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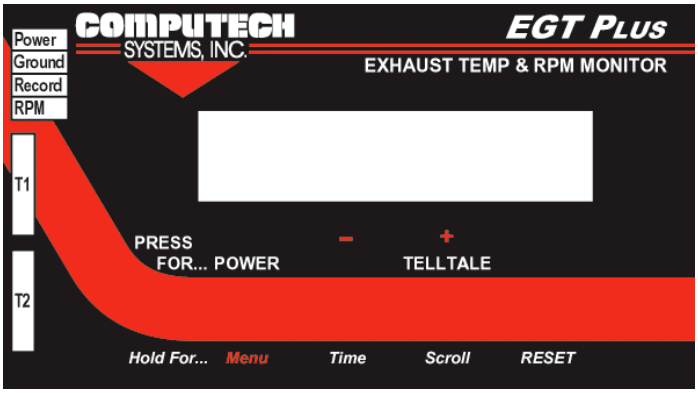
EGT Plus Instructions

The Computech Systems EGT Plus is designed to monitor not only exhaust gas, liquid, tire and track temperatures, but also engine RPM. It has the capability of recording when maximums occur, as well as recording readings at the beginning and end of a run.



Installation – Mounting:

It is recommended that double-stick foam tape or hook and loop fastener such as Velcro brand which is included, be used to mount your Computech Systems EGT Plus.

Your Computech Systems EGT Plus may be installed anywhere that ignition noise is not a problem. Be sure to avoid close proximity to ignition modules, coils, and spark plug wires. Direct exposure to the weather is also discouraged.

Obviously, you'll need to mount the unit where your temperature probe cables can reach, possibly through the use of special thermocouple wire extensions. If you plan on recording RPM, using a record switch, or connecting to your transbrake, keep in mind that you'll need to connect both the desired signal as well as a chassis (car battery) ground signal to the unit. Chose your mounting location appropriately.

Operating Modes - Choose before wiring

Your Computech Systems EGT Plus may be operated in one of three modes. Before you complete your installation, it's best if you select which mode you would like to use. If you're unsure, don't worry too much. It's fairly easy to re-wire your Computech Systems EGT Plus for a different mode. Continuous mode, of course, may be used with any of the wiring scenarios. Select from one of the following Computech Systems EGT Plus operating modes.

Continuous Mode:

In continuous mode, your Computech Systems EGT Plus behaves like most other EGT monitors. It continually monitors your EGT and RPM inputs, and continually takes note of the maximum reading.

To reset the maximums and start over again, press and hold the "RESET" button until the LCD display acknowledges the reset. If power is removed and restored, the previously noted maximums are remembered.

Record Switch Mode:

In record switch mode, you have the extra advantage of restricting the period of time over which maximums are noted. For example, you might choose to only turn the record switch on while you're on the track, intentionally omitting possible maximums from burnouts or engine tests.

Each time you turn on the record switch, the old maximums are reset and new maximums are noted. You can press and hold the "RESET" button to eliminate the old maximums, but this is not necessary.

If power is removed and restored while the record switch is off, the previously noted maximums are remembered. If power is removed and restored while the record switch is on, the previously noted maximums are eliminated and a new recording with new maximums is begun.

Transbrake Mode:

In transbrake mode, you have not only the extra advantage of restricting the period of time over which maximums are noted, you also have the advantage of gathering extra information at the beginning and end of your run, as well as the time during the run at which each maximum occurred. That is, for each EGT and for the RPM, you'll be able to record: 1) the reading at the start of the run; 2) the maximum during the run; 3) when that maximum occurred (independently for each input); and 4) the reading at the end of the run.

Before a run, you must press and hold the "RESET" button. Once the LCD display indicates "Ready to Run…", your Computech Systems EGT Plus is armed and ready to go. Whenever the transbrake is released, the unit will note the beginning readings and start watching for new maximums. After the end of the pre-configured approximate E.T., the unit will note the end readings and stop watching for new maximums.

If power is removed and restored, the previously noted maximums are normally remembered. However, if power is removed and restored while the unit is in the process of recording a run, the recording will be terminated early and may not contain valid information.

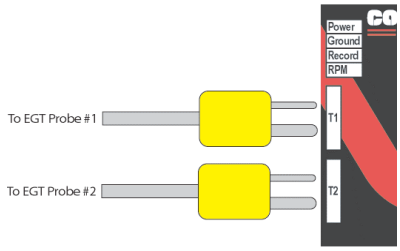
Installation – Wiring:

NOTE: Read about **Operating Modes** before wiring your Computech Systems EGT Plus.

