



Suntracer KNX basic Weather Station

Item number 3096 (20...30 V DC)



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 **Weather Station Suntracer KNX basic** perceives temperature, wind speed, brightness and precipitation. All data may be used for the control of switching outputs which depend on threshold values. The states may be linked by means of AND and OR logic gates. The compact housing of **Suntracer KNX basic** stores the sensor system, the evaluation electronics and the electronics of the bus connection.

Functions:

- **Brightness measurement:** The current light intensity is measured by means of a sensor
- **Wind measurement:** The measurement of wind speed is accomplished electronically and thus noiseless and reliable even in case of hail, snow and minus temperature. Air swirls and up-draught in the radius of the weather station are collected, too
- **Wind sensor monitoring:** If the wind measurement value changes by less than ± 0.5 m/s within 48 hours, a fault can be output. The wind measured value

is output with the maximum measured value of 35 m/s and all wind threshold values below this value become active

- **Precipitation perception:** The surface of the sensor is heated so that only drops and flakes are recognised as precipitation but not fog or dew. If it stops raining or snowing, the sensor dries quickly and the precipitation message ends
- **Temperature measurement**
- **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

The measured wind value and thus all other wind switching outputs may only be supplied 60 seconds after the supply voltage has been connected.

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:

Temperatures in degree Celsius

Light in Lux

Wind in meters per second

4.1. List of all communication objects

Abbreviations EIS types:

1 Switching1/0

5 Floating decimal value

6 8 bit value

Abbreviations Flags:

C Communication

R Read

W Write

T Transmit

No.	Name	Function	EIS type	Flags
0	Switching output dawn		1	C R T
1	Switching output rain		1	C R T
2	Logic input 1		1	C R W
3	Logic input 2		1	C R W
4	Logic input 3		1	C R W
5	Logic input 4		1	C R W
6	Logic input 5		1	C R W
7	Logic input 6		1	C R W
8	Logic input 7		1	C R W
9	Logic input 8		1	C R W
10	Temperature sensor failure	Output	1	C R T
11	Wind sensor failure	Output	1	C R T
12	Measured temperature value		5	C R T
13	Requirement min/max temperature	Requirement	1	C R W
14	Lowest measured temperature value	Sends min. temperature	5	C R T
15	Highest measured temperature value	Sends max. temperature	5	C R T
16	Min/max temperature reset	Reset of temperature	1	C R W

No.	Name	Function	EIS type	Flags
17	Temperature threshold value 1	Target value	5	CRW
18	Temperature threshold value 1	Actual value	5	CRT
19	Temperature threshold value 2	Target value	5	CRW
20	Temperature threshold value 2	Actual value	5	CRT
21	Temperature threshold value 3	Target value	5	CRW
22	Temperature threshold value 3	Actual value	5	CRT
23	Temperature threshold value 4	Target value	5	CRW
24	Temperature threshold value 4	Actual value	5	CRT
25	Switching output temperature threshold value 1		1	CRT
26	Switching output temperature threshold value 2		1	CRT
27	Switching output temperature threshold value 3		1	CRT
28	Switching output temperature threshold value 4		1	CRT
29	Measured value of wind force		5	CRT
30	Requirement max. wind force	Requirement	1	CRW
31	Highest measured value of wind force	Sends max. wind force	5	CRT
32	Max. wind force reset	Reset of wind force	1	CRW
33	Wind force threshold value 1	Target value	5	CRW
34	Wind force threshold value 1	Actual value	5	CRT
35	Wind force threshold value 2	Target value	5	CRW
36	Wind force threshold value 2	Actual value	5	CRT
37	Wind force threshold value 3	Target value	5	CRW
38	Wind force threshold value 3	Actual value	5	CRT
39	Switching output wind force threshold value 1		1	CRT
40	Switching output wind force threshold value 2		1	CRT
41	Switching output wind force threshold value 3		1	CRT
42	Measured light value		5	CRT
43	Brightness threshold value 1	Target value	5	CRW
44	Brightness threshold value 1	Actual value	5	CRT
45	Brightness threshold value 2	Target value	5	CRW
46	Brightness threshold value 2	Actual value	5	CRT
47	Brightness threshold value 3	Target value	5	CRW
48	Brightness threshold value 3	Actual value	5	CRT

