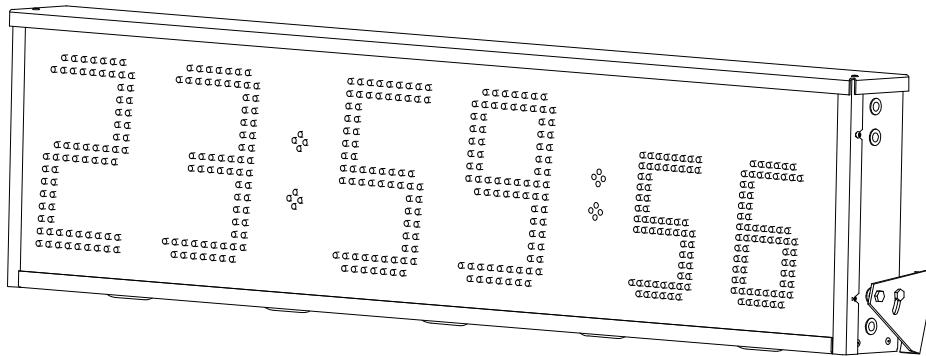
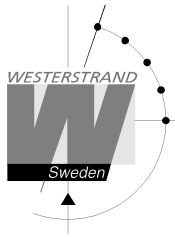


Manual

Westerstrand T/T- display





General

Westerstrand time- and temperature displays, alternates time and temperature in 1-25 seconds intervals.

Consists of 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.

One side contains four or six symbols with symbols between who shows blank, colon (:) or dot (.).

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 °

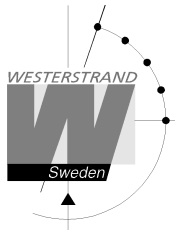
6 digits: - 12 °C

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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 or GPS.

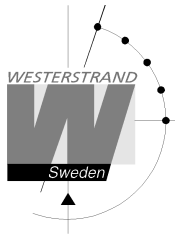
If the DLS-function is set, the clock is changing summer and winter time, the last Sunday in March and the last Sunday in October automatically.

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 the power failure the display is turned on and correct time is shown.

Installation

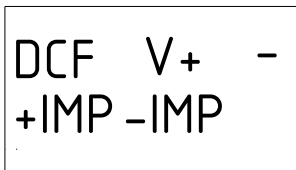
- Mount the clock by means of the mounting brackets. Both wall and roof mounting is possible by rotating the brackets.
- To open the clock, slide the front glass by loosening the aluminium profile on the short side of the clock. Unscrew 2 screws and open the service plate.
- Connect the synchronisation 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.



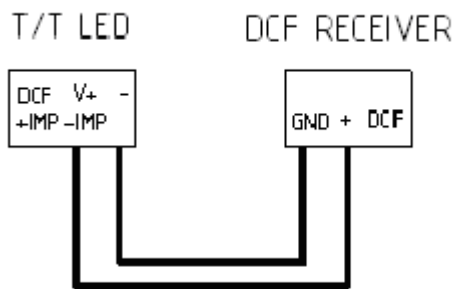
Connection

Connection synchronisation

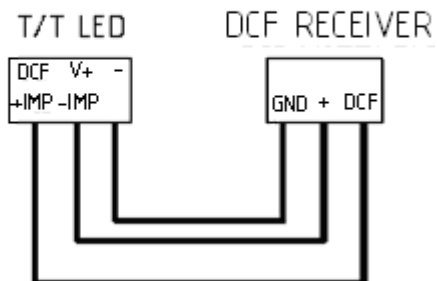
TC and MIN-imp is connected at +IMP and -IMP.



