


FT 55 RL(2)AM – the all-rounder for distance measurement

Precise measurements easily adjustable



 made in Germany

The new FT 55-RL(2)AM compact distance sensor from SensoPart is a true allrounder, reliably detecting surfaces from **black to shiny**. Offering extensive connectivity, the triangulation sensor is equipped with an analogue output, two switching outputs, an **IO-Link** interface and optional RS485 interface. The laser class 1 sensor comes with an innovative and user-friendly operating concept including a large LCD display, unusual in this performance category.




TYPICAL FT 55-RL(2)AM

- Stable processes thanks to excellent sensor qualities across the entire operating range
 - Operating range from 80 ... 1000 mm
 - Repeatability $\leq 6 \mu\text{m}$
 - Linearity $\leq 0.4 \text{ mm}$
 - Resolution $1 \mu\text{m}$ via IO-Link
- O-Link – a future-proof interface that meets the demands of Industry 4.0
- Laser class 1 – for optimum security (Variant with laser class 2 for measurements on very dark objects optional)
- Simple and fast setup using the intuitive LCD display
- Robust metal housing – sensor durability even in challenging processes
- Thickness or parallel differential measurement

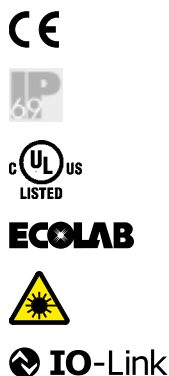
Well-equipped with FT 55-RL(2)AM

Its combination of unique characteristics makes FT 55-RL(2)AM ideally suited for diverse sectors and applications. Whether determining positions in robotics applications, measuring a coil diameter or monitoring web tension. By combining two sensors, width and thickness measurements can be carried out using the differential measurement function. One sensor – countless applications!

FT 55-RL(2)AM – Product Overview				
	Operating distance	Functional principle	Special features	Page
FT 55-RL(2)AM-320	80 ... 400 mm	Scanning on object	Measured value output analogue, serial or IO-Link  , display, Variants with laser class 1 or laser class 2	229
FT 55-RL(2)AM-480	120 ... 600 mm			231
FT 55-RL(2)AM-800	200 ... 1000 mm			233

FT 55-RLAM-320 / FT 55-RL2AM-320

Distance sensor for a wide range of applications



PRODUCT HIGHLIGHTS

- Operating range up to 400 mm enables versatile applications
- Precise measurements thanks to repeatability up to $\leq 3 \dots 100 \mu\text{m}$
- Switching hysteresis of 0.6 mm enables precise smart part detection
- Variant with laser class 2 for measurements on very dark objects

