

KNX Manual

METEODATA 150 S weather station



Meteodata 150 KNX



Meteodata basic KNX

Meteodata 150 KNX	1509207
Meteodata 150 GPS KNX	1509208
Meteodata 150 24V KNX	1509201
Meteodata 150 24V GPS KNX	1509204
Meteodata 150 basic KNX	1509205

Table of contents

1	Functional properties	3
1.1	Integrated sensors:	3
1.2	Integrated functions	3
2	Intended use	4
2.1	Important notes	4
2.2	Installation location and orientation:	4
2.3	Factory Settings / Master Reset	5
2.4	programming mode	5
3	Technical data	6
3.1	Technical	6
4	The Meteodata 150 application program	8
4.1	Selection in the product database	8
4.2	Communication objects Overview	9
4.3	Communication objects Description	26
4.4	Parameter pages Overview	44
4.5	General parameters	46
4.6	Universal channels	64
4.7	Sun protection channels	82
4.8	Threshold channels	105
4.9	Logic channels	108
4.10	Time channels	112
4.11	Astro channels	113
4.12	Output objects for all channels	115
4.13	Diagnosis	120
5	Typical application examples	121
5.1	Shading control with sun position tracking and wind warning	121
6	Appendix	125
6.1	Brightness sensors	125
6.2	Elevation	126
6.3	Azimuth and solar path	127
6.4	Sun protection area	128
6.5	Sun positiontracking	133
6.6	Vertical blinds	136
6.7	The Beaufort wind scale	137

1 Functional properties

1.1 Integrated sensors:

- Temperature sensor with calculation of the perceived temperature
- Wind sensor, output of wind speed in m/s, km/h or Beaufort
- 4x brightness sensor for the detection of all 4 cardinal points
- Humidity sensor (output of absolute and relative humidity)
- Air pressure sensor (not with the Basic version)
- Rain sensor (not for the Basic version)
- Global radiation sensor (not for the Basic version)
- GPS for receiving location and time information (optional, not for the Basic version)



Device version with GPS/GNSS: The time and position data determined via GPS/GNSS are potentially susceptible to external, manipulated signals and must therefore not be used in safety-critical applications.

1.2 Integrated functions

- 10 universal channels (logic links of all existing sensors possible) or pre-configured universal channels for all individual sensors
- 14 sun protection channels with optional twilight functions.
Additionally, sun-position-dependent louver and/or height tracking can be implemented (not available on the Basic model)
- 4 threshold channels
- 6 logic channels
- 4 time channels (not with the Basic version)
- 2 astro channels (not with the Basic version)

2 Intended use

The weather station records various weather data (see technical data) and is mounted on the building.

2.1 Important notes

- Rain can only be detected when the rain sensor is sufficiently wet.
There may therefore be a certain delay between the first raindrops of a shower and the time at which rain is detected, depending on the type of rain.
- At the most sensitive setting of the rain sensor, especially when dew suppression is disabled, "rain" may be detected when humidity is high. If this is undesirable, a different setting should be selected.
- As the running time of the sun/visual protection devices (blinds, roller shutters, etc.) can be several minutes, they are not immediately protected in the event of sudden gusts of wind.
Therefore, the maximum permissible wind speed specified by the manufacturer must be observed when configuring the wind threshold, and the threshold should be set lower as a precaution.
A delay with increasing wind should not be parameterized!
- Temperature measurement: Temperatures are normally measured in the shade.
The weather station, on the other hand, is typically installed in places exposed to sunlight.
This solar radiation can cause the measured temperature to be far higher than the temperature in the shade.

2.2 Installation location and orientation:

When selecting the installation location, ensure that the device is not exposed to excessive environmental contamination.

Do not install the weather station in areas sheltered from the wind. If the wind hits the facade head-on, an area of stagnant air may form where the measured wind speed can be significantly lower than the actual wind speed. This should be taken into account when setting the wind threshold for frontal facades exposed to strong winds. A mast mount or a lower wind threshold can help with this.

Recommendation for orienting the weather station:

We recommend aligning the weather station according to the building's orientation and the shaded facade areas. In particular, care should be taken to ensure that the front sensor does not face a direction where the sun is low in the sky (e.g., east or west).

The facade orientation for the¹louver and/or height tracking² can be set independently of the weather station's mounting orientation



Please note that the front sensor is slightly limited in its ability to detect the low sun.

¹only for 1509201, 1509204, 1509207, 1509208

²only for 1509201, 1509204, 1509207, 1509208

2.3 Factory Settings / Master Reset

To reset the device to factory settings, proceed as follows:

- Disconnect the device from the bus (remove it from the base or turn off the bus voltage)
- Place the magnet near the mark on the physical address LED
- Connect the device to the bus (plug it into the socket or turn the bus voltage back on; the LED will remain lit)
- Remove the magnet
- A successful master reset is indicated by a single flash of the physical address LED after the magnet is removed



The physical address is set to 15.15.255 and the application is unloaded. The FDSK remains valid.

2.4 programming mode

Programming mode for setting the physical address can be activated manually with a magnet at the marked location on the bottom of the device. Alternatively, starting with ETS6, the device can also be physically addressed via the serial number. The serial number can be imported into the ETS by scanning the FDSK or typing it in (0048:xxxxxxx).

3 Technical data

3.1 Technical

3.1.1 Meteodata 150 S / 150 S GPS

Operating voltage ³	100...230 V AC
Own consumption ⁴	Standby 0.1 W, (max. 4.7 W)
Operating voltage/current consumption KNX	21 – 32 V DC / ≤ 7.5 mA
type of installation	Wall or mast installation ⁵
Dimensions (H x W x D)	103 x 120 x 227 mm
Connection type KNX	KNX bus terminal
Auxiliary voltage connection type ⁶	Load line connection, max. 1.5 mm ²
Ambient temperature	-25 °C ... +60 °C
Protection class	IP 44 according to EN 60529
Protection class	III when mounted as intended
Measurement ranges:	
Brightness	1..150,000 lux
Temperature	-25 ... 60 °C
Perceived temperature	-25 ... 60 °C
Wind	2 - 40 m/s
Precipitation ⁷	Rain/no rain
Relative humidity	0 ... 100 % rel. Humidity
Absolute humidity	0 ... 200 g/m ³
Air pressure ⁸	300 ... 1200 mbar
Global radiation ⁹	0 ...1300 W/m ²

³only for 1509207, 1509208

⁴only for 1509207, 1509208

⁵With accessory 9070928

⁶only for 1509201, 1509204, 1509207, 1509208

⁷only for 1509201, 1509204, 1509207, 1509208

⁸only for 1509201, 1509204, 1509207, 1509208

⁹only for 1509201, 1509204, 1509207, 1509208

GPS ¹⁰	Time, date, location
-------------------	----------------------

3.1.2 Different technical specifications for Meteodata 150 24V (1509201), 150 24V GPS (1509204)

Operating voltage	15 - 34 V DC (SELV)
max. current consumption when connected to - 24 V DC - 29 V DC	180 mA 170 mA
Self-consumption standby	< 0.5 W

3.1.3 Different technical specifications Meteodata 150 Basic (1509205)

operating voltage	-
-------------------	---

¹⁰only for 1509204, 1509208

4 The Meteodata 150 application program

4.1 Selection in the product database

Manufacturer	Theben AG	Theben AG	Theben AG
Product family	Phys. Sensors	Phys. Sensors	Phys. Sensors
Product type	Weather stations	Weather stations	Weather stations
Program name	Meteodata 150	Meteodata 150 GPS	Meteodata 150 Basic
For item number	1509201 + 1509207	1509204 + 1509208	1509205

Number of usable group addresses	1000
Number of assignments	1000
Number of communication partners (Secure)	250



You can find the ETS database in your ETS online catalog and on our website: www.theben.de/downloads



Recommended ETS version: ETS 5.7.5 or higher.

4.2 Communication objects Overview

4.2.1 General



The direction of the brightness sensors is displayed in the name of the brightness objects no. 1-4 [Orientation], provided the parameter Sensor 1 front - *Orientation* according to actual mounting position is set accordingly.



DPTx.* means: General DPT type for maximum flexibility.
The required subtype can be specified in the ETS.

No.	Object name	Function	Length	Flags	DPT
1	Brightness value [alignment] ¹¹ - Transmit	Brightness (lux)	2 bytes	RCT	9.004
2	Brightness value [alignment] ¹² - Transmit	Brightness (lux)	2 bytes	RCT	9.004
3	Brightness value [alignment] ¹³ - Transmit	Brightness (lux)	2 bytes	RCT	9.004
4	Brightness value [alignment] ¹⁴ - Transmit	Brightness (lux)	2 bytes	RCT	9.004
5	Minimum brightness value - send	Brightness (lux)	2 bytes	RCT	9.004
6	Maximum brightness value - send	Brightness (lux)	2 bytes	RCT	9.004
7	Average value of brightness sensors left/right - send	Brightness (lux)	2 bytes	RCT	9.004
8	Average value of the 4 brightness sensors - Send	Brightness (lux)	2 bytes	RCT	9.004
9	External brightness value 1 [Description] - Receive	Brightness (lux)	2 bytes	WC	9.004
10	External brightness value 2 [Description] - Receive	Brightness (lux)	2 bytes	WC	9.004
11	Failure of brightness sensor [alignment] - Send	Alarm (1 = alarm)	1 bit	RCT	1.005
12	Failure of brightness sensor [alignment] - Send	Alarm (1 = alarm)	1 bit	RCT	1.005
13	Brightness sensor failure Alignment - Transmit	Alarm (1 = alarm)	1 bit	RCT	1.005
14	Failure of brightness sensor [alignment] - Send	Alarm (1 = alarm)	1 bit	RCT	1.005
15	Failure external brightness value 1 Description - Send	Alarm (1 = alarm)	1 bit	RCT	1.005

¹¹ Sensor 1 front

¹² Sensor 2 left

¹³ Sensor 3 left

¹⁴ Sensor 4 rear

No	Object name	Function	Length	Flags	DPT
16	Failure external brightness value 2 Description - Transmit	Alarm (1 = alarm)	1 bit	RCT	1.005
21	Temperature value - Transmit	Temperature (°C)	2 bytes	RCT	9.001
22	Sensed temperature value - Send	Temperature (°C)	2 bytes	RCT	9.001
23	External temperature value 1 [Description] - Receive	Temperature (°C)	2 bytes	WC	9.001
24	External temperature value 2 [Description] - Receive	Temperature (°C)	2 bytes	WC	9.001
25	Temperature sensor failure - Send	Alarm (1 = alarm)	1 bit	RCT	1.005
26	Failure of external temperature value 1 [Description] - Send	Alarm (1 = alarm)	1 bit	RCT	1.005
27	Failure of external temperature value 2 [Description] - Send	Alarm (1 = alarm)	1 bit	RCT	1.005
31	Wind speed - send	Wind speed (m/s)	2 bytes	RCT	9.005
31	Wind speed - send	Wind speed (km/h)	2 bytes	RCT	9.028
31	Wind speed - send	Wind force (Bft)	1 byte	RCT	20.014
32	Wind sensor failure warning - send	Alarm (1 = alarm)	1 bit	RCT	1.005
33	Failure wind sensor alarm - send	Alarm (1 = alarm)	1 bit	RCT	1.005
34	Acknowledgement Failure wind sensor warning - receive	Reset (1 = reset)	1 bit	WC	1.015
38	Rain sensor - send	Rain (1 = rain)	1 bit	RCT	1.001
47	Global radiation - send	Global radiation (W/m²)	2 bytes	RCT	9.022
48	Global radiation sensor failure - send	Alarm (1 = alarm)	1 bit	RCT	1.005
52	Relative humidity - send	Humidity (%)	2 bytes	RCT	9.007
53	Absolute humidity - send	Humidity (g/m³)	2 bytes	RCT	9.029
54	Humidity sensor failure - send	Alarm (1 = alarm)	1 bit	RCT	1.005
58	Air pressure - send	Air pressure (Pa)	2 bytes	RCT	9.006
59	Air pressure sensor failure - send	Alarm (1 = alarm)	1 bit	RCT	1.005
63	Local time - receive	Time of day	3 bytes	WC	10.001
63	Local time - send	Time of day	3 bytes	RCT	10.001
64	Local date - receive	Date	3 bytes	WC	11.001
64	Local date - Send	Date	3 bytes	RCT	11.001
65	Local time and date - Receive	Time & date	8 bytes	WC	19.001
65	Local time and date - Send	Time & date	8 bytes	RCT	19.001
66	Time request - receive	Time request (1 = request)	1 bit	WC	1.017
66	Time request - send	Time request (1 = request)	1 bit	RCT	1.017
67	Time status - send	Time status (1 = Valid)	1 bit	RCT	1.001
68	UTC time - send	Time of day	3 bytes	RCT	10.001
69	UTC date - send	Date	3 bytes	RCT	11.001
70	UTC time and date - send	Time & date	8 bytes	RCT	19.001

No .	Object name	Function	Length	Flags	DPT
74	<i>Elevation - Send</i>	<i>Position of the sun (0° = horizon)</i>	4 bytes	RCT	14.007
75	<i>Azimuth - Send</i>	<i>Position of the sun (north = 0° / east = 90° / south = 180° / west = 270°)</i>	4 bytes	RCT	14.007
76	<i>GNSS (GPS, GLONASS, BDS, Galileo, and QZSS) latitude - Send</i>	<i>Latitude (°)</i>	4 bytes	RCT	14.007
77	<i>GNSS (GPS, GLONASS, BDS, Galileo, and QZSS) longitude - Send</i>	<i>Longitude (°)</i>	4 bytes	RCT	14.007
78	<i>GNSS (GPS, GLONASS, BDS, Galileo, and QZSS) sensor failure - Send</i>	<i>Alarm (1 = alarm)</i>	1 bit	RCT	1.005
82	<i>Auxiliary voltage failure - transmit</i>	<i>Alarm (1 = alarm)</i>	1 bit	RCT	1.005
83	<i>Sensor failure - transmit</i>	<i>Alarm (1 = alarm)</i>	1 bit	RCT	1.005

4.2.2 Universal channel

No.	Object name	Function	Length	Flags	DPT
120	F1 Universal channel - Brightness threshold - Transmit	Brightness (lux)	2 bytes	RCT	9.004
121	F1 Universal channel - Teach-in brightness threshold - Receive	1 bit (1 = teach-in)	1 bit	WC	1.017
121	F1 Universal channel - Set brightness threshold - Receive	Brightness (lux)	2 bytes	WC	9.004
122	F1 Universal channel - Temperature threshold - Transmit	Temperature (°C)	2 bytes	RCT	9.001
123	F1 Universal channel - Teach-in temperature threshold - Receive	1 bit (1 = teach-in)	1 bit	WC	1.017
123	F1 Universal channel - Set temperature threshold - Receive	Temperature (°C)	2 bytes	WC	9.001
124	F1 Universal channel - Wind threshold - Transmit	Speed (m/s)	2 bytes	RCT	9.005
125	F1 Universal channel - wind threshold - receive	Speed (m/s)	2 bytes	WC	9.005
126	F1 Universal channel - Humidity threshold - Transmit	Percentage value	2 bytes	RCT	9.007
127	F1 Universal channel - Teach humidity threshold - Receive	1 bit (1 = teach-in)	1 bit	WC	1.017
127	F1 Universal channel - Set humidity threshold - Receive	Percentage value	2 bytes	WC	9.007
128	F1 Universal channel - Set air pressure threshold - Transmit	Air pressure (Pa)	2 bytes	RCT	9.006
129	F1 Universal channel - Teach in air pressure threshold - Receive	1 bit (1 = teach-in)	1 bit	WC	1.017
129	F1 Universal channel - Set air pressure threshold - Receive	Air pressure (Pa)	2 bytes	WC	9.006
132	F1 Universal channel - Global radiation threshold - Send	Global radiation (W/m²)	2 bytes	RCT	9.022
133	F1 Universal channel - Teach-in global radiation threshold - Receive	1 bit (1 = teach-in)	1 bit	WC	1.017
133	F1 Universal channel - Set global radiation threshold - Receive	Global radiation (W/m²)	2 bytes	WC	9.022
140	F1 Universal channel - Output object 1 - Transmit	Switching	1 bit	RCT	1.001
140	F1 Universal channel - Output object 1 - Transmit	Priority	2 bit	RCT	2.001
140	F1 Universal channel - Output object 1 - Transmit	Percentage value	1 byte	RCT	5.001
140	F1 Universal channel - Output object 1 - Transmit	Value (0-255)	1 byte	RCT	5.010
140	F1 Universal channel - Output object 1 - Transmit	Color temperature (K)	2 bytes	RCT	7.600
140	F1 Universal channel - Output object 1 - Transmit	Temperature (°C)	2 bytes	RCT	9.001
140	F1 Universal channel - Output object 1 - Transmit	Scene number	1 byte	RCT	17.001

No.	Object name	Function	Length	Flags	DPT
140	F1 Universal channel - Output object 1 - Transmit	HVAC Operating mode	1 byte	RCT	20.102
140	F1 Universal channel - Output object 1 - Transmit	Color value (RGB)	3 bytes	RCT	232.600
140	F1 Universal channel - Output object 1 - Transmit	Color value (XY)	6 bytes	RCT	242.600
140	F1 Universal channel - Output object 1 - Transmit	Color value (RGBW)	6 bytes	RCT	251.600
140	F1 Universal channel - Output object 1 - Transmit	1 bit	1 bit	RCT	1.*
140	F1 Universal channel - Output object 1 - Transmit	Priority	2 bit	RCT	2.*
140	F1 Universal channel - Output object 1 - Transmit	1 byte Unsigned	1 byte	RCT	5.*
140	F1 Universal channel - Output object 1 - Transmit	2 bytes Unsigned	2 bytes	RCT	7.*
140	F1 Universal channel - Output object 1 - Transmit	2 bytes With sign	2 bytes	RCT	8.*
140	F1 Universal channel - Output object 1 - Transmit	2 bytes With sign	2 bytes	RCT	9.*
140	F1 Universal channel - Output object 1 - Transmit	4 Byte Unsigned	4 bytes	RCT	12.*
140	F1 Universal channel - Output object 1 - Transmit	4 bytes with sign	4 bytes	RCT	13.*
140	F1 Universal channel - Output object 1 - Transmit	4 bytes with sign	4 bytes	RCT	14.*
141	F1 Universal channel - output object 2 - send	Switching	1 bit	RCT	1.001
141	F1 Universal channel - output object 2 - send	Priority	2 bit	RCT	2.001
141	F1 Universal channel - output object 2 - send	Percentage value	1 byte	RCT	5.001
141	F1 Universal channel - output object 2 - send	Value (0-255)	1 byte	RCT	5.010
141	F1 Universal channel - output object 2 - send	Color temperature (K)	2 bytes	RCT	7.600
141	F1 Universal channel - output object 2 - send	Temperature (°C)	2 bytes	RCT	9.001
141	F1 Universal channel - output object 2 - send	Scene number	1 byte	RCT	17.001
141	F1 Universal channel - output object 2 - send	HVAC Operating mode	1 byte	RCT	20.102
141	F1 Universal channel - output object 2 - send	Color value (RGB)	3 bytes	RCT	232.600
141	F1 Universal channel - output object 2 - send	Color value (XY)	6 bytes	RCT	242.600
141	F1 Universal channel - output object 2 - send	Color value (RGBW)	6 bytes	RCT	251.600
141	F1 Universal channel - output object 2 - send	1 bit	1 bit	RCT	1.*
141	F1 Universal channel - output object 2 - send	Priority	2 bit	RCT	2.*
141	F1 Universal channel - output object 2 - send	1 unsigned byte	1 byte	RCT	5.*

No.	Object name	Function	Length	Flags	DPT
141	<i>F1 Universal channel - output object 2 - send</i>	<i>2 bytes Unsigned</i>	2 bytes	RCT	7.*
141	<i>F1 Universal channel - output object 2 - send</i>	<i>2 bytes With sign</i>	2 bytes	RCT	8.*
141	<i>F1 Universal channel - output object 2 - send</i>	<i>2 bytes With sign</i>	2 bytes	RCT	9.*
141	<i>F1 Universal channel - output object 2 - send</i>	<i>4 Byte Unsigned</i>	4 bytes	RCT	12.*
141	<i>F1 Universal channel - output object 2 - send</i>	<i>4 bytes with sign</i>	4 bytes	RCT	13.*
141	<i>F1 Universal channel - output object 2 - send</i>	<i>4 bytes with sign</i>	4 bytes	RCT	14.*
142	<i>F1 Universal channel - Disable - Receive</i>	<i>Disable (1 = Disable)</i>	1 bit	WC	1.003
142	<i>F1 Universal channel - Disable - Receive</i>	<i>Disable (0 = Disable)</i>	1 bit	WC	1.003

4.2.3 Sun protection channel

No.	Object name	Function	Length	Flags	DPT
390	F11 Sun protection channel - up/down - send	Move command (1 bit)	1 bit	RCT	1.008
390	F11 Sun protection channel - open/close ¹⁵ - Send	Move command (1 bit)	1 bit	RCT	1.009
391	F11 Sun shading channel - blind - height - send	Percentage value	1 byte	RCT	5.001
391	F11 Sun shading channel - blind - position - send	Percentage value	1 byte	RCT	5.001
391	F11 Sun shading channel - shutter - height - send	Percentage value	1 byte	RCT	5.001
391	F11 Sun shading channel - Scene - Send	Scene number	1 byte	RCT	17.001
392	F11 Sun shading channel - slats - position - send	Percentage value	1 byte	RCT	5.001
393	F11 Sun shading channel - Shading interruption - Receive	1 bit	1 bit	WC	1.001
394	F11 Sun shading channel - Shading interruption status - Send	Status (1 bit)	1 bit	RCT	1.001
395	F11 Sun shading channel - Shading active - Transmitting	1 bit	1 bit	RCT	1.001
397	F11 Sun protection channel - Teach-in twilight threshold - Receive	1 bit (1 = teach-in)	1 bit	WC	1.017
397	F11 Sun protection channel - Set twilight threshold - Receive	Brightness (lux)	2 bytes	WC	9.004
398	F11 Sun protection channel - Twilight threshold - Transmit	Brightness (lux)	2 bytes	RCT	9.004
399	F11 Sun protection channel - Teach in brightness threshold - Receive	1 bit (1 = teach-in)	1 bit	WC	1.017
399	F11 Sun protection channel - Set brightness threshold - Receive	Brightness (lux)	2 bytes	WC	9.004
400	F11 Sun protection channel - Brightness threshold - Transmit	Brightness (lux)	2 bytes	RCT	9.004
401	F11 Sun protection channel - Teach-in temperature threshold - Receive	1 bit (1 = teach-in)	1 bit	WC	1.017
401	F11 Sun protection channel - Set temperature threshold - Receive	Temperature (°C)	2 bytes	WC	9.001
402	F11 Sun protection channel - Temperature threshold - Transmit	Temperature (°C)	2 bytes	RCT	9.001
403	F11 Sun protection channel - Automatic sun function - On/Off - Receive	Switching	1 bit	WC	1.001

¹⁵ For vertical blinds

No.	Object name	Function	Length	Flags	DPT
404	F11 Sun protection channel - Automatic sun function status - Send	Status (1 bit)	1 bit	RCT	1.001
405	F11 Sun protection channel - Automatic twilight function in the morning On/Off - Receive	Switching	1 bit	WC	1.001
406	F11 Sun protection channel - Automatic twilight function in the evening On/Off - Receive	Switching	1 bit	WC	1.001
407	F11 Sun protection channel - Automatic twilight status in the morning - Transmit	Status (1 bit)	1 bit	RCT	1.001
408	F11 Sun protection channel - Automatic twilight status in the evening - Transmit	Status (1 bit)	1 bit	RCT	1.001
409	F11 Sun protection channel - Block sun protection - Receive	1 bit (1 = disable)	1 bit	WC	1.003
409	F11 Sun protection channel - Block sun protection - Receive	1 bit (0 = disable)	1 bit	WC	1.003
410	F11 Sun shading channel - Drive height for shading - Set position - Receive	Percentage value	1 byte	WC	5.001
411	F11 Sun shading channel - Drive height for shading - Position - Send	Percentage value	1 byte	RCT	5.001
412	F11 Sun shading channel - Slat position for shading - Set position - Receive	Percentage value	1 byte	WC	5.001
413	F11 Sun shading channel - Slat position for shading - Position - Send	Percentage value	1 byte	RCT	5.001