No.	Name	Function	EIS type	Flags
49	Switching output light threshold value 1		1	C R T
50	Switching output light threshold value 2		1	C R T
51	Switching output light threshold value 3		1	C R T
52	Dawn threshold value 1	Target value	5	C R W
53	Dawn threshold value 1	Actual value	5	C R T
54	Dawn threshold value 2	Target value	5	C R W
55	Dawn threshold value 2	Actual value	5	C R T
56	Dawn threshold value 3	Target value	5	C R W
57	Dawn threshold value 3	Actual value	5	C R T
58	Switching output dawn threshold value 1		1	C R T
59	Switching output dawn threshold value 2		1	C R T
60	Switching output dawn threshold value 3		1	C R T
61	AND logic 1	Switching output	1	C R T
62	AND logic 1	8 Bit output A	6	C R T
63	AND logic 1	8 Bit output B	6	C R T
64	AND logic 2	Switching output	1	C R T
65	AND logic 2	8 Bit output A	6	C R T
66	AND logic 2	8 Bit output B	6	C R T
67	AND logic 3	Switching output	1	C R T
68	AND logic 3	8 Bit output A	6	C R T
69	AND logic 3	8 Bit output B	6	C R T
70	AND logic 4	Switching output	1	C R T
71	AND logic 4	8 Bit output A	6	C R T
72	AND logic 4	8 Bit output B	6	C R T
73	AND logic 5	Switching output	1	C R T
74	AND logic 5	8 Bit output A	6	C R T
75	AND logic 5	8 Bit output B	6	C R T
76	AND logic 6	Switching output	1	C R T
77	AND logic 6	8 Bit output A	6	C R T
78	AND logic 6	8 Bit output B	6	C R T
79	AND logic 7	Switching output	1	C R T
80	AND logic 7	8 Bit output A	6	C R T
81	AND logic 7	8 Bit output B	6	C R T

No.	Name	Function	EIS type	Flags
82	AND logic 8	Switching output	1	C R T
83	AND logic 8	8 Bit output A	6	C R T
84	AND logic 8	8 Bit output B	6	C R T
85	OR logic 1	Switching output	1	C R T
86	OR logic 1	8 Bit output A	6	C R T
87	OR logic 1	8 Bit output B	6	C R T
88	OR logic 2	Switching output	1	C R T
89	OR logic 2	8 Bit output A	6	C R T
90	OR logic 2	8 Bit output B	6	C R T
91	OR logic 3	Switching output	1	C R T
92	OR logic 3	8 Bit output A	6	C R T
93	OR logic 3	8 Bit output B	6	C R T
94	OR logic 4	Switching output	1	C R T
95	OR logic 4	8 Bit output A	6	C R T
96	OR logic 4	8 Bit output B	6	C R T
97	OR logic 5	Switching output	1	C R T
98	OR logic 5	8 Bit output A	6	C R T
99	OR logic 5	8 Bit output B	6	C R T
100	OR logic 6	Switching output	1	C R T
101	OR logic 6	8 Bit output A	6	C R T
102	OR logic 6	8 Bit output B	6	C R T
103	OR logic 7	Switching output	1	C R T
104	OR logic 7	8 Bit output A	6	C R T
105	OR logic 7	8 Bit output B	6	C R T
106	OR logic 8	Switching output	1	C R T
107	OR logic 8	8 Bit output A	6	C R T
108	OR logic 8	8 Bit output B	6	C R T

