KNX PY

Pyranometer

Technical specifications and installation instructions

Item number 70157

1.   Description

The **Pyranometer KNX PY** measures global irradiance, which is perceived as heat. The measured current irradiance (watts per squaremetre) allows for drawing conclusions on the energy input to an area during a defined period of time (kilowatt hours per squaremetre). Both values can be read out by the **KNX PY**. Four switching outputs with adjustable threshold values as well as additional AND and OR logic gates are available.The sensor system, the evaluation electronics and the electronics of the bus connection are mounted in a compact housing.

Functions:
- **Measurement of global irradiance**: The current irradiance is measured (W/m^2). The energy input to an area during a defined period of time can be read out (kWh/m^2)
- **4 switching outputs** with adjustable threshold values (Threshold values can be set by parameter or via communication objects)
- **2 AND and 2 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 homepage on **www.elsner-elektronik.de** in the "Service" menu.

1.1. Scope of delivery
- Pyranometer with combined wall/pole mounting
- 2 mounting brackets for pole mounting (Ø 40-60 mm)

1.2. Technical specifications

Housing	Plastic material
Colour	White / Transparent
Mounting	On-wall
Protection category	IP 44
Dimensions	approx. 96 × 77 × 118 (W × H × D, mm)
Weight	approx. 145 g
Ambient temperature	Operation -25…+85°C, storage -30…+85°C
Operating voltage	KNX bus voltage
Bus current	max. 7 mA, max. 10 mA when programming LED is active
Data output	KNX +/- bus terminal plug
BCU type	Own micro controller
PEI type	0
Group addresses	max. 200

Allocations	max. 200
Communication objects	52
Measurement range	0…2500 W/m² 0…2196 kWh/m²
Measurement range	5 W/m² 0.1 kWh/m²
Accuracy	± 15% of the measured value at above 150 W/m²

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.

2.2. **Location**

Select an assembly location at the building where sun may be collected by the sensors unobstructedly. The sensor may not be shaded by the building or for example by trees.

At least 60 cm of clearance must be left all round the device. Concurrently, the prevents spray (raindrops hitting the device) or snow (snow penetration) from impairing the measurement. It also does not allow birds to bite it.
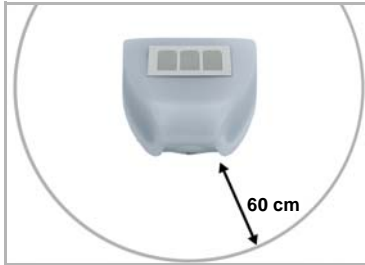

Fig. 1
There must be at least 60 cm of space below, to the sides and in front of the sensor left from other elements (structures, construction parts, etc.).
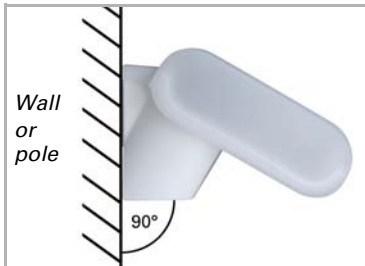
Fig. 2
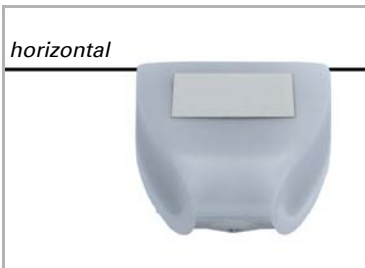*The sensor must be mounted onto a vertical wall (or pole).*

Fig. 3
The sensor must be mounted horizontally in the lateral direction.

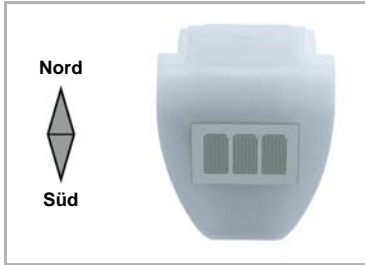Fig. 4
For installation in the northern hemisphere, the sensor must be aligned to face south.

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

2.3. Mounting 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.
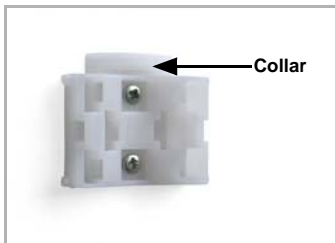
Fig. 5
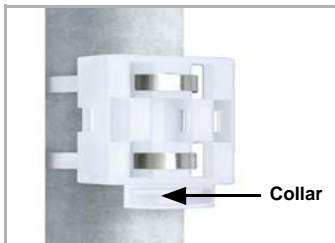When wall mounting: flat side on wall, crescent-shaped collar upward.

