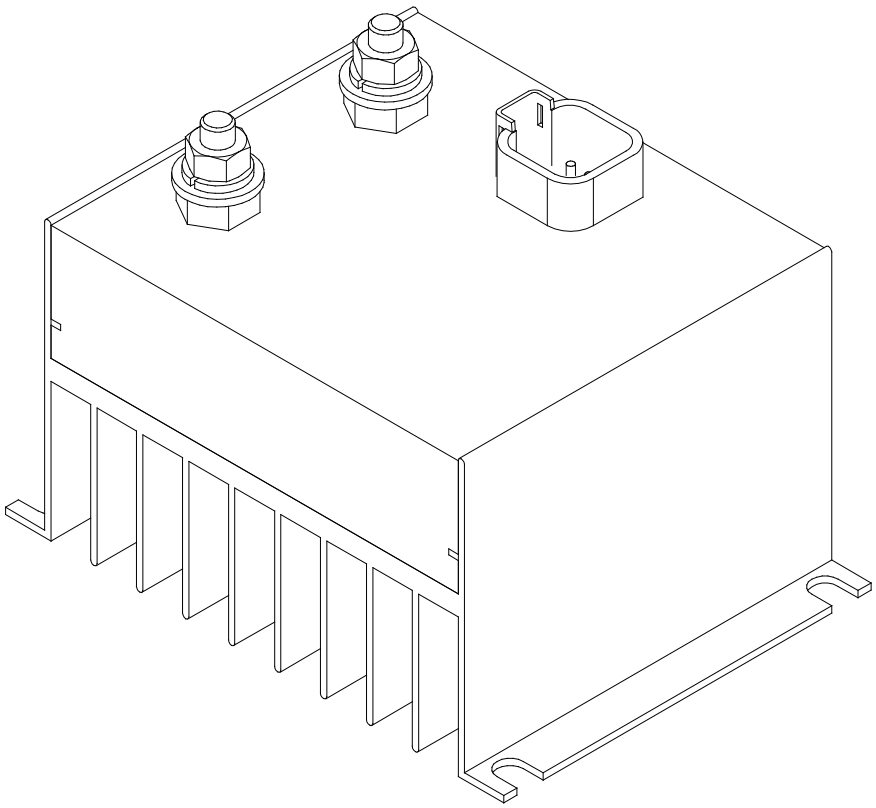
Dual Low Voltage Disconnect



Model – DLVD24-3010
Owner's Manual - D913539

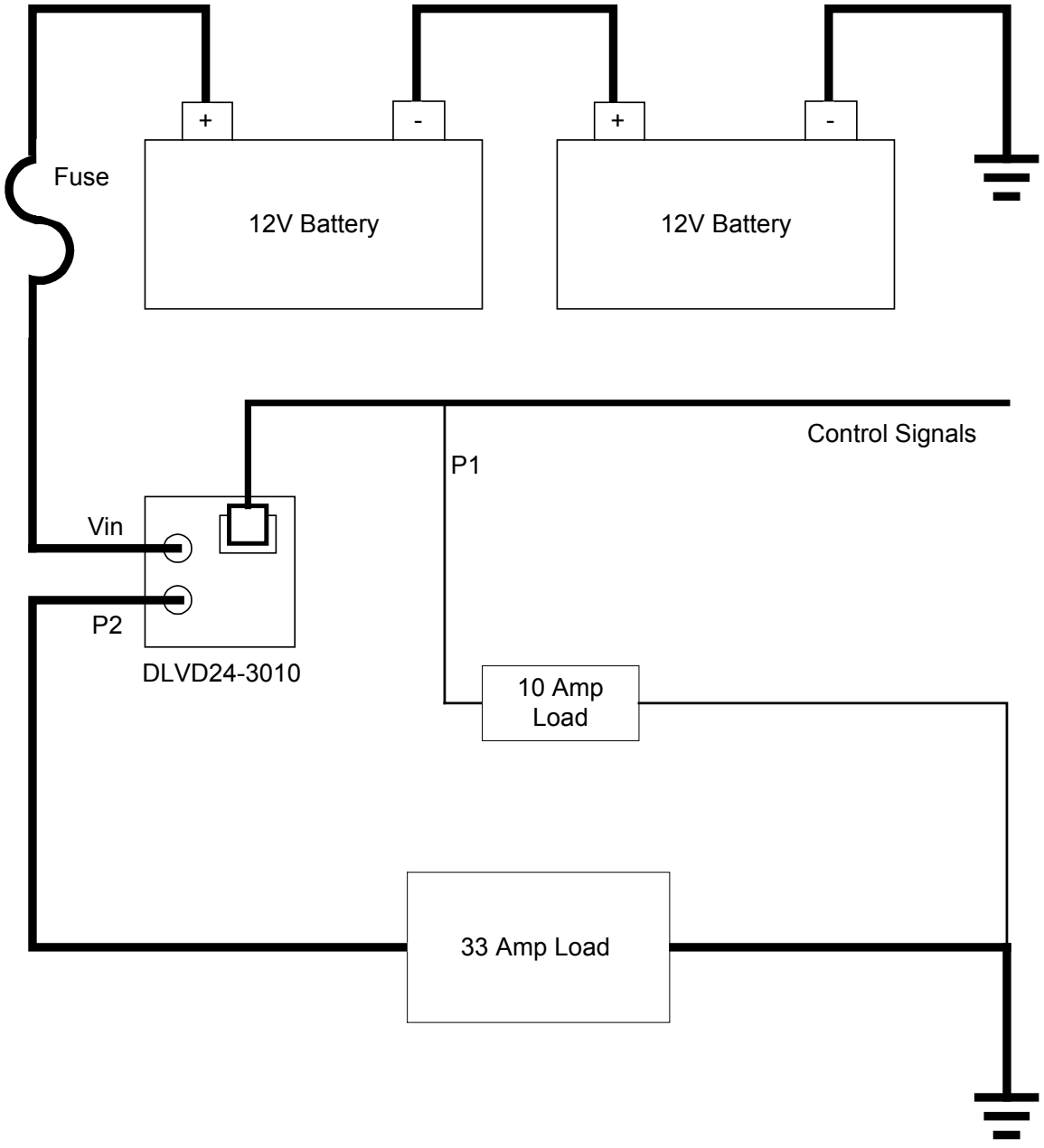


Figure 1 Typical Dual Low Voltage Disconnect Installation

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1 Introduction

Thank you for purchasing Vanner's Dual Low Voltage Disconnect (DLVD). We are confident that you will be satisfied with its performance and its features. With proper installation and care, you can look forward to years of service from this high performance product.

This document will describe the operation, technical specifications, installation procedures, and accessories. If you require additional information please contact Vanner at 800-227-6937 (800-AC Power) or 614-771-2718.

WARNING: Before you install and use your low voltage disconnect, be sure to read and save these safety instructions.

PLEASE NOTE YOUR MODEL AND SERIAL NUMBER HERE FOR FUTURE REFERENCE

Model Number _____

Serial Number _____

Date of Installation _____

1.1 Specifications

	Model
Specifications	**DLVD24-3010**
DC Input Voltage	24 VDC nominal
DC Input Voltage Range	12-32 VDC
DC Input Current	43 Amps Nominal 52 Amps Max
Off DC Current Draw	.0035 Amp
Control Pulse Voltage	32 VDC Max 10 VDC Min
Control Pulse Time	10ms Min
P2 Output Current	33 Amps Nominal 38 Amps Limited
P1 Output Current	10 Amps Nominal 13 Amps Limited
Temperature	-40˚C to +80˚C
Dimensions	4.75”W x 3.31”H x 3.50”D
Weight	1.6 Lbs.

