

Rako RAK-4R Instruction Manual

Overview

The Rako RAK-4R is a four channel controller which can be used to operate most types of Curtain, Blinds and Screen motors.

The RAK4-R has a single L-N-Earth 230v ac input. Each of the four outputs comprise two uncommitted volt-free relays. The relays can be wired or switched to suit the specific motor connected to them. The RAK4-R provides auxiliary Live outputs that can be used to drive ac motors.

The Rako RAK4-R is designed for use as a single 4 channel controller or to be stacked together to other RAK-4's to give more outputs.

RAK4-R can be stacked with other members of the RAK4 family, a single stack may contain an mixture of RAK-4T, RAK-4R, RAK-4L, RAK-4F etc.

Whether forming a single 4 channel rack or multiples each stack requires to be connected to an Rx-Link wireless receiver or RAK-Link wired unit. A single Rx-Link can support up to 4 RAK-4 units. A RAK-Link can support up to 8 RAK-4 units.

Each RAK-4R has an on-board fuse rated at 5A.

Before commencing installation of a Rako module first read this instruction manual carefully.

Rako Controls Ltd accepts no responsibility for any damage or injury caused by incorrect installation of a Rako product.

Installation should only be carried out by a qualified electrician.

Always install RAK-4 units in a well ventilated room, with a minimum clearance of 50mm on the sides in the correct orientation i.e. vents top and bottom.

Warning: Each RAK-4 unit must be earthed.

Installation

Step 1 - Secure Case to wall or secure mounting position. The RAK-4 system relies on being vertically mounted to allow the ventilation system to work properly.

Step 2 - If multiple RAK-4s are to be joined to form a larger 'stack' (maximum of four to be connected together) then mount the other cases to join the original case using the joining brackets to align and secure the casings (see fig.1). Ensure that adequate knockouts are removed and grommeted to allow cable access.

Step 3 - Bring a separate 10A MCB protected supply to each RAK-4 case. Connect the Earth and Neutral supply to the appropriate connector block and leave the Live ready to connect to the circuit board. Bring a feed from both the Earth and Neutral bars ready to connect to the circuit board (see Fig.1) Also feed the load Lives and prepare ready for connection to the circuit board and connect the load Neutral and Earths to the appropriate connector block.

Step 4 - Secure the circuit boards into position using the two fixing screws supplied and connect the Supply (LN&E) and the feeds to the loads.

Step 5 - On multiple assemblies of RAK-4s interconnect the circuit boards using the RJ45 interconnecting leads supplied ensuring that the cable guides are used to avoid the data cable from touching the heat sink and the IN OUT topology is adhered to. Connect the Rx Link (or RAK-Link) using a CAT 5 cable into the IN socket of the top RAK-4 circuit board (see Fig.2)

