

LRA 4** : Electronic room operating unit (868 MHz)

How energy efficiency is improved

Individual, optimised energy use through precise adherence to setpoint.

Areas of use

For single-room control in residential and commercial properties, with wireless, bi-directional data transmission.

Features

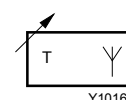
- Room operating unit with bi-directional wireless transmission for heating/cooling
- Transmission frequency 868 MHz, encoded
- NTC sensor
- Easy addressing, parameterisation and monitoring using sensor buttons
- Large TFT LCD, black on grey, 32 × 38 mm
- Integrated and configurable time programme
- Heating/cooling change-over using a room operating unit or via the input on the controller
- Party function and additional functions can be selected
- Room operating unit can be configured as an additional sensor
- Connection for floor, room or outside-temperature sensor
- Contemporary design

Technical description

- Flat housing of white (RAL9016) or black (RAL9005) thermoplastic
- Temperature range 5...30 °C
- With settable frost-protection facility, factory setting 8 °C
- Suitable for wall mounting and recessed junction box
- Standard battery 2 × 1.5 V AAA



T11103



Y10164

Type	Colour	Humidity range % rh
LRA420R K104	white	-
LRA420R K124	black	-
LRA450R K104	white	5...95
LRA450R K124	black	5...95
Setting range	5...30 °C	Perm. ambient temperature 0...55 °C
Setting accuracy	±0.1 K	Perm. ambient humidity 5...80% rh
Sensor	NTC 10 kΩ	Weight 0.13 kg
Humidity accuracy	±3.5% rh at 55% rh, 23 °C	Ingress protection IP 20 (EN 60529)
Hysteresis (average)	> 3% rh	Protection class III (EN 60730)
Radio frequency	868.3 MHz	CE conformity as per: R&TTE 1999/5/EG EN 300220-1 EN 300220-3
Transmission power	13 mW (self-adjusting)	Dimension drawing M11485
Range ¹⁾	approx. 50 m	Cover plate M11487
Data transmission	every 10 minutes	Outside-temperature sensor M11492
Power supply	2 × AAA 1.5 V ²⁾	Fitting instructions P100009964

1) In standard buildings or houses, depending on the ambient conditions, 40 m in buildings, 200...300 m in open areas (depending on obstructions and local sources of interference)

2) Supplied with the unit

Accessories

0313367001	Cable-type NTC sensor, 10 kΩ, 1.5 m, for floor or outside temperature, max. 70 °C
0313367003	Cable-type NTC sensor, 10 kΩ, 3 m, for floor or outside temperature, max. 70 °C
0450232001	Outside-temperature NTC sensor, 10 kΩ, in housing, -50...+90 °C, IP43, connected via two screw terminals, see fitting instructions P100011523
0450241001	Cover plate, white (RAL 9016), dimensions 138 mm × 72.5 mm
0450541021	Cover plate, black (RAL 9005), dimensions 138 mm × 72.5 mm

*) Dimension drawing or wiring diagram is available under the same number

Operation

The LRA4 electronic room operating unit is a component of the radio system in combination with the LET4 bi-directional wireless controller. The room temperature is measured by a precision temperature sensor and compared with the current setpoint. Depending on the control offset and the control characteristic, the output is regulated on the wireless controller, thereby increasing or decreasing the heating/cooling in the room. Therefore, the required room temperature can be kept constant.

Using the weekly programme to select an individual temperature profile for each day ensures the optimal comfort level with minimal energy consumption. There are three different time programmes stored in the controller. Additional time programmes can be programmed for temperature requirements that differ from these.

The operating status of the system is shown on the display (LCD) with visual symbols and a numerical field. Programming mode is used to enter an individual switching program temperature profile that differs from the factory setting.

Service mode is available for adapting the device to the installation etc. The following can be parameterised: control characteristic; setpoint limitation; operating modes; inputs and outputs of the wireless controller and their priorities; output (NC or NO) of the thermal actuators; parameters of the room operating units; local parameters for the room operating unit, such as cooling lock, bypass functions, master and wireless controller parameters; see the parameter list.

The room operating units and wireless controllers are configured ex works so that underfloor heating control is possible without any additional settings. If a cooling command is entered on the controller via the C/O input, cooling control starts automatically. The 'cooling' symbol is displayed on the room operating unit.

Other applications, such as cooling via the master room operating unit and special function settings for hotels or public buildings, can be set by means of the service parameters.

