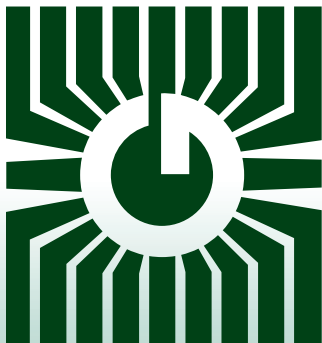


GREYSTONE

ACCURACY BY DESIGN



TEMPERATURE TRANSDUCERS TE500/TE511/TE512 Series



Precision temperature control/sensing

FEATURES:

- Precision RTD
- High accuracy transmitter for any application
- Several mounting configurations, i.e.: room, duct, 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

TE500/511/512 - TEMPERATURE TRANSDUCER CONFIGURATIONS

FEATURES AND SPECIFICATIONS:

The TE500/511/512 is a precision current loop temperature transmitter. It utilizes the platinum RTD and is available in various configurations. The transmitter provides a high accuracy signal with excellent long term stability, low hysteresis and fast response while being virtually immune to power supply noise and input voltage fluctuations. All models operate on a wide range of AC or DC power supplies. The TE511/512 incorporates a LCD which is factory configured to display readings in either °C or °F.

4-20mA Loop Power Supply.....	15-35 Vdc or 22 to 32 Vac (No LCD) 22 to 35 Vdc or 22 to 32 Vac (with 250 ohm load) with LCD
Minimum Loop Current	2 mA nominal, (occurs with shorted sensor)
Maximum Loop Current	22.5 mA nominal, (occurs with open sensor)
Maximum Loop Load	> 600 ohms no LCD or > 325 ohms with LCD
0-5 Vdc Power Supply	10 to 35 Vdc or 10 to 32 Vac
0-10 Vdc Power Supply	15 to 35 Vdc or 15 to 32 Vac
Voltage Mode Maximum Current ..	5 mA nominal
Voltage Mode Maximum Output ..	Limited to < 5.5 Vdc for 0-5 model and < 10.5 Vdc for 0-10 model
Input Voltage Effect	Negligible over specified operating range
RFI Rejection	Good RFI rejection of normal frequencies with standard installation
Protection Circuitry	Reverse voltage protected and output limited

Output Signal	4-20mA current loop, 0-5 Vdc or 0-10 Vdc (factory configured)
Transmitter Accuracy	±0.1% of span, including linearity
Temperature Calibration	Three point with precision calibration standards
Display Units	C or F (Factory set)
Display Range	0 – 100°C typical range for transmitter (other ranges available)
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 with respect to the output signal
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)
O.S.A. Operating Temperature.....	-40 to 85°C (-40 to 185°F)
PCB Operating Humidity	0 to 95% RH (non-condensing)
Wiring Connections	Two or three wires, screw terminal block, (14 to 22 AWG)
Manufacturing Process	ISO 9001 Certified
Internal Adjustments	Clearly marked ZERO and SPAN pots



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.



AD) Designer – Features include a two-piece enclosure that mounts directly to a wall box or on any wall.



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.



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 enclosure styles.



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 an immersion sensor can not be installed.



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



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.



F) OSA Sensor – Comes in an ABS enclosure. It incorporates a 1/2" NPT knockout for connection to conduit. It incorporates a sun/wind shield to protect the sensor.

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

TE500 - SPACE TEMPERATURE TRANSDUCERS:

PRODUCT ORDERING INFORMATION:

MODEL	Product Description
TE500	Sensor assembly c/w transmitter

CODE	Enclosure
AD	Designer
AE	Executive
AS	S/S plate

CODE	Sensor
2	PT100-100 Ω Platinum, IEC 751, 385 Alpha, thin film
12	PT1000-1000 Ω Platinum, IEC 751, 385 Alpha, thin film (Standard)

CODE	TE500 AE/AS Options
AP	20-30K linear slide pot for set point control - call for other values (TE500AE only)
BS	Exposed push button momentary switch (NO)
AM	Alcohol thermometer °C/°F (TE500AE only)
BC	Bimetal thermometer °C (TE500AE only)
BF	Bimetal thermometer °F (TE500AE only)
AC	3-digit LCD temperature indicator °C (TE500AE only)
AF	3-digit LCD temperature indicator °F (TE500AE only)
TP	Tamper proof Security screws (TE500AS only)

CODE	TE500 Transmitter Output Option
1A	Current 4-20mA
1D	Voltage 0-5 VDC
1E	Voltage 0-10 VDC

CODE	TE500 Transmitter Range Option
1	0°C - 35°C (32°F - 95°F)
2	0°C - 50°C (32°F - 122°F)

TE500	AE	12	AC	1A	2
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Greystone Energy Systems, Inc. reserves the right to make design modifications without prior notice.

