



DCLV1

0-10V Controller
Miro Decorator Syle

SPECIFICATIONS

Power Supply.....	Watt Stopper Power Pack
Rating	24VDC, 35mA
Control outputs	
For 0-10V Dimming Ballasts:	
Sink.....	up to 50mA
Maximum voltage.....	9.5VDC
Minimum voltage	0.5VDC
Two outputs for external maintained relays:	
EXT RELAY 1	
Dimming mode	0-10V ON/OFF
Shade mode.....	Shade up/down direction
EXT RELAY 2	
Dimming mode	n/a
Shade mode.....	Shade power ON/OFF
Operating Temperature.....	32° to 104°F (0° to 40°C)

LOAD TYPES

Use the DCLV1 for these load types:

- 0 to 10V electronic dimming ballasts (Mark 7 or equivalent) with maximum of up to 50mA.
- Compatible LED systems (verify compatibility with LED control manufacturer).
- Line voltage (120VAC, 60Hz tubular motor shade, where full open and close positions can be set (verify compatibility with shade manufacturer).

Hardware

The DCLV1 has a wiring terminal block with 7 positions:

- 1 24VDC input
- 2 Common
- 3 0-10V Violet
- 4 Sensor input
- 5 Output to External Maintained Relay 1 (EXT RELAY 1):
 - Dimming mode: 0-10V ON/OFF
 - Shade mode: Shade up/down direction
- 6 Common
 - Dimming mode: 0-10 Gray
 - Shade mode: power pack or slave pack Common
- 7 Output to External Maintained Relay 2 (EXT RELAY 2):
 - Dimming mode: n/a
 - Shade mode: Shade control ON/OFF.



DESCRIPTION

The DCLV1 0 to 10V controller has two different operating modes: 0-10V Dimming or Shade Control. It can be used to control dimmable 0 to 10V fluorescent ballasts (Advance Mark 7 or equivalent), dimmable 0 to 10V LED drivers, or compatible line voltage shades.

The DCLV1 is shipped from the factory with the 0 to 10V dimming mode enabled. The DCLV1 can be changed to shade control mode in the field using a simple operating mode selection procedure.

The DCLV1 must be used in conjunction with power packs by Watt Stopper/Legrand (refer to wiring diagrams). The DCLV1 also has an input for connecting a sensor for automatic operation.

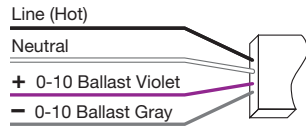
Features

- Control electronic ballasts and drivers for LED systems.
- Sink up to 50mA, allowing the product to control up to 100 ballasts wired in parallel (each ballast sourcing 0.5mA).
- 0-10V output ranges at a minimum between 0.5VDC and 9.5VDC.
- Control line voltage (120VAC) tubular motor shade, where full open & closed positions can be mechanically set on the motor shade itself.
- Able to control two external maintained relays.
- Able to receive a sensor input.
- Operating supply voltage 24VDC: Class-2 device powered directly from an external source.
- Watt Stopper BZ series for 0-10V ballast control.
- Watt Stopper A120C-P Form C Power Pack and S120/277/347C-P slave pack for shade control.

Installation Instructions

INSTALLATION

The DCLV1 is a Class 2 product. A low voltage cable with the appropriate number of conductors must be installed. For ease of installation, manufacturer recommends use of a deep wall box.



1. Disconnect power to circuit by turning circuit breaker OFF before installation.
2. Remove the existing wall plate and switch, if one is present. If there is an existing line voltage switch the wiring must be converted to low voltage in order to use the original wall box location for the DCLV1. Alternatively, the existing line voltage switch may remain, however a new wall box must be installed for the DCLV1 according to NEC requirements.
3. Install power pack to control the desired lighting circuit.
4. Strip existing wires 1/4". If two wires will be connected to the same terminal, both wires must be the same gauge. Connect wires as appropriate for your application.
5. Attach the wall plate.
6. Switch the circuit breaker back ON.

INSTALL IN COMPLIANCE WITH ALL APPLICABLE CODES & STANDARDS.

Failure to follow these instructions may cause personal injury or equipment damage.

DIMMING MODE

Background: Dimming "0-10V"

- It is a low-voltage DC dimming method, using Class 2 wires.
- It allows multiple circuits to use the same dimming signal without additional power equipment.

When controlling 0-10V systems, or ON/OFF systems:

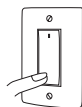
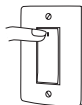
Use a Watt Stopper/Legrand B or BZ power pack.

0-10V Dimming curves

To accommodate various types of ballasts, the DCLV1, executes a straight proportional relationship between the internal level and the voltage provided, 0.5VDC to 9.5VDC.

