LightSync Phase Selectable Dimmer (LSPSD)

intelligent lighting controls

IMPORTANT: Read carefully before installing product. Retain for future reference.
Failure to comply with these instructions may result in death, serious bodily injury and property damage.

⚠ WARNING

Risk of Fire, Electrical Shock, Cuts or other Casualty Hazards- Installation and maintenance of this product must be performed by a qualified electrician. This product must be installed in accordance with the applicable installation code by a person familiar with the construction and operation of the product and hazards involved.

Before installing or performing any service, the power MUST be turned OFF at the branch circuit breaker. All installations should be in compliance with the National Electric Code and all state and local codes.

Risk of Fire and Electric Shock- Make certain power is OFF before starting installation or attempting any maintenance. Disconnect power at fuse or circuit breaker.

Risk of Burn- Disconnect power and allow product to cool before handling or servicing.

Risk of Personal Injury- Due to sharp edges, handle with care.

DISCLAIMER OF LIABILITY: Cooper Lighting Solutions assumes no liability for damages or losses of any kind that may arise from the improper, careless, or negligent installation, handling or use of this product.

NOTICE: Product may become damaged and/or unstable if not installed properly.

Note: Specifications and dimensions subject to change without notice.

ATTENTION Receiving Department: Note actual product description of any shortage or noticeable damage on delivery receipt. File claim for common carrier (LTL) directly with carrier. Claims for concealed damage must be filed within 15 days of delivery. All damaged material, complete with original packing must be retained.

NOTICE: All new wiring must be fully verified before applying power.

NOTICE: Designed for indoor installation and use only.

NOTICE: Do not install near electric or gas heaters.

NOTICE: Refer to product cut sheet for additional operating environment specifications.

NOTICE: The unit must be installed in locations and at heights where it cannot be easily tampered with by unauthorized personnel.

NOTICE: The use of accessories not recommended by the manufacturer may cause hazardous conditions.

NOTICE: Do not use this equipment for purposes other than its intended use.

NOTICE: The device should be mounted in a location and at heights where it will not be readily subject to tampering by un-authorized personnel, but still accessible to an electrician for testing and maintenance.

NOTICE: The use of accessory equipment not recommended by the manufacturer may cause an unsafe condition, void warranty, and result in non-compliance with UL specifications

This document covers settings and programming of the following products.

- LSPSD - LightSync Phase Selectable Dimmer

Read and follow safety instructions

- When changing the three control mode switches on the dimmer we recommend the power to the dimmer device be shut off at the breaker to prevent accidentally damaging the unit.

Installing the LightSync Phase Selectable Dimmer (LSPSD)

- Refer to LightSync Phase Selectable Dimmer (LSPSD) Installation Instructions document

Mode Switch Settings

Phase Dim - Forward/Reverse phase dimming mode.

On/Off (0-10V) – Electronic relay full 0-100% instant +cut out relay.

Reverse - phase dimming mode - For ELV - Electronic Low Voltage loads such as a dimmable LED or fixture.

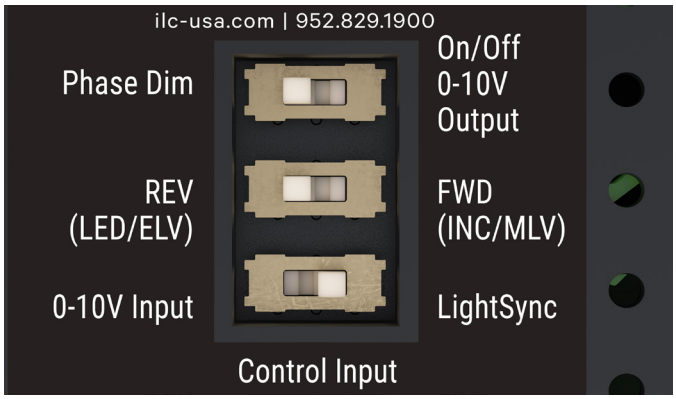
Forward - phase mode is for traditional Incandescent loads and some LED lamps with a modified dimming curve or and for MLV - Magnetic Low Voltage dimmable transformer driven loads

0-10V - mode for control via the 0-10V input leads.

