Pyranometer KNX PY

Technical specifications and installation instructions

Elsner Elektronik GmbH Control and Automation Engineering
Herdweg 7
D – 75391 Gechingen
Germany
Phone +49 (0) 70 56 / 93 97-0
Fax +49 (0) 70 56 / 93 97-20
info@elsner-elektronik.de
www.elsner-elektronik.de

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/m²). The energy input to an area during a defined period of time can be read out (kWh/m²)
- **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 **programme file** (format VD2), the data sheet and the manual 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 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

2.1. Notes on installation

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

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.

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

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.

2.2. 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.

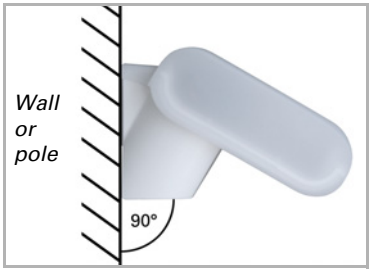


Fig. 1
The sensor must be mounted onto a vertical wall (or pole).

Fig. 2
The sensor must be mounted horizontally in the lateral direction.

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.

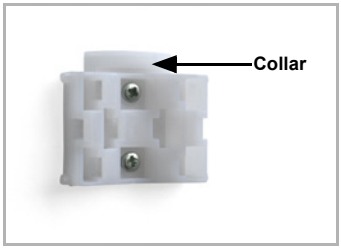


Fig. 3
When wall mounting: flat side on wall, crescent-shaped collar upward.

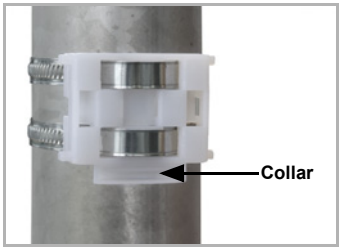


Fig. 4
When pole mounting: curved side on pole, collar downward.

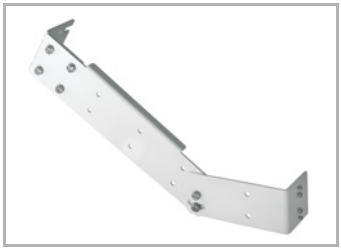


Fig. 5
An additional, optional accessory available from Elsner Elektronik is an articulated arm for flexible wall, pole or beam mounting of the sensor.

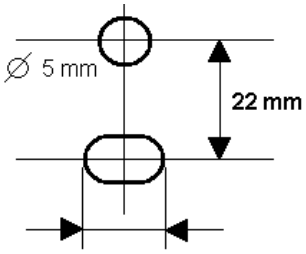
Fig. 6
Example uses of the hinge arm mounting: With the hinge arm mounting, the sensor peeps out from beneath the roof overhang.

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

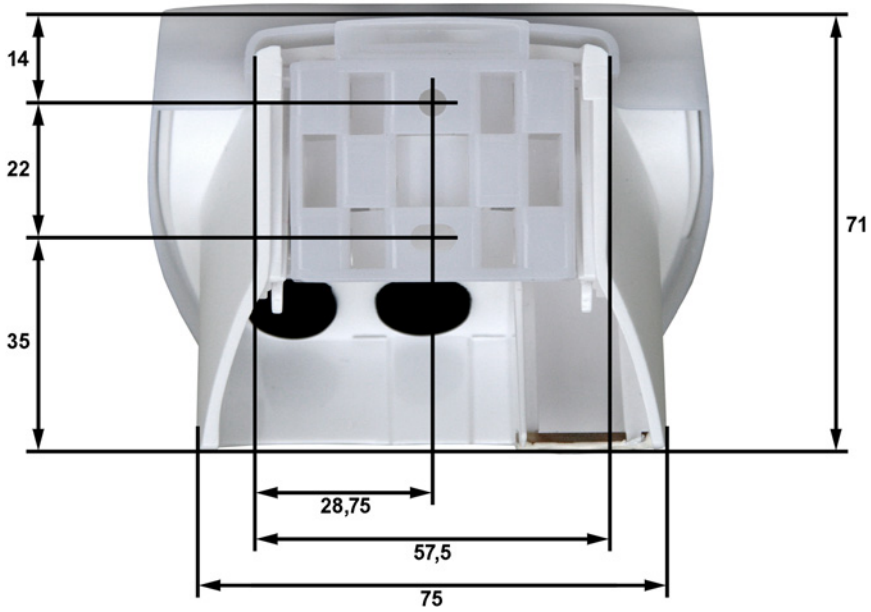
2.3.2. View of rear side and drill hole plan

Fig. 8 a+b
Drill hole plan

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



Langloch 7,5 x 5 mm



2.3.3. Preparing the sensor

Fig. 9
1 Cover snaps
2 Bottom part of housing

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

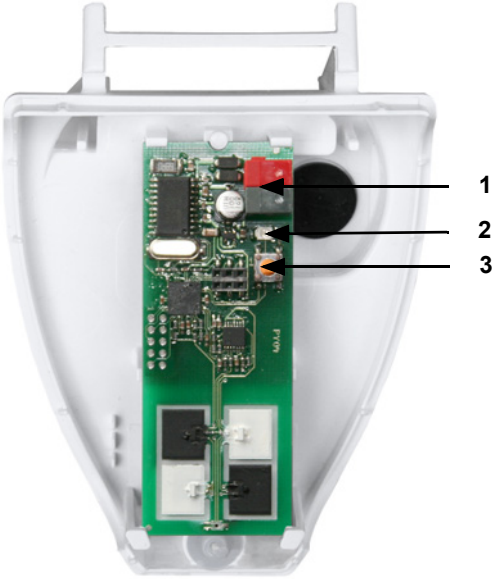


Fig. 10
1 KNX clamp +/-
2 Programming LED
3 Programming pushbutton for the teach-in of the device

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”.

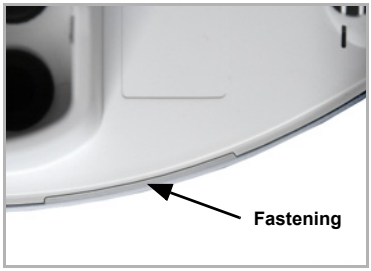


Fig. 11
Make sure the cover and bottom part are properly snapped together! This picture is looking at the closed sensor from underneath.

Fig. 12
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 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 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 bus current for maintenance works.