OSIRIA secondary clocks

OSIRIA 220 AR KNX	5009200
OSIRIA 230 AR KNX	5009210
OSIRIA 230 SR KNX	5009211
OSIRIA 240 AR KNX	5009230
OSIRIA 240 SR KNX	5009231
OSIRIA 241 AR KNX	5009240
OSIRIA 241 BR KNX	5009241
OSIRIA 242 AR KNX	5009250
OSIRIA 242 SR KNX	5009251
OSIRIA 251 BQ KNX	5009252
OSIRIA 232 BQ KNX	5009233

Contents

1 Functional characteristics

With the Theben OSIRIA secondary clocks, a secondary clock system can be set up using the cable network of a KNX system.
According to the particular version, they can display time or time and date
The clocks are synchronised via time messages from the KNX bus.
The clocks can request a new time message from the main clock at regular intervals
An alarm message can be sent to the bus if no time messages are received after several requests
One particular advantage is that every OSIRIA clock is fitted with a rechargeable battery charged by the bus voltage[1] and a power reserve of 10 days.
The rechargeable battery powers the OSIRIA clock mechanism, which has an integrated clock, in the event of a power failure. The clock keeps going in the event of a power failure; it is only no longer synchronised via the bus.

2 Application options

OSIRIA secondary clocks are suitable for displaying the time in salesrooms, factories, indoor arenas, schools, public buildings...

3 Technical data

Operating voltage KNX	Bus voltage, ≤10 mA
Power reserve	10 days via environmentally-friendly cadmium-free rechargeable batteries
Ambient temperature	-5 °C … +45 °C

4 Operation

When receiving carrier signals for the first time, the hands are put in the zero position (12:00 position) after 5 seconds.
Then the clock automatically sets itself to the appropriate time.

[1] Load time ≈ 4 days.

5 The "Secondary clock control" application program"

5.1 Selection in the product database

Manufacturer	Theben AG
Product family	Display units
Product type	Time display
Programname	OSIRIA KNX

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

Table 2

Number of communication objects:	5
Number of group addresses:	5
Number of associations:	5

5.2 Communication Objects

Table 2

No.	Object name	Function	Length DPT	Flags			
				C	R	W	T
0	*Receive time*	*Receive time message*	3 byte 10,001	C	-	W	T
1	*Receive date*	*Receive date message*	3 byte 11,001	C	-	W	T
2	*Automatic synchronization**	*Receive auto synch. message*	1 bit 1,001	C	-	W	T
3	*Send time query*	*Send time query message*	1 bit 1,001	C	-	-	T
4	*Alarm message*	*Send time query message failure*	1 bit 1,001	C	-	-	T

* **IMPORTANT:** The *Force synchronisation* object should always be associated with a group address. This allows the entire system to be quickly and easily resynchronised in case of error.

5.2.1 Description of objects

Object 0 "*Receive time*"

Receives the time messages from the bus clock, e.g. TR 648 top2 RC KNX
(order no. 6489212) to set the clock.

Object 1 "*Receive date*"

Receives the date messages from the bus clock, e.g. TR 648 top2 RC KNX
(order no. 6489212).

Object 2 "*Automatic synchronisation*"

A 1 on this object starts the following process:

The clock stops (second hand stops)
The hands are reset to zero after approx. 5 seconds rest:
First, the second hand is moved to the 12 o'clock position and then the minute hand.
The OSIRIA clock sets itself to the internal time after the hands are set to zero.

This mechanism allows the whole clock system to be easily synchronised again mechanically.

Object 3 "*Send time query*"

Sends time query to bus timer, e.g. TR 648 top2 RC KNX
(order no. 6489212) to receive the current time.

Object 4 "*Alarm message*"

An alarm message is sent if no time is received after a set number of time queries.
The number of queries is set using the *Report alarm after* parameter on the *Safety* parameter page.
0 = no alarm
1 = Alarm

5.3 Parameters

5.3.1 Parameter pages

Table 2

Function	Description
General	Type of clock
Safety	Time query and alarm

5.3.2 General

Table 2

Designation	Values	Description
Type of clock	*just time display* *with time and date display*	depending on version of clock

5.3.3 Safety

Table 2

Designation	Values	Description
Send time query approx.	*every hour* *every 2 hours* *every 3 hours* *every 6 hours* *every 12 hours* *every 24 hours* *every 48 hours*	How often should a time query be sent to the bus?
Report alarm after	*2 failed time queries* *3 failed time queries* *5 failed time queries* *7 failed time queries* *10 failed time queries*	After how many attempts should an alarm message be sent if the time query remains unanswered and no time is received?

6 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.

6.1 Simple control of a clock system

A system, consisting of several OSIRIA secondary clocks is controlled by a TR 648 top2 time switch.

