Suntracer RS485 pro
Weather Station

Item number 30167

elsner

Manual

Contents

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.

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, disposal, scope of delivery and technical data, please refer to the installation instructions.

2.   Description

The **Weather Station Suntracer RS485 pro** measures temperature, wind speed, wind direction, brightness air humidity and air pressure. It recognises precipitation and receives the GPS signal for time and location. In addition, using location coordinates and the time, it calculates the exact position of the sun (azimuth and elevation).

The weather station sends the currently recorded weather data, date and time once every second. This data can be analyzed by an end device such as SPS, PC or MC. The **Suntracer RS485 pro** has 2 connections for data output (A/B) and 2 for power supply (24 V DC).

Functions:

• **Brightness measurement** (current light strength). Measurement with 5 separate sensors, output of the current highest value (one maximum value)
• **GPS receiver**, outputting the current time and location coordinates. The **Weather Station Suntracer RS485 pro** also computes the position of the sun (azimuth and elevation)

- **Wind measurement**: Measurement of wind strength and wind direction (0°-360°) by ultrasound
- **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. Calculation of the felt temperature (considering wind strength and air humidity)**
- **Air humidity measurement** (relative, absolute)
- Calculation of the **dew point**
- **Air pressure measurement**

2.1. Notes on wind measurement

Due to very heavy rain, hail or snowfall, the ultrasonic signal can be attenuated to such an extent that no correct measured values can be output. In this case, a wind sensor error is sent and the wind speed is set to the maximum value of 35 m/s or 126 km/h for safety reasons.

2.2. Position of the sensors

Fig. 1

1 *Precipitation sensors (4 surfaces with conductor tracks)*
2 *Brightness sensors under plastic domes, directed towards*
   a - North
   b - East
   c - South
   d - West and up (sky)
3 *Pressure sensor*
4 *GPS module*
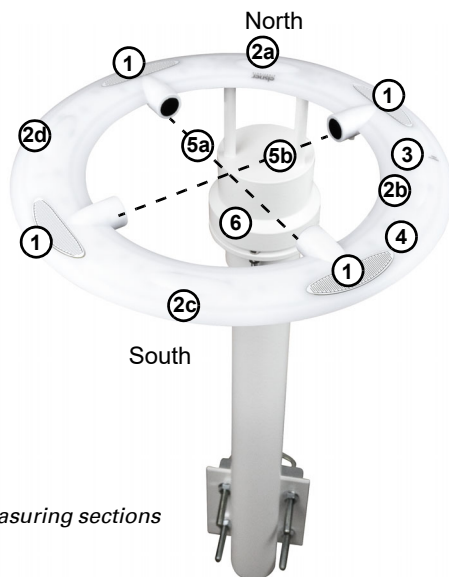
5 *Wind sensor with ultrasonic measuring sections*
   a - North-east/South-west
   b - South-east/North-west
6 *Temperature and humidity sensor in the base*

2.3.　Notes on mounting and commissioning

The correct wind value is only supplied about 30 seconds after the supply voltage has been connected.

The brightness values are offset against the position of the sun. Therefore, valid brightness values are only output if GPS reception is available.

3.　Transfer protocol

All characters and/or digits are based on the ASCII standard, i.e. every reading processed internally as an integer or float value will always be broken down into and transferred in its individual ASCII format characters. They must then be reassembled in the reverse process by the receiver.

Transfer rate: 19200 Baud
Data bits: 8
Stop bit: 1
Parity: none

The checksum is calculated by adding all transferred bytes (without checksum).

Byte No	Char	Description
0	p = 80	Start of string
1	+ / -	Outdoor temperature in °C, sign
2	0 … 9	Outdoor temperature in °C, tens digit
3	0 … 9	Outdoor temperature in °C, units digit
4	.	Outdoor temperature in °C, decimal point
5	0 … 9	Outdoor temperature in °C, tenths digit
6	+ / -	Felt temperature in °C, sign
7	0 … 9	Felt temperature in °C, tens digit
8	0 … 9	Felt temperature in °C, units digit
9	.	Felt temperature in °C, decimal point
10	0 … 9	Felt temperature in °C, tenths digit
11	0 … 3	Wind in m/s, tens digit
12	0 … 9	Wind in m/s, units digit
13	.	Wind in m/s, decimal point
14	0 … 9	Wind in m/s, tenths digit
15	0 … 1	Wind in km/h, hundreds digit
16	0 … 9	Wind in km/h, tens digit
17	0 … 9	Wind in km/h, units digit
18	.	Wind in km/h, decimal point
19	0 … 9	Wind in km/h, tenths digit
20	0 … 1	Beaufort, tens digit
21	0 … 9	Beaufort, units digit

