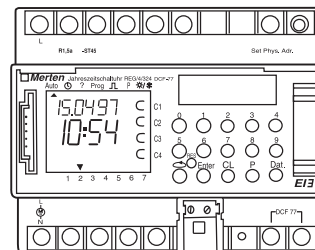# merten

Year Time Switch
REG-K/4/324

Art. no. MTN677129

Year Time Switch
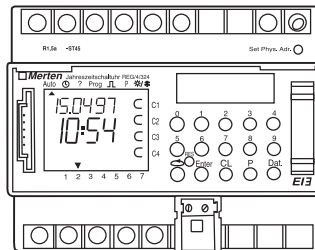## REG-K/4/324 DCF77

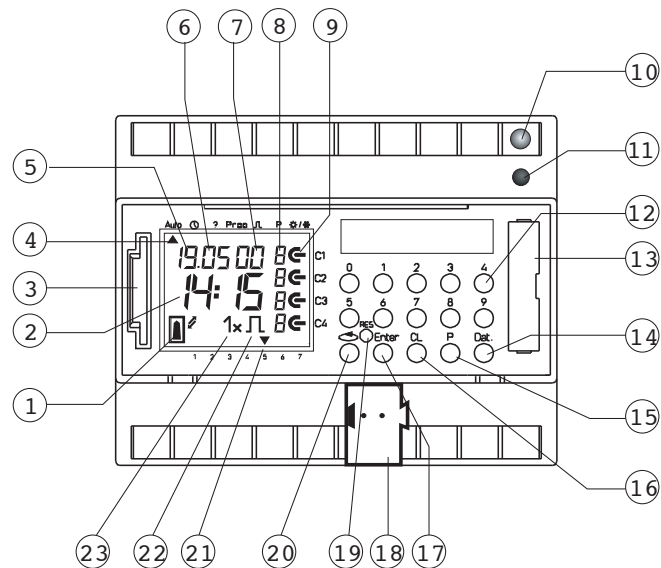Art. no. MTN677029

Ⓖ **Manual**
4-channel year time switch

Year time switch REG-K/4/324

Year time switch REG-K/4/324 DCF77

1.0 Description

1 Display data exchange with memory card
2 Display hours
3 Interface
4 Cursor for program selection
5 Display date day
6 Display date month
7 Display year
8 Random indicator /P 1 .. 9 / Manual ON (H ⤶ / Manual OFF (H ⤸)
9 Display status ON = ⤶ OFF = ⤸
10 LED-BCU
11 BCU-Prog.button
12 Buttons 0 – 9 for program entry
13 Battery compartment
14 Button for entry of date switchings
15 Button for entry of priority programs/changes
16 Button for cancellation of programs and program steps
17 Button for entry of input
18 Bus-connection
19 RES = Reset / the micro-processor makes a defined new start
20 Program selection button for menu selection
21 Cursor for display of days of the week 1 = Monday,2 = Tuesday ...
22 Display for pulse programming
23 Display **1 x** shows single switchings
24 Bus connection terminal DCF
25 LED lights up with DCF antenna reverse polarity
26 Display DCF77 reception

2.0 Features

– 4-Channel Yearly Time Switch
– Time switch programming or PC programming using Windows 95 / 98 / 2000 / WIN NT with software
– The time switch can be programmed up to the year 2063 in advance
– Data transfer and security possible with memory card
– Data can be transferred from time switch to time switch, from time switch to PC and vice versa
– **Functions:** switching, dimming, transmitting time, receiving time
– BCU integrated in unit
– 324 switchings for free block formation of channels and week days
– Stipulating public holidays without a fixed date
– Permanent switching times by means of EEPROM
– Day/Week/Year program
– Random program
– Pulse program
– Switching times: ON or OFF delay
– automatic stipulating of public holidays without fixed date
– 1x-function for all date-related switching times
– 10 priority programs consisting of 10 individual weekly programs per channel
– Time limited permanent switching ON/OFF
– Approx. 1.5 years battery reserve by means of exchangeable environmentally friendly lithium cell
– Option: radio controlled
– Up to 10 time switches or even products can be connected to one radio antenna.

3.0 Application

The time switch controls connected bus participants via a group address.
It transmits either 1, 2 or 8-bit telegrams, including the time.
With the time program and the corresponding application, the time can be transmitted and received via the BUS.
Transmission of current switch-time or date telegrams is only possible in automatic mode.

3.1 Safety Instruction

⚠️ **DANGER**
Risk of fatal injury from electrical current.
All work carried out on the unit may only be performed by skilled electricians. Observe the regulations valid in the country of use, as well as the valid KNX guidelines.

The time switch:

-> Must only be operated with the data from the product database

-> Must only be used in dry areas

-> The time switch is suitable for use in environmental conditions with normal pollution

-> The time switch is suitable for mounting on the 35 mm top-nat rail

Unauthorised modifications to the equipment render the warranty invalid.

3.2 Installation Instructions

In spite of expensive protection measures, exceptionally strong magnetic fields can lead to the destruction of the micro-processor controlled time switch.

We therefore recommend attention be given to the following points before installation:

☞ Use separate lead for the mains voltage supply.

☞ Suppress inductive loads with suitable RC filters.

☞ Do not mount product in direct proximity to sources of interference as e. g. transformers, contactors, PCs and TV and communication equipment.

☞ After suffering intereference, we recommend, before re-setting, a RESET with a new initial set up (chapter 5.3).

☞ Strongly heat-generating products on the right side of the product shorten the life of the battery.

3.3 Electrical Connection
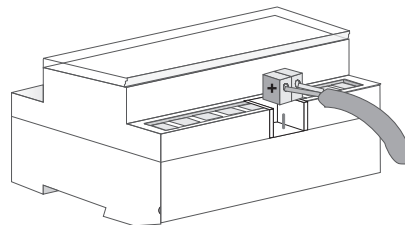
Busline

Description:	Yearly-Time-Switch
Program type:	Day/Week
Operating voltage:	Bus-connection
Interval consumption:	< 150 mW incl. BCU
Memory locations:	324
Minimum switching time:	1 second/minute
Minimum pulse:	1 second
Switching accuracy:	Accurate to the second
Accuracy:	±1 sec./day at 20 °C
Power reserve:	Lithium Cell 1.5 years at 20 °C
Permissible ambient temperature:	–10 °C ... +50 °C (–10T50)
Protection class:	II if installed according to EN 60335
Enclosure type:	IP 20 in accordance with EN 60529
Type:	1 BSTU in accordance with EN 60730-1, -2, - 7

Operating voltage for supply

of the antenna:	230 V - 240 V AC -10 % +6 %

Antenna for the reception of the radio signal is required

Time base:	Radio exact
	(with power reserve quartz operated)
Max. distant of the radio antenna:	200 m
Enclosure type:	IP 54 in accordance with EN 60529
Max. loading:	10 products

Note deviating technical data on the rating plate
Rights to technical improvements are reserved.

Note
The time switches conform to the European Regulations 73/23/EEC (low voltage rules) and 89/336/EEC (EMV-Regulations).
If the time switches are used with other products in one installation, attention must be given to ensure that the whole installation does not cause radio interference.

3.5 Illustration of Dimensions
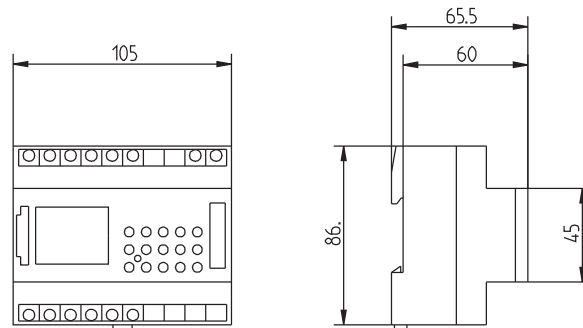
4.0 Power Reserve

In the event of a power failure, the battery back-up provides for the maintenace of correct time (approx. 1.5 years). Even without power and with a drained battery, the switching times remain permanently stored.

4.1 Battery Loading

– Note the polarity of the lithium battery.
– Insert the lithium battery into the holder (see diagram 1).
– Push the battery holder into the battery compartment.
– Press the battery holder down, untl it audibly locates.

4.2 Battery Changing

Important Instructions

Battery changing with mains voltage
All memorised program data is maintained

Battery changing without mains voltage
Note: date and time are lost.

1. Lift the battery draw with a suitable screw driver (see diagram 3).

2. Remove the lithium battery from the holder (see diagram 2).

3. Note the polarity of the new lithium cell.

4. Insert the Lithium battery into the holder (see diagram 1).

5. Push the battery holder into the battery compartment.

6. Press the battery holder down until it audibly locates.

7. Dispose of lithium battery in an environmentally friendly way.

Dia. 1
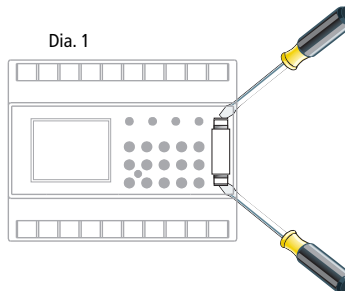
Dia. 2
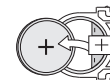
Ensure that the lithium battery is located (Chapter 4.1)

Press the ⬡ button to move the cursor ▲.

The cursor moves eacht time a menu item button is pressed.

Cursor below symbol:

Auto	(Automatic Program) – Programmed switching times determine the switching programm – Switching override (Manual ON/OFF) – Random ON/OFF
🕐	– Set / change date and time
?	– Interrogate, change, cancel, completely cancel
Prog	– Programming of date, weekly and 1x switching times
⊓	– Programming of date, weekly pulses, 1x pulse, ON and OFF switching delays
P	e.g. public holiday, vacation, or holiday program
☀/❄	– Programming and change of Summer/Winter time switching

Ending Programming: use ⬡ button, and place cursor ▲ into following position Auto 🕐 ? Prog ⊓ P ☀/❄ .
       ▲

5.1 Entry Adjustment

The time switches contains a prompt facility. Follow the flashing symbols. They show the programming sequence.

Entry Adjustment:

What to do when a wrong value has been entered in error?

