Meteodata 140 S weather station

Meteodata 140 S	1409207
Meteodata 140 S 24V	1409201
Meteodata 140 S GPS	1409208
Meteodata 140 S 24V GPS	1409204

Contents

1 Functional characteristics

The weather station measures temperature, brightness from 3 directions and wind speed.
A rain sensor (rain / no rain) is also installed on the top of the device.
The measured values and the rain status can be sent to the bus.

The weather station has the following channel types:

- 10 universal channels for wind, rain, temperature, brightness
- 8 sun protection channels **with sun position adjustment**
- 4 threshold channels with per cent, EIS5 , 8- and 16-bit value)
- 6 logic channels (AND, OR, XOR)

See attachment for detailed description of the channel types.

1.1 Special features

- Adjustment of slat position according to current position of the sun.
- Sun protection area both horizontal (azimuth) and vertical (elevation) can be set exactly.
- 3 installed brightness sensors at 90° spacing.
- 2 objects for external brightness sensors.
- Shading can be temporarily interrupted via object.
- Universal channels with AND/OR linking of weather parameters.
- Threshold channels with delay with falling below and exceeding.
- Logic channels with 4 input objects + internal link that can be configured with status of the universal and threshold channels.

Caution!
In case of installation or replacement, always use the right ETS application program!
Meteodata 140 and Meteodata 140 S require different applications!
See: www.theben.de/en/downloads_en

1.2 Important information

- Rain can only be detected when the rain sensor is sufficiently wet.
  This may lead to a certain delay between the first drops of rain falling and the point that rain is detected.
- It is possible the sensor can dry off very quickly in light rain. It is recommended not to set the delay time below 5 minutes (standard 10 minutes) when it rains as "rain"/"no rain" are signaled alternatively at short intervals in light rain.
- With the most sensitive setting of the rain sensor, particularly when dew suppression is switched off, "rain" can be detected if high humidity is combined with high temperature . Another setting must be selected if this is not required.
- As it can take several minutes to retract the sun / sight protection devices (blinds, shutters etc.), they are not immediately protected if the wind picks up suddenly.
  Therefore, take the maximum permissible wind speed specified by the manufacturer into account when configuring the wind threshold, and set the threshold below this value to be on the safe side.
- If the wind hits the facade from front on, an air pocket can build up where the wind speed is significantly below the actual wind speed.
  Therefore, the Meteodata 140 is only able to measure the prevailing wind speed directly at the installation site.
  This should be taken into account when setting the wind threshold for facades exposed to strong frontal winds.
  Mast installation can provide a remedy here.
- Temperature measurement: Temperatures are normally measured in the shade.
  In contrast, the weather station is typically installed where the sun shines.
  The measured temperature can be considerably higher than in the shade due to the effect of the sun.

2 Technical data

2.1 Technical data Meteodata 140 S / 140 S GPS

Operating voltage	110 – 230 V AC
KNX operating voltage	21-32 V DC / ≤ 3 mA
Power consumption	typically 0,7W (max. 5,5 W)
Installation type	Wall or mast bracket
Dimensions (H x W x D)	84 x 121 x 227 mm
Connection type	KNX bus terminal
Max. cable cross-section	1.5 mm^2
Ambient temperature	-20 °C… +55 °C
IP rating	IP 44 in accordance with EN 60529
Protection class	II subject to correct installation

Measuring ranges

Brightness	1..100,000 Lux
Temperature	-30..60 °C
Wind	2 - 30 m/s
Precipitation	Rain/no rain

2.2 Technical data Meteodata 140 S 24V / 140 S 24V GPS

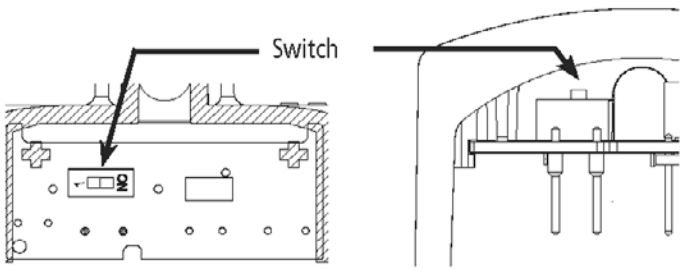
Operating voltage	15 – 24 V DC (SELV)
KNX operating voltage	21-32 V DC / ≤ 3 mA
Max. power input	350 mA (at 15 V)
Max. power input when connected to - 24 V DC - 29 V DC	 210 mA 180 mA
Power input Standby	≤ 7 mA, ≤ 15 mA with GPS
Installation type	Wall or mast bracket
Dimensions (H x W x D)	84 x 121 x 227 mm
Connection type	KNX bus terminal
Max. cable cross-section	1.5 mm^2
Ambient temperature	-20 °C… +55 °C
IP rating	IP 44 in accordance with EN 60529
Protection class	III subject to correct installation

Measuring ranges

Brightness	1..100,000 Lux
Temperature	-30..60 °C
Wind	2 - 30 m/s
Precipitation	Rain/no rain

IMPORTANT :

Meteodata 140 S 24 V KNX 1409201
Meteodata 140 S 24 V KNX GPS 1409204



ON Switch the switch to ON (factory setting) if an external power unit is used

1 Switch the switch to 1 if the auxiliary voltage of the KNX power unit is used

3 The "Meteodata 140 S V1.2" application program

3.1 Selection in the product database

Manufacturer	Theben AG
Product family	Phys. sensors
Product type	Weather stations
Programname	Meteodata 140 S V1.2

The ETS database can be found on our downloads page: www.theben.de/en/downloads_en

Table 2

Number of communication objects:	186
Number of group addresses:	254
Number of associations:	255

3.2 Communication objects

Table 2

No.	Object name	Function	Type DPT	Flags			
0	*Brightness value at front*	*Physical value*	2 byte 9.004	C	R	-	T
1	*Brightness value left*	*Physical value*	2 byte 9.004	C	R	-	T
2	*Brightness value right*	*Physical value*	2 byte 9.004	C	R	-	T
3	*Maximum brightness value*	*Physical value*	2 byte 9.004	C	R	-	T
4	*Temperature value*	*Physical value*	2 byte 9.001	C	R	-	T
5	*Wind speed (m/s)*	*Physical value*	2 byte 9.005	C	R	-	T
	Wind speed (km/h)		2 byte 9.005	C	R	-	T
	Wind speed (Bft)		1 byte 20.014	C	R	-	T
6	*Rain sensor*	*Rain / no rain*	1 bit 1.001	C	R	-	T
7	*n.a.*						
8	*Local time*	*receive*	3 byte 10.001	C	-	W	-
		transmit	3 byte 10.001	C	-	-	T
9	*Date*	*transmit*	3 byte 11.001	C	-	-	T
		receive	3 byte 11.001	C	-	W	-
10	*Time query*	*transmit*	1 bit 1.001	C	R	-	T
		receive	1 bit 1.001	C	-	W	-
11	*Status time*	*1 = Valid time*	1 bit 1.001	C	-	-	T
12	*Elevation*	*0° = Horizon*	4 byte 14.007	C	R	-	T
13	*Azimuth*	*N=0°, E=90°, S=180°, W=270°*	4 byte 14.007	C	R	-	T
14	*n.a.*						
15	*Temperature sensor status*	*0=OK, 1=defect*	1 bit 1.001	C	R	-	T
16	*n.a.*						

Continuation:

No.	Object name	Function	Type DPT	Flags			
17	*n.a.*						
18	*External lux value 1*	*Receive*	2 byte 9.004	C	R	W	-
19	*External lux value 2*	*Receive*	2 byte 9.004	C	R	W	-
20	*C1.1 Universal channel*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T
21	*C1.2 Universal channel*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T
22	*C1 lock*	*Disable = 1*	1 bit 1.001	C	R	W	-
		Disable = 0	1 bit 1.001	C	R	W	-
23	*C1 Brightness threshold*	*enter/view*	2 byte 9.004	C	R	W	T
		Request	2 byte 9.004	C	R	-	T
24	*C2.1 Universal channel*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T
25	*C2.2 Universal channel*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T
26	*C2 lock*	*Disable = 0*	1 bit 1.001	C	R	W	-
		Disable = 1	1 bit 1.001	C	R	W	-
27	*C2 Brightness threshold*	*enter/view*	2 byte 9.004	C	R	W	T
		Request	2 byte 9.004	C	R	-	T

Continuation:

No.	Object name	Function	Type DPT	Flags			
28	*C3.1 Universal channel*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T
29	*C3.2 Universal channel*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T
30	*C3 lock*	*Disable = 1*	1 bit 1.001	C	R	W	-
		Disable = 0	1 bit 1.001	C	R	W	-
31	*C3 Brightness threshold*	*enter/view*	2 byte 9.004	C	R	W	T
		Request	2 byte 9.004	C	R	-	T
32	*C4.1 Universal channel*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T
33	*C4.2 Universal channel*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T
34	*C4 lock*	*Disable = 0*	1 bit 1.001	C	R	W	-
		Disable = 1	1 bit 1.001	C	R	W	-
35	*C4 brightness threshold*	*Request*	2 byte 9.004	C	R	-	T
		enter/view	2 byte 9.004	C	R	W	T

Continuation:

No.	Object name	Function	Type DPT	Flags			
36	*C5.1 Universal channel*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T
37	*C5.2 Universal channel*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T
38	*C5 lock*	*Disable = 1*	1 bit 1.001	C	R	W	-
		Disable = 0	1 bit 1.001	C	R	W	-
39	*C5 Brightness threshold*	*enter/view*	2 byte 9.004	C	R	W	T
		Request	2 byte 9.004	C	R	-	T
40	*C6.1 Universal channel*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T
41	*C6.2 Universal channel*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T
42	*C6 lock*	*Disable = 1*	1 bit 1.001	C	R	W	-
		Disable = 0	1 bit 1.001	C	R	W	-
43	*C6 Brightness threshold*	*enter/view*	2 byte 9.004	C	R	W	T
		Request	2 byte 9.004	C	R	-	T

Continuation:

No.	Object name	Function	Type DPT	Flags			
44	*C7.1 Universal channel*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T
45	*C7.2 Universal channel*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T
46	*C7 lock*	*Disable = 1*	1 bit 1.001	C	R	W	-
		Disable = 0	1 bit 1.001	C	R	W	-
47	*C7 Brightness threshold*	*enter/view*	2 byte 9.004	C	R	W	T
		Request	2 byte 9.004	C	R	-	T
48	*C8.1 Universal channel*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T
49	*C8.2 Universal channel*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T
50	*C8 lock*	*Disable = 1*	1 bit 1.001	C	R	W	-
		Disable = 0	1 bit 1.001	C	R	W	-
51	*C8 Brightness threshold*	*enter/view*	2 byte 9.004	C	R	W	T
		Request	2 byte 9.004	C	R	-	T

Continuation:

No.	Object name	Function	Type DPT	Flags			
52	*C9.1 Universal channel*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T
53	*C9.2 Universal channel*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T
54	*C9 Disable*	*Disable = 0*	1 bit 1.001	C	R	W	-
		Disable = 1	1 bit 1.001	C	R	W	-
55	*C9 Brightness threshold*	*enter/view*	2 byte 9.004	C	R	W	T
		Request	2 byte 9.004	C	R	-	T
56	*C10.1 Universal channel*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T
57	*C10.2 Universal channel*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T
58	*C10 Disable*	*Disable = 0*	1 bit 1.001	C	R	W	-
		Disable = 1	1 bit 1.001	C	R	W	-
59	*C10 Brightness threshold*	*Request*	2 byte 9.004	C	R	-	T
		enter/view	2 byte 9.004	C	R	W	T

Continuation:

No.	Object name	Function	Type DPT	Flags			
60	*C11 up/down*	*Drives up/down*	1 bit 1.008	C	-	-	T
61	*C11 Shutters*	*Height*	1 byte 5.001	C	R	-	T
	C11 Blinds	*Height*	1 byte 5.001	C	R	-	T
	C11 scene	*transmit*	1 byte 5.001	C	R	-	T
62	*C11 lamella*	*Position*	1 byte 5.001	C	R	-	T
63	*C11 sun control*	*Morning=1 / Evening=0*	1 bit 1.001	C	R	W	-
64	*C11 Interrupt shading*	*receive*	1 bit 1.001	C	R	W	-
65	*C11 safety*	*Input*	1 bit 1.001	C	R	W	-
66	*C11 Dawn/dusk threshold*	*send/receive*	2 byte 9.004	C	R	W	T
67	*C11 brightness threshold*	*send/receive*	2 byte 9.004	C	R	W	T
68	*C12 up/down*	*Drives up/down*	1 bit 1.001	C	-	-	T
69	*C12 scene*	*transmit*	1 byte 18.001	C	R	-	T
	C12 Blinds	*Height*	1 byte 5.001	C	R	-	T
	C12 Shutters	*Height*	1 byte 5.001	C	R	-	T
70	*C12 Slats*	*Position*	1 byte 5.001	C	R	-	T
71	*C12 Sun control*	*Morning=1 / Evening=0*	1 bit 1.001	C	R	W	-
72	*C12 Interrupt shading*	*receive*	1 bit 1.001	C	R	W	-
73	*C12 Safety*	*Input*	1 bit 1.001	C	R	W	-
74	*C12 Dawn/dusk threshold*	*send/receive*	2 byte 9.004	C	R	W	T
75	*C12 Brightness threshold*	*send/receive*	2 byte 9.004	C	R	W	T

Continuation:

No.	Object name	Function	Type DPT	Flags			
76	*C13 Up/down*	*Drives up/down*	1 bit 1.001	C	-	-	T
77	*C13 Blinds*	*Height*	1 byte 5.001	C	R	-	T
	C13 Shutters	*Height*	1 byte 5.001	C	R	-	T
	C13 Scene	*transmit*	1 byte 18.001	C	R	-	T
78	*C13 Slats*	*Position*	1 byte 5.001	C	R	-	T
79	*C13 Sun control*	*Morning=1 / Evening=0*	1 bit 1.001	C	R	W	-
80	*C13 Interrupt shading*	*receive*	1 bit 1.001	C	R	W	-
81	*C13 Safety*	*Input*	1 bit 1.001	C	R	W	-
82	*C13 Dawn/dusk threshold*	*send/receive*	2 byte 9.004	C	R	W	T
83	*C13 Brightness threshold*	*send/receive*	2 byte 9.004	C	R	W	T
84	*C14 Threshold switch input*	*0..65535*	2 byte 7.001	C	R	W	-
		EIS 5	2 byte 9.*	C	R	W	-
		Percent	1 byte 5.001	C	R	W	-
		0..255	1 byte 5.010	C	R	W	-
85	*C14 Disable*	*Disable = 1*	1 bit 1.001	C	R	W	-
		Disable = 0	1 bit 1.001	C	R	W	-
86	*C14.1 Threshold switch input*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T
87	*C14.2 Threshold switch input*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T

