

# SensorLinx™

BTU Metering Technical Data Sheet



The SensorLinx™ Sensor System is designed to measure and record the thermal energy used in a residential or commercial heating or cooling system including HVAC, Solar thermal heating and Geothermal. The sensors can be used individually to track many system parameter configurations in real time using the HBX Thermolinx™ App. When the Sensorlinx™ sensors are used in conjunction within your liquid system, the system allows for accurate BTU measurement.



 **SensorLinx™**  
Smart Sensor Solutions

## Features and Benefits:

- Remote monitoring and configuration via the Thermolinx App
- Residential and commercial tenant billing
- Vortex inflow sensor
- Supply and return do not have to be within 2 meters like conventional BTU meters
- Graphs calculated BTU's based on hour, day, week and monthly
- Accurate calculations in glycol, methanol, and water at any concentration
- Suitable for a wide range of applications
- Measure System pressure, flow, and temperature for easy and cost-efficient installation
- BTU Metering
- Triac output for relay operation
- External strap on thermistor for simple BTU calculations.
- Hydronic system balancing



## BTU METERING

SensorLinx™ is a customizable sensor solution incorporating the **WFS Sensor** (Wi-Fi Flow & Temperature Sensor) and **WPS Sensor** (Wi-Fi Pressure & Temperature Sensor). The system includes 2 pre-paired sensors that feature a wireless communication protocol between them that eliminate. The system is based on vortex in-fluid sensors rather than other sensing technologies for more precise and accurate sensing calculations with a built-in electronic calculator and data logger via the ThermoLinx mobile app.

**SensorLinx™ BTU metering sensors include the following:**

- *WFS Sensor (Wi-Fi Flow and Temperature Sensor) (x1)*
- *WPS Sensor (Wi-Fi Pressure and Temperature Sensor) (x1)*
- *EPDM O-rings (x4)*
- *Dual unions, tailpieces - NPT, sweat*
- *Composite Flow pipe and tube with connection fittings (x2)*  
*\*Stainless steel option available in all sizes except for the BTU-0400*

### Flow Rates

Flow (l/Min) (GPM)		Flow Pipe (Housing)	Flow Pipe Size Configuration	HBX Part #
1.4 – 14	0.36 - 3.69	Composite, Stainless Steel	1/2"	BTU-0014
3 - 30	0.70 - 7.92	Composite, Stainless Steel	1/2"	BTU-0030
7 - 70	1.84 - 18.49	Composite, Stainless Steel	3/4"	BTU-0070
13 - 130	3.43 – 34.34	Composite, Stainless Steel	1 "	BTU-0130
*20 - 400	5.28 - 105.67	Composite	1 1/4"	BTU-0400

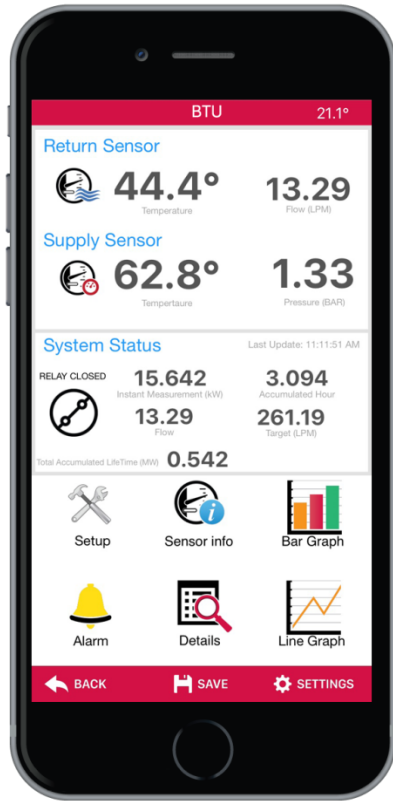
*\*This unit is not certified under the EN 1434 certification.*

### Triac Output

The control module incorporates a triac output for relay operation that will allow for equipment to turn on/off manually or based off a flow, temperature, and pressure trigger limit for system safety purposes. The triac output also allows for a modulating output signal to external devices.

