



HVAC

2017 PRODUCT CATALOG

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PREMIUM SENSING SOLUTIONS

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Setra Systems, Inc. | 159 Swanson Road | Boxborough, MA 01719

CORPORATE HEADQUARTERS & U.S. PRODUCTION FACILITY



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Setra-Systems



SetraSystems

A collage of various images related to industry and science, including a large white pipe in a field, a close-up of a brass fitting, a modern building, a scientist in a lab, solar panels, and various mechanical parts.

SETRA BLOG

What's capacitance? What's the difference between PSI, PSIA, and PSIG?
What's vacuum pressure and how do you measure it?

Learn the answer to these questions
and about many more industry topics at:

www.setra.com/blog

HVAC

2017 PRODUCT CATALOG

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WHO IS SETRA?

5-Sigma Quality • 95% On Time Delivery • 99.8% Quality Rating • 10+ Million Sensors Shipped • Made in the USA

Setra Systems, Inc. was founded in an age of transducer innovation. Our founders, Dr. Y.T. Li and Dr. S.Y. Lee were Professors of engineering at the Massachusetts Institute of Technology and co-developers of the Variable Capacitance Transduction Principle. Building on this heritage of innovation, Setra has designed and developed the most comprehensive product lines of pressure sensing transducers in the world. Setra has been innovating Test & Measurement sensor designs for over 50 years and has become a leader in the pressure transducer market.



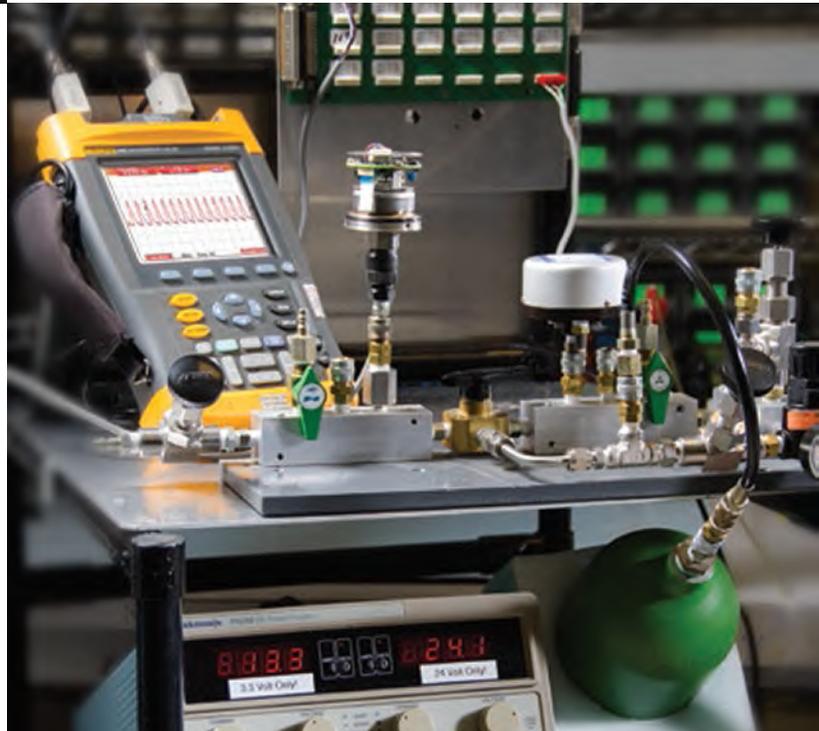
MANUFACTURING

Dedicated tools and processes eliminate product and process variation at every stage of manufacturing including:

- Design Failure Model Effect Analysis (DFMEA)
- Process Failure Model Effect Analysis (PFMEA)
- Process Capabilities Studies
- Design Verification and Validation
- Corrective and Preventative Action (CAPA)
- Lean Tools

RESEARCH & INNOVATION

Setra's multi-disciplinary engineering department has decades of experience in designing high precision pressure, humidity, and current sensing instruments. The design group includes senior electrical, mechanical, and software engineers in an organization that fosters creativity and innovation in design. Setra's engineers have a close working relationship with many customers. As a result, they have been able to apply Setra's advanced technologies to solving customer application challenges.



CUSTOMER SUPPORT

Setra provides customer support through its knowledgeable staff of customer service representatives and applications engineers. Our customer service representatives are available to process and assist with expediting and delivery of your order. Our staff of application engineers is ready to discuss your system requirements, provide solutions to your applications, answer technical questions, and assist with installation and wiring. A complete library of our products is maintained on our website, including product specifications, installation, operating instructions and direct ordering options.

Inside this catalog is a comprehensive selection of sensors and transducers designed for the HVAC/Building Automation industry. If you don't see exactly what is needed for your specific application, give us a call.

Contact us today

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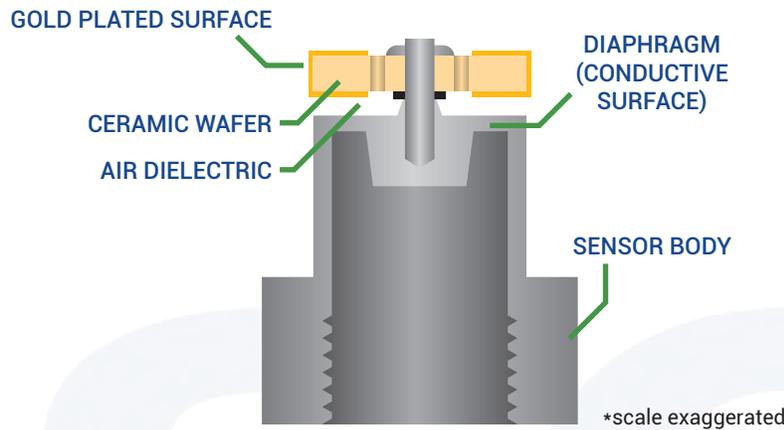
setra

Corporate Headquarters & Production Facility

Boxborough, Massachusetts

SETRA'S TECHNOLOGY

Since Setra was started in 1967, capacitance has been and will continue to be the core technology for our pressure transducers. Each of the capacitive sensors that we manufacture employs two closely spaced parallel plates, one of which is fixed while the other is a flexible diaphragm which allows for motion when pressure is applied. This straightforward concept combined with innovative design and world class manufacturing has enabled Setra to become a leading supplier to the pressure transducer market.



CAPACITIVE TRANSDUCERS

Setra's capacitive pressure transducers are expertly designed adaptations of a simple, durable and fundamentally stable device: the electrical capacitor. In a typical Setra configuration, a compact housing contains two closely spaced, parallel, electrically isolated metallic surfaces, one of which is essentially a diaphragm capable of slight flexing under pressure. The diaphragm is constructed of a low-hysteresis material such as 17-4 PH SS or a proprietary compound of fused glass and ceramic (Setraceram).

These firmly secured surfaces (or plates) are mounted so that a slight mechanical flexing of the assembly, caused by a minute change in applied pressure, alters the gap between them (creating, in effect, a variable capacitor). The resulting change in capacitance is detected by a sensitive linear comparator circuit (employing proprietary custom designed ASICs), which amplifies and outputs a proportional, high level signal.

ADVANTAGES OF CAPACITANCE SENSORS



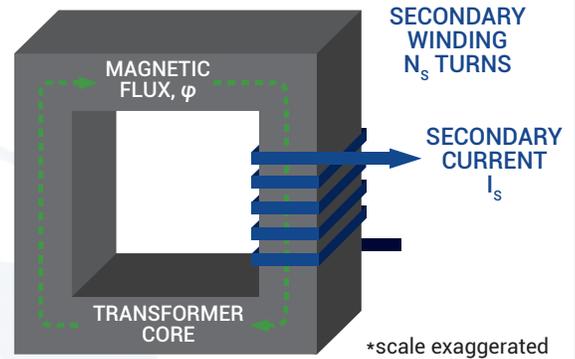
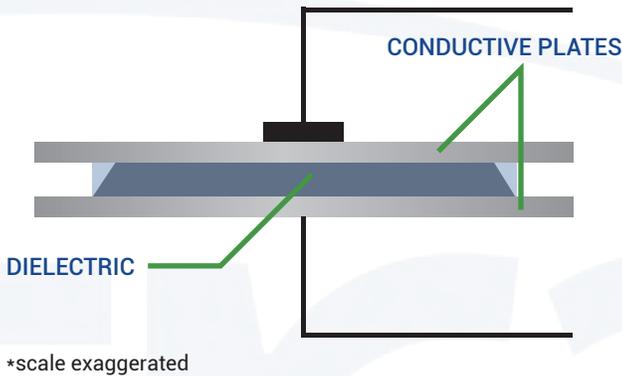
HIGH ACCURACY

Performance in Test & Measurement applications is crucial. The data collected is used to ensure product quality, improve efficiency, and provide public safety. Setra's sensors have a long history of providing reliable test data with accuracies as high as 0.02% FS.

WE'VE GOT YOU COVERED

Setra provides solutions, not just sensors

- Quality and reliability you can depend on
- Customizable platform products ideal for many applications
- Class leading overpressure capability
- High accuracy up to $\pm 0.02\%$ FS
- All sensor calibration are traceable to NIST



CAPACITIVE RH SENSORS

Setra's Capacitive RH sensors consist of a ceramic substrate on which a thin film of polymer is deposited between two conductive electrodes. The sensing surface is coated with a micro-porous metal electrode, allowing the polymer to absorb moisture while protecting it from contamination and exposure to condensation. As the polymer absorbs water, the dielectric constant changes incrementally and is nearly directly proportional to the relative humidity of the surrounding environment. Thus, by monitoring the change in capacitance, relative humidity can be derived. Setra's patented charge balance ASIC measures the capacitance change and uses digital potentiometers to precisely calibrate the replaceable sensor tip.

INDUCTIVE CURRENT SENSORS

Setra Current Switch and Transducers use inductive current transformers (CTs) to sense an AC current in a primary conductor. The CT generates a low level AC current which is proportional to the current flowing in the primary conductor. The resulting low level AC current is rectified and compared to either a factory set or field adjustable set point value. When the sensed current exceeds the set point value, the internal circuitry triggers the output switch to change state from open to short in a current switch. The current transducers provide a DC output with is linearly proportional to the sensed current.

RUGGED DESIGN

Applications in the Test & Measurement industry are among the most demanding; not only with performance but also with harsh operating environments. These applications have caustic chemicals and high pulsation during testing. Setra's rugged design prolongs the life of the sensor and keeps you up and running to get the job done.

HIGH STABILITY

The capacitance sensing element provides a high level of output that is not only accurate when first purchased, but will remain accurate over the long haul. The stable sensor will prevent the need for constant re-calibrations of the sensor.

The logo for 'setra' is rendered in a light blue, lowercase, sans-serif font. The word is centered horizontally and is enclosed within a thin, light blue oval outline. A registered trademark symbol (®) is located at the bottom right of the word. The background of the page is a light gray, semi-transparent image of a server room with rows of server racks and overhead cables.

setra®

DIFFERENTIAL PRESSURE TRANSDUCERS

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Model MRC

MULTI-RANGE CRITICAL PRESSURE TRANSDUCER



•Ideal For Critical Environments

•±0.5% FS Accuracy

•Universal Design

- Field Configurable Duct Probe Optional
- External Mounting Tabs & Optional DIN Rail
- IP67 Rated Housing
- 4 Digit LCD
- Field Selectable Range
- Field Selectable Output
- Simple 5-Step Setup
- Field Accessible Push-Button Zero & Span
- Unregulated AC/DC Operation

Target Uses

- Hospitals
- Isolation Rooms
- Vivariums
- Sub-Contractors, Quick Installation
- Flexible for Building Specification Changes
- Service/Retrofit Friendly
- Quick & Accurate Reconfiguration

Designed for Critical Environments, The Setra Model MRC is Setra's newest differential pressure transducer. This is the first multi-range transducer designed for stringent requirements of difficult applications. The MRC offers class leading $\pm 0.5\%$ FS accuracy in selectable ranges down to 0.1"W.C., which is required for critical applications. Setra's MRC comes with 3 different mounting options: duct probe, DIN Rail mount, and a universal model to cover any installation changes on the job site.

0.5% FS ACCURACY

The Setra MRC is the first multi-range transducer designed for use in Critical Environments. No other multi-range transducer product offers better than 1% FS accuracy; a requirement in most critical applications. The Setra MRC is available down to 0.1"W.C. with 0.5% FS accuracy.

IP67 RATED HOUSING

The MRC housing is a robust IP67 rated design and is sealed with a gasket to make it wash-down capable for difficult applications. The MRC can accommodate a conduit fitting, making installation and wiring easier.

FIELD SELECTABLE UNIVERSAL DESIGN

The Setra MRC has 4 selectable ranges and 3 selectable outputs, giving the flexibility to make changes on the job site. The MRC is field configurable for range, mounting (wall mount standard, DIN Rail and duct mount optional), output (mA or voltage) and engineering units (W.C. or Pascals). This flexibility means that the contractor can use the MRC for all of their critical needs.

CAPACITIVE SENSING TECHNOLOGY

Only Setra can claim ownership to the stainless steel capacitive design used in all of our HVAC/R sensors. Our advanced capacitive element provides excellent stability and linearity, while standing above the competitors in our ability to measure low pressure (<0.0001"W.C.) at high accuracy. Our technology has been used in over 8 million installations and has the highest field acceptance rate in the industry.

Model MRC

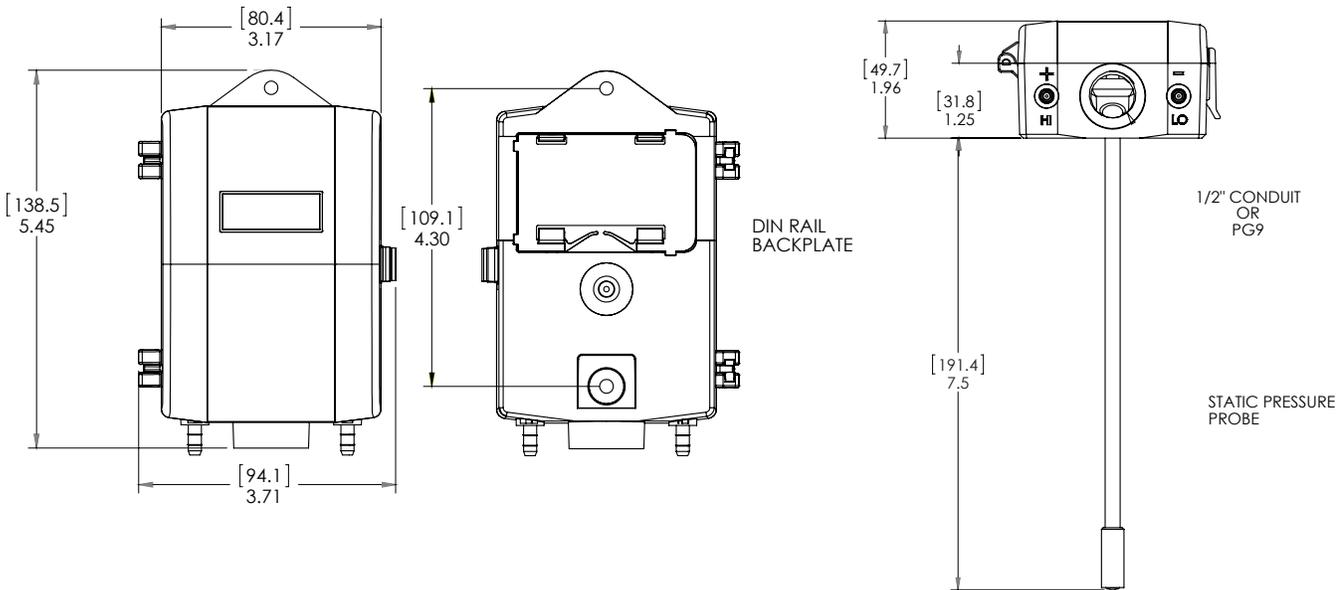
MULTI-RANGE CRITICAL PRESSURE TRANSDUCER

SPECIFICATIONS

PERFORMANCE DATA	PHYSICAL DESCRIPTION	ELECTRICAL DATA
Accuracy RSS ¹ (at constant temp)	Case: Fire-Retardant Polycarbonate (UL 94 V-0 Approved), Hinged Lid	Excitation Range: 13 to 30 VDC/18 to 24 VAC (Voltage Output) 13 to 30 VDC (4 to 20mA output at terminals)
Compensated Range	Mounting: Two Screw Holes Vertical Position	Current Consumption: 30mA (max)
Thermal Effects ² %FS/°F(°C)	Electrical Connection Block: Removable Screw Terminal	Mis-Wiring: Reverse Excitation Protection
Maximum Line Pressure	Pressure Fitting: 3/16" O.D. Barbed Brass	Field Selectable Output ⁴ : 0 to 5 V, 0 to 10V (3-wire), 4 to 20mA (2-wire)
Overpressure	Zero: Push Button	Output Resistance (Voltage Output): 10 Ohms (max)
Long Term Stability (max.)	Span: Push Button	Load Resistance (Voltage Output): 10 K-Ohms (min)
ENVIRONMENTAL DATA	Weight (approx.): 8 Ounces	Loop Resistance (4-20mA): 0 to 800 Ohms
Operating Temperature ³	POSITION EFFECT	Approval: CE & RoHS Compliant
Operating Temperature ³ : 32 to 122°F (0 to 50°C)	Zero Offset %FS/G ⁸ : 0.5%	
PRESSURE MEDIA		
Clean air or similar non-conducting gases.		

¹ RSS of Non-Linearity, Hysteresis, and Non-Repeatability.
² Units calibrated at nominal 70°F. Maximum thermal error computed from this datum.
³ Operating temperature limits of the electronics only. Pressure media temperatures may be considerably higher.
⁴ Calibrated into a 50K ohm load, operable into a 10K ohm load or greater.
⁵ Span (Full Scale) output factory set to within 1%.
⁶ Calibrated at factory with a 24 VDC loop supply voltage and a 250 ohm load.
⁷ Span (Full Scale) output factory set to within ±0.16mA.
⁸ Unit is factory calibrated at 0g effect in the vertical position.
 Specifications subject to change without notice.

DIMENSIONS



ORDERING INFORMATION

M R - C - □ - □

MODEL	FIELD SELECTABLE RANGES				CONFIGURATION		ELECTRICAL FITTING	
MRC	UNIDIRECTIONAL PRESSURE RANGES		BIDIRECTIONAL PRESSURE RANGES		S	Standard (Base Mount)	C	1/2" Conduit w/ Cal Certification ²
	0.1 "W.C.	25 Pa	±0.1 "W.C.	±25 Pa	U	Universal ¹	D	PG9 w/ Cal Certification ²
	0.25" W.C.	50 Pa	±0.25" W.C.	±50 Pa	D	DIN Rail		
					P	Duct Probe		

¹Universal unit includes Duct Probe and DIN Rail options.
²Calibration is performed at highest range.
 Ordering Example:
 MRCUC= Model MRC, Universal Configuration, with 1/2" Conduit.

Model MRG

MULTI-RANGE GENERAL PRESSURE TRANSDUCER



- **Universal Design**
- **IP67 Rated Housing**
- **Field Selectable**

- Field Configurable Duct Probe Optional
- External Mounting Tabs & Optional DIN Rail
- IP67 Rated Housing
- 4 Digit LCD
- Field Selectable Range
- Field Selectable Output
- Simple 5-Step Setup
- Field Accessible Push-Button Zero & Span
- Unregulated AC/DC Operation

Target Uses

- Hospitals
- Isolation Rooms
- Vivariums
- Sub-Contractors, Quick Installation
- Flexible for Building Specification Changes
- Service/Retrofit Friendly
- Quick & Accurate Reconfiguration

Setra's Model MRG multi-range low differential pressure transducer uses a dead-ended capacitive sensing element that requires minimal amplification and delivers excellent accuracy and longterm stability. It is the ideal solution for any contractor, combining flexibility of a multi-range transducer with the performance of a single range transducer. The MRG has 8 field selectable ranges and 3 field selectable outputs which makes it easily adjustable on the job with a flip of a switch or jumper. The MRG is offered with 3 different housing configuration options: Wall Mount, Duct Probe or DINrail Mount as well as a universal design that incorporates all 3 configurations in one to address any installation changes on the job site.

8 FIELD SELECTABLE RANGES

The MRG provides 8 field selectable ranges (0.5", 1.0", 2.5" and 5.0"W.C.). These ranges can be selected on site by flipping to the desired range.

ROBUST ENCLOSURE FOR HARSH ENVIRONMENTS

The MRG housing is a robust IP67 rated design and is sealed with a gasket to make it wash down capable for difficult applications. The MRG also has a conduit fitting that make installation and wiring easier.

UNIVERSAL DESIGN

The MRG utilizes a universal design that gives the user total flexibility to make changes on the job site. The user has the option to choose field selectable ranges, output, mounting setup and engineering unit. The flexibility means a contractor can feel comfortable stocking one product for all of their needs.

THE SETRA SENSOR

The core technology of the MRG is the all stainless steel capacitive sensing element. Setra designs and manufactures all of their sensing elements resulting in full control over the process and quality of every single sensor. The welded dead-ended capacitive sensors requires minimal amplification and delivers excellent accuracy and longterm stability. Setra's technology has been used in over 8 million installations and has the highest field acceptance rate in the industry.

Model MRG

MULTI-RANGE CRITICAL PRESSURE TRANSDUCER

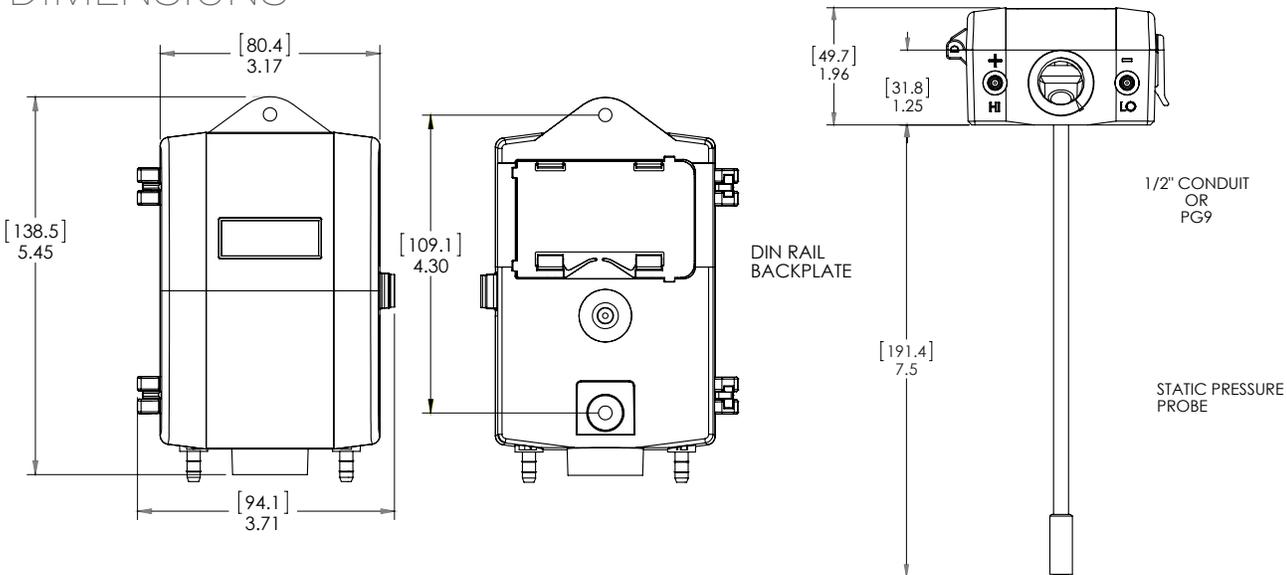
SPECIFICATIONS

PERFORMANCE DATA	PHYSICAL DESCRIPTION	ELECTRICAL DATA
Standard	Case Fire-Retardant Polycarbonate (UL 94 V-0 Approved), Hinged Lid	Excitation Range 13 to 30 VDC/18 to 24 VAC (Voltage Output) 13 to 30 VDC (4 to 20mA output at terminals)
Accuracy RSS¹ (at constant temp) ±1.0% FS	Mounting Two Screw Holes Vertical Position	Current Consumption 30mA (max)
Compensated Range °F (°C) 32 to 122°F (0 to 50°C)	Electrical Connection Block Removable Screw Terminal	Mis-Wiring Reverse Excitation Protection
Thermal Effects² %FS/°F(°C) 0.03 (0.054)	Pressure Fitting 3/16" O.D. Barbed Brass	Field Selectable Output⁴ 0 to 5 V, 0 to 10V (3-wire), 4 to 20mA (2-wire)
Maximum Line Pressure 10 PSI	Zero Push Button	Output Resistance (Voltage Output) 10 Ohms (max)
Overpressure Up to 10 PSI ⁵	Span Push Button	Load Resistance (Voltage Output) 10 K-Ohms (min)
Long Term Stability (max.) 1.0% FS/YR	Weight (approx.) 8 Ounces	Loop Resistance (4-20mA) 0 to 800 Ohms
ENVIRONMENTAL DATA	POSITION EFFECT	Approval CE & RoHS Compliant
Operating Temperature³ 32 to 122°F (0 to 50°C)	Zero Offset %FS/G⁸ 0.5%	
PRESSURE MEDIA		
Clean air or similar non-conducting gases.		

¹ RSS of Non-Linearity, Hysteresis, and Non-Repeatability.
² Units calibrated at nominal 70°F. Maximum thermal error computed from this datum.
³ Operating temperature limits of the electronics only. Pressure media temperatures may be considerably higher.
⁴ Calibrated into a 50K ohm load, operable into a 10K ohm load or greater.
⁵ Span (Full Scale) output factory set to within 1%.
⁶ Calibrated at factory with a 24 VDC loop supply voltage and a 250 ohm load.
⁷ Span (Full Scale) output factory set to within ±0.16mA.
⁸ Unit is factory calibrated at 0g effect in the vertical position.
⁹ Range dependent

Specifications subject to change without notice.

DIMENSIONS



ORDERING INFORMATION

M R - G - □ - □

MODEL	FIELD SELECTABLE RANGES				CONFIGURATION		ELECTRICAL FITTING	
MRG	UNIDIRECTIONAL PRESSURE RANGES		BIDIRECTIONAL PRESSURE RANGES		S	Standard (Base Mount)	A	1/2" Conduit
	0.5"W.C.	100 Pa	±0.5"W.C.	±100 Pa	U	Universal ¹	P	PG9
	1.0"W.C.	250 Pa	±1.0"W.C.	±250 Pa	D	DIN Rail	C	1/2" Conduit w/ Cal Certification ²
	2.5"W.C.	500 Pa	±2.5"W.C.	±500 Pa	P	Duct Probe	D	PG9 w/ Cal Certification ²
	5.0"W.C.	1,000 Pa	±5.0"W.C.	±1,000 Pa	¹ Universal unit includes Duct Probe and I ² Calibration is performed at highest rang			

Ordering Example: MRGUA= Model MRG, Universal Configuration, with 1/2" Conduit.

Model 230

TRUE WET-TO-WET PRESSURE DIFFERENTIAL TRANSDUCER



Pressure Fitting Option "3V" Shown Here

- **Single Diaphragm Design**
- **All Stainless Steel Capacitive Sensor**
- **3 or 5 Valve Manifold Assembly Options**

- Only True Wet-to-Wet Differential Pressure Transducer on the Market
- Available to 1 PSID with 350 PSI Line Pressure
- $\pm 0.25\%$ FS Accuracy
- No Liquid Fill Diaphragm
- NEMA 4 Rated Housing
- Low Line Pressure Effect
- Fast Response Time
- Gas & Liquid Compatible
- CE & RoHS Compliant

Applications

- Energy Management Systems
- Process Control Systems
- Flow Measurement of Various Gases or Liquids
- Liquid Level Measurement or Pressurized Vessels
- Pressure Drop Across Filters

The Model 230 is Setra's highest accuracy solution for monitoring differential pressure in wet-to-wet applications. Its single diaphragm design enables a true wet-to-wet differential pressure measurement with superior $\pm 0.25\%$ FS accuracy compared to competitive units which calculate differential pressure using two single point pressure sensors.

The stainless steel capacitive sensor provides a highly accurate, linear analog output proportional to the pressure over a wide temperature range.

The 230 is offered with an optional 3 or 5 valve machined brass manifold for ease of installation and maintenance.

AVOID LINE PRESSURE WITH A SINGLE DIAPHRAGM SENSOR

Unlike the competition, the 230 is a true wet-to-wet sensor with a single diaphragm construction. The differential pressure range of a single diaphragm is not impacted by line pressure whereas dual differential pressure sensors require the individual sensors to measure gauge pressure, comparing the outputs to determine the differential pressure.

INCREASE THE SENSOR'S RESPONSE TIME

The 230 utilizes an all stainless steel capacitive sensor which responds 20x faster than oil filled sensors and provides conditioned electronic circuitry with a highly accurate, linear analog output proportional to the pressure over a wide temperature range.

SAVE TIME ON MONEY & INSTALLATION

When time and project costs are a priority, the 230 is offered with an optional 3 or 5 valve machined brass manifold for ease of installation and maintenance. The brass body has no internal process connections, therefore eliminating the risk of internal leaks.

Model 230

TRUE WET-TO-WET PRESSURE DIFFERENTIAL TRANSDUCER

SPECIFICATIONS

PERFORMANCE DATA	
Accuracy RSS ¹ (at constant temp)	±0.25% FS
Non-Linearity, BFSL	±0.20% FS
Hysteresis	0.10% FS
Non-Repeatability	0.05% FS
THERMAL EFFECTS ²	
Compensated Range °F(°C)	+30 to +150 (-1 to +65)
Zero Shift %FS/100°F(%FS/50°C)	2.0 (1.8)
Span Shift %FS/100°F(%FS/50°C)	2.0 (1.8)
Line Pressure Effect	Zero shift ±0.004% FS/PSIG line pressure
Resolution	Infinite, limited only by output noise level (0.02%FS)
Static Acceleration Effect	2%FS/g (most sensitive axis)
Natural Frequency	500 Hz (gaseous media)
Warm-up Shift	±0.1% FS total
Response Time	50 milliseconds
Long Term Stability	0.5%FS/1 YR
Maximum Line Pressure	350 PSIG
ENVIRONMENTAL DATA	
Operating ³ Temperature °F (°C)	0 to +175 (-18 to +80)
Storage Temperature °F (°C)	-65 to +250 (-54 to +121)
Vibration	5 g from 5 Hz to 500 Hz
Acceleration	10g
Shock	50g
APPROVALS	
CE, RoHS	

PHYSICAL DESCRIPTION (MODEL 230)	
Case	Stainless Steel/Aluminum
Electrical Connection	Barrier strip terminal block with conduit enclosure & 0.875 DIA conduit opening.
Pressure Fittings	1/4"-18 NPT internal
Weight (approx.)	14.4 oz
Sensor Cavity Volume	0.27 in ³ Positive Port, 0.08 in ³ Negative Port (With 1/4"NPT external fittings installed-does not include cavity volume of 1/4"NPT external fittings.)
PHYSICAL DESCRIPTION (3-VALVE MANIFOLD ASSEMBLY) ⁴	
Manifold Block	Brass
Valves (3) ⁵	V1 for Connection to + port V2 for Connection to - port V3 for Equalizing Pressure
Valve Type	90° On/Off
Process Connections	1/4"-18 NPT Internal Thread
Dimensions	7.05"W x 6.25"H x 2.16"D
Weight	<2.5 lbs.
PHYSICAL DESCRIPTION (5-VALVE MANIFOLD ASSEMBLY) ⁴	
Manifold Block	Brass
Valve (5) ⁵	V1 for Connection to ± Port V2 for Connection to - Port V3 for Equalizing Pressure V4 & V5 for Connection to External Gauge or Alternate Plumbing Configuration
Process Connection	1/4"-18 NPT Internal Thread
Dimensions	7.05"W x 6.25"H x 2.16"D
Weight	<3.8 lbs.

ELECTRICAL DATA (VOLTAGE)	
Circuit	3-Wire (Exc, Out, Com)
Excitation	9 to 30 VDC for 0-5 VDC Output, 13 to 30 VDC for 0-10 VDC Output
Output ⁷	0 to 5 VDC ⁸ , 0 to 10 VDC ⁸
Output Impedance	100 ohms
ELECTRICAL DATA (CURRENT)	
Circuit	2-Wire
Output ⁹	4 to 20mA ¹⁰
External Load	0 to 1000 ohms
Minimum supply voltage (VDC)	9+ 0.02 x (Resistance of receiver plus line).
Maximum supply voltage (VDC)	30+ 0.004 x (Resistance of receiver plus line).
PRESSURE MEDIA	
Model 230	Gases or liquids compatible with 17-4 PH Stainless Steel, 300 Series Viton O-Rings. Note: Hydrogen not recommended for use with 17-4 PH stainless steel. Optional Buna-N O-rings are recommended for hydrocarbon applications.
3 & 5 Valve Manifold	Gases or liquids compatible with 360 brass, Copper 122, Acetal plug valves and Nitrile O-rings.

