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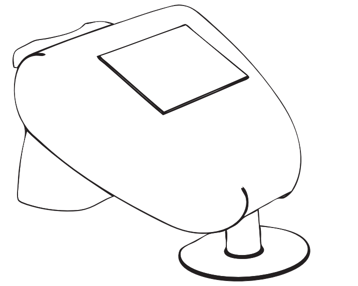

TP | RF | 24V | Bus 30V

TXE531

Weather station with GPS

Safety instructions

Electrical equipment may only be installed and assembled by a qualified electrician. Always follow the relevant accident prevention regulations.

Failure to comply with these installation instructions may result in damage to the device, fire or other hazards.

When installing and laying cables, always comply with the applicable regulations and standards for SELV electrical circuits.

These instructions are an integral component of the product and must be retained by the end user.

Design and layout of the device

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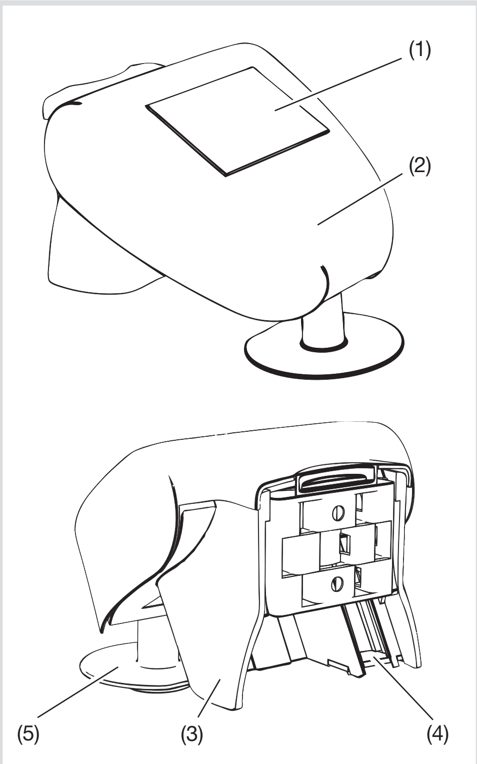

Figure 1: Exterior view

(1) Precipitation sensor on housing cover
(2) Brightness/twilight sensor
(3) Housing, bottom part
(4) Temperature sensor
(5) Wind sensor

Function

System information

This device is a product of the KNX system and corresponds to the KNX guidelines. Detailed specialised knowledge obtained from KNX training courses is required for understanding. The planning, installation and commissioning are carried out with the help of KNX-certified software.

System start-up

The function of the device is software-dependent. The software is to be taken from the product database. You can find the latest version of the product database, technical descriptions as well as conversion and additional support programmes on our website.

Easy start-up

The function of the device is configuration-dependent. The configuration can also be done using devices developed specially for simple setting and start-up.

This type of configuration is only possible with devices of the easy system. Easy stands for easy, visually supported start-up. Preconfigured standard functions are assigned to the in/outputs by means of a service module.

Correct use

- Measurement and evaluation of the weather data: precipitation, temperature, wind speed, twilight and brightness
- Horizontal installation on the outside of buildings (figure 3), preferably in the roof and facade area

The measured values apply to the installation location. Variations to other weather services – e.g. through local turbulence or areas with build-ups of air – are possible.

Product characteristics

- Integrated KNX bus coupling and data processing unit
- Integrated GPS antenna
- Command for ON/OFF switch outputs :
  • an output for day/night information with an adjustable threshold of 5 to 50 lux;
  • alarm outputs: 1 rain alarm, 1 temperature alarm with an adjustable threshold of -20°C to + 50°C and 3 wind alarms that can be adjusted from 10 to 100 km/h.
- Reception of date, time and location data (installation location) via GPS signal
- convenient shade and heat protection functions (with position tracking and horizontal sun tracking) for up to four building facades through the use of a brightness sensor and accurate solar positioning calculations

GPS data, date, time

The date, time and exact location coordinates of the weather station are received via the GPS signal. Date and time can also be received via the KNX bus and may be used as master or slave depending on ETS programming.

This information is required to control the automatic changeover for daylight savings time.

If programmed, the device receives the date and time during first start-up via the KNX bus until the first GPS signal is received.

If the device is operated in a country that does not require changes to be made for daylight savings time, the Summer time offset in minutes should be set to zero..

Simulation function (only in ETS)

Only available using the ETS configuration. It tests the product programming independently of weather conditions. It uses dedicated KNX objects to simulate weather conditions and solar positioning. This simulation checks that the alarm is triggered when the thresholds are exceeded and that the heat protection, collection and shade functions work.

Maintaining the device

The weather station should be checked for soiling at regular intervals – at least twice a year – and cleaned if necessary.

