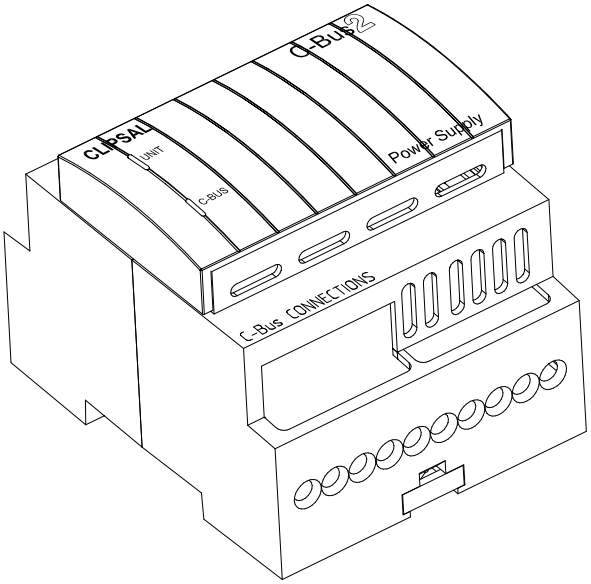
C-Bus DIN Rail Power Supply Unit, 350mA

Installation Instructions

5500PS Series



REGISTERED PATENT

3042248

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1.0 Product Range

5500PS C-Bus DIN Rail Power Supply, 350mA (220-240V, 50-60 Hz)
E5500TPS C-Bus DIN Rail Power Supply, 350mA (110-120V, 50-60 Hz)

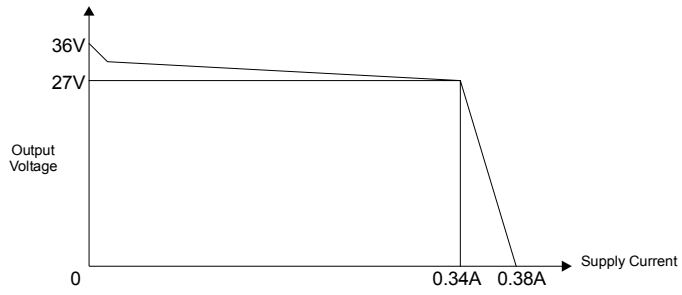
2.0 Description

The 5500PS Series Power Supply is the C-Bus power source, providing the power to each unit on the Network for it to operate. For ease of installation they are DIN rail mounted, measuring 4M wide (1M = 17.5 +0.5/-0.0 mm). C-Bus connection is conveniently achieved through the use of RJ45 connectors, allowing similar units to be quickly looped together.

3.0 Capabilities

The 5500PS Series Power Supply provides up to 350mA of current to the isolated 36Vd.c. safety extra low voltage C-Bus Network. Each Power Supply, allowing for voltage drops due to cable resistance, can support up to 18 C-Bus devices (@ approx. 18mA per unit). A maximum of five (5) 5500PS Series Power Supply units may be connected in parallel to support the required number of devices on the C-Bus Network. The unit number limit is dictated by the maximum short circuit current of 2A.

(**Note:** A PC interface counts as two units which should be taken into consideration when counting the number of units per Power Supply).

