Suntracer KNX-GPS Weather Station

Technical specifications and installation instructions

Item number 3093

1. Description

The **Weather Station Suntracer KNX-GPS** measures temperature, wind speed and brightness. It recognises precipitation and receives the GPS signal for time and location. In addition, using location coordinates and the time, it calculates the exact position of the sun (azimuth and elevation).

All values can be used for the control of threshold value-dependent switching outputs. States can be linked via AND logic gates and OR logic gates. The compact housing of the **Suntracer KNX-GPS** accommodates the sensors, evaluation circuits and bus-coupling electronics.

Functions:

- **Brightness and position of the sun**: The current light intensity is measured by a sensor. In addition the Suntracer KNX-GPS calculates the position of the sun (azimuth and elevation) using time and location
- **Shade control** for up to 6 facades with slat and shadow edge tracking
- **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
- **Precipitation recognition**: The sensor surface is heated, so that only drops and flakes are recognised as precipitation, but not mist or dew. When the rain or snow stops, the sensor is soon dry again and the precipitation warning ends
- **Temperature measurement**
- **Weekly and calendar time switch**: The weather station receives the time and date from the integrated GPS receiver. The weekly time switch switches up to 4 different periods per day. With the calendar time switch up to 3 additional time periods can be defined, in which up to 2 On/Off switches take place. The switching outputs can be used as communications objects. The switch times are set via parameters.
- **Threshold values** can be adjusted per parameter or via communication objects
- **8 AND and 8 OR logic gates** with 4 for each input. All switching events as well as 16 logic inputs (in the form of communications objects) can be used as inputs for the logic gates. The output of each gate can be optionally configured as 1-bit or 2 x 8-bit

Configuration is made using the KNX software ETS. The **product file** can be downloaded from the Elsner Elektronik website on **www.elsner-elektronik.de** in the “Service” menu.

1.1. Technical data

Housing	Plastic
Colour	White / Translucent
Mounting	Surface-mounted
Protection rating	IP 44
Dimensions	approx. 96 × 77 × 118 (W × H × D, mm)
Weight	approx. 170 g
Ambient temperature	Operation -30…+50°C, storage -30…+70°C
Auxiliary voltage	12…40 V DC, 12…28 V AC. An appropriate power supply unit can be obtained from Elsner Elektronik.
Auxiliary current	max. 185 mA at 12 V DC, max. 81 mA at 24 V DC, Residual ripple 10%
Bus current	max. 8 mA
Data output	KNX +/- Bus connector terminal
BCU Type	own microcontroller
PEI Type	0
Group addresses	max. 254
Assignments	max. 255
Communication objects	254
Heater rain sensor	approx. 1,2 W
Measurement range temperature	-30…+80°C
Resolution (temperature)	0,1°C
Accuracy (temperature)	±1°C at -10…+85°C, ±1,5°C at -25…+150°C
Measurement range wind	0…35 m/s
Resolution (wind)	0,1 m/s
Accuracy (wind)	at ambient temperature -20…+50°C: ±22% of the measurement value when incident flow is from 45…315° ±15% of the measurement value when incident flow is from 90…270° (Frontal incident flow corresponds to 180°)
Measurement range brightness	0…150.000 Lux
Resolution (brightness)	1 Lux at 0…120 Lux 2 Lux at 121…1.046 Lux 63 Lux at 1.047…52.363 Lux 423 Lux at 52.364…150.000 Lux
Accuracy (brightness)	±20% at 0 lx … 10 klx ±15% at 10 klx … 150 klx

The product conforms with the provisions of EU directives.

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.

2.1.1. Installation position

Choose an installation position in the building where wind, rain and sun can be measured unhindered by the sensors. The weather station must not be installed underneath any structural parts from which water can still drip onto the rain sensor after it has stopped raining or snowing. The weather station must not be shaded by anything, such as building structures or trees.

At least 60 cm of clearance must be left all round the weather station. 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.
Please take note that an extended awning does not shade the device from sun and wind.

Temperature measurements can also be affected by external influences such as by warming or cooling of the building structure on which the sensor is mounted, (sunlight, heating or cold water pipes). Temperature variations from such sources of interference must be corrected in the ETS in order to ensure the specified accuracy of the sensor (temperature offset).

