

EGT K-Type thermocouple adapter manual (v2)

Features

- Operates with low cost Type K Thermocouples
- Built-In ice Point Compensation
- High accuracy and stability
- Linear and Temperature Proportional Operation - 5 mV/C
- 0-5v output compatible with most stand alone EMS and Data loggers.
- Completely sealed waterproof package
- Compact size 1"x0.25"x0.25"

General Description

Today's high performance engine tuning process is almost impossible without some kind of electronic data logging. Exhaust gas temperature reading is one of the most important parameters allowing tuner to monitor fuel combustion process.

EGT adapter acts as an interface between K-type thermocouple and EMS (engine management system) or Data logger. EGT adapter allows taking advantage of widely available, inexpensive K-type thermocouple and connecting it to virtually any EMS/Data logger accepting 0-5v input.

Selecting K-type probe

Only K-type (nickel-chromium (Chromel) vs nickel- aluminum (Alumel)) thermocouple can be used with the EGT adapter. Fast response time is very important and the probe with smallest diameter or exposed junction can be selected.

In reducing atmospheres (lack of oxygen) at temperatures of 1,500 to 1,750°F the positive thermoelement forms a greenish chromic oxide, commonly known as "green rot". This causes a decrease in the electromotive force of the thermocouple. Exposed junction is also subject to aging when exposed to 800 to 1,200°F for a few hours. Temperature cycling above 1,400°F and then below 700°F causes a random error due to changes in the composition (inter-granular structure) of the conductors.

Solutions to the problems of Type K thermocouples include using metal sheathed mineral insulated thermocouples.

Probe location

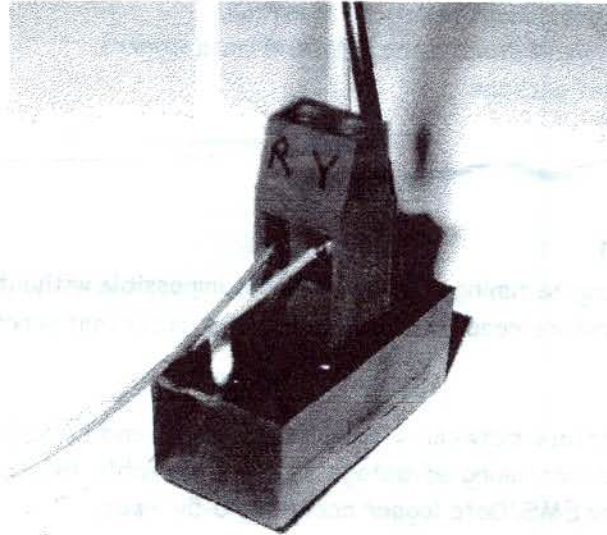
To achieve the accurate EGT reading EGT probe has to be located 2-3 inches away from the exhaust port. The probe can be mounted further down the header tube but the temperature reading will be lower and has to be taken in consideration.

EGT adapter mounting location

Due to the 'ice-point' compensation the best accuracy is achieved when the adapters ambient temperature is between 40-150F. Mount the adapter inside the car possibly close to the EMS/Data logger unit.

Connecting adapter

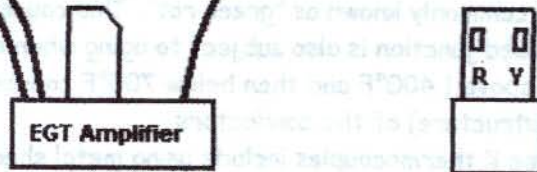
Adapter terminal block has two screw-hold type inputs for thermocouple. K-type adapter has red and yellow wires, connect them to the adapter according to the picture below. The adapter will not function if you revers thermocouple wires. Connect adapter black wire to the ground preferable to the EMS/Data logger ground to achieve best accuracy. Connect red wire to the 12-15V +power source and white wire to the EMS/Data Logger 5V input port.



Black/Red (Ground/+12v)

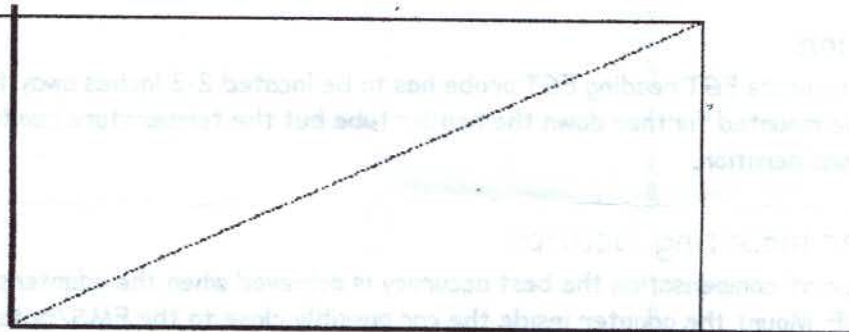
Output 8-5v
5V = 990C

K-type probe
Red/Yellow



Output, V

5



990

Temp, C