



Quick Start Guide

RAP-B511-EU -K, -W, -S
RAP-B511-UK -K, -W, -S
RAP-B511-US -K, -W, -S

Front View (RAP-B511-EU-K)



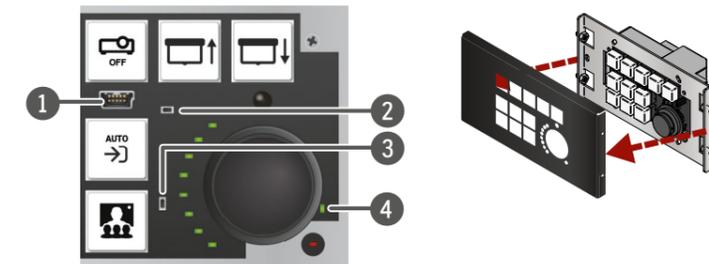
i The labels of the buttons are just for illustration since the button caps are empty by default. The user can insert the desired label from the attached sheet.

i All the models have the same look and controls on the front and rear panel, the only difference is the size and color of the enclosure.

- 1 Buttons** 11 configurable buttons normal and long press detection. Each button has a programmable background light. They can be configured for immediate feedback of pushing the buttons or can be set five different modes: off / low bright / high bright / slow blink / sine pulse.
- 2 Rotary LEDs** Eight green-colored LEDs for giving feedback about the current position of the jog dial knob.
 - **full bright** As the jog dial is rotated right (and the volume increases), the LEDs turn on one-by-one. One level means half bright. The picture on the left shows that the volume is set 11.
 - **half bright**
 - **off**
- 3 Rotary knob** Jog dial for volume control on a 16-level scale or be programmed for other controlling purposes by turning and clicking the knob.
- 4 Mute LED** It gives feedback about the mute status of the volume. It can be toggled on and off by pushing the rotary knob.
 - **on** The volume is muted.
 - **off** The volume is unmuted.
- 5 IR detector** Built-in IR eye to receive infra signal.

Hidden Functions (Front View)

After removing the front plate (no special tool needed, just pull apart by hands), a USB connector, two buttons and a live LED can be seen.



- 1 USB Port** USB mini-B connector can be used for LDC access or firmware upgrade.
- 2 Reset Button** Hidden button to restart the device.
- 3 Factory default** Hidden button to reload the factory default settings.
- 4 Live LED**
 - ✳ **blinking** The unit is powered and ready to use.
 - **on** The device is powered, but the CPU is not running.
 - **off** The unit is NOT powered or out of operation.

Important Safety Instructions

Please read the supplied safety instruction document before using the product and keep it available for future reference.

Introduction

Room Automation Panel (RAP) is an integrated room control interface device for collaboration spaces. RAP features a programmable keypad, a volume knob, and a processor running Event Manager, the versatile, proprietary room control application of Lightware.

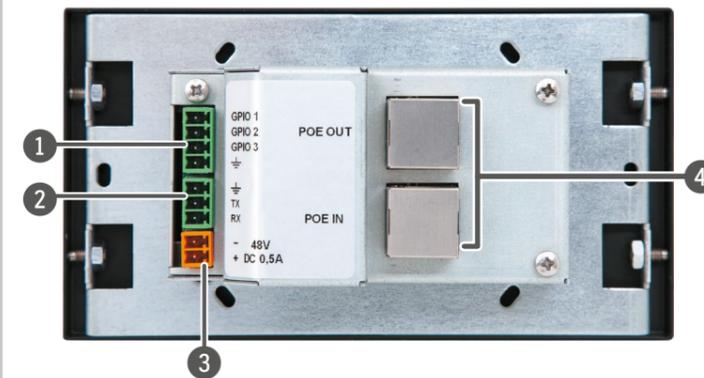
A button press can initiate performing actions in other Lightware products by Event Manager, and scheduled tasks can all trigger programmed actions to happen. Room automation panel can send commands to or set the volume on third-party devices as well.

Real-time clock with network time protocol and automatic daylight saving adjustment makes possible to program scheduled or recurring actions in the Event Manager.

