

Suntracer KNX-GPS light Weather Station

Technical specifications and installation instructions

Item numbers
3090 (230 V AC),
3094 (12...40 V DC, 12...28 V AC)



1. Description

The **Weather Station Suntracer KNX-GPS light** measures temperature, wind speed and brightness. It perceives precipitation and receives the GPS signal for time and position. Furthermore, the exact position of the sun (azimuth and elevation) is calculated on the basis of location coordinates and time.

ATTENTION

The calculation of the position of the sun is optimised for UTC -1...+3. The device therefore may only be applied within Europe. For other time zones, please use Suntracer KNX-GPS Weather Station.

All data may be used for the control of switching outputs which depend on threshold values. The states may be linked by means of AND and OR logic gates. The compact housing of **Suntracer KNX-GPS light** stores the sensor system, the evaluation electronics and the electronics of the bus connection.

Functions:

- Brightness and position of the sun:** The current light intensity is measured by means of a sensor. At the same time, Suntracer KNX-GPS light calculates the position of the sun (azimuth and elevation) on the basis of time and location
- Wind measurement:** The measurement of wind speed is accomplished electronically and thus noiseless and reliable even in case of hail, snow and minus temperature. Air swirls and up-draught in the radius of the weather station are collected, too
- Precipitation perception:** The surface of the sensor is heated so that only drops and flakes are recognised as precipitation but not fog or dew. If it stops raining or snowing, the sensor dries quickly and the precipitation message ends
- Temperature measurement**
- Week and calendar time switch:** The weather station receives time and date from the integrated GPS receiver. The week time switch operates up to 4 different periods each day. With the calendar time switch, you may determine 3 additional periods where the time switch accomplishes up to 2 activations and deactivations each day. The Switching outputs can be used as communication objects. The switching times are set by parameter or via communication objects
- Threshold values** for all measured and calculated values can be set by parameter or via communication objects
- 8 AND and 8 OR logic gates** with each 4 inputs. Every switching incident as well as 8 logic inputs (in the form of communication objects) may be used as inputs for the logic gates. The output of each gate may optionally be configured as 1 bit or 2 x 8 bits

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 specifications

Housing	Plastic material
Colour	White / translucent
Mounting	On-wall
Protection category	IP 44
Dimensions	approx. 96 x 77 x 118 (W x H x D, mm)
Weight	230 V AC version: approx. 240 g, 12...40 V DC, 12...28 V AC version: approx. 170 g
Ambient temperature	Operation -30...+50°C, Storage -30...+70°C
Operating voltage	Available for 230 V AC or for 12...40 V DC (12...28 V AC). An appropriate power supply unit can be obtained from Elsner Elektronik.
Auxiliary current	230 V AC version: max. 20mA 12...40 V DC, 12...28 V AC version: 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 terminal plug
BCU type	Own micro controller
PEI type	0
Group addresses	max. 254
Allocations	max. 255
Communication objects	222
Heating rain sensor	approx. 1.2 W
Measurement range temperature:	-40...+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)	±35%

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.

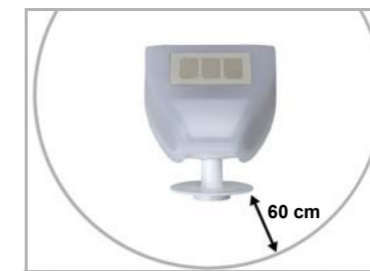


Fig. 1
There must be at least 60 cm of space below, to the sides and in front of the weather station left from other elements (structures, construction parts, etc.).

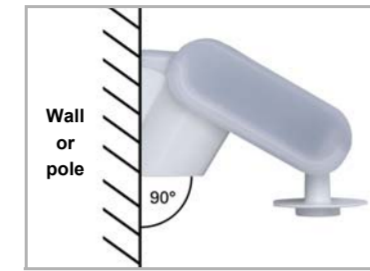


Fig. 2
The weather station must be mounted on a vertical wall (or a pole).



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

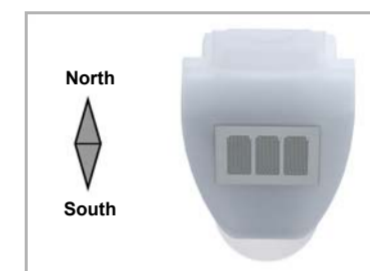


Fig. 4
For installation in the northern hemisphere, the weather station must be aligned to face south.

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.

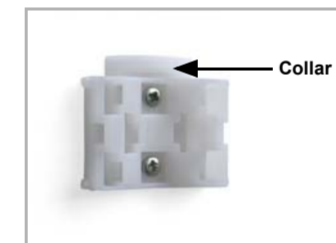


Fig. 5
For wall mounting: Flat side to the wall, crescent moon-shaped crosspiece facing up.

