



RW-PF

Rain/Wind Sensor

Technical specifications and installation instructions

Item number 30159



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1. Description

The **Rain/Wind Sensor RW-PF** measures wind speed and recognizes precipitation. Wind and rain alarm are output via dry contacts and displayed by LEDs on the board of the device. The wind threshold value is set with DIP switches.

Functions:

- **Wind measurement:** The wind strength measurement takes place electronically and thus noiselessly and reliably, even during hail, snow and sub-zero temperatures. Even turbulent air and anabatic winds in the vicinity of the weather station are recorded
- Setting of the **wind threshold value** with DIP switches inside the housing
- **Potential-free output for wind alarm**, additional wind alarm LED on the board. Changeover contact can be used as normally open or normally closed contact
- In case of a malfunction of the wind sensor, wind alarm will be activated and the Power LED in the case will blink. Malfunction will also be triggered if there has been no change of the measured wind value within 48 hours (failure monitoring)
- Heated **precipitation sensor** (1.2 watts): No false reports as a result of fog or dew. Dries quickly after precipitation has stopped
- **Potential-free output for rain alarm**, additional rain alarm LED on the board. Changeover contact can be used as normally open or normally closed contact

1.1. Technical specifications

Housing	Plastic material
Colour	White / translucent
Mounting	On-wall
Protection category	IP 44
Dimensions	approx. 96 × 77 × 118 (W × H × D, mm)
Ambient temperature	Operation -30...+50°C, Storage -30...+70°C
Operating voltage	12..35 V DC (12...28 V AC). An appropriate power supply unit can be obtained from Elsner Elektronik.
Cable cross-section	Massive conductors of up to 1.5 mm ² or conductors with fine wires
Current	12 V DC: 180 mA 24 V DC: 90 mA 14 V AC: 150 mA 28 V AC: 55 mA
Output „Rain“	dry changeover contact
Output „Wind Alarm“	dry changeover contact
Maximum load of the relays	max. 1 A at 30 V DC
Heating rain sensor	approx. 1.2 W

Measurement range wind	0...35 m/s
Accuracy (wind)	when incident flow 45...315°: $\pm 22\%$ of measured value when incident flow 90...270°: $\pm 15\%$ of measured value (Frontal incident flow corresponds to 180°)

The product conforms with the provisions of EC guidelines

- EMC Directive 2004/108/EC
- Low Voltage Directive 2006/95/EC

The following standards and/or technical specifications have been applied:

- EN 60730-1: 2011

2. Installation and commissioning

2.1. Installation notes



Installation, testing, operational start-up and troubleshooting should only be performed by an electrician.



CAUTION! **Live voltage!**

There are unprotected live components inside the device.

- National legal regulations are to be followed.
- Ensure that all lines to be assembled are free of voltage and take precautions against accidental switching on.
- Do not use the device if it is damaged.
- Take the device or system out of service and secure it against unintentional use, if it can be assumed, that risk-free operation is no longer guaranteed.

The device is only to be used for its intended purpose. Any improper modification or failure to follow the operating instructions voids any and all warranty and guarantee claims.

After unpacking the device, check it immediately for possible mechanical damage. If it has been damaged in transport, inform the supplier immediately.

The device may only be used as a fixed-site installation; that means only when assembled and after conclusion of all installation and operational start-up tasks and only in the surroundings designated for it.

Elsner Elektronik is not liable for any changes in norms and standards which may occur after publication of these operating instructions.

2.2. Location

Select an assembly location at the building where precipitation and wind may be collected by the sensors unobstructedly. Do not assemble any construction components above the sensor from where water may drop on to the rain and wind sensor after it has stopped raining or snowing.

At least 60 cm of clearance must be left all round the device. This facilitates correct wind speed measurement without eddies. The distance concurrently prevents spray (raindrops hitting the device) or snow (snow penetration) from impairing the measurement. It also does not allow birds to bite it.

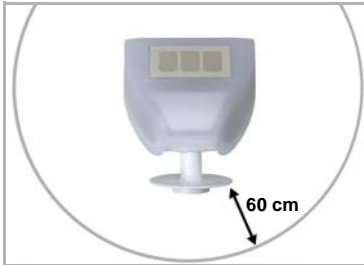


Fig. 1

There must be at least 60 cm of space below, to the sides and in front of the sensor left from other elements (structures, construction parts, etc.).

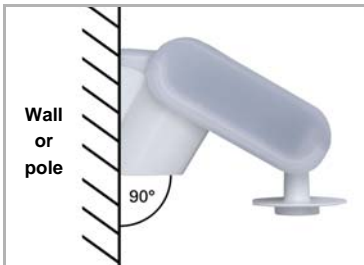


Fig. 2

The sensor must be mounted onto a vertical wall (or pole).