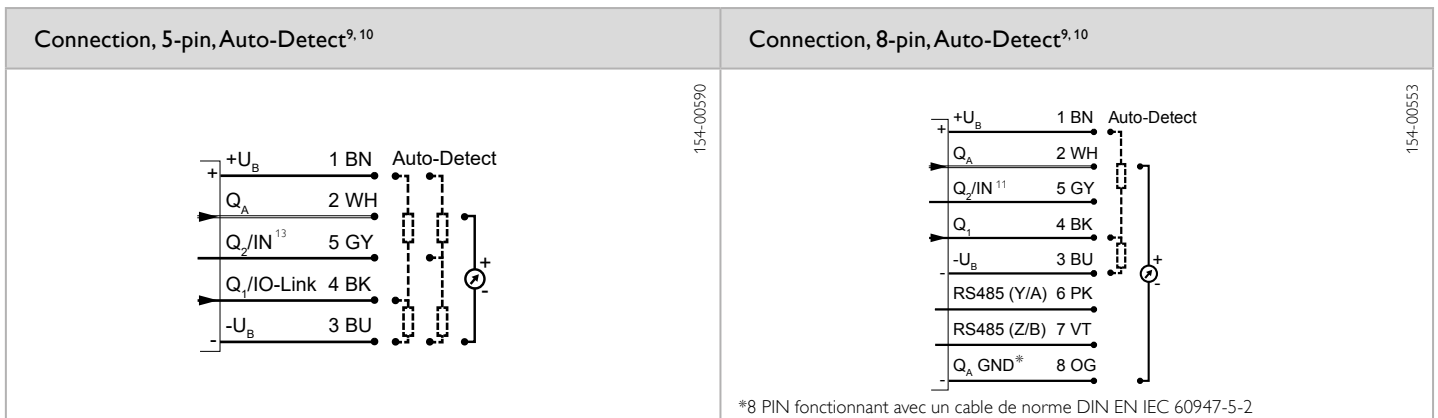
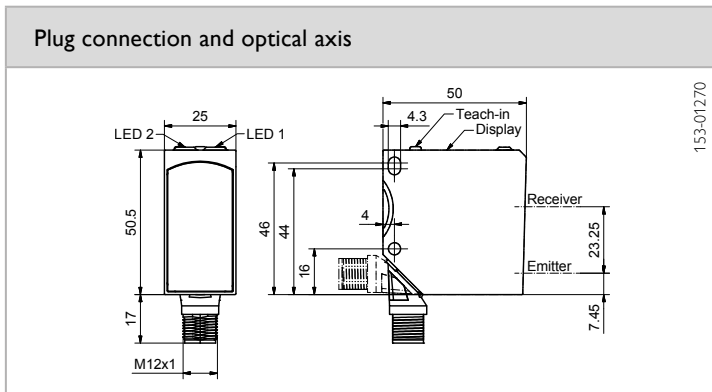
Optical data		Functions	
Operating range	80 ... 400 mm	Indicator LED 1, green	Operating voltage indicator
Resolution (14 Bit)	$\leq 20 \mu\text{m}$	Indicator LED 2, yellow	Status indicator Q_1 / Q_2
Linearity (typ.) ^{1,2}	$\pm 0.4 \text{ mm}$	Measurement range adjustment	Via display or IO-Link
Repeatability ²	$\leq 6 \dots 100 \mu\text{m}$, see illustration	Adjustment possibilities	Teach-in Q_1, Q_2, Q_A, Q as switching window or switching point
Hysteresis ²	$\leq 0.6 \text{ mm}$		Setting of mean value at Q_A
Type of light	Laser, red 655 nm		Auto-Detect / NPN / PNP / Push-Pull
Immunity to ambient light	$\leq 10,000 \text{ lux}$ (laser class 2: 3000 Lux)		Smart Functions (On-delay and drop-out delay, counter, impulse, frequency)
Light spot size (w x h)	4 x 1 mm		
Measurement frequency	5 kHz (laser class 2: 2.5 kHz)		
Laser class (IEC 60825-1)	1 / 2, see selection table		
Electrical data			
Operating voltage $+U_B$	15 ... 30V DC	Load	$\leq 1 \text{ k}\Omega$ (2 ... 10 mA)
Power consumption	$\leq 1.5 \text{ W}$		$\leq 500 \text{ }\Omega$ (4 ... 20 mA)
Output current I_Q	< 50 mA		$\geq 2 \text{ k}\Omega$ (0 ... 10V, 2 ... 10V)
Protection circuits	Reverse polarity protection U_B / short-circuit protection (Q)	Switching frequency f (ti/tp 1:1) Q^+	$\leq 1000 \text{ Hz}$ (laser class 2: 500 Hz)
Protection class	2	Response time Q	600 μs (laser class 2: 1 ms)
Power On Delay	< 300 ms	Response time Q_A	400 μs (laser class 2: 800 μs)
Switching output Q	Auto-Detect ³ / PNP / NPN / Push-Pull	Averaging time ⁵	0.2 ms, 1 ms, 10 ms, 100 ms, 1000 ms
Output function Q	N.O./N.C.	Update time measured value	Update time Q_A + averaging time
Thermal response Q_A / digital	$\pm 0.02 \text{ \%}/\text{K} \pm 0.01 \text{ \%}/\text{K}$	Analogue output Q_A	2 ... 10 mA / 4 ... 20 mA
Warm-up time	20 min.		0 ... 10V ⁶ / 2 ... 10V
Mechanical data			
Dimensions	50 x 50.5 x 25 mm	Ambient temperature: operation	-20 ... +50 °C ⁸
Enclosure rating	IP 67 & IP 69 ⁷	Ambient temperature: storage	-20 ... +60 °C
Material, housing	Zinc die-cast, matt chrome	Weight (plug device)	185 g
Material, front screen / Display	PMMA	Resistance to vibration and impacts	EN IEC 60947-5-2
Type of connection	See selection table	Display	LCD, with background illumination

