REGNSENSOR

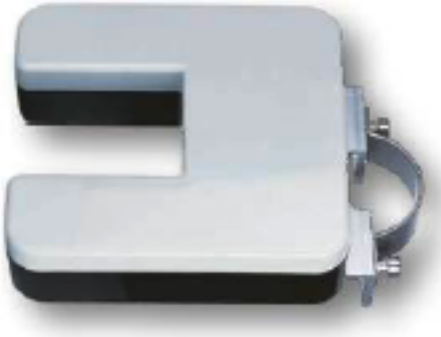
Precipitation sensor

with analogue intensity output

- New developed unit for the economical regulation of precipitation intensities basing on the proven maintenance-free optical technology.

Range of application:

- Facility protection
- Artificial irrigation / Irrigation control
- Control of intensity and quantity of precipitation events
- Flood control measuring / Flood protection
- Aquaplaning protection



The precipitation sensor serves as measuring instrument for the determination of the instantaneous precipitation intensities (mm precipitation / min.). By integration of the precipitation intensities, the precipitation quantity can be calculated, as well. Control- and warning signals can be derived from the precipitation intensity. The measuring signal output is an intensity-dependent analogue current value. The whole measurement range is divided into 4 linear characteristic segments, which shows a tenth of the slope of the more sensitive segment. Thus, it is possible to represent an intensity range from approx. 0,001mm/min. (light drizzle) up to 10 mm/min. (extremely heavy rain) with reasonable resolution (quasi-logarithmic output).

Mode of Operation

Precipitation in the form of drizzle, rain, snow, or hail falls through a light band, induced by light diodes, and lead to shadowing effects on the receiving side. The sent light is pulse-modulated so that outside light effects cannot falsify the measurement results. The instrument is equipped with a heating system for extreme weather condition. This avoids ice and snow forming on the housing surface. In addition, the surface retains a temperature of >0° by means of a regulated heating.Order Code: **5.4103.20.041**

Technical Data:

Measuring Value	Precipitation Intensity	
Measuring range	0 - 0,01 mm / min >> 4,0 - 8,0mA 0,01 - 0,1 mm / min >> 8,0 - 12,0 mA 0,1 - 1,0 mm / min >> 12,0 - 16,0 mA 1,0 - 10 mm / min >> 16,0 - 20,0 mA	
Output	constant current, depending on measuring value, between 4,0mA and 20,0mA	
Active sensor surface	25 cm²	
Minimum drop size	0,2 mm	
Operating voltage	24 V AC/DC ± 15 %	
Operating current	approx. 90 mA	
Heating current	max. 1A	
Ambient temperature	-25 ... +55°C	
Protection	IP 65 acc. to DIN 40050	
EMC	Reference number IEC 61000-6-2: 2005	Specification Electromagnetic compatibility Immunity for industrial environment

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1 Model

Order - No.	Measuring value	Electrical Output	Operating Voltage	Connection
5.4103.20.041	Precipitation intensity	4…20mA	24 V AC/DC	Cable gland
5.4103.20.741	Precipitation intensity	4…20mA	24 V AC/DC	7- pole plug connection

2 Range of Application

The precipitation sensor serves as measuring instrument for the determination of the instantaneous precipitation intensities (mm precipitation / min.). By integration of the precipitation intensities, the precipitation quantity can be calculated, as well. Control- and warning signals can be derived from the precipitation intensity.
The measuring signal is output as intensity-dependent analogue output value. The dimension of the measurement value output is divided into 4 linear characteristic segments, which show a tenth of the slope of the more sensitive segment.
Thus, it is possible to represent an intensity range from approx. 0,001mm/min. (light drizzle) up to 10 mm/min. (extremely heavy rain) with reasonable resolution (quasi-logarithmic output).

3 Mode of Operation

Precipitation in the form of drizzle, rain, snow, or hail falls through a light band, induced by light diodes, and lead to shadowing effects on the receiving side. The sent light is pulse-modulated so that outside light effects cannot falsify the measurement results. From the extent of shading along with the duration of falling through a factor is calculated that gives the information if there is a precipitation incident or not.

