Suntracer KNX sl light

Weather Station

Technical specifications and installation instructions

Item number 70155

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1. Description

The **Weather Station Suntracer KNX sl light** for the KNX building bus system 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 limit dependent switching outputs. States can be linked via AND logic gates and OR logic gates. Multi-function modules change input data as required by means of calculations, querying a condition, or converting the data point type.
The integrated shade control system allows intelligent sun protection control of up to 5 façades.

The compact housing of the **Suntracer KNX sl light** accommodates the sensors, evaluation circuits and bus-coupling electronics.

Functions:

- **Brightness measurement**(current light strength)
- **GPS receiver**, outputting the current time and location coordinates. The **Weather Station Suntracer KNX sl light** also computes the position of the sun (azimuth and elevation)
- **Shade control** for up to 5 façades
- **Wind measurement**: The wind strength is measured electronically and thus noiselessly and reliably, even during hail, snow and sub-zero temperatures. Even turbulent air and rising winds in the vicinity of the device are recorded
- **Precipitation detection**: 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**
- Frost protection for shading systems
- **Weekly and calendar time switch**: All time switching outputs can be used as communication objects.
  The **weekly time switch** has 24 periods. Each period can be configured either as an output or as an input. If the period is an output, then the switching time is set per parameter or per communication object.
  The **calendar time switch** has 4 periods. Two on/off switching operations, which are executed daily, can be set for each period
- **Switching outputs** for all measured and computed values. Threshold values can be adjusted per parameter or via communication objects
- **8 AND and 8 OR logic gates**, each with 4 inputs. 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 configured optionally as 1-bit or 2 x 8-bit
- **8 multi-function modules** (computers) for changing the input data by calculations, by querying a condition or by converting the data point type
- **Summer compensation** for cooling systems. A characteristic curve matches the target temperature in the room to the external temperature and sets the minimum and maximum target temperature values.

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.

1.0.1. Deliverables

- Weather station
- Stainless steel installation band for pole installation
- 4×50 mm stainless steel roundhead screws and 6×30 mm dowels for wall mounting. Use fixing materials that are suitable for the base!

1.1. Technical specification

Housing	Plastic
Colour	White / Translucent
Assembly	Surface mount
Protection category	IP 44
Dimensions	approx. 62 × 71 × 145 (W × H × D, mm)
Weight	approx. 85 g
Ambient temperature	Operation -30…+50°C, storage -30…+70°C
Auxiliary supply	12…40 V DC, 12…28 V AC. An appropriate power supply unit can be purchased from Elsner Elektronik.
Auxiliary current	at 12V DC: max. 185 mA at 24V DC: max. 90 mA at 24V AC: max. 82 mA
Bus current	max. 10 mA
Data output	KNX +/-
BCU type	Integrated microcontroller
PEI type	0
Group addresses	max. 2000
Assignments	max. 2000
Communication objects	864
Temperature sensor:	
Measurement range	-30°C … +50°C
Resolution	0.1°C
Accuracy	±0.5°C at -30°C … +25°C ±1.5°C at -30°C … +45°C
Wind sensor:	
Measurement range	0 m/s … 35 m/s
Resolution	0.1 m/s
Accuracy	±15% of the measurement value when incoming flow is 45°…315° (Frontal incoming flow corresponds to 180°)
Brightness sensor:	

Measurement range	0 lux ... 150,000 lux
Resolution	1 lux at 0…255 lux 4 lux at 256…2,645 lux 163 lux at 2,646…128,256 lux 762 lux at 128,257…150,000 lux
Accuracy	±15% of the measurement value at 35 lux ... 150,000 lux

The product conforms with the provisions of EU directives.

2. Installation and start-up

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. Installation location

Select an installation position on the building where the sensors can measure wind, rain and sunshine without hindrance. No structural elements should be mounted above the weather station, from which water could continue to drop on the precipitation sensor even after it has stopped raining or snowing. The weather station should not be shaded by structures or, for example, trees.

At least 60 cm of clearance must be left around the device. This facilitates correct wind speed measurement without eddies. At the same time, this prevents spray (raindrops hitting the device) or snow (snow penetration) from impairing the measurement. This also prevents birds from biting it.

Please ensure that the extended awning does not cast shade on the unit, and that it is protected from the wind.

Temperature measurements can also be distorted by external influences such as 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 interference fields from electrical consumers (e.g. fluorescent lamps, neon signs, switch mode power supplies etc.) can block or interfere with the reception of the GPS signal.

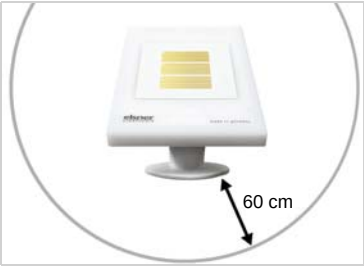


Fig. 1
There must be at least 60 cm clearance to other elements (structures, construction parts, etc.) below, to the sides and in front of the device.