6.1.1 Devices:

TR 648 top2 RC KNX
Various OSIRIA secondary clocks

6.1.2 Overview

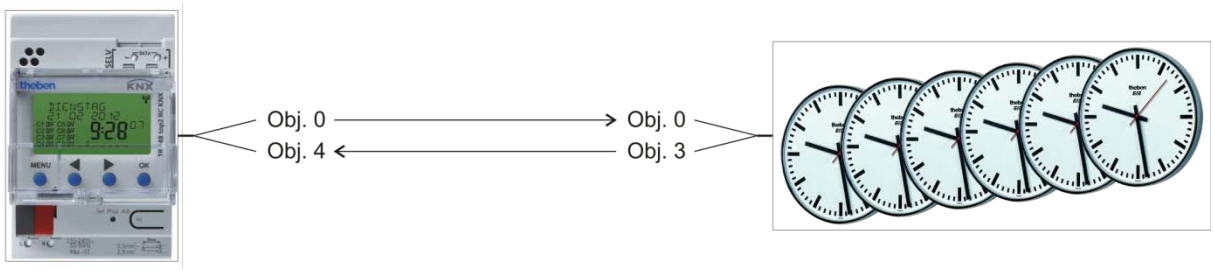


Figure 1

6.1.3 Objects and links

Table 1:

No.	TR648 top2 RC KNX Object name	No.	(all) OSIRIA clocks Object name	Comment
0	*Local time*	0	*Receive time*	The TR 648 top2 sends the time to all OSIRIA secondary clocks via a common group address
1	*Time query*	1	*Send time query*	All secondary clocks send the time query to the TR 648 top2 via a common group address

6.1.4 Important parameter settings

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

Table 2: OSIRIA

Parameter page	to select parameter	Setting
General	*Type of clock*	*just time display*

Table 3: TR 648 top2 RC

Parameter page	to select parameter	Setting
Date and time	*Mode of operation of object, time and date*	*send time and date*

6.2 Clock system with manual time synchronisation.

A system, consisting of several OSIRIA secondary clocks is controlled by a TR 648 top2 time switch.

6.2.1 Devices:

TR 648 top2 RC KNX (order no. 6489212)
TA 2 KNX (order no. 4969202)
Various OSIRIA secondary clocks

6.2.2 Overview

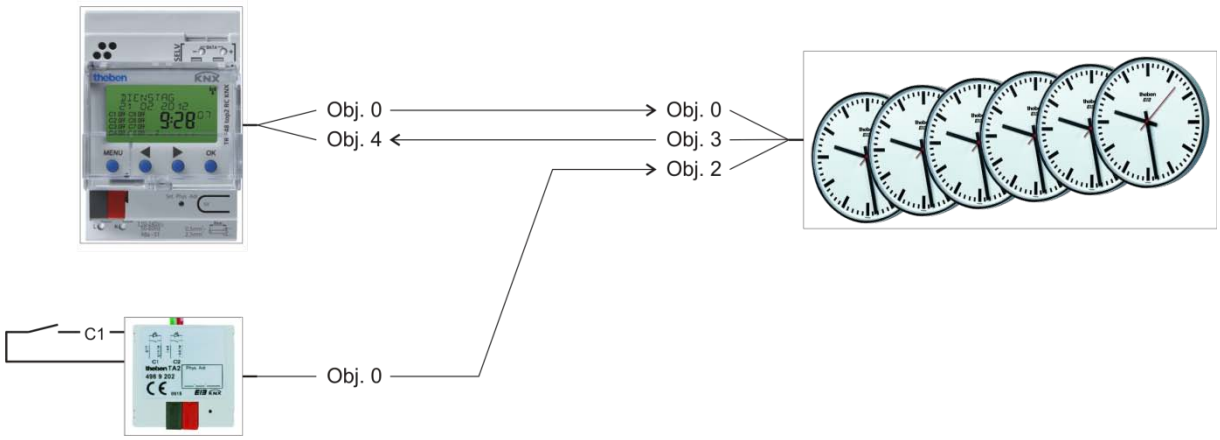


Figure 2

6.2.3 Objects and links

Table 4: TR648 top2 → OSIRIA

No.	TR648 top2 RC KNX Object name	No.	(all) OSIRIA clocks Object name	Comment
0	*Local time*	0	*Receive time*	The TR 648 top2 sends the time to all OSIRIA secondary clocks via a common group address
1	*Time query*	1	*Send time query*	All secondary clocks send the time query to the TR 648 top2 via a common group address

Table 5: TA 2 → OSIRIA

No.	TA 2 Object name	No.	(all) OSIRIA clocks Object name	Comment
0	*Channel 1* *Switching ON/OFF*	2	*Automatic synchronisation*	An ON telegram is sent to all clocks at the press of a button. The system auto synchronisation is triggered (see attachment).