Engineering and fitting notes

The unit should be fitted approx. 1.5 m above the floor, and protected from direct sunlight, draughts and sources of heat and cold.

The room operating unit should be installed in a readily accessible location so that the temperature of the room can be easily set.

Additional technical data

CE conformity as per:	
Radio	EN 300220
RTTE immunity	EN 301489-3
RTTE emission	EN 300220-3

Serviceable life and replacement of batteries

The serviceable life of the battery is approx. two years, though it depends on the transmission distance to the controller. The transmission strength is constantly adjusted to provide optimal power. This keeps the transmission output as low as possible.

The batteries should be replaced as soon as the 'battery' symbol appears in the display. If 'Batt' lights up in the display, the battery is so low that a signal cannot be sent to the controller. No settings are lost when the batteries are replaced. When installing batteries, ensure that batteries of the same type are used and that both of them are new. Do not mix old and new batteries.

Notes on the use of the LRA450 with humidity sensor

In general, humidity sensors are subject to increased ageing if they are used in very contaminated air or aggressive gases. The sensor may start to drift prematurely under these conditions. If the sensor is used in very contaminated air, the warranty does not cover the replacement of the complete sensor.

Addressing the room operating units on the wireless controller

When the system is put into operation for the first time, the radio connection must be set up between the room operating unit and the wireless controller. Addressing is not lost when batteries are replaced. After the desired channel (one or more) has been selected on the wireless controller, the 'OK' and 'Escape' buttons must be pressed for 5 s. 'Pair' appears briefly on the display, denoting that the connection between the thermostat and the controller has been established.

To test the connection, these two buttons can be pressed again for 5 s. During the 5 s, 'Pair' briefly lights up on the display, followed by 'Test', along with the relevant channel LED on the controller.

After the addressing, the time and date must be entered as follows: hours, minutes, year, month and day. The '+' and '-' buttons are used to change the values, and each step should be confirmed with the 'OK' button. When the time has been entered in the first room operating unit, this time is forwarded to all room operating units in the system (master controller to slave controller). If the time has not been entered on the first addressed unit, this is queried on the next unit. If the 'OK' button is pressed for 10 s, the time and date can be called up and changed. An automatic summertime/wintertime change-over is stored. This can be deactivated in service mode using parameters.

Basic functions

After the addressing, the device switches to sleep mode after 10 s. The display shows the actual temperature, the radio transmission, the ECO symbol, the day and, if the battery is low, the battery symbol. Pressing any button switches the device on, and the device obtains the current data from the wireless controller. The unit must be switched on before any entry, parameterisation or function change can be made.

The setpoint can be set by pressing the '+' or '-' button again. After 5 s, or immediately after the 'OK' button is pressed, the selected setpoint is automatically sent to the wireless controller and saved there. After that, the actual temperature value is retrieved every 10 minutes.

By pressing the 'Menu' button again, it is possible to switch between the frost protection mode (Off), ECO, normal operation or the time programme. If the room operating unit is configured so that change-over between heating and cooling was programmed, these two modes are also available.

The button lock is activated by pressing the '+' and '-' buttons for 5 s. The 'button lock' symbol appears on the display, also in sleep mode. The lock is removed by pressing both buttons again for 5 s.

If the 'Menu' button is pressed again for 5 s, the display shows the first level of the parameter settings. If the 'Menu' button is briefly pressed again, the parameters up to P-SE, parameters of the service level, are shown.

Time programmes

Stored in the wireless controller are three time programmes that can be altered using the wireless room control unit. Whenever a time programme is altered, it is adopted by all the other room operating units that use the same profile.

Time programme I:

A profile for all days of the week; three switching points are available. Time programme I includes only one profile; the profile is identical for every day.

Time programme II:

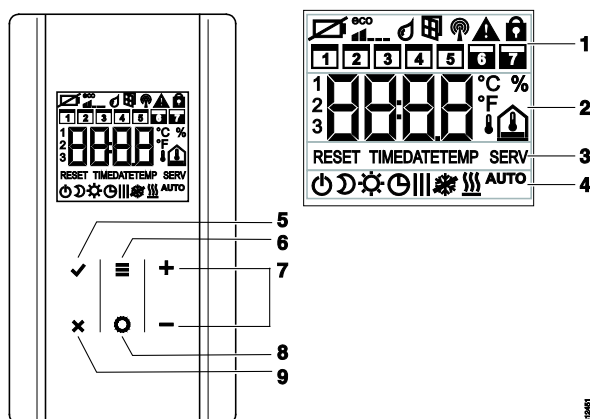
A profile for the working days of Monday to Friday and a profile for the weekend. Three switching points are available for all working days, and three additional switching points are available for the weekend.

