



LIGHTWARE RAC-B501 Room Automation Controller User Guide

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RAC-B501 Room Automation Controller
User Guide



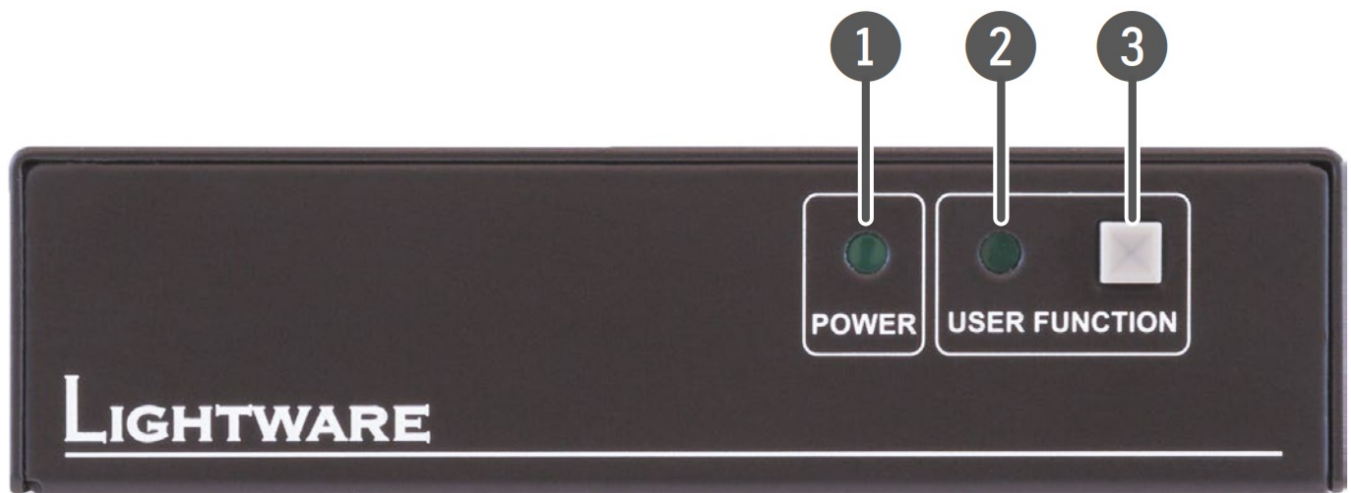
Quick Start Guide
RAC-B501

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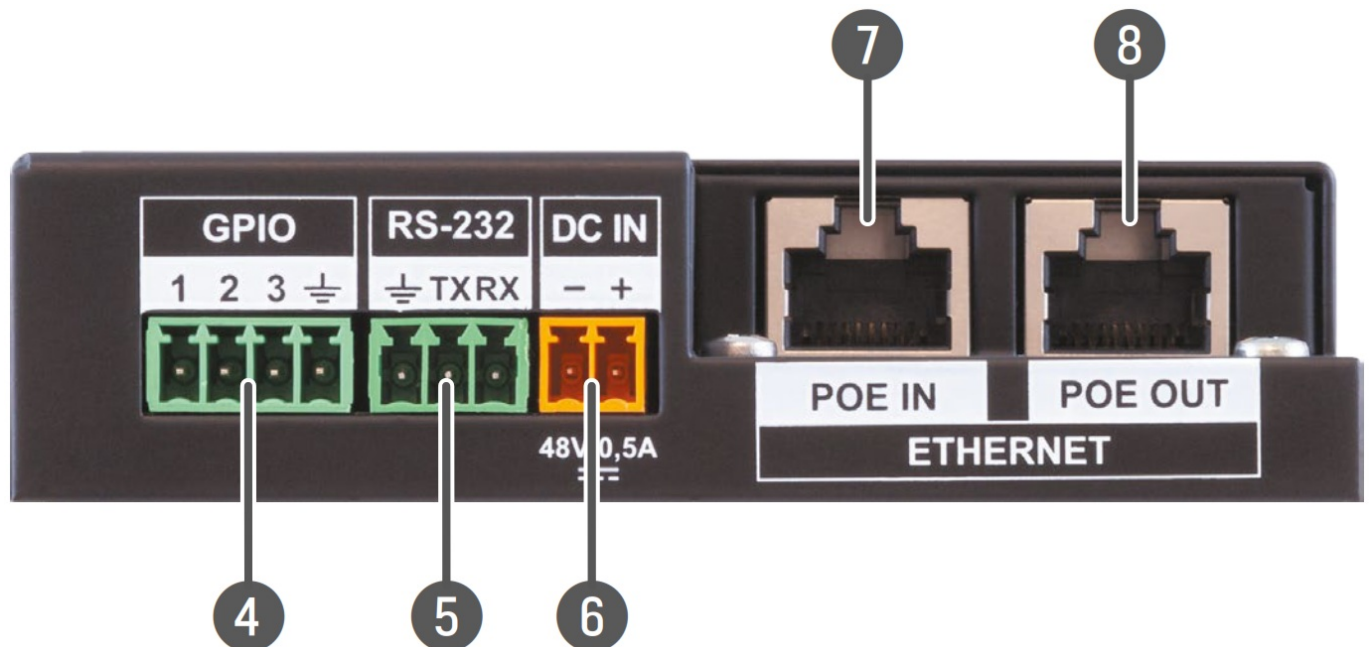
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RAC-B501 Room Automation Controller