Continuation:

No.	Object name	Function	Type DPT	Flags			
88	*C15 Threshold switch input*	*0..65535*	2 byte 7.001	C	R	W	-
		EIS 5	2 byte 9.*	C	R	W	-
		Percent	1 byte 5.001	C	R	W	-
		0..255	1 byte 5.010	C	R	W	-
89	*C15 Disable*	*Disable = 0*	1 bit 1.001	C	R	W	-
		Disable = 1	1 bit 1.001	C	R	W	-
90	*C15.1 Threshold switch input*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T
91	*C15.2 Threshold switch input*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T
92	*C16 Threshold switch input*	*0..65535*	2 byte 7.001	C	R	W	-
		EIS 5	2 byte 9.*	C	R	W	-
		Percent	1 byte 5.001	C	R	W	-
		0..255	1 byte 5.010	C	R	W	-
93	*C16 Disable*	*Disable = 1*	1 bit 1.001	C	R	W	-
		Disable = 0	1 bit 1.001	C	R	W	-
94	*C16.1 Threshold switch input*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T

Continuation:

No.	Object name	Function	Type DPT	Flags			
95	*C16.2 Threshold switch input*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T
96	*C17 Threshold switch input*	*0..65535*	2 byte 7.001	C	R	W	-
		EIS 5	2 byte 9.*	C	R	W	-
		Percent	1 byte 5.001	C	R	W	-
		0..255	1 byte 5.010	C	R	W	-
97	*C17 Disable*	*Disable = 0*	1 bit 1.001	C	R	W	-
		Disable = 1	1 bit 1.001	C	R	W	-
98	*C17.1 Threshold switch input*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T
99	*C17.2 Threshold switch input*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T

Continuation:

No.	Object name	Function	Type DPT	Flags			
100	*C18 Logic module*	*Logic input 1 in AND/OR/XOR gate*	1 bit 1.001	C	R	W	-
101		*Logic input 2 in AND/OR/XOR gate*	1 bit 1.001	C	R	W	-
102		*Logic input 3 in AND/OR gate*	1 bit 1.001	C	R	W	-
103		*Logic input 4 in AND/OR gate*	1 bit 1.001	C	R	W	-
104	*C18 Logic module*	*Disable = 0*	1 bit 1.001	C	R	W	-
		Disable = 1	1 bit 1.001	C	R	W	-
105	*C18.1 Logic module*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T
106	*C18.2 Logic module*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T
107	*C19 Logic module*	*Logic input 1 in AND/OR/XOR gate*	1 bit 1.001	C	R	W	-
108		*Logic input 2 in AND/OR/XOR gate*	1 bit 1.001	C	R	W	-
109		*Logic input 3 in AND/OR gate*	1 bit 1.001	C	R	W	-
110		*Logic input 4 in AND/OR gate*	1 bit 1.001	C	R	W	-
111	*C19 Logic module*	*Disable = 0*	1 bit 1.001	C	R	W	-
		Disable = 1	1 bit 1.001	C	R	W	-
112	*C19.1 Logic module*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T

Continuation:

No.	Object name	Function	Type DPT	Flags			
113	*C19.2 Logic module*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T
114	*C20 Logic module*	*Logic input 1 in AND/OR/XOR gate*	1 bit 1.001	C	R	W	-
115		*Logic input 2 in AND/OR/XOR gate*	1 bit 1.001	C	R	W	-
116		*Logic input 3 in AND/OR gate*	1 bit 1.001	C	R	W	-
117		*Logic input 4 in AND/OR gate*	1 bit 1.001	C	R	W	-
118	*C20 Logic module*	*Disable = 1*	1 bit 1.001	C	R	W	-
		Disable = 0	1 bit 1.001	C	R	W	-
119	*C20.1 Logic module*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T
120	*C20.2 Logic module*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T
121	*C21 Logic module*	*Logic input 1 in AND/OR/XOR gate*	1 bit 1.001	C	R	W	-
122		*Logic input 2 in AND/OR/XOR gate*	1 bit 1.001	C	R	W	-
123		*Logic input 3 in AND/OR gate*	1 bit 1.001	C	R	W	-
124		*Logic input 4 in AND/OR gate*	1 bit 1.001	C	R	W	-
125	*C21 Logic module*	*Disable = 0*	1 bit 1.001	C	R	W	-
		Disable = 1	1 bit 1.001	C	R	W	-

Continuation:

No.	Object name	Function	Type DPT	Flags			
126	*C21.1 Logic module*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T
127	*C21.2 Logic module*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T
128	*C22 Logic module*	*Logic input 1 in AND/OR/XOR gate*	1 bit 1.001	C	R	W	-
129		*Logic input 2 in AND/OR/XOR gate*	1 bit 1.001	C	R	W	-
130		*Logic input 3 in AND/OR gate*	1 bit 1.001	C	R	W	-
131		*Logic input 4 in AND/OR gate*	1 bit 1.001	C	R	W	-
132	*C22 Logic module*	*Disable = 1*	1 bit 1.001	C	R	W	-
		Disable = 0	1 bit 1.001	C	R	W	-
133	*C22.1 Logic module*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T
134	*C22.2 Logic module*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T

Continuation:

No.	Object name	Function	Type DPT	Flags			
135	*C23 Logic module*	*Logic input 1 in AND/OR/XOR gate*	1 bit 1.001	C	R	W	-
136		*Logic input 2 in AND/OR/XOR gate*	1 bit 1.001	C	R	W	-
137		*Logic input 3 in AND/OR gate*	1 bit 1.001	C	R	W	-
138		*Logic input 4 in AND/OR gate*	1 bit 1.001	C	R	W	-
139	*C23 Logic module*	*Disable = 0*	1 bit 1.001	C	R	W	-
		Disable = 1	1 bit 1.001	C	R	W	-
140	*C23.1 Logic module*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T
141	*C23.2 Logic module*	*Switching*	1 bit 1.001	C	R	-	T
		Value	1 byte 5.010	C	R	-	T
		priority	2 bit 2.001	C	R	-	T
142	n.a.						
143	n.a.						
144	*UTC time*	*send*	3 byte 10.001	C	-	-	T
145	*UTC date*	*send*	3 byte 10.001	C	-	-	T

Continuation:

No.	Object name	Function	Type DPT	Flags			
146	*C24 up/down*	*Drives up/down*	1 bit 1.008	C	-	-	T
147	*C24 Shutters*	*Height*	1 byte 5.001	C	R	-	T
	C24 Blinds	*Height*	1 byte 5.001	C	R	-	T
	C24 scene	*transmit*	1 byte 5.001	C	R	-	T
148	*C24 lamella*	*Position*	1 byte 5.001	C	R	-	T
149	*C24 sun control*	*Morning=1 / Evening=0*	1 bit 1.001	C	R	W	-
150	*C24 Interrupt shading*	*receive*	1 bit 1.001	C	R	W	-
151	*C24 safety*	*Input*	1 bit 1.001	C	R	W	-
152	*C24 Dawn/dusk threshold*	*send/receive*	2 byte 9.004	C	R	W	T
153	*C24 brightness threshold*	*send/receive*	2 byte 9.004	C	R	W	T
154	*C25 up/down*	*Drives up/down*	1 bit 1.008	C	-	-	T
155	*C25 Shutters*	*Height*	1 byte 5.001	C	R	-	T
	C25 Blinds	*Height*	1 byte 5.001	C	R	-	T
	C25 scene	*transmit*	1 byte 5.001	C	R	-	T
156	*C25 lamella*	*Position*	1 byte 5.001	C	R	-	T
157	*C25 sun control*	*Morning=1 / Evening=0*	1 bit 1.001	C	R	W	-
158	*C25 Interrupt shading*	*receive*	1 bit 1.001	C	R	W	-
159	*C25 safety*	*Input*	1 bit 1.001	C	R	W	-
160	*C25 Dawn/dusk threshold*	*send/receive*	2 byte 9.004	C	R	W	T
161	*C25 brightness threshold*	*send/receive*	2 byte 9.004	C	R	W	T

Continuation:

No.	Object name	Function	Type DPT	Flags			
162	*C26 up/down*	*Drives up/down*	1 bit 1.008	C	-	-	T
163	*C26 Shutters*	*Height*	1 byte 5.001	C	R	-	T
	C26 Blinds	*Height*	1 byte 5.001	C	R	-	T
	C26 scene	*transmit*	1 byte 5.001	C	R	-	T
164	*C26 lamella*	*Position*	1 byte 5.001	C	R	-	T
165	*C26 sun control*	*Morning=1 / Evening=0*	1 bit 1.001	C	R	W	-
166	*C26 Interrupt shading*	*receive*	1 bit 1.001	C	R	W	-
167	*C26 safety*	*Input*	1 bit 1.001	C	R	W	-
168	*C26 Dawn/dusk threshold*	*send/receive*	2 byte 9.004	C	R	W	T
169	*C26 brightness threshold*	*send/receive*	2 byte 9.004	C	R	W	T
170	*C27 up/down*	*Drives up/down*	1 bit 1.008	C	-	-	T
171	*C27 Shutters*	*Height*	1 byte 5.001	C	R	-	T
	C27 Blinds	*Height*	1 byte 5.001	C	R	-	T
	C27 scene	*transmit*	1 byte 5.001	C	R	-	T
172	*C27 lamella*	*Position*	1 byte 5.001	C	R	-	T
173	*C27 sun control*	*Morning=1 / Evening=0*	1 bit 1.001	C	R	W	-
174	*C27 Interrupt shading*	*receive*	1 bit 1.001	C	R	W	-
175	*C27 safety*	*Input*	1 bit 1.001	C	R	W	-
176	*C27 Dawn/dusk threshold*	*send/receive*	2 byte 9.004	C	R	W	T
177	*C27 brightness threshold*	*send/receive*	2 byte 9.004	C	R	W	T

Continuation:

No.	Object name	Function	Type DPT	Flags			
178	*C28 up/down*	*Drives up/down*	1 bit 1.008	C	-	-	T
179	*C28 Shutters*	*Height*	1 byte 5.001	C	R	-	T
	C28 Blinds	*Height*	1 byte 5.001	C	R	-	T
	C28 scene	*transmit*	1 byte 5.001	C	R	-	T
180	*C28 lamella*	*Position*	1 byte 5.001	C	R	-	T
181	*C28 sun control*	*Morning=1 / Evening=0*	1 bit 1.001	C	R	W	-
182	*C28 Interrupt shading*	*receive*	1 bit 1.001	C	R	W	-
183	*C28 safety*	*Input*	1 bit 1.001	C	R	W	-
184	*C28 Dawn/dusk threshold*	*send/receive*	2 byte 9.004	C	R	W	T
185	*C28 brightness threshold*	*send/receive*	2 byte 9.004	C	R	W	T

3.2.1 Description of objects

3.2.1.1 Physical values

- **Object 0 "*Brightness value at front"***

Sends the current brightness value at front brightness sensor.
Only the value measured directly by the installed sensor is sent.
Received external brightness values are not considered.

- **Object 1 "*Brightness value left*"**

Sends the current brightness value at the left brightness sensor (looking at device from the front).
Received external brightness values are not considered.

- **Object 2"*Brightness value right"***

Sends the current brightness value at the left brightness sensor (looking at device from the front).
Received external brightness values are not considered.

- **Object 3 *"Maximum brightness value"***

Reports the highest measured value from objects 0, 1 and 2.
Received external brightness values are not considered.

- **Object 4 *"Temperature value"***

Depending on the configuration, sends the current temperature value either if there is a change and/or cyclically.

- **Object 5 "*Wind speed*"**

Depending on the configuration, sends the current wind speed if there is a change and/or cyclically.
The unit used, i.e. **m/s** or **km/h**, **Beaufort** can be selected on the measured values parameter page.

- **Object 6 "*Rain sensor*"**

This 1-bit object sends the current rain status – "1" for "rain" and "0" for "no rain".
Depending on how it is configured, it can be sent only when the status has changed, after a change, or cyclically.

- **Object 7**

Not used.

- **Object 8 "*Local time*"**

As a transmission object:
Sends the current time in DPT 10.001 format, depending on the configuration: only on request, cyclically or at specific times (see “Send time and date” parameter table).

As a receive object:
Used to set the time via the bus:

- **Object 9 *"Local date"***

As a transmission object (send time):
Sends the current date in DPT 11.001 format, depending on the configuration: only on request, cyclically or at specific times.

As a receive object (receive time):
Used to set the date via the bus:

- **Object 10"*Time query"***

Table 2

Device version	Data orientation
without GPS module	Object sends time query to bus clock to receive the current time.
with GPS module	Object receives time query from other bus participants and initiates sending process for time and date object.

- **Object 11 *"Time status"***

Only with version with GPS module.
0 = No GPS time reception in the previous 24 hours. No sun position adjustment possible.
1 = Time synchronised via GPS signal and can be transmitted.

- **Object 12** *"Elevation"*

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

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

- **Object 13** *"Azimuth"*

Horizontal angle of the sun in all directions.
0° = North
90° = East
180° = South
270° = West

- **Object 14**

Not used.

- **Object 15** *"Temperature sensor status"*

0 = Sensor OK.
1 = Error.

- **Object 16**

Not used.

- **Object 17**

Not used.

- **Object 18** *"External lux value 1"*

Receives the brightness value of another facade from another KNX sensor (e.g. Luna 133 KNX order no. 1339200).

- **Object 19** *"External lux value 2"*

Receives the brightness value of another facade from another KNX sensor (e.g. Luna 133 KNX order no. 1339200).

3.2.1.2 Universal channels C1..C10

- **Object 20** *"C1.1 Universal channel switch/value/priority"*

This is the first output object of a universal channel.
The function of the object depends upon the selected telegram type
(see *Objects* parameter page, *telegram type C1.1* parameter).

Table 2

<table>
<tr><th>Telegram type</th><th>format</th><th>Sent telegrams</th></tr>
<tr><td>Switching</td><td>DPT 1.001 (On/Off)</td><td>On/Off</td></tr>
<tr><td>priority</td><td>DPT 2.001 (priority control)</td><td>2-bit telegram
<table>
<tr><th>Function</th><th>value</th></tr>
<tr><td>no priority (no control)</td><td>0</td></tr>
<tr><td>Priority OFF (control: disable, off)</td><td>2</td></tr>
<tr><td>Priority ON (control: enable, on)</td><td>3</td></tr>
</table></td></tr>
<tr><td>value</td><td>DPT 5.010</td><td>Value between 0 and 255</td></tr>
</table>

- **Object 21** *"C1.2 Universal channel switch/value/priority"*

This is the second output object of a universal channel.
The function of the object depends upon the selected telegram type
(see *Objects* parameter page, *telegram type C1.2* parameter).

The telegram type can be parameterized independently of the first output object.
The same setting options are available for this purpose as for the first output object
(see table above for object 20).

