

2023 CATALOG



**SUPERIOR BUILDING AUTOMATION SENSORS**



Energy

Current

Air Quality

Temp

Pressure

CO/NO2

Refrigerant

Toxic Gas

Higher reliability  
Faster installation  
Superior accuracy

***Sense the difference***



Higher Reliability    Faster Installation    Superior Accuracy

## *Sense the Difference*

### **SAME DAY SHIPPING**

Place your order prior to 3 pm PST, and it's on the way

### **EASY TO ORDER 866-660-8864**

5 am to 5 pm PST (8AM-8PM EST) or online 24/7!

### **7 YEAR LIMITED WARRANTY**

We stand behind our quality. See terms and conditions. Warranty varies for certain items.

### **FAST ACCOUNT APPROVAL**

Instant \$1000 credit limit.

### **LIVE TECHNICAL SUPPORT**

The industry's best!

### **CUSTOM ORDERS**

We go the extra mile—Have a special requirement? Just ask!

### **ONLINE ORDERING**

Our online web store lets you manage all your Senva business.

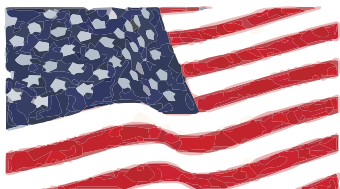
## *Proudly Made in Beaverton, Oregon*



Senva Production Facility - Beaverton, OR



Senva current sensor assembly and testing line



**PROUDLY MADE IN USA**

This classification of manufacturing is our promise that our products (except PR series relays, which we're moving to USA in 2022) are designed and assembled from top to bottom in our Beaverton, OR facility. Senva sensors are built with a commitment to superior quality that Senva has been known for since 2008.



### **TO ORDER**

Ph: 866-660-8864

Fax: 503-296-2529

[sales@senvainc.com](mailto:sales@senvainc.com)



### **FREE SHIPPING**

via UPS Ground on your first order OR any qualifying\* order placed online at [senvainc.com](http://senvainc.com)


\*Online orders of \$700 or more ship free in the contiguous 48 states. Online orders of \$750 or more ship free to Alaska, Hawaii and Canada.



## ***ISO Certification***

As part of enhancing our management systems with the collaboration of our entire staff and Orion Registrar, Inc., we are pleased to announce our ISO 9001:2015 registration.

To view our certificate, please visit our website [www.senvainc.com](http://www.senvainc.com) under the documents section or email our team at [sales@senvainc.com](mailto:sales@senvainc.com)

 **Warning:** This catalog is designed for reference only. Refer to installation instructions that accompany product and heed all safety instructions. Never rely on current status LED to indicate presence of power. Product improvement is a continuing process at Senva. Changes may occur to products without prior notice.



# Core Products

## AUTOSET VFD/CV

Now with super low turn on for smaller VFDs. Self induced power for simplified wiring. Works on constant volume applications, too.



## ECMSET

Fine turn on adjustment for run status on VFDs without false trips from stand-by ECM current. Prevents costly call backs.



## PILOT RELAYS

Featuring tamper-proof hand-off-auto switch cover, current run status option, and compact 20A versions



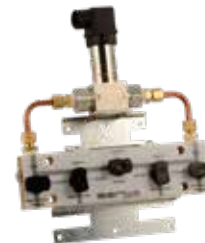
## UNIVERSAL PRESSURE

Innovative duct/remote probe coupled with selectable ranges, 0-5/10VDC and 4-20mA loop and 3-wire outputs, din/duct/conduit ready!



## NIST PRESSURE

Looking for the best value in pressure; look no further. Now featuring NIST high accuracy options!



## PRO PRESSURE

Single diaphragm element provides 0.25% accuracy and rugged IP65 durability.



## TOXIC GAS SENSING

Raising the bar with replaceable digital sensing elements for CO, NO2, and much more. New metal enclosure is industries toughest!



## ENERGY METER

The EMX Advanced is the most user-friendly and quick installation True RMS energy meter on the market. Its line powered with a color OLED screen and data-rich user interface making setup as easy as L1, L2, L3.



## MULTI-CIRCUIT/BRANCH CIRCUIT

The versatile Core Module TM system is a single monitoring solution with peripherals optimized for Branch Circuit and Multi-Circuit Monitoring applications designed to reduce the cost and complexity associated with legacy multi-circuit monitors.



## P4 Value Series

# P4 Value Dry Pressure

Range: 0.1 to 25" W.C.  
 0-5VDC/10VDC or 4-20 mA loop & 3-wire powered versions  
 LCD option & LED status indication  
 Remote & manual zero function  
 PATENT PENDING

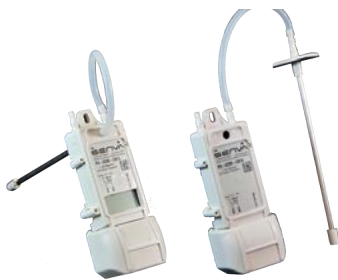


### DESCRIPTION

The P4 dry media pressure transmitter features fixed ranges optimized for building (zone) pressure, filter measurement, and static duct applications. Innovative static probe integrates with unit or can be mounted remotely for static pressure. PATENT PENDING.

### APPLICATIONS

- Building (zone) pressure
- Filter condition measurement
- Duct/static
- OEM HVAC



*Innovative probe transforms for duct or remote applications*



*High density DIN mounting saves valuable panel space*



*Conduit ready*

### FEATURES

- Duct, filter, and room pressure with a single unit with RP-6 probe addition
- LCD option for set-up and reference
- Non-position sensitive for easy placement accuracy
- 0-5VDC/10VDC or 4-20 mA loop or 3-wire powered versions
- DIN mount flat or side to conserve panel space
- Conduit cover for 3/8" flex connectors...no extra parts required
- LED: Power heartbeat, auto-zero complete, 110% over pressure; facilitates locating sensor in ductwork

ORDERING

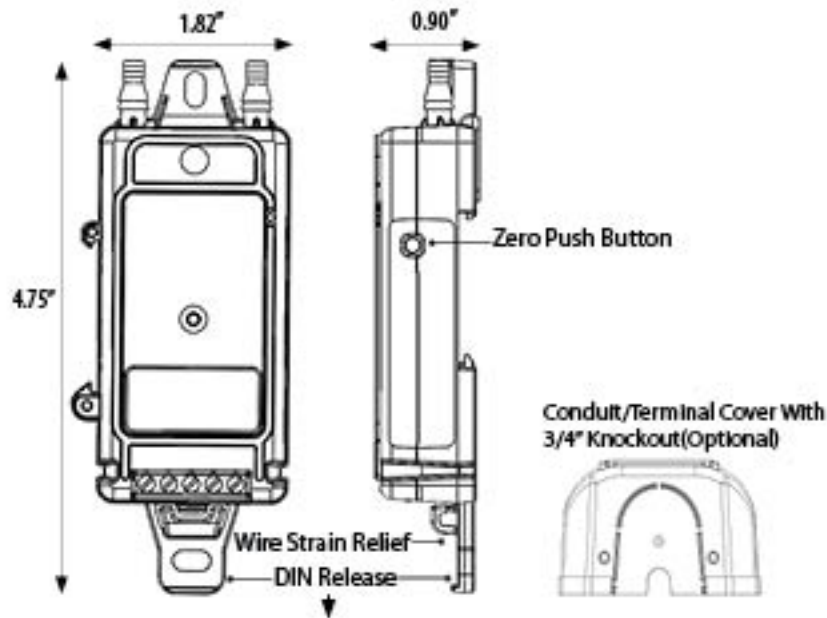
<p><b>P4</b> - <input type="checkbox"/> - <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> <p><b>Fixed Range*</b></p> <p>0005 = 0-0.05 "w.c.    0025Pa = 0-25 Pa          0010 = 0-0.10 "w.c.    0050Pa = 0-50 Pa          0025 = 0-0.25 "w.c.    0100Pa = 0-100 Pa          0050 = 0-0.50 "w.c.    0300Pa = 0-300 Pa          0100 = 0-1.0 "w.c.    0500Pa = 0-500 Pa          0150 = 0-1.5 "w.c.    1000Pa = 0-1000 Pa          0250 = 0-2.5 "w.c.    1600Pa = 0-1600 Pa          0300 = 0-3.0 "w.c.    2500Pa = 0-2500 Pa          0500 = 0-5.0 "w.c.    3000Pa = 0-3000 Pa          0750 = 0-7.5 "w.c.    5000Pa = 0-5000 Pa          1000 = 0-10 "w.c.          1500 = 0-15 "w.c.          2500 = 0-25 "w.c.          5000 = 0-50 "w.c.</p>	<p><b>Output</b></p> <p>A = 0-5VDC, 3-Wire          B = 0 -10VDC, 3-Wire          C = 4-20mA, 2-wire          D= 4-20mA, 3-wire</p>	<p><b>Uni or Bi</b></p> <p>U = Uni-directional          B = Bi-directional</p>	<p><b>Accuracy**</b></p> <p>1 = 1.00% of range          2 = 0.25% of range NIST          5 = 0.50% of range NIST</p>	<p><b>Display</b></p> <p>L = LCD          X = No Display</p>	<p><b>Duct Probe</b></p> <p>P = Duct Probe          X = No Probe</p>
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*Example part number P4-0500-CU2LP is 4-20mA (2-wire), 0.25% accuracy, uni-directional 0-5" WC sensor with LCD display and Duct Probe.*

*\*Other Fixed Ranges Available Upon Request (mmwc, etc), Please Consult Factory*

*\*\*0.25% accuracies available n 0.5"w.c. and greater, 0.5% accuracy available on 0.1"w.c. and greater (or equivalent Pa ranges)*

DIMENSIONS



SPECIFICATIONS		
Power Supply		12-30VDC/24VAC(1), 30mA max
Output type	Outputs Available	4-20mA loop powered, 4-20 mA 3-wire, 0-5VDC, 0-10VDC
Fixed Ranges	Multiple Fixed Ranges (Inches of w.c. and Pascals)	0.1"w.c. up to 25"w.c. models 1250 Pa up to 6250 Pa models
Operating Temperature	Operating range	-4 to 140F (-20 to 60°C)
	Compensated range	-4 to 140F (-20 to 60°C)
Media compatibility		Dry, oil-free air, N2
Sensor Type		MEMS silicon piezoresistive; precision calibrated
Sensor Performance	Accuracy 1.00%	±1.00% of range
	Accuracy 0.25%(2)	±0.25% of range; 7-point NIST calibrated
	Accuracy 0.50%(2)	±0.50% of range; 7-point NIST calibrated
	Zero Tolerance	Included in accuracy specification
	Span Tolerance	±1.00%
	Zero Drift (1 year)	0.004"WC/year max. 0.4% for units >0.5"w.c.
	Auto-zero input	Push-button and contact closure
	Thermal Shift (Zero and Span)	0.02% FSO/°C (0.01%FSO/°F) measured from 22°C (72°F)
	Overpressure	up to 5" models: 41.5"w.c.; 10" models: 133"w.c.; 25" models: 332"w.c.
	Max Static Line Pressure	up to 5" models: 41.5"w.c.; 10" models: 133"w.c.; 25" models: 332"w.c.
Burst Pressure	up to 5" models: 83"w.c.; 10" models: 166"w.c.; 25" models: 415"w.c.	
Position Sensitivity	Non-position sensitive	
Agency	Compliance	CE, RoHS
Enclosure	Flammability	UL94 5VB
	Environmental	NEMA 1

\* Product improvement is a continual process as Senva and product features and specification may change without prior notice. Refer to instructions that accompany the product for installation and wiring.



## P4 Precision Series

# P4 Precision Dry Pressure

Precision calibrated 0.25% and 0.50% accuracy models  
 Standard industry leading 7-point NIST certification  
 LCD display option  
 LED status indication and Zero push button and contact closure  
 PATENT PENDING

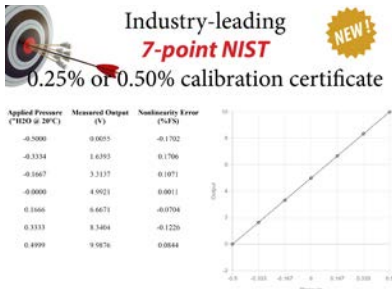


### DESCRIPTION

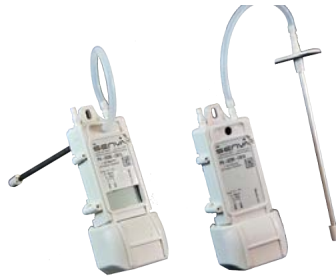
Now with NIST calibrated 0.25% and 0.50% accuracy options, the P4 dry media pressure transmitter features fixed ranges optimized for building (zone) pressure, filter measurement, and static duct applications. Innovative static probe integrates with unit or can be mounted remotely for static pressure. PATENT PENDING. CALL FOR SPECIAL PRICING

### APPLICATIONS

- Building (zone) pressure
- Filter condition measurement
- Duct/static
- OEM HVAC
- Meets 0.25% or 0.5% accuracy specs



Precision NIST calibration



Innovative Probe transforms for duct or remote applications



Conduit Ready

### FEATURES

- 7-point NIST certificate; more accuracy points than any competitor
- 0.25% and 0.50% accuracy versions available from 0.25" to 25" W.C.
- Precision calibrated, temperature compensated, non-position-sensitive pressure element
- Versatile duct, filter, or remote mounting; address all with a single unit with RP-6 probe addition
- DIN mount - forward for LCD panel or sideways for panel space savings
- 0-5VDC/10VDC or 4-20 mA loop & 3 wire powered versions
- Conduit cover for 3/8" flex connectors
- LED facilitates locating sensor in ductwork

ORDERING

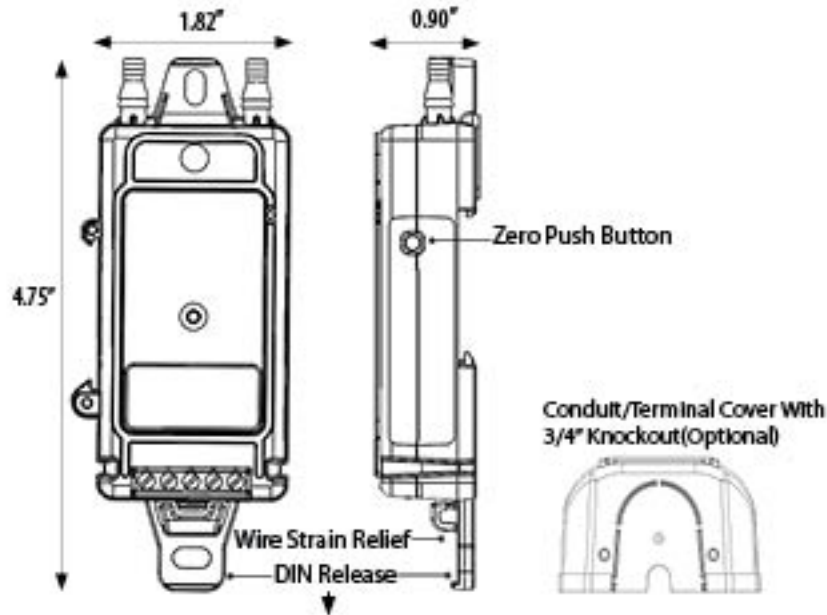
<p><b>P4</b> - <input type="checkbox"/> - <input type="checkbox"/> - <input type="checkbox"/> - <input type="checkbox"/> - <input type="checkbox"/> - <input type="checkbox"/></p> <p><b>Fixed Range*</b></p> <p>0005 = 0-0.05 "w.c.    0025Pa = 0-25 Pa          0010 = 0-0.10 "w.c.    0050Pa = 0-50 Pa          0025 = 0-0.25 "w.c.    0100Pa = 0-100 Pa          0050 = 0-0.50 "w.c.    0300Pa = 0-300 Pa          0100 = 0-1.0 "w.c.    0500Pa = 0-500 Pa          0150 = 0-1.5 "w.c.    1000Pa = 0-1000 Pa          0250 = 0-2.5 "w.c.    1600Pa = 0-1600 Pa          0300 = 0-3.0 "w.c.    2500Pa = 0-2500 Pa          0500 = 0-5.0 "w.c.    3000Pa = 0-3000 Pa          0750 = 0-7.5 "w.c.    5000Pa = 0-5000 Pa          1000 = 0-10 "w.c.          1500 = 0-15 "w.c.          2500 = 0-25 "w.c.          5000 = 0-50 "w.c.</p>	<p><b>Output</b></p> <p>A = 0-5VDC, 3-Wire          B = 0-10VDC, 3-Wire          C = 4-20mA, 2-wire          D = 4-20mA, 3-wire</p>	<p><b>Uni or Bi</b></p> <p>U = Uni-directional          B = Bi-directional</p>	<p><b>Accuracy**</b></p> <p>1 = 1.00% of range          2 = 0.25% of range NIST          5 = 0.50% of range NIST</p>	<p><b>Display</b></p> <p>L = LCD          X = No Display</p>	<p><b>Duct Probe</b></p> <p>P = Duct Probe          X = No Probe</p>
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*Example part number P4-0500-CU2LP is 4-20mA (2-wire), 0.25% accuracy, uni-directional 0-5" WC sensor with LCD display and Duct Probe.*

*\*Other Fixed Ranges Available Upon Request (mmwc, etc), Please Consult Factory*

*\*\*0.25% accuracies available n 0.5"w.c. and greater, 0.5% accuracy available on 0.1"w.c. and greater (or equivalent Pa ranges)*

DIMENSIONS



**SPECIFICATIONS**

SPECIFICATIONS

Power Supply		12-30VDC/24VAC(1), 30mA max
Output type	Outputs Available	4-20mA loop powered, 4-20 mA 3-wire, 0-5VDC, 0-10VDC
Fixed Ranges	Multiple Fixed Ranges (Inches of w.c. and Pascals)	0.1"w.c. up to 25"w.c. models 1250 Pa up to 6250 Pa models
Operating Temperature	Operating range	-4 to 140F (-20 to 60°C)
	Compensated range	-4 to 140F (-20 to 60°C)
Media compatibility		Dry, oil-free air, N2
Sensor Type		MEMS silicon piezoresistive; precision calibrated
Sensor Performance	Accuracy 1.00%	±1.00% of range
	Accuracy 0.25%(2)	±0.25% of range; 7-point NIST calibrated
	Accuracy 0.50%(2)	±0.50% of range; 7-point NIST calibrated
	Zero Tolerance	Included in accuracy specification
	Span Tolerance	±1.00%
	Zero Drift (1 year)	0.004"WC/year max. 0.4% for units >0.5"w.c.
	Auto-zero input	Push-button and contact closure
	Thermal Shift (Zero and Span)	0.02% FSO/°C (0.01%FSO/°F) measured from 22°C (72°F)
	Overpressure	up to 5" models: 41.5"w.c.; 10" models: 133"w.c.; 25" models: 332"w.c.
	Max Static Line Pressure	up to 5" models: 41.5"w.c.; 10" models: 133"w.c.; 25" models: 332"w.c.
	Burst Pressure	up to 5" models: 83"w.c.; 10" models: 166"w.c.; 25" models: 415"w.c.
Position Sensitivity	Non-position sensitive	
Agency	Compliance	CE, RoHS
Enclosure	Flammability	UL94 5VB
	Environmental	NEMA 1

\* Product improvement is a continual process as Senva and product features and specification may change without prior notice. Refer to instructions that accompany the product for installation and wiring.



# P5 Series Universal Pressure Sensor

5", 10", and 25" versions with four selectable sub-ranges  
 1250, 2500, 6250 Pa versions with four selectable sub-ranges  
 Optional LCD display and LED indicator  
 Dual 0-5/10VDC, 4-20mA (loop and 3-wire)



*Versatile probe for duct or remote mount included. Save on probe expense.*

## DESCRIPTION

The P5 universal dry media pressure transmitter accurately measures multiple ranges optimized for building (zone) pressure, filter measurement, and static duct applications. Selectable outputs and uni/bi directional readings reduce inventory. Innovative static probe integrates with unit or can be mouted remotely for static pressue. Optional LCD for panel mount readings and set up.

## APPLICATIONS

- Building (zone) pressure
- Filter condition measurement
- Duct/static

**PATENT PENDING**

## FEATURES

### Reduce inventory and ordering errors with universal unit

- Selectable 4-20 mA loop powered, 4-20 mA 3-wire, 0-5VDC, 0-10VDC for compatibility
- Zero calibration push button and remote contact input
- Designed for duct, filter, and remote probe applications in a single universal unit
- Probe is compatible with both 1/8" and 1/4" ID hose

### Time & money saving installation for contractors and OEMs

- Non-position sensitive for easy placement
- Dual DIN mount: Side mount for high density OEM applications, flat panel mount for LCD viewable panel mount.
- Conduit ready for for 3/8" flex connectors
- Post mountable with mounting tab indents and wire ties

### LED visual status indications of operation

- LED: Power heartbeat, momentary rapid flash = auto-zero complete, continual rapid flash = 110% over pressure
- LED facilitates locating sensor in ductwork



*Conduit ready...no additional parts to buy*

*Integrated high density mount or flat mount saves valuable panel space.*



7 year limited warranty

ORDERING



Pressure Range

- 0100 = 0-1" w.c. (w/subranges)
- 0500 = 0-5" w.c. (w/subranges)
- 0501 = 0-5" w.c. (w/subranges)
- 1000 = 0-10" w.c. (w/subranges)
- 2500 = 0-25" w.c. (w/subranges)
- 1250Pa = 0-1250Pa (w/subranges)
- 2500Pa = 0-2500Pa (w/subranges)
- 6250Pa = 0-6250Pa (w/subranges)

Accuracy

1 = 1% of selected range

Display

L = LCD  
X = No Display

Duct Probe

P = Duct Probe  
X = No Probe

**Example part number P5-0500-1LP is universal pressure sensor, 0-5" full scale range (selectable sub-ranges) with LCD and Duct Probe.**



SPECIFICATIONS

Power Supply	12-30VDC/24VAC(1), 30mA max
Output type	Selectable outputs 4-20mA loop powered, 4-20 mA 3-wire, 0-5VDC, 0-10VDC
Output scaling	P5-0100 0-1" (Selectable 0.1, 0.25, 0.5, 1.0, ±0.1, ±0.25, ±0.5, ±1.0"WC)
	P5-0500 0-5" (Selectable 0.1, 0.25, 2.5, 5.0, ±0.1, ±0.25, ±2.5, ±5.0"WC)
	P5-0501 0-5" (Selectable 0.5, 1.0, 2.5, 5, ±0.5, ±1.0, ±2.5, ±5"WC)
	P5-1000 0-10" (selectable 1.0, 2.5, 5.0, 10, ±1.0, ±2.5, ±5.0, ±10"WC)
	P5-2500 0-25" (selectable 5.0, 10, 15, 25, ±5.0, ±10, ±15, ±25"WC)
	P5-1250Pa 0-1250 Pa (selectable 25, 50, 625, 1250, ±25, ±50, ±625, ±1250 Pa)
P5-2500Pa 0-2500 Pa (selectable 250, 625, 1250, 2500, ±250, ±625, ±1250, ±2500 Pa)	
P5-6250Pa 0-6250 Pa (selectable 1250, 2500, 3750, 6250, ±1250, ±2500, ±3750, ±6250 Pa)	
Operating Temperature	Operating range -4 to 140F (-20 to 60°C)
	Compensated range -4 to 140F (-20 to 60°C)
Media compatibility	Dry, oil-free air, N2
Sensor Type	MEMS silicon piezoresistive; precision calibrated
Sensor Performance	Accuracy ±1.0% of selected range (combined linearity and hysteresis)
	Zero Tolerance Included in accuracy specification
	Span Tolerance ±1.00%
	Zero Drift (1 year) 0.004"WC/year max. 0.4% for units >0.5" w.c.
	Thermal Shift (Zero Overpressure) 0.02% FSO/°C (0.01%FSO/°F) measured from 22°C (72°F)
	Max Static Line up to 5" models: 41.5" w.c.; 10" models: 133" w.c.; 25" models: 332" w.c.
	Burst Pressure up to 5" models: 83" w.c.; 10" models: 166" w.c.; 25" models: 415" w.c.
	Position Sensitivity Non-position sensitive
	Auto-zero input Push-button and N.O. contact closure
	Agency Compliance

Additional Remote probe

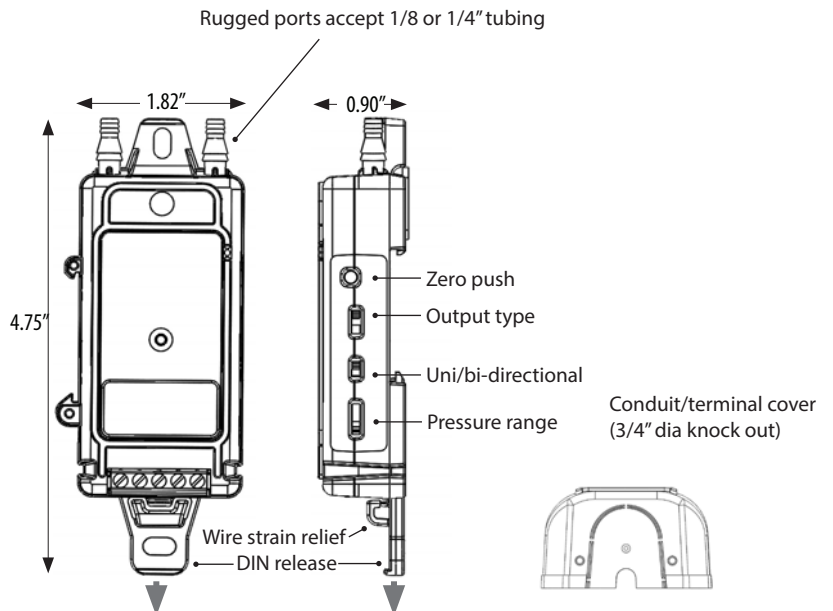
RP-6 Remote/duct probe, 6"

- RP-6 remote probe with integrated dampener for accurate measurements.
- Accepts both 1/8" and 1/4" tubing.
- Note: One probe is standard with product



(1) One side of transformer secondary is connected to signal common. Dedicated transformer is recommended.

DIMENSIONS



**Warning:** Refer to installation instructions that accompany product and heed all safety instructions.

# P6 Series Pro Pressure Sensors

0-5", 15", and 40" ranges; 10 selectable sub-ranges  
 0-1250, 3750, and 10000 Pa ranges; 10 selectable sub-ranges  
 LCD display and LED indicator  
 Nema 4X enclosure (Duct/port version)



DUAL BARB



DUCT PROBE

## DESCRIPTION

The P6 universal dry media pressure transmitter accurately measures multiple ranges optimized for building (zone) pressure, filter measurement, and static duct applications. Selectable outputs and uni/bi directional readings reduce inventory. Conduit ready Nema 4 enclosure for harsh environments.

## APPLICATIONS

- Building (zone) pressure
- Filter condition measurement
- Duct/static
- Wash down environments

## FEATURES

### Reduce inventory and ordering errors

- Selectable 4-20 mA loop-powered, 4-20 mA 3-wire, 0-5VDC, 0-10VDC for compatibility
- 10 field selectable pressure ranges to address a wide range of applications with high resolution
- Field selectable Pa or WC" display
- Zero calibration push button and remote contact input
- Models for duct or remote probe applications
- Selectable fast/slow response rate (2s fast, 8s slow)

### Time & money saving installation

- Non-position sensitive for easy placement
- Conduit ready or use included water tight cable gland

### LED visual status indications of operation

- LED: Power heartbeat, momentary rapid flash = autozero complete, continual rapid flash = 110% over pressure



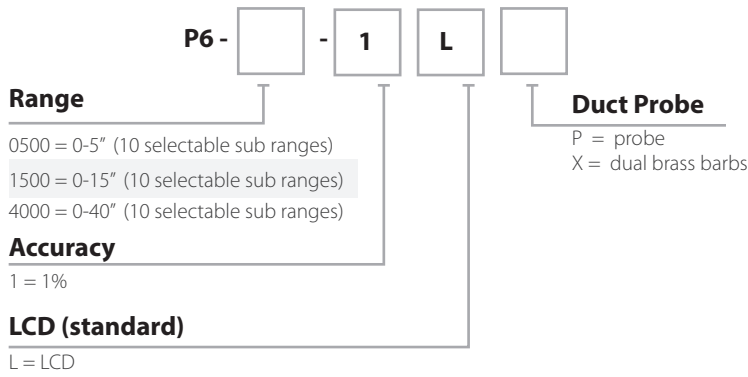
Ten field selectable ranges for high resolution



7 year limited warranty



ORDERING

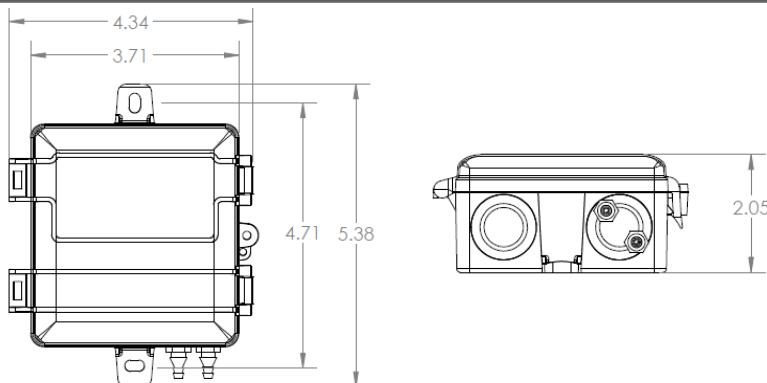


SPECIFICATIONS

Power Supply		12-30VDC/24VAC (1), 30mA max.
Output type	Selectable outputs	4-20 mA loop powered, 4-20 mA 3-wire, 0-5VDC, 0-10VDC
Output scaling	Max range	0-5" (0.1/0.25/0.5/1/1.5/2/2.5/3/4/5"wc), 0-1250Pa (25/50/125/250/375/500/625/750/1000/1250 Pa)
	(selectable sub ranges)	0-15" (0.25/0.5/1/2.5/3/4/5/8/10/15"wc) 0-3750Pa (50/125/250/625/750/1000/1250/2000/2500/3750 Pa) 0-40" (1/2.5/5/8/10/15/20/25/30/40"wc) 0-10000Pa (250/625/1250/2000/2500/3750/5000/6250/7500/10000 Pa)
Operating Temperature	Operating range	-4 to 140F (-20 to 60°C)
	Compensated range	-4 to 140F (-20 to 60°C)
Media compatibility		Dry, oil-free air, N2
Sensor Type		MEMS silicon piezoresistive; precision calibrated
Sensor Performance	Accuracy	±1.0% of selected range (combined linearity and hysteresis)
	Zero Tolerance	Included in accuracy specification
	Span Tolerance	±1.00%
	Zero Drift (1 year)	0.004"WC/year max. 0.4% for units >0.5" w.c.
	Auto-zero input	Push-button and contact closure
	Thermal Shift (Zero and Span)	0.02% FSO/°C (0.01%FSO/°F) measured from 22°C (72°F)
	Overpressure	up to 5" models: 41.5" w.c.; 10" models: 133" w.c.; 25" models: 332" w.c.
	Max Static Line Pressure	up to 5" models: 41.5" w.c.; 10" models: 133" w.c.; 25" models: 332" w.c.
	Burst Pressure	up to 5" models: 83" w.c.; 10" models: 166" w.c.; 25" models: 415" w.c.
	Position Sensitivity	Non-position sensitive
Auto-zero input	Push-button and N.O. contact closure	
Response Rate	Selectable	Fast = 2 seconds, slow = 8 seconds
Dimensions		4.0"h x 3.7"w x 2.1"d
Agency	Compliance	CE, RoHS
Enclosure	Flammability	UL94 5VB
	Environmental	NEMA 4X

(1) One side of transformer secondary is connected to signal common. Dedicated transformer is recommended.

DIMENSIONS



**Warning:** Refer to installation instructions that accompany product and heed all safety instructions.

# PW31 Series Single Diaphragm Wet-to-Wet Differential Pressure Sensor

±0.25% accuracy  
Stand-alone transducer, 3-valve, or 5-valve options  
Rugged IP65 construction for harsh environments  
Optional LED display for ease of commissioning and troubleshooting



## DESCRIPTION

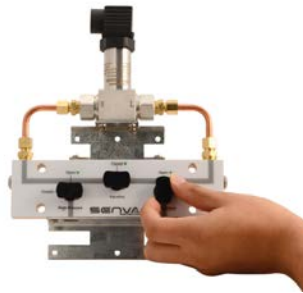
Senva's PW31 Series is designed to streamline installation and provide maximum accuracy. Options for standalone transducer or 3-valve and 5-valve bypass assemblies allow flexibility and save time on installation and commissioning. The single-diaphragm element is temperature compensated to provides superior ±0.25% accuracy. The PW31's compact, light, and rugged structure combined with IP65 stainless steel construction make it ideal for most installations and capable of withstanding the most rugged environments. Now available with a highly visible, loop-powered LED display. Just plug it in for ease of commissioning and troubleshooting (4-20mA version only).

## APPLICATIONS

- Meet rigid accuracy and/or bypass specifications
- Demand measurement in HVAC systems for pump speed control and local indication
- Process control systems
- Measurement of gases, vapors, and liquids
- Measure pressure changes on pumps for efficiency regulation and energy savings
- Level measurement in tanks and vessels
- Filter status monitoring
- System leak detection



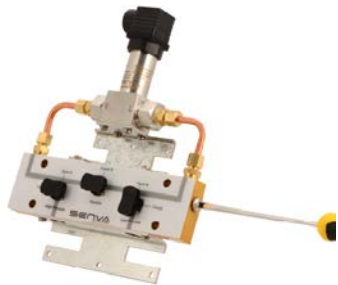
*IP65 LED display option for ease of troubleshooting*



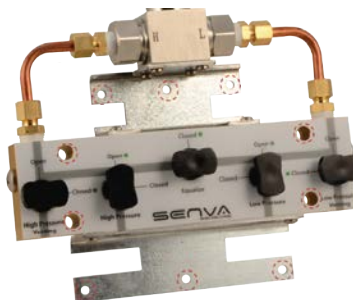
*3-valve and 5-valve bypass assemblies to meet specifications*



*High accuracy ±0.25% single-diaphragm element*



*Easy-to-use bleed valves*



*Securely screw-mount or clamp to any pipe*



*DIN43650 connection for ease of wiring*

## FEATURES

- Temperature compensated element for high accuracy in any environment
- 3-valve or 5-valve bypass options available to meet specifications
- DIN 43650 connector with screw terminals - no splicing necessary
- Versatile 1/2" FNPT allows simplified conduit connections - connect to any EMT, flex, or liquid-tight conduit
- Easy-access bleed valves for quick commissioning
- Calibration certificate included with every sensing element
- Optional LED display is highly visible and makes commissioning and troubleshooting simple (IP65)

## ORDERING

<input type="checkbox"/>	-	<input type="checkbox"/>	-	<input type="checkbox"/>	-	<input type="checkbox"/>	-	<input type="checkbox"/>
<b>Model</b>		<b>Bypass</b>		<b>Transducer Range</b>		<b>Output</b>		<b>Display</b>
PW31		X = None 3V = 3 Valves 5V = 5 Valves		005 = 0-5 PSID 010 = 0-10 PSID 025 = 0-25 PSID 050 = 0-50 PSID 100 = 0-100 PSID 150 = 0-150 PSID		A = 0-5V B = 0-10V C = 4-20mA		D = Display* *for 4-20mA units only

### Manifold Only



PWV-3 3-valve



PWV-5 5-valve

### Display Only



PW31-DISPLAY

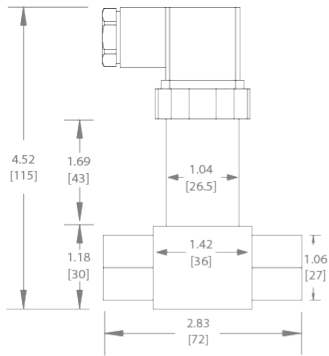
### Ordering the Correct Transducer

Transducer Ordering #	PSID Range (Differential)	Expected PSIG Pressure Range (Max Line Pressure)
005	0-5 PSID	0-25 PSIG
010	0-10 PSID	0-50 PSIG
025	0-25 PSID	0-100 PSIG
050	0-50 PSID	0-250 PSIG
100	0-100 PSID	0-500 PSIG
150	0-150 PSID	0-750 PSIG

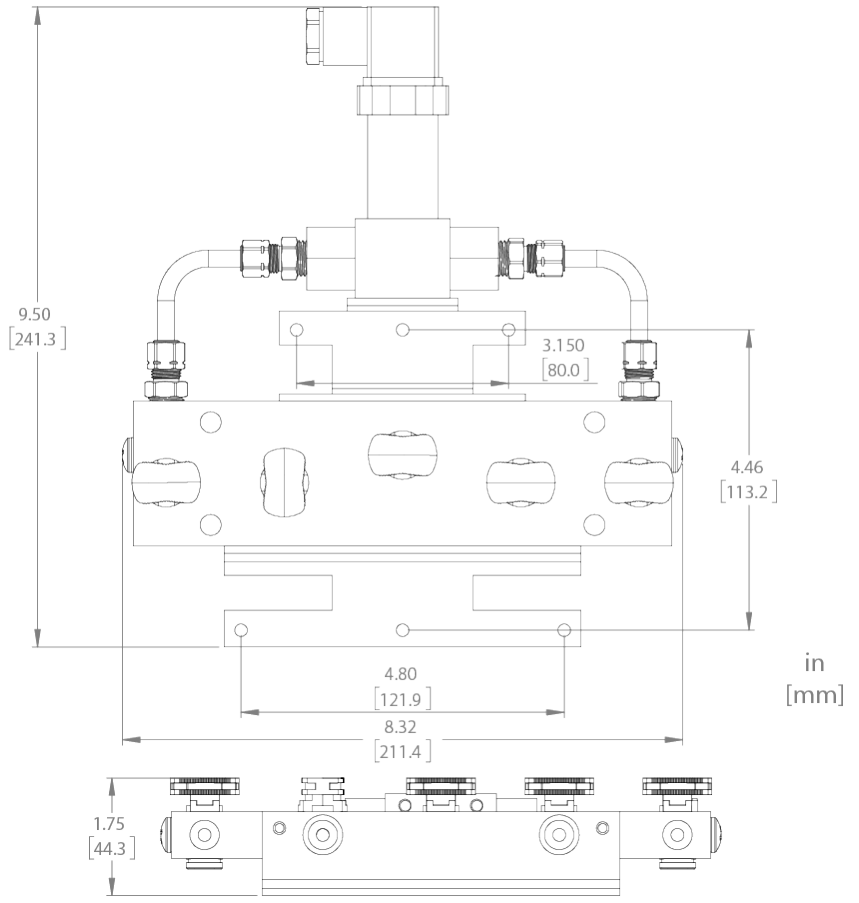
*\*Using a lower range PSID transducer for higher PSIG applications will result in inaccurate readings and may reduce the life span of the transducer. See "line pressure effect" in specification section.*

**DIMENSIONS**

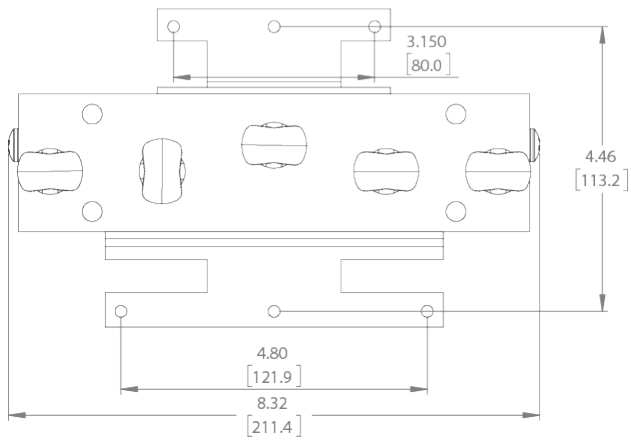
**Transmitter Only**



**3-Valve and 5-Valve Assemblies (same dimensions)**



**Manifold Only**



**Warning:** The datasheet is designed for reference only. Refer to installation instructions that accompany the product and heed all safety instructions. Product improvement is a continuing process at Senva. Changes may occur to products without prior notice

SPECIFICATIONS							
Power supply	15-35vdc, 20mA max.						
Outputs	2-wire 4-20mA, 3-wire 0-10V, 3-wire 0-5V						
Operating Temperature (3)	Operating Temperature	-4 to 175°F (-20-80°C)					
	Compensated range	30 to 158°F (0-70°C)					
Media Compatibility Transmitter	Transmitter Only	316L SS compatible liquids and gases, Viton O-rings					
Media Compatibility Manifold	Connection	Copper tube, CW614n Brass fittings (2.5-3.5% lead content)					
	Manifold O-Rings	Neoprene					
	Manifold Valves	Glass filled Acetal (Polyacetal Resin)					
	Manifold Material	Anodized Aluminum					
	Type	Micro-machined silicon strain gauge					
	Accuracy (2)	±0.25%					
	Zero and Span from Factory	Included in ±0.25% accuracy statement					
	Temp coefficient zero	For units <25PSI: ±1.7% FS/100°F; ±1.5%FS/50°C For units >25PSI: ±1.1% FS/100°F; ±1.0%FS/50°C					
	Temp coefficient span	For units <25PSI: ±1.7% FS/100°F; ±1.5%FS/50°C For units >25PSI: ±1.1% FS/100°F; ±1.0%FS/50°C					
	Line Pressure Effect	Zero Shift ≤0.0035%FS/PSIG line pressure					
Burst Pressure	500% DP range high side; 300% DP range low side						
Sensor Performance	Differential Pressure Ranges	0-5 PSID	0-10	0-25	0-50	0-100	0-150
	Differential Overload Pressure	7.5 PSID	15	37.5	75	150	225
	Maximum Static/Line Pressure (1)	25 PSIG	50	125	250	500	750
	Accuracy (2)	±0.0125 PSID	±0.025	±0.0625	±0.125	±0.25	0.375
	Sensor Enclosure	Laser welded housing, IP65					
	Long Term Stability	±0.5 %FS/Year					
	Shock	30G					
Vibration	5G @ 50Hz; 10G acceleration						
EMI/RFI Protection	Per CE Requirements						
Connection	Pressure Connection Transmitter	1/4" NPT Female					
	Pressure Connections Manifold	1/4" NPT female					
	Electrical Connection	DIN43650A					
	Environmental	IP65 (Installed with water-tight fittings) 1/2" conduit adapter included					
Display	Accuracy	0.1%					
	Output	4-20mA					
	Voltage Drop	<3.5VDC					
	Sample Rate	4/s					
	Environmental	IP65					
Agency	Transmitter Only	CE, RoHS					
	Manifold	CE					

(1) This is maximum gauge pressure to maintain the 0.25% accuracy.

