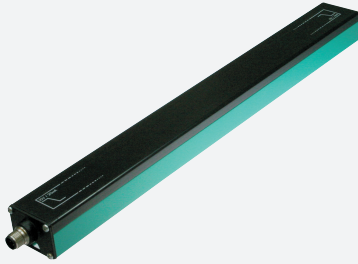


# Inductive positioning system

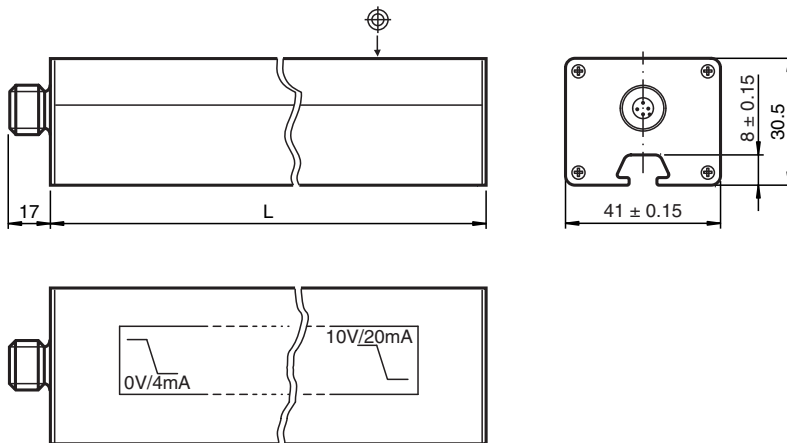
## PMI510-F110-IU-V1



- Analog output 0 V ... 10 V/4 mA ... 20 mA
- Measuring range 0 ... 510 mm



### Dimensions



### Technical Data

#### General specifications

Switching element function	analog, current or voltage output
Object distance	max. 6 mm
Measurement range	0 ... 510 mm

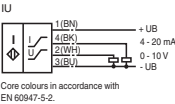
#### Nominal ratings

Operating voltage	$U_B$	18 ... 30 V DC
Reverse polarity protection		reverse polarity protected
Linearity error		$\pm 0.6$ mm
Repeat accuracy	$R$	$\pm 0.5$ mm
Resolution		550 $\mu$ m
Temperature drift		$\pm 0.7$ mm (-25 °C ... 70 °C)
No-load supply current	$I_0$	$\leq 65$ mA
Operating voltage indicator		LED green

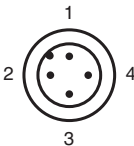
Technical Data

Functional safety related parameters		
MTTF <sub>d</sub>		183 a
Mission Time (T <sub>M</sub> )		20 a
Diagnostic Coverage (DC)		0 %
Analog output		
Output type		1 current output: 4 ... 20 mA 1 voltage output: 0 ... 10 V
Load resistor		current output: ≤ 400 Ω voltage output: ≥ 1000 Ω
Short-circuit protection		voltage output: pulsing
Compliance with standards and directives		
Standard conformity		
Standards		EN 60947-5-2:2007 EN 60947-5-2/A1:2012 IEC 60947-5-2:2007 IEC 60947-5-2 AMD 1:2012
Approvals and certificates		
UL approval		cULus Listed, General Purpose, Class 2 Power Source
CCC approval		CCC approval / marking not required for products rated ≤36 V
Ambient conditions		
Ambient temperature		-25 ... 70 °C (-13 ... 158 °F)
Mechanical specifications		
Connection type		4-pin, M12 x 1 connector
Housing length L		550 mm
Degree of protection		IP65
Material		
Housing		PA 6 / AL
Target		mild steel, e. g. 1.0037, SR235JR (formerly St37-2)
Note		The data relating to accuracy only apply to a distance to the object to be detected of 1 ... 6 mm.