5. Setting of parameters

5.1. General settings

1.1.8 KNX Suntracer basic

General settings

- Temperature
- Wind force
- Brightness
- Dawn
- AND logic
- OR logic

General settings

Send measured values cyclically every: 5 sec

Send switching outputs cyclically every: 5 sec

Logic outputs cyclical send all: 5 sec

Communication objects logic inputs: do not release

Communication object switching output night: send in case of change

Communication object switching output rain: send in case of change

Transmission delay of the switching outputs after power up and programming: 10 sec

Maximum telegram quota: 5 Telegrams per second

OK Cancel Default Info Help

Send measured values cyclically every	<u>5 sec</u> • 10 sec • 30 sec • ... • 2 h
Send switching outputs cyclically every	<u>5 sec</u> • 10 sec • 30 sec • ... • 2 h
Logic outputs cyclical send all	<u>5 sec</u> • 10 sec • 30 sec • ... • 2 h
Communication objects logic inputs	<u>do not release</u> • release
Communication object switching output night (The output reacts with a delay of approx. 1 minute; "night" is recognised when light is below 10 lux)	<ul style="list-style-type: none"> • not send • <u>send in case of change</u> • send inversely in case of change • send in case of change and cyclically • send in case of change and cyclically inverse
Communication object Switching output rain (After approx. 8 minutes without rain, the output is reset)	<ul style="list-style-type: none"> • not send • <u>send in case of change</u> • send inversely in case of change • send in case of change and cyclically • send in case of change and cyclically inverse
Transmission delay of the switching outputs after power up and programming	5 sec • <u>10 sec</u> • 30 sec • ... • 2 h
Maximum telegram quota	1 • 2 • 3 • <u>5</u> • 10 • 20 <u>telegrams per second</u>

5.2. Temperature

Measured value	<ul style="list-style-type: none"> • <u>not send</u> • send cyclically • send in case of change • send in case of change and cyclically
From a temperature change of	<u>0.5°C</u> • 1°C • 2°C • 3°C • 4°C • 5°C
Temperature offset in 0.1°C	-50 ... 50; <u>0</u>
Send and reset of the min. and max. temperature value on request	<u>do not release</u> • release
Threshold value 1 / 2 / 3 / 4	<u>not active</u> • active

5.2.1. Temperature threshold value 1 / 2 / 3 / 4

If the threshold is set by parameters:

Threshold value is set by	Parameter
Threshold value in 0.1°C valid until 1st communication	-300 ... 800; <u>200</u>
Hysteresis of the threshold value in 0.1°C.	0 ... 100; <u>30</u>

If the threshold is set by communication objects, a threshold which is valid until the first communication of a new threshold must be determined for the initial operation:

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.

Threshold value is set by	Communication object
Start of threshold value in 0.1°C valid until 1st communication	-300 ... 800; <u>200</u>
Hysteresis of the threshold value in 0.1°C	0...100; <u>30</u>

The thresholds set at last by communication objects are saved in EEPROM in order to maintain them in case of voltage breakdown and to provide them as soon as there is voltage supply again.

In case of an already commissioned weather station, the threshold which has been communicated at last may be used:

As soon as a threshold has been set by means of a parameter or by means of a communication object, the threshold set at last remains until a new threshold has been transmitted by a communication object.

Switching output:

Activation delay	<u>none</u> • 1 s • 1 min... • 2 h
Switch-off delay	<u>none</u> • 1 s • 1 min... • 2 h

Output switches at	<ul style="list-style-type: none"> • TV above = ON TV-Hyst. below = OFF • TV below = ON TV-Hyst. above = OFF
Communication object switching output temperature threshold value 1	<ul style="list-style-type: none"> • <u>do not send</u> • send in case of change • send inverted in case of change • send in case of change and periodically • send inverted in case of change and periodically

