

# SymTech Laboratories

## 1-4 ch. EGT Module

Thank you for purchasing the SymTech Labs Exhaust Gas Temperature (EGT) Module! Your EGT module will generate a linear analog signal proportional to the temperature at the tip of any K-type thermocouple, compatible with MegaSquirt EMS and most other engine management systems.

### INSTALLATION

#### Required Tools:

- Wire crimping and cutting tool
- Butt or closed end splice crimp connectors
- Small flat-head screwdriver

#### Optional Tools:

- Soldering iron and solder
- Heat-shrink tubing

EGT modules are available in single- or multi-channel, and internal or external configurations. Single-channel units require just five connections. Multi-channel units require five connections for the first channel, and three connections for each additional channel.

#### Internal Modules

Internal modules are designed to be mounted inside the enclosure of your EMS. They can be mounted using the integrated mounting hole or heavy duty double-sided foam tape.

Use *figure 1* to identify each connection. If used with MegaSquirt EMS, the 12V power connection should be connected to *S12* or *S12C*. The ground connection should be connected to the internal signal ground plane at *SG* or the *GND* through-hole above the proto area. The 12V and ground connections only need to be made once on multi-channel modules.

Connect the *post-filter output* to *JS4* in MS1 systems, or *JS4* (egtGauge7) or *JS5* (egtGauge6) in MS2 or MS3 systems. The *pre-filter output* may be connected to *EXT\_MAP*, *EGO2*, or *SPARE\_ADC* in MS3+MS3X systems.

Connect the two thermocouple connections (alumel and chromel) directly to your K-type thermocouple or to any two spare pins on the DB37 or DB15 (if equipped) connector. If using the DB connectors, terminate the thermocouple as close to the connector as possible with crimp connectors, or be sure to use K-type thermocouple extension wire. In K-type thermocouples, the chromel wire is usually marked yellow and the alumel wire is usually marked red.

Each channel in the module can be configured for either 0-1000°C or 0-1250°C operation. All channels are configured for 0-1000°C operation by default. To configure a channel for 0-1250°C, clip the small, uninsulated wire between the *RANGE* terminals with wire or flush cutters.

#### External Modules

External modules are designed to be mounted external to your EMS, but they should not be subjected to extreme heat or moisture. If equipped with an ABS enclosure, they can be mounted using the enclosure's flanged lid, otherwise they can be mounted using the integrated mounting holes.

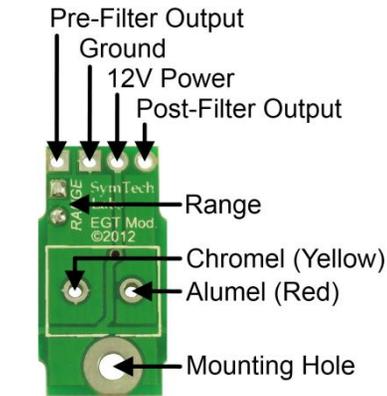


Figure 1: Int. Module Connections

The *red* 12V ( $\pm 4V$ ) power wire should be connected to a switched/fused 12V source. The *black* ground connection should be connected to a low current, signal return point (a black/white wire in most MegaSquirt EMS harnesses).

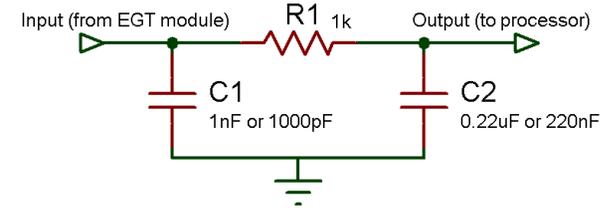


Figure 2: Low-Pass Filter Schematic

The remaining wires transmit the signal outputs from each channel. These wires can be connected directly to your EMS's 0-5V analog inputs. In MS3+MS3X systems, *EXT\_MAP*, *EGO2*, and *SPARE\_ADC* are the three analog inputs. In MS2 or MS3 systems, *JS4* (egtGauge7) or *JS5* (egtGauge6) may be used. In MS1 systems, *JS4* may be used. A low-pass filter must be constructed to use *JS4* or *JS5*; refer to *figure 2* for a schematic.



Figure 3: Ext. Module Connections

If equipped with an enclosure, remove the lid by unscrewing the two black screws. Install your K-type thermocouples by inserting the bare end of each lead into the terminal blocks on each EGT module channel. A thermocouple's chromel lead is usually marked yellow, and should be inserted in the left side of the terminal block. The alumel lead is usually marked red, and should be inserted in the right side of the terminal block. See *figure 3* for an example of these connections. Be sure to secure the leads by tightening the screws on the top of each terminal block with a small flat-head screwdriver.

Each channel in the module can be configured for either 0-1000°C or 0-1250°C operation. All channels are configured for 0-1000°C operation by default. To configure a channel for 0-1250°C operation, remove the black shunt jumper across the *RANGE* terminals.

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