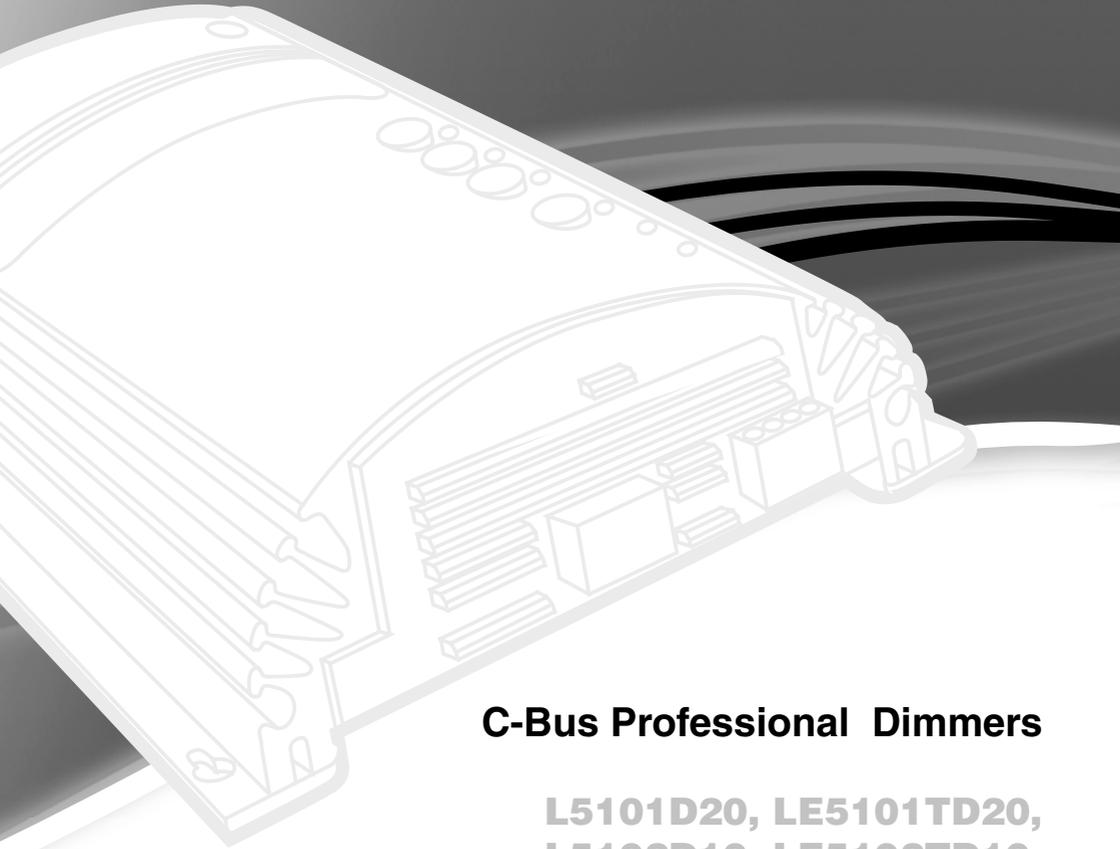


CLIPSAL[®]

by **Schneider** Electric



C-Bus Professional Dimmers

**L5101D20, LE5101TD20,
L5102D10, LE5102TD10,
L5104D5, LE5104TD5**

Series



Installation Instructions

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1.0 Product Range

Catalogue No.	Channels	Current	Supply Voltage (50 or 60 Hz)	
			110V to 120V	220V to 240V
L5101D20	1	20A		✓
L5102D10	2	10A		✓
L5104D5	4	5A		✓
LE5101TD20	1	20A	✓	
LE5102TD10	2	10A	✓	
LE5104TD5	4	5A	✓	

2.0 Important Notes

- Lx510xDx Professional Series Dimmers must be installed by appropriately qualified personnel.
- The use of any software not provided by Clipsal Integrated Systems (CIS) in conjunction with the installation of these products may void any warranties applicable to the hardware.
- Installing the Lx510xDx Professional Series Dimmers in a way which disregards the recommendations in this manual may void the product warranty.

3.0 Description

The Lx510xDx Professional Series Dimmers are C-Bus controlled high power single phase dimmers for incandescent and low voltage lighting applications (iron core and electronic transformer).

Dimming is achieved via the highly efficient leading edge phase control technique. Four channel units (Lx5104x5 series) utilise Triacs. Single and dual channel units (Lx5101x20 and Lx5102x10 series) utilise rugged Silicon Controlled Rectifiers (SCRs).

EMC compliance is maintained by advanced electronic control of the load current waveform, eliminating the requirement for bulky EMI filtering inductors.

Wall mounting aluminium extruded enclosures are used for all models. Local toggle buttons and status indicators are provided. A built-in auxiliary relay with normally-open contacts is provided. This indicates the presence of the AC supply voltage and can be used to trigger emergency lighting applications.

4.0 Capabilities

- Over-temperature and over-current shutdown.
- Soft load turn-on characteristic to reduce mechanical stress on lamp filaments.
- Load brightness level is held constant when AC supply voltage varies while unit is actively dimming.
- Current dimming output levels are stored at loss of AC supply voltage.
- Adjustable power-up delay of previously set dim levels.
- Linear output load power variation versus input control C-Bus Group Address level.
- Load brightness during dimming remains relatively unaffected by the presence of typical AC-supply ripple control signals.
- Front panel LED indicating C-Bus network connection status.
- Average channel load current and C-Bus network voltage measurement available via C-Bus network.
- Built-in 60 mA power supply to power additional units on the C-Bus network.
- Built-in selectable C-Bus network burden and network clock generator for simple network installations.

5.0 Load Compatibility

Table 1 shows the loads that are compatible with the Lx510xDx C-Bus Professional Series dimmers.

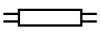
Load Symbol	Compatible Loads	Full Load Rating Per Channel		
		Lx5104x5	Lx5102x10	Lx5101x20
	Incandescent lighting halogen 110/240V lamps	5A	10A	20A
	Low voltage or neon** lighting with iron-core transformers			
	†Low voltage (LV) lighting with electronic transformers			
	*Exhaust fans (shaded pole induction motors) *§Ceiling fans (split-phase induction motors)	2A		
	*Fluorescent lighting	2AX		

Table 1 – Loads compatible with the Lx510xDx Series dimmers.

