

HZRE5



Proportional regulators



Product line "Simple & Reliable"

- 3 sizes available
- High visibility LED display
- Low consumption
- Aluminium body
- User-interface integrated buttons
- M12 connector

DF-MS/DF-MA

Cylinder position sensors



- Continuous detection of the cylinder stroke
- Available with analog and IO-Link output
- Wide detection range
- Repeatability 0,1mm
- Direct assembly in cylinder sensor grooves on KD, KL, RP, RM, RO, RN, RS, RQ, OV and W cylinder series



DF-MS

IO-Link upon request
Detection range up to 250mm

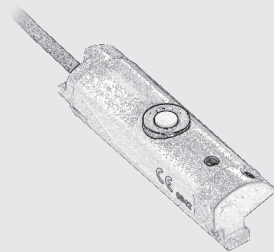


DF-MA

IO-Link standard supplied
Detection range up to 1000mm

DF-MS

Magnetic position sensor



UNIVER S.p.A.
Headquarters
 20128 Milano
 Via Eraclito, 31
 Tel. +39 02 25298.1
 Fax +39 02 2575254
 info@univer-group.com
 www.univer-group.com

EN_

Safety Specifications

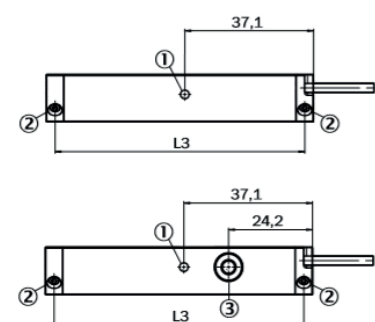
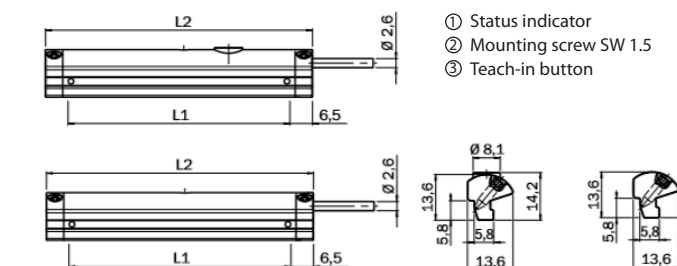
- Read the operating instructions before starting operation.
- Connection, assembly, and settings only by competent technicians.
- No safety component in accordance with EU machine guidelines.
- Use power source according to IEC/DIN EN 60204-1.
- Avoid introducing magnetically conductive components into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

Proper Use

The MS is a magnetic position sensor and is designed for measuring distances of linear movements on pneumatic drives. The sensor is suitable for all standard T-slots. A field strength of 4 mT to 30 mT is required in order to ensure optimal functionality. The piston position is recorded contact-free. The measurement signal is output via an analog voltage and 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. (See the assembly scheme 2a and 3). The Zero Point (NP) and End Point (EP) can be taught independent 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 check the screw connections and plug-in connections at regular intervals.



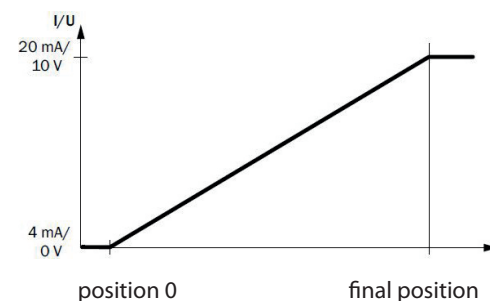
Part no.	Measuring range (L1) (mm)	Total length (L2) (mm)	Fixing screw spacing (L3) (mm)
DF_MS032M08	32	45	40
DF_MS064M08	64	77	72
DF_MS096M08	96	109	104
DF_MS128M08	128	141	136
DF_MS160M08	160	173	168
DF_MS192M08	192	205	200
DF_MS224M08	224	237	232
DF_MS256M08	256	269	264

