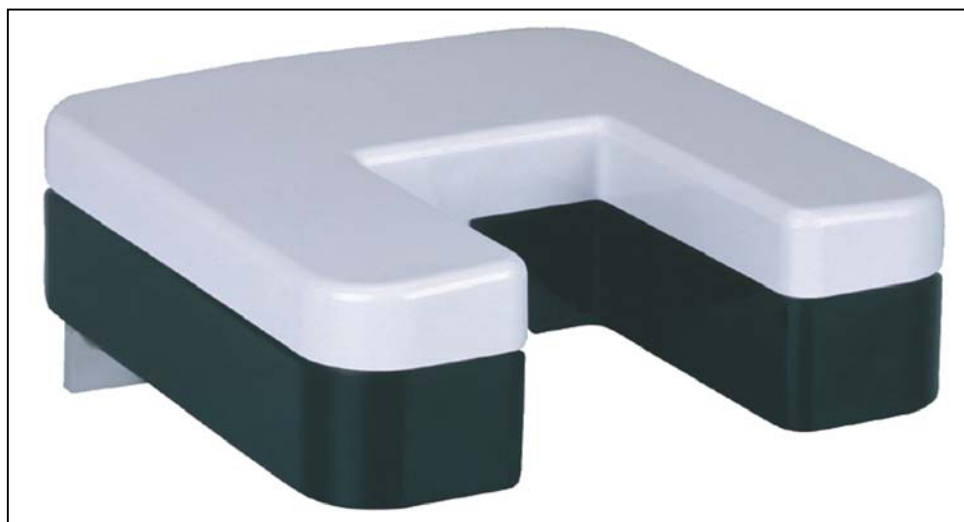


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***Precipitation Monitor***

**5.4103.10.000, 5.4103.10.700**



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## **1 Model**

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<b>Order- No.</b>	<b>Elect. Output</b>	<b>Operating Voltage</b>	<b>Connection</b>
5.4103.10.000	relay	24 V AC/DC	Cable gland
5.4103.10.700	relay	24 V AC/DC	7- pole plug connection

**Table 1: Models**

## **2 Application**

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The precipitation monitor transmits signals to determine the beginning and the end of precipitation and the duration of the period of precipitation as required by meteorological services.

In addition, the precipitation monitor can be used to report status or to transmit control signals to connected rain protection devices such as windows, air vents, awnings, or Venetian blinds.

### 3 Mode of Operation

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Precipitation in the form of drizzle, rain, snow or hail is detected by means of a light barrier system and triggers a signal. A built-in incidence-filter shall smooth the triggering of switching signals in case of individual incidences, as for example leaves, bird droppings, insects etc. For this, a certain number of at least  $n$  incidences should have occurred within a time-window of 50 sec. The number of drop incidences (1...15) can be selected through the DIP-switch on the pc-board.

With the precipitation end the switching signal is reset after a selectable switch-off delay. Thanks to the immediate evaluation of the incidences it is possible to determine precisely the beginning and end of the precipitation period.

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  $>0^{\circ}$  by means of a regulated heating.

### 4 Installation

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**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!*

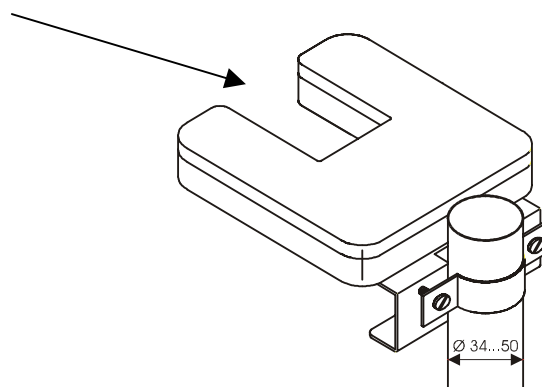
**Remark:**

*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 the opening of the sensor, and that the instrument, while operating, is not exposed to strong vibrations or shocks.

