

**Up to 500 Amp Continuous Capability Per Relay / Extremely Compact Footprint**

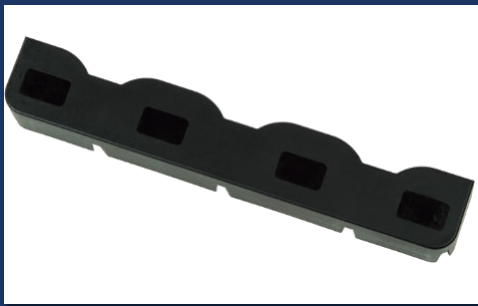
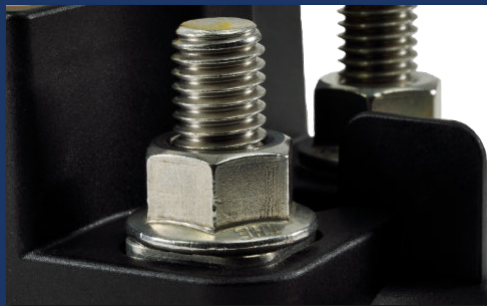
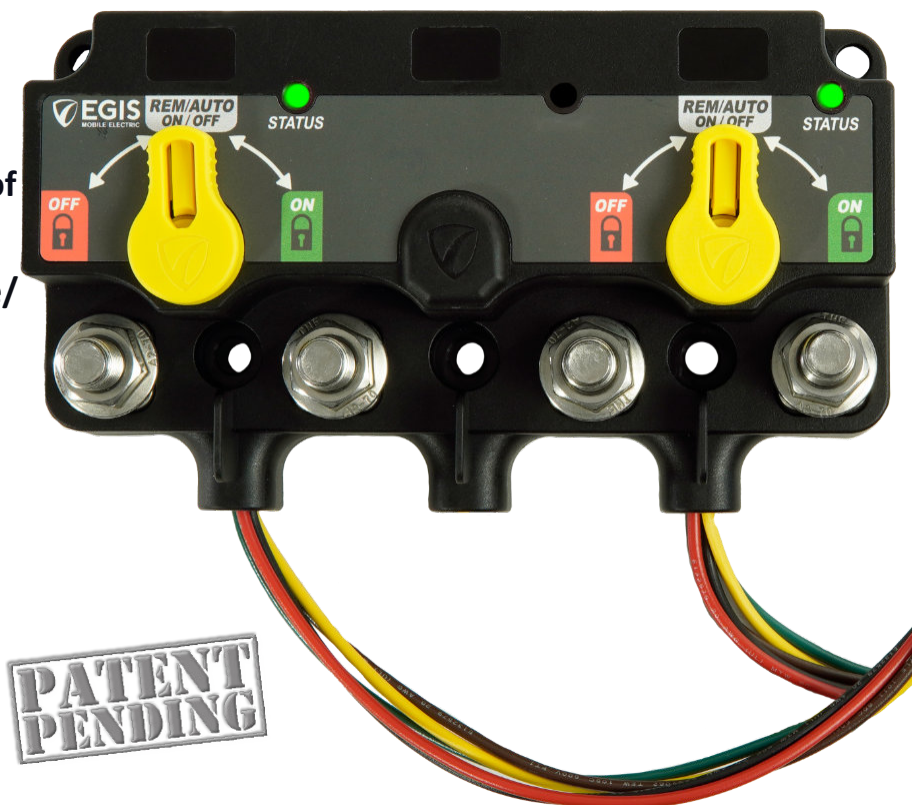
**Meets Aluminum Hull and US Coast Guard Safety Requirements For Isolated Switching of Both Positive and Ground Leads.**

**Multiple Voltage Capability For Multi Voltage/ Multi Battery Chemistry Battery Applications With 12 & 24V Switching Capability in One Device.**

**Remote ON/OFF/Auto Inputs Allows Forced Close or Open or Allowing Automatic Operation Based on Voltage Sensing**

**LED Indicator Provides Helpful Diagnostics**

**Flexible Functionality via Dip Switches: Low Voltage OFF Set-Point, Delay Off Time, and Voltage Differential for Warning Signal**



