KNX manual
8-channel yearly timer
TR 648 top3 RC KNX



Device designation	Order number
TR 648 top3 RC KNX	6489130

theben

Contents

1 Functional characteristics 3
1.1 Special features 3
2 Technical data 4
2.1 Technical data TR 648 top3 RC KNX 4
3 The application program TR 648 top3 RC KNX 5
3.1 Selection in the product database 5
3.2 Overview of communication objects 6
3.3 Description of communication objects 15
3.4 Parameter pages overview 27
3.5 General parameter page 28
3.6 Date and time parameter page 30
3.7 Time channel parameter page 31
3.8 Threshold channel parameter page 38
3.9 Logic channel parameter page 45
4 Typical application example 51
4.1 8 channel switching 51

1 Functional characteristics

- 8 time-channels
- 4 threshold channels
- 6 logic channels (AND, OR, XOR)
- 800 Switching times
- Daily, weekly and yearly program
- 16 special programs including Continuous on/Continuous off selectable via object
- 2 random programs
- Astronomical switching program
- On/Off switching times, pulse program, cycle program
- Automatic summertime/wintertime changeover
- Text-based user guidance
- Bluetooth

1.1 Special features

- Can also be programmed via Bluetooth by the operator without mains voltage.
- Upward compatible: Settings and switching programs can be copied via Obelisk stick between the top2 and the top3 annual clock. Both top2 and top3 Obelisk memory cards can be used.
- Programming without accessories on the device or via app (Android, IOS, PC) via Bluetooth
- Programming via a Windows PC using the "OBELISK top3" software and the Obelisk PC adapter (9070409).
- Time synchronization via connection of a DCF, GNSS antenna or via KNX bus. (The clock can also be used as a time signal transmitter).
- 10-year power reserve
- Each channel can be operated either with time switch function or with astro function.
- Two sending objects per channel
- Support of KNX DATA Secure
- Device firmware can be updated via the Theben ETS Update app
- 4 threshold channels with delay with falling below and exceeding.
- 6 logic channels with 4 input objects + internal link that can be configured with status of the time switch and threshold channels.

2 Technical data

2.1 Technical data TR 648 top3 RC KNX

KNX operating voltage	Bus voltage, ≤10 mA
Operating voltage	110-240 V AC
Frequency	50 – 60 Hz
Power consumption	Type 0.9 W
Standby output	0.45 W
Power reserve	10 years
Width	3 HP
Type of connection	KNX bus terminal
Max. cable cross-section	2.5 mm²
Type of installation	DIN rail
Number of channels	8
Number of memory locations	800
Time basis	Quartz
Time accuracy 25°C	≤ ± 0.25 s/day (Quartz) or DCF77/GNSS
Shortest switching time	1 s
Display	LCD
Ambient temperature	-5°C ... +45°C
Protection rating	IP 20 when installed
Protection class	II
Radio frequency/transmission power	BLE 2402 ... 2480 MHz/–4.4 dBm Range open field: 40 m

3 The application program TR 648 top3 RC KNX

3.1 Selection in the product database

Manufacturer	Theben AG
Product family	Time switches
Product type	8-channel yearly timer TR 648 top3 RC KNX
Programme names	TR 648 top3 RC KNX V1.0

Number of communication objects	127
Number of group addresses	254
Number of assignments	255

ⓘ The ETS database can be found in the ETS online catalogue and on our website:
https://www.theben.de/en/downloads/

ⓘ Recommended ETS version: ETS 5.7.5 or higher.

3.2 Overview of communication objects

3.2.1 Date and time

No.	Object name	Function	Length	Flags	DPT
1	*Central - Time - Send*	*Local time*	3 bytes	RCT	10.001
1	*Central - Time - Receive*	*Local time*	3 bytes	WC	10.001
2	*Central - Date - Send*	*Local date*	3 bytes	RCT	11.001
2	*Central - Date - Receive*	*Local date*	3 bytes	WC	11.001
3	*Central - Time and date - Send*	*Local time and date*	8 bytes	RCT	19.001
3	*Central - Time and date - Receive*	*Local time and date*	8 bytes	WC	19.001
4	*Central - Time - Send*	*UTC time*	3 bytes	RCT	10.001
4	*Central - Time - Receive*	*UTC time*	3 bytes	WC	10.001
5	*Central - Date - Send*	*UTC date*	3 bytes	RCT	11.001
5	*Central - Date - Receive*	*UTC date*	3 bytes	WC	11.001
6	*Central - Time and date - Send*	*UTC time and UTC date*	8 bytes	RCT	19.001
6	*Central - Time and date - Receive*	*UTC time and UTC date*	8 bytes	WC	19.001
7	*Central - Time query - Send*	*Time query*	1 bit	RCT	1.017
7	*Central - Time query - Receive*	*Time query*	1 bit	WC	1.017
8	*Central - Error - Send*	*Auxiliary voltage/antenna error*	1 bit	RCT	1.002
9	*Central - Error - Send*	*Time synchronisation error*	1 bit	RCT	1.002

3.2.2 Time channels F1 - F8

No.	Object name	Function	Length	Flags	DPT
10	*F1 - Time channel - Receive*	*Block = 1*	1 bit	WC	1.003
10	*F1 - Time channel - Receive*	*Lock = 0*	1 bit	WC	1.003
11	*F1 - Time channel - Output object 1 - Send*	*Switch*	1 bit	RCT	1.001
11	*F1 - Time channel - Output object 1 - Send*	*Priority*	2 bits	RCT	2.001
11	*F1 - Time channel - Output object 1 - Send*	*Percentage value*	1 byte	RCT	5.001
11	*F1 - Time channel - Output object 1 - Send*	*Value (0-255)*	1 byte	RCT	5.010
11	*F1 - Time channel - Output object 1 - Send*	*Colour temperature (K)*	2 bytes	RCT	7,600
11	*F1 - Time channel - Output object 1 - Send*	*Temperature [°C]*	2 bytes	RCT	9.001
11	*F1 - Time channel - Output object 1 - Send*	*Scene number*	1 byte	RCT	17.001
11	*F1 - Time channel - Output object 1 - Send*	*HVAC operating mode*	1 byte	RCT	20.102
11	*F1 - Time channel - Output object 1 - Send*	*Colour (RGB)*	3 bytes	RCT	232,600
11	*F1 - Time channel - Output object 1 - Send*	*Colour (XY)*	6 bytes	RCT	242,600
11	*F1 - Time channel - Output object 1 - Send*	*Colour (RGBW)*	6 bytes	RCT	251.600
11	*F1 - Time channel - Output object 1 - Send*	*1 bit*	1 bit	RCT	1.*
11	*F1 - Time channel - Output object 1 - Send*	*Priority*	2 bits	RCT	2.*
11	*F1 - Time channel - Output object 1 - Send*	*1 byte unsigned*	1 byte	RCT	5.*
11	*F1 - Time channel - Output object 1 - Send*	*2 bytes unsigned*	2 bytes	RCT	7.*
11	*F1 - Time channel - Output object 1 - Send*	*2 bytes signed*	2 bytes	RCT	8.*
11	*F1 - Time channel - Output object 1 - Send*	*2 bytes signed*	2 bytes	RCT	9.*
11	*F1 - Time channel - Output object 1 - Send*	*4 bytes unsigned*	4 bytes	RCT	12.*
11	*F1 - Time channel - Output object 1 - Send*	*4 bytes signed*	4 bytes	RCT	13.*
11	*F1 - Time channel - Output object 1 - Send*	*4 bytes signed*	4 bytes	RCT	14.*
12	*F1 - Time channel - Output object 2 - Send*	*Switch*	1 bit	RCT	1.001
12	*F1 - Time channel - Output object 2 - Send*	*Priority*	2 bits	RCT	2.001
12	*F1 - Time channel - Output object 2 - Send*	*Percentage value*	1 byte	RCT	5.001
12	*F1 - Time channel - Output object 2 - Send*	*Value (0-255)*	1 byte	RCT	5.010
12	*F1 - Time channel - Output object 2 - Send*	*Colour temperature (K)*	2 bytes	RCT	7,600
12	*F1 - Time channel - Output object 2 - Send*	*Temperature [°C]*	2 bytes	RCT	9.001
12	*F1 - Time channel - Output object 2 - Send*	*Scene number*	1 byte	RCT	17.001
12	*F1 - Time channel - Output object 2 - Send*	*HVAC operating mode*	1 byte	RCT	20.102
12	*F1 - Time channel - Output object 2 - Send*	*Colour (RGB)*	3 bytes	RCT	232,600
12	*F1 - Time channel - Output object 2 - Send*	*Colour (XY)*	6 bytes	RCT	242,600
12	*F1 - Time channel - Output object 2 - Send*	*Colour (RGBW)*	6 bytes	RCT	251.600
12	*F1 - Time channel - Output object 2 - Send*	*1 bit*	1 bit	RCT	1.*
12	*F1 - Time channel - Output object 2 - Send*	*Priority*	2 bits	RCT	2.*
12	*F1 - Time channel - Output object 2 - Send*	*1 byte unsigned*	1 byte	RCT	5.*
12	*F1 - Time channel - Output object 2 - Send*	*2 bytes unsigned*	2 bytes	RCT	7.*
12	*F1 - Time channel - Output object 2 - Send*	*2 bytes signed*	2 bytes	RCT	8.*
12	*F1 - Time channel - Output object 2 - Send*	*2 bytes signed*	2 bytes	RCT	9.*
12	*F1 - Time channel - Output object 2 - Send*	*4 bytes unsigned*	4 bytes	RCT	12.*
12	*F1 - Time channel - Output object 2 - Send*	*4 bytes signed*	4 bytes	RCT	13.*
12	*F1 - Time channel - Output object 2 - Send*	*4 bytes signed*	4 bytes	RCT	14.*

No.	Object name	Function	Length	Flags	DPT
13	*F1 - Time channel - Receive*	*Special program*	1 byte	WC	5.010
14	*F1 - Time channel - Send*	*Time to service*	2 bytes	RCT	7.007
14	*F1 - Time channel - Send*	*Time to service*	4 bytes	RCT	12.102
14	*F1 - Time channel - Send*	*Time to service*	4 bytes	RCT	13,100
14	*F1 - Time channel - Send*	*Operating hours feedback*	2 bytes	RCT	7.007
14	*F1 - Time channel - Send*	*Operating hours feedback*	4 bytes	RCT	12.102
14	*F1 - Time channel - Send*	*Operating hours feedback*	4 bytes	RCT	13,100
15	*F1 - Time channel - Send*	*Service required*	1 bit	RCT	1.001
16	*F1 - Time channel - Receive*	*Restarting the service interval*	1 bit	WC	1.017
16	*F1 - Time channel - Receive*	*Restart the elapsed-time counter*	1 bit	WC	1.017
20-86	Time channels F2 – F8 (for details see time channel F1)				