CHARACTERISTICS

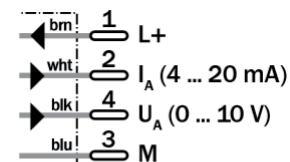
Measuring range (± 1 mm)	32/64/96/128/160/192/224/256 mm
Operation voltage	15...30 V DC
Residual ripple V_{pp}	10%
Connection type	¹⁾ + ²⁾
Sample time	1 ms
Resolution typ.	0,03% FSR ($\geq 0,05$ mm) ³⁾
Linearity error typ.	0,3 mm
Repeat accuracy typ.	0,06% FSR ($\geq 0,1$ mm) ³⁾
Partial stroke speed, type. ^{4) 5)}	< 1,5 m/s
Full stroke speed, type. ^{4) 6)}	< 3 m/s
Analog output (current)	4...20 mA
Analog output (voltage)	0...10 V
Overload protection	x
Short-circuit protection	x
Reverse polarity protection	x
Max. load resistance, current output	500 W
Min. load resistance, voltage input	2,0 kW
Idle current typ.	25 mA
Protection class	\diamond
Enclosure rating	IP67
EMC	according EN 60947-5-7 ⁷⁾
Perm. impact load	30g/11 ms
Perm. vibration load	10...55 Hz/1 mm
Ambient operating temperature	-20...+70°C
Housing material	PA ⁸⁾
LED, status indicator	⁹⁾

- 1) Cable, PUR, 2 m
- 2) Pigtail M8 x 1 plug (300 mm PUR cable)
- 3) FSR: Full Scale Range; max. measuring range
- 4) T = 25 °C, UB = 24 V
- 5) Physical max. measuring range < working stroke (magnetic field also outside the max. coverage)
- 6) Physical max. measuring range > working stroke (magnetic field is always recorded)
- 7) The analog measured value can deviate under transient conditions
- 8) reinforced
- 9) yellow

DESCRIPTION OUTPUT SIGNAL



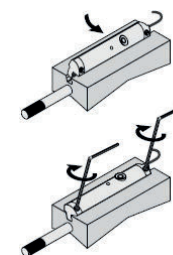
ELECTRIC CIRCUITS



ASSEMBLY SCHEME



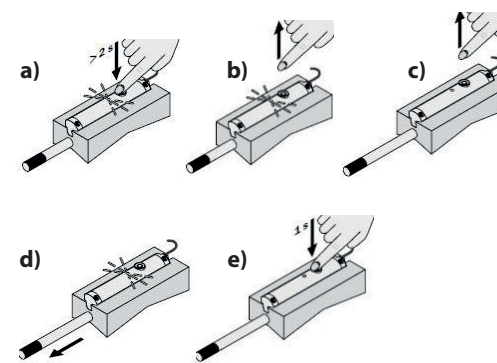
1



Alignment and fixation of the sensor:

Connect the sensor to operating voltage (see Specifications). Insert the sensor into the slot from above. Move the piston into the desired zero point position. The yellow LED lights when the piston is in the measurement range. The sensor is moved into the slot until the LED switches off. Move the sensor back again until the LED lights. Secure the sensor appropriately. The in-range display may flicker at the start of the commissioning process. 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 Teach-in the measurement range, the maximum possible range is used as a default.

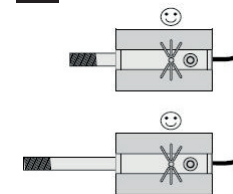
2



Teach-in of measurement range:

Set the piston position for zero point. Press the teach button for 2 s; LED blinks (3x/s). Release the Teach-in button; the zero point is stored. Set the piston position for the "end point" of the measurement range. Press the Teach-in button; the "end point" of the measurement range is stored. **2a** Display of output signal (see diagram). Note: If the zero point is external to the measurement range, the teach procedure is aborted the LED blinks quickly as a result (6x/s). If the teach procedure is not concluded, there is a timeout after 90 s; the last taught-in measurement range is active.

