USER MANUAL

Economy LED digital clock

ECO-M-DC.E / ECO-DC.E

Appendix Option E

Table of contents

1 Description

For a general description of the ECO-M-DC.E/ECO-DC.E clock, refer to the basic version of the manual, this appendix only describes the functions for option E.

1.1 Option E function

The clocks

- ECO-M-DC, clock setting by IR remote control or two buttons, accessible after removing the front plexiglass;
- ECO-DC, clock setting by IR remote control or two buttons, accessible on the back side in the recess;
- temperature indication (providing the temperature sensor is connected) in °C or °F;
- alternating indication of time, date and temperature, with adjustable period of each of the displayed data;

Stopwatch

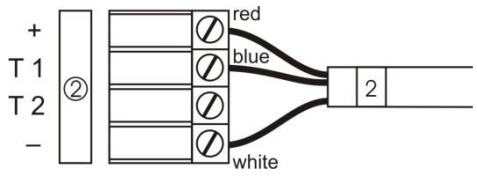
- counting up, starting from zero, up to 99 hours;
- countdown from a set up value, with stop at zero, automatic restart or counting to negative values;
- indication of intermediate times, “freezing“ of the display, cumulated interim time;
- counting in steps of one minute, one second or 1/100 second;
- control using the keyboard (if the temperature sensor is not connected to the terminal block) or IR remote control;
- concurrently, possibility of changeover into the time/date display mode, or the temperature indication;

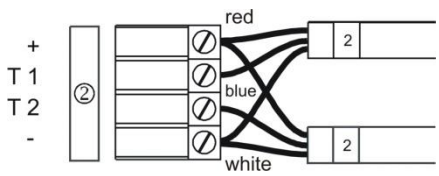
1.2 Connecting the temperature sensor

- mount the connectors to the cable of the temperature sensor, if these have been delivered;
- Push the temperature sensor connector into the corresponding terminals on the control PCB. Check the marking of the jack-plugs, in order to prevent their mix-up;

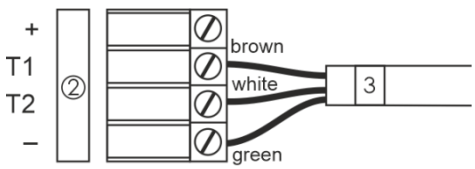
1.3 Connection of the cable ends

TEMP wire connection – 1 or 2 thermometers



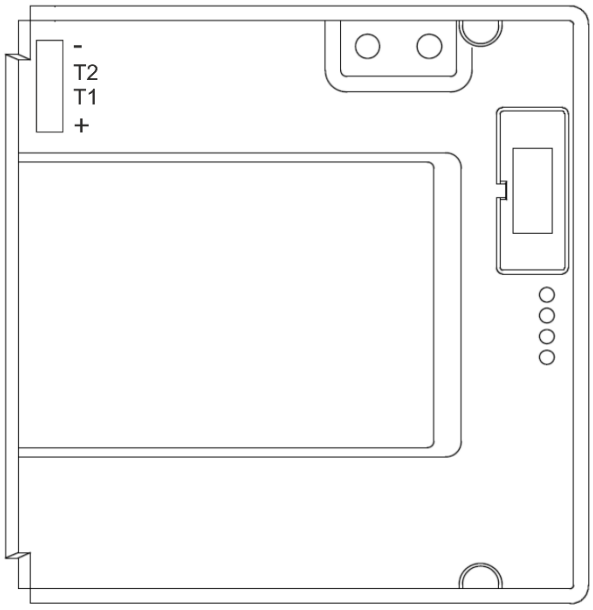


TEMP wire connection - keyboard

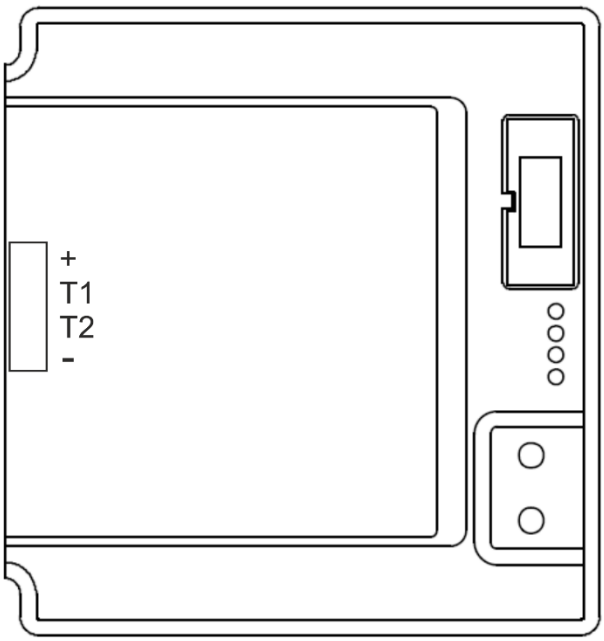


1.4 TEMP connector position and signals on ECO-DC

ECO-DC.57.4, ECO-DC.57.6, ECO-DC.57x.6, ECO-DC.75.4



ECO-DC.75.6, ECO-DC.75x.6, ECO-DC.100.4, ECO-DC.100.6, ECO-DC.100x.6



2 Control of the clock using pushbuttons (Option E add-on)

2.1 Submenu for user-specific setting of time constants for data switchover

In menu item **P2** (time constants for automatic switching over of values), set the value **U,** then enter the submenu by pushing **PB1L**. The item to be set is blinking.

By pushing the **PB2S** button, the adjusted value is increased in steps of 1, by pushing the **PB2L** button, the value will be continuously increased.

The display shows the following:

Enter the constant for time display in seconds.
Push the **PB1S** button and enter the time constant for the display of date in seconds.

