Instruction Manual

RAK8-MB

8-Channel modular dimming motherboard

2024
Version 2.4.2

UK CA

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

Contents

1. What is the RAK8-MB?
2. RAK8-MB Circuit Board
3. Installation
4. Programming
5. Appendix 1: Diagnostics
6. Appendix 2: WM-CUB wiring diagrams

1 What is the RAK8-MB?

The RAK8-MB forms the base for up to eight pluggable modules, which can be added in any combination as per the system requirements.

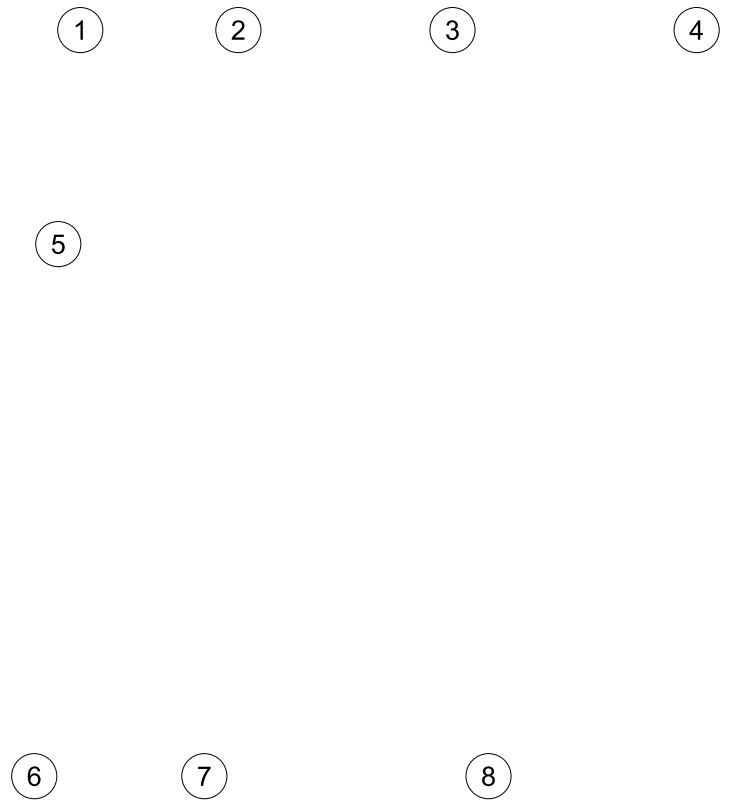
Pluggable modules to be used with the RAK8-MB are:

- WMT-400 - 400W Trailing Edge dimmer
- WML-300 - 300W Leading Edge dimmer
- WDA-600 - 600W digital dimmer for use with 1-10V, DSI and DLI broadcast
- WMS-600 - 600W Switching Module
- WM-CUB - Twin relay Curtain and Blind controller

RAK8s, 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-8 motherboards.

NB
The RX-LINK has a limit of 2 RAK8-MBs per unit, if more RAK8-MBs are required then additional RX-LINK units must be used.

2 RAK8-MB Circuit Board



1. RJ45 Ports
   Used for connecting between the RAK-LINK and the RAK8-MB, as well as between RAK8-MB's.

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

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

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

5. Card Sockets
   The top and bottom sockets on the RAK8-MB are for the pluggable modules for the RAK8-MB, each two vertical slots houses a single module.

6. Mains Input
   The mains supply is wired into the three terminals on the Mains Input, for details on input requirements, see the RAK8-MB Datasheet.

7. Permanent 230V Outputs
   The permanent output may be used to temporarily power lighting circuits should the pluggable modules not be present.

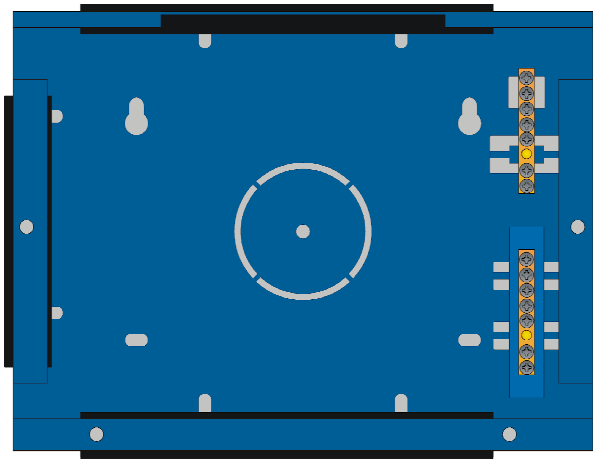
8. Card Outputs
   The 1-8 outputs relate to the pluggable card slots, for example: if a WMT-400 is plugged into slot 1 of the RAK8-MB, Card Output 1 would be a trailing edge dimmable output.

