GREYSTONE

ACCURACY BY DESIGN

TEMPERATURE SENSORS
TE200 Series

Precision temperature control/sensing

FEATURES:

- Thermistor, Precision RTD or I.C. sensing element
- Various configurations available, i.e.: duct averaging, immersion, etc.
- Room Sensor options – Setpoint Adjustment, Override, etc.
- Custom logos available

Peace of mind through reliable temperature monitoring

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

TE200 - TEMPERATURE SENSOR CONFIGURATIONS

FEATURES AND SPECIFICATIONS:

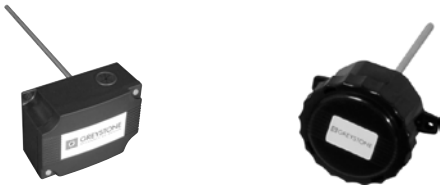
The TE200 temperature sensors offer a choice of precision platinum RTD's, I.C., or NTC Thermistors which can be interfaced with a computerized monitoring or control system. A wide variety of configurations are available such as:

AE) Executive – Features include a universal back plate to mount to any wall box or may be flush mounted. Available with various options, including setpoint adjustments, push button overrides, LCD's, etc. (see product ordering information)

AD) Designer – Features include a two-piece enclosure that mounts directly to a wall box or on any wall. Available with various options, including setpoint adjustments, & push button overrides. (see product ordering information)

AS) Surface - A stainless steel plate which can be mounted to a wall box used where tamper- proof or protection is required. Available with various options, including push button overrides and or LED's.

A) Micro – Includes a compact snap-mounted cover for ease of installation, avaiable with various temperature sensors.



B) Duct Sensor – For single point monitoring. It is available with various probe lengths and enclosures to fit any application.

C) Immersion Sensor – 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. Above shown with LCD option (left) and round ABS enclosure (right)

E) & ES) Strap-on Sensor – Comes in a stainless steel probe option or with a 10" clamp assembly and is used in remote applications where surface temperature is measured.

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. Both incorporate a sun/wind shield to protect the sensor.

FD) Flex-Duct Sensor – Is made of flexible plenum rated cable which incorporates numerous sensors along the assembly. It acts as a single sensor averaging any temperature change across the sensors.

D) Duct Average Sensor – Incorporates numerous sensors inside a copper tube. It acts as a single sensor, averaging any temperature change across the sensors

NOTE: TEMPERATURE RATINGS - Space Assemblies (A, AD and AE) are rated at 0C - 70C (32F - 158F). Stainless plate (AS) rated at -20C - 93C (-4F - 200F). Probe assemblies (AP, B, C, E, ES, G and HC) are rated -20C - 105C (-4F - 221F). Assemblies (BB, D, FD and FL) are rated at -20C - 60C (-4F - 140F). Assembly (DC) is rated -40C - 100C (-40F - 221F). Assemblies (F and FX) are rated at -50C - 100C (-58F - 212F). **For higher or lower temperature applications, please contact Greystone.**

TE200 - ROOM TEMPERATURE SENSOR:

PRODUCT ORDERING INFORMATION:

MODEL	Product Description
TE200	Sensor assembly

CODE	Enclosure
A	Micro
AD	Designer
AE	Executive
AS	S/S plate

CODE	Sensor
2	PT100-100 Ω Platinum, IEC 751, 385 Alpha, thin film
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
9	100,000 Ω, NTC Thermistor, ±0.2 C
11	LM334 IC, 1.0uA/ C (Not avaiable in Micro)
12	PT1000-1000 Ω Platinum, IEC 751, 385 Alpha, thin film
13	1000 Ω Nickel
14	10,000 Ω, type 3, NTC Thermistor, ±0.2 C c/w 11K shunt resistor
15	PT3000 PTC Platinum, ±0.2 C
20	20,000 Ω, NTC Thermistor, ±0.2 C
21	LM335 IC, 10mv/ C (Not avaiable in Micro)
24	10,000 Ω, type 2, NTC Thermistor, ±0.2 C

CODE	TE200 AD/AE Options (Multiple selections can be made)
AP	20-30K linear slide pot for set point control (call for other values)
AS	Concealed push button momentary switch (N.O.) (TE200AD only)
BS	Exposed push button momentary switch (NO)
GB	Grayhill exposed pushbutton, (N.O)., SPST, 3A (TE200AS only)
AM	Alcohol thermometer ˚C/˚F (TE200AE only)
BC	Bimetal thermometer ˚C (TE200AE only)
BF	Bimetal thermometer ˚F (TE200AE only)
AC	3-digit LCD temperature indicator ˚C (TE200AE only)
AF	3-digit LCD temperature indicator ˚F (TE200AE only)
LY	Yellow LED
LR	Red LED
LG	Green LED
CJ	3.5mm Phono jack for remote system access
AE	External jack for remote system access (4-pin header)
AI	Internal jack (RJ-45)
TP	Tamper proof security screws (TE200AS only)

TE200	AE	7	AP	BS

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

EXAMPLE:
Executive space sensor, c/w 10K Thermistor, 20-30K slidepot and exposed pushbutton.

