GREYSTONE ENERGY SYSTEMS INC

# PROBE TEMPERATURE SENSORS
## TE200 Series


## Precision temperature control/sensing

**FEATURES:**

- Thermistor or Precision RTD
- Various configurations available
- Selection of enclosures
- Custom laser etching available

***Peace of mind through reliable temperature monitoring***

GREYSTONE HAS AN **ISO 9001** REGISTERED QUALITY SYSTEM

# TE200 - PROBE TEMPERATURE SENSOR CONFIGURATIONS

## FEATURES:

The TE200 temperature sensors offer a choice of precision platinum or nickel RTD's, or NTC Thermistors which can be interfaced with a computerized monitoring or control system. A wide variety of configurations are available such as:

**B & BB) Duct Sensor** – The B & BB is for single point monitoring. Both are available with various probe lengths. The B has various enclosures available and the BB provides a mounting bracket for installation.

**B)**


**BB)**

**C & AP) Immersion Sensor** – The C comes in two configurations. It has either spring loaded or non-spring loaded probes and has a 1/2" NPT fitting to be mounted into a thermowell. It is available in various lengths and enclosures styles. The AP is a non-spring loaded probe with a 1/2" NPT fitting to be mounted in a thermowell.

**C)**


**AP)**

**FD, D, DC & DR) Duct Averaging Sensor** – All models incorporate numerous sensors along the assembly and act as a single sensor averaging the temperature across the sensors. They are available in various lengths. The FD probe is constructed of FT-6 rated plenum cable which allows for easy installation. The D & DC probes are constructed of bendable soft copper and the DR is a constructed of rigid stainless steel. Various enclosures are available.

**FD)**


**D & DC)**


**DR)**


**E) & ES) Strap-on Sensor** – The E comes with stainless steel probe and is available in several lengths and 1.5 m (5') of cable for remote mounting. The ES has an aluminum plate with an expandable 10" clamp assembly to strap directly to a pipe. Various enclosures are available.

**E)**


**ES)**


**F, FE, & FX) OSA Sensor** – Comes in an aluminum LB (F) or ABS (FE/FX) enclosure. The LB is c/w 1/2" NPT fitting for connection to conduit. All incorporate a sun/wind shield to protect the sensor.

**F)**

**FE)**


**FX)**


**G) Glass** – The sensor is encapsulated in a 1/2" square x 2" aluminum wafer that can be affixed to any surface. It comes with 5' of zip cable.

**G)**

**FL) Flying Lead** – The sensor is encapsulated in a 2" S/S probe with 6' of FT-6 rated cable and can be used in almost any application where temperature monitoring is required.

**FL)**

**H) Stack** – Is designed for installation in an exhaust stack to measure flue gas temperature. Comes standard with a mounting flange and weatherproof enclosure

**H)**

## SPECIFICATIONS:

Sensor..... Several Thermistors, Platinum or Nickel RTD's available.
See product ordering information

Sensor Accuracy ..... **Thermistors:** ±0.2˚C (±0.36˚F), 0 to 70˚C (32 tp 158˚F)
**Platinum RTD's:** ±0.3˚C (±0.54˚F) @ 0˚C (32˚F)
**Nickel RTD's:** ±0.4˚C (±0.72˚F) @ 0˚C (32˚F)

Operating Temperature ..... **AP, B, C, E, EX, G, & HC:** -20 - 105˚C (-4 - 221˚F)
**BB, D, DR, FD & FL:** -20 - 60˚C (-4 - 140˚F)
**DC**: -40 - 100˚C (-40 - 212˚F)
**F, FE & FX:** -50 - 100˚C (-58 - 212˚F)
**H:** (Sensor 4 & 28) -100 - 600˚C (-148 - 1112˚F)

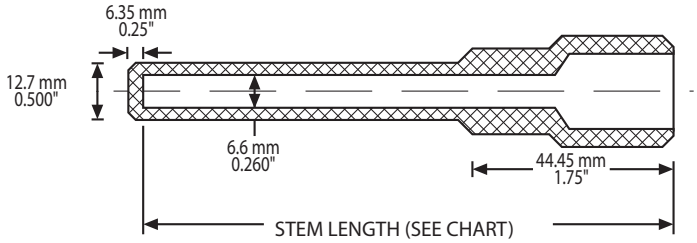
Probe Material ..... **AP, B, BB, C, DR, E, FL, H:** 6.35 mm (0.25") O.D., 304 series stainless steel
**D & DC:** 7.94 mm (0.3125") O.D. soft copper
**FD:** FT-6 rated plenum cable
**ES:** 2" x 2" aluminum plate
**G:** 0.5" x 0.5" x 2" aluminum wafer

