Instruction Manual

RAK8-S

8-Channel Switching RAK

2024
Version 1.0.0

For programming information: Wireless RAK Programming guide or Wired system Programming Guide

For general system information: Wireless RAK Application Sheet or Wired RAK Application Sheet

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1 What is the RAK8-S?

The RAK8-S is an 8-Channel switching board designed to control non-dimmable loads such as lights, pumps and contactors.

The RAK8-S combined with a Link device (Rx-LINK or RAK-LINK) can either be used as a single 8-Channel unit or formed into a "stack" of up to 32 circuits or 4 RAK boards.

NB
The Rx-LINK has a limit of 16 Channels per unit, if more Channels are required then additional Rx-LINK units must be used.

2 Loadings

Load Type	Symbol	Examples	Maximum Load
Mains LED	LED	All LED fittings: GU10, integrated, LED tape, driver etc	300W
Incandescent		Mains halogens, tungsten fittings etc	600W
Transformer		Wire wound transformer, 12V MR16 Gu5.3 Halogen etc	300W (cos φ => 0.6)
Motor		Fan, Pump and all other forms of motor	1A (⅓ HP Fan)

3 RAK8-S Circuit Board

1. RJ45 Port 1 - Power Carrier
   For connection to the RAK-LINK/Rx-LINK, as well as looping between RAK's.

2. RJ45 Port 2 - Non-Power Carrier
   For connection between RAK8's only, this port cannot be connected directly to the RAK-LINK/Rx-LINK.

3. Display
   The seven-segment display is used for diagnostic feedback for the RAK8-S, see the appendix for more information see Appendix 1: Diagnostics for more information.

4. Test Buttons
   Used for manually switching the outputs on and off, this can be used to test outputs before the RAK8-S has been programmed.

5. Address DIP Switches
   Dip switches are used to assign unique box numbers to each RAK8, for more information, see the Wired System Programming Guide.

6. Mains Input
   The 230VAC mains supply is wired into the three terminals on the Mains Input.

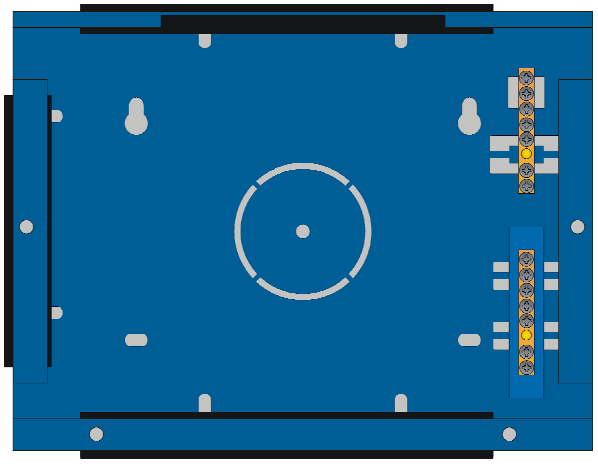
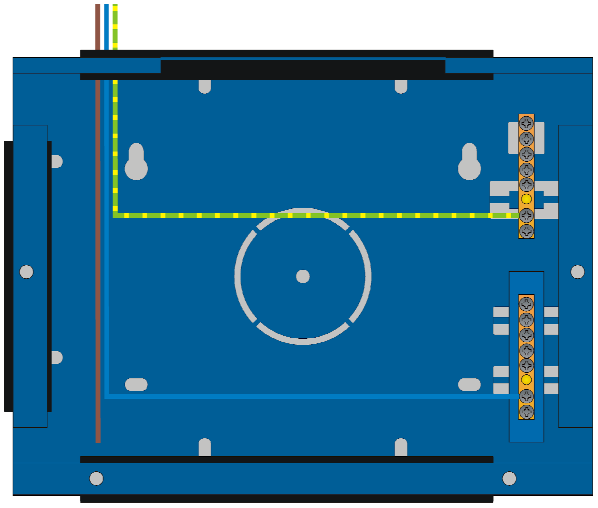
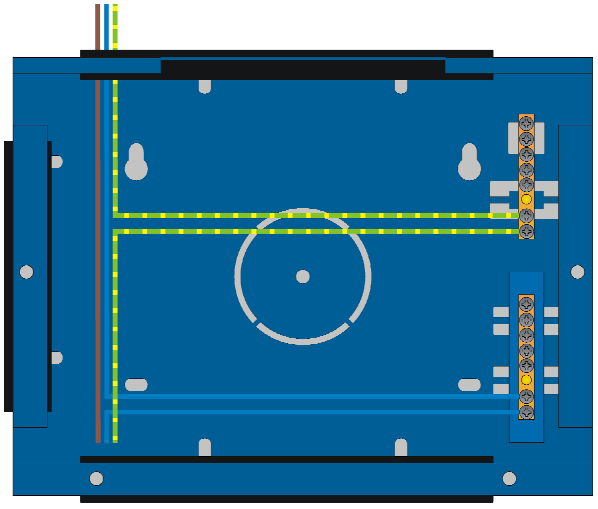
7. Output Fuses
   The switched outputs have individual 5A fuses, if there is no output Voltage on the output, it is advised to test the 5A fuse first.

