

LUMINO

V20S IP50 V20S OPTIC IP50

INSTALLATION MANUAL

IMV20_IP50_R2202

TECHNICAL SUPPORT

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www.lumino.lighting

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Dublin, D07 P4AX
Ireland

Installers must read this document and any other referenced documents in full before commencing installation work. Failure to observe all installation guidance in this document may result in unsafe installation, cause permanent product damage and void product warranty.

This document is subject to change without notice.
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HANDLING PRECAUTIONS

PLASTIC COVER / DIFFUSER

To avoid permanent damage, do not allow small or sharp objects to apply pressure on to the plastic cover / diffuser.

STRESS

Never stand or place weighted items on the product. The product is not vandal resistant and has no IK rating. Do not subject the product to impact forces.

POWER CABLES

The product end caps, power cables and connectors must not be pulled or twisted. Never pull the product by its power cables or hang it from its power cables or connectors.

CUTTING AND SAWING

The product must not be sawn, drilled or otherwise modified in any way.

DAMAGES

Inspect the product. If you see any damage upon unpacking, report to LUMINO immediately and do not install the product.

LOCATION

Use in dry locations only. This product is unsuitable for wet and damp locations.
IP50 rated for dust protection.

Protect product from dust, paint and harmful substances during installation and use. Ensure product is not exposed to VOC gases. Do not obstruct the product and its light output.



SAFETY GUIDANCE

WIRING GUIDE

Follow the guidance shown in the provided wiring guide, including maximum cable lengths, cable sizes and other wiring instructions. When running cables through an enclosure, ensure cables are protected from damage, separated from mains voltage cables and anchored against being pulled. Make connections appropriate for the IP rating of the product.

QUALIFIED INSTALLER

Installation must be carried out by a qualified person and conducted in accordance with local regulations and applicable standards.

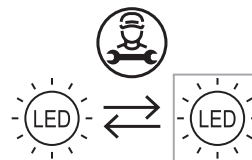
THERMAL MANAGEMENT

Ensure ambient temperature (Ta) does not exceed 40°C (104°F) and case temperature (Tc) does not exceed 70°C (158°F). Exceeding maximum Tc will cause permanent damage and void the product warranty.

Allow sufficient clear air space for the LED drivers, as well as suitable access to the drivers as specified on installation instructions.

REPAIR AND REPLACEMENT

If the product is not functioning, contact LUMINO to register a Service Call for factory repair or replacement. Product's light source is replaceable by a qualified professional. See page 3 for Ecodesign and end of life information.



DRIVERS

POWER OFF

Product and driver must not be live wired. Switch off power before work begins. Follow instructions and guidance for the make and model of driver being used.

24VDC SELV

Only use drivers with a maximum output of 24VDC. Drivers must be SELV, constant voltage with both overload and short-circuit protection.

DIMMERS

Check dimmer is compatible with the driver and certified to local regulations.

INRUSH CURRENT

Many constant voltage LED drivers can have high inrush current at power-on. Driver's inrush current can be many times the normal operating current. Use a suitable MCB. Type C MCBs are normally suitable but if inrush current is a persistent problem an inrush suppressor may be required.

PROTECTION

Use only with 24VDC Class 2 power unit to UL1310 standard with overload and short-circuit protection. Rate drivers for at least 10% above load. Driver protection circuitry must not be relied upon to protect secondary 24VDC electrical circuits from damage caused by over-current or short circuit. DC fuses or DC electronic circuit breakers are recommended for full protection. Allow for access to drivers for maintenance and sufficient clear air space for ventilation.

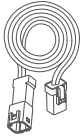
CABLING

Do not overload the driver. Damage will be caused by incorrect input voltage, reverse polarity or short circuit. Plan for loads, driver locations, dimming and cabling prior to start of work. Ensure basic insulation is maintained between mains and dimming control wires.

ACCESSORIES

Cable & Connector

VECA-CA0250-__MF-R1
2 / 3 / 4 / 5 Pole power link
250mm cable length



VECA-CA1000-__MF-R1
2 / 3 / 4 / 5 Pole power link
1000mm cable length

IDC Connector

VECA-CA90-__R1
Sealant connector.
1 - 3A Max / 3 - 5A Max. Pair



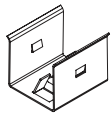
Self-closing Cable Sleeve

VECA-SL001-R1
1000mm Cable sleeving



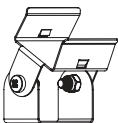
Fixed Mount

V20S-M__501-R1
Fixed clip
D - Silver / F - Black / E - White
[Specify quantity required]

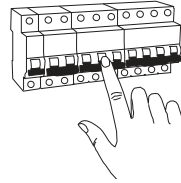


Rotation Mount

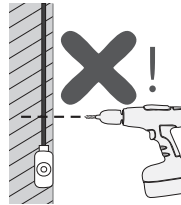
V20S-M__501-R1
180° Rotation clip
D - Silver / F - Black / E - White
[Specify quantity required]



CHECK FIRST!



TURN OFF POWER!
COUPER LE COURANT!
STROM ABSHALTEN!
CORTE CORRIENTE!

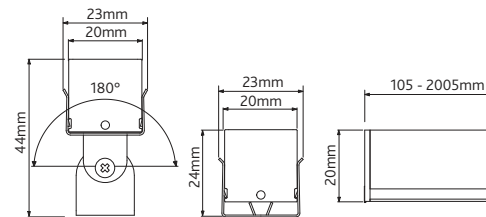


CHECK THE WALL!
VÉRIFIER LE MUR!
DIE WAND ÜBERPRÜFEN!
COMPRUEBE LA PARED!

INSTALLATION

1. Plan Installation

Check product and its dimensions against the planned installation. Runs of LEDs may have to be installed in a particular sequence.



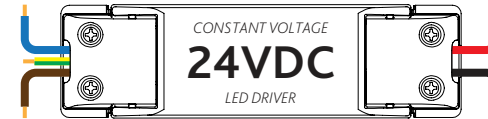
Rotation Mount

Fixed Mount

~342g per metre

2. Prepare Power Supply

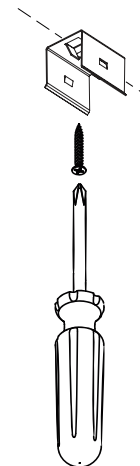
This product requires a 24VDC power supply.
Please refer to provided wiring guide document.
Failure to follow guide may result in damage to the product and voiding of warranty.



3. Mounting Clips

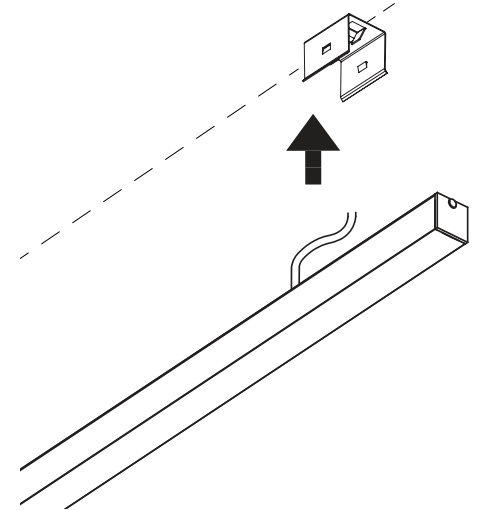
Fix all the clips securely to the mounting surface. Recommended screw size is a Nº 4 gauge wood screw. If necessary, use alternative fixings of a similar gauge and size suitable for the material being fixed into.

Products should be held by at least 3 equally spaced clips per metre. Products shorter than 505mm may be held by just 2 clips. There must always be a clip within 100mm of each end of the product.



4. Install V20S

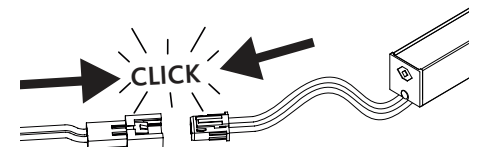
Align clips and carefully push the product into the clips. Ensure the product is fully clipped in place and check it is not misaligned or misplaced due to screw heads or wires. Ensure that cables are not pinched when installed.



5. Connect to LED Driver

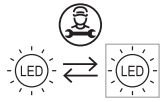
With the power off. Feed the power cables to the V20S, connecting the product to the LED driver.

Finalise all electrical connections and test the circuit. If the product does not function as expected, turn power off immediately and check all connections.



REPAIR & REPLACEMENT

VERY IMPORTANT! PLEASE READ BEFORE CARRYING OUT ANY WORK!



This product's light source is only replaceable by a qualified professional.

If the product has stopped working, please review the following before replacing the light source. It is important to identify why the product has stopped working first, as replacing the light source might not fix the cause of the failure.

When installed correctly, LEDs have a long service life, with light output gradually decreasing over time (L70 60k hrs, 70% light output after 60,000 hours of use).

Check the lighting circuit.

Was the correct power sourced used?
Check product label for requirements.

Are there nearby heat sources that might overheat the product? See first page for maximum Ta and Tc details.

All work must be done by a qualified professional, and carried out in accordance with local regulations. All tools required to replace the light source are commonly found tools. Please contact LUMINO if further assistance is required.

It is the full responsibility of the professional carrying out the repair work to ensure that after the work is complete, the repaired product still complies with all relevant safety standards and is safe to use. LUMINO cannot accept liability for any harm resulting from an unsafe repair. If in any doubt, do not carry out repair work and contact LUMINO for support.

TOOLS & PARTS LIST

Tools & Consumables Required

- Isopropyl alcohol
- T8 torx screwdriver
- Scissors
- Small hole punch tool (Ø1.2mm)
- Soldering iron
- Solder wick / sucker
- Solder (lead-free)
- Wire cutters

Spare Parts

The following spare parts are available to order. Please contact LUMINO if any spare parts are required.