Cancel the program step again:
– press button **CL** = one step back
– press button **CL** repeatedly = repeated steps back

When wrong value flashes:
– enter correct value with buttons **0 ... 9**

or when programming channels or week-days:
or in the event of a wrong entry:
– press the same button again

Note:
Only the last entry will be cancelled.

5.2 Setting date and time

On initial operation press button **RES** with a pointed object e.g. pencil, and afterwards release it.

Example:
The time switch is to be set up on 19.05.2000 at 9.25
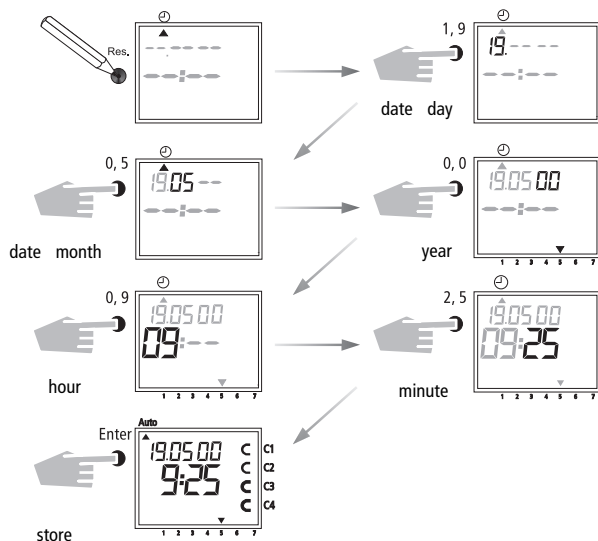
Note:

After the initial operation (Chapter 5.3) automatic Summer/Winter time is already programmed.

☞ Basic setting is for Central Europe: **dat 1.**

☞ If another or no change over standard is required, this can be changed at any time, as described in Chapters 5.4 – 5.5.

5.3 Selection Schedule for Automatic Summer-/Winter time

Setting	Commencement	Commencement	Area
dat 0	no change	no change	
dat 1	last Sunday in March 2:00 ➜ 3:00	last Sunday in October 3:00 ➜ 2:00	EU
dat 2	last Sunday in March 1:00 ➜ 2:00	last Sunday in October 2:00 ➜ 3:00	UK
dat 3	1st Sunday in April 2:00 ➜ 3:00	last Sunday in October 3:00 ➜ 2:00	North America
dat 4	individual Summer/Winter time table, programmable only with software		

5.4 Changing Automatic Summer/Winter time

Default REG/K4/324 dat 1

Select the new switching time (Chapter 5.3).

Example: basic setting **dat 1**
Change to: new regulation **dat 0**

Note: For radio controlled time switch (REG-K/4/324 DCF77) **dat 0** is necessary.
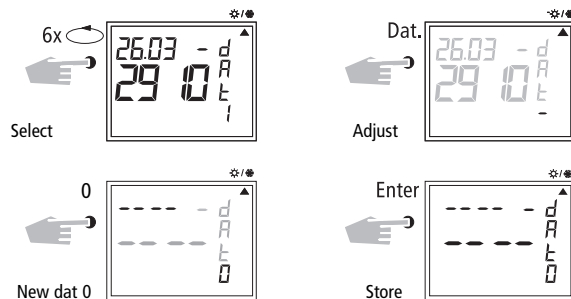
Back into automatic program with button ⟲.

5.5 Radio Time Switch

The operation of the radio time switch is exactly the same without DCF-antenna. The correct time, date and Summer-/Wintertime change-over set themselves automatically with me DCF77 radio receiver.

Interesting Details:
– Accuracy of the radio receiver +/– 1 sec. in 1,000,000 years
– Transmitter location is Mainflingen near Frankfurt
– Transmitting radius of the transmitter approx. 1000 km
– Synchronisation is effected after initial setting-up and then daily at night.

5.6 Connection and Adjustment of the Radio Antenna

We recommend the following mounting positions:

– outside the control box (at least 4 m away)
– under the roof
– or in a protected position out of doors

Avoid mounting positions near:

– radio transmitting installations
– radiological equipment
– television and personal computers

A. Operation without DCF77 radio reception

1. Connect the bus line only.

2. In this case, set the summer/winter change to the correct changeover standard, see Chapter 5.3/5.4.

B. FW/S connection with radio reception

DCF77 busline

KNX busline
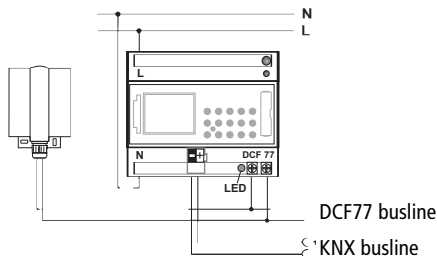
1. First connect the radio time switch to the 230 V mains supply and then to the bus line.

2. Connect only antenna to the time switch. In this case, the polarity of the connection is **very important**. The antenna signal is safety extra-low voltage. Ensure that there is safe isolation from the voltage supply.

C. Adjusting the DCF radio antenna

1. Set the radio antenna so that the LED installed in the front flashes at one second intervals.

Frankfurt a.M.

D. Connecting several radio time switches to the DCF antenna
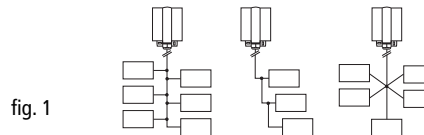
fig. 1

1. First, connect only **one** time switch to the 230 V mains supply, then connect to the bus line.

Observe the following when connecting the antenna:

2. Only after this, connect further time switch devices **to the antenna.**

Year time switch REG-K/4/324 DCF77

fig. 2

KNX busline
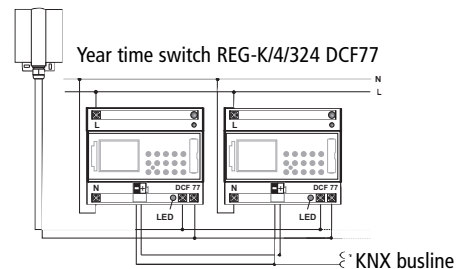
The connection to the **DCF** antenna may take the form of a star, bus or tree topology, see Fig. 1).

Note: If an LED at the **DCF** lights up, simply reverse the polarity at this connection!

3. Following this, connect the other devices first to the 230 V mains supply and then to the bus line.

4. Align the antenna, see Chapter **C.**

5.7 Initial Operation of the Radio Time Switch

A. Setting-Up Automatically

Note: During synchronisation press **no** buttons!

The synchronisation test would be discontinued immediately.
To obtain a new start after this, **RES** button must be pressed again.

1. The display counts from **00** to **59** (see illustration **2**)
Depending on the reception quality of the DCF77 signal, this procedure can be repeated several times.

2. If the time swtich has received the whole of signal**, RC** goes on flashing.
Only after a further signal is received, does the **RC** symbol stop.
The status of the channels are displayed (see illustration **3**).
The clock is now ready.

B. Setting-Up Manually

Tip: If the clock, on the initial set-up, does not synchronise even after several attempts, possibly because of a disturbed reception signal, we recommend setting-up as described in Chapter 5.3.
The clock will then try once more to synchronise itself on the signal, during the night.

Example: The time switch has synchronised itself on 19.5.2000 at 9.25.
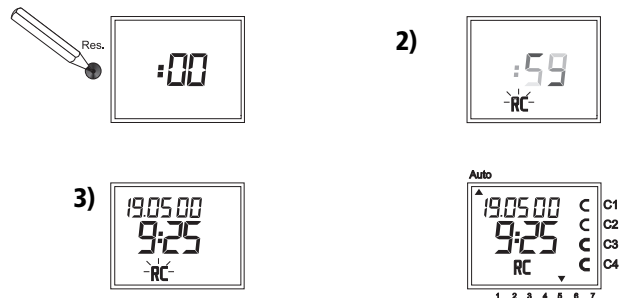
5.8 Forced Transmitter Call

The synchronisation of the time switch is effected after the initial setting-up, then daily between 1.58 and 3.13.
A radio synchronisation can be called up manually during the day (transmitter call).
Start of the Transmitter Call
1. Press **Dat** Button for approx. 3 secs.
2. Then release.
The timeswitch synchronises itself on the DCF77 signal.
In the LCD display can be seen:
The **RC** symbol flashes only during a DCF77 synchronisation!
If the time switch has synchronised itself, a program review takes place. The channels take on, afterwards, the specified switching positions, from the individual program.
The **RC** symbol is permanently in the LCD display.

5.9 Changing Date / Time

With the cursor in Pos. ⏲, any flashing value, the actual time or date, can be changed with the buttons **0 .. 9.**

Change date e.g. from 19.5.2000 to 20.5.2000

Change time only e.g. from 9.25 to 9.27
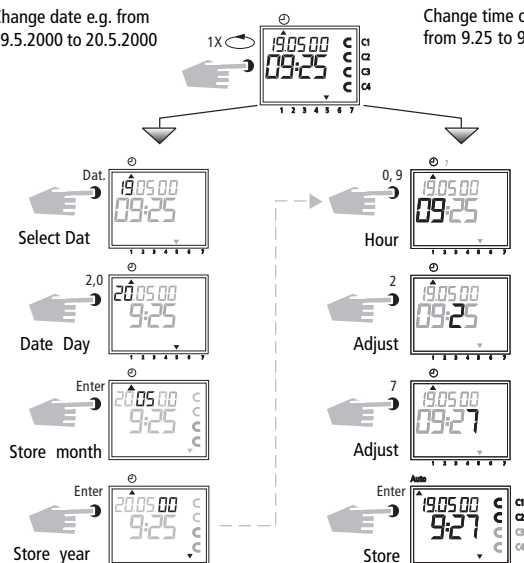
– Press **Enter** repeatedly, until the cursor is below Auto
– or follow the line and change the actual time.

6.0 Manual Intervention in the Program

6.1 Permanent ON / OFF

Each channel can be manually switched in automatic menu to permanently **ON.** A permanent switching has highest priority. The channel remains in the permanently **ON** switching position until manually cancelled.

