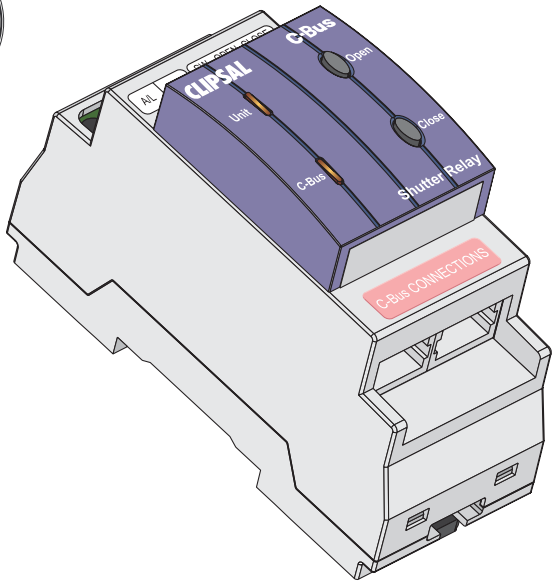
CLIPSAL
LIVING ELECTRICAL

C-Bus Shutter Relay

Installation Instructions

L5501RBCP

TWO YEAR WARRANTY 2



CLIPSAL C-Bus Control and Management System

V1.0 Sep 2007

Contents

1.0 Description

The L5501RBCP C-Bus Shutter Relay is an output unit suitable for controlling motorised curtains, blinds and shutters. The unit has voltage free relay terminals with separate outputs for open/up and close/down.

The L5501RBCP is DIN rail mounted, measuring 2 modules wide (1 module = 17.5 mm). A separate wall mounting enclosure is available for mounting the unit near the curtain, blind or shutter motor.

2.0 Important Notes

- Ensure you set the unit's Fail Safe setting to an appropriate value using C-Bus Toolkit. Refer to Section16.0 (Page 14).
- The use of any software not provided by Clipsal Integrated Systems (CIS) in conjunction with the installation of this product may void any warranties applicable to the hardware.

3.0 Capabilities

The L5501RBCP is used to control one set of motorised curtains, blinds or shutters. It contains interlocked relays for Close, Open and Stop control. It has Active and Neutral inputs with Active Open, Active Close and Switched Neutral (SW-N) outputs.

The unit is capable of generating a C-Bus system clock signal and has a software-selectable network burden. Two local override buttons are provided for Close and Open functions (overriding the current C-Bus state). The unit does not require fan forced cooling.

4.0 Compatible Loads

Any motor running at mains power, 24 V AC or 24 V DC, and rated at up to 2 Amps (M) and intended for blinds, curtains or shutter control can be connected to the L5501RBCP C-Bus Shutter Relay.

5.0 Wiring Instructions

The L5501RBCP unit is capable of handling up to 2 Amps of motor load across the relays. Consider the maximum current draw and the unit's terminal size when selecting cables. The load supply should be protected by a suitably rated circuit breaker.

Consider the following points when installing this unit:

- Fix mains cabling in the distribution board using cable ties or trunking as required by local cabling rules. Take care not to allow copper strands to enter the DIN unit's apertures.
- Apply a maximum torque of 1.4 Nm to the mains rated screw terminals.
- Rubber bungs are supplied for unused RJ45 connectors, to stop foreign bodies from entering the unit. Always install these bungs when the unit is mounted inside a mains rated enclosure.

