KNX LW

Brightness and Wind Sensor

Technical specifications and installation instructions

KNX LW 12...40 V DC / 12...28 V AC
No. 70129

KNX LW 230 V
No. 70128

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1. Description

The **Brightness and Wind Sensor KNX LW** measures the intensity of illumination and wind speed and transfers the values to the KNX system. Nine 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:

- **Brightness measurement**: The current light intensity is measured by a sensor
- **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
- **9 switching outputs** with adjustable threshold values (Threshold 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 × 77 × 118 (W × H × 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.
Cable cross-section	Massive conductors of up to 1.5 mm² or conductors with fine wires
Current	230 V AC version max. 20 mA, 12...40 V DC / 12...28 V AC version: at 12 V DC max. 30 mA. max. 0,4 W. residual ripple 10%
Data output	KNX +/- bus terminal plug

BCU type	Own micro controller
PEI type	0
Group addresses	max. 254
Allocations	max. 255
Communication objects	117
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.

DANGER!
Risk to life from live voltage (mains voltage)!
There are unprotected live components within the device.

- VDE regulations and national 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 and wind 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. 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.

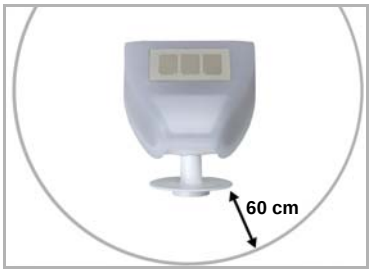


Fig. 1
There must be at least 60 cm of space below, to the sides and in front of the sensor left from other elements (structures, construction parts, etc.).

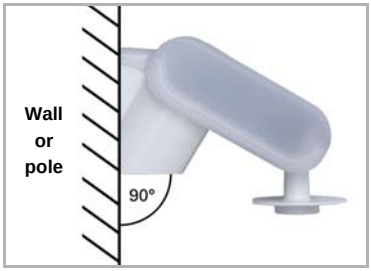


Fig. 2
The brightness/wind sensor must be mounted on a vertical wall (or a pole).

Fig. 3
The brightness/wind sensor must be mounted in the horizontal transverse direction (horizontally).

2.3. Mounting of 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.

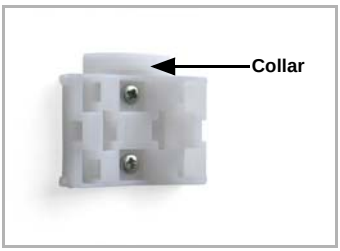


Fig. 4
When wall mounting: flat side on wall, crescent-shaped collar upward.

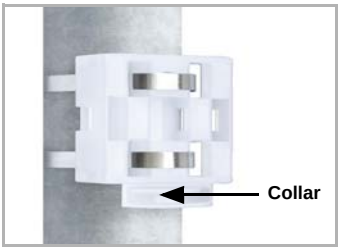


Fig. 5
When pole mounting: curved side on pole, collar downward.

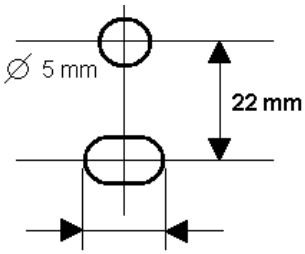
Fig. 6
Different mounting arms are available from Elsner Elektronik as additional, optional accessories for flexible installation of the weather station on a wall, pole or beam.
Example of the use of a mounting arm:
Due to flexible ball joints, the sensor can be brought into ideal position.

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

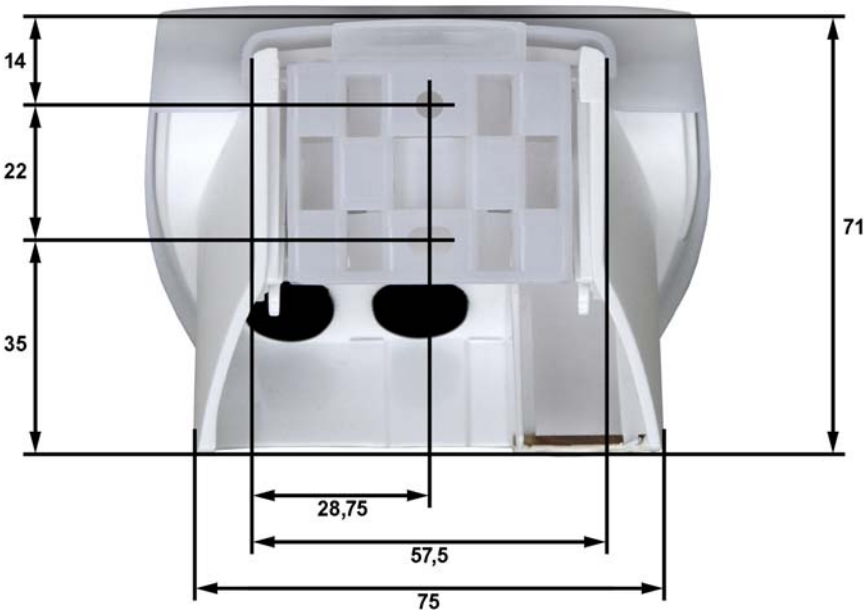
2.3.2. View of rear side and drill hole plan

