Kübler

NEW PRODUCTS

for SPS 2025

pulses for automation

kuebler.com

Topics

NEW GENERATION OF SENDIX ENCODERS

Incremental and absolut

YOUR BENEFITS

- **Programmable**
- **High resolution**
- **Operation at high temperatures**
- **Standardized design**
- **Durable and future-proof**
- **IIoT ready – digital type plate / digital twin**

Powerful, Flexible, Sustainable

The new generation of Sendix encoders are more powerful, more flexible, and can be tailored precisely to your requirements. Thanks to their programmability, they can be adapted precisely to specific applications—whether in industrial automation or in demanding environments.

The Sendix encoders K58 (size 58 mm) and K80 (size 80 mm with large hollow shaft) also feature new, future-proof technology – they are ideal for integration into future IIoT environments and will have a digital nameplate in the future. The robust construction with advanced Safety-Lock™ design, long service life, and versatile application options make the new Sendix encoders the ideal choice for your application.

An innovative housing design that is uniform for all sizes of incremental and absolute encoders enables designers to achieve maximum simplicity and efficiency without compromising on mounting type, installation depth, size, or installation space. This means that designers only need to use one uniform design-in concept across all new variants.

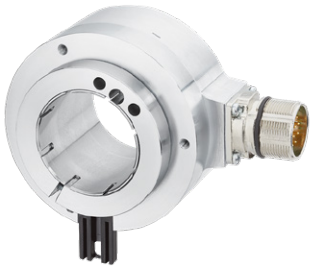
Quick and easy - individually configurable parameters:

- Number of pulses up to 36.000 ppr
- Singleturn up to 21 bit
- Multiturn up to 12 bit
- HTL / TTL / SSI / BiSS output
- Counting direction
- Zero pulse (length, position, links)

Our new products

Sendix K58 Industrial-Line
see page 6

Sendix K58 Performance-Line
see page 7



Sendix K80 Industrial-Line
see page 8

New benchmarks in encoder technology
Incremental Sendix K58 Industrial-Line encoders

New generation - ready for the future.
The new Sendix encoders are based on state-of-the-art sensor and electronic components and a robust metal code disc. The incremental Sendix K58 encoders achieve a resolution of up to 5,000 pulses per revolution with high reliability. The absolute versions achieve up to 21 bits singleturn and 12 bits multiturn. Combined outputs of incremental and absolute signals are also possible. The 58 mm housing with a uniform design for all variants facilitates planning for plant designers and also sets new standards in the combination of small size for large applications, for example with the continuous hollow shaft up to 25.4 mm.

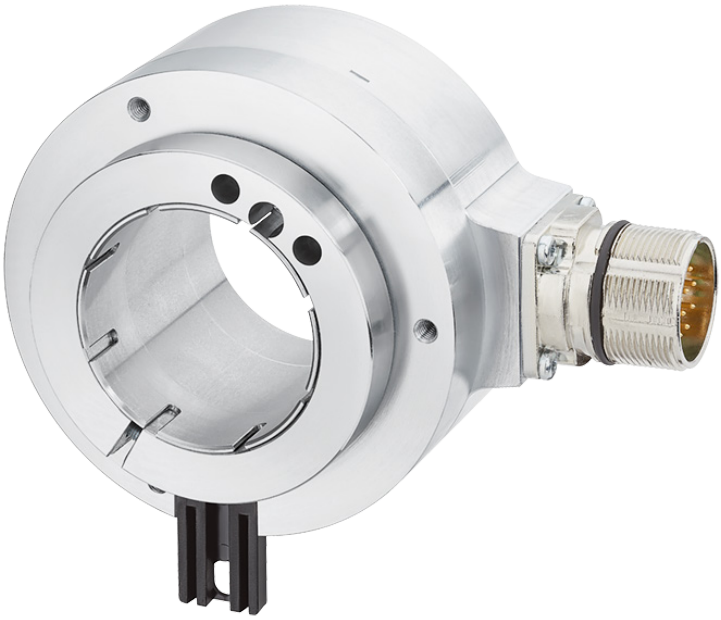
Features	Benefits
State-of-the-art sensor technology with high resolution: · incremental up to 5.000 ppr · absolut up to 21 bit Ssingleturn / 12 bit multiturn	High accuracy and reliability of measurement
Through hollow shaft up to 25.4 mm diameter with a size of only 58 mm	For use even on large shafts
· Temperature range from -40 °C to +85 °C · Protection class up to a maximum of IP67 · Optimized EMC shielding concept · Advanced Safety Lock technology	Prepared for the toughest operating conditions and a wide range of external influences
24one delivery promise: Your customized encoder will be manufactured and delivered within just 24 hours	This free service not only guarantees maximum planning reliability, but also maximum system availability
Prepared for use with digital type plate and digital twin for monitoring and maintaining machines and for a wide range of documentation tasks	Seamless integration into modern, digital networks to optimize processes and increase efficiency

Individually programmable - high temperature, high resolution
Sendix K58 Performance-Line encoders

Highest performance and flexibility.
In addition to the new features of the Sendix K58 Industrial Line, the corresponding Performance version impresses above all with its ability to program various parameters such as resolution, counting direction, or zero pulse. Any combination of absolute and incremental signals can also be programmed. The settings can be made before or after installation and enable a quick, direct response to changing or new requirements without having to replace the encoder with a new one. Other optimized features include a higher temperature range and a resolution of up to 36,000 pulses per revolution or 21-bit singleturn and 12-bit multiturn.

Features	Benefits
State-of-the-art sensor technology with high resolution: · incremental up to 36.000 ppr · absolut up to 21 bit singleturn / 12 bit multiturn	High accuracy and reliability of measurement
Individually configurable parameters · Pulse numbers up to 36,000 ppr · Resolution absolut up to 21 bit singleturn and 12 bit multiturn · HTL / TTL/ SSI / BiSS output · Counting direction · Zero pulse settings (length, position, links)	Encoders can be customized quickly and easily at any time
· Temperature range from -40 °C to +110 °C · Protection class up to a maximum of IP67 · Optimized EMC shielding concept · Advanced Safety Lock technology	Prepared for the toughest operating conditions and a wide range of external influences. Even more possibilities in applications with the highest demands on temperature resistance.
24one delivery promise: Your customized encoder will be manufactured and delivered within just 24 hours	This free service not only guarantees maximum planning reliability, but also maximum system availability
Prepared for use with digital type plate and digital twin for monitoring and maintaining machines and for a wide range of documentation tasks	Seamless integration into modern, digital networks to optimize processes and increase efficiency

Maximum performance even for large shafts
Sendix K80 Industrial-Line encoders



With reduced size - for large shafts.
The new Sendix encoders are based on state-of-the-art sensor and electronic components and a robust metal code disc. The Sendix K80 rotary encoders achieve a resolution of up to 5,000 pulses per revolution or 21 bits singleturn with high reliability.
Designed for use on large shafts, their outstanding feature is the combination of a continuous hollow shaft with a diameter of up to 42 mm and a reduced size of 80 mm.

Features	Benefits
State-of-the-art sensor technology with resolutions up to 5.000 ppr or 21 bit singleturn	High accuracy and reliability of measurement
Hollow shaft up to 42 mm diameter with 80 mm size	Reduced installation space even in large applications
· Temperature range from -40 °C to +85 °C · Protection class up to a maximum of IP67 · Optimized EMC shielding concept · Advanced Safety Lock technology	Prepared for the toughest operating conditions and a wide range of external influences
24one delivery promise: Your customized encoder will be manufactured and delivered within just 24 hours	This free service not only guarantees maximum planning reliability, but also maximum system availability
Prepared for use with digital type plate and digital twin for monitoring and maintaining machines and for a wide range of documentation tasks	Seamless integration into modern, digital networks to optimize processes and increase efficiency

Safety over EtherCAT

EtherNet/IP

EtherCAT Technology Group

MQTT

INDUSTRIAL ETHERNET

CIP Safety

PROFIsafe

PROFINET

OPC UA

YOUR BENEFITS

- Reduced cost of ownership
- Constant encoder design
- Maximum adaptability without additional costs / equipped for any application
- Latest protocol stacks with significantly more features
- Compatibility with existing Kübler Ethernet encoders
- Extended and more direct service options
- IIoT – Future-proof for Industry 4.0 / IIoT concepts
- Performance up – costs down

Kübler Industrial Ethernet platform

Industrial Ethernet in automation technology.
The use of Industrial Ethernet communication in modern industry is continuously increasing. In the future, in line with the Industrie 4.0 idea, all areas of industrial production plants will be united in a single network on the Industrial Ethernet platform, from the field devices to the control level to the cloud. And this with real-time data exchange. The corresponding communication capability of the sensors plays an essential role here. This is why Kübler has put the focus on the development of a high-performance and efficient Industrial Ethernet platform.

Cyber Security:

encoder as a supplement for the Defense in Depth concept:
(Redundancies for safety measures - protection against failure)
Cyber security implementation according to CRA --> IEC 62443-3-3

Security Level 0:	No special requirement or protection required.
Security Level 1:	Protection against unintentional or accidental misuse.
Security Level 2:	Protection against deliberate misuse with simple means with limited resources, general skills and motivation.
Security Level 3:	Protection against intentional abuse using sophisticated means with moderate resources, IACS-specific knowledge and moderate motivation.
Security Level 4:	Protection against deliberate misuse using sophisticated means with extensive resources, IACS-specific knowledge and high motivation.

