Description

In order to comply with Rule EV4.9 of the Formula SAE Rules an energy will be installed in each vehicle at competition. The energy meter will measure energy usage as well as monitor for power or voltage violations. The energy meter will be provided at technical inspection and must be returned by the end of the competition.

Wiring

Tractive System

The energy meter has 3 TS connections. The first two connections are bus bars on either side of the meter. This is a shunt for measuring current. These must be wired in series with the TS on the negative side such that all power supplying the tractive system passes through the energy meter. The third TS connection is a TS positive sense lead for measuring voltage. This is a flying lead (~6") coming out of the top of the energy meter. The team must supply the mating connector. The positive sense connection must be fused by the team.

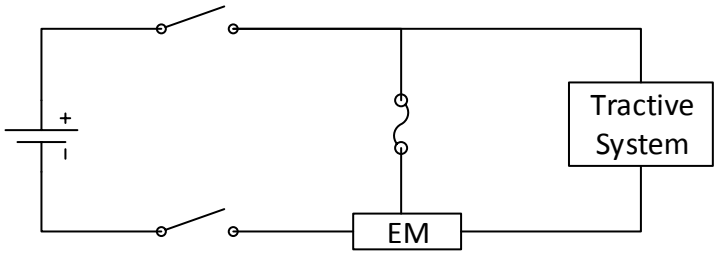


Figure 1 - Example Energy Meter Location

Description	Manufacturer & PN
Housing	Anderson Power Products 1327G17
Terminal	Anderson Power Products 262G1

Table 1 - TS Mating Connector

GLV System

The energy meter has a 4 pin connector for GLV connections which will require power from the GLV system of the car. The power should ideally be supplied directly from the GLV Master Switch. To download, the energy meter will require GLV power with the TS off. The energy meter will be downloaded using a hard wired connection. The 4 pin connector on the energy meter must be duplicated outside of the TS enclosure for race officials to use for download. An extension harness with breakout for supplying power will be available with the energy meter at the competition. For those teams wishing to integrate the energy meter GLV connector and download connector into their vehicle harness details of the pinout and connectors are provided below.

Pin	Function
1	GLV+ Supply
2	GLV Ground
3	Comm+
4	Comm-

Table 2 - GLV Connector Pinout

Description	Manufacturer & PN
Mating connector for energy meter	Molex 33472-4001
Terminal	Molex 33012-2002
Download connector	Molex 33482-4001
Terminal	Molex 33000-0002

Table 3 - GLV Mating Connector

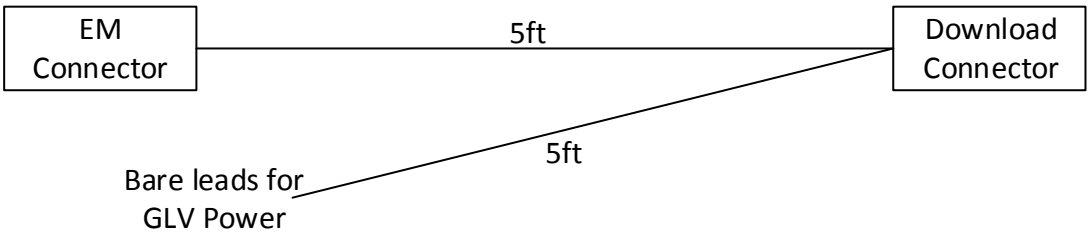
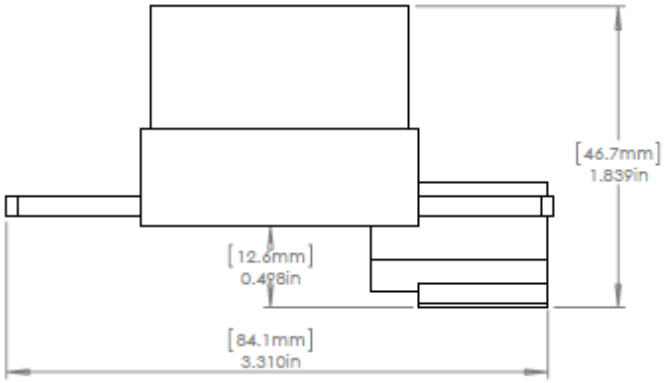


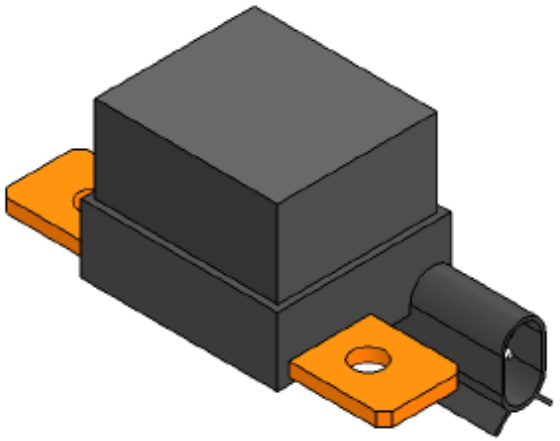
Figure 2 - GLV Harness

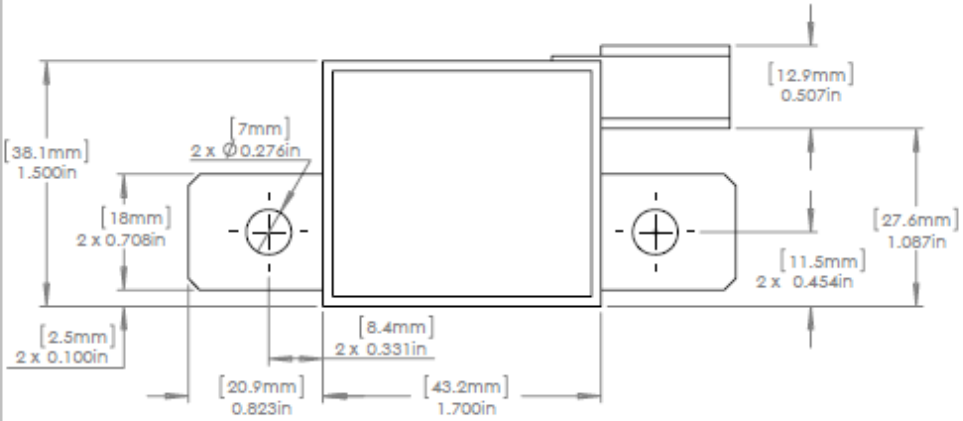
GLV Supply Specs
Supply Voltage: 6-60Vdc
Power Consumption: <1W

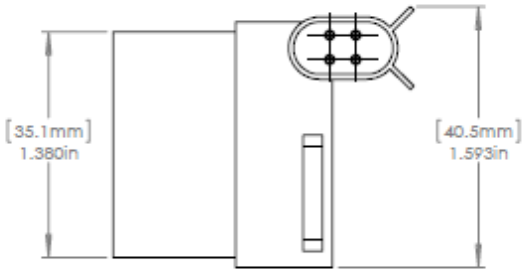
Voltage sensing specs
Measureing Voltage Range: +/-600V
Maximum Voltage: +/-1000V
Resolution: 45mV

Current sensing specs
Continuous Current: 600A
Shunt Resistance: 0.1mΩ
Resolution: 11mA









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NOTES: Units: In [mm] Tolerances +/- 0.005	DWG NO. FSAE Energy Meter
WEIGHT:	SCALE:1:1 SHEET 1 OF 1