User Manual
Master Clock WDP-Y2/Y4/Y8

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This product might include unintentional technical or typographical errors. Changes are periodically made to the information herein to correct such errors, and these changes are incorporated into new editions of the publication.

Important Safeguards

Read all these instructions and save them for later use

- Do not place this product on an unstable cart, stand or table. The product may fall, causing serious damage to the product and/or person.

- Slots and openings in the cabinet and the back are provided for ventilation to ensure reliable operation of the product and to protect it from overheating, these openings must not be blocked or covered. This product should never be placed near or over a heat source. This product should not be placed in a built-in installation unless proper ventilation is provided.

- Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electric shock.

- If installation is required, it must only be done by appropriately skilled personnel.

- Except as explained elsewhere in the operating manual, do not attempt to service this product yourself. Removing covers may expose you to dangerous voltage points or other risks. Refer all servicing in those compartments to a service technician.

- Product that intents to be connected to mains as a permanent installation shall be connected by a readily accessible safety switch.

- Is the product equipped with a plug (grounding type) shall this be connected to an outlet that is intended for the product. The plug must be easy to disconnect without moving or dismantle the product.

CAUTION: this equipment must be serviced by an approved technician.
The guarantee shall be cancelled if any modifications are made to this product.
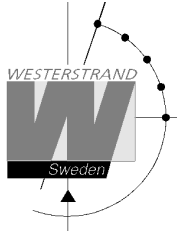
General warning (refer to accompanying documents)

Consult instruction for use

This symbol means that according to local laws and regulations your product shall be disposed of separately from household waste. When this product reaches its end of life, take it to a recycling center designated by local authorities.

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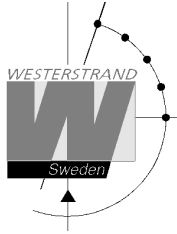
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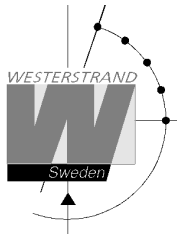**User Manual**

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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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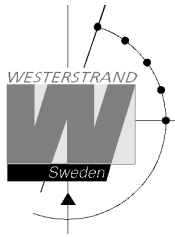
General description

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.)
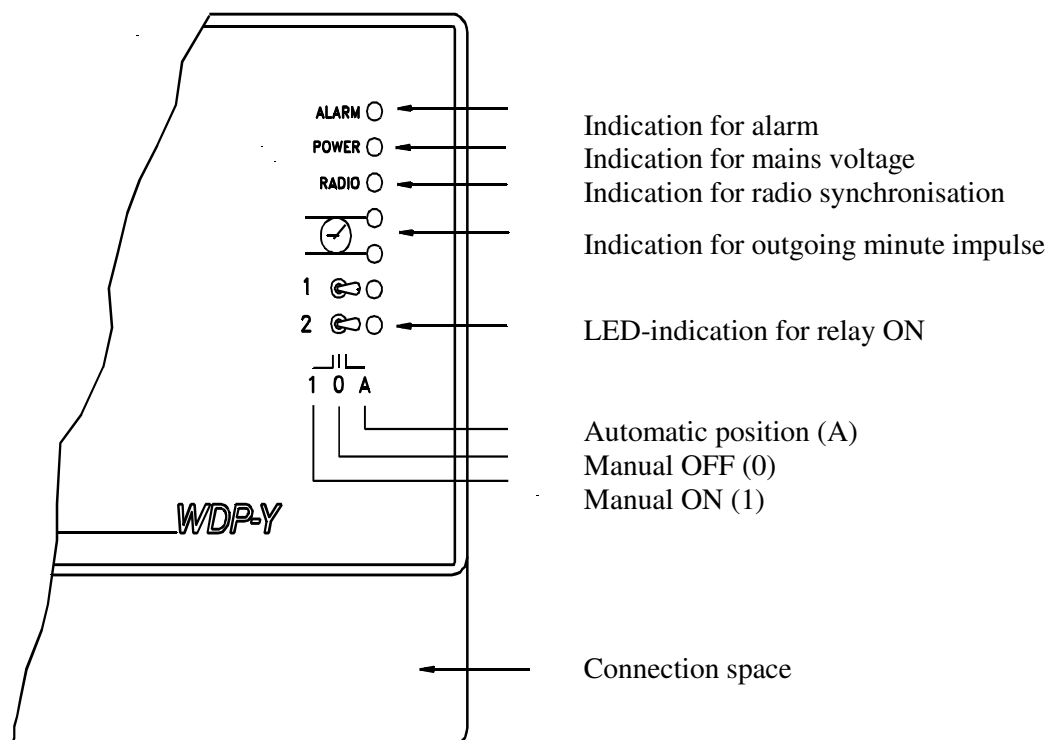
ALARM	Indication for alarm
POWER	Indication for mains voltage
RADIO	Indication for radio synchronisation
	Indication for outgoing minute impulse
1 2	LED-indication for relay ON
1 0 A	Automatic position (A) / Manual OFF (0) / Manual ON (1)
WDP-Y	Connection space

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Installation

The Master Clock Programmer is intended for wall mounting.

1. Screw in the upper fixing screw halfway and hang up the unit.
2. Screw in the two lower screws, accessible under the connection space cover.
3. Connect the slave clock lines.
4. Connect the signal line/lines (to relay contacts).
1. NOTE! For connection of signals etc., mixed voltages must not be used.
2. Therefore, choose either 230VAC or, for example 24VAC for connection to the relays.
5. Connect, if included, other accessories/options such as radio synchronisation, RS232 etc.
6. Connect the supply voltage.