Sensor opening



## 4.2 Electrical Mounting for Precipitation with Cable Gland

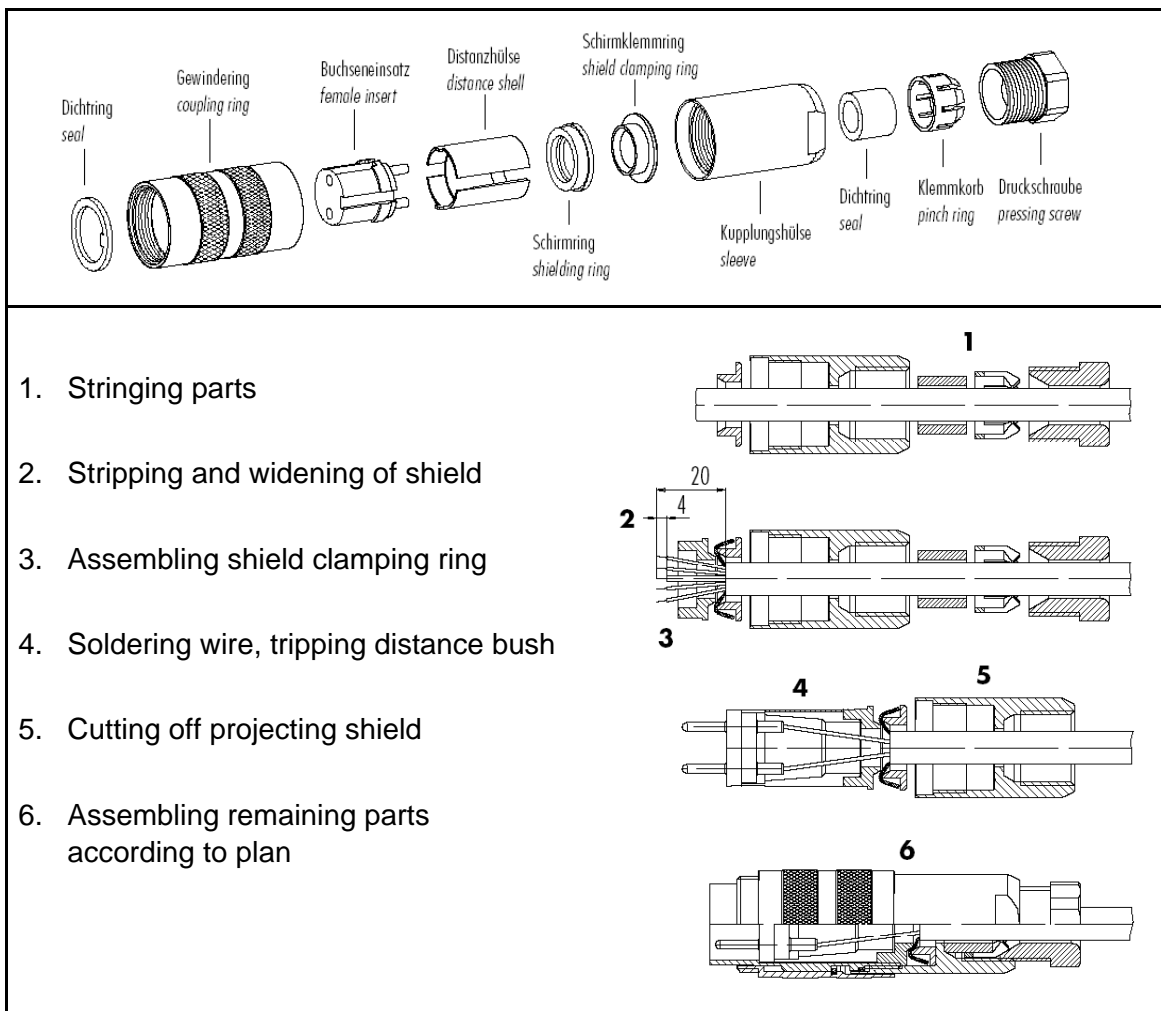
To connect the instrument electrically, remove the cover with its 5 screws. The connecting terminals and the DIP-switches for selecting the number of incidences and switch-off delays are then accessible. The electrical connection is carried out according to the Circuit diagram. Insert the cable from 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 the 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 screwed down with a torsional of 1 Nm to 2 Nm.

## 4.3 Electrical Mounting for Precipitation 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“.



## 5 Taking into Operation

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After the electrical connection has been established, and the case has been screwed, the operating voltage can be switched on. The setting of the relay output is undefined after switching on the operating voltage and shows „no precipitation“.

