□

MKZ–210–0



MKA–210–□ + MMK–1□0 tester + MFF–1□1 counter flange

MKA–230–□

TECHNICAL DATA

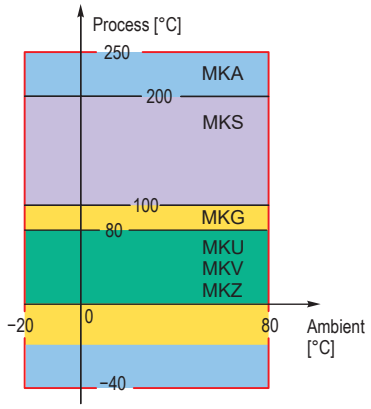
		Cylindrical float (side and top mounting)				Ball float (top mounting)
		MKA-□1□-□	MKA-□2□-□	MKU/MKV/MKZ-□1□-□	MKS / MKG-□1□-□	MK□-□3□-□
Nominal pressure		25 bar [MKU, MKV, MKZ: 2 bar / 25 bar]				16 bar
Process temperature		–40…+250 °C		0…+80 °C	MKS: 0…+200 °C MKG: 0…+100 °C	–40…+250 °C
		Ex variant: see Temperature specification table				
Ambient temperature		–20…+80 °C, Ex variant: see temperature specification for Ex version table				
Liquid density		Minimum 0.7…0.85 kg/dm³, see "Additional technical data" table				
Switching differential		Fixed	Adjustable	Fixed[1]		Adjustable
Insertion length		202…521 mm	254…573 mm	202…521 mm[1]		1265…3265 mm
Material of wetted parts		Stainless steel (1.4571, 1.3960, 1.4404); MKG, MKV: rubber (NBR); MKS, MKZ: silicone				
Housing material		Painted aluminum or stainless steel				
Microswitch		1 or 2 microswitch with closing and opening contact (NO and NC)[2]				
Switch rating	Standard	250 V 10 A AC12; 220 V 0.6 A DC13				
	Ex variant	250 V 2.5 A AC12; 220 V 0.3 A DC13				
Electrical connection		M20×1.5 cable gland, cable diameter: Ø6…12 mm (Ex version: Ø10…14 mm), wire cross section: 5× 0.75…2.5 mm² (MKU, MKV, MKZ: integrated cable NSSHöu-J 5× 1.5 mm², Ø14mm)[3]				
Ingress protection		IP65 (MKU, MKV, MKZ: IP68, up to 20 m water column)				
Electrical protection		Class I				
Safety integrity level		SIL 1				
Ex marking	ATEX	⟨Ex⟩ II 1/2 G Ex db eb mb IIC T6…T2 Ga/Gb				
	IEC Ex	Ex db eb mb IIC T6…T2 Ga/Gb				
	INMETRO	Ex db eb mb IIC T6…T2 Ga/Gb				
Weight		~1.8…3.5 kg				

[1] MKU type is also available with adjustable switching differential. In this case, the extension length is 254…573 mm.
[2] NO and NC terminals must be connected to an equipotential circuit.
[3] Cable length must be specified when ordered.

Ex INFORMATION

Temperature specification for Ex variants

Temperature classes		T6	T5	T4	T3	T2
Ambient temperature range		–20…+70 °C	–20…+80 °C			
Process temperature range	MKA	–40…+80 °C	–40…+95 °C	–40…+130 °C	–40…+200 °C	–40…+250 °C
	MKG	–20…+80 °C	–20…+95 °C			
	MKS	–40…+80 °C	–40…+95 °C	–40…+130 °C	–40…+200 °C	
	MKU, MKV, MKZ	–20…+70 °C	–20…+80 °C			




MKA–21□–□
with threaded process connection


MKA–21□–□
with flanged process connection


MKA–210–4
with "Z" lever


MKA–210–4
with "L" lever


MKU–210–□


MFF–110
counter flange


MFF–111 counter flange
+ MMK–120 tester

NIVOMAG MK-21 with fixed switch differential — 5 years

Side / top-mounted magnetic coupling float level switch with fixed switch differential with SIL 1 and marine (DNV, BV) certificates

Version

M K □ – ■ 1 ■ – ■

A		Standard
G		With rubber protective sleeve
S		With silicone protective sleeve
U	*	Submersible (IP68)
V	*	Submersible (IP68), with rubber protective sleeve
Z	*	Submersible (IP68), with silicone protective sleeve

* Cable length must be specified in text of the order.

Housing / Output

M K ■ – □ 1 ■ – ■

2		Aluminum / 1x SPDT
5	**	Aluminum / 2x SPDT
4		Stainless steel / 1x SPDT
6	**	Stainless steel / 2x SPDT

** Ex version in progress.

Process connection

M K ■ – ■ 1 □ – ■

0		92 × 92 mm, PN square flange
B	***	2" BSP
N	***	2" NPT
1	***	DIN DN80, PN40 / 25 / 16 / 10 steel
2	***	DIN DN100, PN40 / 25 steel
5	***	DIN DN80, PN40 / 25 / 16 / 10, 1.4571/1.4404 stainless steel
6	***	DIN DN100, PN40 / 25, 1.4571/1.4404 stainless steel
U	***	Stainless steel flanges; welded (MF_–___–J type flanges [available from size DN80] should be ordered separately)

*** Not available with protection sleeve

Protrusion / Lever length / Ex Certificate

M K ■ – ■ 1 ■ – □

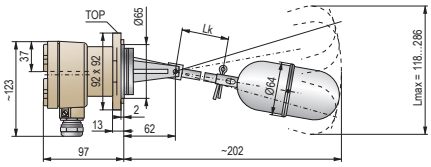
0		202 mm (189 mm for MKA-21B, 178 mm for MKA-21N)
1		321 / 100 mm
2		421 / 200 mm
3		521 / 300 mm
4	****	"L" or "Z" lever
9		202 mm (189 mm for MKA-21B, 178 mm for MKA-21N) / Ex db eb mb G
5		321 / 100 mm / Ex db eb mb G
6		421 / 200 mm / Ex db eb mb G
7		521 / 300 mm / Ex db eb mb G
8	****	"L" or "Z" lever / Ex db eb mb G

**** The type of the lever profile ("L" or "Z") and the upper (Lsh) or the lower (Lsl) switching point must be specified in text of the order.

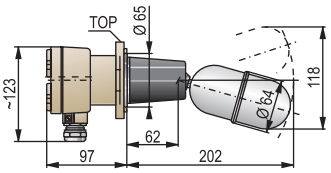
Need of IEC Ex is to be specified in the text part of the order

Cable for MKU/MKV/MKZ submersible version

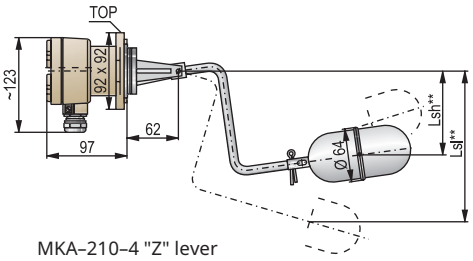
To be specified in the order; sold by the meter



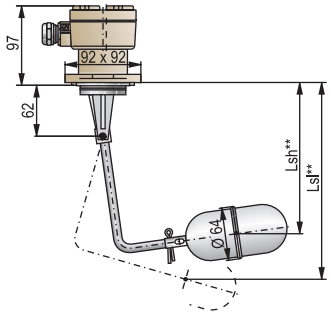
MKA–210–□



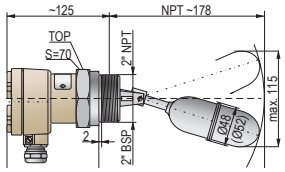
MKG–210–□



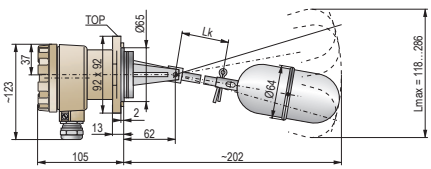
MKA–210–4 "Z" lever



MKA–210–4 "L" lever



MKA–21B / 21N



MKA–510–□

NIV24

MKA–210–0

NIVOMAG MK-22 with adjustable switch differential — 5 years

Magnetic coupling float level switch with adjustable switch differential
with SIL 1 and marine (DNV, BV) certificates

Version

M K □ – ■ 2 ■ – ■

A		Standard
U	*	Submersible (IP68)

* Cable length must be specified in text of the order.

Housing / Output

M K ■ – □ 2 ■ – ■

2		Aluminum / 1x SPDT
5	**	Aluminum / 2x SPDT
4		Stainless steel / 1x SPDT
6	**	Stainless steel / 2x SPDT

** Ex version in progress.

Process connection

M K ■ – ■ 2 □ – ■

0	92 × 92 mm, PN Square flange
1	DIN DN80, PN40 / 25 / 16 / 10 steel
2	DIN DN100, PN40 / 25 steel
5	DIN DN80, PN40 / 25 / 16 / 10, stainless steel
6	DIN DN100, PN40 / 25, 1.4571/1.4404 stainless steel
U	Stainless steel flanges; welded (MF_–___–J type flanges [available from size DN80] should be ordered separately)

Protrusion / Lever length / Ex certificate

M K ■ – ■ 2 ■ – □

0		254 mm
1		373 / 100 mm
2		473 / 200 mm
3		573 / 300 mm
4	***	"L" or "Z" lever
9		254 mm / Ex db eb mb G
5		373 / 100 mm / Ex db eb mb G
6		473 / 200 mm / Ex db eb mb G
7		573 / 300 mm / Ex db eb mb G
8	***	"L" or "Z" lever / Ex db eb mb G

*** The type of the lever profile ("L" or "Z") and the upper (Lsh)
or the lower (Lsl) switching point must be specified in text of the order.
With the adjustable switch differential option, the switching points can be shifted.

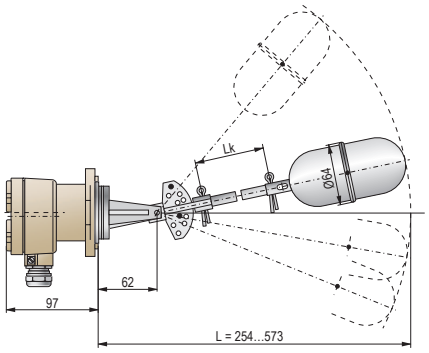
Need of IEC Ex is to be requested in the text part of the order

Cable for MKU submersible version

To be specified in the order; sold by the meter

Accessories sold separately

MKA-210-0M-200-00	Ø64 mm stainless steel (1.4404) ball float (for min. 0.7...0.8 kg/dm³ liquids)
MKA-21B-0M-000-02	Ø52 mm stainless steel (1.4404) ball float (for min. 0.7...0.85 kg/dm³ liquids)
MKA-230-0M-100-00	Ø124 mm stainless steel (1.4404) ball float (for min. 0.7 kg/dm³ liquids)
MKA-210-0M-900-00	Ø50 mm titanium float (for min. 0.4 kg/dm³ liquids)
MKA-140-0M-000-01	Oil resistant rubber sleeve
MKA-150-0M-000-01	Silicon protection sleeve
4guo74x2epdmy	EPDM O-ring (cover seal)
4gu2x76klinge	REINZ AFM34 flat gasket for 92x92 connection
4gu2colklinge	REINZ AFM34 flat gasket for 2" connection
MKA-110-1M-000-01	100 mm arm extension
MKA-110-2M-000-01	200 mm arm extension
MKA-110-3M-000-01	300 mm arm extension
4cesa5x25koa4	Split pin, 5x25 mm
MKA-110-1M-000-02	Tubular sleeve
MKA-120-0M-000-02	Hysteresis adjusting piece
MKA-120-0M-000-04	Tilting fork
MKA-220-0M-000-07	Tilt pin, long
MKA-120-0M-000-03	Adjuster pin
4cesa2x10koa4	Split pin, 2x10 mm
MKA-210-9M-100-00	Microswitch Ex
4we83140noncy	Microswitch non-Ex



MKA-220-□

NIVOMAG MK-23 Top-mounted — 5 years

Top-mounted magnetic coupling float level switch and adjustable switch differential with SIL 1 and marine (DNV, BV) certificates

Version

M K □ – ■ 3 0 – ■

A		Standard
U	*	Submersible (IP68)

* Cable length must be specified in text of the order.

Housing / Output

M K ■ – □ 3 0 – ■

2		Aluminum / 1x SPDT
5	**	Aluminum / 2x SPDT
4		Stainless steel / 1x SPDT
6	**	Stainless steel / 2x SPDT

** Ex version in progress.

Process connection

M K ■ – ■ 3 □ – ■

0	92 × 92 mm, PN Square flange

Protrusion / Lever length / Ex certificate

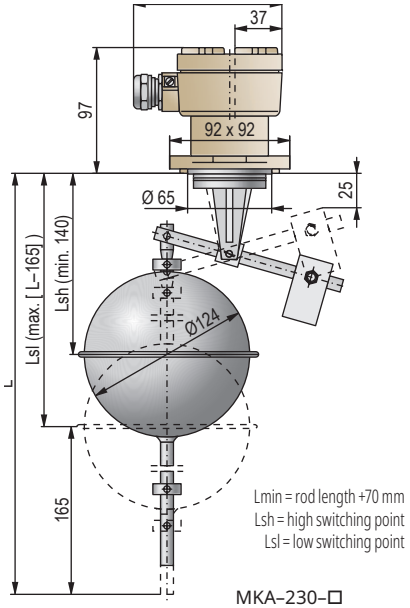
M K ■ – ■ 3 0 – □

1	1265 mm / 1000 mm
2	2265 mm / 2000 mm
3	3265 mm / 3000 mm
5	1265 mm / 1000 mm / Ex db eb mb G
6	2265 mm / 2000 mm / Ex db eb mb G
7	3265 mm / 3000 mm / Ex db eb mb G

Need of IEC Ex is to be requested in the text part of the order

Cable for MKU submersible version

To be specified in the order; sold by the meter



MKA-230-□

NIVOMAG MFF Counter flange — 5 years

Counter flange for MK magnetic level switch

Material

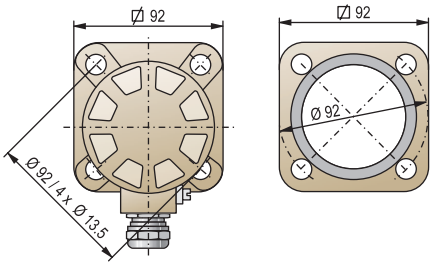
M F F – 1 □ ■ – 0

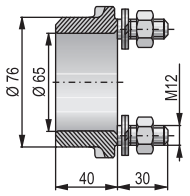
1	Steel (1.7218)
2	Stainless steel (1.4409)

Version

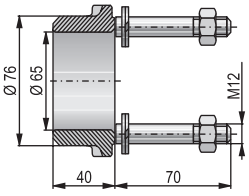
M F F – 1 ■ □ – 0

0	Standard
1	For units with MMK-1_0 tester





MFF-110



MFF-111

NIVOMAG MMK Tester — 5 years

Tester for MK magnetic level switch

Type

M M K – 1 1 0 – 0	Steel (1.7218)
M M K – 1 2 0 – 0	Stainless steel (1.4409)

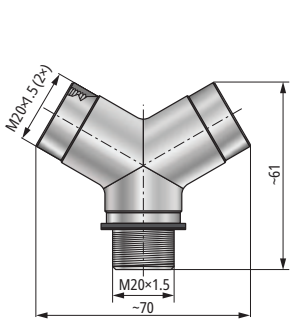
NIVOMAG MAY Gland adapter — 5 years

Y-adapter for multiple cable entry with M20x1.5 connector size, for non Ex devices.

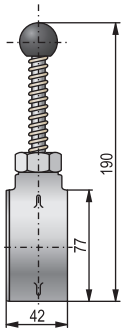
Type

M A Y – 1 2 2 – □

0	Without gland
1	Plastic glands
2	Metal glands



MAY-122-0



MMK-110

NIVOPOINT magnetic float level switches are suitable for single and multi-point level controlling tasks in non-hazardous and hazardous areas. The device consists of a probe tube, a float incorporating a magnet, and the housing that contains the connection terminals. Up to 5 switches can be connected to the probe. A sliding-sleeve on the top of the probe provides a simultaneous ±25 mm adjustment possibility of the positioning of the switches. The wetted parts of the level switch are made of stainless steel. Plastic-coated versions are suitable for measuring aggressive liquids, and ATEX certified variants can be used with explosive materials. The measured medium and application determine floats and process connections.

The mini version of the NIVOPOINT magnetic float level switch is suitable for small tanks. The small size and easy installation make it perfect for detecting the maximum, minimum, or intermediate level using the tank's or device's connection stubs made for other purposes.

FEATURES

- Level switching without auxiliary power
- Up to 5 switching points
- Stainless steel and plastic-coated versions
- +150 °C process temperature
- Mini version
- Wide variety of floats
- IP67 / IP68
- Ex variant
- 5 years warranty

APPLICATIONS

- Multi-point level switching
- For controlling pumps, valves
- Level detection of aggressive liquids
- Level switching of explosive liquids

CERTIFICATES

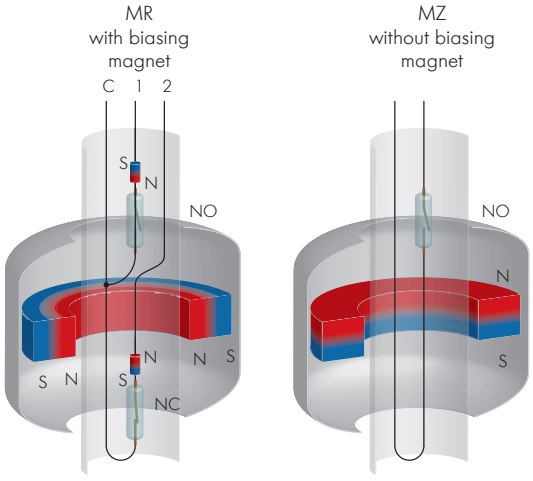
- ATEX (Ex d G)
- Bureau Veritas (BV) (only for MZ☐ types)

MZS–100
mini version

MP☐–100
Plastic-coated
version

MZC–300

MR☐–100
Standard version



OPERATION

NIVOPOINT magnetic float level switches use the interaction between a magnet in the float and the reed switches in the probe. The float moves along the stem, following the level of the liquid and activating the reed-switches. As the float moves along the reed-switches, it changes their state *(NO or NC)*, and they stay triggered until the liquid's level falls, and the float moves along the reed switches again, breaking off the self-holding state and restoring the previous state of the reed-switches. The mini version does not contain biasing magnets. By following the level, the magnetic float activates the reed switches in the probe. The reed switches opens or close according to the position of the magnetic float. The default state is when the float is at the bottom position.

TECHNICAL DATA

	Standard (MR)	Plastic-coated (MP)	Explosion-proof (MR [Ex])	Mini (MZ)
Insertion length	0.25…3 m[1]			0.1…1.5 m
Material of wetted parts	Titan / 1.4404 / 1.4435 float; 1.4571/1.4404 probe tube	PVDF / PP float; PFA / PP-coated probe tube	Titan / 1.4404 / 1.4435 float; 1.4571/1.4404 probe tube	
Max. process pressure[2]	16 / 25 bar	3 / 6 bar	16 / 25 bar	
Min. medium density	0.45…0.8 kg/dm³	0.4 / 0.7 kg/dm³	0.45…0.8 kg/dm³	
Float sizes	See "Floats"			
Process temperature	–40…+150 °C	–40…+80 °C	See temperature data for Ex versions table	–40…+120 °C
Ambient temperature	–40…+95 °C			–20…+70 °C
Output	1…5 reed-switches, one connecting point of each is common NO/NC			1…3 reed-switches, NO/NC depending on float orientation
Switching rate[3]	120 W / VA, 250 V AC/DC, If process temp. is ≤ +100 °C, then 2 A per reed-relay, max. 6 A in total, If process temp. is > +100 °C, then 1 A per reed-relay, max. 3 A in total			120 W / VA; 250 V AC / DC; max. 2 A
Switching point	See auxiliary table of order codes			up to 3 (to be specified when ordering)
Switching differential	<10 mm			max. Δ8 mm
Distance between reed-switches	≥110 mm			≥90 mm
Electrical connection	M20×1.5 cable gland, cable diameter: 6…12 mm		M20×1.5 cable gland, cable diameter: 7…12 mm[4]	0.5 m long[5] cable with silicone insulation
	Terminal, 0.5…2.5 mm² wire cross section			
Process connection	As per order code			
Seal	Klingerit[6]	–	Klingerit[6]	
Electrical protection	Class I (protective cable 4 mm²)			Class II (reinforced insulation)
Ingress protection	IP67			IP68 (20 m)
Certification	–		ATEX: ⟨Ex⟩ II 1/2G Ex db IIC T6…T3 Ga/Gb	Bureau Veritas
Housing dimensions	116 × 80 × 65 mm		124 × 80 × 65 mm	–
Weight	400 g + 300 g/m		450 g + 300 g/m	~0.15…2.5 kg (depending on order) + cable: 0.03 kg/m

[1] 3…4 m as per special offer, Ex version not available. [2] at +20 °C. [3] For inductive loads, it is not recommended to apply a current exceeding 10% of the rated current, as this may significantly reduce the lifespan of the switching element. In the case of capacitive loads, it must be ensured that the inrush current does not exceed 300% of the rated current. [4] The type MR□–□□□–8 Ex devices are shipped without cable glands. [5] Available with different cable length. [6] Only for BSP.

TEMPERATURE DATA FOR Ex VERSIONS

Class	T6	T5	T4	T3
Highest ambient temperature	+65 °C	+80 °C	+95 °C	+95 °C
Highest medium temperature	+80 °C	+95 °C	+130 °C	+150 °C
Minimum ambient temperature	–40 °C			

REQUIRED SPECIFICATIONS IN THE ORDER

Switching point[7]		Default operation mode[8]	
		NO	NC
L1[9]	..... mm	☐	☐
L2	..... mm	☐	☐
L3	..... mm	☐	☐
L4	..... mm	☐	☐
L5	..... mm	☐	☐

[7] Min. distance of the switching points: 110 mm for MR□/MP□, 70 mm for MZ□.
[8] Default operation mode (NO/NC) is meant with bottom positioned float.
[9] L = insertion length (custom size available).

NIVOPOINT MR up to 5 switch points — 5 years

Magnetic tracking float level switch with up to 5 switch points. Output: NO or NC
with stainless steel rod probe and Ø54x60 mm stainless steel float and IP67 aluminum housing

Process connection

M R □ – ■■■ – ■

A	1" BSP
B	1½" BSP
C	2" BSP
D	1" NPT
H	1¼" NPT
E	1½" NPT
G	2" NPT
O	2½" TriClamp
P	3" TriClamp
R	4" TriClamp

Number of switching points

M R ■ – □■■ – ■

1	1 switch
2	2 switches
3	3 switches
4	4 switches
5	5 switches

Probe length (Ln)**

M R ■ – ■□□ – ■

n n	0.3...0.5 m; sold by the 0.1 m
o o	0.6...3 m; sold by the 0.1 m

nn = 03...05 : 0.3...0.5 m
oo = 06...30 : 0.6...3 m, ** 3...4 m as per special offer, Ex version not available

Ex certificate

M R ■ – ■■■ – □

3	For non-hazardous area
7	Ex d G
8	Ex d G (without cable gland)

Available on request (must be specified in the text of the order)

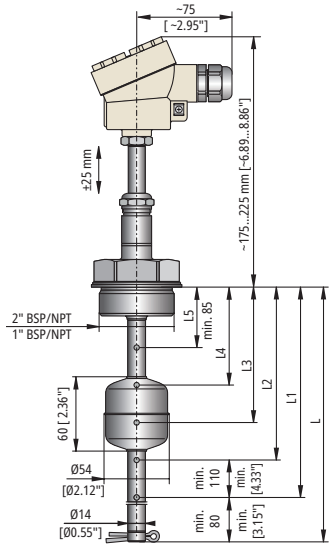
MRC–105–7M–700–00	Ø96 mm stainless steel (1.4404) ball float (for min. 0.55 kg/dm³ liquids)
MRC–105–7M–800–00	Ø124 mm stainless steel (1.4401) ball float (for min. 0.4 kg/dm³ liquids)
MRC–105–7M–900–00	Ø54x60 mm titanium float (for min. 0.55 kg/dm³ liquids)
MRC–106–7M–900–00	Ø50x100 mm titanium float (for min. 0.45 kg/dm³ liquids)

Accessories sold separately

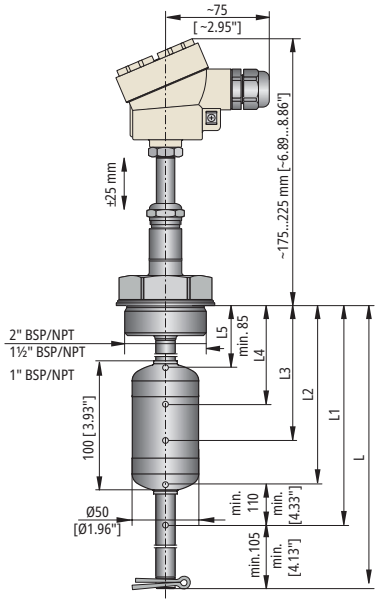
MRC–105–7M–600–00	Ø54x60 mm stainless steel (1.4401) ball float (for min. 0.8 kg/dm³ liquids)
MRC–105–7M–700–00	Ø96 mm stainless steel (1.4404) ball float (for min. 0.55 kg/dm³ liquids)
MRC–105–7M–800–00	Ø124 mm stainless steel (1.4401) ball float (for min. 0.4 kg/dm³ liquids)
MRC–105–7M–900–00	Ø54x60 mm titanium float (for min. 0.55 kg/dm³ liquids)
MRC–106–7M–900–00	Ø50x100 mm titanium float (for min. 0.45 kg/dm³ liquids)

Accessories sold separately; see relevant page for details

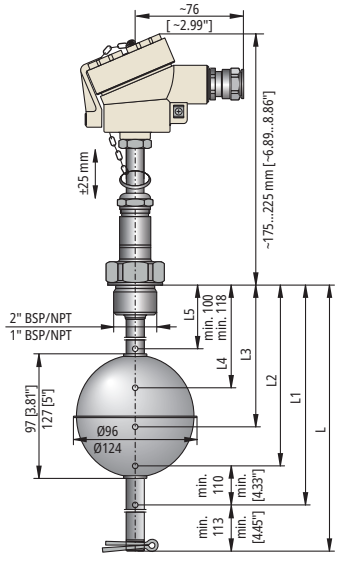
S A C – 1 ■ 1 – 0	Mounting brackets



MR□–□00–3

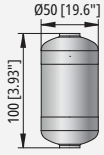
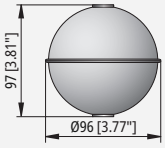
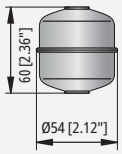
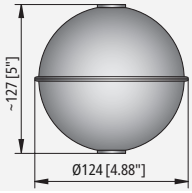


MR□–□00–3
+ MRC–106–7M–900–00



MR□–□00–7 Ex
+ MRC–105–7M–800–00

FLOATS

	MRC–106–7M–900–00	MRC–105–7M–700–00	MRC–105–7M– 900–00	MRC–105–7M– 600–00(1)	MRC–105–7M–800–00
Dimensions					
Min. medium density [kg/dm³]	0.45	0.55	0.55	0.8	0.4
Material	Titanium	Austenitic stainless steel(2)	Titanium	Austenitic stainless steel(2)	
Process pressure	16 bar		25 bar		

(1) Standard float.

(2) 1.4401, 1.4404, 1.4435, 1.4571, etc.

NIVOPOINT MP up to 5 switching points, plastic-coated — 5 years

Magnetic tracking float level switch with up to 5 switching points. Output: NO or NC with plastic-coated probe and Ø76x87 mm PVDF float and IP67 aluminum housing

Process connection

M P □ – ■ ■ ■ – 3

P	DIN DN80, PN16
R	DIN DN100, PN16

Number of switching points

M P ■ – □ ■ ■ – 3

1	1 switch
2	2 switches
3	3 switches
4	4 switches
5	5 switches

Probe length

M P ■ – ■ □ □ – 3

0 5	0.5 m
n n	0.6...3 m; sold by the 0.1 m

nn = 06...30 : 0.6...3 m

Float / Material

M P ■ – ■ ■ ■ – □

3	Ø76 x 87 / PVDF

Available on request (must be specified in the text of the order)

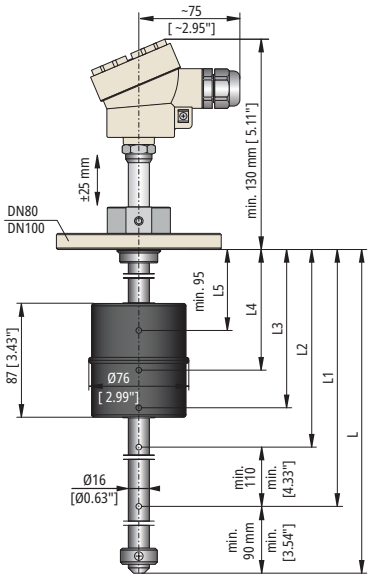
MPP-105-3M-900-00	Ø76x87 mm PP float (for min. 0.4 kg/dm³ liquids)

Accessories sold separately

MPP-105-3M-200-00	Ø76x87 mm PVDF float (for min. 0.7 kg/dm³ liquids)
MPP-105-3M-900-00	Ø76x87 mm PP float (for min. 0.4 kg/dm³ liquids)

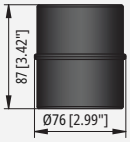
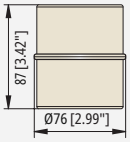
Accessories sold separately; see relevant page for details

S A C – 1 ■ 1 – 0	Mounting brackets



MP□–□00–3

FLOATS

	MPP-105-3M-200-00[1]	MPP-105-3M-900-00
Dimensions		
Medium density (min.) [kg/dm³]	0.7	0.4
Material	PVDF	PP
Process pressure	6 bar	3 bar

[1] *Standard float.*

NIVOPOINT MZ up to 3 switching points — 5 years

Magnetic float switch with up to 3 switching points
with stainless steel rod probe and Ø54x60 mm stainless steel float, with integrated cable and IP68 protection

Process connection

M Z □ – ■■■ – 3

A	1" BSP
B	1½" BSP
C	2" BSP
D	1" NPT
H	1¼" NPT
E	1½" NPT
G	2" NPT
S	¼" BSP (internally mountable)
U	¾" NPT (internally mountable)
O	2½" TriClamp
P	3" TriClamp
R	4" TriClamp

Number of switching points / Number of floats

M Z ■ – □■■ – 3

1	1 switch / 1 float
2	2 switches / 2 floats
3	3 switches / 3 floats

Probe length

M Z ■ – ■□□ – 3

n n	*	0.1...1.5 m; sold by the 0.1 m

nn = 01...15 : 0.1...1.5 m
* Ln = 100 mm for L1 = 60 mm

Cable

Sold by the meter over the standard 0.5 m

Available on request (must be specified in the text of the order)

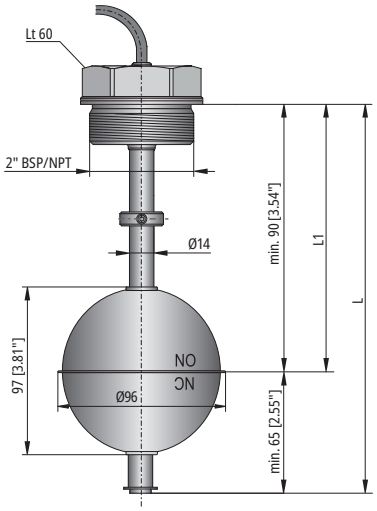
MZS–101–3M–800–00	Ø96 mm stainless steel (1.4404) (for min. 0.55 kg/dm³ liquids, from min. 200 mm probe length)
MZS–101–3M–900–00	Ø54x60 mm titanium float (for min. 0.55 kg/dm³ liquids)
MZS–101–3X–0C7–10	Ø49x60 mm titanium float (for min. 0.7 kg/dm³ liquids)
MZS–101–3M–600–00	Ø50x100 mm titanium float (for min. 0.45 kg/dm³ liquids)

Accessories sold separately

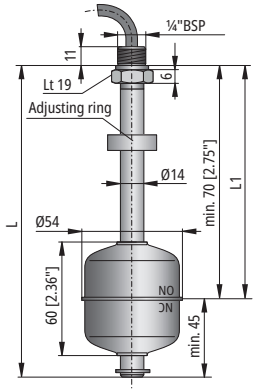
MZS–101–3M–700–00	Ø54x60 mm stainless steel (1.4404) (for min. 0.55 kg/dm³ liquids)
MZS–101–3M–800–00	Ø96 mm stainless steel (1.4404) (for min. 0.55 kg/dm³ liquids, from min. 200 mm probe length)
MZS–101–3M–900–00	Ø54x60 mm titanium float (for min. 0.55 kg/dm³ liquids)
MZS–101–3X–0C7–10	Ø49x60 mm titanium float (for min. 0.7 kg/dm³ liquids)
MZS–101–3M–600–00	Ø50x100 mm titanium float (for min. 0.45 kg/dm³ liquids)

Accessories sold separately; see relevant page for details

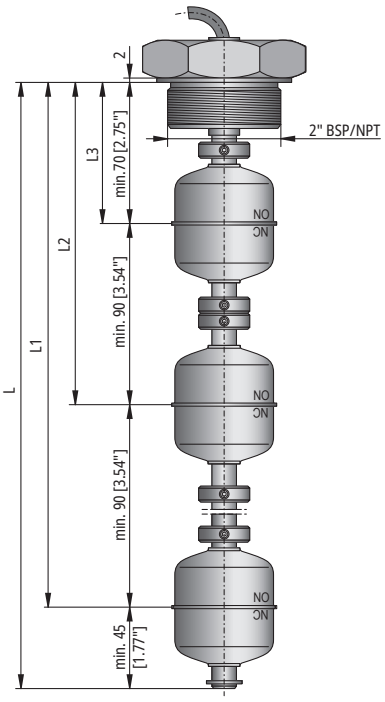
S A C – 1 ■ 1 – 0	Mounting brackets



MZC/MZG–1□□–3
with Ø96 mm float

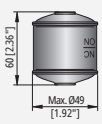
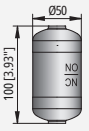
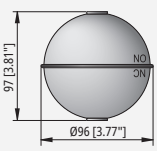
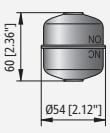


MZS–1□□–3



MZC/MZG–3□□–3

FLOATS

	MZS–101–3X –0C7–10	MZS–101–3M– 600–00	MZS–101–3M –800–00	MZS–101–3M– 900–00	MZS–101–3M– 700–00[1]
Dimensions					
Min. medium density [kg/dm³]	0.7	0.45	0.55	0.55	0.8
Material	Titanium		Austenitic stainless steel[2]	Titanium	Austenitic stainless steel[2]
Process pressure	16 bar			25 bar	

[1] *Standard float.*

[2] *1.4401, 1.4404, 1.4435, 1.4571, etc.*

NIV24
MZS–101–3

NIVOSWITCH RC–400 vibrating fork level switches with parallel vibrating fork are suitable for detecting the level of liquids. Mounted on pipes, tanks it can control filling/emptying, also can generate fail-safe alarms providing overfill- or dry run protection. The operation principle is based on that the electronic circuit excites a vibration in the fork probe. When the medium reaches and covers the fork, its vibration changes. The fork will start vibrating freely again as the medium sets it free. The electronics senses the change of vibration and gives output signal after a selected delay. The plastic-coated version is recommended to use for aggressive mediums, the highly polished version is recommended to use for abrasive mediums. The PNP/NPN transistor output versions can be connected directly to PLC, or relay unit.

Certain types of **NIVOSWITCH** vibrating forks are able to solve switching tasks of high-current loads with the help of **UNICONT PKK** switching amplifiers. **UNICONT** PKK–312–8 Ex is a recommended Intrinsic safety switching unit designed for Ex rated vibrating forks.

FEATURES

- Integrated version
- Rod length up to 3 meters
- ECTFE/PFA-coated version
- Polished vibrating part
- Hygienic versions with various process connections and 0.5 micron fine polishing
- Selectable sensitivity
- Electronic output
- Switching performance does not depend on the change of liquid conductivity, dielectric constant, pressure and temperature
- Process temperature max. +130 °C
- Output can be toggled by test magnet
- NIFLANGE weldable stainless steel flange variants
- Ex, DNV variants
- IP65/IP68

APPLICATIONS

- For liquids: min. 0.7 kg/dm^3 density and max. 10^4 mm^2/s viscosity
- Food & beverages industry, water industry, chemical industry, oil industry
- For normal or hazardous, aggressive (acids, solvents) liquids
- Covers a large variety of level detection, applications such as high/low fail-safe limit switch, overfill or dry-run protection, pump controls

CERTIFICATES

- ATEX (Ex ia G)

VARIANTS

This table helps choose the proper version for a given level switching task. Most essential aspect is the consistency of the measurement medium.

		RC□–400
Stainless steel housing		■
Aluminum housing		–
Plastic housing		–
Extension		■
High-polished version		■
Plastic-coated fork		■
2" process connection		■
1", 1½" process connection		■
Relay output		–
Electronic output		■
Electrical connection	Terminal	–
	DIN connector	■
	M12 connector	■
	Cable	■
Intrinsic safety version		■
Flameproof enclosure		–
DNV		–
Mode setting *(low-high level)*		■ [1]
Mode indication		■
Output test magnet		■

[1] *Only for 3-wire DC versions*

PKK–312–8 Ex
Ex ia power supply
for Ex ia vibrating forks

RPS–101–0
test magnet

RBM–401–3

RCM–401
cable version

RCM–402
with M12
connector

RCM–400
with DIN connector

TECHNICAL DATA

	2-wire AC version	2-wire DC version	3-wire DC version
	R□□–4□□		
	–1, –2	–6, –7, –K, –8 Ex, –9 Ex, –L Ex	–3, –4, –M
Insertion length	69…3000 mm, as per order code		
Material of wetted parts	1.4571/1.4404 stainless steel or ECTFE/PFA-coating		
Process connection	As per order code		
Process temperature	–40…+130 °C (see "Temperature diagram"), for ECTFE-coated versions: –40…+120 °C		
Ambient temperature	–40…+70 °C (see "Temperature diagram") with M12 connector: –25…+70 °C		
Process pressure	Up to 40 bar; PP flange: 6 bar (see "Pressure-temperature diagram")		
Medium density	≥ 0.7 kg/dm^3		
Medium viscosity	≤ 10,000 mm^2/s (cSt)		
Response time	Getting immersed: 0.5 s		
	Getting free: ≤ 1 s (see response time diagram)		
Output mode indication	Bi-color (LED)		
Operation test	Output can be toggled by test magnet		
Housing material	1.4571/1.4404 stainless steel		
Electrical protection	Class I	Class III	
Output protection	–		Reverse polarity, overcurrent and short-circuit protection
Weight	~0.5 kg + 1.2 kg/m extension		

TYPE-SPECIFIC DATA

	2-wire AC version		2-wire DC version			3-wire DC version		
	R□□–4□□							
	–1	–2	–6, –8 Ex	–K, –L Ex	–7, –9 Ex	–3	–M	–4
Electrical connection	DIN connector	3 m integrated cable [1] (4× 0.75 mm^2)	DIN connector	M12 connector	3 m integrated cable [1] (2× 0.5 mm^2)	DIN connector	M12 connector	3 m integrated cable [1] (5× 0.5 mm^2)
Ingress protection	IP65	IP68	IP65	IP67	IP68	IP65	IP67	IP68
High/low mode setting (Low fail-safe – "L", High fail-safe – "H")	Determined by the wiring inside the connector	Determined by the wiring	By switch on the remote switching unit			Switch selectable	Connection within connector	Wire selectable
Supply voltage	20…255 V AC		15…29 V DC			12…55 V DC		
Power consumption	depending on load		< 0.5 W			< 0.6 W		
Output	2-wire AC, for serial connection		DC current change: When free: 9 ±1 mA; When immersed: 14 ±1 mA			Field selectable, NPN / PNP transistor switch		Field selectable, galvanically isolated PNP/NPN transistor switch
Load current (I_L)	max. continuous: 350 mA AC 13 min. continuous: 10 mA / 255 V, 25 mA / 24 V – max. impulse: 1.5 A / 40 ms		–			max. continuous: I_{Lmax} = 350 mA DC / U_{max} = 55 V DC		
Residual current, in switched off state (I_{min})	< 6 mA		–			< 100 µA		
Voltage drop when switched on	< 10.5 V		–			< 4.5 V		

[1] *Available cable length: up to 30 m.*

Ex INFORMATION

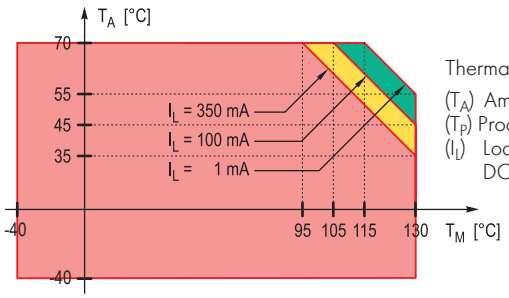
		R□□-4□□-8 Ex (DIN connector)	R□□-4□□-L Ex (M12 connector)	RC□-4□□-9 Ex (integrated cable[1])
Explosion protection		Intrinsically safe[2]		
Ex marking	ATEX	⟨Ex⟩ II 1G Ex ia IIB T6…T4 Ga; ⟨Ex⟩ II 1G Ex ia IIC T6…T4 Ga		
Intrinsic safety limits		U_i = 29 V; I_i = 100 mA; P_i = 1.4 W; C_i = 7 nF; L_i = 0 mH		U_i = 29 V; I_i = 100 mA; P_i = 1.4 W; C_i = 15 nF; L_i = 0 mH
Supply voltage		15…29 V DC		

[1] *Available cable length: max. 30 m.*
[2] *Intrinsically safe vibrating forks must be powered by [Ex ia] certified devices, for example by UNICONT PKK–312–8 Ex.*

TEMPERATURE DATA FOR Ex CERTIFIED MODELS

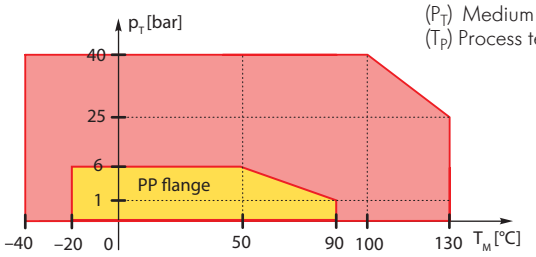
	R□□-4□□-8 Ex, -L Ex, -9 Ex			
Temperature classes	**T6**		**T5**	**T4**
Highest ambient temperature	+70 °C		+60 °C	
Highest process temperature	+70 °C	+75 °C	+95 °C	+130 °C

TEMPERATURE DIAGRAM



Thermal limits:
(T_A) Ambient temperature
(T_P) Process temperature
(I_L) Load current of DC versions

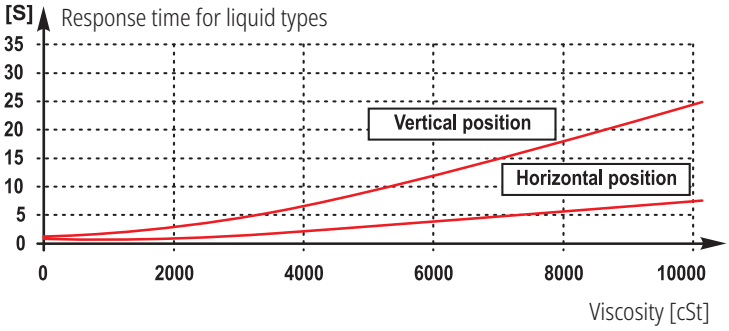
PRESSURE–TEMPERATURE DIAGRAM



(P_T) Medium pressure
(T_P) Process temperature

RGB–400–3

RESPONSE TIME DIAGRAM



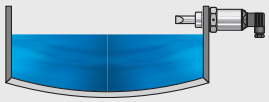
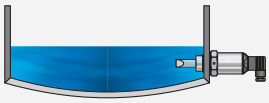
MODE SELECT

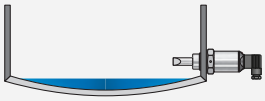
R□□-4□□-3

2-wire DC types:
Operating mode setting only possible on PKK–312 accessory

Other types:
Operating mode can be selected by wiring

OPERATION

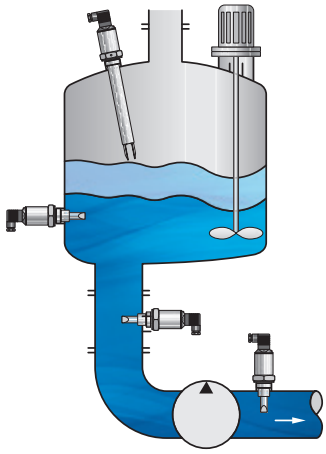
2-wire AC, 3-wire DC version					
Power supply	Fork location		Fail-Safe setting [2]	Status LED	Output
ON	High level		High		ON (I_L)
			High		OFF (I_{min})
	Low level		Low		ON (I_L)
			Low		OFF (I_{min})
OFF	–	–	High / Low		OFF (I = 0)

2-wire DC version			
Power supply	Fork location	Status LED	Output
ON			14 ±1 mA
			9 ±1 mA
OFF	Fork immersed, or fork is free		–

[2] *In the case of the integrated version with integrated cable, it is determined by the appropriate wiring.*

RCT–401–3

INSTALLATION



NIVOSWITCH RC-400 standard version — 3 years

Mini compact vibrating fork level switch for liquids

Type

R ■■ – 4 □□ – ■

0 0	69 mm
0 1	125 mm

Fork material

R □■ – 4 ■■ – ■

C	Tumble-polished stainless steel
G	High-polished stainless steel (Ra ≤ 0.5)
B	ECTFE-coated fork, PFA-coated extension (only 1" BSP (PVDF) or flange (PP or ECTFE -coated) process connection)
E	Stainless steel without reed sensor (Ex version not available)

Process connection

R ■□ – 4 ■■ – ■

M	1" BSP
P	1" NPT
T	1½" TriClamp (ISO 2852)
R	2" TriClamp (ISO 2852)
D	DN40 Pipe coupling (DIN 11851)
E	DN50 Pipe coupling (DIN 11851)
U	Stainless steel flanges; welded (MF_–___–H type flanges [available from size DN40] should be ordered separately)
Stainless steel flanges; Flanges conform to: EN 1092-1 / ANSI B 16.5	
S	DN40 PN40/25/16/10
G	DN50 PN40 / 25
B	ANSI 2" RF 600/400 psi
K	JIS 40K 50A
ECTFE-coated stainless steel flange Flanges conform to: EN 1092-1 / ANSI B 16.5	
S	DN40 PN40/25/16/10
G	DN50 PN40 / 25
B	ANSI 2" RF 600 / 400 psi
K	JIS 40K 50A
PP flanges (max. 6 bar; –20...+90 °C), DIN PN16 / ANSI 150 psi	
F	DN50 PN16
A	ANSI 2" FF 150 psi
J	JIS 10K 50A

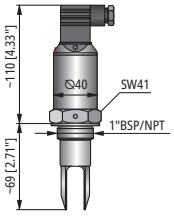
Output / Certificates

R ■■ – 4 ■■ – □

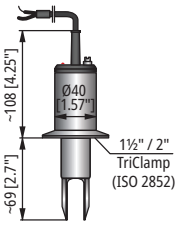
1	2-wire AC, DIN connector
2	2-wire AC, cable
3	3-wire DC, DIN connector
4	3-wire DC, cable
6	2-wire DC, DIN connector
7	2-wire DC, cable
8	2-wire DC, DIN connector / Ex ia G
9	2-wire DC, cable / Ex ia G
K	2-wire DC, M12 connector
L	2-wire DC, M12 connector / Ex ia G
M	3-wire DC, M12 connector

Cable

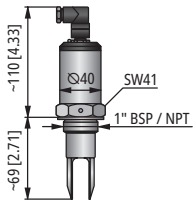
Maximum length 30 m; sold by the meter over the standard 3 m



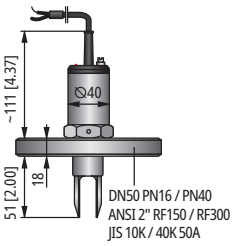
RCM / RCP–400



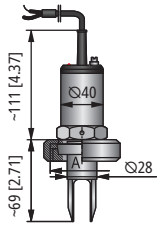
RCT / RCR–400



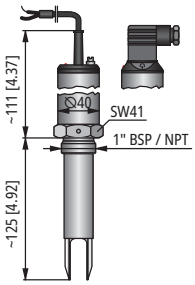
RCM / RCP–400 with M12 connection



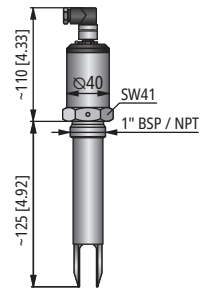
RCG–400



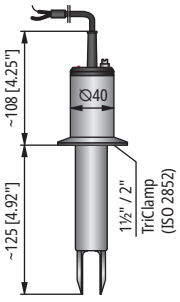
RCD–400



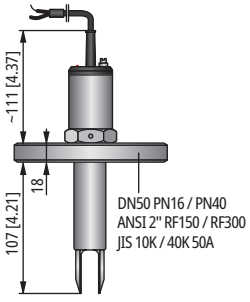
RCM / RCP–401



RCM / RCP–401 with M12 connection



RCT / RCR–401



RCG / RCF–401

	RCD	RCE
Nominal size	DN40	DN50
A	RD 65 x 1/6	RD 78 x 1/6

NIV24
RCM-400-3
RCM-401-3

NIVOSWITCH RC-400 rod-extended version — 3 years

Mini compact vibrating fork level switch for liquids
with stainless steel rod-extended probe up to 3 m

Fork material

R □■ – 4 ■■ – ■

C	Tumble-polished stainless steel
G	High-polished stainless steel (Ra ≤ 0.5)
B	ECTFE-coated fork, PFA-coated extension (only 1" BSP (PVDF) or flange (PP or ECTFE-coated) process connection)
E	Stainless steel without reed sensor (Ex version not available)

Process connection

R ■□ – 4 ■■ – ■

M	1" BSP
P	1" NPT
T	1½" TriClamp (ISO 2852)
R	2" TriClamp (ISO 2852)
D	DN40 Pipe coupling (DIN 11851)
E	DN50 Pipe coupling (DIN 11851)
U	Stainless steel flanges; welded (MF_–___–H type flanges [available from size DN40] should be ordered separately)
Stainless steel flanges; Flanges conform to: EN 1092-1 / ANSI B 16.5	
S	DN40 PN40/25/16/10
G	DN50 PN40/25
B	ANSI 2" RF 600/400 psi
K	JIS 40K 50A
ECTFE-coated stainless steel flange Flanges conform to: EN 1092-1 / ANSI B 16.5	
S	DN40 PN40/25/16/10
G	DN50 PN40 / 25
B	ANSI 2" RF 600 / 400 psi
K	JIS 40K 50A
PP flanges (max. 6 bar; –20...+90 °CC), DIN PN16 / ANSI 150 psi	
F	DN50 PN16
A	ANSI 2" FF 150 psi
J	JIS 10K 50A

Probe length

R ■■ – 4 □□ – ■

For standard polished forks (RC, RE)	
0 2	0.2 m
n n	0.3...3 m; sold by the 0.1 m
For high-polished forks (RG)	
0 2	0.2 m
n n	0.3...3 m; sold by the 0.1 m
For ECTFE-coated stainless steel forks (RA, RB)	
0 2	0.2 m
n n	0.3...3 m; sold by the 0.1 m

nn = 03...30 : 0,3...3 m

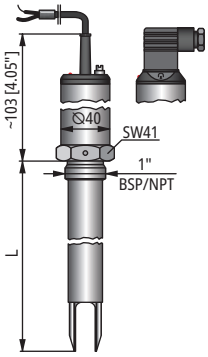
Output / Certificates

R ■■ – 4 ■■ – □

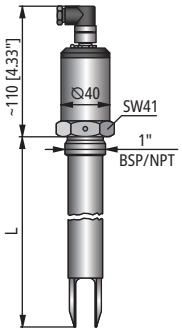
1	2-wire AC, DIN connector
2	2-wire AC, cable
3	3-wire DC, DIN connector
4	3-wire DC, cable
6	2-wire DC, DIN connector
7	2-wire DC, cable
8	2-wire DC, DIN connector / Ex ia G
9	2-wire DC, cable / Ex ia G
K	2-wire DC, M12 connector
L	2-wire DC, M12 connector / Ex ia G
M	3-wire DC, M12 connector

Cable

Maximum length 30 m; sold by the meter over the standard 3 m (R_ _-4_ _-9 Ex version comes with 3 m cable only)



RCM / RCP-402 / 430



RCM / RCP-402 / 430

NIVOSWITCH RF–400/500 vibrating fork level switches with parallel vibrating fork are suitable for detecting the level of liquids. Mounted on pipes, tanks it can control filling/emptying, also can generate fail-safe alarms providing overfill- or dry run protection. The operation principle is based on that the electronic circuit excites a vibration in the fork probe. When the medium reaches and covers the fork, its vibration changes. The fork will start vibrating freely again as the medium sets it free. The electronics senses the change of vibration and gives output signal after a selected delay. The plastic-coated version is recommended to use for aggressive mediums, the highly polished version is recommended to use for abrasive mediums. The PNP/NPN transistor output versions can be connected directly to PLC, or relay unit.