Objects for the time channels:

F1	F2	F3	F4	F5	F6	F7	F8
10	20	30	40	50	60	70	80
11	21	31	41	51	61	71	81
12	22	32	42	52	62	72	82
13	23	33	43	53	63	73	83
14	24	34	44	54	64	74	84
15	25	35	45	55	65	75	85
16	26	36	46	56	66	76	86

3.2.3 Threshold channels F9 - F12

No.	Object name	Function	Length	Flags	DPT
100	F9 - Threshold channel - Value - Receive	Percentage value	1 byte	WC	5.001
100	F9 - Threshold channel - Value - Receive	Value (0-255)	1 byte	WC	5.010
100	F9 - Threshold channel - Value - Receive	2 bytes unsigned	4 bytes	WC	7.001
100	F9 - Threshold channel - Value - Receive	Colour temperature (K)	2 bytes	WC	7,600
100	F9 - Threshold channel - Value - Receive	Temperature [°C]	2 bytes	WC	9.001
100	F9 - Threshold channel - Value - Receive	1 byte unsigned	1 byte	WC	5.*
100	F9 - Threshold channel - Value - Receive	2 bytes signed	2 bytes	WC	8.*
100	F9 - Threshold channel - Value - Receive	2 bytes signed	2 bytes	WC	9.*
100	F9 - Threshold channel - Value - Receive	4 bytes unsigned	4 bytes	WC	12.*
100	F9 - Threshold channel - Value - Receive	4 bytes signed	4 bytes	WC	13.*
100	F9 - Threshold channel - Value - Receive	4 bytes signed	4 bytes	WC	14.*
101	F9 - Threshold channel - Set threshold - Receive	Percentage value	1 byte	WC	5.001
101	F9 - Threshold channel - Set threshold - Receive	(0-255)	1 byte	WC	5.010
101	F9 - Threshold channel - Set threshold - Receive	2 bytes unsigned	4 bytes	WC	7.001
101	F9 - Threshold channel - Set threshold - Receive	Colour temperature (K)	2 bytes	WC	7.600
101	F9 - Threshold channel - Set threshold - Receive	Temperature (°C)	2 bytes	WC	9.001
101	F9 - Threshold channel - Set threshold - Receive	1 byte unsigned	1 byte	WC	5.*
101	F9 - Threshold channel - Set threshold - Receive	2 bytes signed	2 bytes	WC	8.*
101	F9 - Threshold channel - Set threshold - Receive	2 bytes signed	2 bytes	WC	9.*
101	F9 - Threshold channel - Set threshold - Receive	4 bytes unsigned	4 bytes	WC	12.*
101	F9 - Threshold channel - Set threshold - Receive	4 bytes signed	4 bytes	WC	13.*
101	F9 - Threshold channel - Set threshold - Receive	4 bytes signed	4 bytes	WC	14.*
102	F9 - Threshold channel - Receive	Lock = 1	1 bit	WC	1.003
102	F9 - Threshold channel - Receive	Lock = 0	1 bit	WC	1.003
103	F9 - Threshold channel - Output object 1 - Send	Switch	1 bit	RCT	1.001
103	F9 - Threshold channel - Output object 1 - Send	Priority	2 bits	RCT	2.001
103	F9 - Threshold channel - Output object 1 - Send	Percentage value	1 byte	RCT	5.001
103	F9 - Threshold channel - Output object 1 - Send	Value (0-255)	1 byte	RCT	5.010
103	F9 - Threshold channel - Output object 1 - Send	Colour temperature (K)	2 bytes	RCT	7,600
103	F9 - Threshold channel - Output object 1 - Send	Temperature [°C]	2 bytes	RCT	9.001
103	F9 - Threshold channel - Output object 1 - Send	Scene number	1 byte	RCT	17.001

No.	Object name	Function	Length	Flags	DPT
103	F9 - Threshold channel - Output object 1 - Send	HVAC operating mode	1 byte	RCT	20.102
103	F9 - Threshold channel - Output object 1 - Send	Colour (RGB)	3 bytes	RCT	232,600
103	F9 - Threshold channel - Output object 1 - Send	Colour (XY)	6 bytes	RCT	242,600
103	F9 - Threshold channel - Output object 1 - Send	Colour (RGBW)	6 bytes	RCT	251,600
103	F9 - Threshold channel - Output object 1 - Send	1 bit	1 bit	RCT	1.*
103	F9 - Threshold channel - Output object 1 - Send	Priority	2 bits	RCT	2.*
103	F9 - Threshold channel - Output object 1 - Send	1 byte unsigned	1 byte	RCT	5.*
103	F9 - Threshold channel - Output object 1 - Send	2 bytes unsigned	2 bytes	RCT	7.*
103	F9 - Threshold channel - Output object 1 - Send	2 bytes signed	2 bytes	RCT	8.*
103	F9 - Threshold channel - Output object 1 - Send	2 bytes signed	2 bytes	RCT	9.*
103	F9 - Threshold channel - Output object 1 - Send	4 bytes unsigned	4 bytes	RCT	12.*
103	F9 - Threshold channel - Output object 1 - Send	4 bytes signed	4 bytes	RCT	13.*
103	F9 - Threshold channel - Output object 1 - Send	4 bytes signed	4 bytes	RCT	14.*
104	F9 - Threshold channel - Output object 2 - Send	Switch	1 bit	RCT	1.001
104	F9 - Threshold channel - Output object 2 - Send	Priority	2 bits	RCT	2.001
104	F9 - Threshold channel - Output object 2 - Send	Percentage value	1 byte	RCT	5.001
104	F9 - Threshold channel - Output object 2 - Send	Value (0-255)	1 byte	RCT	5.010
104	F9 - Threshold channel - Output object 2 - Send	Colour temperature (K)	2 bytes	RCT	7,600
104	F9 - Threshold channel - Output object 2 - Send	Temperature [°C]	2 bytes	RCT	9.001
104	F9 - Threshold channel - Output object 2 - Send	Scene number	1 byte	RCT	17.001
104	F9 - Threshold channel - Output object 2 - Send	HVAC operating mode	1 byte	RCT	20.102
104	F9 - Threshold channel - Output object 2 - Send	Colour (RGB)	3 bytes	RCT	232,600
104	F9 - Threshold channel - Output object 2 - Send	Colour (XY)	6 bytes	RCT	242,600
104	F9 - Threshold channel - Output object 2 - Send	Colour (RGBW)	6 bytes	RCT	251,600
104	F9 - Threshold channel - Output object 2 - Send	1 bit	1 bit	RCT	1.*
104	F9 - Threshold channel - Output object 2 - Send	Priority	2 bits	RCT	2.*
104	F9 - Threshold channel - Output object 2 - Send	1 byte unsigned	1 byte	RCT	5.*

No.	Object name	Function	Length	Flags	DPT
104	F9 - Threshold channel - Output object 2 - Send	2 bytes unsigned	2 bytes	RCT	7.*
104	F9 - Threshold channel - Output object 2 - Send	2 bytes signed	2 bytes	RCT	8.*
104	F9 - Threshold channel - Output object 2 - Send	2 bytes signed	2 bytes	RCT	9.*
104	F9 - Threshold channel - Output object 2 - Send	4 bytes unsigned	4 bytes	RCT	12.*
104	F9 - Threshold channel - Output object 2 - Send	4 bytes signed	4 bytes	RCT	13.*
104	F9 - Threshold channel - Output object 2 - Send	4 bytes signed	4 bytes	RCT	14.*
110 – 134	Threshold channels F10 – F12 (for details see threshold channel F9)				

Objects for the threshold channels:

F9	F10	F11	F12
100	110	120	130
101	111	121	131
102	112	122	132
103	113	123	133
104	114	124	134

3.2.4 Logic channel F13 - F18

No.	Object name	Function	Length	Flags	DPT
200	F13 - Logic channel - Receive	Logic input 1 in AND gate	1 bit	WC	1.002
200	F13 - Logic channel - Receive	Logic input 1 in OR gate	1 bit	WC	1.002
200	F13 - Logic channel - Receive	Logic input 1 in XOR gate	1 bit	WC	1.002
201	F13 - Logic channel - Receive	Logic input 2 in AND gate	1 bit	WC	1.002
201	F13 - Logic channel - Receive	Logic input 2 in OR gate	1 bit	WC	1.002
201	F13 - Logic channel - Receive	Logic input 2 in XOR gate	1 bit	WC	1.002
202	F13 - Logic channel - Receive	Logic input 3 in AND gate	1 bit	WC	1.002
202	F13 - Logic channel - Receive	Logic input 3 in OR gate	1 bit	WC	1.002
203	F13 - Logic channel - Receive	Logic input 4 in AND gate	1 bit	WC	1.002
203	F13 - Logic channel - Receive	Logic input 4 in OR gate	1 bit	WC	1.002
204	F13 - Logic channel - Receive	Lock = 1	1 bit	WC	1.003
204	F13 - Logic channel - Receive	Lock = 0	1 bit	WC	1.003
205	F13 - Logic channel - Output object 1 - Send	Switch	1 bit	RCT	1.001
205	F13 - Logic channel - Output object 1 - Send	Priority	2 bits	RCT	2.001
205	F13 - Logic channel - Output object 1 - Send	Percentage value	1 byte	RCT	5.001
205	F13 - Logic channel - Output object 1 - Send	Value (0-255)	1 byte	RCT	5.010
205	F13 - Logic channel - Output object 1 - Send	Colour temperature (K)	2 bytes	RCT	7,600
205	F13 - Logic channel - Output object 1 - Send	Temperature [°C]	2 bytes	RCT	9.001
205	F13 - Logic channel - Output object 1 - Send	Scene number	1 byte	RCT	17.001
205	F13 - Logic channel - Output object 1 - Send	HVAC operating mode	1 byte	RCT	20.102
205	F13 - Logic channel - Output object 1 - Send	Colour (RGB)	3 bytes	RCT	232,600
205	F13 - Logic channel - Output object 1 - Send	Colour (XY)	6 bytes	RCT	242,600
205	F13 - Logic channel - Output object 1 - Send	Colour (RGBW)	6 bytes	RCT	251,600
205	F13 - Logic channel - Output object 1 - Send	1 bit	1 bit	RCT	1.*
205	F13 - Logic channel - Output object 1 - Send	Priority	2 bits	RCT	2.*
205	F13 - Logic channel - Output object 1 - Send	1 byte unsigned	1 byte	RCT	5.*
205	F13 - Logic channel - Output object 1 - Send	2 bytes unsigned	2 bytes	RCT	7.*
205	F13 - Logic channel - Output object 1 - Send	2 bytes signed	2 bytes	RCT	8.*
205	F13 - Logic channel - Output object 1 - Send	2 bytes signed	2 bytes	RCT	9.*
205	F13 - Logic channel - Output object 1 - Send	4 bytes unsigned	4 bytes	RCT	12.*
205	F13 - Logic channel - Output object 1 - Send	4 bytes signed	4 bytes	RCT	13.*
205	F13 - Logic channel - Output object 1 - Send	4 bytes signed	4 bytes	RCT	14.*
206	F13 - Logic channel - Output object 2 - Send	Switch	1 bit	RCT	1.001
206	F13 - Logic channel - Output object 2 - Send	Priority	2 bits	RCT	2.001
206	F13 - Logic channel - Output object 2 - Send	Percentage value	1 byte	RCT	5.001
206	F13 - Logic channel - Output object 2 - Send	Value (0-255)	1 byte	RCT	5.010