Byte No	Char	Description
22	0 … 3	Wind angle, hundreds digit
23	0 … 9	Wind angle, tens digit
24	0 … 9	Wind angle, units digit
25	0 … 1	Rain
26	0 … 9	Air humidity in % rH, tens digit
27	0 … 9	Air humidity in % rF, units digit
28	.	Air humidity in % rF, decimal point
29	0 … 9	Air humidity in % rF, tenths digit
30	0 … 9	Air humidity in g/kg, tens digit
31	0 … 9	Air humidity in g/kg, units digit
32	.	Air humidity in g/kg, decimal point
33	0 … 9	Air humidity in g/kg, tenths digit
34	0 … 9	Air humidity in g/m³, tens digit
35	0 … 9	Air humidity in g/m³, units digit
36	.	Air humidity in g/m³, decimal point
37	0 … 9	Air humidity in g/m³, tenths digit
38	0 … 1	Air pressure in Pa, hundred thousands digit
39	8 … 2	Air pressure in Pa, ten-thousands digit
40	0 … 9	Air pressure in Pa, thousands digit
41	0 … 9	Air pressure in Pa, hundreds digit
42	0 … 9	Air pressure in Pa, tens digit
43	0 … 9	Air pressure in Pa, units digit
44	+ / -	Dew point in °C, sign
45	0 … 9	Dew point in °C, tens digit
46	0 … 9	Dew point in °C, units digit
47	.	Dew point in °C, decimal point
48	0 … 9	Dew point in °C, tenths digit
49	0 / 1	GPS report azimuth/elevation/longitude/latitude (1 = OK, 0 = not OK)
50	0 / 1	Night message
51	0 … 1	Daylight in Lux, hundred thousands digit
52	0 … 9	Daylight in Lux, ten-thousands digit
53	0 … 9	Daylight in Lux, thousands digit
54	0 … 9	Daylight in Lux, hundreds digit
55	0 … 9	Daylight in Lux, tens digit
56	0 … 9	Daylight in Lux, units digit
57	0 … 1	Air pressure at sea level in Pa, hundred thousands digit
58	8 … 2	Air pressure at sea level in Pa, ten-thousands digit
59	0 … 9	Air pressure at sea level in Pa, thousands digit
60	0 … 9	Air pressure at sea level in Pa, hundreds digit
61	0 … 9	Air pressure at sea level in Pa, tens digit

Byte No	Char	Description
62	0 … 9	Air pressure at sea level in Pa, units digit
63	+ / -	Height above sea level in m, sign
64	0 … 9	Height above sea level in m, thousands digit
65	0 … 9	Height above sea level in m, hundreds digit
66	0 … 9	Height above sea level in m, tens digit
67	0 … 9	Height above sea level in m, units digit
68	+ / -	Latitude in °, sign
69	0 … 9	Latitude in °, tens digit
70	0 … 9	Latitude in °, units digit
71	.	Latitude in °, decimal point
72	0 … 9	Latitude in °, tenths digit
73	0 … 9	Latitude in °, hundredths digit
74	+ / -	Longitude in °, sign
75	0 … 1	Longitude in °, hundreds digit
76	0 … 9	Longitude in °, tens digit
77	0 … 9	Longitude in °, units digit
78	.	Longitude in °, decimal point
79	0 … 9	Longitude in °, tenths digit
80	0 … 9	Longitude in °, hundredths digit
81	0 … 3	Azimuth in °, hundreds digit
82	0 … 9	Azimuth in °, tens digit
83	0 … 9	Azimuth in °, units digit
84	.	Azimuth in °, decimal point
85	0 … 9	Azimuth in °, tenths digit
86	0 … 9	Azimuth in °, hundredths digit
87	+ / -	Elevation in °, sign
88	0	Elevation in °, hundreds digit
89	0 … 9	Elevation in °, tens digit
90	0 … 9	Elevation in °, units digit
91	.	Elevation in °, decimal point
92	0 … 9	Elevation in °, tenths digit
93	0 … 9	Elevation in °, hundredths digit
94	1 … 7	Weekday (1 = Monday … 7 = Sunday)
95	0 … 3	Date Day, tens digit
96	0 … 9	Date Day, units digit
97	0 … 1	Date Month, tens digit
98	0 … 9	Date Month, units digit
99	0 … 9	Date Year, tens digit (from the year 2000)
100	0 … 9	Date Year, units digit (from the year 2000)
101	0 … 2	Time Hour, tens digit

Byte No	Char	Description
102	0 … 9	Time Hour, units digit
103	0 … 5	Time Minute, tens digit
104	0 … 9	Time Minute, units digit
105	0 … 5	Time second, tens digit
106	0 … 9	Time second, units digit
107	0 … 9	Checksum thousands digit
108	0 … 9	Checksum hundreds digit
109	0 … 9	Checksum tens digit
110	0 … 9	Checksum units digit
111	0x03	end identifier

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)