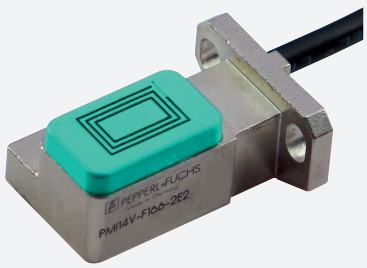
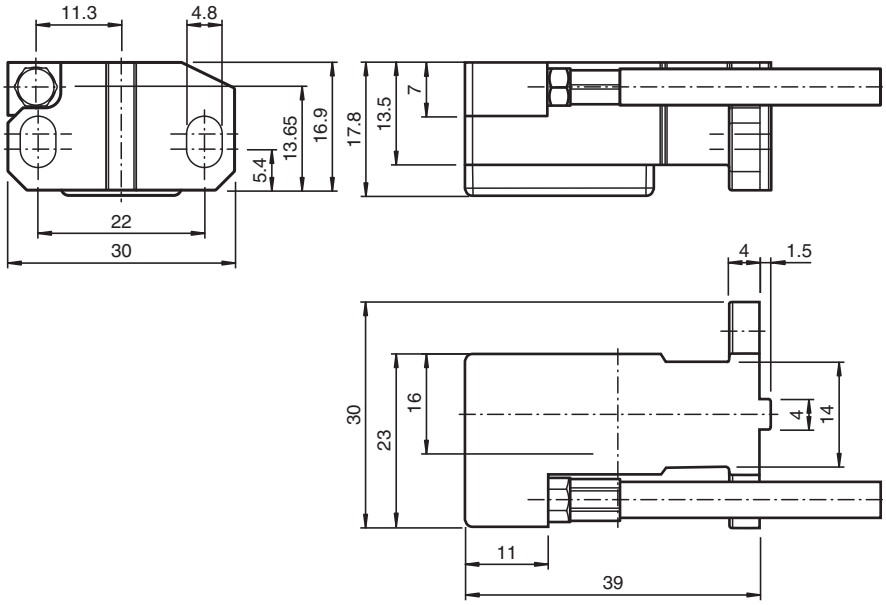


Inductive positioning system

PMI14V-F166-2E2-1M-V15

- Measuring range 0 ... 14 mm
- 2 programmable switch outputs

Dimensions



Technical Data

General specifications		
Switching element function		PNP Dual NO
Object distance		0.5 ... 2 mm
Measurement range		0 ... 14 mm
Nominal ratings		
Operating voltage	U_B	18 ... 30 V DC
Reverse polarity protection		reverse polarity protected
Voltage drop	U_d	≤ 3 V
Linearity error		± 0.3 mm
Repeat accuracy	R	± 0.05 mm

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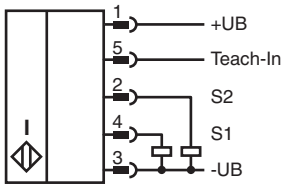
Technical Data

Resolution		33 µm
Temperature drift		± 0.3 mm (With a target distance of 0.5 mm)
No-load supply current	I_0	≤ 20 mA
Functional safety related parameters		
$MTTF_d$		880 a
Mission Time (T_M)		20 a
Diagnostic Coverage (DC)		0 %
Switching output		
Output type		PNP (2 Channels)
Operating current	I_L	per channel 50 mA , Combined max. 80 mA
Switching window		position programmable, width 2 mm
Switching hysteresis		0.4 mm
Short-circuit protection		pulsing
Compliance with standards and directives		
Standard conformity		
Standards		EN 60947-5-2:2007 IEC 60947-5-2:2007 EN 60947-5-7:2003
Ambient conditions		
Ambient temperature		-10 ... 70 °C (14 ... 158 °F)
Storage temperature		-20 ... 70 °C (-4 ... 158 °F)
Mechanical specifications		
Degree of protection		IP65
Material		
Housing		Zinc diecast, nickel-plated cover , PBT
Target		mild steel, e. g. 1.0037, SR235JR (formerly St37-2)
Connector		
Threading		M12 x 1
Tightening torque		0.6 Nm
Number of pins		5
Cable		
Cable diameter		4.8 mm ± 0.2 mm
Bending radius		> 10 x cable diameter
Material		PUR , screened
Color		black
Number of cores		5
Core cross section		0.14 mm^2
Length	L	1 m
Mass		76 g

