



KNX L

Brightness Sensor

Item number 70119



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-to-date 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.



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 **KNX L brightness sensor** measures the intensity of illumination and transfers the value to the KNX system. Six 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
- **3 threshold values for twilight** (up to 1000 lux), 3 for **daylight** (1-99 klux), 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.

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.

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:

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

No.	Name	Function	EIS type	Flags
23	AND Logic 1	Switching output	1	C R T
24	AND Logic 1	8 bit output A	6	C R T
25	AND Logic1	8 bit output B	6	C R T
26	AND Logic 2	Switching output	1	C R T
27	AND Logic 2	8 bit output A	6	C R T
28	AND Logic 2	8 bit output B	6	C R T
29	AND Logic 3	Switching output	1	C R T
30	AND Logic 3	8 bit output A	6	C R T
31	AND Logic 3	8 bit output B	6	C R T
32	AND Logic 4	Switching output	1	C R T
33	AND Logic 4	8 bit output A	6	C R T
34	AND Logic 4	8 bit output B	6	C R T
35	AND Logic 5	Switching output	1	C R T
36	AND Logic 5	8 bit output A	6	C R T
37	AND Logic 5	8 bit output B	6	C R T
38	AND Logic 6	Switching output	1	C R T
39	AND Logic 6	8 bit output A	6	C R T
40	AND Logic 6	8 bit output B	6	C R T
41	AND Logic7	Switching output	1	C R T
42	UND Logik 7	8 bit output A	6	C R T
43	AND Logic 7	8 bit output B	6	C R T
44	AND Logic8	Switching output	1	C R T
45	AND Logic 8	8 bit output A	6	C R T

No.	Name	Function	EIS type	Flags
46	AND Logic 8	8 bit output B	6	C R T
47	OR Logic 1	Switching output	1	C R T
48	OR Logic 1	8 bit output A	6	C R T
49	OR Logic 1	8 bit output B	6	C R T
50	OR Logic 2	Switching output	1	C R T
51	OR Logic 2	8 bit output A	6	C R T
52	OR Logic 2	8 bit output B	6	C R T
53	OR Logic 3	Switching output	1	C R T
54	OR Logic 3	8 bit output A	6	C R T
55	OR Logic 3	8 bit output B	6	C R T
56	OR Logic4	Switching output	1	C R T
57	OR Logic 4	8 bit output A	6	C R T
58	OR Logic4	8 bit output B	6	C R T
59	OR Logic 5	Switching output	1	C R T
60	OR Logic 5	8 bit output A	6	C R T
61	OR Logic 5	8 bit output B	6	C R T
62	OR Logic 6	Switching output	1	C R T
63	OR Logic 6	8 bit output A	6	C R T
64	OR Logic 6	8 bit output B	6	C R T
65	OR Logic 7	Switching output	1	C R T
66	OR Logic 7	8 bit output A	6	C R T
67	OR Logic 7	8 bit output B	6	C R T
68	OR Logic 8	Switching output	1	C R T
69	OR Logic 8	8 bit output A	6	C R T
70	OR Logic 8	8 bit output B	6	C R T
71	Logic input 1	Input	1	C R W
72	Logic input 2	Input	1	C R W
73	Logic input 3	Input	1	C R W
74	Logic input 4	Input	1	C R W
75	Logic input 5	Input	1	C R W
76	Logic input 6	Input	1	C R W
77	Logic input 7	Input	1	C R W
78	Logic input 8	Input	1	C R W
79	Brightness measured value	Output	5	C R T
80	Brightness threshold value 1	16 bit value	5	C R W T
81	Brightness threshold value 1	1 = Increment 0 = Decrement	1	C R W
82	Brightness threshold value 1	Increment	1	C R W

No.	Name	Function	EIS type	Flags
83	Brightness threshold value 1	Decrement	1	C R W
84	Brightness threshold value 1	Switching output	1	C R T
85	Brightness threshold value 1	Switching output block	1	C R W
86	Brightness threshold value 2	16 bit value	5	C R W T
87	Brightness threshold value 2	1 = Increment 0 = Decrement	1	C R W
88	Brightness threshold value 2	Increment	1	C R W
89	Brightness threshold value 2	Decrement	1	C R W
90	Brightness threshold value 2	Switching output	1	C R T
91	Brightness threshold value 2	Switching output blocking	1	C R W
92	Brightness threshold value 3	16 bit value	5	C R W T
93	Brightness threshold value 3	1 = increment 0 = decrement	1	C R W
94	Brightness threshold value 3	increment	1	C R W
95	Brightness threshold value 3	decrement	1	C R W
96	Brightness threshold value 3	Switching output	1	C R T
97	Brightness threshold value 3	Switching output blocking	1	C R W
98	Twilight threshold value 1	16 bit value	5	C R W T
99	Twilight threshold value 1	1 = increment 0 = decrement	1	C R W
100	Twilight threshold value1	increment	1	C R W
101	Twilight threshold value 1	decrement	1	C R W
102	Twilight threshold value 1	Switching output	1	C R T
103	Twilight threshold value 1	Switching output blocking	1	C R W
104	Twilight threshold value 2	16 bit value	5	C R W T
105	Twilight threshold value 2	1 = increment 0 = decrement	1	C R W
106	Twilight threshold value 2	increment	1	C R W
107	Twilight threshold value 2	decrement	1	C R W
108	Twilight threshold value 2	Switching output	1	C R T
109	Twilight threshold value 2	Switching output blocking	1	C R W
110	Twilight threshold value 3	16 bit value	5	C R W T