Diffusers

V20S Clear diffuser
V20S Opal diffuser

End Caps

V20S End cap
Silver / White / Black

Gasket

V20S Silicone gasket

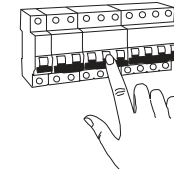
Optics

V20S Lens
V20S WASH diffusion film
V20S GRAZE diffusion film
V20S Louvre

Instructions are meant for IP50 rated products only. Do not attempt to repair the IP67 version of this product and instead contact LUMINO if a repair is required.

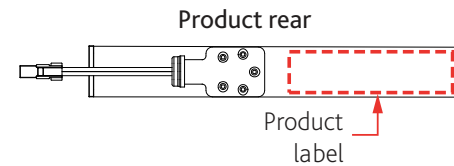
1. Turn off the power.

Make sure no electricity can reach the LED power supply.

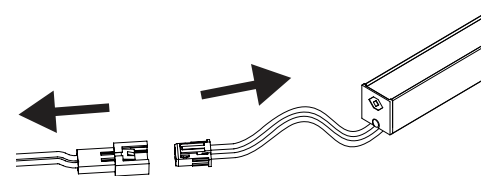


2. Check Product Label

See product label and check specification of LED tape inside. Replacement power output should match or be no greater than that of the original LED tape.



3. Disconnect V20S from LED driver.



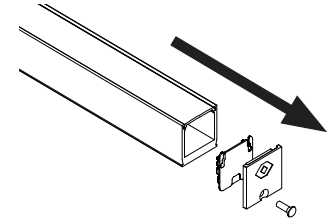
4. Move the Product

Move the V20S to an ESD safe workspace. Take all necessary ESD precautions where appropriate.



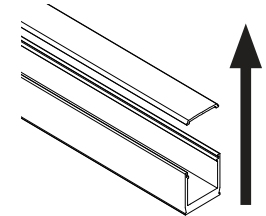
5. Remove End Caps & Gaskets

Carefully remove the end caps and gaskets from the V20S using a torx T8 bit.



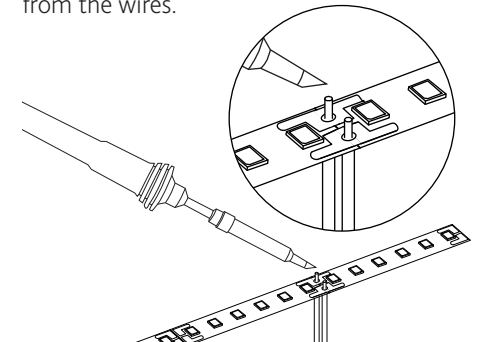
6. Remove Diffuser & Lens

Starting from one end, gently pry the plastic diffuser off from the V20S. Take care not to crack the diffuser. Then remove any optics inside. Set all components aside for later use.



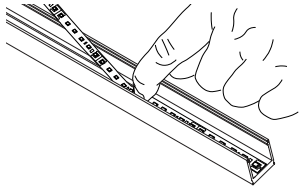
7. Unsolder Cable

Unsolder the individual wires from the LED tape. Additional solder and solder wick may be required to complete this step. Once the solder pad is at the correct temperature, slowly lift the LED tape away from the wires.



8. Remove LEDs

Remove the original LED tape. Lift one end of the LED tape and unpeel from the profile.



9. Recycling

Dispose of electronic waste in accordance with local environmental regulations. Do not send to landfill.

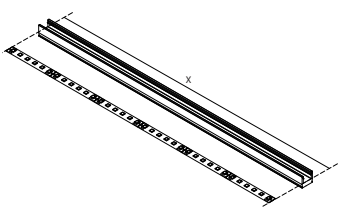


10. Clean

Remove any remaining adhesive residue inside the V36S profile. Use isopropyl alcohol if necessary and allow to air dry.

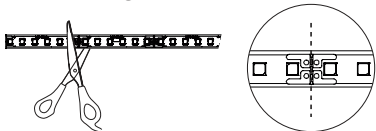
11. Measure LED Tape

Lay out the new LED tape, measuring how much is required. V36S profile's length should closely match the cut increments of the LED tape.



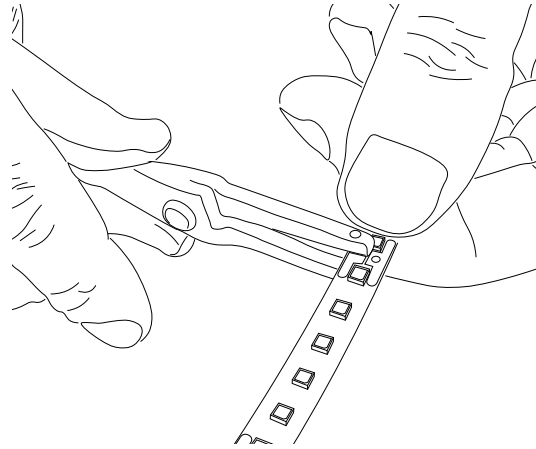
12. Trim LED Tape

Cut between the solder pads using strong scissors. LED tape cut increments are shown on the right.

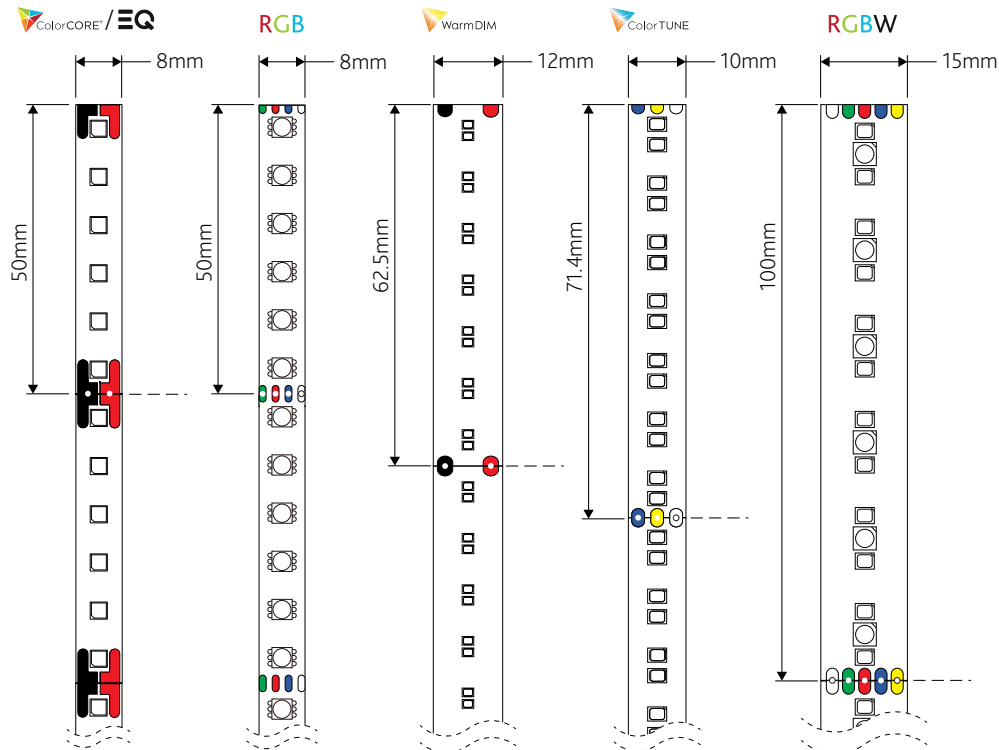
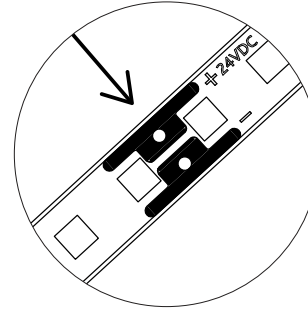


13. Punch Holes

Using a small hole punch tool, create Ø1.2mm holes in the LED tape as shown.

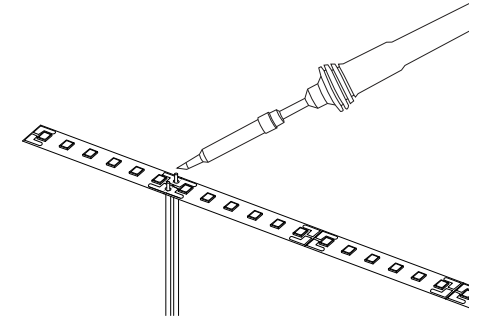


Hole position must match up with the cable entry hole on the V20S's profile. See hole offset set below.

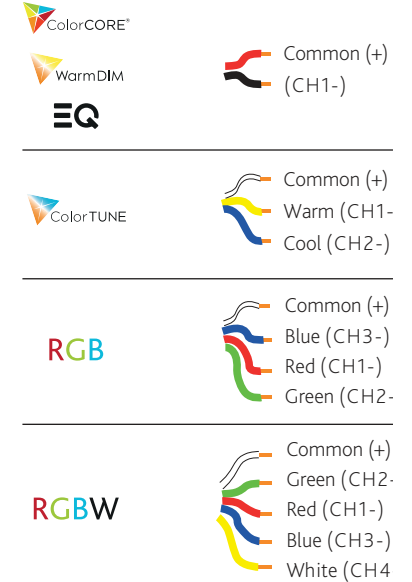


14. Solder Cables

With the paper backing. Resolder the cable/s to the LED solder pads. Take care not to over heat the pads.
IMPORTANT: Observe LED tape's polarities!

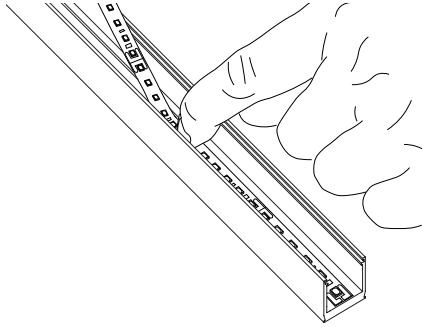


Wiring Diagram



15. Install LED Tape

Peel back 50mm to 100mm of the adhesive backing, starting with the hole punched end of the LED tape. Carefully align the beginning of the tape with the start of the V20S extrusion. Simultaneously unpeel backing and press down on the LED tape, working along the length of the profile. Only use finger/thumb pressure on the LEDs.