The cycle time and the disabling behaviour are valid together for both objects (objects 20+21).

- **Object 22** *"C1 disable"*

Only available if the disable function is activated.

The behaviour on setting and cancelling the disable status can be selected on the *Objects* parameter page.

- **Object 23** *"C1 brightness threshold"*

Only available if the channel is configured as brightness sensor or as link of several sensors.
This object makes it possible to change the configured brightness threshold of the channel via bus telegram at any time.

- **Objects 24..59**

Objects 24 to 59 are for universal channels C2..C10 and have an identical function as with objects on channel C1.

3.2.1.3 Sun protection channels C11..C13 and C24..C28

- **Object 60** *"C11 up/down"*

This object is used to completely open or close the sun protection devices.
0 = raise
1 = lower

- **Object 61** *"C11 send shutters/blinds height, scenes"*

The function of this object depends on the *channel* parameter *controlled by sun protection channel C11* parameter page.

Table 2

Channel controls	Object transmits
Shutter	Height telegram in %
Via scenes	Scene numbers 1..64
Blinds	Height telegram in %

- **Object 62** *"C11 slats"*

Sends the required slat position from 0% to 100% in 1% increments to the blinds actuator.

- **Object 63** *"C11 Sun control"*

This object is only available if the "*via object*" activation of the sun control is selected on the *sun control* parameter page.
A "1" on the object activates the sun control and the weather station sends the necessary height and position telegrams to the actuator.
The sun control is deactivated with a "0", and the drives are then no longer controlled by the weather station.

- **Object 64** *"C11 Interrupt shading"*

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

Table 2

<table>
<tr><th>Channel controls</th><th>Response</th></tr>
<tr><td>Shutter</td><td>Shutters move all the way up.</td></tr>
<tr><td>Via scenes</td><td>Configured scene numbers for shading break is transmitted</td></tr>
<tr><td>Blinds</td><td>
<table>
<tr><th>Calculation of slat position</th><th>Response</th></tr>
<tr><td>Automatic via slat dimensions</td><td>Configured slat position for shading break is sent</td></tr>
<tr><td>Allocate own values</td><td>Configured values for shading break is transmitted.</td></tr>
</table>
</td></tr>
</table>

Note: Safety has priority over shading break.

- **Object 65** *"C11 safety"*

If safety is set (= 1) then the 2 objects, C11 height and C11 slats, of the affected channel do no transmit.
The response to the start of safety is controlled by the actuator.

On cancellation of safety (=0):
During the day: The current channel status is resent after the delay timer has finished. This means that the actuator is sent the new settings from the weatherstation after the end of the safety phase.

During the night, the "*Reaction to dusk*" or "*Reaction to sun control OFF* " parameters apply depending on setting (*Activation of sun control object* or *dawn/dusk threshold*).

- **Object 66** *"C11 Dawn/dusk threshold"*

This object makes it possible to change the configured dawn/dusk threshold of the channel via bus telegram at any time.

- **Object 67** *"C11 brightness threshold"*

This object makes it possible to change the configured brightness threshold of the channel via bus telegram at any time.

- **Objects 68..83, 146..185**

Objects 68 to 83, 146 to 185 are for sun protection channels C12..C13, C24 to C28 and have an identical function as with objects on channel C11.

3.2.1.4 Threshold switch C14..C17

- **Object 84** *"C14 Threshold switch input"*

Input object of channel: This object activates the set channel function.

Table 2

Type of threshold value object	Activation of channel function via
object type: Per cent (DPT 5.001)	Exceeding per cent value
Object type: Counter value 0..255 (DPT 5.010)	Any value in given numerical range
object type: Counter value 0..65535 (DPT 7.001)	
Object type: EIS5 e.g. CO2, brightness (DPT 9.xxx)	2 byte floating-point number

- **Object 85** *"C14 disable"*

Disable object on channel
Only visible if the disable function is activated.
The action (disable with 0 or 1) can be set via parameters.

- **Object 86** *"C14.1 Threshold value switch, switch/value/priority"*

This is the first output object of the threshold value switch.
The function of the object depends upon the selected telegram type
(see *Objects* parameter page, *telegram type C14.1* parameter).

Table 2

Telegram type	format	Sent telegrams
Switching	DPT 1.001 (On/Off)	On/Off
priority	DPT 2.001 (priority control)	2-bit telegram *Function* / *value* no priority (no control) / 0 Priority OFF (control: disable, off) / 2 Priority ON (control: enable, on) / 3
value	DPT 5.010	Value between 0 and 255

- **Object 87** *"C14.2 Threshold value switch, switch/value/priority"*

This is the second output object of the threshold value switch.
The function of the object depends upon the selected telegram type
(see *Objects* parameter page, *telegram type C14.2* parameter).

The telegram type can be parameterized independently of the first output object.
The same setting options are available for this purpose as for the first output object
(see table above for object 86).

The cycle time and the disabling behaviour are valid together for both objects (objects 86+87).

- **Objects 88..99**

Objects 88 to 99 are for threshold value switches C15/C17 and have an identical function as with objects on channel C14.

3.2.1.5 Logic modules C18..C23

- **Object 100** *"C18 Logic module, logic input 1 in AND/OR/XOR gate 1"*

First input object of logic module.

- **Object 101** *"C18 Logic module, logic input 2 in AND/OR/XOR gate"*

Second input object of logic module.

- **Object 102** *"C18 Logic module, logic input 3 in AND/OR/ gate"*

Third input object of logic module.
Not used with XOR link.

- **Object 103** *"C18 Logic module, logic input 4 in AND/OR/ gate"*

Fourth input object of logic module.
Not used with XOR link.

- **Object 104** *"C18 logic module disable"*

Disable object on channel
Only visible if the disable function is activated.
The action (disable with 0 or 1) can be set via parameters.

- **Object 105***"C18.1 Logic module, switch/value/priority"*

This is the first output object of the logic module.
The function of the object depends upon the selected telegram type
(see *Objects* parameter page, *telegram type C18.1* parameter).

Table 2

Telegram type	format	Sent telegrams
Switching	DPT 1.001 (On/Off)	On/Off
priority	DPT 2.001 (priority control)	2-bit telegram *Function* / *value* no priority (no control) / 0 Priority OFF (control: disable, off) / 2 Priority ON (control: enable, on) / 3
value	DPT 5.010	Value between 0 and 255

- **Object 106** *"C18.2 Logic module, switch/value/priority"*

This is the second output object of the logic module.
The function of the object depends upon the selected telegram type
(see *Objects* parameter page, *telegram type C18.2* parameter).

The telegram type can be parameterized independently of the first output object.
The same setting options are available for this purpose as for the first output object
(see table above for object 105).

The cycle time and the disabling behaviour are valid together for both objects (objects 86+87).

- **Objects 107..141**

Objects 107 to 141 are for logic modules C19/C23 and have an identical function as with objects on channel C18.

3.2.1.6 Extension module

- **Object 142** *"GPS latitude"*

Not used

- **Object 143** *"GPS longitude"*

Not used

- **Object 144 "***UTC time"*

Only with version with GPS module.
Greenwich Mean Time (*Coordinated Universal Time)* i.e. basis for calculating different time zones.
Corresponds to the time on the Greenwich Meridian.

CET (Central European Time) = UTC + 1 h
CEST (Central European Summer Time) = UTC + 2 h.
UTC time is transmitted but not received.

- **Object 145 "***UTC date"*

Only with version with GPS module.
Global date, Corresponds to the date on the Greenwich Meridian.

UTC date is transmitted but not received.

3.3 Parameter

3.3.1 Parameter pages

Table 2

Function	Description
General	Selection of required channels, activation of extension module and manual positioning input.
Measured values	Settings for transmitting brightness, temperature, wind, rain, the position of the sun and geographical data.
Date and time	Settings on location, summer time and transmission of time/date.
Universal channel C1: Function .. *Universal channel C10: Function*	Basic settings, delays, response after download etc.
*Objects**	Telegram type switch and disable response etc.
Sun protection channel C11 *Sun protection channel C12* *Sun protection channel C13* *Sun protection channel C24* .. *Sun protection channel C28*	Basic settings for sun protection functions. Object type, sun position adjustment, brightness threshold, delays etc.
*sun position adjustment**	Positioning of sun protection depending on actual position of sun
*sun control**	Type of activation and reaction with sun control On/Off.
*safety**	Response to safety telegram
Threshold channel C14: Function .. *Threshold channel C17: Function*	Type of threshold value object, delays etc.
*Objects**	Telegram type switch and disable response etc.
Logic channel C18: Function .. *Logic channel C23: Function*	Number of inputs, links etc.
*Objects**	Telegram type switch and disable response etc.

* Own parameter page for each channel.

3.3.2 Parameter description

Settings that lead to the display of other pages or functions are identified by ...
Example: *yes/no*

3.3.2.1 The "*General*" parameter page

Designation	*Values*	Description
Activate universal channel C1	***No*** *Yes..*	The universal channels can trigger telegrams based on one or more physical measurements.
Activate universal channel C2	***No*** *Yes..*	
Activate universal channel C3	***No*** *Yes..*	
Activate universal channel C4	***No*** *Yes..*	
Activate universal channel C5	***No*** *Yes..*	
Activate universal channel C6	***No*** *Yes..*	
Activate universal channel C7	***No*** *Yes..*	
Activate universal channel C8	***No*** *Yes..*	
Activate universal channel C9	***No*** *Yes..*	
Activate universal channel C10	***No*** *Yes..*	
Activate sun protection channel C11	***No*** *Yes..*	8 sun protection channels for controlling shutters, awnings or blinds etc.
Activate sun protection channel C12	***No*** *Yes..*	
Activate sun protection channel C13	***No*** *Yes..*	
Activate sun protection channel C24	***No*** *Yes..*	
Activate sun protection channel C25	***No*** *Yes..*	
Activate sun protection channel C26	***No*** *Yes..*	
Activate sun protection channel C27	***No*** *Yes..*	
Activate sun protection channel C28	***No*** *Yes..*	
Activate threshold channel C14	***No*** *Yes..*	Threshold channels switch based on received bus telegrams according to whether a value is exceeded or not achieved.
Activate threshold channel C15	***No*** *Yes..*	
Activate threshold channel C16	***No*** *Yes..*	
Activate threshold channel C17	***No*** *Yes..*	

Continuation:

Designation	*Values*	Description
Activate logic channel C18	***No*** *Yes..*	Logic channels enable the linking of up to 4 inputs. These can be both specific logic input objects (max. 4) as well as the switching statuses of the other channels (universal, threshold or logic channels).
Activate logic channel C19	***No*** *Yes..*	
Activate logic channel C20	***No*** *Yes..*	
Activate logic channel C21	***No*** *Yes..*	
Activate logic channel C22	***No*** *Yes..*	
Activate logic channel C23	***No*** *Yes..*	
Device version	***without GPS module***	Device without GPS module: **If sun position adjustment is required, the weather station must receive time and date via the bus.** Longitude and latitude have to be set manually (see below).
	with GPS module	The GPS module delivers time information (time/date) required for sun position adjustment.
Manual position input	***Yes***	Only with version with GPS module. Standard setting.
Latitude of location (°)	*0..63* Default = ***48***	Enter latitude manually
Position	***North***	For all locations north of the equator e.g. Europe, Russia, China, Japan, India, Saudi Arabia, North and Central America etc.
	South	For all locations south of the equator e.g. South Africa, Australia, New Zealand etc.
Longitude of location (°)	*0..180* Default = ***9***	This input is required for the sun position adjustment
Position	***East***	For all locations east of the Greenwich Meridian e.g. Paris, Barcelona, Belgium, Scandinavia, Central and Eastern Europe, South Africa, Saudi Arabia etc.
	West	For all locations of the Greenwich Meridian e.g. Portugal, Ireland, Morocco, America etc.

3.3.2.2 The "*Measured values*" parameter page

Designation	Values	Description
Send brightness value on change	*no* *of 20 %, but at least 1 lux* ***of 30 %, but at least 1 lux*** *of 50 %, but at least 1 lux* *of 10 %, but at least 1 lux*	Only send cyclically (if enabled) Send if the value has changed by 10%, 20% etc. since it was last sent. However, if a change of 10% corresponds to a brightness change < 1 lux, then the value is not sent until the change is >1 lux.
Send brightness value cyclically	***do not send cyclically*** *every min* *every 2 min* *every 3 min* *every 5 min* *every 10 min* *every 15 min* *every 20 min* *every 30 min* *every 45 min* *every 60 min*	How often should the current brightness value be resent?
Brightness adjustment sensor at front in %	*-30..30* (Default = ***0***)	Adjustment to brightness measurement if sent value deviates from actual ambient brightness. Example: Brightness = 10,000 lux Sent = 11,000 lux Adjustment value = -10 %
Brightness adjustment sensor left in %	*-30..30* (Default = ***0***)	See above.
Brightness adjustment sensor right in %	*-30..30* (Default = ***0***)	See above.
Transmit temperature in the event of change	*no* *of 0.5 °C* ***of 1.0 °C*** *of 1.5 °C* *of 2.0 °C* *of 2.5 °C*	Only send cyclically (if enabled) Send if the value has changed for example by 0.5°C or 1°C since it was last sent.

Continuation:

Designation	*Values*	Description
Temperature adjustment in 0.1°C stages (-64 ..) 63)	*-64..63* (Default = ***0***)	Adjustment to temperature measurement if sent temperature deviates from actual ambient temperature. Example: Temperature = 20°C sent temperature = 21°C Adjustment value = -10 (i.e. -10 x 0.1°C)
Send temperature cyclically	***do not send cyclically*** *every min* *every 2 min* *every 3 min* *every 5 min* *every 10 min* *every 15 min* *every 20 min* *every 30 min* *every 45 min* *every 60 min*	How often should the current temperature be sent again?
Send wind speed in	***m/s*** *km/h* *Beaufort*	Unit for wind speed 1 m/s is equivalent to 3.6 km/h 1 km/h is equivalent to 0.278 m/s Wind force 1..12. See table in attachment
Send wind speed in the event of a change	*No* ***of 10 %, but at least 0.5 m/s*** *of 20 %, but at least 0.5 m/s* *of 30 %, but at least 1 m/s* *of 50 %, but at least 1 m/s*	Only send cyclically (if enabled) Send if the value has changed by 20%, 30% or 50% since it was last sent

Continuation:

Designation	*Values*	Description
Send wind speed cyclically	***do not send cyclically*** *every min* *every 2 min* *every 3 min* *every 5 min* *every 10 min* *every 15 min* *every 20 min* *every 30 min* *every 45 min* *every 60 min* *every 10 seconds (for test purposes only)*	How often should the current wind speed be sent again?
Send rain in the event of change	***yes*** *no*	Always send when the rain starts or stops. Only send cyclically (if enabled)
Send rain cyclically	***no*** *every min* *every 2 min* *every 3 min* *every 5 min* *every 10 min* *every 15 min* *every 20 min* *every 30 min* *every 45 min* *every 60 min*	How often should the rain status be sent again?
Off-delay	*None* *1 min* *2 min* *3 min* *5 min* ***10 min*** *15 min*	The rain status 0 is sent as soon as the rain stops The status 0 is only sent after completion of a delay. Status 1 is reported up to that point.

