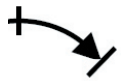
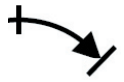


### Adjusting additional settings on the sensor



| Code                         |
|------------------------------|
| 0 0 <input type="checkbox"/> |

1) Turning the programming ring right to position 2 while in the edit mode will cause the cursor to appear. The cursor will blink.



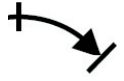
| Code  |
|-------|
| 0 0 1 |

2) Turning the programming ring to the right (Position 2) will increase the value to be changed by 1. In the edit mode, if no entry is made within 30 seconds, the display will return to the normal measured value display.



| Code                         |
|------------------------------|
| 0 <input type="checkbox"/> 1 |

3) Turning the programming ring to the left will move the cursor to the next digit or field.



| Code  |
|-------|
| 0 1 1 |

4)



| Code                         |
|------------------------------|
| <input type="checkbox"/> 1 1 |

5)



| Code  |
|-------|
| 1 1 1 |

6)



| Filter |
|--------|
| 1      |

7) Turning the programming ring to the left until the cursor is in a free field will complete the change and automatically move to the next parameter.



| Units |
|-------|
| l/min |

8) Choosing between different units of measure with automatic conversion of the units shown in the display and the switch values.



| Output   |
|----------|
| 4...20mA |

9) Switching the analog output between 0 and 4...20mA.



|      |
|------|
| 4 mA |
| 0    |

10) Beginning of the output range in the selected unit of measure.



|       |
|-------|
| 20 mA |
| 80    |

11) End of the analog output range in the selected unit of measure.



|       |
|-------|
| + 0.0 |
| l/min |

12) Return to normal display mode.

### Content

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### 2.3 Qualified personnel

Flow monitoring/metering devices equipped with the analog transmitter DISPLAY must only be installed by qualified personnel, who are able to correctly employ the device for its intended purpose. Qualified personnel are persons who are familiar with the setup, assembly, start-up, and correct use of these devices, and who are able to independently carry out the work assigned to them.

### 1 Introduction

The analog transmitter DISPLAY is characterized by reliable function and simple operation. In order to use the advantages of this equipment in its entirety, please consider the following.

**All persons, assigned to work on or operate this equipment, must have read and understand the Operating Instructions and in particular, the safety references!**

### 3 Functional description

The analog transmitters, DISPLAY, detect the position of magnetic floats or pistons with the aid of hall sensors. An analog signal, appropriate to the position, is then sent.

### 2 Safety guidelines

#### 2.1 General information

To ensure safe operation, the equipment must be operated only in accordance with the instructions in this manual. Additionally, use of the device requires adherence to all accident prevention- and legal regulations as well as safety standards for the respective application.

#### 2.2 Correct use in accordance with these instructions

The analog transmitter DISPLAY must only be used in combination with the following flow monitoring- and flow indicating devices from Meister Strömungstechnik:



DUM  
DWM  
RVM/U-1  
RVM/U-2  
RVM/U-4



DKM-1  
DKM-2  
DKME



DWM-L  
RVM/U-L1  
RVM/U-L2  
RVM/U-L4

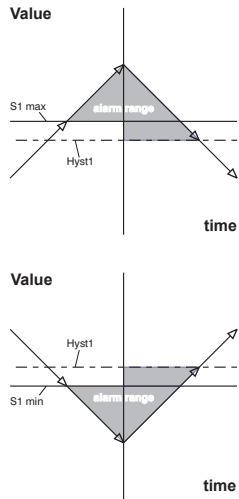
B DISPLAY 0001 09-12 E M

Any additional or different application, above and beyond the correct use in accordance with these instructions, is deemed as incorrect use.

**5 Device description**

At the site of employment, these sensors allow switch points to be set for increasing or decreasing the flow when the actual flow rate exceeds the set process values in either direction. By using the display on the transmitter, switch point values can be set in a dry state or prior to installing the device in the system. Currently measured values and error messages as well as all set parameters may be read off on the display. This saves time during installation, initial start-up and fault tracing in the system. The analog signal can be transmitted over long distances and the data processed and evaluated at a remote location. The sensor is configured to user specifications and is therefore immediately available without additional programming. To change parameters, the new settings for the device can be entered directly at the sensor with the programming ring.

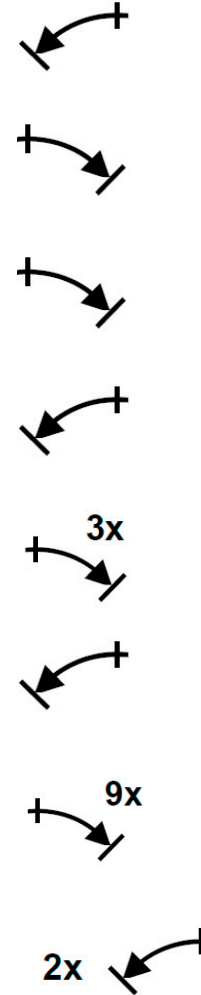
The signal is displayed on a backlit LCD graphic display showing units of measure and transformed into a 4...20 mA signal. The device has 2 short circuit proof and reverse polarity protected switching outputs (push-pull). The outputs are self-configuring and can be connected as PNP- or NPN switches. The switch contacts are programmable as minimum or maximum contacts. The hystereses of the switching points are separated into value and direction, (min-, max-limits) and are separately adjustable.