WDP-Y2
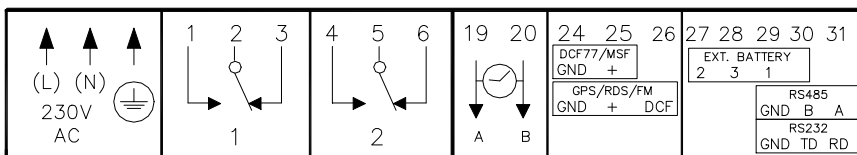
WDP-Y4
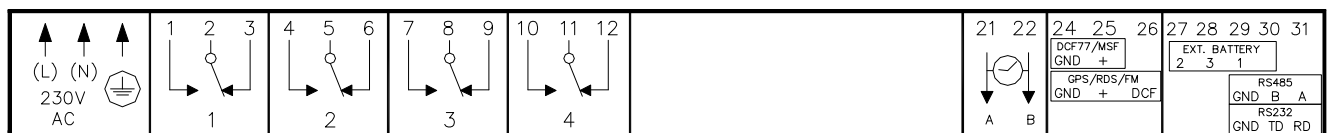
WDP-Y8 123352-00

WDP-Y8 123353-00

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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 x I x k

A = Area [mm^2]
l = cable length [m]
I = current [A]
k = 0,015 [constant]

Power consumption

Impulse Slave Clocks
Analogue clocks minute ≤ 400 mm: 7,5 mA
Analogue clocks minute ≤ 900 mm: 15 mA
Analogue clocks minute + sweep seconds hand ≤ 400 mm: 25 mA
Digital Clocks: 4 mA

Time-Code (TC) Slave Clocks
Analogue clocks minute ≤ 400 mm:	14 mA
Analogue clocks minute ≤ 900 mm:	20 mA
Analogue clocks minute + sweep seconds hand ≤ 400 mm, indoor:	12 mA
Analogue clocks minute + sweep seconds hand ≤ 400 mm, outdoor:	20 mA
Analogue clocks minute + sweep seconds hand ≤ 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 x 7,5 = 300 mA = 0,3A.
Cable length is 100 metres.

A = 100 x 0,3 x 0,015 = 0,45 mm^2

Choose a cable with an area of at least 0,45 mm^2.

WESTERSTRAND URFABRIK AB

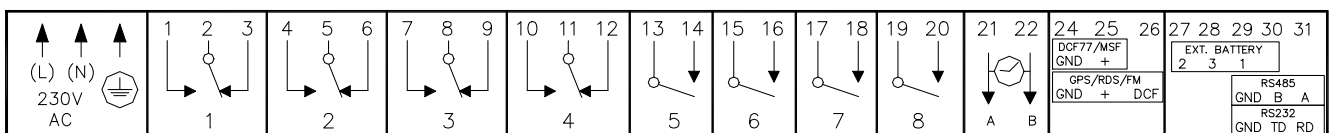|			
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SE-545 23 TÖREBODA	Fax. +46 506 48051	E-mail:	info@westerstrand.se

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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.

WDP-Y2   WDP-Y4, WDP-Y8
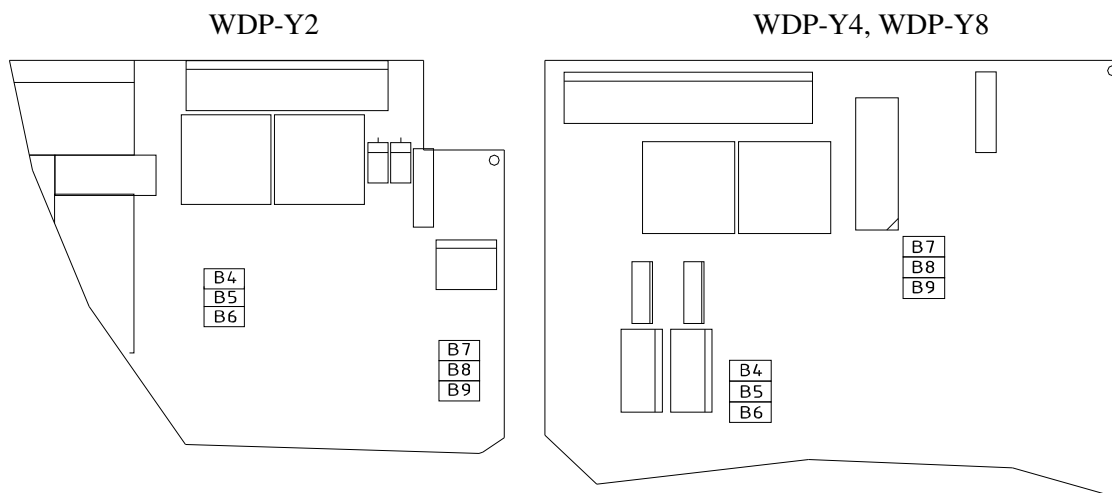
	B4	B5	B6	
PREP. FOR RADIO RECEIVER	X	X		FACTORY DEFAULT
PREP. FOR SYNC. PULSE FROM ANOTHER MASTER CLOCK			X	

