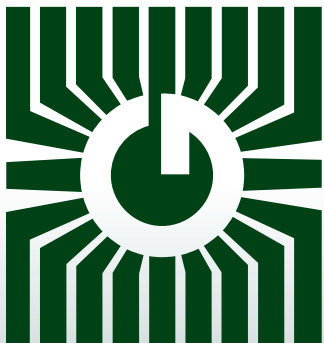# GREYSTONE ENERGY SYSTEMS INC

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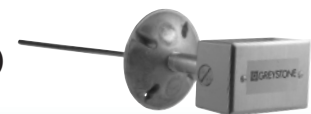
FL) Flying Lead – The sensor is encapsulated in a 2" S/S probe with 6' of FT-6 rated cable and can be used in almost any application where temperature monitoring is required.

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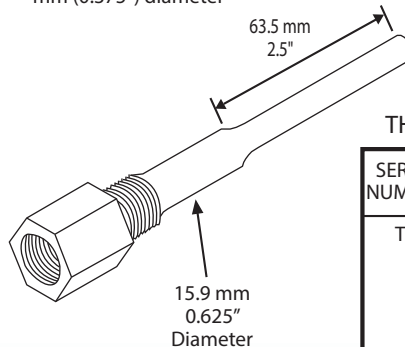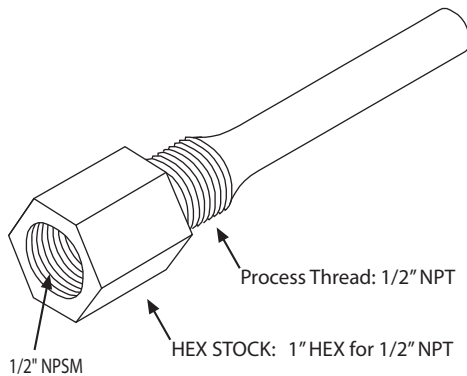
G)

FL)

H)

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RoHS COMPLIANT

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ISO9001

CE

SPECIFICATIONS:

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

Sensor Accuracy .... **Thermistors:** ±0.2˚C (±0.36˚F) @ 25˚C (77˚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:
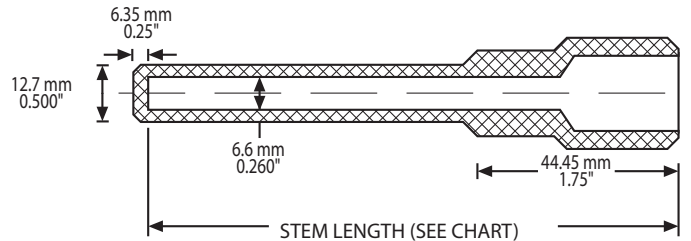
NOTE:

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

6.35 mm 0.25"
12.7 mm 0.500"
6.6 mm 0.260"
44.45 mm 1.75"
STEM LENGTH (SEE CHART)

63.5 mm 2.5"

Process Thread: 1/2" NPT
HEX STOCK: 1" HEX for 1/2" NPT
1/2" NPSM

15.9 mm 0.625" 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

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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)	CODE	Flex Duct Only (FD)
-	ABS enclosure, standard (no code required, leave blank)	**A**	Lead only, no box
E	Round ABS, w/gasketed cover	**B**	ABS enclosure
M	Metal utility box	**C**	Aluminum weatherproof
W	Aluminum weatherproof box	**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)	CODE	Averaging (D, DC, & DR)	CODE	Flex Duct Only (FD)
A2	50 mm (2")	**G3**	1800 mm (6') - D & DC	**A**	1800 mm (6')
B2	100 mm (4")	**H3**	3600 mm (12') - D	**B**	3600 mm (12')
C2	150 mm (6")	**I3**	6100 mm (20') - D & DC	**C**	6100 mm (20')
D2	200 mm (8")	**J3**	7300 mm (24') - D	**D**	7300 mm (24')
E2	300 mm (12")	**K2**	450 mm (18") - DR		
F2	450 mm (18")	**L2**	600 mm (24") - DR		
		M2	900 mm (36") - DR		

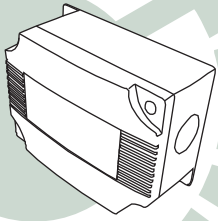| CODE	Fitting (only required for immersion "C")
A	Spring loaded 1/2 " NPT
E	Non-spring loaded 1/2 " NPT

