

2020 CATALOG

**SENVVA**

**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.

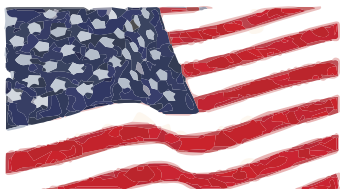
## *Proudly Made in Beaverton, Oregon*



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) 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 \$300 or more ship free in the contiguous 48 states. Online orders of \$500 or more ship free to Alaska, Hawaii and Canada. Online orders including 3 or more transformers do not qualify for free shipping.



## ***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.



# New 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!



## ECONOMY PRESSURE

Looking for the best value in pressure; look no further. Same form as our universal, but job specific ordering.

## PRO PRESSURE

10 field selectable ranges and every feature you'll need in a nema 4 package.



## TOXIC GAS SENSING

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



## ENERGY GATEWAY

The Senva Energy Gateway is a pre-assembled energy meter, data logger, and power supply. Connect to a LAN and push or pull data via HTTPS, XML or FTP, optional 4G LTE cellular modem



## MULTI-CIRCUIT/BRANCH CIRCUIT

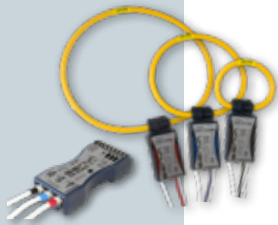
The versatile Core Module TM system is a single monitoring solution with peripherals optimized for Branch Circuit and Multi-Circuit Monitoring applications designed to reduce the cost and complexity associated with legacy multi-circuit monitors.



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“*The safest, most cost-effective proof of flow for fans and pumps is with Senva Sensors.*”



*Reduce the risk of arc flash with Senva.*



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



*Save over 1/2 hour per sensor install.*



*OSHA requires protection when working in energized enclosures; just use Senva never calibrate live again!*

**If you're calibrating current sensors in energized enclosures, you're wasting TIME AND MONEY.**

Worse, you should be suiting up for arc flash protection (yes, it's OSHA code). If you're not, you're exposed to injury and liability. Senva makes it safe, simple, and profitable.

**Thanks to PRESET™ you'll never calibrate in live enclosures again!**



*Patent Pending*

PreSet™ sensors let you set the dial to the motor amperage. You can install the sensor and never return back to calibrate. Installers tell us they save over 1/2 hour per sensor. Plus, they're safe. You do the math.

Never calibrate live again!



*Set the sensor to motor full load amps—never return to calibrate!*

*Split Core Mini now available!*





**NEW  
for VFDS**

## Now proof of flow status for VFDs and constant volume fans and pumps

- New AutoSet™ sensor boasts super low turn-on of just 0.5A, perfect for today's smaller VFDs.
- Works on constant volume fans and pumps.
- Fool proof operation. Never calibrate live again!



**AutoSet™**

**NEW  
for ECMS**



## Don't get fooled by ECM stand-by current!

- This clever sensor lets you set the "on" point above an Electronically Commuted Motors' (ECM) stand by current.
- Eliminates call backs due to false "ON" status trips! Fool proof ECM status.

## Power relays and current sensing combos

- Hand-off-auto switch option features secure screw cover door to prevent tampering; eliminates costly system override related service calls.
- Current sensor run status option (start/stop/status in a single device)
- LED indicator, multi-voltage coil
- 10A pilot or 20A power relay versions



# 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



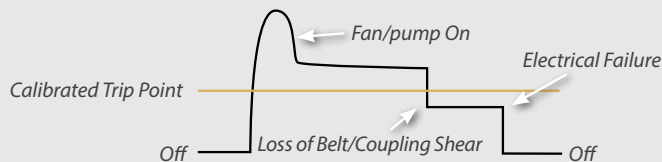
Simply set to motor FLA for proof of flow set-point

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

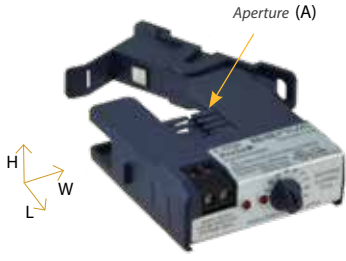


Save over 1/2 hour per sensor install—based on field productivity tests.



**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"



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

- 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

- 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

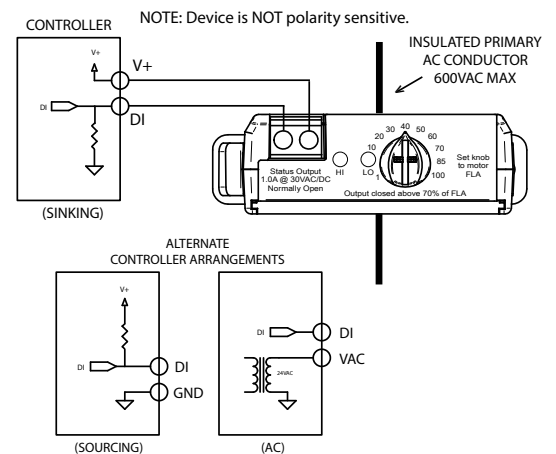


**Ordering tip:** For best resolution, choose the sensor lowest maximum amperage which accommodates your motor (e.g. 0-50A use -L, 50-100A use standard, 100 to 150A use -H)

**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
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



7 year limited warranty

# 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

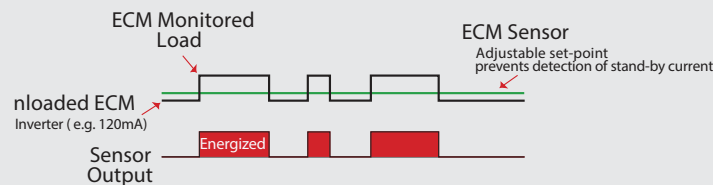
### Maintenance-free—no call backs

- Industry leading 7 year warranty



## SET-POINT OPERATION

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



The Serva 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	•	•

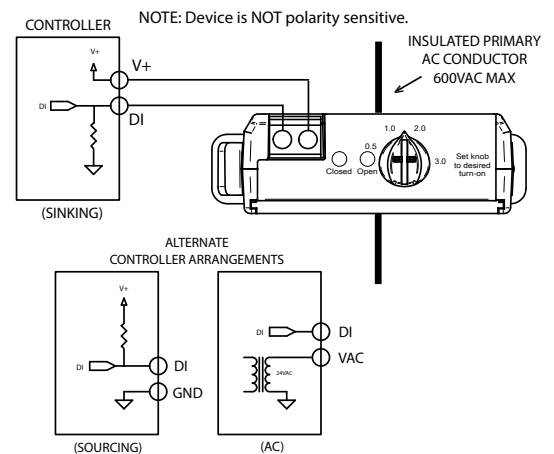
**COMMAND RELAY**

	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



# 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

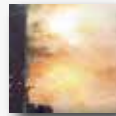
### Maintenance-free—no call backs

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

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



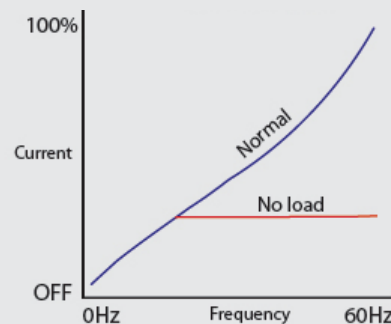
No hazardous guesswork. Multi-turn adjustments are a thing of the past; no time consuming “training!”



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

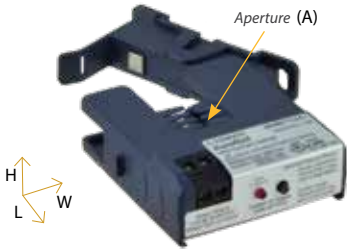
## SET POINT OPERATION

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



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

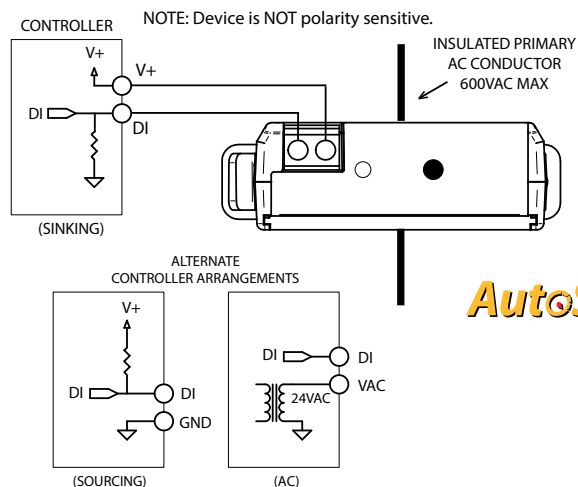
SPECIFICATIONS

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+
Compliance	cUL, UL, CE, RoHS

**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 current 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™

# 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

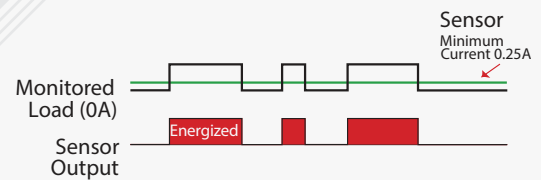
- Monitoring on/off status of electrical loads
- Monitoring direct-drive units, exhaust fans, and other fixed loads
- Verifying lighting run times

## 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.

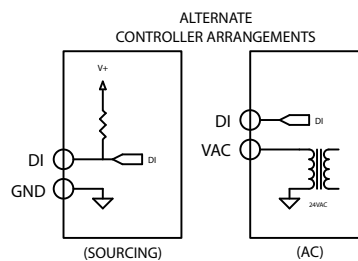
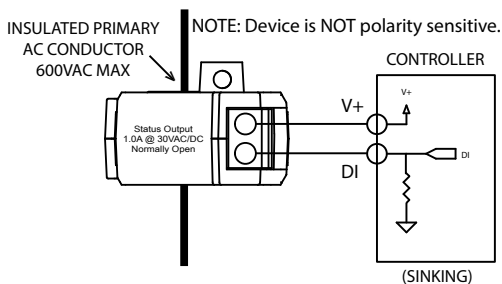


PROUDLY MADE IN USA



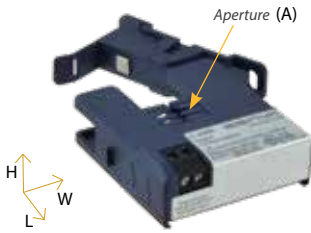
7 year limited warranty

## 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	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
Compliance	cUL, UL, CE, RoHS

# 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

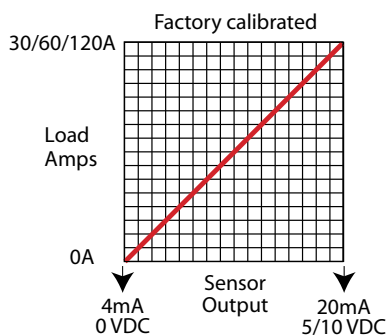
### Reliable and cost-effective

- Industry leading 7 year limited warranty



7 year limited warranty

## LINEAR ANALOG OUTPUT

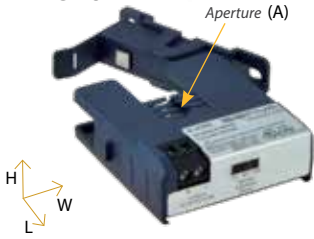


## SPECIFICATIONS

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**

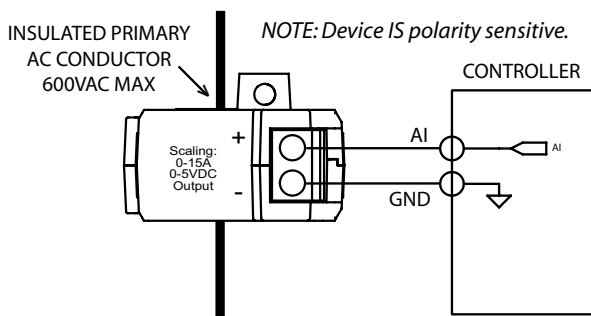
SPLIT CORE	Range A	Output	Sensor Power
C-2343	30A, 60A, 120A Selectable	0 - 5 VDC	Induced
C-2344	30A, 60A, 120A Selectable	0 - 10 VDC	Induced
C-2345	30A, 60A, 120A Selectable	4 - 20mA	Loop- powered, 30 VDC
C-2343-L	5A, 10A, 20A Selectable	0 - 5 VDC	Induced
C-2345-L	5A, 10A, 20A Selectable	4 - 20mA	Loop-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

**SOLID CORE - MINI**

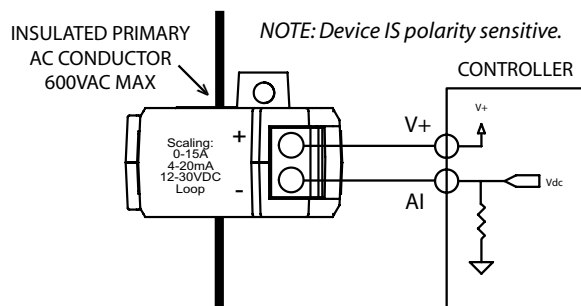
C-1203	15 A	0 - 5 VDC	Induced
C-1205	15 A	4 - 20mA	Loop- powered, 30 VDC
C-1203-L	5 A	0 - 5 VDC	Induced
C-1303-L	5 A	0 - 5 VDC	Induced

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

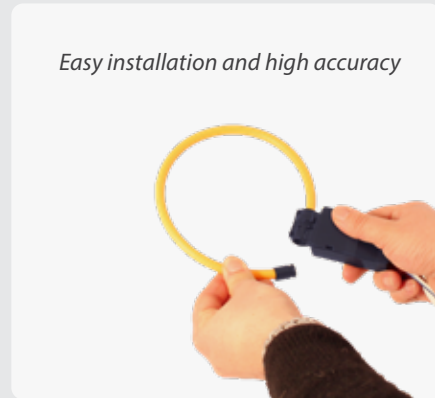
- Compatible with any system

### Easy installation

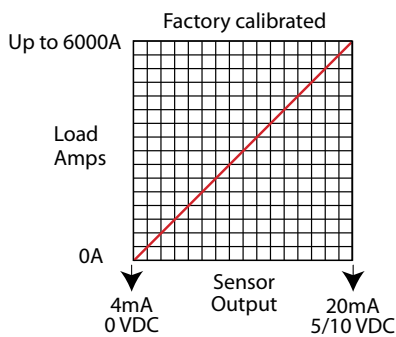
- Mount sensor without removing conductor for installation savings
- Rogowski coil is lightweight and space saving

### Reliable and cost-effective

- Industry leading 7 year limited warranty

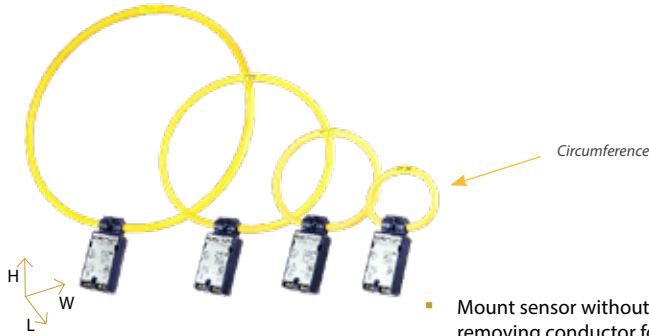


## LINEAR ANALOG OUTPUT



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



ORDERING

C3-



Circumference\*

- 1 = Small 9"
- 2 = Medium 15"
- 3 = Large 24"
- 4 = Extra Large 36"

Range\*

- 0 = 50/100/200/300A (Selectable)
- 1 = 200/400/600A/800A
- 2 = 600/800/1000/1200A
- 3 = 800/1200/1800/2400A
- 4 = 1800/2400/4000/6000A

Output

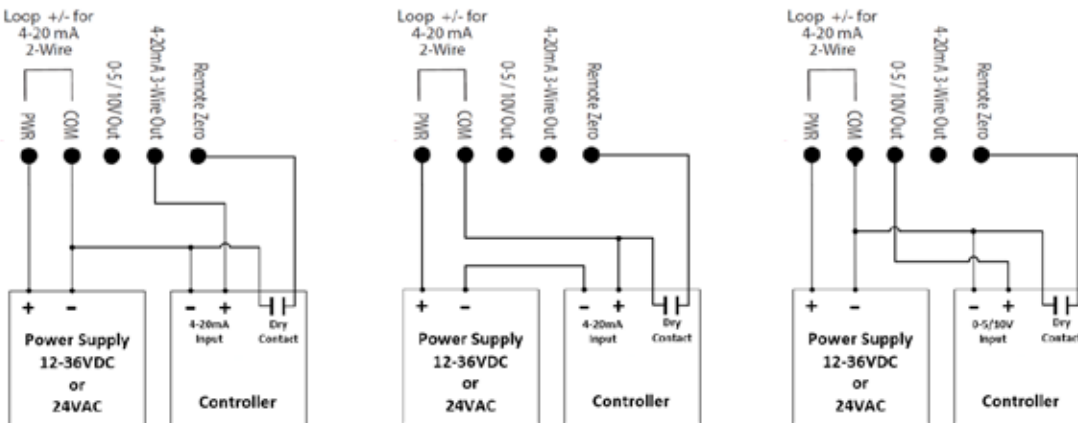
- 6 = Universal output  
0-5/10VDC, 4-20mA (loop and 3-wire)

\*Due to the estimated size of conductor size and circumference needed for each amperage range, Circumference/Range options are only available in the following combinations: 10, 21, 32, 43, 44

