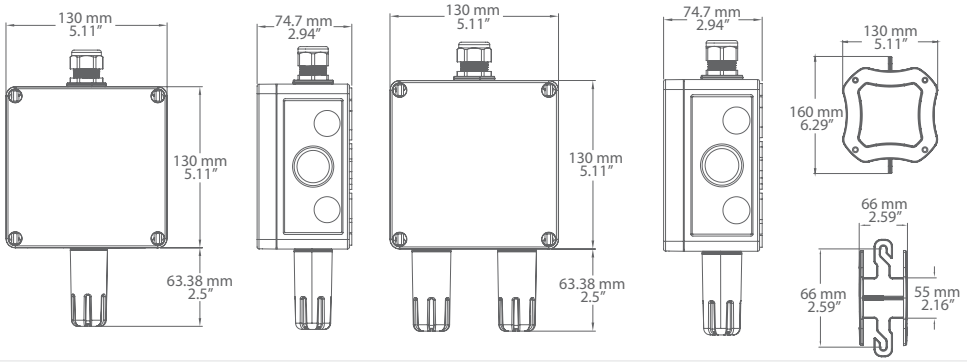
GREYSTONE ENERGY SYSTEMS INC

GREENHOUSE/HORTICULTURE SENSOR



GH SERIES GH2 GH3

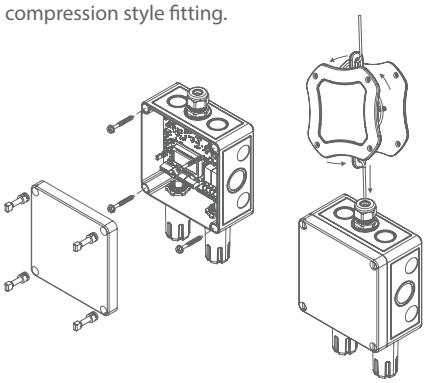
PRODUCT DESCRIPTION

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 CO2, 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

POWER SUPPLY	24 Vac/dc ±20% (non-isolated half-wave rectified)
CONSUMPTION	**Current:** 120 mA max @ 24 Vdc, 220 mA max @ 24 Vac **Voltage:** 80 mA max @ 24 Vdc, 130 mA max @ 24 Vac **BACnet®/Modbus:** 75 mA max @ 24 Vdc, 125 mA max @ 24 Vac
PROTECTION CIRCUITRY	Reverse voltage protected and overvoltage protected
OPERATING CONDITIONS	-10 to 50°C (14 to 122°F), 5 to 95 %RH non-condensing
STORAGE CONDITIONS	-30 to 60°C (-22 to 140°F)
ENCLOSURE	IP65 (NEMA 4X)
ENCLOSURE DIMENSIONS	130mm W x 130mm H x 75mm D (5.12" x 5.12" x 2.95")
WIRING CONNECTIONS	Screw terminal block (14 to 22 AWG)
COUNTRY OF ORIGIN	Canada
LCD DISPLAY	**Size:** 35mm W x 15mm H (1.4" x 0.6") alpha-numeric 2 line x 8 characters **Backlight:** Enable or disable via menu or network
ANALOG OUTPUTS	**Output Signals:** 4-20 mA active (sourcing) or 0-5 Vdc / 0-10 Vdc **Output Drive Capability:** *Current* - 550Ω maximum *Voltage* - 5K Ω minimum
BACnet®	**Interface:** MS/TP, 2 wire RS-485 **Baud Rate:** 9600, 19200, 38400, 57600, 76800, or 115200 **Address Range:** 0 to 127
MODBUS	**Interface:** MS/TP, 2 wire RS-485 **Baud Rate:** 9600, 19200, 38400, 57600, 76800, or 115200 **Address Range:** 1 to 255
TEMPERATURE SENSOR	**Type:** NTC thermistor **Accuracy:** ±0.2°C (±0.4°F) **Range:** 0 to 50°C (32 to 122°F)
RELATIVE HUMIDITY SENSOR	**Type:** Thermoset polymer based capacitive **Accuracy:** ±2 %RH **Range:** 0 to 100 %RH **Hysteresis:** ±1.5 %RH **Response Time:** 15 seconds typical **Stability:** ±1 %RH typical @ 50 %RH in 5 years
CO_2 (GH3 MODEL)	**Measurement Type:** Dual-channel, non-dispersive infrared (NDIR), diffusion sampling **Measurement Range:** 0 to 5000 ppm **Standard Accuracy:** ±50 ppm +3% of reading **Pressure Dependence:** <1% of reading / kPa **Response Time:** 2 minutes (T90) **Sensor Life Span:** >10 years
OPTIONAL RELAY OUTPUTS	**Contact Ratings:** Form C (NO + NC), 2A @ 140 Vac, 2A @ 30 Vdc **Setpoints + Hysteresis:** Programmable via menu or network **Time Delay:** Programmable via menu or network

GREYSTONE
ENERGY SYSTEMS INC

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

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

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

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

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.

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.

RoHS COMPLIANT

Greystone Energy Systems, Inc.
150 English Drive, Moncton,
New Brunswick, Canada E1E 4G7

Ph: +1 (506) 853-3057 Fax: +1 (506) 853-6014
North America: 1-800-561-5611
E-mail: mail@greystoneenergy.com