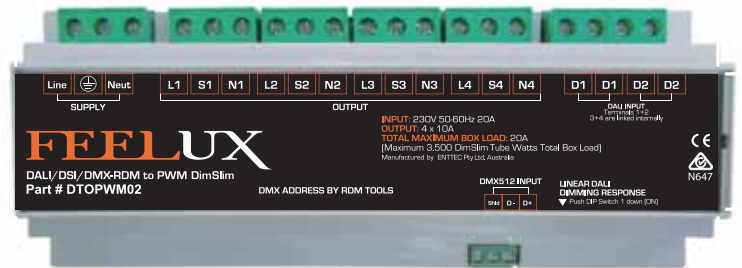


DALI/DSI/ DMX to PWM DimSlim Translator # DTOPWM02



DimSlim / DimSlimLine dimmable T5 fluorescent fixtures are the World's smallest T5 fluorescent fixture that is entirely self contained within a cross section that is only 38 mm high by 24 mm wide.

DimSlim fixtures are fitted with a 3-pin supply connector input and a 3-pin supply socket output, the centre contact is reserved for the control signal.

The centre pin is **NOT** an earth connection!

DO NOT earth DimSlim/DimSlimLine double insulated fixtures.

Additional Safety

DimSlim fixtures are fitted with **additional electrical safety** covers overlaying the socket output terminals. The cover allows for "simple" removal by the installing contractor if power take off is required.

DimSlim power cables use "standard" electrical power cables, but the control wire (shown) is the black cable.



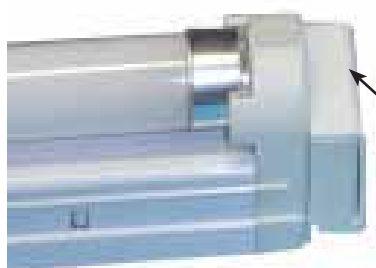
DimSlim control signal is at neutral potential therefore "green, yellow, or green/yellow coloured cables should NOT be used for the signal supply.



*DimSlim fixture
plug end
supply input*

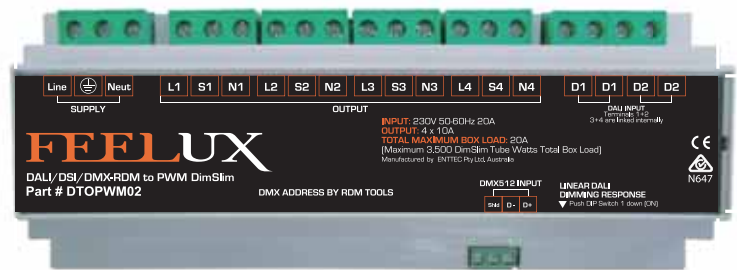


*DimSlim fixture
socket end
supply output*



Safety Cover

DALI/DSI/ DMX to PWM DimSlim Translator # DTOPWM02



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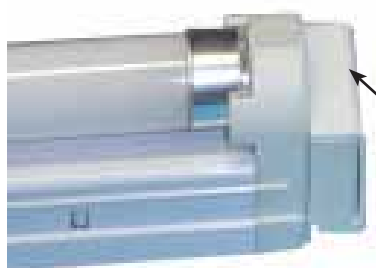
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*DimSlim fixture
plug end
supply input*

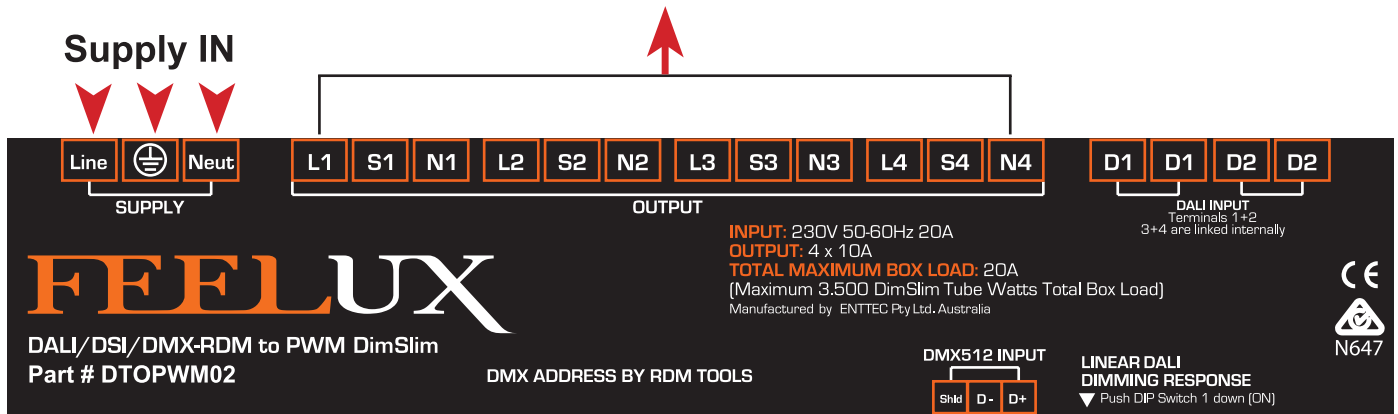


*DimSlim fixture
socket end
supply output*



Safety Cover

DimSlim supply OUT
DO NOT connect DimSlim
Neutrals to remote neutral bar



Power requirements using the translator:

To comply with EMC and RFI standards it is vital that the power supplying the DimSlim fixtures originates from the translator.

ON NO ACCOUNT is the neutral supplying the DimSlim fixtures to be grouped onto a remote neutral bar. For example, the first channel should be connected to L1, S1, N1, the second channel connected to L2, S2, N2 etc.