No.	Object name	Function	Length	Flags	DPT
206	F13 - Logic channel - Output object 2 - Send	Colour temperature (K)	2 bytes	RCT	7,600
206	F13 - Logic channel - Output object 2 - Send	Temperature [°C]	2 bytes	RCT	9.001
206	F13 - Logic channel - Output object 2 - Send	Scene number	1 byte	RCT	17.001
206	F13 - Logic channel - Output object 2 - Send	HVAC operating mode	1 byte	RCT	20.102
206	F13 - Logic channel - Output object 2 - Send	Colour (RGB)	3 bytes	RCT	232,600
206	F13 - Logic channel - Output object 2 - Send	Colour (XY)	6 bytes	RCT	242,600
206	F13 - Logic channel - Output object 2 - Send	Colour (RGBW)	6 bytes	RCT	251,600
206	F13 - Logic channel - Output object 2 - Send	1 bit	1 bit	RCT	1.*
206	F13 - Logic channel - Output object 2 - Send	Priority	2 bits	RCT	2.*
206	F13 - Logic channel - Output object 2 - Send	1 byte unsigned	1 byte	RCT	5.*
206	F13 - Logic channel - Output object 2 - Send	2 bytes unsigned	2 bytes	RCT	7.*
206	F13 - Logic channel - Output object 2 - Send	2 bytes signed	2 bytes	RCT	8.*
206	F13 - Logic channel - Output object 2 - Send	2 bytes signed	2 bytes	RCT	9.*
206	F13 - Logic channel - Output object 2 - Send	4 bytes unsigned	4 bytes	RCT	12.*
206	F13 - Logic channel - Output object 2 - Send	4 bytes signed	4 bytes	RCT	13.*
206	F13 - Logic channel - Output object 2 - Send	4 bytes signed	4 bytes	RCT	14.*
210 – 256	Logic channels F14 – F18 (for details see threshold channel F9)				

Objects for the logic channels:

F13	F14	F15	F16	F17	F18
200	210	220	230	240	250
201	211	221	231	241	251
202	212	222	232	242	252
203	213	223	233	243	253
204	214	224	234	244	254
205	215	225	235	245	255
206	216	226	236	246	256

3.3 Description of communication objects

3.3.1 Date and time

Object 1: 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).

As a reception object:
Used to set the time via the bus.

Object 2: Local date

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

As a reception object:
Used to set the date via the bus.

Object 3: Local time and local date

As a transmission object:
Sends the date and current time together as an 8-byte telegram (DPT19.001), depending on the configuration, only on request, cyclically or at specific times
(see *Send time and date* parameter).

As a reception object:
Used to set the time and date via the bus.

Object 4: UTC time

Greenwich Mean Time (Coordinated Universal Time), i.e. basis for calculating different time zones.
Corresponds to the time at the Greenwich meridian.

CET (Central European Time) = UTC + 1 h
CEST (Central European Summer Time) = UTC + 2 h.

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

As a reception object:
Used to set the time via the bus. (UTC time is converted by the clock, depending on the set time zone and summertime/wintertime)

Object 5: UTC date

World date, corresponds to the date at the Greenwich meridian.

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

As a reception object:
Used to set the date via the bus.
(The UTC date is converted by the clock, depending on the set time zone and summer/wintertime)

Object 6: UTC time and UTC date

As a transmission object:
Sends the UTC date and UTC time together as an 8-byte telegram (DPT19.001), depending on the configuration, only on request, cyclically or at specific times
(see *Send time and date* parameter).

As a reception object:
Used to set the time and date via the bus.
(The UTC time and the UTC date are converted by the clock, depending on the set time zone and summer/wintertime)

Object 7: Time query

As a transmission object:
Appears only if the parameter *Operating mode of the object Time and date* is set to *Receive time and date*.

The *Cycle time* parameter can be used to set a time in hours for sending the 1 bit "Time query" object. This is then sent at the set cycle time on the bus and initiates the transmission of the date and time at the receiver (bus timer).

As a reception object:
Appears only if the parameter *Operating mode of the object Time and date* is set to *Send time and date*.

The object receives a time query from other bus participants and initiates the transmission process for time and date objects.

Object 8: Auxiliary voltage/antenna error - Send

Appears only if the parameter *Operating mode of the object Time and date* is set to *Send time and date* and *Antenna connected*" parameter is set to *Yes*.

The object is always sent after modification. If a 1 is sent (after 30 minutes), there is a problem with the auxiliary voltage or the antenna.
0 = No error.

Object 9: Time synchronisation error - Send

Appears only if the parameter *Operating mode of the object Time and date* is set to *Send time and date* and *Antenna connected* parameter is set to *Yes*.

The object is always sent after modification. If a 1 is sent (after one hour), there is a problem with the time synchronisation.
0 = No error.

3.3.2 Time channels F1 - F8

Object 10: F1 - Time channel - block - Receive

Only available if the block function is activated.

The behaviour when setting/cancelling the block and the direction of action can be selected on the ***Block function*** parameter page.
The block object acts together on both objects (objects 11 + 12).

Object 11: F1 - Time channel - Output object 1 - Switch, Priority, Valuator, Percentage, HVAC operating mode... - Send

This is the first output object of the switching channel.
The function of the object depends upon the selected telegram type
(see parameter page ***F1 - Output objects***, *Telegram type F1* parameter).
20 telegram formats can be set.
Of these, 11 have a predefined data type (e.g. Switching DPT1.001).
These are the most common types of telegrams. These are predefined.
If a different format is desired, the general telegram formats can be selected (e.g. 1 bit DPT7.*)
The required subtype can be defined in the ETS under Communication objects (e.g. when setting DPT7.*, the DPT7.012 current (mA) can be set)

The cycle time and the blocking behaviour are valid together for both objects (objects 11 + 12).

<table>
<tr><th>Telegram type</th><th>Sent telegrams</th></tr>
<tr><td>Switching DPT1.001</td><td>On/Off</td></tr>
<tr><td>Priority switching DPT2.001</td><td>2-bit telegram:

<table>
<tr><th>Function</th><th>Value</th></tr>
<tr><td>No Priority (00) (no priority)</td><td>0 (00bin)</td></tr>
<tr><td>No Priority (01) (no priority)</td><td>1 (01bin)</td></tr>
<tr><td>Priority Off (priority active, switching status: Off)</td><td>2 (10bin)</td></tr>
<tr><td>Priority On (priority active, switching status: On)</td><td>3 (11bin)</td></tr>
</table></td></tr>
<tr><td>Percentage value DPT5.001</td><td>Percentage value 0 - 100%</td></tr>
<tr><td>Value 0-255 DPT5.010</td><td>Value between 0 and 255</td></tr>
<tr><td>Temperature DPT9.001</td><td>Temperature value -273 to 300°C</td></tr>
<tr><td>HVAC operating mode DPT20.102</td><td>
<table>
<tr><th>Operating Mode</th><th>Value</th></tr>
<tr><td>Auto</td><td>0</td></tr>
<tr><td>Comfort</td><td>1</td></tr>
<tr><td>Standby</td><td>2</td></tr>
<tr><td>Night</td><td>3</td></tr>
<tr><td>Frost/heat protection</td><td>4</td></tr>
</table></td></tr>
<tr><td>Scene DPT17.001</td><td>Scene number 1 to 64</td></tr>
<tr><td>Colour temperature DPT7.600</td><td>Colour temperature value 1000 to 10000 K</td></tr>
<tr><td>RGB colour value DPT232.600</td><td>UTC 3-byte value for RGB colour.
RGB value: #000000-FFFFFF</td></tr>
</table>

<table>
<tr><th>Telegram type</th><th>Sent telegrams</th></tr>
<tr><td>RGBW colour value
DPT251.600</td><td>6-byte value for RGBW colour.
RGB value: #000000-FFFFFF
White value: 0-255</td></tr>
<tr><td>XY colour value DPT242,600</td><td>6-byte value for XY colour.
X value: 0-1 (0.00000 – 1.00000)
Y value: 0-1 (0.00000 – 1.00000)
Brightness value: 0-100
Resolution X/Y value: 5 decimal places.</td></tr>
<tr><td>1 bit DPT1.*</td><td>1 bit value: 0-1</td></tr>
<tr><td>2 bit DPT2.*</td><td>2-bit telegram:
<table><tr><td>Function</td><td>Value</td></tr><tr><td>No priority (00)</td><td>0 (00bin)</td></tr><tr><td>No priority (01)</td><td>1 (01bin)</td></tr><tr><td>Priority 0</td><td>2 (10bin)</td></tr><tr><td>Priority 1</td><td>3 (11bin)</td></tr></table></td></tr>
<tr><td>1 byte unsigned DPT5.*</td><td>Any value between 0 and 255 can be sent.</td></tr>
<tr><td>2 bytes unsigned DPT7.*</td><td>Any value between 0 and 65535 can be sent.</td></tr>
<tr><td>2 bytes signed DPT8.*</td><td>Any value between -32768 and 32767 can be sent.</td></tr>
<tr><td>2 bytes signed DPT9.*</td><td>Any value between -671088.6 and 670433.2 can be sent. Format: floating point</td></tr>
<tr><td>4 bytes unsigned DPT12.*</td><td>Any value between 0 and 4294967295 can be sent.</td></tr>
<tr><td>4 bytes signed DPT13.*</td><td>Any value between -2147483648 and 2147483647 can be sent.</td></tr>
<tr><td>4 bytes signed DPT14.*</td><td>Any value between -3.402E+38 and 3.402E+38 can be sent.
Input format: The ETS only allows the input as a decimal without power.
Accuracy: 32-bit float single. 7 decimal places.
Example: 152.1234</td></tr>
</table>

Object 12: F1 - Time channel - Output object 2 - Switching, Priority, Valuator, Percentage, HVAC operating mode... send

This is the second output object of a switching channel
The function of the object depends upon the selected telegram type.
Telegram types see object 11 F1
The telegram type can be parameterised independent of the 1st output object.