LightSync – for control as a LightSync device on the local bus of a panel.

The dimmer will put out an isolated 0-10V dimming control for cascading dimmers or for additional LSPSD units or fixtures in the zone that are 0-10V control.

This 0-10V output is active in both LightSync and 0-10V control mode.



Emulate Typical Phase Dimmer

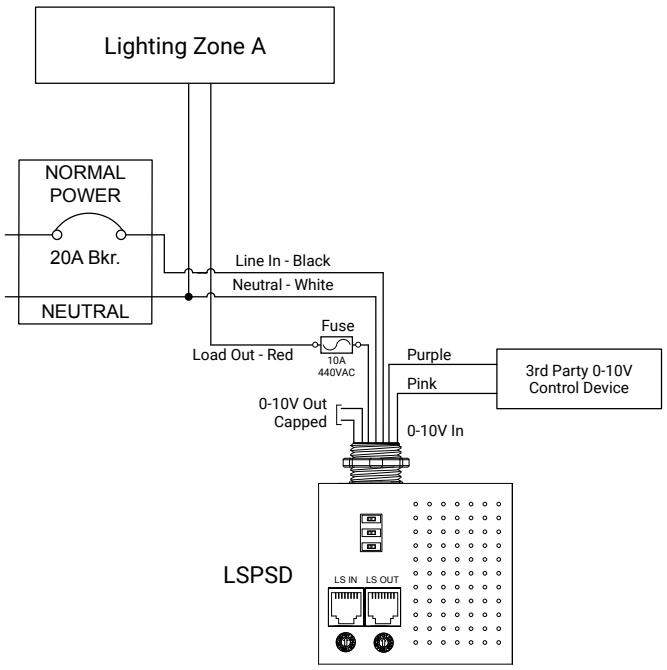
- Select Forward or Reverse Phase based on Load Type

Load Type	Control Type	0-10V
	MLV / Incandescent	Phase Dim — On/Off 0-10V Output Reverse (LED/ELV) — Forward (INC/MLV) 0-10V Input — LightSync
	ELV / LED	Phase Dim — On/Off 0-10V Output Reverse (LED/ELV) — Forward (INC/MLV) 0-10V Input — LightSync

- Wire as shown on the right:

(3rd Party 0-10V, 1 LSPSD Phase Out)