DimSlim - Translator Connections

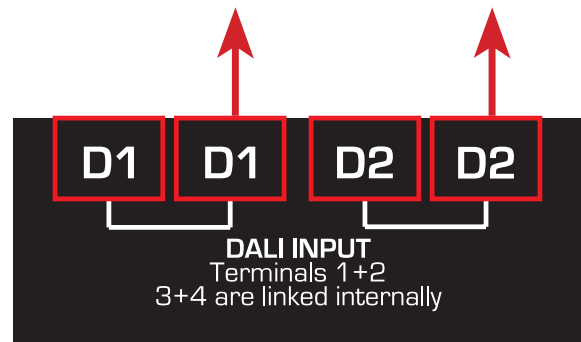
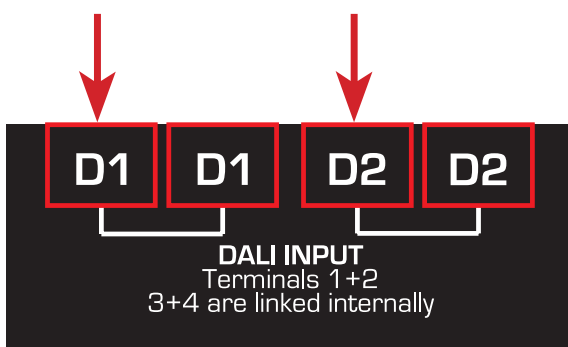
Connect the Brown wire (live) to the translator “L” terminal

Connect the Black (signal) to the “S” terminal

Connect the Blue (neutral) the “N” terminal

DALI or DSI input

The translator provides “loop in - loop out” terminals the DALI signal should be connected to one of the “D1” and one of the “D2” terminals, if further units are to be wired then the DALI signal can be “looped” out using the spare set of terminals as shown below.



DALI

The DALI protocol produces a low frequency digital signal which is capable of controlling up to 64 Fluorescent ballasts and/or 64 “DALI” devices^{1*} per “Universe”

**1 A “DALI devise” is any unit other than a fluorescent ballast that is being controlled by a DALI signal*

For compliance with DALI standard:
The DALI signal cable shall be afforded mains voltage insulation.

Setting up the hardware:

The translator may be mounted in any convenient location. DALI signal cable is limited to 300 meters maximum run.

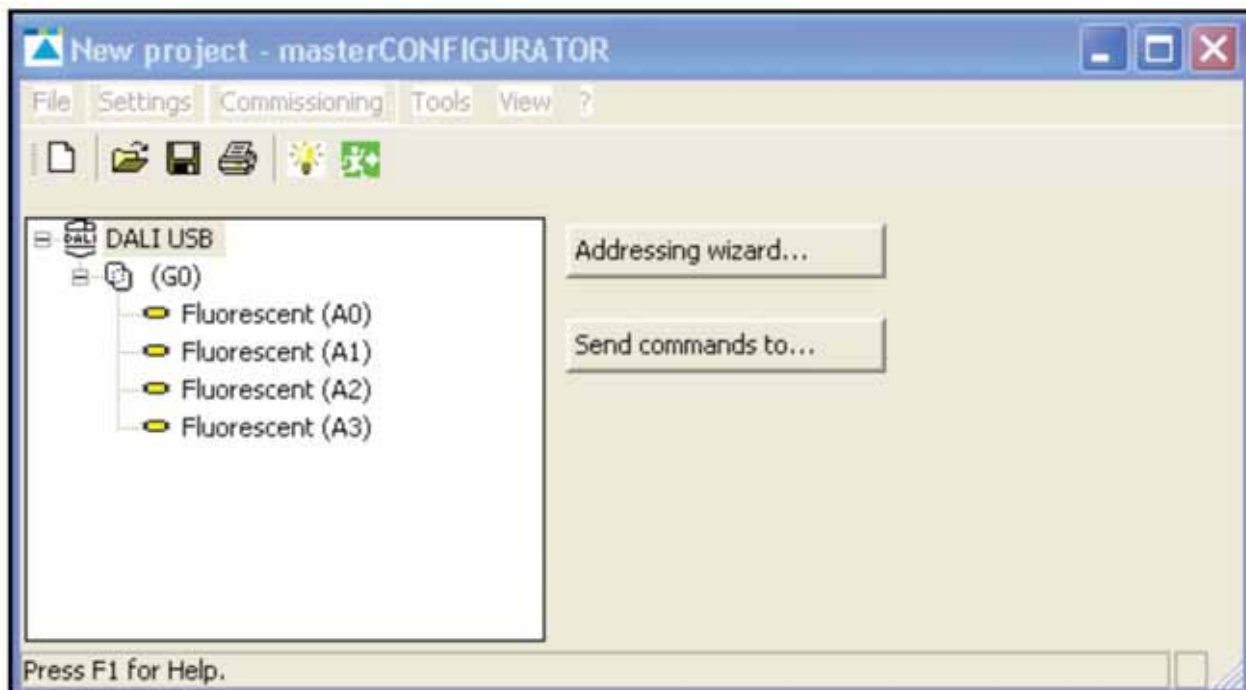
Important NOTE:

A DALI network consists of a DALI 2 wire signal and a DALI power supply.

The Translator is a “Receiver, therefore the power supply and the signal are by a 3rd party. The installer should check that the DALI control system being installed, includes BOTH a DALI network signal AND a DALI power supply.

Setting up a DALI Universe:-

When operating the DimSlim Translator for a DALI system. The DALI addressing wizard will recognise the DimSlim translator as **FOUR DALI Fluorescents**. In this instance the ‘fluorescent’ is a DimSlim channel. - Four DALI Fluorescents = Four DimSlim dimmable channels.



