

# F 55 – family of photoelectric sensors with high-quality housings

The compact class with long ranges



made in Germany



## **Always sparkling clean**

Neither bubble baths with aggressive chemicals nor high-pressure rinsing processes with jets of water or steam can damage the tightly sealed stainless steel housings of the F 55 series. No deposits can adhere during the cleaning process due to the completely smooth housing surface with flush inset operating elements.
















## TYPICAL F 55

- Glass-fibre-reinforced plastic or stainless steel housings (IP 69K / IP 67, Ecolab)
- Bright, easily visible, light spot with sharp contour even in daylight
- Precise background suppression and minimal black/white-shift
- User-friendly operation of all diffuse variants via electronic Teach-in button or control line
- 18-step potentiometer for precise adjustment of background suppression
- Laser or LED options
- Safe operation due to Laser Class 1
- Two dovetail guides for simple sensor alignment
- Well thought-out mounting accessories

SensoPart sets new standards in the compact class with its F 55 family of photoelectric sensors. The products in this series combine excellent performance data with a robust housing design and many user-friendly details. They guarantee reliable detection by means of focused laser light or red-light LED with precise background suppression.

The sensors of the F 55 series have a very high light intensity: the photoelectric proximity sensor with background suppression, for example, reaches a scanning distance of up to 1200 mm. The bright, sharply contoured light spot is still easily visible even at long distances and in intense daylight, considerably simplifying commissioning.

The F 55 sensors generally impress through their clever design details: there is, for example, no trouble at all mounting them when space is limited, thanks to the device plug that can be continuously rotated through 270° and the supplementary dovetail guides. Adjustment via potentiometer with an indicator scale or by teach-in is also easy and user-friendly. The F 55 series covers all standard applications in industrial automation: whether for part detection in the automotive industry or for sorting tasks in machine construction – the sensors excel everywhere with their excellent performance. The food industry-enabled tightly sealed stainless steel variants (IP 69K) with Ecolab certification – rounding out the comprehensive sensor programme – shine in all regards.

F 55 – Product Overview					
	Type of light	Adjustment	Scanning distance / range	Special features	Page
<b>Photoelectric proximity sensors with background suppression</b>					
FT 55- RLH	Laser 	Potentiometer	800 mm		246
FT 55-RL2H	Laser 	Potentiometer	1000 mm	Precise small-part detection at long scanning distances	248
FT 55B-RH	LED	Potentiometer	800 mm		250
FT 55-RH	LED	Potentiometer	1200 mm		252
FT 55-RHM	LED	Teach-in 	550 mm	Stainless steel housing	254
<b>Photoelectric proximity sensors</b>					
FT 55-RL2	Laser 	Teach-in 	1200 mm	Detection of slightest grey value differences	256
FT 55-R	LED	Teach-in 	2000 mm		258
FT 55-RM	LED	Teach-in 	1750 mm	Stainless steel housing	260
<b>Retroreflective photoelectric sensors</b>					
FR 55-RL	Laser 	Teach-in 	14 m		262
FR 55-R	LED	Teach-in 	14 m		266
FR 55-RM	LED	Teach-in 	13 m	Stainless steel housing	268
<b>Through-beam photoelectric sensors</b>					
FS/FE 55-RL	Laser 	Teach-in 	30 m		270
FS/FE 55-R	LED	Teach-in 	25 m		272
FS/FE 55-RM	LED	Teach-in 	20 m	Stainless steel housing	274

# FT 55-RLH

Laser photoelectric proximity sensor with background suppression



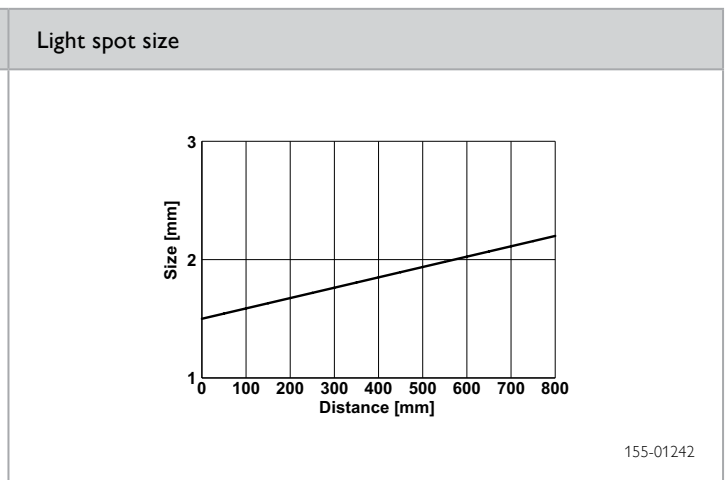
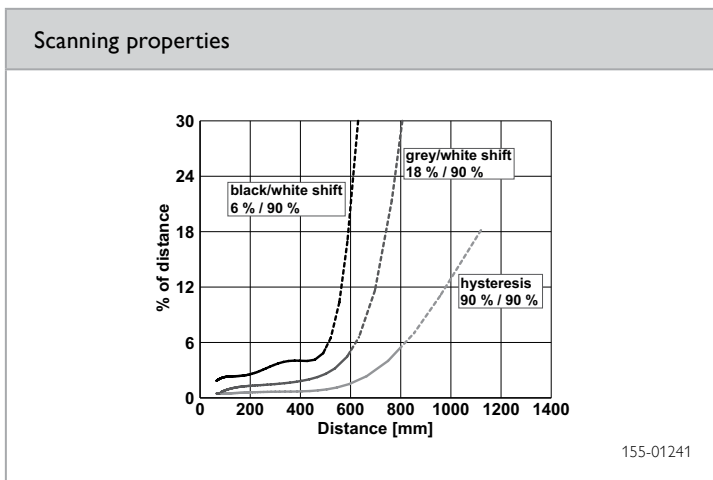
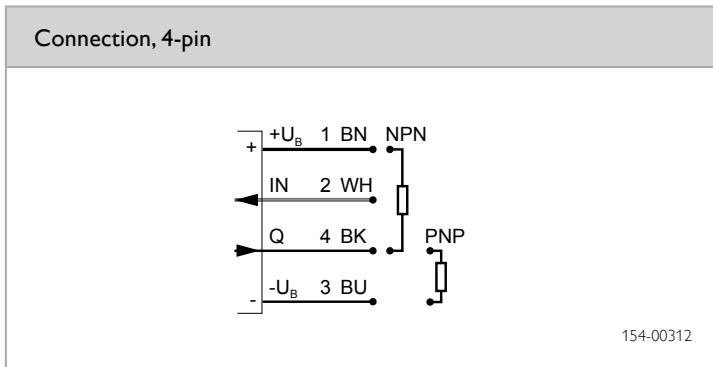
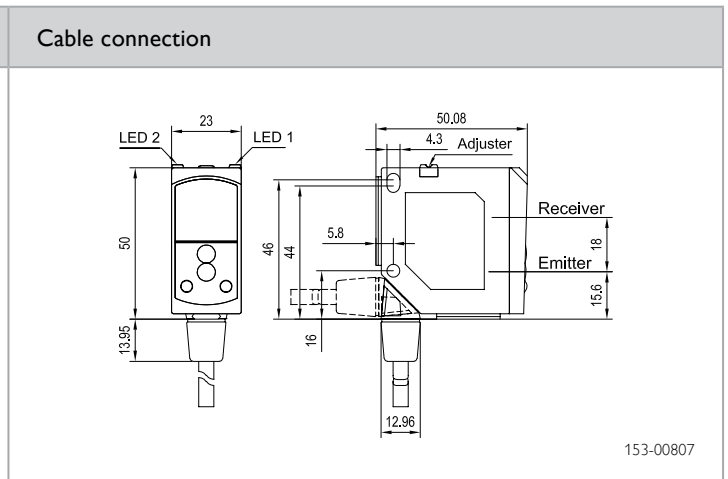
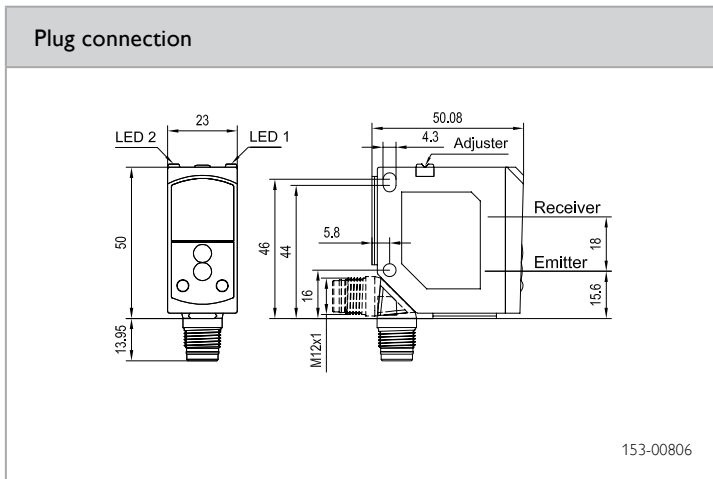
## PRODUCT HIGHLIGHTS

- Precisely adjustable background suppression – reliable operation even with highly reflective and glossy backgrounds
- Particularly suitable for the detection of the smallest of objects
- Very small, easily visible laser light spot
- Precise scanning distance adjustment by means of potentiometer
- Plug and cable connection rotatable

Optical data		Functions	
Scanning distance	5 ... 800 mm <sup>1</sup>	Indicator LED, green	Operating voltage indicator
Type of light	Laser, red, 655 nm	Indicator LED, yellow	Switching output indicator / contamination indicator
Light spot size	See diagram	Scanning distance adjustment	Via potentiometer
Laser Class (DIN EN 60825-1: 2008-05)	1	Adjustment possibilities	N.O./N.C. via control input
		Default settings	Max. scanning distance (6 %)
Electrical data		Mechanical data	
Operating voltage, +U <sub>B</sub>	12 ... 30V DC <sup>2</sup>	Dimensions	50 × 50.08 × 23 mm <sup>3</sup>
No-load current, I <sub>0</sub>	≤ 30 mA	Enclosure rating	IP 69K & IP 67 <sup>3</sup>
Output current, I <sub>e</sub>	≤ 100 mA	Material, housing	PC-ABS
Protective circuits	Reverse-polarity protection, U <sub>B</sub> / short-circuit protection (Q)	Material, front screen	PMMA
Protection Class	2	Type of connection	(See Selection Table)
Standby time	< 300 ms	Ambient temperature: operation	-20 ... +60 °C
Switching output, Q	PNP/NPN (see Selection Table)	Ambient temperature: storage	-20 ... +80 °C
Output function	N.O./N.C.	Weight (plug device)	35 g
Switching frequency, f (ti/tp 1:1)	≤ 1000 Hz	Weight (cable device)	125 g
Response time	500 μs	Vibration and impact resistance	EN 60947-5-2
Control input, IN	+U <sub>B</sub> = N.C. -U <sub>B</sub> / Open = N.O.		

<sup>1</sup> Reference material: white, 90 % reflectivity    <sup>2</sup> Max. 10 % ripple, within U<sub>B</sub>, ~ 50 Hz / 100 Hz    <sup>3</sup> With connected IP 67 / IP 69K plug

Scanning distance	Switching output	Type of connection	Part number	Article number
5 ... 800 mm	PNP	Plug, M12x1, 4-pin	FT 55-RLH-PS-L4	623-11018
5 ... 800 mm	NPN	Plug, M12x1, 4-pin	FT 55-RLH-NS-L4	623-11019
5 ... 800 mm	PNP	Cable, 3 m, 4-wire	FT 55-RLH-PS-K4	623-11021
5 ... 800 mm	NPN	Cable, 3 m, 4-wire	FT 55-RLH-NS-K4	623-11022



Reference material	Detection range
White (90 %)	5 ... 800 mm
Grey (18 %)	10 ... 600 mm
Black (6 %)	30 ... 500 mm

