Display standard for room temperature control
Art. no.: ..1790D..

Operating instructions

1 Safety instructions

Electrical devices may only be mounted and connected by electrically skilled persons.

Serious injuries, fire or property damage possible. Please read and follow manual fully.

Danger of electric shock. Always disconnect before carrying out work on the device or load. In so doing, take all the circuit breakers into account, which support dangerous voltages to the device and or load.

These instructions are an integral part of the product, and must remain with the end customer.

2 Device components

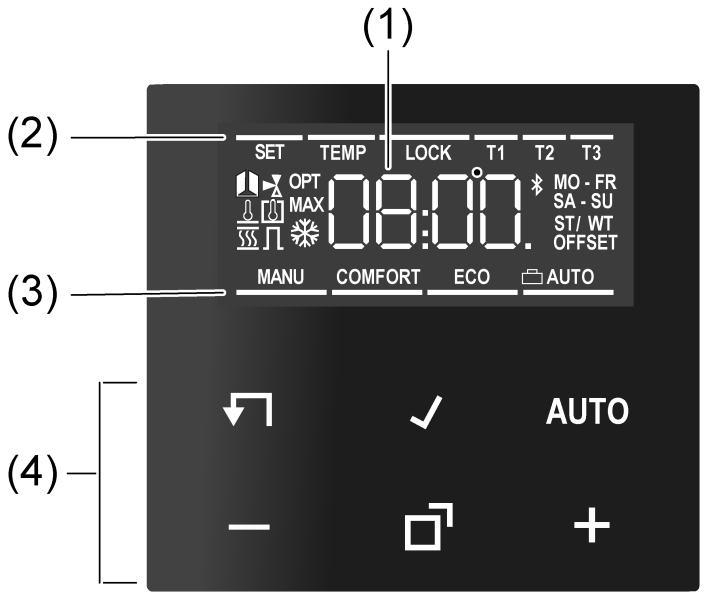

Figure 1: Display and operating area

(1) Setpoint temperature, actual temperature or current time
(2) Programming menu
(3) active mode
(4) Operating area

Icons in the display

AUTO	Automatic mode is active
COMFORT	Temperature value is regulated to comfort temperature
ECO	Temperature value is regulated to ECO temperature
	Cooling icon lights up: cooling mode, no cooling is taking place Cooling icon flashes: cooling mode, cooling is taking place
	Heating icon lights up: heating mode, no heating is taking place Heating icon flashes: heating mode, heating is taking place

Icons of the operating area (4)

↩	Step back / display current time
✓	Confirm input / display current time
AUTO	Switch between manual operation and automatic operation
+ / –	Increase or reduce the displayed temperatures or times / navigation in menu
⧉	Call up and terminate the programming menu

3 Intended use

– Manual and time-controlled regulation of the room temperature
– Operation with room temperature controller insert or switch insert from LB management

4 Product characteristics

– Timer with three memory areas
  Comfort and ECO time for Mo-Fr and Sa-Su in each memory area
– Setting a comfort, ECO, cooling and frost protection temperature
– Current time can be saved as switching time, quick programming
– Automatic summer time changeover, can be switched off
– Illuminated segment display for easy reading
– Operating lock
– Optimised heating up (temperature is reached at the set time), can be switched off
– Adaptation to valves (deenergised open or deenergised closed)
– Cooling mode possible
– Supports internal and external temperature sensor
– Temperature drop detection (call-up of frost protection temperature when window is opened)
– Offset adjustment (correction value for measured temperature)
– Controller output working method: pulse width modulation (PWM) or two-point
– Valve protection function (once a week opening and closing of valve, on Saturdays at 11 a.m.)
– Interrupts the heating process after 60 minutes for 5 minutes
– Display switch-off after 2 minutes or permanent display available

5 Functional description

Heating and cooling operating mode

Modern heat pump systems often also provide the option of cooling rooms. This function is supported by the cover by means of the "Heating and cooling" operating mode. In this operating mode the system permanently regulates the temperature to the set cooling temperature. There are no time programs in cooling mode. The only way to change the cooling temperature consists in adjusting the temperature parameters, the **+/-** buttons cannot be used.
In conjunction with a room temperature controller insert, cooling mode is activated by applying mains power to input terminal "C". With switch inserts, cooling mode is activated by applying mains power to extension input "1". In general, the heat pump features a corresponding output or a switch can be used.