0-10V Dimming (with ON/OFF option)

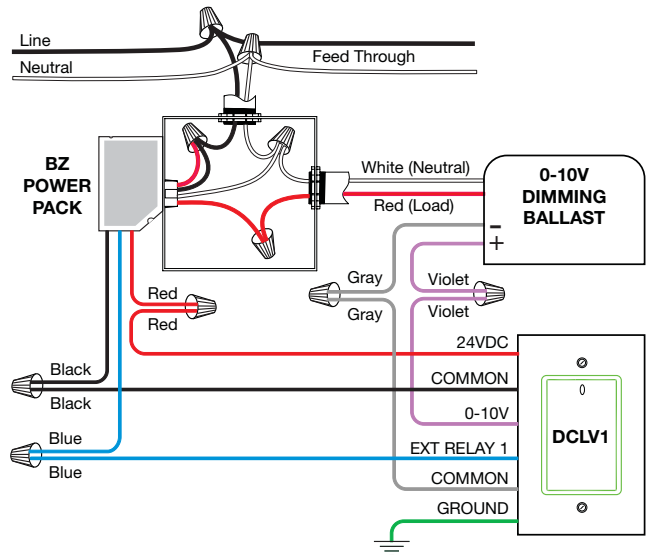
- When the user ramps up, relay 1 output switches from 0V to 24VDC. This closes the power pack relay to supply line voltage to the light fixtures.
- When the user ramps down and the 0-10V output becomes 0V, relay 1 switches to 0V. This opens the power pack relay to remove power to the light fixtures. This allows the ballast to smoothly ramp down and then be turned OFF.



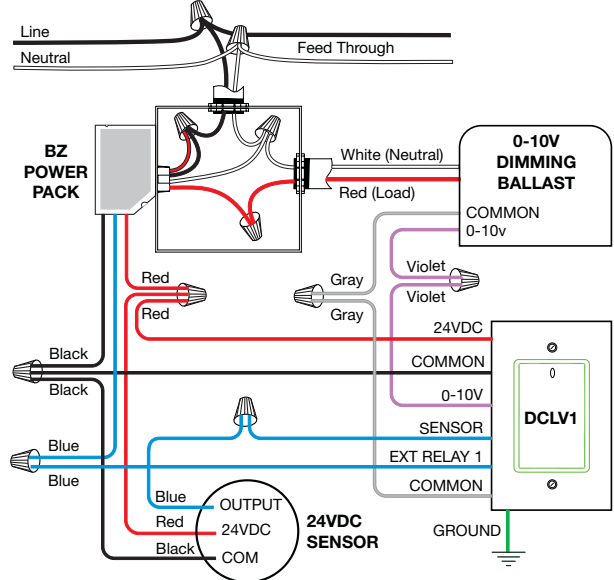
NOTE: An ON to OFF transition can take longer than expected (by about 2 seconds) because the DCLV1 is dimming down. The OFF to ON transition is immediate.

WIRING EXAMPLES, LIGHTING CONTROL

0-10V wiring diagram

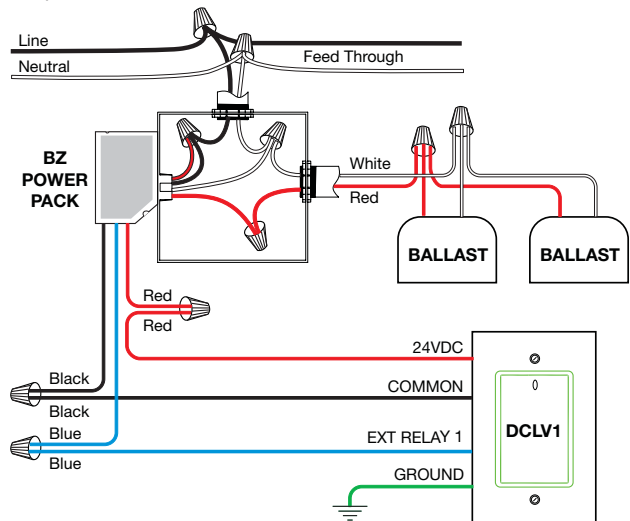


Sensor input wiring diagram



Ballast ON/OFF control wiring diagram

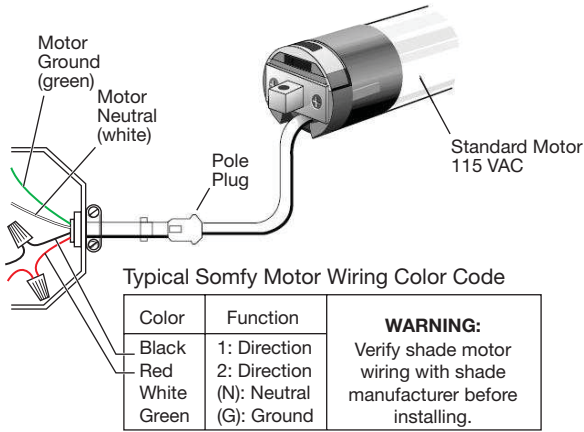
To control a simple ON/OFF system do not connect the 0-10V output on the DCLV1.