Fig. 6
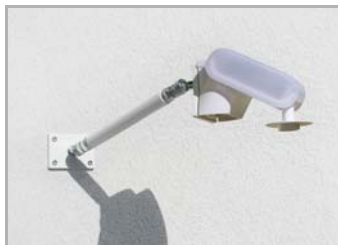When pole mounting: curved side on pole, collar downward.

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 (pictures of sensors exemplary).
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.
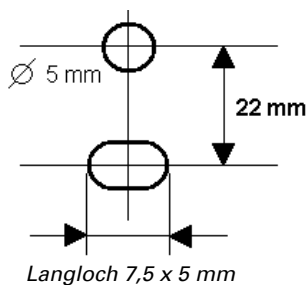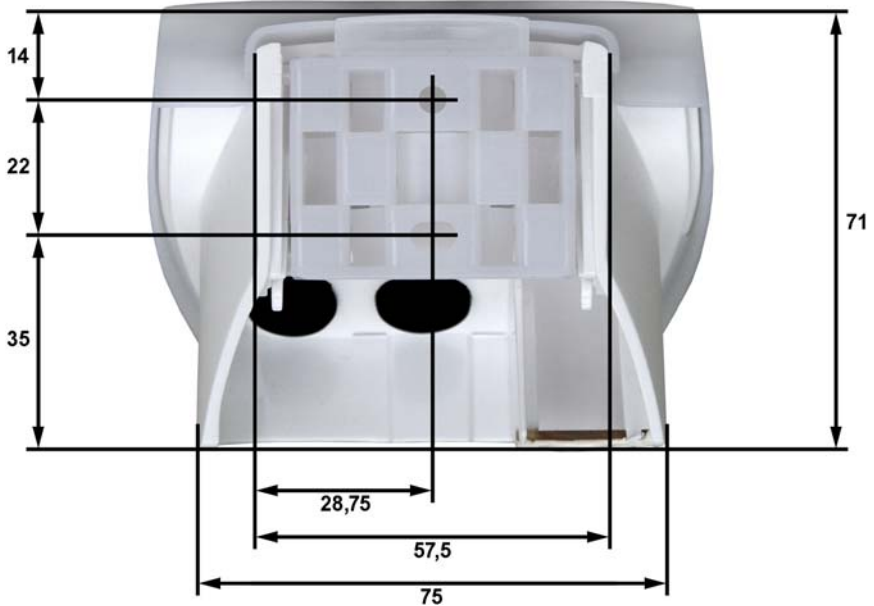

Fig. 9
Example use of the hinge arm mounting:
Fitting to a pole with worm drive hose clips

2.3.2. View of rear side and drill hole plan

Fig. 10 a+b
Drill hole plan

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

⌀ 5 mm

22 mm

Langloch 7,5 x 5 mm

2.3.3. Preparing the sensor

Unsnap cover
and remove upwards

Fig. 11
1   Cover snaps
2   Bottom part of housing

1

2

The sensor cover snaps in on the left and right along the bottom edge (see Fig.).
Remove the cover.
Push the connection cable through the rubber seal on the bottom of the device and
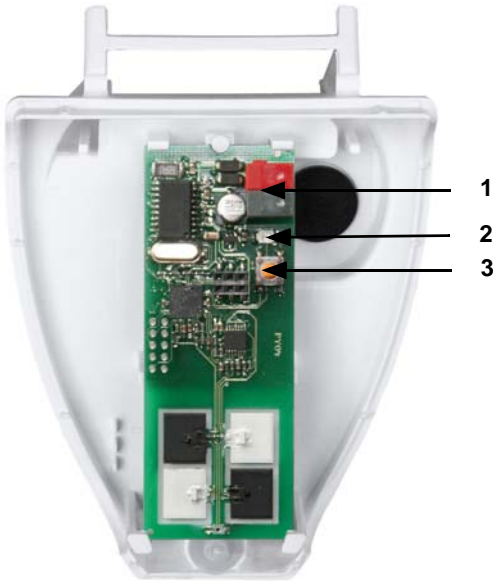connect voltage and data cable to the provided clamps.

2.3.4. PCB layout

Fig. 12
1   KNX clamp +/-
2   Programming LED
3   Programming pushbutton for
    the teach-in of the device

1
2
3

2.3.5. 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".
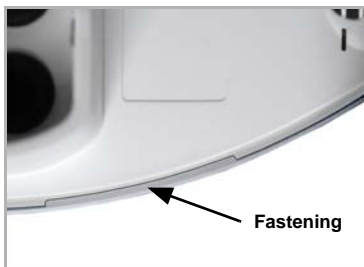

Fig. 13
Make sure the cover and bottom part are properly snapped together! This picture is looking at the closed sensor from underneath.

Fastening

Fig. 14
Push the housing from above into the fas-
tened 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.

After the bus 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

⚠️ **WARNING!**
Risk of injury caused by components moved automatically!
The automatic control can start system components and place people in danger.
• 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.