Magnetic fields, transmitters and interfering fields from electricity consumers (e.g. fluorescent lamps, neon signs, switched-mode power supplies etc.) can interfere with or even cut out reception of the GPS signal.

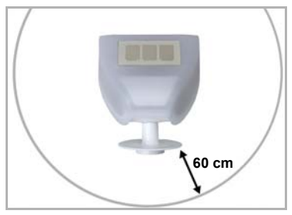


Fig. 1
There must be at least 60 cm of space below, to the sides and in front of the weather station left from other elements (structures, construction parts, etc.).

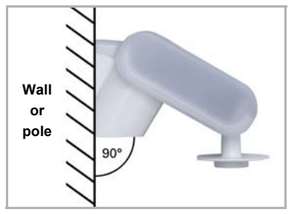


Fig. 2
The weather station must be mounted on a vertical wall (or a pole).

Fig. 3
The weather station must be mounted in the horizontal transverse direction (horizontally).

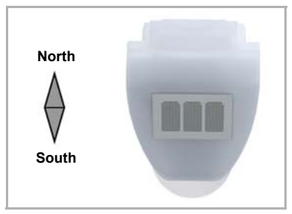


Fig. 4
For installation in the northern hemisphere, the weather station must be aligned to face south.

For installation in the southern hemisphere, the weather station must be aligned to face north.

2.2. Mounting the weather station

2.2.1. Attaching the mount

The weather station comes with a combination wall/pole mount. The mount comes adhered by adhesive strips to the rear side of the housing.

Fasten the holder vertically to the wall or pole.

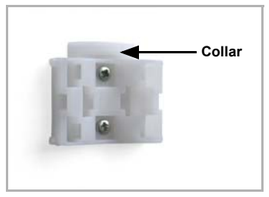


Fig. 5
For wall mounting: Flat side to the wall, crescent moon-shaped crosspiece facing up.

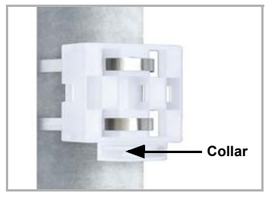


Fig. 6
For pole mounting: curved side to the pole, crosspiece facing down.

Fig. 7
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.

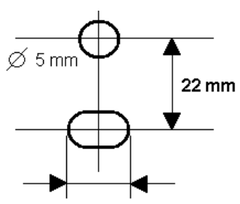
Fig. 8
Example use of the hinge arm mounting: With the hinge arm mounting, the weather station projects from beneath the roof overhang. Sun, wind and precipitation can act upon the sensors without hindrance.

Fig. 9
Example use of the hinge arm mounting: Fitting to a pole with worm drive hose clips

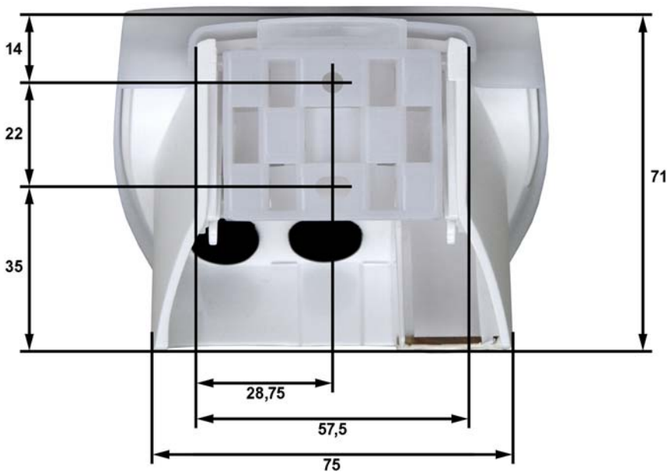
2.2.2. Rear view and drill sketch

Fig. 10 a+b
Drill sketch.

Dimensions of the rear side of the housing with holder, dimensions in mm. Divergences are possible for technical reasons.