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

TYPICAL WIRING



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

# 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



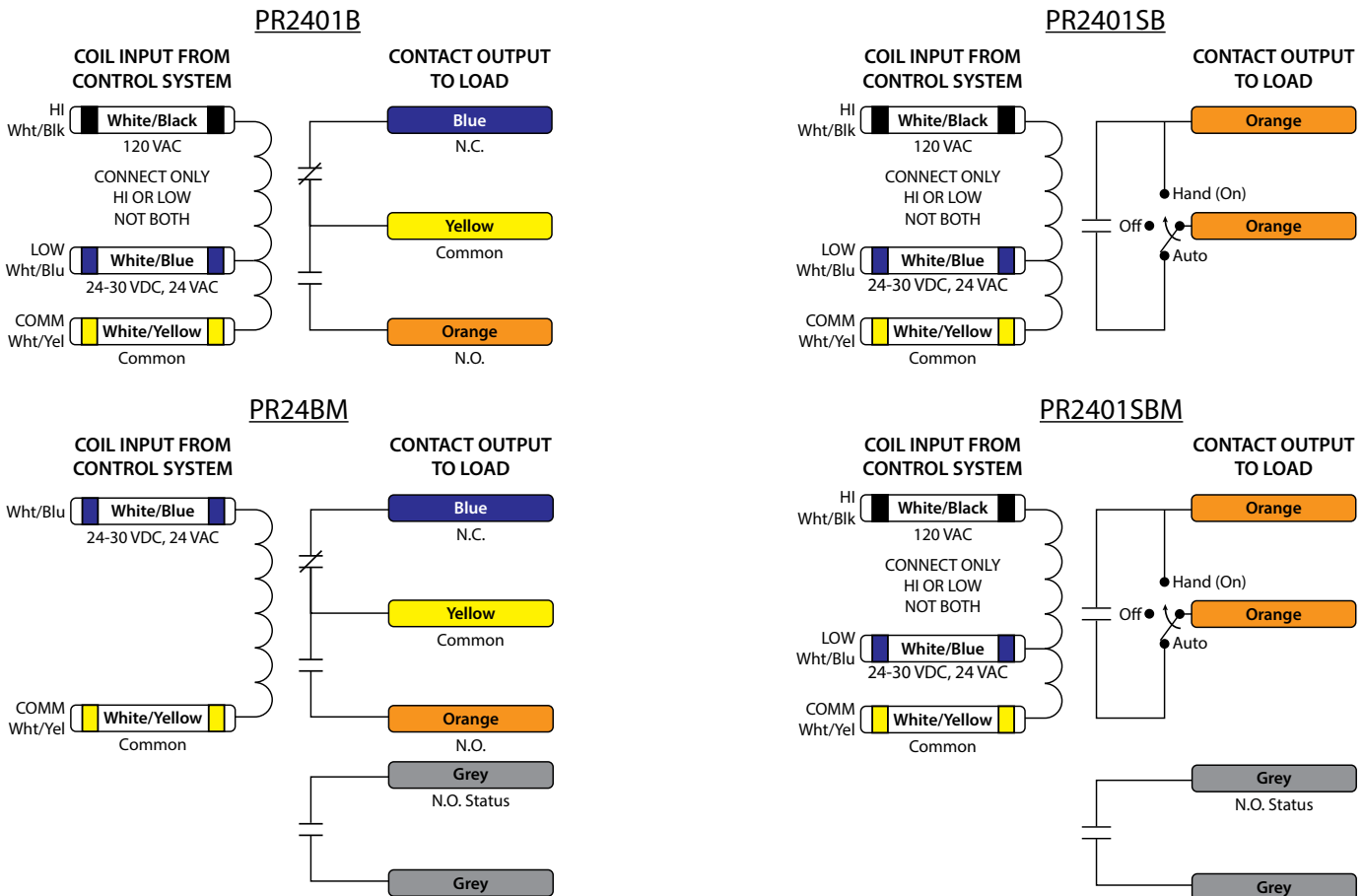
MODEL	CONTACT	COIL INPUT	CONTACT	HOA	CURRENT RUN STATUS	ENCLOSURE	LED
PR2401B	SPDT	24-30VDC, 24VAC, 120VAC	20A			Small	●
PR24BM	SPDT	24-30VDC, 24VAC	20A		N.O. 1A @ 30VAC/DC, 0.3A TRIP	Small	●
PR2401SB	SPST N.O.	24-30VDC, 24VAC, 120VAC	20A	●		Medium	●
PR2401SBM	SPST N.O.	24-30VDC, 24VAC, 120VAC	20A	●	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	<b>Voltage</b>	<b>AC</b>	<b>DC</b>
1HP @ 120VAC NO/NC	1HP @ 120VAC NO	24 V	59mA	32mA
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

TYPICAL WIRING



# 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

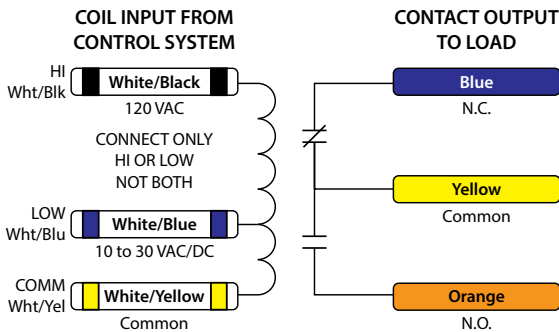
CONTACT RATINGS(PRU1C)
10 Amp Resistive @ 277 VAC
10 Amp Resistive @ 28 VDC
480 VA Pilot Duty @ 240-277 VAC
480 VA Ballast @ 277 VAC
<i>Not rated for electronic ballast</i>
600 Watt Tungsten @ 120 VAC (N.O.)
240 Watt Tungsten @ 120 VAC (N.C.)
1/3 HP @ 120 VAC (N.O.)
1/6 HP @ 120 VAC (N.C.)
1/4 HP @ 277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

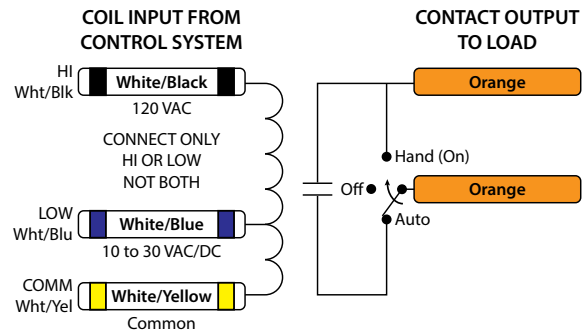
COIL CURRENT/PERFORMANCE		
Voltage	AC	DC
10 V	30mA	16mA
15 V	34mA	20mA
20 V	38mA	21mA
25 V	42mA	22mA
30 V	45mA	23mA
120 V	23mA	
Pull-In Voltage		
	AC	DC
10 to 30V	8V	9V
120V	85V	
Dropout Voltage		
10 to 30V	3V	3V

TYPICAL WIRING

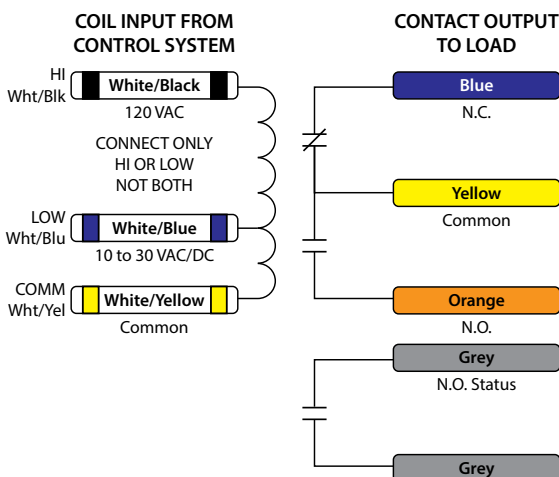
PRU1C



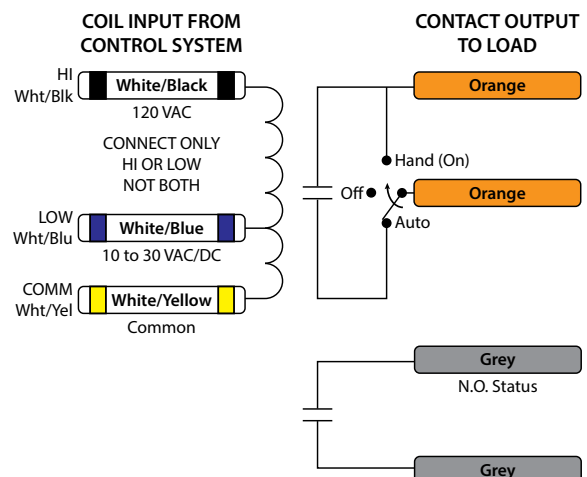
PRU1S



PRU1CM



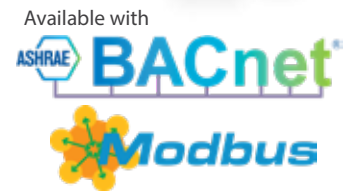
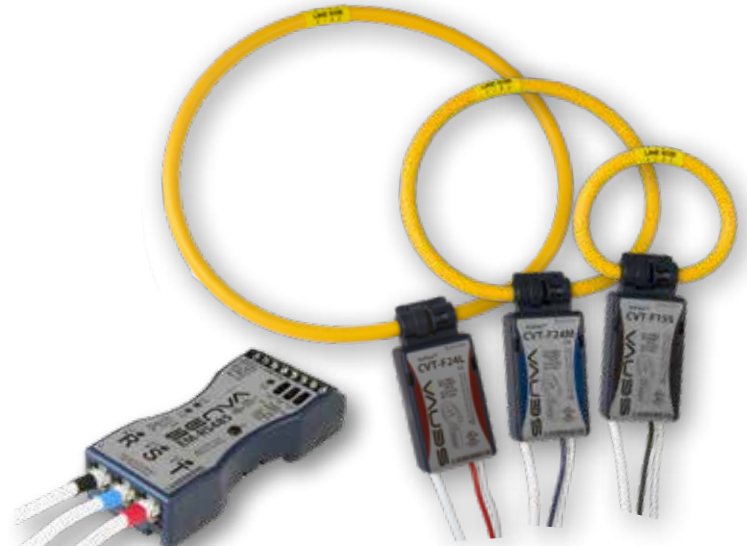
PRU1SM



# The ultimate energy meter from Senva

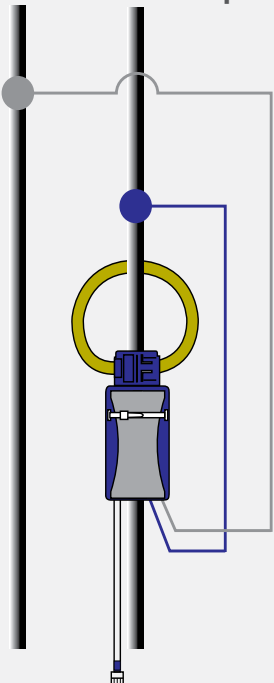
**Get in. Get out. Get data.**

We set out to make the easiest to install, most accurate meter. We started with flexible Rogowski CTs because they're compact, lightweight, and split-core for easy installation. But we didn't like their accuracy. So we gave them a brain so they can digitally communicate with our meter. And then it dawned on us you'd appreciate not having high voltage at the meter where you make your digital connections. So we made the voltage connection at the CT itself. Suddenly, we were measuring current and voltage in a current transducer.



**The current/Voltage Transducer™ (CVT™) measures both voltage and current, communicating the data digitally to the meter via plug-in low voltage connections.**

Smart microprocessor enabled 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 and the accuracy is maintained. A big advantage for auditing, since your meter is not size specific.
- Plug and play installation— individual CVTs™ are digitally recognized by the meter base 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



## Intelligent Meter Technology auto-detects and self configures on each installation!

The meter recognizes the CVT™ sensors and then scales itself accordingly. If you're using BACnet or Modbus versions (EM-RS485), it even self-configures its baud rate, eliminating additional configuration steps to provide a full data stream of power variables. Two pulse inputs allows aggregation of additional EM-PULSE meters. With the EM-RS485, the on-board inputs can connect to a variety of pulse output meters (water, gas, steam, etc.) for increased flexibility.

The entire assembly is easily mounted inside the electrical panel. Multiple mounting options including DIN rail adapter, snap-in mounting ears and integrated rare earth magnets to instantly secure on any ferrous enclosure or surface.

Additional features include diagnostics for assistance during installation. User programmable pulse scales, pulse width/alarm options, energy type, balanced load multipliers and PowerPrint power quality alarm.

It all adds up to ease of installation and higher accuracy. Just what you'd expect from Senva.



*The most compact meter ever!  
Simply plug in CVT™ connections  
for easy installation*



*Flexible Rogowski CVT™ sensors are available in four sizes from 9" to 36" in circumference (approximately 2.8" to 11.4" in diameter) and include rating options from 300A to 6000A*

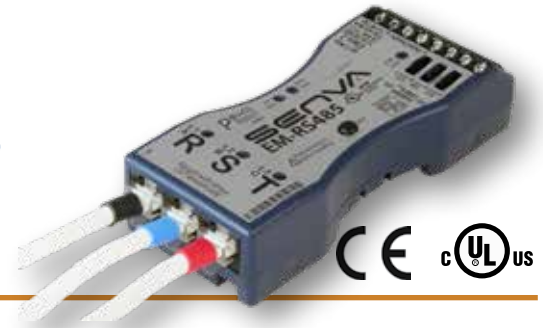


*Flexible split-core CVT™ sensors are easy to install and more accurate than traditional CTs*

*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!

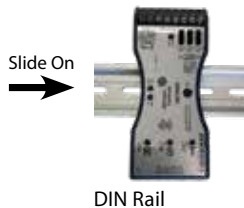
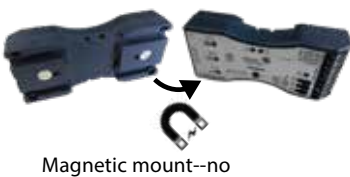
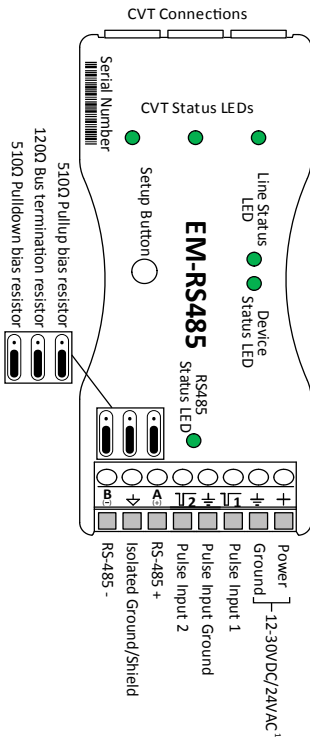
ORDERING

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)

EM BACnet Protocol Guide

www.senvainc.com/emrs485bn



EM Modbus Protocol Guide

www.senvainc.com/emrs485mb



BACnet® is a registered trademark of ASHRAE.

# 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!

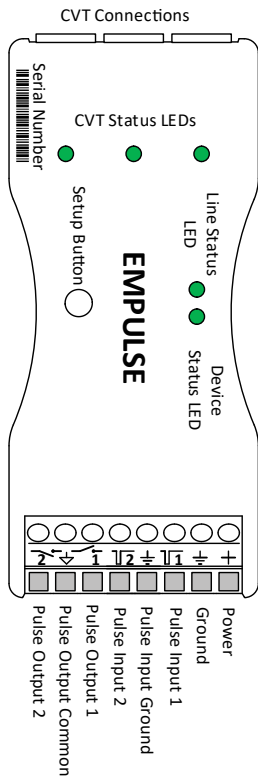
ORDERING

EM-Pulse

CVT Current/voltage transducers

See page 32

TERMINATIONS

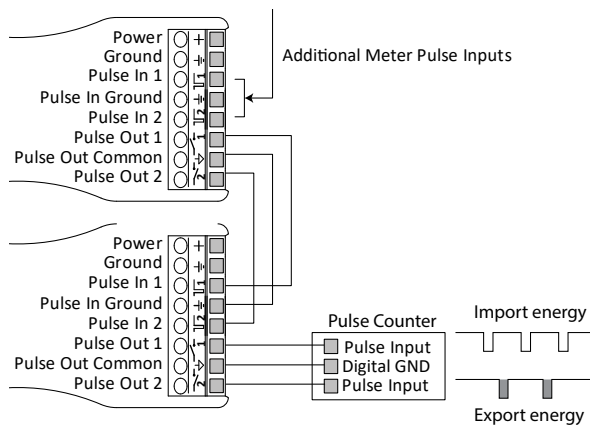


SPECIFICATIONS

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.



# 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



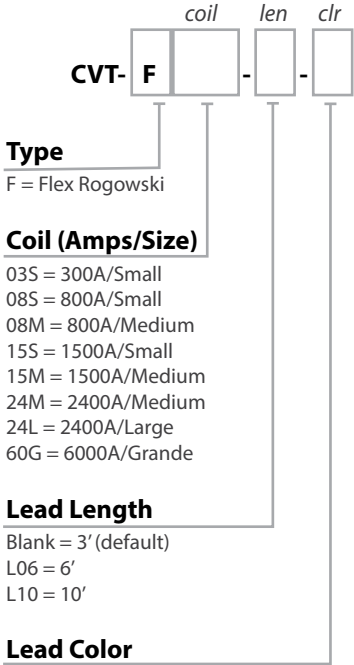
### Split-core Rogowski CVT™

- 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'

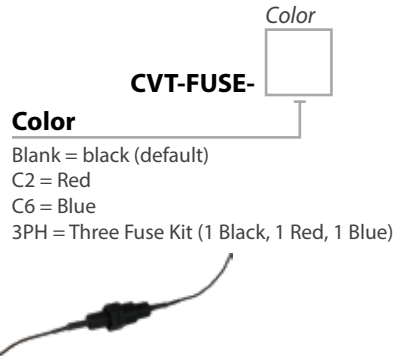
**Lead Color**

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

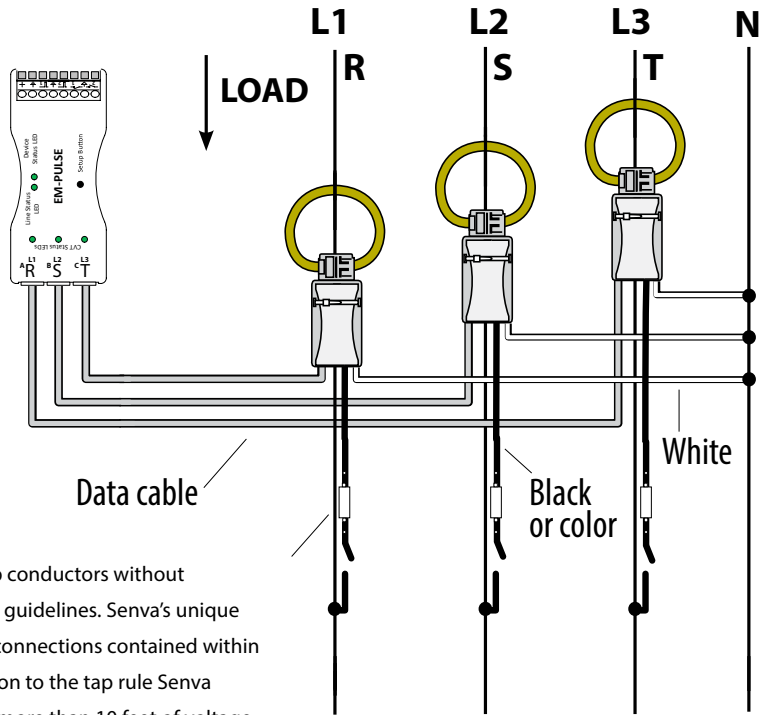
SPECIFICATIONS

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.

BACnet® is a registered trademark of ASHRAE.