Example: Channel **1** permanent **ON**.
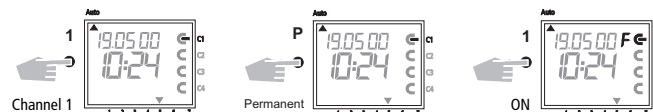
Example: Channel **1** permanent **OFF**.
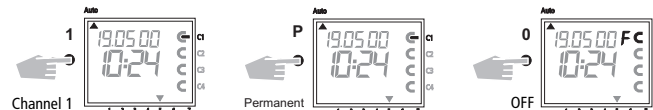
Each channel can be manually switched in automatic menu to permanently **OFF.** A permanent switching has highest priority. The channel remains in the permanently **OFF** switching position until manually cancelled.
After cancellation of a permanent switching the time switch effects a program recall. This results in the time switch checking the stored program and implementing the correct switching condition.

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Each channel can be switched **ON** manually in the automatic program. In which case, the symbol **H = hand** appears in the display.
An override switching is cancelled again by the next switching command. The **H** display is turned off.

Select Channel: e.g. Button **1** = Channel C1, Button **2** = Channel C2 etc.
Select Status: Button **1** = Switch ON, Button **0** = Switch OFF
Example: Switch ON Channel **C2** manually, press button **2,** once (press **1**).
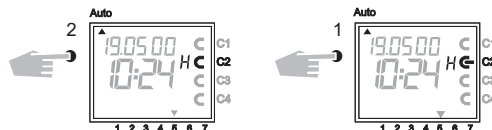
Each channel can be switched OFF manually in the automatic program. An override switching in the automatic program is corrected again by the next switching command. (The **H** symbol is turned off).

Select Channel: e.g. Button **1** = Channel C1, Button **2** = Channel C2 etc.
Select Status: Button **1** = Switch ON, Button **0** = Switch OFF
Example: Switch OFF Channel **C2** manually, Button **2,** press.
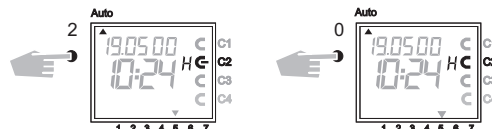
General Comment
A random program causes the time switch to switch ON or OFF at random between one or more pairs of switchings (ON and OFF switching time).
Duration of the random ON and OFF switching time approx.
10 – 120 minutes.
The random program can be selected individually for each time channel.

Example:
Between 19.00 and 22.00 random ON (display:**r**)
Between 0.00 and 06.00 random ON (display:**r**)

Programmed switching pairs

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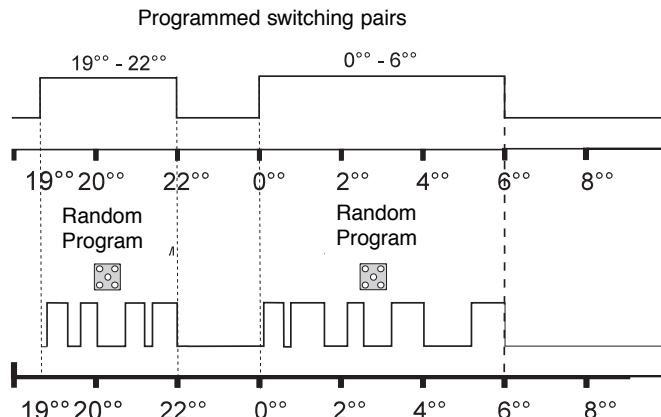
6.4 Random Program Start

A random program can be switched ON manually in the automatic program (Auto) at any time. It remains active until switched OFF (chapter 6.5).

Note: If the random program is active in a channel, the symbol **r** (random) appears beside the channel.

Example: Switch ON random program in Channel **C2.**
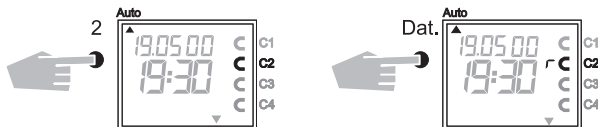
6.5 Stop Random Program / Override Switching

A random program override switching can be interrupted at any time.
After cancellation of the random program override switching, the time switch carries out a program review. This causes the time switch to inspect the stored program and then take up the correct switching status.

Example: Stop random program Channel **C2.**

Note: The symbol **r** turns OFF.
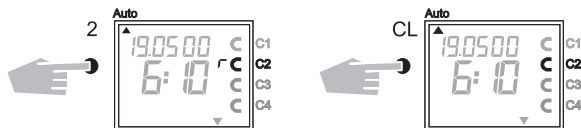
6.6 Locking/ Unlocking the Keyboard

Effect:

The memory card allows you to prevent operation of the device by unauthorized persons.
In this case time switch query and programming are impossible without the memory card.

Locking the keyboard

1. Insert the memory card into the data interface.

2. Press key **8** for approx. 3 secs until the icon ⬜ is flashing.

Operating the time switch

If after a button is pressed and the Symbol ⬜ is blinking, the keyboard is locked.

1. Insert the memory card into the data interface.

2. You can the select the desired program using the ⬯ key.

3. Now you can remove the memory card in order to continue programming. When the time switch returns to auto mode, the keyboard is locked.

Canceling the keyboard lock

1. Insert the memory card into the data interface.

2. Press key **8** until the icon ⬜ appears.

3. Press key **8** for approx. 3 secs until the icon disappears.

4. Remove the memory card.

Now the time switch can be operated again without obstruction.

7.0 Programming

7.1 Weekly Program, set switch ON time

e.g.: Channels **C1** and **C3** are to switch on at 6.30 from Mon to Fri ⊏
Place cursor ▲ in pos. Auto ⏱ ? Prog ⎍ P ☼/❋
▲

3x [Prog display]
Select Prog

Enter [Confirm Channel display]
Confirm Channel

*) 1,2,3,4,5 [Weekdays display]
Weekdays

0, 6 [Hours display]
Hours

Enter [Prog display C1 C2 C3 C4]
Storage Program

1,2 [Prog display]
Channel 1 + 3

1 [Switch ON display]
Switch ON

Enter [Confirm days display]
Confirm days

3,0 [Minutes display]
Minutes

*) Press button **0**
    Switching time activated daily
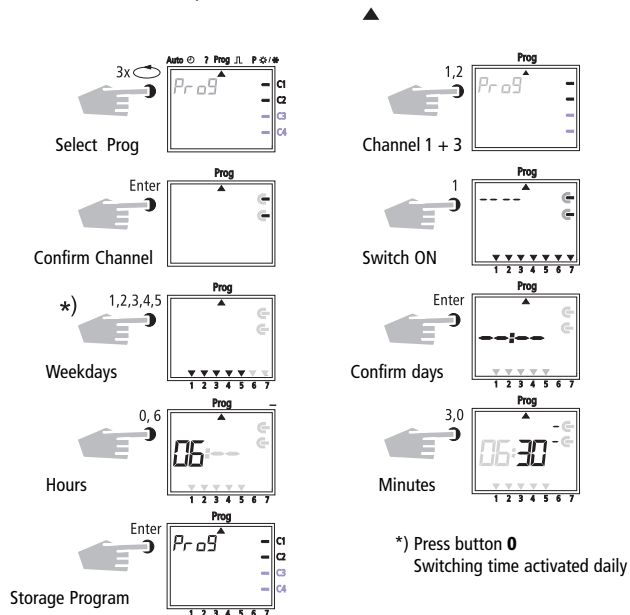
Example 2: Weekly program – set switch **OFF time**
– Channels **C1** and **C3** are to switch OFF at 18.30 from Mon to Fri ⊏
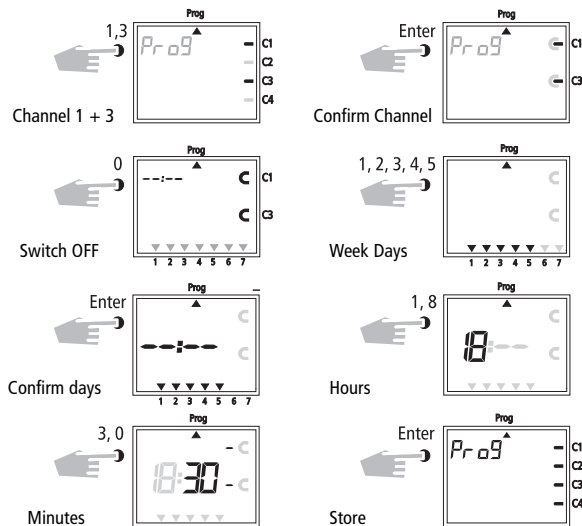
1,3 [Prog display C1 C2 C3 C4]
Channel 1 + 3

Enter [Prog display C1 C3]
Confirm Channel

0 [Switch OFF display]
Switch OFF

1, 2, 3, 4, 5 [Week Days display]
Week Days

Enter [Confirm days display]
Confirm days

1, 8 [Hours display]
Hours

3, 0 [Minutes display]
Minutes

Enter [Prog display C1 C2 C3 C4]
Store

Additional programming as described, or back into the automatic program with button ↺.

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7.2 Programming Date Program

Example.: Channel **C1** is to switch ON yearly on the 1.5 at 7.30
Place cursor ▲ in pos. **Auto** ⏰ **?** **Prog** ⊓ **P** ☀/❄

3x — Select Prog.

1 — Channel 1

Enter — Confirm Channel

1 — ON

Dat. — Date

0, 1 — Date Day

0, 5 — Date Month

0, 7 — Hours

3,0 — Minutes

Enter — Store
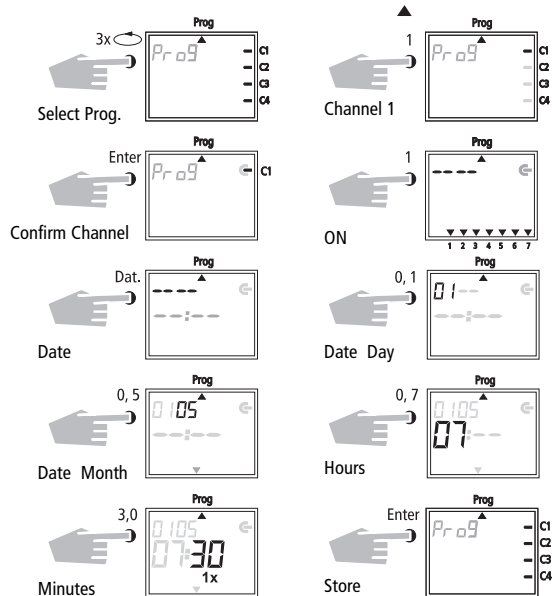
Additional programming as described or back into the automatic program with button ⟲.