Frost protection / temperature drop detection

The frost protection temperature is the minimum temperature regulated by the controller in order to avoid frost damage. In case of a significant temperature drop, e.g. after opening a window, the system regulates to the frost protection temperature for a maximum of 30 minutes. This requires the temperature drop detection parameter to be activated.

Optimised heating up **OPT**

Heating is started at most 4 hours before the switching time, so that the desired temperature has been reached at the switching time rather than starting to heat up at that time. The display icon **OPT** flashes during the heat-up phase.
Note: Optimised heating up is designed for panel heating/radiators.

Offset **OFFSET**

If the system detects that the displayed actual temperature differs from the general room temperature, this parameter can be used to enter a correction value in 0.5 °C increments. The actual temperature will then be corrected by this offset value.

Controller adaptation ⎍

The control principle should be adjusted depending on the heating system and the insert used.
Two-point control: The output remains switched on until the selected setpoint temperature has been exceeded by 0.5 °C. The output will not be switched on again until the setpoint value is undercut by 0.5 °C. Since most heating systems respond very slowly, this type of control can entail temperature overshooting.
Pulse width modulation control (⎍): Optimised for electrothermal valve drives,
e.g. TVA 230 NC WW: The output is not permanently actuated, but only for a time period (pulse width) that depends on the difference between setpoint and actual temperature. This method brings the actual temperature gradually closer to the setpoint temperature. The cycle time is 15 minutes.

Valve adaptation

This parameter is used to adapt to the electrothermal valve drives. There are drives that are either open (deenergised open, setting **NO**) or closed (deenergised closed, setting **NC**) when no power supply is applied.

Temperature sensor

The room temperature controller cover features a built-in temperature sensor, which is used to detect the room temperature.
In conjunction with a room temperature controller insert a remote sensor can be connected, either to measure the room temperature or limit the maximum floor temperature.
The following settings are possible.
: The room temperature is measured using the internal temperature sensor.
: The room temperature is measured using the remote sensor. The internal temperature sensor is deactivated.
and : The room temperature is measured using the internal temperature sensor and the floor temperature is measured using the remote sensor for monitoring the floor temperature. If the maximum temperature is exceeded, the floor heating will be switched off until the floor temperature is below the maximum value again. This way, an unpleasantly hot floor is avoided.

Behaviour after a mains voltage failure

Voltage failure less than power reserve
– All data and settings are preserved

Voltage failure greater than power reserve
– Date and time are reset and need to be set again
– Temperature control is performed like before the power failure
– All times set in the weekly timer are retained
– All settings are retained

Default setting

Times for comfort temperature **COMFORT** and ECO temperature **ECO**

	Mo - Fr			Sa - Su	
	COMFORT	**ECO**		**COMFORT**	**ECO**

	Mo - Fr			Sa - Su	
T1	06:00	08:30		07:00	22:00
T2	12:00	14:00		--:--	--:--
T3	17:00	22:00		--:--	--:--

– Automatic mode is active
– Controller output depending on insert: room temperature controller insert = pulse width modulation, switch insert = two-point control
– Internal temperature sensor for room temperature measurement is active
– Display switch-off after 2 minutes of inactivity (no button actuation) is active

6 Commissioning

Setting date, time and other parameters

When the year is flashing on the display, you must set or confirm the data listed in the table.
– Briefly press the **–** or **+** button to change values or toggle between **YES / No**.
– A long press of the **–** or **+** button accelerates value changes.
– Press the ↩ button to go back in the menu.
– Press the ✓ button to apply the setting and call the next value. After editing the last parameter, all values will be saved and automatic mode will be invoked.