3

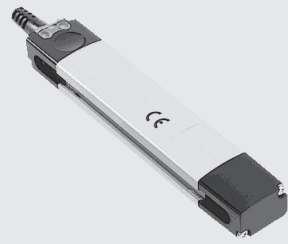


Check of the taught-in measurement range (option):

Move the piston and check the set measurement range using the LED. If necessary, correct the desired measurement range via a renewed Teach-in procedure. Reset the measurement range to the ex works setting: Press Teach-in button > 5 s. The sensor is reset to the ex works setting (max. measurement range).

DF-MA

Magnetic Position Sensor with analog output and IO-Link



NFPA 79 Applications only enclosure type 1
Attention: Devices shall be protected by a 2 A fuse suitable for 30 Vdc



UNIVER S.p.A.
Headquarters
20128 Milano
Via Eraclito, 31
Tel. +39 02 25298.1
Fax +39 02 2575254
info@univer-group.com
www.univer-group.com

ENG_

Safety Specifications

- Read the operating instructions before starting operation.
- Connection, assembly, and settings only by competent technicians.
- No safety component in accordance with EU machine guidelines.
- Use power source according to IEC/DIN EN 60204-1.

Proper Use

The MA is a magnetic position sensor and is intended for linear path measurement on pneumatic drives or with free position encoders. For mounting on the cylinder it is recommended that the relevant SICK securing methods be used.

Avoid magnetically conductive components in the direct vicinity of the MA position sensor.

A magnetic field strength between 2 mT and 15 mT is required in order to ensure a smooth function.

Outside these limits, the specifications data cannot be guaranteed.

Note the magnetic field indication: Magnetic field strength at optimum level:

The magnetic field is at its optimum level, LED 1 (yellow) is continuously illuminated within the measuring range.

Magnetic field strength not at optimum level: When the magnetic field is weak, LED 1 (yellow) is continuously illuminated within the measuring range.

In addition, LED 2 (red) is flashing. The measurement function and output are active, but the characteristic data may be outside specification.

We recommend a SICK magnet (order no. 5327349) for operation with a free position sensor. Ensure that the distance between the sensor and the magnet is between 4 mm and 8 mm, and that the distance remains constant.

The piston position is recorded contact-free. The output of the measurement signal is made via an analogous voltage and current output or an IO link interface.

The control panel allows the required measuring range to be precisely set.

(See commissioning 1). Setting the measuring range is not mandatory.

The maximum possible measuring range is used as standard if you do not teach-in a measuring range. The Zero Point and End Point can be taught independent of the magnetic field polarity and the piston position.

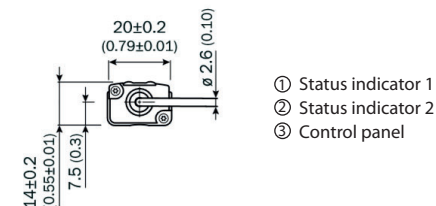
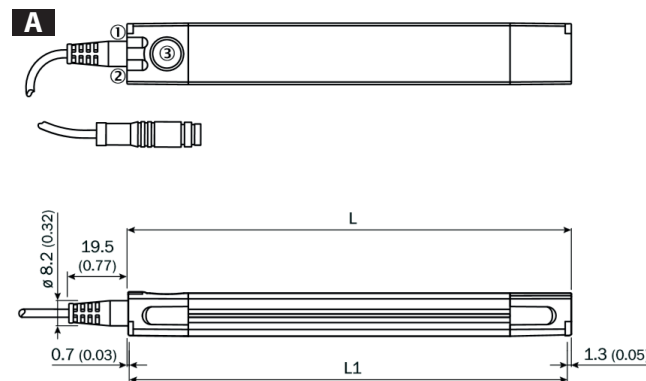
Maintenance

SICK magnetic position sensors are maintenance-free. We recommend that you check the screw connections and plug-in connections at regular intervals.