Heavy soiling can make it impossible to calculate wind speed correctly, cause the precipitation sensor (1) to display a permanent precipitation message, or prevent the brightness sensor (2) from detecting any sunlight.

Scope of delivery

- Weather station
- Wall/mast fixing
- Set of screws and dowels for wall mounting
- 2 Cable ties for mast assembly

Information for electricians

Installation and electrical connection

> Touching live parts in the installation environment can result in an electric shock.
>
> The device could get damaged.
>
> Disconnect the connecting cables before working on the device and cover all live parts in the area!

Selecting installation location

Select the assembly location so that wind, precipitation and sun can be detected by the sensors without impedance:

- Avoid influences by obstacles or shadings such as facades, roofs or trees
- Do not install underneath construction components that can delay precipitation from reaching the sensor
- Avoid influences on the GPS signal caused by magnetic fields, transmitters and interference fields for electrical devices, such as fluorescent lamps, neon signs and switching power supply units
- Do not mount in the vicinity of chimneys or other gas or ventilation systems
- Do not mount in the vicinity of radio transmitter systems
- A space of at least 60 cm must be left free below, to the side and to the front to guarantee correct wind measurements and to ensure the device does not become covered in snow
- Install on vertical walls (figure 2) or on a mast (figure 5, right)

Select the mounting location so that the weather station will always be accessible for maintenance purposes.

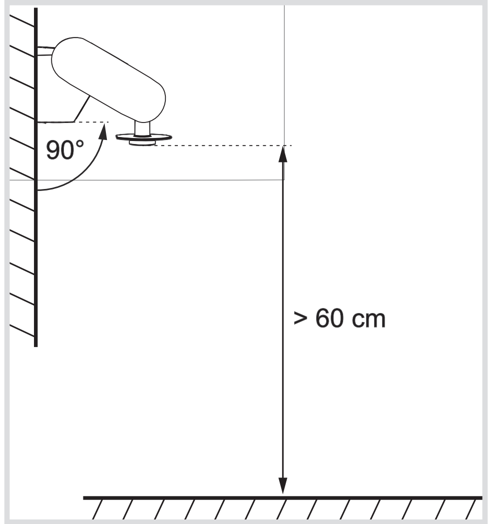

Figure 2

Aligning the device

To measure the brightness accurately, align the weather station in such way that the brightness/twilight sensor (2) faces south.

- Use a compass to align the device to the south (figure 3).

An incorrect alignment may influence the measured values of the brightness sensor..

In some cases, it may be appropriate to align the device in a direction other than south to accommodate existing walls or other geographical factors.

- Use a spirit level to align the device horizontally (figure 3).

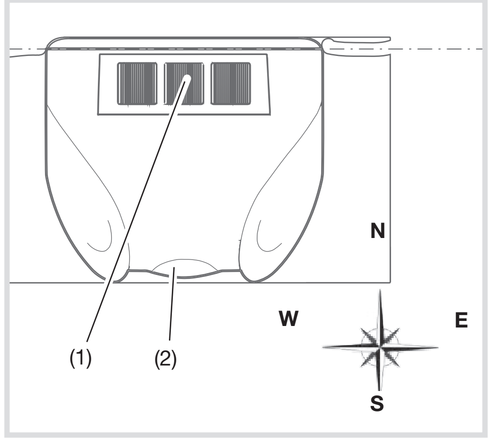

Figure 3: Aligning the device horizontally and to face south

Connecting and installing the device

Observe the layout requirements for SELV installations.

To avoid EMC interference, do not install input cables parallel to mains cables.

The weather station is supplied complete with a wall/mast fixing (6). This is locked into place on the rear of the device upon delivery (figure 4).

Optional holders are available for mounting the device on walls, masts or brackets (see accessories).

- Carefully loosen the wall/mast fixing (6) from the detent mechanism using a screwdriver and slide it downwards to remove (figure 4).

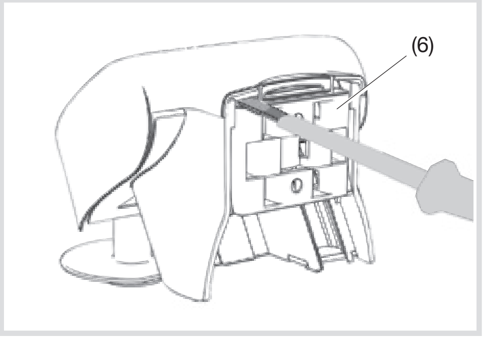

Figure 4: Loosening the wall/mast fixing

(6) Wall/mast fixing

- Use two screws to attach the fixing vertically to a wall or use the accompanying cable ties to attach it to a mast.

When doing so, please ensure that:

- In the case of wall mounting, the smooth side lies against the wall and the crescent-shaped bar (7) is at the top (figure 5, left).
- In the case of mast mounting, the curved side lies against the mast and the crescent-shaped bar (7) is at the bottom (figure 5, right).

