

KNX LW

Brightness and Wind Sensor

Item number 70129



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.

4

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.

STOP

ATTENTION! ... 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

underlining.

1. Safety and operating instructions



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



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 **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
- 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
- 9 threshold values can be adjusted per 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

3. Commissioning

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.

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.

3.1. Addressing of the device at the bus

The equipment is delivered with the individual address 15.15.255. This can be changed via the ETS. There is a button and a control LED on the circuit board inside the housing for this purpose.

4. Transmission protocol

Units of measurement:

Wind in Metre per second Brightness in Lux

4.1. List of all communication objects

Abbreviations EIS types:

- 1 Switching 1/0
- 5 Floating point value
- 6 8 bit value

Abbreviations flags:

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

Nr.	Name	Function	EIS type	Flags
0	Wind force measured value	Output	5	CRT
1	Request max. wind force	Input	1	CRW
2	Max. wind force measured value	Output	5	CRT
3	Reset max. wind force	Input	1	CRW
4	Wind sensor malfunction	Output	1	CRT
5	Wind threshold value 1	16 bit value	5	CRWT
6	Wind threshold value 1	1 = Increment 0 = Decrement	1	CRW
7	Wind threshold value 1	Increment	1	CRW
8	Wind threshold value 1	Decrement	1	CRW
9	Wind threshold value 1	Switching output	1	CRT
10	Wind threshold value 1	Switching output block	1	CRW
11	Wind threshold value 2	16 bit value	5	CRWT
12	Wind threshold value 2	1 = Increment 0 = Decrement	1	CRW
13	Wind threshold value 2	Increment	1	CRW
14	Wind threshold value 2	Decrement	1	CRW
15	Wind threshold value 2	Switching output	1	CRT
16	Wind threshold value 2	Switching output Sperre	1	CRW
17	Wind threshold value 3	16 bit value	5	CRWT

Nr.	Name	Function	EIS type	Flags
18	Wind threshold value 3	1 = Increment 0 = Decrement	1	CRW
19	Wind threshold value 3	Increment	1	CRW
20	Wind threshold value 3	Decrement	1	CRW
21	Wind threshold value 3	Switching output	1	CRT
22	Wind threshold value 3	Switching output block	1	CRW
	ANID	0 11 11	4	0.0.7
23	AND Logic 1	Switching output	1	CRT
24	AND Logic 1	8 bit output A	6	CRT
25	AND Logic1	8 bit output B	6	CRT
26	AND Logic 2	Switching output	1	CRT
27	AND Logic 2	8 bit output A	6	CRT
28	AND Logic 2	8 bit output B	6	CRT
29	AND Logic 3	Switching output	1	CRT
30	AND Logic 3	8 bit output A	6	CRT
31	AND Logic 3	8 bit output B	6	CRT
32	AND Logic 4	Switching output	1	CRT
33	AND Logic 4	8 bit output A	6	CRT
34	AND Logic 4	8 bit output B	6	CRT
35	AND Logic 5	Switching output	1	CRT
36	AND Logic 5	8 bit output A	6	CRT
37	AND Logic 5	8 bit output B	6	CRT
38	AND Logic 6	Switching output	1	CRT
39	AND Logic 6	8 bit output A	6	CRT
40	AND Logic 6	8 bit output B	6	CRT
41	AND Logic7	Switching output	1	CRT
42	UND Logik 7	8 bit output A	6	CRT
43	AND Logic 7	8 bit output B	6	CRT
44	AND Logic8	Switching output	1	CRT
45	AND Logic 8	8 bit output A	6	CRT
46	AND Logic 8	8 bit output B	6	CRT
47	OR Logic 1	Switching output	1	CRT
48	OR Logic 1	8 bit output A	6	CRT
49	OR Logic 1	8 bit output B	6	CRT
50	OR Logic 2	Switching output	1	CRT
51	OR Logic 2	8 bit output A	6	CRT
52	OR Logic 2	8 bit output B	6	CRT
53	OR Logic 3	Switching output	1	CRT
54	OR Logic 3	8 bit output A	6	CRT

