Leak KNX basic

Leakage sensor for water and pipe breakage reporting

Item number 70315

Installation and Adjustment

Installation, inspection, commissioning and troubleshooting of the device must only be carried out by a competent electrician.

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.   Description

The **Leakage sensor Leak KNX basic** for the KNX building bus system recognizes water, e.g. in case of a pipe breakage. If there is water between the electrodes of the probe, an alarm message will be sent to the KNX bus.

Functions:
- Detection of water on the probe
- Alarm signal sent to the KNX bus with a text message
- 4 AND and 4 OR logic gates with each 4 inputs. Every switching incident as well as 16 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 5. The **product file** can be downloaded from the ETS online catalogue and the Elsner Elektronik website on **www.elsner-elektronik.de** in the "Service" menu.

1.1.   Deliverables

- Probe with cable
- Stainless steel plumbing screw 4.5 x 70 (DIN 7995), matching dowel SX6 x 30
- Surface-mounted junction box (IP 55)
- Magnet for teaching procedure (telescopic rod)

1.2.   Technical specifications

Casing	Polished stainless steel
Installation	for placing on the floor
Protection category	IP 68
Electrode chemical resistance	Water
Dimensions	Diameter: approx. 77 mm Height: approx. 33 mm
Cable length	approx. 140 mm (plus cable grip and plugs)
Weight	approx. 210 g (without junction box)
Ambient temperature	Operation -25…+85 °C, storage -40…+125°C.
Operating voltage	bus voltage
Power on the bus	30 mA
Data output	KNX +/- Bus connector terminal
BCU type	unit's own microcontroller
PEI type	0
Group addresses	254
Assignments	254
Communication objects	54

The product is compliant with the provisions of EC guidelines.

2.   Installation and commissioning

2.1. Installation notes

Installation, testing, operational start-up and troubleshooting of parts of the electrical installation should only be performed by an electrician.

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.

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2.2. Probe placement

The electrode probe is placed on the floor with the contacts facing downwards. To prevent slipping or tilting, the probe can be screwed to the floor.

Ideally, the probe should be located in a place that, in case of water damage, would be the first to be flooded — e.g. close to washing machines, sinks, baths, water pipes or pump sumps.

Fig. 1
Probe
1) 3 electrodes (contacts) on the lower side
2) Fixing screw
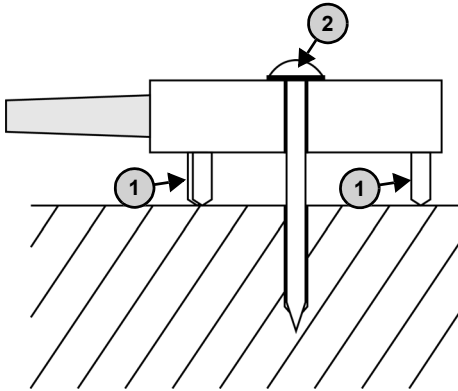*3) Connection lead (for evaluation unit)*

Fig. 2
Scheme of the probe bolted to the ground

Use a fixing material suitable for the ground (dowels)!
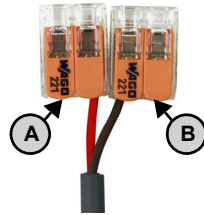
Tighten the plumbing screw with rubber buffer (2) only so far that the 3 electrodes (1) have loose contact with the ground.

2.3. Leakage sensor commissioning

1. Connect the bus lead +/-.

Fig. 3
A   KNX + (red)
B   KNX - (black)

2. Activate the programming mode of the device by holding the enclosed magnet (telescopic rod) to the programming magnet switch (C). The programming LED (D) will light up.

Fig. 4 Bottom of the probe
C   Reaction range of the programming magnet switch
D   Programming LED
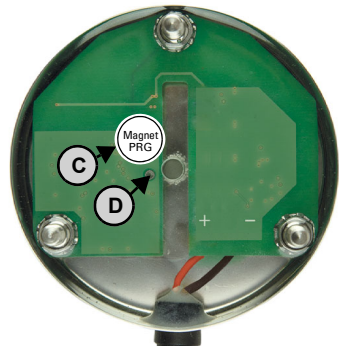
3. The programming magnet switch also reacts when you hold the magnet from above to the housing of the probe in the area of the screw.

Fig. 5
*C   Reaction range of the programming ma-
    gnet switch*

4. Address the device (see *Addressing the device*) and configure the ETS.

2.4.   Bus settings

If there is water contact, **Leak KNX basic** can send an alarm signal and a text message
to the KNX bus. Adjust the setting for these parameters in the ETS.

