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C-Bus™
Energy Management System

C-Bus DSI Gateway

Installation Instructions

5508DSIP Series

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1. Product Range

5508DSIP   C-Bus Eight Channel DSI Gateway (220-240V, 50-60Hz)
E5508TDSIP   C-Bus Eight Channel DSI Gateway (110-120V, 50-60Hz)

2. Description

The C-Bus DSI Gateway is a C-Bus output device, designed to control TRIDONIC$_\circledR$ DSI Dimming ballasts or equivalent products. For ease of installation the 5508DSIP range is DIN mounted, measuring 12M wide (1M=17.5 +0.5/-0.0mm). Eight independent channels are provided for general DSI dimming control applications. Remote access to diagnostic information is available for all fittings via software tools.

3.0 Capabilities

This DSI Gateway provides two C-Bus connections through the use of RJ45 connectors, allowing similar units to be quickly looped together. In normal operation, where the DSI Gateway is connected to the mains, the unit draws no power from the C-Bus network. If the DSI Gateway is disconnected from the mains, the unit will draw 18mA from the C-Bus network. The DSI Gateway is capable of generating C-Bus clock signals. Together with the C-Bus power supply, it provides all the support necessary for a simple C-Bus network. Local toggle buttons are provided to allow individual DSI channels to be toggled at each unit as well as via C-Bus commands.

4.0 Compatible Loads

The C-Bus DSI Gateway is designed to supply 200mA per channel, which can control up to 100 TRIDONIC$_\circledR$ DSI dimming ballasts or equivalent products

5.0 Wiring Instructions
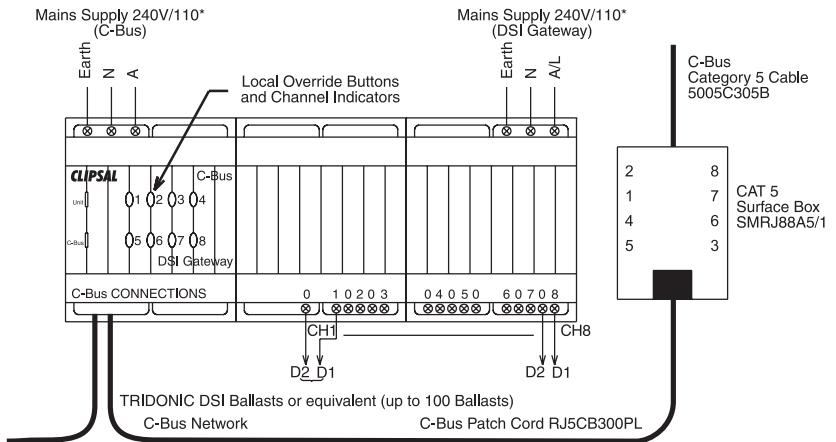
* For 5508DSIP use 240V~, 50/60Hz and for E5508TDSIP use 110V~, 50/60Hz

Notes:

1. A maximum of 100 C-Bus DSI Gateway units can be connected to a single C-Bus network.

2. The installer must fix mains cabling in the distribution board using cable ties or trunking as required by local cabling rules. Care must be taken not to allow copper strands to enter DIN unit apertures.

3. Mains connections to the unit are internally isolated. The two mains supplies may be wired from different voltage phases, but DO NOT CROSS NEUTRAL CONNECTIONS.

Note: Rubber bungs are supplied (3 off) for unused RJ45 connectors, to stop foreign bodies from entering the unit.

6.0 C-Bus DSI Gateway Features
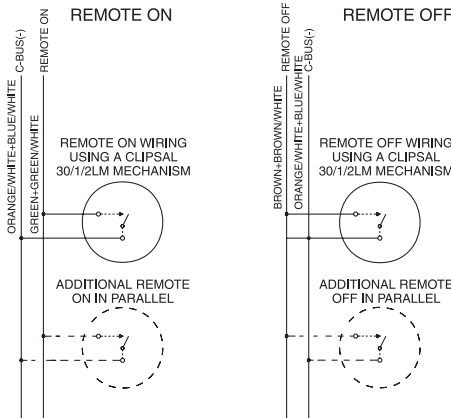
6.1 Local Override Buttons

The buttons located on the front of the unit provide a means to toggle each channel locally. Each button is illuminated when the respective channel is in the ON state.