Common encoder base
- Absolute singleturn or multiturn encoders
- Sendix F58, multiturn encoder with patented Intelligent Scan Technology™
- Sendix S58 for functional safety, multiturn with redundant mechanical gear unit
- Robust bearing construction in Safety-Lock™ design
- Options like approvals, surface protection, default configurations, parallel connection to several controllers, fast operational availability, and many more
- Updates possible via integrated web server

For all Industrial Ethernet applications
- Industrial Ethernet protocols such as PROFINET IO, EtherCAT and EtherNet/IP
- Future convergent protocols such as OPC-UA and MQTT
- Application profiles such as PROFIdrive or PROFIenergy, as well as PROFIsafe or FSoE for functional safety
- Integrated web server and cyber security

Sendix encoders for Industrial Ethernet applications

Safety over EtherCAT® | PROFIsafe | EtherNet/IP™ | PROFINET | EtherCAT®

Sendix S58 FSoE see page 12
Sendix S58 PROFIsafe see page 13
Sendix F58 EtherNet IP see page 14
Sendix F58 PROFINET IO see page 15
Sendix F58 EtherCAT see page 16

For safety applications
Sendix S58 FSoE encoders

New generation - ready for the future.
The optical absolute Sendix S58 FSoE encoders are based on the new Kübler Industrial Ethernet encoder platform and are therefore already designed today for future Industry 4.0 concepts.
As certified SIL2/PLd or SIL3/PLe encoders with redundant design and EtherCAT interface, they support the FSoE profile and are predestined for safety applications.

Features	Benefits
Latest Ethernet profiles · EtherCAT v1.0.4 · Safety over EtherCAT v1.2	Support of the latest EtherCAT features. Comprehensive object directory (high resolution position, gear factor, filter, integration time, etc.) Support for additional communication profiles such as FoE and CoE.
100 % future-proof · Firmware Update über FoE realisierbar · Cyber Security acc. to SL1	Implement features and adaptations quickly and easily. High system availability, protection against misuse (acc. IEC 62443).
High resolution · Singleturn 15 bit (safe) or 24 bit (non safe) / Multiturn 12 bit (safe) · Fully redundant multiturn information due to redundant multiturn gearbox	Reliable transmission of measurement and diagnostic data.
High performance · EtherCAT with up to 500 µs cycle time · Ideal for geared drives and geared or reduced axis	Ideal for highly synchronous applications, such as axis synchronization. Simple adjustment of the resolution via gear factor.

For safety applications
Sendix S58 PROFIsafe encoders

New generation - ready for the future.
The optical absolute Sendix S58 PROFIsafe encoders are based on the new Kübler Industrial Ethernet encoder platform and are therefore already designed today for future Industry 4.0 concepts.
One example of this is the integrated web server: features or adjustments can be implemented quickly and easily at any time.
As certified SIL3/PLe encoders with redundant design and PROFINET interface, they support the PROFIsafe profile and are predestined for safety applications.

in preparation

Features	Benefits
Latest Ethernet profiles · PROFINET v2.4.1 · Encoderprofil V 4.2 · PROFIsafe Profil v2.6.1 · PROFIdrive Profil v4.2	Support of the latest PROFINET features
100 % future-proof · Integrated web server · Cyber Security update in preparation	Implement features and adaptations quickly and easily. High system availability, protection against misuse (acc. IEC 62443).
High resolution · Singleturn 15 bit (safe) or 24 bit (non safe) / Multiturn 12 bit (safe) · Fully redundant multiturn information due to redundant multiturn gearbox · Transmission via safety telegrams 36/37, according to BP and XP	Reliable transmission of measurement and diagnostic data. Easy handling of input and output data of processes via standard telegrams.
High performance · PROFINET IO, RT, IRT / IRT with up to 500 µs cycle time	Ideal for highly synchronous applications, such as axis synchronization

Powerful and future-proof
Sendix F58 EtherNet/IP encoders

New generation - ready for the future.
The optical absolute singleturn and multiturn Sendix F58 EtherNet/IP encoders are based on the latest CIP version v3.32 and EtherNet/IP version v1.30.
Key features are neighborhood detection, gear factor, the calculation of acceleration and simultaneous connection to up to 5 controllers. Thanks to the new framework, the functionality can be extended at any time via the integrated web server by update.

V2A/V4A

EtherNet/IP™

in preparation

Features	Benefits
Link Layer Discovery Protocol (LLDP)	Quick and easy device replacement through neighborhood detection
Scaling of the total resolution via the gear factor	Direct mapping of pitch ratios, e.g. for gear ratios or gear reductions
High resolution: singleturn up to 19 bit, multiturn up to 24 bit	Precise position detection
High-precision setting of velocity and acceleration values through filter and hysteresis	Cost and time savings when setting up the control system
Device Level Ring (DLR) ring redundancy of the network with two network ports	Communication is maintained when the ring structure is interrupted

For realtime applications
Sendix F58 PROFINET IO encoders

V2A/V4A

in preparation

New generation.
The optical absolute Sendix F58 PROFINET IO encoders are ideal for realtime applications. Thanks to the new technical platform, the encoders can also be integrated in PROFIdrive networks. The vertical communication, from control level to industrial production facilities, enables location-independent parameterization, remote diagnosis as well as priority-assisted process data exchange. Even maintenance work can be done in less time.

Features	Benefits
PROFINET IO, RT, IRT	Integration in applications with different performance requirements
Supports isochronous mode	Can be implemented in networks for tough realtime requirements with cycle times < 1 ms
Latest encoder profile (V 4.2)	Complete support for all Profinet features
Supports isochronous cycle times of a send cycle up to 31.25 µs and a jitter < 1 µs	Ideal for highly synchronous applications such as axis synchronization
PROFIdrive profile	Interoperability between diverse control and drive manufacturers thanks to PROFIdrive

Powerful and future-proof
Sendix F58 EtherCAT encoders

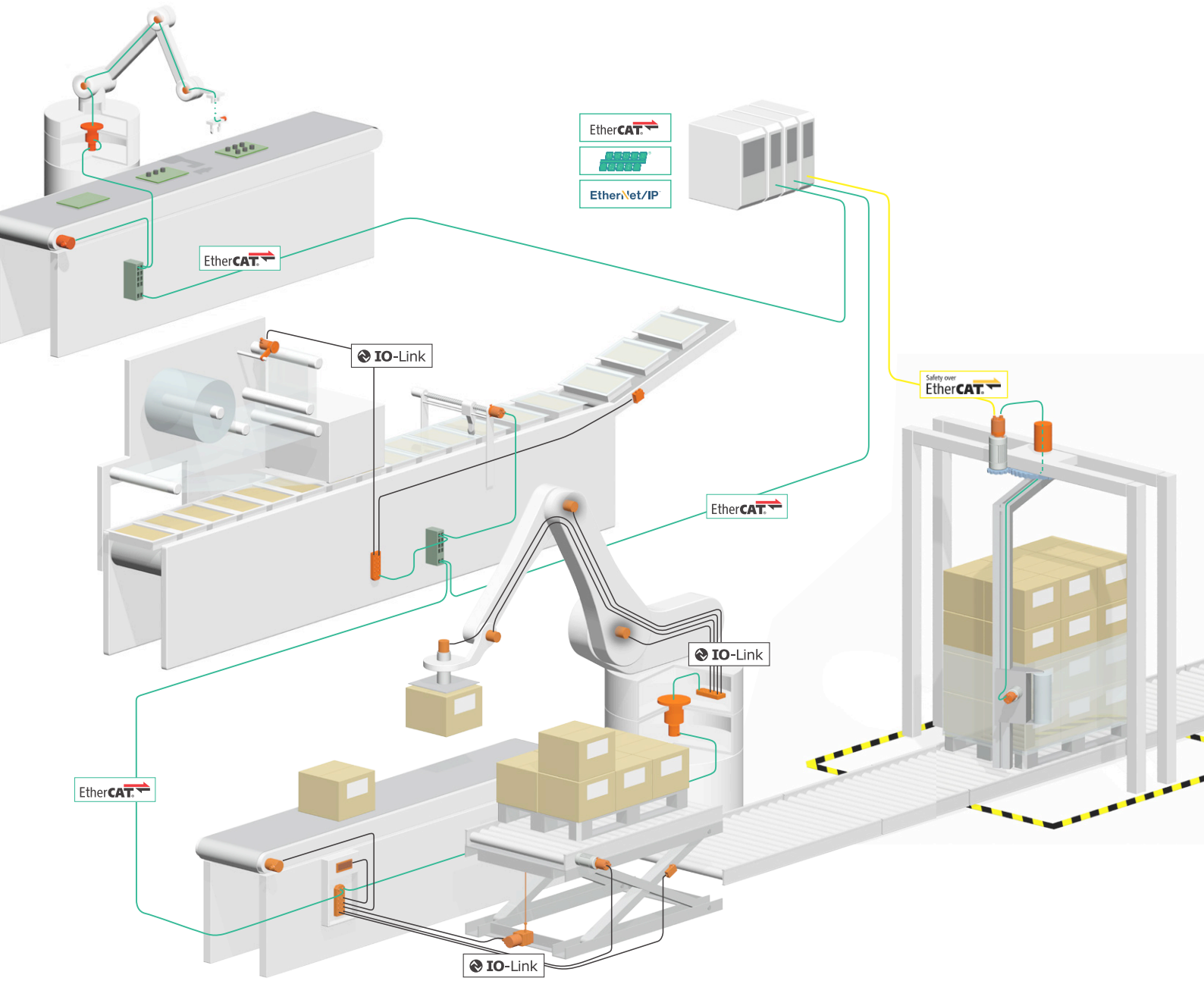
V2A/V4A

EtherCAT

Maximum security. Maximum dynamics.
Fully configurable.
The new Sendix F58 EtherCAT optical absolute encoders set new standards in terms of performance and flexibility. With extremely short cycle times of up to 150 µs and a wide range of adjustable parameters, they are ideal for demanding real-time applications.
Features such as distributed clocks, scalable resolutions, and comprehensive diagnostic options make the F58 the first choice for modern automation solutions. Thanks to firmware updates via the network, the system can be expanded at any time – ready for tomorrow's requirements.

Features	Benefits
Distributed Clocks	For highly dynamic applications with minimal jitter
Hot Connect	Flexible adaptation of the topology during operation
Scaling of the total resolution via the gear factor	Direct mapping of pitch ratios, e.g. for gear ratios or gear reductions
High resolution: singleturn up to 19 bit, multiturn up to 24 bit	Precise position detection
Support for cycle times up to 150 µs	Suitable for time-critical applications with high update frequencies / Suitable for dynamic and high-precision applications and torque control
Firmware update via EtherCAT FoE possible	Easy maintenance and updating in the field
Cyber Security	High system availability, protection against misuse (acc. IEC 62443).