RFM–401–G

RFM–500

FEATURES

- Compact version
- Rod length up to 3 meters
- ECTFE/PFA-coated version
- Polished vibrating part
- Hygienic versions with various process connections and 0.5 micron fine polishing
- Selectable sensitivity
- Relay output
- Switching performance does not depend on the change of liquid conductivity, dielectric constant, pressure and temperature
- Process temperature max. +130 °C
- NIFLANGE weldable stainless steel flange variants
- Ex, DNV variants
- IP67

APPLICATIONS

- For liquids: min. 0.7 kg/dm^3 density and max. 10^4 mm^2/s viscosity
- Food & beverages industry, water industry, chemical industry, oil industry
- For normal or hazardous, aggressive (acids, solvents) liquids
- Covers a large variety of level detection, applications such as high/low fail-safe limit switch, overfill or dry-run protection, pump controls

CERTIFICATES

- ATEX (Ex d G)
- IEC Ex (Ex d G)
- DNV (only for RF–400 types)l)
- CE
- UKCA

VARIANTS

This table helps choose the proper version for a given level switching task. Most essential aspect is the consistency of the measurement medium.

		RF□–400/500	RN□–400 Ex
Housing material	Painted aluminum	■	■
	Plastic	■	–
	Stainless steel	–	–
Extension		■	■
High-polished version		■	■
Plastic-coated fork		■	–
2" process connection		■	■
1", 1½" process connection		■	■
Relay output		■	■
Electronic output		–	–
Electrical connections	Terminal block	■	■
	DIN connector	–	–
	M12 connector	–	–
	Cable	–	–
Intrinsic safety version		–	–
Flameproof enclosure		–	■
DNV		■	–
Mode setting *(low-high level)*		■	■
Mode indication		■	■
Output test magnet		–	–

RVG–501

RNM–402

TECHNICAL DATA

	Ex d version	Coated version	Standard version
	RN□-4□□-□ Ex, RM□-4□□-□ Ex	RV□-□□□-□	RF□-□□□-□, RJ□-□□□-□
Insertion length	69…3000 mm, as per order code		
Material of wetted parts	1.4571/1.4404 stainless steel	ECTFE/PFA-coating	1.4571/1.4404 stainless steel
Process connection	As per order code		
Process temperature	See "Temperature data for Ex certified models"	–40…+130 °C (see "Temperature diagrams"), PP flange: –20…+90 °C; ECTFE-coated with 1.4571/1.4404 flange[1]: –40…+120 °C	
Ambient temperature		R□□–4□□: –40…+70 °C, R□□–5□□: –30 …+70 °C	
Process pressure	max. 40 bar (see pressure diagrams)	6 bar	max. 40 bar (with PP flange 6 bar (see "Pressure diagrams")
Medium density	≥ 0.7 kg/dm^3		
Medium viscosity	≤ 10,000 mm^2/s (cSt)		
Response time	Getting immersed: ≤ 0.5 s		
	Getting free: ≤ 1 s (see "Response time diagram")		
Output mode indication	Bi-color (LED)		
Supply voltage	See Ex information	20…255 V AC / 20…60 V DC	
Power consumption	< 3 W		
Housing material	Painted aluminum	R□□–4□□: fiberglass-reinforced plastic (PBT) R□□–5□□: painted aluminum	
High/low mode setting	By switch (Low fail-safe – "L", High fail-safe – "H")		
Output	1 or 2 SPDT relays 250 V AC, 8 A, AC1 / 250 V AC, 6 A, AC1		
Electrical connection	See "Ex information"	2× M20×1.5 plastic cable glands for Ø6…Ø12 mm cable, 2× or 3 terminal blocks for max. 1.5 mm^2 wire cross section, 2× internally threaded ½" NPT connection for protective pipes	
Electrical protection	Class I		
Ingress protection	IP67		
Weight	~2.1 kg + 1.2 kg/m extension	R□□–4□□: ~1.3 kg + 1.2 kg/m extension; R□□–5□□: ~0.95 kg + 1.2 kg/m extension	

[1] *The temperature difference between inner and outer surface of the ECTFE-coated flanges must not exceed +60 °C. If necessary, insulate outer surface of the flange.*

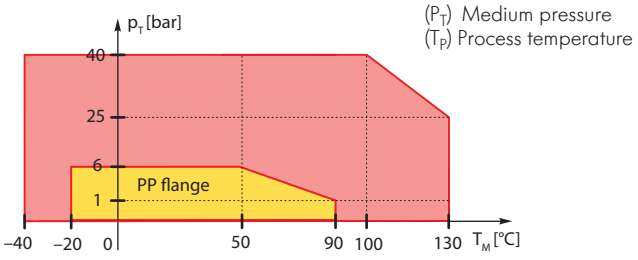
Ex INFORMATION

		Metal housing
		RN□-4□□-N Ex, RN□-4□□-P Ex, RM□-4□□-N Ex, RM□-4□□-P Ex
Explosion protection		Flame-proof housing
Ex marking	IEC Ex	Ex d IIB T6…T4 Ga/Gb, –40 °C ≤ T_{amb} ≤ +70 °C
	ATEX	⟨Ex⟩ II 1/2 G Ex d IIB T6…T4 Ga/Gb
Supply voltage		20…250 V AC (50/60 Hz) / 20…36 V DC
Electrical connection		2× M20×1.5 cable glands with Ex d IIC protection for Ø7…Ø12 mm cable
		2× or 3× terminal blocks for max. 1.5 mm^2 wire cross section, 2× ½" NPT internal threads for cable protective pipes.

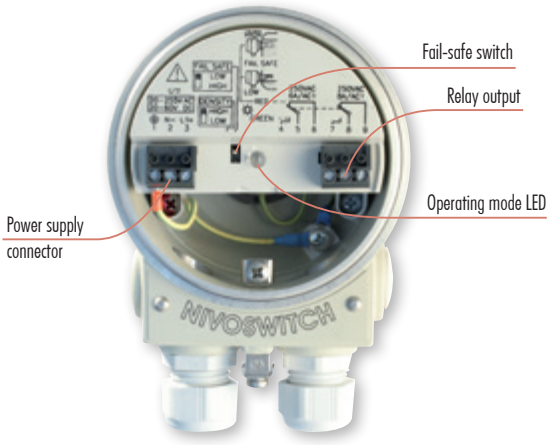
TEMPERATURE DATA FOR Ex CERTIFIED MODELS

	RN□-4□□-N Ex, -P Ex, RM□-4□□-N Ex, -P Ex			
Temperature classes	**T6**		**T5**	**T4**
Process temperature minimum: –40 °C; Maximum:	+70 °C	+80 °C	+95 °C	+130 °C
Ambient temperature minimum: –40 °C; Maximum:	+65 °C	+50 °C	+65 °C	+70 °C
Highest surface temperature of the process connection	+70 °C	+80 °C	+95 °C	+125 °C
Highest surface temperature	+75 °C			+130 °C

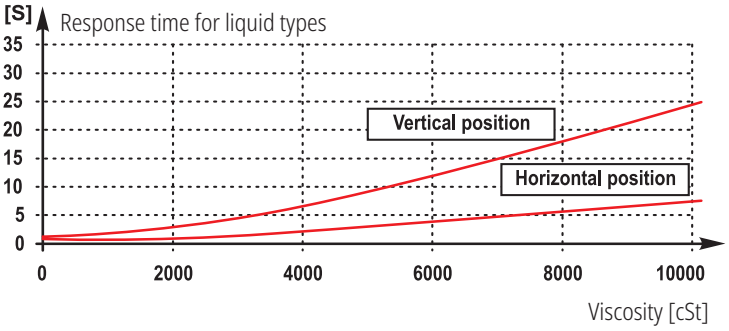
PRESSURE–TEMPERATURE DIAGRAM



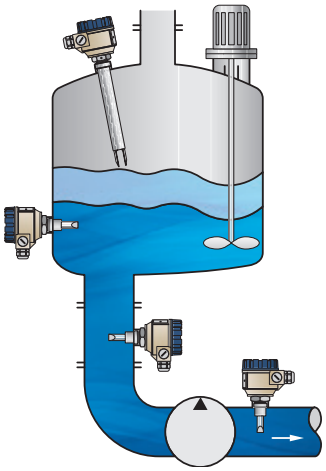
WIRING



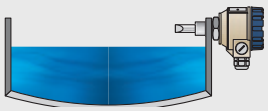
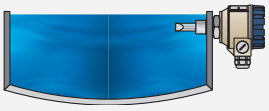
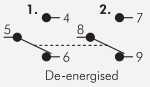
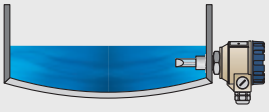
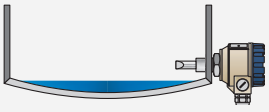
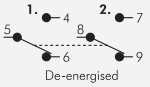
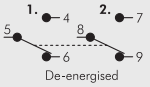
RESPONSE TIME DIAGRAM



INSTALLATION



OPERATION

Power supply	Fork location		Fail-Safe setting	Status LED	Output [2]
ON	High level		 HIGH		 Energised
			 HIGH		 De-energised
	Low level		 LOW		 Energised
			 LOW		 De-energised
OFF	–	–	High / Low		 De-energised

(2) Emergency is signaled by de-energized relay.

NIVOSWITCH RF-400 standard version — 3 years

Compact vibrating fork level switch for liquids

Type

R ■■ – ■□□ – ■

0 0	69 mm
0 1	125 mm

Fork material

R □■ – ■■■ – ■

F	Stainless steel with tumble polish
V	ECTFE-coated fork, PFA-coated extension (only 1" BSP (PVDF) or flange (PP or ECTFE-coated) process connection)
J	High-polished stainless steel (Ra ≤ 0.5)

Process connection

R ■□ – ■■■ – ■

M	1" BSP
P	1" NPT
T	1½" TriClamp (ISO 2852)
R	2" TriClamp (ISO 2852)
D	DN40 Pipe coupling (DIN 11851)
E	DN50 Pipe coupling (DIN 11851)
U	Stainless steel flanges; welded (MF_–___–H type flanges [available from size DN40] should be ordered separately)
Stainless steel flanges; Flanges conform to: EN 1092-1 / ANSI B 16.5	
S	DN40 PN40/25/16/10
G	DN50 PN40/25
B	ANSI 2" RF 600/400 psi
K	JIS 40K 50A
ECTFE-coated stainless steel flange Flanges conform to: EN 1092-1 / ANSI B 16.5	
S	DN40 PN40/25/16/10
G	DN50 PN40/25
B	ANSI 2" RF 600/400 psi
K	JIS 40K 50A
PP flanges (max. 6 bar; –20...+90 °C)	
F	DN50 PN16
A	ANSI 2" FF 150 psi
J	JIS 10K 50A

Housing

R ■■ – □■■ – ■

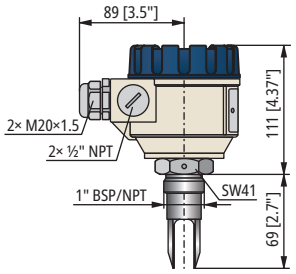
4	Painted aluminum
5	Fiberglass-reinforced plastic (PBT)

Output

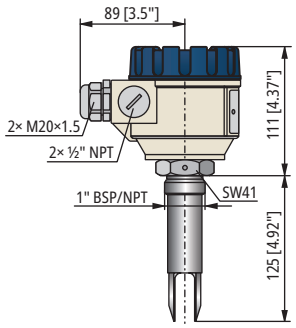
R ■■ – ■■■ – □

0		1 SPDT relay: 250 V AC, 8 A
A		2 SPDT relay: 1x 250 V AC, 8 A and 1x 250 V AC, 6 A
G	*	1 SPDT relay: 250 V AC, 8 A / DNV
H	*	2 SPDT relay: 1x 250 V AC, 8 A and 1x 250 V AC, 6 A / DNV

* RF version only, 1" BSP / 1" NPT and stainless steel flanged version only, with DNV certification.



RFM / RFP–400 / 500



RFM / RFP–401 / 501

NIVOSWITCH RF-400 rod-extended version — 3 years

Compact vibrating fork level switch for liquids
with stainless steel rod-extended probe up to 3 m

Fork material

R □■ – ■■■ – ■

F	Stainless steel with tumble polishing
V	ECTFE-coated fork, PFA-coated extension (only 1" BSP (PVDF) or flange (PP or ECTFE-coated) process connection)
J	High-polished stainless steel (Ra ≤ 0.5)

Process connection

R ■□ – ■■■ – ■

M	1" BSP
P	1" NPT
T	1½" TriClamp (ISO 2852)
R	2" TriClamp (ISO 2852)
D	DN40 Pipe coupling (DIN 11851)
E	DN50 Pipe coupling (DIN 11851)
U	Stainless steel flanges; welded (MF_–___–H type flanges [available from size DN40] should be ordered separately)
Stainless steel flanges; Flanges conform to: EN 1092-1 / ANSI B 16.5	
S	DN40 PN40/25/16/10
G	DN50 PN40/25
B	ANSI 2" RF 600/400 psi
K	JIS 40K 50A
ECTFE-coated stainless steel flange Flanges conform to: EN 1092-1 / ANSI B 16.5	
S	DN40 PN40/25/16/10
G	DN50 PN40/25
B	ANSI 2" RF 600/400 psi
K	JIS 40K 50A
PP flanges (max. 6 bar; –20...+90 °C)	
F	DN50 PN16
A	ANSI 2" FF 150 psi
J	JIS 10K 50A

Housing

R ■■ – □■■ – ■

4	Painted aluminum
5	Fiberglass-reinforced plastic (PBT)

Probe length

R ■■ – ■□□ – ■

For standard polished forks (RF)	
0 2	0.2 m
n n	0.3...3 m; sold by the 0.1 m
For high-polished forks (RJ)	
0 2	0.2 m
n n	0.3...3 m; sold by the 0.1 m
For ECTFE-coated stainless steel forks (RD, RV)	
0 2	0.2 m
n n	0.3...3 m; sold by the 0.1 m

nn = 03...30 : 0.3...3 m

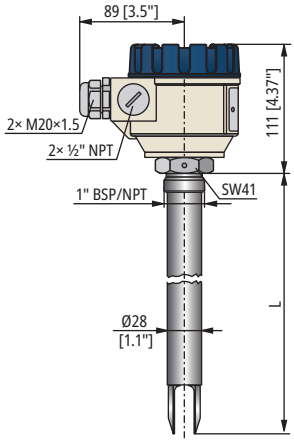
Output

R ■■ – ■■■ – □

0		1 SPDT relay: 250 V AC, 8 A
A		2 SPDT relay: 1x 250 V AC, 8 A and 1x 250 V AC, 6 A
G	*	1 SPDT relay: 250 V AC, 8 A / DNV
H	*	2 SPDT relay: 1x 250 V AC, 8 A and 1x 250 V AC, 6 A / DNV

* RF version only, 1" BSP / 1" NPT and stainless steel flanged version only, max. 300 mm, with DNV certification.

Non-standard probe lengths are available on request



RFM / RFP-402 / 430
RFM / RFP-502 / 530

NIVOSWITCH RN-400 Ex standard or rod-extended version — 3 years

Explosion proof compact vibrating fork level switch for liquids, standard probe length: 125 mm or with stainless steel rod-extended probe up to 3 m

Fork material / Ex certificate

R □■ – 4 ■■ – ■

N	Tumble-polished stainless steel / Ex d G
M	High-polished stainless steel (Ra ≤ 0.5) / Ex d G

Process connection

R ■□ – 4 ■■ – ■

M	1" BSP
P	1" NPT
H	1½" BSP
N	1½" NPT
C	2" BSP
L	2" NPT
T	1½" TriClamp (ISO 2852)
R	2" TriClamp (ISO 2852)
D	DN40 Pipe coupling (DIN 11851)
E	DN50 Pipe coupling (DIN 11851)
U	Stainless steel flanges; welded (MF_–___–H type flanges [available from size DN40] should be ordered separately)

Stainless steel flanges;
Flanges conform to: EN 1092-1 / ANSI B 16.5

S	DN40 PN40 / 25 / 16 / 10
G	DN50 PN40 / 25
B	ANSI 2" RF 600/300 psi
K	JIS 40K 50A

Housing

R ■■ – □■■ – ■

4	Painted aluminum

Probe length

R ■■ – 4 □□ – ■

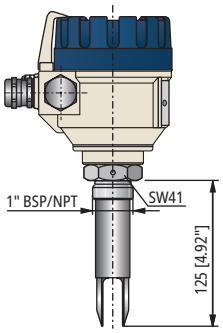
For standard polished forks (RN)	
0 0	Standard probe: 69 mm
0 1	Standard probe: 125 mm
n n	0.2...3 m; sold by the 0.1 m
For high-polished forks (RM)	
0 0	Standard probe: 69 mm
0 1	Standard probe: 125 mm
n n	0.2...3 m; sold by the 0.1 m

nn = 02...30 : 0,2...3 m

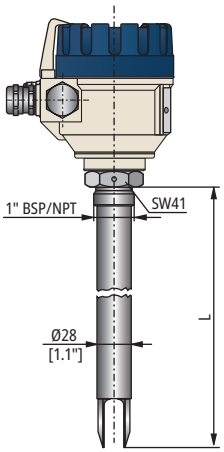
Output

R ■■ – 4 ■■ – □

N	1 SPDT relay: 250 V AC, 8 A
P	2 SPDT relay: 1x 250 V AC, 8 A and 1x 250 V AC, 6 A



RNM / RNP-401



RNM / RNP-402 / 430

NIVOSWITCH RL/RC–200/300 vibrating fork level switches are suitable for detecting the level of granular or powdered solids. Mounted on silos, bins it can control filling/emptying, also can generate fail-safe alarms providing overfill protection. The operation principle is based on that the electronic circuit excites a vibration in the fork probe. When the medium reaches and covers the fork, its vibration changes or stops. The fork will start vibrating freely again as the medium sets it free. The electronics senses the change of vibration and gives output signal after a selected delay.

The PNP/NPN transistor output versions can be connected directly to PLC, or relay unit. Certain types of **NIVOSWITCH** vibrating forks are able to solve switching tasks of high-current loads with the help of **UNICONT PKK** switching amplifiers.

FEATURES

- Integrated version
- Rod length up to 3 meters
- Selectable sensitivity
- Electronic output
- Switching performance does not depend on the change of liquid conductivity, dielectric constant, pressure and temperature
- Process temperature max. +130 °C
- Output can be toggled by test magnet (optional)
- Ex variants
- NIFLANGE weldable stainless steel flange variants
- IP65 / IP68
- 3 years warranty

APPLICATIONS

- For solids: min. 0.01 kg/dm^3 density
- Level switching for powders, granules
- Chemical industry, food & beverages, paper mill and plastic industry
- For free-flowing, powdered solids, granules
- Covers a large variety of level detection, applications such as high/low fail-safe limit switch, overfill protection

VARIANTS

This table helps choose the proper version for a given level switching task. Most essential aspect is the consistency of the measurement medium.

		RC□–300	RL□–300
Housing material	Stainless steel	■	■
	Plastic	–	–
	Aluminum	–	–
Extension		■	■
1" process connection		■	–
1½" process connection		■	■
Relay output		–	–
Electronic output		■	■
Electrical connection	Terminal block	–	–
	DIN connector	■	■
	Cable	■	■
Dust Ex version		–	–
Mode setting *(low-high level)*		■(1)	■(1)
Mode indication		■	■
Density selection		■	■
Output test magnet		■	■

(1) *Only for 3-wire DC versions*

RLH–301

RPS–101–0
test magnet

RLH–302

RCM–301

TECHNICAL DATA

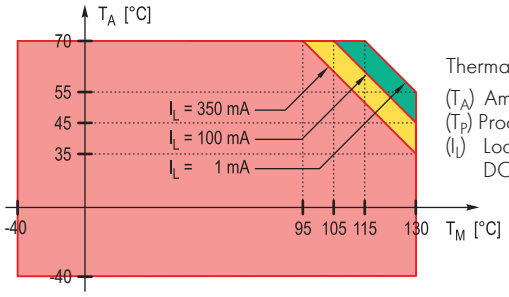
	2-wire AC version	2-wire DC version	3-wire DC version
	R□□-3□□-1, -2	R□□-3□□-6, -7	R□□-3□□-3, -4
Insertion length	125…3000 mm, as per order code		
Material of wetted parts	1.4571/1.4404 stainless steel		
Process connection	As per order code		
Process temperature	–40…+130 °C (see "Temperature diagram")		
Ambient temperature	–40…+70 °C (see "Temperature diagram")		
Process pressure	Up to 40 bar (4 MPa); PP flange: 6 bar (0.6 MPa) (see "Pressure-temperature diagram")		
Medium density	≥ 0.01 kg/dm³		
Response time	Getting immersed: 0.5 s		
	Getting free: ≤ 1 s at high-density ("H") setting (ρ ≥ 0.5 kg/dm³) ≤ 3 s at low-density ("L") setting (ρ < 0.5 kg/dm³)		
Output mode indication	Bi-color (LED)		
Operation test	Output can be toggled by test magnet		
Housing material	1.4571/1.4404 stainless steel		
Electrical protection	Class I	Class III	
Output protection	–		Reverse polarity, overcurrent and short-circuit protection
Weight	~0.5 kg + 1.2 kg/m extension		

TYPE-SPECIFIC DATA

	2-wire AC version		2-wire DC version		3-wire DC version	
	R□□-3□□					
	–1	–2	–6	–7	–3	–4
Electrical connection	DIN connector	3 m integrated cable[1]; (4× 0.75 mm²)	DIN connector	3 m integrated cable[1]; (2× 0.5 mm²)	DIN connector	3 m integrated cable[1]; (5× 0.5 mm²)
Ingress protection	IP65	IP68	IP65	IP68	IP65	IP68
High/low mode setting (Low fail-safe – "L", High fail-safe – "H")	Determined by the wiring inside the connector	Determined by the wiring	By switch on the remote switching unit		Switch selectable	Wire selectable
Selection of density (Low density – "L", high density – "H")	Not possible, ρ ≥ 0.5 kg/dm³		By inverting the polarity of connection		By switch on the cover	With wiring
Supply voltage	20…255 V AC		15…27 V DC		DC: 12…55 V DC	
Power consumption	depending on load		< 0.5 W		< 0.6 W	
Output	2-wire AC, for serial connection		DC current change: When free: 9 ±1 mA; When immersed: 14 ±1 mA		Field selectable, NPN / PNP transistor switch	Field selectable, galvanically isolated PNP/NPN transistor switch
Load current (I_L)	max. continuous: 350 mA AC 13 min. continuous: 10 mA / 255 V, 25 mA / 24 V max. impulse: 1.5 A / 40 ms		–		max. continuous: I_{Lmax} = 350 mA DC / U_{max} = 55 V DC	
Residual current, in switched off state (I_{min})	< 6 mA		–		< 10 µA	
Voltage drop when switched on	< 10.5 V		–		0…1.8 V	

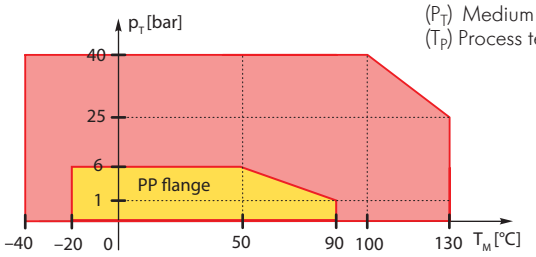
[1] *Available cable length: up to 30 m*

THERMAL PROPERTIES



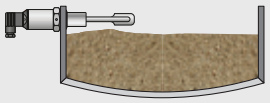
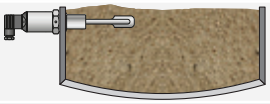
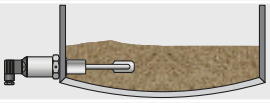
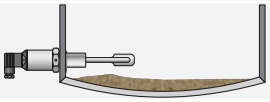
Thermal limits:
(T_A) Ambient temperature
(T_P) Process temperature
(I_L) Load current of DC versions

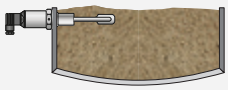
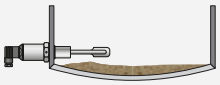
PRESSURE–TEMPERATURE DIAGRAM



(P_T) Medium pressure
(T_P) Process temperature

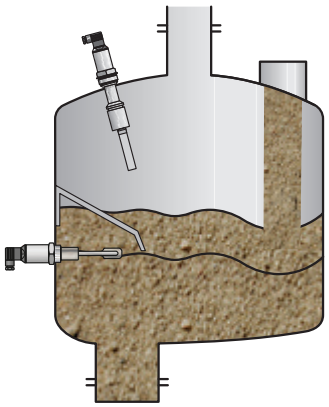
OPERATION

2-wire AC, 3-wire DC version					
Power supply	Fork location		Fail-Safe setting[2]	Status LED	Output
ON	High level		High		ON (I_L)
			High		OFF (I_{min})
	Low level		Low		ON (I_L)
			Low		OFF (I_{min})
OFF	–	–	High / Low		OFF (I = 0)

2-wire DC version			
Power supply	Fork location	Status LED	Output
ON			14 ±1 mA
			9 ±1 mA
OFF	Fork immersed, or fork is free		–

[2] *In the case of the integrated version with integrated cable, it is determined by the appropriate wiring.*

INSTALLATION



MODE SELECT

R□□–3□□–3

2-wire DC types
R□□–3□□–6, –7:
Operating mode setting only possible on PKK–312 accessory
Other types:
Operating mode can be selected by wiring

[3] Only for 3-wire DC versions.

NIVOSWITCH RC–300 standard version — 3 years

Mini compact vibrating fork level switch for light, free-flowing solids
Standard probe length: 125 mm

Process connection

R C □ – 3 ■■ – ■

M	1" BSP
P	1" NPT
U	Stainless steel flanges; welded (MF_–___–H type flanges [available from size DN40] should be ordered separately)

Stainless steel flanges;
Flanges conform to: EN 1092-1 / ANSI B 16.5

G	DN50 PN40 / 25
B	ANSI 2" RF 600 / 400 psi
K	JIS 40K 50A

PP flanges (max.: 6 bar; –20...+90 °C)

F	DN50 PN16
A	ANSI 2" FF 150 psi
J	JIS 10K 50A

Probe length

R C ■ – 3 □□ – ■

0 1	125 mm

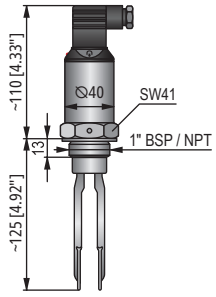
Output / Certificates

R C ■ – 3 ■■ – □

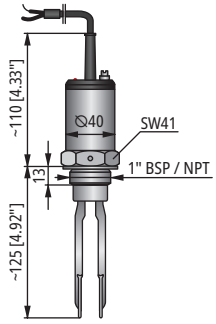
1	2-wire AC, connector
2	2-wire AC, cable
3	3-wire DC, connector
4	3-wire DC, cable
6	2-wire DC, connector
7	2-wire DC, cable

Cable

Maximum length 30 m; sold by the meter over the standard 3 m



RCM / RCP–301
with DIN connection



RCM / RCP–301
with integrated cable

NIVOSWITCH RC-300 rod-extended version — 3 years

Mini compact vibrating fork level switch for light, free-flowing solids
with stainless steel rod-extended probe up to 3 m

Process connection

R C □ – 3 ■ ■ – ■

M	1" BSP
P	1" NPT
U	Stainless steel flanges; welded (MF_–___–H type flanges [available from size DN40] should be ordered separately)

Stainless steel flanges;
Flanges conform to: EN 1092-1 / ANSI B 16.5

G	DN50 PN40 / 25
B	ANSI 2" RF 600 / 400 psi
K	JIS 40K 50A

PP flanges (max.: 6 bar; –20...+90 °C)

F	DN50 PN16
A	ANSI 2" FF 150 psi
J	JIS 10K 50A

Probe length

R C ■ – 3 □ □ – ■

0 2	0.2 m
n n	0.3...3 m; sold by the 0.1 m

nn = 03...30 : 0.3...3 m

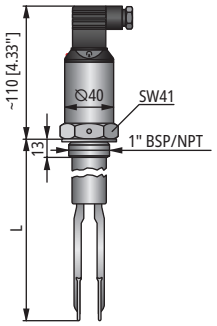
Output / Certificates

R C ■ – 3 ■ ■ – □

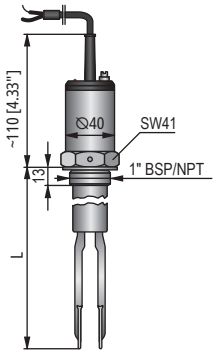
1	2-wire AC, connector
2	2-wire AC, cable
3	3-wire DC, connector
4	3-wire DC, cable
6	2-wire DC, connector
7	2-wire DC, cable

Cable

Maximum length 30 m; sold by the meter over the standard 3 m



RCM / RCP–302 / 330
with DIN connector



RCM / RCP–302 / 330
with integrated cable

NIVOSWITCH RL–300 short or standard version — 3 years

Mini compact vibrating fork level switch with welded fork for powders and granules
Short probe length: 137 mm, standard probe length: 175 mm

Type

R L ■ – 3 □□ – ■

0 1	137 mm
0 2	175 mm

Process connection

R L □ – 3 ■■ – ■

H	1½" BSP
N	1½" NPT
U	Stainless steel flanges; welded (MF_–___–H type flanges [available from size DN40] should be ordered separately)

Stainless steel flanges;
Flanges conform to: EN 1092-1 / ANSI B 16.5

G	DN50 PN40 / 25
B	ANSI 2" RF 600 / 400 psi
K	JIS 40K 50A

PP flanges (max. 6 bar; –20...+90 °C)

F	DN50 PN16
A	ANSI 2" FF 150 psi
J	JIS 10K 50A

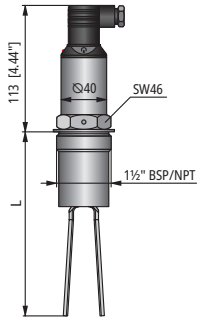
Output / Certificates

R L ■ – 3 ■■ – □

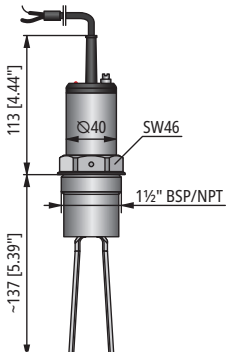
1	2-wire AC, DIN connector
2	2-wire AC, integrated cable
3	3-wire DC, DIN connector
4	3-wire DC, integrated cable
6	2-wire DC, DIN connector
7	2-wire DC, integrated cable

Cable

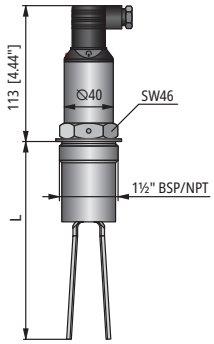
Maximum length 30 m; sold by the meter over the standard 3 m



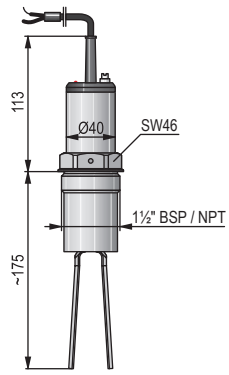
RLH / RLN–301
with DIN connector



RLH / RLN–301
with integrated cable



RLH / RLN–302
with DIN connector



RLH / RLN–302
with integrated cable

NIVOSWITCH RL–300 rod-extended version — 3 years

Mini compact vibrating fork level switch with welded fork for powders and granules
with stainless steel rod-extended probe up to 3 m

Process connection

R L □ – 3 ■ ■ – ■

H	1½" BSP
N	1½" NPT
U	Stainless steel flanges; welded (MF_–___–H type flanges [available from size DN40] should be ordered separately)

Stainless steel flanges;
Flanges conform to: EN 1092-1 / ANSI B 16.5

G	DN50 PN40 / 25
B	ANSI 2" RF 600 / 400 psi
K	JIS 40K 50A

PP flanges (max. 6 bar; –20...+90 °C)

F	DN50 PN16
A	ANSI 2" FF 150 psi
J	JIS 10K 50A

Probe length

R L ■ – 3 □ □ – ■

0 3	0.3 m
n n	0.4...3 m; sold by the 0.1 m

nn = 04...30 : 0.4...3 m

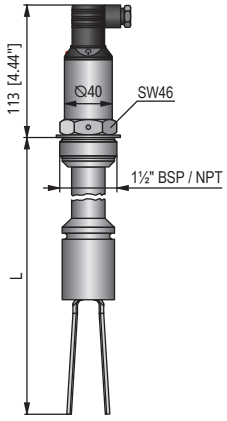
Output / Certificates

R L ■ – 3 ■ ■ – □

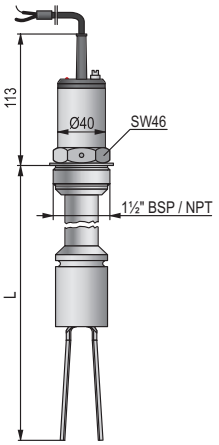
1	2-wire AC, DIN connector
2	2-wire AC, integrated cable
3	3-wire DC, DIN connector
4	3-wire DC, integrated cable
6	2-wire DC, DIN connector
7	2-wire DC, integrated cable

Cable

Maximum length 30 m; sold by the meter over the standard 3 m



RLH / RLN–303 / 330
with DIN connector



RLH / RLN–303 / 330
with integrated cable

NIVOSWITCH RF/RR–200/300 vibrating fork level switches with diverging vibrating fork are suitable for detecting the level of granular or powdered solids. Mounted on silos, bins it can control filling/emptying, also can generate fail-safe alarms providing overfill protection. The operation principle is based on that the electronic circuit excites a vibration in the fork probe. When the medium reaches and covers the fork, its vibration changes or stops. The fork will start vibrating freely again as the medium sets it free. The electronics senses the change of vibration and gives output signal after a selected delay.

FEATURES

- Compact version
- Rod length up to 3 meters
- Selectable sensitivity
- Relay output
- Switching performance does not depend on the change of liquid conductivity, dielectric constant, pressure and temperature
- Process temperature max. +130 °C
- Ex variants
- NIFLANGE weldable stainless steel flange variants
- IP67
- 3 years warranty

APPLICATIONS

- For solids: min. 0.01 kg/dm^3 density
- Level switching for powders, granules
- Chemical industry, food & beverages, paper mill and plastic industry
- For free-flowing, powdered solids, granules
- Covers a large variety of level detection, applications such as high/low fail-safe limit switch, overfill protection

CERTIFICATES

- ATEX (Ex ta/tb D)

VARIANTS

This table helps choose the proper version for a given level switching task. Most essential aspect is the consistency of the measurement medium.

		RF□–200/300	RR□–200/300
Housing material	Stainless steel	–	–
	Plastic	■	■
	Aluminum	■	■
Extension		■	■
1" process connection		■	–
1½" process connection		■	■
Relay output		■	■
Electronic output		–	–
Electrical connection	Terminal block	■	■
	DIN connector	–	–
	Cable	–	–
Dust Ex version		■	■
Mode setting *(low-high level)*		■	■
Mode indication		■	■
Density selection		■	■
Output test magnet		–	–

TECHNICAL DATA

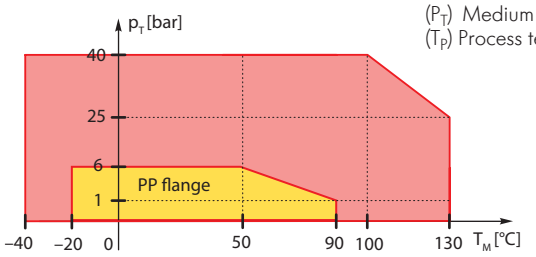
	Aluminum housing (R□□–3□□–□)	Plastic housing (R□□–2□□–□)
Insertion length	125…3000 mm, as per order code	
Material of wetted parts	1.4571/1.4404 stainless steel	
Process connection	As per order code	
Process temperature	–40…+130 °C, PP flange: –20…+90 °C	
Ambient temperature	–40…+70 °C	
Process pressure	max. 40 bar, with PP flange: 6 bar (see "Pressure-temperature diagram")	
Medium density	≥ 0.01 kg/dm^3	
Response time	Getting immersed: ≤ 0.5 s	
	Getting free: ≤ 1 s – selected high density (H) (ρ ≥ 0.5 kg/dm^3). ≤ 3 s – selected low density (L) (ρ < 0.5 kg/dm^3)	
Output mode indication	Bi-color (LED)	
Supply voltage[1]	20…255 V AC/DC	
Power consumption	DC: < 3 W	
Housing material	Painted aluminum	Fiberglass-reinforced plastic (PBT)
High/low mode setting	By switch (Low fail-safe (L), High fail-safe (H))	
Selection of density	By switch (Low density (L), high density (H))	
Output[1]	1 or 2 SPDT relays 250 V AC, 8 A, AC1 / 250 V AC, 6 A, AC1	
Electrical connection[1]	2× M20×1.5 plastic cable glands for Ø6…Ø12 mm cable, 2× or 3× terminal blocks for max. 2.5 mm^2 wire cross section, 2× internally threaded ½" NPT connection for protective pipes	
Electrical protection	Class I	
Ingress protection	IP67	
Weight	1.3 kg + 1.2 kg/m extension	0.95 kg + 1.2 kg/m extension

[1] *For Ex type see "Ex Information" table.*

Ex INFORMATION

		Compact version, metal housing (RF□/RR□–3□□–B Ex)
Explosion protection		Dust Ex
Ex marking	ATEX	⟨Ex⟩ II 1/2 D Ex ta/tb IIIC T140 °C Da/Db
Supply voltage		20…250 V AC / 20…50 V DC
Electrical connection		2× M20×1.5 cable glands for Ø7…Ø12 mm cable
		Ex ta IIIC protection
		2× terminal blocks for max. 1.5 mm² wire cross section, 2× ½" NPT internal threads for cable protective pipes.

PRESSURE–TEMPERATURE DIAGRAM

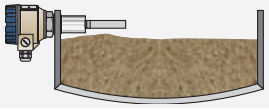
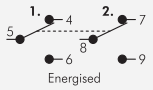
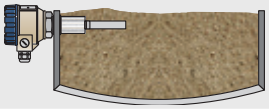
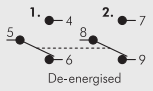
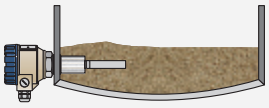
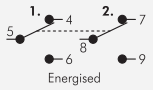
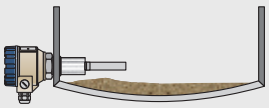
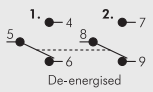
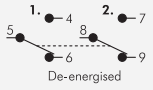


(P_T) Medium pressure
(T_P) Process temperature

RFM–301

RRH–301

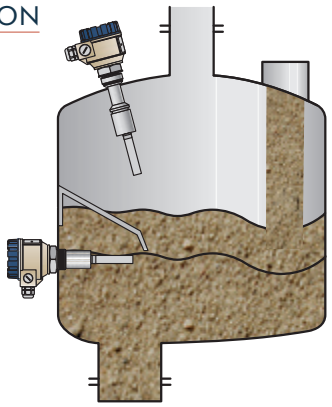
OPERATION

Compact and Mini compact version					
Power supply	Fork location		Fail-Safe setting	Status LED	Output
ON	High level		 HIGH		 Energised
			 HIGH		 De-energised
	Low level		 LOW		 Energised
			 LOW		 De-energised
OFF	–	–	High / Low		 De-energised

OPERATING MODE SWITCHES

Compact Fail-safe		Compact Density	
HIGH LOW	Fail-safe alarm is indicated with de-energized relay	HIGH	Medium density ≥ 0.5 kg/dm³
		LOW	Medium density < 0.5 kg/dm³

INSTALLATION



NIVOSWITCH RF-200 standard version — 3 years

Compact vibrating fork level switch for light free-flowing solids
Standard probe length: 125 mm

Process connection

R F □ – ■■■ – ■

M	1" BSP
P	1" NPT
U	Stainless steel flanges; welded (MF_–___–H type flanges [available from size DN40] should be ordered separately)

Stainless steel flanges;
Flanges conform to: EN 1092-1 / ANSI B 16.5

G	DN50 PN40 / 25
B	ANSI 2" RF 600 / 400 psi
K	JIS 40K 50A

PP flanges (max. 6 bar; –20...+90 °C)

F	DN50 PN16
A	ANSI 2" FF 150 psi
J	JIS 10K 50A

Housing

R F ■ – □■■ – ■

2	Fiberglass-reinforced plastic (PBT) (Ex version not available)
3	Painted aluminum

Probe length

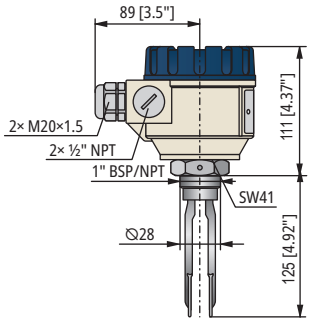
R F ■ – ■□□ – ■

0 1	125 mm

Output / Certificates

R F ■ – ■■■ – □

0	1 SPDT relay: 250 V AC, 8 A
A	2 SPDT relays: 1x 250 V AC, 8 A and 1x 250 V AC, 6 A
B	1 SPDT relay: 250V AC, 8 A / Ex ta/tb D



RFM / RFP-201 / 301

NIVOSWITCH RF-200 rod-extended version — 3 years

Compact vibrating fork level switch for light free-flowing solids
with stainless steel rod-extended probe up to 3 m

Process connection

R F □ – ■■■ – ■

M	1" BSP
P	1" NPT
U	Stainless steel flanges; welded (MF_–___–H type flanges [available from size DN40] should be ordered separately)

Stainless steel flanges;
Flanges conform to: EN 1092-1 / ANSI B 16.5

G	DN50 PN40 / 25
B	ANSI 2" RF 600 / 400 psi
K	JIS 40K 50A

PP flanges (max. 6 bar; –20...+90 °C)

F	DN50 PN16
A	ANSI 2" FF 150 psi
J	JIS 10K 50A

Housing

R F ■ – □■■ – ■

2	Fiberglass-reinforced plastic (PBT) (Ex version not available)
3	Painted aluminum

Probe length

R F ■ – ■□□ – ■

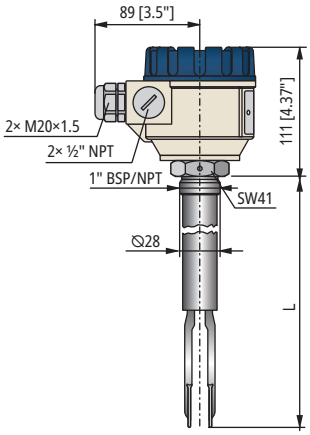
0 2	0.2 m
n n	0.3...3 m; sold by the 0.1 m

nn = 03...30 : 0.3...3 m

Output / Certificates

R F ■ – ■■■ – □

0	1 SPDT relay: 250 V AC, 8 A
A	2 SPDT relays: 1x 250 V AC, 8 A and 1x 250 V AC, 6 A
B	1 SPDT relay: 250V AC, 8 A / Ex ta/tb D



RFM / RFP–202 / 230
RFM / RFP–302 / 330

NIVOSWITCH RR-200 short or standard version — 3 years

Compact vibrating fork level switch with welded fork for powders and granules
Short probe length: 137 mm, standard probe length: 175 mm

Type

R R ■ – ■□□ – ■

0 1	Short probe, Probe length: 137 mm
0 2	Standard probe, Probe length: 175 mm

Process connection

R R □ – ■■■ – ■

H	1½" BSP
N	1½" NPT
U	Stainless steel flanges; welded (MF_–___–H type flanges [available from size DN40] should be ordered separately)
Stainless steel flanges; Flanges conform to: EN 1092-1 / ANSI B 16.5	
G	DN50 PN40 / 25
B	ANSI 2" RF 600 / 400 psi
K	JIS 40K 50A
PP flanges (maximum 6 bar; –20...+90 °C)	
F	DN50 PN16
A	ANSI 2" FF 150 psi
J	JIS 10K 50A

Housing

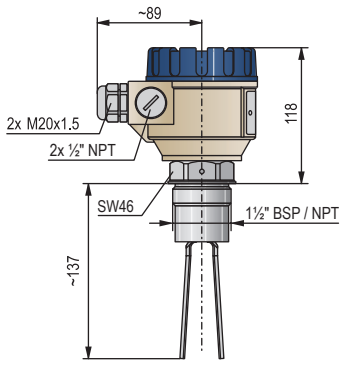
R R ■ – □■■ – ■

2	Fiberglass-reinforced plastic (PBT) (Ex version not available)
3	Painted aluminum

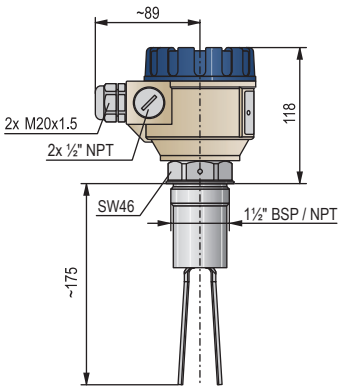
Output / Certificates

R R ■ – ■■■ – □

0	1 SPDT relay: 250 V AC, 8 A
A	2 SPDT relays: 1x 250 V AC, 8 A and 1x 250 V AC, 6 A
B	1 SPDT relay: 250 V AC, 8 A / Ex ta/tb D



RRH / RRN-201 / 301



RRH / RRN-202 / 302

NIVOSWITCH RR-200 rod-extended version — 3 years

Compact vibrating fork level switch with welded fork for powders and granules
with stainless steel rod-extended probe up to 3 m

Process connection

R R □ – ■ ■ ■ – ■

H	1½" BSP
N	1½" NPT
U	Stainless steel flanges; welded (MF_–___–H type flanges [available from size DN40] should be ordered separately)

Stainless steel flanges;
Flanges conform to: EN 1092-1 / ANSI B 16.5

G	DN50 PN40 / 25
B	ANSI 2" RF 600 / 400 psi
K	JIS 40K 50A

PP flanges (maximum 6 bar; –20...+90 °C)

F	DN50 PN16
A	ANSI 2" FF 150 psi
J	JIS 10K 50A

Housing

R R ■ – □ ■ ■ – ■

2	Fiberglass-reinforced plastic (PBT) (Ex version not available)
3	Painted aluminum

Probe length

R R ■ – ■ □ □ – ■

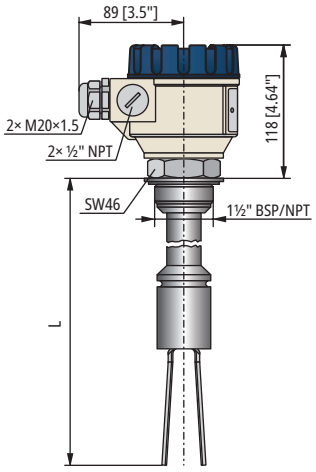
0 3	0.3 m
n n	0.4...3 m; sold by the 0.1 m

nn = 04...30 : 0.4...3 m

Output / Certificates

R R ■ – ■ ■ ■ – □

0	1 SPDT relay: 250 V AC, 8 A
A	2 SPDT relay: 1x 250 V AC, 8 A and 1x 250 V AC, 6 A
B	1 SPDT relay: 250 V AC, 8 A / Ex ta/tb D



RRH / RRN–203 / 230
RRH / RRN–303 / 330

UNICONT PKK-312-8 Ex — 3 years

DIN-rail-mountable intrinsically safe remote switching unit dedicated to the Ex ia rated NIVOSWITCH R-400 series mini compact vibrating fork level switches

Type	
P K K – 3 1 2 – 8	24 V DC / [Ex ia G/D] (for Ex ia G vibrating forks)

UNICONT PK-300 — 3 years

DIN-rail-mountable programmable current controlled remote switching unit featuring 1...22 mA input current and powering capabilities for transmitters

Type	
P K K – 3 1 2 – 1	230 V AC
P K K – 3 1 2 – 2	110 V AC
P K K – 3 1 2 – 3	24 V AC
P K K – 3 1 2 – 4	24 V AC/DC
P K K – 3 1 2 – 7	24 V AC/DC / [Ex ia G/D]

NIVOSWITCH RP — 3 years

Sliding sleeve for NIVOSWITCH R-300/R-400 series vibrating forks only for extended versions without coating and with a minimum length of 300 mm

Type	
R P H – 1 1 2 – 0	1½" BSP (1.4571/1.4404, max. up to 6 bar process pressure)
R P N – 1 1 2 – 0	1½" NPT (1.4571/1.4404, max. up to 6 bar process pressure)
R P H – 1 2 2 – 0	1½" BSP (1.4571/1.4404, max. up to 6 bar process pressure, for coated version)
R P N – 1 2 2 – 0	1½" NPT (1.4571/1.4404, max. up to 6 bar process pressure, for coated version)

NIVOSWITCH RP — 3 years

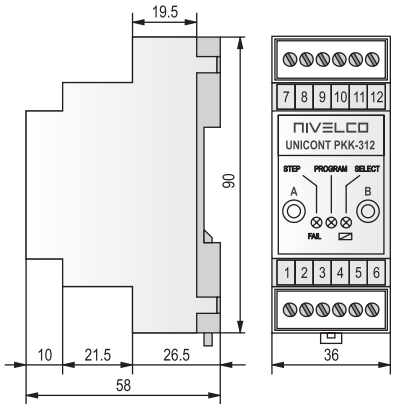
Stainless steel weld-in socket for flush mounting with O-ring seal for NIVOSWITCH R_M-400 vibrating forks

Type	
R P G – 1 0 1 – 0	1" BSP
R P K – 1 0 1 – 0	1" NPT

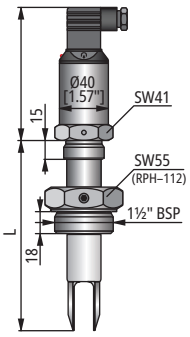
NIVOSWITCH RPS — 3 years

Magnetic screwdriver for operation test of mini compact NIVOSWITCH vibration forks

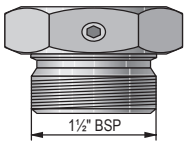
Type	
R P S – 1 0 1 – 0	Test magnet



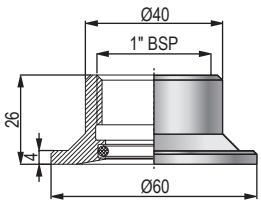
PKK–312



RCM–403 / 430 + RPH–112



RPH–112 / 122



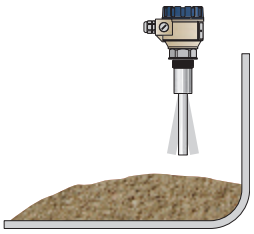
RPG–101

NIV24

PKK–312–1, PKK–312–8 Ex

The **NIVOCONT R** series vibrating rod level switches are robust devices, designed for low and high level indication of granules and powders with a minimum of 0.05 kg/dm^3 density. Mounted on tanks, silos or hopper bins, it controls filling/dumping, and sends alarm signals when necessary.

The circuit induces a vibration in the rod probe, when the medium touches the rod, the vibration changes, when the level drops and the medium no longer touches the rod, it starts to vibrate freely again. The electronics senses the change of vibration and sends an output signal after a predetermined delay.



FEATURES

- Length up to 20 m
- Adjustable sensitivity
- Highest process temperature: +160 °C
- Universal supply voltage
- Dust explosion protection
- Fine-polished probe
- IP67
- 5 years warranty

RKH–502–5 Ex

RKR–500 / 600

RKK–500 / 600

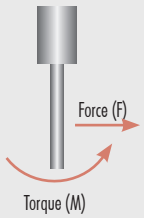
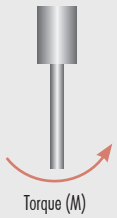
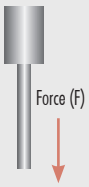
APPLICATIONS

- Powders, pellets, granulates
- Grains
- Ground products
- Stone-powder, chippings
- Cement, sand
- Coal, slag

CERTIFICATES

- ATEX (Ex ta/tb D)
- IEC Ex (Ex ta/tb D)
- UKCA Ex (Ex ta/tb D)
- KCs Ex (Ex ta/tb D)

LOADABILITY

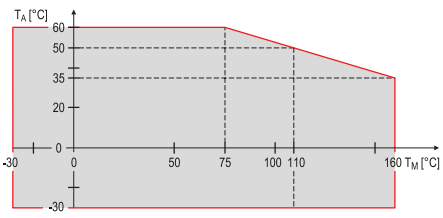
	Standard	Rod-extended	Cable-extended
Type of load			
Force	max. 500 N	–	max. 45 kN
Torque	max. 100 Nm	max. 100 Nm	–

MOUNTING OPTIONS

	Standard		Rod-extended	Cable-extended
High level switching	Top-mounted	Side-mounted[1]	Vertical mounting from the top	
Low level switching	Side-mounted[1]			

[1] Protect the device against falling material by installing a baffle plate. The device must be installed with a slope greater than the slope angle is required for powdery materials.

TEMPERATURE DIAGRAM



Ambient temperature (T_A) versus process temperature (T_P)

TECHNICAL DATA

		Standard (R□H/R□N)	Rod-extended (R□R/R□L)	Cable-extended (R□K/R□C)	Custom-extended (R□E/R□F)
Insertion length		207 mm	0.3…3 m	1…20 m	0.2…2 m
Material of wetted parts		1.4571/1.4404		Vibrating part: 1.4571/1.4404, Cable: PE cover	1.4571/1.4404
Housing material		Painted aluminum (R–500 series); or fiberglass-reinforced plastic (PBT) (R–600 series)			
Process connection		R□H, R□R, R□K, R□E: 1½" BSP; R□N, R□L, R□C, R□F: 1½" NPT			
Process temperature		–30…+110 °C; high-temperature version[2]: –30…+160 °C		–30…+80 °C	–30…+110 °C; high-temp. version[2]: –30…+160 °C
Ambient temperature		–30…+60 °C			
Process pressure		max. 25 bar		max. 6 bar[2]	
Medium density[1]		min. 0.05 kg/dm³ (grain size max. 10 mm)			
Response time (selectable)	Getting immersed	<1.8 s or 5 ±1.5 s			
	Getting free	<2 s or 5 ±1.5 s			
Supply voltage (universal)		Standard version: 20…255 V AC/DC			
Power consumption		≤2.5 VA / 2 W			
Electrical connections		2× M20×1.5 plastic cable glands for Ø6…12 mm cable; 2× terminal blocks for max. 1.5 mm² wire cross section; 2× internally threaded 1½" NPT connection for protective pipes.			
Ingress protection		Housing: IP67[3]			
Electrical protection		Class I (must be grounded)[3]			
Weight	plastic housing	1.5 kg	1.5 kg (+1.4 kg/m)	1.5 kg (+0.6 kg/m)	1.5 kg
	aluminum housing	1.88 kg	1.88 kg (+1.4 kg/m)	1.88 kg (+0.6 kg/m)	1.88 kg

[1] Depend on friction and grain size of the medium. [2] Only with metal housing. [3] Custom-extended devices must be installed and mounted appropriately, which is the responsibility of the customer. Only the appropriate mounting ensures IP67 protection, up to 6 bar maximum tank pressure, and Class I electrical protection.

