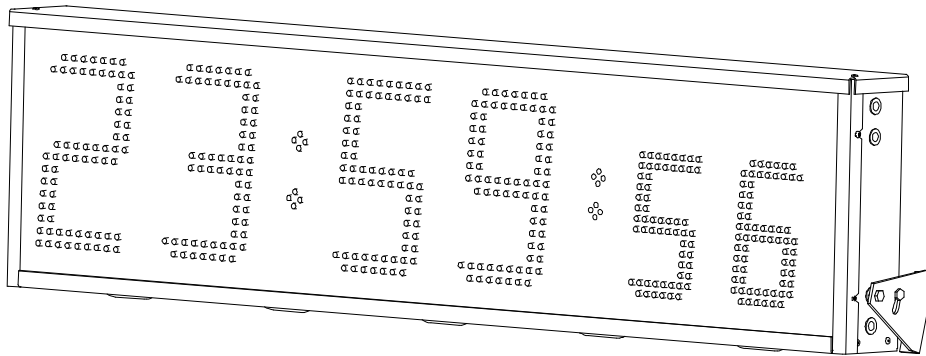
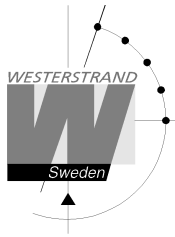


Manual

Westerstrand T/T- display

With chronometer function





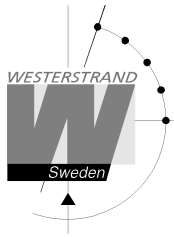
GENERAL	3
INSTALLATION.....	4
CONNECTION.....	5
CONNECTION SYNCHRONISATION	5
STRAPPING TC / MIN-IMPULSE COMPUTER BOARD (DEFAULT).....	6
STRAPPING DCF- RADIO(2 –WIRE) COMPUTER BOARD.....	6
STRAPPING DCF-RADIO (3 –WIRE) COMPUTER BOARD	7
SYNCHRONISATION.....	8
CONNECTION TEMPERATURE SENSOR (OPTION).....	9
PROGRAMMING	9
<i>Manual programming time.....</i>	<i>10</i>
<i>Setting light intensity.....</i>	<i>11</i>
<i>Setting synchronisation</i>	<i>12</i>
IMPULSE SYNCHRONISATION.....	12
<i>Setting alternating time, Loop time.....</i>	<i>12</i>
<i>Setting Correction value, for the temperature sensors.....</i>	<i>13</i>
<i>Setting DLS-function.....</i>	<i>13</i>
<i>Setting 12/24 h format.....</i>	<i>14</i>
FUNCTION AS CHRONOMETER.....	14
PROGRAMMING OF THE CHRONOMETER	15
DYNAMIC/ STATIC FORMAT.....	16
TECHNICAL SPECIFICATION	17

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General

Westerstrand time- and temperature displays, alternates time and temperature in 1-25 seconds intervals. This device is for use alternatively as digital clock or as chronometer.

7-segments LED digits in dimensions 150, 190, 250, 300 and 450 mm.

The time and temperature display could be single or double sided with or without second.

Example for time display:

4 digits

23:59

6 digits

23:59:48

Example for date display:

4 digits

17.06

6 digits

17.06.08

Example for temperature display:

4 digits

20 °C

6 digits

20 °C

4 digits

-12 °

6 digits

- 12 °C

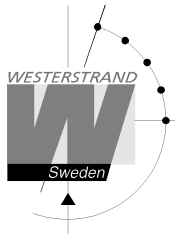
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The Temperature sensor is not included. It is an option.

The programming of the time and temperature display is made by buttons at the computer board or via remote control.

The digital clock can operate stand alone with a built in quartz crystal as time reference, as a slave clock to a master clock transmitting 24 V polarised 1/1 minute impulses or synchronised by TC, DCF. If the DLS-function is set, the clock is changing, summer and winter time, the last Sunday in March and the last Sunday in October automatically.