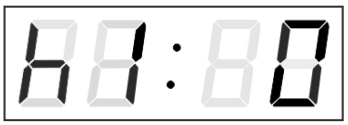
Push **PB1S**. The display shows the following:

Enter the time constant for the display of first temperature, in seconds. Push the **PB1S** button and enter the time constant for the display of stopwatch, in seconds.

Push **PB1S**.The display shows the following:

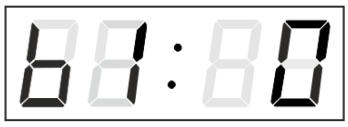
Enter the time constant to display temperature of second sensor inn seconds.

Push **PB1S**.The display shows the following:



Enter a time constant to display the humidity of the first sensor in seconds.

Push **PB1S**.The display shows the following:



Enter a time constant to display the pressure of the first sensor in seconds.

Push **PB1S**.The display shows the following:

Enter a time constant to display the humidity of the second sensor in seconds.

Push **PB1S**.The display shows the following:

Enter a time constant to display the pressure of the second sensor in seconds.

By pushing the PB1L button are the entered values stored and the clock returns to the menu item P2.

3 Control of the clock using IR remote control

A 2-digit address is assigned to the clock. With the IR remote control the clock can be locked. The setting of time, date and the clock parameters can only take place at clocks in an unlocked state.

Function of the pushbuttons in normal display mode

pushing **F1** + entry of 2-digit address, using numerical pushbuttons	unlock the clock with the corresponding address
holding down **F1** button	unlock all clocks within the reach of the IR beam of the remote control unit
holding down **F2** button	lock all clocks within the reach of the IR beam of the remote control unit
holding down **F3** button	display the address of all locked clocks within the reach of the IR beam of the remote control

Function of the pushbuttons in the "Clock" operation mode

SET	entry into the time and date setting mode
The **+** button	button brightness increase (not applicable when **P0** is set to **A**)
The **-** button	button brightness decrease (not applicable when **P0** is set to **A**)
CLOCK	visualization of time
DATE	visualization of date
TEMP	visualization of temperature
TIMER	visualization of stopwatch
MENU	entry into the menu of setting of clock parameters
CLR	time correction to the whole minute (±30 sec)

3.1 Setting of time and date

The time and date values are adjusted in the following sequence: year – day – month – hours – minutes. By pushing the **SET** button, enter the time and date setting mode.

The display shows the following:

The item to be adjusted is now blinking.

Press **>>** to go to the next value. After having set up the minutes the value is blinking. By pushing the **OK** button the value is stored (with seconds reset to zero) and the clock operation resumes. The clock returns into normal working mode.

Note: When the time zone of displayed time and date (menu item P6, basic version of the manual) is set to the values U1 – U7 or U, the entered time and date is taken as UTC.

Function of the pushbuttons in the “Time and date setting“ mode

The **+** pushbutton	increase of the value adjusted, in steps of 1
The **–** pushbutton	decrease of the value adjusted, in steps of 1
Holding down the **+** button	continuous increase of the value set up
Holding down the **–** button	continuous decrease of the value set up
ESC	return into normal display mode, without storage of the data
>>	move to next parameter
<<	move to previous parameter
CLR	entry of zero or minimum value
OK	storage of values set up and return into normal working mode, followed with seconds reset
Pushbuttons **0–9**	entry of the corresponding numerical value

3.2 Setup menu for the setting of the clock parameters

The entry into the menu for the setting of the clock parameters is done by pushing the **MENU** button.

The display shows the following:

The item to be adjusted is now blinking

The options for the parameter setup are shown in the clock menu table (basic version of the manual chap.6).

Function of the pushbuttons in the “MENU“ mode

>>	move to next menu item
<<	move to previous menu item
The **+** button	increase of the value adjusted, in steps of 1
The **-** button	decrease of the current value, in steps of 1
Holding down the **+** button	continuous increase of the value set up
Holding down the **–** button	continuous decrease of the value set up
ESC	return into the normal working mode, without storing the modified items
OK	storing of the modified items and return into the normal working mode
SET	enter the sub-menu, where it is possible
Pushbuttons **0–9**	entry of the corresponding numerical value

Note: During entering the numbers in the octets of the IP addresses the editing to the next digit moves automatically.

3.2.1 Submenu for user-specific setting of time constants for data switchover

In menu item **P2** (time constants for automatic switching over of values) set value **U,** then enter the submenu by pushing the **SET** button. The item to be set is blinking.

The display shows the following:

Enter the constant for time display in seconds. Push the **>>** button and enter the time constant for the display of date in seconds.

Push **>>.** The display shows the following:

Enter the time constant for the display of first temperature, in seconds. Push the **>>** button and enter the time constant for the display of stopwatch, in seconds.

Push **>>**. The display shows the following:

Enter the time constant to display temperature of second sensor inn seconds.

Push **>>**. The display shows the following:

Enter a time constant to display the humidity of the first sensor in seconds.

Push **>>**. The display shows the following:

Enter a time constant to display the pressure of the first sensor in seconds.

Push **>>**. The display shows the following:

Enter a time constant to display the humidity of the second sensor in seconds.

Push **>>**. The display shows the following:

Enter a time constant to display the pressure of the second sensor in seconds.

By pushing **OK,** the entered values are stored and the clock returns to the menu item **P2**. Return to the item **P2** without storing by pushing **ESC**.

3.2.2 Submenu for network services configuration

Choose the value **2** or **3** in the item **P8** (network work mode selection) in the clock menu, then enter the submenu by pushing the **SET** pushbutton for configuring the network services (Multicast support in unicast work mode, SNMP service, Telnet service). The item to be set is blinking.

The display shows the following:

Set value **1** for enabling the multicast support in the unicast work mode or value **0** for disabling it.

Switch to the next parameter – SNMP communication support by pushing the **>>**. The display shows the **Sn: 1**. Set value **1** for enabling the SNMP support or value **0** for disabling it.

Switch to the next parameter – Telnet support by pushing the **>>**. The display shows the **tn: 1**. Set value **1** for enabling the telnet support or value **0** for disabling it.

