Dual Rectifier Part Numbering Guide

DR M 41 B - 300 - B L - xxxx
1 2 3 4 5 6 7 8

Example part is a Dual Rectifier, Medium Package, Generation 4.0, 24 volt system, 300 amps per leg, All LEDS Active, Active-low non-isolated Combine trigger

1: Unit Type

DR – Dual Rectifier

2: Enclosure Size

S - Small Enclosure
M - Medium Enclosure
L - Large Enclosure

Enclosure size is selected by the manufacturer based upon amperage capability. If a specific package is required, contact the manufacturer for guidance.

3: Generation Number

41 - Generation 4.1

4: Nominal Voltage Rating

A - 12VDC
B - 24VDC

5: Continuous Current Rating

050-300 in 50 A increments, 400a, 500a, and 600a

For continuous current levels in excess of 600 amps, please contact us for custom engineering services.

6: LED Options

A – De-activated
B – All (factory default, both on-board LEDS and external LEDS active)
C – External LEDS Activated (on-board LEDS de-activated)
D – Eliminated and not present on package

7: Combine Trigger Options

X – Combine trigger disabled / not needed	**L** – Active-low non-isolated Combine trigger
H – Active-high non-isolated Combine trigger	

8: Specification Code

Optional 4 digit code for orders that have special requirements beyond those listed above. Default is omitted and manufacturer will add these as needed.

Standard Features

Battery Combine Trigger forces the MOSFET arrays to turn-on which then, in turn, combines the main and auxiliary batteries. When pins 1 and 2 (black and green) are shorted, combine is active. When the connection is open, combine is disabled and default isolation takes place. Perfect Switch recommends the use of a momentary switch to insure the battery combine feature is not accidentally left on. Default is active-low trigger.

Alternator excitation trigger is necessary for most internally regulated alternator voltage regulators to "turn-on" during the vehicle starting process. Although some external regulators do not require this trigger, most internally sensed internal voltage regulators do require excitation.

IGNITION ALTERNATOR EXCITATION (violet wire):

Upon application on the ignition line of a voltage greater than the turn-on threshold (~2 V), the device will first wait four seconds before initiating the alternator excitation sequence. This allows cranking to occur without a possible depleted auxiliary battery loading down the engine. After the four seconds has elapsed, the MOSFET array connected to the main battery will turn on to connect the battery to the alternator, allowing the regulator to begin operation. The array will remain on for approximately 500 milliseconds; during this time, the device will be looking for the moment when the alternator voltage rises above that of the main battery. If this occurs, the excitation sequence is ended and the device will transition into its standard ideal diode mode. If not, once the half-second on-time has elapsed, the main array will shut off. Approximately 3 seconds later, the device will try exciting the alternator once again (with a half-second on-time). This process will occur a maximum of five times; if the alternator fails to begin charging after the fifth time, the device will immediately go to sleep and wait for another positive-going ignition signal. The user will note the Yellow LED will be on when the excitation sequence is active.

Ideal Configuration

STARTER ALTERNATOR EXCITATION (orange wire):

Upon application on the starter line of a voltage greater than the turn-on threshold (~2 V), the device will wake up from its sleep mode and wait for a disappearance of the starter signal, indicating the starter has been released and, presumably, the cranking process has completed. The signal must be applied for a minimum of 80 milliseconds to initiate the trigger. The device will then wait four seconds before initiating the alternator excitation sequence. After the four seconds has elapsed, the MOSFET array connected to the main battery will turn on to connect the battery to the alternator, allowing it's regulator to begin operation. The array will remain on for approximately half a second; during this time, the device will be looking for the moment when the alternator voltage rises above that of the main battery. If this occurs, the excitation sequence is ended and the device will transition into its standard ideal diode mode. If not, once the half second on-time has elapse the main array will shut off. Approximately 3 seconds later, the device will try exciting the alternator once again (with a half-second on-time). This process

will occur a maximum of five times; if the alternator fails to begin charging after the fifth time, the device will immediately go to sleep and wait for another positive-going starter signal.

ECONO TRIGGER (green wire):

For vehicles with an engine start/stop feature, or "smart" alternators that turn off to extend fuel economy, connect the Econo Trigger to ignition switched 12 volts. If the DR senses the alternator voltage to be less than battery voltage (when computer turns off alternator to save fuel), with the green wire sensing +12v ignition voltage, the excitation circuit will automatically re-trigger and pulse 12 volts to the alternator output post allowing the alternator to create output when the vehicle computer brings the alternator out of the so-called Econo Mode.

Generally speaking, when using Econo Mode trigger, the excitation trigger to use would be the Ignition Alternator Excitation (violet wire) detailed above, not the starter excitation.

Contact technical support for guidance with respect to excitation trigger or any customization needs.