Continuation:

Designation	*Values*	Description
Activate dew suppression (rain sensor is always heated)	*Yes*	The rain sensor is permanently maintained at a temperature of approx. 30 °C. The sensor remains dry when dew forms and does not report precipitation.
	no	The sensor can report precipitation given sufficient dew. **Important:** This function is only possible at temperatures above +5 °C. The sensor is permanently maintained at a temperature of approx. 30 °C (frost protection). In order to ensure a suitable drying time for the sensor, this is always heated up to approx. 40 °C when precipitation is detected.
Send elevation and azimuth of the sun	***only on request*** *every 5 min.* *every 15 min.* *every 30 min.*	How often should the sun height and direction telegrams be resent?

3.3.2.3 The "*Date and time*" parameter page

Table 2

Designation	Values	Description
send time and date	*do not send* ***every hour*** *every 2 hours* *every 3 hours* *every 6 hours* *every 12 hours*	Only with version with GPS module.
Send time request cyclically	*only on request* *every min* *every hour* ***every 2 hours*** *every 3 hours* *every 6 hours* *every 12 hours*	Only with version without GPS module. How often should a time query be sent to the bus?
Time zone of location	*0 h (Greenwich)* ***1 h (CET)**, 2 h, 3 h, 3.5 h,* *4 h, 4.5 h, 5 h, 5.5 h, 5.75 h* *6 h 6.5 h, 7 h, 8 h, 9 h, 9,5 h, 10 h,* *10.5 h, 11 h, 11.5 h,* *12 h, 12.75 h 13 h* *- 1 h, - 2 h, - 3 h,- 3.5 h,* *- 4 h, - 5 h, - 6 h, - 7 h,* *- 8 h - 9 h - 10 h - 11 h - 12 h*	CET applies to most countries in Western Europe. For time zones west of Greenwich.
Summer/winter time changeover	*none* ***As for Central Europe*** *As for the United Kingdom* *Greece, Finland, Turkey* *As for North America* *user-defined..*	Select location-specific summer/winter time changeover rule. Produce customer-specific rule
User-defined summer/winter time changeover		
Start of summer time	*first Sunday in* *second Sunday in* *third Sunday in* *fourth Sunday in* ***last Sunday in***	Start date for summer time
Month	*January, February, **March**, April,* *May, June, July, August* *September, October, November,* *December*	Start month for summer time
Time	*0:00, 1:00, **2:00**, 3:00, 4:00, 5:00,* *6:00*	Start time

Continuation:

Designation	*Values*	Description
Start of winter time	*first Sunday in* *second Sunday in* *third Sunday in* *fourth Sunday in* ***last Sunday in***	Start date for winter time
Month	*January, February, March , April, May, June, July, August September,* ***October****, November, December*	Start month for winter time

3.3.2.4 The "*Universal channel C1..C10: function*" parameter pages

The universal channels C1..C10 can be used for sub-tasks (e.g. a pure brightness threshold) or for a free combination of measured variables.

A channel is made up of up to 4 logically linked weather conditions, i.e.:

- If the brightness is above/below the threshold AND
- If the temperature is above/below the threshold AND
- If the wind speed is above/below the threshold AND
- If rain is present / not present

Or:

- If the brightness is above/below the threshold OR
- If the temperature is above/below the threshold OR
- If the wind speed is above/below the threshold OR
- If rain is present / not present

A non-relevant condition (e.g. temperature) can be omitted and is then ignored during linking.

As a result of the satisfaction or non-satisfaction of this AND/OR link, a telegram is sent to the associated channel object (e.g. channel 1.1).
If required, an additional second object (e.g. channel 1.2) can be activated and thereby a second telegram sent as well.

Each universal channel has one disabling object and one object for setting the brightness threshold.

If required, a universal channel can also be configured as a safety channel if the relevant variables, i.e. temperature, rain and wind OR are linked.
The result of the link can be evaluated internally in the sun protection channels as a safety report.

3 sensors are available for brightness measurement

The use of a front sensor is recommended for applications in the brightness range below 100 lux, e.g. as twilight switch, as this produces a finer resolution than the other sensors in this area.

The universal channels are activated on the General parameter page.
Various parameters are available according to the set function.

Table 1: Function selection

Designation	Values	Description
Channel function	***Brightness sensor 1 .. 100,000 lux*** *temperature sensor* *wind sensor* *rain sensor* *Link of the following sensors:*	Which of the 4 weather variables should the channel react to? The channel is to react to several weather variables. These are logically linked together (AND or OR).

Table 2: Function = Brightness sensor 1 .. 100,000 lux

Designation	Values	Description
Brightness	*Below 3 lux .. below 90,000 lx* (in 72 increments) *Over 3 lux .. over 90,000 lux* (in 75 increments, default = **10,000lux**)	The channel condition is fulfilled if the value is below the entered threshold. The channel condition is fulfilled if the value is above the entered threshold.
Source:	***Sensor at front***, *sensor left, sensor right* *maximum value of the 3 sensors*	Which of the 3 installed brightness sensors should be used for taking measurements? The values of the 3 sensors are compared with each other and only the highest value is considered.
Light hysteresis	***20 % but at least 1 lux*** *30 %, but at least 1 lux* *50 %, but at least 1 lux*	The hysteresis prevents frequent switching after small changes in brightness. Depending on the selected condition, it can be either negative or positive. **Example** with 20% hysteresis: Condition: "OVER 4,500 lux“ = fulfilled from 4,500 lux and no longer fulfilled at 4,500 lux - 20% Condition: "UNDER 4,500 lux“ = satisfied below 4500 lx and no longer satisfied at 4500 lx + 20%

Continuation:

Designation	Values	Description
Delay when brightness increases	*none* *5 s, 10 s, 20 s, 30 s, 1 min, 2 min,* ***3 min****, 5 min, 10 min, 15 min, 20 min*	Response time when it gets lighter and the selected threshold is passed as a result. This setting prevents conflicting telegrams from being sent in response to temporary fluctuations in brightness
Delay when brightness decreases	*none* *5 s, 10 s, 20 s, 30 s, 1 min, 2 min, 3 min, 5 min,* ***10 min****, 15 min, 20 min*	Response time when it gets darker and the selected threshold is passed as a result. This setting prevents conflicting telegrams from being sent in response to temporary fluctuations in brightness
Value can be overwritten via object	***Yes*** *no*	Should it be possible to change the configured brightness threshold via bus telegrams at any time.
Overwrite value on download	***Yes*** *no*	With an ETS download, the brightness threshold currently stored in the device is deleted and overwritten with the value set in the ETS. An ETS download, does not have any effect on the brightness threshold currently stored in the device. **Exception:** Even if *no* is selected, **all** ETS parameter values are downloaded when it is first commissioned (i.e. with an empty storage device).

Table 3: Function = Temperature sensor

Designation	Values	Description
Temperature	*below –30°C to over 40°C (in 1K increments)* *over –30°C to over 40°C* Default = ***over 18 °C***	Should the condition be satisfied when the temperature is below or above the selected value?
Temperature hysteresis	***1.0 K****, 1.5 K* *2.0 K, 2.5 K*	The hysteresis prevents frequent switching after small temperature changes. It can be negative or positive depending on the selected condition (above or below xx°C) (see table above: Light hysteresis).

Table 4: Function = Wind sensor

Designation	Values	Description
Wind speed	*below 4 m/s (approx. 14 km/h) .. below 30 m/s(approx. 108 km/h)*	The channel condition is fulfilled if the value is below the entered threshold.
	***over 4 m/s (approx. 14 km/h)** .. over 30 m/s(approx. 108 km/h)*	The channel condition is fulfilled if the value is above the entered threshold.
Wind off-delay	*none*	The channel status changes immediately the wind threshold is not achieved.
	*5 s, 10 s, 20 s, 30 s, 1 min, 2 min, **3 min**, 5 min, 10 min, 15 min, 20 min*	The channel status only changes after the the set time delay period.

Table 5: Function = Rain sensor

Designation	Values	Description
Rain condition	***It's raining***	Fulfilled when it rains
	it's not raining	Fulfilled when it doesn't rain

Table 6: Function = Linking of the following sensors:

Designation	Values	Description
Brightness	*Yes* ***No***	Which of the 4 weather variables are to be taken into account?
Temperature	*Yes* ***No***	
Wind	*Yes* ***No***	
Rain	*Yes* ***No***	
Type of link	***AND***	Fulfilled when the conditions of **all** the selected weather variables have been met. Example: Temperature AND brightness
	OR	Fulfilled when the conditions of **one** of the selected weather variables have been met. Example: Wind OR rain (including safety function for awnings)
Parameters for brightness		
Brightness threshold value	*Below 3 lux .. below 90,000 lx* *Over 3 lux .. over 90,000 lux* Default = ***over 10,000 lux***	See above: Function = Brightness sensor 1 .. 100,000 lux
Value can be overwritten via object	***Yes*** *no*	
Overwrite value on download	*Yes* ***no***	
Source:	***Sensor at front***, *sensor left, sensor right* *maximum value of the 3 sensors*	
Light hysteresis	***20 % but at least 1 lux*** *30 %, but at least 1 lux* *50 %, but at least 1 lux*	
Delay when brightness increases	*none* *5 s, 10 s, 20 s, 30 s, 1 min, 2 min,* ***3 min**, 5 min, 10 min, 15 min,* *20 min*	
Delay when brightness decreases	*none* *5 s, 10 s, 20 s, 30 s, 1 min, 2 min,* *3 min, 5 min, **10 min**, 15 min,* *20 min*	
Parameters for temperature		
Temperature threshold	*below -30 °C .. below 40 °C* *over -30 °C .. over 40 °C* Default = ***over 18 °C***	See above: Function = Temperature sensor.
Temperature hysteresis	***1.0 K**, 1.5 K* *2.0 K, 2.5 K*	

Continuation:

Designation	Values	Description
Parameters for wind		
Wind speed	*below 4 m/s (approx. 14 km/h) .. below 30 m/s(approx. 108 km/h)* ***over 4 m/s (approx. 14 km/h)*** *.. over 30 m/s(approx. 108 km/h)*	See above: Function = Wind sensor.
Wind off-delay	*none* *5 s, 10 s, 20 s, 30 s, 1 min, 2 min,* ***3 min****, 5 min, 10 min, 15 min, 20 min*	
Parameters for rain		
Rain condition	***It's raining*** *it's not raining*	See above: Function = Rain sensor.

3.3.2.5 The "*Objects*" parameter pages

All universal, threshold and logic channels have this type of parameter page.
The reaction here is configured on fulfillment or non-fulfillment of the conditions.

Table 2

<table>
<tr><th>Designation</th><th>Values</th><th>Description</th></tr>
<tr><td>Telegram type C1.1</td><td>Switching command

Priority

value</td><td>1 bit ON/OFF

2-bit
<table><tr><th>Function</th><th>value</th></tr><tr><td>Priority inactive (no control)</td><td>0 (00_{bin})</td></tr><tr><td>Priority ON
Priority ON (control: enable, on)</td><td>3 (11_{bin})</td></tr><tr><td>Priority OFF (control: disable, off)</td><td>2 (10_{bin})</td></tr></table>1-byte 0 ... 255</td></tr>
<tr><td>If all conditions are met</td><td>no telegram
send following telegram once
send cyclically</td><td>Send behaviour if the channel condition has been fulfilled.</td></tr>
<tr><td>Telegram</td><td>

ON
OFF
no priority
priority, ON (down)
priority, OFF (up)
Telegram 0 ... 255</td><td>Type of telegram for the first channel output object with fulfilled condition:
For telegram type Switching command

For telegram type Priority

For telegram type Value</td></tr>
<tr><td>If not all conditions are met</td><td>no telegram
send following telegram once
send cyclically</td><td>Send behaviour if the channel condition has not been fulfilled.</td></tr>
<tr><td>Telegram</td><td>

ON
OFF
no priority
priority, ON (down)
priority, OFF (up)
Telegram 0 .. 255</td><td>Type of telegram for the first channel output object without fulfilled condition:
For telegram type Switching command

For telegram type Priority

For telegram type Value</td></tr>
</table>

Continuation:

<table>
<tr><th>Designation</th><th>Values</th><th>Description</th></tr>
<tr><td>Should a second telegram be sent?</td><td>Yes
no</td><td>If yes has been selected, further parameters and a second transmission object appear.
It can be used to send 2 different telegrams at the same time on the same channel.
The cycle time and the disabling behaviour are apply to both objects.</td></tr>
<tr><td>Telegram type C1.2</td><td>Switching command

Priority

value</td><td>Second output object on channel
1 bit ON/OFF

2-bit
<table><tr><th>Function</th><th>value</th></tr><tr><td>Priority inactive (no control)</td><td>0 (00_{bin})</td></tr><tr><td>Priority ON
Priority ON (control: enable, on)</td><td>3 (11_{bin})</td></tr><tr><td>Priority OFF (control: disable, off)</td><td>2 (10_{bin})</td></tr></table>1-byte 0 ... 255</td></tr>
<tr><td>If all conditions are met</td><td>no telegram
send following telegram once
send cyclically</td><td>Send behaviour if the channel condition has been fulfilled.</td></tr>
<tr><td>Telegram</td><td>

ON
OFF
no priority
priority, ON (down)
priority, OFF (up)
Telegram 0 ... 255</td><td>Type of telegram for the second channel output object with fulfilled condition:
For telegram type Switching command

For telegram type Priority

For telegram type Value</td></tr>
<tr><td>If not all conditions are met</td><td>no telegram
send following telegram once
send cyclically</td><td>Send behaviour if the channel condition has not been fulfilled.</td></tr>
<tr><td>Telegram</td><td>

ON
OFF
no priority
priority, ON (down)
priority, OFF (up)
Telegram 0 .. 255</td><td>Type of telegram for the second channel output object without fulfilled condition:
For telegram type Switching command

For telegram type Priority

For telegram type Value</td></tr>
</table>

Continuation:

Designation	Values	Description
Activate lock function	*Yes*	Show disable parameter and disable object
	no	No disable function
Behaviour when setting the disable function	***do not send***	No telegrams while the disable object is set.
	as with unfulfilled condition	Same reaction as set in the *When not all conditions have been fulfilled* parameter (see above).
	as with fulfilled condition	Same reaction as set in the *When all conditions have been fulfilled* parameter (see above).
Behaviour when cancelling the disable setting Behaviour when cancelling the disable setting	*do not send*	Not automatically resent when the disable setting is cancelled
	update channel	The current channel status is sent immediately as soon as the disable setting is cancelled.
Cycle time (if used)	*do not send cyclically* *every min* *every 2 min* *every 3 min* *every 5 min* *every 10 min* *every 15 min* *every 20 min* *every 30 min* *every 45 min* ***every 60 min***	How often should the telegrams for CX.1 and CX.2 be sent?
Telegram with recognised sensor error (just temperature or rain)	***Do not send any longer*** *as with unfulfilled condition, as with fulfilled condition*	This parameter comes into effect if the temperature or rain sensor (if used by channel) reports an error.