6.2.4 Important parameter settings

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

Table 6: OSIRIA

Parameter page	to select parameter	Setting
General	*Type of clock*	*just time display*

Table 7: TR 648 top2 RC

Parameter page	to select parameter	Setting
Date and time	*Mode of operation of object, time and date*	*send time and date*

Table 8:

Parameter page	to select parameter	Setting
Channel 1	*Channel function*	*Switch/push button*
	Object type	*Switching (1-bit)*
	Response to rising edge	*ON*
	Response to falling edge	*none*

7 APPENDIX

7.1 Hand reset to zero

When setting the hand to zero, the hour and minute hands are moved to a set position (12:00). This makes it possible to ensure the exact positioning of the hands during normal operation.

The hand is reset to zero:

After receiving a 1 on the *Force synchonisation* object.
After first receipt of a time after restoration of bus voltage.

7.2 Synchronisation behaviour of clock

The control unit must have received at least one time telegram to set the clock.
If no date has been received, 1.1.2001 will be used as a start date (Only for models with date display).
If the clock receives a time for the first time or the new time differs by more than 5 seconds from the internal time then the time will be set after the hands have been reset to zero again.
If the time only differs by 1 - 5 seconds, then the correction will be made between the 39th and 41st minutes in an hour.
Example: A time telegram with a difference of 4 seconds is received at 9:10.
The difference is corrected between 9:39 and 9:41.
The clock resets itself when receiving the first time telegram after the restoration of bus voltage. This happens even if the time was not set correctly.
If the hand is reset to zero via the bus (force synchronisation or
new time), then the clock will stop immediately and perform the zero reset.

7.3 Troubleshooting

Remove bus terminal.
Put bus connection terminal back in again.
The clock automatically resets after it has received a carrier signal (as with initial set-up)

8 Operating manual

Designated use

With the OSIRIA KNX clocks, a secondary clock system can be set up using the cable network of a KNX system. The clock is synchronised via a time message from the KNX bus.
The OSIRIA KNX secondary clocks are suitable for installation in, among other places, sales rooms, factories, halls, schools or public buildings.
ETS (Engineering Tool Software) enables application programs to be selected, specific parameters and addresses to be assigned and transferred to the device.
The device is designed for wall installation. Only to be used in closed, dry rooms.

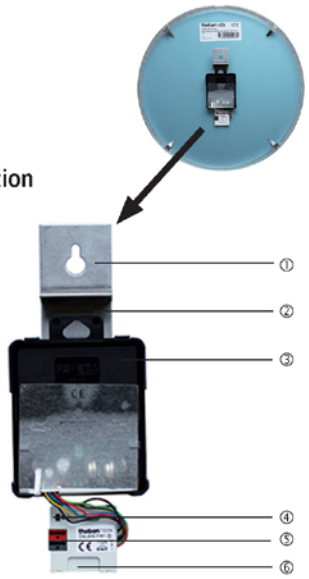
Safety instructions

NOTICE

➢ Installation should only be carried out by a professional electrician.

Please note the provisions of EN 50428 for switches or similar installation material for use in building systems technology with regard to the correct installation of bus lines and device start-up procedure.
Tampering with, or making modifications to, the device will invalidate the guarantee.

Bus connection



① Device to fasten the clock (from 415 mm)
② Device to fasten the clock (up to 315 mm)
③ Clock unit
④ Programming push button and LED for the physical address
⑤ Bus terminal for bus connection: ensure correct polarity
⑥ Control unit

➢ Insert bus line in bus terminal of the control unit.
➢ Note polarity: red = +, black = –

Enter physical address

➢ Press program button ④.
– The programming LED lights up.
– Device is in program mode.

Start-up, diagnostics and configuration are handled via the ETS (Engineering Tool Software V3 or V4).

The double-sided clock OSIRIA KNX has 2 control units. Therefore both clocks must be registered in the KNX bus.
➢ Loosen screws on the top and bottom of the clock.
➢ Connect both clocks to the KNX bus.
➢ Assign physical addresses for both clocks.

Start-up

- When receiving carrier signals for the first time, a zeroing will take place after approx. 5 s, meaning the hour and minute hands are set to the 12 o' clock position.
- After approx. 3 mins the clock automatically sets itself to the appropriate time.

Technical data

- Operating voltage: Bus voltage KNX
- Current consumption from the bus:
  max. 10 mA in Setting mode
  max. 8 mA in Normal mode
- Permissible ambient temperature:
  –5 °C ... +45 °C
- Power reserve: 10 days
- Protection class: III in accordance with EN 60730-1
- Protection rating: IP 20 in accordance with EN 60529

The ETS database is available at **www.theben.de**
Please refer to the KNX Handbook for detailed functional descriptions.

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