* Fluorescent lamps may be switched but not dimmed. For each channel connected to a fluorescent load, set the minimum Turn On level to 100% using the C-Bus Toolkit software. A Power Factor Correction (PFC) capacitor must be fitted.

** A 5100NLA (Neon Lighting Adaptor) must be used in conjunction with neon lamps. Only iron core transformers compatible with electronic switches may be used to ensure compliance with IEC 60669-2-1.

† The number of electronic transformer loads which may be connected to a channel depends on the transformer model used. Refer to the Technical Support → FAQs → Transformer section of the Clipsal Integrated Systems web site (<http://www.clipsal.com/cis>) for information of calculating the maximum load.

‡ Ensure that an appropriate manually operated mechanical isolating switch and circuit breaker is installed with the motor, in order to comply with local wiring rules applicable to the region.

§ Some fans produce audible noise when the dim level is less than 100%.

5.1 Electronic Transformers – Limited Load Rating

Electronic transformers for Low Voltage (LV) lighting are less preferred for leading edge phase control dimming due to the capacitive loading presented to the dimmer unit.

The maximum low voltage lighting load that can be controlled with these types of electronic transformers can be calculated if a transformer's input capacitance is known. Refer to the Technical Support → FAQs → Transformer section of the Clipsal Integrated Systems web site (<http://www.clipsal.com/cis>) for further information.



WARNING

Exceeding the loading limit for electronic transformers may result in excessive EMI emissions or cause damage to the dimmer unit channel.

5.2 Fluorescent Lighting

The dimmer output may be configured to switch (but not dim) low power iron-core ballasted fluorescent lighting. However, the load power factor correction capacitance must not exceed 1.0 μ F per channel. This limit applies to all Lx510xDx Series models.

6.0 Mounting Considerations

The C-Bus Professional Series Dimmers supply high current when controlling full rated loads, causing them to dissipate a significant amount of heat. It is recommended you mount the units vertically with mains wiring at the top. If mounting in an enclosure, ensure there is adequate ventilation to optimise operating reliability. At no time should the internal temperature of the enclosure exceed 45 °C (113 °F).

In installations where multiple dimmers are used, the minimum clearance between units must be 30 mm (1.18 inches) side by side (base to base) and 100 mm (3.94 inches) end to end, while observing all wiring safety regulations. This is illustrated in Figure 1.

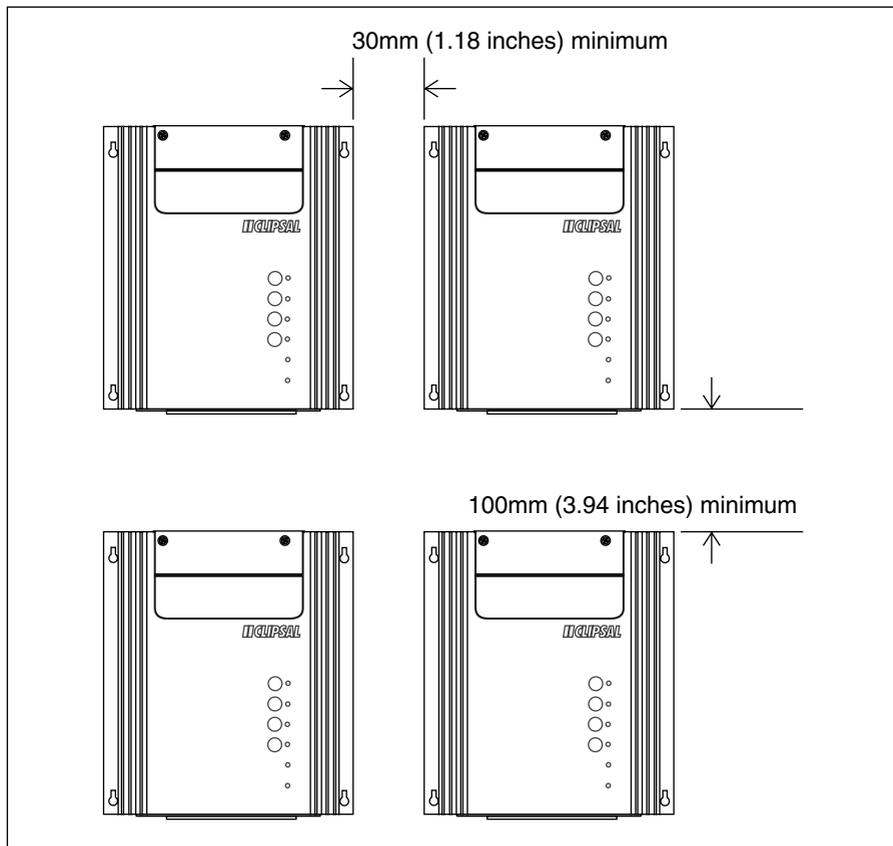


Figure 1 – Mounting clearance for multiple units.

If mounting in a non-vertical orientation or with less clearance than specified, the capacity of each channel must be derated by 20%. Poor ventilation may cause automatic thermal shut down. Current capacities for the rated operating voltage at 45 °C (113 °F) are provided in Table 2.

Catalogue Number	Rated Current per Channel	Derated Current per Channel
L5104D5/LE5104TD5	5	4
L5102D10/LE5102TD10	10	8
LE101D20/LE5101TD20	20	16

Table 2 – Derating of units mounted in non-standard configurations.

7.0 Wiring Instructions

The L5101xD20, L5102xD10 and L5104xD5 Series units are capable of handling up to one 20 Amp, two 10 Amp, and four 5 Amp dimmed channels respectively. Adequately consider the total current consumption when selecting power feed cables, and allow for multiple feed cables. The load supply should be protected by a 20 Amp circuit breaker.

Wiring diagrams for the Lx510xDx Series dimmers are provided in Figures 2 to 4. Consider the following points when installing these units:

- Do not wire dimmer channels in parallel.
- Do not short dimmer channel outputs to Neutral or Earth.
- Load terminals are not isolated when the output is in the off state.
- A maximum of 30 Lx510xDx Series dimmers can be connected to a single C-Bus network.

