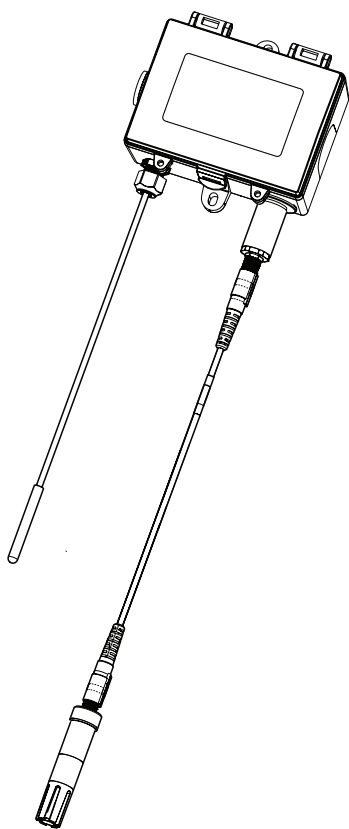




INTRODUCTION

The Rough Duty Condensation Prevention RH/Temperature/Dew point Remote Probe 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 highly accurate and reliable humidity sensor and digital temperature sensor ensuring precision and dependable operation in critical applications.

The transmitter measures relative humidity and dry-bulb temperature by default with field programmable setup option for analog or network communication output that provides an efficient monitoring control solution. The field technician configures the analog output independently for each channel which allows selection between relative / absolute humidity, dry-bulb / wet-bulb / dew point temperature and enthalpy. Each output features adjustable ranges for maximum application flexibility.

An additional Pt1000 sensor input is provided to monitor the cooling pipe temperature. By continuously comparing the measured pipe temperature with the calculated dew point derived from environmental dry-bulb temperature and relative humidity, the relay output is activated whenever the pipe temperature is at or below the configured condensation threshold (Dew Point + Condensation Differential). This enables reliable condensation detection and alarm activation, helping to prevent moisture-related damage in critical HVAC and environmental control applications.

WARNING

Read these installation instructions carefully before commissioning The Rough Duty Condensation Prevention RH/Temperature/Dew point Remote Probe. Failure to follow these instructions may result in product damage. Do not use in an explosive or hazardous environment, with combustible or flammable gases, as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

Use electrostatic discharge precautions during installation and do not exceed the device ratings.

MOUNTING

The Rough Duty Condensation Prevention RH/Temperature/Dew point Remote Probe has the main PCB inside enclosure and comes equipped with a Remote Probe. Select a suitable location on an interior wall mounted five feet from the floor for easy accessibility to mount enclosure. Place the remote probe in the area you want to measure, ideally at the same height as typical occupancy. Keep it away from doors, windows, external walls, nearby heat sources, and areas with vibration to avoid false readings. Use wall mounting bracket or ceiling mounting bracket and secure with screws.

Refer Greystone application notes for specific locations Probes should not be painted over or covered; ensure access for cleaning.

1. The enclosure installs directly on an interior wall using the two integrated mounting holes. Select the best mounting technique based on the interior wall material. The 2 mounting holes will facilitate a #10 size screw (not supplied). The sensor fitting must be pointing down. See Figure 1

Figure 1

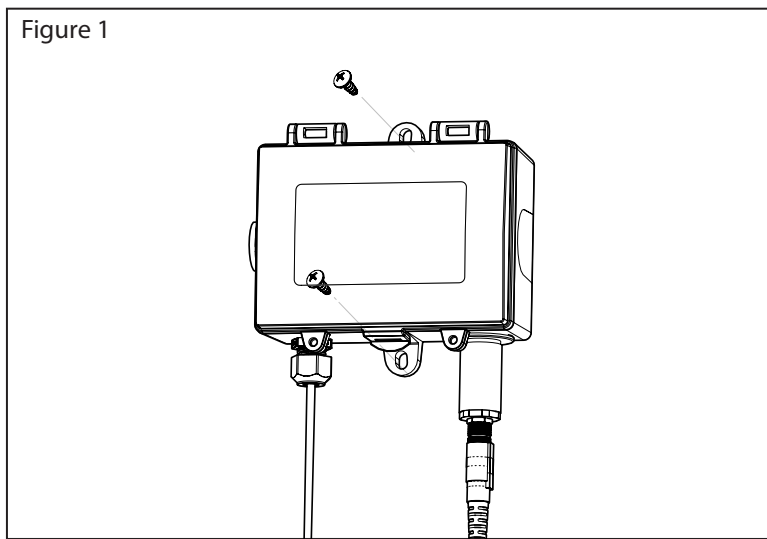


Figure 2

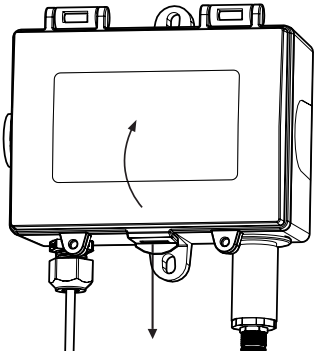
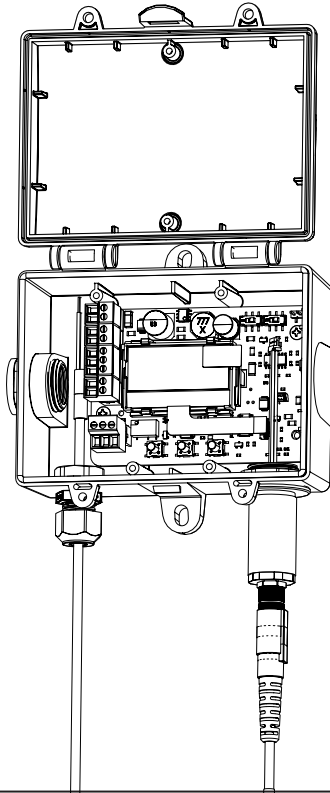
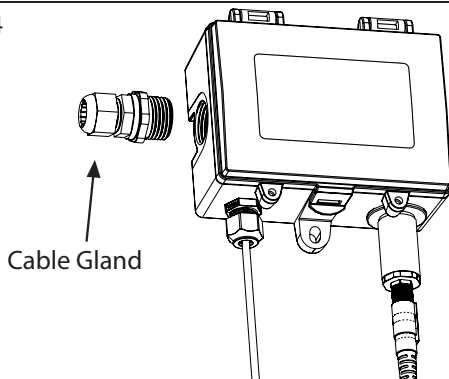


Figure 3



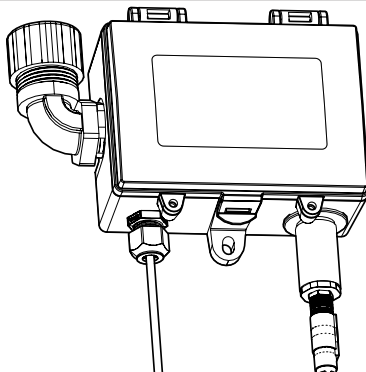
2. The enclosure has a hinged cover with a latch. Open the cover by pulling slightly on the bottom of the enclosure, at the same time pulling on the cover, as illustrated. See Figure 2&3.

Figure 4



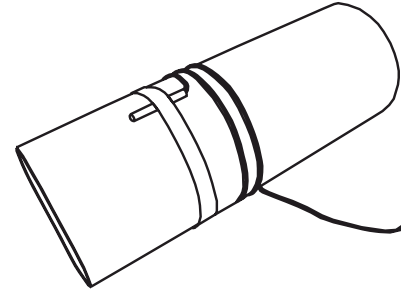
3. A 1/2" NPT threaded connection hole is provided in the side of the enclosure. Screw-in EMT connector or cable gland connector in until tight. A weatherproof conduit or cable gland fitting is recommended. See Figure 4.

Figure 5



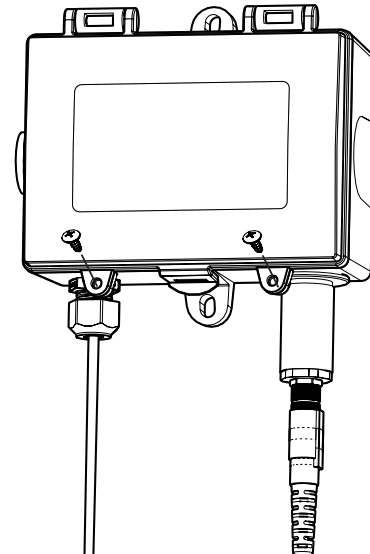
4. Option F: 1/2" NPT to M16 thread adapter with cable gland fitting is available for left side cable entry.
Option G: 90° angled NPT cable gland fitting is available for Top or Bottom side cable entry. See Figure 5

Figure 6



5. The flying lead could also be used to measure pipe temperature. Select a suitable spot along the pipe, remove a small section of insulation if present and set aside. For added protection it is recommended to wrap the probe cable around the pipe 1 to 2 times. Re-install insulation if present, allowing sensor cable to protrude. See Figure 6

Figure 7



6. Two security screws are provided which can be installed to help secure the cover once settings and wiring connections are complete. See Figure 7.