Front View



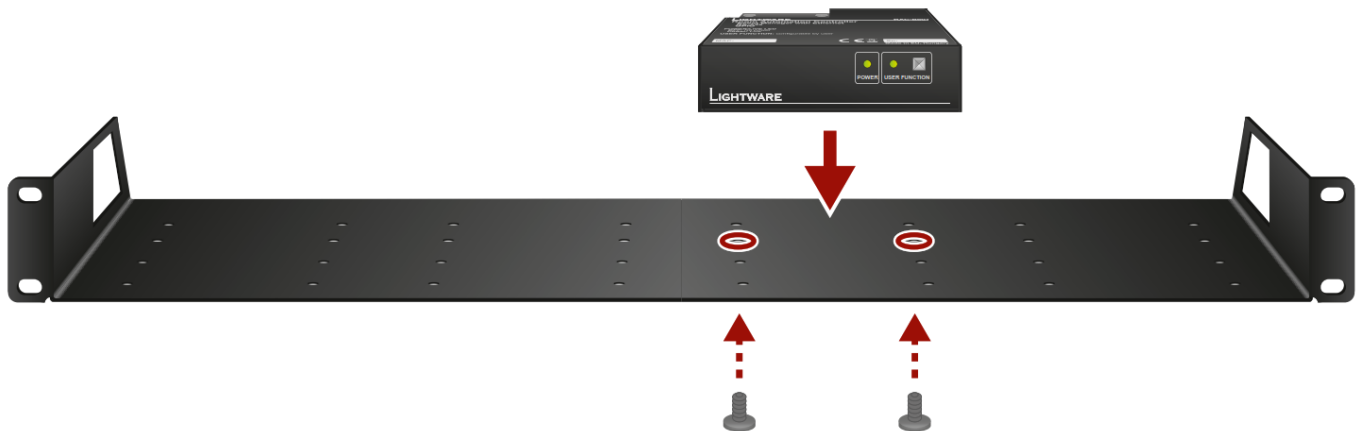
Rear View



1 Power LED	The LED gives immediate feedback about the current power status of the device.  off The device is not powered.  blinking (green) The device is powered on.
2 User LED	Configurable user LED for action feedback purpose.
3 Function button	Special functions are available with the button (DHCP settings, restore factory default settings, condition launching in Event Manager).
4 GPIO port	4-pole Phoenix® connector for configurable general purpose.
5 RS-232 port	3-pole Phoenix® connector for bi-directional serial communication.
6 DC input	The device can be powered by a local adaptor. For more information see the Power Supply Options section.
7 Ethernet port with PoE input support	RJ45 connector for Ethernet communication. The port is PoE-compatible to receive power from a remote device.
8 Ethernet port with PoE output support	RJ45 connector for Ethernet communication. The port is PoE-compatible to send power to a remote device.