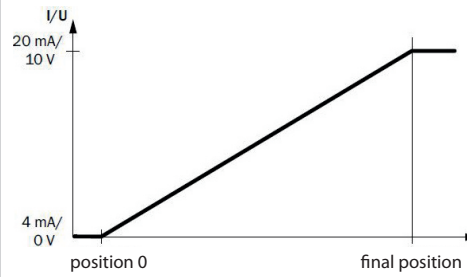
LED	Function	Display
1 - yellow	Measuring operation	Permanently On
	Teach	Flashes (3 Hz)
	No power supply/piston not in the measuring range	Off
1 - red	No power supply/no errors	Off
	Internal sensor error	Permanently On
1 - yellow/red	Weak magnetic field/reduced signal quality	Alternating
2 - green	Configuration running	Flashes (3 Hz)
	Voltage output configured	Permanently on
	No power supply	Off
2 - blue	Configuration running	Flashes
	Current output configured	Permanently on
	No power supply	Off

CHARACTERISTICS	
Measuring range, see A	L (+/- 1 mm)
Operation voltage	15...30 V DC ¹⁾
Residual ripple V _{pp}	< 10% ²⁾
Sample time type	1,15 ms
Resolution	0,03% FSR ⁶⁾ (≥ 0,06 mm)
Linearity type	0,5 mm ⁷⁾
Repeat accuracy typ. ³⁾	0,06% FSR ⁶⁾ (≥ 0,1 mm)
Partial stroke speed, typ. ^{3) 4)}	< 1,5 m/s
Full stroke speed, typ. ^{3) 5)}	< 3 m/s
Analoge output (current)	4...20 mA
Analoge output (voltage)	0...10 V
Short-circuit protection	x
Reverse polarity protection	x
Load resistance, current output	< 500 W
Load resistance, voltage input	> 2 kW
Closed current (without load) ³⁾	35 mA
Enclosure rating	IP67/IP65
Protection class	◆
EMC	according to EN 60947-5-7 ⁸⁾
Perm. impact load	30g/11 ms
Perm. vibration load	10...55 Hz/1 mm
Ambient temperature	-20...+70°C

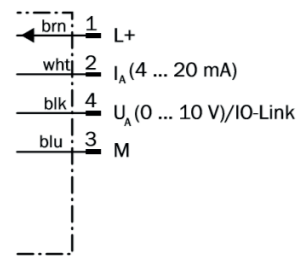
- 1) Operation in short-circuit protected network max. 8 A
- 2) from UB
- 3) T = 25 °C, UB = 24 V
- 4) Physical max. measuring range < working stroke (magnetic field also outside the max. coverage)
- 5) Physical max. measuring range < working stroke (magnetic field is always recorded)
- 6) FSR: Full scale range, max. measuring range
- 7) at field strength 2 mT to 15 mT
- 8) The analog measured value can deviate under transient conditions