NOTE:
Due to the many possible configurations, special part numbers may be required, please contact Greystone for more information.

TE200 - PROBE TEMPERATURE SENSOR:

PRODUCT ORDERING INFORMATION:

MODEL	Product Description
TE200	Sensor assembly

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

CODE	Enclosure (N/A for AP, BB, F, FE, FL, FX, H & HC)
-	ABS enclosure, standard (no code required, leave blank)
M	Metal utility box
E	Round ABS, w/gasketed cover
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	PT100-100 Ω Platinum, IEC 751, 385 Alpha, thin film
4	PT100-100 Ω Platinum, IEC 751, 385 Alpha, wire wound-ceramic* (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
9	100,000 Ω, NTC Thermistor, ±0.2 C
11	LM334 IC, 1.0uA/ C (N/A in AP, BB, D, DC, F, FD, H or HC configurations)
12	PT1000-1000 Ω Platinum, IEC 751, 385 Alpha, thin film
13	1000 Ω Nickel
14	10,000 Ω, type 3, NTC Thermistor, ±0.2 C c/w 11K shunt resistor
15	PT3000 PTC Platinum, ±0.2 C
20	20,000 Ω, NTC Thermistor, ±0.2 C
21	LM335 IC, 10mv/ C (N/A in AP, BB, D, DC, F, FD, H or HC configurations)
24	10,000 Ω, type 2, NTC Thermistor, ±0.2 C

CODE	Probe Length
A	50 mm (2")
B	100 mm (4")
C	150 mm (6")
D	200 mm (8")
E	300 mm (12")
F	450 mm (18")

CODE	Copper Avg. (D & DC)
G	1800 mm (6')**
H	3600 mm (12')
I	6100 mm (20')**
J	7300 mm (24')
	**-not available in DC

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

CODE	**Probe Material** (not required for ES, F, FD, G, HC)
2	Stainless steel
3	Copper (rigid duct average only)

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	I	3	-

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

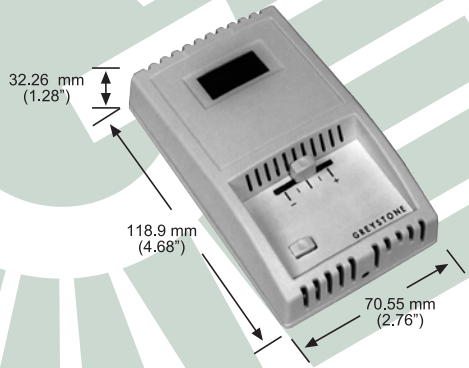
* must use for high temperature applications over 400 C (752 F)

GREYSTONE ENERGY SYSTEMS, INC.

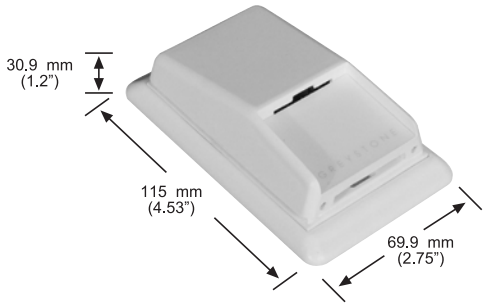
RoHS COMPLIANT

ENCLOSURE DIMENSIONS:

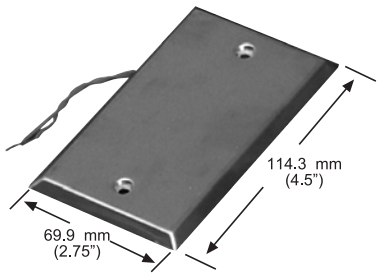
AE) Executive



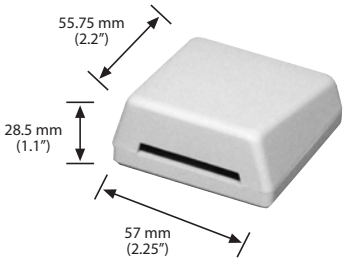
AD) Designer



AS) Surface

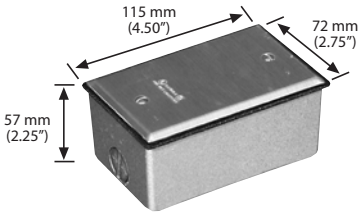


A) Micro



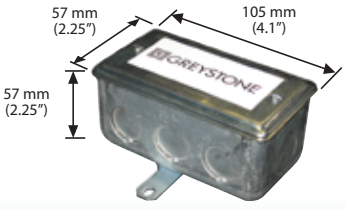
Standard ABS Enclosure

W) Aluminum Weatherproof Box



E) Round ABS Enclosure

M) Metal Utility Box

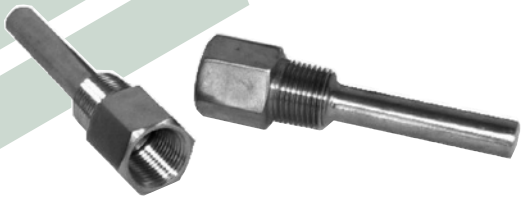


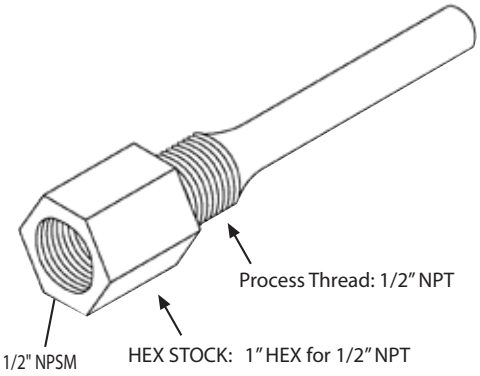
ABS Weatherproof Box **(TE200FX)**

LCD SPECIFICATIONS:
(AC and AF options)

Power Supply	12 to 30 Vac/dc at 2mA max
Display Units	C or F (Factory set)
Display Range	0 – 35 C (AC option) 32 – 95 F (AF option)
Display Resolution	0.1 C or 0.1 F for display of 00.0 to 99.9
Display Accuracy	±0.2 C or ±0.2 F over full range
Display Update Rate	3 times per second
Display Size	24 mm W x 11 mm H (0.95" x 0.45") three digit
PCB Operating Temperature	0 to 70 C (32 to 158 F)
PCB Operating Humidity	0 to 95% RH (non-condensing)
Wiring Connections	Two wires,screw terminal block, (14 to 22 AWG)
Manufacturing Process	ISO 9001 Certified
Internal Adjustments	Clearly marked ZERO and SPAN pots

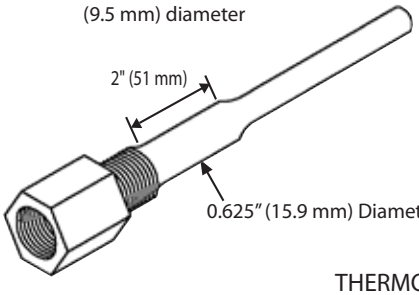
THERMOWELLS:

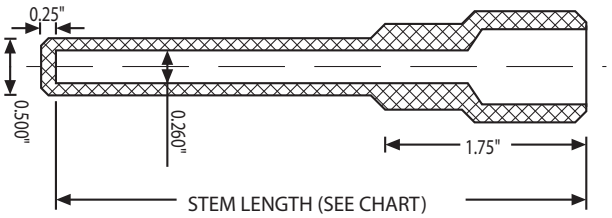




NOTE:

6" and 8" thermowells have a two step stem as shown
12" and 18" have a 0.375" (9.5 mm) diameter





THERMOWELL PART NUMBERING SYSTEM

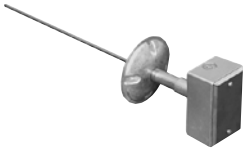
SERIES NUMBER	NPT THREAD SIZE	MATERIAL	STEM LENGTH
T-1	1/2"	P - 304 SS R - 316 SS BR - BRASS	2" 4" 6" 8" 12" 18"

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

OTHER CONFIGURATIONS:

BB) Duct probe c/w mounting bracket

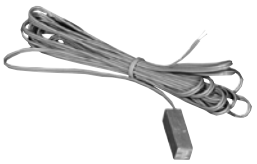
H) Stack



FL) Flying Lead

AP) All Purpose

G) Glass



GREYSTONE
ACCURACY BY DESIGN

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RoHS COMPLIANT

Greystone Energy Systems Inc. is one of North America's largest ISO registered manufacturers of HVAC sensors and transducers 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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