LB management

Operating instructions

LB Management room thermostat display
Art. no. ..1790D..



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1 Safety instructions

To avoid potential damage, read and follow the following instructions:

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

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.

Instructions are part of the product, so keep them in a safe place.

2 Device components

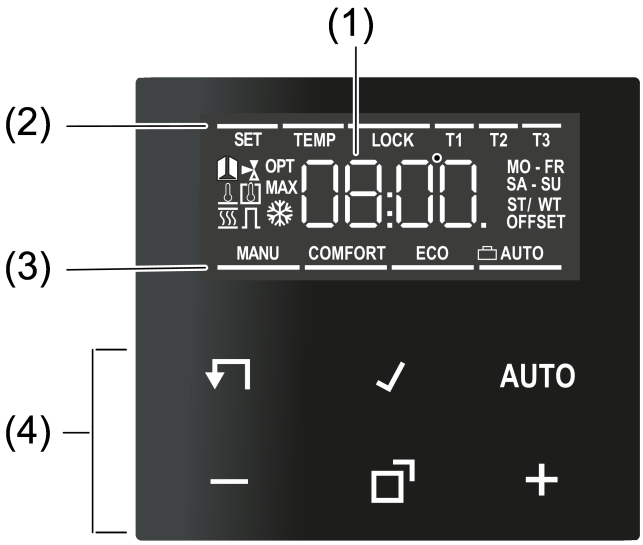

Figure 1: Display and operating area

(1) Target 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 thermostat insert or system insert for switching

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 indication 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 cooling temperature can only be changed via the temperature parameters, and not using the **+/-** buttons.
In conjunction with a Room thermostat insert, cooling mode is activated by applying mains voltage 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 to which the system is regulated in order to avoid frost damage. In case of a significant temperature drop, e.g. after opening a window, the system is regulated to the frost protection temperature for a maximum of 30 minutes. For this, the temperature drop detection parameter must 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 target 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) dependent on the difference between the target temperature and the actual temperature. This method brings the actual temperature gradually closer to the target 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 supply voltage is applied.

Temperature sensor

The LB Management room thermostat display features a built-in temperature sensor, which is used to detect the room temperature.
In conjunction with a Room thermostat insert, a remote sensor can be connected, either to measure the room temperature or to 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 via the remote sensor for monitoring the floor temperature. If the maximum floor temperature is exceeded, the floor heating is switched off until the floor temperature has fallen 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**
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 thermostat 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
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 target 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 target 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 target temperature is retrieved:
  – = ECO temperature
  + = Comfort temperature

i During a detected temperature drop, changing the target 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: Target temperature indication in automatic mode

The target 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: Target temperature indication in manual mode

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

Programming menu overview

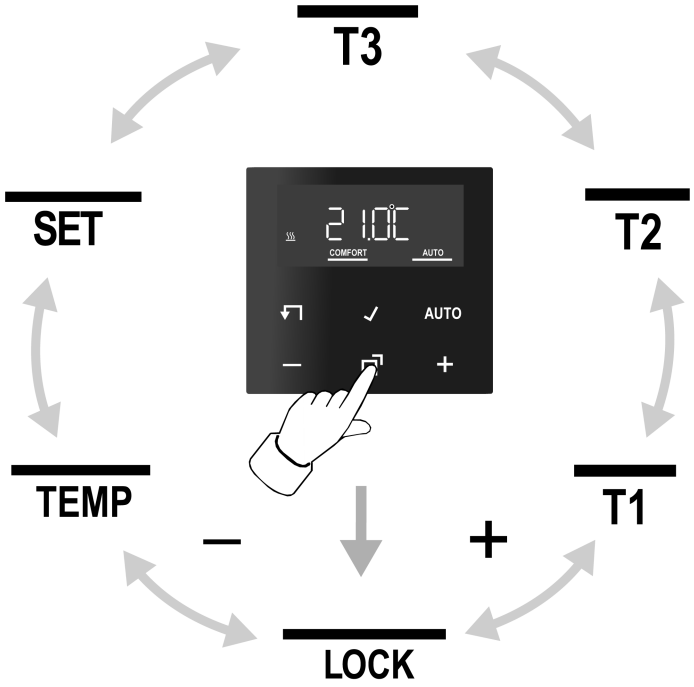

Figure 4: Programming menu

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 week-day 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 the ⧉ button.
  LOCK flashes in the display.
- Press the ✓ 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 indication.

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 the ⧉ 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 the same time. Temperature control can then not be carried out reliably.

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 temperature and ECO temperature can be saved, one after the other, for the weekday blocks Mo-Fr and Sa-Su.
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 the ⧉ button.
- Select **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 the ⧉ button.
- Select **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**.

i 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.

Indication: target temperature, actual temperature or current time

After commissioning, the device indicates the target 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 target temperature indication.

- 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 target or actual temperature indication mode, the ✓ or ↵ button can be pressed for more than 1 second to indicate 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.

Mounting the device

Switching or Room thermostat 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	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 target temperature, actual temperature and current time

Button combination	Length of button press	Display	What happens
✓ 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
Controller class (EU 811/2013)	IV
Contribution to energy efficiency	2%
This controller fulfils the following control functions	TW(0/2/0/4/0/0/0/0)

11.1 Product information in accordance with the Ecodesign Directive (ErP 2009/125/EC)

Contact details: ALBRECHT JUNG GMBH & CO. KG, Volmestraße 1, 58579 Schalksmühle			
Model identifier: LB Management room thermostat display , ..1790D..			
Specification	**Icon**	**Value**	**Unit**
Power consumption			
In the off state	P_0	-	W
In standby mode	P_{sm}	<0.5	W
In idle state	P_{idle}	<0.5	W
In networked standby mode	P_{nsm}	-	W
In standby mode with information or status display		Yes	
Type			
Single-stage heat output, no room temperature control		No	
Two or more manual levels, no room temperature control		No	
Room thermostat with mechanical thermostat		No	
Electronic room temperature controller		No	
Electronic room temperature controller with time-of-day control		No	
Electronic room temperature controller with weekday regulation		Yes	
Other control options			
Presence detection		No	
Detection of open windows		Yes	
Remote control option		No	
Adaptive control of the start of heating		Yes	
Operating time limit		No	
Black ball sensor		No	
Self-learning function		No	
Control accuracy		No	

Codes of the control functions

The format of the code is TC (f1/f2/f3/f4/f5/f6/f7/f8), where TC is the code for temperature control and f1 to f8 are the codes for the respective control functions, if available; otherwise "0" must be specified.

		(TC)*	Control functions							
			f1	f2	f3	f4	f5	f6	f7	f8
Type of temperature control	Single-stage heat output, no room temperature control	NC								
	Two or more manual levels, no room temperature control	TX								
	Room thermostat with mechanical thermostat	TM								
	Electronic room temperature controller	HP								
	Electronic room temperature controller with daytime control	TD								
	Electronic room thermostat with weekday control	TW								
Control functions	Presence detection		1							
	Detection of open windows			2						
	Remote control option				3					
	Adaptive control of the start of heating					4				
	Operating time limit						5			
	Black ball sensor							6		
	Self-learning function								7	
	Control accuracy with CA < 2 Kelvin and CSD < 2 Kelvin									8

* Temperature control code

12 Warranty

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

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