

DF-MS

Analog exit and IO-LINK position sensor for cylinder

- Continuous detection sensor of the piston rod's position, for direct mounting on cylinders with T-slot.
- Available with analog exit or IO-LINK.
- Button Teach-In for measurement range regulation.



TECNICAL CHARACTERISTICS

Type	ANALOG	IO-Link
Part no.	DF-MS	
Stroke measuring range (± 1 mm)	5÷256 mm depending on the model	
Voltage	15÷30 V DC	
Type of connection	M8 male 4P	
Sampling time	1 ms	
Resolution	0,03% FS ($\geq 0,05$ mm) ^(A)	
Linearity	0,3 mm	
Repeatability ^(B)	0,06% FS ($\geq 0,1$ mm) ^(A)	
Cylinder's traslation speed	< 3 m/s	
Exit function	analog 0-10 V	IO-Link 4-20 mA
Overload protection	YES	
Short circuit protection	YES	
Reverse polarity protection	YES	
Max load resistance (output current)	$\leq 500 \Omega$	
Min. load resistance (output voltage)	$\geq 2 K\Omega$	
Power consumption (without loading)	22 mA	25 mA
Protection class	III	
Protection degree	IP67	
Electromagnetic compatibility	according to EN 60947-5-2	
Shock e vibrations	30 g, 11 ms / 10 ... 55 Hz, 1 mm	
Ambient temperature	-20÷+70°C	
Case material	plastic	
Cable	PUR	
LED, operating indication	yellow	

(A) FS: Full-scale

(B) T = 25 °C, 24 V DC

EXTENSION CABLES

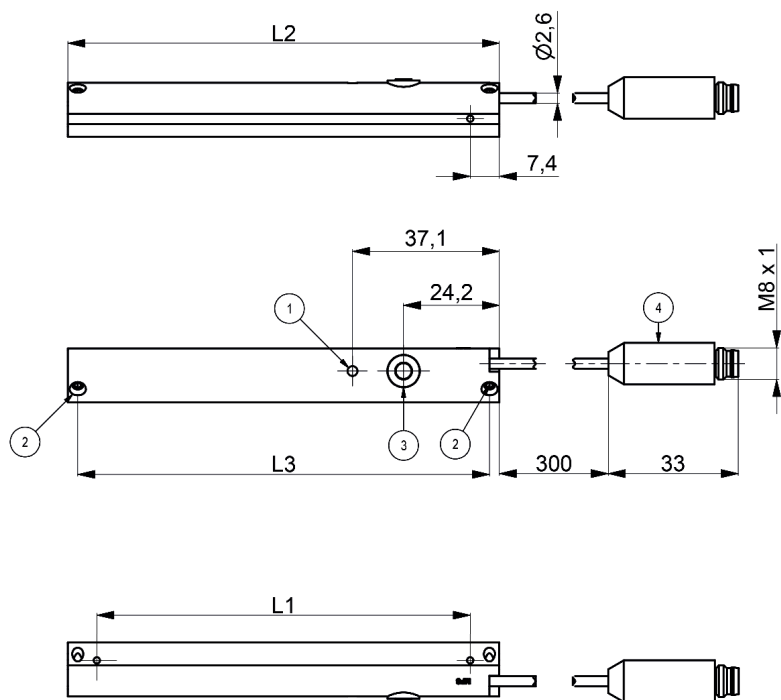
M8 in-line connector 2 meters cable	DHF-P24M08
M8 in-line connector 5 meters cable	DHF-P54M08
M8 - 90° connector 2 meters cable	DHF-P24M0890
M8 - 90° connector 5 meters cable	DHF-P54M0890

CODIFICATION KEY

D	F	-	M	S	0	3	2	M	0	8
1			2				3			

1 Series	2 Measurement range	3 Connection
DF-MS = Magnetic position sensor	032 = 32 mm 160 = 160 mm 064 = 64 mm 192 = 192 mm 096 = 96 mm 224 = 224 mm 128 = 128 mm 256 = 256 mm	M08 = M8 connector analog exit and IO-LINK