Rack Mounting Instructions

The enclosure allows rack mounting for half-rack, quarter-rack and pocket sized units. 1U high rack shelf provides mounting holes for fastening two half-rack or four quarter-rack sized units. Pocket sized devices can also be fastened on the self.



Always use M3x4 screws for fastening the device to the rack shelf. Using different (e.g. longer) ones may cause damage to the device.



1U high rack shelf can be ordered separately, please contact sales@lightware.com.

Important Safety Instructions

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

Introduction

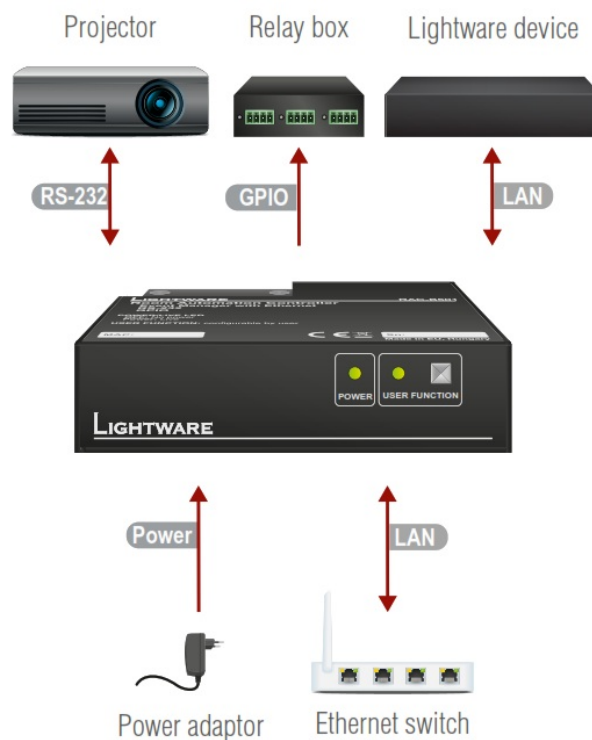
Room Automation Controller (RAC) is an integrated room control device for automation of complex AV systems. RAC features a processor running Event Manager, the versatile, proprietary AV system control application of Lightware.

RAC device can send commands to or set the volume on third-party devices as well. Realtime clock with network time protocol and automatic daylight saving adjustment make possible program scheduled or recurring actions in the Event Manager.

Compatible devices

RAC has standard RS-232, Ethernet, GPIO ports and they are compatible with other Lightware products or third-party devices which handles the same signal levels.

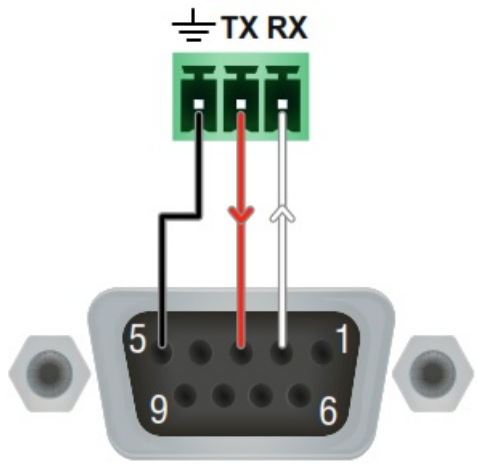
Connecting Steps



RS-232	Optionally for RS-232 extension: connect a controller/controlled device (e.g. Projector) to the RS-232 port.
GPIO	Connect a controller/controlled device (e.g. relay box) to the GPIO port.
LAN	<ol style="list-style-type: none">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. <p>i Do not connect the PoE IN and PoE OUT connectors together. The device can be powered remotely OR can power another device but the two functions are not working at the same time.</p>
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.

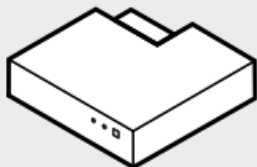
Wiring Guide for RS-232 Data Transmission

RAC-B501 device is 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:

<p>Lightware device and a DCE D-SUB 9 – Phoenix</p>	
 <p>2: TX data 3: RX data 5: Ground</p>	

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/support/guides-and-white-papers.