(2) FS is defined as the full scale of the selected range. Accuracy includes non-linearity, hysteresis, repeatability, zero and span tolerance.

(3) Stated operating range is for electronics only; Media temperature may be considerably higher. Use of device outside of compensated range may result in drift.

\* Product improvement is a continual process as Senva and product features and specification may change without prior notice. Refer to instructions that accompany the product for installation and wiring.



# PW30 Series Remote Wet-to-Wet Differential Pressure Sensor

Revolutionary design eliminates plumbing/bypass assemblies  
16 selectable differential ranges in one device  
LCD display for verification of high, low, and differential pressures  
Swap or replace remote sensors with ease



## DESCRIPTION

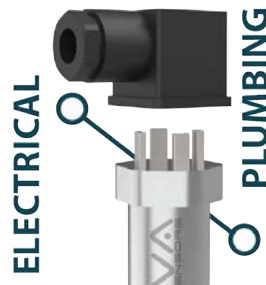
The PW30 Series uses remote sensors to eliminate the need for costly bypass assemblies, enabling fast, cost effective installation. The remote sensors mount directly to pipe to eliminate bleeding and additional plumbing. Optional factory pre-wired harnesses also available in wire and armored cable versions. NEW! Order pre-fabricated with a 3 or 5-valve bypass assembly for easy bleeding and installation where bypass is required. Standard LCD screen and dip switches make configuration a breeze. Measure 16 differential pressure ranges from 1-500 PSID with a single device without sacrificing accuracy. Selectable output 0-5V, 0-10V, or 2 Wire 4-20mA.

## APPLICATIONS

- Demand measurement in HVAC systems for pump speed control and local indication
- Process control systems
- Flow measurement of gases, vapors, and liquids compatible with 316L SS
- Filter status monitoring
- System leak detection



Don't waste time and money on unnecessary plumbing!



Remote sensors eliminate need for bypasses

Ease of installation - Independent installation for mechanical & electrical trades

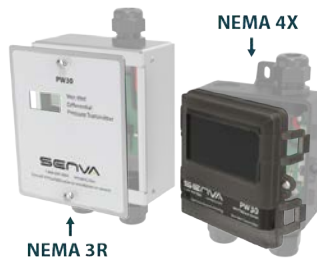


Save on commissioning and maintenance - Order fully assembled with bypass manifold - sensors are field swappable!



Pre-wired Armored Cable Available!

Save time - Available with prewired armored cable or shielded cable



High reliability - Metal or Plastic tamper resistant enclosures provided added layer of security



Flexibility - Accepts rigid conduit and field wiring

**FEATURES**

- Drastically reduce plumbing needs and save installation time
- Order with pre-fabricated wire or pre-fabricated bypass assembly
- Single device for 1-500 PSID makes ordering easy
- Swap or replace remote sensors with ease
- LCD and dip switches make configuration fast and simple
- Remote sensors come standard with DIN43650 connection for easy plug-and-play, no wire twisting
- MEMS sensor technology
- Integrated surge snubber protects sensor from water hammer for reliable long term performance
- Manual and remote zero for maintained accuracy
- Port swap corrects plumbing errors
- Uni/bi directional
- Conduit and wire connection compatible

**ORDERING**

**Transmitter**

PW30



**Enclosure**  
W = Rugged Plastic  
M = Metal

**Cable**



**Cable Termination**  
C = Conduit and wire gland connections (for field wiring) Blank = Standard  
**Optional Factory Wire (Pre-wired)**  
A = Armored

**Remote Sensor**

PWT



**Range**  
050 = 0-50 PSIG  
100 = 0-100 PSIG  
250 = 0-250 PSIG  
500 = 0-500 PSIG

**Add a bypass manifold...**



PWV-3 3-valve



PWV-5 5-valve

- 003 = 3 feet (36in)
- 009 = 9 feet (108in)
- 015 = 15 feet (180in)
- 020 = 20 feet (240in)
- 025 = 25 feet (300in)
- 030 = 30 feet (360in)
- 035 = 35 feet (420in)
- 040 = 40 feet (480in)
- 045 = 45 feet (540in)
- 050 = 50 feet (600in)
- 075 = 75 feet (900in)
- 100 = 100 feet (1200in)

**Optional Service Valve**

PWBV



Optional service valve PWBV for live sensor swap

**Fully Assembled with Bypass Manifold**

**Transmitter**

PW30



**Enclosure**  
W = Rugged Plastic  
M = Metal

**Bypass**



**Bypass**  
3V = 3 Valves  
5V = 5 Valves

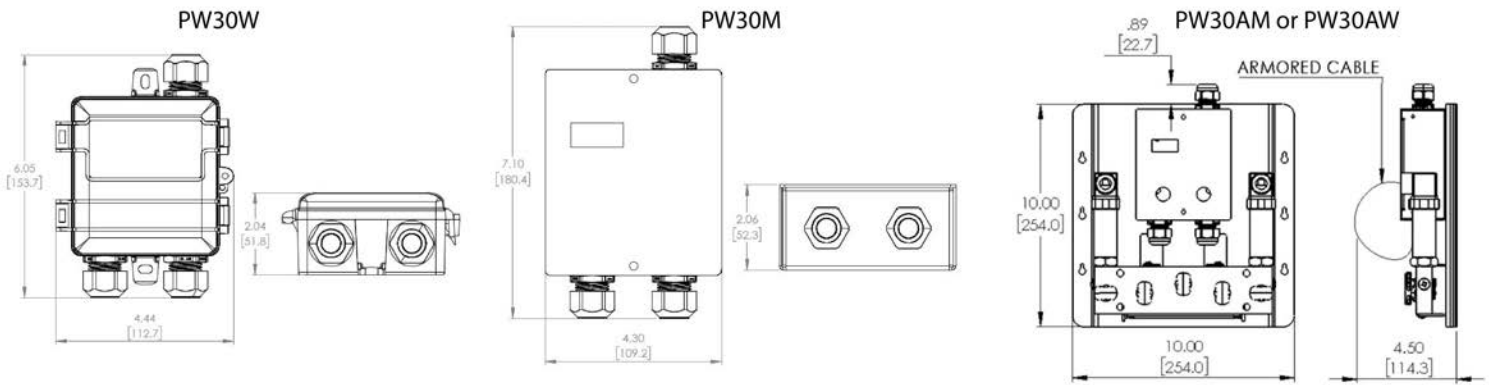
**Remote Sensor**



**Range**  
050 = 0-50 PSIG  
100 = 0-100 PSIG  
250 = 0-250 PSIG  
500 = 0-500 PSIG



DIMENSIONS



**Warning:** The datasheet is designed for reference only. Refer to installation instructions that accompany the product and heed all safety instructions. Product improvement is a continuing process at Senva. Changes may occur to products without prior notice

SPECIFICATIONS			
Power supply	Voltage output mode (0-5v)	12-30VDC/24VAC (1), 20mA max.	
	Voltage output mode (0-10v)	13-30VDC/24VAC required for 10V FS output	
	Current (4-20mA) output mode	15-30VDC (0 Ohm)/16-30VDC (250 Ohm)/ 18-30VDC (500 Ohm) , 20mA max.	
Outputs	Switch selectable	2-wire 4-20mA, 3-wire 0-5V/10V	
Operating Temperature	Transmitter	-22 to 158°F (-30 to 70°C)	
Media Compatibility	Type	Water, other 316 SS compatible media (316L diaphragm)	
	Temperature	32 to 250°F (0-125°C)	
Zero adjustment	Automatic	Pushbutton, terminal block switch input	
		Press button for 5 seconds to re-zero	
		Hold for 10 seconds to restore factory settings	
Sensor Type		Micro-machined silicon strain gauge	
PW Transmitter Accuracy	<i>Sensor PSIG</i>	<i>2% Accuracy Ranges</i>	<i>1% Accuracy Ranges</i>
	25 PSIG	0-1 / 0-2 PSID	0-5 / 0-10 / 0-15 / 0-20 / 0-25 PSID
	50 PSIG	0-10 / 0-15 PSID	0-20 / 0-25 / 0-30 / 0-40 / 0-50 PSID
	100 PSIG	0-15 / 0-20 / 0-25 / 0-30 PSID	0-40/ 0-50 / 0-75 / 0-100 PSID
	250 PSIG	0-30 / 0-40 / 0-50 PSID	0-75 / 0-100 / 0-125 / 0-150 / 0-250 PSID
	500 PSIG	0-75 / 0-100 / 0-125 PSID	0-150 / 0-250 / 0-500 PSID
Sensor Performance	Accuracy		< ±0.25% BFSL
	Stability (1 year)		±0.25% FS, typ
	Over-range protection		200% rated pressure
	Pressure Cycles		> 100 Million
	Compensated Operating Range		14 to 158°F (-10-70°C)
	Temperature Compensation %FS/C		Zero, <±0.03(<100kPa), <±0.02(>100kPa) Span, <±0.03(<100kPa), <±0.02(>100kPa)
	Vibration		10G peak, 20 to 2000 Hz
Enclosure	Construction PW30		PC/ABS (Plastic), Powder coated steel (metal)
	Environmental PW30		Nema 4X (plastic), Nema 3R (Metal)
	Environmental PW30A		Nema 4X (plastic), Nema 3R (Metal)
	Construction PWT[xxx] Sensor		Stainless Steel, 304, 1/4" MNPT, 1/2" Conduit Fitting

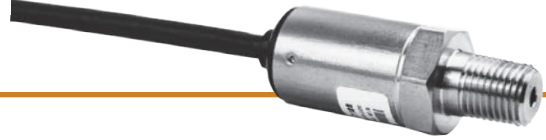
(1) FS is defined as the full scale of the selected range. Accuracy includes non-linearity, hysteresis, and repeatability.

(2) Because of lower accuracy, it is not factory recommended to use an output range less than 10% of the total sensor PSIG.

\* Product improvement is a continual process as Senva and product features and specification may change without prior notice. Refer to instructions that accompany the product for installation and wiring.

## PG Series Gauge Pressure Transducer

Stainless Steel Wet Media  
1/4" MNPT  
0-5VDC or 4-20mA outputs



### DESCRIPTION

This PG Series is a rugged and accurate gauge pressure sensor. It is compatible with a wide variety of liquids and gases. Whether measuring hydraulic pressure in a manifold or corrosive liquids and gases such as sea water or hydrogen, the PG series industrial pressure sensor provides a thick diaphragm to maintain long-term stability.

### APPLICATIONS

- Refrigeration Pump Controls
- Chillers
- Freon and Ammonia Cooling Systems
- CO2 Systems
- Building Controls
- Water Pressure Systems
- Boiler Controls
- Environmental Test Chambers

### FEATURES

#### Versatile

- Compact, robust package
- 1/4" MNPT
- Chemical Compatibilities: Any gas or liquid compatible with 316L stainless steel.
- IP65

#### High Reliability...fewer call backs

- Burst pressure 5X full scale
- Reverse voltage protected
- Rugged stainless steel construction

#### Superb Accuracy

- $< \pm 0.25\%$  BFSL @ room temperature (Accuracy includes non-linearity, hysteresis & non-repeatability)



ORDERING



Pressure Range

- 15 = 15 PSI
- 50 = 50 PSI
- 75 = 75 PSI
- 100 = 100 PSI
- 200 = 200PSI
- 300 = 300 PSI
- 500 = 500 PSI
- 150 = 150 PSI\*
- 250 = 250 PSI\*

Output Type

- B = 0-5 VDC
- C = 4-20 mA

\*Ranges available on a limited basis

ELECTRICAL DATA

Output	4-20mA	0-5VDC
Power Supply	12-28VDC	12-28VDC
Output Load	250-500 Ohms	5K Ohms min.
Current Consumption	20mA, typical	<20mA

ENVIRONMENTAL DATA

Temperature

Operating	-20 to 85°C (-4 to 185°F)
Storage	-40 to 125°C (-40 to 257°F)

Thermal Limits

Compensated Range	0 to 60°C (32 to 140°F)
TC Zero	<±1% of FS
TC Span	<±1% of FS

Other

Rating	IP-65 (housing only)
--------	----------------------

PERFORMANCE @ 25°C (77°F)

Accuracy <sup>(1)</sup>	<±0.25% BFSL
Stability (1 year)	±0.25% FS, typical
Over Range Protection	2X Rated Pressure
Burst Pressure	5X
Pressure Cycles	> 100 Million

(1) Accuracy includes non-linearity, hysteresis & non-repeatability

WIRING CONNECTIONS

0-5 VDC Models	3-wire voltage
4-20mA Models	2-wire loop powered



**Warning:** Refer to installation instructions that accompany product and heed all safety instructions.

# Calibration Gas Kit

Practical kit for commissioning and calibration



## DESCRIPTION

All gas monitors must be calibrated on a regular basis. Readily verify sensor calibration and adjust as appropriate. Rugged case for ease of transport and deployment.

## APPLICATIONS

- Quick and accurate calibration or commissioning verification

### ORDERING INFORMATION

UNIVERSAL GAS KIT

(order gas separately below)

CALKITHW-UL

- Includes case to hold two cylinders
- Regulator, Stainless Steel, 0.5 LPM, Inlet CGA: C-10/SS, Inlet Gauge: 0-1200, 3/16" Hose Barb
- Tygon Tubing (2X3')
- Gas Shroud (For Nemoto Style Elements)

CALKITHW-R

- Includes case to hold two cylinders
- Regulator, Stainless Steel, 0.5 LPM, Inlet CGA: C-10/SS, Inlet Gauge: 0-1200, 3/16" Hose Barb
- Tygon Tubing (2X3')
- Gas Shroud (For TGOR Series)



### ORDERING INFORMATION

CALGAS-FNO2	A29L 10ppm NO2, Valve CGA: C-10, 500PSI, Balance Nitrogen
CALGAS-ZNO2	A58L 10ppm NO2, Valve CGA: C-10, 500PSI, Balance Nitrogen
CALGAS-UNO2	A116L 10ppm NO2, Valve CGA: C-10, 1000PSI, Balance Nitrogen
CALGAS-JCO	103L 100ppm CO, Valve CGA: C-10, 1000PSI, Balance Air
CALGAS-JCO2	103L 100ppm CO2, Valve CGA: C-10, 1000PSI, Balance Nitrogen
CALGAS-JC3H8	103L 1.05% (50% LEL) PROPANE C-10Valve,1000PSI, Balance Air
CALGAS-JCH4	103L 2.50% (50% LEL) METHANE C-10Valve,1000PSI, Balance Air
CALGAS-JH2	103L 2.00% (50% LEL) HYDROGEN C-10Valve,1000PSI, Balance Air
CALGAS-JO2	103L 20.90% OXYGEN C-10Valve,1000PSI, Balance Air
CALGAS-JR134A	103L 1000 PPM R-134A C-10Valve,1000PSI, Balance Air
CALGAS-J404A	103L 1000 PPM R-404A C-10Valve,1000PSI, Balance Air
CALGAS-J410A	103L 1000 PPM R-410A C-10Valve,1000PSI, Balance Air
CALGAS-JR22	103L 1000 PPM R-22 C-10Valve,1000PSI, Balance Air
CALGAS-JR407C	103L 1000 PPM R-407C C-10Valve,1000PSI, Balance Air
CALGAS-JCO2	103L 100ppm CO2, Valve CGA: C-10, 1000PSI, Balance Nitrogen



**Warning:** Refer to installation instructions that accompany product and heed all safety instructions.

Consult factory for certificate of gas analysis if required

# TG UL Series Wall & Duct Dual Toxic Gas CO/NO<sub>2</sub> Sensor/Controller

Analog and BACnet/Modbus protocol options  
Field replaceable calibrated sensing elements  
Standard LCD with intuitive set up menu  
Integrated LED indicators and audible alarm



## DESCRIPTION

Sena TG Series sensors can be ordered as individual CO or NO<sub>2</sub> sensors or as any dual combination of CO/NO<sub>2</sub> sensor in a shared enclosure.

The analog output model features 2 outputs that support daisy chain wiring - multiple sensors may be used in a parallel sequence (0-10V) for cost effective coverage of large areas. The unit can also act as a stand alone controller, utilizing the relay for exhaust fan operation or the output for direct control of a VFD.

The BACnet/Modbus model supports BACnet MS/TP & Modbus network communication in one unit. Standard features include network auto-configuration, programmable fan and alarm relays, LED indicators, integrated display and audible alarm.

## APPLICATIONS



- Control exhaust in parking garages according to International Mechanical Code
- Ensure adequate air flow in occupied spaces
- Monitor multiple toxic gases with one mounted unit
- Alert occupants of elevated gas levels
- Directly control exhaust fans

## FEATURES

### Cost-effective dual gas sensing and control

- Integrated display, LED indicators, audible alarm
- Order as individual CO or NO<sub>2</sub> sensor, or specify any two sensing elements in one enclosure

### Flexibility of analog output model

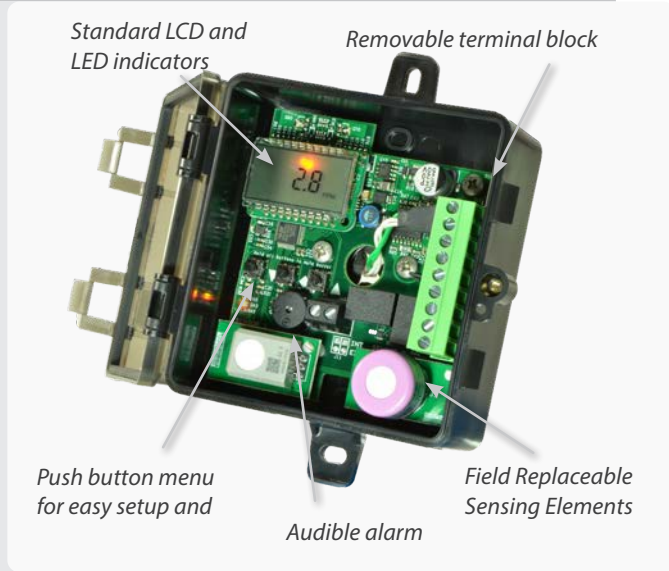
- Menu selectable 0-5/10V, 1-5V and 4-20mA outputs (0-10V default)
- Dual outputs support daisy chain wiring to cost-effectively sense and control large areas

### Versatility with BACnet/Modbus model

- Supports BACnet MS/TP and Modbus RTU networks
- Auto-configuration detects network baud rate, serial format, protocol type and self-addresses

### High reliability reduces call backs

- Temperature compensated elements for maximum accuracy
- UL2034 recognized electrochemical CO sensing element
- 7 year life expectancy on CO and NO<sub>2</sub> elements
- Warning indicators alert occupants when element's lifecycle is near end for replacement
- 7-year limited warranty on electronics; 2-year on elements



### Easy to install

- Through the back wiring
- Test mode speeds up field commissioning for verifying warning indicators and relay functions
- Push buttons and LCD to navigate setting parameters



ORDERING

TG  -     -

**Package**  
 W = Wall Mount  
 M = Metal  
 D = Duct Mount

**Output Type**  
 A = Analog  
 B = BACnet/Modbus

**Gas Type 1**  
 C = Carbon Monoxide (CO)  
 N = Nitrogen Dioxide (NO<sub>2</sub>)  
 D = Carbon Dioxide (CO<sub>2</sub>)  
 E = Dual Channel CO<sub>2</sub>

**Gas Type 2**  
 N = Nitrogen Dioxide (NO<sub>2</sub>)  
 D = Carbon Dioxide (CO<sub>2</sub>)  
 E = Dual Channel CO<sub>2</sub>  
 X = No second gas

**Temperature Output**  
 A = None  
 C = 100Pt RTD  
 D = 1000Pt RTD  
 E = 10K Type 2  
 F = 10K Type 3  
 G = 10k w/11k  
 H = 3k  
 I = 2k2  
 J = 1k8

**Enclosure Lid**  
 Blank = Clear/Tinted  
 S = Solid/Opaque  
 W = All White Solid

SPECIFICATIONS

Power Supply		15-30VDC/24VAC <sup>(1)</sup> , 4W max, 160mA max.
Analog Outputs	2 programmable outputs	0-10V (default), 0-5V, 1-5V and 4-20mA (menu selectable)
	CO output scaling	0-200ppm (default), 0-1000ppm (menu selectable)
	NO <sub>2</sub> output scaling	0-10ppm (default), 0-30ppm (menu selectable)
	Temperature output scaling	-20 to 85°C
BACnet /Modbus	Protocol RS-485	BACnet MS/TP, Modbus RTU, Modbus ASCII
	Baud Rates	9600, 19200, 38400, 57600, 76800, 115200
Fan Relay	Fan relay characteristics	N.C. 1A@24/30VDC (50/60Hz) (no mains connection)
	CO fan relay setpoint	25ppm (default), 0-1000 ppm (menu selectable)
	NO <sub>2</sub> fan relay setpoint	1ppm (default), 0-30ppm (menu selectable)
Alarm Relay	Alarm relay characteristics	N.C. 1A@24/30VDC (50/60Hz) (no mains connection)
	CO alarm relay setpoint	100ppm (default), 0-1000 ppm (menu selectable)
	NO <sub>2</sub> alarm relay setpoint	3ppm (default), 0-30ppm (menu selectable)
Display	3-1/2 digit LCD	Indicates CO ppm, NO <sub>2</sub> ppm (menu selectable)
LEDs	Green, Yellow, Red	Green = Normal, Yellow = Relay, Red = Alarm
Audible Alarm Exposure	85dB Piezo transducer	30 minutes above alarm setpoint per UL2034 (menu selectable)
CO Sensor Performance	Type	Electrochemical
	Accuracy	±5% of default range <sup>(2)</sup> ±5% of reading above 200ppm
	Resolution	1ppm
	Certifications	UL2034 Listed Component
	Life expectancy	>7 years
NO <sub>2</sub> Sensor Performance	Coverage Area	5000-7500 square feet
	Type	Electrochemical
	Accuracy	±5% of default range <sup>(3)</sup> ±5% of reading above 20ppm
	Resolution	0.1ppm
	Life expectancy	>7 years
Carbon Dioxide (CO <sub>2</sub> )	Coverage Area	5000-7500 square feet
	Type	Non-Dispersive Infrared (NDIR)
	Accuracy <sup>(4)</sup>	±(30ppm +3% of reading) (400-2000ppm), @-10-50°C ±(50ppm +5% of reading) Standard (2000-5000ppm), ±(50ppm+3% of reading) Dual Channel (2000-5000ppm), ±(100ppm+10% of reading) (5000-10000ppm)
	Resolution	1 ppm
	Life expectancy	15 years
Operating Environment	Temperature, continuous	-20 to 50°C
	Humidity	15-95% continuous, 0-95% intermittent
	Max Elevation	2000m
Enclosure (Wall & Duct)	Material	ABS/Polycarbonate
	Dimensions	4.0" h x 4.4" w x 2.1" d (+6.8" probe for duct version)
	Conduit Opening	Tapped 1/2" NPT
Enclosure (Metal)	Rating	NEMA 3R, NEMA 4X (Duct)
	Material	Powder coated steel/acrylic
	Dimensions	5.0" h x 4.3" w x 2.25" d
Agency	Opening	Dual air vents on bottom of enclosure
	Mounting	Pre-drilled for 2x4" electrical box
	Rating	NEMA 3R
	Compliance	UL61010-1 Listed UL, cUL, CE

Replacement Elements

TGS-CO-UL = Carbon Monoxide  
 TGS-NO<sub>2</sub>-UL = Nitrogen Dioxide



Pair it with a fan relay

See Senva pilot and power relays for ordering information.



Duct Applications

See Senva's Duct Mount Gas sensing application note to learn about the use of duct-mounted sensors to provide redundancy and peace of mind.



**Warning:** Refer to installation instructions that accompany product and heed all safety instructions.

(1) One side of transformer secondary is connected to signal common. Dedicated transformer is recommended. No mains circuit connection allowed. In addition, it is required to use an isolated power supply that is certified by a national or international standard (i.e. UL). Use of a Class 2 LPS power supply or greater is required.

(2) Carbon Monoxide full scale is 1000ppm.

(3) Nitrogen Dioxide full scale is 30ppm

(4) Accuracy of CO<sub>2</sub> reading may be reduced at temperatures below 14°F (-10°C).

# TGOR Value Series Recessed Wall CO/Refrigerant Sensor

High accuracy CO readings  
0-5/10V/2 and 3-wire 4-20mA CO transmitter  
Relay, LED and Audible alarms  
Sleek & functional low-profile design



## DESCRIPTION

Designed to maximize safety in work and school environments, the TGOR Value Series features a UL2034 recognized CO sensor or a factory-calibrated refrigerant sensor, audible buzzer, relay output and end-of-life indication. Choose the analog output that works best for each job.

## APPLICATIONS

- Detect CO in indoor environments
- Detect refrigerant leaks in indoor environments, such as hotels
- Alert occupants of elevated gas levels
- Ventillation control
- Economizer control

## FEATURES

### Sleek and functional design

- Standard wall plate size fits most single gang junction boxes
- Flush-mount screw plugs for tamper-resistance
- Ideal for schools or hotels

### Versatile Safety Features

- Audible buzzer alarm for local annunciation
- End-of-life indication for sensor element
- Buzzer test button for safety checks
- Relay output for alarm indication

### Superior sensing

- UL2034 recognized electrochemical CO sensing element
- 7 year life expectancy on CO elements
- 10 year life expectancy on Refrigerant elements
- Calibration mode makes calibration quick and easy
- Gasket ensures excellent measurement accuracy

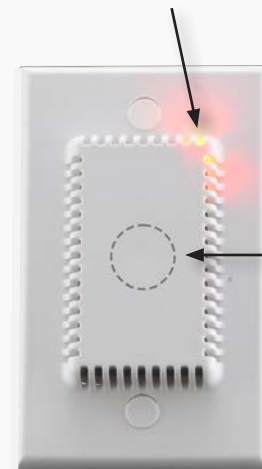
### Industry-leading warranty

- 7-year limited warranty on electronics; sensor element 2 years



### Warning and alarm LED

- Blinks for warning and alarm
- EOL indication

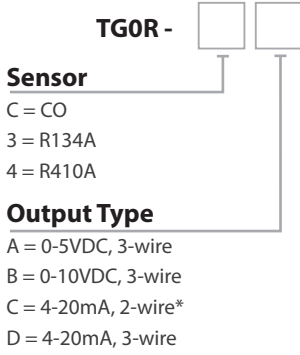


### Capacitive Touch Silence Button

- No accidental presses
- Unattractive to vandals



ORDERING



\* Option available for CO sensors only

Scan here to see refrigerant cross-sensitivities



CUSTOMIZATION

See "Value Customization Request Form" or call for a sample today!



CALIBRATION

Order with CALKITHW-R to receive calibration fitting and regulator.



SPECIFICATIONS

Power Supply	12-30VDC/24VAC <sup>(1)</sup> , 24mA max	
Analog Outputs	Analog outputs	0-10V, 0-5V, 2-wire or 3-wire 4-20mA (selectable)
	CO output scaling	0-200ppm
	Refrigerant output scaling	0-1000ppm
Alarm Relay	Relay characteristics	N.C. 1A@24/30VDC (50/60Hz) (no mains connection)
	CO alarm setpoint	Activates above 30ppm for 1 hour or 70 ppm for 15 min
	Refrigerant alarm setpoint	Activates above 300ppm
LEDs	LED indicator CO	1 long blink above 30PPM, 1 short blink above 70 ppm
	LED indicator Refrigerant	1 long blink above 300PPM, 1 short blink above 600 ppm
	End-of-life Indicator	3 blinks at 30s intervals
Audible Alarm	Audible Buzzer CO	Activates above 30ppm for 1 hour or 70 ppm for 15 min
	Audible Buzzer Refrigerant	Activates above 300ppm for 1 hour or 600 ppm for 15 min
	Buzzer level	82 dB
CO Sensor Performance	Alarm Test	Hidden button provided for buzzer test
	Type	Electrochemical
	Accuracy	±5%
	Resolution	1ppm
	Certifications	UL2034 Listed Component
	Life expectancy	>7 years
	Coverage Area	5000-7500 square feet
Calibration Interval	Annually, hold test button for 10s to enter cal mode	
Refrigerant Sensor Performance	Type	MOS
	Resolution	1ppm
	Life expectancy	>10 years (typical life expectancy of MOS sensors)
	Calibration <sup>(2)</sup>	Calibrated to selected refrigerant
	Sensitivity of R134A calibrated device	@300ppm test gas: 450ppm R410A, 425 ppm R407C, 400ppm R404A, 370ppm R22, 300ppm R134A
Other detectable gases <sup>(3)</sup>		R407A, R407F, R427A, R452B, R507, R448A, R449A, R422A, R422D, R452A, R513A, R514A, R32
	Coverage Area	5000-7500 square feet
	Calibration Interval	6 months, hold test button for 10s to enter cal mode
Operating Environment	Humidity	15-95% continuous, 0-95% intermittent
	Max Elevation	2000m
Enclosure	Dimensions	4.45"h x 2.7"w x 0.5"d (depth measured from wall)
	Unit Temp Rating	-4 to 122°F (-20 to 50°C)
Compliance	CE, RoHS	

(1) One side of transformer, secondary is connected to signal common. Dedicated transformer is recommended. 15-30VDC/24VAC power supply voltage required for 10 volt output.

(2) R134A sensor is factory calibrated to R134A gas but may be used as a general purpose refrigerant sensor. Sensitivity to some other gases can be found at Senva.com (see QR code on left). Actual response may vary depending on installation. For more accurate response to a specific gas, a unit may be field calibrated.

(3) These gases may be detected by the sensor but sensitivity curves are not available at this time.



**Warning:** Refer to installation instructions that accompany product and heed all safety instructions.

# TG UL Series Wall & Duct Dual Combustible Gas Sensor/Controller

**NEW!**



Analog and BACnet/Modbus protocol options  
 Field replaceable calibrated sensing elements  
 Detect combustibles and CO in one unit  
 Integrated LED indicators and audible alarm



## DESCRIPTION

Senva TG Series sensors can be ordered as individual sensors or as any dual combination of CO/NO<sub>2</sub>/Propane/Methane/H<sub>2</sub>S sensor in a shared enclosure. Detect Methane/Propane leaks and monitor for elevated CO levels, all in one unit.

The analog output model features 2 outputs that support daisy chain wiring - multiple sensors may be used in a parallel sequence (0-10V) for cost effective coverage of large areas. The unit can also act as a stand alone controller, utilizing the relay for exhaust fan operation or the output for direct control of a VFD.

The BACnet/Modbus model supports BACnet MS/TP & Modbus network communication in one unit. Standard features include network auto-configuration, programmable fan and alarm relays, LED indicators,

## APPLICATIONS



- Boiler rooms
- Commercial kitchens
- Battery Rooms
- Compressed Gas storage
- Residential and commercial heating and water heating
- Vehicle bays and garages for natural gas (LNG) or petroleum gas (LPG) vehicles
- Waste facilities
- Monitor multiple combustible gases with one mounted unit
- Alert occupants of elevated gas levels
- Directly control exhaust fans



**Warning:** Refer to installation instructions that accompany product and heed all safety instructions.

## FEATURES

### Cost-effective dual gas sensing and control

- Integrated display, LED indicators, audible alarm
- Order as individual CO, NO<sub>2</sub>, Propane, Methane, Hydrogen, Oxygen, or Hydrogen Sulfide sensor, or specify any two sensing elements in one enclosure

### Flexibility of analog output model

- Menu selectable 0-5/10V, 1-5V and 4-20mA outputs (0-10V default)
- Dual outputs support daisy chain wiring to cost-effectively sense and control large areas

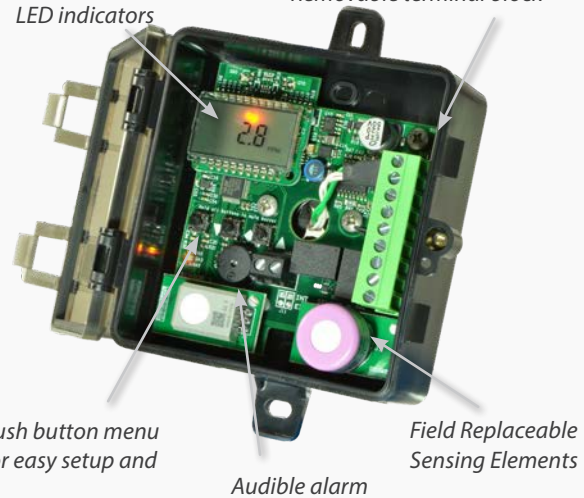
### Versatility with BACnet/Modbus model

- Supports BACnet MS/TP and Modbus RTU networks
- Auto-configuration detects network baud rate, serial format, protocol type and self-addresses

### High reliability reduces call backs

- Temperature compensated elements for maximum accuracy
- UL2034 recognized electrochemical CO sensing element
- Warning indicators alert occupants when element's lifecycle is near end for replacement
- 7-year limited warranty on electronics; 2-year on elements

Standard LCD and LED indicators      Removable terminal block



Push button menu for easy setup and

Audible alarm

Field Replaceable Sensing Elements

### Easy to install

- Through the back wiring
- Test mode speeds up field commissioning for verifying warning indicators and relay functions
- Push buttons and LCD to navigate



7 year limited warranty

## ORDERING

**TG**  Pkg  -  Out  -  Gas1  -  Gas2  -  Temp  -  Lid

### Package

W = Wall Mount  
M = Metal  
D = Duct Mount

### Output Type

A = Analog  
B = BACnet/Modbus

### Gas Type 1

C = Carbon Monoxide (CO)  
N = Nitrogen Dioxide (NO<sub>2</sub>)  
M = Methane (CH<sub>4</sub>)  
P = Propane (C<sub>3</sub>H<sub>8</sub>)  
H = Hydrogen (H<sub>2</sub>)  
O = Oxygen (O<sub>2</sub>)  
S = Hydrogen Sulfide (H<sub>2</sub>S)  
D = Carbon Dioxide (CO<sub>2</sub>)  
E = Dual Channel CO<sub>2</sub>

### Gas Type 2

N = Nitrogen Dioxide (NO<sub>2</sub>)  
M = Methane (CH<sub>4</sub>)  
P = Propane (C<sub>3</sub>H<sub>8</sub>)  
H = Hydrogen (H<sub>2</sub>)  
O = Oxygen (O<sub>2</sub>)  
S = Hydrogen Sulfide (H<sub>2</sub>S)  
D = Carbon Dioxide (CO<sub>2</sub>)  
E = Dual Channel CO<sub>2</sub>  
X = No second gas

### Temperature Output

A = None  
C = 100Pt RTD  
D = 1000Pt RTD  
E = 10K Type 2  
F = 10K Type 3  
G = 10k w/11k  
H = 3k  
I = 2k2  
J = 1k8  
K = 20k

### Enclosure Lid

Blank = Clear/Tinted  
S = Solid/Opaque  
W = All White Solid

## Replacement Elements

- TGS-CO-UL = Carbon Monoxide
- TGS-NO<sub>2</sub>-UL = Nitrogen Dioxide
- TGS-CH<sub>4</sub>-UL = Methane
- TGS-C<sub>3</sub>H<sub>8</sub>-UL = Propane
- TGS-O<sub>2</sub>-UL = Oxygen
- TGS-H<sub>2</sub>-UL = Hydrogen
- TGS-S-UL = Hydrogen Sulfide



(1) One side of transformer secondary is connected to signal common. Dedicated transformer is recommended. No mains circuit connection allowed. In addition, it is required to use an isolated power supply that is certified by a national or international standard (i.e. UL). Use of a Class 2 LPS power supply or greater is required.