5.1 AC Motor Control

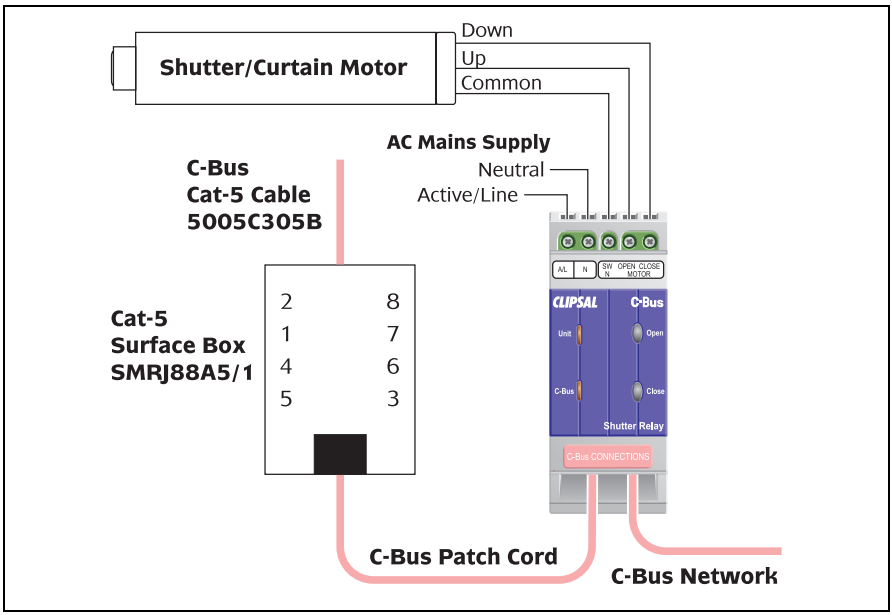


Figure 1 – L5501RBCP wiring using an AC motor

A wiring diagram using the L5501RBCP with an AC motor is shown in Figure 1.

5.2 DC Motor Control

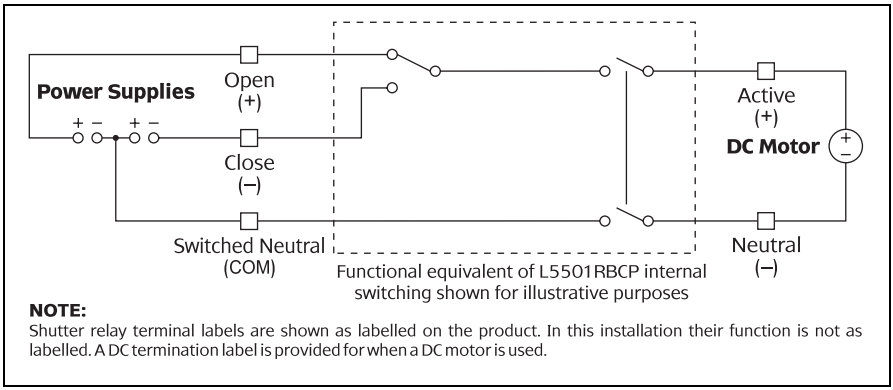


Figure 2 – L5501RBCP wiring using a DC motor

Figure 2 shows how the L5501RBCP is used with a DC motor. When Open is activated, positive polarity is applied to the motor; when Close is activated, negative polarity is applied. In this configuration two power supplies are required.

NOTE

The terminals of the L5501RBCP are labelled for use with an AC motor. When using a DC motor, attach the provided DC termination label over the factory terminal label. Refer to Figure 3.

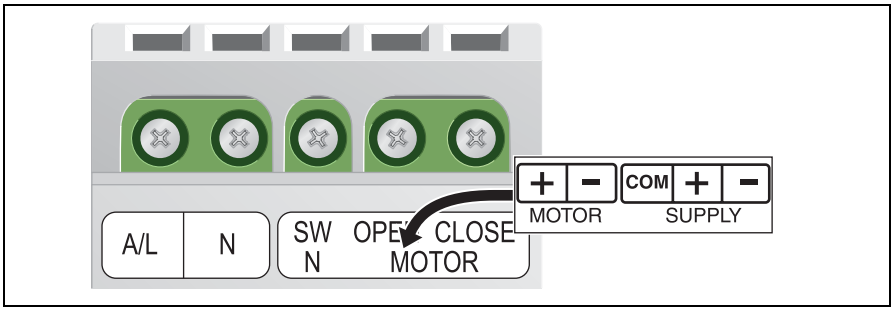
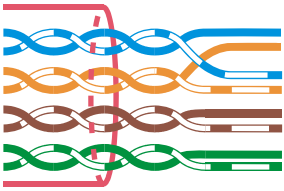


Figure 3 - The alternative label to be attached when a DC motor is used

6.0 C-Bus Network Connection

Connection to the C-Bus network is made via one of the RJ45 sockets. Use Cat-5 Unshielded Twisted Pair (UTP) C-Bus cable, and an appropriately wired RJ45 plug. Pinouts and cable conductor assignments are provided in Figure 4 and Table 1. The RJ45 sockets are internally connected. The Clipsal catalogue number for the C-Bus Cat-5 UTP cable is 5005C305B.