3.3.2.6 The "*Sun protection channel C11..C13 and C24..C28*" parameter pages

The sun protection channels can control shutters, awnings or blinds etc.

A sun protection channel comprises:
- 1 Dawn/dusk threshold
- 1 Brightness threshold for shading
- 3 objects for actuating the drive (up/down – height % – slats %)
- 1 sun control object (morning/evening)
- 1 Object for setting the brightness threshold.
- 1 safety object

The signal for "morning" or "evening" can be issued either via the sun control object (e.g. via a timer switch) or via the dawn/dusk. Sun protection can work with or without sun position adjustment (see below).

The sun protection channels are activated on the General parameter page.

Table 2

Designation	Values	Description
Channel controls	*Shutters*	For shutters, awnings etc.
	via scenes	With Up/Down and scene telegrams
	Blinds	For blinds
Sun position adjustment	*Yes*	The shutter height or blinds slat position are controlled in dependence on the actual position of the sun in the sky. Requires GPS module or KNX clock + manual location entry.
	No	Shutter height and blinds slat position are controlled in dependence on brightness threshold.
Source for brightness measurement	***Sensor at front*** *Sensor left* *Sensor right*	Which of the 3 installed brightness sensors should be used for taking measurements?
	maximum value of the 3 sensors	The values of the 3 sensors are compared with each other and only the highest value is considered.
	External lux value 1 object *External lux value 2 object*	Use brightness value from another KNX sensor. e.g. Luna 133 (order no. 1339200) on another facade.

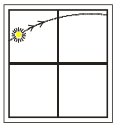
Continuation:

Designation	Values	Description
Dawn/dusk threshold	*2 lux..500 lux* Default = ***10 lux***	Threshold for detection of rise/set.
Brightness threshold for shading	*2,000..90,000 lux* Default = ***20,000 lux***	From what brightness level is sun protection required?
Delay when brightness increases	*None,* *5 s, 10 s,* *20 s,* ***30 s****, 1 min, 2 min,* *3 min, 5 min, 10 min, 15 min,* *20 min*	Only for initial start-up and tests. Response time when it gets lighter and the threshold is passed as a result. This delay prevents conflicting responses from the drives to temporary fluctuations in brightness.
Delay when brightness decreases	*none,* *5 s, 10 s* *20 s, 30 s,* *1 min, 2 min, 3 min,* ***5 min****, 10 min, 15 min,* *20 min*	Only for initial start-up and tests. Response time when it gets darker and the threshold is exceeded as a result. This delay prevents conflicting responses from the drives to temporary fluctuations in brightness.
Drive height when brightness threshold is exceeded	*0..100 %* Default = ***10 %***	The blinds or shutters are lowered once after the threshold is exceeded.
Scene number when brightness threshold is exceeded	*1..64* Default = ***Scene 1***	The covering is lowered once after the threshold is exceeded and a scene number is sent.
Slat when brightness threshold is exceeded	*0..100 %* Default = ***50 %***	Slat position when threshold is exceeded.
Thresholds can be overwritten via object	***Yes*** *no*	With an ETS download, the brightness or dawn/dusk thresholds currently stored in the device are deleted and overwritten with the value set in the ETS.
Overwrite thresholds on download	***Yes*** *no*	With an ETS download, the brightness or dawn/dusk thresholds currently stored in the device are deleted and overwritten with the value set in the ETS. An ETS download does not affect the brightness thresholds currently stored in the device **Exception:** Even if *no* is selected **all** ETS parameter values are downloaded when it is first commissioned (i.e. with an empty storage device).

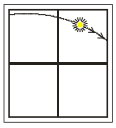
3.3.2.7 The "*Sun position adjustment*" parameter page

Sun position adjustment is activated on the previous parameter page.
Important:
All directional details apply for an observer who is *in the building* at a window of the facade to be shaded.

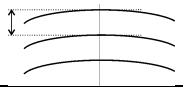
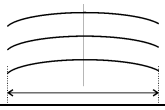
Table 2

Designation	Values	Description
Facade direction	*0..360°* (in 32 increments)	Alignment of the facade to be shaded, i.e the direction you are looking at if you look out of the window. The course of the sun cover a maximum range of 180° in front of the facade (azimuth). This is divided into 2 x 90° (see below).
(Sun protection area) in front of the facade direction (0..90 degrees)	***-90**..90*	Left zone of the course of the sun, starting from the centre of the facade. -90° = Full shading: This starts as soon as the sun shines on the side of the facade and until it is at right angles to the facade. 0°= No shading possible before the sun is at right angles to the facade. Positive values (1..90°) shifts the sun protection area to the right zone. *In front of the facade* = Window side where the sun first appears (for an observer in the room).  North of the Tropic of Cancer (Europe, North America, Russia etc.) this is always the left window side. See appendix: Sun protection area

Continuation:

Designation	Values	Description
(Sun protection area) after the facade direction (0..90 degrees)	*-90..**90***	Right zone of the course of the sun, starting from the centre of the facade. **90°** = **Maximum shading angle**: Shading as soon as the sun is at right angles to the facade and until it passes the side of the facade. 0°= no shading in this section of the course of the sun. *After the facade* = Window side where the sun first passes the building (for an observer in the room).  North of the Tropic of Cancer (Europe, North America, Russia etc.) this is always the right window side. The maximum sun protection area is achieved via the following setting: *In front of the direction of the facade* = -90° *After the direction of the facade* = 90° See appendix: Sun protection area
min. elevation between (0..90 degrees) (position of sun over the horizon)	*0..90* **Default = *10***	Do not shade below this height of the sun.
and max. elevation (0..90 degrees)	*0..90* **Default = *80***	Do not shade above this height of the sun. Set 90 ° even if to be shaded at the highest position of the sun.
Response when leaving the sun protection range	 ***No response*** *Raise* *Adjust slats*	If the sun has left the sun protection area based on elevation or azimuth: Drives have. not moved Raise all drives Don't raise blinds; just move slats to preset position. See below, *slats position.*

Continuation:

Designation	Values	Description
Slats position	*0..100 %* Default = ***20 %***	Slats position when leaving the sun protection range
Scene number	*1..64* Default = ***Scene 1***	Scene number when leaving the sun protection range
Reposition every	*10 degrees* *15 degrees* ***22.5 degrees*** *30 degrees*	After what change in the height of the sun, should the slats position or the shutter height be adjusted?
Call new scene every	*10 degrees* *15 degrees* ***22.5 degrees*** *30 degrees*	After what change in the height of the sun, should the a new scene number be transmitted?
Calculation of slat position	***Automatic via slat dimensions***	The correct slats position for each elevation level is automatically calculated according to the slat width and spacing. The slats are always positioned so that the sunlight cannot shine through while the room is still kept as light as possible.
	Allocate own values	The user has the opportunity to define their own slat position for each elevation level.
Calculation of slat position = automatic via slat dimensions		
Spacing of slats in mm	*0..255* Default = ***20***	Enter exact distance between 2 slats 
Width of slats in mm	*0.255* Default = ***50***	Enter exact width of a slat 
Reserve for ensured shading (0..25 %)	***0***..*25*	If necessary, this makes it possible to adjust the slat positions afterwards.
Slats position for shading break	*0..100 %* Default = ***75 %***	Specific slats position for the temporary lifting of the shading function (e.g. via object 64 for channel C11).

Continuation:

Designation	Values	Description
SCENES FOR SHADING		
Scene numbers for elevation 0..10°, 0..15°,0..22,5°, 0..30°	*Scene **1**..64*	Depending on the *Reposition all* parameter setting, a different scene number can be transmitted for each elevation level.
Scene numbers for elevation 10..20°, 15..30°, 22,5..45°, 30..60°,	*Scene 1..64* Default = ***Scene 2***	
Scene numbers for elevation 20..30°, 30..45°, 45..67,5°, 60..90°	*Scene 1..64* Default = ***Scene 3***	
Scene numbers for elevation 30..40°, 45..60°, 67,5..90°	*Scene 1..64* Default = ***Scene 4***	
Scene numbers for elevation 40..50°, 60..75°	*Scene 1..64* Default = ***Scene 5***	
Scene numbers for elevation 50..60°, 75..90°	*Scene 1..64* Default = ***Scene 6***	
Scene numbers for elevation 60..70°	*Scene 1..64* Default = ***Scene 7***	
Scene numbers for elevation 70..80°	*Scene 1..64* Default = ***Scene 8***	
Scene numbers for elevation 80..90°	*Scene 1..64* Default = ***Scene 9***	
Scene numbers for shading break	*Scene 1..64* Default = ***Scene 10***	Specific scene numbers for the temporary lifting of the shading function (e.g. via object 64 for channel C11).
With shutters/textile sun protection		
VALUES FOR SHADING		
Height with elevation 0..10°, 0..15°, 0..22,5°, 0..30°	*0..100 %* Default = ***80 %***	Depending on the *Reposition all* parameter setting, a separate shutter height can be set for each elevation level (height of sun range).
Height with elevation, , , , *10..20°* *15..30°* *22.5..45°* *30..60°*	*0..100 %* Default = ***70 %*** Default = ***60 %*** Default = ***50 %*** Default = ***40 %***	
Height with elevation *20..30°* *30..45°* *45..67.5°* *60..90°*	*0..100 %* Default = ***60 %*** Default = ***50 %*** Default = ***25 %*** Default = ***0 %***	
Height with elevation, , *30..40°* *45..60°* *67.5..90°*	*0..100 %* Default = ***50 %*** Default = ***30 %*** Default = ***0 %***	
Height with elevation, *40..50°* *60..75°*	*0..100 %* Default = ***40 %*** Default = 15 ***%***	

Continuation:

Designation	Values	Description
Height with elevation,	*0..100 %*	
50..60°	Default = ***30 %***	
75..90°	Default = ***0 %***	
Height with elevation	*0..100 %*	
60..70°	Default = ***20 %***	
Height with elevation	*0..100 %*	
70..80°	Default = ***10 %***	
Height with elevation	*0..100 %*	
80..90°	Default = ***0 %***	
Calculation of slat position = Allocate own values		
Slat with elevation 0..10°,	***0**..100 %*	Depending on the *Reposition all* parameter setting, a separate slat height can be set for each elevation level (height of sun range).
0..15°,0..22,5°, 0..30°		
Slat with elevation	*0..100 %*	
10..20° [1]	Default = ***5 %***	
15..30° [2]	Default = ***10 %***	
22.5..45° [3]	Default = ***15 %***	
30..60° [4]	Default = ***25 %***	
Slat with elevation, , ,	*0..100 %*	
20..30°	Default = ***12.5 %***	
30..45°	Default = ***20 %***	
45..67.5°	Default = ***32.5 %***	
60..90°	Default = ***50 %***	
Slat with elevation	*0..100 %*	
30..40°	Default = ***17.5 %***	
45..60°	Default = ***30 %***	
67.5..90°	Default = ***50 %***	
Slat with elevation	*0..100 %*	
40..50°	Default = ***25 %***	
60..75°	Default = ***40 %***	
Slat with elevation,	*0..100 %*	
50..60°	Default = ***30 %***	
75..90°	Default = ***50 %***	
Slat with elevation	*0..100 %*	
60..70°	Default = ***37.5 %***	
Slat with elevation	*0..100 %*	
70..80°	Default = ***42.5 %***	
Slat with elevation	*0..100 %*	
80..90°	Default = ***50 %***	

Continuation:

Designation	Values	Description
VALUES FOR SHADING BREAK		
Height/slat with elevation …° → *see above.*	Default values = ***50 %***	For the shading break, i.e. temporary lifting of shading function (e.g. via object 64 for channel C11). specific shutter heights or slat positions can be configured for the different positions of the sun. The settings are completed with the same steps as with shading (see above, *Values for shading*).

[1] with *Reposition every 10°*
[2] with *Reposition every 15°*
[3] with *Reposition every 22.5°*
[4] with *Reposition every 30°*

3.3.2.8 The "*Sun control*" parameter page

Table 2

Designation	Values	Description
Activation of sun control	***Via object***	The automatic sun protection is activated via the relevant sun control object (e.g. via a timer).
	Via dawn/dusk threshold	The automatic sun control becomes active immediately after the dawn threshold is exceeded
Reaction to dawn	***Raise and sun control ON***	Automatic sun protection is activated once the dawn threshold is exceeded, (e.g.) the blinds are raised.
	Sun control. ON but not driven	Automatic sun protection is activated once the dawn threshold is activated. Only move drives when shading required.
Reaction to dusk	***Sun control OFF & raise*** *Sun control OFF & lower* *Sun control OFF but not driven*	Response of drives when dusk threshold is exceeded in the evening.
Reaction to sun control ON		only visible with *Activation of sun control via object* When the sun control object is set:
	Raise and sun control ON	Raise blinds/shutters and position accordingly if shading is required.
	Do not raise until dawn & sun control ON	The blinds are not raised until the sun control object has been set and the dawn threshold has been exceeded.
	Sun control. ON but not driven	Only move drives when shading required.

Continuation:

Designation	Values	Description
Reaction to sun control OFF	***Sun control OFF & raise*** *Sun control OFF & lower* *Sun control OFF & shut down at dusk* *Sun control OFF but not driven*	Response of drives after switching off sun control.
With falling below brightness threshold while sun control is active	***No response*** *Raise* *Adjust slats*	If the brightness, e.g. due to heavy cloud, falls below the set threshold: Do not move drives This setting serves to calm the facade, no constant movements. To achieve the maximum light yield. With blinds: Only open the slats
Slats position.	*0..100 %* Default = ***20 %***	Slats position with falling below brightness threshold while sun control is active
Move to end position after twilight	*1 bit object (up/down)* *% Height*	Definition, via which object the hanging has to be moved to the end position

3.3.2.9 The "*Safety*" parameter page

Table 2

Designation	Values	Description
Safety check triggered by		The safety status (based on wind, rain, frost etc.) is …
	input object	triggered via object safety – input (obj. 65, 73 etc.)
	Condition C1, condition C2 *Condition C3, condition C4* *condition C5, condition C6* *condition C7, condition C8* *condition C9, condition C10*	triggered with fulfilled condition of a universal channel. The OR sensors have to be linked for this.
	Threshold channel status C14 *Threshold channel status C15* *Threshold channel status C16* *Threshold channel status C17*	triggered with fulfilled condition of a threshold channel.
	link result logic channel C18 *Link result logic channel C19* *Link result logic channel C20* *Link result logic channel C21* *Link result logic channel C22* *link result logic channel C23*	triggered with fulfilled condition of a logic channel.
Reaction to safety beginning	***No response***	No more telegrams are sent. This setting is recommended if the safety function is administered in the actuator.
	Start drive	e.g. for blinds, awnings and textile sun protection.
	Shut down drive	e.g. for roller shutters.
Reaction to safety end	*No response*	No more telegrams are sent. This setting is recommended if the safety function is administered in the actuator.
	Update position	Immediately transmit the current drive height and, if nec., slats position.
	Update scene	Immediately transmit the current scene number
Move to end position at safety	*1 bit object (up/down)* *% Height*	Definition, via which object the hanging has to be moved to the end position

3.3.2.10 The "*Threshold channel C14..C17*" parameter pages

The threshold channel block forms a separate unit, which is internally completely independent of the weather data.