¹ RSS of Non-Linearity, Hysteresis, and Non-Repeatability.
² Units calibrated at nominal 70°F. Maximum thermal error computed from this datum.
³ Operating temperature limits of the electronics only. Pressure media temperatures may be considerably higher.
⁴ Order assembled with the Model 230 (Code 3V) or separately as Option 891.
⁵ Refer to drawings.
⁶ Order assembled with the Model 230 (Code 5V)
⁷ Calibrated into a 50K ohm load, operable into a 5000 ohm load or greater.
⁸ Zero output factory set to within ±25mV (for 5 VDC output) or ±50mV (for 10 VDC output)
⁹ Span (Full Scale) output factory set to ±25 mV (for 5 VDC output) or ± 50 mV (for 10 VDC output)
¹⁰ Calibrated at factory with a 24 VDC loop supply voltage and a 250 ohm load.
¹¹ Zero output factory set to within ±0.16mA. Span factory set to within ±0.16 mA

OVERPRESSURE CAPABILITY

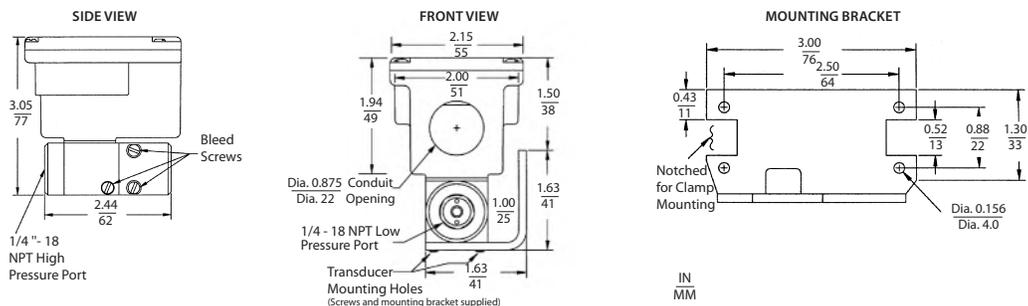
Unidirectional			Bidirectional		
Pressure Range PSID	Proof Pressure High Side PSI	Proof Pressure Low Side PSI	Pressure Range PSID	Proof Pressure High Side PSI	Proof Pressure Low Side PSI
0 to 1.0	50	2.5	0 to ±0.5	50	1.25
0 to 2.0	50	5	0 to ±1.0	50	2.5
0 to 5.0	100	12.5	0 to ±2.5	100	6.35
0 to 10.0	100	25	0 to ±5.0	100	12.5
0 to 25.0	350	62.5	0 to ±10.0	200	25
0 to 30.0	350	75	0 to ±25.0	350	62.5
0 to 50.0	350	125	0 to ±50.0	350	125

(continue Model 230 on next page)

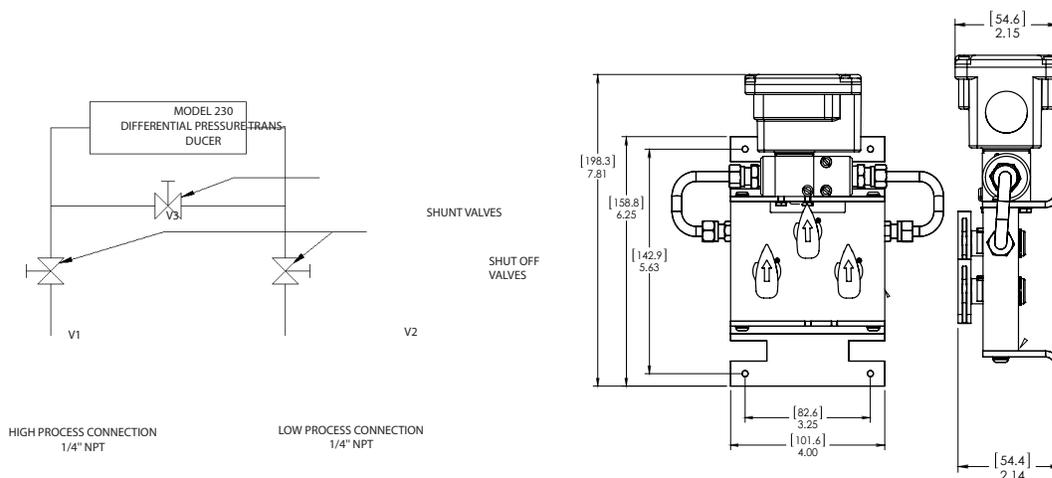
Model 230

TRUE WET-TO-WET PRESSURE DIFFERENTIAL TRANSDUCER

DIMENSIONS - MODEL 230

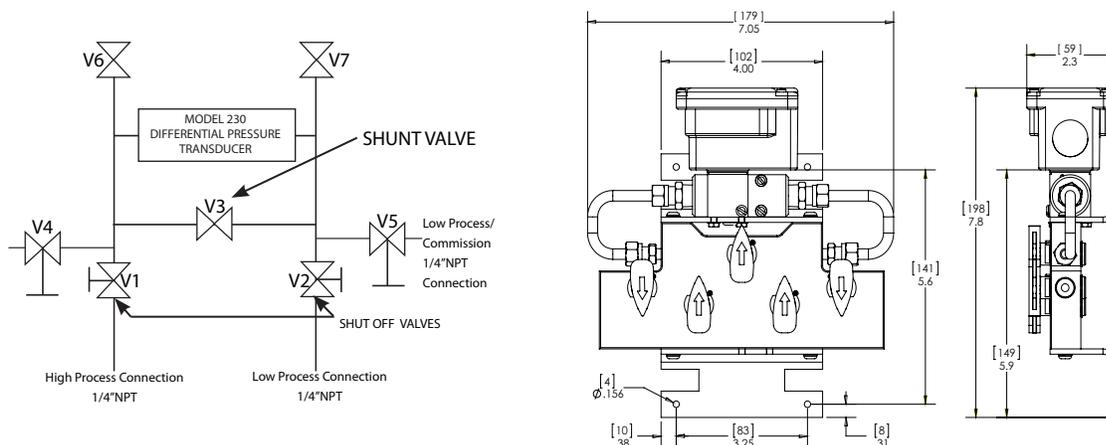


DIMENSIONS - 3 VALVE MANIFOLD ASSEMBLY



For differential pressure measurements at high line pressure (350 PSIG max), it is recommended that the pressure sensor be installed with a valve in each line, plus a shunt valve across the high and low (reference) pressure ports as shown.

DIMENSIONS - 5 VALVE MANIFOLD ASSEMBLY



For differential pressure measurements at high line pressure (350 PSIG max), it is recommended that the pressure sensor be installed with a valve in each line, plus a shunt valve across the high and low (reference) pressure ports as shown.
 Note: V6 and V7 bleed valves are not required when used with a Setra Model 230. Use the bleed screws on Model 230 to bleed the lines of air.

Model 230

TRUE WET-TO-WET PRESSURE DIFFERENTIAL TRANSDUCER

ORDERING INFORMATION

2 3 0 1 - [] [] [] [] - [] [] - [] [] - [] - []

MODEL	RANGE		PRESSURE FITTING		OUTPUT		BLEED SCREW SEALS		OPTIONAL	
2301 = 230	UNIDIRECTIONAL	BIDIRECTIONAL	2F	1/4" NPT (F)	11	4-20 mA	B	Viton (Std.)	C	Calibration Certificate
001PD	0 to 1 PSID	0R5PB	±0.5 PSID	3V	3-Valve Manifold	2D	0.05-5.05 VDC	A	Buna-N (Opt.)	
002PD	0 to 2 PSID	001PB	±1 PSID	5V	5-Valve Manifold	2E	0.05-10.05 VDC			
005PD	0 to 5 PSID	2R5PB	±2.5 PSID							
010PD	0 to 10 PSID	005PB	±5 PSID							
025PD	0 to 25 PSID	010PB	±10 PSID							
030PD	0 to 30 PSID	025PB	±25 PSID							
050PD	0 to 50 PSID	050PB	±50 PSID							
100PD	0 to 100 PSID									

Ordering Example: 2301005PD2F11B = Model 230 0 to 5 PSID unidirectional, 1/4-18 NPT Male fitting, 4 to 20 mA Output, and Viton/Silicone Seals. Please contact for versions not shown.



Multi-Sense Model 231

MULTI-CONFIGURABLE WET-TO-WET
DIFFERENTIAL PRESSURE TRANSDUCER



Pressure Fitting Option "5V" Shown Here

- **Dual Sensors**
- **Suitable for Harsh Environments**
- **3 & 5 Valve Manifold Assembly Options**

- Shows High, Low, and Differential Pressures
- 4 Field Selectable Outputs
- 8 Field Selectable Pressure Ranges
- Field Accessible Push-Button Zero & Remote Zero
- Hinged Cover
- Optional LCD Display
- NEMA 4 Rated Housing, All Cast Aluminum
- CE & RoHS Compliant

Applications

- Energy Management Systems
- Process Control Systems
- Flow Measurement
- Liquid Level Measurement
- Pressurized Vessels
- Pressure Drop Across Filters

Setra's 231 is a multi-configurable, wet-to-wet differential pressure transducer offering the user an all-in-one device with field selectable pressure ranges and analog outputs. The device is offered with an optional 3 or 5 valve machined brass manifold for ease of installation and maintenance. The 231 has a robust, NEMA 4 enclosure with a hinged, captive cover allowing for easy access to switches for adjusting the range and output. An optional display is available that allows users to view high, low, and differential pressure readings on a simple rotating cycle.

FIELD SELECTABLE PRESSURE RANGES

The 231 offers 8 field selectable pressure ranges which can be changed using a slide switch, reducing the risk of improperly installing the wrong range unit. The multi-range functionality allows the user to hold less inventory and add additional flexibility in the field.

QUICK & SIMPLE INSTALLATION

The 231 provides the user with an optional 3 or 5 valve machined brass manifold which can save money on installation and maintenance. The single piece construction of the brass body has no internal process connections, eliminating the risk of internal leaks.

ROBUST ENCLOSURE FOR DIFFICULT APPLICATIONS

The 231 NEMA 4 housing offers an optional LCD display for instant indication of the high, low and differential pressure readings. A hinged enclosure makes it suitable for harsh environments and saves the hassle of misplacing it when completing a difficult installation.

Multi-Sense Model 231

MULTI-CONFIGURABLE WET-TO-WET
DIFFERENTIAL PRESSURE TRANSDUCER

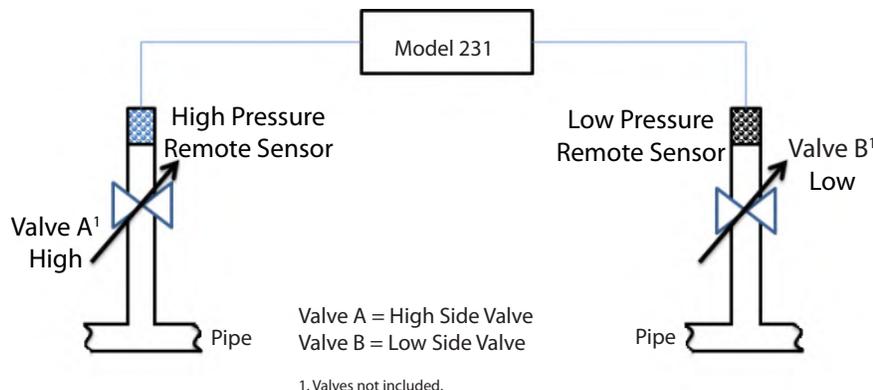
SPECIFICATIONS

ELECTRICAL DATA (VOLTAGE)	
Circuit	3-Wire
Excitation	15 to 30 VDC/18 to 30 VAC (Reverse Excitation Protected)
Output ¹	0 to 5 VDC, 0 to 10 VDC, 1 to 5 VDC
Output Impedance	30 Ohms
Circuit Consumption	8 mA (typ.) at 5 VDC, 8 mA (typ.) at 10 VDC, 40 mA (typ.) at 18-30 VAC
ELECTRICAL DATA (CURRENT)	
Circuit	2-wire (Reverse Excitation Protected)
Output ²	4 to 20 mA
External Load	0 to 250 Ohms
Min. Supply Voltage (VDC)	15 + 0.02 x (Resistance of receiver plus line)
Max. Supply Voltage (VDC)	30 + 0.004 x (Resistance of receiver plus line)
PHYSICAL DESCRIPTION	
Case	Die Cast Aluminum, Powder Coated
Pressure Fittings	1/8-18 NPT Internal
Electrical Connection	1/2 in. Conduit
Size	4.0 x 6 x 2 in. (102 x 152 x 51 mm)
Weight	1.5 lb
Sensor Vacuity Volume	0.2 cc
APPROVALS	
	CE, RoHS

PERFORMANCE DATA					
Accuracy RSS ⁴ (at constant temp.)	Ranges A, B, C: ±1.0% FS Range D: ±2.0% FS				
PRESSURE RANGES					
RANGE CODE	A	B	C	D	Max. Line Pressure
MS1	50	25	10	5	50
MS2	100	50	20	10	100
MS3	250	125	50	25	250
PRESSURE MEDIA					
Liquids or Gases Compatible with 17-4 PH Stainless Steel Note: Hydrogen not recommended for use with 17-4 PH stainless steel					
THERMAL EFFECTS ⁵					
Compensated Range °F (°C)	+32 to +130 (0 to +54)				
Zero/Span Shift %FS/100°F (50°C)	2.0 (1.8)				
Warm-up Shift	<0.12% FS				
Response Time	1 to 5 sec. (selectable)				
Proof Pressure	2 x Full Scale				
Burst Pressure	15 x Full Scale (50 PSI), 10 x Full Scale (75 x 150 PSI), 8 x Full Scale (250 PSI)				
ENVIRONMENTAL DATA					
Operating ³ Temperature	-4 to +185°F (-20 to -85°C)				
Storage Temperature	-4 to +185°F (-20 to +85°C)				
Vibration	10g from 50Hz to 2000 Hz				
Shock	200g				

¹ Calibrated into a 50K ohm load, operable into a 5000 ohm load or greater.
² Calibrated at factory with a 24 VDC loop supply voltage and a 250 ohm load.
³ Operating temperature limits of the electronics only. Pressure media temperatures may be considerably higher or lower.
⁴ RSS of Non-Linearity, Hysteresis, and Non-Repeatability.
⁵ Units calibrated at nominal 70°F. Maximum thermal error computed from this datum.
 Specifications subject to change without notice.

INSTALLATION

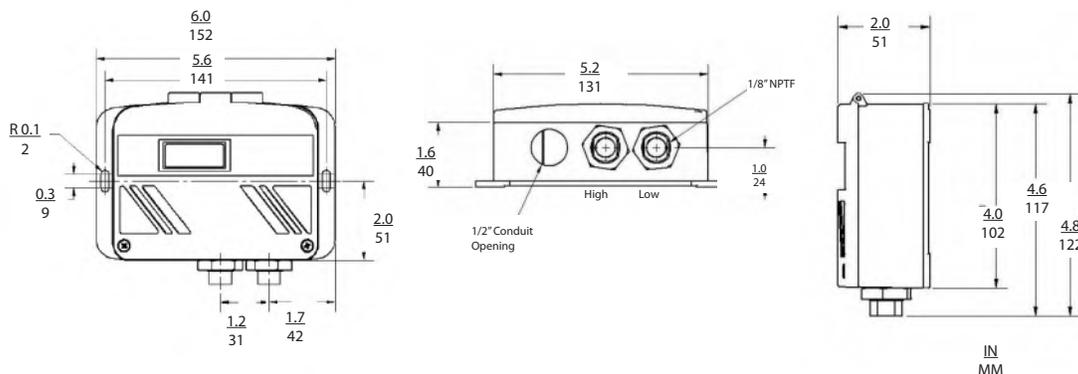


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Multi-Sense Model 231

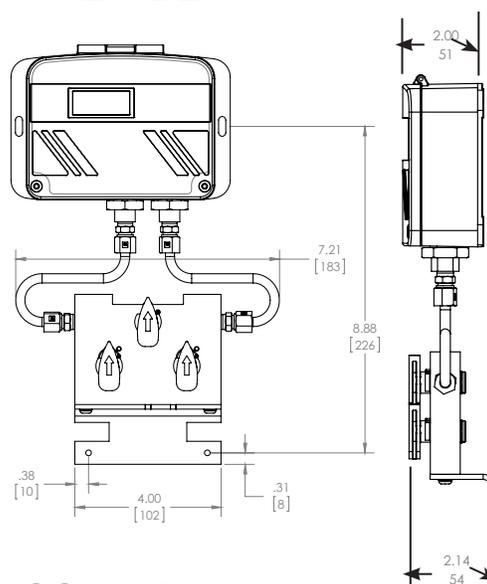
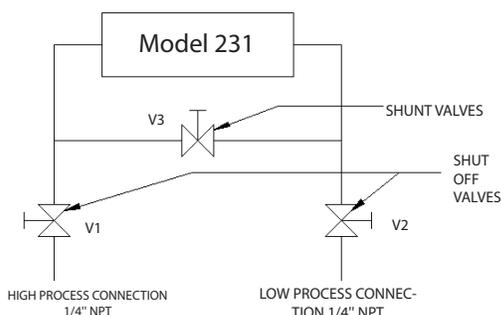
MULTI-CONFIGURABLE WET-TO-WET
DIFFERENTIAL PRESSURE TRANSDUCER

DIMENSIONS - MODEL 231



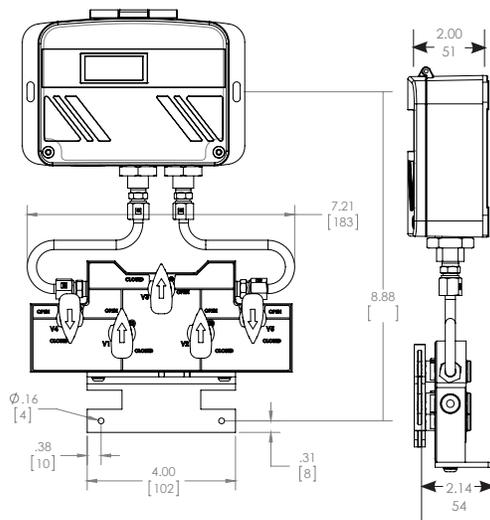
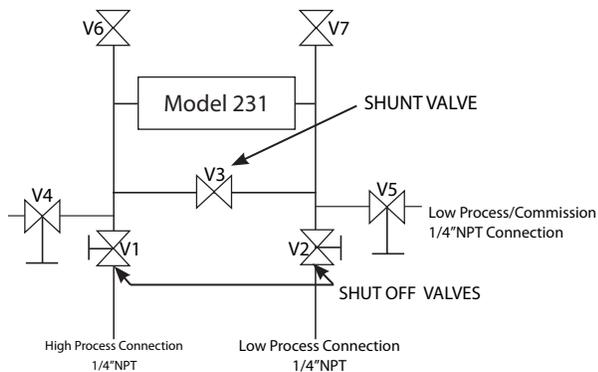
DIMENSIONS - 3 VALVE MANIFOLD ASSEMBLY

- Manifold Block Valves (3)
- Brass V1 for connection to +port V2 for connection to -port V3 for equalizing pressure
- Valve type 90 Degree On/Off
- Process Connections 1/4" -18 NPT Internal Thread



DIMENSIONS - 5 VALVE MANIFOLD ASSEMBLY

- Manifold Block Valves (5)
- Brass V1 for connection to ±port V2 for connection to -port V3 for equalizing pressure V4 for connection to external gauge or alternate plumbing configuration V5 for connection to external gauge or alternate plumbing configuration
- Valve Type 90 Degree On/Off
- Process Connection 1/4" -18 NPT Internal Thread



Multi-Sense Model 231

MULTI-CONFIGURABLE WET-TO-WET
DIFFERENTIAL PRESSURE TRANSDUCER

PRESSURE RANGE CODE SELECTOR (READ BEFORE ORDERING)

Examine the pressure application and determine what is the Highest System Line Pressure.
Determine what is the Differential Pressure being measured.
Find the MAX. Line Pressure in the table on the right that is \geq to your Highest System Line Pressure.
Verify that your DP falls within the selectable ranges in that row.
Follow that row to the left and select that range code.

RANGE CODE	A	B	C	D	MAX. LINE PRESSURE
MS1	50	25	10	5	50
MS2	100	50	20	10	100
MS3	250	125	50	25	250

Example:
Highest System Line Pressure: 125 PSIG
Differential Pressure Measured: 50 PSID
"Max Line Pressure" \geq to System Line Pressure: 250 PSID (50 PSID DP falls within ranges in this row)
Select Range Code: MS3

ORDERING INFORMATION

2 3 1 G - [] [] [] - [] [] - []

MODEL	RANGE SPECIFICATIONS ¹		PRESSURE CONNECTION		DISPLAY	
231G = 231	UNIDIRECTIONAL	BIDIRECTIONAL	2F	1/8-18 NPT female (Standard) Sensor (Conduit Version)	N	No Display
MS1	5, 10, 25, 50 PSID	$\pm 5, \pm 10, \pm 25, \pm 50$ PSID	3V	3-V Manifold assembled w/ Model 231	D	LCD Display
MS2	10, 20, 50, 100 PSID	$\pm 10, \pm 20, \pm 50, \pm 100$ PSID	5V	5-V Manifold assembled w/ Model 231		
MS3	25, 50, 125, 250 PSID	$\pm 25, \pm 50, \pm 125, \pm 250$ PSID				

¹ Maximum line pressure is maximum range of pressure ordered.

Ordering Example: 231GMS12FD = Model 231, 5 PSID up to 50 PSID, 1/8" NPT Female Fitting, and LCD Display 31GMS13VN= Model 231, 0 to 5 PSID up to 50 PSI, 3-Valve Manifold, and No LCD Display



Multi-Sense Model 231RS

REMOTE SENSOR MULTI-CONFIGURABLE WET-TO-WET
DIFFERENTIAL PRESSURE TRANSDUCER



- **Wet-to-Wet w/ Remote Sensors**
- **Armored Jacket, Conduit, Cable Versions**
- **Optional LCD Display w/ Hinged Cover**

- Remote Sensor Design
- Labor and Material Costs are Cut by One-Third
- Field Selectable Ranges
- Field Selectable Outputs
- Field Accessible Push-Button Zero & Remote Zero
- Jumper Selectable Port Swap
- All Cast Aluminum, NEMA 4 Rated Housing
- CE & RoHS Compliant

Applications

- Energy Management Systems
- Process Control Systems
- Flow Measurement
- Liquid Level Measurement
- Pressurized Vessels
- Pressure Drop Across Filters

Setra's Model 231RS is the industry's first multi-configurable, wet-to-wet differential pressure transducer utilizing remote sensors. This design reduces labor and material costs versus traditional copper piping installations. The 231RS has a robust, NEMA 4 enclosure with an LCD display and a hinged, captive cover allowing for easy access to switches in order to adjust range and output. An optional display is available that allows users to view high, low, and differential pressure readings on a simple rotating cycle.

ADVANTAGES OF REMOTE SENSORS

Remote sensors provide multiple advantages. By connecting the high and low side transducers at the point of measurement instead of running copper piping back to the transducer, the labor and material costs are cut by one-third.

ALL INCLUSIVE FIELD SELECTABLE DESIGN

The 231RS has a multi-configurable design, providing the user with field selectable ranges and outputs as well as push button or remote zero. This design gives the user total flexibility to make changes on the job site.

MULTIPLE CONNECTOR OPTIONS FOR ADDED FLEXIBILITY

The 231RS offers remote sensors that connect to the unit via armored jacket, cable or conduit fitting available in 10, 20, 30, 40 and 50 foot lengths. With the remote sensors, there is no need for a 3 or 5 valve manifold and no risk to compromising the electronics.

DISPLAY OPTIONS AVAILABLE

The 231RS has an optional LCD display which gives the user the ability to view the high, low and differential pressure outputs locally at the device. The visual indicator gives instant feedback providing performance validation to the user.

Multi-Sense Model 231RS

REMOTE SENSOR MULTI-CONFIGURABLE WET-TO-WET
DIFFERENTIAL PRESSURE TRANSDUCER

SPECIFICATIONS

ELECTRICAL DATA (VOLTAGE)	
Circuit	3-Wire
Excitation	15 to 30 VDC/18 to 30 VAC (Reverse Excitation Protected)
Output ¹	0 to 5 VDC, 0 to 10 VDC, 1 to 5 VDC
Output Impedance	30 Ohms
Circuit Consumption	8 mA (typ.) at 5 VDC, 8 mA (typ.) at 10 VDC, 40 mA (typ.) at 18-30 VAC
ELECTRICAL DATA (CURRENT)	
Circuit	2-wire (Reverse Excitation Protected)
Output ²	4 to 20 mA
External Load	0 to 250 Ohms
Min. Supply Voltage (VDC)	15 + 0.02 x (Resistance of receiver plus line)
Max. Supply Voltage (VDC)	30 + 0.004 x (Resistance of receiver plus line)
PHYSICAL DESCRIPTION	
Case	Die Cast Aluminum, Powder Coated
Pressure Fittings	1/4-18 NPT Internal
Electrical Connection	1/2 in. Conduit
Size	4.0 x 6 x 2 in. (102 x 152 x 51 mm)
Weight	1.3 lb
ENVIRONMENTAL DATA	
Operating ³ Temperature	-4 to +185°F (-20 to -85°C)
Storage Temperature	-4 to +185°F (-20 to +85°C)
Vibration	10g from 50Hz to 2000 Hz
Shock	200g
APPROVALS	
CE, RoHS	

PERFORMANCE DATA					
Accuracy RSS ⁴ (at constant temp.)	Ranges A, B, C: ±1.0% FS Ranges D: ±2.0% FS				
PRESSURE RANGES					
RANGE CODE	A	B	C	D	Max. Line Pressure
RS1	50	25	10	5	50
RS2	75	37.5	15	7.5	75
RS3	100	50	20	10	100
RS4	150	75	30	15	150
RS5	250	125	50	25	250
PRESSURE MEDIA					
Liquids or Gases Compatible with 17-4 PH Stainless Steel Note: Hydrogen not recommended for use with 17-4 PH stainless steel					
THERMAL EFFECTS ⁵					
Compensated Range	+32 to +130°F (0 to +54°C)				
Zero/Span Shift %FS/100°F (50°C)					2.0 (1.8)
Warm-up Shift	<0.12% FS				
Response Time	1 to 5 sec. (selectable)				
Proof Pressure	2x Full Scale				
Burst Pressure	15 x Full Scale (50 PSI), 10 x Full Scale (75 x 150 PSI), 8 x Full Scale (250 PSI)				

¹ Calibrated into a 50K ohm load, operable into a 5000 ohm load or greater.

² Calibrated at factory with a 24 VDC loop supply voltage and a 250 ohm load.

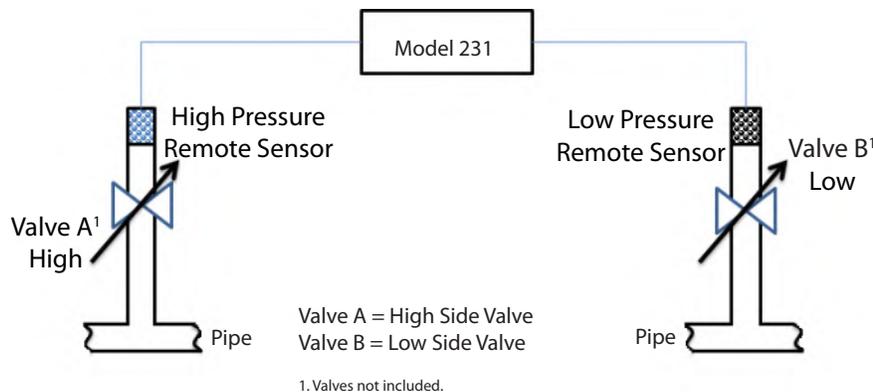
³ Operating temperature limits of the electronics only. Pressure media temperatures may be considerably higher or lower.

⁴ RSS of Non-Linearity, Hysteresis, and Non-Repeatability.

⁵ Units calibrated at nominal 70°F. Maximum thermal error computed from this datum.

Specifications subject to change without notice.

INSTALLATION



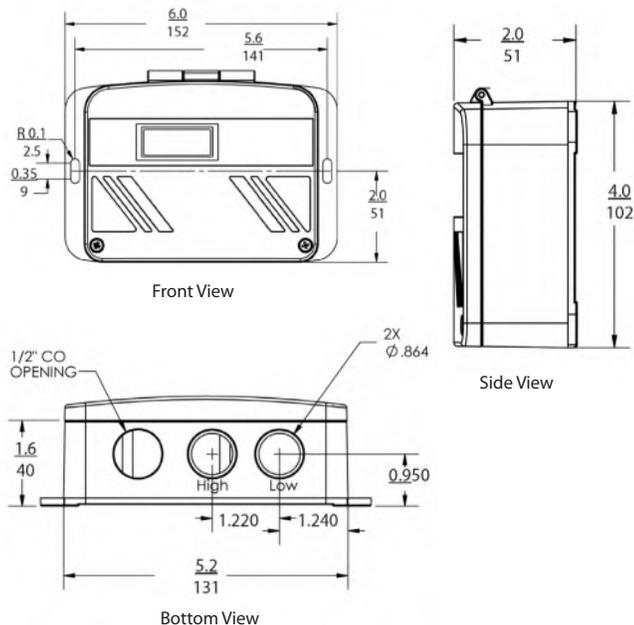
(continue Model 231RS on next page)

Multi-Sense Model 231RS

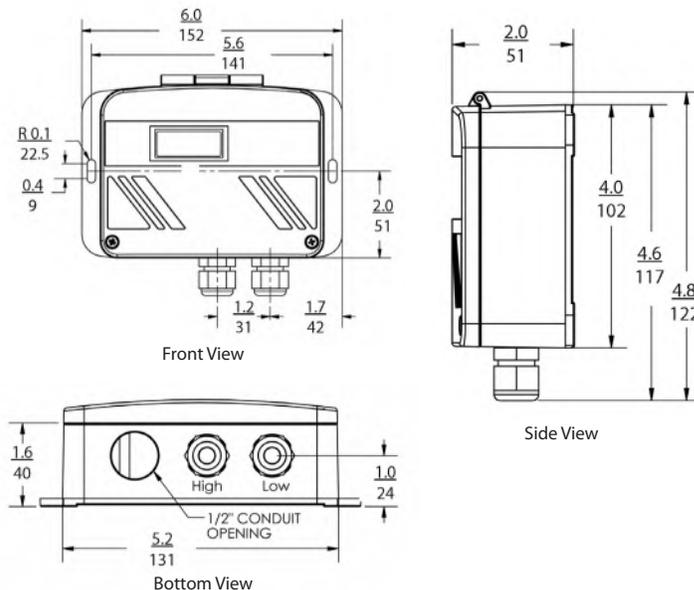
REMOTE SENSOR MULTI-CONFIGURABLE WET-TO-WET
DIFFERENTIAL PRESSURE TRANSDUCER

DIMENSIONS

Conduit Version

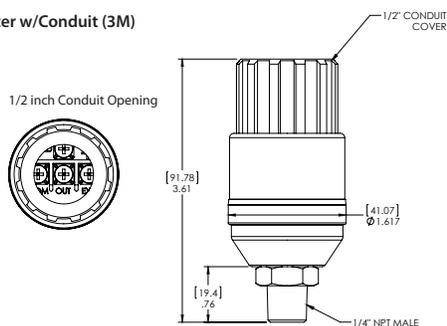


Cable Version

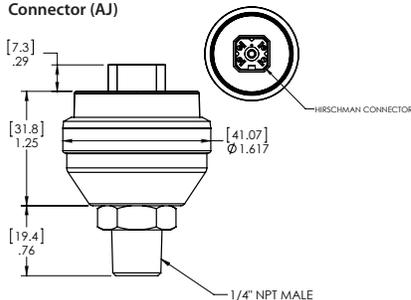


DIMENSIONS - REMOTE SENSOR

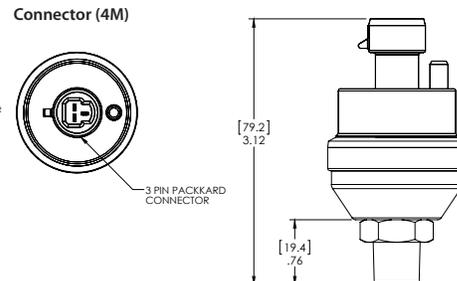
Transducer w/Conduit (3M)



Transducer w/Hirschmann Connector (AJ)



Transducer w/Packard Connector (4M)



Multi-Sense Model 231RS

REMOTE SENSOR MULTI-CONFIGURABLE WET-TO-WET
DIFFERENTIAL PRESSURE TRANSDUCER

PRESSURE RANGE CODE SELECTOR (READ BEFORE ORDERING)

Examine the pressure application and determine what is the Highest System Line Pressure.
Determine what is the Differential Pressure being measured.
Find the MAX. Line Pressure in the table on the right that is \geq to your Highest System Line Pressure.
Verify that your DP falls within the selectable ranges in that row.
Follow that row to the left and select that range code.

RANGE CODE	A	B	C	D	MAX. LINE PRESSURE
RS1	50	25	10	5	50
RS2	75	37.5	15	7.5	75
RS3	100	50	20	10	100
RS4	150	75	30	15	150
RS5	250	125	50	25	250

Example:
Highest System Line Pressure: 125 PSIG
Differential Pressure Measured: 75 PSID
"Max Line Pressure" \geq to System Line Pressure: 150 PSID (75 PSID DP falls within ranges in this row)
Select Range Code: RS4

ORDERING INFORMATION

2 3 1 G - [] [] [] - [] [] - [] - [] []

MODEL	RANGE SPECIFICATIONS ¹		PRESSURE CONNECTION		DISPLAY		CABLE ²	
231G = 231RG	UNIDIRECTIONAL	BIDIRECTIONAL	3M	1/4-18 NPT Male Remote Sensor (Conduit Version - No Cable Provided)	N	No Display	10	10 ft.
RS1	5, 10, 25, 50 PSID	$\pm 5, \pm 10, \pm 25, \pm 50$ PSID	4M	1/4-18 NPT Male Remote Sensor (Cable Version)	D	LCD Display	20	20 ft.
RS2	7.5, 15, 37.5, 75 PSID	$\pm 7.5, \pm 15, \pm 37.5, \pm 75$ PSID	AJ	1/4-18 NPT Male Remote Sensors (Armored Jacket Version)			30	30 ft.
RS3	10, 20, 50, 100 PSID	$\pm 10, \pm 20, \pm 50, \pm 100$ PSID					40	40 ft.
RS4	15, 30, 75, 150 PSID	$\pm 15, \pm 30, \pm 75, \pm 150$ PSID					50	50 ft.
RS5	25, 50, 125, 250 PSID	$\pm 25, \pm 50, \pm 125, \pm 250$ PSID						

Ordering Example: 231GRS44MN10 = Model 231RS w/Range Code RS4, 1/4-18 NPT Male Remote Sensor (Cable Version), No Display, 10ft. Cable¹.

NOTE: NOT RECOMMENDED TO CONNECT VAC EXCITATION TO EARTH (SAFETY) GROUND



Model 239

HIGH ACCURACY LOW DIFFERENTIAL PRESSURE TRANSDUCER

- Industry Standard for High Accuracy
- Captures Dynamic Pressure Changes
- Small Footprint

- High Accuracy $\pm 0.073\%$ FS Option Available
- Fast Response Time: $< 10\text{ms}$
- Fast Warm-Up: $< 0.1\%$ over 5 min.
- Low Thermal Error
- CE & RoHS Compliant

Applications

- Exhaust Pressure
- Leak Detection Systems
- Filter Pressure
- Medical Instrumentation
- Part Integrity Testing
- Cleanrooms



Setra's Model 239 is the "standard" for measuring low differential pressure in the Test & Measurement industry. Decades worth of installations have helped the 239 build a reputation of reliability and remains the trusted choice for critical installations. The 239 delivers a high performance 0.073% FS accuracy option over a wide temperature range which outperforms competitive transducers in the low pressure market. The 239 offers multiple options to meet both simple and demanding application requirements that are not provided on competitive transducers.

LONG-TERM RELIABILITY

The Model 239 differential pressure transducer uses a simple and reliable variable capacitance sensor design. The 239 provides repeatable and dependable readings in rugged applications through its efficient sensor design.

CUSTOMIZATION IS STANDARD

Unlike many competitors, the 239 offers many mechanical and electrical options that can be integrated into existing system designs. These options reduce engineering design time, allowing for earlier project completion and quicker time to market.