The instrument is equipped with a heating system for extreme weather condition. This avoids ice and snow forming on the housing surface. In addition, the surface retains a temperature of >0° by means of a regulated heating.

4 Installation

Please Note:

The electrical connection is to be carried out by experts only.
Please open the instrument only with dry ambient conditions.
Do not damage the exposed electronics!

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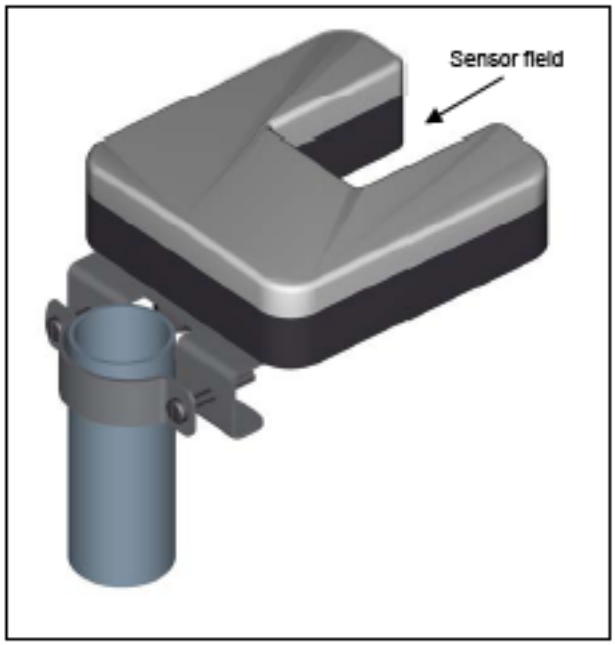
Remark:

In order to achieve an optimal electro-magnetic immunity (> 20 V/m) please use shielded cable.

4.1 Mechanical Mounting

The mounting system of the instrument is designed for attachment to a mast. When mounting make sure, that the precipitation can easily reach of the sensor field, and that the instrument is not exposed to strong vibrations or shocks.



4.2 Electrical Mounting for Precipitation Sensor with Cable Gland

To connect the instrument electrically, remove the cover with its 5 screws. The connecting terminals and the DIP-switches for selecting the number of incidences and switch-off delays are then accessible. The electrical connection is carried out according to the Circuit diagram. Insert the cable from below through the screwed cable gland on the bottom of the case and connect it to the connecting terminals and the shield connection. After the wiring – and mounting work is done, the nuts of the screwed cable gland, and die screws of the cover are to be screwed evenly tight with the case so that water cannot penetrate it. The fixing screws for the cover must be srewed down with a torsional of 1 Nm to 2 Nm.

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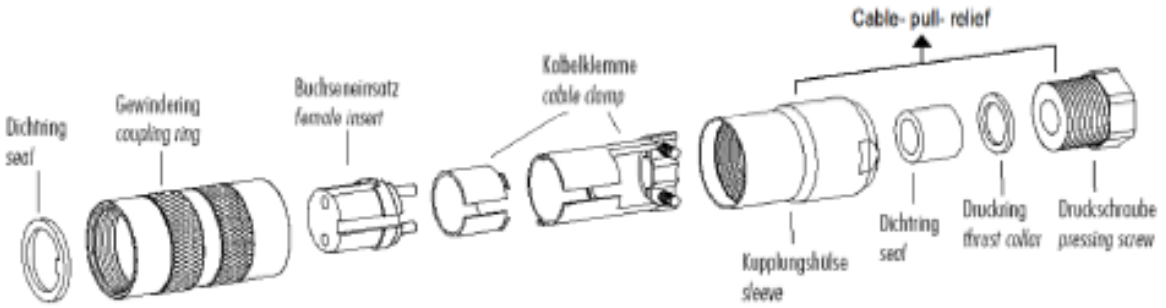
4.3 Electrical Mounting for Precipitation Sensor with Plug Connection

The electrical connection is carried out by plug in accordance with the connecting diagram.

