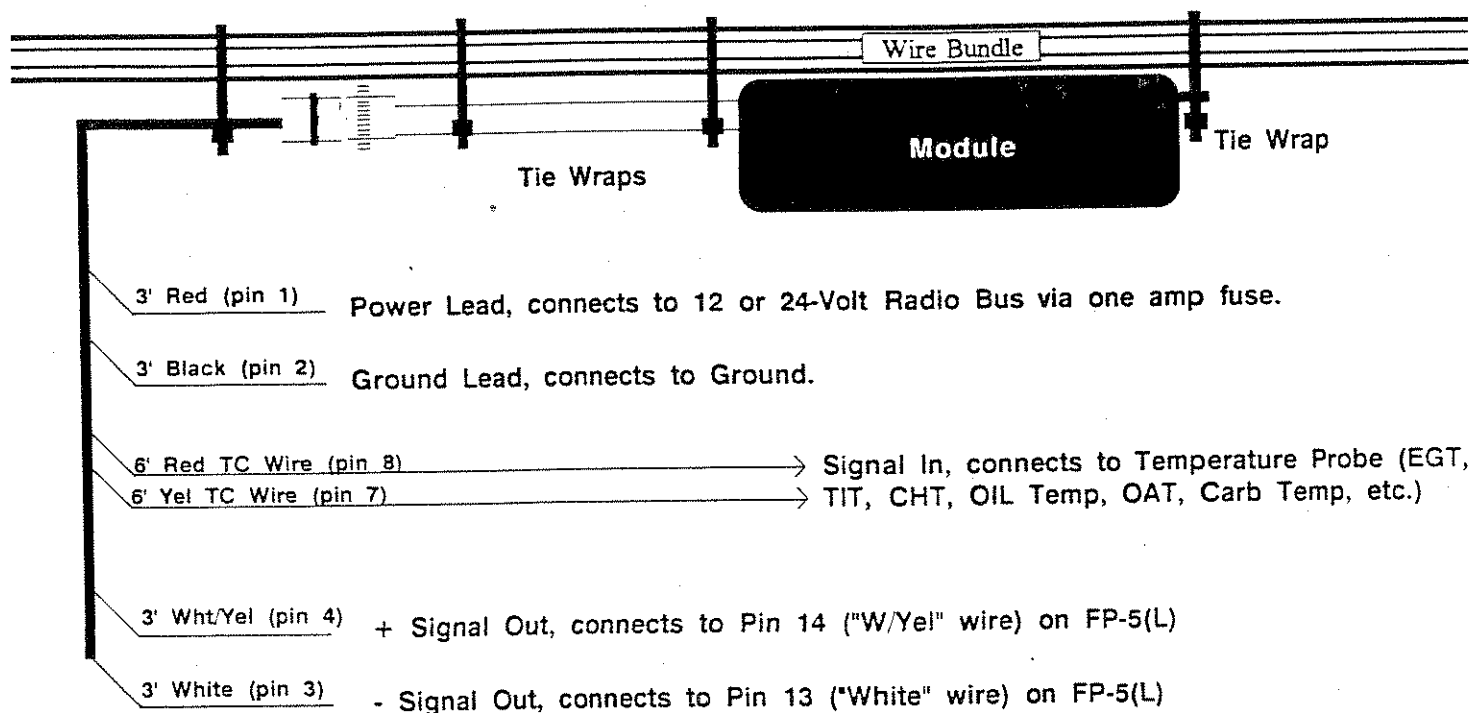


Temperature Functional Module (FM-T) Installation Instructions and Wiring Diagram

1110987

II 0506931 Supplement (FP-5(L))

5/24/02



1. Mount the Module and Connect the 9-Pin Wire Harness:

Tie wrap the FM-T Module to a wire bundle under the aircraft instrument panel. Connect the 9-Pin Wire Harness to the Module.

2. Route the Power and Ground Wires:

Route the red wire in the wire harness to the aircraft's 12 or 24-volt radio or main bus as applicable via a one amps fuse. Route the black wire in the wire harness to a good ground. Tie wrap these wires so they do not obstruct the freedom of travel of any controls.

3. EGT Probe Installation:

The FM-T may be connected to an existing EGT probe or a new EGT probe may be mounted in the aircraft. To connect the FM-T to an existing probe, splice the FM-T Termocouple (TC) wires (red and yellow) into the existing EGT extension cable. Match the EGT extension cable wire colors with the FM-T TC wire colors. The high impedance differential input of the FM-T will not affect the readings on your existing EGT gauge.

If a new EGT probe is to be mounted in the aircraft, the probe should be installed in the exhaust stack of the leanest cylinder. Each engine has its own characteristics and the leanest cylinder can be different from aircraft to aircraft. As a general rule, the leanest cylinder is one of the back cylinders on a carbureted engine and one of the center cylinders on a fuel-injected engine.