Dimensions and electric connection

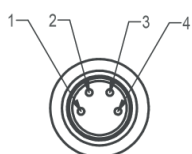


- ① Status indicator
- ② Mounting screw SW 1,5
- ③ Teach-in button

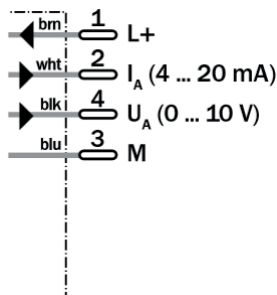
L1 = Measuring range
 L2 = Total length
 L3 = Fixing screw spacing

Part No.	L1	L2	L3
DF-MS032M08	32	45	40
DF-MS064M08	64	77	72
DF-MS096M08	96	109	104
DF-MS128M08	128	141	136
DF-MS160M08	160	173	168
DF-MS192M08	192	205	200
DF-MS224M08	224	237	232
DF-MS256M08	256	269	264

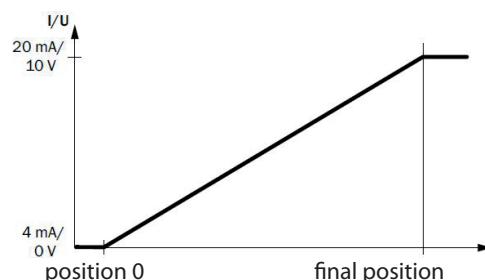
Electrical Circuit



PIN	Color	Function
1	Brown	Supply port +
2	White	output current
3	Blue	Supply port -
4	Black	output current



Output signal description



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SAFETY SPECIFICATIONS

- Read the operating instructions before starting operation.
- Connection, assembly, and settings to be arranged only by competent technicians.
- No safety component in accordance with EU machine guidelines.
- Use power source according to IEC/DIN EN 60204-1.
- Avoid introducing magnetically conductive components in close proximity of the MS.

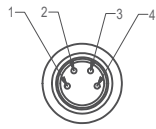
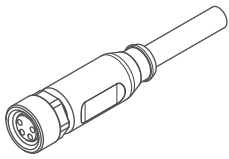
PROPER USE

DF-MS is a magnetic position sensor and is designed for measuring distances of linear movements on pneumatic actuators. The sensor is suitable for all standard T-slots. A field strength of 2 mT to 15 mT is required in order to ensure optimal functionality. The piston position is recorded contact-free. The measurement signal is performed via an analogue voltage or current output. The yellow LED lights when the piston is within the measurement range (signal strength indicator). The desired measurement range can be set precisely (Zero Point (NP)/End Point (EP) in devices with Teach-in button. The Zero Point (NP) and End Point (EP) can be taught regardless of the magnetic field polarity and the piston position. The sensor is equipped with an analog voltage output (0 ... 10 V) as well as an analog current output (4 ... 20 mA). The sensor only activates the wired output.

MAINTENANCE

Magnetic cylinder sensors do not require any maintenance. We recommend that you should check the screw connections and plug-in connections regularly.

M8 in-line connector with shielded cable



PIN	Color
1	Brown
2	White
3	Blue
4	Black

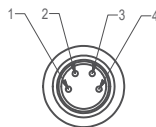
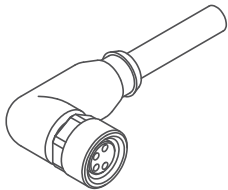
DHF-P24M08