DESCRIPTION OUTPUT SIGNAL

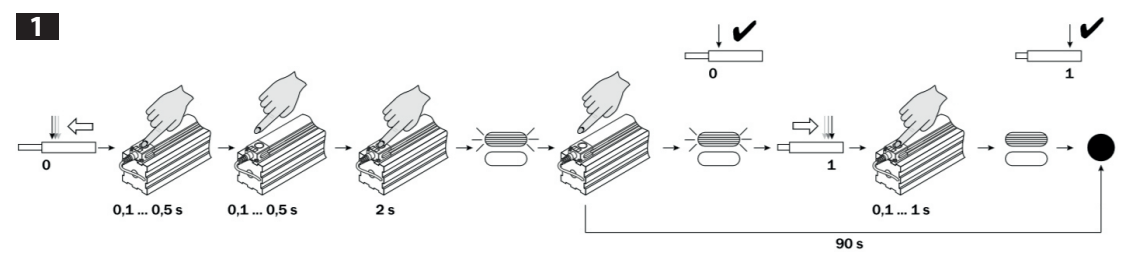


ELECTRIC CIRCUITS



Part no.	Total length (L) (mm)	Measuring range (L1) (mm)
DF-MA0287M08	289	287
DF-MA0323M08	325	323
DF-MA0359M08	361	359
DF-MA0395M08	397	395
DF-MA0431M08	433	431
DF-MA0467M08	469	467
DF-MA0503M08	505	503
DF-MA0539M08	541	539
DF-MA0575M08	577	575
DF-MA0611M08	613	611
DF-MA0647M08	649	647
DF-MA0683M08	685	683
DF-MA0719M08	721	719
DF-MA0755M08	757	755
DF-MA0791M08	793	791
DF-MA0827M08	829	827
DF-MA0863M08	865	863
DF-MA0899M08	901	899
DF-MA0935M08	937	935
DF-MA0971M08	973	971
DF-MA1007M08	1009	1007

ASSEMBLY SCHEME



- Teach-in the measuring range:**
- Apply sensor to the operating voltage (see technical data) and secure with appropriate accessories (the assembly instructions enclosed with the accessories must be followed).
 - Set pistons or magnets to the required zero point position. The LED is illuminated if the piston/magnet is in the measuring range. Briefly tap on the control panel, hold for 2 s until the LED 1 flashes yellow and then release. The zero point is saved.
 - Set piston/magnet position to the required end position. Briefly tap on the control panel (< 1 s). The LED 1 is illuminated (yellow), the measuring range end point is saved.

The maximum possible range is used as standard if the user does not teach-in the measuring range. The teach-in process can be used to increase the resolution, but only to a maximum of 60 µm. The teach-in process is aborted if the zero point is located outside the measuring range.

In this case the LED 1 flashes at short intervals. If the teach-in process is incomplete, it is aborted after 90 s (time-out).

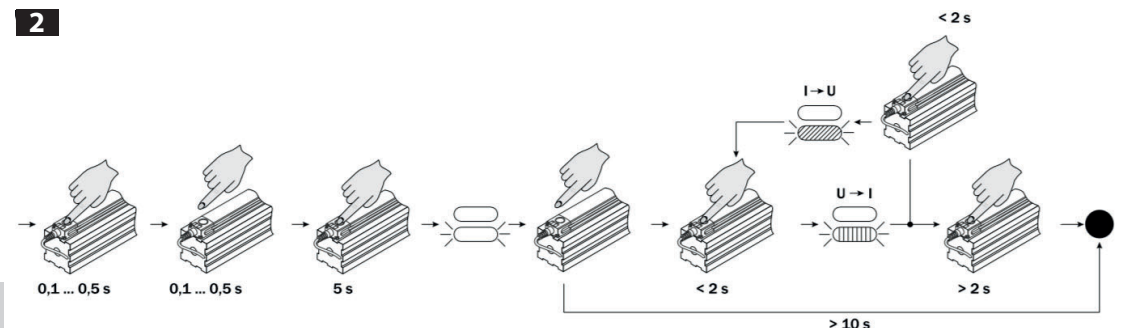
The measuring range saved previously remains active. The in-range display may flicker at the start of commissioning.

This indicates that the magnet field is still being taught-in on the sensor.

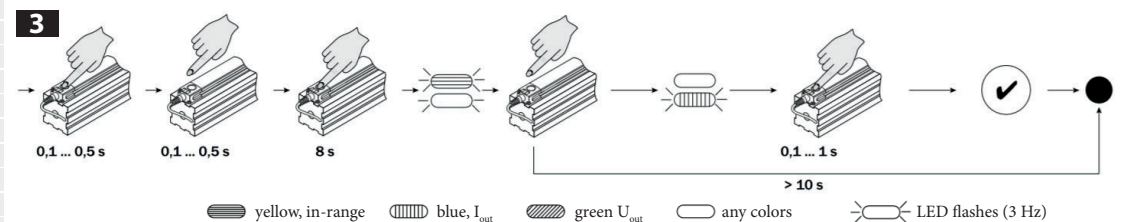
Check the taught-in measuring range (optional)

Move the piston/magnet and review the set measuring range based on the yellow LED.

