

P04-KNX-GPS Weather Station

Item number 71230



elsner

Manual

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This manual is amended periodically and will be brought into line with new software releases. The change status (software version and date) can be found in the contents footer. If you have a device with a later software version, please check

www.elsner-elektronik.de in the menu area "Service" to find out whether a more up-todate version of the manual is available.

Clarification of signs used in this manual

	Safety advice.
	Safety advice for working on electrical connections, components, etc.
DANGER!	indicates an immediately hazardous situation which will lead to death or severe injuries if it is not avoided.
WARNING!	indicates a potentially hazardous situation which may lead to death or severe injuries if it is not avoided.
CAUTION!	indicates a potentially hazardous situation which may lead to trivial or minor injuries if it is not avoided.
	indicates a situation which may lead to damage to property if it is not avoided.
ETS	In the ETS tables, the parameter default settings are marked by <u>underlining</u> .

1. Safety and operating instructions

Installation, testing, operational start-up and troubleshooting should only be performed by a qualified electrician.



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CAUTION! Live voltage!

- Inspect the device for damage before installation. Only put undamaged devices into operation.
- Comply with the locally applicable directives, regulations and provisions for electrical installation.
- Immediately take the device or system out of service and secure it against unintentional switch-on if risk-free operation is no longer guaranteed.

Use the device exclusively for building automation and observe the operating instructions. Improper use, modifications to the device or failure to observe the operating instructions will invalidate any warranty or guarantee claims.

Operate the device only as a fixed-site installation, i.e. only in assembled condition 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.

For information on installation, maintenance, disposal, scope of delivery and technical data, please refer to the installation instructions.

2. Description

The **Weather Station P04-KNX-GPS** for the KNX building bus system measures temperature, wind speed and brightness. It recognises precipitation and receives the GPS signal for time and location.

The compact housing of the **P04-KNX-GPS** accommodates the sensors, evaluation circuits and bus-coupling electronics.

Functions:

- Brightness measurement
- GPS receiver, outputting the current time and location coordinates
- 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
- Wind sensor monitoring: If the wind measurement value changes by less than ± 0.5 m/s within 48 hours, the maximum measurement value of 35 m/s is

output as a fault message. All wind alarms with a limit value below 35 m/s become active as a result

- **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

3. Commissioning

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

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.

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.

4. Addressing the equipment

The equipment is delivered ex works with the bus address 15.15.255. You program a different address in the ETS by overwriting the address 15.15.255 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 mm^2 wire.



Fig. 1

1 Programming LED (under the semi-transparent lid)

2 Programming button

5. Transfer protocol

Units:

Temperatures in degrees Celsius Brightness in Lux Wind in metres per second

5.1. List of all communications objects

Abbreviation flags:

- C Communication
- R Read
- W Write
- T Transmit
- U Update

No	Text	Function	Flags	DPT type	Size
1	Software version	Output	R-CT	[217.1] DPT_Ver- sion	2 Bytes
24	GPS malfunction (0 : OK 1: NOK)	Output	R-CT	[1.2] DPT_Bool	1 Bit
25	Date / time	Input / Output	RWCT	[19.1] DPT_Date- Time	8 Bytes
26	Date	Input / Output	RWCT	[11.1] DPT_Date	3 Bytes
27	Time	Input / Output	RWCT	[10.1] DPT_Ti- meOfDay	3 Bytes
28	Date and time query	Input	-WC-	[1.017] DPT_Trig- ger	1 Bit
30	Location: Northern latitude [°]	Output	R-CT	[14.7] DPT Value_AngleDeg	4 Bytes
31	Location: Eastern longitude [°]	Output	R-CT	[14.7] DPT Value_AngleDeg	4 Bytes
34	Rain: Switching output	Output	R-CT	[1.1] DPT_Switch	1 Bit
35	Rain: Switching output with fixed delays	Output	R-CT	[1.1] DPT_Switch	1 Bit
36	Rain: Switching delay to rain	Input	-WC-	[7,005] DPT_Ti- mePeriodSec	2 Bytes
37	Rain: Switching delay to no rain	Input	-WC-	[7,005] DPT_Ti- mePeriodSec	2 Bytes
41	Temperature sensor: Malfunction	Output	R-CT	[1.1] DPT_Switch	1 Bit
42	Temperature sensor: External measurement	Input	-WCT	[9.1] DPT Value_Temp	2 Bytes
43	Temperature sensor: Measure- ment value	Output	R-CT	[9.1] DPT Value_Temp	2 Bytes