4.2.4 Threshold channel

No.	Object name	Function	Length	Flags	DPT
736	F25 Threshold value channel - Threshold value - Receive	Percentage value	1 byte	WC	5.001
736	F25 Threshold value channel - Threshold value - Receive	Value (0-255)	1 byte	WC	5.010
736	F25 Threshold value channel - Threshold value - Receive	2 bytes without sign	4 bytes	WC	7.001
736	F25 Threshold value channel - Threshold value - Receive	Color temperature (K)	2 bytes	WC	7.600
736	F25 Threshold value channel - Threshold value - Receive	Temperature (°C)	2 bytes	WC	9.001
736	F25 Threshold value channel - Threshold value - Receive	1 unsigned byte	1 byte	WC	5.*
736	F25 Threshold value channel - Threshold value - Receive	2 bytes with sign	2 bytes	WC	8.*
736	F25 Threshold value channel - Threshold value - Receive	2 bytes with sign	2 bytes	WC	9.*
736	F25 Threshold value channel - Threshold value - Receive	4 unsigned bytes	4 bytes	WC	12.*
736	F25 Threshold value channel - Threshold value - Receive	4 bytes with sign	4 bytes	WC	13.*
736	F25 Threshold value channel - Threshold value - Receive	4 bytes with sign	4 bytes	WC	14.*
737	F25 Threshold channel - Set threshold - Receive	Percentage value	1 byte	WC	5.001
737	F25 Threshold channel - Set threshold - Receive	Value (0-255)	1 byte	WC	5.010
737	F25 Threshold channel - Set threshold - Receive	2 bytes without sign	4 bytes	WC	7.001
737	F25 Threshold channel - Set threshold - Receive	Color temperature (K)	2 bytes	WC	7.600
737	F25 Threshold channel - Set threshold - Receive	Temperature (°C)	2 bytes	WC	9.001
737	F25 Threshold channel - Set threshold - Receive	1 unsigned byte	1 byte	WC	5.*
737	F25 Threshold channel - Set threshold - Receive	2 bytes with sign	2 bytes	WC	8.*
737	F25 Threshold channel - Set threshold - Receive	2 bytes with sign	2 bytes	WC	9.*
737	F25 Threshold channel - Set threshold - Receive	4 Byte Unsigned	4 bytes	WC	12.*
737	F25 Threshold channel - Set threshold - Receive	4 bytes with sign	4 bytes	WC	13.*
737	F25 Threshold channel - Set threshold - Receive	4 bytes with sign	4 bytes	WC	14.*
741	F25 Threshold channel - output object 1 - send	Switching	1 bit	RCT	1.001
741	F25 Threshold channel - output object 1 - send	Priority	2 bit	RCT	2.001
741	F25 Threshold channel - output object 1 - send	Percentage value	1 byte	RCT	5.001
741	F25 Threshold channel - output object 1 - send	Value (0-255)	1 byte	RCT	5.010

No.	Object name	Function	Length	Flags	DPT
741	F25 Threshold channel - output object 1 - send	Color temperature (K)	2 bytes	RCT	7.600
741	F25 Threshold channel - output object 1 - send	Temperature (°C)	2 bytes	RCT	9.001
741	F25 Threshold channel - output object 1 - send	Scene number	1 byte	RCT	17.001
741	F25 Threshold channel - output object 1 - send	HVAC Operating mode	1 byte	RCT	20.102
741	F25 Threshold channel - output object 1 - send	Color value (RGB)	3 bytes	RCT	232.600
741	F25 Threshold channel - output object 1 - send	Color value (XY)	6 bytes	RCT	242.600
741	F25 Threshold channel - output object 1 - send	Color value (RGBW)	6 bytes	RCT	251.600
741	F25 Threshold channel - output object 1 - send	1 bit	1 bit	RCT	1.*
741	F25 Threshold channel - output object 1 - send	Priority	2 bit	RCT	2.*
741	F25 Threshold channel - output object 1 - send	1 byte Unsigned	1 byte	RCT	5.*
741	F25 Threshold channel - output object 1 - send	2 bytes Unsigned	2 bytes	RCT	7.*
741	F25 Threshold channel - output object 1 - send	2 bytes With sign	2 bytes	RCT	8.*
741	F25 Threshold channel - output object 1 - send	2 bytes With sign	2 bytes	RCT	9.*
741	F25 Threshold channel - output object 1 - send	4 Byte Unsigned	4 bytes	RCT	12.*
741	F25 Threshold channel - output object 1 - send	4 bytes with sign	4 bytes	RCT	13.*
741	F25 Threshold channel - output object 1 - send	4 bytes with sign	4 bytes	RCT	14.*
742	F25 Threshold channel - output object 2 - send	Switching	1 bit	RCT	1.001
742	F25 Threshold channel - output object 2 - send	Priority	2 bit	RCT	2.001
742	F25 Threshold channel - output object 2 - send	Percentage value	1 byte	RCT	5.001
742	F25 Threshold channel - output object 2 - send	Value (0-255)	1 byte	RCT	5.010
742	F25 Threshold channel - output object 2 - send	Color temperature (K)	2 bytes	RCT	7.600
742	F25 Threshold channel - output object 2 - send	Temperature (°C)	2 bytes	RCT	9.001
742	F25 Threshold channel - output object 2 - send	Scene number	1 byte	RCT	17.001
742	F25 Threshold channel - output object 2 - send	HVAC Operating mode	1 byte	RCT	20.102
742	F25 Threshold channel - output object 2 - send	Color value (RGB)	3 bytes	RCT	232.600
742	F25 Threshold channel - output object 2 - send	Color value (XY)	6 bytes	RCT	242.600
742	F25 Threshold channel - output object 2 - send	Color value (RGBW)	6 bytes	RCT	251.600

No.	Object name	Function	Length	Flags	DPT
742	F25 Threshold channel - output object 2 - send	1 bit	1 bit	RCT	1.*
742	F25 Threshold channel - output object 2 - send	Priority	2 bit	RCT	2.*
742	F25 Threshold channel - output object 2 - send	1 byte Unsigned	1 byte	RCT	5.*
742	F25 Threshold channel - output object 2 - send	2 bytes Unsigned	2 bytes	RCT	7.*
742	F25 Threshold channel - output object 2 - send	2 bytes With sign	2 bytes	RCT	8.*
742	F25 Threshold channel - output object 2 - send	2 bytes With sign	2 bytes	RCT	9.*
742	F25 Threshold channel - output object 2 - send	4 Byte Unsigned	4 bytes	RCT	12.*
742	F25 Threshold channel - output object 2 - send	4 bytes with sign	4 bytes	RCT	13.*
742	F25 Threshold channel - output object 2 - send	4 bytes with sign	4 bytes	RCT	14.*
743	F25 Threshold channel - disable - receive	Disable (1 = Disable)	1 bit	WC	1.003
743	F25 Threshold channel - disable - receive	Disable (0 = Disable)	1 bit	WC	1.003

4.2.5 Logic channel

No.	Object name	Function	Length	Flags	DPT
790	F29 Logic channel - (AND) - Input 1 - Receive	1 bit	1 bit	WC	1.002
790	F29 Logic channel - (OR) - Input 1 - Receive	1 bit	1 bit	WC	1.002
790	F29 Logic channel - (XOR) - Input 1 - Receive	1 bit	1 bit	WC	1.002
791	F29 Logic channel - (AND) - Input 2 - Receive	1 bit	1 bit	WC	1.002
791	F29 Logic channel - (OR) - Input 2 - Receive	1 bit	1 bit	WC	1.002
791	F29 Logic channel - (XOR) - Input 2 - Receive	1 bit	1 bit	WC	1.002
792	F29 Logic channel - (AND) - Input 3 - Receive	1 bit	1 bit	WC	1.002
792	F29 Logic channel - (OR) - Input 3 - Receive	1 bit	1 bit	WC	1.002
793	F29 Logic channel - (AND) - Input 4 - Receive	1 bit	1 bit	WC	1.002
793	F29 Logic channel - (OR) - Input 4 - Receive	1 bit	1 bit	WC	1.002
798	F29 Logic channel - output object 1 - send	Switching	1 bit	RCT	1.001
798	F29 Logic channel - output object 1 - send	Priority	2 bit	RCT	2.001
798	F29 Logic channel - output object 1 - send	Percentage value	1 byte	RCT	5.001
798	F29 Logic channel - output object 1 - send	Value (0-255)	1 byte	RCT	5.010
798	F29 Logic channel - output object 1 - send	Color temperature (K)	2 bytes	RCT	7.600
798	F29 Logic channel - output object 1 - send	Temperature (°C)	2 bytes	RCT	9.001
798	F29 Logic channel - output object 1 - send	Scene number	1 byte	RCT	17.001
798	F29 Logic channel - output object 1 - send	HVAC Operating mode	1 byte	RCT	20.102
798	F29 Logic channel - output object 1 - send	Color value (RGB)	3 bytes	RCT	232.600
798	F29 Logic channel - output object 1 - send	Color value (XY)	6 bytes	RCT	242.600
798	F29 Logic channel - output object 1 - send	Color value (RGBW)	6 bytes	RCT	251.600
798	F29 Logic channel - output object 1 - send	1 bit	1 bit	RCT	1.*
798	F29 Logic channel - output object 1 - send	Priority	2 bit	RCT	2.*
798	F29 Logic channel - output object 1 - send	1 byte Unsigned	1 byte	RCT	5.*
798	F29 Logic channel - output object 1 - send	2 bytes Unsigned	2 bytes	RCT	7.*
798	F29 Logic channel - output object 1 - send	2 bytes With sign	2 bytes	RCT	8.*

No.	Object name	Function	Length	Flags	DPT
798	F29 Logic channel - output object 1 - send	2 bytes With sign	2 bytes	RCT	9.*
798	F29 Logic channel - output object 1 - send	4 Byte Unsigned	4 bytes	RCT	12.*
798	F29 Logic channel - output object 1 - send	4 bytes with sign	4 bytes	RCT	13.*
798	F29 Logic channel - output object 1 - send	4 bytes with sign	4 bytes	RCT	14.*
799	F29 Logic channel - output object 2 - send	Switching	1 bit	RCT	1.001
799	F29 Logic channel - output object 2 - send	Priority	2 bit	RCT	2.001
799	F29 Logic channel - output object 2 - send	Percentage value	1 byte	RCT	5.001
799	F29 Logic channel - output object 2 - send	Value (0-255)	1 byte	RCT	5.010
799	F29 Logic channel - output object 2 - send	Color temperature (K)	2 bytes	RCT	7.600
799	F29 Logic channel - output object 2 - send	Temperature (°C)	2 bytes	RCT	9.001
799	F29 Logic channel - output object 2 - send	Scene number	1 byte	RCT	17.001
799	F29 Logic channel - output object 2 - send	HVAC Operating mode	1 byte	RCT	20.102
799	F29 Logic channel - output object 2 - send	Color value (RGB)	3 bytes	RCT	232.600
799	F29 Logic channel - output object 2 - send	Color value (XY)	6 bytes	RCT	242.600
799	F29 Logic channel - output object 2 - send	Color value (RGBW)	6 bytes	RCT	251.600
799	F29 Logic channel - output object 2 - send	1 bit	1 bit	RCT	1.*
799	F29 Logic channel - output object 2 - send	Priority	2 bit	RCT	2.*
799	F29 Logic channel - output object 2 - send	1 byte Unsigned	1 byte	RCT	5.*
799	F29 Logic channel - output object 2 - send	2 bytes Unsigned	2 bytes	RCT	7.*
799	F29 Logic channel - output object 2 - send	2 bytes With sign	2 bytes	RCT	8.*
799	F29 Logic channel - output object 2 - send	2 bytes With sign	2 bytes	RCT	9.*
799	F29 Logic channel - output object 2 - send	4 Byte Unsigned	4 bytes	RCT	12.*
799	F29 Logic channel - output object 2 - send	4 bytes with sign	4 bytes	RCT	13.*
799	F29 Logic channel - output object 2 - send	4 bytes with sign	4 bytes	RCT	14.*
800	F29 Logic channel - disable - receive	Disable (1 = Disable)	1 bit	WC	1.003
800	F29 Logic channel - disable - receive	Disable (0 = Disable)	1 bit	WC	1.003

4.2.6 Time channel

No.	Object name	Function	Length	Flags	DPT
888	F35 Time channel - output object 1 - send	Switching	1 bit	RCT	1.001
888	F35 Time channel - output object 1 - send	Priority	2 bit	RCT	2.001
888	F35 Time channel - output object 1 - send	Percentage value	1 byte	RCT	5.001
888	F35 Time channel - output object 1 - send	Value (0-255)	1 byte	RCT	5.010
888	F35 Time channel - output object 1 - send	Color temperature (K)	2 bytes	RCT	7.600
888	F35 Time channel - output object 1 - send	Temperature (°C)	2 bytes	RCT	9.001
888	F35 Time channel - output object 1 - send	Scene number	1 byte	RCT	17.001
888	F35 Time channel - output object 1 - send	HVAC Operating mode	1 byte	RCT	20.102
888	F35 Time channel - output object 1 - send	Color value (RGB)	3 bytes	RCT	232.600
888	F35 Time channel - output object 1 - send	Color value (XY)	6 bytes	RCT	242.600
888	F35 Time channel - output object 1 - send	Color value (RGBW)	6 bytes	RCT	251.600
888	F35 Time channel - output object 1 - send	1 bit	1 bit	RCT	1.*
888	F35 Time channel - output object 1 - send	Priority	2 bit	RCT	2.*
888	F35 Time channel - output object 1 - send	1 byte Unsigned	1 byte	RCT	5.*
888	F35 Time channel - output object 1 - send	2 bytes Unsigned	2 bytes	RCT	7.*
888	F35 Time channel - output object 1 - send	2 bytes With sign	2 bytes	RCT	8.*
888	F35 Time channel - output object 1 - send	2 bytes With sign	2 bytes	RCT	9.*
888	F35 Time channel - output object 1 - send	4 Byte Unsigned	4 bytes	RCT	12.*
888	F35 Time channel - output object 1 - send	4 bytes with sign	4 bytes	RCT	13.*
888	F35 Time channel - output object 1 - send	4 bytes with sign	4 bytes	RCT	14.*
889	F35 Time channel - output object 2 - send	Switching	1 bit	RCT	1.001
889	F35 Time channel - output object 2 - send	Priority	2 bit	RCT	2.001
889	F35 Time channel - output object 2 - send	Percentage value	1 byte	RCT	5.001
889	F35 Time channel - output object 2 - send	Value (0-255)	1 byte	RCT	5.010
889	F35 Time channel - output object 2 - send	Color temperature (K)	2 bytes	RCT	7.600
889	F35 Time channel - output object 2 - send	Temperature (°C)	2 bytes	RCT	9.001

No.	Object name	Function	Length	Flags	DPT
889	F35 Time channel - output object 2 - send	Scene number	1 byte	RCT	17.001
889	F35 Time channel - output object 2 - send	HVAC Operating mode	1 byte	RCT	20.102
889	F35 Time channel - output object 2 - send	Color value (RGB)	3 bytes	RCT	232.600
889	F35 Time channel - output object 2 - send	Color value (XY)	6 bytes	RCT	242.600
889	F35 Time channel - output object 2 - send	Color value (RGBW)	6 bytes	RCT	251.600
889	F35 Time channel - output object 2 - send	1 bit	1 bit	RCT	1.*
889	F35 Time channel - output object 2 - send	Priority	2 bit	RCT	2.*
889	F35 Time channel - output object 2 - send	1 byte Unsigned	1 byte	RCT	5.*
889	F35 Time channel - output object 2 - send	2 bytes Unsigned	2 bytes	RCT	7.*
889	F35 Time channel - output object 2 - send	2 bytes With sign	2 bytes	RCT	8.*
889	F35 Time channel - output object 2 - send	2 bytes With sign	2 bytes	RCT	9.*
889	F35 Time channel - output object 2 - send	4 Byte Unsigned	4 bytes	RCT	12.*
889	F35 Time channel - output object 2 - send	4 bytes with sign	4 bytes	RCT	13.*
889	F35 Time channel - output object 2 - send	4 bytes with sign	4 bytes	RCT	14.*
890	F35 Time channel - Block - Receive	Disable (1 = Disable)	1 bit	WC	1.003
890	F35 Time channel - Block - Receive	Disable (0 = Disable)	1 bit	WC	1.003

4.2.7 Astro channel

No.	Object name	Function	Length	Flags	DPT
938	F39 Astro channel - output object 1 - send	Switching	1 bit	RCT	1.001
938	F39 Astro channel - output object 1 - send	Priority	2 bit	RCT	2.001
938	F39 Astro channel - output object 1 - send	Percentage value	1 byte	RCT	5.001
938	F39 Astro channel - output object 1 - send	Value (0-255)	1 byte	RCT	5.010
938	F39 Astro channel - output object 1 - send	Color temperature (K)	2 bytes	RCT	7.600
938	F39 Astro channel - output object 1 - send	Temperature (°C)	2 bytes	RCT	9.001
938	F39 Astro channel - output object 1 - send	Scene number	1 byte	RCT	17.001
938	F39 Astro channel - output object 1 - send	HVAC Operating mode	1 byte	RCT	20.102
938	F39 Astro channel - output object 1 - send	Color value (RGB)	3 bytes	RCT	232.600
938	F39 Astro channel - output object 1 - send	Color value (XY)	6 bytes	RCT	242.600
938	F39 Astro channel - output object 1 - send	Color value (RGBW)	6 bytes	RCT	251.600
938	F39 Astro channel - output object 1 - send	1 bit	1 bit	RCT	1.*
938	F39 Astro channel - output object 1 - send	Priority	2 bit	RCT	2.*
938	F39 Astro channel - output object 1 - send	1 unsigned byte	1 byte	RCT	5.*
938	F39 Astro channel - output object 1 - send	2 bytes without sign	2 bytes	RCT	7.*
938	F39 Astro channel - output object 1 - send	2 bytes with sign	2 bytes	RCT	8.*
938	F39 Astro channel - output object 1 - send	2 bytes with sign	2 bytes	RCT	9.*
938	F39 Astro channel - output object 1 - send	4 unsigned bytes	4 bytes	RCT	12.*
938	F39 Astro channel - output object 1 - send	4 bytes with sign	4 bytes	RCT	13.*
938	F39 Astro channel - output object 1 - send	4 bytes with sign	4 bytes	RCT	14.*
939	F39 Astro channel - output object 2 - send	Switching	1 bit	RCT	1.001
939	F39 Astro channel - output object 2 - send	Priority	2 bit	RCT	2.001
939	F39 Astro channel - output object 2 - send	Percentage value	1 byte	RCT	5.001
939	F39 Astro channel - output object 2 - send	Value (0-255)	1 byte	RCT	5.010
939	F39 Astro channel - output object 2 - send	Color temperature (K)	2 bytes	RCT	7.600
939	F39 Astro channel - output object 2 - send	Temperature (°C)	2 bytes	RCT	9.001

No.	Object name	Function	Length	Flags	DPT
939	F39 Astro channel - output object 2 - send	Scene number	1 byte	RCT	17.001
939	F39 Astro channel - output object 2 - send	HVAC Operating mode	1 byte	RCT	20.102
939	F39 Astro channel - output object 2 - send	Color value (RGB)	3 bytes	RCT	232.600
939	F39 Astro channel - output object 2 - send	Color value (XY)	6 bytes	RCT	242.600
939	F39 Astro channel - output object 2 - send	Color value (RGBW)	6 bytes	RCT	251.600
939	F39 Astro channel - output object 2 - send	1 bit	1 bit	RCT	1.*
939	F39 Astro channel - output object 2 - send	Priority	2 bit	RCT	2.*
939	F39 Astro channel - output object 2 - send	1 unsigned byte	1 byte	RCT	5.*
939	F39 Astro channel - output object 2 - send	2 bytes without sign	2 bytes	RCT	7.*
939	F39 Astro channel - output object 2 - send	2 bytes with sign	2 bytes	RCT	8.*
939	F39 Astro channel - output object 2 - send	2 bytes with sign	2 bytes	RCT	9.*
939	F39 Astro channel - output object 2 - send	4 unsigned bytes	4 bytes	RCT	12.*
939	F39 Astro channel - output object 2 - send	4 bytes with sign	4 bytes	RCT	13.*
939	F39 Astro channel - output object 2 - send	4 bytes with sign	4 bytes	RCT	14.*
940	F39 Astro channel - Disable - Receive	Disable (1 = Disable)	1 bit	WC	1.003
940	F39 Astro channel - Disable - Receive	Disable (0 = Disable)	1 bit	WC	1.003

4.3 Communication objects Description

4.3.1 General objects



The direction of the brightness sensors is displayed in the name of the brightness objects no. 1-4 [Orientation], provided the parameter Sensor 1 front - *Orientation* according to actual mounting position is set accordingly.

Object 1: Brightness value[alignment] - Send

Sends the current brightness value from sensor 1, front.

Object 2: Brightness value[alignment] - send

Sends the current brightness value from sensor 2, left.

Object 3: Brightness value[alignment] - send

Sends the current brightness value from sensor 3, right.

Object 4: Brightness value[Alignment] - Send

Sends the current brightness value from sensor 4, left.

Object 5: Minimum brightness value - send

Sends the lowest value of the 4 sensors.

Object 6: Maximum brightness value - Transmit

Sends the highest value of the 4 sensors.

Object 7: Average value of brightness sensors left/right - Send

Sends the average value of both sensors

Object 8: Average value of the 4 brightness sensors - Send

Sends the average value of the 4 built-in sensors.

Object 9: External brightness value 1 [Description]¹⁶ - Receive

Receives the 1. External brightness value, if used.

This object detects the brightness of an additional façade for a sun shading channel or serves as a brightness source for the universal channel.

¹⁶ User-defined description text for the respective channel.

Object 10: External brightness value 2[Description] - Receive

Receives the 2nd brightness value. External brightness value, if used.

This object enables the brightness of a further façade to be detected for a sun shading channel or as a brightness source for the universal channel.

Object 11: F1 Brightness sensor failure[Alignment] - Transmit

Reports an error of sensor 1 at the front.

0 = no error

1 = Error

Object 12: F1 Failure of brightness sensor[alignment] - send

Reports an error of sensor 2 left.

0 = no error

1 = Error

Object 13: F1 Failure brightness sensor[alignment] - send

Reports an error of sensor 3 right.

0 = no error

1 = Error

Object 14: F1 Failure brightness sensor[alignment] - send

Reports an error of sensor 4 at the rear.

0 = no error

1 = Error

Object 15: Failure external brightness value 1 [Description¹⁷] - Transmit

Reports an error if no new brightness telegram could be received within the monitoring time.

0 = no error

1 = Error

Object 16: Failure external brightness value 2[Description] - Send

Reports an error if no new brightness telegram could be received within the monitoring time.

0 = no error

1 = Error

Object 21: Temperature value - send

Sends the current temperature value, depending on the parameterization, on change and /or cyclically.

Object 22: Sensed temperature value - Send

Sends the calculated sensed temperature based on wind, temperature, humidity and global radiation.

Object 23: External temperature value 1[Description] - Receive

Receives the 1. External temperature value, if required.

This object enables the temperature to be recorded at a more favorable location, e.g. in the shade.

Object 24: External temperature value 2[Description] - Receive

Receives the 2nd brightness value. External temperature value, if required.

¹⁷ User-defined channel description text.

This object enables the temperature to be recorded at a more favorable location, e.g. in the shade.

Object 25: F1 Temperature sensor failure[Alignment] - Send

Reports an error of the integrated temperature sensor.

0 = no error

1 = Error

Object 26: External temperature value 1 failure[Description] - Send

Reports an error if no new temperature telegram could be received within the monitoring time.

0 = no error

1 = Error

Object 27: Failure external temperature value 2[Description] - Send

Reports an error if no new temperature telegram could be received within the monitoring time.

0 = no error

1 = Error

Object 31: Wind speed - send

Sends the current wind speed, depending on the parameterization on change and /or cyclically.

The unit used, m/s km/h or Beaufort, can be selected on the measured values parameter page.

Object 32: Failure wind sensor warning - send

Only available if wind sensor monitoring is activated (Measured values / Wind parameter page).