**Accessories**

Connection cables	From Page A-31
Brackets	From Page A-1

# FT 55-RL2H

Laser photoelectric proximity sensor with background suppression



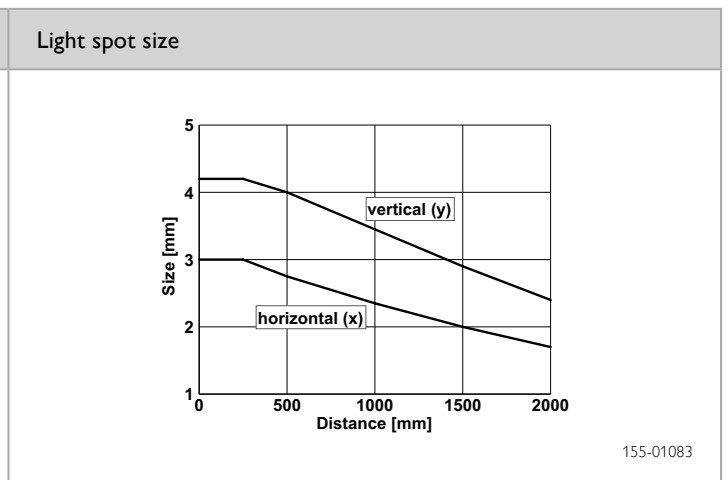
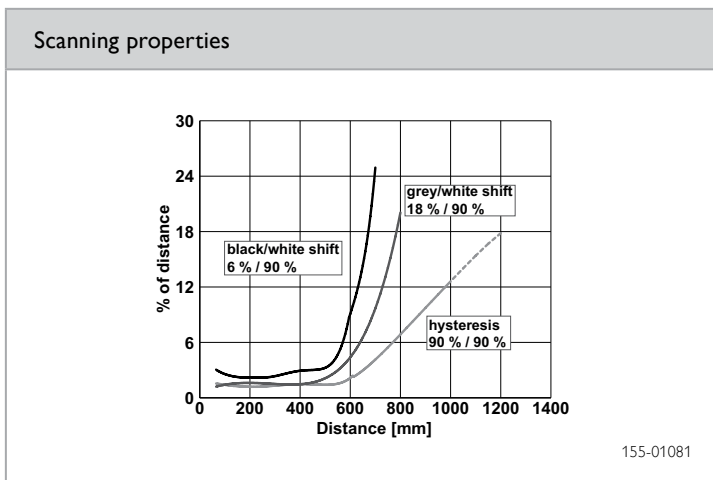
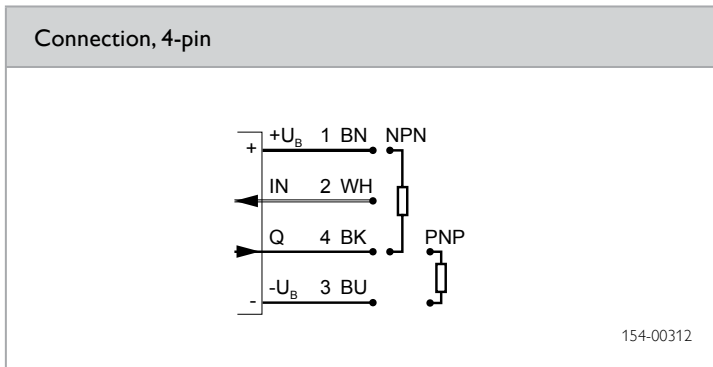
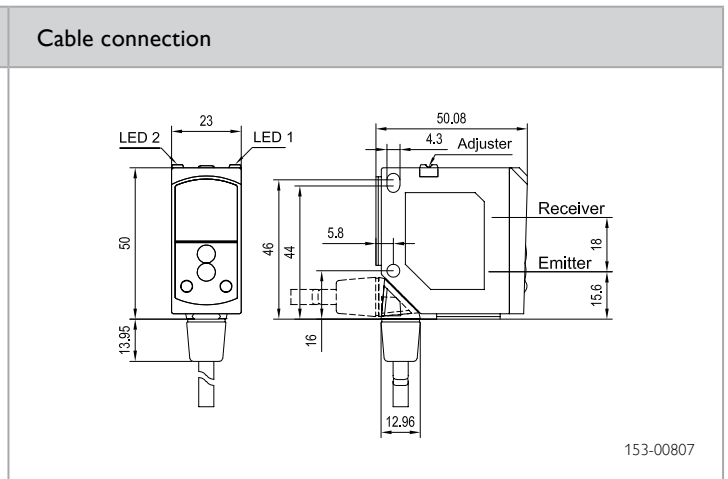
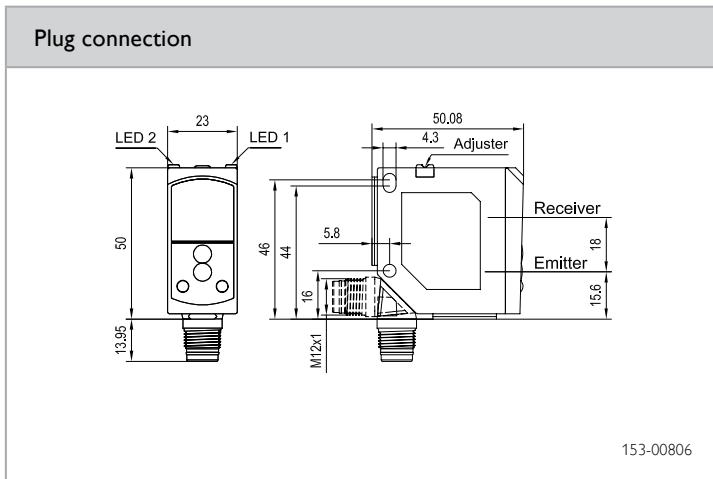
## PRODUCT HIGHLIGHTS

- Long scanning distance of 1 m combined with extremely accurate small-part detection
- Precisely adjustable background suppression – reliable operation even with highly reflective and glossy backgrounds
- Very small, easily visible laser light spot
- Precise scanning distance adjustment by means of potentiometer
- Integrated display window for scanning distance adjustment

Optical data		Functions	
Scanning distance	5 ... 1000 mm <sup>1</sup>	Indicator LED, green	Operating voltage indicator
Type of light	Laser, red, 655 nm	Indicator LED, yellow	Switching output indicator / contamination indicator
Light spot size	See diagram	Scanning distance adjustment	Via potentiometer
Laser Class (DIN EN 60825-1:2008-5)	2	Adjustment possibilities	N.O./N.C. via control input
		Default settings	S <sub>n</sub> = 500 mm (6 %)
Electrical data		Mechanical data	
Operating voltage, +U <sub>b</sub>	12 ... 30V DC <sup>2</sup>	Dimensions	50 × 50.08 × 23 mm <sup>3</sup>
No-load current, I <sub>0</sub>	≤ 30 mA	Enclosure rating	IP 69K & IP 67 <sup>3</sup>
Output current, I <sub>e</sub>	≤ 100 mA	Material, housing	PC-ABS
Protective circuits	Reverse-polarity protection, U <sub>b</sub> / short-circuit protection (Q)	Material, front screen	PMMA
Protection Class	2	Type of connection	(See Selection Table)
Standby time	< 300 ms	Ambient temperature: operation	-20 ... +60 °C
Switching output, Q	PNP/NPN (see Selection Table)	Ambient temperature: storage	-20 ... +80 °C
Output function	N.O./N.C.	Weight (plug device)	35 g
Switching frequency, f (ti/tp 1:1)	≤ 1000 Hz	Weight (cable device)	125 g
Response time	500 μs	Vibration and impact resistance	EN 60947-5-2
Control input, IN	+U <sub>b</sub> = N.C. -U <sub>b</sub> / Open = N.O.		

<sup>1</sup> Reference material: white, 90 % reflectivity    <sup>2</sup> Max. 10 % ripple, within U<sub>b</sub>, ~ 50 Hz / 100 Hz    <sup>3</sup> With connected IP 67 / IP 69K plug

Scanning distance	Switching output	Type of connection	Part number	Article number
5 ... 1000 mm	PNP	Plug, M12x1, 4-pin	FT 55-RL2H-PS-L4	623-11006
5 ... 1000 mm	NPN	Plug, M12x1, 4-pin	FT 55-RL2H-NS-L4	623-11007
5 ... 1000 mm	PNP	Cable, 3 m, 4-wire	FT 55-RL2H-PS-K4	623-11009
5 ... 1000 mm	NPN	Cable, 3 m, 4-wire	FT 55-RL2H-NS-K4	623-11010



Reference material	Detection range
White (90 %)	5 ... 1000 mm
Grey (18 %)	10 ... 800 mm
Black (6 %)	15 ... 700 mm

**Accessories**

Connection cables	From Page A-31
Brackets	From Page A-1

# FT 55B-RH

Photoelectric proximity sensor with background suppression



## PRODUCT HIGHLIGHTS

- Precisely adjustable background suppression
- Reliable switching despite differing object colours and surfaces
- Simple alignment thanks to easily visible light spot
- Plug and cable connection rotatable

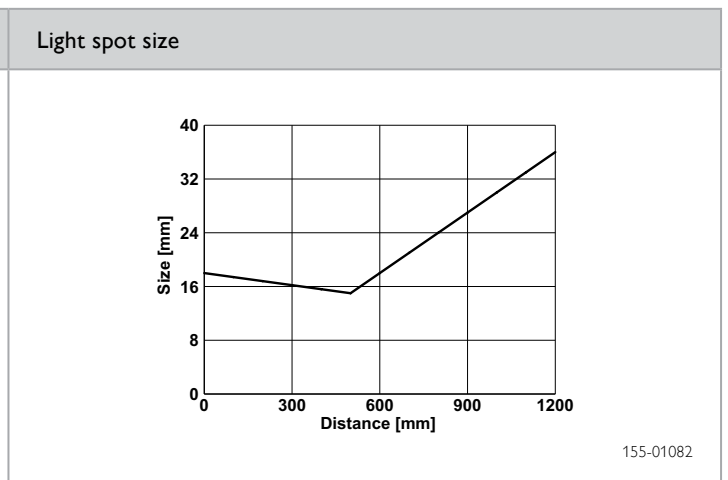
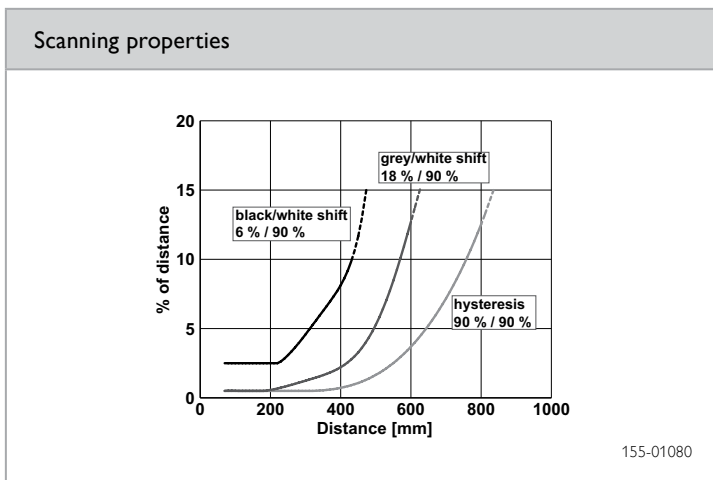
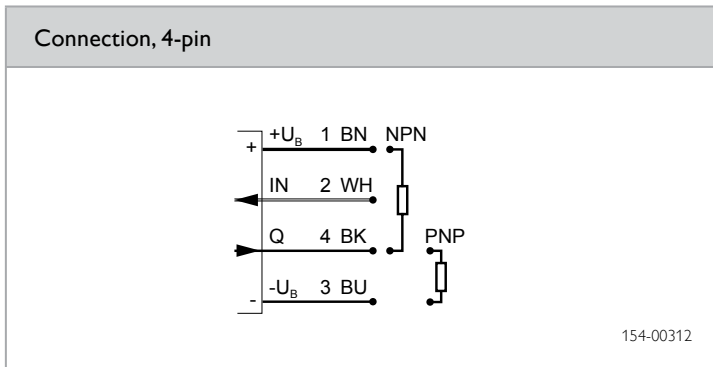
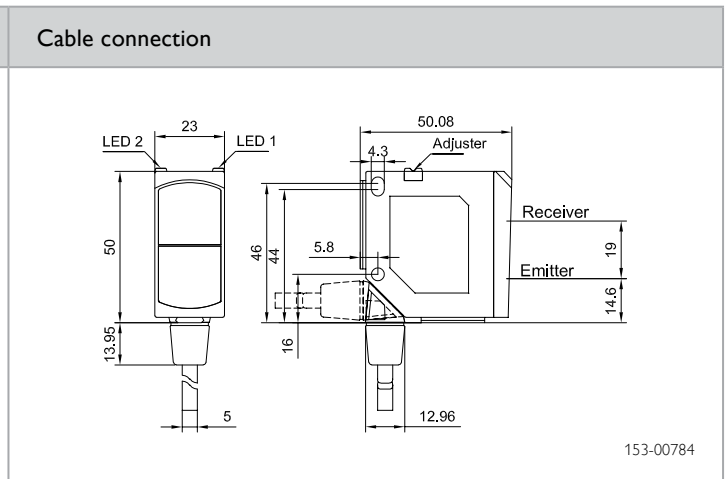
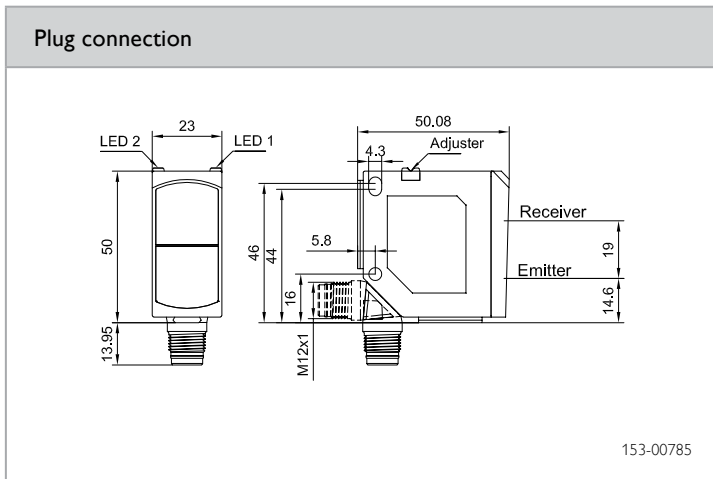
Optical data		Functions	
Scanning distance	3 ... 800 mm <sup>1</sup>	Indicator LED, green	Operating voltage indicator
Type of light	LED, red, 640 nm	Indicator LED, yellow	Switching output indicator / contamination indicator
Light spot size	See diagram	Scanning distance adjustment	Via potentiometer
		Adjustment possibilities	N.O./N.C. via control input
		Default settings	Max. scanning distance (6 %)
Electrical data		Mechanical data	
Operating voltage, +U <sub>B</sub>	10 ... 30V DC <sup>2</sup>	Dimensions	50 × 50.08 × 23 mm <sup>3</sup>
No-load current, I <sub>0</sub>	≤ 30 mA	Enclosure rating	IP 69K & IP 67 <sup>3</sup>
Output current, I <sub>e</sub>	≤ 100 mA	Material, housing	PC-ABS
Protective circuits	Reverse-polarity protection, U <sub>B</sub> / short-circuit protection (Q)	Material, front screen	PMMA
Protection Class	2	Type of connection	(See Selection Table)
Standby time	< 300 ms	Ambient temperature: operation	-20 ... +60 °C
Switching output, Q	PNP/NPN (see Selection Table)	Ambient temperature: storage	-20 ... +80 °C
Output function	N.O./N.C.	Weight (plug device)	35 g
Switching frequency, f (ti/tp 1:1)	≤ 600 Hz	Weight (cable)	125 g
Response time	830 μs	Vibration and impact resistance	EN 60947-5-2
Control input, IN	+U <sub>B</sub> = N.C. -U <sub>B</sub> / Open = N.O.		