M8 in-line connector 4-poles female with shielded cable
L = 2 m

DHF-P54M8

M8 in-line connector 4-poles female with shielded cable
L = 5 m

M8 - 90° connector with shielded cable



PIN	Color
1	Brown
2	White
3	Blue
4	Black

DHF-P24M0890

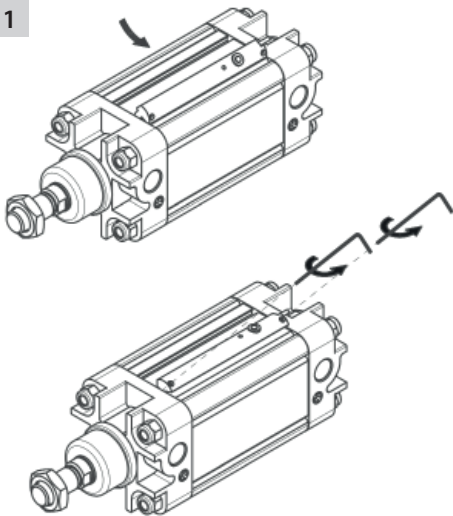
M8 90° connector 4-poles female with shielded cable
L = 2 m

DHF-P54M0890

M8 90° connector 4-poles female with shielded cable
L = 5 m

Mounting scheme

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SENSOR ALIGNMENT AND FIXING

- Connect the sensor to the operating voltage (see technical characteristics).
- Insert the sensor into the slot from above.
- Move the piston into the desired zero point position.
- The yellow LED lights up when the piston is in the measurement range.
- Move the sensor into the slot until the LED switches off.
- Move the sensor back again until the LED lights up.
- Fix the sensor properly.

The in-range display may flicker during the start-up phase.

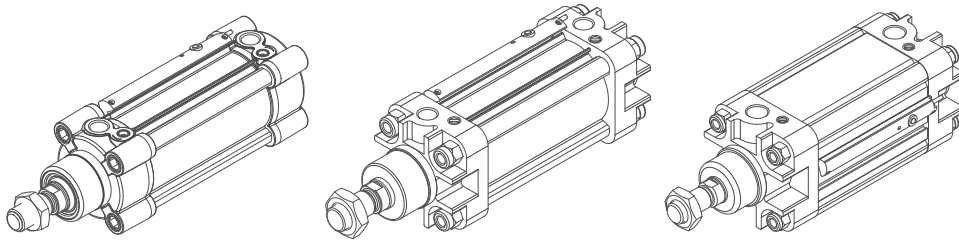
This indicates that the sensor is still teaching-in to the magnetic field.

Setting the measurement range is not absolutely necessary in devices with Teach-in button.

If the user does not arrange the Teach-in of the measurement range, the maximum possible range is used as a default.

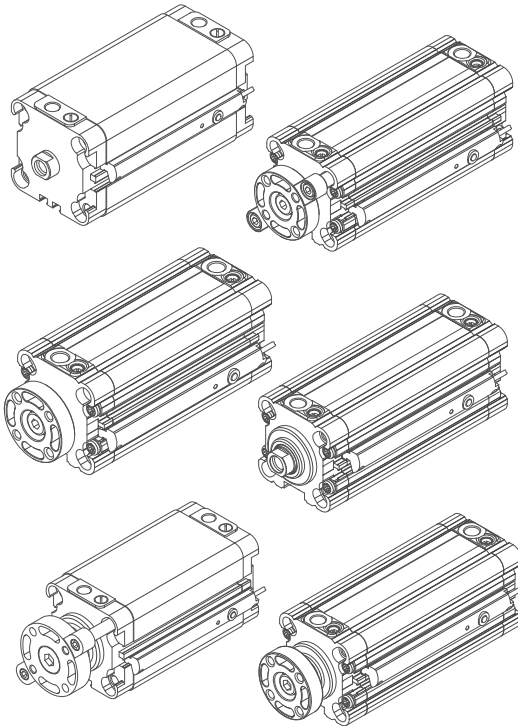
Mounting on cylinders

Standards-based cylinders KL, KE, KD series



Ø 32 - 40 - 50 - 63 - 80 - 100 - 125	
Stroke (mm)	Sensor
until 32	DF-MS032M08
33 ÷ 64	DF-MS064M08
65 ÷ 96	DF-MS096M08
97 ÷ 128	DF-MS128M08
129 ÷ 160	DF-MS160M08
161 ÷ 192	DF-MS192M08
193 ÷ 224	DF-MS224M08
225 ÷ 256	DF-MS256M08

