

**GREYSTONE**  
**ENERGY SYSTEMS INC**

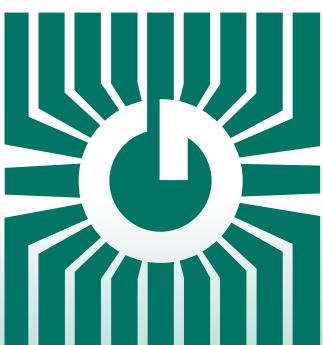
**HIGH ACCURACY  
HUMIDITY/TEMPERATURE  
TRANSMITTER  
HAHT Series**



**Precision humidity/temperature  
control/sensing**

**FEATURES:**

- Highly stable RH sensor element
- Humidity range: 0-100%
- Accuracy available 1% & 2%
- High Accuracy Platinum RTD for Temperature
- AC/DC operation



***Peace of mind  
through reliable  
humidity monitoring***

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

## DESCRIPTION:

The HAHTRC Humidity/Temperature transmitter incorporates two sensors in one attractive wall mount enclosure for the most efficient environmental monitoring and control system. It uses a field-proven RH sensor to monitor relative humidity and a high accuracy, curve-matched thermistor to measure temperature and provides two analog outputs of either 4-20 mA, 0-5Vdc or 0-10 Vdc .

Additional options include an occupancy override button, a communication jack, a fan speed switch or a LCD display.

## SPECIFICATIONS:

RH Sensor.....	Thermoset polymer based capacitive
Accuracy.....	±1% RH (20 to 80% RH) or ±2% RH (5 to 95% RH)
Range.....	0 to 100% RH non-condensing
Temperature Compensation .....	0° to 50°C (32°-122°F)
Hysteresis .....	± 3% RH
Response Time.....	15 seconds typical
Stability .....	+/- 0.1°C (0.2°F) / year
Offset .....	±20% RH, programmable
Temperature Sensor .....	Curve-matched thermistor
Accuracy.....	±0.1°C (±0.18°F)
Range.....	0° to 35°C (32° to 95°F) or 0° to 50°C (32° to 122°F), programmable
Power Supply .....	24 Vac/dc ±10% (non-isolated half-wave rectified)
Consumption .....	60 mA max @ 24 Vdc
Input Voltage Effect .....	Negligible over specified operating range
Output Signal.....	4-20 mA active (sourcing), 0-5 Vdc or 0-10 Vdc
Output Drive @24 Vdc .....	550 ohm max. for current, 10K ohms min. for voltage
Output Resolution .....	10 bit PWM
Protection Circuitry.....	Reverse voltage protected and output limited
Operating Conditions .....	0° to 50°C (32°-122°F), 0-95% RH non-condensing
Programming/Selection .....	Via internal push buttons and on-screen menu
Wiring Connections.....	Screw terminal block (14 to 22 AWG)
Enclosure Size .....	84mmW x 119mmH x 29mmD (3.3"x 4.7"x 1.15")

## OPTIONS:

### LCD DISPLAY

Range.....	00.0 to 99.9, 3 digit
Symbols .....	°C, °F, %RH
Display Size.....	38.1 x 16.5 mm (1.5"x 0.65")
Digit Height.....	11.43 mm (0.45")
Backlight.....	Enable/disable via menu

### OVERRIDE

Type.....	Front panel, momentary push-button, 2 wire dry contact
Switch ratings .....	N.O., SPST, 50 mA @12 Vdc

### FAN SPEED SWITCH

Type.....	Side panel mount, 5 position switch
Range.....	Off, Auto, Low, Medium, High
Signal .....	Resistance: 0, 2, 4, 6, 8 KΩ (Custom ranges available)