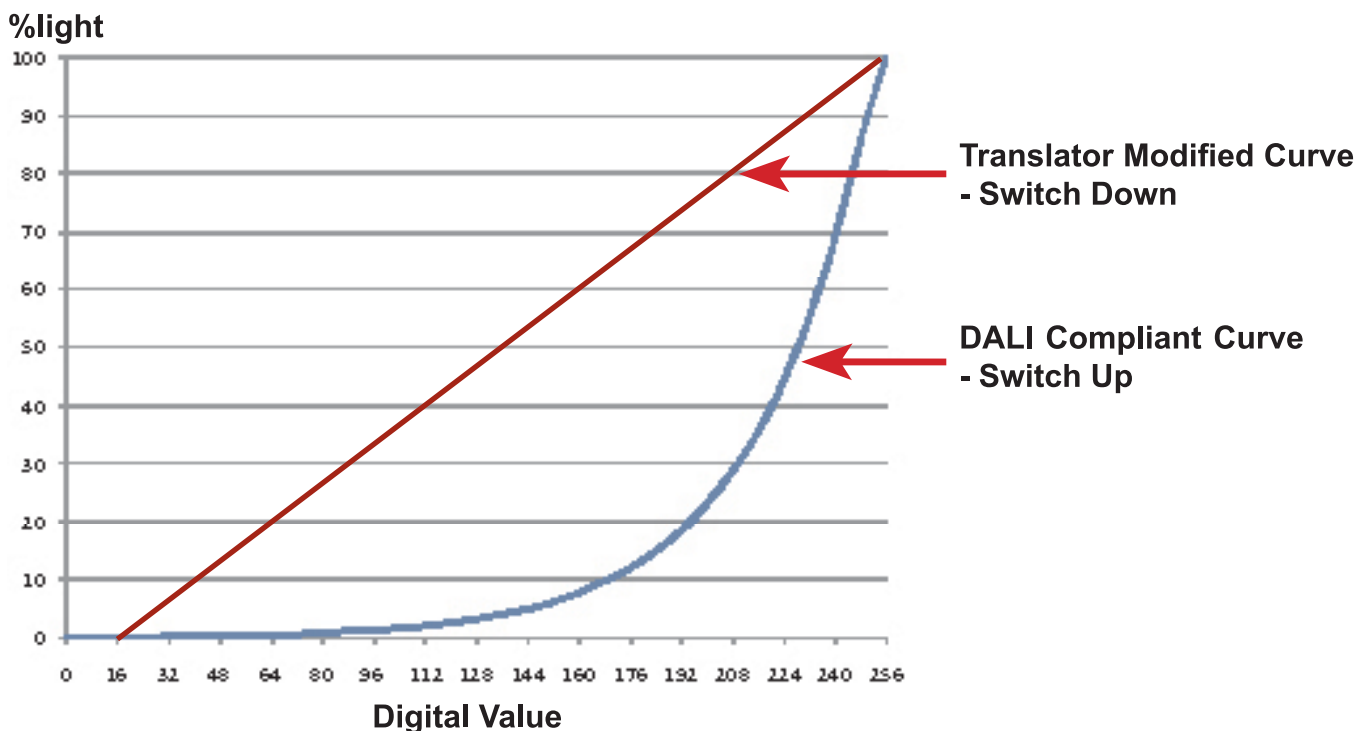
Example of a typical “screen dump” taken from a DALI set up wizard program

The DimSlim DALI-PWM translator employs a fully isolated DALI / DSI input. This ensures that under failure mode, mains supply cannot cross over the isolation barrier onto the DALI signal line. However, as third party ballasts can also be connected onto the DALI network, most ballasts only have secondary insulation between active components and signal.

DALI and Fluorescent Dimming

In the DALI standard - IEC 60929 the dimming curve for fluorescent lamps is as below. It show that at 50% dimming the light output shall be 3%.

Please note: This is an error in the standard not in the Translator. When using liner or rotary faders a further algorithm is required to relate 50% light output to 50% fade position. As the translator is a DALI complaint device then the following DALI curve is followed by the translator. To keep DALI compliance the dimming curve follows the curve specified in the DALI document, but we have added a switch to the side of the unit. When this switch is in the down(ON) position dimming is linear – 50% fader =50% light output.



DALI Set-Up

The DALI protocol requires all cabling including DALI signal cabling (D1,D1-D2,D2) to be afforded insulation for compliance with low voltage (240v) installations. (SELV is not granted to DALI/DSI devices operating on a DALI network).

The DimSlim PWM translator has four terminals for DALI signal control.

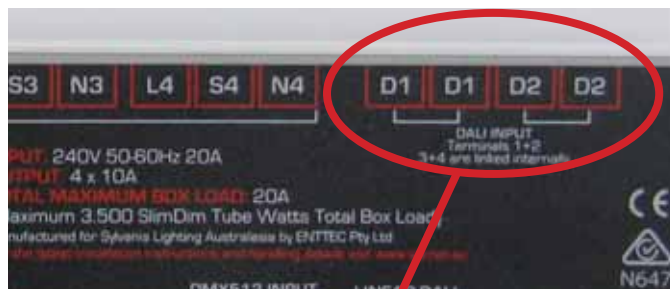
To make large scale installations simpler for the installer, the translator has “loop-in loop-out terminals.

