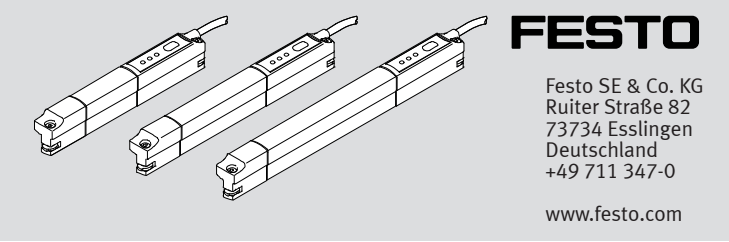


SDAP-MHS
Position transmitter



Operating instructions

8158433
2021-05b
[8158435]



Translation of the original instructions

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IO-Link® is a registered trademark of its respective trademark holder in certain countries.

1 About this document

1.1 Applicable Documents

All available documents for the product -> www.festo.com/sp.

2 Safety

2.1 General safety instructions

- Only use the product in its original condition without unauthorised modifications.
- Only use the product if it is in perfect technical condition.
- The product may generate high frequency interference, which may require interference suppression measures in residential areas.

2.2 Intended use

- The product is intended for contactless detection of the piston position of magnetically proximity sensing drives.
- Use the product only in combination with the analogue input module CTMM-S1-A-... (optional component of the Motion Terminal VTEM).
- Keep magnetic objects away from the near vicinity of the product.

2.3 Training of qualified personnel

Work on the product may only be carried out by qualified personnel who can evaluate the work and detect dangers. The qualified personnel have skills and experience in dealing with electropneumatic (open-loop) control technology.

2.4 UL/CSA certification

In connection with the UL and CSA marking on the product, the information of this section is also applicable for compliance with the certification conditions of Underwriters Laboratories Inc. (UL) for the USA and Canadian Standards Association (CSA) for Canada.

Table with 2 columns: UL/CSA approval information, details including Product category code (NRKH, NRKH7), File number (E232949), Considered standards (UL 60947-1, UL 60947-5-2, CAN/CSA C22.2), and UL mark (UL US LISTED).

Tab. 1: UL/CSA approval information

Only for connection to a NEC/CEC Class 2 supply.

3 Additional information

- Contact the regional Festo contact if you have technical problems -> www.festo.com.
- Accessories and spare parts -> www.festo.com/catalogue.

4 Product overview

4.1 Function

The product detects the magnetic field of the piston magnet and continuously senses the piston movement in the sensing range. An analogue current signal of 4 ... 20 mA is available as output signal. The power supply comes from the analogue input module CTMM-S1-A-... (optional component of the Motion Terminal VTEM).

4.2 Design

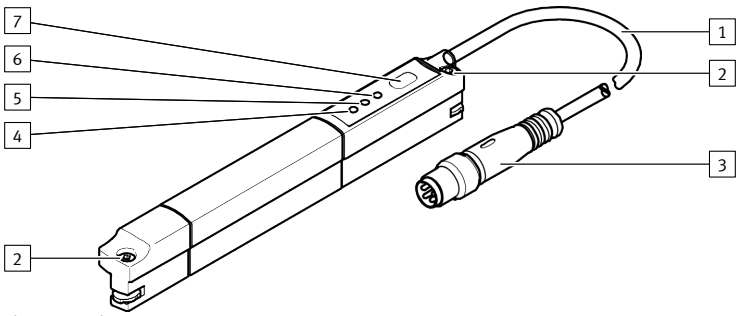


Fig. 1: Design

5 Installation

5.1 Electrical installation

WARNING
Risk of injury due to electric shock.
• For the electric power supply, use only PELV circuits that ensure a reliable electric disconnection from the mains network.
• Observe IEC 60204-1/EN 60204-1.

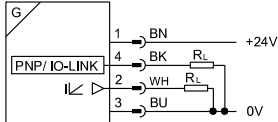


Fig. 2: Circuit diagram

Table with 3 columns: Pin, Allocation, and Plug. It details the pin allocation for the 4-pin M8 plug: Pin 1 for +24V DC, Pin 2 for Analogue output 4 ... 20 mA, Pin 3 for 0V DC, and Pin 4 for PNP switching output.

- 1) If the analogue output is not used, connect a resistor of 500 Ω between pin 2 and pin 3 or leave it open.
- 2) IO-Link operation is blocked on the SDAP-MHS. The PNP switching output is preset as a functional reserve/setting aid.

Tab. 2: Pin allocation

- 1. Switch off the operating voltage.
- 2. Connect the connecting cable to the input module CTMM-S1-A-.... Tightening torque: 0.3 Nm

5.2 Mechanical installation

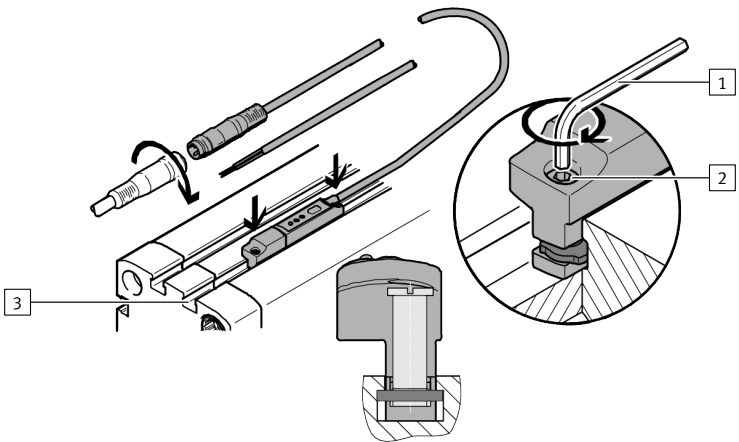


Fig. 3: Mechanical installation

- 1 Hexagon socket spanner
- 2 Retaining screw
- 3 T-slot: profile slot 8

- 1. Place the product in the T-slot of the drive or mounting kit.
- 2. Tighten the retaining screws. Tightening torque: 0.5 Nm

6 Commissioning

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- Observe the commissioning notes in the documentation of the Motion Terminal VTEM.