C-Bus Positive: blue + orange
C-Bus Negative: blue & white + orange & white
Remote OFF: brown + brown & white
Remote ON: green + green & white

Figure 4 – C-Bus cable conductor assignments

Pin	C-Bus Connection	Colour
1	Remote ON	green & white
2	Remote ON	green
3	C-Bus Negative (-)	orange & white
4	C-Bus Positive (+)	blue
5	C-Bus Negative (-)	blue & white
6	C-Bus Positive (+)	orange
7	Remote OFF	brown & white
8	Remote OFF	brown

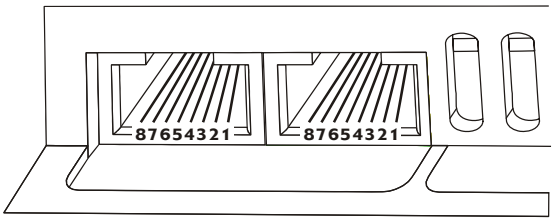


Table 1 – RJ45 sockets and C-Bus pinouts

The L5501RBCP does not have Remote Override functions (Remote ON/Remote OFF). However, these connections must be maintained for correct operation of these services across the C-Bus network.

A Clipsal RJ5CB300PL Cat-5 UTP patch cord is included with the unit for easy interconnection.

Rubber bungs are supplied for unused RJ45 connectors, to stop foreign bodies from entering the unit. Always ensure these bungs are installed when the unit is mounted inside a mains rated enclosure.

7.0 Local Override

Two local override buttons located on the front of the unit activate the Open and Close functions, providing local override capability. Each button illuminates when its respective function is active. Local override buttons perform different functions depending on how they are pressed. This is summarised in Table 2.

Operation	Function
Quick-press	A single quick-press toggles the state of a channel
Long press	Pressing either of the local override buttons for 1 second or more returns the functions to the C-Bus network level
10 second press	Pressing a local override button for 10 seconds or more causes the C-Bus network to enter learn mode

Table 2 – Local override button functions

Note that long press operations only apply when the unit is in local override mode. C-Bus commands received by the unit will (by default) override local override changes. This option may be disabled in software. Refer to Section 8.0, Priority of Operating Modes.

8.0 Priority of Operating Modes

The output status of the L5501RBCP can be changed by:

- pressing a C-Bus button
- a C-Bus command issued from a scene or logic device
- activating a local override button.

Table 3 shows the priority ranking of these control inputs.

Mode	Priority	Function
Local override	1* (highest)	Toggles the function
C-Bus input unit (Neo, PIR , C-Touch, etc.)	2* (lowest)	Controls the functions

Table 3 – Control input priority ranking

*Using local override buttons overrides the normal C-Bus commands such as those issued by input units. By default, once a unit is in local override mode, further relevant C-Bus commands issued by input and control units will override the local override state. This feature can be disabled in software so that all relevant C-Bus commands are ignored by the unit when it is in local override mode.

Further information about programming C-Bus units is provided at the Clipsal Integrated Systems web site (http://www.clipsal.com/cis).

9.0 Status Indicators

9.1 C-Bus Indicator

The “C-Bus” indicator shows the status of the C-Bus network at the unit. If sufficient network voltage and a valid C-Bus clock signal are present, the indicator illuminates (as a continuous orange light). If a network is connected which has a higher current load than the power supplies support, the indicator flashes to show a marginal network voltage. If no C-Bus clock is present, the indicator remains off.

Indicator Status	Meaning
On	Power is on and functional
Flashing	The network voltage is marginal (15 V < voltage < 20 V)
Off	No C-Bus clock signal is present

Table 4 – The "C-Bus" indicator

Further debugging of possible network problems can be achieved using the Clipsal C-Bus Network Analyser tool (5100NA).

9.2 Unit Indicator

The "Unit" indicator shows the status of the individual unit. With normal operation, the indicator illuminates (as a continuous orange light). If a local override button has been used to perform a local override, or if a Remote Override is active, the indicator flashes with a 90% duty cycle.

Indicator Status	Meaning
On	Normal operation
Flashing	Unit is in override mode

Table 5 – The "Unit" indicator

9.3 Function Indicators

Each function (Open and Close) has an associated indicator to display its operating condition. Refer to Table 6.

Indicator Status	Meaning
On	Relay contact is closed
Off	Relay contact is open

Table 6 - Function indicators

10.0 C-Bus System Clock

The L5501RBCP C-Bus Shutter Relay incorporates a software selectable C-Bus system clock. The system clock is used to synchronise data communication over a C-Bus network. At least one active C-Bus system clock is required on each C-Bus network for successful communication. No more than three units on any C-Bus network should have clock circuitry enabled, so this option is normally disabled using the C-Bus Toolkit software.

If a system clock is required, it can be enabled from the unit's "Global" tab in the C-Bus Toolkit software.