By pushing **OK**, the entered values are stored and the clock returns to the menu item **P8**. By pushing **ESC**, the clock returns to **P8** without saving.

3.2.3 Manual setting of the IPv4 address of the clock

Choose the item **P9** in the main menu and push the **SET** button to enter the submenu for setting the IP address. The item to be set is blinking.

The display shows the following:

Enter four octets of the IP address step by step. Switch to another octet by pushing the **<<** and **>>** buttons. Octets are marked by letters **A**, **b**, **C** and **d**.

By pushing **OK,** the entered values are stored and the clock returns to the menu item **P9.** By pushing **ESC** the clock returns to **P9** without storing.

3.2.4 Manual setting of the IPv4 subnet mask

Choose item **P10** in the main menu and push the **SET** button to enter the submenu for setting the subnet mask. The item to be set is blinking.

The display shows the following:

Enter four octets of the IP address step by step. Switch to another octet by pushing the **<<** and **>>** buttons. The octets are marked by the letters **A**, **b**, **C** and **d**.

By pushing **OK,** the entered values are stored and the clock returns to the menu item **P10.** By pushing **ESC** the clock returns to **P10** without storing.

3.2.5 Manual setting of the default gateway IPv4 address

Choose the item **P11** in the main menu and push the **SET** button to enter the submenu for setting the default gateway IP address. The item to be set is blinking.

The display shows the following:

Enter the four octets of the IP address step by step. Switch to the next digit or octet respectively by pushing the **>>** button. The octets are marked by the letters **A**, **b**, **C** and **d**.

By pushing OK, the entered values are stored and the clock returns to the menu item P11. By pushing ESC, the clock returns to P11 without saving.

3.2.6 Submenu for setting the IPv4 multicast group address

Choose the menu item **P12** and then enter the submenu by pushing the **SET** pushbutton for setting the multicast group address. The item to be set is blinking.

The display shows the following:

Enter the four octets of the IP address step by step. Switch to the next digit or octet respectively by pushing the **>>** button. Octets are marked by the letters **A**, **b**, **C** and **d**.

By pushing OK, the entered values are stored and the clock returns to the menu item P12. By pushing ESC, the clock returns to P12 without saving.

3.2.7 Submenu for setting of the NTP unicast synchronization

Choose the menu item **P13** then enter the submenu by pushing the **SET** pushbutton for setting the parameters of the NTP unicast synchronization. The item to be set is blinking.

The display shows the following:

Set the four octets of the NTP server's IP address step by step. Switch to the next digit or octet respectively by pushing the **>>** button. Octets are marked by letters **A**, **b**, **C** and **d**.

After the last octet setting, set the constant x which determines the interval of synchronization in seconds.

By pushing OK, the entered values are stored and the clock returns to the menu item P13. By pushing ESC, the clock returns to P13 without saving.

Note: Through the setup menu, it is possible to set only one NTP server IP address. If more than one NTP server addresses were previously configured (using telnet or MOBA-NMS tool), after opening the **P13** submenu the IP address of currently active NTP server is displayed. When the IP address was modified and the configuration is saved using the setup menu, the IP address is stored to the definition of the first NTP server, the other NTP server addresses are cleared including those defined by the NTP server domain names.

3.3 Submenu for displaying IPv6 addresses

Choose the menu item **P14** and then enter the submenu by pushing the **SET** for display IPv6 address. In the submenu, select the desired IP address to display and push the **SET** button to display the first part of the IPv6 address.

IPv6 address consists of 8 parts. Navigate between the individual parts of the IPv6 address by pushing the **>>** or **<<** button. The parts are differentiated by the decimal dots on the last three digits. Decimal dots display binary order of each IPv6 address (0-7).

Push **ESC** to return to **P14.**

Example of IPv6 address display 2001: 0db8: 0000: 0012: f68e: 38ff: fee8: 4a13

2001	– first part of IPv6 address	(000b)
0db8.	– second part of IPv6 address	(001b)
000.0	– third part IPv6 address	(010b)
001.2.	– fourth part of the IPv6 address	(011b)
f6.8e	– fifth part of the IPv6 address	(100b)
38.ff.	– sixth part of the IPv6 address	(101b)
fe.e.8	– seventh IPv6 address	(110b)
4a.1.3.	– eighth part of iPv6 address	(111b)

3.4 Parameter reset

If necessary, the clock parameters can be set to factory defaults by the following procedure:

- Enter the clock menu, move to the software version item by several pushes of the **>>**;
- Keep pushing **DISP** until the display shows **C0:00**;
- Use the **+** button to set the value behind the colon to **04**;
- Keep pushing **DISP** until the display shows **FAC1** and the clock resets;

4 Setting of temperature sensors with buttons

Two buttons on the PCB are used to control and set the clock and are accessible after removing the front Plexiglas. We recommend adjusting before completing assembly.

Abbreviations used for the key strokes

PB1L, PB2L	pushing of the pushbutton for a period of more than 1 second
PB1S, PB2S	short-time pushing of the pushbutton

Function of the pushbuttons in the "Clok" mode (temperature display)

PB2S	indication switch over: time - date - temperature - stopwatch - time
PB1L	enter time and data settings
PB2L	temperature settings menu

4.1 Setting of temperature sensors

The setting temperature sensors menu is entered by long pushing of the **PB2L** pushbutton (temperature must be displayed).

The display shows "**t1: 1**"

Set the parameter according the table MENU TEMPERATURE SENSORS (chapter 6).

To save the settings, press **PB1S** repeatedly to go to the item showing the firmware version and press **PB1L** to save the settings.

Function of the pushbuttons in the "Menu" mode

PB1S	move to another menu item
PB1L	save and return to normal display or input mode to a submenu where the program allows it
PB2S	increase of the current value, in steps of 1
PB2L	continuous increase of current value
PB1L+PB2L	return into normal display mode, without storage of the data

4.2 Setting parameters of predefined temperature values

It is possible to display preset temperature values for each temperature sensor without connecting a temperature sensor.

