

FT 55-RLAP

Distance sensor for large distances – Time-of-flight technology



PRODUCT HIGHLIGHTS

- For measurement and control tasks with all object surfaces at long scanning distances
- Stable and precise distance measurement even with tilted objects and with bright, highly reflective or shiny backgrounds
- Compact design for an easy integration
- High flexibility thanks to invertible analogue characteristic (Q_A) and window mode (Q)
- Easy installation and operation via external teach-in
- Clearly visible laser light spot (laser class 1) for an easy alignment and full eye safety

Optical data		Functions	
Measurement range	0.1 ... 5 m (see selection table) ¹	Indicator LED 2, green	Operating voltage indicator
Resolution	< 5 mm (12-bit)	Indicator LED 2, yellow	Status indicator analogue output
Linearity	± 30 mm ^{1,2}	Indicator LED 1 yellow	Switching output indicator
Repeatability	1.2 mm ^{1,2,3}	Measurement range adjustment	Via Teach-in button or control input
Hysteresis	20 mm	Adjustment possibilities	Analogue measurement range Q_A
Type of light	Laser, red 655 nm		Invertible analogue characteristic
Laser class (IEC 60825-1)	1		Switching output Q (window mode)
			N.O. / N.C. and Auto-Detect / NPN / PNP via teach-in and control line
		Default settings	See selection table
Electrical data			
Operating voltage $+U_B$	18 ... 30V DC	Response time Q	2 ms
No-load current I	≤ 60 mA	Load	≤ 500 Ohm (4 ... 20 mA) ≥ 4 k Ohm (0 ... 10 V)
Output current I_Q	≤ 100 mA	Analogue output Q_A	4 ... 20 mA / 0 ... 10 V
Protection circuits	Reverse polarity protection U_B / short-circuit protection (Q)	Update rate Q_A	2 ms
Protection class	2	Temperature drift	< 2 mm / K
Power On Delay	< 5 s	Warm-up time	20 min.
Switching output Q	Auto-Detect (PNP/NPN) ⁴	Control input I_N	$+U_B$ = Teach-in / $-U_B$ = button locked Open = normal operation
Output function	N.O./N.C.		
Switching frequency f (ti/tp 1:1) Q	≤ 250 Hz		
Mechanical data		IO-Link	
Dimensions	50 x 50.1 x 23 mm	Communication mode	COM 2
Enclosure rating	IP 67 & IP 69K ⁵	Min. cycle time	2.7 ms
Material, housing	ABS	SIO mode	compatible
Material, front screen	PMMA	Process bit length	24 Bit
Type of connection	See selection table	Specification	1.1
Ambient temperature: operation	-40 ... +60 °C ^{6,7}		
Ambient temperature: storage	-40 ... +80 °C		
Weight (plug device)	42 g		
Resistance to vibration and impacts	EN 60947-5-2		