IO-Link


EtherCAT
EtherNet/IP
EtherCAT
IO-Link
Safety over EtherCAT
EtherCAT
IO-Link
EtherCAT
IO-Link

YOUR BENEFITS

- **Time and cost savings**
- **Efficient production thanks to Smart Sensor profile**
- **Independent in use**
- **Remote diagnosis and condition monitoring**

IO-Link - door opener for Industry 4.0 / IIoT

IO-Link is establishing itself more and more on the market - and the trend is rising. IO-Link is used today in machine tools, production lines, intralogistics and packaging machines. IO-Link stands for simplicity, cost reduction and as a starting point for implementing future Industrie 4.0 / IIoT concepts. IO-Link products from Kübler open up new possibilities for your application. Let us make your existing or new machines / plants future-proof.

Our IO-Link products for measurement

Encoders
see page 20

Draw-wire encoder
see page 21

Measuring wheel systems

Inclinometers
see page 22

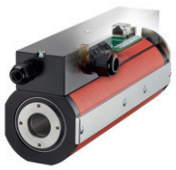
Radar sensors
see page 43

Vibration / Temperature sensors
see page 30

Our IO-Link products for transmission

IO-Link master
see page 23

Pre-assembled cables, connectors



Slip rings
see page 54

Our IO-Link products for evaluation

Counters
see page 24

Process devices
see page 25

Signal towers
see page 33

IO-Link

- Simple/cost-effective solution for lower performance requirements
- Simple modernization of older systems by 1:1 replacement of the sensors using the existing cabling
- Communication gateway for standard sensors/actuators in SIO mode via the IO-Link master

Magnetic. Compact. Versatile.
Magnetic absolute encoders with IO-Link

Simple and cost-efficient.
The Sendix M36 and M58 encoders with IO-Link stand for simple, fast and cost-effective commissioning. The basis for this is the standardized Smart Sensor profile to reduce programming effort and the use of 3-wire unshielded cables with M12 connectors.
These encoders also enable comprehensive diagnostics for condition monitoring as a basis for predictive maintenance.

Features	Benefits
Robust bearing structure in Safety-Lock™ design, magnetic sensors, optional stainless steel housing	Long service life even when exposed to significant shocks and vibrations
Protection level IP67 and temperature range of -40 °C ... +85 °C	For the highest reliability in almost all applications
Programmable digital limit switches for position and speed	Mark individual workspaces, an event is started when the value is exceeded or undercut
IO-Link interface (Version 1.1 according to IEC 61131-9)	Globally recognized standard
IO-Link can be integrated into all common fieldbuses	Flexible and easy to use for any system

Networking up to the draw-wire mechanism
Draw-wire encoders with IO-Link

IO-Link offers completely new possibilities.
All draw-wire mechanisms from the Compact-Line and Performance-Line performance classes can be equipped with IO-Link encoders. The IO-Link interface offers completely new possibilities in combination with our draw-wire mechanisms. For example, pull-out speeds can be monitored and limit values can be set. The setting of application-specific switching points should be emphasized. This can replace existing components such as mechanical limit switches.

IO-Link

Features	Benefits
Digital limit switches for position and speed	Replaces existing solutions digitally - saves costs and installation time
Kübler Standard Profile and standardized IO-Link Smart Sensor Profile	Simple and flexible implementation in the IO-Link world
Versatile draw-wire portfolio with measuring ranges from 0.3 m to 42.5 m	The right performance for your application
Compact design with variable mounting options, different wire types and wire fastenings	Simple and individual mounting, suitable for limited installation space
Robust draw-wire mechanism, low-wear wire outlet and stable die-cast zinc housing	Ideal for dynamic applications with high travel speeds in harsh environments

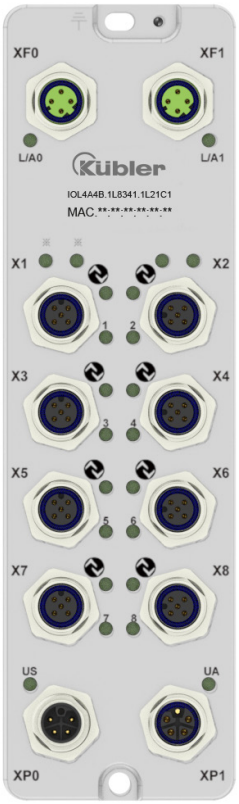
For static and dynamic applications
Inclinometers IN6x and IN7x for IO-Link and also for CANopen

Precise and fast measurement thanks to innovative sensor fusion – now also for CANopen.
The new IN6x and IN7x inclinometers not only offer innovative sensor technology, but also simple programming options for individual requirements.IN7x inclinometers use an additional gyroscope sensor in addition to the acceleration measuring cell (MEMS) for precise angle measurement. An intelligent algorithm combines the acquired values for acceleration and rotation rate.
This leads to a high speed of the measurement result and thus also enables the use in dynamic applications.

Analog output | PNP NPN | CANopen | IO-Link

Features	Benefits
Analog, IO-Link and now CANopen interfaces	The right interface for every application - IO-Link as IIoT enabler
Intelligent combination of MEMS and gyroscope data	Precise and fast measurement for dynamic applications
“Easy Teach“ – customer-specific settings via teach adapter	Determination of the center point as well as the start or end points
Further setting options via FDT/IODD (PACTware)	Direction of rotation, filter and spirit level functions.Selection of different analog output signals possible in the field..
LED display and spirit level function	For easiest assembly, fast commissioning and diagnostics in operation - visual supports save time and provide transparency
Temperature range -40 °C ... +85 °C and protection level IP68 / IP69K	Precise measurement even under the harshest environmental conditions, protection against salt spray and rapid temperature changes

Gateway to the world of Industrial Ethernet
IO-Link Master



Simple connection for any Ethernet protocol.
The IO-Link masters from Kübler are available with the Ethernet/IP, EtherCAT and PROFINET protocols. Versions with 4 or 8 ports in Class A and Class B are available from stock. Existing field devices that send classic switching signals can also be operated per port in SIO mode.

IO-Link

Features	Benefits
Versions with PROFINET, Ethernet/IP or EtherCAT	Suitable for any Ethernet network
Up to 4 IO-Link ports in Class B	Also enables the connection of energy-intensive actuators
Aluminum alloy housing with IP67 and -40 °C ... +85 °C	Robust and reliable - can also be used in wet areas

PNP/NPN goes IO-Link
Service pulse counter Codix 144
Service timer Codix 145

IO-Link - Door opener for Industry 4.0 / IIoT.
The voltage-supplied Codix 144 and Codix 145 counters can be used as simple pulse counters or timers, service counters and/or batch counters. With the adjustable pre-warning and signaling via the traffic light function, the displays are ideal for monitoring service intervals. The user also has a large number of adjustable parameters and modes at their disposal, which can be parameterized via the IO-Link interface. This offers a wide range of options for solving control and monitoring tasks in any application.

Traffic light function

IO-Link

Features	Benefits
With IO-Link interface	· For easy integration into Industry 4.0 / IIoT networks · Ideal for retrofit applications
7-digit multicolor LCD display	For optimum readability
Blinking text message and signaling via traffic light function (green, yellow and red) when the set limit values are reached	Ideal for monitoring service intervals
Two separate inputs and one transistor output	Flexible use for a wide range of applications
Scalable display through multiplication and division factor	Offers the possibility to display corresponding units
Parameterizable via IO-Link	Large selection of programmable parameters and modes · Differential, summing or counting direction detection (Codix 144) · Individually adjustable start/stop function (Codix 145) · Fast or damped PNP/NPN control · and much more.
Saving of values in EEPROM	The values are also saved after a voltage drop

Simple and versatile
LCD display and process controllers
573T IO-Link

Optimal for IO-Link applications.
With the type 573T, 2 IO-Link values or 2 standard signal readings can be displayed for further processing and evaluation.
One advantage of the new multifunctional devices is the easy commissioning thanks to plain text programming with resistive touch screen.
All display, counting, measuring and control tasks can also be implemented as transmitters.

Analog output RS232 RS485 Modbus IO-Link

Features	Benefits
Plain text programming, touch screen (color switching), no operation manual necessary	Simple and fast commissioning - saves money and time
4 fast transistor and / or 2 relay switching outputs	Flexible programming of the switching states with display color switching, adapted to your application
High resolution analog output up to 16 bit	Processing of the standard signal readings or IO-Link values for further processing
Available RS232 or RS485 interface, with MODBUS, ISO 1745 or printer protocol and/or IO-Link interface	Support during commissioning or control of your application with many display formats such as double or large display
Modular design and order code (switching outputs, analog output and / or interfaces)	Only the required functions are included in the device

CONDITION MONITORING PREDICTIVE MAINTENANCE

YOUR BENEFITS

- **Avoiding machine downtimes**
- **Predictive machine maintenance**
- **Preventing damage**
- **Saving time and costs**
- **Intelligent data management**

Smart solutions for IIoT – together into the digital future

The **Industrial Internet of Things** (IIoT) stands for the intelligent networking of machines, components, and IT systems. The goal is to make production data usable– for greater efficiency, maximum availability, and sustainable processes. With Kübler's IIoT solutions, you can lay the foundation for the factory of the future – scalable, secure, and compatible across manufacturers.

Condition Monitoring as the basis for Predictive Maintenance

The targeted collection of status data such as temperature, vibration, or runtime provides information about the condition of machines and systems. Changes are detected at an early stage, allowing maintenance to be coordinated proactively and malfunctions to be rectified before they cause damage. The result: minimized downtime and increased productivity.

If the condition data of a machine or system is combined with specific algorithms or AI and evaluated, even more precise predictions about the future condition can be derived. On this basis, predictive maintenance can be determined, ensuring maximum availability, reduced costs, and higher productivity.

Edge Processing

Data is processed immediately where it is generated. This reduces transmission times, relieves network congestion, and enables rapid responses.