<sup>1</sup> Reference material: white, 90 % reflectivity

<sup>2</sup> Max. 10 % ripple, within U<sub>B</sub>, ~ 50 Hz / 100 Hz

<sup>3</sup> With connected IP 67 / IP 69K plug

Scanning distance	Switching output	Type of connection	Part number	Article number
3 ... 800 mm	PNP	Plug, M12x1, 4-pin	FT 55B-RH-PS-L4	623-11012
3 ... 800 mm	NPN	Plug, M12x1, 4-pin	FT 55B-RH-NS-L4	623-11013
3 ... 800 mm	PNP	Cable 3 m, 4-wire	FT 55B-RH-PS-K4	623-11014
3 ... 800 mm	NPN	Cable 3 m, 4-wire	FT 55B-RH-NS-K4	623-11015



Reference material	Detection range
White (90 %)	3 ... 800 mm
Grey (18 %)	5 ... 600 mm
Black (6 %)	15 ... 450 mm

**Accessories**

Connection cables	From Page A-31
Brackets	From Page A-1



# FT 55-RH

Photoelectric proximity sensor with background suppression



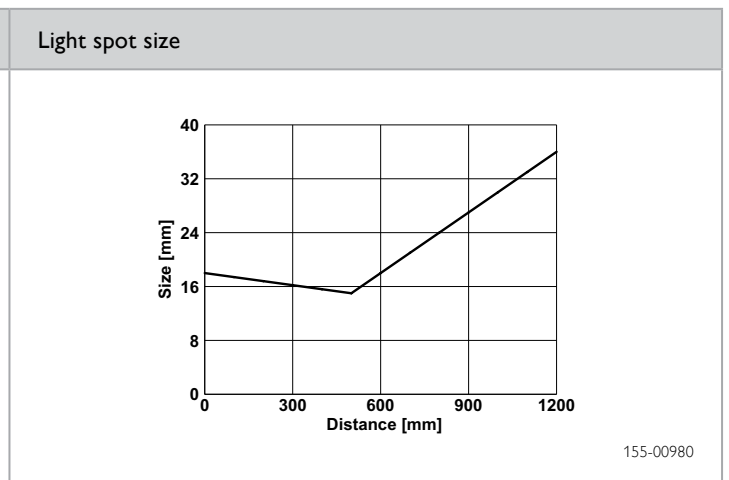
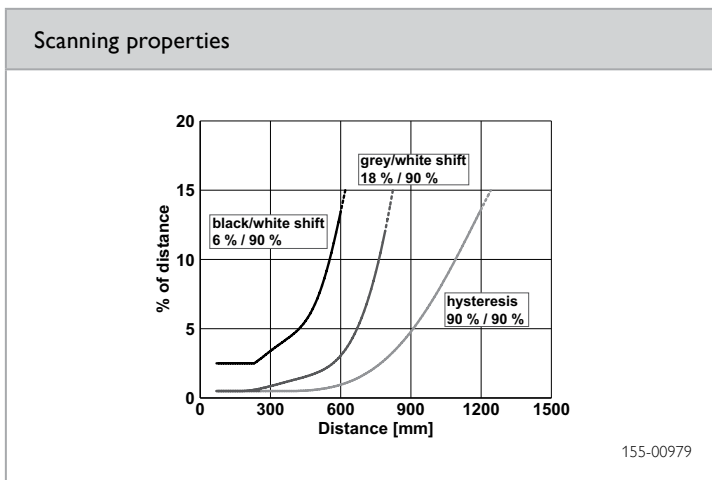
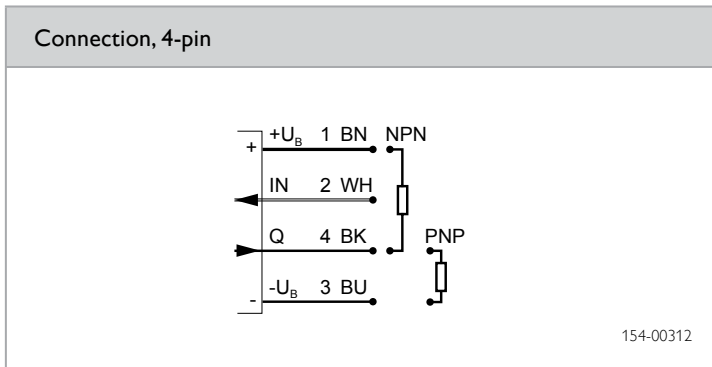
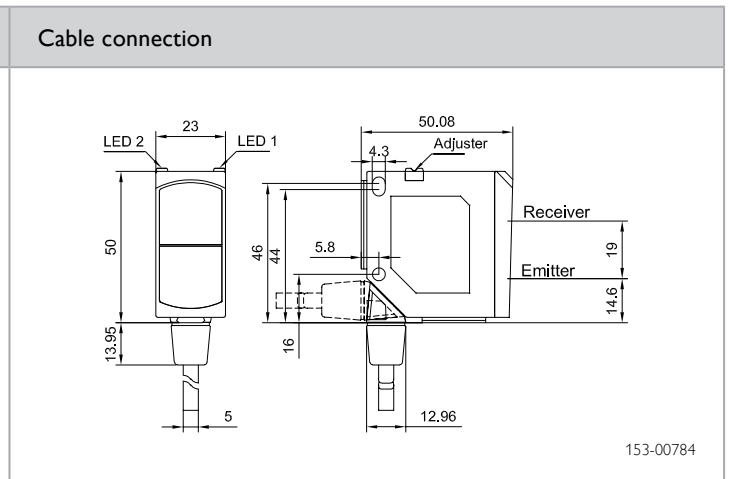
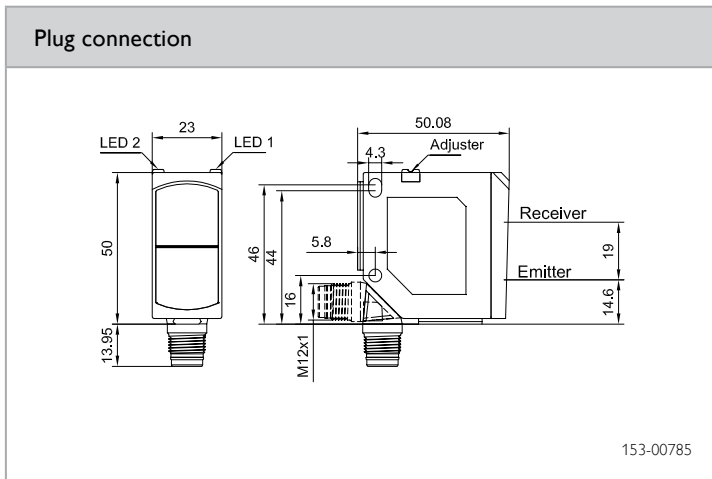
## PRODUCT HIGHLIGHTS

- Long scanning distance of 1.20 m
- Precisely adjustable background suppression – reliable operation even with highly reflective and glossy backgrounds
- Reliable suppression of ambient light, such as sunlight and halogen lamps
- Precise scanning distance adjustment by means of potentiometer

Optical data		Functions	
Scanning distance	3 ... 1200 mm <sup>1</sup>	Indicator LED, green	Operating voltage indicator
Type of light	LED, red, 640 nm	Indicator LED, yellow	Switching output indicator / contamination indicator
Light spot size	See diagram	Scanning distance adjustment	Via potentiometer
		Adjustment possibilities	N.O./N.C. via control input
		Default settings	$S_n = 500 \text{ mm (6 \%)}$
Electrical data		Mechanical data	
Operating voltage, +U <sub>b</sub>	10 ... 30V DC <sup>2</sup>	Dimensions	50 × 50.08 × 23 mm <sup>3</sup>
No-load current, I <sub>0</sub>	≤ 30 mA	Enclosure rating	IP 69K & IP 67 <sup>3</sup>
Output current, I <sub>e</sub>	≤ 100 mA	Material, housing	PC-ABS
Protective circuits	Reverse-polarity protection, U <sub>b</sub> / short-circuit protection (Q)	Material, front screen	PMMA
Protection Class	2	Type of connection	(See Selection Table)
Standby time	< 300 ms	Ambient temperature: operation	-20 ... +60 °C
Switching output, Q	PNP/NPN (see Selection Table)	Ambient temperature: storage	-20 ... +80 °C
Output function	N.O./N.C.	Weight (plug device)	35 g
Switching frequency, f (ti/tp 1:1)	≤ 600 Hz	Weight (cable device)	125 g
Response time	830 μs	Vibration and impact resistance	EN 60947-5-2
Control input, IN	+U <sub>b</sub> = N.C. -U <sub>b</sub> / Open = N.O.		

<sup>1</sup> Reference material: white, 90 % reflectivity    <sup>2</sup> Max. 10 % ripple, within U<sub>b</sub>, ~ 50 Hz / 100 Hz    <sup>3</sup> With connected IP 67 / IP 69K plug

Scanning distance	Switching output	Type of connection	Part number	Article number
3 ... 1200 mm	PNP	Plug, M12x1, 4-pin	FT 55-RH-PS-L4	623-11000
3 ... 1200 mm	NPN	Plug, M12x1, 4-pin	FT 55-RH-NS-L4	623-11001
3 ... 1200 mm	PNP	Cable, 3 m, 4-wire	FT 55-RH-PS-K4	623-11003
3 ... 1200 mm	NPN	Cable, 3 m, 4-wire	FT 55-RH-NS-K4	623-11004



Reference material	Detection range
White (90 %)	3 ... 1200 mm
Grey (18 %)	5 ... 800 mm
Black (6 %)	10 ... 600 mm

### Accessories

Connection cables	From Page A-31
Brackets	From Page A-1

# FT 55-RHM

Photoelectric proximity sensor with background suppression – stainless steel housing



## PRODUCT HIGHLIGHTS

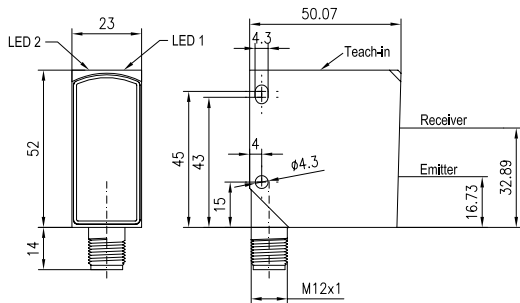
- Minimum black / white-shift for reliable switching regardless of object colour and surface
- Stable stainless steel housing – ideal for use in hygiene zones
- Housing concept designed for intensive cleaning processes in the food industry
- Sensor adjustment via teach-in and control input

Optical data		Functions	
Scanning distance	3 ... 550 mm <sup>1</sup>	Indicator LED, green	Operating voltage indicator
Adjustment range	100 ... 550 mm <sup>1</sup>	Indicator LED, yellow	Switching output indicator / functional reserve indicator
Type of light	LED, red, 640 nm	Scanning distance adjustment	Via Teach-in button and control input
Light spot size	See diagram	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 Button lock via control input
		Default settings	Max. scanning distance and N.O.
Electrical data		Mechanical data	
Operating voltage, +U <sub>b</sub>	10 ... 30V DC <sup>2</sup>	Dimensions	52 x 50.07 x 23 mm <sup>3</sup>
No-load current, I <sub>0</sub>	≤ 30 mA	Enclosure rating	IP 69K & IP 67 <sup>3</sup>
Output current, I <sub>e</sub>	≤ 100 mA	Material, housing	Stainless steel, 316L
Protective circuits	Reverse-polarity protection, U <sub>b</sub> / short-circuit protection (Q)	Material, front screen	PMMA
Standby time	< 300 ms	Type of connection	(See Selection Table)
Switching output, Q	PNP/NPN (see Selection Table)	Ambient temperature: operation	-20 ... +60 °C
Output function	N.O./N.C.	Ambient temperature: storage	-20 ... +80 °C
Switching frequency, f (ti/tp 1:1)	≤ 400 Hz	Weight (plug device)	145 g
Response time	1.25 ms	Vibration and impact resistance	EN 60947-5-2
Control input, IN	+U <sub>b</sub> = teach-in -U <sub>b</sub> = button locked Open = normal operation		