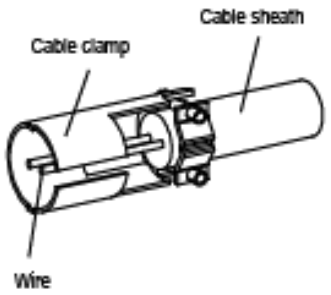
4.3.1 Plug Mounting

Applies only to instruments with connection „plug".

Coupling socket, Typ:Binder, Serial 423, EMC with cable clamp
Cable connection: without cable shield



1. Stringing parts on cable acc. to plan given above.
2. Stripping cable sheath 20 mm
3. Cutting uncovered shield 20 mm
4. Stripping wire 5mm.
5. Soldering wire to the insert
6. Positioning shield in cable clamp.
7. Screwing-on cable clamp.
8. Assembling remaining parts acc. to upper plan.
9. Tightening pull-relief of cable by screw-wrench (SW16 und 17).



5 Taking into Operation

After the electrical connection has been established, and the case has been screwed, the operating voltage can be switched on. The dimension of the measurement value output is reset when the supply voltage is switched on.

6 Maintenance

The device is maintenance free.

Cleaning:
The pollution and the pollution level is dependent on the location. Therefore, we recommend the unit be checked at appropriate intervals and cleaned if necessary.
For the cleaning should use a damp cloth without chemical cleaning agents are used.

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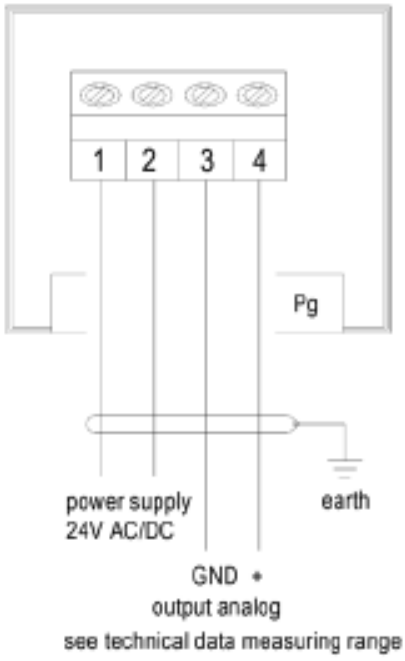
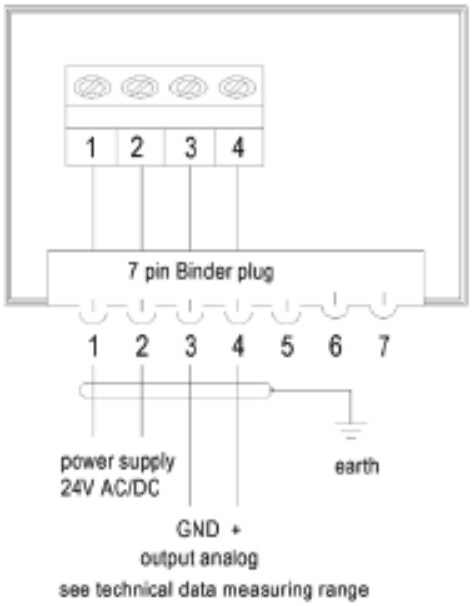
7 Connecting Diagram / Connecting Table

Order-No.	Clamp connection
5.4103.20.041	

Order-No.	Plug connection	
5.4103.20.741		View on the soldering side of the counter plug. 

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8 Technical Data

Measuring Value	Precipitation intensity (mm / min)		
Output	Constant current, depending on measuring value, between 4,0mA and 20,0mA		
Measuring range, Output, Transfer function	Measuring range	Output	Function[1)]
Segment 1	0.....0,01 mm / min	= 4,0.....8,0 mA	0,0025 *x -0,01
Segment 2	0,01 0,1 mm / min	= 8,0…12,0 mA	0,0225 *x -0,17
Segment 3	0,1....1,0 mm / min	= 12,0…16,0 mA	0,225 *x -2,6
Segment 4	1,0...10,0 mm / min	= 16,0…20,0	2,25 *x -35
max. load	400 Ohm		
Active sensor surface	25 cm^2		
Minimum drop size	0,2 mm		
Operating voltage	24 V AC/DC ± 15 %		
Operating current	approx. 300 mA @20°C ambient temperature max. approx. 1 A		
Ambient temperature	-30 ... +60°C		
Protection	IP 65 acc. to DIN 40050		
Weight	0,4 kg		
Connection	See model		

[1)]Function for calculation:
Depending on the segment, where the measured current fits in, the respective function must be applied, wherein for "x" the measured value in mA is entered.