Oblong hole 7,5 x 5



2.2.3. Weather station layout

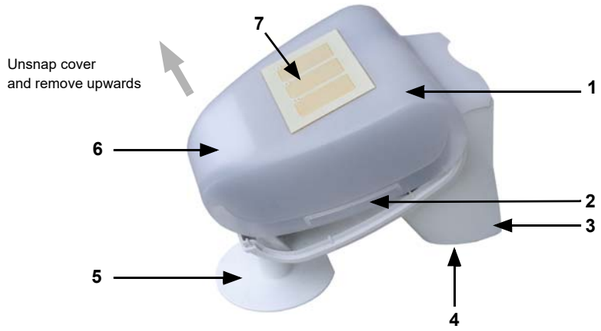


Fig. 11
1 Cover
2 Cover snaps
3 Bottom part of housing
4 Temperature sensor
5 Wind sensor
6 Brightness sensor
7 Rain sensor

2.2.4. Connection of the weather station

The weather station lid with the rain sensor latches into place on the lower edge to the right and left (see figure). Remove the lid from the weather station. Proceed carefully to avoid tearing off the cable connection between the circuit board in the lower section and the rain sensor in the lid (cable with plug).

Lead the cable for the voltage supply and bus connection through the rubber seals on the bottom of the weather station and connect Voltage and Bus +/- to the terminals provided.

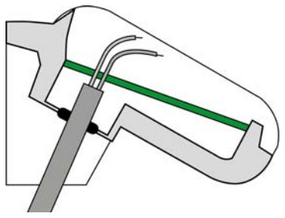


Fig. 12
Remove the cable shielding under the circuit board and only feed the connector cables upwards through the openings in the circuit board.

2.2.5. Layout of the circuit board

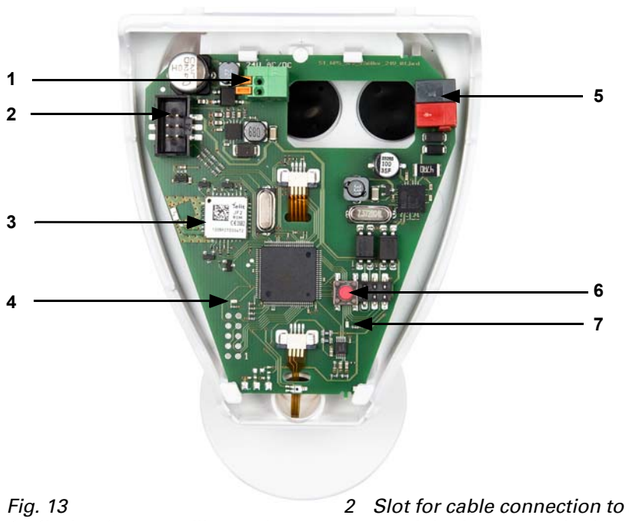


Fig. 13
1 Spring-force auxiliary voltage terminal. Suitable for solid conductor up to 1.5 mm² or fine wire conductor. Terminal configuration independent from polarity (+/- or -/+).
2 Slot for cable connection to the precipitation sensor in the casing lid
3 GPS antenna
4 Signal LED
5 KNX terminal +/-
6 Program button for setting up device
7 Program LED

2.2.6. Mounting the weather station

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”.

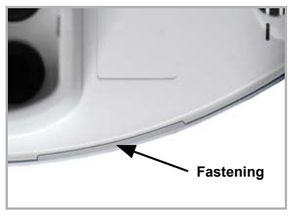


Fig. 14
Make sure the cover and bottom part are properly snapped together! This picture is looking at the closed sensor from underneath.

Fig. 15
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 weather station can be simply pulled upwards out of the mount, against the resistance of the fastening.

2.3. Notes on mounting and commissioning

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

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

Please take care not to damage the temperature sensor (small blank at the bottom part of the housing.) when mounting the weather station. Please also take care not to break away or bend the cable connection between the blank and the rain sensor when connecting the weather station.

Remove all existing protection labels after installation.

The measured wind value and thus all other wind switching outputs may only be supplied 60 seconds after the supply voltage has been connected.

After the auxiliary voltage has been applied, the device will enter an initialisation phase lasting a few seconds. During this phase no information can be received or sent via the bus.

Addressing of the device at the bus

The device is supplied with the bus address 15.15.250. You can program another address into the ETS by overwriting the 15.15.250 address or by teaching via the programming key on the circuit board inside the housing.

3. Maintenance

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.