Drill a 13/64" diameter hole in each exhaust stack 1 1/2" down from the exhaust port.. Insert the probe and tighten the hose clamp. As the hose clamp is heated and cooled, it will become loose as it conforms to the exhaust stack. After the first 10 hours of operation, each hose clamp should be retightened.

IMPORTANT NOTE: For Cessna 210's or any aircraft using a slip joint in the exhaust system, install the EGT probes ABOVE OR BELOW THE SLIP JOINT. Installing a EGT probe in the slip joint can damage the probe.

4. CHT Probe Installation:

A single CHT probe should be placed on the hottest cylinder. In a 6-cylinder engine this would be one of the center cylinders. On a 4-cylinder engine this would be one of the back cylinders. Most engines have a port just below the lower spark plug for the CHT probe. If your engine has a primary CHT probe in one of the cylinders, do not remove it.

5. TIT Probe Installation:

The FM-T may be connected to an existing TIT probe or a new TIT probe may be mounted in the aircraft. To connect the FM-T to an existing probe, splice the FM-T Thermocouple (TC) wires (red and yellow) into the existing TIT extension cable. Match the TIT extension cable wire colors with the FM-T TC wire colors. The high impedance differential input of the FM-T will not affect the readings on your existing TIT gauge.

If a new TIT probe is to be mounted in the aircraft, the probe should be installed on the inlet of the Turbocharger one to two inches before the Turbocharger flange. Drill a 13/64" diameter hole in the exhaust stack. Insert the probe and tighten the hose clamp. As the hose clamp is heated and cooled, it will become loose as it conforms to the exhaust stack. After the first 10 hours of operation, each hose clamp should be retightened.

6. Carb Temp Probe Installation:

Remove the threaded plug located in the carburetor housing just below the throttle valve. Install the Carburetor Temperature Probe in this hole using a lock washer. Care should be taken not to overtighten the probe and strip the threads in the carburetor housing.

NOTE: A Carb Temp Probe should be connected to a Yellow Precision Connector.

7. OAT Probe Installation:

Mount the OAT Probe in an appropriate location on the aircraft, using the hardware supplied. The OAT Probe is sensitive to air temperature changes. For this reason, do not mount the OAT probe in the path of the cowl or engine exiting air (i.e., on the belly of the aircraft). Also, the probe should not be mounted within 8 inches of an exhaust pipe. The radiant energy from the exhaust pipe can cause the probe to read slightly high. Other than these considerations the OAT Probe may be mounted in an air intake vent, on the side of the cowling or anywhere else on the aircraft.

NOTE: An OAT Probe should be connected to a Yellow Precision Connector.

8. Other Temperature Probe Installation:

Other temperature probes (Cowl Temp, CDI Temp, Water Temp, etc.) may be installed using current aircraft standards and practices (refer to AC 43.13). Make sure these probes do not interfere with the operation of the engine or aircraft.

9. Route the Extension Cable:

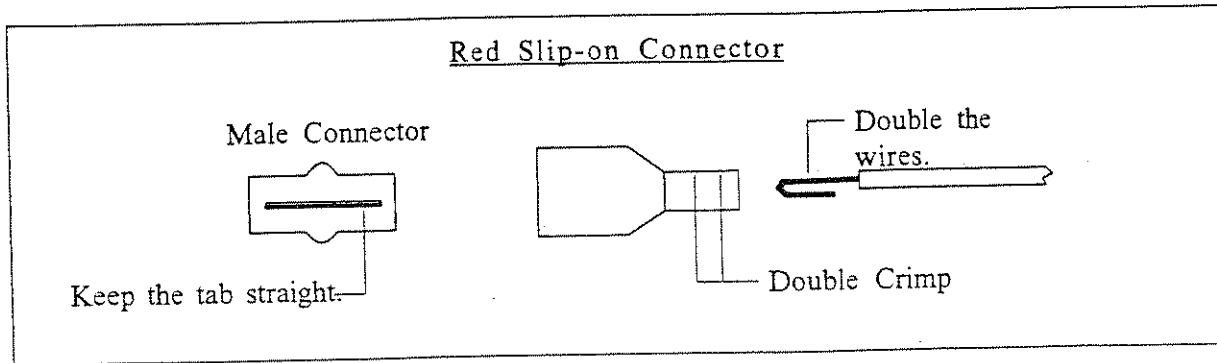
Dress the extension cable down to the probe keeping it away from any hot areas. Plug the probe into the extension cable. Be sure the connectors mate properly. When tie wrapping these cables down, be sure there is no strain or pulling on the cable against the probe housing. Each probe should have 3 to 4 inches of slack to allow the engine to move in its mount without breaking any wires. Also, there should be a tie wrap near the probe connectors.