¹ Output via IO-Link, deviation $Q_A < 0.2 \text{ mm}$ from digital value ² 5 ... 90 %; homogenous object, not moving ³ Auto-Detect: Automatic selection of PNP or NPN by the sensor; PNP or NPN can be fixed ⁴ all RL(2)AM: Switching frequency in IO-Link operation lower ⁵ Scalable ⁶ up to 0.1 V undefined accuracy ⁷ With connected IP 67 / IP 69 plug

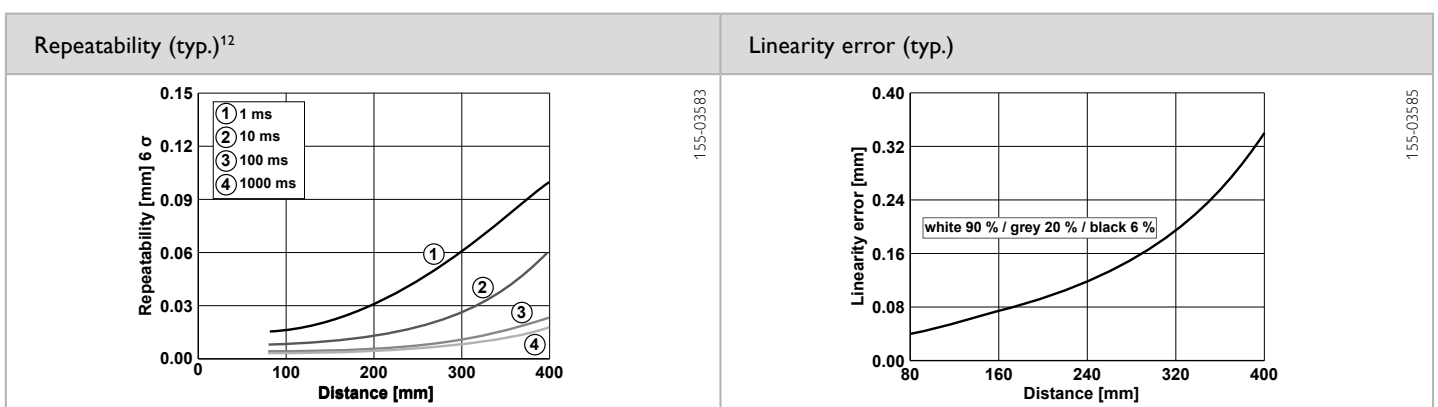
⁸ UL: max. +45 °C

IO-Link			
Communication mode	COM 2	Length process data	32 Bit
Min. cycletime	3 ms	Data Storage	compatible
SIO mode	Compatible	Specification	1.1

Interface	Type of connection	Laser class	Part Number	Article number
IO-Link	Plug, M12x1, 5-pin, IO-Link	1	FT 55-RLAM-320-PNSUIDL-L5M	624-41002
RS485	Plug, M12x1, 8-pin	1	FT 55-RLAM-320-PNSUID-S1L8M	624-41003
IO-Link	Plug, M12x1, 5-pin, IO-Link	2	FT 55-RL2AM-320-PNSUIDL-L5M	624-41012



⁹ In IO-Link mode, a 4-pin cable must be used ¹⁰ For analogue transmission of measured values we recommend shielded cables ¹¹ Can be used as output or input



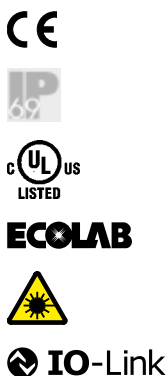
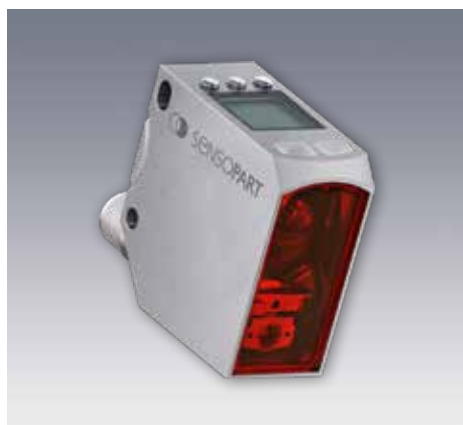
¹² Repeatability 6 σ , 5 ... 90 %, homogenous object, not moving