STANDARD FEATURES

1.2 Standard Features

1. Automatic shutoff for Overload
2. Automatic momentary shutoff/restart for over temperature
3. Four wire pulse control

2 SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS

2.1 General Precautions

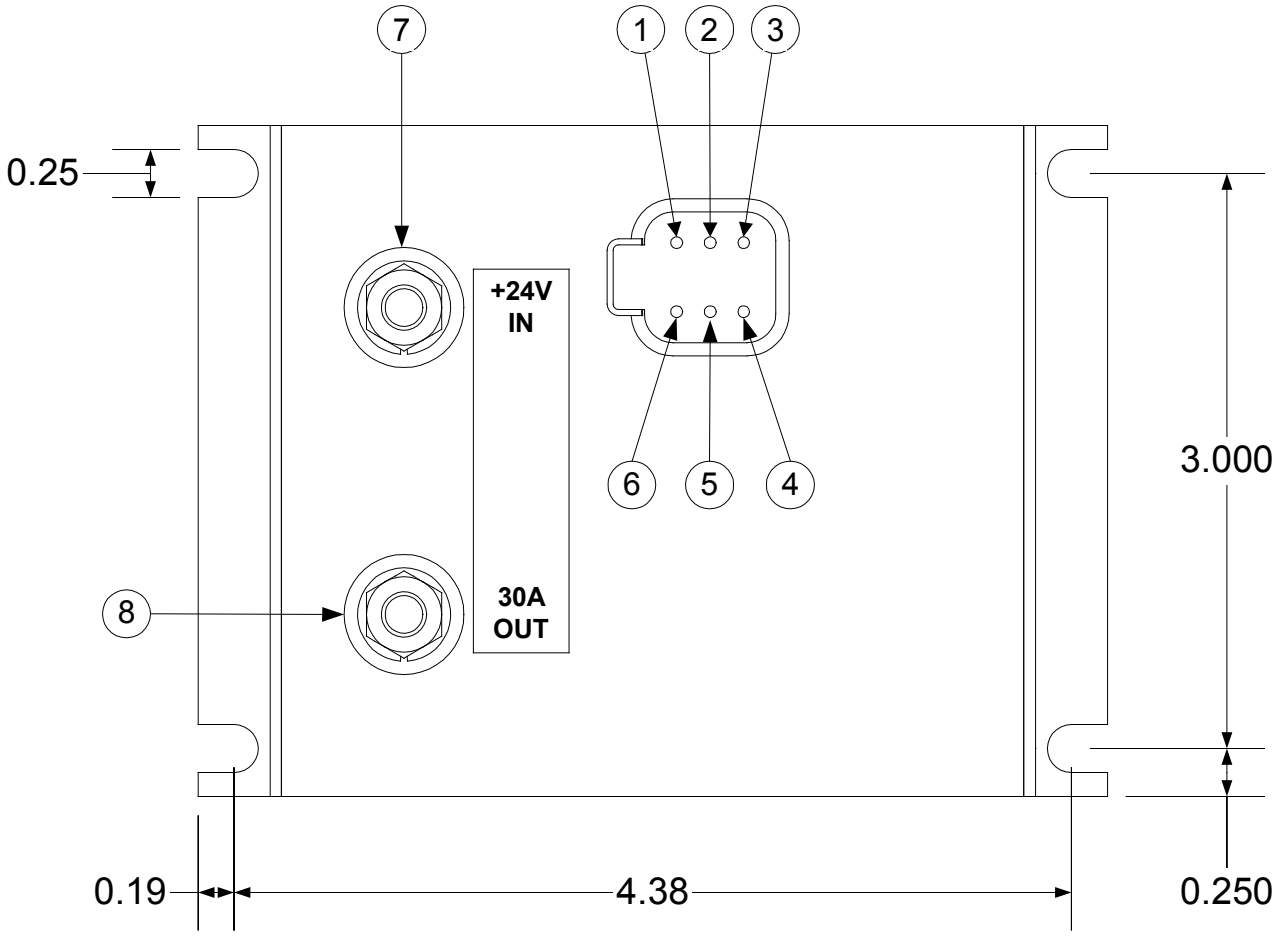
1 Do not expose the DLVD to direct water spray or snow.
2 Vanner recommends that all DC electrical wiring be performed by a certified electrician or technician to ensure compliance with all proper national and local wiring regulations.
3 To avoid a risk of fire and/or electric shock, always verify wiring connections are in good electrical condition. All external conductors must use proper wire size to avoid dangerous overheating or diminished performance.
4 If the Vanner DLVD system has been dropped or damaged in any way, do not operate until its operation has been verified to be safe by a qualified technician.
5 To reduce the risks of electric shock always disconnect the DC connections to the DLVD before attempting any maintenance.
6 Do not disassemble DLVD. See the service section of this manual for instructions on obtaining service for your DLVD. Attempting to service the unit your-self may result in a risk of electrical shock or fire.