Compatible devices

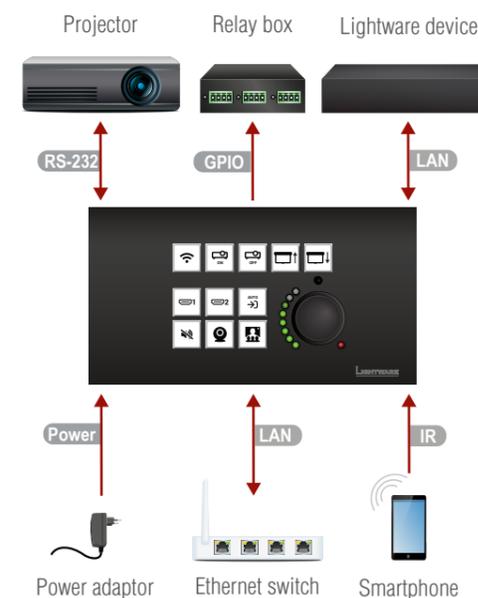
Room automation panel has standard RS-232, Ethernet, GPIO ports and they are compatible with other Lightware products or third-party devices which have the same connector type.

Rear View (RAP-B511-EU-K)



- 1 GPIO** 4-pole Phoenix® connector for configurable general purpose.
- 2 RS-232 port** 3-pole Phoenix® connector for bi-directional serial communication.
- 3 DC Input** The device can be powered by a local adaptor. Connect the output to the 2-pole Phoenix® connector. For more information about the powering, see powering options below.
- 4 Ethernet port** Two RJ45 connectors for Ethernet communication. Both of them are PoE-compatible, one is a PoE receiver, the other can send PoE.

Connecting Steps



- GPIO** Connect a controller/controlled device (e.g. relay box) to the GPIO port.
- RS-232** Optionally for RS-232 extension: connect a controller/controlled device (e.g. Projector) to the RS-232 port.
- LAN**
 1. Connect the switcher to a LAN network in order to control the device.
 2. Connect a PoE-compatible device for remote powering and control to the PoE out LAN port.
- IR** Built-in infra detector is ready to receive any IR signal without user intervention.
- Power** Powering on the devices is recommended to do as the final step during the installation. Please check the Power Supply Options section for the details.

Box Contents



Power Supply Options

RAP-B511 series automation panel is compatible with IEEE 802.3af standard - Power over Ethernet (PoE) - and one Ethernet port can receive, and the other one can send power over the Ethernet line.

The room automation panel can be powered by any of the following ways:

1. Local adaptor and remote power (PoE OUT)

When it is locally supplied with 48V DC adaptor, the room automation panel is able to send remote power via POE OUT RJ45 connector to other PoE-compatible devices.

2. Remote power injector (PoE IN)

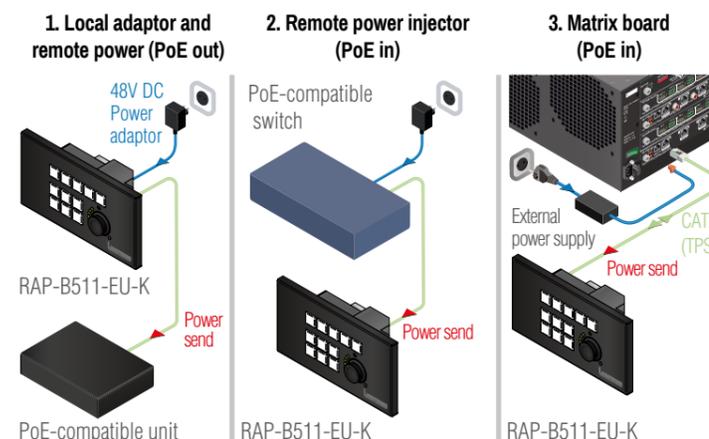
Remotely by a PoE-compatible power injector, like a PoE-compatible switch. Connect it to the POE IN labeled RJ45 connector.

3. Standalone Matrix or Matrix board (PoE IN)

Powering by a matrix board* over the CATx (TPS) cable. Output board needs to be powered by an external PSU. Connect it to the POE IN labeled RJ45 connector.

* TPS2 I/O board with PoE extension (-P)

i Over the CATx cable, the Ethernet communication is transmitted.



Further information on the device is available at www.lightware.com. The User's Manual is also available via the QR code below:



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Doc. ver.: 1.2
19210024

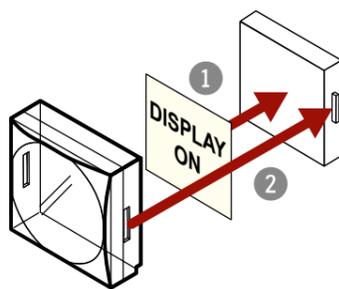
¹ The transparent caps are not placed onto the buttons, thus, you can easily insert the desired labels and fix the caps – see the related section on the next page.