It can be seen from the picture on the right that “D1-D1” and “D2-D2” show on-board links. The two wire DALI Signal input should be connected between one D1 and one D2 terminal. If required, the remaining D1-D2 terminals can then be used for looping to the next DALI device. Connection to a 3rd party DALI system:

The Feelux DimSlim PWM translator provides four independent dimmable control channels. The unit is a fully compliant DALI compatible unit complying with IEC60929 Annex E. (DALI protocol)

Connection to a 3rd party DALI system:

The **FEELUX** DimSlim PWM translator provides four independent dimmable control channels. The unit is a fully compliant DALI compatible unit complying with IEC60929 Annex E. (DALI protocol) whatever DALI universe the **FEELUX** DimSlim PWM translator is connected onto, each translator unit connected will appear in the “DALI properties window” as **four “DALI devices”**. It is therefore possible to install up to 16 Translators (16 x 4 channels) on one DALI universe. (64 channels)



The Feelux DimSlim PWM translator is not a “ballast” but an interface, the DALI protocol recognises each translator channel as a “DALI Device”.

Each “DALI Device” (DimSlim channel) can then be configured into any of the DALI groups on the DALI universe it has been connected to.

For DALI system configuration, Regard the DALI device in the same way you would a DALI ballast (with multiple lamp output)

One **FEELUX DimSlim PWM translator provides four DALI devices (four DimSlim channels)**



DALI Broadcast

DALI broadcast is a simplified protocol where all DALI ballasts connected to its network operate together. No addressing of the DALI ballasts is necessary.

Because DALI broadcast is a 'single wire per channel' protocol the translators four outputs will all work in parallel as one device. That is: 1 Translator per DALI broadcast channel.

Connect the DALI broadcast signal to terminals D1 & D2.



DSI

DSI - Digital Serial Interface is the same as DALI broadcast but is a proprietary protocol unique to Tridonic ATCO.

The translator will accept DSI and will react the same way as with DALI broadcast. That is: 1 Translator per DSI channel.



Connect DALI broadcast or DSI to terminals D1 & D2.

One translator is required per DALI broadcast or DSI channel.

Any or all of the four outputs may be connected to the DimSlim load as per maximum load requirements

DMX

From the theatre TV and Event lighting control Protocol, using a 2 wire + shield ELV signal to address up to 512 independent lighting channels.

Advantages:

Rapid response time. - up to 40 commands per second, allowing complex lighting changes to be 'seamlessly' made.

512 lighting channels per Universe

Universally accepted dimming protocol for Theatre and special application lighting.

Compatible with computerised "theatrical" event type lighting control.

Disadvantages:

Requires shielded control cable.

Normally restricted to "theatre lighting" type of control systems.

The standard ' **FEELUX** Translator' unit will accept the Entertainment Industry standard DMX 512¹ protocol for direct operation off any DMX 512¹ data line. (DMX is SELV compliant)

¹ The Translator is fully compliant with USITT DMX512 (1990) theatre lighting protocol



For pin connection onto a DMX circuit, the pin out sequence is:
D+ (plus) XLR pin 3,
D- (minus) XLR pin 2,
Shield (ground) XLR pin 1

To operate in DMX mode:

Simply connect a suitably compliant DMX data cable to the DMX input. The DimSlim PWM translator is a four channel device. It is configured in the same way as a Theatre dimmer pack. Once the start channel is defined, the remaining channels follow as consecutive channel numbers.

Setting up a DimSlim translator:

To set up DMX the unit is defaulted to start channel 1 (out put 1 is DMX1 out put 2 is DMX 2 etc)

To change the address use any of the proprietary DMX RDM (Remote device monitor) Tools which are no incorporated into may DMX lighting control systems, alternatively RDM dongles are available from Enttec.com using there USB-DMX Pro + free RDM tools software download.

Note: The MAXIMUM dimming speed possible using DimSlim fixtures is internally preset within the fixture at 0.5 second between the minimum and maximum level. There is no restriction to longer fade speeds as required.

Theatre Desk *Fade operation*

When operating from a standard theatre DMX desk, the fader control levels are:-



Less than 1 %, lamp will switch off. (Decimal 0-3)

More than 1% lamp will switch on at minimum level. (Allow a 2 second wait for cathode preheat) (Decimal 4-6)

2-100% lamp will be under dimming control. (Decimal 7-255)

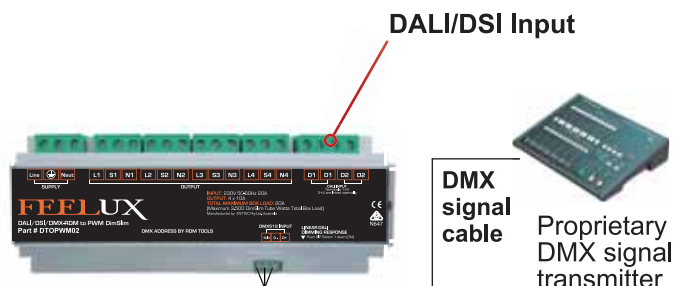
The start address may be set from 1 – 508.

As with all DMX system design, to stop signal reflections, please use a 120 ohm 1/4w termination resistor on last device DMX output. The resistor is placed across D+, D-.

Use industry standard DMX cable for the control signal.

Dual DMX and DALI /DSI Signal configuration

For installations that wish to use a “Building Management” central lighting control via DALI/DSI and occasionally use an area controlled by DMX (a multipurpose space) Both the DALI/DSI and DMX inputs may be connected to the same unit at the same time, as there is an electrical isolation barrier between DALI/DSI and DMX coming into the translator.



Dual input default condition:

Whenever DMX is powered, then the Translator will always default to DMX (within 0.5 seconds) if previously receiving DALI/DSI and then will react normally to the DMX signal whilst present.

When the DMX signal is then powered down the translator will revert back to DALI-DSI within 3 seconds of power down and then when the first DALI/DSI command is received thereafter.

As DALI/DSI and DMX inputs are electrically isolated from each other in the translator, there is no requirement to electrically isolate the protocol not being used.