In **t1** (**or t2**), set the value to **0**, and then press the **PB1L** button to enter the submenu for setting preset temperature.

"**F: xx**" appears on the display. The setting value is blinking.

Set a preset temperature range from -9 to 99 °C.

Press **PB1L** to save the setting and display returns to **t1** (or **t2**).
Press **PB1L** + **PB2L** to exit without saving the settings.

4.3 Setting parameter for TP3 / TP30 temperature sensors

In item **t1** (or **t2**) set the value to **1** and press the **PB1L** button to enter submenu for the address setting, temperature correction and temperature display units.

"**A: x**" appears on the display. The setting value is blinking.

Enter the sensor address, enter **1** for **Temp1** input and enter **2** for **Temp2** input. Press the **PB1S** button to switch to the temperature correction setting.

"**tC: xx**" appears on the display.

Enter a temperature correction value between -9 and +9 °C. Press the **PB1S** button to switch to the temperature display unit setting.

"**tU: x**" appears on the display.

Set the desired temperature display unit: **C** or **F**.

Press **PB1L** to save the setting and display returns to **t1** (or **t2**).
Press **PB1L** + **PB2L** to exit without saving the settings.

4.4 Setting parameter for TPH 1m combined sensors

In item **t1** (or **t2**), set the value to **2** and press the **PB1L** button to enter submenu for the address setting, temperature correction and temperature display units, correction of measured humidity and humidity display unit.

"**A : x**" appears on the display. The setting value is blinking.

Enter the sensor address, enter **1** for **Temp1** and enter **2** for **Temp2**. Press the **PB1S** button to switch to the temperature correction setting.

"**tC:xx**" appears on the display.

Enter a temperature correction value between -9 and +9 °C. Press the **PB1S** button to switch to the temperature display unit setting.

"**tU: x**" appears on the display.

Set the desired temperature display unit: **C** or **F**. Press the **PB1S** button to switch to the humidity correction setting.

"**hC:xx**" appears on the display.

Enter a humidity correction value between -9 and +9 %. Press the **PB1S** button to switch to the humidity display unit setting.

"**hU: x**" appears on the display.

Set the desired humidity display unit: **rH** or **Hr**.

Press **PB1L** to save the setting and display returns to **t1** (or **t2**).
Press **PB1L** + **PB2L** to exit without saving the settings.

4.5 Setting parameter for TP LAN temperature sensors

In item **t1** (or **t2**), set the value to **3** and press the **PB1L** button to enter submenu for the IP address setting, temperature correction and temperature display units.

The setting value is blinking. By pushing the **PB2S** button is the adjusted value increased in steps of 1, by pushing the **PB2L** button will be the value continuously increased.

Set the four octets of the IP address of the temperature sensor step by step. Switch to the next digit or octet respectively by pushing the **PB1S** button. Octets are marked by letters **A**, **b**, **C** and **d**.

After the last octet setting, press the **PB1S** button to switch to the temperature correction setting.

"**tC:xx**" appears on the display.

Enter a temperature correction value between -9 and +9 °C. Press the **PB1S** button to switch to the temperature display unit setting.

"**tU: x**" appears on the display.

Set the desired temperature display unit: **C** or **F**.

Press **PB1L** to save the setting and display returns to **t1** (or **t2**).
Press **PB1L** + **PB2L** to exit without saving the settings.

4.6 Setting parameter for TP LAN PoE temperature sensors

In item **t1** (or **t2**), set the value to **4** and press the **PB1L** button to enter submenu for the IP address setting, temperature correction and temperature display units.

The setting value is blinking. By pushing the **PB2S** button is the adjusted value increased in steps of 1, by pushing the **PB2L** button will be the value continuously increased.

Set the four octets of IP address of the temperature sensor step by step. Switch to the next digit or octet respectively by pushing the **PB1S** button. Octets are marked by letters **A**, **b**, **C** and **d**.

After the last octet setting, press the **PB1S** button to switch to setting the sensor input address.

"**In: x**" appears on the display. The setting value is blinking.

Enter the desired sensor input address: **A** or **b.**. Press the **PB1S** button to switch to the temperature correction setting.

"**tC:xx**" appears on the display.

Enter a temperature correction value between -9 and +9 °C. Press the **PB1S** button to switch to the temperature display unit setting.

"**tU: x**" appears on the display.

Set the desired temperature display unit: **C** or **F**.

Press **PB1L** to save the setting and display returns to **t1** (or **t2**).
Press **PB1L** + **PB2L** to exit without saving the settings.

4.7 Setting parameter for TPHP LAN combined sensors

In item **t1** (or **t2**), set the value to **5** and press the **PB1L** button to enter submenu for the IP address setting, temperature correction and temperature display units, correction of measured humidity and humidity display unit.

The setting value is blinking. By pushing the **PB2S** button is the adjusted value increased in steps of 1, by pushing the **PB2L** button will be the value continuously increased.

Set the four octets of the IP address of the temperature sensor step by step. Switch to the next digit or octet respectively by pushing the **PB1S** button. Octets are marked by letters **A**, **b**, **C** and **d**.

After the last octet setting, press the **PB1S** button to switch to the temperature correction setting.

"**tC:xx**" appears on the display.

Enter a temperature correction value between -9 and +9 °C. Press the **PB1S** button to switch to the temperature display unit setting.

"**tU: x**" appears on the display.

Set the desired temperature display unit: **C** or **F**. Press the **PB1S** button to switch to the humidity correction setting.

"**hC:xx**" appears on the display.

Enter a humidity correction value between -9 and +9 %. Press the **PB1S** button to switch to the humidity display unit setting.

"**hU: x**" appears on the display.

Set the desired humidity display unit: **rH** or **Hr**.