Adjusting the hysteresis (for example S1 as max- or min- switching point)

Exceeding switch point values (in either direction) and error messages are signaled by a highly visible flashing red LED and a message on the display. Entering a code allows other parameters to be changed: signal filter, selectable units (e.g. l/min) including automatic conversion of values, selectable output 0 or 4 ...20 mA, value assignment of 4 (0) and 20 mA (adjustment of zero point and spread). At start-up, the sensor supports a simulation mode of the analog output. It is possible to generate a programmable mA value at the output (without changing the process variable). The range is 0 ... 26 mA. This allows the user to test the distance between the sensor and downstream electronics. This mode can be called up under code 311.

**Changing a switch point (e.g.: S1 to +18.6 l/min)**



|       |
|-------|
| + 0.0 |
| l/min |
| S1    |
| +25.5 |
| S1    |
| +25.█ |
| S1    |
| +25.6 |
| S1    |
| +2█.6 |
| S1    |
| +28.6 |
| S1    |
| +█8.6 |
| S1    |
| +18.6 |
| S1    |
| Min   |

1) Switch point 1

2) Cursor blinks. In the editing mode (Position 2), if no entry is made within 30 seconds, the display will return to the normal measured value display.

3) Turning the programming ring to the right (Position 2) will increase the value to be changed by 1.

4) Turning the programming ring to the left will move the cursor to the next digit field.

5) Turning the programming ring 3x to the right will increase the value by 3.

6)

7)

8) Turning the programming ring to the left until the cursor is in a free field will complete the change and automatically move to the next parameter.

## Viewing the programmed switch points

normal measured value display

**+ 0.0**  
**l/min**

or

**+ 0.0**  
**< S1**

Switch point(s) active. Current state is displayed. Value < switch point 1, alternating with the units of measure, is shown in the lower half of the display field. LED blinking

Rotate the notched programming ring to position 1 (STEP), then back to center.



**S1**  
**+25.5**

1) Switch point 1. If no further action is taken within 5 seconds, the display will return to the normal measured value display shown above.



**S1**  
**Min**

2) Switch point 1 switches when S1 falls below the set value.



**Hyst 1**  
**1.2**

3) Hysteresis of switch point 1 is above the switching value 1, since there is a minimum set point.



**S2**  
**+50.5**

4) Switch point 2.



**S2**  
**Max**

5) Switch point 2 switches when S2 exceeds the set value.



**Hyst 2**  
**1.0**

6) Hysteresis of switch point 2 is below the switching value 2, since there is a maximum set point.



**Code**  
**0 0 0**

7) After entering the code, more parameter fields can be viewed and/or changed.



**+ 0.0**  
**l/min**

8) Return to normal display mode.

## 6 Handling and operation

The programming ring can be turned to Position 1 or Position 2. The following actions are possible:

Displaying parameters in position 1

- Switch points S 1 and S 2: switch points in the selected units of measure
- Hysteresis direction of S 1 and S 2  
Max = Hysteresis below S 1 or S 2  
Min = Hysteresis above S 1 or S 2
- Hysteresis Hyst 1 and Hyst 2: switch point hysteresis values in the selected units of measure
  - Code:  
After entering the code 111, additional parameters can be specified (this should be done only when necessary)
  - Filter:  
Selectable filter constants in seconds (affects display and output)
  - Units of measure:  
(e.g. l/min)
  - Output:  
0...20 mA or 4...20 mA
  - 4(0) mA:  
declared value for 4(0) mA
  - 20 mA:  
declared value for 20 mA

Changing (editing) in Position 2

- Turn the programming ring opening to Position 2. A blinking „cursor“ will appear marking the position at which an entry can be changed. Repeatedly turning the ring to Position 2 increases the value. Turning the ring to Position 1 will move the „cursor“ to the next digit. Each digit is thus changeable. If no changes are programmed within 5 seconds of the last entry, the device will switch back into the normal display mode without saving the changes.

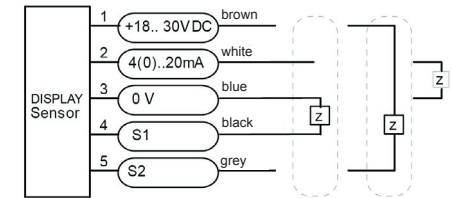
Saving entry changes with Position 1

- When all changes have been programmed, turn the programming ring 1 x to Position 1 to save the changes.

Programming protection:

- The programming ring can be pulled off, turned 180° and reattached onto the transmitter. Turning the programming ring to Pos. 1 or Pos. 2 now will not change the programmed settings and prevents inadvertent changes.