- Pump or valve control
- Modulating Output (0.5-3.5 VDC)
- Equipment safety operation (ex.leaks)
- External thermistor input for BTU measurement





## WI-FI NETWORK PROTOCOL

The SensorLinX™ incorporates a Wi-Fi communication protocol that allows for an easy setup to connect any system to any surrounding Wi-Fi network available. For systems that do not have a Wi-Fi connection, the user can connect the system using an internal local Wi-Fi connection to view current and historical BTU consumption.

Data logging capabilities will also be available for Bacnet or Modbus interfaces through the SensorLinX™ API communication protocol.

### Features:

- Connect each sensor directly to a Wi-Fi network
- Unlimited amount of sensors per location
- Real time BTU calculations on your supply and returns
- 1 year of data storage
- Local on-site network connection available
- Bacnet or Modbus capabilities



The free ThermoLinX app allows for remote monitoring and system configuration for each individual sensor for your entire system. The app is capable of datalogging flow, temperature, and pressure daily, monthly, and yearly totalized usage in real time that can be utilized for billing purposes for residential or commercial tenants.

### Features:

- Available for Apple® and Android Devices®
- Remote monitoring and system configuration
- Calculated BTU graphing and raw data
- System Alarm notification
- Data logging for tenant billing



## WFS SENSORS

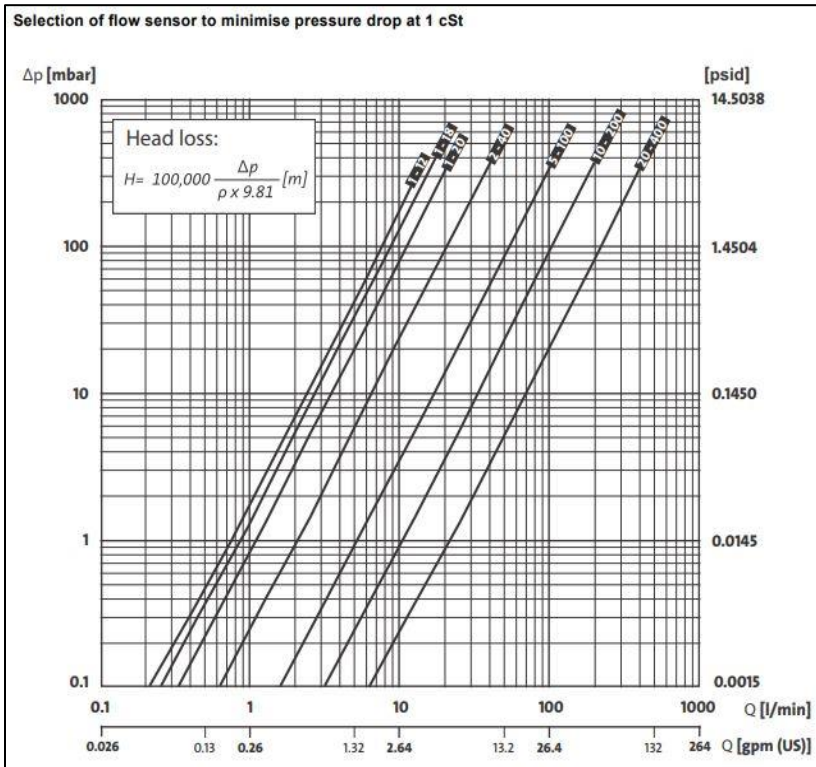
### (Wi-Fi Flow and Temperature Sensor)

The WFS Sensor is a combined flow and temperature sensor (two-in-one). The sensor is fully compatible with wet, aggressive liquids. The sensor is based on the principle of vortex shedding behind a bluff body. The sensor is based on MEMS sensing technology in combination with the corrosion-resistant Silicoat® coating technology on the sensor chip.

