



QWTIME III MASTER CLOCK
User Manual

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User Manual

Master Clock WDP-Y2/Y4/Y8



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QWTIME III MASTER CLOCK

User Manual

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Technical specifications

Crystal Frequency:	4,915200 MHz.
Accuracy:	0,1 sec./24 hours (at +20°C).
Microprocessor:	HD6412394.
Max. load impulse output:	Minute 1A, second 0,5A. (The output is equipped with short circuit protection which resets automatically.)
Impulse duration:	Minute 2 sec. selectable 0.1-9.9 sec. Seconds 0.5 sec. selectable 0.1-1 sec.
Impulse memory:	72 hours (impulse memory with rapid impulsing after power failure).
Program memory:	>100 years (EE-memory).
Number of control functions:	800.
Relay outputs:	
WDP-Y2	2 changeover potential-free contacts.
WDP-Y4	4 changeover potential-free contacts.
WDP-Y8	4 changeover and 4 closing potential-free contacts.
Max. load/relay output:	230 V 6A.
Total load relay outputs:	Number of relay outputs x 6A
Connection voltage:	230 V 50 Hz -5% +10% alt. 24 V DC -5% +20 %.
Max ripple (24V DC):	0,7V RMS.
Power consumption:	10-60 VA depending on model.
Ambient temperature:	Between 0°C and +40°C.
Relative humidity:	Max. 85% non-condensing.
Case:	IP 65, light grey plastic (Polystyrol) with transparent protection cover.
CE-Approval, EMC	Emission acc. to EN61000-6-3, Immunity acc. to. EN61000-6-2.
Art. numbers:	
	WDP-Y2 123342-00 (230V AC) 123343-00 (115V AC) 123340-00 (24V DC)
	WDP-Y4 123347-00 (230V AC) 123348-00 (115V AC) 123345-00 (24V DC)
	WDP-Y8 123352-00 (230V AC) 123353-00 (115V AC) 123350-00 (24V DC)

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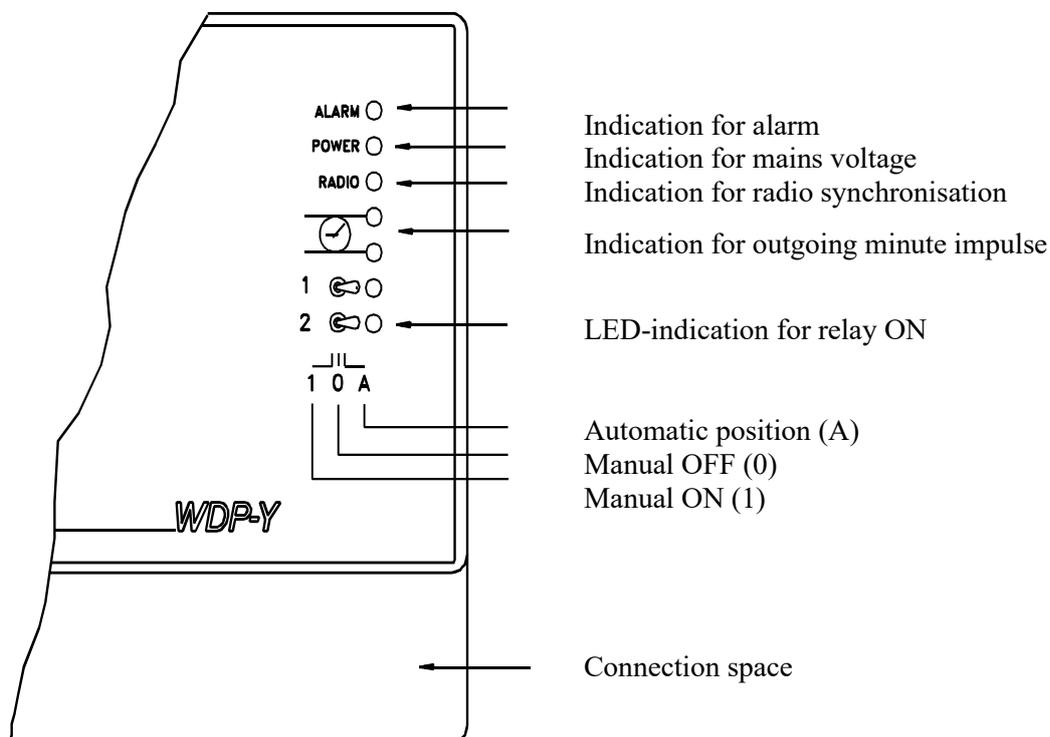
General description

The Master Clock Programmer is a combination of yearly programmer with 2, 4 alt. 8 outputs for control and regulation of various energy consumers such as electrical striking plates, buzzers for pause signalling etc, and a quartz Master Clock for operating Slave Clocks.

In case of power failure the built in Real Time Clock keeps the internal time updated. (the outputs are set to position OFF). Connected Slave Clocks are automatically corrected by rapid impulsing when power returns and the outputs resume their positions (ON/OFF) which were previously programmed (with a 10 second switching delay between the different outputs. Entered data's are stored for at least 100 years.

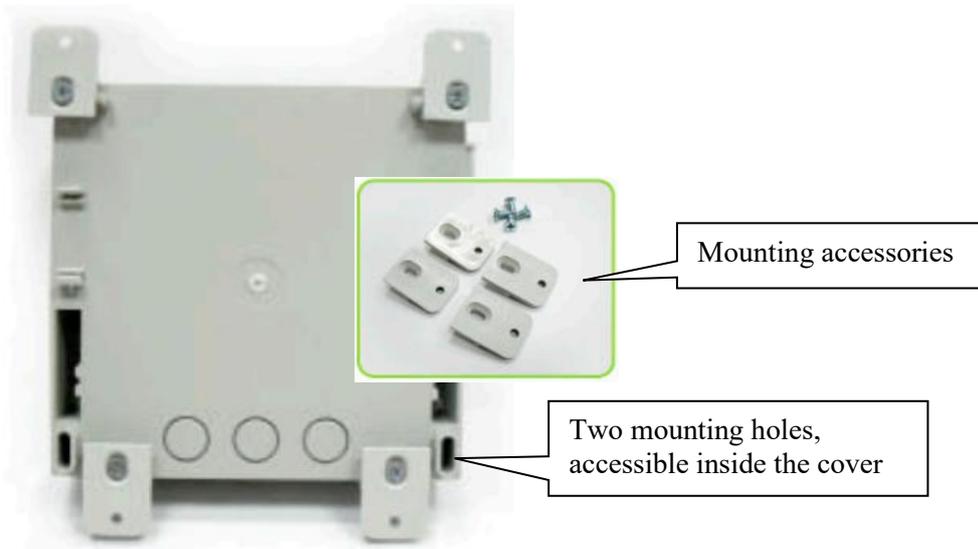
The Master Clock Programmer have pre-programmed fixed public holidays and summer/winter time correction (daylight saving). The clock offers full flexibility with regard to programming working days between holidays, public holidays to weekdays, holiday periods etc.

A total of 800 control functions can be programmed over 2, 4 or 8 outputs. Repeating daily functions on a certain output only requires 1 control function. Further relay outputs (up to 64) possible by adding one or more Expansion Units. (Only for WDP-Y8.)



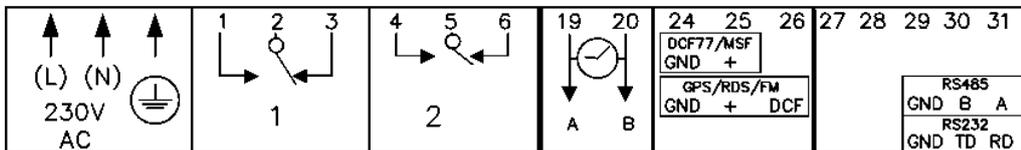
Installation

The Master Clock is intended for wall mounting. Mounting is done either by using the two mounting holes, accessible inside the cover, or by using the enclosed mounting accessories.

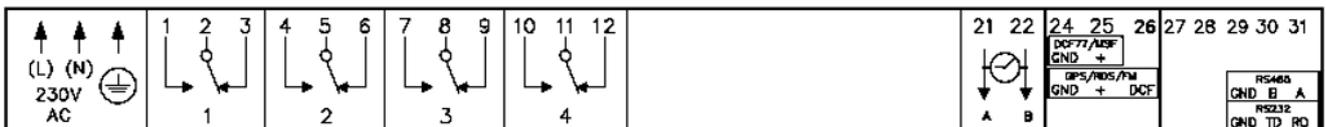


1. Mount the Master Clock on the wall.
2. Connect the slave clock lines.
3. Connect the signal line/lines (to relay contacts).
NOTE! For connection of signals etc., mixed voltages must not be used.
Therefore, choose either 230VAC or, for example 24VAC for connection to the relays.
4. Connect, if included, other accessories/options such as radio synchronisation, RS232 etc.
5. Connect the supply voltage.

