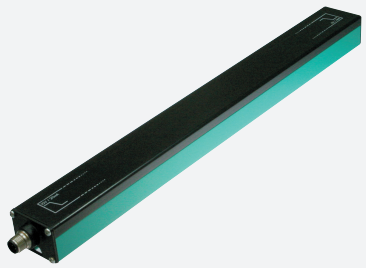
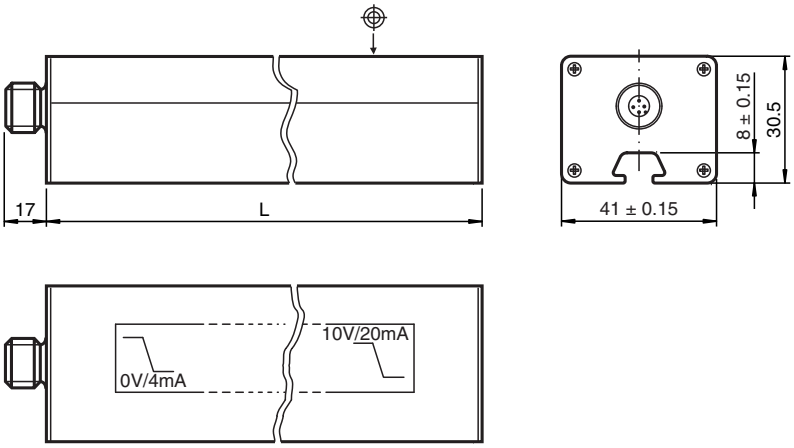


Inductive positioning system

PMI960-F110-IU-V1

- Analog output 0 V ... 10 V/4 mA ... 20 mA
- Measuring range 0 ... 960 mm

Dimensions



Technical Data

General specifications		
Switching element function		analog, current or voltage output
Object distance		max. 6 mm
Measurement range		0 ... 960 mm
Nominal ratings		
Operating voltage	U_B	18 ... 30 V
Reverse polarity protection		reverse polarity protected
Linearity error		± 0.9 mm
Repeat accuracy	R	± 0.4 mm
Resolution		960 µm
Temperature drift		± 0.9 mm (-25 °C ... 70 °C)
No-load supply current	I_0	≤ 70 mA
Operating voltage indicator		LED green
Functional safety related parameters		

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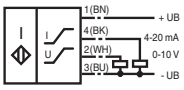
Technical Data

$MTTF_d$		111 a
Mission Time (T_M)		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		M12 connector
Housing material		PA 6 / AL
Housing length L		1000 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. The path measurement system must be secured at 20 cm intervals to prevent mechanical load.

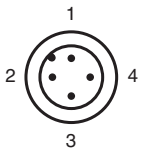
Connection

IU



Core colours in accordance with EN 60947-5-2.

Connection Assignment



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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)

Accessories

	**BT-F110-G**	Damping element for F110 housing sensors; front screw holes
	**BT-F110-W**	Damping element for F110 housing sensors; lateral screw holes
	**V1-G-2M-PVC**	Female cordset single-ended M12 straight A-coded, 4-pin, PVC cable grey
	**MH-F110**	Mounting bracket for mounting F110 series sensors

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Installation

Instruction manual

- Security advice

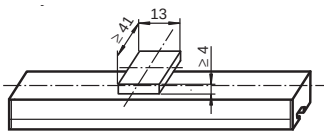
  Warning: This product must not be used in applications, where safety of persons depend on the correct device function.
  This product is not a safety device according to EC machinery directive.

- 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).

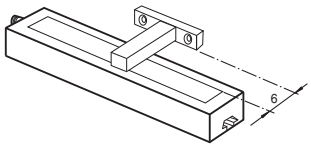


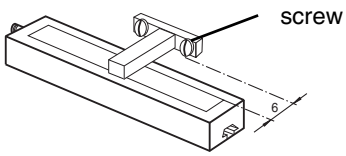
  Note: When using your own attenuating elements, you must ensure that the active surface of the attenuating element has a width of exactly 13 mm and overlaps the entire sensor width (41 mm).
  A different width has a direct impact on the achievable resolution and accuracy of the system.
  Spacing between sensor and attenuating element is from 0 ... 6 mm.
  Sensing accuracy is guaranteed between 1 ... 6 mm..

- Installation and operation

Notes on installation

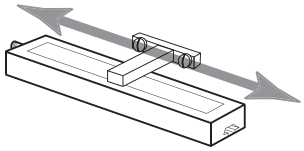
- A flush installation is possible.
- Fixation and installation of the positioning system F110 is carried out by the use of t-slides. This provides a flexible adaptation to the field situation.
- The distance between the measuring field (bordered area at the front of the sensor) and the fixing base or fixing element of the attenuating element must at least be 6 mm.

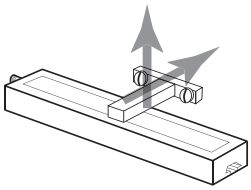




- Notes on operation

  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

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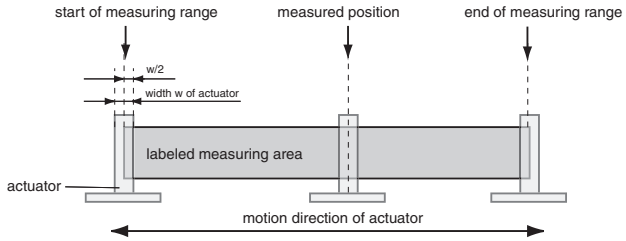
left figure above).



- 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)

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