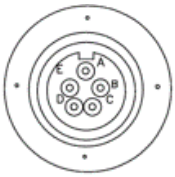
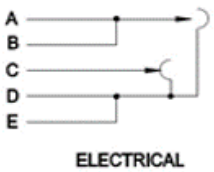
SPECIFICATION DATA SHEET

Pneumatic Continuous Loop Fire Wire,
7.6 M (24.9 ft. ± .10) (299 in.)
P/N TFC13-0027-2

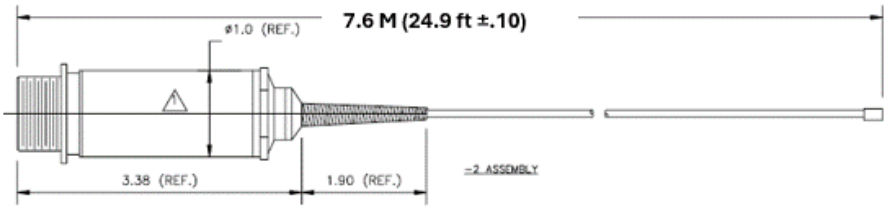
Updated: 06/11/2024



CONNECTOR PINOUTS



ELECTRICAL SCHEMATIC



AAE LTD P/N TFC13-0027-2
Pneumatic Continuous Loop Fire Wire

SPECIFICATIONS

- Low Discrete Temperature Rating: 12 inches @ 1000.4ºF (.305 M @ 538ºC)
- Maximum Low Discrete Response Time: 30 seconds
- Average Temperature Setting: 470ºF +/- 30ºF (243ºC +/- 17ºC)
- Minimum Reset Temperature: 404ºF (207ºC)
- Ambient Temperature: -65ºF and +600ºF (-55ºC and +315ºC)
- Intermittent Temperatures: -750ºF, 1 hour
- Maximum Weight: .56 lbs (.254 KG. Max)
- Voltage: .75 AMP @ 28 VDC Resistive Load, 0.5 AMP Inductive
- Approval: TSO-C11d and TSO-C11e
- Environmental Qualification: Applicable requirements of "Requirements and Technical Concepts for Aviation (RTCA) Document No. DO-160C," Environmental Conditions and Test Procedures for Airborne Equipment," dated December 4, 1989

DESCRIPTION

The P/N TFC13-0027-2 is a continuous length, temperature sensitive pneumatic device. It operates on gas law principles (pressure increases with a rise in temperature). If the ambient temperature around the sensor element increases, or a short section of the sensor tube is exposed to intense heat, internal pressure within the tube and responder housing gas manifold will increase in proportion to the temperature increase. When the pressure increases to the set value, the pressure sensitive alarm switch inside the responder closes and sends an alarm to the aircraft alarm system. After an alarm, if the temperature decreases, the internal gas pressure will also decrease, and the alarm switch will close.

The detector loop senses two types of temperature conditions and gives an alarm signal. One type is a general (total length) temperature increase above set limits in the sensor element environment. This is measured by expanded helium gas in the sensor tube and is sometimes referred to as an “overheat” condition. The second type of alarm temperature condition is triggered by a high intensity flame occurring on a short section of the sensor element tubing. This discrete “fire” condition causes a rapid release of gas from the sensors core material in the tubing. The rapid release of gas causes a rapid increase in the internal pressure.

A second pressure sensitive switch (integrity) in the responder housing is kept closed by the helium gas pressure in the sensor tube. Leakage of this gas and the subsequent pressure decrease will cause the integrity switch to open, signaling a malfunction.

RELIABILITY

Mean Time Between Failure (MTBF) = 1.23E-07 per/Op Hours; Op Hours = 8,112,695

Failure Modes and Effects Summary (FMES)

Loss of Fire Alarm Capability	4.16E-08
Loss of Integrity Alarm Capability	4.72E-09
False Integrity Alarm	6.12E-08
False Fire Alarm	8.12E-09
Undetected Loss of Fire Alarm Capability	4.12E-08
Undetected Loss of Integrity Alarm Capability	4.31E-09

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