Operation	Function
Short Press	Toggle
Double Click (two short presses within 2 seconds)	Returns this channel only to the C-Bus network level
Long Press (a press longer than 2 seconds on any local override button)	Returns ALL channels to C-Bus network level

Note: Double Click and Long Press operations will only occur if the unit/channel is already in override mode.
By default C-Bus commands received by the unit will override local toggle changes. In this case only the channels associated with the received commands will revert to the current C-Bus network state. This option may be disabled via installation software. Please refer to Section 7, Priority of Operating Modes.

6.2 Remote Override Facility

Remote control of all channels on a unit can be achieved via the extra pairs of conductors on the C-Bus connector. C-Bus is a balanced network, therefore at any point where C-Bus negative (-) is taken, C-Bus positive (+) must also be present. Hence both network conductors must be looped through all remote input switches on the network. The diagram below shows how switches may be connected in parallel on any one network, using the green and green/white conductors for a remote ON function. Brown and brown/white may be wired in the same fashion for remote OFF, with these conductors being connected to C-Bus negative (-) via the switch to action state. A Clipsal 30/1/2LM mechanism makes an ideal remote input switch.

REMOTE ON

ORANGE/WHITE+BLUE/WHITE — C-BUS(-)
GREEN+GREEN/WHITE — REMOTE ON

REMOTE ON WIRING
USING A CLIPSAL
30/1/2LM MECHANISM

ADDITIONAL REMOTE
ON IN PARALLEL

REMOTE OFF

BROWN+BROWN/WHITE — REMOTE OFF
ORANGE/WHITE+BLUE/WHITE — C-BUS(-)

REMOTE OFF WIRING
USING A CLIPSAL
30/1/2LM MECHANISM

ADDITIONAL REMOTE
OFF IN PARALLEL

6.3 Network Burden

The DSI Gateway incorporates a software selectable Network Burden. This Burden may or may not be required in order to ensure correct operation of the C-Bus Network. To enable the on-board Burden, set the Unit Address to 001.

6.4 Channel Overload or Short Circuit Detection

Channel overload occurs when the terminals of the channel are shorted or the connected load draws more than 200mA. In such cases the DSI Gateway will shut down the channel and the corresponding channel LED indicator flashes at approximately 8 times per second.

6.5 Channel Faulty Lamp/Ballast Detection

The DSI Gateway is also capable of detecting faulty lamps connected to its terminals.

When this occurs, the DSI Gateway will shut down the channel and the corresponding channel LED indicator flashes at a slower rate of approximately 4 times per second.

6.6 Power Fail Recovery Options

In the event both the C-Bus Network voltage and the Mains Supply (C-Bus) fail (or are disconnected) the DSI Gateway has three software selectable output recovery options (per channel). When either the C-Bus Network voltage or the Mains Supply (C-Bus) is restored, each channel will recover to one of the following three options:

1)   Brightness of the load prior to power interruption is retained, or

2)   The load is set full on (100% brightness), or

3)   The load is turned off (0% brightness)

If the Mains Supply (DSI Gateway) fails (or is disconnected) the loads will continue under the control of their DSI ballasts and remain at levels set before the power interruption.

7.0 Priority of Operating Modes

The output status of the C-Bus DSI Gateway can be changed by pressing a C-Bus Key, by activating any of the Local Override buttons or by using the Remote Override facilities. The table below shows the priority ranking of these control inputs.

Mode	Priority	Function
Remote OFF	1	Turns all channels OFF
Remote ON	2	Turns all channels On
Local Override	3 *	Toggles the channel
C-Bus Input Unit (key, PIR etc.)	4 * (Lowest)	Controls the channel

* Local Override has priority over normal C-Bus commands received on the bus (such as those generated by pressing a C-Bus Key). By default, if any channel is in Local Override mode and a C-Bus command is received for that channel, the C-Bus command state will be imposed ("Enable C-Bus Priority" option). This feature can be disabled in software such that all relevant C-Bus commands will be ignored by the unit whilst in Local Override Mode. For further information relating to the programming of DIN Rail 5508DSIP/ E5508TDSIP units, please refer to the C-Bus Manual (or C-Bus Manual Addendum V211A:C-Bus DIN and PRO Series).

8.0 Indicators

8.1 C-Bus Indicators

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 the "OK" signal will be displayed (continuous green light). If a network is connected which demands more current than the power supplies can support, this indicator will flash showing marginal network voltage. If there is no C-Bus clock present the indicator will not light. When the unit is powered from C-Bus only for stand-alone programming this indicator will not function.

