# Model ED-GV15/30


## General Description

The DC Rider is an input/output module that, when combined with other modules, enables vehicle communications over the direct current (DC) power bus. Utilizing patented conducted emissions technology and configurable for a wide range of applications, DC Rider takes CAN-Bus inputs from switches and sensors and formats the data for transmission over power wiring to other modules to control outputs such as lights, motors, actuators, controls and gauges.

The DC Rider simplifies the design, layout and installation of a vehicle communication bus. Only power is required between modules and by reducing the wiring needed to control electrical loads, the DC Rider eliminates the use of bulky harnesses and also decreases the need for expensive wire and complex connectors. This reduces material and labor costs and enhances troubleshooting, improves overall reliability, and supports upgradeability.

The DC Rider is ideal for use in challenging environments such as high-wear applications with excessive wire flexing and bending where a single robust pair of power lines can carry multiple control signals. The DC Rider is also suited for routing power lines through retractable reels or small conduits or openings where it is not possible to run communication wire bundles. Finally, future DC Rider modules will be configured to provide advanced features such as Bluetooth connectivity to provide access to critical system information through wireless digital devices such as a smartphone.

## Features

- Up to 8 modules can be used in a peer to peer configuration and each module can control two outputs for a maximum total of 16 outputs per system; other configurations available under special order
- Modules accept SAE J1939 compatible commands to control outputs and obtain module status and feedback
- Compatible with 12 and 24 volt DC vehicle electrical systems
- Module connector (Deutsch DTF15-12PA) supports up to 15 amps to outputs and can be used in PWM (pulse width modulation) mode; modules configured with wire pigtails can support up to 30 amps
- Modules have 3 inputs available for module addressing
- Modules are protected against transient voltage spikes and are tolerant to high levels of radio frequency interference
- Module status is indicated by a status indicator light on the enclosure case
- Enclosure potted and rated at IP67

## Applications

The DC Rider is targeted for a broad range of applications in ground-based vehicles. This includes military as well as commercial applications, including those in emergency, construction, energy, agricultural, and forestry industries.

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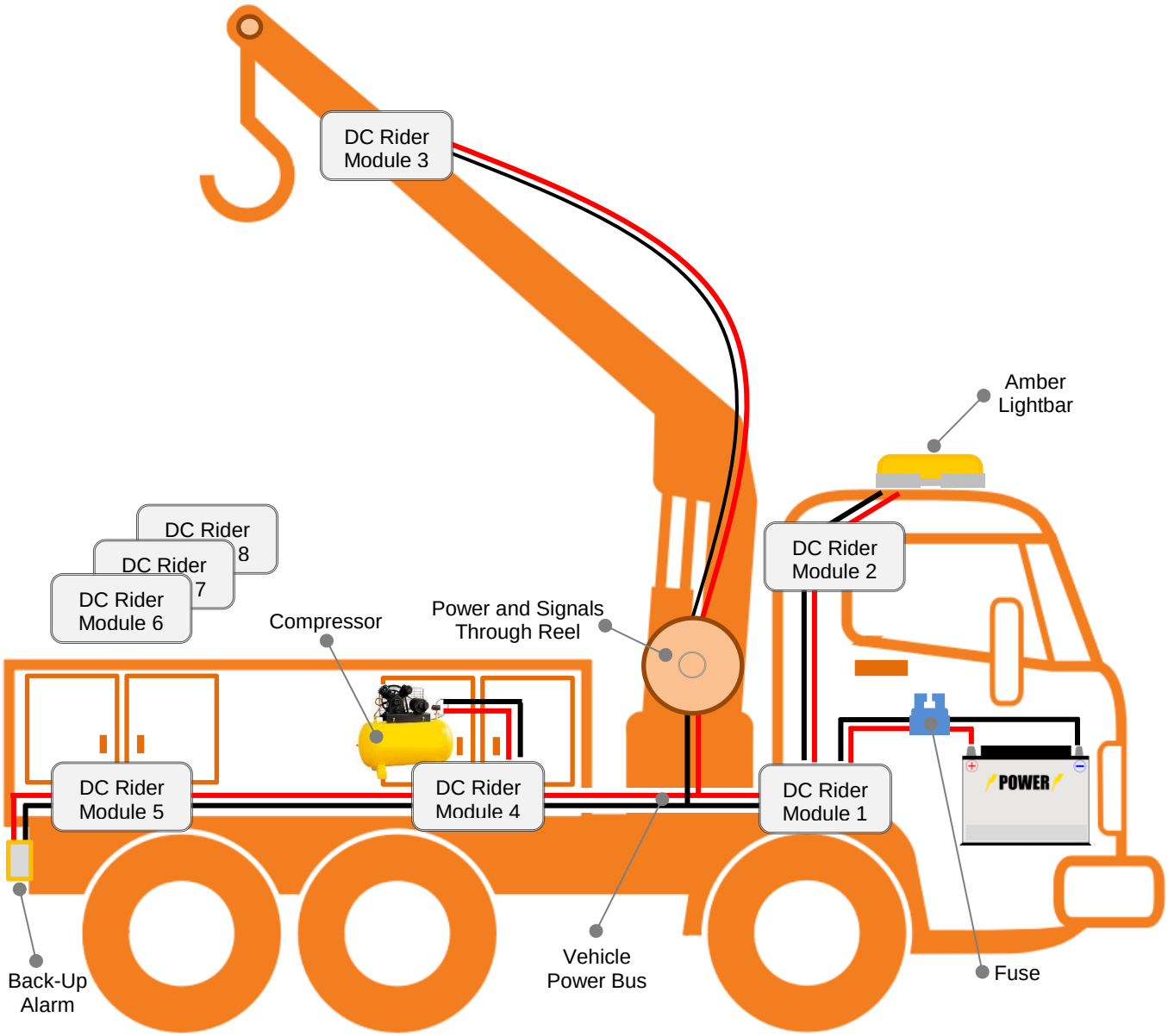
## Example Configuration – Utility Truck




