

# CDRV-LO

## Installation Overview:

The CDRV-LO product may come in one of three sizes. It can have connections for 8 loads (CDRV-LO8), 16 loads (CDRV-LO16), or 32 loads (CDRV-LO32). The CDRV prefix identifies the product as a CAN Bus DRiVer box, also commonly referred to as an output box. CDRV products turn loads on or off (solenoids, valves, actuators, etc) . The LO in CDRV-LO indicates that the device is ground-switching. To turn on a load, the CDRV-LO device is pulling the connection down to GROUND (+0-1V DC).

CDRV - CAN Driver Box

LO - Ground-switching outputs

8, 16, or 32 - The number of pins/loads

A ground-switching device will require the loads to obtain power (+12V) from another source. When wiring a gun solenoid, for example, you may wire the POWER lead to battery +12V and the GROUND lead to the CDRV-LO device.

Each CDRV-LO requires it's own +12V and GROUND connections from a battery source. Each CDRV-LO requires a CAT5 connection to any BUS-012 hub or SC-12 Core Hub.

## Recommended location(s):

The SC-12 Control System uses a modular approach to truck wiring. Because of this, the system has the flexibility to be configured in many different ways. Generally, there are two approaches to choosing a location for CDRV devices:

### *Centralized Location*

The CDRV box can be mounted in a centralized location (ie. rear console) . This method may be preferential on a vehicle retrofit where all load wires have already been ran to a single point, or on a simple vehicle where all the loads from both carriages can be added to a single CDRV box for cost-saving and convenience.

### *Point-of-Load Location*

The CDRV box can be mounted at the Point-of-Load(s). An example of this would be placing the CDRV device on or near a carriage in a sealed NEMA enclosure with the gun and bead solenoids. In this example, lead wires may be shortened and significantly reduce the total vehicle wiring. An installer would not need to run all solenoid wires all the way to the central console. An additional advantage of Point-of-Load wiring is it usually adds redundancy to the vehicle. Using a CDRV-LO16 on each carriage instead of a single CDRV-LO32 means that the vehicle will never be completely out of service in the rare event of a CDRV failure. CDRV boxes can be easily re-addressed (see Addressing section below) so they are interchangeable (or even stockable).

### Mounting:

The CDRV boxes come with a DIN clip on the device for top hat DIN rail mounting. Skip-Line does not supply DIN rails, so please contact your preferred distributor or order DIN rails online.



Use Top Hat DIN Rails:  
EN 5022 35mm x 7.5mm

EN 5022 35mm x 15mm (deep version)

[https://en.wikipedia.org/wiki/DIN\\_rail](https://en.wikipedia.org/wiki/DIN_rail)

<https://www.digikey.com/product-detail/en/phoenix-contact/0807012/277-2064-ND/2179626>

Please mount in a location free from exposure to:

- Water
- Pressure Washing
- Excessive mechanical vibration
- Temperature extremes
- Intermittent, poorly regulated, highly inductive, or noisy power sources
- Improper wiring

## Communications Cabling

The CDRV device receives communication via CAT5 cables. Connect devices to the most convenient hub on any of the numbered hub jacks (1-8). It does not matter which hub a device is connected to. Please keep CAT5 cables between the hub and devices to a maximum length of 5 meters (16.4 ft).

If a device is properly connected to an SC-12 Core Hub or BUS-012 Hub, the large green port light should be illuminated to indicate the device is pulling current.

Cabling should use 26AWG (or larger) Cat5 cable and RJ45 connectors. Cat5 cable should not be longer than 5 meters (16.4 feet). The Hubs accept only standard RJ45 plugs. Some of the devices have sealed RJ45 jacks, available from Skip-Line, which will accept either standard or strain-relieved IP-67 rated plugs. See Appendix B of the SC-12 Manual for instructions on RJ45 568-B connector wiring.

Avoid pinch points where the cable may be damaged from moving parts.

Tips:

- Use a continuity tester for all Cat5 cables

Power Connectors:

The CDRV device requires both +12V and GROUND from the vehicle (from primary battery or auxiliary battery). Power and ground wires connect to the terminal block on the bottom side of the device.

Recommended wire size for +12V and GND to the CDRV-LO is 14-16 gauge wire.



#### Fusing:

Every CDRV device is rated to 20 amps, and has internal protections. Recommended fuse size for CDRV devices is 20 amps.

#### Dimensions:

- Single gang box or CDRV-LO8 - 1.75"W x 4.5"H x 4.25"D

- Dual gang box or CDRV-LO16 - 2.3"W x 4.5"H x 4.25"D
- Quad gang box or CDRV-LO32 - 4.3"W" x 4.5"H x 4.25"D

### Connections:

The CDRV-LO devices accept 8-pin Euro Plug connectors (supplied by Skip-Like). Pin wiring may vary, so please refer to your vehicle's wiring sheet for instructions. The number of 8-pin Euro Plugs per device will vary depending upon the number of headers on the box.

- CDRV-LO8 has 1 x 8-pin Euro Plug connector
- CDRV-LO16 has 2 x 8-pin Euro Plug connectors
- CDRV-LO32 has 4 x 8-pin Euro Plug connectors

*Note: Headers will read right to left on CDRV-LO16 and CDRV-LO32 devices. See below example.*



Each pin on the CDRV device is rated to 5 amps. Use 14-22 AWG wire for loads.

*Note: If a load requires more than 5 amps, please let your preferred OEM or a Skip-Line representative know. Loads can be split over multiple pins to increase current capacity.*

## Troubleshooting

### *Output Lights*

Each pin (load connection) on the CDRV device has an LED light indicating if the output is active (LED ON) or inactive (LED OFF). If a solenoid is not activating as expected, refer to your wiring diagram to see which pin the load is on. If the light is ON, it usually means that the control system is correctly activating the load and there is an issue with the solenoid or the solenoid wiring.

### *CAN Diagnostic Lights*

There are 2 CAN Diagnostic Lights on the front of all CDRV boxes labeled POWER and TRAFFIC.

The POWER LED indicates it has clean power from the CAT5 cable. The POWER light will be solid.

The TRAFFIC LED indicates that the device is receiving CAN-bus activity. It can either be solid or blinking.

If the POWER and/or TRAFFIC lights are not illuminated check the CAT5 cable.

### *Load Power Diagnostic Light*

LOAD PWR is located on the bottom of the device if load power is properly connected this light will be illuminated. If the LOAD PWR light is not illuminated check the power and ground connections.

## Addressing:

Each CDRV device will be assigned an address. This is indicated with labels on both the front and the top of the device. The address is a self-identifier for the CDRV device. If a CDRV-LO16 device, for example, is addressed D1, it will know to only monitor the CAN-bus for instructions that are assigned to D1.

CDRV boxes can be easily re-addressed so they are interchangeable (or even stockable). The address is set using a simple pot switch on the top of the device (under the top address label). The pot can be rotated to a different value to assign a new address. To re-assign a CDRV device from address D1 to D3, simply turn the pot so the arrow points to 3 instead of 1.

Re-addressing may be helpful in troubleshooting a cable issue or in the event of a CDRV device failure. When using the Point-of-Load wiring method, a CDRV box on the right side of the vehicle may be re-assigned and physically moved to take the place of a faulty CDRV box on the left side of the vehicle.

**WARNING!!!**

Always unplug all POWER, LOAD (green connectors) and CAT-5 cables prior to any welding on the vehicle. Failure to do so may result in severe damage to the unit.