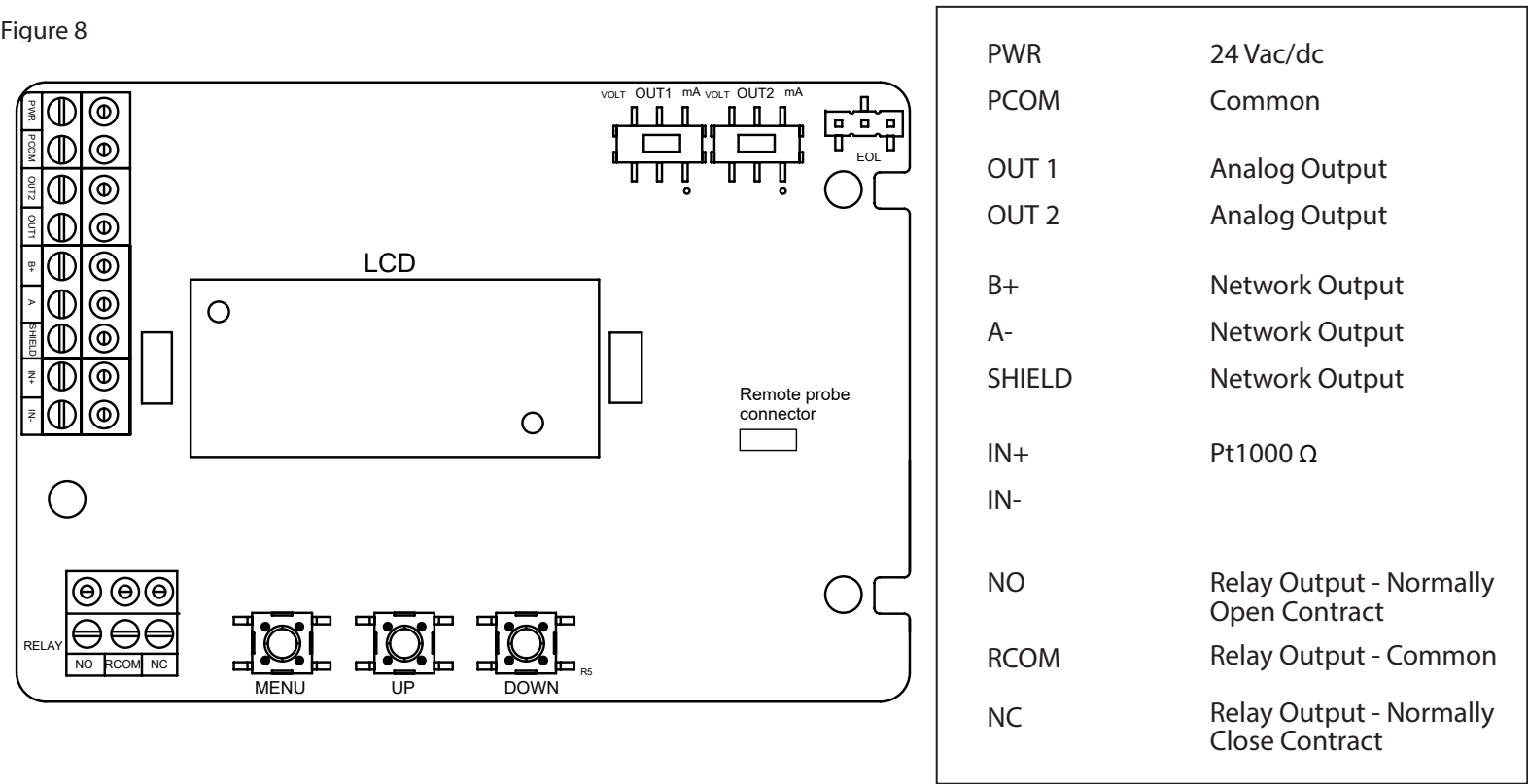
7. Ensure the **probe ribbon cable** in **PCB** before connecting power supply.

WARNING - IMPORTANT

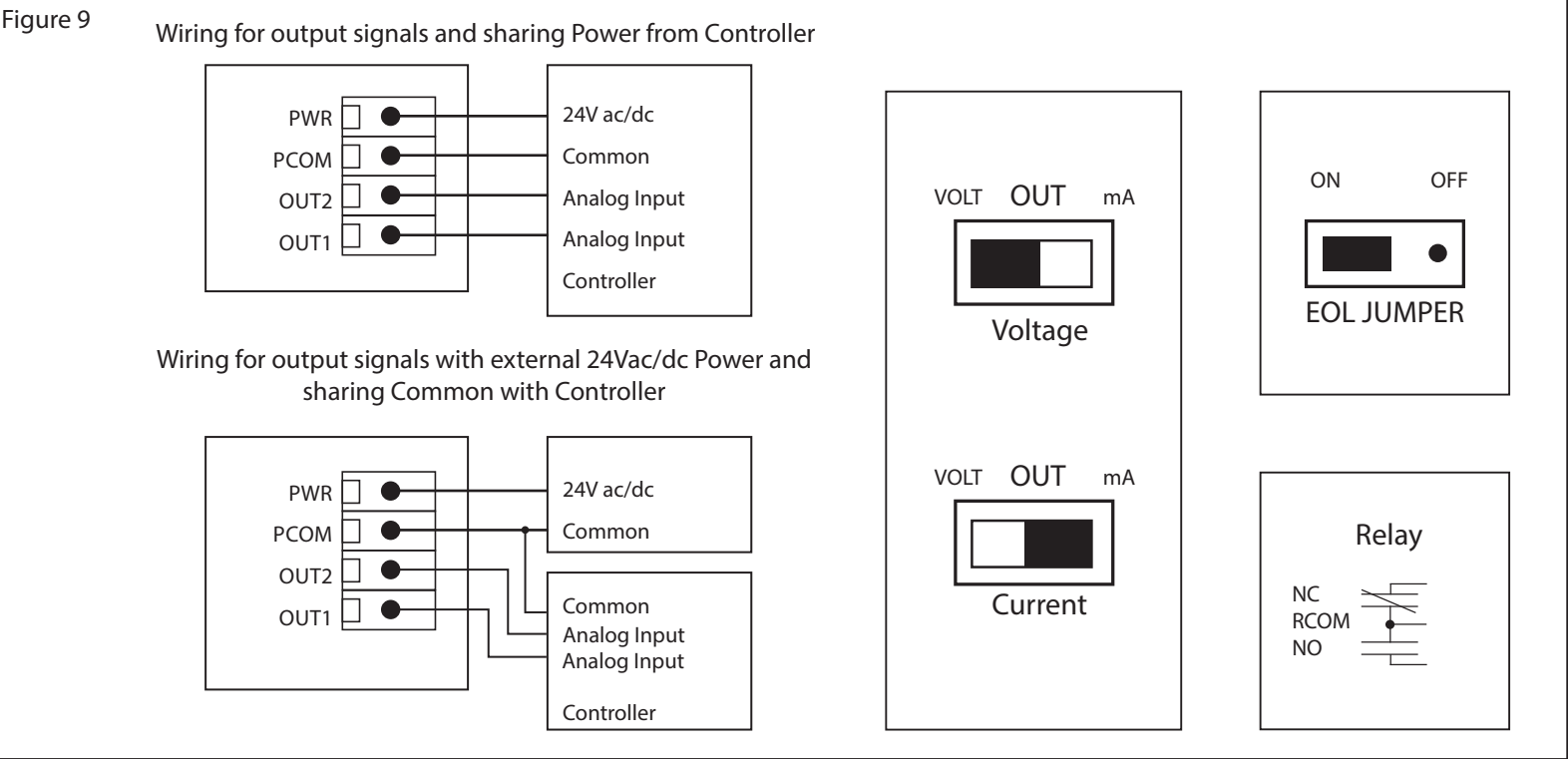
8. Deactivate the 24 Vac/dc power supply until all connections are made to the device to prevent electrical shock or equipment damage. Follow proper electrostatic discharge (ESD) handling procedures when installing the device to prevent equipment damage.

Use 16-28 AWG shielded wire for all connections (only ground the shield at the controller end) and do not locate the device wires in the same conduit with wiring used to supply inductive loads such as motors. Pull at least six inches of wire into the enclosure and complete the wiring connection according to the wiring diagram.

Figure 8

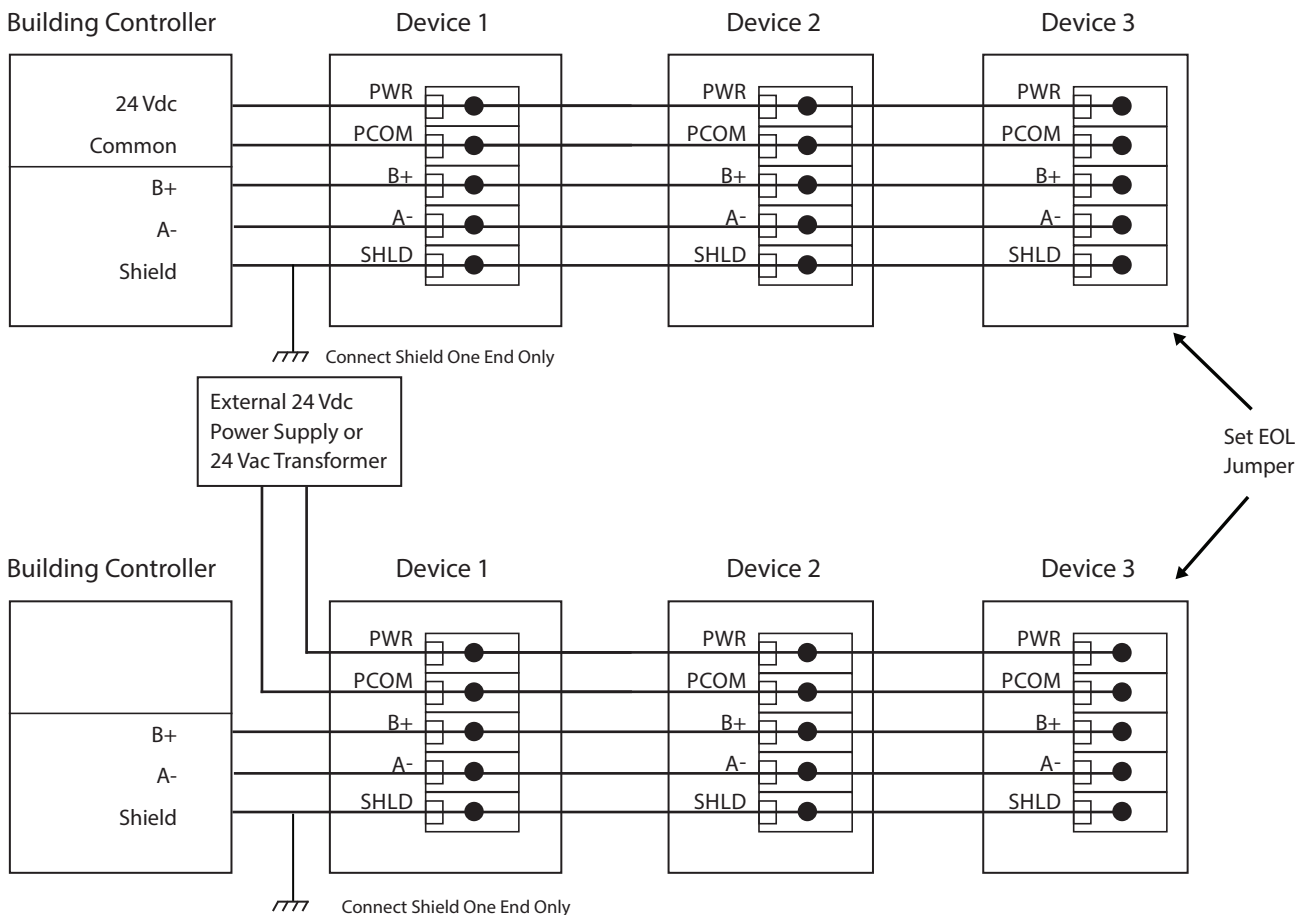


9. The Analog outputs are available on the OUT1 & OUT2 terminals. See Figure 8



10. This transmitter is a 4-wire sourcing device, connect the DC+ or the AC voltage hot side to the PWR terminal and the common is connected to the PCOM terminal. See Figure 9. The device is reverse voltage protected and will not operate if connected backwards. It has a half-wave power supply so the supply common is the same as the signal common. Several devices may be connected to one power supply, and the output signals all share the same common. Use caution when grounding the secondary of a transformer or when wiring multiple devices to ensure the ground point is the same on all devices and the controller.