**Ultra-Low Power Draw:** Lowest off-state current draw in industry (1.3 mA) combined.



**Diagnostic Feedback** via on-board LED



**Simple & Robust Installation:** Sealed DTM/ ATM plug option. Standard product provided with tinned wire leads



**Bullet-proof Construction:** Sealed unit, high temperature materials allow mounting anywhere on vehicle. Integrated thermal overload protection



**Flexible Application Options:** Simple dip switches on rear of device allow adjustable low-voltage disconnect set-points allow pinpoint system response. Additionally adjustable settings include variable time delay after crossing the LVD threshold, and adjustable set-points for triggering a pre-shutdown warning light or alarm.



**Meets Stringent OEM Standards** for electrical transient self-protection

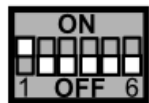
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**4 Year Industry Leading Warranty**

## Dip Switch Settings

**\* DISCONNECT BATTERY FROM POWER DISTRIBUTION SYSTEM BEFORE INSTALLING PRODUCT TO PREVENT ELECTRICAL SHOCK OR PRODUCT DAMAGE**

**\* DIP SWITCHES ARE SET FOR EACH INDIVIDUAL RELAY POSITION WITHIN AN XD RELAY WITH TWO OR MORE RELAY POSITIONS**



VSR "ON"	VSR "OFF"
2 3 Voltage	4 5 6 Voltage
<input type="checkbox"/> 12.5 / 25.0	<input type="checkbox"/> 11.4/22.8
<input type="checkbox"/> 12.9 / 25.8	<input type="checkbox"/> 11.7/23.4
<input type="checkbox"/> 13.1 / 26.2	<input type="checkbox"/> 12.0/24.0
<input type="checkbox"/> 13.5 / 27.0	<input type="checkbox"/> 12.3/24.6
<input type="checkbox"/> 12.5/25.0	<input type="checkbox"/> 12.4/24.8
<input type="checkbox"/> 12.6/25.2	<input type="checkbox"/> 12.5/25.0
<input type="checkbox"/> 12.7/25.4	<input type="checkbox"/> 12.6/25.2
<input type="checkbox"/> 12.7/25.4	<input type="checkbox"/> 12.7/25.4
<input type="checkbox"/> VSR or Relay	<input type="checkbox"/> VSR
<input type="checkbox"/> VSR	<input type="checkbox"/> VSR
<input type="checkbox"/> Relay	<input type="checkbox"/> Relay

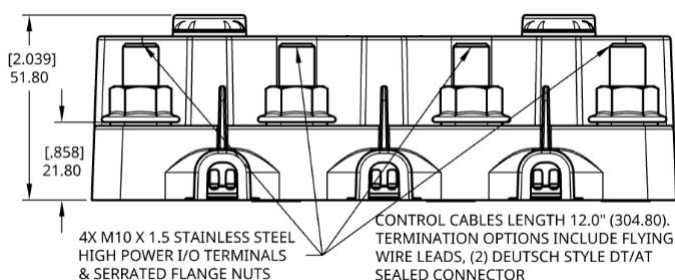
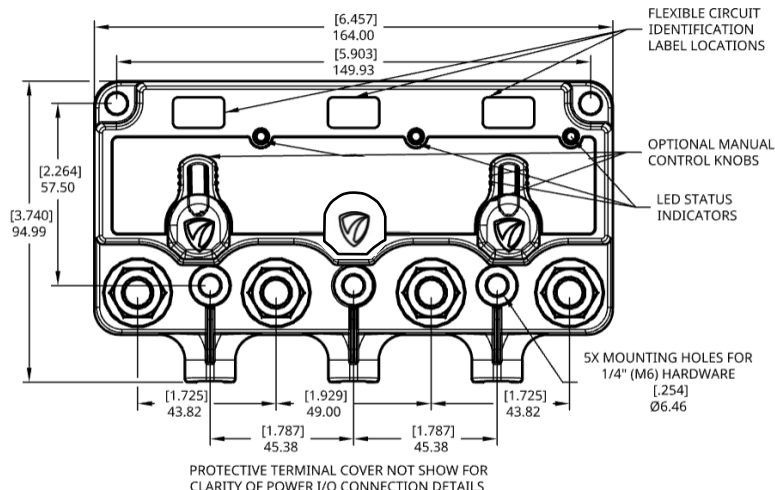
**= Default**