Default setting	Accessories
Analogue output Q_A	4 ... 20 mA, Measurement range limits
Switching output Q_1	190 mm, N.O.
Switching output Q_2	300 mm, N.O.
	Connection cables ¹³ Bracket SensoClip MBD F 55ST2 (579-50012) SensoIO (901-01001)
	www.sensopart.com/en/accessories

¹³ For 8-pin versions, use DIN EN IEC 60947-5-2 compliant cables, see From Page A-44

FT 55-RLAM-480 / FT 55-RL2AM-480

Distance sensor for a wide range of applications



PRODUCT HIGHLIGHTS

- Operating range up to 600 mm enables versatile applications in which precision at large distances is required
- Precise measurements thanks to repeatability up to $\leq 20 \mu\text{m}$
- Switching hysteresis of 1.2 enables smart part detection even at large distances up to 600 mm
- Variant with laser class 2 for measurements on very dark objects

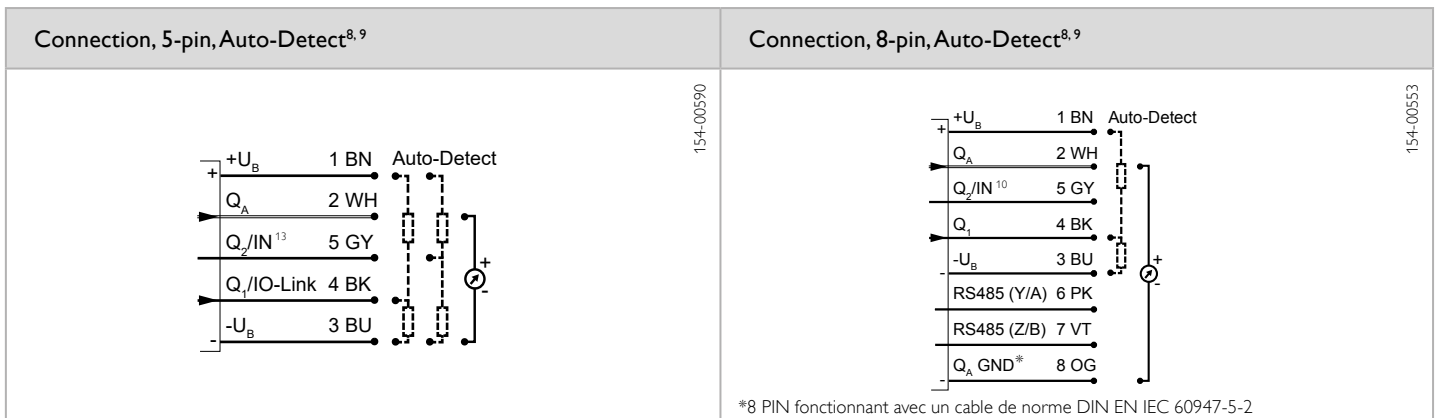
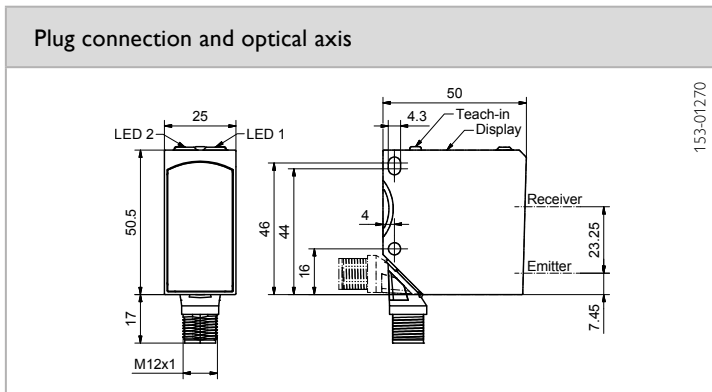
Optical data		Functions	
Operating range	120 ... 600 mm	Indicator LED 1, green	Operating voltage indicator
Resolution (14 Bit)	30 μm	Indicator LED 2, yellow	Status indicator Q_1 / Q_2
Linearity (typ.) ¹	$\pm 0.6 \text{ mm}$	Measurement range adjustment	Via display or IO-Link
Repeatability ¹	20 ... 200 μm , see illustration	Adjustment possibilities	Teach-in Q_1, Q_2, Q_A, Q as switching window or switching point
Hysteresis ¹	$\leq 1.2 \text{ mm}$		Setting of mean value at Q_A
Type of light	Laser, red 655 nm		Auto-Detect / NPN / PNP / Push-Pull
Immunity to ambient light	$\leq 20,000 \text{ lux}$ (laser class 2: 3000 Lux)		Smart Functions (On-delay and drop-out delay, counter, impulse, frequency)
Light spot size (w x h)	4 x 1 mm		
Measurement frequency	5 kHz (laser class 2: 2.5 kHz)		
Laser class (IEC 60825-1)	1 / 2, see selection table		
Electrical data			
Operating voltage $+U_B$	15 ... 30V DC	Load	$\leq 1 \text{ k}\Omega$ (2 ... 10 mA)
Power consumption	$\leq 1.5 \text{ W}$		$\leq 500 \text{ }\Omega$ (4 ... 20 mA)
Output current $I_e Q$	$< 50 \text{ mA}$		$\geq 2 \text{ k}\Omega$ (0 ... 10V, 2 ... 10V)
Protection circuits	Reverse polarity protection U_B / short-circuit protection (Q)	Switching frequency f (ti/tp 1:1) Q^3	$\leq 1000 \text{ Hz}$ (laser class 2: 500 Hz)
Protection class	2	Response time Q	600 μs (laser class 2: 1 ms)
Power On Delay	$< 300 \text{ ms}$	Response time Q_A	400 μs (laser class 2: 800 μs)
Switching output Q	Auto-Detect ² / PNP / NPN / Push-Pull	Averaging time ⁴	1 ms, 10 ms, 100 ms, 1000 ms
Output function Q	N.O./N.C.	Update time measured value	Update time Q_A + averaging time
Thermal response Q_A / digital	$< 0.02 \text{ \%}/\text{K}$ / 0.01 $\text{ \%}/\text{K}$	Analogue output Q_A	2 ... 10 mA / 4 ... 20 mA
Warm-up time	20 min.		0 ... 10V ⁵ / 2 ... 10V
Mechanical data			
Dimensions	50 x 50.5 x 25 mm	Ambient temperature: operation	-20 ... +50 $^\circ\text{C}$ ⁷
Enclosure rating	IP 67 & IP 69 ⁶	Ambient temperature: storage	-20 ... +60 $^\circ\text{C}$
Material, housing	Zinc die-cast, matt chrome	Weight (plug device)	185 g
Material, front screen / Display	PMMA	Resistance to vibration and impacts	EN IEC 60947-5-2
Type of connection	See selection table	Display	LCD, with background illumination