SHADE CONTROL MODE

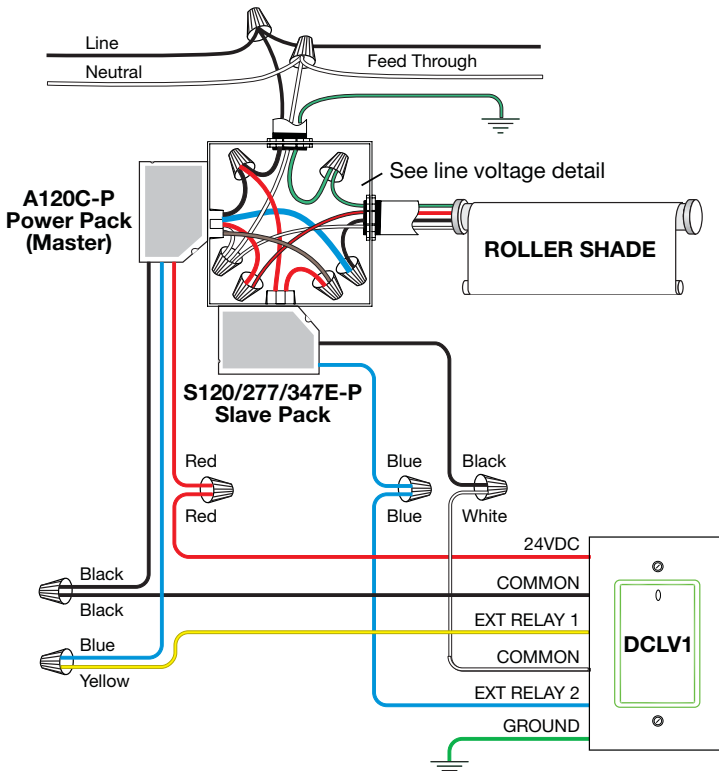
Background: Line voltage motor shades

For shade motor control, these instructions refer only to MechoShade / Somfy motor roller shades. For use with other brands of shade controls, contact Technical Support.



- Line voltage motor shades are controlled up or down by applying or not applying line voltage (120VAC, 60Hz) to the Black (up) or Red (down) wire.
- The motor(s) connect directly to the relays or switches that control them.
- In general, the relays or switches are controlling only one or two motors or a multi-banded group of shades.

IMPORTANT: Set the shade's Fully-up/Fully-down position BEFORE the DCLV is installed. Travel limits are mechanically set on the roller shade itself. See the shade manufacturer's instructions for information about setting the shade travel limits.



Shade control wiring diagram

WIRING TO A SHADE MOTOR

When controlling shades, use a Watt Stopper/Legrand A120C-P power pack, and an S120/277/347E-P auxiliary relay (slave) pack. This combination results in the following low voltage wire connections:

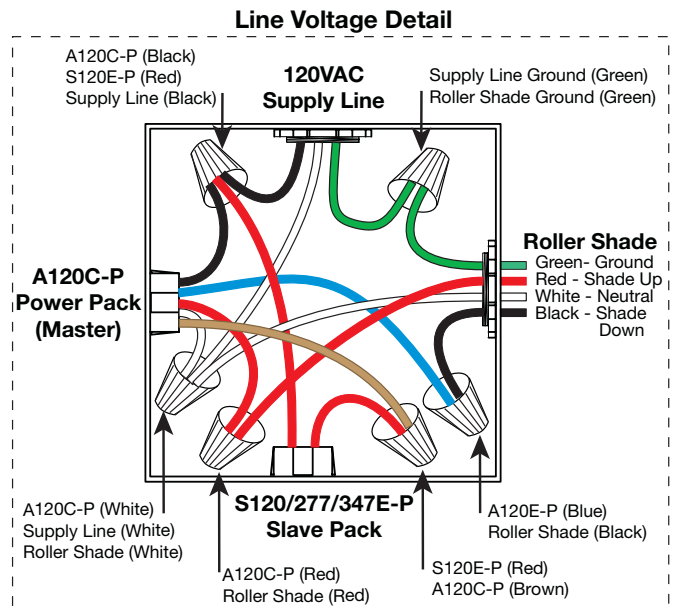
DCLV1 terminal connections

- 24VDC INtoA120C-P — RED
- Common.....toA120C-P — BLACK
- 0-10V not used
- Sensor Inputto optional sensor - control
- Ext Relay 1toA120C-P — BLUE
- Common.....to S120 — BLACK
- Ext Relay 2to S120 — BLUE

- Relay 1 output is used to apply line voltage (120VAC, 60Hz) to the shade's up or down travel direction wires, through a normally open/normally closed relay or form-C power pack such as the A120C-P.
- Relay 2 output is used to provide or remove line voltage (120VAC, 60Hz) through an auxiliary relay pack such as the S120/277/347E-P. Relay 2 closes for 10 minutes then it opens to remove power from the roller shade.