# 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, Rogowski coils and analog, discrete and pulse inputs.

### Easily Access Data

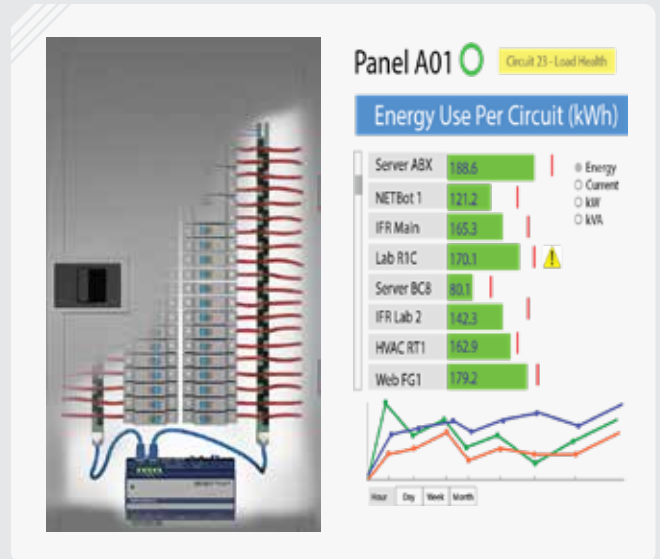
- On-board web server provides immediate access to real-time and logged data
- Integrated data logging supports up to 64 GB storage; remotely accessible or manually exportable
- Available Cloud monitoring service
- Customizable alarming features

### 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

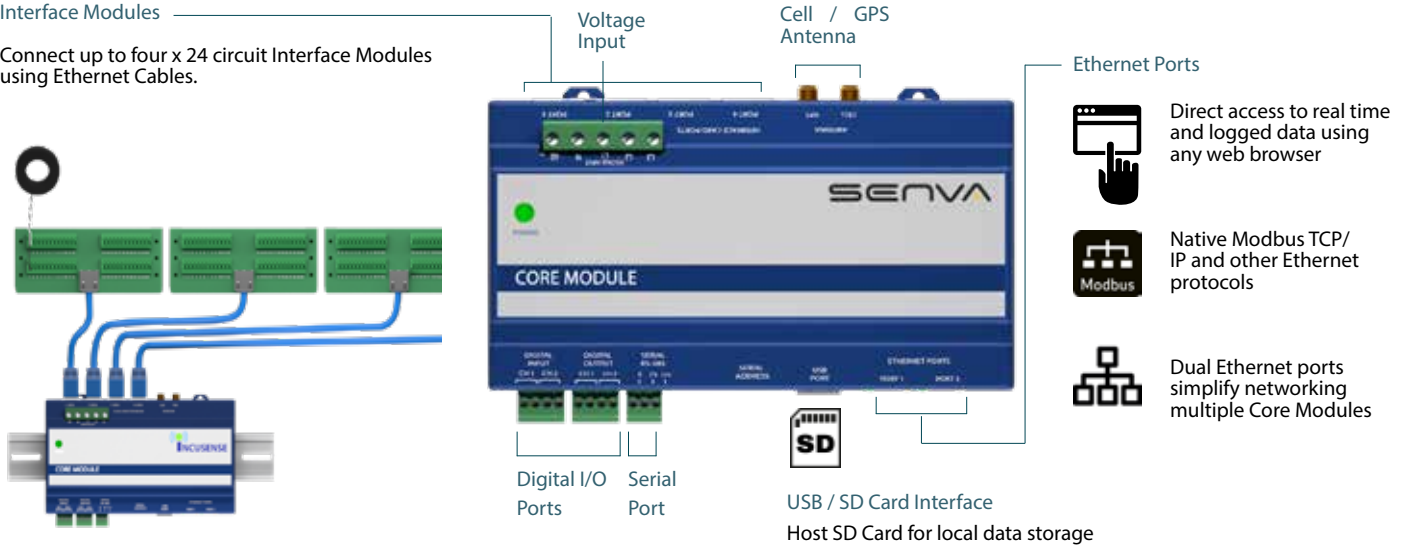


MODULAR SYSTEM DESIGN

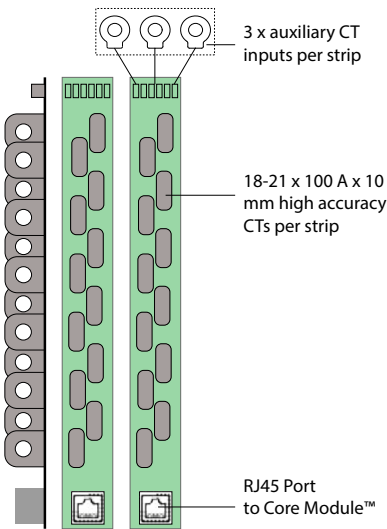
The versatile and compact Core Module™ functions as a Gateway that can host up to four Interface Modules monitoring a total of 96 circuits. Interface modules connect via Ethernet cables and are available for new and retrofit branch circuit and multi-circuit applications.

Interface Modules

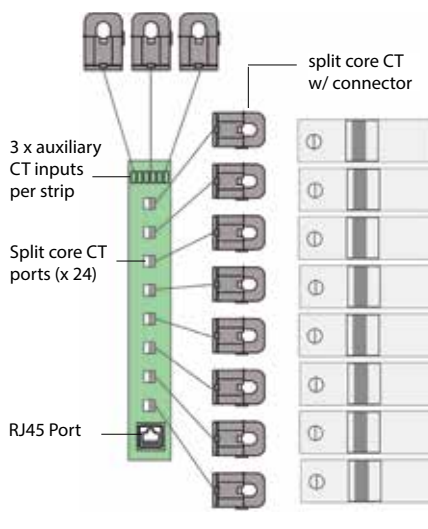
Connect up to four x 24 circuit Interface Modules using Ethernet Cables.



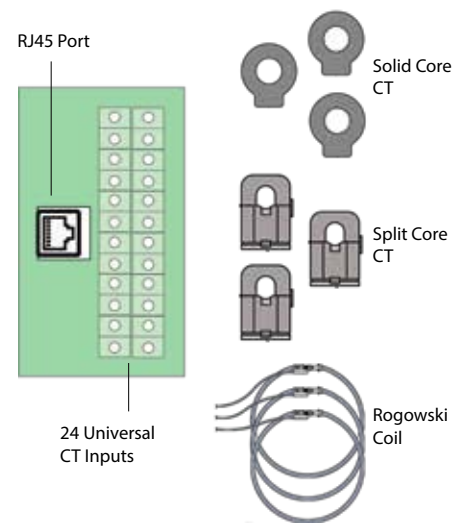
SOLID CORE PANEL CT STRIP



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 as well as available native Rogowski coil version available
- Optional presence of voltage sensing for breaker status per circuit

Consult Interface Module data sheet for specifications and additional modules

## CONNECTIVITY SOLUTIONS

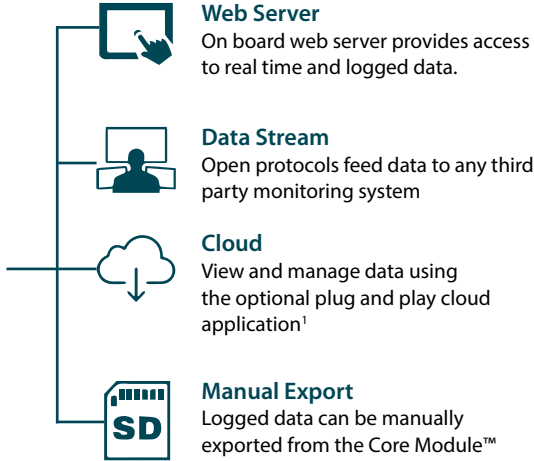
Serva makes it easier than ever to connect and access data in a user friendly format with a range of connectivity solutions including low cost CAT1 cellular links.

### Connectivity Options

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



### 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

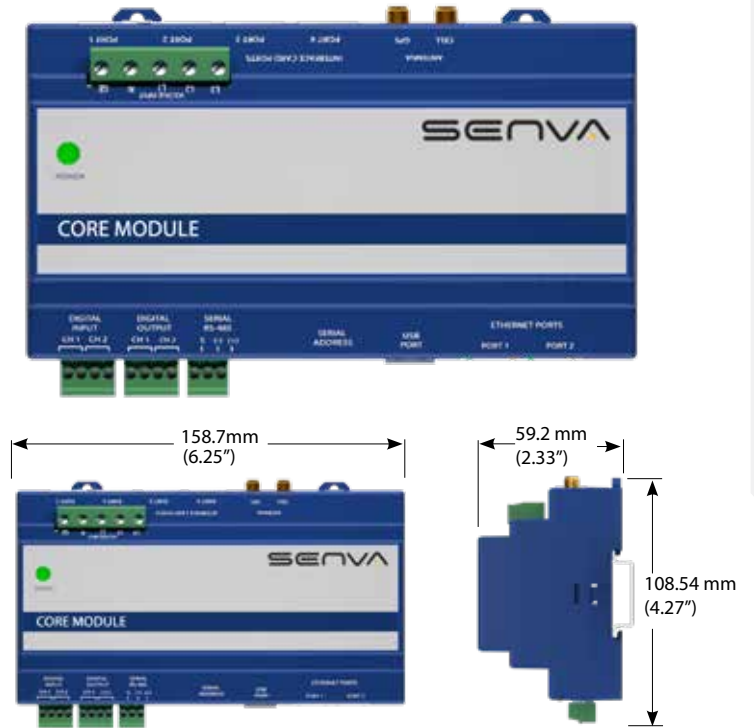


**High-End Residential**  
High end residential automation systems can utilize branch circuit sub-metering to enhance reliability and efficiency

## 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	●

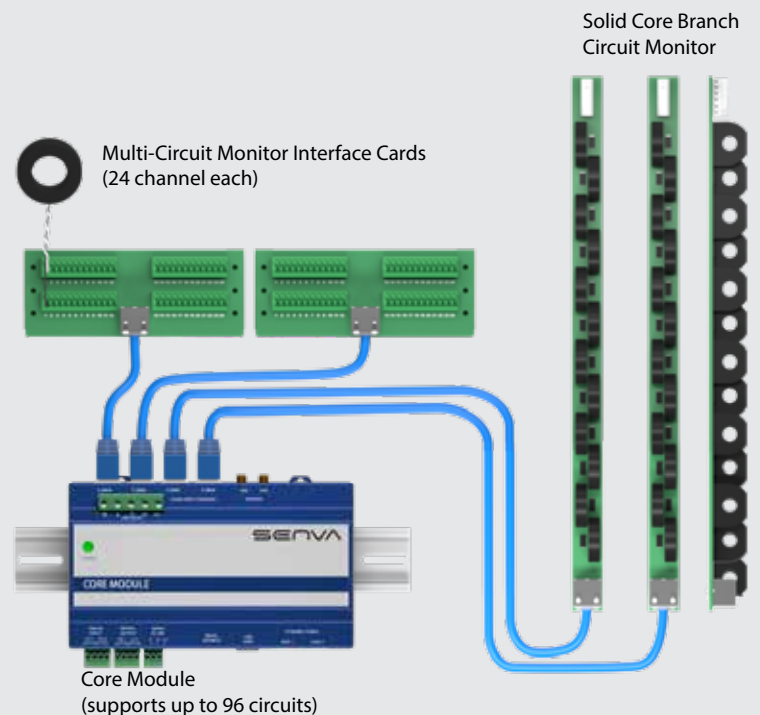


### Installation Overview

#### 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.



## PRODUCT SELECTION GUIDE

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

### Core Module Monitoring Systems

<b>CM01</b>	Standard Core Module monitoring system; expandable up to 96 channels
<b>CM02</b>	Enhanced Core Module monitoring with enhanced firmware; expandable up to 96 channels

### 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 (21 CTs + 3 auxiliary CT inputs per strip) and Core Module monitor

<b>EMMCBCS42-A</b>	42 pole system with 2 x 21 x 100 A solid core CT strips with 0.75" C-C spacing; includes presence of voltage detection
<b>EMMCBCS84-A</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

#### 18mm c-c CT strips (18 CTs + 3 auxiliary CT inputs per strip) and Core Module monitor

<b>EMMCBCS-36A</b>	36 pole system with 2 x 18 x 100 A solid core CT strips with 0.75" C-C spacing; includes presence of voltage detection
<b>EMMCBCS-72A</b>	72 pole system with 4 x 18 x 100 A solid core CT strips with 0.75" C-C spacing; includes presence of voltage detection

### 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 Core Module accommodates up to four interface modules (96 circuits)

<b>EMMBCC-24</b>	24 channel split core CT monitoring system with 24 split core CTs
<b>EMMBCC-48</b>	48 channel split core CT monitoring system with 48 split core CTs
<b>EMMBCC-72</b>	72 channel split core CT monitoring system with 72 split core CTs + 12 aux. CT inputs
<b>EMMBCC-96</b>	96 channel split core CT monitoring system with 96 split core CTs
<b>CT10</b>	24 channel expansion Panelboard CT Interface Module ; Core Modules can accommodate up to 4 x 24 modules

### 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. All iMCM systems include the Core Module as well as CT Interface Card specified.

<b>EMMBC-6C</b>	6 Channel Multi-Circuit Monitoring System (single CT Interface Card)
<b>EMMBC-12C</b>	12 Channel Multi-Circuit Monitoring System (single CT Interface Card)
<b>EMMBC-24C</b>	24 Channel Multi-Circuit Monitoring System (single CT Interface Card)
<b>EMMBC-48C</b>	48 Channel Multi-Circuit Monitoring System (two CT Interface Cards)
<b>EMMBC-72C</b>	72 Channel Multi-Circuit Monitoring System (three CT Interface Cards)
<b>EMMBC-96C</b>	96 Channel Multi-Circuit Monitoring System (four CT Interface Cards)
<b>BCC-24</b>	24 Channel Expansion Card (each Core Module can accommodate up to four x 24 channel cards)

### Wireless Communication Connectivity Options

<b>BCCM</b>	Embedded CATM1 cellular modem; must specify region; connectivity plans purchased separately
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### Current Transformers and Rogowski Coils

see Current Transformer selection guide for details

Current Transformer Range: 10-5,000 A; 10mm (3/8") to 254mm (10") diameter window  
 Rogowski Coil Range: 200-5,000 A; 2" to 12" 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

# EM Series Energy Gateway

Energy Meter and Data Logger  
 Supports Modbus, Analog and Pulse Devices  
 BACnet/IP Server available  
 Pre-configured Enclosure  
 Optional Cellular Modem

## DESCRIPTION

The Senva Energy Gateway is a pre-assembled energy meter, data logger, and power supply. Connect to a LAN and push or pull data via HTTPS, XML or FTP, optional 4G LTE cellular modem expands ease of deployment. This plug-and-play solution supports the Senva EM-PULSE or EM-RS485 meter and Current/Voltage Transducer™ (CVTTM). Pre-configured with the Obvius AcquiLite A7810 or AcquiSuite A8810 Data Acquisition Server, the Energy Gateway will collect and log metering data. Additional analog devices can be connected using optional expansion modules. Flexible integration with BACnet/IP network allows logging of downstream Modbus devices to be available as BACnet points in automation systems.

## APPLICATIONS

- Energy management and performance contracting
- Activity-based costing in commercial and industrial facilities
- Measurement and verification projects
- Software dashboards and kiosks
- Enterprise management applications
- Smart grid programs
- Load shedding

## FEATURES

### Modular and Configurable

- One solution for electrical, gas, BTU's, water as needed
- Connect and monitor up to 32 Senva energy meters, plus any analog signal or pulse output device

### UL 508A Certified

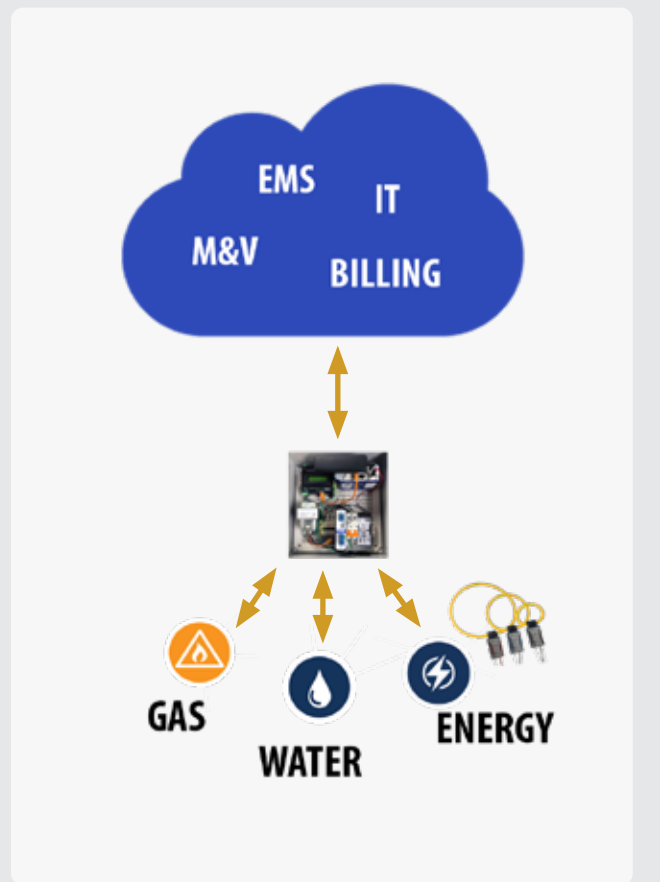
- Energy Gateways manufactured by Senva are UL508A certified which provides safety and confidence that all components used have been carefully selected to meet strict UL safety requirements

### Multiple Communication Capable

- Upload to the cloud or send data to 4 different databases at once, or USB drive to upload on the device itself indefinitely
- Connect to any LAN or Wi-Fi with optional module or cellular modems for easy and quick deployment, all set-up is done at the factory to save on install time
- No software required, use any browser to edit or make changes using laptop or PC

### Fast Installation

- Get fast results for your customers for measurement and verification projects, energy management, continuous commissioning and performance contracts



DATA ACQUISITION SUITES



**AcquiLite A7810**

- Flexible data acquisition server allowing users to collect energy data from up to 4 EM-PULSE meters or other pulse output meters (gas, water, etc.)
- Collects and logs data from connected devices based on user selected intervals
- Pre-configured with one or more EM-PULSE meters for quick startup



**AcquiSuite A8810**

- Flexible data acquisition server allowing users to collect energy data from EM-RS485 meters and environmental sensors
- RS-485 Modbus serial port supports up to 32 external devices (expandable)
- Pre-configured with one or more EM-RS485 meters for quick startup

EXPANSION MODULES



**Flex I/O A8332**

- Add additional devices beyond meters for a complete monitoring package
- 8x user selectable inputs - convert analog, resistive and pulse inputs to Modbus
- Incorporate with AcquiSuite A8810 to provide a cost-effective monitoring solution
- 2x output relays for demand control