5.3. Wind force

Measured value	<ul style="list-style-type: none"> • not send • cyclically send • <u>send in case of change</u> • send in case of change and cyclically
From a wind force change of	<u>1 m/sec ... 4 m/sec</u>
Send and reset of the maximum wind load value on request	<u>do not release</u> • release
Threshold value 1 / 2 / 3	<u>not active</u> • active

5.3.1. Wind threshold value 1 / 2 / 3

Threshold value

Threshold value setpoint per	<u>Parameter</u> • 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>
Hysteresis of the threshold value in %	0 ... 250; <u>20</u>

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	<ul style="list-style-type: none"> • <u>not</u> • 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	<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“)	0,1 m/s ... 5 m/s; <u>1 m/s</u>
Hysteresis of the threshold value in %	0 ... 250; <u>20</u>

Switching output

Output is at (TV = Threshold Value)	<ul style="list-style-type: none"> • <u>TV above = 1 TV - Hyst. below = 0</u> • <u>TV above = 0 TV - Hyst. below = 1</u> • <u>TV below = 1 TV + Hyst. above = 0</u> • <u>TV below = 0 TV + Hyst. above = 1</u>
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 periodically all (only if sending „periodically“)	<u>5 sec</u> ... 2 h

Blocking

„Blocking“ only appears if using „Switching output sends on change“

Use block of the switching output	Yes • <u>No</u>
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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 depends on settings made before)	<ul style="list-style-type: none"> • do not send telegram • <u>send status of the switching output</u> • if switching output = 1 => send 1 • if switching output = 0 => send 0

5.4. Brightness

Measured value	<ul style="list-style-type: none"> • <u>do not send</u> • send cyclically • send in case of change • send in case of change and cyclically
From change in %	1 ... 50; <u>10</u>
Threshold value 1 / 2 / 3	<u>not active</u> • active

5.4.1. Brightness threshold value 1 / 2 / 3

Threshold value in klux	1 ... 99; <u>5</u>
Hysteresis of the threshold value in klux	0 ... 99; <u>2</u>

All other parameters correspond to the parameters of the temperature thresholds (see there).

5.5. Dawn

Threshold value 1 / 2 / 3	<u>Not active</u> • active
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5.5.1. Dawn threshold value 1 / 2 / 3

Threshold value in lux	1 ... 1000; <u>200</u>
Hysteresis of the threshold value in lux	0 ... 1000; <u>50</u>

All other parameters correspond to the parameters of the temperature thresholds (see there).

5.6. AND Logic

Logic 1 / 2 / 3 / 4 / 5 / 6 / 7 / 8	<u>not active</u> • active
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5.6.1. 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> • <u>in case of the change of logic to 1</u> • <u>in case of the change of logic to 0</u> • <u>in case of the change of logic and cyclically</u> • <u>in case of the change of logic to 1 and cyclically</u> • <u>in case of the change of logic to 0 and cyclically</u>
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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> • <u>in case of the change of logic to 1</u> • <u>in case of the change of logic to 0</u> • <u>in case of the change of logic and cyclically</u> • <u>in case of the change of logic to 1 and cyclically</u> • <u>in case of the change of logic to 0 and cyclically</u>

5.6.2. Linkage inputs of AND logic

do not use

Night = 1

Night = 0

Dawn threshold value 1

Dawn threshold value 1 inverted

Dawn threshold value 2

Dawn threshold value 2 inverted

Dawn threshold value 3

Dawn 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
 Rain yes
 Rain no
 Failure temperature
 Failure temperature inverted
 Failure wind
 Failure wind inverted
 Temperature threshold value 1
 Temperature threshold value 1 inverted
 Temperature threshold value 2
 Temperature threshold value 2 inverted
 Temperature threshold value 3
 Temperature threshold value 3 inverted
 Temperature threshold value 4
 Temperature threshold value 4 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

5.7. OR Logic

Logic 1 / 2 / 3 / 4 / 5 / 6 / 7 / 8	<u>not active</u> • active
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5.7.1. 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.

5.7.2. 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

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