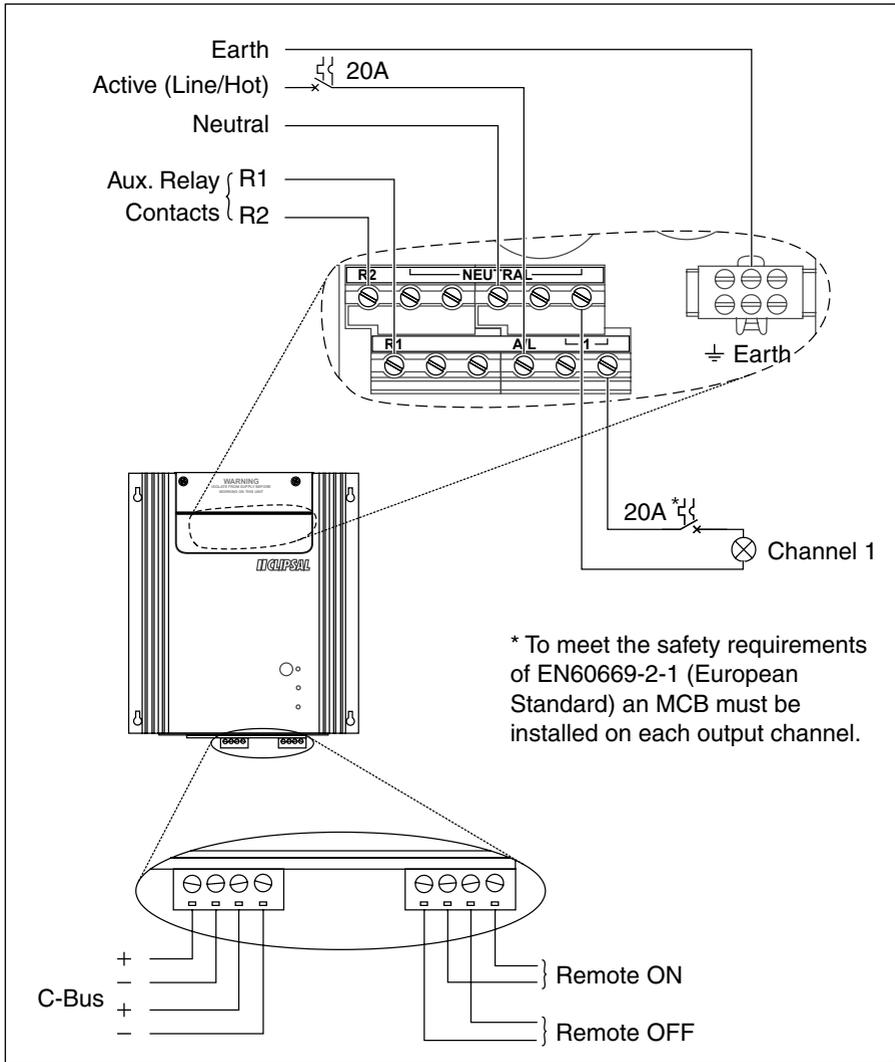


Figure 2 – Lx5101xD20 Series wiring.

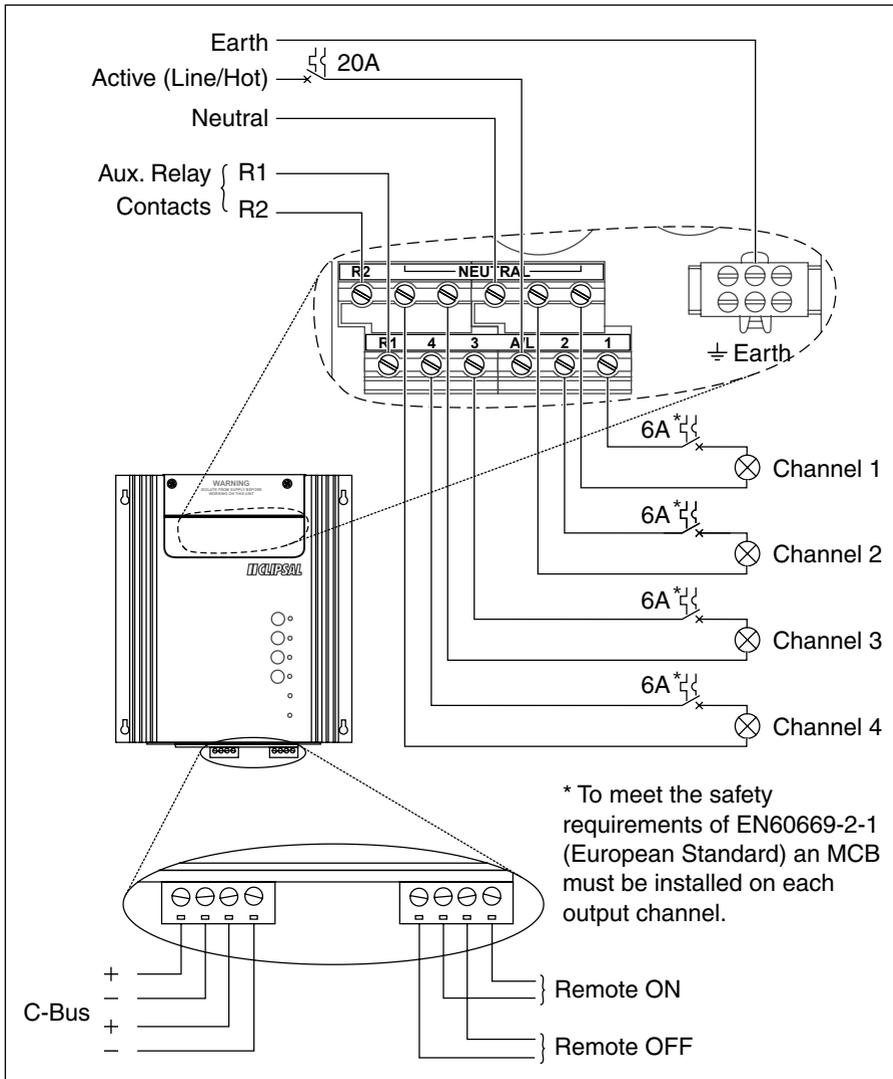


Figure 4 – Lx5104xD5 Series wiring.