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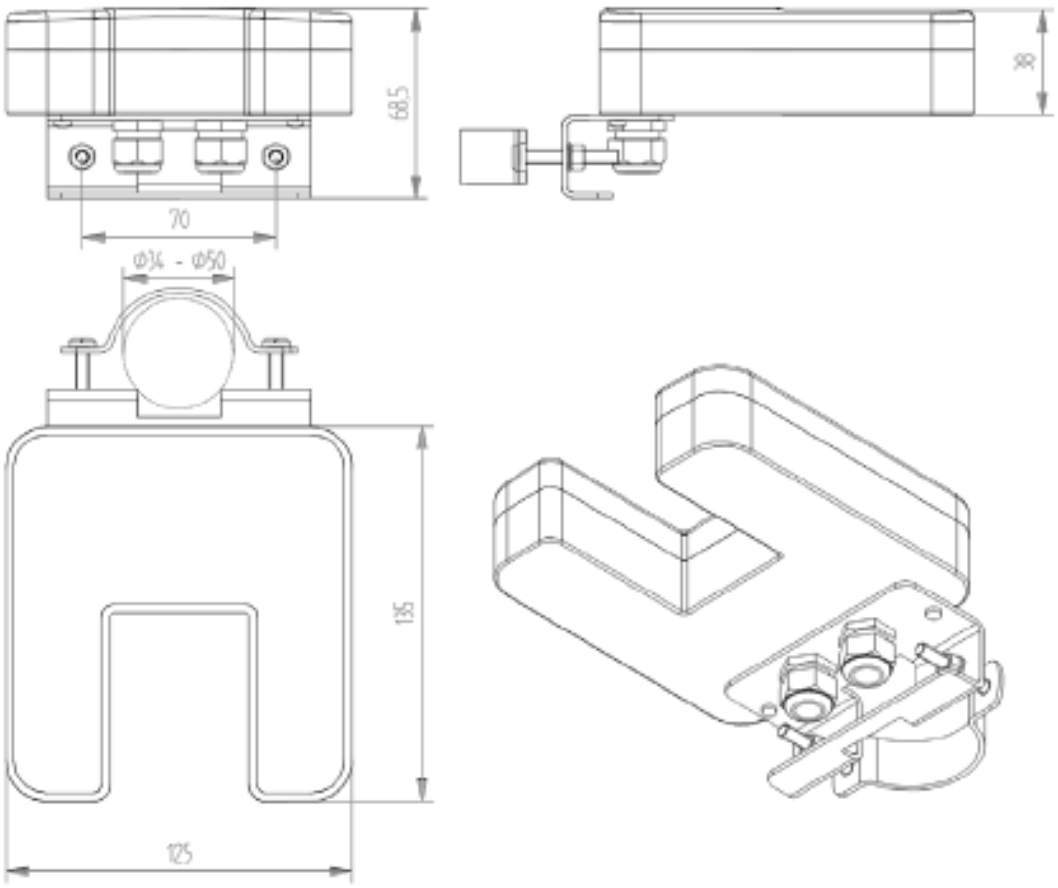
9 Dimensional diagram



10 Accessories (Optional)

Power Supply Unit	**9.3388.00.002**	The power supply unit provides for the current supply of the Precipitation Sensor. It supplies the necessary operation voltage for the electronics and the heating. Primary : 230 V / 50 Hz Secondary : 24 V AC / 25VA Housing : synthetic Protection : IP 65 acc. to DIN 40050 Dimensions : 107 x 125 x 100 mm Weight : 1,2 kg