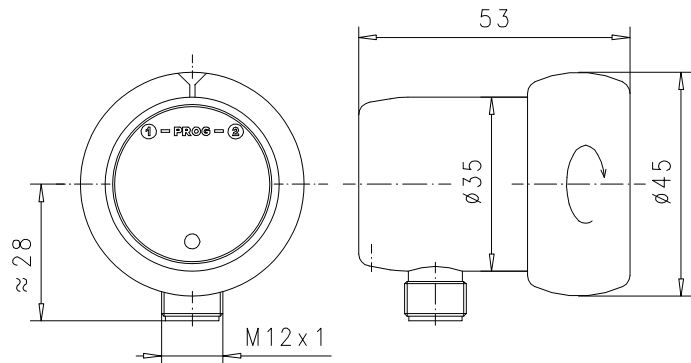
## 7 Terminal assignment



The switch outputs are self-configuring, depending on whether they are connected as PNP- or NPN-switches (Push-Pull). Please use shielded cable, cable length < 30 m and a power supply cable length < 10 m.

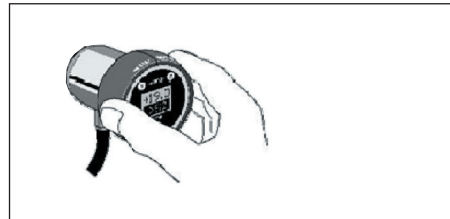
**8 Technical data**

|  |   |                        |
|--|---|------------------------|
| <b>Display</b>                                   | Graphic, transreflective, backlit LCD (32 X 16 Pixels)<br>Displays values and units of measure (unit selectable)<br>Extended temperature range (-20...70 °C)<br>Display can be rotated for optimal reading position (mechanical block limits movement to <360° to prevent damage)                               |                        |
| <b>LED</b>                                       | Indicator light (red) blinks to inform of error messages on the display<br>(e.g. flow rate exceeds set limit value)   |                        |
| <b>Analog output</b>                             |   |                        |
| Current output (standard)                        | 4(0)...20 mA (programmable)   |                        |
| Max. load  | 500 Ω   |                        |
| Voltage output<br>(Please specify when ordering) | 2(0)...10 V<br><br>The programmable range allows optimum device adjustment to the application   |                        |
| Max current                                      | 10 mA   |                        |
| <b>Switch output</b>                             | 2 switch outputs (short-circuit proof and reverse polarity protected) programmable as min- or max- values<br>Alarm: Low / Cable failure: Low / OK: High<br>Push-pull outputs are self-configuring and can be connected as PNP- or NPN switches  |                        |
| Load   | Load in total max. 300 mA   |                        |
| Hysteresis                                       | adjustable in value and direction<br>The position of hysteresis is dependent on whether the contact is programmed as a min.- or max.- contact.  |                        |
| <b>Programming</b>                               | Programming by means of a programming ring<br>Switch points, hysteresis, range etc. are programmable<br>Programming protection by turning the programming ring 180 ° or removal of the programming ring   |                        |
| <b>Operating voltage</b>                         | 24 V (18...30 V)  |                        |
| <b>Power consumption</b>                         | < 1 W   |                        |
| <b>Connection</b>                                | For round plug M 12 x 1, 5 terminals  |                        |
| <b>Ingress protection</b>                        | IP 67   |                        |
| <b>Accuracy</b>                                  | ± 3 % full scale (in combination with the flow sensor)  |                        |
| <b>Repeatability</b>                             | 1 % of full scale   |                        |
| <b>Operating temperature</b>                     | - 20 °C - + 70 °C   |                        |
| <b>Storage temperature</b>                       | - 20 °C - + 80 °C   |                        |
| <b>Materials</b>                                 | Body  | stainless steel 1.4305 |
|  | Glass   | hardened mineral glass |
|  | Magnet  | cobalt samarium        |
|  | Ring  | POM                    |
| <b>Notes</b>                                     | The sensor is programmed by the manufacturer to your specifications and is ready for immediate use. Please note that the DISPLAY-electronics are aligned with the flow sensor and are not interchangeable with other devices! Observe the additional data sheets and Operating Instructions of the flow sensor! |                        |



**9 Operating examples**

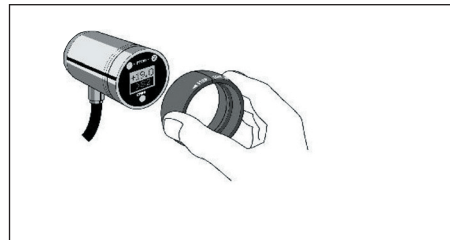
**Operation of the DISPLAY-sensor**



The programming ring permits parameter changes to be made quickly and easily.

Turning the programming ring opening to position 1 or 2 triggers a „ready“ signal. The rest position should be between position 1 and 2! The various adjustment possibilities are discussed briefly.

**Protecting programming entries**



1. Remove the programming ring
2. Remove, rotate and reinstall the programming ring (PROG. LOCK position)