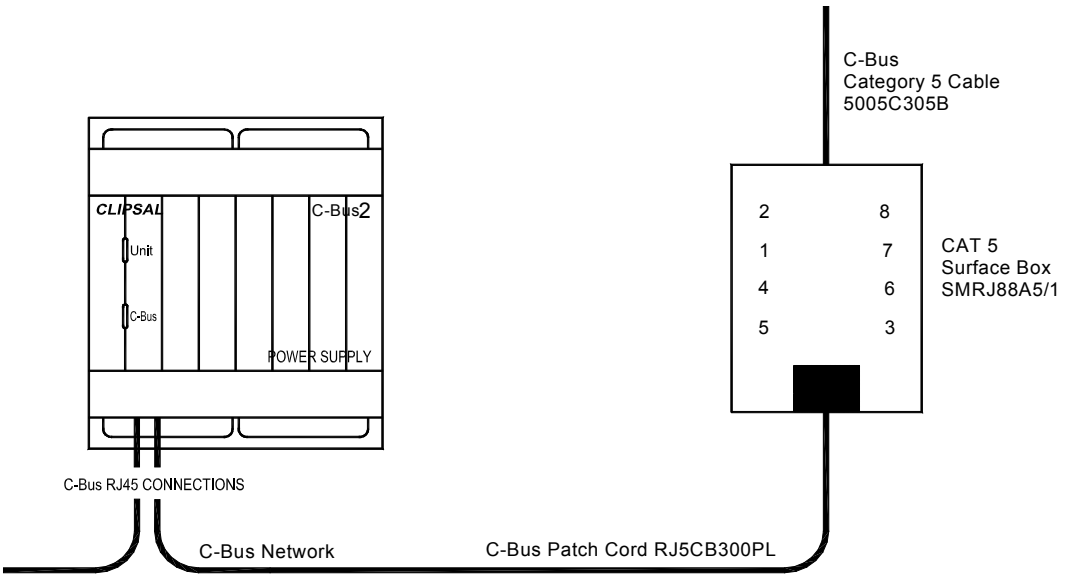


The minimum operating voltage of any C-Bus unit on the Network is 15Vd.c. Owing to voltage drops due to cable resistance, it is recommended that Power Supplies be distributed evenly along the C-Bus Network. Under all conditions it must be ensured that the maximum voltage drop between a C-Bus unit and the closest power supply is limited to 10V.
When calculating the voltage drop the designer should consider the total C-Bus supply current flowing along the particular path of interest. For simplicity, it can be assumed that the CAT5 C-Bus cable resistance is 1 Ohm(Ω) per 10m. The DC output regulation characteristics of the unit ensures that the load will be shared fairly between multiple Power Supplies.

The C-Bus Power Supply is short circuit proof, and protected against thermal or electrical overload. The unit isolates the mains power from the safety extra low voltage of the C-Bus Network.

Why use a C-Bus Power Supply?
C-Bus communications consist of bipolar voltage pulses superimposed on the Bus voltage. The C-Bus Power Supply Unit has been designed to have a low d.c. output resistance, while at the same time present a high a.c. impedance at the communications frequencies (between 500Hz and 20kHz). For this reason, standard off the shelf power supplies are not suitable for use with the C-Bus Network.

4.0 Wiring Instructions

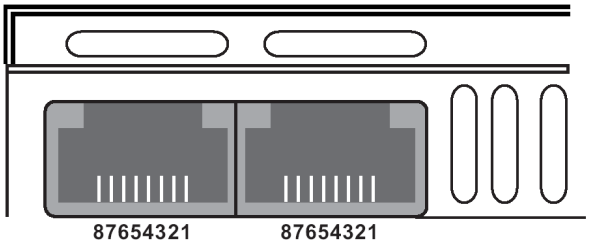


NOTE:

- A maximum of 5 x 5500PS C-Bus DIN Rail Power Supply units can be connected to a single C-Bus Network.
- Other units which incorporate a C-Bus Power Supply (such as the 5100PS, 5104D5, 5512RVF), may be used in conjunction with the 5500PS Series DIN Power Supply, provided that the maximum 2A limit is observed (limitation imposed by CAT5 cable and RJ connector specifications). The user must also comply with any specific installation instructions given for those additional units. Please consult the C-Bus Calculator network design verification software for further details.
- The installer must fix mains cables in the distribution board using cable ties or trunking as required by local wiring rules. Care must be taken not to allow copper strands to enter the DIN unit's apertures.
- A maximum torque of 1.4Nm should be applied to the mains rated screw terminals.
- Rubber bungs are supplied (3 off) for unused RJ45 connectors, to stop foreign bodies from entering the unit. Always ensure these bungs are installed when the Unit is to be mounted inside a mains rated enclosure.
- **Use copper wire only**.

5.0 Connection to the C-Bus Network

Installation requires connection to the unshielded twisted pair C-Bus Network Cable. This illustration shows the recommended technique for cable termination giving the best electrical performance. It is required that Category 5 data cable is used, Clipsal catalogue number 5005C305B.