2.2 Precautions When Working with Batteries

1 Always have someone within range of your voice to come to your aid when you work near a lead-acid battery.
2 Have access to plenty of fresh water and soap nearby in case battery acid contacts skin, clothing, or eyes.
3 Always wear complete eye protection and clothing protection. Avoid touching eyes while working near batteries.
4 If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters eye, immediately flood eye with running cold water for at least 20 minutes and get medical attention immediately.
5 NEVER smoke or allow a spark of flame in the vicinity of batteries. Gases produced by batteries are explosive.
6 Care should be taken when working with metal tools around batteries. Potentials for spark exists or short-circuit of the battery or other electrical part that may cause an explosion.
7 Never charge a frozen battery. Battery temperature needs to be above 32°F (0°C) before charging.

3 Component Identification

Figure 2 DLVD Component Identification



Dimensions are in inches

Deutsch DT15-6P Receptacle

1 – Deutsch Connector Pin 1

On a +24V logic level high on pin 1, connectivity between Vin (Batt) and P2 out is inhibited.

2 – Deutsch Connector Pin 2

On a +24V logic level high on pin 2, connectivity between Vin (Batt) and P2 out is enabled.

3 – Deutsch Connector Pin 3

On a +24V logic level high on pin 3, connectivity between Vin (Batt) and P1 Out and P2 is inhibited. This is a master off pin.

4 – Deutsch Connector Pin 4

On a +24V logic level high on pin 3, connectivity between Vin (Batt) and P1 Out is enabled.

5 – Deutsch Connector Pin 5 (P1)

This is the 10 Amp output pin. Dependencies are controlled by deutsch pins 3 and 4, as noted above.

6 – Deutsch Connector Pin 4

Ground Reference for control signals.

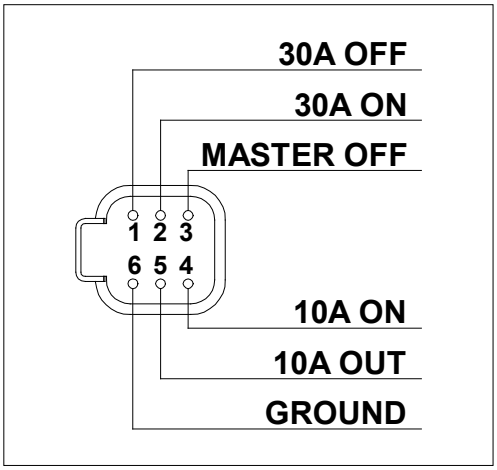
7 – Voltage stud Vin (Batt)

Terminal for connecting the input voltage to the device.

8 – Voltage stud P2 Out

This is the 33 Amp output stud. Dependencies are controlled by deutsch pins 1, 2, and 3, as noted above.

Figure 3 DLVD Deutsch Connector Identification



4 INSTALLATION

4.1 Unpacking the DLVD

Inspect the shipping container and equipment for loose or damaged parts. If any damage is found, immediately notify the freight carrier.