Indicator Status	Meaning
On	C-Bus network operational
Flashing	Insufficient power to support network
Off	No C-Bus clock present; No mains connection

Further debugging of possible network problems can be achieved with the Clipsal C-Bus Network Analyser Tool CAT. No. 5100NA.

8.2 Unit Indicator

This indicator shows the status of the individual unit. A Continuous Green light (OK) indicates the mains power is connected. If the indicator is flashing with a 90% On duty cycle, it means any one of the eight channels have been toggled (using the override facility) into a state different to the C-Bus network. This applies to either Local or Remote Override inputs. This indicator will not function when the unit is powered from C-Bus only for stand-alone programming.

Status	Meaning
On	Normal Operation
Flashing	Unit in override mode
Off	No mains power connected

8.3 Channel Indicator

These indicators show the status of the individual DSI channels.

A steady "ON" Green Light (channel LED) indicates the channel is operating normally and is set to a level above zero dimming. Steady "OFF" indicates the channel is operating normally and is set to zero dimming level.

A slow flashing indicator (approx. 4Hz), indicates the corresponding DSI channel has a faulty DSI ballast connected to its terminals.

A fast flashing indicator (approx. 8Hz) indicates the corresponding DSI channel is overloaded (>200mA) or it's terminals may be shorted.

Indicator Status	Meaning
On	Normal Operation with non-zero DSI dimming level
Off	Normal Operation with zero DSI dimming level
Flashing @ 8Hz approx.	Overload or terminal shorted
Flashing @ 4Hz approx.	Faulty lamp or ballast

9.0   Power-up Load Status

All C-bus units have onboard non-volatile memory, which is used to store the operating state of the unit in case of mains power loss. On restoration of power the DSI Gateway initiates a short power-up diagnostic routine which runs for approximately 5 seconds. Following the diagnostic routine the eight channels will assume levels set by the user programmable option in software (see Section 6.6 "Power Fail Recovery Options"). For further information relating to the programming of the DIN Rail 5508DSIP/ E5508TDSIP units, please refer to the C-Bus Manual (or the C-Bus Manual Addendum V211A: C-Bus DIN and PRO Series).

10.0 C-Bus Power Requirements

In normal operation, where the DSI Gateway is connected to the mains (C-Bus), the unit draws no power from the C-Bus network.

If the mains supply (C-Bus) is disconnected, the unit will draw 18mA from the C-Bus network.
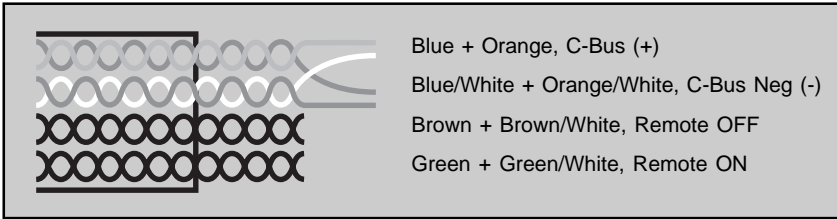
11.0 Stand-alone Programming

A 5508DSIP/E5508TDSIP series product can be programmed without a mains power connection, by connecting the unit to an operational C-Bus network capable of supporting at least one additional C-Bus device (18mA of current required). Once the unit is connected to a network, it can be configured using C-Bus Installation software. Indicators will not function until mains is connected.

12.0 C-Bus Network Connection

It is recommended Category 5 data cable is used, Clipsal catalogue number 5005C305B. Installation of the 5508DSIP products requires connection to the unshielded twisted pair C-Bus Network Cable. This connection is polarity sensitive and clearly shown on the following page.

A Clipsal Cat 5 UTP patch cord is included with the unit for easy interconnection. Up to 100 x DSI Gateway units can be connected to the C-Bus network.