<sup>1</sup> Reference material: white, 90 % reflectivity    <sup>2</sup> Max. 10 % ripple, within U<sub>b</sub>, ~ 50 Hz / 100 Hz    <sup>3</sup> With connected IP 67 / IP 69K plug

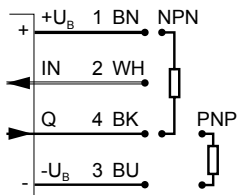
Scanning distance	Switching output	Type of connection	Part number	Article number
3 ... 550 mm	PNP	Plug, M12x1, 4-pin	FT 55-RHM-PS-L4	623-11025
3 ... 550 mm	NPN	Plug, M12x1, 4-pin	FT 55-RHM-NS-L4	623-11026

Plug connection



153-00800

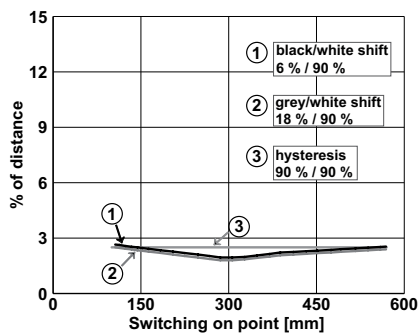
Connection, 4-pin



154-00312

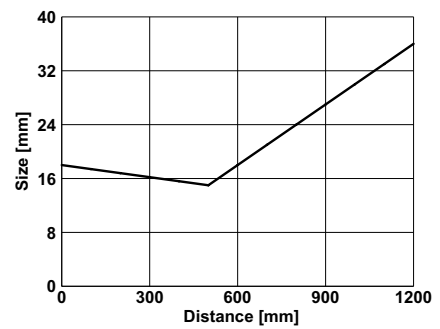
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Scanning properties



155-01286

Light spot size



155-00980

Reference material	Detection range
White (90 %)	3 ... 550 mm
Grey (18 %)	12 ... 550 mm
Black (6 %)	20 ... 550 mm

Accessories

Connection cables	From Page A-31
Brackets	From Page A-1

# FT 55-RL2

Diffuse laser photoelectric proximity sensor



## PRODUCT HIGHLIGHTS

- Differentiation of even the slightest of grey value differences
- Sensor adjustment via teach-in and control input
- Very small, easily visible laser light spot
- Plug and cable connection rotatable

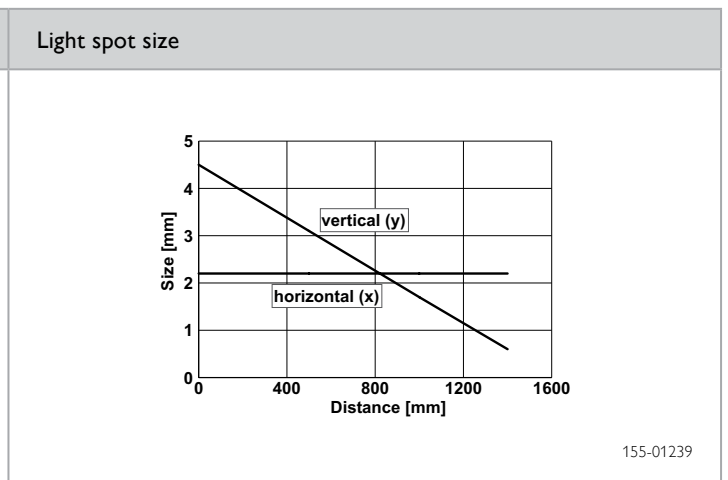
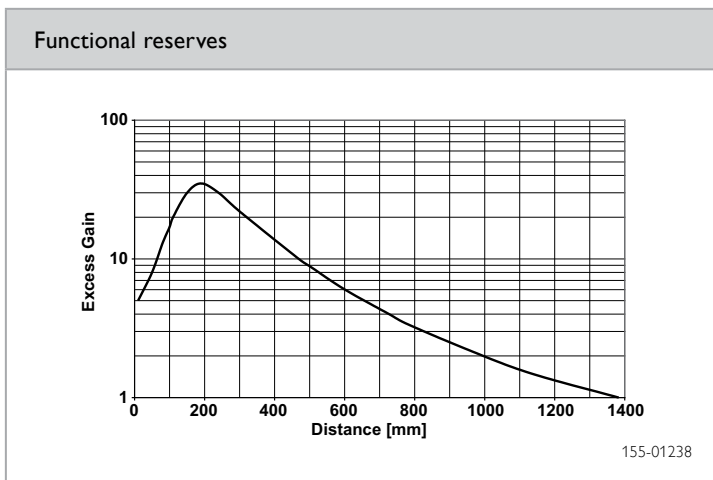
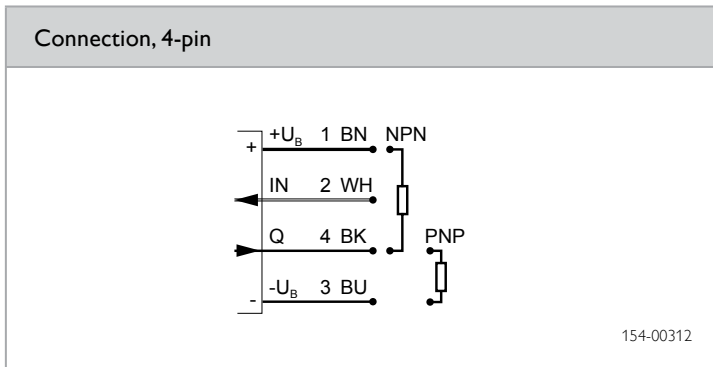
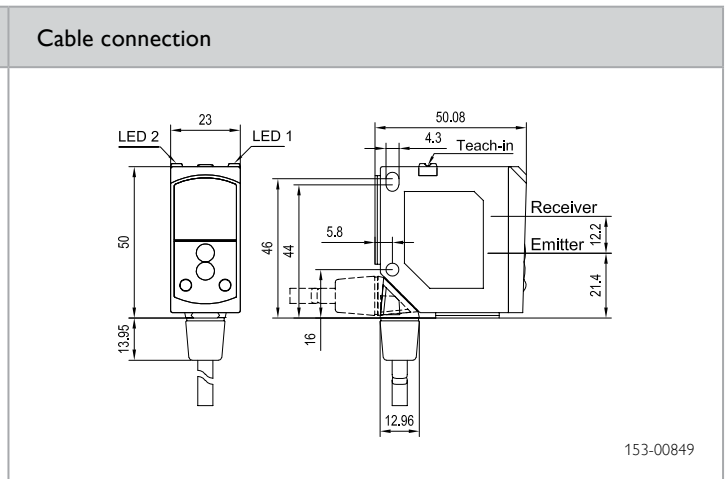
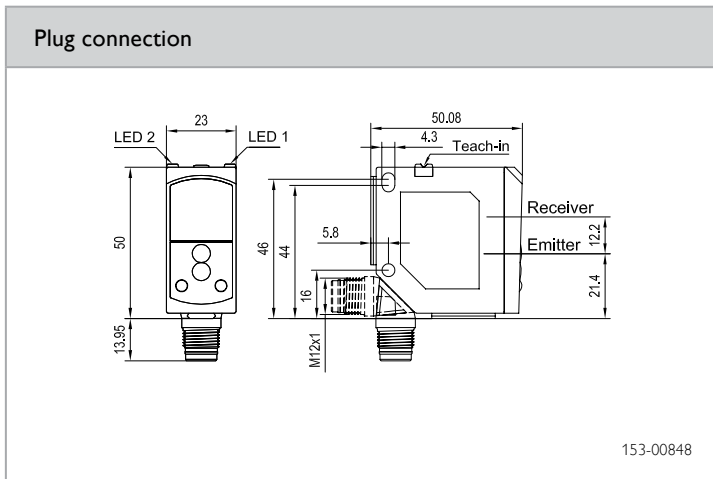
Optical data		Functions	
Scanning distance	5 ... 1200 mm <sup>1</sup>	Indicator LED, green	Operating voltage indicator
Type of light	Laser, red, 655 nm	Indicator LED, yellow	Switching output indicator / contamination indicator
Light spot size	See diagram	Sensitivity adjustment	Via Teach-in button and control input
Laser Class (DIN EN 60825-1:2008-5)	2	Teach-in modes	Mode 1: during running process Mode 2: during standing process
Hysteresis	≤ 15 %	Adjustment possibilities	N.O./N.C. via Teach-in button and control input Button lock via control input
		Default settings	Max. scanning distance and N.O.
Electrical data		Mechanical data	
Operating voltage, +U <sub>b</sub>	10 ... 30V DC <sup>2</sup>	Dimensions	50 × 50.08 × 23 mm <sup>3</sup>
No-load current, I <sub>0</sub>	≤ 30 mA	Enclosure rating	IP 69K & IP 67 <sup>3</sup>
Output current, I <sub>e</sub>	≤ 100 mA	Material, housing	PC-ABS
Protective circuits	Reverse-polarity protection, U <sub>b</sub> / short-circuit protection (Q)	Material, front screen	PMMA
Protection Class	2	Type of connection	(See Selection Table)
Standby time	< 300 ms	Ambient temperature: operation	-20 ... +60 °C
Switching output, Q	PNP/NPN (see Selection Table)	Ambient temperature: storage	-20 ... +80 °C
Output function	N.O./N.C.	Weight (plug device)	35 g
Switching frequency, f (ti/tp 1:1)	≤ 600 Hz	Weight (cable device)	125 g
Response time	830 μs	Vibration and impact resistance	EN 60947-5-2
Control input, IN	+U <sub>b</sub> = teach-in -U <sub>b</sub> = button locked Open = normal operation		

<sup>1</sup> Reference material: white, 90 % reflectivity

<sup>2</sup> Max. 10 % ripple, within U<sub>b</sub>, ~ 50 Hz / 100 Hz

<sup>3</sup> With connected IP 67 / IP 69K plug

Scanning distance	Switching output	Type of connection	Part number	Article number
5 ... 1200 mm	PNP	Plug, M12x1, 4-pin	FT 55-RL2-PS-L4	622-21006
5 ... 1200 mm	NPN	Plug, M12x1, 4-pin	FT 55-RL2-NS-L4	622-21007
5 ... 1200 mm	PNP	Cable, 3 m, 4-wire	FT 55-RL2-PS-K4	622-21009
5 ... 1200 mm	NPN	Cable, 3 m, 4-wire	FT 55-RL2-NS-K4	622-21010



Reference material	Detection range
White (90 %)	5 ... 1200 mm
Grey (18 %)	10 ... 700 mm
Black (6 %)	100 ... 400 mm