WDP-Y2 123342-00



WDP-Y4 123347-00



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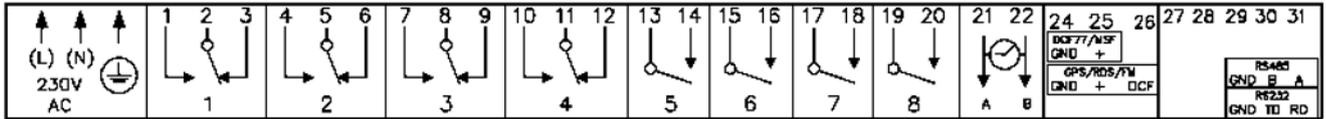
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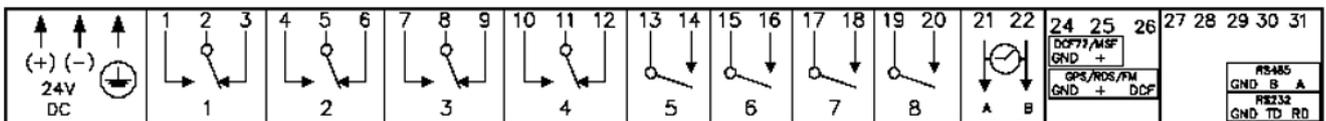
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WDP-Y8 123352-00 (230VAC)



WDP-Y8 123353-00 (115VAC)



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Calculation of cable area in time systems

General

To make a time system with impulse operated analogue and digital slave clocks perform satisfactory, the cable from the Master Clock to the Slave Clocks need to be dimensioned correctly.

A 10% voltage drop is allowed in the cable.

The length and area of the cable and also the current (load) on the cable affect the voltage drop.

Formula

$$A = l \times I \times k$$

A = Area [mm²]

l = cable length [m]

I = current [A]

k = 0,015 [constant]

Power consumption

Impulse Slave Clocks

Analogue clocks minute \leq 400 mm: 7,5 mA

Analogue clocks minute \leq 900 mm: 15 mA

Analogue clocks minute + sweep seconds hand \leq 400 mm: 25 mA

Digital Clocks: 4 mA

Time-Code (TC) Slave Clocks

Analoga ur minut \leq 400 mm: 15 mA (Version med urverk 113160-00)

Analoga ur minut \leq 400 mm: 10 mA (Version med urverk 22742-00)

Analoga ur minut \leq 900 mm: 20 mA

Analoga ur minut + svepande sekund \leq 400 mm, för inomhusbruk: 12 mA

Analoga ur minut + svepande sekund \leq 400 mm, för utomhusbruk: 20 mA

Analoga ur minut + svepande sekund \leq 900 mm: 27 mA

Example

A time system consists of 40 pcs. analogue clocks with diameter 300 mm.

The power consumption will then be $40 \times 7,5 = 300 \text{ mA} = 0,3\text{A}$.

Cable length is 100 metres.

$$A = 100 \times 0,3 \times 0,015 = 0,45 \text{ mm}^2$$

Choose a cable with an area of at least $0,45 \text{ mm}^2$.

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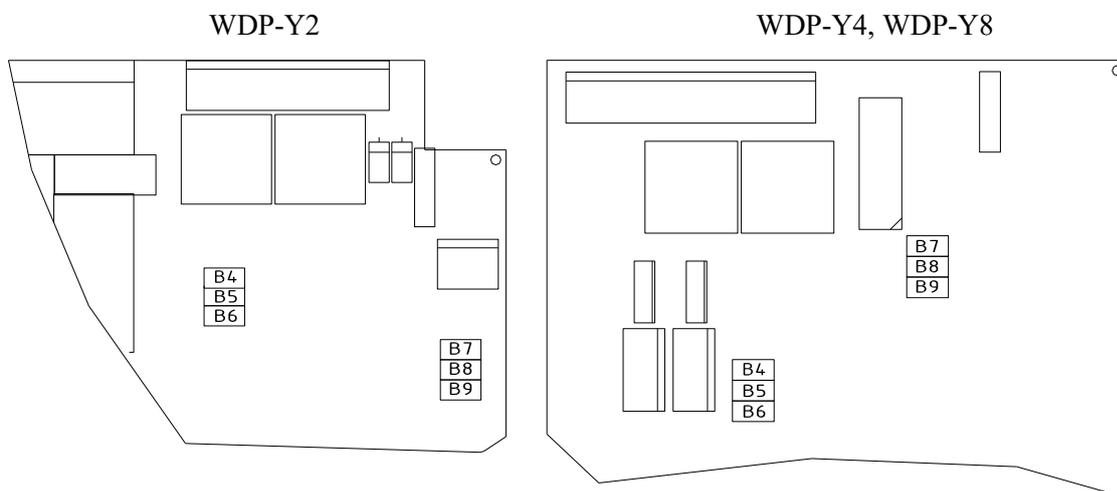
Synchronisation input

General

The Master Clock is equipped with a synchronisation input intended for connection to an external synchronisation source. The sync. source can be either a radio receiver type GPS, RDS, MSF, DCF77 or another Master Clock that transmits synchronisation pulses. The Master Clock is factory prepared for connection to a radio receiver. Detailed connection diagram for different radio receivers can be found in the separate manual delivered together with respectively receiver. If the Master Clock is going to be synchronised from another Master Clock it has to be reconfigured. See below.

Synchronisation from another Master Clock

1. Turn off power.
2. Open the Master Clock by loosening the four screws holding the front panel. Lift the panel and set the jumpers B4-B6 according to the instruction below.
3. Remount the front panel and turn on the power again.
4. Set the sync. source parameter by using the special function *SETUP/SYNC.SOURCE* .
5. Connect the sync. pulses to screw terminal 25 and 26.
6. Set the master clock to correct time +/- 30 sec.
7. When the synchronisation pulses have been accepted by the master clock the colon (:) between hours and minutes in the display starts to flash.



	B4	B5	B6	
PREP. FOR RADIO RECEIVER	X	X		FACTORY DEFAULT
PREP. FOR SYNC. PULSE FROM ANOTHER MASTER CLOCK			X	

X = Closed

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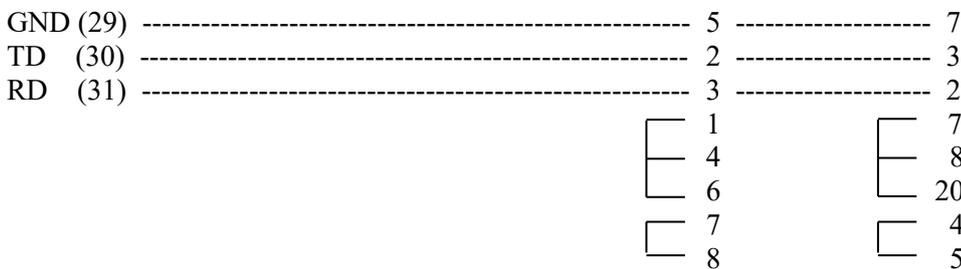
Serial port RS232/RS485

General

The Master Clock has a serial port for connection to a PC or other similar equipment. The serial port is factory set to RS232. If RS485 connection is used the Master Clock has to be reconfigured according to the jumper instruction below. Please see section *SPECIALFUNKTION/SETUP/SERIAL PORT* for details about type of interface, protocol, baudrate etc.

Connection via RS232

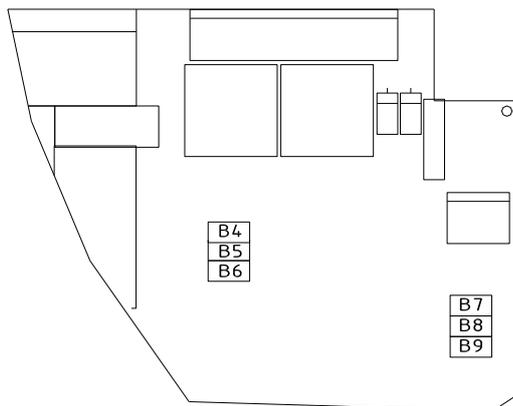
Master Clock External equipment DTE (9-polig D-sub) (25-polig D-sub)



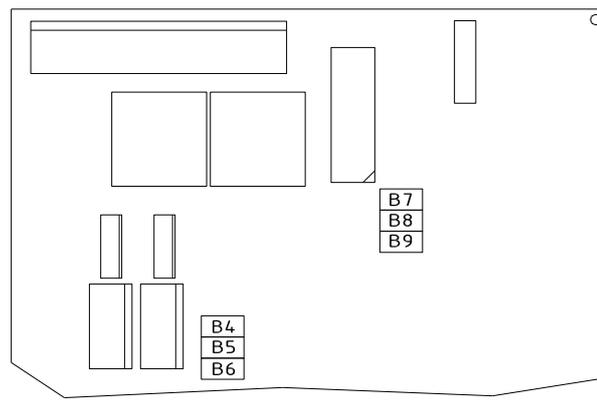
Connection via RS485

1. Turn off power.
2. Open the Master Clock by loosening the four screws holding the front panel. Lift the panel and set the jumpers B7-B9 according to the instruction below.
3. Remount the front panel and turn on the power again.
4. Enter the special function setup/serial port and change the setting to RS485.
5. Connect the RS485 signal to screw terminal 29, 30 and 31.