7.3 Programming Single Switching Time

Example: Channel **C2,** 1 switch ON on the 10.5 at 8.30

Note: Only date related switching times can be programmed with the function **1x** see illustration 10. Once the switching time is effected, it cancels itself automatically at mid-night.
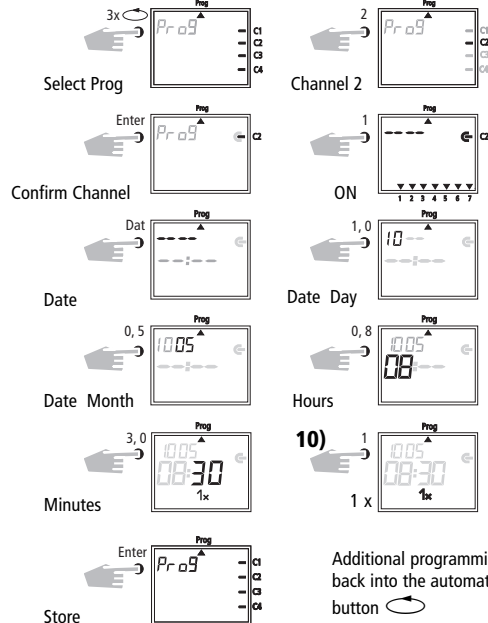
3x — Select Prog

2 — Channel 2

Enter — Confirm Channel

1 — ON

Dat — Date

1, 0 — Date Day

0, 5 — Date Month

0, 8 — Hours

3, 0 — Minutes

10) 1 — 1 x

Enter — Store

Additional programming as described or back into the automatic program with button ⟲

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7.4 Programming Pulse Program

Example: Channels **C1** and **C2** pulse duration: 5 secs from Mon to Fri at 7.15.
Place cursor ▲ in pos. Auto ☉ **?** **Prog** ⎍ **P** ☼/☾

4X ⎍ Select

Enter — Confirm

1, 2, 3, 4, 5 — Week Days

0,7 — Hours

0, 5 — Pulse 5 sec.

1,2 — Channel 1 + 2

1 — Switch ON

Enter — Confirm Days

1, 5 — Minutes

Enter — Store
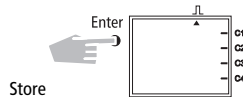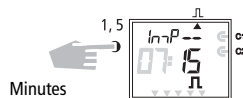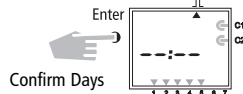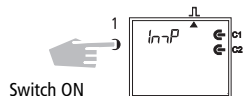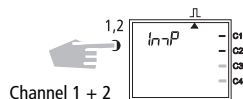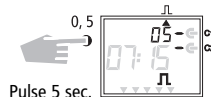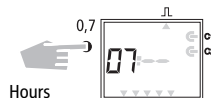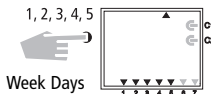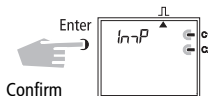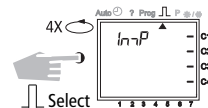
Note After a time adjustment, pulses are only effected, which are programmed at least one minute after the time adjustment.

8.0 Priority Program

With the time switches up to 9 different weekly programs can be performed in addition to the normal weekly program. A firm weekly program **P1 ... P9** can be requested at any fixed periods of time.

That is, the programming consists of:

1. Setting the weekly program (see Chapter 8.1)
2. Setting commencement and completion date (see Chapter 8.2)

If the time period of several weekly programs cut across one another, the program with the highest index number prevails e.g. weekly program **P9** prevails over weekly program **P3**.

In order to maintain control, we recommend that the various weekly programs are noted in the table at the end of the user instructions.

Switching times are executed in the following order:

– Permanent switching
– Time limited permanent switching. Chapter 8.3 (out priority over ON).
– Date switching times. Chapter 7.3 (out priority over ON).
– 1x switching times. Chapter 7.3.
– Weekly program with priority. Chapter 8.2/8.3 (P9 priority over P1).
– Weekly program. Chapter 7.1/7.2.
– etc.

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Weekly Program Schedule with Priority

Highest Priority →

weekly program **P9**
weekly program **P8**
weekly program **P7**
weekly program **P6**
weekly program **P5**

weekly program **P3**
weekly program **P2**
weekly program **P1**

Channel **C1 + C2** at ON ⊂
16.15 daily.

Channel **C1 + C2** at OFF 20.00 ⊂

weekly program **P4**

Channel **C3 + C4** switch ON
Monday-Friday 6.30
pulse duration 5 secs.

Channel **C3 + C4** switch ON
Monday-Friday at 7.15
pulse duration 5 secs.

(8.1)

Start
e.g. 8.4

Finish
e.g. 27.5

Start
e.g. 21.7

Finish
e.g. 7.9

(8.2)

Standard Weekly Program	Weekly Program **P3**	Standard Weekly Program	Weekly Program **P4**	Standard Weekly Program

weekly program „Standard"

weekly program „Priority **1**"

weekly program „Priority **2**"

weekly program „Priority **3**"

weekly program „Priority **4**"

weekly program „Priority **5**"

weekly program „Priority **6**"

weekly program „Priority **7**"

weekly program „Priority **8**"

weekly program „Priority **9**"

Priority times
P1-P9

Date
switching
times

Permanently
ON/OFF

Standard
P1
P2
P3
P4
P5
P6
P7
P8
P9

ON

OFF

RELAY

When changing to a new weekly program (e.g. on 8.4 at 0.00 hr), all channels in questions are switched as if the new weekly program has been valid for some time. This means the new weekly programme makes a review of the program.

19
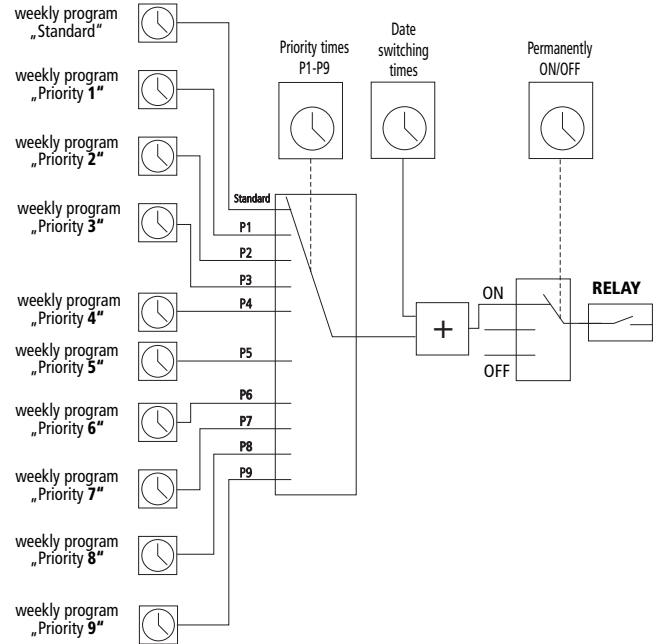
8.1 Programming Weekly Program with Priority P1 .. P9

Example Channel **C1** and **C2** switch on daily at 8.15
Weekprogram get priority sequence **P1.**

3x
Select Prog

1, 2
Select Channel

Enter

Confirm

1
Switch ON

0
Daily

0, 8
Hours

1, 5
Minutes

1
Priority P1

Enter

Store
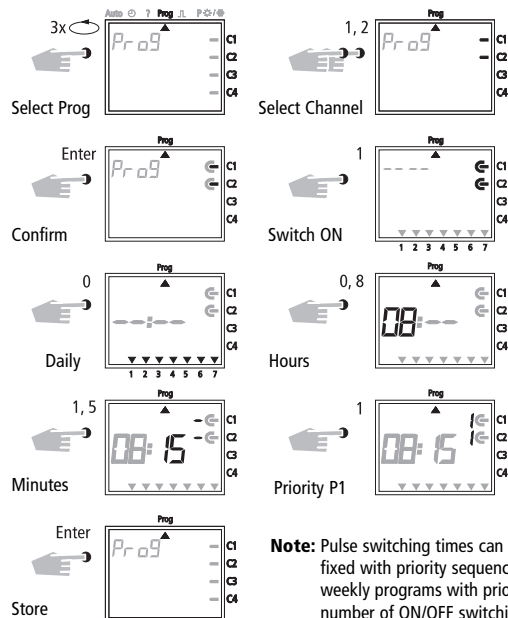
Note: Pulse switching times can also be fixed with priority sequence. For weekly programs with priority, any number of ON/OFF switching commands can be specified.

8.2 Setting Time Period for Weekly Program P1 .. P9

A. Recurring annually

The time period of a weekly program **P1 .. P9** is fixed by entering a commencement and finishing date. The weekly program begins at $0.^{00}$ on the commencement date and ends at 24^{00} on the finishing date.

Example: As opposed to the normally active program on Channel **C2** from **8 April** until **27 May**, the individual priority program with index **P1** is to become effective. In the fixed time period with priority sequence **P1 .. P9,** the whole standard program (without priority sequence) is suppressed.
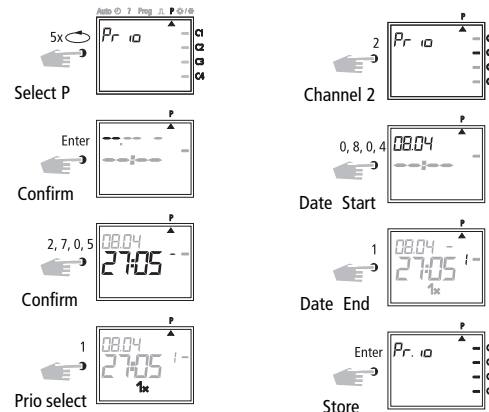
5x
Select P

2
Channel 2

Enter

Confirm

0, 8, 0, 4
Date Start

2, 7, 0, 5
Confirm

1
Date End

1
Prio select

Enter
Store

Additional programming as described or with button ⟷ back into the automatic program.