Fig. 3

The sensor must be mounted horizontally in the lateral direction.

2.3. Monting the sensor

2.3.1. Attaching the mount

The sensor comes with a combination wall/pole mount. The mount comes adhered by adhesive strips to the rear side of the housing. Fasten the mount vertically onto the wall or pole.

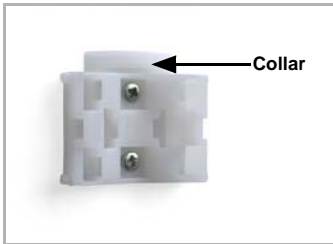


Fig. 4

When wall mounting: flat side on wall, crescent-shaped collar upward.

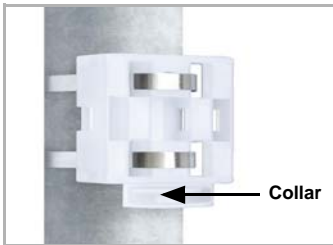


Fig. 5

When pole mounting: curved side on pole, collar downward.



Fig. 6

Different mounting arms are available from Elsner Elektronik as additional, optional accessories for flexible installation of the weather station on a wall, pole or beam.

Example of the use of a mounting arm: Due to flexible ball joints, the sensor can be brought into ideal position.



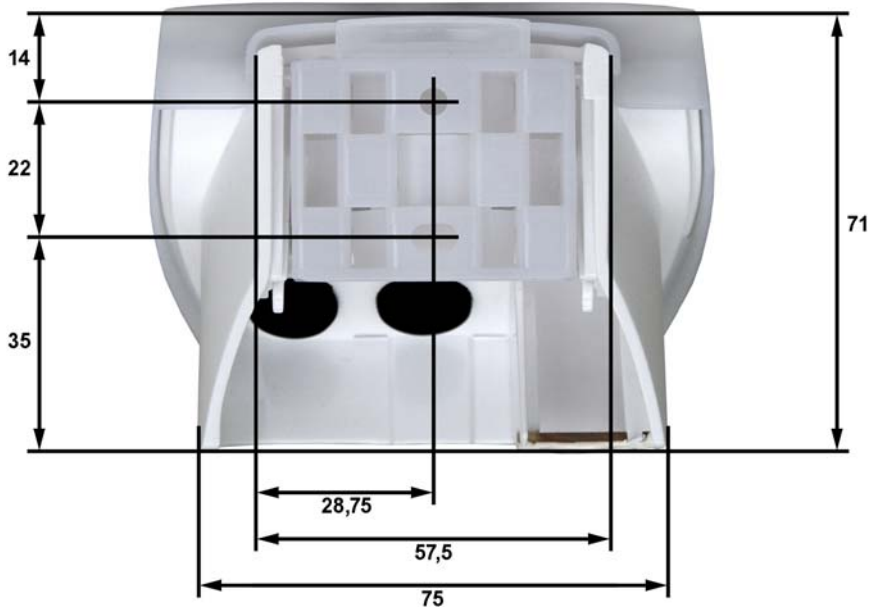
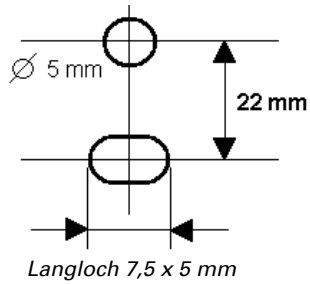
Fig. 7

Example use of the hinge arm mounting: Fitting to a pole with worm drive hose clips

2.3.2. View of rear side and drill hole plan

Fig. 8 a+b
Drill hole plan

Dimensions of rear side of housing with bracket. Subject to change for technical enhancement.



2.3.3. Preparing the sensor

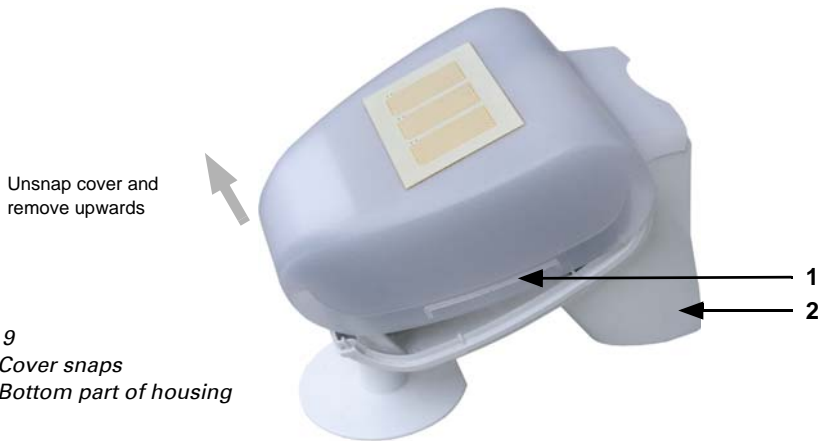


Fig. 9

- 1 Cover snaps
- 2 Bottom part of housing

The sensor cover of **RW-PF** snaps in on the left and right along the bottom edge (see Fig.). Remove the cover. Proceed carefully, so as not to pull off the **wire** connecting the PCB in the bottom part with the rain sensor in the cover (cable with plug).