Press **PB1L** to save the setting and display returns to **t1** (or **t2**).
Press **PB1L** + **PB2L** to exit without saving the settings.

4.8 Setting parameter for TPHP LAN PoE combined sensors

In item **t1** (or **t2**), set the value to **6** and press the **PB1L** button to enter submenu for the IP address setting, temperature correction and temperature display units, correction of measured humidity and humidity display unit.

The setting value is blinking. By pushing the **PB2S** button is the adjusted value increased in steps of 1, by pushing the **PB2L** button will be the value continuously increased.

Set the four octets of the IP address of the temperature sensor step by step. Switch to the next digit or octet respectively by pushing the **PB1S** button. Octets are marked by letters **A**, **b**, **C** and **d**.

After the last octet setting, press the **PB1S** button to switch to setting the sensor input address.

"**In: x**" appears on the display. The setting value is blinking.

Enter the desired sensor input address: **A** or **b.**. Press the **PB1S** button to switch to the temperature correction setting.

"**tC:xx**" appears on the display.

Enter a temperature correction value between -9 and +9 °C. Press the **PB1S** button to switch to the temperature display unit setting.

"**tU: x**" appears on the display.

Set the desired temperature display unit: **C** or **F**. Press the **PB1S** button to switch to the humidity correction setting.

"**hC:xx**" appears on the display.

Enter a humidity correction value between -9 and +9 %. Press the **PB1S** button to switch to the humidity display unit setting.

"**hU: x**" appears on the display.

Set the desired humidity display unit: **rH** or **Hr**.

Press **PB1L** to save the setting and display returns to **t1** (or **t2**).
Press **PB1L** + **PB2L** to exit without saving the settings.

4.9 Setting parameter for TPH LAN combined sensors

In item **t1** (or **t2**), set the value to **7** and press the **PB1L** button to enter submenu for the IP address setting, temperature correction and temperature display units, correction of measured humidity and humidity display unit.

The setting value is blinking. By pushing the **PB2S** button is the adjusted value increased in steps of 1, by pushing the **PB2L** button will be the value continuously increased.

Set the four octets of the IP address of the temperature sensor step by step. Switch to the next digit or octet respectively by pushing the **PB1S** button. Octets are marked by letters **A**, **b**, **C** and **d**.

After the last octet setting, press the **PB1S** button to switch to the temperature correction setting.

"**tC:xx**" appears on the display.

Enter a temperature correction value between -9 and +9 °C. Press the **PB1S** button to switch to the temperature display unit setting.

"**tU: x**" appears on the display.

Set the desired temperature display unit: **C** or **F**. Press the **PB1S** button to switch to the humidity correction setting.

"**hC:xx**" appears on the display.

Enter a humidity correction value between -9 and +9 %. Press the **PB1S** button to switch to the humidity display unit setting.

"**hU: x**" appears on the display.

Set the desired humidity display unit: **rH** or **Hr**.

Press **PB1L** to save the setting and display returns to **t1** (or **t2**).
Press **PB1L** + **PB2L** to exit without saving the settings.

4.10 Setting parameter for TPHB LAN combined sensors

In item **t1** (or **t2**), set the value to **8** and press the **PB1L** button to enter submenu for the IP address setting, temperature correction and temperature display units, correction of measured humidity and humidity display unit, correction of measured pressure and pressure display unit.

The setting value is blinking. By pushing the **PB2S** button is the adjusted value increased in steps of 1, by pushing the **PB2L** button will be the value continuously increased.

Set the four octets of the IP address of the temperature sensor step by step. Switch to the next digit or octet respectively by pushing the **PB1S** button. Octets are marked by letters **A**, **b**, **C** and **d**.

After the last octet setting, press the **PB1S** button to switch to the temperature correction setting.

"**tC:xx**" appears on the display.

Enter a temperature correction value between -9 and +9 °C. Press the **PB1S** button to switch to the temperature display unit setting.

"**tU: x**" appears on the display.

Set the desired temperature display unit: **C** or **F**. Press the **PB1S** button to switch to the humidity correction setting.

"**hC:xx**" appears on the display.

Enter a humidity correction value between -9 and +9 %. Press the **PB1S** button to switch to the humidity display unit setting.

"**hU: x**" appears on the display.

Set the desired humidity display unit: **rH** or **Hr**. Press the **PB1S** button to switch to the pressure correction setting.

"**bC:xx**" appears on the display.

Enter a pressure correction value between -9 and +99 hPa. Press the **PB1S** button to switch to the pressure display unit setting.

"**bU: x**" appears on the display.

Set the desired pressure display unit: only **hP** option.

Press **PB1L** to save the setting and display returns to **t1** (or **t2**).
Press **PB1L** + **PB2L** to exit without saving the settings.

5 Setting of temperature sensors by IR controller

A 2-digit address is assigned to the stopwatch. With the IR remote control, the stopwatch can be locked. Controlling and the stopwatch parameter adjustment are only allowed in unlocked state.

Function of the pushbuttons in normal display mode

pushing **F1** + entry of 2-digit address, using numerical pushbuttons	unlock the clock with the corresponding address
holding down **F1** button	unlock all clocks within the reach of the IR beam of the remote control unit
holding down **F2** button	lock all clocks within the reach of the IR beam of the remote control unit
holding down **F3** button	display the address of all locked clocks within the reach of the IR beam of the remote control

Function of the pushbuttons in the "Clock" mode (temperature display)

SET	entry into the time and date setting mode
The **+** button	button brightness increase (not applicable when **P0** is set to **A**)
The **-** button	button brightness decrease (not applicable when **P0** is set to **A**)
CLOCK	visualization of time
DATE	visualization of date
TEMP	visualization of temperature
TIMER	visualization of stopwatch
MENU	entry into the menu for setting the parameters of temperature sensors (only when temperature is displayed)

5.1 Setting of temperature sensors

The setting temperature sensors menu is entered by long pushing of the **MENU** pushbutton (temperature must be displayed).