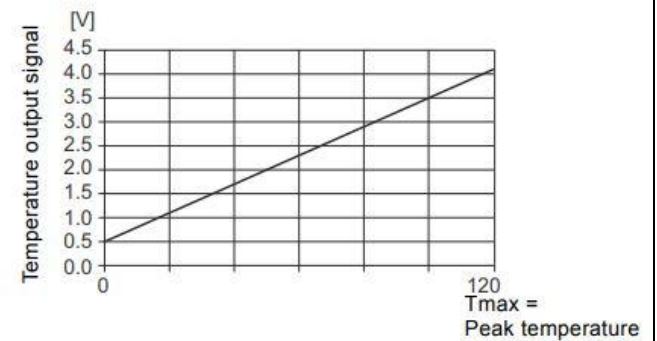
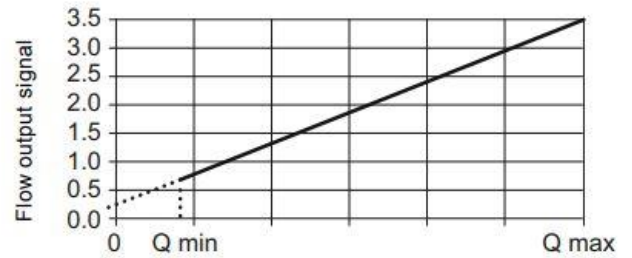
The WFS sensors measure temperature from 0°C -100°C (32°F – 212°F).

The sensor consists of a composite flow pipe and a sensor fitted with cable.

\*Stainless steel options available.



### Sensor output signals



## WPS SENSORS

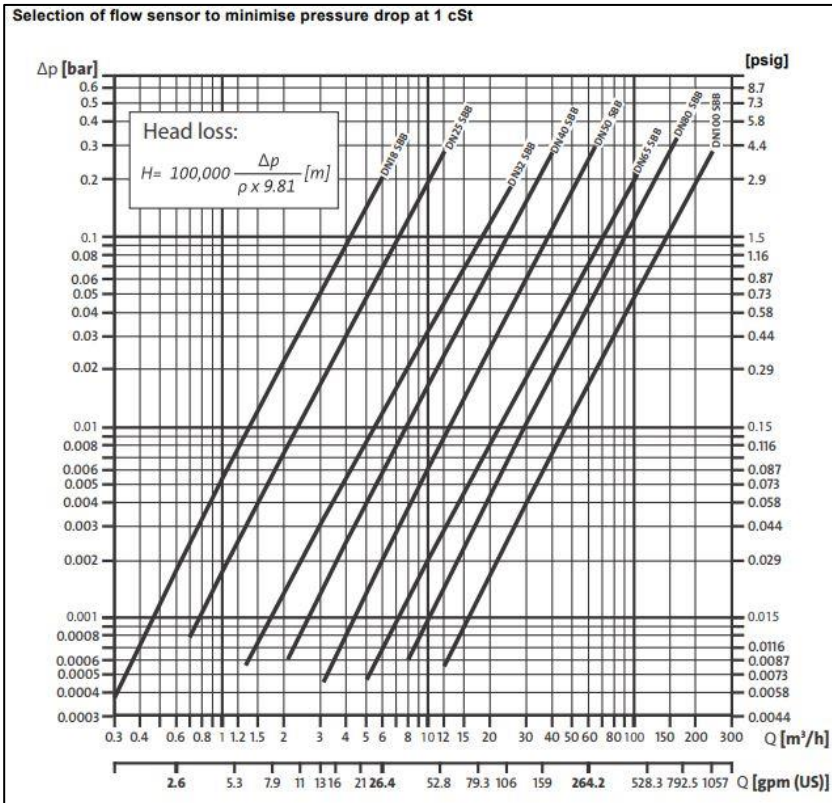
### Wi-Fi Pressure and Temperature Sensor

The WPS sensor is a combined pressure and temperature sensor (two-in-one). The sensor is fully compatible with wet, aggressive liquids. The sensor is based on the principle of vortex shedding behind a bluff body. The sensor is based on MEMS sensing technology in combination with the corrosion-resistant Silicoat® coating technology on the sensor chip.

