

LEDsmart⁺ Digital Level Display

Suitable for use with all two-wire dimmers and some three-wire dimmers



Note: A dimmer is not included with this product. The above picture is for illustration purposes only



Designed in Australia to meet Australian Standards and installation conditions



Introduction

Product Item

Digital Level Display, item number MMDM/DD, connects in parallel with a 2-wire dimmer and some 3-wire dimmers to display the current dimming level.

Package contents



Digital Level Display with clear light pipe and white front cover



Alternative front cover with light globe icon



Alternative orange, green and blue light pipes

The following are also included in the product package

- 1 x Terminal block
- 2 x cables ties (for attaching the terminal block to the rear of the Digital Level Display)
- 1 x 'Megger testing' warning label
- This installation guide

Important Notes and Safety Information



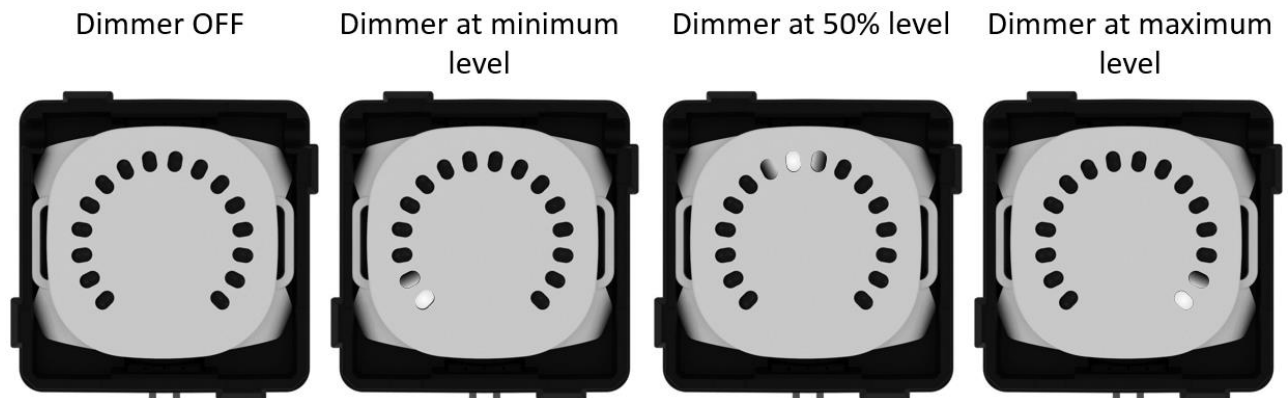
Electric shock may result in serious injury or death. Follow all warnings in this guide and on the product while working in accordance with the latest electrical safety practices. Connecting the Digital Level Display to mains must be carried out by a suitably qualified installer who must work in accordance with standard safety procedures for mains-powered electrical equipment.

- There are no user serviceable parts inside the product. Do not attempt to disassemble this product
- The Digital Level Display is intended for indoor use only
- Consult the manufacturer's instructions for the dimmer(s) connected to the Digital Level Display

If you require information or assistance regarding the installation, configuration, or operation of this product, contact Technical Services at Diginet Control Systems. Contact details are on the back cover of this guide and at www.diginet.net.au

Product summary

The Digital Level Display connects in parallel with any 2-wire and some 3-wire phase angle dimmers. It displays the current dimming level via an array of 16 x white LED's. When the dimming level is changed by a user (from a connected dimmer), the displayed LED changes accordingly. Examples of typical levels displayed on the devices are shown below.



The Digital Level Display is particularly suitable for use in applications where the lights being dimmed cannot be directly seen from the dimming location, for example:-

- Hotels and clubs
- Aged care facilities
- Museums and galleries
- Restaurants
- Retail stores
- Theatres and Cinemas
- Hotels and Motels



A dimmer is not included with this product. A suitable dimmer must be purchased separately

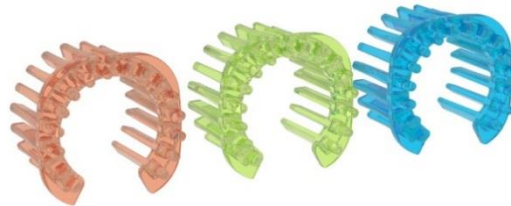
Product Features

- Works in conjunction with 2-wire dimmers and some (not all) 3-wire dimmers (see page 7)
- Connects in parallel with a dimmer
- 2-wire device – connects to Active and Load, no Neutral connection required
- Compatible with Diginet MultiMate™ enabled products, such as LEDsmart⁺ dimmers and Sitara™ Bluetooth® Dimmers
- Optimal performance with Diginet dimmers
- Working conduction angle range 1ms to 8ms
- Soft transition between adjacent indicator LED's
- Includes alternative light pipes to change the LED indicator display colour from white to orange, green or blue
- Plain white front face or alternative front face with light globe icon
- Fits standard Australian wall plate apertures

Installation and wiring

Replacing the light pipe

To provide the user with an alternative LED colour indication, the clear light pipe pre-installed in the Digital Level Display can be replaced with an orange, green or blue light pipe (supplied as accessories in the product packaging).