OUTPUT PROPERTIES

Output	Relay	Electronic
Output type and rating	SPDT 250 V AC, 8 A, AC1	SPST 50 V, 350 mA
Output protection	–	Overvoltage, overcurrent and overload
Voltage drop (switched on)	–	< 2.7 V 350 mA
Residual current (switched off)	–	< 10 µA

Ex INFORMATION

R□□–5□□–5 Ex		
Protection		Dust Ex
Ex marking[4]	ATEX	⟨Ex⟩ II1/2 D Ex ta/tb IIIC T90°C…T170°C Da/Db
	IEC Ex	Ex t IIIC T[5] Da/Db IP67
	KCs Ex	Ex t IIIC T[5]
Electrical connection		2× M20×1.5 cable glands with Ex ta IIIC protection for Ø7…Ø12 mm cable, 2× plug-in terminal blocks for max. 1.5 mm² wire cross section, 2× internally threaded ½" NPT connection for protective pipes.
Supply voltage (universal)		20…250 V AC (50/60Hz) / 20…50 V DC

[4] Only with metal housing. *[5] See "Temperature data table".*

THERMAL LIMITS OF Ex COMPLIANT VERSIONS

Thermal Properties	Cable-extended			Standard or rod-extended				High-temperature
Process temperature (T_M)[6] Min.: –30 °C	+60 °C	+70 °C	+80 °C[7]	+60 °C	+70 °C	+95 °C	+110 °C	+160 °C
Ambient temperature (T_A)[6] Min.: –30 °C	+60 °C	+50 °C	+60 °C	+60 °C	+50 °C	+60 °C	+50 °C	+35 °C
Max. surface temp. of process connection	+85 °C		+95 °C	+85 °C		+95 °C		+135 °C
Max. surface temperature	+85 °C		+95 °C	+85 °C		+95 °C	+110 °C	+160 °C
Temperature classes	**T90°C**		**T100°C**	**T90°C**		**T100°C**	**T115°C**	**T170°C**

[6] To operate the level switch at the maximum values of the related thermal properties the applied cable must permanently withstand up to +90 °C temperature.
[7] Process temperature for max. 1 hour: +95 °C.

NIVOCONT R–500 standard version — 5 years

Vibrating rod level switch for powders and granular solids
Standard probe length: 207 mm

Versions

R □■ – ■ 0 2 – ■

K	Standard version (+110 °C)
H	High-temperature version (+160 °C)
S	Standard version (+110 °C) with fine-polished probe (Ra ≤ 0.5)
T	High-temperature version (+160 °C) with fine-polished probe (Ra ≤ 0.5)

Process connection

R ■□ – ■ 0 2 – ■

H	1½" BSP
N	1½" NPT

Housing

R ■■ – □ 0 2 – ■

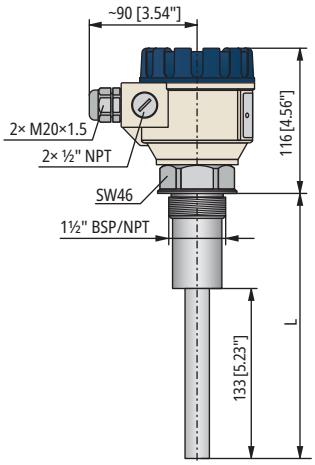
5	Painted aluminum
6	Fiberglass-reinforced plastic (PBT) (Ex version is not available)

Supply voltage / Output / Certificates

R ■■ – ■ 0 2 – □

1	20...255 V AC/DC / SPDT relay
3	20...255 V AC/DC / SPST solid-state output
5	20...250 V AC or 20...50 V DC / SPDT relay / Ex ta/tb D

Need of IEC Ex is to be requested in the text part of the order



RKH / RKN–500 / 600

NIV24
RKH-502-1

NIVOCONT R–500 rod-extended version — 5 years

Vibrating rod level switch for powders and granular solids
with stainless steel rod-extended probe up to 3 m

Versions

R □■ – ■■■ – ■

K	Standard version (+110 °C)
H	High-temperature version (+160 °C)
S	Standard version (+110 °C) with fine-polished probe (Ra ≤ 0.5)
T	High-temperature version (+160 °C) with fine-polished probe (Ra ≤ 0.5)

Process connection

R ■□ – ■■■ – ■

R	1½" BSP
L	1½" NPT

Housing

R ■■ – □■■ – ■

5	Painted aluminum
6	Fiberglass-reinforced plastic (PBT) (not available in Ex version)

Probe length

R ■■ – ■□□ – ■

n n	0.3...0.5 m
o o	0.6...3 m; sold by the 0.1 m

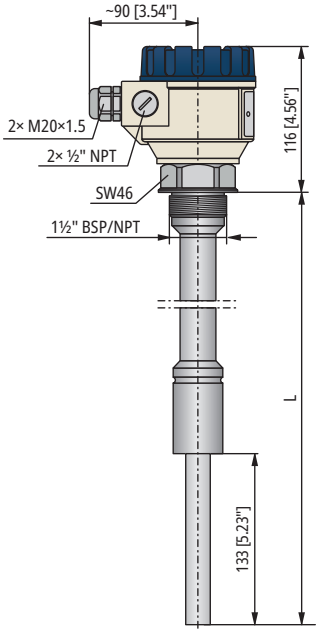
nn = 03...05 : 0.3...0.5 m
oo = 06...30 : 0.6...3 m

Supply voltage / Output / Certificates

R ■■ – ■■■ – □

1	20...255 V AC/DC / SPDT relay
3	20...255 V AC/DC / SPST solid-state output
5	20...250 V AC or 20...50 V DC / SPDT relay / Ex ta/tb D

Need of IEC Ex is to be requested in the text part of the order



RKR / RKL–500 / 600

NIVOCONT R–500 cable-extended version — 5 years

Vibrating rod level switch for powders and granular solids
with PE-coated cable-extended probe up to 20 m

Process connection

R K □ – ■ ■ ■ – ■

K	1½" BSP
C	1½" NPT

Housing

R K ■ – □ ■ ■ – ■

5	Painted aluminum
6	Fiberglass-reinforced plastic (PBT) (not available in Ex version)

Probe length

R K ■ – ■ □ □ – ■

0 1	1 m
n n	2...20 m; sold by the meter

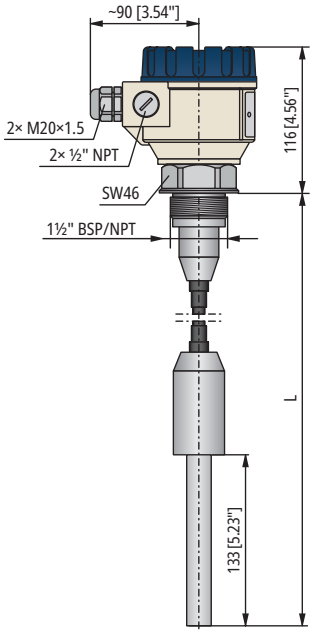
nn = 02...20 : 2...20 m

Supply voltage / Output / Certificates

R K ■ – ■ ■ ■ – □

1	20...255 V AC/DC / SPDT relay
3	20...255 V AC/DC / SPST solid-state output
5	20...250 V AC or 20...50 V DC / SPDT relay / Ex ta/tb D

Need of IEC Ex is to be requested in the text part of the order



RKK / RKC–500 / 600

NIVOCONT R-500 with remote-mounted electronics — 5 years

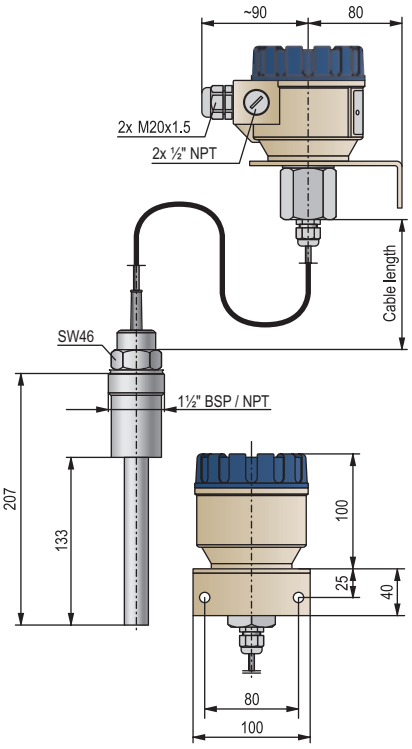
Vibrating rod level switch with electronics separated from the probe
Use the order codes below after the standard order code of the device:

Special versions

X09

Extension cable

Max. 10 m; sold by the meter (Order example:
Remotely mounted version with standard probe and 3 m extension cable: RKH-502-1-X09/3 m)



RKH–500 / 600-X09

NIVOCONT R-500 custom-extended version — 5 years

Vibrating rod level switch for powders and granular solids with custom extension 1" stainless steel (1.4571/1.4404) pipe cut to desired length, up to 2 m (the extension steel tube is not part of the package).

Versions

R □■ – ■ 0 2 – ■

K	Standard version (+110 °C)
H	High temperature version (+160 °C)

Process connection / extension connection

R ■□ – ■ 0 2 – ■

E	1½" BSP / 1" BSP
F	1½" NPT / 1" BSP
G	1½" NPT / 1" NPT

Housing

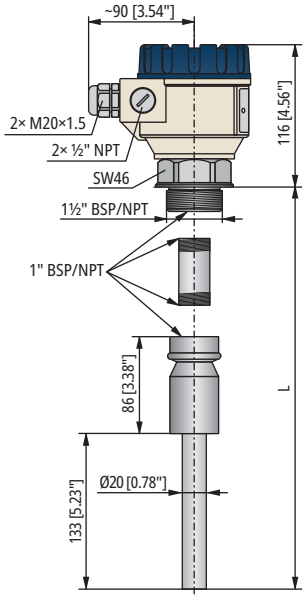
R ■■ – □ 0 2 – ■

5	Painted aluminum
6	Fiberglass-reinforced plastic (PBT)

Supply voltage / Output

R ■■ – ■ 0 2 – □

1	20...255 V AC/DC / SPDT relay
3	20...255 V AC/DC / SPST solid-state output



RKE / RKF–500 / 600

Rotary Paddle Level Switches

NIVOROTA

The **NIVOROTA** rotary paddle level switch detects the level of lumpy substances or powders, grains, and granules. Mounted onto tanks, silos, and hoppers, it monitors and controls the level, filling, and dumping of the stored materials such as stone, ash, sand, coal, feed, beet slices, etc. A small electric motor drives the paddle, which rotates freely in the absence of material. When the material reaches the paddle, the motor is switched off, and the output switch is triggered. When the material level drops, the paddle is free to spin again, the motor is reactivated, and the switch returns to its original state. The **NIVOROTA E-700 & E-800** series rotary paddle level switches provide all the advantageous features of the previous series in one unit. Dust Ex versions are available for use in hazardous environments.

FEATURES

- Level switching of free-flowing solids
- Cable- or rod-extended up to 3 m
- Automatic motor shutdown
- High-temperature version
- IP67
- Dust-Ex certified version
- Rotary force independent of the supply voltage
- Low supply voltage is indicated by a blinking LED

APPLICATIONS

- Food industry: sunflower seeds, sunflower hulls, coffee and, cocoa powder, flour, sugar, etc.
- Chemical industry: plastic powders, granules, pellets
- Building industry: cement, sand, calcium powder, gypsum
- Energy industry: active soot, coal powder, fly ash

CERTIFICATES

- ATEX (Ex ta/tb D)
- UKCA Ex (Ex ta/tb D)

VARIANTS

	E–700	E–800
Metal housing	■	–
Plastic housing	–	■
Single-blade paddle	■	■
Multi-blade paddle	■	■
Flexible coupling	■	■
Cable length	■	■
DC power supply	■	■
Dust Ex version	■	–
High-temperature version	■	–
1" process connection	■	■
1½" process connection	■	■
Torque adjustment	■	■

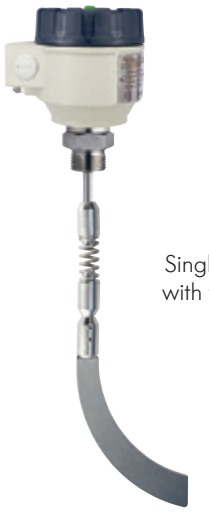
VARIANTS

For appropriate model selection the following must be taken into consideration:

- Insertion length: level switching application *(low or high level switch)* and the position of installation determine the insertion length.
- Number of blades: specific gravity and particle size of the material provides orientation for the number of blades. Most commonly used is the stainless steel, single blade paddle. The paddle can be passed through the respective threaded connection. For lighter materials the use of 3-blade paddle is recommended. The available devices have 1 or 3-blades, they can be ordered with either paddle variant, and the paddles can be ordered separately as well.
- Flexible coupling: Use if the shaft of the device has to be protected against falling materials. *(rocks, larger, lumpy materials)*

Material	Density (kg/dm³) [1]
Wheat	0.4…0.5
Flour	0.6 … 0.8
Wood chip	0.3 … 0.4
Sawdust	0.3 … 0.35
Whiting	0.8 … 1
Lime hydrate dust	0.4 … 0.5
PVC dust	0.3 … 0.6
PVC granule	0.3 … 0.6
Sunflower seeds	0.3 … 0.5
Sunflower hulls	0.1 … 0.2
Feed	0.2 … 0.6
Ground paprika	0.8 … 1

[1] *Informational data*



EL–700
Single-blade paddle
with flexible coupling

EM–700
High-temperature
rod-extended version

EL–700
3-blade
paddle version

TECHNICAL DATA

	Standard version		High-temperature version
	EL□–7□□	EL□–8□□	EM□–7□□
Insertion length	Standard: 200 mm; rod-extended version: 0.3…3 m; cable-extended version: 1…3 m		
Paddle material, number of blades	1.4571/1.4404 stainless steel / 1, 2, 3; as per order code		
Rotation speed	~1 rpm (@50 Hz)		
Material of wetted parts	1.4571/1.4404 stainless steel, material of the seal: NBR		1.4571/1.4404 stainless steel, material of the seal: FPM
Medium density (guideline value)	Minimum 0.1 kg/dm^3		
Process temperature	–20…+120 °C	–20…+80 °C	–20…+200 °C
	Ex variant: see "Ex Information"		
Ambient temperature / relative humidity	–30…+60 °C / maximum 90%		
Process pressure	Up to 3 bar		
Output	SPDT 250 V AC, 6 A, AC1		
Paddle-rotation / shutdown indication	Two-toned (green / red) LED		
Process connection	1"; 1½" universal thread (can be screwed into BSP and NPT threads) or 1¼ NPT		
Supply voltage	230 V AC, 120 V AC, 24 V AC, 24 V DC (18…28 V DC)		
Power consumption	Maximum 4 VA (4 W)		
Electrical connection	2× M20×1.5 plastic cable glands, for Ø6…12 mm cable + 2× internally threaded ½" NPT connection for protective pipes 2× terminal blocks for 0.5…1.5 mm^2 wire cross section		
Electrical protection	Class I		
Ingress protection	IP67		
Housing material	Painted aluminum	Plastic (PBT)	Painted aluminum
Weight	Standard: 1.6 kg, rod-extended version: 1.6 kg + extension 1.6 kg/m, cable-extended version: 2.6 kg + extension 1.4 kg/m, counterweight: 1 kg		

Ex INFORMATION

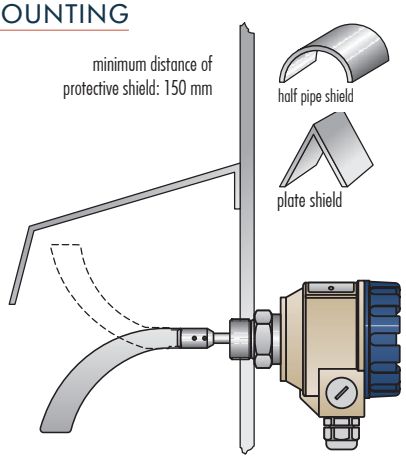
	Standard (EL□–7□□–5, 6, 7, 8 Ex)	High-temperature (EM□–7□□–5, 6, 7, 8 Ex)
Ex marking	Ex II 1/2 D Ex ta/tb IIIC T85°C…T135°C Da/Db	Ex II 1/2 D Ex ta/tb IIIC T85°C…T200°C Da/Db
Ex supply voltage	E□□–7□□–5 Ex: U_0 ≤ 253 V AC; E□□–7□□–7 Ex: U_0 ≤ 26.4 V AC;	E□□–7□□–6 Ex: U_0 ≤ 132 V AC; E□□–7□□–8 Ex: U_0 ≤ 28 V DC
Process and ambient temperature	See below	
Cable entry	M20×1.5 cable gland with "Ex ta" certification	
Cable outer diameter	Ø6…Ø12 mm	
Electrical connection	Wire cross-section: 0.5…1.5 mm^2	

Type	Temperature class	T85°C	T100°C	T135°C	T200°C
Standard EL□–7□□–5, 6, 7, 8 Ex	Maximum surface temperature	+60 °C	+90 °C	+120 °C	
	Maximum process temperature				
	Maximum ambient temperature		+60 °C	+50 °C	
	Waiting time for opening the cover	40 minutes	30 minutes	10 minutes	
High-temperature EM□–7□□–5, 6, 7, 8 Ex	Maximum surface temperature	+60 °C	+90 °C	+120 °C	+200 °C
	Maximum process temperature				
	Maximum ambient temperature	+60 °C			
	Waiting time for opening the cover	40 minutes	30 minutes	15 minutes	0 minute

OPERATING MODES

Power supply	Status LED	Output microswitch	Paddle
ON	Green	C – NC, NO De-Energized	Rotates
	Red	C – NC, NO Energized	Does not rotate
OFF	Off	C – NC, NO De-Energized	Does not rotate

MOUNTING



Protective shield for low fail-safe unit

NIVOROTA E–700 standard version — 3 years

Rotary paddle level switch for powders and granular solids
Standard probe length: 200 mm

Version

E ☐■ – ■■■ – ■

L		Standard bidirectional version
M		High temperature bidirectional version (only with aluminum housing)

Paddle / Process connection

E ■☐ – ■■■ – ■

A		1-blade paddle (EAL–701–1) / 1" universal
H		1-blade paddle (EAL–701–1) / 1½" universal
N		1-blade paddle (EAL–701–1) / 1¼" NPT
F	*	3-blade paddle (EAL–709–1) / 1½" universal
B	*	3-blade paddle (EAL–709–1) / 1¼" NPT

* Mounting plate is ordered separately

Housing / Material of process connection

E ■■ – ☐■■ – ■

7	Painted aluminum / 1.4571/1.4404
8	Fiberglass-reinforced plastic (PBT) / 1.4571/1.4404 (Ex version not available)

Insertion length

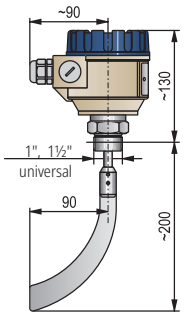
E ■■ – ■☐☐ – ■

0 2	200 mm

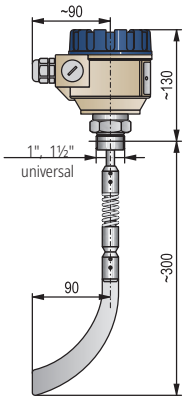
Supply voltage / Certificates

E ■■ – ■■■ – ☐

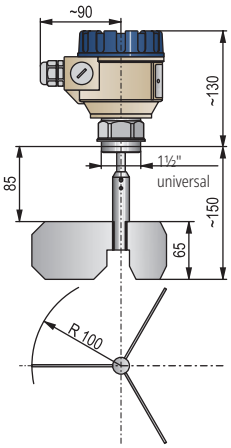
1	230 V AC
2	120 V AC
3	24 V AC
4	24 V DC
5	230 V AC / Ex ta/tb D
6	120 V AC / Ex ta/tb D
7	24 V AC / Ex ta/tb D
8	24 V DC / Ex ta/tb D



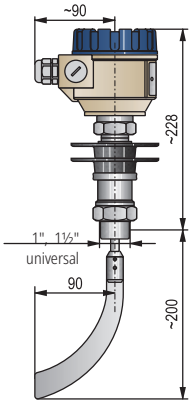
ELA / ELH–702 / 802



ELA / ELH–702 / 802 + EAS–701



ELF–702 / 802



EMA / EMH–702

NIV24
ELA–702–1
ELH–702–1

NIVOROTA E–700 rod-extended version — 3 years

Rotary paddle level switch for powders and granular solids
with stainless steel rod-extended probe up to 3 m

Version

E □■ – ■■■ – ■

L	Standard bidirectional version
M	High temperature bidirectional version (only with aluminum housing)

Version / Paddle / Process connection

E ■□ – ■■■ – ■

R	Rod-extended / 1-blade paddle (EAL–701–1) / 1½" universal
C	Rod-extended / 1-blade paddle (EAL–701–1) / 1¼" NPT

Housing / Material of process connection

E ■■ – □■■ – ■

7	Painted aluminum / 1.4571/1.4404
8	Fiberglass-reinforced plastic (PBT) / 1.4571/1.4404 (Ex version not available)

Insertion length

E ■■ – ■□□ – ■

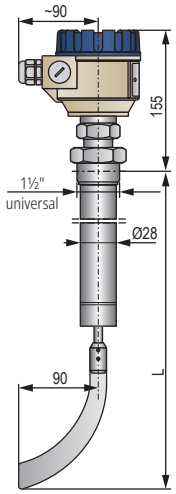
n n	0.3...3 m rod-extended probe; sold by the 0.1 m

nn = 03...30 : 0.3...3 m

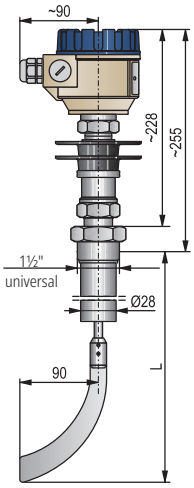
Supply voltage / Certificates

E ■■ – ■■■ – □

1	230 V AC
2	120 V AC
3	24 V AC
4	24 V DC
5	230 V AC / Ex ta/tb D
6	120 V AC / Ex ta/tb D
7	24 V AC / Ex ta/tb D
8	24 V DC / Ex ta/tb D



ELR–703 / 730



EMR–703 / 730

NIVOROTA E–700 cable-extended version — 3 years

Rotary paddle level switch for powders and granular solids
with stainless steel cable-extended probe up to 3 m

Version

E □■ – ■■■ – ■

L		Standard bidirectional version
M		High temperature bidirectional version (only with aluminum housing)

Version / Paddle / Process connection

E ■□ – ■■■ – ■

K		Cable-extended / 1-blade paddle (EAL–701–1) / 1½" universal
D		Cable-extended / 1-blade paddle (EAL–701–1) / 1¼" NPT
L	*	Cable-extended / 3-blade paddle (EAL–709–1) / 1½" universal
G	*	Cable-extended / 3-blade paddle (EAL–709–1) / 1¼" NPT

* Mounting plate is ordered separately

Housing / Material of process connection

E ■■ – □■■ – ■

7	Painted aluminum / 1.4571/1.4404
8	Fiberglass-reinforced plastic (PBT) / 1.4571/1.4404 (Ex version not available)

Insertion length

E ■■ – ■□□ – ■

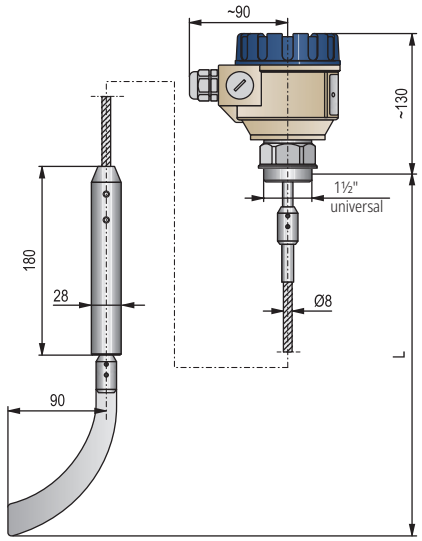
n n	1, 2 or 3 m cable-extended probe; sold by the meter

nn = 10, 20, 30 : 1, 2 or 3 m

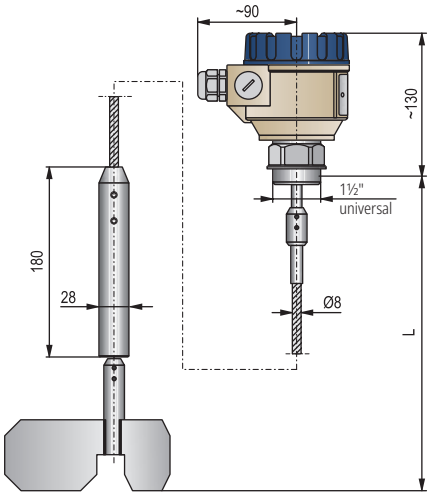
Supply voltage / Certificates

E ■■ – ■■■ – □

1	230 V AC
2	120 V AC
3	24 V AC
4	24 V DC
5	230 V AC / Ex ta/tb D
6	120 V AC / Ex ta/tb D
7	24 V AC / Ex ta/tb D
8	24 V DC / Ex ta/tb D



ELK–710 / 730
ELK–810 / 830

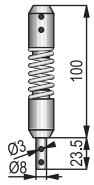


ELL–710 / 730
ELL–810 / 830

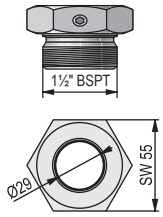
NIVOROTA E-700 accessories (sold separately) — 3 years

Mounting – type / material

E A M – 7 0 □ – 0	
1	1" female nut / 1.4571/1.4404
2	1½" female nut / 1.4571/1.4404
3	Sliding sleeve for rod-extended version / 1.4571/1.4404
4	Mounting plate, 1" hole / 1.4571/1.4404
5	Mounting plate, 1" hole / carbon steel
6	Mounting plate, 1½" hole / 1.4571/1.4404
7	Mounting plate, 1½" hole / carbon steel
8	Mounting plate, 1¼" NPT / 1.4571/1.4404
9	Mounting plate, 1¼" NPT / carbon steel



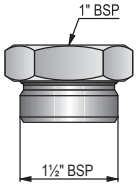
EAS–701–0



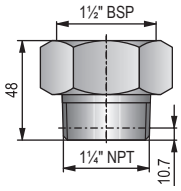
EAM–703–0

Adapters

E A A – 1 8 9 – 0	1" BSP / 1" NPT (1.4571/1.4404)
E A A – 1 8 B – 0	1" BSP / 1½" BSP (1.4571/1.4404)
E A A – 1 8 C – 0	1" BSP / 1½" NPT (1.4571/1.4404)
E A A – 1 B A – 0	1½" BSP / 1¼" NPT (1.4571/1.4404)
E A A – 1 B D – 0	1½" BSP / 2" BSP (1.4571/1.4404)
E A A – 1 B E – 0	1½" BSP / 2" NPT (1.4571/1.4404)



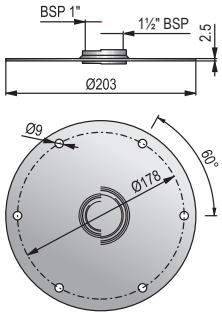
EAA–18B–0



EAA–1BA–0

Paddles – type / material

E A L – 7 0 □ – 1	
1	1-blade curved, 168 mm / 1.4571/1.4404
2	1-blade curved, 120 mm / 1.4571/1.4404
3	2-blade flexible, 172 mm / 1.4571/1.4404
4	2-blade flexible, 120 mm / 1.4571/1.4404
5	1-blade straight, 170 mm / 1.4571/1.4404
6	1-blade straight, 70 mm / 1.4571/1.4404
7	1-blade 90°, 130 mm / 1.4571/1.4404
8	3-blade extended, 268 mm / 1.4571/1.4404
9	3-blade standard, 120 mm / 1.4571/1.4404

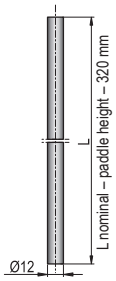


EAM–704 / 707

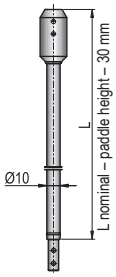
Length size

E A R – 7 0 □ – 1	
n	0.1...0.5 m extension pipe; 1.4571/1.4404, sold by the 0.1 m

n = 1 ...5 : 0.1...0.5 m



EAK–7□□–1



EAR–70□–1

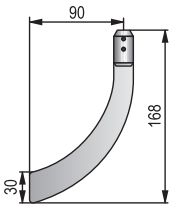
Rigid pipe for cable-extended version

E A K – 7 □ □ – 1	
n n	0.1...3 m Ø12x1; 1.4571/1.4404; sold by the 0.1 m

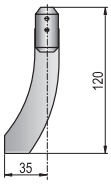
nn = 01...30 : 0.1...3 m

Accessories

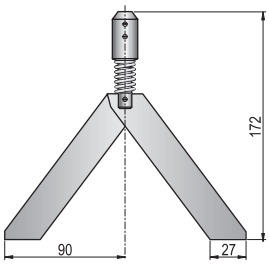
E A S – 7 0 1 – 0	Flexible Coupling / 1.4571/1.4404
E A W – 7 0 1 – 0	Weight / 1.4571/1.4404
EAM–704–0M–000–03	Mounting plate seal
4cesp3x20ykoy	Mounting sleeve



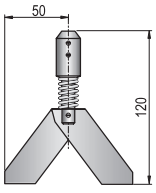
EAL–701–1



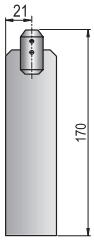
EAL–702–1



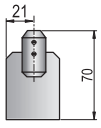
EAL–703–1



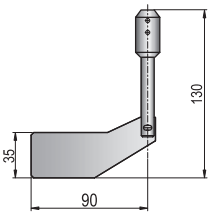
EAL–704–1



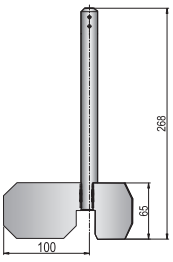
EAL–705–1



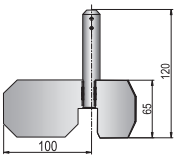
EAL–706–1



EAL–707–1



EAL–708–1



EAL–709–1

The **NIVOCAP CK–100** series capacitive level switches operate in the RF *(radio frequency)* range, unlike conventional capacitive measurement principles, making them ideally suited for sticky or deposit-prone media where vibrating or mechanical contact switches are ineffective or only limitedly usable.

The device measures the capacitance difference between the measuring probe and the reference probe, which is built between two insulators, and the housing *(reference point)*, providing more stable operation compared to analog types by eliminating false switching caused by stubborn deposits. They are available exclusively with aluminum housings. Probe lengths up to 3 meters are available in rod versions, and rope versions allow insertion lengths up to 10 meters. High-temperature and explosion-proof variants are also offered, suitable for power plant applications. For liquids, only the lower metallic part of the probe should contact the medium.

FEATURES

- Intelligent electronic level switch
- Immune to material deposits
- Easy calibration
- Selectable sensitivity
- Fail-safe operating mode
- Rod- or cable-extended
- Calibration with external magnet
- High-temperature version
- Dust-Ex variants available
- 5 years warranty

APPLICATIONS

- For viscous, sticky materials
- For solids with $\varepsilon_r \geq 1.5$ relative dielectric constant and liquids
- Pharmaceutical and food industry
- Powerplant processes

CERTIFICATES

- ATEX (Ex ta/tb D)
- IEC Ex (Ex ta/tb D)

CKH–104 CMR–100 CKK–100

OPERATION AND SETUP

The NIVOCAP CK intelligent electronic level switch measures the change in capacitance acting on the probe. While the probe is in air, the baseline capacitance remains constant. When the target material reaches the probe, the capacitance increases, which the device detects by comparing it to a calibrated reference value. After installation at the final location, the device must be calibrated in an empty tank to record the baseline environmental capacitance. Calibration in explosion-hazard zones can be performed without removing the cover by using the supplied magnet.
Sensitivity is selectable in four steps, with fine adjustments made via a potentiometer.

CALIBRATION

After installation, calibration is initiated by pressing the CAL button or by holding the magnet on the device for 5 seconds. During calibration, LEDs indicate status with blue light: initially steady, then blinking, and finally reverting to the operating mode LED color, signaling successful calibration. In hazardous areas, calibration can be performed any time using the magnet without touching the enclosure, with the LED on the cover providing feedback. Additional settings such as measuring range, sensitivity (SENS), delay, fail-safe, and magnet switch should be set outside the hazardous area before installation. Calibration can be repeated as needed to ensure precise operation.

SENSITIVITY SETTINGS

Sensitivity (range)	Capacitance value	ε_r	Typical measured medium
1 ● ○ ○ ○	18 pF	> 7.0	Wastewater, slurries, and water-based solutions
2 ○ ● ○ ○	8 pF	4.0…7.0	Grains, fertilizers, feed
3 ○ ○ ● ○	2.5 pF	2.0…4.0	Sand, rubber, oils, coal
4 ○ ○ ○ ●	0.5 pF	1.5…2.0	Plastics, fly ash, cement

TECHNICAL DATA

	Standard	Rod-extended	Cable-extended
Probe length	0.3…0.6 m	0.7…3 m	1…10 m
Material of wetted parts	1.4571/1.4404 / 316Ti stainless steel + PPS insulation		Probe: 1.4571/1.4404 / 316Ti stainless steel + PPS Insulation; Cable: PE coating
Process connection	¾", 1", 1½" BSP/NPT, 1¼" NPT threaded connection; as per order code		
Output	See output data table		
Ambient temperature	–30…+65 °C		
Process temperature (for solids)	–30…+110 °C		–25…+80 °C
Process temperature [High-temperature version] (for solids)	–30…+235 °C		–
Process temperature (for liquids)	0…+65 °C		
Process pressure	16 bar		
Response time (selectable)	0.15…15 s		
Sensitivity	Coarse settings: available with push button out of 4 ranges; 4 indication LED Fine adjustment: with potentiometer within the selected range		
Fail-safe mode	Low, high (selectable with DIP-switch)		
Calibration	With push button or external magnet		
Status display	Status LED, Calibration LED		
ε_r	Minimum 1.5		
Supply voltage	20…250 V AC / 20…50 V DC		
Power consumption	≤ 2.5 VA / 2 W		
Housing material	Painted aluminum		
Electrical connection	2× M20×1.5 plastic cable glands, for 6…12 mm cable + 2× internally threaded ½" NPT connection for protective pipes; 2× terminal blocks for 0.5…1.5 mm² wire cross section		
Electrical protection	Class I		
Ingress protection	IP67		
Weight	2 kg	2 kg + 1.4 kg /m	2 kg + 0.6 kg/m

OUTPUT DATA

Type	Relay	Electronic
Output type	SPDT	SPST
Output rating	250 V AC, 8 A, AC1	250 V AC, 50 V DC
Output protection	–	Overvoltage, overcurrent and overload

Ex INFORMATION

Protection		Dust Ex							
Ex marking	ATEX	⟨Ex⟩ II 1/2D Ex ta/tb IIIC T85°C…T220°C Da/Db							
	IEC Ex[1]	Ex ta IIIC T85°C…T220°C Da/Db							
Electrical connection		2× M20×1.5 metal cable glands for Ø8…Ø13 mm cable							
Thermal properties		**Cable-extended**			**Standard or rod-extended**				
		Standard							**High-temperature**
Process temperature min.: –30 °C; Max:		+60 °C	+70 °C	+80 °C	+60 °C	+70 °C	+95 °C	+110 °C	+220 °C
Ambient temperature min.: –30 °C; Max:		+65 °C	+60 °C	+60 °C	+65 °C	+60 °C	+60 °C	+50 °C	+35 °C
Highest permissible surface temperature of the process connection		+80 °C	+80 °C	+90 °C	+80 °C		+90 °C	+95 °C	+195 °C
Temperature classes		**T85°C**		**T95°C**	**T85°C**		**T95°C**	**T110°C**	**T220°C**

[1] *IEC Ex compliance is optional; must be requested in the order.*

NIVOCAP CK-100 standard version — 5 years

High-frequency (RF) capacitance level switch for powders and granular solids, and for liquids
Standard probe length: 300...600 mm

Version

C □■ – 1 ■■ – ■

K	Standard version
M	High-temperature version

Probe version / Process connection

C ■□ – 1 ■■ – ■

D	Standard / ¾" BSP
G	Standard / ¾" NPT
M	Standard / 1" BSP
P	Standard / 1" NPT
B	Standard / 1¼" NPT
H	Standard / 1½" BSP
N	Standard / 1½" NPT

Housing

C ■■ – □■■ – ■

1	Painted aluminum

Probe length

C ■■ – 1 □□ – ■

n n	Standard version 0.3...0.6 m

nn = 03...06 : 0.3...0.6 m

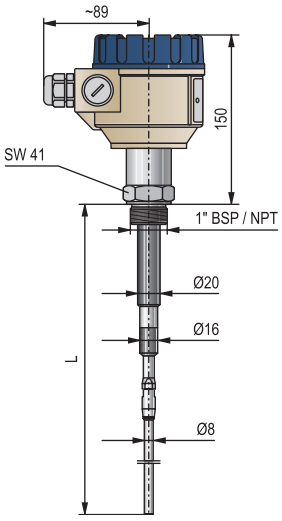
Output / Certificates

C ■■ – 1 ■■ – □

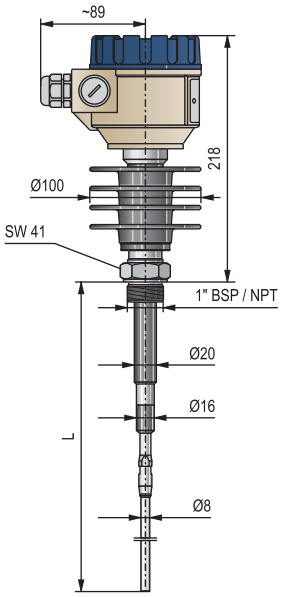
1	SPDT, relay; 250 V AC, 8 A
3	SPST, solid-state output
5	SPDT, relay; 250 V AC, 8 A / Ex ta/tb D
7	SPST, solid-state output / Ex ta/tb D

Available on request (must be specified in the text of the order)

X32	2" TriClamp (ISO 2852) process connection



CKM / CKP-103 / 106



CMM / CMP-103 / 106

NIVOCAP CK-100 rod-extended version — 5 years

High-frequency (RF) capacitance level switch for powders and granular solids, and for liquids with stainless steel rod-extended probe up to 3 m

Version

C □■ – 1 ■■ – ■

K	Standard version
M	High-temperature version

Probe version / Process connection

C ■□ – 1 ■■ – ■

E	Rod-extended / ¾" BSP (max. 1.5 m)
F	Rod-extended / ¾" NPT (max. 1.5 m)
V	Rod-extended / 1" BSP
Z	Rod-extended / 1" NPT
J	Rod-extended / 1¼" NPT
R	Rod-extended / 1½" BSP
L	Rod-extended / 1½" NPT

Housing

C ■■ – □■■ – ■

1	Painted aluminum

Probe length

C ■■ – 1 □□ – ■

0 7	0.7 m
n n	0.8...3 m rod-extended probe; sold by the 0.1 m

nn = 08...30 : 0.8...3 m

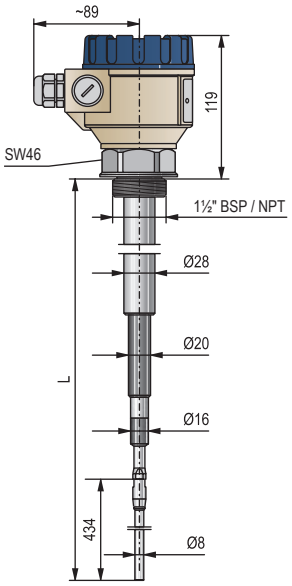
Output / Certificates

C ■■ – 1 ■■ – □

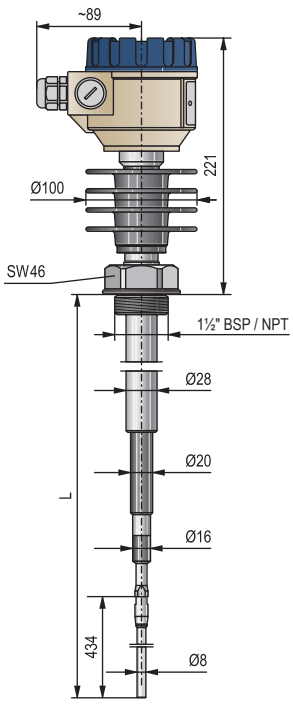
1	SPDT, relay; 250 V AC, 8 A
3	SPST, Solid-state output
5	SPDT, relay; 250 V AC, 8 A / Ex ta/tb D
7	SPST, solid-state output / Ex ta/tb D

Available on request (must be specified in the text of the order)

X32	2" TriClamp (ISO 2852) process connection



CKR / CKL-107 / 130



CMR / CML-107 / 130

NIVOCAP CK-100 cable-extended version — 5 years

High-frequency (RF) capacitance level switch for powders and granular solids, and for liquids with PE-coated stainless steel cable-extended probe up to 10 m

Version

C ☐■ – 1 ■■ – ■

K	Standard version

Probe version / Process connection

C K ☐ – 1 ■■ – ■

K	Cable-extended / 1½" BSP
C	Cable-extended / 1½" NPT

Housing

C K ■ – ☐■■ – ■

1	Painted aluminum

Probe length

C K ■ – 1 ☐☐ – ■

n n	1...10 m cable-extended probe; sold by the 0.5 m

nn = 10...A0 : 1...10 m

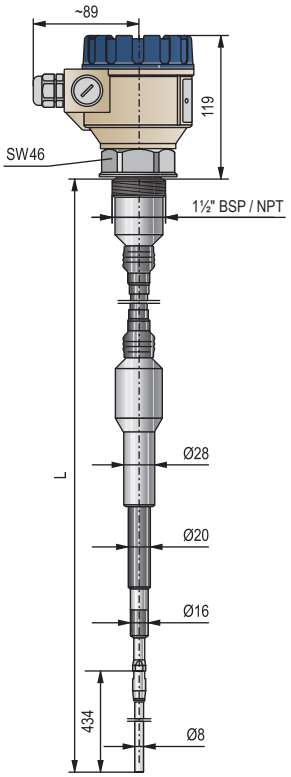
Output / Certificates

C K ■ – 1 ■■ – ☐

1	SPDT, relay; 250 V AC, 8 A
3	SPST, Solid-state output
5	SPDT, relay; 250 V AC, 8 A / Ex ta/tb D
7	SPST, solid-state output / Ex ta/tb D

Available on request (must be specified in the text of the order)

X32	2" TriClamp (ISO 2852) process connection



CKK / CKC-110 / 1A0

ANALYTICAL TRANSMITTERS

There is a constant demand for analytical measurements in practically all industries.

Analysis of fluids and reliable control over the feeding of various chemicals is especially crucial in the water and wastewater, pharmaceutical, chemical, food and beverage, power industries. NIVELCO's AnaCONT analytical range provides HART®-capable transmitters for dissolved oxygen and conductivity measurement.

AnaCONT LED
DISSOLVED OXYGEN TRANSMITTER

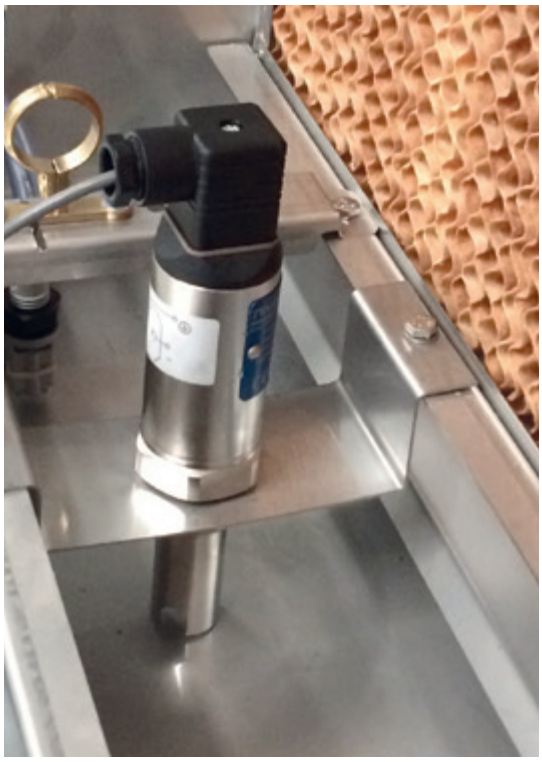
page 170

- 2-wire DO transmitter
- Compact transmitter
- Measurement range: 0…20 ppm
- Replaceable probe
- Temperature-compensated
- 4…20 mA + HART® communication
- Power relay output
- Remote mount versions up to 10 m
- IP67
- Explosion-proof variants available

AnaCONT LCK
CONDUCTIVITY TRANSMITTER

page 176

- 2-wire EC transmitter
- Mini compact version
- Measurement range: 1 µS/cm…2 mS/cm
- Optional plug-in 4-digit LED display
- 4…20 mA + HART® communication
- IP68 / IP65



The dissolved oxygen *(DO)* measurement gives the quantity of dissolved oxygen in a liquid, in ppm or mg/l values. The sensor with an oxygen-permeable membrane is submerged in the liquid and it provides an electronic signal proportional to the oxygen concentration.

The electronics calculates and transmits the DO value normalized to +25 °C on the basis of the output current of the DO sensor and the potential of the temperature sensor immersed in the medium.

FEATURES

- Compact DO transmitter
- Remote mount versions up to 10 m
- Measurement range: 0…20 ppm
- Replaceable probe
- Temperature compensation
- Graphic display
- 4…20 mA, HART®, relay output
- Wide range of accessories
- IP67
- Ex variant
- Sensor should be ordered separately
- 5 years warranty

APPLICATIONS

- Checking of water quality
- Wastewater treatment
- Pharmaceutical industry
- Food and beverage industry
- Effluent treatment
- Checking of aeration in potable water
- Pools

CERTIFICATES

- ATEX (Ex ia G)

LED–100

SAT–504
HART® modem

SAP–300
graphic display

DO measurement sensor
LAD–40□–0

PROBES

		DO sensors (should be ordered separately)	
		LAD–402–0	LAD–401–0
DO sensor	Application area	Fish- and crawfish farms, water conditioning of large aquariums. Controlling of oxygen concentration in water plants, determination of biological condition in surface water. *Interchangeable with HACH-LANGE 085g0023 sensor.*	Potable water production, river monitoring, water treatment sites, controlling of dissolved oxygen level in wastewater plants, determination of biological condition in surface water. *Interchangeable with HACH-LANGE 085g0022 sensor.*
	DO range	0…20 ppm	0…10 ppm
	Process temperature	Up to +50 °C	
	Process pressure	Maximum 1 bar	
	Flow speed	Minimum 0.05 m/s	
	Material / thickness of membrane	PTFE / 125 µm	PTFE / 50 µm

TECHNICAL DATA

		AnaCONT L□D – DO transmitter
Measurement data	Range	0…20 ppm / 0…10 ppm[1]
	Reserve	20%
	Resolution	0.01 ppm (internal resolution: 0.005 ppm)
	Linearity	±0.05 ppm
	Accuracy[2]	0.5% of the measured value ±1 digit ±0.01% / °C
	Measuring cycle	300 msec, on display: 1 s
Temperature measuring (semiconductive sensor)		Range: –50…+130 °C, Accuracy: ±0.5 °C, Resolution: 0.1 °C
Liquid potential (complementary) electrode		Housing of the temperature sensor: stainless steel (1.4571/1.4404), connection: SN6
Electrode input		DO sensor input: galvanically isolated current input, 0.725 V polarization voltage, connection: SN6
Supply voltage / Power consumption		12…36 V DC / 48…720 mW, galvanically isolated, transient overvoltage protection
Output	Analog	4…20 mA, (3.9…20.5 mA), R_{Lmax} = 1200 Ω galvanically isolated, transient overvoltage protection
	Relay	SPDT: 30 V DC, 1 A DC
	Display	LCD graphic display (SAP–300), units of measure and bar graph
	Digital communication	HART®
Process temperature (pressure dependent)[2]		PP probe housing: –10…+90 °C, PVDF probe housing: –15…+100 °C
Pressure (absolute)[2]		Max. 1 bar @ +25 °C
Ambient temperature		Aluminum housing: –30…+70 °C, Plastic housing: –25…+70 °C, with display: –20…+70 °C
Seal		PP probe housing: EPDM, all other probe housing: FPM (Viton®)
Ingress protection		Probe housing: IP68, Electronic housing: IP67
Housing material		Plastic (PBT) or painted aluminum
Material of probe housing		Polypropylene (PP), PVDF
Electrical connection		2× M20×1.5 plastic cable glands for cable: Ø6…Ø12 mm, or 2× M20×1.5 metal cable glands for cable: Ø7…Ø13 mm wire cross section: 0.5…1.5 mm² (shielded cable is recommended), + 2× internally threaded ½" NPT connection for protective pipes
Electrical protection		Class III electric shock protection

[1] *Sensor should be ordered separately.*

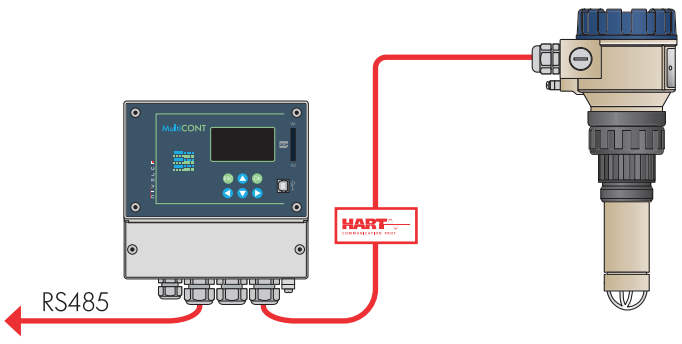
[2] *Depending on probe.*

Ex INFORMATION

Protection	Intrinsic safety
Ex marking	Ⓔx II1G Ex ia IIB T6 Ga
Intrinsic safety data	C_i ≤ 15 nF, L_i ≤ 200 µH, U_i ≤ 30 V, I_i ≤ 140 mA, P_i ≤ 1 W Ex transmitters must use an Ex ia power supply
Process temperature	0…+50 °C
Ambient temperature	Aluminum housing: –30…+70 °C, Plastic housing: –20…+70 °C, With display: –20…+70 °C

AnaCONT IN SYSTEM WITH MultiCONT

The **MultiCONT** can handle digital data from up to 15 HART® transmitters measuring different values *(e.g., DO temperature, level, pressure)*. The digital *(HART®)* information is processed, displayed, and – if necessary – it can be transmitted via RS485 to a PC. The transmitter can also be programmed remotely. Data can be visualized on a computer using the **NIVISION** process visualization software.



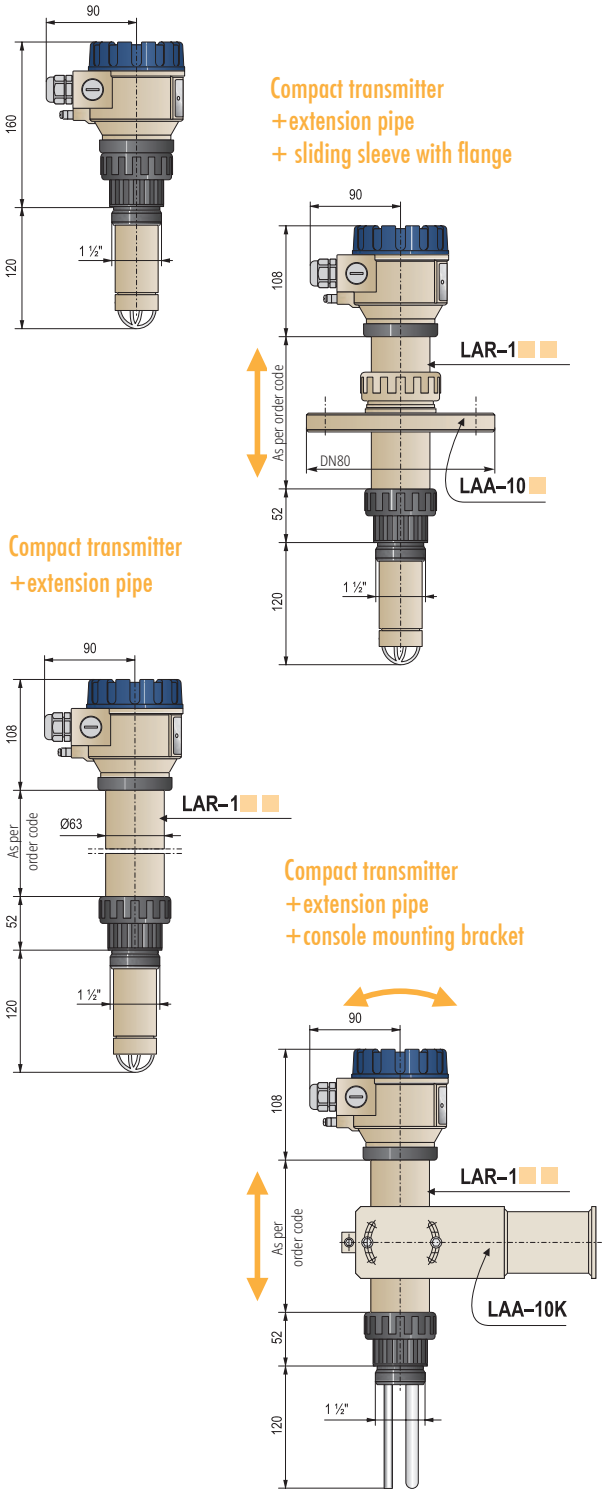
MOUNTING VERSIONS

The construction of the sensors of the compact and integrated versions are identical, so all accessories can be used with both types.