The clock has adjustable light intensity.

If power failure occurs the display is turned off. The internal clock continues to keep the correct time for 48 hours. After power failure the display is turned on and correct time is shown.

Installation{TC \1 "Installation}

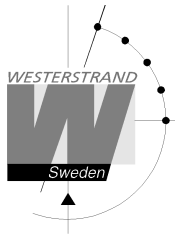
- Mount the clock by means of the mounting brackets. Both wall and roof mounting is possible by rotating the brackets.
- To open the clock, slide the front glass by loosening the aluminium profile on the short side of the clock. Unscrew 2 screws and open the service plate.
- Connect the synchronisation source if present (radio, impulse etc). See the connection diagrams, page 5.
See also the configuration instructions for setting of synchronisation (page. 6 and 8.)
- Connect the mains, 230VAC 50Hz . Installation fuse max 10A.
The socket outlet shall be installed near the clock and shall be easily accessible.
When the clock is installed permanently, a readily accessible disconnect device (2-polar, 3 mm contact gap) shall be incorporated in the fixed wiring.
- Set correct time and date according to the programming instructions on page 10.

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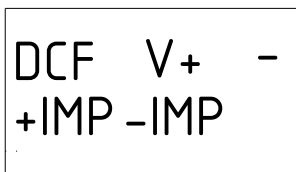
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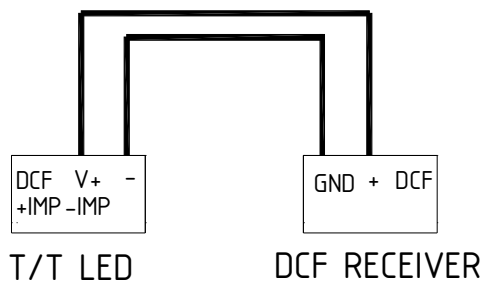
Connection

Connection synchronisation

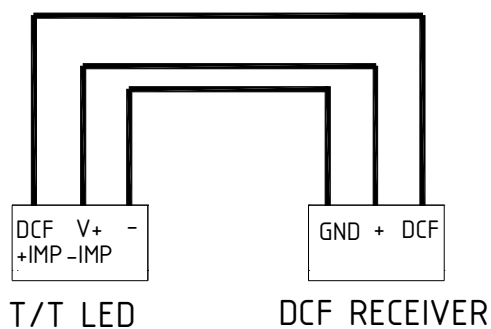
TC and MIN-imp is connected at +IMP and -IMP.

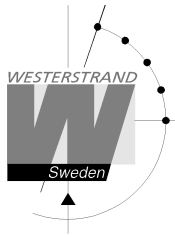


DCF 2-wire is connected V+ and - (GND)

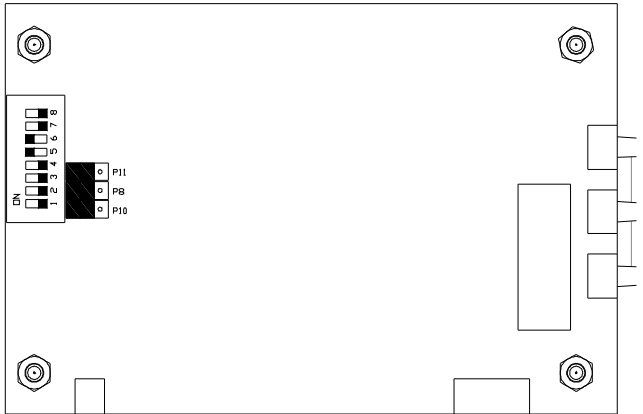


DCF 3-wire is connected DCF, V+ and - (GND)

