

# FR 91 ILA

## Reflector distance sensor



### PRODUCT HIGHLIGHTS

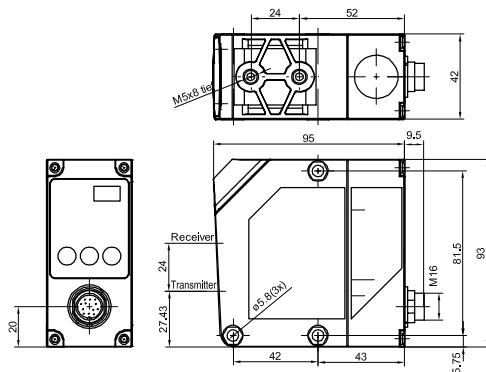
- Long range of up to 50 m on specified reflector
- High repeatability
- High measurement rates
- Very good price/performance ratio
- Open interfaces ensure maximum compatibility (SSI-compatible, RS422)
- Profibus and DeviceNet via gateway
- Switchable red-light pilot laser
- 2 switching outputs

Optical data		Functions	
Scanning distance	0.5 ... 50 m	Indicator LED, green	Operating voltage indicator
Type of light	Infrared, 905 nm (measurement laser) Laser, red, 650 nm (pilot laser)	Indicator LED, yellow	Switching output indicator
Laser Class (IEC 60825-1)	1 (measurement laser) 1 (pilot laser)	Scanning distance adjustment	Via Teach-in button and control input
Resolution	0.1 mm or 0.125 mm		
Linearity	± 5 mm (from 2 m)		
Repeatability	< ± 4 mm		
Light spot	20 × 20 mm <sup>1</sup>		
Electrical data		Mechanical data	
Operating voltage, +U <sub>b</sub>	18 ... 30V DC <sup>2</sup>	Dimensions	95 × 93 × 42 mm
Output current, I <sub>e</sub>	≤ 100 mA	Enclosure rating	IP 67 <sup>3</sup>
Plausibility output, Q <sub>p</sub>	50 mA	Material, housing	ABS, impact-resistant
Service output, Q <sub>s</sub>	50 mA	Material, front screen	PMMA
Protective circuits	Reverse-polarity protection, U <sub>b</sub> / short-circuit protection, Q	Type of connection	See selection table
Protection Class	2	Ambient temperature: operation	-10 ... +50 °C
Power On Delay	≤ 12 ms	Ambient temperature: storage	-30 ... +75 °C
Switching frequency f (ti/tp 1:1) Q	≤ 300 Hz	Weight	230 g
Switching output, Q <sub>1</sub> / Q <sub>2</sub>	PNP	Vibration and impact resistance	EN 60947-5-2
Output function	N.O.		
Temperature drift	< 0.5 mm / K		
Serial interface	RS422 or SSI-compatible (GREY / BINARY) adjustable		
Bus interface	Profibus or DeviceNet, each via gateway (accessories)		
Cable length / m	< 25 / < 50 / < 100 / < 200 / < 400		
Cycle rate	< 500 kHz / < 400 kHz / < 300 kHz / < 200 kHz / < 100 kHz		

<sup>1</sup> At scanning distance of 10 m    <sup>2</sup> 10 % ripple, within U<sub>b</sub>    <sup>3</sup> With connected IP 67 plug

Type of connection	Part number	Article number
Plug, M16, 12-pin	FR 91 ILA-S2-Q12	591-91002

### Plug connection



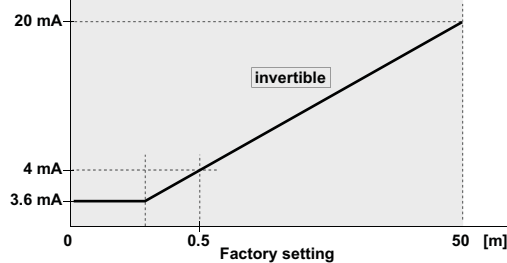
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### Connection, 12-pin

Pin	Name	Cable Type 1 (12-pin) color	Cable Type 2 (5-pin) color	Description
A	TX+	White		RS422: transmission data / SSi: Data+
B	Q1	Brown	Black	Switching output, Q1
C	RX+	Green		RS422: receiver data / SSi: clock+
D	analog	Yellow		Analogue output 4 ... 20 mA (only FT9X)
E	Qs	Grey	Orange	Service output, Qs
F	Qp	Pink		Plausibility output, Qp
G	U <sub>b</sub>	Red	Brown	U <sub>b</sub> + 18 ... 30V
H	RX-	Black		RS422: receiver data / SSi: clock
J	NC	Violet		
K	TX-	Grey/pink		RS422: transmitter data / SSi: Data-
L	Q2	Red/blue	White	Switching output, Q2
M	CND	Blue	Blue	0V (GND)

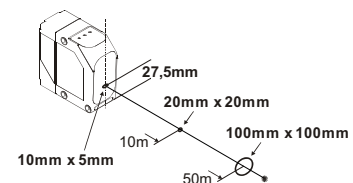
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### Characteristic analogue curve



155-01812

### Light spot geometry



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### Accessories

Reflectors	From Page A-18
Connection cables	From Page A-38
Brackets	From Page A-4
AS F 90 Aligning aid	From Page A-4
MSP F 90 A Fine adjustment	From Page A-4
Converters and adapter cables	From Page A-38