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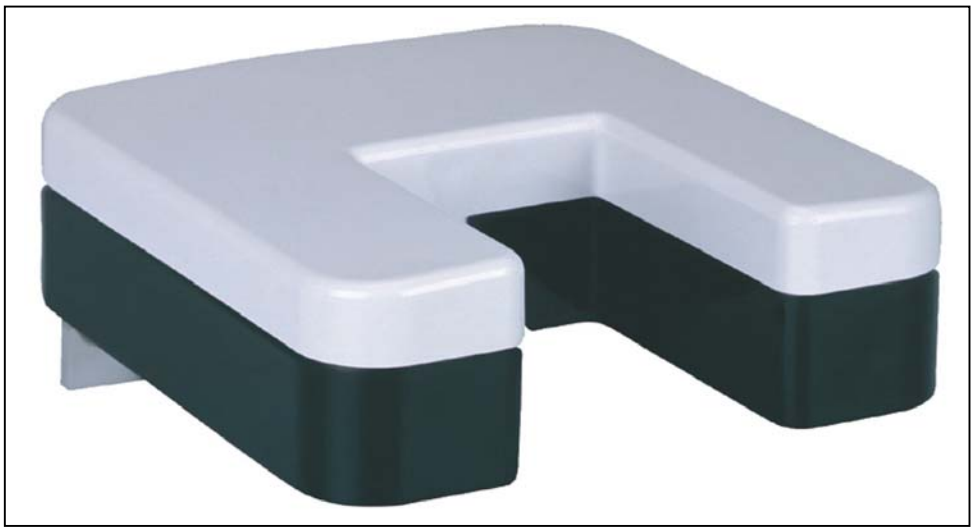
Thies CLIMA

Instruction for use

021197/11/09

Precipitation Monitor

5.4103.10.000, 5.4103.10.700



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1 Model

Order - No.	Measuring value	Electrical Output	Operating Voltage	Connection
5.4103.10.000	Precipitation status	Relay	24 V AC/DC	Cable gland
5.4103.10.700	Precipitation status	Relay	24 V AC/DC	7- pole plug connection

2 Application

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

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 leafs, 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° by means of a regulated heating.

4 Installation

Please Note:

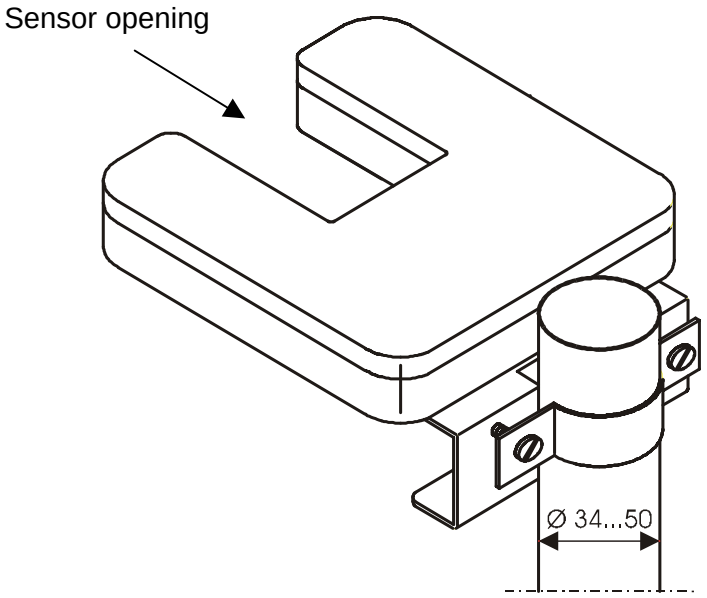
The electrical connection is to be carried out by experts only.
Please open the instrument only with dry ambient conditions.
Do not damage the exposed electronics!

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.



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 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.

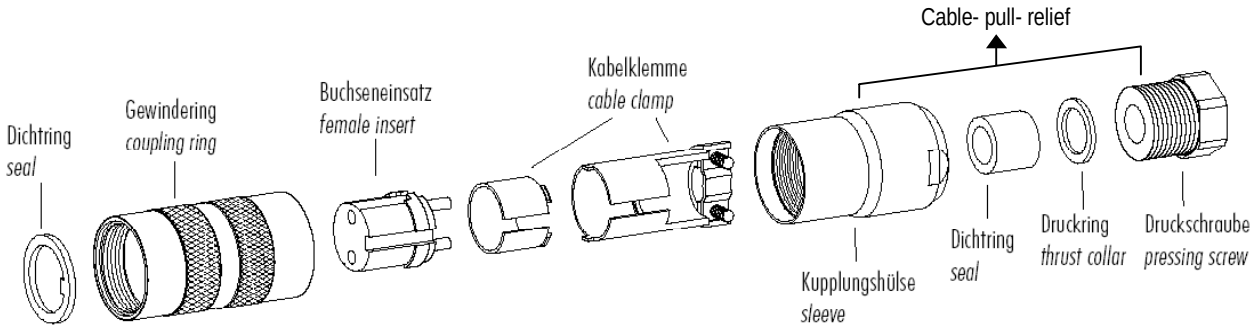
4.3 Electrical Mounting for Precipitation with Plug Connection

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

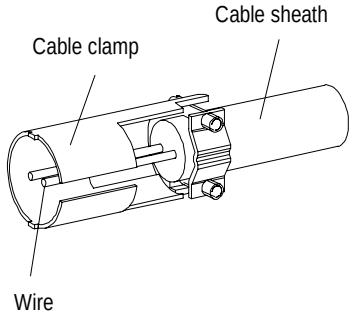
4.3.1 Plug Mounting

Applies only to instruments with connection „plug“.