Fig. 8 a+b
Drill hole plan

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



Slot hole 7,5 x 5 mm



2.3.3. Preparing the sensor

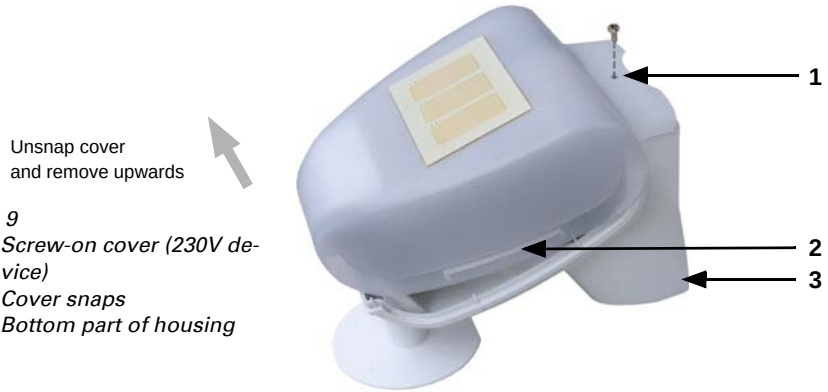


Fig. 9
1 Screw-on cover (230V device)
2 Cover snaps
3 Bottom part of housing

The sensor cover snaps in on the left and right along the bottom edge (see Fig.). The cover of the 230V model is also screwed on top. Remove the cover. Proceed carefully, so as not to pull off the wire connecting the PCB in the bottom part with 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).

Lead the cable for the voltage supply and bus connection through the rubber seals on the bottom of the device and connect Voltage L/N and Bus +/- to the terminals provided.

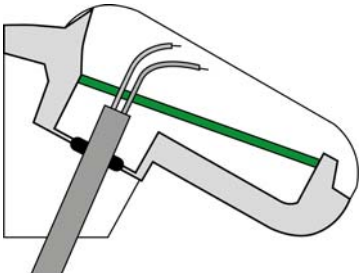


Fig. 10
Remove the cable shielding under the circuit board and only feed the connector cables upwards through the openings in the circuit board.

2.3.4. PCB layout

230 V AC version

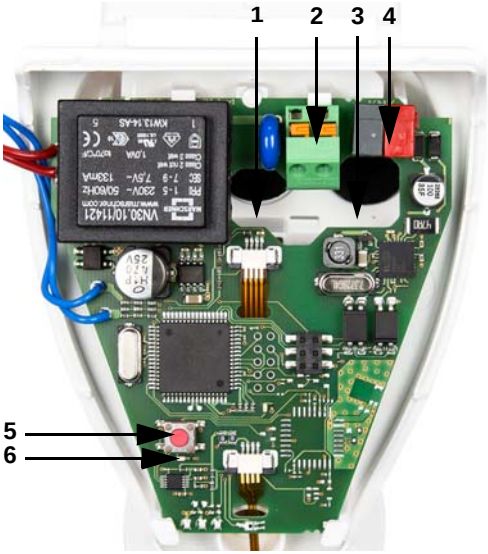


Fig. 11
1 Opening for the cable for the voltage supply
2 Tension clamp for voltage supply (230 V AC), suitable for massive conductors of up to 1.5 mm² or conductors with fine wires
3 Opening for bus cable
4 Slot for KNX clamp +/-
5 Programming pushbutton for the teach-in of the device
6 Programming LED

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

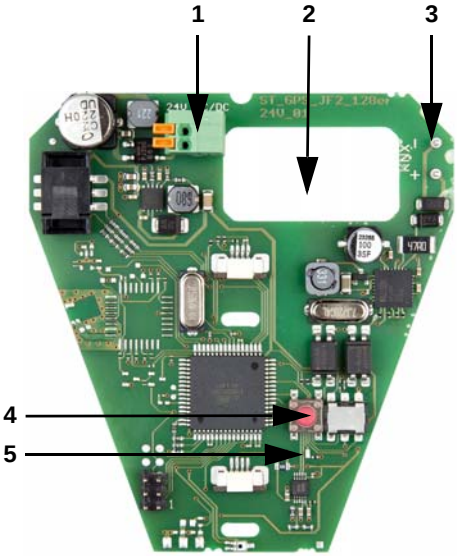


Fig. 12

1 *Tension clamp for voltage supply (12...40 V DC, 12...28 V AC).*
Massive conductors of up to 1.5 mm² or conductors with fine wires. Terminal configuration independent from polarity (+/- or -/+).
2 *Opening for the cable for the voltage supply and for bus cable*
3 *Slot for KNX clamp +/-*
4 *Programming pushbutton for the teach-in of the device*
5 *Programming LED*

2.3.5. 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”.

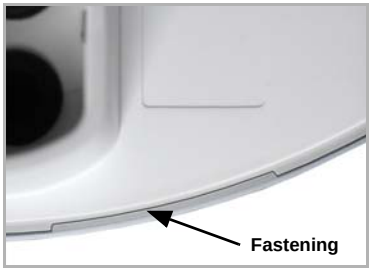


Fig. 13
Make sure the cover and bottom part are properly snapped together! This picture is looking at the closed sensor from underneath.

Fig. 14
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. 15
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.

2.4. Notes on mounting and commissioning

Do not open the device if water (rain) might ingress: even some drops might damage the electronic system.

Observe the correct connections. Incorrect connections may destroy the sensor or connected electronic devices.

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.

DANGER!
Risk to life from live voltage (mains voltage)!
- With the 230V model, bus addressing via the programming key should only be done by an accredited electrician.
- Do not touch any components on the circuit board while pressing the key.

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.