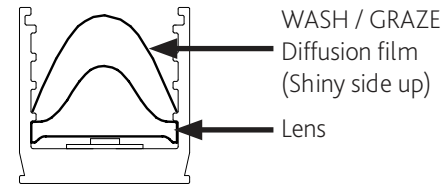
16. Test LED

Before any further work is done. Momentarily power the LEDs to verify that the cable was soldered to the LED tape correctly and that the tape is functioning.

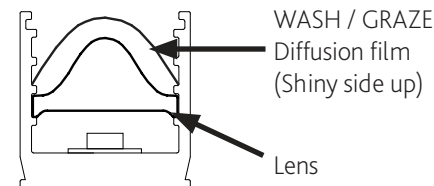
17. Replace Optical Components

For V20S OPTIC products, reinstall the optical components inside the product as shown below.

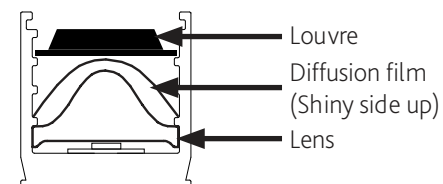
FLOOD / WASH / GRAZE



FLOOD / WASH / GRAZE

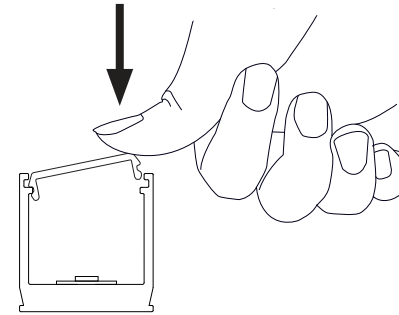


WASH / GRAZE with Louvre



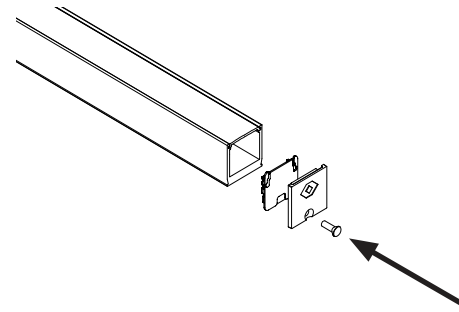
18. Install Diffuser

Align ends with the V20S extrusion, then using thumbs, snap the clear or opal diffuser cover into place, as shown below.



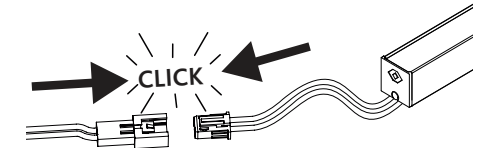
19. End Caps & Gaskets

Install both end caps with gaskets, using a torx T8 screwdriver. Hand tighten screw, do not over torque.



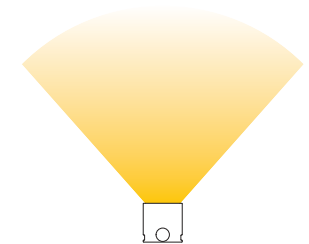
20. Reconnect

With the power off, reconnect the V20S to the LED driver.



21. Power Up

Test the V20S. If the product does not function as expected, turn power off and inspect all connections.

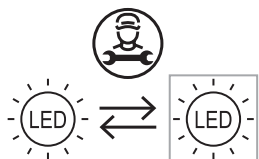


ECODESIGN REGULATION

This product is considered to be a “containing product” in the sense of Regulations (EU) 2019/2020 and (EU) 2019/2015.

The contained light source is replaceable only by a qualified professional.

This product contains a light source of energy efficiency class as shown in the Energy Rating table. Replacement light sources must be of equal or higher energy rating. Full electrical, mechanical, thermal and optical functionality must be restored by a qualified professional when light source is replaced.



DISMANTLING

Dismantling of light source from the containing product at end of life:

The product shall be disassembled in accordance to the provided instructions.

Containing products shall be separated from building material and/or from other additional mounting accessories by means of a professional installer.

Separate control gear and light sources must be disposed of at certified disposal companies in accordance with Directive 2012/19/EU (WEEE) in the EU and with Waste Electrical and Electronic Equipment (WEEE) Regulations 2013 in the UK.

LUMINO is a member of the WEEE producer compliance scheme.
Registration number: WEE/MM8138AA

ENERGY RATING

This product contains light sources of energy efficiency classes as shown:

LED	CCT	6W/m	9.6W/m	12W/m	24W/m
ColorCORE	4000K	F	-	F	F
	3500K	F	-	F	F
	3000K	F	-	F	F
	2700K	F	-	F	G
	2500K	F	-	F	G
	2200K	F	-	F	G
EQ	4000K	F	-	F	G
	3000K	G	-	G	G
	2700K	G	-	G	G
ColorTUNE	4000K - 2200K	-	-	-	F
	3000K - 1800K	-	-	-	F
WarmDIM	3000K	-	F	-	-
RGBW	RGB + 3000K	-	-	F	G
RGB	N/A				

LUMINO

V20S IP67 V20S OPTIC IP67

INSTALLATION MANUAL

IMV20_IP67_R2202

TECHNICAL SUPPORT

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Copyright © LUMINO. E&OE



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PLASTIC COVER / DIFFUSER

To avoid permanent damage, do not allow small or sharp objects to apply pressure on to the plastic cover / diffuser.

STRESS

Never stand or place weighted items on the product. The product is not vandal resistant and has no IK rating. Do not subject the product to impact forces.

POWER CABLES

The product end caps, power cables and connectors must not be pulled or twisted. Never pull the product by its power cables or hang it from its power cables or connectors.

CUTTING AND SAWING

The product must not be sawn, drilled or otherwise modified in any way.

DAMAGES

Inspect the product. If you see any damage upon unpacking, report to LUMINO immediately and do not install the product.

LOCATION

Suitable for wet locations. IP67 rated for temporary submersion for no more than 30mins. Ensure there is adequate drainage made available for the product.

Protect product from dust, paint and harmful substances during installation and use. Ensure product is not exposed to VOC gases. Do not obstruct the product and its light output.



SAFETY GUIDANCE

WIRING GUIDE

Follow the guidance shown in the provided wiring guide, including maximum cable lengths, cable sizes and other wiring instructions. When running cables through an enclosure, ensure cables are protected from damage, separated from mains voltage cables and anchored against being pulled. Make connections appropriate for the IP rating of the product.

QUALIFIED INSTALLER

Installation must be carried out by a qualified person and conducted in accordance with local regulations and applicable standards.

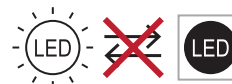
THERMAL MANAGEMENT

Ensure ambient temperature (Ta) does not exceed 40°C (104°F) and case temperature (Tc) does not exceed 70°C (158°F). Exceeding maximum Tc will cause permanent damage and void the product warranty.

Allow sufficient clear air space for the LED drivers, as well as suitable access to the drivers as specified on installation instructions.

REPAIR AND REPLACEMENT

If the product is not functioning, contact LUMINO to register a Service Call for factory repair or replacement. Light source is not user replaceable. See page 3 for Ecodesign and end of life information.



DRIVERS

POWER OFF

Product and driver must not be live wired. Switch off power before work begins. Follow instructions and guidance for the make and model of driver being used.

24VDC SELV

Only use drivers with a maximum output of 24VDC. Drivers must be SELV, constant voltage with both overload and short-circuit protection.

DIMMERS

Check dimmer is compatible with the driver and certified to local regulations.

INRUSH CURRENT

Many constant voltage LED drivers can have high inrush current at power-on. Driver's inrush current can be many times the normal operating current. Use a suitable MCB. Type C MCBs are normally suitable but if inrush current is a persistent problem an inrush suppressor may be required.

PROTECTION

Use only with 24VDC Class 2 power unit to UL1310 standard with overload and short-circuit protection. Rate drivers for at least 10% above load. Driver protection circuitry must not be relied upon to protect secondary 24VDC electrical circuits from damage caused by over-current or short circuit. DC fuses or DC electronic circuit breakers are recommended for full protection. Allow for access to drivers for maintenance and sufficient clear air space for ventilation.

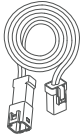
CABLING

Do not overload the driver. Damage will be caused by incorrect input voltage, reverse polarity or short circuit. Plan for loads, driver locations, dimming and cabling prior to start of work. Ensure basic insulation is maintained between mains and dimming control wires.

ACCESSORIES

Cable & Connector

VECA-CA0250-__MF-R1
2 / 3 / 4 / 5 Pole power link
250mm cable length



VECA-CA1000-__MF-R1
2 / 3 / 4 / 5 Pole power link
1000mm cable length

IDC Connector

VECA-CA90-__R1
Sealant connector.
1 - 3A Max / 3 - 5A Max. Pair



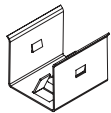
Self-closing Cable Sleeve

VECA-SL001-R1
1000mm Cable sleeving



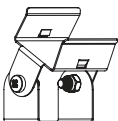
Fixed Mount

V20S-M__501-R1
Fixed clip
D - Silver / F - Black / E - White
[Specify quantity required]

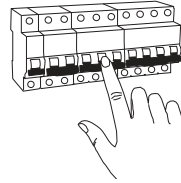


Rotation Mount

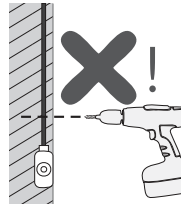
V20S-M__501-R1
180° Rotation clip
D - Silver / F - Black / E - White
[Specify quantity required]



CHECK FIRST!



TURN OFF POWER!
COUPER LE COURANT!
STROM ABSHALTEN!
CORTE CORRIENTE!