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 setting of the relay output is undefined after switching on the operating voltage and shows „no precipitation“.

6 Maintenance

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

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.

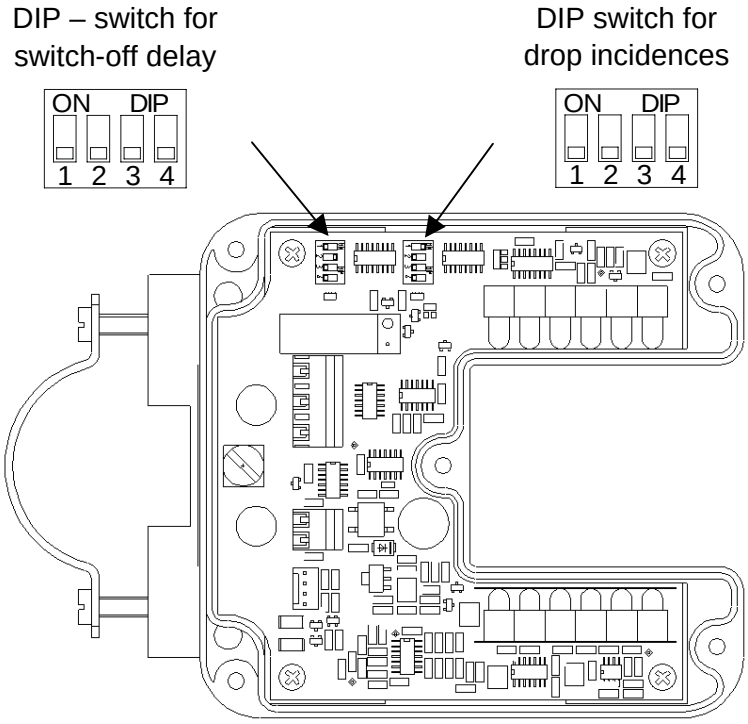


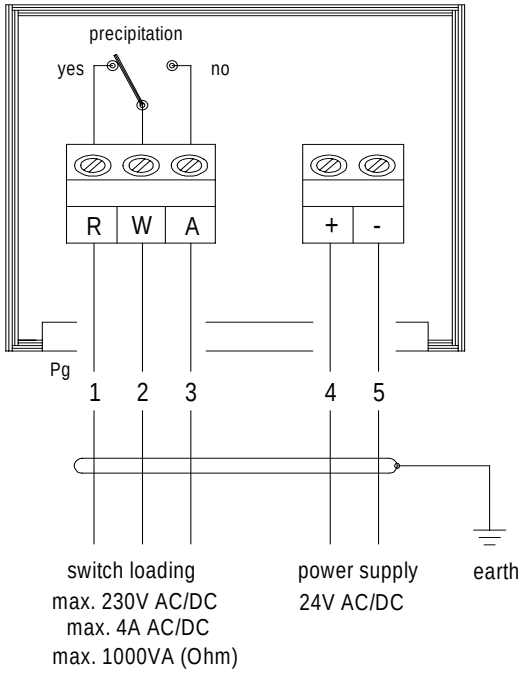
Figure 1: DIP - switch

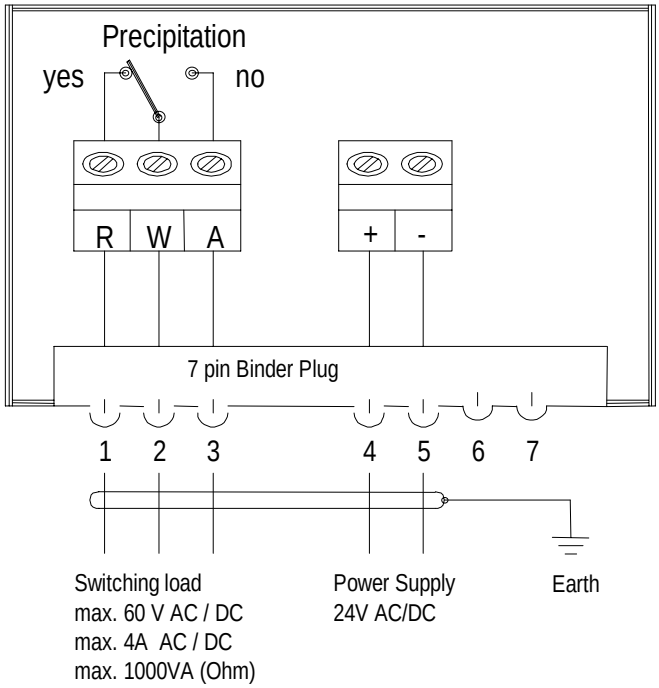
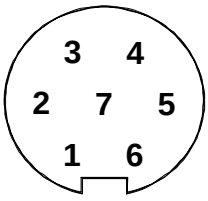
DIP- switch-off delay(1 = ON)					DIP- drop incidences-filter (1 = ON)				
S 1	S 2	S 3	S 4	time (sec)	S 1	S 2	S 3	S 4	drops
1	0	0	0	25	1	0	0	0	1
0	1	0	0	50	0	1	0	0	2
1	1	0	0	75	1	1	0	0	3
0	0	1	0	100	0	0	1	0	4
1	0	1	0	125	1	0	1	0	5
0	1	1	0	150	0	1	1	0	6
1	1	1	0	175	1	1	1	0	7
0	0	0	1	200	0	0	0	1	8
1	0	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 1: DIP – switch adjustment

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

8 Connecting Diagram

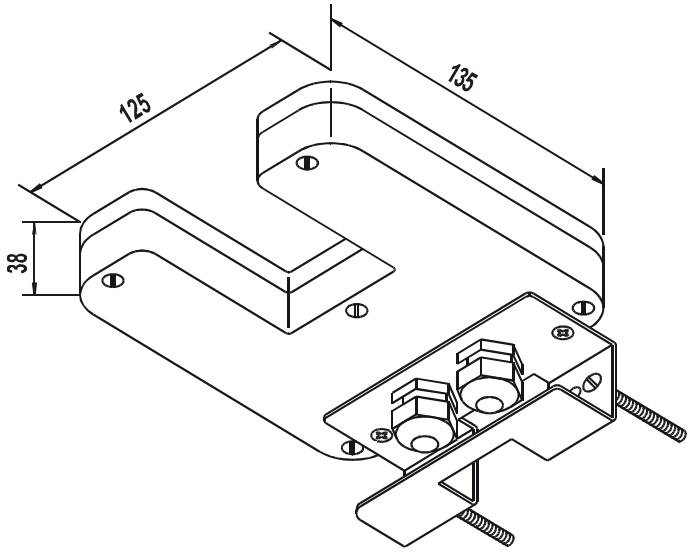
Order-No. 5.4103.10.000	

Order-No. 5.4103.10.700	Plug connection 	View on the soldering side of the counter plug. 

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^2
Drop size	: ≥ 0,2 mm
Switch-on condition	: 1... 15 incidences within 50 sec.
Switch-on delay	: none
Switch-off delay	: 25 ... 375 s ; see „*Adjusting incidences and switch-off delay*“
Contact loading (relay) with model 5.4103.10.000 with model 5.4103.10.700	 : max. 230 V AC; 4 A : max. 60 V AC; 4 A
Operating voltage	: 24 V AC/DC ± 15 %
Operation current maximal	: approx. 300 mA @20°C ambient temperature : approx. 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	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. 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

12 EC-Declaration of Conformity

Document-No.: **000902** Month: 06 Year: 08

Manufacturer: **A D O L F T H I E S G m b H & C o. K G**

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Description of Product: **Precipitation Transmitter**

Article No.				
