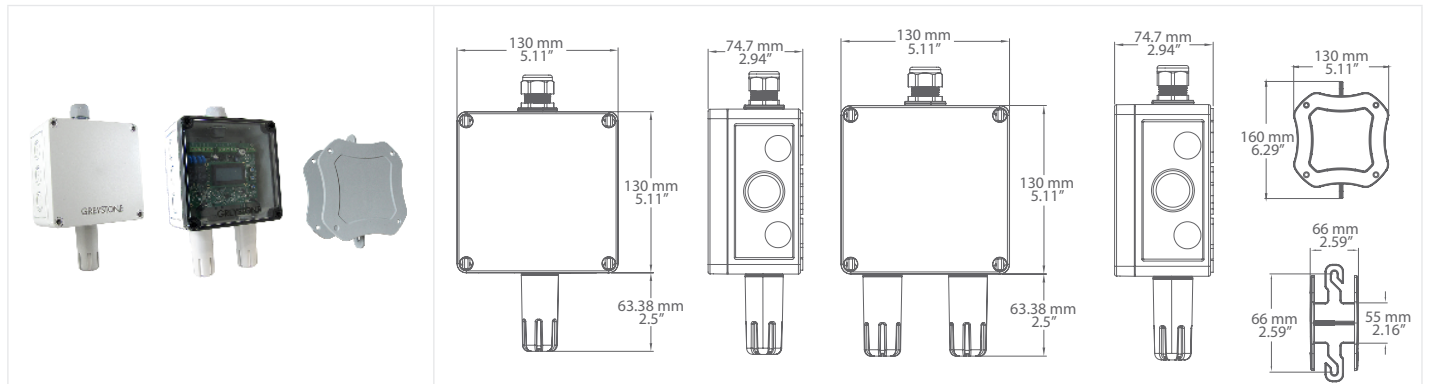




## GREENHOUSE/HORTICULTURE SENSOR



GH SERIES

GH2

GH3

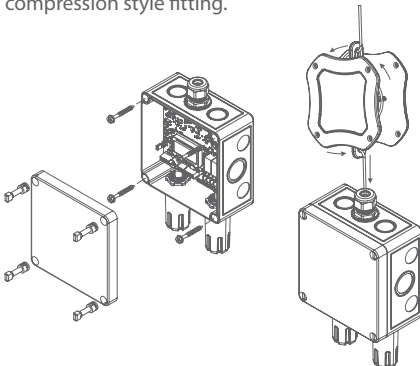
### PRODUCT DESCRIPTION

The GH Series Greenhouse/Horticulture sensor is designed for a greenhouse or indoor grow facility to monitor and allow control for optimum plant growing conditions. The GH Series is available in 2 models; Temperature & Humidity or Temperature, Humidity & Carbon Dioxide. The GH Series utilizes a highly accurate and reliable dual-channel, non-dispersive infrared (NDIR) sensor to monitor CO<sub>2</sub>, a precision thermistor to monitor temperature and a thermoset polymer based capacitance sensor to measure humidity levels. All sensors are encapsulated in filtered sensor pods that are field replaceable. Features include an LCD for configuration and visual indication, various output signal types, and optional relays for alarm indication. An IP65 rated enclosure that can be either wall mounted or suspended from the ceiling is provided to protect against moisture penetration.

### TYPICAL INSTALLATION

For complete installation and wiring details, please refer to the product installation instructions.

The horticulture sensor can be mounted directly onto any wall or flat surface, or may be suspended from the ceiling using the device cable harness which is secured to the enclosure with a compression style fitting.