Step 6 - Fit Lid

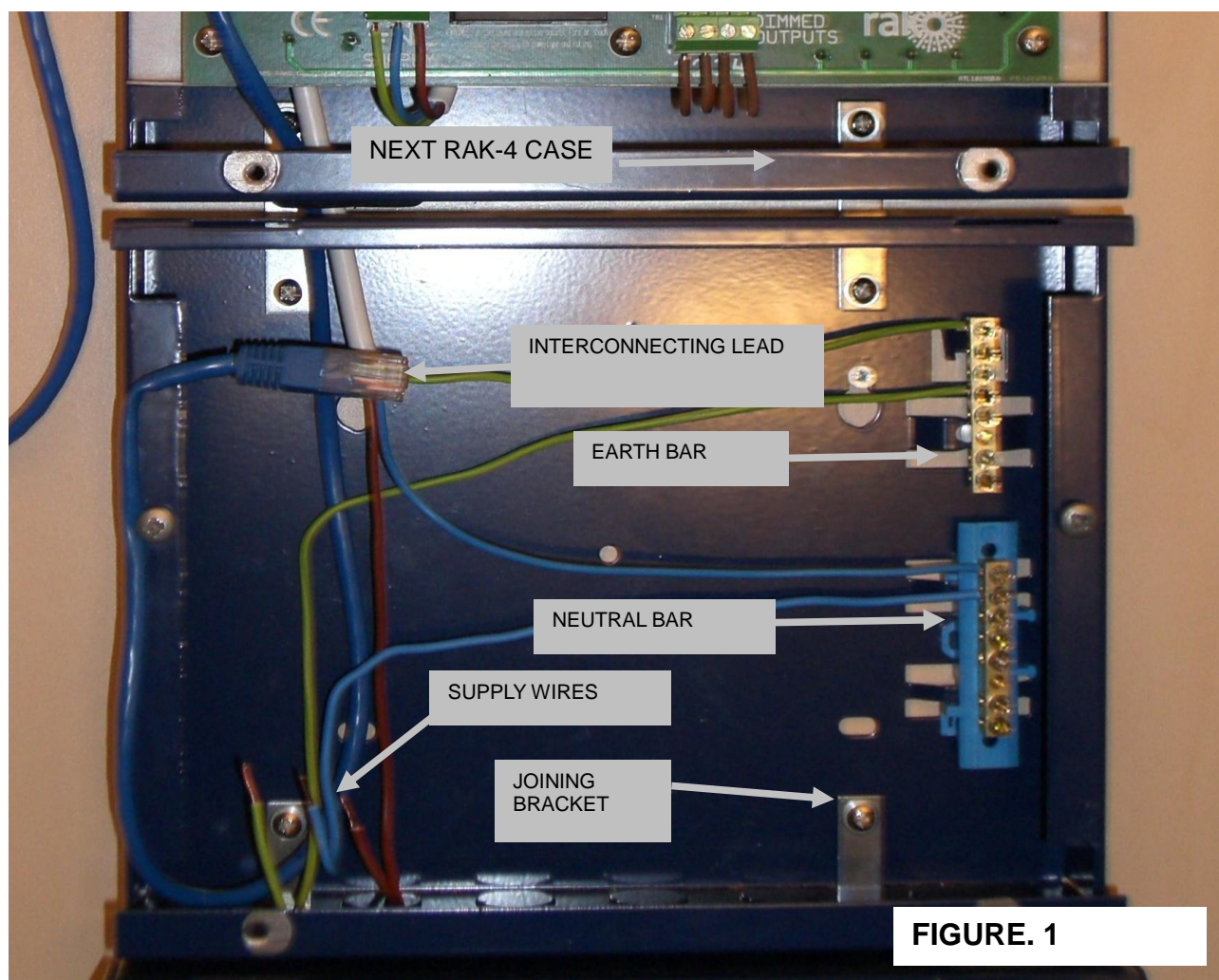


FIGURE. 2

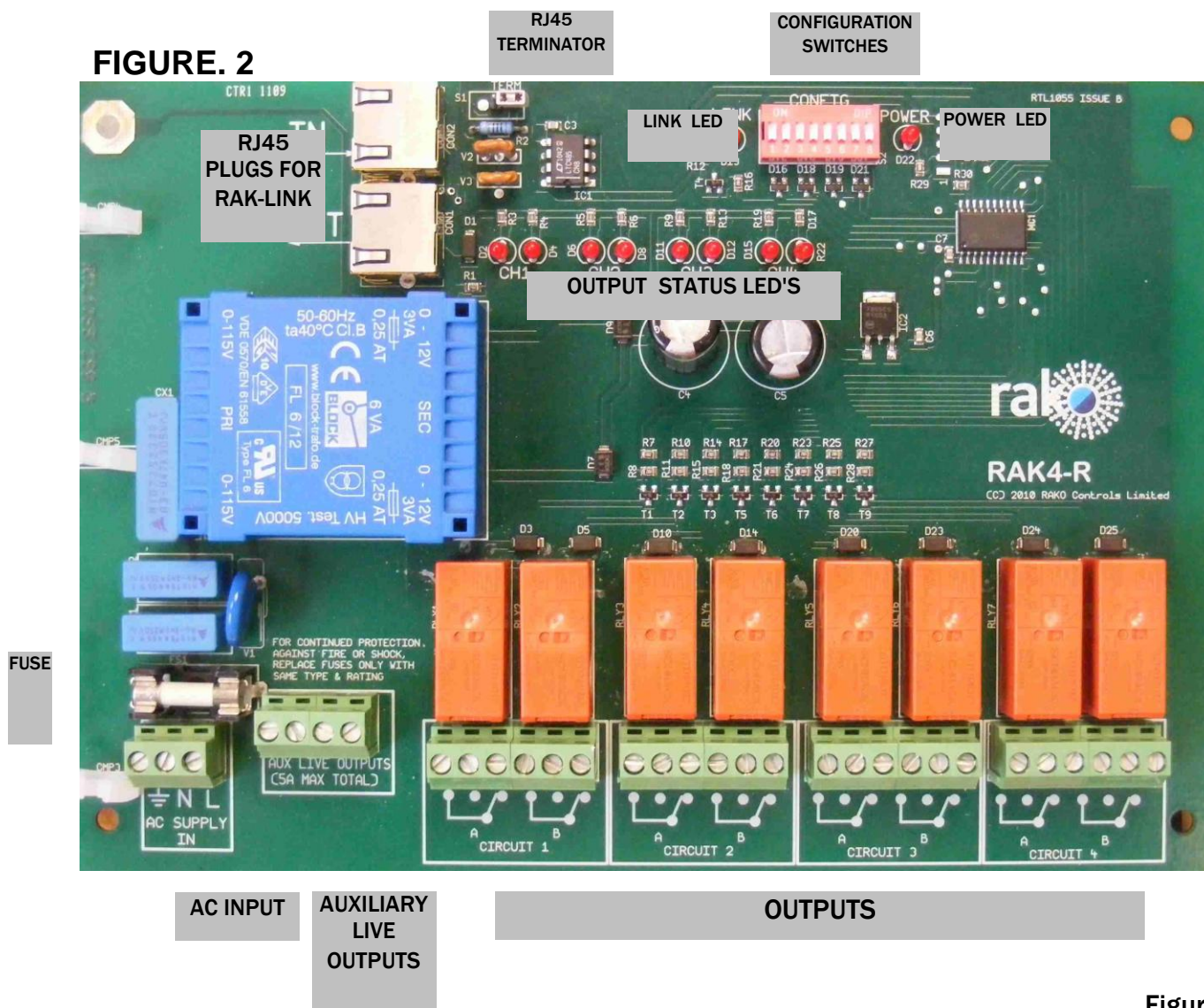


Figure 2

Figure 2 shows RAK-4R with relevant features labelled:

AC Input: Earth – Connect to Earth Bus bar in back of case
Neutral – Connect to Neutral Bus bar in back of case
Live – connect to 230v supply

RJ45

Connectors: Connect first RAK-4 to Rx-Link (or Rak-Link) using RJ45 cables supplied. Interconnect further RAK4's as required.

RJ45

Terminator: Fit a terminator jumper to the last RAK-4 to be connected – (the one furthest from the Rx-Link/Rak-Link). This jumper is only required if the RAK-4's are located more than 10 metres from the Rx-Link/Rak-Link.

Configuration

Switches: Switches 1,2,3 set the Box Address for each RAK4 in a stack. In a stack each RAK-4 must have a different Box Address. When the system is programmed these Addresses are used in the Rasoft software to identify correct circuits.

Link LED: This LED will flash on when the RAK-4 stack receives data from the Rx-Link.

Power LED: This LED indicates that 230v ac is connected to the RAK-4

Outputs: There are four outputs: Circuit 1, Circuit 2, Circuit 3, Circuit 4.
Each output has 2 relays: A, B

OUTPUT STATUS

LED's Each Output relay has a status LED. The LED is lit when the relay is ON.

AUXILIARY LIVE

OUTPUTS: These outputs are used when the RAK-4R is connected to 230v ac motors. The Auxiliary Live outputs provide a convenient source of Live 230v which can be connected to the Relay outputs as required. (Neutral connections to motors can be made to the Bus-Bar in the back of the RAK-4 case).

Addressing and Programming

RAK4's & Rx Links /RAK-Links can only be programmed using RASOFT software (and an appropriate interface unit such as RAUSB , WRE Bridge etc).