Label and Cap Fixation

The caps of the buttons are supplied separately with the product in a plastic bag. Select the desired label and insert it as shown in attached figure:

1. Insert the label.
2. Place the cap and pay attention to the nut; the direction of the buttons are different, thus, certain caps must be rotated by 90°.

The size of the button label: 9.9 x 9.9 mm.



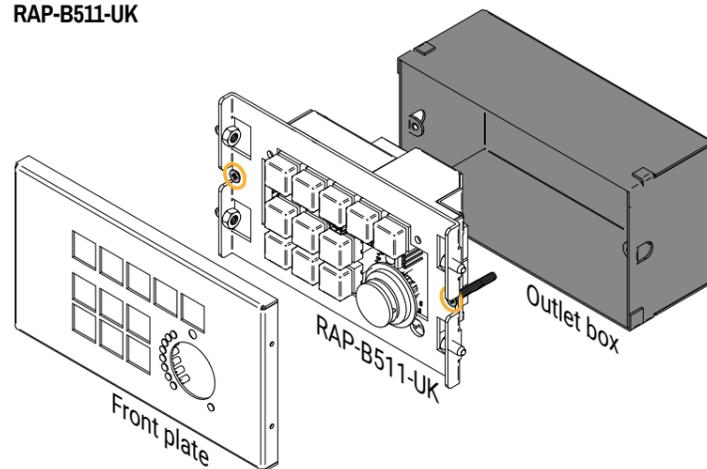
Mounting Options

Model	Recommended outlet box type for mounting
RAP-B511-EU	Double EU wall box (65mm) (e.g. Legrand: 080102, 080122, 080042, 080052, 080142, 2x080141, 2x080151, 2x080161, 081942)
RAP-B511-UK	Double UK wall box (e.g. Appleby SB628 Galvanised Steel Knockout boxes 2G 47mm)
RAP-B511-US	Double US wall box (e.g. Carlon B225R-UPC Switch/Outlet Box, 2-Gang, Depth: 2-3/4")

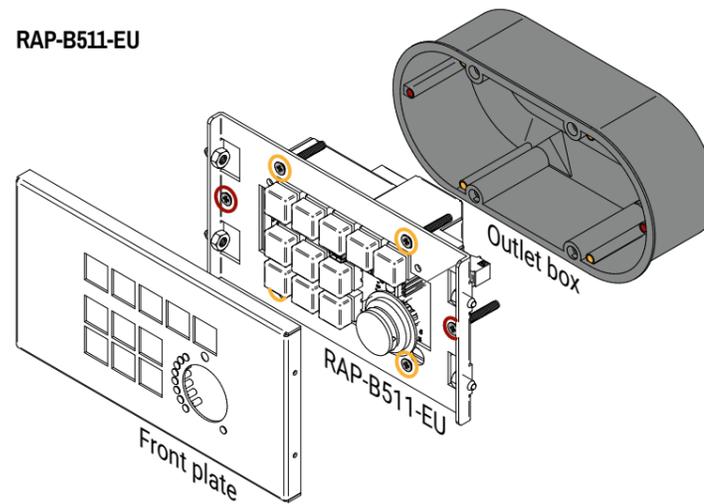
Mount into the Outlet Box

1. Pull apart the **Front plate** from the **RAP-B511** by your hand (no special tool needed).
2. Take four screws over yellow holes (or the two screws over red holes in in -EU model).
3. Insert the **RAP-B511** into the **Outlet box** and position it to get the holes aligned.
4. Fasten the front side of the device to the **Outlet box** by fitting all the screws.
5. Place back the **Front plate** to the **RAP-B511**.

