



# Suntracer KNX-GPS

Weather Station

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**Technical specifications and installation instructions**



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# 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.
- **Switching outputs** for all measured and calculated values (threshold values can be set via parameters or communications 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 **programme file** (format VD), the data sheet and the manual can be downloaded from the Elsner Elektronik homepage on [www.elsner-elektronik.de](http://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 20 V AC 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 following standards have been considered for the evaluation of the product in terms of electro magnetic compatibility:

Transient emissions:

- EN 60730-1:2000 Section EMV (23, 26, H23, H26) (threshold category: B)
- EN 50090-2-2:1996-11 + A1:2002-01 (threshold category: B)
- EN 61000-6-3:2001 (threshold category: B)

Interference resistance:

- EN 60730-1:2000 Section EMV (23, 26, H23, H26)
- EN 50090-2-2:1996-11 + A1:2002-01
- EN 61000-6-1:2004

The product has been tested for the above mentioned standards by an accredited EMV laboratory.

## 2. Installation and commissioning

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### 2.1. Notes on installation

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**Installation, inspection, commissioning and troubleshooting of the device must only be carried out by a competent electrician.**

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Disconnect all lines to be assembled, and take safety precautions against accidental switch-on.

The device is exclusively intended for appropriate use. With each inappropriate change or non-observance of the instructions for use, any warranty or guarantee claim will be void.

After unpacking the device, check immediately for any mechanical damages. In case of transport damage, this must immediately notified to the supplier.

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**If damaged, the device must not be put into operation.**

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If an operation without risk may supposedly not be guaranteed, the device must be put out of operation and be secured against accidental operation.

The device must only be operated as stationary system, i.e. only in a fitted state and after completion of all installation and start-up works, and only in the environment intended for this purpose.

Elsner Elektronik does not assume any liability for changes in standards after publication of this instruction manual.

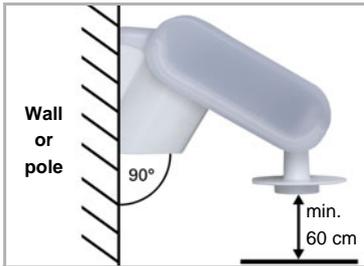
#### 2.1.1. Installation position

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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. There must be at least 60 cm of free space underneath the weather station to allow it to measure the wind correctly and to prevent it from being snowed in when it snows. 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*

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



*Fig. 2*

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

## **2.1.2. Mounting the weather station**

### **2.1.3. 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.

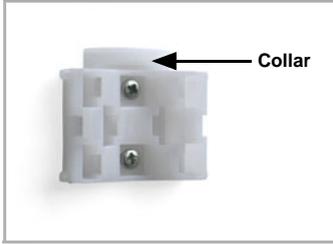


Fig. 3

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

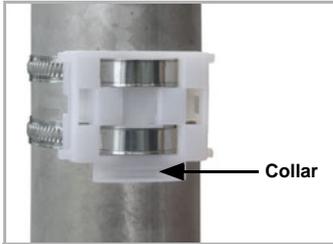


Fig. 4

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

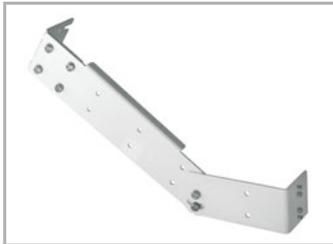


Fig. 5

A hinge arm mounting is available from Elsner Elektronik as an additional, optional accessory for flexible installation of the weather station on wall, pole or beam.



Fig. 6

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.

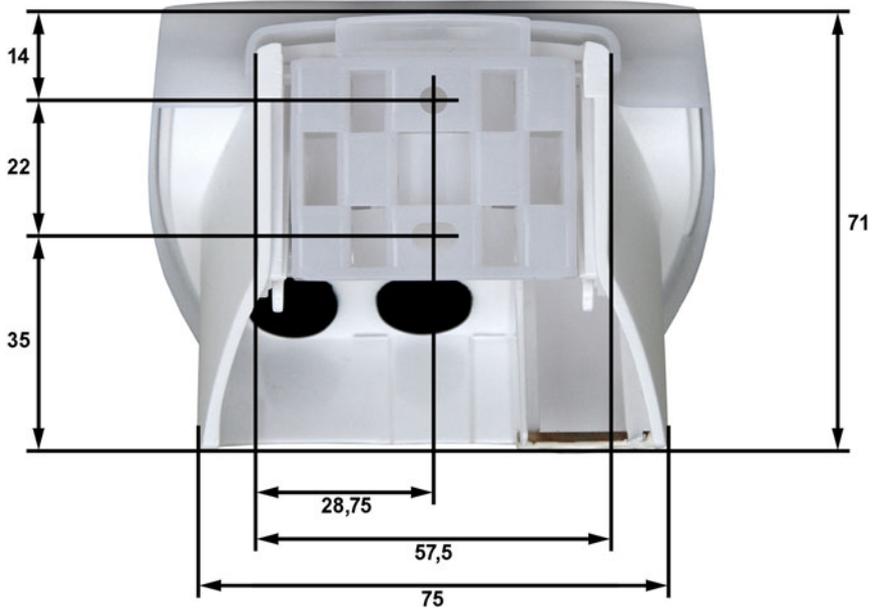
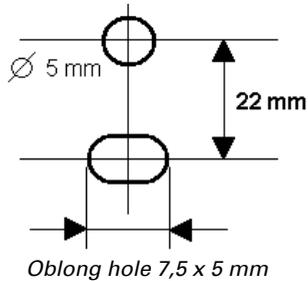