The cycle time and the blocking behaviour are valid together for both objects (objects 11 + 12).

Object 13: F1 Time channel – Special program - Receive

This is an input object.
Each special program can be activated via the object.
The number of the required program is sent for this.
The special program is switched off with program number 0 (standard program active).
The switching times of the special programmes must be created with the Obelisk program. There are no standard templates.
Special programs have a higher priority than the standard program and the higher the number, the higher the priority

0 = End special program/no special program (i.e. standard program).
1-14 = Calls up the corresponding special program.

15 = Special program Continuous ON.
16 = Special program Continuous OFF.

Object 14: F1 - Time channel - Time to the next service, operating hours feedback - Send

Only available if the elapsed-time counter function has been activated.
Reports, depending on selected type of elapsed-time counter, either the remaining time to the next set service interval or the current status of the elapsed-time counter.
The object type can be selected by the user between 3 formats.
DPT 7.007 (2-byte hours), DPT 12.102 (4-byte hours) or DPT 13.100 (seconds).

Object 15: F1 - Time channel - service required - Send

Only available if the elapsed-time counter function has been activated
and type of elapsed-time counter = counter for time to the next service.

Reports if the next service is due.
0 = not due
1 = service is due.

The object can be sent cyclically if it is parameterised.
A change to this object is always reported.

Object 16: F1 - Time channel - restart service interval, restart elapsed-time counter – Receive

Only available if the elapsed-time counter function has been activated.
Function depending on the configuration.

Reset service function:
Reset service interval counter.
1 = Reset

Reset elapsed-time counter function:
Reset elapsed-time counter
1 = Reset

Objects 20 to 86:

Objects 20 to 86 are for time channels F2 - F8 and have an identical function as with objects of time channel F1.

3.3.3 Threshold channels F9 - F12

Object 100: F9 - Threshold channel - Value - Receive
Input object of the channel.
This object activates the set channel function.

Potential input formats	DPT
Percentage value	5.001
Value (0-255)	5.010
2 bytes unsigned	7.001
Colour temperature (K)	7,600
Temperature [°C]	9.001
1 byte unsigned	5.*
2 bytes signed	8.*
2 bytes signed	9.*
4 bytes unsigned	12.*
4 bytes signed	13.*
4 bytes signed	14.*

Object 101: F9 - Threshold channel - Set threshold - Receive
Only available if *threshold can be overwritten via object = yes*.
The parameterised *threshold* is replaced by the received value.

This object makes it possible to change the parameterised threshold via bus telegram at any time.
The data type corresponds to the parameterised *type of threshold object*.

Object 102: F9 - Threshold channel - block - Receive

Only available if the block function is activated.

The behaviour when setting/cancelling the block and the direction of action can be selected on the ***Block function*** parameter page.
The block object acts together on both objects (objects 103 + 104).

Object 103: F9 - Threshold channel - Output object 1 - Switching, Priority, Valuator, Percent, HVAC operating mode... - Send

This is the first output object of the threshold channel.
The function of the object depends upon the selected telegram type
(see parameter page ***F9 - Output objects***, *Telegram type F9* parameter).
20 telegram formats can be set.
Of these, 11 have a predefined data type (e.g. Switching DPT1.001).
These are the most common types of telegrams. These are predefined.
If a different format is desired, the general telegram formats can be selected (e.g. 1 bit DPT7.*).
The required subtype can be defined in the ETS under Communication objects (e.g. when setting DPT7.*, the DPT7.012 current (mA) can be set).

The cycle time and the blocking behaviour are valid together for both objects (objects 103 + 104).

<table>
<tr><th>Telegram type</th><th>Sent telegrams</th></tr>
<tr><td>Switching DPT1.001</td><td>On/Off</td></tr>
<tr><td>Priority switching DPT2.001</td><td>2-bit telegram:

<table><tr><th>Function</th><th>Value</th></tr><tr><td>No Priority (00) (no priority)</td><td>0 (00bin)</td></tr><tr><td>No Priority (01) (no priority)</td><td>1 (01bin)</td></tr><tr><td>Priority Off (priority active, switching status: Off)</td><td>2 (10bin)</td></tr><tr><td>Priority On (priority active, switching status: On)</td><td>3 (11bin)</td></tr></table></td></tr>
<tr><td>Percentage value DPT5.001</td><td>Percentage value 0 - 100%</td></tr>
<tr><td>Value 0-255 DPT5.010</td><td>Value between 0 and 255</td></tr>
<tr><td>Temperature DPT9.001</td><td>Temperature value -273 to 300°C</td></tr>
<tr><td>HVAC operating mode DPT20.102</td><td><table><tr><th>Operating mode</th><th>Value</th></tr><tr><td>Auto</td><td>0</td></tr><tr><td>Comfort</td><td>1</td></tr><tr><td>Standby</td><td>2</td></tr><tr><td>Night</td><td>3</td></tr><tr><td>Frost/heat protection</td><td>4</td></tr></table></td></tr>
<tr><td>Scene DPT17.001</td><td>Scene number 1 to 64</td></tr>
<tr><td>Colour temperature DPT7.600</td><td>Colour temperature value 1000 to 10000 K</td></tr>
<tr><td>RGB colour value DPT232.600</td><td>UTC 3-byte value for RGB colour.
RGB value: #000000-FFFFFF</td></tr>
<tr><td>RGBW colour value DPT251.600</td><td>6-byte value for RGBW colour.
RGB value: #000000-FFFFFF
White value: 0-255</td></tr>
<tr><td>XY colour value DPT242.600</td><td>6-byte value for XY colour.
X value: 0-1 (0.00000 – 1.00000)
Y value: 0-1 (0.00000 – 1.00000)
Brightness value: 0-100
Resolution X/Y value: 5 decimal places.</td></tr>
<tr><td>1 bit DPT1.*</td><td>1 bit value: 0-1</td></tr>
<tr><td>2 bit DPT2.*</td><td>2-bit telegram:

<table><tr><th>Function</th><th>Value</th></tr><tr><td>No priority (00)</td><td>0 (00bin)</td></tr><tr><td>No priority (01)</td><td>1 (01bin)</td></tr><tr><td>Priority 0</td><td>2 (10bin)</td></tr><tr><td>Priority 1</td><td>3 (11bin)</td></tr></table></td></tr>
<tr><td>1 byte unsigned DPT5.*</td><td>Any value between 0 and 255 can be sent.</td></tr>
<tr><td>2 bytes unsigned DPT7.*</td><td>Any value between 0 and 65535 can be sent.</td></tr>
<tr><td>2 bytes signed DPT8.*</td><td>Any value between -32768 and 32767 can be sent.</td></tr>
<tr><td>2 bytes signed DPT9.*</td><td>Any value between -671088.6 and 670433.2 can be sent. Format: floating point</td></tr>
<tr><td>4 bytes unsigned DPT12.*</td><td>Any value between 0 and 4294967295 can be sent.</td></tr>
<tr><td>4 bytes signed DPT13.*</td><td>Any value between -2147483648 and 2147483647 can be sent.</td></tr>
<tr><td>4 bytes signed DPT14.*</td><td>Any value between -3.402E+38 and 3.402E+38 can be sent.
Input format: The ETS only allows the input as a decimal without power.</td></tr>
</table>

Telegram type	Sent telegrams
	Accuracy: 32 bit float single. 7 decimal places. *Example: 152.1234*

Object 104: F9 - Threshold channel - Output object 2 - Switching, Priority, Valuator, Percent, HVAC operating mode... - Send

This is the second output object of the threshold channel.
The function of the object depends upon the selected telegram type.
Telegram types see Object 103 F9
The telegram type can be parameterised independent of the 1st output object.

The cycle time and the blocking behaviour are valid together for both objects (objects 103 + 104).

Objects 110 to 134:

Objects 110 to 134 are for threshold switches F10 - F12 and are identical in their function to the objects of threshold channel F9.

3.3.4 Logic channels F13 - F18

Object 200: F13 - Logic channel - Logic input 1 in AND/OR/XOR gate - Receive
First input object of the logic module
Only available if *input variable for input 1 = input object*

Object 201: F13 - Logic channel - Logic input 2 in AND/OR/XOR gate - Receive
Second input object of the logic module
Only available if *input variable for input 2 = input object*

Object 202: F13 - Logic channel - Logic input 3 in AND/OR gate - Receive
Third input object of the logic module
Only available if *input variable for input 3 = input object* and only for OR and AND links.

Object 203: F13 - Logic channel - Logic input 4 in AND/OR gate - Receive
Fourth input object of the logic module
Only available if *input variable for input 4 = input object* and only for OR and AND links.

Object 204: F13 - Logic channel - block - Receive

Only available if the block function is activated.

The behaviour when setting/cancelling the block and the direction of action can be selected on the ***Block function*** parameter page.
The block object acts together on both objects (objects 205 + 206).

Object 205: F13 - Logic channel - Output object 1 - Switching, Priority, Valuator, Percent, HVAC operating mode... -send

This is the first output object of the logic channel.
The function of the object depends upon the selected telegram type
(see parameter page ***F13 - Output objects***, *Telegram type F13* parameter).
20 telegram formats can be set.
Of these, 11 have a predefined data type (e.g. Switching DPT1.001).
These are the most common types of telegrams. These are predefined.
If a different format is desired, the general telegram formats can be selected (e.g. 1 bit DPT7.*).
The required subtype can be defined in the ETS under Communication objects (e.g. when setting DPT7.*, the DPT7.012 current (mA) can be set).

The cycle time and the blocking behaviour are valid together for both objects (objects 205 + 206).