RJ Pin	C-Bus Connection	Colour
1	Remote ON *	Green/White
2	Remote ON *	Green
3	C-Bus Neg (-)	Orange/White
4	C-Bus Pos (+)	Blue
5	C-Bus Neg (-)	Blue/White
6	C-Bus Pos (+)	Orange
7	Remote OFF *	Brown/White
8	Remote OFF *	Brown

* (Not used by 5500PS unit)

6.0 Status Indicators

6.1 C-Bus Indicator

This indicator shows the status of the C-Bus Network at this unit. If sufficient network voltage and a valid C-Bus Clock signal are present then the 'OK' signal will be displayed (continuous green light). If a Network is connected which has more current load than the power supplies can support, then this indicator will flash to show a marginal Network voltage. If there is no C-Bus Clock present then this indicator will not light.

Indicator Status	Meaning
On	Power on and functional
Flashing	Insufficient power to support Network
Off	No C-Bus connected No C-Bus Clock Signal present

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

6.2 Unit Indicator

This indicator shows the status of the individual unit. When C-Bus is supplied to the unit, 'OK' will be displayed (continuous green light). If any of the four channels have been toggled (using Override facilities) into a state other than is present on the C-Bus network, this indicator will flash with a 90% ON duty cycle. This applies to either Local or Remote Override inputs.

Indicator Status	Meaning
On	Normal operation
Flashing	Unit in override mode
Off	No C-Bus connected

7.0 Programming Requirements

Unlike other C-Bus units, the Power Supply does not require any programming.

8.0 Output Current Limiting

One of the many advantages of the C-Bus extra low d.c. operating voltage, is that connections can be made whilst the Network is still powered up. Should a short circuit occur while this is happening, the Power Supply's output current limiting / overload circuitry will protect it from damage for an indefinite period of time.

9.0 Power Surges and Short Circuit Conditions

The mains voltage must be limited to the range specified for any unit, which is mains powered. 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.

10.0 Megger Testing

Megger testing must never be performed on the C-Bus data cabling or terminals as it may degrade the performance of the Network.

Megger testing of mains wiring of an electrical installation that has C-Bus Units connected will not cause any damage to C-Bus Units. Since C-Bus Units contain electronic components, the installer should interpret megger readings with due regard to the nature of the circuit connection.

11.0 Standards Complied

DECLARATIONS OF CONFORMITY

European Directives and Standards
Model 5500PS complies with the following:

European Council Directive		Standard	Title
89/336/EEC	EMC Directive	IEC61204-3; EN61204-3 EN61000-3-2 EN61000-3-3 IEC61000-4-2 IEC61000-4-3 IEC61000-4-4 IEC61000-4-5 IEC61000-4-6 BS/EN 61000-4-11	LV Power Supplies EMC Standard EMC LF Standard EMC LF Standard Immunity to ESD Immunity to RFI Immunity to EFT Immunity to Surge Voltages Immunity to Conducted RFI Immunity to Voltage Dips and Interruptions
97/32C/EEC	Low Voltage Directive	IEC 61558-1 IEC 61558-2-17	Transformer Safety Standard Transformer Safety Standard

Australian/New Zealand EMC & Electrical Safety Frameworks and Standards
Model 5500PS complies with the following:

Regulations	Standard	Title
EMC (C-Tick)	IEC61204-3; EN61204-3 EN61000-3-2 EN61000-3-3	LV Power Supplies EMC Standard EMC LF Standard EMC LF Standard
Electrical Safety	AS/NZS 3100 AS/NZS 3108; IEC 742	General Requirements for Electrical Equipment Requirements for Safety Extra Low Voltage

U.S. and Canadian Product Safety Standards and U.S. FCC Regulations
Model E5500TPS complies with the following:

Standards/Regulations	Title
CSA C22.2 No. 107.1 UL1012	General Use Power Supplies Power Units Other Than Class 2
Tested to FCC Standards for Home or Office Use	FCC Part 15 ANSI C63.4

Supplemental Information
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesirable operation