WDP-Y2



WDP-Y4, WDP-Y8



	B7	B8	B9	
PREP. FOR RS232	X		X	FACTORY DEFAULT
PREP. FOR RS485		X		

X= Closed

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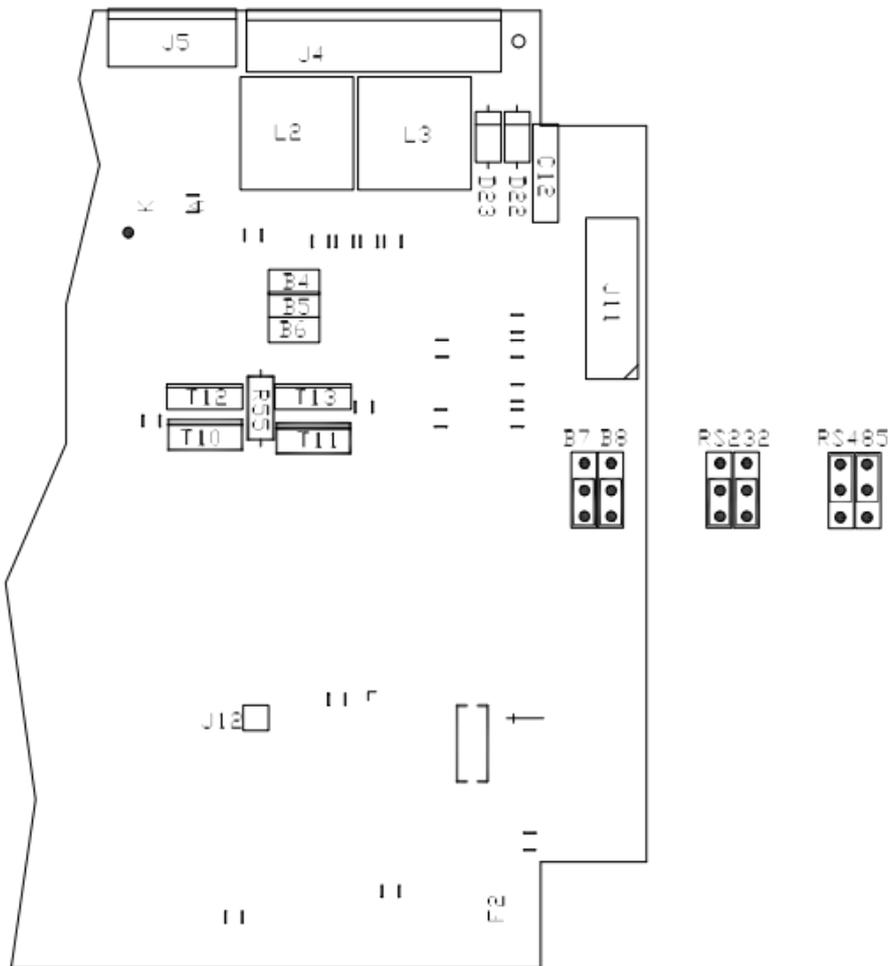
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For K40713-xx



K40713-00, -02, -03, -04

	B4	B5	B6	B7	B8				
PREP. FOR RADIO REC	X	X							FACTORY DEFAULT
PREP. FOR SYNC. PULSE			X						
PREP. FOR RS232	SEE ABOVE								FACTORY DEFAULT
PREP. FOR RS485	SEE ABOVE								

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Programming

General

Using 6 buttons and a 2-row 16-character display carries out all programming. Programming is self-instructive and to simplify the dialogue Yes/No questions are used.

Running mode

When the Master Clock is in operation it shows date and time in the display.

This is called *running mode* in this documentation.

LTs = Local Time summer.

LTw = Local Time winter.

MON 17 MAR 2014
 10:11:00 LT_w

MON 17 MAR 2014
 10:11:00 LT_w

SET TIME

SLAVE CLOCK

ALARMS

WEEK PROGRAM

DATE PROGRAM

DISPLAY PROGRAM

TEMPORARY PROGR.

GROUP → PERIOD

DISPLAY HOLIDAYS

SPEC.-FUNCTIONS

- | | |
|------------------------------|------------|
| 1- Select function | ↑↓ |
| 2- Enter programming mode | YES |
| 3- Move sideways | ← → |
| 4- Change/scroll | ↑↓ |
| 5- Accept | YES |
| 6- Cancel / Leave prog. mode | ← |



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Start up

STARTING

LANGUAGE
ENGLISH?

When the Master Clock is connected for the first time correct/requested language has to be entered. Press **NO** until requested language occurs in the display e.g. English. Accept with **YES**.

COUNTRY
DEU?

Press **NO** until correct country code occurs.
For Germany, select DEU. Accept with **YES**.

SET TIME
1410317 09:07:00

Set, by using the arrows, the right time format i.e. year, month, day and hour but a few minutes in advance.
Wait for the right time and synchronise using **YES**.

SLAVE CLOCK
= 12:00?

Now the question: SLAVE CLOCK 12.00?
If the Slave Clocks show 12.00, answer **YES**,
if not set the time shown by the slave clocks. Accept using **YES**.

MON 17 MAR 2014
09:07:00 LT

The Master Clock is now in running mode.

NOTE! If a slave clock runs out by a minute, its cabling must be pole changed and the slave clock to be corrected manually.

NOTE! If the time of the slave clocks is ahead of correct/present time the Master Clock Programmer will wait until correct time corresponds with the slave clocks.

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Set time when in operation

MON 17 MAR 2014
09:07:00 LT

Select function using ↓.

SET TIME

Enter the programming mode with YES.

SET TIME
110815 09:07:00

Set, by using the arrows, the right time.
Format; year, month, day and hour but a few minutes in advance.
Wait for the right time and synchronise using YES.

SET TIME

Leave programming mode by pressing ← several times.

MON 17 MAR 2014
09:07:00 LT

The master clock is now back in running mode.

Summer to winter (Day light saving)

Resetting between summer and wintertime is fully automatic and does not need programming.



Slave Clock

This function is used to enter the time that the slave clocks are showing.

This is useful if, by some reason, the master clock and the slave clocks should show different times.

When the slave clock time has been entered, the master clock will automatically adjust the slave clocks to correct time.

Please note that before using this function make sure that all connected slave clocks are showing the same time. If any of the slave clocks are showing a divergent time this clock must be manually adjusted to the same time as the other clocks.

The impulses to the slave clocks are temporarily stopped when entering this function.

MON 17 MAR 2014 09:07:00 LT	Select function using ↓.
SLAVE CLOCK	Enter the programming mode with YES.
SLAVE CLOCK = 09:07 OFF	SLAVE CLOCK = 09.07? (Example) If the slave clocks shows 09.07 answer YES, if not, set the time shown by the slave clocks.
SLAVE CLOCK = 09:07 OFF	YES.
SLAVE CLOCK = 09:07 ON	YES.
SLAVE CLOCK	Leave programming mode by pressing ← several times.
MON 17 MAR 2014 09:07:00 LT	The master clock is now back in running mode.

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Alarms

The master clock is equipped with several supervision facilities to detect functional disturbances. When a functional disturbance is detected the following will happen:

- Red alarm LED is lit.
- Alarm relay* is activated.
- An alarm message is displayed in function ALARM.

The function ALARM is used to display and erase (clear) alarm messages.

Type of alarm	Indication	Reason for alarm	Action
<i>NO RADIO</i>	Red alarm LED lit. Alarm relay activated.	The radio receiver is not working.	Check the radio receiver. If OK, clear the alarm.
<i>UF LOW</i>	Red alarm LED lit. Alarm relay activated	Impulse voltage below alarm limit.	Check the load on the impulse output. If OK, clear the alarm.
<i>SHORT CIRCUIT</i>	Red alarm LED lit. Alarm relay activated	Short circuit on impulse output	Remove the short circuit. If OK, clear the alarm.
<i>CURRENT LOW</i>	Red alarm LED lit. Alarm relay activated	Impulse current below alarm limit.	Check the load on the impulse output. If OK, check that the alarm limit is correctly configured. If OK, clear the alarm.
<i>CURRENT HIGH</i>	Red alarm LED lit. Alarm relay activated	Impulse current above alarm limit.	Check the load on the impulse output. If OK, check that the alarm limit is correctly configured. If OK, clear the alarm.
<i>POWER DOWN</i>	Red alarm LED lit. Alarm relay activated Works only if the master clock is equipped with batteries for running reserve.	By some reason the power to the master clock has been switched off.	Check the mains. If OK, clear the alarm.

* One of the relay output can be used as an alarm relay. This function is as default disabled but can be enabled via SPECIAL FUNCTION/ SETUP/ ALARM RELAY/YES.

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ALARMS- DISPLAY

To show the alarms

ALARMS- ERASE

To erase the alarms

Example 1, display alarms

MON 17 MAR 2014
09:07:00 LT

Select function using $\uparrow\downarrow$.

ALARMS

Accept with YES.

ALARMS- DISPLAY

Press NO until the wished function is shown.
Accept with YES.

14AUG 15:52
NO RADIO

The alarm is displayed.
Press $\uparrow\downarrow$ to see next alarm.
Return to running mode press \leftarrow .

ALARMS- DISPLAY

\leftarrow .

ALARMS

\leftarrow .

MON 17 MAR 2014
09:07:00 LT



Example 2, erase (clear) alarms

MON 17 MAR 2014 09:07:00 LT	Select function using $\uparrow\downarrow$.
ALARMS	Accept with YES.
ALARMS- ERASE	Press NO until the wished function is shown. Accept with YES.
17MAR 15:52 NO RADIO	The alarm is displayed. Press YES to erase the alarm.
ERASE?	Accept with YES.
ALARMS- ERASE	Return to running mode press \leftarrow .
ALARMS	\leftarrow .
MON 17 MAR 2014 09:07:00 LT	



Week Program & Date Program

Using these two functions, programming of the outputs is made.