8. Switched 230V Outputs
   The switched live outputs are connected into terminals 1 to 8, the Neutral and Earth conductors are connected at the back section of the case via the bus bars, see 4 Installation for further information.

4 Installation

⚠WARNING

Installation should only be carried out by a competent electrician.

Step 1		Secure the metal box housing to the wall or a secure mounting position. The RAK system relies on being vertically mounted to allow the ventilation system to work properly.
Step 2		Using the top and left entry points, bring a separate 10A protected supply to each RAK case. Connect the Neutral and Earth to the busbars as shown. Bring the live to the front of the metalwork ready for connection to the circuit board.
Step 3		Bring a single Neutral and Earth from the busbars to the front of the metalwork. Prepare screws on either side of metal work ready to hold the circuit board. They should be present and screwed loosely into the case.

Step 4		Place the circuit board on the two screws on either side of the metalwork. Do not screw down at this stage as the busbars need to be accessible for Neutral/Earth connections of lighting circuits. Connect Live, and link the Neutral/Earth terminals to the bus bar.
Step 5		Connect Neutral and Earth conductors for the loads to the appropriate BUS bars in the back of the casing. Connect the switched live conductors to the 'Output' terminals of the RAK8-S.

Step 6		Insert the RJ45 cable from the RAK-LINK/Rx-LINK into port 1 of the RAK8-S, and use port 2 to loop to another RJ45 cable to each RAK in the "stack". NB *Do not use port 2 to connect to the RAK-LINK, only use port 1.*
Step 7		Screw down the circuit board to secure it to the case and fit the lid to complete the installation.

5 Programming

Before the RAK8-S can operate via controls, it will need to be configured using Rasoft Pro software.

If an Rx-LINK is being used with the RAK8-S, follow the Wireless RAK Programming Guide.

If a RAK-LINK is being used with the RAK8-S, follow the Wired System Programming Guide.

Appendix 1: Diagnostics

The display on the RAK8-S has useful diagnostic information which can help with fault finding.

Bootloader When the RAK8-S is updating firmware, the device will be put into bootloader.	
Bootloader Sleep Once a firmware update has commenced, bootloader will go into bootloader Sleep and wait for the upgrade to complete.	
Local Channel When receiving data from the RAK-LINK, the RAK8-S will flash 'L.' when receiving a command.	
Error When the test button is pressed and there is an error communicating with the Channel, 'E' will appear on the display.	
Receiving Channel Data When 't' shows on the display, it means that the RAK8-S is receiving Channel Data relevant to the RAK8-S. For example: If a circuit for 'Kitchen' has been mapped to the RAK8-S, and a 'Kitchen' command is received, 't' will show on the display momentarily.	
Passive data receive When the RAK8-S receives Channel data which is not relevant to its mappings, it will momentarily flash '-'. This is a useful diagnostic indicator to check if a RAK8-S is receiving data from the RAK-LINK or Rx-LINK.	

Appendix 2: RAK8-S wiring example:

The RAK8-S has a 230V mains supply input, the Earth and Neutral must be connected to the BUS bar behind the circuit board, as do the Earth and Neutral for any of the loads.

The example shown has a single load connected for demonstration, additional loads can be connected to a single Channel (such as multiple downlights) by looping in and out of the light fittings, providing that the loading is permitted on the RAK8-S (see 2 Loadings).