The distance between the holes and the measurements for aligning them can be found in the accompanying drilling plan.

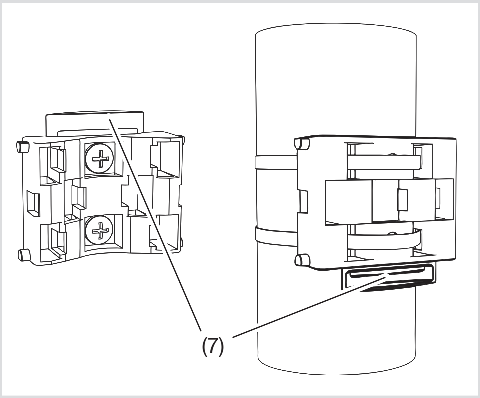

Figure 5: Wall fixing (left) or mast fixing (right)

(7) crescent-shaped bar

- Gently pull the cover apart from the detent mechanisms (9) at the sides and remove the cover (8) from the bottom part of the housing (3).

Take care when opening the weather station. The precipitation sensor in the cover and the printed circuit board in the bottom part of the housing are connected by a cable.

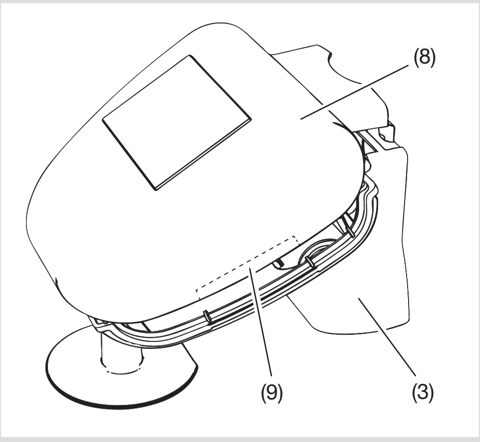

Figure 6: Preparation for mounting

(8) Cover with precipitation sensor
(9) Detent mechanisms on the cover

- Route the cables from the auxiliary voltage and KNX bus through the rubber seals on the bottom part of the weather station.

The second wire pair (yellow/white) of the KNX bus coupling unit may be used for connection of auxiliary voltage.

- Connect the bus cable via the connecting terminal (11). Be sure that the polarity is correct.
- Connect auxiliary voltage to connecting terminals (10).

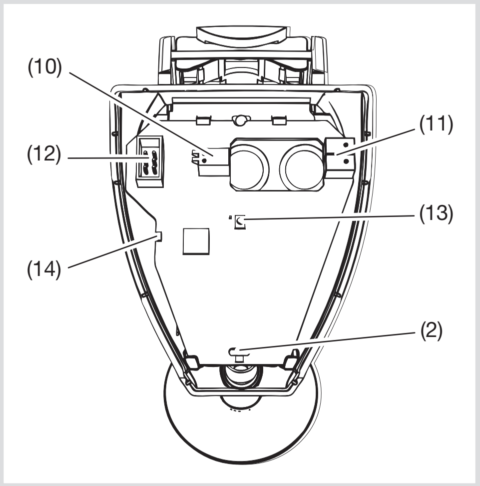

Figure 7: Interior view

(10) Connecting terminals for auxiliary voltage
(11) KNX bus connection terminal
(12) Connector for precipitation sensor in the housing cover
(13) Programming button and programming LED
(14) GPS antenna

- Place cover (8) onto the bottom part of the housing (3) and push carefully until it engages audibly.
- Slide the weather station into the mounted fixing from above. Ensure that the pins for the wall/mast fixing engage audibly into the guides for the bottom part of the housing (figure 8).

  The weather station is ready for operation.

The wind measured value and all wind switching outputs cannot be outputted until 60 seconds after the auxiliary voltage has been applied.

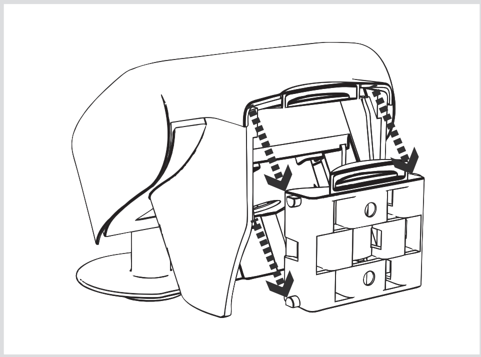

Figure 8: Installing onto the fixing

In the event of any damage, take the device out of operation immediately and safeguard against turning back on.

Dismantling the device

> Opening the device may allow moisture to enter the interior.
>
> This would result in damage to the electronics.
>
> Do not open the device in the event of precipitation and be sure to remove any external moisture from the device with a dry cloth before attempting to disassemble.