(2) Carbon Monoxide full scale is 1000ppm.

(3) Nitrogen Dioxide full scale is 30ppm.

(4) Accuracy of CO<sub>2</sub> reading may be reduced at temperatures below 14°F (-10°C).

## SPECIFICATIONS

Power Supply		15-30 VDC/24VAC <sup>(1)</sup> , 4 W max, 160 mA max.
Analog Outputs	2 programmable outputs	0-10 V (default), 0-5V, 1-5 V and 4-20 mA (menu selectable)
	Output scaling	Menu selectable; see installation manual for ranges
BACnet /Modbus	Protocol RS-485	BACnet MS/TP, Modbus RTU, Modbus ASCII
	Baud Rates	9600, 19200, 38400, 57600, 76800, 115200
Fan Relay	Fan relay characteristics	N.C. 1A@24/30 VDC (50/60 Hz) (no mains connection)
Alarm Relay	Alarm relay characteristics	N.C. 1A@24/30 VDC (50/60 Hz) (no mains connection)
Display	3-1/2 digit LCD	Indicates ppm or % LEL or % Vol (menu selectable)
LEDs	Green, Yellow, Red	Green = Normal, Yellow = Relay, Red = Alarm
Audible Alarm Exposure	85dB Piezo transducer	30 minutes above alarm setpoint per UL2034 (menu selectable)
	Type	Electrochemical
CO Sensor Performance	Accuracy	±5% of default range <sup>(2)</sup> ±5% of reading above 200 ppm
	Resolution	1 ppm
	Certifications	UL2034 Listed Component
	Life expectancy	>7 years
	Coverage Area	5000-7500 square feet
NO <sub>2</sub> Sensor Performance	Type	Electrochemical
	Accuracy	±5% of default range <sup>(3)</sup> ±5% of reading above 20 ppm
	Resolution	0.1 ppm
	Life expectancy	>7 years
	Coverage Area	5000-7500 square feet
Methane/Propane/ Hydrogen Sensors Performance	Type	Catalytic
	Detection Range	0-50% LEL (Lower Explosive Limit)
	Accuracy	5% of range
	Resolution	1%LEL
	Life expectancy	>5 years
Oxygen Sensor Performance	Coverage Area	Methane/Hydrogen 5000-7500 sq ft; Propane 5000 sq ft
	Type	Electrochemical
	Detection Range	0-25% Volume
	Accuracy	±5% of range
	Resolution	0.1 %
H <sub>2</sub> S Sensor Performance	Life expectancy	5 years
	Coverage Area	5000-7500 square feet
	Type	Electrochemical
	Detection Range	0-100 ppm
	Accuracy	±5% of range
Carbon Dioxide (CO <sub>2</sub> )	Resolution	1 ppm
	Life expectancy	15 years
	Coverage Area	5000-7500 square feet
	Accuracy <sup>(4)</sup>	±(30ppm +3% of reading) (400-2000ppm), @-10-50°C ±(50ppm +5% of reading) Standard (2000-5000ppm), ±(50ppm+3% of reading) Dual Channel (2000-5000ppm), ±(100ppm+10% of reading) (5000-10000ppm)
	Operating Environment	Temperature, continuous
Enclosure (Wall & Duct)	Humidity	15-95% continuous, 0-95% intermittent
	Max Elevation	2000m
	Material	ABS/Polycarbonate
Enclosure (Metal)	Dimensions	4.0"h x 4.4"w x 2.1"d
	Conduit Opening	Tapped 1/2" NPT
	Rating	Nema 3R, Nema 4X (Duct)
Agency	Material & Enclosure Rating	Powder coated steel/acrylic, NEMA 3R
	Dimensions	5.0"h x 4.3"w x 2.25"d
	Opening	Dual air vents on bottom of enclosure
Agency	Mounting	Pre-drilled for 2x4" electrical box
	Rating	NEMA 3R
Agency	Compliance	UL61010-1 Listed UL, cUL, CE

# TG UL Series Wall & Duct Dual Refrigerant Gas Sensor/Controller

**NEW!**



Analog and BACnet/Modbus protocol options  
 Field replaceable calibrated sensing elements  
 Standard LCD with intuitive set up menu  
 Integrated LED indicators and audible alarm



## DESCRIPTION

Senva TG Series sensors can be ordered as individual sensors or as any dual combination of refrigerant sensors in a shared enclosure. Refrigerant sensors may also be paired with any toxic or combustible gases, such as CO or Methane.

The analog output model features 2 outputs that support daisy chain wiring - multiple sensors may be used in a parallel sequence (0-10V) for cost effective coverage of large areas. The unit can also act as a stand alone controller, utilizing the relay for exhaust fan operation or the output for direct control of a VFD.

The BACnet/Modbus model supports BACnet MS/TP & Modbus network communication in one unit. Standard features include network auto-configuration, programmable fan and alarm relays, LED indicators, integrated display and audible alarm.

## APPLICATIONS

- Ensure adequate air flow in occupied spaces
- Monitor for refrigerant leaks
- Alert building maintenance of elevated gas levels
- Directly control exhaust fans



**Warning:** Refer to installation instructions that accompany product and heed all safety instructions.

## FEATURES

### Cost-effective dual gas sensing and control

- Integrated display, LED indicators, audible alarm
- Order as individual Refrigerant sensors, or specify any two sensing elements in one enclosure
- May be paired with any toxic or combustible gas sensor

### Flexibility of analog output model

- Menu selectable 0-5/10V, 1-5V and 4-20mA outputs (0-10V default)
- Dual outputs support daisy chain wiring to cost-effectively sense and control large areas

### Versatility with BACnet/Modbus model

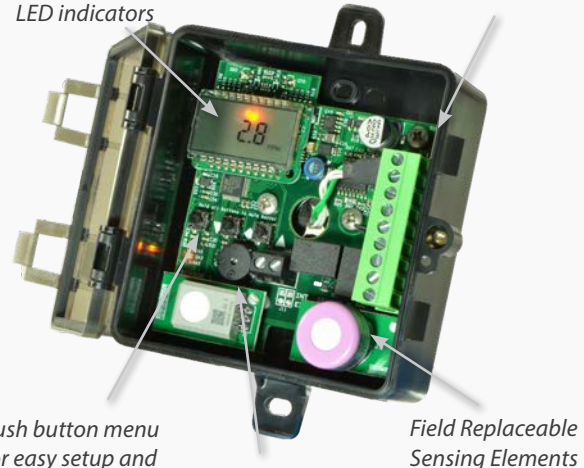
- Supports BACnet MS/TP and Modbus RTU networks
- Auto-configuration detects network baud rate, serial format, protocol type and self-addresses

### High reliability reduces call backs

- Temperature compensated elements for maximum accuracy
- Warning indicators alert occupants when element's lifecycle is near end for replacement
- 7-year limited warranty on electronics; 2-year on elements

Standard LCD and LED indicators

Removable terminal block



Push button menu for easy setup and

Audible alarm

Field Replaceable Sensing Elements

## Easy to install

- Test mode speeds up field commissioning for verifying warning indicators and relay functions
- Push buttons and LCD to navigate setting parameters



7 year limited warranty



## ORDERING

	Pkg	Out	Gas1	Gas2	Temp	Lid
<b>TG</b>	<input type="text"/>	-	<input type="text"/>	<input type="text"/>	-	<input type="text"/>
<b>Package</b>	<p>W = Wall Mount M = Metal D = Duct Mount</p>					
<b>Output Type</b>	<p>A = Analog B = BACnet/Modbus</p>					
<b>Gas Type 1*</b>	<p>A = Ammonia 2 = R22 3 = R134A (Multi-Gas) 4 = R410A 5 = R404A 6 = R407C 7 = R449A 8 = R513A 9 = 1233ZDE M = Methane (CH4) P = Propane (C3H8) D = NDIR Carbon Dioxide (CO2) E = NDIR Dual Channel CO2</p>					
<b>Gas Type 2</b>	<p>X = no second gas X2 = R22 X3 = R134A X4 = R410A X5 = R404A X6 = R407C X7 = R449A X8 = R513A X9 = 1233ZDE</p>					
<b>Temperature Output</b>	<p>A = None E = 10K Type 2 F = 10K Type 3 K = 20k</p>					
<b>Enclosure Lid</b>	<p>Blank = Clear/Tinted S = Solid/Opaque W = All White Solid</p>					

\*Refrigerant gas sensors may be paired with all other TG gas offerings, except Methane, Propane, and Hydrogen. See combustibles spec sheet for list of options.

### Replacement Elements

- TGS-A-UL = Ammonia
  - TGS-3-UL = R134A (multi-gas)
  - TGS-4-UL = R410A
- Consult factory for more.



Scan here to see refrigerant cross-sensitivities



## SPECIFICATIONS

Power Supply		15-30VDC/24VAC <sup>(1)</sup> , 4W max, 160mA max.
Analog Outputs	2 programmable outputs	0-10V (default), 0-5V, 1-5V, 4-20mA (menu selectable)
	Output scaling	Menu selectable; see installation manual for ranges
BACnet /Modbus	Protocol RS-485	BACnet MS/TP, Modbus RTU, Modbus ASCII
	Baud Rates	9600, 19200, 38400, 57600, 76800, 115200
Fan Relay	Fan relay characteristics	N.C. 1A@24/30VDC (50/60Hz) (no mains connection)
	Fan relay setpoint	300 ppm (default), 0-1000 ppm (menu selectable)
Alarm Relay	Alarm relay characteristics	N.C. 1A@24/30VDC (50/60Hz) (no mains connection)
	Alarm relay setpoint	600 ppm (default), 0-1000 ppm (menu selectable)
Display	3-1/2 digit LCD	Indicates gas concentration in ppm (menu selectable)
LEDs	Green, Yellow, Red	Green = Normal, Yellow = Relay, Red = Alarm
Audible Alarm	85dB Piezo transducer	30 minutes above alarm setpoint (menu selectable)
	Type	MOS
General Purpose Sensor Performance	Detection Range	0-1000 ppm
	Resolution	1 ppm
Listed Gas types 2-9		Factory calibrated for respective gas
	R134A Sensitivity <sup>(2)</sup>	@300ppm test gas: 450 ppm R410A, 425 ppm R407C, 400 ppm R404A, 370 ppm R22, 300 ppm R134A
Other detectable gases <sup>(3)</sup>		R407A, R407F, R427A, R452B, R507, R448A, R422A, R422D, R452A, R514A, R32
	Life expectancy	>10 years (typical life expectancy for MOS sensors)
Coverage Area		5000-7500 square feet
	Type	Electrochemical
Ammonia Sensor Performance	Accuracy	±5% of default range
	Resolution	0.1ppm
Life expectancy		5 years
	Coverage Area	5000-7500 square feet
Type		Non-Dispersive Infrared (NDIR)
	Accuracy <sup>(4)</sup>	±(30ppm +3% of reading) (400-2000ppm), @-10-50°C ±(50ppm +5% of reading) Standard (2000-5000ppm), ±(50ppm+3% of reading) Dual Channel (2000-5000ppm), ±(100ppm+10% of reading) (5000-10000ppm)
Resolution		1 ppm
	Life expectancy	15 years
Coverage Area		5000-7500 square feet
	Type	Catalytic
Methane/Propane Sensors Performance	Detection Range	0-50% LEL (Lower Explosive Limit)
	Accuracy	5% of range
Resolution		1%LEL
	Life expectancy	>5 years
Coverage Area		Methane/Hydrogen 5000-7500 sq ft; Propane 5000 sq ft
	Temperature, continuous	-20 to 50°C
Operating Environment	Humidity	15-95% continuous, 0-95% intermittent
	Max Elevation	2000m
Material		ABS/Polycarbonate
	Enclosure (Wall & Duct)	Dimensions
Conduit Opening		Tapped 1/2" NPT
	Rating	Nema 3R, Nema 4X (Duct)
Material & Enclosure Rating		Powder coated steel/acrylic, NEMA 3R
	Dimensions	5.0" h x 4.3" w x 2.25" d
Enclosure (Metal)	Opening	Dual air vents on bottom of enclosure
	Mounting	Pre-drilled for 2x4" electrical box
Rating		Nema 3R
	Agency	Compliance

(1) One side of transformer secondary is connected to signal common. Dedicated transformer is recommended. No mains circuit connection allowed. In addition, it is required to use an isolated power supply that is certified by a national or international standard (i.e. UL). Use of a Class 2 LPS power supply or greater is required.

(2) R134A sensor is factory calibrated to R134A gas but may be used as a general purpose refrigerant sensor. Sensitivity to some other gases can be found in the installation manual. Actual response may vary depending on installation. For more accurate response to a specific gas, a unit may be field calibrated.

(3) These gases may be detected by the sensor but sensitivity curves are not available at this time.



# ZipSeal™ Conduit Sealant

Duct sealing system to protect sensors from water intrusion and conduit reverse venting



## DESCRIPTION

Prevents water intrusion in CO/NO<sub>2</sub> sensors that may occur from warm moisture condensing in conduit and draining into top of sensor body, potentially damaging the sensor. Also prevent airflow intrusion from conduit which can cause faulty readings. Recommended for sealing both top and bottom conduit entries.

The unique two-part foam installs quickly and effectively. The innovative design of the Zip-Disc™ insert allows for horizontal and vertical installation with minimal drippage. Cured foam blocks can be removed and re-entered relatively quickly if necessary. ZipSeal™ Duct Sealant holds up to 10 feet (3.0 m) water-head pressure.

ZipSeal™ Duct Sealant holds up to 10 feet (3.0 m) water-head pressure to keep gases and rodents out of conduits.

## APPLICATIONS

- Protects CO/NO<sub>2</sub> sensors from condensation and water damage
- Prevents back venting into sensor which can impair readings
- Installs in just 45 seconds--save on labor
- Re-enterable – easily removed.
- Multiple Seals – One kit seals up to five 2-inch/50 mm conduits.
- Meets NEC Code Requirements – 2011 NEC Articles 225.27, 230.8, 300.5 (G), 300.7 (A), on Raceway Seals, 501.15 (B)(2).
- Meets Industry Standards – Complies with TIA-758-B Standard 5.1.1.2.8, 5.4.2.3, and 7.4.2.8.1 Sealing Ducts.



ZIP-50KIT1G components

## ORDERING INFORMATION

ZIP-50KIT1	1 - 50-mL cartridge; 2 - mixing nozzles; 2 - pairs of gloves; 5 - 2-in/5-cm Zip-Discs 1 - instruction sheet
ZIP-KIT1G	Same as kit above, includes TOOL-50-11
ZIP-50KITB6	6 - ZIP-50KIT1
TOOL-50-11	Dispensing tool for 50-mL cartridge
MXR-20T-10	10-pack mixing nozzles



**Warning:** Refer to installation instructions that accompany product and heed all safety instructions.

# Alert System Siren/Strobe

High intensity LEDs with clearly visible red strobe  
Adjustable sound and light options  
105dB Siren



## DESCRIPTION

A combination of siren and strobe that can be connected to any number of existing toxic gas (TG) or CO<sub>2</sub> sensors to create one centralized alarm system. The singular, highly visible and audible alert simplifies systems and effectively notifies occupants of elevated gas levels.



## APPLICATIONS

- Provides users with effective visual and/or audible notification when TG or CO<sub>2</sub> sensors detect high concentrations of gas.
- Centralized alarm can be used for entire building systems for rapid notification.

## FEATURES

### Customize your system with multiple visual and audio settings

- Options to program for strobe only or sound only or both
- Tamper-proof for optimal security
- 32 unique alarm tones
- Two volume settings
- Eight different flash patterns, including continuous and optional left to right flashing
- High-impact resistant polycarbonate withstands abuse

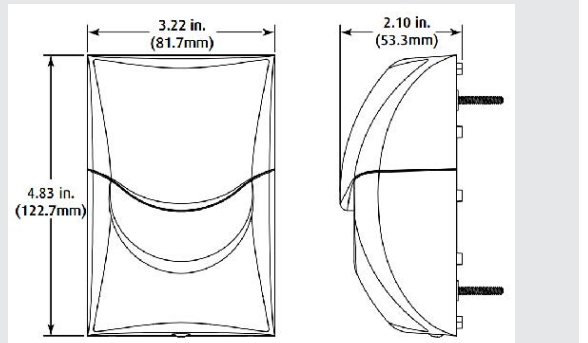
## SPECIFICATIONS

Operating Voltage	12 - 24VDC
Operating Current	0.42A@12VDC, 0.22A@24VDC
Relay Output	N.C. 12VDC, 50mA Dry Contact
Operating Temperature	-4°F to 140°F (-20°C to 60°C)
Volume @1 foot (29.4cm)	High 105dB, Low 85dB
Number of Flash Patterns	8
Number of Sound Tones	32
Strobe/Sound Only Control	Yes
Alarm Trigger	Trigger on Power
Projected IP Rating	IP54

## ORDERING

SS-R Siren/Strobe - Red Beacon

## DIMENSIONS



# TotalSense™ Series Indoor Environmental and Air Quality Sensor Matrix



Industry's first IAQ sensor with PIR motion detection  
 Nine environmental sensors: PIR, PMx, VOC, CO<sub>2</sub>, RH, T, ambient light, barometric pressure  
 BACnet/Modbus and/or analog outputs with set-point relay

## DESCRIPTION

The TotalSense™ Series provides more data for more advanced ventilation control while drastically reducing installation cost and time on a project. It includes a comprehensive selection of IAQ sensing with carbon dioxide (CO<sub>2</sub>), relative humidity (RH), and temperature plus options for occupancy detection (PIR), total volatile organic compounds + Formaldehyde (TVOC/CH<sub>2</sub>O), particulate matter (PM), Carbon Monoxide (CO), barometric pressure, and ambient light. More than an IAQ sensor, it's the first fully configurable Indoor Environmental Quality (IEQ) sensor matrix.

Motion detection (PIR) can initiate ventilation upon occupancy, providing air exchanges the instant people are present (in addition to monitored elevated CO<sub>2</sub> levels). This technology provides a much faster trigger for ventilation allowing for cleaner and safer indoor spaces while still saving energy.

## APPLICATIONS

- Verify effectiveness of IAQ strategies in post covid environment
- Energy management/building control
- Facilitates compliance with ASHRAE 62.1 standard for air quality



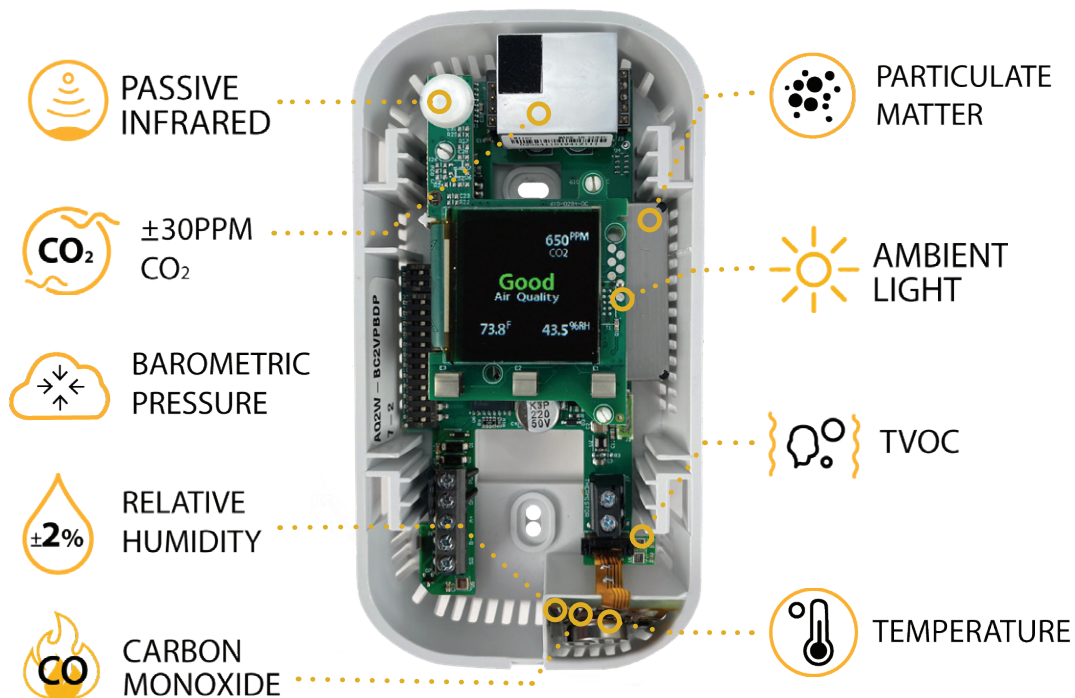
Made in USA



Contributes toward satisfying Feature A08 and T06 under the WELL Building Standard®



## NINE TECHNOLOGIES FOR OPTIMUM INDOOR AIR QUALITY





## SPECIFICATIONS

Power Supply	Non-Display	16-30VDC/24VAC <sup>(1)</sup> , 3.5W nominal, 4W max.	
	Display or LED Ring	24-30VDC/24VAC <sup>(1)</sup> , 4.3W nominal, 5W max.	
Interface	OLED (optional)	1.5" Organic LED Display, 128x128, color	
	Air Quality Ring	Color changing (red/yellow/green) LED Air Quality Ring	
Analog Outputs (Analog or Dual version only)	Quantity	Up to 3 outputs	
	Source	CO <sub>2</sub> , RH%, Temp, Temp slider, TVOC (selectable)	
	Scale	0-5V, 0-10V, 4-20mA (switch selectable, programmable per output)	
Protocol Output (Comms or Dual version only)	Protocol	BACnet MS/TP or Modbus RTU	
	Connection	3-wire RS-485, with isolated ground	
	Data Rate	9600, 19200, 38400, 57600, 76800, 115200 (switch selectable)	
	Address Range	0-127	
Relay (Standard except for PM models)	Type	Solid-state output, 1A @ 30VAC/DC, N.O.	
	Polarity	NO/NC (selectable)	
	Source	CO <sub>2</sub> setpoint, RH setpoint, Temp setpoint, TVOC setpoint, PIR motion detection, Air Quality, off (selectable)	
CO <sub>2</sub> (Optional)	Type	Non-dispersive Infrared (NDIR)	
	Accuracy	±(30ppm + 3% of reading) (400-2,000ppm), -10-50°C, 0-85%RH ±(50ppm + 5% of reading) (2,000-5,000ppm), -10-50°C, 0-85%RH >5,000ppm consult factory	
	Resolution	1 ppm	
	Range	0-2,000 PPM (Default) (Programmable up to 10,000ppm)	
	Response time	90 seconds to 90% reading	
	Sample rate	1s	
Temp and Pressure Compensation	Yes, barometric pressure readable over comms		
Relative Humidity (Optional)	Type	Digital CMOS	
	Accuracy <sup>(2)</sup>	2% models, +/-2% over 0 to 80%RH range	
	Resolution	0.05%RH	
	Response time <sup>(3)</sup>	30s	
	Sample rate	3s	
	Operating range	0 to 100%RH (non-condensing)	
Operating conditions <sup>(4)</sup>	-4 to 140°F (-20 to 60° C) @ RH>90%; -4 to 176°F @ RH=50%		
Temperature Transmitter (Optional)		<u>With RH option</u>	<u>Without RH option</u>
	Type	Silicon Band-gap	NTC Thermistor
	Nominal Accuracy	±0.3° C (operating range)	±0.5° C (operating range)
	Maximum Accuracy <sup>(2)</sup>	±0.5° C (at 25° C), ±1.0° C	±1.0° C (at 25° C), ±2.0° C
	Resolution	0.1° C	0.05° C
	Response time	30s	30s
Sample rate	3s	100 milliseconds	
TVOC (Optional)	Type	MOS	
	Gas	Total VOC	
	Formaldehyde CH <sub>2</sub> O Sensitivity	Responsive to Formaldehyde concentrations 50-1000 ppb	
	Range	0-32,000 µg/m <sup>3</sup> (Display may be programmed to show PPB)	
	Response Time	<10s	
Output	0-2,000 µg/m <sup>3</sup> (default) programmable up to 32,000 µg/m <sup>3</sup>		

1. One side of transformer, secondary is connected to signal common. Dedicated transformer is recommended.


2. Models with PM sensor included achieve ±5% accuracy over 0 to 80%RH range and an additional temperature shift of up to +0.5°C

3. Time for reaching 63% of reading at 25° C and 1 m/s airflow

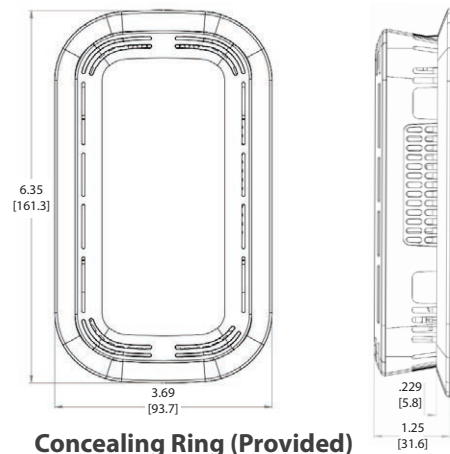
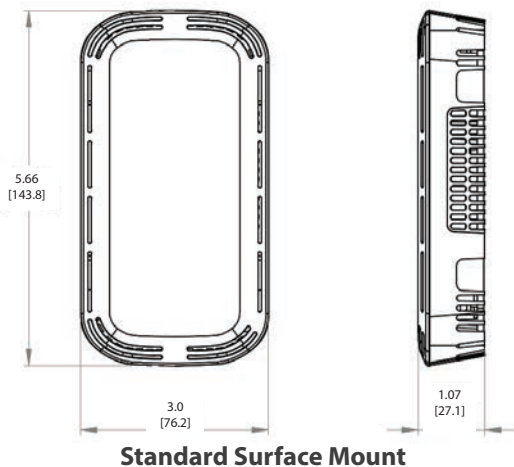
4. Long term exposures to conditions outside normal range at high humidity may temporarily offset the RH reading (+3%RH after 60 hours.)



SPECIFICATIONS

PMx (Optional) CLASS 1 LASER PRODUCT	Type	Optical
	Size range $\mu\text{m}/\text{m}^3$	1.0, 2.5, 4.0, 10.0 (each range is $0.3 \mu\text{m}-x.x \mu\text{m}$ )
	Size Range $\#/\text{cm}^3$	0.5, 1.0, 2.5, 4.0, 10.0 (each range is $0.3 \mu\text{m}-x.x \mu\text{m}$ ) (comms readings only)
	Scale	0-1,000 $\mu\text{g}/\text{m}^3$
	Lower detection limit	0.3 $\mu\text{m}$
	Precision	$\pm 10 \mu\text{g}/\text{m}^3$ (0-100 $\mu\text{g}/\text{m}^3$ ); $\pm 10\%$ (100-1,000 $\mu\text{g}/\text{m}^3$ )
	Long-Term Drift	$\pm 1.25 \mu\text{g}/\text{m}^3$ / year
Carbon Monoxide 	Type	Electrochemical
	Detection Range	0-200 ppm
	Accuracy	$\pm 5\%$ Full scale @20°C
	Resolution	1 ppm
	Response Time	<30 seconds to 90%
	Sensor Life	5 years
	Certifications	UL2034 recognized component
PIR (Optional)	Type	Passive Infrared
	Axis X field of view	140°, 15 ft (4.5m)
	Axis Y field of view	76°, 15 ft (4.5m)
Ambient Light	Type	Phototransistor
	Scale	0-100 fc (lm/ft <sup>2</sup> ), readable over comms
Operating Environment	Temperature	32 to 122°F (0 to 50°C)
	Humidity	0-95% non-condensing
Enclosure	Material	ABS Plastic
	Dimensions	5.67" h x 3.00" w x 1.07" d (With concealing ring: 6.35" h x 3.69" w x 1.25" d)
Compliance	Agency	CE, RoHS
	Accreditations	RESET Air Accredited Monitor
	Standards	Facilitates compliance with ASHRAE 62.1 standard for air quality Contributes toward satisfying Feature A08 and T06 under the WELL Building Standard®

DIMENSIONS



**Warning:** Refer to installation instructions that accompany product and heed all safety instructions.

- Conceal oversized drywall cutouts or European junction boxes



SENAVA THERMISTOR RESISTANCE-TEMPERATURE TABLES										
	C	D	E	F	G	H	I	J	K	L
	100Pt 385	1000Pt 385	10K T2 B=3892	10K T3 B=3694	10K T3 11K Shunt	3K B=3892	2K2 B=3976	1K8 (100 C) B0/100=4300	20K B=4262	100K B=4461
Temp F	Resistance [Ω]									
0	93.0	930	85.41K	70.40K	9513	25.62K	19.21K	327.5K	193.0K	1015K
5	94.1	941	72.96K	61.02K	9320	21.89K	16.41K	276.6K	163.5K	858.0K
10	95.2	952	62.50K	53.28K	9118	18.75K	14.06K	234.3K	139.7K	732.0K
15	96.3	963	53.69K	46.39K	8892	16.11K	12.08K	199.1K	118.8K	620.7K
20	97.4	974	46.24K	40.49K	8650	13.87K	10.41K	169.6K	101.3K	527.6K
25	98.5	985	39.93K	35.41K	8393	11.98K	8989	145.0K	86.73K	450.6K
30	99.6	996	34.57K	31.19K	8132	10.37K	7783	124.2K	74.87K	388.1K
32	<b>100.0</b>	<b>1000</b>	32.66K	29.49K	8012	9799	7352	116.8K	70.14K	362.9K
35	100.7	1007	30.01K	27.39K	7848	9004	6756	106.7K	64.43K	332.8K
40	101.7	1017	26.11K	24.11K	7554	7834	5878	91.87K	55.55K	285.1K
45	102.8	1028	22.77K	21.26K	7249	6832	5127	79.32K	48.07K	245.7K
50	103.9	1039	19.91K	18.79K	6938	5972	4482	68.66K	41.56K	212.3K
55	105.0	1050	17.44K	16.70K	6632	5233	3927	59.57K	36.31K	184.7K
60	106.1	1061	15.31K	14.81K	6312	4595	3448	51.80K	31.56K	160.0K
65	107.1	1071	13.48K	13.16K	5992	4043	3035	45.15K	27.50K	138.8K
70	108.2	1082	11.88K	11.72K	5675	3565	2676	39.44K	24.04K	120.9K
75	109.3	1093	10.50K	10.50K	5371	3150	2365	34.53K	21.17K	106.1K
77	109.7	1097	<b>10.00K</b>	<b>10.00K</b>	<b>5238</b>	<b>3000</b>	<b>2252</b>	<b>32.76K</b>	<b>20.00K</b>	<b>100.0K</b>
80	110.4	1104	9298	9375	5061	2789	2094	30.30K	18.58K	92.72K
85	111.5	1115	8249	8389	4760	2475	1858	26.64K	16.31K	80.95K
90	112.5	1125	7333	7520	4467	2200	1651	23.47K	14.38K	71.05K
95	113.6	1136	6530	6752	4184	1959	1471	20.71K	12.70K	62.47K
100	114.7	1147	5826	6094	3922	1748	1312	18.32K	11.29K	55.29K
105	115.8	1158	5207	5489	3662	1562	1173	16.24K	9993	48.71K
110	116.8	1168	4663	4951	3414	1399	1050	14.41K	8865	42.98K
115	117.9	1179	4182	4473	3180	1254	942	12.82K	7888	38.05K
120	119.0	1190	3757	4062	2966	1127	846	11.42K	7058	33.90K
125	120.0	1200	3381	3680	2758	1014	761	10.20K	6301	30.11K
130	121.1	1211	3047	3338	2561	914	686	9116	5623	26.71K
135	122.2	1222	2751	3033	2378	825	620	8164	5036	23.80K
140	123.2	1232	2487	2760	2206	746	560	7324	4518	21.24K
145	124.3	1243	2252	2522	2052	676	507	6581	4076	19.06K
150	125.4	1254	2043	2301	1903	613	460	5922	3664	17.04K

# TotalSense Series Duct Air Quality Sensor

Build a complete air quality system for indoor, duct, and outdoor  
Six environmental sensors: PMx, VOC, CO2, RH, T, barometric pressure  
BACnet/Modbus or analog outputs with set-point relay



## DESCRIPTION

The TotalSense Series provides more data for more advanced ventilation control while drastically reducing installation cost and time on a project. It includes a comprehensive selection of AQ sensing with carbon dioxide (CO2), relative humidity (RH), and temperature plus options for total volatile organic compounds (TVOC) and particulate matter (PM).

## APPLICATIONS

- Measure duct air quality to validate filtration systems and deliver fresh air
- Verify effectiveness of IAQ strategies in post covid environment
- Energy management/building control
- Facilitates compliance with ASHRAE 62.1 standard for air quality
- Contributes toward satisfying Feature A08 and T06 under the WELL Building Standard®

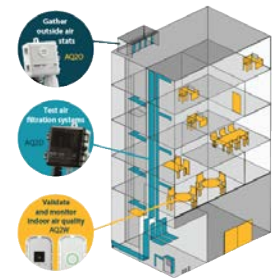


Fully configurable display

★  ±30PPM CO2	★  TEMPERATURE
★  ±2% RELATIVE HUMIDITY	★  PARTICULATE MATTER
★  BAROMETRIC PRESSURE	★  TVOC

★ Industry leading accuracy.  
 • NDIR CO<sub>2</sub> element, ±30ppm, ±3%  
 • ±2% relative humidity ppm,

Choose up to 6 air quality indicators



Build a full validation system

## Built for building automation.

Available with analog or...

Replaceable CO<sub>2</sub>, RH, and temp sensors



Made in USA; 7 year warranty on electronics

## FEATURES

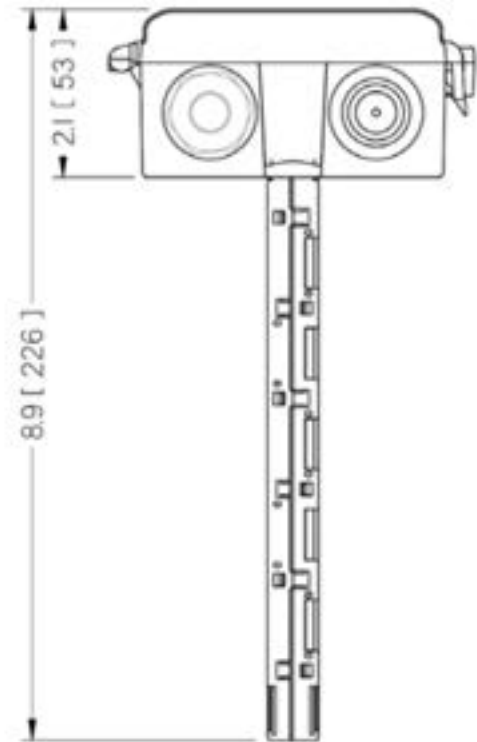
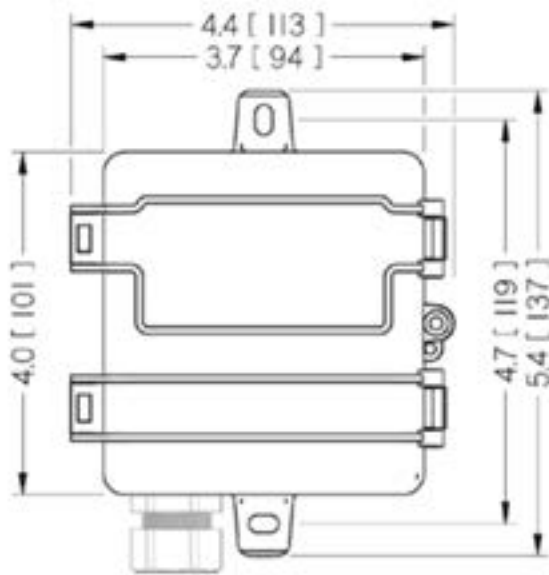
- Reduce installation costs with multiple sensors in a rugged, easy-mount duct enclosure
- Specify the exact product for your application with made in USA quality
- Sense unhealthy particulates or TVOC's in your duct system
- Industry-leading temperature and barometric pressure compensated CO2 sensing with non-dispersive infrared sensing element (NDIR), 15+ year life expectancy on CO2 sensing element;  $\pm 30\text{ppm}$ ,  $\pm 3\%$  of reading
- Tamper-proof
- Field-replaceable RH, Temp, and CO2 sensors ease maintenance
- 7-year limited warranty / 3 years on CO2 sensor - 2 years on all others

## ORDERING

<b>AQ2</b>	<input type="checkbox"/>	-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Package</b>								
D = Duct O = Outdoor								
	<b>Output Type</b>	<b>CO2</b>	<b>Relative Humidity</b>	<b>VOC</b>	<b>Advanced Sensors*</b>	<b>Temperature Output**</b>	<b>Display</b>	
	A = Analog B = BACnet/Modbus D = Dual Analog + BACnet/Modbus	A = None C = CO2 D = Dual Channel CO2	A = None 2 = 2% RH	A = None V = VOC	A = None P = Particulate Matter (PM) C = CO R = CO + PM	A = None B = Transmitter C = 100Pt RTD D = 1000Pt RTD E = 10K Type 2 F = 10K Type 3 G = 10k w/11k H = 3k I = 2k2 J = 1k8 K = 20k	X = None D = OLED Display	

\*Advanced Sensor options "O" and "Q" only available on AQ2W-BC2VOB... models.  
 \*\*Choose transmitter option for temperature display or BACnet/Modbus temp readings. Thermistor versions will be equipped with an isolated resistive thermistor circuit, so cannot be read on the display or over BACnet/Modbus.  
 \*\*\*CO sensor only available with display option for calibration purposes.