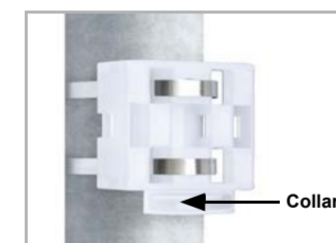


Fig. 6
For pole mounting: curved side to the pole, crosspiece facing down.



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.

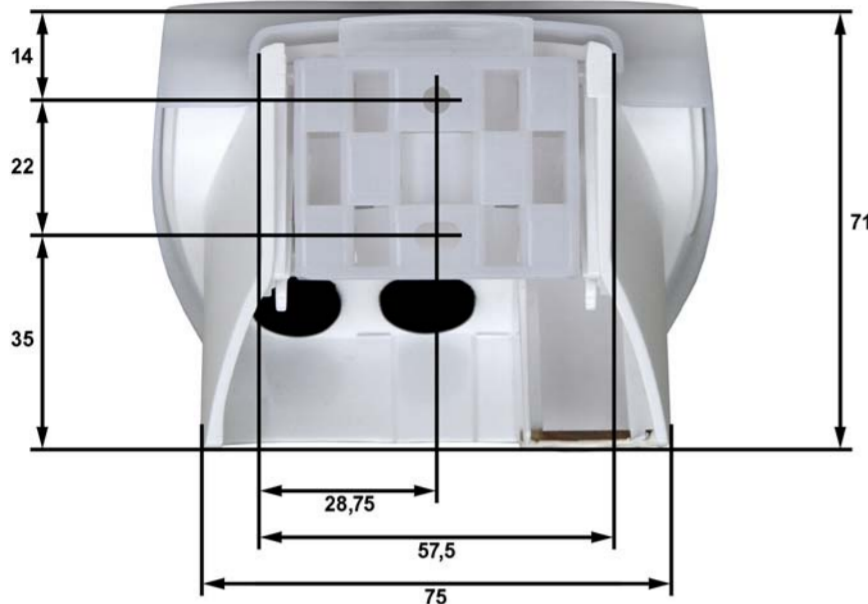
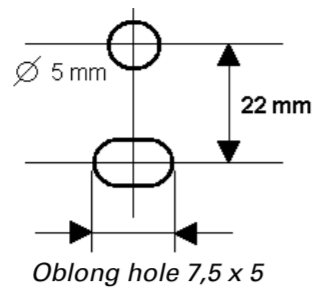


Fig. 9
Example use of the hinge arm mounting: Fitting to a pole with worm drive hose clips

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.



2.2.3. Weather station layout

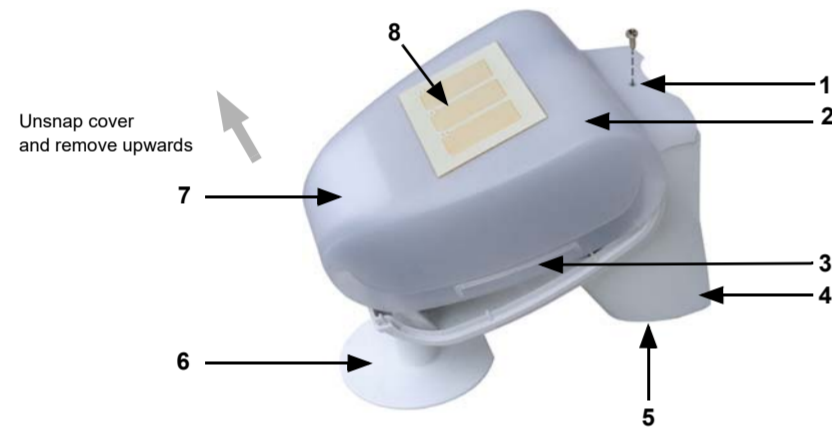


Fig. 11
1 Screw-on cover (230V device)
2 Cover
3 Cover snaps
4 Bottom part of housing
5 Temperature sensor
6 Wind sensor
7 Brightness sensor
8 Rain sensor

2.2.4. Connection of the weather station

The weather station cover with the rain sensor snaps in on the left and right along the bottom edge (see Fig.). Remove the weather station 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 (soldered cable connection in case of 230 V AC version, cable with plug in case of 12...40 V DC, 12...28 V AC version).

Push the power supply and bus connection cable through the rubber seal on the bottom of the weather station and connect voltage and bus +/- to the provided clamps.

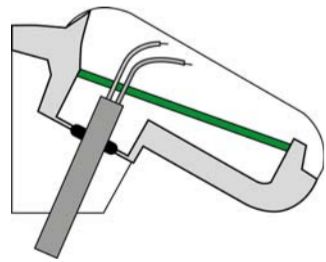


Fig. 12
Remove the cable shielding under the circuit board and only feed the connector cables upwards through the openings in the circuit board.

For 12...40 V DC, 12...28 V AC devices the connection cable must be plugged in between the cover and circuit board.