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)

```
GND (29)  ------------------------------------------------------  5  ------------------  7
TD   (30)  ------------------------------------------------------  2  ------------------  3
RD   (31)  ------------------------------------------------------  3  ------------------  2
                                                    ⌐ 1              ⌐ 7
                                                    ⌐ 4              ⌐ 8
                                                    ⌐ 6              ⌐ 20
                                                    ⌐ 7              ⌐ 4
                                                    ⌐ 8              ⌐ 5
```
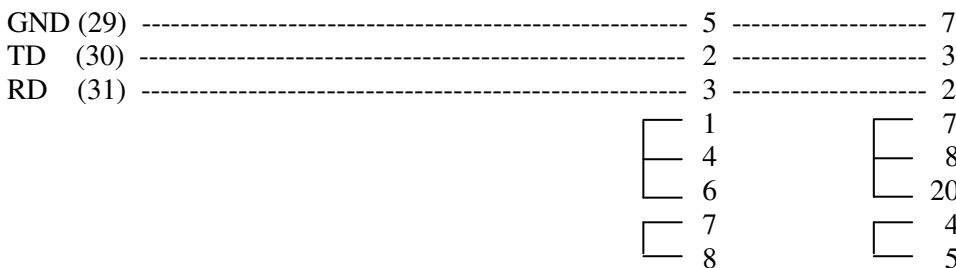
Connection via RS485

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.
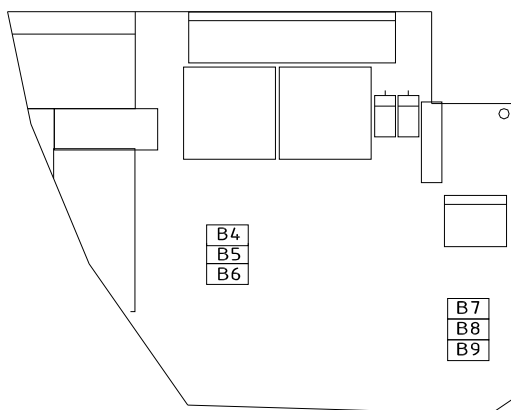
WDP-Y2   WDP-Y4, WDP-Y8
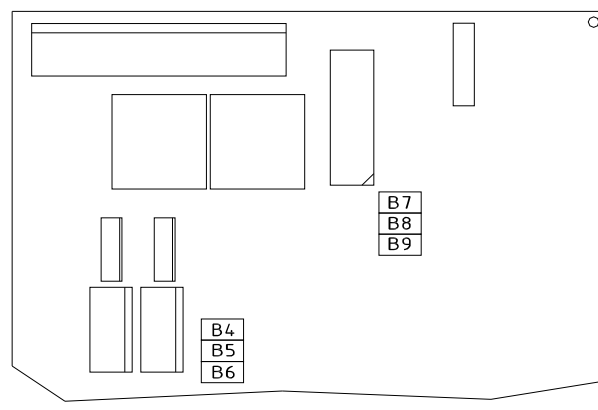
	B7	B8	B9	
PREP. FOR RS232	X		X	FACTORY DEFAULT
PREP. FOR RS485		X		

X= Closed

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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   LTw

MON 17 MAR 2014
 10:11:00   LTw

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.

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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.

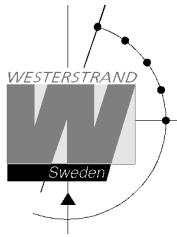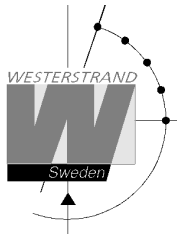|	
MON 17 MAR 2014 09:07:00 LT	Select function using ↓.
SLAVE CLOCK	Enter the programming mode with YES.
SLAVE CLOCK = **09**:07 OFF	SLAVE CLOCK = 09.07? (Example) If the slave clocks shows 09.07 answer YES, if not, set the time shown by the slave clocks.
SLAVE CLOCK = 09:**07** OFF	**YES.**
SLAVE CLOCK = 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.

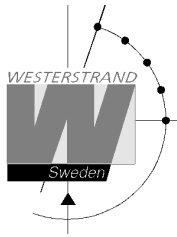| Type of alarm	Indication	Reason for alarm	Action
NO RADIO	Red alarm LED lit. Alarm relay activated.	The radio receiver is not working.	Check the radio receiver. If OK, clear the alarm.
UF LOW	Red alarm LED lit. Alarm relay activated	Impulse voltage below alarm limit.	Check the load on the impulse output. If OK, clear the alarm.
SHORT CIRCUIT	Red alarm LED lit. Alarm relay activated	Short circuit on impulse output	Remove the short circuit. If OK, clear the alarm.
CURRENT LOW	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.
CURRENT HIGH	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.
POWER DOWN	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 ↑↓ .

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 ↑↓ to see next alarm.
Return to running mode press ←.

ALARMS- DISPLAY

←.

ALARMS
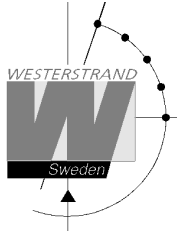
←.

MON 17 MAR 2014
09:07:00 LT

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Example 2, erase (clear) alarms

MON 17 MAR 2014
09:07:00 LT

Select function using ↑↓ .

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 ←.

ALARMS

←.

MON 17 MAR 2014
09:07:00 LT

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Week Program & Date Program

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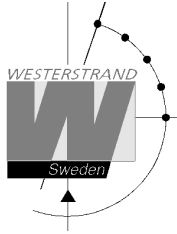
Concept description

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 *group* 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
```
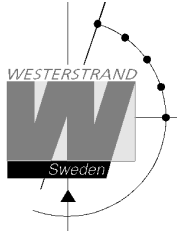To erase a separate existing program.