If necessary, correct the required measuring range via a new teach-in process.



- Select current or voltage output or IO link:**
- Briefly tap the control panel then hold for 5 s until the LED 2 flashes then release.
 - Briefly touch the control panel (< 2 s) in order to switch between U_{out} (LED 2 flashes green) and I_{out} (LED 2 flashes blue).
 - Hold down on the control panel (> 2 s) in order to quit out of the setting.
- The current output must be selected for IO link operation. Please observe the separately enclosed supplementary sheet with IO link specifications.

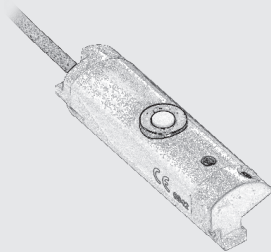


- Reset the measurement range to the ex works setting:**
- Briefly tap on the control panel, hold for 8 s until both LEDs flash then release. The LED 1 now flashes yellow, it has not been reset.
 - Briefly tap the control panel
 - The taught-in positions have now been reset.

UNIVER reserves the right to modify the technical characteristics without prior notice.

DF-MS

Magnetic Position Sensor IO-Link



UNIVER S.p.A.
Headquarters
 20128 Milano
 Via Eraclito, 31
 Tel. +39 02 25298.1
 Fax +39 02 2575254
 info@univer-group.com
 www.univer-group.com

ENG_

Safety Specifications

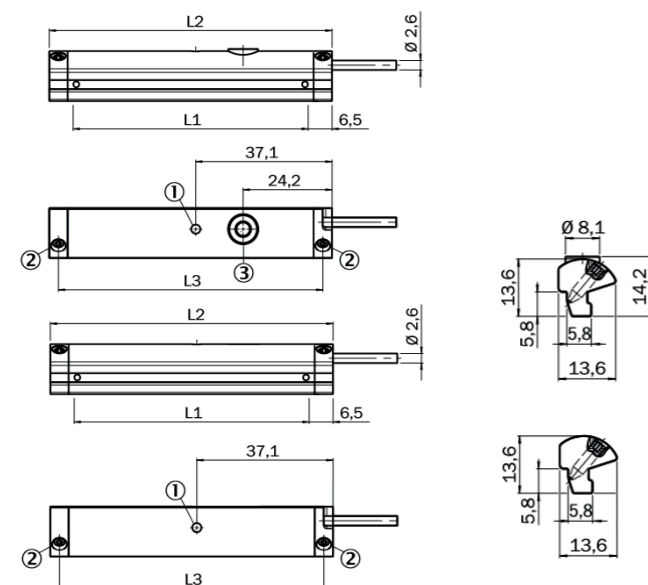
- Read the operating instructions before starting operation.
- Connection, assembly, and settings only by competent technicians.
- No safety component in accordance with EU machine guidelines.
- Use power source according to IEC/DIN EN 60204-1.
- Avoid introducing magnetically conductive components into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

Proper Use

The MS is a magnetic position sensor and is designed for measuring distances of linear movements on pneumatic drives. The sensor is suitable for all standard T-slots. A field strength of 4 mT to 30 mT is required in order to ensure optimal functionality. The piston position is recorded contact-free. The output of the measurement signal takes place via IO-Link. 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. (See the operation startup 3). The Zero Point (NP) and End Point (EP) can be taught independent of the magnetic field polarity and the piston position.

Maintenance

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



CHARACTERISTICS

Measuring range (± 1 mm)	32/64/96/128/160/192/224/256 mm
Measuring range	15...30 V DC
Residual ripple V_{pp}	10%
Connection type	¹⁾ + ²⁾
Sample time	1 ms
Resolution typ.	0,03% FSR ($\geq 0,05$ mm) ³⁾
Linearity error typ.	0,3 mm
Repeat accuracy typ.	0,06% FSR ($\geq 0,1$ mm) ³⁾
Partial stroke speed, typ. ^{4) 5)}	< 1,5 m/s
Full stroke speed, typ. ^{4) 6)}	< 3 m/s
IO-Link	x
Overload protection	x
Short-circuit protection	x
Reverse polarity protection	x
Max. load resistance, current output	500 W
Min. load resistance, voltage input	2,0 kW
Idle current typ.	25 mA
Protection class	\diamond
Enclosure rating	IP67
EMC	according EN 60947-5-7
Perm. impact load	30g/11 ms
Perm. vibration load	10...55 Hz/1 mm
Ambient operating temperature	-20...+70°C
Housing material	PA ⁷⁾
LED, status indicator	⁸⁾