Intelligent solutions für IIoT

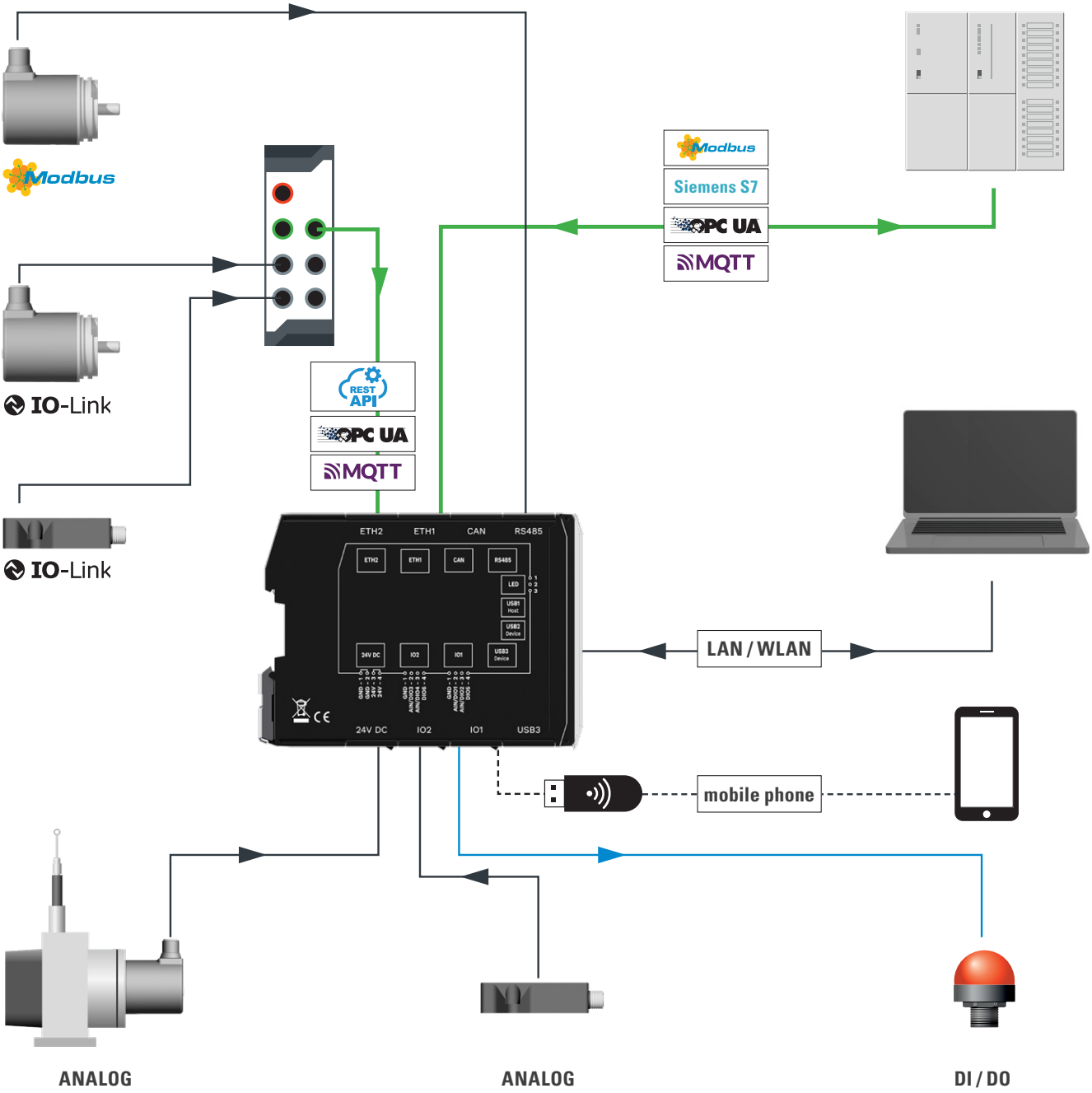
System solutions with IIoT-Edge-Gateway as a central element

Whether for monitoring individual machines or as a control center for complex digitization projects, the IIoT-Edge-Gateway can be scaled flexibly. It is ideal as an entry point into the world of IoT and can later serve as a hub for larger networks. Thanks to its wide range of interfaces, sensors, controllers, peripheral devices, and third-party software systems can be easily integrated. No additional IT resources are required, as the gateway offers its own visualization and local data storage. These features make the device versatile for use across a wide range of manufacturing industries.

Features

- Manufacturer- and protocol-independent – maximum flexibility during integration
- Plug & Play hardware – ready to use immediately
- Control-independent – easy retrofitting without interfering with existing systems
- Alerts via email, text message, or phone call
- On-premise solution – even without a cloud connection
- Remote monitoring anytime, anywhere thanks to network integration
- No programming knowledge required – as user-friendly as a smartphone
- High flexibility – simultaneous processing of multiple monitoring tasks

Connection options for sensors, actuators, and controllers



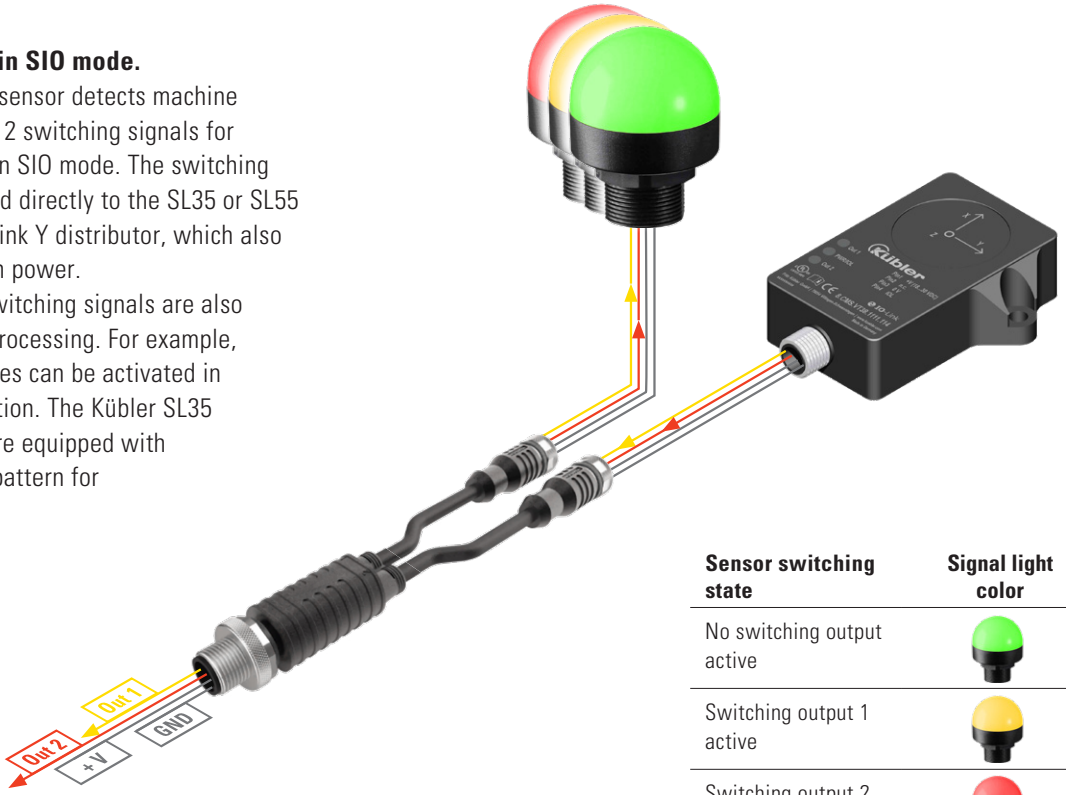
Detect and analyze vibrations
Vibration and temperature sensor – CMSVT38

Basis for predictive maintenance.
The CMSVT38 condition monitoring sensor records reliable information about vibrations / oscillations in 3 axes as well as temperatures.
The measurement data is exchanged with the controller for processing via an IO-Link interface. Alternatively, two PNP/NPN switching outputs can be used individually in SIO mode and parameterized via IO-Link communication.
The CMSVT38 can be integrated into various condition monitoring concepts or used as a stand-alone solution in combination with signal lights from Kübler. In addition to condition monitoring, the sensors can also be used to record process steps.

PNP NPN IO-Link

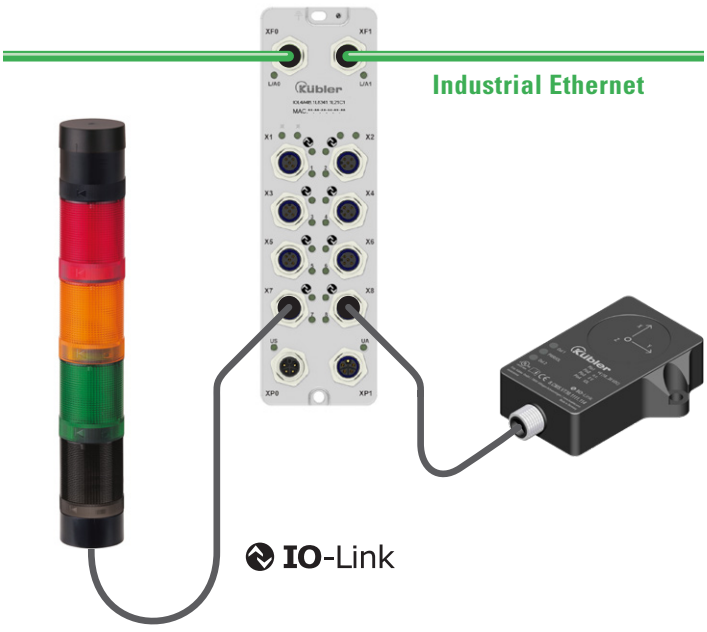
Features	Benefits
Various setting options depending on application requirements · Effective vibration speed (acceleration) · Peak-to-peak values	Precise vibration measurement over three axes
Visualization of operating states via LEDs Simple setting and adaptation of parameters and limit values to a wide range of application requirements (in accordance with ISO 10816-3) via IO-Link.	Simple commissioning, parameterization and installation
IO-Link-interface Industrie 4.0 ready	Seamless integration and communication in state-of-the-art Industry 4.0 / IIoT control concepts
SIO-Mode The sensor can be used in SIO mode with two PNP/NPN switching outputs, which are individually parameterized to the respective requirements via IO-Link.	Actions can be generated directly from limit values, such as visualization via suitable signal lights.