## DIMENSIONS



## SPECIFICATIONS

Power Supply	Without Display	16-30VDC/24VAC(1), 3.5W nominal, 4W max.
	With Display	24-30 VDC/24VAC(1), 4.3W nominal, 5W max
Analog Outputs (Analog version only)	Quantity	Up to 3 outputs
	Source	CO <sub>2</sub> , RH%, Temp, PM, TVOC (selectable)
	Scale	0-5V, 0-10V, 4-20mA (switch selectable, programmable per output)
Protocol Output (Communications version only)	Protocol	BACnet MS/TP or Modbus RTU
	Connection	3-wire RS-485, with isolated ground
	Data Rate	9600, 19200, 38400, 57600, 76800, 115200 (switch selectable)
	Address Range	0-127
Relay Set-point (standard except for PM models)	Type	Solid-state output, 1A @ 30VAC/DC, N.O.
	Source	CO <sub>2</sub> setpoint, RH setpoint, Temp setpoint, TVOC setpoint, air quality, off (selectable)
	Polarity	NO/NC (selectable)
CO <sub>2</sub> (optional)	Type	Non-dispersive Infrared (NDIR)
	Accuracy	±(30ppm + 3% of reading) (400-2000ppm), -10-50°C, 0-85%RH ±(50ppm+ 5% of reading) (2000-5000ppm), -10-50°C, 0-85%RH >5000ppm consult factory
	Resolution	1 ppm
	Range	0-2000 PPM (Default) (Programmable up to 10,000 PPM)
	Response time	90 seconds to 90% reading
	Sample rate	1s
	Temp and Pressure	Compensated. Barometric pressure also readable over communications
Relative Humidity (optional)	Type	Digital CMOS
	Accuracy(2)	±2% over 0 to 80%RH range

	Resolution	0.05%RH
	Response time (3)	30s
	Sample rate	3s
	Operating range	0 to 100%RH (non-condensing)
	Operating conditions (4)	-4 to 140oF (-20 to 60° C) @ RH>90%; -4 to 176oF @ RH=50%
Temperature Transmitter (optional)	Type	Silicon Band-gap
	Nominal Accuracy	±0.3° C (operating range)
	Maximum Accuracy (2)	±0.5° C (at 25° C), ±1.0° C
	Resolution	0.01° C
	Response time	30s
	Sample rate	3s
TVOC (optional)	Type	MOS
	Gas	Total VOC
	Range	0-10,000 µg/m <sup>3</sup>
	Response Time	<10s
	Temp, Pressure	Compensated
	Output	0-2000 µg/m <sup>3</sup> (default) Programmable up to 10,000 µg/m <sup>3</sup>
PMx (optional)	Type	Optical
CLASS 1 LASER PRODUCT	Size Range	PM1.0, PM2.5, PM4.0, PM10.0
	Scale	0-1000 µg/m <sup>3</sup>
	Lower detection limit	0.3 µm
	Precision	±10 µg/m <sup>3</sup> (0-100µg/m <sup>3</sup> ); ±10% (100-1000 µg/m <sup>3</sup> )
	Type	Electrochemical
Carbon Monoxide	Detection Range	0-200 ppm
	Accuracy	5% Gull Scale @20oC
	Resolution	1 ppm
	Response Time	<30 seconds to 90%
	Sensor Life	5 years
	Certifications	UL2034 recognized Component
Ozone	Type	MOS
	Gas	Ozone, Cross sensitivity to NO <sub>2</sub>
	Detection Range	20-500 ppb
Operating Environment	Temp	-4 to 122°F (-20 to 50°C)
	Humidity	0-95% non-condensing
Enclosure	Material	ABS Plastic
	Dimensions	4.0"h x 4.4"w x 2.1"d (+6.8" probe)
	Environmental	NEMA 4X enclosure
Compliance	Agency	CE, RoHS
	Accreditation	RESET International Standard

(1) One side of transformer, secondary is connected to signal common. Dedicated transformer is recommended.

(2) Models with PM sensor included achieve ±5% accuracy over 0 to 80%RH range and an additional temperature shift of up +0.5° C

(3) Time for reaching 63% of reading at 25° C and 1 m/s airflow

(4) Long term exposures to conditions outside normal range at high humidity may temporarily offset the RH reading (+3%RH after 60 hours.)

\* Product improvement is a continual process as Senva and product features and specification may change without prior notice. Refer to instructions that accompany the product for installation and wiring.



## TotalSense Series Outdoor Air Quality Sensor

Build a complete air quality system for indoor, duct, and outdoor  
Six environmental sensors: PMx, VOC, CO2, RH, T, barometric pressure  
BACnet/Modbus or analog outputs with set-point relay



### DESCRIPTION

The TotalSense Series Outdoor AQ sensor provides more data for more advanced ventilation control while drastically reducing installation cost and time on a project. It includes a comprehensive selection of AQ sensing with carbon dioxide (CO2), relative humidity (RH), and temperature plus options for total volatile organic compounds (TVOC), barometric pressure and particulate matter (PM). This sensor is enclosed in an outdoor rated enclosure to protect electronics from rain, overhead watering systems and harmful UV rays.

### APPLICATIONS

- Measure outdoor air quality for indoor/outdoor comparison to meet ASHRAE 62.1 standard for air quality
- Verify effectiveness of IAQ strategies in post covid environment
- Energy management/building control
- Contributes toward satisfying Feature A08 and T06 under the WELL Building Standard®

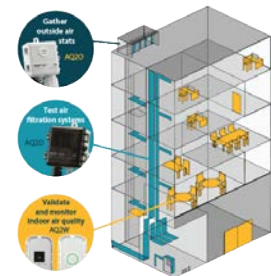


Fully configurable display

★  ±30PPM CO2	★  TEMPERATURE
★  ±2% RELATIVE HUMIDITY	★  PARTICULATE MATTER
★  BAROMETRIC PRESSURE	★  TVOC

★ Industry leading accuracy.  
• NDIR CO2 element, ±30ppm, ±3%  
• ±2% relative humidity ppm,

Choose up to 6 air quality indicators



Build a full validation system

### Built for building automation.

Available with analog or...

Replaceable CO2, RH, and temp sensors



Designed and manufactured in America  
World-class quality backed by seven year limited warranty

BACnet/Modbus protocols or up to 3 analog outputs

Made in USA; 7 year warranty on electronics

**FEATURES**

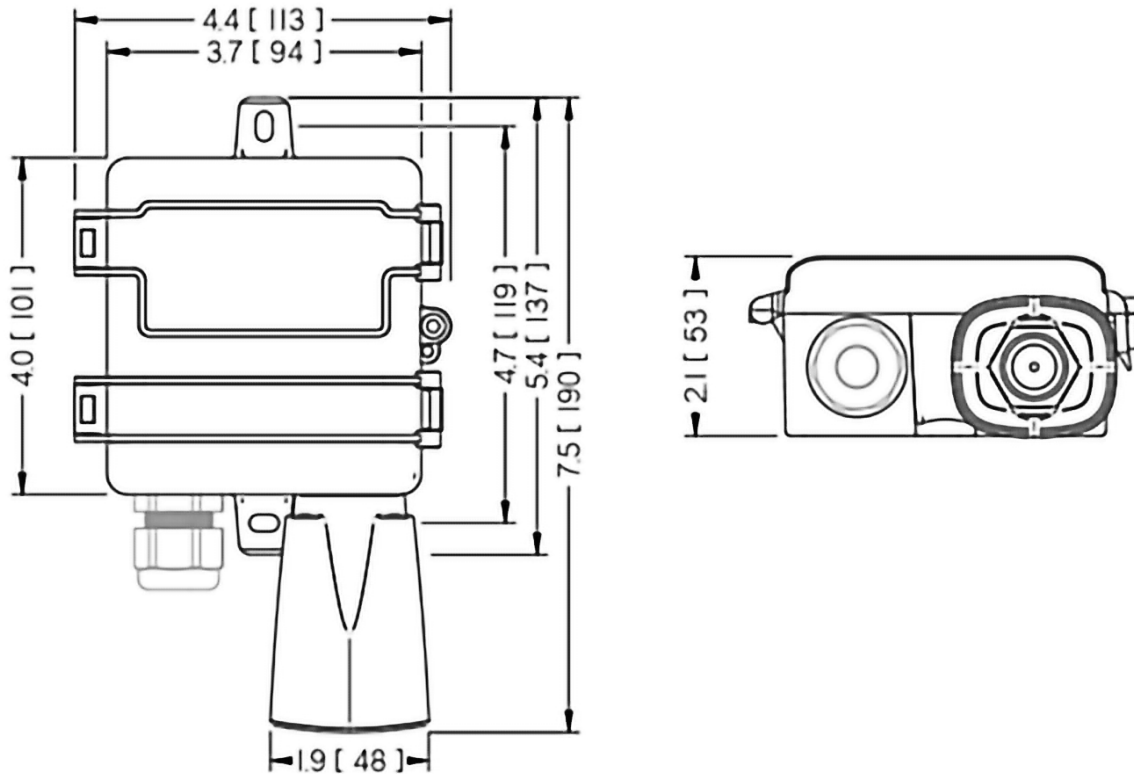
- Reduce installation costs with multiple sensors in a rugged, easy-mount outdoor enclosure
- Specify the exact product for your application with made in USA
- Sense unhealthy particulates or TVOC's before delivering it indoors
- Industry-leading temperature and barometric pressure compensated CO2 sensing with non-dispersive infrared sensing element (NDIR), 15+ year life expectancy on CO2 sensing element; ±30ppm, ±3% of reading
- Tamper-proof
- Field-replaceable RH, Temp, and CO2 sensors ease maintenance
- 7-year limited warranty / 3 years on CO2 sensor - 2 years on all others

**ORDERING**

<b>AQ2</b>	<input type="checkbox"/>	-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Package</b>			<b>Output Type</b>	<b>CO2</b>	<b>Relative Humidity</b>	<b>VOC</b>	<b>Advanced Sensors*</b>	<b>Temperature Output**</b>	<b>Display</b>
D = Duct O = Outdoor			A = Analog B = BACnet/Modbus D = Dual Analog + BACnet/Modbus	A = None C = CO2 D = Dual Channel CO2	A = None 2 = 2% RH	A = None V = VOC	A = None P = Particulate Matter (PM) C = CO R = CO + PM	A = None B = Transmitter C = 100Pt RTD D = 1000Pt RTD E = 10K Type 2 F = 10K Type 3 G = 10k w/11k H = 3k I = 2k2 J = 1k8 K = 20k	X = None D = OLED Display

\*Advanced Sensor options "O" and "Q" only available on AQ2W-BC2VOB... models.  
 \*\*Choose transmitter option for temperature display or BACnet/Modbus temp readings. Thermistor versions will be equipped with an isolated resistive thermistor circuit, so cannot be read on the display or over BACnet/Modbus.  
 \*\*\*CO sensor only available with display option for calibration purposes.

DIMENSIONS



SPECIFICATIONS

Power Supply	Without Display	16-30VDC/24VAC(1), 3.5W nominal, 4W max.
	With Display	24-30 VDC/24VAC(1), 4.3W nominal, 5W max
Analog Outputs (Analog version only)	Quantity	Up to 3 outputs
	Source	CO <sub>2</sub> , RH%, Temp, PM, TVOC (selectable)
	Scale	0-5V, 0-10V, 4-20mA (switch selectable, programmable per output)
Protocol Output (Communications version only)	Protocol	BACnet MS/TP or Modbus RTU
	Connection	3-wire RS-485, with isolated ground
	Data Rate	9600, 19200, 38400, 57600, 76800, 115200 (switch selectable)
	Address Range	0-127
Relay Set-point (standard except for PM models)	Type	Solid-state output, 1A @ 30VAC/DC, N.O.
	Source	CO <sub>2</sub> setpoint, RH setpoint, Temp setpoint, TVOC setpoint, air quality, off (selectable)
	Polarity	NO/NC (selectable)
CO <sub>2</sub> (optional)	Type	Non-dispersive Infrared (NDIR)
	Accuracy	±(30ppm + 3% of reading) (400-2000ppm), -10-50°C, 0-85%RH ±(50ppm+ 5% of reading) (2000-5000ppm), -10-50°C, 0-85%RH >5000ppm consult factory
	Resolution	1 ppm
	Range	0-2000 PPM (Default) (Programmable up to 10,000 PPM)
	Response time	90 seconds to 90% reading
	Sample rate	1s
	Temp and Pressure	Compensated. Barometric pressure also readable over communications
Relative Humidity (optional)	Type	Digital CMOS
	Accuracy(2)	±2% over 0 to 80%RH range
	Resolution	0.05%RH

	Response time (3)	30s
	Sample rate	3s
	Operating range	0 to 100%RH (non-condensing)
	Operating conditions (4)	-4 to 140oF (-20 to 60° C) @ RH>90%; -4 to 176oF @ RH=50%
Temperature Transmitter (optional)	Type	Silicon Band-gap
	Nominal Accuracy	±0.3° C (operating range)
	Maximum Accuracy (2)	±0.5° C (at 25° C), ±1.0° C
	Resolution	0.01° C
	Response time	30s
	Sample rate	3s
TVOC (optional)	Type	MOS
	Gas	Total VOC
	Range	0-10,000 µg/m <sup>3</sup>
	Response Time	<10s
	Temp, Pressure	Compensated
	Output	0-2000 µg/m <sup>3</sup> (default) Programmable up to 10,000 µg/m <sup>3</sup>
PMx (optional)	Type	Optical
CLASS 1 LASER PRODUCT	Size Range	PM1.0, PM2.5, PM4.0, PM10.0
	Scale	0-1000 µg/m <sup>3</sup>
	Lower detection limit	0.3 µm
	Precision	±10 µg/m <sup>3</sup> (0-100µg/m <sup>3</sup> ); ±10% (100-1000 µg/m <sup>3</sup> )
Operating Environment	Temperature	-4 to 122oF (-20 to 50oC)
	Humidity	0-95% non-condensing
Enclosure	Material	ABS Plastic
	Dimensions	4.0"h x 4.4"w x 2.1"d (AQO: +2.8" solar shield)
Compliance	Agency	CE, RoHS

(1) One side of transformer, secondary is connected to signal common. Dedicated transformer is recommended.

(2) Models with PM sensor included achieve ±5% accuracy over 0 to 80%RH range and an additional temperature shift of up +0.5° C

(3) Time for reaching 63% of reading at 25° C and 1 m/s airflow

(4) Long term exposures to conditions outside normal range at high humidity may temporarily offset the RH reading (+3%RH after 60 hours.)

\* Product improvement is a continual process as Senva and product features and specification may change without prior notice. Refer to instructions that accompany the product for installation and wiring.

# CT1R and CT1W Select Series Recessed/Wall CO<sub>2</sub>/Temperature

LCD display with field calibration menu  
2000/5000/10,000 ppm CO<sub>2</sub>  
Integrated set-point relay



## DESCRIPTION

Senva CO<sub>2</sub> sensors maximize energy savings by ensuring optimal ventilation. Measuring exhaled CO<sub>2</sub> levels ensures air is conditioned only when needed. The CT1R is a flush mount design sensor with NDIR sensing element and features that include an optional LCD and setpoint relay, menu selectable auto-calibration and provision to offset the reading +/- 250ppm. Now available with a dual-channel CO<sub>2</sub> (DT1R) element for more accurate sensing in continuously occupied spaces and greenhouses.

## APPLICATIONS

- Ventillation control in response to occupancy
- Facilitates compliance with ASHRAE 62.1 standard for air quality
- Offices, conference rooms, and public assembly areas
- Hospitals, continuous occupation (dual channel version)
- Greenhouses (dual channel version)

## FEATURES

### The industry's best looking CO<sub>2</sub> sensor meets demanding architectural standards.

- Fits in most standard j-box or low voltage brackets.
- No exposed screws; unobtrusive tamper resistant design

### Easy to install and maintain

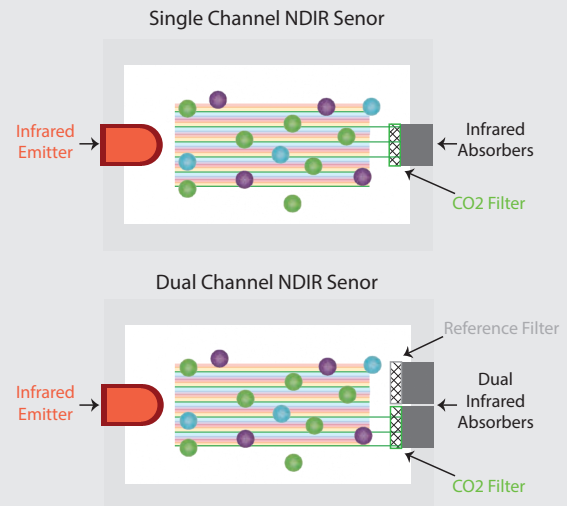
- Integrated display and push-button menus for field selectable scale, calibration, and operational modes
- Dual 4-20mA and 0-5V/0-10V output (switch selectable)
- Integrated high-reliability solid-state set-point relay is ideal for direct control applications; easy to set up thanks to LCD

### High reliability reduces call backs

- Non-dispersive infrared sensing element (NDIR)
- 15+ year life expectancy on CO<sub>2</sub> sensing element
- Industry leading 7-year limited warranty on electronics (NDIR module 2 years)

### High accuracy for improved system performance

- Selectable auto-calibration mode returns sensor to baseline values
- ±30ppm, ±3% of reading



### NEW! Dual Channel CO<sub>2</sub> Option

- Senva's dual channel CO<sub>2</sub> sensor allows for more accurate CO<sub>2</sub> sensing in continuously occupied spaces and greenhouses.
- Dual channel technology employs a calibrated reference chamber within the sensing element to minimize drift.



7 year limited warranty



ORDERING

CT1  -  3  -

Enclosure

W = Wall/Surface  
R = Recessed

Temperature

A = None  
B = Transmitter  
C = 100Pt (385)  
D = 1000Pt (385)  
E = 10k type 2  
F = 10k type 3  
G = 10k type 3 w/11k shunt  
H = 3k  
I = 2k2  
J = 1k8  
K = 20k

Output Type

3 = 3-wire 4-20mA,  
0-5V, 0-10V

Display (LCD)

D = Display + Setpoint Relay  
X = None

Dual Channel

D = Dual Channel CO2 Element  
Blank = None

SPECIFICATIONS

Power Supply		12-30VDC/24VAC <sup>(1)</sup> , 100mA max.	
Analog Outputs	Analog	3-wire 4-20mA and 0-5V/0-10V <sup>(2)</sup> (dip switch selectable)	
	Output scaling	0 - 2000 (default) or 0 - 5000 ppm (selectable)	
Digital Setpoint Output	Programmable	Solid-state, 1A @ 30VAC/DC, N.O. on LCD version only.	
Sensor Performance	Type	Non-dispersive Infrared (NDIR)	
	Accuracy (Standard)		±(30ppm + 3% of reading) (400-2000ppm), @ -10-50°C
			±(50ppm + 5% of reading) (2000-5000ppm), @ -10-50°C
			±(100ppm + 10% of reading) (5000-10000ppm), @ 0-50C
	Accuracy (Dual Channel)		±(30ppm + 3% of reading) (0-2000ppm), @ 0-50C
			±(50ppm + 3% of reading) (2000-5000ppm), @ -10-50C
Drift with ABC disabled (Standard)		±(100ppm + 10% of reading) (5000-10000ppm), @ 0-50C	
		35ppm/month <sup>(3)</sup>	
Drift with ABC disabled (Dual Channel)		5ppm/month <sup>(3)</sup>	
Range		0-2000/5000ppm; Programmable up to 10,000ppm	
Response time		60s to 90% reading	
Output update rate		1s	
SPH, Setpoint, Hi (On point)		500ppm to full-scale (800ppm default)	
SPL, Setpoint, Lo (Off point)		400ppm to full-scale (700ppm default)	
LCD Menu Setup Parameters	SCL, Scaling	0-2000ppm, 0-5000ppm, 0-10000ppm (2000ppm default)	
	ADJ, Adjustment	Offset adjustment +/-250ppm (0 default)	
	CAL, Calibration mode	Automatic mode ON or OFF (default=ON)	
	RUN, Run mode	Displays CO2 in ppm	
Operating Environment	Temperature	14 to 122°F (-10 to 50°C)	
	Humidity	0-95% non-condensing	
Enclosure	Material	ABS Plastic	
	Dimensions (fits low-voltage bracket)	5.7" h x 3.0" w x 1.7" d (1.07d" for surface mount)	

Need surface-mount?

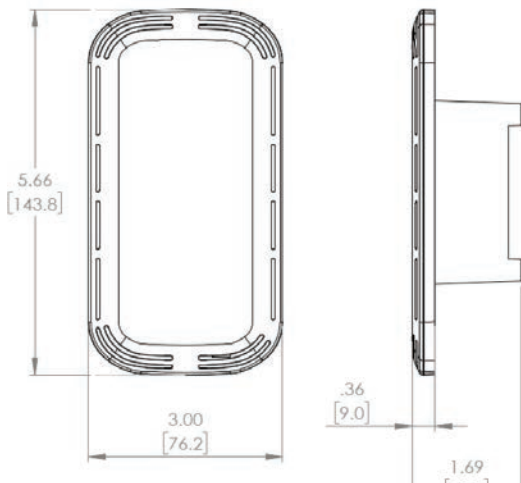
- Order the CT1W



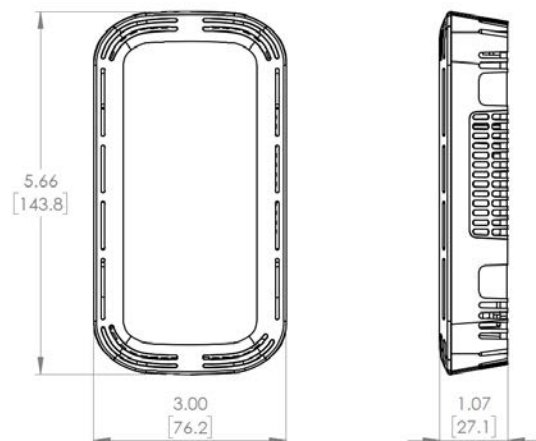
(1) One side of transformer secondary is connected to signal common. Dedicated transformer is recommended.  
(2) 15-30VDC/24VAC power supply voltage required for 10 volt output.

DIMENSIONS

CT1R



CT1W



**Warning:** Refer to installation instructions that accompany product and heed all safety instructions.

# CT10 Outdoor CO2 Sensor

- LCD display with field calibration menu
- 2000/5000/10000 ppm CO2
- Integrated set-point relay
- Field replaceable element
- Internal heater for increased operating range



## DESCRIPTION

Senva CO2 sensors maximize energy savings by ensuring optimal ventilation. Measuring exterior CO2 levels ensures optimized economizer control. The CT10 series is an outside air sensor with NDIR sensing element and features that include an optional LCD, standard setpoint relay, menu selectable auto-calibration and provision to offset the reading +/-250ppm.

## APPLICATIONS

- Controlling ventilation in response to occupancy
- Economizer control
- Facilitates compliance with ASHRAE 62.1 standard for air quality

## FEATURES

### Easy to install and maintain

- Integrated display and push-button menus for field selectable scale, calibration, and operational modes
- Dual 4-20mA and 0-5V/0-10V output (jumper selectable)
- Integrated high-reliability solid-state set-point relay is ideal for direct control applications; easy to set up thanks to LCD

### High reliability reduces call backs

- Non-dispersive infrared sensing element (NDIR)
- 15+ year life expectancy on CO2 sensing element
- Industry leading 7-year limited warranty on electronics; NDIR module 3 years

### High accuracy for improved system performance

- Internal heater for reliable outdoor operation
- Selectable auto-calibration mode returns sensor to baseline values
- ±30ppm, ±3% of reading



### Display and menu

- Easy set point and calibration adjustments. Set offsets for CO2



7 year limited warranty

ORDERING

CT1 **0** - **3**

Enclosure

O = Outdoor

Temperature

- A = None
- B = Transmitter
- C = 100Pt (385)
- D = 1000Pt (385)
- E = 10k type 2
- F = 10k type 3
- G = 10k type 3 w/11k shunt
- H = 3k
- I = 2k2
- J = 1k8
- K = 20k
- L = 100k

Display (LCD)

D = Display  
X = None

To order replacement sensor elements, please consult factory

SPECIFICATIONS

Power Supply		12-30VDC, 50mA max / 24VAC <sup>(1)</sup> , 100mA max.
Analog Outputs	Dual Analog	3-wire 4-20mA and 0-5V/0-10V <sup>(2)</sup> (dip switch selectable)
	Output scaling CO2	0 - 2000 (default) or 0 - 5000/10000 ppm (selectable)
	Output Scaling Temp	32 to 122°F (0-50°C) or -40 to 140°F (-40-60°C) (Switch Selectable)
Digital Setpoint Output	Programmable	Solid-state, 1A @ 30VAC/DC, N.O.
CO2 Sensor Performance	Type	Non-dispersive Infrared (NDIR) ±(30ppm + 3% of reading) (400-2000ppm), -10-50°C, 0-85%RH
	Accuracy	±(50ppm+ 5% of reading) (2000-5000ppm), -10-50°C, 0-85%RH
	Response time	<5000ppm consult factory 60s to 90% reading
	Output update rate	1s
	Operating Environment	14 to 122°F (-10 to 50°C), 0 to 95% RH
		SPH, Setpoint, Hi (On point)
	SPL, Setpoint, Lo (Off point)	400ppm to full-scale-50 (700ppm default)
LCD Menu Setup Parameters	SCL, Scaling	0-2000ppm (default), 0-5000ppm, 0-10000ppm
	ADJ, Adjustment	Offset adjustment +/-250ppm (0 default)
	CAL, Calibration mode	Automatic mode ON or OFF (default=ON)
	RUN, Run mode	Displays CO2 in ppm
Operating Environment	Temperature	-4 to 122°F (-20 to 50°C)
	Humidity	0-95% non-condensing
Enclosure	Material	ABS/Polycarbonate
	Enclosure Rating	Nema 1; Add drain holes to enclosure bottom to achieve Nema 3R rating
	Dimensions	4.0' h x 4.4" w x 2.1" d (+6.8" probe)
Agency	Compliance	CE, RoHS

- (1) One side of transformer secondary is connected to signal common. Dedicated transformer is recommended.
- (2) 15-30VDC/24VAC power supply voltage required for 10 volt output.
- (3) When operating unit outside of each element's specified operating temperature, accuracy may be reduced.



**Warning:** Refer to installation instructions that accompany product and heed all safety instructions.

# CT1D Duct CO<sub>2</sub> Sensor

- LCD display with field calibration menu
- 2000/5000/10000 ppm CO<sub>2</sub>
- Integrated set-point relay
- Field replaceable NDIR element



## DESCRIPTION

Senva CO<sub>2</sub> sensors maximize energy savings by ensuring optimal ventilation. Measuring exhaled CO<sub>2</sub> levels ensures air is conditioned only when needed. The CT1D series is duct mount sensor with NDIR sensing element and features that include an optional LCD, optional thermistor for temperature, standard setpoint relay, menu selectable auto-calibration and provision to offset the reading +/-250ppm.

## APPLICATIONS

- Controlling ventilation in response to occupancy
- Facilitates compliance with ASHRAE 62.1 standard for air quality
- Offices, conference rooms, and public assembly areas

## FEATURES

### Easy to install and maintain

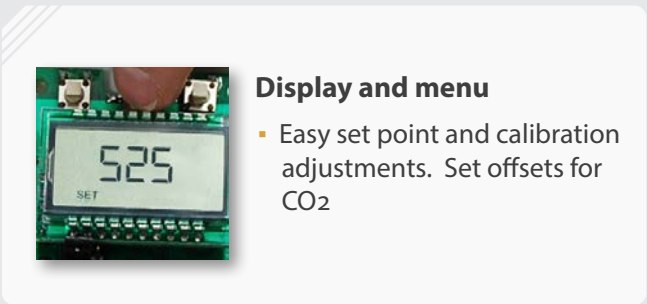
- Integrated display and push-button menus for field selectable scale, calibration, and operational modes
- Dual 4-20mA and 0-5V/0-10V output (dip-switch selectable)
- Integrated high-reliability solid-state set-point relay is ideal for direct control applications; easy to set up thanks to LCD

### High reliability reduces call backs

- Non-dispersive infrared sensing element (NDIR)
- 15+ year life expectancy on CO<sub>2</sub> sensing element
- Industry leading 7-year limited warranty on electronics; NDIR module 3 years

### High accuracy for improved system performance

- Selectable auto-calibration mode returns sensor to baseline values
- ±30ppm, ±3% of reading



### Display and menu

- Easy set point and calibration adjustments. Set offsets for CO<sub>2</sub>



7 year limited warranty

## ORDERING

CT1 **D** -  **3**

### Enclosure

D = Duct  
H = Hose Barb

### Temperature

A = None  
B = Transmitter  
C = 100Pt (385)  
D = 1000Pt (385)  
E = 10k type 2  
F = 10k type 3  
G = 10k type 3 w/11k shunt  
H = 3k  
I = 2k2  
J = 1k8  
K = 20k  
L = 100k

### Display (LCD)

D = Display  
X = None

To order replacement sensor elements,  
please consult factory

## SPECIFICATIONS

Power Supply		12-30VDC, 50mA max / 24VAC <sup>(1)</sup> , 100mA max.
Analog Outputs	Dual Analog	3-wire 4-20mA and 0-5V/0-10V <sup>(2)</sup> (dip switch selectable)
	Output scaling CO <sub>2</sub>	0 - 2000 (default) or 0 - 5000/10000 ppm (selectable)
	Output Scaling Temp	32 to 122°F (0-50°C) or -40 to 140°F (-40-60°C) (Switch Selectable)
Digital Setpoint Output	Programmable	Solid-state, 1A @ 30VAC/DC, N.O.
Sensor Performance	Type	Non-dispersive Infrared (NDIR)
	Accuracy	±(30ppm + 3% of reading) (400-2000ppm), -10-50°C, 0-85%RH ±(50ppm+ 5% of reading) (2000-5000ppm), -10-50°C, 0-85%RH <5000ppm consult factory
	Response time	60s to 90% reading
	Output update rate	1s
Operating Environment	Operating Environment	14 to 122°F (-10 to 50°C), 0 to 95% RH
	SPH, Setpoint, Hi (On point)	500ppm to full-scale (800ppm default)
	SPL, Setpoint, Lo (Off point)	400ppm to full-scale-50 (700ppm default)
LCD Menu Setup Parameters	SCL, Scaling	0-2000ppm (default), 0-5000ppm, 0-10000ppm
	ADJ, Adjustment	Offset adjustment +/-250ppm (0 default)
	CAL, Calibration mode	Automatic mode ON or OFF (default=ON)
	RUN, Run mode	Displays CO <sub>2</sub> in ppm
Operating Environment	Temperature	4 to 122°F (-10 to 50°C)
	Humidity	0-95% non-condensing
Enclosure	Material	ABS/Polycarbonate
	Dimensions	4.0' h x 4.4" w x 2.1" d (+6.8" probe)
Agency	Compliance	CE, RoHS

(1) One side of transformer secondary is connected to signal common. Dedicated transformer is recommended.

(2) 15-30VDC/24VAC power supply voltage required for 10 volt output.



**Warning:** Refer to installation instructions that accompany product and heed all safety instructions.



# Value Series - VTOR or HTOR Customization Form



## Sell your brand of sensor, generate service calls!

- Private label with low up-front cost
- Minimum order of only 10 units
- Market your brand, your service

## Professional look and feel

- Color printed with UV ink
- No bulky, cheap-looking stickers
- High quality, long lasting marketing

## Generate service calls for the life of the product!

### 1. Choose a part number

Choose a part number up to 12 digits. We suggest using the name of your company, such as HTOR-YOURCOMPANY.

Include this part number with each order (of any value product) you'd like customized. For example, if you order:

- (25) HTOR-2AA,
- (5) VTOR-AD,
- (30) HTOR-YOURCOMPANY

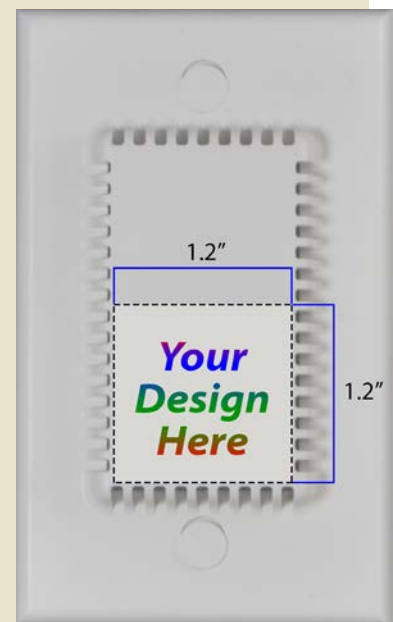
you will receive all 30 units with your company's customization.

**(VTOR) HTOR -** \_\_\_\_\_

### 2. Provide an image

Provide an image for the customization.

- Format: .AI, .JPEG, .PDF, or .PNG
- Dimensions: 1.2" x 1.2" to be placed as shown on the right
- Resolution: At least 300 ppi
- Font: We suggest no less than 6 pt for legibility



### 3. Send this form, and your 1.2"x1.2" image to support@senvainc.com

We'll send you a sample print for approval and then you are ready to order for any job!

A one-time setup fee (HTOR-SETUP) will be added to your first order.



# VTOR VOC Value Series Recessed Wall VOC Sensor

Senses volatile organic compounds  
0-5/10V/2 and 3-wire 4-20mA transmitter  
Sleek & functional low-profile design



## DESCRIPTION

The VTOR is capable of sensing thousands of VOC's coming from sources such as paints, glues, cleaners, alcohol, building products, smoke, and myriad other harmful or offensive gases. It's ability to sense these contaminants in addition to breath and other bodily functions makes it the preferred alternative or compliment to CO2 occupancy sensing.

The VTOR Value Series ensures that odor and ventilation issues are never a topic of conversation. An array of analog outputs and thermistor options accommodate any installation and keep occupants breathing easy.

## APPLICATIONS

- Controlling ventilation in response to occupancy
- Ventillation control
- Economizer control
- Cafeterias, conference rooms, restrooms and public assembly areas

## FEATURES

### Sleek and functional design

- Standard wall plate size fits most single gang junction boxes
- Flush-mount screw plugs for tamper-resistance
- Ideal for schools, hotels, offices, bathrooms, etc.

### Superior sensing

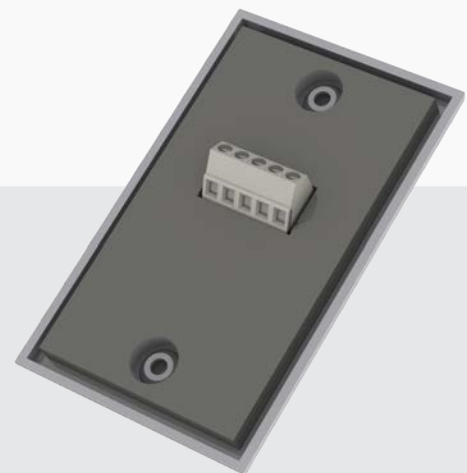
- Humidity compensation for higher accuracy
- Gasket ensures excellent measurement accuracy

### Industry-leading warranty

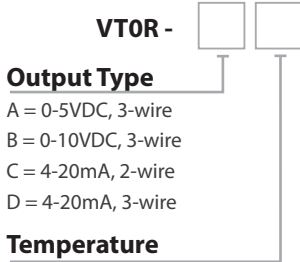
- 7-year limited warranty on electronics; sensor element 2 years

### Easy Wiring

- Streamlined enclosure design and 45° terminals ensure quick and simple installation



ORDERING



- Temperature**
- A = None
  - C = 100Pt (385)
  - D = 1000Pt (385)
  - E = 10k type 2
  - F = 10k type 3
  - G = 10k type 3 w/11k shunt
  - H = 3k
  - I = 2k2
  - J = 1k8
  - K = 20k
  - L = 100k

SPECIFICATIONS

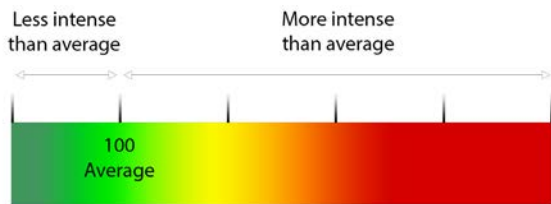
Power Supply	12-30VDC/24VAC <sup>(1)</sup> , 24mA max
Output	Analog outputs 0-10V, 0-5V, 2-wire or 3-wire 4-20mA
Output scaling	VOC intensity 0-500 (relative intensity)
Thermistor Options	Yes, see ordering table on left
VOC Sensor Performance	Type MOS
	Gas Ethanol
	Range 0-1000ppm of ethanol equivalent
	Response Time <10s
	Humidity Compensation Yes
Enclosure	Dimensions 4.45" h x 2.7" w x 0.5" d (depth measured from wall)
	RH 0 to 90% RH (operating) 0- to 80% (storage)
	Temp Rating 14 to 122°F (-10 to 50°C) (operating) 5 to 30°C (storage)
Compliance	CE, RoHS

(1) One side of transformer, secondary is connected to signal common. Dedicated transformer is recommended. 15-30VDC/24VAC power supply voltage required for 10 volt output.

WHAT IS VOC?

VOC means volatile organic compounds which can be found in a number of harmful and other gases, odors, and smoke. Some example contaminants are listed on the right.

The output of this product has been converted from a raw Ethanol concentration into an intensity value, ranging from 0-500. An environment with normal air quality will typically read about 100 on this scale. Suggested control actions are listed to the right.



VOC Contaminant	Sources
Harmful Gases	Paints, glues, solvents, furniture, mattresses, carpet, flooring, building products
Other gases	Alcohol, cleaners, perfume, cooking smells
Odors	Rotten food, flatulence, breath, cosmetics, pet pee
Smoke	Cigarette smoke

VOC Level	Suggested Action
0-200	None, air quality is good
200-300	Ventilate, purify
300-500	Ventilate, purify intensely

FULLY CUSTOMIZABLE

**Sell your brand of sensor**

- Private label with low up-front cost
- Minimum order of only 10 units
- Market your brand, your service
- Direct all service calls to you

**Professional look and feel**

- Color printed with UV ink
- No bulky, cheap-looking stickers
- High quality, long lasting marketing

**Call for a sample today!**



**Warning:** Refer to installation instructions that accompany product and heed all safety instructions.

# VT0D VOC Value Series Duct VOC Sensor

Senses volatile organic compounds  
0-5/10V/2 and 3-wire 4-20mA transmitter



## DESCRIPTION

The VT0D is capable of sensing thousands of VOC's coming from sources such as paints, glues, cleaners, alcohol, building products, smoke, and myriad other harmful or offensive gases. It's ability to sense these contaminants in addition to breath and other bodily functions makes it the preferred alternative or compliment to CO2 occupancy sensing.

The VT0D Value Series ensures that odor and ventilation issues are never a topic of conversation. An array of analog outputs and thermistor options accommodate any installation and keep occupants breathing easy.