No.	Name	Function	EIS type	Flags
111	Twilight threshold value3	1 = increment 0 = decrement	1	C R W
112	Twilight threshold value 3	increment	1	C R W
113	Twilight threshold value 3	decrement	1	C R W
114	Twilight threshold value 3	Switching output	1	C R T
115	Twilight threshold value 3	Switching output blocking	1	C R W
116	Software Version	readable	6	CR

5. Setting of parameters

5.1. General settings

1.1.3 KNX L

General settings

Threshold values
 Dawn threshold value 1
 Dawn threshold value 2

Logic
 AND Logic 1
 AND Logic 2
 AND Logic 3
 AND Logic 4
 AND Logic 5
 AND Logic 6
 AND Logic 7
 AND Logic 8
 OR Logic 1
 OR Logic 2
 OR Logic 3
 OR Logic 4
 OR Logic 5
 OR Logic 6
 OR Logic 7
 OR Logic 8

General settings

Measured value: send in case of change and cyclically

from change in %: 10

send cyclically every: 5 sec

Maximum telegram quota: 5 Telegrams per second

OK Cancel Default Info Help

Measured value	<ul style="list-style-type: none"> • do not send • <u>send periodically</u> • send on change • send on change and periodically
From change of (in relation to last measured value) (only if sending „on change“)	1 ... 50; <u>10</u>
send cyclically every (only if sending “cyclically”)	<u>5 sec</u> ... 2 h
Maximum telegram quota	1 • 2 • 3 • <u>5</u> • 10 • 20 <u>telegrams per second</u>

5.2. Threshold values

Threshold values

Brightness:
.....

Use threshold value 1 Yes

Use threshold value 2 Yes

Use threshold value 3 Yes

Transmission delay of the switching outputs
after power up and programming 5 sec

Transmission delay of the threshold values
after power up and programming 5 sec

Dawn:
.....

Use threshold value 1 Yes

Use threshold value 2 Yes

Use threshold value 3 No

Transmission delay of the switching outputs
after power up and programming 5 sec

Transmission delay of the threshold values
after power up and programming 5 sec

Brightness

Use threshold value 1 / 2 / 3	No • 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	No • 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. Brightness 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 klux	0 ... 99; <u>60</u>
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	<ul style="list-style-type: none"> • <u>not</u> • 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	<ul style="list-style-type: none"> • <u>Absolute value with a 16 bit communication object</u> • Increment / decrement with one communication object • Increment / decrement with two communication objects
Step size (only if sending „Increment/decrement“)	1 klux • <u>2 klux</u> • 3 klux • 4 klux • 5 klux • 10 klux
Hysteresis of the threshold value in %	0 ... 50; <u>20</u>

Switching output

Ausgang ist bei (TV = Threshold Value)	<ul style="list-style-type: none"> • <u>TV above = 1 TV - Hyst. below = 0</u> • TV above = 0 GW - Hyst. below = 1 • TV below = 1 GW + Hyst. above = 0 • TV below = 0 GW + Hyst. 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	<ul style="list-style-type: none"> • <u>not</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 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
-----------------------------------	----------

If block of the switching output is used:

Use block of the switching output	Yes
Evaluation of the blocking object	<ul style="list-style-type: none"> • <u>if value 1: block if value 0: release</u> • <u>if value 0: block if value 1: release</u>
Value of the blocking object before 1. communication	<u>0</u> • 1
Behaviour of the switching output with blocking	<ul style="list-style-type: none"> • <u>do not send telegram</u> • send 0 • send 1
Behaviour of the switching output with release (Selection according to pre- vious settings)	<ul style="list-style-type: none"> • do not send telegram • <u>send status of the switching output</u> • <u>if switching output = 1 => send 1</u> • <u>if switching output = 0 => send 0</u>

5.2.2. Twilight 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 lux	0 ... 1000; <u>200</u>
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	<ul style="list-style-type: none"> • <u>not</u> • 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	<ul style="list-style-type: none"> • <u>Absolute value with a 16 bit communication object</u> • 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
Hysteresis 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“

5.2.3. Logic

Communication objects logic inputs	<u>do not release</u> • release
------------------------------------	---------------------------------

AND Logic

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

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

1. / 2. / 3. / 4. Input	<ul style="list-style-type: none"> • do not use • all switching events which the sensor provides (see "Linkage inputs of the AND logic")
Logic output sends	<ul style="list-style-type: none"> • <u>not</u> • 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	<ul style="list-style-type: none"> • <u>in case of the change of logic</u> • 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	<ul style="list-style-type: none"> • <u>in case of the change of logic</u> • 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

5.2.5. 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 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

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

1. / 2. / 3. / 4. Input	<ul style="list-style-type: none"> • <u>do not use</u> • all switching events which the sensor provides (see "Linkage inputs of the OR logic")
Logic output sends	<ul style="list-style-type: none"> • <u>one 1 bit object</u> • two 8 bit objects

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

5.2.7. 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

elsner

Elsner Elektronik GmbH Control and Automation Engineering

Sohlengrund 16
75395 Ostelsheim
Germany

Phone +49 (0) 70 33 / 30 945-0 info@elsner-elektronik.de
Fax +49 (0) 70 33 / 30 945-20 www.elsner-elektronik.de