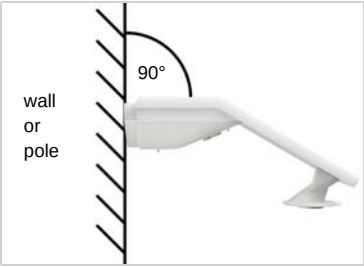


Fig. 2
The device must be attached to a vertical wall (or a pole).

Fig. 3
The device must be mounted in the horizontal (transverse) direction.

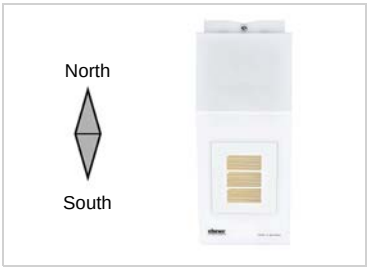


Fig. 4
For installation in the northern hemisphere, the device must be aligned to face south.

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

2.3. Device design

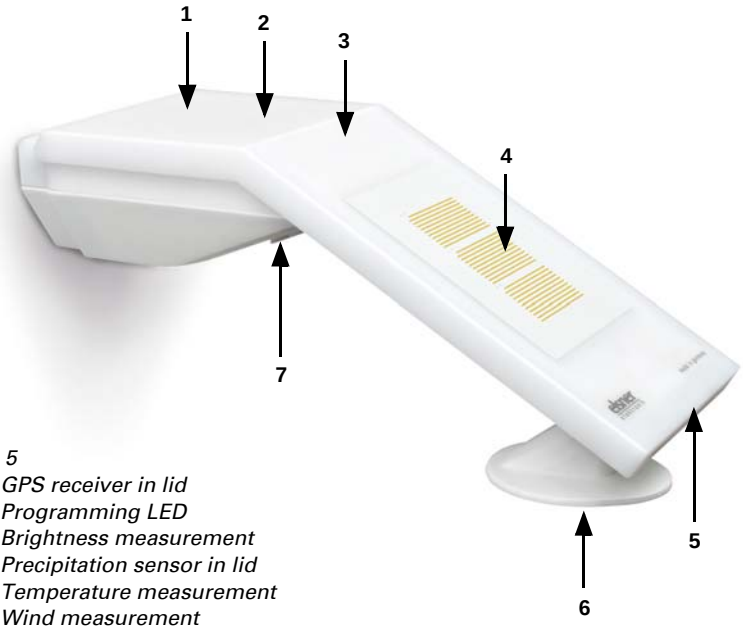


Fig. 5

1 *GPS receiver in lid*
2 *Programming LED*
3 *Brightness measurement*
4 *Precipitation sensor in lid*
5 *Temperature measurement*
6 *Wind measurement*
7 *Programming key on the underside of the housing (recessed),* see *Addressing the equipment, page 12*

ATTENTION!
Sensitive wind sensor.
- Remove the protective transport sticker after installation.
- Do not touch the sensor on the wind measuring element (no. 6).

2.4. Installing the weather station

ATTENTION!
Even a few drops of water can damage the device electronics.
- Do not open the device if water (e.g. rain) can get into it.

2.4.1. Preparation for installation

Fig. 6
Slacken both screws on the lid (top) and lower part (bottom) with a Phillips screwdriver.

Fig. 7
Pull the lid and lower part completely apart. This also releases the plug-in connection between the board in the lid and the socket in the lower part.

2.4.2. Fitting the lower part with mounting

Now, first of all, assemble the lower part of the housing with the integrated mounting for wall or pole installation.

Wall installation

Use fixing materials (dowels, screws) that are suitable for the base.

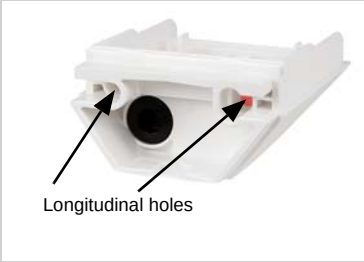
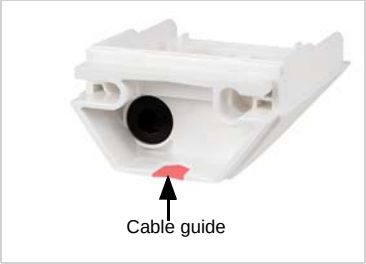


Fig. 8
The device is installed with two screws. Break off the two longitudinal holes in the lower part of the housing.

Fig. 9 a+b

a) If the power lead is to be hidden when installed, it must emerge from the wall in the vicinity of the rear of the housing (marked area).



b) If the power lead is to be surface-mounted, the cable guide is broken off. The lead is then fed into the device at the underside of the housing.