Sends a warning message if the wind sensor has not detected any air movement within the specified number of days and a wind sensor malfunction should be considered.

See *Output warning message after* parameter on the Measured values / Wind parameter page.

The warning can be reset either via the acknowledgement object or by detecting an air movement¹⁸ be reset.

Object 33: Wind sensor failure alarm - send

Only available if wind sensor monitoring is activated (Measured values / Wind parameter page).

Sends an alarm message if the wind sensor continues to report no wind within the parameterized time in days.

This alarm message must be reset by the acknowledgement object. A new air movement is not sufficient for this.

Object 34: Acknowledgement failure wind sensor warning - receive

Resets the set warning period and the alarm period.

The Warning and Wind sensor alarm objects are set to 0.

Object 38: Rain sensor - send

This 1-bit object sends the current rain status 1 or 0, i.e. rain / no rain.

Object 47: Global radiation - send

Sends the measured global radiation in W/m^2 .

Object 48: Global radiation sensor failure - send

Reports a failure of the integrated global radiation sensor.

0 = no error

¹⁸i.e., the anemometer has moved and is operational.

1 = Error

Object 52: Relative humidity - send

Sends the measured relative humidity in %.

Object 52: Absolute humidity - send

Sends the measured absolute humidity in g/m³.

Object 54: Humidity sensor failure - send

Reports an error in the integrated humidity sensor

0 = no error

1 = Error

Object 58: Atmospheric pressure - send

Sends the measured atmospheric air pressure.

Object 59: Air pressure sensor failure - send

Reports a failure of the integrated air pressure sensor

0 = no error

1 = Error

Object 63: Local time - receive

Receives the time from an external time source (device model without GPS module).

It is recommended to send the current time to Meteodata once an hour

Object 63: Local time - send

Sends the time (device version with GPS module).

Object 64: Local date - receive

Receives the date from an external time source (device version without GPS module).

Object 64: Local date - send

Sends the date (device version with GPS module).

Object 65: Local time and date - Receive

Receives the time and date from an external time source (device model without GPS module).

Object 65: Local time and date - send

Transmits the time and date (device version with GPS module).

Object 66: Time request - Receive

Object receives time request from other bus devices and triggers transmission process for time and date objects.
(Device version with GPS module).

Object 67: Time request - send

Object sends time request to bus timer to receive the current time (device version without GPS / GLONASS module).

Object 67: Time status - send

Only for models with a GPS module.

0 = No GNSS time reception in the last 24 hours.

1 = Time has been synchronized by GNSS signal and can be sent.

Object 68: UTC Time¹⁹ - Send

Sends the UTC time (Coordinated Universal Time, device version with GPS module).

Object 69: UTC date - send

Sends the UTC date (Coordinated Universal Time, device version with GPS module).

Object 70: UTC Time and Date - Send

Sends UTC time and date (device version with GPS module).

Object 74: Elevation - send

Height of the sun above the horizon.

0° corresponds to the sun at the lowest point on the horizon (sunrise or sunset).

The actual elevation depends on the latitude, date and time.

Object 75: Azimuth - Send

Horizontal angle of the sun in all directions.

0° = North

90° = East

180° = South

270° = West

Object 76: GPS latitude - send

Only for models with a GPS module.

Sends the latitude of the location as DPT 14.007.

Object 77: GPS longitude - send

Only for models with a GPS module.

Sends the longitude of the location as DPT 14.007.

Object 78: GPS sensor failure - send

Reports an error in the GPS module.

0 = no error

1 = Error

An error is reported if either no valid GNSS data (location/time/date) has been received 60 minutes after an attempted synchronization (synchronization is repeated every 60 minutes) or if no GPS module is detected approximately 60 seconds into the synchronization process.

¹⁹ UTC is used as world time wherever a globally standardized time scale is required.

Object 82: Auxiliary voltage failure - send

Reports a failure of the auxiliary voltage. The weather station continues to function, except for the heating of the rain sensor and the GPS module)

Object 83: Sensor failure - send

General sensor error message.

All monitored sensors are OR-linked

0 = no error

1 = Error

4.3.2 Universal channel



Objects 120-131 are only available if the parameter *Threshold can be overwritten via object = yes* and the respective measured variable is used in the channel.

Object 120: F1 Universal channel - Brightness threshold - Send

Sends the parameterized threshold value for brightness.

Object 121: F1 Universal channel - Teach in or set brightness threshold - Receive

Parameters *Thresholds via object*

Specify value (set)	Teach in value
2-byte object: The parameterized <i>threshold value for brightness</i> is replaced by the received value.	1-bit object: When a 1 is received, the currently measured brightness value is adopted as the new threshold value.

This object can be used to change the parameterized brightness threshold of the channel at any time via bus telegram.

Object 122: F1 Universal channel - temperature threshold - send

Sends the parameterized threshold value for temperature.

Object 123: F1 Universal channel - Teach in or set temperature threshold - Receive

Parameters *Thresholds via object*

Specify value (set)	Teach in value
2-byte object: The parameterized <i>threshold value for temperature</i> is replaced by the received value.	1-bit object: When a 1 is received, the currently measured temperature value is adopted as the new threshold value.

This object can be used to change the parameterized temperature threshold of the channel at any time via bus telegram.

Object 124: F1 Universal channel - wind threshold - send

Sends the parameterized threshold value for wind.

Object 125: F1 Universal channel - Teach-in wind threshold - Receive

The parameterized *threshold value for wind* is replaced by the received value (in m/s).

This object can be used to change the parameterized wind threshold of the channel at any time via bus telegram.

Object 126: F1 Universal channel - humidity threshold - send

Sends the parameterized threshold value for air humidity.

Object 127: F1 Universal channel - Teach in or set humidity threshold - ReceiveParameters *Thresholds via object*

Specify value (set)	Teach in value
2-byte object: The parameterized <i>threshold value for humidity</i> is replaced by the received value.	1-bit object: When a 1 is received, the currently measured humidity value is adopted as the new threshold value.

This object can be used to change the parameterized humidity threshold of the channel at any time via bus telegram.

Object 128: F1 Universal channel - Air pressure threshold - Transmit

Sends the parameterized threshold value for air pressure.

Object 129: F1 Universal channel - Teach in or set air pressure threshold - ReceiveParameters *Thresholds via object*

Specify value (set)	Teach in value
2-byte object: The parameterized <i>threshold value for air pressure</i> is replaced by the received value.	1-bit object: When a 1 is received, the currently measured air pressure value is adopted as the new threshold value.

This object can be used to change the parameterized air pressure threshold of the channel at any time via bus telegram.

Object 132: F1 Universal channel - Global radiation threshold - Transmit

Sends the parameterized threshold value for global radiation.

Object 133: F1 Universal channel - Teach in or set global radiation threshold - ReceiveParameters *Thresholds via object*

Specify value (set)	Teach in value
2-byte object: The parameterized <i>threshold value for global radiation</i> is replaced by the received value.	1-bit object: When a 1 is received, the currently measured global radiation value is adopted as the new threshold value.

This object can be used to change the parameterized global radiation threshold of the channel at any time via bus telegram.

4.3.2.1 Output objects for the universal channel**Object 140: F1 Universal channel - Output object 1 - Transmit****Object 141: F1 Universal channel - Output object 2 - Transmit****Object 142: F1 Universal channel - Block - Receive**

The output objects of a channel are identical for all channel types and are described in a separate chapter (see chapter Output objects).

4.3.3 Sun protection channel



Slat-related objects are only available if the channel controls a blind.

Object 390: F11 Sun shading channel - Up/Down - Send

This object is only available if the *Move to end position via* parameter is set to *1-bit command*. It is used to fully open or close the sun shading devices.

Standard blinds (horizontal slats) ²⁰	Vertical blinds ²¹
0 = Raise	0 = Open
1 = Lowering	1 = Close

Object 391:

F11 Sun protection channel - Scene - Transmit

F11 Sun protection channel - Blinds - Height - Transmit,

F11 Sun shading channel - shutter - height - send

F11 Sun shading channel - blind - position - send

The function of the object is determined by the parameter *Channel controls* on the parameter page **General** parameter page.

Channel controls	Object sends
Roller shutter / textile sun protection	Height telegram in %
Via scenes	Scene number 1 ... 64
Blinds	Height telegram or position telegram ²² in %

Object 392: F11 Sun protection channel - Slats - Position - Send

Sends the required slat position from 0% to 100% in 1% steps to the blind actuator Blind actuator.

Object 393: F11 Sun protection channel - Shading interruption - Receive

This function is only effective while the sun is in the defined sun protection area.

The reaction when shading is interrupted can be set on the automatic sun control parameter page.

Object 394: F11 Sun protection channel - Shading interruption status - Transmit

Reports the current status of the shading interruption.

²⁰ DPT1.008

²¹ DPT1.009

²² For vertical blinds

Object 395: F11 Sun protection channel - Shading active - Send

Sends a 1 if the shading function is activated and a 0, e.g. if the sun is outside the shading area or the brightness value has fallen below the parameterized shading threshold.

Object 396: N.b.

Object 397: F11 Sun protection channel - Set or teach-in twilight threshold - Receive

Only available if the twilight function is used and *threshold can be overwritten via object* = yes.

Parameters *Thresholds via object*:²³

Specify value (set)	Teach in value
2-byte object: The parameterized <i>twilight threshold</i> is replaced by the received value.	1-bit object: When a 1 is received, the currently measured brightness value is adopted as the new twilight threshold.

This object can be used to change the parameterized twilight threshold of the channel at any time via bus telegram.

Object 398: F11 Sun protection channel - Twilight threshold - Transmit

Only available if the twilight function is used and

Threshold can be overwritten via object = yes.

Reports the value of the twilight threshold.

Object 399: F11 Sun protection channel - Set or teach-in brightness threshold - Receive

Only available if *threshold can be overwritten via object* = yes.

Parameters *Thresholds via object*:²⁴

Specify value (set)	Teach in value
2-byte object: The parameterized <i>brightness threshold</i> is replaced by the received value.	1-bit object: When a 1 is received, the currently measured brightness value is adopted as the new brightness threshold.

This object can be used to change the parameterized brightness threshold of the channel at any time via bus telegram.

Object 400: F11 Sun protection channel - Brightness threshold - Transmit

Only available if *threshold can be overwritten via object* = yes.

Reports the value of the brightness threshold.

²³ Parameter page **General**

²⁴ Parameter page **General**

Object 401: F11 Sun protection channel - Set or teach-in temperature threshold - Receive

Only available if *automatic sun function temperature-dependent = yes* and *threshold can be overwritten via object = yes*.

Parameters *Thresholds via object*:²⁵

Specify value (set)	Teach in value
2-byte object: The parameterized <i>temperature threshold</i> for the automatic sun function is replaced by the received value.	1-bit object: When a 1 is received, the currently measured temperature value is adopted as the new temperature threshold for automatic solar control.

This object can be used to change the parameterized temperature threshold at any time via bus telegram.

Object 402: F11 Sun protection channel - Temperature threshold - Transmit

Only available if *threshold can be overwritten via object = yes*.

Reports the value of the temperature threshold for the automatic sun function.

Object 403: F11 Sun protection channel - Automatic sun function - On/Off - Receive

This object is only available if on the parameter page **Automatic solar function** the *Activation of the automatic sun function "via object"* was selected.

A 1 on the object activates the automatic solar function.

A 0 deactivates the automatic sun function.

Object 404: F11 Sun protection channel - Automatic solar function status - Transmit

This object is only available if **activation of the automatic solar function "via object"** has been selected on the *automatic solar function* parameter page.

Reports whether the automatic solar function is active or inactive.

Object 405: F11 Automatic twilight in the morning On/Off - Receive

Object receives	Automatic twilight function
0	The weather station does not react to dawn.
1	If the set dawn threshold is exceeded, the parameterized reaction is executed.

Object 406: F11 Automatic twilight in the evening On/Off - Receive

Object receives	Automatic twilight function
0	The weather station does not react to the evening twilight.
1	The parameterized reaction is executed when the set twilight threshold is undershot.

Object 407: F11 Sun protection channel - Automatic twilight status in the morning - Transmit

Reports the current status of the automatic twilight function in the morning.

Object 408: F11 Sun protection channel - Automatic twilight status in the evening - Send

Reports the current status of the automatic twilight function in the evening.

Object 409: F11 Sun protection channel - Block sun protection - Receive

Blocking object for the automatic sun protection.

The behaviour when setting and cancelling the block can be parameterized.

²⁵ Parameter page **General**



The objects 401...413 are only available if *Drive height and slats can be overwritten via object = yes*

Object 410: F11 Sun protection channel - Drive height for shading - Set position - Receive

Overwrites the parameterized value for *drive height* when the thresholds are exceeded.

Object 411: F11 Sun shading channel - Drive height for shading - Position - Send

Reports the set drive height *Drive height* when the thresholds are exceeded.

Object 412: F11 Sun shading channel - Slat position for shading - Set position - Receive

Overwrites the parameterized value for *Slats* when the thresholds are exceeded.

Object 413: F11 Sun shading channel - Slat position for shading - Position - Send

Reports the set value for *Slats* when the thresholds are exceeded.

4.3.4 Threshold channel

Object 736: F25 Threshold value channel - Threshold value - Receive

Input object of the channel.

This object is used to trigger the set channel function.

Possible input formats	DPT
Percentage value	5.001
Value (0-255)	5.010
2 bytes without sign	7.001
Color temperature (K)	7.600
Temperature (°C)	9.001
1 unsigned byte	5.*
2 bytes with sign	8.*
2 bytes with sign	9.*
4 unsigned bytes	12.*
4 bytes with sign	13.*
4 bytes with sign	14.*

Object 737: F25 Threshold channel - Set threshold - Receive

Only available if *threshold* can be overwritten via *object* = yes.

The parameterized *threshold value* is replaced by the received value.

This object can be used to change the parameterized threshold at any time via bus telegram.

The data type corresponds to the parameterized *type of threshold object*.

4.3.4.1 Output objects for the threshold channel

Object 741: F25 Threshold channel - output object 1 - send

Object 742: F25 Threshold channel - output object 1 - send

Object 743: F25 Threshold channel - Disable - Receive



The output objects of a channel are identical for all channel types and are described in a separate chapter (see chapter Output objects).

4.3.5 Logic channel

Object 737: F29 Logic channel - (AND / OR / XOR) - Input 1 - Receive

First input object of the logic module

Only available if *Input variable for input 1 = Input object*

Object 738: F29 Logic channel - (AND / OR / XOR) - Input 2 - Receive

Second input object of the logic module

Only available if *Input variable for input 2 = Input object*

Object 739: F29 Logic channel - (AND / OR) - Input 3 - Receive

Third input object of the logic module

Only available if *input variable for input 3 = input object* and only for OR and AND logic operations.

Object 740: F29 Logic channel - (AND / OR) - Input 4 - Receive

Fourth input object of the logic module

Only available if *input variable for input 4 = input object* and only for OR and AND logic operations.

4.3.5.1 Output objects for the logic channel

Object 798: F29 Logic channel - Output object 1 - Send

Object 799: F29 Logic channel - output object 2 - send

Object 800: F29 Logic channel - Block - Receive



The output objects of a channel are identical for all channel types and are described in a separate chapter (see chapter Output objects).

4.3.6 Time channel

The time channel only has output objects.

Object 888: F35 Time channel - output object 1 - send

Object 889: F35 Time channel - output object 2 - send

Object 890: F35 Time channel - Block - Receive



The output objects of a channel are identical for all channel types and are described in a separate chapter (see chapter Output objects).

4.3.7 Astro channel

The astro channel only has output objects.

Object 938: F39 Astro channel - output object 1 - send

Object 939: F39 Astro channel - output object 2 - send

Object 940: F39 Logic channel - Block - Receive



The output objects of a channel are identical for all channel types and are described in a separate chapter (see chapter Output objects).

4.3.8 Output objects

 All channel types have identical output object types. ²⁶

There are 2 output objects available per channel.

The *type of telegram* can be set individually for each object.

The list below applies to the following channels:

- Universal channels
- Threshold channels
- Logic channels
- Time channels
- Astro channels

...Output object 1 or 2 - Transmit - Switch

First and second output object of the channel.

Sends ON / OFF switching telegrams.

...Output object 1 or 2 - Transmit - Priority

First and second output object of the channel.

Sends priority telegrams.

...Output object 1 or 2 - send - percentage value

First and second output object of the channel.

Sends percentage telegrams 0-100 %.

...Output object 1 or 2 - Send - Value (0-255)

First and second output object of the channel.

Sends value telegrams 0-255.

...Output object 1 or 2 - Send - Color temperature (K)

First and second output object of the channel.

Sends color temperature telegrams from 1000 to 10000 K.

...Output object 1 or 2 - Send - Temperature (°C)

First and second output object of the channel.

Sends temperature telegrams from -273 to 300 °C

...Output object 1 or 2 - Send - Scene number

First and second output object of the channel.

Sends call-up telegrams for scene numbers 1-64.

²⁶ Exception: Sun protection channel.

...Output object 1 or 2 - Send - HVAC operating mode

First and second output object of the channel.

Sends HVAC operating modes.

Value	Operating mode
0	Car
1	Comfort
2	Standby
3	Night
4	Frost protection/heat protection

...Output object 1 or 2 - Send, color value (RGB)

First and second output object of the channel.

Sends an RGB color value.

...Output object 1 or 2 - Send, color value (XY)

First and second output object of the channel.

Sends an XY color value.

...Output object 1 or 2 - Send, color value (RGBW)

First and second output object of the channel.

Sends an RGBW color value.

...Output object 1 or 2 - Send, 1 bit

First and second output object of the channel.

Sends DPT1.* telegrams [0, 1].

The exact data type can be set in the ETS.

...Output object 1 or 2 - Send, priority

First and second output object of the channel.

Sends DPT2.* telegrams.

The exact data type can be set in the ETS.

...Output object 1 or 2 - Send, 1 byte Unsigned

First and second output object of the channel.

Sends DPT5.* telegrams [0...255].

The exact data type can be set in the ETS.

...Output object 1 or 2 - send, 2 bytes Unsigned

First and second output object of the channel.

Sends DPT7.* telegrams [0...65,535].

The exact data type can be set in the ETS.

...Output object 1 or 2 - send, 2 bytes With sign

First and second output object of the channel.

Sends DPT8.* telegrams [-32.768...32.767].

The exact data type can be set in the ETS.

...Output object 1 or 2 - send, 2 bytes With sign

First and second output object of the channel.

Sends DPT9th * telegrams [-671,088.64...670,433.28]

The exact data type can be set in the ETS.

...Output object 1 or 2 - Send, 4 bytes Unsigned

First and second output object of the channel.

Sends DPT12.* telegrams [0...4,294,967,295]

The exact data type can be set in the ETS.

...Output object 1 or 2 - send, 4 bytes with sign

First and second output object of the channel.

Sends DPT13.* telegrams [-2,147,483,648...2,147,483,647]

The exact data type can be set in the ETS.

...Output object 1 or 2 - send, 4 bytes with sign

First and second output object of the channel.

Sends DPT14.* telegrams [-3.40 E+38...3.40 E+38]

The exact data type can be set in the ETS.

...Output object 1 or 2 - send, 4 bytes with sign

First and second output object of the channel.

...Disable - Receive

Common disable object for both output objects.

The effective direction of the disable telegram and the reaction when setting or cancelling the disable can be parameterized.

4.4 Parameter pages Overview

Parameter page	Description
General	
General	Basic settings: Device version, channel type selection, activation and customer-specific labeling of the channels.
Measured values	
Brightness	Configuration of brightness measurement: alignment, adjustment, monitoring, external sensors.
Temperature	Configuration of temperature measurement, alignment, monitoring, external sensors.
Wind	Configuration of wind measurement: unit, monitoring, etc.
Rain	Configuration of precipitation measurement: sensitivity, transmission behavior, delay, dew suppression, etc.
Global radiation	Configuration of global radiation measurement: transmission behavior, monitoring, etc.
Humidity	Configuration of humidity measurement: absolute and relative measurement, transmission behavior, monitoring, etc.
Air pressure	Configuration of air pressure measurement: Adjustment, transmission behavior, monitoring.
General fault message	Configuration of general fault reporting: Transmission behavior and monitoring of the auxiliary voltage.
Location data	Settings for GPS positioning of the weather station: Manual position information, transmission behavior of position, elevation and azimuth.
Date and time	Settings for the time zone, summer/winter time changeover, transmission behavior, etc.
Universal channels F1-F10	
General	All settings for evaluating the sensors: threshold values, delays, etc.
Output objects	Configuration of the output telegrams and reaction to fulfillment or non-fulfillment of the conditions.
Sun protection channels F11- F24	
General	Basic settings for the sun shading functions. Type of sun protection, activate height and slat tracking, brightness threshold, delays, etc.
Automatic sun function	Reaction to activation of the automatic sun function, behavior after reset, download, activation of the twilight function, etc.
Automatic twilight function	Reaction to dawn and dusk, etc.
Façade settings	Definition of the sun protection area according to façade orientation, angle and elevation.
Slat tracking	Parameters for calculating the slat position, automatically or using your own values.
Height tracking	Parameters for calculating the drive height, automatically or using your own values.
Threshold channels F25...F28	
General	Settings for threshold value, hysteresis, delay, etc.
Output objects	Configuration of the output telegrams and reaction to exceeding or falling below the threshold.
Logic channels F29...F34	
General	Type of link, configuration of the inputs.
Output objects	Configuration of the output telegrams and reaction to fulfillment or non-fulfillment of the logic operation condition.
Time channels F35...F38	
General	Switching time table and reset behavior.

Parameter page	Description
<i>Output objects</i>	Configuration of the output telegrams and reaction to switching the clock on or off.
<i>Astro channels F39...F40</i>	
<i>General</i>	Precise definition of the day/night transition and additional time delays (offsets).
<i>Output objects</i>	Configuration of the output telegrams and reaction to exceeding or falling below the elevation angle.

4.5 General parameters

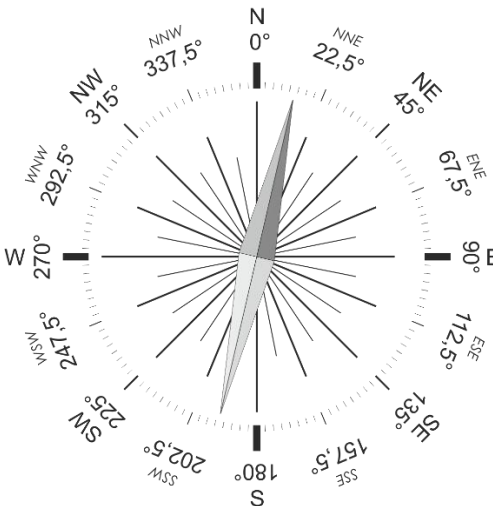
4.5.1 General

Designation	Values	Description
<i>Device version</i>	<i>With GPS module</i> <i>Without GPS module</i>	The GPS module provides the location and time information (time/date) required for sun-tracking. If sun position tracking is required, the weather station must receive the time and date via the bus. Longitude and latitude must be set manually (see below).
<i>Response to locking / unlocking</i>	<i>Only for status change</i> <i>For each telegram received</i>	When a telegram is received on the disable object of a channel, the parameterized reaction is executed once. Repeated lock/unlock telegrams with the same status are ignored. Repeated locking/unlocking telegrams trigger the parameterized reaction to locking or unlocking each time. It is irrelevant whether the disable command is repeated.
<i>Use universal channels</i>	<i>Yes</i> <i>No</i>	The universal channels can trigger telegrams based on one or more physical measured values.
<i>Use sun protection channels</i>	<i>Yes</i> <i>No</i>	The sun protection channels are used to control awnings, blinds, shutters, etc.
<i>Use threshold channels</i>	<i>Yes</i> <i>No</i>	Threshold channels switch on the basis of received bus telegrams depending on whether a value is exceeded or not reached.
<i>Use logic channels</i>	<i>Yes</i> <i>No</i>	Logic channels make it possible to link up to 4 input variables each. These can be specific logic input objects (max. 4) as well as the switching states of the other channels (universal, threshold or logic channels).
<i>Use time channels</i>	<i>Yes</i> <i>No</i>	Each time channel provides a timer with up to 8 switching times each (weekly program)
<i>Use Astro channels</i>	<i>Yes</i> <i>No</i>	Astro channels send telegrams depending on sunrise and sunset.