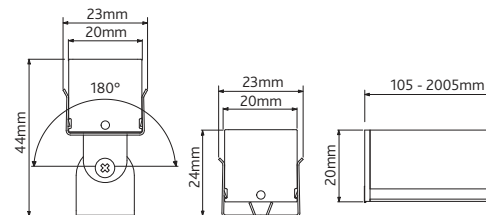


CHECK THE WALL!
VÉRIFIER LE MUR!
DIE WAND ÜBERPRÜFEN!
COMPRUEBE LA PARED!

INSTALLATION

1. Plan Installation

Check product and its dimensions against the planned installation. Runs of LEDs may have to be installed in a particular sequence.



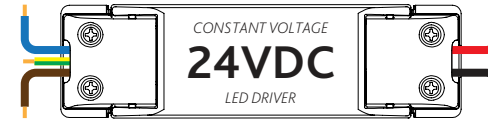
Rotation Mount

Fixed Mount

~342g per metre

2. Prepare Power Supply

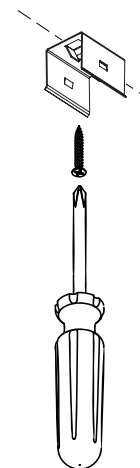
This product requires a 24VDC power supply. Please refer to provided wiring guide document. Failure to follow guide may result in damage to the product and voiding of warranty.



3. Mounting Clips

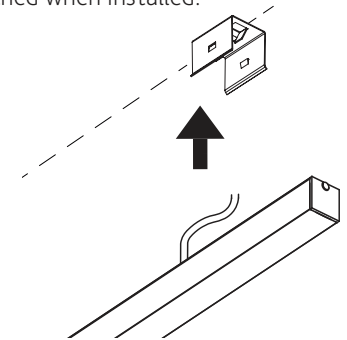
Fix all the clips securely to the mounting surface. Recommended screw size is a N° 4 gauge wood screw. If necessary, use alternative fixings of a similar gauge and size suitable for the material being fixed into.

Products should be held by at least 3 equally spaced clips per metre. Products shorter than 505mm may be held by just 2 clips. There must always be a clip within 100mm of each end of the product.



4. Install V20S

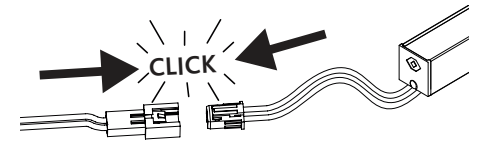
Align clips and carefully push the product into the clips. Ensure the product is fully clipped in place and check it is not misaligned or misplaced due to screw heads or wires. Ensure that cables are not pinched when installed.



5. Connect to LED Driver

With the power off. Feed power cables to the V20S, connecting the product to the LED driver.

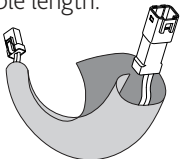
Finalise all electrical connections and test the circuit. If the product does not function as expected, turn power off immediately and check all connections.



5. Protect exposed cable

Self-closing cable sleeving: VECA-SL001-R1

For outdoor applications, the power cable must be wrapped in cable sleeving to protect the cable from UV exposure. Trim sleeving to match cable length.

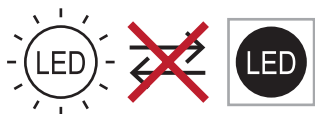


ECODESIGN REGULATION

This product is considered to be a “containing product” in the sense of Regulations (EU) 2019/2020 and (EU) 2019/2015.

The contained light source is an integrated part of the containing product and its removal can only be done by causing permanent damage to the containing product.

Therefore, replacement of the light source with the use of commonly available tools is not justified due to its restricted mechanical, electrical, optical, thermal and/or environmental protection requirements.



DISMANTLING

Dismantling of light source from the containing product at end of life:

The containing product shall be cut to the length of the contained light source and the light source mechanically detached from the containing product. Containing product component parts shall then be disassembled.

Containing products shall be separated from building material and/or from other additional mounting accessories by means of a professional installer.

Separate control gear and light sources must be disposed of at certified disposal companies in accordance with Directive 2012/19/EU (WEEE) in the EU and with Waste Electrical and Electronic Equipment (WEEE) Regulations 2013 in the UK.

LUMINO is a member of the WEEE producer compliance scheme.
Registration number: WEE/MM8138AA

ENERGY RATING

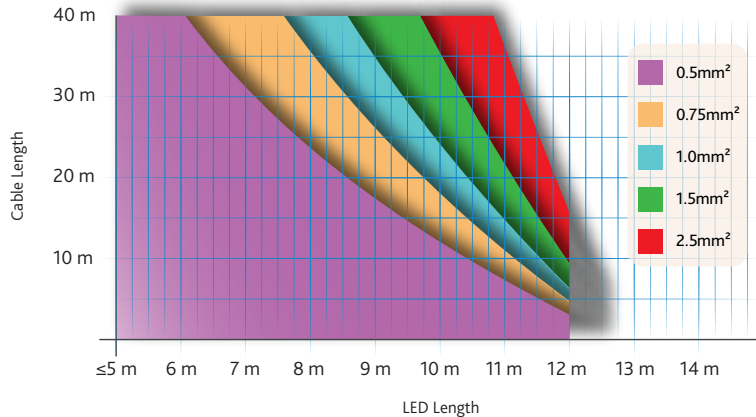
This product contains light sources of energy efficiency classes as shown:

LED	CCT	6W/m	9.6W/m	12W/m	24W/m
ColorCORE	4000K	F	-	F	F
	3500K	F	-	F	F
	3000K	F	-	F	F
	2700K	F	-	F	G
	2500K	F	-	F	G
	2200K	F	-	F	G
EQ	4000K	F	-	F	G
	3000K	G	-	G	G
	2700K	G	-	G	G
ColorTUNE	4000K - 2200K	-	-	-	F
	3000K - 1800K	-	-	-	F
WarmDIM	3000K	-	F	-	-
RGBW	RGB + 3000K	-	-	F	G
RGB	N/A				

Maximum Cable Length Table 1.

LED LENGTH	CURRENT	0.5mm ²	0.75mm ²	1mm ²	1.5mm ²	2.5mm ²
< 6 m	< 1.50 A					
6 m	1.50 A	40 m				
6.5 m	1.63 A	35.5 m				
7 m	1.75 A	31.25 m				
7.5 m	1.88 A	27.25 m	40 m			
8 m	2.00 A	23.5 m	35.5 m			
8.5 m	2.13 A	20.25 m	30.5 m	40 m		
9 m	2.25 A	17.25 m	26 m	34.75 m		
9.5 m	2.38 A	14.5 m	21.75 m	29.25 m	40 m	
10 m	2.50 A	12 m	18 m	24 m	35.25 m	
10.5 m	2.63 A	9.5 m	14.25 m	19.25 m	28.25 m	40 m
11 m	2.75 A	7.25 m	11 m	14.75 m	21.5 m	36 m
11.5 m	2.88 A	5 m	7.75 m	10.25 m	15.25 m	25.5 m
12 m	3.00 A	3 m	4.75 m	6.25 m	9.25 m	15.5 m

40 m max.



! Cable lengths are based on average resistance for typical copper cables. Cable characteristics may vary according to manufacturer, temperature, copper purity, connections etc.

Use 24VDC drivers with overload and short-circuit protection. Use reputable driver manufacturers with appropriate standards for the local requirements.

USA & Canada:
Use only with Class 2 power unit to UL1310 standard. Use only with maximum output 24VDC voltage Class 2 power unit.

! Maximum cable lengths shown above are calculated for voltage drop and do not consider EMI. Long cables can potentially emit EMI. Do not exceed the maximum cable length stated by the driver manufacturer. Installers must ensure EMI emissions do not exceed local regulated limits.

Shielded cables and ferrite coils can be used where applicable.

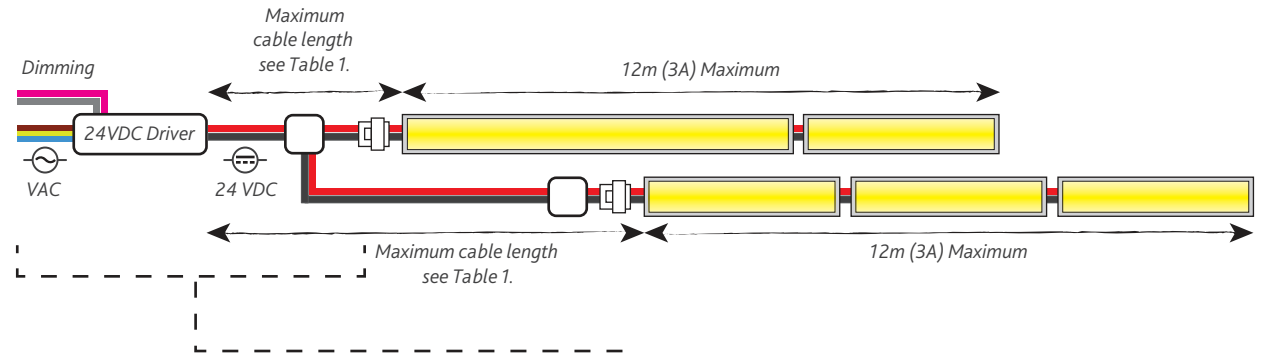
Installers must ensure voltage drop does not exceed 5%.

Driver protection circuitry must not be relied upon to protect secondary 24VDC electrical circuits from damage caused by overcurrent or short circuit. DC fuses or DC electronic circuit breakers are recommended to provide additional protection.

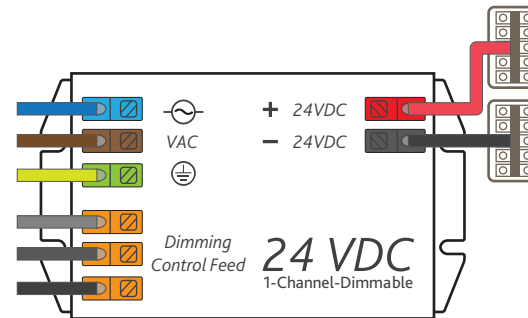
Constant voltage LED drivers can have high inrush current at power-on. Driver inrush current can be many times the normal operating current.