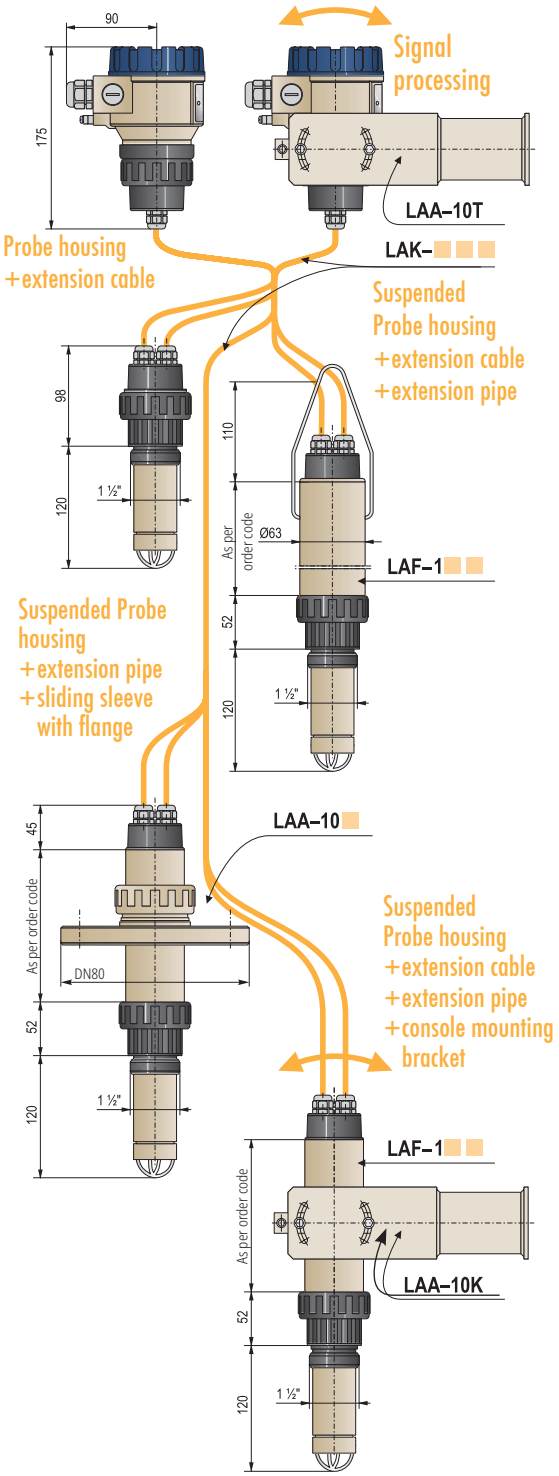
Using the accessories designed specifically for the **AnaCONT** family helps optimize the installation of the transmitters making the installation process easier.

By using extension pipes and extension cables, the remote-mount versions allow mounting the electronics and the sensor at any distance from each other.

COMPACT TRANSMITTER



DETACHED COMPACT TRANSMITTER



AnaCONT LED-100 — 5 years

2-wire compact liquid analytical DO (dissolved oxygen) transmitter with current / HART® and SPDT relay output
DO measurement range: 0 ppm or 20 ppm, without sensor

Type

L ■□ – ■■■ – ■

D	Compact DO transmitter

Version

L □ D – ■■■ – ■

E	Transmitter
G	Transmitter with plug-in display

Housing

L ■ D – □■■ – ■

1	Fiberglass-reinforced plastic (PBT)
2	Painted aluminum

Probe

L ■ D – ■□■ – ■

2	For 10 ppm sensor
1	For 20 ppm sensor

Process connection / Material

L ■ D – ■■□ – ■

1	1½" BSP / PP
2	1½" BSP / PVDF
4	1½" NPT / PP
5	1½" NPT / PVDF

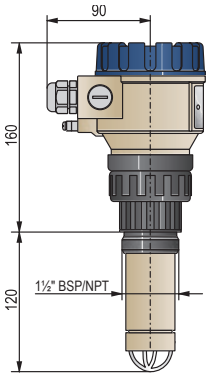
Output / Certificates

L ■ D – ■■■ – □

2	4...20 mA
4	4...20 mA + HART®
6	4...20 mA / Ex ia G
8	4...20 mA + HART® / Ex ia G
R	4...20 mA + SPDT Relay
H	4...20 mA + HART® + SPDT Relay

Accessories sold separately; see relevant page for details

S A P – 3 0 0 – 0	Graphic plug-in display module
S A T – 5 0 4 – ■	HART®-USB/Bluetooth® modem
S A K – 3 0 5 – ■	HART®-USB/RS485 modem
S A B – 1 1 2 – 0	3D printed plastic shielding cap, snap-on design for plastic cover
S A B – 1 1 3 – 0	3D printed plastic shielding cap, snap-on design for aluminum cover
S A B – 2 1 1 – 2	Stainless steel shielding cap, clamp-type design, for all instrument covers



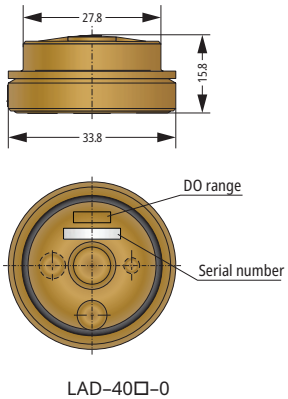
LED-100

DO probes — 5 years

Type

L A D – 4 0 □ – 0

1	DO Sensor 10 ppm
2	DO Sensor 20 ppm



LAD-40□-0

AnaCONT accessories to order — 5 years

Various installations can be achieved with the use of accessories

Material

L A R – □■■ – 0

1	PP

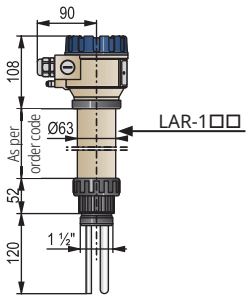
Extension length

L A R – 1 □□ – 0

n n	0.2...3 m; sold by the 0.1 m

nn = 02...30 : 0.2...3 m

Extension pipe = L
All cables of required length and terminals are included!



Pipe extension for separate mounting

L A F – 1 ■■ – 0

Material

L A F – □■■ – 0

1	PP

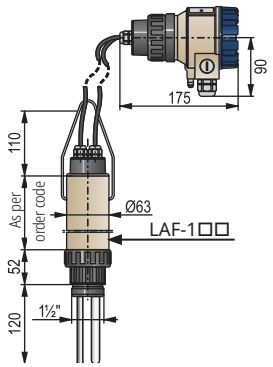
Extension length

L A F – 1 □□ – 0

n n	0.2...3 m; sold by the 0.1 m

nn = 02...30 : 0.2...3 m

Extension pipe = L
Attention! Cables and terminals are NOT included! The cable and terminal set LAK-_ _ _ for the version with an extension pipe for separate mounting is ordered separately (L + the distance between the mounting point and the electronics)!



Material

L A K – □■■ – 0

1	PP

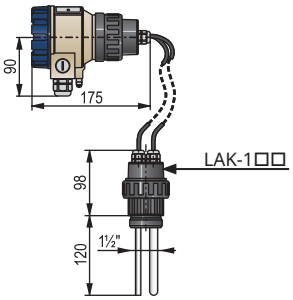
Extension length

L A K – 1 □□ – 0

n n	1...10 m cable set; sold by the meter

nn = 10...A0 : 1...10 m

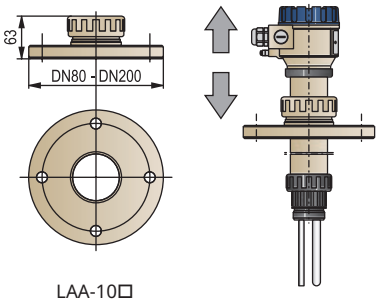
Terminals are included in the cable set!



Process connection / Material

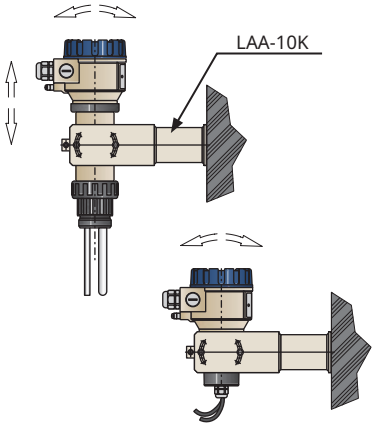
L A A – 1 0 □ – 0

2	DN80 PN16 / PP
3	DN100 PN16 / PP
4	DN125 PN16 / PP
5	DN150 PN16 / PP
6	DN200 PN16 / PP



Consoles

L A A – 1 0 K – 0	200 mm mounting bracket for extended version
L A A – 1 0 T – 0	200 mm mounting bracket for basic version



The **AnaCONT** 2-wire mini compact conductivity transmitters are designed to measure the conductivity of liquids and convert the signal to 4…20 mA output. They are suitable for measuring clean, non-crystallizable liquids. The design and the small size of the transmitter, and the wide temperature range make the device useful in diverse industrial applications. The two probes are immersed in the measured liquid. The distance between the probes and their surface defines the cell constant *(K)* of the device. The cell constant determines the measurement range and thus the application area.

FEATURES

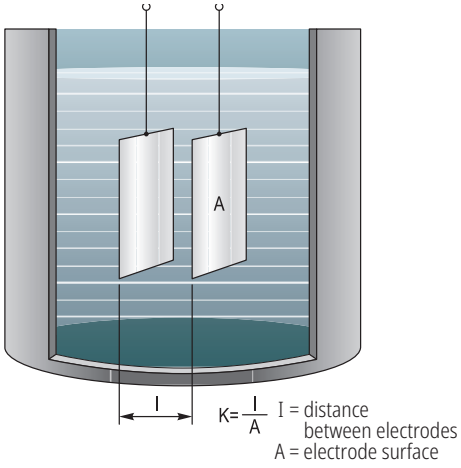
- Mini compact version
- Application oriented measurement range
- Optional plug-in display
- 4…20 mA, HART®
- PACTware™ compatible
- IP68
- 5 years warranty

APPLICATIONS

- Water production
- Water processing
- Water purification
- Wastewater treatment
- Pharmaceutical industry
- Food and beverage industry

LCK–21☐
+ PLK–501

PROBE

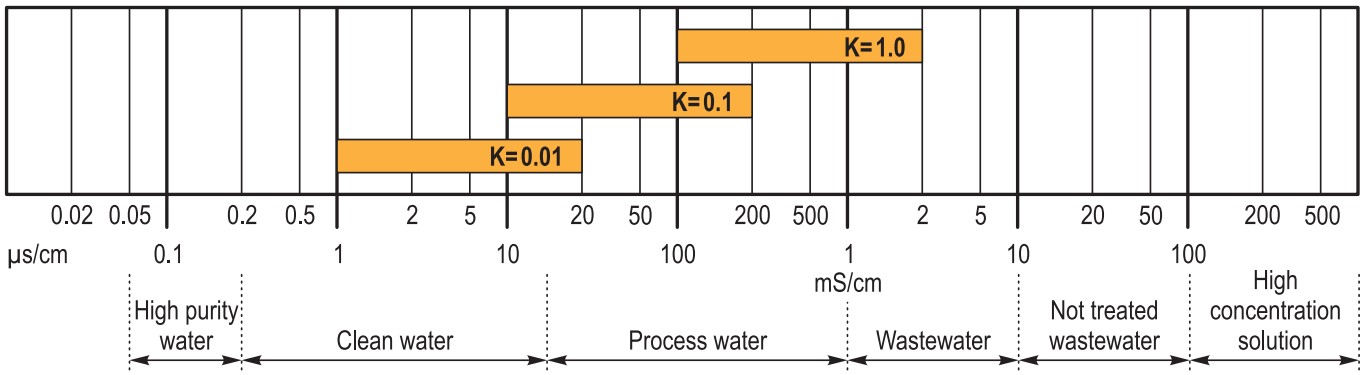


TECHNICAL DATA

		AnaCONT LCK – mini compact
Measurement data	Range	1…20 µS/cm 10…200 µS/cm 100…2000 µS/cm
	Margin of error	Typically 3% ±1 digit, max. 5%
Supply voltage		12…36 V DC galvanically isolated, transient overvoltage protection
Probe		2-electrodes, built-in
Cell constant		K = 0.01; K = 0.1; K = 1
Output	Analog	4…20 mA
	Display	UNICONT PLK–501 display (optional)
	Digital communication	HART®
Process temperature		–10…+70 °C
Process pressure		0…16 bar
Ambient temperature		0…+70 °C
Seal		Viton®
Process connection		As per order code
Ingress protection		Probe: IP68, Connector: IP65
Housing material		stainless steel 1.4571/1.4404
Probe housing material		1.4571/1.4404 + PP
Electrical connection		ISO 4400 connector
Electrical protection		Class III
Weight		~350 g

LCK–232–2

OPERATION



AnaCONT LCK-200 — 5 years

2-wire mini compact liquid analytical conductivity transmitter with 4...20 mA / 4...20 mA + HART® output
Conductivity measurement range: 1...20 µS/cm or 10...200 µS/cm or 100...2000 µS/cm

Measurement range

L C K – 2 □ ■ – ■	
1	1...20 µS/cm
2	10...200 µS/cm
3	100...2000 µS/cm (¾" version not available)

Process connection

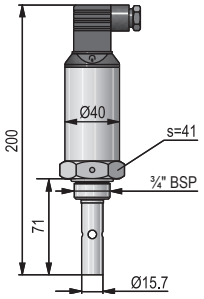
L C K – 2 ■ □ – ■	
1	¾" BSP
2	1" BSP
3	¾" NPT
4	1" NPT
T	1½" TriClamp (ISO 2852)
R	2" TriClamp (ISO 2852)

Output

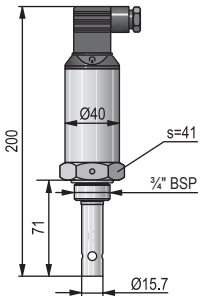
L C K – 2 ■ ■ – □	
2	4...20 mA
4	4...20 mA + HART®

Accessories (sold separately; see relevant page for details)

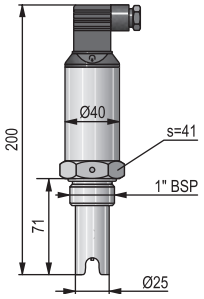
P L K – 5 0 1 – 2	Plug-in display
P L K – 5 0 1 – 3	Plug-in display with PNP output
E A A – 1 5 9 – 0	¾" BSP / 1" NPT (1.4571/1.4404)
S A T – 5 0 4 – ■	HART®-USB/Bluetooth® modem
S A K – 3 0 5 – ■	HART®-USB/RS485 modem
P ■ F – ■ 1 ■ – ■	Smart Field Display and Data Logger
P ■ F – ■ 0 1 – ■	Loop Display



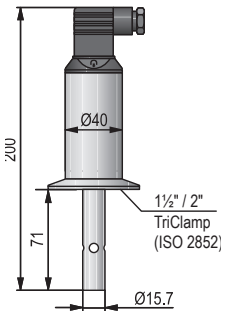
LCK-211



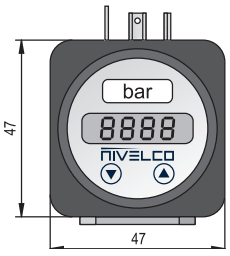
LCK-221



LCK-232



LCK-2□T/R



PLK-501

NIV24
LCK–232–2, PLK–501–2


REAKTOR


EchoTREK

FLOW MEASUREMENT

NIVELCO's open-channel flow metering system offers 9 different sizes, compact types of **Parshall** flumes made of plastic *(PP)*. The flume together with **PiloTREK, EasyTREK, EchoTREK** ultrasonic level transmitters and **MultiCONT** process controller makes a complete flow-measurement system.

The **NIVOSONAR GPA** enables flow measurements on gravitational sewers, brook channels, irrigation channels or any other open-channel with the help of a **Parshall** flume.

NIVOSONAR
OPEN-CHANNEL FLOW MEASUREMENT

page 181

- 9 different sizes, compact versions of Parshall flumes made of plastic (PP)
- Factory calibrated dimensions
- Measurement range: 0.94…6627 m^3/h
- Level transmitters are sold separately: PiloTREK, EasyTREK, EchoTREK
- 4…20 mA, HART® communication
- For open-channels, treated effluent sewage measurements
- Certification of measurement

The **NIVOSONAR GPA** open-channel flow metering system measures the flow of liquids in various open channels and gravitational sewers. The flow-measuring system consists of **PiloTREK, EasyTREK, EchoTREK** ultrasonic level transmitters and a Parshall flume reducing element. Depending on the flow rate, nine channels of different sizes and measurement ranges are available with a total measurement ranges of 0.94…6627 m^3/h. The Parshall flume is a rigid structure welded out of polypropylene sheets, with narrow tolerances to ensure high-accuracy metering; therefore, great care should be taken during transport and installation to prevent the flume getting deformed. Parshall flumes are delivered as compact units, and they are easy to install, with no special skills required. When selecting the mounting position, laminar flow conditions must be ensured. Flow measurement in closed channels using a Parshall flume is possible only if the liquid does not fully occupy the entire cross-section of the channel *(e. g., gravitational sewers)*. In such cases, it is inevitable to disassemble the pipeline network to insert a meter shaft to install the reducing element.

APPLICATION

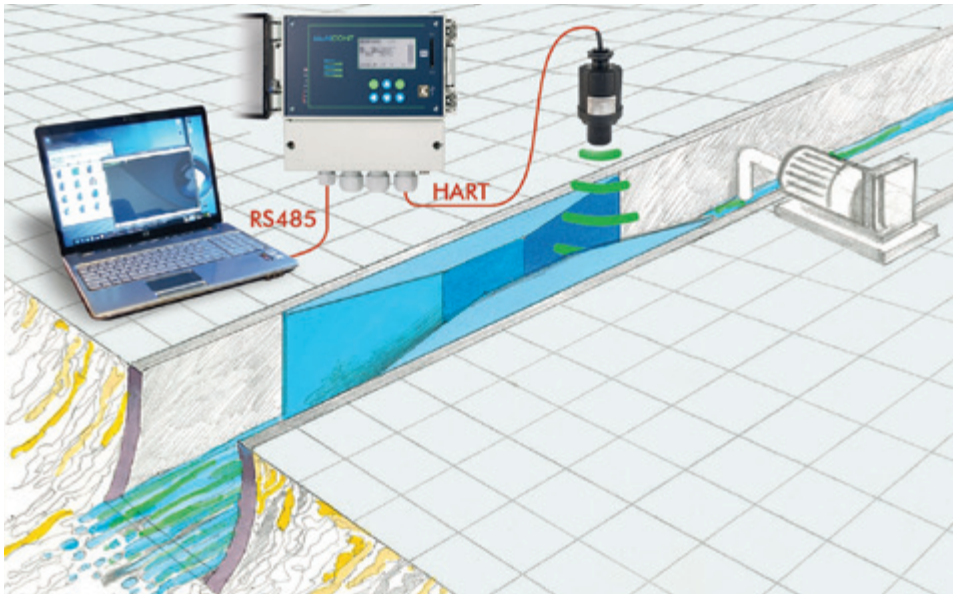
If a Parshall flume is applied as a reducing element, the stagnation pressure causes the liquid level to rise. This change of the level is proportional to the velocity and rate of the liquid flow. **PiloTREK, EasyTREK, EchoTREK** ultrasonic level transmitters measures the fluid level changes and transmits the measured data to the **MultiCONT** Multichannel Process Controller, **MonoCONT** Smart Field Display & Data Logger, or a PC via HART® using a **UNICOMM** HART®–USB/RS485 modem. The ultrasonic transmitters are programmable, they gather and transmit *(4…20 mA, RS485)* the measured data, which is displayed remotely, and they can also have multiple relay outputs. The flowmeter formula of the selected Parshall flume is included in each NIVELCO ultrasonic transmitter's software. The **PiloTREK, EasyTREK** and **EchoTREK** ultrasonic level transmitters *(upon choice)* and the **MultiCONT/MonoCONT** signal processing units process controller – which are required to build a complete measuring system – can be purchased separately.

FEATURES

- 9 different sizes, compact versions of Parshall flumes made of plastic (PP)
- Reliable measurement with ultrasonic level transmitter
- Level transmitter can be used for all flume types
- Displaying of flow measurement and average or total flow

APPLICATIONS

- For open-channels, gravitational channels
- Measurement of feed or process water
- Yield measurement of irrigation canals
- Treated sewage effluent measurement



PROPERTIES

Type		NIVOSONAR GPA								
		P1	P2	P3	P4	P5	P6	P7	P8	P9
Q_{min}	m^3/h	0.94	1.88	2.8	5.5	8.1	10.5	15.8	20.8	31.3
Q_{max}	m^3/h	22.3	54.4	196	604	1324	2152	3232	4359	6627
W	cm	2.54	5.08	7.62	15.24	22.86	30.48	45.7	61	91.4
B	cm	30	34	39	53	75	120	130	135	150
C	cm	9.29	13.49	17.8	39.4	38.1	61	76.2	91.44	121.9
D	cm	16.75	21.35	25.88	39.69	57.47	84.46	102.6	120.7	157.2
E	cm	23	26.4	46.7	62	80	92.5	92.5	92.5	92.5
L	cm	63.5	77.5	91.5	152.4	162.6	286.7	294.3	301.9	316.9
O	cm	5	5	5	10	10	10	10	10	10
U	cm	24.8	28.6	49.2	69.6	87.6	100.1	100.1	100.1	100.1
V	cm	30.7	35.35	39.9	54	80	100	120	140	180
m	kg	9	10.6	19.1	49	81	146	183	231	252
h_d / h_a		0.6					0.7			
a		0.0609	0.1197	0.1784	0.354	0.521	0.675	1.015	1.368	2.081
b		1.552	1.553	1.555	1.558	1.558	1.556	1.560	1.564	1.569

$Q = a \cdot h_a^{\,b}$ [m^3/s], where h_a: the measured level in meters, a: see table, b: see table

NIVOSONAR GPA

3 years

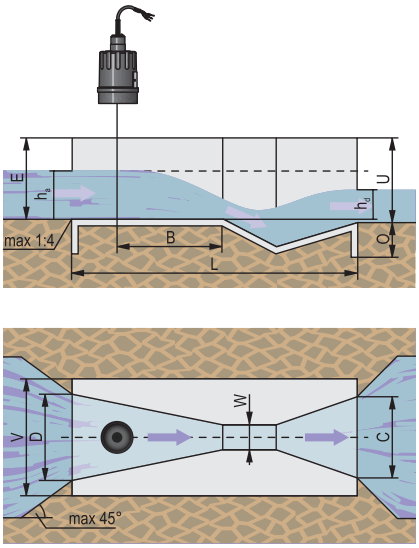
Parshall flume for open channel flow metering through liquid level measurement
Welded construction of PP-sheets

Prices on request

Measurement range

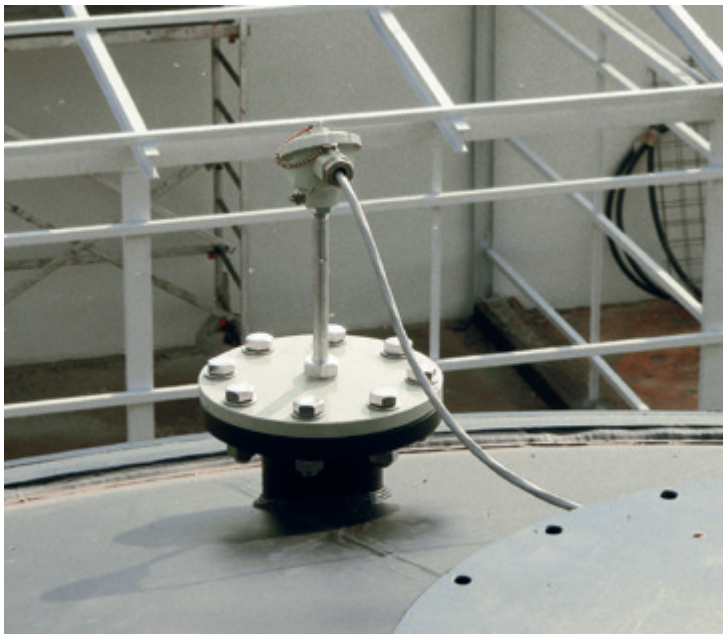
G P A – 1 P □ – 0

1	Qmin = 0.94 m³/h, Qmax = 22.3 m³/h
2	Qmin = 1.88 m³/h, Qmax = 54.4 m³/h
3	Qmin = 2.8 m³/h, Qmax = 196 m³/h
4	Qmin = 5.5 m³/h, Qmax = 604 m³/h
5	Qmin = 8.1 m³/h, Qmax = 1324 m³/h
6	Qmin = 10.5 m³/h, Qmax = 2152 m³/h
7	Qmin = 15.8 m³/h, Qmax = 3232 m³/h
8	Qmin = 20.8 m³/h, Qmax = 4359 m³/h
9	Qmin = 31.3 m³/h, Qmax = 6627 m³/h



GPA–1P□

NIV24
GPA–1P1–0
GPA–1P2–0



TEMPERATURE MEASUREMENT

The most frequently measured physical parameter in modern process automation is temperature.

NIVELCO's temperature devices are designed primarily to measure this vital parameter. Devices range from simple thermal sensors to pressure-resistant, explosion-proof, high-temperature thermometers with digital communication and multi-point transmitters.

The product range starts with a simple Pt100 temperature sensor and ends with high temperature transmitters with Ex d explosion proof housing, HART® communication and multi-point temperature transmitters.

The number of order code variations and special types is very large, so that NIVELCO can offer a suitable solution for most applications. Our product line and the number of available design variations are extensive; we can provide our customers with the most suitable device for any application.

THERMOPOINT
MULTI-POINT TRANSMITTER

page 185

- 2-wire multi-point temperature transmitter
- Temperature measurement of powdered, granular solids or liquids
- Up to 15 sensors / probe
- Up to 50 m probe length
- Temperature trend monitoring
- –40…+125 °C range
- HART® communication
- Explosion-proof variants

THERMOCONT TT
TEMPERATURE TRANSMITTER

page 190

- –50…+600 °C range
- Plug-in display module
- 4…20 mA, HART® communication
- Built-in Pt100 temperature sensor
- Probe length up to 3 m
- Stainless steel or PFA-coated probes
- Heavy duty housing
- Multiple head positions
- Explosion-proof variants

THERMOCONT T
TEMPERATURE SENSOR

page 194

- –50…+600 °C range
- Resistance Temperature Detectors
- 2 or 4-wire versions
- Fast response sensor version
- Probe length up to 3 m
- Stainless steel or PFA-coated
- Temperature sensor for gases
- Explosion-proof variants

THERMOPOINT 2-wire temperature transmitters are designed for multipoint, continuous temperature measurement, indication and transmission in normal and hazardous-area liquids, dusty or granular solids, particularly for preserving the quality of grain and feed stored in silos. Digitally addressed temperature sensors integrated into the rope probe measure the temperature, and the measured values are transmitted via HART® communication to a **MultiCONT** controller or a computer; in bulk solids monitoring, temperature changes indicate product spoilage, allowing ventilation or reclaiming to be started on alarm.

The system can be combined with level measurement using common cabling and signal processing, and existing level monitoring systems can be easily upgraded with silo temperature monitoring functionality for a wide range of industrial applications.

FEATURES

- 2-wire multi-point temperature transmitter
- Communicates via HART®
- PACTware™ compatible
- Up to 50 m probe length
- Up to 15 sensors
- Max. 35 kN tensile force
- Plug-in display
- Replaceable sensors
- Digitally addressed sensors
- –40…+125 °C process temperature
- IP67
- Ex variant
- 5 years warranty

APPLICATIONS

- For normal and hazardous materials
- Temperature measurement of powdered, granular or free-flowing solids
- For transmitting temperature data from remote locations
- Grain, feed and food industry

CERTIFICATES

- ATEX (Ex ia G)
- ATEX (Ex ia D)
- ATEX (Ex ta/tb D)
- ATEX (Ex ta D)

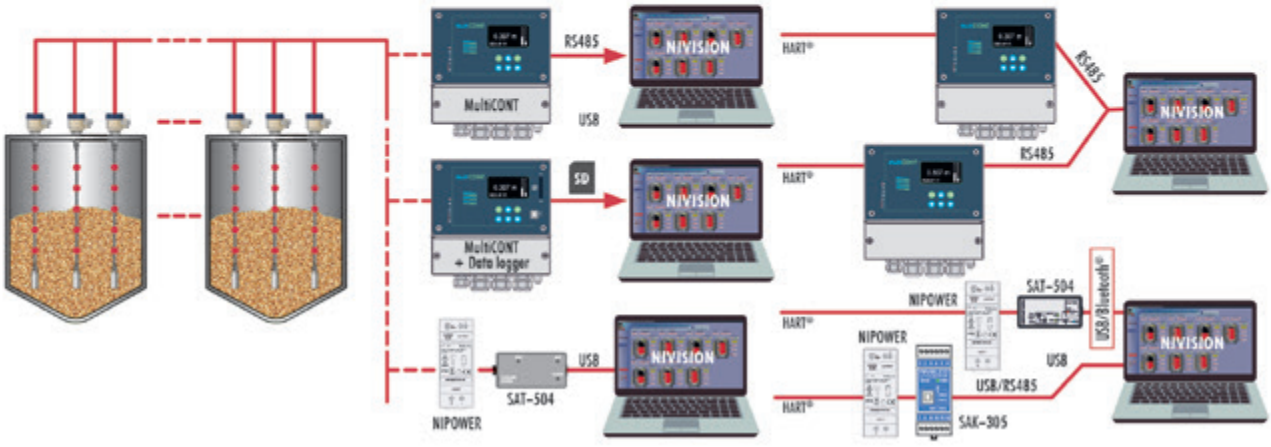
SYSTEM CONFIGURATION

The THERMOPOINT system can be configured in three ways depending on the signal processing method:

1. Temperature data received via HART® communication is processed by the MultiCONT, then forwarded to the PC via RS485 bus, while relay outputs signal alarms.
2. The MultiCONT with data logging function records measurements, saves them to an SD card, and generates continuous temperature trends from data transmitted via RS485 bus, while outputs provide alarms.
3. HART® signals are transmitted to the PC via UNICOMM SAK–305 USB/RS485 modem or SAT–504 wireless Bluetooth® modem. Transmitters can be programmed from the PC using EView2 configuration software and integrated into process control systems with NIVISION display software. If more than 15 transmitters are required, they must be connected to separate cable pairs and individual MultiCONT units or HART® modems.

A MULTIFUNCTION SYSTEM

If level measurement is required the appropriate level transmitter *(e.g., MicroTREK/EchoTREK)* can be connected to the same HART® loop. Due to HART® protocol limitations, the total number of temperature and level transmitters should not exceed 15. Variants of the combined system setup are the same as described earlier.



TECHNICAL DATA

		For liquids		For solids
		Rigid Probe	Flexible Probe	Flexible plastic-coated Probe
Insertion length		1…4 m	1…50 m	
Number of temperature sensors		Up to 15		
Position of sensors		Up to 10 m: 1 sensor at every one meter, between 11 and 50 m: 1 sensor at every two meters from the bottom positioned sensor		
Temperature range		–40…+105 °C (for max. 1 hour @ +125 °C)		–40…+80 °C (for max. 1 hour @ +85 °C)
Highest process pressure		25 bar	16 bar	3 bar
Resolution (digital)		0.1 °C		
Accuracy		–40…–10 °C: ±2 °C; –10…+85 °C: ±0.5 °C; +85…+125 °C: ±2 °C		
Measurement cycle		Maximum (Nx1) seconds, where N is the number of sensors		
Probe	Tensile force	–		35 kN
	Dimension	Ø14 mm	Ø16 mm	Ø17 mm + 1 mm coating
Material of wetted parts		Stainless steel: 1.4571/1.4404	Stainless steel: 1.4571/1.4404 + 1.4301	Stainless steel: 1.4571/1.4404 + Antistatic PE-coated steel + 1.4301
Ambient temperature		With plastic housing: –30… +65 °C; with metal housing: –30…+65 °C; with SAP–300 display: –20…+65 °C		
Output	Analog	4…20 mA		
	Digital	HART®		
	Display	SAP–300 LCD		
Output load		$R_{max} = (U_{Supply} - U_{Supply\ min.})/0.02$ A [Ω], load during HART® communication: R_{min} = 250 Ω		
Supply voltage		11…36 V DC (in case of HART® multi-drop: 10…36 V DC)		
Electrical protection		Class III		
Ingress protection		Electronic housing: IP67		
		Probe: IP68 (up to process pressure)		Probe: IP66
Process connection		As per order code		
Electrical connection		2× M20×1.5 plastic cable gland, cable outer diameter: Ø6…Ø12 mm, wire cross section: max. 1.5 mm²; 2× internally threaded ½" NPT connection for protective pipes		
Housing material		Painted aluminum (EN AC-42000), stainless steel (1.4571/1.4404) or plastic (PBT)		
Weight		1.7 kg + probe: 0.6 kg/m	2.9 kg + probe cable: 0.3 kg/m + weight 3 kg	2.9 kg + probe cable: 0.7 kg/m

Ex INFORMATION

	T□□–□□□–6 Ex	T□□–5□□–5 Ex, T□□–7□□–5 Ex	T□□–5□□–8 Ex, T□□–7□□–8 Ex, T□□–5□□–9 Ex, T□□–7□□–9 Ex	
Ex marking	⟨Ex⟩ II 1 G Ex ia IIB T6…T4 Ga	⟨Ex⟩ II 1 D Ex ia IIIC T85°C Da	⟨Ex⟩ II 1 D Ex ta IIIC T105°C Da[1]	⟨Ex⟩ II 1/2 D Ex ta/tb IIIC T85°C Da/Db
Waiting time for opening the cover	–	–	0 minutes	30 minutes
Ex electrical limits	Only Ex ia power supply may be used! U_i ≤ 30 V DC I_i ≤ 140 mA P_i ≤ 1 W C_i ≤ 15 nF L_i ≤ 200 µH		U_o ≤ 30 V DC I_o ≤ 1 A	
Supply voltage	U_i = 11…30 V DC (in case of HART® multi-drop U_i = 10…30 V DC)			
Process temperature	See Thermal Limits of Ex Compliant Models Table			
Ambient temperature	See Thermal Limits of Ex Compliant Models Table, for SAP–300 display: –20…+60 °C			
Cable introduction	M20×1.5 cable gland		certified "Ex ta" protective gland M20×1.5	
Cable diameter	Ø7…12 mm			
Electrical connection	Wire cross section: 0.5…1.5 mm²			

[1] Ex ta IIIC protection class devices are available only with a windowless cap.

THERMAL LIMITS OF Ex COMPLIANT MODELS

Thermal limits of Ex ia IIB compliant models

Housing / probe	Ambient temperature	Process temperature	Temperature class
Metal housing with rigid or flexible probe	–30…+65 °C	–40…+80 °C –40…+95 °C –40…+105 °C	T6 T5 T4
Plastic housing with rigid or flexible probe	–20…+65 °C	–40…+80 °C –40…+95 °C –40…+105 °C	T6 T5 T4
Metal housing with plastic-coated flexible probe	–30…+65 °C	–40…+80 °C	T6

Thermal limits of Ex ta/tb IIIC, Ex ta IIIC and Ex ia IIIC compliant models

Transmitter location	Ambient temperature	Process temperature	Temperature class		
			Ex ta/tb IIIC	Ex ta IIIC	Ex ia IIIC
Outside the bin/silo	–30…+65 °C	–40…+80 °C	T85°C	T105°C	T85°C
Inside the bin/silo	–30…+65 °C		–		

THERMOPOINT TM-500 with cable probe — 5 years

2-wire compact multipoint temperature transmitter for liquids
with stainless steel cable probe and weight, max. cable length: 50 m

Version

T □■ – ■■■ – ■

M	Multipoint transmitter
J	Multipoint transmitter with plug-in display

Process connection / Probe length

T ■□ – ■■■ – ■

K	1½" BSP / 1...30 m
E	1½" NPT / 1...30 m
N	1½" BSP / 31...50 m
L	1½" NPT / 31...50 m

Housing

T ■■ – □■■ – ■

5	Painted aluminum
6	Fiberglass-reinforced plastic (PBT)
7	Stainless steel

Number of sensors

T ■■ – ■□■ – ■

n	1...9; each sensor
o	10...15; each sensor

n = 1...9 : 1...9
o = A...F : 10...15

Cable length

T ■■ – ■■□ – ■

p	2...9 m; sold by the meter
q	10...30 m; sold by the meter
r	31...39 m; sold by the meter
s	40...50 m; sold by the meter

p = 2...9 : 2...9 m
q = A...Z : 10...30 m (letters I, O, Q, X, Y not used)
r = 1...9 : 31...39 m
s = A...L : 40...50 m (letter I not used)

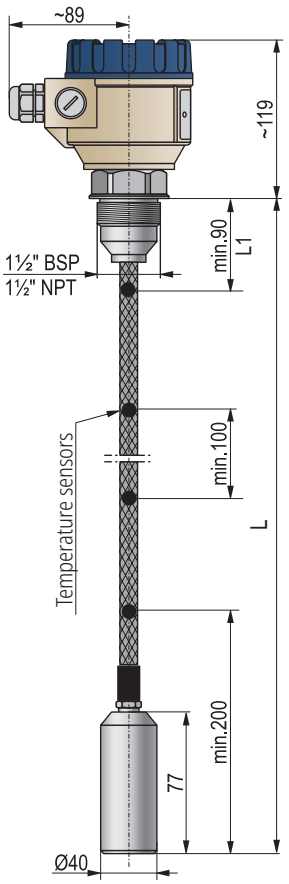
Output / Certificates

T ■■ – ■■■ – □

4	HART®
6	HART® / Ex ia G

Accessories to order (see relevant page for details)

TMK–555–4M–200–01	Stainless steel Counterweight (comes with the unit)
SAP – 300 – 0	Graphic plug-in display module
SAT – 504 – ■	HART®-USB/Bluetooth® modem
SAB – 112 – 0	3D printed plastic shielding cap, snap-on design for plastic cover
SAB – 113 – 0	3D printed plastic shielding cap, snap-on design for aluminum cover
SAB – 211 – 2	Stainless steel shielding cap, clamp-type design, for all instrument covers



TMK- / TME- / TMN- / TML-□□1/□□Z

THERMOPOINT TM-500 with rod probe — 5 years

2-wire compact multipoint temperature transmitter for liquids
with stainless steel rod probe, max. probe length: 4 m

Version

T □■ – ■■■ – ■

M	Multipoint transmitter
J	Multipoint transmitter with plug-in display

Process connection

T ■□ – ■■■ – ■

R	1" BSP
A	1" NPT
J	M20x1.5

Housing

T ■■ – □■■ – ■

5	Painted aluminum
6	Fiberglass-reinforced plastic (PBT)
7	Stainless steel

Number of sensors*

T ■■ – ■□■ – ■

n	1...9; each sensor
o	10...15; each sensor

n = 1...9 : 1...9
o = A...F : 10...15
* Number of temperature sensors is depending on the insertion length!

Probe length**

T ■■ – ■■□ – ■

p	1...4 m; sold by the meter

p = 1...4 : 1...4 m
** Special probe length is available on request

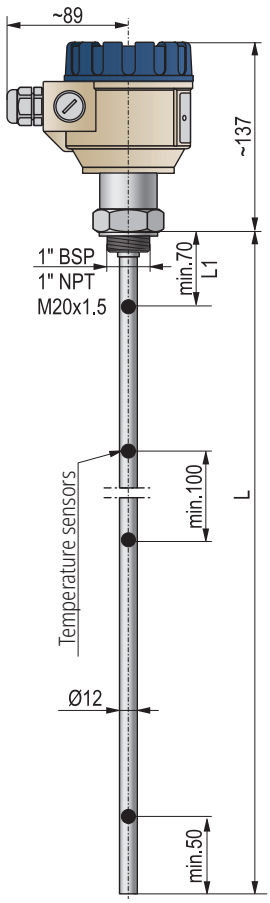
Output / Certificates

T ■■ – ■■■ – □

4	HART®
6	HART® / Ex ia G

Accessories sold separately; see relevant page for details

SAP-300-0	Graphic plug-in display module
SAT-504-■	HART®-USB/Bluetooth® modem
SAK-305-■	HART®-USB/RS485 modem
SAB-112-0	3D printed plastic shielding cap, snap-on design for plastic cover
SAB-113-0	3D printed plastic shielding cap, snap-on design for aluminum cover
SAB-211-2	Stainless steel shielding cap, clamp-type design, for all instrument covers



TMR- / TMA- / TMJ-□□1/□□4

THERMOPOINT TM-500 with coated cable probe — 5 years

2-wire compact multipoint temperature transmitter for free-flowing solids
with PE-coated stainless steel cable probe and weight, max. cable length: 50 m

Version

T □■ – ■■■ – ■

M	Multipoint transmitter
J	Multipoint transmitter with plug-in display

Process connection / Probe length

T ■□ – ■■■ – ■

H	1½" BSP / 1...30 m
C	1½" NPT / 1...30 m
F	1½" BSP / 31...50 m
G	1½" NPT / 31...50 m

Housing

T ■■ – □■■ – ■

5	Painted aluminum
7	Stainless steel

Number of sensors

T ■■ – ■□■ – ■

n	1...9; each sensor
o	10...15; each sensor

n = 1...9 : 1...9
o = A...F : 10...15

Cable length

T ■■ – ■■□ – ■

p	2...9 m; sold by the meter
q	10...30 m; sold by the meter
r	31...39 m; sold by the meter
s	40...50 m; sold by the meter

p = 2...9 : 2...9 m
q = A...Z : 10...30 m (letters I, O, Q, X, Y not used)
r = 1...9 : 31...39 m
s = A...L : 40...50 m (letter I not used)

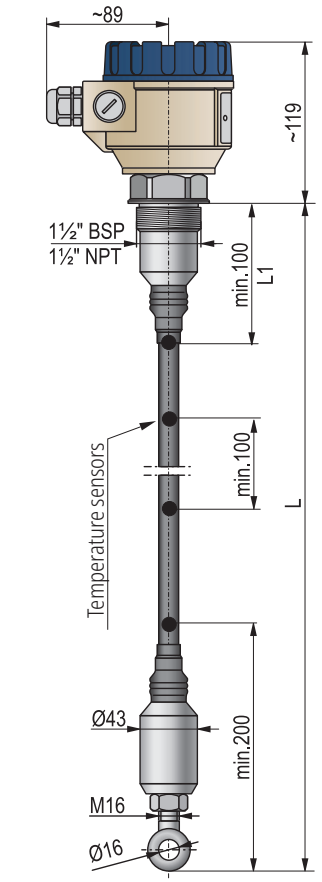
Output / Certificates

T ■■ – ■■■ – □

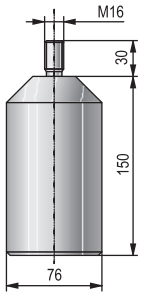
5	HART® / Ex ia D
6	HART® / Ex ia G
8	HART® / Ex ta/tb D
9	HART® / Ex ta D

Accessories sold separately; see relevant page for details

CTN–103–0M–400–00	Stainless steel Counterweight, Ø80 x 150 mm
S A P – 3 0 0 – 0	Graphic plug-in display module
S A T – 5 0 4 – ■	HART®-USB/Bluetooth® modem
S A B – 1 1 2 – 0	3D printed plastic shielding cap, snap-on design for plastic cover
S A B – 1 1 3 – 0	3D printed plastic shielding cap, snap-on design for aluminum cover
S A B – 2 1 1 – 2	Stainless steel shielding cap, clamp-type design, for all instrument covers



TMH- / TMC- / TMF- / TMG-□□1/□□Z



CTN-103-0M-400-00

THERMOCONT TT field devices, incorporating a Pt100 sensor, are 2-wire temperature transmitters with a 4…20 mA analog output or transmitter/indicator if equipped with a plug-in display. Intrinsically safe versions are available in standard and flame-proof housing.

The measured temperature can also be transmitted via HART®. **THERMOCONT TT** Temperature Transmitters are suitable for measuring the temperature of liquids in tanks and pipes and that of free-flowing, powdered solids and gases. Wall-mounted versions are available for ambient temperature measurement. The PFA-coated stainless steel probes can be used to measure the temperature of aggressive materials. The reinforced probe version is an ideal solution for the oil, gas, and heavy chemical industries and also an excellent choice for jobs where a robust probe is advantageous. A remote version of the transmitter is also available, which can be connected to a standard Pt100 sensor with a simple 4-wire cable.

FEATURES

- Temperature transmitting and displaying
- Measurement range: –50…+600 °C
- 4…20 mA output
- HART® communication
- Variety of head positions
- Stainless steel probe
- Plastic-coated version
- Flame-proof casing
- Plug-in display
- Strengthened probe version
- Ex variants
- NIFLANGE weldable stainless steel flange variants
- IP65
- 5 years warranty

APPLICATIONS

- For normal and hazardous mediums
- For temperature metering of liquids, vapors, gases and granules, powders
- Temperature transmitting for far distances
- Temperature metering in tanks, tubes, furnaces or boilers
- Temperature metering of halls or rooms

TBJ–500 TBW–620 TBJ–600 TVC–511–6 Ex
High-temperature version

CERTIFICATES

- ATEX (Ex ia G)
- ATEX (Ex d G)
- ATEX (Ex d ia G)

POSITION OF THE DISPLAY

Requested head position differing from standard ("A") version must be requested in the order

TECHNICAL DATA

			Version	Standard [TT□, TB□]	Plastic-coated [TR□, TW□]	Strengthened probe [T□S, T□Z]	High-temperature [TV□, TL□]
Measurement range				–50…+200 °C T□W: –40…+70 °C	–50…+200 °C	–50…+600 °C (1)	–50…+600 °C (1)
Insertion length				As per order code, up to 3000 mm			
Process connection				As per order code		½" / 1" NPT threaded	As per order code
Highest process pressure				25 bar @ +20 °C, 16 bar @ +400 °C		40 bar	25 bar @ +20 °C, 16 bar @ +400 °C
Material of wetted parts (2)				1.4571/1.4404 stainless steel	PFA / (PTFE or PVDF)	1.4571/1.4404 stainless steel	
Probe				Pt100 temperature sensor, as per order code			
Accuracy (3)	Output current	Class "A" Pt100		± (0.3+ |0.0025 t |) °C			± (1.5+ |0.004 t |) °C
		Temperature error		± 0.02 °C / °C			
	Displayed current	Class "A" Pt100		± (0.2+ |0.0025 t |) °C			± (1.5+ |0.004 t |) °C
		Temperature error		± 0.02 °C / °C			
Supply voltage				10…36 V DC; Ex: 12…30 V DC, see "Ex information"			
Output	Analog			4…20 mA, output limit values: 3.9…20.5 mA			
	Digital communication			HART®			
	Output load			$R_{max} = [(U_{Supply} - U_{Supply\ min.})/0.02\ A], [\Omega]$			
	Display	type		SAP–202 plug-in display			
		resolution		0.1 °C	0.1 °C	0.4 °C	0.4 °C
Error indication				3.8 mA / 22 mA			
Ambient temperature				–40…+70 °C, with display: –25…+70 °C; see "Ex information"			
Electrical protection				Class III			
Ingress protection				Probe: IP68, Housing: IP65			
Electrical connection				Plastic or metal cable gland: M20×1.5; Cable outer diameter: Ø6…Ø12 mm; / see "Ex information" Wire cross section: 0.25…1.5 mm²			
Housing material				Painted aluminum or plastic (PBT)		Painted aluminum	
Weight		with aluminum housing		~0.9 kg + probe 0.5 kg/m (for T□W types ~0.9 kg total)		~1.55 kg + probe 0.25 kg / 100 mm	~0.9 kg + probe 0.5 kg/m (for T□W types ~0.9 kg total)
		with plastic housing		~500 g + probe 500 g/m (for T□W types ~500 g total)		–	

(1) *With heatsink above +200 °C.* (2) *Not valid for T□W types.* (3) *t = measured temperature.*

Ex INFORMATION

T□□–5□□–□ Ex			
Protection	Intrinsic safety	Flameproof enclosure	Intrinsic safety with flameproof enclosure
Ex marking	⟨Ex⟩ II 1 G Ex ia IIB T6…T1 Ga	⟨Ex⟩ II 2 G Ex d IIB T6…T1 Gb	⟨Ex⟩ II 1/2 G Ex d ia IIB T6…T1 Ga/Gb
Intrinsic safety data	U_i = 30 V I_i = 140 mA P_i = 1.0 W C_i < 14 nF L_i < 180 µH	–	U_i = 30 V I_i = 140 mA P_i = 1.0 W C_i < 14 nF L_i < 180 µH
Ambient temperature	–40…+70 °C, with display –25…+70 °C		
Cable gland	Metal, M20×1.5, cable outer diameter: Ø6…Ø12 mm	Ex d IIB certified metal M20×1.5, cable outer diameter: Ø9…Ø11 mm	

Temperature classes	T6	T5	T4	T3	T2	T1
Ambient temperature	+60 °C	+75 °C	+75 °C	+70 °C	+60 °C	+45 °C
Process temperature	+80 °C	+95 °C	+120 °C	+190 °C	+290 °C	+440 °C

THERMOCONT TT–500 standard — 5 years

2-wire compact temperature indicator / transmitter for liquids, gases and free-flowing solids with Pt100 temperature sensor

Version

T □■ – ■■■ – ■

T	Transmitter, up to +200 °C
V	Transmitter, up to +600 °C
W	Transmitter, up to +200 °C , PFA-coated
B	Transmitter with plug-in display, up to +200 °C
L	Transmitter with plug-in display, up to +600 °C
R	Transmitter with plug-in display, up to +200 °C, PFA-coated

Process connection

T ■□ – ■■■ – ■

W	With console for wall mounting
C	½" BSP
D	¾" BSP
E	1" BSP
H	½" NPT
J	M20x1.5
L	1" TriClamp
K	1½" TriClamp
N	2" TriClamp
O	DN25 Pipe coupling (DIN 11851)
P	DN40 Pipe coupling (DIN 11851)
R	DN50 Pipe coupling (DIN 11851)
F	DN50, PN16, 1.4571/1.4404 flange + PTFE lining (only for coated probe versions)
A	2" ANSI, 1.4571/1.4404 flange + PTFE lining (only for coated probe versions)
U	Welded stainless steel flange (MF_–___–K type flanges [available from size DN15] should be ordered separately)

Housing

T ■■ – □■■ – ■

5	Painted aluminum
6	Fiberglass-reinforced plastic (PBT) (only for +200 °C versions, not available in Ex version)

Sensor

T ■■ – ■□■ – ■

0	None
1	Class A Pt100
2	Class B Pt100

Probe length

T ■■ – ■■□ – ■

0	60 mm
1	160 mm
2	250 mm
3	400 mm
4	500 mm
5	1000 mm
6	1500 mm
7	2000 mm
8	2500 mm
9	3000 mm

Output / Certificates

T ■■ – ■■■ – □

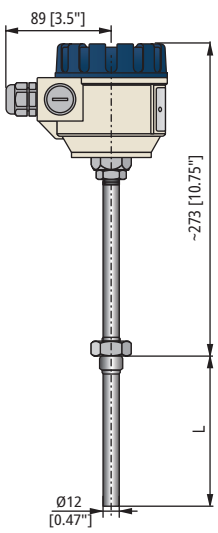
2	4...20 mA
4	4...20 mA + HART®
6	4...20 mA / Ex ia G
8	4...20 mA + HART® / Ex ia G
A	4...20 mA / Ex d G
B	4...20 mA + HART® / Ex d G
C	4...20 mA / Ex d ia G
D	4...20 mA + HART® / Ex d ia G

Available on request (must be specified in the text of the order)

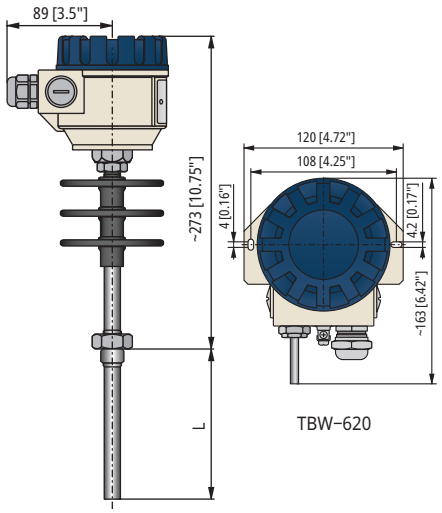
Non-standard, customized 4...20 mA output calibration

Accessories (sold separately; see relevant page for details)

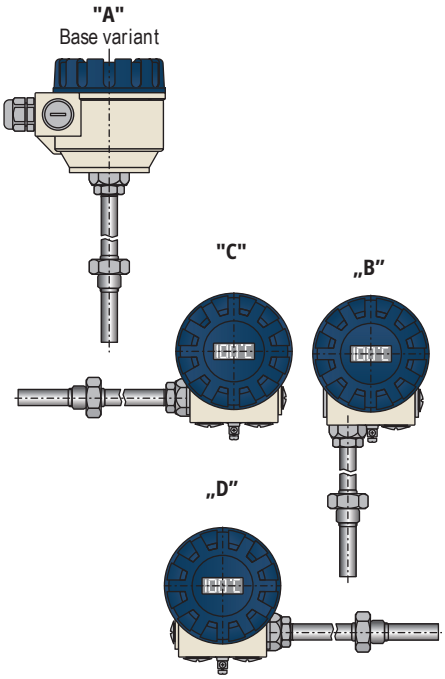
SAP – 202 – 0	Plug-in display module
SAT – 504 – ■	HART®-USB/Bluetooth® modem
SAK – 305 – ■	HART®-USB/RS485 modem
SAB – 112 – 0	3D printed plastic shielding cap, snap-on design for plastic cover
SAB – 113 – 0	3D printed plastic shielding cap, snap-on design for aluminum cover
SAB – 112 – 0	3D printed plastic shielding cap, snap-on design for plastic cover



TT□–500/600 TT□–500 (Ex d)



TVJ–500 TBW–620



Any head position different from the standard "A" version must be specified in the order.