## 6 Maintenance

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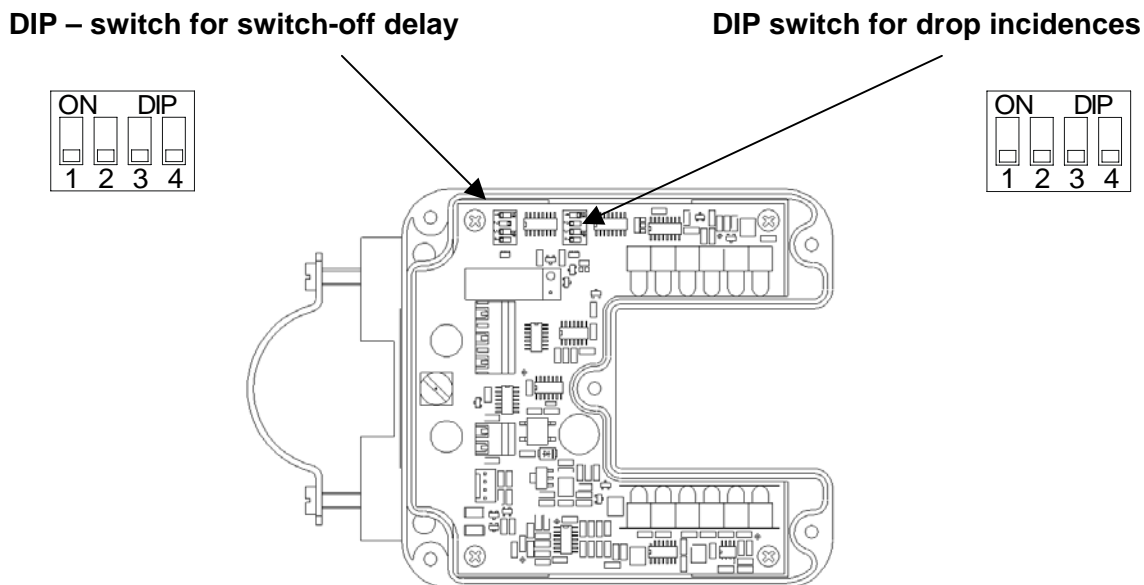
A layer of dirt can form on the windows of the sensor as a result of atmospheric pollution, which, however, is usually washed off by the precipitation. According to the local degree of pollution the windows of the sensor should be checked and possibly be cleaned in appropriate intervals.

## 7 Setting of Incidences and Switch-off Delay

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In the factory a setting is carried out for 12 drop incidences within 50 seconds with a switch-off delay of 25 seconds.

If this setting is to be changed, the **switch-off delay**, and the number of **drop incidences** are set through the DIP-switches acc. to the table.