Fig. 7  
Example use of the hinge arm mounting:  
Fitting to a pole with worm drive hose clips

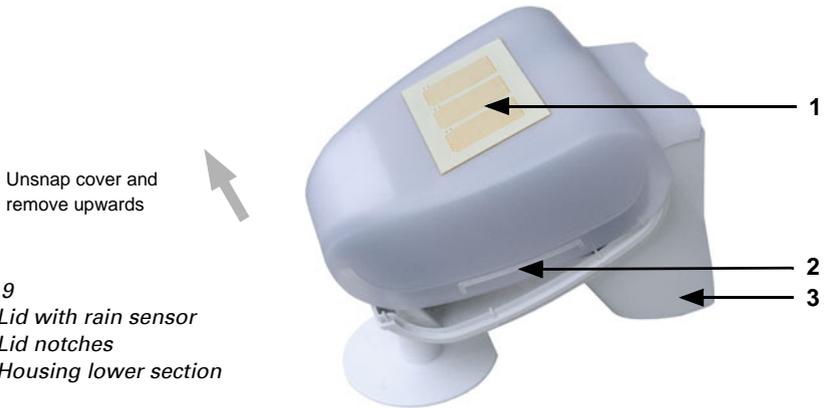
#### 2.1.4. Rear view and drill sketch

Fig. 8 a+b  
Drill sketch.

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



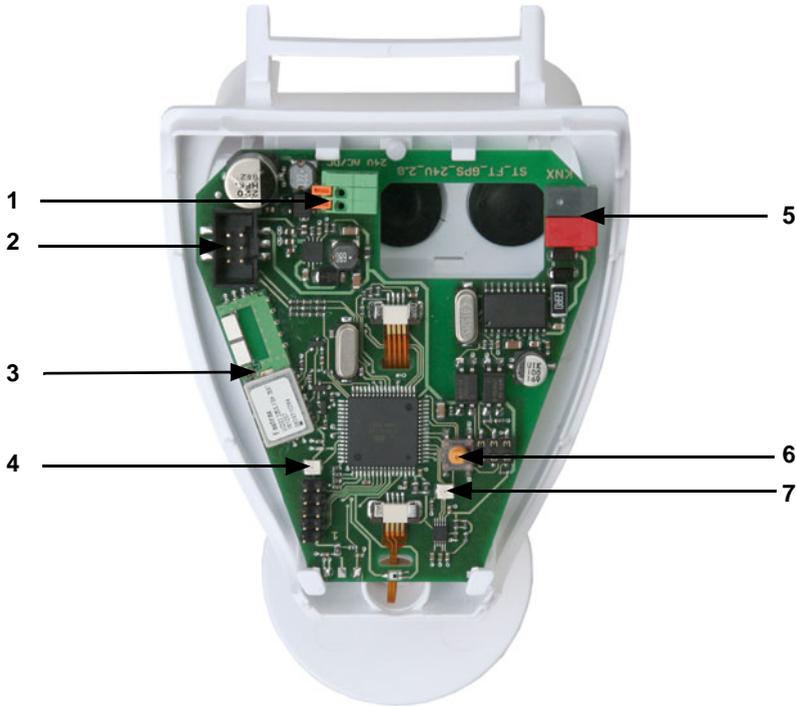
### 2.1.5. Preparing the weather station



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 L/N and Bus +/- to the terminals provided.

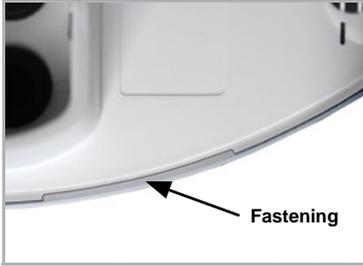
### 2.1.6. Layout of the circuit board



- 1 *Spring-force auxiliary voltage terminal, suitable for solid conductor up to 1.5 mm<sup>2</sup> or fine wire conductor*
- 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 the device*
- 7 *Program LED*

### 2.1.7. 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. 10*  
Make sure the cover and bottom part are properly snapped together! This picture is looking at the closed sensor from underneath.



*Fig. 11*  
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.

## 2.2. 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 5 seconds. During this phase no information can be received via the bus.

## 3. Maintenance

The sensor 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.



**As a precaution, the device should always be separated from power supply for maintenance works (e.g. deactivate or remove fuse).**

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