

EGT-204 / 208

INSTRUCTION MANUAL



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EGT-104 SPECIFICATIONS

DIMENSIONS (APPROX)	120 x 100 x 30mm
OPERATING VOLTAGE	12V – 18V DC
OPERATING TEMPERATURE	0°C – 70°C
OPERATING CURRENT	120mA @ 12V
INTERNAL PROTECTION	SELF RESET FUSE
OVER-VOLTAGE PROTECTION	80V LOAD DUMP
THERMOCOUPLE INTERFACE	'K' TYPE x 4
MAXIMUM TEMPERATURE	1000°C / 1800°F
MEASUREMENT ACCURACY	±10°C @ 1000°C
THERMOCOUPLE CHANNELS	4 (EGT-204) 8 (EGT-208)
CONTROL INTERFACE	5 PIN CUSTOM

WARRANTY CONDITIONS

Sakura Motorsports warrants this product to be free from defects in material and workmanship under normal use and if properly installed for a period of one year from date of purchase.

If found to be defective as mentioned above, it will be replaced or repaired if returned prepaid along with proof of date of purchase. This shall constitute the sole remedy of the purchaser and the sole liability of Sakura Motorsports. To the extent permitted by law, the foregoing is exclusive and in lieu of all other warranties or representations whether expressed or implied, including any implied warranty of merchantability or fitness.

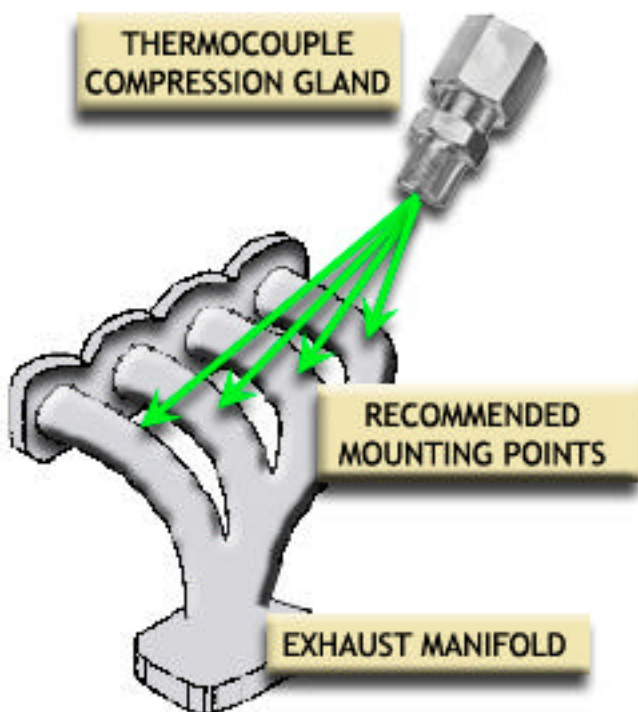
In no event shall Sakura Motorsports be liable for special or consequential damages.

In case of malfunction, this Sakura Motorsports product will be repaired free of charge according to the terms of the warranty. After the warranty period has expired, repair service is charged based on a minimum and maximum charge quoted by the dealer. The repaired unit will be returned as soon as possible after receipt.

INSTALLATION

The EGT-204 is a four channel , and the EGT-208 is an eight channel thermocouple interface unit.. When used in conjunction with a suitable 'K' type thermocouple, engine Exhaust Gas Temperatures (EGT's) may be measured and recorded.

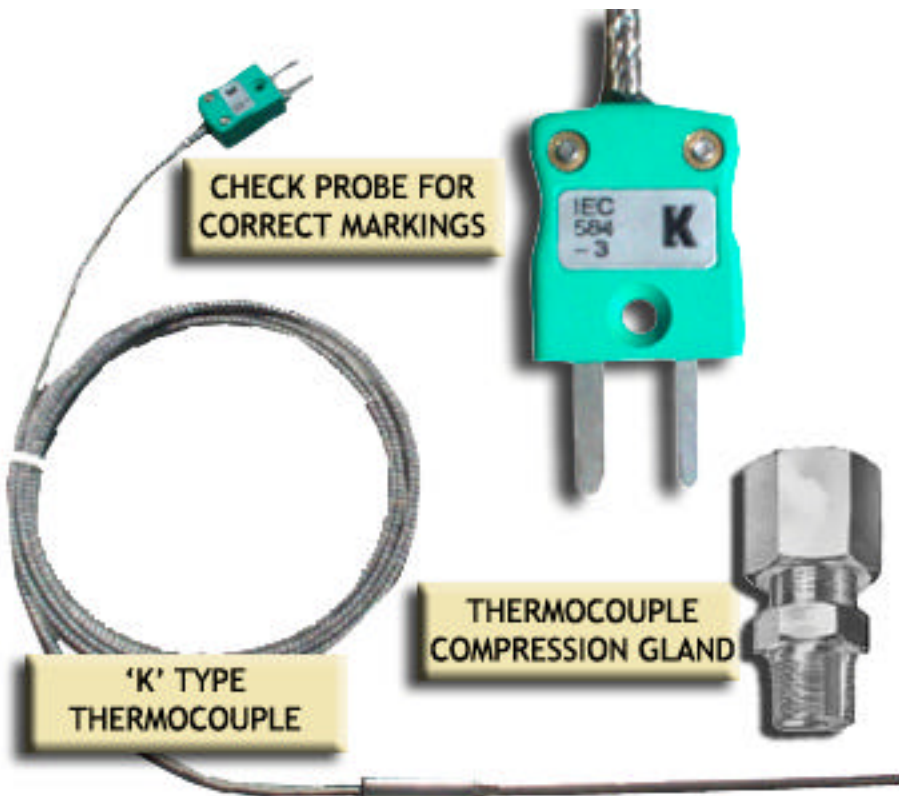
The thermocouple probe(s) should be mounted into the exhaust system, relatively close to the engine. The recommended distance is between 3 and 8 inches from the exhaust port. To assure maximum accuracy, the probe should be mounted in the centre of the exhaust gas stream as it comes out of the engine.