Figure 10



WIRING - COMMUNICATION

11. The transformer should not be connected to earth ground when using devices with an RS-485 network connection. In case of dual output configuration (both Analog and Communication) being applied then we recommend a 24Vdc power supply be utilized. Connect the RS-485 network with twisted shielded pair to the terminals marked A(-), B(+) and SHIELD. The positive wire connects to B(+) and the negative wire connects to A(-) and the cable shield must be connected to the SHIELD terminal on each device. See Figure 10.

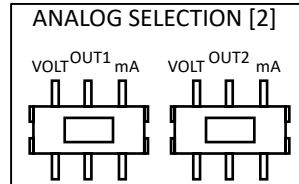
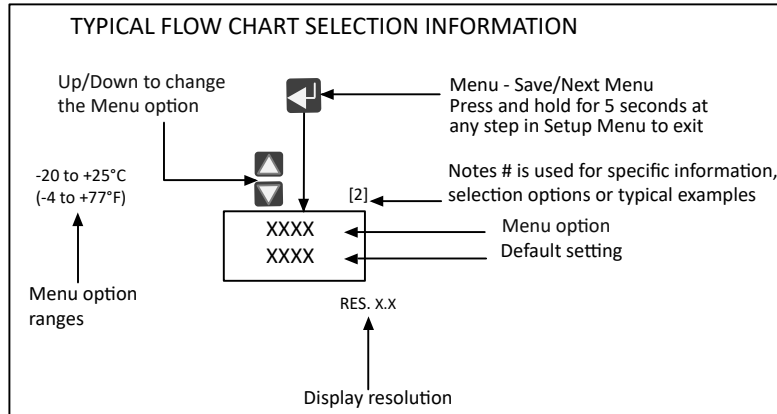
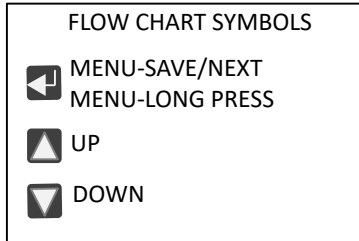
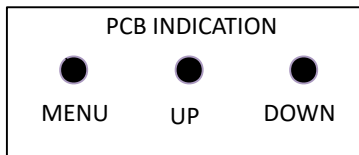
12. The CPX1R transmitter offers an End-of-Line 121 ohm termination resistor which can be used when the last device via the RS-485 network to ensure reliable communication. Place the EOL jumper shunt into the ON position thus in parallel across the negative A(-) and positive B(+) data lines so an external termination resistor is not required. Do not run bus wiring in the same conduit as line voltage wiring or other wiring that switches power to highly inductive loads such as contactors, coils or motors. The ground wire of the shielded pair should be connected to earth ground at Building controller.

13. A network segment is a single shielded wire loop run between several devices (nodes) in a daisy chain configuration. The total segment length should be less than 4000 feet (1220 meters) and the maximum number of nodes on one segment is 127. Nodes are any device connected to the loop and include controllers, repeaters and sensors such as this one but do not include the EOL terminators. To install more than 127 devices, or to increase the network length, repeaters will be required for proper communication.

14. The maximum daisy chain length (segment) depends on transmission speed (baud rate), wire size and number of nodes. If communication is slow or unreliable, it may be necessary to wire two daisy chains to the controller with a repeater for each segment.

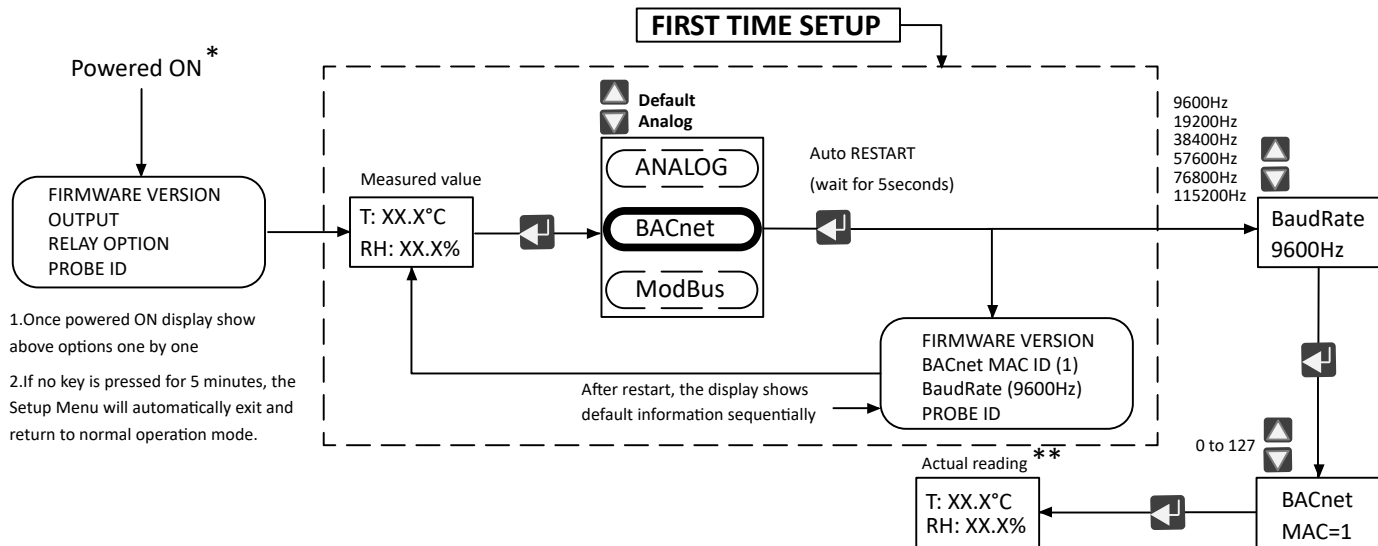
15. The device has several parameters that can be configured locally via the Setup menu using the keypad and LCD. Any changes made are saved in non-volatile memory and are restored in case of a power loss. The menu can be accessed at any time after the start-up mode and if there is 5 minutes of inactivity the menu will close and normal operation will continue.

16. To enter the MENU, press and release the <MENU> key. This will enter the Setup Menu. Each press of the <MENU> key saves the current setting and advances the menu item. The <UP> and <DOWN> keys are used to make changes to program variables by scrolling through the available options. The flow chart below shows what will be displayed on the LCD, including the default value.

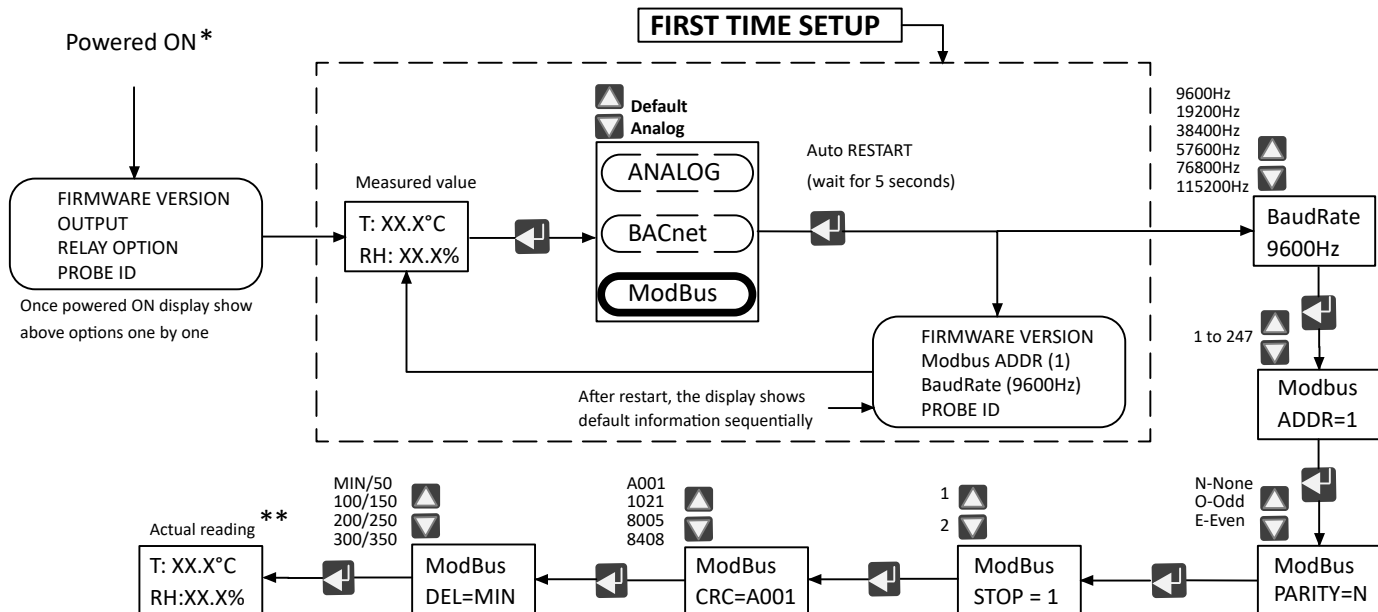


INDEX	
T	Temperature
H	Relative Humidity
RH	Relative Humidity
DP	Dew Point
WB	Wet Bulb
EN	Enthalpy
AH	Absolute Humidity
CD	Condensation
PIP	Pt 1000 pipe Temperature
PIP	Pt 1000 pipe Temperature
OUT	Output
MAC	MAC Address
ADDR	Address
N	Parity None
O	Parity Odd
E	Parity Even
DEL	Modbus Delay
MIN	Minimum
MAX	Maximum
RES.	Resolution
RL	Relay
SP	Setpoint
LSP	Low setpoint
HSP	High setpoint
Hy	Hysteresis
DL	Delay
S	Seconds
Sec	Seconds
*	Start MENU
**	End back to MENU