Up to 4 RAK-4's can be run from one Rx Link, giving 16 separate fully addressable dimming channels. Multiple stacks of RAK-4s can be used in one system.

Box addresses are as follows:

Box Number	Switch 1	Switch 2	Switch 3
0	Off	Off	Off
1	On	Off	Off
2	Off	On	Off
3	On	On	Off
4	Off	Off	On
5	On	Off	On
6	Off	On	On
7	On	On	On

RAK-4's connected to Wireless Rx Links should always be addressed as Boxes 0 to 3 using the Address Switches at the top of the card (see Fig. 2). Each RxLink should then also be given a unique address so that each uniquely addressed RxLink will have its own set of RAK-4s address from 0-3.

RAK-4's connected Wired RAK-Links can be addressed as boxes 0 to 7. RAK-Links also require their own unique addresses.

Rx-Link Addressing

The default address of an Rx-Link is House 1, room 255, receiver channel 1, in a multiple Rx Link installation it is strongly advised to address all Rx Link with the same receiver room address but with unique and sequential receiver channel numbers. To address an Rx-Link open RASOFT, making sure that the correct House number for the project is selected. From the drop down menu under 'controls' select Mapping (Rx Link), the mapping page is then displayed. Use the magnet to put the unit into programming mode (see Rx Link instruction manual), select a suitable receiver channel number and click the ident button in the receiver mapping window.

Rx-Links require a separate and unique address in installations using multiple Rx-Links, enabling communication with individual Rx-Links whilst mapping. This address has no bearing on the addressing of wall-panels or channels throughout the house, hence the suggestion and default of Room 255 which is not often used as a Room address.

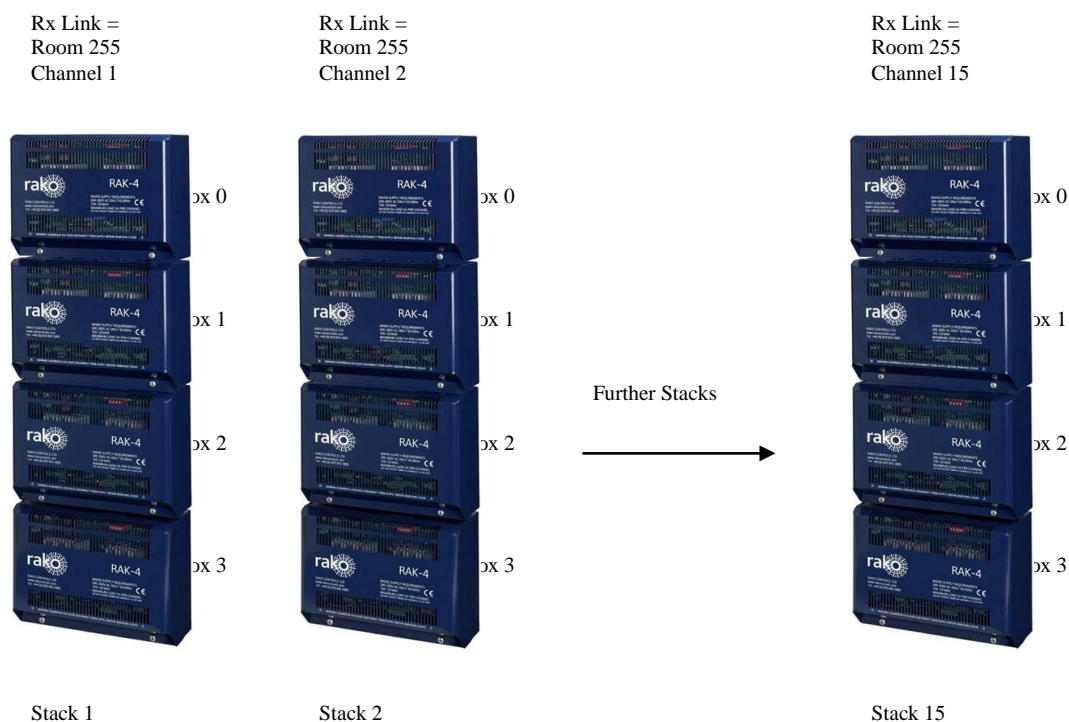
To address additional Rx Links simply select the next logical channel, then click 'Add New Receiver' and follow the procedure above.