Stand-alone solution in SIO mode.
The CMSVT38 vibration sensor detects machine vibrations and transmits 2 switching signals for predefined limit values in SIO mode. The switching outputs can be connected directly to the SL35 or SL55 signal lights via the IO-Link Y distributor, which also supplies the system with power.
At the same time, the switching signals are also transmitted for further processing. For example, switches, motors or valves can be activated in addition to the visualization. The Kübler SL35 and SL55 signal lights are equipped with a predefined switching pattern for this application.



Sensor switching state	Signal light color
No switching output active	
Switching output 1 active	
Switching output 2 active	

Integrated into Ethernet networks in IO-Link mode.
In IO-Link mode, the CMSVT38 vibration sensor can be integrated into an Ethernet network via an IO-Link master. By communicating with the controller, the IO-Link signal tower ST40, for example, can signal the detected states on site.



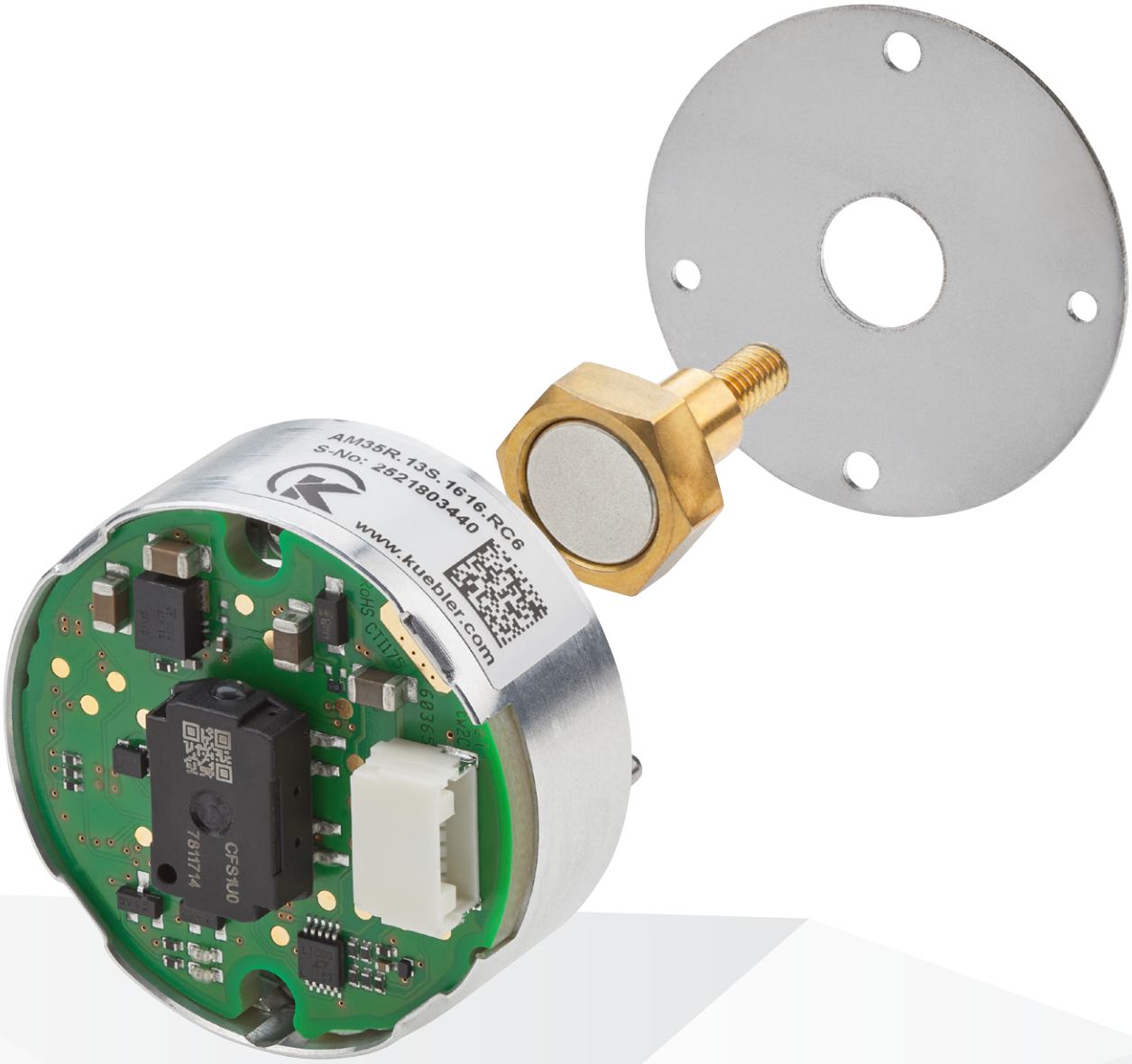
SIGNAL TECHNOLOGY

Signaling of states
Signal lights SL35 and SL55 / Signal towers ST40

Kübler expands its portfolio to include signaling technology.
The ST40 signal tower and the SL35 and SL55 signal lights can be equipped with a siren as an option. With a high protection class of IP66/IP69k and a long service life of 50,000 hours, reliable operation is ensured even in harsh environments. Kübler signal technology can be used to signal the status of machines and systems both visually and acoustically.

Features	Benefits
All-round LED display for 360° visibility	Maximum visibility from any angle
Optional siren with a volume of 85 dB	Acoustic signal for higher perception
Signal lights SL35 and SL55: · Pre-defined display logic · Mounting via M22 or M25 thread · M12 connector, 5-pin	 · Can be combined with almost all Kübler products · Fast and flexible mounting · Standardized electrical connection
Signal tower ST40 · Floor or recessed mounting with corresponding mounting accessories · With IO-Link interface	 · Wide range of mounting options · Optimum integration into IO-Link networks

INTEGRATED ENCODER SOLUTIONS



YOUR BENEFITS

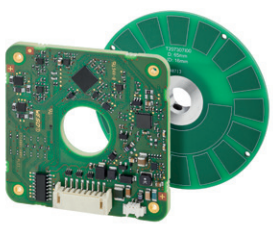
- **For extremely compact drive concepts**
- **Less effort required for installation and connection of sensors**
- **Wear- and maintenance-free thanks to bearingless technologies**
- **Reduced overall costs**

Compact - Robust - Reliable

Even more possibilities - new bearingless sensor technologies.
The trend in drive technology is increasingly moving towards more compact, more efficient systems. The aim is to minimize not only installation space, but also installation and maintenance costs. Kübler's bearingless encoder solutions for direct integration into drives go one step further. All installation solutions can be individually adapted to the respective application – ideal as part of a joint development of your drive systems with us in the "Kübler Technology talks."

Our solutions for motors

Magnetic kit solution
see page 36

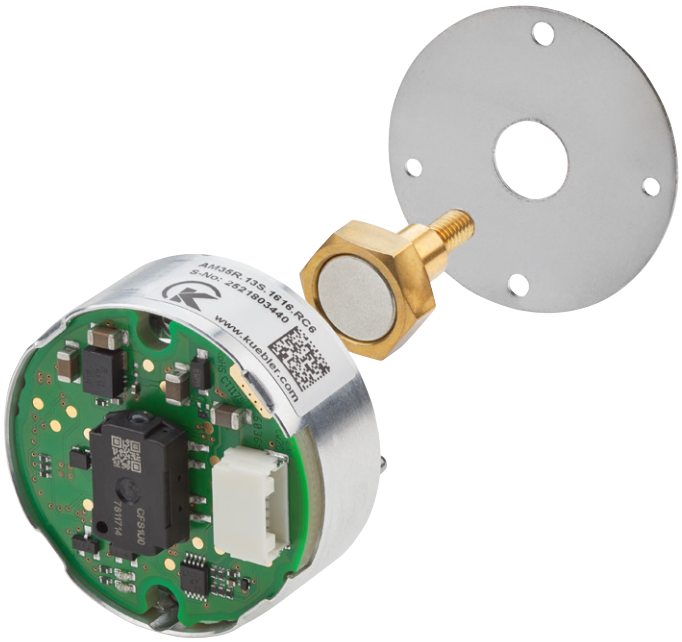


Inductive encoders
see page 37

RIM200(0), RIM500(0)
see page 38

RIL201, RIL501
see page 39

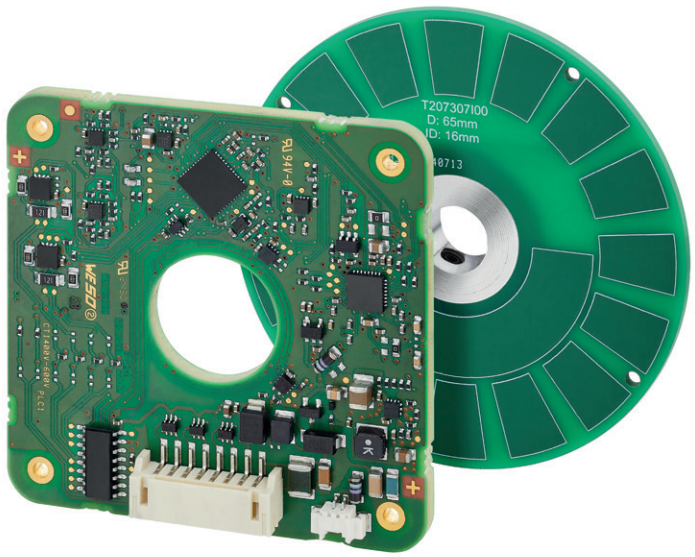
Magnetic end-of-shaft solution
Magnetic kit solution



The magnetic kit solution for absolute multiturn measurements features an innovative design based on the latest energy harvesting technology and is ideally suited for use in demanding environments, e.g. for precise positioning tasks in drive technology, stepper motors or brushless DC motors (BLDC motors), and can be optionally calibrated to ensure optimum or specified accuracy of the encoder when used as a magnetic kit solution.