Custom ranges available upon request

TE200	D	-	7	I3	-	

Greystone Energy Systems, Inc. reserves the right to make design modifications without prior notice.
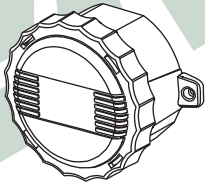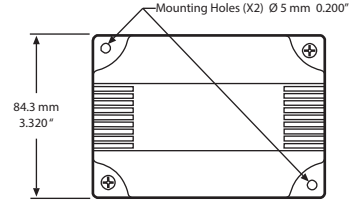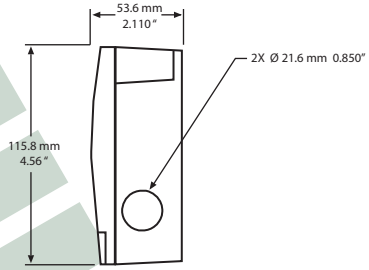
EXAMPLE:
Duct Average, 10 K Thermistor, 20' Copper

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

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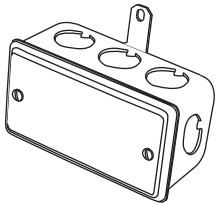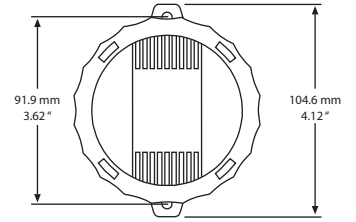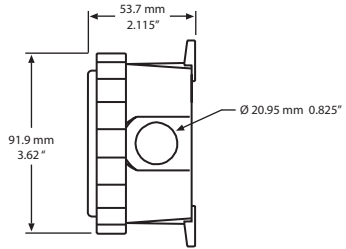
RoHS COMPLIANT   MADE IN CANADA   ISO9001   CE

ENCLOSURE DIMENSIONS:

ABS Enclosure

53.6 mm
2.110"

2X Ø 21.6 mm 0.850"

115.8 mm
4.56"

Mounting Holes (X2) Ø 5 mm 0.200"

84.3 mm
3.320"

Round ABS Enclosure (E)

53.7 mm
2.115"

Ø 20.95 mm 0.825"

91.9 mm
3.62"

91.9 mm
3.62"

104.6 mm
4.12"

Metal Enclosure (M)

51.8 mm
2.04"

8X Ø 22.22 mm 0.875"

107.7 mm
4.24"

101.6 mm
4.0"

53.3 mm
2.10"

84.3 mm
3.452"

98.4 mm
3.875"

Weatherproof Enclosure (W)

53.9 mm
2.125"

114.3 mm
4.50"

2X Ø 0.50" NPT

25.4 mm
1"

72 mm
2.85"

85 mm
3.35"

96 mm
3.78"
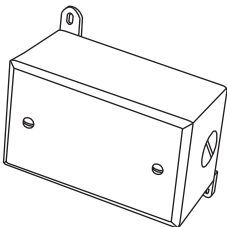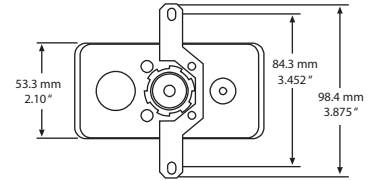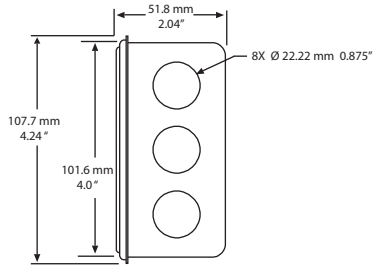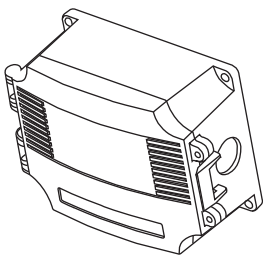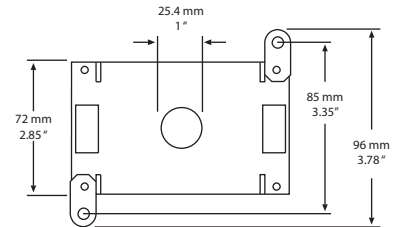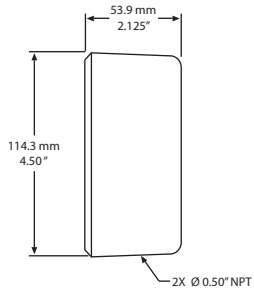
ABS Hinged Weatherproof Enclosure (FX)

64 mm
2.5"

145 mm
5.7"

114.3 mm
4.5"

100 mm
3.95"

88.9 mm
3.5"

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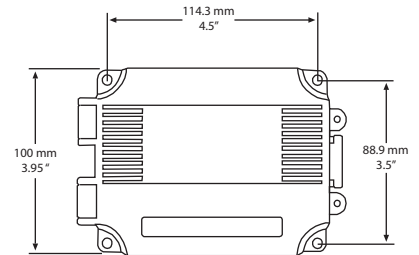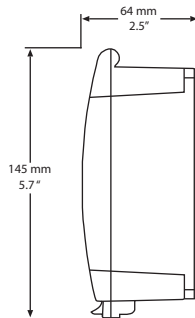
ACCESSORIES:

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.

GREYSTONE
ENERGY SYSTEMS INC

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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.

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