¹ 5 ... 90 %; homogenous object, not moving ² Auto-Detect: Automatic selection of PNP or NPN by the sensor; PNP or NPN can be fixed operation lower ⁴ Scalable ⁵ up to 0.1 V undefined accuracy ⁶ With connected IP 67 / IP 69 plug ⁷ UL: max. +45 $^\circ\text{C}$

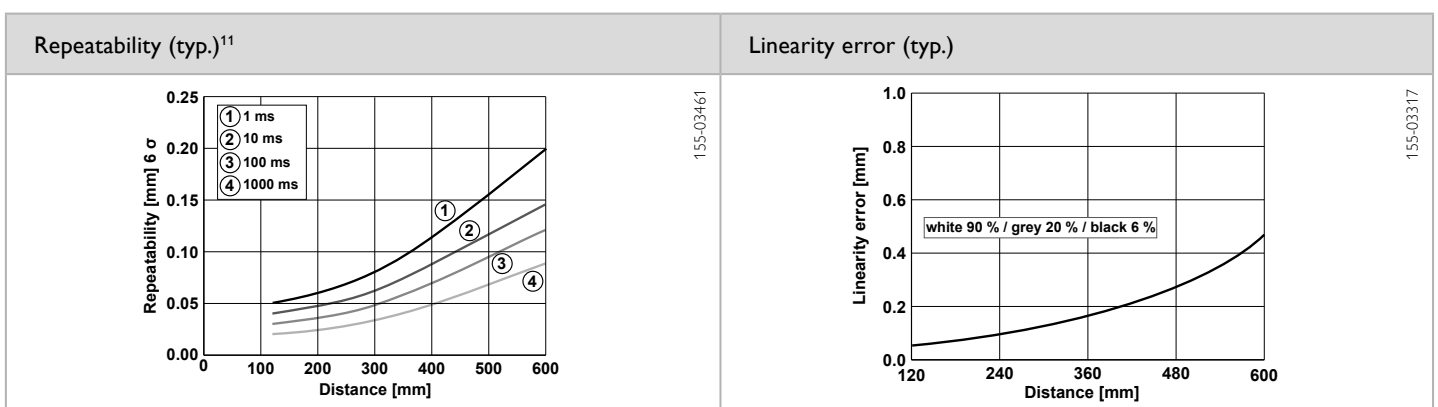
³ all RL(2)AM: Switching frequency in IO-Link

