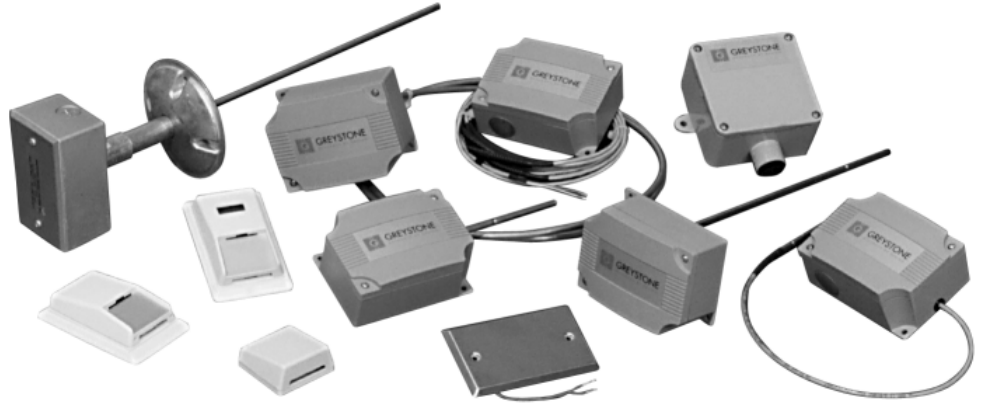


GREYSTONE
ACCURACY BY DESIGN



TEMPERATURE SENSORS/TRANSDUCERS



Precision temperature control/sensing

FEATURES:

- Platinum RTD, integrated circuit or thermistor sensors
- Optional features include set point adjust, push button switch and external/internal jacks
- High accuracy temperature transmitters for any application
- Transmitters with optional output signal types, power supplies and temperature ranges
- Bimetal, Alcohol, LED or LCD temperature indication
- Custom logos available

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

GREYSTONE IS AN **ISO 9000** REGISTERED COMPANY

SPACE/WALL MOUNT

FEATURES:

The TE Series Space Temperature sensors are available in four different enclosure styles. They are available with a choice of precision RTD's, IC's, or thermistors. A number of options, such as momentary override and setpoint adjustment are also available for various configurations.

A transmitter option is also available to be used with the 1000• platinum sensor which provides either 4 - 20mA, 0 - 5 VDC or 0 - 10 VDC output proportional to a selected temperature span. A 100 • platinum sensor transmitter is optional.

The transmitters provide high accuracy, long-term

TRANSMITTER:

stability, low hysteresis, fast response and a wide operating temperature range.

Every transmitter offers accuracy of 0.1% of span or better and are highly stable due to excellent RFI rejection and are also virtually immune to power supply noise and input voltage fluctuations.

Transmitter General Specifications:

Supply Voltage: 24 VDC/VAC
 Output: 4 - 20mA, 0-5 VDC or 0-10 VDC
 Accuracy: ±0.1% of span
 Operating temp: 0°C - 70°C (32°F - 158°F)

Display Type	LCD Display	LED Display
Power Supply	12 - 30 VAC/DC at 2mA max	12 - 30 VAC/DC at 30mA max
Display Units	°C or °F (factory set)	°C or °F (jumper selectable)
Display Range	0.0 - 35.0°C (32.0 - 95.0°F)	10.0 - 35.5°C (50.0 - 96.0°F)
Display Resolution	0.1°C (0.1°F)	0.5°C (1.0°F)
Display Size	23 mm W x 11 mm H (0.9" W x 0.45" H)	3 digit x 30 mm W x 7.6 mm H (1.18" W x 0.3" H)
Available Options	Various sensors, set points, push buttons, external jacks, and logos.	



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



C) Corporate - Well vented, large enclosure provides a decorative look and is available with different features. The base plate is suitable for mounting to any wall box.



AD) Designer - Features include a three-piece enclosure that mounts directly to a wall box or on any wall. Available with various options. Including LCD or LED temperature display, set point adjustments, momentary push buttons, custom logos, etc.



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 momentary push button, etc.