Parameters	Display icon	Setting option/ Default setting
Year	**SET**	2019 or later
Month	**SET**	01 ... 12
Day	**SET**	01 ... 31
Hour	**SET**	00 ... 12 ... 23
Minute	**SET**	00 ... 59
Automatic summer time changeover	**SET ST / WT**	YES / No
Controller output [1]	**SET** ⎍	YES / No
Valve adaptation [2]	**SET**	NO / NC
Optimised heating up	**TEMP OPT**	YES / No
Temperature drop detection	**TEMP**	YES / No
Temp. unit	**TEMP**	°C / °F
Comfort temp.	**TEMP COMFORT**	5 ... 21.0 ... 30 °C
ECO temp.	**TEMP ECO**	5 ... 18.0 ... 30 °C
Frost protection	**TEMP** ❄	5 ... 7.0 ... 30 °C

Parameters	Display icon	Setting option/ Default setting
Heating / cooling	**TEMP**	YES / No
Cooling temp. [3]	**TEMP**	5 ... 24.0 ... 30 °C
Temperature sensor	**TEMP**	, or both
Max. floor temp. [4]	**TEMP MAX**	10 ... 35.0 ... 45 °C
Offset	**TEMP OFFSET**	-5 ... 0.0 ... +5 °C

1) Pulse width modulation (PWM) = **YES**, two-point control = **No**

2) **NC**: Valve is closed when deenergised.
NO: Valve is open when deenergised.

3) This parameter only appears if the device is set to "Heating and cooling".

4) This parameter only appears if and have been set for the temperature sensor.

7 Operation

Increasing or reducing the room temperature

- Press the **–** or **+** button for less than 1 second.
  With every brief press of a button the setpoint temperature changes by 0.5 °C. The set value is retained in manual mode; in automatic mode it is retained until the next switching time is reached.

i In cooling mode the **–** or **+** buttons cannot be used to change the setpoint temperature.

i If the display is switched off or has been set to indicate the actual temperature or time, the **–** or **+** button will have to be pressed a second time or even more before a change in the setpoint value takes place.

- Press the **–** or **+** button for more than 1 second.
  In heating mode, the saved setpoint temperature is retrieved:
  – = ECO temperature
  + = comfort temperature

i During a detected temperature drop, changing the setpoint temperature is not possible.

8 Activate functions

Automatic operation/manual operation

Pressing the **AUTO** button toggles between automatic mode and manual mode.

i If all timer blocks are deactivated, the cover will automatically switch to manual mode. Automatic mode cannot be activated.

Figure 2: Setpoint temperature display in automatic mode

The setpoint temperature and the **AUTO** icon are shown in the display. Active heating is indicated by the flashing heating icon ♨. If heating is not active, the ♨ icon lights up permanently. The **COMFORT** icon indicates that the system is being regulated to the saved comfort temperature.

Figure 3: Setpoint temperature display in manual mode

In manual mode, the **MANU** icon is displayed.

Programming menu overview

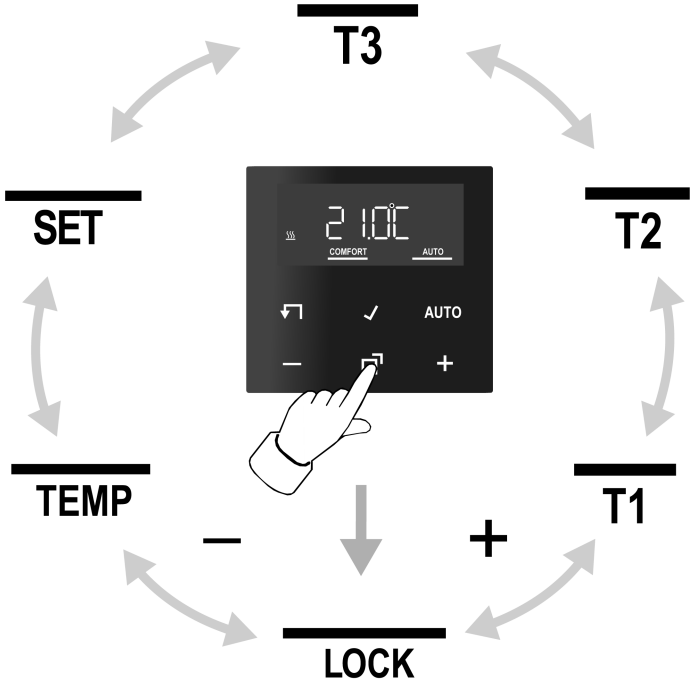

Figure 4: Programming menu

Press the ⧉ button to call up or exit the programming menu.