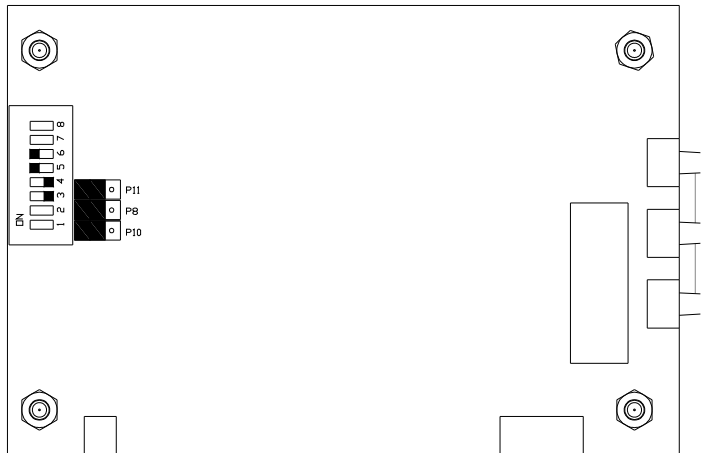
DCF 2-wire is connected V+ and - (GND)



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



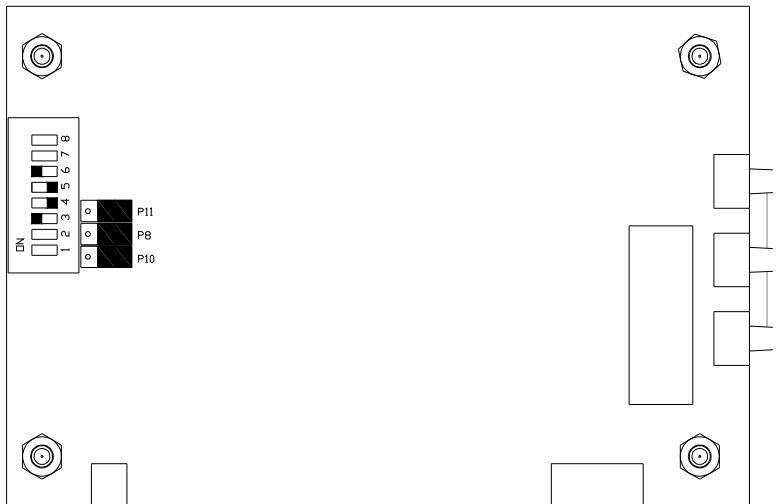
Strapping TC / MIN-impulse computer board (default)



Strapping DCF- radio(2 –wire) computer board

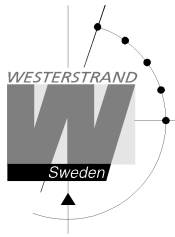


Strapping DCF,GPS-radio (3 –wire) computer board



The DIP-switch on the computer board should be set as follows:

- | | | |
|--------|-----|--|
| Dip 1: | OFF | Display format is HH:MM. |
| | ON | Display format is HH:MM:SS. |
| Dip 2: | OFF | always OFF |
| Dip 3: | OFF | TC/Min impulse synchronisation. (default) |
| | ON | DCF/GPS synchronisation. |
| Dip 4: | OFF | TC/Min impulse or 3-wire DCF/GPS synchronisation. (default) |
| | ON | 2-wire DCF synchronisation. |
| Dip 5: | OFF | DCF/GPS synchronisation. |
| | ON | TC/Min impulse synchronisation.(default) |
| Dip 6: | OFF | ½ Min impulse synchronisation. |
| | ON | TC/Min impulse synchronisation or DCF/GPS synchronisation. (default) |
| Dip 7: | OFF | always OFF |
| Dip 8: | OFF | always OFF |



Synchronisation

Stand alone

If no synchronisation is used, 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 or GPS

DCF 3 wire and GPS has the same setting

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

Connect the DCF/GPS 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.

