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.

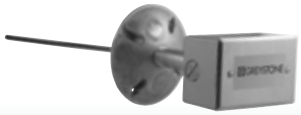
G)

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)

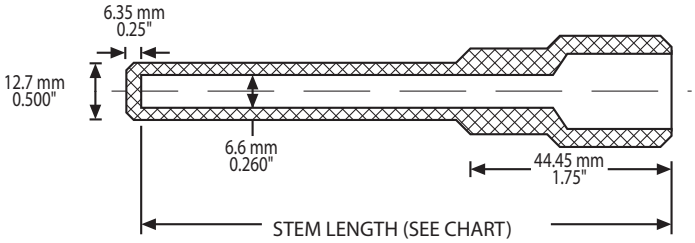
Probe Material ..... **AP, B, BB, C, DR, E, FL, H:** 6.35 mm (0.25") O.D., 304 series stainless steel
D & DC: 7.94 mm (0.3125") O.D. soft copper
FD: FT-6 rated plenum cable
ES: 2" x 2" aluminum plate
G: 0.5" x 0.5" x 2" aluminum wafer

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)

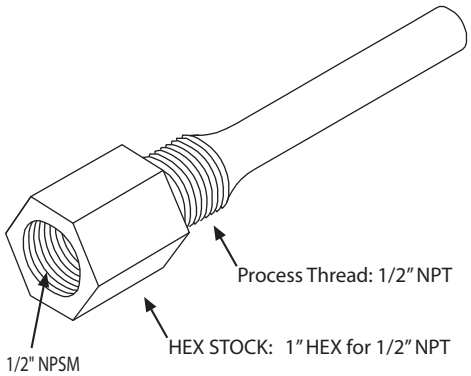
Wiring Connections..... Pigtail, 2 or 3 wire
Round (**E**) enclosure- screw terminal block (14 to 22 AWG)

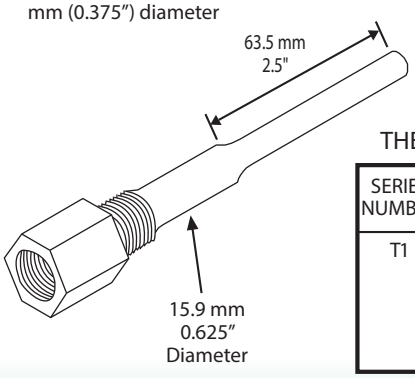
THERMOWELLS:



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 R - 316 SS	2" 4" 6" 8" 12" 18"	- MACHINED W - WELDED (12" and up only)

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

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

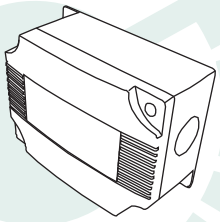
TE200	D	-	7	I3	-

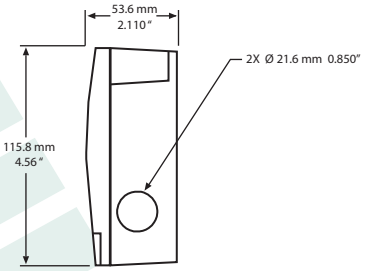
Greystone Energy Systems, Inc. reserves the right to make design modifications without prior notice.

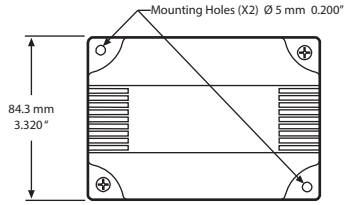
EXAMPLE:
Duct Average, 10 K Thermistor, 20' Copper

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

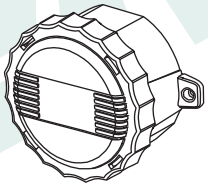
ENCLOSURE DIMENSIONS:

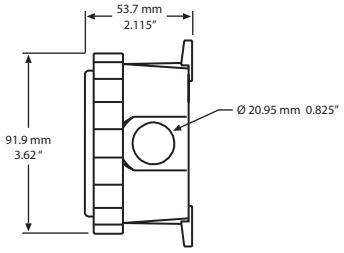


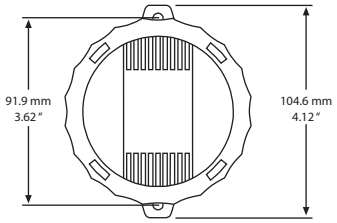




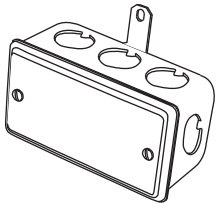
ABS Enclosure

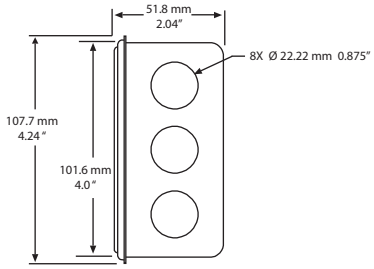


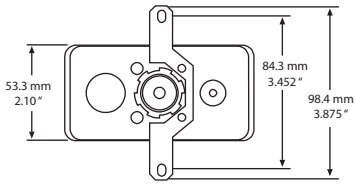




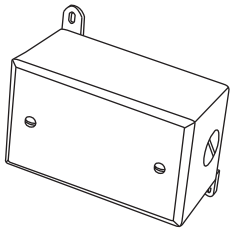
Round ABS Enclosure (E)

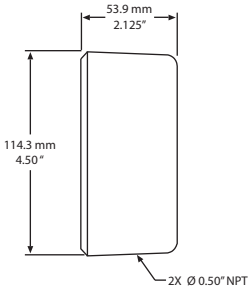


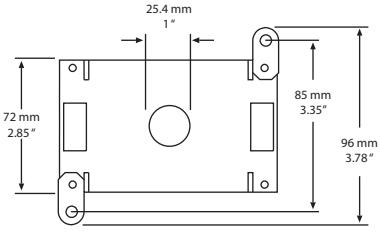




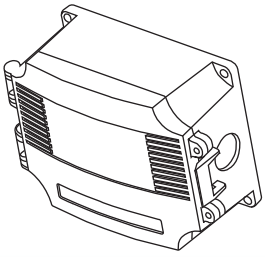
Metal Enclosure (M)

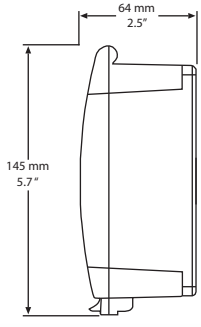


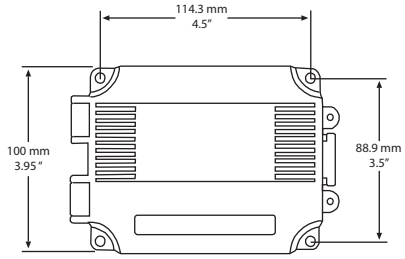




Weatherproof Enclosure (W)







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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RoHS COMPLIANT

Greystone Energy Systems Inc. is one of North America's largest ISO registered manufacturers of HVAC/R sensors and transmitters for Building Automation Management Systems. We have conscientiously established a worldwide reputation as an industry leader by maintaining leading-edge design technology, prompt technical support, and a commitment to on-time deliveries. We take pride in our Quality Management System which is ISO 9001 certified, assuring our customers of consistent product reliability.

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

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