```
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 2014
09:07:00    LT
```
Select function using ↑↓.

```
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 ↑↓, accept using YES.

```
OUTPUT 2        ON
------- 08:00:00
```
Select output using ↑↓. Move to the right using →.

```
OUTPUT 2        ON
------- 08:00:00
```
State type of signal using ↑↓.

```
OUTPUT 2        ON
MTWTF-- 08:00:00
```
State the days the program shall function using ↑↓.
Move to the right using →.

```
OUTPUT 2        ON
MTWTF-- 09:00:00
```
State the time of the program using ↑↓.
Move to the right using →.
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
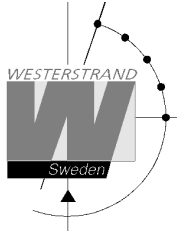programming by pressing ← several times.

```
WEEK PROGRAM
```

```
 MON 17 MAR 2014
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 2014
09:07:00    LT
```
Select function using ↑↓ .

```
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 ↑↓, accept using YES.

```
OUTPUT 2      05S
MTWTF-- 08:00:00
```
Select output using ↑↓. Move to the right using →.

```
OUTPUT 2      05S
MTWTF-- 08:00:00
```
Step forward to the program, which is to be changed using NO and YES.
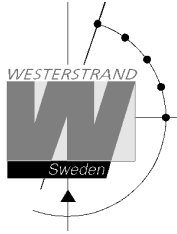
```
OUTPUT 2      05S
MTWTF-- 08:15:00
```
Change the time to 09.15 using the arrows.
Accept using YES.

```
WEEK PROGRAM
```
Leave the programming by pressing ← several times.

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

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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 2014
09:07:00    LT
```
Select function using ↑↓ .

```
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 ↑↓, accept using YES.

```
OUTPUT 1       ON
MTWTF-- 09:00:00
```
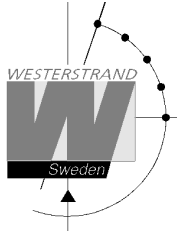Select output using ↑↓. Move to the right using →.

```
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 2014
09:07:00    LT
```

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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 2014
09:07:00    LT
```
Select function using ↑↓ .

```
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 ↑↓, accept using YES.

```
OUTPUT 2 ON
MTWTF-- 08:00:00
```
Select output using ↑↓. Move to the right using →.

```
OUTPUT 2 ASTR
MTWTF--
```
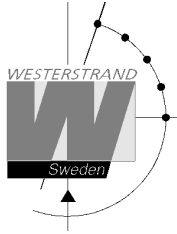State type of signal using ↑↓.

```
OUTPUT 2 ASTR
MTWTF--
```
State the days the program shall function using ↑↓.
Accept using YES.
If the program is approved the text "Program saved" is displayed quickly.

```
WEEK PROGRAM
```
Leave the programming by pressing ← several times.

```
MON 17 MAR 20145
09:07:00    LT
```

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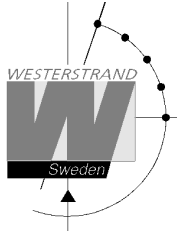Date: 2014-06-12
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Week Program, example 5 (Block program)

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

```
MON 17 MAR 2014
09:07:00    LT
```
Select function using ↑↓ .

```
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 ↑↓, accept using YES.

```
OUTPUT 2 ON
------- 08:00:00
```
Select output using ↑↓. Move to the right using →.

```
OUTPUT 2 ON
------- 08:00:00
```
State type of signal using ↑↓.

```
OUTPUT 2 ON
M-W-F-- 08:00:00
```
State the days the program shall function using ↑↓.
Move to the right using →.

```
OUTPUT 2 ON
M-W-F-- 09:00:00
```
State the time of the program using ↑↓.
Move to the right using →.
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 ← several times

```
WEEK PROGRAM
```

```
MON 17 MAR 2014
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 ↑↓ .

```
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 ↑↓, accept using YES.

```
OUTPUT 2 ON
------- 08:00:00
```
Select output using ↑↓. Move to the right using →.

```
OUTPUT 2 05S
------- 08:00:00
```
State type of signal using ↑↓.
05S = Pulse with 5 seconds length.

```
OUTPUT 2 05S
MTWTFSS 08:00:00
```
State the days the program shall function using ↑↓.
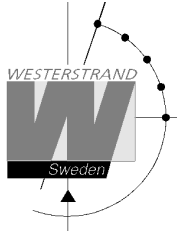Move to the right using →.

```
OUTPUT 2 05S
MTWTFSS **:15:00
```
State the time of the program using ↑↓. ** = every hour.
Move to the right using →.
Accept using YES.
If the program is approved the text "Program saved" is displayed quickly.

```
WEEK PROGRAM
```
Leave programming by pressing ← several times.

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

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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 ↑↓ .

```
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 ↑↓. Move to the right using →.

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

State type of signal using ↑↓.

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

State the date the program shall function using ↑↓.
Move to the right using →.

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

State the time of the program using ↑↓.
Move to the right using →.
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 ← several times.

```
DATE PROGRAM
```

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

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Display Program

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

Select function using ↑↓ .

```
DISPLAY PROGRAM
```

Enter display program using YES.