3rd Party 0-10V

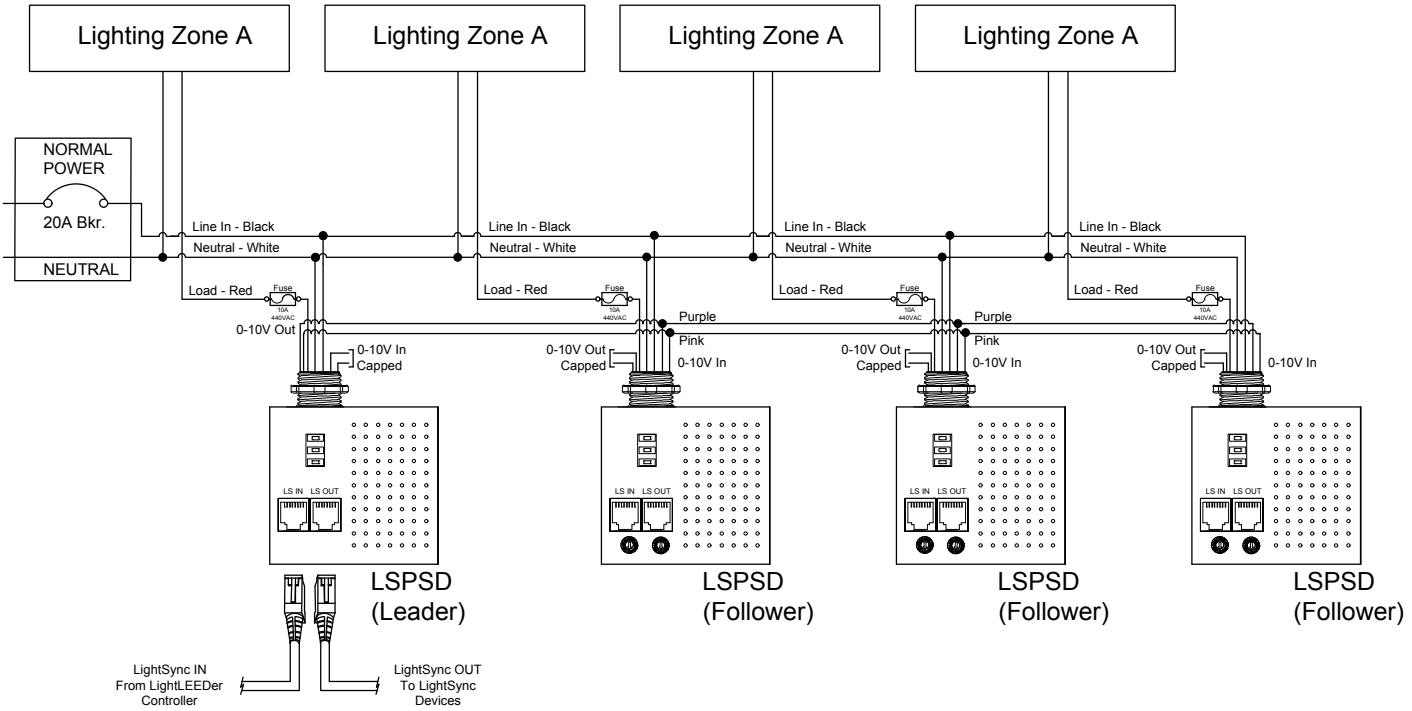


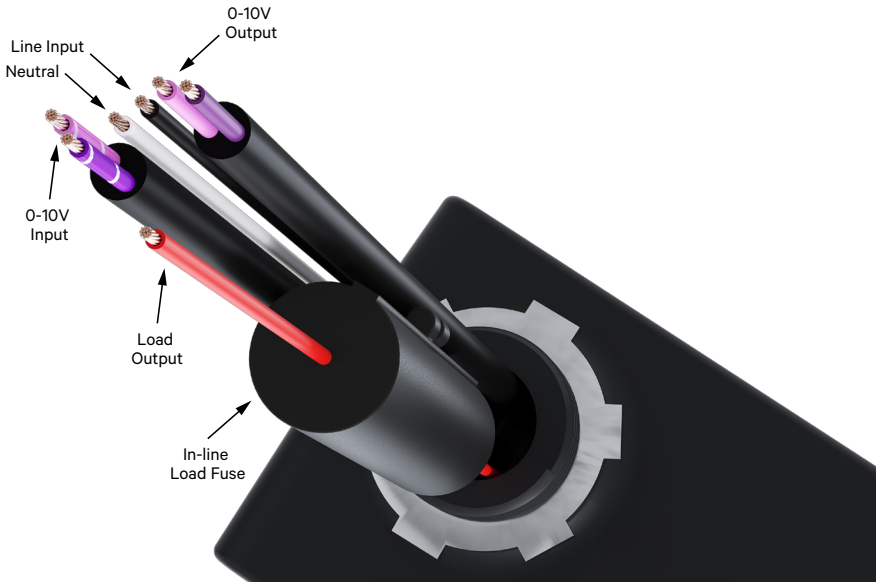
Daisy Chain multiple LSPSD

- Select Forward or Reverse Phase based on Load Type

Load Type	Control Type	0-10V
	MLV / Incandescent	Phase Dim — On/Off 0-10V Output Reverse (LED/ELV) — Forward (INC/MLV) 0-10V Input — LightSync
	ELV / LED	Phase Dim — On/Off 0-10V Output Reverse (LED/ELV) — Forward (INC/MLV) 0-10V Input — LightSync