**HD Pulse A8911-23**

- Collect data from up to 23 independent pulse inputs
- Convert pulse inputs to Modbus for use with the AcquiSuite A8810

CELLULAR MODEMS



**CDMA, USB Kit**

- Verizon/Sprint cellular modem, USB interface
- Pre-configured to AcquiLite A7810 or AcquiSuite A8810

**GSM/3G, USB Kit**

- AT&T/T-Mobile cellular modem, USB interface
- Pre-configured to AcquiLite A7810 or AcquiSuite A8810



**LTE/4G Advanced Ethernet Based**

- Verizon/Sprint cellular modem, 2-3 LAN ports, Modbus TCP
- Advanced networking, Optional Wi-Fi, VPN support, Firewall, Remote Access
- Pre-configured to AcquiLite A7810 or AcquiSuite A8810

**LTE/4G Advanced Ethernet Based**

- AT&T/T-Mobile cellular modem, 2-3 LAN ports, Modbus TCP
- Advanced networking, Optional Wi-Fi, VPN support, Firewall, Remote Access
- Pre-configured to AcquiLite A7810 or AcquiSuite A8810

# 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 CT's 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 CT's 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 Recognized, CE Compliant, RoHS Compliant



XH-SCT-3000



XH-SCT-2000



XH-SCT-1250



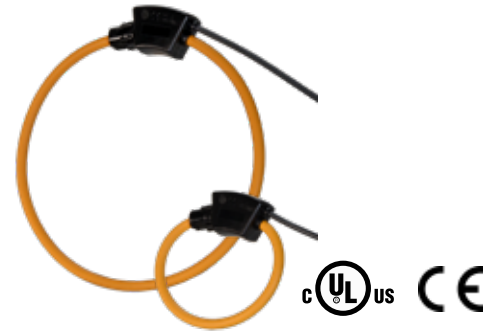
XH-SCT-T16



XH-SCT-T10



## 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

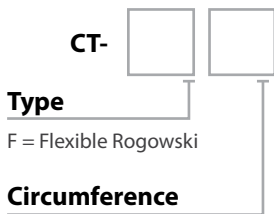
### DESCRIPTION

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



“ *I want to tell you that the new P5 design Universal Pressure Sensor is a homerun!*

*The device is very well thought out. I have looked it over and cannot find anything I would say needs to be improved upon. I like the small package size with all the features of the big bulky DP sensors. I like the fact it can take 24vac. I look for sensors that take the 24vac because I dont like adding 24vdc power supplies at VAV boxes just to power a sensor. Now I can use the same power as the VAV and move on.*

*The multiple outputs from the sensor makes it easy for integrating into our system. If we have a long cable pull to this sensor we will use the 4-20mA signal. If it a relatively short run we will use the 0-5v signal. Our new control line will accept the 0-10v .*

*The scale factor of .10 thru 5 inwc makes it very nice for us to use one sensor for all applications. Fewer part numbers and easier install with less wiring mistakes.*

*The design of the pick up probe and how it works seamlessly with the sensor body is very nice! Not only is the design radically different when compared to the competitors, but the cost & warranty is too..*

”

Actual customer feedback

## P4/P5 Series

**NEW!**



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



NEW!



## P6 Universal Pressure

Our top the line pressure transducer featuring 10 selectable sub-ranges for precision readings, WC" and Pascal LCD display.

Versatile output and NEMA 4 duct or port to hold up in just about any environment.

NEW!

## P5 Universal Pressure

This new sensor does it all! Duct, wall, din mount with an interchangeable probe.

Selectable ranges, Dual 0-5/10VDC and 4-20mA outputs (loop & 3-wire), zero push-button, and LED for ease of use and locating.

NEW!

## P4 Value Pressure

Same great package as the P5, but more economical for OEMS or those who always know what output and ranges they want.

Order per range and output type.

# 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)



**NEW!**



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

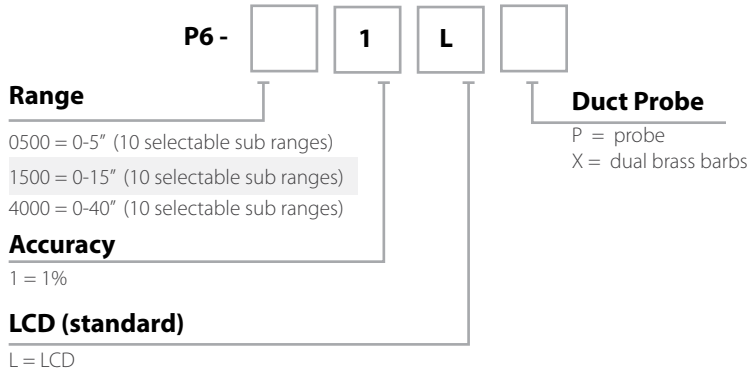


Ten field selectable ranges for high resolution



7 year limited warranty

ORDERING

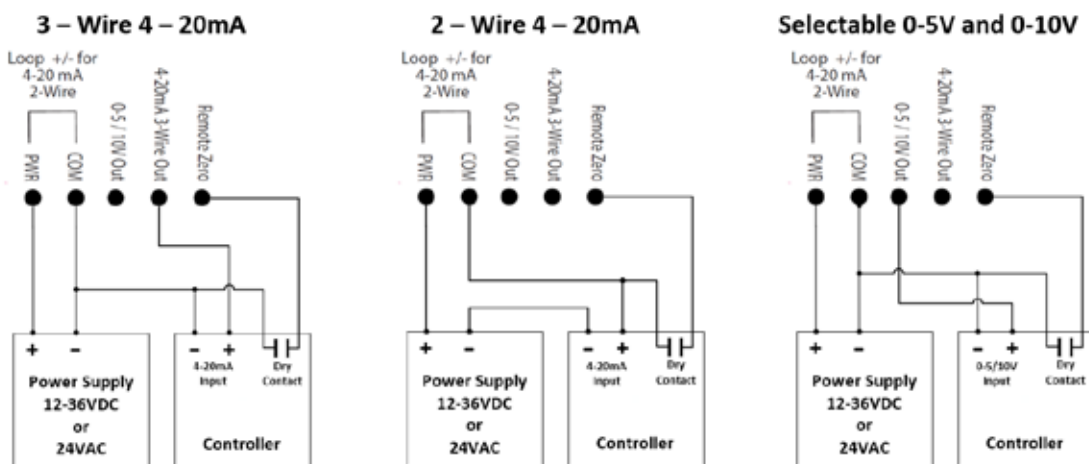


SPECIFICATIONS

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 (selectable sub ranges)	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) 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 Compensated range	-4 to 185F (-20 to 85C) 32 to 122F (0 to 50C)
Media compatibility		Dry, oil-free air, N2
Sensor Type		MEMS silicon piezoresistive; precision calibrated
Sensor Performance	Accuracy	±0.25% BFSL (Best fit straight line) ±1.0% of selected range (combined linearity and hysteresis) 0.025%/C, (Relative to 25C, 0-50C)
	Zero Drift (1 year)	1% max
	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

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

TYPICAL 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 pressure. 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

- 0500 = 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.

Additional Remote probe

RP-6 Remote/duct probe, 6"

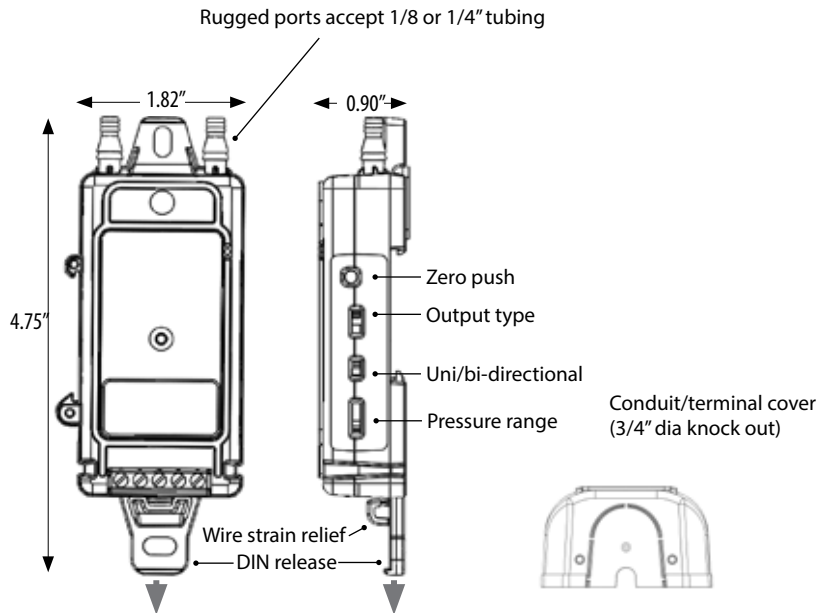
- RP-6 remote probe with integrated dampener for accurate measurements.
- Accepts both 1/8" and 1/4" tubing.
- Note: One probe is standard with product



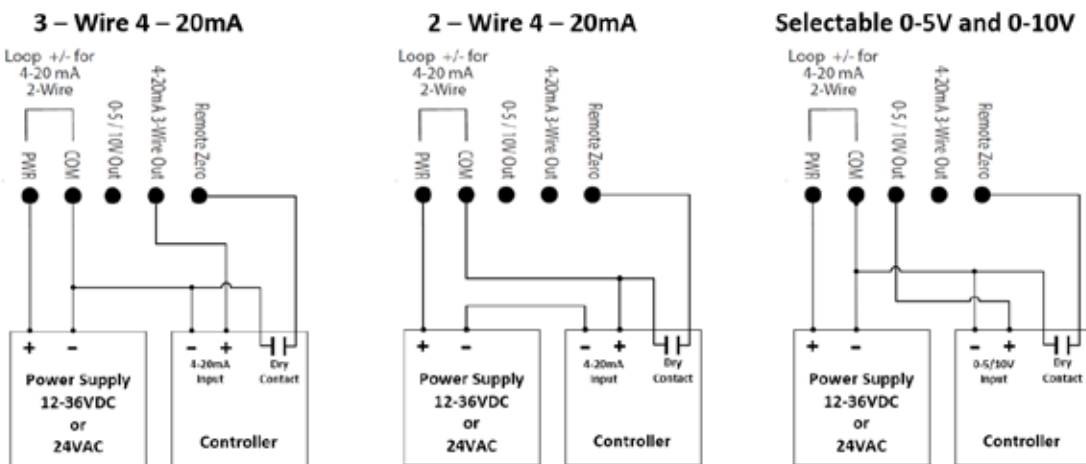
SPECIFICATIONS

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	P5-0500	0-5" (Selectable 0.1, 0.25, 2.5, 5.0" WC)
	P5-1000	0-10" (selectable 1.0, 2.5, 5.0, 10" WC)
	P5-2500	0-25" (selectable 5.0, 10, 15, 25" WC)
	P5-1250Pa	0-1250 Pa (selectable 25, 50, 625, 1250 Pa)
	P5-2500Pa	0-2500 Pa (selectable 250, 625, 1250, 2500 Pa)
Operating Temperature	Operating range	-4 to 185F (-20 to 85C)
	Compensated range	32 to 122F (0 to 50C)
Media compatibility		Dry, oil-free air, N2
Sensor Type		MEMS silicon piezoresistive; precision calibrated
Sensor Performance	Accuracy	±0.25% BFSL (Best fit straight line)
		±1.0% of selected range (combined linearity and hysteresis)
	Zero Drift (1 year)	1% max
	Auto-zero input	Push-button and contact closure
Agency	Compliance	CE, RoHS

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



TYPICAL WIRING



## P4 Series

# Value Pressure Sensor

Range and output specific models ranging from 0-0.1 to 0-25"  
 Optional pressure probe adapts for duct or remote mounting  
 Zero push button and contact closure



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

**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.

### APPLICATIONS

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

### FEATURES

#### Time and space saving installation for field and OEM applications

- 0-5VDC/10VDC or 4-20 mA loop powered output options
- Address duct, filter, and remote probe mounting with a single unit with RP-6 probe addition
- Remote probe mounting accepts both 1/4" and 3/8" ID hose
- Non-position sensitive for easy placement
- DIN mount - forward for LCD panel applications
- Side DIN mount to maximize panel space
- Conduit cover for 3/8" flex connectors

#### LED for status indication and location in duct work

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



7 year limited warranty



*Conduit ready.*



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



ORDERING



Fixed Range\*\*

- 0010 = 0-0.10" w.c.
- 0025 = 0-0.25" w.c.
- 0050 = 0-0.50" w.c.
- 0100 = 0-1.0" w.c.
- 0250 = 0-2.5" w.c.
- 0500 = 0-5" w.c.
- 1000 = 0-10" w.c.
- 2500 = 0-25" w.c.
- 1250Pa = 0-1250 Pa
- 2500Pa = 0-2500 Pa
- 6250Pa = 0-6250 Pa

Output

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

Uni or Bi-directional

- U = Uni-directional
- B = Bi-directional

Accuracy

1 = 1% of selected range

Display

- L = LCD
- X = No Display

Duct Probe

- P = Duct Probe
- X = No Probe

Example part number P4-0500-CU1LP is a 4-20mA (2-wire), uni-directional 0-5" WC sensor with LCD display and Duct Probe.

\*\*Other Fixed Ranges Available Upon Request, Please Consult Factory

Options

- RP-6 Remote/duct probe, 6"
- CC-1 Replacement Conduit/Terminal Cover
- RP-6 remote probe with integrated snubber for accurate measurements.
- Accepts both 1/8" and 1/4" tubing.
- CC-1 conduit cover has a 3/4" diameter knockout

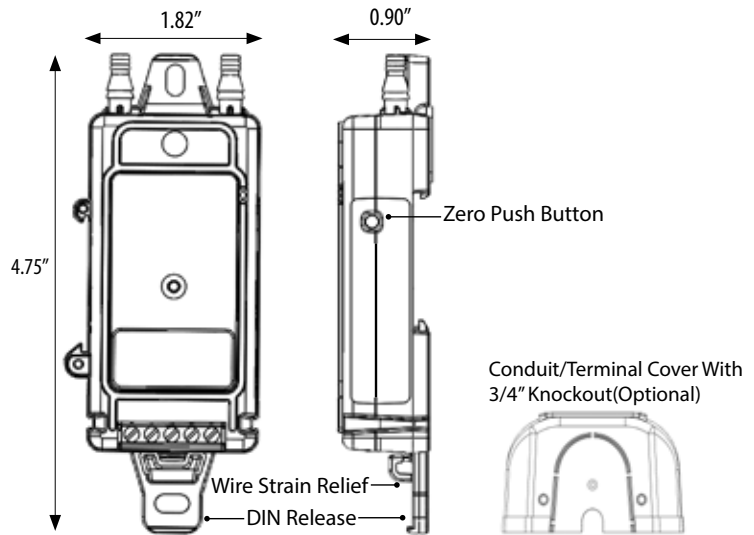


Integrated dampener for better readings

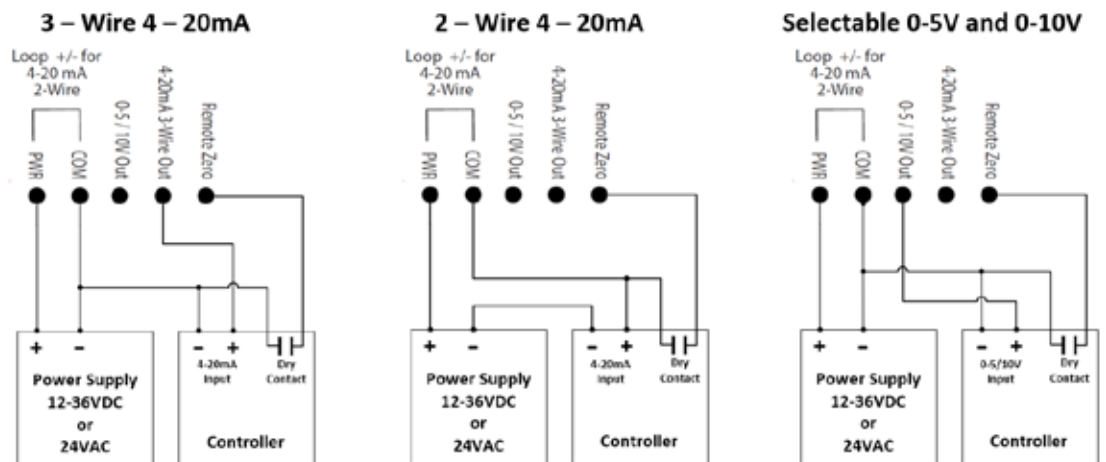
SPECIFICATIONS

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 Ranged Models(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 185F (-20 to 85°C) Compensated range 32 to 122F (0 to 50°C)
Media compatibility	Dry, oil-free air, N2
Sensor Type	MEMS silicon piezoresistive; precision calibrated
Sensor Performance	Accuracy (1%) ±0.25% BFSL (Best fit straight line @ 70°F) ±1.0% of selected range (total error band)
	Zero Drift (1 year) 1% max
	Auto-zero input Push-button and contact closure
Agency	Compliance CE, RoHS

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



TYPICAL WIRING



# Remote Cable Mounted Sensors

## Wet-Wet Differential Pressure

- Prefabricated cables design
- 0 to 10~500 PSID
- Revolutionary design eliminates plumbing
- LCD display (PSID or kPa jumper selectable)
- Dual 0-5/10VDC and 4-20mA outputs



### DESCRIPTION

The PW Cable Wet-Wet series remote sensors are installed directly into the pipe and electrical connection is made between the PWS remote sensors and the PW transmitter via cables. This dramatically reduces labor cost by eliminating plumbing/piping to a traditional transducer. Startup time is reduced since purging air out of the lines is not necessary. Traditional plumbed bypass assemblies are no longer required. Choose between the PW10 and PW20 model based on your anticipated PSID range.

### APPLICATIONS

- Ideal for monitoring pumps and load differential pressures in HVAC systems and processes where local indication is needed.
- Process control systems
- Flow measurement of various gases or liquids
- Liquid level measurement of pressurized vessels

### FEATURES

#### Versatile Universal Transmitter

- Three selectable PSID ranges per sensing element
- Low and standard PSID range transmitter models
- 500 PSIG is ideal for high rise applications
- User friendly LCD displays in PSID or kPa

#### Jumper selectable features for easy installation

- Absolute mode outputs absolute value of difference
- Port swap corrects plumbing errors
- Fast/slow to select desired response time
- Uni/bi directional
- Display units in PSI/kPa
- Test mode—forces full-scale output
- Over range icon flashes if differential pressure is over-range, alerting technician to move range switch to next higher dp setting and rescale panel
- Switch selectable outputs: 2-wire 4-20mA, 3-wire 0-5V or 0-10V

#### High Reliability

- Industry's only standard built-in t-shaped snubbers protect sensing elements from water hammer damage
- MEMS sensor technology

#### Snap on deutsch sensor connection

- Allows for mounting sensor and quick connection of wire later
- Eliminates wire twisting when tightening sensors in pipe fitting

#### Save time and money--pull wires, not pipe!

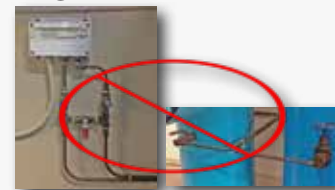


Pre-wired leads for fast snap connection to sensors



Revolutionary design eliminates costly field plumbing. Simply run wires to sensors instead of costly plumbing! Also eliminates the need for costly bypass assemblies.