Standards-based compact cylinders RP/RM-RO/RN-RS/RQ series



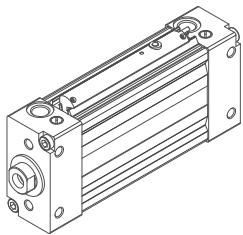
Ø 16 - 20		
Stroke (mm)	Sensor	Strokes where the sensor exceeds the end-caps
until 32	DF-MS032M08	-
33 ÷ 64	DF-MS064M08	33 ÷ 38
65 ÷ 96	DF-MS096M08	66 ÷ 70
97 ÷ 128	DF-MS128M08	98 ÷ 102
129 ÷ 160	DF-MS160M08	130 ÷ 134
161 ÷ 192	DF-MS192M08	162 ÷ 166
193 ÷ 224	DF-MS224M08	194 ÷ 198
225 ÷ 256	DF-MS256M08	226 ÷ 230

Ø 25		
Stroke (mm)	Sensor	Strokes where the sensor exceeds the end-caps
until 32	DF-MS032M08	-
33 ÷ 64	DF-MS064M08	33 ÷ 37
65 ÷ 96	DF-MS096M08	65 ÷ 69
97 ÷ 128	DF-MS128M08	97 ÷ 101
129 ÷ 160	DF-MS160M08	129 ÷ 133
161 ÷ 192	DF-MS192M08	161 ÷ 165
193 ÷ 224	DF-MS224M08	193 ÷ 197
225 ÷ 256	DF-MS256M08	225 ÷ 229

Ø 32 - 40 - 50 - 63 - 80 - 100	
Stroke (mm)	Sensor
until 32	DF-MS032M08
33 ÷ 64	DF-MS064M08
65 ÷ 96	DF-MS096M08
97 ÷ 128	DF-MS128M08
129 ÷ 160	DF-MS160M08
161 ÷ 192	DF-MS192M08
193 ÷ 224	DF-MS224M08
225 ÷ 256	DF-MS256M08

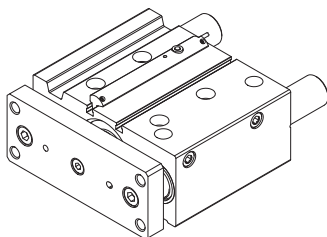
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Oval cylinders OV series



Ø 18 - 25 - 32 - 40 - 50 - 63 - 80	
Stroke (mm)	Sensor
until 32	DF-MS032M08
33 ÷ 64	DF-MS064M08
65 ÷ 96	DF-MS096M08
97 ÷ 128	DF-MS128M08
129 ÷ 160	DF-MS160M08
161 ÷ 192	DF-MS192M08
193 ÷ 224	DF-MS224M08
225 ÷ 256	DF-MS256M08

Guided compact cylinders JLE series



Stroke (mm)	Sensor	Ø 12 - 16 - 20 - 25 - 32 - 40 - 50 - 63		
		Ø 12	Ø 16	Ø 20 - 25 - 32
until 32	DF-MS032M08	Strokes where the sensor exceeds the end-caps		
33 ÷ 64	DF-MS064M08	5 ÷ 16	5 ÷ 12	5 ÷ 8
65 ÷ 96	DF-MS096M08	33 ÷ 48	33 ÷ 44	33 ÷ 40
97 ÷ 128	DF-MS128M08	65 ÷ 80	65 ÷ 76	65 ÷ 72
129 ÷ 160	DF-MS160M08	97 ÷ 112	97 ÷ 108	97 ÷ 104
161 ÷ 192	DF-MS192M08	129 ÷ 144	129 ÷ 140	129 ÷ 136
193 ÷ 224	DF-MS224M08	161 ÷ 176	161 ÷ 172	161 ÷ 168
225 ÷ 256	DF-MS256M08	193 ÷ 208	193 ÷ 204	193 ÷ 200
		225 ÷ 240	225 ÷ 236	225 ÷ 232