DUAL THERMOCOUPLE GAUGE

CRITICAL WARNINGS! READ THESE EVEN IF YOU KNOW WHAT YOU ARE DOING!!!

When tapping for the compression fitting, do not tap too deep, these fittings start off narrower than most fittings and may bottom out before being tight if you tap too deep.

The gauge and lens are plastic and easily scratched, please use caution when installing to preserve their appearance.

When mounting the gauge, tighten the nuts only as much as needed to secure the gauge! The studs are mounted in plastic and overtightening the nuts can pull the studs out, force the studs into the internal circuit boards, or pull the housing halves apart!

Do not press on the clear window of the gauge display while the gauge is operating, or has been operating within 30 minutes. This can damage the anti reflective coating. You can press the buttons at any time, of course.

Do not depend on the phsyical polarity of the thermocouples when you plug them into the gauge connectors. Match the "+" on both connectors together.

PINOUT

RED - 11VDC To 15VDC
BLACK - GND
BLU – Analog out for probe #2
ORG – Analog out for probe #1
YLW **(read section on analog ouputs for information on this wire)**

USING THE GAUGE

When the gauge is powered on, it displays "8888" on both rows as a test, then "dEgs" and the units (F = Farenheit or C = Centigrade), then labels as described below to indicate what each row is configured to display, and finally, the actual temperature information.

When the display is not flashing, it is in the "display locked" mode. From this mode, you can do the following:

-Enter display configuration to change what the rows display during the display locked mode. (Press and hold one of the buttons until display begins to flash.)
-Enter the settings menu (Tap both buttons simulatenously until display begins to flash.)
-Reset the recorded peak values (Press and hold either button until "pEAk rSt" is displayed.)
-Show what a given row is configured to display. (Briefly tap either button just long enough to display the item label.)

DISPLAY CONFIGURATION

The two rows can each be independently configured to display different information.

To configure a display row:

-Press and hold one of the buttons until the display begins to flash, then release the button.
-Tap the left button to change the upper row, and the right button to change the lower row.
-Each time you tap the button, the row will change to a different piece of information.
-Only tap the button long enough to change the display, don't hold it down.
-While the button is depressed during your tap, the row will show the label which identifies what information the row is showing, as described below:

" A" Thermocouple A temperature
" b" Thermocouple B temperature
" dAb" Difference in temperature between thermocouple A and B (A minus B)
" dbA" Difference in temperature between thermocouple B and A (B minus A)
"A p " Peak thermocouple A temperature
"b p " Peak thermocouple B temperature
"dAbp" Peak difference in temperature between thermocouple A and B (A minus B)
"dbAp" Peak difference in temperature between thermocouple B and A (B minus A)

In addition, some debugging functions can be displayed:

"intt" Temperature of internal cold junction reference.
"Lght" Counts from ambient light sensor (for display dimming).

-When you have finished, simply do not press any buttons. In a couple seconds, the display will stop flashing and your changes will have been saved.

SETTINGS MENU

In the settings menu, the top row displays the item label as described below, and the lower row displays the item value.

"dACL" Lower DAC (Analog output) limit **(do not change this unless you know what you are doing)**
"dACu" Upper DAC (Analog output) limit **(do not connect this unless you know what you are doing)**
"intt" Temperature of internal cold junction reference. (same as display configuration item)
"Lght" Counts from ambient light sensor (for display dimming). (same as display configuration item)
"dEgS" Units, F = Farenheit, C = Centigrade
"ver" Firmware version

To go to the next item, press the left button. To change the item, press the right button.

-When you have finished, simply do not press any buttons. In a couple seconds, the display will stop flashing and your changes will have been saved.

ANALOG OUTPUTS

The two DAC output wires, ORG and BLU, output a voltage which represents the current temperature for thermocouple A (ORG) and thermocouple B (BLU).

The factory settings of "dACL" and "dACu" make it so that the output is 1mV per Degree (in whatever units, Farenheit or Centigrade, you have selected.).

For instance, 1200mV on the analog output represents 1200 degrees.

The analog outputs should only be connected to voltage reading devices like multimeters, voltmeters, oscilloscopes, and voltage loggers. Do not connect them to the coils of relays, lights, or other devices which draw current. They are meant as signals only, and are not intended or capable of powering electrical devices.

Do not allow the analog output wires to connect to anything besides their intended measuring device. The analog outputs or gauge can be damaged if that occurs.

For improved accuracy, you can use the YLW wire as signal ground with your voltage measuring device. Do not use this wire for any other purpose.

TIPS AND TRICKS

-When **"diSC"** is displayed, a thermocouple required for that rows information is not plugged in.
-If an **"E1"** appears during power on, some or all saved values were corrupt and default values had to be loaded. You should check all settings to make sure they are how you wish. Items that get saved are:
    -upper and lower row configuration
    -units (F or C)
    -DAC lower and upper limits
-The display automatically dims in low ambient light to make it easier to read.

FUSE

-The included external fuse in the black housing on the red wire should not blow under normal circumstances.
-The only time it might blow is during severe and unusual electrical transients as described in the "electrical transients" section.
-If the fuse blows under other circumstances, the gauge may have a severe electrical problem.
-Do not attempt to bypass the fuse or install a fuse with a higher rating.
-If the fuse continues to blow, please contact engineering at the email address below.

ELECTRICAL TRANSIENTS

-Automotive electrical systems have many types of severe electrical transients, and this is normal. This gauge has a transient surpression device, along with a fuse, to protect itself from these transients.
-The vast majority of normal electrical transients should be absorbed by the transient supression device and cause no abnormal behavior of the gauge.
-However, certain unusual transients, such as load dump or boosted jump starting, may cause the gauges external fuse to blow.
-Load dump is caused by the battery being disconnected, or intermittently connected to the electrical system, such as by the battery cables coming loose or corrosion on the battery connections.
-Boosted jump starting is connecting a device to the vehicle electrical system with a voltage greater than normal vehicle voltages (just under 15V). This might be a mains powered jump starting device at 24V, for instance.

If you need help, email office@exoticelectron.com and an engineer will be happy to assist!