The only “special” requirement for electrical connections is that the signal wire is afforded mains voltage insulation and that the signal wire is NOT green, yellow or green/yellow.



Whatever option is used, both the signal and the supply must originate from the “Translator”

The only “special” requirement for electrical connections is that the signal wire is afforded mains voltage insulation and that the signal wire is NOT green, yellow or green/yellow.

Whatever option is used, both the signal and the supply must originate from the ‘Translator.’



4mm power input and output terminal



2.5mm control signal input terminals and
DIP- DMX addressing switches

Installation Considerations:

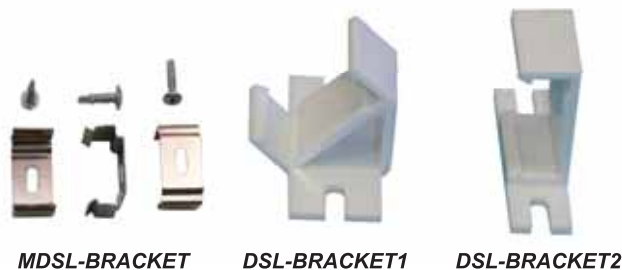
There is no restriction to cable lengths.

Maximum number of fixtures mounted in a continuous line is 10. Or 400 lamp watts which ever is the greater.

For longer lines, resupply the power and signal to the line from the input source (see the illustration opposite)

EMC

DimSlim fixtures are fully compliant with current EMC/RFI requirements at time of manufacture. To maintain installation compliance, the SlimDim fixtures **shall not** be allowed to come into contact with earthed surfaces. Mount on insulated surfaces, or use the clips provided with the fixture. (Alternative mounting clips are available from [FEELUX](#)).

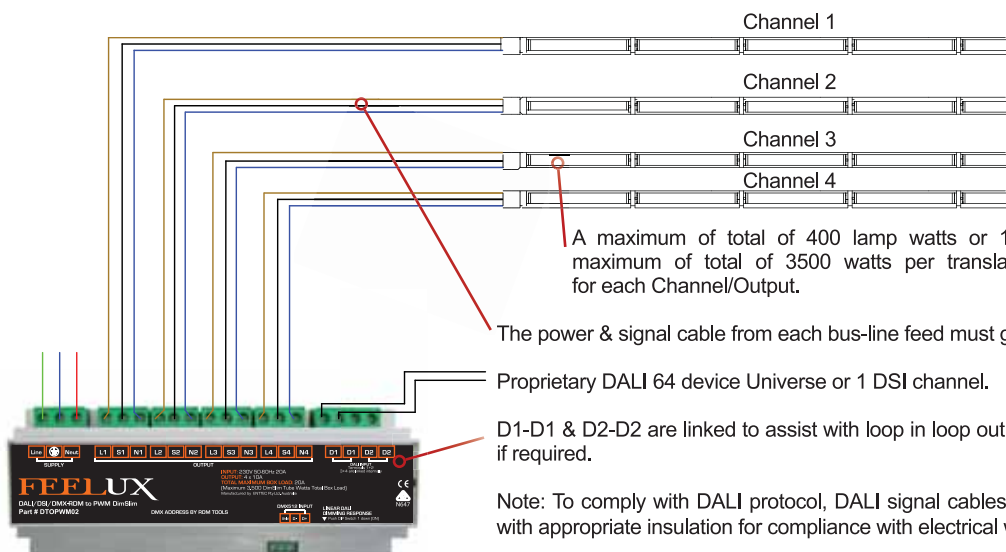


Mounting Clip Options

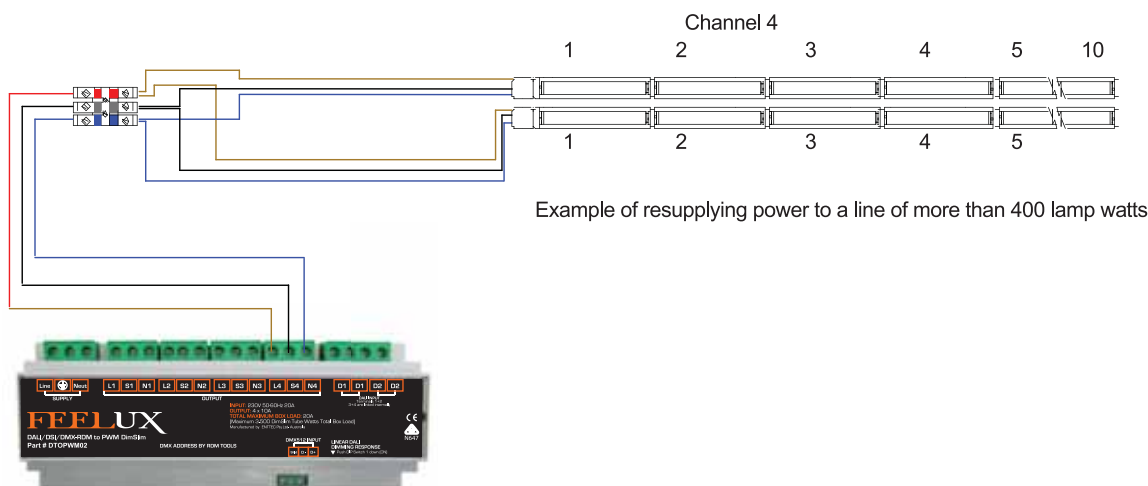
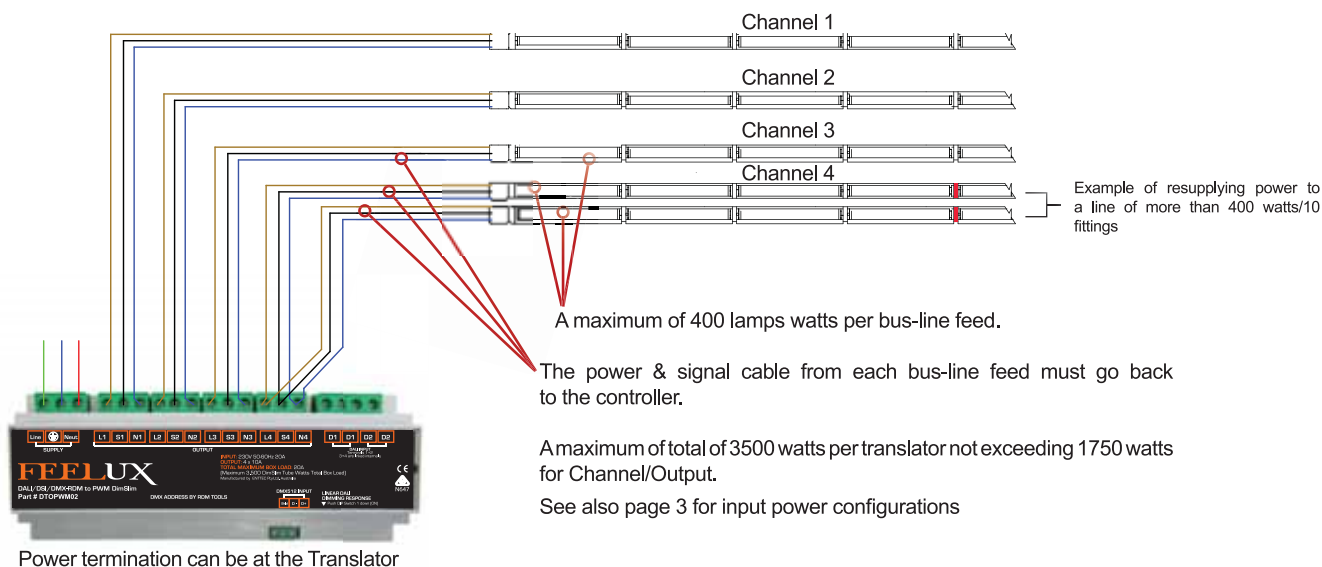
Four examples are given on the following page that can be used for power connection.