EXAMPLE:

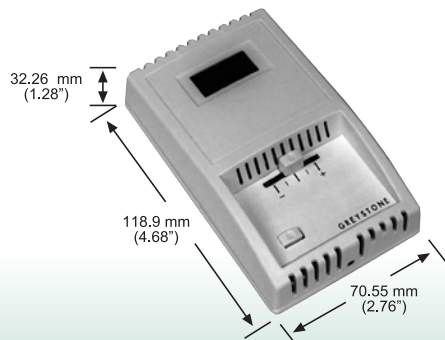
Executive space temperature transmitter, c/w PT1000 ohm RTD, 4-20mA output with a 0°C - 50°C (32°F - 122°F) range and LCD display in °C.

NOTE:

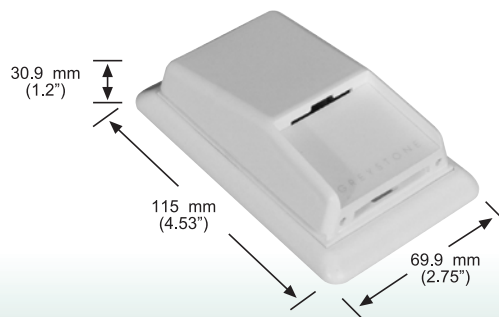
Due to the many possible configurations, special part numbers may be required, please contact Greystone for more information.

ENCLOSURE DIMENSIONS:

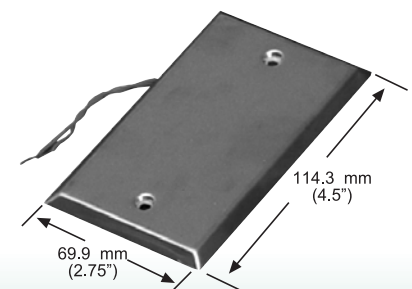
AE) Executive



AD) Designer



AS) Surface



TE500 - PROBE TEMPERATURE TRANSDUCERS:

PRODUCT ORDERING INFORMATION:

MODEL	Product Description
TE500	Sensor assembly c/w transmitter

CODE	Style
B	Duct mount
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. (ABS enclosure)
FD	Duct average (flexible plenum rated cable)
FL	Flying lead
G	Glass
H	Stack

CODE	Enclosure	CODE	Flex Duct Only (FD)
-	ABS enclosure, standard (no code required, leave blank)	B	ABS enclosure
M	Metal utility box	C	Aluminum weatherproof box
W	Aluminum weatherproof box	D	Metal utility box
E	Round ABS, w/ gasketed cover	E	Round ABS, w/ gasketed cover

CODE	Sensor (Type 12 is Standard)
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)
12	PT1000-1000 Ω Platinum, IEC 751, 385 Alpha, thin film

CODE	Probe Length	CODE	Copper Avg. (D & DC)	CODE	Flex Duct Only (FD)
A	50 mm (2")	G	1800 mm (6')*	A	1800 mm (6')
B	100 mm (4")	H	3600 mm (12')	B	3600 mm (12')
C	150 mm (6")	I	6100 mm (20')*	C	6100 mm (20')
D	200 mm (8")	J	7300 mm (24')	D	7300 mm (24')
E	300 mm (12")		*-not available in DC		
F	450 mm (18")				

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

CODE	Input/Output Options
1A	24 VAC/VDC, 4-20mA 2 or 3 wire
1D	24 VAC/VDC, 0-5 VDC 3 wire
1E	24 VAC/VDC, 0-10 VDC 3 wire

CODE	TE500 Transmitter Range Option
1	0°C - 35°C (32°F - 95°F)
2	0°C - 50°C (32 F - 122 F)
3	0°C - 100°C (32°F - 212°F)
4	50°C - 150°C (122°F - 302°F)
5	50°C - 250°C (122°F - 482°F)
6	-50°C - 50°C (-58°F - 122°F)

Custom ranges available upon request

TE500	B	-	12	E	2	-	1A	2
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Greystone Energy Systems, Inc. reserves the right to make design modifications without prior notice.

EXAMPLE: Duct temperature transmitter, c/w 1000Ω RTD, 12" S/S Probe, ABS enclosure, 4-20mA output with a 0°C-50°C (32°F-122°F) range.

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

TE511/512 - PROBE TEMPERATURE TRANSDUCERS:

PRODUCT ORDERING INFORMATION:

MODEL	Product Description
TE511	Sensor assembly c/w transmitter and LCD display °C
TE512	Sensor assembly c/w transmitter and LCD display °F

CODE	Style
B	Duct mount
C	Immersion
D	Duct average (copper)
DC	Duct average continuous (copper)
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	Heavy-duty wall mount (PVC enclosure)
FD	Duct average (flexible plenum rated cable)
FL	Flying lead
G	Glass

CODE	Enclosure (ABS enclosure is standard)	CODE	Flex Duct Only (FD)
-	ABS enclosure, standard (no code required, leave blank)	B	ABS enclosure
W	PVC weatherproof enclosure	C	PVC weatherproof enclosure