Wire Material ..... **AP, B, C, DR, E, ES, G, HC:** PVC insulated, parallel bonded, 22 AWG
(Sensor type 2, 100 ohm platinum uses FT-4)
**BB, D, FD, FL :** FT-6 rated plenum cable, 22 AWG
**DC:** PTFE insulated, 22 AWG
**H :** Fiberglass insulated cable, 24 AWG

Enclosure ..... Standard - ABS - UL94-5VB - IP61 (NEMA 2)
Round (**E**) - ABS - UL94-5VB - IP65 (NEMA 4X)
Metal (**M**) - Galvanized Steel - IP50 (NEMA 1)
Weatherproof (**W**) - Cast Aluminum - IP64 (NEMA 3X)
Hinged Weatherproof (**FX**) - ABS - UL94-5VB - IP65 (NEMA 4X)

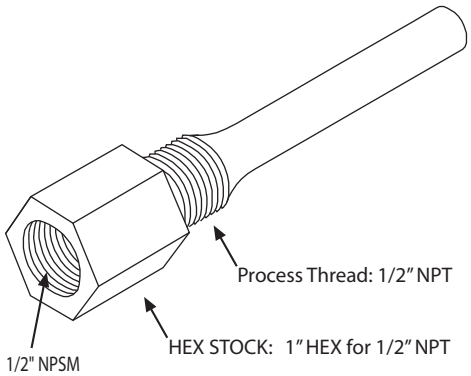
Wiring Connections ..... Pigtail, 2 or 3 wire
Round (**E**) enclosure- screw terminal block (14 to 22 AWG)

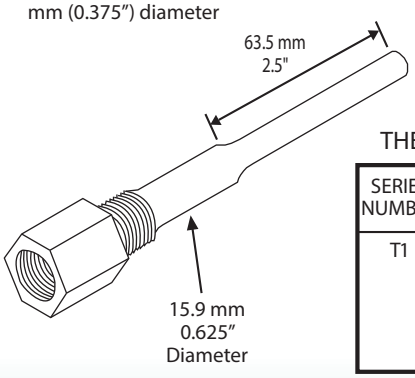
## THERMOWELLS:




NOTE:

6" and up machined thermowells have a two step stem as shown. welded construction have a 9.5 mm (0.375") diameter




THERMOWELL PART NUMBERING SYSTEM

| SERIES NUMBER | NPT THREAD SIZE | MATERIAL | STEM LENGTH | CONSTRUCTION |
|---|---|---|---|---|
| T1 | 1/2" | P - 304 SS<br>R - 316 SS | 2"<br>4"<br>6"<br>8"<br>12"<br>18" | - MACHINED<br>W - WELDED<br>(12" and up only) |

EXAMPLE: T1 1/2 P 4
4" 304 STAINLESS THERMOWELL
WITH 1/2" NPT PROCESS THREAD



RoHS COMPLIANT

## PRODUCT ORDERING INFORMATION:

| MODEL | Product Description |
|---|---|
| TE200 | Temperature Sensor Series |

| CODE | Mounting Style |
|---|---|
| AP | All purpose |
| B | Duct mount |
| BB | Duct probe w/ mounting bracket only |
| C | Immersion |
| D | Duct average, copper probe |
| DC | Duct average, continuous copper probe (Available with Type 12, 1000 ohm RTD only) |
| DR | Duct average, rigid stainless steel probe |
| E | Strap-on - 50 mm (2") probe assembly |
| ES | Strap-on - Assembly clamps around pipe with aluminum plate c/w 254 mm (10") stainless clamp |
| F | O.S.A. , LB fitting |
| FE | O.S.A. , Round ABS, w/ gasketed cover |
| FD | Duct average, Flexible plenum rated cable probe |
| FL | Flying lead |
| FX | O.S.A. , Hinged ABS enclosure |
| G | Glass |
| H | Stack (Only available with Platinum RTD sensor types 4 & 28) |
| HC | Sensor with mounting clip |