### NETWORK COMMUNICATIONS

3.5mm phono jack .....	Ring/Mid/Tip connections to a 3-pin terminal block
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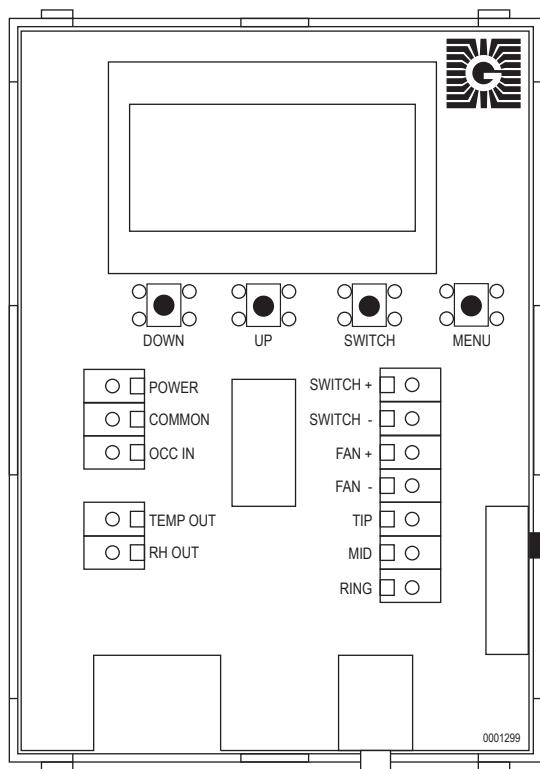


## PRODUCT ORDERING INFORMATION:

MODEL	Product Description	
HAHTRC	Room Humidity/Temperature Transmitter	
	<b>CODE</b>	<b>RH Accuracy</b>
	1	1 %
	2	2 %
	<b>CODE</b>	<b>LCD Display</b>
	N	Concealed
	L	Viewable
	<b>CODE</b>	<b>Output</b>
	I	4-20 mA
	V	0-5 Vdc or 0-10 Vdc (Jumper selectable)
	<b>CODE</b>	<b>Options (Multiple selections may be made)</b>
	S	Override switch (Includes occupied input)
	J	Communication jack (3.5 mm phono)
	F	Fan speed switch
HAHTRC	2	N
		I
		-
		-
← Typical Model Number		

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

## PCB/WIRING INFORMATION



### Terminal

POWER	From +24 Vac/dc of controller or power supply
COMMON	To GND or COMMON of controller
OCC IN	To digital output of controller
TEMP Output	To analog input of controller
RH Output	4-20 mA or 0-5 Vdc or 0-10 Vdc
SWITCH +	To analog input of controller
SWITCH -	4-20 mA or 0-5 Vdc or 0-10 Vdc
FAN +	To digital input of controller
FAN -	To GND or COMMON of controller
TIP	To GND or COMMON of controller
MID	External Jack TIP (tip of plug) connection
RING	External Jack MID (middle of plug) connection
	External Jack RING (base of plug) connection

\* Some models do not have all these features

\*\*To save on number of connection wires, all GND or COMMON may be connected together.

\*\*\*Illustration shows standard wiring configuration. Custom configurations are available. Please contact Greystone.



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## DESCRIPTION:

The HAHT series of high accuracy humidity/temperature transmitters are designed for use in environmental monitoring and control systems where high performance and stability are demanded. It's state-of-the-art design combines digital linearization and temperature compensation with a world class capacitive humidity sensor and platinum RTD for reliability and accuracy in even the most critical applications. Various models cover many aspects of RH and temperature measurement and several optional features are available to meet virtually all HVAC applications.