```
DISPLAY PROGRAM
GROUP A
```

Select program group using ↑↓, accept with YES.

```
GROUP A
OUTPUT ALL
```

Select output to be displayed using ↑↓, accept with YES.

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

Step forwards alt. Backwards using ↑↓.

```
DISPLAY PROGRAM
```

Leave the function display program by pressing ← several times.

```
 MON 17 MAR 2014
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 2014
09:07:00   LT
```
Select function using ↑↓ .

```
TEMPORARY PROGR.
```
Enter programming mode using YES.

```
OUTPUT 2 ON
15:35:00
```
Select output using ↑↓. Move to the right using →.

```
OUTPUT 2 ON
15:35:00
```
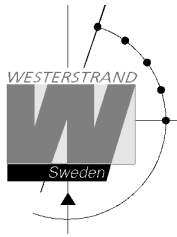State type of signal using ↑↓.
Accept using YES

```
OUTPUT 2 ON
15:35:00
```
Accept using YES or change the time of the program using ↑↓.

```
TEMPORARY PROGR.
```
Leave the programming by pressing ˝ several times.

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

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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...

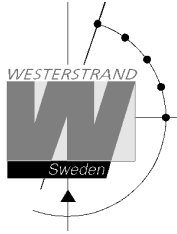|	
```MON 17 MAR 2014``` ```09:07:00 LT```	Select function using ↑↓ .
```GROUP => PERIOD```	Enter programming mode using YES.
```GROUP B``` ```1:_____ – _____```	Select group of programs using ↑↓, accept using YES.
```GROUP B``` ```1:MAY01 – _____```	State the date when the period shall begin. Move to the right using →.
```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 ← several times.
```MON 17 MAR 2014``` ```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 2014
09:07:00    LT
```
Select function using ↑↓ .

```
DISPLAY HOLIDAYS
```
Enter display program using YES.

```
DISPLAY HOLIDAYS
01:   01Jan
```
Scroll using ↑↓.

```
DISPLAY HOLIDAYS
```
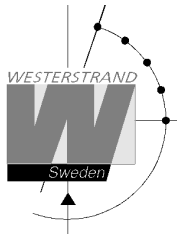Leave the programming by pressing ← several times.

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

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Spec.-Functions

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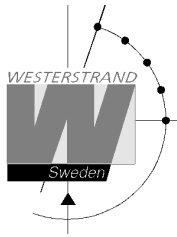If the default settings are used no configuration is needed.

MON 17 MAR 2014 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 2014 09:07:00 LT	

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Status

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

Example:
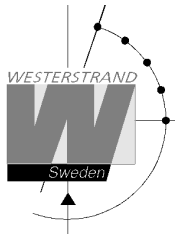Check the status of the radio receiver.

| MON 17 MAR 2014
09:07:00 LTw | 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 | ← |

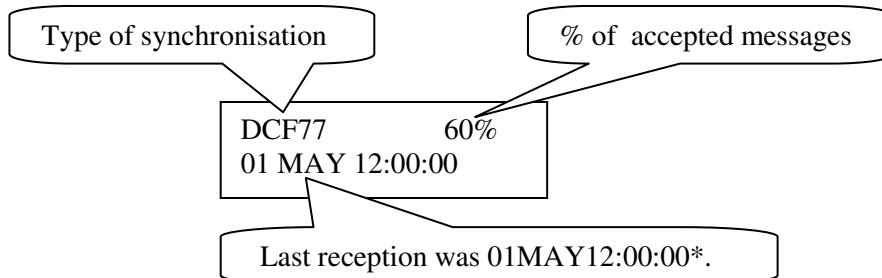| MON 17 MAR 2014
09:07:00 LTw | |

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Status sync. source

Type of synchronisation

% of accepted messages

```
DCF77        60%
01 MAY 12:00:00
```

Last reception was 01MAY12:00:00*.
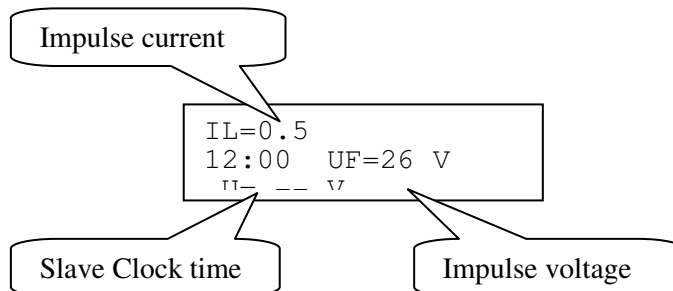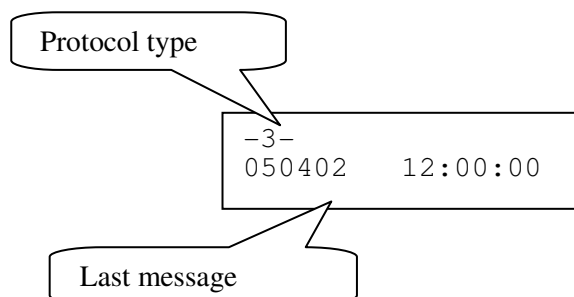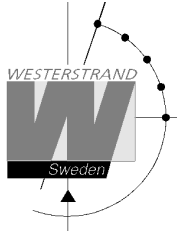
*Remark: The marked position always shows the actual second. This information is updated every other second.
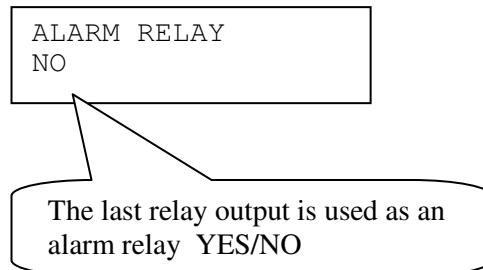
Status impulse output