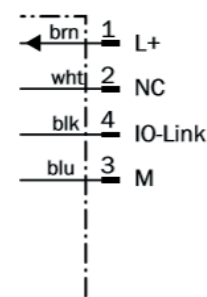
- 1) Cable, PUR, 2 m
 2) Pigtail M8/M12 (300 mm PUR cable)
 3) FSR: Full Scale Range; max. measuring range
 4) T = 25 °C, UB = 24 V
 5) Physical max. measuring range < working stroke (magnetic field also outside the max. coverage)

- 6) Physical max. measuring range > working stroke (magnetic field is always recorded)
 7) reinforced
 8) yellow

- ① Status indicator
 ② Mounting screw SW1.5
 ③ Teach-in button

Part no.	Measuring range (L1) (mm)	Total length (L2) (mm)	Fixing screw spacing (L3) (mm)
DF_MS032M12	32	45	40
DF_MS064M12	64	77	72
DF_MS096M12	96	109	104
DF_MS128M12	128	141	136
DF_MS160M12	160	173	168
DF_MS192M12	192	205	200
DF_MS224M12	224	237	232
DF_MS256M12	256	269	264

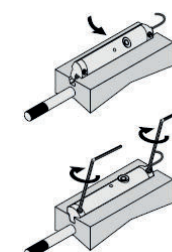
ELECTRIC CIRCUITS



ASSEMBLY SCHEME



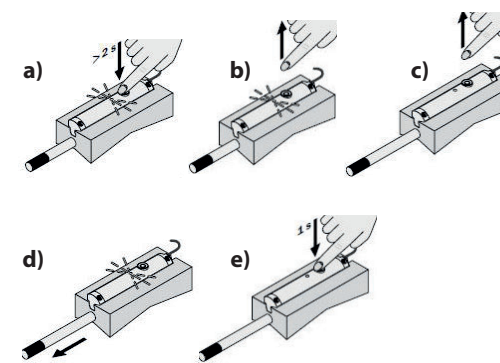
1



Alignment and fixation of the sensor:

Connect the sensor to operating voltage (see Specifications). Insert the sensor into the slot from above. Move the piston into the desired zero point position. The yellow LED lights when the piston is in the measurement range. The sensor is moved into the slot until the LED switches off. Move the sensor back again until the LED lights. Secure the sensor appropriately. The in-range display may flicker at the start of the commissioning process. 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 Teach-in the measurement range, the maximum possible range is used as a default.

2



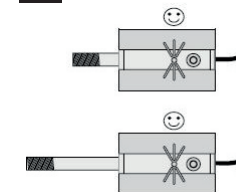
Teach-in of measurement range:

Set the piston position for zero point. Press the teach button for 2 s; LED blinks (3x/s). Release the Teach-in button; the zero point is stored. Set the piston position for the "end point" of the measurement range. Press the Teach-in button; the "end point" of the measurement range is stored.

Note:

If the zero point is external to the measurement range, the teach procedure is aborted the LED blinks quickly as a result (6x/s). If the teach procedure is not concluded, there is a timeout after 90 s; the last taught-in measurement range is active

3



Check of the taught-in measurement range :

Move the piston and check the set measurement range using the LED. If necessary, correct the desired measurement range via a renewed Teach-in procedure. *Reset the measurement range to the ex works setting:* Press Teach-in button > 5 s. The sensor is reset to the ex works setting (max. measurement range).