SPACE TEMPERATURE SENSORS/TRANSMITTERS: PRODUCT ORDERING INFORMATION

MODEL	Product Description					
TE200	Sensor assembly					
TE500	Sensor assembly c/w transmitter (sensor type 12 is standard)					
	CODE	Enclosure				
	A	Micro (not available with transmitter)				
	AD	Designer				
	C	Corporate				
	AS	S/S plate				
	CODE	Sensor				
	2	PT100-100 Ω Platinum, IEC 751, 385 Alpha, thin film				
	5	1801Ω, NTC Thermistor, ±0.2°C				
	6	3,000Ω, NTC Thermistor, ±0.2°C				
	7	10,000Ω, type 3, NTC Thermistor, ±0.2°C				
	9	100,000Ω, NTC Thermistor, ±0.2°C				
	11	LM334 IC, 1.0uA/°C				
	12	PT1000-1000Ω Platinum, IEC 751, 385 Alpha, thin film				
	20	20,000Ω, NTC Thermistor, ±0.2°C				
	21	LM335 IC, 10mv/°C				
	24	10,000Ω, type 2, NTC Thermistor, ±0.2°C				
	CODE	Options				
	AP	20-30K linear slide pot for set point control				
	AS	Membrane switch (NO)				
	BS	Exposed push button momentary switch (NO)				
	AM	Alcohol thermometer °C/°F				
	BC	Bimetal thermometer °C				
	BF	Bimetal thermometer °F				
	AL	3-digit LED temperature indicator				
	AC	3-digit LCD temperature indicator °C				
	AF	3-digit LCD temperature indicator °F				
	LY	Yellow LED				
	LR	Red LED				
	LG	Green LED				
	AE	External jack for remote system access (4-pin header)				
	AI	Internal jack (RJ-45)				
	CODE	TE500 Transmitter Power Supply				
	1	24 VAC/DC				
	CODE	TE500 Transmitter Output Option				
	A	Current 4 – 20mA				
	D	Voltage 0 – 5 VDC				
	E	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	AD	12	-	1	A	2

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

EXAMPLE:

Designer space, c/w PT1000Ω RTD, 4–20mA transmitter with a 0°C – 50°C (32°F – 122°F) temperature range.

NOTE:

For special set points, custom jack configurations, or for special part numbers, etc. please contact Greystone.

PROBE SENSORS

FEATURES:

The TE Series Temperature sensors offer a choice of precision platinum RTD's, IC, or NTC thermistor sensors which can be interfaced with a computerized monitoring or control system.

The sensors are available in different housings, with various configurations and options for duct, immersion, duct averaging, remote strap-on and outside air applications.

The single point sensors are encapsulated in a 6.35 mm (0.25") OD 304 stainless steel probe. All probes are constructed to provide good heat transfer and fast response. The averaging sensors are available in both plenum rated cable or with a copper probe.



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

TRANSMITTER:

The TE500 transmitter option is standard with the 1000Ω platinum sensor and provides either 4 – 20mA, 0 – 5 VDC or 0 – 10 VDC output over a selected range. It is powered by either 24 VAC or VDC. A 100Ω platinum sensor transmitter is optional.

Transmitter General Specifications:

Supply Voltage:	24 VDC/VAC
Output:	4–20mA, 0–5 VDC or 0-10 VDC
Accuracy:	±0.1% of span
Operating temp:	0°C – 70°C (32°F – 158°F)
OSA operating temp:	-40°C – 85°C (-40°F – 185°F)



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.



E) Strap-on Sensor – Is a stainless steel probe and is used in remote applications where an immersion sensor can not be installed.

F) OSA Sensor – Comes in



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.



a weatherproof enclosure. It incorporates a sun/wind shield to protect the sensor and provide accurate readings.



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:

Standard probe assemblies are rated at -40°C – 105°C (-40°F - 221°F).

For higher or lower temperature applications, please contact Greystone.