Navigate through the menu with the **–** or **+** button and confirm the selection with the ✓ button.

LOCK	Activating/deactivating the operating lock
T1 T2 T3	Three memory areas for comfort and ECO temperature for the two weekday blocks Mo - Fr and Sa - Su
SET	Setting date, time and automatic summer time changeover
TEMP	Setting the comfort temperature, ECO temperature and cooling temperature, activating optimised heating up, temperature drop detection and setting an offset value

Activating/deactivating the operating lock

An activated operating lock prevents users from directly operating the system on the cover.

- Press ⧉ button.
  LOCK flashes in the display.
- Press ✓ button.
  No flashes in the display.

- Change settings with the **-** or **+** button on **YES** and confirm with the ✓ button.
  The operating lock is active and the **LOCK** icon appears in addition to the normal display.

  Deactivate: Press and hold the **–** and **AUTO** buttons simultaneously for more than one second.

ⓘ The operating lock can be activated via the same button combination that is used for deactivating the lock.

Setting switching times

- Press ⧉ button.
- Select memory area **T1**, **T2** or **T3**.
- Confirm with the ✓ button.
  YES or **No** flashes in the display.

No is used to deactivate all times in the selected memory area.

ⓘ The switching times of the memory areas (**T1**, **T2**, **T3**) must not overlap or be set to an identical time. Otherwise, temperature control cannot be reliably performed.

ⓘ The available memory areas are described in the table in the Default setting section.

- Change selection with the **–** or **+** button and confirm with the ✓ button.
  The first switching time for the comfort temperature appears in the display.

The flashing switching time can be changed with the **–** or **+** button and saved with the ✓ button. The times for comfort and ECO temperature can be saved consecutively for the weekday blocks Mo-Fr and Sa-Su each.
The menu is exited upon saving the last time setting.

Set the clock - -:- - to deactivate individual switching times.

ⓘ After one minute without any operation the menu is exited automatically without saving.

Set date and time

- Press ⧉ button.
- Setting the **SET**
- Confirm with the ✓ button.
  The year flashes in the display.
- Date, time and automatic summer time changeover can be edited as described in the Commissioning section.

Changing temperature parameters

- Press ⧉ button.
- Setting the **TEMP**
- Confirm with the ✓ button.
  The setpoint value for the comfort temperature **COMFORT** flashes in the display.
- Change the setpoint value with the **–** or **+** button and confirm with the ✓ button.
- Use the same procedure to set the values for the ECO temperature **ECO** and, if parameterised, the cooling temperature ≋ as well.
- Activate/deactivate optimised heating up **OPT** and temperature drop detection ⚠.
- Set the offset value **OFFSET**.

ⓘ After value changes, the device will start with the saved setpoint values.

Changing control parameters

Various settings are made during initial commissioning in order to adapt the temperature control to local conditions. This menu item can be used to change the settings.

- Press ⧉ and ↵ buttons simultaneously for longer than 10 seconds.
  While actuating the buttons, a countdown from 9 to 0 is displayed.

SET, ⎍ and YES or No appear in the display.

The parameters can be confirmed (✓ button) or changed (– or + button) as described in the Commissioning section.

i After value changes, the device will start with the saved setpoint values.

Saving current time as switching time, quick programming

Switching times can also be saved without calling up the programming menu. The current time is saved as the switching time for Mo-Fr and Sa-So.

i Quick programming overwrites the existing ECO or comfort temperature in the first memory area. The switching times from memory areas 2 and 3 are deactivated.