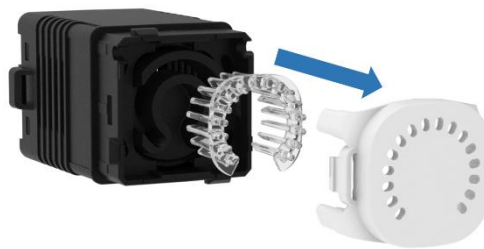
Orange, green and blue light pipes

To replace the clear light pipe with one of the coloured light pipes, the front cover needs to be removed. Use a small screwdriver to release the two clips, one either side of the front cover.

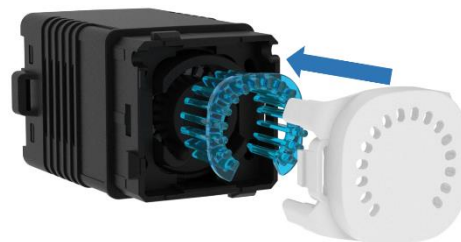


Use a small screw driver to release the two clips

The front cover and the clear light pipe can now be removed from the main housing.



Replace clear light pipe with the required coloured light pipe and insert into the Digital Level Display housing. Snap the front cover back onto the housing, ensuring that that the cover is securely clipped in on both sides.



Replacing the front cover

The Digital Level Display is pre-fitted with a plain white front cover. This can be replaced with a front cover displaying a light globe icon (supplied as an accessory in the product packaging).



The front cover with a light globe icon can be used as an alternative to the plain white front cover

To replace the front cover

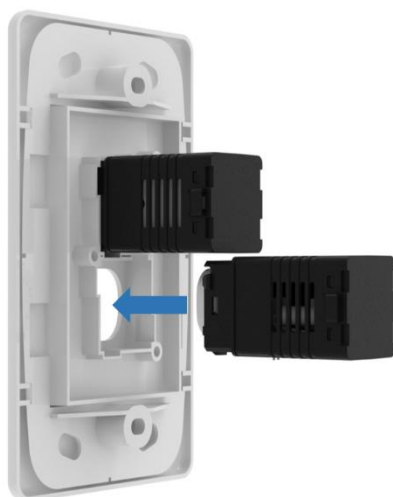
1. Remove the plain white front cover from the Digital Level Display, as described on page 4, ensuring that the light pipe remains in place.
2. Clip the replacement front cover onto the main Digital Level Display housing, ensuring that that the cover is securely clipped in on both sides.

Installing the Digital Level Display



If the light pipe and/or the front cover are required to be changed (as described on page 4 and above), this must be done **before** the Digital Level Display is installed.

The Digital Level Display can be clipped into any standard Australian wall plate aperture, as shown below. Before clipping into the plate aperture, ensure that the LED display on the front of the device is orientated correctly.



The Digital Level Display clips into a standard Australian wall plate aperture



The Digital Level Display installed with a dimmer in a standard Australian wall plate