8.0 C-Bus Network Connection

Connection to the C-Bus network is made via the Phoenix connectors on the base of the Lx510xDx Series unit. Use Cat-5 Unshielded Twisted Pair (UTP) C-Bus cable, and an appropriately wired 4 pin Phoenix plug. The use of bootlace ferrules (crimps) is recommended for a reliable connection.

C-Bus cable conductor assignments are provided in Figure 5. The Clipsal catalogue number for the C-Bus Cat-5 UTP cable is 5005C305B.

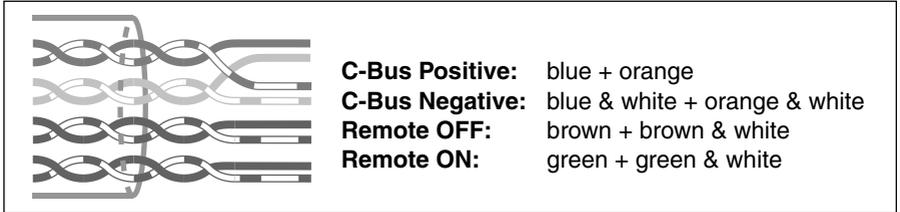


Figure 5 – C-Bus cable conductor assignments.

Pinouts for a standard C-Bus connection are provided in Table 3. The Remote Override on Lx510xDx Series dimmers is capable of working independently of the C-Bus network (see Section 9.2). The REMOTE pinouts in Table 3 do not apply in this mode.

Terminal		C-Bus Connection	Colour
C-Bus (out/in)	+	C-Bus Positive (+)	blue + orange
	-	C-Bus Negative (-)	blue & white + orange & white
C-Bus (in/out)	+	C-Bus Positive (+)	blue + orange
	-	C-Bus Negative (-)	blue & white + orange & white
Remote	C	Link either terminal to C-Bus Negative above	
	C		
	OFF	Remote OFF	brown + brown & white
	ON	Remote ON	green + green & white

Table 3 – Pinouts for a standard C-Bus connection.

NOTE: Each '+', '-', and 'C' terminal is internally connected to the other terminal of the same name.

There are several methods of wiring, depending on how the Remote Override is to be used, and whether a C-Bus cable is to be daisy-chained (looped) to another C-Bus device.

Figure 6 shows the wiring of a C-Bus cable, where the Remote Override is connected to the C-Bus network. Note the extra wire used to connect REMOTE 'C' to C-Bus '-'.

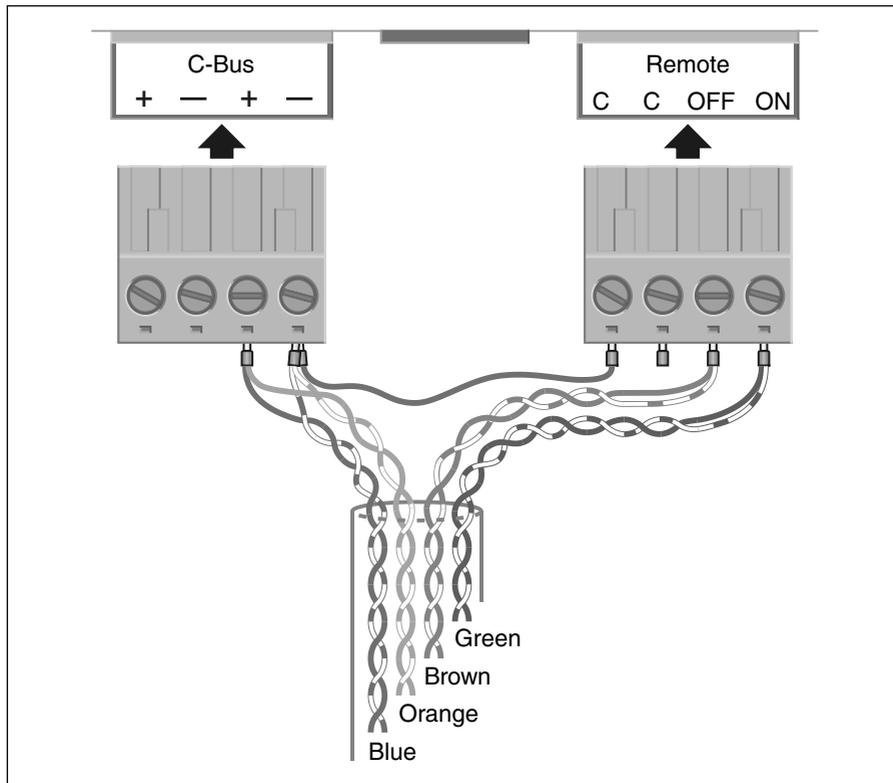


Figure 6 – Standard C-Bus connection with Remote Override connected to C-Bus.

Figure 7 shows the wiring of a C-Bus cable, where the Remote Override is used independently of the C-Bus network. In this alternate Remote Override mode, the REMOTE terminals are not connected to the C-Bus cable. Refer to section 9.2 for more information about this mode.