Connection







Connection Assignment



Wire colors in accordance with EN 60947-5-2

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

Accessories

	<b>BT-F110-G</b>	Damping element for F110 housing sensors; front screw holes
	<b>BT-F110-W</b>	Damping element for F110 housing sensors; lateral screw holes
	<b>V1-G-2M-PVC</b>	Female cordset, M12, 4-pin, PVC cable
	<b>MH-F110</b>	Mounting bracket for mounting F110 series sensors

Release date: 2020-04-27 Date of issue: 2020-04-27 Filename: 205697\_eng.pdf

## Installation

### Instruction manual

- Security advice



This product must not be used in applications, where safety of persons depend on the correct device function.  
This product is not a safety device according to EC machinery directive.

- Sensor Properties

The inductive positioning system F110 provides both, a current and voltage signal at the outputs, which is proportional to the position of the attenuating element.  
Output signals: 4 mA ... 20 mA and 0 V ... 10 V

- Attenuating element

The inductive position encoding system F110 is optimally adjusted to the geometry of the attenuating elements we offer (see accessories, below).



When using your own attenuating elements, you must ensure that the active surface of the attenuating element has a width of exactly 13 mm and overlaps the entire sensor width (41 mm).

A different width has a direct impact on the achievable resolution and accuracy of the system.

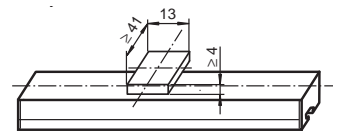
Spacing between sensor and attenuating element is from 0 ... 6 mm.

Sensing accuracy is guaranteed between 1 ... 6 mm..

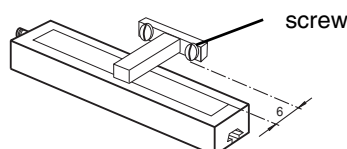
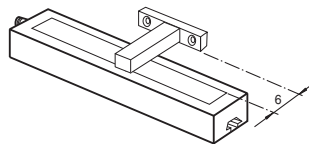
- Installation and operation

### Notes on installation

- A flush installation is possible.
- Fixation and installation of the positioning system F110 is carried out by the use of t-slides. This provides a flexible adaptation to the field situation.



- The distance between the measuring field (bordered area at the front of the sensor) and the fixing base or fixing element of the attenuating element must at least be 6 mm.

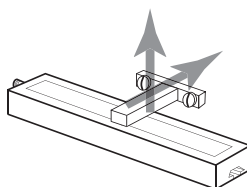
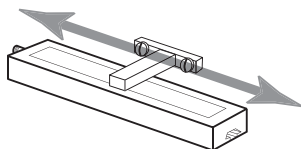


- Notes on operation

The sensor accuracy can be guaranteed, when the spacing between attenuating element and sensor is within an interval of 1 ... 6 mm.

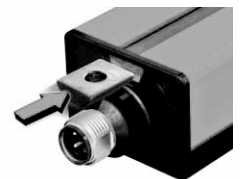
When the attenuating element leaves the measurement range (figures below):

- the last valid value is maintained at the voltage output until the attenuating element re-enters the valid range.
- the last valid value is maintained at the current output for 0.5 seconds. Afterwards, the output changes to a fault current of 3.6 mA until the attenuating element re-enters the valid range.

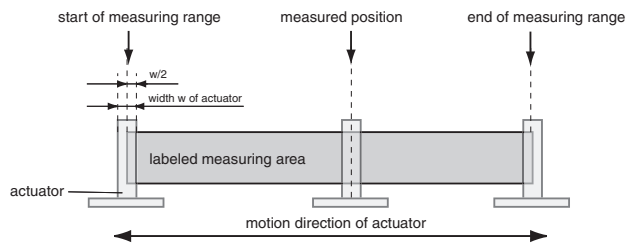


- Definition of measuring range / of measured position

The measured attenuating elements (actuators) position refers to half its width (middle of the actuator). The measuring range starts and ends when the attenuating element overlaps the labeled measuring area on the sensor at transversal motion (see



left figure above).



- Accessories

## Attenuating elements

BT-F110-G



BT-F110-W



## Mounting brackets

MH-F110



**Straight cables:**V1-G-2M-PVC (4 wire)

**Angled cables:**V1-W-2M-PVC (4 wire)