Thermocouples are mounted using compression glands, which typically screw into the exhaust manifold. Cast iron exhausts may be drilled and tapped to accept the thermocouple compression glands. Thin wall exhausts (typically wall thicknesses less than 1/8") such as extractors may require thick steel washers to be welded in place to accept the compression glands.

If your kit does not include thermocouples or suitable compression glands, contact your nearest Sakura Motorsports distributor for information on where to obtain them. Please note the following requirements when using probes from alternate vendors :

- ✘ Thermocouples should be of the 'K' type, with a maximum temperature rating of at least 1600°F.
- ✘ Probes should generally be encased in a stainless steel body, with a typical probe diameter of 1/8".
- ✘ Probe lengths should be kept short, as the vibration of the engine may cause premature failure of excessively long probes.



Compression glands should not be over-tightened as permanent damage to the thermocouple may result. The rapid temperature cycling of the exhaust may cause the fittings to loosen, routine examination of all fittings should be performed.

Once the thermocouple probes have been mounted into the exhaust system, the position of the EGT-20x should be determined. Avoid mounting the EGT-20x and associated wiring unit near any of the following:

- ⚡ Fluids such as water, engine coolant , engine oil or fuel
- ⚡ Heat sources such as engine exhausts or radiators
- ⚡ Electrical noise sources such as spark plug leads, ignition coils and CDI ignition units (eg. MSD, Jacobs).

Screw or bolt the unit firmly into the vehicle and plug the thermocouple probes into the EGT-20x. The thermocouple extension wires are covered in stainless steel braid. Care should be taken to fasten the wires as to limit their movement during vehicle operation. If allowed to move, the wires can cut through grommets or any material in connect with them. Do not bend the thermocouple wires into sharp bends, radius all bends.

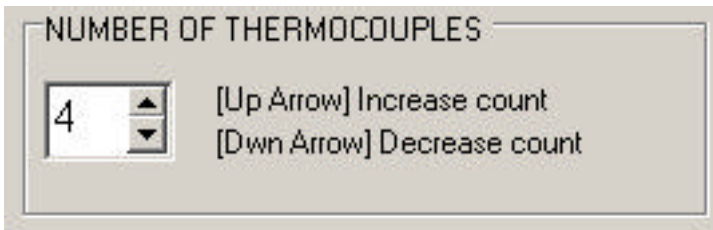
Supplied with the EGT-20x is a wiring harness to connect the unit to the FC-10 Fuel Management Computer. The wiring harness attaches to the interface unit by simply pushing the circular metallic connector into the interface unit and turning the locking nut by hand until tight. The circular connector is 'keyed' and hence can only be inserted one way.



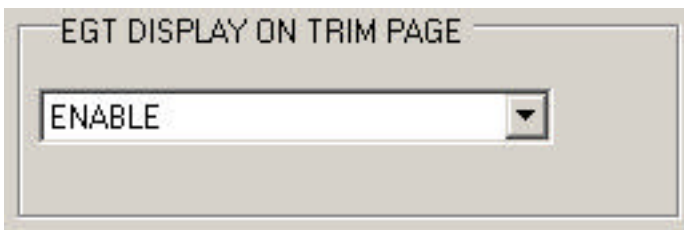
The other end of the wiring harness plugs directly into the FC-10 Fuel Management Computer.

SOFTWARE CONFIGURATION

Once the physical installation of the EGT-20x is complete, the FC-10 Interface Software must be configured. Start the interface software and select the SETUP menu option. Go to the INPUTS section and navigate to the '**NUMBER OF THERMOCOUPLES**' input box. Use the up and down arrows to select the number of thermocouples installed. The setup page may be quickly accessed using the following key strokes :



Next, move to the '**EGT DISPLAY ON TRIM PAGE**' input box and select enabled. This will display the EGT temperatures next to each cylinder trim.