Wiring your Computech Systems EGT Plus is simple. Note that EGT cables are made of special wire, and use special connectors. Substitutes are not acceptable. For best results with the other signals (RPM, Transbrake, Record Switch, Power, Ground), use 18 to 22 gauge (AWG) stranded wire. Solid or smaller gauge wire is not recommended. Strip the insulation on each wire back 1/4". At a minimum, twist the strands very tightly before inserting into the connector. For a better connection, tin the wire with solder.

To record one or two EGT's:

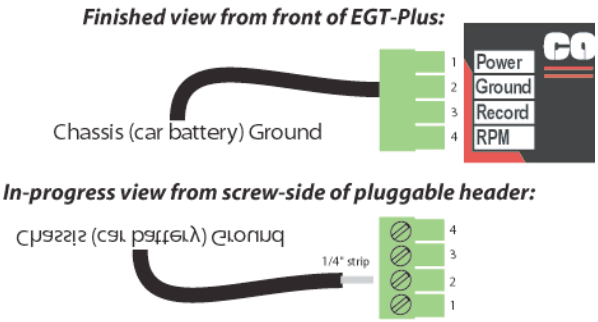
Connect one (or two) temperature probe cables into the T1 (and T2) jack of the EGT Plus. Note that this jack accepts the two prongs of the sub-miniature yellow K-thermocouple type plugs. These plugs are polarized, with one wide prong and one skinny prong. The EGT Plus accepts the plug with the skinny prong toward the top.



Connecting a chassis (car battery) ground:

If you plan on recording RPM, triggering off your transbrake, using a record switch, or powering the EGT Plus from your car battery, then a chassis (car battery) ground wire is required. Otherwise, no such connection is required.

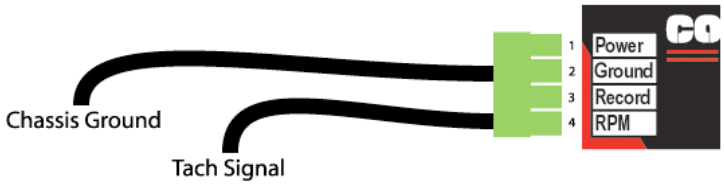
If you need a chassis (car battery) ground signal, then connect it to the indicated terminal on the EGT Plus, using the green pluggable header provided. On the EGT Plus end, be sure to strip the wire back only 1/4", and be sure that it is firmly held by the pluggable header set screw. Also, pay careful attention to the proper orientation of the green plug. Plug it into the EGT Plus temporarily in order to be certain that you're running the ground wire to the correct place.



To record RPM:

For recording RPM, both the RPM and a chassis (car battery) ground wire are required.

After connecting the chassis (car battery) ground signal, connect the RPM signal to the indicated terminal on the EGT Plus. The best place to pick up the RPM signal is from the same wire that drives your tachometer. Otherwise, use the "Tach" output of your ignition system. If you do not have either of these available, or you are using a magneto ignition, contact Computech Systems technical support to get information about a tach output generator for your car.



To power your EGT Plus from your car battery:

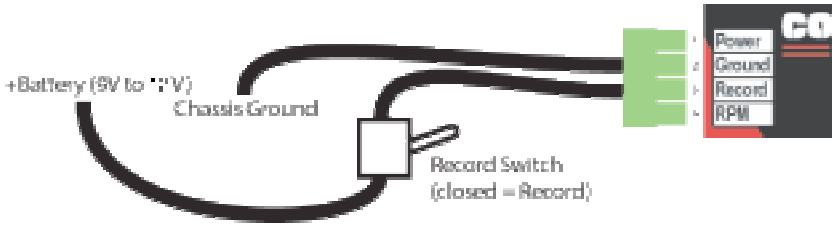
To power your EGT Plus from your car battery, both the positive battery and a chassis (car battery) ground wire are required.

After connecting the chassis (car battery) ground signal, connect positive battery power to the indicated terminal on the EGT Plus. This may be any voltage between 9V and 12V. Note that it is indeed safe to power from the car with a 9V battery inside the unit. As long as the car battery is higher than the 9V battery, the car battery will be used. If the unit is unplugged from the car, the internal 9V battery will automatically take over.

To record using a record switch:

For using a record switch, both the record signal and a chassis (car battery) ground wire are required.