THERMOCONT TT-500 with strengthened probe — 5 years

2-wire compact temperature indicator / transmitter for liquids, gases and free-flowing solids with strengthened, drilled probe, with Pt100 temperature sensor

Version

T □■ – ■■■ – ■

T	Transmitter, up to +200 °C
V	Transmitter, up to +600 °C
B	Transmitter with plug-in display, up to +200 °C
L	Transmitter with plug-in display, up to +600 °C

Process connection

T ■□ – ■■■ – ■

S	1" NPT
Z	½" NPT

Housing

T ■■ – □■■ – ■

5	Painted aluminum
6	Fiberglass-reinforced plastic (PBT) (only for +200 °C versions, not available in Ex version)

Sensor

T ■■ – ■□■ – ■

1	Class A Pt100
2	Class B Pt100

Probe length

T ■■ – ■■□ – ■

0	60 mm
1	160 mm
2	250 mm
3	400 mm
4	500 mm
5	1000 mm
6	1500 mm
7	2000 mm
8	2500 mm
9	3000 mm

Output / Certificates

T ■■ – ■■■ – □

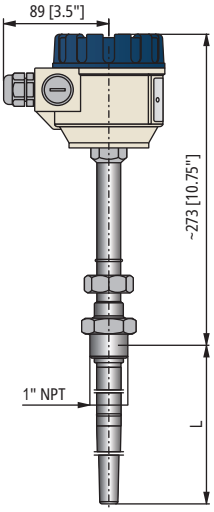
2	4...20 mA
4	4...20 mA + HART®
6	4...20 mA / Ex ia G
8	4...20 mA + HART® / Ex ia G
A	4...20 mA / Ex d G
B	4...20 mA + HART® / Ex d G
C	4...20 mA / Ex d ia G
D	4...20 mA + HART® / Ex d ia G

Available on request (must be specified in the text of the order)

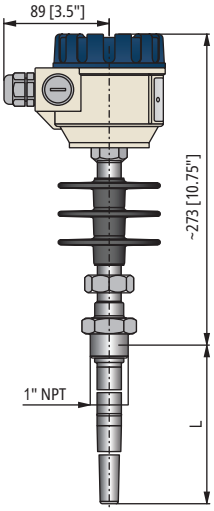
Non-standard, customized 4...20 mA output calibration

Accessories (sold separately; see relevant page for details)

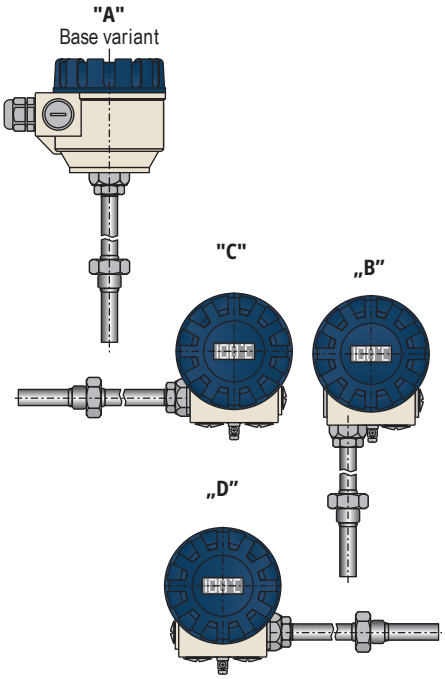
SAP – 202 – 0	Plug-in display module
SAT – 504 – ■	HART®-USB/Bluetooth® modem
SAK – 305 – ■	HART®-USB/RS485 modem
SAB – 112 – 0	3D printed plastic shielding cap, snap-on design for plastic cover
SAB – 113 – 0	3D printed plastic shielding cap, snap-on design for aluminum cover
SAB – 211 – 2	Stainless steel shielding cap, clamp-type design, for all instrument covers



TTS-500 / 600



TVS-500



Any head position different from the standard "A" version must be specified in the order.

The wide range of **THERMOCONT** temperature sensors covers almost all industrial temperature measurement needs. The large number of versions and the variety of probes available make THERMOCONT a suitable choice for all industries.

THERMOCONT TFP resistance thermometers are primarily used as sensors for heated tools. The sensor tip of the **TFP–500/600** types is made of copper to provide a faster response time. The **TFP–300/400** has a process connection with a suitable mounting stud. The **TFP–100/200/500/600** have different types of mounting bolts that are ordered separately. The mounting bolts allow the sensors to be screwed into various threads.

The **THERMOCONT TGP** resistance thermometer can be used primarily for bearing temperature measurements on high performance machines.

TGP
bearing temperature
sensor

FEATURES

- Single or dual Pt100 sensor versions
- 2, 3 or 4-wire types
- Fast response sensor version
- Stainless steel protection tube
- Up to 500 mm insertion length
- Temperature metering in bearing, baking tray
- Mounting bolts allow the sensors to be screwed into various threads
- 5 years warranty

TFP–121–2

TFP
temperature sensor

APPLICATIONS

- For temperature control of heated tools
- Bearing temperature sensing for motors, pumps
- Water & Wastewater Industry
- Chemical & Pharmaceutical
- Food & Beverage
- Oil & Gas
- Heavy Industry
- Packaging Industry

TECHNICAL DATA

	THERMOCONT TGP – bearing temperature sensor	THERMOCONT TFP – temperature sensor
Operating temperature	–50…+180 °C	–50…+200 °C
Ambient Temperature	–30…+100 °C	
Sensor	Pt100	
Sensor diameter	Ø8 mm	Ø6, Ø8 mm
Accuracy class	Accuracy class in accordance to EN 60751	
Measuring current	max. 1 mA	
Material of sensor tube	1.4571/1.4404 stainless steel / Cu protector cover	1.4571/1.4404 stainless steel
Process connection	As per order code	
Electrical connection	SHFP type silicone rubber and shield, 3× 0.75 mm^2	PTFE-coated, 0.35 mm^2 wire cross section cable
Cable shielding	Tinned copper braid protective jacket	
Cable length	0.6…12 m	0.6…3 m
Insertion length	max. 380 mm	max. 500 mm
Ingress protection	IP65	IP54
Electrical protection	Class III	
Insulation resistivity	Measured @ 500 V DC, min. 100 MΩ, +20 °C @ ±5 °C	
Weight	max. ~600 g	
Time constant (9/10)	< 20 s	35…45 s, depending on type
Pressure	max. 1 bar[1]	

[1] *Can be mounted in a blind hole.*

THERMOCONT TFP Resistance thermometer — 5 years

Resistance thermometer (RTD) with single or dual type Pt100 temperature sensor with stainless steel protective tube and integrated cable

Process connection

T F P – □ ■ ■ – ■

1		Ø6 mm 1.4571/1.4404
2		Ø8 mm 1.4571/1.4404
3		Ø8 mm, M12x1.5 (special)
4		Ø6 mm, M8x1 (special)
5	*	Ø6 mm, fast response
6	*	Ø8 mm, fast response

* Mounting bolts are ordered separately

Pt100 sensor

T F P – ■ □ ■ – ■

1		Class A, single
2		Class B, single
4	**	Class A, dual
5	**	Class B, dual
6	**	Class B, single, 4-wire
7	**	Class A, single, 4-wire

** only with Ø8 mm tube diameter

Probe length (L)

T F P – ■ ■ □ – ■

1		60 mm
2		100 mm
3		160 mm
4		250 mm
5	***	10 mm
6	***	30 mm
7		400 mm
8		500 mm

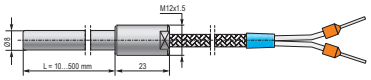
*** only for TFP-300, TFP-400 types

Cable length

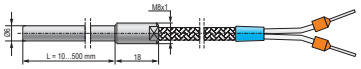
T F P – ■ ■ ■ – □

0	0.6 m
1	1 m
2	2 m
3	3 m

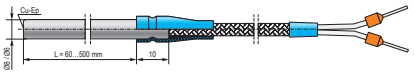
TFP–1□□ / 2□□



TFP–3□□



TFP–4□□



TFP–5□□ / 6□□

THERMOCONT TGP Bearing resistance thermometer — 5 years

Bearing resistance thermometer (RTD) with Pt100 temperature sensor with stainless steel protective tube and integrated cable

Process connection

T G P – □ ■ ■ – ■

1	Rimmed
2	M20x1.5
3	½" NPT
4	½" BSP

Pt100 sensor

T G P – ■ □ ■ – ■

1	Class A, 3-wire
2	Class B, 3-wire

Probe length (L)

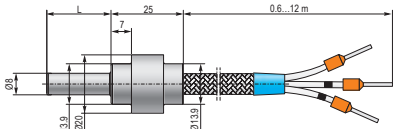
T G P – ■ ■ □ – ■

1	30 mm
2	50 mm
3	100 mm
4	160 mm
5	380 mm

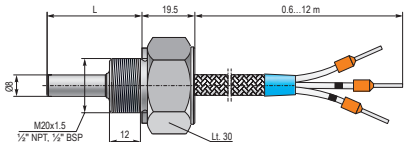
Cable length

T G P – ■ ■ ■ – □

0	0.6 m
1	1 m
2	2 m
3	3 m
4	6 m
5	12 m



TGP–1□□



TGP–2□□

NIV24

TFP–121–0
TFP–121–1
TFP–121–2

THERMOCONT TFA Resistance thermometer — 5 years

Resistance thermometer (RTD) with single Pt100 temperature sensor
with stainless steel protective tube and integrated cable, for –50...+450 °C temperature range

Diameter / Protective tube material

T F A – □ 1 ■ – ■

1		Ø4 mm / Stainless steel
2	*	Ø6 mm / Stainless steel
3	*	Ø8 mm / Stainless steel

* Mounting bolts are ordered separately

Pt100 sensor

T F A – ■ □ ■ – ■

1	Class A, single, 4-wire

Probe length (L)

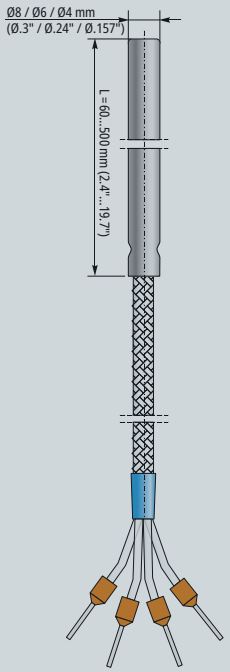
T F A – ■ 1 □ – ■

1	60 mm
2	100 mm (only for Ø6 mm version)
3	160 mm (only for Ø6 mm version)
4	250 mm (only for Ø6 mm version)
5	400 mm (only for Ø6 mm version)
6	500 mm (only for Ø6 mm version)

Total length with cable

T F A – ■ 1 ■ – □

0	1 m
3	3 m
A	10 m



TFA–11□ / 21□ / 31□

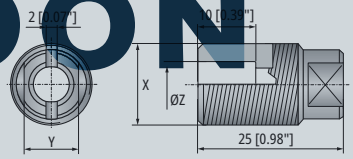
THERMOCONT TFS Mounting bolts — 5 years

Mounting bolts for TFA resistance thermometer (RTD), 1.4571/1.4404 stainless steel

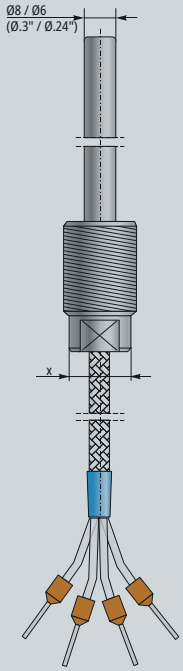
Process connection

T F S – 1 0 □ – 0

1	M8 / only for Ø6 mm version
2	M10 / for Ø6 mm and Ø8 mm version
3	M12 / for Ø6 mm and Ø8 mm version
4	M20x1.5 / for Ø6 mm and Ø8 mm version
5	¼" BSP / only for Ø6 mm version
6	⅜" BSP / for Ø6 mm and Ø8 mm version
7	½" BSP / for Ø6 mm and Ø8 mm version



TFS–10□



TFA–21□ / 31□ + TFS–10□

The **THERMOCONT TSP** sensors are installed in various kinds of mediums *(e.g., liquids, gas, fumes)* inside pipes, tanks and furnaces. PFA-coated probe versions having a steel flange with a PTFE-insert can be used in chemical and petrochemical applications where aggressive mediums could damage the steel probes. The stainless steel construction includes the inner and external *(double)* tube and the welded flange.

FEATURES

- Single or dual Pt100 sensor versions
- 2 or 4-wire types
- Double sensor protection tube
- Fast response sensor version
- Plastic-coated or stainless steel protection tub
- Up to 3 m insertion length
- Explosion-proof variants
- Can be mounted to special technological places, tanks, tubes, furnaces or boilers
- Special versions for unique applications
- 5 years warranty

APPLICATIONS

- Temperature measurement of liquids, gases, vapors
- Coated version for temperature measurement in aggressive media
- Construction Materials
- Chemical Industry
- Food & Beverage
- Oil Industry
- Metallurgy
- Recycling

CERTIFICATES

- ATEX (Ex ia G / Ex d G / Ex d ia G)

TSP
– standard
temperature sensor

TECHNICAL DATA

		Thermo-couples	Resistance thermometers (1× Pt100, 2× Pt100)		
		[TSJ (Fe-Cu-Ni)] [TSK (NiCr-Ni)]	Standard [TSP, TSV, TSB]	Fast response [TSG]	Plastic-coated [TPP]
General data	Range	–50…+600 °C			–50…+200 °C
	Process pressure	25 bar @ +20 °C; 16 bar @ +400 °C			1 bar[1]
	Damping time	< 3 min		< 20 s	4.5 min
	Ambient temperature	–20…+80 °C			
	Electrical protection	Class III			
	Ingress protection	IP65			
Head	Housing material	Painted aluminum (EN AC 43100)			
	Electrical connection	Nickel-plated aluminum M20×1.5 cable gland, cable outer diameter: Ø8…10 mm, wire cross section: 0.5…1.5 mm^2			
	Cable connection	Terminal with fixing screw			
Sensor	Accuracy class [2]	1 or 2 EN 60584.1	Class A or Class B EN 60751		
	Grounding	Ground-independent			
External Protection	Material	1.4571/1.4404 stainless steel			PFA / (PTFE / PVDF) coating
	Probe length	60…3000 mm (as per order code)			
	Process connection	As per order code			

[1] *The maximum allowable pressure with a flanged process connection is 10 bar.*
[2] *In standard temperature ranges (below +400 °C), the margin of error for Class "A" resistance temperature sensors is below ±1 °C.*

Ex INFORMATION

	TSG–□□□–□ Ex	TP□–□□□–□ Ex	TS□–□□□–□ Ex *(except: TSG)*
Ex marking (ATEX)	Ⓔx II 1 G Ex ia IIC T6…T1 Ga	Ⓔx II 1 G Ex ia IIB T6…T1 Ga, Ⓔx II 1/2 G Ex d ia IIB T6…T1 Ga/Gb	Ⓔx II 1 G Ex ia IIC T6…T1 Ga
Intrinsically safe data	U_{imax} = 30 V I_{imax} = 100 mA P_{imax} = 750 mW C_i =0 nF L_i =0 mH	U_{imax} = 30 V I_{imax} = 140 mA P_{imax} = 1 W C_i =0 nF L_i =0 mH	U_{imax} = 30 V I_{imax} = 100 mA P_{imax} = 750 mW C_i =0 nF L_i =0 mH
Ex marking (ATEX)		Ⓔx II 2 G Ex d IIB T6…T1 Gb	Ⓔx II 2 G Ex d IIB T6…T1 Gb
Intrinsically safe data		U_{imax} = 30 V I_{imax} = 140 mA	
Ex marking (ATEX)			Ⓔx II 1/2 G Ex d ia IIB T6…T1 Ga/Gb
Intrinsically safe data			U_{imax} = 30 V I_{imax} = 140 mA P_{imax} = 1 W C_i =0 nF L_i =0 mH
Electrical connection	For Ex ia, Ex d and Ex d ia versions: M20×1.5 cable gland, cable outer diameter: Ø6…12 mm, wire cross section: 0.5…1.5 mm^2		

Temperature Classes					
T6	T5	T4	T3	T2	T1
Ambient temperature from –20 °C (–4 °F)					
+65 °C (+149 °F)	+70 °C (+158 °F)		+80 °C (+176 °F)		
Process temperature from –20 °C (–4 °F)					
+85 °C (+185 °F)	+100 °C (+212 °F)	+135 °C (+275 °F)	+200 °C (+392 °F)	+300 °C (+572 °F)	+450 °C (+842 °F)

THERMOCONT TSP Encapsulated — 5 years

Resistance thermometer (RTD) with single or dual type Pt100 temperature sensor with stainless steel rod probe with or without plastic coating, max. probe length: 3 m

Version

T □■ – ■■■ – ■

S	1.4571/1.4404 (stainless steel)
P	PFA/(PTFE or PVDF)-coated stainless steel (only with flange and M20x1.5 or ½" process connection)

Sensor / Version

T ■□ – ■■■ – ■

P	Pt100
V	Pt100 / Shock-proof sensor insert
G	Pt100 / Fast response (only Ex ia version is available)
B	Pt100 / Shock-proof sensor insert, dismountable version with chain head (Ex version not available)

Process connection

T ■■ – □■■ – ■

0	Flange DN25 PN25, 1.4571/1.4404
1	M20x1.5 external thread
2	½" BSP
3	½" NPT
4	⅜" BSP
5	Flange DN40 PN25/16, 1.0037
6	Flange DN50 PN25/16, 1.0037
7	Flange DN80 PN25/16, 1.0037
8	Flange DN100 PN25, 1.0037
9	Flange DN150 PN25, 1.0037

Pt100 Sensor

T ■■ – ■□■ – ■

1	Class A
2	Class B
4	Class A, dual
5	Class B, dual
6	Class B + 4-wire
7	Class A + 4-wire

Probe length (L)

T ■■ – ■■□ – ■

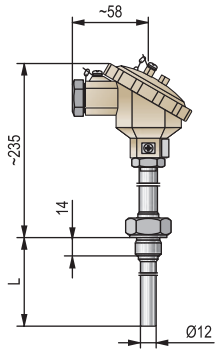
0	60 mm
1	160 mm
2	250 mm
3	400 mm
4	500 mm
5	1000 mm
6	1500 mm
7	2000 mm
8	2500 mm
9	3000 mm

Ex certificate

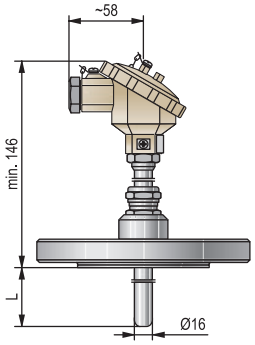
T ■■ – ■■■ – □

0	None
7	Ex ia G
8	Ex d ia G
9	Ex d G

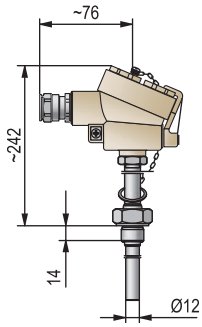
On request: other process connections and probe lengths



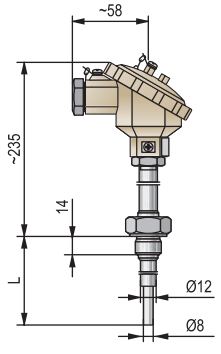
TSP / TSV–□□□



TPP–□□□



TSP / TSV–□□□–8 Ex
TSP / TSV–□□□–9 Ex



TSG–□□□

The wide range of **THERMOCONT** temperature sensors covers nearly all needs in industrial temperature measurement, both in terms of design and the selection of Pt100 resistance temperature sensors. **THERMOCONT TN/TX** reinforced-case temperature sensors are used with various media *(liquids, gases, vapors)* in pipelines, tanks, and furnaces. They are primarily designed for oil, gas, and heavy chemical industry applications but can be used anywhere where a robust protective tube design is an advantage.

A protective assembly, consisting of an outer and an inner tube, is used to shield the thermal sensors and protect them from vibrations. The outer protective tube is made of machined stainless steel welded to the flange for safety reasons. The ribbing on the outer protective tube does not allow the external ambient temperature to interfere with the accuracy of the measurement. The head has a protective chain to prevent falling off. The sensor insert can be replaced without dismantling the technological system.

Temperature sensor for gases (TXP)

FEATURES

- Robust design for heavy chemical industry
- Stainless steel, drilled, tapered thermowell case
- Up to 3 m insertion length
- Sensor can be replaced without removing the device from the process
- Welded flange
- Gas thermometer version
- Explosion-proof variants available
- 5 years warranty

APPLICATIONS

- Temperature measurement of liquids, gases, vapors
- Special versions for unique applications
- For applications exposed to mechanical damage
- Chemical and Oil Industry

CERTIFICATES

- ATEX (Ex ia G)
- ATEX (Ex d G)
- ATEX (Ex d ia G)

TECHNICAL DATA

		Strengthened probe [TN□, TU□]		For gases [TXP]		
		T□P	T□K	TXP-□1□-□	TXP-□4□-□	TXP-□7□-□
Sensor	Accuracy class [1]	Pt100 (EN 60751)	1 / 2 Class NiCr-thermo-couple (EN 60584.1)	Pt100 (EN 60751)		
	Type	See order code		single, 2-wire	dual, 3-wire	single, 4-wire
	Grounding	Ground-independent				
	Mounting	Spring loaded				
	Material of inner protective tube	Stainless steel (1.4571/1.4404)		PTFE		
Head	Housing material	Painted EN AC 43100				
	Cable gland	M20×1.5 / ½" NPT		M20×1.5 or without cable glands, ½" NPT interior thread		
	Cable diameter	Ø6…Ø12 mm				
	Electrical connection	Terminal with fixing screw				
External Protection	Material	1.4571/1.4404 stainless steel				
	Probe length	160…3000 mm[2]		120…500 mm		
	Process connection	As per order code		M33×2; 1" NPT		
General data	Range	–50…+600 °C		–50…+150 °C		
	Process pressure	1" NPT – 40 bar or pressure rating of flanges		up to 80 bar		
	Ambient temperature	–20…+80 °C		–30…+80 °C		
	Grounding	External, grounding screw on the housing				
	Electrical protection	Class III				
	Ingress protection	IP65		IP67		
	Ex marking	⟨Ex⟩ II 1 G Ex ia IIC T6…T1 Ga; ⟨Ex⟩ II 2 G Ex d IIB T6…T1 Gb ⟨Ex⟩ II 1/2 G Ex d ia IIB T6…T1 Ga/Gb		⟨Ex⟩ II 1 G Ex ia IIB T6…T4 Ga; ⟨Ex⟩ II 2 G Ex d IIB T6…T4 Gb ⟨Ex⟩ II 1/2 G Ex d ia IIB T6…T4 Ga/Gb		
	Ex Information	"d": Supply voltage: max. 28 V, Current: max. 100 mA "ia": U_i = 30 V, I_i = 100 mA, P_i = 750 mW, C_i = 0 nF, L_i = 0 mH "d ia": U_i = 30 V, I_i = 140 mA, P_i = 1.4 W, C_i = 0 nF, L_i = 0 mH		U_i: 30 V, I_i: 140 mA, P_i: 1.1W; C_o = 0, L_o = 0		

[1] *In standard temperature ranges (below +400 °C, the margin of error for Class A resistance temperature sensors is below ±1 °C.*
[2] *If the measured medium is abrasive, the maximum probe length is limited to 1000 mm.*

Temperature classes	T6	T5	T4	T3[3]	T2[3]	T1[3]
Max. ambient temperature	+65 °C	+70 °C			+80 °C	
Max. process temperature	+85 °C	+100 °C	+135 °C	+200 °C	+300 °C	+450 °C
Min. ambient temperature	–20 °C					

[3] *Only TN/TU types.*

THERMOCONT TN Heavy-duty temperature sensor — 5 years

Heavy-duty temperature sensor with strengthened probe for liquids, gases and free-flowing solids with single or dual type Pt100 temperature sensor or thermocouple, max. probe length: 1 m

Sensor tube

T □■ – ■■■ – ■

N	Drilled, tapered
U	Drilled straight

Sensor

T ■□ – ■■■ – ■

K	Thermocouple NiCr-Ni (IEC 584)
P	Resistance Temperature Sensor Pt100 (IEC 751)

Process connection*

T ■■ – □■■ – ■

1	1" NPT
2	DN40 PN40 (PN25)
5	DN50 PN40 (PN25)
F	2" ANSI 300RF
T	1½" ANSI 300RF

* On request: other process connections

Sensor classification / Arrangement

T ■■ – ■□■ – ■

Thermocouple	
1	Class 1, single
4	Class 1, dual
Resistance Temperature Sensor	
1	Class A, single, 2-wire
4	Class A, dual, 3-wire
7	Class A, single, 4-wire

Probe length (L)

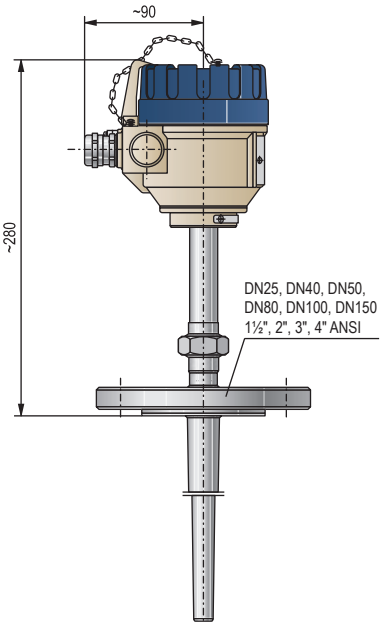
T ■■ – ■■□ – ■

TN - Drilled, tapered	
1	160 mm
3	250 mm
6	400 mm
8	500 mm
9	600 mm
A	700 mm
B	800 mm
C	900 mm
D	1000 mm
H	2000 mm
M	3000 mm
TU - Drilled straight	
1	160 mm
3	250 mm
6	400 mm
8	500 mm
9	600 mm
A	700 mm
B	800 mm
C	900 mm
D	1000 mm
H	2000 mm
M	3000 mm

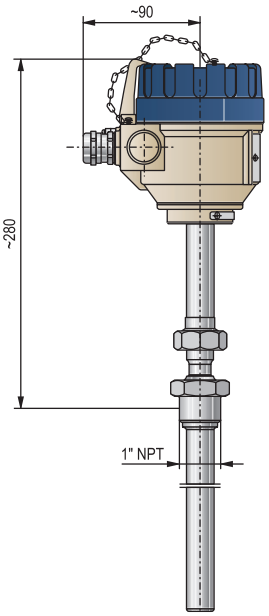
Ex certificate

T ■■ – ■■■ – □

0	None
7	Ex ia G
8	Ex d ia G
9	Ex d G



TNP / TNK–□□□



TUP / TUK–□□□

THERMOCONT TX for gases — 5 years

Heat stabilized temperature sensor with strengthened case for gases
with single or dual type Pt100 temperature sensor, max. probe length: 0.5 m

Sensor

T X □ – ■■■ – ■

P	Resistance Temperature Sensor Pt100 (IEC 751)

Process connection*

T X P – □■■ – ■

1	1" NPT
V	M33x2

* On request: other process connections

Sensor classification / Arrangement

T X P – ■□■ – ■

1	Class A Pt100, single, 2-wire
4	Class A Pt100, dual, 3-wire
7	Class A Pt100, single, 4-wire

Probe length (L)

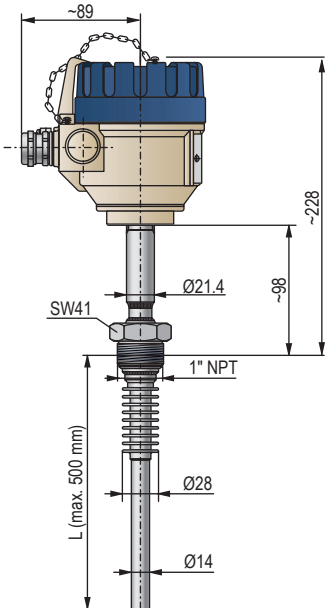
T X P – ■■□ – ■

0	120 mm
1	160 mm
2	200 mm
3	250 mm
4	300 mm
5	350 mm
6	400 mm
7	450 mm
8	500 mm

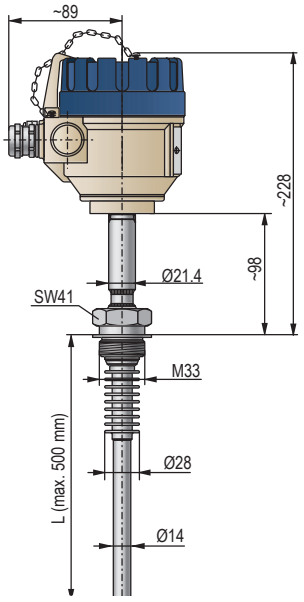
Ex certificate

T X P – ■■■ – □

0	None
8	Ex d ia G
9	Ex d G



TXP–1□□



TXP–V□□

PRESSURE SENSORS

In the world of industrial metrology, monitoring and controlling the pressure of fluids and gases — *along with processing the measured results* — is of the highest priority. NIVELCO meets the needs of numerous industries and applications with the wide NIPRESS family range.

Main categories of the **NIPRESS** device family:

- Pressure switches
- Pressure transmitters
- Differential pressure transmitters

NIPRESS DK
PRESSURE SWITCHES

page 207

- Silicon, ceramic or stainless steel sensor
- Relative or absolute measuring mode
- Up to 4 contacts
- Swiveling and configurable 4-digit display module
- Versions configurable via PC or programming device
- Stainless steel housing versions
- Ex ia variants*
- Integrated cable version

NIPRESS D
PRESSURE TRANSMITTERS

page 217

- Ceramic or stainless steel sensor
- Relative or absolute measuring mode
- For high-pressure (up to 2200 bar)
- For vacuum, overpressure and absolute pressure measurement
- Measurement range downscale
- HART® communication versions
- Two-chamber cast aluminum or stainless steel housing
- Ex ia or Ex d variant*
- SIL 2 variant*

NIPRESS DD
DIFFERENTIAL TRANSMITTERS

page 231

- Piezoresistive silicon or stainless steel sensor
- Relative measuring mode
- Measurement range downscale
- Up to 2 contacts
- Cast aluminum housing
- Static overpressure 400 bar
- HART® communication versions
- High accuracy
- Mechanical robust versions
- Hastelloy® sensor version
- Ex ia variants*

**Ex or SIL versions are available only on request for custom price.*

NIPRESS DK page 207

Devices with or without display
Measurement range: **–1…600 bar**

NIPRESS **pressure switches** are used in hydraulic and pneumatic applications for monitoring and controlling the pressure via switching outputs. Due to the simple handling as well as the variety of software features *(switching points and hysteresis freely configurable, delay function, storing min-/max-value, scalable display and analog output signal, etc.)* the pressure switches with display are especially suitable for general plant and machine construction and processing industry applications.

NIPRESS D page 217

Measurement of vacuum, overpressure and absolute pressure
Measurement range: **–1…2200 bar**

NIPRESS **pressure transmitters** with multiple sensor technologies combined with various housing materials can be used for almost all relative or absolute fluid or gas pressure measurement tasks requiring different accuracy.
Their design, high overload capability and the possibility to install the units in any physical position makes them suitable for a wide range of industrial applications.

NIPRESS DD page 231

For differential pressure measurement
Measurement range: **0…70 bar**

NIPRESS **differential pressure transmitters** are available with different sensor technologies combined with compact stainless steel or cast aluminum or plastic housings.
The wide variety of the product range can measure the pressure of numerous fluids and gases, monitor ventilation ducts, filters and fans in HVAC areas as well as measure the level in closed, pressurized tanks.

TECHNICAL DATA

		Ceramic sensor for hydraulics and mechanical engineering applications **Configurable via CIS Set USB kit (PC) or P6 programming device**	**Electronic pressure switches with stainless steel internal or flush sensor** **Combines intelligent switch with digital display**	**Welded stainless steel flush sensor** **Ideal for viscous and pasty media across industrial sectors**
Measurement range		0…400 bar	−1…600 bar	−1…40 bar
Overload capability		As per order code		
Accuracy		1%	p ≥ 0.4 bar: 0.25%; 0.5%	
Process temperature		−25…+85 °C	−40…+125 °C	−40…+125 °C (silicone oil) −10…+125 °C (food grade oil)
Ambient temperature			−40…+85 °C (with integrated cable −5…+70 °C)	
Materials of the wetted parts	Sensor	Ceramic	Stainless steel	Stainless steel (option: Hastelloy® C)
	Sensor seal	FKM (option: EPDM)	FKM, welded	FKM < 200 °C, FFKM > 200 °C
	Process conn.	Stainless steel		
Housing		Stainless steel		
Output		1, 2 PNP	1, 2 PNP 4…20 mA (optional: 0…10 V)	
Supply voltage		12…30 V DC	2-wire: 13…36 V DC, Ex version* 15…28 V DC, 3-wire: 15…36 V DC	
Load resistance		–	2-wire: R_{max}=[(U_{Supply} – $U_{Supply\ min.}$)/0.02 A], [Ω] 3-wire: R_{min} = 10 kΩ	
Process connection		¼" BSP	¼", ½", ¾" BSP; ¼", ½" NPT; M20×1.5	As per order code
Electrical connection		M12×1	ISO 4400, M12×1, integrated cable	
Ingress protection		IP67	IP65	
Electrical protection		Class III (SELV)		
Weight		~90 g	~160 g	~160…250 g
				
		DK−200	**DK−300**	**DK−400**

TECHNICAL DATA

		Stainless steel sensor with swiveling display **PNP contact outputs for broad industrial use**	**Ceramic sensor with flush diaphragm for viscous, pasty, contaminated media** **Robust swiveling stainless steel housing for harsh environments** **Standard PNP contact outputs**	**Welded stainless steel flush sensor for process industry *(food, pharma)*** **Swiveling display with PNP contact outputs**	**Ceramic sensor for general industrial applications** **Flush diaphragm version for viscous, pasty, contaminated media** **PNP outputs and swiveling display**
Measurement range		−1…600 bar		−1…40 bar	−1…600 bar
Overload capability		As per order code			
Accuracy		p ≥ 0.4 bar: 0.25%; 0.5%	0.5%	p ≥ 0.4 bar: 0.25%; 0.5%	0.5%
Process temperature		−40…+125 °C		−40…+125 °C (silicone oil) −10…+125 °C (food grade oil)	−40…+125 °C
Ambient temperature		−40…+85 °C			−40…+85 °C (with integrated cable −5…+70 °C)
Materials of the wetted parts	Sensor	Stainless steel	Ceramic	Stainless steel	Ceramic
	Sensor seal	FKM, welded	FKM (option: EPDM, max. 160 bar)	FKM < 200 °C, FFKM > 200 °C	FKM (option: EPDM, max. 160 bar)
	Process connection	Stainless steel	Stainless steel (option: PVDF (½" BSP, max. 60 bar))	Stainless steel	Stainless steel (option: PVDF (½" BSP, max. 60 bar))
Housing		Stainless steel			
Output		1, 2 PNP, 4…20 mA (optional: 0…10 V)			
Supply voltage		2-wire: 13…36 V DC, Ex version*: 15…28 V DC, 3-wire: 24 V DC			2-wire: 13…36 V DC, Ex version*: 15…28 V DC, 3-wire (0…10 V): 15…36 V DC
Load resistance		2-wire: $R_{max}=[(U_{Supply} - U_{Supply\ min.})/0.02\ A]$, [Ω] 3-wire: R_{min} = 10 kΩ			2-wire: $R_{max}=[(U_{Supply} - U_{Supply\ min.})/0.02\ A]$, [Ω], 3-wire (0…10 V): R_{min} = 10 kΩ
Process connection		As per order code	¼", ½" BSP / NPT	As per order code	
Electrical connection		ISO 4400, M12×1, integrated cable			M12×1 /5, M12×1 /8, integrated cable
Electrical protection		Class III (SELV)			
Ingress protection		IP67			IP65
Weight		~400 g		~500 g	~200 g
					
		DK−500	**DK−600**	**DK−700**	**DK−800**

**Ex or SIL versions are available only on request for custom price.*

NIPRESS DK-200 — 5 years

3- / 4-wire mini compact pressure switch for absolute and gauge pressure
Output: PNP transistor, diaphragm: ceramic, measurement range: 0...400 bar

Measuring method

D □ A – 2 ■ 3 – ■

K	Switch

Process connection

D K □ – 2 ■ 3 – ■

A	¼" BSP

Range / Overpressure

D K A – 2 □ 3 – ■

S	0...2 bar / 7 bar
M	0...5 bar / 12 bar
A	0...10 bar / 25 bar
T	0...20 bar / 50 bar
N	0...50 bar / 120 bar
F	0...100 bar / 250 bar
U	0...200 bar / 400 bar
J	0...400 bar / 600 bar

Accuracy

D K A – 2 ■ □ – ■

3	1%

Output

D K A – 2 ■ 3 – □

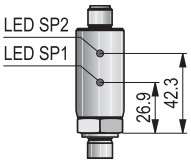
7	1 PNP switching output
9	2 PNP switching outputs

Available on request (must be specified in the text of the order)

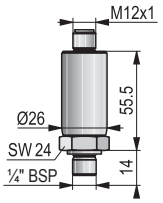
- EPDM seal
- Absolute pressure measuring method
- Oil and grease-free version
- Oxygen application (max. 25 bar, FKM seal)
- Custom switching points
- Custom measurement range (based on prior negotiations)

Accessories to order

JBD-P6D-S6N0	P6 programming device for DK-200 pressure switch
JBD-CIS-685U	USB modem with software



DKA-2□3-□
front view



DKA-2□3-□
side view

NIPRESS DK-300 — 5 years

3- / 5- / 8-wire mini compact pressure switch for absolute and gauge pressure
Output: 1, 2 PNP transistor, 4...20 mA or 0...10 V, with swiveling display,
Diaphragm: stainless steel flush and inner, measurement range: –1...600 bar

Measuring method

D □■ – 3 ■■ – ■

K	Switch

Process connection

D K □ – 3 ■■ – ■

A	¼" BSP
C	½" BSP
J	M20x1.5
D	¾" BSP, flush membrane (max. 40 bar)
G	¼" NPT
H	½" NPT

Range / Overpressure

D K ■ – 3 □■ – ■

0	–1...0 bar / 5 bar
1	0...0.1 bar / 0.5 bar
R	0...0.16 bar / 1 bar
2	0...0.25 bar / 1 bar
3	0...0.4 bar / 2 bar
4	0...0.6 bar / 5 bar
5	0...1 bar / 5 bar
6	0...1.6 bar / 10 bar
7	0...2.5 bar / 10 bar
8	0...4 bar / 20 bar
9	0...6 bar / 40 bar
A	0...10 bar / 40 bar
B	0...16 bar / 80 bar
C	0...25 bar / 80 bar
D	0...40 bar / 105 bar
E	0...60 bar / 210 bar
F	0...100 bar / 210 bar
G	0...160 bar / 600 bar
H	0...250 bar / 1000 bar
J	0...400 bar / 1000 bar
K	0...600 bar / 1000 bar

Accuracy

D K ■ – 3 ■□ – ■

1	0.25% (p ≥ 0.4 bar)
2	0.5%

Output / Certificates

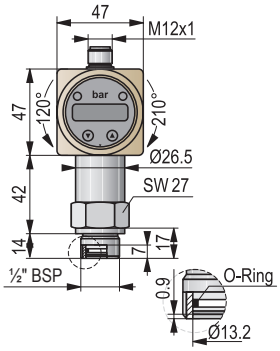
D K ■ – 3 ■■ – □

7	4...20 mA + 1 PNP switching output
9	4...20 mA + 2 PNP switching outputs (only with M12x1 (5-pin) electrical connection)

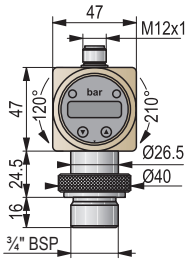
* SIL versions are available on request.

Available on request (must be specified in the text of the order)

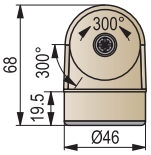
Absolute pressure measuring method (p ≥ 0.4 bar)
M12x1 (5-pin) electronic connection, plastic
M12x1 (5-pin) electronic connection, metal
Integrated cable version (IP65), PVC cable (–5...+70 °C), with cable gland
PVC cable add-on price per meter
4...20 mA with 3-wire adjustable output (max. 1 switching outputs, but with M12x1 (5 pin) electric connection)
0...10 V 3-wire (max. 2 switching outputs, but with M12x1 (5 pin) electric connection)
Custom measurement range (based on prior negotiations)



DKC-3□□-□
front view



DKD-3□□-□
front view



DKD-3□□-□
plan view

NIPRESS DK-400 — 5 years

3- / 5- / 8-wire mini compact pressure switch for absolute and gauge pressure
Output: 1, 2 PNP transistor, 4...20 mA or 0...10 V, with swiveling display, diaphragm: stainless steel flush,
Measurement range: –1...40 bar

Measuring method / Temperature

D □■ – 4 ■■ – ■

K	Switch / up to +125 °C
L	Switch / up to +300 °C (in the case of vacuum, up to +150 °C, p ≤ 70 bar max +200 °C permanent)

Process connection

D ■□ – 4 ■■ – ■

C	½" BSP (p > 2.5 bar)
J	M20x1.5 (p > 2.5 bar)
D	¾" BSP
E	1" BSP
F	1½" BSP
K	2" BSP
T	¾" TriClamp (4 bar ≤ p ≤ 8 bar)
L	1" TriClamp (0.25 bar ≤ p ≤ 16 bar)
M	1½" TriClamp (p ≤ 16 bar)
N	2" TriClamp (p ≤ 16 bar)
O	DN25 Pipe coupling (DIN 11851) 0.25...40 bar
P	DN40 Pipe coupling (DIN 11851) 0.25...40 bar
R	DN50 Pipe coupling (DIN 11851) 0.25...25 bar
I	DN40 / PN40 1.4404 flange (p ≤ 40 bar)
Q	DN50 / PN40 1.4404 flange (p ≤ 40 bar)
U	DN80 / PN16 1.4404 flange (p ≤ 16 bar)
V	VARIVENT® DN40/50 (p ≤ 25 bar)

Range / Overpressure

D ■■ – 4 □■ – ■

0	–1...0 bar / 5 bar
1	0...0.1 bar / 0.5 bar
R	0...0.16 bar / 1 bar
2	0...0.25 bar / 1 bar
3	0...0.4 bar / 2 bar
4	0...0.6 bar / 5 bar
5	0...1 bar / 5 bar
6	0...1.6 bar / 10 bar
7	0...2.5 bar / 10 bar
8	0...4 bar / 20 bar
9	0...6 bar / 40 bar
A	0...10 bar / 40 bar
B	0...16 bar / 80 bar
C	0...25 bar / 80 bar
D	0...40 bar / 105 bar

Accuracy

D ■■ – 4 ■□ – ■

1	0.25% (p ≥ 0.4 bar)
2	0.5%

Output / Certificates

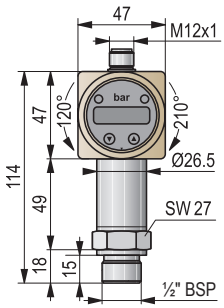
D ■■ – 4 ■■ – □

7	4...20 mA + 1 PNP switching output
9	4...20 mA + 2 PNP switching outputs (only with M12x1 (5-pin) electrical connection)

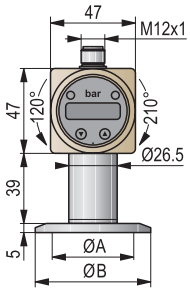
* SIL versions are available on request.

Available on request (must be specified in the text of the order)

- Absolute pressure measuring method (p ≥ 0.4 bar)
- M12x1 (5-pin) electronic connection, metal
- Integrated cable version (IP65), PVC cable (–5...+70 °C), with cable gland
- PVC cable add-on price per meter
- 4...20 mA with 3-wire adjustable output (max. 1 switching outputs, but with M12x1 (5 pin) electric connection)
- 0...10 V 3-wire (max. 2 switching outputs, but with M12x1 (5 pin) electric connection)
- Hastelloy C membrane
- FFKM seal
- Filled with food compatible oil (up to +150 °C)
- Custom measurement range (based on prior negotiations)

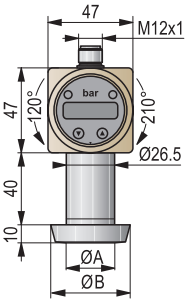


D□C-4□□-□
front view



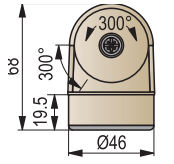
D□□-4□□-□
front view

TriClamp	¾"	1"	1½"	2"
A	14	23	32	45
B	25	50.5		64



D□□-4□□-□
front view

	DN25	DN40	DN50
A	23	32	45
B	44	56	68.5



D□□-4□□-□
plan view

NIPRESS DK-500 — 5 years

3- / 5-wire mini compact pressure switch for absolute and gauge pressure, with stainless steel housing
Output: 1, 2 PNP transistor, 4...20 mA, with swiveling display, diaphragm: stainless steel,
Measurement range: –1...600 bar

Measuring method

D □■ – 5 ■■ – ■

K	Switch

Process connection

D K □ – 5 ■■ – ■

A	¼" BSP
C	½" BSP
G	¼" NPT
H	½" NPT

Range / Overpressure

D K ■ – 5 □■ – ■

0	–1...0 bar / 5 bar
1	0...0.1 bar / 0.5 bar
R	0...0.16 bar / 1 bar
2	0...0.25 bar / 1 bar
3	0...0.4 bar / 2 bar
4	0...0.6 bar / 5 bar
5	0...1 bar / 5 bar
6	0...1.6 bar / 10 bar
7	0...2.5 bar / 10 bar
8	0...4 bar / 20 bar
9	0...6 bar / 40 bar
A	0...10 bar / 40 bar
B	0...16 bar / 80 bar
C	0...25 bar / 80 bar
D	0...40 bar / 105 bar
E	0...60 bar / 210 bar
F	0...100 bar / 210 bar
G	0...160 bar / 600 bar
H	0...250 bar / 1000 bar
J	0...400 bar / 1000 bar
K	0...600 bar / 1000 bar

Accuracy

D K ■ – 5 ■□ – ■

1	0.25% (p ≥ 0.4 bar)
2	0.5%

Output / Certificates

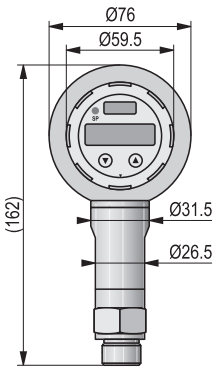
D K ■ – 5 ■■ – □

7	4...20 mA + 1 PNP switching output
9	4...20 mA + 2 PNP switching outputs

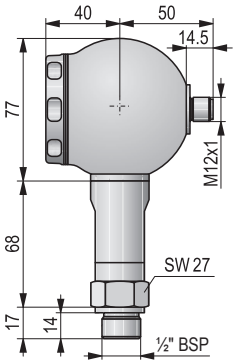
* SIL versions are available on special request.

Available on request (must be specified in the text of the order)

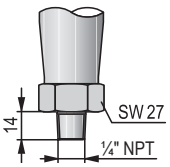
Absolute pressure measuring method (p ≥ 0.4 bar)
4...20 mA with 3-wire adjustable output (max. 1 switching outputs)
Custom measurement range (based on prior negotiations)



DKC-5□□-□ with display, front view



DKC-5□□-□ side view



DKG-5□□-□ side view

NIPRESS DK-600 — 5 years

3- / 5-wire mini compact pressure switch for absolute and gauge pressure, with stainless steel housing
Output: 1, 2 PNP transistor, 4...20 mA, with swiveling display, diaphragm: ceramic,
Measurement range: –1...600 bar

Measuring method

D □■ – 6 ■ 2 – ■	
K	Switch

Process connection

D K □ – 6 ■ 2 – ■	
A	¼" BSP
C	½" BSP
G	¼" NPT
H	½" NPT

Range / Overpressure

D K ■ – 6 □ 2 – ■	
0	–1...0 bar / 4 bar
3	0...0.4 bar / 1 bar
4	0...0.6 bar / 2 bar
5	0...1 bar / 2 bar
6	0...1.6 bar / 4 bar
7	0...2.5 bar / 4 bar
8	0...4 bar / 10 bar
9	0...6 bar / 10 bar
A	0...10 bar / 20 bar
B	0...16 bar / 40 bar
C	0...25 bar / 40 bar
D	0...40 bar / 100 bar
E	0...60 bar / 100 bar
F	0...100 bar / 200 bar
G	0...160 bar / 400 bar
H	0...250 bar / 400 bar
J	0...400 bar / 600 bar
K	0...600 bar / 800 bar

Accuracy

D K ■ – 6 ■□ – ■	
2	0.5%

Output / Certificates

D K ■ – 6 ■ 2 – □	
7	4...20 mA + 1 PNP switching output
9	4...20 mA + 2 PNP switching outputs

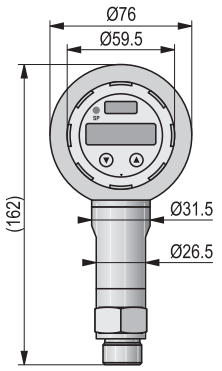
* SIL versions are available on request.

Available on request (must be specified in the text of the order)

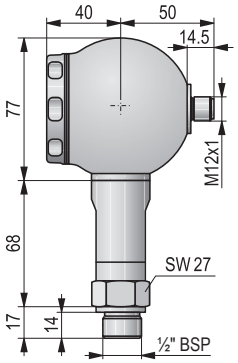
- Absolute pressure measuring method
- EPDM seal (max. 160 bar)
- PVDF process connection (only ½" BSP, max. 60 bar)
- Oxygen application (max. 25 bar, FKM seal)
- 4...20 mA with 3-wire adjustable output (max. 1 switching outputs)
- Custom measurement range (based on prior negotiations)

Accessories (sold separately)

JBD-TTR-04SA	½" BSP / ½" BSP shock absorber



DKC-6□2-□ with display, front view



DKC-6□2-□ side view

NIPRESS DK-700 — 5 years

3- / 5-wire mini compact pressure switch for absolute and gauge pressure, with stainless steel housing
Output: 1...2 PNP transistor, 4...20 mA, with swiveling display, diaphragm: stainless steel flush,
Measurement range: –1...40 bar

Measuring method / Temperature

D □■ – 7 ■■ – ■

K	Switch / up to +125 °C
L	Switch / up to +300 °C (in the case of vacuum, up to +150 °C, p ≤ 70 bar max +200 °C permanent)

Process connection

D ■□ – 7 ■■ – ■

C	½" BSP (p ≥ 1 bar)
D	¾" BSP
E	1" BSP
T	¾" TriClamp
L	1" TriClamp
M	1½" TriClamp
N	2" TriClamp
O	DN25 Pipe coupling (DIN 11851) 0.25...40 bar
P	DN40 Pipe coupling (DIN 11851) 0.25...40 bar
R	DN50 Pipe coupling (DIN 11851) 0.25...25 bar
V	VARIVENT® DN40/50 (p ≤ 25 bar)

Range / Overpressure

D ■■ – 7 □■ – ■

0	–1...0 bar / 5 bar
1	0...0.1 bar / 0.5 bar
R	0...0.16 bar / 1 bar
2	0...0.25 bar / 1 bar
3	0...0.4 bar / 2 bar
4	0...0.6 bar / 5 bar
5	0...1 bar / 5 bar
6	0 ...1.6 bar / 10 bar
7	0...2.5 bar / 10 bar
8	0...4 bar / 20 bar
9	0...6 bar / 40 bar
A	0...10 bar / 40 bar
B	0...16 bar / 80 bar
C	0...25 bar / 80 bar
D	0...40 bar / 105 bar

Accuracy

D ■■ – 7 ■□ – ■

1	0.25% (p ≥ 0.4 bar)
2	0.5%

Output / Certificates

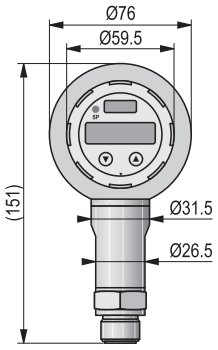
D ■■ – 7 ■■ – □

7	4...20 mA + 1 PNP switching output
9	4...20 mA + 2 PNP switching outputs

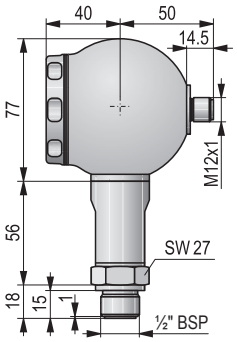
* SIL versions are available on request.