If you would like to see the EGT readings on the Engine Data page, select the **ENGINE DATA**, and select the **Setup Engine Data ? Text Engine Data** menu item. Tick each EGT input you would like displayed.

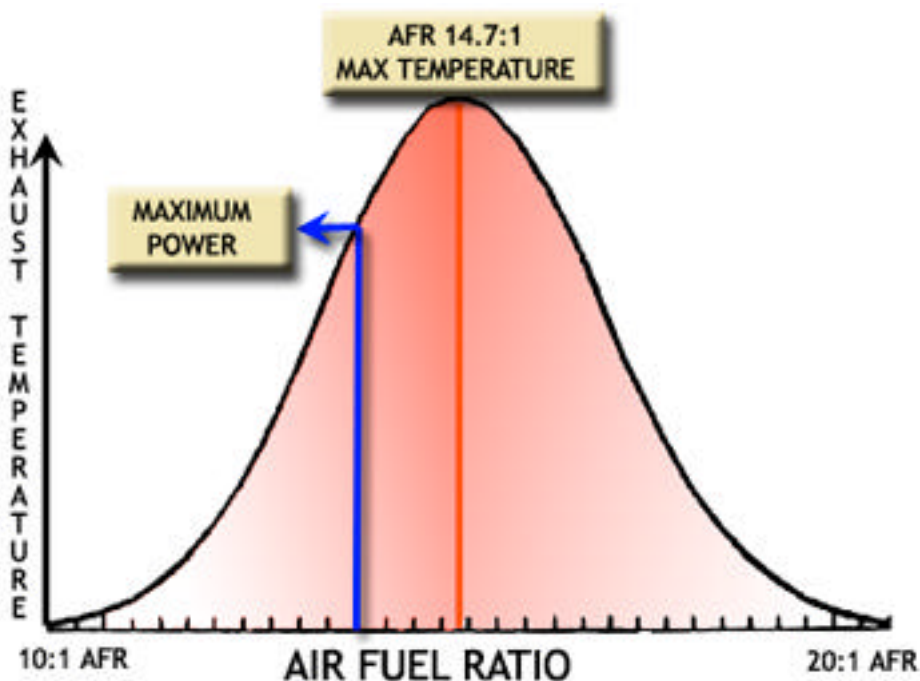
The temperatures from the EGT probes should now be displayed in the Engine Data page and along side each cylinder trim in the **TRIMS** page.

TUNING WITH EXHAUST GAS TEMPERATURES

Before attempting to tune with EGT data, the following information should be reviewed and understand.

There is no one optimum temperature for maximum engine performance, engine temperatures are dependent on many factors. The maximum combustion temperature is achieved at stoichiometric (14.7:1 Air Fuel Ratio for Gasoline engines). If the Air Fuel Ratio (AFR) is leaned off or enriched from this AFR, the EGT will drop. Generally gasoline engines develop maximum power at AFR's between 11 and 13 to 1, that is below the maximum combustion temperature achievable.

It is highly recommended that the engine be tuned on a dyno, with the correct Air Fuel Ratio's and ignition timing. Once these parameters have been determined, the EGT readings at these values should be noted. If the EGT rises above this temperature, the engine is starting to 'lean' away from the ideal AFR for maximum power. Similarly, if the temperature drops, the AFR is richer then the ideal AFR.

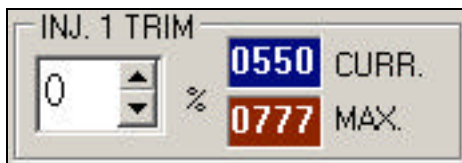


The EGT readings may also be used to 'trim' each individual cylinder. The INJECTOR TRIM page of the FC-10 interface software allows adjustment of each fuel injector to help compensate for differences between engine cylinders. These differences may be the result of several factors including :

- ⌘ Intake manifold design where some cylinders receive greater airflow than others
- ⌘ Compression ratio imbalances between cylinders
- ⌘ Flow rate variations between fuel injectors
- ⌘ Variations in exhaust manifold design

Correct adjustment of the trims will result in a better balance between cylinders, helping improve engine efficiency and hence increase power. Each cylinder trim input box has the provision of displaying the Exhaust Gas Temperature (EGT) of the associated cylinder.

By measuring the temperature of each cylinder, we can compare the amount of energy each cylinder is developing. To balance the energy between cylinders, the trims should be adjusted so that the temperature difference between cylinders is as small as possible.



To trim each cylinder, use the up and down arrow keys once the desired cylinder trim input box is selected. Note the current temperature in blue, always pay careful attention the maximum EGT temperature recorded.

Cylinder No. 1 is usually chosen as the reference cylinder and all other cylinders are trimmed to match the temperature in this cylinder. The tuner should not allow the maximum EGT reading to greatly exceed the value determined as the maximum power EGT reading. Excessive temperature may result in permanent engine damage.