4.5.2 Measured values

4.5.2.1 Brightness

Designation	Values	Description
Sensor 1 front <i>Orientation</i>	<i>NORTH 0°</i> <i>Between North and NNO 11.25°</i> <i>North-northeast 22.5°</i> <i>Between NNO and NE 33.75°</i> <i>Northeast 45°</i> <i>Between NE and ONE 56.25</i> <i>East-northeast 67.5°</i> <i>Between ONE and E 78.75</i> <i>EAST 90°</i> <i>Between EAST and OSE 101.25</i> <i>East southeast 112.5°</i> <i>Between OSO and SO 123.75</i> <i>Southeast 135°</i> <i>Between SO and SSO 146.25°</i> <i>South southeast 157.5°</i> <i>Between SSO and SO 168.75</i> <i>SOUTH 180°</i> <i>Between south and SSW 191.25°</i> <i>South southwest 202.5</i> <i>Between SSW and SW 213.75°</i> <i>Southwest 225°</i> <i>Between SW and WSW 236.25°</i> <i>West-southwest 247.5°</i> <i>Between WSW and West 258.75°</i> <i>WEST 270°</i> <i>Between west and WNW 281.25°</i> <i>West-northwest 292.5°</i> <i>Between WNW and NW 303.75°</i> <i>Northwest 315°</i> <i>Between NW and NNW 326.25°</i> <i>North northwest 337.5°</i> <i>Between NNW and North 348.75°</i>	Set the actual mounting orientation of the weather station. The correct orientation is also automatically displayed in the sensor object names.
Brightness adjustment	-30...30 %	Correction value for the brightness measurement if the transmitted value deviates from the actual ambient brightness. Example: Brightness = 10000 lx Sent = 11000 lx Correction value = -10 %
Sensor 2 left <i>Orientation</i>	<i>Fixed to sensor 1 + 90°</i>	The alignment is displayed automatically depending on sensor 1.
Brightness adjustment	-30...30 %	Correction value for the brightness measurement if the transmitted value deviates from the actual ambient brightness. Example: Brightness = 10000 lx Sent = 11000 lx Correction value = -10 %
Sensor 3 right <i>Orientation</i>	<i>Fixed to sensor 1 - 90°</i>	The alignment is displayed automatically depending on sensor 1.

Designation	Values	Description
Brightness adjustment	-30...30 %	Correction value for the brightness measurement if the transmitted value deviates from the actual ambient brightness. Example: Brightness = 10000 lx Sent = 11000 lx Correction value = -10 %
Sensor 4 rear Orientation	Fixed to sensor 1 + 180°	The alignment is displayed automatically depending on sensor 1.
Brightness adjustment	-30...30 %	Correction value for the brightness measurement if the transmitted value deviates from the actual ambient brightness. Example: Brightness = 9000 lx Sent = 10000 lx Correction value = -10 %
		
Send brightness when changed	Yes	Send as soon as the value changes, see next parameter.
	No	Do not send.
From	10 %, but at least 1 lx 20 %, but at least 1 lx 30 %, but at least 1 lx 50 %, but at least 1 lx	Transmit if the value has changed by 10%, 20% etc. since the last transmission However, if a change of e.g. 10% corresponds to a change in brightness < 1 lx, then only a change >1 lx is sent.
Send brightness cyclically	Yes No	Resend values at regular intervals.

Designation	Values	Description
<i>Cycle time</i>	1 min 2 min 3 min 5 min 10 min 15 min 30 min 45 min 60 min	Time interval between telegrams.
<i>External brightness value 1</i> <i>Description</i>	<i>Text field</i>	User-defined description text for the external brightness value, if used.
<i>External brightness value 2</i> <i>Description</i>	<i>Text field</i>	User-defined description text for the external brightness value, if used.
<i>Monitor internal sensors</i>	<i>Yes</i>	A sensor error triggers an alarm telegram.
	<i>No</i>	No monitoring.
<i>Monitor external sensors</i>	<i>Yes</i>	Check whether the objects regularly receive a value. If no telegrams are received, an alarm telegram is triggered.
	<i>No</i>	No monitoring.
<i>Monitoring time for external sensors</i>	1 min 2 min 3 min 5 min 10 min 15 min 30 min 45 min 60 min	If no value is received within the parameterized time, an alarm telegram is triggered.
<i>Transmission behavior</i>	<i>Send once</i>	Only send once in the event of an error.
	<i>Send cyclically</i>	Status, alarm / no alarm, always send.
	<i>Send cyclically in the event of an alarm</i>	Only send cyclically when an alarm is active.
<i>Cycle time status</i>	1 min 2 min 3 min 5 min 10 min 15 min 30 min 45 min 60 min	Time interval between the alarm status telegrams if cyclical transmission is activated.

4.5.2.2 Temperature

Designation	Values	Description
<i>Temperature adjustment</i>	<i>-10...0...10 K</i>	Correction value for the temperature measurement if the transmitted temperature deviates from the actual ambient temperature. Example: Temperature = 20°C sent temperature = 21°C Correction value = -1
<i>Send temperature on change</i>	<i>Yes</i> <i>No</i>	This parameter applies to both the measured and the calculated sensed temperature. Send as soon as the value changes, see next parameter. Do not send.
<i>from</i>	<i>0.2...5 K</i>	Send if the value has changed by 0.5 K since the last transmission, for example.
<i>Send temperature cyclically</i>	<i>Yes</i> <i>No</i>	Resend values at regular intervals.
<i>Cycle time</i>	<i>1 min</i> <i>2 min</i> <i>3 min</i> <i>5 min</i> <i>10 min</i> <i>15 min</i> <i>30 min</i> <i>45 min</i> <i>60 min</i>	Time interval between telegrams. This parameter applies to both the measured and the calculated sensed temperature.
<i>External temperature value 1 Description</i>	<i>Text field</i>	User-defined description text for the external temperature value, if used.
<i>External temperature value 2 Description</i>	<i>Text field</i>	User-defined description text for the external temperature value, if used.
<i>Monitor internal sensor</i>	<i>Yes</i> <i>No</i>	A sensor error triggers an alarm telegram. No monitoring.
<i>Monitor external sensors</i>	<i>Yes</i> <i>No</i>	Check whether the objects regularly receive a value. If no telegrams are received, an alarm telegram is triggered. No monitoring.
<i>Monitoring time for external sensors</i>	<i>1 min</i> <i>2 min</i> <i>3 min</i> <i>5 min</i> <i>10 min</i> <i>15 min</i> <i>30 min</i> <i>45 min</i> <i>60 min</i>	If no value is received within the parameterized time, an alarm telegram is triggered.
<i>Transmission behavior</i>	<i>Send once</i> <i>Send cyclically</i>	Only send once in the event of an error. Status, alarm / no alarm, always send.

Designation	Values	Description
	<i>Send cyclically in the event of an alarm</i>	Only send cyclically when an alarm is active.
<i>Cycle time status</i>	<i>1 min</i> <i>2 min</i> <i>3 min</i> <i>5 min</i> <i>10 min</i> <i>15 min</i> <i>30 min</i> <i>45 min</i> <i>60 min</i>	Time interval between the alarm status telegrams if cyclical transmission is activated.

4.5.2.3 Wind

Designation	Values	Description
Send wind speed in	<i>m/s</i> <i>km/h</i> <i>Beaufort</i>	Unit for the wind speed. 1 m/s corresponds to 3.6 km/h 1 km/h corresponds to approx. 0.278 m/s Wind speed 1...12. See Table in the appendix.
Send wind speed with change	<i>Yes</i> <i>No</i>	Send as soon as the value changes, see next parameter. Do not send.
From	<i>of 10 %, min. but at least 0.5 m/s</i> <i>from 20 %, min. but at least 0.5 m/s</i> <i>from 30 %, min. but at least 1 m/s</i> <i>from 50 %, min. but at least 1 m/s</i>	Transmit if the value has changed since the last transmission.
Send wind speed cyclically	<i>Yes</i> <i>No</i>	Resend values at regular intervals.
Cycle time	<i>1 min</i> <i>2 min</i> <i>3 min</i> <i>5 min</i> <i>10 min</i> <i>15 min</i> <i>30 min</i> <i>45 min</i> <i>60 min</i> <i>10 s (for test purposes only)</i>	Time interval between telegrams.
Monitor sensor	<i>Yes</i> <i>No</i>	A sensor error triggers an alarm telegram. No monitoring.
Issue warning message after	<i>1...28 days</i>	As there may be no wind for several days, it is not easy to detect a wind sensor failure from a distance. An advance warning time is therefore granted here, after which the <i>Wind sensor failure warning</i> object sends a warning telegram. This warning is reset either by the acknowledgment object or by wind.
Then issue an alarm message after	<i>1...28 days</i>	After the warning message has been issued, the alarm time starts and after this time has elapsed without wind, the <i>Failure wind sensor alarm</i> object sends an alarm telegram. This alarm must be acknowledged by the acknowledgement object and is not acknowledged by renewed wind!
Transmission behavior	<i>Send once</i>	Only send once in the event of an error.

Designation	Values	Description
	<i>Send cyclically</i>	Status, alarm / no alarm, always send.
	<i>Send cyclically in the event of an alarm</i>	Only send cyclically when an alarm is active.
<i>Cycle time</i>	<i>1 min</i> <i>2 min</i> <i>3 min</i> <i>5 min</i> <i>10 min</i> <i>15 min</i> <i>30 min</i> <i>45 min</i> <i>60 min</i>	Time interval between the alarm status telegrams if cyclical transmission is activated.

4.5.2.4 Rain

Designation	Values	Description
<i>Sensitivity of the rain sensor</i>	<i>High sensitivity</i> <i>Normal sensitivity</i> <i>Reduced sensitivity</i>	High sensitivity enables a fast response. Dampened sensitivity can prevent an unnecessary rain signal in very humid air.
<i>Send rain status on change</i>	<i>Yes</i> <i>No</i>	Always send when the rain status changes. Do not send
<i>Send rain cyclically</i>	<i>Yes</i> <i>No</i>	Resend values at regular intervals.
<i>Cycle time</i>	<i>1 min</i> <i>2 min</i> <i>3 min</i> <i>5 min</i> <i>10 min</i> <i>15 min</i> <i>30 min</i> <i>45 min</i> <i>60 min</i> <i>10 s (for test purposes only)</i>	Time interval between telegrams.
<i>After rain End</i>	<i>0 s... 10 min 59 s</i>	Delay after the sensor no longer reports precipitation. In addition to the time that can be set here, a delay is already built in for the transition from "Rain" to "No Rain," which varies depending on the selected sensitivity: High sensitivity approx. 5 minutes Normal sensitivity approx. 3 minutes Low sensitivity approx. 1 minute
<i>Activate dew suppression</i> (rain sensor is always heated)	<i>Yes</i> <i>no</i>	When activated, the rain sensor is permanently kept at a temperature of approx. 30 °C. If dew forms, the sensor remains dry and does not report any precipitation.

4.5.2.5 Global radiation

Designation	Values	Description
<i>Global radiation adjustment</i>	-400...400 W/m ²	Correction value if the global radiation sent deviates from the actual value.
<i>Send global radiation on change</i>	Yes	Send as soon as the value changes, see next parameter.
	No	Do not send.
<i>from</i>	50 W/m ² 100 W/m ² 200 W/m ² 500 W/m ²	Transmit if the value has changed since the last transmission.
<i>Send global radiation cyclically</i>	Yes No	Resend values at regular intervals.
<i>Cycle time</i>	1 min 2 min 3 min 5 min 10 min 15 min 30 min 45 min 60 min	Time interval between telegrams.
<i>Monitor sensor</i>	Yes No	A sensor error triggers an alarm telegram. No monitoring.
<i>Transmission behavior</i>	Send once Send cyclically Send cyclically in the event of an alarm	Only send once in the event of an error. Status, alarm / no alarm, always send. Only send cyclically when an alarm is active.
<i>Cycle time status</i>	1 min 2 min 3 min 5 min 10 min 15 min 30 min 45 min 60 min	Time interval between the alarm status telegrams if cyclical transmission is activated.

4.5.2.6 Humidity

Designation	Values	Description
Relative humidity		
<i>Humidity adjustment</i>	-30...30 %	Correction value if the transmitted humidity deviates from the actual value.
<i>Send humidity on change</i>	Yes	Send as soon as the value changes, see next parameter.
	No	Do not send.
<i>From</i>	2 % 5 % 10 % 20 %	Transmit if the value has changed since the last transmission.
<i>Send humidity cyclically</i>	Yes No	Resend values at regular intervals.
<i>Cycle time</i>	1 min 2 min 3 min 5 min 10 min 15 min 30 min 45 min 60 min	Time interval between telegrams.
Absolute humidity		
<i>Humidity adjustment</i>	-30...30 g/m ³	Correction value if the transmitted humidity deviates from the actual value.
<i>Send humidity on change</i>	Yes	Send as soon as the value changes, see next parameter.
	No	Do not send.
<i>From</i>	2 g/m ³ 5 g/m ³ 10 g/m ³ 20 g/m ³	Transmit if the value has changed since the last transmission.
<i>Send humidity cyclically</i>	Yes No	Resend values at regular intervals.
<i>Cycle time</i>	1 min 2 min 3 min 5 min 10 min 15 min 30 min 45 min 60 min	Time interval between telegrams.
<i>Monitor sensor</i>	Yes	A sensor error triggers an alarm telegram.
	No	No monitoring.
<i>Transmission behavior</i>	Send once	Only send once in the event of an error.
	Send cyclically	Status, alarm / no alarm, always send.
	Send cyclically in the event of an alarm	Only send cyclically when an alarm is active.

Designation	Values	Description
<i>Cycle time status</i>	<i>1 min</i> <i>2 min</i> <i>3 min</i> <i>5 min</i> <i>10 min</i> <i>15 min</i> <i>30 min</i> <i>45 min</i> <i>60 min</i>	Time interval between the alarm status telegrams if cyclical transmission is activated.

4.5.2.7 Air pressure

Designation	Values	Description
<i>Air pressure adjustment</i>	-400...400 W/m ²	Correction value if the air pressure sent deviates from the actual value.
<i>Send air pressure on change</i>	Yes	Send as soon as the value changes, see next parameter.
	No	Do not send.
<i>from</i>	50 W/m ² 100 W/m ² 200 W/m ² 500 W/m ²	Transmit if the value has changed since the last transmission.
<i>Send air pressure cyclically</i>	Yes No	Resend values at regular intervals.
<i>Cycle time</i>	1 min 2 min 3 min 5 min 10 min 15 min 30 min 45 min 60 min	Time interval between telegrams.
<i>Monitor sensor</i>	Yes No	A sensor error triggers an alarm telegram. No monitoring.
<i>Transmission behavior</i>	Send once Send cyclically Send cyclically in the event of an alarm	Only send once in the event of an error. Status, alarm / no alarm, always send. Only send cyclically when an alarm is active.
<i>Cycle time status</i>	1 min 2 min 3 min 5 min 10 min 15 min 30 min 45 min 60 min	Time interval between the alarm status telegrams if cyclical transmission is activated.

4.5.2.8 General fault message

Designation	Values	Description
<i>Send sensor error</i>	<i>Yes</i> <i>No</i>	A general sensor error can be reported in addition to specific sensor failures. This feature is available as soon as at least two sensors are being monitored. In this general sensor error object, all monitored sensors, as well as the monitored external brightness and temperature values, are linked with an "OR" operator.
<i>Transmission behavior</i>	<i>Send once</i>	Only send once in the event of an error.
	<i>Send cyclically</i>	Status, alarm / no alarm, always send.
	<i>Send cyclically in the event of an alarm</i>	Only send cyclically when an alarm is active.
<i>Cycle time status</i>	<i>1 min</i> <i>2 min</i> <i>3 min</i> <i>5 min</i> <i>10 min</i> <i>15 min</i> <i>30 min</i> <i>45 min</i> <i>60 min</i>	Time interval between the alarm status telegrams if cyclical transmission is activated.
<i>Monitor auxiliary voltage</i>	<i>Yes</i> <i>No</i>	Should the auxiliary voltage for heating the rain sensor be monitored?
<i>Transmission behavior</i>	<i>Send once</i>	Only send once in the event of an error.
	<i>Send cyclically</i>	Status, alarm / no alarm, always send.
	<i>Send cyclically in the event of an alarm</i>	Only send cyclically when an alarm is active.
<i>Cycle time status</i>	<i>1 min</i> <i>2 min</i> <i>3 min</i> <i>5 min</i> <i>10 min</i> <i>15 min</i> <i>30 min</i> <i>45 min</i> <i>60 min</i>	Time interval between the alarm status telegrams if cyclical transmission is activated.

4.5.3 Location data

Designation	Values	Description
<i>Manual position input</i> ²⁷	No Yes	The position data is received by the GPS module. Select this setting if satellite reception is not possible at the location.
<i>Latitude of the location</i>	0...80°	This input is required for sun position tracking.
<i>Hemisphere</i>	North South	For all locations north of the equator, e.g., Europe, Russia, China, Japan, India, Saudi Arabia, North and Central America, etc. For all locations south of the equator e.g. South Africa, Australia, New Zealand etc.
<i>Longitude of the location</i>	0...180°	This input is required for sun position tracking.
<i>Position</i>	East West	For all locations east of the Prime Meridian (Greenwich), e.g., Paris, Barcelona, Belgium, Scandinavia, Central and Eastern Europe, South Africa, Saudi Arabia, etc. For all locations east of the prime meridian (Greenwich) e.g. Portugal, Ireland, Morocco, America etc.
<i>Transmission behavior</i> ²⁸	Do not send Send cyclically On change	It is not actively transmitted. Resend position data at regular intervals. Send when the location changes.
Elevation and azimuth		
<i>Send cyclically</i>	Yes No	Resend values at regular intervals.
<i>Cycle time</i>	1 min 2 min 3 min 5 min 10 min 15 min 30 min 45 min 60 min	Time interval between telegrams.

²⁷ Only for device models with a GPS module

²⁸ Only for device models with a GPS module and manual position entry = no.

4.5.4 Date and time ²⁹

Designation	Values	Description
<i>Time zone of the location</i>	<i>0 h (Greenwich)</i> <i>1 h (CET)</i> <i>2 h</i> <i>3 h</i> <i>3,5 h</i> <i>4 h</i> <i>4,5 h</i> <i>5 h</i> <i>5,5 h</i> <i>5,75 h</i> <i>6 h</i> <i>6,5 h</i> <i>7 h</i> <i>8 h</i> <i>9 h</i> <i>9,5 h</i> <i>10 h</i> <i>10,5 h</i> <i>11 h</i> <i>11,5 h</i> <i>12 h</i> <i>12,75 h</i> <i>13 h</i> <i>-1 h</i> <i>-2 h</i> <i>-3 h</i> <i>-3,5 h</i> <i>-4 h</i> <i>-5 h</i> <i>-6 h</i> <i>-7 h</i> <i>-8 h</i> <i>-9 h</i> <i>-10 h</i> <i>-11 h</i> <i>-12 h</i>	For time zones east of Greenwich. In most countries in Western Europe, CET applies (during standard time). For time zones west of Greenwich.
<i>Send time and date</i>	<i>Only on request</i> <i>Send cyclically</i> <i>Every day at 0:00 a.m. and with SO/WI changeover</i> <i>Every day at 0:02 and with SO/WI changeover</i>	Only for models with a GPS module. Transmission behavior for time and date telegrams.
<i>Send time request cyclically</i>	<i>Yes</i> <i>no</i>	Only for versions without a GPS module, since the time and date must be received from another bus sharing unit (time signal transmitter).

²⁹ only for 1509204, 1509208

Designation	Values	Description
<i>Cycle time</i>	<i>Every hour</i> <i>2 hours</i> <i>3 hours</i> <i>6 hours</i> <i>12 hours</i>	Only for versions without a GPS module. Cycle time for the time request.
<i>Time / date format</i>	<i>DPT10.001</i> <i>DPT19.001</i>	Time and date are sent with separate objects. The date and time are transmitted as a single object.
<i>Use UTC time</i>	<i>Yes</i> <i>No</i>	UTC time and date ³⁰ are sent via additional objects. (Device version with GPS module). Send only local time and date.
<i>Summer/winter time changeover</i>	<i>Yes</i> <i>No</i>	Should summer time be taken into account?
<i>Rule</i>	<i>Like Central Europe</i> <i>Like Great Britain</i> <i>Greece, Finland, Turkey</i> <i>Like North America</i> <i>User-defined...</i>	Select location-specific daylight saving time switch rule. Create customized rule.
Summer time		
<i>Start</i>	<i>First Sunday in</i> <i>Second Sunday in</i> <i>Third Sunday in</i> <i>Fourth Sunday in</i> <i>Last Sunday in</i>	Time of transition to daylight saving time.
<i>Month</i>	<i>January...December</i>	Start month.
<i>Time of day</i>	<i>0:00 a.m</i> <i>1:00 a.m</i> <i>2:00 a.m</i> <i>3:00 a.m</i> <i>4:00 a.m</i> <i>5:00 a.m</i> <i>6:00 a.m</i>	Time.
Winter time		
<i>Start</i>	<i>First Sunday in</i> <i>Second Sunday in</i> <i>Third Sunday in</i> <i>Fourth Sunday in</i> <i>Last Sunday in</i>	Time of the transition back to standard time
<i>Month</i>	<i>January...December</i>	Start month for the return to winter time
<i>Time of day</i>	<i>0:00 a.m</i> <i>1:00 a.m</i> <i>2:00 a.m</i> <i>3:00 a.m</i> <i>4:00 a.m</i> <i>5:00 a.m</i> <i>6:00 a.m</i>	Time.

³⁰ Coordinated universal time, no summer/winter time.

Designation	Values	Description
<i>Monitor GNSS (GPS, GLONASS, BDS, Galileo, and QZSS) reception</i>	<i>Yes</i>	Trigger an alarm message if satellite reception is not possible.
	<i>No</i>	No monitoring.
<i>Transmission behavior</i>	<i>Send once</i>	Only send once in the event of an error.
	<i>Send cyclically</i>	Status, alarm / no alarm, always send.
	<i>Send cyclically in the event of an alarm</i>	Only send cyclically when an alarm is active.
<i>Cycle time status</i>	<i>1 min</i> <i>2 min</i> <i>3 min</i> <i>5 min</i> <i>10 min</i> <i>15 min</i> <i>30 min</i> <i>45 min</i> <i>60 min</i>	Time interval between the alarm status telegrams if cyclical transmission is activated.

4.6 Universal channels



The universal channels F1...F10 can be used for partial tasks (e.g. pure brightness threshold) or for any combination of measured variables

A channel can AND or OR up to 7 physical variables together, but can also process a single variable:

- Brightness above/below threshold.
- Temperature above/below threshold value.
- Wind speed above/below threshold value.
- Rain present / not present.
- Humidity above/below threshold value.
- Air pressure above/below threshold.
- Global radiation above/below threshold.

A non-relevant condition (e.g. temperature) can be omitted and is ignored in the link.

The fulfillment or non-fulfillment of the AND/OR link leads to the sending of a telegram to the associated output object.

In addition, a 2nd object can be activated if required. In addition, a second object can be activated if required, thus sending a second telegram.

Each universal channel has a disable object.

The respective thresholds can be specified or taught-in via object if necessary.

If required, a universal channel can also be parameterized as a safety channel if the relevant variables, i.e. temperature, rain and wind, are OR-linked.

The result of the link can be evaluated internally in the sun protection channels as a safety message.

The 4 integrated sensors plus 2 external brightness values via object are available for brightness measurement.
The integrated sensor plus 2 external temperature values via object are available for temperature measurement.

4.6.1 General

4.6.1.1 Function selection

[illegible]

Designation	Values	Description
	<i>Do not send</i>	Send nothing if the status is unknown. Otherwise, the current status is sent.