Class B Product

NOTE:
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

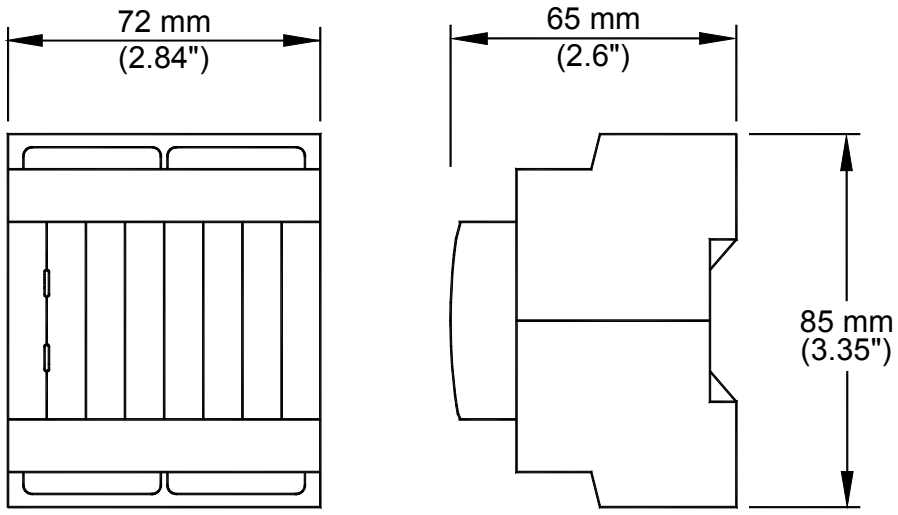
- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

Warning: Any changes or modifications not expressively approved by Clipsal Integrated Systems could void the user's authority to operate this equipment.

12.0 Important Warning

The use of any non-approved software in conjunction with the hardware installation without the written consent of Clipsal Integrated Systems may void any warranties applicable to the hardware.

13.0 Mechanical Specifications



No user serviceable parts inside.

14.0 Electrical Specifications

Catalogue No.	5500PS	E5500TPS
Nominal Supply Voltage	220-240V~	110-120V~
Frequency Range(s)	47-53Hz and 57-63Hz	
C-Bus Supply Voltage	15-36V DC @ 350mA	
C-Bus Current Output	Sources 350mA to the C-Bus Network with mains power connected	
DC Output Resistance	Approx. 22Ω	
AC Input Impedance	>60kΩ @1kHz	
Electrical Isolation	3.75kV RMS from C-Bus to Mains	
Status Indicators	**C-Bus Indicator** On Flashing Off **Unit Indicator** On Off **C-Bus Network Status** Voltage ⩾ 20V DC Voltage < 20V DC Voltage < 15V DC **Mains Power Status** Present Fail	
Maximum Number of Units on a Single C-Bus Network	5	
Load Rating	350mA Able to support up to 18 units (@ 18mA each) on the C-Bus Network.	
Power Supply Type	High Impedance Switch Mode Power Supply	
Quiescent Power	15 Watts Max	
Warm Up Time	3 seconds	
Dimensions	72 x 85 x 65 mm (2.84 x 3.35 x 2.6 inches)	
Mains Terminals	Accommodates 2 x 1.5mm^2 or 1 x 2.5mm^2 (2 x 16 AWG or 1 x 13 AWG)	
Weight	200g (7oz)	
C-Bus Connections	2 x RJ45 sockets	
Operating Temperature Range	0 - 45^{0}C (32 - 113^0 F)	
Operating Humidity Range	10 – 95% RH	

NOTES:

Further Information

For further information about configuring this product and other C-Bus devices, please consult the documentation supplied. Further assistance can be obtained as follows:

- **C-Bus Manuals**
  The 5000M/2 C-Bus Technical Manual provides a comprehensive and definitive guide to Clipsal C-Bus. Includes hardware and software specifications, product datasheets, system design and installation guides, and software overview with fully worked programming examples.

- **C-Bus Installation Software**
  The 5000S/2 C-Bus Installation Software (includes 5000M/2 C-Bus Technical Manual) may be used to unlock the power and flexibility of Clipsal C-Bus. Unit operation may be completely customised to suit user requirements. Advanced control functions may be programmed.

- **C-Bus Installer Training Courses**
  Contact your nearest Clipsal Integrated Systems Sales or Technical Support Officer and enquire about Clipsal C-Bus Installer Training and Certification Programs today !!

- **Technical Support and Troubleshooting**
  For further assistance, please consult your nearest Clipsal Integrated Systems Sales Representative or Technical Support Officer.

Technical Support Hotline	1 300 722 247 (Cost 25¢ per call, Australia Only)
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Sales Support Email	sales.cis@clipsal.com.au
Clipsal Integrated Systems Website	clipsal.com/cis

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