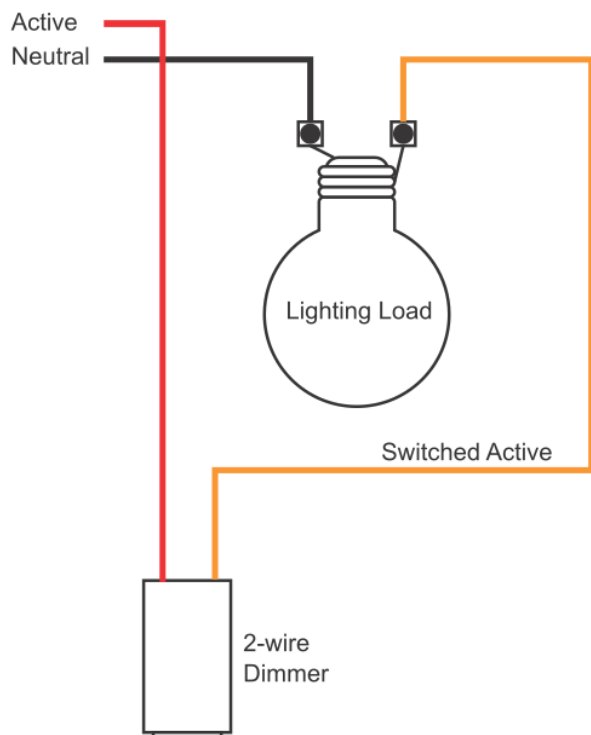
Wiring the device



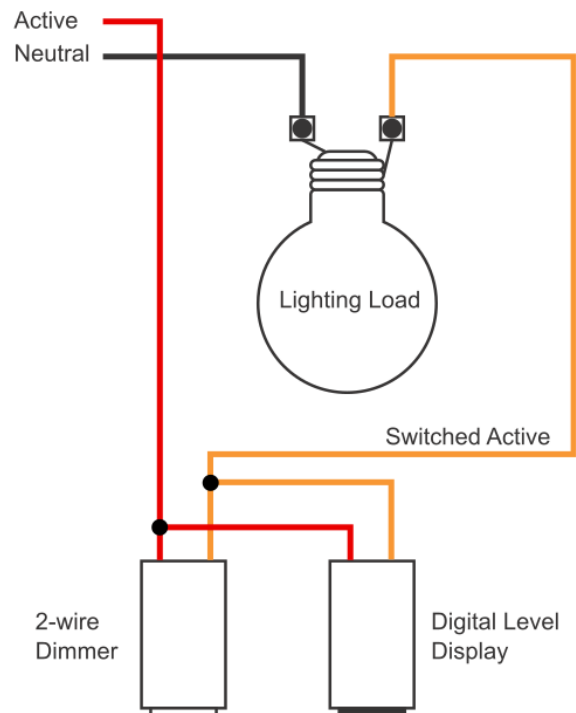
Electric shock may result in serious injury or death. Follow all warnings in this guide and on the product while working in accordance with the latest electrical safety practices. Connecting the Digital Level Display to mains must be carried out by a suitably qualified installer who must work in accordance with standard safety procedures for mains-powered electrical equipment.

Wiring the device to a 2-Wire dimmer

The Digital Level Display is wired in parallel with a 2-wire dimmer, between Active and Load, as shown in the diagram below.



2-wire dimmer without Digital Level Display Installed



2-wire dimmer with Digital Level Display Installed



Some 3rd party 2-wire dimmers limit the maximum conduction angle to below 8ms. This means that some 3rd party dimmers will not illuminate the upper-most LED(s), even when at maximum output.

Some 3rd party dimmers limit the minimum conduction angle. This may affect the ability of the Digital Level Display to illuminate the lower-most LED(s) at low dimming levels.

Dignet phase dimmers such as the LEDsmart MEDM, LEDsmart⁺ MMDM/RT, LEDsmart⁺ MMDM/PB and the Sitara STDN/BT are not affected by these issues.



The following issues are occasionally seen when LED/CFL lamps are used in conjunction with 2-wire dimmers and the Digital Level Display

- When switched off, the LED/CFL lights flicker, pulse on/off or do not switch off completely
- When switched off, the LEDsmart⁺ dimmer LED indicators flicker
- When switching on, the LED/CFL lights have difficulty turning on and the dimmer indicators flicker or pulse

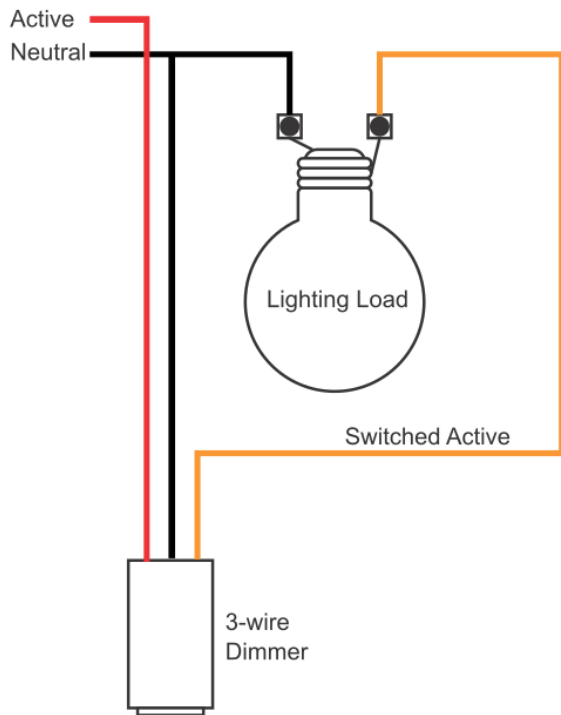
It is recommended to install a Dignet 'Load By-pass Device' (Dignet item number **MMBP**) across Load and Neutral terminals to provide improved performance of these lamps.

