

# INSTALLATION INSTRUCTIONS THERMOCOUPLE EXPANSION MODULE



# <u>Auto Meter</u>

#### 2650-1846-77 Rev. B

#### Details:

- Temperature Rating: -40°C to 85°C/-40°F to 185°F
- Vibration Specification: 20 g continuous, 50 g shock
- Inputs:
  - o 4 EGT type k thermocouples (-17.8°C to 1093°C/0 to 2000°F) (Probes sold separately)
  - o 4 analog 0-5V (requires purchase of ST570002 and sensors)
- Network cable 1.2m/4ft. terminated with male and female mini sure seal connectors.
  - o Recommend maintaining 0.9m/3ft. distance between ignition wiring and network cables.
  - o Network cable must be connected to the system with a terminating resistor on both ends of the CAN bus.

# Note: Some modules and network harnesses have a terminating resistor included, reference instruction manuals from connected devices for more information.

- LED status light a status light is visible through the label located on the top of the module.
  - o Solid green system operation normal
  - o Flashing red bad or open probe
  - o Alternating red and green no configuration loaded to the module
  - Only one of each type of module can be connected onto the same network.
    - o ST269612 (EGT module A) EGT1, EGT3, EGT5, EGT7, and up to 4 analog inputs.
    - o ST269613 (EGT module B) EGT2, EGT4, EGT6, EGT8, and up to 4 analog inputs



### **Mounting Details:**

- Housing provides holes for panel mounting through either self-tapping screws or nuts and bolts.
  - o Hole diameter Ø4.6mm/0.182"
  - o See Appendix A for mounting template
- Housing can be secured to a panel using dual lock or double-sided tape. Be sure that the surfaces are thoroughly cleaned prior to application to ensure a robust adhesive cure.

### Note: See appendix A for mounting template.

### Wiring:

- Connect network Cable from the EGT module to the network connector on the display or logger system.
  - o Be sure that the EGT module cable is connected between the terminating resistors on either end of the system.
    - Example 1: For a multi-function display (MFD) system connect between the MFD "NET" plug and the jack socket since both are pre-wired with terminating resistors.
    - Example 2: For connection to an LCD race dash connect the EGT module to the "NET" plug on the harness and enable the internal CAN terminator in the configuration utility on the race dash, and add terminating resistor cable assembly (ST270001) on the remaining network connector.
- Power to the system will be provided by the logger or display that is connected to the system.
- A CAN connection to a display or logger is required (from PC via USB-CAN module or from "NET" cable of LCD race dash) to configure both the EGT A and EGT B modules.

#### Note: See appendix B custom wiring details.

#### All EGT probes must be mounted:

- In the primary header tubes.
- The same distance (one to two inches) from the cylinder head.
- Before the first bend.

To ensure all probes are mounted before the first bend and are the same distance from the head, measure and mark the distance on the header tube that has the first bend closest to the head. After marking this distance on all tubes, drill a 14.29mm/0.5625in. hole for mounting the bung. Clean the holes to remove any burrs. Install bung and weld 360° around the bung. Install compression fitting and tighten.



#### Wiring EGT Probes:

The EGT cables on the probes can be trimmed to fit, stripped and separated for thermocouple connector installation. Each connector has a male and female end, for consistency install all male ends on the EGT probe wires. EGT polarity is very critical and it must be noted the **red** wire is **negative**.

Follow these steps for connector installation:

- Install a 50mm/2in. piece of heat shrink tubing on the wire. Slide tubing up the wire to get it out of the way.
- Remove 32mm/1.25in. of the outer braided shielding from the end of the wire.
- Remove 25mm/1in. of the newly exposed brown insulation from the wire.
- Remove 8mm/0.3125 of insulation off both the red and yellow wire.
- Bend the bare wire to fit around the screws. The wire should now look like Figure 4.



Figure 4. Wires ready for connector

- Install the two wires on the screw terminals of the connector (Red wire negative (-)/Yellow wire positive (+).
- Twist the connector 1-1/2 turns (Figure 5) and slide the Heat Shrink Tubing into the connecter (Figure 6).



## 1 Unused EGT Inputs: A

Unused EGT inputs must not be left open. They must be shorted using an EGT Loopback Connector (requires purchase of ST269614). For example, if only one input is being used, the other three inputs must use EGT Loopback Connectors. If the unused inputs are left open, the input in use will not provide accurate EGT readings.

#### **Configure Inputs:**



To add a 4 Channel EGT Module to an existing system, click on the "modules" tab from the properties menu of DataPro designer.



Select the appropriate model number from the menu. ST269612 – EGT1, EGT3, EGT5, EGT7 ST269613 – EGT2, EGT4, EGT6, EGT8

EGT Inputs (not configurable)



Adding Analog channels:

- 1. From the inputs menu in DataPro Designer, select the appropriate module in the module list.
- 2. Assign sensors from the sensor database to the desired channel by dragging the sensor and dropping onto the channel.
- 3. Provide a channel name by selecting a default channel name from the drop down menu, or apply a custom name if desired.
- Note: EGT channels are not configurable and will always assigned a channel name in DataPro Designer based on the module selected.

Peak: NONE -		
Pulse Count: 0		
Pulses Per Update: 0		
Moving Average Filter		
Points: 2		

Under the advanced tab, select type of peak for each channel, Min, Max, or Both.



Appendix A

Note: This image is scaled (1:1) and can be used as a mounting template.

Connector pinout:		
AS connector pin	Signal Name	
1	+12V	
2	Sensor +5V	
3	Chassis Ground	
5	CH 1 signal	
6	CH 2 signal	
7	CH 3 signal	
8	CH 4 signal	
9	Sensor GND	
10	CAN HI	
11	CAN LO	
12	CAN shield	

**Appendix B** Main connector details – Deutsch Autosport – AS610-35SN

Notes:

- Recommend wiring CAN shield to chassis ground.
- Sensor ground is an isolated ground for sensors only. Do not connect to chassis ground!!
- Pin 13 is not used for this product.
- If an auxiliary power source is used (not connected to logger or display) it is recommended to use a 1 amp fuse in line with the 12V input.

#### **12 MONTH LIMITED WARRANTY**

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