Concept description

Program	A "program" refers to programming an output to a certain time. The word program represents a single time event and several programs are defined as a <i>group</i> of programs. For example: output 2 switches on every working day (Monday-Friday) at 8.00.
Week program	A week program is a program, which is repeated every week. You can for each program choose for which days of the week it shall be valid: Individual or block programming. M = Monday T = Tuesday W = Wednesday T = Thursday F = Friday S = Saturday S = Sunday
Date program	A date program is a program, which is valid for a specific date.
Group	A group of programs, signal events.
Type of signals	There are some different kinds of signals, depending on how the relay output is to be used.
ON/OFF	Is used when a longer lasting switching ON is required, e.g. for controlling fans, door locks, lighting etc.
01s	Is used when a short pulse is required, e.g. for bells/buzzers. Pulse duration selectable from 1-99 seconds.
Astr.	Astr. (Twilight) is a function which closes/opens a predestined relay at sunrise resp. sunset. Which day and month of the year it is, and where the Master Clock is located geographically, define the time of the sunrise resp. sunset. The sunrise resp. sunset are calculated in the software of the Y8 module. The geographic position of the Master Clock is entered at starting up. A map indicating latitude (Enorth) and longitude (Eeast) is enclosed.
Mask	A program that is repeated f. ex every hour is easily entered by the use of mask program. XX.15.00 ; the program is repeated every hour att minute 15. 08.XX.00 ; the program is repeated every minute between 08.00 and 09.00. XX.XX.00 ; The program is repeated every minute.

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To simplify programming 3 sub menus are used:

WEEK PROGRAM
NEW GROUP A

To enter new programs.

WEEK PROGRAM
ERASE GROUP A

To erase a separate existing program.

WEEK PROGRAM
CHANGE GROUP A

To change existing programs.

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Week Program, example 1 (New program)

Example: Outputs No. 2 shall switch on Monday – Friday at 09.00 and off at 17.00.

```
MON 17 MAR 2021
09:07:00 LT
```

Select function using $\uparrow\downarrow$.

```
WEEK PROGRAM
```

Enter programming mode using YES.

```
WEEK PROGRAM
NEW GROUP A
```

Select new program using YES.

```
WEEK PROGRAM
NEW GROUP A
```

Select group of programs using $\uparrow\downarrow$, accept using YES.

```
OUTPUT 2 ON
----- 08:00:00
```

Select output using $\uparrow\downarrow$. Move to the right using \rightarrow .

```
OUTPUT 2 ON
----- 08:00:00
```

State type of signal using $\uparrow\downarrow$.

```
OUTPUT 2 ON
MTWTF-- 08:00:00
```

State the days the program shall function using $\uparrow\downarrow$.
Move to the right using \rightarrow .

```
OUTPUT 2 ON
MTWTF-- 09:00:00
```

State the time of the program using $\uparrow\downarrow$.

Move to the right using \rightarrow .

Accept using YES.

If the program is approved the text “Program saved” is displayed quickly.

```
OUTPUT 2 OFF
MTWTF-- 17:00:00
```

Continue with programming OFF for the same output or leave programming by pressing \leftarrow several times.

```
WEEK PROGRAM
```

```
MON 17 MAR 2021
09:07:00 LT
```

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Week Program, example 2 (Change program)

Example: A signal on output 1, Monday – Friday at 08.00, shall be changed to 08.15. Signal length is 5 seconds.

```
MON 17 MAR 2021  
09:07:00 LT
```

Select function using $\uparrow\downarrow$.

```
WEEK PROGRAM
```

Enter programming mode using YES.

```
WEEK PROGRAM  
CHANGE GROUP A
```

Select change program using YES.

```
WEEK PROGRAM  
CHANGE GROUP A
```

Select group of programs using $\uparrow\downarrow$, accept using YES.

```
OUTPUT 2 05S  
MTWTF-- 08:00:00
```

Select output using $\uparrow\downarrow$. Move to the right using \rightarrow .

```
OUTPUT 2 05S  
MTWTF-- 08:00:00
```

Step forward to the program, which is to be changed using NO and YES.

```
OUTPUT 2 05S  
MTWTF-- 08:15:00
```

Change the time to 09.15 using the arrows.
Accept using YES.

```
WEEK PROGRAM
```

Leave the programming by pressing \leftarrow several times.

```
MON 17 MAR 2021  
09:07:00 LT
```



Week Program, example 3 (Erase program)

Example: A signal on output 1, Fridays at 16.30 shall be deleted. Signal length is 5 seconds.

```
MON 17 MAR 2021  
09:07:00 LT
```

Select function using $\uparrow\downarrow$.

```
WEEK PROGRAM
```

Enter programming mode using YES.

```
WEEK PROGRAM  
ERASE GROUP A
```

Select erase program using YES.

```
WEEK PROGRAM  
ERASE GROUP A
```

Select group of programs using $\uparrow\downarrow$, accept using YES.

```
OUTPUT 1 ON  
MTWTF-- 09:00:00
```

Select output using $\uparrow\downarrow$. Move to the right using \rightarrow .

```
OUTPUT 1 05S  
----F-- 16:30:00
```

Step forward to the program that is to be erased using NO and YES.
Accept using YES.

```
WEEK PROGRAM
```

Leave the programming by pressing " several times.

```
MON 17 MAR 2021  
09:07:00 LT
```



Week Program, example 4 (Astronomical function)

Example: Output No. 1 shall switch ON all sunset All days and switch OFF at sunrise.

```
MON 17 MAR 2021  
09:07:00 LT
```

Select function using $\uparrow\downarrow$.

```
WEEK PROGRAM
```

Enter programming mode using YES.

```
WEEK PROGRAM  
NEW GROUP A
```

Select new program using YES.

```
WEEK PROGRAM  
NEW GROUP A
```

Select group of programs using $\uparrow\downarrow$, accept using YES.

```
OUTPUT 2 ON  
MTWTF-- 08:00:00
```

Select output using $\uparrow\downarrow$. Move to the right using \rightarrow .

```
OUTPUT 2 ASTR  
MTWTF--
```

State type of signal using $\uparrow\downarrow$.

```
OUTPUT 2 ASTR  
MTWTF--
```

State the days the program shall function using $\uparrow\downarrow$.
Accept using YES.

If the program is approved the text "Program saved" is displayed quickly.

```
WEEK PROGRAM
```

Leave the programming by pressing \leftarrow several times.

```
MON 17 MAR 20215  
09:07:00 LT
```



Week Program, example 5 (Block program)

Example: Outputs No. 2 shall switch on Monday, Wednesday and Friday at 09.00.

MON 17 MAR 2021 09:07:00 LT	Select function using $\uparrow\downarrow$.
WEEK PROGRAM	Enter programming mode using YES.
WEEK PROGRAM NEW GROUP A	Select new program using YES.
WEEK PROGRAM NEW GROUP A	Select group of programs using $\uparrow\downarrow$, accept using YES.
OUTPUT 2 ON ----- 08:00:00	Select output using $\uparrow\downarrow$. Move to the right using \rightarrow .
OUTPUT 2 ON ----- 08:00:00	State type of signal using $\uparrow\downarrow$.
OUTPUT 2 ON M-W-F-- 08:00:00	State the days the program shall function using $\uparrow\downarrow$. Move to the right using \rightarrow .
OUTPUT 2 ON M-W-F-- 09:00:00	State the time of the program using $\uparrow\downarrow$. Move to the right using \rightarrow . Accept using YES. If the program is approved the text "Program saved" is displayed quickly.
OUTPUT 2 OFF M-W-F-- 09:00:00	Continue with programming OFF for the same output or leave programming by pressing \leftarrow several times
WEEK PROGRAM	
MON 17 MAR 2021 09:07:00 LT	

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Week Program, example 6 (Mask program)

Example: Outputs No. 2 shall switch on for 5 seconds every hour at minute 15, all days in the week.

```
MON 17 MAR 2014  
09:07:00 LT
```

Select function using $\uparrow\downarrow$.

```
WEEK PROGRAM
```

Enter programming mode using YES.

```
WEEK PROGRAM  
NEW GROUP A
```

Select new program using YES.

```
WEEK PROGRAM  
NEW GROUP A
```

Select group of programs using $\uparrow\downarrow$, accept using YES.

```
OUTPUT 2 ON  
----- 08:00:00
```

Select output using $\uparrow\downarrow$. Move to the right using \rightarrow .

```
OUTPUT 2 05S  
----- 08:00:00
```

State type of signal using $\uparrow\downarrow$.
05S = Pulse with 5 seconds length.

```
OUTPUT 2 05S  
MTWTFSS 08:00:00
```

State the days the program shall function using $\uparrow\downarrow$.
Move to the right using \rightarrow .

```
OUTPUT 2 05S  
MTWTFSS ** :15:00
```

State the time of the program using $\uparrow\downarrow$. ** = every hour.
Move to the right using \rightarrow .
Accept using YES.

If the program is approved the text "Program saved" is displayed quickly.

```
WEEK PROGRAM
```

Leave programming by pressing \leftarrow several times.

```
MON 17 MAR 2014  
09:07:00 LT
```



Date Program, example (New program)

Example: Outputs No. 1 shall switch on the 1st of August at 12.00.

MON 17 MAR 2014
09:07:00 LT

Select function using $\uparrow\downarrow$.

DATE PROGRAM

Enter programming mode using YES.

DATE PROGRAM
NEW

Select new program using YES.

OUTPUT 1 ON
AUG 01 08:00:00

Select output using $\uparrow\downarrow$. Move to the right using \rightarrow .

OUTPUT 1 **ON**
AUG 01 08:00:00

State type of signal using $\uparrow\downarrow$.

OUTPUT 1 ON
AUG 01 08:00:00

State the date the program shall function using $\uparrow\downarrow$.
Move to the right using \rightarrow .

OUTPUT 1 ON
AUG 01 **12:00:00**

State the time of the program using $\uparrow\downarrow$.
Move to the right using \rightarrow .
Accept using YES.

If the program is approved the text "Program saved" is displayed quickly.

OUTPUT 1 OFF
AUG 01 12:00:00

Continue with programming OFF for the same output or leave programming by pressing \leftarrow several times.