2.2.5. PCB layout

12...40 V DC, 12...28 V AC version

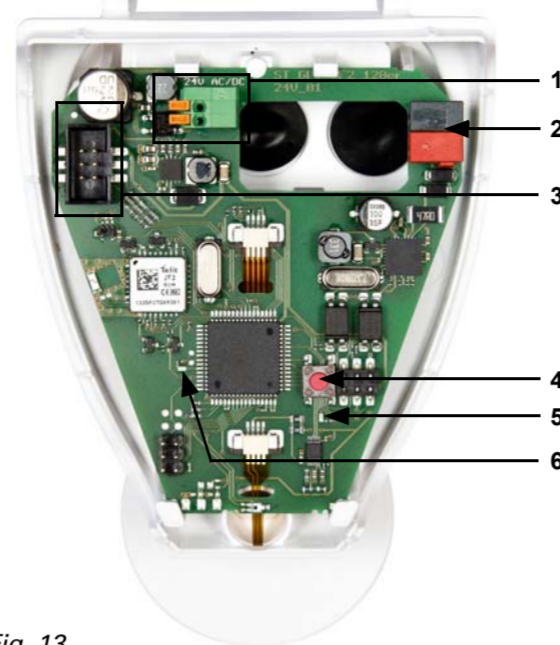


Fig. 13

- 1 Tension clamp for auxiliary voltage supply (12...40 V DC, 12...28 V AC). For massive conductors of up to 1.5 mm² or conductors with fine wires. Terminal configuration independent from polarity (+/- or -/+).
- 2 KNX clamp +/-
- 3 Slot for cable connection to the rain sensor in the housing cover
- 4 Programming pushbutton for the teach-in of the device
- 5 Programming LED
- 6 Control LED GPS reception. Depending on the parameter setting in the ETS, the LED blinks 1x per second to show GPS reception or it stays "always off". After the auxiliary supply voltage has been connected, it may take some minutes before reception is established.

230 V AC version

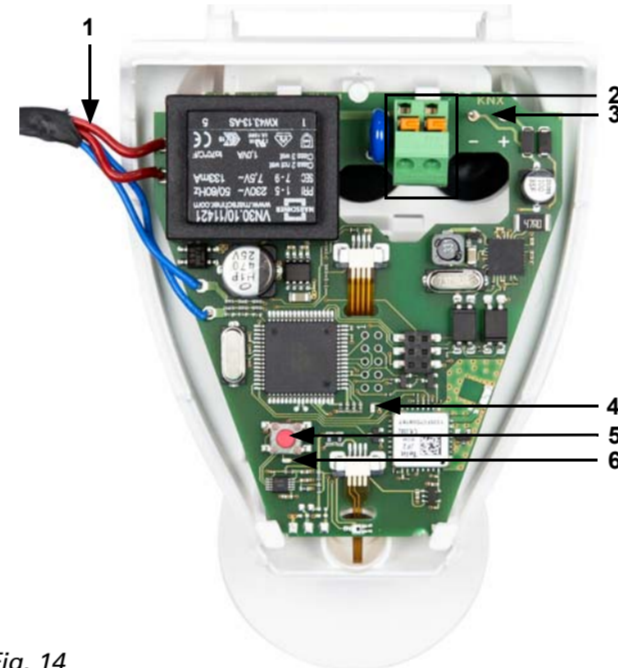


Fig. 14

- 1 Slot for cable connection to the rain sensor in the housing cover
- 2 Tension clamp for power supply (230 V AC). For massive conductors of up to 1.5 mm² or conductors with fine wires.
- 3 KNX clamp +/-
- 4 Control LED GPS reception. Depending on the parameter setting in the ETS, the LED blinks 1x per second to show GPS reception or it stays "always off". After the auxiliary supply voltage has been connected, it may take some minutes before reception is established.
- 5 Programming pushbutton for the teach-in of the device
- 6 Programming 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".

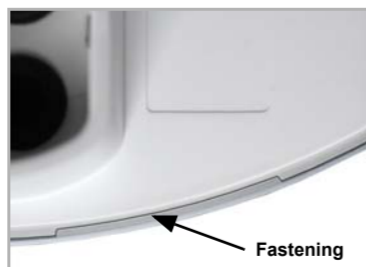


Fig. 15
Make sure the cover and bottom part are properly snapped together! This picture is looking at the closed sensor from underneath.



Fig. 16
With the 230V model, screw the cover on to the underpart, to prevent unauthorised or accidental opening.



DANGER!

There is a risk to life from the live voltage on a 230 V device!
• The cover must be screwed on in operation.



Fig. 17
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.

3. 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.

4. Maintenance



DANGER!

There is a risk to life from the live voltage (mains voltage)!
If you come into contact with live components in the device, (e.g.

caused

also by a jet of water) there is the risk of an electric shock with 230 V devices.

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 (e.g. switch off or remove the fuse).

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.