| CODE | Enclosure (N/A for AP, BB, F, FD, FE, FL, FX, H & HC) |
|---|---|
| - | ABS enclosure, standard (no code required, leave blank) |
| E | Round ABS, w/gasketed cover |
| M | Metal utility box |
| W | Aluminum weatherproof box |

| CODE | Flex Duct Only (FD) |
|---|---|
| A | Lead only, no box |
| B | ABS enclosure |
| C | Aluminum weatherproof |
| D | Metal utility box |
| E | Round ABS w/ Gasketed cover |

| CODE | Sensor |
|---|---|
| 2 | 100 Ω Platinum, IEC 751, 385 Alpha, thin film |
| 4 | 100 Ω Platinum, IEC 751, 385 Alpha, wire wound-ceramic* **H Mounting Style (see below)** |
| 5 | 1801 Ω, NTC Thermistor, ±0.2 C |
| 6 | 3000 Ω, NTC Thermistor, ±0.2 C |
| 7 | 10,000 Ω, Type 3, NTC Thermistor, ±0.2 C |
| 8 | 2.252K Ω, NTC Thermistor, ±0.2 C |
| 12 | 1000 Ω Platinum, IEC 751, 385 Alpha, thin film |
| 13 | 1000 Ω Nickel, Class B, DIN 43760 |
| 14 | 10,000 Ω, Type 3, NTC Thermistor, ±0.2 C c/w 11K shunt resistor |
| 20 | 20,000 Ω, NTC Thermistor, ±0.2 C |
| 24 | 10,000 Ω, Type 2, NTC Thermistor, ±0.2 C |
| 28 | 1000 Ω Platinum, IEC 751, 385 Alpha, wire wound-ceramic* **H Mounting Style (see below)** |

| CODE | Probe Length (B, BB, C, E & H) |
|---|---|
| A2 | 50 mm (2") |
| B2 | 100 mm (4") |
| C2 | 150 mm (6") |
| D2 | 200 mm (8") |
| E2 | 300 mm (12") |
| F2 | 450 mm (18") |

| CODE | Averaging (D, DC, & DR) |
|---|---|
| G3 | 1800 mm (6') - D & DC |
| H3 | 3600 mm (12') - D |
| I3 | 6100 mm (20') - D & DC |
| J3 | 7300 mm (24') - D |
| K2 | 450 mm (18") - DR |
| L2 | 600 mm (24") - DR |
| M2 | 900 mm (36") - DR |

| CODE | Flex Duct Only (FD) |
|---|---|
| A | 1800 mm (6') |
| B | 3600 mm (12') |
| C | 6100 mm (20') |
| D | 7300 mm (24') |

| CODE | **Fitting** (only required for immersion "C) |
|---|---|
| A | Spring loaded 1/2 " NPT |
| E | Non-spring loaded 1/2 " NPT |

Custom ranges available upon request

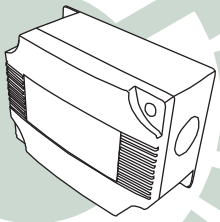
| TE200 | D | - | 7 | I3 | - |
|---|---|---|---|---|---|

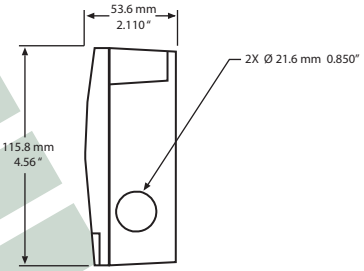
Greystone Energy Systems, Inc. reserves the right to make design modifications without prior notice.

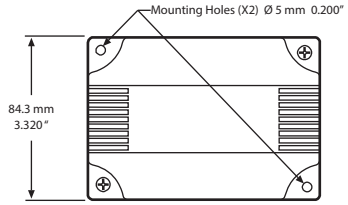
**EXAMPLE:**
Duct Average, 10 K Thermistor, 20' Copper

* must use for high temperature applications over 400 C (752 F)

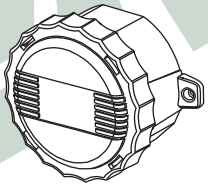
# ENCLOSURE DIMENSIONS:

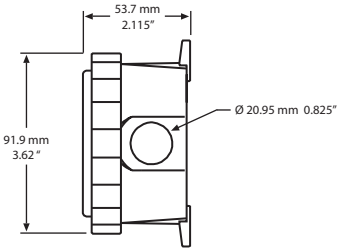


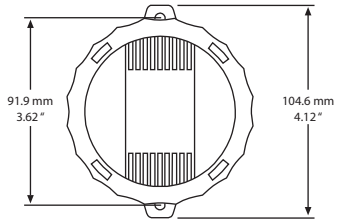


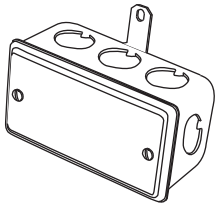

**ABS Enclosure**

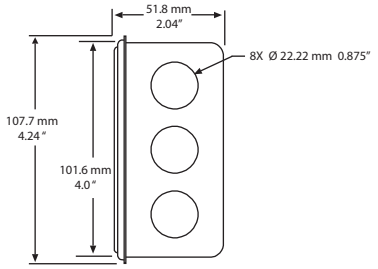


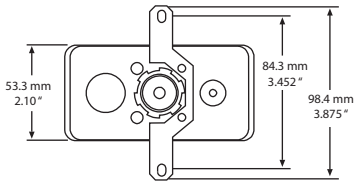


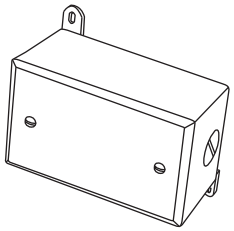

**Round ABS Enclosure (E)**

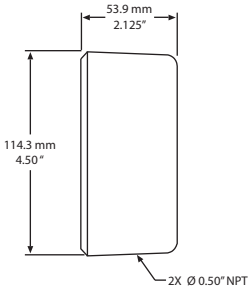


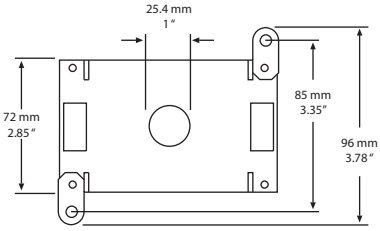


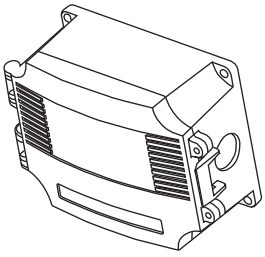

**Metal Enclosure (M)**

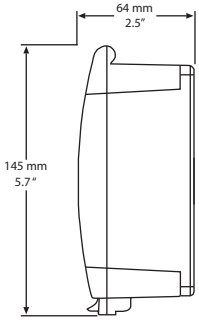


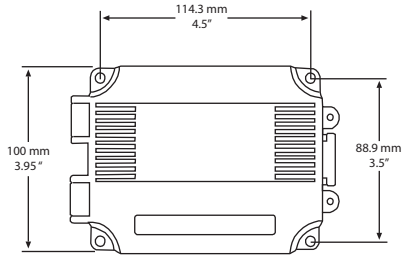



**Weatherproof Enclosure (W)**






**ABS Hinged Weatherproof Enclosure (FX)**

## ACCESSORIES:


**120-*) Thermal Compound** – The 120- Thermal Conducting Compound is a zinc oxide-filled, dielectric, silicone oil-based compound that facilitates heat transfer by filling voids and gaps between mating surfaces. The operating temperature range is -40° to 200°C (-40° to 392°F). It is available in a 5 oz tube or 2 & 8 oz jars.

**DC-01) Duct collar** - The DC-01 is an adjustable collar for mounting the duct temperature sensor probes. It incorporates a foam backed mounting flange with 2 mounting holes. A compression type fitting accommodates a 1/4" probe and allows for an adjustable probe depth.

**CC-1G) Averaging probe clip** – The CC-1G is used to mount averaging sensors in duct applications. It can be used for probe diameters of 1/8",1/4" and 3/8". The bracket provides support and a smooth arc for direction reversal allowing for criss-crossing the duct. It eliminates kinking of the sensor and damaging the probe.

A fixed 1/4" probe may also be mounted as part of the bracket design using the scored break-off. It is made out of tough UL94V Nylon and limits heat/cold conduction to the probe and has multiple mounting holes to make mounting quick and easy.

**TS17R-*) Probe clamp** – The TS17R-* is a zinc plated, rubber coated tube clamp that can be used to secure a temperature probe. It is available in several sizes to fit a wide variety of probes.

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V.12/13
PRINTED IN CANADA