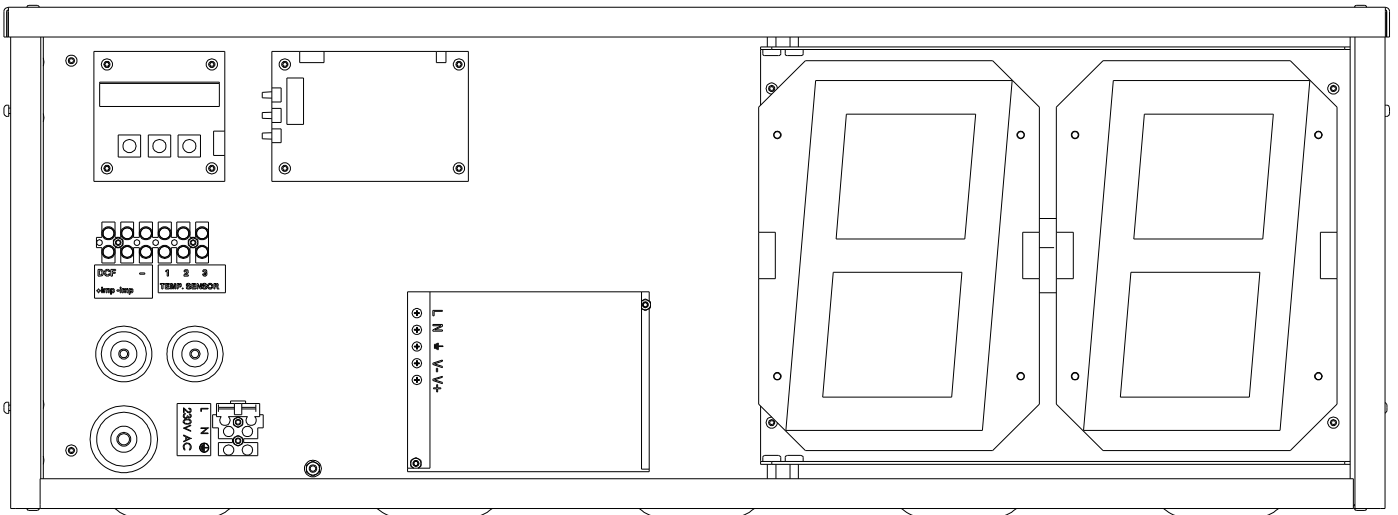
If GPS antenna synchronisation the GPS antenna has to be set for correct time zone.

Connection temperature sensor (option).

Temperature sensor connection

- 1 brown.
- 2 black
- 3 Screen

1	2	3
TEMP.SENSOR		



Programming

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

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

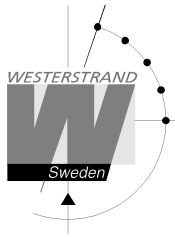
Push [P] until desired date (1-31).
Accept with [F].

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Display shows: hour

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:

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

Setting synchronisation

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

Push [F] until display shows:

Sy nc

Push [P] for desired synchronisation.

no sy

No synchronisation, stand-alone

dcf

TC, DCF or GPS

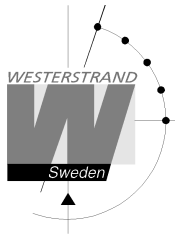
InSy

Impulse synchronisation

InSL

Impulse slave-mode

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



Setting alternating time, Loop time

Push [F] until display shows:

Push [P].

Display shows: Alternating time for display time is 4 seconds.

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

Display shows: Alternating time for display temperature is 0

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

Display shows: 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:

Push [P].

Display shows:

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

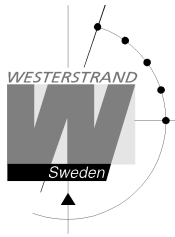
Push [R] for entering base mode or push [F] for next function.

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Setting DLS-function.

With this function the DLS can be activated.

Push [F] until display shows:

Push [P].

Display shows:

Or:

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:

Push [P].

Display shows: 12 hour format

Or: 24 hour format

Push [P] for desired format.

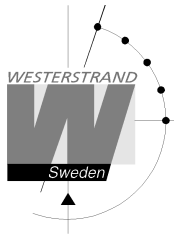
Push [R] for entering base mode or push [F] for next function.