- Wire as shown:





Line Voltage Wire Color
Neutral = White
Line Input = Black
Load Output = Red

Class-2 Wire Color
Dimming Output 0-10VDC (+) = Purple
Dimming Output 0-10VDC (-) = Pink
Dimming Input 0-10VDC (+) = Purple / White
Dimming Input 0-10VDC (-) = Pink / White

0-10V Input (Striped Purple & Pink):
Source input, for connection to any 0-10V dimmer.

0-10V Output (Purple & Pink):
Sinking output, for connection to any 0-10V driver / light fixture.

Use device as an electronic relay

Load Type	Control Type	0-10V
	MLV / Incandescent	Phase Dim — On/Off 0-10V Output Reverse (LED/ELV) — Forward (INC/MLV) 0-10V Input — LightSync
	ELV / LED	Phase Dim — On/Off 0-10V Output Reverse (LED/ELV) — Forward (INC/MLV) 0-10V Input — LightSync

If dimming not needed or incorrect fixture purchased, the LSPSD can be used as on/off electronic relay.

Programming Guide for the LightSync Phase Selectable Dimmer

The LSPSD is a Dimmer device that can be connected to a LightLEEDer panel local LightSync Bus and be addressed as one of the 16 Dimmers sets occupying four 4 dimmer channels each. The LSPSD will only provide an output for one of the four dimming channels, no other dimmer devices can occupy the set of four assigned to the LSPSD. The dimmer device also occupies the set of 4 relays associated with the address, the first in the set allows relay On/Off control of the internal cut out relay, the remaining 3 relay points are a virtual relay status point that allows for use as a logic relay.

Note: LSPSD address 41 to 50 will set the device for Dimmer only operation and does not utilize the active or virtual relay points, allowing them to be used in a LightLEEDer panel or by another device like a LSDCO.

For this reason, the programmer and installer will need to be aware of other dimmer units in the local bus of the LL or LLEVO panel, typically the first dimmer device outside in a LLEVO is D:02 because the LLEVO is using D:01 internally for the 4 R20D relays.

LSPSD LightSync Dimmer/Relay Hex Addressing Chart

LS	Dimmer	Dim Output	Dimmer set of 4	Relay	Virtual Relay
LS:01	1	D:01.1	D:01.1 to 01.4	R:01	R:02,03,04
LS:02	5	D:02.1	D:02.1 to 02.4	R:05	R:06,07,08
LS:03	9	D:03.1	D:03.1 to 03.4	R:09	R:10,11,12
LS:04	13	D:04.1	D:04.1 to 04.4	R:13	R:14,15,16
LS:05	17	D:05.1	D:05.1 to 05.4	R:17	R:18,19,20
LS:06	21	D:06.1	D:06.1 to 06.4	R:21	R:22,23,24
LS:07	25	D:07.1	D:07.1 to 07.4	R:25	R:26,27,28
LS:08	29	D:08.1	D:08.1 to 08.4	R:29	R:30,31,32,
LS:09	33	D:09.1	D:09.1 to 09.4	R:33	R:34,35,36
LS:0A	37	D:0A.1	D:0A.1 to 0A.4	R:37	R:38,39,40
LS:0B	41	D:0B.1	D:0B.1 to 0B.4	R:41	R:42,43,44
LS:0C	45	D:0C.1	D:0C.1 to 0C.4	R:45	R:46,47,48
LS:0D	49	D:0D.1	D:0D.1 to 0D.4	R:49	R:50,51,52
LS:0E	53	D:0E.1	D:0E.1 to 0E.4	R:53	R:54,55,56
LS:0F	57	D:0F.1	D:0F.1 to 0F.4	R:57	R:58,59,60
LS:10	61	D:10.1	D:10.1 to 10.4	R:61	R:62,63,64