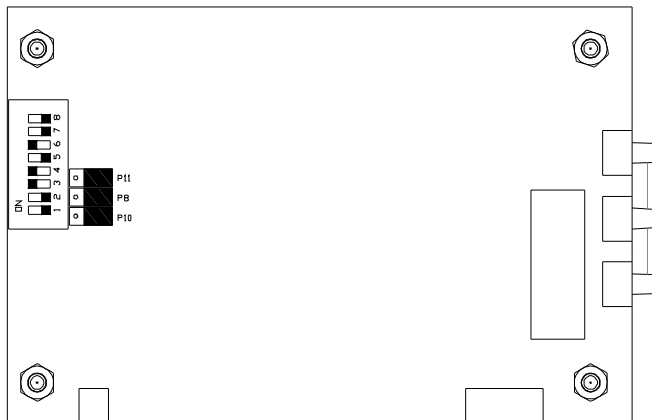


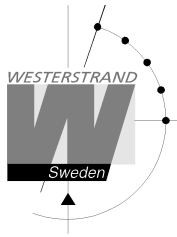


Strapping TC / MIN-impulse computer board (default)

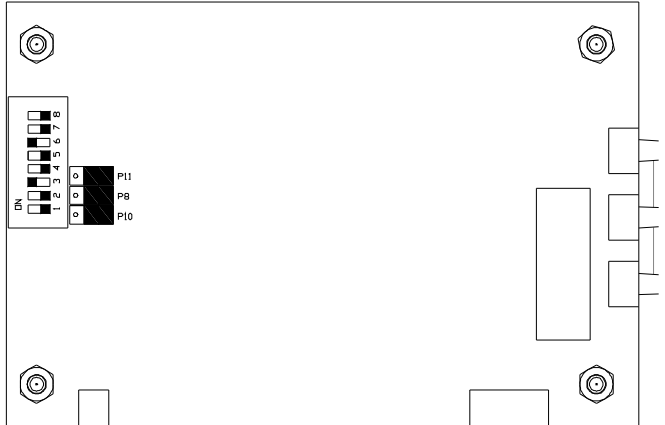


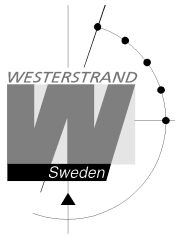
Strapping DCF- radio(2 -wire) computer board





Strapping DCF-radio (3 -wire) computer board





Synchronisation

Stand alone

If no synchronisation the T/T works as stand alone.

Minute impulse

Set the straps according to the strapping schema page 6.

Connect the wires, see page 5.

The T/T could be set for synchronisation or slave mode.

Synchronisation mode:

Set the T/T in synchronisation mode InSy, see programming page 10.

Set time and wait for next minute impulse. It is now synchronised.

Slave mode:

Set the T/T in slave mode InSL, see programming page 10.

Set time and wait for next minute impulse. It is now working in slave mode.

TC

Set the straps according to the strapping schema page 6.

Connect the TC wires, see page 5.

Set the T/T in synchronisation mode sync. Functions DCF see programming page 10.

After one correct accepted time message the time is displayed and the colon starts flashing on and off.

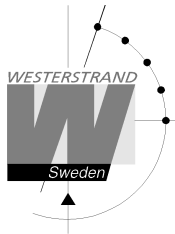
DCF

Set the straps according to the strapping schema page 6 and 7.

Connect the DCF wires, see page 5.

Set the T/T in synchronisation mode sync. Functions DCF see programming page 10.

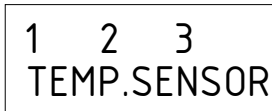
After one correct accepted time message the time is displayed and the colon starts flashing on and off.



Connection temperature sensor (option).

Temperature sensor connection

- 1 red.
- 2 black
- 3 Screen



Programming

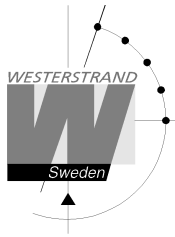
Programming is made via a remote control or push buttons at the computer board.