## APPLICATIONS

- Controlling ventilation in response to occupancy
- Ventillation control
- Economizer control
- Cafeterias, conference rooms, restrooms and public assembly areas

## FEATURES

### Senva's high efficiency duct probe

- Designed to mount easily in any duct
- Ideal for schools, hotels, offices, bathrooms, etc.

### Superior sensing

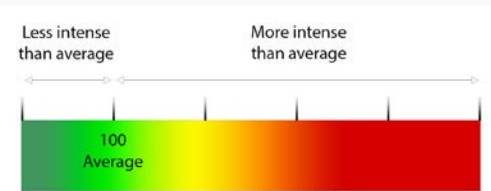
- Humidity compensation for higher accuracy
- Gasket ensures excellent measurement accuracy

### Industry-leading warranty

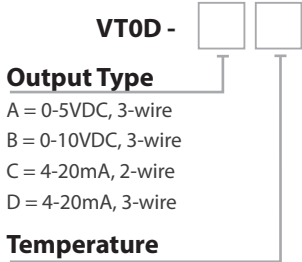
- 7-year limited warranty on electronics; sensor element 2 years

### Easy Scaling

- The 0-1000 ppm ethanol output is logarithmically scaled to give a 0-500 relative intensity value that more closely correlates to what is expected from other occupancy sensors.



ORDERING



Output Type

- A = 0-5VDC, 3-wire
- B = 0-10VDC, 3-wire
- C = 4-20mA, 2-wire
- D = 4-20mA, 3-wire

Temperature

- A = None
- C = 100Pt (385)
- D = 1000Pt (385)
- E = 10k type 2
- F = 10k type 3
- G = 10k type 3 w/11k shunt
- H = 3k
- I = 2k2
- J = 1k8
- K = 20k
- L = 100k

SPECIFICATIONS

Power Supply	12-30VDC/24VAC <sup>(1)</sup> , 24mA max	
Output	Analog outputs	0-10V, 0-5V, 2-wire or 3-wire 4-20mA
Output scaling	VOC intensity	0-500 (relative intensity)
Thermistor Options	Yes, see ordering table on left	
VOC Sensor Performance	Type	MOS
	Gas	Ethanol
	Range	0-1000ppm of ethanol equivalent
	Response Time	<10s
	Humidity Compensation	Yes
Enclosure	Dimensions	4.0' h x 4.4"w x 2.1"d (+6.8" probe)
	RH	0 to 90% RH (operating) 0- to 80% (storage)
	Temp Rating	14 to 122°F (-10 to 50°C) (operating) 5 to 30°C (storage)
Compliance	RoHS	

(1) One side of transformer, secondary is connected to signal common. Dedicated transformer is recommended. 15-30VDC/24VAC power supply voltage required for 10 volt output.

WHAT IS VOC?

VOC means volatile organic compounds which can be found in a number of harmful and other gases, odors, and smoke. Some example contaminants are listed on the right.

The output of this product has been converted from a raw Ethanol concentration into an intensity value, ranging from 0-500. An environment with normal air quality will typically read about 100 on this scale. Suggested control actions are listed to the right.

VOC Contaminant	Sources
Harmful Gases	Paints, glues, solvents, furniture, mattresses, carpet, flooring, building products
Other gases	Alcohol, cleaners, perfume, cooking smells
Odors	Rotten food, flatulence, breath, cosmetics, pet pee
Smoke	Cigarette smoke

VOC Level	Suggested Action
0-200	None, air quality is good
200-300	Ventilate, purify
300-500	Ventilate, purify intensely



**Warning:** Refer to installation instructions that accompany product and heed all safety instructions.

# HT1R and HT1W Select Series Recessed/Wall Humidity/Temperature

LCD, 2% or 3% accuracy  
0-5/10V/4-20mA RH/Temp (thermistors optional)  
Digital field offset calibration  
Durable and attractive low-profile design



## DESCRIPTION

The new Senva HT1 Series comes in our newly engineered enclosure making it the most attractive and quickest-installation humidity sensor on the market. Designed with a universal analog output and a variety of thermistor options allows flexibility on-site. It mounts easily in any junction box or it can be unobtrusively mounted directly to drywall using Senva's built-in drywall clamps. Also available in a surface-mount enclosure.

Save installation time and energy costs with this versatile product.

## APPLICATIONS

- HVAC room humidity and temperature measurement and control
- Energy management/building control

## FEATURES

### Attractive and low-profile design

- Enclosure mounts easily in junction boxes
- Innovative drywall clamps allow unobtrusive and secure mounting without a junction box
  - Ideal for schools, offices, etc

### Field calibration with LCD or LED

- Field calibration scaled adjustment allows for the calibrated RH value to be changed as needed to maintain certification.
- Dip-switch selectable 0-5V/0-10V/4-20mA universal output

### Options for any job

- Thermistor or transmitter outputs for temperature (optional)

### Superior RH sensing

- 2%, 3%, and 2% NIST calibrated RH accuracy options
- Field-replaceable humidity element
- On-board temperature compensation eliminates temperature coefficient errors and achieves high repeatability and offset stability



### Innovative Drywall Clamps

- Clamps allow mounting to drywall without adding the cost and time required for a junction box or trim ring (recessed version only).





ORDERING

HT1 - [ ] [ ] U [ ]

Enclosure

W = Wall/Surface  
R = Recessed

Accuracy

2 = 2%  
3 = 3%  
N = 2% NIST

Temperature

A = None  
B = Transmitter  
C = 100Pt (385)  
D = 1000Pt (385)  
E = 10k type 2  
F = 10k type 3  
G = 10k type 3 w/11k shunt  
H = 3k  
I = 2k2  
J = 1k8  
K = 20k  
L = 100k

Output Type

U = Universal (2-wire and 3-wire  
4-20mA, 0-5V, 0-10V)

Display (LCD)

D = Display  
X = None

Need surface-mount?

- Order the HT1W

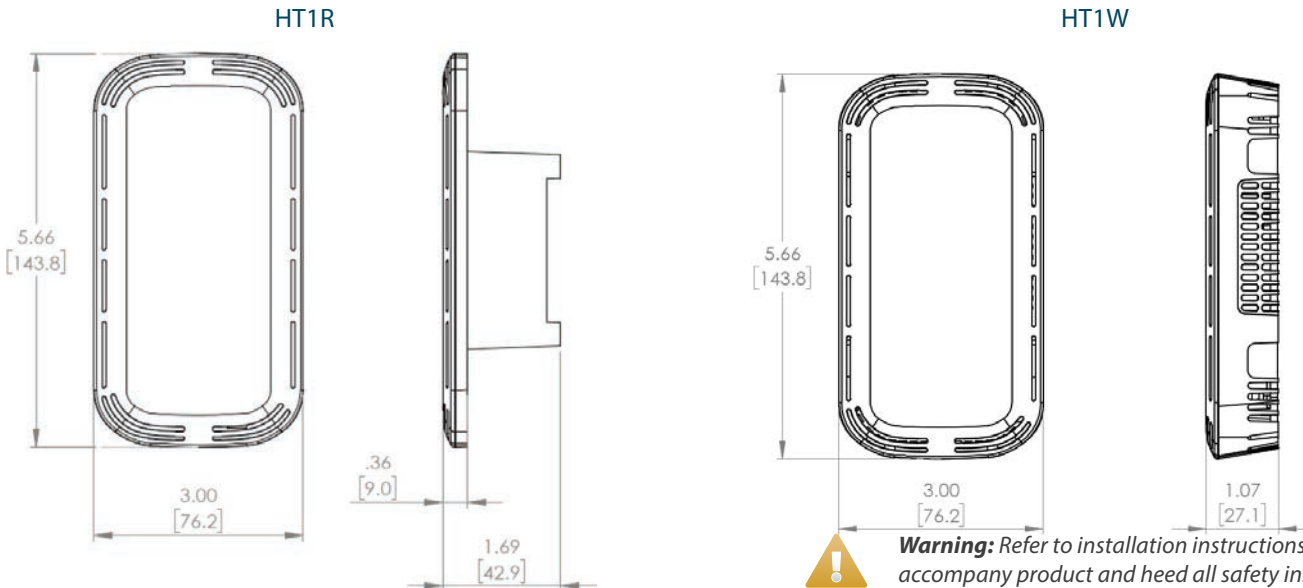


SPECIFICATIONS

Power Supply	12-30VDC/24VAC <sup>(1)</sup> , 100mA max.	
Outputs	RH% and Temperature 3-wire 0-5, 10V <sup>(4)</sup> , or 4-20mA, 2-wire 4-20mA(selectable)	
Output scaling	RH% 0-100% RH Temperature Transmitter 50-95° F (10-35°C) or 32-122°F (0-50°C) (selectable)	
Thermistor Options	Yes, see ordering table on left	
Media filter	PTFE membrane, IP54 protection	
Relative Humidity	Accuracy	2% models, ±2% over 0 to 100% RH Range; ±1.5% typ 3% models, ±3% over 0 to 100% RH Range; ±2% typ
	Resolution	0.01%RH
	Hysteresis	±0.8%RH
	Non-Linearity	factory linearized <1%RH
	Temperature coefficient	fully compensated by on-board temp sensor
	Response time <sup>(2)</sup>	8s
	Output update rate	0.5s
	Operating range	0 to 100%RH (non-condensing)
	Long term drift	<0.25%RH per year
	Element Normal Operating conditions <sup>(3)</sup>	41 to 140°F (5°C to 60°C) @ 20% to 80% RH
Temp Transmitter	Accuracy	2% models, <±0.25°C; 0.1°C typ @ 25°C 3% models, <±0.3°C; 0.25°C typ @ 25°C
	Resolution	0.01°C
	Repeatability	0.04°C
	Response time <sup>(2)</sup>	2s
Enclosure	Dimensions	5.7" h x 3.0" w x 1.7" d (1.07" d for surface mount)
	Unit Temp Rating	-40 to 158°F (-40 to 70°C)
	Compliance	CE

(1) One side of transformer, secondary is connected to signal common. Dedicated transformer is recommended.  
 (2) Time for reaching 63% of reading at 25° C and 1 m/s airflow.  
 (3) Long term exposures to conditions outside normal range at high humidity may temporarily offset the RH reading (+3%RH after 60 hours).  
 (4) 15-30VDC/24VAC power supply voltage required for 10 volt output.

DIMENSIONS



# HT1D Series

## Duct Humidity/Temperature

- 2% or 3% accuracy (NIST certification options)
- 0-5V/10V and 4-20mA RH/Temp (thermistors optional)
- LCD display with field calibration menu
- Field replaceable element



### DESCRIPTION

The HD Series is designed with both the engineer and field technician in mind. The HD Series combines excellent stability with reliable operation in 2% or 3% RH accuracy options. Optional temperature transmitters, RTDs and thermistors add further flexibility when ordering. The standard LCD and field replaceable elements make the initial installation and future service a breeze.

### APPLICATIONS

- HVAC room humidity and temperature measurement and control
- Replaceable element is ideal for difficult environments such as swimming pools

### FEATURES

#### Versatile

- 2% or 3% RH versions with field replaceable sensor
- Switch selectable 5V/10V and 4-20mA RH/T transmitter outputs
- Thermistor outputs for temperature optional

#### Easy to maintain

- Field calibration. LCD and push-button menu allows easy adjustment of calibrated RH value as needed to maintain certification.
- Field replaceable sensor—without disturbing conduit

#### Superior RH sensing

- On-board temperature compensation for RH. Eliminates temperature coefficient errors and achieves an excellent measurement accuracy as well as high repeatability and offset stability.
- State of the art testing facilities. 8-point calibration certificate available (NIST traceability—consult factory)

#### Quality

- Industry leading 7-year warranty/ 2-year replaceable element warranty



#### Field replaceable element

- Ideal for harsh environments
- Accurate dual RH/Temp IC sensing



#### LCD with menu

- Easier commissioning
- Re-scale to field metrics if required
- LCD cover provided



#### NIST traceable

- 8-point calibration certification options. Consult factory.

ORDERING

HT1D-   **U**

Accuracy

- 2 = 2%
- 3 = 3%
- N = 2% NIST

Temperature

- A = None
- B = Transmitter
- C = 100Pt (385)
- D = 1000Pt (385)
- E = 10k type 2
- F = 10k type 3
- G = 10k type 3 w/11k shunt
- H = 3k
- I = 2k2
- J = 1k8
- K = 20k
- L = 100k

Output Type

- U = Universal (2-wire and 3-wire 4-20mA, 0-5V, 0-10V)

Display (LCD)

- D = Display
- X = None

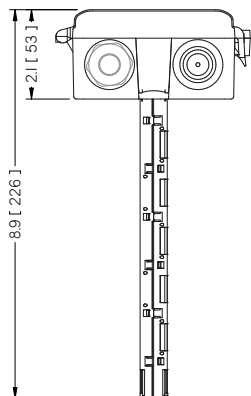
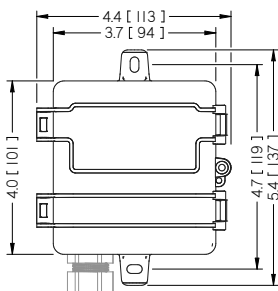


SPECIFICATIONS

Power Supply	3-wire voltage mode (0-5/10V)	12-30VDC/24VAC <sup>(1)</sup> , 15mA max.
	Current mode (4-20mA)	12-30VDC, 30mA max.
Outputs	RH and Temperature (option)	3-wire 0-5/10V <sup>(4)</sup> or 3-wire or 2-wire 4-20mA (Selectable)
		RH 0-100% RH
Output scaling	Temperature	32-122° F (0-50°C) or -40-140° F (-40-60°C) (Selectable)
		See ordering table
Thermistor/RTD	Optional	See ordering table
Media filter		PBT with water-vapor permeable membrane
Relative Humidity	Accuracy	2% models, ±2% over 0 to 100% RH Range; ±1.5% typ 3% models, ±3% over 0 to 100% RH Range; ±2% typ
	Resolution	0.01%RH
	Hysteresis	±0.8%RH
	Non-Linearity	factory linearized <1%RH
	Temperature coefficient	fully compensated by on-board sensor
	Response time <sup>(2)</sup>	8s
	Output update rate	0.5s
	Operating range	0 to 100%RH (non-condensing)
	Long term drift	<0.25%RH per year
	Element Normal Operating conditions <sup>(3)</sup>	41 to 140°F (5°C to 60°C) @ 20% to 80% RH
	Accuracy	2% models, <±0.25°C; 0.1°C typ @ 25°C 3% models, <±0.3°C; 0.25°C typ @ 25°C
	Temperature	Resolution
Repeatability		0.04 °C
Response time (2)		2s
Output update rate		0.5s
Enclosure	Element Operating range	-40 to 140°F (-40° C to 60° C)
	Materials	ABS/Polycarbonate
	Unit Temp Rating	-40 to 158°F (-40 to 70°F)
Agency	Dimensions	4.0"h x 4.4"w x 2.1"d (+6.8" probe)
	Compliance	CE, RoHS

- (1) One side of transformer, secondary is connected to signal common. Dedicated transformer is recommended.
- (2) Time for reaching 63% of reading at 25° C and 1 m/s airflow.
- (3) Long term exposures to conditions outside normal range at high humidity may temporarily offset the RH reading (+3%RH after 60 hours.)
- (4) 15-30VDC/24VAC power supply voltage required for 10 volt output.

DIMENSIONS



**Warning:** Refer to installation instructions that accompany product and heed all safety instructions.

# HT10 Series

## Outdoor Humidity/Temperature

- 2% or 3% accuracy (NIST certification options)
- 0-5V/10V and 4-20mA RH/Temp (thermistors optional)
- LCD display with field calibration menu
- Field replaceable element



### DESCRIPTION

The HO Series is designed to be mounted on the building exterior to provide outside air RH measurement. The HO Series combines excellent stability with reliable operation in 2% or 3% RH accuracy options. Optional temperature transmitters, RTDs and thermistors add further flexibility when ordering. The standard LCD, gasketed lid and field replaceable elements make the initial installation and future service a breeze.

### APPLICATIONS

- Outdoor humidity and temperature measurement for building control

### FEATURES

#### Versatile

- 2% or 3% Rh versions with field replaceable sensor
- Switch selectable 5V/10V and 4-20mA RH/T transmitter outputs
- Thermistor/RTD output for temperature optional

#### Easy to maintain

- Field calibration. LCD and push-button menu allows easy adjustment of calibrated RH value as needed to maintain certification
- Replace a sensor without disturbing conduit

#### Superior RH sensing

- On-board temperature compensation for RH. Eliminates temperature coefficient errors and achieves an excellent measurement accuracy as well as high repeatability and offset stability
- State of the art testing facilities. 8-point calibration certificate available (NIST traceability—consult factory)

#### Quality

- Industry leading 7-year warranty/ 2-year replaceable element warranty



#### Field replaceable element

- Ideal for harsh environments
- Accurate dual RH/Temp IC sensing



#### LCD with menu

- Easier commissioning
- Re-scale to field metrics if required



#### NIST traceable

- 8-point calibration certification options. Consult factory.

ORDERING

HT10 -   **U**

**Accuracy**  
 2 = 2%  
 3 = 3%  
 N = 2% NIST

**Temperature**  
 A = None  
 B = Transmitter  
 C = 100Pt (385)  
 D = 1000Pt (385)  
 E = 10k type 2  
 F = 10k type 3  
 G = 10k type 3 w/11k shunt  
 H = 3k  
 I = 2k2  
 J = 1k8  
 K = 20k

**Output Type**  
 U = Universal (2-wire and 3-wire 4-20mA, 0-5V, 0-10V)

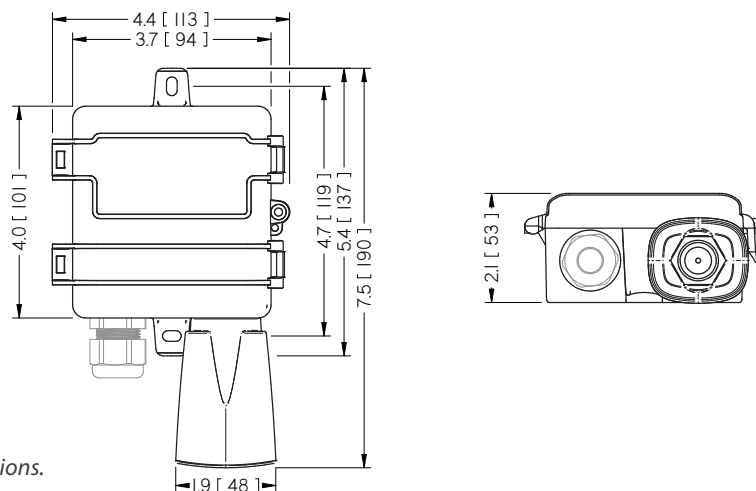
**Display (LCD)**  
 D = Display  
 X = None

SPECIFICATIONS

Power Supply	3-wire voltage mode (0-5/10V)	12-30VDC/24VAC <sup>(1)</sup> , 15mA max
	Current mode (4-20mA)	12-30VDC, 30mA max.
Outputs	RH and Temperature (option)	3-wire 0-5/10V <sup>(4)</sup> or 3-wire or 2-wire 4-20mA
Output scaling	RH	0-100% RH
	Temperature	32-122°F (0-50°C) or -40-140°F (-40-60°C)
Thermistor/RTD	Optional	See ordering table
Media filter		Sintered stainless steel
Relative Humidity	Accuracy	2% models, ±2% over 0 to 100% RH Range; ±1.5% typ 3% models, ±3% over 0 to 100% RH Range; ±2% typ
	Resolution	0.01%RH
	Hysteresis	±0.8%RH
	Non-Linearity	Factory linearized <1%RH
	Temperature coefficient	Fully compensated by on-board sensor
	Response time <sup>(2)</sup>	8s
	Output update rate	0.5s
	Operating range	0 to 100%RH (non-condensing)
	Long term drift	<0.25%RH per year
	Normal Operating conditions <sup>(3)</sup>	41 to 140°F (5°C to 60°C) @ 20% to 80% RH
Temperature	Accuracy	2% models, <±0.25° C; 0.1° C typ @ 25° C 3% models, <±0.3° C; 0.25° C typ @ 25° C
	Resolution	0.01° C
	Repeatability	0.08° C
	Response time <sup>(2)</sup>	2s
Enclosure	Materials	ABS/Polycarbonate
	Unit Temp Rating	-40 to 158°F (-40 to 70°F)
	Enclosure Rating	Nema 1; Add drain holes to enclosure bottom to achieve Nema 3R rating
Agency	Dimensions	4.0"h x 4.4"w x 2.1"d (+2.8" solar shield)
	Compliance	CE, RoHS

(1) One side of transformer,, secondary is connected to signal common. Dedicated transformer is recommended.  
 (2) Time for reaching 63% of reading at 25° C and 1 m/s airflow.  
 (3) Long term exposures to conditions outside normal range at high humidity may temporarily offset the RH reading (+3%RH after 60 hours.)  
 (4) 15-30VDC/24VAC power supply voltage required for 10 volt ouput.

DIMENSIONS



**Warning:** Refer to installation instructions that accompany product and heed all safety instructions.

# HTOR Value Series Recessed Wall Humidity/Temperature

LCD 2% or 3% accuracy  
0-5/10V/4-20mA RH/Temp (thermistors optional)  
Sleek and functional low-profile design



## DESCRIPTION

Designed for use with energy management systems in buildings, the HTOR series combines excellent stability and reliable operation. Thermistor options accommodate any installation.

## APPLICATIONS

- HVAC room humidity and temperature measurement and control
- Energy management/building control

## FEATURES

### Sleek and functional design

- Standard wall plate size fits most single gang junction boxes
- Flush-mount screw plugs for tamper-resistance
- Ideal for schools

### Simple yet versatile

- 45° terminals for ease of wiring
- Easy installation saves time and callbacks

### Options for any job

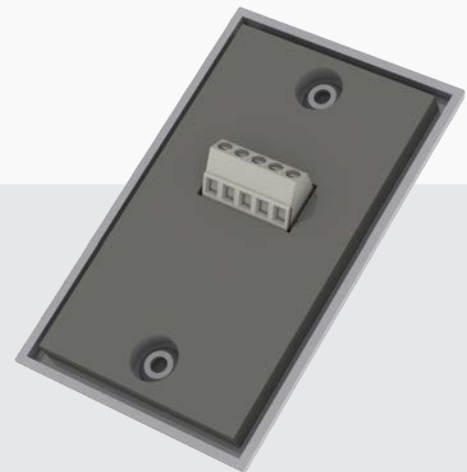
- Thermistor outputs for temperature (optional)
- 0-5V, 0-10V, 4-20mA 2-wire, or 3-wire options available

### Superior RH sensing

- 2% or 3% RH accuracy options
- On-board temperature compensation eliminates temperature coefficient errors and achieves high repeatability and offset stability
- Gasket ensures excellent measurement accuracy
- Achieve better accuracy for more efficient control

### Easy Wiring

- Streamlined enclosure design and 45° terminals ensure quick and simple installation





## ORDERING

HTOR -

### Accuracy

- 2 = 2%
- 3 = 3%

### Output Type

- A = 0-5VDC, 3-wire
- B = 0-10VDC, 3-wire
- C = 4-20mA, 2-wire
- D = 4-20mA, 3-wire

### Temperature

- A = None
- C = 100Pt (385)
- D = 1000Pt (385)
- E = 10k type 2
- F = 10k type 3
- G = 10k type 3 w/11k shunt
- H = 3k
- I = 2k2
- J = 1k8
- K = 20k
- L = 100k

### Customize it!

HTOR-(Your name here)

## SPECIFICATIONS

Power Supply		12-30VDC/24VAC <sup>(1)</sup> , 24mA max
Output	RH%	3-wire 0-5, 10V <sup>(4)</sup> , or 4-20mA, 2-wire 4-20mA(optional)
Output scaling	RH%	0-100% RH
Thermistor Options		Yes, see ordering table on left
Media filter		PTFE membrane, IP54 protection
Relative Humidity	Accuracy	2% models, $\pm 2\%$ over 0 to 100% RH Range 3% models, $\pm 3\%$ over 0 to 100% RH Range
	Resolution	0.01%RH
	Hysteresis	$\pm 0.8\%$ RH
	Non-Linearity	factory linearized <1%RH
	Temperature coefficient	fully compensated by on-board temp sensor
	Response time <sup>(2)</sup>	8s
	Output update rate	0.5s
	Operating range	0 to 100%RH (non-condensing)
	Long term drift	<0.25%RH per year
	Element Normal Operating conditions <sup>(3)</sup>	41 to 140°F (5°C to 60°C) @ 20% to 80% RH
Enclosure	Dimensions	4.45" h x 2.7" w x 0.5" d (depth measured from wall)
	Unit Temp Rating	-40 to 158°F (-40 to 70°C)
Agency	Compliance	CE, RoHS

- (1) One side of transformer, secondary is connected to signal common. Dedicated transformer is recommended.
- (2) Time for reaching 63% of reading at 25° C and 1 m/s airflow.
- (3) Long term exposures to conditions outside normal range at high humidity may temporarily offset the RH reading (+3%RH after 60 hours).
- (4) 15-30VDC/24VAC power supply voltage required for 10 volt output.

## FULLY CUSTOMIZABLE

### Sell your brand of sensor

- Private label with low up-front cost
- Minimum order of only 10 units
- Market your brand, your service
- Direct all service calls to you

### Professional look and feel

- Color printed with UV ink
- No bulky, cheap-looking stickers
- High quality, long lasting marketing

**Call for a sample today!**



**Warning:** Refer to installation instructions that accompany product and heed all safety instructions.

# HT0D Value Series Duct Humidity/Temperature

2% or 3% accuracy  
0-5/10V/4-20mA RH/Temp (thermistors optional)



## DESCRIPTION

Designed for use with energy management systems in buildings, the HT0D series combines excellent stability and reliable operation. Analog output options and thermistor options accommodate any installation.

## APPLICATIONS

- HVAC room humidity and temperature measurement and control
- Energy management/building control

## FEATURES

### Senva's high efficiency duct probe

- Designed to mount easily in any duct
- Ideal for schools, hotels, offices, etc.

### Options for any job

- Thermistor outputs for temperature (optional)
- 0-5V, 0-10V, 4-20mA 2-wire, or 3-wire options available

### Superior RH sensing

- 2% or 3% RH accuracy options
- On-board temperature compensation eliminates temperature coefficient errors and achieves high repeatability and offset stability
- Achieve better accuracy for more efficient control

### Industry-leading warranty

- 7-year limited warranty on electronics; sensor element 2 years



### Field replaceable element

- Ideal for harsh environments
- Accurate dual RH/Temp IC sensing



ORDERING

HT0D -

Accuracy

2 = 2%  
3 = 3%

Output Type

A = 0-5VDC, 3-wire  
B = 0-10VDC, 3-wire  
C = 4-20mA, 2-wire  
D = 4-20mA, 3-wire

Temperature

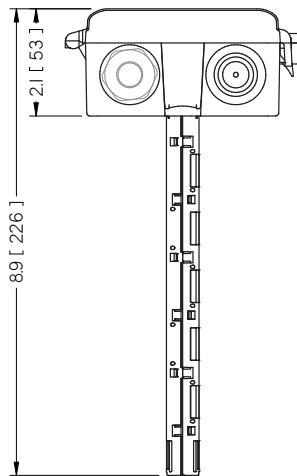
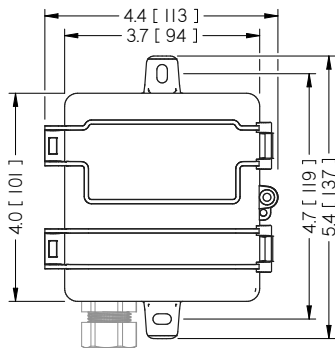
A = None  
C = 100Pt (385)  
D = 1000Pt (385)  
E = 10k type 2  
F = 10k type 3  
G = 10k type 3 w/11k shunt  
H = 3k  
I = 2k2  
J = 1k8  
K = 20k  
L = 100k

SPECIFICATIONS

Power Supply	12-30VDC/24VAC <sup>(1)</sup> , 24mA max
Output	RH% 3-wire 0-5, 10V <sup>(4)</sup> , or 4-20mA, 2-wire 4-20mA(optional)
Output scaling	RH% 0-100% RH
Thermistor Options	Yes, see ordering table on left
Media filter	PTFE membrane, IP54 protection
Relative Humidity	Accuracy 2% models, ±2% over 0 to 100% RH Range 3% models, ±3% over 0 to 100% RH Range
	Resolution 0.01%RH
Relative Humidity	Hysteresis ±0.8%RH
	Non-Linearity factory linearized <1%RH
Relative Humidity	Temperature coefficient fully compensated by on-board temp sensor
	Response time <sup>(2)</sup> 8s
Relative Humidity	Output update rate 0.5s
	Operating range 0 to 100%RH (non-condensing)
Relative Humidity	Long term drift <0.25%RH per year
	Element Normal Operating conditions <sup>(3)</sup> 41 to 140°F (5°C to 60°C) @ 20% to 80% RH
Enclosure	Dimensions 4.0" h x 4.4" w x 2.1" d (+6.8" probe)
	Unit Temp Rating -40 to 158°F (-40 to 70°C)
Agency	Compliance RoHS

- (1) One side of transformer, secondary is connected to signal common. Dedicated transformer is recommended.
- (2) Time for reaching 63% of reading at 25° C and 1 m/s airflow.
- (3) Long term exposures to conditions outside normal range at high humidity may temporarily offset the RH reading (+3%RH after 60 hours).
- (4) 15-30VDC/24VAC power supply voltage required for 10 volt output.

DIMENSIONS



**Warning:** Refer to installation instructions that accompany product and heed all safety instructions.

# T0R Series Recessed Wall Temperature

Wide range of thermistor options  
Set-point & override options  
Low-profile design



## DESCRIPTION

The T0R series is designed for use in energy management systems in buildings. The flush mount sensor housing accommodates a wide range of thermistor options for sensing room temperature. Optional setpoint slider and override button can be added for additional control.

## APPLICATIONS

- Room temperature measurement for building automation control

## FEATURES

### The industry's best looking temp sensor

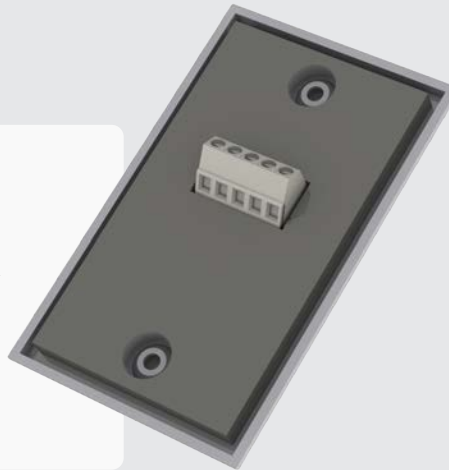
- Fits in any standard j-box or low voltage bracket.
- No exposed screws; unobtrusive tamper resistant design
- Complements CO2 sensor installations

### User Friendly

- Wide range of thermistor options
- Set-point options
- Override options

### Easy Wiring

- Streamlined enclosure design and 45° terminals ensure quick and simple installation



## ORDERING

	<i>therm</i>	<i>ovrd</i>	<i>s-p</i>
	□	□	□
<b>T0R -</b>			
<b>Temperature</b>			
C = 100Pt (385)			
D = 1000Pt (385)			
E = 10k type 2			
F = 10k type 3			
G = 10k type 3 w/11k shunt			
H = 3k			
I = 2k2			
J = 1k8			
K = 20k			
L = 100k			
<b>Override</b>			
A = None			
B = N.O.			
<b>Set-point</b>			
A = None			
B = 1k Ω setpoint slider			
C = 10k Ω setpoint slider			
D = 5k Ω setpoint slider			
E = 20k Ω setpoint slider			
T = 200-900 Ω			

## SPECIFICATIONS

	Material	ABS Plastic
Enclosure	Dimensions	4.45" h x 2.7" w x 0.5" d (depth measured from wall)



SENA THERMISTOR RESISTANCE-TEMPERATURE TABLES										
	C	D	E	F	G	H	I	J	K	L
	100Pt 385	1000Pt 385	10K T2 B=3892	10K T3 B=3694	10K T3 11K Shunt	3K B=3892	2K2 B=3976	1K8 (100 C) B0/100=4300	20K B=4262	100K B=4461
Temp F	Resistance [Ω]									
0	93.0	930	85.41K	70.40K	9513	25.62K	19.21K	327.5K	193.0K	1015K
5	94.1	941	72.96K	61.02K	9320	21.89K	16.41K	276.6K	163.5K	858.0K
10	95.2	952	62.50K	53.28K	9118	18.75K	14.06K	234.3K	139.7K	732.0K
15	96.3	963	53.69K	46.39K	8892	16.11K	12.08K	199.1K	118.8K	620.7K
20	97.4	974	46.24K	40.49K	8650	13.87K	10.41K	169.6K	101.3K	527.6K
25	98.5	985	39.93K	35.41K	8393	11.98K	8989	145.0K	86.73K	450.6K
30	99.6	996	34.57K	31.19K	8132	10.37K	7783	124.2K	74.87K	388.1K
32	<b>100.0</b>	<b>1000</b>	32.66K	29.49K	8012	9799	7352	116.8K	70.14K	362.9K
35	100.7	1007	30.01K	27.39K	7848	9004	6756	106.7K	64.43K	332.8K
40	101.7	1017	26.11K	24.11K	7554	7834	5878	91.87K	55.55K	285.1K
45	102.8	1028	22.77K	21.26K	7249	6832	5127	79.32K	48.07K	245.7K
50	103.9	1039	19.91K	18.79K	6938	5972	4482	68.66K	41.56K	212.3K
55	105.0	1050	17.44K	16.70K	6632	5233	3927	59.57K	36.31K	184.7K
60	106.1	1061	15.31K	14.81K	6312	4595	3448	51.80K	31.56K	160.0K
65	107.1	1071	13.48K	13.16K	5992	4043	3035	45.15K	27.50K	138.8K
70	108.2	1082	11.88K	11.72K	5675	3565	2676	39.44K	24.04K	120.9K
75	109.3	1093	10.50K	10.50K	5371	3150	2365	34.53K	21.17K	106.1K
77	109.7	1097	<b>10.00K</b>	<b>10.00K</b>	<b>5238</b>	<b>3000</b>	<b>2252</b>	<b>32.76K</b>	<b>20.00K</b>	<b>100.0K</b>
80	110.4	1104	9298	9375	5061	2789	2094	30.30K	18.58K	92.72K
85	111.5	1115	8249	8389	4760	2475	1858	26.64K	16.31K	80.95K
90	112.5	1125	7333	7520	4467	2200	1651	23.47K	14.38K	71.05K
95	113.6	1136	6530	6752	4184	1959	1471	20.71K	12.70K	62.47K
100	114.7	1147	5826	6094	3922	1748	1312	18.32K	11.29K	55.29K
105	115.8	1158	5207	5489	3662	1562	1173	16.24K	9993	48.71K
110	116.8	1168	4663	4951	3414	1399	1050	14.41K	8865	42.98K
115	117.9	1179	4182	4473	3180	1254	942	12.82K	7888	38.05K
120	119.0	1190	3757	4062	2966	1127	846	11.42K	7058	33.90K
125	120.0	1200	3381	3680	2758	1014	761	10.20K	6301	30.11K
130	121.1	1211	3047	3338	2561	914	686	9116	5623	26.71K
135	122.2	1222	2751	3033	2378	825	620	8164	5036	23.80K
140	123.2	1232	2487	2760	2206	746	560	7324	4518	21.24K
145	124.3	1243	2252	2522	2052	676	507	6581	4076	19.06K
150	125.4	1254	2043	2301	1903	613	460	5922	3664	17.04K



**Warning:** Refer to installation instructions that accompany product and heed all safety instructions.

# PreSet™ Adjustable Current Switches

- Scaled calibration for proof of flow set-point
- Split and solid core models to 150A
- N.O. 30VAC/DC or 120VAC output
- Optional command relay



Patent Pending

## DESCRIPTION

PreSet™ allows for matching sensor set-point to the motor nameplate, eliminating the need to calibrate in energized enclosures and reducing installation time. Sensor will detect motor undercurrent conditions such as belt loss, coupling shear, and mechanical failure on fans and pumps.

## APPLICATIONS

- Detecting belt loss, coupling shear, and mechanical failure on fans and pumps
- Monitoring status of industrial processes
- Monitoring status of critical motors

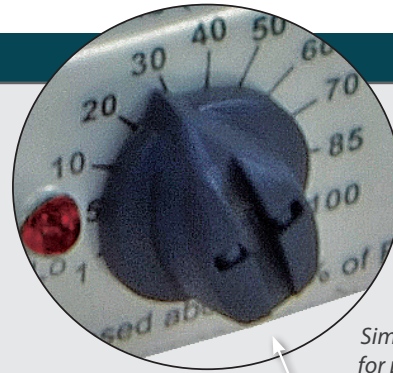
## FEATURES

### Save time and money while eliminating calibration inside energized enclosures

- Preset™ scaled calibration enables set-point adjustment for proof of flow by simply matching dial to motor full load amps (FLA) nameplate
- Safer: Eliminates calibration in energized enclosures, reduces arc flash hazard
- No need to return to calibrate—saves time and money
- Super low turn-on

### Maintenance-free—no call backs

- Superior to traditional adjustable CTs and pressure switches
- Industry leading 7 year warranty



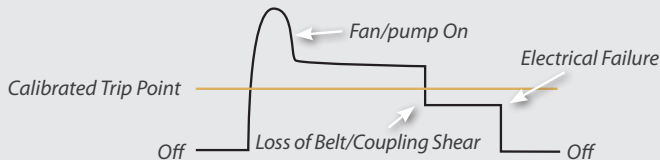
Simply set to motor FLA for proof of flow set-point

Patent Pending



## SET-POINT OPERATION

### Detects Belt Loss/Coupling Shear!



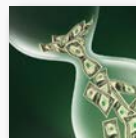
Now you can easily detect when drive belts slip, break, or pump coupling shear. In fact, a typical HVAC motor that loses its load has a reduction of current draw of up to 50%. That's why our sensors are the industry standard for status.



No hazardous guesswork. Multi-turn adjustments are a thing of the past.



Reduce the risk of arc flash because sensor is calibrated to motor FLA nameplate

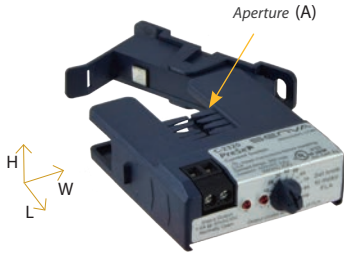


Save over 1/2 hour per sensor install—based on field productivity tests.