### Accessories

Connection cables	From Page A-31
Brackets	From Page A-1

# FT 55-R

Diffuse photoelectric proximity sensor



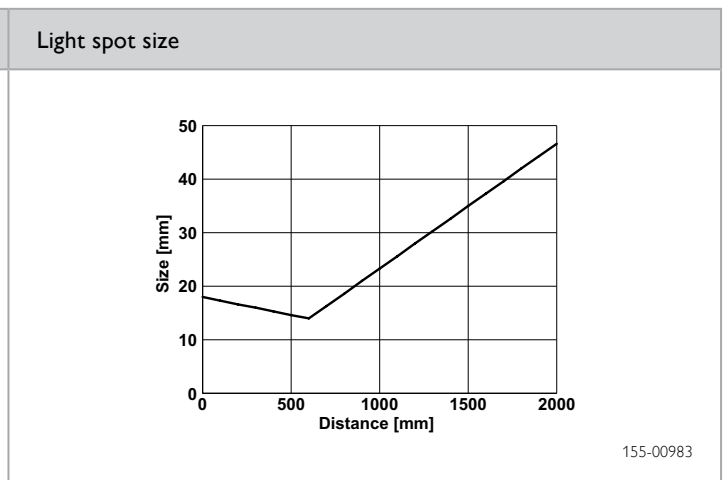
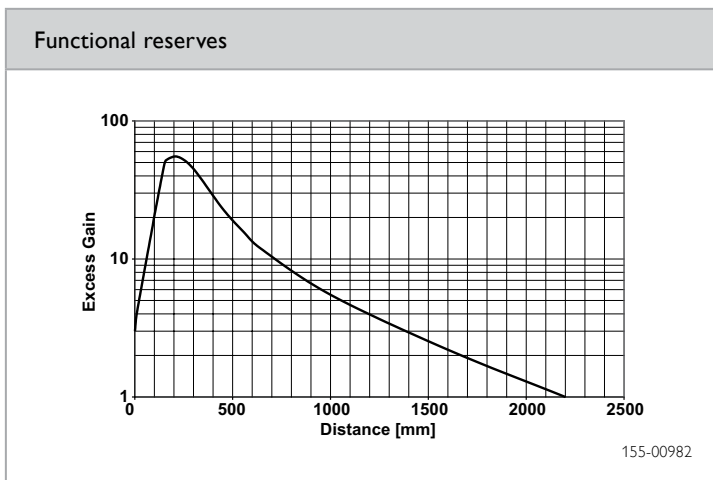
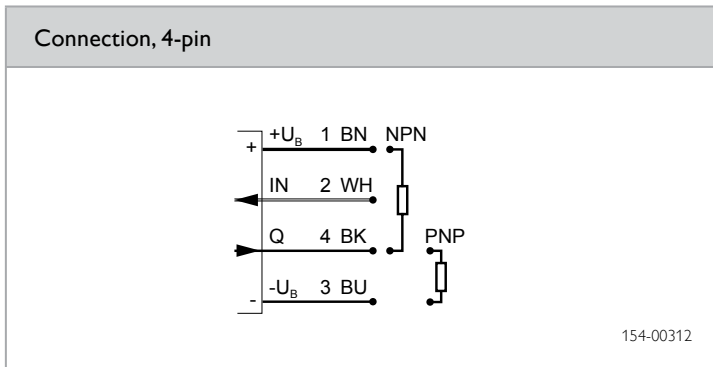
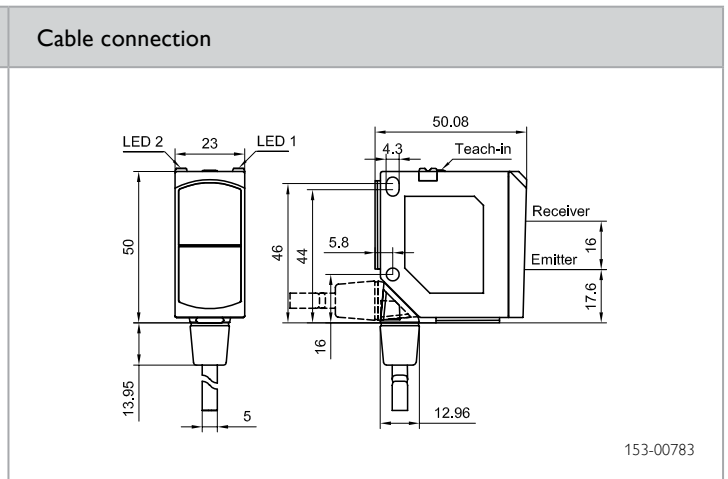
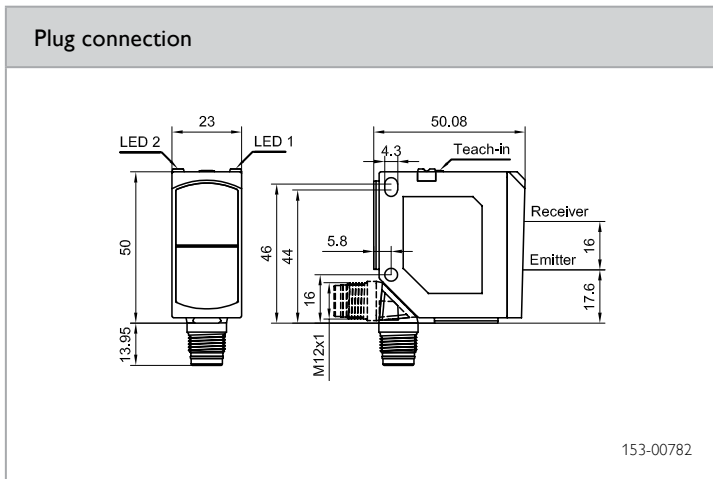
## PRODUCT HIGHLIGHTS

- Differentiation of even the slightest of grey value differences
- Sensor adjustment via teach-in and control input
- Simple alignment thanks to easily visible light spot
- Plug and cable connection rotatable

Optical data		Functions	
Scanning distance	5 ... 2000 mm <sup>1</sup>	Indicator LED, green	Operating voltage indicator
Type of light	LED, red, 640 nm	Indicator LED, yellow	Switching output indicator / contamination indicator
Light spot size	See diagram	Sensitivity adjustment	Via Teach-in button and control input
		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 Button lock via control input
		Default settings	Max. scanning distance and N.O.
Electrical data		Mechanical data	
Operating voltage, +U <sub>B</sub>	10 ... 30V DC <sup>2</sup>	Dimensions	50 × 50.08 × 23 mm <sup>3</sup>
No-load current, I <sub>0</sub>	≤ 30 mA	Enclosure rating	IP 69K & IP 67 <sup>3</sup>
Output current, I <sub>e</sub>	≤ 100 mA	Material, housing	PC-ABS
Protective circuits	Reverse-polarity protection, U <sub>B</sub> / short-circuit protection (Q)	Material, front screen	PMMA
Protection Class	2	Type of connection	(See Selection Table)
Standby time	< 300 ms	Ambient temperature: operation	-20 ... +60 °C
Switching output, Q	PNP/NPN (see Selection Table)	Ambient temperature: storage	-20 ... +80 °C
Output function	N.O./N.C.	Weight (plug device)	35 g
Switching frequency, f (ti/tp 1:1)	≤ 600 Hz	Weight (cable device)	125 g
Response time	830 μs	Vibration and impact resistance	EN 60947-5-2
Control input, IN	+U <sub>B</sub> = teach-in -U <sub>B</sub> = button locked Open = normal operation		

<sup>1</sup> Reference material: white, 90 % reflectivity    <sup>2</sup> Max. 10 % ripple, within U<sub>B</sub>, ~ 50 Hz / 100 Hz    <sup>3</sup> With connected IP 67 / IP 69K plug

Scanning distance	Switching output	Type of connection	Part number	Article number
5 ... 2000 mm	PNP	Plug, M12x1, 4-pin	FT 55-R-PS-L4	622-21000
5 ... 2000 mm	NPN	Plug, M12x1, 4-pin	FT 55-R-NS-L4	622-21001
5 ... 2000 mm	PNP	Cable, 3 m, 4-wire	FT 55-R-PS-K4	622-21003
5 ... 2000 mm	NPN	Cable, 3 m, 4-wire	FT 55-R-NS-K4	622-21004



Reference material	Detection range
White (90 %)	5 ... 2000 mm
Grey (18 %)	10 ... 1200 mm
Black (6 %)	90 ... 600 mm

### Accessories

Connection cables	From Page A-31
Brackets	From Page A-1



# FT 55-RM

Diffuse photoelectric proximity sensor – stainless steel housing



## PRODUCT HIGHLIGHTS

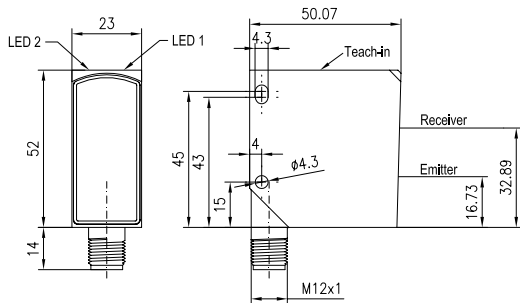
- Stable stainless steel housing – ideal for use in hygiene zones, e.g. in the food and beverages industries
- Housing concept designed for intensive cleaning processes
- Sensor adjustment via teach-in and control input
- Simple alignment thanks to easily visible light spot

Optical data		Functions	
Scanning distance	0 ... 1750 mm <sup>1</sup>	Indicator LED, green	Operating voltage indicator
Type of light	LED, red, 640 nm	Indicator LED, yellow	Switching output indicator / contamination indicator
Light spot size	See diagram	Sensitivity adjustment	Via Teach-in button and control input
		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 Button lock via control input
		Default settings	Max. scanning distance and N.O.
Electrical data		Mechanical data	
Operating voltage, +U <sub>b</sub>	10 ... 30V DC <sup>2</sup>	Dimensions	52 x 50.07 x 23 mm <sup>3</sup>
No-load current, I <sub>0</sub>	≤ 30 mA	Enclosure rating	IP 69K & IP 67 <sup>3</sup>
Output current, I <sub>e</sub>	≤ 100 mA	Material, housing	Stainless steel, 316L
Protective circuits	Reverse-polarity protection, U <sub>b</sub> / short-circuit protection (Q)	Material, front screen	PMMA
Standby time	< 300 ms	Type of connection	(See Selection Table)
Switching output, Q	PNP/NPN (see Selection Table)	Ambient temperature: operation	-20 ... +60 °C
Output function	N.O./N.C.	Ambient temperature: storage	-20 ... +80 °C
Switching frequency, f (ti/tp 1:1)	≤ 600 Hz	Weight (plug device)	138 g
Response time	830 μs	Vibration and impact resistance	EN 60947-5-2
Control input, IN	+U <sub>b</sub> = teach-in -U <sub>b</sub> = button locked Open = normal operation		

<sup>1</sup> Reference material: white, 90 % reflectivity    <sup>2</sup> Max. 10 % ripple, within U<sub>b</sub>, ~ 50 Hz / 100 Hz    <sup>3</sup> With connected IP 67 / IP 69K plug

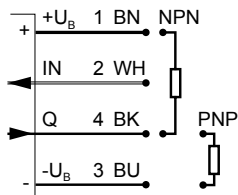
Scanning distance	Switching output	Type of connection	Part number	Article number
0 ... 1750 mm	PNP	Plug, M12x1, 4-pin	FT 55-RM-PS-L4	622-21012
0 ... 1750 mm	NPN	Plug, M12x1, 4-pin	FT 55-RM-NS-L4	622-21013

Plug connection



153-00800

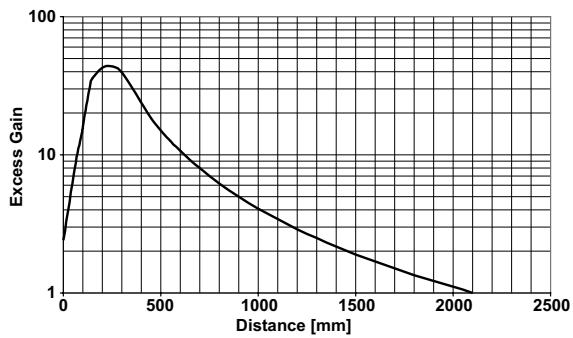
Connection, 4-pin



154-00312

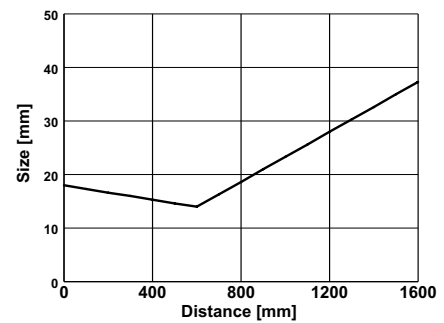
8

Functional reserves



155-01163

Light spot size



155-01111

Reference material	Detection range
White (90 %)	0 ... 1750 mm
Grey (18 %)	15 ... 1100 mm
Black (6 %)	90 ... 550 mm

Accessories

Connection cables	From Page A-31
Brackets	From Page A-1

# FR 55-RL

## Laser retroreflective photoelectric sensor



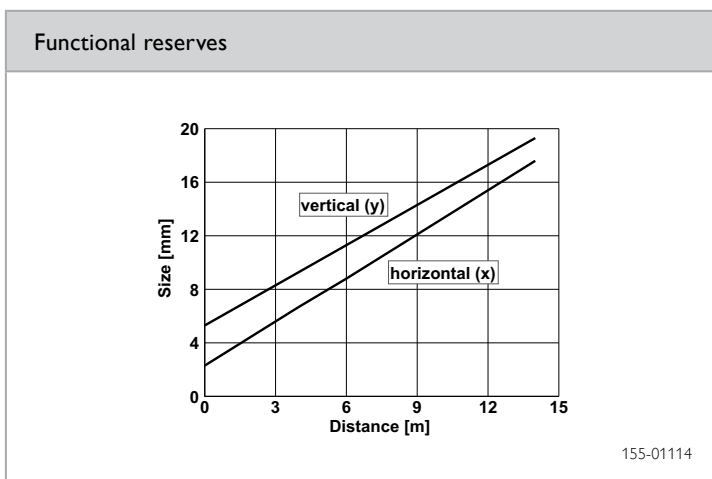
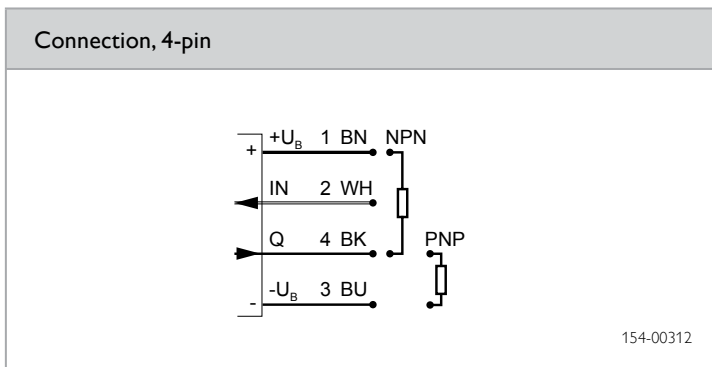
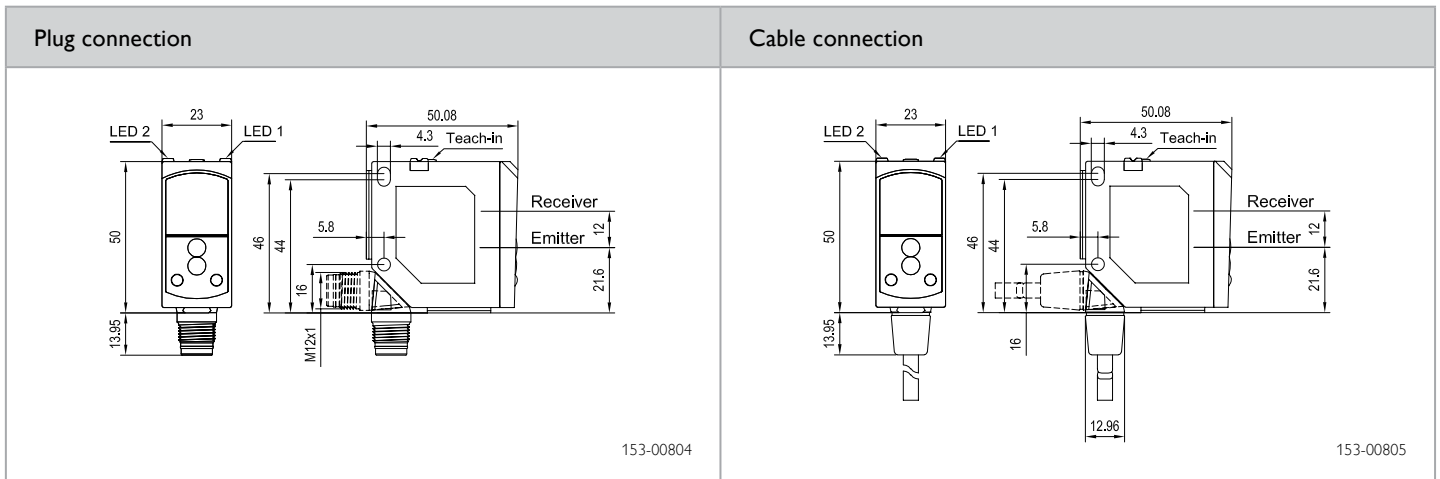
### PRODUCT HIGHLIGHTS