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Remote control:



- R (Return)** Enter the base mode (display time)
F (Function) Next function / Accept displayed value
P (Program) Enter the displayed function / Increase displayed value.

Manual programming time

Push [F] until display shows

Push [P] display shows year.

Push [P] until desired year (00-99)
Accept with [F].

Display shows month.

Push [P] until desired month (1-12).
Accept with [F].

Display shows day.

Push [P] until desired date (1-31).
Accept with [F].

Display shows weekday.

Push [P] until desired weekday (1-7). 1 = Monday.
Accept with [F].

Display shows hour.

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Push [P] until desired hour (0-23).
Accept with [F].

Display shows minute.

Push [P] until desired minute (00-59).
Push [F] for synchronisation.

Display shows:

Push [R]. Programming of time is finished.

Display shows:

Setting light intensity

The light intensity for the digits has one minimum and one maximum level. The setting levels (1-50) are set in function **disp**. An automatic dimmer function regulates the light intensity between minimum and maximum levels that are set.

Push [F] until display shows.

Push [P]

Display shows light intensity 1 (weakest), 50 (strongest) (one of the levels).

Push [P] for desired light intensity. Accept with [F].

Display shows light intensity 1 (weakest), 50 (strongest) (the Other level).

Push [P] for desired light intensity. Accept with [F].

Display shows

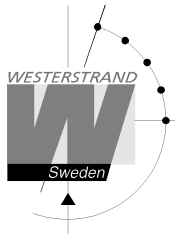
Push [R] for entering base mode or push [F] for next function.

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Setting synchronisation

Synchronisation for this model is minute impulse, TC, DCF (or stand alone).

Push [F] until display shows.

Sy nc

Push [P] for desired synchronisation.

no sy

No synchronisation, stand alone.

dcf

TC or DCF.

InSy

Impulse synchronisation.

InSL

Impulse slave mode.

Push [R] for entering base mode or push [F] for next function.

Setting alternating time, Loop time

LooP

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Push [F] until display shows.

Push [P].

Display shows

L1 4

Alternating time for display time is 4 seconds.

Push [P] for desired alternating time (0-25). Accept with [F].

Display shows

L2 0

Alternating time for display temperature is 0

Push [P] for desired alternating temperature (0-25). Accept with [F].

Display shows

L2 4

Alternating time for display date is 4 seconds.

Push [P] for desired alternating time (0-25). Accept with [F].

Push [R] for entering base mode or push [F] for next function.

Setting Correction value, for the temperature sensors.

With this function the temperature sensors can be adjusted ± 9 °C.

Push [F] until display shows.

Corr

Push [P].

Display shows

C1 0

Push [P] for desired correction value (± 9 °C). Accept with [F].

Push [R] for entering base mode or push [F] for next function.

Setting DLS-function.

With this function the DLS can be activated.

Push [F] until display shows.

dLS

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Push [P].

Display shows

YES

or

no

Push [P] for DLS or not.

Push [R] for entering base mode or push [F] for next function

Setting 12/24 h format.

With this function the format 12/24 hours display can be set.

Push [F] until display shows.

For n

Push [P].

Display shows

12

12 hour format.

or

24

24 hour format.

Push [P] for desired format.

Push [R] for entering base mode or push [F] for next function.

Function as chronometer.

When used as chronometer the display is programmed from an external radio remote control unit.

Time can be counted up or down. At the end of the count period a buzzer signal is heard. The buzzer signal time is adjustable from 0-9 seconds. The buzzer can also be shut off manually.

There is an output for an external relay. The relay is a factory mounted option.