DALI/DSI/DMX Translator

Typical DALI - DSI Installation



DALI/DSI/DMX Translator. Typical DALI - DSI. Re - supply configuration.



SlimDim Mounting Brackets

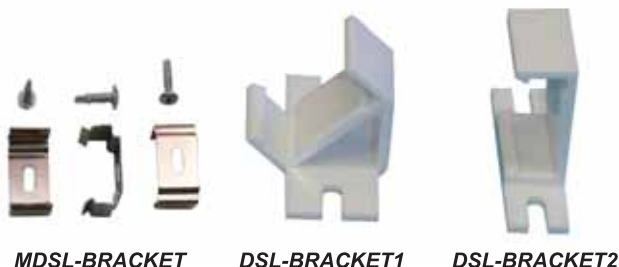
MDSL-BRACKET

Three alternative brackets are available affording EMC isolation.

MDSL-BRACKET* = Standard straight bracket packed c/w wood fixing screws in one end of the DimSlim packing box.

DSL-BRACKET1* = A45 degree corner bracket ideal for glass cabinet vertical corner mounting.

DSL-BRACKET2* = A 90 degree bracket ideal for under shelf lighting.



DSLPTCx/T

DimSlim T5 Power Cord 1800 mm long
DimSlim Plug at one end. No mains Plug.

One cable with input plug required per circuit output or every 350 lamp watts. The cable can be cut to shorter lengths. Additional cable can be ordered if required for, extended lengths using suitable connection methods as required.



**All clip accessories are packed in bags of 3 c/w wood screws*

DSL-BUSCABLE

White outer, internal colours are:

Brown lead = Live

Black lead = Signal

Blue lead = Neutral



DSL-BUSC10 Bus cable
0.75mm white pvc outer
supplied in 10 meter packs.

DSL-BUSC100 - As above but 100 meter roll

DSL-BUSPP

Plug Pack consisting of 2 plugs and 2 sockets for in-line connection of Bus cable to Bus connectors.



DSLCPPL

DimSlim T5 Direct Connector used for in-line connecting of DimSlim fixtures



DSLPTCx/T (length mm)

DimSlim 'bus wire'



Allows fixtures to be wired with spacings between fixtures as required. Minimum cable lengths are as follows:

DSLPTC/T = 150 mm cable length

DSLPTC1/T = 300 mm cable length

DSLPTC2/T = 600 mm cable length

DSLPTC4/T = 1200 mm cable length

DSLPTC6/T = 1800 mm cable length

DSL-BWOL0080

DimSlim Bus wire OverLap.

The standard unit allows for 80 mm of light overlap so that it eliminates the “dark gap” effect when in-line mounting close to a surface.



DSL-BWOL0080

DimSlim Bus wire overlap tubes 80 mm tube overlap

DSL-BWOL3000

DimSlim Bus wire overlap tubes type but, with 3 meters of cable for special project applications

DSL-XXX

Rear end cable entry option for suspended applications or any option that requires power to be supplied from the rear of the unit.