We do not recommend removing the connectors when installing the extension cables but if you must shorten the cable, pull any excess cable length through the fire wall and cut it off at this time. However, it is recommended you leave some extra wire length under the instrument panel for later modifications. Varying cable lengths will not affect the accuracy of this instrument. The Extension Cable and probe wire are made of type K thermocouple wire that must not be substituted or extended with regular copper wire. Also, it is important these wires not be kinked (i.e., do not bend the wires on a radius less than 1 inch).

Attach the appropriate connectors to the ends of each of the Extension Cables as described below:

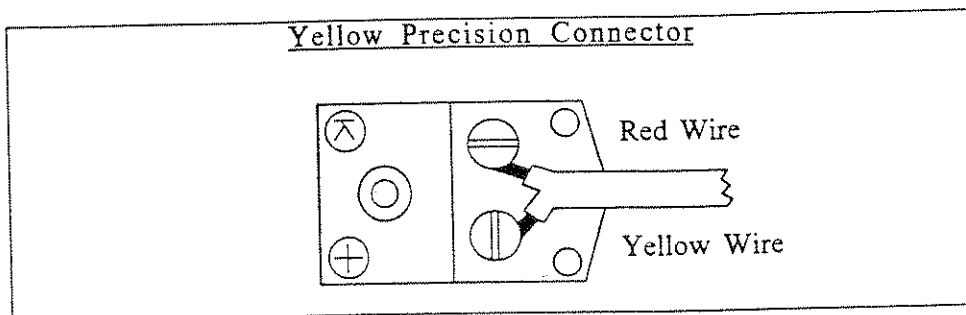
Red Slip-on Connectors

- A) Strip the overbraid back 3 1/2". Be careful not to nick the wires.
- B) Shrink a piece of 1" heat shrink over the cut portion of the overbraid.
- C) Split the two wires back 3". Be careful not to nick the wires.
- D) Strip each wire and double the wires over. These wires must be doubled over.
- E) Place a male connector on the red wire and a female connector on the yellow wire. Double crimp these connectors. A good crimp is very important. Poor crimps will cause jumpv readings and are the biggest source of problems.



Yellow Precision Connector

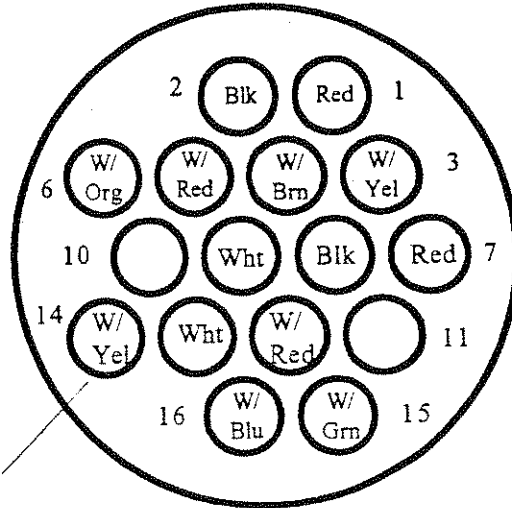
- A) Strip the overbraid back 3 1/2". Be careful not to nick the wires. Shrink a piece of 1" heat shrink over the cut portion of the overbraid.
- B) Remove the yellow cap on the Precision Female Connector.
- C) Strip back the wire insulation 1/2".
- D) Connect the yellow lead of the Extension Cable to the terminal marked "+" and the red lead to the other terminal. The insulation on these wires should almost touch the mounting screws. Replace the yellow cap on the Female Precision Connector. Be careful not to overtighten any screws or twist the wires when installing the connector.
- Tie off any excess cable under the instrument panel. Be sure these cables do not obstruct the freedom of travel of any controls. Cable length does not affect the accuracy of our units, so cables of any length may be ordered from the factory.



10. Route the Signal Out and Ground Wires to the FP-5(L):

Route and connect the White/Yellow wire to pin 14 on the FP-5(L). Route and connect the White wire to pin 13 on the FP-5(L). Tie wrap all wires so they do not obstruct the freedom of travel of any controls.

FP-5(L) Extension Cable Harness, Back View (wire side)



12 through 14 connects to a Functional Module

Specifications and Operating Features

Model:

FM-I (Temperature Functional Module)

Case Dimensions:

3" x 2" x 1"

Weight:

Module Only: 2.8 Oz.

Environmental:

Meets TSO C43a.

Power Requirements:

7.5 to 35 Volts, 1/10 Amp.

Accuracy:

1% or better in accordance with TSO C43a.

Extension Cable and Probes:

Type K, any length or size.