### SPECIFICATIONS

<b>POWER SUPPLY</b>	24 Vac/dc ±20% (non-isolated half-wave rectified)
<b>CONSUMPTION</b>	<b>Current:</b> 120 mA max @ 24 Vdc, 220 mA max @ 24 Vac <b>Voltage:</b> 80 mA max @ 24 Vdc, 130 mA max @ 24 Vac <b>BACnet®/Modbus:</b> 75 mA max @ 24 Vdc, 125 mA max @ 24 Vac
<b>PROTECTION CIRCUITRY</b>	Reverse voltage protected and overvoltage protected
<b>OPERATING CONDITIONS</b>	-10 to 50°C (14 to 122°F), 5 to 95 %RH non-condensing
<b>STORAGE CONDITIONS</b>	-30 to 60°C (-22 to 140°F)
<b>ENCLOSURE</b>	IP65 (NEMA 4X)
<b>ENCLOSURE DIMENSIONS</b>	130mm W x 130mm H x 75mm D (5.12" x 5.12" x 2.95")
<b>WIRING CONNECTIONS</b>	Screw terminal block (14 to 22 AWG)
<b>COUNTRY OF ORIGIN</b>	Canada
<b>LCD DISPLAY</b>	<b>Size:</b> 35mm W x 15mm H (1.4" x 0.6") alpha-numeric 2 line x 8 characters <b>Backlight:</b> Enable or disable via menu or network
<b>ANALOG OUTPUTS</b>	<b>Output Signals:</b> 4-20 mA active (sourcing) or 0-5 Vdc / 0-10 Vdc <b>Output Drive Capability:</b> Current - 550Ω maximum Voltage - 5K Ω minimum
<b>BACnet®</b>	<b>Interface:</b> MS/TP, 2 wire RS-485 <b>Baud Rate:</b> 9600, 19200, 38400, 57600, 76800, or 115200 <b>Address Range:</b> 0 to 127
<b>MODBUS</b>	<b>Interface:</b> MS/TP, 2 wire RS-485 <b>Baud Rate:</b> 9600, 19200, 38400, 57600, 76800, or 115200 <b>Address Range:</b> 1 to 255
<b>TEMPERATURE SENSOR</b>	<b>Type:</b> NTC thermistor <b>Accuracy:</b> ±0.2°C (±0.4°F) <b>Range:</b> 0 to 50°C (32 to 122°F)
<b>RELATIVE HUMIDITY SENSOR</b>	<b>Type:</b> Thermoset polymer based capacitive <b>Accuracy:</b> ±2 %RH <b>Range:</b> 0 to 100 %RH <b>Hysteresis:</b> ±1.5 %RH <b>Response Time:</b> 15 seconds typical <b>Stability:</b> ±1 %RH typical @ 50 %RH in 5 years
<b>CO<sub>2</sub> (GH3 MODEL)</b>	<b>Measurement Type:</b> Dual-channel, non-dispersive infrared (NDIR), diffusion sampling <b>Measurement Range:</b> 0 to 5000 ppm <b>Standard Accuracy:</b> ±50 ppm +3% of reading <b>Pressure Dependence:</b> <1% of reading / kPa <b>Response Time:</b> 2 minutes (T90) <b>Sensor Life Span:</b> >10 years
<b>OPTIONAL RELAY OUTPUTS</b>	<b>Contact Ratings:</b> Form C (NO + NC), 2A @ 140 Vac, 2A @ 30 Vdc <b>Setpoints + Hysteresis:</b> Programmable via menu or network <b>Time Delay:</b> Programmable via menu or network



ORDERING		
PRODUCT	<b>GH</b>	Greenhouse/Horticulture Sensor
SENSORS	<b>2</b>	Temperature & Humidity
	<b>3</b>	Temperature, Humidity, & Carbon Dioxide
MOUNTING	<b>SM</b>	Suspension Mount (includes cable winder)
	<b>WM</b>	Wall Mount
ENCLOSURE	<b>B</b>	5" x 5" with smoked, transparent cover
	<b>C</b>	5" x 5" with solid cover
OUTPUT	<b>I</b>	Analog, 4-20 mA (2x or 3x)
	<b>V</b>	Analog, 0-5 or 0-10 Vdc (2x or 3x)
	<b>B</b>	BACnet® communications
	<b>M</b>	Modbus communications
RELAY	<b>XX</b>	None
	<b>R1</b>	1 Relay
	<b>R2</b>	2 Relay

PART NUMBER
<b>GH</b>

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

ACCESSORIES	
<b>GHP-RHT</b>	Relative Humidity/Temperature Replacement Pod
<b>GHP-CO2</b>	Carbon Dioxide Replacement Pod
<b>GHP-CAP</b>	Pod Protective Cap
<b>GHS-WINDER</b>	Cable Winder (included with SM model)

PART NUMBER



## BACnet® COMMUNICATION

BACnet® is a data communication protocol for building automation and control networks. The sensor communicates on a standard 2-wire RS-485 MS/TP network designed to run at speeds from 9600 to 115200 baud over twisted pair wiring.

BACnet® is a registered trademark of ASHRAE. ASHRAE does not endorse, approve or test products for compliance with ASHRAE standards. Compliance of BACnet® listed products to the requirements of ASHRAE Standard 135 is the responsibility of BACnet® International (BI). BTL is a registered trademark of BI.

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## MODBUS COMMUNICATION

Modbus is a network protocol for industrial manufacturing environments. The sensor communicates on a standard Modbus network using the RTU (Remote Terminal Unit) transmission mode. The hardware interface is RS-485.



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