Blue + Orange, C-Bus (+)

Blue/White + Orange/White, C-Bus Neg (-)

Brown + Brown/White, Remote OFF

Green + Green/White, Remote ON

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
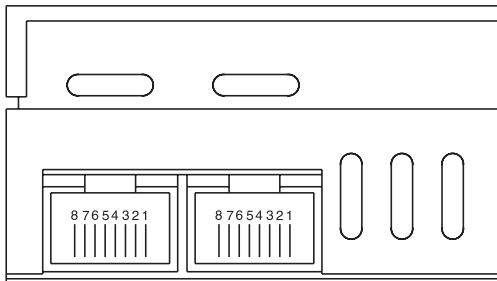
13.0 Programming Requirements

As is the case with other C-Bus units, the DSI Gateway must be programmed to set its unique identification and the mode of operation on the C-Bus Network. The C-Bus Installation Software can be used to configure all operational parameters including the specification of control sources, and power up options. Please refer to the C-Bus Manual for further information relating to the programming of the DSI Gateway unit.

14.0 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 and additional external power surge protection devices can be used to enhance system immunity to power surges. It is strongly recommended over-voltage equipment such as the Clipsal 970 series is installed at the switchboard.

15.0 Megger Testing

Megger testing of the mains powered part of an electrical installation with 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.

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

16.0 Important Warning

The use of any non C-Bus Software in conjunction with the hardware installation without the written consent of Clipsal Integrated Systems may void any warranties applicable to the hardware.
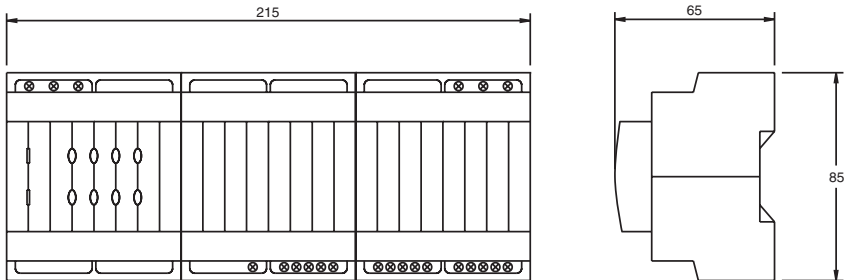
17.0 Standards Complied

The units have been designed to meet Australian and European standards for EMC Compliance and Safety.

AS/NZS 3100:1997	General Requirements for Electrical Equipment
AS/NZS 3108:1994, IEC 742:1983	Requirements for Safety Extra Low Voltage
97/32C/EE	Low Voltage Directives
AS/NZS 1044:1995, IEC/CISPR 14:1993, BS/EN 55014:1994	RFI Emissions Standard
AS/NZS 4051:1998, IEC/CISPR 15:1996, BS/EN 55015:1994	RFI Emissions Standard
IEC669-2-2, BS/EN 60669-2-2	Particular Requirements for Remote Control Switching Devices
BS/EN 61000-4-2	Immunity to Electrostatic Discharge
BS/EN 61000-4-3	Immunity to Radio Frequency Interference
BS/EN 61000-4-4	Immunity to Electrical Fast Transients
BS/EN 61000-4-5	Immunity to Surge Voltages
BS/EN 61000-4-11	Immunity to Voltage Dips and Interruptions
EN 61558	Safety of Power Supplies and Transformers
89/336/EEC	Electromagnetic Compatibility Directive

18.0 Product Specifications

Catalogue Number	5508DSIP	E5508TDSIP
Nominal Supply Voltage	220 – 240V~	110-120V~
Frequency Range(s)	47 – 53Hz and 57 – 63Hz	
C-Bus Supply Voltage	15-36VDC @ 18mA required for programming when mains power is not connected. 15-36VDC @ 0mA required for programming when mains power is connected. Does not source current to the C-Bus network.	
AC Input Impedance	100kΩ @ 1kHz. A maximum of 100 units can be connected on a single C-Bus network.	
Electrical Isolation	3.75kV RMS. from C-Bus to Mains	
Status Indicators	**C-Bus Status** *Clock Present* *No Clock Present* • Voltage $\geq$ 20V DC On Off • Voltage < 20V DC Flashing Off • Voltage < 15V DC Off Off **Unit Status** *Mains Power* *Conditions* • On Present Normal Operation • Flashing Present At least one channel in local or remote override mode • Off Fail Mains power not available **Load Indicators (8)** • On – normal operation and DSI output is at some non-zero C-Bus dimming level. • Off – normal operation and DSI output is at zero C-Bus dimming level. • Flashing, fast rate (8Hz) – DSI channel overloads or output terminals shorted. • Flashing, slow rate (4Hz) – The connected lamp or ballast is faulty.	
Maximum Number of Units on a single C-Bus Network	100	
Load Rating	• 200mA max. per channel (or 100 DSI ballasts). • 270mA max total.	
Interface Type	DSI – Digital Serial Interface	
Compatible Loads	TRIDONIC$_\circledR$ DSI Dimmable ballast or equivalent (up to 100 per channel)	
Channel output voltage	0.0 – 0.8V (low) to 11.0 – 13.0V (high)	
Output control range	0% to 100%.	
Network Clock	Software selectable	
Network Burden	Software selectable (Unit address 01 only)	
Dimensions	215 x 85 x 65mm	
Remote Override Input	Remote switch input can be daisy chained to maximum of 10 units and a maximum of 1000m of cable.	
Mains Terminals	Accommodates 2 x 1.5mm^2 or 1 x 2.5mm^2	
C-Bus Connection	RJ45 socket	
Remote Override Connection	RJ45 socket	
Operating Temperature Range	0 – 45°C	
Operating Humidity Range	10 – 95% RH	