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B. Weekly Program only in one Specified Year

Example: Only in year 2000 from 8th April to 27th May, e.g. the weekly program **P2** activated.

5x — Select P
2 — Select channel
Enter — Confirm
8, 4, 0, 0 — Start
2, 7, 0, 5 — End
2 — Priority 2
Enter — Confirm
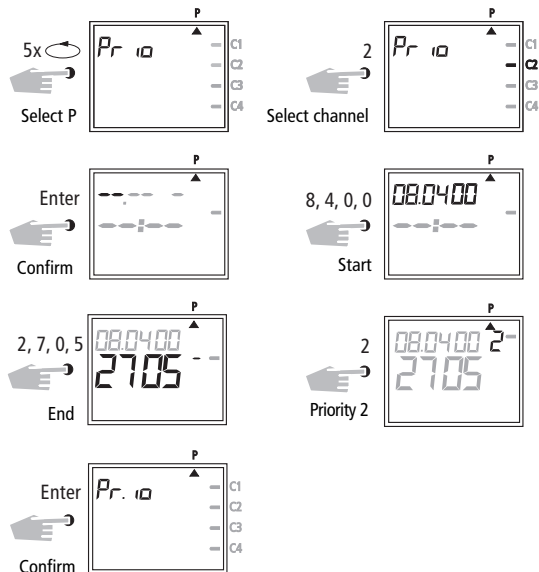
C. Stipulating Public Holidays without a Fixed Date

Example: Following this measure, a public holiday such as Easter (not a fixed date) will be activated automatically and will execute, e.g., program **P2.**

5x — Select P
1 — Select channel
Enter — Confirm
0, 4, 0, 4 — Date start
Dat — Symbol „no fixed date"
2 — Program 2
Enter — Confirm
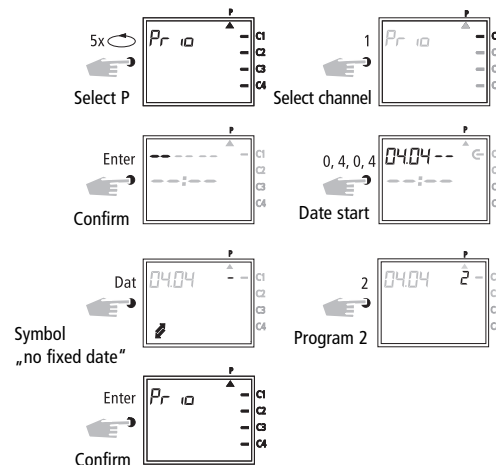
Note: Programming of public holidays without fixed dates only needs to be carried out once, e.g. following initial start-up.
This applies to holidays connected with Easter such as Ascension, Whitsun, Corpus Christi, Ash Wednesday, Good Friday etc. Program the date of **all** of these holidays that do not have a fixed date **once** only for the **current** year.

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8.3 Time Limited Permanent Switching ON or OFF

E.g.: All connected equipment is to remain switched OFF during the Christmas holidays between **23 December** and the **7 January.**

5x ⟳ **Pr io** — Select P	1, 2,3,4 **Pr io** — Channel1 .. 4
Enter --·--·-- — Confirm	2, 3,1, 2 **23.12 --** — Date Start
9, 9 **23.1299 --** — Year	7, 0, 1 **23.1299 0701** — Date End
P **23.1299 P 0701 P P** — Permanent	0 **23.1299 P 0701 P P** — OFF
Enter **Pr io** — Store	
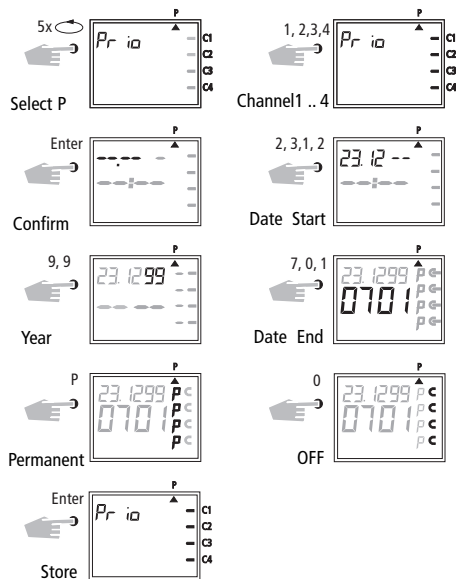
Additional programming as described or with button ⟳ back into the automatic program.

9.0 Program Interrogation

9.1 Whole Program Interrogation

Menu Selection cursor under **?**
By pressing **ENTER** button (several times) interrogate whole program.

9.2 Interrogating of Designated Switching Times

1. Illustration: menu selection and display of the free memory locations e.g. **304**
2. Illustration: e.g. select channel **1** (press button **1**).
3. Illustration: begin interrogation e.g. from Mondays: button **0, 1** press.
(**C3** is displayed likewise, as jointly programmed as a block).
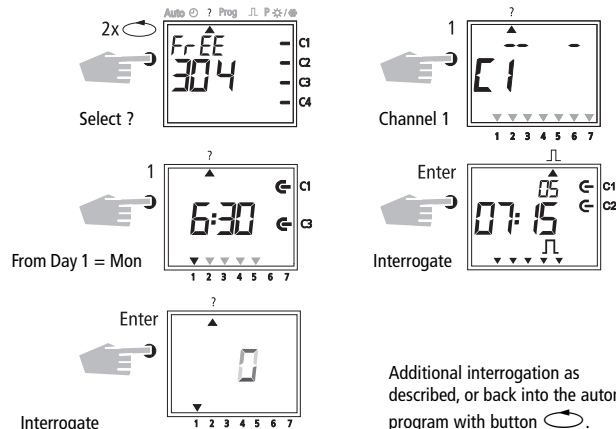
2x ⟳ **FrEE 304** — Select ?	1 **C1** — Channel 1
1 **6:30** — From Day 1 = Mon	Enter **05 07:15** — Interrogate
Enter **0** — Interrogate	Additional interrogation as described, or back into the automatic program with button ⟳.

Illustration 1: Menu selection and display of the free memory locations e.g. **304**
Illustration 2: Select Channel e.g. **C1**, press button **1**
Illustration 3: Select date program, press button **Dat**
Illustration 4: Begin interrogation e.g. from May Button **0,** press **5**
(interrogation from February Button **0,** press **2** etc.)
Illustration 5: Search for the desired switching time press **Enter** Button
e.g. on 1.5 Channel **C1** ist urned on at 7.30
Illustration 6: Example, memory searches for additional switching times
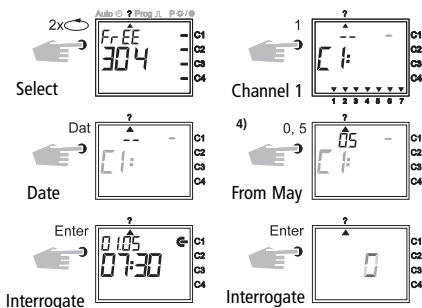
With Button ⟲ back into the automatic program (Auto).

9.4 Complete Interrogation of Date Program

The complete interrogation of the date program is effected as described in 9.3.
The entry step in illustration 4 (button 0,5) must be omitted in this case.
All stored date related switching times will be shown one after the other from
January (01).

Fig. 1: Display of available memory space **210**
Fig. 2: Select: Channel **C1**
Fig. 3: Only have priorities displayed
Fig. 4: Priority selection, have everything displayed with priority **2**
Fig. 5: Press **Enter** to have further programs with priority **2** displayed
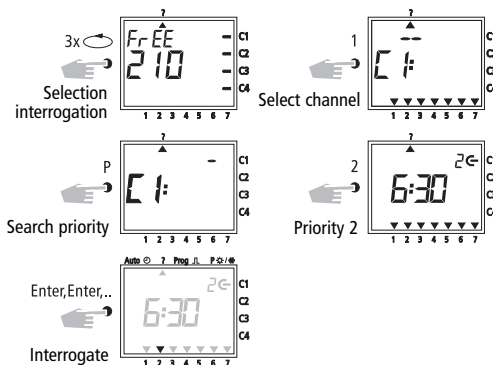
Note: If, while in interrogation mode, a date, the year and the symbol ✐
are displayed, then this indicates a public holiday without a fixed
date.

To cancel: Press button ⟲ to return to the automatic program.

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10.0 Changing a Stored Program

Any program already stored, whether weekly or yearly can be changed depending on individual requirements.

Condition: Cursor must be in the interrogation menu. Auto ☺ ? Prog ⎍ P ☼/❅

Example:

Illustration 1:	example: free memory locatins **304**
Illustration 2:	Button **1** of selected Channel **C1**
Illustration 3:	By repeatedly pressing the **Enter** Button, call up the switching time to be changed
Illustration 4:	Button **P** = adjustment
Illustration 5:	e.g. Channels C2, C4 ON
	– **change channel sequence:** with **Button 1, 2, 3, 4**
	– afterwards store with **Enter** Button
	– retain channel sequence: progress with **Enter** Button
Illustration 6:	Store channel selection
Illustration 7:	Switching status e.g. switch ON
	– **change switching status:** with Button **0,1**
	– **retain switching status:** progress with **Enter** Button
Illustration 8:	Programmed weekdays
	– switching times are effected on the day, Mo to Fr (1 – 5)
	– **changing weekdays: e.g.: not** Wed, Sat, Sun press Button **3, 6, 7**
	– **retain weekdays:** progress with **Enter** Button
Illustration 9:	Store change
Illustration 10:	**Change switching time:** e.g. 7.45 press Button 7, 4, 5
	– afterwards store with **Enter** Button
	– **retain switch time:** progress with **Enter** Button
Illustration 11:	Search for additional switching times, press **Enter** Button
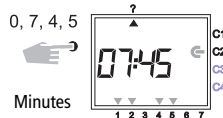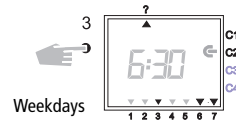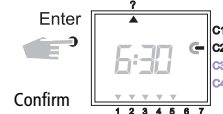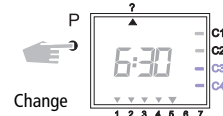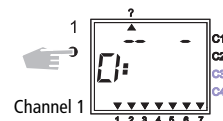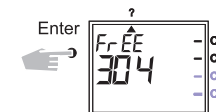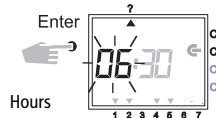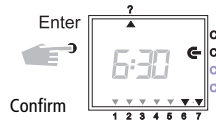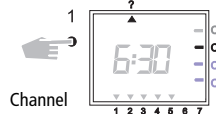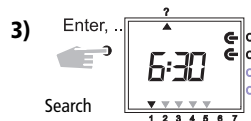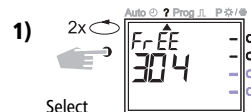
Additional changes as described, or back into the automatic program (Auto) with Button ⌔..