Available on request (must be specified in the text of the order)

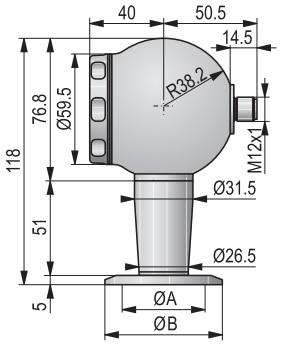
Absolute pressure measuring method (p ≥ 1 bar)
FFKM seal
Filled with food compatible oil (up to +150 °C)
4...20 mA with 3-wire adjustable output (max. 1 switching outputs)
Custom measurement range (based on prior negotiations)



D□C-7□□-□ with display, front view

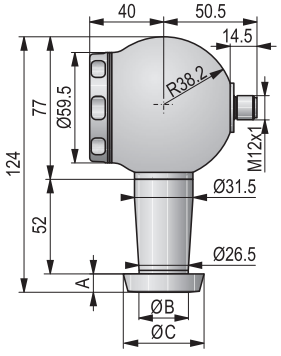


D□C-7□□-□ side view



D□□-7□□-□ side view

TriClamp	¾"	1"	1½"	2"
A	14	23	32	45
B	25	50.5		64



D□□-7□□-□ side view

	DN25	DN40	DN50
A	10		11
B	23	32	45
C	44	56	68.5

NIPRESS DK-800 — 5 years

5- / 8-wire mini compact pressure switch for absolute and gauge pressure
Output: 1, 2 PNP transistor, with swiveling display, diaphragm: ceramic, 4...20 mA or 0...10 V
Measurement range: –1...600 bar

Measuring method

D □■ – 8 ■ 2 – ■

K	Switch

Process connection

D K □ – 8 ■ 2 – ■

A	¼" BSP
C	½" BSP
D	¾" BSP, flush membrane (0.6 bar ≤ p ≤ 60 bar)
G	¼" NPT
H	½" NPT

Range / Overpressure

D K ■ – 8 □ 2 – ■

0	–1...0 bar / 4 bar
3	0...0.4 bar / 1 bar
4	0...0.6 bar / 2 bar
5	0...1 bar / 2 bar
6	0...1.6 bar / 4 bar
7	0...2.5 bar / 4 bar
8	0...4 bar / 10 bar
9	0...6 bar / 10 bar
A	0...10 bar / 20 bar
B	0...16 bar / 40 bar
C	0...25 bar / 40 bar
D	0...40 bar / 100 bar
E	0...60 bar / 100 bar
F	0...100 bar / 200 bar
G	0...160 bar / 400 bar
H	0...250 bar / 400 bar
J	0...400 bar / 600 bar
K	0...600 bar / 800 bar

Accuracy

D K ■ – 8 ■□ – ■

2	0.5%

Output / Certificates

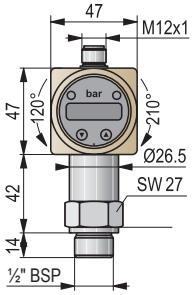
D K ■ – 8 ■ 2 – □

7	4...20 mA + 1 PNP switching output
9	4...20 mA + 2 PNP switching outputs (only with M12x1 (5-pin) electrical connection)

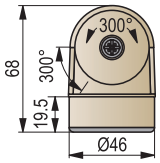
* SIL versions are available on request.

Available on request (must be specified in the text of the order)

Absolute pressure measuring method
EPDM (p ≤ 160 bar), NBR seal
PVDF process connection (only ½" BSP, max. 60 bar)
Oxygen application (max. 25 bar, FKM seal)
Integrated cable version (IP65), PVC cable (–5...+70 °C), with cable gland
PVC cable add-on price per meter
M12x1 (5-pin) electrical connection, metal
4...20 mA with 3-wire adjustable output (max. 1 switching outputs, but with M12x1 (5 pin) electric connection)
0...10 V 3-wire (max. 2 switching outputs, but with M12x1 (5 pin) electric connection)
Custom measurement range (based on prior negotiations)



DKC-8□2-□ with display, front view



DKC-8□2-□ with display, plan view

TECHNICAL DATA

		Ceramic internal sensor for aggressive gases, steam, and fluids **Not for sediment-prone, crystallizing, or stiffening media** **Overpressure measurement; 2-wire system**	**Stainless steel internal sensor for static/dynamic stress** **Not for sediment-prone, crystallizing, or stiffening media** **Absolute pressure over 0.1 bar**	**Stainless steel flush sensor for contaminated liquids, bottom pressure** **High-temp versions: +150 °C or +300 °C** **Silicone oil standard; food-grade liquid available**	**Ceramic flush sensor for aggressive, contaminated, pasty media** **Low-pressure oxygen applications**
		Optional UNICONT PLK–501 display			
Measurement range		–1…400 bar	–1…600 bar	–1…400 bar	–1…600 bar
Overload capability		As per order code			
Accuracy		0.5%; –1…0 bar: 1%	0.5%; p ≥ 0.5 bar: 0.25%	(0.4 bar ≤ p ≤ 40 bar): ±0.25%; 0.5%; 0.1%	0.5%; 1%
Process temperature		–25…+125 °C	–40…+125 °C	–40…+125 °C (silicone oil, high-temperature version up to +300 °C, up to max. 160 bar), –10…+125 °C (food grade oil, high-temperature version up to +250 °C, up to max. 160 bar)	–40…+125 °C
Ambient temperature		–25…+85 °C	–40…+85 °C (with integrated cable –5…+70 °C)		
Materials of the wetted parts	Sensor	Aluminum oxide ceramic	Stainless steel		Aluminum oxide ceramic
	Sensor seal	FKM (Viton®) (option: EPDM)	FKM (Viton®, max. 40 bar), NBR (60…600 bar) (option: EPDM (max. 160 bar), FFKM (max. 40 bar))	FKM (Viton®, max. +200 °C) (option: FFKM)	FKM (Viton®) (option: EPDM (p ≤ 160 bar))
	Process connection	Stainless steel			Stainless steel (option: PVDF)
Housing		Stainless steel			
Output		2-wire: 4…20 mA, 3-wire: 0…10 V			
Supply voltage		2-wire: 8…32 V DC, 3-wire: 14…30 V DC	2-wire: standard version 8…32 V DC, Ex variant* 10…28 V DC, SIL variant* 14…28 V DC, 3-wire: 14…30 V DC		
Load resistance		2-wire: $R_{max}=[(U_{Supply} - U_{Supply\ min.})/0.02\ A]$, [Ω]; 3-wire: R_{min} = 10 kΩ			
Process connection		As per order code			
Electrical connection		ISO 4400, M12×1 /4	ISO 4400, M12×1 /4, integral cable version		
Ingress protection		IP65 / IP67	IP65 / IP67 / IP68		
Electrical protection		Class III (SELV)			
Weight		~120 g	~140 g	~200 g	~140 g
					
		D–200	**D–300**	**D–400**	**D–500**

**Ex or SIL versions are available only on request for custom price.*

TECHNICAL DATA

		Screw-in with ceramic flush sensor for fluids, oils, gases **Ideal for viscous/ polluted media; PVDF connection for aggressive media**	**Screw-in ceramic flush sensor for low-pressure viscous/pasty media** **PVDF housing/ connection for aggressive media; PTFE coating available**	**Robust stainless steel flush sensor screw-in transmitters** **Modular construction for high flexibility**	**Ceramic internal sensor for plant/ machine engineering, labs** **Small system pressure; 99.9% Al_2O_3 sensor for high-temp/ overpressure**
		Optional UNICONT PLK–501 display			
Measurement range		0…60 bar	0…20 bar	0…40 bar	0…20 bar
Overload capability		As per order code			
Accuracy		0.5%	±0.5%; p ≥ 0.6 bar: ±0.25%; ±1% (PTFE-coated)	p ≤ 0.4 bar: 0.5%; p ≥ 0.4 bar: 0.25%;	p ≥ 0.6 bar: 0.25%; 0.5%
Process temperature		–40…+125 °C			
Ambient temperature		–25…+85 °C (with integrated cable: –5…+70 °C)	–40…+85 °C (with integrated cable: –5…+70 °C)		
Materials of the wetted parts	Sensor	Aluminum oxide ceramic		Stainless steel	Aluminum oxide ceramic
	Sensor seal	FKM (Viton®) (option: EPDM, NBR))	FKM (Viton®) (option: EPDM, FFKM)	FKM (Viton®) (option: EPDM)	
	Process connection	Stainless steel (option: PVDF)		Stainless steel	
Housing					
Output		2-wire: 4…20 mA, 3-wire: 0…10 V			
Supply voltage		2-wire: 8…32 V DC, Ex variant*: 10…28 V DC, SIL variant*: 14…28 V DC, 3-wire: 14…30 V DC	2-wire: 9…32 V DC, Ex variant*: 14…28 V DC, 3-wire: 12.5…32VDC	2-wire: 8…32 V DC, Ex variant*: 10…28 V DC, SIL variant*: 14…28 V DC, 3-wire: 14…30 V DC	2-wire: 9…32 V DC, Ex variant*: 14…28 V DC, 3-wire: 12.5…32 V DC
Load resistance		2-wire: $R_{max}=[(U_{Supply} - U_{Supply\ min.})/0.02\ A]$, [Ω] 3-wire: R_{min} = 10 kΩ			
Process connection		¾" BSP	1½" BSP	¾" BSP	½" BSP / NPT; ¼" BSP; M20×1.5
Electrical connection		ISO 4400, M12x1 /4, integral cable version			
Ingress protection		IP65 / IP67 / IP68			
Electrical protection		Class III (SELV)			
Weight		~150 g	~200 g		
					
		D–600	**D–700**	**D–800**	**D–900**

**Ex or SIL versions are available only on request for custom price.*

TECHNICAL DATA

		Stainless steel internal/flush sensor for process/pharma industry **Gases/steam up to 600 bar; HART® communication** **Multiple connections/housings; high-temp +300°C with cooling**	**Ceramic flush sensor (99.9% Al_2O_3) with high overpressure resistance** **Gases, steam, fluids; HART® communication** **Multiple connections/housings**	**Stainless steel internal sensor for extreme pressures (2200 bar)** **Hydraulic applications; thin-film sensor welded to port** **Optional UNICONT PLK–501 display**
Measurement range		0…600 bar (optionally also from –1 bar)	0…20 bar	0…2200 bar
Overload capability		As per order code		
Accuracy		0.1%	p ≥ 1 bar: 0.1%; p < 1 bar: 0.2%; 1% (PTFE-coated)	0.5%
Process temperature		–40…+125 °C (silicone oil) –10…+125 °C (food grade oil)	–25…+125 °C	–40…+140 °C
Ambient temperature		–40…+70 °C (without display) –20…+70 °C (with display)		–25…+85 °C
Materials of the wetted parts	Sensor	Stainless steel (option: Hastelloy® C)	Aluminum oxide ceramic	Stainless steel
	Sensor seal	FKM (optional: FFKM (p ≤ 100 bar))	FKM (optional: EPDM)	–
	Process connection	Stainless steel	Stainless steel (optional: PVDF (1½" BSP))	Stainless steel
Housing		Cast aluminum / stainless steel		
Output		4…20 mA, HART®		2-wire: 4…20 mA, 3-wire: 0…10 V
Supply voltage		2-wire standard version and Ex ia variant*: 12…28 V DC, Ex d variant*: 13…28 V DC		2-wire: 12…36 V DC, Ex variant*: 14…28 V DC, 3-wire: 14…30 V DC
Load resistance		2-wire: R_{max}=[(U_{Supply} – $U_{Supply\ min.}$)/0.02 A], [Ω], load during HART® communication: R_{min}: 250 Ω		2-wire: R_{max}=[(U_{Supply} – $U_{Supply\ min}$)/0.02 A], [Ω], 3-wire: R_{min} = 10 kΩ
Process connection		As per order code		
Electrical connection		M20×1.5 (for cable Ø5…Ø14 mm)		ISO 4400, M12×1 /4, integral cable version
Ingress protection		IP67		IP65 / IP67 / IP68
Electrical protection		Class III (SELV)		
Weight		~400 g		~240 g
				
		D–A00	**D–B00**	**D–C00**

**Ex or SIL versions are available only on request for custom price.*

PRESSURE SENSORS

NIPRESS D-200 — 5 years

2- / 3-wire mini compact pressure transmitter for gauge pressure measurement
Output: 4...20 mA, diaphragm: ceramic, measurement range: 0...400 bar

Measuring method

D □■ – 2 ■■ – ■

R	Gauge
E	Absolute

Process connection

D ■□ – 2 ■■ – ■

A	¼" BSP according to EN837 (manometer)
C	½" BSP according to EN837 (manometer)
G	¼" NPT

Range / Overpressure

D ■■ – 2 □■ – ■

0	–1...0 bar / 3 bar (only with 1% accuracy)
5	0...1 bar / 3 bar
6	0...1.6 bar / 5 bar
7	0...2.5 bar / 5 bar
8	0...4 bar / 12 bar
9	0...6 bar / 12 bar
A	0...10 bar / 20 bar
B	0...16 bar / 50 bar
C	0...25 bar / 50 bar
D	0...40 bar / 120 bar
E	0...60 bar / 120 bar
F	0...100 bar / 200 bar
G	0...160 bar / 400 bar
H	0...250 bar / 400 bar
J	0...400 bar / 650 bar

Accuracy

D ■■ – 2 ■□ – ■

2	0.5%
3	1% (only –1...0 bar)

Output

D ■■ – 2 ■■ – □

2	4...20 mA, 2-wire
3	0...10 V mA, 3-wire

Available on request (must be specified in the text of the order)

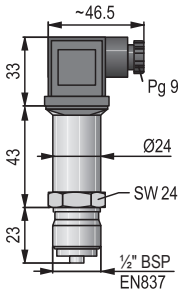
EPDM seal
M12x1 (4-pin) IP67 electrical connection, plastic, including connector plug
Oil and grease-free version
Oxygen application (max. 25 bar, FKM seal)
Custom measurement range (based on prior negotiations)

Accessories * (sold separately)

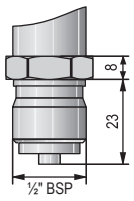
PLK-501-2	Plug-in display
PLK-501-3	Plug-in display with PNP output

* Only for 2-wire version and ISO 4400 connector.

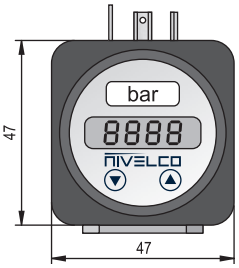
JBD-TTR-04SA	½" BSP / ½" BSP shock absorber



DRC-2□2



½" BSP EN 837



PLK-501

NIV24
DRC–252–2
DRC–272–2
DRC–292–2
DRC–2A2–2
DRC–2B2–2
PLK–501–2

NIPRESS D-300 — 5 years

2- / 3-wire mini compact pressure transmitter for absolute and gauge pressure measurement
Output: 4...20 mA or 0...10 V, diaphragm: stainless steel, measurement range: –1...600 bar

Measuring method

D □■ – 3 ■■ – ■

R	Gauge
E	Absolute (p ≥ 0.4 bar)

Process connection

D ■□ – 3 ■■ – ■

A	¼" BSP
C	½" BSP
G	¼"' NPT (max. 40 bar)
H	½" NPT
J	M20x1.5

Range / Overpressure

D ■■ – 3 □■ – ■

0	–1...0 bar / 5 bar
1	0...0.1 bar / 0.5 bar
R	0...0.16 bar / 1 bar
2	0...0.25 bar / 1 bar
3	0...0.4 bar / 2 bar
4	0...0.6 bar / 5 bar
5	0...1 bar / 5 bar
6	0...1.6 bar / 10 bar
7	0...2.5 bar / 10 bar
8	0...4 bar / 20 bar
9	0...6 bar / 40 bar
A	0...10 bar / 40 bar
B	0...16 bar / 80 bar
C	0...25 bar / 80 bar
D	0...40 bar / 105 bar
E	0...60 bar / 210 bar
F	0...100 bar / 600 bar
G	0...160 bar / 600 bar
H	0...250 bar / 1000 bar
J	0...400 bar / 1000 bar
K	0...600 bar / 1000 bar

Accuracy

D ■■ – 3 ■□ – ■

1	0.25% (p ≥ 0.5 bar)
2	0.5%

Output / Certificates

D ■■ – 3 ■■ – □

2		4...20 mA, 2-wire
3		0...10 V, 3-wire
6	*	4...20 mA, 2-wire / Ex ia G
C	*	4...20 mA, 2-wire, SIL 2
D	*	4...20 mA, 2-wire, SIL 2 / Ex ia G

* Ex or SIL versions are available on request.

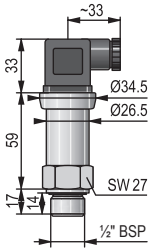
Available on request (must be specified in the text of the order)

EPDM (max. 160 bar), FKM, NBR seal
FFKM (max. 40 bar)
M12x1 (4-pin) IP67 electrical connection, metal
Integrated cable version (IP68), PVC cable (–5...+70 °C)
PVC cable sold separately by the meter
Blue Ex PVC cable sold separately by the meter
Custom measurement range (based on prior negotiations)

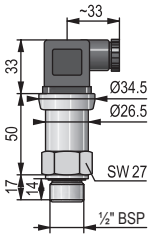
Accessories ** (ordered separately)

PLK-501-2	Plug-in display
PLK-501-3	Plug-in display with PNP output

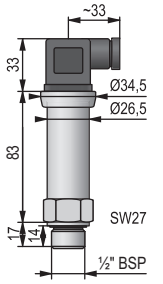
** Only for 2-wire version and ISO 4400 connector.



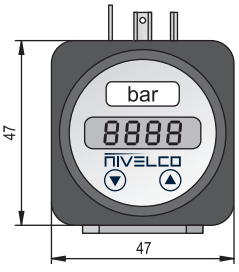
DR□–3□□, DE□–3□□
p ≤ 40 bar



DR□–3□□, DE□–3□□
p ≥ 60 bar



D□C–3□□–C, –D
SIL and SIL-Ex versions



PLK-501

NIV24

DRC-3A2-2
DRC-3B2-2
PLK-501-2

PRESSURE SENSORS

NIPRESS D-400 — 5 years

2- / 3-wire mini compact pressure transmitter for absolute and gauge pressure measurement
Output: 4...20 mA or 0...10 V, diaphragm: stainless steel flush, measurement range: −1...400 bar

Measuring method / Temperature

D □■ – 4 ■■ – ■

R	Gauge / up to +125 °C
E	Absolute / up to +70 °C (p ≥ 0.6 bar)
H	Gauge / up to +150 °C (p ≤ 160 bar)
J	Gauge / up to +300 °C (p ≤ 160 bar, p ≤ 70 bar up to +200 °C permanent)

Process connection

D ■□ – 4 ■■ – ■

B	½" BSP (p > 1.5 bar)
C	½" BSP (sensor: 1.4404) max. +125 °C, −1...40 bar; without media separator
J	M20x1.5 (p > 2.5 bar)
D	¾" BSP (p > 0.6 bar)
E	1" BSP (p > 0.25 bar)
S	1" NPT (0.25...40 bar)
F	1½" BSP
T	¾" TriClamp (4...8 bar)
L	1" TriClamp (0.25...16 bar)
M	1½" TriClamp (p ≤ 16 bar)
N	2" TriClamp (p ≤ 16 bar)
O	DN25 Pipe coupling (DIN 11851; 0.25...40 bar)
P	DN40 Pipe coupling (DIN 11851; 0.25...40 bar)
R	DN50 Pipe coupling (DIN 11851; 0.25...25 bar)
I	DN25 / PN40 1.4404 flange (p ≤ 40 bar)
Q	DN50 / PN40 1.4404 flange (p ≤ 40 bar)
U	DN80 / PN16 1.4404 flange (p ≤ 16 bar)
K	DN100 / PN16 1.4404 flange (p ≤ 16 bar)
V	VARIVENT® DN40 / 50 (p ≤ 10 bar)

Range / Overpressure

D ■■ – 4 □■ – ■

0	−1...0 bar / 5 bar (up to +70 °C)
1	0...0.1 bar / 0.5 bar
R	0...0.16 bar / 1 bar
2	0...0.25 bar / 1 bar
3	0...0.4 bar / 2 bar
4	0...0.6 bar / 5 bar
5	0...1 bar / 5 bar
6	0...1.6 bar / 10 bar
7	0...2.5 bar / 10 bar
8	0...4 bar / 20 bar
9	0...6 bar / 40 bar
A	0...10 bar / 40 bar
B	0...16 bar / 80 bar
C	0...25 bar / 80 bar
D	0...40 bar / 105 bar
E	0...60 bar / 100 bar
F	0...100 bar / 200 bar
G	0...160 bar / 400 bar
H	0...250 bar / 400 bar
J	0...400 bar / 600 bar

Accuracy

D ■■ – 4 ■□ – ■

1	0.25% (0.4 bar ≤ p ≤ 40 bar)
2	0.5%

Output / Certificates

D ■■ – 4 ■■ – □

2		4...20 mA, 2-wire
3		0...10 V, 3-wire
6	*	4...20 mA, 2-wire / Ex ia G
C	*	4...20 mA, 2-wire, SIL 2
D	*	4...20 mA, 2-wire, SIL 2 / Ex ia G

* Ex or SIL versions are available on request.

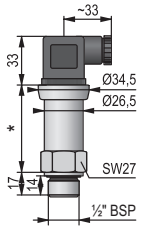
Available on request (must be specified in the text of the order)

Filled with food grade oil (not available for D_C-_ _ _-_; max. +150 °C)
EPDM seal (max. 160 bar)
FFKM seal (max. 100 bar)
M12x1 (4-pin) IP67 electrical connection, metal
Integrated cable version (IP68), PVC cable (−5...+70 °C; max. 40 bar)
PVC cable add-on price per meter
Custom measurement range (based on prior negotiations)

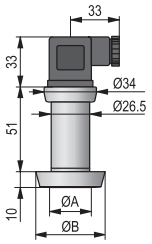
Accessories ** (sold separately)

PLK-5012	Plug-in display
PLK-5013	Plug-in display with PNP output

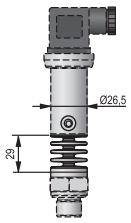
** Only for 2-wire version and ISO 4400 connector.

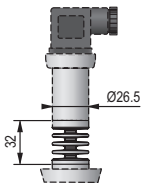


D□C-4□□-□
*Length may vary depending on the pressure range p ≥ 1 bar

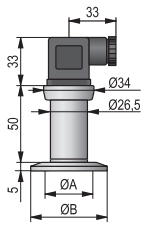


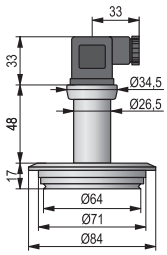
D□O-, D□P-, D□R-4□□-□
Pipe coupling DIN11851





40 bar ≤ p ≤ 160 bar p ≤ 40 bar
DH□-, DJ□-4□□-□
Cooling element (+300°C)





D□T-, D□L-, D□M-, D□N-4□□-□
TriClamp

D□V-4□□-□
VARIVENT DN40/50

NIV24
PLK-501-2

NIPRESS D-500 — 5 years

2- / 3-wire mini compact pressure transmitter, with inner or flush diaphragm ceramic sensor, for absolute and gauge pressure measurement
Output: 4...20 mA or 0...10 V, diaphragm: ceramic flush or inner, measurement range: –1...600 bar

Measuring method

D □■ – 5 ■■ – ■

R	Gauge
E	Absolute

Process connection

D ■□ – 5 ■■ – ■

A	¼" BSP (inner diaphragm version only)
C	½" BSP (inner or optional flush diaphragm version)
G	¼" NPT (inner diaphragm version only)
H	½" NPT (inner diaphragm version only)
J	M20x1.5 (inner diaphragm version only)

Range / Overpressure / Membrane design

D ■■ – 5 □■ – ■

0	–1...0 bar / 4 bar / inner (only with 1% accuracy)
3	0...0.4 bar / 1 bar / inner or optional flush diaphragm
4	0...0.6 bar / 2 bar / inner or optional flush diaphragm
5	0...1 bar / 2 bar / inner or optional flush diaphragm
6	0...1.6 bar / 4 bar / inner or optional flush diaphragm
7	0...2.5 bar / 4 bar / inner or optional flush diaphragm
8	0...4 bar / 10 bar / inner or optional flush diaphragm
9	0...6 bar / 10 bar / inner or optional flush diaphragm
A	0...10 bar / 20 bar / inner or optional flush diaphragm
B	0...16 bar / 40 bar / inner or optional flush diaphragm
C	0...25 bar / 40 bar / inner or optional flush diaphragm
D	0...40 bar / 100 bar / inner
E	0...60 bar / 100 bar / inner
F	0...100 bar / 200 bar / inner
G	0...160 bar / 400 bar / inner
H	0...250 bar / 400 bar / inner
J	0...400 bar / 600 bar / inner
K	0...600 bar / 800 bar / inner

Accuracy

D ■■ – 5 ■□ – ■

2	0.5%
3	1% (only with underpressure ranges)

Output / Certificates

D ■■ – 5 ■■ – □

2		4...20 mA, 2-wire
3		0...10 V, 3-wire
6	*	4...20 mA, 2-wire / Ex ia G
C	*	4...20 mA, 2-wire, SIL 2
D	*	4...20 mA, 2-wire, SIL 2 / Ex ia G

* Ex or SIL versions are available on request.

Available on request (must be specified in the text of the order)

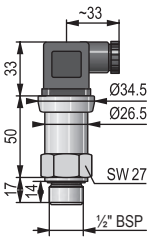
- Flush diaphragm design (½" BSP only, max. 25 bar)
- PVDF process connection (only with ½" BSP, max. 60 bar, open port)
- EPDM seal (p ≤ 160 bar)
- FFKM seal
- PTFE coating on the sensor (only with 0.5% accuracy, p ≥ 0 bar)
- Oxygen application (max. 25 bar, FKM seal)
- M12x1 (4-pin) IP67 electrical connection, metal
- Integrated cable version (IP68), PVC cable (–5...+70 °C)
- PVC cable add-on price per meter
- Custom measurement range (based on prior negotiations)

Accessories ** (sold separately)

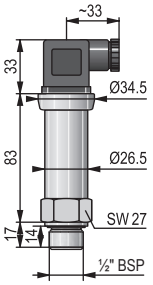
PLK-5012	Plug-in display
PLK-5013	Plug-in display with PNP output

** Only for 2-wire version and ISO 4400 connector.

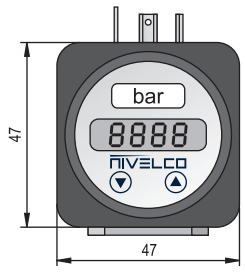
JBD-TTR-04SA	½" BSP / ½" BSP shock absorber



D□C-5□2-□



D□C-5□2-□
for SIL and SIL / Ex ia versions



PLK-501

NIV24
PLK-501-2

NIPRESS D-600 — 5 years

2- / 3-wire mini compact pressure transmitter for gauge pressure measurement
Output: 4...20 mA or 0...10 V, diaphragm: ceramic flush, measurement range: 0...60 bar

Measuring method

D □ D – 6 ■ ■ – ■

R		Gauge

Process connection

D R □ – 6 ■ ■ – ■

D		¾" BSP

Range / Overpressure

D R D – 6 □ ■ – ■

3		0...0.4 bar / 1 bar
4		0...0.6 bar / 2 bar
5		0...1 bar / 2 bar
6		0...1.6 bar / 4 bar
7		0...2.5 bar / 4 bar
8		0...4 bar / 10 bar
9		0...6 bar / 20 bar
A		0...10 bar / 20 bar
B		0...16 bar / 40 bar
C		0...25 bar / 40 bar
D	*	0...40 bar / 100 bar
E	*	0...60 bar / 200 bar

* Only available with stainless steel process connection

Accuracy

D R D – 6 ■ □ – ■

2		0.5%

Output / Certificates

D R D – 6 ■ ■ – □

2		4...20 mA, 2-wire
3		0...10 V, 3-wire
6	**	4...20 mA / Ex ia G
C	**	4...20 mA, SIL 2
D	**	4...20 mA, SIL 2 / Ex ia G

** Ex or SIL versions are available on request.

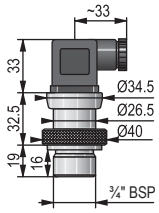
Available on request (must be specified in the text of the order)

PVDF process connection (p ≤ 25 bar)
EPDM, NBR seal
M12x1 (4-pin) IP67 electrical connection, metal
Integrated cable version (IP68), PVC cable (–5...+70 °C)
PVC cable add-on price per meter
Custom measurement range (based on prior negotiations)

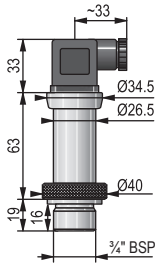
Accessories *** (sold separately)

PLK-501-2	Plug-in display
PLK-501-3	Plug-in display with PNP output

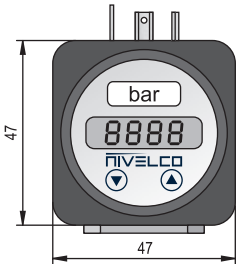
*** Only for 2-wire version and ISO 4400 connector.



DRD-6□2-□



DRD-6□2-□
for SIL and SIL / Ex ia versions



PLK-501

NIV24
PLK-501-2

NIPRESS D-700 — 5 years

2- / 3-wire mini compact pressure transmitter for gauge pressure measurement
Output: 4...20 mA or 0...10 V, diaphragm: ceramic flush, measurement range: 0...20 bar

Process connection

D R □ – 7 ■ ■ – ■

F	1½" BSP

Range / Overpressure

D R F – 7 □ ■ – ■

O	0...0.04 bar / 2 bar
P	0...0.06 bar / 2 bar
1	0...0.1 bar / 4 bar
R	0...0.16 bar / 4 bar
2	0...0.25 bar / 6 bar
3	0...0.4 bar / 6 bar
4	0...0.6 bar / 8 bar
5	0...1 bar / 8 bar
6	0...1.6 bar / 15 bar
7	0...2.5 bar / 25 bar
8	0...4 bar / 25 bar
9	0...6 bar / 35 bar
A	0...10 bar / 35 bar
B	0...16 bar / 45 bar
T	0...20 bar / 45 bar

Accuracy

D R F – 7 ■ □ – ■

1	0.25% (p ≥ 0.6 bar)
2	0.5%
3	1% (only with PTFE-coated version)

Output / Certificates

D R F – 7 ■ ■ – □

2		4...20 mA, 2-wire
3		0...10 V, 3-wire
6	*	4...20 mA, 2-wire / Ex ia G

* Ex or SIL versions are available on request.

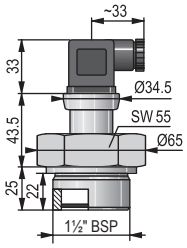
Available on request (must be specified in the text of the order)

With PVDF process connection and housing (only with 0.5% accuracy)
PTFE-coating on sensor (only with 1% accuracy, p ≥ 0.4 bar)
EPDM seal
FFKM seal
M12x1 (4-pin) IP67 electrical connection, metal
Oxygen application
Integrated cable version (IP68), PVC cable (–5...+70 °C)
PVC cable add-on price per meter
Custom measurement range (based on prior negotiations)

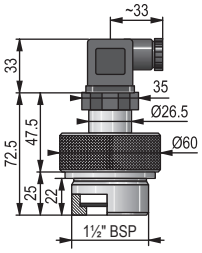
Accessories ** (sold separately)

P L K – 5 0 1 – 2	Plug-in display
P L K – 5 0 1 – 3	Plug-in display with PNP output

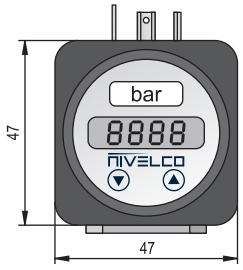
** Only for 2-wire version and ISO 4400 connector.



DRF-7□□-□



DRF-7□□-□ / PVDF



PLK-501

NIV24
PLK-501-2

NIPRESS D-800 — 5 years

2- / 3-wire mini compact pressure transmitter for gauge pressure measurement
Output: 4...20 mA or 0...10 V, diaphragm: stainless steel flush, measurement range: 0...40 bar

Measuring method

D □ D – 8 ■ ■ – ■	
R	Gauge

Process connection

D R □ – 8 ■ ■ – ■	
D	¾" BSP

Range / Overpressure

D R D – 8 □ ■ – ■	
1	0...0.1 bar / 0.5 bar
R	0...0.16 bar / 1 bar
2	0...0.25 bar / 1 bar
3	0...0.4 bar / 2 bar
4	0...0.6 bar / 5 bar
5	0...1 bar / 5 bar
6	0...1.6 bar / 10 bar
7	0...2.5 bar / 10 bar
8	0...4 bar / 20 bar
9	0...6 bar / 40 bar
A	0...10 bar / 40 bar
B	0...16 bar / 80 bar
C	0...25 bar / 80 bar
D	0...40 bar / 105 bar

Accuracy

D R D – 8 ■ □ – ■	
1	0.25% ($p \geq 0.4$ bar)
2	0.5% ($p \leq 0.4$ bar)

Output / Certificates

D R D – 8 ■ ■ – □		
2		4...20 mA, 2-wire
3		0...10 V, 3-wire
6	*	4...20 mA, 2-wire / Ex ia G
C	*	4...20 mA, 2-wire, SIL 2
D	*	4...20 mA, 2-wire, SIL 2 / Ex ia G

* Ex or SIL versions are available on request.

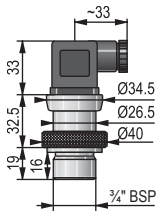
Available on request (must be specified in the text of the order)

EPDM seal
M12x1 (4-pin) IP67 electrical connection, metal
Integrated cable version (IP68), PVC cable (–5...+70 °C)
PVC cable add-on price per meter
Custom measurement range (based on prior negotiations)

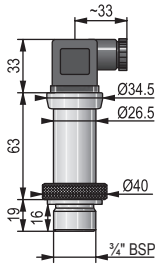
Accessories ** (sold separately)

P L K – 5 0 1 – 2	Plug-in display
P L K – 5 0 1 – 3	Plug-in display with PNP output

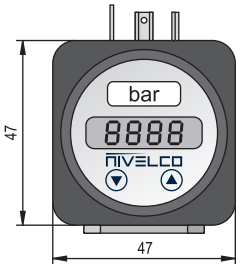
** Only for 2-wire version and ISO 4400 connector.



DRD-8□□-□



DRD-8□□-□
for SIL and SIL / Ex ia versions



PLK-501

NIV24

PLK-501-2

NIPRESS D-900 — 5 years

2- / 3-wire mini compact pressure transmitter for absolute and gauge pressure measurement
Output: 4...20 mA or 0...10 V, diaphragm: ceramic, measurement range: 0...20 bar

Measuring method

D □■ – 9 ■■ – ■

R	Gauge
E	Absolute (p ≥ 1 bar)

Process connection

D ■□ – 9 ■■ – ■

A	¼" BSP
C	½" BSP
H	½" NPT
J	M20x1.5

Range / Overpressure

D ■■ – 9 □■ – ■

O	0...0.04 bar / 2 bar
P	0...0.06 bar / 2 bar
1	0...0.1 bar / 4 bar
R	0...0.16 bar / 4 bar
2	0...0.25 bar / 6 bar
3	0...0.4 bar / 6 bar
4	0...0.6 bar / 8 bar
5	0...1 bar / 8 bar
6	0...1.6 bar / 15 bar
7	0...2.5 bar / 25 bar
8	0...4 bar / 25 bar
9	0...6 bar / 35 bar
A	0...10 bar / 35 bar
B	0...16 bar / 45 bar
T	0...20 bar / 45 bar

Accuracy

D ■■ – 9 ■□ – ■

1	0.25% (p ≥ 0.6 bar)
2	0.5%

Output / Certificates

D ■■ – 9 ■■ – □

2		4...20 mA, 2-wire
3		0...10 V, 3-wire
6	*	4...20 mA / Ex ia G, 2-wire

* Ex or SIL versions are available on request.

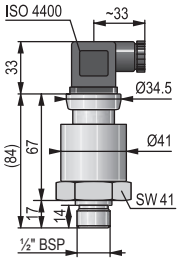
Available on request (must be specified in the text of the order)

PVDF process connection (only ½" BSP, p ≤ 10 bar)
EPDM seal (max. 160 bar)
M12x1 (4-pin) IP67 electrical connection, metal
Integrated cable version (IP68), PVC cable (–5...+70 °C)
PVC cable add-on price per meter
Custom measurement range (based on prior negotiations)

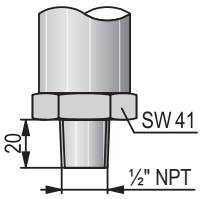
Accessories ** (sold separately)

PLK-501-2	Plug-in display
PLK-501-3	Plug-in display with PNP output

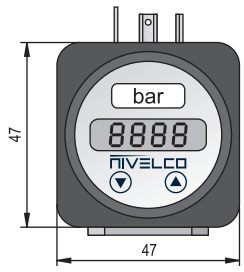
** Only for 2-wire version and ISO 4400 connector.



D□C-9□□-□



D□H-9□□-□



PLK-501

NIV24
PLK-501-2

PRESSURE SENSORS

NIPRESS D-A00 — 5 years

2-wire compact pressure transmitter for absolute and gauge pressure measurement
Output: 4...20 mA + HART®, with display, diaphragm: stainless steel flush and inner, measurement range: 0...600 bar

Measuring method / Temperature

D □■ – A■ 4 – ■

R	Gauge / up to +125 °C
E	Absolute / up to +125 °C (p ≥ 1 bar)
H	Gauge / up to +150 °C
J	Gauge / up to +300 °C (p ≤ 70 bar, max. +200 °C permanent)

Process connection

D ■□ – A■ 4 – ■

A	¼" BSP (max. +125 °C)
C	½" BSP (max. +125 °C)
H	½" NPT (max. +125 °C)
J	M20x1.5 (max. +125 °C)
E	1" BSP (0.25...400 bar)
S	1" NPT (p > 0.25 bar)
F	1½" BSP (max. 40 bar)
T	¾" TriClamp (4...8 bar)
L	1" TriClamp (0.25...16 bar)
M	1½" TriClamp (p ≤ 16 bar)
N	2" TriClamp (p ≤ 16 bar)
O	DN25 Pipe coupling (DIN 11851) 0.25...40 bar
P	DN40 Pipe coupling (DIN 11851) 0.25...40 bar
R	DN50 Pipe coupling (DIN 11851) 0.25...25 bar
I	DN25 / PN40 1.4404 flange (p ≤ 40 bar)
Q	DN50 / PN40 1.4404 flange (p ≤ 40 bar)
U	DN80 / PN16 1.4404 flange (p ≤ 16 bar)
K	DN100 / PN16 1.4404 flange (p ≤ 16 bar)
W	2" RF / 150 psi 1.4404 flange (p ≤ 10 bar)
Z	3" RF / 150 psi 1.4404 flange (p ≤ 10 bar)
V	VARIVENT® DN40 / 50 (p ≤ 25 bar)

Range / Overpressure

D ■■ – A□ 4 – ■

3	0...0.4 bar / 2 bar
5	0...1 bar / 5 bar
S	0...2 bar / 10 bar
8	0...4 bar / 20 bar
A	0...10 bar / 40 bar
T	0...20 bar / 80 bar
D	0...40 bar / 105 bar
F	0...100 bar / 210 bar
U	0...200 bar / 600 bar
J	0...400 bar / 1000 bar
K	0...600 bar / 1000 bar

Accuracy

D ■■ – A■□ – ■

4	0.1%

Output / Certificates

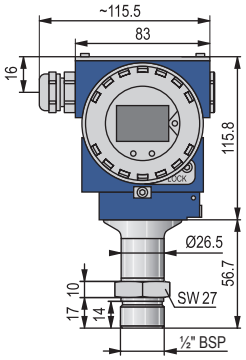
D ■■ – A■ 4 – □

4		4...20 mA + HART®
8	*	4...20 mA + HART® / Ex ia G
B	*	4...20 mA + HART® / Ex d G (stainless steel housing not available)
E	*	4...20 mA + HART®, SIL 2 / Ex ia G
F	*	4...20 mA + HART®, SIL 2 / Ex d G (stainless steel housing not available)

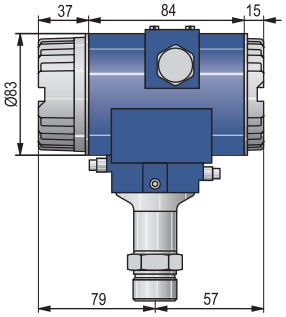
* Ex or SIL versions are available on request.

Available on request (must be specified in the text of the order)

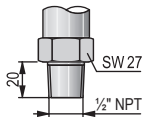
Filled with food compatible oil (max. +150 °C)
EPDM seal
FFKM seal (p ≤ 100 bar, max. +200 °C)
Hastelloy sensor (p ≥ 1 bar)
Tantalum sensor (p ≥ 1 bar, not available with the internal diaphragm version)
Stainless steel housing
Custom measurement range (based on prior negotiations)



D□C-A□4-□
front view



D□C-A□4-□
side view



D□H-A□4-□

NIPRESS D-B00 — 5 years

2-wire compact pressure transmitter for gauge pressure measurement
Output: 4...20 mA + HART®, with display, diaphragm: ceramic flush, measurement range: 0...20 bar

Measuring method

D □■ – B ■■ – ■

R	Gauge

Process connection

D R □ – B ■■ – ■

C	½" BSP
H	½" NPT
J	M20x1.5 (EN 837)
F	1½" BSP
P	DN40 Pipe coupling (DIN 11851)
R	DN50 Pipe coupling (DIN 11851)
I	DN25 / PN40 1.4404 flange
Q	DN50 / PN40 1.4404 flange
U	DN80 / PN16 1.4404 flange
W	2" RF / 150 psi 1.4404 flange (p ≤ 10 bar)
Z	3" RF / 150 psi 1.4404 flange (p ≤ 10 bar)

Range / Overpressure

D R ■ – B □■ – ■

P	0...0.06 bar / 2 bar
R	0...0.16 bar / 4 bar
3	0...0.4 bar / 6 bar
5	0...1 bar / 8 bar
S	0...2 bar / 15 bar
I	0...5 bar / 25 bar
A	0...10 bar / 35 bar
T	0...20 bar / 45 bar

Accuracy

D R ■ – B ■□ – ■

4	*	0.1% (p ≥ 1 bar)
6		0.2% (p < 1 bar)
3		1% (only with PTFE-coated version)

* versions under 1 bar are available on request

Output / Certificates

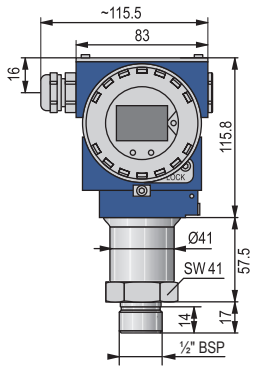
D R ■ – B ■■ – □

4		4...20 mA + HART®
8	**	4...20 mA + HART® / Ex ia G (min. 60 mbar range)
B	**	4...20 mA + HART® / Ex d G (stainless steel housing not available)

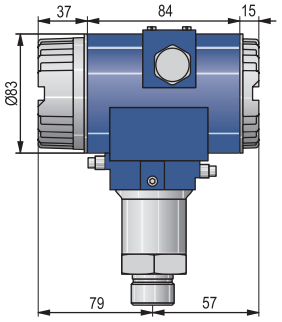
** Ex or SIL versions are available on request.

Available on request (must be specified in the text of the order)

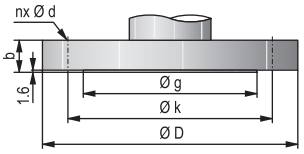
- Stainless steel housing
- PVDF process connection (only 1½" BSP)
- PTFE-coating on sensor (only with 1% accuracy, p ≥ 0.4 bar)
- EPDM seal
- Oxygen medium application
- Custom measurement range (based on prior negotiations)



DRC-B□□-□
front view



DRC-B□□-□
side view



DRW-B□□-□ / DRZ-B□□-□

	2" / 150	3" / 150
D	152.4	190.5
g	91.9	127
k	120.7	152.4
b	19.1	23.9
n	4	
d	19.1	

NIPRESS D-C00 — 5 years

2- / 3-wire mini compact pressure transmitter for gauge pressure measurement
Output: 4...20 mA or 0...10 V, diaphragm: stainless steel, measurement range: 0...2200 bar

Measuring method

D □■ – C ■ 2 – ■

R		Gauge

Process connection

D R □ – C ■ 2 – ■

A		¼" BSP (EN 837, p ≤ 1000 bar)
C		½" BSP (EN 837, p ≤ 1000 bar)
J		M20x1.5 (inner thread)

Range / Overpressure

D R ■ – C □ 2 – ■

K	*	0...600 bar / 800 bar
L		0...1000 bar / 1400 bar
M		0...1600 bar / 2200 bar
N		0...2000 bar / 2800 bar
V		0...2200 bar / 2800 bar

* Available only with BSP ½" process connection EN 837

Accuracy

D R ■ – C ■□ – ■

2		0.5%

Output / Certificates

D R ■ – C ■ 2 – □

2		4...20 mA, 2-wire, 2-wire
3		0...10 V, 3-wire
6	**	4...20 mA, 2-wire / Ex ia G

** Ex or SIL versions are available on request.

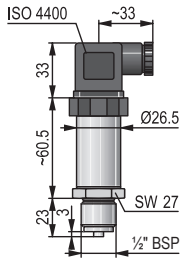
Available on request (must be specified in the text of the order)

M12x1 (4-pin) IP67 electrical connection, metal
Integrated cable version (IP67), PVC cable (–5...+70 °C), with cable gland
PVC cable add-on price per meter
Custom measurement range (based on prior negotiations)

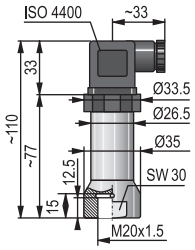
Accessories to order***

PLK-5012	Plug-in display
PLK-5013	Plug-in display with PNP output

*** Only for 2-wire version and ISO 4400 connector.



DRC-C□2-□

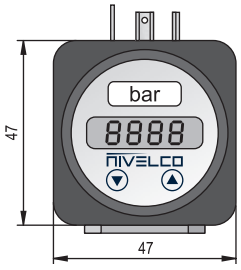


DRJ-C□2-□

Mechanical Adapters — 5 years

Accessories to order

EAA-1340	½" BSP / ½" NPT (1.4571/1.4404)
EAA-1380	½" BSP / 1" BSP (1.4571/1.4404)
EAA-1830	1" BSP / ½" BSP (1.4571/1.4404)
EAA-1850	1" BSP / ¾" BSP (1.4571/1.4404)
EAA-1890	1" BSP / 1" NPT (1.4571/1.4404)
EAA-18C0	1" BSP / 1½" NPT (1.4571/1.4404)
JBD-500-1372	Weldable socket for 1" BSP tapered gasket



PLK-501

NIV24
PLK-501-2

TECHNICAL DATA

		Stainless steel sensor (*Hastelloy® C-276 option*) 2-wire HART® communication Process industry; closed pressurized tanks Display and operating module	**Stainless steel sensor, pressurizable on both sides (*fluids/gases*) Measures differential pressure (*positive vs. negative side*) Compact size for tight spaces**	**Dual piezore-sistive stainless steel sensors Swiveling display Process connections for gas/fluid pressure difference**	**Silicon sensor; ranges 0…1 bar Wall-mountable for dry, non-aggressive gases/ compressed air Short circuit & reverse polarity protection HVAC apps: heating, ventilation, clean rooms, medical tech, filters, draft metering**
Measurement range		0…20 bar	0…16 bar	0…70 bar	0…1 bar
Overload capability		As per order code			
Accuracy		0.1%; 0.075%	0.5%; 1%	2%	1% (p ≥ 6 mbar) 2% (p < 6 mbar)
Process temperature		–40…+100 °C (with silicone oil filling)	–25…+125 °C	–40…+125 °C	0…+50 °C
Ambient temperature		Without display: –40…+85 °C With display: –20…+65 °C	–25…+85 °C		0…+50 °C
Materials of the wetted parts	Sensor	Stainless steel (option: Hastelloy® C)	Stainless steel		Silicon
	Sensor seal	FKM (options: EPDM / PTFE)	FKM		–
	Process conn.	Stainless steel			Brass nickel plated
Housing		Cast aluminum	Aluminum, black anodized	PA 6.6 polycarbonate	ABS
Output		4…20 mA, HART®	2-wire: 4…20 mA, 3-wire: 0…10 V	3-wire: 4…20 mA	2-wire: 4…20 mA, 3-wire: 0…5 V / 0…10 V / 0…20 mA / 4…20 mA (adjustable)
Supply voltage		Ex ia variant[1]: 12…28 V DC, Ex d variant[1]: 13…28 V DC	2-wire: 12…36 V DC, Ex ia variant[1]: 14…28 V DC, 3-wire: 14…36 V DC	24 V DC ±10%	2-wire: 11…32 V DC[2] 3-wire: 19…32 V DC[2]
Load resistance		Load during HART® communication: R_{min}: 250 Ω	2-wire: $R_{max}=[(U_{Supply} - U_{Supply\ min.})/0.02\ A]$, [Ω], 3-wire: R_{min} = 10 kΩ	500 Ω	2-wire: $R_{max}=[(U_{Supply} - U_{Supply\ min.})/0.02\ A]$, [Ω] 3-wire: R_{min} = 10 kΩ
Process connection		¼" NPT (inner tread)		As per order code	
Electrical connection		M20×1.5 (for cable Ø5…14 mm)	ISO 4400	M12×1 /5	M12×1.5
Ingress protection		IP67	IP65		IP54
Electrical protection		Class III (SELV)			
Weight		~3.5 kg	~250 g	~350 g	~165 g
					
		DD–200	**DD–300**	**DD–400**	**DD–600**

[1] *Ex or SIL versions are available only on request for custom price.*

[2] *With automatic zero adjustment: 24…32 V DC.*

NIPRESS DD-200 — 5 years

2-wire compact differential pressure transmitter for gauge pressure measurement, with dual-compartment housing
Output: 4...20 mA + HART®, with display, diaphragm: stainless steel, measurement range: 0...20 bar

Measuring method

D □ G – 2 ■ ■ – ■

D	Differential

Process connection

D D □ – 2 ■ ■ – ■

G	¼" NPT (inner thread)

Range / Max. static pressure

D D G – 2 □ ■ – ■

7	0...0.06 bar / 160 bar
D	0...0.4 bar / 160 bar
H	0...2.5 bar / 160 bar
M	0...20 bar / 160 bar

Accuracy

D D G – 2 ■ □ – ■

4	0.1%
7	0.075%

Output / Certificates

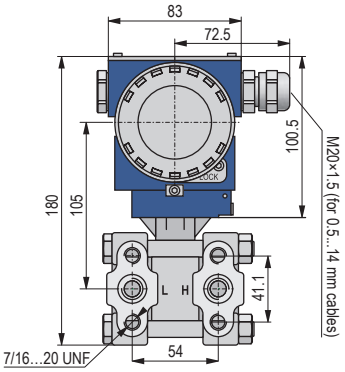
D D G – 2 ■ ■ – □

4		4...20 mA + HART®
8	*	4...20 mA + HART® / Ex ia G
B	*	4...20 mA + HART® / Ex d G

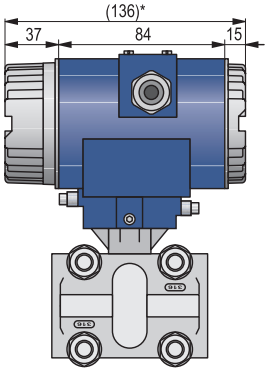
* Ex or SIL versions are available on request.

Available on request (must be specified in the text of the order)

EPDM seal
PTFE seal
Hastelloy C sensor
Special version up to 400 bar static pressure (p ≥ 0.4 bar)
Custom measurement range (based on prior negotiations)



DDG–2□4–□
front view



DDG–2□4–□
side view

** Without display and control module marked size is 19 mm smaller*

NIPRESS DD-300 — 5 years

2 or 3-wire mini compact differential pressure transmitter for gauge pressure measurement
Output: 4...20 mA or 0...10 V, diaphragm: stainless steel, measurement range: 0...16 bar

Measuring method

D □■ – 3 ■■ – ■

D	Differential

Process connection

D D □ – 3 ■■ – ■

C	½" BSP
J	M20x1.5
O	7/16" UNF DIN 3866
A	¼" BSP (inner thread)

Range / Nominal pressure

D D ■ – 3 □■ – ■

4	0...0.02 bar / 0.2 bar
6	0...0.04 bar / 0.4 bar
9	0...0.1 bar / 1 bar
B	0...0.2 bar / 1 bar
C	0...0.25 bar / 2.5 bar
D	0...0.4 bar / 2.5 bar
E	0...0.6 bar / 6 bar
F	0...1 bar / 6 bar
I	0...1.6 bar / 16 bar
H	0...2.5 bar / 16 bar
Q	0...4 bar / 16 bar
J	0...6 bar / 16 bar
T	0...10 bar / 16 bar
L	0...16 bar / 16 bar

Accuracy

D D ■ – 3 ■□ – ■

2	0.5% (available up to 1:5 DP/PN)
3	1%

Output / Certificates

D D ■ – 3 ■■ – □

2		4...20 mA
3		0...10 V
6	*	4...20 mA / Ex ia

* Ex or SIL versions are available on request.

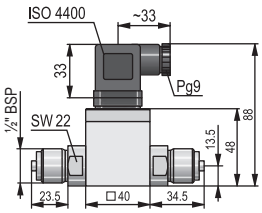
Available on request (must be specified in the text of the order)

Custom measurement range (based on prior negotiations)

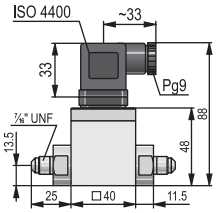
Accessories ** (sold separately)

PLK-501-2	Plug-in display
PLK-501-3	Plug-in display with PNP output

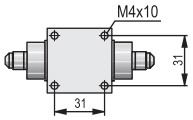
** Only for 2-wire version and ISO 4400 connector.