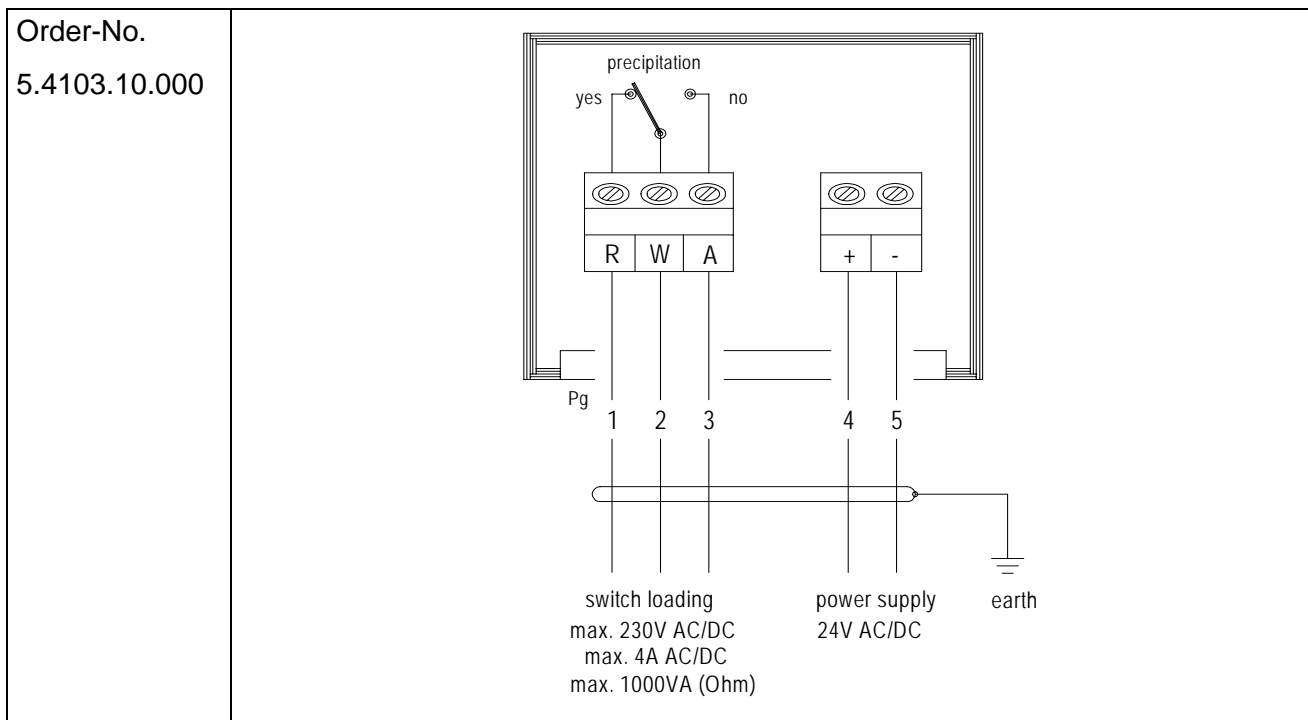
**Figure 1: DIP - switch**

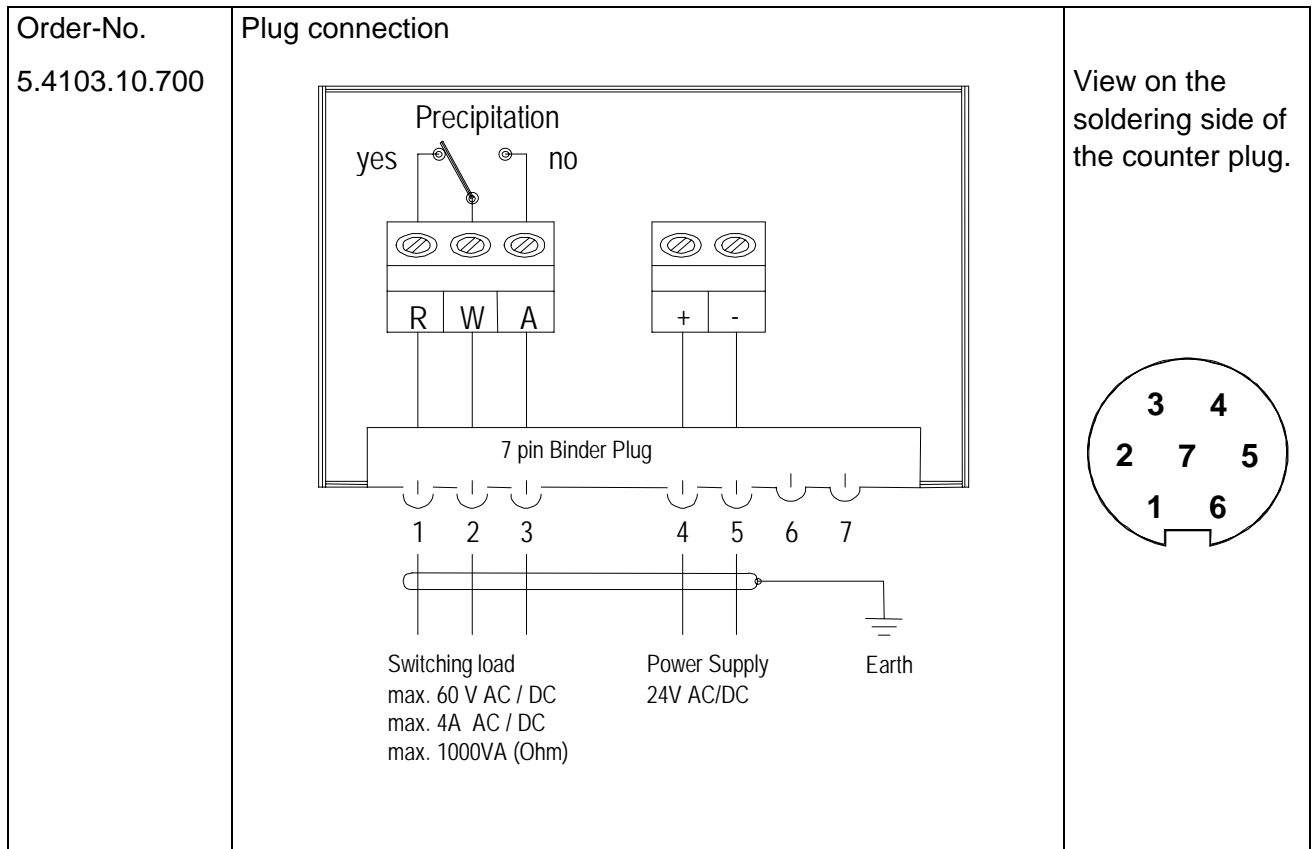
DIP- switch-off delay( 1 = ON )					DIP- drop incidences-filter ( 1 = ON )				
S 1	S 2	S 3	S 4	time (sec)	S 1	S 2	S 3	S 4	drops
1	0	0	0	25	1	0	0	0	1
0	1	0	0	50	0	1	0	0	2
1	1	0	0	75	1	1	0	0	3
0	0	1	0	100	0	0	1	0	4
1	0	1	0	125	1	0	1	0	5
0	1	1	0	150	0	1	1	0	6
1	1	1	0	175	1	1	1	0	7
0	0	0	1	200	0	0	0	1	8
1	0	0	1	225	1	0	0	1	9
0	1	0	1	250	0	1	0	1	10
1	1	0	1	275	1	1	0	1	11
0	0	1	1	300	0	0	1	1	12
1	0	1	1	325	1	0	1	1	13
0	1	1	1	350	0	1	1	1	14
1	1	1	1	375	1	1	1	1	15