#### Don't waste time and money on plumbing like this ever again!



Cables are prefabricated and snap onto sensors with industrial deutsch connectors. This eliminates wire twisting when tightening sensors. IP65 rated for outdoor use when

ORDERING

**Ordering sensors:** Order elements based on expected maximum PSIG. Order quantity of (2) PWSxxx sensors of same pressure range per (1) PW transmitter. The PW cables are prefabricated and cut to custom lengths at the factory.

**UNIVERSAL TRANSMITTER: PW**

**Transmitter Ranges**

10 = Low PSID selectable ranges  
20 = Standard PSID selectable ranges

**Sensor Cable Length (feet)**

A = 3'    E = 20'    I = 40'    M = 100'  
B = 6'    F = 25'    J = 45"  
C = 9'    G = 30'    K = 50'  
D = 15'    H = 35'    L = 75'

**Sensor Cable Type**

A = Armored plenum cable    Blank = Standard plenum cable

**REMOTE SENSORS: PWS**

**Element Number**

Element Number	Element Range	PW10 Selectable Ranges	PW20 Selectable Ranges
050	50 PSI	5/10/25 PSID	10/25/50 PSID
100	100 PSIG	10/20/40 PSID	50/75/100 PSID
250	250 PSIG	25/50/100 PSID	75/150/250 PSID
500	500 PSIG	50/100/150 PSID	100/250/500 PSID

**PRESSURE SENSOR SERVICE VALVE: PWBV**

 Optional service valve PWBV for live sensor swap

SPECIFICATIONS

Power Supply	Voltage output mode 0-5V	12-30VDC/24VAC <sup>(1)</sup> , 20mA max.		
	Voltage output mode 0-10V	15-30VDC/24VAC required for 10V full scale output		
	Current (4-20 mA) output mode	12-30VDC, 20mA max.		
Output type	Switch selectable	3-wire 0-5/10VDC and 2-wire 4-20mA		
	Model PWS050	50 PSIG (Select 5/10/25 or 10/25/50 PSID Based on PW Model)		
	Model PWS100	100 PSIG (Select 10/20/40 or 50/75/100 PSID based on PW Model)		
Pressure Ranges	Model PWS250	250 PSIG (Select 25/50/100 or 75/150/250 PSID based on PW Model)		
	Model PWS500	500 PSIG (Select 50/100/150 or 100/250/500 PSID based on PW Model)		
	Operating Temperature	Transmitter	32 to 140F (0-60°C)	
Media compatibility	Type	Water; other 17-4 SS compatible media		
	Media Temperature	-40 to 248°F (-40-120°C)		
Zero Adjustment	Automatic	Push-button, terminal block switch input, Push button for 5-seconds to re-zero. Hold for 10-seconds to restore factory settings		
Transmitter Performance <sup>(2)</sup>	PW10 Accuracy	Range	A	B/C
	PW20 Accuracy	Range	A	B/C
Sensor Type	Micro-machined silicon strain gauge	All PSIG Elements	±4% FS	±2% FS
	Accuracy	All PSIG Elements	±2% FS	±1% FS
	Zero Offset	< ±0.25% BFSL		
	Span Tolerance	< ±1%		
	Stability (1 Year)	±0.25%FS, typ		
	Overrange Protection	2X Rated Pressure		
	Burst Pressure	5X or 60,000 psi (whichever is less)		
	Pressure Cycles	> 100 Million		
	Compensated Range	0 to 60°C (30 to 140°F)		
	Temperature Compensation	Zero, <±1% of FS		
	Shock	Span, <±1% of FS		
	Vibration	100G, 11 msec, 1/2 sine		
	EMI/RFI Protection	10G peak, 20 to 2000 Hz.		
Enclosure, PW Transmitter	Construction	Yes		
	Sealing	Powdered coated steel		
Enclosure, PWS (xxx) Sensor	Construction	IP65 (when installed with water-tight fittings)		
	Sealing	Stainless Steel 316L 1/4" MNPT, Deutsch DT series connector		
Enclosure, PWBV Service Valve	Construction	IP65 (when installed with armored cable option)		
	Agency	Chrome-plated brass, 1/4" NPT Female x Male		
Agency	Compliance	CE, RoHS		

(1) One side of transformer secondary is connected to signal common. Dedicated transformer is recommended.  
(2) FS is defined as the full scale of the selected range in bi-directional mode.

# Remote Conduit Mounted Sensors

## Wet-Wet Differential Pressure

- Conduit adapter design
- 0 to 10~500 PSID
- Revolutionary design eliminates plumbing
- LCD display (PSID or kPa jumper selectable)
- Dual 0-5/10VDC and 4-20mA outputs



### DESCRIPTION

The PW Conduit Wet-Wet series remote sensors are installed directly into the pipe and electrical connection is made between the PWC remote sensors and PW transmitter via 4-conductor shielded cable run through conduit. This dramatically reduces labor cost by eliminating plumbing/piping to a traditional transducer. Startup time is reduced since purging air out of the lines is not necessary. Traditional plumbed bypass assemblies are no longer required. Choose between the PW10 and PW20 model based on your anticipated PSID range.

### APPLICATIONS

- Ideal for monitoring pumps and load differential pressures in HVAC systems and processes where local indication is needed.
- Process control systems
- Flow measurement of various gases or liquids

### FEATURES

#### Conduit ports on transmitter and elements

- Run conduit and 4-conductor shielded cable from transmitter to elements to wire in the field
- Eliminates costly plumbing and by-pass manifolds

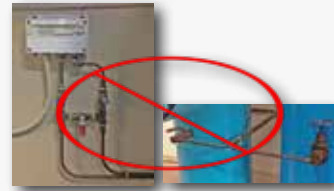
#### Versatile Universal Transmitter

- Three selectable PSID ranges per sensing element
- Low and standard PSID range transmitter models
- 500 PSIG is ideal for high rise applications
- User friendly LCD displays in PSID or kPa

#### Jumper selectable features for easy installation

- Absolute mode outputs absolute value of difference
- Port swap corrects plumbing errors
- Fast/slow to select desired response time
- Uni/bi directional
- Test mode—forces full-scale output
- Over range icon flashes if differential pressure is over-range, alerting technician to move range switch to next higher dp setting and rescale panel
- Switch selectable outputs: 2-wire 4-20mA, 3-wire 0-5V or 0-10V

**Don't waste time and money on plumbing like this ever again!**



*Revolutionary design eliminates costly field plumbing. Simply run wires to sensors instead of costly plumbing! Also eliminates the need for costly bypass assemblies.*

#### High Reliability

- Industry's only standard built-in t-shaped snubbers protect sensing elements from water hammer damage
- MEMS sensor technology

ORDERING

**Ordering sensors:** *Order elements based on expected maximum PSIG. Order quantity of (2) PWCxxx sensors of same pressure range per (1) PW transmitter. Conduit, conduit connectors and 4-conductor shielded cable not provided.*

**UNIVERSAL TRANSMITTER: PW**

**Transmitter Ranges**

10 = Low PSID selectable ranges  
20 = Standard PSID selectable ranges

**REMOTE SENSORS: PWC**

**Element Number**

Element Number	Element Range	PW10 Selectable Ranges	PW20 Selectable Ranges
050	50 PSIG	5/10/25 PSID	10/25/50 PSID
100	100 PSIG	10/20/40 PSID	50/75/100 PSID
250	250 PSIG	25/50/100 PSID	75/150/250 PSID
500	500 PSIG	50/100/150 PSID	100/250/500 PSID

**PRESSURE SENSOR SERVICE VALVE: PWBV**



Optional service valve PWBV for live sensor swap. Order 1 PWBV service valve for each PWCxxx element.

SPECIFICATIONS

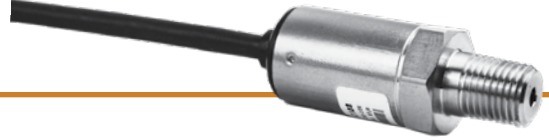
Power Supply	Voltage output mode 0-5V	12-30VDC/24VAC <sup>(1)</sup> , 20mA max.		
	Voltage output mode 0-10V	15-30VDC/24VAC required for 10V full scale output		
	Current (4-20 mA) output mode	12-30VDC, 20mA max.		
Output type	Switch selectable	3-wire 0-5/10VDC and 2-wire 4-20mA		
	Model PWS050	50 PSIG (Select 5/10/25 or 10/25/50 PSID Based on PW Model)		
Pressure Ranges	Model PWS100	100 PSIG (Select 10/20/40 or 50/75/100 PSID based on PW Model)		
	Model PWS250	250 PSIG (Select 25/50/100 or 75/150/250 PSID based on PW Model)		
	Model PWS500	500 PSIG (Select 50/100/150 or 100/250/500 PSID based on PW Model)		
Operating Temperature	Transmitter	32 to 140F (0-60°C)		
	Type	Water; other 17-4 SS compatible media		
Media compatibility	Media Temperature	-40 to 248°F (-40-120°C)		
	Automatic	Push-button, terminal block switch input, Push button for 5-seconds to re-zero. Hold for 10-seconds to restore factory settings		
Zero Adjustment	PW10 Accuracy	Range	A	B/C
	All PSIG Elements	±4% FS	±2% FS	
Transmitter Performance <sup>(2)</sup>	PW20 Accuracy	Range	A	B/C
	All PSIG Elements	±2% FS	±1% FS	
Sensor Type	Micro-machined silicon strain gauge			
	Accuracy	< ±0.25% BFSL		
	Zero Offset	< ±1%		
	Span Tolerance	< ±1%		
	Stability (1 Year)	±0.25%FS, typ		
	Overrange Protection	2X Rated Pressure		
	Burst Pressure	5X or 60,000 psi (whichever is less)		
	Pressure Cycles	> 100 Million		
	Compensated Range	0 to 60°C (30 to 140°F)		
	Temperature Compensation	Zero, <±1% of FS Span, <±1% of FS		
Sensor Performance	Shock	100G, 11 msec, 1/2 sine		
	Vibration	10G peak, 20 to 2000 Hz.		
	EMI/RFI Protection	Yes		
	Construction	Powdered coated steel		
Enclosure, PW Transmitter	Sealing	IP65 (when installed with water-tight fittings)		
	Construction	Stainless Steel 316L 1/4" MNPT, Deutsch DT series connector		
Enclosure, PWS (xxx) Sensor	Sealing	IP65 (when installed with armored cable option)		
	Compliance	CE, RoHS		

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

(2) FS is defined as the full scale of the selected range in bi-directional mode.

## 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. The MEMS technology gives the PG series flexibility to be used in virtually any OEM application. 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
- 72" wire leads; 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
- UL508 Certified
- No oil, welds or internal o-rings

#### 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

Output Type

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

ELECTRICAL DATA

Output	4-20mA	0-5VDC
Power Supply	10-28VDC	10-28VDC
Output Load	250-500 Ohms	5K Ohms min.
Current Consumption	20mA, typical	<10mA
Bandwidth	(-3dB): DC to 250 Hz	(-3dB): DC to 1kHz
Zero Offset	<±1% of FS	<±1% of FS
Span Tolerance	<±1.5% of FS	<±1.5% of FS

ENVIRONMENTAL DATA

Temperature

Operating	-40 to 85°C (-40 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

Shock	EN 60068-2-27
Vibration	EN 60068-2-6, 60068-2-64, and IEC 68-2-32
EMI/RFI Protection	Yes
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 or 60,000 PSI (whichever is less)
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



## The new IAQ standard

### CO<sub>2</sub>, Humidity, and Temperature in a single compact unit

Senva has packed a high accuracy NDIR, integrated humidity IC, and a full complement of temperature sensing into a stylish housing. Now you can offer a total indoor air quality solution in one easy to install unit.



### Introducing the worlds only slimline CO<sub>2</sub>

This flush mount design fits in any single-gang box and sets the new standard for attractive and functional CO<sub>2</sub> sensing. It's recessed to complement the most demanding architectural standards; it also deters tampering. The CO<sub>2</sub>RL is proof that beauty is more than skin deep.

### Intuitive installation

*Recessed wall mount for great looks and tamper resistance in schools*

Thanks to an Integrated display with push-button menu, it's easy to select your scale to 2000 or 5000 ppm. You can select automatic daily calibration or manual calibration to a known source. There's even a provision to offset the reading. For compatibility, 4-20mA and jumper selectable 0-5V or 0-10V outputs are provided.





Available in wall, duct, and outside air



LCD with menu for easy set-up and parameter sections

**High reliability CO<sub>2</sub>**

Our non-dispersive infrared sensing element (NDIR) offers high performance—accurate to  $\pm 30\text{ppm}$ ,  $\pm 3\%$  of reading to be exact. And thanks to our auto calibration mode, the sensor will adapt to the environment, ensuring effects of long term drift are negligible. Our sensing element has a life expectancy of 15+ years.

# AQW Series CO<sub>2</sub>/Humidity/Temp



Available with analog outputs or protocol for BACnet RS-485  
Integrated set-point relay  
Optional field replaceable NDIR CO<sub>2</sub> and RH elements

## DESCRIPTION

The AQW series design allows customization for a sensor that meets project requirements for monitoring temperature, CO<sub>2</sub> and relative humidity. The sensor can be ordered as stand alone temperature, CO<sub>2</sub>/Temp, RH/Temp or all-in-one CO<sub>2</sub>/RH/Temp with a 0-5/10V analog or BACnet RS485 output. Lower material costs and installation time by combining multiple sensors into a single sensor housing with standard LCD and optional add-on features.

## 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

### Customize to meet project requirements

- Standard LCD and temperature on each device
- Options to add CO<sub>2</sub> and/or RH sensing elements
- Field replaceable elements for RH
- Available with 0-5/10V Analog or BACnet protocol communication

### Protocol Version

- BACnet RS-485 ready
- Auto-configuration wizard detects baud rate and MAC address
- Adjustable set-point using button menu or optional 10k slider

### Analog Version

- LCD for easy setup of all parameters (concealment cover included)
- Programmable set-points for complete control
- Provision to offset CO<sub>2</sub> reading
- Optional thermistors, sliders and override button

### High performance NDIR CO<sub>2</sub> element

- Selectable auto-calibration mode returns sensor to baseline values

### 2% RH field replaceable sensor

- On-board temperature compensation for RH eliminates temp coefficient errors achieving excellent measurement accuracy, high repeatability and offset stability.
- State of the art testing facilities. 8-point NIST traceable certification available—consult factory

### Quality

- Industry leading 7-year limited warranty/ 2-year RH element, 3-year CO<sub>2</sub> element limited warranties

## ORDERING INFORMATION

	Output	CO <sub>2</sub>	RH	SLD	BTN	RTD/TH	Color										
<b>AQW -</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>										
<b>Output Type</b>	A = Analog (0-5/10V) B = BACnet RS-485																
<b>CO<sub>2</sub> Sensor</b>	A = None B = CO <sub>2</sub> Sensor																
<b>RH Sensor</b>	A = None B = 2% RH Sensor																
<b>Set-Point Slider</b>	A = None B = 1k (Not valid w/ BACnet) C = 10k M = 6-26k (Not valid w/ BACnet) T = 200-900 Ω (Not valid w/ BACnet)																
<b>Push Button</b>	A = None B = Override Button (Requires thermistor) C = User Push Button																
<b>RTD/Thermistor*</b>	<table border="0"> <tr> <td>A = None</td> <td>G = 10k w/11k</td> </tr> <tr> <td>C = 100Pt (385) RTD</td> <td>H = 3k</td> </tr> <tr> <td>D = 1000Pt (385) RTD</td> <td>I = 2k2</td> </tr> <tr> <td>E = 10k type 2</td> <td>J = 1k8</td> </tr> <tr> <td>F = 10k type 3</td> <td>K = 20k</td> </tr> </table>							A = None	G = 10k w/11k	C = 100Pt (385) RTD	H = 3k	D = 1000Pt (385) RTD	I = 2k2	E = 10k type 2	J = 1k8	F = 10k type 3	K = 20k
A = None	G = 10k w/11k																
C = 100Pt (385) RTD	H = 3k																
D = 1000Pt (385) RTD	I = 2k2																
E = 10k type 2	J = 1k8																
F = 10k type 3	K = 20k																
<b>Color</b>	1 = White 6 = Black																

\*Add-on RTD/Thermistor not readable via BACnet; Temperature output is standard on AQW devices, Add-on RTD/Thermistor is option for Analog.