ACCURACY & PERFORMANCE FOR LOW PRESSURE RANGES

The Model 239 is a Test & Measurement grade transducer for extremely low pressure ranges. The 239 covers a large selection of pressure ranges with optional $\pm 0.073\%$ FS accuracy over a wide temperature range. The Model 239 provides the fastest response time compared to its competitors.

Model 239

HIGH ACCURACY LOW DIFFERENTIAL PRESSURE TRANSDUCER

SPECIFICATIONS

PERFORMANCE DATA		ELECTRICAL DATA (CURRENT)		PHYSICAL DESCRIPTION	
Accuracy RSS ¹ at constant temp	±0.14% FS ±0.073% FS	Circuit	2-Wire	Pressure Fittings	1/8" -27 NPT Internal
Non-Linearity (BFSL)	±0.10% FS	Output ³	0 to 20 mA ⁴	Electrical Connection	2' Multiconductor cable
Hysteresis	0.10%FS	External Load	0 to 1000 ohms	Weight (approx)	8 oz
Non-Repeatability	0.02% FS	Min. Supply Voltage (VDC)	17 + 0.02 x (resistance of receiver plus line)	Vibration	2g from 5 Hz to 500 Hz
Warm-up Shift	<±0.1% FS residual shift after 5 minutes	Max. Supply Voltage (VDC)	42 + 0.004 x (resistance of receiver plus line)	Internal Volumes	Positive port 0.03 in ³ Negative port 0.1 in ³
Setting Time	<100 milliseconds	EFFECT OF POWER SUPPLY		Max Volume Change at FS	0.001 in ³
Acceleration Response	<0.0002 psi/g	Variations	<0.003 mA/Volt	Acceleration	10g Max
Natural Frequency	2000 Hz nominal	Output Noise	<10 microamperes RMS (0 Hz to 10k Hz)	Shock	50g Operating
Operable Line Pressure	Vacuum to Max 250 PSIG	ELECTRICAL DATA (VOLTAGE)		ENVIRONMENTAL DATA	
Line Pressure Effect	2%/100 PSI	Circuit	4-Wire (+Exc, -Exc, +Out, -Opt)	Operating Temp. ³	0 to +175°F (-18 to +80°C)
THERMAL EFFECTS²		Excitation ⁵	22 to 30 VDC (reverse excitation protected)	Storage Temp.	-65 to +250°F (-55 to +120°C)
Compensated Range	+30 to +150°F (-1 to -65°C)	Output Impedance	<10 ohms	PRESSURE MEDIA	
Zero/Span Shift %FS/100°F(50°C)	<+1 (<±0.9)/<+1(<±0.9)	Output Noise	<200 microvolts RMS (in band, 0 Hz to 10k Hz)	Positive Pressure Media: Gases compatible with stainless steel, hard anodized 6061 aluminum (Buna-N O-ring)	
		Output ⁶	See ordering information (for unidirectional ranges) ±2.5 VDC (for bidirectional ranges)	Reference Pressure Media: Clean dry air or other gases (non-corrosive, non-condensable)	
				APPROVALS	
				CE, RoHS	

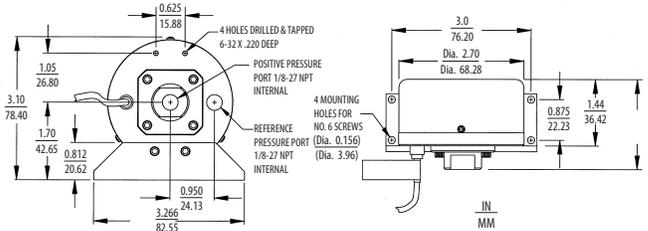
¹RSS of Non-Linearity, Hysteresis, and Non-Repeatability.
²Units calibrated at nominal 70°F. Max thermal error computer from this datum. x 2 for 0.5 and ±0.25 in W.C. changes.
³Calibrated at factory with a 24 VDC loop supply voltage and a 250 ohm load.
⁴Zero output factory set to within ±0.07 mA.
⁵Span (FS) output factory set to within ±0.07 mA.
⁶Internal regulation minimizes effect of excitation variation, with <±0.005% FS output change. Will operate on 28VDC aircraft power per MIL-STD-704A & not be damaged by emergency power conditions.
⁷Calibrated into 50K oh load. Operable into 5000 ohms or greater. Zero output factory set to within ±20mV.

Specifications subject to change without notice.

OVERPRESSURE CAPABILITY

PRESSURE RANGE		PROOF PRESSURE		PRESSURE RANGE		PROOF PRESSURE	
Unidirectional	Bidirectional	Positive	Negative	Unidirectional	Bidirectional	Positive	Negative
0 to 0.5 in. W.C.	±0.25 in. W.C.	5 PSI	2.5 in. W.C.	0 to 250 Pa	±125 Pa	0.5 BAR	1,250 Pa
0 to 1 in. W.C.	±0.5 in. W.C.	7 PSI	5 in. W.C.	0 to 500 Pa	±250 Pa	0.7 BAR	3,000 Pa
0 to 2.5 in. W.C.	±1 in. W.C.	10 PSI	12.5 in. W.C.	0 to 1,000 Pa	±500 Pa	1.25 BAR	6,250 Pa
0 to 5 in. W.C.	±2.5 in. W.C.	20 PSI	25 in. W.C.	0 to 2,000 Pa	±1,000 Pa	3.5 BAR	18,500 Pa
0 to 15 in. W.C.	±5 in. W.C.	50 PSI	75 in. W.C.	0 to 5,000 Pa	±2,500 Pa	3.5 BAR	37,000 Pa
0 to 30 in. W.C.	±15 in. W.C.	50 PSI	150 in. W.C.	0 to 15 kPa	±7,500 Pa	3.5 BAR	37,000 Pa
0 to 5 PSID	±2.5 PSID	75 PSI	25 PSI	0 to 35 kPa	±17,500 Pa	5 BAR	1.75 BAR
0 to 10 PSID	±5 PSID	100 PSI	50 PSI	0 to 70 kPa	±35 kPa	7 BAR	3.5 BAR

DIMENSIONS



ORDERING INFORMATION

2 3 9 1 - [] [] [] [] - 1 F - [] [] - [] [] - [] []

MODEL	PRESSURE RANGES		PRESSURE FITTING		OUTPUT		TERMINATION		ACCURACY		OPTIONS ⁴	
2391 = Model 239	UNIDIRECTIONAL	BIDIRECTIONAL	1F	1/8" NPT Int.	11	4 to 20 mA ⁷	02	2' Cable 22 GA	W	±0.14% FS	N	None
	0R5WD	0 to 0.5 in. W.C.	R25WB	±0.25 in. W.C.	2S	±2.5 VDC ¹	10	10' Cable 22 GA	9	±0.073% FS	7	303SS Housing Positive Port
	001WD	0 to 1 in. W.C.	0R5WB	±0.5 in. W.C.	2B	0 to 5 VDC ²	25	25' Cable 22 GA			3	Compensated Temp. Range (-65 to 250°F) ⁵
	2R5WD	0 to 2.5 in. W.C.	001WB	±1 in. W.C.	27	1 to 5 VDC	Y1	2' 30 GA 9-Conductor ³			4	Viton O-Ring
	005WD	0 to 5 in. W.C.	2R5WB	±2.5 in. W.C.	28	1 to 6 VDC	Y3	5' 30 GA 9-Conductor ³			D	Mate with Datum
	015WD	0 to 15 in. W.C.	005WB	±5 in. W.C.	2C	0 to 10 VDC	Y4	10' 30 GA 9-Conductor ³			E	Special Excitation Voltage ±24 VDC
	030WD	0 to 30 in. W.C.	7R5WB	±7.5 in. W.C.	2T	0 to 5 VDC ¹	Y6	25' 30 GA 9-Conductor ³			G	Special Excitation Voltage ±15VDC
	005PD	0 to 5 PSID	015WB	±15 in. W.C.							L	Etched SS Tags
	010PD	0 to 10 PSID	2R5PB	±2.5 PSID							M	Remote Full Scale Sensitivity ⁶
	250LD	0 to 250 Pa	005PB	±5 PSID							R	Remote Calibration (Adjustable) ⁵
	500LD	0 to 500 Pa	125LB	±125 Pa							S	Remote Calibration Adjustment (Fixed) ⁵
	10CLD	0 to 1000 Pa	250LB	±250 Pa							Y	Clean for Oxygen
	20CLD	0 to 2000 Pa	500LB	±500 Pa								
	50CLD	0 to 5000 Pa	10CLB	±1000 Pa								
	010KD	0 to 10 kPa	25CLB	±2500 Pa								
	015KD	0 to 15 kPa	50CLB	±5000 Pa								
	035KD	0 to 35 kPa	75CLB	±7500 Pa								
	070KD	0 to 70 kPa	035KB	±35 kPa								

¹ 2S and 2T are for Bidirectional Pressure Ranges Only
² 2B is for Unidirectional Pressure Ranges Only
³ Y1-Y6 = Red Jacket Cable (Previously the standard for voltage outputs.)
⁴ Both boxes must be filled in alphanumeric order.
 • If No options: N + N
 • If 1 option: Option Code + N
 • If 2 options: Option Code + Option Code
⁵ Options M, R & S are for voltage units and Y1-Y6 Termination Codes
⁶ 2x Thermal Effects Specification
⁷ Not available with 9-conductor cable

Example: Part No. 2391001WD1F1102WLN = Model 239, 0 to 1 in. W.C. pressure range, 1/8" NPT Int. fitting, 4 to 20 mA Output, 2' Cable Length, ±0.14% FS Accuracy, Etched SS Tags Option

Model 264

VERY LOW DIFFERENTIAL PRESSURE TRANSDUCER



- Industry Standard
- 3 Year Unconditional Warranty
- $\pm 0.25\%$, $\pm 0.4\%$, ± 1 FS Accuracy

- Installation Time Minimized w/ Mounting Options
- Reverse Wiring Protection
- Internal Regulation Permits Use with Unregulated DC Power Supplies
- Fire Retardant Case (UL 94 V-0 Approved)
- CE & RoHS Compliant

Applications

- HVAC Systems
- Energy Management Systems
- Variable Air Volume and Fan Control (VAV)
- Environmental Pollution Control
- Lab & Fume Hood Control

With millions of sensors installed world wide, Setra's 264 is the standard for low differential pressure measurement in HVAC building automation. The 264 very low differential pressure transducer uses a dead-ended stainless steel welded capacitive sensing element that requires minimal amplification and delivers excellent accuracy and longterm stability in critical installations. The 264 has a 3 year, unconditional warranty, giving the end-user peace of mind well beyond the initial commissioning phase and guarantees performance well after the BAS warranty. The 264 utilizes a robust design that offers brass barbed fittings, and an optional conduit cover for easy and consistent installation.

THE INDUSTRY STANDARD PRESSURE TRANSDUCER

The 264 has been a consistent and trusted HVAC sensor for over two decades. The reputation of reliability and quality with exceptional delivery time has helped the 264 remain the trusted choice for any low differential pressure applications.

CONVENIENT INSTALLATION

The 264 is available in both a wall and conduit versions providing the installer with flexible mounting options. The base mount allows the sensor to be installed anywhere, allowing for a simple installation.

THE SETRA SENSOR

The core technology of the 264 is the all stainless steel capacitive sensing element. Setra designs and manufactures all of their sensing elements resulting in full control over the process and quality of every single sensor. The welded dead-ended capacitive sensors requires minimal amplification and delivers excellent accuracy and longterm stability. Setra's technology has been used in over 8 million installations and has the highest field acceptance rate in the industry.

Model 264

VERY LOW DIFFERENTIAL PRESSURE TRANSDUCER

SPECIFICATIONS

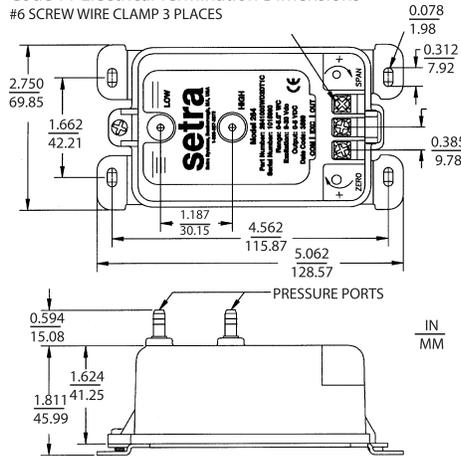
PERFORMANCE DATA		ELECTRICAL DATA (VOLTAGE)		PHYSICAL DESCRIPTION	
	STANDARD	OPTIONAL			
Accuracy RSS ¹ (at constant temp)	±1.0% FS	±0.4% FS ±0.25% FS	Circuit	3-Wire (Com, Out, Exc)	
Non-Linearity, BFSL	±0.96% FS	±0.38% FS ±0.22% FS	Excitation/ Output ⁴	9 to 30 VDC / 0 to 5 VDC ^{5,6}	
Hysteresis	0.10% FS	0.10% FS	Output Impedance	100 ohms	
THERMAL EFFECTS					
Compensated Range	0 to +150°F (-18 to +65°C)				
Zero/ Span Shift %FS/100°F(50°C)	±0.033 (±0.06)				
Maximum Line Pressure	10 PSI				
Overpressure	Up to 10 PSI (Range Dependent)				
Long Term Stability	0.5% FS/1 YR				
ENVIRONMENTAL DATA					
Operating Temperature ³	0 to +175°F (-18 to +79°C)				
Storage Temperature	-65 to +250°F (-54 to +121°C)				
ELECTRICAL DATA (CURRENT)					
Circuit	2-Wire				
Output ²	4 to 20 mA ^{8,9}				
External Load	0 to 800 ohms				
Minimum Supply Voltage (VDC)	9 + 0.02 x (resistance of receiver plus line)				
Maximum Supply Voltage (VDC)	30 + 0.004 x (resistance of receiver plus line)				
Bidirectional output at zero pressure	12 mA ^{8,9}				
PHYSICAL DESCRIPTION					
Case	Fire-Retardant Glass Filled Polyester (UL 94 V-0 Approved)				
Electrical Connection	Screw Terminal Strip				
Mounting	4 screw holes on removable zinc plated steel base (designed for 2.75" snap track)				
Pressure Fittings	3/16" O.D. barbed brass for 1/4" push on tubing				
Zero and Span Adjustments	Accessible on top of case				
Weight (approx.)	10 Ounces				
PRESSURE MEDIA					
Clean air or similar non-conducting gases.					
POSITION EFFECT¹⁰					
	RANGE		%FS/G		
	0.1 in. WC		2.3		
	0.25 in. WC		1		
	0.5 in. WC		0.5		
	1.0 in. WC		0.3		
	2.5 in. WC		0.2		
	10 in. WC		0.15		

¹ RSS of Non-Linearity, Hysteresis, and Non-Repeatability.
² Units calibrated at nominal 70°F. Maximum thermal error computed from this datum.
³ Operating temperature limits of the electronics only. Pressure media temperatures may be considerably higher.
⁴ Calibrated into a 50K ohm load, operable into a 5000 ohm load or greater.
⁵ Zero output factory set to within ±50mV (±25 mV for optional accuracies).
⁶ Span (Full Scale) output factory set to within ±50mV. (±25 mV for optional accuracies).
⁷ Calibrated at factory with a 24 VDC loop supply voltage and a 250 ohm load.
⁸ Zero output factory set to within ±0.16mA (±0.08 mA for optional accuracies).
⁹ Span (Full Scale) output factory set to within ±0.16mA (±0.08 mA for optional accuracies).
¹⁰ Unit is factory calibrated at 0g effect in the vertical position

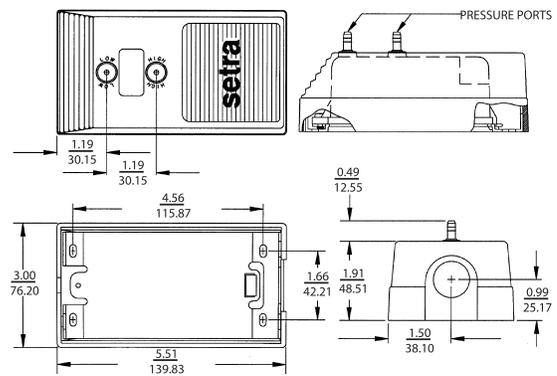
Specifications subject to change without notice.

DIMENSIONS

Code T1 Electrical Termination Dimensions
 #6 SCREW WIRE CLAMP 3 PLACES



Optional 1/2" Conduit Electrical Enclosure Dimensions



ORDERING INFORMATION

MODEL	RANGE CODE		OUTPUT		ELECTRICAL TERMINATION	ACCURACY ¹
2641 = Model 264	UNIDIRECTIONAL	BIDIRECTIONAL	T1	4-20 mA	T1	C ±1% FS
	OR1WD	R05WB	2D	0-5 VDC	A1	E ±0.4% FS
	R25WD	OR1WB				F ±0.25% FS
	OR5WD	R25WB				G ±1% FS
	001WD	OR5WB				
	1R5WD	001WB				
	2R5WD	1R5WB				
	003WD	2R5WB				
	005WD	005WB				
	010WD	7R5WB				
	015WD	010WB				
	025WD	025WB				
	050WD	050WB				
	100WD					

1. Optional Accuracies E, F, G include Calibration Certificate

Ordering Example: 26412R5WD11T1C= Model 264, 0 to 2.5 in. W.C. Range, 4 to 20 mA Output, Terminal Strip Electrical Connection, and ±1% Accuracy



Model 265

VERY LOW DIFFERENTIAL PRESSURE TRANSDUCER

•Excellent Price to Performance Ratio

•Reduce Installation Costs

• $\pm 0.25\%$, $\pm 0.4\%$, ± 1 FS Accuracy

- 24 VDC or 24 VAC Excitation
- Voltage or Analog Outputs
- Reverse Wiring Protection
- Internal Regulation
- Fire Retardant Case (UL 94 V-0 Approved)
- CE & RoHS Compliant

Applications

- Heating, Ventilation, and Air Conditioning
- Energy Management Systems
- Variable Air Volume and Fan Control (VAV)
- Environmental Pollution Control
- Static Duct and Cleanroom Pressures

Setra's Model 265 is a lower price solution that offers an excellent price to performance ratio and meets the requirements in all typical HVAC applications.

The 265 is a low differential pressure transducer that uses a dead-ended capacitive sensing element that requires minimal amplification and delivers excellent accuracy and longterm stability. It delivers $\pm 1\%$ FS accuracy with $\pm 0.25\%$ and $\pm 0.4\%$ FS options and pressure ranges from 0.25" W.C. up to 100" W.C.

The 265 has a small footprint, an AC power option and an optional conduit cover that allows for simple, secure installation for any applications.

THE BEST PRICE TO PERFORMANCE IN THE INDUSTRY

The 265 delivers exceptional features at a low price, perfect for any OEM looking for quality and performance at an affordable price.

QUICK & EASY INSTALLATION

The 265 is designed to reduce installation costs while increasing overall operating efficiency. Installation is easy with integral mounting tabs, pressure connections located on the face of the unit, and a screw terminal strip for electrical termination.

THE SETRA SENSOR

The core technology of the 265 is the all stainless steel capacitive sensing element. Setra designs and manufactures all of their sensing elements resulting in full control over the process and quality of every single sensor. The welded dead-ended capacitive sensors requires minimal amplification and delivers excellent accuracy and longterm stability. Setra's technology has been used in over 8 million installations and has the highest field acceptance rate in the industry.

Model 265

VERY LOW DIFFERENTIAL PRESSURE TRANSDUCER

SPECIFICATIONS

PERFORMANCE DATA		
	STANDARD	OPTIONAL
Accuracy RSS ¹ (at constant temp)	±1.0% FS	±0.4% FS ±0.25% FS
Non-Linearity, BFSL	±0.98% FS	±0.38% FS ±0.22% FS
Hysteresis	0.10% FS	0.10% FS
Non-Repeatability	0.05% FS	0.05% FS
THERMAL EFFECTS ²		
Compensated Range	0 to +150°F (-18 to +65°C)	
Zero Shift %FS/100°F(50°C)	±0.033 (±0.06)	
Span Shift %FS/100°F(50°C)	±0.033 (±0.06)	
Max. Line Pressure	10 PSI	
Overpressure	Up to 10 PSI (range dependent)	
Long Term Stability	0.5% FS/YR	
Warm-Up Shift	±0.1% FS Total	

ELECTRICAL DATA (VOLTAGE)	
Circuit	3-Wire (Com, Out, Exc)
Excitation/Output ⁵	9 to 30 VDC / 0 to 5 VDC 9 to 30 VAC / 0 to 5 VDC 12 to 30 VAC / 0 to 10 VDC
Output Impedance	<100 ohms
Bidirectional output at zero pressure	2.5 VDC (±50 mV)
ELECTRICAL DATA (CURRENT)	
Circuit	2-Wire
Output ⁷	4 to 20 mA ³
External Load	0 to 800 ohms
Min. Loop Supply Voltage (VDC)	9 + 0.02 x (resistance of receiver plus line)
Max. Loop Supply Voltage (VDC)	30 + 0.004 x (resistance of receiver plus line)
Bidirectional output at zero pressure	12 mA

PHYSICAL DESCRIPTION	
Pressure Fittings	1/4" Fitting
Case	Fire Retardant Glass Filled Polyester (UL 94-V Approved)
Weight	3 oz
Elec. Connection	Screw Terminal Strip
POSITION EFFECT ⁴	
RANGE	ZERO OFFSET (%FS/G)
To 0.5" W.C.	0.60
To 1.0" W.C.	0.50
To 2.5" W.C.	0.22
To 5.0" W.C.	0.14
PRESSURE MEDIA	
Clean air or similar non-conducting gases.	
ENVIRONMENTAL DATA	
Temperature	
Operating °F (°C) ³	0 to +150 (-18 to +65)
Storage °F (°C)	-40 to +185 (-40 to +85)

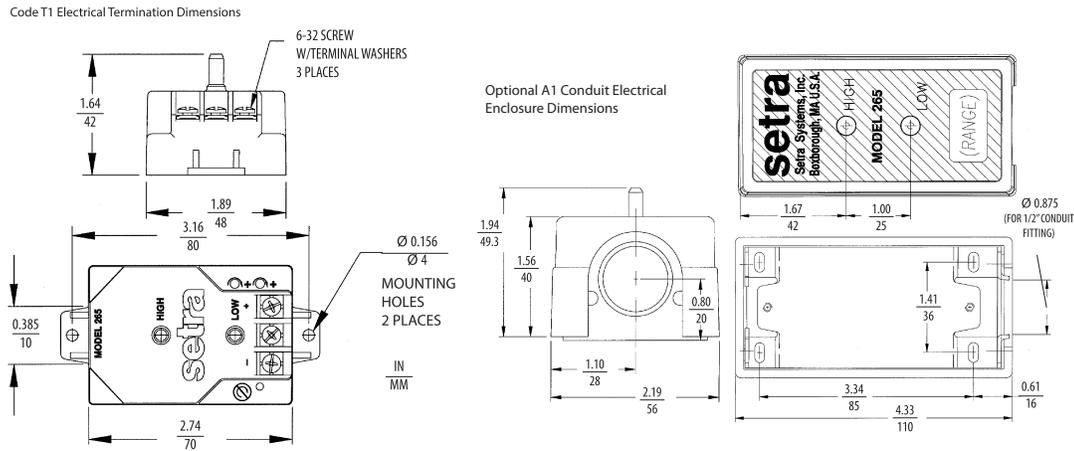
¹ RSS of Non-Linearity, Non-Repeatability and Hysteresis
² Units calibrated at nominal 70°F. Maximum thermal error computed from this datum.
³ Operating temperature of the electronics only. Pressure media temperatures may be considerably higher or lower.
⁴ Unit is factory calibrated at 0g effect of vertical position.
⁵ Calibrated into 50K ohm load. Operable into 5000 ohms or greater.
⁶ Zero & Span (FS) output factory set to within ±50mV (±25 mV for optional accuracies).
⁷ Calibrated at factory with a 24 VDC loop supply voltage and a 250 ohm load.
⁸ Zero & Span (FS) output factory set to within ±0.16 mA (±0.08 mA for optional accuracies).

NOTE: Setra quality standards are based on ANSI-Z540-1. The calibration of this product is NIST traceable.

U.S. Patent Nos. 5442962, 6019002, 6014800 and other Patents Pending.

Specifications subject to change without notice.

DIMENSIONS



ORDERING INFORMATION



MODEL	RANGE CODE		EXCITATION/OUTPUT		ELECTRICAL TERMINATION		ACCURACY ¹	
2651 = Model 265	UNIDIRECTIONAL	BIDIRECTIONAL	T1	24VDC/ 4-20 mA	T1	Terminal Strip	C	±1% FS
	R25WD	0R1WB	2B	24VDC/ 0-5 VDC	A1	1/2" Conduit Enc.	E	±0.4% FS
	0R5WD	R25WB	AB	24VAC/ 0-5 VDC			F	±0.25% FS
	001WD	0R5WB	AC	24VAC/ 0-10 VDC			G	±1% FS
	2R5WD	001WB						
	005WD	2R5WB						
	010WD	005WB						
	025WD	010WB						
	050WD	025WB						
	100WD	050WB						

1. Optional Ranges E, F with Calibration Certificate. G with Calibration Certificate.

Ordering Example: 26512R5WD11T1C = Model 265, 0 to 25 in. WC Range, 4 to 20 mA Output, Terminal Strip Electrical Connection, ±1% Accuracy.

Please contact factory for versions not shown.

Model 267

VERY LOW DIFFERENTIAL PRESSURE TRANSDUCER



- **Suitable for Harsh Environments**
- **Optional LCD Display**
- **±0.25%, ±0.4%, ±0.5%, ±1 FS Accuracies**
- Optional 3.5 Digit LCD Display w/ 0.5% FS Accuracy
- NEMA 4 Rated Housing
- Optional Static Pressure Probe
- PG-9, PG-13 or Conduit Electrical Termination
- 24 VAC or 24 VDC Excitation
- CE & RoHS Compliant

Applications

- HVAC Systems
- Energy Management Systems
- Static Duct Pressure
- Cleanroom Pressure
- Oven Pressurization Controls
- Furnace Draft Controls

Setra's Model 267 is the most rugged high accuracy, low differential pressure transducer on the market. It delivers accuracies of ±1% FS (without display), ±0.5% FS (with display), optional ±0.25% FS and ±0.4% FS accuracies, and pressure ranges from 0.1" W.C. up to 100" W.C. The 267 is housed in a robust, NEMA 4 rated enclosure and has an optional static pressure probe reducing installation and material costs. The 267 is offered with an optional LCD display and a standard accuracy of ±0.5% making it ideal for high accuracy Pharmaceutical applications.

CUSTOMIZATION IS STANDARD

The 267, unlike most competitors, offers many mechanical and electrical options that can be integrated into existing designs. The optional 0.25" diameter pressure probe is made of sturdy extruded aluminum and is designed with baffles to prevent velocity pressure errors which saves money and reduces time on the job site.

ROBUST ENCLOSURE FOR DIFFICULT APPLICATIONS

The 267 is housed in a NEMA 4 rated housing and is built to withstand harsh environments. The 267 is available in both wall and duct mount providing the installer with flexible mounting options. The wall mount allows the sensor to be installed anywhere, whereas the duct probe configuration is designed to maximize space efficiency in difficult applications.

THE SETRA SENSOR

The core technology of the 267 is the all stainless steel capacitive sensing element. Setra designs and manufactures all of their sensing elements resulting in full control over the process and quality of every single sensor. The welded dead-ended capacitive sensors requires minimal amplification and delivers excellent accuracy and longterm stability. Setra's technology has been used in over 8 million installations and has the highest field acceptance rate in the industry.

Model 267

VERY LOW DIFFERENTIAL PRESSURE TRANSDUCER

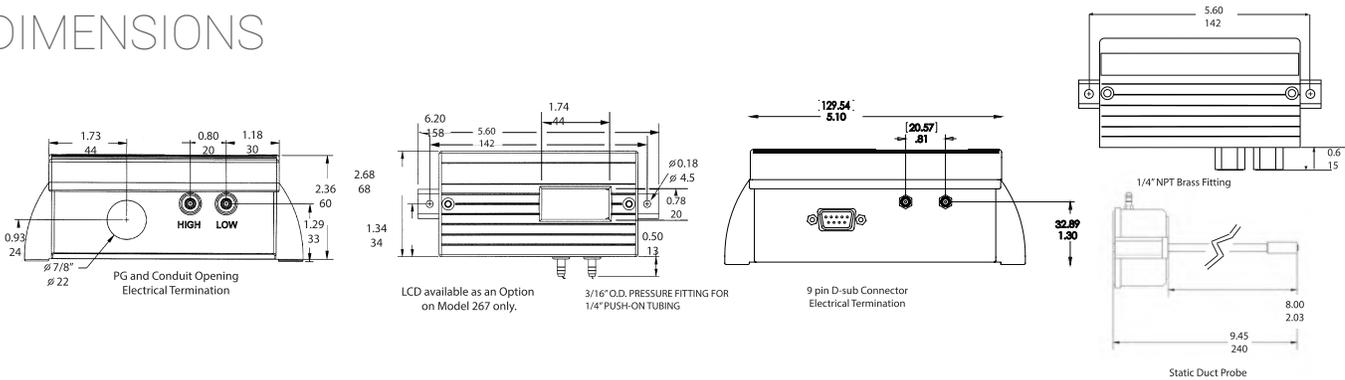
SPECIFICATIONS

PERFORMANCE DATA		
	STANDARD	OPTIONAL
Accuracy RSS ¹ (at constant temp)	±1.0% FS	±0.4% FS ±0.25% FS
Non-Linearity, BFSL	±0.98% FS	±0.38% FS ±0.22% FS
Hysteresis	±0.10% FS	±0.10% FS
Non-Repeatability	±0.05% FS	±0.05% FS
Position Effect	Consult factory	
THERMAL EFFECTS ^{2,3}		
Compensated Range	+40 to +150°F (+5 to +65°C)	
Zero/Span Shift %FS/°F (°C)	±0.033 (±0.06)	
Maximum Line Pressure	10 PSI	
Overpressure	Up to 10 PSI (Range Dependent)	
Long-Term Stability	0.1% FS Total	
ENVIRONMENTAL DATA		
Operating ⁴ Temperature	0 to +150°F (-18 to +65°C)	
Storage Temperature	-65 to +180°F (-54 to +82°C)	
PRESSURE MEDIA		
Clean air or similar non-conducting gases.		

PHYSICAL DESCRIPTION	
Case	IP65/NEMA 4 Plastic Glass-Filled Polycarbonate UL94V-0 Case
Electrical Connection	Screw Terminal Strip Inside of Case
Electrical Terminations	PG-9/PG13.5 Strain Relief, 1/2" Conduit Opening, or 9 Pin D-Sub Connector*
Zero and Span Adjustments	Accessible Inside of Case
Weight (approx.)	9.0 Ounces (255 grams) 9.5 Ounces (Duct Probe Assembly)
ELECTRICAL DATA (CURRENT)	
Circuit	2-Wire, Protected from Miswiring
Output ⁷	4 to 20 mA ⁴
Bidirectional Output at Zero	12 mA
Min. Loop Supply Voltage (VDC)	9 + 0.02 x (Resistance of Receiver plus line)
Max. Loop Supply Voltage (VDC)	30 + 0.004 x (Resistance of Receiver plus line)
ELECTRICAL DATA (VOLTAGE)	
Circuit	3-Wire (Exc, Gnd, Sig), Protected from Miswiring
Excitation (for 0-5 VDC Output)	9 to 30 VAC / 12 to 40 VDC
Excitation (for 0-10 VDC Output)	11 to 30 VAC / 13 to 40 VDC
Output ³	0 to 5 VDC ⁵ / 0 to 10 VDC ⁵

¹ RSS of Non-Linearity, Hysteresis, and Non-Repeatability.
² Units calibrated at nominal 70°F. Maximum thermal error computed from this datum.
³ Calibrated into a 50K ohm load, operable into a 5000 ohm load or greater.
⁴ Zero output factory set to within ±0.16 mA (±0.08 mA for optional accuracies). Span (Full Scale) output factory set to within ±0.16 mA (±0.08 mA for optional accuracy).
⁵ Zero output factory set to within ±50mV (±25 mV for optional accuracies). Span (Full Scale) output factory set to within ±50mV (±25 mV for optional accuracies).
⁶ Operating temperature limits of the electronics only. Pressure media temperatures may be considerably higher.
⁷ Calibrated at factory with a 24 VDC loop supply voltage and a 250 ohm load.

DIMENSIONS



ORDERING INFORMATION



MODEL	RANGE				OUTPUT		PRESSURE FITTING/ELEC. TERMINATION		ACCURACY (FULL SCALE)	
2671 = 267	UNIDIRECTIONAL	BIDIRECTIONAL	UNIDIRECTIONAL	BIDIRECTIONAL	11	4-20 mA	3/16" Barbed Brass Fitting	CN	±1% FS with no LCD Display	
	OR1WD 0 to 0.1 "W.C.	OR1WB ±0.1 "W.C.	025LD 0 to 25 Pa	025LB ±25 Pa	2D	0-5 VDC	G1 PG-13.5 Strain Relief	EN	±0.4% FS* with no LCD Display	
	R25WD 0 to 0.25 "W.C.	R25WB ±0.25 "W.C.	050LD 0 to 50 Pa	050LB ±50 Pa	2E	0-10 VDC	G2 PG9 Strain Relief	FN	±0.25% FS* with no LCD Display	
	OR5WD 0 to 0.5 "W.C.	OR5WB ±0.5 "W.C.	100LD 0 to 100 Pa	100LB ±100 Pa			D9 ¹ 9 pin D-Sub Conn.	GN	±1% FS* with no LCD Display	
	001WD 0 to 1 "W.C.	001WB ±1.0 "W.C.	250LD 0 to 250 Pa	250LB ±250 Pa			A1 1/2" Conduit Opening	HD	±0.5% FS* with LDC Display	
	1RSWD 0 to 1.5 "W.C.	1RSWB ±1.5 "W.C.	500LD 0 to 500 Pa	500LB ±500 Pa			1/4" NPTF BRASS FITTING		ED	±0.4% FS* with LDC Display
	2R5WD 0 to 2.5 "W.C.	2R5WB ±2.5 "W.C.	10CLD 0 to 1000 Pa	10CLB ±1000 Pa			1K PG-9 Strain Relief	FD	±0.25% FS* with LDC Display	
	005WD 0 to 5.0 "W.C.	005WB ±5.0 "W.C.	25CLD 0 to 2500 Pa	25CLB ±2500 Pa			2K PG-13.5 Strain Relief	*includes Cal Cert.		
	010WD 0 to 10 "W.C.	010WB ±10 "W.C.	40CLD 0 to 4000 Pa	40CLB ±4000 Pa			9K 9 Pin D-Sub Conn.			
	025WD 0 to 25 "W.C.	025WB ±25 "W.C.	70CLD 0 to 7000 Pa	70CLB ±7000 Pa			AK 1/2" Conduit Opening	STATIC DUCT PROBE		
	050WD 0 to 50 "W.C.	050WB ±50 "W.C.					1P PG-9 Strain Relief			
	100WD 0 to 100 "W.C.	100WB ±100 "W.C.					2P PG-13.5 Strain Relief			
							9P 9 Pin D-Sub Conn.			
							AP 1/2" Conduit Opening			

Ordering Example: Part No. 2671R25WD11G2CN for a 0 to 25 in. WC Unidirectional Range, 4-20 mA Output, 3/16" Barbed Brass Fitting, PG-9 Electrical Termination, 1% Accuracy with LCD Display

Model 267MR

MULTI-RANGE LOW DIFFERENTIAL PRESSURE TRANSDUCER



- **Suitable for Harsh Environments**
- **Multi-Range Capability**
- **Optional Static Pressure Probe**

Applications

- HVAC Systems
- Energy Management Systems
- Static Duct Pressure
- Cleanroom Pressure

- 6 Field Selectable Ranges
- 2 Field Selectable Outputs
- NEMA 4 Rated Housing
- PG-9, PG-13 or Conduit Electrical Termination
- Optional Static Pressure Probe
- 24 VAC or 24 VDC Excitation
- CE & RoHS Compliant

Setra's Model 267MR is a highly configurable multi-range low differential pressure transducer. It offers multi-range capability with 6 field selectable ranges and 2 field selectable outputs that are easily configured by flipping a Dip Switch. The 267MR is housed in a NEMA 4 rated enclosure with an optional static pressure probe reducing installation and material costs. It delivers $\pm 1\%$ FS accuracy with pressure ranges from 0.1" W.C. up to 100" W.C.