	5.4103.10.000	**5.4103.10.012**	**5.4103.10.700**	**5.4103.20.041**
	5.4103.20.741	**5.4103.30.000**	**5.4103.30.700**	

specified technical data in the document: **021324/10/04; 021196/12/04; 021334/04/05; 021469/08/05**

The indicated products correspond to the essential requirement of the following European Directives and Regulations:

2004/108/EC	DIRECTIVE 2004/108/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 15 December 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility and repealing Directive 89/336/EEC
2006/95/EC	DIRECTIVE 2006/95/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 12 December 2006 on the harmonisation of the laws of Member States relating to electrical equipment designed for use within certain voltage limits
552/2004/EC	Regulation (EC) No 552/2004 of the European Parliament and the Council of 10 March 2004 on the interoperability of the European Air Traffic Management network (the interoperability Regulation)

The indicated products comply with the regulations of the directives. This is proved by the compliance with the following standards:

Reference number	Specification
IEC 61000-6-2: 2005	Electromagnetic compatibility Immunity for industrial environment
IEC 61000-6-3: 2006	Electromagnetic compatibility Emission standard for residential, commercial and light industrial environments
IEC 61010-1: 2001	Safety requirements for electrical equipment for measurement, control and laboratory use. Part 1: General requirements

Place: Göttingen Date: 27.06.2008

Legally binding signature: issuer:

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Wolfgang Behrens, General Manager

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Joachim Beinhorn, Development Manager

This declaration certificates the compliance with the mentioned directives, however does not include any warranty of characteristics.
Please pay attention to the security advises of the provided instructions for use.

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