4.2 DLVD Installation Considerations

The wiring of your DLVD installation should conform to the National Electric Code (NEC) and any other state or local codes in effect at the time of installation. These codes have been written for your protection and their requirements should be followed.

Mounting

Locate a secure, dry, flat horizontal or vertical surface large enough to mount the DLVD. The recommended location would allow unobstructed cooling airflow at sides and bottom of the unit, and be free from road spray, dripping water or other moisture contamination.

4.3 DC Wiring Considerations

DC INPUT WIRING CONNECTIONS

The DC cables should be as short as possible.

A DC fuse is REQUIRED to properly protect the DLVD and the DC cables.

DC input studs have been provided to accommodate cable terminals with M6 hole. Good DC connections and proper wire sizing are critical for the performance and safe operation of the DLVD and loads connected to it.

5 THEORY OF OPERATION

The dual low voltage disconnect is composed of two high side solid state switches, one rated for 33 amps which is output through a stud on the device. This switch is current limited to 38 amps typically. The second switch is rated for 10 amps and is output through pin 5 of the deutsch connector. This switch is current limited to 13 amps typically. These switches are controlled by 4 input pins of the deutsch connector. Note that a pulse of 12 to 24 volts is considered a high pulse and that a voltage of less than 1 volt is considered low. The 33 amp switch is turned on by a high pulse to pin 2 of the deutsch connector. It will stay on as long as pin 1 and 3 remain low. It is turned off by pin 2 remaining, or changing to, low and a high pulse to pin 1 or pin 3 of the deutsche connector. The 10 amp switch is turned on by a high pulse on pin 4. It is turned off by pin 4 remaining, or changing to, low and a high pulse on pin 3. Note that pin 3 is a master that will turn off both switches. If any two on/off pair pins are driven high at the same time, the switch will turn on, or remain on depending on its previous state. Pin 5 of the deutsch connector is a reference ground for the control signals.

6 PREVENTIVE MAINTENANCE

There are no user serviceable components inside the device. For service refer to the Vanner Incorporated Service Department or other qualified service personnel.

6.1 Maintenance Items

For continued reliability and safety, a maintenance program should be implemented to include the following:

1 Check air ventilation openings for dust and other obstructions.
2 Examine for any surfaces that are discolored or deformed due to excessive heat.
3 Check to insure that all DC wiring connections are secured and corrosion free.

6.2 Troubleshooting Procedures

Before continuing with the trouble-shooting guide, first verify all **cable connections**, **fuses**, and proper **input voltage**.

Symptom 33 Amp output will not turn on.
Solution Verify the control signal to deutsch connector Pin 2 has minimum 12-volt amplitude and a minimum pulse length of 10ms. Verify deutsch connector pins 1 and 3 remain low during the duration of the on time.

Symptom 10 Amp output will not turn on.
Solution Verify the control signal to deutsch connector Pin 4 has minimum 12-volt amplitude and a minimum pulse length of 10ms. Verify deutsch connector pin 3 remains low during this pulse.

Symptom 33 Amp output will not turn off.
Solution Verify the control signal to deutsch connector Pin 4 has minimum 12-volt amplitude and a minimum pulse length of 10ms. Verify deutsch connector pin 2 is not high during this control pulse. Verify deutsch connector pin 2 remains low during the duration of the off time.

Symptom 10 Amp output will not turn off.
Solution Verify the control signal to deutsch connector Pin 4 has minimum 12-volt amplitude and a minimum pulse length of 10ms. Verify deutsch connector pin 2 is not high during this control pulse. Verify deutsch connector pin 2 remains low during the duration of the off time.

Symptom When turned on, switch works briefly and turns back off.
Solution Verify DC load is within unit's rated capacity.

Symptom Loads do not seem to be fully energized when operating from the DLVD.
Solution Check the DC Output with a multi-meter. If this voltage is significantly lower than the input voltage, the device will require service.
Check for overheated DC or AC wiring

Notes:

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