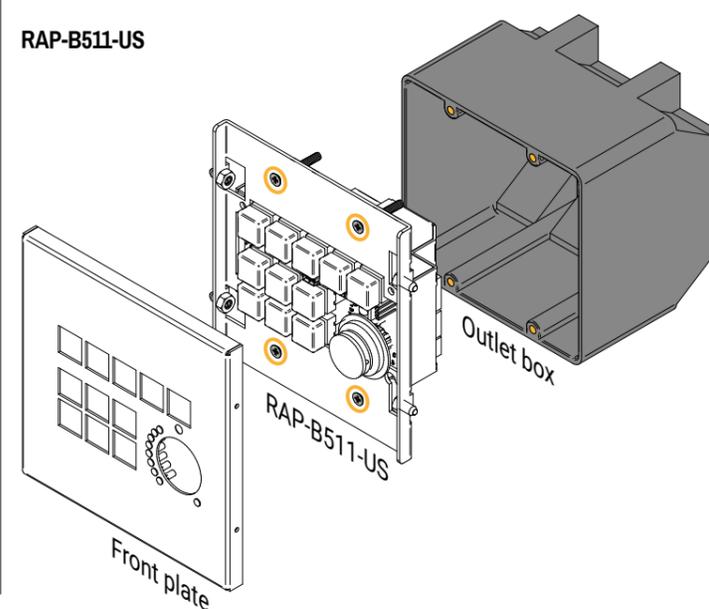
RAP-B511-UK



RAP-B511-EU



RAP-B511-US



Software Control – Using Lightware Device Controller (LDC)

The device can be controlled from a computer through the Ethernet port using Lightware Device Controller. Please download the application from www.lightware.com, install on Windows PC or macOS and connect to the device via the Ethernet port.

Firmware Upgrade

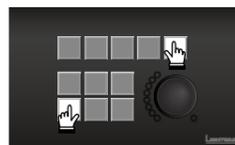
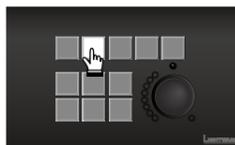
Lightware Device Updater (LDU2) is an easy and comfortable way to keep your device up to date. Establish the connection via Ethernet. Download and install LDU2 software from the company's website www.lightware.com where you can find the latest firmware package as well.

Set Dynamic IP Address (DHCP)

1. Keep the 2nd button pressed for **5 seconds**; all front panel LEDs start to blink.
2. Release the button, then press it **3 times** quickly. DHCP is now enabled.

Reset the Device

1. Keep the 5nd and the 9th button pressed for **10 seconds**.
2. Release the buttons. The mute LED lights up when the device restarts.



User Interface Configuration - Buttons

These settings can be done from a computer using the Lightware Device Controller (LDC) software (or via LW3 protocol commands).

1. Run the **LDC** and navigate to the **UI Config** menu.
2. Click the button icon to select the configurable one.
3. Select a **Button operation mode**. Three types are available: **momentary**, **toggle** and **radio group (1-5)**.
The button operation mode defines how the **interaction state** changes when the button is pressed or released (see the details about it in the table on the right). The value of the interaction state triggers the button LED function and the desired action.
4. Set the button **LED function**. This property takes into consideration the button **interaction state**, different functions can be set for the true and the false state. Five LED behaviors are available.
5. **Configure the action** of the chosen button. Actions are displayed in the thematic list. Click one to choose and specify the details (e.g. IP address or GPIO state) in the pop-up window. Click **OK** to approve. The actions can be set to execute when the **interaction state** changes **true** or when the **interaction state** changes **false**.
6. **Test Button Press** can be used to see the working method in the practice with LDC software.
7. In the right block of the LDC, all the adjusted actions of the selected button are displayed.



Momentary Operation Mode				
	PRESS	RELEASE	PRESS	RELEASE
interaction state	↓	↑	↓	↑
	true	false	true	false
Toggle Operation Mode				
	PRESS	RELEASE	PRESS	RELEASE
interaction state	↓	↑	↓	↑
	true	true	false	false
Radio Group Operation Mode				
	PRESS	RELEASE	PRESS	RELEASE
interaction state	↓	↑	↓	↑
	1 2 3	1 2 3	1 2 3	1 2 3
	true false false	true false false	false true false	false true false

Explanation: Radio group number (1-5) defines that a button is which radio group member. Five groups are available, and one button may belong to one group at the same time. One group may contain max. 11 buttons.

User Interface Configuration - Rotary

These settings can be done from a computer using the Lightware Device Controller (LDC) software or via LW3 protocol commands.

The jog dial knob can be configured for volume control (or other controlling purposes). Turning left and right the rotary triggers the command sending via RS-232 or Ethernet. It is for setting the volume on a 0-16 scale or the knob press is for toggling between the mute and the unmute states.