No	Text	Function	Flags	DPT type	Size
44	Temperature sensor: Total measu- rement	Output	R-CT	[9.1] DPT Value_Temp	2 Bytes
45	Temperature sensor: Min./Max. measurement query	Input	-WC-	[1.017] DPT_Trig- ger	1 Bit
46	Temperature sensor: Minimum measurement	Output	R-CT	[9.1] DPT Value_Temp	2 Bytes
47	Temperature sensor: Maximum measurement	Output	R-CT	[9.1] DPT Value_Temp	2 Bytes
48	Temperature sensor: Min./Max. measurement reset	Input	-WC-	[1.017] DPT_Trig- ger	1 Bit
95	Brightness sensor measurement	Output	R-CT	[9.4] DPT Value_Lux	2 Bytes
271	Wind sensor: Malfunction	Output	R-CT	[1.1] DPT_Switch	1 Bit
272	Wind sensor: Measurement [m/s]	Output	R-CT	[9.5] DPT Value_Wsp	2 Bytes
273	Wind sensor: Measurement [Beaufort]	Output	R-CT	[20.014] DPT_Be- aufort_Wind Force_Scale	1 Byte
274	Wind sensor: Max. query measure- ment	Input	-WC-	[1.017] DPT_Trig- ger	1 Bit
275	Wind sensor: Maximum measure- ment [m/s]	Output	R-CT	[9.5] DPT Value_Wsp	2 Bytes
276	Wind sensor: Maximum measure- ment [Beaufort]	Output	R-CT	[20.014] DPT_Be- aufort_Wind Force_Scale	1 Byte
277	Wind sensor: Max. reset measure- ment	Input	-WC-	[1.017] DPT_Trig- ger	1 Bit

6. Parameter setting

6.0.1. Behaviour on power failure/power restoration

Behaviour on bus or auxiliary power failure

The device sends nothing.

Behaviour on bus or auxiliary voltage restoration and following programming or reset

The device sends all measurement values as well as switching and status outputs according to their send pattern set in the parameters with the delays established in the "General settings" parameter block. The "Software version" communications object is sent once after 5 seconds.

6.0.2. Malfunction objects

Malfunction objects are sent after every reset and, additionally, after changes (i.e. at the beginning and end of a malfunction).

6.1. General settings

Set basic characteristics of data transfer.

Transmission delay after reset/restoration of bus for:		
Measured values <u>5</u> 300 seconds		
Maximum telegram quota 1 • 2 • 5 • 10 • 20 • 50 Telegrams per sec.		

6.2. GPS

Set whether the time and date are to be sent as separate objects or as one common object. Specify whether the time and date are to be set by the GPS signal or objects.

If time and date are **set by the GPS-Signal**, the data is available as soon as a valid GPS signal is received.

If time and date are **set by two objects**, then only a maximum of 10 seconds may elapse between receiving the date and receiving the time Furthermore, a change of date may not occur between receiving both objects. The objects must be received by the device on the same day.

The device has an integrated real-time clock. Therefore, time keeps on running internally and can be sent to the bus, even when no GPS coverage is available or no time object has been received for some time. The internal clock can show a time drift of up to ± 6 seconds per day.