### SPLIT CORE C-2320

### OPTIONAL RELAY for additional labor savings



L: 2.5" H: 0.57" W: 2.23"  
A: 0.75" x 0.75"

- Mount sensor without removing conductor for installation savings
- Clamp on conductor with iris, or use detachable base to screw or DIN mount
- Larger 0.75" aperture accommodates oversized conductors



L: .84" H: .72" W: 2.06"

- Add to 2320 series to get start/stop/status in a single device
- Reduces the number of installed components... saves time and space
- Removable relay facilitates service

### SPLIT CORE - MINI C-2220



L: 2.00" H: .75" W: 1.75"  
A: .040" x 0.32"

- Mount sensor without removing conductor for installation savings
- Fits in small enclosures
- Clamp on conductor with iris, or screw mount detachable base

### SOLID CORE C-1320



L: 2.40" H: 1.04" W: 1.6"  
A: 0.52" diameter

- Compact design
- Aperture accommodates spade terminals

### SOLID CORE - MINI C-1220



L: 1.91" H: .88" W: 1.31"  
A: 0.30" diameter

- Super small—fits anywhere
- Low cost

## ORDERING INFORMATION

SPLIT CORE	Min (on)	Max A	N.O. Output*	Trip LED	Power LED
C-2320-L	0.45A	50A	1.0A@30VAC/DC	•	•
C-2320	0.50A	100A	1.0A@30VAC/DC	•	•
C-2320-H <small>NEW LOWER TURN-ON!</small>	0.50A	150A	1.0A@30VAC/DC	•	•
C-2320HV	0.50A	100A	0.2A@120VAC	•	•
C-2320HV-L	0.45A	50A	0.2A@120VAC	•	•

### SPLIT CORE - MINI

C-2220	1.00A	50A	1.0A@30VAC/DC	•
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### SOLID CORE

C-1320	0.75A	50A	1.0A@30VAC/DC	•
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### SOLID CORE - MINI

C-1220-L	0.75A	5A	1.0A@30VAC/DC	•
C-1220	0.75A	50A	1.0A@30VAC/DC	•
C-1220HV-L	0.75A	5A	0.2A@120VAC	•
C-1220HV	0.75A	50A	0.2A@120VAC	•

### COMMAND RELAY

	Contact rating	Coil
CR3-24	N.O. 10A @ 125VAC	24VAC/DC 15mA nom.
CR4-24	N.C. 10A @ 125VAC	24VAC/DC 15mA nom.
CR3-12	N.O. 10A @ 125VAC	9-12VDC 30mA nom.
CR4-12	N.C. 10A @ 125VAC	9-12VDC 30mA nom.

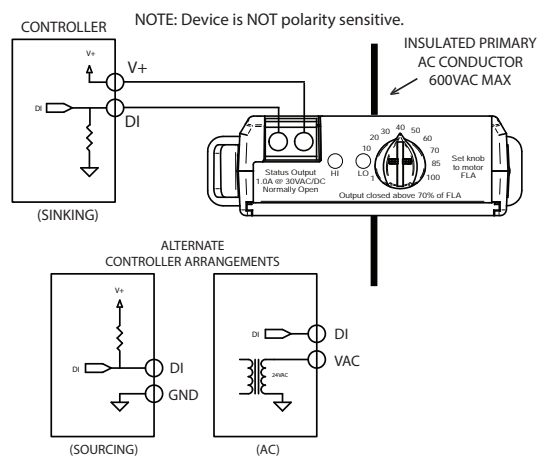
Other coil voltages available—consult factory

**Ordering tip:** For best resolution, choose the sensor lowest maximum amperage which accommodates your motor (e.g. 0-50A use -L, 50-100A use standard, 100 to 150A use -H)

## SPECIFICATIONS

Standard Output Rating	1.0A@30VAC/DC
Line Voltage Output Rating	0.2A@120VAC (-HV ONLY)
Output Type	NO, solid-state FET
Temperature Rating	-15-60 °C
Insulation Class	600V RMS. For use on insulated conductors only! Use minimum 75 °C insulated conductor
Sensor Power	Induced
Frequency Range	50/60Hz

## TYPICAL WIRING



**Warning:** Refer to installation instructions that accompany product and heed all safety instructions. Do not rely on current status LED to indicate presence



7 year limited warranty

# VFD & Constant Volume AutoSet™ Current Switch

- Self-calibrating for proof of flow
- 0.5-135A range
- N.O. 30VAC/DC output
- Optional command relay



AutoSet™



## DESCRIPTION

The AutoSet™ VFD self-calibrates to detect proof of flow on both variable frequency driven and constant volume motors on fans or pumps. The C-2350VFD automatically set the proper threshold, eliminating false alarms associated with varying frequencies. Detects motor undercurrent conditions such as belt loss, coupling shear, and mechanical failure on fans and pumps while reducing installation time.

## APPLICATIONS

- Detecting belt loss, coupling shear, and mechanical failure on variable frequency drives and constant volume fans and pumps

## FEATURES AND BENEFITS

### Self-calibration for proof of flow on fans and pumps

- Works without time consuming “training” of sensor— simply operate motor once above 40 Hz
- No need to open hot starter enclosures—save on labor as well as improve safety
- Only VFD sensor capable of functioning on VFDs to 0.5A; wrap conductor turns for the smallest of VFDs
- Sensor is always properly adjusted—no call backs

### Split-core with optional command relay

- Easy installation and provides stop/start/status in a unitary device—saves component and installation space/cost

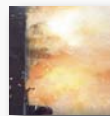
### Maintenance-free—no call backs

- Superior to differential pressure sensors
- Industry leading 7 year limited warranty

### Save time and money by eliminating hazardous calibration in energized enclosures



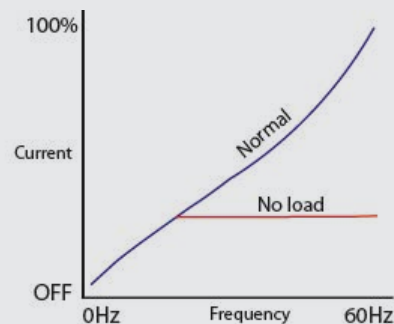
No hazardous guesswork. Multi-turn adjustments are a thing of the past; no time consuming “training!”



Reduce the risk of arc flash by setting in advance and not c

## SET POINT OPERATION

### Positive proof of flow for both VFD and constant volume fans and pumps

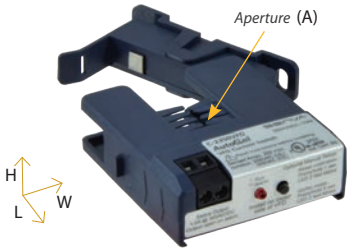


PROUDLY MADE IN USA



7 year limited warranty

SPLIT CORE  
C-2350VFD



L: 2.5" H: 0.57" W: 2.23"  
A: 0.75" x 0.75"

- Mount sensor without removing conductor for installation savings
- Clamp on conductor with iris, or use detachable base to screw or DIN mount
- Larger 0.75" aperture accommodates oversized conductors

OPTIONAL RELAY



L: 0.84" H: 0.72" W: 2.06"

- Add to 2350VFD series to get start, stop, status in a single device
- Reduces the number of installed components... saves time and space
- Removable relay facilitates service

ORDERING INFORMATION

SPLIT CORE	Min (on)	Max A	Output*	Sensor Power
	0.5A @ 60Hz 1.5A @ 20Hz 2.5A @ 10Hz	135A	1.0A@30VAC/DC	Induced

COMMAND RELAY	Contact rating	Coil (nominal)
CR3-24	N.O. 10A @ 125VAC	24VAC/DC 15mA
CR4-24	N.C. 10A @ 125VAC	24VAC/DC 15mA
CR3-12	N.O. 10A @ 125VAC	9-12VDC 30mA
CR4-12	N.C. 10A @ 125VAC	9-12VDC 30mA

SPECIFICATIONS

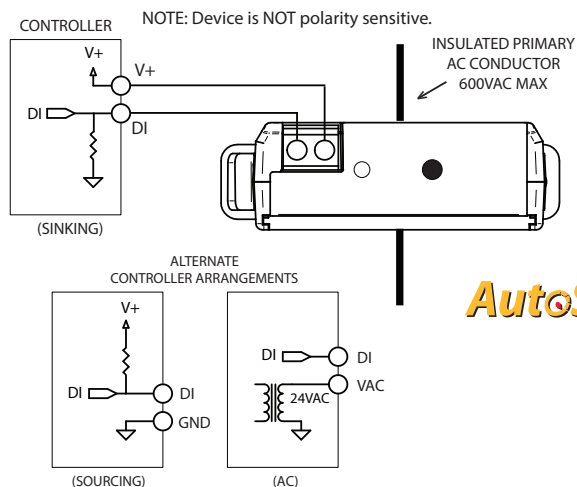
Standard Output Rating	1.0A@30VAC/DC
Output Type	N.O., solid-state FET
Temperature Rating	-15 to 60 ° C
Insulation Class	600V RMS. For use on insulated conductors only! Use minimum 75 ° C insulated conductor
Frequency Range	10-120Hz; proof of flow loss alarm at 40Hz+

**Tech tip for smaller motors and loads**  
For small motors: If the sensor you have will not turn on due to low amperage, wrap the conductor through the aperture. Each wrap will increase the amperage by 1x. For best resolution, choose the currents sensor that most closely matches your maximum motor or load full load amps (FLA)



**Warning:** Refer to installation instructions that accompany product and heed all safety instructions. Do not rely on current status LED to indicate presence of power.

WIRING FOR C-2350VFD



AutoSet™

# ECMSet™ ECM Current Switch

Adjustable minimum turn-on  
Prevents false trip due to ECM stand-by current  
Split-core operation to 200A  
N.O. 30VAC/DC output



Low adjustable turn-on prevents false trips!

Patent Pending

## DESCRIPTION

ECMSet™ is designed for no/go run detection on electrically commutated motors (ECMs). ECMs draw a small amount of AC standby current to power their inverter, up to 1A, even when the motor isn't running. The ECMSet features a high resolution adjustable turn-on setpoint to ignore standby current, preventing false ON status indications.

## APPLICATIONS

- No/go run detection for EC motors
- On set-point prevents false trips due to EC inverter stand-by current



## FEATURES

### Reliable operation on ECM motors

- Set trip point with easily scaled dial to that sensor only turns on when motor is actually running
- Super low turn-on adjustment scale

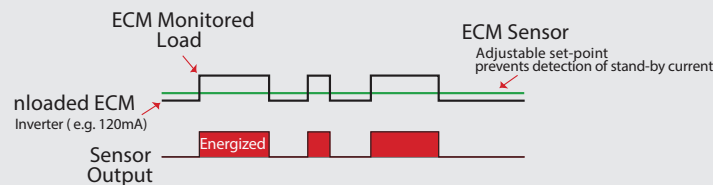
### Maintenance-free—no call backs

- Industry leading 7 year warranty



## SET-POINT OPERATION

The new ECM sensor Senva has an adjustable “ON” setpoint easily adjusted to ignore any ECM stand-by current, eliminating call backs due to false ON status indications.



The Senva ECMSET output changes state whenever current above the minimum turn-on is present. This provides “go/no” status on ECMs without false trips due to the quiescent inverter current.



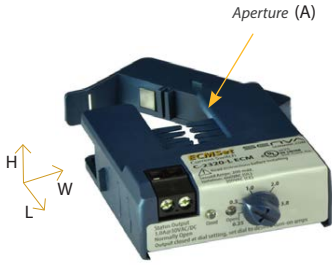
No hazardous guesswork. Multi-turn adjustments are a thing of the past.



Reduce the risk of arc flash; sensor can be set without calibration in live enclosure



SPLIT CORE  
C-2320-L ECM



L: 2.5" H: 0.57" W: 2.23"  
A: 0.75" x 0.75"

- Mount sensor without removing conductor for installation savings
- Clamp on conductor with iris, or use detachable base to screw or DIN mount
- Larger 0.75" aperture accommodates oversized conductors

OPTIONAL RELAY  
for additional labor savings



L: .84" H: .72" W: 2.06"

- Add to 2320 series to get start/stop/status in a single device
- Reduces the number of installed components... saves time and space
- Removable relay facilitates service

ORDERING INFORMATION

SPLIT CORE	Min ON Adjustment	Max A	N.O. Output*	Trip LED	Power LED
C-2320-L ECM	0.25A	200A	1.0A@30VAC/DC	•	•

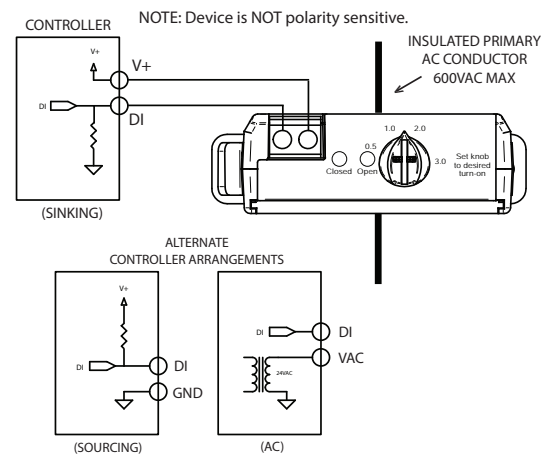
COMMAND RELAY

	Contact rating	Coil
CR3-24	N.O. 10A @ 125VAC	24VAC/DC 15mA nom.
CR4-24	N.C. 10A @ 125VAC	24VAC/DC 15mA nom.
CR3-12	N.O. 10A @ 125VAC	9-12VDC 30mA nom.
CR4-12	N.C. 10A @ 125VAC	9-12VDC 30mA nom.

SPECIFICATIONS

Standard Output Rating	1.0A@30VAC/DC
Output Type	NO, solid-state FET
Temperature Rating	-15-60 °C
Insulation Class	600V RMS. For use on insulated conductors only! Use minimum 75 °C insulated conductor
Sensor Power	Induced
Frequency Range	50/60Hz
Compliance	cUL, UL, CE, RoHS

TYPICAL WIRING



**Warning:** Refer to installation instructions that accompany product and heed all safety instructions. Do not rely on current status LED to indicate presence



# Go/No Current Switches

- Go/No status
- 0.25-200A range
- Split and solid core models
- N.O. 30VAC/DC or 120VAC output
- Optional command relay



## DESCRIPTION

Fixed threshold trip point detects the presence of current above low trip point to provide cost-effective status monitoring unit vents, exhaust fans, recirculation pumps, and other fixed loads where belt loss is not a concern.

## APPLICATIONS

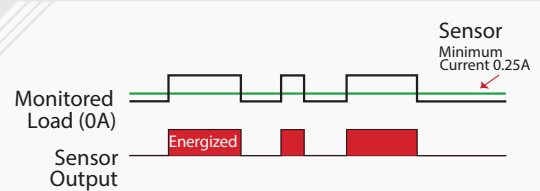
- Monitoring on/off status of electrical loads
- Monitoring direct-drive units, exhaust fans, and other fixed loads
- Verifying lighting run times

## FEATURES

### Reliable and cost-effective

- Solid-state—no moving parts to fail
- Less expensive than 277V relays for lighting status
- More reliable for status than relays across auxiliary contacts
- Industry leading 7 year limited warranty

### Run status based on current



The go/no series output changes state whenever current above the minimum turn-on is present. This provides "go/no" status on loads that are not subject to mechanical failures.

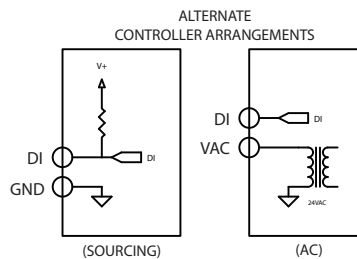
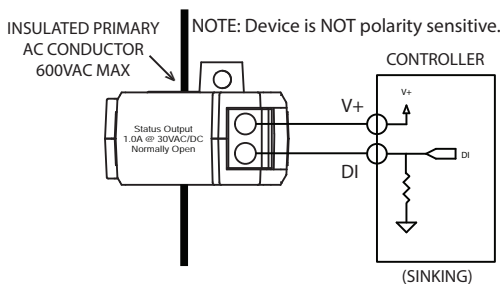


PROUDLY MADE IN USA



7 year limited warranty

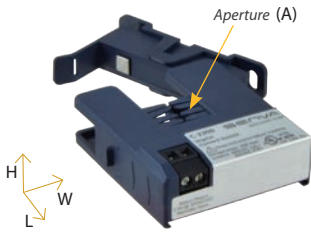
## TYPICAL WIRING



**Warning:** Refer to installation instructions that accompany product and heed all safety instructions.



**SPLIT CORE  
C-2300**



L: 2.5" H: 0.57" W: 2.23"  
A: 0.75"x. 0.75"

- Mount sensor without removing conductor for installation savings
- Clamp on conductor with iris, or use detachable base to screw or DIN mount
- Larger 0.75" aperture accommodates oversized conductors

**OPTIONAL RELAY**



L: 0.84" H: .72" W: 2.06"

- Add to 2300 series to get start/stop/status in a single device
- Reduces the number of installed components... saves time and space
- Removable relay facilitates service

**SPLIT CORE - MINI  
C-2200**



L: 2.00" H: .75" W: 1.75"  
A: .0.40"x 0.32"

- Mount sensor without removing conductor for installation savings
- Fits in small enclosures
- Clamp on conductor with iris, or screw mount detachable base

**SOLID CORE  
C-1300**



L: 2.27" H: 1.04" W: 1.6"  
A: 0.52" diameter

- Compact design
- Aperture accommodates spade terminals

**SOLID CORE - MINI  
C-1200**



L: 1.78" H: .88" W: 1.31"  
A: 0.30" diameter

- Super small—fits anywhere
- Low cost

**ORDERING INFORMATION**

SPLIT CORE	Min (on)	Max A	N.O. Output
C-2300	0.35A	200A	1.0A@30VAC/DC
C-2300HV	0.35A	100A	0.2A@120VAC
SPLIT CORE - MINI			
C-2200	0.5A	50A	1.0A@30VAC/DC
SOLID CORE			
C-1300	0.25A	50A	1.0A@30VAC/DC
SOLID CORE - MINI			
C-1200	0.25A	50A	1.0A@30VAC/DC
C-1200HV	0.25A	50A	0.2A@120VAC

**COMMAND RELAY**

Command Relay	Contact rating	Coil
CR3-24	N.O. 10A @ 125VAC	24VAC/DC 15mA nom.
CR4-24	N.C. 10A @ 125VAC	24VAC/DC 15mA nom.
CR3-12	N.O. 10A @ 125VAC	9-12VDC 30mA nom.
CR4-12	N.C. 10A @ 125VAC	9-12VDC 30mA nom.

**SPECIFICATIONS**

Standard Output Rating	1.0A@30VAC/DC
Line Voltage Output Rating	0.2A@120VAC (-HV MODELS ONLY)
Output Type	NO, solid-state FET
Temperature Rating	-15-60 ° C
Insulation Class	600V RMS. For use on insulated conductors only! Use minimum 75 ° C insulated conductor
Sensor Power	Induced
Frequency Range	50/60Hz

# Analog Current Sensors

- 0-5VDC, 0-10VDC, 4-20mA outputs
- Multiple selectable range split-cores
- Optional command relay
- Fixed ranges on solid-cores



## DESCRIPTION

Senva analog transducers measure AC current and provide a proportional output for load trending and control. Choose from easy to install split-core or compact solid core. Selectable ranges and optional command relay make for a versatile transducer.

## APPLICATIONS

- Load trending
- Motor control
- Process control
- Fan/Pump status
- Motor load jamming
- Lighting load levels

## FEATURES

### Split-core switch selectable ranges (30, 60, 120A or 5, 10, 20A full scale ranges)

- Makes scaling easy
- Reduces inventory
- No call backs due to mis-sizing

### 0-5VDC, 0-10VDC, 4-20mA loop powered versions

- Versions compatible with any system

### Superior split core design for easy installation

- Mount sensor without removing conductor for installation savings
- Clamp on conductor with iris or use detachable base to screw or DIN mount
- Larger 0.75" aperture accommodates oversize conductors

### Snap-on command relay for unitary start/stop/status

- Reduces the number of installed components... saves time and space
- Removable relay facilitates service

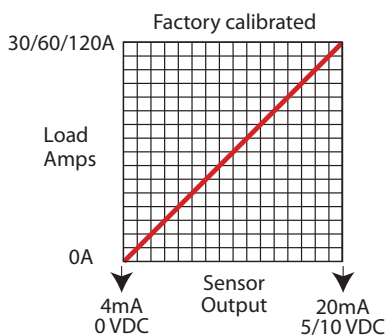
### Reliable and cost-effective

- Industry leading 7 year limited warranty



7 year limited warranty

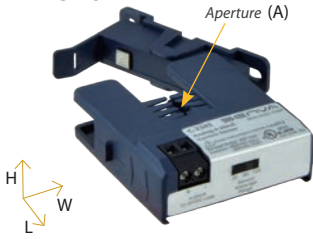
## LINEAR ANALOG OUTPUT



## SPECIFICATIONS

Temperature Rating	-15-60 ° C
Insulation Class	600V RMS. For use on insulated conductors only! Use minimum 75 ° C insulated conductor
Frequency Range	50/60Hz

**SPLIT CORE  
C-234X**



L: 2.5" H: 0.57" W: 2.23"  
A: 0.75" x 0.75"

- Mount sensor without removing conductor for installation savings
- Clamp on conductor with iris, or use detachable base to screw or DIN mount
- Larger 0.75" aperture accommodates oversized conductors

**OPTIONAL RELAY**



L: 0.84" H: .72" W: 2.06"

- Add to 234X series to get start/stop/status in a single device
- Reduces the number of installed components... saves time and space
- Removable relay facilitates service

**SOLID CORE  
C-120X**



L: 1.78" H: .88" W: 1.31"  
A: 0.30" diameter

- Super small—fits anywhere
- Low cost

**SOLID CORE  
C-130X**



L: 2.27" H: 1.04" W: 1.6"  
A: 0.52" diameter

- Compact design
- Aperture accommodates spade terminals

**ORDERING INFORMATION**

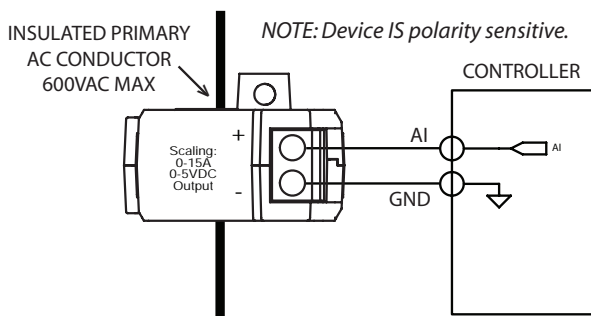
SPLIT CORE	Range A	Output	Sensor Power
C-2343	30A, 60A, 120A Selectable	0 - 5 VDC	Induced
C-2344	30A, 60A, 120A Selectable	0 - 10 VDC	Induced
C-2345	30A, 60A, 120A Selectable	4 - 20mA	Loop- powered, 30 VDC
C-2343-L	5A, 10A, 20A Selectable	0 - 5 VDC	Induced
C-2345-L	5A, 10A, 20A Selectable	4 - 20mA	Loop- powered, 30 VDC
C-2343-200	200A	0 - 5 VDC	Induced
C-2344-200	200A	0-10 VDC	Induced

**SOLID CORE - MINI**

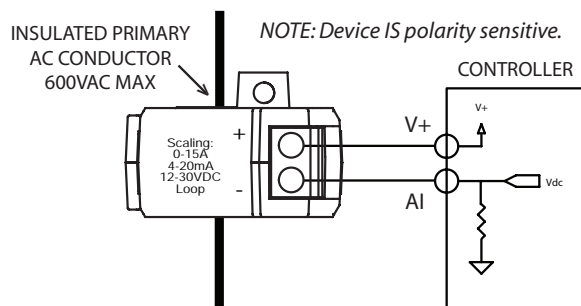
C-1203	15 A	0 - 5 VDC	Induced
C-1205	15 A	4 - 20mA	Loop- powered, 30 VDC
C-1203-L	5 A	0 - 5 VDC	Induced
C-1303-L	5 A	0 - 5 VDC	Induced

COMMAND RELAY	Contact rating	Coil
CR3-24	N.O. 10A @ 125VAC	24VAC/DC 15mA nom.
CR4-24	N.C. 10A @ 125VAC	24VAC/DC 15mA nom.
CR3-12	N.O. 10A @ 125VAC	9-12VDC 30mA nom.
CR4-12	N.C. 10A @ 125VAC	9-12VDC 30mA nom.

**TYPICAL WIRING 0-5/10VDC OUTPUT**



**TYPICAL WIRING LOOP 4-20 MA**



**Warning:** Refer to installation instructions that accompany product and heed all safety instructions.

# High Amperage Analog Current Transducers

Universal output 0-5/10VDC, 4-20mA (loop and 3-wire)  
 Space saving, easy to install rogowski coil  
 Five models up to 6000A  
 Four sizes from 9" to 36" circumference



## DESCRIPTION

Rogowski analog transducers measure high amperage AC current and provide a proportional output for load trending and control. Rogowski coil covers wide amperages without saturation effects common to iron core sensors. Selectable ranges ensure excellent resolution.

## APPLICATIONS

- Load trending
- Building mains
- Motor control
- Process control
- Chiller monitoring

## FEATURES

### Four selectable ranges per model

- Higher resolution
- Reduces inventory
- No call backs due to mis-sizing

### Universal output

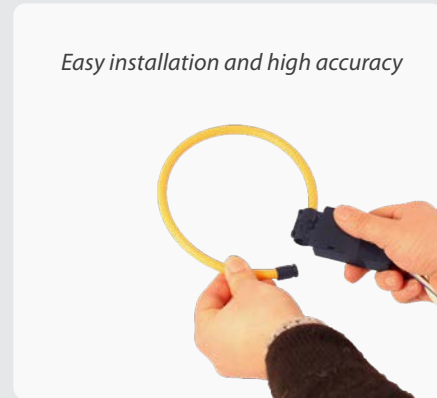
- Compatible with any system

### Easy installation

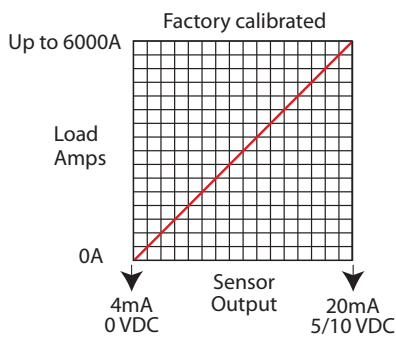
- Mount sensor without removing conductor for installation savings
- Rogowski coil is lightweight and space saving

### Reliable and cost-effective

- Industry leading 7 year limited warranty

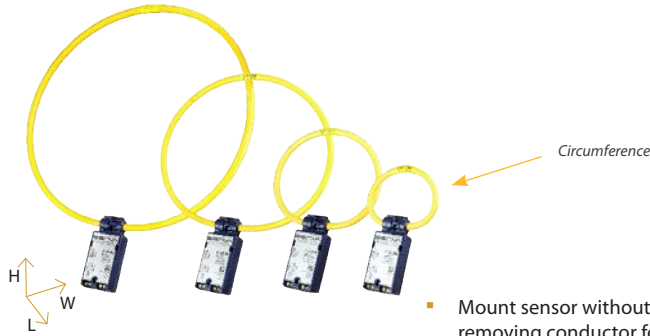


## LINEAR ANALOG OUTPUT



7 year limited warranty

ROGOWSKI ANALOG  
C-3XXX



Housing L: 3.5 H: 1.6" W: 0.8"  
Circumferences: 9", 15", 24", 36"

- Mount sensor without removing conductor for installation savings
- Lightweight space saving coil



Selectable amperage ranges

Selectable outputs

ORDERING

- C-3106** = Small 9"; 50/100/200/300A (Selectable)
- C-3216** = Medium 15"; 200/400/600A/800A
- C-3326** = Large 24"; 600/800/1000/1200A
- C-3436** = Extra Large 36"; 800/1200/1800/2400A
- C-3446** = Extra Large 36"; 1800/2400/4000/6000A

SPECIFICATIONS

Amperage Range	Varies by model 50 to 6000A
Output type	Universal (2-wire 4-20mA, 3-wire 0-5V/0-10V/4-20mA)
Accuracy	+/-2% F.S. over 10 to 100% range
Temperature rating	Maximum surrounding air ambient, 60 ° C
Insulation class	600V RMS. For use on insulated conductors only Use minimum 75 ° C insulated conductors Must be installed at least 1/2" away from any uninsulated conductor This product provides basic insulation only
Sensor Power	12 to 30VDC/24VAC
Frequency Range	50/60Hz
Dimensions ( LxWxH)	3.5" x 1.6" x 0.8"
Compliance	cUL, UL, CE, RoHS



**Warning:** Refer to installation instructions that accompany product and heed all safety instructions.

# EMX Advanced True RMS Energy Meter

BACnet & Modbus  
Pulse kWh, KVAR, kVA  
Revenue grade metering (ANSI C12.20 Class 0.2 Standards)  
Monitor loads from 0.25-6000A & 90-600V  
Accurately measure harmonic loads



## DESCRIPTION

The EMX Advanced is the most user-friendly and quick installation True RMS energy meter on the market. Its line powered with a color OLED screen and data-rich user interface making setup as easy as L1, L2, L3. Equipped with both pulse and RS485 outputs, the EMX Advanced can connect to almost any metering or control device. Ideal for retrofits, the EMX accepts any 0.333V CT or standard metering Rogowski coil with no need for time-consuming and bulky integrators. Mixed or match loads or CT sizes!

## APPLICATIONS

- Energy Management and performance contracting
- Monitoring for commercial tenants
- Activity-based costing in commercial and industrial facilities
- Real-time power monitoring
- Load shedding
- Audits/temporary monitoring
- Distributed generation

READ.  
WRITE.  
CONFIGURE.

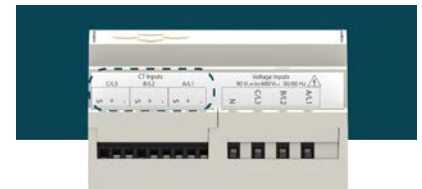
COMING  
SOON



Compatible with our upcoming NFC app



OELD screen for easy configuration



1-3 PHASE VOLTAGE  
90-600V

Self-powered with 1 to 3 phase voltage, 90-600V



Supports DIN rail mounting



ENCLOSURE  
AVAILABLE  
WITH LOCK  
OPTION

Optional Nema 4X Enclosure with lock option



Works with any 0.333V CT or di-dt Rogowski coil



**FEATURES**

- OLED screen with user interface that streamlines the setup process
- Self-powered with 1 to 3 phase voltage, 90-600V
- Functions as three independent voltage/current power meters in one--mix and match CT sizes for multiple loads
- 2 pulse inputs for summing multiple meters or for general (configurable) pulse counting from any pulse meter - water, gas, steam, etc
- 2 pulse outputs for separately tracking positive and negative energy usage, additional tracking of power metrics or power quality alarms
- Provides accurate RMS (Root Mean Square) metering of harmonic loads
- One universal meter supports all metering CT options in the product family
- Supports mounting on PR30 (TS 35/F6) DIN rail

**ORDERING**

**EMX Enclosure**



**Enclosure Options**

- EMX-ENC = Enclosure WITHOUT Lock & Key
- EMX-ENK = Enclosure WITH Lock & Key
- EMX-KEY = Lock & Key ONLY

**Rogowski Current Transducers**



See Metering Series Rogowski CT's page to order

PART #: CT-F(XX)

**Split Core Current Transducers**



See Metering Series Split-Core CT's page to order

PART #: XH-SCT-(XXXX)

**Fuse Kit**



Fuse Kit, 600V, 1/2A, 3 Phase

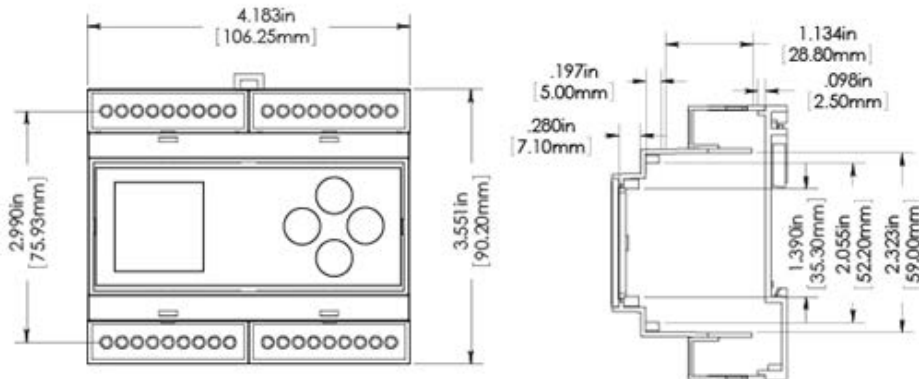
PART #: CVT-FUSE-3PH

Rogowski CT: <https://www.senvainc.com/en/products/energy-measurement/metering-series-rogowski-ct's>

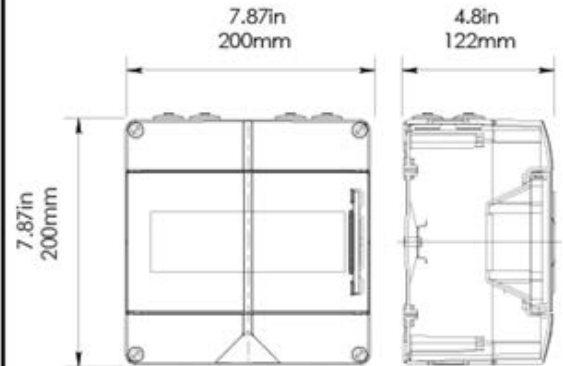
Split-Core Current Transducers: <https://www.senvainc.com/en/products/energy-measurement/metering-series-split-core-ct's>

**DIMENSIONS**

**EMX**



**ENCLOSURE**



SPECIFICATIONS		
Power supply Input	Line/High voltage	90-600VLL (+20%), max 300VLN, 50/60Hz, 1-3 phase
	Power Consumption	5VA max
	Frequency Range	50/60 Hz
Outputs	RS-485	2-wire, BACnet MS/TP, Modbus RTU, Modbus ASCII
	Baud Rates	9600, 19200, 38400, 57600, 76800, 115200
	RS-485 Loading	1/4 unit
Pulse Output	Dual Outputs	Import & Export Energy Outputs
	Type	Solid state dry contact
	Specifications	N.O., 300mA max, 40V max
	Pulse scaling	0.01, 0.1, 1, 10, 100, 1k Wh/Pulse
EMX Wiring Requirements	Conductor gauge	24-14 AWG; Power terminals: 24-12 AWG
	Terminal torque rating	0.37 ft-lb (0.50 N•m)
Pulse Inputs	Input Rating	3.5 ± 0.5 VDC, short circuit current is 10mA max
	Pulse Rate	50 Hz (default), configurable up to 500 Hz
	Pulse Active	<100 Ohms
	Pulse Undefined	100-1000 Ohms
	Pulse Idle	>1000 Ohms
Service Types	Configurations	1Ph, 2Ph, 3Ph Wye (4-Wire), 3Ph Delta (3-Wire)
	Voltages	90VL-N through 600VL-L
	Frequency	45-65 Hz
EMX Performance	Meter Accuracy	0.2% (ANSI C12.20 Class 0.2 standards)
Operating Environment	Operating Temperature	-22 to 158°F (-30 to 70°C)
	Storage Temperature	-40 to 185°F (-40 to 85°C)
	Humidity	0-95% non-condensing
	Environmental Rating	IP20; Front display IP40
EMX Meter Enclosure	Material	Polycarbonate/ABS
	Dimensions	3.55" h x 4.18" w x 2.26" d
	DIN Rail Compatibility	PR30 (TS 35/F6)
Industrial Enclosure (Optional)	Environmental Rating	NEMA 4X/ IP65
	Dimensions	7.78" h x 7.78" w x 4.8" d
	Material	Polycarbonate

\* Product improvement is a continual process as Senva and product features and specification may change without prior notice. Refer to instructions that accompany the product for installation and wiring.

# Metering Series

## Split Core 0.333V CT



1% total system accuracy (meter & CT)  
 For use with Pulse and Protocol Versions of the EM Series Meter  
 Flexible Split-core Sensors  
 Monitor loads from 30-6000A & 90-600V

### DESCRIPTION

The Senva Metering Series CTs provide a high accuracy linear 0V to 0.333V<sub>AC</sub> signal output proportional to the measured current. These can be safely and simply installed to be used with most power meters, data loggers, and other instruments.

Our Split-core Metering CTs come in a range of inner diameter sizes and amperages to accommodate a wide variety of installations and retro-fits.

### APPLICATIONS

- Energy management and performance contracting
- Monitoring for commercial tenants
- Activity-based costing in commercial and industrial facilities
- Real-time power monitoring
- Load shedding
- Audits/temporary monitoring
- Distributed generation

### ORDERING

XH-SCT-



#### Size

- T10 = Round 10mm I.D.
- T16 = Round 16mm I.D.
- 1250 = Square 31.8mm I.D.
- 2000 = Square 50.8mm I.D.
- 3000 = Rect. 76.2x127mm I.D.

#### Amp Rating

Varies based on size.  
 See 'Current Range' in Specification section for options

### SPECIFICATIONS

Performance	Accuracy	±1% From 5-120% rated current
Rated Output	Scale	0.333VAC
Current Range	T10	15A, 30A, 50A
	T16	100A
	1250	100A, 150A, 200A, 300A
	2000	400A, 600A, 800A
	3000	1000A, 1200A, 1500A, 2000A
Inner Diameter	T10	10mm, 0.39in, round
	T16	16mm, 0.63in, round
	1250	19.1mm, 0.75in, square
	2000	31.8mm, 1.25in, square
3000	76.2mmx127mm, 3x5in, rectangular	
Phase Angle	Rated	Less than 2 degrees at 50% rated current
Voltage	Insulation Voltage	600VAC
	Primary Voltage	5000VAC (insulated conductor)
Environmental	Operating Temp	-15 to 60°C
Frequency	Freq Range	50-400Hz
Leads	Length	105cm, 4 ft.
	Wire	UL 1015 twisted pair, 22AWG

Agency

Compliance  
 UL/cUL Listed Energy Monitoring Equipment,  
 UL/cUL Recognized Instrument Transformers -  
 Component, CE Compliant, RoHS Compliant



XH-SCT-3000



XH-SCT-2000



XH-SCT-1250



XH-SCT-T16



XH-SCT-T10



**Warning:** Refer to installation instructions that accompany product and heed all safety instructions.

## Metering Series Rogowski CT



Standard mV/kA output  
Space saving, easy-to-install Rogowski coil  
Rated for 6000A  
Four sizes from 9" to 36" circumference

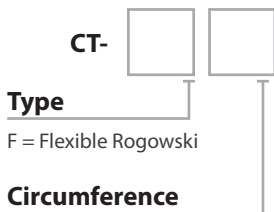
### DESCRIPTION

Rogowski analog transducers measure high amperage AC current and provide a proportional output for metering devices. Rogowski coil covers wide amperage ranges without saturation effects common to iron core sensors. Selectable lengths ensure ease of installation.