4.6.1.2 Brightness sensor function

Designation	Values	Description
<i>Brightness condition</i>	<i>Under</i>	The channel condition is fulfilled if the value is below the entered threshold.
	<i>About</i>	The channel condition is fulfilled if the value is above the entered threshold.
<i>Threshold value</i>	<i>3...120.000 lx</i>	Brightness threshold.
<i>Source</i>	<i>Sensor 1 Front - SOUTH 180°</i> <i>Sensor 2 Left - WEST 270°</i> <i>Sensor 3 Right - EAST 90°</i> <i>Sensor 4 Rear - WEST 270°</i>	Integrated sensors.
	<i>Minimum value of the 4 sensors</i> <i>Maximum value of the 4 sensors</i> <i>Average value Sensor left / right</i> <i>Average value of the 4 sensors</i>	Calculated values.
	<i>External brightness value 1</i> <i>External brightness value 2</i>	External brightness values via object.
<i>Hysteresis</i>	<i>5 %, but at least 1 lx</i> <i>10 %, but at least 1 lx</i> <i>15 %, but at least 1 lx</i> <i>20 %, but at least 1 lx</i> <i>30 %, but at least 1 lx</i> <i>40 %, but at least 1 lx</i> <i>50 %, but at least 1 lx</i> <i>60 %, but at least 1 lx</i> <i>70 %, but at least 1 lx</i> <i>80 %, but at least 1 lx</i>	The hysteresis prevents frequent switching in the event of small changes. Depending on the set condition, it can be negative or positive. Example with 20% hysteresis: Condition: "OVER 4500 lux" = fulfilled from 4500 lx and no longer fulfilled at 4500 lx-20% Condition: "UNDER 4500 lux" = fulfilled below 4500 lx and no longer fulfilled at 4500 lx + 20%
<i>Delay with increasing brightness</i>	<i>0...60 min, 0...59 s</i>	Response time when it gets brighter and the set threshold is exceeded as a result. This setting prevents telegrams to the contrary from being sent in the event of brief changes in brightness
<i>Delay with decreasing brightness</i>	<i>0...60 min, 0...59 s</i>	Response time when it gets darker and therefore falls below the set threshold. This setting prevents telegrams to the contrary from being sent in the event of brief changes in brightness
<i>Threshold can be overridden via object</i>	<i>Yes</i> <i>No</i>	Should the configured brightness threshold be changeable via bus telegrams?
<i>Override threshold during download</i>	<i>Yes</i>	During an ETS download, the brightness threshold currently stored in the device is deleted and overwritten by the value set in the ETS.

Designation	Values	Description
	No	An ETS download has no effect on the brightness threshold currently stored in the device. Exception: Even if no is selected, all ETS parameter values are downloaded during initial commissioning (i.e. when the device memory is empty).
Thresholds via object	Specify value Teach in value	Set value: The threshold object receives a new brightness value. This replaces the parameterized <i>threshold value for brightness</i> . When a 1 is received, the currently measured brightness value is adopted as the new threshold value.

4.6.1.3 Temperature sensor function

Designation	Values	Description
<i>Source for temperature measurement</i>	<i>Measured temperature</i>	Actual ambient temperature.
	<i>Perceived temperature</i>	Calculated perceived temperature, based on wind, temperature, humidity and global radiation.
	<i>External temperature value 1</i> <i>External temperature value 2</i>	External temperature values via object.
<i>Temperature condition</i>	<i>Under</i>	The channel condition is fulfilled if the value is below the entered threshold.
	<i>About</i>	The channel condition is fulfilled if the value is above the entered threshold.
<i>Threshold value</i>	-20...40 °C	Temperature threshold.
<i>Hysteresis</i>	1... 10 K	The hysteresis prevents frequent switching in the event of small changes. Depending on the set condition, it can be negative or positive.
<i>Threshold can be overridden via object</i>	<i>Yes</i> <i>No</i>	Should the configured temperature threshold be changeable via bus telegrams?
<i>Override threshold during download</i>	<i>Yes</i>	During an ETS download, the temperature threshold currently stored in the device is deleted and overwritten by the value set in the ETS.
	<i>No</i>	An ETS download has no effect on the temperature threshold currently stored in the device. Exception: Even if no is selected, all ETS parameter values are downloaded during initial commissioning (i.e. when the device memory is empty).
<i>Thresholds via object</i>	<i>Specify value</i>	Set value: The threshold object receives a new temperature value. This replaces the parameterized <i>threshold value</i> .
	<i>Teach in value</i>	When a 1 is received, the currently measured temperature value is adopted as the new threshold value.

4.6.1.4 Wind sensor function

Designation	Values	Description
Wind condition	Under	The channel condition is fulfilled if the value is below the entered threshold.
	About	The channel condition is fulfilled if the value is above the entered threshold.
Threshold value	4...30 m/s	Wind threshold.
Hysteresis	5 %, but at least 1 m/s 10 %, but at least 1 m/s 15 %, but at least 1 m/s 20 %, but at least 1 m/s 30 %, but at least 1 m/s 40 %, but at least 1 m/s 50 %, but at least 1 m/s 60 %, but at least 1 m/s 70 %, but at least 1 m/s 80 %, but at least 1 m/s	The hysteresis prevents frequent switching in the event of small changes. Depending on the set condition, it can be negative or positive.
Delay with increasing wind	0...60 min, 0...59 s	Reaction time when the wind speed increases.  ATTENTION! A delay can limit the channel's protective function. Sudden gusts can cause damage before a response occurs. Keep the delay as short as possible.
Delay with decreasing wind	0...60 min, 0...59 s	Reaction time when the wind decreases and the threshold is undercut. This setting prevents premature extension of the sun shading devices.
Threshold can be overridden via object	Yes No	Should the configured wind threshold be adjustable via bus telegrams?
Override threshold during download	Yes	During an ETS download, the wind threshold currently stored in the device is deleted and overwritten by the value set in the ETS.
	No	An ETS download has no effect on the wind threshold currently stored in the device. Exception: Even if no is selected, all ETS parameter values are downloaded during initial commissioning (i.e. when the device memory is empty).

4.6.1.5 Rain sensor function

Designation	Values	Description
Rain condition	It is raining	The channel condition is fulfilled if the sensor reports rain.

Designation	Values	Description
	<i>It is not raining</i>	The channel condition is fulfilled if the sensor does not report rain.
<i>Delay after rain end</i>	<i>0...60 min, 0...59 s</i>	Delay after the sensor no longer reports precipitation. In addition to the time that can be set here, a delay is already built in for the transition from "Rain" to "No Rain," which varies depending on the selected sensitivity: High sensitivity approx. 5 minutes Normal sensitivity approx. 3 minutes Low sensitivity approx. 1 minute

4.6.1.6 Humidity sensor function

Designation	Values	Description
<i>Humidity condition</i>	<i>Under</i>	The channel condition is fulfilled if the value is below the entered threshold.
	<i>About</i>	The channel condition is fulfilled if the value is above the entered threshold.
<i>Threshold value</i>	<i>10...90 %</i>	Air humidity threshold.
<i>Hysteresis</i>	<i>1...30 %</i>	The hysteresis prevents frequent switching in the event of small changes. Depending on the set condition, it can be negative or positive.
<i>Threshold can be overridden via object</i>	<i>Yes</i> <i>No</i>	Should the configured humidity threshold be adjustable via bus telegrams?
<i>Override threshold during download</i>	<i>Yes</i>	During an ETS download, the humidity threshold currently stored in the device is deleted and overwritten by the value set in the ETS.
	<i>No</i>	An ETS download has no effect on the humidity threshold currently stored in the device. Exception: Even if no is selected, all ETS parameter values are downloaded during initial commissioning (i.e. when the device memory is empty).
<i>Thresholds via object</i>	<i>Specify value</i>	Set value: The threshold object receives a new humidity value. This replaces the parameterized <i>threshold value</i> .
	<i>Teach in value</i>	When a 1 is received, the currently measured humidity value is adopted as the new threshold value.

4.6.1.7 Air pressure sensor function

Designation	Values	Description
<i>Air pressure condition</i>	<i>Under</i>	The channel condition is fulfilled if the value is below the entered threshold.
	<i>About</i>	The channel condition is fulfilled if the value is above the entered threshold.
<i>Threshold value</i>	<i>400...1000 hPa</i>	Air pressure threshold.
<i>Hysteresis</i>	<i>10...50 hPa</i>	The hysteresis prevents frequent switching in the event of small changes. Depending on the set condition, it can be negative or positive.
<i>Threshold can be overridden via object</i>	<i>Yes</i> <i>No</i>	Should the configured air pressure threshold be adjustable via bus telegrams?
<i>Override threshold during download</i>	<i>Yes</i>	During an ETS download, the air pressure threshold currently stored in the device is deleted and overwritten by the value set in the ETS.
	<i>No</i>	An ETS download has no effect on the air pressure threshold currently stored in the device. Exception: Even if no is selected, all ETS parameter values are downloaded during initial commissioning (i.e. when the device memory is empty).
<i>Thresholds via object</i>	<i>Specify value</i>	Set value: The threshold object receives a new air pressure value. This replaces the parameterized <i>threshold value</i> .
	<i>Teach in value</i>	When a 1 is received, the currently measured air pressure value is adopted as the new threshold value.

4.6.1.8 Global radiation sensor function

Designation	Values	Description
<i>Global radiation condition</i>	<i>Under</i>	The channel condition is fulfilled if the value is below the entered threshold.
	<i>About</i>	The channel condition is fulfilled if the value is above the entered threshold.
<i>Threshold value</i>	<i>0...1300 W/m²</i>	Global radiation threshold
<i>Hysteresis</i>	<i>10...600 W/m²</i>	The hysteresis prevents frequent switching in the event of small changes. Depending on the set condition, it can be negative or positive.
<i>Delay with increasing global radiation</i>	<i>0...60 min, 0...59 s</i>	Response time when global radiation increases.
<i>Delay with decreasing global radiation</i>	<i>0...60 min, 0...59 s</i>	Response time when the global radiation decreases and therefore falls below the set threshold.
<i>Threshold can be overridden via object</i>	<i>Yes</i> <i>No</i>	Should the configured wind threshold be adjustable via bus telegrams?
<i>Override threshold during download</i>	<i>Yes</i>	During an ETS download, the wind threshold currently stored in the device is deleted and overwritten by the value set in the ETS.
	<i>No</i>	An ETS download has no effect on the wind threshold currently stored in the device. Exception: Even if no is selected, all ETS parameter values are downloaded during initial commissioning (i.e. when the device memory is empty).

4.6.1.9 Frost protection function



Preconfigured linking of temperature and rain

Designation	Values	Description
Type of link	AND	Preconfigured.
Source for temperature measurement	Measured temperature	Actual ambient temperature.
	External temperature value 1 External temperature value 2	External temperature values via object.
Temperature condition	Under	Preconfigured.
Threshold value	-20...40 °C	Temperature threshold.
Hysteresis	1...10 K	The hysteresis prevents frequent switching in the event of small changes. Depending on the set condition, it can be negative or positive.
Rain condition	It is raining	Preconfigured.
Delay after rain end	0...60 min, 0...59 s	Delay after the sensor no longer reports precipitation. In addition to the time that can be set here, a delay is already built in for the transition from "Rain" to "No Rain," which varies depending on the selected sensitivity: High sensitivity approx. 5 minutes Normal sensitivity approx. 3 minutes Low sensitivity approx. 1 minute
Threshold can be overridden via object	Yes No	Should the configured temperature threshold be changeable via bus telegrams?
Override threshold during download	Yes	During an ETS download, the temperature threshold currently stored in the device is deleted and overwritten by the value set in the ETS.
	No	An ETS download has no effect on the temperature threshold currently stored in the device. Exception: Even if no is selected, all ETS parameter values are downloaded during initial commissioning (i.e. when the device memory is empty).
Thresholds via object	Specify value	Set value: The threshold object receives a new temperature value. This replaces the parameterized <i>threshold value</i> .
	Teach in value	When a 1 is received, the currently measured temperature value is adopted as the new threshold value.

4.6.1.10 Twilight function

Designation	Values	Description
Brightness condition	Under	The channel condition is fulfilled if the value is below the entered threshold.
	About	The channel condition is fulfilled if the value is above the entered threshold.
Threshold value	3...120.000 lx	Brightness threshold.
Source	Sensor 1 Front - SOUTH 180° Sensor 2 Left - WEST 270° Sensor 3 Right - EAST 90° Sensor 4 Rear - WEST 270°	Integrated sensors.
	Minimum value of the 4 sensors Maximum value of the 4 sensors Average value Sensor left / right Average value of the 4 sensors	Calculated values.
	External brightness value 1 External brightness value 2	External brightness values via object.
Hysteresis	5 %, but at least 1 lx 10 %, but at least 1 lx 15 %, but at least 1 lx 20 %, but at least 1 lx 30 %, but at least 1 lx 40 %, but at least 1 lx 50 %, but at least 1 lx 60 %, but at least 1 lx 70 %, but at least 1 lx 80 %, but at least 1 lx	The hysteresis prevents frequent switching in the event of small changes. Depending on the set condition, it can be negative or positive. Example with 20% hysteresis: Condition: "OVER 4500Lux" = fulfilled from 4500 lx and no longer fulfilled at 4500 lx-20% Condition: "UNDER 4500 lux" = fulfilled below 4500 lx and no longer fulfilled at 4500 lx + 20%
Delay with increasing brightness	0...60 min, 0...59 s	Response time when it gets brighter and the set threshold is exceeded as a result. This setting prevents telegrams to the contrary from being sent in the event of brief changes in brightness
Delay with decreasing brightness	0...60 min, 0...59 s	Response time when it gets darker and therefore falls below the set threshold. This setting prevents telegrams to the contrary from being sent in the event of brief changes in brightness
Threshold can be overridden via object	Yes No	Should the configured brightness threshold be changeable via bus telegrams?
Override threshold during download	Yes	During an ETS download, the brightness threshold currently stored in the device is deleted and overwritten by the value set in the ETS.

Designation	Values	Description
	<i>No</i>	An ETS download has no effect on the brightness threshold currently stored in the device. Exception: Even if no is selected, all ETS parameter values are downloaded during initial commissioning (i.e. when the device memory is empty).
<i>Thresholds via object</i>	<i>Specify value</i>	Set value: The threshold object receives a new brightness value. This replaces the parameterized <i>threshold value for brightness</i> .
	<i>Teach in value</i>	When a 1 is received, the currently measured brightness value is adopted as the new threshold value.

4.6.1.11 Function Linking the following sensors

Designation	Values	Description
Link		
Brightness	Checkbox ☒	Physical variables that can be linked with each other.
Temperature	Checkbox ☒	
Wind	Checkbox ☒	
Rain	Checkbox ☒	
Humidity	Checkbox ☒	
Air pressure	Checkbox ☒	
Global radiation	Checkbox ☒	
Type of link	AND	The condition is fulfilled if all selected conditions are fulfilled, e.g. rain AND temperature. As long as one of them is not fulfilled, the channel condition also remains unfulfilled.
	OR	The condition is fulfilled if one or more of the selected conditions are fulfilled, e.g. wind OR rain.
Brightness		
Brightness condition	Under	The channel condition is fulfilled if the value is below the entered threshold.
	About	The channel condition is fulfilled if the value is above the entered threshold.
Threshold value	3... 120.000 lx	Brightness threshold.
Source	Sensor 1 Front - SOUTH 180° Sensor 2 Left - WEST 270° Sensor 3 Right - EAST 90° Sensor 4 Rear - WEST 270°	Integrated sensors.
	Minimum value of the 4 sensors Maximum value of the 4 sensors Average value Sensor left / right Average value of the 4 sensors	Calculated values.
	External brightness value 1 External brightness value 2	External brightness values via object.
Hysteresis	5 %, but at least 1 lx 10 %, but at least 1 lx 15 %, but at least 1 lx 20 %, but at least 1 lx 30 %, but at least 1 lx 40 %, but at least 1 lx 50 %, but at least 1 lx 60 %, but at least 1 lx 70 %, but at least 1 lx 80 %, but at least 1 lx	The hysteresis prevents frequent switching in the event of small changes. Depending on the set condition, it can be negative or positive. Example with 20% hysteresis: Condition: "OVER 4500 lux" = fulfilled from 4500 lx and no longer fulfilled at 4500 lx-20% Condition: "UNDER 4500 lux" = fulfilled below 4500 lx and no longer fulfilled at 4500 lx + 20%
Delay with increasing brightness	0...60 min, 0...59 s	Response time when it gets brighter and the set threshold is exceeded as a result.

Designation	Values	Description
		This setting prevents telegrams to the contrary from being sent in the event of brief changes in brightness
<i>Delay with decreasing brightness</i>	<i>0...60 min, 0...59 s</i>	Response time when it gets darker and therefore falls below the set threshold. This setting prevents telegrams to the contrary from being sent in the event of brief changes in brightness
Temperature		
<i>Source for temperature measurement</i>	<i>Measured temperature</i>	Actual ambient temperature.
	<i>Perceived temperature</i>	Calculated perceived temperature, based on wind, temperature, humidity and global radiation.
	<i>External temperature value 1</i> <i>External temperature value 2</i>	External temperature values via object.
<i>Temperature condition</i>	<i>Under</i>	The channel condition is fulfilled if the value is below the entered threshold.
	<i>About</i>	The channel condition is fulfilled if the value is above the entered threshold.
<i>Threshold value</i>	<i>-20...40 °C</i>	Temperature threshold.
<i>Hysteresis</i>	<i>1...10 K</i>	The hysteresis prevents frequent switching in the event of small changes. Depending on the set condition, it can be negative or positive.
Wind		
<i>Wind condition</i>	<i>Under</i>	The channel condition is fulfilled if the value is below the entered threshold.
	<i>About</i>	The channel condition is fulfilled if the value is above the entered threshold.
<i>Threshold value</i>	<i>4...30 m/s</i>	Wind threshold.
<i>Hysteresis</i>	<i>5 %, but at least 1 m/s</i> <i>10 %, but at least 1 m/s</i> <i>15 %, but at least 1 m/s</i> <i>20 %, but at least 1 m/s</i> <i>30 %, but at least 1 m/s</i> <i>40 %, but at least 1 m/s</i> <i>50 %, but at least 1 m/s</i> <i>60 %, but at least 1 m/s</i> <i>70 %, but at least 1 m/s</i> <i>80 %, but at least 1 m/s</i>	The hysteresis prevents frequent switching in the event of small changes. Depending on the set condition, it can be negative or positive.
<i>Delay with increasing wind</i>	<i>0...60 min, 0...59 s</i>	Reaction time when the wind speed increases.  ATTENTION! A delay can limit the channel's protective function. Sudden gusts of wind can cause damage before a reaction takes place. Keep the delay as short as possible.

Designation	Values	Description
<i>Delay with decreasing wind</i>	<i>0...60 min, 0...59 s</i>	Reaction time when the wind subsides and therefore falls below the set threshold. This setting prevents premature extension of the sun shading devices.
<i>Delay with increasing wind</i>	<i>0...60 min, 0...59 s</i>	Reaction time when the wind speed increases.  ATTENTION! A delay can limit the channel's protective function. Sudden gusts of wind can cause damage before a reaction takes place. Keep the delay as short as possible.
<i>Threshold(s) can be overridden via object</i>	<i>Yes</i> <i>No</i>	Should the configured thresholds be adjustable via bus telegrams?
<i>Override threshold(s) during download</i>	<i>Yes</i>	During an ETS download, the thresholds currently stored in the device are deleted and overwritten by the value set in the ETS.
	<i>No</i>	An ETS download has no effect on the thresholds currently stored in the device. Exception: Even if no is selected, all ETS parameter values are downloaded during initial commissioning (i.e. when the device memory is empty).
<i>Thresholds via object</i>	<i>Specify value</i>	Set value: The respective threshold object receives a new value. This replaces the parameterized <i>threshold value</i> .
	<i>Teach in value</i>	When a 1 is received, the currently measured value is adopted as the new threshold value.

4.6.2 Output objects for the universal channel



The output objects and parameters of a channel are almost identical for all channel types and are described in a separate chapter (see chapter **Output objects for all channels**).

4.7 Sun protection channels

The sun protection channels can control blinds (standard or vertical), awnings, shutters, etc.

The following factors can be combined for shading:

- Brightness and twilight.
- Temperature.
- Position of the sun (elevation and azimuth).
- Shadow edge and/or slat tracking.



Slat-related parameters are only available if the channel controls a blind.



Vertical blinds have no height adjustment, but are opened and closed by a lateral movement. For this reason, the term "position" is used instead of "height" in this case.

4.7.1 General

Designation	Values	Description
Channel controls	Via scenes	With scene telegrams ³¹ .
	Blinds	For sun shading devices with horizontal or vertical slats.
	Roller shutter / textile sun protection	For roller shutters and various sun shading devices.
Slat type	Horizontal (standard)	For classic blinds consisting of horizontally arranged slats.
	Vertical	For vertical blinds or slat curtains consisting of vertically hanging slats.
Source for brightness measurement	Sensor 1 Front - SOUTH 180° Sensor 2 Left - WEST 270° Sensor 3 Right - EAST 90° Sensor 4 Rear - WEST 270° Minimum value of the 4 sensors Maximum value of the 4 sensors Average value Sensor left / right Average value of the 4 sensors External brightness value 1 External brightness value 2	Selection of the brightness source. The orientation of the 4 built-in sensors available for selection here (SOUTH...) corresponds to the parameter setting <i>Sensor 1 front alignment</i> on the parameter page Measured values / Brightness .
Take sun position into account for shading	Yes	The Façade settings parameter page and the <i>Activate slat/height tracking</i> parameters are displayed. Note: Shading only takes place if the sun is calculated to be shining on the façade. ³²
	No	Shading takes place regardless of the calculated position of the sun.
Activate louver tracking (Sun position tracking)	Yes	The Slat tracking parameter page is displayed. Automatic adjustment of the slats according to the position of the sun.
	No	When shading is active, the slats are determined by the parameter "Slats when thresholds are exceeded"
	Yes	The Height tracking parameter page is displayed. Automatic adjustment of the drive height according to the position of the sun. This controls how far the sun can penetrate into the room.

³¹ and up/down telegrams if applicable. See parameter *Move to end position via*

³² Due to elevation or azimuth, facade angle...

Designation	Values	Description
Activate height tracking ³³ (Shadow edge calculation)	No	When shading is active, the height is determined by the drive height parameter <i>when the thresholds are exceeded</i> .
Brightness threshold for shading	1000...120.000 lx	At what brightness level is sun protection desired?
Hysteresis	5 %, 10 %, 15 %, 20 % 30 %, 40 %, 50 %, 60 % 70 %, 80 %	The hysteresis prevents frequent switching in the event of small changes.
Delay with increasing brightness	0...60 min, 0...59 s	Response time when it gets brighter and the set threshold is exceeded as a result. This setting prevents telegrams to the contrary from being sent in the event of brief changes in brightness
Delay with decreasing brightness	0...60 min, 0...59 s	Response time when it gets darker and therefore falls below the set threshold. This setting prevents telegrams to the contrary from being sent in the event of brief changes in brightness
Is the sun control temperature-dependent?	Yes	Shading should only be provided when the temperature exceeds a certain value. This allows the sunshade to remain open in winter and the heat radiation from the sun to additionally heat the room.
	No	Ignore temperature.
Automatic solar control active at temperatures above	0...35 °C	At what temperature should shading be activated?
Source for temperature measurement	Measured temperature	Actual ambient temperature.
	Perceived temperature	Calculated perceived temperature. based on wind, temperature, humidity and global radiation.
	External temperature value 1 External temperature value 2	External temperature value received via object.
Thresholds can be overridden for the object	Yes No	Should the parameterized thresholds for brightness, temperature, and twilight be changeable via bus telegrams?
Override threshold during download	Yes	During an ETS download, the thresholds for brightness, temperature and twilight currently stored in the device are deleted and overwritten by the value set in the ETS. If the position of the sun is not taken into account for shading, the height and slat position can also be overwritten.

³³ Not available for vertical blinds.

