DATA SHEET

SP4Mi

Single Point Load Cell with IO-Link communication protocol

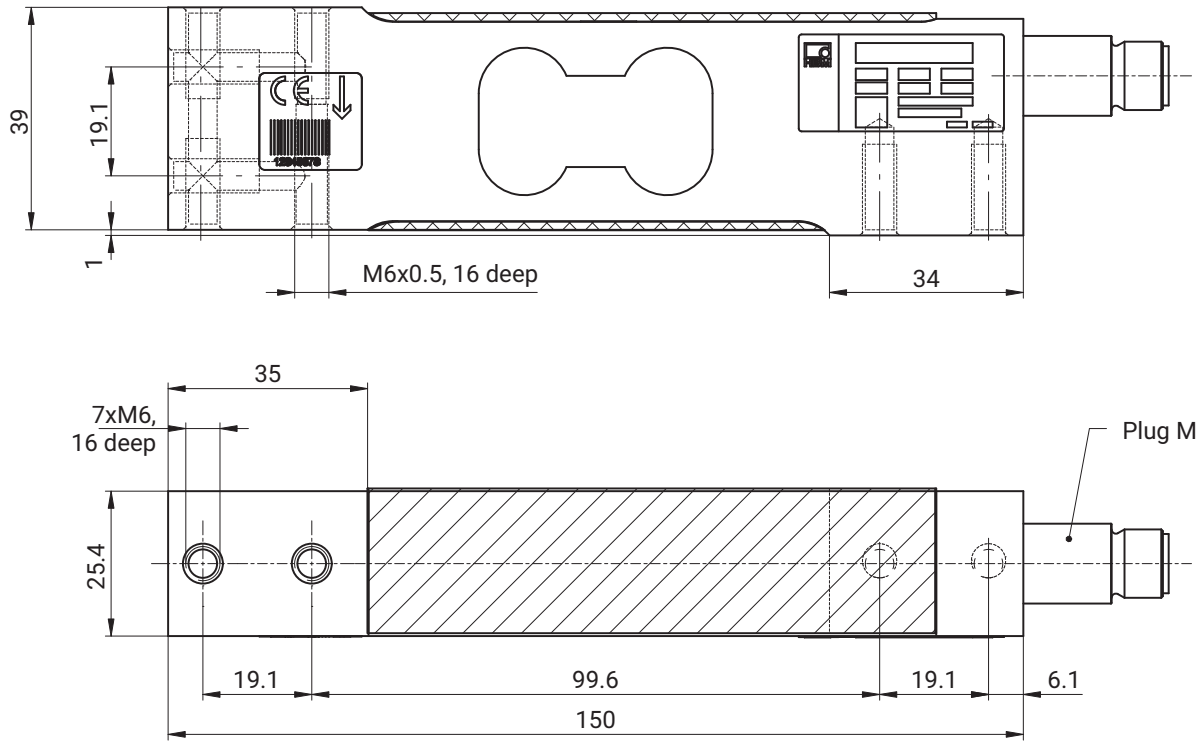
IO-Link

SPECIAL FEATURES

- Well known SP4M load cell with integrated IO-Link sensor communication
- IO-Link interface brings several advantages such as smart functions (preprocessing of data, self-monitoring and warnings), bidirectional sensor communication, and easy installation

DIMENSIONS

Dimensions in mm (1 mm = 0.03937 inches)



SPECIFICATIONS

Type			SP4Mi											
Accuracy class [1]			C3 Multi Range (MR) without OIML certificate				C3 Multi Range (MR) with OIML certificate							
Maximum number of load cell verification intervals	n_{LC}		3000											
Maximum capacity	E_{max}	kg	1	3	5	7	10	15	20	30	50	75	100	150	200
Ratio of minimum verification interval	Y		10000											
Temperature coefficient of zero signal	TC_0	% of E_{max}/ 10 K	0.0140											
Maximum platform size		mm	300 x 300					400 x 400			600 x 600			
Temperature coefficient of sensitivity [2] In the range +20 … +40 °C In the range -10 … +20 °C	TC_S	% of E_{max}/ 10 K	±0,0170 ±0,0110											
Relative reversibility error [2]	d_{hy}	% of E_{max}	±0,0166 (typical 50 ppm)											
Non-linearity [2]	d_{lin}		±0,0166 (typical 70 ppm)											
Minimum dead load output return	DR		±0,0166											
Off-center load error [3]			±0,0233											
Sensitivity tolerance			± 0,1											
Nominal (rated) range of the ambient temperature	B_T	°C	-10 … +40											
Operating temperature range	B_{tu}	°C	-10 … +50											
Storage temperature range	B_{tl}	°C	-25 … +75											
Limit load	E_L	% of E_{max}	150											
Limit lateral loading, static	E_{lq}		300											
Service load at max. 100 mm eccentricity	E_U		150											
Breaking load at 20 mm eccentricity	E_d		300											
Relative permissible oscillation stress at max. 20 mm eccentricity	F_{srel}		70											
Rated displacement at E_{max}, approx.	s_{nom}	mm	< 0,3											
Weight, approx.	m	kg	0.45											
Degree of protection [4]			IP67											
Material			Aluminum, silicone rubber											