CODE	Secondary Sensor (Not available on D, DC, FD configurations) (Leave blank if not required)
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
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
24	10,000 Ω, type 2, NTC Thermistor, ±0.2°C

CODE	Probe Length (B, C, & E)	CODE	Copper Avg. (D & DC)	CODE	Flex Duct Only (FD)
A	50 mm (2")	G	1800 mm (6')*	A	1800 mm (6')
B	100 mm (4")	H	3600 mm (12')	B	3600 mm (12')
C	150 mm (6")	I	6100 mm (20')*	C	6100 mm (20')
D	200 mm (8")	J	7300 mm (24')	D	7300 mm (24')
E	300 mm (12")		*-not available in DC		
F	450 mm (18")				

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

CODE	Input/Output Options
A	24 VAC/VDC, 4-20mA 2 or 3 wire
D	24 VAC/VDC, 0-5 VDC 3 wire
E	24 VAC/VDC, 0-10 VDC 3 wire

CODE	TE511/512 Transmitter Range Option
1	0°C - 35°C (32°F - 95°F)
2	0°C - 50°C (32°F - 122°F)
3	0°C - 100°C (32°F - 212°F)
*	Custom range, please contact Greystone

TE511	B	-	20	E	2	A	2	Custom ranges available upon request
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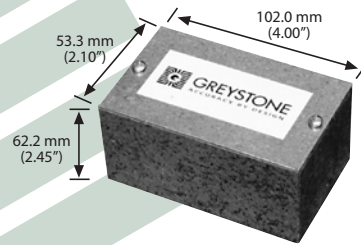
EXAMPLE: Duct temperature transmitter, 12" S/S Probe, ABS enclosure, 20K Thermistor - Secondary Sensor, 4-20mA output with a 0°C - 50°C (32°F-122°F) range, and LCD in °C

ENCLOSURE DIMENSIONS:

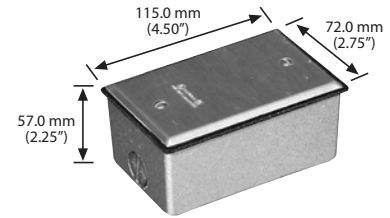
Standard ABS Enclosure



M) Stamped Metal Utility Box



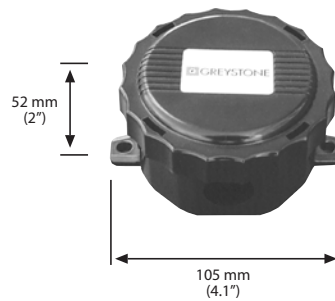
W) Aluminum Weatherproof (TE500)



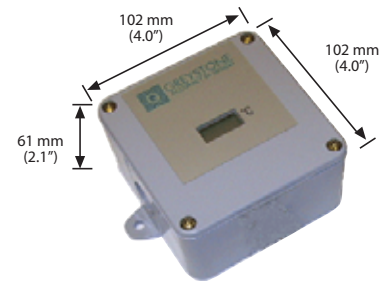
ABS Weatherproof Box (TE500F only)



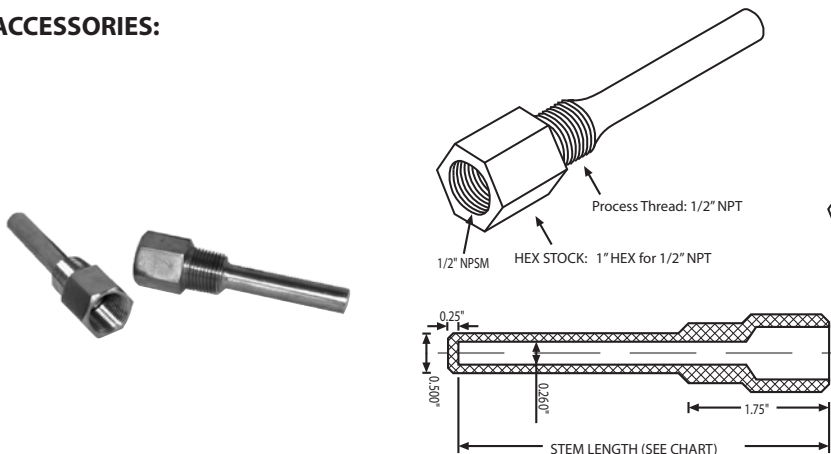
E) Round ABS Enclosure



W) PVC Weatherproof Box (TE511/512)

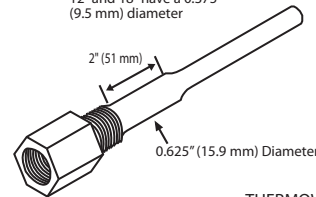


ACCESSORIES:



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



GREYSTONE

ACCURACY BY DESIGN

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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.

GREYSTONE HAS AN ISO 9001 REGISTERED QUALITY SYSTEM