TEMPERATURE SENSORS/TRANSDUCERS: PRODUCT ORDERING INFORMATION

MODEL	Product Description									
TE200 TE500	Sensor assembly Sensor assembly c/w transmitter (sensor type 12 is standard)									
	CODE	Style								
	AP B BB C D E F FD G H HC	All purpose Duct mount Duct probe w/ mounting bracket only Immersion Duct average (copper) Strap-on O.S.A. (ABS enclosure only) Duct average (flexible plenum rated cable) Glass Stack Clip								
		CODE	Enclosure (GES ABS enclosure is standard)				CODE	Flex Duct Only		
		- M R W	ABS enclosure, standard (no code required, leave blank) Metal utility box No box Aluminum weatherproof box				A B C D	Lead only, no box ABS enclosure Aluminum weatherproof box Metal utility box		
		CODE	Sensor							
		2 4 5 6 7 9 11 12 20 21 24	PT100-100Ω Platinum, IEC 751, 385 Alpha, thin film PT100-100Ω Platinum, IEC 751, 385 Alpha, wire wound-ceramic* (<i>see below</i>) 1801Ω, NTC Thermistor, ±0.2°C 3000Ω, NTC Thermistor, ±0.2°C 10,000Ω, type 3, NTC Thermistor, ±0.2°C 100,000Ω, NTC Thermistor, ±0.2°C LM334 IC, 1.0uA/°C PT1000Ω Platinum, IEC 751, 385 Alpha, thin film 20,000Ω, NTC Thermistor, ±0.2°C LM335 IC, 10mv/°C 10,000Ω, type 2, NTC Thermistor, ±0.2°C							
										*must use for high temp. applications over 400°C (752°F)
		CODE	Probe Length		CODE	Copper Avg. (D)		CODE	Flex Avg. (FD)	
		A B C D E F	50 mm (2") 100 mm (4") 150 mm (6") 200 mm (8") 300 mm (12") 450 mm (18")		G H I J	1800 mm (6') 3600 mm (12') 6100 mm (20') 7300 mm (24')		A B C D	1800 mm (6') 3600 mm (12') 6100 mm (20') 7300 mm (24')	
		CODE	Probe Material (not required for F, FD, G, HC)							
		2 3	Stainless steel Copper (rigid duct average only)							
		CODE	Fitting (only required for immersion)							
		A E	Spring loaded 1/2" NPT Non-spring loaded 1/2" NPT							
		CODE	TE500 Transmitter Power Supply							
		1	24 VAC/VDC							
		CODE	TE500 Transmitter Output Option							
		A D E	4 – 20mA 0 – 5 VDC 0 – 10 VDC							
		CODE	TE500 Transmitter Range Option							
		1 2 3 4 5 6	0°C – 35°C (32°F – 95°F) 0°C – 50°C (32°F – 122°F) 0°C – 100°C (32°F – 212°F) 50°C – 150°C (122°F – 302°F) 50°C – 250°C (122°F – 482°F) -50°C – +50°C (-58°F – 122°F)							
			Custom ranges available upon request.							
		TE200	D	-	7	I	3	-	-	-

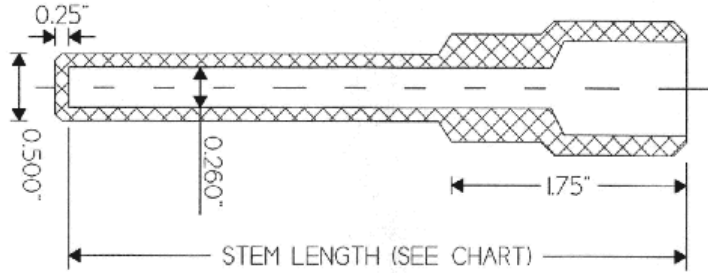
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GREYSTONE ENERGY SYSTEMS INC.



**OPTIONS:
Immersion Wells**



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'

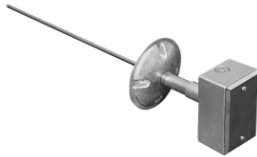
EXAMPLE : T 1-1/2 P 4
4' 304 STAINLESS THERMOWELL
WITH 1/2" NPT PROCESS THREAD.

ASSEMBLIES:

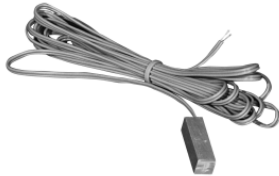
BB) Duct probe c/w mounting bracket



H) Stack



G) Glass



AP) All Purpose



ENCLOSURES:

GES ABS Enclosure



M) Metal Utility Box



W) Aluminum Weatherproof Box



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Greystone Energy Systems Inc., established in 1983, is Canada's largest manufacturer 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 9002 certified, assuring our customers of consistent product reliability.

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EXECUTIVE ENCLOSURE

DESCRIPTION:

The TE200AE space temperature sensor is available with a variety of options that can be configured to all makes of Building Control Systems.

The TE500AE is a precision current loop temperature transmitter featuring an optional three digit LCD indication of the temperature signal that is being sent to the control system. The LCD display is factory configured to display readings in either °C or °F. This transmitter is also available with set point adjustment and override push button.

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.