DATE PROGRAM

MON 17 MAR 2014
09:07:00 LT



Display Program

MON 17 MAR 2021
09:07:00 LT

Select function using $\uparrow\downarrow$.

DISPLAY PROGRAM

Enter display program using YES.

DISPLAY PROGRAM
GROUP **A**

Select program group using $\uparrow\downarrow$, accept with YES.

GROUP A
OUTPUT **ALL**

Select output to be displayed using $\uparrow\downarrow$, accept with YES.

OUTPUT 2 ON
MTWTF-- 08:00:00

Step forwards alt. Backwards using $\uparrow\downarrow$.

DISPLAY PROGRAM

Leave the function display program by pressing \leftarrow several times.

MON 17 MAR 2021
09:07:00 LT

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Temporary Program, example

Example: Outputs No. 2 shall switch on immediately 15.35.00 and turn off according to normal week program. The temporary program will automatically be erased when the event has been effected.

MON 17 MAR 2021
09:07:00 LT

Select function using $\uparrow\downarrow$.

TEMPORARY PROGR.

Enter programming mode using YES.

OUTPUT 2 ON
15:35:00

Select output using $\uparrow\downarrow$. Move to the right using \rightarrow .

OUTPUT 2 **ON**
15:35:00

State type of signal using $\uparrow\downarrow$.
Accept using YES

OUTPUT 2 ON
15:35:00

Accept using YES or change the time of the program using $\uparrow\downarrow$.

TEMPORARY PROGR.

Leave the programming by pressing " several times.

MON 17 MAR 2021
09:07:00 LT



Group => Period

Each program group can be associated to one or several *time periods*. A time period can consist of one or several dates. Maximum 99 time periods can be used. Program group **A** is as default associated to a time period covering the complete year, 1/1-31/12.

Example:

A school has one group of programs that are used during the school season and another used during school holidays. School season = Group **A**, School holidays = Group **B**.

The school holidays are at the following dates: 1/5, 10/6-15/8, 23/9 and so on...

```
MON 17 MAR 2021
09:07:00 LT
```

Select function using $\uparrow\downarrow$.

```
GROUP => PERIOD
```

Enter programming mode using YES.

```
GROUP B
1: ____ - ____
```

Select group of programs using $\uparrow\downarrow$, accept using YES.

```
GROUP B
1: MAY01 - ____
```

State the date when the period shall begin.
Move to the right using \rightarrow .

```
GROUP B
1: MAY01 - MAY01
```

State the date when the period shall end.
Accept with Yes.

```
GROUP B
2: ____ - ____
```

Continue with next time period.

```
GROUP B
2: JUN07 - ____
```

```
GROUP B
2: JUN07 - AUG15
```

Accept with YES.

```
GROUP => PERIOD
```

Continue with next time period or leave programming by pressing \leftarrow several times.

```
MON 17 MAR 2021
09:07:00 LT
```

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Display Holidays

This function is used to display the public holidays that are stored.

Example:

```
MON 17 MAR 2021  
09:07:00 LT
```

Select function using $\uparrow\downarrow$.

```
DISPLAY HOLIDAYS
```

Enter display program using YES.

```
DISPLAY HOLIDAYS  
01: 01Jan
```

Scroll using $\uparrow\downarrow$.

```
DISPLAY HOLIDAYS
```

Leave the programming by pressing \leftarrow several times.

```
MON 17 MAR 2021  
09:07:00 LT
```



Spec.-Functions

The special functions contain functions used during setup and configuration of the Master Clock. If the default settings are used no configuration is needed.

MON 17 MAR 2021 09:07:00 LT	Select function using ↓ .
SPEC.-FUNCTIONS	Accept with YES.
SPEC.-FUNCTIONS STATUS	Press NO until wished function is shown. Accept with YES.
STATUS	Show status information of the different output/ input in the Master Clock.
KEYLOCK	Keylock and password function.
LANGUAGE	Language selection.
COUNTRY	Country selection.
POSITION	Selection of position for astronomical function.
SETUP	Setup / configuration of the different impulse system, type of synchronisation etc.
HOLIDAYS	Change holidays
DISPLAY FORMAT	Display format in running mode.
SOFTWARE VERSION	Present software version.
SPEC.-FUNCTIONS STATUS	Return to running mode press ←.
MON 17 MAR 2021 09:07:00 LT	

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Status

With this function each input/output status can be checked.

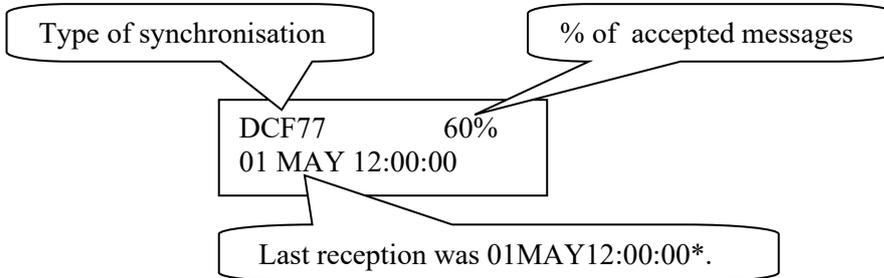
Example:

Check the status of the radio receiver.

MON 17 MAR 2021 09:07:00 LT _w	Select function using ↓ .
SPEC.-FUNCTIONS	Accept with YES. Press NO until wished function is shown.
SPEC.-FUNCTIONS STATUS	Accept with YES.
STATUS SYNC.SOURCE	Press NO until wished input/output is shown. Accept with YES.
DCF77 60% 16MAR 19:59:00	The radio receiver has accepted 60% of the radio messages. Last reception was 16/3 19:59:00.
STATUS SYNC.SOURCE	Return to running mode press ←.
SPEC.-FUNCTIONS STATUS	←
SPEC.-FUNCTIONS	←
MON 17 MAR 2021 09:07:00 LT _w	

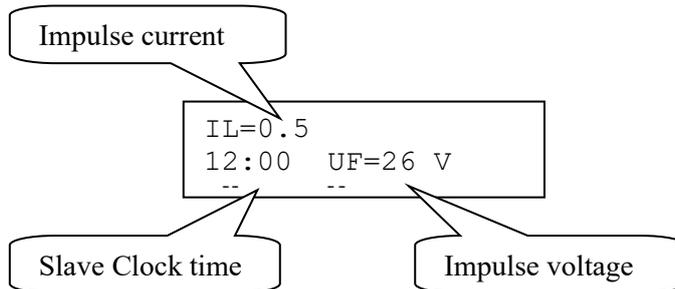


Status sync. source

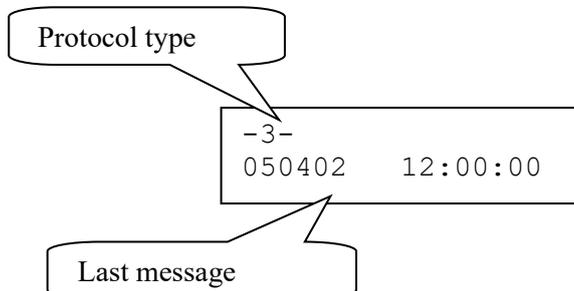


*Remark: The marked position always shows the actual second. This information is updated every other second.

Status impulse output

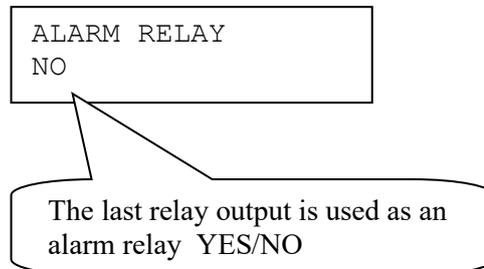


Status RS232/RS485-port

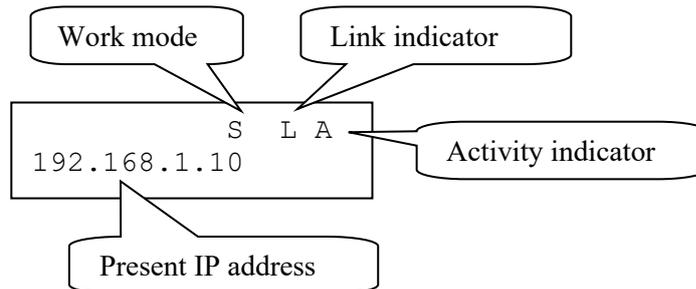




Status Alarm relay



Status IP



Work mode S = Server. The Master Clock is configured to work as an NTP Time Server.
C = Client. The Master Clock is configured to work as an NTP Time Client.

Link indicator L = Link activated. The Master Clock is connected to a network.
= No link. The Master Clock is not connected to a network.

Activity indicator A = The Master Clock is accessed via the network.

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Keylock

With this function it is possible to lock the keyboard. When activated the keylock will lock all buttons in the Master Clock.

There are two levels of keyboard protection.

1. Low level protection
Keylock **ON** : Keyboard locked, press ← YES to open.
2. High level protection
Keylock with **Password** : Keyboard locked, enter password to open.