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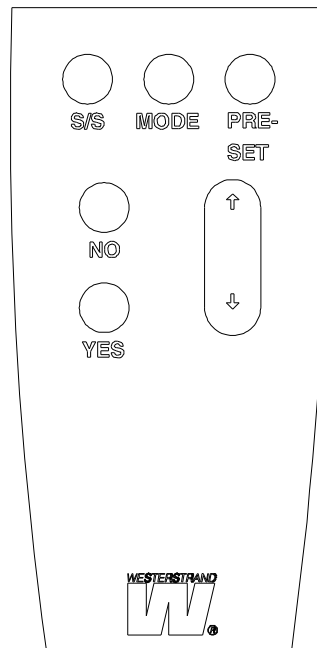
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Programming of the chronometer

Used as a chronometer the display of the clock is monitored from a remote control unit with seven buttons. [MODE], [S/S], [PRESET], [NO], [YES], [↑] och [↓].



- | | |
|----------|---|
| [MODE] | For the change between chronometer and clock. |
| [S/S] | Start/stop. |
| [PRESET] | Reset of time.
Reset can only be done when the clock is stopped. |

Programming can only be done in mode chronometer and time is stopped.

Press [NO].

If the unit is set to show hours "**HH:00**" is displayed.

If not programming starts with minutes, see below.

Press [↑] and [↓] until selected hour is shown. Accept with [YES].

Display shows "**nn:05**".



Press [↑] and [↓] until selected minute is shown. Accept with [YES].

Display shows "SS:00".

Press [↑] and [↓] until selected second is shown. Accept with [YES].

Display shows "SU :01".

Set time for how long the buzzer will sound. (0-9 sec.)

If 0 sec. is chosen the buzzer is shut off by software.

Press [↑] and [↓] until wished buzzer time is shown. Accept with [YES].

Display shows "UP " or "dn ".

Select "UP" for count up, and "dn" for count down.

Press [NO] until selected text is shown. Press [YES].

Display shows "dy " or "St ".

Select "St" for static format display, and "dy" for dynamic format display.

Press [NO] until selected text is shown. Press [YES].

Display shows 'noAU' or 'AUto'. In setting 'AUto' the chronometer starts unconditionally when [MODE] is pressed from the clock mode.

Press [NO] until selected text is shown. Press [YES]

Display shows "HnS ", "Hn ", "nSC ", "nS ", "nnS " or "nnC ":

"Hns " Display shows hours, minutes and seconds.

"Hn " Display shows hours and minutes.

"nSC " Display shows minutes, seconds and 1/100s.

"nS " Display shows minutes (0-99) and seconds.

"nnS " Display shows minutes (0-9999) and seconds.

"nnC " Display shows minutes (0-9999) and 1/100 minutes.

Press [NO] until selected text is shown. Accept with [YES].

Dynamic/ Static format

How time is displayed can be selected by dynamic or static format display.

If dynamic format is selected the display will show the time according to the example below.

Example dynamic display.

Countdown from 1 hour and display format "Hns".

Before starting the display shows 1:00:00. After pushing the start button the display shows 59:59:99. The display now shows hundreds of a second.

After 59 minutes the display will show 01:00:00.

Example static display.

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Countdown from 1 hour and display format "Hns".

Before starting the display shows 1:00:00. After pushing the start button the display shows 00:59:59. The display do not show hundreds of a second.

After 59 minutes the display will show 00:01:00.

Technical specification

Common

Mains	230 VAC 50Hz \pm 10 %
Temperature range	-20° C + 40° C
Synchronisation	Polarised 24V impulse 1/1, TC, DCF
Accuracy	\pm 0.1 sek/24 hour
Running reserve	48 hour
Changing Summer/ Winter	Last Sunday in march, last Sunday in October.
Measure range temperature sensor	-30° - +60°
Accuracy temperature sensor	\pm 1° C
Temperature measurement	Each minute

Specific for 190131-30

Connection power max.	110W / 0.85A
Size of digits HH:MM:SS	190mm :190mm:140 mm
Dimension (WxHxD)	1070 x 270 x 130

Specific for 190130-30

Connection power max.	55W / 0.43A
Size of digits HH:MM:SS	190mm :190mm:140 mm
Dimension (WxHxD)	1070 x 270 x 90

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