## SPECIFICATION:

Humidity Sensor Type.....	Thermoset Polymer based capacitive
Accuracy .....	$\pm 1\%$ (20 to 80% RH) or $\pm 2\%$ (5 to 95% RH)
Measurement Range .....	0 to 100% RH
Temperature Dependence.....	$\pm 0.05\%$ RH/ $^{\circ}\text{C}$
Hysteresis .....	$\pm 1.5\%$ RH maximum
Repeatability.....	$\pm 0.5\%$ RH typical
Linearity.....	$\pm 0.5\%$ RH typical
Sensor Response Time.....	15 seconds typical
Stability.....	$\pm 1\%$ RH typical at 50% RH in 5 yrs.
Temperature Sensor Type.....	1000 $\Omega$ Platinum, IEC 751, 385 Alpha, thin film
Temperature Sensor Accuracy.....	<b>RTD Class A:</b> $\pm 0.15\text{ }^{\circ}\text{C}$ @ $0\text{ }^{\circ}\text{C}$ <b>RTD 1/3 DIN:</b> $\pm 0.1\text{ }^{\circ}\text{C}$ @ $0\text{ }^{\circ}\text{C}$ <b>RTD 1/10 DIN:</b> $\pm 0.03\text{ }^{\circ}\text{C}$ @ $0\text{ }^{\circ}\text{C}$
Accuracy .....	$\pm 0.25\%$ of span
Operating Temperature .....	-40° to 85° $\text{C}$ (-40° to 185° $\text{F}$ ) for HAHTD/HAHTO
Operating Humidity .....	0 to 95% RH non-condensing
Power Supply.....	18 to 35 Vdc, 15 to 26 Vac
Consumption.....	22 mA maximum
Input Voltage Effect.....	Negligible over specified operating range
Protection Circuitry.....	Reverse voltage protected and output limited
Output Signals.....	4-20 mA, 0-5 or 0-10 Vdc
Output Drive at 24 Vdc.....	550 ohms max for current output 10K ohms min for voltage output
Internal Adjustments .....	Clearly marked ZERO and SPAN pots
Wiring Connections.....	Screw terminal block (14 to 22 AWG)
Enclosures .....	HAHTDA (Grey ABS, UL94-V0), IP61 (Nema 2), 114x84x53mm (4.5" w x 3.3" h x 2.1" d) HAHTOA (Grey ABS, UL94-V0 WP) IP65 (Nema 4X), 145x100x64mm (5.7" w x 3.95" h x 2.5" d) HAHTDC/OC(PVC WP) IP65 (Nema 4X), 126x100x74mm (4.97" w x 3.95" h x 2.9" d)
HAHTD Probe .....	230 mm (9") probe length x 12.7 mm (1/2") diameter stainless steel with porous filter



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## DUCT/OUTSIDE HUMIDITY/TEMPERATURE PRODUCT ORDERING INFORMATION

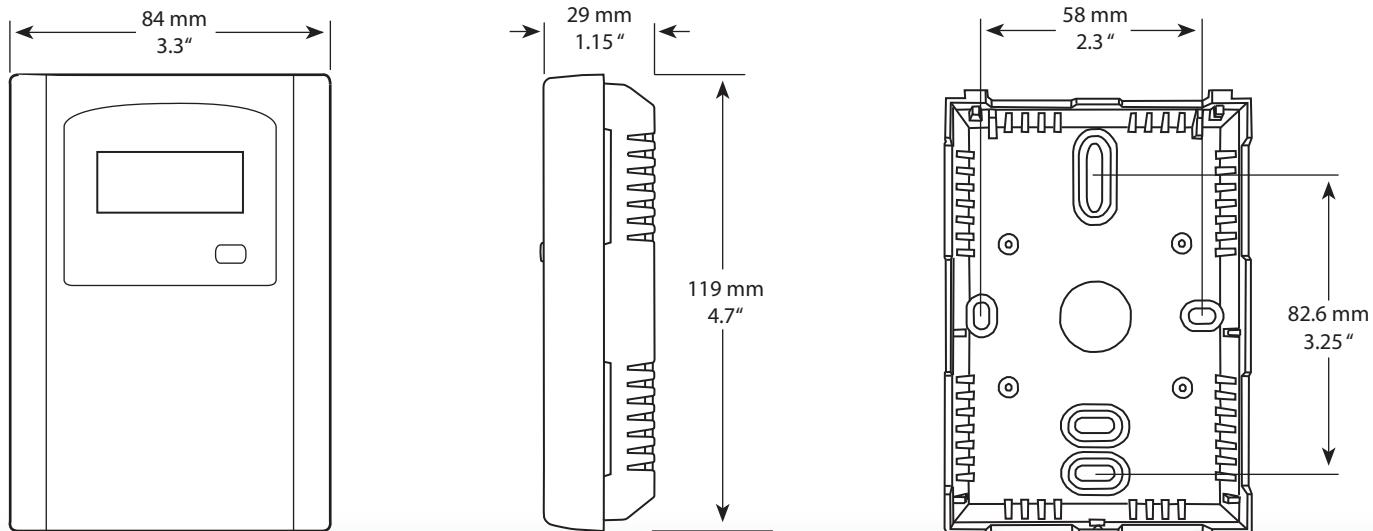
MODEL	Product Description
HAHTD	Duct
HAHTO	Outside Air
CODE	Enclosure
A	ABS Enclosure
C	PVC Enclosure
CODE	Accuracy
01	1%
02	2%
CODE	Temperature Sensor
18	1000Ω Platinum, IEC 751, 385 Alpha, thin film, Class A
48	1000Ω Platinum, IEC 751, 385 Alpha, thin film, 1/3 Din
22	1000Ω Platinum, IEC 751, 385 Alpha, thin film, 1/10 Din
CODE	Output Signals (RH and Temperature)
A	4 - 20 mA
D	0 - 5 Vdc
E	0 - 10 Vdc
CODE	Transmitter Temperature Span Range
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)
6	-50°C - 50°C (-58°F - 122°F)