Connection



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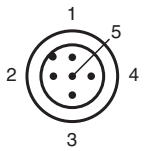
Connection Assignment

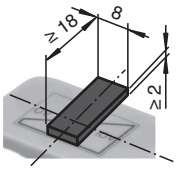


Wire colors in accordance with EN 60947-5-2

1	BN	(brown)
2	WH	(white)
3	BU	(blue)
4	BK	(black)
5	GY	(gray)

Additional Information

dimensions for the target object:



Accessories

	**BT-F90-W**	Damping element for sensors of type F90, F112, and F166; side hole
	**BT-F90-G**	Damping element for sensors of type F90, F112, and F166; front hole
	**PMI14V-Teach**	Programming unit
	**MH V1-SCREWDRIVER**	Torque screwdriver (0.6 Nm)
	**MH V1-BIT M12**	plug-in cap M12

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Operation

Information on Operation

Safety Information

Warnung

This product must not be used in applications in which the safety of persons depends on the function of the device. This product is not a safety component as specified in the EU Machinery Directive.

Actuator

The linear position measurement system is optimally aligned to the geometry of Pepperl+Fuchs actuators.

Using Your Own Actuators

Generally speaking, it is possible for you to use your own actuators. The specified measurement accuracy of the sensor will be achieved only if the actuator has the following properties:

- Material: construction steel such as S235JR+AR (previously St37)
- Dimensions (L x W x H): ≥ 18 mm x 8 mm x ≥ 2 mm
- The active surface of the actuator must protrude across the entire sensor width.

Note:

The width of the actuator must be precisely 8 mm. If the width of the actuator deviates from this value, the position values will differ.

Programming

Programming the Switching Windows

The two switching windows can be taught in using the PMI14V-Teach programming unit. The programming unit is connected directly between the sensor and the power supply. The Teach-in process is generally only possible in the first 6 minutes of the sensor being switched on. After that point, programming is blocked and is only possible again once the power supply has been interrupted.

The relevant positions of the switching windows that are taught in are stored in the nonvolatile memory. The switching windows are positioned symmetrically around the configured position in each case. The measured position is based on half of the width (center) of the damping element.

Teach-In Process

Switching the Sensor to Programming Mode

1. Connect the programming unit between the sensor and the power supply.
2. Press and hold the key on the programming unit for approx. 1.5 seconds.

>> The LED S1 on the programming unit flashes (2 Hz).

Switching window 1: width 2 mm (± 1 mm), switching output S1

Prerequisite: LED S1 is flashing.

1. Position the damping element in the required switching position.
2. Press the button again.

>> The sensor teaches in position 1. If the Teach-in process was successful, LED S1 lights up for approx. 1.5 seconds.

Switching window 2: width 2 mm (± 1 mm), switching output S2

Prerequisite: LED S2 is flashing.

1. Position the damping element in the required switching position.
2. Press the button again.

>> The sensor teaches in position 2. If the Teach-in process was successful, LED S2 lights up for approx. 1.5 seconds. LED S2 goes out briefly. Afterwards the sensor returns to its normal operating state. The LEDs now follow the switching status of the respective output. If the damping element is still at the teaching position LED S2 lights up.

Reset to Default Settings

1. Press and hold the button for approx. 6.5 seconds.

>> The sensor is reset to its default settings. The programming unit confirms this by flashing quickly (8 Hz).

Faults during Teach-in

If a Teach-in process fails for any reason, LED S1 flashes quickly (16 Hz) for approx. 1.5 seconds. The cause for this may be that the Teach-in attempt was conducted outside the measuring range.
The Teach-in process is canceled when the power supply is interrupted or if no button is pressed for approx. 410 s.

In both cases, the existing switching limits remain saved.

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