Impulse current

```
IL=0.5
12:00  UF=26 V
U= __ V
```
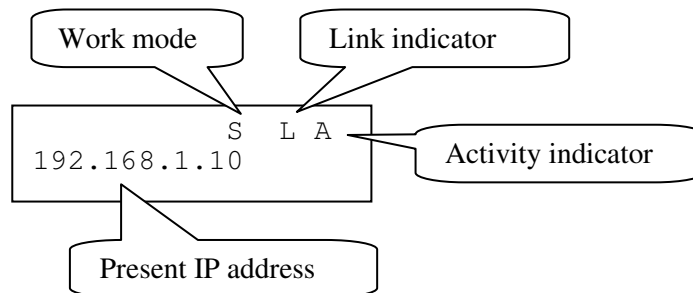
Slave Clock time

Impulse voltage

Status RS232/RS485-port

Protocol type

```
-3-
050402  12:00:00
```

Last message

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Status Alarm relay

```
ALARM RELAY
NO
```

The last relay output is used as an alarm relay YES/NO

Status IP

Work mode

Link indicator

```
        S  L A
192.168.1.10
```

Activity indicator

Present IP address

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.
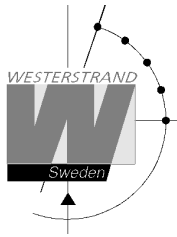   = No link. The Master Clock is not connected to a network.

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
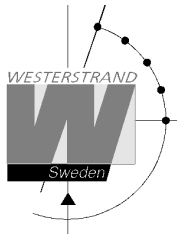

Example 1:
Activate keylock without password

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

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Example 2:
Activate keylock with password

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

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Language

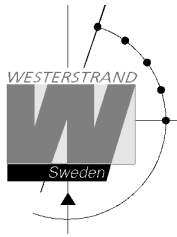With this function the language be selected.

Example:
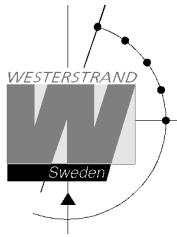
```
MON 17 MAR 2014
09:07:00   LT
```
Select function using ↓ .

```
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 2014 09:07:00 LTw	Select function using ↓ .

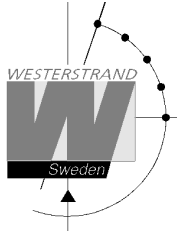| SPEC.-FUNCTIONS	Accept with YES. Press NO until wished function is shown.

SPEC.-FUNCTIONS COUNTRY	Accept with YES.

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| COUNTRY |
| D49 ? |

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

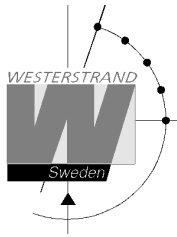| SPEC.-FUNCTIONS |
| COUNTRY |

Return to running mode press ←.

| MON 17 MAR 2014 |
| 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 2014 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.

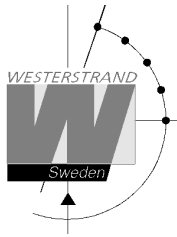| SPEC.-FUNCTIONS POSITION |
|---|

Return to running mode press ←.

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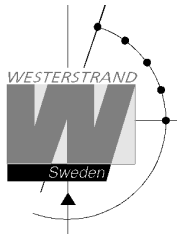Set the alarm limit for *radio alarm* to 1 hour. (Default setting is 12 hours.)

MON 17 MAR 2014 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 2014 09:07:00 LT	

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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 │
                        └──────────────────────┘
  ┌──────────────────────┐
  │ DCF77                │
  │ AL. LIMIT   12h00m   │
  └──────────────────────┘
                        ┌──────────────┐
                        │ Alarm limit  │
                        └──────────────┘
```
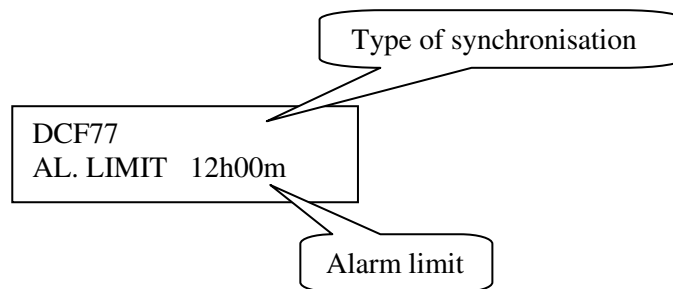
Type of synchronisation
State type of external synchronisation. The following time sources can be selected:

--------	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.
TC-POL	Polar reversing time code type hard wired DCF.
FMSF	Finnish FM time signal.
NTP CLIENT	The Master Clock is NTP client*
AFNOR	Time code according to AFNOR NFS-87500 (IRIG-B with date)**

*Only applicable if the Master Clock is equipped with option Ethernet.
**Only applicable if the Master Clock is equipped with option IRIG-B.
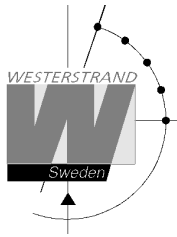
Alarm limit
The configuration parameter *Alarm limit* specifies the time delay before the radio alarm is activated. Default setting is that the radio alarm is inactivated, AL.LIMIT --h--m.