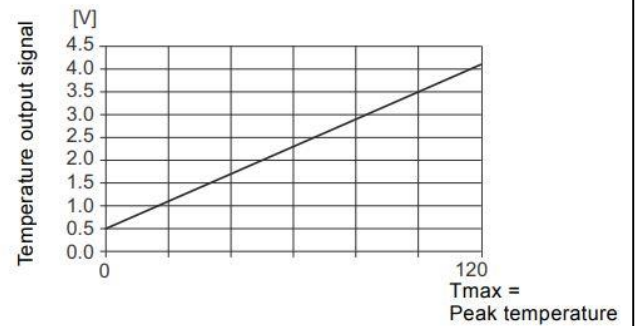
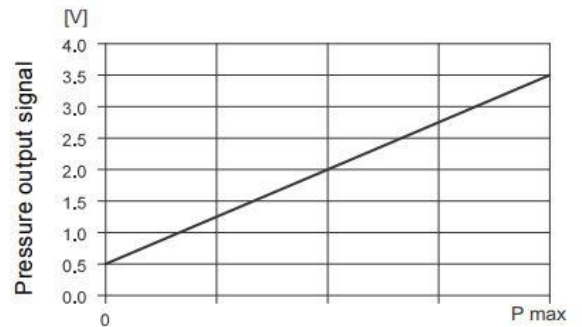
The sensor is suitable for a wide range of applications with a measuring range <10 BAR (145 PSI).

\*The sensor consists of a composite flow pipe and a sensor fitted with cable.

\*Stainless steel options available.



### Output signals



## SPECIFICATIONS

<b>Flow</b>	
Measuring Range	1-14L (0.36-3.69 GPM), 3-30L (0.70-7.92 GPM), 7-70L (1.84-18.49 GPM), 13-130L (3.43-34.34 GPM), 20-400L (5.28-105.67) *Composite only
Accuracy ( $\pm 1 \sigma$ ) in water, 0-100 °C (32-212 °F)	$\pm 1$ % FS
Response time (63.2 %)	Less than 1 s
Maximum range	105 GPM
<b>Pressure</b>	
Measuring Range	0-10 bar (0-145 psig)
Accuracy ( $\pm 1 \sigma$ ), 15-90°C (59-194°F)	$\pm 1.5$ % FS
Accuracy ( $\pm 1 \sigma$ ), 0-120 °C (32-248 °F)	$\pm 2$ % FS
Response time	Less than 1 s
Resolution	0.6 mbar (0.009 psig)
<b>Temperature</b>	
Measuring Range	0-120 °C (32-248 °F)
Accuracy ( $\pm 1 \sigma$ ), 15-90 °C (59-194 °F)	$\pm 0.5$ K
Accuracy ( $\pm 1 \sigma$ ), 0-120 °C (32-248 °F)	$\pm 1$ K
Response time (63.2 % at 50 % FS flow)	250 ms
Resolution	0.006 K
<b>System Conditions and Environment</b>	
Liquid Types	Aqueous media compatible with wetted materials. Kinematic viscosity less than or equal to 2 mm <sup>2</sup> /s (cSt)
Liquid temperature, operation	Water: 0-100 °C (32-212 °F)
Liquid temperature, peak	-25 to +120 °C (-13 to +248 °F), non-freezing
Ambient temperature	operation -25 to +60 °C (-13 to +140 °F)
Ambient temperature, peak	-55 to +90 °C (-67 to +194 °F)
Maximum System Pressure	24 bar (348 psig) Composite, 30 bar (435 psig) Stainless
Burst Pressure	30 bar (435 psig) Composite, 40 bar (580 psig) Stainless
<b>Materials</b>	
Sensing element	Silicon-based MEMS
Sealing	EPDM O-rings, FKM O-rings or EPDM sealing cap with FKM O-rings
Housing	Composite (PPS, PA66),
Flow pipe	Stainless steel AISI 316 EN 1.4408, PPA 40-GF
Piping connection	Dual unions, tailpieces - NPT, sweat, press Pipe thread – BSPP (G thread)
<b>Electrical</b>	
Power Supply	24 VAC, 1A
Triac Output	24 VAC, 1A
Analog Output	0.5 - 3.5 V