ALL INCLUSIVE FIELD SELECTABLE DESIGN

The 267MR is the ideal product for any contractor to stock in their truck; combining the flexibility of a multi-range with the performance of a single-range transducer to ensure the installer has the right solution for any job.

ROBUST ENCLOSURE FOR DIFFICULT APPLICATIONS

The 267MR is housed in a NEMA 4 rated housing and is built to withstand harsh environments. The 267MR is available in both wall and duct mount providing the installer with flexible mounting options. The wall mount allows the sensor to be installed anywhere, whereas the duct probe configuration is designed to maximize space efficiency in difficult applications.

THE SETRA SENSOR

The core technology of the 267MR is the all stainless steel capacitive sensing element. Setra designs and manufactures all of their sensing elements resulting in full control over the process and quality of every single sensor. The welded dead-ended capacitive sensors requires minimal amplification and delivers excellent accuracy and longterm stability. Setra's technology has been used in over 8 million installations and has the highest field acceptance rate in the industry.

Model 267MR

MULTI-RANGE LOW DIFFERENTIAL PRESSURE TRANSDUCER

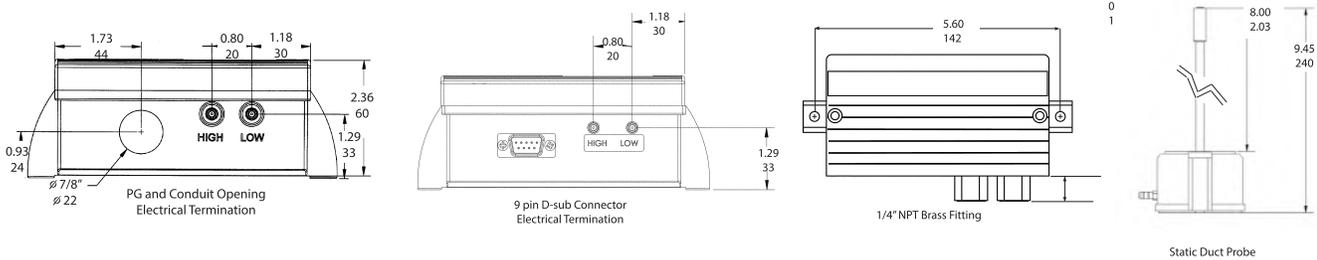
SPECIFICATIONS

PERFORMANCE DATA		
	STANDARD	OPTIONAL
Accuracy RSS ¹ (at constant temp)	±1.0% FS	
Non-Linearity, BFSL	±0.98% FS	±0.38% FS ±0.22% FS
Hysteresis	±0.10% FS	±0.10% FS
Non-Repeatability	±0.05% FS	±0.05% FS
Position Effect	Consult factory	
THERMAL EFFECTS ^{2,3}		
Compensated Range	+40 to +150°F (+5 to +65°C)	
Zero/Span Shift %FS/°F (°C)	±0.033 (±0.06)	
Maximum Line Pressure	10 PSI	
Overpressure	Up to 10 PSI (Range Dependent)	
Long-Term Stability	0.1% FS Total	
ENVIRONMENTAL DATA		
Operating ⁶ Temperature	0 to +150°F (-18 to +65°C)	
Storage Temperature	-65 to +180°F (-54 to +82°C)	
PRESSURE MEDIA		
Clean air or similar non-conducting gases.		

PHYSICAL DESCRIPTION	
Case	IP65/NEMA 4 Plastic Glass-Filled Polycarbonate UL94V-0 Case
Electrical Connection	Screw Terminal Strip Inside of Case
Electrical Terminations	PG-9/PG13.5 Strain Relief, 1/2" Conduit Opening, or 9 Pin D-Sub Connector*
Zero and Span Adjustments	Accessible Inside of Case
Weight (approx.)	9.0 Ounces (255 grams) 9.5 Ounces (Duct Probe Assembly)
ELECTRICAL DATA (CURRENT)	
Circuit	2-Wire, Protected from Miswiring
Output ⁴	4 to 20 mA ⁵
Bidirectional Output at Zero	12 mA
Min. Loop Supply Voltage (VDC)	9 + 0.02 x (Resistance of Receiver plus line)
Max. Loop Supply Voltage (VDC)	30 + 0.004 x (Resistance of Receiver plus line)
ELECTRICAL DATA (VOLTAGE)	
Circuit	3-Wire (Exc, Gnd, Sig), Protected from Miswiring
Excitation (for 0-5 VDC Output)	9 to 30 VAC / 12 to 40 VDC
Excitation (for 0-10 VDC Output)	11 to 30 VAC / 13 to 40 VDC
Output (Field Selectable)	0 to 10 VDC ⁷
Bidirectional Output at Zero	Mid-Range of Specified
Output Impedance	Ohms
Re-Ranging	5 Position Dip Switches (Located Inside Case)

¹ RSS of Non-Linearity, Hysteresis, and Non-Repeatability.
² Units calibrated at nominal 70°F. Maximum thermal error computed from this datum.
³ Calibrated into a 50K ohm load, operable into a 5000 ohm load or greater.
⁴ Zero output factory set to within ±0.16 mA (±0.08 mA for optional accuracies). Span (Full Scale) output factory set to within ±0.16 mA (±0.08mA for optional accuracy).
⁵ Zero output factory set to within ±50mV (±25 mV for optional accuracies).
⁶ Span (Full Scale) output factory set to within ±50mV (±25 mV for optional accuracies)
⁷ Operating temperature limits of the electronics only. Pressure media temperatures may be considerably higher.
⁸ Calibrated at factory with a 24 VDC loop supply voltage and a 250 ohm load.

DIMENSIONS



ORDERING INFORMATION



MODEL	RANGE				OUTPUT		PRESSURE FITTING/ ELEC. TERMINATION	ACCURACY		DISPLAY			
	UNIDIRECTIONAL	BIDIRECTIONAL	UNIDIRECTIONAL	BIDIRECTIONAL	11	4-20 mA		C	±1% FS	N	None		
2671 = 267MR													
MR1WD	0 to 0.1 "W.C.	±0.05"W.C.	MR5LD	0 to 25 Pa	±12.5 Pa	2D	0-5 VDC	G1	G	±1% FS W/ Cal Cert			
	0 to 0.25"W.C.	±0.125"W.C.		0 to 50 Pa	±25 Pa		2E					0-10 VDC	G2
MR2WD	0 to 0.5"W.C.	±0.25"W.C.	MR6LD	0 to 100 Pa	±50 Pa				D9'				
	0 to 1"W.C.	±0.5"W.C.		0 to 200 Pa	±100 Pa		A1						1/2" Conduit Opening
MR3WD	0 to 1.25"W.C.	±0.625"W.C.	MR7LD	0 to 250 Pa	±125 Pa								
	0 to 2.5"W.C.	±1.25"W.C.		0 to 500 Pa	±250 Pa		1K						PG-9 Strain Relief
MR4WD	0 to 7.5"W.C.	±3.75"W.C.	MR8LD	0 to 625 Pa	±312 Pa								
	0 to 15"W.C.	±7.5"W.C.		0 to 1250 Pa	±625 Pa		2K						PG-13.5 Strain Relief
	0 to 30"W.C.	±15"W.C.		0 to 2500 Pa	±1250 Pa								9K
				0 to 1875 Pa	±937 Pa		AK						
		0 to 3750 Pa	±1875 Pa	Static Duct Probe									
		0 to 7000 Pa	±3750 Pa	1P	PG-9 Strain Relief								
				2P	PG-13.5 Strain Relief								
				9P	9 Pin D-Sub Conn..								
				AP	1/2" Conduit Opening								

Ordering Example: Part No. 2671MR1WD11G1CN = 267MR Transducer, 0.01, ±0.05 in. WC, Differential, 4-20 mA Output, 3/16" Barbed Brass Fitting, PG-13.5 Strain Relief Electrical Termination, 1% Accuracy with No Display

Model 269

SECURE-SENSE™ LOW DIFFERENTIAL PRESSURE TRANSDUCER

- **Highest Accuracy HVAC/R Transducer**
- **Secure Calibration**
- **Reduce Calibration Time**

Our Customers

Abbott Laboratories

Genzyme

Merck

Sanofi Pasteur

Thermo Systems

- No Zero/Span Access
- End Point $\pm 0.25\%$ FS Accuracy
- Security Key Required for Calibration
- 2:1 Turndown Ratio Available
- Fire Retardant Case (UL 94 V-0 Approved)
- Enhanced Thermal Performance
- DIN Rail Mounting Option Available
- Optional Display Available



Setra's Model 269 transducer is the highest accuracy solution for monitoring differential pressure in critical environments. Its 0.25% accuracy is calibrated using the "End Point Method" which improves linearity when compared to competitive transducers which use the "Best Fit Straight Line" method. The 269's calibration is tamper proof by utilizing a removable process head that eliminates inadvertent adjustments while allowing in-situ calibrations without removing the process tubing. Calibrations can be performed automatically when performed with Setra's MicroCal outfitted with an expert system. The 269 offers multiple mounting configurations, including DINrail, for quicker and easier installation.

HIGH ACCURACY FOR DEMANDING PHARMACEUTICAL APPLICATIONS

The Model 269 differential pressure transducer uses a dead-ended capacitive differential sensing element with superior linearity and enhanced thermal performance to ensure the highest accuracy and reliability in your most critical and demanding applications.

QUICK & SIMPLE INSTALLATION

The Model 269 is designed specifically for the pharmaceutical industry's stringent calibration guidelines in mind. The 269 has a removable process head to allow technicians to perform calibrations without cutting pneumatic tubes during each calibration cycle. The 269 also provides secure calibration; in order to make sensor adjustments, the unit requires a calibration key to prevent unauthorized personnel from making unwanted changes.

FLEXIBILITY IN INSTALLATION

The Model 269 is available in both a base and DINrail providing the installer with flexible mounting options. The base mount allows the sensor to be installed anywhere, whereas the DINrail configuration is designed to maximize space efficiency in a pharmaceutical panel. An optional display is available for all mounting options.

Constant Pressure Controller



- **Energy Efficient Draft Control**
- **Proprietary PI Control Algorithm**
- **Sensor & Controller in One Package**

- On-board Sensor- Industry Best Accuracy
- Flush Mount and Surface Mount Available
- Removable Faceplate for No Hassle Calibration
- Field Configurable Output
- Remote Override to Fixed Fan Speed
- 0-10 VDC Output for Motor Control
- CE & RoHS Compliant

Applications

Building Automation

Schools, hotels and prison facilities

Exhaust shafts for high rise buildings

Dryer booster fans, exhaust fans, power venters, and supply fans

The Constant Pressure Controller is a constant pressure fan controller designed to increase control and efficiency in supply and exhaust systems.

Setra's Constant Pressure Controller will reduce energy consumption by reducing the speed of the fan and reducing the amount of conditioned air exhausted, using proprietary closed loop PI control, to create the ultimate draft control solution.

ALL-IN-ONE SOLUTION

The Constant Pressure Controller is designed for pressure control applications that require pressure monitoring, control and alarming. The controller can be configured to control positive or negative pressures. The membrane keypad user interface enables access to security, calibration, and alarm setups. Backlight LED's provide a local visual indication of the pressure alarm status and a local audible alarm to alert personnel to system status.

SERVICE AND INSTALLATION

The Constant Pressure Controller can maintain static pressure within a room or duct through a proprietary closed loop PI algorithm. The Setra controller monitors the pressure that is being controlled and provides a 0-10 VDC analog output. The unit utilizes an on-board dead ended capacitive pressure sensor for accurate measurement. The Constant Pressure Controller also allows for in-field calibration to ensure maximum efficiency. It is easily mounted to a wall or duct with no requirement for any special tooling. This unit is intended for indoor applications and the housing is rated NEMA1.

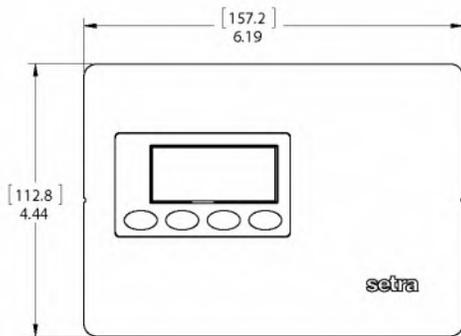
Constant Pressure Controller



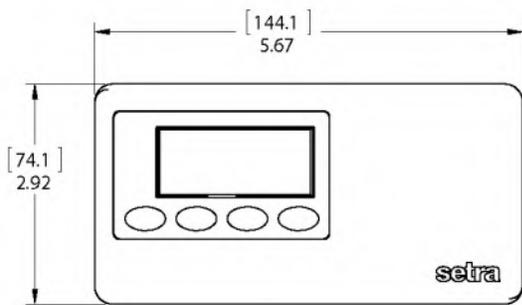
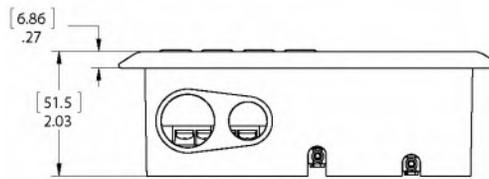
SPECIFICATIONS

PERFORMANCE DATA	ENVIRONMENTAL DATA	PHYSICAL DESCRIPTION	*RSS of Non-Linearity, Hysteresis, and Non-Repeatability. Specifications subject to change without notice.
Accuracy RSS ¹ ±1.0% FS	Operating Temp. ³ 22 to +140°F (-6 to +60°C)	Electrical Connection Screw Terminal	
Output Direct or Reverse Acting 0-10 VDC		Dimensions See Diagram	
THERMAL EFFECTS	ELECTRICAL DATA	Weight 10.7 oz.	
Compensated Range 40 to 120°F (4.5 to 50°C)	Circuit 3-Wire (Exc, Out, Com)	Display Custom 2-Line Character LCD	
Zero/Span Shift %FS ±0.02% FS/C Typ	Output 0 to 10 VDC	Pressure Fittings Barbed Fittings for 1/4" Tubing	
PRESSURE MEDIA	Power 18 to 30 VDC or 24 VAC ±20%	Case Fire Retardant Plastic UL94V-0	
Clean air or similar non-conducting gases.	Power Consumption 4 W MAX (24 VDC) 8 W MAX (24 VAC)		
CERTIFICATIONS			
CE EN61326-1 & EN61326-2-3 BASIC Immunity & Class B Emission			
RoHS			

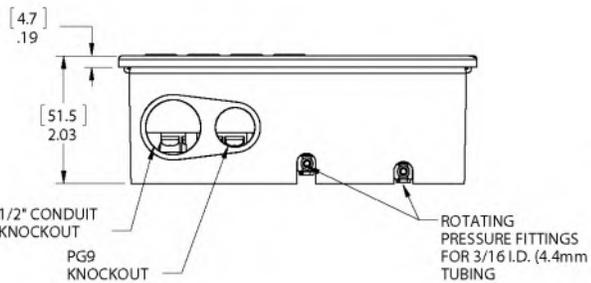
DIMENSIONS



WALL MOUNT



DUCT MOUNT



ORDERING INFORMATION

S R I M C - [] [] [] [] - [] - [] [] - [] [] - []

MODEL	PRESSURE RANGES	TYPE	OUTPUT	MOUNTING/LOGO	ACCURACY
SRIMC = Constant Pressure Controller	INCHES W.C.	B Bidirectional	2C 0 to 10 VDC	WL Wall Mount w/ Logo	C ±1.0% FS
	001W ±1.0			DL Duct Mount w/ Logo	G ±1.0% FS w/ cal. cert
				WN Wall Mount, No Logo	
				DN Duct Mount, No Logo	
				WS Wall Mount, Stainless Steel Bezel	

Example: Part No. SRIMC001WB2CWLC1 = Constant Pressure Controller, 0 to 1.0" W.C. Pressure Range, Bidirectional, 0 to 10V Output, Wall Mount with Logo, ±1.0% FS Accuracy

Velocity Monitor

- Measure Velocity, Flow, or Air Change Rate
- Alarm on 6 Parameters
- Removable Faceplate for No-Hassle Calibration

- 3-Color LCD Display for Easy Setup and Room Display
- On-board Sensor - Industry Best Accuracy
- Analog Inputs for External Temp & Humidity Sensors
- Analog Outputs 4-20 mA, 0-5 and 0-10 VDC Field Selectable
- Monitor & Alarm Velocity, Flow, ACH, Pressure, Temp & RH
- Configurable Audible & Visual Alarms
- Adjustable Filtering to Reduce Noisy Pressure and Velocity Inputs
- Flush Mount and Surface Mount Available
- CE & RoHS Compliant



Setra's Velocity Monitor is a multi-function device designed to monitor velocity while also giving the user the option to measure and display volumetric flow, air changes per hour, differential pressure, temperature and humidity. The Velocity Monitor offers three velocity ranges as well as three pressure ranges, giving the user the option to choose the appropriate range for their application. The Velocity Monitor has a 3-color backlit display for easy menu navigation and audible/visual alarm capability for velocity, flow, pressure, temperature, humidity and a door input. The velocity and flow measurements are based on differential pressure and require the use of a pitot tube or averaging probe.

SIMPLIFY YOUR VELOCITY MEASUREMENT

The Velocity Monitor offers velocity ranges of 2,000 ft/min, 4,000 ft/min and 8,000 ft/min as well as three pressure ranges (0.25", 1" and 4" W.C.). The Velocity Monitor automatically calculates the velocity, volumetric flow rates, and air changes per hour based on differential pressure, eliminating the need for a manual square root calculation.

ALARM EVERYTHING YOU MONITOR

The Velocity Monitor provides audible and visual alarming for velocity flow, ACH, pressure, temperature, and humidity to give you piece of mind that your measurements are within range. High and low alarm set-points for each parameter are easily configurable through a four-button membrane keypad. A digital input is also provided to show door status.

THREE COLOR EASY-TO-SEE STATUS SCREEN

The Velocity Monitor utilizes a three-color backlit screen which allows the end user to easily view the status of the monitored space with green (normal), yellow (warning) and red (alarm) status screens. Alarms can be configured to be delayed to ensure that each Velocity Monitor is configured to the specific needs of the end user.

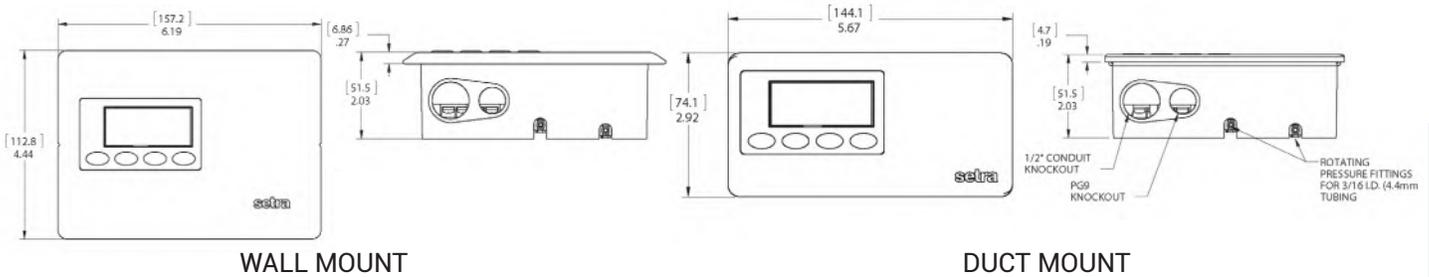
Velocity Monitor

SPECIFICATIONS

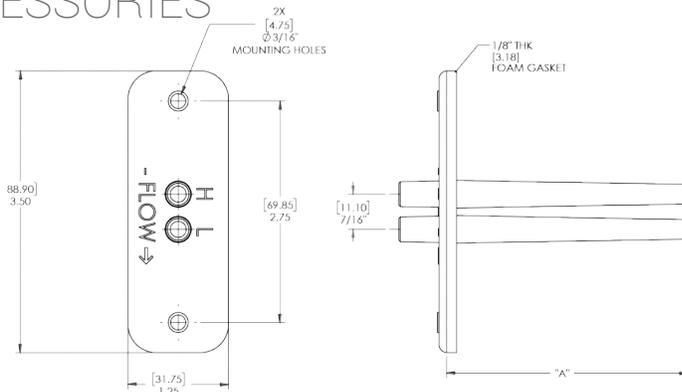
PERFORMANCE DATA		ENVIRONMENTAL DATA	
RANGE	ACCURACY	Operating Temperature	22 to +140°F (-6 to +60°C)
0-2,000 ft/min	±2.5% Reading ±10 ft/min from 0-500 ft/min, ±2.5% Reading ±20 ft/min from 500 to 2,000 ft/min	ELECTRICAL DATA	
0-4,000 ft/min	±2.5% Reading ±10 ft/min from 0-500 ft/min, ±2.5% Reading ±20 ft/min from 500 to 2,000 ft/min	Circuit	3-Wire (Exc, Out, Com)
0-8,000 ft/min	±2.5% Reading ±10 ft/min from 0-500 ft/min, ±2.5% Reading ±20 ft/min from 500 to 2,000 ft/min	Output	0 to 5 VDC, 0 to 10 VDC, 4 to 20 mA
0-10 m/s	±2.5 Reading ±0.05 m/s from 0-3 m/s, +2.5 Reading ±0.1 m/s from 3 to 10 m/s	Power	18 to 30 VDC on 24 VAC ±10%
0-20 m/s	±2.5 Reading ±0.05 m/s from 0-3 m/s, +2.5 Reading ±0.1 m/s from 3 to 20 m/s	Power Consumption	4 W. MAX (24 VDC) 8 W. MAX (25 VAC)
0-40 m/s	±2.5 Reading ±0.05 m/s from 0-3 m/s, +2.5 Reading ±0.1 m/s from 3 to 40 m/s	PRESSURE MEDIA	Clean air or similar non-conducting gases.
Long Term Stability	0.5% FS/YR	CERTIFICATIONS	
THERMAL EFFECTS		CE	EN61326-1 & EN61326-2-3 BASIC Immunity & Class B Emission
Compensated Range	40 to 120°F (4.5 to 50°C)	RoHS	
Zero/Span Shift %FS	±0.02% FS/°C	PHYSICAL DESCRIPTION	
Overpressure	Up to 10 PSI	Electrical Connection	Screw Terminal
		Dimensions	See below
		Weight	10.7 oz.
		Display	Custom 2-Line Character LCD
		Pressure Fittings	Barbed Fittings for 1/4" Tubing
		Case	Fire Retardant Plastic UL94V-0

¹RSS of Non-Linearity, Hysteresis, and Non-Repeatability. Specifications subject to change without notice.

DIMENSIONS



ACCESSORIES



PART NUMBER	PROBE LENGTH "A"	DESCRIPTION
242915-01	3- 5/32"	Averaging flow sensor
242915-02	5- 13/32"	
242915-03	7- 21/32"	
242915-04	9- 29/32"	
242915-05	12- 1/2"	
242915-06	14- 3/4"	

ORDERING INFORMATION

S R I M V - [] [] [] - [] [] - [] []

MODEL	PRESSURE RANGES		OUTPUT		MOUNTING/LOGO		
SRIMV = Velocity Monitor	ft/min	m/s	11	4 to 20mA	WL	Wall Mount w/ Logo	
20CF	2,000	010M	0-10	2B	0 to 5 VDC	DL	Duct Mount w/ Logo
40CF	4,000	020M	0-20	2C	0 to 10 VDC	WN	Wall Mount, No Logo
80CF	8,000	040M	0-40			DN	Duct Mount, No Logo

Ordering Example: Part No. SRIMV010M11WL = Velocity Monitor, 0 to 10 m/s Velocity Range, 4 to 20 mA Output, Wall Mount with Logo.



setra®

ROOM PRESSURE MONITORS

Setra FLEX	44
Model SRCM	48
Model SRPM	50
Model MRMS	52
Model SRIM1	54
Model SRIM2	56
Model SRMD	58

Setra FLEX

ENVIRONMENTAL MONITOR & CONTROLLER



setraFLEX

- Supports 3 Rooms, 6 Parameters Each
- Control Option - 3 PID Loops
- BACnet/IP, BACnet MS/TP, BTL Certified

- High Accuracy 0.25% Sensor Standard
- 7" Projected Capacitive Touch Screen
- Flush Mount to Wall
- Mounts in Standard Triple Gang Double Deep Electrical Boxes
- Full Touch Response with Medical Gloves
- No Programming Required, Simple Set-Up
- 12 Inputs & 10 Outputs Available (8 Inputs and 8 Outputs Require Expansion I/O Module)
- On-board or External Pressure Transducer
- Monitor and Control Pressure, Temperature, Humidity, Air Change Rate and 2 User Defined Parameters
- 4 Customizable Room Profiles
- 50mm Wall Depth with Remote Sensor

The Setra FLEX™ provides a flexible room environmental control and monitoring solution in a simple-to-use package. An attractive flush-mount faceplate is complemented by an intuitive graphical display to meet any architectural requirement. The unit supports 3 rooms, monitoring up to 6 parameters for each room. If additional I/O is required, an expansion I/O module enables the monitoring and control for more complicated applications. A differential pressure sensor can be either factory-installed in the unit or ordered separately and installed above the ceiling. Integration with building automation systems is made easy through either BACnet/IP or BACnet MS/TP network protocols.

MODULAR DESIGN

A modular hardware design enables the FLEX monitor to fit in various wall thickness found around the globe. For applications which require the monitor to fit in wall depths less than 50mm, the FLEX can be ordered with an external pressure sensor. When mounting in a three gang electrical box, the FLEX can be ordered with an integrated on-board sensor. Sufficient on-board I/O provides connectivity for most common equipment and sensor applications. If additional connections are required, or if more advanced HVAC applications demand it, the expansion I/O module can be ordered as an accessory. A high accuracy 0.25% differential pressure transducer is used in all pressure sensing options. A projected capacitive touch screen provides swipe functionality and allows for use with medical gloves. The faceplate is attached to the unit body, enabling both tamper resistant operation and easy opening for pressure calibration.

FLEX-RM & FLEX-RC

FLEX software is designed to suit any application, with the ability to support up to 3 rooms. FLEX-RM (Room Monitor) provides monitoring only, for those applications where no control from the touch screen is needed. FLEX-RC (Room Control) offers monitoring, plus PI loop or network control of VAV boxes, venturi valves, or hydronic reheat valves. Software is pre-installed, with configuration and network integration done using simple setup screens. There is no programming required. When completed, configuration settings on one unit can be cloned to other devices using a standard USB thumb drive, thereby shortening commissioning time. Units can also be configured remotely over a BACnet network. The FLEX monitor is both a controller and monitor, with audible and visual alarming on all room environmental parameters. The FLEX monitor enables users to save energy by choosing from two PI control loops and two monitoring sets for any of four room modes, such as occupied and unoccupied.

Setra FLEX

ENVIRONMENTAL MONITOR & CONTROLLER



SPECIFICATIONS

PHYSICAL DESCRIPTION	
Dimensions	9.25" W x 6.3" H x 0.65"D (215.0mm x 160.0mm x 16.51mm)
Mounting	Triple-gang, double deep electrical box. RACO 697, Appleton M3-350, or equivalent
Case	Fire-retardant plastic UL94 V-0
Weight	2 lbs
Display	7" Projected Capacitive (PCAP) multitouch. 800 x 480 pixels. Usable with medical gloves.
Display Brightness	1-7
USB Port	Micro-USB port for configuration cloning between units and software upgrades.
Audible Alarm	Dual piezo with 7 volume levels (0-75 dB max.)
COMMUNICATIONS	
	BACnet/IP using IPv4, Ethernet CAT5 cables with RJ45
	BACnet MS/TP up to 76.8 kbps, 3-conductor, twisted, shielded 16-24 AWG cable
ELECTRICAL	
Power	24 VAC (18-32 VAC operational), 50-60 HZ
Power Draw	13 W max, 10 W typical
Wire	2 or 3-conductor (depending on application) stranded unshielded twisted pair, 16-24 AWG
Connections	Removable Terminal Blocks
REGULATORY COMPLIANCE	
	CSA, CE, RoHS, WEEE

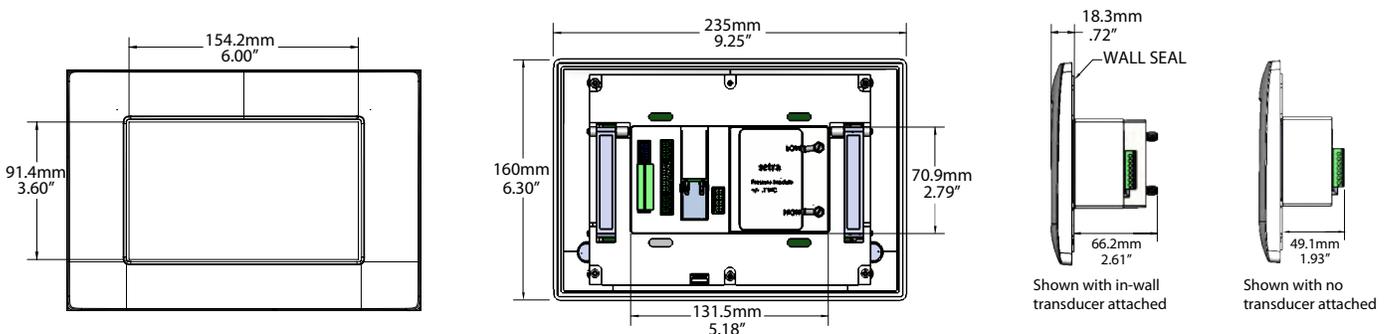
ENVIRONMENTAL DATA	
Operating Temp.	32 to 120°F (0 to 50°C)
Storage Temp.	-40 to 185°F (-40 to 85°C)
Operating Humidity	5 to 95% RH (non-condensing)
Ingress Protection (IP) Rating	IP54
CHEMICAL RESISTANCE	
	IP 54 rated against dust and liquid penetration on room facing side. Exposed surfaces are chemically resistant to vaporized hydrogen peroxide (VHP).
PERFORMANCE	
Accuracy RSS	±0.25%
Non-Linearity (BFSL)	±0.24%
Hysteresis	±0.05%
Non-Repeatability	±0.05%
Span Setting Tol.	±0.5% Rdg
Zero/Span Shift % FS	± 0.03% FSI (±0.05% FS)
Overpressure	±1 PSI (15" WC for ≤0.10" WC FS)
Pressure Media	Clean air or similar non-conducting gases.
Pressure Fittings	3/16" barbed fittings
Altitude	6562 ft. (2000 m) max.
Position	Housing to be 90° in reference to level surface, ±5°

SOFTWARE FEATURES

HOME SCREEN		
Rooms Supported	3	Carousel display to show up to 3 rooms, with monitor and control for each.
Parameters per Room	6	Badges display pressure, temperature, humidity, air change rate, and 2 user-defined parameters. Each capable of monitor or control. All information available over the network.
Room Profiles	4	Define profiles for room environmental control and monitoring. User-defined text. Used for modes such as occupied, unoccupied, cleaning, or decontamination.
Pressure Modes	3	Positive, Negative, Neutral
Background Colors	5	Green, yellow, blue, red, orange for room condition.
Text	2	User defined lines text that describe room condition.
Icons	1	Choose from a palate of icons to represent room condition.
Control		Four control loops assignable per device. PI control loop for on-board and external analog outputs. User-defined set point limits. All information available over the network.

ALARMING		
Parameters per Room	6	Visual and audible alarms for pressure, temperature, humidity, air change rate, and 2 user-defined parameters.
Visual		Green = normal, Red = alarm, Yellow = warning
Audible		Dual buzzers with 7 volume levels (0-75 dB max.)
Disable		One-touch all alarms disable function.
Silence		Selectable 0 - ∞ seconds
Delay		Selectable 0 - 9999 seconds
Latch		Alarm option to hold alarm state until manually reset by operator.
Remote		Remote annunciation to dedicated unit (p/n SRAN) or to multi-unit room monitor.

DIMENSIONS



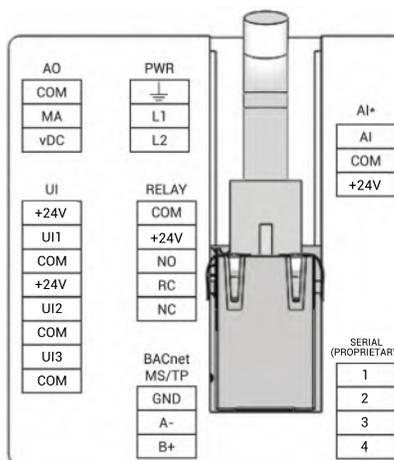
(continue Setra FLEX on next page)

Setra FLEX

ENVIRONMENTAL MONITOR & CONTROLLER

INPUTS & OUTPUTS

INPUTS AND OUTPUTS		
Universal Inputs	3	0-5 VDC, 0-10 VDC, or 4-20 mA input signal Configurable for either Analog or Digital signals. Use external sensors for pressure, temperature, humidity, or any suitable application. Use as digital input for door, HVAC filter DP, or duct static DP pressure switch.
Analog Input	1	Dedicated for use as input for either on-board pressure transducer, or general AI input. Used only when no transducer is purchased on unit.
Analog Output	1	0-5 VDC, 0-10 VDC, or 4-20 mA output signal. Use as PI control loop to modulate reheat valves or other analog driven devices, pressure output signal, or mirror an input signal. Can be assigned to any room parameter.
Relay Output	1	15 VDC SPDT NO/NC Relay. Use as remote alarm annunciator or other NO/NC applications. Contact rating 2.0A @ 30 VDC /VA 0.6A @125 VAC
Wire		Stranded shielded twisted pair, 16-24 AWG .14-1.5 mm ² cross sectional area
Expansion I/O Module		8 Universal Inputs, 4 Analog Outputs, 4 Relay Outputs



*AI for on-board transducer or general AI input.