<table>
<tr><th>Telegram type</th><th>Sent telegrams</th></tr>
<tr><td>Switching DPT1.001</td><td>On/Off</td></tr>
<tr><td>Priority switching DPT2.001</td><td>2-bit telegram:

<table><tr><th>Function</th><th>Value</th></tr><tr><td>No Priority (00) (no priority)</td><td>0 (00bin)</td></tr><tr><td>No Priority (01) (no priority)</td><td>1 (01bin)</td></tr><tr><td>Priority Off (priority active, switching status: Off)</td><td>2 (10bin)</td></tr><tr><td>Priority On (priority active, switching status: On)</td><td>3 (11bin)</td></tr></table></td></tr>
<tr><td>Percentage value DPT5.001</td><td>Percentage value 0 - 100%</td></tr>
<tr><td>Value 0-255 DPT5.010</td><td>Value between 0 and 255</td></tr>
<tr><td>Temperature DPT9.001</td><td>Temperature value -273 to 300°C</td></tr>
<tr><td>HVAC operating mode DPT20.102</td><td><table><tr><th>Operating mode</th><th>Value</th></tr><tr><td>Auto</td><td>0</td></tr><tr><td>Comfort</td><td>1</td></tr><tr><td>Standby</td><td>2</td></tr><tr><td>Night</td><td>3</td></tr><tr><td>Frost/heat protection</td><td>4</td></tr></table></td></tr>
<tr><td>Scene DPT17.001</td><td>Scene number 1 to 64</td></tr>
<tr><td>Colour temperature DPT7.600</td><td>Colour temperature value 1000 to 10000 K</td></tr>
<tr><td>RGB colour value DPT232.600</td><td>UTC 3-byte value for RGB colour.
RGB value: #000000-FFFFFF</td></tr>
<tr><td>RGBW colour value DPT251.600</td><td>6-byte value for RGBW colour.
RGB value: #000000-FFFFFF
White value: 0-255</td></tr>
<tr><td>XY colour value DPT242.600</td><td>6-byte value for XY colour.
X value: 0-1 (0.00000 – 1.00000)
Y value: 0-1 (0.00000 – 1.00000)
Brightness value: 0-100
Resolution X/Y value: 5 decimal places.</td></tr>
<tr><td>1 bit DPT1.*</td><td>1 bit value: 0-1</td></tr>
<tr><td>2 bit DPT2.*</td><td>2-bit telegram:

<table><tr><th>Function</th><th>Value</th></tr><tr><td>No priority (00)</td><td>0 (00bin)</td></tr><tr><td>No priority (01)</td><td>1 (01bin)</td></tr><tr><td>Priority 0</td><td>2 (10bin)</td></tr><tr><td>Priority 1</td><td>3 (11bin)</td></tr></table></td></tr>
<tr><td>1 byte unsigned DPT5.*</td><td>Any value between 0 and 255 can be sent.</td></tr>
<tr><td>2 bytes unsigned DPT7.*</td><td>Any value between 0 and 65535 can be sent.</td></tr>
<tr><td>2 bytes signed DPT8.*</td><td>Any value between -32768 and 32767 can be sent.</td></tr>
<tr><td>2 bytes signed DPT9.*</td><td>Any value between -671088,6 and 670433,2 can be sent. Format: floating point</td></tr>
<tr><td>4 bytes unsigned DPT12.*</td><td>Any value between 0 and 4294967295 can be sent.</td></tr>
<tr><td>4 bytes signed DPT13.*</td><td>Any value between -2147483648 and 2147483647 can be sent.</td></tr>
<tr><td>4 bytes signed DPT14.*</td><td>Any value between -3.402E+38 and 3.402E+38 can be sent.
Input format: The ETS only allows the input as a decimal without power.</td></tr>
</table>

Telegram type	Sent telegrams
	Accuracy: 32-bit float single. 7 decimal places. *Example: 152.1234*

Object 206: F13 - Logic channel - Output object 2 - Switching, Priority, Valuator, Percent, HVAC operating mode... -send

This is the second output object of the logic channel
The function of the object depends upon the selected telegram type.
Telegram types see Object 205 F13
The telegram type can be parameterised independent of the 1st output object.

The cycle time and the blocking behaviour are valid together for both objects (objects 205 + 206).

Objects 210 to 256:

Objects 210 to 256 are for logic channels F14 - F18 and are identical in their function to the objects of logic channel F13.

3.4 Parameter pages overview

Parameter page	Description
General information	
General information	Basic settings: Channel type selection, channel activation and customer-specific labelling of the channels. General behaviour of the block function of all channels.
Date and time	
Date and time	Settings for transmission / reception of time / date and selection of antenna.
Time channels F1 - F8	
Time channel	Activate the block function and elapsed-time counter for the respective channel. After activation, the corresponding parameter pages are displayed.
Output objects	Telegram type and reaction when clock is switched on and off. Response after bus voltage recovery and download.
Block function	Response to block telegrams.
Elapsed-time counter	Selection between elapsed-time counter and counter for time to the next service. Configuration of the selected counter.
Threshold channels F9 - F12	
Threshold channel	Activation of the block function. General settings (type of threshold object, threshold, hysteresis, delays, etc).
Output objects	Configuration of output telegrams and reaction to falling below or exceeding the threshold.
Block function	Response to block telegrams.
Logic channels F13 - F18	
Logic channel	Activation of the block function. General settings (type of link, number of inputs, etc).
Output objects	Configuration of the output telegrams and reaction to fulfilling or failure to fulfil the link condition.
Block function	Response to block telegrams.

3.5 General parameter page

Designation	Values	Description
Use time channels?	Yes ***No***	If this parameter is active, then 8 further parameters appear with which the individual time channels F1 - F8 can be activated and deactivated. Time channels can be used when switching the clock on or off to trigger telegrams.
Use threshold channels?	Yes ***No***	If this parameter is active, then 4 further parameters appear with which the individual threshold channels F9 - F12 can be activated and deactivated. Switch threshold channels based on received bus telegrams depending on whether a value is fallen below or exceeded.
Use logic channels?	Yes ***No***	If this parameter is active, then 6 further parameters appear with which the individual logic channels F13 - F18 can be activated and deactivated. Logic channels enable the linking of up to 4 input variables. These can be both specific logic input objects (max. 4) and the switching statuses of the other channels (time switch, threshold or logic channels).
Response to blocking/unblocking *(Setting applies jointly to all blocking objects of all channels F1 – F18)*	***Only when status changes*** *On each telegram reception*	When receiving a telegram to the blocking object of a channel, the parameterised response is executed once when the status of the object changes. Repeated block/unblock telegrams with the same status are ignored. Repeated blocking/unblocking telegrams trigger the parameterised response to blocking or unblocking every single time. It is irrelevant whether the status of the blocking object changes.
F1	☐	Checkboxes for activating/deactivating the respective time channel. The input field for the user text is used for the ***time channel*** parameter page, as well as for the object name.
F2	☐	
F3	☐	
F4	☐	
F5	☐	
F6	☐	
F7	☐	
F8	☐	
F9	☐	

Designation	Values	Description
F10	☐	Checkboxes for activating/deactivating the respective threshold channel. The input field for the user text is used for the ***threshold channel*** parameter page, as well as for the object name.
F11	☐	
F12	☐	
F13	☐	Checkboxes for activating/deactivating the respective logic channel. The input field for the user text is used for the ***logic channel*** parameter page, as well as for the object name.
F14	☐	
F15	☐	
F16	☐	
F17	☐	
F18	☐	

3.6 Date and time parameter page

Designation	Values	Description
Operating mode of the Time and date object	***Receive time and date***	If "receive" is selected, then the clock can be reset via external time and date telegrams.
	Send time and date	If "send" is selected, the clock can send the current time and date to the bus both cyclically and on request.
Parameter for receiving time and date (If no GNSS or DCF module is used).		
Send time query cyclically?	*Yes* ***No***	Selection of whether the object for the time query should be sent cyclically. This is used to receive the time and date from another bus participant (time transmitter).
Cycle time	*1 h* ***2 h*** *3 h* *6 h* *12 h*	How often should a time query be sent to the bus?
Parameter for sending time and date		
Antenna connected?	*Yes* ***No***	If a GNSS or a DCF antenna is connected, then this parameter should be set to *Yes*. If an antenna is connected, the additional supply voltage must be connected! If this parameter is set to *Yes*, 2 more communication objects appear: Auxiliary voltage/antenna error 0=OK, 1=Error Time synchronisation error 0=OK, 1=Error Both objects are always sent when there is a change.
Send time and date?	*Only on request* ***With cycle time*** *Every day at 00:00 and at change > 1 minute* *Every day at 00:02 and at change > 1 minute*	Setting, when for example how often time and date should be sent. Note: Sending can be initiated at any time via the "Time query" object.
Cycle time	*1 min* *2 min* *3 min* *5 min* *10 min* *15 min* *30 min* *45 min* ***60 min***	Cycle time for sending the time and date objects. Only appears when *Send time and date* parameter? = *With cycle time*.

3.7 Time channel parameter page

The time channels are activated on the ***General*** parameter page.
The time channels F1 – F8 are independent but identical by the parameter settings.

Designation	Values	Description
Activate block function?	***No*** *Yes*	No block function. The ***block function*** parameter page and the block object are displayed.
Activate elapsed-time counter?	***No*** *Yes*	No elapsed-time counter. The ***elapsed-time counter*** parameter page and the associated objects are displayed.

3.7.1 Output objects parameter page

Designation	Values	Description
Output object 1 *Telegram type*	***Switching DPT1,001*** *Priority switching DPT2,001* *Percentage value DPT5,001* *Value 0-255 DPT5,010* *Temperature DPT9,001* *HVAC operating mode DPT20,102* *Call up scene DPT17,001* *Colour temperature DPT7,600* *RGB colour DPT232,600* *RGBW colour DPT251,600* *XY colour DPT242,600* *1 bit DPT1.** *2 bit DPT2.** *1 byte unsigned DPT5.** *2 bytes unsigned DPT7.** *2 bytes signed DPT8.** *2 bytes signed DPT9.** *4 bytes unsigned DPT12.** *4 bytes signed DPT13.** *4 bytes signed DPT14.**	Telegram type for the first output object of the time channel.
When the clock is switched on	*No telegram* *Send* **the following telegram once** *Send cyclically*	Send output object 1 when channel is switched on?
Telegram *(Switching DPT 1.001)*	***On*** *Off*	Send switch-on command Send switch-off command
Telegram *(Priority switching DPT2,001)*	*No priority (00)* *No priority (01)* *Priority Off* ***Priority On***	No priority value = 0 (00bin) No priority value = 1 (01bin) Priority active, switching status = Off value = 2 (10bin) Priority active, switching status = On value = 3 (11bin)
Telegram *(Percentage value DPT5.001)*	*0 -* **100***%*	Any percentage value between 0 and 100% can be sent.
Telegram *Value 0-255 DPT5,010*	*0 –* **255**	Any value between 0 and 255 can be sent.
Telegram *(Temperature DPT9.001)*	*-273-300°C* *Standard:* **22°C**	Any temperature value between -273 and 300 can be sent.
Telegram *(HVAC operating mode DPT20,102)*	*Auto* ***Comfort*** *Standby* *Night* *Frost/heat protection*	Send HVAC telegram.
Telegram (Call up scene DPT17,001)	*Scene numbers:* **1***-64*	Any scene number between 1 and 64 can be sent.
Telegram *(Colour temperature DPT7.600)*	*1000-10000 K* *Standard:* **3300**	Send value for colour temperature between 1000 and 10000 K.
Telegram *(RGB colour DPT232,600)*	*RGB colour value:* **#000000***-FFFFFF*	Send 3-byte value for RGB colour.