Nr.	Name	Function	EIS type	Flags
55	OR Logic 3	8 bit output B	6	CRT
56	OR Logic4	Switching output	1	CRT
57	OR Logic 4	8 bit output A	6	CRT
58	OR Logic4	8 bit output B	6	CRT
59	OR Logic 5	Switching output	1	CRT
60	OR Logic 5	8 bit output A	6	CRT
61	OR Logic 5	8 bit output B	6	CRT
62	OR Logic 6	Switching output	1	CRT
63	OR Logic 6	8 bit output A	6	CRT
64	OR Logic 6	8 bit output B	6	CRT
65	OR Logic 7	Switching output	1	CRT
66	OR Logic 7	8 bit output A	6	CRT
67	OR Logic 7	8 bit output B	6	CRT
68	OR Logic 8	Switching output	1	CRT
69	OR Logic 8	8 bit output A	6	CRT
70	OR Logic 8	8 bit output B	6	CRT
71	Logic input 1	Input	1	CRW
72	Logic input 2	Input	1	CRW
73	Logic input 3	Input	1	CRW
74	Logic input 4	Input	1	CRW
75	Logic input 5	Input	1	CRW
76	Logic input 6	Input	1	CRW
77	Logic input 7	Input	1	CRW
78	Logic input 8	Input	1	CRW
79	Brightness measured value	Output	5	CRT
80	Brightness threshold value 1	16 bit value	5	CRWT
81	Brightness threshold value 1	1 = Increment 0 = Decrement	1	CRW
82	Brightness threshold value 1	Increment	1	CRW
83	Brightness threshold value 1	Decrement	1	CRW
84	Brightness threshold value 1	Switching output	1	CRT
85	Brightness threshold value 1	Switching output block	1	CRW
86	Brightness threshold value 2	16 bit value	5	CRWT
87	Brightness threshold value 2	1 = Increment 0 = Decrement	1	CRW
88	Brightness threshold value 2	Increment	1	CRW
89	Brightness threshold value 2	Decrement	1	CRW

Nr.	Name	Function	EIS type	Flags
90	Brightness threshold value 2	Switching output	1	CRT
91	Brightness threshold value 2	Switching output block	1	CRW
92	Brightness threshold value 3	16 bit value	5	CRWT
93	Brightness threshold value 3	1 = Increment 0 = Decrement	1	CRW
94	Brightness threshold value 3	Increment	1	CRW
95	Brightness threshold value 3	Decrement	1	CRW
96	Brightness threshold value 3	Switching output	1	CRT
97	Brightness threshold value 3	Switching output block	1	CRW
98	Twilight threshold value 1	16 bit value	5	CRWT
99	Twilight threshold value 1	1 = Increment 0 = Decrement	1	CRW
100	Twilight threshold value 1	Increment	1	CRW
101	Twilight threshold value 1	Decrement	1	CRW
102	Twilight threshold value 1	Switching output	1	CRT
103	Twilight threshold value 1	Switching output block	1	CRW
104	Twilight threshold value 2	16 bit value	5	CRWT
105	Twilight threshold value 2	1 = Increment 0 = Decrement	1	CRW
106	Twilight threshold value 2	Increment	1	CRW
107	Twilight threshold value 2	Decrement	1	CRW
108	Twilight threshold value 2	Switching output	1	CRT
109	Twilight threshold value 2	Switching output block	1	CRW
110	Twilight threshold value3	16 bit value	5	CRWT
111	Twilight threshold value3	1 = Increment 0 = Decrement	1	CRW
112	Twilight threshold value 3	Increment	1	CRW
113	Twilight threshold value 3	Decrement	1	CRW
114	Twilight threshold value 3	Switching output	1	CRT
115	Twilight threshold value 3	Switching output block	1	CRW
116	Software Version	readable	6	CR

5. Setting of parameters

5.1. General settings

Maximum telegram quota	1 • 2 • 3 • <u>5</u> • 10 • 20 <u>telegrams per second</u>
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Wind force

Measured value	do not send send cyclically send on change send on change and cyclically
send cyclically every (only if sending "cyclically")	<u>5 sec</u> 2 h
From change in % (only if sending "on change")	1 50; <u>20</u>
Send and reset of the maximum wind load value on request	not release • release
Use malfunction object	<u>No</u> • Yes

Brightness

Measured value	do not send send cyclically send on change send on change and cyclically
send cyclically every (only if sending "cyclically")	<u>5 sec</u> 2 h
From change in % (only if sending "on change")	1 50; <u>20</u>

5.2. Threshold values

Wind force

Use threshold value 1 / 2 / 3	<u>No</u> • Yes
Transmission delay of the switching outputs after power up and programming	<u>5 sec</u> 2 h
Transmission delay of the switching outputs after power up and programming	<u>5 sec</u> 2 h

Brightness

Use threshold value 1 / 2 / 3	<u>No</u> • Yes
Transmission delay of the switching outputs after power up and programming	<u>5 sec</u> 2 h
Transmission delay of the switching outputs after power up and programming	<u>5 sec</u> 2 h

Twilight

Use threshold value 1 / 2 / 3	<u>No</u> • Yes
Transmission delay of the switching outputs after power up and programming	<u>5 sec</u> 2 h
Transmission delay of the switching outputs after power up and programming	<u>5 sec</u> 2 h

5.2.1. Wind threshold value 1 / 2 / 3

Threshold value

Threshold value setpoint per Parameter • Communication object	Threshold value setpoint per	Parameter • Communication object
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If the threshold value is set per Parameter:

Threshold value in 0.1 m/s	0 350; <u>40</u>
Switching distance (hysteresis) of the	0 250; <u>20</u>
threshold value in %	_

If the threshold value is set per Communication object:

From the 1st communication onwards, the threshold value corresponds to the value of the communication object and is not multiplied by the factor 0.1.