ORDERING INFORMATION

FLEX - [] - [] - [] - []

MODEL	MONITOR OR CONTROLLER	DISPLAY	ROOMS	PRESSURE TRANSDUCER RANGE	
FLEX	SELECT IF ONLY MONITORING, OR IF EQUIPMENT CONTROL IS NEEDED	SCREEN SIZE	NUMBER OF ROOMS	INCHES W.C.	PASCALS
RM	Monitor Only No Control Operation	7 7 Inches	2 Up to 2	NNNN	No Transducer, Remote Sensor Ordered Separately
RC	Control and Monitoring Full Control Operation		3 Up to 3	R05WB	±0.05 ±12.5
				OR1WB	±0.10 ±25
				R25WB	±0.25 ±50
				OR5WB	±0.50 ±100
				001WB	±1.00 ±250

FLEX - IO

MODEL	EXPANSION I/O	
FLEX	IO	Include Expansion I/O module with order

2641 - [] - [] - A1 - F

MODEL	RANGE CODE	OUTPUT	ELECTRICAL TERMINATION	ACCURACY
2641 = Model 264	BIDIRECTIONAL	11 4-20 mA	A1 1/2 in. Conduit Enclosure	F ±0.25% FS
	R05WB	±0.05" W.C.		
	OR1WB	±0.1" W.C.		
	R25WB	±0.25" W.C.		
	OR5WB	±0.5" W.C.		
	001WB	±1" W.C.		

2671 - [] - [] - A1 - []

MODEL	RANGE CODE	OUTPUT	ELECTRICAL TERMINATION	ACCURACY
2671 = Model 267	BIDIRECTIONAL	11 4-20 mA	A1 1/2 in. Conduit Enclosure	FN ±0.25% FS* with no LCD display
	R05WB	±0.05" W.C.		FD ±0.25% FS* with LCD display
	OR1WB	±0.1" W.C.		
	R25WB	±0.25" W.C.		
	OR5WB	±0.5" W.C.		
	001WB	±1" W.C.		

Setra FLEX

EXPANSION I/O MODULE



The FLEX Expansion I/O Module adds an additional eight inputs and eight outputs to the FLEX monitor. This I/O module can be used for additional hard-wired sensors, expanding monitoring and control applications. Eight universal inputs can be configured as either analog inputs or digital inputs. Four analog outputs provide external signaling and data values to third party equipment and controllers. Four relay outputs enable equipment control for reheat coils, VAV damper actuators, and similar devices. A 24 VDC output can be used with other peripheral devices such as Setra's SRAN remote annunciator. Communications to the FLEX monitor is via a proprietary serial bus.

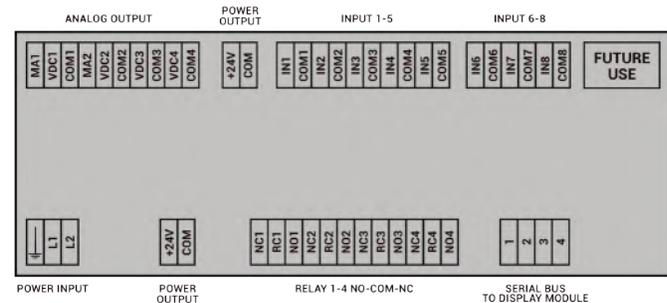


INPUTS & OUTPUTS

INPUTS AND OUTPUTS	
Universal Inputs	8 0-5 VDC, 0-10 VDC, or 4-20 mA output signal Configurable for either Analog or Digital signals. Use external sensors for pressure, temperature, humidity, or any suitable application. Use as digital input for door, HVAC filter DP, or duct static DP pressure switch.
Analog Output	4 0-5 VDC, 0-10 VDC, or 4-20 mA output signal. Use as PI control loop to modulate reheat valves or other analog driven devices, pressure output signal, or mirror an input signal.
	Outputs #1-2 0-5 VDC, 0-10 VDC, or 4-20mA output signal
	Outputs #3-4 0-5 VDC or 0-10 VDC only
Relay Output	4 SPDT NO/NC Relay. Use as remote alarm annunciator or other NO/NC applications. Contact rating 2.0A @ 30 VDC /VA 0.6A @125 VAC
	Outputs #5-8 3-terminal, NC-COM-NO
Wire	Stranded shielded twisted pair, 16-24 AWG .14-1.5 mm ² cross sectional area

*Installer-provided 250 ohm resistor for required use of 4-20 mA signal.

EXPANSION I/O MODULE



SPECIFICATIONS

PHYSICAL DESCRIPTION	
Dimensions	6.36" W x 3.53"h x 2.40"D (161.6mm x 89.7mm x 60.75mm)
Mounting	Base Mount or 35mm DIN Rail
Case	Polycarbonate
Weight	1lb

ENVIRONMENTAL DATA	
Operating Temp. ⁴	32 to 120°F (0 to 50°C)
Storage Temp.	-40 to 185°F (-40 to 85°C)
Operating Humidity	5 to 95% RH (non-condensing)
Ingress Protection (IP) Rating	IP 20
COMMUNICATIONS	
RS-485 isolated full duplex. Dedicated I/O expansion module to the FLEX touch monitor product family. I/O points are accessible on BACnet/IP or BACnet MS/TP through the FLEX monitor.	

ELECTRICAL DATA	
Power Input	24 VAC (18-32 VAC operational), 50-60 HZ
Power Output	Auxiliary power for external sensors. 24 VDC, 0.4A
Power Draw	18 W maximum depending on load
Wire	2 or 3-conductor stranded unshielded twisted pair, 16-22 AWG
Connections	Removable Terminal Blocks
REGULATORY COMPLIANCE	
CSA, CE, RoHS, WEEE	

Model SRCM

ROOM CONDITION MONITOR

- **Maximize Patient Safety**
- **Save on Installation Costs**
- **Monitor Two Rooms with One Device**

- On-Board Dead-Ended Sensor
- Industry Best $\pm 0.25\%$ Accuracy
- 4.3" Color Touch Screen for Easy Setup and Room Display
- Monitor up to 4 Parameters per room:
 - Pressure, Temp, RH, User-Defined (ex. CO₂, LUX)
- Wipe-down Capable IP-54 Flush Mount Design
- Configurable Audible & Visual Alarms to Avoid Nuisance
- Easy Mounting into off-the-shelf Electrical Gang Box
- Reduce Installation Time with Unit Clone Feature
- Full Banner Feature - Customize Display Text

Our Customers

Harvard Medical School
 Memorial Sloan Kettering
 Cancer Center
 St. Judes Medical Center
 UC San Francisco Medical Center
 Veterans Affairs (VA) Hospital



The SRCM is the highest performance BACnet capable product for measuring low differential pressure in critical applications. Unlike the SRPM, the SRCM can monitor and alarm two rooms through one device, as well as display 3 additional parameters such as temperature, humidity & CO₂. The SRCM builds upon the SRPM's feature set by adding cloning functionality via a USB port, which ensures time and money savings on installation in applications where multiple monitors are required. The SRCM also has a 4.3" color LCD touch screen for easy menu navigation as well as a flush mount design. The SRCM provides the ability for custom naming for all rooms and conditions while including two-level password protection.

MONITOR & ALARM MULTIPLE ROOMS

The SRCM is designed to give the user flexibility and dependability in the most critical applications. The SRCM has an expanded feature set that includes 2 analog inputs to allow the user to monitor temperature and humidity, as well as a user defined parameter. The SRCM also has a digital input to be used for a door alarm, ensuring that there are no breaches in the critical environment.

ON-BOARD DEAD-ENDED SENSOR

Protection and isolation rooms are designed to adhere to strict standards in order to provide a proper barrier between the room and reference space. Unlike a flow-through design, the SRCM utilizes an on-board dead-ended low differential pressure sensor. This technology provides the user with a trusted solution & peace of mind that the sensor will prevent contaminated air from passing through it.

SAVE TIME AND MONEY ON INSTALLATION AND CALIBRATION

The SRCM is designed with both the installer and end user in mind. The BACnet enabled unit can be installed in an off-the-shelf electrical box, improving the ease of installation instead of having to use a custom electrical box that is not typically available at the rough stage of the project. The SRCM offers push button zero and span calibration that is easily performed by any low differential pressure calibrator and can be calibrated in minutes.

Model SRCM

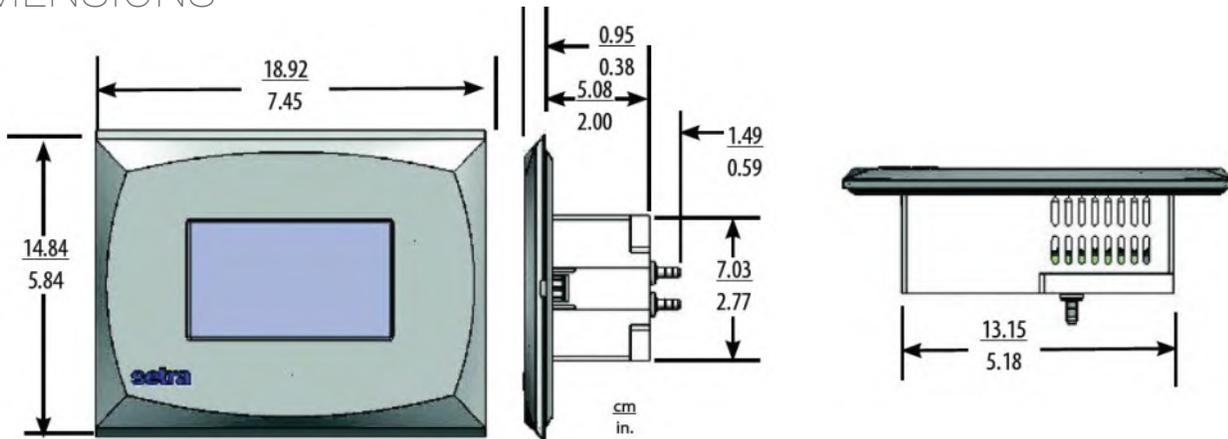
ROOM CONDITION MONITOR

SPECIFICATIONS

PERFORMANCE DATA			ELECTRICAL DATA (CURRENT)		PRESSURE MEDIA	
	CODE F	CODE H	Circuit	2-Wire	Clean air or similar non-conducting gases.	
Accuracy RSS ¹	±0.25%	±0.5%	Output	4 to 20 mA	PHYSICAL DESCRIPTION	
Non-Linearity (BFSL)	±0.24%	±0.49%	External Load	0 to 510 ohms		
Hysteresis	±0.05%	±0.05%	Excitation	18-32 VAC	Case	Fire Retardant Plastic UL94 V-0
Non-Repeatability	±0.05%	±0.05%	ELECTRICAL DATA (VOLTAGE)		Dimensions	5.84"H x 7.45"W x 0.38"D (14.84 x 18.92 x 0.95 cm)
Span Setting Tol. ²	±0.5% Rdg	±0.5% Rdg	Circuit	3-Wire (Exc, Out, Com)	Electrical Connection	Removable Terminal Block
THERMAL EFFECTS³			Output ⁵	0 to 5 VDC, 0 to 10 VDC	Pressure Fittings	Barbed Fittings for 1/4" O.D. Tubing
Compensated Range	40 to 120°F (4.5 to 50°C)		Alarm Output	SPDT Relay: 0.6A @ 120 VDC, 2A @ 30 VDC	Weight (approx.)	1 lb. 3.2 ounces (554 g)
Zero/Span Shift %FS	±0.03% FSI (±0.05% FS)		Power Consumption	10 W max., 3 W typ.	Mounting	Mounts to a triple gang double-deep electrical box
Overpressure	±1 PSI (15" W.C. for ≤ 0.10" W.C. F.S.)		Excitation	18-32 VAC, 50-60 HZ	LCD Display	4.3" TFT, 480x272, Dimmable
			ENVIRONMENTAL DATA			
			Operating Temp. ⁴	32 to +120°F (0 to +50°C)		
			Storage Temp.	-20 to +160°F (-30 to +70°C)		
			Operating Humidity	5 to 95% RH (Non-Condensing)		

¹ RSS of Non-Linearity, Hysteresis, and Non-Repeatability.
² Zero setting tol. negated by zero push button.
³ Units calibrated at nominal 70°F. Maximum thermal error computed from this datum.
⁴ Operating Temperature limits of the electronics only.
⁵ Calibrated into a 50K ohm load, operable into a 5000 ohm load or greater.
 Specifications subject to change.

DIMENSIONS



ORDERING INFORMATION

S R C M - [] [] [] [] - [] [] - [] - [] - []

MODEL	RANGE CODE		EXCITATION/OUTPUT		ACCURACY		PRESSURE SNUBBER*		FACEPLATE		
SRCM = SRCM	INCHES W.C.	PASCALS	A1	24 VAC/4-20 mA, 0-5 VDC & 0-10 VDC	H	±0.5% FS	N	Quantity 0	S	Setra Logo	
	R05WB	±0.05	Z02LB	±12.5	A2	24 VAC/4-20 mA, 0-5 VDC, 0-10 VDC w/BACnet®	F	±0.25% FS	1	Quantity 1	
	OR1WB	±0.10	O25LB	±25				2	Quantity 2	B	Blank
	R25WB	±0.25	O50LB	±50							
	OR5WB	±0.50	100LB	±100							
	O01WB	±1.00	250LB	±250							
	2R5WB	±2.50	500LB	±500							
	O05WB	±5.00	10CLB	±1000							

Ordering Example: Part No. SRCMR05WBA1HNS for A SRCM, ±0.05"WC Range, 24VAC/4-20 mA, 0.5% Full Scale Accuracy, No Pressure Snubber
 * For other pressure fitting configurations, please contact factory.



Model SRPM

ROOM PRESSURE MONITOR

- **Maximize Patient Safety**
- **Save on Installation Costs**
- **Low-Cost BACnet Solutions**

- Dead-ended On-board Sensor
- Industry Best 0.25% FS Accuracy Available
- LCD Touch Screen for Easy Setup and Room Display
- Monitor Single Pressure Relationship and Door Status
- Configurable Audible & Visual Alarms to Avoid Nuisance
- Easy Surface Mounting - Wall Thickness is Irrelevant
- Increased Safety with 2 Layer Password Protection
- Calibration: Simply Zero Once Installed

Our Customers

- Brigham and Women's Hospital
- Emory University Medical Center
- Memorial Sloan Kettering Cancer Center
- Stanford University Medical Center
- Veterans Affairs (VA) Medical Center

The SRPM is Setra's standard single room BACnet capable room pressure monitor for measuring low differential pressure in critical applications. The SRPM's backlit touchscreen LCD provides an intuitive graphic user interface for ease of setup. The SRPM has a built-in calibration feature and only needs to be zeroed once installed, significantly reducing the cost of ownership. The SRPM monitors and alarms while providing a digital input for a door alarm. The SRPM is a simple, cost-effective solution which combines state-of-the-art electronics with Setra's superior true differential pressure sensing technology to ensure safety in critical environments. The SRPM also incorporates two-level password protection.

MONITOR & ALARM CRITICAL ROOMS

The SRPM is most user friendly room pressure monitor on the market today. It has an intuitive touchscreen interface that allows the user to easily configure alarm set points, passwords and audible alarming conditions. With its bi-directional sensor, the unit can switch between protection and isolation room modes, or be put into standby mode when the room is not in use.

ON-BOARD DEAD-ENDED SENSOR

Protection and isolation rooms are designed to adhere to strict standards in order to provide a proper barrier between the room and reference space. Unlike a flow-through design, the SRPM utilizes an on-board dead-ended low differential pressure sensor. This technology provides the user with a trusted solution & peace of mind that the sensor will prevent contaminated air from passing through it.

SAVE TIME AND MONEY ON INSTALLATION & CALIBRATION

The SRPM is designed with both the installer and end user in mind. The BACnet enabled unit can be installed in an off-the-shelf electrical box, improving the ease of installation instead of having to use a custom electrical box that is not typically available at the rough stage of the project. The SRPM offers push button zero and span calibration that is easily performed by any low differential pressure calibrator and can be calibrated in minutes.

Model SRPM

ROOM PRESSURE MONITOR

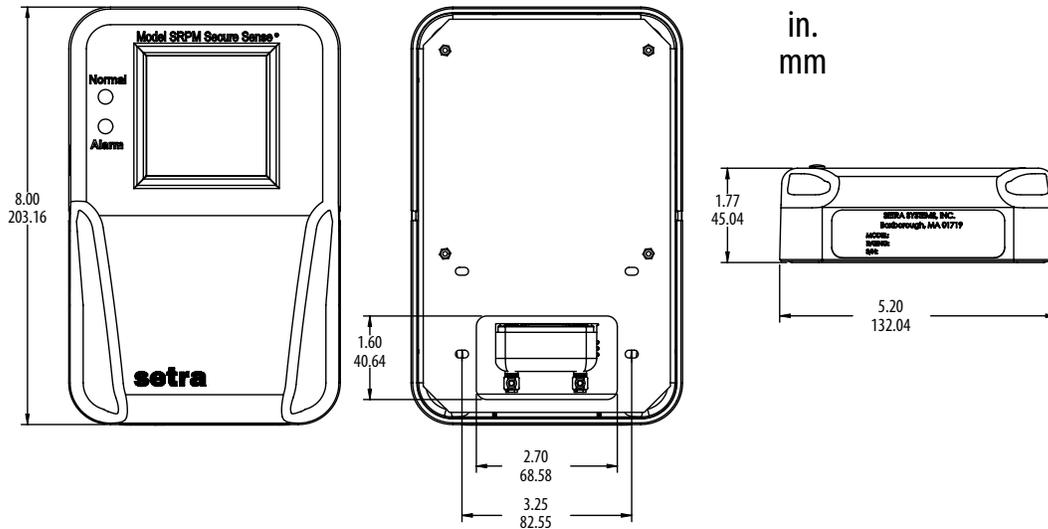


SPECIFICATIONS

PERFORMANCE DATA			ENVIRONMENTAL DATA		ELECTRICAL DATA (VOLTAGE)			
	STANDARD	OPTIONAL						
Accuracy RSS ¹	±0.5%	±0.25%	Operating Temperature	32 to +120°F (0 to +50°C)	Circuit	3-Wire (Exc, Out, Com)		
Non-Linearity (BFSL)	±0.49%	±0.24%	Storage Temperature	-20 to +160°F (-30 to +170°C)	Output ⁴	0 to 5 VDC, 0 to 10 VDC		
Hysteresis	±0.05%	±0.05%	Operating Humidity	5 to 95% RH (Non-Condensing)	Alarm Output	SPDT Relay: 1A @ 24 VDC, 1A @ 120 VDC		
Non-Repeatability	±0.05%	±0.05%	PHYSICAL DESCRIPTION				Power Consumption	5W
Span Setting Tol. ⁵	±0.5% Rdg.	±0.5% Rdg.	Case	Fire-Retardant Plastic (NEMA1, IP20 Rated for Indoor Applications)	Excitation: Code V1 Code A1 Code V2 Code A2	85-265 VAC, 50-60 Hz 18-32 VAC, 50-60 Hz 85-265 VAC, BACnet® 18-32 VAC, BACnet®		
THERMAL EFFECTS ²			Dimensions	8"H x 5.1"W x 1.8"D (203 x 130 x 46 mm)	ELECTRICAL DATA (CURRENT)			
Compensated Range	40 to 120°F (4.5 to 50°C)		Electrical Connection	Removable Terminal Block	Circuit	2-Wire		
Zero/Span Shift %FS	±0.03% FS (±0.05%FS)		Pressure Fittings	Barbed Fittings 1/4" O.D. Tubing	Output	4 to 20 mA		
Overpressure		±15"W.C.	Weight (approx.)	1.5lbs (680g)	External Load	0 to 510 ohms		
					Excitation: Code Vi Code A1	85-265 VAC, 50-60 Hz1 8-32 VAC, 50-60 Hz		

¹RSS of Non-Linearity, Hysteresis, and Non-Repeatability.
²Units calibrated at nominal 70°F. Max thermal error computer from this datum.
³Operating temperature limits of the electronics only.
⁴Calibrated into a 50K ohm load, operable into a 5000 ohm load or greater.
⁵Zero setting tol. negated by zero push button.
 Specifications subject to change.

DIMENSIONS



ORDERING INFORMATION



MODEL	RANGE CODE		EXCITATION/OUTPUT		ACCURACY	
SRPM = SRPM	INCHES W.C.		A1	24 VAC/4-20 mA or 0-5 and 0-10 VDC	E	±0.5% FS
	005WB	±5	V1	120/240 VAC/4-20 mA or 0-5 and 0-10 VDC	V	±0.25% FS
	2R5WB	±2.5	A2	24 VAC w/ BACnet®		
	001WB	±1.0	V2	120/240VAC BACnet®		
	OR5WB	±0.50				
	R25WB	±0.25				
	OR1WB	±0.1				
	R05WB	±0.05				

Ordering Example: Part No. SRPM005WBA1E for a SRPM, ±5 in. W.C. Range, 24 VAC EXC. with 4 to 20 mA output, and ±0.5% FS Accuracy.*
 Please contact factory for versions not shown..

Model MRMS

MULTI-ROOM MONITORING STATION



- **Save on Installation Cost with Auto-Discover**
- **Reduce Burden on Nursing Staff**
- **Monitor Up to 8 Rooms**

- Monitor 8 Rooms from 1 Device through BACnet MS/TP
- Auto-Discover Feature Reduces Installation Time with Less Wiring and BACnet Discovery
- 4.3" Color Touch Screen for Easy Room Navigation
- Configurable Audible/Visual Alarms
- IP54 Wipe-Down Flush Mount Design

Our Customers

Jewish General Hospital
 Mayo Clinic
 Naval Hospital Camp Pendleton
 St. Jude Children's Hospital
 Veterans Affairs (VA) Medical Center

The Setra MRMS provides a central location to view critical room conditions for up to eight rooms with configurable audible/visual alarms. The MRMS' 4.3" color LCD touchscreen is easy to navigate and ideal for any healthcare facility that needs to monitor critical room status from a central nurses location.

The MRMS significantly reduces installation through simplified wiring for BACnet and power, as well as setup through its Auto-Discover feature which automatically finds and connects to other Setra BACnet products and imports all MAC addresses, BACnet objects, naming conventions and other setup parameters.

DISPLAY REAL-TIME FEEDBACK FOR UP TO 8 ROOMS

Modern healthcare requires nursing and facilities professionals to monitor just about everything from the patient status to the condition of patient rooms. People can't be in two places at once, which is why Setra designed the MRMS, providing a central location to monitor the environmental condition for up to 8-rooms from a single device. The MRMS displays real-time data and provides an audible and visual alarm for the people who need it most: nurses and maintenance staff.

NO SET-UP REQUIRED

The MRMS has a unique "Auto-Discover" feature that allows the installer to quickly locate any of Setra's SRCM or SRPM series room pressure monitors with a click of a button. This feature uses the BACnet MS/TP protocol to discover any Setra unit and retrieves the data automatically. The auto-discover feature saves time and headaches when trying to ensure each unit is properly installed.

EASY TO USE TOUCHSCREEN

The MRMS has a 4.3" touchscreen user interface that makes setup and looking up the important information quick and easy. The user can see the present room condition at a glance and with one touch can access the other parameters that are displayed at the room.

Model MRMS

MULTI-ROOM MONITORING STATION

SPECIFICATIONS

PHYSICAL DESCRIPTION	
Case	Fire Retardant Plastic UL94V-0
Dimensions	5.84"H x 7.45"W x 0.38"D
Mounting	Standard Triple Gang Double-Deep-Electrical Box
Weight	1 lb 2 oz (482 grams)
Display	Touchscreen LCD 4.3" TFT, 480 x 272
COMMUNICATIONS	
BACnet®	MS/TP ASC
CERTIFICATIONS	
CE	Conforms to European Pressure Directive
CSA	CAN/CSA - C22.2 No. 61010-1-04, ANSI/UL 61010-1, 3rd Edition
ENVIRONMENTAL DATA	
Operating Temp.	32 to +120°F (0 to +50°C)
Storage Temp.	-20 to +160°F (-30 to +170°C)
Operating Humidity	5 to 95% RH (Non-Condensing)
ELECTRICAL DATA (VOLTAGE)	
Power Input	18-32 VAC, 50-60Hz
Power Consumption	10W
Circuit	2-Wire (Exc, Com)

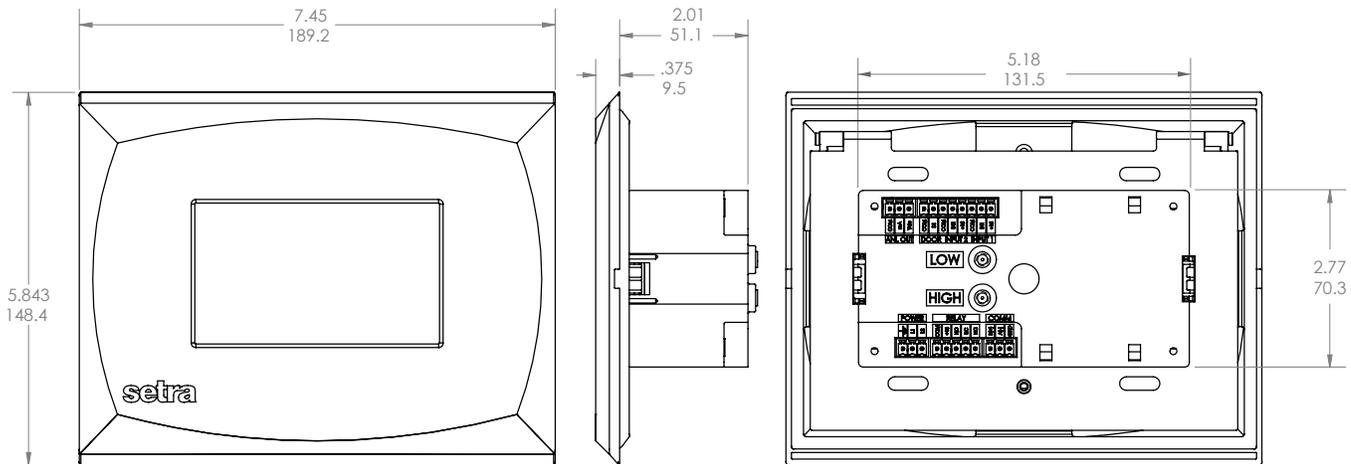
ORDERING INFORMATION

M R M S - □

MODEL	FACE PLATE LOGO	
MRMS = MRMS	S	Setra (Std.)
	B	Blank/No Logo (Opt.)

Ordering Example: MRMSS = Model MRMS with Setra logo on Face Plate.

DIMENSIONS



Model SRIM1

ROOM ISOLATION MONITOR



- **Maximize Patient Safety**
- **Save on Calibration & Installation**
- **Low-Cost Reliable Solution**

- Dead-Ended On-Board Sensor
- Industry Best Accuracy
- 2-Line LCD Display for Easy Setup & Room Display
- Configurable Audible & Visual Alarm
- Flush Mount (43mm wall depth) & Surface Mount Available
- Field Configurable Output (0-5VDC, 0-10VDC, 4-20mA)
- Removable Faceplate for No Hassle Calibration
- True Selectable 2-Wire 4-20mA Output

Our Customers

Battelle Laboratories
 Bella Vista Hospital
 Fort Lauderdale Hospital
 Harvard Medical School
 Russell Medical Center

The SRIM1 is Setra's low cost non-BACnet product measuring low differential pressure in critical applications. The SRIM1 is an ideal solution for anyone who requires cost-effective local monitoring and alarming of a single pressure relationship, but does not require BACnet protocol. The SRIM1 has a two-line LCD display with easy menu navigation and configurable visual/audible alarm setup. The SRIM1 has field selectable output and uses a unique removable faceplate design, allowing the user to fully calibrate the unit without the hassle of removing plumbing or wiring.

ON-BOARD DEAD-ENDED SENSOR

Protection and isolation rooms are designed to adhere to strict standards in order to provide a proper barrier between the room and reference space. Unlike a flow-through design, the SRIM1 utilizes an on-board dead-ended low differential pressure sensor. This technology provides the user with a trusted solution & peace of mind that the sensor will prevent contaminated air from passing through it.

PREMIUM PERFORMANCE AT AN AFFORDABLE PRICE

The SRIM1 is designed for the facility that needs local alarming on pressure, without paying a premium for the bells and whistles of higher priced devices. The SRIM1 has a configurable audible/visual alarm for pressure, which is easily configured through the 2-line LCD display.

SAVE TIME AND MONEY ON CALIBRATION

With requirements to calibrate pressure sensors anywhere from 1-3 times annually, the Setra SRIM1 offers a solution to help you save on calibration time. The SRIM1 allows the end user to remove the sensor without detaching any wiring or plumbing, saving time and money by completing the calibration in minutes.

Model SRIM1

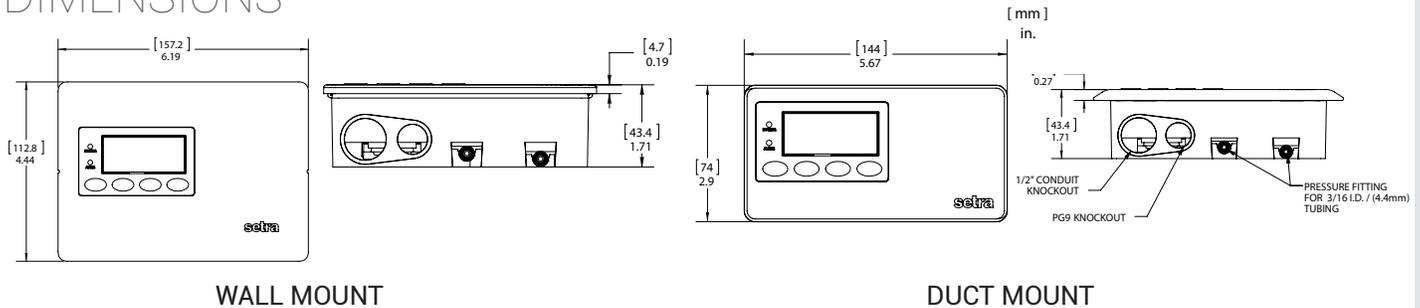
ROOM ISOLATION MONITOR

SPECIFICATIONS

PERFORMANCE DATA				ENVIRONMENTAL DATA	
	CODE F	CODE H	CODE C/G		
Accuracy RSS ¹	±0.25% FS	±0.5% FS	±1.0% FS	Operating Temp.	22 to +140°F (-6 to +60°C)
Non-Linearity (BFSL)	±0.22% FS	±0.49% FS	±0.98% FS	Operating Humidity	5 to 95% RH (Non-Condensing)
Hysteresis	±0.1% FS	±0.1% FS	±0.1% FS	ELECTRICAL DATA	
Non-Repeatability	±0.05% FS	±0.05% FS	±0.05% FS	Circuit	3-Wire (Exc, Out, Com) 2-Wire (+Exc, Com)
Zero/Span Setting Tol.	±0.5% FS	±0.5% FS	±1.0% FS	Output (field selectable)	0 to 5 VDC, 0 to 10 VDC, 4 to 20 mA
THERMAL EFFECTS				Excitation	18 to 32 VDC
Compensated Range	40 to 120°F (4.5 to 50°C)			Current Consumption	5 mA (voltage output mode)
Zero/Span Shift %FS ²	±0.02% FS/deg° Typ.			PHYSICAL DESCRIPTION	
Overpressure	Up to 10 PSI (Range Dependent)			Electrical Connection	Screw Terminal
PRESSURE MEDIA				Weight	8.9 oz (Duct) 9.8 oz (Wall)
Clean air or similar non-conducting gases.				Display	Custom 2-Line Character LCD
CERTIFICATIONS				Pressure Fittings	Barbed Fittings for 1/4" Tubing
CE	EN61326-1 & EN61326-2-3 BASIC Immunity & Class B Emission			Case	Fire Retardant Plastic UL94V-0
RoHS					

¹RSS of Non-Linearity, Non-Repeatability & Hysteresis at constant temp.
²Units calibrated at nominal 21°C. Max thermal error computed from this datum.

DIMENSIONS



WALL MOUNT

DUCT MOUNT

ORDERING INFORMATION



MODEL	PRESSURE RANGES			TYPE ²	OUTPUT ²		MOUNTING/LOGO		ACCURACY		PRESSURE SNUBBER		
	INCHES W.C.		PASCALS		DIFFERENTIAL	T1	4 to 20mA	WL	Wall Mount w/ Logo	C	±1.0% FS	N	None
SRIM1 = SRIM1													
R05W ¹	0 to 0.05	±0.05	Z02L 0 to 12.5	±12.5	D	Unidirectional	2B 0 to 5 VDC	DL	Duct Mount w/ Logo	F	±0.25% FS w/ cal. cert	1	Quantity 1
OR1W	0 to 0.1	±0.1	O25L 0 to 25	±25	B	Bidirectional	2C 0 to 10 VDC	WN	Wall Mount, No Logo	H	±0.05% FS w/ cal. cert	2	Quantity 2
R25W	0 to 0.25	±0.25	O50L 0 to 50	±50				DN	Duct Mount, No Logo	G	±1.0% FS w/ cal. cert		
OR5W	0 to 0.5	±0.5	100L 0 to 100	±100									
001W	0 to 1.0	±1.0	250L 0 to 250	±250									
2R5W	0 to 2.5	±2.5	500L 0 to 500	±500									
005W	0 to 5.0	±5.0	10CL 0 to 1,000	±1,000									
			25CL 0 to 2,500	±2,500									

¹Available in unidirectional only.
²Field Configurable but factory configured for cal certs.

Example: Part No. SRIM1R05WD11WCL1 = Model SRIM1, 0 to 0.05 in. W.C. Pressure Range, Unidirectional, 4 to 20 mA Output, Wall Mount with Logo, ±1.0% FS Accuracy, 1 Snubber

Model SRIM2

ROOM ISOLATION MONITOR

- Alarm on 4 Parameters
- Maximize Patient Safety
- Save on Calibration & Installation

- Dead- Ended On-board Sensor
- Configurable Audible & Visual Alarm
- Removable Faceplate for No Hassle Calibration
- Industry Best Accuracy
- Flush Mount (51mm wall depth) & Surface Mount Available
- 3-Color LCD Display for Easy Setup & Room Display



Setra's SRIM2 has the most alarming features of all our non-BACnet room monitors measuring low differential pressure in critical applications. The SRIM2, built on the foundation of the SRIM1, is an ideal solution for anyone who requires cost-effective local monitoring and alarming of multiple parameters, but does not require BACnet protocol. The SRIM2 has a 3-color backlit display, for easy menu navigation and visual/audible alarm setup for pressure, temperature, and humidity.