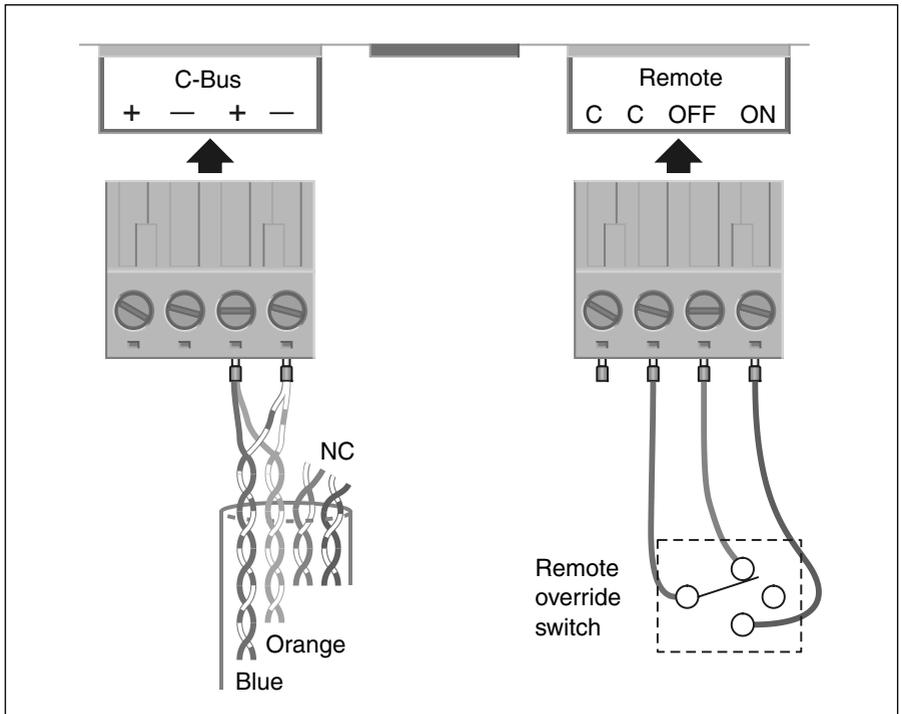


Figure 7 – C-Bus Connection with alternative separate Remote Override.

You may choose not to connect the C-Bus cable to the Remote Override terminals (when using an independent Remote Override as in Figure 7). In this case, ensure you maintain the continuity of the Remote Override wires in the C-Bus network, when daisy-chaining two C-Bus cables together. This is illustrated in Figure 8.

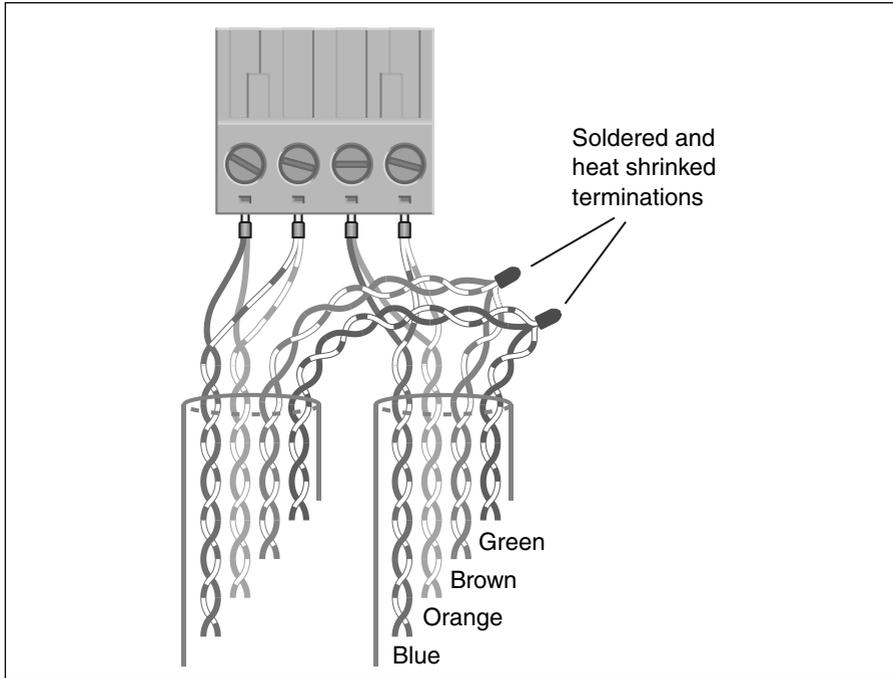


Figure 8 – Daisy-chaining C-Bus cables (maintaining C-Bus Remote Override).

9.0 Features

C-Bus Lx510xDx Series dimmers incorporate a microcontroller which provides many specialised features.

9.1 Local Override

The buttons located on the front of the unit toggle each channel on and off, providing local override capability. Each button illuminates when its respective channel is in the on state. The buttons perform different functions depending on how they are pressed. This is summarised in Table 4.

Operation	Function
Quick-press	A single quick-press toggles the state of a channel
Double quick-press	Two quick-presses in quick succession return the channel to the C-Bus network level
Long press	Pressing any of the buttons for one second or more returns all channels to the C-Bus network level

Table 4 – Local toggle button functions.

Note that double quick-press and long press operations only apply when the unit/channel is in local override mode. C-Bus commands received by the unit will (by default) override local changes. In this case, only the channel associated with the received commands will revert to the current C-Bus network state. This option may be disabled in software. Refer to Section 10.0, Priority of Operating Modes.

In the absence of a C-Bus network, the dimmer can function as a stand-alone scene controller, provided the channels are programmed with preset levels.

9.2 Remote Override

Remote switches can be connected to an Lx510xDx Series dimmer, providing Remote Override ON and OFF functions. Activation of the remote inputs corresponds to contact closure of the switch mechanism.

When one of these inputs is activated, all channels of the dimmer will be set to either on or off. In the event that the Remote ON and OFF functions are activated simultaneously, the Remote OFF has priority.

There are two methods of implementing Remote Override on an Lx510xDx Series dimmer:

- 1) Connect one of the 'C' terminals on the REMOTE Phoenix connector to C-Bus Negative '-'. Also connect the OFF and ON terminals to the extra pairs of conductors on the C-Bus cable. Remote Override of all C-Bus units on a network is achieved by connecting a switch to these conductors at any point on the network (provided that continuity of the Remote Override conductors is maintained).

Figure 9 illustrates how switches are connected to these conductors. Green + green & white conductors are used for the Remote ON function. Brown + brown & white are used for Remote OFF. The Remote Override is triggered by connecting the relevant conductors to C-Bus negative. A Clipsal 30/1/2LLM mechanism makes an ideal remote input switch.

- 2) Connect the Remote Override terminals on the Phoenix connector to one or more remote switches via a separate cable (**not connected to the C-Bus network**). Remote switches can be located up to 1000 metres from the unit. Multiple switches can be connected in parallel, allowing the dimmer to be controlled remotely from different locations.

