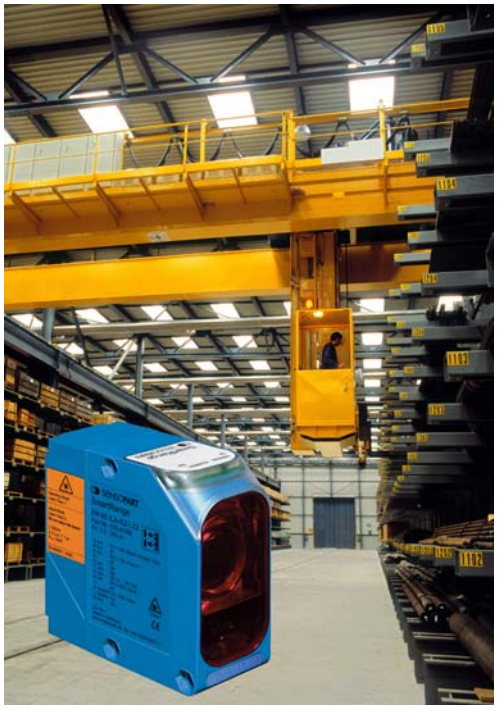
DISTANCE MEASURING



SmartRange
FR/FT 91 Distance sensor
FR/FT 90 Distance measuring device

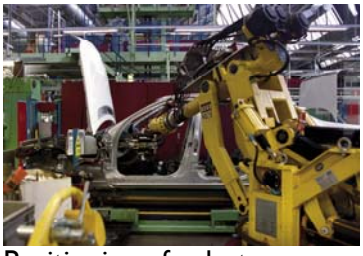
You are looking for a precise distance measuring device at a reasonable price? You need a very good ease of use and a superior optical performance?

The **SmartRange Fx9x** is the solution for

- the positioning of rail-mounted vehicles, shelf-access equipment, lifting units and cranes at large range with a high degree of accuracy
- all measuring and positioning tasks in automation, as needed e.g. for coils and different lengths of material
- the type classification of sub-assemblies, e.g. in the automotive industry
- reliable and precise robot control

and many more ...

Typical applications


Positioning of robots


Automobile production


Measurement of coils


Storage techniques and materials handling

Features

- *Large scanning distances and working ranges (as proximity switch up to 10 m on white objects, as reflex version up to 250 m on a specified reflector)*
- *High repeatability*
- *High measuring rates*
- *Very good cost/performance ratio*
- *Open interfaces provide for maximum compatibility (SSI compatible, RS422, Profibus)*
- *Optional red light pilot laser*

Technical data

	Distance measuring devices		Distance sensors	
	FR 90 ILA-S2-Q12	**FT 90 ILA-S2-Q12**	**FR 91 ILA -S2-Q12**	**FT 91 ILA-S2-Q12**
	Reflex version	**Proximity switch**	**Reflex version**	**Proximity switch**
Electrical data				
Supply voltage	18 - 30 VDC			
Residual ripple	10 % within Ub			
Power consumption	< 4.5 W at 25 °Celsius			
Outputs Q1/Q2	100 mA, PNP			
Plausibility output Qp	50 mA, PNP (N.O.)			
Service output Qs	50 mA, PNP (N.O.)			
Protection class	II double-insulated			
Short-circuit protection (all outputs)	yes			
Polarity reversal protection	yes			
Serial interface	RS 422 or SSI - compatible (GRAY / BINARY)			
Bus interface	Profibus or DeviceNet via respective gateway (accessory)			
Maximum cable length	100 m			
Analogue output	no	0 - 20 mA	no	0 - 20 mA
Optical data				
Measuring ranges				
reflector (specified)	**0.5 m ... 250 m**	-	**0.5 m ... 50 m**	-
black 6 %		0.5 m ... 3 m		0.5 m ... 2 m
grey 10 %		0.5 m ... 7 m		0.5 m ... 4 m
white 90 %		**0.5 m ... 10 m**		**0.5 m ... 6 m**
Measuring laser	IR 900 nm, laser protection class 1			
Diameter of light spot	20 x 20 mm @ 10 m	3 x 10 mm @ 4 m	20 x 20 mm @ 10 m	3 x 10 mm @ 4 m
Pilot laser	red 650 nm, laser protection class 2			
Switching points	adjustable in 1 mm steps			
Switching hysteresis	min. 10 mm (adjustable)		min. 20 mm (adjustable)	
Mechanical data				
Dimensions	93 mm x 93 mm x 42 mm			
Weight	approx. 230 g			
Vibration/Shock	EN 60947-5-2			
Ambient operating temperature	-10 ... +50 °Celsius (-20 ... + 50 °Celsius in continuous operation)			
Storage temperature	-30 ... +75 degrees Celsius			
Protection	IP 67			
Connection	connector M16, 12 pin			
Housing material	ABS shock-resistant			
Measured values				
Resolution (output of measurement values)	0.1 or 0.125 mm	0.1 or 0.125 mm	0.1 or 0.125 mm	0.1 or 0.125 mm
Repeatability	**+/- 2 mm**	**+/- 4 mm**	**+/- 5 mm**	**+/- 5mm**
Linearity	+/- 10 mm	+/- 10 mm	+/- 15 mm	+/- 15 mm
Response time	12 ms	12 ms	12 ms	12 ms
Temperature drift	-	-	< 0.5 mm/K	< 0.5 mm/K
Thermal response	< +/- 5 mm absolute	< +/- 5 mm absolute	-	-
Speed of measurement output	SSI: 1,4 ms (SSI cycle 80 µs ; RS 422 2,9 ms at 57,6 kBaud)			

All details regarding accuracy and distance are based on the specified surface at constant ambient conditions and with a minimum operating time of 15 minutes.

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