IO-Link			
Communication mode	COM 2	Length process data	32 Bit
Min. cycletime	3 ms	Data Storage	compatible
SIO mode	Compatible	Specification	1.1

Interface	Type of connection	Laser class	Part Number	Article number
IO-Link	Plug, M12x1, 5-pin, IO-Link	1	FT 55-RLAM-480-PNSUIDL-L5M	624-41004
RS485	Plug, M12x1, 8-pin	1	FT 55-RLAM-480-PNSUID-S1L8M	624-41005
IO-Link	Plug, M12x1, 5-pin, IO-Link	2	FT 55-RL2AM-480-PNSUIDL-L5M	624-41008



⁸ In IO-Link mode, a 4-pin cable must be used ⁹ For analogue transmission of measured values we recommend shielded cables ¹⁰ Can be used as output or input



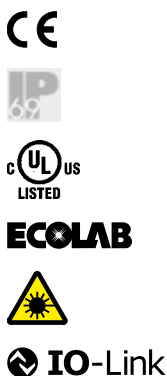
¹¹ Repeatability 6 σ , 5 ... 90 %, homogenous object, not moving

Default setting	Accessories
Analogue output Q_A	4 ... 20 mA, Measurement range limits
Switching output Q_1	280 mm, N.O.
Switching output Q_2	440 mm, N.O.
	Connection cables ¹² Bracket SensoClip MBD F 55ST2 (579-50012) SensoIO (901-01001)
	www.sensopart.com/en/accessories

¹² For 8-pin versions, use DIN EN IEC 60947-5-2 compliant cables, see From Page A-44

FT 55-RLAM-800 / FT 55-RL2AM-800

Distance sensor for a wide range of applications



PRODUCT HIGHLIGHTS

- Operating range up to 1 m enables versatile applications in which precision at large distances is required
- Precise measurements thanks to repeatability up to $\leq 40 \mu\text{m}$
- Switching hysteresis of 2 mm enables smart part detection even at large distances up to 1000 mm
- Variant with laser class 2 for measurements on very dark objects