Designation	Values	Description
	No	An ETS download has no effect on the threshold values currently stored in the device. Exception: Even if no is selected, all ETS parameter values are downloaded during initial commissioning (i.e. when the device memory is empty).
Thresholds via object	Specify value Teach in value	Set value: The threshold objects receive a new absolute threshold value for shading, twilight or temperature. When a 1 is received, the currently measured value for brightness, twilight or temperature is adopted.
Drive height when the threshold is exceeded	0..100 %	What height should the drive move to when the shading conditions are met?
Slats when the threshold is exceeded	0..100 %	Slat position to be approached when the threshold is exceeded.
Drive height and slats can be overridden via object	No Yes	The <i>drive height</i> and <i>slat position</i> parameterized in the ETS apply when the thresholds are exceeded. The parameterized <i>drive height</i> and, if applicable, <i>slat position when the thresholds are exceeded</i> can be subsequently overwritten via the bus. Note: values that are overwritten via object (slat height) are not approached immediately, but only the next time.
Override on download	No Yes	The <i>drive height</i> and, if applicable, <i>slat position</i> stored in the device when the thresholds are exceeded remain unchanged even after an ETS download. An ETS download overwrites the drive height stored in the device <i>Drive height</i> and, if applicable <i>Slat position when the thresholds are exceeded</i>
When falling below the thresholds during automatic sun function active	Raise drive Lower drive No reaction Move to predefined position	Behavior when the sun is heavily obscured by clouds during the day. The <i>no reaction</i> setting prevents frequent raising and lowering of the drives.
Adjust height ³⁴	Yes No	Send height telegram
Height	0... 100 %	Drive height if the thresholds are not reached.

³⁴ At Move to predefined position

Designation	Values	Description
<i>Adjust slats³⁵</i>	Yes No	Reposition slats?
<i>Slat position</i>	<i>0... 100 %</i>	Slat position when the thresholds are undercut.
<i>Move to end position via</i>	<i>1-bit command</i> <i>Percentage command</i>	The commands: Move up drive (0) or Move down drive (1) are sent via the <i>Move up/down command</i> object. The commands: Move up drive or Move down drive are executed via the <i>Height - Send - Percentage value</i> object (i.e. 100 % or 0 %).
<i>Send slats when moving to end position</i>	Yes No	After the up or down command, the channel also sends a slat telegram, 0 % or 100 % according to the parameter <i>Assignment of the slat position³⁶</i> , see parameter page Slat tracking . Only send end position telegrams. Do not take slat position into account.
<i>Activate disable function</i>	Yes No	Activate disable function for this channel.
<i>Disable telegram</i>	<i>Disable with On telegram</i> <i>Disable with Off telegram</i>	Effect of the disabling telegram.
<i>Reaction when setting the lock</i>	<i>Raise drive</i> <i>Lower drive</i> <i>No reaction</i> <i>Move to predefined position</i>	Move to selected end position when blocking. Do not react. Move to specified height, position ³⁷ or slat position.
<i>Adjust height</i>	Yes No	Send height telegram?
<i>Height</i>	<i>0... 100 %</i>	Height of active block.
<i>Adjust slats</i>	Yes No	Reposition slats?
<i>Slat position</i>	<i>0... 100 %</i>	Slat position of active block.
<i>Reaction when the block is lifted</i>	<i>Do not send</i> <i>Update position</i>	No reaction when the lock is lifted. Send height and slat position according to the current channel status.

³⁵ At *Move to predefined position*

³⁶ Only if *calculation of slat position = Automatic via slat dimensions*.

³⁷ For vertical blinds

4.7.1.1 Parameters for scene control

Specific parameters if the channel is not controlled via percentage telegrams but via scenes.

Designation	Values	Description
<i>Activate tracking</i> (Sun position tracking)	Yes No	The Tracking parameter page is displayed. Send different scene numbers depending on the sun's position. When shading is active, the scene number is determined by the parameter "Scene number when thresholds are exceeded"
<i>Scene number when thresholds are exceeded</i>	1...64	Scene number to be sent when the thresholds are exceeded.
<i>When falling below the thresholds during automatic sun function active</i>	Raise drive Lower drive No reaction Send scene number	Move drive to specified end position. Do not react. Move to predefined position via a scene number.
<i>Scene number</i>	1...64	Scene number be active when falling below the thresholds during automatic sun function.
<i>Move to end position via</i>	1-bit command Scene number	The commands: Move up drive (0) or Move down drive (1) are sent via the <i>Move up/down command</i> object. Moving up or down to the end position is triggered by two defined scene numbers.
<i>Scene number for top end position</i>	1...64	Scene number defined in the blind/roller shutter actuator for moving to the upper end position.
<i>Scene number for lower end position</i>	1...64	Scene number defined in the blind/roller shutter actuator for moving to the lower end position.
<i>Reaction when setting the lock</i>	Raise drive Lower drive No reaction Send scene number	Move to predefined end position when blocked. Do not react. Move to predefined position via a scene number.
<i>Scene number</i>	1...64	Scene number for the blocking state.

4.7.2 Automatic sun function

Automatic shading function when all shading conditions are met.

Designation	Values	Description
Activation of the automatic sun function	Permanently On Via object	The automatic sun function is always active. Automatic sun shading is activated via the relevant automatic shading object (e.g. by a timer).
Automatic solar control after download	A From	After downloading, automatic solar shading is immediately in operation. Shading is only activated when the automatic solar shading is activated via object (see above, Activation of automatic solar shading).
Status after reset	Automatic sun function Off Automatic solar function On As before reset	Behavior after bus return: There is no shading. The automatic solar function is active. The status before reset or bus failure is restored.
Reaction to automatic solar function Off	Raise drive Lower drive No reaction Move to predefined position	Reaction when the automatic sun function is switched off. Parameters for height and slats ³⁸ are displayed. See below.
Height ³⁹ Adjust	Yes No	For predefined position: Send height telegram?
Height ⁴⁰	0... 100 %	Height with automatic sun function off
Adjust slats	Yes No	Reposition slats?
Slat position	0... 100 %	Slat position with automatic sun function off
Reaction to shading interruption	Raise drive Lower drive No reaction Move to predefined position	Reaction when a shading interruption telegram is received via the associated object. Note: Shading interruption is automatically deactivated below 100 lx. Parameters for height ⁴¹ and slats ⁴² are displayed. See below.

³⁸ Only if channel controls = blind

³⁹ or position for vertical blinds

⁴⁰ or position for vertical blinds

⁴¹ or position for vertical blinds

⁴² Only if channel controls = blind

Designation	Values	Description
<i>Height⁴³ Adjust</i>	Yes No	Send height telegram?
<i>Height</i>	0...100 %	Height during shading interruption
<i>Adjust slats</i>	Yes No	Reposition slats?
<i>Slat position</i>	0...100 %	Slat position during shading interruption
<i>Scene number</i>	1...64	Scene number for shading interruption.
<i>Use twilight function</i>	yes	The automatic twilight parameter page is displayed.
	No	Twilight is not taken into account.
Automatic sun function status		
<i>Send</i>	Yes	Send "Sun Control Active/Inactive" via status object as soon as the value changes. Note: An interruption in tracking has no effect on the status of the "Shading active" object.
	No	Do not send.
<i>Send cyclically</i>	no yes	Should be sent cyclically?
<i>Cycle time</i>	every min every 2 min every 3 min ... every 30 min ... every 60 min	How often should be sent again?

⁴³ or position for vertical blinds

4.7.2.1 Parameters for scene control with automatic sun function

Specific parameters if the channel is not controlled via percentage telegrams but via scenes.

Designation	Values	Description
<i>Reaction to automatic solar function Off</i>	<i>Raise drive</i> <i>Lower drive</i> <i>No reaction</i> <i>Send scene number</i>	Reaction when the automatic sun function is deactivated either via the object or when the value falls below the twilight threshold. Parameter for scene number is displayed. See below.
<i>Scene number</i>	<i>1...64</i>	Scene number for automatic solar control off.
<i>Reaction to shading interruption</i>	<i>Raise drive</i> <i>Lower drive</i> <i>No reaction</i> <i>Send scene number</i>	Reaction when a shading interruption telegram is received via the associated object. Parameter for scene number is displayed. See below.
<i>Scene number for shading interruption</i>	<i>1...64</i>	Scene number that is sent when shading is interrupted.

4.7.3 Automatic twilight function

Designation	Values	Description
<i>Twilight threshold</i>	2...500 lx	Threshold for detecting sunrise or sunset.
In the morning		
<i>Activation of the automatic twilight function in the morning</i>	<i>Permanently On</i> <i>Via object</i>	If the twilight threshold is exceeded, the parameterized reaction to dawn is always executed. If the twilight threshold is exceeded, the parameterized reaction to dawn is only executed if the automatic dawn on/off object has received a 1.
<i>Twilight control in the morning after reset⁴⁴</i>	<i>From A</i> <i>As before reset</i>	Behavior after bus voltage recovery or restart.
<i>Automatic twilight in the morning after download⁴⁵</i>	<i>From A</i>	Behavior after downloading the application program.
<i>Reaction to dawn</i>	<i>Raise drive</i> <i>Lower drive</i> <i>No reaction</i> <i>Move to predefined position</i>	Reaction when the twilight threshold is exceeded (if necessary, also with automatic dawn on/off object) Parameters for height and slats⁴⁶ are displayed. See below.
<i>Height⁴⁷ Adjust</i>	<i>Yes</i> <i>No</i>	Send height telegram?
<i>Height</i>	0...100 %	Height at dawn
<i>Adjust slats</i>	<i>Yes</i> <i>No</i>	Reposition slats?
<i>Slat position</i>	0...100 %	Slat position at dawn.
<i>Delay</i>	0...60 min, 0...60 s	Waiting time before the reaction to dawn is executed.
Evening		
<i>Activation of the automatic twilight function in the evening</i>	<i>Permanently On</i> <i>Via object</i>	If the light falls below the twilight threshold, the parameterized reaction to dusk is always executed. If the value falls below the twilight threshold, the parameterized reaction to dusk is only executed if the object Automatic twilight in the evening on/off has received a 1.
<i>Twilight control in the evening after reset⁴⁸</i>		Behavior after bus voltage recovery or restart.

⁴⁴ Only if *Activation of the automatic sun function* = *Via object*

⁴⁵ Only if *Activation of the automatic twilight function* = *Via object*

⁴⁶ Only if channel controls = blind

⁴⁷ or position for vertical blinds

⁴⁸ Only if *Activation of the automatic twilight function* = *Via object*

Designation	Values	Description
<i>Automatic twilight in the evening after download⁴⁹</i>	<i>From A</i>	Behavior after downloading the application program.
<i>Reaction to dusk</i>	<i>Raise drive Lower drive No reaction Move to predefined position</i>	Reaction when dusk falls below the twilight threshold (possibly also with automatic twilight on/off in the evening object) Parameters for height and slats ⁵⁰ are displayed. See below.
<i>Height⁵¹ Adjust</i>	<i>Yes No</i>	Send height telegram?
<i>Height</i>	<i>0...100 %</i>	Height at dusk
<i>Adjust slats</i>	<i>Yes No</i>	Reposition slats?
<i>Slat position</i>	<i>0...100 %</i>	Slat position at dusk.
<i>Delay</i>	<i>0...60 min, 0...60 s</i>	Waiting time before the reaction to dusk is executed.
Twilight status morning, evening		
<i>Send</i>	<i>Yes No</i>	Send the status of the automatic twilight function in the morning or evening as soon as the value changes. Do not send.
<i>Send cyclically</i>	<i>No yes</i>	Should be sent cyclically?
<i>Cycle time</i>	<i>every min every 2 min every 3 min ... every 30 min ... every 60 min</i>	How often should be sent again?

⁴⁹ Only if *Activation of the automatic twilight function = Via object*

⁵⁰ Only if channel controls = blind

⁵¹ or position for vertical blinds

4.7.4 Façade settings

This parameter page is available if *Consider sun position for shading = yes* (General parameter page).

The position, height and direction of the sun at which the façade should be shaded can be set here.

This means that the sun shading is only used when it is actually required.

If the sun is in a certain area behind an obstacle (other building, trees, etc.), the shading can be canceled or ended.



All directional information is viewed from the inside of the building to the outside (e.g. like an observer at a window).

Designation	Values	Description
Facade direction	0...359°	Orientation of the façade to be shaded. The path of the sun can cover a maximum range of 180° (azimuth). This is divided into 2 x 90° (see below).
Sun protection area		

Designation	Values	Description
<i>Facade angle A</i>	$-90...90^{\circ}$	Left-hand sun angle range of the façade. Determines which section is to be shaded as long as the sun is in this area. Prerequisite⁵² the elevation is also within the parameterized minimum and maximum values, see below. -90° = Maximum shading angle: North of the equator:⁵³ Shading as soon as the sun appears on the left edge of the façade (-90°) until it is at a right angle to the façade. The sun then enters the façade angle B. South of the equator:⁵⁴ Shading as soon as the sun appears at right angles to the façade direction (0°) until it leaves the façade at the left edge (-90°)
<i>Façade angle B</i>	$-90...90^{\circ}$	Right-hand sun angle range of the façade. See façade angle A. 90° = Maximum shading angle North of the equator:⁵⁵ Shading as soon as the sun appears at right angles to the façade direction (0°) until it leaves the façade at the right edge ($+90^{\circ}$) South of the equator:⁵⁶ Shading as soon as the sun appears at the right edge of the façade ($+90^{\circ}$) until it is at right angles to the façade. The sun then enters the façade angle A.

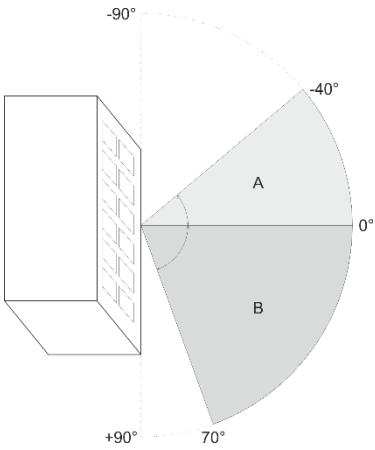
⁵² Not applicable for vertical blinds.

⁵³ Façade facing south towards the sun, the sun moves from left to right, i.e. from A to B.

⁵⁴ Façade facing north towards the sun, the sun moves from right to left, i.e. from B to A.

⁵⁵ Façade facing south towards the sun, the sun moves from left to right, i.e. from A to B.

⁵⁶ Façade facing north towards the sun, the sun moves from right to left, i.e. from B to A.

Designation	Values	Description
		
Minimum elevation (position of the sun above the horizon)	0...90	Elevation angle below which shading is no longer required or desired. This parameter is not available for vertical blinds.
Maximum elevation	0...90	Elevation angle above which shading is no longer required or desired. This parameter is not available for vertical blinds.
Reaction when leaving the sun protection area	Raise drive Lower drive No reaction Move to predefined position ⁵⁷	Reaction when the sun leaves the parameterized area (façade angle and, if applicable, elevation). Parameters for height and slats ⁵⁸ are displayed. See below.
Adjust height	Yes No	Send height telegram?
Height	0... 100 %	Height when leaving the sun shading area.
Adjust slats	Yes No	Reposition slats?
Slat position	0... 100 %	Slat position at dusk.

⁵⁷ Or . Send scene number

⁵⁸ Only with Channel controls = Blinds

4.7.5 Slat tracking



) This function is used to position the slats depending on the position of the sun (elevation)⁵⁹ or the direction of the sun⁶⁰ (azimuth).

Designation	Values	Description
<i>Calculation of the slat position</i>	<i>Automatically via slat dimensions</i> <i>Assign your own values</i>	The correct slat position for each elevation level is calculated automatically based on the slat width and distance. The slats are always positioned so that no direct sunlight can penetrate and the room still remains as bright as possible. The elevation is divided into fixed sections (next parameter). The user defines a separate slat position for each section.
<i>Once again, position all</i>	10° 15° 22,5° 30°	Size of the sections for the elevation. After which change in the height of the sun should the slat position or shutter height be adjusted?

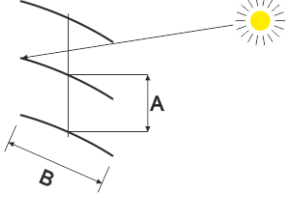
⁵⁹ Horizontal blinds

⁶⁰ Vertical blinds

4.7.5.1 Automatically via slat dimensions



With this setting, the slat position is controlled automatically based on the position of the sun and the slat dimensions.

Designation	Values	Description
<i>Slat distance (A)</i>	<i>0...255 mm</i>	Distance between 2 slats.
<i>Slat width (B)</i>	<i>0...255 mm</i>	Width of one slat.
<i>Reserve for safe shading</i>	<i>0...25 %</i>	This allows the position of the slats to be additionally corrected if necessary.
<i>Slats horizontal at</i>	<i>20...80 %</i>	Required percentage value to position the slats horizontally.
<i>Assignment of the slat position</i>	<i>0% corresponds to the slat position when moving upwards 0% corresponds to the slat position on departure</i>	Enter the starting position for calculating the slat turn.
		

4.7.5.2 Assign your own values



Here, the user can enter a separate slat position for each section of the sun's path (elevation⁶¹ or azimuth⁶²).

The size of the sections is defined with the *Reposition all* parameter (see above).

Designation	Values	Description
Slat position for elevation... (horizontal blinds)		
Reposition every 10°		Depending on the setting of the <i>Reposition all</i> parameter, a separate slat position can be defined for each elevation level (sun height range). Only the parameters that are within the defined minimum and maximum elevation are displayed in the ETS (see façade settings parameter page).
...from 0° to 10°	0... 100 %	
...from 10° to 20°	0... 100 %	
...from 20° to 30°	0... 100 %	
...from 30° to 40	0... 100 %	
...from 40° to 50	0... 100 %	
...from 50° to 60	0... 100 %	
...from 60° to 70	0... 100 %	
...from 70° to 80	0... 100 %	
...from 80° to 90°	0... 100 %	
Reposition every 15°		
...from 0° to 15	0... 100 %	
...from 15° to 30	0... 100 %	
...from 30° to 45	0... 100 %	
...from 45° to 60	0... 100 %	
...from 60° to 75	0... 100 %	
...from 75° to 90	0... 100 %	
Reposition every 22.5°		
...from 0° to 22.5	0... 100 %	
...from 22.5° to 45	0... 100 %	
...from 45° to 67.5	0... 100 %	
...from 67.5° to 90	0... 100 %	
Reposition every 30°		
...from 0° to 30	0... 100 %	
...from 30° to 60	0... 100 %	
...from 60° to 90	0... 100 %	
Scene number for azimuth... (vertical blinds)		
Reposition every 10°		Depending on the setting of the " <i>Reposition All</i> " parameter, a separate slat position can be defined for each azimuth step (cardinal direction). Only the parameters that are within the defined façade angle (A+B) are displayed in the ETS (see façade settings parameter page).
...from -90 to -80°	1...64	
...from -80 to -70°	1...64	
...from -70 to -60°	1...64	
...from -60 to -50°	1...64	
...from -50 to -40°	1...64	
...from -40 to -30°	1...64	
...from -30 to -20°	1...64	
...from -20 to -10°	1...64	
...from -10 to 0°	1...64	
...from 0 to 10°	1...64	
...from 10 to 20°	1...64	

⁶¹ Horizontal blind

⁶² Vertical blind

Designation	Values	Description
...from 20 to 30°	1...64	
...from 30 to 40°	1...64	
...from 40 to 50°	1...64	
...from 50 to 60°	1...64	
...from 60 to 70°	1...64	
...from 70 to 80°	1...64	
...from 80 to 90°	1...64	
Reposition every 15°		
...from -90 to -75°	1...64	
...from -75 to -60°	1...64	
...from -60 to -45°	1...64	
...from -45 to -30°	1...64	
...from -30 to -15°	1...64	
...from -15 to 0°	1...64	
...from 0 to 15°	1...64	
...from 15 to 30°	1...64	
...from 30 to 45°	1...64	
...from 45 to 60°	1...64	
...from 60 to 75°	1...64	
...from 75 to 90°	1...64	
Reposition every 22.5°		
...from -90 to -67.5°	1...64	
...from -67.5 to -45°	1...64	
...from -45 to -22.5°	1...64	
...from -22.5 to 0°	1...64	
...from 0 to 22.5°	1...64	
...from 22.5 to 45°	1...64	
...from 45 to 67.5°	1...64	
...from 67.5 to 90°	1...64	
Reposition every 30°		
...from -90 to -60°	1...64	
...from -60 to -30°	1...64	
...from -30 to 0°	1...64	
...from 0 to 30°	1...64	
...from 30 to 60°	1...64	
...from 60 to 90°	1...64	

4.7.6 Height tracking



This function is used to position the drive height depending on the position of the sun (elevation).

Designation	Values	Description
<i>Calculation of the height position</i>	<i>Automatically via window dimensions</i> <i>Assign your own values</i>	The correct height for each elevation level is calculated automatically based on the window height and the desired penetration depth of the sunlight. The height is controlled so that direct sunlight can only penetrate as far into the room as set. The user has the option of setting a separate height for each elevation level.
<i>Reposition all (penetration depth)</i>	<i>5...50 cm</i>	After which change in the penetration depth of the sunlight should the roller shutter height be adjusted?

4.7.6.1 Automatically via window dimensions



With this setting, the drive height is automatically controlled based on the position of the sun and the window dimensions

Designation	Values	Description
<i>Window height (f)</i>	<i>0...300 cm</i>	See appendix: Height tracking or shadow edge calculation.
<i>Penetration depth (e)</i>	<i>0...300 cm</i>	

H % = Drive height
h = not shaded area
e = Depth of penetration (see also above: *Reposition all*)

4.7.6.2 Assign your own values



Here, the user can select a separate drive height for each section of the sun path (elevation). The size of the sections is defined with the *Reposition all* parameter (see above).

Only the parameters that are within the defined minimum and maximum elevation are displayed in the ETS (see façade settings parameter page).

Designation	Values	Description
Height at elevation...		
Reposition every 10°		Depending on the setting of the <i>Reposition all</i> parameter, a separate drive height can be defined for each elevation stage (sun position range).
...from 0° to 10°	0... 100 %	
...from 10° to 20°	0... 100 %	
...from 20° to 30°	0... 100 %	
...from 30° to 40	0... 100 %	
...from 40° to 50	0... 100 %	
...from 50° to 60	0... 100 %	
...from 60° to 70	0... 100 %	
...from 70° to 80	0... 100 %	
...from 80° to 90°	0... 100 %	
Reposition every 15°		
...from 0° to 15	0... 100 %	
...from 15° to 30	0... 100 %	
...from 30° to 45	0... 100 %	
...from 45° to 60	0... 100 %	
...from 60° to 75	0... 100 %	
...from 75° to 90	0... 100 %	
Reposition every 22.5°		
...from 0° to 22.5	0... 100 %	
...from 22.5° to 45	0... 100 %	
...from 45° to 67.5	0... 100 %	
...from 67.5° to 90	0... 100 %	
Reposition every 30°		
...from 0° to 30	0... 100 %	
...from 30° to 60	0... 100 %	
...from 60° to 90	0... 100 %	

4.7.7 Tracking (via scenes)



This function is used to position the drive height or the slat position depending on the position of the sun (elevation) or the direction of the sun (azimuth).

The actuator is controlled via defined scene numbers.