The display shows "**t1: 1**"

Set the parameter according the table MENU TEMPERATURE SENSORS (chapter 6).

Function of the pushbuttons in the "Menu" mode

>>	save current value and moving to the next menu item
<<	save current value and move to previous menu item
The **+** button	increase of the current value, in steps of 1
The **-** button	decrease of the current value, in steps of 1
Hold down the **+** button	continuous increase of current value
Hold down the **+** button	continuous decrease of current value
ESC	return into normal display mode, without storage of the data
OK	storage of the data and return to temperature display mode

5.2 Setting parameters of predefined temperature values

It is possible to display preset temperature values for each temperature sensor without connecting a temperature sensor.

In **t1** (**or t2**), set the value to **0**, and then press the **SET** button to enter the submenu for setting preset temperature.

"**F: xx**" appears on the display. The setting value is blinking.

Set a preset temperature range from -9 to 99 °C.

Press **OK** to save the setting and display returns to **t1** (or **t2**).
Press **ESC** to exit without saving the settings.

5.3 Setting parameter for TP3 / TP30 temperature sensors

In item **t1** (or **t2**) set the value to **1** and press the **SET** button to enter submenu for the address setting, temperature correction and temperature display units.

"**A: x**" appears on the display. The setting value is blinking.

Enter the sensor address, enter **1** for **Temp1** and enter **2** for **Temp2**. Press the **>>** button to switch to the temperature correction setting.

"**tC: xx**" appears on the display.

Enter a temperature correction value between -9 and +9 °C. Press the **>>** button to switch to the temperature display unit setting.

"**tU: x**" appears on the display.

Set the desired temperature display unit: **C** or **F**.

Press **OK** to save the setting and display returns to **t1** (or **t2**).
Press **ESC** to exit without saving the settings.

5.4 Setting parameter for TPH 1m combined sensors

In item **t1** (or **t2**), set the value to **2** and press the **SET** button to enter submenu for the address setting, temperature correction and temperature display units, correction of measured humidity and humidity display unit.

"**A: x**" appears on the display. The setting value is blinking.

Enter the sensor address, enter **1** for **Temp1** input and enter **2** for **Temp2** input.
Press the **>>** button to switch to the temperature correction setting.

"**tC: xx**" appears on the display.

Enter a temperature correction value between -9 and +9 °C. Press the **>>** button to switch to the temperature display unit setting.

"**tU: x**" appears on the display.

Set the desired temperature display unit: **C** or **F**. Press the **>>** button to switch to the humidity correction setting.

"**hC: xx**" appears on the display.

Enter a humidity correction value between -9 and +9 %. Press the **>>** button to switch to the humidity display unit setting.

"**hU: x**" appears on the display.

Set the desired humidity display unit: **rH** or **Hr**.

Press **OK** to save the setting and display returns to **t1** (or **t2**).
Press **ESC** to exit without saving the settings.

5.5 Setting parameter for TP LAN temperature sensors

In item **t1** (or **t2**), set the value to **3** and press the **SET** button to enter submenu for the IP address setting, temperature correction and temperature display units.

Enter four octets of the temperature sensor IP address step by step. Switch to another octet/digit by pushing the **<<** and **>>** buttons. Octets are marked by letters **A**, **b**, **C** and **d**.

After the last octet setting, press the **>>** button to switch to the temperature correction setting.

"**tC:xx**" appears on the display.

Enter a temperature correction value between -9 and +9 °C. Press the **>>** button to switch to the temperature display unit setting.

"**tU: x**" appears on the display.

Set the desired temperature display unit: **C** or **F**.

Press **OK** to save the setting and display returns to **t1** (or **t2**).
Press **ESC** to exit without saving the settings.

5.6 Setting parameter for TP LAN PoE temperature sensors

In item **t1** (or **t2**), set the value to **4** and press the **SET** button to enter submenu for the IP address setting, temperature correction and temperature display units.

Enter four octets of the temperature sensor IP address step by step. Switch to another octet/digit by pushing the **<<** and **>>** buttons. Octets are marked by letters **A**, **b**, **C** and **d**.

After the last octet setting, press the **>>** button to switch to setting the sensor input address.

"**In: x**" appears on the display. The setting value is blinking.

Enter the desired sensor input address: **A** or **b.**. Press the **>>** button to switch to the temperature correction setting.

"**tC:xx**" appears on the display.

Enter a temperature correction value between -9 and +9 °C. Press the **>>** button to switch to the temperature display unit setting.

"**tU: x**" appears on the display.

Set the desired temperature display unit: **C** or **F**.

Press **OK** to save the setting and display returns to **t1** (or **t2**).
Press **ESC** to exit without saving the settings.

5.7 Setting parameter for TPHP LAN combined sensors

In item **t1** (or **t2**), set the value to **5** and press the **SET** button to enter submenu for the IP address setting, temperature correction and temperature display units. correction of measured humidity and humidity display unit.

Enter four octets of the temperature sensor IP address step by step. Switch to another octet/digit by pushing the **<<** and **>>** buttons. Octets are marked by letters **A**, **b**, **C** and **d**.

After the last octet setting, press the **>>** button to switch to the temperature correction setting.

"**tC:xx**" appears on the display.

Enter a temperature correction value between -9 and +9 °C. Press the **>>** button to switch to the temperature display unit setting.

"**tU: x**" appears on the display.

Set the desired temperature display unit: **C** or **F**. Press the **>>** button to switch to the humidity correction setting.

"**hC:xx**" appears on the display.

Enter a humidity correction value between -9 and +9 %. Press the **>>** button to switch to the humidity display unit setting.

"**hU: x**" appears on the display.

Set the desired humidity display unit: **rH** or **Hr**.

Press **OK** to save the setting and display returns to **t1** (or **t2**).
Press **ESC** to exit without saving the settings.