**Table 2: DIP – switch adjustment**

- Grey marked squares = factory settings
- DIP – switch adjustment „0000“ : not defined

## 8 Connecting Diagram

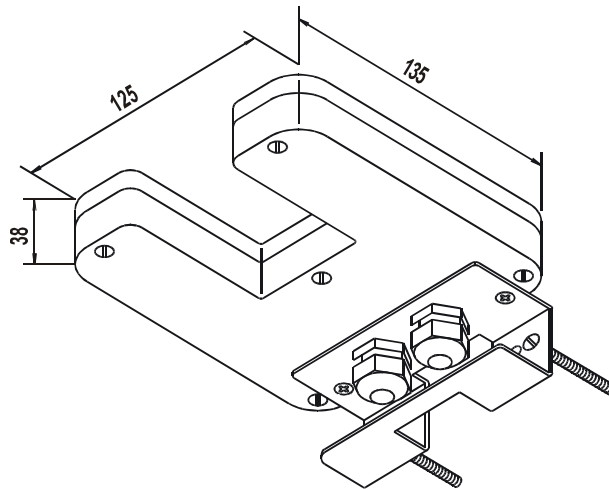




## 9 Technical Data

Measuring value	: Status of precipitation (rain, snow, hail, etc.)
Output	: Precipitation = relay OFF ( also at $U_B = 0$ ); no precipitation = relay ON
Sensor area	: 25 cm <sup>2</sup>
Drop size	: $\geq 0,2$ mm
Switch-on condition	: 1... 15 incidences within 50 sec.
Switch-on delay	: none
Switch-off delay	: 25 ... 375 s ; see „ <i>Adjusting incidences and switch-off delay</i> “
Contact loading (relay)	
with model 5.4103.10.000	: max. 230 V AC; 4 A
with model 5.4103.10.700	: max. 60 V AC; 4 A
Operating voltage	: 24 V AC/DC $\pm$ 15 %
Operation current	: 24 V AC/DC $\pm$ 15 %
Operation current	: ca. 70 mA
Heating current	: max. 1 A
Ambient temperature	: -30 ... +60°C
Protection	: IP 65 acc. to DIN 40050
EMV	: EN 61000-6-2 ; EN 61000-6-3
Weight	: 0,4 kg
Connection	See model

## 10 Dimension diagram



## 11 Accessories

Power Supply Unit	9.3388.00.002	<p>The power supply unit serves for the current supply of the precipitation monitor, order-no. 5.4103.10.000. It supplies the necessary operation voltage for the electronics and the heating.</p> <p>Primary : 230 V / 50 Hz          Secondary : 24 V AC / 20 VA          Housing : synthetic          Protection : IP 65 acc. with DIN 40050          Dimensions : 107 x 125 x 100 mm          Weight : 1,2 kg</p>
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