Time programme III:



















A profile for every day; three switching points are available for each day. With time programme III, you can choose different profiles for each day.

A switching point always consists of two change-over points. A time must be specified for each change-over point. For the first change-over point, the time for the change from 'Reduced Mode' to 'Normal Mode' is set. For the second change-over point, the time for the switch from 'Normal Mode' to 'Reduced Mode' is set.

Overview of display and sensor buttons



- 1 General information such as battery status, energy-saving mode, alarms for dew point and window contacts, radio connection, general alarm, locking, weekdays for time programme
- 2 Temperature setpoint and actual value, time, time programme, indoor, outdoor and floor temperature
- 3 Auxiliary texts for parameterisation
- 4 Operating modes
- 5 Confirm changed values, confirm selection
- 6 Activate menu mode, select menus and parameters
- 7 Change setpoints, time, date and other values; select the time programme
- 8 Function button, can be set using parameter P-10
- 9 Cancel: leave current parameter or menu

Sensor buttons	Description
2 s:      	Activate operation with any sensor button.
	<u>Selection button</u> Activate menu mode. Select operating mode. Possible operating modes: frost protection, reduced operation, normal operation, time programme, heating or cooling Select parameter (menu mode).
 	Change setpoint.
	Save value. Confirm selection.
10 s: 	Change time.
	Cancel.
5 s:  + 	Addressing. Test addressing.
5 s:  + 	Lock/unlock manual operation.
2 s: 	<u>Select function or display directly</u> Function: Heating or cooling (party function) has priority over all other functions. Override is active for the time set here, between 1 hour and 9 hours. On the display, P appears in front of the actual value. Function/display: Depending on the setting selected for parameter P-10, pressing the sensor button executes one of the following functions: <ul style="list-style-type: none"> • Immediate change-over between heating and cooling, and display of room temperature. • Immediate display of the floor temperature. • Immediate display of the outside temperature. • Immediate display of the relative humidity (optional).
5 s: 	If a function other than the 'party function' is set using parameter P-10, this function still becomes active by pressing the sensor button for 5 seconds.

Description of parameters

Changing and confirming the operation for parameters

- The first parameter is displayed by touching the 'Menu' button for 5 s
- Briefly touching the 'Menu' button switches from one parameter to the next
- Touching the 'OK' button causes the selected parameter to be ready for changing
- The parameter is changed using the '+' or '-' button; several important parameters also need to be confirmed with 'yes' or 'no'
- Touching the 'OK' button causes the changed parameter to be confirmed
- Touching the 'Escape' button causes the unit to be switched to a lower level and the change to be communicated on the wireless controller

Parameter used		Factory setting
P-01	Adjust the standby display: actual value or time	Room temperature
P-02	Specify the setpoint for the minimum floor temperature	15 °C
P-03	Specify the limitation of the setpoint temperature	30 °C / 5 °C
P-04	Change the time programme	
P-05	Reset the time programme to the factory setting	–
P-06	Specify the display for standby mode (max. battery-saving mode)	On
P-07	Activate or deactivate button tone	On
P-08	ID number of the wireless room operating unit	–
P-09	ID number of the wireless controller	–
P-10	Set the parameter for the function of the sensor button <input type="checkbox"/>	0
P-11	Specify the limitation of the setpoint humidity (optimal with room operating units with integrated humidity sensor)	65 % / 55 %

P-SE Service parameters

The service parameters are protected by a password (set at 1-2-3-4 at the factory). Parameter P-SE comes after parameter P-11. If the 'OK' button is pressed, the code is queried. Each number must be confirmed by pressing 'OK'. The first service parameter is P-20. If you press the 'OK' button, you are taken to the P-20 parameter list. Pressing the 'Escape' button takes you out of the P-20 parameter list and straight to the next parameter list, P-30. See the description for making changes in each parameter list.