Use a suitable MCB. Type C MCBs are normally suitable but if inrush current is a persistent problem an inrush suppressor may be required.

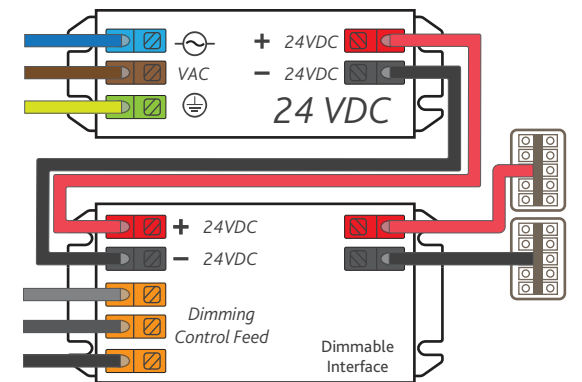
Wiring Diagram



Dimmable Driver Wiring



Driver + Dimming Interface Wiring



IM-6Wm_ColorCORE_EQ_R2101

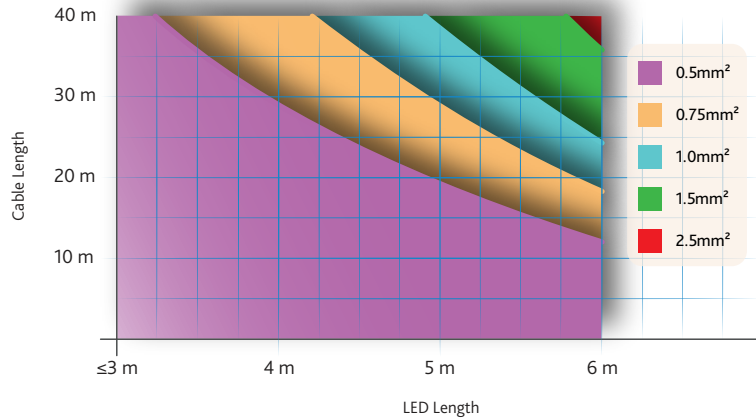
For further help regarding installation visit lumino.lighting

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- Electrical work to be conducted in accordance with local regulations.
- Power must be disconnected prior to installation work.
- Ensure free-moving air space around LEDs and drivers.
- Protect the LEDs from dust and paint during installation and use.
- Plan for loads, driver locations, cables sizes etc prior to installation.
- Shielded control pair required for dimming signal wires.
- Incorrect voltage, reverse polarity or short circuit will cause damage.

Maximum Cable Length Table 1.

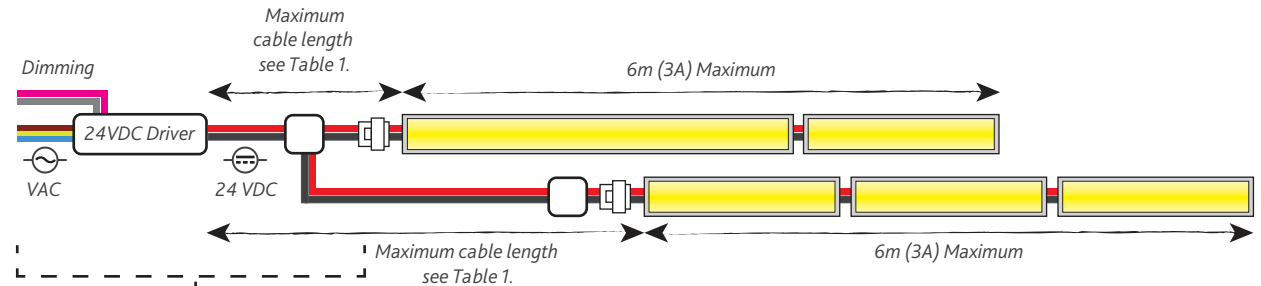
LED LENGTH	CURRENT	0.5mm ²	0.75mm ²	1mm ²	1.5mm ²	2.5mm ²
< 3 m	< 1.50 A					
3 m	1.50 A	40 m				
3.5 m	1.75 A	35.5 m				
4 m	2.00 A	29 m	40 m			
4.5 m	2.25 A	23.5 m	35.5 m	40 m		
5 m	2.50 A	19.25 m	28.75 m	38.5 m		
5.5 m	2.75 A	15.5 m	23.25 m	31 m	40 m	
6 m	3.00 A	12 m	18.25 m	24.25 m	35.75 m	

40 m max.

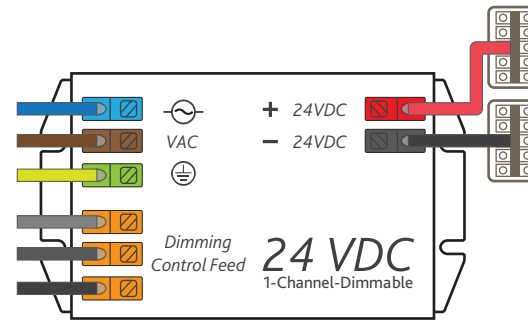


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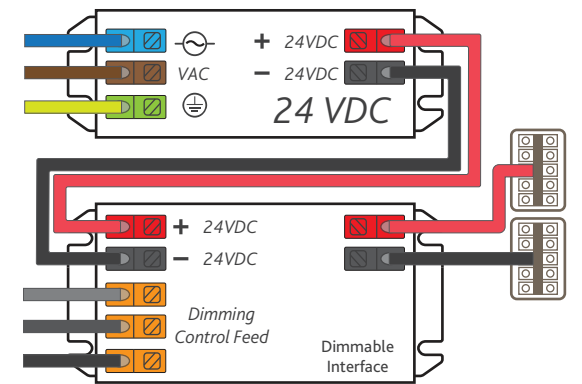
Wiring Diagram



Dimmable Driver Wiring



Driver + Dimming Interface Wiring



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Shielded cables and ferrite coils can be used where applicable.

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Driver protection circuitry must not be relied upon to protect secondary 24VDC electrical circuits from damage caused by overcurrent or short circuit. DC fuses or DC electronic circuit breakers are recommended to provide additional protection.

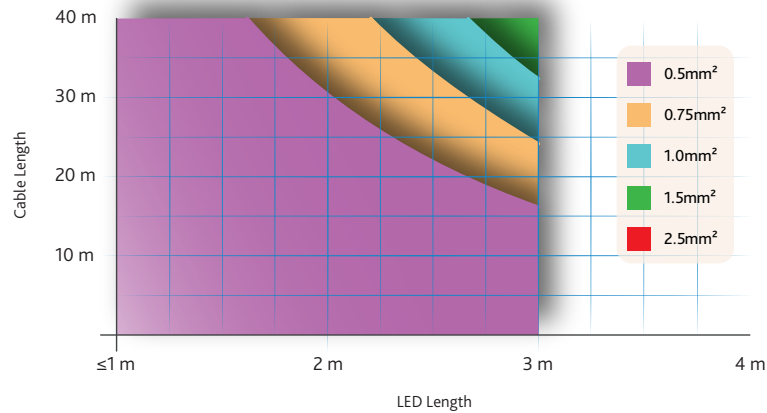
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- Shielded control pair required for dimming signal wires.
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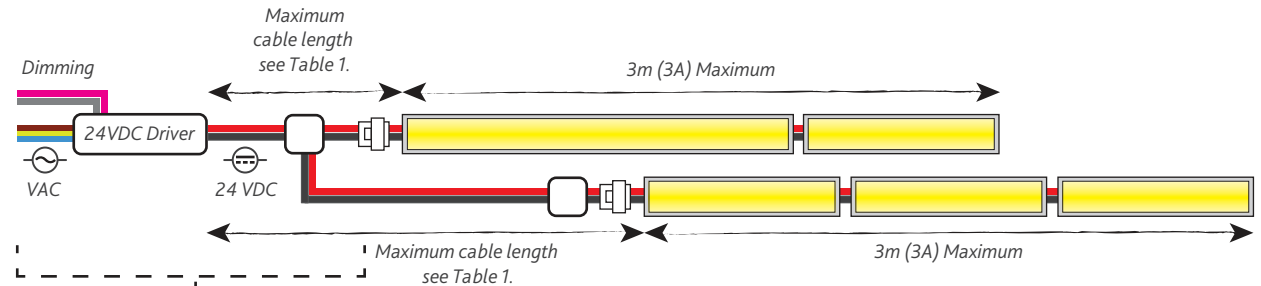
Maximum Cable Length Table 1.

LED LENGTH	CURRENT	0.5mm ²	0.75mm ²	1mm ²	1.5mm ²	2.5mm ²
<1.5 m	< 1.5 A					
1.5 m	1.5 A	40 m				
2 m	2 A	30.5 m	40 m			
2.5 m	2.5 A	22 m	33.25 m	40 m		
3 m	3 A	16.25 m	24.25 m	32.5 m	40 m	

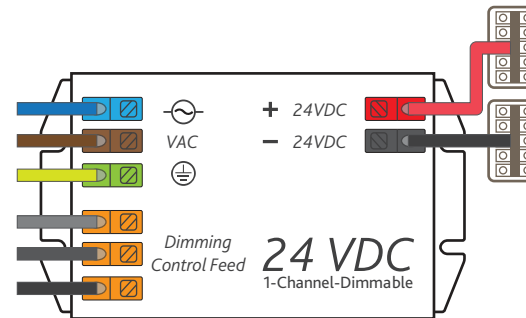


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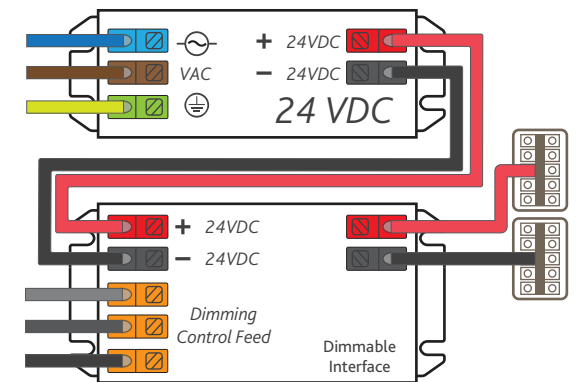
Wiring Diagram



Dimmable Driver Wiring



Driver + Dimming Interface Wiring



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Installers must ensure voltage drop does not exceed 5%.