11.0 Cancellation

11.1 Cancellation of Individual Switching Times

Illustration 1: Menu selection **?** and display of free memory locations e.g. **304**.
Illustration 2: Select channel, e.g. C1, press Button **1.**
Illustration 3: Commence search from day 1 = Monday, press Button **1.**
Illustration 4: Search for switch times: press **Enter** Button.
Illustration 5: Cancel: press **CL** Button and then **Enter** Button.
Discontinue cancel procedure: press **CL** instead of **Enter** Button.
Illustration 6: **Enter** Button: memory searches for additional switching times.
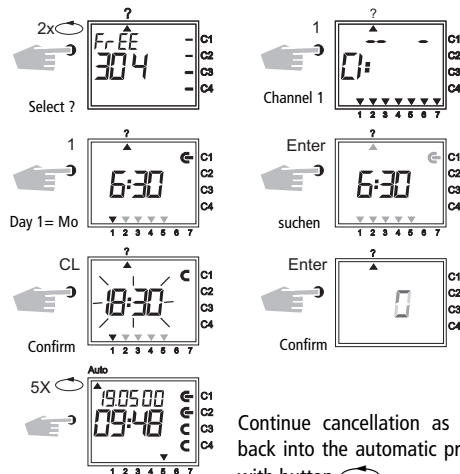
2x — Select ?

1 — Channel 1

1 — Day 1= Mo

Enter — suchen

CL — Confirm

Enter — Confirm

5X — Auto

Continue cancellation as described, or back into the automatic program (Auto) with button ⟳..

11.2 Cancellation of Date Program

Illustration 1: Menu selection **?** and display of free memory locations e.g. **304**
Illustration 2: Select channel e.g. C1, press Button **1**
Illustration 3: Select date switching times, press **Dat** Button
Illustration 4: Begin interrogation from January: press Button **0, 1** (February **0, 2** etc.)
Illustration 5: Search for the switching time to be cancelled, press **Enter** Button.
Illustration 6: Cancellation of the switching time: press **CL** Button and afterwards **Enter.**
Illustration 7: **Enter** Button**:** memory searches for additional switching times.
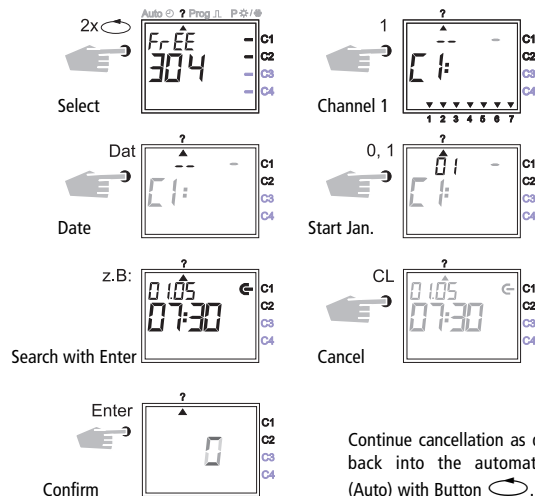
2x — Select

1 — Channel 1

Dat — Date

0, 1 — Start Jan.

z.B: — Search with Enter

CL — Cancel

Enter — Confirm

Continue cancellation as described, or back into the automatic program (Auto) with Button ⟳.

11.3 Cancellation of the Whole Priority Program

Illustration 1: Menu selection **?** and display of free memory locations e.g. **304**
Illustration 2: Initiate the cancellation procedure, press **CL** Button
Illustration 3: Select channel e.g. **C1,** press Button **1**
Illustration 4: Select the priority program for cancellation e.g. **P1,** press Button **1**
Discontinue cancellation procedure, press **CL** Button again
Illustration 5: Confirm cancellation procedure, press **Enter** Button

Additional cancellation as described, or with Button back into the automatic program (Auto) ⟳.
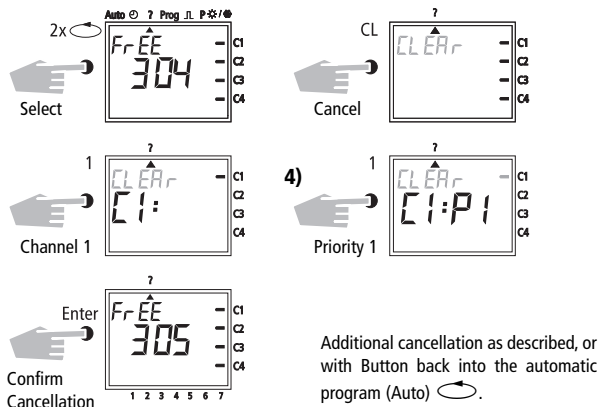
11.4 Complete Program Cancellation of One Channel

The program of one channel can be cancelled completely. The cancellation is effected as described in Chapter 11.3. The entry step in Illustration 4 (Button **1**) must be omitted in this case.

11.5 Cancel Everything

Illustration 1: Menu selection **?** and display of free memory locations e.g. **304**
Illustration 2: Cancel program, press Button **CL**
Illustration 3: Cancel everything, press Button **0**
Discontinue cancellation, press **CL** Button again
Illustration 4: Confirm cancellation, press **Enter** Button
Illustration 5: Display **324** memory locations, all switching times are cancelled
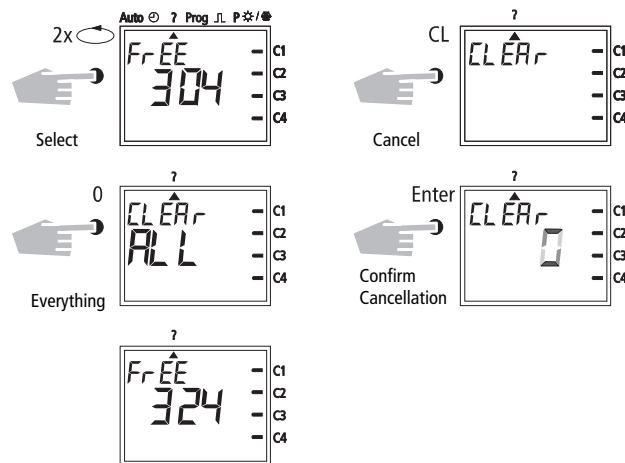
With Button ⟳ back into the automatic program (Auto).

12.0 Data Exchange / Security

Switching times of time switch can be stored externally with the memory card. The data can be filed or transferred from time switch to time switch.

Illustration 4
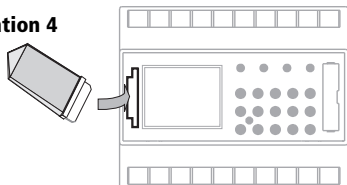
12.1 Entering Data from Time Switch onto Memory Card

Push the memory card into the data interface (Illus. 4). Select menu **?.**
Enter data on the memory card: press **Enter** button.
The data is transferred when the **End** symbol is displayed in the LCD.
Remove memory card. Back into the **Auto** menu with **Enter** button.
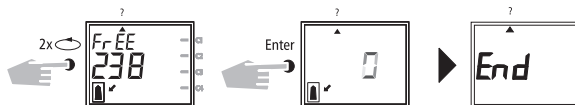
12.2 Reading Data from Memory Card into Time Switch

Push the memory card into the data interface (illus. 4).
Select menu **Prog.** Read data in, press **Enter** button. The data is transferred, when the **End** symbol is displayed in the LCD.
Remove memory card. Back into the **Auto** menu with **Enter** button.eicherten Schaltzeiten der Schaltuhr gelöscht (siehe Tabelle in Kapitel 16).

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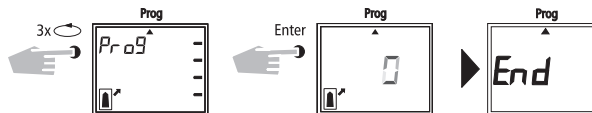
13.0 Preview Programming with Software

As an option, the possibility exists for preparing a program on the computer with the software program. The prepared program can be written onto the memory card and also be printed out. The memory card can now be as secure data or for reading into another time switch.

Condition: – PC from 486 free hard disk storage capacity
                     approx. 1 MB
                  – from WINDOWS 95 to WIN 98 / 2000 / WIN NT

Order No.   contains:
                  Software program + system adapter +
                  memory card.

Schematic of function

serial
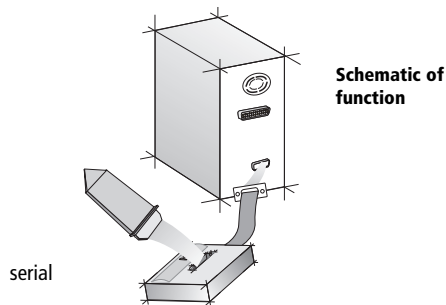
14.0 Tips and Additional Possibilities

1. Priority Program with Random Switching
Possibility for starting a random program automatically during public or annual holiday times.

1. Program weekly program with the desired ON and OFF switching times and priority sequence **P1 .. P9** (Chapter 8.1)
2. Specifity the time period for the weekly program (Chapter 8.2).
3. Activate random program once manually (Chapter 6.7).

2. Special Program for holidays
Procedurally during holidays to switch ON and OFF connected units at different times:

1. Program your desired holiday program. The ON and OFF switching times must occur daily. A priority sequence **P1..P9** must be assigned to the switching times (Chapter 8.1).
2. Specifity the time period for the weekly program
e.g. only for the 1st May➜ begin 01.05 finish 01.05 (Chapter 8.2).