Remark: "PASSWORD --" means that no password is used

Example 1:

Activate keylock without password

MON 17 MAR 2021 09:07:00 LT	Select function using ↓ .
SPEC.-FUNCTIONS	Accept with YES. Press NO until wished function is shown.
SPEC.-FUNCTIONS KEYLOCK	Accept with YES.
KEYLOCK OFF PASSWORD --	Change to keylock ON.
KEYLOCK ON PASSWORD --	Accept with YES.
KEYLOCK ON PASSWORD --	Accept with YES.
SPEC.-FUNCTIONS KEYLOCK	Return to running mode press ←.
MON 17 MAR 2021 09:07:00 LT	

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Example 2:
Activate keylock with password

MON 17 MAR 2021 09:07:00 LT	Select function using ↓ .
SPEC.-FUNCTIONS	Accept with YES. Press NO until wished function is shown.
SPEC.-FUNCTIONS KEYLOCK	Accept with YES.
KEYLOCK OFF PASSWORD --	Change to keylock ON.
KEYLOCK ON PASSWORD --	Accept with YES.
KEYLOCK ON PASSWORD 99	Enter, by using the arrows, a 2-digit password. Accept with YES.
SPEC.-FUNCTIONS KEYLOCK	Return to running mode press ←.
MON 17 MAR 2021 09:07:00 LT	

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Language

With this function the language be selected.

Example:

MON 17 MAR 2021 09:07:00 LT	Select function using ↓ .
SPEC.-FUNCTIONS	Accept with YES. Press NO until wished function is shown.
SPEC.-FUNCTIONS LANGUAGE	Accept with YES.
LANGUAGE ENGLISH?	Select, by using the arrows, the wished language. Accept with YES.
SPEC.-FUNCTIONS LANGUAGE	Return to running mode press ←.
MON 17 MAR 2017 09:07:00 LT	



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Country

With this function the Country can be selected.
The following country codes are available:

ALG = Algeria	ESP-W	NLD = Netherlands
Au-EST	EST = Estonia	NOR = Norway
AuCSTN	FIN = Finland	NZL = New Zealand
AuCSTS	FRA = France	PHL = Philippines
Au-WST	FRO = Faroe Islands	POL = Poland
Au-TAS	GBR = Great Britain	PRT = Portugal
AUT = Austria	GRC = Greece	QAT = Qatar
BEL-1	GRL = Greenland	OMN = Oman
BEL-2	HKG = Hongkong	ROU = Romania
BEL-3	HRV = Kroatia	RUS-M
BEL-4	HUN = Hungary	SAU = Saudi Arabia
BGR = Bulgaria	IND = India	SGP = Singapore
BRA = Brazil	IRL = Ireland	SWE = Sweden
CAN-P	ISL = Iceland	SYR = Syria
CAN-M	ISR = Israel	TUR = Turkey
CAN-C	ITA = Italy	UAE = United Arab Emirates
CAN-E	JOR = Jordan	US-HAW
CHE = Schweiz	KWT = Kuwait	US-ALA
CYP = Cyprus	LTU = Lithuania	US-P
DEN = Denmark	LUX = Luxembourg	USA-M
DEU = Germany	LVA = Latvia	USA-C
EGY = Egypt	MEX = Mexico	USA-E
ESP = Spain	MLT = Malta	US-ATL
	MUS = Mauritius	VEN = Venezuela
	MYS = Malaysia	ZAF = South Africa
		EUROPÉ = CET, without holidays
		GLOBAL = UTC, without holidays

Example:

MON 17 MAR 2021
09:07:00 LTW

Select function using ↓ .

SPEC.-FUNCTIONS

Accept with YES.
Press NO until wished function is shown.

SPEC.-FUNCTIONS
COUNTRY

Accept with YES.

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COUNTRY
D49 ?

Select, by using the arrows, the wished country.
Accept with YES.

SPEC.-FUNCTIONS
COUNTRY

Return to running mode press ←.

MON 17 MAR 2021
09:07:00 LTW

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Position

Enter the geographic position of the Master Clock.

This information is needed for the signal type “Astr.” (Twilight), in order to make it possible for the software to calculate the time of sunset and sunrise.

Example:

MON 17 MAR 2021
09:07:00 LT

Select function using ↓ .

SPEC.-FUNCTIONS

Accept with YES.
Press NO until wished function is shown.

SPEC.-FUNCTIONS
POSITION

Accept with YES.

POSITION
07E 052N

Press buttons ↓ and ↑ until requested longitude occurs.
Press →. State latitude. Accept with YES.

SPEC.-FUNCTIONS
POSITION

Return to running mode press ←.

MON 17 MAR 2021
09:07:00 LT

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Setup

With this function the different output and input can be configured. If the default setup is used no configuration is needed.

Example:

Set the alarm limit for *radio alarm* to 1 hour. (Default setting is 12 hours.)

MON 17 MAR 2021 09:07:00 LT	Select function using ↓ .
SPEC.-FUNCTIONS	Accept with YES. Press NO until wished function is shown.
SPEC.-FUNCTIONS SETUP	Accept with YES.
SETUP SYNC SOURCE	Press NO until wished input/output is shown. Accept with YES.
DCF77 AL.LIMIT --h -- m	Set, by using the arrows, the alarm limit to 1 hour (01h).
DCF77 AL.LIMIT 01h 00 m	Accept with YES
SETUP SYNC SOURCE	Return to running mode press ←.
SPEC.-FUNCTIONS SETUP	←
SPEC.-FUNCTIONS	←
MON 17 MAR 2021 09:07:00 LT	

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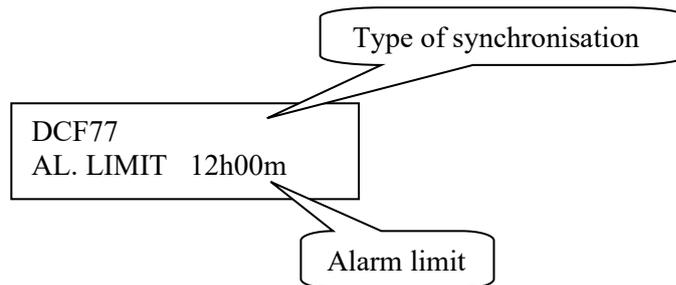
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Setup sync. source

Below is a description of the different configuration parameters available in the setup menu for *sync. source*. Please remark that if default settings are used no configuration is needed.



Type of synchronisation

State type of external synchronisation. The following time sources can be selected:

-----	No external synchronisation.
DCF77	Radio synchronisation DCF77.
GPS	Radio synchronisation GPS.
RDS	Radio synchronisation RDS.
MSF	Radio synchronisation MSF/RUGBY.
1/1M SYNC	Polarised 1/1-minute impulse, sync.
1/1M SLAVE	Polarised 1/1-minute impulse, slave.
1/2M SYNC	Polarised 1/2-minute impulse, sync.
1/2M SLAVE	Polarised 1/2-minute impulse, slave.
TC	Time code type hard wired DCF.
FMSF	Finnish FM time signal.
NTP CLIENT	The Master Clock is NTP client*
RS232	Synchronisation via RS232
AFNOR	Time code according to AFNOR NFS-87500 (IRIG-B with date)**
1/1 SEC SYNC	Polarised 1/1-sec impulse, sync.
1/1 SEC SLAVE	Polarised 1/1-sec impulse, slave.

*Only applicable if the Master Clock is equipped with option Ethernet.

**Only applicable if the Master Clock is equipped with option IRIG-B.

Alarm limit

The configuration parameter *Alarm limit* specifies the time delay before the radio alarm is activated. Default setting is that the radio alarm is inactivated, AL.LIMIT --h--m.

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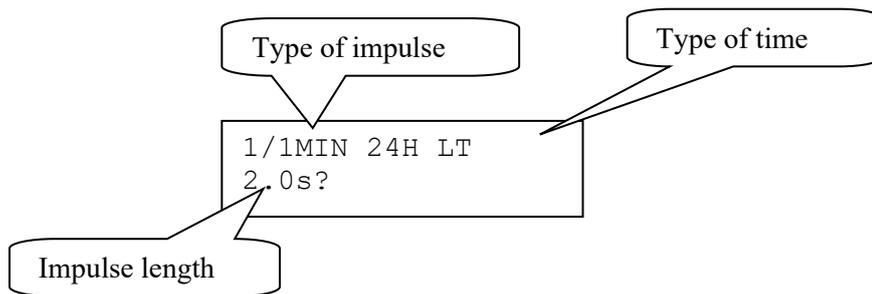
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Setup impulse output

Below is a description of the different configuration parameters available in the setup menu for *impulse output*. Please remark that if default settings are used no configuration is needed.

Impulse type



Type of impulse

Selection of impulse type. The following types are available.

- 1/1M-24H : Polarised 1/1-minute impulse with 24 hours resetting (default).
- 1/1M-12H : Polarised 1/1-minute impulse with 12 hours resetting.
- 1/2M-24H : Polarised 1/2-minute impulse with 24 hours resetting
- 1/2M-12H : Polarised 1/2-minute impulse with 12 hours resetting.
- SEC-12H : Polarised Second impulses with 12 hours resetting.
- SEC-60S : Polarised Second impulses with 60 seconds resetting.
- TC : Hard wired DCF Time Code.
- TC-POL : Polarised hard wired DCF Time Code.
- 1/1M-UP : Non polarised (Uni-Polar) PPM synchronisation pulse. Pulse length 1 second.
- SR2-58 : (SR2, hourly correction 2-wired, with imp. correction on the 58th minute).
- SR2-59 : (SR2, hourly correction 2-wired, with imp. correction on the 59th minute).
- SR3-58 : (SR3, hourly correction 3-wired, with imp. correction on the 58th minute).
- SR3-59 : (SR3, hourly correction 3-wired, with imp. correction on the 59th minute).
- IRIGB123 : Time code according to IRIG Document 200-98, Format B123.*
- AFNOR : Time code according to AFNOR NFS-87500.*
- : No impulse system.

*Only applicable if the Master Clock is equipped with option IRIG-B.