¹ Reference material 90 % reflectivity

² At 50 Hz

³ For 1 σ , see diagram for further values

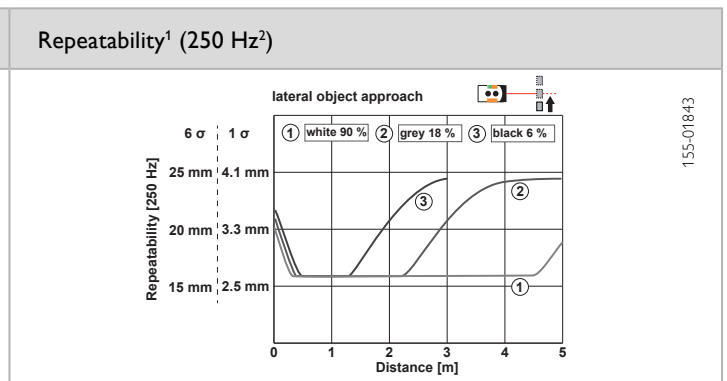
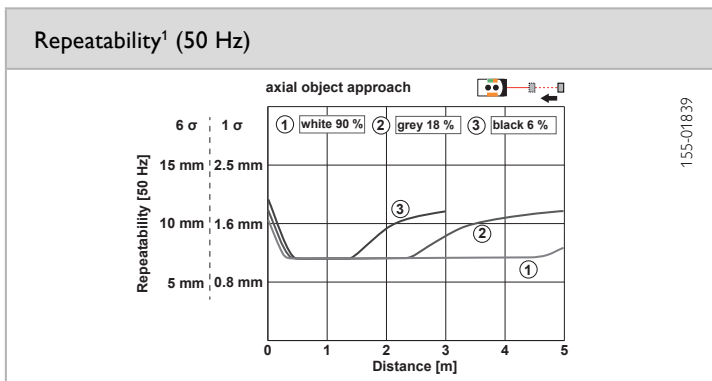
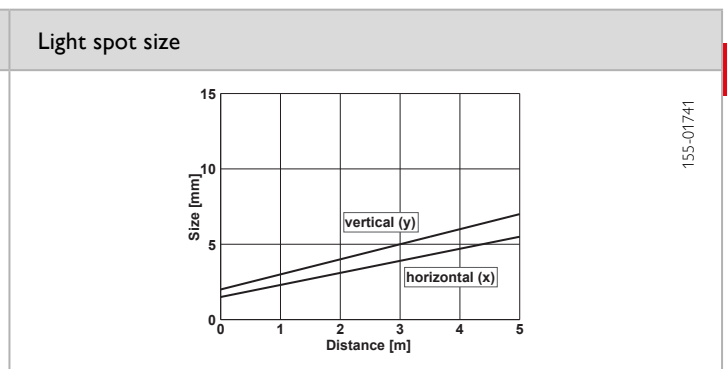
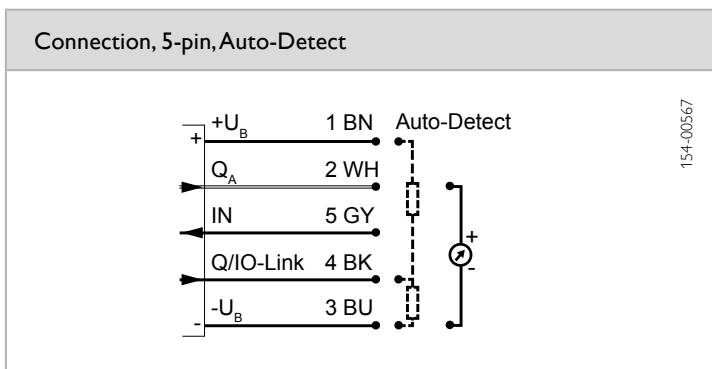
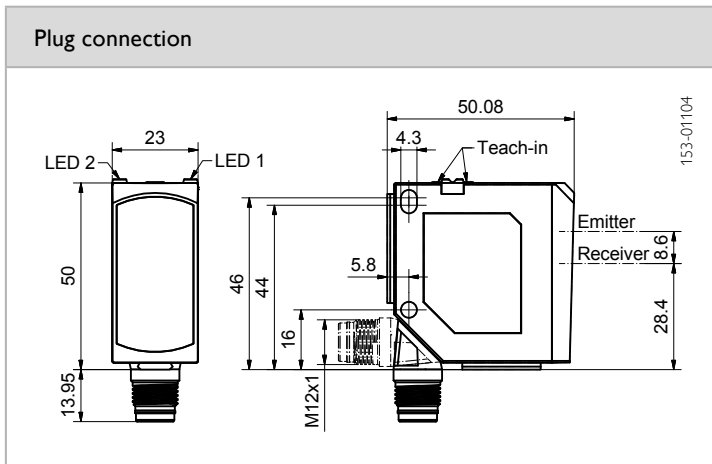
⁴ Auto-Detect: Automatic selection of PNP or NPN by the sensor; PNP or NPN can be fixed

⁵ With connected IP 67 / IP 69K plug

⁶ Up to +50 °C with current output 4 ... 20 mA

⁷ UL: max. +45 °C

Measurement range ¹	Analogue output	Switching output	Type of connection	Part Number	Article number
0.1 ... 5 m	4 ... 20 mA	Auto-Detect	Plug, M12x1, 5-pin, IO-Link	FT 55-RLAP-5-PNSIL-L5	622-21023
0.1 ... 5 m	0 ... 10V	Auto-Detect	Plug, M12x1, 5-pin, IO-Link	FT 55-RLAP-5-PNSUL-L5	622-21024



¹ At constant ambient conditions ² Automatic adjustment to 50 Hz at constant distance

Characteristic analogue curve	Reference material	Measurement range
<p>Analogue output Q_A: 21.1 mA / 11 V, 20 mA / 10 V, 4 mA / 0.09 V, 3.6 mA / 0.06 V.</p> <p>Switching output Q: High, Low, A₁, A₂, Distance [mm].</p>	White (90 %) Grey (18 %) Black (6 %)	0.1 ... 5 m 0.1 ... 5 m 0.1 ... 3 m
	Default setting³	
	Analogue output Q _A (4...20 mA / 0,09 ... 10V)	0.3 ... 3 m
	Switching output Q (A ₁ ...A ₂), N.O., Auto-Detect	0.3 ... 3 m
Accessories		
	Connection cables	From Page A-38
	Brackets	From Page A-4

³The specified precision is achieved by teaching the distances