Features	Benefits
High resolution: Up to 23 bit singleturn - multiturn resolution programmable	Perfectly suited for position and / or speed detection
Operating temperature range from -40 °C ... +105 °C	Can be used for almost any application
Mounting with 2 non-detachable screws	Quick and easy installation
High accuracy: ±0.05° with quick and easy calibration	Highest precision in position detection

Compact with inductive detection
Inductive encoders

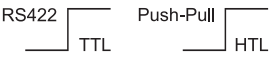


The new inductive encoders, which are available as incremental, singleturn or multiturn versions, are the ideal choice for applications in which scalable variables play a decisive role. Thanks to the flexible adaptation of the PCBs, these encoders are perfect for use in hollow shaft torque motors. The inductive encoders also score points for their ease of installation, high resistance to contamination and particularly compact design.

Features	Benefits
High resolution: Up to 23 bit singleturn - multiturn resolution programmable	Perfectly suited for position and / or speed detection
Operating temperature range from -40 °C ... +105 °C	Can be used for almost any application
Inner and outer diameters of the PCBs can be flexibly scaled or adapted	Integration in almost all motors and applications possible
Minimum installation depth	The compact design enables installation even in the tightest of spaces

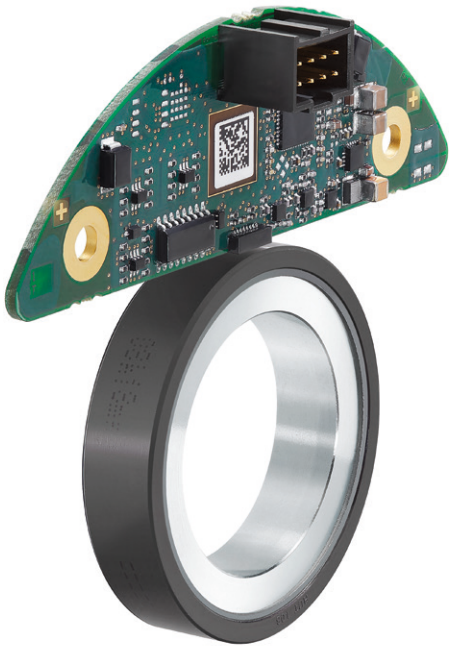
New generation of bearingless encoders
RIM200, RIM500 / RIM2000, RIM5000 (programmable)

For maximum flexibility, higher performance and cost savings.
With a new technology approach based on digital signal processing independent of previous ASIC solutions, Kübler has significantly expanded the range of applications for bearingless encoders. In conjunction with the available magnetic rings, the best possible accuracy is now always achieved. Influences due to individual installation and temperature differences during operation are automatically compensated in the sensor head. This facilitates integration into applications and makes the overall system even more powerful. Another advantage with the RIM2000 and RIM5000 versions is the programmability of the sensor resolution, in order to realize any pulse number independent of the magnetic ring used.

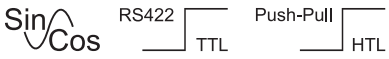


Features	Benefits
Programmability of the resolution	Any number of pulses can be realized for all magnetic ring versions
Flexibly adaptable at the customer	Changing the number of pulses per revolution is possible with an associated programming device
High signal quality	Very high speed quality in drive technology
Adaptable to customer requirements	Customer-specific OEM designs can be easily realized

For integration in motors
Incremental bearingless encoders RIL201, RIL501



For a compact motor design.
The magnetic bearingless encoders are free of wear and robust at the same time thanks to a contactless measuring principle. This means your motors can enjoy continuous operation without fault. The compact design really comes into its own in tight installation spaces.



Features	Benefits
100 % integration in the motor	Slim motor design is possible.
Compact dimensions – adapted to the corresponding installation space in the motor	Optimal integration in any motor concept
Kübler shielding technology	Interference field of the magnetic brake is shielded 100 %
High signal quality	Optimal drive control
Smart Technology	Intelligent solutions for different motors

Application asynchronous motors
Asynchronous motors are increasingly used in applications where the available space is limited. In response to this requirement, drives are becoming ever more compact.
To reduce the length, Kübler provides magnetic, bearingless encoders, which can also be integrated customer specifically in the motor. A scope of delivery tailored to customer requirements and comprising sensor head, magnetic ring and shielding (against magnetic effects from the brake) is provided for such purpose.
This modular system consisting of optimally coordinated components allows Kübler to provide solutions for all motor sizes with minimum variance.

INTEGRATED SERVO MOTORS

synapticon by Kübler

YOUR BENEFITS

- 80 % less installation space
- 70 % less material
- 50 % lower costs
- 100 % performance

Motor-sensor combination - everything from a single source

Kübler expands its product range with integrated drives with built-in sensors.
The new ACTILINK-S integrated servomotors from Synapticon are a pioneering solution for integrated servomotors and are unique in their class. The position determination of the drive controller is based on Kübler sensor technology. The growing demand for decentralized automation in machine building and factory automation calls for new concepts in terms of both space saving and performance optimization, areas in which Kübler traditionally has a very strong global presence, market knowledge and application experience. While many customers in this business segment require different types of encoders, integrated servo drives are naturally also found here.

The new integrated drives are available in 60 mm and 80 mm sizes with an output of 200 to 1000 watts. They enable a considerable reduction in installation space and costs compared to conventional drive and motor solutions, as they replace several components and functions in a classic servo axis. A unique thermal concept ensures maximum efficiency with up to 3 times higher dynamics compared to conventional drive solutions. A hybrid single-cable technology replaces the classic three cables per axis. The connection is made via FSoE. Further protocols and safety functions are being planned.

Conventional servo drives

New integrated drive solution with built-in sensors

LINEAR MEASUREMENT TECHNOLOGY

Extremely compact - the industrial all-rounders
Radar sensors RAD51C, RAD51D

Simple. Robust. Precise.
The compact industrial radar sensors RAD51C and RAD51D are suitable for the tightest installation situations and the harshest environmental conditions.
With two different aperture angles of ±3° (6°) and ±8° (16°), the sensors offer maximum focusing for positioning tasks and distance measurement as well as maximum reliability for object detection and collision protection. Thanks to a measuring rate of up to 100 Hz and a measuring range between 0.3 m and 40 m, countless applications can be realized with the latest radar technology. The simplest tools not only help with implementation, but also create transparency in operation.

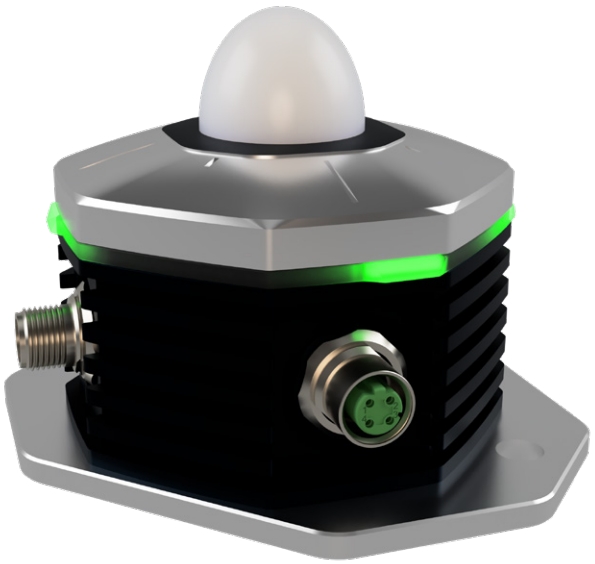
Analog Output

PNP NPN

Features	Benefits
Robust design in M30 stainless steel housing, combined with the latest radar technology	High availability - not affected by dust, fog, rain, smoke, wind or unfavorable light influences, as well as glowing heat
Measuring range from 0.3 ... 40 m	Wide range of applications due to wide measuring range with low blind range
Measuring accuracy ±1 mm / Linearity ±5 mm / Measuring rate 100 Hz	Precise, fast and reliable distance measurement
Different opening angles RAD51D: narrow opening angle ±3° (6°) RAD51C: wide opening angle ±8° (16°)	Wide range of applications · For precise distance and position detection · For reliable object detection
User-friendly tools: Visualization of the echo curve in real time - see what the sensor sees	Simple and intuitive commissioning. Maximum transparency during operation and servicing.
Individually parameterizable features: Measuring range, offset, delay times, filters, switching points, etc.	Even better measurement results thanks to simple and customizable settings
Suitable accessories (mounting brackets and corner cubes)	For optimum integration, alignment and protection in the application

Even more precise and faster - our top performer
Radar sensors RAD78D and RAD78L

Precise. Fast. Robust.
The RAD78D radar sensors for distance and RAD78L for level measurement have been specially developed for the steel industry and therefore for the harshest environmental conditions. The sensors have a PROFINET interface with integrated web server. The RAD78D can be used both as a stand-alone sensor and integrated into system solutions such as for width or thickness measurements. Thanks to the intuitive GUI (Graphical User Interface), the sensor is easy to implement in the application and the associated control concept. A narrow aperture angle of just ±1.5° (3°) offers maximum focusing. With a measuring rate of 500 Hz and a repeat accuracy of ±0.1 mm, measurements can also be taken quickly and precisely.