Driver protection circuitry must not be relied upon to protect secondary 24VDC electrical circuits from damage caused by overcurrent or short circuit. DC fuses or DC electronic circuit breakers are recommended to provide additional protection.

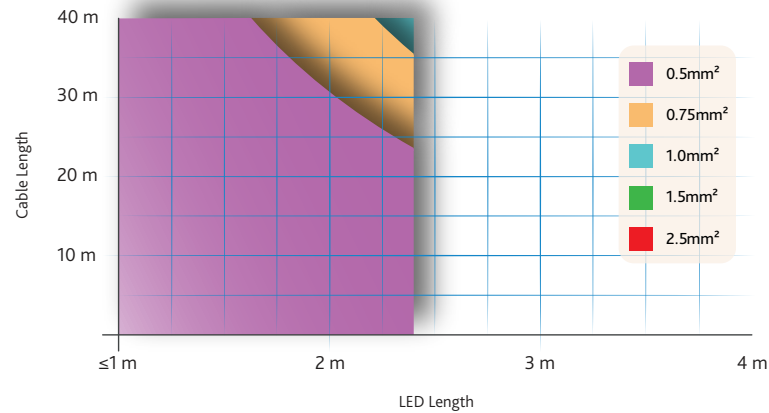
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- Incorrect voltage, reverse polarity or short circuit will cause damage.

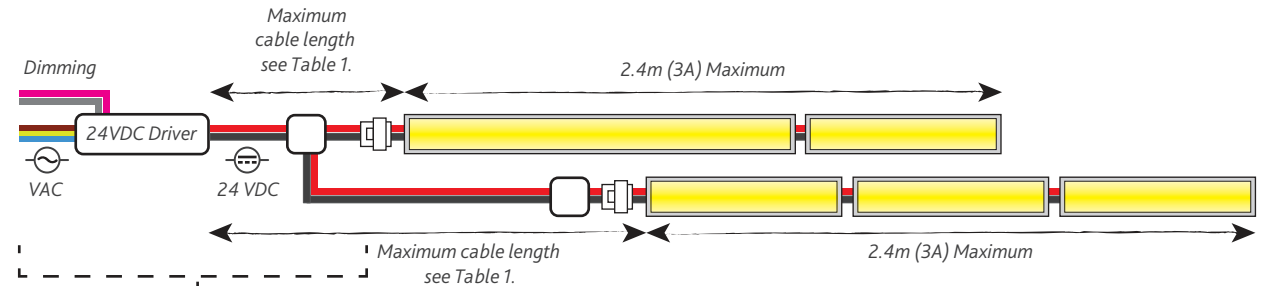
Maximum Cable Length Table 1.

LED LENGTH	CURRENT	0.5mm ²	0.75mm ²	1mm ²	1.5mm ²	2.5mm ²
<1 m	< 0.63 A					
1 m	1.25 A	40 m				
1.5 m	1.88 A	33.5 m	40 m			
2 m	2.5 A	22.25 m	33.5 m	40 m		
2.4 m	3 A	16.5 m	24.75 m	33.25 m	40 m	

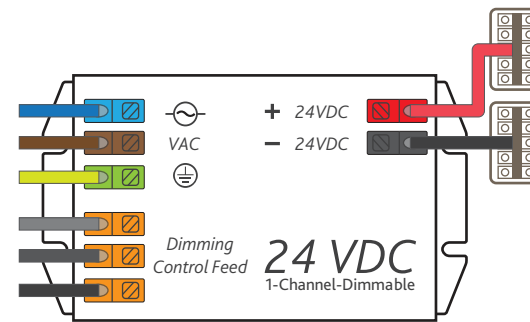


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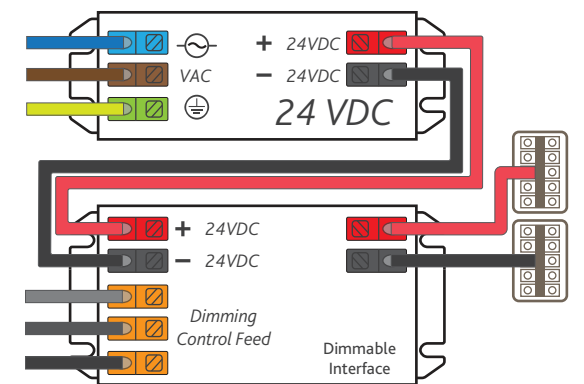
Wiring Diagram



Dimmable Driver Wiring



Driver + Dimming Interface Wiring



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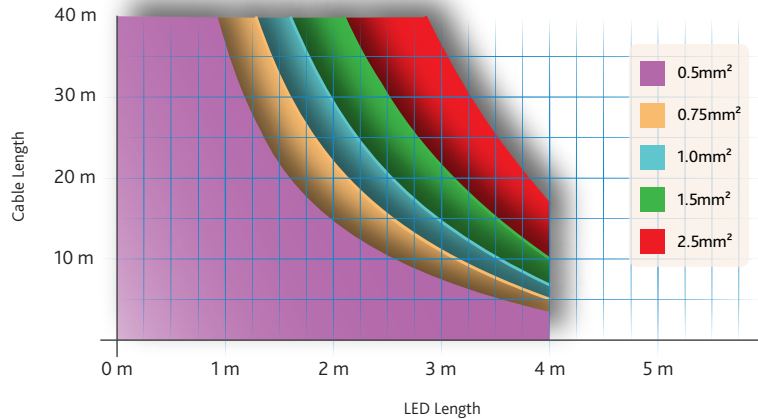
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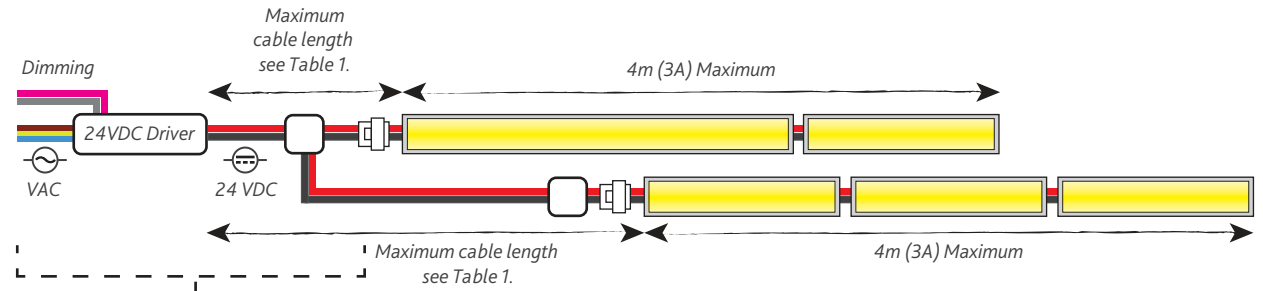
Maximum Cable Length Table 1.

LED LENGTH	CURRENT	0.5mm ²	0.75mm ²	1mm ²	1.5mm ²	2.5mm ²
< 0.5 m	< 0.2 A					
0.5 m	0.2 A	40 m				
1 m	0.4 A	36.5 m	40 m			
1.5 m	0.6 A	21.75 m	32.75 m	40 m		
2 m	0.8 A	14.5 m	22 m	29.25 m	40 m	
2.5 m	1 A	10.25 m	15.5 m	20.75 m	30.25 m	40 m
3 m	1.2 A	7.25 m	11 m	14.75 m	21.75 m	36.25 m
3.5 m	1.4 A	5 m	7.75 m	10.25 m	15.25 m	25.25 m
4 m	1.6 A	3.25 m	5 m	6.75 m	10 m	16.75 m

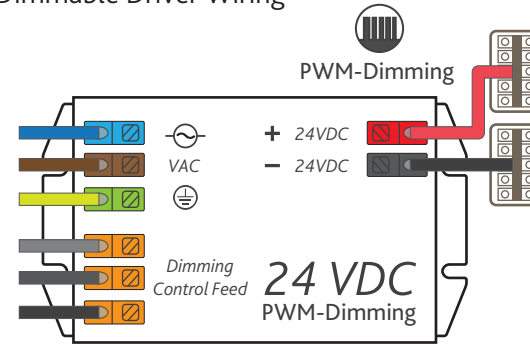


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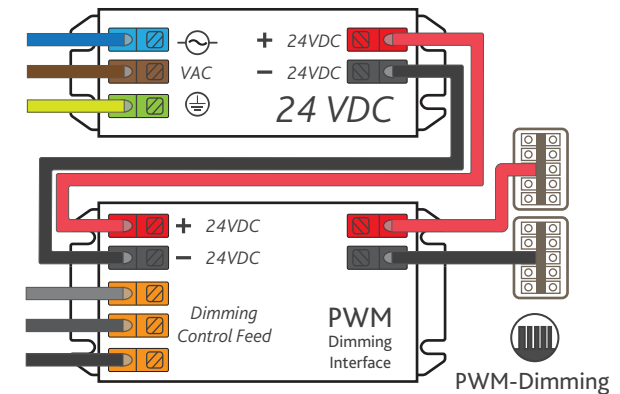
Wiring Diagram