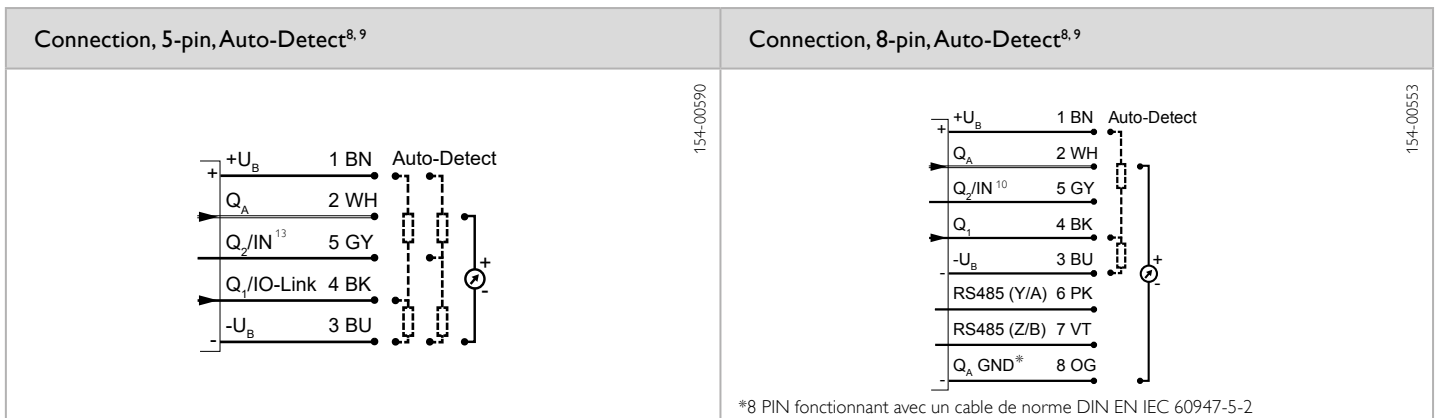
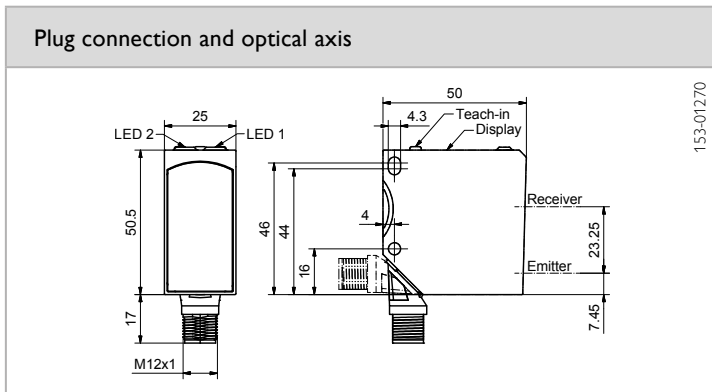
Optical data		Functions	
Operating range	200 ... 1000 mm	Indicator LED 1, green	Operating voltage indicator
Resolution (14 Bit)	50 μm	Indicator LED 2, yellow	Status indicator Q_1 / Q_2
Linearity (typ.) ¹	$\pm 1.5 \text{ mm}$	Measurement range adjustment	Via display or IO-Link
Repeatability ¹	40 ... 820 μm , see illustration	Adjustment possibilities	Teach-in Q_1, Q_2, Q_A, Q as switching window or switching point
Hysteresis ¹	$\leq 2 \text{ mm}$		Setting of mean value at Q_A
Type of light	Laser, red 655 nm		Auto-Detect / NPN / PNP / Push-Pull
Immunity to ambient light	$\leq 20,000 \text{ lux}$ (laser class 2: 3000 Lux)		Smart Functions (On-delay and drop-out delay, counter, impulse, frequency)
Light spot size (w x h)	4 x 1 mm		
Measurement frequency	5 kHz (laser class 2: 2.5 kHz)		
Laser class (IEC 60825-1)	1 / 2, see selection table		
Electrical data			
Operating voltage $+U_B$	15 ... 30V DC	Load	$\leq 1 \text{ k}\Omega$ (2 ... 10 mA)
Power consumption	$\leq 1.5 \text{ W}$		$\leq 500 \text{ }\Omega$ (4 ... 20 mA)
Output current $I_e Q$	$< 50 \text{ mA}$		$\geq 2 \text{ k}\Omega$ (0 ... 10V, 2 ... 10V)
Protection circuits	Reverse polarity protection U_B / short-circuit protection (Q)	Switching frequency f (ti/tp 1:1) Q^3	$\leq 1000 \text{ Hz}$ (laser class 2: 500 Hz)
Protection class	2	Response time Q	600 μs (laser class 2: 1 ms)
Power On Delay	$< 300 \text{ ms}$	Response time Q_A	400 μs (laser class 2: 800 μs)
Switching output Q	Auto-Detect ² / PNP / NPN / Push-Pull	Averaging time ⁴	1 ms, 10 ms, 100 ms, 1000 ms
Output function Q	N.O./N.C.	Update time measured value	Update time Q_A + averaging time
Thermal response Q_A / digital	$< 0.02 \text{ \%}/\text{K}$ / 0.01 $\text{ \%}/\text{K}$	Analogue output Q_A	2 ... 10 mA / 4 ... 20 mA
Warm-up time	20 min.		0 ... 10V ⁵ / 2 ... 10V
Mechanical data			
Dimensions	50 x 50.5 x 25 mm	Ambient temperature: operation	-20 ... +50 $^\circ\text{C}$ ⁷
Enclosure rating	IP 67 & IP 69 ⁶	Ambient temperature: storage	-20 ... +60 $^\circ\text{C}$
Material, housing	Zinc die-cast, matt chrome	Weight (plug device)	185 g
Material, front screen / Display	PMMA	Resistance to vibration and impacts	EN IEC 60947-5-2
Type of connection	See selection table	Display	LCD, with background illumination