BACnet MSTP - Installation Guide

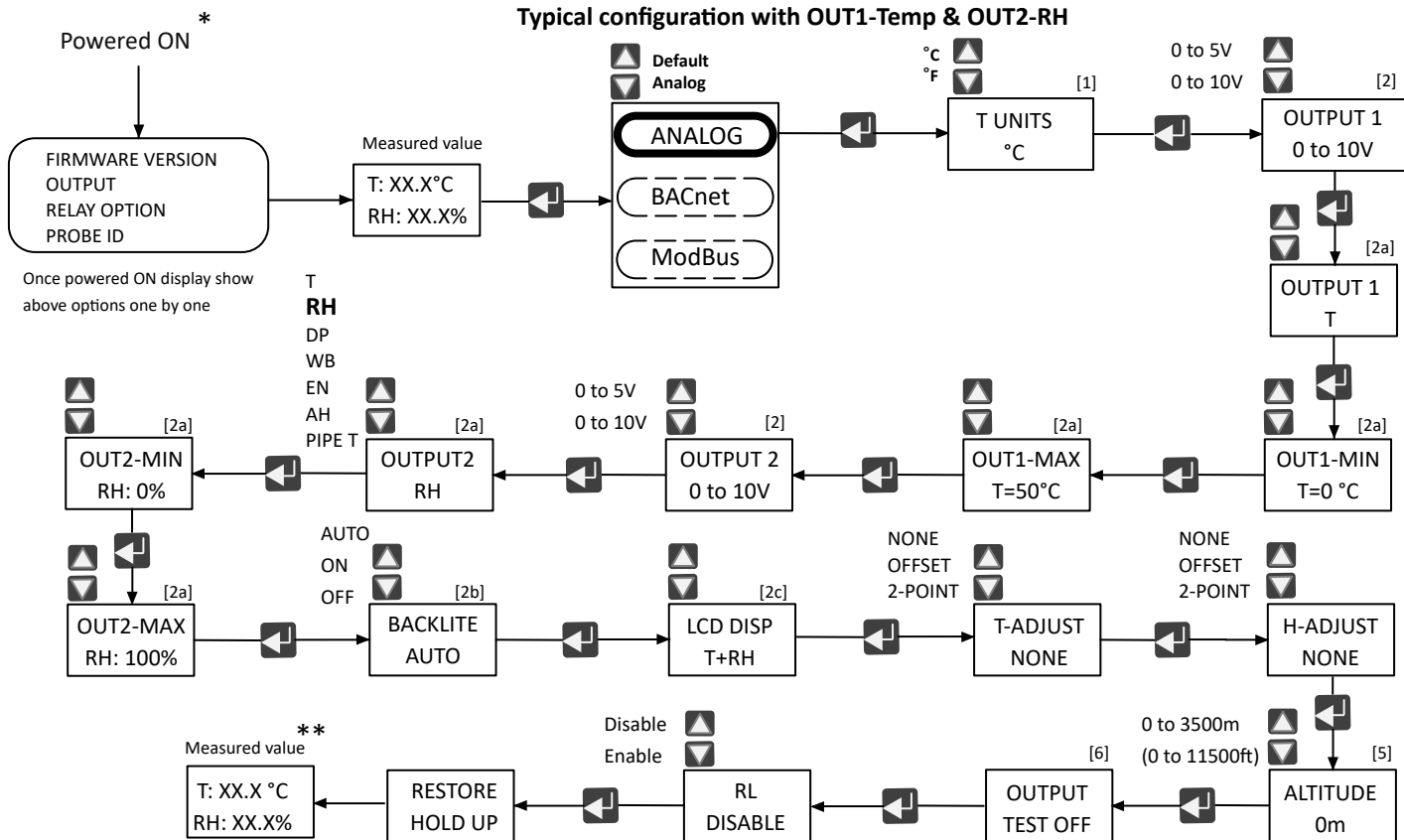


ModBus - Installation Guide

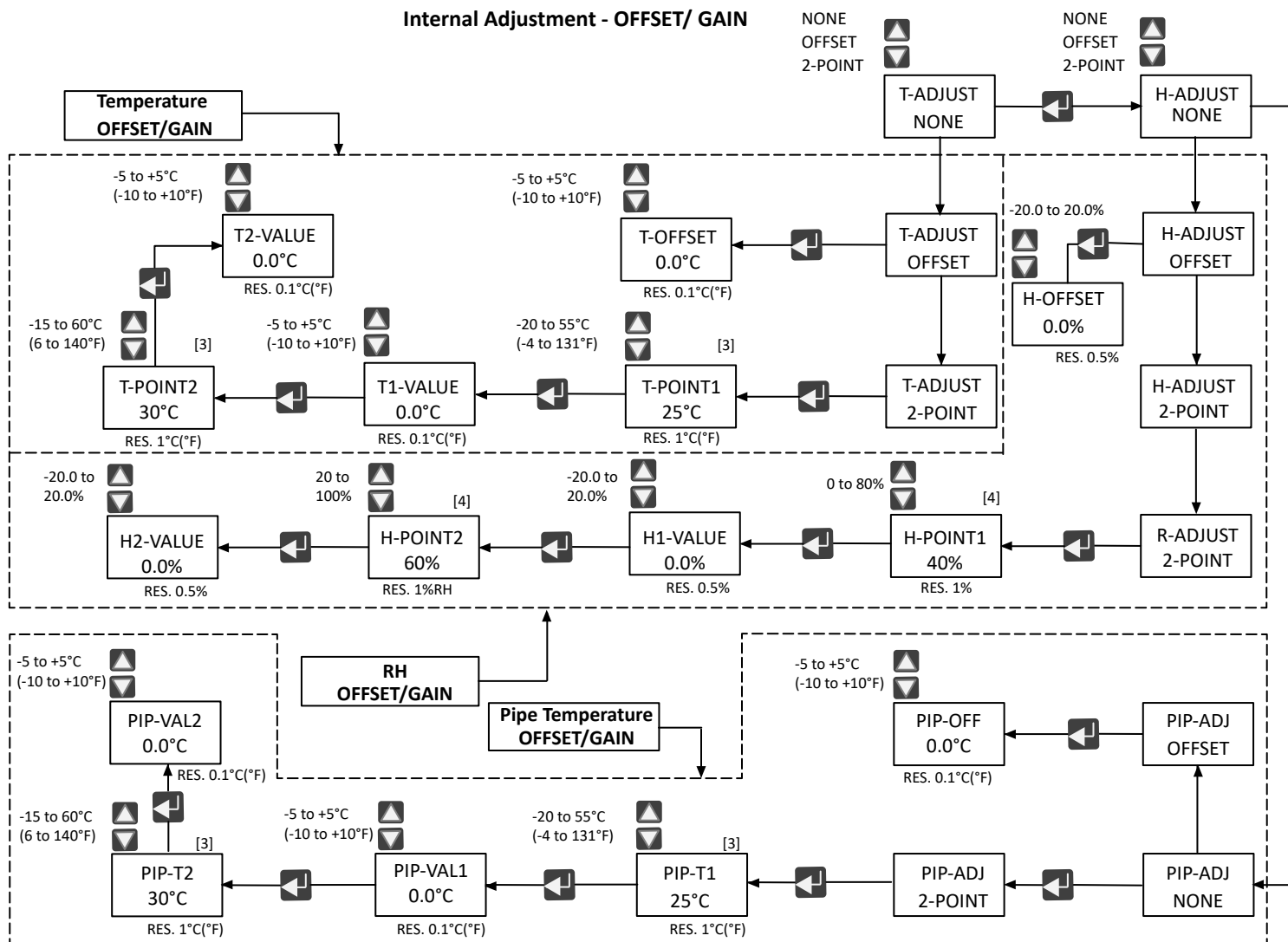


ANALOG- Installation Guide

Typical configuration with OUT1-Temp & OUT2-RH

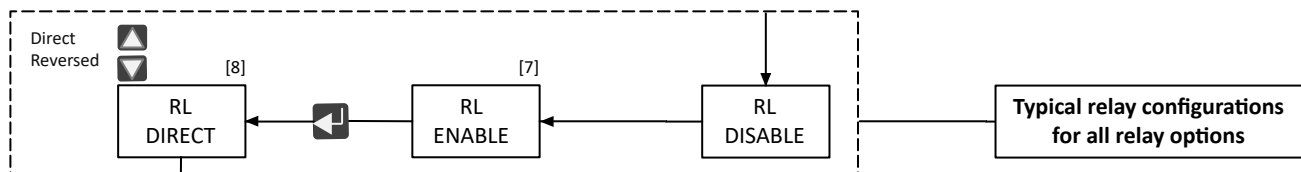
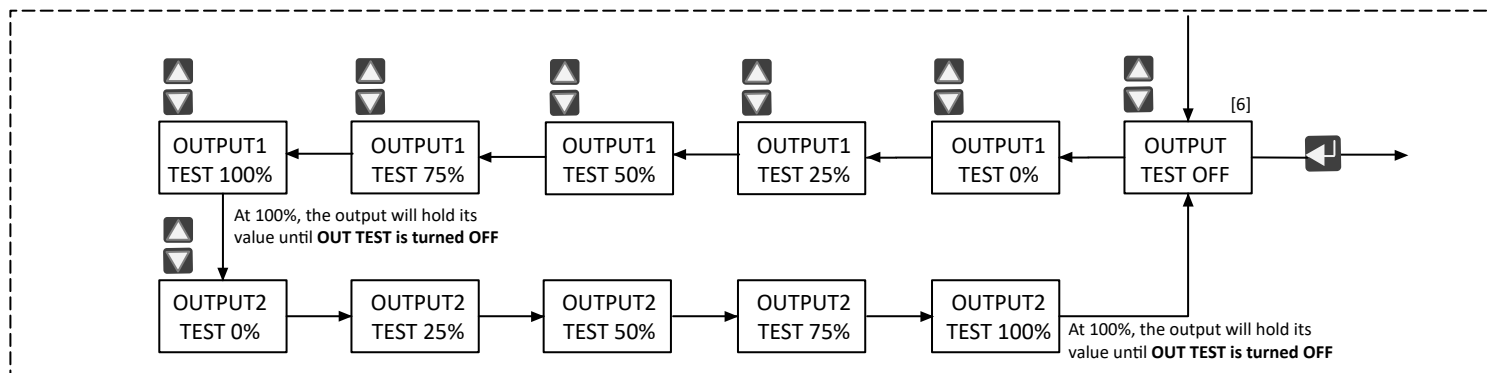