Dimmable Driver Wiring



Driver + Dimming Interface Wiring



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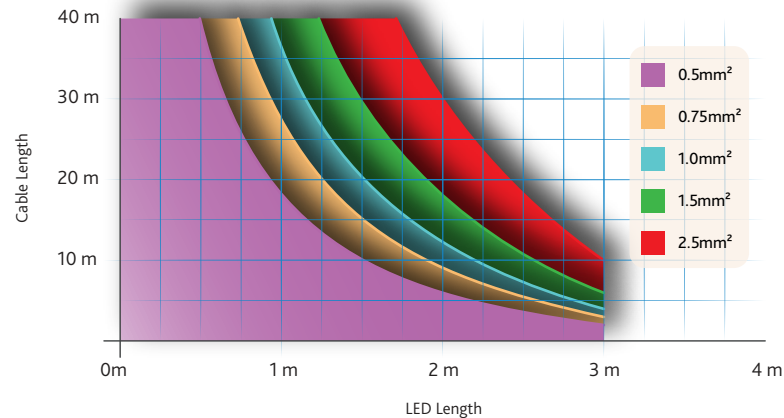
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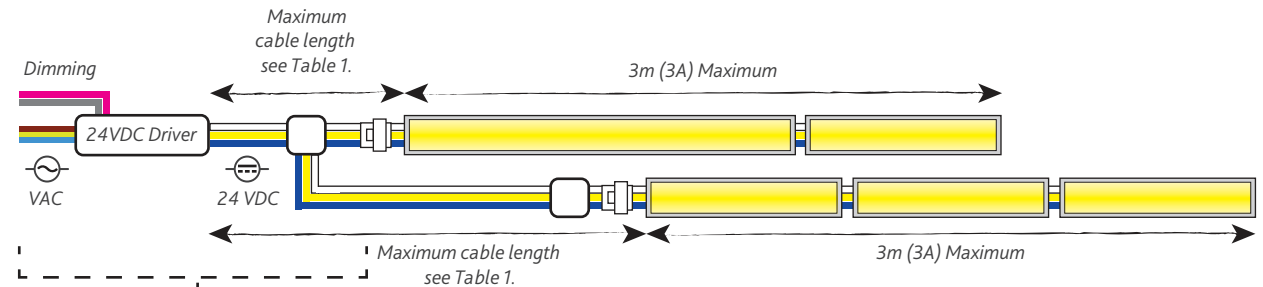
Maximum Cable Length Table 1.

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<0.5 m	< 0.5 A					
0.5 m	0.5 A	40 m	40 m	40 m	40 m max.	
1 m	1 A	18.25 m	27.5 m	36.75 m	40 m	
1.5 m	1.5 A	10 m	15.25 m	20.25 m	29.75 m	40 m
2 m	2 A	6 m	9.25 m	12.25 m	18 m	30 m
2.5 m	2.5 A	3.75 m	5.5 m	7.5 m	11 m	18.25 m
3 m	3 A	2 m	3 m	4 m	6 m	10 m

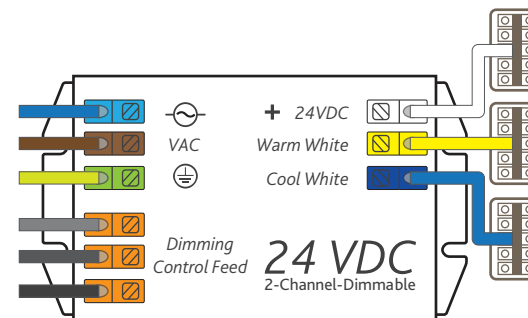


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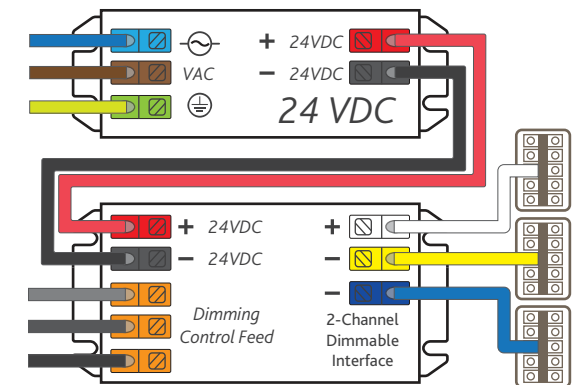
Wiring Diagram



Dimmable Driver Wiring



Driver + Dimming Interface Wiring



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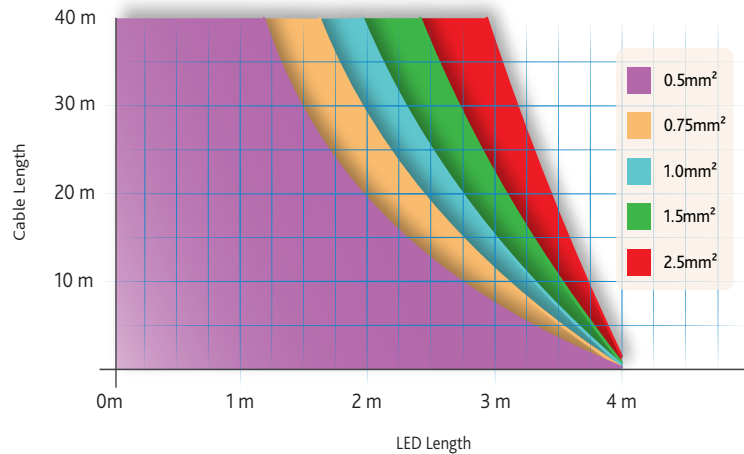
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- Protect the LEDs from dust and paint during installation and use.
- Plan for loads, driver locations, cables sizes etc prior to installation.
- Shielded control pair required for dimming signal wires.
- Incorrect voltage, reverse polarity or short circuit will cause damage.

Maximum Cable Length Table 1.

LED LENGTH	CURRENT	0.5mm ²	0.75mm ²	1mm ²	1.5mm ²	2.5mm ²
<0.5 m	< 0.3 A	40 m max.				
0.5 m	0.3 A					
1 m	0.6 A	40 m	40 m			
1.5 m	0.9 A	29.5 m	40 m	40 m		
2 m	1.2 A	19.25 m	29 m	38.75 m	40 m	
2.5 m	1.5 A	12.5 m	18.75 m	25.25 m	37 m	40 m
3 m	1.8 A	7.5 m	11.25 m	15.25 m	22.25 m	37.25 m
3.5 m	2.1 A	3.5 m	5.5 m	7.25 m	10.75 m	18 m
4 m	2.4 A	0.25 m	0.25 m	0.5 m	0.75 m	1.5 m



! Cable lengths are based on average resistance for typical copper cables. Cable characteristics may vary according to manufacturer, temperature, copper purity, connections etc.

Use 24VDC drivers with overload and short-circuit protection. Use reputable driver manufacturers with appropriate standards for the local requirements.

USA & Canada:
Use only with Class 2 power unit to UL1310 standard. Use only with maximum output 24VDC voltage Class 2 power unit.

! Maximum cable lengths shown above are calculated for voltage drop and do not consider **EMI**. Long cables can potentially emit **EMI**. Do not exceed the maximum cable length stated by the driver manufacturer. Installers must ensure **EMI** emissions do not exceed local regulated limits.

Shielded cables and ferrite coils can be used where applicable.

Installers must ensure voltage drop does not exceed 5%.

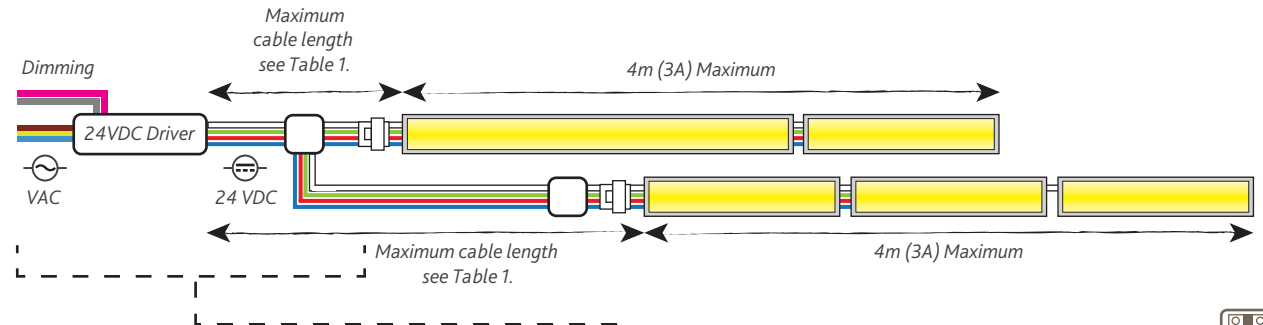
Driver protection circuitry must not be relied upon to protect secondary 24VDC electrical circuits from damage caused by overcurrent or short circuit. DC fuses or DC electronic circuit breakers are recommended to provide additional protection.

Constant voltage LED drivers can have high inrush current at power-on. Driver inrush current can be many times the normal operating current.

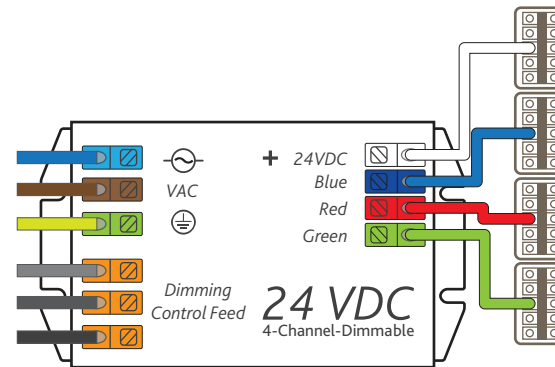
Use a suitable MCB. Type C MCBs are normally suitable but if inrush current is a persistent problem an inrush suppressor may be required.