	Output	CO <sub>2</sub>	RH	SLD	BTN	RTD/TH	Color
<b>Example</b>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>AQW -</b>	<b>B</b>	<b>B</b>	<b>B</b>	<b>A</b>	<b>A</b>	<b>A</b>	<b>1</b>

(AQW sensor with BACnet RS-485, Temp, CO<sub>2</sub>, 2% RH, no set-point slide, no user push button, no RTD/thermistor, white color)

## SPECIFICATIONS

Power Supply		12-30VDC/24VAC <sup>(1)</sup> , 100mA max.
Analog Outputs	Temperature	0--5/10V standard, Scaling 50°F to 95°F (10°C to 35°C); thermistor/RTD values optional
	CO2 and RH	0-5/10V
	Update Rate	Continuous
	Programmable Relay	Solid-state output, 1A @ 30VAC/DC, N.O. Source Selectable: CO2, RH, Temperature
	SPt, Set point, Hi (On)	Sets relay turn-on threshold (800ppm default)
Analog LCD Menu Parameters <sup>(2)</sup>	SPh, Set point, hysteresis (Off)	Sets the relay turn-off hysteresis (100ppm default)
	SCl, Scaling	0-2000ppm or 0-5000ppm (2000ppm default)
	Adj, Adjustment	CO2 Offset adjustment +/-250ppm (0 default)
	CRl, Auto Calibration Period	Off, 7 days, 14 days, 30 days, 60 days (14 days default)
	FL, Displayed Temp Unit	F degrees fahrenheit (default), C degrees celsius
	LUL Analog Output Scale	5v 5.0V full scale, 10v 10.0V full scale (default)
	rUn, Run Mode	Displays temp and optional CO2 and RH
Protocol Output	Protocol	BACnet (Isolated)
	Connection	3-wire RS-485, with isolated ground
	Data Rate	Locally set baud rate up to 115200 (9600, 19200, 28800, 38400, 57600, 76800, 115200)
	Address Range	0-127
Protocol Relay Set-point	Programmable	Solid-state output, 1A @ 30VAC/DC, N.O. Source selectable: CO2, RH, Temperature
CO2	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
	Range	0-2000/5000ppm; Programmable up to 10,000ppm
	Response time	60 seconds to 90% reading
	Sample rate	1s
	Resolution	1 ppm (Screen resolution 50 ppm above 2000 ppm)
Relative Humidity	Type	Digital CMOS
	Accuracy	2% models, +/-2% over 10 to 90%RH range
	Resolution	0.05%RH
	Hysteresis	+/-1%RH
	Temperature coefficient	Compensated on-board
	Response time <sup>(3)</sup>	30s
	Sample rate	3s
	Operating range/Output Scale	0 to 100%RH (non-condensing)
	Long term drift	<0.5%RH per year
	Operating conditions <sup>(4)</sup>	-4 to 140°F (-20 to 60° C) @ RH>90%; -4 to 176°F (-20 to 80° C) @ RH=50%
Temperature (with RH option)	Type	Silicon Bandgap
	Nominal Accuracy	+/-0.3° C (operating range)
	Maximal Accuracy	+/-0.5° C (at 25° C), +/-1.0° C (operating range)
	Resolution	0.01° C
	Repeatability	+/-0.1° C
	Response time <sup>(3)</sup>	30s
	Sample rate	3s
Temperature	Type	NTC Thermistor
	Nominal Accuracy	+/-0.5° C (operating range)
	Maximal Accuracy	+/-1.0° C (at 25° C), +/-2.0° C (operating range)
	Resolution	0.05° C
	Repeatability	+/-0.2° C
	Sample Rate	100 milliseconds
Operating Environment	Temperature	32 to 122°F (0 to 50°C)
	Humidity	0-95% non-condensing
Enclosure	Material	ABS Plastic
	Dimensions	4.85"h x 3.25"w x 1.19"d
Agency	Compliance	CE, RoHS

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

<sup>(2)</sup> Quick Start Menu parameters shown, for additional capabilities see installation manual.

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

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

# AQD Series CO<sub>2</sub>/Humidity/Temp

Available with analog outputs or protocol for BACnet RS-485  
Integrated set-point relay  
Optional field replaceable NDIR CO<sub>2</sub> and RH elements



## DESCRIPTION

The AQD series design allows customization for a sensor that meets project requirements for monitoring temperature, CO<sub>2</sub> and relative humidity. The sensor can be ordered as stand alone temperature, CO<sub>2</sub>/Temp, RH/Temp or all-in-one CO<sub>2</sub>/RH/Temp with a 0-5/10V analog or BACnet RS485 output. Lower material costs and installation time by combining multiple sensors into a single sensor housing with standard LCD and optional add-on features.

## 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

### Customize to meet project requirements

- Standard LCD and temperature on each device
- Options to add CO<sub>2</sub> and/or RH sensing elements
- Field replaceable elements for RH
- Available with 0-5/10V Analog or BACnet protocol communication

### Protocol Version

- BACnet RS-485 ready
- Auto-configuration wizard detects baud rate and MAC address
- Adjustable set-point using button menu or optional 10k slider

### Analog Version

- LCD for easy setup of all parameters (concealment cover included)
- Programmable set-points for complete control
- Provision to offset CO<sub>2</sub> reading
- Optional thermistors, sliders and override button

### High performance NDIR CO<sub>2</sub> element

- Selectable auto-calibration mode returns sensor to baseline values

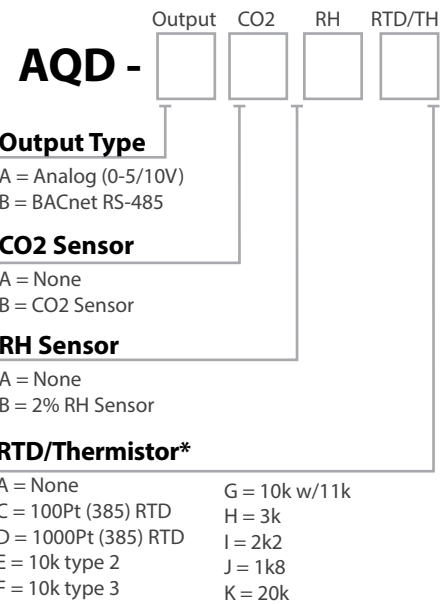
### 2% RH field replaceable sensor

- On-board temperature compensation for RH eliminates temp coefficient errors achieving excellent measurement accuracy, high repeatability and offset stability.
- State of the art testing facilities. 8-point NIST traceable certification available—consult factory

### Quality

- Industry leading 7-year limited warranty/ 2-year RH element, 3-year CO<sub>2</sub> element limited warranties

## ORDERING INFORMATION



\*Add-on RTD/Thermistor not readable via BACnet; Temperature output is standard on AQD devices, Add-on RTD/Thermistor is option for Analog.



BACnet® is a registered trademark of ASHRAE.

## SPECIFICATIONS

Power Supply		12-30VDC/24VAC <sup>(1)</sup> , 100mA max.
Analog Outputs	Temperature (Analog)	0--5/10V standard, Scaling 50°F to 95°F (10°C to 35°C)
	Temperature (Thermistor)	Thermistor/RTD values optional, temperature range dependent on selection
	CO <sub>2</sub> and RH	0-5/10V
	Update Rate	Continuous
	Programmable Relay	Solid-state output, 1A @ 30VAC/DC, N.O. Source Selectable: CO <sub>2</sub> , RH, Temperature
Analog LCD Menu Parameters <sup>(2)</sup>	SPt, Set point, Hi (On)	Sets relay turn-on threshold (800ppm default)
	SPh, Set point, hysteresis (Off)	Sets the relay turn-off hysteresis (100ppm default)
	SCl, Scaling	0-2000ppm or 0-5000ppm (2000ppm default)
	Adj, Adjustment	CO <sub>2</sub> Offset adjustment +/-250ppm (0 default)
	ACL, Auto Calibration Period	Off, 7 days, 14 days, 30 days, 60 days (14 days default)
	FE, Displayed Temp Unit	F degrees fahrenheit (default), C degrees celsius
	LSL Analog Output Scale	5u 5.0V full scale, 10u 10.0V full scale (default)
Protocol Output	rLn, Run Mode	Displays temp and optional CO <sub>2</sub> and RH
	Protocol Connection	BACnet (Isolated) 3-wire RS-485, with isolated ground
	Data Rate	Locally set baud rate up to 115200 (9600, 19200, 28800, 38400, 57600, 76800, 115200)
	Address Range	0-127
Protocol Relay Set-point	Programmable	Solid-state output, 1A @ 30VAC/DC, N.O. Source Selectable: CO <sub>2</sub> , RH, Temperature Source selectable: CO <sub>2</sub> , RH, Temperature
CO <sub>2</sub>	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
	Range	0-2000/5000ppm; Programmable up to 10,000ppm
	Response time	30s
	Sample rate	1s
Relative Humidity	Type	Digital CMOS
	Accuracy	2% models, +/-2% over 10 to 90%RH range
	Resolution	0.05%RH
	Hysteresis	+/-1%RH
	Temperature coefficient	Compensated on-board
	Response time <sup>(3)</sup>	30s
	Sample rate	3s
Operating range/Output Scale	0 to 100%RH (non-condensing)	
Long term drift	<0.5%RH per year	
Operating conditions <sup>(4)</sup>	-4 to 140°F (-20 to 60° C) @ RH>90%; -4 to 176°F (-20 to 80° C) @ RH=50%	
Temperature (analog) (with RH option)	Type	Silicon Bandgap
	Nominal Accuracy	+/-0.3° C (operating range)
	Maximal Accuracy	+/-0.5° C (at 25° C), +/-1.0° C (operating range)
	Resolution	0.01° C
	Repeatability	+/-0.1° C
	Response time <sup>(3)</sup>	30s
	Sample rate	3s
Temperature (analog) (without RH option)	Type	NTC Thermistor
	Nominal Accuracy	+/-0.5° C (operating range)
	Maximal Accuracy	+/-1.0° C (at 25° C), +/-2.0° C (operating range)
	Resolution	0.05° C
	Repeatability	+/-0.2° C
Sample Rate	100 milliseconds	
Operating Environment <sup>(5)</sup>	Temperature	-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)
Agency	Compliance	CE, RoHS

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

<sup>(2)</sup> Quick Start Menu parameters shown, for additional capabilities see installation manual.

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

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

<sup>(5)</sup> Accuracy of CO<sub>2</sub> reading may be reduced at temperatures below 14°F (-10°C).

# AQO Series

## Outside Air CO<sub>2</sub>/RH/T



- Available with analog outputs or protocol for BACnet RS-485
- Integrated set-point relay
- Optional field replaceable NDIR CO<sub>2</sub> and RH elements
- Now available with dual-channel CO<sub>2</sub> element

### DESCRIPTION

The AQO series exceeds project requirements for monitoring outside air conditions for temperature, CO<sub>2</sub> and relative humidity. The AQO series is enclosed in an outdoor rated enclosure to protect electronics from rain, overhead watering systems and harmful UV rays. The sensor can be ordered as stand alone temperature, CO<sub>2</sub>/Temp, RH/Temp or all-in-one CO<sub>2</sub>/RH/Temp with a 0-5/10V analog or BACnet RS485 output. Now available with a dual-channel CO<sub>2</sub> element for more accurate sensing in continuously occupied spaces and greenhouses.

### APPLICATIONS

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

### FEATURES

#### Customize to meet project requirements

- Standard LCD and temperature on each device
- Options to add CO<sub>2</sub> and/or RH sensing elements
- Field replaceable elements for RH
- Available with 0-5/10V Analog or BACnet protocol communication

#### Protocol Version

- BACnet RS-485 ready
- Auto-configuration wizard detects baud rate and MAC address
- Adjustable set-point using button menu or optional 10k slider

#### Analog Version

- LCD for easy setup of all parameters (concealment cover included)
- Programmable set-points for complete control
- Provision to offset CO<sub>2</sub> reading
- Optional thermistors, sliders and override button

#### High performance NDIR CO<sub>2</sub> element

- Selectable auto-calibration mode returns sensor to baseline values
- NEW! Dual-Channel CO<sub>2</sub> element available. Dual channel technology employs a calibrated reference chamber to minimize drift

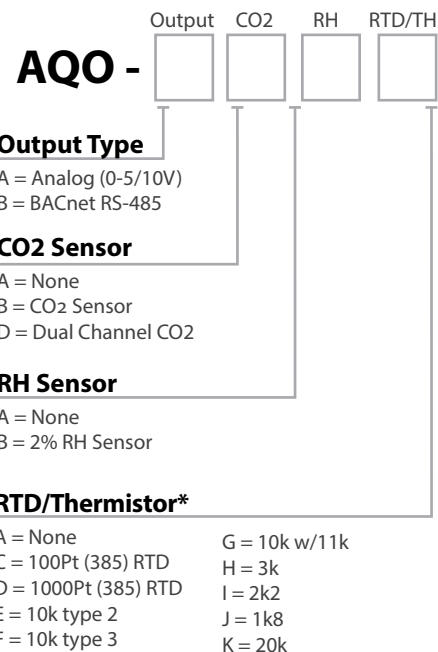
#### 2% RH field replaceable sensor

- On-board temperature compensation for RH eliminates temp coefficient errors achieving excellent measurement accuracy, high repeatability and offset stability.
- State of the art testing facilities. 8-point NIST traceable certification available—consult factory

#### Quality

- Gasketed hinged housing with tamper screw

### ORDERING INFORMATION



\*Add-on RTD/Thermistor not readable via BACnet; Temperature output is standard on AQO devices, Add-on RTD/Thermistor is option for Analog.



BACnet® is a registered trademark of ASHRAE.

SPECIFICATIONS			
Power Supply		12-30VDC/24VAC <sup>(1)</sup> , 100mA max.	
Analog Outputs	Temperature (Analog)	0-5/10V standard, Analog scaling 50°F to 95°F (10°C to 35°C)	
	Temperature (Thermistor)	Thermistor/RTD values optional, temp range varies -40 to 185°F (-40 to 85°C) or better	
	CO2 and RH	0-5/10V	
	Update Rate	Continuous	
Analog LCD Menu Parameters <sup>(2)</sup>	Programmable Relay	Solid-state output, 1A @ 30VAC/DC, N.O. Source Selectable: CO2, RH, Temperature	
	SPt, Set point, Hi (On)	Sets relay turn-on threshold (800ppm default)	
	SPh, Set point, hysteresis (Off)	Sets the relay turn-off hysteresis (100ppm default)	
	SEL, Scaling	0-2000ppm or 0-5000ppm (2000ppm default)	
	Adj, Adjustment	CO2 Offset adjustment +/-250ppm (0 default)	
	CAL, Auto Calibration Period	Off, 7 days, 14 days, 30 days, 60 days (14 days default)	
Protocol Output	FC, Displayed Temp Unit	F degrees fahrenheit (default), C degrees celsius	
	LUL, Analog Output Scale	5V 5.0V full scale, 10V 10.0V full scale (default)	
	Run, Run Mode	Displays temp and optional CO2 and RH	
	Protocol	BACnet (Isolated)	
Protocol Output	Connection	3-wire RS-485, with isolated ground	
	Data Rate	Locally set baud rate up to 115200 (9600, 19200, 28800, 38400, 57600, 76800, 115200)	
	Address Range	0-127	
CO2 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
			±(100ppm+10% of reading) (5000-10000ppm), @ 0-50C
Drift with ABC disabled (Standard)		35ppm/month <sup>(6)</sup>	
Drift with ABC disabled (Dual Channel)		5ppm/month <sup>(6)</sup>	
Range		0-2000/5000ppm; Programmable up to 10,000ppm	
Response time		30s	
Sample rate		1s	
Relative Humidity	Type	Digital CMOS	
	Accuracy	2% models, +/-2% over 10 to 90%RH range	
	Resolution	0.05%RH	
	Hysteresis	+/-1%RH	
	Temperature coefficient	Compensated on-board	
	Response time <sup>(3)</sup>	30s	
	Sample rate	3s	
	Operating range/Output Scale	0 to 100%RH (non-condensing)	
Long term drift	<0.5%RH per year		
Operating conditions <sup>(4)</sup>		-4 to 140°F (-20 to 60° C) @ RH>90%; -4 to 176°F (-20 to 80° C) @ RH=50%	
Temperature (analog) (with RH option)	Type	Silicon Bandgap	
	Nominal Accuracy	+/-0.3° C (operating range)	
	Maximal Accuracy	+/-0.5° C (at 25° C), +/-1.0° C (operating range)	
	Resolution	0.01° C	
	Repeatability	+/-0.1° C	
	Response time <sup>(3)</sup>	30s	
Sample rate		3s	
Temperature (analog)	Type	NTC Thermistor	
	Nominal Accuracy	+/-0.5° C (operating range)	
	Maximal Accuracy	+/-1.0° C (at 25° C), +/-2.0° C (operating range)	
	Resolution	0.05° C	
	Repeatability	+/-0.2° C	
Sample Rate		100 milliseconds	
Operating Environment <sup>(5)</sup>	Temperature	-4 to 122°F (-20 to 50°C)	
	Humidity	0-95% non-condensing	
Enclosure	Material	ABS Plastic	
	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) Quick Start Menu parameters shown, for additional capabilities see installation manual.

(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.)

(5) Accuracy of CO2 reading may be reduced at temperatures below 14°F (-10°C).

(6) It is not recommended to de-activate ABC (auto-calibration) except for continuously occupied spaces or greenhouses. Drift ratings may vary based on environment.

# CT1R 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)

## 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

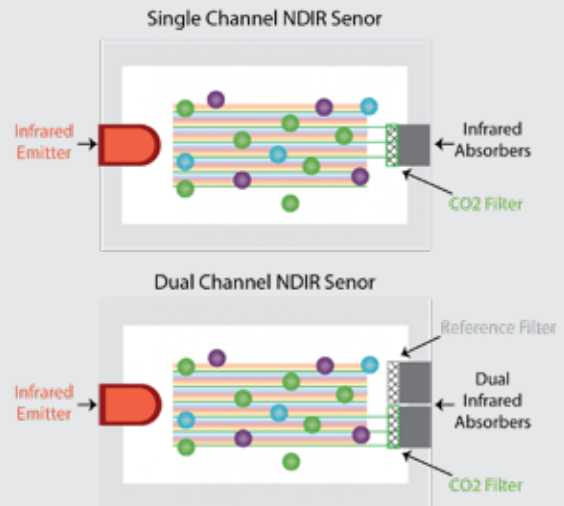
- Integrated display and push-button menus for field selectable scale, calibration, and operational modes
- Dual 4-20mA and 0-5V/0-10V output (switch selectable)
- Integrated high-reliability solid-state set-point relay is ideal for direct control applications; easy to set up thanks to LCD

### 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

CT1R -  **3**

**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

SPECIFICATIONS

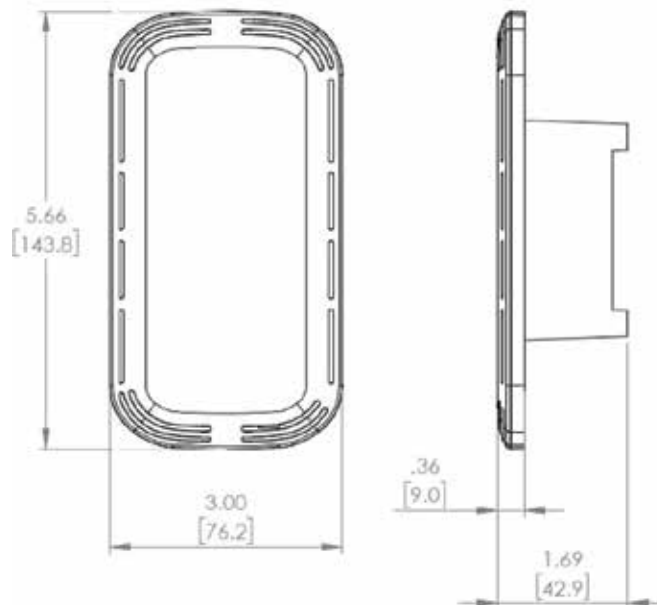
Power Supply		12-30VDC/24VAC <sup>(1)</sup> , 100mA max.
Analog Outputs	Analog	3-wire 4-20mA and 0-5V/0-10V <sup>(2)</sup> (dip switch selectable)
	Output scaling	0 - 2000 (default) or 0 - 5000 ppm (selectable)
Digital Setpoint Output	Programmable	Solid-state, 1A @ 30VAC/DC, N.O. on LCD version only.
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 ±(100ppm+10% of reading) (5000-10000ppm), @ 0-50C
	Drift with ABC disabled (Standard)	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	SC <sub>L</sub> , Scaling	0-2000ppm, 0-5000ppm, 0-10000ppm (2000ppm default)
	Rd <sub>U</sub> , Adjustment	Offset adjustment +/-250ppm (0 default)
	CL, Calibration mode	Automatic mode ON or OFF (default=ON)
	r <sub>U</sub> n, 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)	4.7"h x 2.9"w x 1.24"d (0.48" wall profile)

DUAL CHANNEL OPTION

CT1R -  **3**  - **D**

(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



# 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

Serva 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 a standard LCD, optional thermistor for temperature, 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  
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.
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	14 to 122°F (-10 to 50°C), 0 to 95% RH
LCD Menu Setup Parameters	SPH, Setpoint, Hi (On point)	500ppm to full-scale (800ppm default)
	SPL, Setpoint, Lo (Off point)	400ppm to full-scale-50 (700ppm default)
	SEL, 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 mode	Displays CO2 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.