3.   Addressing the device

The device is delivered with the bus address 15.15.255. You can program a different
address in the ETS by overwriting the address 15.15.255 or by teaching the device via
the programming button.

The programming button (magnetic switch) is inside the case and is activated with the
attached magnetic telescopic rod.

4. Transfer protocol

4.1. List of all communication objects

Abbreviations:
R   Read
W   Write
C   Communication
T   Transfer
U   Update

No.	Text	Function	Flags	Data Point Type	Size
0	Software version	Readable	R-C-	[217.1] DPT_Version	2 Bytes
1	Leakage alarm (1 = On | 0 = off)	Output	R-CT	[1.1] DPT_Switch	1 Bit
2	Leakage alarm text	Output	R-CT	[16.0] DPT_String_ASCII	14 Bytes
3	Leakage alarm Switching-on delay	Input	RWCT	[7.5] DPT_TimePeriodSec	2 Bytes
4	Leakage alarm Switching-off delay	Input	RWCT	[7.5] DPT_TimePeriodSec	2 Bytes
5	Leakage alarm signal tone muting (1 = mute | 0 = not mute)	Input	-WC-	[1.1] DPT_Switch	1 Bit
6	Logic input 1	Input	-WC-	[1.2] DPT_Bool	1 Bit
7	Logic input 2	Input	-WC-	[1.2] DPT_Bool	1 Bit
8	Logic input 3	Input	-WC-	[1.2] DPT_Bool	1 Bit
9	Logic input 4	Input	-WC-	[1.2] DPT_Bool	1 Bit
10	Logic input 5	Input	-WC-	[1.2] DPT_Bool	1 Bit
11	Logic input 6	Input	-WC-	[1.2] DPT_Bool	1 Bit
12	Logic input 7	Input	-WC-	[1.2] DPT_Bool	1 Bit
13	Logic input 8	Input	-WC-	[1.2] DPT_Bool	1 Bit
14	Logic input 9	Input	-WC-	[1.2] DPT_Bool	1 Bit
15	Logic input 10	Input	-WC-	[1.2] DPT_Bool	1 Bit

No.	Text	Function	Flags	Data Point Type	Size
16	Logic input 11	Input	-WC-	[1.2] DPT_Bool	1 Bit
17	Logic input 12	Input	-WC-	[1.2] DPT_Bool	1 Bit
18	Logic input 13	Input	-WC-	[1.2] DPT_Bool	1 Bit
19	Logic input 14	Input	-WC-	[1.2] DPT_Bool	1 Bit
20	Logic input 15	Input	-WC-	[1.2] DPT_Bool	1 Bit
21	Logic input 16	Input	-WC-	[1.2] DPT_Bool	1 Bit
22	AND Logic 1: 1 Bit switching output	Output	R-CT	[1.2] DPT_Bool	1 Bit
23	AND Logic 1: 8 Bit output A	Output	R-CT	Depending on setting	1 Byte
24	AND Logic1: 8 Bit output B	Output	R-CT	Depending on setting	1 Byte
25	AND Logic 1: block	Output	-WC-	[1.1] DPT_Switch	1 Bit
26	AND Logic 2: 1 Bit switching output	Output	R-CT	[1.2] DPT_Bool	1 Bit
27	AND Logic2: 8 Bit output A	Output	R-CT	Depending on setting	1 Byte
28	AND Logic2: 8 Bit output B	Output	R-CT	Depending on setting	1 Byte
29	AND Logic 2: block	Input	-WC-	[1.1] DPT_Switch	1 Bit
30	AND Logic 3: 1 Bit switching output	Output	R-CT	[1.2] DPT_Bool	1 Bit
31	AND Logic 3: 8 Bit output A	Output	R-CT	Depending on setting	1 Byte
32	AND Logic 3: 8 Bit output B	Output	R-CT	Depending on setting	1 Byte
33	AND Logic 3: block	Input	-WC-	[1.1] DPT_Switch	1 Bit
34	AND Logic 4: 1 Bit switching output	Output	R-CT	[1.2] DPT_Bool	1 Bit
35	AND Logic 4: 8 Bit output A	Output	R-CT	Depending on setting	1 Byte
36	AND Logic 4: 8 Bit output B	Output	R-CT	Depending on setting	1 Byte
37	AND Logic 4: block	Output	-WC-	[1.1] DPT_Switch	1 Bit
38	OR Logic 1: 1 Bit switching output	Output	R-CT	[1.2] DPT_Bool	1 Bit
39	OR Logic 1: 8 Bit output A	Output	R-CT	Depending on setting	1 Byte
40	OR Logic 1: 8 Bit output B	Output	R-CT	Depending on setting	1 Byte
41	OR Logic 1: block	Input	-WC-	[1.1] DPT_Switch	1 Bit