Designation	Values	Description
Telegram *(RGBW colour DPT251.600)*	*RGB value:* **#000000**-*FFFFFF* *White value:* **0**-*255*	Send 6-byte value for RGBW colour.
Telegram *XY colour DPT242,600)*	*X value: 0*-**1** *Y value: 0*-**1** *Brightness value: 0*-**100**	Send 6-byte value for RGB colour. Resolution X/Y value: 5 decimal places.
Telegram *(1 bit DPT1.*)*	*0*-**1**	Send 1 bit value.
Telegram *(2 bit DPT2.*)*	*No priority (00)* *No priority (01)* *Priority 0* ***Priority 1***	Value = 0 (00bin) Value = 1 (01bin) Value = 2 (10bin) Value = 3 (11bin)
Telegram *(1 byte unsigned DPT5.*)*	*0* – **255**	Any value between 0 and 255 can be sent.
Telegram (2 bytes unsigned DPT7.*)	*-32768 ... 32767* *Standard:* **100**	Any value between -32768 and 32767 can be sent.
Telegram (2 bytes signed DPT9.*)	*-671088,6 ... 670433,2* *Standard:* **100**	Any value between -671088.6 and 670433.2 can be sent. Format: floating point value.
Telegram (4 bytes unsigned DPT12.*)	*0 ... 4 294 967 295* *Standard:* **100**	Any value between 0 and 4294967295 can be sent.
Telegram (4 bytes signed DPT13.*)	*-2 147 483 648 ... 2 147 483 647* *Standard: 100*	Any value between -2147483648 and 2147483647 can be sent.
Telegram (4 bytes signed DPT14.*)	*-3.402E+38 ... 3.402E+38* *Standard:* **100**	Any value between -3.402E+38 and 3.402E+38 can be sent. Input format: The ETS only allows the input as a decimal without power. Accuracy: 32-bit float single. 7 decimal places. Example: 152,1234
When clock is switched off	*No telegram* ***Send the following telegram once*** *Send cyclically*	Send output object 1 when channel is switched off?
Telegram	See above.	Value of the telegram when the clock is switched off.
Use output object 2?	***No*** *Yes*	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 block behaviour apply to both objects.

Designation	Values	Description
Output object 2 *Telegram type*	***Switching DPT1,001*** *Priority switching DPT2,001* *Percentage value DPT5,001* *Value 0-255 DPT5,010* *Temperature DPT9,001* *HVAC operating mode DPT20,102* *Call up scene DPT17,001* *Colour temperature DPT7,600* *RGB colour DPT232,600* *RGBW colour DPT251,600* *XY colour DPT242,600* *1 bit DPT1.** *2 bit DPT2.** *1 byte unsigned DPT5.** *2 bytes unsigned DPT7.** *2 bytes signed DPT8.** *2 bytes signed DPT9.** *4 bytes unsigned DPT12.** *4 bytes signed DPT13.** *4 bytes signed DPT14.**	Telegram type for the second output object of the time channel.
When the clock is switched on	***No telegram*** *Send the following telegram once* *Send cyclically*	Send output object 2 when channel is switched on?
Telegram	See above, output object 1	Value of the telegram when the clock is switched on.
When clock is switched off	***No telegram*** *Send the following telegram once* *Send cyclically*	Send output object 2 when channel is switched off?
Telegram	See above, output object 1	Value of the telegram when the clock is switched off.
Cycle time (if used)	*1 min, 2 min, 3 min* *5 min, 10 min, 15 min* *30 min, 45 min,* **60 min**	The parameter only appears if parameter *When the clock is switched on* or parameter *When the clock is switched off* is set to Send cyclically. The cycle time is shared for both output objects
Send last time command after download?	***No*** *Yes*	After downloading the application program: Do not send telegrams. Both output objects are sent after downloading the application. Example: 1. Channel status = Off. 2. Download the application 3. Both telegrams are sent with the value of parameter *When the clock is switched off*.
Send last time command after bus voltage recovery?		This applies to the following events: •KNX reset. •Return of bus voltage.
	no	Do not send telegrams.
	yes	Both output objects are sent after one of these events.

3.7.2 Block function parameter page

The block function is activated on the ***Time channel*** parameter page.

Designation	Values	Description
Block object	***Block with 1 (default)***	1 = Block 0 = Cancel block
	Block with 0	1 = Cancel block 0 = Block
Response when the block is set	***Do not send***	No telegrams when setting the block
	As when the clock is switched on	Same reaction as set in the When the clock is switched on parameter. (See above ***Output objects*** parameter page).
	As when the clock is switched off	Same reaction as set in the When the clock is switched off parameter. (See above ***Output objects*** parameter page).
Response when cancelling the block	*Do not send*	Not automatically resent when the block is cancelled.
	Update channel	The current channel status is sent immediately as soon as the block is cancelled.

3.7.3 Elapsed-time counter parameter page

The elapsed-time counter is activated on the ***Time channel*** parameter page.

Designation	Values	Description
Type of elapsed-time counter	***Elapsed-time counter*** *Counter for time to the next service*	Forward counter for channel duty cycle. Backward counter for channel duty cycle.
Object type	*DPT13.100 (seconds)* *DPT12.102 (4-byte hours)* ***DPT7.007 (2-byte hours)***	Object type for the object of the elapsed-time counter.
Type of elapsed-time counter = elapsed-time counter		
Send brightness value upon change?	***No*** *Yes*	The current meter reading is not sent in the event of a change. If there is a change, the current value of the elapsed-time counter is sent. The parameter *Size of the change* is displayed.
Size of the change	*1 – 100 h* *Default value* = **10 h**	The size of the change from which the current value of the elapsed-time counter is sent to the bus. Example: 10 = Send each time the counter reading has increased by another 10 hours.
Send operating hours cyclically?	***No*** *Yes*	Send at regular intervals?
Cycle time	*1 minute, 2 minutes,* *3 minutes, 5 minutes* *10 minutes, 15 minutes,* *30 minutes, 45 minutes* ***60 minutes***	At what interval should the transmission regularly occur?
Type of elapsed-time counter = counter for time to the next service		
Service interval	*1 – 60000 h* *Default value* = **100 h**	Desired interval in hours between 2 services.
Send time to the next service on change?	***No*** *Yes*	The current meter reading is not sent in the event of a change. If there is a change, the current value of the elapsed-time counter is sent. The parameter *Size of the change* is displayed.
Size of the change	*1 – 100 h* *Default value* = **10 h**	At what interval is the current meter reading to be sent? Example: 10 = Send each time the meter reading has decreased by another 10 hours.
Send time to the next service cyclically?	***no*** *Yes*	Send remaining time to the next service at regular intervals? -> Object Time to service.

Designation	Values	Description
Cycle time	*1 minute, 2 minutes,* *3 minutes, 5 minutes* *10 minutes, 15 minutes,* *30 minutes, 45 minutes,* ***60 minutes***	At what interval should the time to the next service be sent cyclically?
Send service due 1 bit cyclically?	***no*** *Yes*	Send required service (1 bit) at regular intervals? -> Object Service required.
Cycle time	*1 minute, 2 minutes,* *3 minutes, 5 minutes,* *10 minutes, 15 minutes,* *30 minutes, 45 minutes,* ***60 minutes***	At what interval should the 1-bit object Service required be sent cyclically?

3.8 Threshold channel parameter page

The value received is compared with the set threshold. If the value exceeds the threshold, the condition is considered fulfilled; if the value is below the threshold, the condition is not fulfilled.

The response of the output objects to fulfilling or not fulfilling the condition is set on the ***Output objects*** parameter page.

Designation	Values	Description
Activate block function?	***No*** *Yes*	No block function. The ***block function*** parameter page and the block object are displayed.
Type of threshold object	***Percentage value DPT5.001*** *Value 1-255 DPT5.010* *Temperature DPT9.001* *Colour temperature DPT7.600* *1 byte unsigned DPT5.** *2 bytes unsigned DPT7.** *2 bytes signed DPT8.** *2 bytes signed DPT9.** *4 bytes unsigned DPT12.** *4 bytes signed DPT13.** *4 bytes signed DPT14.**	Value type for threshold. DPTx.* means general DPT type. The required subtype can be set in the ETS.
Threshold	*0…100%*	With the telegram type Percentage value DPT5.001
	0…255	With the telegram type Value 0-255 DPT5,010
	-273…300°C	With the telegram type Temperature DPT9.001
	1000…10000 K	With the telegram type Colour temperature DPT7,600
	0…255	With the telegram type 1 byte unsigned DPT5.*
	0…65535	With the telegram type 2 bytes unsigned DPT7.*
	-32768…32767	With the telegram type 2 bytes signed DPT8.*
	-671088.6…670433.2	With the telegram type 2 bytes signed DPT9.*
	0…4,294,967,295	With the telegram type 4 bytes unsigned DPT12.*
	-2,147,483,648…2,147,483,647	With the telegram type 4-bytes signed DPT13.*
	-3.402E+38… *3.402E+38*	With the telegram type 4-bytes signed DPT14.* Input format: The ETS only allows the input as a decimal without power. Accuracy: 32 bit float single. 7 decimal places. Example: 152.1234

Designation	Values	Description
Hysteresis	*1...100%*	Prevents frequent switching in the event of small changes in value. The hysteresis is unilaterally negative for all threshold types, e.g. threshold 50, hysteresis 5 means: Switch on at 50 and switch off at 50 – hysteresis = 45. With the telegram type Percentage value DPT5,001
	1...255	With the telegram type Value 0-255 DPT5,010.
	0.01...300	With the telegram type Temperature DPT9,001.
	1...10000	With the telegram type Colour temperature DPT7,600.
	1...255	With the telegram type 1 byte unsigned DPT5..
	1...65535	With the telegram type 2 bytes unsigned DPT7.*.
	1...32767	With the telegram type 2 bytes signed DPT8.*
	0.01...670,433.2	With the telegram type 2 bytes signed DPT9.*
	1...4,294,967,295	With the telegram type 4 bytes unsigned DPT12.*
	1...2,147,483,647	With the telegram type 4 bytes signed DPT13.*
	1.4E-45...3.402E+38	With the telegram type 4 bytes signed DPT14.* Input format: The ETS only allows the input as a decimal without power. Accuracy: 32-bit float single. 7 decimal places. Example: 152.1234
Delay on exceeding the threshold	**0**...*60 min*, **0**...*59 s*	Delay before the associated telegram is sent if the thresholds are exceeded or fallen below,
Delay when falling below the threshold	**0**...*60 min*, **0**...*59 s*	
Can a threshold be overwritten via an object?	*Yes* ***No***	Should it be possible to change the parameterised threshold via bus telegrams?
Overwrite threshold on download?	*Yes*	With an ETS download, the threshold currently stored in the device is deleted and overwritten with the value set in the ETS.
	No	An ETS download does not have any effect on the threshold currently stored in the device. Exception: Even if no is selected, all ETS parameter values will be downloaded on first use (i.e. when the device memory is empty).