Object type date and time	• <u>two separate objects</u> • a common object
Date and time will be set by	 GPS signal and not sent GPS signal and sent periodically GPS signal and sent on request GPS signal and sent on request + periodically object(s) and not sent
Send cycle (if sent periodically)	5 s 2 h; <u>1 min</u>

Set what happens in the event of a GPS malfunction. Please note, that after return of auxiliary voltage, it can take up to 10 minutes before the GPS signal is received.

If there is no reception, GPS fault is	20 min • <u>30 min</u> • 1 h • 1.5 h • 2 h
recognised after the last reception	

GPS fault object sends (1: malfunction 0: no malfunction)	 <u>never</u> on change on change to 1 on change to 0 on change and periodically on change to 1 and periodically on change to 0 and periodically
Send cycle (if sent periodically)	5 s 2 h; <u>10 s</u>

6.3. Location

The **location** is received via GPS or entered manually (selection of the nearest town or by entering coordinates). Also when using the GPS signal coordinates can be entered manually for the initial commissioning. This data is used as long as no GPS reception exists. For this you select the option "Input (only valid until the first GPS reception)".

Location is determined by	 input input (only valid until the first GPS reception) GPS reception 	
Location input using (<i>if input selected</i>)	• <u>Town</u> • Coordinates	
Country (if input by town is selected)	 Belgium Denmark Germany France Great Britain Italy 	 Liechtenstein Luxembourg Netherlands Austria Switzerland USA
Town (if input by town is selected)	6 towns in Belgium 1 town in Denmark 48 towns in Germany; <u>Stuttgart</u> 23 towns in France 4 towns in Great Britain 10 towns in Italy 1 town in Liechtenstein 1 town in Luxembourg 2 towns in the Netherlands 4 towns in Austria 4 towns in Switzerland 2 towns in the USA	
E.longitude[degrees,-180+180] (if input by coordinates is selected)	9 [negative values mean "western longitude"]	
E. longitude [minutes, -59+59] (if input by coordinates is selected)	<u>10</u> [negative values mean	n "western longitude"]

Northern latitude [Degrees, -90+90]	48
(if input by coordinates is selected)	[negative values mean "southern latitude"]
Northern latitude [minutes, -59+59]	<u>46</u>
(if input by coordinates is selected)	[negative values mean "southern latitude"]

In order to be able to output the **local time**, the time zone (difference to world time (Coordinated Universal Time)) and the summer time rules must be defined. Specify the hours and minutes after winter time (standard time).

Time zone (relative to GMT):			
Prefix	• <u>positive (+)</u> • negative (-)		
Hours	0 13; <u>1</u>		
Minutes	0 59; <u>0</u>		
Summertime rule	• Europe • USA • user-defined • none		
All the following times are to be entered as w	vinter time = standard time		
Start of Summer Time:			
on	• Monday <u>Sunday</u> • Date		
From (day) (for Europe or USA summer time rules) (Day) (For user defined summer time rules)	1 31; <u>25</u>		
(Month)	1 12; <u>3</u>		
(Hour)	0 23; <u>2</u>		
(minutes)	<u>0</u> 59		
End of Summer Time:			
on	• Monday <u>Sunday</u> • Date		
From (day) (for Europe or USA summer time rules) (Day) (For user defined summer time rules)	1 31; <u>25</u>		
(Month)	1 12; <u>10</u>		
(hour)	0 23; <u>2</u>		
(minutes)	<u>0</u> 59		
Time shift:			
hours	-12 12; <u>1</u>		
minutes	<u>0</u> 59		

The standard coordinates can be transmitted from the device to the bus and thus be used in other applications, no matter whether they have been received via GPS or specified manually.

Send coordinates	 <u>never</u> periodically on change on change and periodically
on change of	0.5° • 1° • <u>2°</u> • 5° • 10°
Send cycle	5 s 2 h; <u>5 min</u>

6.4. Rain

Activate the rain sensor in order to use objects and switch outputs.