11.0 C-Bus Network Burden

The L5501RBCP incorporates a software selectable network burden. The network burden can be enabled from the unit's programming interface in the C-Bus Toolkit software, but only if the unit address is 001 and the C-Bus system clock is also enabled.

One network burden is normally required to ensure correct operation of each C-Bus network. The Network window of a C-Bus Toolkit project provides a summary of a C-Bus network according to the units added to the Database. This can be helpful in determining how many burdens are required on a particular network.

12.0 Power-Up Load Status

C-Bus output units have on-board non-volatile memory, which is used to store the operating state of the unit in case of power loss. On restoration of power, the L5501RBCP initiates a power-up diagnostic routine, which lasts approximately 5 seconds. The Open and Close relays are set to off to maintain the current position of the shutter or curtain motor.

13.0 C-Bus Power Requirements

The L5501RBCP C-Bus Shutter Relay draws 22 mA from the C-Bus network, whether or not the load is connected. The unit does not supply power to the C-Bus network.

Adequate C-Bus Power Supply Units must be installed to support connected devices. The Network window of a C-Bus Toolkit project provides a summary of a C-Bus network according to the units added to the Database. This can be helpful in determining the power supply requirements of a particular network.

14.0 Power Surges

Each unit incorporates transient protection circuitry. Additional external power surge protection devices should be used to enhance system immunity to power surges. It is strongly recommended that overvoltage equipment such as the Clipsal 970 be installed at the switchboard.

15.0 Megger Testing

Important points when megger testing an electrical installation:

- Only megger test when mains cabling is disconnected from C-Bus output units.
- Do not megger test the C-Bus cable.

16.0 Programming

As with other C-Bus units, the L5501RBCP C-Bus Shutter Relay must be programmed before it will function as part of a C-Bus network. This can be accomplished using Learn Mode. However, using the C-Bus Toolkit software provides a greater level of flexibility and customisation.

C-Bus Toolkit is available from the Downloads section of the Clipsal Integrated Systems (CIS) web site (http://www.clipsal.com/cis).

Using C-Bus Toolkit, you must:

- give the unit a unique identification address (unit address)
- select a group address used to control the unit
- set the Fail Safe delay to a value which just exceeds the amount of time taken for the curtains, blinds or shutters to fully open or close. This provides a measure of safety in case the motor's limit switch fails.

You can also customise other settings such as the minimum delay between Open and Close operations, and whether or not Learn Mode is allowed.

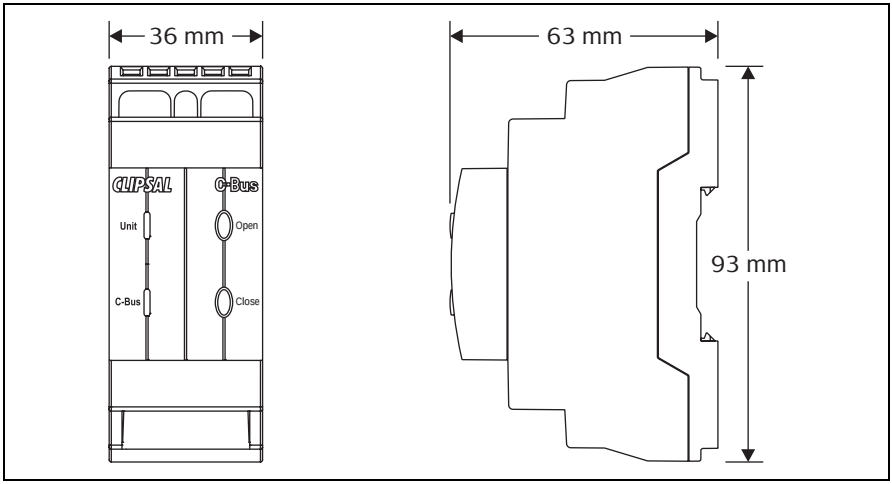
Refer to the C-Bus Toolkit Help documentation for information on the settings (click the Help button from the relevant tab when editing the unit within Toolkit).