Internal Adjustment - OFFSET/ GAIN

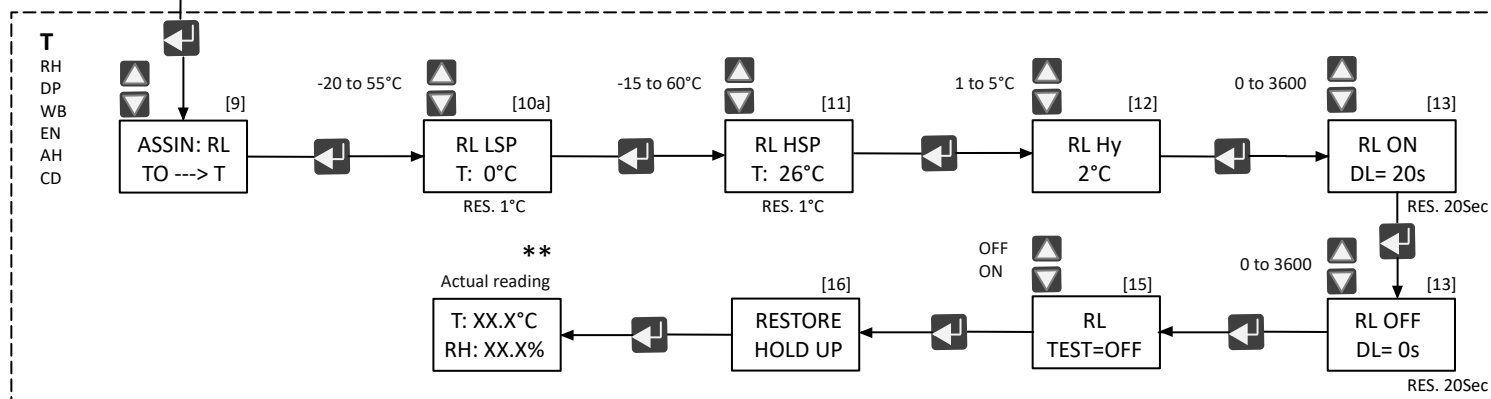


ANALOG - Installation Guide

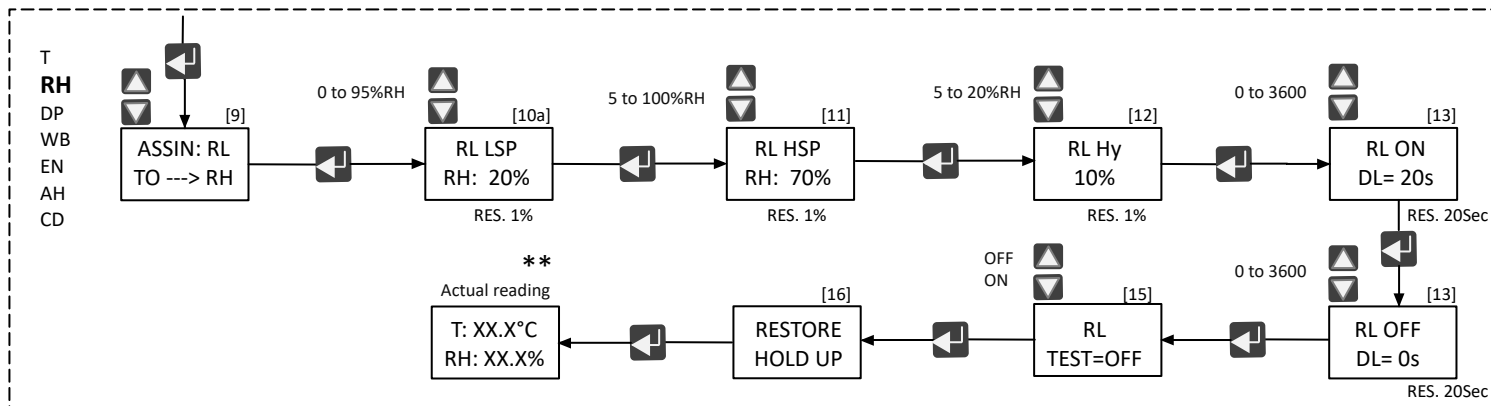
Output TEST options



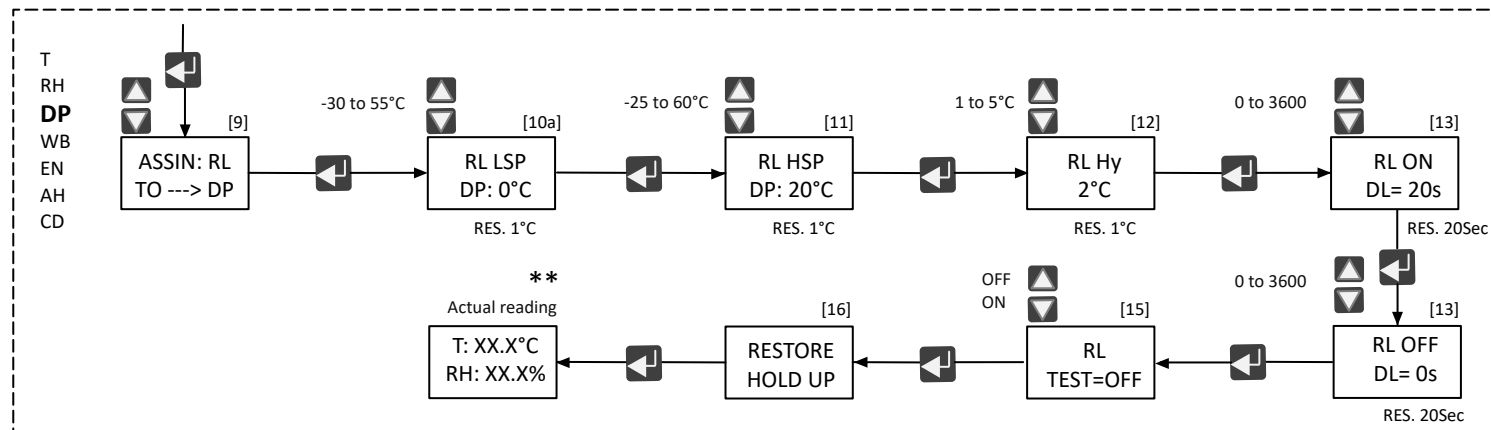
Relay configuration with Temperature



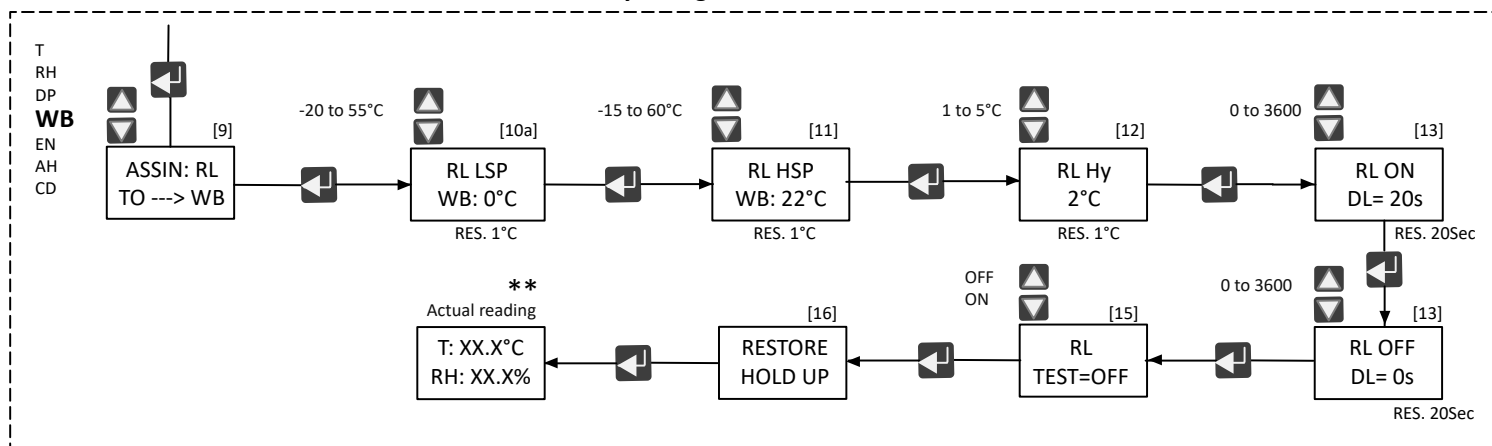
Relay configuration with RH



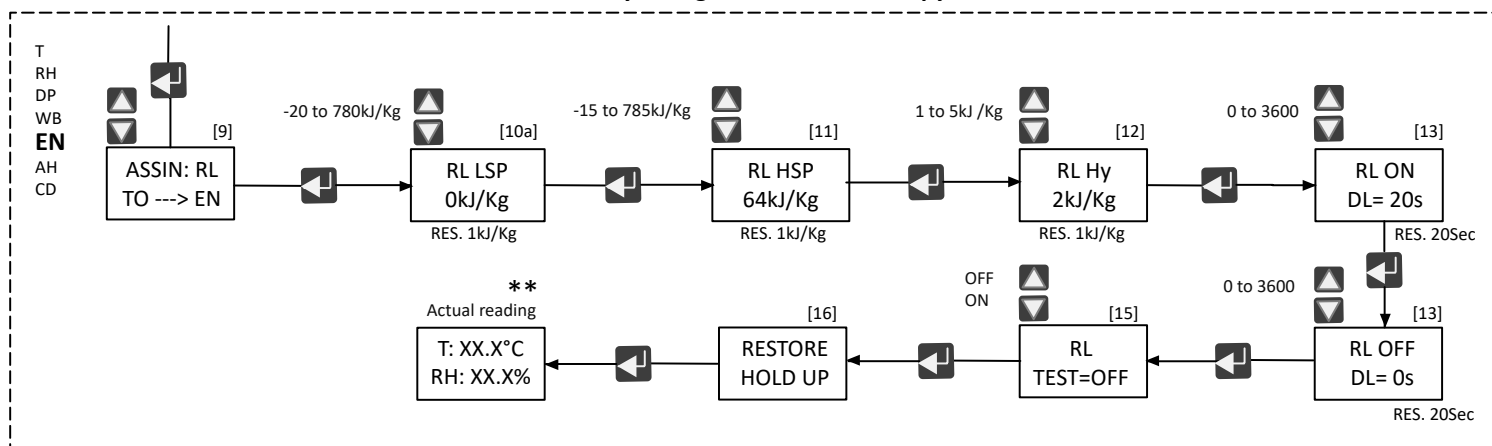
Relay configuration with Dew point



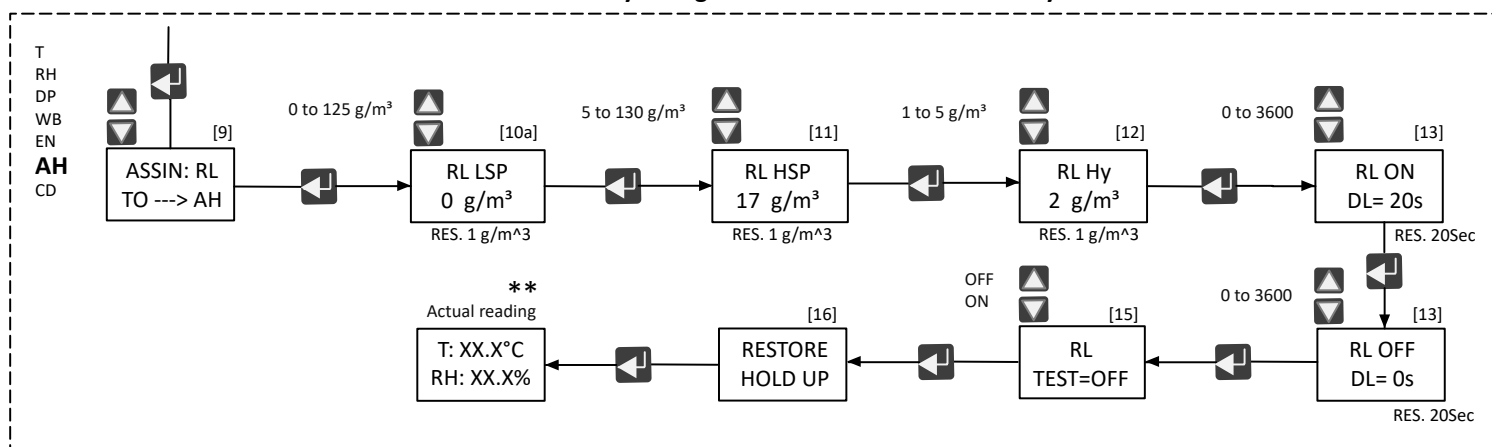
Relay configuration with Wet Bulb



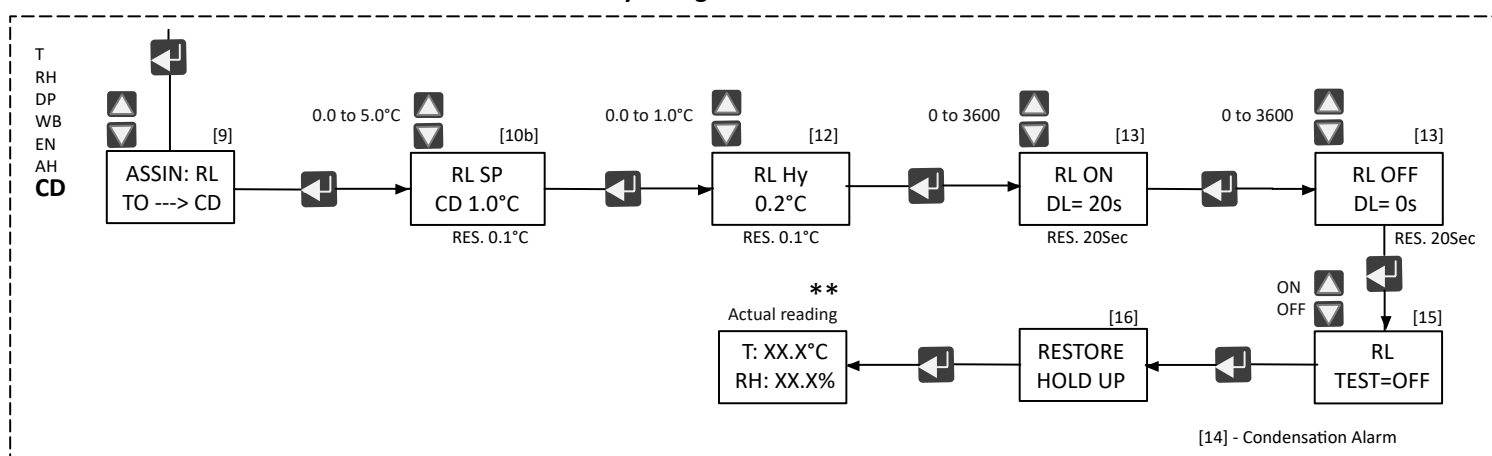
Relay configuration with Enthalpy



Relay configuration with Absolute Humidity



Relay configuration with Condensation Alarm



ANALOG - INSTALLATION GUIDE NOTES

1: The temperature unit selection(°C/°F) determines the measurement system. By default, the unit is configured for Metric measurements, with temperature displayed in °C. Refer the below table-1 for both °C and °F options.

Measurement	Unit	LCD Unit selection		Display resolutions
		°C	°F	0.1
Temperature (TEMP)	°C	x		0.1
Temperature (TEMP)	°F		x	0.1
Dew point (DP)	°C	x		0.1
Dew point (DP)	°F		x	0.1
Wet Bulb (WB)	°C	x		0.1
Wet Bulb (WB)	°F		x	1
Enthalpy (EN)	kJ/kg	x		1
Enthalpy (EN)	BTU/lb		x	1
Absolute Humidity (AH)	g/m ³	x		0.0001
Absolute Humidity (AH)	lb./ft ³		x	0.1
Pipe T (T)	°C	x		0.1
Pipe T (T)	°F		x	100
Altitude	m	x		100
Altitude	ft		x	

Table-1

Output1	0 to 5V	0 to 10V	4 to 20mA
Output2			
0%	0v	0v	4mA
25%	1.25v	2.5v	8mA
50%	2.5v	5v	12mA
75%	3.75v	7.5v	16mA
100%	5v	10v	20mA

2: Output voltage selection is available only when the main PCB DIP switch is configured for Voltage mode.

[2a]: Refer the below table 3 output unit selection and display resolution.

Table-2

Measurement	Unit	MIN Default	MIN Adjustable Range	MAX Default	MAX Adjustable Range	MIN/MAX Display Resolution
Temp (T)	°C	0	-20 to 25	50	35 to 60	1
Temp (T)	°F	32	-4 to 77	122	95 to 140	1
Relative Humidity (RH)	%	0	0 to 30	100	70 to 100	1
Dew point (DP)	°C	0	-30 to 20	50	30 to 60	1
Dew point (DP)	°F	32	-22 to 68	122	86 to 140	1
Wet Bulb (WB)	°C	0	-20 to 25	50	35 to 60	1
Wet Bulb (WB)	°F	32	-4 to 77	122	95 to 140	1
Enthalpy (EN)	kJ/kg	0	-20 to 40	70	50 to 785	1 (5 for above 100)