Use rain sensor	<u>No</u> • Yes
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Set, in which cases delay times received are to be kept per object. The parameter is only taken into consideration if the setting by object is activated further down. Please note that the setting "After power restoration and programming" should not be used for the initial start-up, as the factory settings are always used until the first call (setting via objects is ignored).

Maintain the	
delays received via communication objects	 <u>never</u> after power restoration after power restoration and programming

Select whether the special rain output is to be used with fixed switching delay. This switching output has no delay on rain recognition and 5 minutes delay after it is dry again.

Use rain output with fixed	<u>No</u> • Yes
switching delay	

Set the delay times. If the delays are defined using objects, then the times set here are only valid up to the first call.

Delays can be set via objects (in seconds)	<u>No</u> • Yes
Delay on rain	<u>none</u> •1 s •2 h
Delay on no rain (after drying of the sensor)	<u>5 min</u> • 1 h • 2 h

Switching output sends	 on change on change to rain on change to no rain on change and periodically on change to rain and periodically on change to no rain and periodically
Send cycle (<i>if sent periodically</i>)	5 s 2 h; <u>10 s</u>
Object value(s) with rain	0 • <u>1</u>

Define the send pattern for the rain switch output and specify the object value for the event of rain.

6.5. Temperature measurement value

First of all set whether the temperature sensor malfunction object is to be used and correct, if necessary, the output of the measurement value by specifying an offset (e.g. in order to compensate malfunction sources).

Use malfunction object	<u>No</u> •Yes
Offset in 0.1°C	-50 50; <u>0</u>

Then set the mixed value calculation if desired.

Use external reading	<u>No</u> • Yes
Ext. Reading proportion of the total reading <i>(if external reading is to be used)</i>	5% • 10% • 15% • • <u>50%</u> • • 95% • 100%
All following settings refer to the total measured value	

Specify the send pattern for the total measured value.

Send pattern	 <u>never</u> periodically on change on change and periodically
on change of (if sent on change)	0.1°C • 0.2°C • 0.5°C • <u>1.0°C</u> • 2.0°C • 5.0°C
Send cycle (if sent periodically)	5 s 2 h; <u>10 s</u>

Select whether the minimum and maximum value should be used.

	Use minimum and maximum value	<u>No</u> • Yes
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6.6. Brightness measurement value

Set the send pattern for the measured brightness.

Send pattern	 <u>never</u> periodically on change on change and periodically
at and above change in % (if sent on change)	1 100; <u>20</u>
Send cycle (if sent periodically)	<u>5 s</u> 2 h

6.7. Wind measurement

If necessary, activate the wind malfunction object. Specify whether the measurement should also be output in Beaufort.

Use malfunction object	<u>No</u> • Yes
Measured value additionally output in the Beaufort scale	<u>No</u> • Yes

Define the send pattern and, if necessary, activate the maximum value (this value is not retained after a reset).

Send pattern	 <u>never</u> periodically on change on change and periodically
on change of (if sent on change)	2% • <u>5%</u> • 10% • 25% • 50%
Send cycle (if sent periodically)	5 s 2 h; <u>10 s</u>
Use maximum value	No • Yes

Beaufort scale

Beaufort	Meaning
0	Calm
1	Light air
2	Light breeze
3	Gentle breeze
4	Moderate breeze

Beaufort	Meaning
5	Fresh breeze
6	Strong breeze
7	High wind
8	Gale
9	Severe gale
10	Storm
11	Violent storm
12	Hurricane

Questions about the product?

You can reach the technical service of Elsner Elektronik under Tel. +49 (0) 70 33 / 30 945-250 or service@elsner-elektronik.de

We need the following information to process your service request:

- Type of appliance (model name or item number)
- Description of the problem
- Serial number or software version
- Source of supply (dealer/installer who bought the device from Elsner Elektronik)

For questions about KNX functions:

- Version of the device application
- ETS version used for the project

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