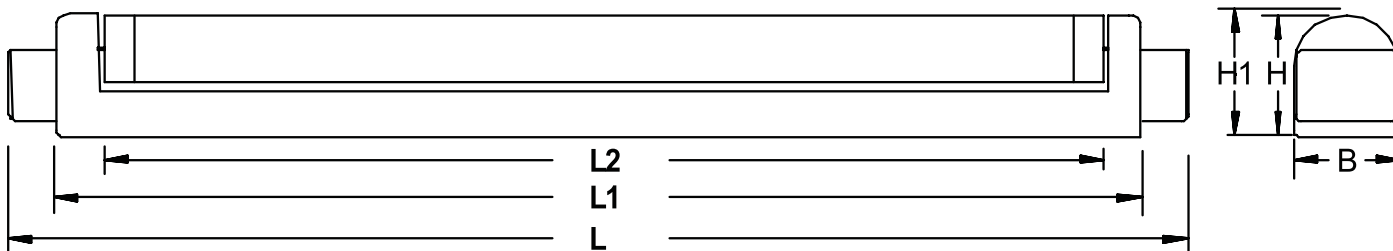
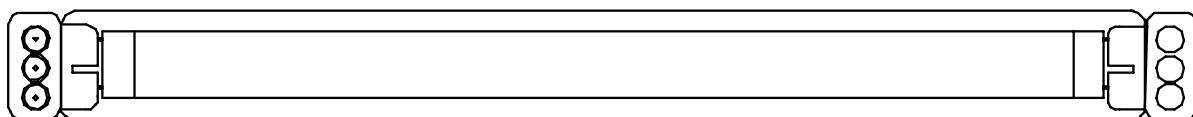
FEELUX

Example: DSL14AB23NN/T

DSL14 = DimSlimLamp 14W

AB = the lamp type (with Color Temperature)

23NN/T = Rating Voltage, with diffuser(NN) or without diffuser(NC)



	L2 (mm)	L1 (mm)	L (mm)	H1 (mm)	H (mm)	B (mm)
DSL14(24)AB23NN/T	550	573	595	38	37.6	24.2
DSL21(39)AB23NN/T	850	873	895	38	37.6	24.2
DSL28(54)AB23NN/T	1150	1173	1195	38	37.6	24.2
DSL35AB23NN/T	1450	1473	1495	38	37.6	24.2

H1 = Includes a diffuser

H = no diffuser

Electrical Data:

		UNIT	14 watt	21 watt	24 watt	28 watt	35 watt	39 watt	54 watt
	Full intensity	W	17+/-2.5	26+/-2.5	30+/-2.5	33+/-2.5	40+/-2.5	48+/-2.5	67+/-2.5
Input power	Lowest level (dimnable)	W	6+/-0.6	9+/-0.5	9.5+/-0.5	10+/-0.5	11+/-0.5	12.5+/-0.5	17+/-0.5
	Standby (lamp off)	W	<1	<1	<1	<1	<1	<1	<1
Input volts		V	180-260	180-260	180-260	180-260	180-260	180-260	180-260
Input frequency		Hz	50-60	50-60	50-60	50-60	50-60	50-60	50-60
	Cold start maximum surge*	mA	190	280	330	380	460	535	740
Input Current	Full intensity	mA	75+/-10	110+/-10	130+/-10	150+/-10	180+/-10	210+/-10	290+/-10
	Low level (dimnable)	mA	30+/-10	45+/-10	51+/-10	52+/-10	59+/-10	66+/-10	91+/-10
Power Factor	Full intensity	Lagging	>97	>97	>97	>97	>97	>97	>97
	Low level (dimnable)	Lagging	>70	>70	>70	>70	>70	>70	>70
Reset type			warm	warm	warm	warm	warm	warm	warm
Over voltage protection			yes	yes	yes	yes	yes	yes	yes
Under voltage protection			yes	yes	yes	yes	yes	yes	yes
Open circuit/filament protection auto shut down			yes	yes	yes	yes	yes	yes	yes

*Cold start = Worst (average) case scenario, maximum surge current from cold start to full light, start up maximum first 3 seconds

Q1: Can I drill through the fixture to fix it?

A1: No, there is a circuit board and cabling running internally the whole length of the fixture. Use the mounting clip option available. Other mounting methods such as double sided tape and bonding materials can be used, provided the bond is strong enough to hold the fixture and that the fixture does not come into direct contact with an electrical conducting material. (see question 11 regarding earthing)

Q2: What cable do I use to control DimSlim fixtures?

A2: The termination into DimSlim fixtures is by a special **FEELUX** 3-pin connector with internal lead. The lead is available in several lengths up to 1.8 meters. After terminating the cable on the DimSlim connector, it will be noticed that the DimSlim connector's cable has 3 conductors:

Brown - Live, Blue - Neutral, Black - PWM signal. Any standard power cable capable of handling the power requirements of the DimSlim fixtures can be used between the DimSlim fixtures and the PWM translator.



***Please Note:** The PWM signal terminal is at neutral potential and is not necessarily at earth potential. To comply with Australian, New Zealand and International wiring standards, green, green/yellow, or, yellow cable must NOT be used as the PWM signal wire.*

Q3: Can I use any type of cable for the PWM signal?

A3: Yes, so long as it is afforded the same insulation protection as AC mains voltage cable. However, we would advise that the cable should have a current rating of not less than those of the accompanying fixture supply cables. Please see the answer to question 2 regarding cable identity.

Q4: How long can the cable runs be from the SlimDim PWM unit to the fixtures?

A4: As the PWM signal is at low frequency (400Hz), there is no theoretical maximum length limit to the cable run.

Q5: Can I mix tube wattage's on the same dimming channel?

A5: Yes, this is possible, but depending upon the lamp colour/manufacturer, the lamps may dim at different rates between full and minimum light output.

Q6: Can I strobe the lamps ON/OFF?

A6: No, the internal circuit of the DimSlim fixture limits the speed of fade between zero and full to approximately 0.5 second.

Q7: Can I use any type of fluorescent lamp with the SlimDim fixture?

A7: Yes, provided it is a "standard" T5 lamp of the appropriate wattage.

Q8: Can I cut inter-connecting bus wires to make them longer?