No.	Text	Function	Flags	Data Point Type	Size
42	OR Logic 2: 1 Bit switching output	Output	R-CT	[1.2] DPT_Bool	1 Bit
43	OR Logic 2: 8 Bit output A	Output	R-CT	Depending on setting	1 Byte
44	OR Logic 2: 8 Bit output B	Output	R-CT	Depending on setting	1 Byte
45	OR Logic 2: block	Input	-WC-	[1.1] DPT_Switch	1 Bit
46	OR Logic 3: 1 Bit switching output	Output	R-CT	[1.2] DPT_Bool	1 Bit
47	OR Logic 3: 8 Bit output A	Output	R-CT	Depending on setting	1 Byte
48	OR Logic 3: 8 Bit output B	Output	R-CT	Depending on setting	1 Byte
49	OR Logic 3: block	Input	-WC-	[1.1] DPT_Switch	1 Bit
50	OR Logic 4: 1 Bit switching output	Output	R-CT	[1.2] DPT_Bool	1 Bit
51	OR Logic 4: 8 Bit output A	Output	R-CT	Depending on setting	1 Byte
52	OR Logic 4: 8 Bit output B	Output	R-CT	Depending on setting	1 Byte
53	OR Logic 4: block	Input	-WC-	[1.1] DPT_Switch	1 Bit

5. Parameter setting

The default settings of the parameter are labelled by an underscore.

5.1. Behaviour on power failure/ restoration of power

Behaviour following a failure of the bus power supply:

The device sends nothing.

Behaviour on bus restoration of power and following programming or reset:

The device sends all outputs according to their send behaviour 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.

5.2. General settings

First, set the general parameters for the bus communication (transmission delay). When labelling objects, you can enter an additional label (abbreviation) for the objects of the device, e.g. 'LR' for 'living room', to make the room installation more transparent.

Send delay in seconds after reset and voltage returns	5 ...7200
Maximum telegram quota	• 1 message per second • ... • 10 messages per second • ... • 50 message per second
Object labelling	[Free text]

5.3. Alarm object

Adjust the setting for the alarm object. Define the sending behaviour and the object value.

Alarm object sending behaviour	• on change • on change and alarm on • on change and alarm off • on change and periodically • on change to alarm on and periodically • on change to alarm off and periodically
Send cycle	5 s • ... • 10 s • ... • 2 h
Analysis of alarm object	• 0 = alarm off | 1 = alarm on • 1 = alarm off | 0 = alarm on
Adjust alarm delay via object	No • Yes
Maintain delays received via objects	• never be retained • after power restoration • after power restoration and programming
Delay for alarm on (until 1. communication)	0 s • ... • 10 s • ... • 2 h
Delay for alarm off (until 1. communication)	0 s • ... • 10 s • ... • 2 h

5.4.   Text object

When an alarm is issued, a text message is transmitted to the KNX bus. Adjust the parameters for the sending behaviour. You can insert your own text that is shown during alarm on or alarm off.

Alarm object sending behaviour	• on change • on change and alarm on • on change and alarm off • on change and periodically • on change to alarm on and periodically • on change to alarm off and periodically
Send cycle	5 s • ... • 10 s • ... • 2 h
Text for alarm on	[Free text]
Text for alarm off	[Free text]

5.5.   Logic Inputs

The device has 16 logic inputs, four AND and four OR logic gates. Activate the logic inputs and assign object values up to 1st communication.

Use logic inputs	No • **Yes**

Object value before 1st communication

Logic input 1	0 • 1
Logic input 2	0 • 1
Logic input ...	0 • 1
Logic input 16	0 • 1

5.5.1.   AND Logic

Activate the required logic outputs.

AND Logic 1	not active • active
AND Logic 2	not active • active
AND Logic 3	not active • active
AND Logic 4	not active • active

5.5.2.   OR Logic

Activate the required logic outputs.

OR Logic 1	not active • active
OR Logic 2	not active • active
OR Logic3	not active • active
OR Logic 4	not active • active

5.5.3.   AND Logic 1-4 and OR Logic 1-4

AND and OR logic gates provide the same setting options. Each logic output can send 1-bit or 8-bit objects. Chose what the output sends at logic = 1 and = 0.

1. / 2. / 3. / 4. Input	• <u>do not use</u> • Logic input 1...16 • Logic input 1...16 inverted • all switching events which are available to the device (see chapter *connection inputs of the AND or Or logic*)
Logic output sends	• <u>one 1-bit object</u> • two 8-bit objects

Adjust the output values for different states for the one **1-bit object**.