Principle:
A value is received by the bus and compared with the set threshold.
Ii the value is higher than the set threshold, then the condition counts as fulfilled.
Alternatively, if the value is below it, then it counts as unfulfilled.

The response of the output objects with fulfilled or unfulfilled conditions is et on the *Objects* parameter page.

The channel status (condition fulfilled/unfulfilled) of each threshold channel can be configured as the input value for the logic channels (see below, The logic channels).

The threshold channels are activated on the General parameter page.

Table 2

Designation	Values	Description
Type of threshold value object	***object type: Per cent (DPT 5.001)*** *Object type: Counter value 0..255 (DPT 5.010)* *object type: Counter value 0..65535 (DPT 7.001)* *Object type: EIS5 e.g. CO2, brightness etc. (DPT 9.xxx)*	Value type for threshold.
Parameter for *Percent* threshold object		
Threshold value (in %)	*1..99* Default = ***50***	Desired threshold value. in per cent.
Hysteresis (as %)	*1..99* Default = ***5***	The hysteresis prevents frequent switching after small changes in readings. the hysteresis is unilaterally negative for all types of threshold, e.g. threshold 50, hysteresis 5 means: Switch on at 50 and switch off at 50 – hysteresis = 45
Parameter for threshold value object *Counter value 0..255*		
Threshold value	*1..254* Default = ***127***	Desired threshold value as 1 byte number from 1 to 254.
Hysteresis	*1..254* Default = ***5***	The hysteresis prevents frequent switching after small changes in readings.

Continuation:

Designation	Values	Description
Parameter for threshold value object *Counter value 0..65535*		
Threshold value	*1..65534* Default = ***1,000***	Desired threshold value as 2 byte number from 1 to 65534.
Hysteresis	*1..65534* Default = ***5***	The hysteresis prevents frequent switching after small changes in readings.
Parameter for threshold value object *EIS5 (e.g. CO_2, brightness…)*		
Threshold value format: (-000,00..9999).	-9999..99999 Default = ***20,0***	Desired threshold value as decimal number with sign Format: A maximum of 5 characters are permitted, including signs and commas. Examples with 5 characters: -9999 -9,99 10,35 100,6 99999 etc.
Hysteresis format: 0,00..9999	*0,00..9999* Default = ***1,0***	The hysteresis prevents frequent switching after small changes in readings. Format: Max. 4 characters, positive numbers only. Examples: 0,01 99,9 9999
Common parameters		
Delay with exceeding	***None,*** *5 s, 10 s, 20 s, 30 s, 1 min, 2 min, 3 min, 5 min, 10 min, 15 min, 20 min*	The channel transmits immediately. The channel only transmits after set delay is completed. The channel only transmits after set delay is completed.
Delay with falling below	***none*** *5 s, 10 s, 20 s, 30 s, 1 min, 2 min, 3 min, 5 min, 10 min, 15 min, 20 min*	The channel transmits immediately. The channel only transmits after set delay is completed. The channel only transmits after set delay is completed.

3.3.2.11 The "*Objects*" parameter pages

All universal, threshold and logic channels have this type of parameter page.
The reaction here is configured on fulfillment or non-fulfillment of the conditions.

Table 2

<table>
<tr><th>Designation</th><th>Values</th><th>Description</th></tr>
<tr><td>Telegram type C14.1</td><td>Switching command

Priority

value</td><td>1 bit ON/OFF

2-bit
<table><tr><th>Function</th><th>value</th></tr><tr><td>Priority inactive (no control)</td><td>0 (00_{bin})</td></tr><tr><td>Priority ON
Priority ON (control: enable, on)</td><td>3 (11_{bin})</td></tr><tr><td>Priority OFF (control: disable, off)</td><td>2 (10_{bin})</td></tr></table>1-byte 0 ... 255</td></tr>
<tr><td>When exceeding the threshold</td><td>no telegram
send following telegram once
send cyclically</td><td>Send behaviour if the channel condition has been fulfilled.</td></tr>
<tr><td>Telegram</td><td>

ON
OFF
no priority
priority, ON (down)
priority, OFF (up)
Telegram 0 ... 255</td><td>Type of telegram for the first channel output object with fulfilled condition:
For telegram type Switching command

For telegram type Priority

For telegram type Value</td></tr>
<tr><td>When underrunning threshold</td><td>no telegram
send following telegram once
send cyclically</td><td>Send behaviour if the channel condition has not been fulfilled.</td></tr>
<tr><td>Telegram</td><td>

ON
OFF
no priority
priority, ON (down)
priority, OFF (up)
Telegram 0 .. 255</td><td>Type of telegram for the first channel output object without fulfilled condition:
For telegram type Switching command

For telegram type Priority

For telegram type Value</td></tr>
</table>

Continuation:

<table>
<tr><th>Designation</th><th>Values</th><th>Description</th></tr>
<tr><td>Should a second telegram be sent?</td><td>Yes
no</td><td>If yes has been selected, further parameters and a second transmission object appear.
It can be used to send 2 different telegrams at the same time on the same channel.
The cycle time and the disabling behaviour are apply to both objects.</td></tr>
<tr><td>Telegram type C14.2</td><td>Switching command

Priority

value</td><td>Second output object on channel
1 bit ON/OFF

2-bit<table><tr><th>Function</th><th>value</th></tr><tr><td>Priority inactive (no control)</td><td>0 (00_{bin})</td></tr><tr><td>Priority ON
Priority ON (control: enable, on)</td><td>3 (11_{bin})</td></tr><tr><td>Priority OFF (control: disable, off)</td><td>2 (10_{bin})</td></tr></table>1-byte 0 ... 255</td></tr>
<tr><td>When exceeding the threshold</td><td>no telegram
send following telegram once
send cyclically</td><td>Send behaviour if the channel condition has been fulfilled.</td></tr>
<tr><td>Telegram</td><td>

ON
OFF
no priority
priority, ON (down)
priority, OFF (up)
Telegram 0 ... 255</td><td>Type of telegram for the second channel output object with fulfilled condition:
For telegram type Switching command

For telegram type Priority

For telegram type Value</td></tr>
<tr><td>When underrunning threshold</td><td>no telegram
send following telegram once
send cyclically</td><td>Send behaviour if the channel condition has not been fulfilled.</td></tr>
<tr><td>Telegram</td><td>

ON
OFF

no priority
priority, ON (down)
priority, OFF (up)

Telegram 0 .. 255</td><td>Type of telegram for the second channel output object without fulfilled condition:
For telegram type Switching command

For telegram type Priority

For telegram type Value</td></tr>
</table>

Continuation:

Designation	Values	Description
Activate lock function	*Yes* ***no***	Show disable parameter and disable object No disable function
Behaviour when setting the disable function	***do not send*** *as with unfulfilled condition* *as with fulfilled condition*	No telegrams while the disable object is set. Same reaction as set in the *When threshold is not exceeded* parameter (see above). Same reaction as set in the *With exceeding the threshold* parameter (see above).
Behaviour when cancelling the disable setting Behaviour when cancelling the disable setting	*Do not send* ***update channel***	Not automatically resent when the disable setting is cancelled The current channel status is sent immediately as soon as the disable setting is cancelled.
Cycle time (if used)	*do not send cyclically* *every min* *every 2 min* *every 3 min* *every 5 min* *every 10 min* *every 15 min* *every 20 min* *every 30 min* *every 45 min* ***every 60 min***	How often should the telegrams for CX.1 and CX.2 be sent?
Telegram after reset or download	***Do not send any longer*** *as with unfulfilled condition, as with fulfilled condition*	Reaction of channel with new start.

3.3.2.12 The "*Logic channel C18..C23"*

The logic channel block forms a separate unit, which is internally completely independent of the weather data.
The logic channels can be included for the widest range of tasks within a KNX device.

Principle:
Up to four 1 bit input values are logically linked together.

These input values can be:
- Input objects of logic channels
- Status of universal channels (fulfilled/unfulfilled)
- Status of threshold channels (fulfilled/unfulfilled)
- link result of the other logic channels (a logic channel cannot be linked with itself)

The response of the output objects with fulfilled or unfulfilled conditions is et on the *Objects* parameter page.
The logic channels are activated on the General parameter page.

Table 2

Designation	Values	Description
Type of link		Selection of logical link between the 1-bit input values (see below)..
	AND	2 to 4 inputs
	OR	
	XOR	2 inputs
Use input 1	***Yes***	Input is used
	Yes, inverted	Input acts inverted
Use input 2	***Yes***	See above, input 1
	Yes, inverted	
Use input 3	***No***	Input is hidden.
	Yes	See above.
	Yes, inverted	
Use input 4	***No***	Input is hidden.
	Yes	See above.
	Yes, inverted	

Continuation:

Designation	Values	Description
Input value for input 1	***Input object***	First input object of channel (e.g. object 100 for C18)
	Condition C1 condition C2 condition C3 condition C4 condition C5 condition C6 condition C7 condition C8 condition C9 condition C10	Status of a universal channel (fulfilled/unfulfilled)
	Threshold channel status C14 Threshold channel status C15 Threshold channel status C16 Threshold channel status C17	Status of threshold channel (threshold exceeded/not exceeded).
	Link result logic channel C18[(1)] *Link result logic channel C19*[(2)] *Link result logic channel C20*[(3)] *Link result logic channel C21*[(4)] *Link result logic channel C22*[(5)] *Link result logic channel C23*[(6)]	Link result of another logic channel (a logic channel cannot be linked with itself)
Input value for input 2	*See above, Input value for input 1*	Second input object of channel See above.
Input value for input 3	*See above, Input value for input 1*	Third input object of channel See above.
Input value for input 4	*See above, Input value for input 1*	Fourth input object of channel See above.

(1) With C18 not available, (2) With C19 not available, (3) With C20 not available
(4) With C21 not available, (5) With C22 not available, (6) With C23 not available

3.3.2.13 The "*Objects*" parameter pages

All universal, threshold and logic channels have this type of parameter page.
The reaction here is configured on fulfillment or non-fulfillment of the conditions.

Table 2

<table>
<tr><th>Designation</th><th>Values</th><th>Description</th></tr>
<tr><td>Telegram type C18.1</td><td>Switching command

Priority

value</td><td>1 bit ON/OFF

2-bit
<table><tr><th>Function</th><th>value</th></tr><tr><td>Priority inactive (no control)</td><td>0 (00_{bin})</td></tr><tr><td>Priority ON
Priority ON (control: enable, on)</td><td>3 (11_{bin})</td></tr><tr><td>Priority OFF (control: disable, off)</td><td>2 (10_{bin})</td></tr></table>1-byte 0 ... 255</td></tr>
<tr><td>If the condition is met</td><td>no telegram
send following telegram once
send cyclically</td><td>Send behaviour if the channel condition has been fulfilled, i.e. link result = 1</td></tr>
<tr><td>Telegram</td><td>
ON
OFF
no priority
priority, ON (down)
priority, OFF (up)
Telegram 0 ... 255</td><td>Type of telegram for the first channel output object with fulfilled condition:
For telegram type Switching command

For telegram type Priority

For telegram type Value</td></tr>
<tr><td>If the condition is not met</td><td>no telegram
send following telegram once
send cyclically</td><td>Send behaviour if the channel condition has not been fulfilled, i.e. link result = 0</td></tr>
<tr><td>Telegram</td><td>

ON
OFF
no priority
priority, ON (down)
priority, OFF (up)
Telegram 0 .. 255</td><td>Type of telegram for the first channel output object without fulfilled condition:
For telegram type Switching command

For telegram type Priority

For telegram type Value</td></tr>
</table>

Continuation:

<table>
<tr><th>Designation</th><th>Values</th><th>Description</th></tr>
<tr><td>Should a second telegram be sent?</td><td>Yes
no</td><td>If yes has been selected, further parameters and a second transmission object appear.
It can be used to send 2 different telegrams at the same time on the same channel.
The cycle time and the disabling behaviour are apply to both objects.</td></tr>
<tr><td>Telegram type C18.2</td><td>Switching command

Priority

value</td><td>Second output object on channel
1 bit ON/OFF

2-bit
<table><tr><th>Function</th><th>value</th></tr><tr><td>Priority inactive (no control)</td><td>0 (00_{bin})</td></tr><tr><td>Priority ON
Priority ON (control: enable, on)</td><td>3 (11_{bin})</td></tr><tr><td>Priority OFF (control: disable, off)</td><td>2 (10_{bin})</td></tr></table>1-byte 0 ... 255</td></tr>
<tr><td>If the condition is met</td><td>no telegram
send following telegram once
send cyclically</td><td>Send behaviour if the channel condition has been fulfilled.</td></tr>
<tr><td>Telegram</td><td>
ON
OFF
no priority
priority, ON (down)
priority, OFF (up)
Telegram 0 ... 255</td><td>Type of telegram for the second channel output object with fulfilled condition:
For telegram type Switching command

For telegram type Priority

For telegram type Value</td></tr>
<tr><td>If the condition is not met</td><td>no telegram
send following telegram once
send cyclically</td><td>Send behaviour if the channel condition has not been fulfilled.</td></tr>
<tr><td>Telegram</td><td>

ON
OFF
no priority
priority, ON (down)
priority, OFF (up)
Telegram 0 .. 255</td><td>Type of telegram for the second channel output object without fulfilled condition:
For telegram type Switching command

For telegram type Priority

For telegram type Value</td></tr>
</table>

Continuation:

Designation	Values	Description
Activate lock function	*Yes*	Show disable parameter and disable object
	no	No disable function
Behaviour when setting the disable function	***do not send***	No telegrams while the disable object is set.
	as with unfulfilled condition	Same reaction as set in the *When the condition has not been fulfilled* parameter (see above).
	as with fulfilled condition	Same reaction as set in the *When the condition has been fulfilled* parameter (see above).
Behaviour when cancelling the disable setting Behaviour when cancelling the disable setting	*Do not send*	Not automatically resent when the disable setting is cancelled
	update channel	The current channel status is sent immediately as soon as the disable setting is cancelled.
Cycle time (if used)	*do not send cyclically* *every min* *every 2 min* *every 3 min* *every 5 min* *every 10 min* *every 15 min* *every 20 min* *every 30 min* *every 45 min* ***every 60 min***	How often should the telegrams for CX.1 and CX.2 be sent?
Telegram after reset or download	*Do not send any longer as with unfulfilled condition, as with fulfilled condition*	Reaction of channel with new start.