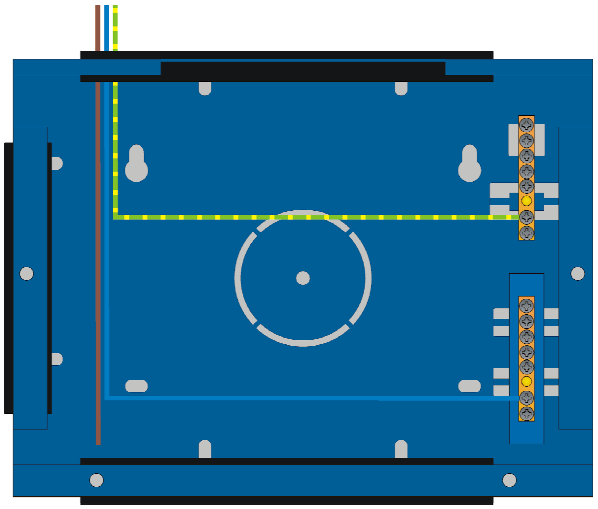
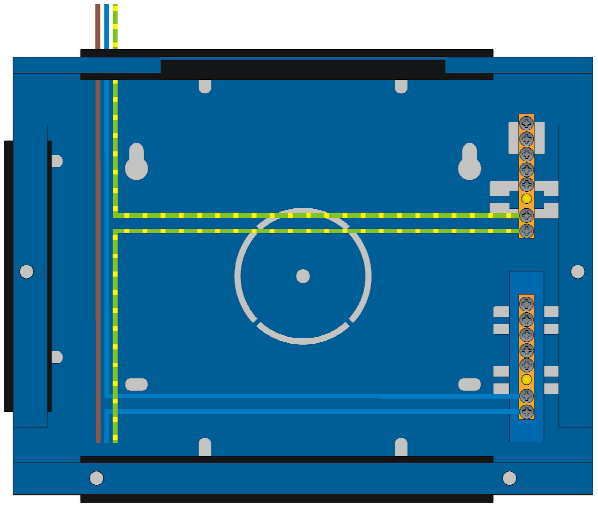
   NB
   The WM-CUB has onboard outputs via a 6-way pluggable terminal block.

3 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		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, Neutral, and Earth for board supply as indicated.

Step 5		Insert the daughterboards into the slots on the motherboard. Connect Neutral and Earth to the appropriate busbars in the back of the casing. Make Live load connections to the right-hand 8-way terminal block as shown. NB *In this example 5 slots of the RAK6-MB are used.*
Step 6		Insert the RJ45 cable from the RAK-LINK/RxLINK into the port on the RAK and from there another RJ45 cable to each RAK in the "stack". Screw down the circuit board to secure it to the case and fit the lid to complete installation NB *The WDA-600 and WM-CUB will have connections on the circuit boards themselves which also need to be connected.*

4 Programming

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

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

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

Appendix 1: Diagnostics

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

Bootloader When the RAK8-MB 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-MB will flash 'L.' when receiving a command.	
Error When the test button is pressed and there is an error communicating with the card, 'E' will appear on the display.	
Receiving Channel Data When 't' shows on the display, it means that the RAK8-MB is receiving Channel Data relevant to the RAK8-MB. For example: If a circuit for 'Kitchen' has been mapped to the RAK8-MB, and a 'Kitchen' command is received, 't' will show on the display momentarily.	
Passive data receive When the RAK8-MB 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-MB is receiving data from the RAK-LINK.	

Appendix 2: WM-CUB wiring diagrams

The WM-CUB is a dual relay unit capable of controlling mains, dc or dry contact blinds, it can also be used for controlling volt-free or dc interfaces if the loadings permit.

Mains switching

The WM-CUB is most commonly used with "mains switching blinds." The six-way terminal block is fed with permanent mains and has two switched mains outputs. A three-core earth cable should be run from the WM-CUB to the blind.

Terminal	Mains
1	Permanent Mains
2	Relay A Output (Open)
3	Linked to 4
4	Linked to 3
5	Relay B Output (Close)
6	Not used

24V Polarity Switching

The WM-CUB can also be used to control 24V polarity switching blinds. In this case, a separate 24V power supply is required, and a two-core cable should be run from the WM-CUB to the blind.

Terminal	24V
1	Relay A Output (Open)
2	+24V from PSU
3	0V from PSU
4	Relay B Output (Close)
5	+24V from PSU
6	0V from PSU

Contact Closure

The WM-CUB can be used to provide a control signal to the blinds. In this case, a 3-core cable is run from the WM-CUB to the blind control box.

1	Common
2	Relay A Output (Open)
3	Not used
4	Common
5	Relay B Output (Close)
6	Not used

Appendix 3: RAK8-MB wiring example:

The RAK8-MB 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-MB card.