Designation	Values	Description
<i>Tracking depending on</i>	<i>Elevation</i>	Standard setting for vertical blinds, shutters and sun shading devices. Tracking is based on the height of the sun.
	<i>Azimuth</i>	Setting for horizontal blinds. Tracking is based on the direction of the compass, i.e. the movement of the sun from east to west.
<i>Call up new scene all</i>	10° 15° 22,5° 30°	Tracking dependent on elevation: After which change in the penetration depth of the sunlight should a new scene be sent? Tracking dependent on azimuth: After which change in the altitude ⁶³ or direction of the ⁶⁴ sun should a new scene be sent?
Scene number for elevation... ⁶⁵		
<i>Reposition every 10°</i>		
<i>...from 0° to 10°</i>	1...64	Depending on the setting of the <i>Reposition all</i> parameter, a separate scene number can be defined for each elevation level (sun position range). Only the parameters that are within the defined minimum and maximum elevation are displayed in the ETS (see façade settings parameter page).
<i>...from 10° to 20°</i>	1...64	
<i>...from 20° to 30°</i>	1...64	
<i>...from 30° to 40°</i>	1...64	
<i>...from 40° to 50°</i>	1...64	
<i>...from 50° to 60°</i>	1...64	
<i>...from 60° to 70°</i>	1...64	
<i>...from 70° to 80°</i>	1...64	
<i>...from 80° to 90°</i>	1...64	
<i>Reposition every 15°</i>		
<i>...from 0° to 15°</i>	1...64	
<i>...from 15° to 30°</i>	1...64	
<i>...from 30° to 45°</i>	1...64	
<i>...from 45° to 60°</i>	1...64	
<i>...from 60° to 75°</i>	1...64	
<i>...from 75° to 90°</i>	1...64	
<i>Reposition every 22.5°</i>		
<i>...from 0° to 22.5°</i>	1...64	
<i>...from 22.5° to 45°</i>	1...64	

⁶³ For tracking via elevation

⁶⁴ For tracking via azimuth

⁶⁵ Only for tracking via elevation

Designation	Values	Description
...from 45° to 67.5	1...64	
...from 67.5° to 90	1...64	
Reposition every 30°		
...from 0° to 30	1...64	
...from 30° to 60	1...64	
...from 60° to 90	1...64	
Scene number for azimuth... ⁶⁶		
Reposition every 10°		Depending on the setting of the "Reposition All " parameter, a separate scene number can be defined for each azimuth step (cardinal direction). Only the parameters that are within the defined facade angles (A+B) are displayed in the ETS (see parameter page Facade settings).
...from -90 to -80°	1...64	
...from -80 to -70°	1...64	
...from -70 to -60°	1...64	
...from -60 to -50°	1...64	
...from -50 to -40°	1...64	
...from -40 to -30°	1...64	
...from -30 to -20°	1...64	
...from -20 to -10°	1...64	
...from -10 to 0°	1...64	
...from 0 to 10°	1...64	
...from 10 to 20°	1...64	
...from 20 to 30°	1...64	
...from 30 to 40°	1...64	
...from 40 to 50°	1...64	
...from 50 to 60°	1...64	
...from 60 to 70°	1...64	
...from 70 to 80°	1...64	
...from 80 to 90°	1...64	
Reposition every 15°		
...from -90 to -75°	1...64	
...from -75 to -60°	1...64	
...from -60 to -45°	1...64	
...from -45 to -30°	1...64	
...from -30 to -15°	1...64	
...from -15 to 0°	1...64	
...from 0 to 15°	1...64	
...from 15 to 30°	1...64	
...from 30 to 45°	1...64	
...from 45 to 60°	1...64	
...from 60 to 75°	1...64	
...from 75 to 90°	1...64	
Reposition every 22.5°		
...from -90 to -67.5°	1...64	
...from -67.5 to -45°	1...64	
...from -45 to -22.5°	1...64	
...from -22.5 to 0°	1...64	
...from 0 to 22.5°	1...64	
...from 22.5 to 45°	1...64	
...from 45 to 67.5°	1...64	
...from 67.5 to 90°	1...64	
Reposition every 30°		

⁶⁶ Only for tracking via azimuth

Designation	Values	Description
...from -90 to -60°	1...64	
...from -60 to -30°	1...64	
...from -30 to 0°	1...64	
...from 0 to 30°	1...64	
...from 30 to 60°	1...64	
...from 60 to 90°	1...64	

4.8 Threshold channels

The received value is compared with the set threshold. If the value exceeds the threshold, the condition is considered fulfilled; if it is below, it is unfulfilled.

The behavior of the output objects if the condition is fulfilled or not fulfilled is defined on the Output objects parameter page.

4.8.1 General

Designation	Values	Description
Type of threshold value object	Percentage value DPT5.001 Value 1-255 DPT5.010 Temperature DPT9.001 Color temperature DPT7.600 1-byte unsigned DPT5.* 2-byte unsigned DPT7.* 2-byte with sign DPT8.* 2-byte with sign DPT9 4-byte unsigned DPT12.* 4-byte with sign DPT13.* 4-byte with sign DPT14.*	Value type for the threshold. DPTx.* means general DPT type. The required subtype can be set in the ETS.
Threshold value	0...100 %	For the telegram type Percentage value DPT5.001
	0...255	For telegram type Value 0-255 DPT5.010
	-273...300 °C	For telegram type Temperature DPT9.001
	1000...10.000 K	For telegram type Color temperature DPT7.600
	0...255	For telegram type 1-byte Unsigned DPT5.*
	0...65535	For telegram type 2-byte Unsigned DPT7.*
	-32768...32767	For telegram type 2-byte with sign DPT8.*
	-671.088,6...670.433,2	For telegram type 2-byte with sign DPT9
	0...4.294.967.295	For telegram type 4-byte unsigned DPT12.*
	-2.147.483.648...2.147.483.647	For telegram type 4-byte with sign DPT13
	-3,40282346638529E+38... 3,40282346638529E+38	For the telegram type 4-byte with sign DPT14.*
Hysteresis		Prevents frequent switching with small value changes. The hysteresis is negative on one side for all threshold types, e.g. threshold 50 means hysteresis 5: Switch on at 50 and switch off at 50 - hysteresis = 45.

Designation	Values	Description
	1...100 %	For the telegram type Percentage value DPT5.001
	1...255	For telegram type value 0-255 DPT5.010.
	0,01...300	For telegram type temperature DPT9.001.
	1...10.000	For telegram type color temperature DPT7.600.
	1...255	For telegram type 1-byte unsigned DPT5...
	1...65535	For telegram type 2-byte Unsigned DPT7.*.
	1...32767	For telegram type 2-byte with sign DPT8.*
	0,01...670.433,2	For telegram type 2-byte with sign DPT9
	1...4.294.967.295	For telegram type 4-byte unsigned DPT12.*
	1...2.147.483.647	For telegram type 4-byte with sign DPT13
	1,4E-45...3,402E+38	For the telegram type 4-byte with sign DPT14.*
Delay		
When the threshold is exceeded	0...60 min, 0...59 s	Delay before the associated telegram is sent if the thresholds are exceeded or undershot,
When falling below the threshold	0...60 min, 0...59 s	
Threshold can be overridden via object	Yes No	Should the configured threshold be changeable via bus telegrams?
Override threshold during download	Yes No	During an ETS download, the threshold currently stored in the device is deleted and overwritten by the value set in the ETS. An ETS download has no effect on the threshold currently stored in the device. Exception: Even if no is selected, all ETS parameter values are downloaded during initial commissioning (i.e. when the device memory is empty).
Telegram after reset or download	As when falling below the threshold As when the threshold is exceeded Do not send	Reaction of the channel after a restart.

4.8.2 Output objects for the threshold channel



The output objects and parameters of a channel are almost identical for all channel types and are described in a separate chapter (see chapter **Output objects for all channels**).

4.9 Logic channels

The logic channels can logically link up to four 1-bit input variables with each other.

Available input variables:

- Input objects of the channel
- Link result of the other logic channels⁶⁷.
- Status of the universal channels (fulfilled/not fulfilled)
- Status of the threshold channels (fulfilled/not fulfilled)
- Status of the time channels
- Status of the astro channels

The behavior of the output objects in the event of a fulfilled or unfulfilled condition is set on the Objects parameter page.

4.9.1 General

Designation	Values	Description
<i>Type of link</i>		Selection of the logical link between the 1-bit input variables (see below).
	AND OR	Logical link of 2 to 4 inputs or status of other channels. See truth tables.
	XOR	Logical link of 2 inputs or status of other channels. See truth tables.
<i>Use input 1</i>	Yes	The input is used.
	Yes, inverted	The input is logically inverted: 0 becomes 1, 1 becomes 0.
<i>Use input 2</i>	Yes	The input is used.
	Yes, inverted	The input is logically inverted: 0 becomes 1 and 1 becomes 0.
<i>Use input 3</i>	No	Input is hidden.
	Yes	The input is used.
	Yes, inverted	The input is logically inverted: 0 becomes 1 and 1 becomes 0.
<i>Use input 4</i>	No	Input is hidden.
	Yes	The input is used.
	Yes, inverted	The input is logically inverted: 0 becomes 1 and 1 becomes 0.

⁶⁷ Important: A logic channel cannot be linked to itself

Designation	Values	Description
<i>Input variable for input 1</i>	<i>Input object</i> <i>Condition Universal channel F1</i> <i>Condition universal channel F2</i> <i>Universal channel condition F3</i> <i>Universal channel condition F4</i> <i>Universal channel condition F5</i> <i>Condition universal channel F6</i> <i>Condition universal channel F7</i> <i>Condition universal channel F8</i> <i>Condition universal channel F9</i> <i>Universal channel condition F10</i> <i>Status of threshold channel F25</i> <i>Status of threshold channel F26</i> <i>Status of threshold channel F27</i> <i>Status of threshold channel F28</i> <i>Logic channel F30 logic result</i> <i>Logic channel logic result F31</i> <i>Logic channel logic result F32</i> <i>Logic channel F33 logic result</i> <i>Logic channel F34 logic result</i> <i>Switching status of time channel F35</i> <i>Switching status of time channel F36</i> <i>Switching status time channel F37</i> <i>Switching status of time channel F38</i> <i>Elevation status astro channel F39</i> <i>Elevation status of astro channel F40</i>	First input object of the channel. Status of a universal channel (0 = unfulfilled, 1 = fulfilled). Status of a threshold channel (0 = below threshold, 1 = exceeded). Logic result of another logic channel. ⁶⁸ Status of a time channel. Status of an astro channel: 0 = Elevation angle undershot 1 = Elevation angle exceeded.
<i>Input variable for input 2</i>	<i>See input 1</i>	Second input object of the channel.
<i>Input variable for input 3</i>	<i>See input 1</i>	Third input object of the channel.
<i>Input variable for input 4</i>	<i>See input 1</i>	Fourth input object of the channel.
<i>Telegram after reset or download</i>	<i>As for unfulfilled condition</i> <i>As for fulfilled condition</i> <i>Do not send</i>	Reaction of the channel after a restart.

⁶⁸ Important: A logic channel cannot be linked to itself

4.9.1.1 Truth tables:

Result of the 3 logic operations when using all 4 inputs.

0 = Condition not fulfilled

1 = Condition fulfilled.

AND				Result
1	2	3	4	
0	0	0	0	0
0	0	0	1	0
0	0	1	0	0
0	0	1	1	0
0	1	0	0	0
0	1	0	1	0
0	1	1	0	0
0	1	1	1	0
1	0	0	0	0
1	0	0	1	0
1	0	1	0	0
1	0	1	1	0
1	1	0	0	0
1	1	0	1	0
1	1	1	0	0
1	1	1	1	1

OR				Result
1	2	3	4	
0	0	0	0	1
0	0	0	1	1
0	0	1	0	1
0	0	1	1	1
0	1	0	0	1
0	1	0	1	1
0	1	1	0	1
0	1	1	1	1
1	0	0	0	1
1	0	0	1	1
1	0	1	0	1
1	0	1	1	1
1	1	0	0	1
1	1	0	1	1
1	1	1	0	1
1	1	1	1	0

XOR		Result
1	2	
0	0	0
0	1	1
1	0	1
1	1	0

4.9.2 Output objects for the logic channel



The output objects and parameters of a channel are almost identical for all channel types and are described in a separate chapter (see chapter **Output objects for all channels**).

4.10 Time channels

The time channels function as a timer with eight individually programmable weekly switching programs.

4.10.1 General

Switching program	Mon	The	Wed	Thu	Fri	Sa	Like this	h	min	From	A
1	Weekdays 1. Switching program							Switching time		Switching status	
2	Weekdays 2. Switching program							Switching time		Switching status	
3	Weekdays 3. Switching program							Switching time		Switching status	
4	Weekdays 4. Switching program							Switching time		Switching status	
5	Weekdays 5. Switching program							Switching time		Switching status	
6	Days of the week 6. Switching program							Switching time		Switching status	
7	Days of the week 7. Switching program							Switching time		Switching status	
8	Days of the week 8. Switching program							Switching time		Switching status	

Designation	Values	Description
<i>Telegram after reset or download</i>	<i>As for Off</i> <i>As for On</i> <i>Do not send</i>	Reaction of the channel after a restart. Note: There is no program review.

4.10.2 Output objects for the time channel



The output objects and parameters of a channel are almost identical for all channel types and are described in a separate chapter (see chapter **Output objects for all channels**).

4.11 Astro channels

The astro channels function as astronomical timers that trigger a telegram in the morning and evening at the day/night transitions based on the height of the sun on the horizon. This requires that the device either has an integrated GPS module or that the location data has been entered manually.

Devices without a GPS module must additionally receive the date and time via an external time source (recommended once per hour).

Further information can be found on the **Location data** parameter page.

The behaviour of the output objects when exceeding or falling below the parameterized elevation angle is set on the Output objects parameter page.

4.11.1 General

Designation	Values	Description
<i>Day / night transition at elevation</i>	-20° -19° -18° (darkness) -17° -16° -15° -14° -13° -12° -11° -10° -9° -8° -7° -6° (twilight) -5° -4° -3° -2° -0.83° (sunrise/sunset) 0° +1° +2° +3° +4° +5°	The exact time of the desired day/night transition can be determined to the nearest degree using the height of the sun on the horizon.
<i>Offset in the morning</i>	-120...120 min	Delay in the transition from night to day before the day telegram is sent. A negative offset allows the switching time to be brought forward by up to two hours, so that the lighting is switched off long before sunrise, for example.
<i>Offset in the evening</i>	-120...120 min	Delay in the transition from day to night before the night telegram is sent. A positive offset makes it possible to delay the switching time by up to two hours, so that the lighting is only switched off after sunset, for example.
<i>Telegram after reset or download</i>	<i>As for elevation angle undershot</i>	Reaction of the channel after a restart.

Designation	Values	Description
	<i>As for elevation angle exceeded Do not send</i>	

4.11.2 Output objects for the astro channel



The output objects and parameters of a channel are almost identical for all channel types and are described in a separate chapter (see chapter **Output objects for all channels**).

4.12 Output objects for all channels⁶⁹



The function of the output objects is identical for all channel types.
Exception: The sun protection channels do not have separate output objects or parameters.

Designation	Values	Description
Output object 1		
Telegram type	Switching DPT1.001 Priority switching DPT2.001 Percentage value DPT5.001 Value 0-255 DPT5.010 Temperature DPT9.001 HVAC operating mode DPT20.102 Scene DPT17.001 Color temperature DPT7.600 RGB color value DPT232.600 RGBW color value DPT251.600 XY color value DPT242.600 1-bit DPT1.* 2-bit DPT2.* 1-byte Unsigned DPT5.* 2-byte unsigned DPT7.* 2-byte with sign DPT8.* 2-byte with sign DPT9 4-byte unsigned DPT12.* 4-byte with sign DPT13.* 4-byte with sign DPT14.*	Type of telegram for the first output object of the channel.
If the condition is fulfilled ⁷⁰ When the threshold is exceeded ⁷¹ A ⁷² If elevation angle exceeded ⁷³	No telegram Send the following telegram once Send cyclically	Transmission behavior if the channel condition is fulfilled.
Telegram	A From	Telegram for the first output object of the channel if the condition is fulfilled: For telegram type switching

⁶⁹ Except sun protection channels

⁷⁰ Universal channels, logic channels

⁷¹ Threshold channels

⁷² Time channels

⁷³ Astro channels

Designation	Values	Description								
	<i>no priority</i> <i>Priority, ON (down)</i> <i>Priority, OFF (up)</i>	For the telegram type Priority 2-bit <table><tr><th>Function</th><th>Value</th></tr><tr><td>Priority inactive (no control)</td><td>0 (00bin)</td></tr><tr><td>Priority ON (control: enable, on)</td><td>3 (11bin)</td></tr><tr><td>Priority OFF (control: disable, off)</td><td>2 (10bin)</td></tr></table>	Function	Value	Priority inactive (no control)	0 (00bin)	Priority ON (control: enable, on)	3 (11bin)	Priority OFF (control: disable, off)	2 (10bin)
	Function	Value								
	Priority inactive (no control)	0 (00bin)								
	Priority ON (control: enable, on)	3 (11bin)								
	Priority OFF (control: disable, off)	2 (10bin)								
	0...100 %	For the telegram type Percentage value DPT5.001								
	0...255	For telegram type Value 0-255 DPT5.010								
	-273...300 °C	For telegram type Temperature DPT9.001								
	<i>Car</i> <i>Comfort</i> <i>Standby</i> <i>Night</i> <i>Frost/heat protection</i>	For the telegram type HVAC operating mode DPT20.102								
	Scene number 1...64	For telegram type Scene DPT17.001								
	1000...10.000 K	For telegram type Color temperature DPT7.600								
	RGB color value	For telegram type RGB color value DPT232.600								
	RGBW color value	For telegram type RGBW Color value DPT251.600								
	X value 0...1 Y value 0...1 Brightness 0...100 %	For telegram type XY color value DPT242.600								
	A From	For telegram type 1-bit DPT1.*								
	No priority (00) No priority (01) Priority Off Priority On	For telegram type 2-bit DPT2.*								
	0...255	For telegram type 1-byte Unsigned DPT5.*								
	0...65535	For telegram type 2-byte Unsigned DPT7.*								
	-32768...32767	For telegram type 2-byte with sign DPT8.*								
	-671.088,6...670.433,2	For telegram type 2-byte with sign DPT9								
0...4.294.967.295	For telegram type 4-byte unsigned DPT12.*									
-2.147.483.648...2.147.483.647	For telegram type 4-byte with sign DPT13									
-3,40282346638529E+38... 3,40282346638529E+38	For the telegram type 4-byte with sign DPT14.*									
No telegram Send the following telegram once	Transmission behavior if the channel condition is not fulfilled.									

Designation	Values	Description								
<i>If the condition is not fulfilled</i> ⁷⁴ <i>When falling below the threshold</i> ⁷⁵ <i>From</i> ⁷⁶ <i>If the elevation angle is undershot</i> ⁷⁷	<i>Send cyclically</i>									
<i>Telegram</i>	<i>A</i> <i>From</i>	Telegram for the first output object of the channel if the condition is not fulfilled: For telegram type switching								
	<i>no priority</i> <i>Priority, ON (down)</i> <i>Priority, OFF (up)</i>	For the telegram type Priority 2-bit <table><tr><th>Function</th><th>Value</th></tr><tr><td>Priority inactive (no control)</td><td>0 (00bin)</td></tr><tr><td>Priority ON (control: enable, on)</td><td>3 (11bin)</td></tr><tr><td>Priority OFF (control: disable, off)</td><td>2 (10bin)</td></tr></table>	Function	Value	Priority inactive (no control)	0 (00bin)	Priority ON (control: enable, on)	3 (11bin)	Priority OFF (control: disable, off)	2 (10bin)
Function	Value									
Priority inactive (no control)	0 (00bin)									
Priority ON (control: enable, on)	3 (11bin)									
Priority OFF (control: disable, off)	2 (10bin)									
	<i>0...100 %</i>	For the telegram type Percentage value DPT5.001								
	<i>0...255</i>	For telegram type Value 0-255 DPT5.010								
	<i>-273...300 °C</i>	For telegram type Temperature DPT9.001								
	<i>Car</i> <i>Comfort</i> <i>Standby</i> <i>Night</i> <i>Frost/heat protection</i>	For the telegram type HVAC operating mode DPT20.102								
	<i>Scene number 1...64</i>	For telegram type Scene DPT17.001								
	<i>1000...10.000 K</i>	For telegram type Color temperature DPT7.600								
	<i>RGB color value</i>	For telegram type RGB color value DPT232.600								
	<i>RGBW color value</i>	For telegram type RGBW Color value DPT251.600								
	<i>X value 0...1</i> <i>Y value 0...1</i> <i>Brightness 0...100 %</i>	For telegram type XY color value DPT242.600								
	<i>A</i> <i>From</i>	For telegram type 1-bit DPT1.*								

⁷⁴ Universal channels, logic channels

⁷⁵ Threshold channels

⁷⁶ Time channels

⁷⁷ Astro channels

Designation	Values	Description
	No priority (00) No priority (01) Priority Off Priority On	For telegram type 2-bit DPT2.*
	0...255	For telegram type 1-byte Unsigned DPT5.*
	0...65535	For telegram type 2-byte Unsigned DPT7.*
	-32768...32767	For telegram type 2-byte with sign DPT8.*
	-671.088,6...670.433,2	For telegram type 2-byte with sign DPT9
	0...4.294.967.295	For telegram type 4-byte unsigned DPT12.*
	-2.147.483.648...2.147.483.647	For telegram type 4-byte with sign DPT13
	-3,40282346638529E+38... 3,40282346638529E+38	For the telegram type 4-byte with sign DPT14.*
Use output object 2	Yes No	Should a second telegram be sent?
Output object 2		
Telegram type	See output object 1.	Telegram for the second output object of the channel. See output object 1.
If the condition is fulfilled ⁷⁸		
When the threshold is exceeded ⁷⁹		
A ⁸⁰		
If elevation angle exceeded ⁸¹		
Telegram		
If the condition is not fulfilled ⁸²		
When falling below the threshold ⁸³		
From ⁸⁴		
If the elevation angle is undershot ⁸⁵		
Telegram		

⁷⁸ Universal channels, logic channels

⁷⁹ Threshold channels

⁸⁰ Time channels

⁸¹ Astro channels

⁸² Universal channels, logic channels

⁸³ Threshold channels

⁸⁴ Time channels

⁸⁵ Astro channels

Designation	Values	Description
Send		 This parameter is available exclusively for the logic channels.
	When the output state changes	The channel transmits only when the state of the output changes.
	When an input receives a telegram	The channel always transmits when a logic input receives a telegram, regardless of whether this changes the output state or not.
Activate disable function	Yes No	Activate disable function for this channel. The disable function affects both output objects.
Polarity of the disable object	Disable with On telegram Disable with Off telegram	Effect of the disabling telegram.
Reaction when setting the lock	Do not send As with unfulfilled condition As for fulfilled condition	The channel does not send any telegrams. The channel behaves as if the condition is unfulfilled or fulfilled ⁸⁶ .
Reaction when the block is lifted	Do not send Update channel	No reaction when the lock is lifted. Send telegram according to the current channel status.

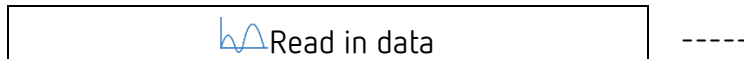
⁸⁶ or when exceeding/falling below the threshold, on/off when elevation angle is exceeded/fallen below.

4.13 Diagnosis



The current data of the weather station can be read out directly via the diagnostics page.

Once the device has been programmed with the physical address, the "Read data" button is available.



Clicking the "Read Data" button reads the data from the device and displays the current values below.

The time of the last read process appears to the right of the button.

The data is updated by pressing the button again.

Designation	Description
Firmware version	3-digit version number of the device firmware.
Sensor values	
Front brightness [Lux]	Current measurement value or alarm of the sensor.
Brightness left [Lux]	
Brightness right [Lux]	
Rear brightness [Lux]	
Temperature [°C]	
Perceived temperature [°C]	
Wind speed [m/s]	
Rain	
Global radiation [W/m²]	
Relative humidity [%]	
Absolute humidity [%]	
Air pressure [mBar or hPa]	
Auxiliary voltage	
Voltage for rain sensor	Indicates whether the voltage for heating the rain sensor is present.
Current time / date of the meteodata	
Date	Time information used for the • Slat or height tracking • Time channels • Astro channels
Time of day	
position (Only for devices with an integrated GPS module (1509204, 1509208))	
Latitude	Location coordinates.
Longitude	
GPS status	Reception status

5 Typical application examples



This application example is intended as a planning aid and does not claim to be exhaustive. It can be supplemented and extended as required.

The standard or customer-specific parameter settings apply to the parameters not listed here.

5.1 Shading control with sun position tracking and wind warning

The façade should be shaded in such a way that the blinds are raised at dawn.

During the day, shading is provided as required, with the blinds being lowered so that direct sunlight can penetrate the room by a maximum of 30 cm.

The slats are always adjusted so that as much daylight as possible enters, but no direct sunlight enters the room.

At dusk, the blinds should be raised again.

Sun position tracking:

Facade orientation = south 180°

Desired sun protection area:

Zone A = -40°, Zone B = 70° (see in the appendix: Unsymmetrical sun protection area).

Minimum elevation = 10°, maximum elevation = 90° (i.e. unlimited.)

Slat tracking:

Venetian blind slat width = 80 mm, spacing 65 mm.

Height tracking:

Window height = 175 cm

Desired penetration depth for direct sunlight: 30 cm

Twilight function:

Raise at dawn (if manually lowered).

Also raise all blinds at dusk.

Wind alarm:

A safety telegram is sent to the actuator if there is a risk of storm. This raises the blinds and prevents unintentional movement as long as the safety status applies.

The safety object of the actuator is monitored cyclically.