Designation	Values	Description
Status after reset or download	*As when falling below the threshold* *As when exceeding the threshold* ***Unknown status, do not send***	Reaction of channel upon a restart.

3.8.1 Output objects parameter page

Designation	Values	Description
Output object 1 *Telegram type*	***Switching DPT1.001*** *Priority switching DPT2.001* *Percentage value DPT5.001* *Value 0-255 DPT5.010* *Temperature DPT9.001* *HVAC operating mode DPT20.102* *Call up scene DPT17.001* *Colour temperature DPT7.600* *RGB colour DPT232.600* *RGBW colour DPT251.600* *XY colour DPT242.600* *1 bit DPT1.** *2 bit DPT2.** *1 byte unsigned DPT5.** *2 bytes unsigned DPT7.** *2 bytes signed DPT8.** *2 bytes signed DPT9.** *4 bytes unsigned DPT12.** *4 bytes signed DPT13.** *4 bytes signed DPT14.**	Telegram type for the first output object of the threshold channel.
When exceeding the threshold	*No telegram* *Send* **the following telegram once** *Send cyclically*	Send output object 1 if threshold is exceeded?
Telegram *(Switching DPT 1.001)*	***On*** *Off*	Send switch-on command Send switch-off command
Telegram *(Priority switching DPT2.001)*	*No priority (00)* *No priority (01)* *Priority Off* ***Priority On***	No priority Value = 0 (00bin) No priority Value = 1 (01bin) Priority active, switching status = Off Value = 2 (10bin) Priority active, switching status = On Value = 3 (11bin)
Telegram *(Percentage value DPT5.001)*	*0 -* **100***%*	Any percentage value between 0 and 100% can be sent.
Telegram *(Value 0-255 DPT5.010)*	*0 –* **255**	Any value between 0 and 255 can be sent.
Telegram *(Temperature DPT9,001)*	*-273-300°C* *Standard:* **22°C**	Any temperature value between -273 and 300 can be sent.
Telegram *(HVAC operating mode DPT20,102)*	*Auto* ***Comfort*** *Standby* *Night* *Frost/heat protection*	Send HVAC telegram.
Telegram (Call up scene DPT17,001)	*Scene numbers:* **1***-64*	Any scene number between 1 and 64 can be sent.
Telegram *(Colour temperature DPT7,600)*	*1000-10000 K* *Standard:* **3300**	Send value for colour temperature between 1000 and 10000 K.
Telegram *(RGB colour DPT232,600)*	*RGB colour value:* **#000000***-FFFFFF*	Send 3-byte value for RGB colour.

Designation	Values	Description
Telegram *(RGBW colour DPT251.600)*	*RGB value:* **#000000**-*FFFFFF* *White value:* **0**-*255*	Send 6-byte value for RGBW colour.
Telegram *(XY colour DPT242,600)*	*X value: 0*-**1** *Y value: 0*-**1** *Brightness value: 0*-**100**	Send 6-byte value for RGB colour. Resolution X/Y value: 5 decimal places.
Telegram *(1 bit DPT1.*)*	*0*-**1**	Send 1 bit value.
Telegram *(2 bit DPT2.*)*	*No priority (00)* *No priority (01)* *Priority 0* ***Priority 1***	Value = 0 (00bin) Value = 1 (01bin) Value = 2 (10bin) Value = 3 (11bin)
Telegram *(1 byte unsigned DPT5.*)*	*0* – **255**	Any value between 0 and 255 can be sent.
Telegram (2 bytes unsigned DPT7.*)	*-32768 ... 32767* *Standard:* **100**	Any value between -32768 and 32767 can be sent.
Telegram (2 bytes signed DPT9.*)	*-671088.6 ... 670433.2* *Standard:* **100**	Any value between -671088.6 and 670433.2 can be sent. Format: floating point value.
Telegram (4 bytes unsigned DPT12.*)	*0 ... 4 294 967 295* *Standard:* **100**	Any value between 0 and 4294967295 can be sent.
Telegram (4 bytes signed DPT13.*)	*-2 147 483 648 ... 2 147 483 647* *Standard: 100*	Any value between -2147483648 and 2147483647 can be sent.
Telegram (4 bytes signed DPT14.*)	*-3.402E+38 ... 3.402E+38* *Standard:* **100**	Any value between -3.402E+38 and 3.402E+38 can be sent. Input format: The ETS only allows the input as a decimal without power. Accuracy: 32-bit float single. 7 decimal places. Example: 152.1234
When falling below the threshold	*No telegram* ***Send the following telegram once*** *Send cyclically*	Send output object 1 if threshold is fallen below?
Telegram	See above.	Value is sent when the threshold is fallen below.
Use output object 2?	***No*** *Yes*	If Yes is selected, further parameters and a second transmission object appear. As a result, 2 different telegrams can be sent at the same time on the same channel. The cycle time and the block behaviour apply to both objects.

Designation	Values	Description
Output object 2 *Telegram type*	***Switching DPT1.001*** *Priority switching DPT2.001* *Percentage value DPT5.001* *Value 0-255 DPT5.010* *Temperature DPT9.001* *HVAC operating mode DPT20.102* *Call up scene DPT17.001* *Colour temperature DPT7.600* *RGB colour DPT232.600* *RGBW colour DPT251.600* *XY colour DPT242.600* *1 bit DPT1.** *2 bit DPT2.** *1 byte unsigned DPT5.** *2 bytes unsigned DPT7.** *2 bytes signed DPT8.** *2 bytes signed DPT9.** *4 bytes unsigned DPT12.** *4 bytes signed DPT13.** *4 bytes signed DPT14.**	Telegram type for the second output object of the threshold channel.
When exceeding the threshold	***No telegram*** *Send the following telegram once* *Send cyclically*	Send output object 2 if threshold is exceeded?
Telegram	See above, output object 1	Value which is sent when the threshold is exceeded.
When falling below the threshold	***No telegram*** *Send the following telegram once* *Send cyclically*	Send output object 2 if threshold is fallen below?
Telegram	See above, output object 1	Value which is sent when the threshold is fallen below.
Cycle time (if used)	*1 min, 2 min, 3 min,* *5 min, 10 min, 15 min,* *30 min, 45 min,* **60 min**	The parameter only appears if parameter *When exceeding the threshold* or parameter *When falling below the threshold* is set to Send cyclically. The cycle time is shared for both output objects.

3.8.2 Block function parameter page

The block function is activated on the ***Threshold channel*** parameter page.

Designation	Values	Description
Block object	***Block with 1 (default)***	1 = Block 0 = Cancel block
	Block with 0	1 = Cancel block 0 = Block
Response when the block is set	***Do not send***	No telegrams when setting the block
	Response on exceeding the threshold	Same reaction as set in the *When exceeding the threshold* parameter. (See above ***Output objects*** parameter page).
	As when falling below threshold	Same reaction as set in the *When the threshold is fallen below* parameter. (See above ***Output objects*** parameter page).
Response when cancelling the block	*Do not send*	Not automatically resent when the block is cancelled.
	Update channel	The current channel status is sent immediately as soon as the block is cancelled.

3.9 Logic channel parameter page

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

Available input variables:
- Input object of the channel
- Link result of the other logic channels[1].
- Switching status of the time channels
- Status of threshold channels (fulfilled / not fulfilled)

The response of the output objects to fulfilling or not fulfilling the condition is set on the ***Output objects*** parameter page.

Designation	Values	Description
Activate block function?	***No*** *Yes*	No block function. The ***block function*** parameter page and the block object are displayed.
Type of link	 ***AND*** *OR* *XOR*	Selection of the logical link between the 1-bit input variables (see below). Logical linking of 2 to 4 inputs or status of other channels. Logical linking of 2 inputs or status of other channels.
Use input 1	***Yes*** *Yes, inverted*	The input is used. The input is logically inverted: 0 becomes 1, 1 becomes 0.
Use input 2	***Yes*** *Yes, inverted*	The input is used. The input is logically inverted: 0 becomes 1 and 1 becomes 0.
Use input 3	***No*** *Yes* *Yes, inverted*	Input is hidden. The input is used. The input is logically inverted: 0 becomes 1 and 1 becomes 0.
Use input 4	***No*** *Yes* *Yes, inverted*	Input is hidden. The input is used. The input is logically inverted: 0 becomes 1 and 1 becomes 0.
Input variable for input 1	***Input object***	First input object of the channel.

[1]Important: A logic channel cannot be linked with itself

Designation	Values	Description
	Time channel F1 switching status *Time channel F2 switching status* *Time channel F3 switching status* *Time channel F4 switching status* *Time channel F5 switching status* *Time channel F6 switching status* *Time channel F7 switching status* *Time channel F8 switching status* *Time channel F9 switching status* *Time channel F10 switching status*	Switching status of a time channel. (0 = Off, 1 = On)
	Threshold channel F9 status *Threshold channel F10 status* *Threshold channel F11 status* *Threshold channel F12 status*	Status of a threshold channel (0 = threshold fallen below, 1 = exceeded).
	Logic channel F13 link result *Logic channel F14 link result* *Logic channel F15 link result* *Logic channel F16 link result* *Logic channel F17 link result* *Logic channel F18 link result*	Link result of another logic channel. [2]
Input variable for input 2	*See input 1*	Second output object of the channel.
Input variable for input 3	*See input 1*	Third output object of the channel.
Input variable for input 4	*See input 1*	Fourth output object of the channel.
Telegram after reset or download	*As with unfulfilled condition* *As with fulfilled condition* ***Unknown status, do not send***	Reaction of the channel upon a restart.