4 Typical applications

These typical applications are designed to aid planning and are not to be considered as an exhaustive list.
It can be extended and updated as required.

4.1 Simple shading control

A facade with a number of blinds should be controlled using the following functions:

- Raise at dawn (if lowered manually).
- Lower blinds and set slats to configured position when the preset brightness threshold is reached.
- Raise all blinds at dusk as well.
- A safety telegram is sent to the actuator in the event of potential frost or storms. This raises the blinds and prevents unintentional movement as long as the safety hazard applies.
- Cyclical monitoring of the safety object in the blinds actuator.

4.1.1 Devices:

- Meteodata 140 S (1409207)
- JMG 4 S (4910250)

4.1.2 Overview

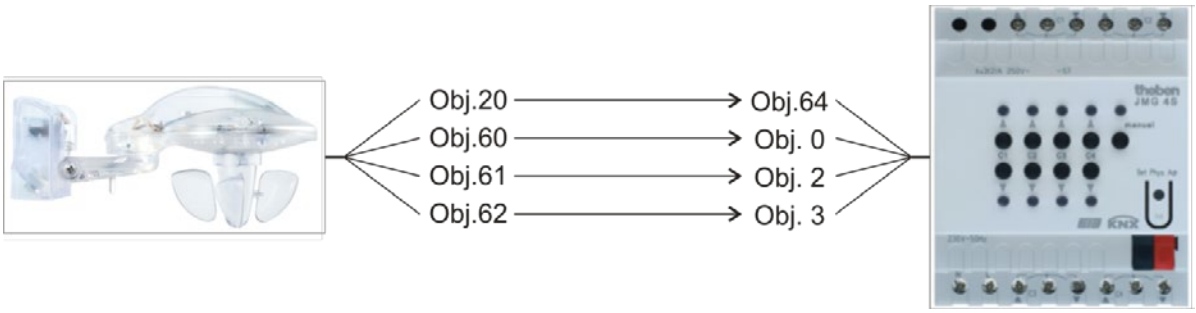


Figure 1

4.1.3 Objects and links

Table 7

No.	Meteodata 140 S Object name	No.	JMG 4 S Object name	Comment
20	*C1.1 Switching universal channel*	64	*Central safety 1*	-
60	*C11 Drives up/down*	0	*C1 – Up / down*	-
61	*C11 Blinds height*	2	*C1 - % height*	-
62	*C11 lamella*	3	*% Slats*	-

4.1.4 Important parameter settings

Standard or customer-defined parameter settings apply for unlisted parameters.

Table 8: Meteodata 140 S

Parameter page	Parameter	Setting
Universal channel 1: Function	*Channel function*	*Link of the following sensors*
	Brightness	*no*
	Temperature	*yes*
	Wind	*yes*
	Rain	*no*
	Type of link	*OR*
	Temperature	*below 3 °C*
	Temperature hysteresis	*1.0 °C*
	Wind speed	*Over 14 m/s (approx. 50 km/h)*
objects	*Telegram type C1.1*	*switching command*
	If all conditions are met	*send cyclically*
	Telegram	*ON*
	If not all conditions are met	*send cyclically*
	Telegram	*OFF*
	Cycle time (if used)	*Every 10 minutes*
	Telegram with recognised sensor error	*do not send anymore*
Sun protection channel C11	*Channel controls*	*Blinds*
	Sun position adjustment	*no*
	Source for brightness measurement	*Sensor front*
Sun control	*Activation of sun control*	*via dawn/dusk threshold*
	Reaction to dawn	*Raise & sun control ON*
	Reaction to dusk	*Sun control OFF and raise*
Safety	*Safety check triggered by*	*condition: C1*
	Reaction to safety beginning	*no reaction*
	Reaction to safety end	*Update position*

Table 9: JMG 4 S

Parameter page	Parameter	Setting
General	*Type of basic module*	*GM is a JMG 4 S*
JMG 4 S general	*Safety objects 1-3*	*With cyclical monitoring 20 min*
GM JMG 4 S C1	*Type of curtain*	*Blinds*
	Runtime completely up	(depending on type of blinds)
	Complete turn of slat	(depending on type of blinds)
	Which safety objects function (OR-linked)	*Safety 1*
	Response in the event of bus failure	*Top end position*

4.2 Shading control with sun position adjustment

Blinds are to be controlled depending on position of the sun.
A safety telegram is sent to the actuator by the universal channel C1 in the event of potential frost or storms. The actuator safety object is monitored cyclically.

Facade direction: East 90°
Desired sun protection area (user-specific):
Before the facade = -40°, after the facade = 70° (see attachment: Asymmetrical sun protection area).
Minimum elevation= 10°, maximum elevation = 90° (i.e. unlimited.)
Blinds slat width = 80 mm, spacing 65 mm.

4.2.1 Devices:

- Meteodata 140 S (1409207)
- JMG 4 S (4910250)

4.2.2 Overview

Figure 2

4.2.3 Objects and links

Table 10

No.	Meteodata 140 S Object name	No.	JMG 4 S Object name	Comment
20	*C1.1 Switching universal channel*	64	*Central safety 1*	-
60	*C11 Drives up/down*	0	*C1 – Up / down*	-
61	*C11 Blinds height*	2	*C1 - % height*	-

4.2.4 Important parameter settings

Standard or customer-defined parameter settings apply for unlisted parameters.

Table 11: Meteodata 140 S

Parameter page	Parameter	Setting
Universal channel 1: Function	*Channel function*	*Link of the following sensors*
	Brightness	*no*
	Temperature	*yes*
	Wind	*yes*
	Rain	*no*
	Type of link	*OR*
	Temperature	*Below 3 °C*
	Temperature hysteresis	*1.0 °C*
	Wind speed	*Over 14 m/s (approx. 50 km/h)*
objects	*Telegram type C1.1*	*switching command*
	If all conditions are met	*send cyclically*
	Telegram	*ON*
	If not all conditions are met	*send cyclically*
	Telegram	*OFF*
	Cycle time (if used)	*Every 10 minutes*
	Telegram with recognised sensor error	*do not send anymore*
Sun protection channel C11	*Channel controls*	*Blinds*
	Sun position adjustment	*yes*
	Source for brightness measurement	*Maximum value of the 3 sensors*
Sun position adjustment	*Facade direction*	*east 90°*
	in front of the direction of the facade	*-40*
	After the direction of the facade	*70*
	Min. elevation (sun position over the horizon, 0..90°)	*10*
	And max. elevation (0..90°)	*90*
	Reposition every	*10 degrees*
	Calculation of slat position	*Automatic via slat dimensions*
	Spacing of slats in mm	*65*
	Width of slats in mm	*80*

Continuation:

Parameter page	Parameter	Setting
Sun control	*Activation of sun control*	*Via dawn/dusk threshold*
	Reaction to dusk	*Sun control off and raise*
Safety	*Safety check triggered by*	*condition: C1*
	Reaction to safety beginning	*No response**
	Reaction to safety end	*Update position*

* Safety response is assumed by actuator.

Table 12: JMG 4 S

Parameter page	Parameter	Setting
General	*Type of basic module*	*GM is a JMG 4 S*
JMG 4 S general	*Safety objects 1-3*	*With cyclical monitoring 20 min*
GM JMG 4 S C1	*Type of curtain*	*Blinds*
	Runtime completely up	(depending on type of blinds)
	Complete turn of slat	(depending on type of blinds)
	Which safety objects function (OR-linked)	*Safety 1*
	Response in the event of bus failure	*Top end position*

4.3 Guttering heating

A heating strip mounted on the guttering should be switched on if there is risk of frost

4.3.1 Devices:

- Meteodata 140 S (1409207)
- RMG 8 S

4.3.2 Overview

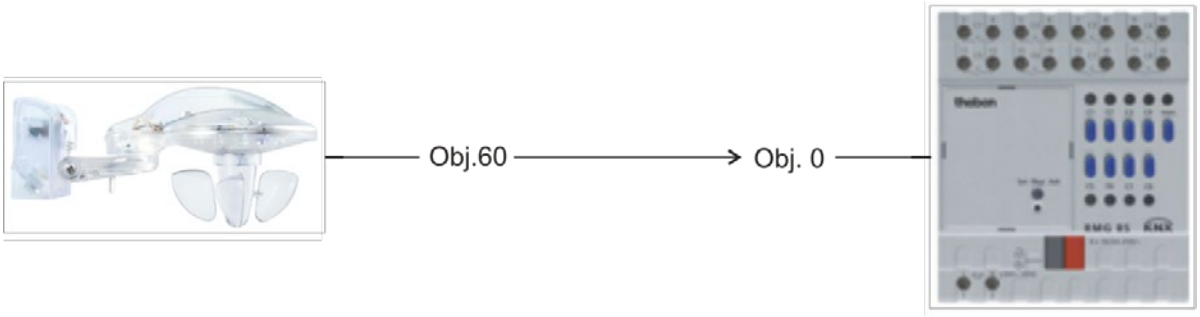


Figure 3

4.3.3 Objects and links

Table 13

No.	Meteodata 140 S	No.	RMG 8 S	Comment
	Object name		Object name	
20	*C1.1 Switching universal channel*	0	*RMG 8 S channel C1 switching object*	-

4.3.4 Important parameter settings

Standard or customer-defined parameter settings apply for unlisted parameters.

Table 14: Meteodata 140 S

Parameter page	Parameter	Setting
Universal channel 1: Function	*Channel function*	*temperature sensor*
	Temperature	*Below 3 °C*
	Temperature hysteresis	*1,0 K*
objects	*Telegram type C1.1*	*switching command*
	If all conditions are met	*send cyclically*
	Telegram	*ON*
	If not all conditions are met	*send cyclically*
	Telegram	*OFF*
	Cycle time (if used)	*Every 60 minutes*
Sun protection channel C11	*Channel controls*	*Blinds*
	Sun position adjustment	*yes*
	Source for brightness measurement	*Sensor front*
Sun position adjustment	*Facade direction*	*east 90°*
	in front of the direction of the facade	*-40*
	After the direction of the facade	*70*
	Min. elevation (sun position over the horizon, 0..90°)	*10*
	And max. elevation (0..90°)	*90*
	Reposition every	*10 degrees*
	Calculation of slat position	*Automatic via slat dimensions*
	Spacing of slats in mm	*65*
	Width of slats in mm	*80*
Sun control	*Activation of sun control*	*Via dawn/dusk threshold*
	Reaction to dusk	*Sun control off and raise*
Safety	*Safety check triggered by*	*condition: C1*
	Reaction to safety beginning	*No response**
	Reaction to safety end	*Update position*

* Safety response is assumed by actuator.

Table 15: RMG 8 S

Parameter page	Parameter	Setting
General	*Type of basic module*	*RMG 8 S*
RMG 8 S channel C1 function selection	*Channel function*	*Switching On/Off*
	Activation of function via	*Switching object*
Contact characteristics	*Type of contact*	*NO contact*

5 Appendix

5.1 Brightness sensors

The Meteodata 140 has 3 installed brightness sensors.
These are described in the ETS application software as *Sensor front*, *Sensor left* and *Sensor right*.
These designations comply with frontal view of device, in accordance with the following diagram:

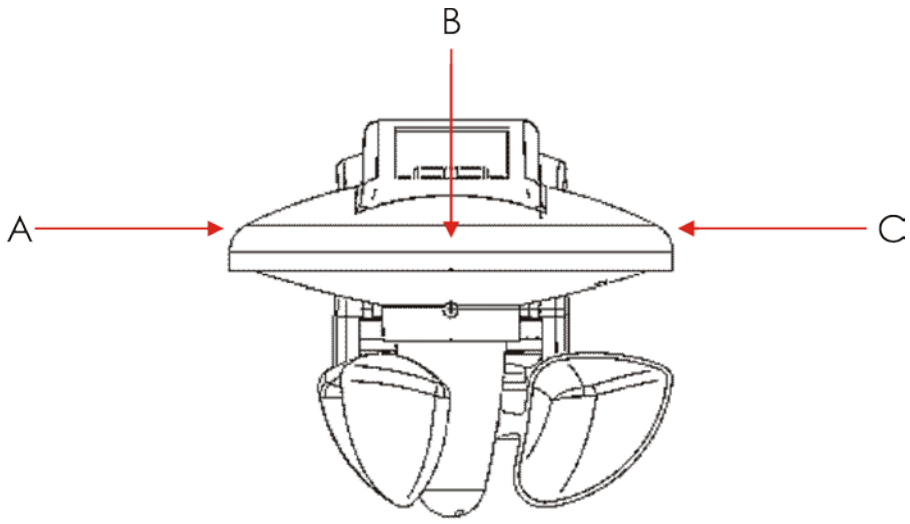


Figure 4: Brightness sensors.

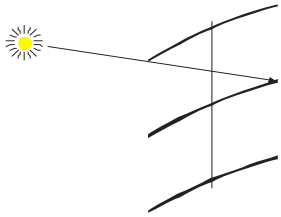
Key:

A	Sensor left
B	Sensor front
C	Sensor right

5.2 Sun position adjustment

The sun position adjustment controls the slats of the blinds or the shutter/awning height according to the actual position of the sun in the sky.

The slats are always positioned so that the sunlight cannot shine through while the room is still kept as light as possible (no lighting required).



Date, time and the geographical location data are required for this function.

5.3 Azimuth and the course of the sun

Azimuth: Here, horizontal angle of the sun in the sky at a specific point in time.
Course of the sun: Path that the sun takes through the sky between sunrise and sunset.