Enthalpy (EN)	BTU/lb	0	-1 to 30	50	40 to 345	1 (2 for above 100)
Absolute Humidity (AH)	g/m ³	0	0 to 10	50	20 to 130	1
Absolute Humidity (AH)	lb./ft ³	0.0000	0.0000 to 0.0010	0.0030	0.0020 to 0.0081	0.0001
Pipe T (PT)	°C	0	-20 to 25	50	35 to 60	1
Pipe T (PT)	°F	32	-4 to 77	122	95 to 140	1
Altitude	m	-	-	-	-	100
Altitude	ft	-	-	-	-	100

Table-3

[2b]: If AUTO is selected, the LCD backlight will turn ON when any keypad is touched. Otherwise, the backlight will turn OFF after 5 seconds of no keypad activity. The backlight will remain ON in the Setup Menu. If ON is selected, the backlight is always ON. If OFF is selected, the backlight is always OFF.
 The backlight remains ON during the Setup Menu, Factory Menu, relay activation, and DI input.

[2c]: Refer the below table 4 display setting selection.

Menu Setting	Display
NONE	Blank
T	Temperature – Single Row
RH	Relative Humidity – Single Row
T+RH	Temperature & Relative Humidity – Dual Row
DP	Dew Point – Dual Row
WB	Wet Bulb – Dual Row
EN	Enthalpy – Dual Row
AH	Absolute Humidity – Dual Row
PIPE_T	Pipe Temperature – Dual Row
T+PIPE_T	Temperature and Pipe Temperature – Toggle
PIPE_T+DP	Pipe Temperature and Dew Point – Toggle
T&RH+DP	Temperature & Relative Humidity and Dew Point – Toggle
T&RH+WB	Temperature & Relative Humidity and Wet Bulb – Toggle
T&RH+EN	Temperature & Relative Humidity and Enthalpy – Toggle
T&RH+AH	Temperature & Relative Humidity and Absolute Humidity – Toggle
T&RH+PIPE_T	Temperature & Relative Humidity and Pipe Temperature – Toggle
ALL	Slides every 2 seconds, displaying all values in Dual Row

Table-4

- 3:** MIN ≤ Point1 ≤ MAX and
 MIN ≤ Point2 ≤ MAX.
 The temperature gain point values must have a minimum difference of 5°C (10°F). Point 2 - Point 1 ≥ 5°C (10°F).
- 4:** MIN ≤ Point1 ≤ MAX and
 MIN ≤ Point2 ≤ MAX.
 The relative humidity (RH) gain point values must have a minimum difference of 20%. Point 2 - Point 1 ≥ 20%.
- 5:** The altitude setting will be displayed in feet once the temperature unit is changed to Imperial (°F).
- 6:** The output test option is provided to verify proper sensor operation, refer the table-2 output test options.