Lead the cable for the connection cables through the rubber seals on the bottom of the device and connect voltage and relay outputs to the terminals provided.

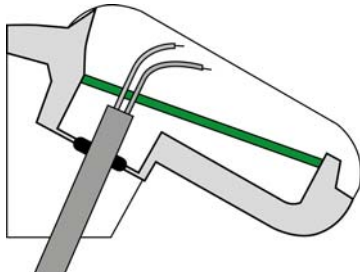


Fig. 10

Remove the cable shielding under the circuit board and only feed the connector cables upwards through the openings in the circuit board.

The connection cable between the cover and circuit board must be plugged in.

2.3.4. PCB Layout

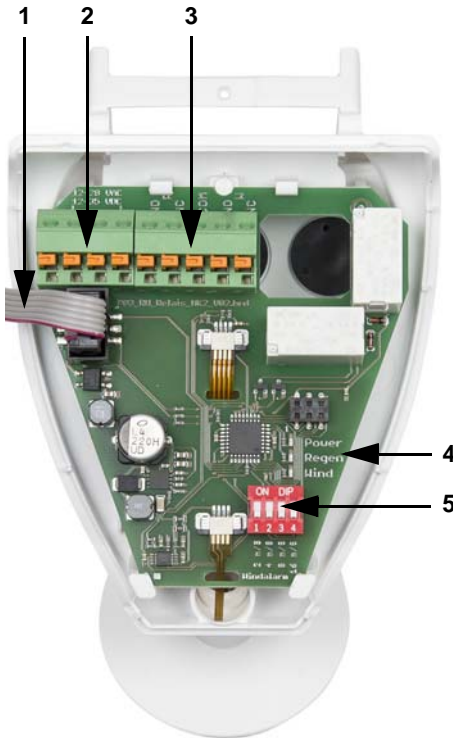


Abb. 11: Overview pcb

- 1 Connection to housing cover with rain sensor
- 2 Connection operating voltage 12-35 V DC or 12-28 V AC
- 3 Connection output

rain signal:

normally closed: R NC | Com
normally open: R NO | Com

wind signal:

normally closed: W NC | Com
normally open: W NO | Com

Maximum relay load capacity:
1 A at 30 V DC.

Both connectors suitable for massive conductors of up to 1,5 mm² or conductors with fine wires.

- 4 LEDs „Power“, „Rain“ and „Wind“, see **LED Signals**, page 11
- 5 Dip switch for wind threshold value, see **Setting of the wind threshold value**, page 11

2.3.5. Connection

Operation voltage:

Operating voltage
12...35 V DC or 12...28 V AC

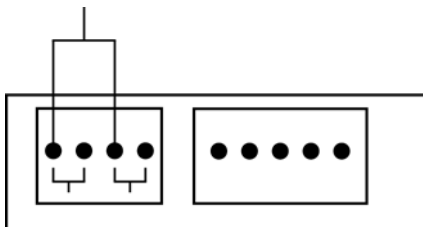


Fig. 12

Contacts are by-passed (e. g. to connect through)

Rain alarm at NC contact:

e. g. when used as replacement for no. 30155

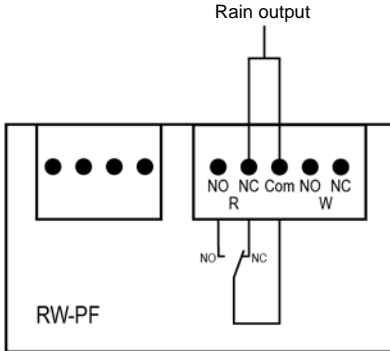


Fig. 13 shows the relay status of RW-PF without voltage and in case of rain alarm. The contact of the rain output is closed.

*In case of a lead fracture in the system that uses the alarm message, there is **no rain alert** when using this connection type.*

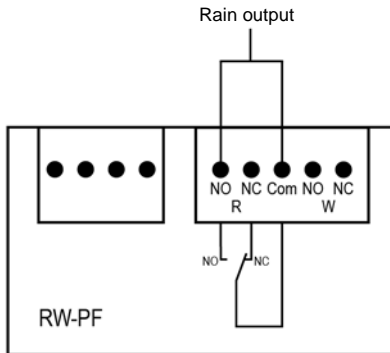
Rain alarm at NO contact:

Fig. 14 shows the relay status of RW-PF without voltage and in case of rain alarm. The contact of the rain output is open.