3. Pulse Program for Time delayed Switch-ONs
A switch-ON time e.g. at 7.0 and 10 secs can be achieved by:

1. programming a switch-ON time e.g. 7^{00} ON (⊏) (Chapter 7.1)
2. Additional pulse program (Chapter 7.4) with same switch-ON time.

1. Switch-ON time e.g. 7^{00} ⊏

2. Additionally at 7^{00} pulse OFF (⊐)
for the duration of 10 secs

3. Effective at 7^{00} 10 secs switch ON
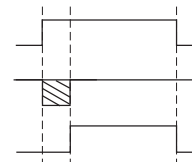
Note: After a time adjustment, only pulses, which are programmed at least 1 minute after the time adjustment, are carried out.

4. Pulse Program for Time Delayed Switch-OFF

A switch-OFF time e.g. at 8.0 and 10 secs. can be achieved by:

1. Programming a switch-OFF time eg.g. 8^{00} (Chapter 7.1)
2. Additional programming of a simultaneous pulse switching time of 10 secs. duration.

1. Switch-OFF time e.g. 8^{00} OFF ⊏

2. Additional pulse ON (⊏) at 8^{00} for 10 secs duration

3. Effective at 8^{00} 10 secs. switch OFF.
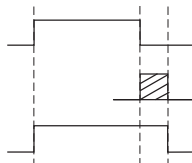
Note: After time adjustment, only pulses, which are programmed at least 1 minute after the time adjustment are carried out.

5. Channel Block Formation

If not all memory locations are to be used, we recommend you dispense with channel block formation when programming switching times.
This provides advantages when changing or cancelling individual switching commands.

What does automatic operation (Auto) mean?
The cursor is below **Auto.** Current time is displayed.
The switching sequence of the time switch is determined by the stored switching times.
(Note: permanent switching has priority see Chapters 6.2 and 6.3).

What is automatic return?
When in the interrogation or programming mode, if no button is used for a long time, the display reverts automatically, after approx. 40 secs. to automatic operation. The product then takes up the switching status specified by the program.

Program recan?
This results in the time switch checking the stored program and implementing the correct switching condition.

What does entry correction mean?
In the event of wrong entry during programming, by pressing the **CL** button, the entry can be cancelled and immediately corrected.

What does weekday block formation mean?
Simultaneous programming at one switching time e.g. 6^{00} ON on several days of the week e.g. Monday, Tuesday and Friday.
Only one memory lacation is used.

What does channel block formation mean?
Simultaneous programmed switching times, which are effective in several channels, take up only **one** memory location.
Advantage: Faster programming of the switching times.

What does memory card mean?

Mobile data carrier can be used for:

– security of the programmed time program

– duplication of the programmed time program

– faster programming of additional time switches with the same program

Option only with software:

– programming on the PC, store on memory card

– read program into time switch(es)

– program print out possible

What does RESET mean?

By pressing the RESET button, a defined new start for the time switch is effected. The current time and date are cancelled. The stored switching times are maintained permanently.

What does EEPROM mean?

An EEPROM is an electronic memory, which can store memorised data even without current (without battery back up) for a period of approx. 40 years.

What is an LCD?

An LCD display is a liquid crystal display, with which current time and stored data (switching times) can be shown.

16.0 Table of Errors

In order to increase the reliability of operation, several internal tests are run by the time switch. If any error appears during these tests, the LCD will display the following error numbers.

Error no. 4, 5, 6, 7:

Error in the transmittance of data memorized in the memory card.

1. Transfer program once again onto program card.

2. Repeat transaction.

3. No success.

Error no. 3:

Program card has been withdrawn prior to end of data transfer.

Repeat transaction.

Error no. 1, 2, 8:

Program memory defect.

Dat			C1	C2	C3	C4	↺	↻	1x
P1 ..P9	↑	↓							
P 9	01.05	07.01	X						X

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Tag/Dat	🕐	C1	C2	C3	C4	1x	⊓	1	2	3	4	5	6	7	↺	↻	Prio
01.05	6 °°	X					X								X		
	5.30 °°		X					X	X	X	X	X			X		

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Overview

The following application programs are available for the room temperature controller:

Application	Function
7713 scene with switching, value and priority	On each of the 4 channels you can choose between the following message types: • switching message (1 Bit) • priority message (2 Bit) • dimming or value message (8 Bit) • cyclic sending selectable You can implement a scene with up to 4 different message types with the 4th channel. At one switching time point, different types of actuators or actuator groups (switching/dimming/shutter actuators) can be triggered <u>at</u> **the same time**.
7712 switching, value, transmit time and date	On each of the 4 channels you can choose between the following message types: • switching message (1 Bit) • priority message (2 Bit) • dimming or value message (8 Bit) • cyclic sending selectable • date and time can be sent each minute, hour, day or on demand (via object time inquiry)
7711 switching, value, temperature, transmit time and date	On each of the 4 channels you can choose between the following message types: • switching message (1 Bit) • priority message (2 Bit) • dimming or value message (8 Bit) • temperature message (16 Bit) • any message in the EIS 5 form (16 Bit) • cyclic sending selectable • time switch can can be set synchronised via bus by receiving the time and date message

Selection in the product database

Manufacturer:	Schneider Electric
Product family:	time switches
Product type:	4-channel year time switch
Product name:	Year time switch REG-K/4/324 (DCF77

7713: Application program "scene with switching, value, priority"

Function Characteristics

By choice, a switching, priority or value message can be sent on each of the channels 1 to 3. Additionally a scene with up to 4 types of message can be implemented on the 4th channel. Thus different types can be triggered by actuators or groups of actuators at one switching time (switching / dimming / shutter actuators). Example: The scene "end of workday" effects at the same time following instructions with different group addresses:

- light off
- lower heating
- close shutters
- alarm system armed

Additionally the possibility exists for suppressing the time switch program of the clock via the bus by control of a blocking object. Whether the blocking object has an influence on the transmission behaviour of the individual channel objects can be adjusted by parameters. If this is the case, uniquely a message can be released corresponding to the switching off/on instruction of the clock or no message may be released when setting the blocking object for each channel object. Subsequently, no message is transmitted by the corresponding channel object. If the blocking object is again reset, the current status of the channel object is transmitted directly on the bus.

> **ⓘ** **Attention!**
>
> Communication between bus coupler and time switch (and thus also processing the application program) is only effected when the clock is in the automatic mode. Possible actions, as long as the clock is not in the automatic mode, are retrieved when re-creating the automatic mode.

Communication objects

Object Name	Function	Type	Behaviour
channel <No> – switching no = 1,2,3 channel 4 scenes-obj. 1 ..4	transmitting of a switching message, when the channel switches	1 Bit	transmit
channel <No> – value, no = 1,2,3 channel 4 scenes-obj. 1 ..4	transmitting of a value message, when the channel switches	8 Bit	transmit
channel <No> – priority no = 1,2,3 channel 4 scenes-obj. 1 ..4	transmitting of a priority message, when the channel switches	2 Bit	transmit
block	receiving a message blocking	1 Bit	receive

number of communication objects	8
max. amount of group addresses:	10
max. amount of associations	10

Parameter

Parameter on page „generally"

Description	Possible adjustments	Meaning
time for all objects, which are sending in cycles	appr. 2,5 min appr. 3 min. appr. 5 min. **appr. 10 min.** appr. 15 min. appr. 20 min. appr. 30 min. appr. 45 min. appr. 60 min.	Adjustment of the cycle time with which the message is transmitted repeatedly on the bus. This parameter applies to all objects, where the transmission behaviour "cyclic transmitting" is adjusted.
Is channel 4 to control a scene?	**no** yes	Adjustment if a scene function is to be implemented on channel 4.
How many objects is this scene to have?	**2 objects** 3 objects 4 objects	The parameter appears when a scene is to be controlled on channel 4. Adjustment, how many scene objects for channel 4 are to be produced. If channel 4 switches, messages are transmitted at the same time on the scene objects.

Parameter on the pages channel 1,2,3 and channel 4 – scenes-obj. 1,2,3 or 4"

Description	Possible adjustments	Meaning
object type	**switching** value priority	Adjustment whether a switching (1 bit), value (8 bits) or priority message (2 bits) has to be transmitted over the channel.
switching behaviour	**clock on -> on / clock off -> off** clock on-> off / clock off -> on	Parameter appears, if type of object "switching" is adjusted. Adjustment whether "0" - or "1"-message is transmitted, if the clock channel switches accordingly.
value when turning off the clock	0 ... 255	Parameter appears, if type of object "value" is adjusted. Adjustment, which value is transmitted, if the clock channel switches off.

Description	Possible adjustments	Meaning
value when turning on the clock	0 ... 255	Parameter appears, if type of object "value" is adjusted. Adjustment which value is transmitted, if the clock channel switches on.
priority value when turning off the clock	**priority inactive** priority off priority on	Parameter appears, if type of object "priority" is adjusted. Adjustment which priority value is transmitted, if the clock channel switches off.
priority value when turning on the clock	priority inactive priority off **priority on**	Parameter appears, if type of object "priority" is adjusted. Adjustment which priority value is transmitted, if the clock channel switches on.
sending behaviour	**only when switching the clock** send cyclically	Adjustment whether the message is transmitted only when switching the clock channel or cyclically on the bus

7712: Application program "switching, value, send time and date"

Operational Characteristics

On each of the 4 channels you can choose between the following message types:
- switching message (1 Bit)
- priority message (2 Bit)
- dimming or value message (8 Bit)

For each channel cyclic transmitting can be selected, this is controlled by a common timer. Date and time-of-day can be transmitted each minute, each hour, each day or only on request. When interrogating a time via time inquiry the object (1-Bit), the status of the inquiry message is insignificant. Date and time-of-day are always transmitted together.

Attention:
Communication between bus coupler and time switch (and thus also processing the application program) takes place only, if the time switch itself is in the automatic mode (screen-display **auto**).