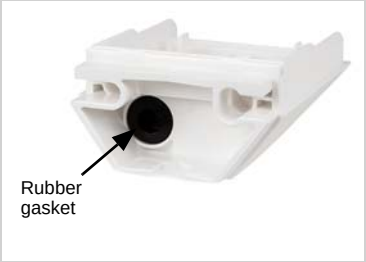


Fig. 10
Feed the power lead through the rubber gasket.

Drilling plan

ATTENTION! The printout of the data sheet does not have original size! A separate, dimensionally correct drilling plan is included ex works and this can be used as a template.

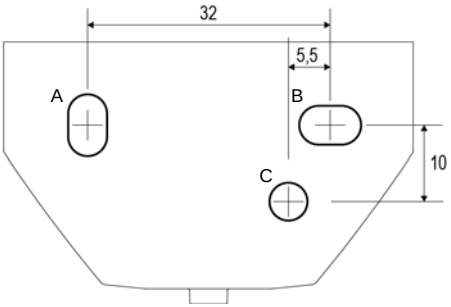


Fig. 11
Dimensions in mm. Variations are possible for technical reasons

A/B 2× longitudinal holes 8 mm × 5.5 mm
C Position of the cable outlet (rubber gasket) in the housing

Pole installation

The device is installed on the pole with the enclosed stainless steel mounting band.

Fig. 12
Feed the mounting band through the eyelets in the lower part of the housing.

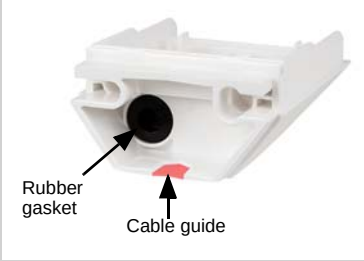


Fig. 13
Break the cable guide off.

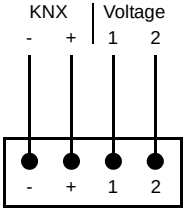
Feed the power lead through the rubber gasket.

2.4.3. Connection

The connector is in the lower part of the housing.

Fig. 14
Connect
KNX data (+|-) and
power supply (12...40V DC, 12...28V AC, 1|2)
to the connector.

The terminal assignment of the power supply is polarity-independent.



2.4.4. Closing the installation

Fig. 15
Push the lid on the lower part. This also makes the plug-in connection between the board in the lid and the socket in the lower part.

Fig. 16
Screw the lid (top) and lower part (bottom) together.

2.5. Instructions for assembly and initial start-up

Remove all transport protection stickers present after installation.

The wind measurement value and thus also all wind switching outputs cannot be output until 35 seconds after the power is turned on.

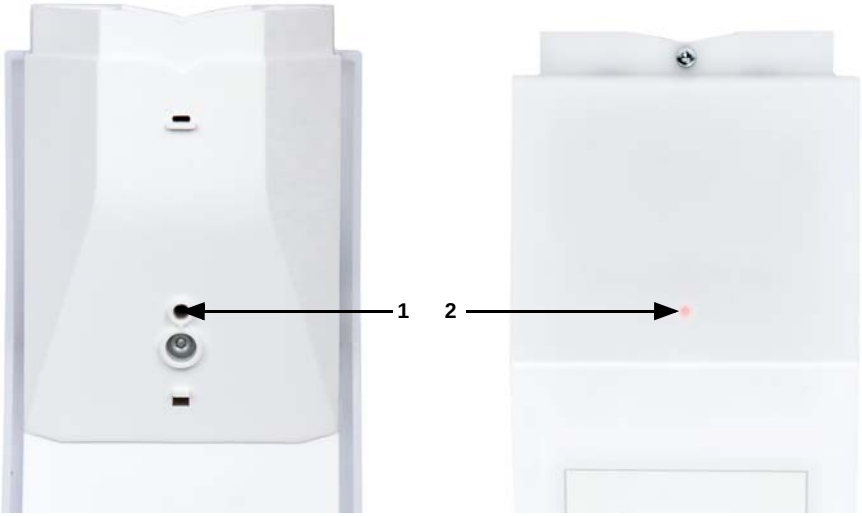
After the auxiliary voltage has been applied, the device will enter an initialisation phase lasting a few seconds. During this phase no information can be received or sent via the bus.

3. Addressing the equipment

The equipment is delivered ex works with the bus address 15.15.250. You program a different address in the ETS by overwriting the address 15.15.250 or teach the device using the programming button.

The programming button can be reached through the opening on the underside of the housing; it is recessed by approx. 15 mm. Use a thin object to reach the key, e. g. a 1.5 mm² wire.

Fig. 17
1 Programming button for teaching the device
2 Programming LED (under the semi-transparent lid)



4. 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.