# 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

Serva 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 a standard LCD, 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

D = Duct  
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 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.
CO <sub>2</sub> 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 <5000ppm consult factory
	Response time	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)	500ppm to full-scale (800ppm default)
	SPL, Setpoint, Lo (Off point)	400ppm to full-scale-50 (700ppm default)
LCD Menu Setup Parameters	SEL, 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 mode	Displays CO <sub>2</sub> 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.

# VT0R 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 VT0R 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 VT0R 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

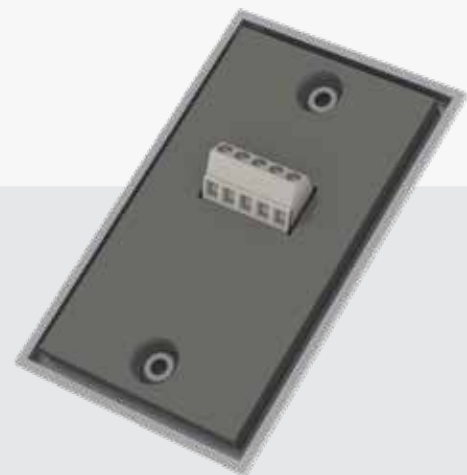
- Humidity compensation for higher accuracy
- Gasket ensures excellent measurement accuracy

### Industry-leading warranty

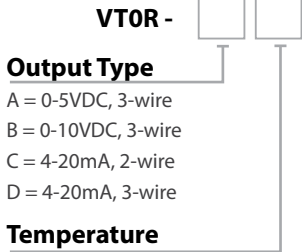
- 7-year limited warranty on electronics; sensor element 2 years

### Easy Wiring

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



ORDERING



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

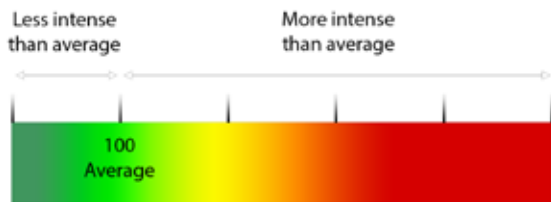
Power Supply	12-30VDC/24VAC <sup>(1)</sup> , 24mA max	
Output	Analog outputs	0-10V, 0-5V, 2-wire or 3-wire 4-20mA
Output scaling	VOC intensity	0-500 (relative intensity)
Thermistor Options	Yes, see ordering table on left	
VOC Sensor Performance	Type	MOS
	Gas	Ethanol
	Range	0-1000ppm of ethanol equivalent
	Response Time	<10s
	Humidity Compensation	Yes
Enclosure	Dimensions	4.45"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!



# 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

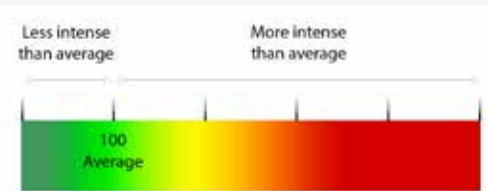
- Humidity compensation for higher accuracy
- Gasket ensures excellent measurement accuracy

### Industry-leading warranty

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

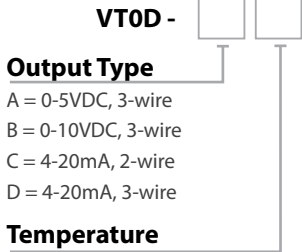
### Easy Scaling

- 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

# HT1R 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 HT1R 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. 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.



ORDERING

HT1R- [ ] [ ] 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)

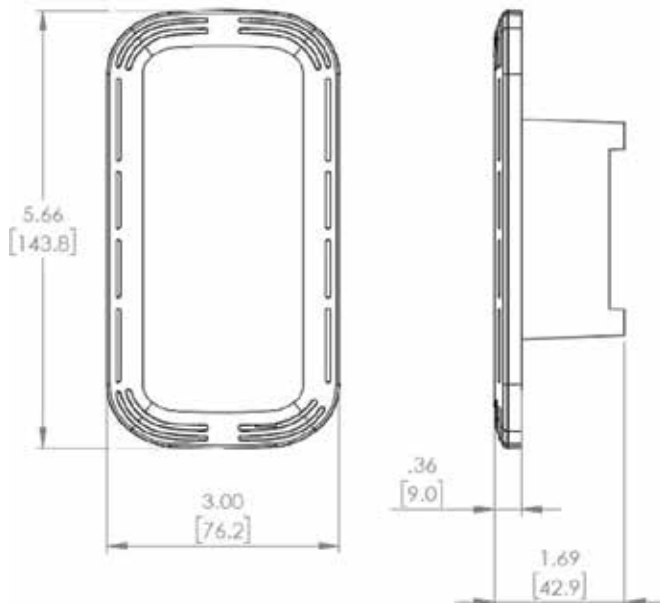
D = Display  
X = None

SPECIFICATIONS

Power Supply	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
	Output update rate	0.5s
Enclosure	Dimensions	5.7" h x 3.0" w x 1.7" d
	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

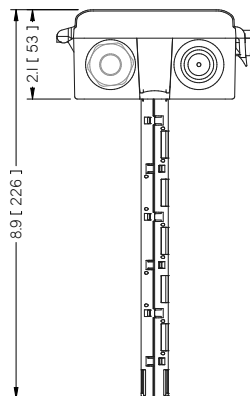
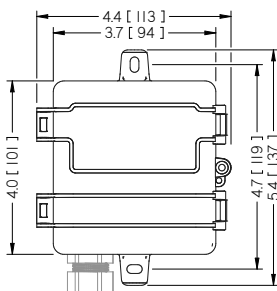
SPECIFICATIONS

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)
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
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	0.04 °C
	Response time (2)	2s
Enclosure	Output update rate	0.5s
	Element Operating range	-40 to 140°F (-40° C to 60° C)
	Materials	ABS/Polycarbonate
Agency	Unit Temp Rating	-40 to 158°F (-40 to 70°F)
	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



# 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)**

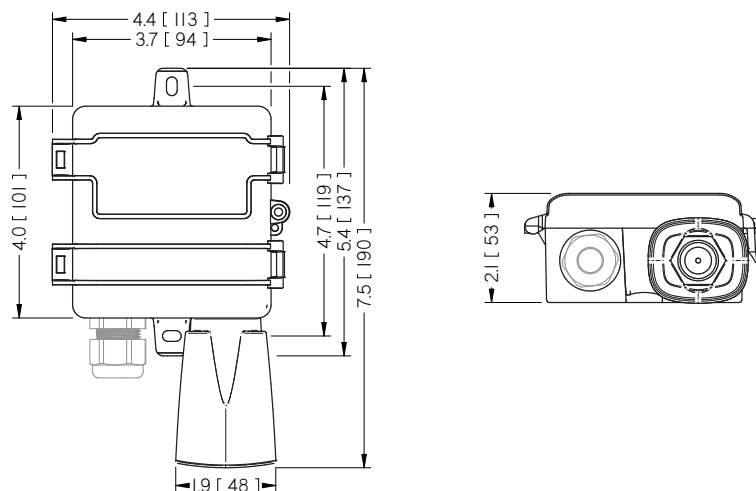
- D = Display
- X = None

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	Output update rate	0.5s
	Operating range	-40 to 140°F (-40° to 60° C)
	Materials	ABS/Polycarbonate
Agency	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
	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



# 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

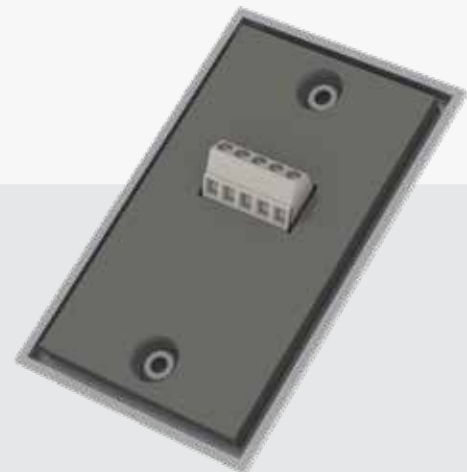
- Thermistor outputs for temperature (optional)
- 0-5V, 0-10V, 4-20mA 2-wire, or 3-wire options available

### 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

**HT0R -**




### 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!

**HT0R-(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!**



# 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

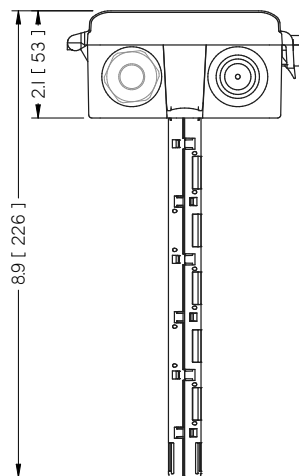
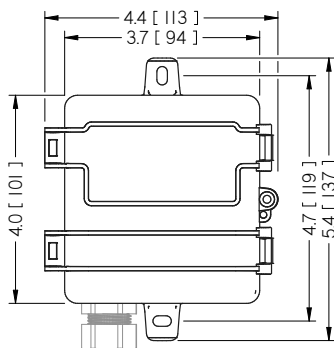
A = None  
C = 100Pt (385)  
D = 1000Pt (385)  
E = 10k type 2  
F = 10k type 3  
G = 10k type 3 w/11k shunt  
H = 3k  
I = 2k2  
J = 1k8  
K = 20k  
L = 100k

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



# 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

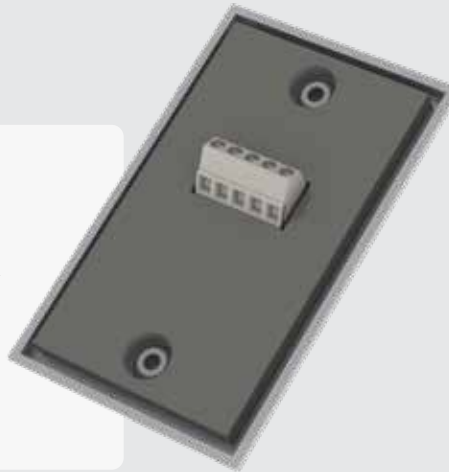
- Fits in any standard j-box or low voltage bracket.
- No exposed screws; unobtrusive tamper resistant design
- Complements CO2 sensor installations

### 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

# 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

Serva 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

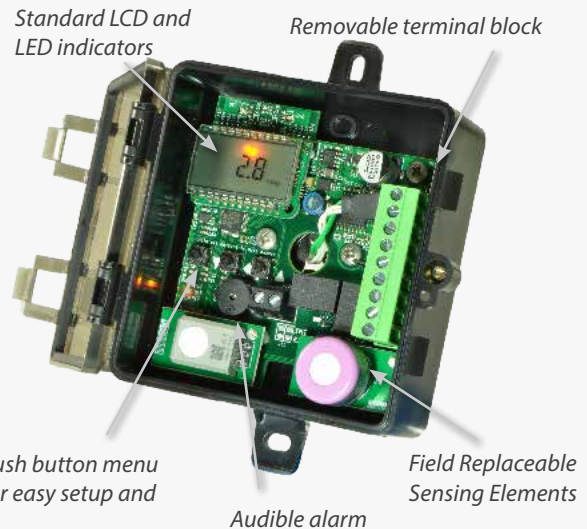
- Menu selectable 0-5/10V, 1-5V and 4-20mA outputs (0-10V default)
- Dual outputs support daisy chain wiring to cost-effectively sense and control large areas

### 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



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>)

**Gas Type 2**  
N = Nitrogen Dioxide (NO<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

Replacement Elements

TGS-CO-UL = Carbon Monoxide  
TGS-NO2-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.



SPECIFICATIONS

Power Supply	15-30VDC/24VAC <sup>(1)</sup> , 4W max, 160mA max.		
Analog Outputs	2 programmable outputs CO output scaling NO <sub>2</sub> output scaling Temperature output scaling	0-10V (default), 0-5V, 1-5V and 4-20mA (menu selectable) 0-200ppm (default), 0-1000ppm (menu selectable) 0-10ppm (default), 0-30ppm (menu selectable) -20 to 85°C	
	BACnet /Modbus	Protocol RS-485 Baud Rates	BACnet MS/TP, Modbus RTU, Modbus ASCII 9600, 19200, 38400, 57600, 76800, 115200
	Fan Relay	Fan relay characteristics CO fan relay setpoint NO <sub>2</sub> fan relay setpoint	N.C. 1A@24/30VDC (50/60Hz) (no mains connection) 25ppm (default), 0-1000 ppm (menu selectable) 1ppm (default), 0-30ppm (menu selectable)
Alarm Relay	Alarm relay characteristics CO alarm relay setpoint NO <sub>2</sub> alarm relay setpoint	N.C. 1A@24/30VDC (50/60Hz) (no mains connection) 100ppm (default), 0-1000 ppm (menu selectable) 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	
NO <sub>2</sub> Sensor Performance	Life expectancy	>7 years	
	Coverage Area	5000-7500 square feet	
	Type	Electrochemical	
	Accuracy	±5% of default range <sup>(3)</sup> ±5% of reading above 20ppm	
Operating Environment	Resolution	0.1ppm	
	Life expectancy	>7 years	
Enclosure (Wall & Duct)	Coverage Area	5000-7500 square feet	
	Temperature, continuous	-20 to 50°C	
Enclosure (Metal)	Humidity	15-95% continuous, 0-95% intermittent	
	Max Elevation	2000m	
Agency	Material	ABS/Polycarbonate	
	Dimensions	4.0"h x 4.4"w x 2.1"d (+6.8" probe for duct version)	
Enclosure (Metal)	Conduit Opening	Tapped 1/2" NPT	
	Rating	IP20	
Agency	Material & Enclosure Rating	Powder coated steel/acrylic, NEMA 3R	
	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	
Agency	Rating	IP20	
	Compliance	UL61010-1 Listed UL, cUL, CE	

(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

# 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

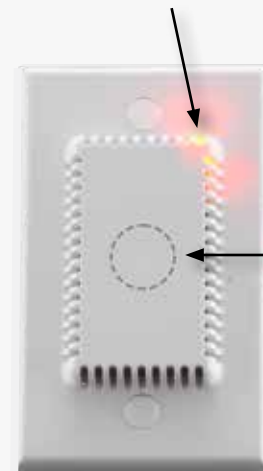
### Industry-leading warranty

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



### Warning and alarm LED

- Blinks for warning and alarm
- EOL indication

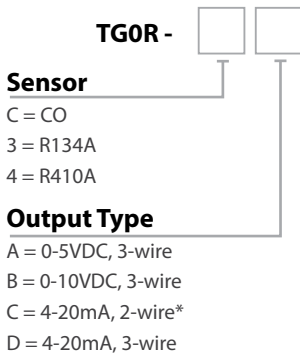


### Capacitive Touch Silence Button

- 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!



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 R134A refrigerant
	Sensitivity	@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.

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



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

Serva 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

## 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

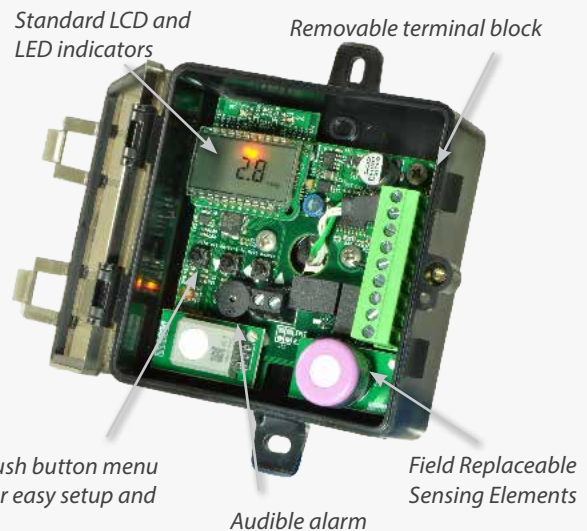
- Menu selectable 0-5/10V, 1-5V and 4-20mA outputs (0-10V default)
- Dual outputs support daisy chain wiring to cost-effectively sense and control large areas

### 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



### 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

	Pkg	Out	Gas1	Gas2	Temp	Lid
<b>TG</b>	<input type="text"/>	-	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

**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

**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)  
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

## 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

## 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)
	CO output scaling	0-200 ppm (default), 0-1000 ppm (menu selectable)
	NO <sub>2</sub> output scaling	0-10 ppm (default), 0-30 ppm (menu selectable)
	Methane/Propane/Hydrogen scaling	0-50% LEL (default), 0-50% LEL (menu selectable)
	Oxygen scaling	0-25% Volume (default), 0-25% Vol (menu selectable)
	H <sub>2</sub> S Scaling	0-100 ppm (default), 0-100 ppm (menu selectable)
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
Operating Environment	Resolution	1 ppm
	Life expectancy	5 years
	Coverage Area	5000-7500 square feet
	Temperature, continuous	-20 to 50°C
	Humidity	15-95% continuous, 0-95% intermittent
Enclosure (Wall & Duct)	Max Elevation	2000m
	Material	ABS/Polycarbonate
	Dimensions	4.0"h x 4.4"w x 2.1"d
	Conduit Opening	Tapped 1/2" NPT
	Rating	IP20
Enclosure (Metal)	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
	Mounting	Pre-drilled for 2x4" electrical box
	Rating	IP20
Agency	Compliance	UL61010-1 Listed UL, cUL, CE