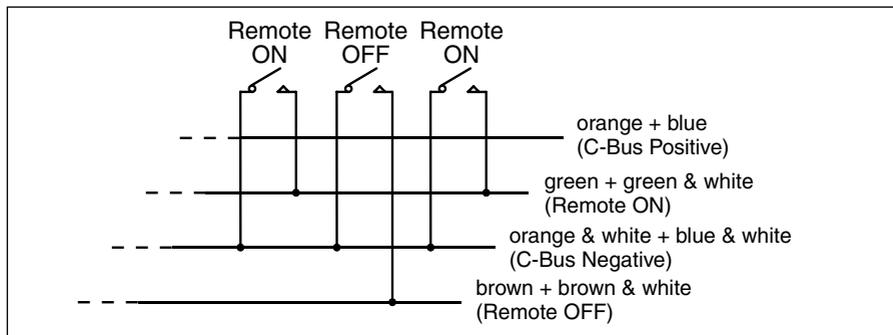


Figure 9 – Remote Override connections.

NOTE: C-Bus is a balanced network and therefore at any point where C-Bus Negative (-) is taken, C-Bus Positive (+) must also be present. For this reason both conductor pairs must be looped through all remote input switches on the network. External voltage sources must not be connected to any remote input of the dimmer.

9.3 Voltage Compensation

The Lx510xDx Series dimmers continually monitor the incoming mains voltage.

To compensate for incoming mains voltage variations, the microcontroller automatically adjusts the output drive to the load (when dimming). This minimises the change in brightness often associated with typical phase control dimmers during mains variations. Compensation covers the operating voltage range of 190 V to 265 V (L510xDx Series) and 90 V to 130 V (LE510xTDx Series).

Figure 10 illustrates the brightness variation produced with a varying input voltage, in both conventional and Lx510xDx Series dimmers.

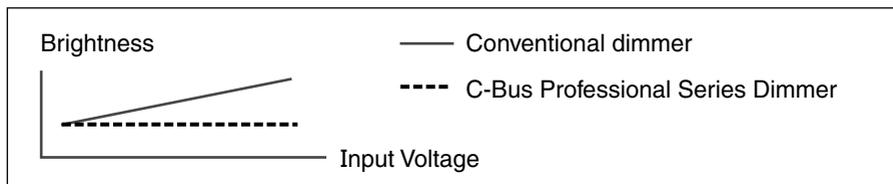


Figure 10 – Voltage compensation: Conventional vs C-Bus Professional Dimmer.

NOTE: At full brightness (100%) Lx510xDx Series dimmers do not compensate for mains voltage variations.

9.4 Automatic Mains Frequency Adjustment

C-Bus Lx510xDx Series dimmers constantly track the mains frequency. Whenever a frequency shift is detected, the microcontroller automatically adjusts the dimmer to maintain synchronisation to the mains. The units operate over a wide range of frequencies, provided that the mains frequency drift rate is less than 1 Hz per second and any step change is less than 0.1 Hz.

Under poor quality mains supply conditions, the dimmers may automatically switch off. This typically occurs when the line frequency is unstable, such as when using some types of portable AC generating equipment. The unit automatically returns to normal once the mains frequency stabilises.

9.5 Current Sensing and Overload Protection

The Lx510xDx Series dimmer measures average current in each load. You can use the C-Bus Toolkit software to monitor the load current in each channel. This information appears on the unit's "Status" tab.

Channel overloading exceeding the rated load current by 20% results in shutdown of the affected channel. During this time the unit ignores C-Bus and local override commands. After a five second delay the channel is reinstated to the C-Bus determined brightness level. If the resulting current magnitude is still excessive, continuous on/off cycling of the load occurs until the overload condition is removed.

9.6 Thermal Shutdown

Thermal shutdown of all output channels on the Lx510xDx Series dimmer is an indication of insufficient ventilation under heavy load conditions. This occurs when the internal operating temperature exceeds approximately 75 °C (167 °F), or the ambient temperature exceeds 50 °C (122 °F). After the unit has cooled sufficiently, the shutdown is cancelled when any channel is activated (via a C-Bus command or local override).

9.7 Linearised Brightness Control

In conventional phase control dimmers, as the light is being dimmed, the rate of change of power delivered to the load is not linear (Figure 11). The result is a more significant change in brightness at lower levels. The microcontroller in the Lx510xDx Series dimmer uses an algorithm to ensure that this change in brightness is uniform throughout the control range.

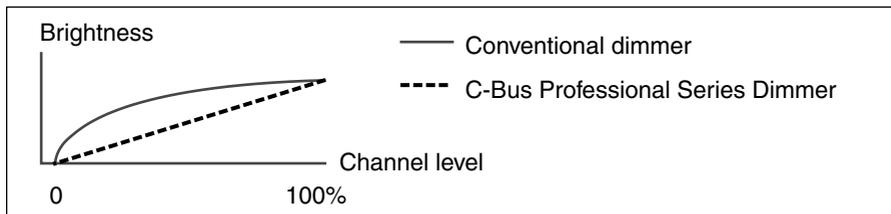


Figure 11 – Linearised brightness control: Conventional vs C-Bus Pro Dimmer.

9.8 Soft Turn On

When a channel is switched on or off in conventional devices, an abrupt change in brightness occurs. In the C-Bus Lx510xDx Series dimmer, the rate of brightness change is controlled by the microcontroller, resulting in a soft more gradual brightness change (Figure 12). This feature helps to prolong the life of incandescent lamps. It is referred to as “Soft Turn On” and “Soft Turn Off”.

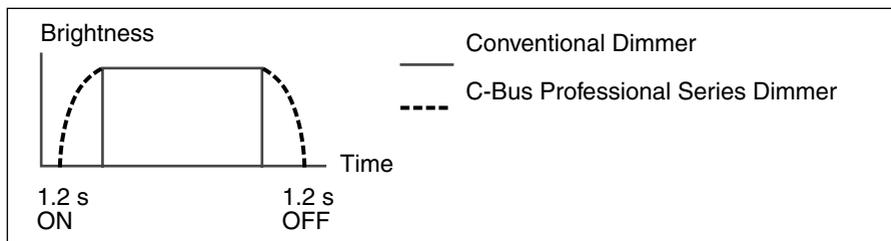


Figure 12 – Channel ON/OFF: Conventional vs C-Bus Professional Dimmer.