SPECIFICATIONS:

4-20 mA Loop Power Supply.....	18 to 35 Vdc or 18 to 32 Vac (with 250 ohm load and no LCD) 22 to 35 Vdc or 22 to 32 Vac (with 250 ohm load and LCD)	Display Units	°C or °F (Factory set)
Minimum Loop Current	2 mA nominal, (occurs with shorted sensor)	Display Range	0.0 to 35.0°C typical range for transmitter (other ranges available)
Maximum Loop Current	22.5 mA nominal, (occurs with open sensor)	Display Resolution	0.1°C or 0.1°F for display of 00.0 to 99.9
Maximum Loop Load	> 600 ohms at 24 Vac/dc with no LCD, > 325 ohms with LCD	Display Accuracy	±0.2°C or ±0.2° over full range with respect to the output signal
0-5 Vdc Power Supply	10 to 35 Vdc or 10 to 32 Vac, 15 Volts minimum with LCD	Display Update Rate	3 times per second
0-10 Vdc Power Supply	15 to 35 Vdc or 15 to 32 Vac,	Display Size	0.95"W x 0.45" H (24mm x 11mm) three digit
Voltage Mode Maximum Current	< 3 mA with no LCD, 15 mA nominal with LCD	Operating Temperature	0 to 70°C (32 to 158°F)
Voltage Mode Maximum Output	Limited to < 5.5 Vdc for 0-5 model and < 10.5 Vdc for 0-10 model & 0-5 with LCD	Operating Humidity	0 to 95% RH (non-condensing)
Input Voltage Effect	Negligible over specified operating range	Wiring Connections	Two or three wires, screw terminal block, (14 to 22 AWG)
RFI Rejection	Good RFI rejection of normal frequencies with standard Installation	Manufacturing Process	ISO 9002 Certified
Protection Circuitry	Reverse voltage protected and output limited	Internal Adjustments	Clearly marked ZERO and SPAN pots
Output Signal	4-20 mA current loop, 0-5 Vdc or 0-10 Vdc (factory configured)	Enclosure Size	2.8" W x 4.7" H x 1.25" D (71 mm x 119 mm x 32 mm) universal back plates mount to any wall box or may be flush mounted
Transmitter Accuracy	±0.1% of span, including linearity	Optional Slidepot	20 – 30K (L-R) standard, other values available
Temperature Sensor Type	1000 ohm platinum RTD standard (class B, 385 Alpha, thin film)	Optional Switch	Normally open pushbutton, 0.4 VA at 24 Vac/dc standard
Temperature Calibration	Three point with precision		

STYLES:



TE200AE c/w LCD, slidepot and push button



TE200AE c/w slidepot and push button



GREYSTONE ENERGY SYSTEMS INC.



EXECUTIVE SPACE TEMPERATURE SENSORS/
TRANSMITTERS:

MODEL	Product Description					
TE200	Sensor assembly					
TE500	Sensor assembly c/w transmitter (sensor type 12 is standard)					
	CODE	Enclosure				
	AE	Executive				
		CODE	Sensor			
		2	PT100-100 Ω Platinum, IEC 751, 385 Alpha, thin film			
		5	1801Ω, NTC Thermistor, ±0.2°C			
		6	3,000Ω, NTC Thermistor, ±0.2°C			
		7	10,000Ω, type 3, NTC Thermistor, ±0.2°C			
		9	100,000Ω, NTC Thermistor, ±0.2°C			
		11	LM334 IC, 1.0uA/°C			
		12	PT1000-1000Ω Platinum, IEC 751, 385 Alpha, thin film			
		13	1000 ohm nickel			
		20	20,000Ω, NTC Thermistor, ±0.2°C			
		21	LM335 IC, 10mv/°C			
		24	10,000Ω, type 2, NTC Thermistor, ±0.2°C			
		CODE	TE200 & TE500* Options			
		AP*	20-30K linear slide pot for set point control			
		BS*	Exposed push button momentary switch (NO)			
		AM*	Alcohol thermometer °C/°F			
		BC*	Bimetal thermometer °C			
		BF*	Bimetal thermometer °F			
		AC*	3-digit LCD temperature indicator °C			
		AF*	3-digit LCD temperature indicator °F			
		LY	Yellow LED			
		LR	Red LED			
		LG	Green LED			
		AE	External jack for remote system access (4-pin header)			
		AI	Internal jack (RJ-45)			
			* Options also available with TE500 Transmitter			
		CODE	TE500 Transmitter Power Supply			
		1	24 VAC/DC			
		CODE	TE500 Transmitter Output Option			
		A	Current 4 – 20 mA			
		D	Voltage 0 – 5 VDC			
		E	Voltage 0 – 10 VDC			
		CODE	TE500 Transmitter Range Option			
		1	0°C – 35°C (32°F – 95°F) 0°C – 50°C (32°F – 122°F)			
TE500	AE	12	AC	1	A	2

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

EXAMPLE:

Executive space temperature transmitter, c/w
PT1000Ω RTD, 4–20 mA 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.