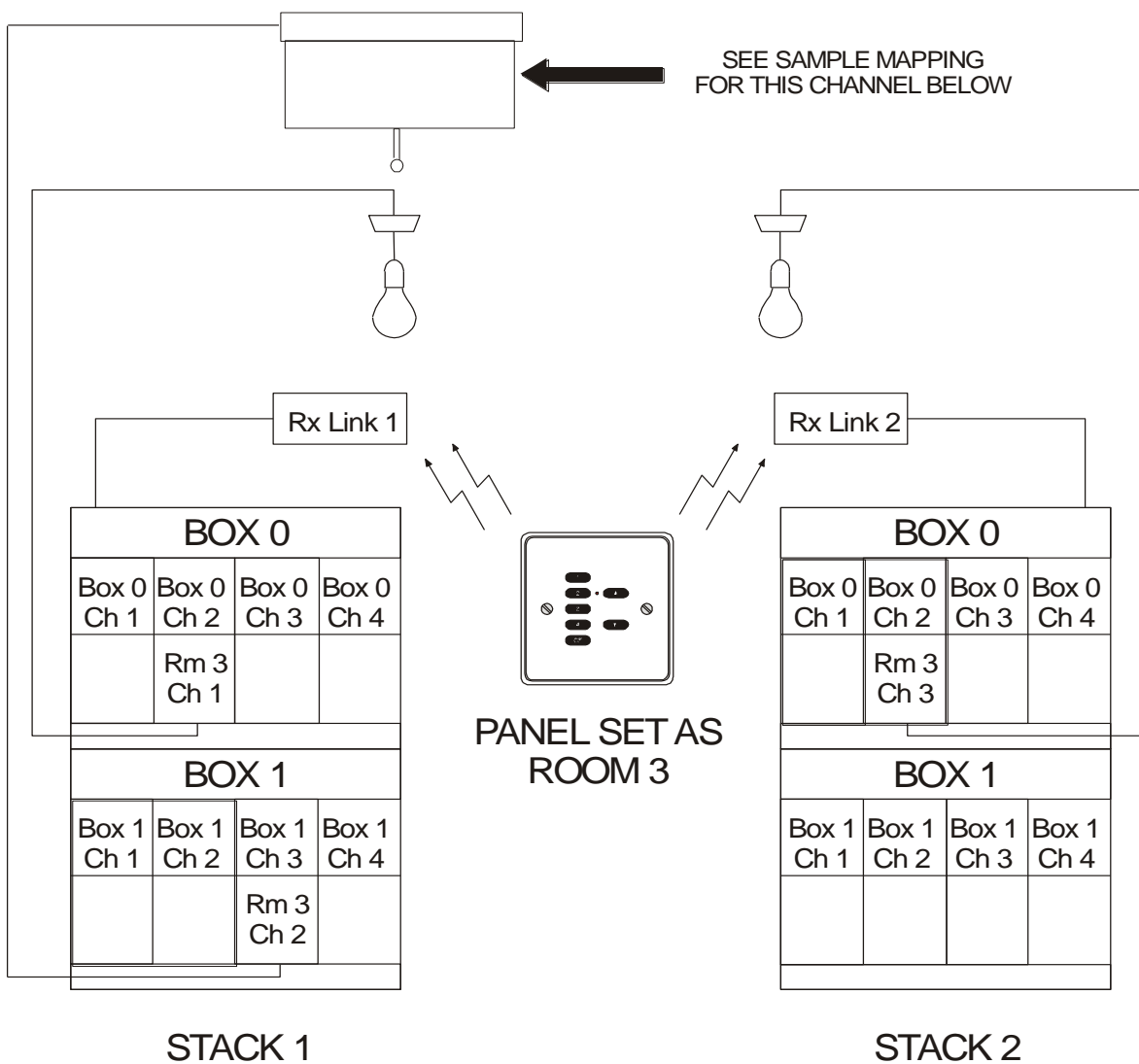
As each new receiver is added to the list in the top of the window, a new mapping sheet is displayed in the lower half of the window for that Rx Link and its associated RAK4's.

