



## Model Number

PMI40-F90-IU2EP-IO-V15-3G-3D

## Features

- Parameterization and diagnosis via IO-Link
- Measuring range 0 ... 40 mm
- Parameterisable measuring range
- Analog current or voltage output, programmable
- 2 Push-pull outputs
- Switch points programmable via IO-Link

## Application

### Attention!

If the sensor is supplied via an IO-Link-Master, ensure that the sum of the no-load supply current and operating currents of all sensor outputs does not exceed the maximum current the IO-Link-Master can supply.

## Accessories

### BT-F90-W

Damping element for sensors of type F90, F112, and F166; side hole

### MH-F90

Mounting bracket for mounting of F90 sensors

### V15-G-2M-PVC

Female cordset, M12, 5-pin, PVC cable

### V15-W-2M-PVC

Female cordset, M12, 5-pin, PVC cable

## Technical Data

### General specifications

Switching element function	Analog current or voltage output, programmable
Object distance	2 switch outputs, programmable
Measurement range	0.5 ... 3 mm, recommended: 1.5 mm
Linearity range	0 ... 40 mm
	1 ... 39 mm

### Nominal ratings

Operating voltage	$U_B$	12 ... 30 V DC (13 ... 30 V when analog voltage output is parameterized)
Reverse polarity protection		reverse polarity protected
Linearity error		within measuring range: $\pm 0.8$ mm within linearity range: $\pm 0.4$ mm
Repeat accuracy	R	$\pm 0.1$ mm
Resolution		50 $\mu$ m
Temperature drift		$\pm 0.5$ mm (-25 °C ... 70 °C)
No-load supply current	$I_0$	$\leq 40$ mA
Operating voltage indicator		LED green

### Functional safety related parameters

MTTF <sub>d</sub>	382 a
Mission Time (T <sub>M</sub> )	20 a
Diagnostic Coverage (DC)	0 %

### Indicators/operating means

LED S1	switching state Switching output 1
LED S2	switching state Switching output 2
LED S3	Damping element in the configured analog measuring range
LED STATUS	Status display LED, green/red (Power on, communication/error, missing damping element)

### Interface

Interface type	IO-Link (via C/Q = Pin 4)
Device profile	Smart Sensor
Transfer rate	COM 2 (38.4 kBaud)
Value range	0000h ... 3200h
IO-Link Revision	1.1
Min. cycle time	2.3 ms
Process data width	Process data input: 16 Bit Process data output: none
SIO mode support	yes
Device ID	0x200204 (2097668)
Compatible master port type	A

### Switching output

Output type	2 push-pull outputs (can be parameterized), short-circuit-proof, reverse polarity protection, surge-proof
Operating current	$I_L$ $\leq 100$ mA / output
Switching window	$\pm 1$ mm
Switching hysteresis	0.2 mm
Voltage drop	$\leq 3$ V
Short-circuit protection	pulsing

### Analog output

Output type	1 current output: 4 ... 20 mA or 1 voltage output: 0 ... 10 V, programmable
Load resistor	current output: $\leq 400$ $\Omega$ voltage output: $\geq 1000$ $\Omega$
Short-circuit protection	voltage output: current limit

### Ambient conditions

Ambient temperature	-25 ... 85 °C (-13 ... 185 °F)
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### Mechanical specifications

Connection type	5-pin, M12 x 1 connector
Degree of protection	IP67 / IP69K
Material	
Housing	PBT, stainless steel 1.4571, brass, nickel-plated
Target	mild steel, e. g. 1.0037, SR235JR (formerly St37-2)
Mass	56 g

### General information

Use in the hazardous area	see instruction manuals
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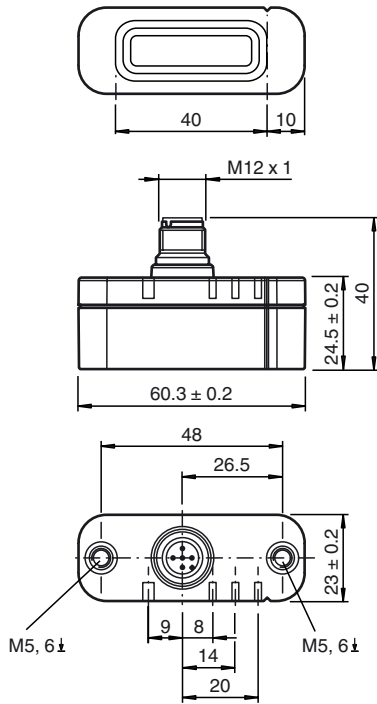
### Compliance with standards and directives