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HAHTD	A	03	18	2A	1
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### DIMENSIONS:



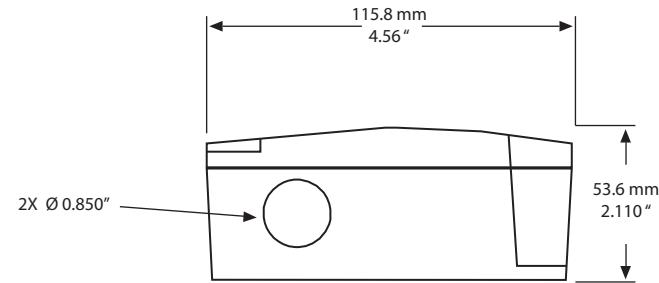
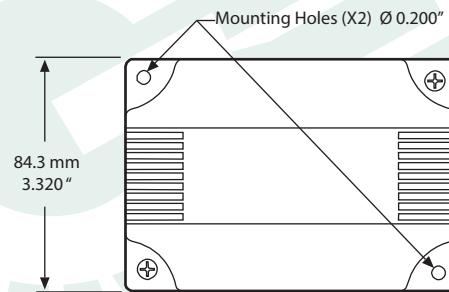
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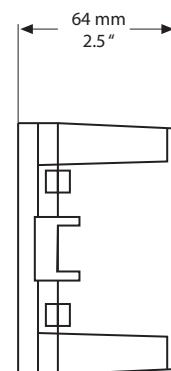
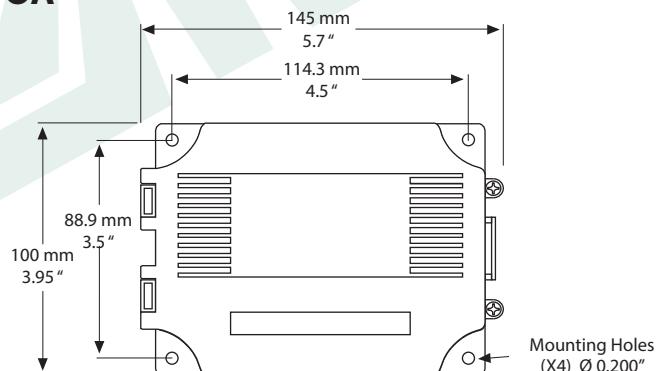


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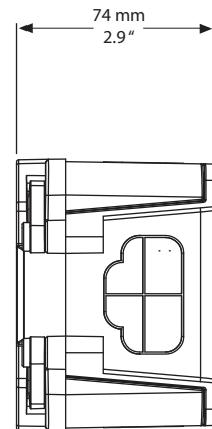
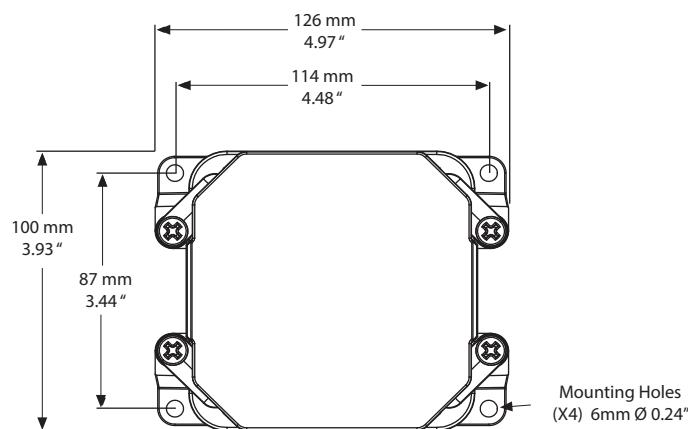
### HAHTDA



### HAHTOA



### HAHTDC & HAHTOC



# 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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