No Relay	Lost Com w/ Relay	Lost Com No Relay
LS:41	LS:21	LS:61
LS:42	LS:22	LS:62
LS:43	LS:23	LS:63
LS:44	LS:24	LS:64
LS:45	LS:25	LS:65
LS:46	LS:26	LS:66
LS:47	LS:27	LS:67
LS:48	LS:28	LS:68
LS:49	LS:29	LS:69
LS:4A	LS:2A	LS:6A
LS:4B	LS:2B	LS:6B
LS:4C	LS:2C	LS:6C
LS:4D	LS:2D	LS:6D
LS:4E	LS:2E	LS:6E
LS:4F	LS:2F	LS:6F
LS:50	LS:30	LS:70

We have assigned 4 different HEX code sets to the device (Rev.06 1-10-2025)

Address **01 to 10** = Dimmer with relay control enabled
if there is a loss of LS data communication the dimmer holds value

Address **41 to 50** = Dimmer with relay control disabled
if there is a loss of LS data communication the dimmer holds value

Address 21 to 30 = Dimmer with relay control enabled
if there is a loss of LS data communication the dimmer defaults to 100%

Address 61 to 70 = Dimmer with relay control disabled
if there is a loss of LS data communication the dimmer defaults to 100%

Alternatly to using the LSPSD as a LS device directly, the device can be set for 0-10V control mode and connected to the R20D's 0-10V control or to a LSDM module. The installer can connect multiple LSPSD units to a single 0-10V control or use the 0-10V dimmer control output to cascade with other units.

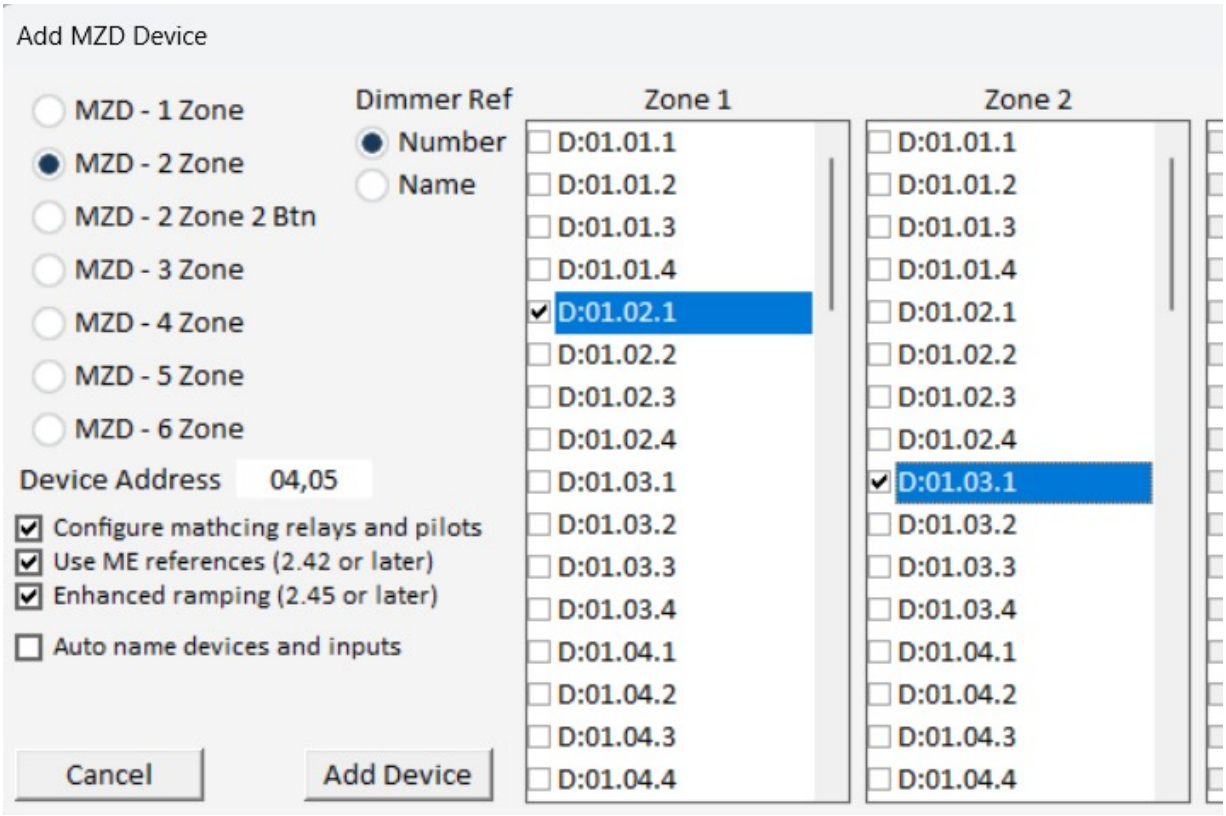
The LSPSD is provided with Both 0-10VDC control input and output isolated leads for this purpose, ILC would suggest using the cascade method to add additional isolation between units. The 0-10VDC control output is still operational when the dimmer is set for LightSync control. In LS control mode the 0-10V input will be non-functional.

