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 backgrounds
- Detection of all objects in front of fixed backgrounds via switching output
- 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
Type of light	Laser, red 655 nm	Indicator LED 2, yellow	Status indicator analogue output
Laser class (IEC 60825-1)	1	Indicator LED 1 yellow	Switching output indicator
Resolution	< 5 mm	Measurement range adjustment	Via Teach-in button or control input
Hysteresis	20 mm	Adjustment possibilities	Analogue measurement range Q_A Invertible analogue characteristic Switching output Q (window mode) N.O. / N.C. and Auto-Detect / NPN / PNP via teach-in and control line, wide variety of adjustment possibilities for service and process data via IO-Link
Linearity	± 15 mm (see diagram)[2]		
Repeatability	≤ 7 mm (6 σ, see diagram)[1,3]	Default settings	See selection table

Electrical data			
Operating voltage $+U_B$	18 … 30 V DC	Response time Q	2 ms
No-load current I_0	≤ 60 mA	Load	≤ 500 Ohm (4 ... 20 mA) ≥ 4 k Ohm (0 … 10 V)
Output current Ie Q	≤ 100 mA	Analogue output Q_A	4 … 20 mA / 0.1 … 10 V
Protection circuits	Reverse polarity protection U_B / short-circuit protection (Q)	Update time Q_A	2 / 20 ms
Protection class	2	Factors averaging time[8]	1 / 10 / 20 / 30 / 40 / 50 / 60 / 70 / 80 / 90 / 100
Power On Delay	< 500 ms	Response time Q_A	2 / 20 ms x factor averaging time
Switching output Q	Auto-Detect (PNP/NPN)[4]	Temperature drift	< 1 mm / K
Output function	N.O./N.C.	Warm-up time	20 min.
Switching frequency f (ti/tp 1:1) Q	≤ 250 Hz	Control input IN	$+U_B$ = Teach-in / $-U_B$ = button locked Open = normal operation

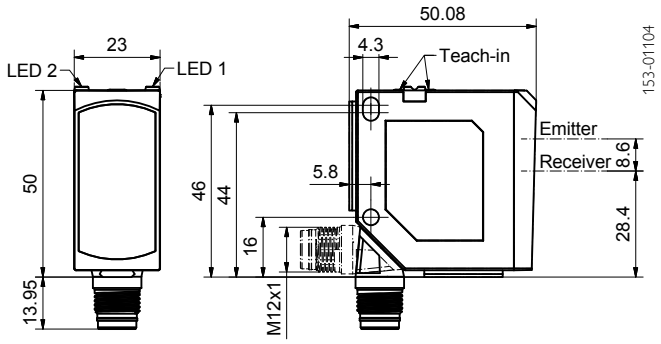
Mechanical data		IO-Link	
Dimensions	50 x 50.1 x 23 mm	Communication mode	COM 2
Enclosure rating	IP 67 & IP 69K[5]	Min. cycle time	2.7 ms
Material, housing	ABS	SIO mode	Compatible
Material, front screen	PMMA	Process bit length	24 Bit
Type of connection	See selection table	Specification	1.1
Ambient temperature: 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] 20 ... 90 % [3] At 50 Hz [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 [8] adjustable via IO-Link, e. g. with SensoIO

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 … 10 V	Auto-Detect	Plug, M12x1, 5-pin, IO-Link	FT 55-RLAP-5-PNSUL-L5	622-21024

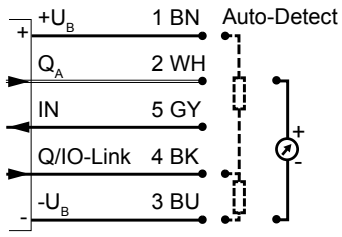
Version: 05/2021. Subject to changes; diagrams similar

Plug connection



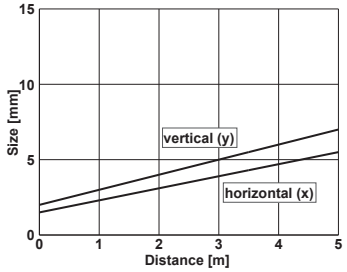
153-01104

Connection, 5-pin, Auto-Detect



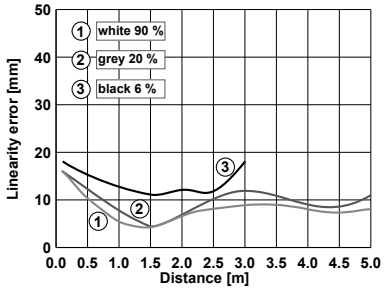
154-00567

Light spot size



155-01741

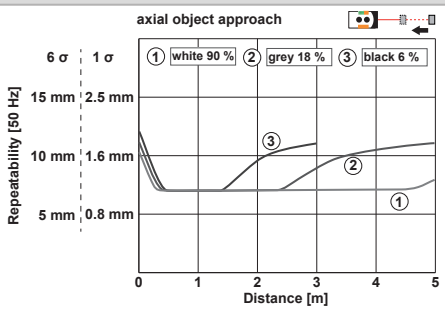
Linearity error (typ.)[9, 10]



155-03528

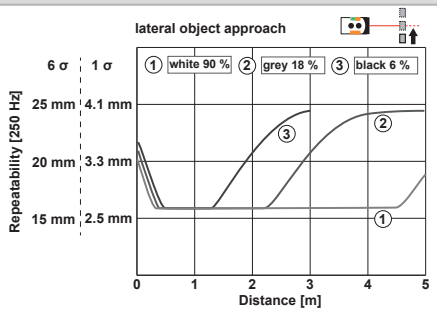
[9] Output via IO-Link [10] Deviation linearity error Q_A < 5 mm from digital value

Repeatability[11] (50 Hz)



155-01839

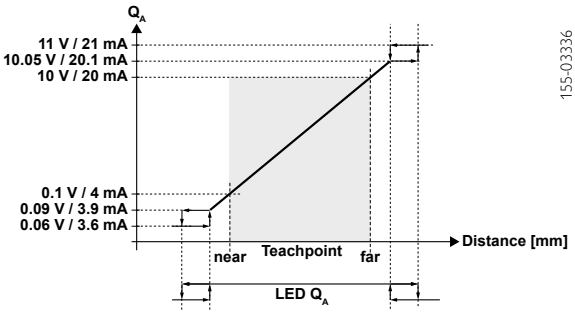
Repeatability[11] (250 Hz[12])



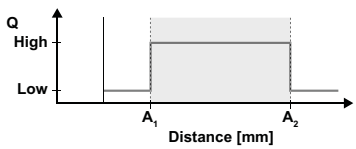
155-01843

[11] At constant ambient conditions [12] Automatic adjustment to 50 Hz at constant distance

Characteristic analogue curve



155-03336



155-01681

Reference material	Measurement range
White (90 %)	0.1 … 5 m
Grey (18 %)	0.1 … 5 m
Black (6 %)	0.1 … 3 m

Default setting[13]

Analogue output Q_A (4…20 mA / 0.1 … 10 V)	0.3 … 3 m
Switching output Q (A_1…A_2), N.O., Auto-Detect	0.3 … 3 m

Accessories

Connection cables	www.sensopart.com/en/accessories
Brackets	
SensoIO (901-01001)	

[13] The specified precision is achieved by teaching the distances