DS1 determines the function of the device. If DS1 = OFF, relay will act as a simple Battery Disconnect Switch Remote Relay. If DS1 = ON, relay will operate as a Voltage Sensing Relay (VSR) and will utilize DS2-DS6 to determine VSR response per individual application requirements

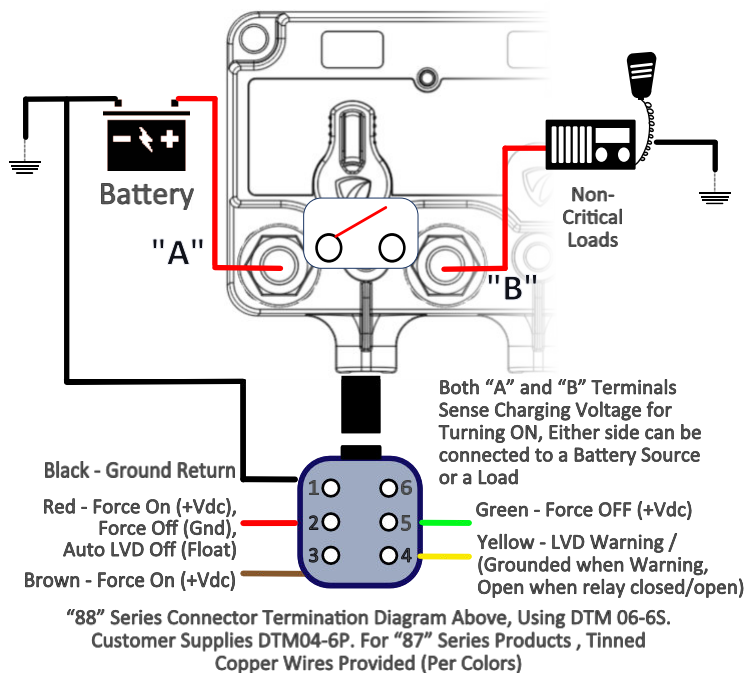
DS2-DS3: Determines 120 sec ON Trigger Voltage, 30 sec ON Voltage is 0.6 (1.2) Vdc higher. Once above this voltage, time delay to turning the relay ON is counting until ON event. If voltage is less than this setting, time delay is re-set to 0.

DS4-DS6: Determines OFF Trigger Voltage. See methods of operation for device response to voltages below this setting. Setting below 12.7 (25.4) Vdc allows accessory loads partial use of start battery energy, while ensuring sufficient starting ability.

## Dimensions



## Typical Configuration (Either Relay)



- 1) Relay Turns ON Automatically is Voltage on Terminal A or B > 13.1 Vdc (26.2 Vdc)
- 2) Forcing Red, Brown, or Green wires to Open or Close relay overrides Auto ON or OFF operation while input line asserted to +Vdc / Gnd

## Specifications

Input Voltage Range (Vdc)	8.0 - 36.0 Auto-Ranging	
Nominal Voltage (Vdc)	12	24
Over Voltage Protection (Vdc) (5 sec)	17.0	34.0
State Change Current (20 msec)	5.0 A	3.0 A
Standby Current (mA)	1.3	1.3
Live Current Switching -50,000 cycles	12V/300A	24V/300A
Mechanical Switching Life	1,000,000 cycles	
2/0 AWG - 30sec/5min/Continuous	1000 / 400 / 225 Amps	
4/0 AWG - 30sec/5min/Continuous	1100 / 400 / 300 Amps	
2x 4/0 AWG - 30sec/5min/Cont.	1600 / 700 / 500 Amps	
Hardware Material	Stainless Steel Self-Locking	
Terminal Stud Torque	120 in-lbs	
LED/Aux Output Max Drive Current	400 milli-Amps	
Min Source Current for Inputs	10 micro-Amps	