After connecting the chassis (car battery) ground signal, connect a wire from your record switch to the indicated terminal on the EGT Plus. The other side of the record switch MUST be connected to your car battery signal. The record switch will not function properly if this other side is connected to ground. Also, while this other side may be connected to the EGT Plus power terminal, doing so without also connecting it to the car battery will not work. The EGT Plus power terminal will accept power coming in, but it will not produce power going out. Recording will occur while the switch is in the CLOSED position.



To record automatically using your transbrake signal:

For using the transbrake, both the transbrake and a chassis (car battery) ground wire are required.

After connecting the chassis (car battery) ground signal, connect your transbrake wire to the indicated terminal on the EGT Plus

Sensor Installation:

Weld-In Style Sensor #4110:

1. Select the header tube in which you wish to mount the sensor.
2. Measure a spot 1-1/4 inches from the header flange. If more than one probe is to be mounted, it is important that all probes be located the same distance from the header flange. This will allow for comparison from cylinder to cylinder.
3. Once the spot has been located, drill a 5/16 inch (.3125") diameter hole in the header pipe.
4. Center the weld-in weldment on the hole and weld to the header pipe a full 360 degrees.
5. Coat the 1/8" pipe threads on the compression fitting liberally with anti-seize and install the compression fitting into the weldment and tighten.
6. Now, using a marker or pencil, make a mark on the probe that is half the diameter of the header pipe plus one-inch (the length of the weldment and the compression fitting) from the exposed tip of the probe. Verify this depth by visual inspection into the pipe. Probe should be at least 1/2" into the header pipe.
7. Slip the compression nut (with the cup side to the exposed tip of the probe) and the ferrule onto the probe.
8. Insert the probe into the compression-fitting base to the point where the ferrule and the line on the probe come together. This will insure that the probe is in the middle of the exhaust stream and will set the ferrule on the probe sheath.
9. Holding the probe in place, tighten the compression nut down tight. **Make certain that the thermocouple is in its proper position prior to tightening the compression nut.**
10. Loosen the compression nut to the point that the probe will turn, and, if room permits, align the transition spring and the lead wire at a 90-degree angle from the exhaust pipe. This will position the sender tip correctly in the exhaust stream.
11. Re-tighten the compression nut to secure the probe.

Clamp-On Style Sensor #4115:

1. Select the header tube in which you wish to mount the probe.
2. Measure a spot about 1-1/4 inches from the header flange. If more than one probe is to be mounted, it is important that all probes be located the same distance from the header flange. This will allow for comparison from cylinder to cylinder.
3. Once a spot has been located, drill a 1/4 inch (.250") inch diameter hole in the header tube.
4. Insert probe into hole and snug it to the header using the band clamp.
5. If room permits, align the transition spring and lead wire at a 90-degree angle from the exhaust pipe. This will position the sender tip correctly in the exhaust stream.
6. Tighten the band around the exhaust header pipe.

Lead Wire Installation:

1. Route the thermocouple extension wire to the EGT monitor location in the cockpit. Route the wire away from areas of high heat and from areas where the wire could be vulnerable to damage.
2. ***The thermocouple extension wire may be shortened if required. Cut the wire to the desired length and carefully cut the stainless steel overbraid back approximately 1". Shrink tubing should be used over the cable where it exits the connector to make for a neater installation. Make certain that the overbraid in no way comes in contact with the wire terminals in the connector. Strip the RED wire back approximately 1/4"and connect to the minus (-) terminal in the connector. Repeat the process for the YELLOW wire and connect to the positive (+) terminal. NOTE: Only this wire can be utilized, substitution of a different wire will affect the operation of the monitor.***
REMEMBER - The RED wire must be connected to the Minus (-) terminal and the YELLOW wire must be connected to the Positive (+) terminal.
3. DO NOT HARNESS THE LEAD WIRE TIGHTLY. Make long sweeping bends and loosely guide the lead wire to the instrument. This will allow the wire to absorb the vibration along the wire's length.

Initial Configuration:

Before using your Computech Systems EGT Plus, a simple initial configuration is required. Press and hold the "POWER" button until you see the configuration menu option for number of cylinders. To advance to the next configuration menu option, simply press the "POWER" button again (you may notice that below the "POWER" button is the word "Menu").

Cylinders:

This one's easy. Simply select the appropriate number of cylinders for your engine.

Redline:

If you're recording RPM, it's important to properly configure your redline. The unit will be able to record a RPM up to 25% beyond the configured redline. Any spark or ignition signals that are received closer together than that are assumed to be noise and are ignored. Since this kind of noise is very common, it's important to accurately set your redline. Otherwise, you're likely to get erratic RPM readings. Tachometers don't need this kind of setting because they actually don't react very fast to RPM changes, and so random noise pulses aren't noticed. Even tachometers with telltales, whether mechanical or electrical, are able to ignore these fast changes due to noise. However, for the most accurate computer recording of your RPM, this information is very important.