19.0 Mechanical Specifications

Dimensions in millimeters

Note : No user serviceable parts inside.

20.0 Technical Support and Troubleshooting

For further assistance in using C-Bus Eight Channel 5508DSIP/ E5508TDSIP, please consult your nearest Clipsal Integrated Systems Sales Representative or Technical Support Officer.

Technical Support Email   techsupport.cis@clipsal.com.au
Sales Support Email   sales.cis@clipsal.com.au

Clipsal Integrated Systems Website

Please visit the Clipsal Integrated Systems Website for information on new product developments, online software registration, software upgrades, plus much more.

Website   clipsal.com/cis

CLIPSAL®
INTEGRATED SYSTEMS

Products of Clipsal Integrated Systems Pty Ltd

ACN 089 444 931 ABN 15 089 444 931

Head Office
12 Park Terrace, Bowden
South Australia 5007
PO Box 103 Hindmarsh
South Australia 5007

Telephone	(08) 8269 0560
International	+61 8 8269 0560
Facsimile	(08) 8346 0845
International	+61 8 8346 0845

Internet clipsal.com/cis
E-Mail cis@clipsal.com.au

Offices in all States

NSW	Sydney	(02) 9794 9200
	Albury	(02) 6041 2377
VIC	Melbourne	(03) 9207 3200
	Country Areas	1800 653 893
QLD	Brisbane	(07) 3244 7444
	Townsville	(07) 4729 3333
SA	Adelaide	(08) 8269 0555
WA	Perth	(08) 9442 4444
TAS	Hobart	(03) 6272 3177
	Launceston	(03) 6343 5900
NT	Darwin	(08) 8947 0278

International Enquiries
Head Office Export Department

Telephone	+61 8 8269 0587
Facsimile	+61 8 8340 7350

E-Mail export@clipsal.com.au

International Representatives

New Zealand
Clipsal Industries (NZ) Ltd Auckland

Telephone	(09) 576 3403
Facsimile	(09) 576 1015

E-Mail headoffice@clipsal.co.nz

Customer Service

Free Fax	(0508) 250 305
Auckland/Mobile Phone	(09) 572 0014
Free Phone	(0508) CLIPSAL
	2 5 4 7 7 2 5

Malaysia
Clipsal Integrated Systems Sdn Bhd
Lot 26, Jalan Pengapit 15/19
Shah Alam Industrial Estate
40000 Shah Alam
Selangor Darul Ehsan

West Malaysia

Telephone	(3) 5519 1122
Facsimile	(3) 5512 3155

E-mail clipsal@clipsaltech.com.my

Singapore
Clipsal Integrated Systems Pte Ltd
No. 5 Fourth Chin Bee Road
Singapore 619699

Telephone	(65) 266 1998
Facsimile	(65) 266 3922

E-mail clipsal@clipsaltech.com.sg

Argentina
Controles Tecnova S.A.	(114) 207 9534

China
Clipsal (China) Ltd	(755) 246 1122

Greece
Clipsal Hellas S.A.	(1) 600 3718

Middle East
Clipsal Middle East	(6) 557 0777

South Africa
Clipsal South Africa (Pty) Ltd	(11) 314 5200

Taiwan
Clipsal (Taiwan) Co Ltd	(2) 2558 3456

Thailand
Clipsal Thailand Ltd	(2) 952 5338

United Kingdom
Clipsal Ltd (UK)	(44) 1494 521111

Vietnam
Clipsal – VTEC	(8) 856 3002

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