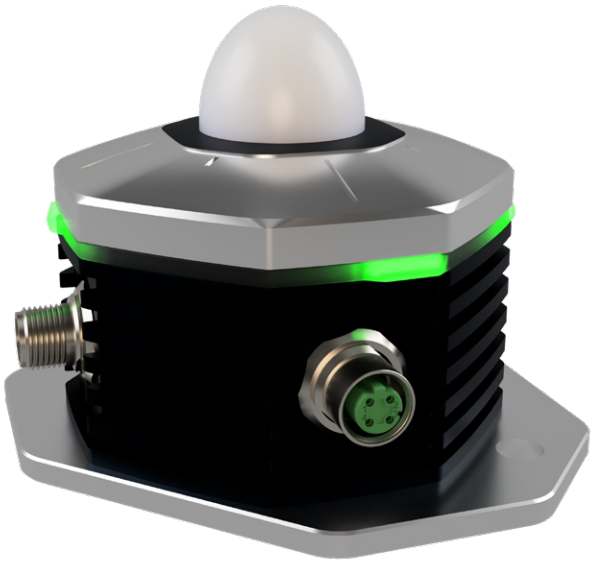


Analog Output PNP NPN PROFINET

Features	Benefits
RAD78D radar sensors with a measuring range of 0.1 m ... 6 m – can also be used as a system solution thanks to a trigger input	Precise distance measurement - as a system also suitable for profile measurements (widths, thicknesses)
RAD78L radar sensors with a measuring range of 0.1 m ... 20 m – optimized for measuring liquid surfaces	Precise measurement of fill levels in a wide range of applications – especially for the highest demands on measuring tasks with liquid metal in the steel industry
Measuring accuracy ±0.1 mm / Linearity ±0.7 mm / Measuring rate 500 Hz	Precise, fast and reliable distance measurement
Narrow opening angle ±1.5° (3°)	Focused measurement for optimum measurement results even over long distances
Robust design combined with the latest radar technology	High availability - not affected by dust, fog, rain, smoke, wind or unfavorable light influences, as well as glowing heat
PROFINET interface with integrated web server and user-friendly GUI	Simple and intuitive commissioning. Easy integration into the latest control concepts.
Suitable accessories (mounting brackets, protective housing and corner cubes)	For optimum integration, alignment and protection in the application

Ultra-precise - distance measurement in the µm range
Radar sensors RAD78P

Suitable for condition monitoring applications.
The RAD78P radar sensors with PROFINET interface and integrated web server can be used both as a stand-alone sensor and in system solutions. Thanks to the intuitive GUI (Graphical User Interface), the sensors are easy to implement in the application and the associated control concept.
An extremely narrow aperture angle of just ±1.5° (3°) offers maximum focusing. With a measuring rate of 500 Hz, measurements can be taken not only precisely but also quickly with an accuracy of up to ±1 µm. This means that countless applications can be realized with the latest radar technology, even in the harshest environmental conditions.

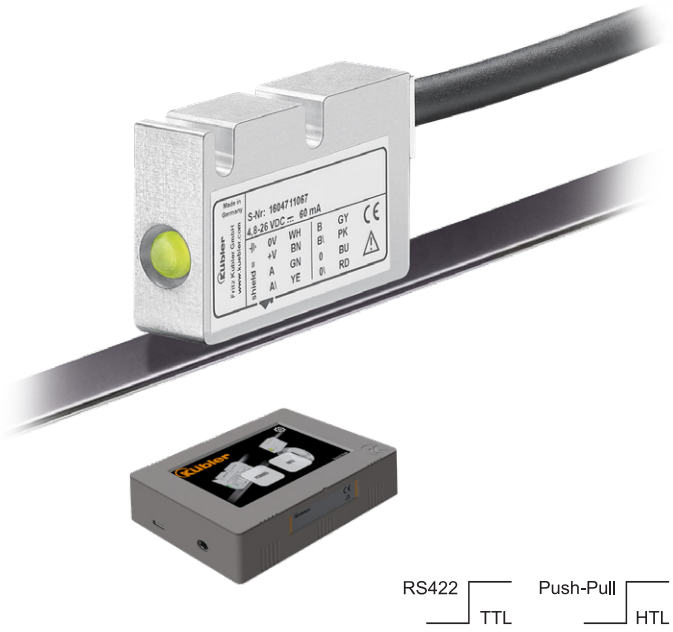


Analog Output PNP NPN

Features	Benefits
Reference point-based distance change measurement	Suitable for ultra-precise condition monitoring applications
Different measuring ranges: 0.1 m ... 6 m or 0.3 m ... 40 m	Wide range of applications due to wide measuring range with low blind range
Measuring accuracy ±1 µm / Linearity ±0.7 mm / Measuring rate 500 Hz	Precise, fast and reliable distance measurement
Narrow opening angle ±1.5° (3°)	Focused measurement for optimum measurement results even over long distances
Robust design combined with the latest radar technology	High availability - not affected by dust, fog, rain, smoke, wind or unfavorable light influences, as well as glowing heat
PROFINET interface with integrated web server and user-friendly GUI	Simple and intuitive commissioning. Easy integration into the latest control concepts.
Suitable accessories (mounting brackets, protective housing and corner cubes)	For optimum integration, alignment and protection in the application

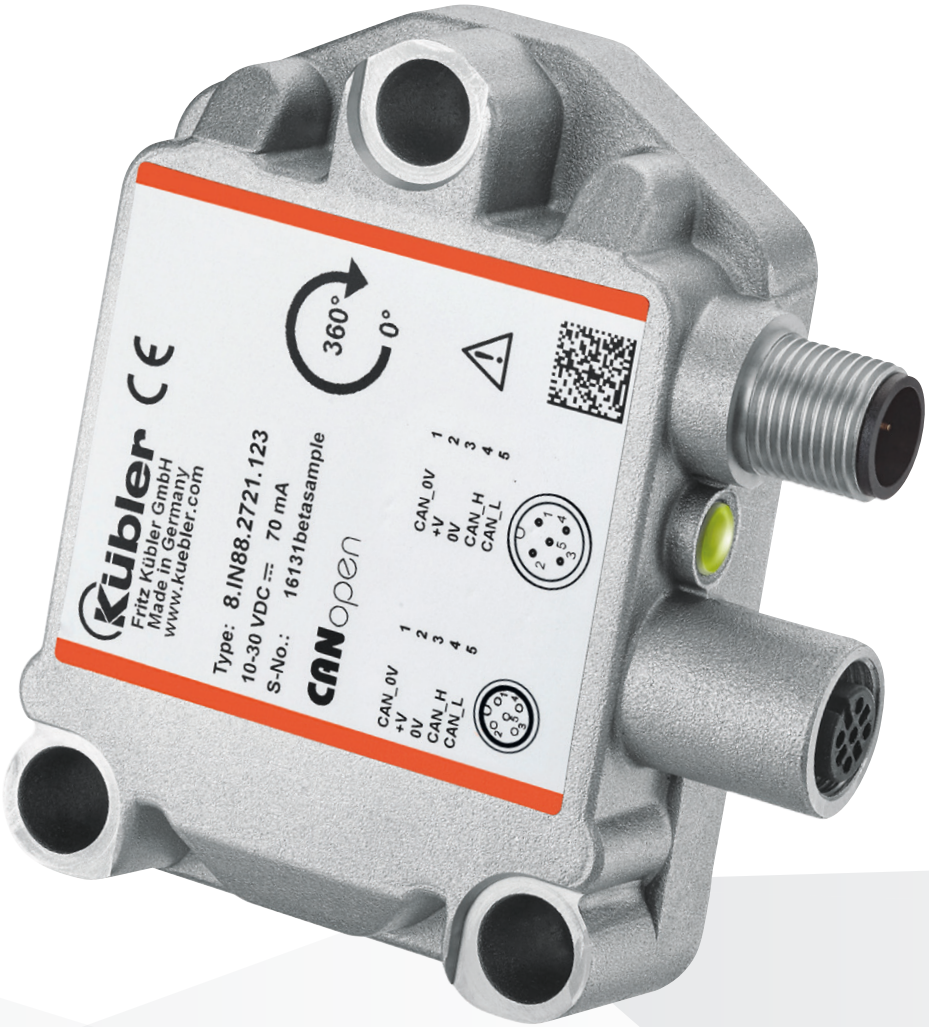
Incremental, magnetic length measuring systems
LIM200, LIM500 / LIM2000, LIM5000 (programmable)

Flexible. Compact. Precise.
With the new non-contact magnetic length measuring systems - consisting of a sensor head and magnetic tape - for pole lengths of 2 mm and 5 mm, the desired resolution of the sensor is freely selectable. In the customer-programmable LIM2000 and LIM5000 versions, the sensor system can be easily and flexibly adapted to the respective application requirements using a programming device. Together with the wide temperature range and a protection class of IP68 / IP69k, this results in maximum reliability even in unprotected outdoor applications.



Features	Benefits
Resolutions can also be freely adjusted in the field via a programming device	Maximum flexibility - even more performance in the application and simple integration into the control concept
Highest signal quality	Precise and reliable measurement
Protection class IP68 / IP69 in accordance with EN 60529 and humidity tested in accordance with EN 60068-2-38, EN 60068-2-78	Maximum availability even in the harshest environmental conditions
Robust sensor housing in a compact size 40 x 25 x 10.2 mm	Suitable for the tightest installation spaces

INCLINOMETERS



High performance in a small installation space
Inclinometers IN4x

Compact. Precise. Versatile.
The IN4x series of inclinometers for static applications can be used to reliably measure 2-axis inclinations in a measuring range of ±85° or 1-axis inclinations up to 360°. Thanks to their compact housing and high protection class up to IP68/IP69K, they are also suitable for use in demanding environments. Optionally selectable measuring ranges, integrated filter functions, and various analog or fieldbus interfaces enable flexible adaptation to different applications.

Analog Output CANopen SAE J1939 Modbus

Features	Benefits
Extremely compact housing / 44.5 x 42.5 x 20 mm	Ideal for applications with limited installation space
Optionally selectable and adjustable measuring ranges and filter functions	Flexible adaptation to different applications
Protection class IP68/IP69k – protection even against salt spray and rapid temperature changes	For use in harsh environmental conditions
LED display for quick and visual detection of operating states	Easy commissioning and diagnostics
High accuracy up to ±0.15°	Accurate measurement in a compact design

SAFE SHAFT COPYING SYSTEMS

SIL3 Functional Safety EN 81

YOUR BENEFITS

- **Plug & Drive**
- **Automomous system**
- **Intelligent gear management**
- **Elimination of mechanical components**

Safe system solutions for the realization of elevator functions

Whether modernization projects or new installations - the SIL3-certified shaft copying systems from Kübler offer completely new possibilities in the field of digitalization of elevator systems. Different systems consisting of the Ants Safe Sensor **LES03** combined with the **PSU03** or **SGT03** evaluation units offer the right solution for every application for the safe and precise determination, transmission, and processing of position and speed information of the elevator car.