5.8 Setting parameter for TPHP LAN PoE combined sensors

In item **t1** (or **t2**), set the value to **6** and press the **SET** button to enter submenu for the IP address setting, temperature correction and temperature display units. correction of measured humidity and humidity display unit.

Enter four octets of the temperature sensor IP address step by step. Switch to another octet/digit by pushing the **<<** and **>>** buttons. Octets are marked by letters **A**, **b**, **C** and **d**.

After the last octet setting, press the **>>** button to switch to setting the sensor input address.

"**In: x**" appears on the display. The setting value is blinking.

Enter the desired sensor input address: **A** or **b.** Press the **>>** button to switch to the temperature correction setting.

"**tC:xx**" appears on the display.

Enter a temperature correction value between -9 and +9 °C. Press the **>>** button to switch to the temperature display unit setting.

"**tU: x**" appears on the display.

Set the desired temperature display unit: **C** or **F**. Press the **>>** button to switch to the humidity correction setting.

"**hC:xx**" appears on the display.

Enter a humidity correction value between -9 and +9 %. Press the **>>** button to switch to the humidity display unit setting.

"**hU: x**" appears on the display.

Set the desired humidity display unit: **rH** or **Hr**.

Press **OK** to save the setting and display returns to **t1** (or **t2**).
Press **ESC** to exit without saving the settings.

5.9 Setting parameter for TPH LAN combined sensors

In item **t1** (or **t2**), set the value to **7** and press the **SET** button to enter submenu for the IP address setting, temperature correction and temperature display units. correction of measured humidity and humidity display unit.

Enter four octets of the temperature sensor IP address step by step. Switch to another octet/digit by pushing the **<<** and **>>** buttons. Octets are marked by letters **A**, **b**, **C** and **d**.

After the last octet setting, press the **>>** button to switch to the temperature correction setting.

"**tC:xx**" appears on the display.

Enter a temperature correction value between -9 and +9 °C. Press the **>>** button to switch to the temperature display unit setting.

"**tU: x**" appears on the display.

Set the desired temperature display unit: **C** or **F**. Press the **>>** button to switch to the humidity correction setting.

"**hC:xx**" appears on the display.

Enter a humidity correction value between -9 and +9 %. Press the **>>** button to switch to the humidity display unit setting.

"**hU: x**" appears on the display.

Set the desired humidity display unit: **rH** or **Hr**.

Press **OK** to save the setting and display returns to **t1** (or **t2**).
Press **ESC** to exit without saving the settings.

5.10 Setting parameter for TPHB LAN combined sensors

In item **t1** (or **t2**), set the value to **8** and press the **SET** button to enter submenu for the IP address setting, temperature correction and temperature display units. correction of measured humidity and humidity display unit, correction of measured pressure and pressure display unit.

Enter four octets of the temperature sensor IP address step by step. Switch to another octet/digit by pushing the **<<** and **>>** buttons. Octets are marked by letters **A**, **b**, **C** and **d**.

After the last octet setting, press the **>>** button to switch to the temperature correction setting.

"**tC:xx**" appears on the display.

Enter a temperature correction value between -9 and +9 °C. Press the **>>** button to switch to the temperature display unit setting.

"**tU: x**" appears on the display.

Set the desired temperature display unit: **C** or **F**. Press the **>>** button to switch to the humidity correction setting.

"**hC:xx**" appears on the display.

Enter a humidity correction value between -9 and +9 %. Press the **>>** button to switch to the humidity display unit setting.

"**hU: x**" appears on the display.

Set the desired humidity display unit: **rH** or **Hr**. Press the **>>** button to switch to the pressure correction setting.

"**bC:xx**" appears on the display.

Enter a pressure correction value between -9 and +99 hPa. Press the **>>** button to switch to the pressure display unit setting.

"**bU: x**" appears on the display.

Set the desired pressure display unit: only **hP** option.

Press **OK** to save the setting and display returns to **t1** (or **t2**).
Press **ESC** to exit without saving the settings.

6 TEMPERATURE SENSORS MENU Table

Programm selection	**Funkce**	**Range of values** (default values in bold)	
t1	Temperature 1	0-8, **1**	
		0*	Uses a preset value.
		1*	TP3/TP30
		2*	TPH 1m
		3*	TP LAN
		4*	TP LAN PoE
		5*	TPHP LAN
		6*	TPHP LAN PoE
		7*	TPH LAN
		8*	TPHB LAN
t2	Temperature 2	0-8, **1**	
		0*	Uses a preset value
		1*	TP3/TP30
		2*	TPH 1m
		3*	TP LAN
		4*	TP LAN PoE
		5*	TPHP LAN
		6*	TPHP LAN PoE
		7*	TPH LAN
		8*	TPHB LAN
SW version		r_._(e.g.: r6.46)	

- * possibility to enter the submenu.
- Values 3-8 for t1 and t2 are available for NTP, PoE, and WiFi variants only.

7 Control of the stopwatch via keyboard

The operation of the stopwatch is controlled and the device is adjusted using three pushbuttons on the connected keyboard. The keyboard cable must be connected to the TEMP plug connector (description of cable connection see chapter 1.3).

Abbreviations used for the key strokes

PB1L, PB2L	pushing of the pushbutton for a period of more than 1 second
PB1S, PB2S, PB3S	short-time pushing of the pushbutton

Function of the pushbuttons in the "Stopwatch" mode

PB2S	indication switch over: time - date - temperature - stopwatch - time
PB2L	stopwatch menu
PB3S, PB1S, PB1L	according to the stopwatch mode setup

7.1 The stopwatch menu

The stopwatch menu is entered by long pushing of the **PB2** pushbutton (stopwatch must be displayed). The parameter adjustment is to be performed according to the menu table (chapter 6).