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Technical specification

Common

Mains	100-240 VAC, 50/60Hz
Temperature range	-20°C – + 55°C
Synchronisation	Polarised 24V impulse 1/1, TC, DCF, GPS
Accuracy	± 0.1 seconds/24 hour
Running reserve	48 hour
Changing Summer/ Winter	Last Sunday in march, last Sunday in October.
Measure range temperature sensor	-30°C – +60°C
Accuracy temperature sensor	± 1 ° C
Temperature measurement	Once per minute

: Specific for:

190100-xx

Type	Single sided without second
Connection current max	2A
Size of digits HH:MM	150mm:150mm
Dimension (WxHxD)	685x245x92mm

190101-xx

Type	Double sided without second
Connection current max	2A
Size of digits HH:MM:SS	150mm:150mm
Dimension (WxHxD)	685x245x130mm

190110-xx

Type	Single sided with second
Connection current max	2A
Size of digits HH:MM:SS	150mm:150mm:120mm
Dimension (WxHxD)	965x245x92mm

190111-xx

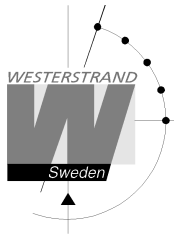
Type	Double sided with second
Connection current max	2A
Size of digits HH:MM:SS	150mm:150mm:120mm
Dimension (WxHxD)	965x245x130mm

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190120-xx

Type	Single sided without second
Connection current max	2A
Size of digits HH:MM	190mm:190mm
Dimension (WxHxD)	740x270x92mm

190121-xx

Type	Double sided without second
Connection current max	2A
Size of digits HH:MM	190mm:190mm
Dimension (WxHxD)	740x270x130mm

190130-xx

Type	Single sided with second
Connection current max	2A
Size of digits HH:MM:SS	190mm:190mm:150mm
Dimension (WxHxD)	1070x270x92mm

190131-xx

Type	Double sided with second
Connection current max	2A
Size of digits HH:MM:SS	190mm:190mm:150mm
Dimension (WxHxD)	1070x270x130mm

190140-xx

Type	Single sided without second
Connection current max	2A
Size of digits HH:MM	250mm:250mm
Dimension (WxHxD)	900x330x92mm

190141-xx

Type	Double sided without second
Connection current max	2.5A
Size of digits HH:MM	250mm:250mm
Dimension (WxHxD)	900x330x130mm

190150-xx

Type	Single sided with second
Connection current max	2.5A
Size of digits HH:MM:SS	250mm:250mm:190mm
Dimension (WxHxD)	1320x330x92mm

190151-xx

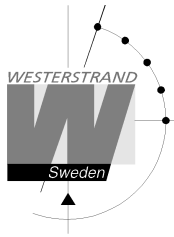
Type	Double sided with second
Connection current max	2.5A
Size of digits HH:MM:SS	250mm:250mm:190mm
Dimension (WxHxD)	1320x330x130mm

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190160-xx

Type	Single sided without second
Connection current max	2.5A
Size of digits HH:MM	300mm:300mm
Dimension (WxHxD)	1000x380x92mm

190161-xx

Type	Double sided without second
Connection current max	2.5A
Size of digits HH:MM	300mm:300mm
Dimension (WxHxD)	1000x380x130mm

190170-xx

Type	Single sided with second
Connection current max	2.5A
Size of digits HH:MM:SS	300mm:300mm:250mm
Dimension (WxHxD)	1450x380x92mm

190171-xx

Type	Double sided with second
Connection current max	2.5A
Size of digits HH:MM:SS	300mm:300mm:250mm
Dimension (WxHxD)	1450x380x130mm

190191-xx

Type	Double sided with second
Connection current max	5A
Size of digits HH:MM:SS	450mm:450mm:300mm
Dimension (WxHxD)	