Output value if logic = 1	<u>1</u> • 0
Output value if logic = 0	1 • <u>0</u>
Output value if block is active	1 • <u>0</u>
Output value if monitoring period is exceeded	1 • <u>0</u>

Adjust the object type and output values for different states for the two **8-bit objects**.

Object type	• <u>Value (0...255)</u> • Percent (0...100%) • Angle (0...360°) • Scenario load (0...63)
Output value object A if logic = 1	0 … 255 / 100% / 360° / 63; <u>1</u>
Output value object B if logic = 1	0 … 255 / 100% / 360° / 63; <u>1</u>
Output value object A if logic = 0	0 … 255 / 100% / 360° / 63; <u>0</u>
Output value object B if logic = 0	0 … 255 / 100% / 360° / 63; <u>0</u>
Output value object A if block is active	0 … 255 / 100% / 360° / 63; <u>0</u>
Output value object B if block is active	0 … 255 / 100% / 360° / 63; <u>0</u>
Output value object A if monitoring period is exceeded	0 … 255 / 100% / 360° / 63; <u>0</u>
Output value object B if monitoring period is exceeded	0 … 255 / 100% / 360° / 63; <u>0</u>

Adjust the sending behaviour of the output.

Send behaviour	• on change of logic
	• on change of logic to 1
	• on change of logic to 0
	• on change of logic and periodically
	• on change of logic to 1 and periodically
	• on change of logic to 0 and periodically
	• on change of logic + receipt of object
	• on change of logic + receipt of object and periodically
Send cycle *(is only sent if "periodically" is selected)*	5 s • 10 s • ... • 2 h

Block

Activate the block of the logic output if needed and adjust what 1 or 0 means for the inhibiting input and what happens while blocking.

Use block	No • Yes
Blocking object analysis	• at value 1: block | at value 0: release at value 0: block | at value 1: release
Blocking object value before 1st communication	0 • 1
Output behaviour	
With blocking	• do not send message • Send blocking value [look above, output value when block is active]
On release (with 2 seconds release delay)	[send value for current logic state]

Monitoring

If necessary, activate the input monitoring. Set which inputs are to be monitored, at which intervals the inputs are to be monitored and what value the "monitoring status" should have, if the monitoring period is exceeded without feedback.

Use input monitor	No • Yes
Monitor input	• 1 • 2 • 3 • 4 • 1 + 2 • 1 + 3 • 1 + 4 • 2 + 3 • 2 + 4 • 3 + 4 • 1 + 2 + 3 • 1 + 2 + 4 • 1 + 3 + 4 • 2 + 3 + 4 • 1 + 2 + 3 + 4
Monitoring period	5 s • ... • 2 h; 1 min
Value of the object "monitoring status" if period is exceeded	• do not send message • send exceeding value [= value of the parameter „monitoring period"]

5.5.4. Connection inputs of the AND logic

do not use
Logic input 1
Logic input 1 inverted
Logic input 2
Logic input 2 inverted
Logic input 3
Logic input 3 inverted
Logic input 4
Logic input 4 inverted
Logic input 5
Logic input 5 inverted
Logic input 6
Logic input 6 inverted
Logic input 7
Logic input 7 inverted
Logic input 8
Logic input 8 inverted
Logic input 9
Logic input 9 inverted
Logic input 10
Logic input 10 inverted
Logic input 11
Logic input 11 inverted
Logic input 12
Logic input 12 inverted
Logic input 13
Logic input 13 inverted
Logic input 14
Logic input 14 inverted
Logic input 15
Logic input 15 inverted
Logic input 16
Logic input 16 inverted
Leakage alarm ON
Leakage alarm OFF

5.5.5. Connection inputs of the OR logic

do not use
Logic input 1
Logic input 1 inverted
Logic input 2
Logic input 2 inverted
Logic input 3
Logic input 3 inverted
Logic input 4

Logic input 4 inverted
Logic input 5
Logic input 5 inverted
Logic input 6
Logic input 6 inverted
Logic input 7
Logic input 7 inverted
Logic input 8
Logic input 8 inverted
Logic input 9
Logic input 9 inverted
Logic input 10
Logic input 10 inverted
Logic input 11
Logic input 11 inverted
Logic input 12
Logic input 12 inverted
Logic input 13
Logic input 13 inverted
Logic input 14
Logic input 14 inverted
Logic input 15
Logic input 15 inverted
Logic input 16
Logic input 16 inverted
Leakage alarm ON
Leakage alarm OFF
Switching output and logic 1
Switching output and logic 1 inverted
Switching output and logic 2
Switching output and logic 2 inverted
Switching output and logic 3
Switching output and logic 3 inverted
Switching output and logic 4
Switching output and logic 4 inverted