Description	Connection	Bulk Pack
XD Series 2 Pole Intelligent Relay	Tinned Wire	8730-1505B
XD Series 2 Pole Intelligent Relay	DTM Conn	8830-1505B

Related Products	Knob	Flying Wires	DTM Terminal
XD Flex 2 ACR/Relay	Yes	8710-1300B	8810-1300B
XD Flex 2 Relay/ACR	Yes	8710-1500B	8810-1500B
XD Flex 2 Relay/ACR	No	8710-1600B	8810-1600B
XD Flex 2 Triple Relay/ACR/Relay	Yes	8730-1535B	8830-1535B



## Detailed Operational Modes & Responses

### Relay Mode - Relay Closes (Turns ON) Immediately if:

- 1) Voltage on Either Input to Relay > 9 Vdc (minimum operating Voltage) and either any of the following two conditions exist:
- 2) Rem On/Off Ctrl (Red) wire is connected to +Vdc (maintain if desire is for device to stay Closed) or
- 3) Momentary ON Signal Wire (Brown) is Connected to +Vdc Until Device Closes (+Vdc may then remain or be removed while device remains Closed either way)
- 4) DS1 = Off, Setting Device as an Simple Relay

### Relay Mode - Relay Open (Turns OFF) Immediately if:

- 1) Voltage on Either Input to Relay > 9 Vdc (minimum operating Voltage) and either any of the following three conditions exist:
- 2) Rem On/Off Ctrl (Red) wire changes from +Vdc to Floating or
- 3) Rem On/Off Ctrl (Red) wire is connected to Ground (may be momentarily or permanently connected for device to stay Closed) or
- 4) Momentary OFF Signal Wire (Green) is Connected to +Vdc Until Device Opens (+Vdc may then remain or be removed while device will remain Open either way)
- 5) Rem Ctrl (Red) wire and Momentary ON Signal Wire (Brown) must not have +Vdc applied, they will override Off Signal from Green Wire
- 6) DS1 = Off, Setting Device as an Simple Relay

### VSR Mode - Relay Closes (Turns ON) after 120 sec if:

- 1) Voltage on Either Input > V<sub>On</sub> as determined by DS2-DS3 and
- 2) Rem Ctrl (Red) wire is not connected to +Vdc or Gnd and
- 3) Start Isolation Input Wires SI#1 (Brown) and SI#2 (Green) Not Connected to +Vdc
- 4) DS1 = On, Setting Device as an Voltage Sensing Relay (VSR)

### VSR Mode - Relay Closes (Turns ON) after 30 sec if:

- 1) Voltage on Either Input to Relay > V<sub>on</sub> + 0.6 V (1.2V if on 24V System) as determined by DS4-DS6 and
- 2) Rem Ctrl (Red) wire is not connected to +Vdc or Gnd
- 3) Start Isolation Input Wires SI#1 (Brown) and SI#2 (Green) Not Connected to +Vdc
- 4) DS1 = On, Setting Device as an Voltage Sensing Relay (VSR)

### VSR Mode - Relay Automatically Opens (Turns OFF) if:

- 1) Voltage on Either Input < V<sub>Off</sub> as determined by DS4-DS6 and
- 2) Rem Ctrl (Red) wire is not connected to +Vdc or Gnd and
- 3) Start Isolation Input Wires SI#1 (Brown) and SI#2 (Green) are Not Connected to +Vdc and
- 4) DS1 = On, Setting Device as an Voltage Sensing Relay and
- 5) At least 120 sec has passed since the device was either forced Closed by the Red input wire or the device automatically Closed and
- 6) The advanced charge management algorithm has determined that any electrical charging, if operating, is not equal to or great than the electrical loads discharging the connected batteries.