Mode:

Select "Continuous", "Record Swt", or "Transbrake". See the instructions for **Operating Modes** for details.

End at:

This configuration menu option will only appear if you've selected "Transbrake" mode. Enter the number of seconds for a typical run. It will be exactly this long after the transbrake is released that your Computech Systems EGT Plus makes a note of your end-of-run EGT and RPM readings. Don't worry if your E.T. doesn't match exactly. Near the end of your run, the EGT and RPM readings won't be changing very rapidly. By allowing you to explicitly set this time, difficulties with automatic end-of-run detection are avoided, and you have a highly reliable, repeatable engine diagnostic tool. Also, if you lie about the "End at" time, you can get end-of-run readings that correspond to some other regularly anticipated event, such as the first gear shift!

Operation:

So now you've installed your Computech Systems EGT Plus, determined the operating mode you want to use, wired up the unit, and set the initial configuration. Now time to actually put the EGT Plus to use.

Power On/Off:

When powering from the internal 9V battery, you can turn the unit on or off at any time by pressing the "POWER" button. However, if connected to your car battery (at 11V or higher), the unit will turn itself on, by design.

LCD Backlight:

When powering from the internal 9V battery, the LCD backlight will come on for a few seconds, each time that you press a button. This is a battery power conservation feature. However, if connected to your car battery (at 11V or higher), the LCD backlight will stay on continuously.

HELP – Bad EGT cabling or temperature too high:

If an EGT probe is not connected, or if that probe temperature is too high, then the word "HELP" is displayed instead of an EGT reading. "Not connected" includes the possibility that one of the EGT cable wires is broken or disconnected. The normal maximum reading is just above 1800°F.

If the EGT probe or wiring has the wires reversed, then a reading between 32°F and ambient will be displayed, regardless of the actual temperature. If you see the reading start at ambient and go DOWN as the temperature goes up, then you have the wires swapped somewhere!

Recording:

First, you need some readings. In Continuous mode, you're getting them all the time. In Record Switch mode, you'll need to turn on the record switch on for a while, and then off. In Transbrake mode, you MUST first reset the unit by pressing and holding the "RESET" button. Then, upon release of the transbrake signal, the unit will start recording for the pre-configured amount of time.

Viewing Readings:

Whether you've recorded any maximums or not, you can always view the current readings for EGT and/or RPM. Whenever the LCD says "Now" in the top left corner, you're viewing current readings.

To view the maximum readings recorded, simply press the "TELLTALE" button (repeatedly) until the LCD says "Max" in the top left corner. While viewing the maximums, you can press and hold the "Time" button. After a moment, those maximum readings on the LCD will be temporarily replaced by the time at which they occurred. Note, however, that these time readings are only applicable for Record Switch or Transbrake mode.

In Transbrake mode, you can also view the readings as of the beginning or end of your run. Simply press the "TELLTALE" button (repeatedly) until the LCD says either "Begin" or "End" in the top left corner.

Reset:

By pressing and holding the "RESET" button, you can make your Computech Systems EGT Plus eliminate the maximums it has recorded so far. If in Continuous mode, it will start recording new maximums right away. In Record Switch or Transbrake mode, it will wait until you start recording.

Factory Reset:

Pressing and holding the "RESET" button while powering up the unit will cause the EGT Plus to "Factory Reset". The unit will power up, blink off, and then power back up. All previously recorded information and user defined set-up information will be erased and the EGT Plus will return to the original factory set-up.

Anticipated Exhaust Gas Temperatures:

Monitor the exhaust gas temperature and carefully make tuning adjustments as required to obtain the desired exhaust gas temperature. In general terms, methanol temperatures range from 1000 degrees to 1200 degrees; gasoline ranges from 1250 degrees to 1500 degrees. Consult with your engine builder to determine what is an appropriate exhaust gas temperature for your engine combination, the fuel you are using and the engine air inlet temperature. **Many things affect the exhaust gas temperature such as: fuel, jetting, engine inlet air temperature, ignition timing, compression ratio, coolant temperature, etc. BE CAREFUL - EXHAUST GAS TEMPERATURES THAT ARE TOO HIGH CAN CAUSE SEVERE ENGINE DAMAGE!!! All tuning changes should be made very carefully and with the advice of your engine builder.**

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