17.0 Electrical Specifications

Parameter	Description
C-Bus supply voltage	15 to 36 V DC @ 22 mA Does not supply power to the C-Bus network.
AC input impedance	80 kΩ @1 kHz
Electrical isolation	3.75 kV RMS from C-Bus to mains
Max. units per network	80
Load current rating	2 A (motor load)
Load voltage rating	24 V DC, 24 to 240 V AC
Warm up time	5 seconds
Network clock	Software selectable
Network burden	Software selectable when Unit Address is 001
Class of switch	Class II
Rated impulse withstand voltage	4 kV
Proof tracking index (PTI)	175
Level 3 glow wire	850 °C
IP rating	20
Switch duty type (S2)	Momentary duty
Operating temperature	0 to 55 °C (32 to 131 °F)
Operating humidity	10 to 95% RH

18.0 Mechanical Specifications

Parameter	Description
Dimensions (W×H×D)	36 × 93 × 63 mm (2.83 × 3.35 × 2.56 inches)
Weight	250 g (0.552 lbs)
Mains terminals	Accommodates 2 × 1.5 mm^2 or 1 × 2.5 mm^2 (2 × 15 AWG or 1 × 13 AWG), suitable for flexible and rigid/solid conductors, prepared and unprepared (with or without bootlace ferrules)
Pollution degree	2



19.0 Standards Complied

DECLARATIONS OF CONFORMITY

Australian/New Zealand EMC & Electrical Safety Frameworks and Standards
The L5501RBCP C-Bus Shutter Relay complies with the following:

Regulation	Standard	Title
EMC (C-Tick)	AS/NZ CISPR 14-1	Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus – Part 1: Emissions
Electrical Safety	AS/NZS 61058-1	Switches for appliances – General Requirements

European Directives and Standards
The L5501RBCP C-Bus Shutter Relay complies with the following:

European Council Directive	Standard	Title
EMC Directive 89/336/EEC	EN 55014-1	Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus – Emissions
	EN55014-2	Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus – Immunity – Product family standard
Low Voltage Directive 2006/95/EC	EN 61058-1	Switches for appliances – General Requirements

Other International Directives and Standards

The 5501RBCP C-Bus Shutter Relay complies with the following:

Regulation	Standard	Title
EMC	CISPR 14-1	Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus – Part 1: Emissions
	CISPR 14-2	Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus – Immunity – Product family standard
Electrical Safety	IEC 61058-1	Switches for appliances – General Requirements

20.0 Warranty

The L5501RBCP C-Bus Shutter Relay carries a two year warranty against manufacturing defects.

Warranty Statement

1) The benefits conferred herein are in addition to, and in no way shall be deemed to derogate; either expressly or by implication, any or all other rights and remedies in respect to Clipsal Integrated Systems Product, which the consumer has under the Commonwealth Trade Practices Act or any other similar State or Territory Laws.
2) The warrantor is Clipsal Australia Pty Ltd of 12 Park Terrace, Bowden, South Australia, 5007. Telephone (08) 8345 9500. With registered offices in all Australian States.
3) This Clipsal Integrated Systems Product is guaranteed against faulty workmanship and materials for a period of two (2) years from the date of installation.
4) Clipsal Australia Pty Ltd reserves the right, at its discretion, to either repair free of parts and labour charges, replace or offer refund in respect to any article found to be faulty due to materials, parts or workmanship.
5) This warranty is expressly subject to the Clipsal Integrated Systems Product being installed, wired, tested, operated and used in accordance with the manufacturer's instructions.
6) All costs of a claim shall be met by Clipsal Australia Pty Ltd, however should the product that is the subject of the claim be found to be in good working order, all such costs shall be met by the claimant.
7) When making a claim, the consumer shall forward the Clipsal Integrated Systems Product to the nearest office of Clipsal Australia Pty Ltd with adequate particulars of the defect within 28 days of the fault occurring. The product should be returned securely packed, complete with details of the date and place of purchase, description of load, and circumstances of malfunction.

For all warranty enquiries, contact your local Clipsal sales representative. The address and contact number of your nearest Clipsal Australia office can be found at http://www.clipsal.com/locations or by telephoning Technical Support (refer to the back page).

Technical Support and Troubleshooting

For further assistance in using this product, consult your nearest Clipsal Integrated Systems (CIS) Sales Representative or Technical Support Officer.

Technical Support Contact Numbers	
Australia	1300 722 247 (CIS Technical Support Hotline)
New Zealand	0800 888 219 (CIS Technical Support Hotline)
Northern Asia	852 2484 4157 (Clipsal Hong Kong)
South Africa	(011) 314 5200 (C-Bus Technical Support)
Southern Asia	603 7665 3555 Ext. 236 or 242 (CIS Malaysia)
United Kingdom	0870 608 8 608 (Schneider Electric Support)

Technical Support email: techsupport.cis@clipsal.com.au
Sales support email: sales.cis@clipsal.com.au

Worldwide contacts are provided at http://www.clipsal.com/locations/
Information and resources are provided at http://www.clipsal.com/cis/

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