General parameters		Factory setting
P-SE	Access only with service code (factory setting '1-2-3-4')	–
P-21	Display the software version of the wireless room operating unit	–
P-22	Display the software version of the wireless controller	–
P-23	Display the current status of the wireless controller and the I/O box	–
P-24	Reset the parameters to the factory setting	–

Parameters for all room operating units		Factory setting
P-31	Specify the increment for the setpoint temperature	0: 0,5 K
P-32	Specify the temperature for the frost-protection facility	8.0 °C
P-33	Specify the temperature unit	0: °C
P-34	Specify the value for the dead zone for heating/cooling change-over	0: 2 K
P-35	Change the service code for the service menu	1234
P-36	Change the access code for public buildings	1234
P-37	Activate or deactivate the 'summertime/wintertime' function	0: activated

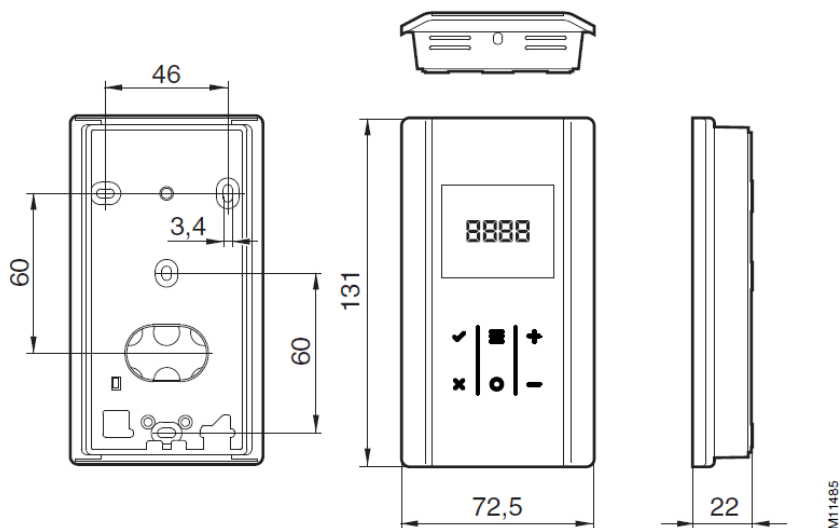
Parameters for individual room operating units		Factory setting
P-41	Compensate for the influence of the wall temperature for the	0 K

	wireless room operating unit	
P-42	Compensate for the floor temperature	0
P-43	Specify the maximum value for the floor temperature	35 °C
P-44	Specify the setback temperature for the 'Eco' function	3 K
P-45	Activate or deactivate the cooling lock and/or bypass, e.g. for a heat pump	0
P-46	Activate or deactivate the 'Make common use of a setpoint within a zone' function	0: deactivated
P-47	Activate the lock for public buildings or hotels	0: deactivated
P-48	Activate or deactivate the master function for a wireless room operating unit	0: deactivated
P-49	Specify the function of the external temperature sensor. An optional external temperature sensor must be connected to the wireless room operating unit	0

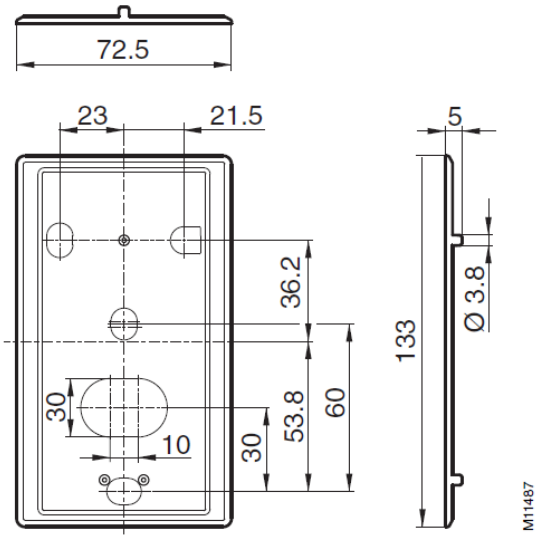
Parameters that are specific to the installation and the topology		Factory setting
P-51	Set priorities for the 'heating/cooling' change-over and for the 'heating/cooling' output or burner control	0
P-52	Activate or deactivate the 'Optimised time programme' function	0: deactivated
P-53	Set the type of communication between wireless controllers (options: radio or bus)	0

Control parameters		Factory setting
P-61	Configure ECO or N/R input	0
P-62	Configure c/o in or temp. limit input	2
P-63	Select 'local' pump activation or activation through the 'master wireless controller' (only for communication between wireless controllers)	0
P-64	Select function NC or NO for thermal actuators	0: NC
P-65	Select control algorithm	0: ON/OFF
P-66	Activate the 'Optimised actuator control' function	0: deaktiviert
P-67	Select the initial controlled floor heating	0: deaktiviert

Dimension drawing



Cover plate



Outside-temperature sensor