The value communicated last shall be maintained	not after restoration of voltage (the changes threshold value may be saved at least 100,000 times) after restoration of voltage and programming (Attention: Do not use for first commissioning)
Start threshold value in 0.1 m/s valid until 1. communication (only if the value communicated last is "not" maintained or "after restoration of voltage")	0 350; <u>40</u>
Type of threshold change	Absolute value with a 16 bit communication object Increment / decrement with one communication object Increment / decrement with two communication objects
Step size (only if sending "Increment/decrement")	0,1 m/s 5 m/s; <u>1 m/s</u>
Switching distance of the threshold value in %	0 250; <u>20</u>

Switching output

When the following conditions apply, the output is (TV = Threshold value) (SD = Switching distance)	• TV above = 1 TV - SD below = 0 • TV above = 0 TV - SD below = 1 • TV below = 1 TV + SD above = 0 • TV below = 0 TV + SD above = 1
Switching delay from 0 to 1	<u>none</u> • 1 sec 2 h
Switching delay from 1 to 0	<u>none</u> • 1 sec 2 h
Switching output sends	 not 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 periodically all (only if sending "periodically")	<u>5 sec</u> 2 h

Blocking

"Blocking" only appears if using "Switching output sends on change"

Too 140	Use block of the switching output	Yes • No	
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If block of the switching output is used:

Use block of the switching output	Yes
Evaluation of the blocking object	• if value 1: block if value 0: release • if value 0: block if value 1: release
Value of the blocking object before 1. communication	<u>0</u> • 1
Behaviour of the switching output with blocking	do not send telegram send 0 send 1
Behaviour of the switching output with release (selection depends on settings made before)	do not send telegram send status of the switching output if switching output = 1 => send 1 if switching output = 0 => send 0

5.2.2. Brightness threshold value 1 / 2 / 3 $\,$

Threshold value

Threshold value setpoint per Parameter • Communication object

If the threshold value is set per Parameter:

Threshold value setpoint per	Parameter
Threshold value in klux	0 99; <u>60</u>
Switching distance (hysteresis) of the threshold value in %	0 50; <u>20</u>

If the threshold value is set per Communication object:

Threshold value setpoint per	Communication object
The value communicated last shall be maintained	not after restoration of voltage (der geänderte Grenzwert kann mindestens 100.000 Mal gesichert werden) after restoration of voltage and programming (Attention: Do not use for first commissioning)
Start threshold value in kLux valid until 1. communication (only if the value communicated last is "not" maintained or "after restoration of voltage")	0 99; <u>60</u>
Type of threshold change	Absolute value with a 16 bit communication object Increment / decrement with one communication object Increment / decrement with two communication objects
Step size (only if sending "Increment/decrement")	1 klux • 2 klux • 3 klux • 4 klux • 5 klux • 10 klux
Switching distance of the threshold value in %	0 50; <u>20</u>

Switching output

When the following conditions apply, the output is (TV = Threshold value) (SD = Switching distance)	• TV above = 1 TV - SD below = 0 • TV above = 0 TV - SD below = 1 • TV below = 1 TV + SD above = 0 • TV below = 0 TV + SD above = 1
Switching delay from 0 to 1	<u>none</u> • 1 sec 2 h
Switching delay from 1 to 0	<u>none</u> • 1 sec 2 h
Switching output sends	 not 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 cyclically every (only if sending "cyclically")	<u>5 sec</u> 2 h

Blocking

"Blocking" only appears if using "Switching output sends on change"

Use block of the switching output	Yes • No
Ose block of the switching output	162 - INO

If block of the switching output is used:

Use block of the switching output	Yes
Evaluation of the blocking object	• if value 1: block if value 0: release • if value 0: block if value 1: release
Value of the blocking object before 1. communication	<u>0</u> • 1
Behaviour of the switching output with blocking	do not send telegram send 0 send 1
Behaviour of the switching output with release (Selection according to previous settings)	do not send telegram send status of the switching output if switching output = 1 => send 1 if switching output = 0 => send 0

5.2.3. Twilight threshold value 1/2/3

Threshold value

Threshold value setpoint per	Parameter • Communication object
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If the threshold value is set per Parameter:

Threshold value setpoint per	Parameter
threshold value in lux	0 1000; <u>200</u>
Switching distance (hysteresis) of the threshold value in %	0 50; <u>20</u>

If the threshold value is set per Communication object:

Threshold value setpoint per	Communication object
The value communicated last shall be maintained	not after restoration of voltage (der geänderte Grenzwert kann mindestens 100.000 Mal gesichert werden) after restoration of voltage and programming (Attention: Do not use for first commissioning)
Start threshold value in lux valid until 1. communication (only if the value communicated last is "not" maintained or "after restoration of voltage")	0 1000; <u>200</u>

Type of threshold change	Absolute value with a 16 bit communication object Increment / decrement with one communication object Increment / decrement with two communication objects
Step size (only if sending "Increment/decrement")	1 lux • 2 lux • 3 lux • 4 lux • <u>5 lux</u> • 10 lux • 20 lux • 30 lux • 40 lux • 50 lux • 100 lux
Switching distance of threshold value in %	0 50; <u>20</u>

Switching output

See "Brightness threshold value 1 / 2 / 3"

Blocking

"Blocking" only appears if using "Switching output sends on change"

See "Brightness threshold value 1 / 2 / 3"

5.2.4. Logic

Communication objects logic inputs do not r	release • release
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AND Logic

Logic 1/2/3/4/5/6/7/8	not active • active
Transmission delay of the switching outputs after power up and programming	<u>5 sec</u> 2 h

OR Logic

Logic 1/2/3/4/5/6/7/8	not active • active
Transmission delay of the switching	<u>5 sec</u> 2 h
outputs after power up and programming	

5.2.5. AND Logic 1 / 2 / 3 / 4 / 5 / 6 / 7 / 8

1. / 2. / 3. / 4. Input	do not use all switching events which the sensor provides (see "Linkage inputs of the AND logic")
Logic output sends	not one 1 bit object two 8 bit objects

Logic output sends "one 1 bit Object":

Logic output sends	one 1 bit object
if logic = 1 →object value	<u>1</u> • 0

if logic = 0 →object value	1 • <u>0</u>
Communication object AND Logic 1 sends	in case of the change of logic in case of the change of logic to 1 in case of the change of logic to 0 in case of the change of logic and cyclically in case of the change of logic to 1 and cyclically in case of the change of logic to 0 and cyclically
send cyclically every (only if sending "cyclically")	<u>5 sec</u> 2 h

Logic output sends "two 8 bit objects":

Logic output sends	two 8 bit objects
if logic = 1 →object A value	0 255; <u>127</u>
if logic = 0 →object A value	<u>0</u> 255
if logic = 1 →object B value	0 255; <u>127</u>
if logic = 0 → object B value	<u>0</u> 255
Communication objects AND Logic 1 A and B sends	 in case of the change of logic in case of the change of logic to 1 in case of the change of logic to 0 in case of the change of logic and cyclically in case of the change of logic to 1 and cyclically in case of the change of logic to 0 and cyclically
send cyclically every (only if sending "cyclically")	<u>5 sec</u> 2 h

5.2.6. Linkage inputs of AND logic

do not use

Twilight threshold value 1

Twilight threshold value 1 inverted

Twilight threshold value 2

Twilight threshold value 2 inverted

Twilight threshold value 3

Twilight threshold value 3 inverted

Brightness threshold value 1

Brightness threshold value 1 inverted

Brightness threshold value 1
Brightness threshold value 2

Brightness threshold value 2 inverted

Brightness threshold value 3

Brightness threshold value 3 inverted

Communication object logic input 1

Communication object logic input 1 inverted

Communication object logic input 2

Communication object logic input 2 inverted

Communication object logic input 3

Communication object logic input 3 inverted

Communication object logic input 4

Communication object logic input 4 inverted

Communication object logic input 5

Communication object logic input 5 inverted

Communication object logic input 6

Communication object logic input 6 inverted

Communication object logic input 7

Communication object logic input 7 inverted

Communication object logic input 8

Communication object logic input 8 inverted

Disruption wind

Disruption wind inverted

Wind threshold value 1

Wind threshold value 1 inverted

Wind threshold value 2

Wind threshold value 2 inverted

Wind threshold value 3

Wind threshold value 3 inverted

5.2.7. OR Logic 1 / 2 / 3 / 4 / 5 / 6 / 7 / 8

1. / 2. / 3. / 4. Input	 do not use all switching events which the sensor provides (see "Linkage inputs of the OR logic")
Logic output sends	one 1 bit object two 8 bit objects

All settings of the OR logic correspond to those of the AND logic.

5.2.8. Linkage inputs of OR logic

The linkage inputs of the OR logic correspond with the parameters of the AND logic. The OR logic is additionally provided with the following inputs:

AND Logic output 1

AND Logic output 1 inverted

AND Logic output 2

AND Logic output 2 inverted

AND Logic output 3

AND Logic output 3 inverted

AND Logic output 4

AND Logic output 4 inverted

AND Logic output 5

AND Logic output 5 inverted

AND Logic output 6

AND Logic output 6 inverted

AND Logic output 7

AND Logic output 7 inverted

AND Logic output 8

AND Logic output 8 inverted

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