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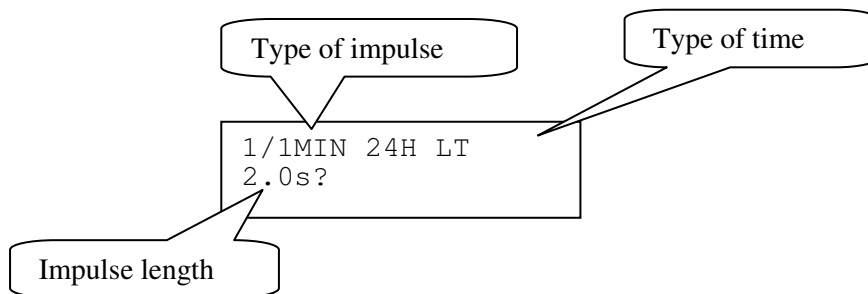## Setup impulse output

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
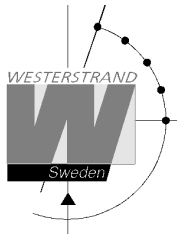LT = Local Time.
NT = Normal Time (winter time).
UTC = Universal Time Coordinated.

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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

Impulse current high limit

```
IL=0.0 – 1.1A
UF= –– V
```

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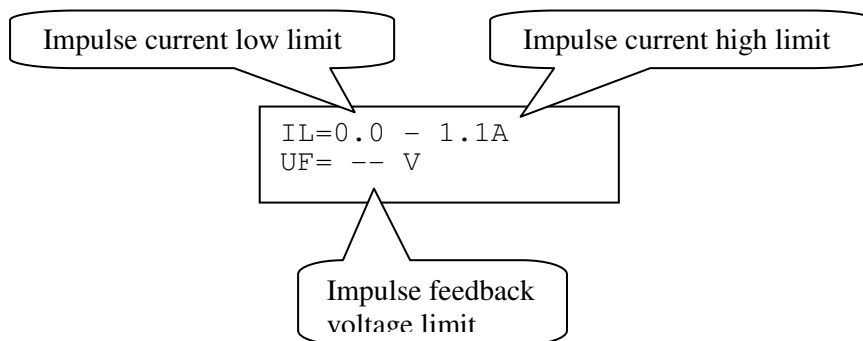
Impulse current low limit
Alarm limit for low current (minimum load). The minimum load can be set from 0A up to 1.1A.

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
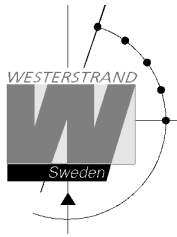Alarm limit for feedback impulse voltage.

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

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Setup RS232/485 port
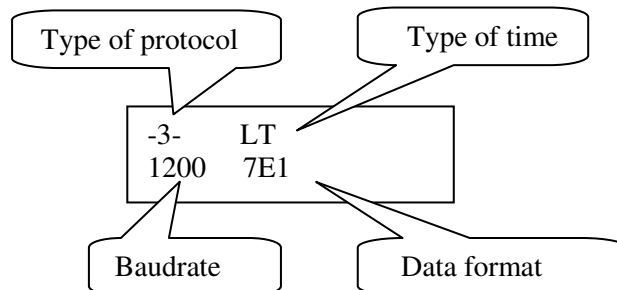
Type of protocol

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.
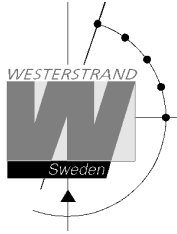NT = Normal Time (winter time).
UTC = Universal Time Coordinated.

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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.
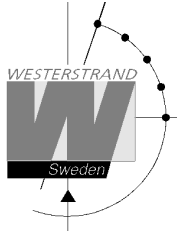No. of stop bits, 1 or 2.

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 Synched 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
```
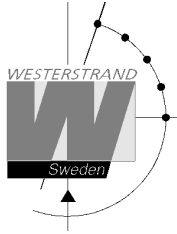
The message is transmitted each second

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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 = Carrige return 0Dh.
LF = Line feed 0Ah.
```
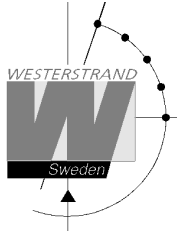
The time message is sent out each minute or each second.