- Press and hold the ✓ button and additionally press the – button for the ECO temperature or the + button for the comfort temperature for more than 1 second.

  SAVE appears in the display. The current time is saved as the new switching time for the ECO or comfort temperature.

Display: setpoint temperature, actual temperature or current time

After commissioning, the device indicates the setpoint temperature and switches off the display after 2 minutes without any operation. Alternatively, the actual temperature or current time can be displayed.
The display can also remain switched on continuously.

- Press the ✓ and AUTO buttons simultaneously for longer than 10 seconds.

  A countdown runs in the display. When "0" is reached, the actual temperature is shown in the display.

  The active temperature sensor is shown in the display when the actual temperature indication is selected.
  [⌂] or [⌂] and [🌡]: The measured value is provided by the internal sensor.
  [🌡]: The measured value is provided by the remote sensor connected to the insert.

- Press the ✓ and AUTO buttons simultaneously again for more than 10 seconds.

  A countdown runs in the display. When "0" is reached, the current time is displayed.

i Use the same operating step to switch back to setpoint temperature display.

- Press the ✓ and ↩ buttons simultaneously for longer than 10 seconds.

  A countdown runs in the display. When "0" is reached, the display is switched on continuously.

i Use the same operating step to switch the display off again after 2 minutes. The display briefly turns dark to indicate confirmation.

In setpoint or actual temperature display mode, the ✓ or ↩ button can be pressed for more than 1 second to display the current time as long as the button is actuated.

Resetting the cover to the default setting

- Press the ↩ and AUTO buttons simultaneously for 10 seconds.

  A countdown runs in the display. The reset is performed with "0".

  The default setting is restored. The year flashes in the display and the device must be recommissioned (see Commissioning section).

9 Information for electrically skilled persons

This device includes an integrated battery. At the end of its useful life, dispose of the device together with the battery in accordance with the environmental regulations. Do not throw device into household waste. Consult your local authorities about environmentally friendly disposal. According to statutory provisions, the end consumer is obligated to return the device.

DANGER!

Mortal danger of electric shock

Disconnect the device. Cover up live parts.

Fitting the device

Switch or room temperature controller insert are mounted and connected properly (see instructions of the relevant inserts).

- Fit the cover with frame on the insert.
- Switch on mains voltage.
  All display icons are briefly actuated and the software version is displayed for approx. 3 seconds. Subsequently, the year flashes in the display and the device must be commissioned (Commissioning).

If **Err** appears in the display, the cover was previously connected to another insert. To enable operation again, either place the cover onto the correct insert or press the **+** and **–** buttons for more than 4 seconds.

After changing the insert, the year flashes in the display and all settings must be confirmed (see Commissioning section).

10 Overview of button combinations

Button combination	Length of button press	Display Reading	What happens
– and **AUTO**	Longer than one second	**LOCK** is shown or hidden	Button lockout is activated or deactivated
⧉ and ⮌	Longer than 10 seconds	Countdown from 9 to 0	Parameters for control can be changed
✓ and - or +	Longer than one second	**SAVE**	The current time is saved as the switching time.
✓ and **AUTO**	Longer than 10 seconds	Countdown from 9 to 0	Display: toggling between setpoint temperature, actual temperature and current time
✓ and ⮌	Longer than 10 seconds	Countdown from 9 to 0	Display: toggling between display permanently on and switch-off after 2 minutes
⮌ and **AUTO**	Longer than 10 seconds	Countdown from 9 to 0	The default setting for the device is restored
+ and –	Longer than 4 seconds	**Err**	Cancelling of lockout when changing cover or insert

11 Technical data

Ambient temperature	-5 ... +45 °C
Storage/transport temperature	-20 ... +70 °C
Accuracy per month	± 10 s
Power reserve	> 4 h

12 Warranty

The warranty is provided in accordance with statutory requirements via the specialist trade.

ALBRECHT JUNG GMBH & CO. KG
Volmestraße 1
58579 Schalksmühle
GERMANY

Telefon: +49 2355 806-0
Telefax: +49 2355 806-204
kundencenter@jung.de
www.jung.de