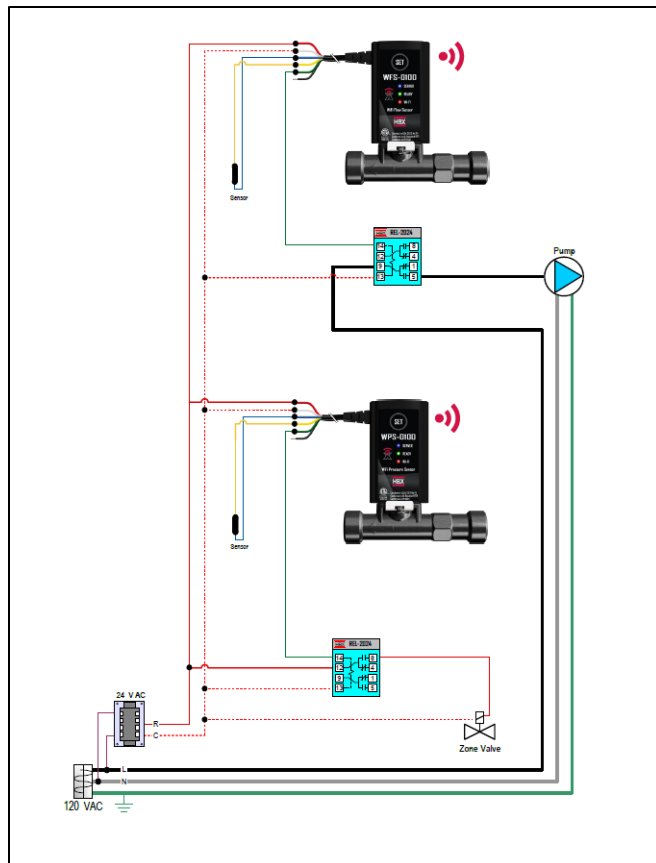
# WIRING

## Sensor Wiring Instructions

24 VAC R	①	
24 VAC C	②	
Ground	③	
Thermistor Input	④	
24VAC Triac Output	⑤	
Modulating Output	⑥	

<b>Power</b>	9V - 24V (AC or DC) Pins 1, 2 (If using Triac 24VAC is Required)
<b>Thermistor</b>	Pins 4, 3 10k thermistor type 3
<b>24VAC Triac</b>	0 - 0.75VDC Pins 5, 2
<b>Modulating Output</b>	0.5 - 3.5VDC

⚠️ If Wiring more than one sensor to same power supply, ensure the same connections are made on pins 1, 2 to the power supply. Do not swap.



## INSTALLATION

Install the WFS (Flow and temperature) Sensor and WPS (pressure and temperature) sensors in a location that will be easy to perform periodic maintenance. Install shut-off valves upstream and downstream of the sensors to aid installation and maintenance. Install a strainer or other filtering device upstream of the flow and pressure sensors.

The corresponding supply and return pipes must be integral to the same flow rate as measured by the flow meter. The WFS flow meter must be installed on the return pipe and the WPS pressure sensor on the supply pipe. The sensors can be installed in a horizontal or vertical position, following the flow direction indicated by the arrow on the body. The first length of straight of pipe connected to the flow sensor must be a minimum of 3" long prior to a bend for the sensor to register a proper reading.