[2] Important: A logic channel cannot be linked with itself

3.9.1 Output objects parameter page

Designation	Values	Description
Output object 1 *Telegram type*	***Switching DPT1,001*** *Priority switching DPT2,001* *Percentage value DPT5,001* *Value 0-255 DPT5,010* *Temperature DPT9,001* *HVAC operating mode DPT20,102* *Call up scene DPT17,001* *Colour temperature DPT7,600* *RGB colour DPT232,600* *RGBW colour DPT251,600* *XY colour DPT242,600* *1 bit DPT1.** *2 bit DPT2.** *1 byte unsigned DPT5.** *2 bytes unsigned DPT7.** *2 bytes signed DPT8.** *2 bytes signed DPT9.** *4 bytes unsigned DPT12.** *4 bytes signed DPT13.** *4 bytes signed DPT14.**	Telegram type for the first output object of the logic channel.
If the condition is fulfilled	*No telegram* **Send the following telegram once** *Send cyclically*	Send output object 1 if the condition is fulfilled?
Telegram *(Switching DPT 1.001)*	***On*** *Off*	Send switch-on command Send switch-off command
Telegram *(Priority switching DPT2,001)*	*No priority (00)* *No priority (01)* *Priority Off* ***Priority On***	No priority Value = 0 (00bin) No priority Value = 1 (01bin) Priority active, switching status = Off Value = 2 (10bin) Priority active, switching status = On Value = 3 (11bin)
Telegram *(Percentage value DPT5,001)*	*0 –* **100***%*	Any percentage value between 0 and 100% can be sent.
Telegram *(Value 0-255 DPT5,010)*	*0 –* **255**	Any value between 0 and 255 can be sent.
Telegram *(Temperature DPT9,001)*	*-273-300°C* *Standard:* **22°C**	Any temperature value between -273 and 300 can be sent.
Telegram *(HVAC operating mode DPT20,102)*	*Auto* ***Comfort*** *Standby* *Night* *Frost/heat protection*	Send HVAC telegram.
Telegram (Call up scene DPT17,001)	*Scene numbers:* **1***-64*	Any scene number between 1 and 64 can be sent.
Telegram *(Colour temperature DPT7,600)*	*1000-10000 K* *Standard:* **3300**	Send value for colour temperature between 1000 and 10000 K.
Telegram *(RGB colour DPT232,600)*	*RGB colour value:* **#000000***-FFFFFF*	Send 3-byte value for RGB colour.

Designation	Values	Description
Telegram *(RGBW colour DPT251,600)*	*RGB value:* **#000000**-*FFFFFF* *White value:* **0**-*255*	Send 6-byte value for RGBW colour.
Telegram *(XY colour DPT242.600)*	*X value: 0*-**1** *Y value: 0*-**1** *Brightness value: 0*-**100**	Send 6-byte value for RGB colour. Resolution X/Y value: 5 decimal places.
Telegram *(1 bit DPT1.*)*	*0*-**1**	Send 1 bit value.
Telegram *(2 bit DPT2.*)*	*No priority (00)* *No priority (01)* *Priority 0* ***Priority 1***	Value = 0 (00bin) Value = 1 (01bin) Value = 2 (10bin) Value = 3 (11bin)
Telegram *(1 byte unsigned DPT5.*)*	*0* – **255**	Any value between 0 and 255 can be sent.
Telegram (2 bytes unsigned DPT7.*)	*-32768 ... 32767* *Standard:* **100**	Any value between -32768 and 32767 can be sent.
Telegram (2 bytes signed DPT9.*)	*-671088.6 ... 670433.2* *Standard:* **100**	Any value between -671088.6 and 670433.2 can be sent. Format: floating point value.
Telegram (4 bytes unsigned DPT12.*)	*0 ... 4 294 967 295* *Standard:* **100**	Any value between 0 and 4294967295 can be sent.
Telegram (4 bytes signed DPT13.*)	*-2 147 483 648 ... 2 147 483 647* *Standard: 100*	Any value between -2147483648 and 2147483647 can be sent.
Telegram (4 bytes signed DPT14.*)	*-3.402E+38 ... 3.402E+38* *Standard:* **100**	Any value between -3.402E+38 and 3.402E+38 can be sent. Input format: The ETS only allows the input as a decimal without power. Accuracy: 32 bit float single. 7 decimal places. Example: 152.1234
If the condition is not fulfilled	*No telegram* ***Send the following telegram once*** *Send cyclically*	Send output object 1 if the condition is not fulfilled?
Telegram	*See above.*	Value of the telegram when the condition is not fulfilled.
Use output object 2?	***No*** *Yes*	If Yes is selected, further parameters and a second transmission object appear. As a result, 2 different telegrams can be sent at the same time on the same channel. The cycle time and the block behaviour apply to both objects.

Designation	Values	Description
Output object 2 *Telegram type*	***Switching DPT1,001*** *Priority switching DPT2,001* *Percentage value DPT5,001* *Value 0-255 DPT5,010* *Temperature DPT9,001* *HVAC operating mode DPT20,102* *Call up scene DPT17,001* *Colour temperature DPT7,600* *RGB colour DPT232,600* *RGBW colour DPT251,600* *XY colour DPT242,600* *1 bit DPT1.** *2 bit DPT2.** *1 byte unsigned DPT5.** *2 bytes unsigned DPT7.** *2 bytes signed DPT8.** *2 bytes signed DPT9.** *4 bytes unsigned DPT12.** *4 bytes signed DPT13.** *4 bytes signed DPT14.**	Telegram type for the second output object of the logic channel.
When the condition is fulfilled	***No telegram*** *Send the following telegram once* *Send cyclically*	Send output object 2 when the condition is fulfilled?
Telegram	See above, output object 1	Value of the telegram when the condition is fulfilled.
When the condition is not fulfilled	***No telegram*** *Send the following telegram once* *Send cyclically*	Send output object 2 when the condition is not fulfilled?
Telegram	See above, output object 1	Value of the telegram when the condition is not fulfilled.
Cycle time (if used)	*1 min, 2 min, 3 min,* *5 min, 10 min, 15 min,* *30 min, 45 min,* **60 min**	The parameter appears only if parameter *When the condition is fulfilled* or parameter *When the condition is not fulfilled* is set to Send cyclically. The cycle time is shared for both output objects.
Send output objects Fx?	***When status of the output changes*** *On telegram reception of an input*	When should the output objects be sent? If the status of the logic output changes, the parameterised response (condition fulfilled / not fulfilled) is executed once. The parameterised response (condition fulfilled / not fulfilled) is executed each time after telegram reception to an input. It is irrelevant whether the output status of the logic gate changes.

3.9.2 Block function parameter page

Designation	Values	Description
Block object	***Block with 1 (default)***	1 = Block 0 = Cancel block
	Block with 0	1 = Cancel block 0 = Block
Response when the block is set	***Do not send***	Do not send any telegrams when setting the block.
	As with fulfilled condition	Same reaction as set in the *When the condition is fulfilled* parameter. (See above ***Output objects*** parameter page).
	As with not fulfilled condition	Same reaction as set in the *When the condition is not fulfilled* parameter. (See above ***Output objects*** parameter page).
Response when cancelling the block	*Do not send*	Not automatically resent when the block is cancelled.
	Update channel	The current channel status is sent immediately as soon as the block is cancelled.

4 Typical application example

ⓘ This application example is intended as a planning aid and does not claim to be complete. It can be extended and updated as required.
Standard or customer-defined parameter settings apply for the parameters not listed here.

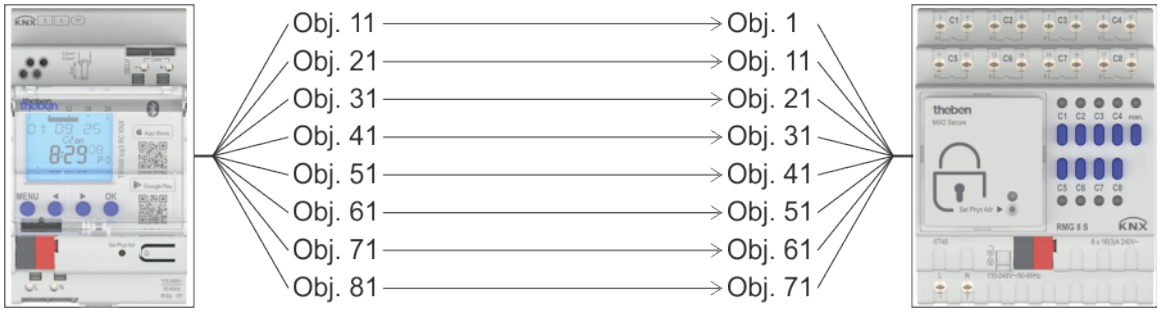
4.1 8 channel switching

The TR 648 controls the MIX2 switch actuator RMG 8 S.
All 8 channels are used.

4.1.1 Devices

- TR 648 top3 (6489130)
- RMG 8 S (4930220)

4.1.2 Overview



4.1.3 Objects and links

Links

No.	TR 648 top3 Object name	No.	RMG 8 S Object name	Comment
10	*F1 switching*	0	*RMG 4 U channel C1*	TR 648 top3 sends switch commands to RMG 8 S
20	*F2 switching*	10	*RMG 4 U channel C2*	
30	*F3 switching*	20	*RMG 4 U channel C3*	
40	*F4 switching*	30	*RMG 4 U channel C4*	

4.1.4 Important parameter settings

TR 648 top3

Parameter page	Parameter	Setting
F1...F8 - Output objects	*Telegram type F1.1*	*Switching DPT1.001*
	When the clock is switched on	*Send the following telegram once* [3]
	Send after short operation	*Send telegram*
	Telegram	*On*
	When clock is switched off	*Send the following telegram once* [4]
	Send after short operation	*Send telegram*
	Telegram	*Off*

RMG 8 S

Parameter page	Parameter	Setting
RMG 8 S channel C1 ... C8: Function selection	*Channel function*	*Switching On / Off*
	Activation of function via	*Switch object*

[3] Or send cyclically
[4] Or send cyclically