Wiring the device to a 3-Wire Dimmer

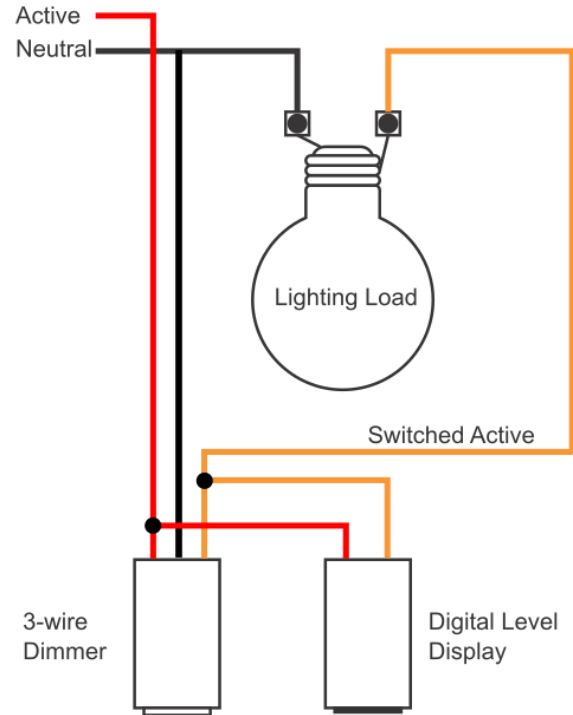


The Digital Level Display will not function with all 3-wire dimmer products. Some 3-wire dimmers operate at full (10ms) conduction angle. The Digital Level Display is only suitable for dimmers with a maximum conduction angle of 8.5ms. Please check with the relevant 3-wire dimmer manufacturer to ensure compatibility.

The Digital Level Display is wired in parallel with a 3-wire dimmer, between Active and Load, as shown in the diagram below.



3-wire dimmer without Digital Level Display Installed







3-wire dimmer with Digital Level Display Installed



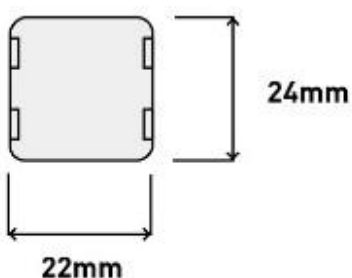
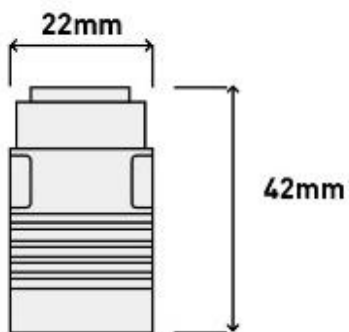
If the Digital Level Display is connected between Neutral and Load instead of Active and Load, the display will illuminate in an anti-clockwise direction as the load is dimmed up. This will not damage the Digital Level Display, however to revert to normal (clockwise) operation connect the dimmer between Active and Load, as described above.

Specifications and standards compliance

Product specifications

Line Voltage / Frequency	220-240Vac/50Hz
Maximum Load	Independent of maximum dimmer load
Off-state leakage Current	3mA (non-separately switched dimmer application only)
Off-state Power Consumption	< 100mW (non-separately switched dimmer application only)
Dimmer working conduction angle display limits	Between 1ms and 8ms
Display resolution step size	Approximately 0.5ms per LED
Maximum Ambient Temperature	35°C
Operating Humidity	10% - 95% RH, non-condensing
Compatibility	2-wire dimmers and 3-wire dimmers with a maximum conduction angle of 8ms (Leading Edge, Trailing Edge and Universal Dimmers)
Number of LED's	16
LED Indicators	Off – no LED lit LED#1 lit – minimum level LED#8 lit – 50% level LED#16 lit – maximum level (Note: The display resolution has been designed for best compatibility with the range of Diginet phase-adaptive dimmers)
Compliance	   

Dimensions



Standards and compliance

The MMDM/DD product is designed to meet/exceed the following Australian and International standards:

Australian/New Zealand EMC and Electrical Safety Frameworks and Standards

Regulation	Standard	Title
Electrical Safety	AS/NZS 61347.2.11:2003 (R2016)	Lamp controlgear - Particular requirements for miscellaneous electronic circuits used with luminaires (IEC 61347-2-11:2001, MOD)
EMC	AS/NZS CISPR 15:2011	Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment (CISPR 15, Ed.7.2 (2009) MOD)

Other International Directives and Standards

Regulation	Standard	Title
EMC	EN 55015:2013+A:2015	Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment
	EN 61547:2009	Equipment for general lighting purposes - EMC immunity requirements
	EN 61000-3-2:2014 (R2014)	Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current $\leq 16\text{A}$ per phase)
	EN 61000-3-3:2013 (R2013)	Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current $\leq 16\text{A}$ per phase and not subject to conditional connection

Product warranty

This product has a two-year warranty against manufacturing defects in accordance with the following terms:

1. Nothing in this Warranty affects any person's rights under the Australian Consumer Law. The benefits to any person under the GERARD LIGHTING Warranty are in addition to the rights and remedies available under any Consumer Guarantees.
2. Subject to the other clauses of this Warranty, GERARD LIGHTING warrants that the Goods will be free of manufacturing defects and will perform to GERARD LIGHTING's specifications.
3. The benefit of the GERARD LIGHTING Warranty extends only to the owner of the property in which the Goods are installed (the Owner) for two (2) years after the date of purchase (Warranty Period).
4. If within the Warranty Period the Goods fail to perform to GERARD LIGHTING's specifications as a result of some defect in material or workmanship in the Goods (Defect) then GERARD LIGHTING will, at its option, repair the Goods or supply replacement Goods free of charge.
5. The GERARD LIGHTING Warranty will not apply to Goods:
 - 5.1. installed by any person other than a qualified tradesperson; or
 - 5.2. subjected to misuse, neglect, negligence or accidental damage; or
 - 5.3. operated in any way contrary to any operating or maintenance instructions; or
 - 5.4. improperly handled, installed or maintained; or
 - 5.5. altered or modified prior to or after installation.
6. The GERARD LIGHTING Warranty does not apply to faulty or defective design of Goods unless GERARD LIGHTING has designed the Goods and GERARD LIGHTING expressly accepts responsibility for such design in writing.
7. In order to make a claim under the GERARD LIGHTING Warranty, the Owner must:
 - 7.1. contact GERARD LIGHTING to obtain a Returned Goods Authorisation Number for the Goods and to be notified of GERARD LIGHTING's return address for the Goods by:
 - 7.1.1. freecall **1300 95 DALI (3254)**; or
 - 7.1.2. post to **PO Box 314, Padstow NSW 2211**; or
 - 7.1.3. fax to **1300 95 3257**; or
 - 7.1.4. email to sales@diginet.net.au.
 - 7.2. return the Goods at the Owners expense to the return address notified by GERARD LIGHTING together with all accessories, instructions, specifications or other material supplied with the Goods and a notice in writing:
 - 7.2.1. stating the Returned Goods Authorisation Number for the Goods;
 - 7.2.2. describing in detail the defect or fault in the Goods;
 - 7.2.3. setting out the Owner's contact details (including postal address, email address and telephone numbers at which the Owner can be contacted during usual business hours).
 - 7.3. GERARD LIGHTING will not accept any returned Goods which have not been returned strictly in accordance with the above instructions.
8. GERARD LIGHTING will examine any returned Goods and if GERARD LIGHTING determines that they are defective through no fault of the Owner and are otherwise undamaged, GERARD LIGHTING will repair or replace the Goods free of charge.
9. GERARD LIGHTING will notify the Owner whether it accepts the Goods are defective within a reasonable time of return.
10. GERARD LIGHTING will not be responsible for any costs of de-installation, re-installation, returning Goods or for redelivery of the Goods (whether original or repaired and/or replacement Goods) by GERARD LIGHTING and any other related expenses of the Owner in claiming under the GERARD LIGHTING Warranty.
11. GERARD LIGHTING will not be responsible for any loss or damage to the Goods occurring while the Goods are in transit (either on return to GERARD LIGHTING or upon redelivery to the Owner of the original or repaired and/or replacement Goods).
12. GERARD LIGHTING will not be responsible (whether arising in contract or tort (including negligence) or under any statute) for any special, indirect, incidental, consequential or economic losses or damages (including loss of data, business, profits, revenue, anticipated savings, bargain, opportunity or goodwill) whether or not the possibility of those losses or damages being suffered had been brought to the attention of GERARD LIGHTING.

The Australian Consumer Law requires the inclusion of the following statement with the GERARD LIGHTING Warranty:

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

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