Programming the dimmer output in LL-Pro software is the same process you would use for other dimmers in a LLEVO, LLEVO-INT panel or LSDM, LSDMXD. Two devices cannot occupy the same digital device address, in the case of the LSPSD it is occupying both a set of 4 dimmers and 4 relays.

The Example below is a stand-alone LLEVO panel with a Single LSG3-2-MZD station intended to control two LSPSD modules separately.

The Two dimmers will be physically set for address LS:02 and 03.

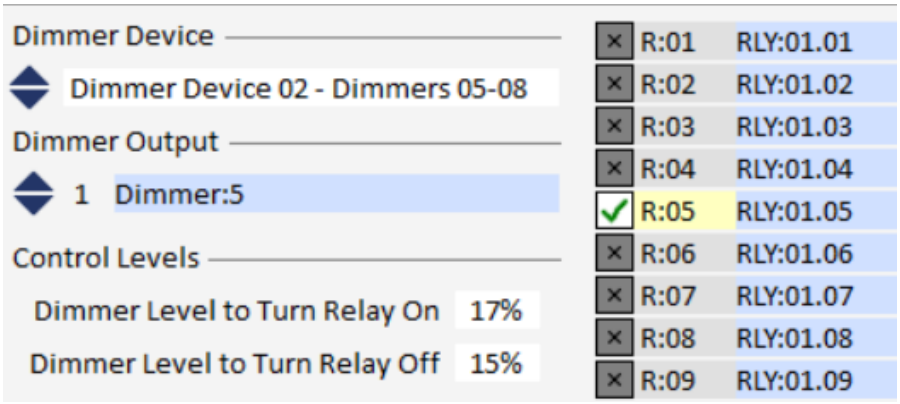
When configuring the LSG3-XX-2-MZD station using the tools menu we will select Dimmers outputs D:01.02.1 & D01.03.1