### APPLICATIONS

- Energy management and performance contracting
- Monitoring for commercial tenants
- Activity-based costing in commercial and industrial facilities
- Real-time power monitoring
- Load shedding
- Audits/temporary monitoring
- Distributed generation

### ORDERING



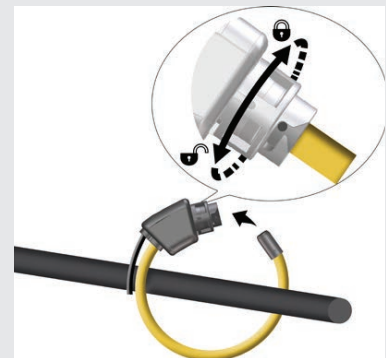
09 = 9" Rogo, 6000A  
15 = 15" Rogo, 6000A  
24 = 24" Rogo, 6000A  
36 = 36" Rogo, 6000A

### SPECIFICATIONS

Performance	Accuracy	<±1% of reading
Rated Output	Scale	120 mV/kA @60Hz
Voltage	Insulation Voltage	600VAC CAT IV
	Primary Voltage	1000VAC CAT III
Environmental	Operating Temp	-30 to 80°C
	Protection Degree	IP67
Frequency	Freq Range	40-20kHz
Agency	Length	3m, 9ft
	Wire	shielded, double insulated, 22AWG
	Compliance	UL Recognized, CE Compliant, RoHS Compliant EN61010-1, EN61010-2-032

### Easy installation

- Mount sensor without removing conductor for installation savings
- Fast, locking coil connection
- Rogowski coil is lightweight and space saving



# EM Series Rogowski CVT™ Sensors

1% total system accuracy (meter & CVT)  
 For use with Pulse and Protocol Versions of the EM Series Meter  
 Flexible Split-core Rogowski CVT™ Sensors  
 Monitor loads from 30-6000A & 90-600V



## DESCRIPTION

The Current/Voltage Transducer™ (CVT™) measures both voltage and current, communicating the data digitally to the meter via plug-in low voltage connections. This allows the meter to remain a low-voltage device. Each CVT™ uses digital communication with the meter for superior noise immunity. The CVTs™ are individually calibrated and measurement accuracy is independent of the transducer. To complement the CVT™, our metering platform offers two meter options (EM-PULSE & EM-RS485) which are small enough to fit in the palm of your hand, yet powerful enough to self-configure during installation, removing all manual configuration. Virtually a plug and play BACnet meter!

## APPLICATIONS

- Energy Management and performance contracting
- Monitoring for commercial tenants
- Activity-based costing in commercial and industrial facilities
- Real-time power monitoring
- Load shedding
- Audits/temporary monitoring
- Distributed generation

## FEATURES

### Intelligent CVTs™ boast numerous benefits:

- Digitally calibrated CVTs™ are extremely accurate
- The accuracy is as high as a calibrated system, yet different CVTs™ can be changed from meter to meter while maintaining accuracy. A big advantage for auditing, since meter is not size specific.
- Plug and play installation— individual CVTs™ are digitally recognized by the meter and outputs are automatically scaled—no user set up is required.
- Digital communication offers superior noise immunity compared to traditional induced low-signal Rogowskis
- All the high voltage connections are at the CVT™
- Rogowski CVTs™ are available in 4 sizes from 9" to 36" in circumference and include several rating options from 300A to 6000A and are universally rated for 90-600V



7 year limited warranty



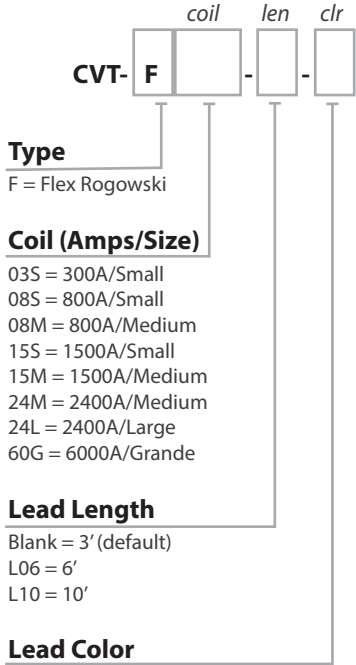
### Split-core Rogowski CVT™

- Easiest in the industry to install
- Senses both voltage & current
- High accuracy...digitally calibrated; interchangeable
- Available in multiple sizes & ratings to meet any project requirements



Flexible split-core CVT™ sensors are easy to install and more accurate than traditional CTs

ORDERING



**Type**  
F = Flex Rogowski

**Coil (Amps/Size)**  
03S = 300A/Small  
08S = 800A/Small  
08M = 800A/Medium  
15S = 1500A/Small  
15M = 1500A/Medium  
24M = 2400A/Medium  
24L = 2400A/Large  
60G = 6000A/Grande

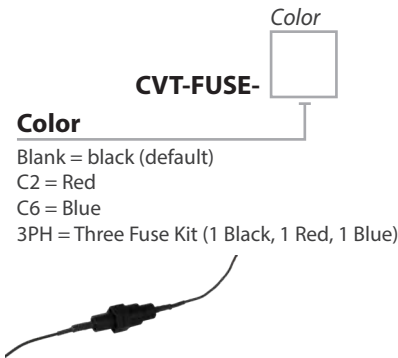
**Lead Length**  
Blank = 3' (default)  
L06 = 6'  
L10 = 10'

**Lead Color**  
Blank = Black (default)  
C2 = Red  
C6 = Blue  
3PH = Three CVT Kit (1 Black, 1 Red, 1 Blue)

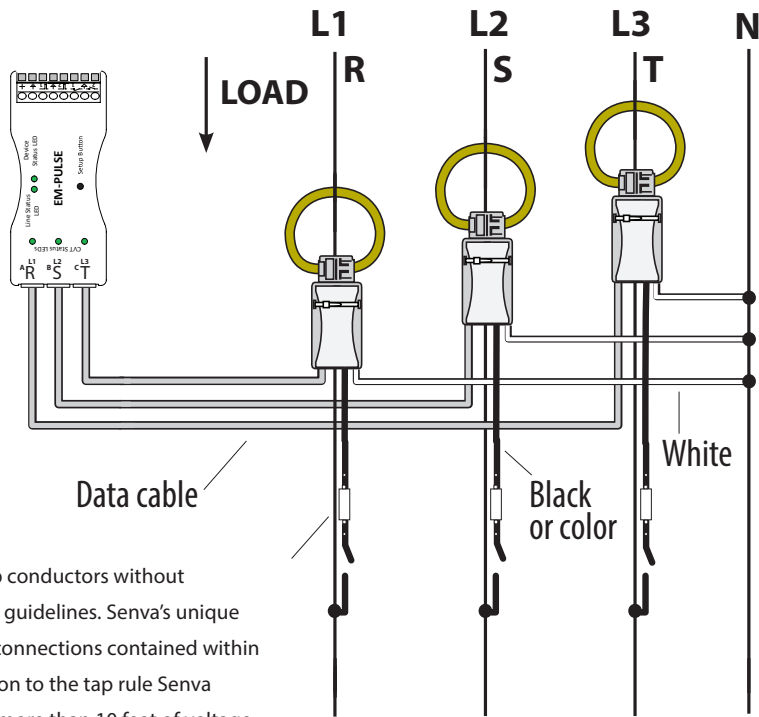
SPECIFICATIONS

Performance	Accuracy	1% System Accuracy (Includes Meter & CVTs) for V, A, KW, kVAR, KVA
	Small Rope Circumference	9"
	Medium Rope Circumference	15"
	Large Rope Circumference	24"
	Grande Rope Circumference	36"
Current/Voltage Transducer™	300A Operating Range <sup>(1)</sup>	+/-1% 30-300A (+/-3% >10A)
	800A Operating Range <sup>(1)</sup>	+/-1% 30-800A (+/-3% >10A)
	1500A Operating Range <sup>(1)</sup>	+/-1% 30-1500A (+/-3% >10A)
	2400A Operating Range <sup>(1)</sup>	+/-1% 50-2400A (+/-3% >15A)
	6000A Operating Range <sup>(1)</sup>	+/-1% 120-6000A (+/-3% >40A)
Operating Environment	Temperature	-4 to 140°F (-20 to 60°C)
	Humidity	0-95% non-condensing
Meter Enclosure	Material	Polycarbonate/ABS
	Dimensions	4.1" h x 1.8" w x 0.9" d
CVT™ Enclosure	Material	Polycarbonate/ABS
	Enclosure Dimensions	3.5" h x 1.6" w x 0.8" d
Fuse specifications (see application note)	Fuse type	1/2 Amp, 600VAC slow blow, 200kA AC Interrupting rating
	Dimensions	4.1" h x 1.8" w x 0.9" d
Agency	Compliance	CE, RoHS

(1) Accuracy based on reading, not full scale.



**Color**  
Blank = black (default)  
C2 = Red  
C6 = Blue  
3PH = Three Fuse Kit (1 Black, 1 Red, 1 Blue)



Under UL 240.21 Senva CVTs may tap conductors without overcurrent protection under certain guidelines. Senva's unique architecture keeps the high voltage connections contained within the CVT enclosure and in consideration to the tap rule Senva does not ship EM Series meters with more than 10 feet of voltage reference wire on any CVT. If your voltage reference must be longer than 10 feet, proper use of over current protection is required (i.e. appropriate fusing or circuit breakers.) See [www.senvainc.com](http://www.senvainc.com) for additional information.



**Warning:** Refer to installation instructions that accompany product and heed all safety instructions.

BACnet® is a registered trademark of ASHRAE.



# EM-RS485 Series Energy Meters

BACnet & Modbus  
Flexible Split-core Rogowski CVT™ Sensors  
Monitor loads from 30-6000A & 90-600V



## DESCRIPTION

The EM Series is the safest and fastest meter to install on the market. Unique design makes the meter entirely low-voltage. Ideal for retrofits as the high voltage components are embedded in the Current/Voltage Transducer™ (CVT™). Experience high accuracy data rich power metering in a compact easy to use package. Meter recognizes CVTs automatically eliminating time consuming scaling.

Each CVT™ uses digital communication with the meter for superior noise immunity. The CVTs™ are individually calibrated and can be mixed or matched as independent meter channels--1% total accuracy! Features both Modbus and self configuring plug and play BACnet MS/TP for seamless integration.

## APPLICATIONS

- Energy Management and performance contracting
- Monitoring for commercial tenants
- Activity-based costing in commercial and industrial facilities
- Real-time power monitoring
- Load shedding
- Audits/temporary monitoring
- Distributed generation



7 year limited warranty

## FEATURES

### Intelligent Meter Technology

- EM Series meters auto-detect and self configure for electrical service, CVT™ size, communication protocol (BACnet/Modbus), baud rate and more for simple and efficient installation
- Calibration is at the CVT™ level so any CVT™ from the product family will maintain its accuracy with any EM Series meter
- Functions as three independent voltage/current power meters in one--mix and match CVT sizes for multiple loads.
- 2 pulse inputs for summing multiple meters on the EM-PULSE or for general (configurable) pulse counting on the EM-RS485 (from any pulse meter - water, gas, steam, etc.)
- 2 pulse outputs on the EM-PULSE for separately tracking positive and negative energy usage, additional power metrics or power quality alarms

### Ultimate Flexibility

- One universal meter supports all CVT™ options in the product family
- Flexible Mounting Options
  - Supports mounting on either horizontal or vertical PR30 (TS 35/F6) DIN rail
  - Snap-in mounting ears allow screwing to any suitable surface
  - Integrated rare earth magnets secure the EM meter to any ferrous enclosure or surface.



### Split-core Rogowski CVT™

- Easiest in the industry to install
- Senses both voltage & current
- High accuracy...digitally calibrated; interchangeable
- Available in multiple sizes & ratings to meet any project requirements

### Quick Start Auto-detection

- Meter base recognizes the CVT™ sensors and scales itself accordingly
- No manual configuration necessary

### Compact Size

- Most compact meter ever - fits in the palm of your hand!

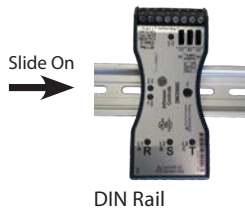
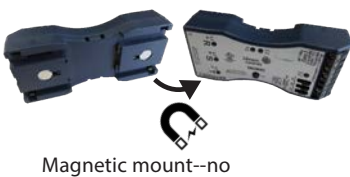
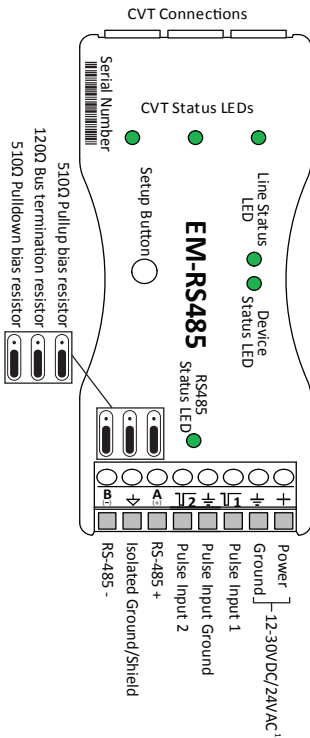
ORDERING

EM-RS485

RS485 = Modbus & BACnet

CVT Current/voltage transducers

See page 32



SPECIFICATIONS

Power Supply Input	12-30VDC/24VAC <sup>(1)</sup> , 100mA max.
Output	RS-485 2-wire, BACnet MS/TP, Modbus RTU
	Baud Rates 9600, 19200, 38400, 57600, 76800, 115200
	RS-485 Loading 1/4 unit
Wiring Requirements	Conductor gauge 14-26 AWG
	Terminal torque rating 0.5 min, 0.6 max
	Dual Inputs 3.5 +/- 0.5 VDC, short circuit current is 10mA max
	Pulse Rate 50 Hz (default), configurable up to 500 Hz
Pulse Inputs	Pulse active <100 ohms
	Pulse Undefined 100-1000 ohms
	Pulse Idle >1000 ohms
	Configurations 1Ph, 2Ph, 3Ph Wye (4-Wire), 3Ph Delta (3-Wire)
Service Types	Voltages 90VL-N through 600VL-L
	Frequency 45-65 Hz
Performance	Meter Accuracy 0.2% (ANSI C12.20 Class 0.2 standards)
	System Accuracy 1% for V, A, kW, kVAR, kVA
Operating Environment	Temperature 32 to 140F (0 to 60C)
	Humidity 0-95% non-condensing
Meter Enclosure	Material Polycarbonate/ABS
	Dimensions 4.1" h x 1.8" w x 0.9" d
	Agency UL Listed, File E501430, CE, RoHS
Compliance	USA Meets ANSI C12.20 Class 0.2 Standards
	State Meets WA State Clean Building bill

(1) One side of transformer secondary is connected to signal common. Dedicated transformer is recommended.

TYPICAL OUTPUT POINTS (SEE PROTOCAOL GUIDES FOR COMPREHENSIVE POINTS LIST)

Bi-Directional Energy Measurements\*

Power (3-phase Total and Per Phase): Real (kW), Reactive (kVAR), and Apparent (KVA)

Power Factor: 3-phase Average and Per Phase

Present Power Demand Real (kW), Reactive (kVAR), and Apparent (kVA)

Import and Export totals of Present Power Demand: Real (kW), Reactive (kVAR), and Apparent (kVA)

Current (3-Phase Average and Per Phase)

Voltage: Line-Line and Line-Neutral (3-Phase Average and Per Phase)

Frequency

Accumulated Net Energy: Real (kWh), Reactive (kVARh), and Apparent (kVAh)\*

Accumulated Real Energy per Phase: Real (kWh), Reactive (kVARh), and Apparent (kVAh)

Import and Export Accumulators of Real and Apparent Energy

Reactive Energy Accumulators (3-Phase Total and Per Phase)

Demand Interval Configuration Fixed or Rolling Block

Demand Interval Configuration: External Sync to Comms (Time Inputs or Protocol)

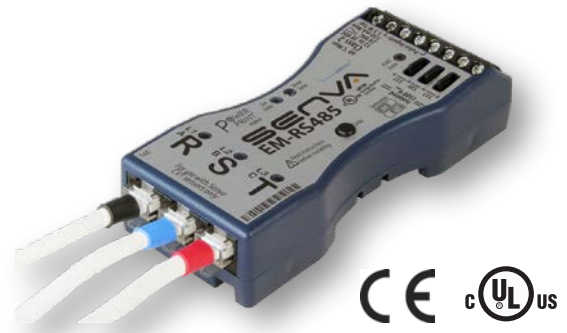


**Warning:** Refer to installation instructions that accompany product and heed all safety instructions.

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# EM-Pulse Pulse Energy Meter

Pulse Version: kWh, KVAR, kVA  
 Accepts additional pulse inputs for meters or flow meters  
 Flexible Split-core Rogowski CVT™ Sensors  
 Monitor loads from 30-6000A & 90-600V



## DESCRIPTION

The EM-pulse installs quickly and safely. Unique design makes the meter entirely low-voltage, as the high voltage components are embedded in the Current/Voltage Transducer™ (CVT™).

Each CVT™ uses digital communication with the meter for superior noise immunity. The CVTs™ are individually calibrated and can be mixed or matched with independent meter channels for a sum total.

Accepts additional pulse inputs for additional meter inputs.

## APPLICATIONS

- Energy Management and performance contracting
- Monitoring for commercial tenants
- Activity-based costing in commercial and industrial facilities
- Real-time power monitoring
- Load shedding
- Audits/temporary monitoring
- Distributed generation

## FEATURES

### Intelligent Meter Technology

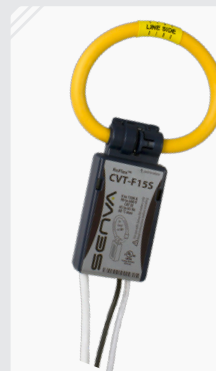
- EM Series meters auto-detect and self configure for electrical service, CVT™ size for simple and efficient installation--manual CT scaling
- Calibration is at the CVT™ level so any CVT™ from the product family will maintain its accuracy with any EM Series meter

### Ultimate Flexibility

- One universal meter supports all CVT™ options in the product family
- Flexible Mounting Options
  - Supports mounting on either horizontal or vertical PR30 (TS 35/F6) DIN rail
  - Snap-in mounting ears allow screwing to any suitable surface
  - Integrated rare earth magnets secure the EM meter to any ferrous enclosure or surface.



7 year limited warranty



### Split-core Rogowski CVT™

- Easiest in the industry to install
- Senses both voltage & current
- High accuracy...digitally calibrated; interchangeable
- Available in multiple sizes & ratings to meet any project requirements



### Quick Start Auto-detection

- Meter base recognizes the CVT™ sensors and scales itself accordingly
- No manual configuration necessary

### Compact Size

- Most compact meter ever - fits in the palm of your hand!

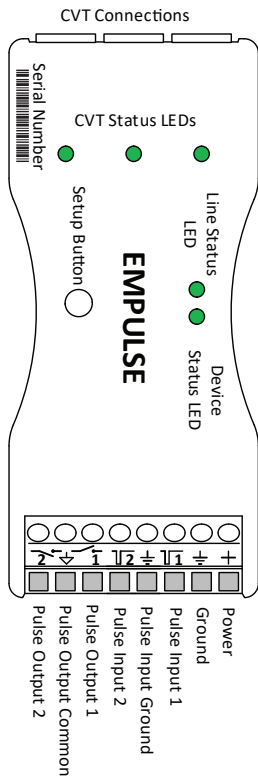
ORDERING

EM-Pulse

CVT Current/voltage transducers

See page 32

TERMINATIONS

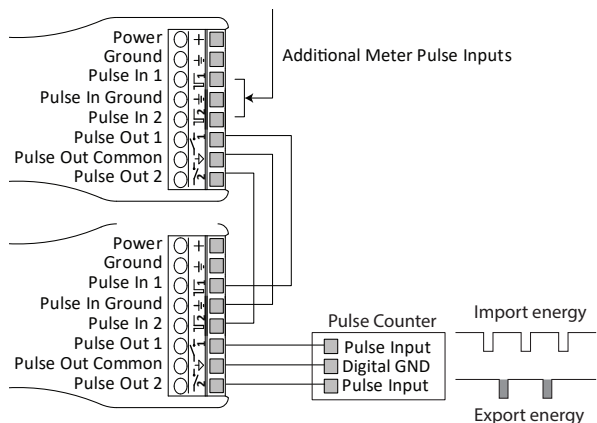


SPECIFICATIONS

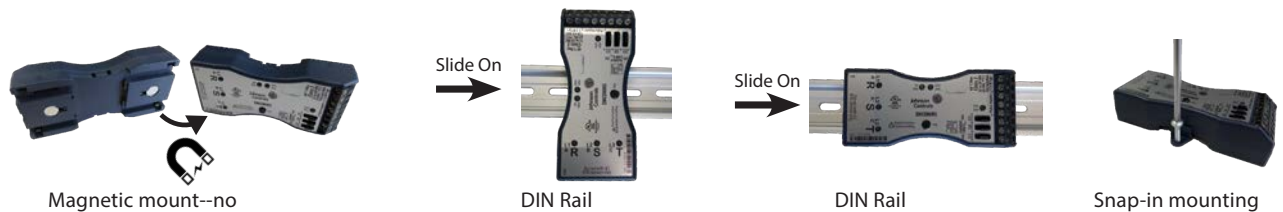
Power Supply Input	12-30VDC/24VAC <sup>(1)</sup> , 1.5W max, 100mA max.	
Pulse Outputs	Dual Outputs	Import & Export Energy
	Type	Solid state dry contact
	Specifications	N.O., 300mA max, 40V max
Wiring Requirements	Pulse Scaling	0.01, 0.1, 1, 10, 100, 1k Wh/Pulse
	Conductor gauge	14-26 AWG
	Terminal torque rating	0.4 ft-lb (0.55 N-m)
Pulse Inputs	Input Rating	3.5 +/- 0.5 VDC, short circuit current is 10mA max
	Pulse Rate	50 Hz max
	Pulse Active	<100 ohms
	Pulse Undefined	100-1000 ohms
Service Types	Pulse Idle	>1000 ohms
	Configurations	1Ph, 2Ph, 3Ph Wye (4-Wire), 3Ph Delta (3-Wire)
	Voltages	90VL-N through 600VL-L
Performance	Frequency	45-65 Hz
	Meter Accuracy	0.2% (ANSI C12.20 Class 0.2 standards)
Operating Environment	System Accuracy	1% for V, A, kW, kVAR, kVA
	Temperature	-4 to 140F (-20 to 60C)
Enclosure	Humidity	0-95% non-condensing
	Material	Polycarbonate/ABS
Compliance	Dimensions	4.1" h x 1.8" w x 0.9" d
	Agency	UL Listed, File E501430, CE, RoHS
	USA	Meets ANSI C12.20 Class 0.2 Standards
	State	Meets WA State Clean Building bill

MULTI-METER PULSE DAISY CHAIN WIRING EXAMPLE

The EMPULSE meter is capable of accepting pulse inputs from one or more meters. The meter will aggregate the pulses and report them as a total sum. The meters must all be set with the same pulse scale.



**Warning:** Refer to installation instructions that accompany product and heed all safety instructions.



# Multi-Circuit & Branch Circuit Monitoring System



- Monitors up to 96 circuits
- On board webserver and data logging
- Customizable alarming features



## DESCRIPTION

The EM-Estimator gives you assumed power based on accurate rogowski current transformers and installer set circuit power and power factor.

Simplify installation and connectivity while providing instant access to data in a user friendly format. The versatile Core Module™ system is a single monitoring solution with peripherals optimized for Branch Circuit and Multi-Circuit Monitoring applications designed to reduce the cost and complexity associated with legacy multi-circuit monitors.

## APPLICATIONS

- Ideal for baseline consumption in premises (e.g. store to store comparisons for chains)
- Activity-based costing in commercial and industrial facilities
- More informative than an amperage measurement only.

## FEATURES

### Rapid Installation

- Optimized for new and retrofit installations with no disruption to critical loads
- Monitors up to 96 circuits
- Options for solid core, split core CTs, and analog, discrete and pulse inputs.

### Easily Access Data

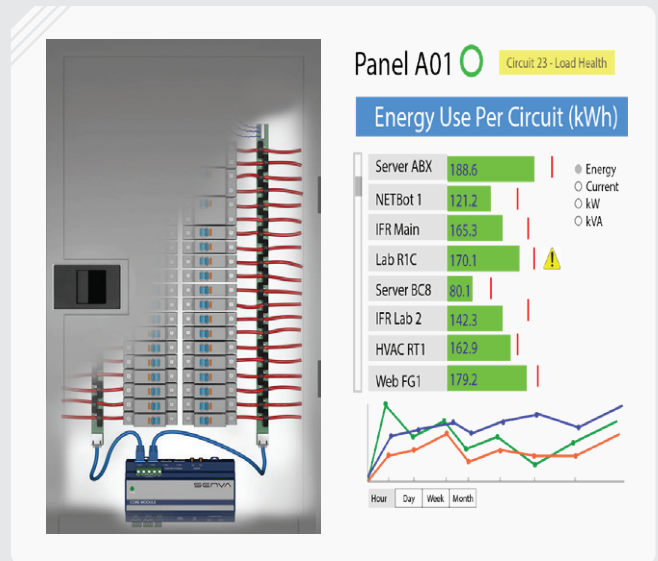
- On-board web server provides immediate access to real-time and logged data
- Integrated data logging supports up to 64 GB storage; remotely accessible or manually exportable
- Available Cloud monitoring service
- Customizable alarming features

### Easy Connectivity

- Select from multiple connectivity options including Modbus TCP/IP, RTU
- Open protocols allows connection with any third party monitoring system

### Accurate

- True 0.5% accuracy suitable for billing applications



### Intelligent Features

- Presence of Voltage detection accurately indicates breaker status even under no load conditions
- True-Circuit Display mapping function presents data according to actual circuit configurations
- Detailed power and energy monitoring per circuit including Waveform capture and THD

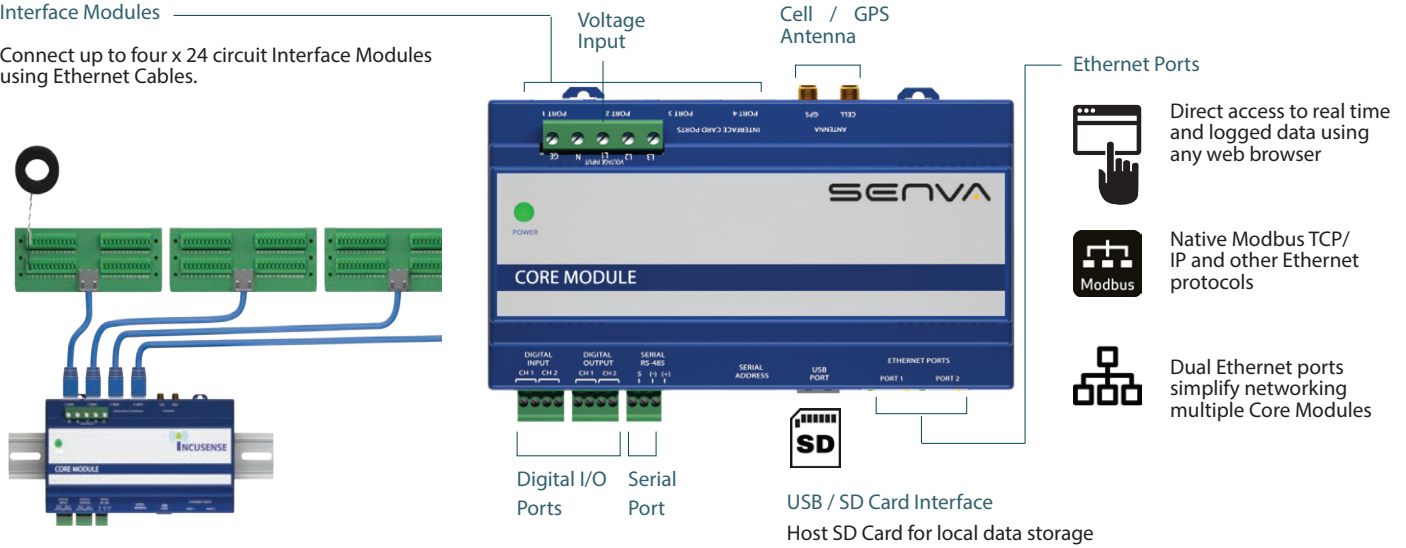


MODULAR SYSTEM DESIGN

The versatile and compact Core Module™ functions as a Gateway that can host up to four Interface Modules monitoring a total of 96 circuits. Interface modules connect via Ethernet cables and are available for new and retrofit branch circuit and multi-circuit applications.

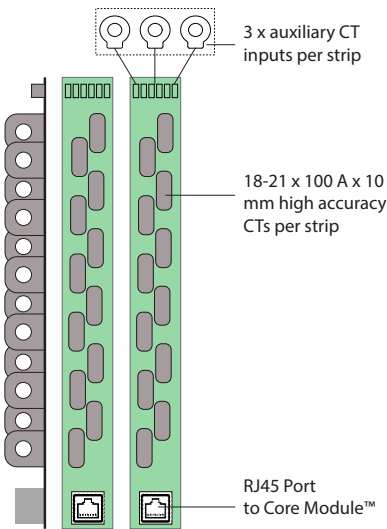
Interface Modules

Connect up to four x 24 circuit Interface Modules using Ethernet Cables.

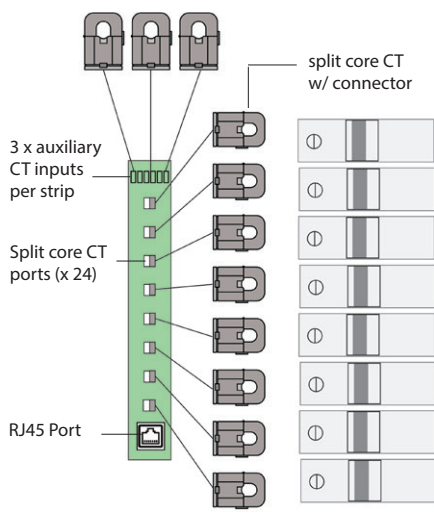


- Direct access to real time and logged data using any web browser
- Native Modbus TCP/IP and other Ethernet protocols
- Dual Ethernet ports simplify networking multiple Core Modules

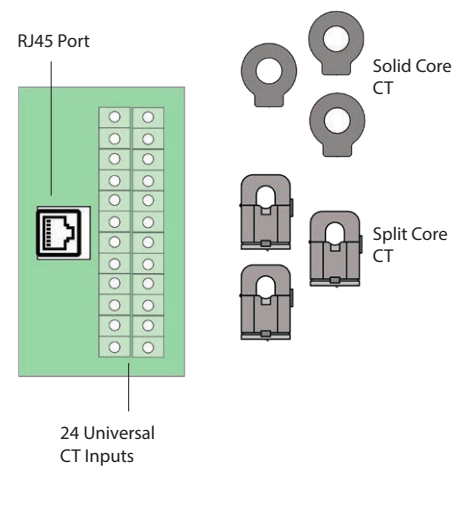
SOLID CORE PANEL CT STRIP



SPLIT CORE PANELBOARD MODULE



MULTI-CIRCUIT CT MODULE



- Used for new installations on panelboard branch circuit monitoring
- Up to 21 circuits per strip + 3 auxiliary CT inputs (96 total)
- 0.75" and 18mm C-C versions
- 10mm CT window w/ 100 A range
- Optional presence of voltage sensing for breaker status per circuit

- Used for retrofit installations on panelboard branch circuit monitoring
- Floating CT interface strip with quick connect 10mm split core CTs sits on top of existing conductors
- 24 circuits per module (96 Total)
- Optional presence of voltage sensing for breaker status per circuit

- 24 CTs / circuits per module (96 Total)
- Supports 0.33 V solid core and split core CTs
- Optional presence of voltage sensing for breaker status per circuit

Consult Interface Module data sheet for specifications and additional modules



**Warning:** Refer to installation instructions that accompany product and heed all safety instructions.



## CONNECTIVITY SOLUTIONS

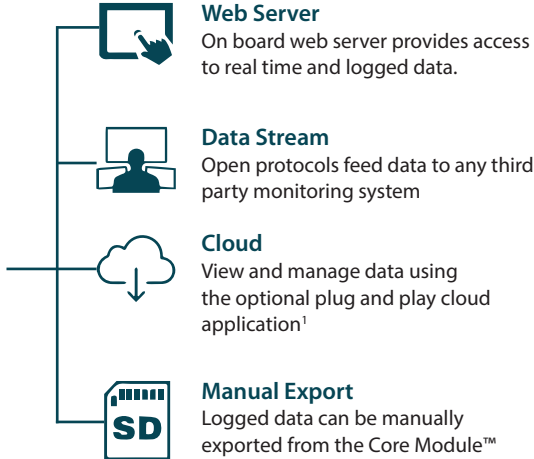
Serva makes it easier than ever to connect and access data in a user friendly format with a range of connectivity solutions including low cost CAT1 cellular links.

### Connectivity Options

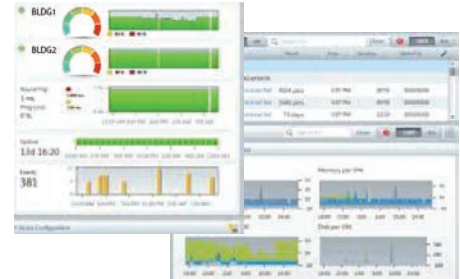
- Modbus TCP/IP and RTU
- HTML
- BACnet<sup>1</sup> TCP/IP



### Data Acquisition Options



### Data Presentation



The available cloud monitoring service provides all the functionality of advanced monitoring systems at a fraction of the cost and with no programming.

- Report Generation
- Predictive Analysis
- Trending
- Report Generation
- Alarming

## Smart Technology that Makes a Big Difference



**Presence of Voltage Detection** detects circuit breaker status even under no load conditions using a proprietary voltage field detection system identifying failed circuits that may go unnoticed on conventional monitoring systems.



**Predictive Circuit Health Analysis** uses proprietary algorithms to analyze circuit signatures over time and detect changes indicative of common failure modes in power supplies and other critical loads.



**Waveform Capture:** High resolution power quality data from all circuits is stored for any power quality deviation providing invaluable data for evaluating power disturbances.



**True Circuit Display** allows data to be expressed according to the actual panelboard configuration by indicating pole position, circuit type, friendly names and more to each circuit.

## Applications



**Collocation Data Centers**  
Collocation data center often must monitor the health and energy usage of each branch circuit



**Lighting / HVAC Energy Optimization**  
Sub-metering is required to provide the needed resolution to initiate and verify most energy efficiency upgrades



**Demand Management**  
Sub-metering identifies energy use by specific loads allowing them to be managed to avoid peak demand charges



**Tenant Sub-Metering**  
Commercial facilities are increasingly using sub-metering to allocate costs



**Switchgear / Power Distribution**  
Economically identify energy and power use per breaker



**Circuit / Load Health**  
Facilities use sub-metering to verify performance of critical loads



**Energy Use Allocation**  
Larger buildings and campuses require a means of allocating energy usage for costing purposes

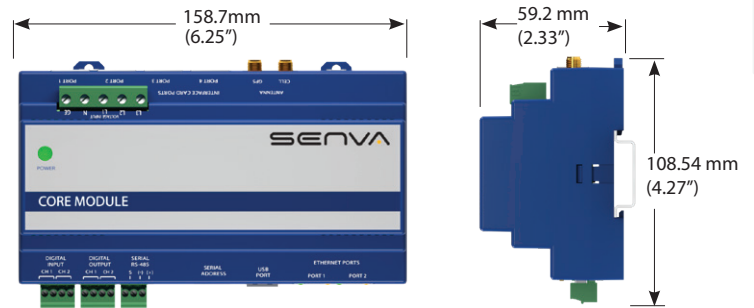


**High-End Residential**  
High end residential automation systems can utilize branch circuit sub-metering to enhance reliability and efficiency

PRODUCT SELECTION GUIDE

Core Module Monitor Feature Set

FEATURE	ENHANCED
Local Network Access	●
Integrated Web Server	●
Field Upgradeable Feature Set	●
SD Card and Network Configuration	●
Modbus TCP/IP output	●
Modbus Serial Output	●
HTML web server console	●
Presence of Voltage Detection	●
BACnet Protocol	●
Waveform Capture	●
True Circuit Display	●
SD Card Data Storage	●
Newtork Data File Export	●
Alarming	●



**Warning:** Refer to installation instructions that accompany product and heed all safety instructions.

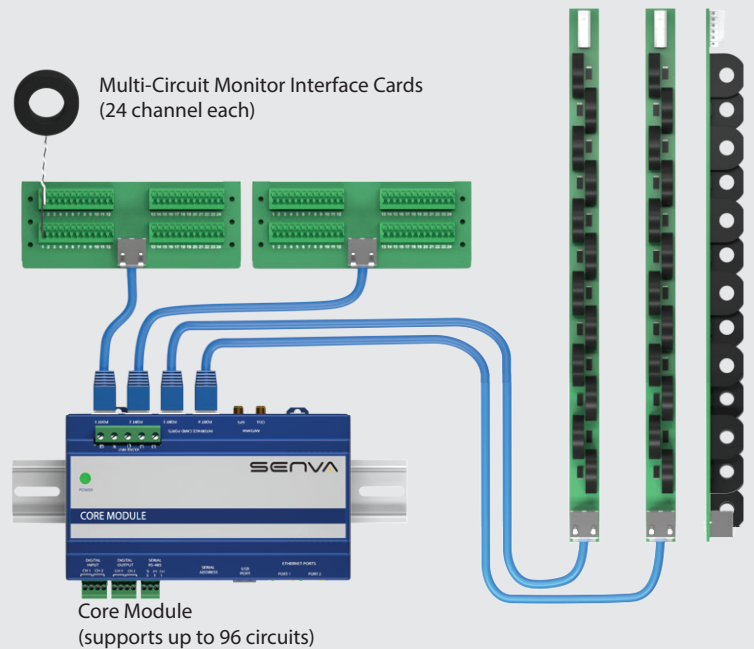
Installation Overview

FROM INSTALLATION TO MONITORING IN MINUTES

Senva reduces the cost of monitoring by simplifying installation and providing instant access to real time and logged data without programming requirements.