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 EN 60947-5-7:2003 EN61131-9:2013 IEC 60947-5-7:2003 IEC 61131-9:2013

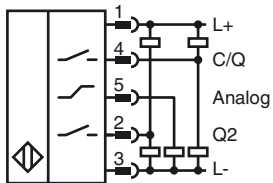
### Approvals and certificates

UL approval	cULus Listed, Class 2 Power Source, Type 1 enclosure
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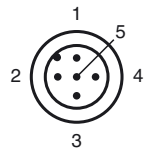
**Dimensions**



**Electrical Connection**



**Pinout**

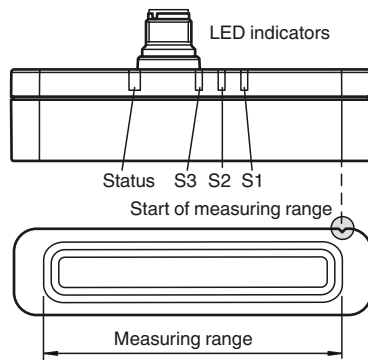
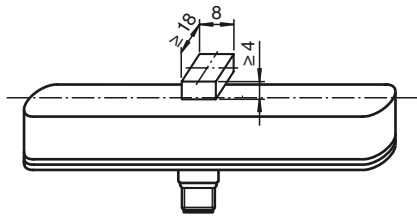


Wire colors in accordance with EN 60947-5-2

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

**Additional Information**

dimensions for the target object:



Release date: 2018-01-31 08:45 Date of issue: 2018-01-31 315191\_eng.xml

**Data for application in connection with hazardous areas**

Equipment protection level	Gc (nA) , Dc
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**Equipment protection level Gc (nA)**

Type of protection	"n"
CE marking	

**Certificates**

ATEX certificate	PF 15 CERT 3754 X
ATEX marking	
Standards	EN 60079-0:2012+A11:2013 , EN 60079-15:2010

Possible characteristics maximum operating voltage  $U_{Bmax}$  , maximum load current  $I_{Lmax}$  , minimum series resistance  $R_V$  , maximum analog output voltage  $U_{Amax}$  , maximum analog output current  $I_{Amax}$

Maximum permissible ambient temperature  $T_{amb}$  Also observe the maximum permissible ambient temperature stated in the general technical data. Keep to the lower of the two values.  
**mode of operation 1**  
 at  $U_{Bmax} = 30$  V and maximum 2 switching outputs with each  $I_{Lmax} = 100$  mA and 1 analog output with  $I_{Amax} = 20$  mA or  $U_{Amax} = 10$  V : 30 °C (86 °F)  
**mode of operation 2**  
 at  $U_{Bmax} = 30$  V and maximum 1 switching output with  $I_{Lmax} = 100$  mA : 50 °C (122 °F)

**Equipment protection level Dc**

Type of protection	Protection by enclosure "tc"
CE marking	

**Certificates**

ATEX certificate	PF 15 CERT 3774 X
ATEX marking	
Standards	EN 60079-0:2012/A11+2013 , EN 60079-31:2014

Possible characteristics maximum operating voltage  $U_{Bmax}$  , maximum load current  $I_{Lmax}$  , minimum series resistance  $R_V$  , maximum analog output voltage  $U_{Amax}$  , maximum analog output current  $I_{Amax}$

Maximum permissible ambient temperature  $T_{amb}$  Also observe the maximum permissible ambient temperature stated in the general technical data. Keep to the lower of the two values.  
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 at  $U_{Bmax} = 30$  V and maximum 2 switching outputs with each  $I_{Lmax} = 100$  mA and 1 analog output with  $I_{Amax} = 20$  mA or  $U_{Amax} = 10$  V : 30 °C (86 °F)  
**mode of operation 2**  
 at  $U_{Bmax} = 30$  V and maximum 1 switching output with  $I_{Lmax} = 100$  mA : 50 °C (122 °F)

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