Boom truck running communications signaling via DC Rider system over just the vehicle power bus to various equipment stations and through a reel.

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## Maximum Ratings

| Symbol | Parameter | Value | Units |
|---|---|---|---|
| Vbat | DC Battery Voltage – Short Term | 40V | V |
| Imax | Battery Current – Short Term | 30 | A |
| Tstor | Storage Temperature | 105 | °C |
| Tamb | Ambient Operating Temperature | 85 | °C |

## Operating Characteristics

| Parameter | Symbol | Min | Nom | Max | Unit | Conditions |
|---|---|---|---|---|---|---|
| **Power Signals** | | | | | | |
| Battery Voltage | VBAT | 9 | | 34 | V | Continuous operation |
| ZeroWire Voltage | VZW | 9 | | 34 | V | Continuous operation |
| Battery Current | IBAT | | | 15 | A | Continuous, limited by connector pin |
| ZeroWire Current | IZW | | | 15 | A | Continuous, limited by connector pin |
| ZeroWire Current, Peak | IZWP | | | 25 | A | 10 seconds, limited by Connector pin |
| **ZeroWire Signals** | | | | | | |
| ZeroWire Frequency | ZW_freq | 4.5 | | 6.5 | MHz | |
| ZeroWire Amplitude | ZW_amp | 40 | | 600 | mVp-p | |
| ZeroWire Conducted Harmonics | ZW_harm | | | -50 | dB | |
| **CAN Interface** | | | | | | |
| CAN Line Voltages | Vcan_h Vcan_l | 2 | 2.5 | 3 | V | No load. See J1939-11 sect. 5.1.2 tables |
| Internal Capacitance | Cin | 200 | 220 | 240 | pF | CAN_H and CAN_L relative to ground |
| Differential Internal Capacitance | Cdiff | 30 | 33 | 40 | pF | |
| Optional Internal Termination Resistance | RL/2 | 59 | 60 | 61 | Ohm | Internal backbone split terminations are optional |
| **Environmental** | | | | | | |
| Operating Temperature | Top | -40 | | 85 | °C | Continuous 15A operation |
| Storage Temperature | Tst | -40 | | 105 | °C | |