Communication Objects

object name	function	type	behaviour
channel <no> – switching no = 1,2,3 or 4	transmitting a switching message when the channel switches	1 Bit	send
channel <no> – value, no = 1,2,3 or 4	transmitting a value message when the channel switches	8 Bit	send
channel <no> – priority no = 1,2,3 or 4	transmitting a priority message when the channel switches	2 Bit	send
send time	transmitting a message "time" (EIS 3) with the components week-day and time corresponding to the parameter adjustment (each minute, each hour, each day or on demand)	3 Byte	semd
semd date	transmitting a message "date" (EIS 4) with the components week-day and time corresponding to the parameter adjustment (each minute, each hour, each day or on demand)	3 Byte	send
time inquiry	receiving a message „time inquiry"; after reception, time and date are sent on the bus;	1 Bit	receive

Max. amount of communication objects:	7
Max. amount of group addresses:	8
Max. amount of associations:	8

Parameter

Parameter on the pages „channel 1, 2, 3 or 4"

Description	Possible adjustments	Meaning
object type	**switching** value priority	Adjustment whether a switching (1 bit), value (8 bits) or priority message (2 bits) has to be transmitted over the channel.
switching behaviour	**clock on -> on / clock off -> off** clock on-> off / clock off -> on	Parameter appears, if type of object "switching" is adjusted. Adjustment whether a "0" - or "1"-message is transmitted, if the clock channel switches accordingly.
value when turning off the clock	0 ... 255	Parameter appears, if type of object "value" is adjusted. Adjustment, which value is transmitted, if the clock channel switches off.
value when turning on the clock	0 ... 255	Parameter appears, if type of object "value" is adjusted. Adjustment which value is transmitted, if the clock channel switches on.
priority value when turning off the clock	**priority inactive** priority off priority on	Parameter appears, if type of object "priority" is adjusted. Adjustment which priority value is transmitted, if the clock channel switches off.
priority value when turning on the clock	priority inactive priority off **priority on**	Parameter appears, if type of object "priority" is adjusted. Adjustment which priority value is transmitted, if the clock channel switches on.
sending behaviour	**only when switching the clock** send cyclically	Adjustment whether the message is transmitted only when switching the clock channel or cyclically on the bus.

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Parameter on the page „cycle time for channel 1 – 4"

Description	Possible adjustments	Meaning
time for sending cyclically	ca. 3 min ca. 5 min **ca. 10 min** ca. 15 min ca. 20 min ca. 30 min ca. 45 min ca. 60 min	Adjustment of the cycle time with which the message is transmitted repeatedly on the bus. This parameter applies to all channels, where the transmission behaviour "cyclic transmitting" is adjusted.

Parameter on page "time/date"

Description	Possible adjustments	Meaning
sending of date and time	only on demand each minute each hour each day	Adjustment of the sending condition, when the message "date" and "time" is sent on the bus

7711: Application "switching, value, temperature, receive time and date"

Operational Characteristics

This application offers the possibility to send on each of the 4 channels the following messages:
- switching message (1-Bit)
- priority message (2-Bit)
- dimming or value message (8-Bit)
- temperature message (16-Bit)
- any message in the EIS 5 form (16-Bit)

Furthermore the time switch can receive time and date messages for temporal synchronisation. These time and date messages can for example be sent on the bus by a Year time switch with a DCF 77 reception and the application "switching, value, time and date transmit".

The adjustment of any message in the EIS 5 form requires appropriate mathematical knowledge.

Communication objects

object name	function	type	behaviour
channel <no> – switching no = 1,2,3, 4	transmitting a switching message when the channel switches	1 Bit	send
channel <no> – value, no = 1,2,3, 4	transmitting a value message when the channel switches	8 Bit	send
channel <no> – priority no = 1,2,3, 4	transmitting a priority message when the channel switches	2 Bit	send
channel <no> – temperature, no = 1,2,3, 4	transmitting any 16-Bit number value (EIS 5), when the channel switches	2 Bytes	send
channel <no> – amount, no = 1,2,3, 4	transmitting a temperature message when the channel switches	2 Bytes	send
receive time	receiving a time message (EIS 3) with the components week-day and time	3 Byte	semd
receive date	receiving the date message (EIS 4) with the components week-day, month and year	3 Byte	send

Max. amount of communication objects:	6
Max. amount of group addresses:	8
Max. amount of associations:	8

Parameter

Parameter on the pages „channel 1, 2, 3 or 4"

Description	Possible adjustments	Meaning
Function of channel 1	**switching** value priority temperature 16-Bit-value = (S*0.01*(M1+M2)* 2^exp.)	Adjustment if a switching, (1 Bit), value (8 Bit) or priority message (2 Bit) is to be sent over the channel.
switching behaviour when turning off the clock	**to send off-message** to send on-message	Parameter appears, if type of object "switching" is adjusted. Adjustment whether a "1" – or "0"-message is transmitted, when the clock channel turns off.
switching behaviour when turning on the clock	**to send on-message** to send off-message	Parameter appears, if type of object "switching" is adjusted. Adjustment whether a "1" – or "0"-message is transmitted, when the clock channel turns on.
value when turning off the clock	0 ... 255	Parameter appears, if type of object "value" is adjusted. Adjustment, which value is transmitted, if the clock channel switches off.
value when turning on the clock	0 ... 255	Parameter appears, if type of object "value" is adjusted. Adjustment which value is transmitted, if the clock channel switches on
priority value when turning off the clock	**priority inactive** priority off priority on	Parameter appears, if type of object "priority" is adjusted. Adjustment which priority value is transmitted, if the clock channel switches off.
priority value when turning on the clock	priority inactive priority off **priority on**	Parameter appears, if type of object "priority" is adjusted. Adjustment which priority value is transmitted, if the clock channel switches on.
temperature value when switching off the clock	5 °C ... **15 °C**... 30 °C	Parameter appears, if type of object "temperature" is adjusted. Adjustment which temperature value will be sent, when the clock channel turns off. Expert info: The temperature value is sent in the EIS 5 – form with fixed

Description	Possible adjustments	Meaning
		specified exponents 3;
temperature value when switching on the clock	5 °C ... **21 °C**... 30 °C	Parameter appears, if type of object "temperature" is adjusted. Adjustment which temperature value will be sent, when the clock channel turns on.
when switching off sign (S) mantissa (M1) mantissa (M2) exponent (exp)	 **+1** -1 **0** 256 512 768 1024 1280 1536 1792 **0** ... 255 **0** ... 15	Parameter appears, if type of object "16-Bit-value" is adjusted. Adjustment which 16-Bit value will be sent, when the clock channel turns off. The number value will be sent in the EIS 5-form and is calculated according to the following formula: *16-Bit-Wert = (S*0.01*(M1+M2)* 2^exp.)* Example: S = +1 M1 = 0 M2 = 255 exp = 0 16-Bit-value = (+1*0.01*(0+255)* 2^0.) 16-Bit-value = 2,55
when switching on signs (S) mantissa (M1) mantissa (M2) exponent (exp)	 **+1** -1 **0** 256 512 768 1024 1280 1536 1792 0 ... **255** **0** ... 15	Parameter appears, if type of object "16-Bit-value" is adjusted. Adjustment which 16-Bit value will be sent, when the clock channel turns on. The number value will be sent in the EIS 5-form and is calculated according to the following formula: *16-Bit-Wert = (S*0.01*(M1+M2)* 2^exp.)* Example: S = -1 M1 = 256 M2 = 88 exp = 3 16-Bit-value = (-1*0.01*(256+88)* 2^3.) 16-Bit-value = -6880
sending behaviour	**only when switching the clock** send cyclically	Adjustment whether the message is transmitted only when switching the clock channel or cyclically on the bus.

Parameter on the page „cycle time for channel 1 – 4"

Description	Possible adjustment	Meaning
cycle time for channel 1-4	ca. 3 min ca. 5 min **ca. 10 min** ca. 15 min ca. 20 min ca. 30 min ca. 45 min ca. 60 min	Adjustment of the cycle time with which the message is sent repeatedly on the bus. This parameter is applied for all channels where the sending behaviour is adjusted "cyclic sending".

Additional Expert Information

HVAC Functions (Heating, Ventilation, Air Conditioning)

The Year time switch is also in the position to control an individual room controller time-dependent through HVAC telegrams. For this purpose, HVAC operation modes such as auto, comfort, standby, Economy mode, frost protection and heat protection can be sent to a room thermostat. HVAC operation modes can be generated by using the object type "value" with following settings:

Operation mode	Value
Auto	0
Comfort	1
Standby	2
Night	3
Frost protection	4

Communication of the Year time switch with bus

The transfer of data between Year time switch and the KNX bus coupler takes place only if the clock is in the automatic mode. Reason: In all other modes, data which are to be transferred, can be modified and thus not all current data could get on the bus. If a switching command takes place when the clock is not in the automatic mode, it is retrieved upon return to the automatic mode.

Bus synchronisation

As already described, the time switch can receive (with the application "switching, value, temperature, time and date reception") time and date messages (ICE 3, 4) for temporal synchronisation.
However, during this so-called bus synchronisation the following points are to be considered:

- Two time windows are available daily between 1:58:44h and 2:13:00h as well as between 2:58:44h and 3:13:00h within which the clock is ready to receive time and date messages.

- Outside these two time windows the clock is only ready once to receive time and date messages independently.

- Another possibility is the execution of a so-called manual sender call. By this means, a time window is opened for 14 minutes by pressing the key Dat for 3 seconds. Within this time window, the clock is again ready to receive time and date messages (as often as required). After this time
  window, the clock is ready only once to receive time and date messages on its own.

- Furthermore it has to be taken into consideration that in case deviation of a weekday by +/- 1 day the date is also in the time message with regard to the weekday set on the clock. Time messages with a deviation of more than one weekday are not accepted. If no weekday is available in the time message, this is however accepted. The use of time messages without specification of the weekday is not recommended, as problems can occur with a daily transfer.

- If the clock is synchronized additionally by a DCF signal, then a synchronization is blocked via the bus.

i **Recommendation!**

If an absolute synchronisation between certain clocks is required in the KNX system, a synchronization should be made by the DCF signal. During this procedure in particular the transmission times of the bus are omitted (e.g. via several couplers). Each Year time switch KNX therefore possesses an appropriate DCF entrance.