Box Contents



RAC-B501 device



Phoenix® Combicon 3-pole connector



Phoenix® Combicon 4-pole connector



**Safety & Warranty Info;
Quick Start Guide**

Power Supply Options

RAC-B501 automation device 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 device 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 device 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.

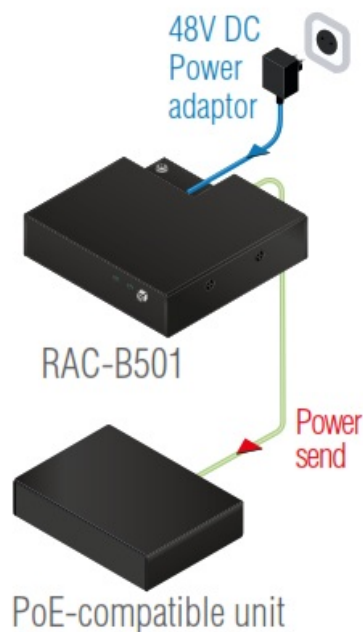
3. Standalone Matrix or Matrix board (PoE IN)

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.

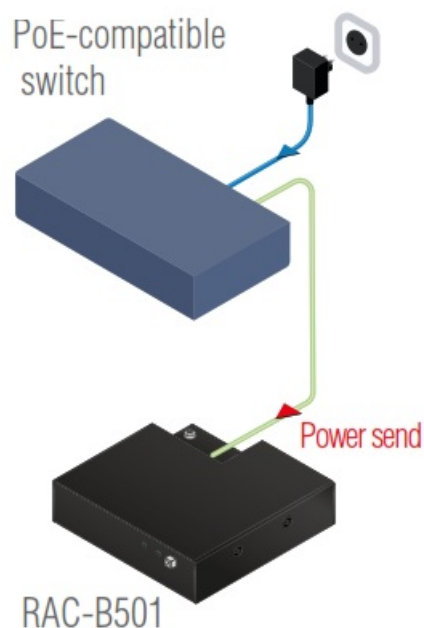
* TPS2 I/O board with PoE extension (-P)

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

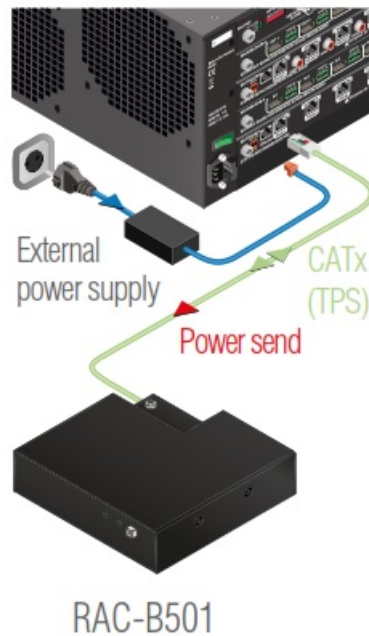
1. Local adaptor and remote power (PoE out)



2. Remote power injector (PoE in)



3. Matrix board (PoE in)



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 Update

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

Restore Factory Default Settings

1. Keep the Function button pressed for 10 seconds; after 5 seconds front panel LEDs start to blink but keep the button pressed; 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
GPIO output level	High
GPIO output direction	Input



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 4×0.22 mm 2 wires.

Ethernet

The Ethernet port on the RAC-B501 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



RAC device 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. thirdparty 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

i The RAC-B501 series works as a DCE unit according to its pin-out.

Further Information

The document is valid with the following firmware version: 1.1.2 and above

The User's manual of this appliance is available on www.lightware.com.

See the Downloads section on the dedicated product page.

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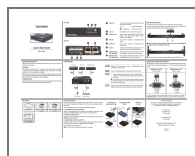
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RAC-B501 Room Automation Controller, RAC-B501, Room Automation Controller, Automation Controller, Controller, Room Controller

References

-  [Lightware Visual Engineering](#)
-  [Guides and White Papers](#)