¹ 5 ... 90 %; homogenous object, not moving ² Auto-Detect: Automatic selection of PNP or NPN by the sensor; PNP or NPN can be fixed operation lower ⁴ Scalable ⁵ up to 0.1 V undefined accuracy ⁶ With connected IP 67 / IP 69 plug ⁷ UL: max. +45 $^\circ\text{C}$

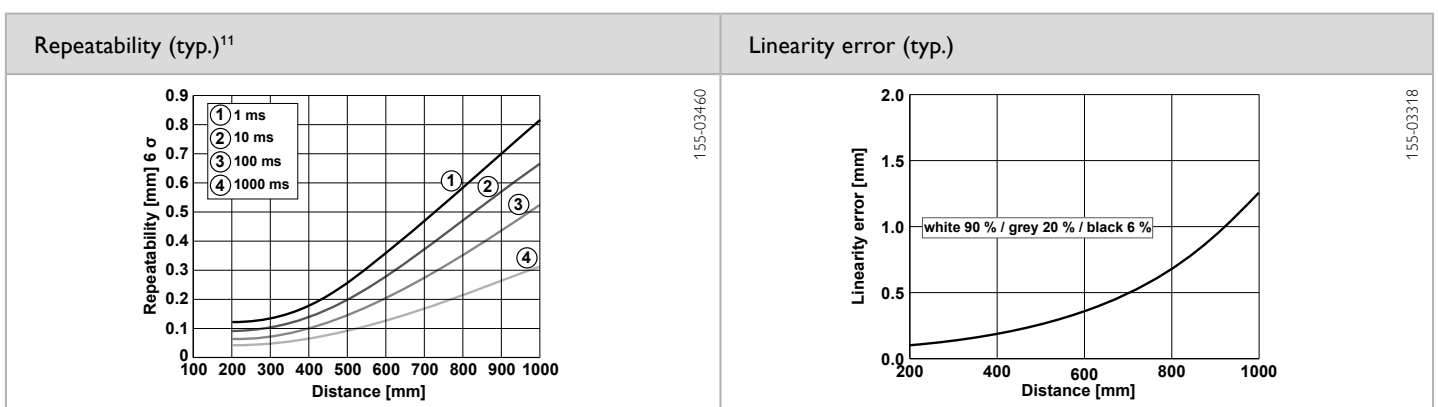
³ all RL(2)AM: Switching frequency in IO-Link

IO-Link			
Communication mode	COM 2	Length process data	32 Bit
Min. cycletime	3 ms	Data Storage	compatible
SIO mode	Compatible	Specification	1.1

Interface	Type of connection	Laser class	Part Number	Article number
IO-Link	Plug, M12x1, 5-pin, IO-Link	1	FT 55-RLAM-800-PNSUIDL-L5M	624-41006
RS485	Plug, M12x1, 8-pin	1	FT 55-RLAM-800-PNSUID-S1L8M	624-41007
IO-Link	Plug, M12x1, 5-pin, IO-Link	2	FT 55-RL2AM-800-PNSUIDL-L5M	624-41009



⁸ In IO-Link mode, a 4-pin cable must be used ⁹ For analogue transmission of measured values we recommend shielded cables ¹⁰ Can be used as output or input



¹¹ Repeatability 6 σ , 5 ... 90 %, homogenous object, not moving

Default setting	Accessories
Analogue output Q_A	4 ... 20 mA, Measurement range limits
Switching output Q_1	450 mm, N.O.
Switching output Q_2	750 mm, N.O.
	Connection cables ¹² Bracket SensoClip MBD F 55ST2 (579-50012) SensoIO (901-01001)
	www.sensopart.com/en/accessories

¹² For 8-pin versions, use DIN EN IEC 60947-5-2 compliant cables, see From Page A-44