Plug & Drive

- The systems can be used according to the plug & drive principle with all electronic safety gear from established suppliers.
- Both the mechanical installation of the code band and sensor using a mounting kit and the commissioning and validation are quick and easy.

Autonomous system

The electromechanical safety gears are triggered directly by the PSU03 or SGT03 evaluation unit based on sensor data, without going through the elevator control system. This makes the system ideal for retrofitting during modernization projects.

Intelligent gear management

A milestone in elevator safety thanks to comprehensive gear management from PSU03 and SGT03.

- Real-time analysis of drive data and detection of safety-critical overspeed conditions.
- Direct, precise, and instantaneous activation of the electromechanical safety gears in an emergency.
- Controlled reset and continuous status monitoring of the safety gears

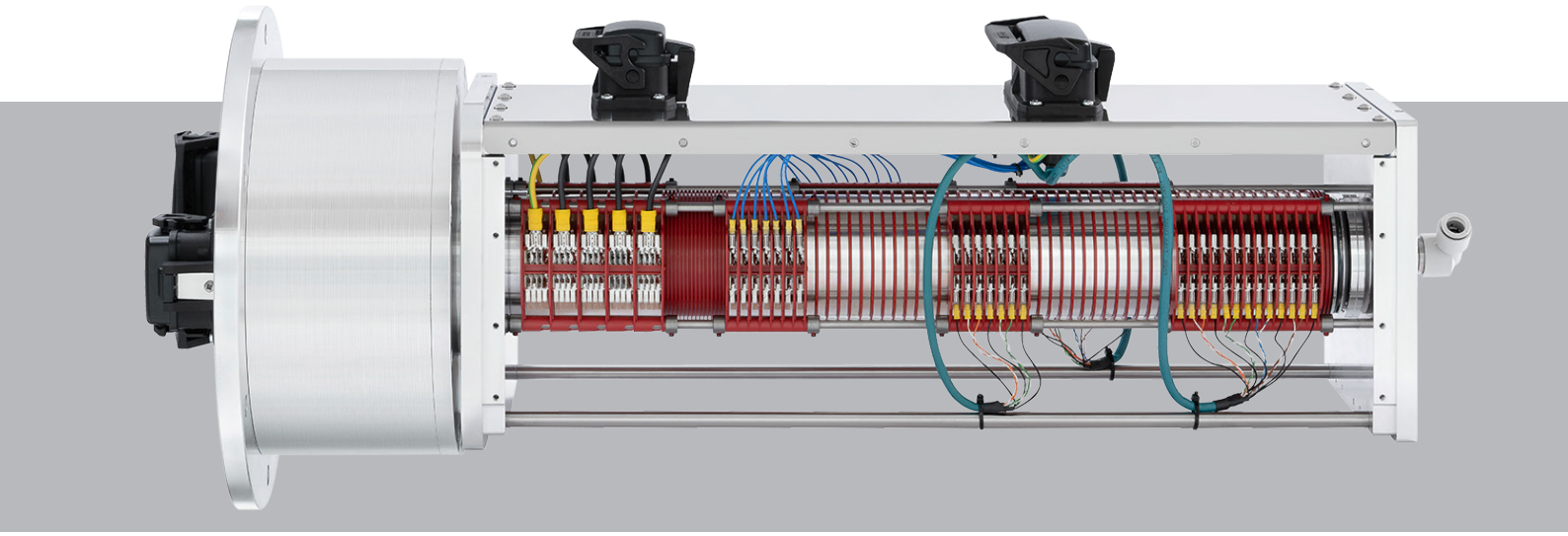
Elimination of mechanical components

Numerous mechanical components such as magnetic switches, ramps, and roller limit switches can be eliminated thanks to the digitally available shaft information. This also reduces the cost of installing and maintaining the elevator system.

MODBOX – even easier and faster

- Evaluation unit pre-wired with power supply and backup batteries in IP66 plastic housing
- Everything tailored to the safety gears used

SLIP RINGS

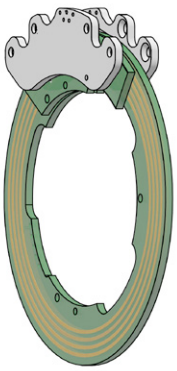


Slip rings

Slip ring platform – Gigabit transmission
Due to the increasing networking of all components of a plant / machine and the associated complexity of machine controllers through to the implementation of Industry 4.0 / IIoT concepts such as Condition Monitoring, the demand for highend data transmission is increasing. Following this trend, Kübler has developed a new, future-proof slip ring platform, which on the one hand is equipped with reliable „high-end" transmission technology in a maximum compact design and on the other hand has a 1 Gbit module. This operates without further electronic components and thus enables interference-free, reliable and direct transmission.

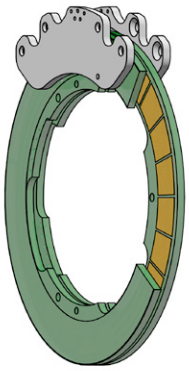
INDUSTRIE 4.0 - IIoT READY
The intelligent networking of all components is based on the use of smart sensors. Smart Kübler slip rings with integrated sensors are seen as Industry 4.0 enablers. Thanks to condition monitoring and the associated predictive maintenance, for example, they ensure higher system availability.

Slip ring platform – new modules



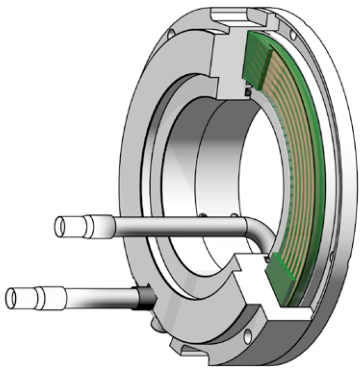
Pancake modules

- Data transmission Ethernet up to max. 1 Gbit/s
- Significant space savings thanks to the concentric arrangement of the lines



Integrated sensor modules

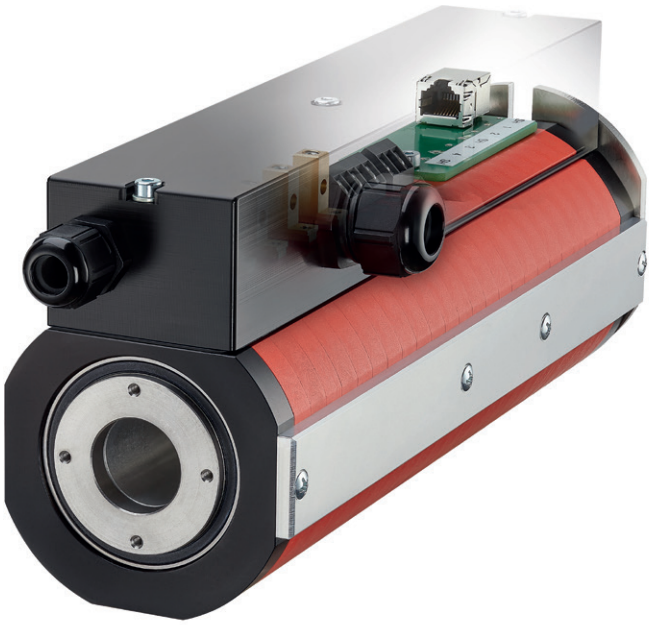
- Inductive, bearingless sensor technology
- Speed and position detection
- Optional temperature monitoring



Expansion modules (concept) also as a stand-alone solution

- Efficient retrofit for existing slip rings
- Fast and cost-effective solution for upgrading to Gigabit Ethernet transmission
- Also as a space-saving stand-alone solution

Industrial Ethernet transmission
Slip ring SR085IE



For Industry 4.0 / IIoT concepts.
Reliable transmission of Industrial Ethernet is now also possible in the 85 mm size.
For this purpose, the SR085 slip rings from Kübler have been expanded with a Fast Ethernet module that enables a transmission rate of up to 100 Mbps. The connection for data transmission is made as standard via a CAT5e cable with RJ45 plug connection. Customer-specific special solutions can also be implemented on request, such as M-type industrial connectors.

CANopen · SAE J1939 · IO-Link · EtherCAT Conformance tested · EtherNet/IP · Single Pair Ethernet System Alliance · PROFIBUS · PROFINET and many more

Features	Benefits
Optional Ethernet module for transmission of all common Industrial Ethernet protocols	· Transmission of Industrial Ethernet up to 100 Mbit/s · Fast connection via RJ45 connector with CAT5e cable · Quick and easy replacement by user
Robust GFK housing in modular design	Individual configuration for all applications
Reliable transmission of loads up to 25 A	Prepared for a wide range of applications even with high current load
Flange mounting or simple plug-on via a hollow shaft	The application determines the mechanical connection - the SR085IE slip ring adapts to

Smart solution for Industry 4.0 / IIoT
SIip ring SRS250

With integrated sensors.
Power, signals and Industrial Ethernet communication are transmitted reliably via the slip ring. The integrated sensors support the implementation of Industry 4.0 / IIoT concepts via functions like condition monitoring or electronic data sheet. Its robust modular design and various connection options ensure flexible and reliable applications. Thanks to its innovative contact technology, this slip ring is particularly low-maintenance and durable.

Features	Benefits
Transmission of Industrial Ethernet and analog signals (0 ... 20 mA, 0 ... 10 V, Pt100 / 1000 and thermocouples)	Reliable networking and fault-free system control
Transmission of current up to 600 V / 100 A	Optimal supply for powerful drives
Integrated system of sensors	High system availability thanks to condition monitoring, Lifetime histograms and predictive maintenance
Electronic data sheet	Simplifies commissioning and asset management
High protection level IP64 (optional IP67)	Reliable and durable performance
Designed for maximum adaptability	High level of integration in the system saves space and costs

KÜBLER WORLDWIDE

600 EMPLOYEES · 4 PRODUCTION SITES · PRESENCE IN OVER 50 COUNTRIES

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