- Pull upwards against the resistance created by the detent mechanism to remove the device from the wall/mast fixing from above.
- Gently pull the cover apart from the detent mechanisms (9) at the sides and remove the cover (8) from the bottom part of the housing (3).
- Disconnect bus line (11) and auxiliary voltage (10).

Start-up

The weather station must only be operated from its fixed installation position once all installation and commissioning work is complete.

System – Loading the physical address and application software

The device is mounted and also connected to the KNX bus and auxiliary voltage.

It is advisable to program the physical address before installation.

The physical address is only ever assigned for one device. Only one device can ever be in programming mode.

- Gently pull the cover apart from the detent mechanisms (9) at the sides and remove the cover (8) from the bottom part of the housing (3).

Take care when opening the weather station. The precipitation sensor in the cover and the printed circuit board in the bottom part of the housing are connected by a cable.

- Switch on bus voltage
- Switch on auxiliary voltage.
- Press programming button (13).

  The programming LED (13) lights up.

If the programming LED does not light up, no bus voltage is present.

- Load the physical address into the device.

  The programming LED (13) goes out

- Load application software Note down the physical address on the labelling field.

The loading of non-compatible application software is indicated by flashing of the programming LED (13)

- Place cover (8) onto the bottom part of the housing (3) and push carefully until it engages audibly.

  The weather station has been commissioned.

Easy

Consult the detailed description of the “easy” configuration tool for more information on the configuration of the installation.

If start-up is initiated using the “easy” tool, only a single weather station can be configured per installation.

Appendix

Technical data

Frequency range	1 559 -1 610 MHz
KNX Medium	TP 1
Configuration mode	S-Mode, Easy controller
Rated voltage KNX	⎓ 30 V SELV
Current consumption KNX	max. 6 mA
Connection mode KNX	bus connecting terminal
Auxiliary voltage	⎓ 12 … 40 V SELV ~ 12 … 24 V SELV
Auxiliary current	max. 185 mA at 12 V ⎓ max. 80 mA at 24 V ⎓
Operating temperature	-30 … + 50 °C
Operating altitude	max. 2000 m
Storage/transport temperature	-30 … +70 °C
Conductor cross-section (rigid)	max. 0.5 mm²
Dimensions (W x H x D)	ca. 96 x 77 x 118 mm
Weight	170 g
Degree of protection	IP44
Surge voltage	1500 V
Overvoltage category	III
Degree of contamination	2
Software	class A
Action type	type 2
Precipitation sensor:	
- Measurement precipitation	Yes/No (1 bit)
- Heating	approx. 1.2 W
Temperature sensor:	
- Measuring range	-30 … +80°C
- Resolution	0.1 °C
- Measuring accuracy	± 0,5 °C at +10 … +50 °C
-	± 1 °C at -10 … +85 °C
-	± 1,5 °C at -25 … +150 °C
Wind sensor:	
- Measuring range	0 … 35 m/s
- Resolution	0.1 m/s
- Measuring accuracy	± 15% of measured value
with an incidental flow from 90 … 270 °	
Brightness/twilight sensor	
- Cardinal direction	South
- Measuring range	0 lx … 150 klx
- Measuring accuracy	± 20 % at 0 lx … 10 klx ± 15 % at 10 … 150 klx
Test mark	KNX, CE

Declared voltage and current for ECM emissions testing: 30 V= KNX / 24 V= (auxiliary voltage); 6 mA / 80 mA

Troubleshooting

Bus operation is not possible

Cause 1: Bus voltage is not present.

Check bus connection terminals (11) for correct polarity.

Cause 2: Auxiliary voltage is not present.

Check connection for auxiliary voltage (10).

Check auxiliary voltage by means of measuring device.

Auxiliary voltage is also essential for bus operation.

Precipitation sensor is permanently covered in snowy weather

Cause: Heating does not work. Auxiliary voltage is not present.

Check connection for auxiliary voltage (10).

Check auxiliary voltage by means of measuring device.

Accessories

KNX power supply 320 mA + 24 V ⎓, 640 mA RMD	TXA114
Power supply flush-mounted, 24 V ⎓ (auxiliary voltage)	TP110
Hinge arm, large, for weather station KNX	TG353
Hinge arm, small, for weather station KNX	TG354

Correct Disposal of This product
(Waste Electrical & Electronic Equipment).

(Applicable in the European Union and other European countries with separate collection systems).

This marking shown on the product or its literature indicates that it should not be disposed with other household waste at the end of its working life.
To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate this from other types of waste and recycle it responsibly to promote the sustainable reuse of material resources.
Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take this item for environmentally safe recycling.
Business users should contact their supplier and check the terms and conditions of the purchase contract. This product should not be mixed with other commercial waste for disposal.

Hager Controls hereby declares that the radio transmitter/receiver complies with the 2014/53/EU directive.

The CE declaration can be consulted on the site:
www.hager.com