Relay Options	Unit	RL LSP Default	RL LSP Range	RL HSP Default	RL HSP Range	Threshold (HSP-LSP)	RL Hy Default	RL Hy Range	Display Resolution
Temp (T)	°C	0	-20 to 55	26	-15 to 60	5	2	1 to 5	1
Temp (T)	°F	32	-4 to 131	79	6 to 140	10	4	2 to 10	1
Relative Humidity (RH)	%	20	0 to 95	70	5 to 100	5	10	5 to 20	1
Dew point (DP)	°C	0	-30 to 55	20	-25 to 60	5	2	1 to 5	1
Dew point (DP)	°F	32	-22 to 131	68	-12 to 140	10	4	2 to 10	1
Wet Bulb (WB)	°C	0	-20 to 55	22	-15 to 60	5	2	1 to 5	1
Wet Bulb (WB)	°F	32	-4 to 131	72	6 to 140	10	4	2 to 10	1
Enthalpy (EN)	kJ/kg	0	-20 to 780	64	-15 to 785	5	2	1 to 5	1 (5 for above 100)
Enthalpy (EN)	BTU/lb	0	-1 to 340	35	4 to 345	5	2	1 to 3	1 (2 for above 100)
Absolute Humidity (AH)	g/m³	0	0 to 125	17	5 to 130	5	2	1 to 5	1
Absolute Humidity (AH)	lb./ft³	0.0000	0.0000 to 0.0078	0.0010	0.0003 to 0.0081	0.0003	0.0002	0.0001 to 0.0003	0.0001
Condensation (CD)	°C	1.0	0.0 to 5.0	The condensation alarm will have only a relay setpoint (RL SP)			0.2	0.1 to 1.0	0.1
Condensation (CD)	°F	2.0	0.0 to 10.0				0.4	0.1 to 2.0	0.1

Table-5

7: The relay output is used to directly switch external devices ON or OFF based on configurable temperature or relative humidity setpoints, or via a digital input contact, enabling standalone environmental control and alarm functions. The relay output is potential free (voltage-free) and provides Form-C (NO/NC) contacts.

8: The relay output default setting is DIRECT, i.e., normally open (NO) contactors remain open under normal conditions and close (short) when the target value (e.g., temperature) exceeds the setpoint. In contrast, when the setting is REVERSED, the NO contactors are closed (short) under normal conditions and open when the target value exceeds the setpoint.

9: The relay can be assigned to operate based on Temperature (T), Relative Humidity (RH), Dew point (DP), Wet Bulb (WB), Enthalpy (EN), Absolute Humidity (AH), Condensation (CD) setpoint values and it can be configured include the setpoint, hysteresis, and ON/OFF delay.

[10a]: The relay low setpoint is used to enable a relay when the measured temperature or Humidity falls below a specified threshold, refer table-5 threshold (HSP-LSP)

Refer to **"Typical Example-1" for sample setpoint details.**

HSP-LSP $\geq$ 5°C, 10°F or 5%RH. Refer table-5 threshold (HSP-LSP) for other units.

The relay low setpoint (LSP) is interlocked with the analog output MIN range. If the MAX range is 5°C, the relay low setpoint cannot be adjusted below 5°C.

Relay LSP $\geq$ Analog output MIN range

[10b]: Condensation Alarm comes with single setpoint (RL SP).

Refer to **"Typical Example-2" for sample setpoint details.**

11: The relay high setpoint is used to enable a relay when the measured temperature or humidity rises above a specific threshold.

Refer to **"Typical Example-1" for sample setpoint details.**

MIN $\leq$ LSP $\leq$ MAX and HSP-LSP $\geq$ 5°C, 10°F or 5%RH

The relay high setpoint (HSP) is interlocked with the analog output MAX range.

If the MAX range is 50°C, the relay high setpoint cannot be adjusted above 50°C.

Relay HSP $\geq$ Analog output MAX range

12: The relay Hysteresis is used with the low and high setpoints to prevent rapid Enable/Disable of the relay near the setpoints. For the low setpoint, the relay remains Enabled until the temperature rises above the setpoint plus the hysteresis value. For the high setpoint, the relay remains Enabled until the temperature falls below the setpoint minus the hysteresis value.

13: The relay ON/OFF delay prevents rapid switching and ensures stable operation of connected devices by applying a configurable delay before the relay is enabled or disabled.

14: The Condensation alarm will be programmed with Relay setpoint and it will take Dew point calculated values to enable condensation alarm.

Refer to **"Typical Example-2" for sample setpoint details and below Condensation conditions.**

PipeT $\leq$ (DP + CD) $\rightarrow$ Condensation alarm

PipeT $>$ (DP + CD + Hy) $\rightarrow$ No condensation alarm

15: The Relay Test ON/OFF function is used to manually activate and deactivate the relay to verify correct relay operation, wiring, and connected device response during installation. When performing a RELAY TEST ON, the relay operates without any conditions/parameters such as relay ON delay, OFF delay, and contact time are all ignored.

16: To RESET the transmitter, the user should hold the UP button for 5 seconds until the function activates and the system returns to normal operation. This action will reset both the main PCB and probe PCB settings, it will restore the factory settings mode.

Typical example-1 for Relay LOW and HIGH setpoint for Temperature:

1: Relay control shall be based on configurable Low Setpoint (LSP) and High Setpoint (HSP) values, with adjustable hysteresis and time delays, to ensure stable and reliable relay operation. The difference between the High Setpoint and the Low Setpoint shall not be less than 5°C (HSP-LSP should be $\geq 5^{\circ}\text{C}$)

[1.1]: The Low Setpoint means that the relay will activate when the target value lower than low setpoint.

Low Setpoint: 20°C

Hysteresis: 2°C

Relay ON Delay: 20 seconds

Relay OFF Delay: 40 seconds

Relay ON Condition: When the temperature drops to $\leq 20^{\circ}\text{C}$ ($\leq$ Low Setpoint of 20°C) and remains at or below this value for 20 seconds (Relay ON Delay = 20s), the relay turns ON.

If $T \leq \text{LSP (20}^{\circ}\text{C)} \rightarrow \text{Wait 20s} \rightarrow \text{Relay ON}$

Relay OFF Condition: When the relay is ON, it will remain enabled until the temperature reaches $\geq 22^{\circ}\text{C}$ (Low Setpoint + Hysteresis) and remains at or above 22°C for 40 seconds (Relay OFF Delay = 40s), after which the relay will switch OFF.

If $T \geq (\text{LSP} + \text{Hyst}) = \geq 22^{\circ}\text{C} \rightarrow \text{Wait 40s} \rightarrow \text{Relay OFF}$

[1.2]: The High Setpoint means that the relay will activate when the target value higher than high setpoint.

High Setpoint: 30°C

Hysteresis: 2°C

Relay ON Delay: 20 seconds

Relay OFF Delay: 40 seconds

Relay ON Condition: When the temperature raises to 30°C ($\geq$ High Setpoint of 30°C) and remains at or above this value for 20 seconds (Relay ON Delay = 20s), the relay turns ON.

If $T \geq \text{HSP (30}^{\circ}\text{C)} \rightarrow \text{Wait 20s} \rightarrow \text{Relay ON}$

Relay OFF Condition: When the relay is ON, it will remain enabled until the temperature drops to 28°C (High Setpoint 30°C - Hysteresis 2°C) and remains at or below 28°C for 40 seconds (Relay OFF Delay = 40s), before switching OFF.

If $T \leq (\text{HSP} - \text{Hyst}) = \leq 28^{\circ}\text{C} \rightarrow \text{Wait 40s} \rightarrow \text{Relay OFF}$

2: Relay control shall be based on configurable Relay Setpoint (RL SP) with adjustable hysteresis and time delays, to ensure stable and reliable relay operation.

[2.1]: Example 1:

Setpoint (CD): 1.0°C

Hysteresis (Hy): 0.2°C

Relay ON Delay: 20 seconds

Relay OFF Delay: 40 seconds

Dew Point (DP): 5.0°C (Calculated values from Temperature and RH)

Relay ON Condition: When the pipe temperature (PipeT) is 5.8°C, which is less than or equal to $(\text{DP} + \text{CD}) = 6.0^{\circ}\text{C}$, and this condition is maintained for 20 seconds, the relay turns ON.

PipeT $\leq (\text{DP} + \text{CD}) \rightarrow \text{Wait 20s} \rightarrow \text{Relay ON}$

5.8°C $\leq 6.0^{\circ}\text{C} \rightarrow \text{Wait 20s} \rightarrow \text{Relay ON}$

Relay OFF Condition: When the pipe temperature rises to 6.5°C ($> 6.2^{\circ}\text{C}$, i.e., $\text{DP} + \text{CD} + \text{Hy}$) and remains above this value for 40 seconds (Relay OFF Delay = 40s), the relay turns OFF.

PipeT $> (\text{DP} + \text{CD} + \text{Hy}) \rightarrow \text{Wait 40s} \rightarrow \text{Relay OFF}$

6.5°C $> 6.2^{\circ}\text{C} \rightarrow \text{Wait 40s} \rightarrow \text{Relay OFF}$

[2.2]: Example 2:

Setpoint (CD): 1.0°C

Hysteresis (Hy): 0.2°C

Relay ON Delay: 20 seconds

Relay OFF Delay: 40 seconds

Dew Point (DP): 12.0°C (Calculated values from Temperature and RH)

Relay ON Condition: When the pipe temperature (PipeT) is 12.8°C, which is less than or equal to $(\text{DP} + \text{CD}) = 13.0^{\circ}\text{C}$, and this condition is maintained for 20 seconds, the relay turns ON.

PipeT $\leq (\text{DP} + \text{CD}) \rightarrow \text{Wait 20s} \rightarrow \text{Relay ON}$

12.8°C $\leq 13.0^{\circ}\text{C} \rightarrow \text{Wait 20s} \rightarrow \text{Relay ON}$

Relay OFF Condition: When the pipe temperature rises to 13.5°C ($> 13.2^{\circ}\text{C}$, i.e., $\text{DP} + \text{CD} + \text{Hy}$) and remains above this value for 40 seconds (Relay OFF Delay = 40s), the relay turns OFF.