# TG UL Series Wall & Duct Dual Refrigerant Gas 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

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

## 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

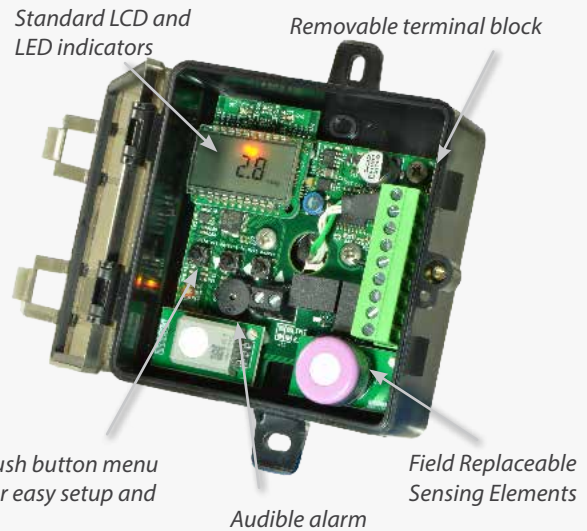
- Menu selectable 0-5/10V, 1-5V and 4-20mA outputs (0-10V default)
- Dual outputs support daisy chain wiring to cost-effectively sense and control large areas

### 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



## Easy to install

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



## ORDERING

	Pkg	Out	Gas1	Gas2	Temp	Lid
<b>TG</b>	<input type="text"/>	-	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

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

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

**Gas Type 1\***  
A = Ammonia  
2 = R22  
3 = R134A (Multi-Gas)  
4 = R410A  
5 = R404A  
6 = R407C  
C = CO  
N = NO<sub>2</sub>

**Gas Type 2**  
X = No second gas  
A = Ammonia  
2-6 = Refrigerants (See above)

**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

## Replacement Elements

- TGS-A-UL = Ammonia
- TGS-2-UL = R22
- TGS-3-UL = R134A (multi-gas)
- TGS-4-UL = R410A
- TGS-5-UL = R404A
- TGS-6-UL = R407C



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 Output scaling: 0-10V (default), 0-5V, 1-5V, 4-20mA (menu selectable) Temperature output scaling: 0-1000ppm (default), 0-1000ppm (menu selectable) -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) 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
LEDs	Green, Yellow, Red Green = Normal, Yellow = Relay, Red = Alarm
Audible Alarm	85dB Piezo transducer 30 minutes above alarm setpoint (menu selectable)
General Purpose Sensor Performance	Type: MOS Detection Range: 0-1000 ppm Resolution: 1 ppm R22, R134A, R410A, R404A, R407C: 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, R449A, R422A, R422D, R452A, R513A, R514A, R32 Life expectancy: >10 years (typical life expectancy for MOS sensors) Coverage Area: 5000-7500 square feet
Ammonia Sensor Performance	Type: Electrochemical Accuracy: ±5% of default range Resolution: 0.1 ppm Life expectancy: 5 years Coverage Area: 5000-7500 square feet
CO Sensor Performance	Type: Electrochemical Accuracy: ±5% of default range <sup>(2)</sup> ±5% of reading above 200ppm 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 20ppm Resolution: 0.1 ppm Life expectancy: >7 years Coverage Area: 5000-7500 square feet
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 Conduit Opening: Tapped 1/2" NPT Rating: IP20
Enclosure (Metal)	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 Mounting: Pre-drilled for 2x4" electrical box Rating: IP20
Agency	Compliance: UL61010-1 Listed UL, cUL, CE

(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.

# 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, 1.0LPM, Inlet CGA: C-10/SS, Inlet Gauge: 0-1200, 3/16" Hose Barb
- Tygon Tubing (2X3')
- Gas Shroud (For Nemoto Style Elements)

## ORDERING INFORMATION

### GAS CYLINDERS

CALGAS-FNO2	A29L 10ppm NO <sub>2</sub> , Valve CGA: C-10, 500PSI, Balance Nitrogen
CALGAS-ZNO2	A58L 10ppm NO <sub>2</sub> , Valve CGA: C-10, 500PSI, Balance Nitrogen
CALGAS-UNO2	A116L 10ppm NO <sub>2</sub> , Valve CGA: C-10, 1000PSI, Balance Nitrogen
CALGAS-JCO	103L 100ppm CO, Valve CGA: C-10, 1000PSI, Balance Air
CALGAS-JCO2	103L 100ppm CO <sub>2</sub> , 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 CO <sub>2</sub> , Valve CGA: C-10, 1000PSI, Balance Nitrogen

Consult factory for certificate of gas analysis if required

# 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



PreSet™ Series

8

ECMSet for EC motors

10



“ *These large and bright color displays can be seen all the way across the room!* ”

**Reading air quality levels shouldn't be a guessing game**

Our designer LED (RD) series feature large and bright numbers in 3 colors to choose from (red, green and blue) and can be seen across the room. Never squint again trying to guess room humidity and temperature levels.



**A spot leak detector that's easy to install and cost effective**

Protect vital components from water damage with our WD series spot leak detector. The WD series utilizes solid state detection, so it is not prone to mechanical failure.

**Adding transformers to your order saves you time and shipping costs**

Our transformer series with integrated circuit breakers make ordering a breeze, allowing you to add an accessory you already need on to your order without cutting additional purchase orders and paying additional shipping costs.





## WD Surface mount Water Detectors

Soild 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 accomodates mounting to a wall or vertical surface, with the gold plated sensing electrodes angled to the bottom of the enclosure.

### APPLICATIONS

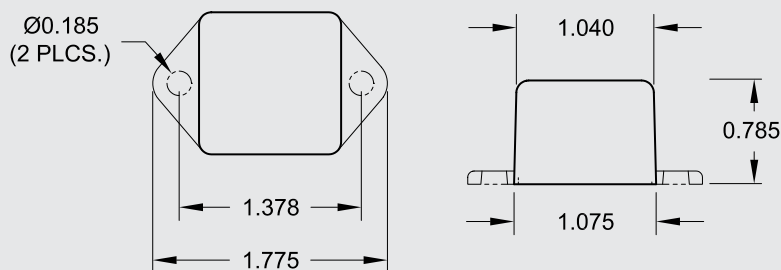
- Ideal for spot leak detection
- Computer rooms, critical equipment, restrooms or commercial kitchens
- Monitor condensate pans and drains—turn off equipment when pans reach limit

### 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



# 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

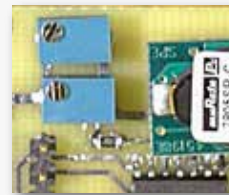
## FEATURES

### 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

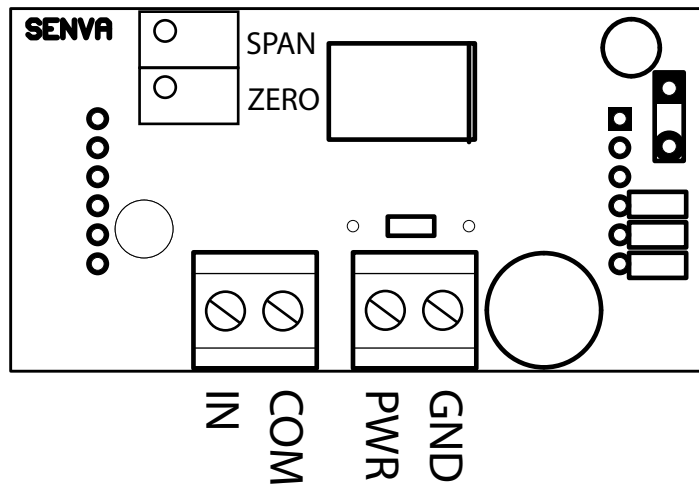
(Write your selected Display Type, Display #1 and #2 LED Color numbers/letters in the boxes above)

SPECIFICATIONS

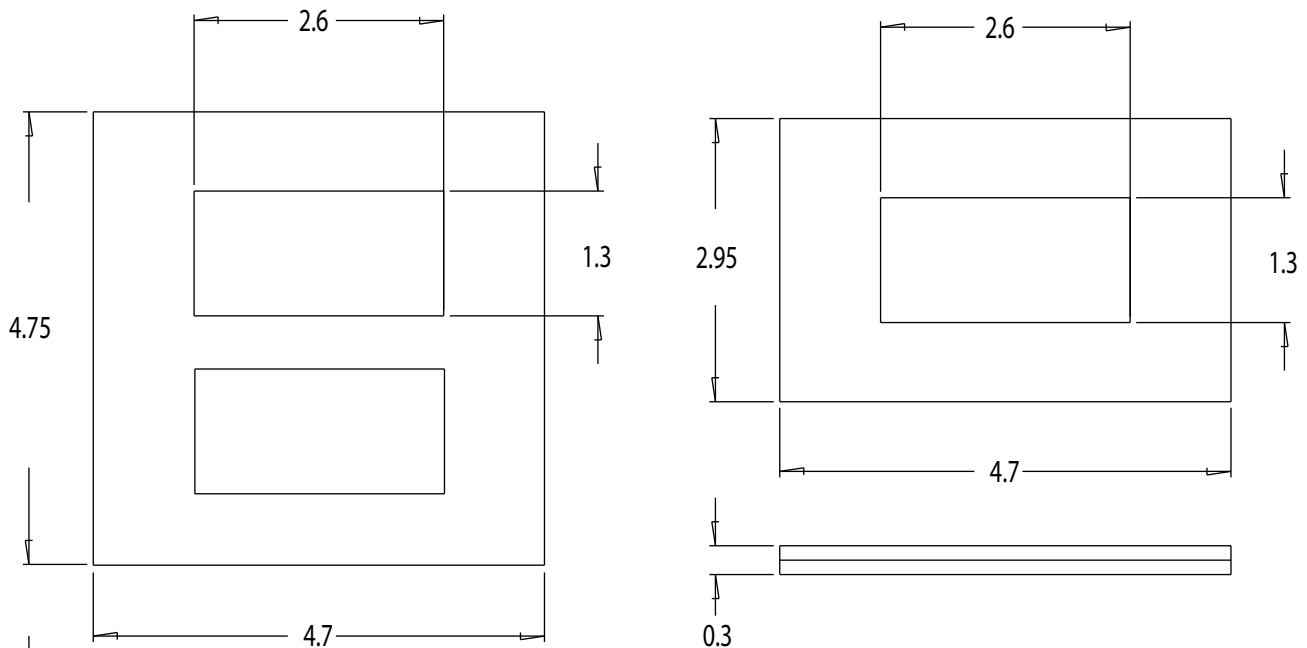
Power supply	12-30VDC/24VAC <sup>(1)</sup> , 40mA max. (per display)
Signal input range	0-10VDC
Scaling	Factory set for customer application Field adjustable zero and span
Display type	3-1/2 digit LED; Red, Green, or Blue
Accuracy	±1% F.S. ±2 counts
Sampling Rate	3 / second
Input Impedance	100k ohm
Operating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

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

WIRING (PER DISPLAY)



DIMENSIONS



# Panel Mount Multi-tap Class 2 Transformers

120, 208, 240, 277, 480 primary inputs  
50, 75, and 96VA models  
Integrated overcurrent breaker



## SPECIFICATIONS

UNIT: Inch±0.04

Model#	VA	PRI(VAC)	HZ	SEC	Over Current Protection	UL MARK	CE MARK	TYPE	A	B	C	D	E
5051MWCB	50	120/208/240/277/480	50/60	24	Circuit Breaker			A.B.C	1.26"	1.91"	3.45"	2.5"	3.06"
7551MWCB	75	120/208/240/277/480	50/60	24	Circuit Breaker			A.B.C	1.67"	2.31"	3.87"	2.5"	3.06"
10051MWCB	96	120/208/240/277/480	50/60	24	Circuit Breaker			A.B.C	2.06"	2.69"	4.25"	2.5"	3.06"

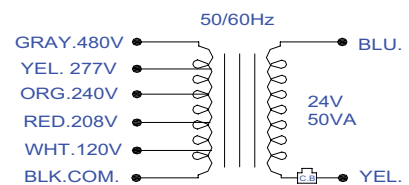
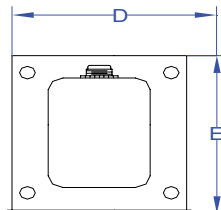
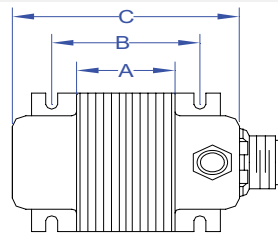


CE:

**UL Component Recognized, U.S. and Canada**

**Conformite Europeide**

## DIMENSIONS



## Tips, Tricks and FAQs

Senva wants to ensure each product is used for the proper application. Below is a list of FAQs we encounter on a regular basis with our current sensor lines. Remember, Senva offers live customer and technical support via email [sales@senvainc.com](mailto:sales@senvainc.com) or toll-free (866) 660-8864.

### **LOOPING WIRE**

Technicians can loop wires in order to increase the amount of current passing through the CT. Each loop doubles the amount of amperage passing through the CT. This may be required for applications where not enough amperage is present in a single wire to fall within the specified CT amperage range.

### **LOAD SIDE VS. LINE SIDE**

All Senva Fixed, Preset, Autoset, Multi-point and Analog current sensors are designed to go on the line side of the motor/pump as all of these CTs operate at a frequency of 50/60Hz. The VFD line (C-2350VFD & C-2350VFD-L) and C-1550 are the only CT lines that are designed to be installed on the load side as they are looking at the ratio between amperage and frequency.

### **MONITORING STATUS**

When monitoring status on your pump or motor, utilize a fixed current sensor that has a minimum threshold of 0.5A or lower. Fixed current sensors will close the contacts and relay a signal that current is present in the line to the pump/motor.

### **MONITORING BELT LOSS/COUPLING**

When looking for belt loss/coupling there are several options based on the desired signal. For a digital current sensor on constant volume motors/pumps, utilize the Preset or Autoset line. The preset line allows the electrician or technician to set the dial to the full load amperage (FLA) on the motor name plate. The Autoset line uses a microprocessor to automatically set the threshold in the same fashion as the Preset without requiring any manual adjustment. The sensor then looks for a 30% or greater decrease in amperage to alert when a belt has broken.

When working with direct drive or fractional HP motors/pumps, it is often recommended to utilize an analog CT as the change in amperage between a loaded and unloaded motor may be too small for a digital current sensor to detect and trigger the alarm.

When working on variable frequency drives (VFDs) see below for the Senva VFD specific sensor.

### **VFD APPLICATIONS**

Our most frequent technical call regarding our current sensor line is for misapplication using our VFD sensors. New for 2019 is the Autoset series which will work on both VFD and constant volume applications for proof of flow. This is a self-learning sensor with an improved lower turn on.

### **ISSUES WITH MONITORING STATUS ON ELECTRONICALLY COMMUTATED MOTORS (ECM)**

ECMs draw a small amount of AC current to the inverter, up to 120mA, when the motor isn't running. If you're using a fixed current sensor with an extremely low trip-point, it may falsely indicate the motor is running when in fact it is only passive current draw from the inverter. See the new ECMset current sensor with adjustable turn on to be set above the ECM stand-by current.

# 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

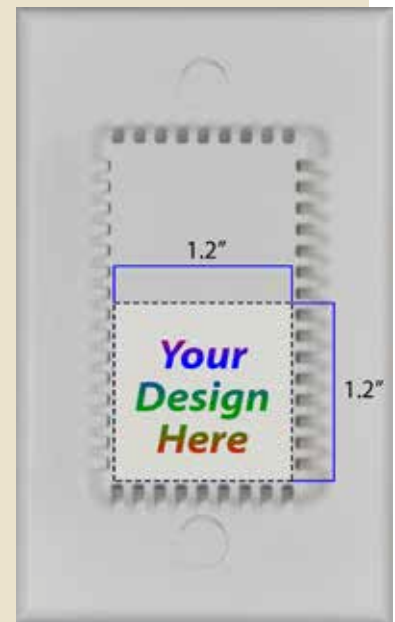
you will receive all 30 units with your company's customization.

**(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.





## Notes



# Terms & Conditions of Purchase

By purchasing Senva products, buyer agrees that all of the following terms and conditions apply to every purchase and supersede any conflicting terms in any purchase order or acknowledgement:

## LIMITED WARRANTY:

SENAVA IS PROVIDING THIS WARRANTY IN LIEU OF ALL OTHER EXPRESSED OR IMPLIED WARRANTIES, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THIS WARRANTY IS BUYER'S EXCLUSIVE REMEDY FOR ALL CLAIMS AGAINST SENVA. SENVA SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES. SENVA TOTAL LIABILITY FOR ALL CLAIMS SHALL BE LIMITED TO THE PRICE PAID FOR ITS PRODUCT.

Senva promises buyer that any standard product manufactured by Senva shall be free from material defects in design, material, or manufacturing for a period of seven (7) years from the manufacture date; provided, however, that the warranty shall not extend to ordinary wear and tear, or to normally replaceable components (e.g., batteries and sensor elements). During the warranty period, Senva may repair or replace (in its sole discretion) any product suffering from a warranty defect and returned freight prepaid by buyer, with no charge to buyer for any warranty repair or replacement. The warranty shall remain in full force and effect for said 7 year period, provided that the product: (1) was installed, operated, and maintained properly; (2) has not been abused or misused; (3) has not been repaired, altered, or modified outside of Senva authorized facilities; This warranty provides specific legal rights that may be varied by local laws.

## SPECIAL ORDERS:

Senva is committed to providing responsive customer service. For products designed and built to customer specifications, please consult with Senva.

## RETURNS:

No product may be returned without a returned material authorization number assigned by Senva. All warranty claims must be delivered to Senva, attention customer service. Standard products in unopened condition (except evaluation orders) can be returned to stock subject to a charge of 15% for up to 90 days from original shipment. Items opened, or held for 90 to 180 days, may be accepted for return subject to a 30% restocking charge. Products returned for credit must be in saleable

condition. If the product has been modified, damaged, or installed, we cannot accept return for credit. Non-standard products (including those having electrical modifications or private labeling) may not be returned, except for warranty service.

## PAYMENT:

Payment terms are stated on each invoice. Buyer agrees to pay finance charges of 18% per annum on any past due amount. Buyer further agrees to pay any court costs, collections fees or attorney fees if legal action must be taken on any unpaid balance. For disputes, the prevailing party shall receive its costs and attorney fees (including costs and fee incurred at trial or an appeal). All legal rights shall be governed by Oregon law, excluding principles of conflict of law. Buyer consents to the jurisdiction of Oregon courts and agrees that such courts shall have personal jurisdiction over buyer. Venue shall be in Multnomah County, Oregon. Product specifications and pricing subject to change without any notice.

## PRODUCT APPLICATION LIMITATION:

Senva products are not designed for life or safety applications. Senva products are not intended for use in critical applications such as nuclear facilities, human implantable device or life support. Senva is not liable, in whole or in part, for any claims or damages arising from such uses. Senva strongly believes in continuous improvement, therefore we must reserve the right to change specifications and product offerings without notice. Where possible, we will substitute products with equivalent functionality when necessary.



## PROPOSITION 65 WARNING FOR CALIFORNIA RESIDENTS

**WARNING:** Senva products may contain BPA or other chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

Though a product may contain a Proposition 65 warning, it does not mean the product is a threat or danger to the consumer. Senva is committed to the quality and safety of our products.

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