FS 10-RL / FE 10-RL

Through-beam laser sensor

CE
IP 67
c UL us LISTED
ECOLAB

PRODUCT HIGHLIGHTS

- Sub-miniature sensor for installation in the smallest of spaces
- Bright, precise laser light spot for optimum small-part detection and simple alignment
- High switching frequency for detection in even the fastest processes
- User-friendly operation via electronic Teach-in button or control line
- Robust, glass-fibre-reinforced plastic housings

Optical data	
Limit range	0 … 5 m
Operating range	0 … 4 m
Type of light	Laser, red, 655 nm
Light spot size	See diagram
Laser Class (IEC 60825-1)	1

Functions	
Indicator LED, green	Operating voltage indicator
Indicator LED, yellow	Switching output indicator
Sensitivity adjustment	Via Teach-in button and control input[2]
Teach-in modes	Mode 1: during running process Mode 2: during standing process
Adjustment possibilities (receiver)	N.O. / N.C. via Teach-in button and control input[2]; Button lock via control input[2]
Default settings	Max. range and N.O.

Electrical data	
Operating voltage, $+U_B$	10 … 30 V DC[1]
No-load current, I_0	≤ 12 mA
Output current, Ie	≤ 50 mA
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection (Q)
Protection Class	2
Switching output, Q	PNP/NPN (see selection table)
Output function	N.O./N.C.
Switching frequency, f (ti/tp 1:1)	≤ 4000Hz
Response time	125 µs
Control input, IN (receiver)[2]	$+U_B$ = Teach-in; $-U_B$ = button locked; Open = normal operation
Control input, Test (transmitter)	$+U_B$ = Test (transmitter off) $-U_B$ / Open = normal operation

Mechanical data	
Dimensions	21.1 x 14.6 x 8 mm
Enclosure rating	IP 67[3]
Material, housing	PUR
Material, front screen	PMMA
Type of connection	See selection table
Ambient temperature: operation	-20 … +50 °C[4]
Ambient temperature: storage	-20 … +80 °C
Weight (plug device)	Approx. 6 g
Weight (cable device)	Approx. 44 g
Weight (pigtail)	Approx. 20 g

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

Operating range	Switching output	Type of connection	Part number	Design	Article number
0 … 4 m	PNP	Plug, M5x0.5, 4-pin	FE 10-RL-PS-E4	Receiver	602-71000
0 … 4 m	–	Plug, M5x0.5, 4-pin	FS 10-RL-E4	Transmitter	601-61000
0 … 4 m	NPN	Plug, M5x0.5, 4-pin	FE 10-RL-NS-E4	Receiver	602-71001
0 … 4 m	PNP	Cable, 2 m, 4-wire	FE 10-RL-PS-K4	Receiver	602-71002
0 … 4 m	–	Cable, 2 m, 4-wire	FS 10-RL-K4	Transmitter	601-61002
0 … 4 m	NPN	Cable, 2 m, 4-wire	FE 10-RL-NS-K4	Receiver	602-71003
0 … 4 m	PNP	Pigtail, 200 mm with M8 plug, 4-pin	FE 10-RL-PS-KM4	Receiver	602-71004
0 … 4 m	–	Pigtail, 200 mm with M8 plug, 4-pin	FS 10-RL-KM4	Transmitter	601-61004
0 … 4 m	NPN	Pigtail, 200 mm with M8 plug, 4-pin	FE 10-RL-NS-KM4	Receiver	602-71005
0 … 4 m	PNP	Pigtail, 200 mm with M8 plug, 3-pin	FE 10-RL-PS-KM3	Receiver	602-71006
0 … 4 m	–	Pigtail, 200 mm with M8 plug, 3-pin	FS 10-RL-KM3	Transmitter	601-61005

Version: 11/2021. Subject to changes; diagrams similar

Operating range	Switching output	Type of connection	Part number	Design	Article number.
0 … 4 m	NPN	Pigtail, 200 mm with M8 plug, 3-pin	FE 10-RL-NS-KM3	Receiver	602-71008

Including dovetail clamp mounting MBD F 10 for all types

Plug connection

153-00894

LED 2 — LED 1 — Teach-in
8
14.6
2.8
21.1
18.3
3.3
5.5
Receiver
Emitter
8
ø3.3
5.7
M5x0.5

Cable connection

153-00895

LED 2 — LED 1 — Teach-in
8
14.6
2.8
21.1
18.3
3.3
5.5
Receiver
Emitter
8
4.6
ø3.3
ø2.6
ø4.9

7

Connection, transmitter, 4-pin

154-00511

+ $+U_B$ 1 BN
TEST 2 WH
4 BK
- $-U_B$ 3 BU

Connection, receiver, 4-pin

154-00508

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

Connection, transmitter, 3-pin

154-00514

+ $+U_B$ 1 BN
TEST 4 BK
- $-U_B$ 3 BU

Connection, receiver, 3-pin

154-00509

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

Light spot size

155-01321

horizontal (x)
vertical (y)

Size [mm] vs Distance [m]

Accessories

Connection cables	www.sensopart.com/en/accessories
Brackets	