Rain alert is triggered even in case of a lead fracture in the system that uses the alarm message when using this connection type.

Wind alarm at NC contact:

e. g. when used as replacement for no. 30155

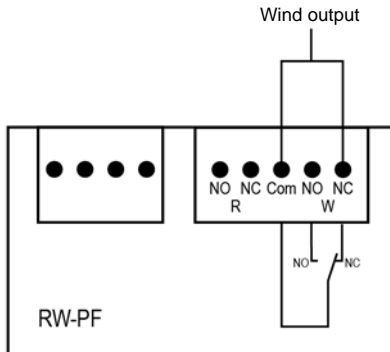


Fig. 15 shows the relay status of RW-PF without voltage and in case of wind alarm. The contact of the wind output is closed.

*In case of a lead fracture in the system that uses the alarm message, there is **no wind alert** when using this connection type.*

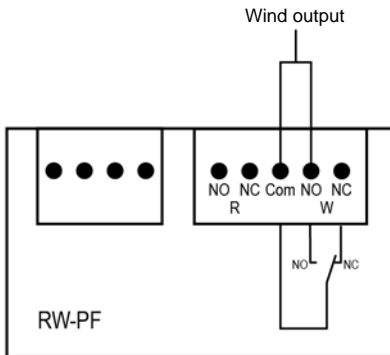
Wind alarm at NO contact:

Fig. 16 shows the relay status of RW-PF without voltage and in case of wind alarm. The contact of the wind output is open.

Wind alert is triggered even in case of a lead fracture in the system that uses the alarm message when using this connection type.

2.3.6. Mounting the sensor

Close the housing by putting the cover back over the bottom part. The cover must snap in on the left and right with a definite “click”

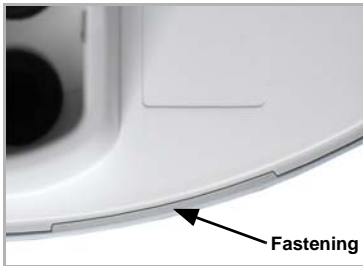


Fig. 17 Make sure the cover and bottom part are properly snapped together! This picture is looking at the closed sensor from underneath.



Fig. 18 Push the housing from above into the fastened mount. The bumps on the mount must snap into the rails in the housing.

To remove it, the sensor can be simply pulled upwards out of the mount, against the resistance of the fastening.

2.4. Notes on mounting and commissioning

Do not open the device if water (rain) might ingress: even some drops might damage the electronic system.

Observe the correct connections. Incorrect connections may destroy the sensor or connected electronic devices.

After mounting, remove all transport protection labels.

2.5. Setting of the wind threshold value

The wind threshold value is set with DIP switches inside the housing. You reach the favoured wind threshold value by adding the switches values (switch on top = on).

Switch 1: 2 m/s

Switch 2: 4 m/s

Switch 3: 8 m/s

Switch 4: 16 m/s

If all switches are set to OFF (delivery status), a threshold value of 1 m/s will be used.

Wind alarm at (m/s)	Dip switch			
	1 (2 m/s)	2 (4 m/s)	3 (8 m/s)	4 (16 m/s)
1	-	-	-	-
2	on	-	-	-
4	-	on	-	-
6	on	on	-	-
8	-	-	on	-
10	on	-	on	-
12	-	on	on	-
14	on	on	on	-
16	-	-	-	on
18	on	-	-	on
20	-	on	-	on
22	on	on	-	on
24	-	-	on	on
26	on	-	on	on
28	-	on	on	on
30	on	on	on	on

2.5.1. LED Signals

LED	Behaviour	
Power	On	Normal operation
	Blinks	Wind sensor failure

LED	Behaviour	
Rain	OnAn	Precipitation recognized
	Blinks	Switching delay running. After precipitation has stopped, the relay will stay closed for another 5 minutes.
	Off	No precipitation, switching delay is over.
Wind	On	Wind threshold value exceeded.
	Blinks	Switching delay running. After wind threshold value is underrun, the relay will stay closed for another 5 minutes.
	Off	Wind threshold value is not exceeded, switching delay is over.

2.6. Maintenance of the sensor



WARNING!

Risk of injury caused by components moved automatically!

The automatic control can start system components and place people in danger (e.g. moving windows/awnings if a rain/wind alarm has been triggered while cleaning).

- Always isolate the device from the mains for servicing and cleaning.

The device must regularly be checked for dirt twice a year and cleaned if necessary. In case of severe dirt, the sensor may not work properly anymore.



ATTENTION

The device can be damaged if water penetrates the housing.

- Do not clean with high pressure cleaners or steam jets.