Example Stuttgart (approx. 48°47' N, 9°11' E):

Table 2

Date	Azimuth at		Complete course of the sun
	Sunrise	Sunset	
21. December	125°57´	234°03´	108° 6´
21. March	88°46´	271°14´	182°28´
21. June	51°40´	308°20´	256°40´

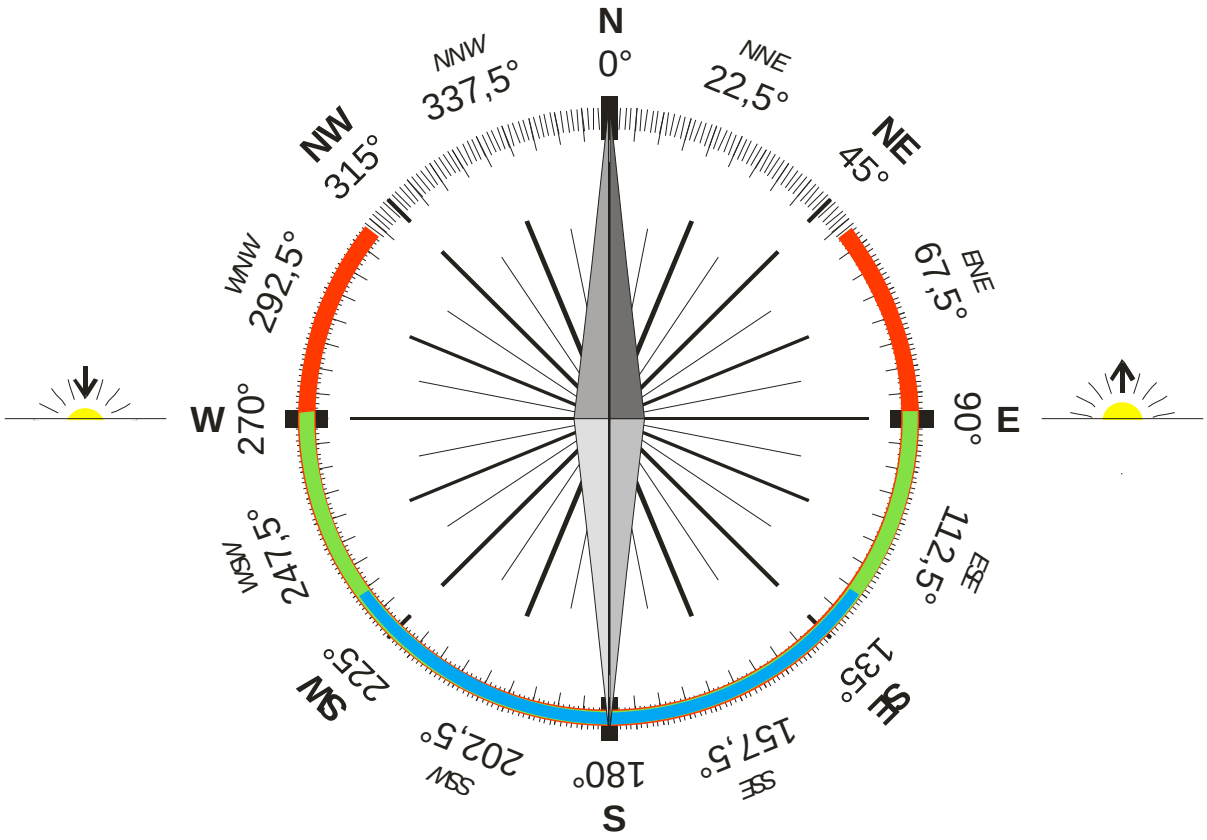


Figure 5

5.4 Elevation

Angle of elevation of the sun over the horizon at a certain point in time.

Example of Stuttgart:

Table 16: Maximum elevation in Stuttgart

Date/time	Elevation
21. December / 12:21	**17°47'**
21. March / 12:31	**41°24'**
21. June / 13:25*	**64°40'**

*Summer time

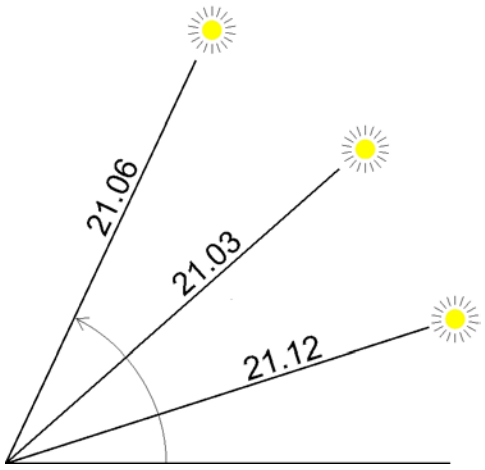


Figure 6: Maximum elevation in Stuttgart

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 21 June (for a location north of the Tropic of Cancer).

In simplified terms, this position of the sun can be calculated with the following formula:

Maximum possible elevation ≈ 113.43° - latitude of location.

Example of Hamburg:
Latitude approx. 53° 32´ N (= 53.53333°)

Maximum possible elevation = 113.43° - 53.53°
= 59.89° (i.e. approx. 59°53‘)

5.5 Facade direction

Alignment of the facade to be shaded, i.e the direction an observer is looking at if he looks straight out of the window.

The direction can be read with a compass (point needle straight to the north) or consult an architect.

Example: South east 135°.

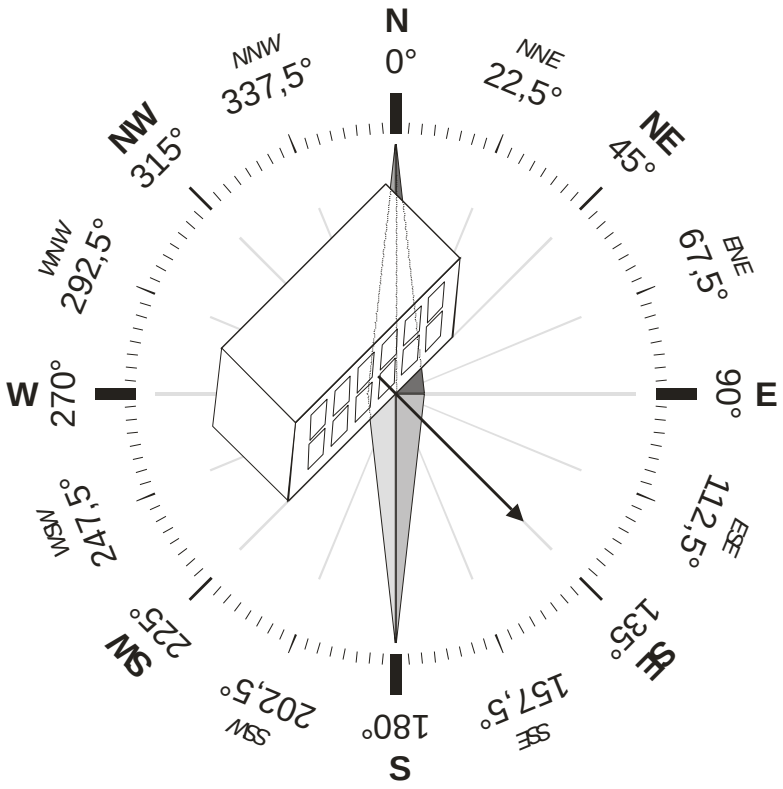


Figure 7

5.6 Sun protection area

The sun describes the sector of a circle in front of the facade, which can be up to 180° depending on the location, the alignment of the building and the season.

The sun protection area is the section of the course of the sun in front of the facade where shading is desired.
This area covers an angle of up to 180°.

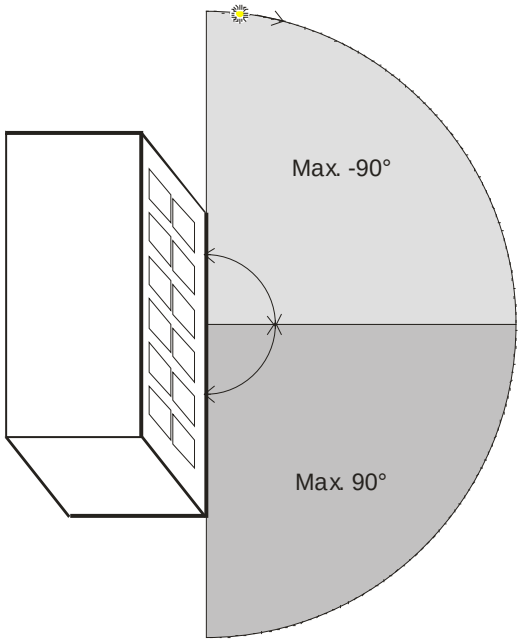


Figure 8

This angle is sub-divided into two 90° zones:
The left zone (light grey) is defined with a negative angle (0 to -90°).
The right zone (dark grey) with a positive angle (0 to 90°)

These zones are configured with the parameters:

In front of the facade = Zone where the sun first appears (for an observer in the room). North of the Tropic of Cancer (Europe, North America, Russia etc.) is always the left zone (light grey).
After the facade = Second zone that the sun crosses before later leaving the facade. North of the Tropic of Cancer (Europe, North America, Russia etc.) this is always the right zone (dark grey).

5.7 Examples for determining the sun protection area

The biggest possible sun protection area is achieved with the following values:
- In front of the facade = -90°,
- After the facade = 90°,

Only shading the left area:
- In front of the facade = -90°,
- After the facade = 0°

Only shading the right area:
- In front of the facade = 0°,
- After the facade = 90°,

The targeted setting of the *in front of/after the facade* parameter enables the exact adoption of the desired sun protection area.
- Entering 0° for a zone means this section will not be shaded.
- A positive angle allocation for the left zone also reduces the right zone.
- A negative angle allocation for the right zone also reduces the left zone.

5.7.1 Asymmetrical sun protection area

- In front of the facade = -40°,
- After the facade = 70°

The sun protection area should cover 110°, split into 40° on the left and 70° on the right zone.

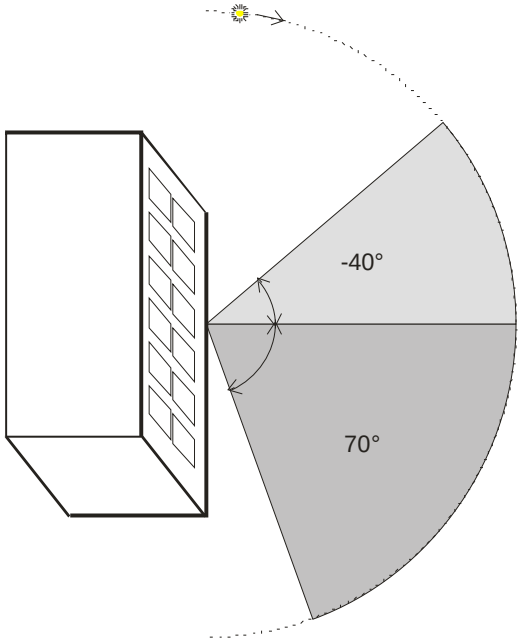


Figure 9:

5.7.2 Unilateral sun protection area in the left zone

- In front of the facade = -70°,
- After the facade = -15°

Only the left zone should be shaded in part.
The entry of the negative number in the *after the facade* parameter reduces the sun protection area by 15° to the left.

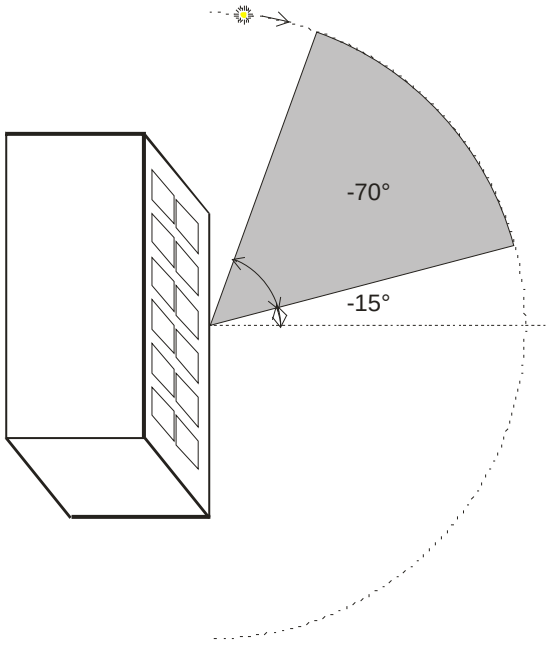


Figure 10:

5.7.3 Unilateral sun protection area in the right zone

- In front of the facade = 10°,
- After the facade = 50°

Only the left zone should be shaded in part.
The entry of the positive number in the *in front of the facade* parameter reduces the sun protection area by 10° to the right.

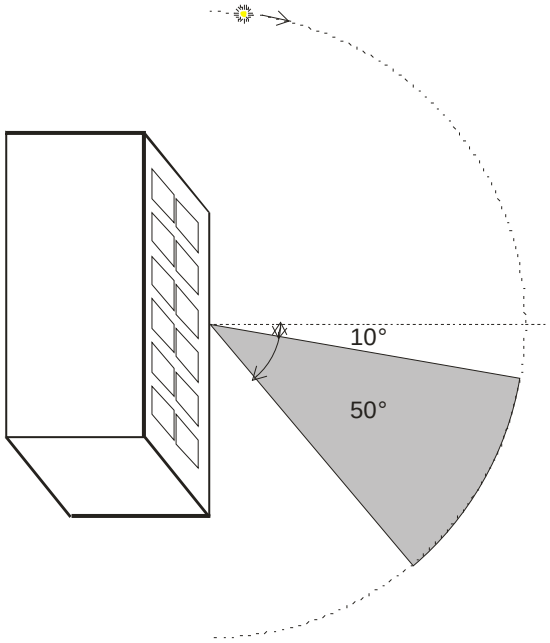


Figure 11:

5.8 Special case: Location south of the Tropic of Cancer.

The following conditions must be observed south of the Tropic of Cancer (e.g. South Africa):

- **The *in front of the facade* parameter applies to the right zone → POSITIVE angle**
- **The after the facade parameter applies to the left zone → NEGATIVE angle**

Here, the biggest possible sun protection area is achieved with the following values:
- In front of the facade = 90°,
- After the facade = -90°

Only shading the left area:
- In front of the facade = 0°,
- After the facade = -90°

Only shading the right area:
- In front of the facade = 90°,
- After the facade = 0°

The correct shading function is only possible if these parameters are correctly entered.

5.9 The Beaufort wind force scale

Figure 12

Strength	Designation	Effect: on land
0	Calm	No air flow, smoke rises vertically
1	Quiet draw	Hardly noticeable, smoke disperses easily, weather and wind vanes stand still
2	Light breeze	Leaves rustle, wind can be felt on the face
3	Gentle breeze	Leaves and thin twigs move, flags unfurl
4	Medium breeze	Branches move, scraps of paper are lifted off the ground
5	Fresh breeze	Bigger branches and trees move, wind is clearly audible
6	Strong wind	Thick branches move, audible whistling of wires, telephone lines
7	Stiff wind	Trees shake, feel resistance walking into wind
8	Stormy wind	Big trees move, window shutters are opened, branches break off trees, great difficulty walking
9	Storm	Branches break, minor damage to houses, tiles and chimney pots are lifted off roofs, garden furniture is blown over, great difficulty in walking
10	Heavy storm	Trees are uprooted, tree trunks break, garden furniture is blown away, more serious damage to houses, rarely in the interior
11	Hurricane force storm	Violent gusts, major storm damage, major damage to forests (Windfall), roofs are torn off, cars are thrown off the road, thick walls are damaged, walking is impossible, very rarely in interior.
12	Hurricane	Heaviest storm damage and devastation, very rarely in interior

Source: Wikipedia.