### VSR Mode - Relay Opens (Turns OFF) after 15 sec if:

- 1) Voltage on Either Input to Relay > Over-voltage set point for 15 continuous seconds and
- 2) Rem Ctrl (Red) wire is not connected to +Vdc or Gnd

### VSR Mode - Relay Immediately Closes (Turns ON) Immediately if:

- 1) Voltage on Either Input > 9 Vdc (minimum operating Vdc) and
- 2) Rem Ctrl (Red) wire is connected to +Vdc

### VSR Mode - Relay Immediately Opens (Turns OFF) immediately if:

- 1) Voltage on Either Input to Relay > 9 Vdc (minimum operating Voltage) and either any of the following three conditions exist:
- 2) Rem Ctrl (Red) wire is connected to Gnd
- 3) Start Isolation Input Wire SI#1 (Brown) is Connected to +Vdc
- 4) Start Isolation Input Wire SI#2 (Green) is Connected to +Vdc

### VSR Mode - Start Isolation Prevents Voltage Based Automatic Closing:

- 1) For as long as one or more of the two Start Isolation Lines SI#1 and/or SI#2 have +Vdc applied on the wires
- 2) For 3 minutes after +Vdc is no longer applied to both Start Isolation Lines SI#1 and/or SI#2 have +Vdc applied on the wires

### Manual Override Prevents Remote or Voltage Based Open or Closing:

- 1) For as long as the manual knob (if equipped) is not positioned in the "Auto/Rem" orientation

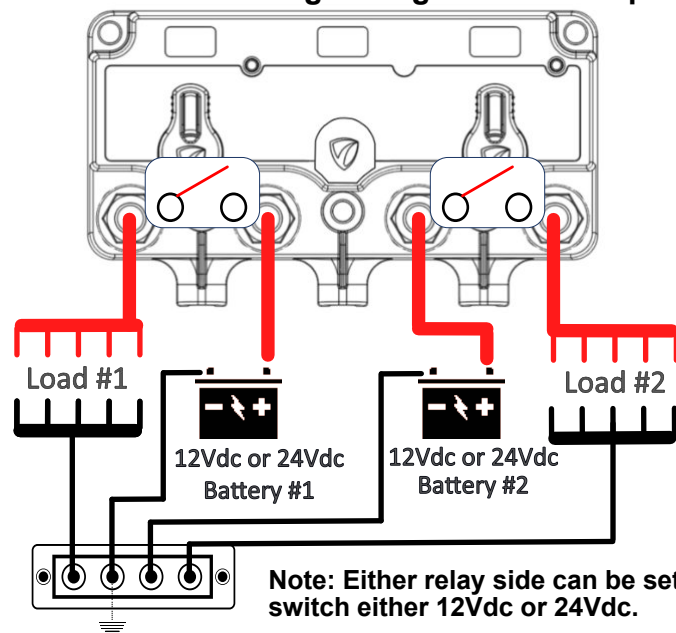
### Upon Startup or Returning Device from Manual to Auto/Rem Mode:

- 1) The remote LED will remain OFF regardless of the physical status of the VSR until the VSR is remotely forced ON/OFF or automatically attempts to turn itself ON/OFF.
- 2) The local LED will rapid flash if the device has an input voltage that would dictate a pending ON or OFF is necessary.

## LED Indicators

	Local LED	Rem LED
Relay OFF - Normal	Off	Off
Relay ON - Normal	On	On
Relay On - Pending Off	On w/3x Off Flashes	On
Relay Off - Pending On	Off w/3x On Flashes	Off
Relay Off - Start Isolation Mode	Off w/4x On Flashes	Off
Relay Off - Over-Voltage Mode	Off w/5x On Flashes	Off
Manual Override Engaged	Off w/2x On Flashes	Off w/2x On Flashes
Relay Off - Power Hibernation Mode	Off w/1x On Flash	Off
Power Up / Manual Mode Exited and Pending On or Off Event	Continuous Flashing	Off

## 12 & 24V Switching Configuration Example



## Positive/Negative Switching Configuration Example