- Particularly suitable for the detection of the smallest of objects – smallest detectable part < 2 mm
- Bright, precise laser light spot in Laser Class 1
- Suitable for a wide variety of different reflectors
- Sensor adjustment via teach-in and control input

Optical data		Functions	
Limit range	0.3 ... 14 m <sup>1</sup>	Indicator LED, green	Operating voltage indicator
Operating range	0.3 ... 12 m <sup>1</sup>	Indicator LED, yellow	Switching output indicator / contamination indicator
Type of light	Laser, red, 655 nm	Sensitivity adjustment	Via Teach-in button and control input
Light spot size	See diagram	Teach-in modes	Mode 1: during running process Mode 2: during standing process
Laser Class (DIN EN 60825-1:2008-5)	1	Adjustment possibilities	N.O./N.C. via Teach-in button and control input Button lock via control input
Polarising filter	Yes	Default settings	Max. range and N.O.
Electrical data		Mechanical data	
Operating voltage, +U <sub>b</sub>	10 ... 30V DC <sup>2</sup>	Dimensions	50 × 50.08 × 23 mm <sup>3</sup>
No-load current, I <sub>0</sub>	≤ 30 mA	Enclosure rating	IP 69K & IP 67 <sup>3</sup>
Output current, I <sub>e</sub>	≤ 100 mA	Material, housing	PC-ABS
Protective circuits	Reverse-polarity protection, U <sub>b</sub> / short-circuit protection (Q)	Material, front screen	PMMA
Protection Class	2	Type of connection	(See Selection Table)
Standby time	< 300 ms	Ambient temperature: operation	-20 ... +60 °C
Switching output, Q	PNP/NPN (see Selection Table)	Ambient temperature: storage	-20 ... +80 °C
Output function	N.O./N.C.	Weight (plug device)	35 g
Switching frequency, f (ti/tp 1:1)	≤ 2000 Hz	Weight (cable device)	125 g
Response time	250 μs	Vibration and impact resistance	EN 60947-5-2
Control input, IN	+U <sub>b</sub> = teach-in - U <sub>b</sub> = button locked Open = normal operation		

<sup>1</sup> Reference material: R5/L reflector    <sup>2</sup> Max. 10 % ripple, within U<sub>b</sub> ~ 50 Hz / 100 Hz    <sup>3</sup> With connected IP 67 / IP 69K plug

Operating range	Switching output	Type of connection	Part number	Article number
0.3 ... 12 m	PNP	Plug, M12x1, 4-pin	FR 55-RL-PS-L4	621-11006
0.3 ... 12 m	NPN	Plug, M12x1, 4-pin	FR 55-RL-NS-L4	621-11007
0.3 ... 12 m	PNP	Cable, 3 m, 4-wire	FR 55-RL-PS-K4	621-11009
0.3 ... 12 m	NPN	Cable, 3 m, 4-wire	FR 55-RL-NS-K4	621-11010



Reflector / reflective foil*	Operating range
R5/L	0.3 ... 12 m
RF-230 KL*	0.2 ... 6 m

### Accessories

Reflectors	From Page A-15
Connection cables	From Page A-31
Brackets	From Page A-1

# FR 55-RLO

## Autocollimation laser retroreflective photoelectric sensor



### PRODUCT HIGHLIGHTS

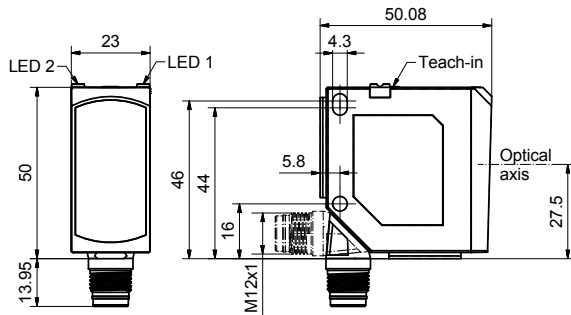
- Reliable small-part detection from a size of 0.2 mm at a scanning distance of 0–5 m
- Precise front-edge detection even in fastest automation processes thanks to a high switching frequency of 5 kHz
- Reliable detection of objects through the smallest of openings thanks to autocollimation; therefore sensor can be placed outside any danger zone
- No blind zone - detection from a range of 0 mm

Optical data		Functions	
Limit range	0.3 ... 14 m <sup>1</sup>	Indicator LED, green	Operating voltage indicator
Operating range	0.3 ... 12 m <sup>1</sup>	Indicator LED, yellow	Switching output indicator / contamination indicator
Type of light	LED, red, 640 nm	Sensitivity adjustment	Via Teach-in button and control input
Light spot size	See diagram	Teach-in modes	Mode 1: during running process Mode 2: during standing process
Laser Class (DIN EN 60825-1:2008-5)	1	Adjustment possibilities	N.O./N.C. via Teach-in button and control input Button lock via control input
Polarising filter	Yes	Default settings	Max. range and N.O.
Electrical data		Mechanical data	
Operating voltage, +U <sub>B</sub>	10 ... 30V DC <sup>2</sup>	Dimensions	50 × 50.08 × 23 mm <sup>3</sup>
No-load current, I <sub>0</sub>	≤ 30 mA	Enclosure rating	IP 69K & IP 67 <sup>3</sup>
Output current, I <sub>e</sub>	≤ 100 mA	Material, housing	PC-ABS
Protective circuits	Reverse-polarity protection, U <sub>B</sub> / short-circuit protection (Q)	Material, front screen	PMMA
Protection Class	2	Type of connection	(see Selection Table)
Standby time	< 300 ms	Ambient temperature: operation	-20 ... +60 °C
Switching output, Q	PNP/NPN (see Selection Table)	Ambient temperature: storage	-20 ... +80 °C
Output function	N.O./N.C.	Weight (plug device)	35 g
Switching frequency, f (ti/tp 1:1)	(see Selection Table)	Vibration and impact resistance	EN 60947-5-2
Response time	(see Selection Table)		
Control input, IN	+U <sub>B</sub> = teach-in -U <sub>B</sub> = button locked Open = normal operation		

<sup>1</sup> Reference material: R10 reflector    <sup>2</sup> Max. 10 % ripple, within U<sub>B</sub>, ~ 50 Hz / 100 Hz    <sup>3</sup> With connected IP 67 / IP 69K plug

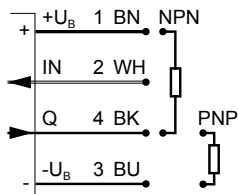
Switching frequency f (ti/tp 1:1) <sup>2</sup>	Response time	Switching output	Type of connection	Part number	Article number
≤ 5 kHz	100 μs	PNP	Plug M12x1, 4-pin	FR 55-RLO1-PS-L4	621-11021
≤ 5 kHz	100 μs	NPN	Plug M12x1, 4-pin	FR 55-RLO1-NS-L4	621-11022
≤ 2,5 kHz	200 μs	PNP	Plug M12x1, 4-pin	FR 55-RLO2-PS-L4	621-11023
≤ 2,5 kHz	200 μs	NPN	Plug M12x1, 4-pin	FR 55-RLO2-NS-L4	621-11024

Plug connection



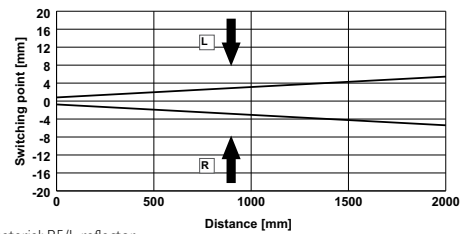
153-01090

Connection, 4-pin



154-00312

Lateral object approach

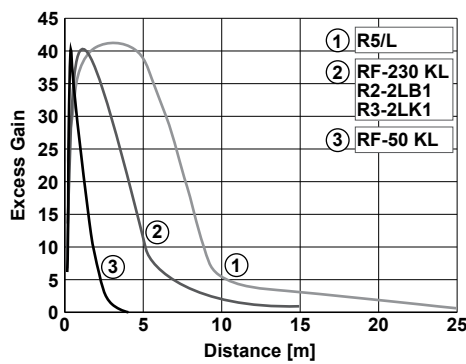


Reference material: R5/L reflector

155-01724

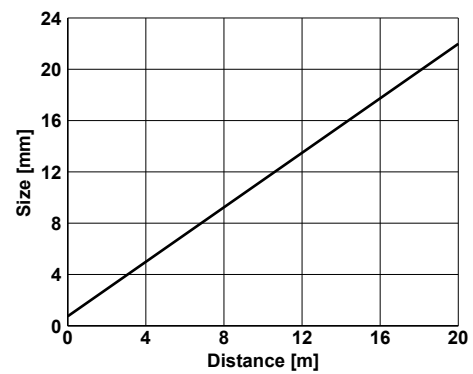
8

Functional reserves



155-01723

Light spot size



155-01722

Reflector	Operating range (min./max. reflector distance)
R5/L	0 ... 20 m
RF-230 KL	0 ... 15 m
R2-2LB1	0 ... 15 m
R3-2LK1	0 ... 15 m
RF-50 KL	0 ... 3 m

# FR 55-R

## Retroreflective photoelectric sensor



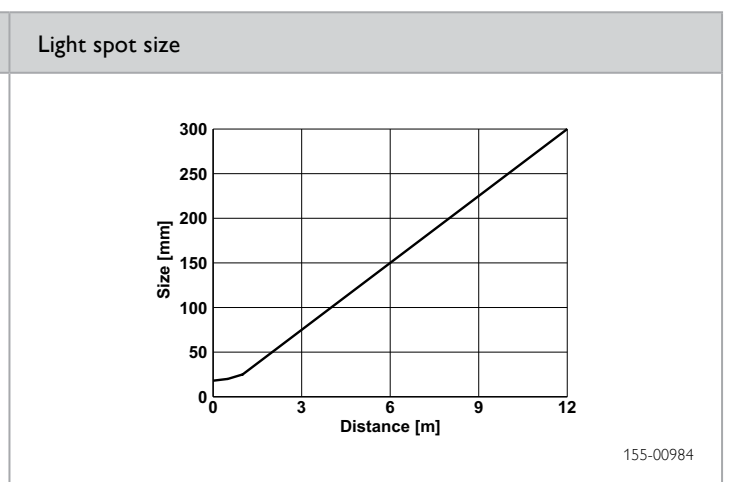
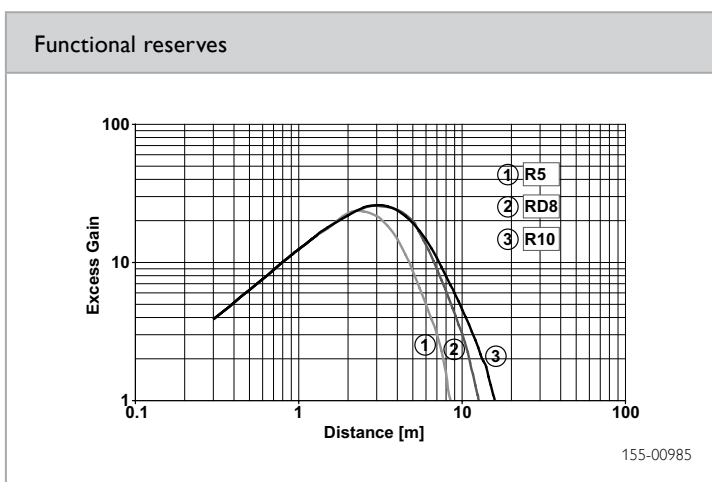
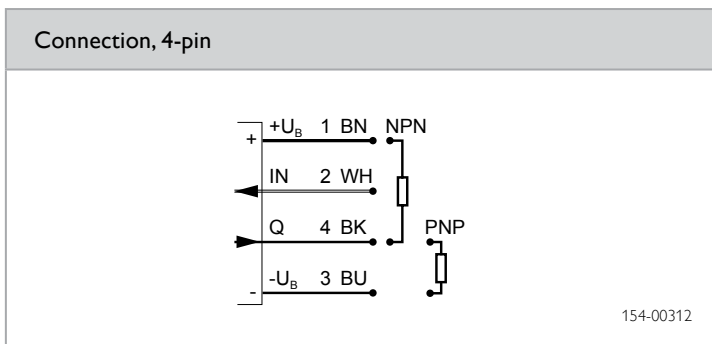
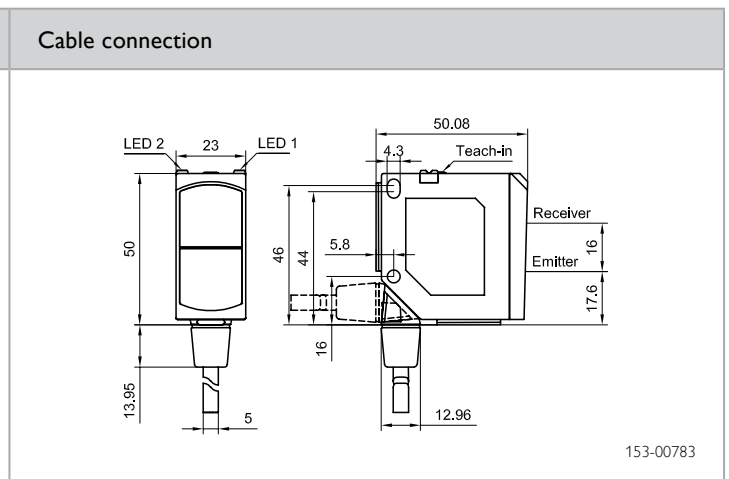
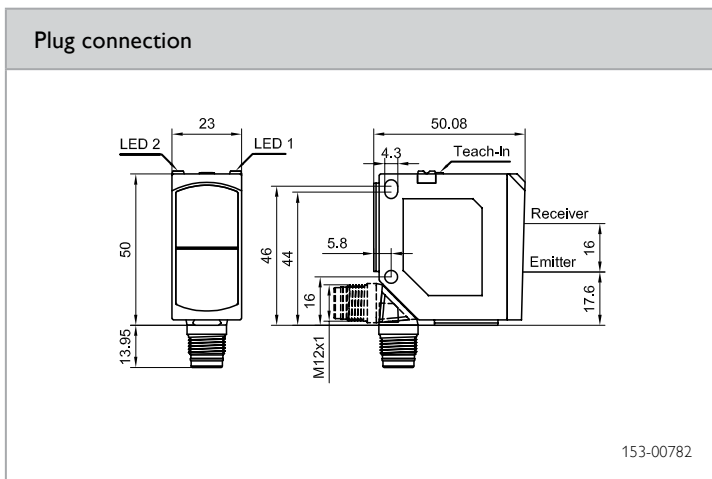
### PRODUCT HIGHLIGHTS