PipeT $> (\text{DP} + \text{CD} + \text{Hy}) \rightarrow \text{Wait 40s} \rightarrow \text{Relay OFF}$

13.5°C $> 13.2^{\circ}\text{C} \rightarrow \text{Wait 40s} \rightarrow \text{Relay OFF}$

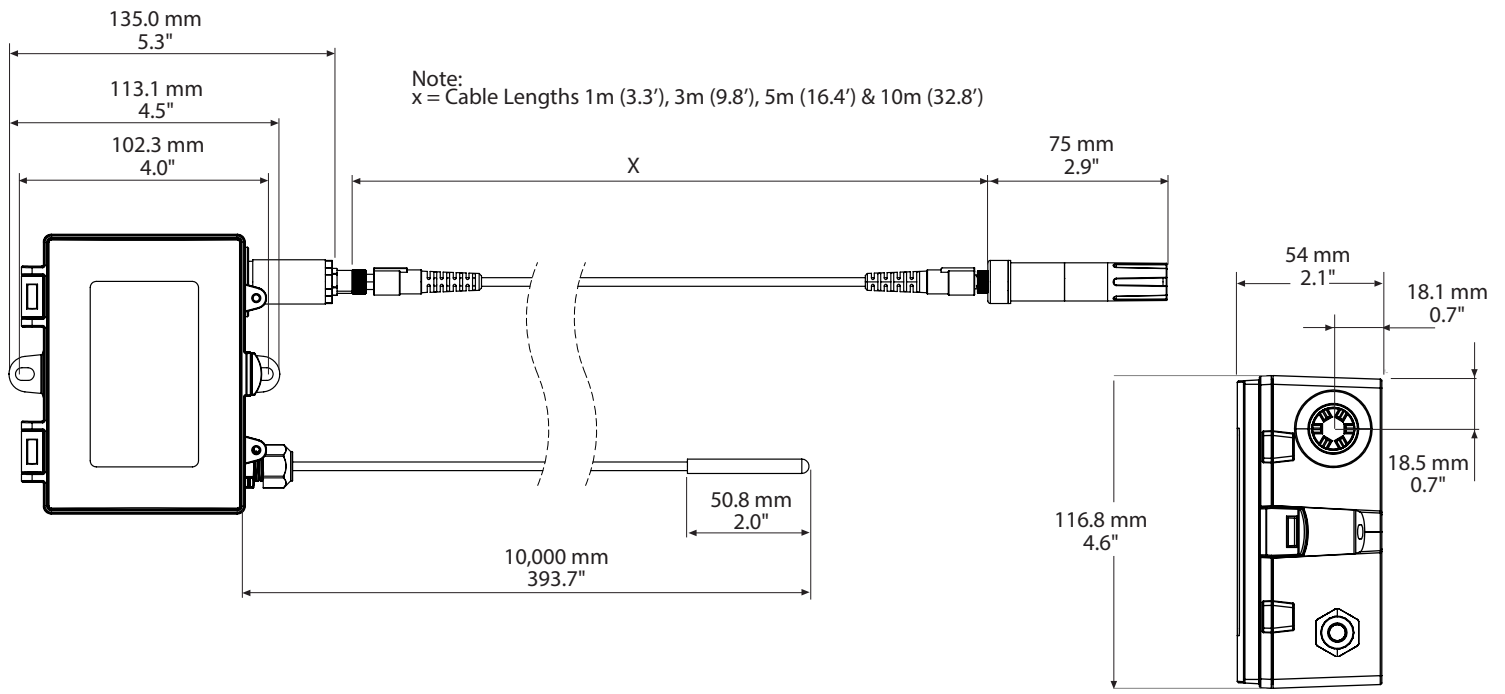
SPECIFICATIONS

SENSOR TYPE	Dry Bulb Temperature (T): Bipolar transistor sensor chip Relative Humidity (RH): Thermoset Polymer-based Capacitive Sensor Chip
MEASUREMENT RANGE	Dry Bulb Temperature (T): -20 to 60°C (-4 to 140°F) Relative Humidity (RH): 0 to 100 %RH
CALCULATED VALUES:	Dewpoint Temperature (DP): -30 to 60°C (-22 to 140°F) Wet Bulb Temperature (WB): -20 to 60°C (-4 to 140°F) Enthalpy (EN): -20 to 785 kJ/kg (-1 to 345 BTU/lb) Absolute Humidity (AH): 0 to 130 g/m ³ (0.0000 to 0.0081lb/ft ³)
ACCURACY	Dry Bulb Temperature (T): $\pm 0.1^{\circ}\text{C}$ ($\pm 0.18^{\circ}\text{F}$) @ 0 to 60°C (32 to 140°F) Typical Relative Humidity (RH): $\pm 1\%$ (20 to 70 %RH) @ 25°C Typical Dewpoint Temperature (DP): $\pm 1.0^{\circ}\text{C}$ ($\pm 1.8^{\circ}\text{F}$) @ 50 %RH / 25°C Wet Bulb Temperature (WB): $\pm 1.0^{\circ}\text{C}$ ($\pm 1.8^{\circ}\text{F}$) @ 50 %RH / 25°C Enthalpy (EN): $\pm 2 \text{ kJ/kg}$ ($\pm 1 \text{ BTU/lb}$) @ 50 %RH / 25°C Absolute Humidity (AH): $\pm 0.45 \text{ g/m}^3$ ($\pm 0.000028 \text{ lb/ft}^3$) @ 50 %RH / 25°C

SPECIFICATIONS

LCD DISPLAY VALUES	Dry Bulb Temp (T): -20.0 to 60.0°C (0.1°C) or -4 to 140°F (0.1°F) Relative Humidity (RH): 0 to 100%RH (0.1%) Dewpoint Temp (DP): -30.0 to 60.0°C (0.1°C) or -22 to 140°F Td (0.1°F) Wet Bulb Temp (WB): -20.0 to 60.0°C (0.1°C) or -4 to 140°F Tw (0.1°F) Enthalpy (EN): -20 to 785 kJ/kg (1 kJ/kg) or -1 to 345 BTU/lb (1 BTU/lb) Absolute Humidity (AH): 0 to 80 g/m ³ (0.1 g/m ³) Display Size (WxH): 37 x 13mm (1.46 x 0.51") Backlight: AUTO / ON / OFF
OUTPUT	Analog Signals (2X): 4-20mA (Active) or 0-5 / 0-10 Vdc, (selectable)
RELAY OUTPUT	Form-C, max 24v AC/DC, 3A contact rating Programmable from Temperature/RH/Dewpoint/Wet Bulb/Enthalpy/AH/Condensation alarm/Modbus soft point
IMPEDANCE @ 24 VDC	Current: 550 Ω maximum Voltage: 10K Ω minimum
OUTPUT PARAMETERS (FIELD ADJUSTABLE)	Dry Bulb Temperature (T): -20 to 60°C (-4 to 140°F) Relative Humidity (RH): 0 to 100% Dewpoint Temperature (DP): -30 to 60°C (-22 to 140°F) Wet Bulb Temperature (WB): -20 to 60°C (-4 to 140°F) Enthalpy (EN): -20 to 785 kJ/kg (-1 to 345 BTU/lb) Absolute Humidity (AH): 0 to 130 g/m ³ (0.0000 to 0.0081lb/ft ³)
INTERNAL ADJUSTMENT	Temperature OFFSET: ±5.0°C or ±10.0°F programmable Relative Humidity OFFSET: ±20 %RH, programmable 2 point GAIN for Temperature & RH
INPUT	Pt1000 RTD (Condensation alarm) , IEC 751, 385 Alpha, thin film
POWER SUPPLY	24 Vac/dc ±10% (non-isolated half-wave rectified)
CONSUMPTION	65mA max @ 24Vdc X VA max @ 24Vac
PROTECTION CIRCUITRY	Reverse voltage protected, and output limited
BACNET® PROTOCOL	MS/TP, 2-wire RS-485 Baud rate - 9600, 19200, 38400, 57600, 76800 or 115200 0-127 slave address range (Factory default is 1, 127 devices max on one daisy chain)
MODBUS PROTOCOL	RTU, 2-wire RS-485 Baud rate - 9600, 19200, 38400, 57600, 76800 or 115200 1-247 slave address range (Factory default is 1, 247 devices max on one daisy chain)
PROGRAMMING/SELECTION	Via internal push buttons and on-screen menu
OPERATING CONDITIONS	-20 to 60°C (-4 to 140°F), 0 to 95 %RH non-condensing
STORAGE CONDITIONS	-40 to 70°C (-40 to 158°F), 0 to 95 %RH non-condensing
ENCLOSURE	Material: B - Grey polycarbonate UL94-V0, IP65 (NEMA 4X) Side cable entry 0.5" NPT threaded for EMT connection F - Same as B, includes thread adapter (1/2" NPT to M16) and liquid tight cable gland fitting cord grip 1.7 to 5.8mm (0.067 to 0.228") G - 90° Angled Cable Gland Dimensions: (LxWxD): 116.8 x 113.1 x 54mm (4.6 x 4.5 x 2.1")
SENSOR REMOTE PROBE	SS316, 75mm (2.95") L, 16mmø (0.63") D M8 Electrical connector, IP30 (NEMA 1) FT6 remote cable - 1m (3.3'), 3m (9.8'), 5m (16.4') & 10m (32.8')
WIRING CONNECTION	Removable screw terminal block, 16 AWG to 28 AWG
OPTIONAL CALIBRATION CERTIFICATE	NIST traceable 1-Point or 3-Point
APPROVAL (PENDING)	CE / UKCA / UL / BTL
CERTIFICATION (PENDING)	UL 60730 & CSA E60730
PROTECTION CLASS	III
PURPOSE OF CONTROL	Operating Control
TYPE OF ACTION	Type 1
IMPULSE VOLTAGE	330V
POLLUTION DEGREE	2
COUNTRY OF ORIGIN	Canada

PRODUCT DIMENSIONS



NETWORK SETUP GUIDE

The network setup guide describes the implementation of the BACnet® or Modbus protocol. It is intended to assist control system programmers who may need to add support to their systems to communicate with this device.

BACnet® and Modbus setup guide downloads are available online.



BACnet® PROTOCOL

<https://downloads.greystoneenergy.com/SG/SG-CPX1HTX1XXXBAC-001.pdf>



MODBUS PROTOCOL

<https://downloads.greystoneenergy.com/SG/SG-CPX1HTX1XXXMOD-001.pdf>