CAUTION

TURN THE POWER OFF AT THE CIRCUIT BREAKER BEFORE INSTALLING THE DEVICE OR POWER/SLAVE PACKS.



SHADE OPERATION

Shade travel time

The DCLV1 shade travel time limit is 10 minutes. This is enough time for most window sizes. This means that the roller shade must be able to handle having power at all times even if the shade is unused. Consult the shade motor manufacturer for guidance.

When the user presses Raise, two things happen:

- DCLV1 Relay 1 output switches from 0V to 24VDC, causing the A120C-P form-C relay to open.
- DCLV1 Relay 2 output closes the S120E-P auxiliary relay. The A120C-P form-C power pack common is now at line voltage. With the A120C-P form-C power pack relay previously set in an open position, the shade UP wire is also at line voltage causing the shade to go up.
- After 10 minutes both relays are de-energized and line voltage is removed from the UP wire. The shade stays up.

When the user presses Lower, two things happen:

- DCLV1 Relay 1 output switches to 0V, causing the A120C-P form-C relay to close.
- DCLV1 Relay 2 output closes the S120E-P auxiliary relay. The common of the A120C-P form-C power pack is now at line voltage. With the A120C-P form-C power pack relay previously set in a closed position, the shade DOWN wire is also at line voltage causing the shade to go down.
- After 10 minutes both relays are de-energized and line voltage is removed from the DOWN wire. The shade stays down.

Relay 1 & 2 output and shade behavior:

Press and release:	Shade action	Relay 1	Relay 2
Lower	Close/travel down	OFF (0V). Power pack normally closed.	24VDC for 10 minutes
Lower - while shade is traveling down	Stop	OFF (0V).	24VDC for 10 minutes
Lower - after shade traveled down and stopped, even if not 100% down	No change	No change	No change
Lower - while shade is traveling up	Reverse direction, close	OFF (0V). Power pack normally closed.	24VDC for 10 minutes
Raise	Open/travel up	ON (24VDC). Power pack normally open.	24VDC for 10 minutes
Raise - while shade is traveling up	No change	No change.	No change
Raise - while shade is traveling down	Reverse direction, open	ON (24VDC). Power pack normally open.	24VDC for 10 minutes

SETTING THE OPERATING MODE

The factory setting for the DCLV1 is Dimming mode enabled. The Shade mode is disabled.

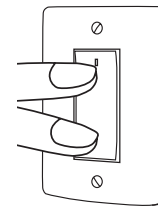
To enable Shade mode:


1. Press and hold LEARN (for two seconds).
2. Release LEARN.
3. Press and hold **RAISE** for two seconds, until the device confirms the new mode by flashing its LED **red**, at 2 Hz, for 1.5 seconds.
4. Press and hold LEARN again (for two seconds) to exit the setup/binding mode and return to normal operation.

To switch back to the Dimming mode:

1. Press and hold LEARN for two seconds.
2. Release LEARN.
3. Press and hold **LOWER** for two seconds, until the device confirms by flashing its LED **green**, at 2 Hz, for 1.5 seconds.
4. Press and hold LEARN again (for two seconds) to exit the setup/binding mode and return to normal operation.

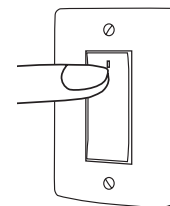
LEARN




When you see  or LEARN in the instructions, firmly press and hold both the top and bottom of the device paddle until the LED changes (about 2 seconds).

RAISE

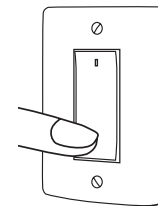
Red LED confirms Shade mode.




When you see  or RAISE in the instructions, touch the top of the switch as directed.

LOWER

Green LED confirms Dimming mode.



When you see  or LOWER in the instructions, touch the bottom of the switch as directed.

WARRANTY INFORMATION

Manufacturer warrants its products to be free of defects in materials and workmanship for a period of five (5) years. There are no obligations or liabilities on the part of manufacturer for consequential damages arising out of, or in connection with, the use or performance of this product or other indirect damages with respect to loss of property, revenue or profit, or cost of removal, installation or reinstallation.

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