DDC-3□2-□
front view



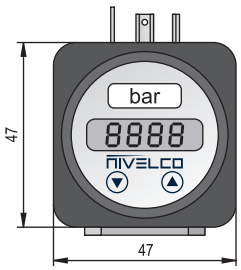
DDO-3□2-□
front view



DDO-3□2-□
bottom view

Differential pressure range, P_D [bar]	Nominal pressure, P_N (Max. static pressure, P_{max}) [bar]					
	0.2 (0.5)	0.4 (1)	1 (3)	2.5 (6)	6 (20)	16 (60)
0...0.02	±1%					
0...0.04	±1%	±1%				
0...0.1	±0.5%	±1%	±1%			
0...0.2	±0.5%	±0.5%	±1%	±1%		
0...0.25		±0.5%	±1%	±1%		
0...0.4		±0.5%	±1%	±0.5%		
0...0.6			±0.5%	±0.5%	±1%	
0...1.0			±0.5%	±0.5%	±1%	
0...1.6				±0.5%	±0.5%	±1%
0...2.5				±0.5%	±0.5%	±1%
0...4					±0.5%	±0.5%
0...6					±0.5%	±0.5%
0...10						±0.5%
0...16						±0.5%

Accuracy, p > 1 bar:	±0.5%, or 1/5 ≤ p_D/p ≤ 1/1
	±1%, or 1/10 ≤ p_D/p ≤ 1/5
Accuracy, p ≤ 1 bar:	±0,5%, or 1/2 ≤ p_D/p ≤ 1/1
	±1%, or 1/10 ≤ p_D/p ≤ 1/2



PLK-501

NIV24

PLK-501-2

NIPRESS DD-400 — 5 years

3-wire mini compact differential pressure transmitter for gauge pressure measurement
Output: 4...20 mA + PNP transistor output, with display, diaphragm: stainless steel, measurement range: 0...70 bar

Measuring method

D □■ – 4 ■ 5 – 2

D	Differential

Process connection

D D □ – 4 ■ 5 – 2

A	¼" BSP
C	½" BSP
G	¼" NPT
H	½" NPT

Range / Max. static pressure

D D ■ – 4 □ 5 – 2

F	0...0.1 bar ...1 bar adjustable / 7 bar
G	0...0.2 bar ...2 bar adjustable / 20 bar
O	0...0.35 bar ...3.5 bar adjustable / 35 bar
K	0...0.7 bar ...7 bar adjustable / 70 bar
M	0...2 bar ...20 bar adjustable / 70 bar
N	0...3.5 bar ...35 bar adjustable / 70 bar
P	0...7 bar ...70 bar adjustable / 70 bar

Accuracy

D D ■ – 4 ■□ – 2

5	2%

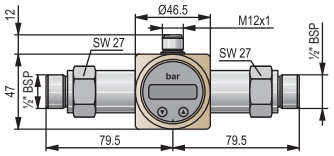
Output

D D ■ – 4 ■ 5 – □

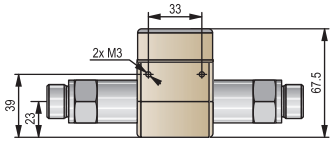
2	4...20 mA

Available on request (must be specified in the text of the order)

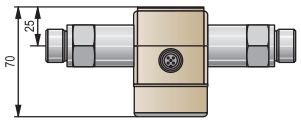
Second PNP switching output
Custom measurement range (based on prior negotiations)



DDC-4□3-□
front view



DDC-4□3-□
bottom view



DDC-4□3-□
plan view

NIPRESS DD-600 — 5 years

2- / 3-wire wall-mountable differential pressure transmitter for gauge pressure measurement
Output: 4...20 mA or 0...10 V, silicon sensor element, measurement range: 0...1000 mbar

Measuring method

D □■ – 6 ■■ – ■

D	Differential

Process connection

D D □ – 6 ■■ – ■

P	Ø6.6 x 11, for Ø6 flexible tube
R	Ø4.45 x 10, for Ø4 flexible tube

Range / Overpressure

D D ■ – 6 □■ – ■

R	0...1.6 mbar / 200 mbar
S	0...4 mbar / 200 mbar
2	0...10 mbar / 200 mbar
6	0...40 mbar / 345 mbar
C	0...250 mbar / 1000 mbar
F	0...1000 mbar / 3000 mbar

Accuracy

D D ■ – 6 ■□ – ■

3	1% (p ≥ 6 mbar)
5	2% (p < 6 mbar)

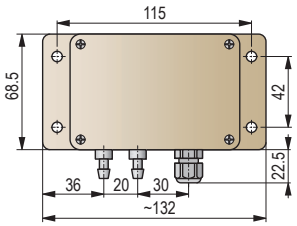
Output / Certificates

D D ■ – 6 ■■ – □

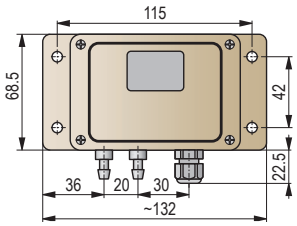
2	4...20 mA
3	0...5 V / 0...10 V / 0...20 mA / 4...20 mA 3-wire (adjustable)

Available on request (must be specified in the text of the order)

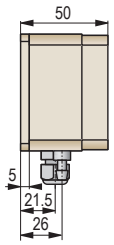
Display
2x switching outputs (2-wire system: PNP; 3-wire system: relay; only with display version)
Automatic zero adjustment
Square root extraction function for flow measurement (only with display version)
Custom measurement range (based on prior negotiations)



DD□-6□□-□
front view



DD□-6□□-□
with display



DD□-6□□-□
side view

SIGNAL PROCESSING UNITS

Integrating NIVELCO's wide range of level devices into process control systems requires intelligent and versatile signal processing and control devices.

Our devices are designed to maximize compatibility with our transmitters and sensors. With our signal processors and controllers, our customers can create complete industrial measurement and process control systems using only NIVELCO devices.

MultiCONT
MULTICHANNEL PROCESS CONTROLLER

page 239

- Programmer, display and controller for transmitters for HART® protocol transmitters
- 1…15 input channels
- 4…20 mA, HART®, RS485 outputs
- Data logger function
- SD card slot
- Expandable with interface modules
- Highly informative dot-matrix display
- Ex ia intrinsically safe variants

MonoCONT
NEW

SMART FIELD DISPLAY & DATA LOGGER

page 242

- Remote programming, data display
- Process controller for HART®-compatible transmitters
- 4-key user interface
- Supports 1 HART® transmitter
- Ex-approved variant available
- Data logging to internal memory
- Displaying measured data in numerical and bargraph mode
- Data transmission via RS485
- Bluetooth® communication (optional)

UNICONT PM
UNIVERSAL CONTROLLER

page 244

- Dual-line, 7-segment, 4-digit LED display
- Wide range of resistance thermometers (Pt, JPt, Cu)
- 0…20 mA, 4…20 mA or 0…10 V input
- Up to 3 power relays
- ON/OFF, PD or PID control
- Auto-tuning
- Heating / cooling control
- Current transformer (CT) input


0.126
0.025
NIVELCO


1 SILO 40 000
2 SILO 60 000
3 SILO 60 000
3093
2989
3449
2629
795
-021
8500
-006
341


MultiCONT
MultiCONT
MultiCONT
MultiCONT


MultiCONT
17.778


MultiCONT
MultiCONT

The **MultiCONT** is a universal interface that receives, processes, and displays measurement data from instruments via HART® protocol, and when needed, forwards it via RS485 communication line. It connects NIVELCO intelligent transmitters with process control elements — *PCs, PLCs, displays, and operating units* — making it flexibly adaptable to complex systems or operable as a standalone controller.

The device communicates with up to 15 standard or 4 explosion-proof HART® output transmitters, providing their power supply and data management, while also enabling programming of these transmitters. The large LCD or OLED dot-matrix display ensures detailed, overview-friendly visualization. A unique feature is the *"echo map"* display, which works with **EchoTREK**, **PiloTREK**, **MicroTREK**, or **EasyTREK** transmitters to enable visual verification of the measurement process.

Measured and calculated values can control various analog **(4…20 mA)** or digital outputs. The built-in, freely programmable relays can be adapted to specific transmitters, while internal current outputs can transmit even modified data. Multiple MultiCONT units can be networked in a chain via RS485, allowing simple system expansion and suitability for larger monitoring tasks.

FEATURES

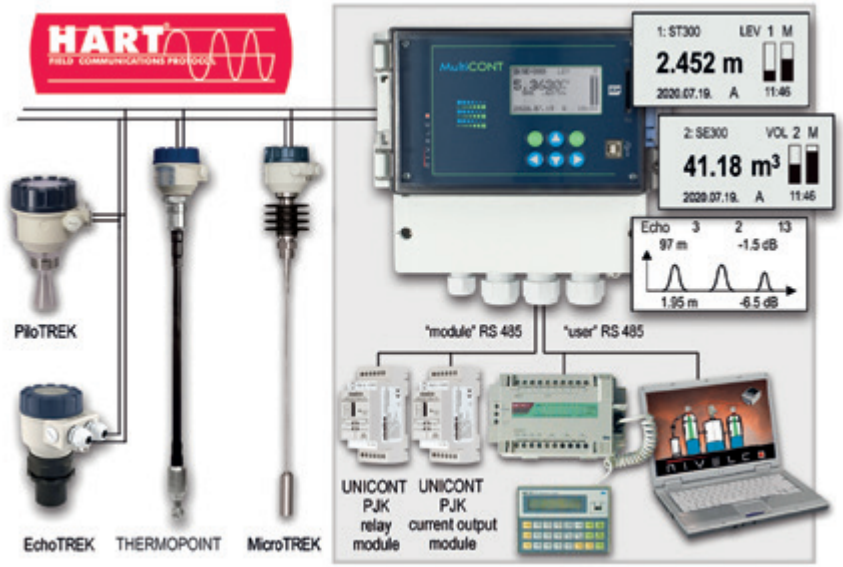
- Provides flexible commissioning for process control systems containing HART®-based intelligent *(level, temperature or pressure)* transmitters
- Galvanically isolated output for 4…20 mA transmitters
- Depending on the type of the transmitters, 1 to 15 *(standard)* or 1 to 4 *(Ex ia)* channels
- Highly informative large LCD or OLED display
- Ex ia variant
- Simple 6-button programming
- Trend logging in internal memory or SD memory card
- USB port for data download from internal FLASH memory
- Universal interface module expansion via RS485
- "Echo-Map" for EchoTREK, PiloTREK, MicroTREK and EasyTREK ultrasonic transmitters
- 5 years warranty

MultiCONT
PRN–200

APPLICATIONS

- Remote programming, transmitter data display
- Power supply for 2-wire transmitters
- Process controller for HART®-capable transmitters
- Displaying measured data in numerical and bargraph mode
- Data transmission via RS485 *(via HART® or Modbus protocol)*
- Simple data-logging function
- Trend or flow-measurement logging

A TYPICAL NETWORK CONTROLLED BY A MultiCONT



CERTIFICATES

- ATEX [Ex ia G]
- ATEX [Ex ia D]
- IEC Ex [Ex ia G]
- INMETRO [Ex ia G]
- UKCA Ex [Ex ia G]

TECHNICAL DATA

MultiCONT P□□–2□□–□		
Power supply / power consumption / max. supply voltage		85…255 V AC 50…60 Hz / 12 VA / 255 V_{rms} ; 11.4…28 V AC 50…60 Hz / 12 VA / 28 V_{rms}; 11.4…40 V DC / 11 W / 40 V DC
Supply voltage for transmitters		30 V DC / 60 mA (Ex variant: 25 V DC / 22 mA)
Graphic display		128 × 64 dot-matrix (LCD / OLED)[1]
Relay		Max. 5, SPDT 250 V AC, AC1, 5 A
Analog output		Max. 2, galvanically isolated 4…20 mA, max. load: 500 Ω, with overvoltage protection
Number of powered transmitters		Max. 15× standard, or max. 4× Ex
RS485 interface	"user"	Galvanically isolated, HART® and Modbus protocol
	"module"	Galvanically isolated, HART® protocol
Logger unit		Capacity: flash = 65,000 entries; SD card = depending on card size (max. 32 GB)
Housing material		Polycarbonate (PC)
Mounting		Wall-mountable
Ambient temperature		–20…+50 °C
Ingress protection		IP65
Electrical protection		Class I / Class III
Weight		900 g
Ex information		
Ex marking	ATEX	Ⓔx II (1) G [Ex ia Ga] IIB, Ⓔx II (1) D [Ex ia Da] IIIC
	IEC Ex	[Ex ia Ga] IIB
Intrinsic safety data		U_o = 30 V; I_o = 140 mA; P_o = 1 W; L_o = 4 mH; C_o = 200 nF; U_m = 253 V
Supply voltage for transmitters		25 V DC / 22 mA
Ambient temperature		–20…+50 °C

[1] *In the case of OLED, the lifetime of the display depends on the way the user applies the screen saver function and hence it is not covered by the warranty.*

SPECIAL FEATURES

Trend logging *(optional)*

MultiCONT versions with an on-board logger can store the measured values and three additional parameters of the transmitters to the system into the internal flash memory or an SD memory card. There are two logging modes, time-controlled and event-controlled. Monitoring the average, minimum, and maximum value or highest flow values can be used only with NIVELCO transmitters in flow-metering mode. The content of the internal memory is retrievable through USB, within the capacity of 65 000 entries. The unit can handle SD cards up to 32 GB capacity.

NIVISION *(optional)* Process Visualization Software

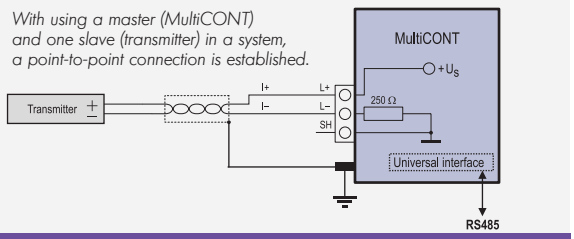
RS485-capable versions of the **MultiCONT** can communicate with NIVELCO's **NIVISION** process visualization software to graphically indicate parameters of process control systems on a PC. The process, the measured values, or any calculated values can be visualized in tables with **NIVISION**. **NIVISION** performs data logging, trend monitoring, database handling, and various other tasks in addition to basic visualization. The software is sold as a custom-tailored product.

OUTPUT TYPES

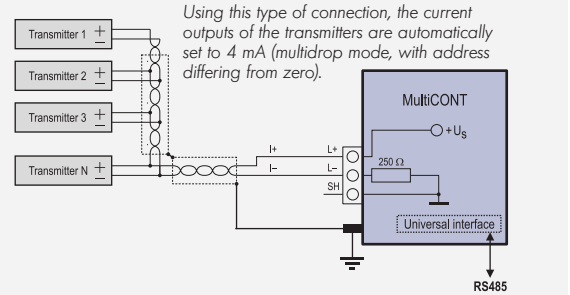
Outputs	Display only (without relay)	Number of relays				
		1	2	3	4	5
Only display (w. o. RS485 or current output)	■	■	■	■	■	■
RS485 Interface	■	■	■	■	■	■
1× 4…20 mA output	■	■	■	■	■	■
2× 4…20 mA output	■	■	■	■	■	
RS485 + 1× 4…20 mA analog output	■	■	■	■	■	
RS485 + 2× 4…20 mA analog outputs	■	■	■	■	■	

COMMUNICATION BETWEEN MultiCONT & TRANSMITTERS

Point-To-Point connection



Multi-point connection (Multidrop). Multiple slaves connected in parallel



SYSTEM SET-UP

There is a Master-Slave relation between **MultiCONT** and the connected transmitters. Through the **MultiCONT** the transmitters can be programmed or their parameters checked and modified. Reading the process values of the transmitters is easy to do by the **MultiCONT**. In case of using **MultiCONT** with multiple transmitters, the units should be addressed with numbers *(Short address)* differing from zero. Using two transmitters with the same Short address is not possible. **MultiCONT** can handle a number of max. 15 transmitters with HART® communication. When using 2-wire transmitters, the current output of the transmitters will be limited to 4 mA, because of the capacity of the **MultiCONT's** power supply, which is rated at 60 mA with standard transmitters.

MultiCONT P-200 — 5 years

Wall-mountable universal multichannel process controller unit to remote program and read all NIVELCO transmitters featuring HART® communication, expandable with relay and current output modules

Type

P □■ – 2 ■■ – ■

E	Standard, non expandable
R	Expandable (with universal interface module)

Version / Display

P ■□ – 2 ■■ – ■

W	IP65 Enclosure / LCD
A	IP20 Enclosure / Datalogger / LCD
C	IP65 Enclosure, transparent cover / LCD
D	IP65 Enclosure, transparent cover + Datalogger / LCD
L	IP65 Enclosure / OLED
K	IP65 Enclosure, transparent cover / OLED
N	IP65 Enclosure, transparent cover + Datalogger / OLED

Input

P ■■ – 2 □■ – ■

1	Single channel for one unit
2	2 channels for up to 2 units
4	4 channels for up to 4 units
8	8 channels for up to 8 units
M	15 channels for up to 15 units

Output

P ■■ – 2 ■□ – ■

0	Display
1	Display and 1× SPDT Relay
2	Display and 2× SPDT Relays
3	Display and 3× SPDT relays
4	Display and 4× SPDT relays
D	Display and 5× SPDT relays
F	Display, 1× 4...20 mA current output
5	Display, 1× 4...20 mA current output and 1× SPDT relay
6	Display, 1× 4...20 mA current output and 2× SPDT relays
7	Display, 1× 4...20 mA current output and 3× SPDT relays
8	Display, 1× 4...20 mA current output and 4× SPDT relays
Q	Display, 1× 4...20 mA current output and 5× SPDT relays
G	Display and 2× 4...20 mA current output
H	Display, 2× 4...20 mA current output and 1× SPDT relay
J	Display, 2× 4...20 mA current output and 2× SPDT relays
K	Display, 2× 4...20 mA current output and 3× SPDT relays
9	Display, 2× 4...20 mA current output and 4× SPDT relays
A	Display + RS485 interface
L	Display + RS485 interface and 1× SPDT relay
M	Display + RS485 interface and 2× SPDT relays
N	Display + RS485 interface and 3× SPDT relays
P	Display + RS485 interface and 4× SPDT relays
E	Display + RS485 interface and 5× SPDT relays
B	Display + RS485 interface and 1× 4...20 mA current output
R	Display + RS485 interface, 1× 4...20 mA current output and 1× SPDT relay
C	Display + RS485 interface, 1× 4...20 mA current output and 2× SPDT relays
S	Display + RS485 interface, 1× 4...20 mA current output and 3× SPDT relays
T	Display + RS485 interface, 1× 4...20 mA current output and 4× SPDT relays
Z	Display + RS485 interface, 1× 4...20 mA current output and 5× SPDT relays
U	Display + RS485 interface, 2× 4...20 mA current output
V	Display + RS485 interface, 2× 4...20 mA current output and 1× SPDT relay
W	Display + RS485 interface, 2× 4...20 mA current output and 2× SPDT relays
X	Display + RS485 interface, 2× 4...20 mA current output and 3× SPDT relays
Y	Display + RS485 interface, 2× 4...20 mA current output and 4× SPDT relays

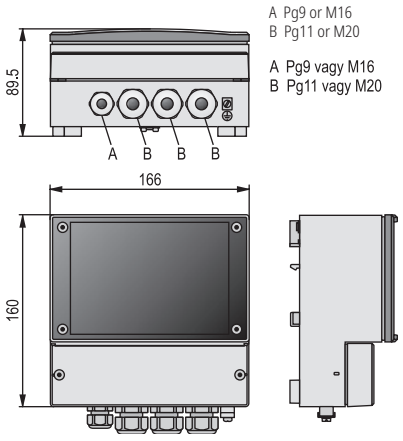
Power supply / Certificates

P ■■ – 2 ■■ – □

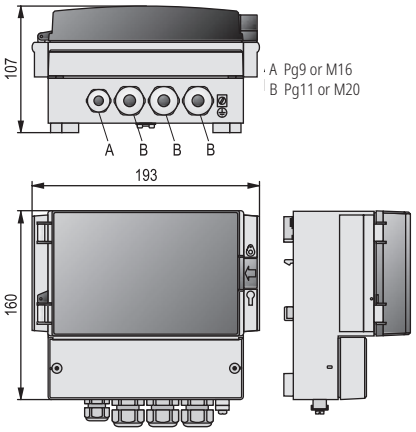
1	85...255 V AC
2	11.4...28 V AC and 11.4...40 V DC
5	85...255 V AC / [Ex ia G/D] (max. 4 channels)
6	11.4...28 V AC and 11.4...40 V DC / [Ex ia G/D] (max. 4 channels)

Check relevant page for the prices of UNICONT PJK

Need of IEC Ex is to be requested in the text part of the order



PEW-2□□



PEC-2□□

NEW

Smart Field Display & Data Logger

MonoCONT is a single-channel HART® smart field display and data logger. It can be integrated as a universal field interface with NIVELCO intelligent level transmitters and other process control system components *(e.g. PCs, PLCs and actuators)*. The MonoCONT can communicate with one transmitter with 4…20mA/HART® output at a time. It can be used with any NIVELCO transmitter with HART® to set up the transmitter, read and display measured data, log data *(data logger)* and transmit data via the RS485 *(Modbus)* communication line.

The LCD allows for on-site reading. It can display an *"echo-map"* for suitable transmitters. Three product families feature a text menu identical to that of the transmitter to simplify transmitter setup: the PiloTREK *(W–200)* non-contact microwave level transmitters and the EasyTREK *(SP–300 and SP–500 Pro)* and EchoTREK *(SE–300)* ultrasonic level transmitters for liquids.

The unit can also perform stand-alone control functions using one or more outputs that can be controlled based on the measured data, allowing multiple control functions to be implemented. It can also be connected to other process control devices via the optional RS485 *(Modbus)* communication line to perform higher-level tasks. It can also be used with transmitters from other manufacturers, in which case all functions except transmitter setting are available *(readout, display, data logging, transmission (Modbus), output control)*.

FEATURES

- Provides a flexible solution for commissioning process control systems containing HART®-compatible intelligent *(level, temperature or pressure)* transmitters
- 4-key user interface"
- Supports 1 HART® transmitter
- Field loop display and controller module
- Ex-approved variant available
- Bluetooth® communication (optional)
- Data logging to internal memory
- 5 years warranty

PDF–410–2

APPLICATIONS

- Remote programming and transmitter data display
- Process controller for transmitters
- Displaying measured data in numerical and bargraph mode
- Data transmission via RS485 *(Modbus protocol)*
- Simple data logging function
- Trend or flow measurement logging

CERTIFICATES

- ATEX (Ex ia G), (Ex d G), (Ex d ia G)
- INMETRO (Ex ia G), (Ex d G), (Ex d ia G)

TECHNICAL DATA

		2-wire version	3-wire version	4-wire version
Power supply		4…20 mA loop powered, voltage drop: 4.5…5.5 V DC	8…30 V DC, max. 250 mW	85…230 V AC, 24 V DC
Housing		Painted aluminum, fiberglass-reinforced plastic (PBT) or stainless steel		
Ambient temperature		–20…+70 °C		
Input		4…20 mA loop, HART® protocol, max. 1 transmitter		
Outputs	Display	SAP–300 graphic display unit		
	Solid-state relay (SSR)	Polarity independent switch, max. 30 V / 320 mA, R_{on}: 2 Ω		
	Relay (optional)	–		SPDT 230 V AC, 6 A
	RS485 (optional)	–	Galvanically isolated Modbus RTU protocol	
	Data logger (optional)	Integrated flash memory (32 MB)[1]		
	Bluetooth® (optional)	BLE, 5.4		
Electrical connection		2× M20×1.5 plastic cable gland + 2× internally threaded ½" NPT connection, cable outer diameter: Ø6…12 mm, wire cross section: 0.5…1.5 mm^2		
Electrical protection		Overvoltage Class 1; (Class III [SELV])		
Ingress protection		IP67		
Weight		plastic housing: ~0.55 kg; aluminum housing: ~0.9 kg; stainless steel housing: ~2.5 kg		

[1] *Serial read (SAT–506 e-Link module required), or Bluetooth® read with MobileEView or EView2.*

MonoCONT PDF–410 — 5 years

Smart Field Display and Data Logger, Single channel, Wall mounting,
Remote program and read 1 transmitter with 4...20 mA / HART® output

Type

□■F–■1■–■

P		Smart Field Display and Data Logger

Function

P□F–■1■–■

D		Display
B	*	Display + Bluetooth®
C	*	Without display + Bluetooth®
F		Display + data logging

* Under development.

Housing

P■F–□1■–■

4		Painted aluminum
5		Fiberglass-reinforced plastic (PBT)
6		Stainless steel

Output

P■F–■1□–■

0		Solid-state relay (SSR) output
1		Solid-state relay (SSR) output + RS485 (only in 3- or 4-wire version)
2	*	Solid-state relay (SSR) output + SPDT relay (only in 4-wire version)
3	*	Solid-state relay (SSR) output + SPDT relay + RS485 (only in 4-wire version)

Supply voltage / Ex

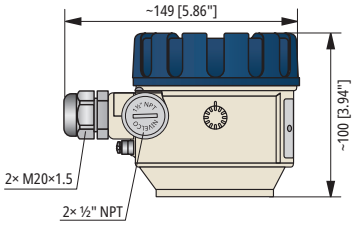
P■F–■1■–□

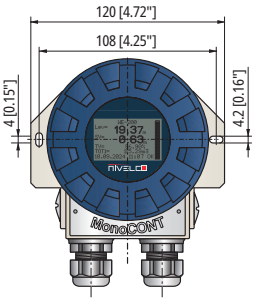
1	*	4-wire 85...230 V AC
2		2-wire loop powered
3		3-wire 8...30 V DC
4	*	4-wire 24 V DC
6	*	2-wire loop powered / Ex ia G/D
7	*	3-wire 8...30 V DC / Ex ia G/D
8	*	4-wire 24 V DC / Ex ia G/D
A	**	4-wire 85...230 V AC / Ex d G/tD
B	**	2-wire loop powered / Ex d G/tD
C	**	3-wire 8...30 V DC / Ex d G/tD
D	**	4-wire 24 V DC / Ex d G/tD
E	**	4-wire 85...230 V AC / Ex d ia G
F	**	2-wire loop powered / Ex d ia G
G	**	3-wire 8...30 V DC / Ex d ia G
H	**	4-wire 24 V DC / Ex d ia G

* Under development.
** Under development, only with metal housing.

Accessories sold separately; see relevant page for details

SAT–506–■	eLink Module





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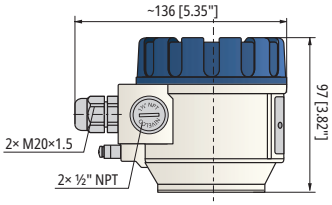
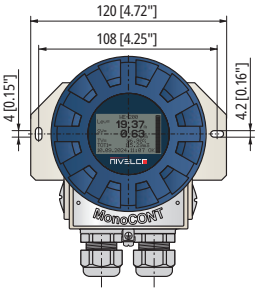
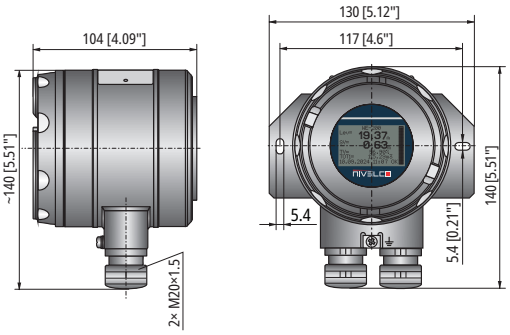




PDF–510



PDF–610

The **UNICONT PMM–300** is a universal one or two-channel process controller with relay and analog outputs and a PID algorithm that supports many functions. It can be used for standard to extraordinary temperature control tasks *(cooling, heating)*. In addition to the usual inputs, practically all common temperature sensors can be connected. Thanks to the auto-tuning function, the controller can be successfully operated by technicians not used to process control.

The 4-digit displays can be read from a distance. The UNICONT PMM–300 is highly accurate and easy to use, making it suitable as a panel device in laboratory and industrial process control applications.

FEATURES

- Programmable inputs
- 4-digit LED display
- Heavy-duty relay contacts or analog output
- 4…20 mA output
- ON/OFF, PD or PID control algorithm
- Auto-tuning feature
- Relay outputs up to 4
- 32-point linearization
- Window comparator differential metering

APPLICATIONS

- Temperature display
- Switching, control or transmitting tasks
- Power valve control
- Sequence control
- Dual-channel display

PMM–300

TECHNICAL DATA

		PMM–300	
Universal Inputs	Thermocouples	K, J, T, E, L, U, N, R, S, B, M, A, C	
	Resistive thermal devices (RTD)	Pt100, JPt100, Pt500, JPt500, Pt1000, JPt1000, Cu100, Ni100, KTY81	
	Current	4…20 mA, 0…20 mA	
	Voltage	–5+20 mV, 0…100 mV, 0…500 mV	
	Resistance	0…500 Ω, 0…2000 Ω	
	Input resistance	10 Ω, Voltage input > 10 MΩ	
Output	Control relays (2×)	SPDT 250 V AC 5 A AC11	
	Alarm relays (2×)	SPST (NO/NC programmable) 30 V DC / 250 V AC 3 A AC11	
	Solid-state relay (SSR) drivers (2×)	12 V DC, 15 mA	
	Current outputs (2×)	0/4…20 mA DC (max. load: 600 Ω), galvanically isolated short circuit protected, programmable	
	Power Supply for transmitters	24 V DC, 100 mA, shot circuit protected	
	RS485 Modbus	Bit rate: 600…38,400 bps selectable, device address: 0…254 programmable	
Control	Features	Setting time	Setting unit
	Proportional band (P)	0…409.5%	0.1%
	Integral time (I)	0…4095 s	1 s
	Derivate time (D)	0…4095 s	1 s
	Cycle time(T)	0…255 s	1 s
	Dead band	0…255	in PV resolution
	Hysteresis		
Display		PV (upper display), red, 4 digits, 7 segments, digit height: 10 mm SV (lower display), green, 4 digits, 7 segments, digit height: 10 mm	
Programming PV		Digital, by front panel keys	
Accuracy of setting and displaying		±0.2%FS ±1 digit	
Sensor wire-break alarm		"Er 11." on SV display (only if the controller is on)	
Cold junction compensation		External temperature sensor to be connected to terminal block. The function can be disabled	
Wire resistance compensation		3-wire, automatic	
Ambient humidity		Up to 85% (relative) non-condensing	
Ambient temperature		Operational: 0…+55 °C, storage: –20…+60 °C	
Supply voltage		85…265 V AC, 50/60 Hz, 8 VA, 120 V 375 V DC 8 VA 16…32 V DC, 8 W, 13…30 V AC, 8 VA	
Electrical connection		Plug-in terminal blocks (recommended wire cross section: 0.5…2.5 mm^2)	
Electrical protection		Class II	
Ingress protection		Front: IP54, back: IP20	
Memory protection		Data stored in EEPROM	
Dimensions		101.5 × 48 × 156 mm	
Weight		300 g	

UNICONT PMM-300 — 3 years

Universal panel controller and display unit with 4...20 mA analog, relay, RS485, Usupply
Universal inputs, PID control algorithm, auto tuning (AT) function, size: 96 x 48 mm

Version

P M □ – 3 ■ ■ – ■

M	Standard

Input

P M M – 3 □ ■ – ■

1	1× universal input (IN1)
2	2× universal inputs (IN1, IN2)
3	1× universal input (IN1) + linearization
4	2× universal inputs (IN1, IN2) + linearization

Output

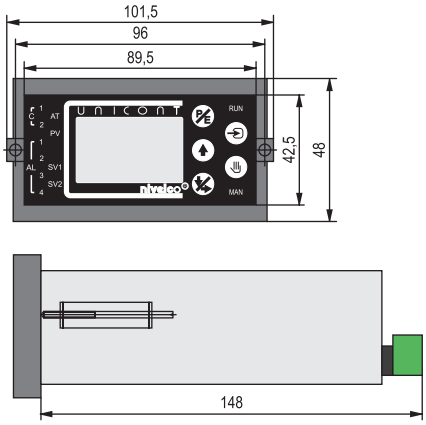
P M M – 3 ■ □ – ■

1	2× relays (C1, C2), Iout 1
2	2× relays (C1, C2), Iout 1, Usupply / Iout 2
3	4× relays (C1, C2, AL3, AL4), Iout 1
4	4× relays (C1, C2, AL3, AL4), Iout 1, Usupply / Iout 2, RS485

Supply voltage

P M M – 3 ■ ■ – □

1	85...265 V AC, 120...375 V DC
2	24 V AC/DC



PMM-3□□

NIV24
PMM-311-1
PMM-312-1
PMM-313-1

The **UNICONT PMG–500** series universal controllers are 1/16 DIN (48 × 48 mm) process controllers with relay and analog outputs or a PID algorithm supporting versatile functions. The universal analog PID controllers can be used with popular RTD *(Pt, JPt, Cu)* resistance thermometers and various thermocouples for temperature measurement, control and processing of signals from transmitters with 0…20 mA, 4…20 mA and 0…10 V DC, 0…5 V DC, 1…5 V DC, 0…100 mV DC output. The controller's output signal can be a relay, a continuous 4...20 mA process current signal, or an SSR driver. An additional alarm relay is provided for limit monitoring. The unit is microprocessor based, has auto-tuning software and its PID controller can find the optimum PID constants. The PMG–500 Series is capable of RS485 communication and has an input to receive the output signal from a current transformer *(CT)*. The large two-color display is easy to read even from a distance.

PMG–500

FEATURES

- Universal input
- 4…20 mA output, relay outputs
- SSR driver output
- RS485 communication
- ON-OFF and PID control
- Auto tuning (AT) feature
- Current transformer (CT) input
- 48 × 48 mm front panel

APPLICATIONS

- Temperature display
- Switching, control tasks
- Simultaneous cooling / heating control
- For automated manufacturing processes
- Alarm indication

TECHNICAL DATA

			PMG–51☐
Input	RTDs (3-wire, automatic wire-resistance comp.)		DPt100, DPt50, JPt100 (–199.9…+650 °C), Cu100, Cu50 (–199.9…+200 °C), Ni120 (–80…+200 °C)
	Thermocouples (automatic cold junction compensation)		K (–200…+1350 °C); J (–200…+800 °C); E (–200…+800 °C)
			T (–200…+400 °C); B (0…+1800 °C); R (0…+1750 °C)
			S (0…+1750 °C); N (–200…+1300 °C); C (0…+2300 °C)
			G (0…+2300 °C); L (–200…+900 °C); U (–200…+400 °C); Platinel II (0…+1390 °C)
	Voltage		0…10 V DC; 0…5 V DC; 1…5 V DC, 0…100 mV DC
	Current		0…20 mA DC; 4…20 mA DC
	Current transformer (CT)		0.0…50.0 mA (1/1000 CT: 0.0…50.0 A)
Output	PID	Proportional band (P)	0.1…999.9 °C / °F (%)
		Integral time (I)	0…9999 s
		Derivate time (D)	
		Cycle time(T)	Relay, SSR output: 0.1…120.0 s. Optional current or SSR output: 1.0…120.0 s
	Type of output	Relay	250 V AC 3 A AC1, closing contact
		SSR driver	11 V DC ±2 V, max. 20 mA
		Current	DC 0…20 mA or 4…20 mA (max. load: 500 Ω)
	RS485		Modbus RTU
Alarm output			1× SPST (NO/NC programmable) 250 V AC, 3 A 1a, AC1
Accuracy of setting & displaying			±0.3% ±1 digit of full range or ±3 °C
Display	PV (primary value)		Red, 4-digits, 7 segments; digit height: 14 mm
	SV (secondary value)		Green, 4-digits, 7 segments; digit height: 10 mm
Supply voltage			100…240 V AC 50/60 Hz, max. 8 VA, operational voltage 90…110%
Ingress protection			Front: IP54, back: IP20
Electrical protection			Class II
Ambient temperature			Operational: –10…+50 °C, storage: –20…+60 °C
Ambient humidity			35…85% (relative) non-condensing
Dimensions			48 × 48 × 70.5 mm (front panel cut-out: $45^{+0.5}$ × $45^{+0.5}$ mm)
Weight			105 g

UNICONT PMG-500 — 3 years

Universal panel controller and display unit with 4...20 mA analog, relay, SSR output
1 universal input, PID and ON/OFF control, size: 48 x 48 mm

Output

P M G – 5 1 □ – ■

1	3× relays (R1, R2, AL1), Iout (input current repeater function)
2	2× relays (R1, AL1), 1× solid-state driver / 4...20 mA (control current output)
3	2× relays (R1, AL1), 1× solid-state driver / 4...20 mA (control current output), RS485
4	1× SSR, 1× SSR / 4...20 mA (control current output), AL1 relay (24 V version not available)
5	2× SSR / 4...20 mA (control current output), AL1 relay

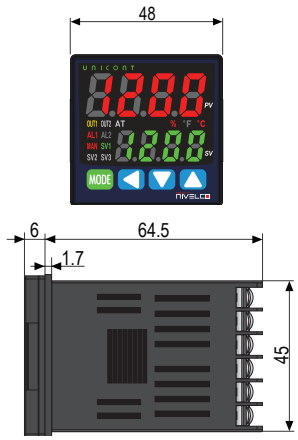
Supply voltage

P M G – 5 1 ■ – □

1	100...240 V AC
2	24 V AC / 24...48 V DC

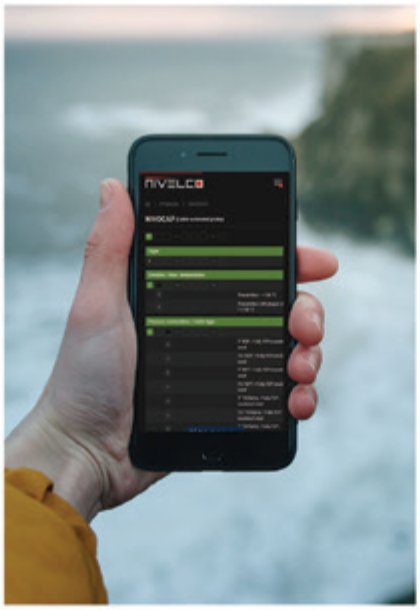
Accessories to order

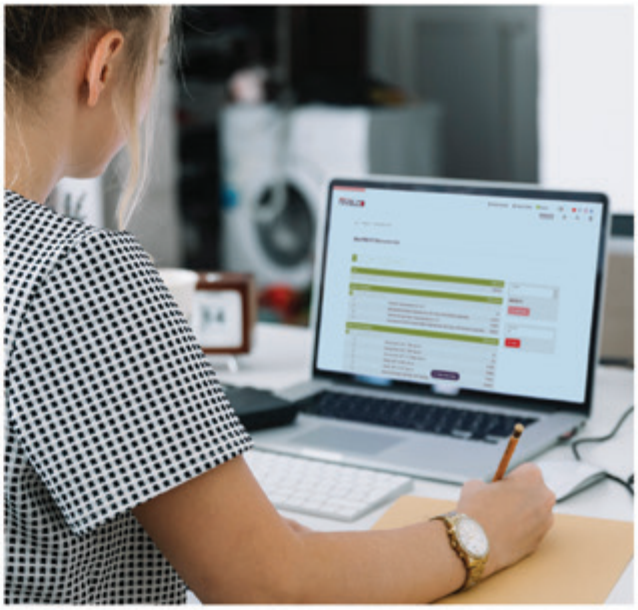
P A M – 5 0 0 – 0	Front panel adapter from 96 x 48 mm to 48 x 48 mm anodized aluminum



PMG–51□

NIV24
PMG–512–1
PMG–513–2





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SYSTEM COMPONENTS

NIVELCO's broad product portfolio requires many types of system accessories. These devices facilitate the integration of NIVELCO level devices into process control systems. The range of system components consists of universal displays, loop displays, interface and other expansion modules, time relays, etc.

UNICONT PJK
UNIVERSAL INTERFACE MODULE

page 252

- MultiCONT expansion module
- RS485 communication
- Output variations:
  – 2× current outputs
  – 2× relay outputs (250 V AC, 8 A)
  – 1× current output and 1× relay
- DIN-rail-mountable
- Provides galvanic isolation
- Level controlling and limit level indication

UNICONT PKK
CURRENT CONTROLLED SWITCH

page 253

- 4…20 mA input
- DIN-rail-mountable
- Can power 2-wire transmitter
- Galvanic isolation
- Power relay (SPDT) output
- Switching amplifier for vibrating forks
- Wire monitoring
- Ex ia intrinsically models

UNICONT PDF / PLK
LOOP DISPLAYS

page 255

- 4…20 mA loop operated
- Operation without external power supply
- 6-digit plug-in display
- 20 mm digit height
- Universal field display for any transmitters
- 4…20 mA / HART® converter version
- Flameproof stainless steel housing
- Explosion-proof models

UNICONT PGK
INTRINSICALLY SAFE ISOLATOR / POWER SUPPLY MODULES

page 258

- Isolated power supply for intrinsically safe transmitters
- For transmitters operating in hazardous applications
- 4…20 mA, HART® communication
- For high-precision transmitters
- Up to 5 ms response time
- Up to 1 µA transmission accuracy
- DIN-rail-mountable
- Ex ia intrinsically models

NIPOWER
SWITCHING-MODE POWER SUPPLY MODULE

page 259

- Output voltage: 12 / 24 V DC
- Output current: 2000 mA / 1250 mA
- Stabilized DC output
- Switching-mode power supply
- Short-circuit protection
- Overload, overvoltage, overcurrent protection
- DIN-rail-mountable

UNICOMM
COMMUNICATION MODULES

page 261

- HART®–USB/RS485 modem
- Bluetooth® (BLE, 5.x) compatibility (SAT–504)
- DIN-rail-mountable version
- Test clip connector version
- No need for power supply
- Galvanic isolation
- Ex ia intrinsically models
- Updating transmitters software/ firmware (SAT–506)
- Data logger readout (SAT–506)

NITIME
TIME RELAY

page 260

- 2 and 10 function types
- Wide time range: from 0.1 s…100 days
- Small size
- Universal supply voltage
- DIN-rail-mountable
- Relay output

NIFLANGE
MOUNTING FLANGES

page 263

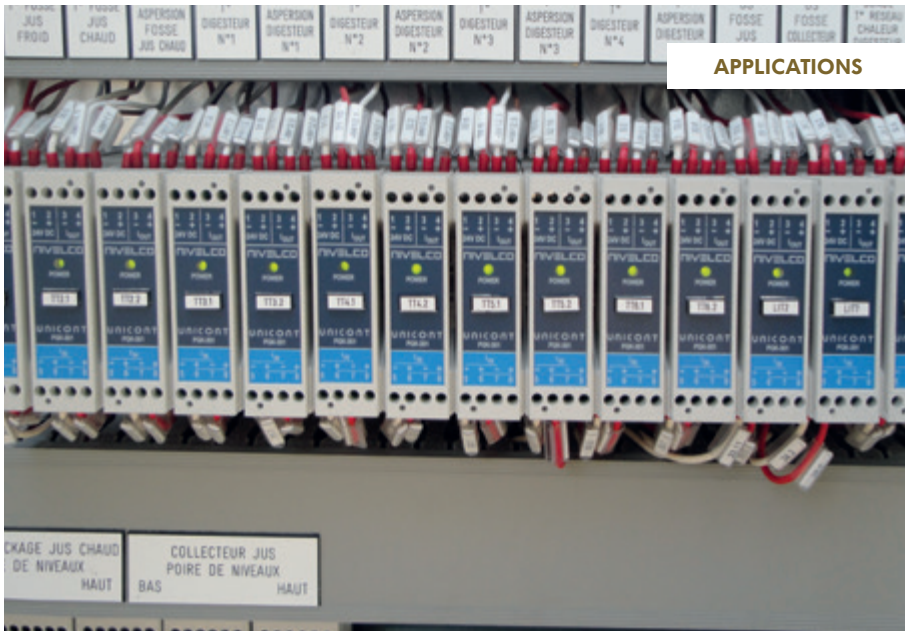
- Complies with DIN, ANSI, and JIS standards
- Materials:
  - Carbon steel
  - Carbon steel + PTFE
  - 1.4571/1.4404 stainless steel
  - Polypropylene
- Size: DN15…DN300
- High-pressure resistance
- BSP, NPT, M20×1.5, process connections
- Welded variant

NIFIT
ADAPTERS

page 264

- Complies with DIN standards
- Materials: 1.4571/1.4404 stainless steel
- Size: threaded versions up to ¼"…2", TriClamp versions ¾"…3"
- High-pressure resistance
- BSP; NPT; M20×1.5; TriClamp process connections
- Easy to install


FOSSE STOCKAGE JUS CHAUD
POIRE DE NIVEAUX
BAS
HAUT
COLLECTEUR JU
POIRE DE NIVEA
BAS
velco
UNICONT PNX-312


ASPERSION DIGESTEUR N°1
ASPERSION DIGESTEUR N°2
ASPERSION DIGESTEUR N°3
ASPERSION DIGESTEUR N°4
COLLECTEUR JUS
POIRE DE NIVEAUX
BAS
HAUT
nivelco
UNICONT


ADAM

The **UNICONT PJK** series is a universal interface module that can be controlled via RS485 and *(depending on the type)* provides relay(s) and/or 4…20 mA current output(s). The DIP switch on the module's front panel is for setting the address. The Universal Interface Modules can be widely used as a part of the following applications:

- Expanding MultiCONT multichannel process controller with relays or current outputs
- Peripheral unit of PLC process control systems
- Peripheral unit of PC automated process control systems

The **UNICONT PJK–100** universal interface modules provide an essential solution if the number of relays or current outputs of the **MultiCONT** is not enough in a system. The device can also be used as a peripheral unit for PLC or PC-controlled process control systems communicating via Modbus RTU protocol. The number of relays in the **UNICONT PJK–100** extension modules and the **MultiCONT** together must not exceed 64, and the number of analog outputs *(4…20 mA)* must not exceed 16. There is a special module with both relay and current output in the variety of the **UNICONT PJK–100** series. The maximum number of these modules is 32. The programming of the **UNICONT PJK** modules can be done via HART® or Modbus protocol with the help of the central unit of the communication network, which can be a process control computer or a **MultiCONT** device. The switches in the module's front panel are only for setting the address.

PJK–102

FEATURES

- RS485 interface
- Modbus or HART® communication protocol
- Output:
  - 2 current
  - 2 relay
  - Current and relay *(for mixed systems)*
- DIN-rail-mountable

APPLICATIONS

- Universal Interface Module
  - Expansion module for **MultiCONT**
  - For PLC process control systems
  - For automated process control systems operating on RS485

TECHNICAL DATA

PJK–1□□–4	
Supply voltage	24 V DC ±10%
Power consumption	10 mA + N_{relay} x 11 mA + $N_{current\ generator}$ x 25 mA) ±10%
Ambient temperature	–20…+50 °C
Electrical connection	Max. 2.5 mm² twisted, or max. 4 mm² solid wire
Electrical protection	Class III
Mechanical connection	EN 60715-35 rail
Ingress protection	IP20
Weight	110 g

Type		PJK–102–4	PJK–111–4	PJK–110–4	PJK–120–4
Output units		2 relays	1 relay + 1 current output	1 current output	2 current outputs
Relay	Relay	SPDT		–	
	Rating	250 V AC, 8 A, AC1		–	
	Insulation voltage	2500 V 50 Hz		–	
	Electrical / mechanical lifespan	10^5 / 2 x 10^6 switchings		–	
	Impulse width in pulse mode	0.1…25.5 s		–	
	Electrical protection	Class II		–	
Current generator	Linear range	–		3.601…21.999 mA	
	Error indication	–		≤ 3.6 mA / ≥ 22 mA	
	Resolution	–		14 bit	
	Accuracy	–		40 µA	
	Temperature dependence	–		Max. 15 µA / 10 °C	

UNICONT PKK–312 series area 4…20 mA current-controlled limit switches featuring galvanic isolation, also available as intrinsically safe units. The input 4…20 mA signals can be transferred from passive or active outputs of 2 or 4-wire transmitters. The value of the input signal will be compared in the unit of the set *(taught)* value, and the state of the galvanically isolated relay changes with the comparison mode programming.

The double throw output relay can be programmed for the following functions:
- Limit switch *(high or low fail-safe)*
- ON-OFF control with selectable switching difference
- Monitoring of discontinuity or short-circuit of the cable
- Window comparison operation mode with energized or de-energized relay state

The **UNICONT PKK–312–8 Ex** is a special version designed to operate with NIVELCO's Ex-rated, DC-powered 2-wire **NIVOSWITCH** vibrating fork level switches as an intrinsically safe power supply and amplifier unit. Without programming, the galvanically isolated limit switch can produce relay-switching signals based on monitoring the vibrating fork's output current changes between the freely vibrating and the immersed states.

PKK–312

FEATURES
- 4…20 mA input
- Relay output
- Rail-mountable
- Intrinsic safety Associated Apparatus

APPLICATIONS
- Galvanically isolated limit switch
- Power supply for transmitters
- Cable state monitoring

CERTIFICATES
- ATEX [Ex ia G/D]
- UKCA Ex [Ex ia G/D]

TECHNICAL DATA

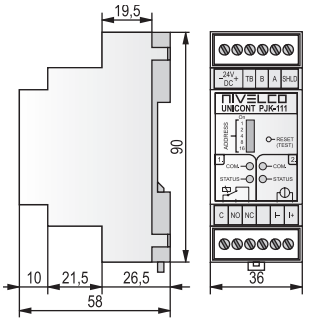
PKK–312–□		
Nominal input current range		1…22 mA
Accuracy of switching level / Threshold level		±0.1 mA
Discontinuity threshold / Lower value fault current		3.7 mA
Short circuit threshold / Upper value fault current		22 mA
Input impedance		10 Ω
Input overload capability		Max. 100 mA (permanent)
Switching delay		0.1 s; 1 s; 2 s; 5 s selectable
Relay	Output	1× SPDT
	Rating	250 V AC, 8 A, AC1
	Insulation strength	4000 V 50 Hz
	Electrical / Mechanical life time	10^5 / 2 × 10^6 switching
Electrical connection		Max. 2.5 mm² twisted, or max 4 mm² solid wire
Mechanical connection		EN 60715-35 rail
Ingress protection		IP20
Weight		~210 g

	Standard version				Ex version			
	PKK–312–							
	–1	–2	–3	–4	–5 Ex	–6 Ex	–7 Ex	–8 Ex
Supply voltage (U)	230 V AC ±10% 50…60 Hz	110 V AC ±10% 50…60 Hz	24 V AC ±10% 50…60 Hz	24 V AC ±10%, 50…60 Hz, 24 V DC ±15%	230 V AC ±10% 50…60 Hz	110 V AC ±10% 50…60 Hz	24 V AC ±10%, 50…60 Hz, 24 V DC ±15%	
Power consumption	< 2.7 VA			< 2.5 W	< 2.5 VA		< 2.5 VA / < 2.5 W	
Switching levels	2 values in the range of 1…22 mA				2 values in the range of 1…22 mA			10.5 mA; 12.5 mA
Ex marking	–				⟨Ex⟩ II (1) G [Ex ia Ga] IIB ⟨Ex⟩ II (1) D[Ex ia Da] IIIC		⟨Ex⟩ II (1) G [Ex ia Ga] IIC ⟨Ex⟩ II (1) D[Ex ia Da] IIIC	
Intrinsic safety data	–				U_0 = 28.4 V; I_0 = 140 mA; P_0 = 1 W; L_0 = 6 mH; C_0 = 50 nF		U_0 = 28.4 V; I_0 = 80 mA; P_0 = 0.6 W L_0 = 4 mH; C_0 = 50 nF	
Output load capability	U_0 = 30 V; I_{MAX} = 70 mA; $U_{OUT\ min}$ = 16 V			U_0 = 24 V; I_{MAX} = 80 mA; $U_{OUT\ min}$ = 23 V	I_T = 22 mA; U_{OUT} ≈12 V		I_T = 22 mA; U_{OUT} ≈15 V	–
Electrical protection	Class II			Class III	Class II		Class III	
Ambient temperature	–25…+55 °C							

UNICONT PJK–100 Interface module — 5 years

DIN-rail-mountable universal interface module that can be controlled via RS485 line and provides relay(s) and/or 4...20 mA current output(s)

Type	
P J K – 1 0 2 – 4	With 2× SPDT relay output
P J K – 1 1 0 – 4	With 1× 4...20 mA current output
P J K – 1 1 1 – 4	With 1x 4...20 mA current output and 1x SPDT relay output
P J K – 1 2 0 – 4	With 2x 4...20 mA current output

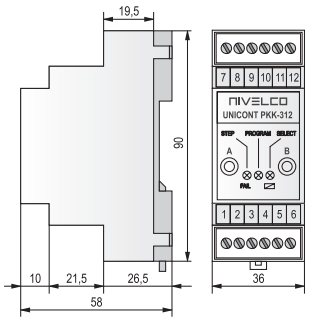


PJK–111

UNICONT PKK–300 — 5 years

DIN-rail-mountable programmable current controlled remote switching unit featuring 1...22 mA input current and powering capability for transmitters

Type	
P K K – 3 1 2 – 1	230 V AC
P K K – 3 1 2 – 2	110 V AC
P K K – 3 1 2 – 3	24 V AC
P K K – 3 1 2 – 4	24 V AC/DC
P K K – 3 1 2 – 5	230 V AC / [Ex ia G/D]
P K K – 3 1 2 – 6	110 V AC / [Ex ia G/D]
P K K – 3 1 2 – 7	24 V AC/DC / [Ex ia G/D]
P K K – 3 1 2 – 8	24 V DC / [Ex ia G/D] (for Ex ia G vibrating forks)



PKK–312

NIV24
PKK-312-1
PKK-312-8 Ex

The UNICONT series 2-wire passive loop indicators are universally scalable process value indicators of NIVELCO, operating without the need for a power supply. The process indicators find their use where the process value has no control function *(such as switching ON/OFF, pressure control, etc.)*. The 3-wire HART® converter type UNICONT devices offer the optimal solution where local displaying is needed besides the remote data processing, and the field transmitters having 4…20 mA output are needed to be integrated into the HART® multidrop system. The devices are applicable for NIVELCO transmitters and all transmitters that use standard 4…20 mA output. The UNICONT PDF devices are digital, 2-wire passive / 3-wire active, field process indicators suitable for temperature, pressure, level, etc. indication with a 6-digit SAP–202 display. Explosion-proof versions are available for hazardous environments. The HART® capable UNICONT PDF 3-wire process indicators require an additional power supply. Besides displaying the loop current or the process values, these units convert input current to HART® signals and enable devices with analog outputs to be integrated into HART® multidrop systems. A robust enclosure also makes applications possible under harsh conditions. The UNICONT PDF–600 series with flameproof (Ex d) stainless steel housing meets the special requirements of certain industry segments, such as food and beverage, maritime, oil & gas.