Channel Mapping

Once the RAK-4 boxes and Rx-Links are addressed logically the channels in the RAK-4s need to be mapped to the Rako Room and Channel addresses. To do this, select the appropriate receiver in the top right hand box in the mapping window. Then in the line below enter, for each RAK-4 channel, the corresponding Rako Room and Channel address. This mapping information will be stored in the Rx Link and needs to be uploaded by either clicking 'Upload Selected' to upload line by line or by clicking 'Upload All' to upload all the mapping information in one go. A pictorial example of how the mapping is arranged is given in the example overleaf.

Note: It may be helpful to fill in the mapping worksheet (see appendix 2) before commencing the mapping





Receiver Mapping

Receiver

Room: 255 Channel: 1 Ident Add New Receiver

Receiver Room	Receiver Channel
255	1
255	2

Room: 3 Channel: 2 Box: 1 Channel: 3 Profile: Use channel's Own Data Upload Selected

Sample for manual Upload All

Active	Room	Channel	BoxAddress	BoxChannel	Profile	Comment
Yes	3	1	0	2	0	
Yes	3	2	1	3	0	Sample for manual
No						
No						

Mapping Add Refresh List Delete Report

Hints and Tips.

Before addressing the Rx-Links or mapping to the RAK-4 boxes take a Rako control panel and with the default address of House 1, Room 4, press buttons on the control panel and confirm that the blue LED in the Rx-Link flashes to confirm that the Rx-Link is receiving messages. Check that the Link LED on each RAK-4 card flashes to confirm communication from the Rx-Link and check that the channel LEDs will dim up and down. Once correct operation of the system has been proved proceed with addressing the Rx-Link. Again once the Rx-Link has been addressed, set the DIL switches on the control panel to the new house address but set and re-confirm correct operation before starting the mapping. If at any point during mapping it appears as though one channel/channels is not working then check operation from the panel set as Room 0, assuming that the channel then works the problem will be with the mapping of that channel/channels.