1. Run the **LDC** and navigate to the **UI Config** menu.
 2. Click the rotary icon.
 3. Choose interface for the (volume) command sending (**RS-232 port** or **Ethernet port**). When Ethernet is selected, IP address and port number are also required.
 4. Choose a **volume control schema**: **LWR** or **Custom**.
 - a. **LWR** is for controlling the volume of the analog audio output levels of the chosen audio port in any Lightware device. Choose schema in a drop-down menu. (To specify which schema suits your Lightware device, see the User's manual of this appliance on www.lightware.com.) After giving the audio port number, the command schema loaded automatically.
 - b. **Custom** makes possible to send serial or Ethernet messages to the third-party (or Lightware) device depending on the rotary state. Type the desired commands into the proper entry fields.
 5. Save the Schema.
- ⓘ Rotary LEDs give feedback about the current position of the jog dial knob. As it is rotated right (and the volume increases), the LEDs turn on one-by-one. One level means half bright.**



Restore Factory Default Settings

1. Keep the 2nd button pressed for **10 seconds**; after 5 seconds front panel LEDs start to blink but keep the button pressed; the LEDs start to blink faster 5 seconds later.
2. Release the button, then press it **3 times** quickly; the following factory default settings are restored:

IP address (static)	192.168.0.100
Subnet mask	255.255.255.0
Static gateway	192.168.0.1
DHCP	Disabled
TCP/IP port nr. LW2 / LW3	10001 / 6107
RS-232 mode	Command Injection
RS-232 control protocol	LW2
RS-232 port setting	57600 BAUD, 8, N, 1
RS-232 command injection port	8001
IR command injection port	9001
GPIO output level	High
GPIO output direction	Input

Infra

The device is equipped with built-in IR detector, so it can be controlled with IR signal from the remote controller or a smartphone (which has IR emitter). The unit is able to learn and store 20 pcs fingerprint (hash) codes, which can be set as a condition in the Event Manager. This makes customizable for any third-party remote controller.

GPIO (General Purpose Input/Output Ports)

The device has three GPIO pins which operate at TTL digital signal levels and can be set to high or low level (Push-Pull). The direction of the pins can be input or output (adjustable). The signal levels are the following:



	Input voltage (V)	Output voltage (V)	Max. current (mA)
Logic low level	0 - 0.8	0 - 0.5	30
Logic high level	2 - 5	4.5 - 5	18

GPIO connector and plug pin assignment

Pin nr.	Signal
1, 2, 3	Configurable
4	Ground

ⓘ The total available current of the controller is 180 mA.

The recommended cable for the connectors is the AWG24 (0.2 mm² diameter) or the generally used 'alarm cable' with 4x0.22 mm² wires.

Ethernet

The Ethernet port on the RAP-B511 can be connected to a LAN hub, switch, or router with a LAN cable. The other one behaves as an Ethernet uplink port. The device supports 10/100 Mbps data transfer rate. The Ethernet port has auto crossover function. It is able to recognize and handle both cable types: patch and cross TP cables.

RS-232

The room automation panel series provides 3-pole Phoenix connector for bi-directional serial communication. The unit can be controlled via serial port or it is able to send serial messages to control devices with standard RS-232 port (e.g. third-party or Lightware devices).

The signal levels are the followings:

	Output voltage (V)
Logic low level	3 - 15
Logic high level	-15 - 3

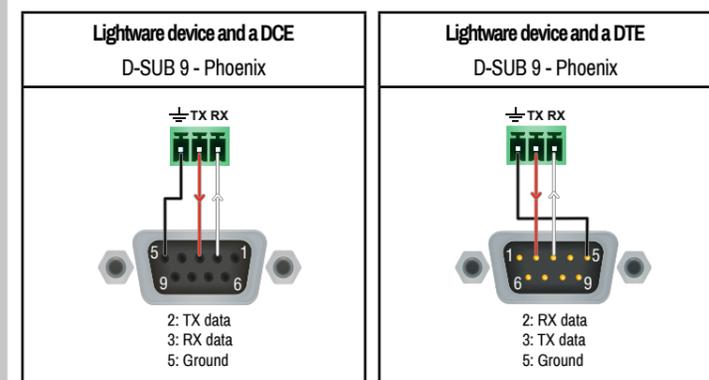
RS-232 connector and plug pin assignment

Pin nr.	Signal
1	Ground
2	TX data
3	RX data

ⓘ The RAP-B511 series works as a DCE unit according to its pin-out.

Wiring Guide for RS-232 Data Transmission

RAP-B511 series are built with 3-pole Phoenix connector. See the below examples of connecting to a DCE (Data Circuit-terminating Equipment) or a DTE (Data Terminal Equipment) type device:



For more information about the cable wiring see the user's manual of the device or **Cable Wiring Guide** on our website www.lightware.com.