10.0 Priority of Operating Modes

The output status of C-Bus Professional Series Dimmers can be changed by:

- pressing a C-Bus button
- activating any of the local override buttons
- using the remote override facility.

Table 5 shows the priority ranking of these control inputs.

Mode	Priority	Function
Current overload	1 (highest)	Channel off
Thermal shutdown	2	All channels off
Remote Off	3	All channels off
Remote On	4	All channels on
Local override	5*	Toggles the channel
C-Bus input unit (Neo, PIR , etc.)	6* (lowest)	Controls the channel

Table 5 – 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 channel 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>).

11.0 Status Indicators

11.1 Network Status

The “Network Status” 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, or if the unit is powered by C-Bus only (for stand-alone programming), the indicator remains off.

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

Indicator Status	Meaning
On	Power is on and the network is functional
Flashing	The network voltage is marginal (15V < voltage < 20V)
Off	No C-Bus clock signal is present and/or mains power is not connected

Table 6 – The “Network Status” indicator.

11.2 Mains Power

The “Mains Power” indicator shows the status of the individual unit. When mains power is supplied, the indicator illuminates (as a continuous orange light). If a local toggle button has been used to perform a local override, or if a Remote Override is active, the indicator flashes with a 90% duty cycle. The Mains Power indicator does not function when the unit is powered by C-Bus only (for stand-alone programming).

Indicator Status	Meaning
On	Normal operation
Flashing	Unit is in override mode
Off	No mains power is connected

Table 7 – The ‘Mains Power’ indicator.

12.0 Auxiliary Relay Output

The C-Bus Lx510xDx Series dimmer provides a set of voltage free auxiliary relay contacts, which can be used to indicate the status of the unit’s mains supply. In the event of a power failure the auxiliary relay is de-energised and its contacts open. For emergency lighting applications the auxiliary contacts should be wired to a separate voltage source. Cables connected to the auxiliary relay contacts should be double insulated and current rated to suit the application.

13.0 C-Bus System Clock

C-Bus Lx510xDx Series dimmers incorporate 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 a C-Bus network should have their clock 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.

14.0 C-Bus Network Burden

C-Bus Lx510xDx Series dimmers incorporate a software selectable network burden. The network burden can be enabled from the unit’s “Global” tab in the C-Bus Toolkit software, but only if the C-Bus system clock is enabled, and the Unit Address is set to 1.

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 whether or not a burden is required on a particular network.

15.0 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, Lx510xDx Series dimmers initiate a power-up diagnostic routine, which lasts approximately 5 seconds. Channels are then restored according to their previous states, and according to the unit's recovery settings.

16.0 C-Bus Power Requirements

C-Bus Lx510xDx Series dimmers draw 18 mA from the C-Bus network when mains power is not connected. The units supply up to 60 mA to the C-Bus network when mains is present. This is sufficient to provide power for up to three C-Bus input units on the same 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 the power supply requirements of a particular network.

17.0 Programming

C-Bus Lx510xDx Series dimmers can be programmed without a mains connection. Units can be connected to any operational C-Bus network that is capable of supporting one or more extra C-Bus units (18 mA current required). Units can then be configured using the C-Bus Toolkit software. Indicators and dimmers will only function when a mains connection is established.

As with other C-Bus output units, Lx510xDx Series dimmers must be programmed to set their unique identification and the mode of operation on the C-Bus network. The C-Bus Toolkit software can be used to configure all operational parameters including the specification of control sources, and power-up options.

18.0 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 protection equipment such as the Clipsal 970 Series be installed at the switchboard.

The recommended value of the active supply circuit breaker is 20 A. To meet the safety requirements of EN60669-2-1 a suitably rated circuit breaker must be installed in each output channel as per the wiring diagrams in Figure 2 to Figure 4.

19.0 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.

20.0 Electrical Specifications

General Limits

Parameter	Description		
	L5101D20/ LE5101TD20	L5102D10/ LE5102TD10	L5104D5/ LE5104D5
AC supply voltage	220 to 240V (L510x Series), 110 to 120V (LE510x Series)		
AC supply frequency	47 to 53Hz and 57 to 63Hz		
Frequency shift	1Hz/s drift (maximum), 0.1 Hz step (maximum) for normal operation.		
Maximum load RMS current per channel	20A	10A	5A
Auxiliary relay contact rating	2.5A @ 240V a.c. normally open voltage free contacts		
Non-repetitive half cycle surge current	550A (peak)		300A (peak)
I²t for fusing (8.3 ms period)	1750A ² s		500A ² s
Repetitive half cycle current	44A (peak)	35A (peak)	17A (peak)
Load shunt capacitance	1µF maximum		
Max. units per network	30		
Compatible loads	Refer to section 5.0 (page 6)		
Minimum load	100 W/channel		
Operating temperature	0 to 45°C (32 to 113°F) ambient		
Operating humidity	0 to 95% RH		

General Levels

Parameter	Description		
	L5101D20/ LE5101TD20	L5102D10/ LE5102TD10	L5104D5/ LE5104D5
Off state power consumption	< 10W		
Off state AC supply current	40mA (L510x Series), 80mA (LE510x Series)		
Controlled load voltage	10 V/ μ s		
Load terminal off state leakage current	< 1mA		
Load terminal off state voltage	< 5V		
Over current cut-off level	24A	12A	6A
Current measurement	5% accuracy (sinusoidal waveform), range 5 to 100% of rated load		
Power control range	2 to 98%		
Warm up time	5 seconds		
Power-up delay	0 seconds to 33 minutes and 30 seconds		

C-Bus Power Supply

Parameter	Description
Line Regulation	Unregulated
Unloaded output voltage	36 V @ 240 V AC supply (L510x Series), 36 V @ 120 V AC supply (LE510x Series)
Loaded output voltage (60 mA)	24 V @ 240 V AC supply (L510x Series), 24 V @ 120 V AC supply (LE510x Series)
C-Bus to mains isolation	3750V AC RMS
Useable output current	60mA
Output current limit	< 100mA

