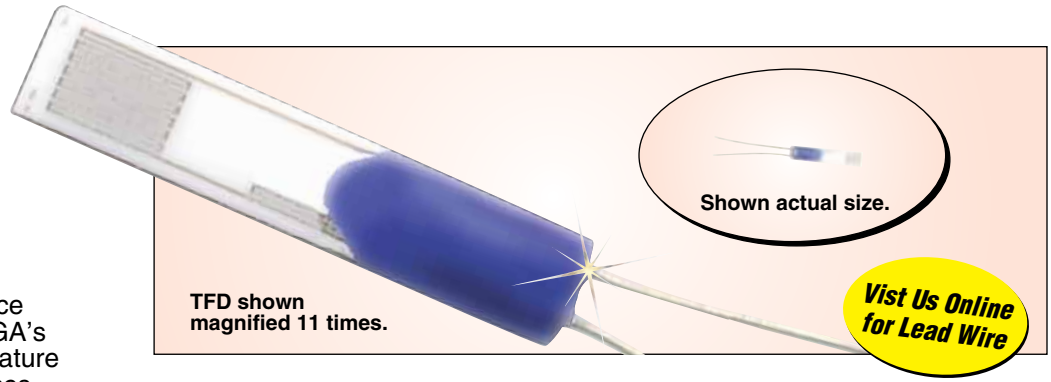
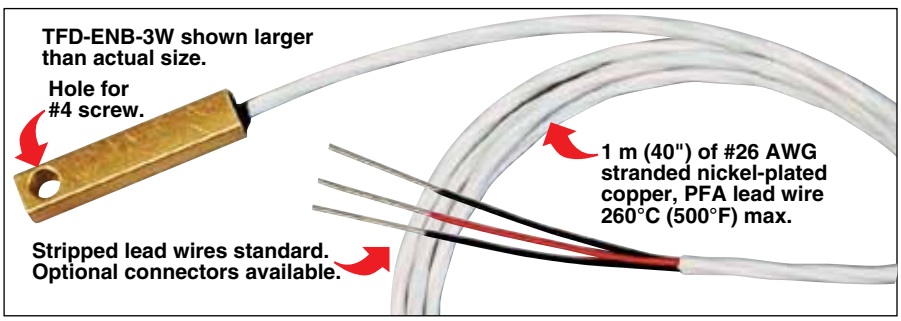
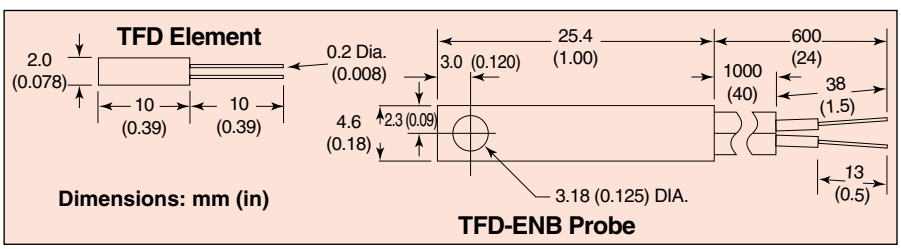
Thin Film Detector (TFD)
OMEGA® Thin Film RTD Elements and Probes

TFD Series







This flat Platinum resistance detector represents OMEGA's latest development in miniature temperature sensing devices. It combines the precision of the Platinum resistance detector with the small temperature-sensing tip and rapid response time of the thermocouple. An immediate field of application for the TFD is surface temperature measurement.

The TFD achieves rapid response times because:

1) It has a high ratio of surface area to volume
2) The temperature-sensitive Platinum layer is separated from the medium to be measured by a thin ceramic substrate of high thermal conductivity.

This is of particular interest to users measuring temperature in gaseous environments, such as wind tunnels and air conditioners. The TFD is also extremely vibration-resistant.

The resistance values and tolerances comply with DIN 43760 and BS 1904 ratings (Pt100 Ω).

The TFD element is supplied in an encapsulated sensor screw-mounted brass housing with PFA insulated leads. Two-, 3- or 4- wire configuration is available. Sensor design provides cost effective, fast response and easy mounting on flat surfaces. The maximum temperate of the probe assembly is 260°C (500°F). Termination options are available for easy operation in conjunction with OMEGA handheld meters or other instruments.

Specifications

Element: TFD-design glass-encapsulated Platinum layer on a ceramic substrate

TFD Leads: Platinum wire 0.2 mm D (0.008"), about 10 mm L (0.39")

Temperature Range:
-70 to 500°C (-95 to 930°F)

Insulative Resistance at 500°C (930°F): $>10^8$ Ω

Voltage Necessary for Destruction: 100 Vdc

Hysteresis Error (Observed Only after Rapid Temperature Cycling): Max 0.25

Self-Heating Error at 20°C (70°F):
In still air, 1.9 mW/°C;
in still water, 75 mW/°C

Response Time:
In Water Moving at 0.4 m/s:
t(50%) = 0.25 s
t(90%) = 1.1 s
In Air Moving at 1 m/s
t(50%) = 13.5 s
t(90%) = 55 s

To Order

TFD Element		
Model No.	**Description**	
TFD	Thin film RTD element	
Surface Mount Probe		
Model No.	**Lead Wire Style**	**Cable**
TFD-ENB-2W-40	2 Wires	1 m (40") PFA insulated
TFD-ENB-3W-40	3 Wires	1 m (40") PFA insulated
TFD-ENB-4W-40	4 Wires	1 m (40") PFA insulated

For lead wire length over 1 m (40"), use additional price per 300 mm (12") increments and modify model number.

***Ordering Example: TFD-ENB-3W-189,** sensor screw mounted, 3 wires, 180" cable.*