- 1 Mount the compact Core Module onto DIN rail; fits inside most existing enclosures
- 2 Mount CT interface cards in most convenient location to minimize CT cable length and connect to monitor using standard network cables.
- 3 Connect to network and acquire real time and logged data from the monitor or utilize optional embedded cellular modem for affordable wireless connectivity at a cost lower than most network connections.

Solid Core Branch Circuit Monitor



## PRODUCT SELECTION GUIDE

See product selection guide on-line for complete product offering and detailed ordering instructions.

### Core Module Monitoring Systems

<b>CM02SV</b>	Enhanced Core Module, 90-300 VAC L-N, 50/60 Hz (combined sensing and power supply input); supports 277V L-N / 480V 4W with neutral sources and 240 VAC / 415V 4W sources; use alternate models for 3W sources that do not have a neutral
<b>CM02SV-480</b>	Enhanced Core Module, 160-480 VAC L-L / 0.1A, 50 Hz (combined sensing and power supply input); used for 3W applications where neutral is not available
<b>CM02SV-DC</b>	Enhanced Core Module with 12-24VDC control power required; supports 3W and 4W sources; 90-300 VAC L-N / 160-480VAC L-L, 50/60 Hz sensing voltage
<b>CTS-ENCL1</b>	NEMA 1 Core Module Enclosure

### Solid Core CT Strip monitoring system for installations on new panelboards

All systems include 10mm x 100 A solid core CTs and + 3 auxiliary CT terminals per strip for main input CTs

#### 0.75" c-c CT strips

<b>CT02101A</b>	Standard 0.75" CT center 1 x 21 100A solid core CT strip
<b>CT02101B</b>	84 pole (2 panel) system with 4 x 21 x 100 A solid core CT strips with 0.75" C-C spacing; includes presence of voltage detection

#### 1.0" c-c CT strips

<b>CTS121A</b>	Standard 1.0" CT center 1 x 21 100A solid core CT strip
<b>CTS121B</b>	Enhanced 1.0" CT center 1 x 21 100A solid core CT strip (w/presence of voltage detection to detect if circuit is energized)

#### 18mm c-c CT strips

<b>CTS218A</b>	Standard 18mm CT center 1 x 18 100A solid core CT strip
<b>CTS218B</b>	Enhanced 18mm CT center 1 x 18 100A solid core CT strip (w/presence of voltage detection to detect if circuit is energized)
<b>CTS221A</b>	Standard 18mm CT center 1 x 21 100A solid core CT strip
<b>CTS221B</b>	Enhanced 18mm CT center 1 x 21 100A solid core CT strip (w/presence of voltage detection to detect if circuit is energized)
<b>CTS223B</b>	Enhanced 18mm CT center 1 x 23 100A solid core CT strip (w/presence of voltage detection to detect if circuit is energized)

### Retrofit Panelboard CT Interface Module (Floating Strip CT interface module) and Core Module monitor

Floating Strip CT interface boards reside in raceway and interface with 10mm x 75 A or 100 A split core CTs using plug-in quick connects; each

<b>CTS321A</b>	24 channel Floating Strip split core CT interface board; utilizes branch CTs with connectors
<b>CTSC01050</b>	50 A x 10mm window split core current transformer, 250mm 300V AWG24 lead with Molex connector
<b>CTSC01075</b>	75 A x 10mm window split core current transformer, 250mm 300V AWG24 lead with Molex connector
<b>CTSC010100</b>	100 A x 16mm window split core current transformer, 250mm 300V AWG24 lead with Molex connector

### Multi-Circuit Monitoring Systems and Core Module monitor

The Multi-Circuit Monitoring system supports up to 4 x 24 CT Interface Cards (96 circuits) and accommodates any 0.33 Vout current transformers or native Rogowski coils.

<b>IOC24A1</b>	24 Channel Digital Input Card
<b>CTC24A1</b>	24 channel Multi-Circuit Monitoring CT interface board; utilizes CTs with bare leads

### Current Transformers

see Current Transformer selection guide for details

Current Transformer Range: 10-5,000 A; 10mm (3/8") to 254mm (10") diameter window

## TECHNICAL SPECIFICATIONS



INPUTS	
Input power (standard)	90-277 VAC (480 VAC 4W+G) 50/ 60 Hz
Input power (enhanced)	480-600 VAC (3W or 4W+G) 50/ 60 Hz
Voltage connection terminals	22 - 14 AWG
Overload protection	Internally fused
Power consumption	<5W / 0.1 A @ 240 VAC
Channels / circuit capacity	24 x 4 channels (96 circuits total)

PERFORMANCE	
Accuracy	0.50%
Sampling rate	> 3 kHz

COMMUNICATIONS	
Data protocols	Modbus TCP/IP (Ethernet), Modbus RTU (RS-485 2 wire), HTML (web server)
Modbus serial specifications	9600, 19200, 38400 Baud (selectable)
Ethernet ports	2 x RJ-45 10/100 Mbit
USB port	USB 2.0 Type A
Web server	HTML via standard browser
WiFi option	802.11 g/n ; requires WiFi option
Cellular option	CAT 1 / CAT M1; requires subscription

ENVIRONMENTAL	
Operating temperature	0 to 60 °C (32 to 140 °F) (<95% RH non-condensing)
Storage temperature	-40 to 70 °C (-40 to 158 °F)
Enclosure versions	NEMA 1/IP20 (indoor use); NEMA 4 / IP67 (outdoor use)

APPROVALS	
Agency approvals	ETL Listed, Cat. III, pollution degree 2, CE

MONITORED PARAMETERS		
Monitored Parameter	Circuit Level	Input Level <sup>1</sup>
Current per phase	●	●
Max. current per phase	●	●
Current demand (avg. current) per phase	●	●
Current phase angle	●	●
Voltage phase angle	●	●
Real power (kW) per phase	●	●
Real power (kW) demand per phase	●	●
Real power (kW) demand max	●	●
Energy (kWh) per phase	●	●
Power factor	●	●
Power factor vector	●	●
Apparent power (kVA)	●	●
Reactive power (kVA)	●	●
THDI	●	●
THDV	●	●
Voltage, L-L and average		●
Voltage, L-N and average		●
Voltage, L-N and per phase		●
Waveform capture	●	●
Presence of Voltage <sup>3</sup>	●	●
Ground current <sup>2</sup>	●	●

1 - Input level data can be calculated by summing up branch CT measurements or directly measured using CTs.

2 - Required optional ground current CT connected to auxiliary CT input

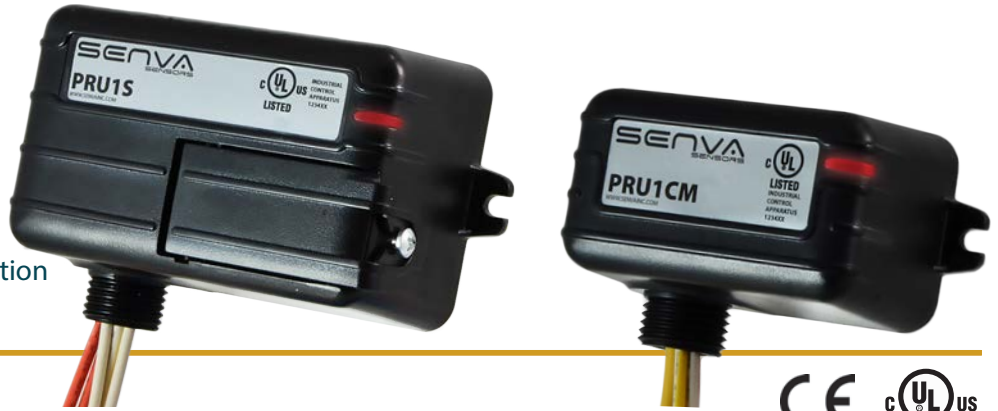
3 - Optional feature



**Warning:** Refer to installation instructions that accompany product and heed all safety instructions.

# PRU1 Series Pilot Relays

10A range resistive rating  
Hand Off Auto switch option  
Current run-status confirmation option



## DESCRIPTION

The PR Series pilot relays are ideal multi-voltage input pilot duty relays that mount to existing panels to control loads. External enclosures are not required making them ideal for interfacing loads with building automation control systems.

## APPLICATIONS

- Command contactors
- Control motors
- Isolation
- Device interlocking
- Relay logic
- Lighting load levels

## FEATURES

### Convenient and cost-effective control

- Current sensor run status option
- LED indicator
- Multi-voltage coil input
- Hand-Off-Auto switch option

### Compact enclosure mounts externally for easy installation

- Nipple mount to any electrical enclosure
- Flexible tinned stranded wire... fits easily in tight spaces and provides secure connections to wire nuts

### Concealed HOA switch with screw secured cover prevents tampering

- Versions with Hand Off Auto (HOA) switch feature with secure screw cover door to prevent tampering
- Eliminates costly system override related service calls

### Run status confirmation

- True current sensing provides proof of load feedback that pilot device relay coil is powered.

### Rugged enclosure

- Rated for outdoor use.

Hinged HOA cover with screw retention minimizes tampering



MODEL	CONTACT	COIL INPUT	CONTACT	HOA	CURRENT RUN STATUS	ENCLOSURE	LED
PRU1C	SPDT	10-30VAC/DC, 120VAC	10A			Small	●
PRU1CM	SPDT	10-30VAC/DC, 120VAC	10A		N.O. 1A @ 30VAC/DC, 0.3A TRIP	Small	●
PRU1S	SPST N.O.	10-30VAC/DC, 120VAC	10A	●		Medium	●
PRU1SM	SPST N.O.	10-30VAC/DC, 120VAC	10A	●	N.O. 1A @ 30VAC/DC, 0.3A TRIP	Medium	●



SPECIFICATIONS

General	Environmental Operating	-30 to 60°C (-22 to 140°F), 10-95% RH non-condensing
	Expected Relay Life	100,000 cycles electrical; 10,000,000 mechanical
	LED	ON when energized
	Device Wiring	16" minimum lead length; coil: 18AWG; contacts: 14AWG; HOA monitor wires: 14 AWG; status: 18AWG
	Field Wiring	Coil: 16AWG to 18AWG, Contacts: 14AWG to 16AWG
Dimensions	Certifications	UL1015 , Plenum Rated (UL2043), California State Fire Marshal, CE, RoHS
	Small Enclosure	1.75"x3.0"x1.75" with 0.5" NPT nipple
	Medium Enclosure	2.5"x4.0"x1.78" with 0.5" NPT nipple

CONTACT RATINGS(PRU1C)
10 Amp Resistive @ 277 VAC
10 Amp Resistive @ 28 VDC
480 VA Pilot Duty @ 240-277 VAC
480 VA Ballast @ 277 VAC
<i>Not rated for electronic ballast</i>
600 Watt Tungsten @ 120 VAC (N.O.)
240 Watt Tungsten @ 120 VAC (N.C.)
1/3 HP @ 120 VAC (N.O.)
1/6 HP @ 120 VAC (N.C.)
1/4 HP @ 277 VAC (N.O.)
1/8 HP @ 277 VAC (N.C.)

CONTACT RATINGS(PRU1S)
10 Amp Resistive @ 277 VAC
10 Amp Resistive @ 14 VDC
480 VA Pilot Duty @ 240-277 VAC
480 VA Ballast @ 277 VAC
<i>Not rated for electronic ballast</i>
600 Watt Tungsten @ 120 VAC (N.O.)
1/3 HP @ 120/240 VAC (N.O.)
1/4 HP @ 277 VAC (N.O.)

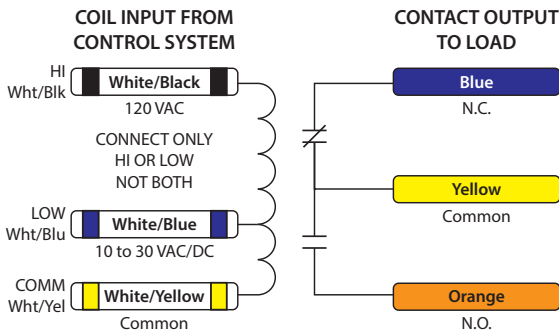
COIL CURRENT/PERFORMANCE		
Voltage	AC	DC
10 V	30mA	16mA
15 V	34mA	20mA
20 V	38mA	21mA
25 V	42mA	22mA
30 V	45mA	23mA
120 V	23mA	
Pull-In Voltage		
	AC	DC
10 to 30V	8V	9V
120V	85V	
Dropout Voltage		
10 to 30V	3V	3V



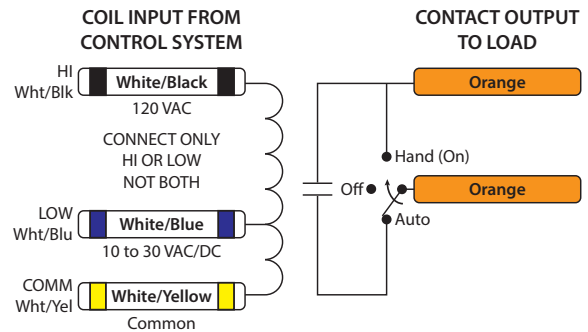
**Warning:** Refer to installation instructions that accompany product and heed all safety instructions. Do not rely on current status LED to indicate presence of power.

TYPICAL WIRING

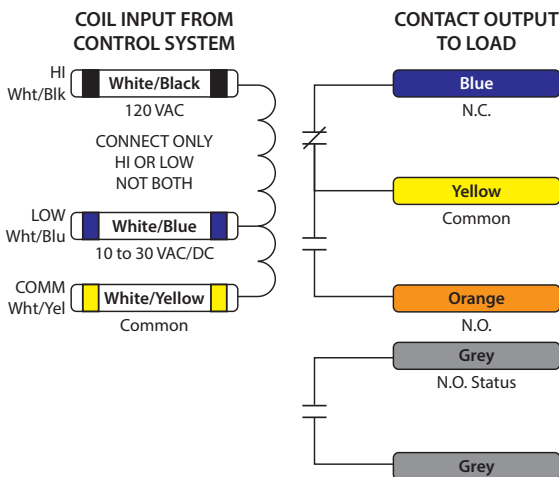
PRU1C



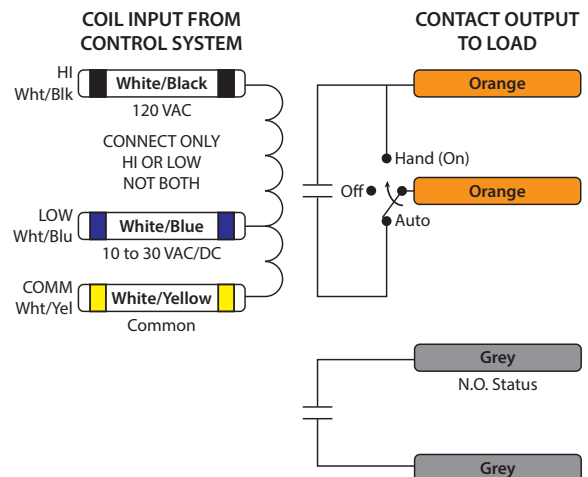
PRU1S



PRU1CM



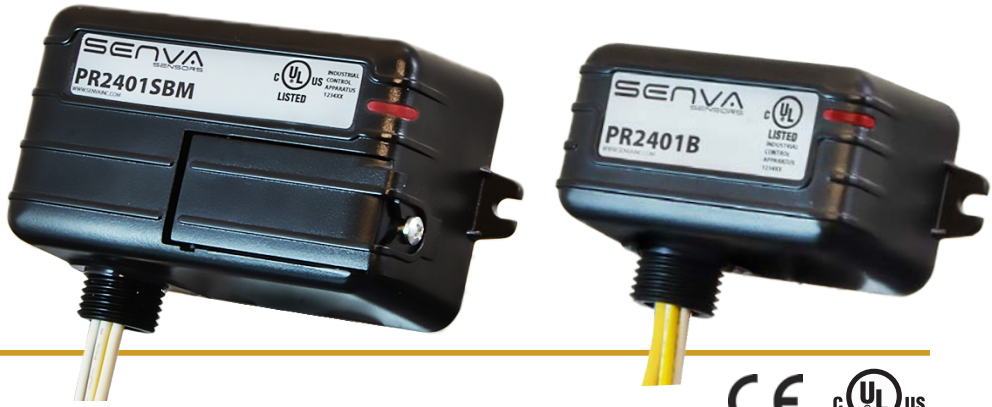
PRU1SM





# PR24 Series Power Relays

20A range resistive rating  
Hand Off Auto switch option  
Current run-status confirmation option



## DESCRIPTION

The PR Series pilot relays are ideal multi-voltage input pilot duty relays that mount to existing panels to control loads. External enclosures are not required making them ideal for interfacing loads with building automation control systems.

## APPLICATIONS

- Command contactors
- Control motors
- Isolation
- Device interlocking
- Relay logic
- Lighting load levels

## FEATURES

### Convenient and cost-effective control

- Current sensor run status option
- LED indicator
- Multi-voltage coil input
- Hand-Off-Auto switch option

### Compact enclosure mounts externally for easy installation

- Nipple mount to any electrical enclosure
- Flexible tinned stranded wire... fits easily in tight spaces and provides secure connections to wire nuts

### Concealed HOA switch with screw secured cover prevents tampering

- Versions with Hand Off Auto (HOA) switch feature with secure screw cover door to prevent tampering
- Eliminates costly system override related service calls

### Run status confirmation

- True current sensing provides proof of load feedback that pilot device relay coil is powered

### Rugged enclosure

- Rated for Nema 4X when installed with O-ring and 1/2" locknut on existing Nema 4X control panel.

### Hinged HOA cover with screw retention minimizes tampering



MODEL	CONTACT	COIL INPUT	CONTACT	HOA	CURRENT RUN STATUS	ENCLOSURE	LED
PR2401B	SPDT	24-30VDC, 24VAC, 120VAC	20A			Small	●
PR24BM	SPDT	24-30VDC, 24VAC	20A		N.O. 1A @ 30VAC/DC, 0.3A TRIP	Small	●
PR2401SB	SPST N.O.	24-30VDC, 24VAC, 120VAC	20A	●		Medium	●
PR2401SBM	SPST N.O.	24-30VDC, 24VAC, 120VAC	20A	●	N.O. 1A @ 30VAC/DC, 0.3A TRIP	Medium	●

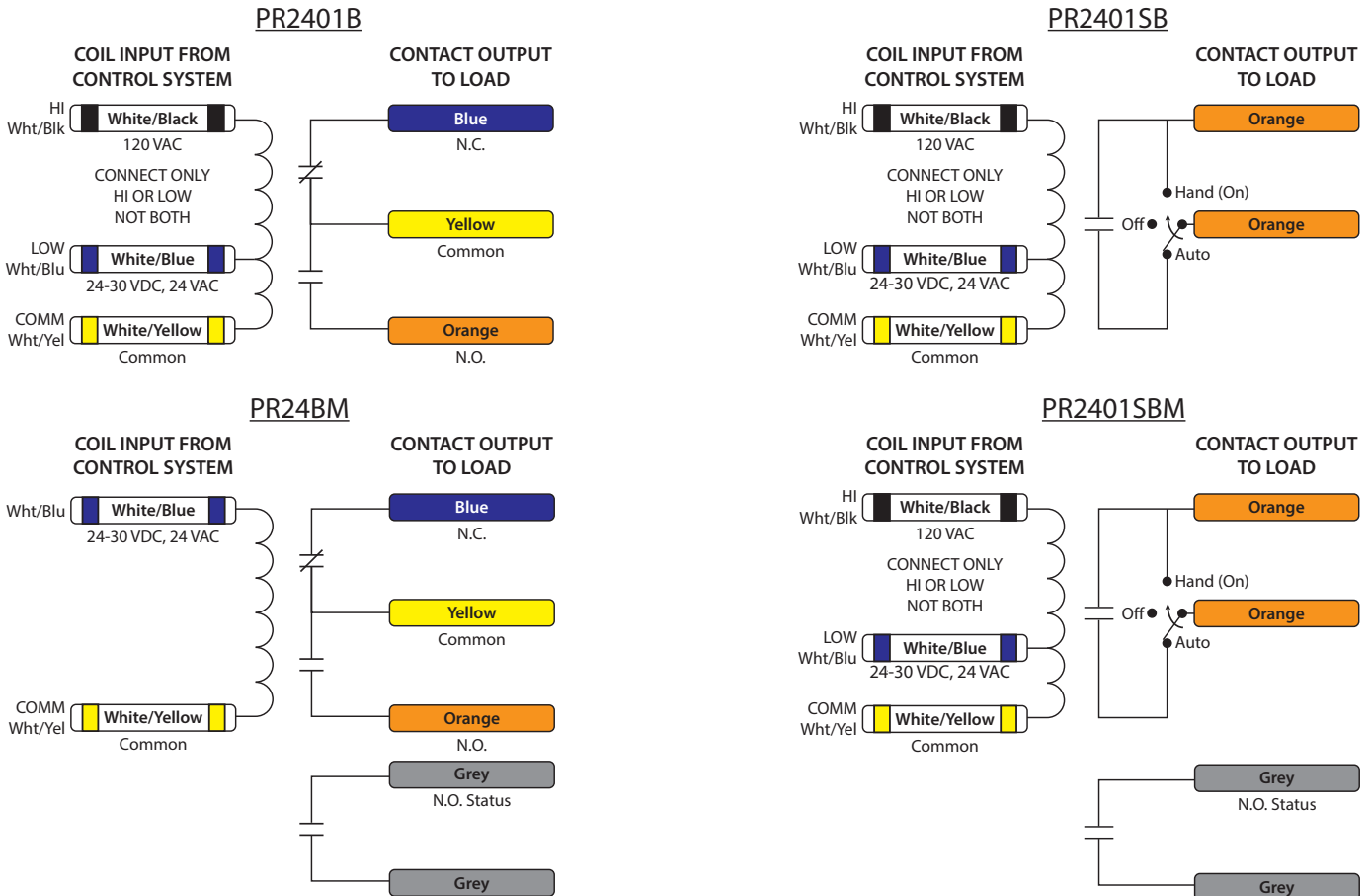
SPECIFICATIONS

General	Environmental Operating	-30 to 60°C (-22 to 140°F), 10-95% RH non-condensing
	Expected Relay Life	100,000 cycles electrical; 10,000,000 mechanical
	LED	ON when energized
	Device Wiring	16" minimum lead length; coil: 18AWG; contacts: 12AWG; HOA monitor wires: 12 AWG; status: 18AWG
	Field Wiring	Coil: 16AWG to 18AWG, Contacts: 12AWG to 14AWG
Dimensions	Certifications	UL1015, Plenum Rated (UL2043), California State Fire Marshal, CE, RoHS
	Small Enclosure	1.75"x3.0"x1.75" with 0.5" NPT nipple
	Medium Enclosure	2.5"x4.0"x1.78" with 0.5" NPT nipple

CONTACT RATINGS(PR2401B/PR24BM)		CONTACT RATINGS(PR2401SB/PR2401SBM)		COIL CURRENT/PERFORMANCE		
20 Amp Resistive @ 277 VAC/30VDC NO/NC	20 Amp Resistive @ 277 VAC NO	Voltage	AC	DC		
1HP @ 120VAC NO/NC	1HP @ 120VAC NO				24 V	59mA
2HP @ 277VAC NO/NC	2HP @ 277VAC NO	26 V			35mA	
20A @ 120/277VAC STANDARD BALLAST NO	20A @ 120/277VAC STANDARD BALLAST NO	28 V			37mA	
1100VA Pilot Duty @ 277VAC	1100VA Pilot Duty @ 277VAC	30 V			40mA	
<i>Not rated for electronic ballast</i>	<i>Not rated for electronic ballast</i>	120 V	43mA			
10A @ 120VAC TUNGSTEN NO	10A @ 120VAC TUNGSTEN NO	<b>Pull-In Voltage</b>				
			AC	DC		
		10 to 30V	8V	9V		
		120V	85V			
		<b>Dropout Voltage</b>				
		10 to 30V	3V	3V		

**Warning:** Refer to installation instructions that accompany product and heed all safety instructions. Do not rely on current status LED to indicate presence of power.

TYPICAL WIRING



# Large LED Remote Displays

3 1/2 digit LED  
 Choose Red, green, or blue  
 Adjustable zero and span



## DESCRIPTION

These large bright displays are ideal for visual feedback of any measured value. Humidity, temperature, and pressure labels provided—others available—consult factory.

## APPLICATIONS

- Provides users with valuable visual verification of humidity and/or temperature status
- Process control feedback, including pharmaceutical, food, and coating applications

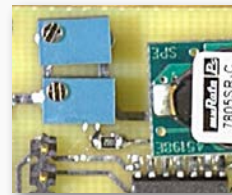
## FEATURES

### Easy to install and maintain

- Fits standard single or double gang boxes (depending on version)
- Accepts 0-10V input signal
- Pre-cut vinyl labels provided with temperature, pressure, humidity for each display ordered.
- Factory scaled; user adjustable zero and span

### Field Adjustable

- Adjust the scaling—both zero and span, for any application requirement.



ORDERING

type	#1 col	#2 col	#3 col
RD			

**Display Type**  
 1 = Single Gang  
 2 = Double Gang  
 3 = Triple Gang

**Display #1 LED**  
 A = Blue  
 B = Green  
 C = Red

**Display #2 LED Color**  
 A = Blue  
 B = Green  
 C = Red  
 D = None

**Display #2 LED Color**  
 A = Blue  
 B = Green  
 C = Red  
 D = None

Consult factory for custom labeling and calibrations

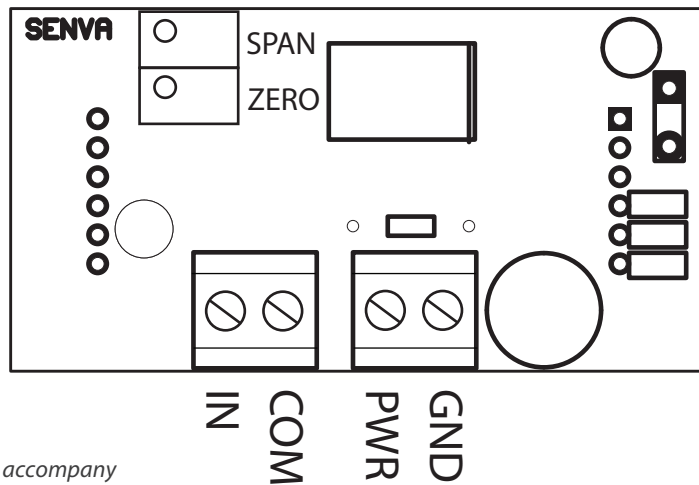
(Write your selected Display Type, Display #1 and #2 LED Color numbers/letters in the boxes above)

SPECIFICATIONS

Power supply	12-30VDC/24VAC <sup>(1)</sup> , 40mA max. (per display)
Signal input range	0-10VDC
Scaling	Factory set for customer application Field adjustable zero and span
Display type	3-1/2 digit LED; Red, Green, or Blue
Accuracy	±1% F.S. ±2 counts
Sampling Rate	3 / second
Input Impedance	100k ohm
Operating Temperature	32-122oF (0-50oC)

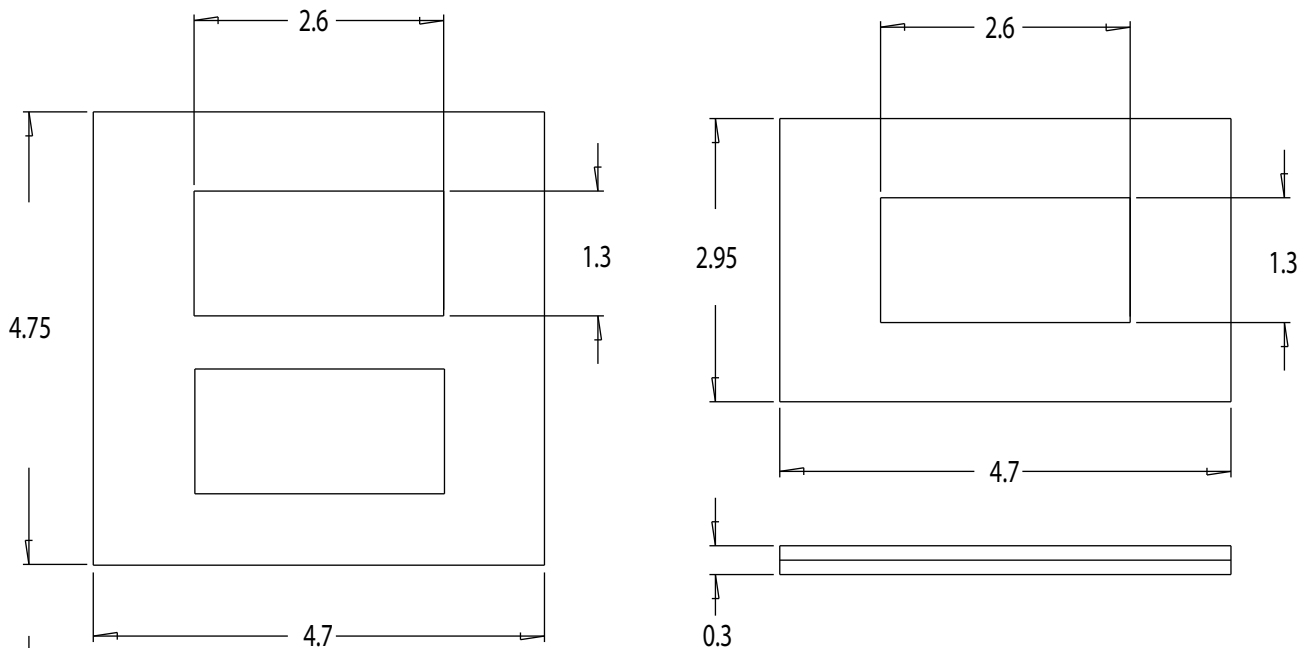
(1) One side of transformer, secondary is connected to signal common. Dedicated transformer is recommended.

WIRING (PER DISPLAY)



**Warning:** Refer to installation instructions that accompany product and heed all safety instructions.

DIMENSIONS



## WD Surface mount Water Detectors

- Solid state
- Gold plated sensing electrodes
- Floor and wall mount options



### DESCRIPTION

The WD series detects water to prevent costly damage. Unlike float systems, it utilizes solid state detection, so is not prone to mechanical failure. The WD-1 is designed for mounting on the floor, drip pans or condensate pans, as the gold plated sensing electrodes face downwards out the back of the enclosure. The WD-2 housing accommodates mounting to a wall or vertical surface, with the gold plated sensing electrodes angled to the bottom of the enclosure.

### APPLICATIONS

- Ideal for spot leak detection
- Computer rooms, critical equipment, restrooms or commercial kitchens
- Monitor condensate pans and drains—turn off equipment when pans reach limit

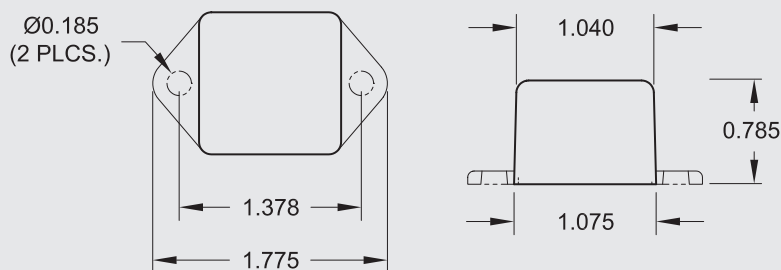


### FEATURES

#### Reliable water detection

- Simple installation—screw or ram-set to surface
- Simple operation—no maintenance
- Solid-state design... no moving parts to fail
- Fully potted for water-proofing... maximum durability

#### Dimensions



### ORDERING

<b>WD-1</b>	Floor Mount Water Detector, 9-30 VAC/DC
<b>WD-2</b>	Wall Mount Water Detector, 9-30VAC/DC

### SPECIFICATIONS

Power Supply	9-30VAC/DC, 20mA Max.
Output	N.C. (Form B) Solid State Relay, Isolated
Output Rating	30VAC/DC, 0.1A (100mA) Max.
Sensing	Gold plated electrodes
Operating Environment	-20 to 80°C



**Warning:** Refer to installation instructions that accompany product and heed all safety instructions.

# IoT Series (Coming Soon!) IOT Buddy

Connects analog or Modbus RTU devices to cloud services  
 Facilitates power over Ethernet (POE), Ethernet, or Wireless 2.4 GHz  
 Small design to allow for installation in sensor housing or junction box  
 Easy configuration



## DESCRIPTION

This is a compact communicating device for your API, cloud storage, and communication applications. Convert any Modbus RTU or analog signal to Ethernet, Power Over Ethernet (POE), or 2.4 GHz wireless (Wifi) and connect to IOT cloud services (AWS, Azure, MQTT). Its small profile and low power requirements allow for field mounting in device enclosures or junction boxes. Use pre-configured sensor data for Senva sensors for fast configuration.

## APPLICATIONS

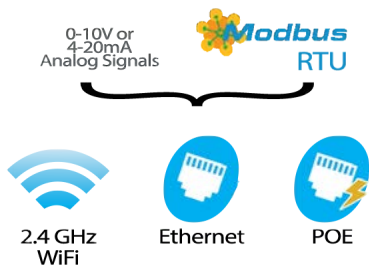
- Allows cloud access to sensor data in remote, network connected spaces or buildings
- Monitoring of sensors in network connected retrofits or additions
- Display data on energy management, tenant, or client facing dashboards
- Perfect for air quality, occupancy, and energy usage reporting
- Add sensor monitoring to critical infrastructure



RJ45 version connects to ethernet and also allows POE (Power over Ethernet)

Choose pre-configured sensor data for Senva devices, or configure your own

Fits in slim enclosures and junction boxes, compatible with many Senva products!



Directly connects analog, Modbus RTU, or BACnet MS/TP devices to cloud services

Small profile, fits inside standard field enclosures and junction boxes

Made in the USA



FEATURES

- Allows cloud IOT (MQTT, Azure, AWS) connections for sensors and field devices
- Expand your IIOT system
- Greatly reduces licensing, technician, and panel costs associated with cloud integration of sensors by allowing installation and network connectivity directly at the device
- Accepts two configurable analog input signals or a single Modbus RTU device
- Pre-configured setup for Senva sensors and devices
- Connect via Ethernet RJ45 or Wireless 2.4 GHz
- Power over ethernet (POE) version includes power pass through for powering sensors and allows the connected sensors to be powered from existing POE equipment, utilizing power backups to allow for critical reporting with no added power cost
- Easily integrated to existing IT data monitoring.
- Monitored sensor data can easily be added to display on energy management, tenant, or client facing dashboards. This is perfect for air quality, occupancy, and energy usage reporting
- Hosts local access point for easy connection and setup
- Inputs, network, and cloud connection are configured via web page hosted from the device
- Modbus RS485 to Ethernet, Modbus RS485 to Wifi, Analog to Ethernet, Analog to Wifi

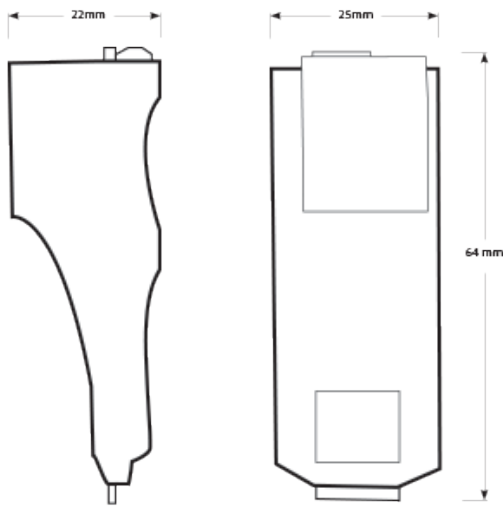
ORDERING

**IoT -**

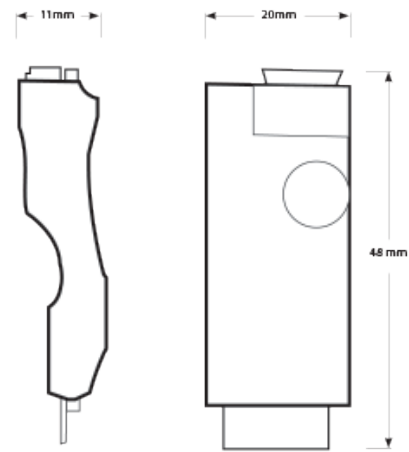
<b>Input</b>	<b>Output</b>
A = Analog	W = WiFi
B = Comms	E = Ethernet
	P = POE

DIMENSIONS


RJ45



WiFi



NOT TO SCALE

 **Warning:** The datasheet is designed for reference only. Refer to installation instructions that accompany the product and heed all safety instructions. Product improvement is a continuing process at Senva. Changes may occur to products without prior notice

**SPECIFICATIONS**

**Note:** Features and Specifications are preliminary and may change upon final release.

Power Supply	4 Wire Flying Leads	12-30VDC/24VAC, 1W max, 100mA max. POE power to Sensor: 24vdc 5W max.
Analog Inputs	2 programmable Inputs	0-10V and 4-20mA (selectable)
LED	Red	<p><b>Normal Mode:</b> Off=Not Configured Steady= No Connection Slow Blink = Connected to device Fast Blink= Connected to cloud service</p> <p><b>Setup Mode:</b>  Off=Button Held (Hold for 3 seconds) Slow Blink = Commissioning Mode Fast Blink= Hold to Initiate Factory Reset</p>
Ethernet	RJ45	10/100 BASE-TX IPV4 Static or DHCP IPV6 Static or Dynamic via DHCPv6 or SLAAC
Wi-Fi	2.4 GHz	<p><b>AP Mode:</b> Supports Open, WPA2, WPA-WPA2 Mixed, WPA3, WPA2-WPA3 Mixed networks IPV4 DHCP or Static IP One client Wi-Fi Connection with configurable password Uses Fixed IP for access point during initial setup WPA2-PSK (AES).</p> <p><b>Station Mode:</b>  Supports Open, WPA2, WPA-WPA2 Mixed, WPA3, WPA2-WPA3 Mixed networks IPV4 Static or DHCP IPV6 Static or Dynamic via DHCPv6 or SLAAC</p> <p>Configurable SSID lookup Auto-reconnect after network or power loss</p>
Operating Environment	Operating Temperature	-40 to 158°F (-40 to 70°C)
	Storage Temperature	-40 to 185°F (-40 to 85°C)
	Humidity	0 to 95% RH ( non-condensing)
	Altitude	3,000 Meters
Enclosure	Wi-Fi Model	~ 1”h x 1”w x 0.5”d
	RJ45 Model	~2”h x 1”w x 1”d
	Type	TBD - ESD/Shorting Protected small enclosure

\* Product improvement is a continual process as Senva and product features and specification may change without prior notice. Refer to instructions that accompany the product for installation and wiring.