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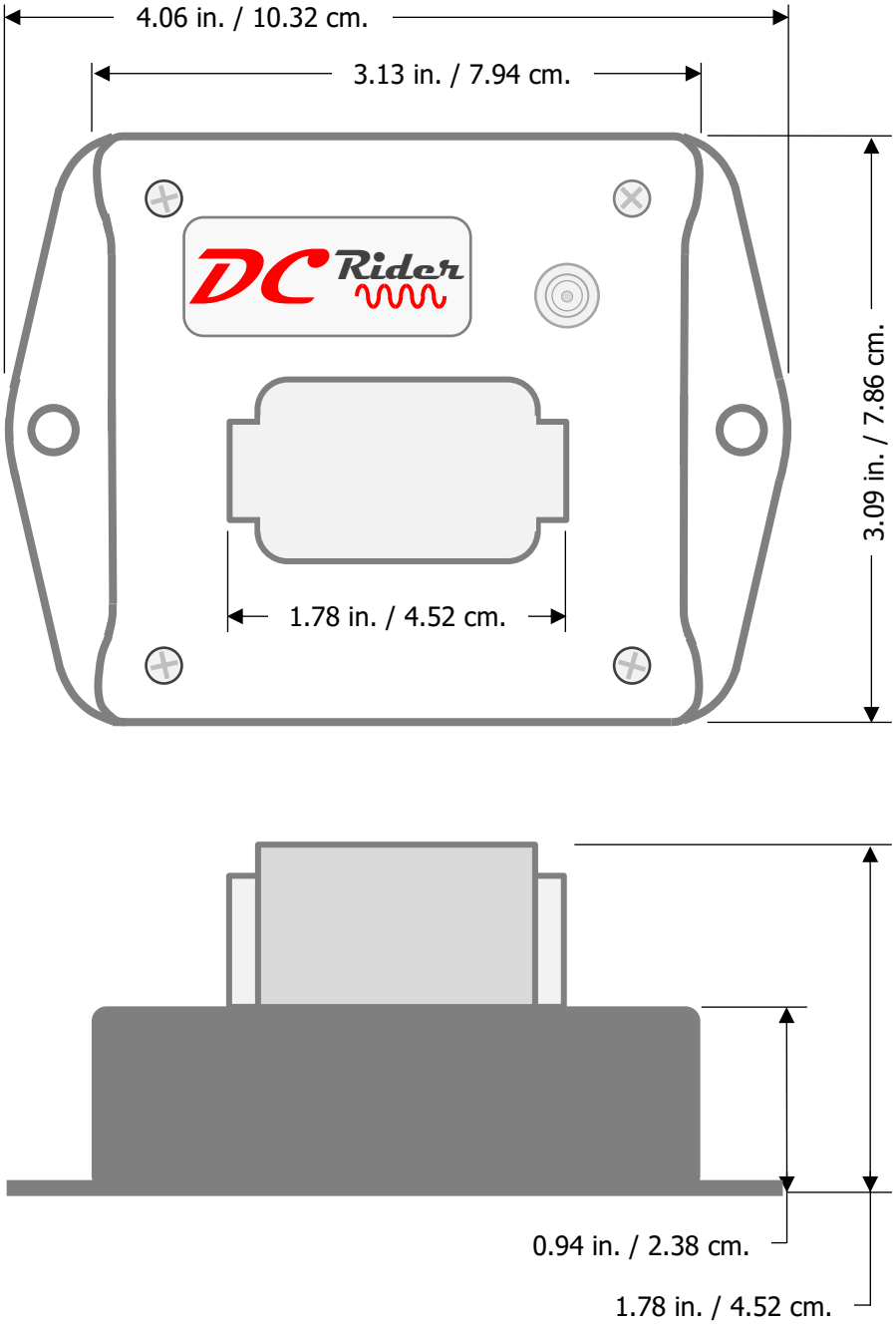
| SAE J1939 Compatible Commands | |
|---|---|
| Obtain software information | Set outputs without response |
| Obtain module status | Set outputs |
| Obtain inputs | Set output PWM without response |
| Obtain output status | Set output PWM |

## Package Dimensions

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DC Rider is patent pending; Design and specifications are subject to change without notice.


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