FR 10-R

Retroreflective photoelectric sensor

PRODUCT HIGHLIGHTS

- Sub-miniature sensor for installation in the smallest of spaces
- Despite very small sensor housing very long operating range of 1.6 m
- Fast response time: only 500 μs
- Static and dynamic teach-in via electronic teach-in button or control line
- Simple mounting and adjustment through innovative dovetail clamp mounting

Optical data		Functions	
Operating range	0.1 … 1.6 m[1]	Indicator LED green	Operating voltage indicator
Used light	LED, red, 650 nm	Indicator LED yellow	Switching output indicator
Light spot size	See diagram	Sensitivity adjustment	Via Teach-in button and control input[3]
Polarising filter	Yes	Teach-in modes	Mode 1: during running process
			Mode 2: during standing process
		Adjustment possibilities	N.O./N.C. via Teach-in button and control input[3]
			Button lock via control input[3]
		Default settings	Max. range and N.O.

Electrical data		Mechanical data	
Operating voltage, $+U_B$	10 … 30 V DC[2]	Dimensions	21,1 × 14,6 × 8 mm
No-load current, I_0	≤ 20 mA	Enclosure rating	IP 67[4]
Output current, Ie	≤ 50 mA	Material, housing	PUR
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection (Q)	Material, front screen	PMMA
		Type of connection	See Selection Table
Protection class	2	Ambient temperature: operation	-20 … +60 °C[5]
Power On Delay	< 300 ms	Ambient temperature: storage	-20 … +80 °C
Switching output, Q	PNP/NPN (see Selection Table)	Weight (cable device)	approx. 22 g
Output function	N.O. /N.C.	Weight (pigtail)	approx. 10 g
Switching frequency, f (ti/tp 1:1)	≤ 1000 Hz		
Response time	500 μs		
Control input, IN[3]	$+U_B$ = teach-in -U_B = button locked Open = normal operation		

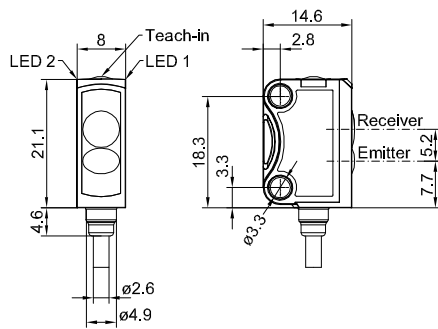[1] Reference material reflector R5   [2] Max. 10 % ripple within U_B, ~ 50 Hz / 100 Hz   [3] Only 4-pin design   [4] With connected IP 67 plug   [5] UL: -20 ... +30 °C

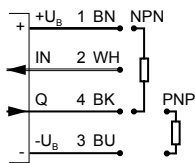| Operating range	Switching output	Type of connection	Part number	Article number-Nr.
0.1 … 1.6 m[1]	PNP	Cable, 2 m, 4-wire	FR 10-R-PS-K4	603-11001
0.1 … 1.6 m[1]	NPN	Cable, 2 m, 4-wire	FR 10-R-NS-K4	603-11004
0.1 … 1.6 m[1]	PNP	Pigtail, 200 mm with M8 plug, 4-pin	FR 10-R-PS-KM4	603-11002
0.1 … 1.6 m[1]	NPN	Pigtail, 200 mm with M8 plug, 4-pin	FR 10-R-NS-KM4	603-11005
0.1 … 1.6 m[1]	PNP	Pigtail, 200 mm with M8 plug, 3-pin	FR 10-R-PS-KM3	603-11003
0.1 … 1.6 m[1]	NPN	Pigtail, 200 mm with M8 plug, 3-pin	FR 10-R-NS-KM3	603-11006

Including dovetail clamp mounting MBD F 10 for all types
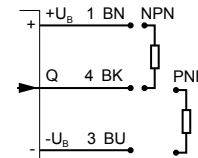
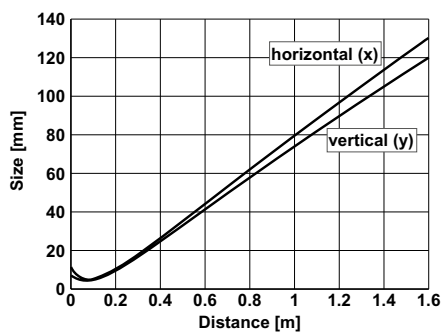## Cable connection

153-01110

Connection, 4-pin

154-00312

		NPN
+	+U_B 1 BN	
	IN 2 WH	
	Q 4 BK	PNP
	-U_B 3 BU	

Connection, 3-pin

154-00311

		NPN
+	+U_B 1 BN	
	Q 4 BK	PNP
-	-U_B 3 BU	

Light spot size

155-01767

Reflector / Reflective foil*	Operating range (min./max. reflector distance)	Accessories	
R5	0.1 … 1.6 m	Reflectors	From Page A-18
R1	0.1 … 1 m	Connection cables	From Page A-38
R2-2LB1	0,15 … 0,5 m	Brackets	From Page A-4
R3-2LK1	0,15 … 0,5 m		
RF-100 KL*	0,15 … 1 m		