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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
```

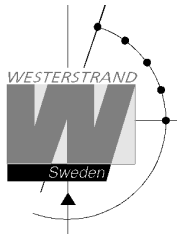NMMI   :NMEA 0183, ZDA Time string, transmitted each minute.
NMSE   :NMEA 0183, ZDA Time string, transmitted each second.

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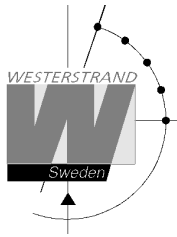Date: 2014-06-12
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Setup Alarm Relay

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 2014 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 2014 09:07:00 LTw	

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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:
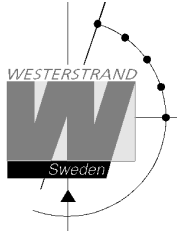Give the Master Clock IP address 192.168.1.100.

MON 17 MAR 2014 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 192.168.00**1**.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	←.
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Software version

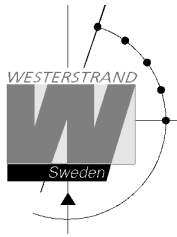This function shows the software version for the Master Clock.

| MON 17 MAR 2014
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 2014
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.

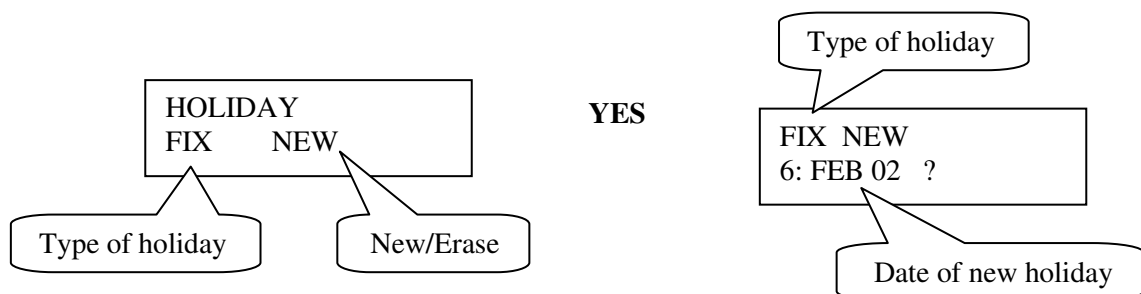It is possible to change the existing, pre-programmed holidays.
- *Fixed date holiday* can be inserted (NEW) or deleted (ERASE).
- *Variable date holidays* can be *enabled* or *disabled.* Disabled means that the holiday is deactivated until it is manually enabled again.

Fixed holidays

Example of fixed holidays:
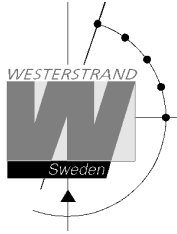JAN01 New Year's day
DEC25 Christmas day

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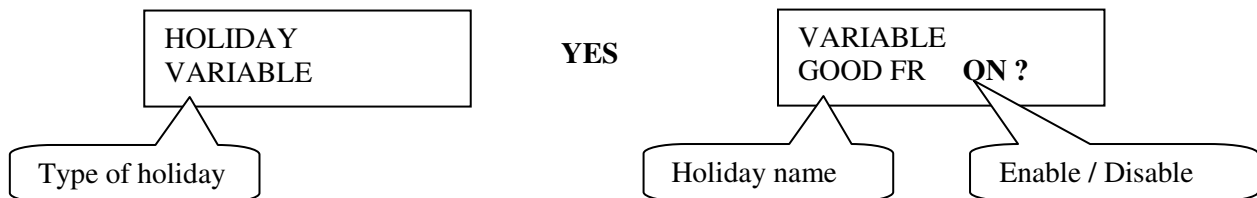Date: 2014-06-12
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Variable holidays

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				

```
┌────────────────┐              ┌────────────────────┐
│ HOLIDAY        │     YES      │ VARIABLE           │
│ VARIABLE       │              │ GOOD FR    ON ?    │
└────────────────┘              └────────────────────┘
```

Type of holiday

Holiday name   Enable / Disable

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

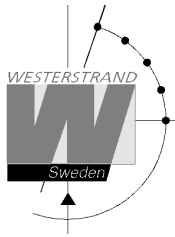Insert January 25 as a new fixed holiday.

MON 17 MAR 2014 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 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:JAN**25**	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 2014 09:07:00 LTw	

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Holidays, example 2, erase fixed holiday

Erase the fixed holiday January 01.

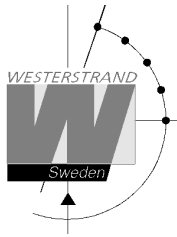| Display	Instruction
MON 17 MAR 2014 09:07:00 LTw	Select function using ↓ .
SPEC.-FUNCTIONS	Accept with **YES**. Press **NO** until wished function is shown.
SPEC.-FUNCTIONS HOLIDAY	Accept with **YES**.
HOLIDAY FIX	Press NO until the text HOLIDAY FIX is shown. Accept with **YES**.
HOLIDAY FIX ERASE	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 2014 09:07:00 LTw	

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Holidays, example 3, disable a variable holiday
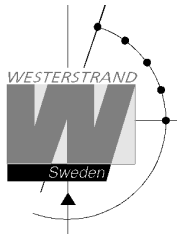
Disable holiday Good Friday.

MON 17 MAR 2014 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 2014 09:07:00 LTw	

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Display format

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

The following two formats can be selected:

| MON 17 MAR 2014 |
| 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 2014 |
| LTw |

Format 2, used for test / fault finding.

Example:

| MON 17 MAR 2014 |
| 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.

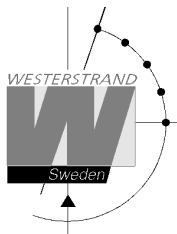| SPEC.-FUNCTIONS |
| DISPLAY FORMAT |

Return to running mode press ←.

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

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Programming form

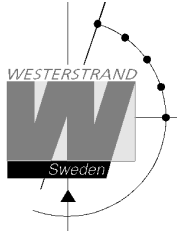| Function	Group	Output no.	Type of signal	Day/Date	Time

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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.
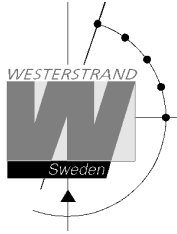
D2.   "Memory full"

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.

Sidan har avsiktligt lämnats tom

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WESTERSTRAND

Sweden