ON-BOARD DEAD-ENDED SENSOR

Protection and isolation rooms are designed to adhere to strict standards in order to provide a proper barrier between the room and reference space. Unlike a flow-through design, the SRIM2 utilizes an on-board dead-ended low differential pressure sensor. This technology provides the user with a trusted solution & peace of mind that the sensor will prevent contaminated air from passing through it.

ALARM EVERYTHING THAT YOU MONITOR

The SRIM2 provides audible and visual alarming for pressure, temperature and humidity to give you peace of mind in your critical environment. High and low alarm set-points for each parameter are easily configurable through a four-button membrane keypad. A digital input is also provided to show door status.

3 COLOR EASY-TO-SEE STATUS SCREEN

The SRIM2's three-color backlit screen allows the end user to easily view the status of the monitored space with green (normal), yellow (warning) and red (alarm) status screens. Alarms can be configured to be delayed to ensure that each SRIM2 is configured to the specific needs of the end user and minimize nuisance alarms.

SAVE TIME AND MONEY ON CALIBRATION

With requirements to calibrate pressure sensors anywhere from 1-3 times annually, the Setra SRIM2 offers a solution to help you save on calibration time. The SRIM2 allows the end user to remove the sensor without detaching any wiring or plumbing, saving time and money by completing the calibration in minutes.

Model SRIM2

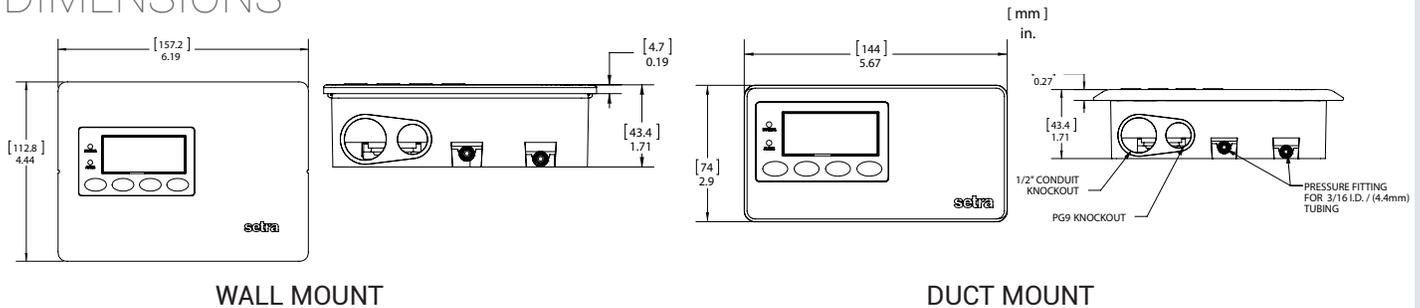
ROOM ISOLATION MONITOR

SPECIFICATIONS

PERFORMANCE DATA				ENVIRONMENTAL DATA	
	CODE F	CODE H	CODE C/G		
Accuracy RSS ¹	±0.25% FS	±0.5% FS	±1.0% FS	Operating Temp.	22 to +140°F (-6 to +60°C)
Non-Linearity (BFSL)	±0.22% FS	±0.49% FS	±0.98% FS	ELECTRICAL DATA	
Hysteresis	±0.1% FS	±0.1% FS	±0.1% FS	Circuit	3-Wire (Exc, Out, Com)
Non-Repeatability	±0.05% FS	±0.05% FS	±0.05% FS	Output (field selectable)	0 to 5 VDC, 0 to 10 VDC, 4 to 20 mA
Zero/Span Setting Tol.	±0.5% FS	±0.5% FS	±1.0% FS	Excitation	18 to 32 VDC or 24 VAC ±10%
THERMAL EFFECTS				Current Consumption	4W MAX (24 VDC) 8W MAX (25 VAC)
Compensated Range	40 to 120°F (4.5 to 50°C)			PHYSICAL DESCRIPTION	
Zero/Span Shift %FS	±0.02% FS/deg° Typ.			Electrical Connection	Screw Terminal
Overpressure	Up to 10 PSI (Range Dependent)			Weight	10.7 oz.
PRESSURE MEDIA				Display	Custom 2-Line Character LCD
Air or non-conductive, non-explosive gases.				Pressure Fittings	Barbed Fittings for 1/4" Tubing
CERTIFICATIONS				Case	Fire Retardant Plastic UL94V-0
CE	EN61326-1 & EN61326-2-3 BASIC Immunity & Class B Emission				
RoHS					

¹RSS of Non-Linearity, Non-Repeatability & Hysteresis at constant temp.

DIMENSIONS



ORDERING INFORMATION



MODEL	PRESSURE RANGES			TYPE	OUTPUT		MOUNTING/LOGO		ACCURACY		PRESSURE SNUBBER					
	INCHES W.C.		PASCALS		11	4 to 20mA	WL	Wall Mount w/ Logo	C	±1.0% FS	N	None				
SRIM2 = SRIM2				DIFFERENTIAL	11	4 to 20mA	WL	Wall Mount w/ Logo	C	±1.0% FS	N	None				
	R05W ¹	0 to 0.05	±0.05	Z02L	0 to 12.5	±12.5	D	Unidirectional	2B	0 to 5 VDC	DL	Duct Mount w/ Logo	F	±0.25% FS w/ cal. cert	1	Quantity 1
	OR1W	0 to 0.1	±0.1	025L	0 to 25	±25	B	Bidirectional	2C	0 to 10 VDC	WN	Wall Mount, No Logo	H	±0.05% FS w/ cal. cert	2	Quantity 2
	R25W	0 to 0.25	±0.25	050L	0 to 50	±50					DN	Duct Mount, No Logo	G	±1.0% FS w/ cal. cert		
	OR5W	0 to 0.5	±0.5	100L	0 to 100	±100					WS	Wall Mount, Stainless Steel Bezel				
	001W	0 to 1.0	±1.0	250L	0 to 250	±250										
	2R5W	0 to 2.5	±2.5	500L	0 to 500	±500										
	005W	0 to 5.0	±5.0	10CL	0 to 1,000	±1,000										
				25CL	0 to 2,500	±2,500										

¹Field Configurable but factory configured for cal certs.

Example: Part No. SRIM2R05WD11WLC1 = Model SRIM2, 0 to 0.05 in. W.C. Pressure Range, Unidirectional, 4 to 20 mA Output, Wall Mount with Logo, ±1.0% FS Accuracy, 1 Snubber

Model SRMD

ROOM MONITORING DISPLAY



- **Easy Out-of-the-Box Installation**
- **Calibrated Sensors Optional**
- **Easy to See from Up to 30 ft**

- Single or Dual Display with Silver or White Bezel
- 1" Illuminated LCD Characters - Red, Green, or Blue
- IP-54 Wipe Down Design for Critical Applications
- Fits into Off-the-Shelf Electrical Gang Box
- Compatible with Any Analog 0-5VDC or 0-10VDC Output

Our Customers

Cleveland Hospitals
 IBA Molecular
 Marymount Hospital
 Med Central Health System
 Pittsburgh VA Hospital

The SRMD is designed to provide a prominent display in critical environments. The SRMD takes inputs from critical sensors, and display the parameters in 1" illuminated LCD characters. The SRMD is sensor agnostic and accepts 0-5VDC or 0-10VDC inputs. However, it is also available to order calibrated with Setra humidity/temperature sensors, ensuring that it is ready to install out of the box, providing quick installation. The SRMD is available in single or dual configuration with a white or metallic bezel, and the LCD characters are available in three colors; red, green, and blue.

HIGHLY VISIBLE LCD DISPLAY

Real-time environmental monitoring is essential in critical spaces such as operating rooms, laboratories or medical manufacturing clean rooms. The SRMD is a display panel which takes sensor information and displays with 1" LCD characters. The SRMD is offered in either a single or dual display configuration with 3 color choices (red, green, blue) so that the end user can clearly see the critical parameters from up to 30' away.

INSTALLATION WITHOUT CUSTOMIZATION

The SRMD is designed to make things easy for both the installer and the end user. The unit mounts in an off-the-shelf electrical box making the installation simple once the rough-in phase of the job is complete. The SRMD accepts either a 0-5 or 0-10 VDC input, can be calibrated for any parameter, and is powered by either 24 volts DC or AC.

LET SETRA PERFORM THE CALIBRATION

The installer has enough to think about on the job site, so let Setra take some of the burden. When paired with Setra's SRH relative humidity sensors, the SRMD comes pre-configured and ready for installation out of the box. This drastically reduces the installation time needed for the application.

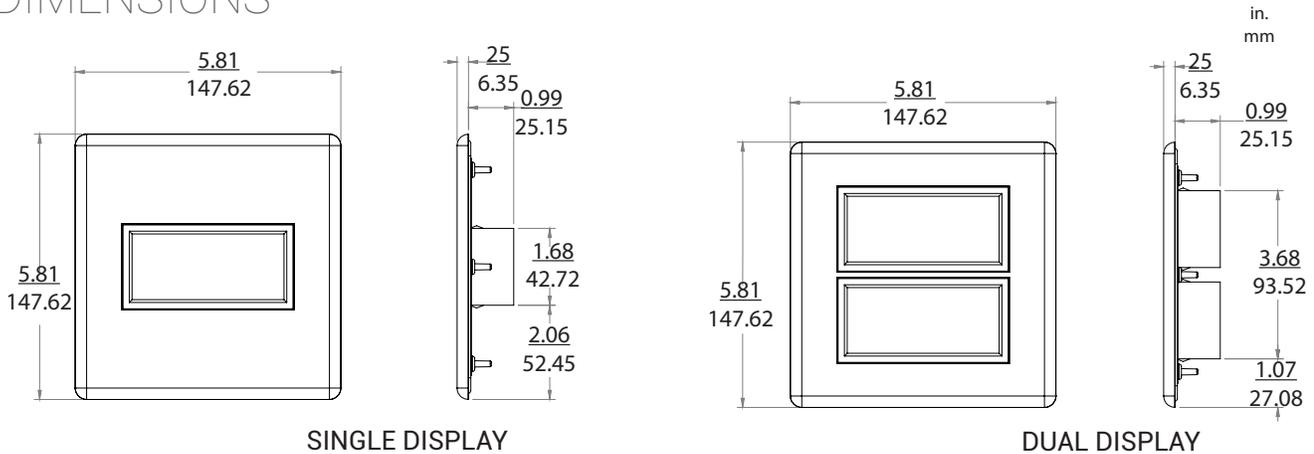
Model SRMD

ROOM MONITORING DISPLAY

SPECIFICATIONS

PHYSICAL DESCRIPTION		ENVIRONMENTAL DATA	
Flush Mount Bezel	Fire Retardant UL94V-0	Operating Temperature	14 to +122°F (-10 to +50°C)
Bezel Dimensions	Single Display Model - 5.9"H x 5.9"W Dual Display Model - 5.9"H x 5.9"W	Storage Temperature	-40 to +167°F (-40 to +75°C)
LCD Assembly Dimension	1.89"H x 3.78"W x 1.5"D	Operating Humidity	5 to 95% RH (Non-Condensing)
Weight (approx.)	Single Display Model - 10oz (554g) Dual Display Model - 13 oz (369g)	Ingress Protection	IP54 Rated
Mounting	Standard 4-11/16 Double Gang Electrical Box	ELECTRICAL DATA (VOLTAGE)	
DISPLAY		Power Input	15-32 VDC or 24 VAC
LCD	Available in Red, Green or Blue Backlit 1" high 3.5 digit (±1999 counts)	Current Consumption	150mA max (per display)
Engineering Unit Labels	Jumper Selectable °F °C % PSI, PPM, °WC	Analog Signal Input	Jumper Selectable 0-5 VDC or 0-10 VDC
Decimal Point	Jumper Selectable	Adjustments	Wide Adjustable Zero & Span by 25 Turn Pots
		Accuracy	±1%FS ± 2 Counts
		Input Impedance	Greater than 300K ohms
		Sampling Rate	3 Readings per Second
		Connection	Screw Terminals

DIMENSIONS



SINGLE DISPLAY

DUAL DISPLAY

ORDERING INFORMATION

S R M D - [] [] - [] - [] - [] - [] - [] - [] - [] - []

MODEL (SINGLE)	DISPLAY BEZEL COLOR	DISPLAY COLOR	MEASUREMENT PARAMETER	SENSOR OPTION				
SRMD = SRMD	SW	White Bezel	R	Red	N	None	N	None
	SM	Metallic Bezel	G	Green	T	Temp. (14 to 140°F)	W	SRH Wall Mount SRH12PW2CT5N
			B	Blue	H	Humidity (0.0 to 100.0% RH)	D	SRH Duct Mount SRH12PD2CT5N
			A	Temp. (-58 to 140°F)	A	SRH Duct SRH12PD2T3N		

1. The SRH Wall Mount (W), Duct Mount (D&A) relative humidity sensors are available as an option when selecting either option A or T (Temperature) or H (Humidity).

Note: Setra's SRH relative humidity sensors contain a humidity and temperature output.

2. Dual display units configured with a SRH humidity / temperature sensor cannot be ordered with temperature on top and bottom (Code TT, TA, or AT) with humidity on top and bottom (Code HH).

Example: SRMDSWRTWNN = SRMD single display, white bezel, red display, temperature, with SRH wall mount sensor.

S R M D - [] [] - [] - [] - [] - [] - [] - [] - [] - []

MODEL (DUAL)	DISPLAY BEZEL COLOR	DISPLAY COLOR (TOP)	MEASUREMENT PARAMETER (TOP DISPLAY)	SENSOR OPTION	DISPLAY COLOR (BOTTOM)	MEASUREMENT PARAMETER (BOTTOM DISPLAY)		
SRMD = SRMD	DW	White Bezel	R	Red	N	None	N	None
	DM	Metallic Bezel	G	Green	T	Temp. (14 to 140°F)	W	SRH Wall Mount SRH12PW2CT5N
			B	Blue	H	Humidity (0.0 to 100.0% RH)	D	SRH Duct Mount SRH12PD2CT5N
			A	Temp. (-58 to 140°F)	A	SRH Duct SRH12PD2T3N	A	Temp. (-58 to 140°F)

Example: SRMDDWRTWGH = SRMD dual display, white bezel, red display w/ temperature on top, SRH Wall Mount Sensor green display w/ humidity on bottom



setra®

POWER MONITORING

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Split-Core Standard CT	69

Power Patrol

REVENUE GRADE POWER METER

- **Configure & Power Through USB**
- **Field Selectable BACnet/Modbus**
- **5 Year Warranty**

- Revenue Grade Approved by NRTL
- Configure & Power Through USB
- Eliminate Setup Within Live Enclosure
- UL 610 Rated & BTL Certified
- Phase-Check LED's Confirm Wiring
- Rogowski Coil & Split-Core CT Compatible
- Field Selectable BACnet/Modbus (4-in-1)
- Broadband Power Supply (80-600V)
- ANSI C12.20-2010 Class 0.2
- Bidirectional
- DINrail Mount Standard
- Digital Pulse Output

Applications

- Measurement & Verification
- Demand Response
- Energy Cost Allocation
- Equipment Efficiency Tracking
- Preventative Maintenance



The Setra Power Patrol is every electrical contractor's dream. The Revenue Grade networked 3-phase power meter works with Rogowski Coils and has a small enough form factor to be mounted inside or outside of the panel using either mounting tabs or the DINrail clip making it the easiest installation in the industry.

ROGOWSKI AND CT COMPATIBLE

The Power Patrol works with either Rogowski Coil "flex" CTs or conventional split-core CTs. The ability to have interchangeable CTs gives added flexibility for last minute changes at the job site. The Power Patrol is embedded with the necessary amplifier/integrator circuitry for the Rogowski coil CTs, eliminating the need to provide external power.

EASY USB CONFIGURATION

Power and configure the meter through your computer's USB port using the Power Patrol HeadStart software. While other meters require configuration in a live enclosure, the Power Patrol can be easily configured outside of the panel, eliminating the risk of arc flash. HeadStart can save meter settings, allowing the installer to clone meter profiles quickly and easily.

FIELD SELECTABLE COMMUNICATION (4-in -1)

Each Power Patrol comes with field selectable Modbus and BACnet communication. Communications interface to the Power Patrol is through either an RS-485 serial connection (BACnet MS/TP / Modbus) or over Ethernet (BACnet IP / Modbus TCP).

LINE POWERED FROM 80-600V

The Power Patrol series instruments are line-powered and do not require external power. Its power supply can accommodate service voltage ranging from 80-600V (phase-to-phase). The Power Patrol has 3 LED indicators (Red/Green) which confirm proper CT-to-phase installation.

Power Patrol

REVENUE GRADE POWER METER

SPECIFICATIONS

TECHNICAL	
Service Type	Single Phase, Three Phase-Four Wire (WYE), Three Phase-Three Wire (Delta)
Power	From L1 Phase to L2 Phase. 80-600VAC CAT III 50/60Hz, 70 mA Max. Non-user replaceable 0.5 Amp internal fuse protection
Voltage Channels	80-346 Volts AC Line-to-Neutral, 600V Phase-to-Phase, CAT III
Current Channels	3 Channels, 0.67 VAC max, 333 mV CT's, 0-4,700 Amps depending on CT
Maximum Current Input	200% of current transducer rating (mV CTs) Measure up to 5000A with Patrol Flex
Measurement Type	True RMS using high-speed digital signal processing (DSP)
Line Frequency	50/60
Waveform Sampling	12 kHz
Parameter Update Rate	.5 seconds
Measurements	Volts, Amps, kW, kWh, kVAR, kVARh, kVA, aPF, dPF (Partial List)
Accuracy	0.2% (<0.1% typical) ANSI C12.20-2010 Class 0.2
Resolution	0.01 Amp, 0.1 Volt, 0.01 watt, 0.01 VAR, 0.01 VA, 0.01 Power Factor depending on scalar setting
LED Indicators	Bi-color LEDs (red and green): 1 LED to indicate communication, 2 LEDs for correct CT-to-phase installation (per meter element), 1 LED for pulse
Pulse Output	Open Collector, 5mA max current, 30V max open voltage

COMMUNICATIONS	
Direct	BACnet IP, BACnet MS/TP, Modbus TCP, Modbus RTU
Max Distance	1200 meters with data rate of 100K bits/second or less
Baud Rate	Modbus: 9600 (default), 19200, 38400, 57600, 76800 & 115200. BACnet: 9600, 19200, 38400 & 76800 (default).
Data Bits	8
Parity	None, Even, Odd
Stop Bit	2, 1
Data Formats	Modbus or BACnet

MECHANICAL	
Operating Temperature	-7° to 60° C (-20° to 140° F)
Humidity	5% to 95% non-condensing
Enclosure	ABS Plastic, 94-VO flammability rating
Weight	340 g (12 ounces, exclusive of CT's)
Dimensions	23.0 x 9.0 x 4.0 cm, (9.0" x 3.5" 1.5")

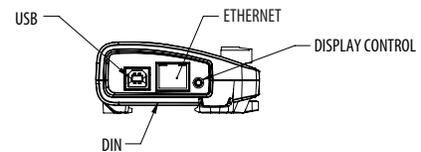
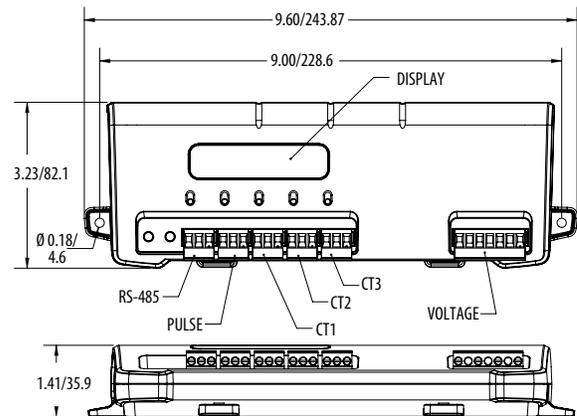
SAFETY	
Power Patrol Serial and Ethernet	UL Listed and CE Mark, Conforms to UL Std 61010-1

MODBUS REGISTER/BACNET OBJECT DESCRIPTION LIST

System True Energy (kWh)	Individual Phase to Phase Voltages
Instantaneous Total True Power (kW)	Line Frequency (Hz)
Peak Demand (Adjustable Window) (kW)	Individual Phases True Energy (kWh)
Maximum Instantaneous Power (kW)	Individual Phases True Power (kW)
System Reactive Energy (kVARh)	Individual Phases Reactive Energy (kVARh)
System Apparent Energy (kVAh)	Individual Phases Reactive Power (kVAR)
System Apparent Power (kVA)	Individual Phases Apparent Energy (kVAh)
System Displacement Power Factor (dPF)	Individual Phases Apparent Power (kVA)
System Apparent Power Factor (aPF)	Individual Phases Apparent Power Factor (aPF)
Average Current (Amps)	Individual Phases Displacement Power Factor (dPF)
Average Line to Line Voltage (Volts)	Individual Phases Current (Amps)
Average Line to Neutral Voltage (Volts)	Individual Phases Line to Neutral Voltages (Volts)
Multiple Meters External Data Synchronization	Individual Phases Line to Line Voltages (Volts)

* Refer to Operating Manual for Complete List.

DIMENSIONS



in./mm

ORDERING INFORMATION



MODEL	COMMUNICATION PORT	DISPLAY
SPP = Setra Power Patrol	E Ethernet & Serial	D Display
	S Serial Only (RS-485)	N No Display

Example: Part No. SPP-E-D = Setra Power Patrol, with Ethernet & Serial, and Display

ACCESSORIES

900900-G	USB Communication Cable, Type A to B, Power Patrol
900901-G	USB Flash Drive, HeadStart Software, Power Patrol
SPP-ACC-ENC1	Enclosure Kit
SPP-ACC-LEADS-208	Voltage Leads 208 VAC
SPP-ACC-LEADS-480	Voltage Leads 480 VAC
SPP-ACC-FUSE-208	Fuse Leads 208 VAC
SPP-ACC-FUSE-480	Fuse Leads 480 VAC
SPP-ACC-FUSE-600	Fuse Leads 600 VAC

Power Squad 24

MULTI-CIRCUIT POWER METER



- **Configure & Power Through USB**
- **Field Selectable BACnet/Modbus**
- **5 Year Warranty**

- Monitors 8 Three-Phase or 24 Single-Phase Devices
- UL 610 Rated & BTL Certified
- Phase-Check LED's Confirm Wiring
- Rogowski Coil & Split-Core CT Compatible
- Broadband Power Supply (80-600V)
- Bidirectional
- Digital Pulse Input & Output
- ANSI C12.20-2010 Class 0.2

Applications

- Measurement & Verification
- Healthcare Facilities
- Energy Cost Allocation
- High Density Electrical Distribution Panels
- LEED Projects

The Power Squad 24 is a versatile, multi-channel power meter designed to significantly reduce overall installation cost. The modular design allows it to be configured for monitoring multiple electrical circuits (sharing a common voltage source) or for current-only monitoring of branch circuits. It can be supplied with virtually any combination of Setra's internally-shunted split-core or Patrol Flex CT's and is capable of monitoring up to 8 three-phase or 24 single-phase electrical devices.

ROGOWSKI AND CT COMPATIBLE

The Power Squad 24 works with either Rogowski Coil "flex" CT's or conventional split-core CT's. The ability to have interchangeable CT's gives added flexibility for last minute changes at the job site. All Setra CT's are internally shunted and carry either UL or ETL certification as well as the CE Mark. Every Power Squad 24 is embedded with the necessary amplifier/integrator circuitry for Rogowski coil CT's—eliminating the need to provide external power to these flexible CT's.

EASY INSTALLATION

The Power Squad 24 series instruments are line-powered and do not require external power. Its power supply can accommodate service voltages ranging from 80-600V (phase-to-phase). The Power Squad 24's flexibility, and ease-of-use make it the ideal solution for commercial, industrial, government, and retail applications.

FIELD SELECTABLE COMMUNICATION

Each Power Squad 24 comes with field selectable Modbus and BACnet communication. Communications interface to the Power Squad 24 is through either an RS-485 serial connection (BACnet MS/TP / Modbus) or over Ethernet (BACnet IP / Modbus TCP).

Power Squad 24

MULTI-CIRCUIT POWER METER



SPECIFICATIONS

TECHNICAL	
Service Type	Single Phase, Three Phase-Four Wire (WYE), Three Phase-Three Wire (Delta)
Power	From L1 Phase to L2 Phase, 80-600 VAC CAT III 50/60Hz, 70 mA Max. Non-user replaceable 0.5 A internal fuse protection.
Power Out	Unregulated 5 VDC output, 500 mA Max.
Voltage Channels	80-346 Volts AC Line-to-Neutral, 600 V Phase-to-Phase, CAT III
Current Channels	3 or 24 Channels, 0.67 VAC Max, 333 mV CTs, 0-5,000 Amps depending on CT
Maximum Current Input	200% of current transducer rating (mV CTs) Measure up to 5,000 A with Patrol Flex
Measurement Type	True RMS using high speed digital signal processing (DSP)
Line Frequency	50/60 or 400 Hz
Waveform Sampling	12 kHz
Parameter Update	1 second
Measurements	Volts, Amps, kW, kWh, kVAR, kVARh, kVA, aPF, dPF
Accuracy	0.5% ANSI C12.20-2010 Class 0.5 for V, A, kW, kVAR, kVA, PF
Resolution	0.01 Amp, 0.1 Volt, 0.01 Watt, 0.01 VAR, 0.01 VA, 0.01 Power Factor depending on scalar setting
Pulse Output	Open Collector, 75 mA Max Current, 40 V Max Open Voltage, 8 Outputs
Pulse Input	Open Collector, 75 mA Max Current, 40 V Max Open Voltage, 2 Inputs

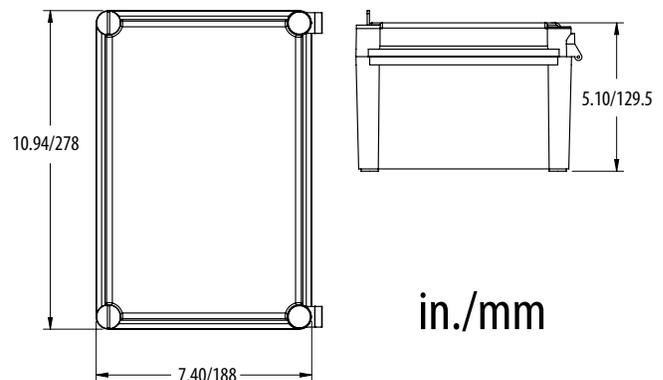
COMMUNICATIONS	
Direct	BACnet IP, BACnet MS/TP, Modbus TCP, Modbus RTU
Max Distance	1200 meters with data rate of 100K bits/second or less
Baud Rates	9600 (Modbus default), 19200, 38400, 57600, 76800 (BACnet default), 11200
Data Bits	8
Parity	None, Even, Odd
Stop Bit	2, 1
Data Formats	Modbus or BACnet
MECHANICAL	
Operating Temperature	-20° to 140°F (-7 to 60°C)
Humidity	5% to 95% non-condensing
Enclosure	(Optional) PC UL 94 5V
Weight	Without Enclosure: 454 g (16 oz) With Enclosure: 1361 g (48 oz)
Dimensions	Without Enclosure: 25.5 x 16.5 x 3.2 cm (10.0" x 6.5" x 1.3") With Enclosure: 27.8 x 18.8 x 13.0 cm (10.9" x 7.4" x 5.1")
SAFETY	
Power Squad Serial and Ethernet	UL Listed and CE Mark, Conforms to UL Std 61010-1

MODBUS REGISTER/BACNET OBJECT DESCRIPTION LIST

System True Energy (kWh)	Individual Phase to Phase Voltages
Instantaneous Total True Power (kW)	Line Frequency (Hz)
Peak Demand (Adjustable Window) (kW)	Individual Phases True Energy (kWh)
Maximum Instantaneous Power (kW)	Individual Phases True Power (kW)
System Reactive Energy (kVARh)	Individual Phases Reactive Energy (kVARh)
System Apparent Energy (kVAh)	Individual Phases Reactive Power (kVAR)
System Apparent Power (kVA)	Individual Phases Apparent Energy (kVAh)
System Displacement Power Factor (dPF)	Individual Phases Apparent Power (kVA)
System Apparent Power Factor (aPF)	Individual Phases Apparent Power Factor (aPF)
Average Current (Amps)	Individual Phases Displacement Power Factor (dPF)
Average Line to Line Voltage (Volts)	Individual Phases Current (Amps)
Average Line to Neutral Voltage (Volts)	Individual Phases Line to Neutral Voltages (Volts)
Multiple Meters External Data Synchronization	Individual Phases Line to Line Voltages (Volts)

* Refer to Operating Manual for Complete List.

DIMENSIONS



ORDERING INFORMATION

SPS24 - [] - []

MODEL	ENCLOSURE	COMMUNICATION PORT
SPS24 = Setra Power Squad 24	D Enclosure	E Ethernet
	N None	S Serial

Example: Part No. SPS-D-E = Setra Power Squad 24, with Enclosure, and Ethernet Port

ACCESSORIES

[] - []

900900-G	USB Communication Cable, Type A to B, Power Patrol
900901-G	USB Flash Drive, HeadStart Software, Power Patrol

Patrol Flex

ROGOWSKI COIL



•Revenue Grade High Accuracy:

±0.5% FS

•Best in Class Linearity

•No External Power Required

- Lightweight: <0.5 lb
- Best in Class Position Sensitivity
- Extend up to 300 ft with only 0.08% error
- Minimal Linearity Effect ±0.2%

Applications

- Measurement & Verification
- Demand Response
- Energy Cost Allocation
- Equipment Efficiency Tracking
- Preventative Maintenance
- Tenant Submetering
- Net Metering

Offered in 12", 24" and 36" lengths, the Patrol Flex is the most accurate Rogowski coil in submetering.

Rogowski coils offer significant installation advantages over split-core CTs because of their light weight, wide current range (5-5,000 Amps), mechanical flexibility for mounting in tight quarters and easy placement around cable bundles or large busbars. The Patrol Flex leads can be extended up to 300 feet with only 0.08% error.

0.5% FS REVENUE GRADE ACCURACY

Setra partnered with Fluke to deliver the Patrol Flex CT; the highest performance Rogowski coil in submetering. The Patrol Flex Rogowski Coil is calibrated to better than ±0.5% FS accuracy for use in revenue grade (tenant billing) applications.

SAVE MONEY ON INSTALLATION

Installers can save significant time and labor using the Patrol Flex due to its flexibility and ease of surrounding conductors of all sizes. Selecting a Rogowski coil instead of a conventional split-core CT can save the installer over two hours per meter point in a challenging installation, which could be the difference between making and losing money on a job.

REDUCED SHIPPING COSTS

A typical 100A CT weighs 2 lbs, however as the current range expands to 3,000A the average weight can increase from 2lbs to 20 lbs. Considering three CTs are required to monitor a 3-phase motor, certain applications could require up to 65lbs of shipping weight per meter point; a serious waste of shipping dollars. The Patrol Flex Rogowski Coil has a current range of 5-5,000 A and up, yet weighs less than 1/2 lb, drastically reducing freight costs.

BEST IN CLASS LINEARITY

Conventional CTs are wound over a magnetic iron core, which makes them more susceptible to saturation leading to linearity error. Engineers and contractors must adjust the phase shift of the meter to compensate in order to achieve an accurate reading. Rogowski coils are wound over a non-magnetic core, giving them perfect linearity and improved accuracy over wide current ranges.

Patrol Flex

ROGOWSKI COIL

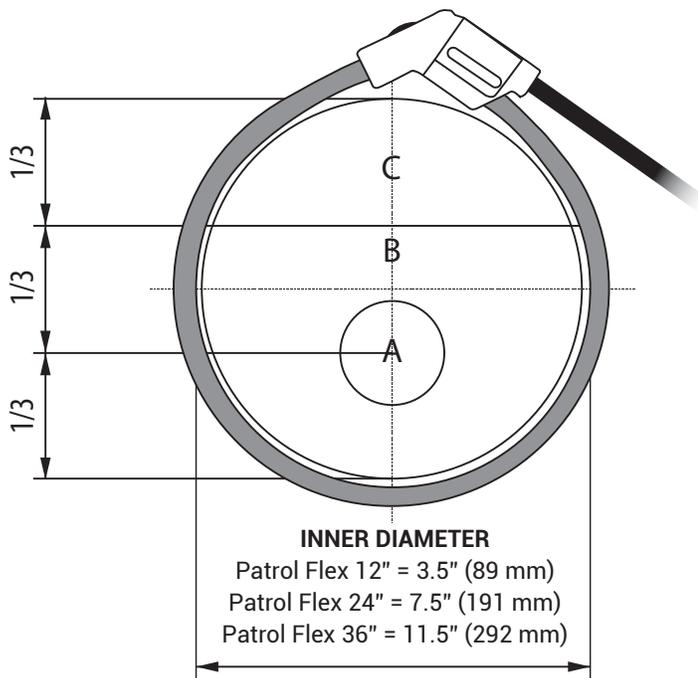


SPECIFICATIONS

GENERAL SPECIFICATIONS		SPECIFICATIONS	
Probe and Cable Material	TPE rubber, reinforced insulation UL94 V-0, Color: RED Munsell 7.5 R 1/14	Voltage Output (@1000 ARMS, 60 Hz)	108 mV
Couplings Material	Polypropylene, UL94 V-0	Current Range ¹	5-5,000 A AC RMS
Probe Cable Length	610 mm	Accuracy	± 0.5% of reading (@ 25°C, 60 Hz)
Probe Cable Diameter	12.4 mm	Linearity (10% to 100% of range)	± 0.2% of reading
Probe Cable Bend Radius	40 mm	Working Voltage (see Safety Standards section)	1000 V AC RMS or DC (head) 30 V max. (output)
Output Cable Length	2 meters shielded 2-wire cable	SAFETY SPECIFICATIONS	
Output Connector	Unterminated	Safety Standards	-BS EN 61010-1 2001 -BS EN 61010-2-032 2002 -BS EN 61010-031 2002, 1000 VRMS, Category III, Pollution Degree 2 -Use of the probe on uninsulated conductors is limited to 1000 V AC RMS or DC and frequencies below 1 kHz.
Operating Range	-20° to +70° C		
Storage Temperature	-40° to +80° C		
Operating Humidity	15% to 85% (non condensing)		
Degree of Protection (Probe)	IP40		

¹When used with Setra Power Patrol (Ranges vary when used with other meters)

DIMENSIONS



ACCURACY

Patrol Flex 12", 24, 36	
Probe Window A	± (0.5% of reading + 0.02% of range)
Probe Window B	± (0.75% of reading + 0.02% of range)
Probe Window C	± (1.25% of reading + 0.02% of range)

ORDERING INFORMATION

CT - PF -

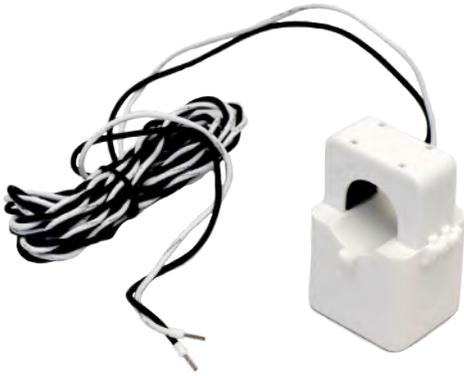
MODEL	PROBE LENGTH
PF = Patrol Flex	12 12" (≈3.5" inner diameter)
	24 24" (≈ 7.5" inner diameter)
	36 36" (≈ 11.5" inner diameter)

Example: Part No. CT-PF-12 = Model Patrol Flex, 12" Probe Length.