FEATURES

- 4…20 mA input
- 2-wire loop display
- 3-wire 4…20 mA + HART® transmitter
- Wall-mountable
- Scalable display
- IP67
- Ex variant

APPLICATIONS

- General display
- For 4…20 mA transmitters
- 4…20 mA–HART® converter
- Displaying level, volume, temperature, pressure, etc.

CERTIFICATES

- ATEX (Ex ia G), (Ex d G), (Ex d ia G)
- INMETRO (Ex ia G), (Ex d G), (Ex d ia G)

PDF–401–2

TECHNICAL DATA

	2-wire version	3-wire version
Measured value (input signal)	4…20 mA current loop	
Measurement range	3.6…22 mA	0…22 mA
Output	–	4…20 mA and/or HART® for 4…20 mA current limit values: 3.9…20.5 mA terminal resistor for HART®: R_{Lmin} = 250 Ω
Supply voltage	–	10…36 V DC Ex variant: 10…30 V
Display	SAP–202 display, range of displayed value: –9999…+29,999	
Accuracy	±0.1% if displayed value is >10,000; ±0.2% if displayed value is <10,000	
Temperature error	±0.05% / 10 °C	
Voltage drop	<1.6 V	<1 V
Overvoltage capability	140 mA	
Damping time	Selectable: 3 s, 5 s, 10 s or 20 s	
Ambient temperature	Standard: –40…+70 °C, with display: –25…+70 °C; Ex variant: see "Ex Information" table	
Electrical connection	Standard: M20×1.5 cable gland, cable diameter: Ø6…Ø12 mm; Ex variant: see "Ex Information" table	
Electrical protection	Class III	
Ingress protection	IP67	
Housing material	Painted aluminum, fiberglass-reinforced plastic (PBT) or stainless steel	
Weight	With aluminum housing: ~0.9 kg; with plastic housing: ~550 g; with stainless steel housing: ~2500 g	

Ex INFORMATION

	PDF–401 / 501 / 601–6 Ex	P□F–401 / 501 / 601–8 Ex	PDF–401–C Ex PDF–601–C Ex	P□F–401–D Ex P□F–601–D Ex	P□F–401–A Ex P□F–601–A Ex	P□F–401–B Ex P□F–601–B Ex
Protection type	Intrinsic safety		Intrinsic safety with flameproof enclosure		Flameproof enclosure	
Ex marking	Ⓔx II 1 G Ex ia IIC T6 Ga	Ⓔx II 1 G Ex ia IIB T6 Ga	Ⓔx II 1 G Ex d+ia IIB T6 Ga		Ⓔx II 2 G Ex d IIB T6 Gb	
Intrinsic safety data	U_i = 30 V; I_i = 100 mA; P_i = 0.7 W; C_i ≈ 0 nF; L_i < 200 µH	U_i = 30 V; I_i = 140 mA; P_i = 1.1 W; C_i < 20 nF; L_i < 200 µH	U_i = 30 V; I_i = 140 mA; P_i = 1.1 W; L_i < 200 µH C_i ≈ 0 nF	C_i < 20 nF	Supply voltage: 10…30 V	
Electrical connection	Plastic M20×1.5 cable glands, cable: Ø6…Ø12 mm		M20×1.5 Ex d cable glands for Ø8…Ø12 mm cable			
	Shielded twisted cable with 0.25…1.5 mm² wire cross section					
Ambient temperature	–25…+70 °C	–40…+70 °C, with display: –25…+70 °C	–25…+70 °C	–40…+70 °C, with display: –25…+70 °C	–25…+70 °C	–40…+70 °C, with display: –25…+70 °C
Housing material	Painted aluminum, fiberglass-reinforced plastic (PBT) or stainless steel		Painted aluminum or stainless steel			

Symbols on the display module:

- **M** – metric (Eu) engineering system
- **US** – imperial engineering system
- **°F, °C, m, cm, in, ft, l, m³, gal, ft³**
- **PROG** – programming mode

Displayed values:

- **DIST** – distance
- **LEV** – level
- **VOL** – volume
- **%** – percentage
- **mA and °C** – current and temperature
- ▼ ▲ – arrow *(shows the selected symbol)*

Plug-in Loop Displays UNICONT PLK

The **UNICONT PLK–501** plug-in displays with 4-digit LED display can be connected to the 2-wire transmitters with its DIN 43650 / ISO 4400 connector *(such as the NIPRESS pressure gauge / transmitter, AnaCONT LCK conductivity transmitter).*

The displayed numerical values can be freely scaled to the current input by the user, setting the maximum and the minimum value.

FEATURES

- 4…20 mA input
- 4-digit LED display
- Swiveling display
- Operation without external power
- PNP switch output
- IP65

APPLICATIONS

- Mountable between standard ISO 4400 connectors
- For 2-wire transmitters with 4…20 mA output

UNICONT PLK–501

TECHNICAL DATA

PLK–501–2, PLK–501–3	
Input	4…20 mA
Output	PNP open collector switch, max. rating: 125 mA
Display	4-digit LED with 7 mm height
Ambient temperature	–25…+70 °C
Setting range	–1999…+9999
Damping time	0.3…30 s
Electrical protection	Class III
Ingress protection	IP65
Electrical connection	ISO 4400 connector
Housing	Plastic
Weight	~100 g

AnaCONT
LCK–211 + PLK–501

UNICONT PDF–400 — 5 years

Wall-mountable universally scalable 2-wire passive process value display
and 3-wire active field loop current display / HART converter units, input: 4...20 mA

Type

□■F–■01–■

P	Loop Display

Version

P□F–■01–■

T	Without plug-in display
D	With plug-in display

Housing

P■F–□01–■

4	Painted aluminum
5	Fiberglass-reinforced plastic (PBT)
6	Stainless steel

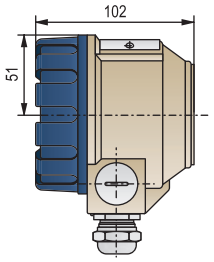
Output / Certificates

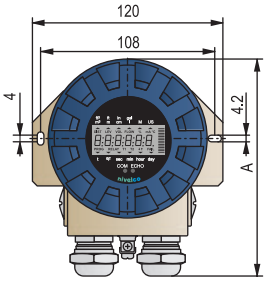
P■F–■01–□

2	- (2-wire, HART® transparent)
4	4...20 mA + HART® (3-wire, 4...20 mA -> HART® converter)
6	- / Ex ia G (2-wire, HART® transparent)
8	4...20 mA + HART® / Ex ia G (3-wire, 4...20 mA -> HART® converter)
A	- / Ex d G (2-wire, HART® transparent)
B	4...20 mA + HART® / Ex d G (3-wire, 4...20 mA -> HART® converter)
C	- / Ex d ia G (2-wire, HART® transparent)
D	4...20 mA + HART® / Ex d ia G (3-wire, 4...20 mA -> HART® converter)

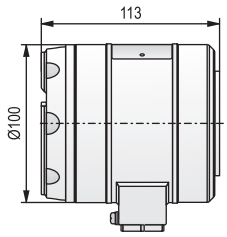
Accessories (sold separately; see relevant page for details)

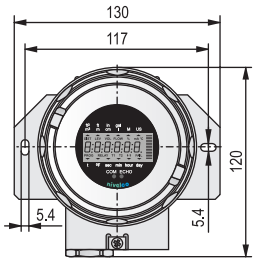
SAP–202–0	Plug-in display module
SAT–504–■	HART®-USB/Bluetooth® modem
SAK–305–■	HART®-USB/RS485 modem





PDF–401 / 501





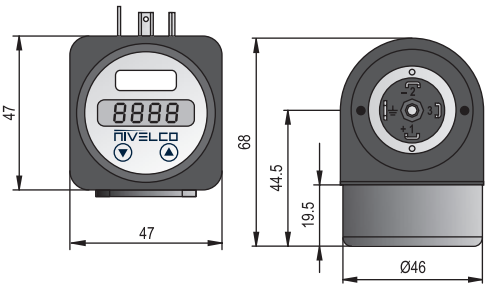
PDF–601

UNICONT PLK–501 — 5 years

2-wire plug-in loop display can be inserted between connectors
complies with DIN 43650 / ISO 4400 , input: 4...20 mA

Type

PLK–501–2	Plug-in display
PLK–501–3	Plug-in display with PNP output



PLK-501

NIV24

PLK-501-2

The **UNICONT PGK–301 Ex** is a DIN-rail-mountable, partially intrinsically safe device that supplies limited power to two-wire transmitters following intrinsic safety rules. Furthermore, it provides galvanic isolation between explosion-hazardous and non-explosion-hazardous spaces between the power supply, signal input, and signal outputs. Galvanic isolation reduces the risk of ground loops and noise entering the current loop. Depending on the type, signal transmission can be the traditional 4…20 mA input / 4…20 mA output current transmission, or via digital HART® communication, or both simultaneously. The signal of the field current loop is transmitted to the safe space by microprocessor signal processing, which is inherently a high-precision transmission. Such accuracy is required for precision transmitters. If fast conversion is preferred, choose the high-speed types. Intrinsic safety limits determine the maximum number of connected transmitters.

PGK–301

TECHNICAL DATA

		PGK–301–			
		–A Ex	–B Ex	–C Ex	–D Ex
		High-precision		High-speed	
Input		4…20 mA			
Output	Normal operation	4…20 mA			
	Current error	3.6 mA: I_{IN}=3.6 mA or I_{IN} > 24 mA			
Protection		Input / output: with overcurrent and overvoltage protection			
Loop resistance		300…1000 Ω / 24 V DC			
Communication		–	HART®	–	HART®
Supply voltage		20…35 V DC			
Power supply indication		LED (green)			
Power supply for transmitters		23 V DC galvanically isolated			
Galvanic isolation		> 2 kV			
Power consumption		Max. 2.2 W			
Current signal	Resolution	1 µA		8 µA	
	Accuracy (@ 20 °C)	Typically max. 2.5 µA		Typically max. 20 µA	
Response time		100 ms		5 ms	
Ingress protection		IP20			
Temp. dependence		< 1 µA/ °C			
Ambient temperature		–20…+60 °C			
Electrical connection		Terminal, wire cross section: 0.5…2.5 mm²			
Electrical protection		Class III			
Mechanical connection		EN 60715-rail-mountable, module width: 22.5 mm			
Weight		250 g			

FEATURES

- Intrinsically safe isolation
- Power supply for transmitters
- 20…35 V DC supply voltage
- 4…20 mA, HART® communication
- Up to 1 µA transmission accuracy
- DIN-rail-mountable
- IP20

APPLICATIONS

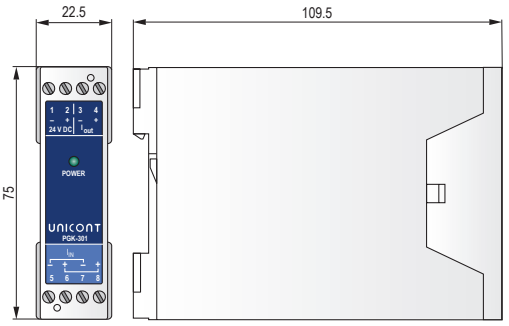
- For high-precision transmitters
- For transmitters operating in hazardous applications
- For certified measurement devices
- Also for temperature and pressure transmitters
- For 2-wire 4…20 mA transmitters

CERTIFICATES

- ATEX [Ex ia G]
- IEC Ex [Ex ia G]

Ex INFORMATION

		PGK–301–A Ex, –C Ex	PGK–301–B Ex, –D Ex
Protection type		Intrinsic safety	
Ex marking	ATEX	⟨Ex⟩ II (1) G [Ex ia Ga] IIC	⟨Ex⟩ II (1) G [Ex ia Ga] IIB
	IEC Ex	[Ex ia Ga] IIC	[Ex ia Ga] IIB
Intrinsic safety limit data		L_o = 2 mH C_o = 60 nF	L_o = 9 mH C_o = 450 nF
		U_o = 26 V I_o = 94 mA P_o = 0.65 W	
		U_m = 253 V AC	



PGK–301

UNICONT PGK-301 — 5 years

DIN-rail-mountable intrinsically safe isolator and power supply module

Function / Output	
PGK – 301 – □	
A	High-precision / 4...20 mA
B	High-precision / 4...20 mA + HART®
C	High-speed / 4...20 mA
D	High-speed / 4...20 mA + HART®

IEC Ex compliance is optional; it must be specified in the order.

NIV24

PGK-301-A, PGK-301-B

The rail-mountable **NIPOWER PPK–421** and **PPK–431** switching-mode power supply modules provide stabilized 12 or 24 V DC output for low-power consumption devices. The output current is limited by an electronic fuse. Both devices are short-circuit protected.

FEATURES

- Stabilized DC output
- Switching-mode power supply
- DIN-rail-mountable
- Short-circuit protection
- Overload protection
- Overvoltage protection
- IP20

APPLICATIONS

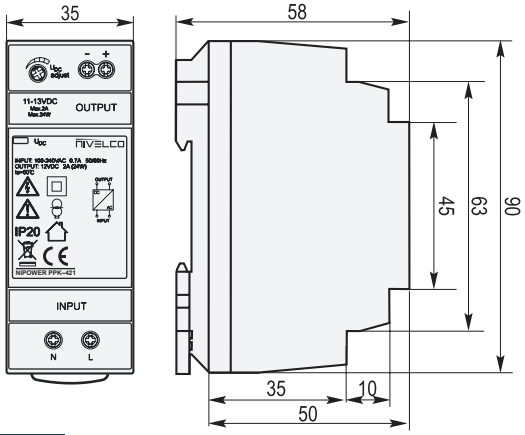
- Any transmitters
- Sensors
- Inductive, capacitive proximity switches
- Infrared sensors
- Ultrasonic Proximity sensors

PPK–4☐1

TECHNICAL DATA

	PPK–421	PPK–431
Supply voltage (U_{in})	100…240 V AC / 50…60 Hz	
Output voltage (U_{out})	12 V DC (11…13 V DC adjustable)	24 V DC (23…25 V DC adjustable)
Output current [1]	2000 mA	1250 mA
Consumption without load	max. 8 VA / 0.3 W	max. 8 VA / 0.4 W
Consumption with maximum load	max. 50 VA / 30 W	max. 60 VA / 33 W
Rated power	24 W	30 W
Overload capability	Max. 120%	
Efficiency	88%	89%
Electronic output protection	Short-circuit, overload, overvoltage, overcurrent	
Output voltage indicator	LED (blue)	
Ripple & Noise	120 mV	150 mV
Operating temperature	–20…+50 °C	
Electrical strength between input and output	3 kV AC	
Electrical connection	Terminal, wire cross section: max. 2.5 mm²	
Electrical protection	Class II, reinforced insulation	
Mechanical connection	EN 60715 rail	
Ingress protection	IP20	
Weight	120 g	

[1] *Correct air-flow is needed to prevent overheating*



PPK–4☐1

NIPOWER PPK-400 — 3 years

DIN-rail-mountable power supply unit
Power supply: 100...240 V AC / 50...60 Hz, output voltage: 12 V DC or 24 V DC

Type	
P P K – 4 ☐ 1 – 1	
2	12 V DC / max. 2 A
3	24 V DC / max. 1.25 A

NIV24
PPK-421-1
PPK-431-1

NITIME time relays are suitable for all kinds of timing tasks of technological equipments. Microprocessor controlled operation, multiple functions, universal power supply voltage, and slim module width are the main characteristics making NITIME time relays applicable also for automation tasks of lights, pumps, heating, coolers, fans, and motors.

FEATURES

- 2 and 10-function types
- Wide time range
- Small size
- Universal supply voltage
- DIN-rail-mountable
- Relay output
- IP20

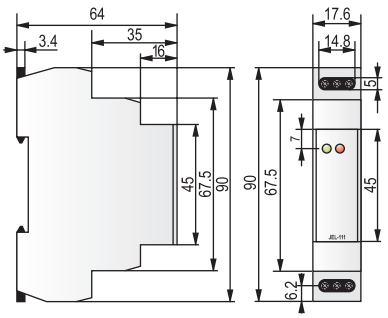
APPLICATIONS

- Process controlling of repeated tasks
- Timed cycling of pumps or compressors
- Timing of technological equipments
- Sequential control

JEL-121 JEL-111

TECHNICAL DATA

		JEL–111	JEL–121
Number of functions		10	2
Time ranges		0.1 s…10 day	0.1 s…100 day
Time setting		Rotary switch and potentiometer	
Reset time		Max. 150 ms	
Time deviation		5%	
Repeat accuracy		0.2%	
Temperature coefficient		0.01% / °C	
Supply voltage		12…240 V AC/DC (AC 50…60 Hz)	
Power consumption		0.7…3 VA AC / 0.5…1.7 W DC	
Outputs	Relay	1× SPDT	
	Rated current	16 A AC1	
	Inrush current	30 A (< 3 s)	
	Output indication	Multifunctional red LED	
	Switching voltage	250 V AC (AC1) / 24 V DC	
	Breaking capacity	4000 VA AC 384 W DC	
	Min. breaking capacity	DC 500 mW	
	Electrical lifespan (AC1)	0.7×10^5	
	Mechanical lifespan	3×10^7	
Electrical connection		Terminal for cables with max 2.5 mm² wire cross section	
Electrical protection		Class II	
Mechanical connection		EN 60715 rail	
Ingress protection		IP20	
Ambient temperature		–20…+55 °C	
Weight		63 g	65 g



JEL-1□1

NITIME **3 years**

DIN-rail-mountable multifunctional time relay module
12...240 V AC/DC power supply, SPDT output

Type	
J E L – 1 1 1 – 1	Multifunctional timer
J E L – 1 2 1 – 1	Cyclic timer

NIV24
JEL-111-1
JEL-121-1

The **UNICOMM** interface modules can establish communication between HART®-capable field devices and the process-controller computer. The communication can be done via USB or RS485 line, and also via Bluetooth®. The **UNICOMM** HART® modems are applicable not only for NIVELCO transmitters but for all HART®-capable transmitters that use standard HART® communication. The device is galvanically isolated from both *(USB and HART®)* sides. When it is used as a HART®–USB modem connected to the USB of a PC, the modem does not need an external power supply. The **UNICOMM SAK–305** modules can be connected to a suitable device with an RS485 interface input, used as a HART®–RS485 modem. The communication protocol is HART® on the RS485 line. In this case, the device needs an external power supply. Ex variants can be connected to transmitters placed in hazardous areas.

FEATURES

- Transferring measurement data to PC
- Connecting field transmitter to the PC via USB, RS485 or Bluetooth® (BLE, 5.x)
- 24 V current loop power supply (SAT–504)
- Switchable HART® terminal resistor (SAT–504, 250 Ω)
- DIN-rail-mountable version
- No need for power supply
- Galvanic isolation
- IP20
- Service interface for firmware update of transmitters *(EasyTREK SP–500 Pro, PiloTREK WP–200)*
- 5 years warranty

APPLICATIONS

- Communication interface (modem) between HART®-capable transmitters and PC
- Minimal system configuration: Windows XP, USB port

CERTIFICATES

- ATEX [Ex ia G]

TECHNICAL DATA

		SAT–504	SAK–305
Input		HART®	
Output		USB, Bluetooth® (BLE, 5.x)	USB / RS485 (HART® over RS485)
Power supply		Supplied from USB or from power bank	Supplied from USB / 24 V DC (10…30 V) nominal voltage
Current consumption		< 150 mA	USB: current consumption <60 mA 24 V DC: power consumption <1.5 W
Current loop power supply		24 V DC ±5% max. 22 mA	–
Ambient temperature		–25…+55 °C	–20…+70 °C
Housing material		Polystyrene	PPO
Electrical connection	PC	Connection: USB 1.1 "B" socket	USB 1.1 "B" socket / RS485 Terminal
		Cable: USB "A–B" 1.8 m	USB "A–B" 1.8 m / RS485 Twisted shielded pair max. 1000 m
	HART® line	Connection: KLEPS2	Screw terminal
		Cable: spiral 0.6 m (1.1 m)	Twisted shielded pair with 0.5…2.5 mm² wire cross section Resistance max. 75 Ω, Capacitance max. 200 nF
Mechanical connection		–	EN 60715-rail-mountable
Ingress protection		IP20	
Electrical protection		Class III (1 kV galvanic isolation)	
Weight		100 g	

Ex INFORMATION

UNICOMM SAK–305–6 Ex	
Ex marking	Ⓔx II (1) G [Ex ia Ga] IIC
Intrinsic safety limit data	U_i = 30 V, I_i = 100 mA, L_i = 200 uH, C_i = 2 nF
U_m	253 V AC

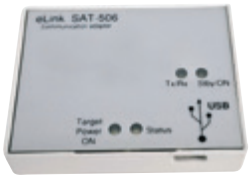
SAT–504–2

SAK–305

eLink Module

UNICOMM SAT–506

The UNICOMM SAT–506 eLink unit can be plugged into the display port to connect compatible NIVELCO devices to a PC. It allows firmware updates and datalogger reading for NiFLash, EView2, and Datascope programs via a mini USB type B connector. It also provides a galvanically isolated power supply and high-speed communication to the device.



TECHNICAL DATA

	SAT–506–0	SAT–506–1
Supply voltage	DC 5 V (USB), Galvanically isolated	
Connection	Mini USB	
Function	Firmware update Data connection (Data logger reading)	Data connection (Data logger reading))
Required software	NiFlash, EView2, Datascope (SE–300 Data logger reading)	EView2, Datascope (SE–300 Data logger reading)
Ambient temperature	–20…+55 °C	
Ingress protection	IP20	
Electrical protection	Class III. Galvanic isolation (500 V rms)	
Weight	100 g	

UNICOMM SAT–504 HART® / Bluetooth® modem — 5 years

HART®-USB/Bluetooth® communication modem for transmitters with HART® output
USB 1.1 "B" connector and KLEPS2 clip-on probes

Type

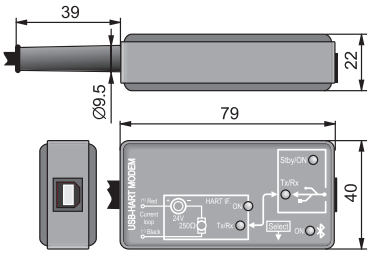
☐ A T – 5 0 4 – ■

S	HART®-USB/Bluetooth® modem

Function

S A T – 5 0 4 – ☐

0	HART®-USB modem
1	HART®-USB modem + power supply for transmitter
2	HART®-USB modem + power supply for transmitter + Bluetooth®
3	HART®-USB modem + power supply for transmitter + service port
4	HART®-USB modem + power supply for transmitter + service port + Bluetooth®



SAT–504–2

UNICOMM SAK–305 DIN rail mounted modem — 5 years

DIN-rail-mountable HART®-USB communication modem for transmitters with HART® output
Connection to PC: USB/RS485 interface

Type

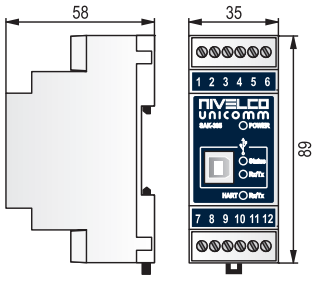
☐ A K – 3 0 5 – ■

S	HART®-USB/RS485 modem

Ex

S A K – 3 0 5 – ☐

2	HART®-USB/RS485 modem
6	HART®-USB/RS485 modem / Ex ia G



SAK–305

UNICOMM SAT–506 eLink Module — 5 years

eLink unit for software/firmware updates for data logger reading with type "B" mini USB connector. Can be plugged in the socket of the SAP display module. Provides galvanically isolated power and communication to the device, capable of high-speed program loading.

Type

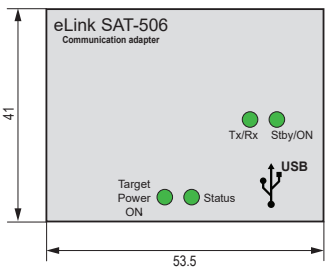
☐ A T – 5 0 6 – ■

S	eLink Module

Function

S A T – 5 0 6 – ☐

0	eLink plug-in unit
1	eLink plug-in unit, for data logger readout only



SAT–506–☐

NIV24

SAT–504–0, SAT–504–1, SAT–504–2

NIFLANGE flanges are suitable for almost any device for installation in an existing flanged connection *(e. g., tank, storage containers)*. With a wide range of internal process connections, it can be fitted to numerous devices. In addition it can be ordered welded to the device on request.

NIFLANGE MFT — 5 years

Available in carbon steel, PTFE lined carbon steel, polypropylene (PP), and stainless steel, DIN, ANSI, and JIS flanges

Prices on request

Type

□ F ■ – ■■■ – ■

M	Mounting flange

Version

M F □ – ■■■ – ■

A	Flat Face (A)
T	Raised Face (B1)
C	Tongue (C)
D	Groove (D)

Standard / Flange material / Form

M F ■ – □■■ – ■

1	DIN / Carbon steel / EN 1092 (B1)
2	DIN / Stainless steel / EN 1092 (B1)
3	DIN / Polypropylene / EN 1092 (A)
5	ANSI / Carbon steel / ASME B16.5 (RF)
6	ANSI / Stainless steel / ASME B16.5 (RF)
7	ANSI / PP/ ASME B16.5 (FF)
A	JIS / Carbon steel / B 2220 (RF)
B	JIS / Stainless steel / B 2220 (RF)
C	JIS / PP / B 2220 (FF)

Dimension DIN / ANSI / JIS

M F ■ – ■□■ – ■

D	DN15 / ½" / 15A
A	DN20 / ¾" / 20A
B	DN25 / 1" / 25A
C	DN32 / 1¼" / 32A
7	DN40 / 1½" / 40A
0	DN50 / 2" / 50A
1	DN65 / 2½" / 65A
2	DN80 / 3" / 80A
3	DN100 / 4" / 100A
4	DN125 / 5" / 125A
5	DN150 / 6" / 150A
6	DN200 / 8" / 200A
8	DN250 / 10" / 250A
9	DN300 / 12" / 300A

Pressure DIN / ANSI / JIS

M F ■ – ■■□ – ■

5	PN6 / - / 5K
6	PN10 / - / 10K
1	PN16 / 150 psi / 16K
2	PN25 / 300 psi / 30K
3	PN40 / 600 psi / 40K
4	PN63 / 900 psi / 63K

Internal dimension

M F ■ – ■■■ – □

1	¼" BSP
C	½" BSP
D	½" NPT
E	¾" BSP
4	¾" NPT
2	1" BSP
5	1" NPT
7	1½" BSP
8	1½" NPT
3	2" BSP
6	2" NPT
9	M20x1.5
H	Weldable to vibrating fork (stainless steel only)
J	Weldable to MK (stainless steel only)
K	Weldable to TT (stainless steel only)
L	Weldable to WE (stainless steel only)
W	Tiltable design for WT

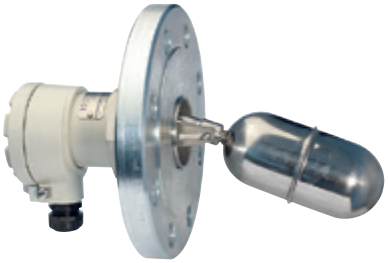
FEATURES

- Complies with DIN, ANSI, and JIS standards
- Materials:
  - Carbon steel
  - Carbon steel + PTFE
  - 1.4571/1.4404 stainless steel
  - Polypropylene
- Size: DN15…DN300
- High-pressure resistance (max. 63 bar)
- BSP, NPT, M20×1.5 process connections
- Weldable stainless steel variants for:
  - NIVOSWITCH vibrating forks
  - NIVOMAG magnetic coupling switches
  - THERMOCONT TT temperature transmitters
  - PiloTREK WE non-contact radar level transmitters

APPLICATIONS

It can be used with any threaded device, e. g. PiloTREK, NIVOCAP, EasyTREK, EchoTREK, NIVOCONT K, NIVOMAG, NIVOSWITCH, NIVOROTA, NIVOCAP CK, AnaCONT, THERMOCONT, NIPRESS.

MFT–601



MKA–21□–□

NIFIT adapters offer a convenient solution for integrating NIVELCO devices into various existing process connections if the device's connection is incompatible. For instance, if the tank stub is ½" NPT while the device in stock is ½" BSP, or if the optimal device for a measurement task has a different process connection than the existing one at the measurement site. In such cases, modifying the process connection may involve significant additional costs. However, utilizing a NIFIT adapter proves to be a much more cost-effective alternative. These adapters are designed to accommodate a wide range of internal process connections and can be easily fitted to various device designs while ensuring compatibility with commonly used host connections.

In addition, we can provide material quality certification upon request for further assurance.

NIFIT EAA — 5 years

Stainless steel adapters

Prices on request

Type	
EA□–1■■–0	
A	Adapter

Design	
EAA–□■■–0	
1	Internal receiving thread – External process thread (Not applicable for TriClamp)

Inner connection	
EAA–1□■–0	
1	¼" BSP
2	¼" NPT
3	½" BSP
4	½" NPT
5	¾" BSP
6	¾" NPT
7	M20x1.5
8	1" BSP
9	1" NPT
A	1¼" NPT
B	1½" BSP
C	1½" NPT
D	2" BSP
E	2" NPT
F	¾" TriClamp
G	1" TriClamp
H	1½" TriClamp
J	2" TriClamp
K	2½" TriClamp
L	3" TriClamp

Outer connection	
EAA–1■□–0	
1	¼" BSP
2	¼" NPT
3	½" BSP
4	½" NPT
5	¾" BSP
6	¾" NPT
7	M20x1.5
8	1" BSP
9	1" NPT
A	1¼" NPT
B	1½" BSP
C	1½" NPT
D	2" BSP
E	2" NPT
F	¾" TriClamp
G	1" TriClamp
H	1½" TriClamp
J	2" TriClamp
K	2½" TriClamp
L	3" TriClamp

Material	
EAA–1■■–□	
0	1.4571/1.4404

EAA–18B–0

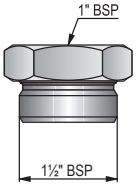
EAA–18D–0

FEATURES

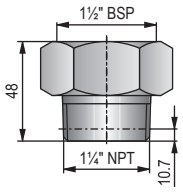
- Complies with DIN standards
- Materials: 1.4571/1.4404 stainless steel
- Size: threaded versions up to ¼"…2", Triclamp versions ¾"…3"
- High-pressure resistance (up to 1450 psi)
- BSP; NPT; M20x1.5; TriClamp process connections
- Easy to install

APPLICATIONS

It can be used with any threaded device *(e. g. PiloTREK, NIVOCAP, EasyTREK, EchoTREK, NIVOCONT K, NIVOMAG, NIVOSWITCH, NIVOROTA, NIVOCAP CK, AnaCONT, THERMOCONT, NIPRESS).*



EAA–18B–0



EAA–1BA–0

NIVISION is a VISION X9 based process visualization software that uses the XSDL *(Extensible Structure Declaration Language)* programming and configuration language. NIVISION can visualize a process control system built with NIVELCO devices on a PC. The devices can be intelligent transmitters with analog output, digital communication, or various switches based on different measurement principles. The tank farm layout with tanks, instrumentation, and other process devices can be easily visualized. NIVISION offers a wide range of visualization elements for measured values and limits, time-based trends, databases and logs. The export and import of different database types is also a basic feature of the software. A clear and transparent overview of all processes involved in an application makes inventory and material management a simple task with a well-designed NIVISION project. Another great feature of the software is that a NIVISION project can be visualized on a remote computer *(without NIVISION installed)* via a local area network *(LAN)* or the Internet using a browser. This is a perfect solution for small and medium process control systems.

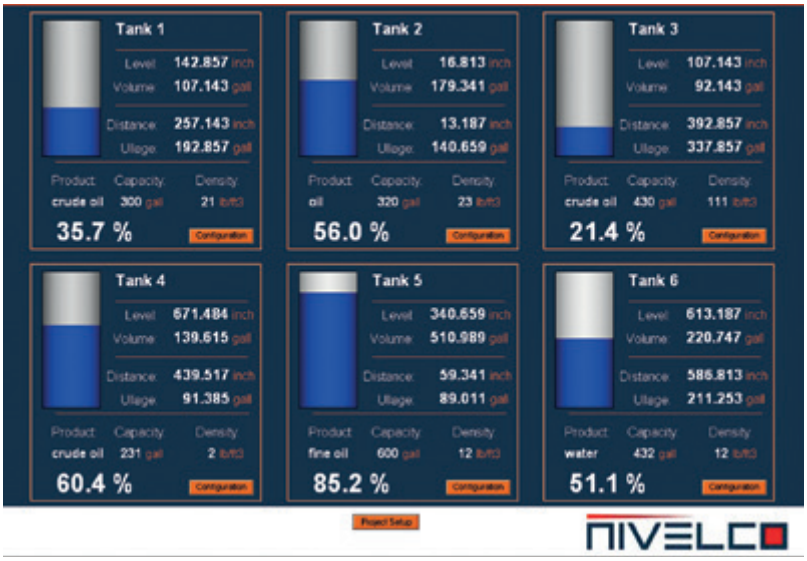
FEATURES

- Tank Configuration
- Transmitter Configuration
- Tank Farm Visualization
- Display of measured values
- Display of limits
- Trend Monitoring
- Data Logging
- Database Handling
- Archiving
- Other Logging Functions (Alarms)
- Remote connection (LAN / Internet)
- Client-server (1+15) or web browser based
- Multiple alarm setpoints per measuring device

APPLICATIONS

The steps to customize NIVISION for a specific application:

- The end user defines the technological, operational and functional requirements of, the application.
- Based on the customer's requirements, the developer graphically configures the visualization project in the NIVISION developer system and performs the necessary programming. The developer mode can only be accessed by the project developer.
- The finished project can be executed by the end user using the NIVISION runtime system.



The basic element of the software is the "UNIT", which contains the applied device *(with graphical representation)*, device variables, event handling, communication and data display. Using these units, a complete process instrumentation system can be set up for visualization.

NIVISION	1 year
NIVISION process visualization, measurement logging and database management software for MultiCONT and all NIVELCO transmitters with installation on-the-spot	
Price on request	
YSNNIVIS00	NIVISION license fee depending on complexity (simple or complex system)
YSNNIVIS01	APPLICATION DEVELOPMENT (For any process controlling task in accordance to order demands)

The HART® configuration software is designed to detect, poll, and display primary measurement data as well as to program NIVELCO's HART®-compatible transmitters remotely.
Installed on a PC the software allows the menu driven remote programming *(device parameters + HART commands)*. The software collects data from the detected NIVELCO units, performs cyclic polling, and displays the measurement data.

FEATURES

- Free configuration program
- Remote programming and querying measurement data for up to 15 HART®-compatible transmitters in one multidrop loop
- Linearization tables
- Echo Map
- Sensor calibration
- Measurement data monitoring and gathering
- Handling multiple HART® modems

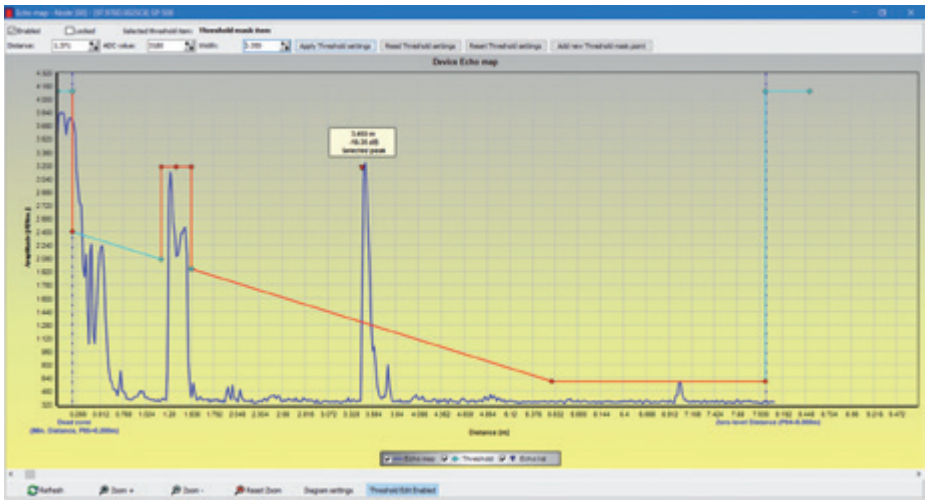
APPLICATIONS

- Commissioning transmitters
- Remote programming
- Displaying measurement data
- Error detection
- Limited trend monitoring

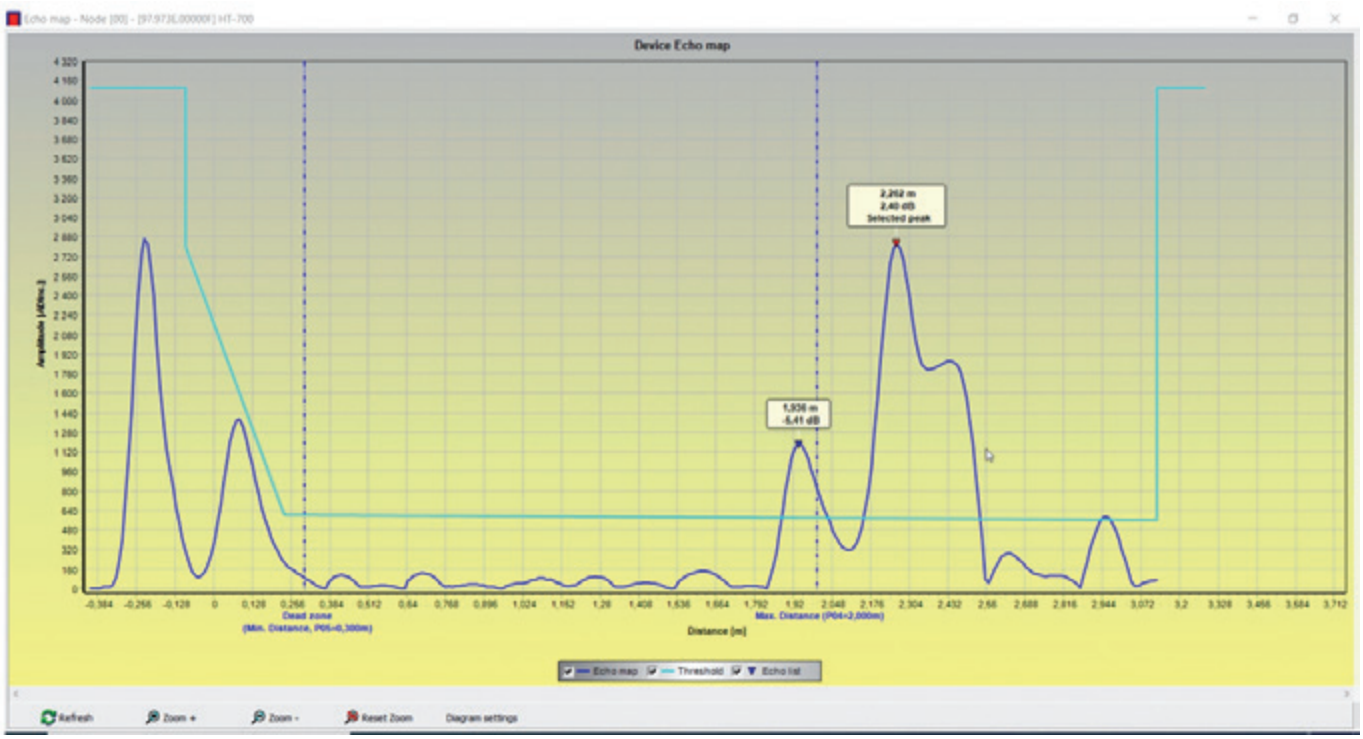
FREE DOWNLOAD

SYSTEM REQUIREMENTS

Operating system	MS Windows 10, 8, 7, Vista, XP, 2000
Connection	RS232, RS485, USB
Disk space	100 MB
Memory	512 MB RAM
HART® modem	UNICOMM SAK–305, SAT–504



SP–500 Pro / EView2 – Threshold edit view. The red corner points can be modified.



HT–700 / EView2 – Displaying the new measurement evaluation process

MobileEView is NIVELCO's first mobile phone application that communicates with devices via Bluetooth®. The new product responds to today's challenges and needs and allows users to use NIVELCO devices easily and efficiently. The MobileEView application allows easy management of transmitter settings using the commissioning and maintenance wizards. Configuration settings can be saved and easily accessed for future use. The application displays data in a clear, structured way, making it easy to review. It also provides the possibility to test and verify.

Various test functions allow you to verify that the device works properly in the application, thus giving you more reliable measurements and guaranteeing optimal device performance. The pages are equipped with help functions and information services to assist the user in using the program and the devices.

PROPERTIES

- Direct connection to transmitters with Bluetooth®
- Live diagram display *(trend)*, with automatic *(~3 s)* update:
  - Flow (PV)
  - Distance (SV)
  - Level% (TV)
  - Temperature (QV)
  - Current value (VV)
  - TOT1, TOT2
  - h Level *(flow measurement)*
  - Echo amplitude
  - Level change rate
- Echo list display with automatic update
- Manually updates echo chart display
- Current PV, SV values of transmitters display already in the device selector's initial screen
- Full product identification, unique user ID
- Log file saving

COMPATIBLE DEVICES

- PiloTREK WP–200 & WE–200
- UNICOMM SAT–504

SYSTEM INFORMATION

Platform	Android 10+; iOS 12+
Connection	Bluetooth®, HART®
Languages	EN, DE, TR, RO, HR, HU, CZ, PT, PL, FR
Help	WiFi or mobile internet required
Required permissions	Bluetooth®, Location*

** The app does not gather or transfer location data.*

FUNCTIONS

- Commissioning wizard *(guides the user through the device settings, eliminating the possibility of errors)*;
- Maintenance wizard *(access to all parameter settings, device customization, more information and data about the device)*;
- Testing / Verification;
- Settings / Customization.

FREE DOWNLOAD

Download on the App Store

GET IT ON Google Play

MAIN INFORMATION

This product catalog is valid from **12 January, 2026***; henceforth, all prior product catalogs are obsolete.
NIVELCO reserves the right to make any changes without any prior notice.
The product illustrations and technical data in this catalog are for informational purposes only,
the exact Ex information is given in the Ex certificate of the products.
Doublechecking specifications in the datasheets, user, and programming manuals is recommended.

DELIVERY

There are four kinds of delivery:

Standard delivery:

- Standard products are usually manufactured within three weeks and shipped on the fourth week.**
- Delivery times may differ in the case of custom products. The estimated delivery time is either provided in the quotation or in the confirmation of the custom order.

Fast delivery:

- Units ordered under the NIVEX service are shipped within 5…8 working days from receiving the order if the order is accepted. Before ordering products with a NIVEX mark (in capital letters), availability of the relevant products in the required quantity must be checked and confirmed by NIVELCO. There is a 5% surcharge over the list price for the NIVEX service.
- NIV24 service is available for models indicated in tables at the bottom right of the relevant price sheets. Products ordered with the remark NIV24 will be shipped on the day following the confirmation of the order for a maximum of 5 items. There is a 10% surcharge over the list price for the NIV24 service.

WARRANTY

NIVELCO undertakes a guarantee of 1 to 5 years for its products.*** The warranty periods for each product group (1 year…5 years) are indicated on the price sheets of the respective products. NIVELCO fulfills the warranty obligations on the premises of the company.

ORDER CODES & ARTICLE NUMBERS

All order codes for complete devices have seven characters (with some exceptions for special constructions with seven characters + "X…"). Order codes can be found in this product catalog, brochures, User and Programming Manuals and other marketing documents on our website. Article numbers are found in our Order Confirmations, Offers and Invoices. Article numbers have eight characters, and they are constructed like the order code + "M" (in some cases, this last character may be different). This distinction between order code and article number has relevance only to NIVELCO's internal administration, not to the technical content.

e. g.,
order code: SGP–380–4
article number: SGP3804M

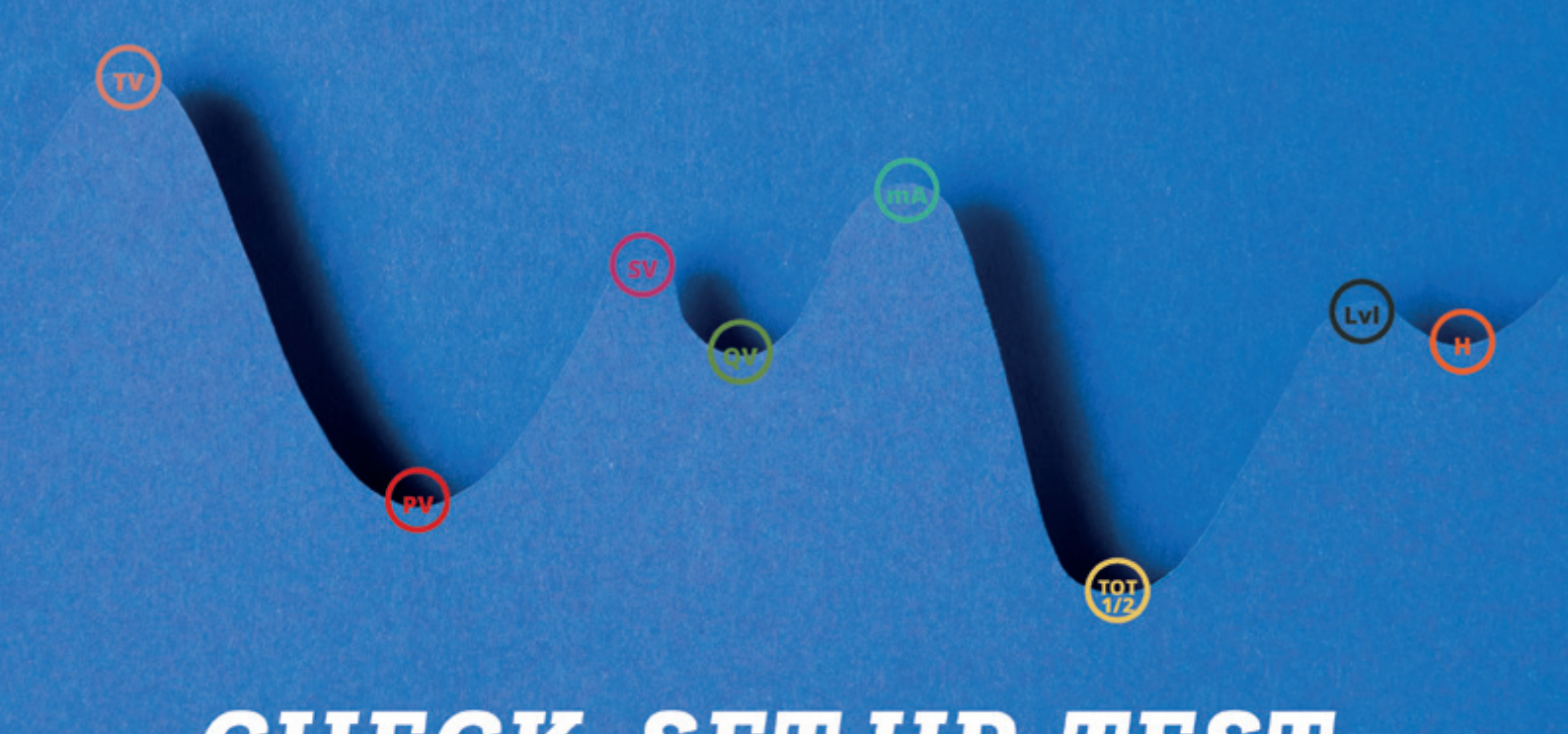
INSPECTION & CLEANING

There is a 35.00 EUR inspection fee for checking returned devices. It is dropped if the repair or replacement is ordered or it is covered by warranty. We charge 35.00 EUR for cleaning returned units that are dirty. If a device is returned without a thorough cleaning, disinfection, and a correctly filled and signed Returned Equipment Handling Form, we reserve the right to return or destroy the device at the purchaser's expense, whichever the purchaser chooses.

* In case of any discrepancies between the corrsponding printed and online data or other kind of information, please consider the online information as the valid one.

** The indicated delivery time varies depending on the quantity ordered.

*** Except for analytical sensors!



CHECK, SET UP, TEST

your devices via

Bluetooth®

Experience easy device management with NIVELCO MobileEView.

PiloTREK W-200/300 families with Bluetooth® Connectivity

80 GHz FMCW radar level transmitters for liquids and bulk solids

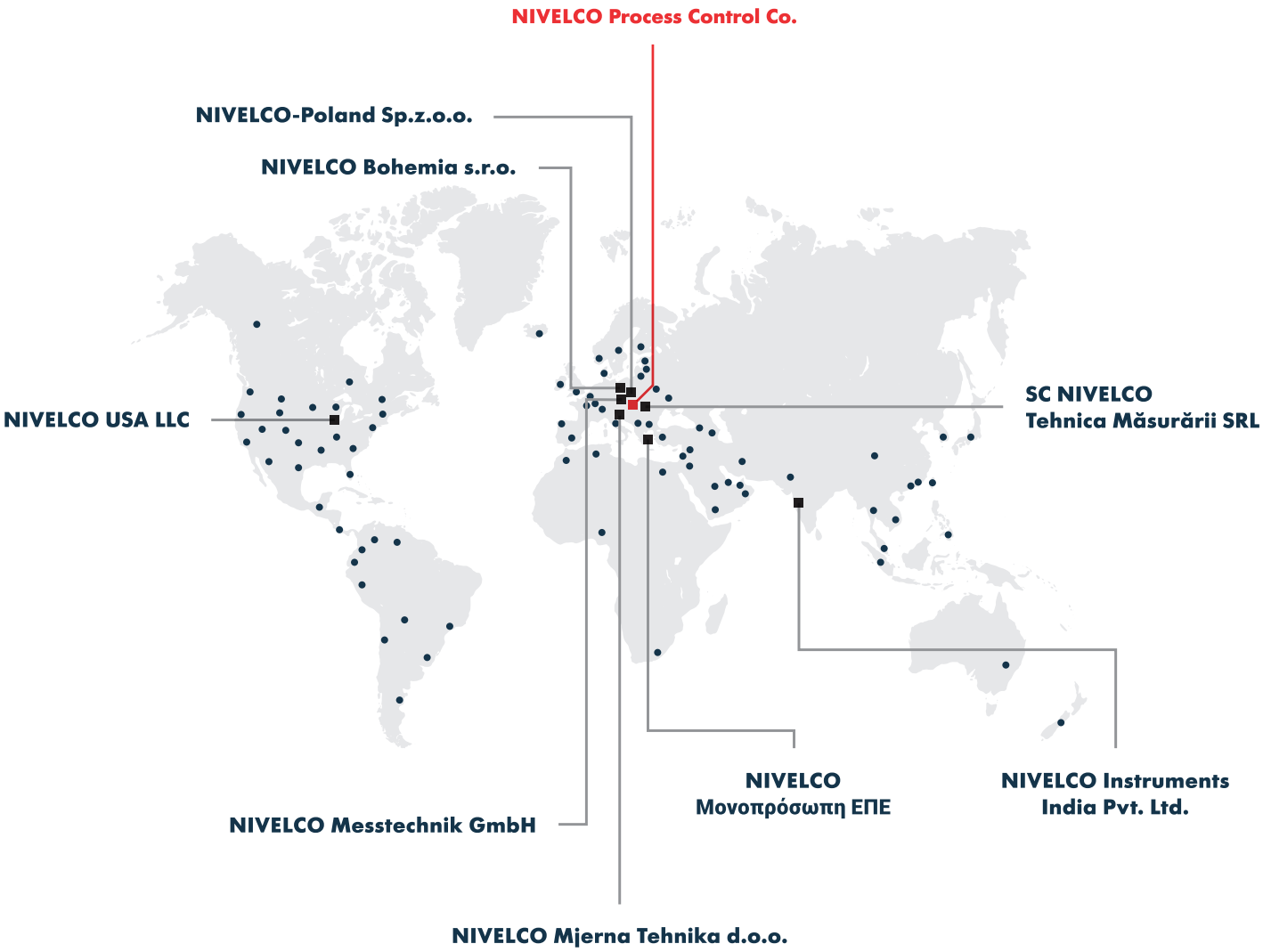
Get a quote for your selected PiloTREK now

Download on the App Store

GET IT ON Google Play

*Free **MobileEView** Application*

http://s.nivelco.com/mobileeviewinfo



nicat26en31np // Information is accurate to the best of NIVELCO's knowledge. We reserve the right to change specifications at any time.

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#NivelcoDevices

ISO CERTIFIED 9001 & 14001

Industrial automation for a smarter future.

HUNGARIAN WATER PARTNERSHIP

HUNGARIAN PARALYMPIC COMMITTEE