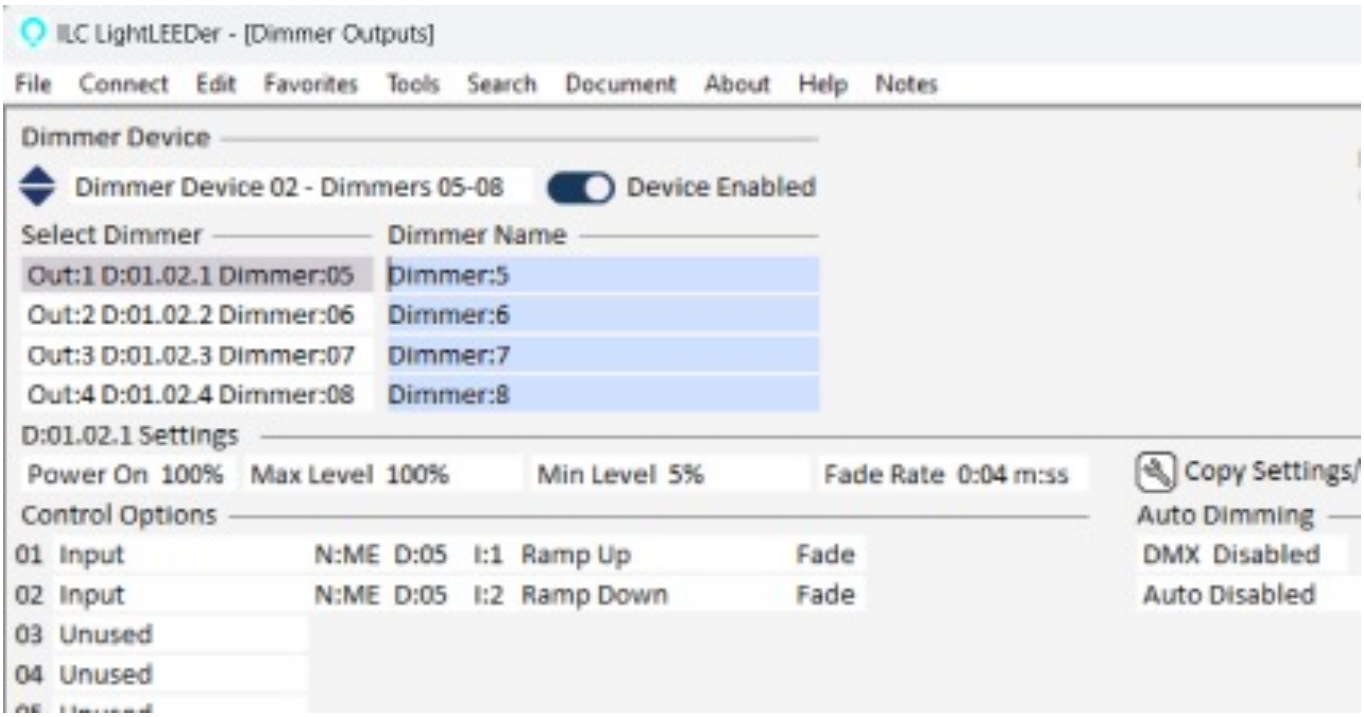
The LL-Pro software tool has mapped the relay control for dimming control to D:02.1 and D:03.1 and R:05 and R:09.

The G3 switch will turn the Dimmers internal cut out relay on/off with the Zone and Off buttons, the raise lower buttons will operate the two dimmers or if a Zone is selected for individual dimmer control.

The dimmer has an internal setting for the cut-out relay control at 7% - Off and 9% - On. The cut-out relay provides a positive open-off state at this internal low dim setting. If a higher cut-out relay On/Off point is needed the panels dimmer to relay control function can be used. Example an application or fixture needs an Off at 15% and On at 17% for best performance, we recommend always leaving a deadband of 1 point minimum between On and Off setpoints.



The setting options are the same in LL-Pro software for this dimmer output as it would be for the LLEVO or LSDM outputs, all of the current standard settings can be used including all operation associated with the 16 Control Option lines.



Remember you will not map anything to the 2nd, 3rd or 4th Dimmer associated with the Hex address, no other devices can be set for the address. The relay will switch on/off as a relay point, the three additional relays points can still be commanded On/Off and used as Virtual relays for interlock or override programming. If the project requires using the relays separately in an LL panel or LSDCO module then they can be set for address 41 to 50 for Dimmer only, the internal cut off relay is then only controlled by the internal on/off set points.

Warranties and Limitation of Liability

Please refer to **www.cooperlighting.com/global/resources/legal** for our terms and conditions.