C-Bus Interface

Parameter	Description
C-Bus supply voltage	15 to 36V DC @ 18mA required for programming when mains is not connected. Supplies 60mA to the C-Bus network when mains is connected
C-Bus line to earth impedance	2M Ω shunted with 56 pF (balanced)
Voltage measurement accuracy	5%
Network clock	Software selectable, 2 ms between clock pulses, amplitude $\pm 2.5V$
Network burden	Software selectable (unit address 001 only)
Connection type	4 way removable terminal block (Phoenix)

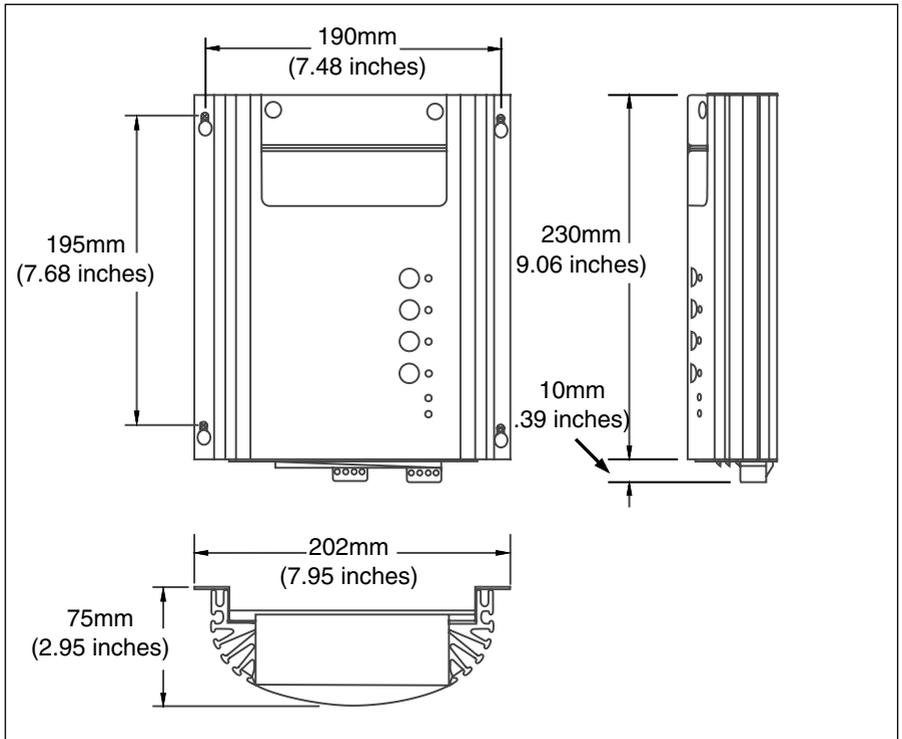
Remote Inputs

Parameter	Description
Open-state voltage (on/off input)	4V
On-input closed-state current	40 μA
Off-input closed-state current	150 μA
Switch and cable resistance limit	1K Ω
Cable capacitance limit	100nF
Remote input to C-Bus isolation	1500V AC RMS
Connection type	4 way removable terminal block (Phoenix), maximum 1000m to switch, input may be paralleled

21.0 Mechanical Specifications

Parameter	Description
Dimensions (WxHxD)	202 × 240 × 75mm (7.95 × 9.45 × 2.95 inches)
Weight	2.2 kg (4.86lbs) packaged
Mains terminals	Accommodates 2 × 2.5 mm ² or 1 × 4 mm ² (2 × 13 AWG or 1 × 11 AWG)

All Lx510xDx Series units have the same dimensions (Lx5104xD5 is shown).



22.0 Standards Complied

DECLARATIONS OF CONFORMITY

Australian/New Zealand EMC & Electrical Safety Frameworks and Standards

The L510xDx and LE510xTDx C-Bus Professional Series Dimmers comply with the following:



Regulations	Standard	Title
EMC (C-Tick)	AS/NZS 1044, AS/NZS 4051	RFI Emissions Standard
Electrical Safety	AS/NZS 3100 AS/NZS 3108	General Requirements for Electrical Equipment Requirements for Safety Extra Low Voltage

European Directives and Standards

The L510xDx and LE510xTDx C-Bus Professional Series Dimmers comply with the following:



European Council Directive	Standard	Title
EMC Directive 89/336/EEC	EN 60669-2-1 Clause 26.1	Immunity to ESD, RFI, EFT, Surge Voltages, Voltage Dips and Interruptions
	EN 60669-2-1 Clause 26.2	RF and Low Frequency Emissions
Low Voltage Directive 73/23/EEC	EN 60669-2-2	Switches for Household Fixed Electrical Installations Part 2-1 (Electronic Switches), Part 2-2 (Remote Control Switches)

Other International Directives and Standards

The L510xDx and LE510xTDx C-Bus Professional Series Dimmers comply with the following:

Regulations	Standard	Title
EMC	CISPR 14, CISPR 15	RFI Emissions Standard
	IEC 60669-2-1 Clause 26.1	Immunity to ESD, RFI, EFT, Surge Voltages, Voltage Dips and Interruptions
	IEC 60669-2-1 Clause 26.2	RF and Low Frequency Emissions
Electrical Safety	IEC 742	Requirements for Safety Extra Low Voltage
	IEC 60669-2-2	Switches for Household Fixed Electrical Installations Part 2-1 (Electronic Switches), Part 2-2 (Remote Control Switches)

US and Canadian Product Safety Standards and US FCC Regulations

The LE510xTDx C-Bus Professional Series Dimmers comply with the following:



Standard/Regulation	Title
CSA C22.2 No. 184.1	Solid State Dimming Controls
UL 1472	Solid State Dimming Controls
FCC	FCC Part 15 Class B Digital Device for Home or Office Use
	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 expressly approved by Clipsal Integrated Systems could void the user's authority to operate this equipment.

23.0 Warranty

Lx510xDx Series C-Bus Professional Dimmers carry 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 Gepps Cross, South Australia 5094. 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/>

Clipsal Australia Pty Ltd

A member of Schneider Electric

Contact us: clipsal.com/feedback

National Customer Care Enquiries:

Tel 1300 2025 25

Fax 1300 2025 56

clipsal.com

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