- Switch on the operating power supply $U_{EL/SEN}$ and the load voltage supply U_{VAL} of the Motion Terminal VTEM.
 - The LED displays light depending on the position of the piston.
 - The product is ready for operation.
- Move the piston to an end position of the application.
- Loosen the retaining screws of the product.
- Push the product in the direction of the piston until the red LED display is off.
- Tighten the retaining screws. Tightening torque: 0.5 Nm

7 Operation

7.1 Analogue output

The analogue output provides a displacement-proportional output signal 4 ... 20 mA in the sensing range of the piston stroke.

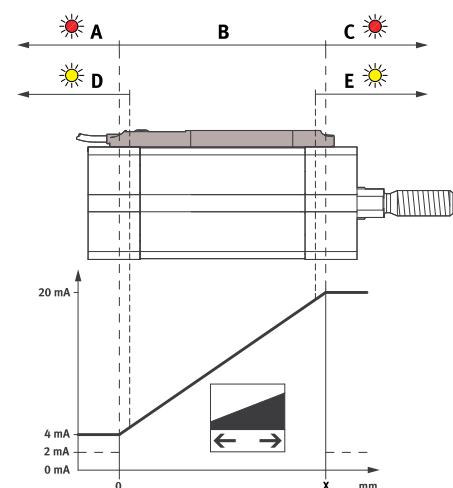


Fig. 4: Analogue output and LED displays in normal operation

X = maximum length of the sensing range (type-dependent)

Signal	Description	Range
0 mA	Error, e.g. cable break, parameter error	–
2 mA	The piston is outside the sensing range after switching on the operating voltage.	A, C
4 mA	The piston has left the sensing range in the direction of the falling output current.	A
>4 ... <20 mA	The piston is within the sensing range.	B
20 mA	The piston has left the sensing range in the direction of the rising output current.	C
>4 mA, <20 mA	Functional reserve/setting aid approx. 1 mm within the nominal detection range	D, E

Tab. 3: Output signal, analogue output

7.2 Status signals in normal operation

LED display	Description
Yellow Green Red	
Green LED: on Red LED: off	Ready for operation: – Voltage supply present. – Piston within the sensing range.
Green LED: flashes 3 s	Key actuated (key without function).
Green LED: on Red LED: on	Piston outside the sensing range.
Yellow LED: on Green LED: on	Functional reserve/setting aid approx. 1 mm within the nominal detection range.

Tab. 4: LED displays in normal operation

8 Malfunctions

LED display	Possible cause	Remedy
Yellow Green Red		
All LEDs: off	Power supply is not present.	Check power supply.
	Connecting cable is faulty or defective.	Replace connecting cable.
	Product is faulty or defective.	Replace product.
Yellow LED: off Green LED: off Red LED: flashing	Hardware error.	Switch the power supply off and on again. Replace product.
Yellow LED: flashing at 3 Hz	Short circuit or overload at the switching output.	Eliminate short circuit or overload.
	Parameter error.	Reset product to factory setting.
Yellow LED: flashing at 3 Hz Green LED: flashing at 1 Hz	Communication error in IO-Link mode.	Check IO-Link master. Restart communication. Check C/Q line.

Tab. 5: LED displays in case of malfunctions

9 Disassembly

- Switch off the operating voltage.
- Disconnect the connections from the product.
- Loosen the retaining screws.
- Remove the product from the T-slot of the drive or mounting kit.

10 Technical data

SDAP-MHS-...	M50-...	M100-...	M160-...	
General data				
Sensing range ¹⁾	[mm]	0 ... 50	0 ... 100	0 ... 160
Typical sampling interval	[ms]	1		
Max. travel speed	[m/s]	3		
Resolution of travel	[mm]	0.05		
Typical linearity error	[mm]	±0.25		
Typical signal running time	[ms]	<2		
Max. tightening torque	[Nm]	0.5		
Operating voltage range	[V DC]	15 ... 30		
Cable length	[m]	0.3		
Nominal conductor cross section	[mm²]	0.1		
Analogue output				
Analogue output	[mA]	4 ... 20		
Sensitivity	[mA/mm]	0.32	0.16	0.10
Max. load resistance of current output	[Ω]	500		
Approvals				
Certification	RCM, c UL us - Listed (OL)			
CE marking	To EU EMC Directive			
Environmental conditions				
Ambient temperature	[°C]	-25 ... +70		
Ambient temperature with flexible cable installation		-20 ... +70		
Degree of protection (to EN 60529)		IP65/IP68 ²⁾		
Information on materials				
Note on materials	RoHS-compliant, halogen-free			
Information on materials – housing	PA-reinforced, polyester, high-alloy stainless steel, nickel-plated brass			
Electrical data and ambient conditions UL/CSA				
Input current	[mA/W]	160/4.8		
Transistor output	[V DC], [mA G.P.]	30 100		
Enclosure Type Rating		Type 1		

1) Type-dependent

2) IP68 condition: test duration 24 h

Tab. 6: Technical data