Appendix 1 - Factory Default Settings

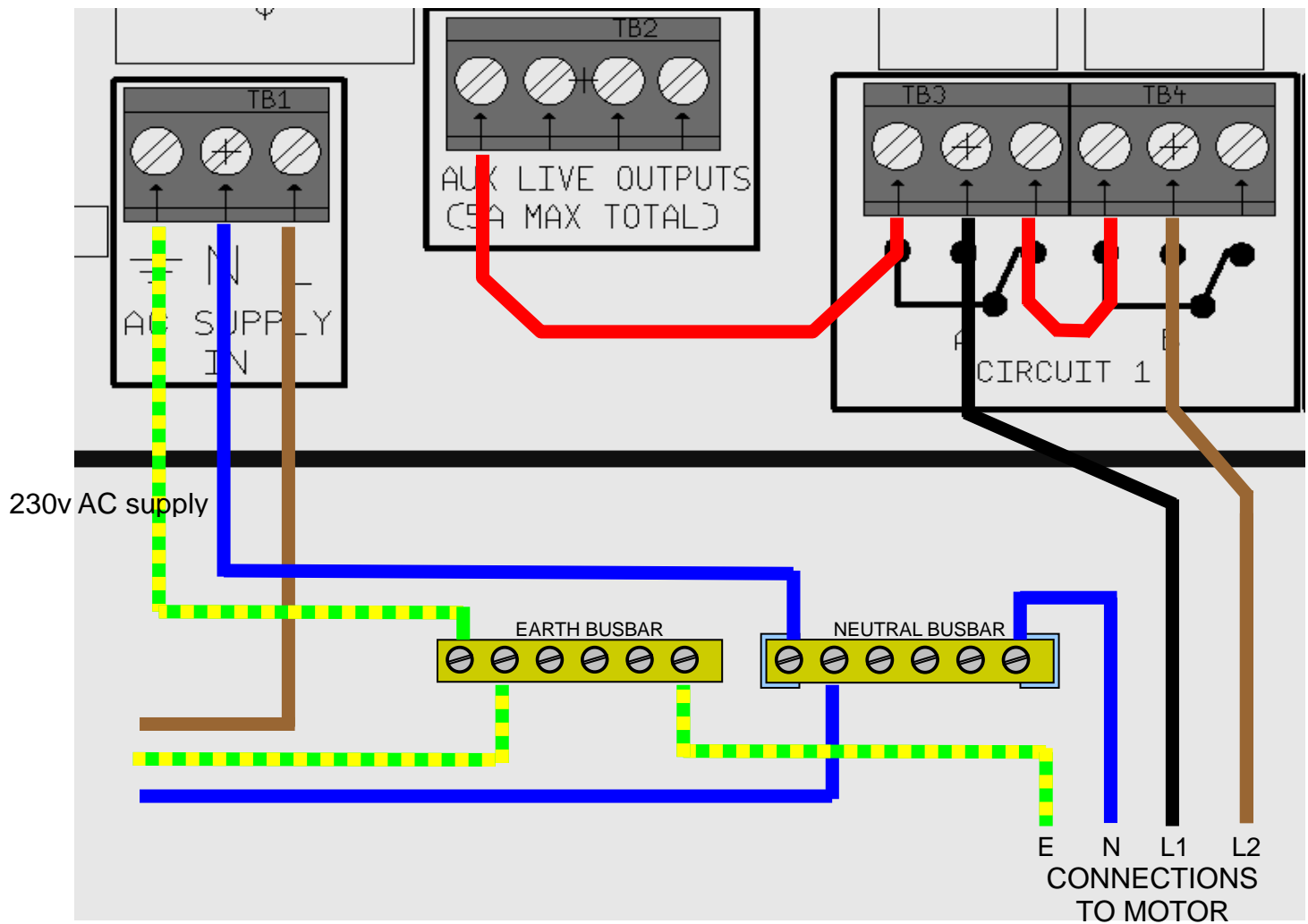
The way in which the channels are linked by default are given in the table below. These can be changed to suit the installation as necessary by using the RASOFT software package and either a RAV232 or RAUSB interface.

Default Rx-Link Room address 255	Default Rako room address		RAK-4 Box number	RAK-4 Physical channel number
	Room	Channel		
1	4	1	0	1
1	4	2	0	2
1	4	3	0	3
1	4	4	0	4
1	5	1	1	1
1	5	2	1	2
1	5	3	1	3
1	5	4	1	4
1	6	1	2	1
1	6	2	2	2
1	6	3	2	3
1	6	4	2	4
1	7	1	3	1
1	7	2	3	2
1	7	3	3	3
1	7	4	3	4

Note: in the above table Rx-Link channels refer to mapping pages in RASOFT. The Rako address refers to physical room numbers and channels (circuits) within each room.

By default the RAK-4 box numbers are set to zero so from power up with an RX-Link module connected the dimmers can be controlled from a Rako RCP07 control pad or other control device. If more than one RAK-4 unit is controlled from an Rx-Link by default channels 1-4 on each box will work in parallel until the box addresses are set to reflect the table above, i.e 2nd RAK-4 set to box 1, 3rd RAK-4 set to box 2, 4th RAK-4 set to box 3.

Appendix 2- Wiring Example for Somfy ac motor



Specifications

Dimensions	253 x 192 x 102mm (w x h x d)
Supply	200-230VAC +/- 10%
	50-60Hz
Output	10A Type C MCB protected supply per RAK-4
Protection	4 x Dual uncommitted changeover relay
	5A 20mm fuse
Terminal sizes	4mm ²
Standards	EMC-EN 5001-1:1992
	Immunity-EN 50082-1:1997 Data

Communication	Rakom coded FM radio or Rako Wired system
Memory	Flash memory (non volatile)
In the Box	Housing x 1
	Circuit board and mounting plate x 1
	Lid & retaining screws x 1
	Joining brackets x 2
	Interconnecting lead x 1

For more information contact Rako Controls Ltd 01634 226666 www.rakocontrols.com