Type of time

LT = Local Time.

NT = Normal Time (winter time).

UTC = Universal Time Coordinated.

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Impulse length

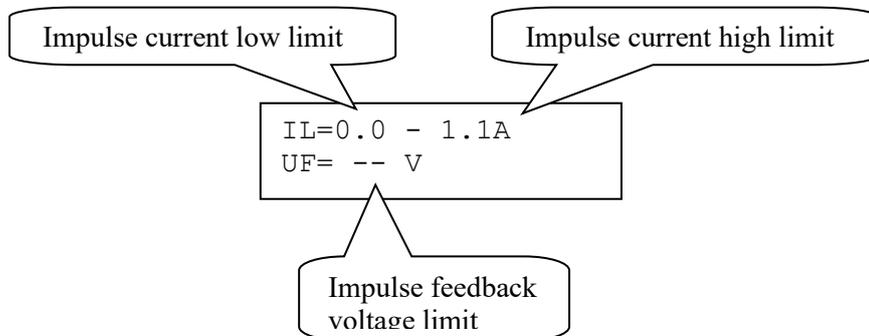
Configuration of impulse length.

1/1 and 1/2 -minute impulse: 0.1s – 9.9 s.
Second impulses: 0.1 – 1.0 s.

Remark:

When selecting second impulses with pulse length > 0.5 seconds, the pulse length for rapid impulses is automatically adjusted to 0.5 seconds.

Alarm limits



Impulse current low limit

Alarm limit for low current (minimum load). The minimum load can be set from 0A up to 1.1A.

Impulse current high limit

Alarm limit for high current (maximum load). The maximum load can be set from 0A up to 1.1A.

Impulse feedback voltage limit

Alarm limit for feedback impulse voltage.

-- : No limit (default).
01 - 99 : Limit in volts, V.

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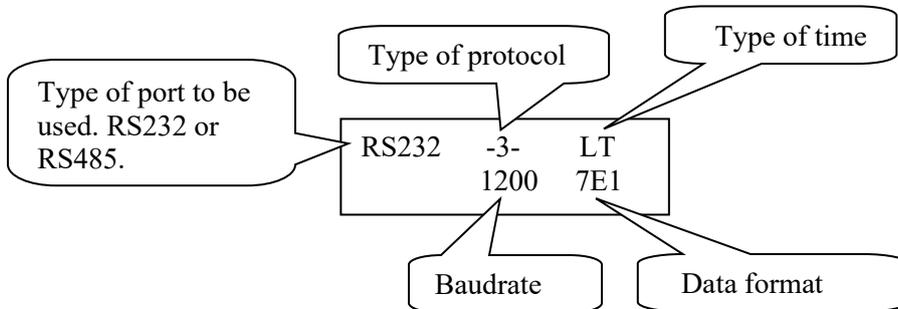
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Setup RS232/485 port



Type of port

Choose serial port to used. RS232 or RS485.

Type of protocol

Name of the transmission / reception protocol used in the module. The following protocols are available.

- 1 : General 2-way-communication protocol.
- 2, 3, 5 and 7 : Automatic time message protocols.
- NMMI :NMEA 0183, ZDA Time string, transmitted every minute.
- NMSE :NMEA 0183, ZDA Time string, transmitted every second.

Type of time

Type of time received or transmitted.

LT = Local Time.

NT = Normal Time (winter time).

UTC = Universal Time Coordinated.

Baudrate

Available speeds:

300, 600, 1200, 2400, 4800, 9600, 19200, 38400 baud.

Data format

Data format of message received or transmitted.

No. of data bits, 7 or 8.

Type of parity, non, odd or even.

No. of stop bits, 1 or 2.

Available formats:

7N1, 7N2, 7O1, 7O2, 7E1, 7E2, 8N1, 8N2, 8O1, 8O2, 8E1, 8E2.

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Protocol description

Protocol 2

The message has length 20 bytes according to:

```
STX F G W 20 YY MM DD HH MM SS ETX BCC
```

F - Flag bits

```
7           =0
6           =1
5           =0
4           =0 Winter time, =1 summer time
3           =1 Synced from Radio source, e.g. DCF77
2           =1 Synced from timeserver
```

```
1  0      Type of time
OFF OFF   UTC
OFF ON    LOC
ON  OFF   NOR
```

Example:

Assume wintertime time, synched from radio source, synchronized from timeserver, local time:

Bits 6, 3, 2 and 0 are set: 0100 1101 = 4Dh = 'M'

G - UTC offset during wintertime from letter 'P' in 1/2 hour steps.

Example:

Germany 2 x 1/2 = 1 hour, so 'P'+2 = 'R'

```
W      Weekday          '1' Monday .. '7' Sunday
YY     Year             '00'..'99'
MM     Month            '01'..'12'
DD     Day of month     '01'..'31'
HH     Hour             '00'..'23'
MM     Minute           '00'..'59'
SS     Second           '00'..'59'
ETX    03h
BCC    Exclusive or of bytes F..ETX
```

The message is transmitted each second

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Protocol 3

At second 56 this message will be transmitted:

HH:MM:00 SP DD/MN/YY SP NNN SP W CR LF (25 bytes)

HH = Hour '00' - '23' .
: = 3AH
MM = Minute '00' - '59' .
SP = Blank 20H.
DD = Date '01' - '31' .
/ = 2FH
MN = Month '01' - '12' .
YY = Year '00' - '99' .
NNN = Daynumber '001' - '365' (3 bytes) .
W = Weekday '1' - '7' .
CR = 0DH.
LF = 0AH.

At second 60 (0) a synchronisation sign SUB (1AH) is transmitted.

Remark: The message transmitted at second 56 is *next* minute.

Example:

At 09:07:56 is a message transmitted. The time included in this message will be 09:08:00.

Protocol 5

T:YY:MN:DD:WW:HH:MM:SS CR LF (24 bytes)

T = T
: = 3AH
YY = Year 00....99
MN = Month 01....12
DD = Day 01....31
WW = Day of week 01....07
HH = Hour 00....23
mm = Minutes 00....59
ss = Seconds 00....59
CR = Carriage return 0Dh.
LF = Line feed 0Ah.

The time message is sent out each minute or each second.

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Protocol 7

STX WW VV YYYY MN DD HH MM SS F G BCC ETX (24 bytes)

STX = 02h (1 byte).

WW = Week number '01'-'53'
VV = Weekday '01'-'07'
YYYY = Year '2003-2099'
MN = Month '01'-'12'
DD = Day '01'-'31'
HH = Hour '00'-'23'
MM = Minute '00'-'59'
SS = Second '00'-'59'

F = '0' Winter-time.
= '1' Summer-time.

G = Offset to UTC for winter-time according to (1 byte):
' ,' (2Ch) -2 hours, '.' (2Eh) -1 hour, '0' (30h) 0 hour.

BCC = Checksum; Exclusive OR of bytes WW..F G in hexadecimal ascii format (2 bytes). Byte STX is NOT included!.

ETX = 03h (1 byte).

This message is sent out each second.

NMEA

ZDA - Time & Date - UTC, Day, Month, Year and Local Time Zone

```
      1      2 3 4      5 6 7  
      |      | | |      | | |  
$--ZDA, hhmmss, xx, xx, xxxx, xx, xx*hh<CR><LF>
```

Field Number:

- 1) Universal Time Coordinated (UTC)
- 2) Day, 01 to 31
- 3) Month, 01 to 12
- 4) Year
- 5) Local zone description, 00 to +- 13 hours
- 6) Local zone minutes description, same sign as local hours
- 7) Checksum

NMMI :NMEA 0183, ZDA Time string, transmitted each minute.

NMSE :NMEA 0183, ZDA Time string, transmitted each second.

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Setup Alarm Relay

One of the relay outputs can be used as an alarm relay. This function is as default disabled but can be enabled via this special function.

Enable alarm relay:

MON 17 MAR 2021 09:07:00 LTW	Select function using ↓ .
SPEC.-FUNCTIONS	Accept with YES. Press NO until wished function is shown.
SPEC.-FUNCTIONS SETUP	Accept with YES.
SETUP ALARM RELAY	Press NO until the text ALARM RELAY is shown. Accept with YES.
ALARM RELAY NO	Change to YES by pressing ↓.
ALARM RELAY YES	Accept with YES.
SETUP ALARM RELAY	Return to running mode press ←.
SPEC.-FUNCTIONS SETUP	←.
SPEC.-FUNCTIONS	←.
MON 17 MAR 2021 09:07:00 LTW	



Setup IP

This function can be used to give the Master Clock an IP address if it is equipped with option Ethernet. Please note that IP address as well as all other network parameters can be configured via an external PC using Telnet. See separate manual for this.

Example:

Give the Master Clock IP address 192.168.1.100.

MON 17 MAR 2021 09:07:00 LTW	Select function using ↓ .
SPEC.-FUNCTIONS	Accept with YES. Press NO until wished function is shown.
SPEC.-FUNCTIONS SETUP	Accept with YES.
SETUP IP	Press NO until the text IP is shown. Accept with YES.
IP 192.168.013.199	Set the first digit group of the IP address using ↑↓. Move to the right using →.
IP 192.168.013.199	Continue with the second digit group. Change digits using ↑↓. Move to the right using →.
IP 192.168.001.199	Continue with the third digit group. Change digits using ↑↓. Move to the right using →.
IP 192.168.13.100	Continue with the fourth digit group. Change digits using ↑↓. Accept with YES.
SETUP IP	Return to running mode press ←.
SPEC.-FUNCTIONS SETUP	←.
SPEC.-FUNCTIONS	←.
MON 17 MAR 2021 09:07:00 LTW	



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Software version

This function shows the software version for the Master Clock.