A8: Yes, but please use an interconnecting cable that does not use an earth- coloured wire for the signal connection. (Please see answers to questions 2 and 3.) Also please observe mains wiring insulation requirements.

Q9: Can I dim these fixtures on a leading or trailing edge dimmer?

A9: No! DimSlim fixtures only respond to a 400Hz PWM low voltage digital signal. Installing them on dimming circuits will invalidate the warranty and could permanently damage the fixture.

Q10: Can I run these fixtures on any other BMS/ control/dimming system?

A10: Yes, the standard DALI/DMX/DSI translator will interface with any other DALI/DMX/DSI manufactured control proprietary system. For non-DALI/DMX/DSI applications, there are several excellent 3rd party off-the-shelf "xxx-protocol to DALI" interface units.

Q11: Can I earth the fixture for added safety?

A11: No, this is of no benefit and there is no earth provision on the fixtures. SlimDim fixtures are fully compliant "**double insulated**" units conforming strictly with "C-Tick" EMC interference standards. Earthing the fixture can invalidate the EMC compliance, and has no added safety advantage.

Q12: Can I install DimSlim fixtures outdoors?

A12: No, the fixture is designed for normal indoor applications. The whole fixture can be placed inside a suitable weather proof enclosure as required, provided the fixture ambient temperature is maintained between 10- 45° C.

Q13: Can I use DimSlim inside another housing?

A13: Yes provided the DimSlim fixture(s) is insulated from earthed metalwork. The standard DimSlim fixing clips could provide this isolation. The DimSlim unit(s) placed inside a 3rd party housing would remain fully EMC compliant.

Q14: Can I fade the lamps up from zero?

A14: ^{*2}No, like all dimmable fluorescent fixtures there is a minimum pre-set light level. For SlimDim, the minimum is set at 7.5% light output. Fading below the minimum level will switch the lamp OFF. The lamp will return to its minimum level (or any other level) on switch ON as requested by its control signal.

Q15: Can I use DimSlim from a theatre style control desk?

A15: ^{*2}Yes, the **FEELUX** translator also has a DMX 512 (theatre lighting) interface. Each translator will provide upto 4 consecutive channels DMX channels. The start channel is addressable via the DIP switches on the **FEELUX** translator unit. – Remember that level 0.11 (1%) on the DMX desk will allow the lamp to dim to 7 ½ % intensity, the lowest ON level. Moving the fader below level 1 will turn the lamp off.

^{*2}**Please Note:** As will all dimmable fluorescent fixtures, there is a delay of approximately 2 seconds from switch ON, for the lamp to ignite due to the cathode pre-heat circuit, therefore, any fade from zero must take this delay into account

Q16: Can I have DALI feedback from the DimSlim fixtures?

A16: No, the translator is **not** a DALI ballast it is a 'DALI device.' A single **FEELUX** translator will appear as four independent 'DALI devices' in the DALI software schedule/

short addresses. Remember that each DALI device can control up to 50 **DimSlim** fixtures, therefore, it is impractical for interrogation of each sub-unit, and DALI protocol is not capable of interrogation at the sub-circuit level. DALI is limited to 64 DALI ballasts per universe. Using the **FEELUX** translator option, 2,656 **DimSlim** fixtures (166 x 21 watt fixtures x 16 translators (64 channels) can be run on one DALI universe.

Q17: How many lamps can I run off the translator?

A17: Each translator can handle a total of 3,500 lamp watts. Individual outputs each have a maximum load of 1,750 lamp watts.

Q18: What do I do if I need to control more than 1,750 lamp watts on one channel?

A18: Separate the load over two channels (they don't have to be equally divided) and "soft patch" in the control circuit to operate the 2 channels as a single "tandem" circuit.

Q19: Lamps will only turn off and on full but won't dim when connected to the translator.

A19: Check that there is a signal present. No signal, and the fixture defaults to full light output. Should the output Live and Neutral be reversed at any point along any channel, then all the fixtures will go to full. To find the error, disconnect all fixtures on that line. Check if the first fixture dims. Add the next fixture and check for dimming, continue until the fault is found.

Q20: Is it safe to install the translator onto a proprietary digital network?

A20: Yes, it is safe. All **FEELUX** translators have 500 volt optical isolation between the DALI/DSI/DMX input, so even if there is an accidental short of any of the translators outputs, mains voltages cannot cross onto the isolated digital input lines.

Q21: How do I handle a situation where I need a DALI signal on some occasions and a DMX signal on other occasions to control the same DimSlim fixtures.

For example, a multi purpose area which when configured for exhibitions and sport uses the DALI protocol, then used DMX protocol for theatre / lectures applications.

A21: *The translator can be connected to both a DALI and a DMX signals. Each input is opto-isolated so there is no cross-talk or back feed between protocols and keeps the integrity of the SELV requirements for DMX isolated from the LV requirements of DALI.*

Q22: Does it matter which way round the lamp should be installed in the fixture

A22: *Yes the dimming range can be effected by random tube orientation please see the notes on page 2*

Q23: Do I need a DALI power supply when I am connecting to a DALI system.

A23: *It is dependent upon the manufacturer of the DALI system being used. Most suppliers use built in DALI power supplies. However, there are systems where an external DALI power supply is required. Check with the DALI system supplier to ensure that a DALI Power supply is included.*

Note: Mixed Signals

With both DALI/DSI and DMX connected. The translator will default to DMX within 10 seconds of DMX signal activation. The translator will switch back to DALI/DSI on DMX signal loss within 10 seconds. There is no requirement to mechanically disconnect either signal lines, however, if the DMX signal is to be operational when DALI operation is required then the DMX line will need to be disconnected by some external method for DALI to operate the translator.

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