Function of the pushbuttons in the "Stopwatch Menu" mode

PB1S	move to another menu item
PB1L	storage of the parameters; return to the stopwatch display mode when counting up from zero; or entry into the initial time setting mode when counting down
PB2S	increase of the current value, in steps of 1
PB2L	continuous increase of current value

7.2 Setting of the initial time for counting down

When counting down is selected, the initial time setting mode is entered from the stopwatch MENU or directly from the "Stopwatch" display mode by pushing the **PB1L** button. The item to be set is blinking.
By pushing the **PB2S** button is the adjusted value increased in steps of 1, by pushing the **PB2L** button will be the value continuously increased. By pushing **PB1S** move to the next item. By pushing the **PB1L** save the setting and return to "Stopwatch" display mode.

Enter the data in the following order depending on the item **S2** setting (counting unit):

Counting unit	Data order
1/100 second	<Minute>:<Second>.<Hundredths of second>
1 second	<Hours>:<Minutes>:<seconds>.
1 minute	<Hours>:<Minutes>
1 day	<Days>

By pushing the **PB1L** button, the entered values are stored and the clock returns to the "Stopwatch" display mode.

8 Control of the stopwatch using IR remote control

A 2-digit address is assigned to the stopwatch. With the IR remote control, the stopwatch can be locked. Controlling and the stopwatch parameter adjustment are only allowed in unlocked state.

Function of the pushbuttons in the "Stopwatch" mode

pushing the **F1** button + entry of 2-digit address using numerical pushbuttons	unlocking of a clock with the corresponding address
holding down the **F1** button	unlocking of all clocks within the reach of the IR beam of the remote control
holding down the **F2** button	locking of all clocks within the reach of the IR beam of the remote control
holding down the **F3** button	display of the addresses of all locked clocks within the reach of the IR beam of the remote control
CLOCK	visualization of time
DATE	visualization of date
TEMP	visualization of temperature
TIMER	visualization of the stopwatch
MENU	entry into stopwatch parameter setup menu
SET	entry into setting initial time of counting down
S/S, HOLD, RES	function depends on the stopwatch operation mode set

8.1 The stopwatch menu

The stopwatch menu is entered by pushing **MENU** button (stopwatch must be displayed). The parameter adjustment is shown in the stopwatch menu table (chapter 6).

Function of the pushbuttons in the "Stopwatch Menu" operation mode

>>	storing the current value and transition to another menu item
<<	storing the current value and transition to previous menu item
The **+** button	increase of the adjusted value in steps of 1
The **-** button	decrease of the adjusted value in steps of 1
Holding down the **+** button	continuous increase of the item set up
Holding down the **-** button	continuous decrease of the item set up
ESC	return into normal display mode,
OK	storage of the parameters; return into the stopwatch display mode when counting up from zero; or entry into the initial time setting mode when counting down

8.2 Setting of initial time for counting down

When counting down is selected, the initial time setting mode is entered from the stopwatch MENU or directly from the “Stopwatch” display mode by pushing the **SET** button. The item to be set is blinking.

Enter data in following order depending on the item **S2** setting (counting unit):

Counting unit	Data order
1/100 second	<Minutes>:<Seconds>.< Hundredths of second >
1 second	<Hours>:<Minutes>:<Seconds>.
1 minute	<Hours>:<Minutes>
1 day	<Days>

By pushing the **OK** button, the entered values are stored and the clock returns to the “Stopwatch” display mode. By pushing **ESC**, the clock returns without storing.

9 Stopwatch menu table

Program option	Function	Scope of the values (**default** values are printed in bold)		
S0	Counting direction	**1** - 4		
		1	Upwards.	
		2	Downwards from a time value set in advance, with stop at zero.	
		3	Downwards from a time value set in advance until zero, with automatic restart from the specified time value.	
		4	Downwards from a set time value, until zero, and keeping the count into minus value.	
S1	Control of intermediate time periods (correspond. with keyboard keys are listed in brackets)	**1** – 4		
		1	S/S (PB3S)	Alternating START - STOP -„UNFREEZE“ of DISPLAY (if it was frozen).
			HOLD (PB1S)	“Freezing” of displaying data with the counter proceeding in the counting.
			RES (PB1L)	Setting the counter to zero in STOP operation mode, for counting up, and return to a present value in all other counting mode.
		2	S/S (PB3S)	Alternating START - STOP -„UNFREEZE“ of DISPLAY (if it was frozen).
			HOLD (PB1S)	The first depression of this button causes the display to freeze on the respective time achieved and lets the counter running. Further activation of the button shows the intermediate time elapsed from the first depression of the button.
			RES (PB1L)	Reset of the counter in the STOP mode while in counting up. Return to a preset value in other counting modes.
		3	S/S (PB3S)	Count up from zero, or from a present value in countdown mode. Next activation of the button causes the display to freeze and to resume the count from zero in counting up, or from a preset value in countdown mode.
			HOLD (PB1S)	Unfreezing of the display, leaving the counter to continue in counting.
			RES (PB1L)	Counter reset (to zero), or return to a preset time followed with counter stop.
		4	S/S (PB3S)	Triggering the counter.
			HOLD (PB1S)	Stopping the counter.
			RES (PB1L)	Resetting the counter or return to a preset time, with counter stop.
S2	Counting unit	**1** - 4		
		1	Counting in increments of 1/100 sec. (with 4-digit display the counting goes on until 59.99 sec., and then continues with displaying of minutes : seconds), up to 59 minutes and 59.99 seconds, at maximum.	
		2	Counting in increments of 1 second (with 4-digit display the counting goes on until 59 minutes and 59 seconds; and follows with displaying of hours: minutes) until 23 hours, 59 minutes and 59 seconds, at maximum.	
		3	Counting in 1 minute steps, until 23 hours 59 minutes	
		4	Counting in periods after one day. A subtraction or an addition always takes place around midnight. Capacity of counting up to 9999 days. When counting is stopped, the dot is displayed after the last digit.	
S3	Keyboard control	**0**	keyboard disabled	
		1	keyboard enabled, TP3 / TP30 and TPH 1m temperature sensors cannot be connected	

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