- Simple alignment thanks to easily visible light spot
- Suitable for a wide variety of different reflectors
- Sensor adjustment via teach-in and control input
- Plug and cable connection rotatable

Optical data		Functions	
Limit range	0.3 ... 14 m <sup>1</sup>	Indicator LED, green	Operating voltage indicator
Operating range	0.3 ... 12 m <sup>1</sup>	Indicator LED, yellow	Switching output indicator / contamination indicator
Type of light	LED, red, 640 nm	Sensitivity adjustment	Via Teach-in button and control input
Light spot size	See diagram	Teach-in modes	Mode 1: during running process Mode 2: during standing process
Polarising filter	Yes	Adjustment possibilities	N.O./N.C. via Teach-in button and control input Button lock via control input
		Default settings	S <sub>n</sub> = 8 m and N.O.
Electrical data		Mechanical data	
Operating voltage, +U <sub>b</sub>	10 ... 30V DC <sup>2</sup>	Dimensions	50 x 50.08 x 23 mm <sup>3</sup>
No-load current, I <sub>0</sub>	≤ 30 mA	Enclosure rating	IP 69K & IP 67 <sup>3</sup>
Output current, I <sub>e</sub>	≤ 100 mA	Material, housing	PC-ABS
Protective circuits	Reverse-polarity protection, U <sub>b</sub> / short-circuit protection (Q)	Material, front screen	PMMA
Protection Class	2	Type of connection	(See Selection Table)
Standby time	< 300 ms	Ambient temperature: operation	-20 ... +60 °C
Switching output, Q	PNP/NPN (see Selection Table)	Ambient temperature: storage	-20 ... +80 °C
Output function	N.O./N.C.	Weight (plug device)	35 g
Switching frequency, f (ti/tp 1:1)	≤ 600 Hz	Weight (cable device)	125 g
Response time	830 μs	Vibration and impact resistance	EN 60947-5-2
Control input, IN	+U <sub>b</sub> = teach-in -U <sub>b</sub> = button locked Open = normal operation		

<sup>1</sup> Reference material: R10 reflector    <sup>2</sup> Max. 10 % ripple, within U<sub>b</sub> ~ 50 Hz / 100 Hz    <sup>3</sup> With connected IP 67 / IP 69K plug

Operating range	Switching output	Type of connection	Part number	Article number
0.3 ... 12 m	PNP	Plug, M12x1, 4-pin	FR 55-R-PS-L4	621-11000
0.3 ... 12 m	NPN	Plug, M12x1, 4-pin	FR 55-R-NS-L4	621-11001
0.3 ... 12 m	PNP	Cable, 3 m, 4-wire	FR 55-R-PS-K4	621-11003
0.3 ... 12 m	NPN	Cable, 3 m, 4-wire	FR 55-R-NS-K4	621-11004



Reflector / reflective tape*	Operating range	Accessories	
R10	0.3 ... 12 m	Reflectors	From Page A-15
RD8	0.3 ... 10 m	Connection cables	From Page A-31
R5	0.3 ... 6 m	Brackets	From Page A-1
RF-230 KL *	0.25 ... 6 m		



# FR 55-RM

Retroreflective photoelectric sensor – stainless steel housing



## PRODUCT HIGHLIGHTS

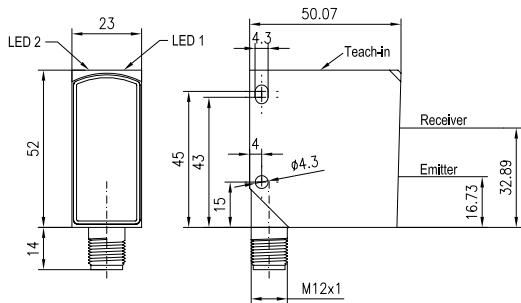
- Stable stainless steel housing – ideal for use in hygiene zones, e.g. in the food and beverages industries
- Housing concept designed for intensive cleaning processes
- Sensor adjustment via teach-in and control input
- Simple alignment thanks to easily visible light spot

Optical data		Functions	
Limit range	0.4 ... 13 m <sup>1</sup>	Indicator LED, green	Operating voltage indicator
Operating range	0.4 ... 11 m <sup>1</sup>	Indicator LED, yellow	Switching output indicator / contamination indicator
Type of light	LED, red, 640 nm	Sensitivity adjustment	Via Teach-in button and control input
Light spot size	See diagram	Teach-in modes	Mode 1: during running process Mode 2: during standing process
Polarising filter	Yes	Adjustment possibilities	N.O./N.C. via Teach-in button and control input Button lock via control input
		Default settings	S <sub>n</sub> = 8 m and N.O.
Electrical data		Mechanical data	
Operating voltage, +U <sub>b</sub>	10 ... 30V DC <sup>2</sup>	Dimensions	52 x 50.07 x 23 mm <sup>3</sup>
No-load current, I <sub>0</sub>	≤ 30 mA	Enclosure rating	IP 69K & IP 67 <sup>3</sup>
Output current, I <sub>e</sub>	≤ 100 mA	Material, housing	Stainless steel, 316L
Protective circuits	Reverse-polarity protection, U <sub>b</sub> / short-circuit protection (Q)	Material, front screen	PMMA
Standby time	< 300 ms	Type of connection	(See Selection Table)
Switching output, Q	PNP/NPN (see Selection Table)	Ambient temperature: operation	-20 ... +60 °C
Output function	N.O./N.C.	Ambient temperature: storage	-20 ... +80 °C
Switching frequency, f (ti/tp 1:1)	≤ 600 Hz	Weight (plug device)	138 g
Response time	830 μs	Vibration and impact resistance	EN 60947-5-2
Control input, IN	+U <sub>b</sub> = teach-in -U <sub>b</sub> = button locked Open = normal operation		

<sup>1</sup> Reference material: R10 reflector    <sup>2</sup> Max. 10 % ripple, within U<sub>b</sub> ~ 50 Hz / 100 Hz    <sup>3</sup> With connected IP 67 / IP 69K plug

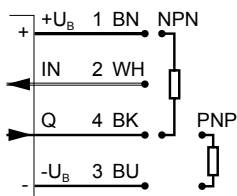
Operating range	Switching output	Type of connection	Part number	Article number
0.4 ... 11 m	PNP	Plug, M12x1, 4-pin	FR 55-RM-PS-L4	621-11012
0.4 ... 11 m	NPN	Plug, M12x1, 4-pin	FR 55-RM-NS-L4	621-11013

Plug connection



153-00800

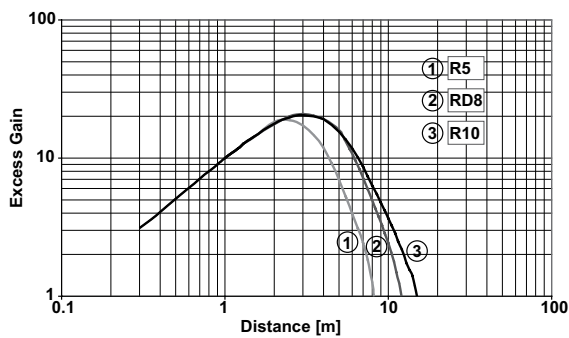
Connection, 4-pin



154-00312

8

Functional reserves



155-01162

Light spot size



155-01112

Reflector	Operating range	Accessories	
R10	0.4 ... 11 m	Reflectors	From Page A-15
RD8	0.4 ... 9 m	Connection cables	From Page A-31
R5	0.4 ... 6 m	Brackets	From Page A-1

# FS/FE 55-RL

## Laser through-beam photoelectric sensor



### PRODUCT HIGHLIGHTS

- Long range combined with precise laser light spot for extremely accurate small-part detection
- High switching frequency for the reliable detection of even the most rapid processes
- Sensor adjustment via teach-in and control input
- Plug and cable connection rotatable

Optical data		Functions	
Limit range	0 ... 30 m	Indicator LED, green	Operating voltage indicator
Operating range	0 ... 25 m	Indicator LED, yellow	Switching output indicator / contamination indicator
Type of light	Laser, red, 655 nm	Indicator LED, red (receiver)	Alignment indicator
Light spot size	See diagram	Sensitivity adjustment (receiver)	Via Teach-in button and control input
Laser Class (DIN EN 60825-1:2008-5)	1	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 Button lock via control input
		Default settings	Max. range and N.O.
Electrical data		Mechanical data	
Operating voltage, +U <sub>B</sub>	10 ... 30V DC <sup>1</sup>	Dimensions	50 x 50.08 x 23 mm <sup>3</sup>
No-load current, I <sub>0</sub>	≤ 30mA	Enclosure rating	IP 69K & IP 67 <sup>2</sup>
Output current, I <sub>e</sub>	≤ 100 mA	Material, housing	PC-ABS
Protective circuits	Reverse-polarity protection, U <sub>B</sub> / short-circuit protection (Q)	Material, front screen	PMMA
Protection Class	2	Type of connection	(See Selection Table)
Standby time	< 300 ms	Ambient temperature: operation	-20 ... +60 °C
Switching output, Q	PNP/NPN (see Selection Table)	Ambient temperature: storage	-20 ... +80 °C
Output function	N.O./N.C.	Weight (plug device)	35 g
Switching frequency, f (ti/tp 1:1)	≤ 3500 Hz	Weight (cable device)	125 g
Response time	140 μs	Vibration and impact resistance	EN 60947-5-2
Control input, IN (receiver)	+U <sub>B</sub> = teach-in -U <sub>B</sub> = button locked Open = normal operation		
Control input, TEST (transmitter)	+U <sub>B</sub> = Test (transmitter off) -U <sub>B</sub> / Open = normal operation		

<sup>1</sup> Max. 10 % ripple, within U<sub>B</sub>, ~ 50 Hz / 100 Hz    <sup>2</sup> With connected IP 67 / IP 69K plug

Operating range	Switching output	Type of connection	Part number	Article number
0 ... 25 m	PNP	Plug, M12x1, 4-pin	FE 55-RL-PS-L4	620-21006
0 ... 25 m	NPN	Plug, M12x1, 4-pin	FE 55-RL-NS-L4	620-21007
0 ... 25 m	-	Plug, M12x1, 4-pin	FS 55-RL-L4	620-11002
0 ... 25 m	PNP	Cable, 3 m, 4-wire	FE 55-RL-PS-K4	620-21009
0 ... 25 m	NPN	Cable, 3 m, 4-wire	FE 55-RL-NS-K4	620-21010
0 ... 25 m	-	Cable, 3 m, 4-wire	FS 55-RL-K4	620-11003