MON 17 MAR 2021 09:07:00 LT	Select function using ↓ .
SPEC.-FUNCTIONS	Accept with YES. Press NO until wished function is shown.
SPEC.-FUNCTIONS SOFTWARE VERSION	Accept with YES.
QW3-A1301 123342-00 11m	The software version is QW3-A130. 11m = Uptime for this Master Clock.
SPEC.-FUNCTIONS SOFTWARE VERSION	Return to running mode press ←.
SPEC.-FUNCTIONS	←
MON 17 MAR 2021 09:07:00 LT	

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Holidays

Normal public holidays are pre-programmed and the following year's public holidays are calculated automatically at the turn of the year.

There are two different types of holidays:

- Holidays with *fixed date*; holidays that is appearing at the same date year after year.
- Holidays with *variable date*; holidays that is changing date from year to year.

It is possible to change the existing, pre-programmed holidays.

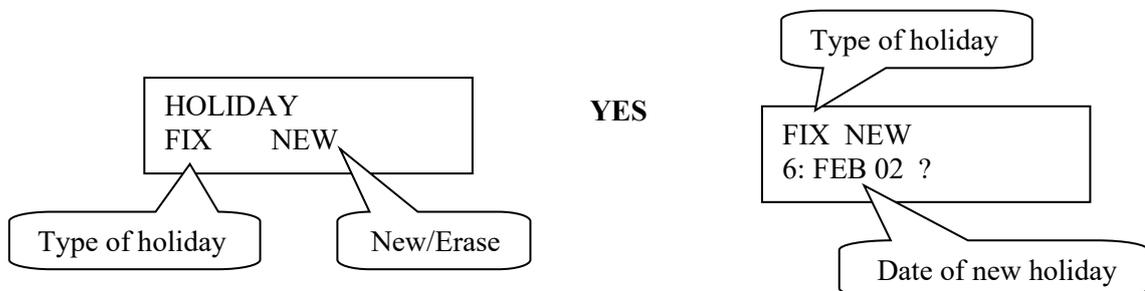
- *Fixed date holiday* can be inserted (NEW) or deleted (ERASE).
- *Variable date holidays* can be *enabled* or *disabled*. Disabled means that the holiday is deactivated until it is manually enabled again.

Fixed holidays

Example of fixed holidays:

JAN01 New Year's Day

DEC25 Christmas day





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Variable holidays

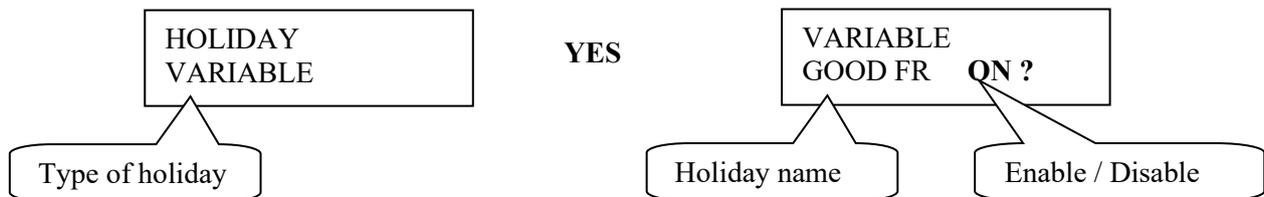
Example of variable holidays:

Good Friday

Easter Monday

Holiday abbreviations used

Language English		Language French		Language German	
EAST. TH	Easter Thursday				
GOOD FR	Good Friday				
EAST. MO	Easter Monday				
ASCENS.	Ascension				
COR CH	Corpus Christi				
PENT. MO	Pentecost Monday				
PRAY DAY	Pray Day				
JOH. EVE					
JOH. DAY					
ALL ST.	All Saints Day				
WED NOV	Bank holiday				
MO MAY	Bank holiday				
MO JUN	Bank holiday				
MO AUG	Bank holiday				
MO OCT	Bank holiday				



Enable/disable

OFF = This holiday is disabled (not used)

ON = This holiday is enabled (used)

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Holidays, example 1, insert a new fixed holiday

Insert January 25 as a new fixed holiday.

MON 17 MAR 2021 09:07:00 LT _w	Select function using ↓.
SPEC.-FUNCTIONS	Accept with YES . Press NO until wished function is shown.
SPEC.-FUNCTIONS HOLIDAY	Accept with YES .
HOLIDAY FIX	Press NO until the text HOLIDAY FIX is shown. Accept with YES .
HOLIDAY FIX NEW	Press YES
FIX NEW 6 : JAN --	Press buttons ↓ and ↑ until requested month occurs. Move to the right using →.
FIX NEW 6 : JAN25	Press buttons ↓ and ↑ until requested day occurs. Accept with YES .
FIX NEW 7 : -----	Leave this function by pressing ←.
HOLIDAY FIX	←
SPEC.-FUNCTIONS HOLIDAYS	←
MON 17 MAR 2021 09:07:00 LT _w	



Holidays, example 2, erase fixed holiday

Erase the fixed holiday January 01.

MON 17 MAR 2021 09:07:00 LT _w	Select function using ↓ .
SPEC.-FUNCTIONS	Accept with YES . Press NO until wished function is shown.
SPEC.-FUNCTIONS HOLIDAY	Accept with YES .
HOLIDAY FIX	Press NO until the text HOLIDAY FIX is shown. Accept with YES .
HOLIDAY FIX ERASE	Press NO until the text FIX ERASE is shown. Press YES .
FIX ERASE 1 : JAN01 ?	Press button ↑ until requested holiday occurs. Accept with YES .
FIX ERASE 1 : JAN01 ERASE?	Accept with YES .
FIX ERASE 1 : JAN01 OK	The holiday Jan 01 is erased.
FIX ERASE 2 : MAY01	Leave this function by pressing ←.
HOLIDAY FIX	←
SPEC.-FUNCTIONS HOLIDAYS	←
MON 17 MAR 2021 09:07:00 LT _w	



Holidays, example 3, disable a variable holiday

Disable holiday Good Friday.

MON 17 MAR 2021 09:07:00 LTW	Select function using ↓ .
SPEC.-FUNCTIONS	Accept with YES . Press NO until wished function is shown.
SPEC.-FUNCTIONS HOLIDAY	Accept with YES .
HOLIDAY VARIABLE	Press NO until the text HOLIDAY VARIABLE is shown. Accept with YES .
VARIABLE EAST . TH OFF?	Press → until the text GOOD FR is shown.
VARIABLE GOOD FR ON ?	Change ON to OFF by pressing button ↑.
VARIABLE GOOD FR OFF ?	Accept with YES .
VARIABLE EAST MO ON?	Press ←.
VARIABLE SAVE ?	Accept with YES .
HOLIDAY VARIABLE	←
SPEC.-FUNCTIONS HOLIDAYS	←
HOLIDAYS	←
MON 17 MAR 2021 09:07:00 LTW	



Display format

With this function the display format in running mode can be selected.

The following two formats can be selected:

MON 17 MAR 2021
10:11:00 LTw

Standard format, default format.
LT = Local Time. (LTs when summer time)
NT = Normal Time (Winter time).
UTC = Universal Time Coordinated.

MON 17 MAR 2021
LTw

Format 2, used for test / fault finding.

Example:

MON 17 MAR 2021
09:07:00 LT

Select function using ↓ .

SPEC.-FUNCTIONS

Accept with YES.
Press NO until wished function is shown.

SPEC.-FUNCTIONS
DISPLAY FORMAT

Accept with YES.

DISPLAY FORMAT
STANDARD

Select, by using the arrows, the wished display format.
Accept with YES.

SPEC.-FUNCTIONS
DISPLAY FORMAT

Return to running mode press ←.

MON 17 MAR 2021
09:07:00 LT



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Map

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Fault tracing

The display is blank

- A. The green LED “POWER” is light?
 - A1. No.
 - A1A. Check the supply voltage.
 - A1B. Power supply wires connected correctly?
 - A2. Yes.
 - A2A. Restart the master clock by switching the supply voltage off and on.

After starting up the master clock, no impulses appear (to correct the slave clocks).

- B1. The master clock awaits the time shown by the slave clocks. Impulses will be distributed when correct time = the time shown by the slave clocks.

Relay outputs are programmed but nothing happens.

- C1. The switch on the front panel is in position **0**. Correct position is **A**.
- C2. Check that the output is working when the switch is in position **1**.
- C3. Different program types have different priority. E.g. a programmed holiday overrides a signal point in a week program.
Priority order (1=highest, 4=lowest):
1) Date program 2) Holiday 3) Group 4) Week program

Alarm messages

- D1. “Short circuit”

Excessive load on the impulse output. Check the slave clock wiring. Impulses are stored (memorised) during the alarm. When the fault is fixed, all the stored impulses are distributed by rapid impulsing.

- D2. “Memory full”

The master clock is out of memory, probably due to incorrect programming. Use week program for repetitive signals or group for a certain period. See the programming instructions in this manual.

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D3. “Exists”

The signal point is already programmed.

D4. “Not programmed”

When trying to change a non-existing signal point.

RADIO

Radio synchronisation is not working (DCF)

Check that the LED in the antenna is flashing in second's rhythm. The antenna should be mounted in the clear, with the arrow on the box aiming south. Check that the LED “Radio” on the master clock is flashing in second's rhythm.

Use special functions “Status/Sync. source” for information on the reception quality.

Accepted radio reception is shown by a flashing colon (:) between hours and minutes in the display.