Integrated amplifier

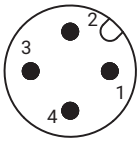
Type		SP4Mi
Software identification		1201
Digital filter		
Digital filters, up to 5 cascadable	Hz	IIR low pass: 0,1 … 30 FIR low pass: 3 ... 30 Moving average filter Notch filter
Device functions		
Weighing functions		Checkweigher with pre- and post-trigger, trigger either levelcontrolled or via external photoelectric sensor; Filling with coarse and fineflow control as well as automatic optimization of target weight
Limit value switches		2 limit value switches. Invertible, freely adjustable hysteresis. Output via process data or 1 digital output
Digital IO		According to IO-Link Smart Sensor Profile, 1 permanently available digital input/output
Peak value memory		Yes
Peak-to-peak memory		Yes
Warning functions		Warning on exceeding limit load; nominal (rated) temperature
Output signal; interface		COM3, to IO-Link standard, class A
Min. cycle time (max. output rate)	ms	1.0
Signal bandwidth (-3 dB)	Hz	200
Resolution	Bit	24
Sample rate (internal)	S/s	2000
Reference supply voltage	V	24
Supply voltage range	V	20 - 30
Max. power consumption	mW	3200
Max. cable length	m	20
Maximum impact load as per IEC 60068-2-6		
Number		1000
Duration	ms	3

1) As per OIML R60, with p_{LC} = 0,7
2) The values for non-linearity (d_{lin}), relative reversibility error (d_{hy}) and temperature coefficient of sensitivity (TC_S) are recommended values. The sum of these values is within the accumulated error limit specified by R60.
3) As per OIML R76
4) As per EN 60 529 (IEC 529)

Connector pinning

Pin	Assignment
1	Supply voltage +, 24 VDC
2	Digital output (DI/DO pin function)
3	Supply voltage/reference potential, 0 V
4	IO-Link data (C/Q)

Class A



Connector plug M12, A coded

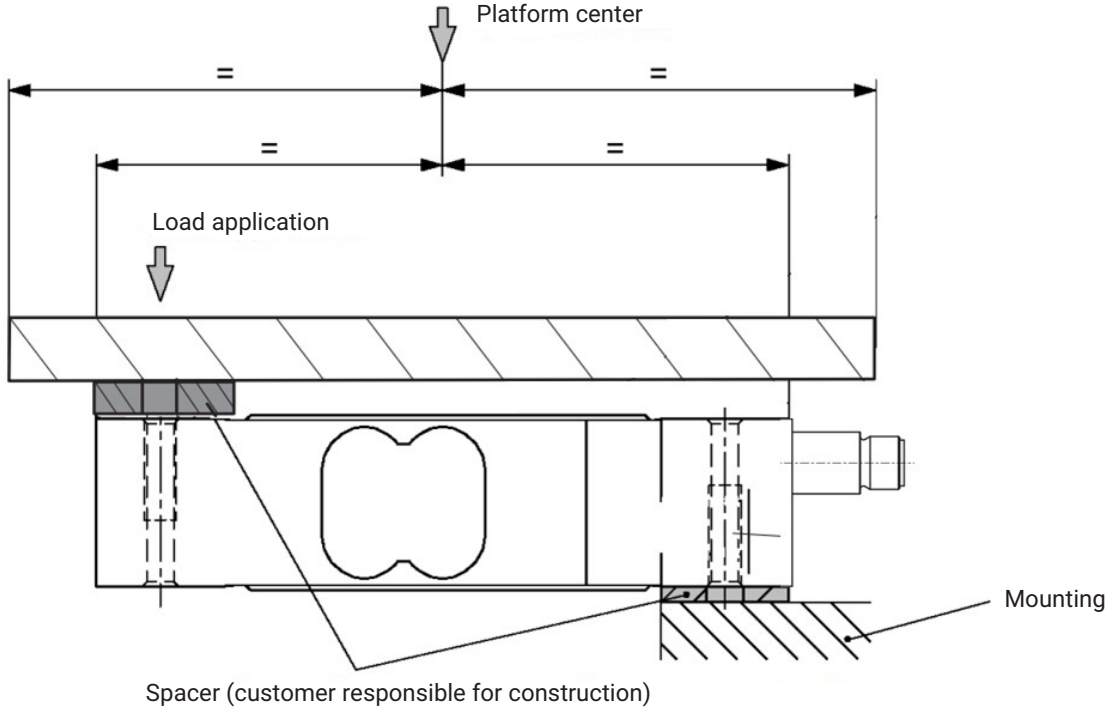
MOUNTING AND LOAD APPLICATION

The load cells are firmly clamped at the mounting holes, the load is applied at the other end. The recommended screws and tightening torques can be found in the table below:

Maximum capacities	Thread	Min. property class	Tightening torque
1 kg ... 30 kg	M6	8.8	6 N·m
50 kg ... 200 kg	M6	10.9	14 N·m

1) Recommended value for the specified property class. Please comply with the screw manufacturer's instructions with regard to screw dimensions.

Load must not be applied to the side where the cable connection is located, as this would cause a force shunt.



PRODUCT NUMBERS (OVERVIEW)

SP4Mi with integrated intelligent IO-Link

Type	SP4Mi
Maximum capacity [kg]	**Ordering number**
1	1-SP4MIC3MR/1KG
3	1-SP4MIC3MR/3KG
5	1-SP4MIC3MR/5KG
7	1-SP4MIC3MR/7KG
10	1-SP4MIC3MR/10KG
15	1-SP4MIC3MR/15KG
20	1-SP4MIC3MR/20KG
30	1-SP4MIC3MR/30KG
50	1-SP4MIC3MR/50KG
75	1-SP4MIC3MR/75KG
100	1-SP4MIC3MR/100KG
150	1-SP4MIC3MR/150KG
200	1-SP4MIC3MR/200KG

B06270 01 E00 04 29.04.2025

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