<p><b>Plug connection (transmitter)</b></p> <p>153-00808</p>	<p><b>Cable connection (transmitter)</b></p> <p>153-00809</p>
<p><b>Plug connection (receiver)</b></p> <p>153-00812</p>	<p><b>Cable connection (receiver)</b></p> <p>153-00813</p>

<p><b>Connection, transmitter, 4-pin</b></p> <p>154-00315</p>	<p><b>Connection, receiver, 4-pin</b></p> <p>154-00312</p>
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<p><b>Functional reserves</b></p> <p>155-01138</p>	<p><b>Light spot size</b></p> <p>155-01139</p>
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<b>Accessories</b>			
Connection cables	From Page A-31	Brackets	From Page A-1

# FS/FE 55-R

## Through-beam photoelectric sensor



### PRODUCT HIGHLIGHTS

- Alignment indicator and easily visible light spot for simple alignment of the through-beam system
- Test input to check sensor pair function
- Sensor adjustment via teach-in and control input
- Plug and cable connection rotatable

Optical data		Functions	
Limit range	0 ... 25 m	Indicator LED, green	Operating voltage indicator
Operating range	0 ... 20 m	Indicator LED, yellow	Switching output indicator / contamination indicator
Type of light	LED, red, 640 nm	Indicator LED, red (receiver)	Alignment indicator
Light spot size	See diagram	Sensitivity adjustment (receiver)	Via Teach-in button and control input
		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 Button lock via control input
		Default settings	Max. range and N.O.
Electrical data		Mechanical data	
Operating voltage, +U <sub>B</sub>	10 ... 30V DC <sup>1</sup>	Dimensions	50 x 50.08 x 23 mm <sup>3</sup>
No-load current, I <sub>0</sub>	≤ 30 mA	Enclosure rating	IP 69K & IP 67 <sup>2</sup>
Output current, I <sub>e</sub>	≤ 100 mA	Material, housing	PC-ABS
Protective circuits	Reverse-polarity protection, U <sub>B</sub> / short-circuit protection (Q)	Material, front screen	PMMA
Protection Class	2	Type of connection	(See Selection Table)
Standby time	< 300 ms	Ambient temperature: operation	-20 ... +60 °C
Switching output, Q	PNP/NPN (see Selection Table)	Ambient temperature: storage	-20 ... +80 °C
Output function	N.O./N.C.	Weight (plug device)	35 g
Switching frequency, f (ti/tp 1:1)	≤ 500 Hz	Weight (cable device)	125 g
Response time	1 ms	Vibration and impact resistance	EN 60947-5-2
Control input, IN (receiver)	+U <sub>B</sub> = teach-in -U <sub>B</sub> = button locked Open = normal operation		
Control input, TEST (transmitter)	+U <sub>B</sub> = Test (transmitter off) -U <sub>B</sub> / Open = normal operation		

<sup>1</sup> Max. 10 % ripple, within U<sub>B</sub>, ~ 50 Hz / 100 Hz    <sup>2</sup> With connected IP 67 / IP 69K plug

Operating range	Switching output	Type of connection	Part number	Article number
0 ... 20 m	PNP	Plug, M12x1, 4-pin	FE 55-R-PS-L4	620-21000
0 ... 20 m	NPN	Plug, M12x1, 4-pin	FE 55-R-NS-L4	620-21001
0 ... 20 m	–	Plug, M12x1, 4-pin	FS 55-R-L4	620-11000
0 ... 20 m	PNP	Cable, 3 m, 4-wire	FE 55-R-PS-K4	620-21003
0 ... 20 m	NPN	Cable, 3 m, 4-wire	FE 55-R-NS-K4	620-21004
0 ... 20 m	–	Cable, 3 m, 4-wire	FS 55-R-K4	620-11001

<p><b>Plug connection (transmitter)</b></p> <p>153-00787</p>	<p><b>Cable connection (transmitter)</b></p> <p>153-00786</p>
<p><b>Plug connection (receiver)</b></p> <p>153-00790</p>	<p><b>Cable connection (receiver)</b></p> <p>153-00791</p>

<p><b>Connection, transmitter, 4-pin</b></p> <p>154-00315</p>	<p><b>Connection, receiver, 4-pin</b></p> <p>154-00312</p>
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<p><b>Functional reserves</b></p> <p>155-00986</p>	<p><b>Light spot size</b></p> <p>155-00994</p>
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<b>Accessories</b>			
Connection cables	From Page A-31	Brackets	From Page A-1

# FS/FE 55-RM

Through-beam photoelectric sensor – stainless steel housing



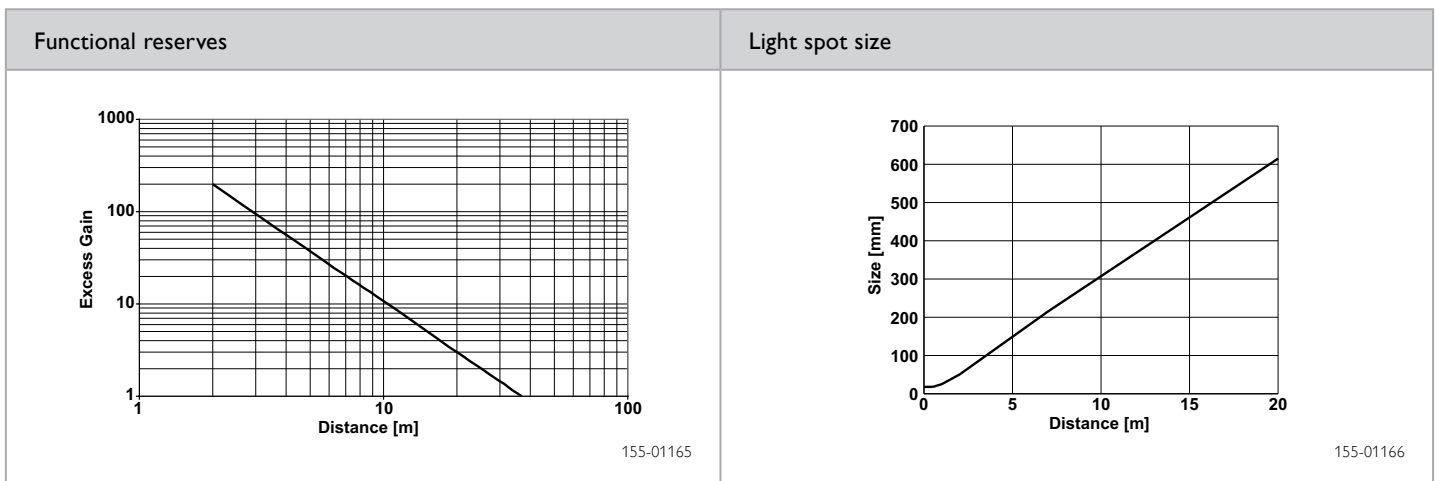
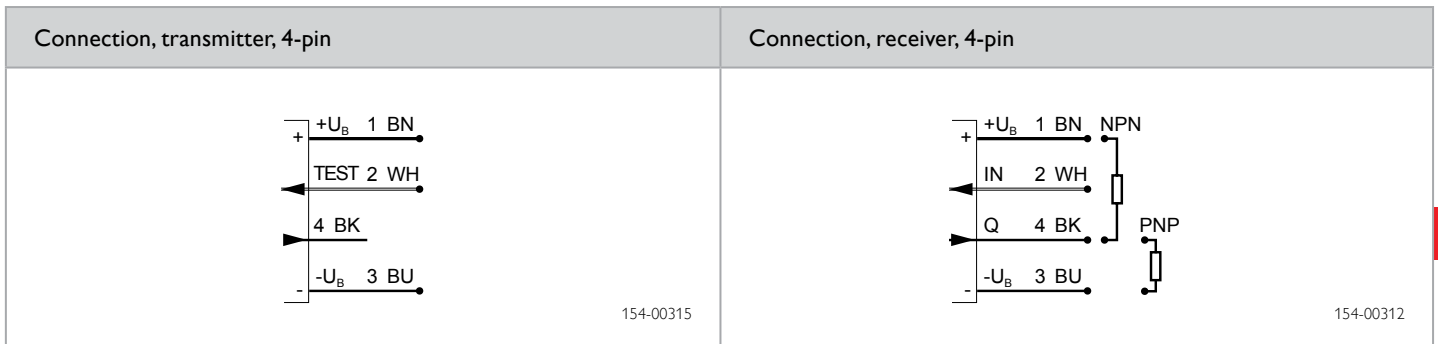
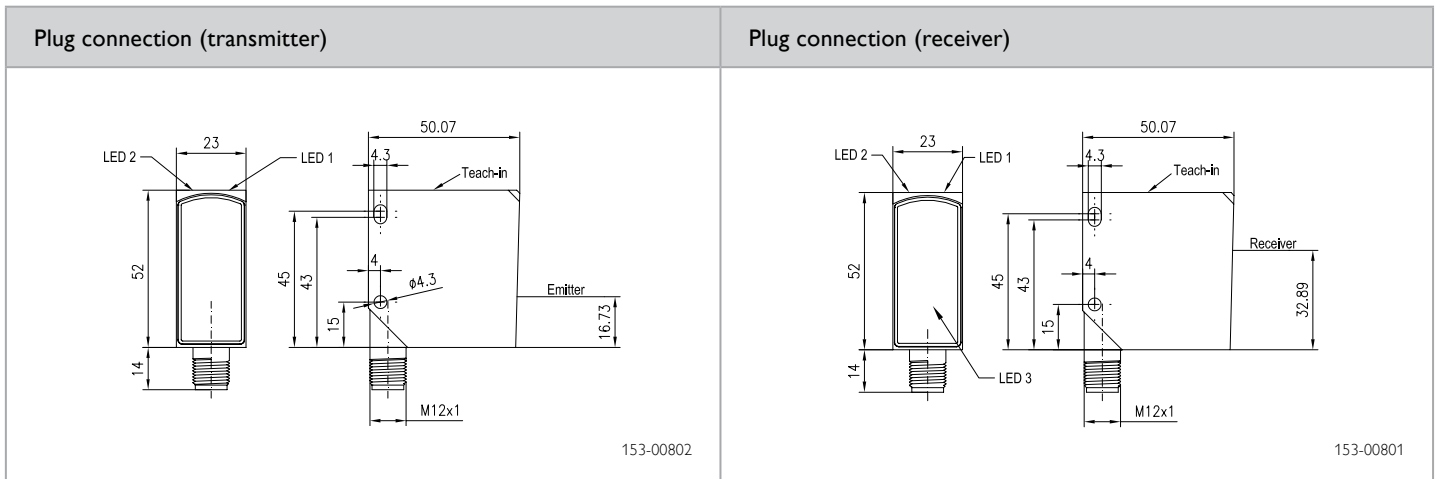
## PRODUCT HIGHLIGHTS

- Stable stainless steel housing – ideal for use in hygiene zones, e.g. in the food and beverages industries
- Housing concept designed for intensive cleaning processes
- Sensor adjustment via teach-in and control input
- Simple alignment thanks to easily visible light spot and alignment indicator

Optical data		Functions	
Limit range	0 ... 20 m	Indicator LED, green	Operating voltage indicator
Operating range	0 ... 15 m	Indicator LED, yellow	Switching output indicator / contamination indicator
Type of light	LED, red, 640 nm	Indicator LED, red (receiver)	Alignment indicator
Light spot size	See diagram	Sensitivity adjustment (receiver)	Via Teach-in button and control input
		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
		Default settings	Button lock via control input
			Max. range and N.O.
Electrical data		Mechanical data	
Operating voltage, +U <sub>b</sub>	10 ... 30V DC <sup>1</sup>	Dimensions	52 x 50.07 x 23 mm <sup>3</sup>
No-load current, I <sub>o</sub>	≤ 30 mA	Enclosure rating	IP 69K & IP 67 <sup>2</sup>
Output current, I <sub>e</sub>	≤ 100 mA	Material, housing	Stainless steel, 316L
Protective circuits	Reverse-polarity protection, U <sub>b</sub> / short-circuit protection (Q)	Material, front screen	PMMA
Standby time	< 300 ms	Type of connection	(See Selection Table)
Switching output, Q	PNP/NPN (see Selection Table)	Ambient temperature: operation	-20 ... +60 °C
Output function	N.O./N.C.	Ambient temperature: storage	-20 ... +80 °C
Switching frequency, f (ti/tp 1:1)	≤ 500Hz	Weight (plug device)	138 g
Response time	1 ms	Vibration and impact resistance	EN 60947-5-2
Control input, IN (receiver)	+U <sub>b</sub> = teach-in -U <sub>b</sub> = button locked Open = normal operation		
Control input, TEST (transmitter)	+U <sub>b</sub> = Test (transmitter off) -U <sub>b</sub> / Open = normal operation		

<sup>1</sup> Max. 10 % ripple, within U<sub>b</sub>, ~ 50 Hz / 100 Hz    <sup>2</sup> With connected IP 67 / IP 69K plug

Operating range	Switching output	Type of connection	Part number	Article number
0 ... 15 m	PNP	Plug, M12x1, 4-pin	FE 55-RM-PS-L4	620-21012
0 ... 15 m	NPN	Plug, M12x1, 4-pin	FE 55-RM-NS-L4	620-21013
0 ... 15 m	–	Plug, M12x1, 4-pin	FS 55-RM-L4	620-11004



Accessories	
Connection cables	From Page A-31
Brackets	From Page A-1