

Engine temperature sensing

August 2012

Engines



Customer

Fozmula has been a long term supplier of temperature switches and sensors to the major world-wide manufacturers of diesel engine based equipment and in particular, of generator sets. Generator sets are engineered to be robust and durable, especially for the rental markets, and the introduction of electronics engine management systems by many manufacturers, to regulate exhaust emissions, is symptomatic of the need to move with the times and remain competitive both in cost and environmental impact.

Application

These new engine management systems require upgrades of the various data inputs such as engine oil pressure, water temperature, oil temperature and fuel level sensors. Traditionally, these were considered low cost throw-away items whose accuracy and reliability were known to be poor, and typically, an oil temperature sensor could have a $\pm 10\%$ accuracy which modern EMS controllers cannot accept. Therefore, there became a need for a more accurate, but still cost effective, product to replace the inaccurate sensors and which could provide an acceptable input to the controller.

Product

Fozmula's wide experience of industrial temperature sensors led it to develop the **T/T10X** range of sensors based upon a PT100 thermistor. This provided a ten-fold improvement in accuracy ($\pm 1\%$) and enabled the sensor housing to be built with a much reduced footprint and lesser weight. An additional benefit is that this sensor reacts to temperature change very much faster than the old style sensor.

For just a small cost, equipment costing over £60,000 can be protected from the devastating effects of cooling and lubricating fluids which have exceeded their service temperature. Fozmula's in-house long term temperature testing has validated the design to be reliable and stable in all relevant environments.

Fozmula is very pleased to be supplying high profile and prestigious companies with a product developed from some 'out of the box' thinking. This is one more in a long list of application based products which Fozmula has designed and put into production.

PT100 RESISTANCE OUTPUT	
TEMPERATURE (°C)	RESISTANCE (OHMS) NOM.
-40°C	84.27
-30°C	88.55
-20°C	92.16
-10°C	96.08
0°C	100.0
10°C	103.90
20°C	107.79
30°C	111.67
40°C	115.54
50°C	119.40
60°C	123.24
70°C	127.08
80°C	130.91
90°C	134.71
100°C	138.51
110°C	142.29
120°C	146.07
130°C	149.83
140°C	153.58

CONNECTOR: DELPHI PART PACKARD No. 12086018 TYPE 101

NOTES:
 1. DESCRIPTION: INSULATED RETURN TEMPERATURE SENSOR.
 2. OPERATING TEMPERATURE: -40°C TO 140°C.
 3. RESISTIVE OUTPUT AS 400Ω VARIOUS PT100 CLASS D DEVICE.
 4. CONNECTOR: DELPHI PACKARD 100 SERIES METRIC/A.
 5. CONDUCTOR: 28 AWG 100% BRASS 70/30.
 6. VOLTAGE: 6 TO 24V DC.
 7. PART IDENTIFIED WITH CUSTOMER PART NO. AND DATE CODE.
 8. INSTALLATION: TORQUE 22NM.
 9. DIMENSIONS FOR REFERENCE ONLY.

REV	DATE	BY	CHKD	APP'D	REVISION