- Installation must be carried out by qualified electrician.
- Electrical work to be conducted in accordance with local regulations.
- Power must be disconnected prior to installation work.
- Ensure free-moving air space around LEDs and drivers.
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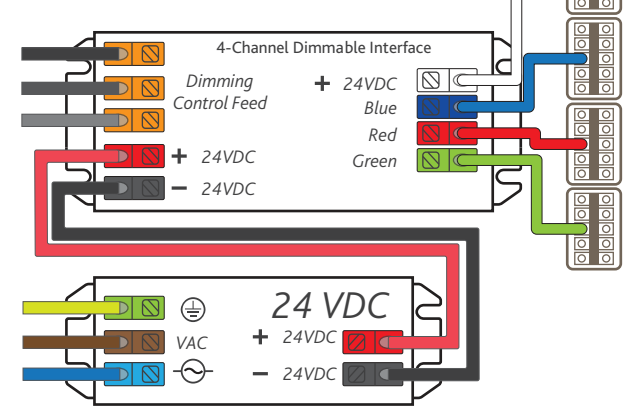
Wiring Diagram



Dimmable Driver Wiring

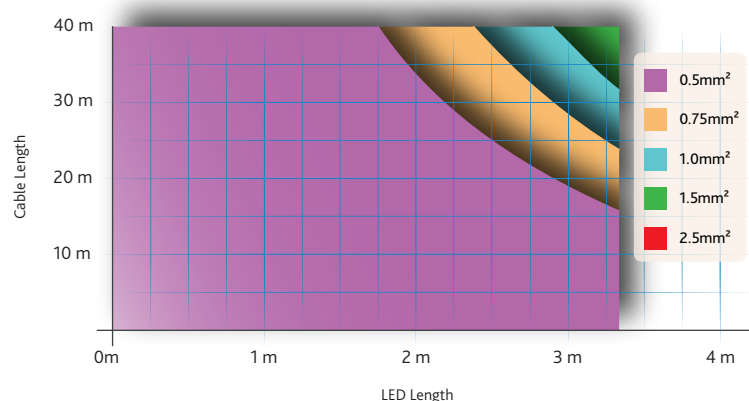


Driver + Dimming Interface Wiring



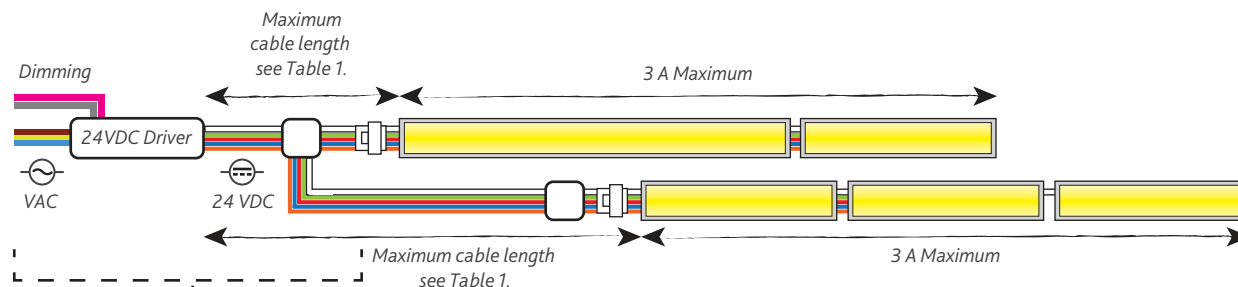
Maximum Cable Length Table 1.

LED LENGTH	CURRENT	0.5mm ²	0.75mm ²	1mm ²	1.5mm ²	2.5mm ²
<0.5 m	< 0.45 A	40 m max.				
0.5 m	0.45 A					
1 m	0.9 A					
1.5 m	1.35 A					
2 m	1.8 A	40 m				
2.5 m	2.25 A	34 m	40 m			
3 m	2.7 A	25 m	38 m	40 m		
3 m	2.7 A	19 m	29 m	38 m		
3.3 m	3 A	16 m	24 m	32 m	40 m	40 m

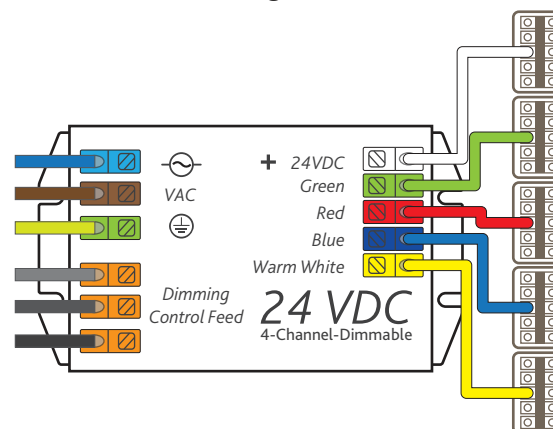


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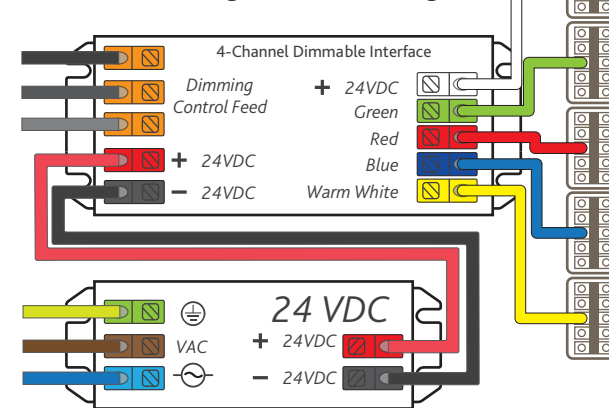
Wiring Diagram



Dimmable Driver Wiring



Driver + Dimming Interface Wiring



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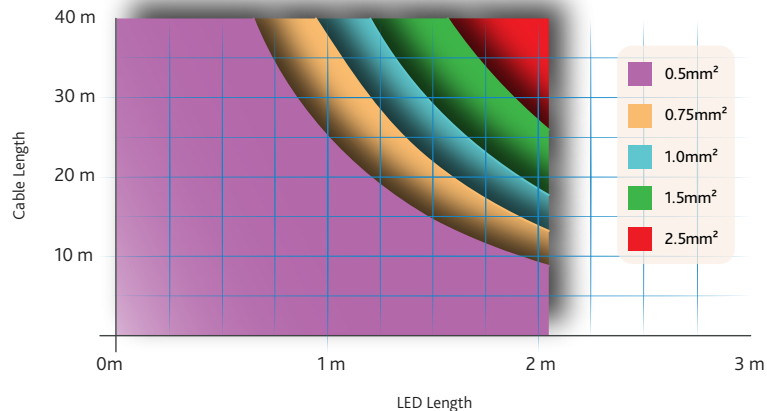
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Maximum Cable Length Table 1.

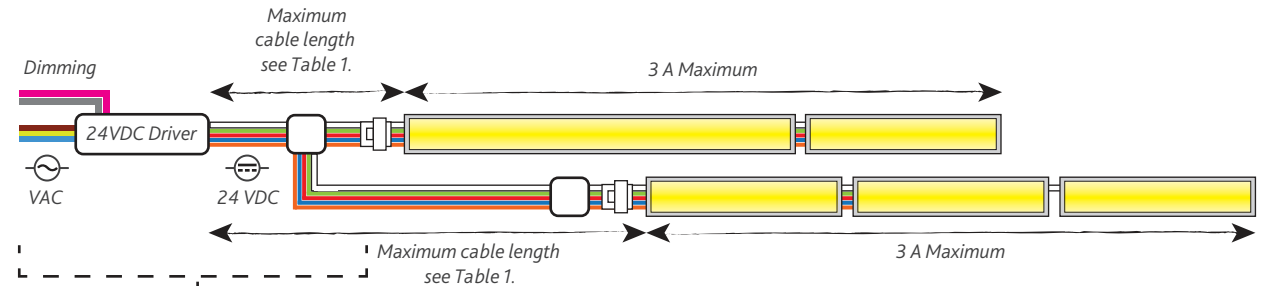
LED LENGTH	CURRENT	0.5mm ²	0.75mm ²	1mm ²	1.5mm ²	2.5mm ²
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0.5 m	0.7 A	40 m	40 m			
1 m	1.4 A	25 m	37.5 m	40 m		
1.5 m	2.1 A	14.5 m	21.75 m	29 m	40 m	
2 m	2.8 A	9 m	13.75 m	18.25 m	27 m	
2.1 m	3 A	8.25 m	12.5 m	16.75 m	24.75 m	40 m

40 m
max.

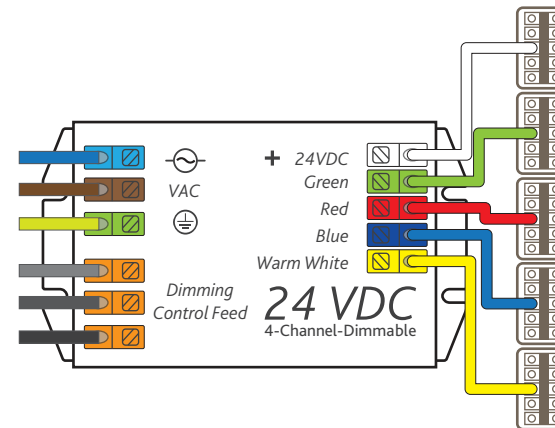


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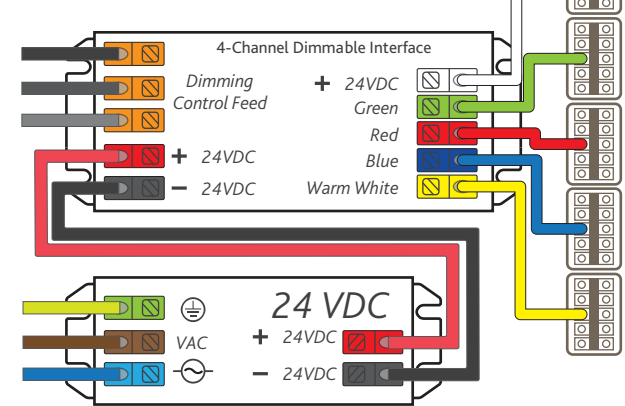
Wiring Diagram



Dimmable Driver Wiring



Driver + Dimming Interface Wiring



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