Split-Core Performance CT



CURRENT TRANSFORMER

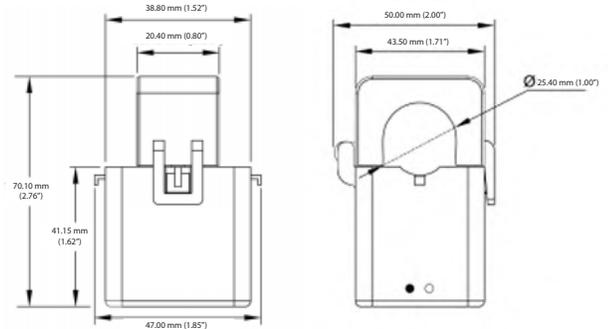


Setra's Split-Core Performance current transformers provide a high accuracy current measurement over a wide dynamic sensing range for power metering applications. Unlike the competition, Setra offers "Safe CTs" which provide a millivolt output directly proportional to the input current. These current transformers are safely and easily installed on existing power lines without disconnecting the lines and interrupting service. These CTs are available from 20A to 200A and when used with Setra's Power Patrol (SPP) or Power Squad (SPS24) provide a complete metering solution for demanding applications.

SPECIFICATIONS

GENERAL				
NOMINAL RATING	20A	50A	100A	200A
Aperture Size	0.4" (10mm)	0.4" (10mm)	1.0" (25mm)	1.0" (25mm)
Current Range	0.25-40A AC	0.25-80A AC	1-200A AC	1-300A AC
Output	333 mV @ 20A AC 16.65 mV/A AC	333 mV @ 50A AC 6.66 mV/A AC	333 mV @ 100A AC 3.33 mV/A AC	333 mV @ 200A AC 1.67 mV/A AC
Ratio Error	<0.5% from 0.25 to 40A AC (typical)	<0.5% from 0.25 to 80A AC (typical)	<0.3% from 1.0A to 200A AC (typical)	<1.0% from 1.0A to 300A AC (typical)
Phase Error	<1.5° from 1A to 80A AC <2° from 0.25 to 1A AC	<1.5° from 1A to 40A AC <2° from 0.25 to 1A AC	<0.5° from 1.0A to 200A AC	<0.5° from 1.0A to 300A AC
Phase Shift	0.75°	0.75°	0.12°	0.30°
ELECTRICAL				
Wire Polarity	White = Hi, positive (+) Black = Low, negative (-)			
Phasing	Arrow on Case Points			
Orientation	Toward Load			
Frequency Range	50 to 400 Hz			
MECHANICAL				
Case Material	White Nylon, UL 94 V-0			
Leads	20 A & 50 A: 2.4 M (8'), 600V, 20 gauge 100 A & 200 A: 2.4 M (8'), 600V, 22 gauge			
Operating Temperature	-15 to 60°C (5 to 140°F)			
Storage Temperature	-20 to 85°C (-4 to 185°F)			
SAFETY				
Working Voltage	600 VAC, Category III			
Dielectric Strength	20 A & 50 A: 3525 VAC for 1 Minute 100 A & 200 A: 5200 VAC for 1 Minute			
Certifications	UL STD 61010-1 Certified to: CAN/CSA STD 22.2 NO. 61010-1			

DIMENSIONS



ORDERING INFORMATION

CT	-	SCP	-		
MODEL		AMPS			
SCP	Split-Core Performance	020	20 Amps		
		050	50 Amps		
		100	100 Amps		
		200	200 Amps		

Split-Core Standard CT

CURRENT TRANSFORMER

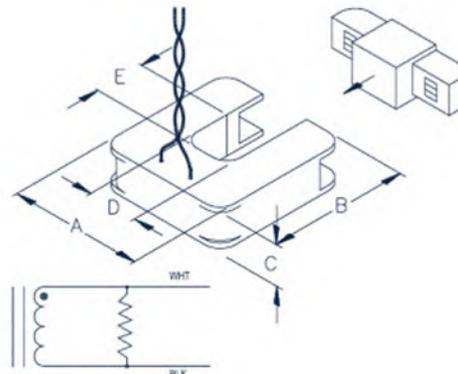


Setra's Split-Core Standard current transformers provide a high accuracy current measurement over a wide dynamic sensing range for power metering applications. Unlike the competition, Setra offers "Safe CTs", which provide a millivolt output directly proportional to the input current. These current transformers are safely and easily installed on existing power lines without disconnecting the lines and interrupting service. The CTs are available from 100A to 600 A and when used with Setra's Power Patrol (SPP) or Power Squad (SPS24) provide a complete metering solution for demanding applications.

SPECIFICATIONS

GENERAL				
NOMINAL RATING	100A	200A	400A	600A
Current Range	5-130A AC	4-260A AC	8-520A AC	12-780A AC
Phase Shift	1.75°	1.50°	1.30°	1.30°
Output	333 mV @ rated current			
Ratio Error	<1% at rated current (typical)			
Phase Error	<2° at rated current (typical)			
Aperture Size	1.25" (3.20 cm)			
ELECTRICAL				
Wire Polarity	White = Hi, positive (+) Black = Low, negative (-)			
Frequency Range	50 to 400 Hz			
MECHANICAL				
Case Material	Epoxy Encapsulated Housing			
Leads	2.7 M (8'), twisted pair, 20 AWG			
Operating Temp.	Maximum 105°C (220°F)			
SAFETY				
Working Voltage	600 VAC, Category III			
Dielectric Strength	5000 VAC around case, 600V rated leads			
Certifications	UL STD 61010-1, EN 60044-1:1999 Certified to: CAN/CSA STD 22.2 NO. 61010-1			

DIMENSIONS



A	B	C	D	E
3.25" (8.26 cm)	3.35" (8.51 cm)	1.00" (2.54 cm)	1.25" (3.18 cm)	1.25" (3.18 cm)

ORDERING INFORMATION

CT - SCM - [] [] []

MODEL		AMPS	
SCM	Split-Core Medium	100	100 Amps
		200	200 Amps
		400	400 Amps
		600	600 Amps



setra®

CURRENT SENSORS

Sure-Set	72
Model CCM	74
Model CSC	75
Model CSS	76
Model CTC	77

Sure-Set™

SPLIT-CORE CURRENT SWITCH



- Safe Installation
- No PPE Suit Required
- Pre-Calibrated Set Points by HP

- Match Set Point to Motor Horsepower Rating
- Multi-Range 9 Set Points Available on Each Model
- Rotary Switch Detents Confirm Intended Settings
- Allows Installation to be Completed on a Cold Circuit
- Split-Core Design
- Under Current Sensing Applications

Applications

- HVAC/R Systems
- Constant Volume Drives (CVD)
- Fans
- Industrial Motors
- Pumps
- Refrigeration

Setra's Sure-Set™ Model SSC current switch is the safest current switch for under current sensing on constant speed drive applications. The split-core current switch provides a unique approach to calibration and installing current sensors, utilizing the horsepower of the motor. This eliminates exposure to arc flash vs. traditional adjustable set point switches on the market. The multi-range dial maximizes flexibility and reduces overall installation time, allowing installation to be done on a cold circuit without the need for an arc flash suit and protective equipment. The SSC's recessed set point dial reduces the chance of inadvertent adjustments, while the detents provide tactical feedback that the desired horsepower rating has been selected.

AVOID ARC FLASH

Traditional adjustable current switches require the installer to make set point adjustments to the unit on a live circuit during installation increasing the safety risk to the installer. Each Sure-Set™ model offers 9 pre-configured set points so the installer can pre-configure the switch, based on the rating of the motor, prior to powering the circuit, eliminating the risk of arc-flash hazard.

SAVE TIME AND MONEY ON INSTALLATION

The installer simply sets the switch to the appropriate setting to match the horsepower (HP) rating of the motor, clamps it on to the de-energized circuit, connects the signal leads and the installation is complete. By eliminating the need to work in a live electrical enclosure, the installer is no longer required to wear a personal protective equipment (PPE) suit, saving valuable time on the job.

REDUCE INVENTORY

Each Sure-Set™ offers 9-pre-configured set points, giving the installer the flexibility to use the same switch on a variety of different motor loads. Unlike fixed set-point switches, the Sure-Set™ provides the multi-range flexibility to work with motors ranging from 1 to 100 HP.

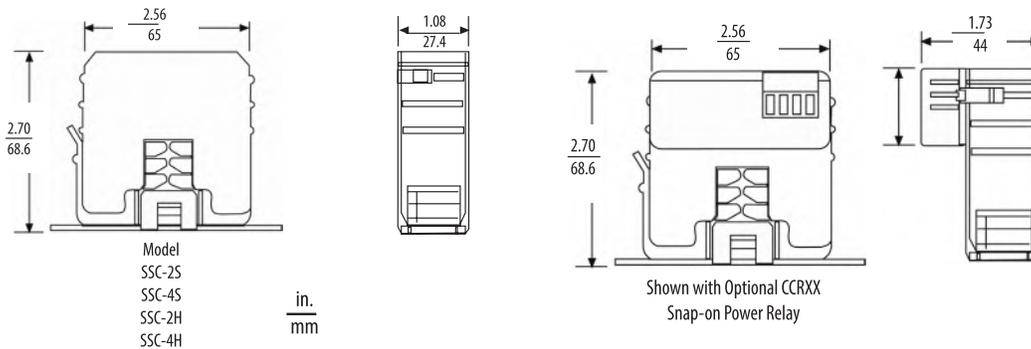
SPECIFICATIONS

GENERAL	
Continuous Operating Current	135A, 600V AC
Switch Set Point	Adjustable, 9 position rotary switch
Output Relay Contacts (option)	Optional. Output contacts rated 10A @ 260V AC, 5A @ 30V DC
Output Relay Coil Voltage (option)	Optional, 12V AC/DC or 24V AC/DC
Switch LED Indication	Yes
Relay LED Indication (option)	Yes
Trip Point Set Value	50% below FLA @ selected hp value
Current Switching Mode	Under Current Sensing
Dimensions	2.7 x 2.56 x 1.08 in. (69 x 65 x 27 mm)

GENERAL (continued)	
Aperture Size	0.72 x 0.78 in. (18 x 20 mm)
Sensor Power Source	Induced from power conductor cable
Status Output	Switch normally open (when energized above trip point switch closes)
Switch Load Capacity	1A @ 30V AC/DC max.
Isolation Voltage	600V AC rms.
Temperature Range	5 to 140°F (-15 to 60°C)
Frequency Range	50/60 Hz
Humidity Range	0 to 95% non-condensing
Agency Approvals/Compliance	CE Compliant, RoHS Compliant, UL/c-UL Listed: 508, IND. Cont. EQ: E317719

Specifications subject to change without notice.

DIMENSIONS



ORDERING INFORMATION



MODEL	MOTOR HP RANGE CODE	MOTOR HP RANGES
SSC = Sure-Set™	2S	1, 2, 3, 5, 7.5, 10, 15, 20, 25 9 position set point for 230V AC Motor Application
	4S	2, 3, 5, 7.5, 10, 15, 20, 25, 30 9 position set point for 480V AC Motor Application
	2H	5, 7.5, 10, 15, 20, 25, 30, 40, 50 9 Position set point for 230V AC Motor Application
	4H	15, 20, 25, 30, 40, 50, 60, 75, 100 9 Position set point for 480V AC Motor Application

OPTIONAL RELAY	
CCR-12	Snap on Power Relay 12 VAC/DC
CCR-24	Snap on Power Relay 24 VAC/DC

Ordering Example: SSC2S = Model SSC with 1, 2, 3, 5, 7.5, 10, 20, 25 hp Ranges and 9 position set point for 230V AC Motor Application.

CAUTION, RISK of ELECTRIC SHOCK
Disconnect power supply before making electrical connections. contact with components carrying hazardous voltage can cause electrical shock and may result in severe personal injury or death.

Model CCM

MINI CURRENT SWITCH



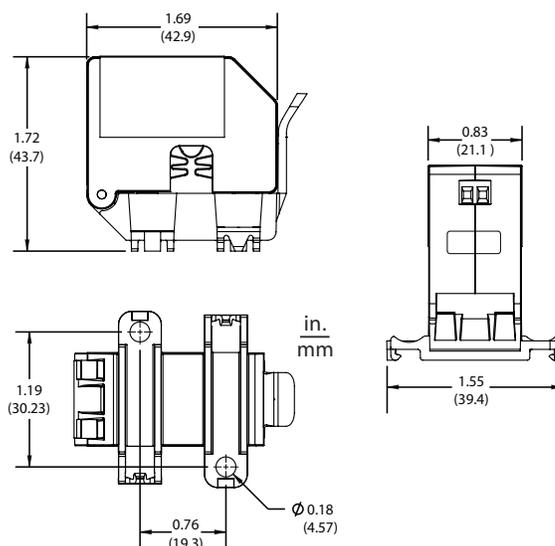
Setra's Model CCM is the industry's smallest split-core current switch offering a cost effective solution for monitoring light to medium current loads in common HVAC applications. It is designed to detect increases or decreases in operating current based on belt loss, slippage or mechanical failure within a process. The CCM incorporates an integrated DINrail and surface mounting flange for easy installation in any application, at no additional cost. The Mini Current Switch is easily clamped onto new or existing power cables or wires, making it ideal for new construction and retrofit projects.

SPECIFICATIONS

GENERAL	
Amperage Range	0.15 to 60 A
Continuous Operating Current	60A, 300V AC
Current Set Point	Fixed
Switch LED Indication	No
Relay LED Indication	No
Trip Point Set Value	0.15A
Current Switching Mode	Under Current Sensing
Dimensions	1.57 H X 1.66 L X 1.52 W in. (39.9) x 42.2 L x 38.6 W mm
Aperture Size	0.3 in. (7.6 mm) 6 AWG
Sensor Power Source	Induced from power conductor cable
Status Output	Switch normally open (when energized above trip point switch closes)
Switch Load Capacity	1A @ 30V AC/DC
Isolation Voltage	300V AC rms.
Temperature Range	5 to 140°F (-15 to 60°C)
Frequency Range	50/60 Hz
Humidity Range	0 to 95% non-condensing
Agency Approvals/Compliance	UL/c-UL Listed: 508, IND. Cont. EQ: E317719/CE Compliant/RoHS Compliant

Specifications subject to change without notice.

DIMENSIONS



ORDERING INFORMATION

C C M F 0 1 5

MODEL	DESCRIPTION
CCMF015	Mini Current Switch, Trip Point Set Value 0.15 A

Model CSC

SPLIT-CORE CURRENT SWITCH

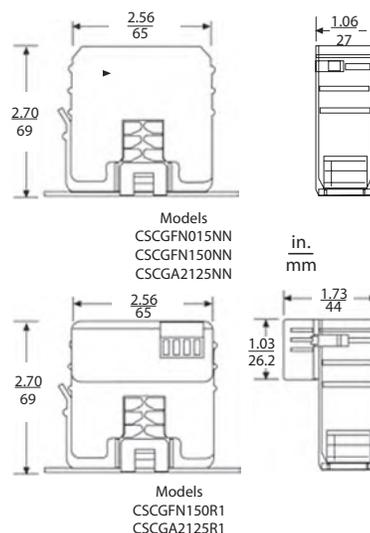


Setra's Model CSC split-core current switches provide a cost effective solution for real-time monitoring of motor status in common HVAC applications. The CSC is available with fixed or adjustable trip set-point values alerting the user to over or under current conditions in the application, with trip points as low as 0.15 A up to 135 A. Setra's design utilizes magnetic induction current sensing technology allowing the CSC switches to accurately operate over a wide range of environmental conditions, without the need for an additional power supply. The current switch is available with a snap-on power relay designed to start or stop AC motors during tripped set-point conditions, minimizing service time in the field.

SPECIFICATIONS

GENERAL					
MODEL	CSCGFN015NN	CSCGFN150NN	CSCGA2125NN	CSCGFN150R1 w/snap-on relay	CSCGA2125R1 w/snap-on relay
Amperage Range	0.15 to 200 A	1.5 to 200 A	1.25 to 135 A	1.5 to 200 A	1.25 to 135 A
Continuous Operating Current	200 A 600 V AC	200 A 600 V AC	135 A 600 V AC	200 A 600 V AC	135 A 600 V AC
Switch Setpoint	Fixed	Fixed	Adjustable	Fixed	Adjustable
Output Relay	No	No	No	SPST, NO 10 A @ 260 V AC, 5 A @ 30 VDC	SPST, NO. 10 A @ 260 V AC, 5 A @ 30 V DC
Actuation Coil	No	No	No	24 V AC/DC	24 V AC/DC
Switch LED Indication	No	No	Yes	No	Yes
Relay LED Indication	No	No	No	Yes	Yes
Trip Setpoint Value	0.15 A	1.5 A	1.25 to 135 A	1.5 A	1.25 to 135 A
Current Switching Mode	Under Current Sensing	Under Current Sensing	Over/Under Current Sensing	Under Current Sensing	Over/Under Current Sensing
Dimensions	2.7 x 2.56 x 1.08 in. (69 x 65 x 27 mm)	2.7 x 2.56 x 1.08 in. (69 x 65 x 27 mm)	2.7 x 2.56 x 1.08 in. (69 x 65 x 27 mm)	2.7 x 2.56 x 1.73 in. (69 x 65 x 44 mm)	2.7 x 2.56 x 1.73 in. (69 x 65 x 44 mm)
Aperture Size	0.72 x 0.78 in. (18 x 20 mm)				
Sensor Supply Voltage	Induced from power conductor cable				
Status Output	Switch normally open (when energized above trip point switch closes)				
Switch Load Capacity	1 A @ 30 V AC/DC max.				
Isolation Voltage	600 V AC rms				
Temperature Range	5 to 140°F (-15 to 60°C)				
Frequency Range	50/60 Hz				
Humidity Range	0 to 95% non-condensing				
Agency Approvals	CE Compliant, RoHS Compliant, c-UL Listed: 508, IND. Cont. EQ: E317719				

DIMENSIONS



ORDERING INFORMATION

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MODEL	DESCRIPTION
CSCGFN015NN	Model CSC, Fixed Setpoint, No LED, 0.15 A Setpoint, No Snap-on Power Relay
CSCGFN150NN	Model CSC, Fixed Setpoint, No LED, 1.50 A Setpoint, No Snap-on Power Relay
CSCGA2125NN	Model CSC, Adjustable Setpoint, with LED, 1.25 A Setpoint, No Snap-on Power Relay
CSCGFN150R1	Model CSC, Fixed Setpoint, No LED, 1.5 A Setpoint, with Snap-on Power Relay
CSCGA2125R1	Model CSC, Adjustable Setpoint, with LED, 1.25 A Setpoint, with Snap-on Power Relay

¹ Units calibrated at nominal 70°F. Max thermal error computer from this datum.
² Calibrated at factory with a 24VDC loop supply voltage and a 250 ohm load.

Specifications subject to change without notice.

Model CSS

SOLID-CORE CURRENT SWITCH



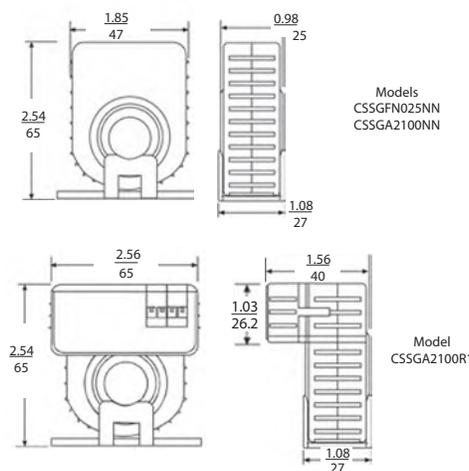
Setra's Model CSS solid-core current switches provide a cost effective solution for real-time monitoring of motor status in common HVAC applications. The CSS is available with fixed or adjustable trip set-point values alerting the user to over or under current situations in the application, with trip points as low as 0.25 A up to 135 A. The Model CSS's design utilizes magnetic induction current sensing technology allowing the CSS switches to accurately operate over a wide range of environmental conditions, without the need for an additional power supply. The current switch is available with a snap-on power relay designed to start or stop AC motors during tripped set-point conditions, minimizing service time in the field.

SPECIFICATIONS

GENERAL			
MODEL	CSSGFN025NN	CSSGA2100NN	CSSGA2100R1 W/ SNAP-ON RELAY
Amperage Range	0.25 to 200 A	1.00 to 135 A	1.00 to 135 A
Continuous Operating Current	200 A, 600 VAC	125 A, 600 VAC	135 A, 600 VAC
Switch Setpoint	Fixed	Adjustable	Adjustable
Output Relay	No	No	SPST, NO. 10 A @ 260 VAC, 5 A @ 30 VDC
Actuation Coil	No	No	24VAC/DC
Switch LED Indication	No	Yes	Yes
Relay LED Indication	No	No	Yes
Trip Setpoint	0.25 A	1.00 to 135 A	1.00 to 135 A
Current Switching Mode	Under Current Sensing	Over/Under Current Sensing	Over/Under Current Sensing
Dimensions	2.54 x 1.85 x 0.98 in. (65 x 47 x 25mm)	2.54 x 1.85 x 0.98 in. (65 x 47 x 25mm)	2.54 x 2.56 x 1.56 in. (65 x 65 x 40mm)
Aperture Size	0.71 in. Dia. (18mm Dia.)		
Sensor Supply Voltage	Induced from power conductor cable		
Status Output	Switch normally open (when energized above trip point switch closes)		
Switch Load Capacity	1 A @ 30 VAC/DC max.		
Isolation Voltage	600 VAC rms		
Temperature Range	5 to 140°F (-15 to 60°C)		
Frequency Range	50/60 Hz		
Humidity Range	0 to 95% non-condensing		
Agency Approvals	CE Compliant, RoHS Compliant, c-UL Listed: 508, IND. Cont. EQ: E317719		

Specifications subject to change without notice.

DIMENSIONS



ORDERING INFORMATION



MODEL	DESCRIPTION
CSSGFN025NN	Model CSS, Fixed Setpoint, No LED, 0.25 A Setpoint, No Snap-on Power Relay
CSSGA2100NN	Model CSS, Adjustable Setpoint, with LED, 1.00 A Setpoint, No Snap-on Power Relay
CSSGA2100R1	Model CSS, Adjustable Setpoint, with LED, 1.00 A Setpoint, with Snap-on Power Relay

Model CTC

SPLIT-CORE CURRENT TRANSDUCER

Setra's Model CTC current transducers provide an accurate and cost effective solution for real-time current measurement on AC powered circuits. Unlike a current switch, each transducer provides an instantaneous voltage or milliamp output that is proportional to any of 3 field selectable amperage ranges. The 5V and 4 to 20 mA output units have 30/60/120 Amp sensing ranges, while the 10V output units have a 20/100/150 Amp sensing ranges. The mutli-range capability combined with the split-core design increases installation flexibility to handle unexpected changes on the job site.

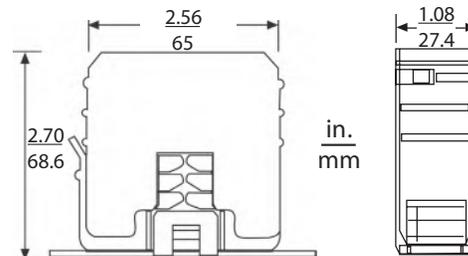


SPECIFICATIONS

GENERAL			
MODEL	CTCG420NN	CTCGV05NN	CTCGV10NN
Multi-Range	30/60/120 A	30/60/120 A	20/100/150 A
Continuous Operating Current	120 A Max.	120 A Max.	150 A Max.
Output	4-20 mA	0-5 VDC	0-10 VDC
Dimensions	2.7 x 2.56 x 1.08 in. (68.6 x 65 x 27.4 mm)	2.7 x 2.56 x 1.08 in. (68.6 x 65 x 27.4 mm)	2.7 x 2.56 x 1.08 in. (68.6 x 65 x 27.4 mm)
Sensor Supply Voltage	24 VDC Loop Power	Self-Powered	Self-Powered
Accuracy (≥ 10% FS)	±2% of Selected Ranges		
Response Time	2 Seconds		
Aperture Size	0.72 x 0.78 in. (18 x 20 mm)		
Isolation Voltage	600 V AC rms		
Temperature Range	5 to 140°F (-15 to 60°C)		
Frequency Range	50/60 Hz		
Humidity Range	0 to 95% non-condensing		

Specifications subject to change without notice.

DIMENSIONS



ORDERING INFORMATION



MODEL	DESCRIPTION
CTCG420NN	Model CTC, Output 4 to 20 mA
CTCGV05NN	Model CTC, Output 0 to 5 VDC
CTCGV10NN	Model CTC, Output 0 to 10 VDC



setra®

GAUGE PRESSURE TRANSDUCERS

Model 206	80
Model 209	82
Model 209H	86
Model 256	90
Model 3100	92
Model 3200	96

Model 206

INDUSTRIAL PRESSURE TRANSDUCER



- **High Accuracy Sensor**
- **Rugged Design Withstands High Shock & Vibration**
- **Configurable Design**

- Long-Term Stability: <0.5%/Year
- User Accessible Zero/Span
- Exceptional EMI/RFI
- Reverse Wire Protection
- Calibration NIST Traceable
- Wide Operating Voltage 12 VDC to 28 VDC
- CE & RoHS Compliant

Applications

- Industrial OEM Equipment
- Hydraulic Systems
- Compressor Control
- HVAC/R Equipment
- Industrial Engines
- Tank Level

The Model 206 pressure sensor is designed for Industrial and OEM customers who require high performance, reliability and versatility at an affordable price. It offers exceptional $\pm 0.13\%$ FS accuracy for pressure ranges as low as 25 PSI up to 10,000 PSI to meet a multitude of demanding applications. The Model 206 features all stainless steel wetted materials and offers many pressure and electrical connections to satisfy challenging installation requirements. The Model 206 also features field accessible zero and span potentiometers allowing the unit to be calibrated in the field.

RUGGED STAINLESS STEEL DESIGN

The Model 206's rugged stainless steel design is built to withstand the rigors of the most difficult industrial applications. The unit is available with NEMA 4 and IP65 environmental ratings, preventing unwanted moisture ingress.

SAVE TIME AND MONEY ON INSTALLATION

The Model 206's capacitive sensor design offers Test & Measurement grade accuracy at a low price point. The sensor comes standard with $\pm 0.13\%$ FS accuracy in ranges from 25 PSI to 10,000 PSI, exceeding most competitive products.

REDUCE INVENTORY

The transducer's pressure and electrical fittings cover many installation configurations, allowing it to fit into most applications. The Model 206 is equipped with zero and span potentiometers, allowing the user to maintain the high performance over the life of the sensor.

Model 206

INDUSTRIAL PRESSURE TRANSDUCER



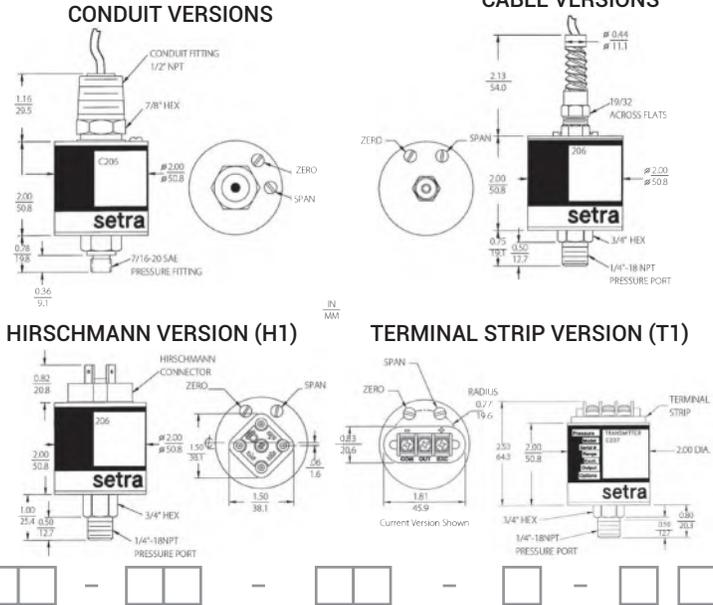
GAUGE PRESSURE TRANSDUCERS

SPECIFICATIONS

PERFORMANCE DATA		PHYSICAL DESCRIPTION		ELECTRIC DATA (VOLTAGE)	
Accuracy RSS ¹ (at constant temp.)	±0.13 % FS	Pressure Fittings	See ordering information	Excitation/Output	12 to 28 VDC Reverse Excitation Protected
Non-Linearity, (BFSL) 25 PSIG range ²	±0.1% FS ±0.2% FS	Vent	Through electrical termination	Power Consumption	<0.15 watts (approx. 5mA @ 24 VDC)
Hysteresis	±0.08% FS	Electrical Connection	See ordering information	Output ³	See ordering information
Non-Repeatability	±0.02% FS	Case	Stainless Steel	Output Impedance	100 ohms
Response Time	5 milliseconds	Zero/Span Adjustments	Top External Access	Circuit	3-Wire (Exc, Out, Com)
Long-Term Stability	0.5% FS/YR	Weight (approx.)	6 oz	ELECTRIC DATA (CURRENT)	
THERMAL EFFECTS		PRESSURE MEDIA		Circuit	2-Wire
Compensated Range	-4 to +176°F (-20 to +80°C)	Gases or liquids compatible with 17-4 PH stainless steel. ³		Output ¹⁰	4 to 20 mA ¹¹
Zero Shift	±1% FS/100°F (±0.9% FS/50°C)	ENVIRONMENTAL DATA		External Load	0 to 800 ohms
Span Shift	±1.5% FS/100°F (±1.4% FS/50°C)	Operating Temperature ⁴	-40 to +185°F (-40° to +85°C)	Min. Supply Voltage (VDC)	9 +0.02 x (Resistance of receiver plus line)
APPROVALS		Storage Temperature	-40 to +185°F (-40° to +85°C)	Max. Supply Voltage (VDC)	30 +0.004 x (Resistance of receiver plus line)
CE, RoHS		Acceleration	10g Maximum ⁵	Specifications subject to change without notice.	
		Shock ⁶	200g Operating		
		Vibration ⁷	20g 50-2000 Hz		

OVERPRESSURE CAPABILITY DIMENSIONS

PRESSURE RANGES (PSIG)			PRESSURE RANGES (BAR)		
Gauge	Proof	Burst	Gauge	Proof	Burst
0-25	100	500	0-1.6	6	32
0-50	150	750	0-4.0	10	50
0-100	300	1,000	0-6.0	18	60
0-250	500	2,000	0-10	30	80
0-500	1,000	3,000	0-16	32	130
0-1,000	2,000	5,000	0-25	50	170
0-3,000	4,500	7,500	0-40	80	240
0-5,000	7,500	10,000	0-60	120	300
0-10,000	12,500	20,000	0-100	200	400
			0-160	250	500
			0-250	380	550
			0-400	600	800
			0-700	800	1,350



ORDERING INFORMATION



MODEL	PRESSURE RANGE		PRESSURE TYPE	FITTING	OUTPUT	TERMINATION	ACCURACY	OPTIONS ²								
2061= Model 206	025P	0 to 25 PSI	1R6B	0 to 1.6 Bar	G	Gauge	2M	1/4" NPT Ext.	11	4 to 20 mA	02	2 ft Cable	8	±0.13% FS	NN	None
	050P	0 to 50 PSI	004B	0 to 4 Bar	C	Compound	1M	1/8" NPT Ext.	22	0.1 - 5.1 VDC	06	6 ft Cable			C	11 Point Cal Cert
	100P	0 to 100 PSI	006B	0 to 6 Bar			J7	7/16" SAE	27	1 to 5 VDC	10	10 ft Cable			D	Mate with Datum
	200P	0 to 200 PSI	010B	0 to 10 Bar					28	1 to 6 VDC	25	25 ft Cable			F	NEMA 4 Enclosure ³
	250P	0 to 250 PSI	016B	0 to 16 Bar					2T	0.1 to 10.1 VDC	XX	Special Cable Length (0-25')			G	Mating Hirschmann Con.
	500P	0 to 500 PSI	025B	0 to 25 Bar							H1	Hirschmann			L	Etched SS Tags
	10CP	0 to 1,000 PSI	040B	0 to 40 Bar							A3	1/2" Conduit w/ 2' Cable			Y	Clean For Oxygen
	30CP	0 to 3,000 PSI	060B	0 to 60 Bar							AD	1/2" Conduit w/ 6' Cable				
	50CP	0 to 5,000 PSI	100B	0 to 100 Bar							AE	1/2" Conduit w/ 10' Cable				
	10KP ¹	0 to 10,000 PSI	160B	0 to 160 Bar							AF	1/2" Conduit w/ 20' Cable				
			250B	0 to 250 Bar							AG	1/2" Conduit w/ 25' Cable				
			400B	0 to 400 Bar							T1	Terminal Strip ⁴				
			700B ¹	0 to 700 Bar												

¹ Units higher than 5k PSI are only available with a 1/4" NPT Ext. fitting
² Both boxes must be filled in alphabetical order:
 • If No options: N + N
 • If 1 option: Option Code + N
 • If 2 options: Option Code + Option Code
³ Only available with T1 termination
⁴ Formerly Model 207

Ordering Example: 2061025P62M11068CN = Model 206, 0 to 25 PSIG, Gauge pressure, 1/4" NPT Ext. fitting, 4 to 20 mA output, 6' Cable Length, ±0.13% FS Accuracy, 11 Point Cal Cert Option.