5.1.1 Devices

- Meteodata 150 S (4969234)
- JMG 4 T (4930250)

5.1.2 Overview

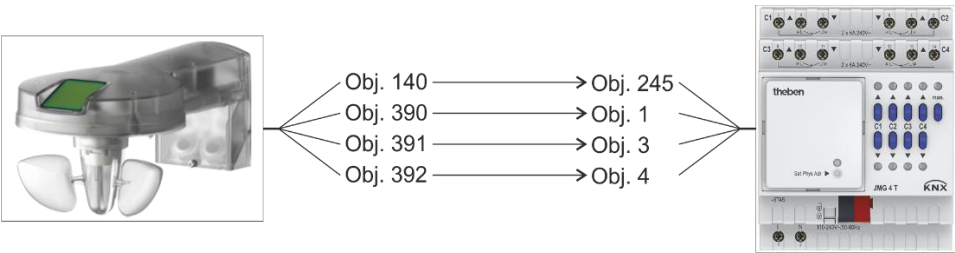


Figure 1

5.1.3 Objects and logic operations

Links

No.	Meteodata 150 Object name	No.	JMG 4 t Object name
140	Universal channel - Output object 1 - Transmit - 1 bit	245	Central security 1
390	Sun protection channel - Up/Down - Transmit	1	Up / Down
391	Sun protection channel - Blinds - Height - Transmit	2	% Height
392	Sun shading channel - Slats - Position - Send	3	% Slat

5.1.4 Important parameter settings

The standard or customer-specific parameter settings apply to the parameters not listed

Meteodata 150

Parameter page	Parameter	Setting
Universal channel		
Function	<i>Function of the channel</i>	<i>Wind sensor</i>
	<i>Wind condition</i>	<i>About</i>
	<i>Wind speed</i>	<i>14 m/s⁸⁷</i>
Output objects	Output object 1	
	<i>Telegram type</i>	<i>Switching DPT1.001</i>
	<i>If the condition is fulfilled</i>	<i>send cyclically</i>
	<i>Telegram</i>	<i>A</i>
	<i>If the condition is not fulfilled</i>	<i>send cyclically</i>
	<i>Telegram</i>	<i>From</i>
	<i>Cycle time (if used)</i>	<i>10 min</i>
Sun protection channel		
General	<i>Channel controls</i>	<i>Blinds</i>
	<i>Take sun position into account for shading</i>	<i>yes</i>
	<i>Activate louver tracking</i>	<i>Yes</i>
	<i>Enable altitude tracking</i>	<i>Yes</i>
	<i>Brightness threshold for shading</i>	<i>50.000 lx</i>
Automatic sun function	<i>Activation of the automatic sun function</i>	<i>Permanently On</i>
	<i>Use twilight function</i>	<i>Yes</i>
Automatic twilight function	<i>Reaction to dawn</i>	<i>Raise drive</i>
	<i>Reaction to dusk</i>	<i>Raise drive</i>
Façade settings	<i>Facade alignment</i>	<i>180°</i>
	<i>Facade angle A</i>	<i>-40°</i>
	<i>Façade angle B</i>	<i>70°</i>
	<i>Minimum elevation</i>	<i>10°</i>
	<i>Maximum elevation</i>	<i>80°</i>
Slat tracking	<i>Calculation of the slat position</i>	<i>Automatically via slat dimensions</i>
	<i>Reposition</i>	<i>every 15°</i>
	<i>Slat distance (A)</i>	<i>65 mm</i>
	<i>Slat width (B)</i>	<i>80 mm</i>
Height tracking	<i>Calculation of the height position</i>	<i>Automatically via window dimensions</i>
	<i>Reposition all (penetration depth)</i>	<i>10 cm</i>
	<i>Window height</i>	<i>175 cm</i>
	<i>Penetration depth</i>	<i>30 cm</i>

⁸⁷ approx. 50 km/h

JMG 4 S

Parameter page	Parameter	Setting
<i>Function selection</i>	<i>Type of blind</i>	<i>Blinds</i>
<i>Security Wind / rain / frost</i>	<i>Monitor objects cyclically</i>	<i>Every 20 min</i>
	<i>Participation in wind safety</i>	<i>Yes</i>
	<i>Source(s)</i>	<i>Obj. safety 1 Wind</i>

6 Appendix

6.1 Brightness sensors

The Meteodata 140 S has 4 built-in brightness sensors.

These are designated in the ETS application software as *Sensor 1 (front)*, *Sensor 2 (left)*, *Sensor 3 (right)*, and *Sensor 4 (rear)*.

These designations apply to the front view of the device, as shown in the following diagram:

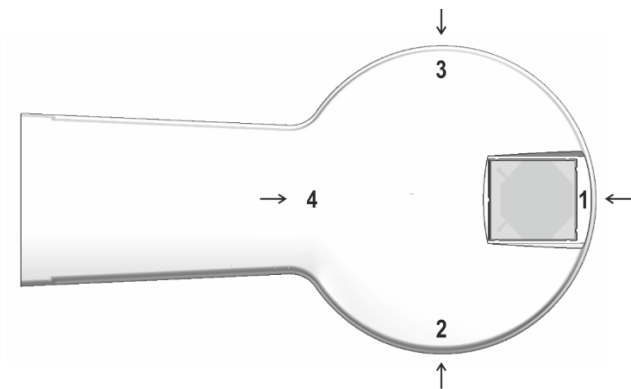


Figure 2: Brightness sensors.

Legend:

1	Front sensor
2	Sensor left
3	Sensor right
4	Rear sensor

6.2 Elevation

The elevation of the sun is the angle between the sun and the horizon. It indicates how high the sun is in the sky.

Example Stuttgart:

Table 1 maximum elevation in Stuttgart

Date / Time	Maximum elevation (Stuttgart, Germany)
21. December / 12:21	17°47'
21. March / 12:31	41°24'
21. June / 13:25 ⁸⁸	64°40'

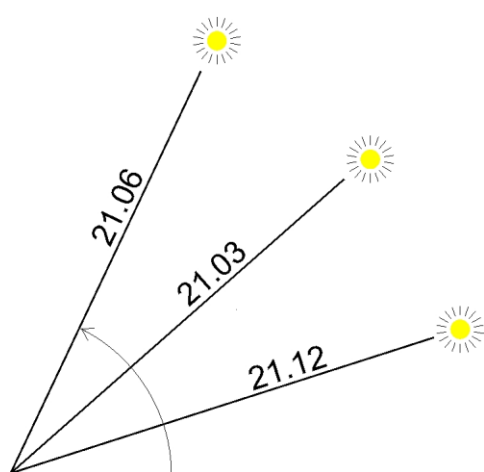


Figure 3 maximum elevation in Stuttgart.

Calculation:

The highest possible position of the sun (upper culmination) of the year is reached on the day of the summer solstice, i.e. on June 21 (for a location north of the Tropic of Cancer).

In simple terms, this position of the sun can be calculated using the following formula:

Maximum possible elevation $\approx 113.43^\circ$ - latitude of the location.

Example Hamburg:

Latitude approx. $53^\circ 32' \text{ N}$ ($= 53.53333^\circ$)

Maximum possible elevation
 $= 113.43^\circ - 53.53^\circ$
 $= 59.89^\circ$ (i.e. approx. $59^\circ 53'$)

⁸⁸ Summertime

6.3 Azimuth and solar path

The **azimuth** of the sun is the angle along the horizon, measured from north in a clockwise direction.

- 0° = north
- 90° = east (sunrise)
- 180° = south (highest point of the sun in the northern hemisphere)
- 270° = west (sunset)

The azimuth therefore indicates the direction of the sun.

The **sun's path** describes the apparent movement of the sun from east to west across the sky, which is caused by the earth's rotation from west to east.

This daily movement of the sun is repeated due to the earth's rotation and varies depending on the time of year and location.

Example Stuttgart (approx. $48^\circ 47'$ N, $9^\circ 11'$ E):

Table 2

Date	Azimuth at		Total course of the sun
	Sunrise	Sunset	
21. December	$125^\circ 57'$	$234^\circ 03'$	$108^\circ 6'$
21. March	$88^\circ 46'$	$271^\circ 14'$	$182^\circ 28'$
21. June	$51^\circ 40'$	$308^\circ 20'$	$256^\circ 40'$

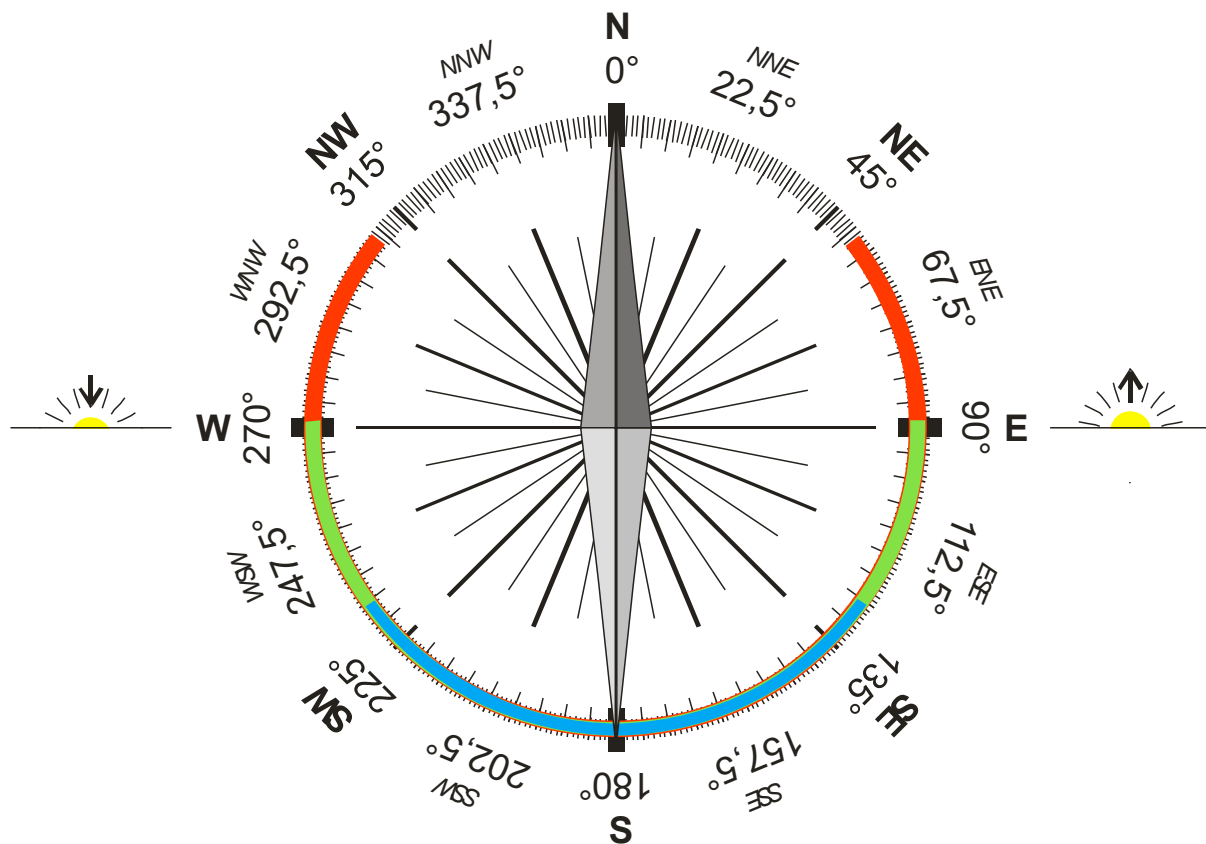


Figure 4

6.4 Sun protection area

Facade angle A describes a circular section of the sun which, depending on the location, building orientation and time of year, can be up to a maximum of 180°.

The sun protection area is the section of the sun's path in front of the façade where shading is desirable.
This area covers a maximum angle of 180°.

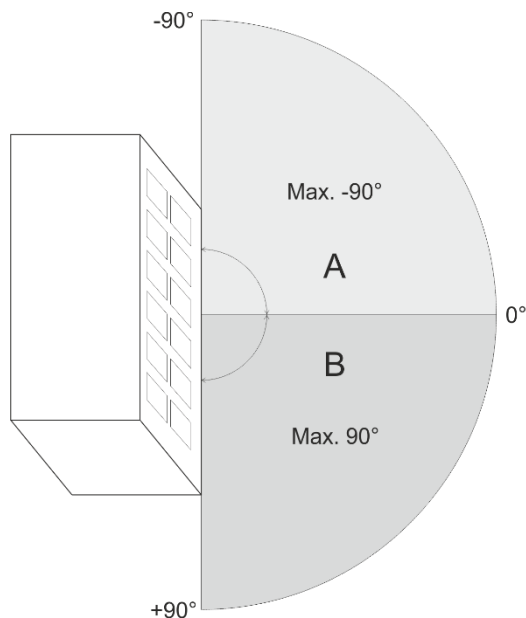


Figure 5

The total area is divided into 2 zones (A, B).
Zone A is defined with a negative angle (0 to -90°).
Zone B with a positive angle (0 to 90°)

These zones are defined using the *façade angle A* and *façade angle B* parameters.

	North of the Tropic of Cancer ⁸⁹	South of the Tropic of Cancer ⁹⁰
Facade angle A	Zone in which the sun appears first.	Second zone through which the sun passes before it leaves the façade.
Façade angle B	Second zone through which the sun passes before it leaves the façade.	Zone in which the sun appears first.

⁸⁹ Europe, North America, Japan, etc.

⁹⁰ Australia, South Africa, Argentina, etc.

6.4.1 Examples for defining the sun protection area

The largest possible sun protection area (180°) is achieved with the following values:

Facade angle A = -90°,

Facade angle B = 90°

Only shade zone A:

Facade angle A = -90°,

Facade angle B = 0°

Shade zone B only:

Facade angle A = 0°,

Facade angle B = 90°

The desired sun protection area can be precisely adjusted by specifically setting the *façade angle A*/*façade angle B* parameters.

Entering 0° for a zone means that it is not shaded.

A positive angle entry for zone A also reduces zone B.

A negative angle specification for zone B also reduces zone A.

6.4.2 Asymmetrical sun shading zone

Facade angle $A = -40^\circ$,

Facade angle $B = 70^\circ$

The solar shading area should cover 110° , with 40° occupying zone A and 70° occupying zone B.

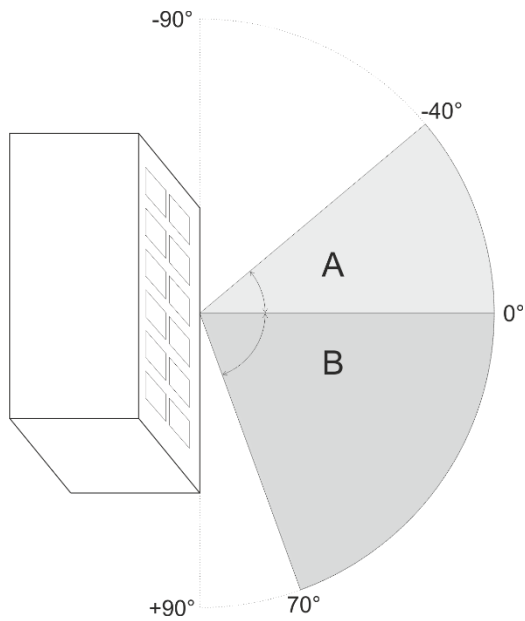


Illustration 6:

6.4.3 One-sided sun protection area in Zone A

Facade angle A = -70° ,

Facade angle B = -15°

Only zone A should be partially shaded.

By entering the negative number in the façade angle B parameter, the sun shading area is reduced by 15° to the left.

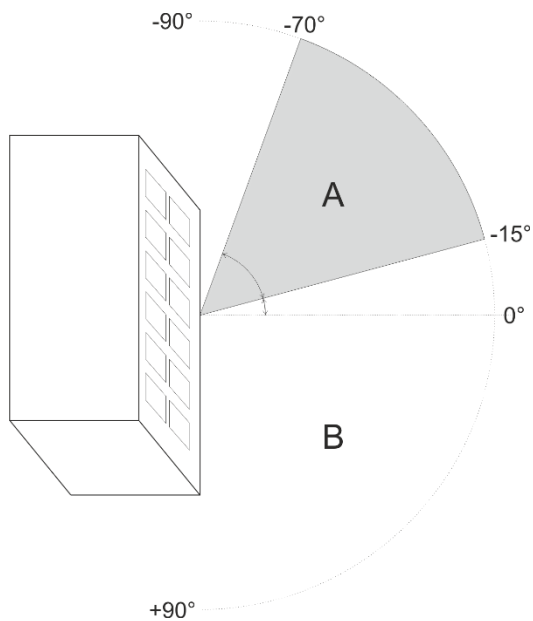


Illustration 7:

6.4.4 One-sided sun shading area in zone B

Facade angle A = 10° ,

Facade angle B = 50°

Only zone B should be partially shaded.

By entering the positive number in the *façade angle A* parameter, the sun shading area is reduced by 10° to the right.

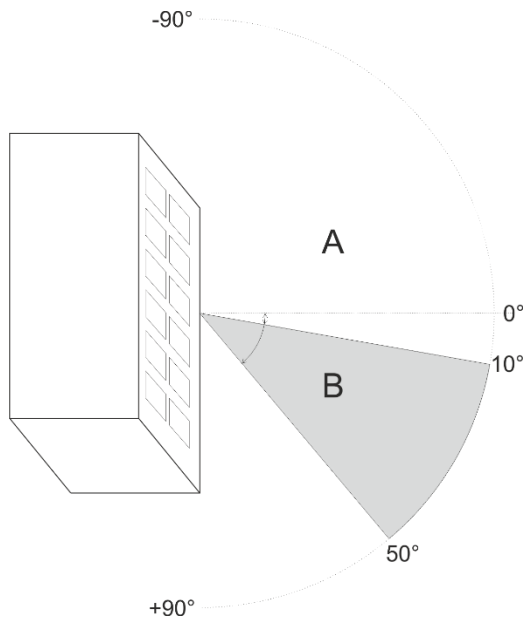


Illustration 8:

6.5 Sun positiontracking



Sun position tracking is enabled via the *Consider sun position for shading* parameter.

2 functions are available.

These can be used either individually or in combination.

- Slat tracking
- Height tracking or shadow edge calculation

6.5.1 Slat tracking

Slat tracking controls the blind slats precisely based on the current position of the sun.

The slats are aligned in such a way that direct sunlight is kept out, while at the same time maximum daylight incidence is ensured - so that artificial lighting is not required as far as possible.

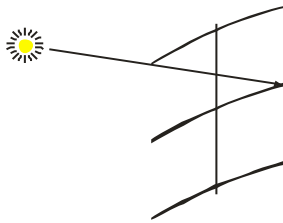


Figure 9

The date, time and geographical location data are required for this function.

6.5.2 Height tracking or shadow edge calculation

Height tracking makes it possible to control the height of the roller shutter or awning depending on the elevation, i.e. the height of the sun. The height of the roller shutter or awning is positioned in such a way that direct sunlight can only penetrate the room up to a certain depth (e).

The penetration depth refers to the bottom edge of the window or window sill.

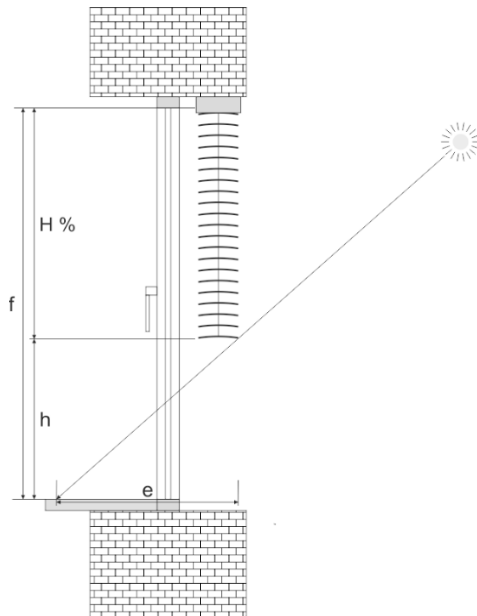


Illustration 10:

$H \% =$ Drive height

$f =$ Window height

$h =$ unshaded area

$e =$ penetration depth of sunlight

6.5.3 Facade direction

The **orientation** of the façade to be shaded corresponds to the viewing direction of an observer looking through the window from the inside to the outside.

This direction can be determined using a compass (point the needle to the north) or by asking the architect.

Example: South-east 135°.

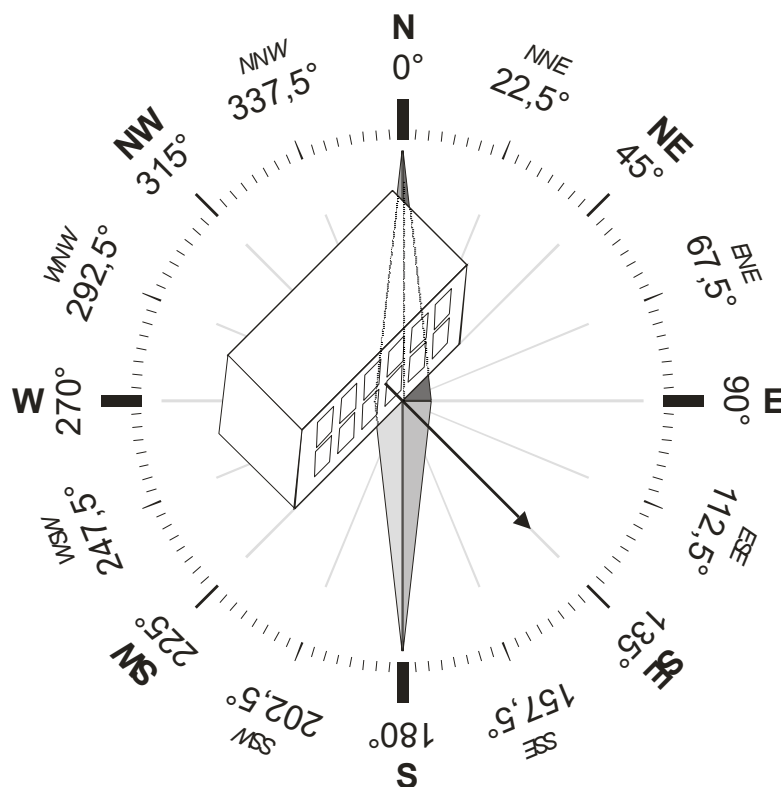


Figure 11

6.6 Vertical blinds

The sun protection channels of the Meteodata 150 weather station are also suitable for vertical blinds, i.e. slat curtains with vertically hanging slats.

The selection is made on the **General** parameter page, with the setting *Slat type = vertical*

Sun position tracking:

- While standard blinds are controlled based on the elevation, the slat alignment here is based on the **azimuth** of the sun.
- There is only slat tracking, there is no height tracking.
- If the channel works with scenes, you can specify on the **Tracking** parameter page whether the tracking is controlled by the elevation or the azimuth.

The term "elevation" has been replaced by "position" in the movement commands.

6.7 The Beaufort wind scale

Strength	Designation	Effect on land
0	Calm wind	No air movement, smoke rises vertically
1	Quiet draught	Barely noticeable, smoke drifts slightly, wind vanes and wind vanes motionless
2	Light breeze	Leaves rustle, wind can be felt on the face
3	Weak breeze	Leaves and thin branches move, streamers are stretched
4	Moderate breeze	Branches move, loose paper is lifted from the ground
5	Fresh breeze	Larger branches and trees move, wind clearly audible
6	Strong wind	Thick branches move, audible whistling on wire ropes, in telephone lines
7	Stiff wind	Trees sway, resistance when walking against the wind
8	Stormy wind	Large trees are moved, shutters are opened, branches break off trees, considerable obstruction when walking
9	Storm	Branches break, minor damage to houses, tiles and smoke hoods are lifted from roofs, garden furniture is knocked over and blown away, considerable hindrance when walking
10	Severe storm	Trees are uprooted, tree trunks break, garden furniture is blown away, major damage to houses; rarely inland
11	Hurricane-like storm	Heavy gusts, severe storm damage, severe damage to forests(wind breakage), roofs are covered, cars are thrown off track, thick walls are damaged, walking is impossible; very rare inland
12	Hurricane	Severe storm damage and devastation; very rare inland

Source: Wikipedia.