MODEL 206

Model 209

OEM PRESSURE TRANSDUCER



- **Full Span Ranges Down to 1 PSI**
- **Highly Configurable Design**
- **Rugged for Demanding Applications**

- Small Package Design for OEM Applications
- High Overpressure Option Available on Select Ranges
- Compatible w/ a Variety of Gases & Liquids
- Operates on Low Cost Unregulated DC Power
- Suitable For High Shock & Vibration Applications
- No Seals or O-Rings to Cause Leakage
- CE & RoHS Compliant

Applications

- Industrial OEM Equipment
- Hydraulic Systems
- Compressor Control
- HVAC/R Equipment
- Industrial Engines
- Tank Level

The Model 209 pressure transducer is designed for Industrial and OEM customers who require high performance, reliability and versatility at an affordable price. It offers exceptional $\pm 0.25\%$ FS accuracy with pressure ranges as low as 1 PSI up to 10,000 PSI to meet a multitude of demanding applications. The 209 features all stainless steel wetted materials and offers many pressure and electrical connections to satisfy challenging installation requirements. The 209 is available with a patented overpressure stop to protect the sensor against unexpected spikes or in high pulsation applications.

TRUE LOW RANGE SENSOR

The Model 209's capacitive transducer is designed for industrial applications with demanding price and performance requirements. The Model 209 offers exceptional reliability in typical industrial grade environments. The true low range sensor design offers high performance with no additional amplification required to meet range requirements down to 1 PSI.

FLEXIBILITY FOR MANY APPLICATIONS

The 209 transducer offers many pressure and electrical fittings covering many installation configurations. It minimizes additional engineering time to accommodate the sensor, allowing for earlier project completion and quicker time to market.

ROBUST DESIGN & CONSTRUCTION FOR RELIABLE SERVICE

The Model 209 is designed and built to withstand demanding applications. The industrial construction, with optional positive overpressure stop, enables the sensor to withstand overpressure conditions up to 16X the rated range.

Model 209

OEM PRESSURE TRANSDUCER

SPECIFICATIONS

PERFORMANCE DATA	PHYSICAL DESCRIPTION	ELECTRICAL DATA (VOLTAGE)
Accuracy RSS ¹ (at constant temp.)	Case Stainless Steel & Valox	Circuit 3-Wire (COM, OUT, EXC)
Non-Linearity, BFSL	Wetted Material 17-4 PH Stainless Steel or 17-7 PH Stainless Steel	Excitation 9 to 30 VDC
Hysteresis	Electrical Connection See ordering information	Output ⁶ See ordering information ⁷
Non-Repeatability	Pressure Fitting ⁵ See ordering information	Output Impedance 10 ohms
THERMAL EFFECTS	ENVIRONMENTAL DATA	ELECTRICAL DATA (CURRENT)
Compensated Range -4 to +176°F (-20 to +80°C)	Vent Through electrical termination	Circuit 2-Wire
Zero Shift %FS/100°F (%FS/50°C)	Weight (approx.) 2.3 ounces (65 grams)	Output ⁸ 4 to 20mA ⁹
Span Shift %FS/100°F (%FS/50°C)	Operating ³ Temperature -40 to +185°F (-40 to +85°C)	External Load 0 to 800 ohms
Warm-up Shift	Storage Temperature -40 to +185°F (-40 to +85°C)	Minimum supply voltage (VDC) 9+ 0.02 x (Resistance of receiver plus line)
Response Time	Shock ² 200g operating	Maximum supply voltage (VDC) 30+ 0.004 x (Resistance of receiver plus line).
Long Term Stability	Acceleration 10g Maximum ⁵	
PRESSURE MEDIA	Vibration ⁴ 20g	
Liquids and gases compatible with 17-4 PH Stainless Steel (<25 PSI) or 17-7 PH Stainless Steel (>25 PSI). ²	Environmental Protection Weather Resistant	

¹ RSS of Non-Linearity, Hysteresis, and Non-Repeatability.
² Note: Hydrogen not recommended for use with 17-4 PH Stainless Steel. See Setra Model 209H.
³ Mil-Std. 202, Method 213B, Cond. C
⁴ Mil-Std. 202, Method 204, Cond. C
⁵ See ordering information for other fittings available (minimum quantities apply).
⁶ Calibrated into a 50k ohm load, operable into a 5000 ohm load or greater.
⁷ Zero output factory set to within ±50mV. Span (Full Scale) output factory set to within ±50mV.
⁸ Calibrated at factory with a 24 VDC loop supply voltage and a 250 ohm load.
⁹ Zero output factory set to within ±0.16mA. Span (Full Scale) output factory set to within ±0.16mA.

Specifications subject to change without notice.

OVERPRESSURE CAPABILITY

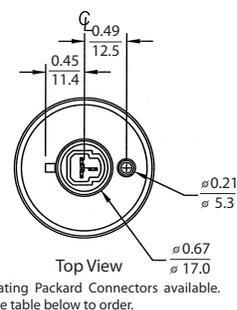
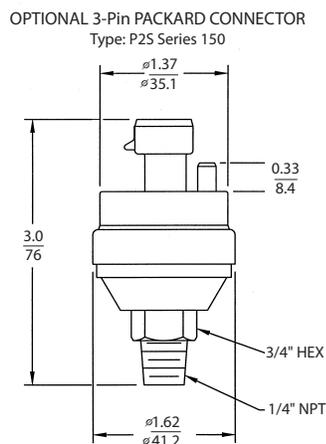
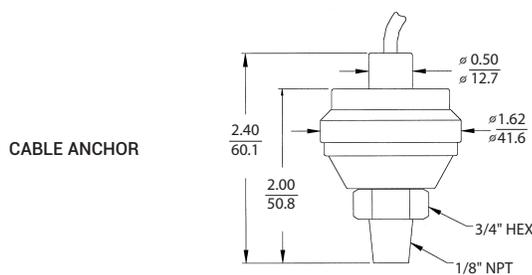
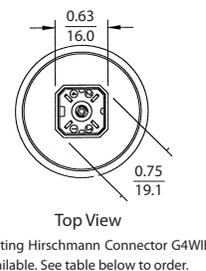
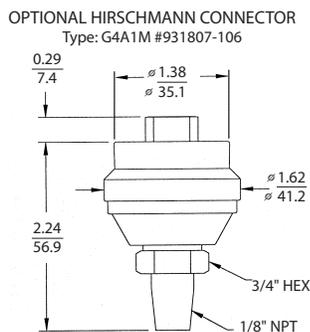
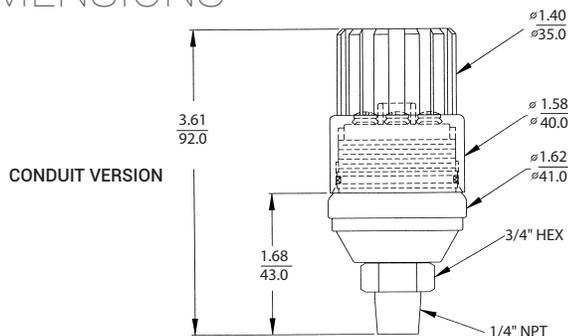
Full Scale Range (PSI)	STANDARD		OPTION	
	Proof Pressure (PSI)	Burst Pressure (PSI)	High Proof Pressure (PSI)	High Burst Pressure (PSI)
1	2	250	N/A	N/A
2	4	250	N/A	N/A
5	10	250	N/A	N/A
10	20	500	N/A	N/A
25	50	500	N/A	N/A
50	100	750	800	5,000
100	200	1,000	1,000	5,000
200	400	2,000	1,500	5,000
250	500	2,000	2,000	8,000
500	1,000	3,000	2,500	10,000
1,000	2,000	5,000	4,000	10,000
1,500	2,500	6,000	5,000	12,000
2,000	3,000	6,500	N/A	N/A
3,000	4,500	7,500	N/A	N/A
5,000	7,500	10,000	N/A	N/A
10,000	12,500	20,000	N/A	N/A
-14.7 (Vacuum)	10	15	N/A	N/A

(continue Model 209 on next page)

Model 209

OEM PRESSURE TRANSDUCER

DIMENSIONS



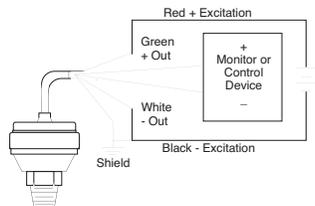
in.
mm

WIRING

CABLE ANCHOR

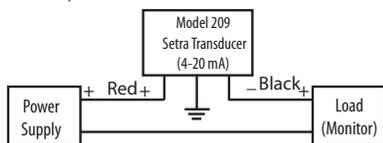
Voltage Output

The Model 209 voltage output is a 3-wire circuit. If the 209 is supplied with 2 feet of cable, the electrical connection is as follows:



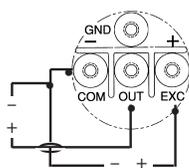
Current Output

The Model 209 True 2-wire device. If the 209 is supplied with 2 feet of cable, the electrical connection is as follows:

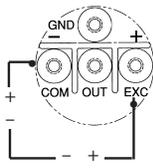


CONDUIT VERSION

Voltage

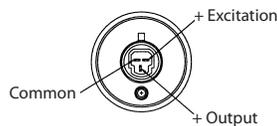


Current



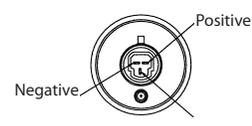
3-PIN PACKARD CONNECTOR

Voltage



Top View: 3-Pin Packard Connector
Type: P2S Series 150

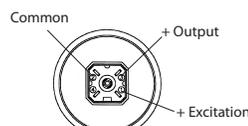
Current



Top View: 3-Pin Packard Connector
Type: P2S Series 150

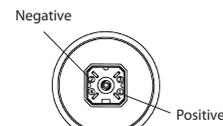
HIRSCHMANN CONNECTOR

Voltage



Top View: Hirschmann Connector
Type: G4A1M#931807-106

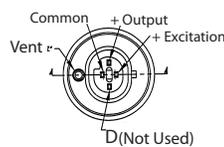
Current



Top View: Hirschmann Connector
Type: G4A1M#931807-106

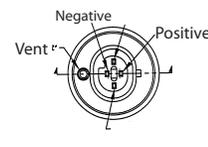
4-PIN PACKARD CONNECTOR

Voltage



Top View: 4-Pin Packard Connector
Type: Metri-Pack 150

Current



Top View: 4-Pin Packard Connector
Type: Metri-Pack 150

Model 209

OEM PRESSURE TRANSDUCER

ORDERING INFORMATION



MODEL	RANGE CODE				PRESSURE TYPE		PRESSURE FITTING		OUTPUT ⁶		ELEC. TERMINATION		OPTIONS
2091 = Model 209	PSI				G	Gauge	2M	1/4" NPT Ext.	11	4-20 mA	XX	Cable length in feet	None
	001P	0 to 1	500P	0 to 500	C	Compound	J7	7/16" SAE Ext.	24	0.5 to 5.5 VDC	P1	Packard (3-Pin) ²	H⁸ High Overpressure Capability (Only available on 25 PSI up to 1500 PSI Pressure Ranges)
	002P	0 to 2	10CP	0 to 1,000	S	Sealed ¹	1M	1/8" NPT Ext.	27	1 to 5 VDC	P3	Packard (4-Pin) ³	
	005P	0 to 5	15CP	0 to 1,500	V⁷	Vacuum	L4	1/4 Int. SAE Internal 7/16-20 w/ Schrader Pin	28	1 to 6 VDC	H2	Hirschmann, ("Mini") ⁴	
	010P	0 to 10	20CP	0 to 2,000									
	025P	0 to 25	30CP	0 to 3,000			P1	1/8" NPT Int. Bulkhead (Available on Ranges > 50 PSI)					
	050P	0 to 50	50CP	0 to 5,000									
	100P	0 to 100	10KP	0 to 10,000									
	200P	0 to 200	Z01P⁶	0 to -14.7 PSI									
	250P	0 to 250											

¹ Sealed version available on 200 PSI ranges and above.
² Order Setra Part #577 for Mating Connector.
³ Order Setra Part #857 for Mating Connector.
⁴ Order Setra Part #590 for Mating Connector.
⁵ Only available for pressure ranges below 25 PSI.
⁶ Consult factory for other output options.
⁷ Range code "Z01P" can only be ordered with pressure type code "V".
⁸ Refer to proof pressure table for more details.

Ordering Example: 2091001PG2M1102 = Model 209, 0 to 1 PSI Range, Gauge Pressure, 1/4" NPT Male Int., 4 to 20 mA Output, 2 ft. Cable.

ACCESSORIES

577	3-Pin Mating Packard Kit
581	Cable Assembly - Packard, 3-pin (3 ft.)
582	Cable Assembly - Packard, 3-pin (6 ft.)
590	Mating Hirschmann Kit
857	4-Pin Mating Packard Kit



Model 209H

316L STAINLESS STEEL OEM PRESSURE TRANSDUCER



- **Rugged 316L Stainless Steel Construction**
- **Non-Oil Filled Design**
- **Ideal For Alternative Energy Market**

- High Over-Pressure Option Available on Select Ranges
- Operates Over a Wide Temperature Band
- Compatible with a Variety of Gases & Liquids
- Operates on Low Cost Unregulated DC Power
- Suitable For High Shock & Vibration Applications
- No Seals or O-Rings to Cause Leakage
- CSA certified as conforming to ANSI/ISA 12-12-01-2015 for Class 1, Groups A, B, C, D DIV2 locations.
- CE & RoHS Compliant

Applications

- Fuel Cell OEMs
- CNG & LNG Applications
- Hydrogen Production Systems
- Water & Wastewater
- Natural Gas Distribution

The Model 209H pressure transducer is designed for customers who require high performance, reliability and versatility in harsh applications. The Model 209H features all 316L stainless steel wetted materials, ideal for the demanding requirements of the alternative energy and industrial market. The sensor offers many pressure and electrical connections to satisfy challenging installation requirements. The 209H is available with a patented overpressure stop to protect the transducer against unexpected spikes or in high pulsation applications.

316L SS DESIGN

The sensor and all wetted material of the 209H are manufactured using a 316L stainless steel, enabling the sensor to stand up in corrosive applications. The unit comes standard with an accuracy of $\pm 0.25\%$ FS across a wide pressure range offering, providing high performance at a low cost.

FLEXIBILITY FOR MANY APPLICATIONS

The 209H transducer offers many pressure and electrical fittings covering many installation configurations. It minimizes additional engineering time to accommodate the sensor, allowing for earlier project completion and quicker time to market.

TRUSTED RELIABILITY

The Model 209H is designed and built to withstand demanding applications. The industrial non-oil filled construction, designed with a positive over-pressure stop, enables the sensor to recover from over-pressure conditions up to 4X the rated range. The 209H's capacitive technology offers worry free operation vs. oil-filled designs, which have a high cost of failure if oil leaks into the application and contaminates costly equipment.

Model 209H

316L STAINLESS STEEL OEM PRESSURE TRANSDUCER

SPECIFICATIONS

PERFORMANCE DATA		PHYSICAL DESCRIPTION		ELECTRICAL DATA (VOLTAGE)	
Accuracy RSS ¹ (at constant temp)	±0.25% FS	Case	Stainless Steel & Valox	Circuit	3-Wire (COM, OUT, EXC)
Non-Linearity, BFSL	±0.16% FS	Wetted Material	316L Stainless Steel	Excitation	9 to 30 VDC
Hysteresis	±0.19% FS	Pressure Fitting	See ordering information	Output	See ordering information ^{4,5}
Non-Repeatability	±0.05% FS	Vent	Through electrical termination	Output Impedance	10 ohms
THERMAL EFFECTS		ENVIRONMENTAL DATA		ELECTRICAL DATA (CURRENT)	
Compensated Range	-4 to +176°F (-20 to +80°C)	Operating Temperature ³	-40 to +185°F (-40 to +85°C)	Circuit	2-Wire
Zero Shift %FS/°F (%FS/°C)	±0.03 (±0.05)	Storage Temperature	-40 to +185°F (-40 to +85°C)	Output	4 to 20mA ^{6,7}
Span Shift %FS/°F (%FS/°C)	±0.015 (±0.03)	Shock ²	200g operating	External Load	0 to 800 ohms
Warm-up Shift	0.2% FS Total	Acceleration	10 g Maximum ²	Minimum supply voltage (VDC)	9+ 0.02 x (Resistance of receiver plus line)
Response Time	5 milliseconds	Vibration ³	20g	Maximum supply voltage (VDC)	30+ 0.004 x (Resistance of receiver plus line).
Long Term Stability	0.5% FS/1 YR	Environmental Protection	Weather Resistant		
PRESSURE MEDIA		APPROVALS			
Liquids and gases compatible with 316L Stainless Steel.		CE, RoHS, CSA			

¹ RSS of Non-Linearity, Hysteresis, and Non-Repeatability.
² Mil-Std. 202, Method 213B, Cond. C
³ Mil-Std. 202, Method 204, Cond. C
⁴ Calibrated into a 50K ohm load, operable into a 5000 ohm load or greater.
⁵ Zero output factory set to within ±50mV. Span (Full Scale) output factory set to within ±50mV.
⁶ Calibrated at factory with a 24 VDC loop supply voltage and a 250 ohm load.
⁷ Zero output factory set to within ±0.16mA. Span (Full Scale) output factory set to within ±0.16mA.

Specifications subject to change without notice.

OVERPRESSURE CAPABILITY

Full Scale Range (PSI)	STANDARD		OPTION	
	Proof Pressure (PSI)	Burst Pressure (PSI)	High Proof Pressure (PSI)	High Burst Pressure (PSI)
15	25	200	60	2000
25	40	300	100	3000
50	75	500	150	4000
100	150	750	300	4000
250	350	1500	750	4000
500	700	2000	1000	4000
1000	1300	3000	2000	5000

Also available in Bar ranges. Consult Factory.

Sealed ranges available on 250 PSI and above.

Gauge Pressure: Measured relative to ambient atmospheric pressure. Referred to as pounds per square inch (gauge) or PSIG.

Proof Pressure: The maximum pressure that may be applied without changing performance beyond specifications (±1% FS zero shift).

Burst Pressure: The maximum pressure that may be applied to the positive pressure port without rupturing the sensing element.

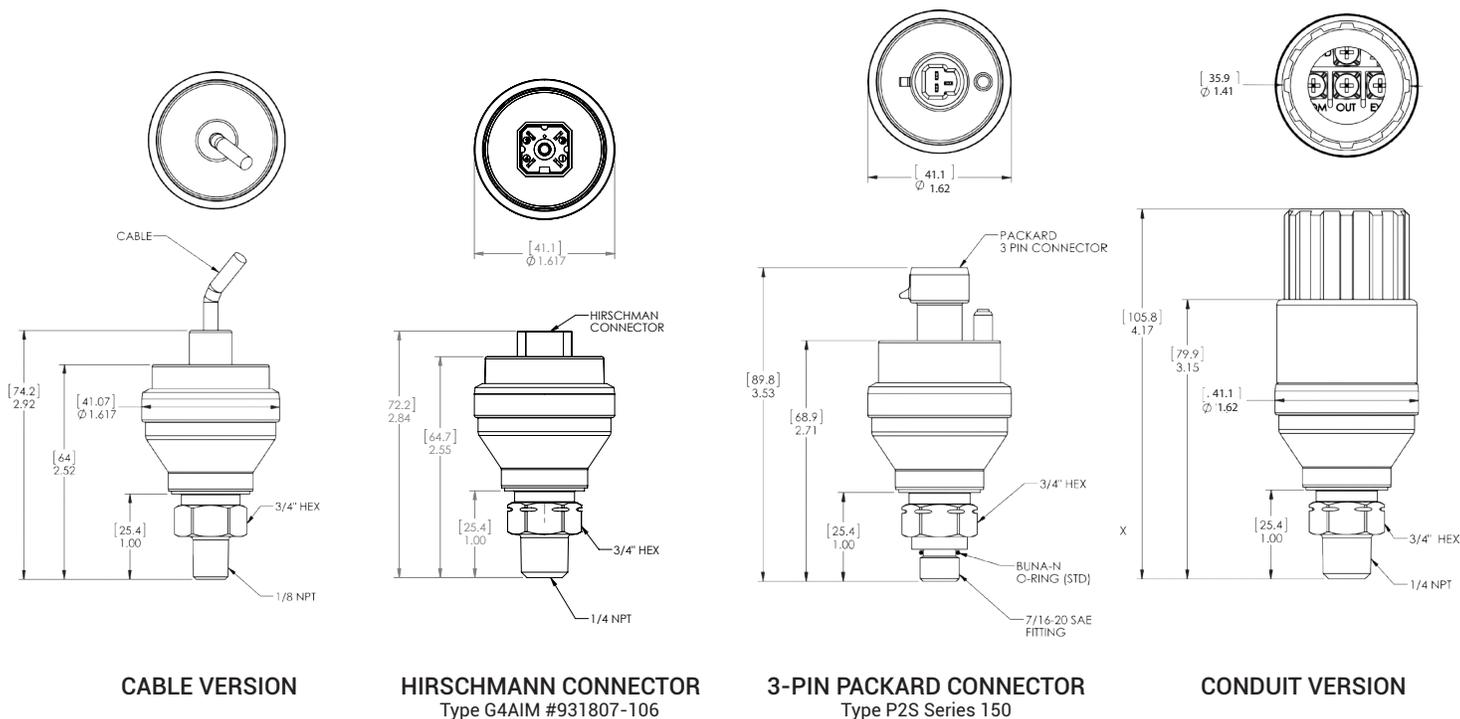


(continue Model 209H on next page)

Model 209H

316L STAINLESS STEEL OEM PRESSURE TRANSDUCER

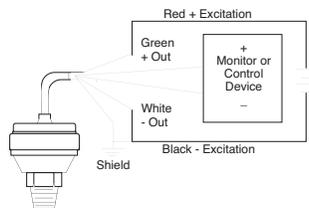
DIMENSIONS



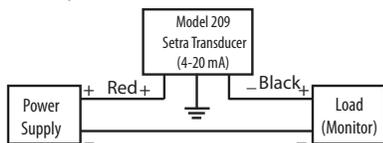
WIRING

CABLE ANCHOR

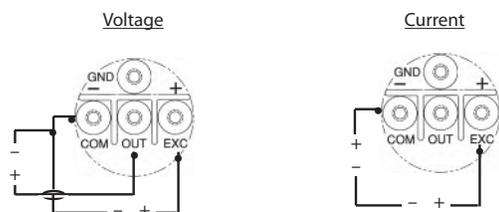
Voltage Output
 The Model 209H voltage output is a 3-wire circuit. If the 209H is supplied with 2 feet of cable, the electrical connection is as follows:



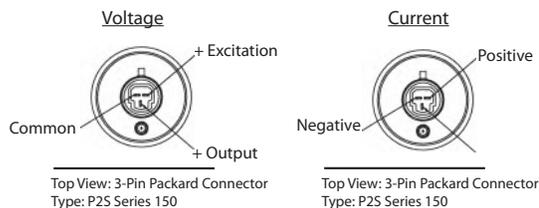
Current Output
 The Model 209H True 2-wire device. If the 209 is supplied with 2 feet of cable, the electrical connection is as follows:



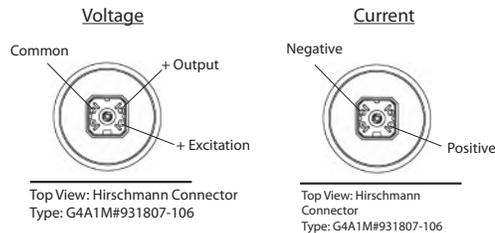
CONDUIT VERSION



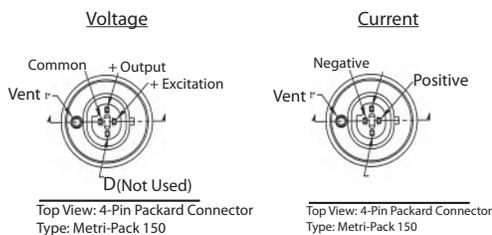
3-PIN PACKARD CONNECTOR



HIRSCHMANN CONNECTOR



4-PIN PACKARD CONNECTOR



Model 209H

316L STAINLESS STEEL OEM PRESSURE TRANSDUCER

ORDERING INFORMATION

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MODEL	RANGE CODE	PRESSURE TYPE		PRESSURE FITTING		OUTPUT		ELEC. TERMINATION ¹		OPTIONS*	
209H = Model 209	PSI	G	Gauge	2M	1/4-18 NPT Ext.	11	4-20 mA	02	2 ft. Cable	NN	No Options
	015P 0 to 15	C	Compound	J7 ⁶	7/16-20 SAE Ext.	24	0.5 to 5.5 VDC	05	5 ft Cable	H	High Overpressure Capability
	025P 0 to 25	S	Sealed ⁵	1M	1/8-27 NPT Ext.	23	0.2 to 5.2 VDC	10	10 ft Cable	P	Calibration Certificate
	050P 0 to 50	¹ Other lengths available, consult factory. ² Order Setra Part #577 for Mating Connector ³ Order Setra Part #857 for Mating Connector ⁴ Order Setra Part #590 for Mating Connector ⁵ Sealed type available on 250 PSI and above ranges ⁶ Buna-N O-RING STD. ⁷ CSA certified as conforming to ANSI/ISA 12-12-01-2015 for Class 1, Groups A, B, C, D DIV2 locations.				N1 ⁷	4-20 mA	25	25 ft Cable	Y	Clean for Oxygen Service
	100P 0 to 100					N4 ⁷	0.5-5.5 VDC	P1	Packard (3-Pin) ²	*Both boxes must be filled in alphabetical order: • If no options: N + N • If 1 option: Option Code + N • If 2 Options: Option Code + Option Code	
	250P 0 to 250					N3 ⁷	0.2-5.2 VDC	P3	Packard (4-Pin) ³		
	500P 0 to 500							H2	Hirschmann ("Mini") ⁴		
	10CP 0 to 1000							A1	Terminal Block w/ Conduit Cover		

Ordering Example: 209H100PG2M1102NN = Model 209, 0 to 100 PSI Range, Gauge Pressure, 1/4" NPT Ext. Fitting, 4 to 20 mA Output, 2 ft. Cable, No Options

Specifications are subject to change without notice.
 NOTE: Setra quality standards are based on ANSI-Z540-1.
 The calibration of this product is NIST traceable.
 US Patent NO 6718827



Model 256

PRESSURE TRANSDUCER



- **NEMA4/IP65 Housing**
- **High Accuracy**
- **Wide Operating Temperature Range**
- Compatible with a Wide Range of Gases or Liquids
- Corrosive Resistant All Stainless Steel Wetted Parts
- CE & RoHS Compliant

Applications

- Process Control
- Chemical Processing
- Agricultural Irrigation Systems
- Natural Gas Pipeline Monitoring
- Grain Processing
- Industrial Pressure Monitoring

The Model 256 is one of the most rugged and reliable sensors available. Specifically designed for NEMA4/IP65 service the 256 is packaged in a die-cast aluminum enclosure and includes Setra's robust capacitive design, making it resistant to environmental effects such as shock, vibration, temperature and EMI/RFI. Available in a wide variety of gauge pressure ranges, the 256 features adjustable potentiometers for zero and span settings. Only 3.6" high x 4.0" wide, the Model 256 is designed for compact installations. The removable cover provides easy access to the internal terminal strip for wiring. Installation is quick and easy with 1/2 inch internal threaded conduit ports for electrical termination.

Model 256

PRESSURE TRANSDUCER

SPECIFICATIONS

PERFORMANCE DATA		
	25 PSI & HIGHER	LESS THAN 25 PSI
Accuracy RSS ¹ (at constant temp) ²	±0.13% FS	±0.25% FS
Non-Linearity, BFSL	±0.10% FS	±0.22% FS
Hysteresis	±0.08% FS	±0.10% FS
Non-Repeatability	±0.02% FS	±0.05% FS
THERMAL EFFECTS		
Compensated Range	-4 to +176°F (-20 to +80°C)	-4 to +176°F (-20 to +80°C)
Zero Shift %FS/100°F	±1.0	±1.0
Zero Shift %FS/100°C	±0.9	±1.8
Span Shift %FS/100°F	±1.5	±1.5
Span Shift %FS/100°C	±1.4	±1.4
Long Term Stability	±0.5% FS/YR	±0.5% FS/YR
Warm-up Shift	±0.1% FS Total	±0.1% FS Total

ENVIRONMENTAL DATA	
Operating Temperature ³	-40 to +185°F (-40 to +85°C)
Storage Temperature	-40 to +185°F (-40 to +85°C)
Shock ⁶	200g
Vibration ⁷	20g
Environmental Protection	NEMA 4/IP65
PHYSICAL DESCRIPTION	
Case	Die Cast Aluminum
Electrical Connections	Two 1/2" Internal Conduit Ports
Pressure Fittings	See ordering information
Weight (approx.)	13.4 Ounces
PRESSURE MEDIA	
Liquids and gases compatible with 17-4 PH Stainless Steel. ⁴	

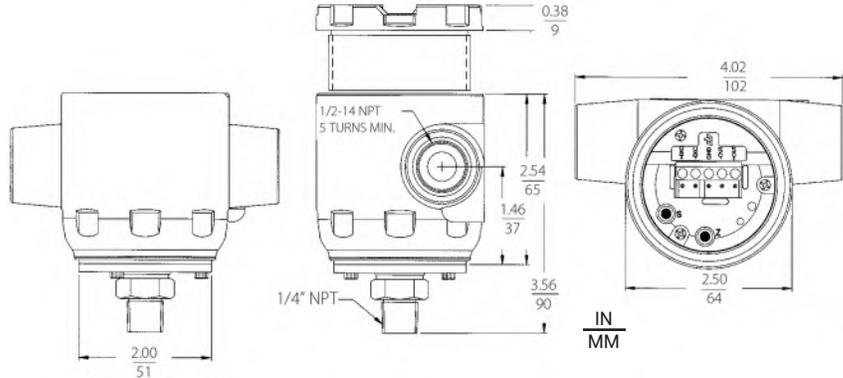
ELECTRICAL DATA (VOLTAGE)	
Circuit	3-Wire (Exc, Out, Com)
Excitation	9 to 30 VDC
Output ⁵	0.1 to 5.1 VDC for Ranges ≥ 25 PSI ⁶
Output Impedance	100 ohms
Power Consumption	<0.15 watts (approx. 5mA @ 24 VDC)
ELECTRICAL DATA (CURRENT)	
Circuit	2-Wire
Output ⁷	4 to 20mA ⁸ for All Ranges
External Load	0 to 800 ohms
Minimum supply voltage (VDC)	9 + 0.02 x (Resistance of receiver plus line).
Maximum supply voltage (VDC)	30 + 0.004 x Resistance of receiver plus line).

¹ RSS of Non-Linearity, Hysteresis, and Non-Repeatability.
² Units calibrated at nominal 70°F. Maximum thermal error computed from this datum.
³ Operating temperature limits of the electronics only. Pressure media temperature may be considerably higher or lower.
⁴ Hydrogen not recommended for use with 17-4 PH Stainless Steel.
⁵ Calibrated into a 50K ohm load, operable into a 5000 ohm load or greater.
⁶ Zero output factory set to within ±25 mV. Span (Full Scale) output factory set to within ±50 mV.
⁷ Calibrated at factory with a 24 VDC loop supply voltage and a 250 ohm load.
⁸ Zero output factory set to within ±0.08 mA. Span output factory set to within ±16 mA. Specifications subject to change without notice.

OVERPRESSURE CAPABILITY

Gauge (PSI)	Proof (PSI)	Burst (PSI)
0-1	2	250
0-2	4	250
0-5	10	250
0-10	20	500
0-25	100	500
0-50	150	750
0-100	300	1,000
0-250	500	2,000
0-500	1,000	3,000
0-1,000	2,000	5,000
0-3,000	4,500	7,500
0-5,000	7,500	10,000
0-10,000	12,500	20,000

DIMENSIONS



ORDERING INFORMATION



MODEL	RANGE CODE		PRESSURE TYPE		PRESSURE FITTING	OUTPUT	OPTIONS	
2561 = 256	PSI	BAR	G	Gauge	RANGES <25 PSI	RANGES <25 PSI	C Calibration Certificate	
	001P	0 to 1	1R6B	0 to 1.6	2M	1/4" NPT Ext.	11	4-20 mA
	002P	0 to 2	004B	0 to 4	1M	1/8" NPT Ext.		RANGES ≥25 PSI
	005P	0 to 5	006B	0 to 6			11	4-20 mA
	010P	0 to 10	010B	0 to 8			2M	1/4" NPT Ext.
	015P	0 to 15	016B	0 to 16			4M	1/2" NPT Ext.
	025P	0 to 25	025B	0 to 25			2F	1.4" NPT Int.
	050P	0 to 50	040B	0 to 40				
	100P	0 to 100	060B	0 to 60				
	150P	0 to 150	100B	0 to 100				
	200P	0 to 200	160B	0 to 160				
	250P	0 to 250	250B	0 to 250				
	500P	0 to 500	400B	0 to 400				
	600P	0 to 600	700B	0 to 700				
	10CP	0 to 1,000						
	30CP	0 to 3,000						
	50CP	0 to 5,000						
	10KP	0 to 10,000						

Ordering Example: 2561001PG2M11C = Model 256, 0 to 1PSI, Gauge Pressure, 1/4" NPT Ext. Pressure Fitting, 4 to 20 MA Output, Calibration Certificate

Model 3100

OEM INDUSTRIAL PRESSURE TRANSDUCER

- **Premium Price-to-Performance**
- **High Quality: <0.1% Failure Rate**
- **Long-Term Stability (<0.2%FS/YR)**

- $\pm 0.25\%$ FS Accuracy
- No Oil Fill - Prevents Thermal Instability & Leakage
- Wide Choice of Pressure Ranges: 75 PSI-32,000 PSI
- Accuracy Specified Over Full Temperature Range
- Small Footprint - Less than 1" Diameter
- Dual Temperature and Pressure Output
- Choice of Current, Voltage, or Ratiometric Outputs
- Reverse Wiring Protection
- All Welded Stainless Steel Construction
- CE & RoHS Compliant, UL Approved
- IP67 Rated

Applications

- Power Generation
- Hydraulic Systems
- Booster Pump Systems
- Irrigation Systems
- Off Highway Vehicles



The Model 3100 sputtered thin film pressure sensor is designed for OEMs who require top of the line performance, reliability, and stability at an affordable price. The Model 3100 offers exceptional $\pm 0.25\%$ FS accuracy in pressure ranges from 75 PSI to 32,000 PSI; features an all welded stainless steel construction for a robust design and IP67 seal for moisture and humidity protection. The Model 3100 offers a variety of different outputs, pressure connectors, and electrical connectors to satisfy the most challenging application requirements. In addition, voltage units are available with a dual pressure/temperature output.

BEST IN CLASS PRICE-TO-PERFORMANCE

Strain Gauge technology provides a very linear and predictable output signal over a wide temperature range, which enables Setra to provide an inherently stable and accurate sensor element in high volumes and at low cost. The Model 3100 sensor is constructed using a highly sophisticated automation process, where the sensors are manufactured in a Class 100 clean room. To ensure best in class accuracy and long term stability, each sensing element is thermally compensated to an accuracy of less than $0.005\% ^\circ\text{C}$ prior to leaving the clean room for final assembly. Thermally compensating the unit ensures improved accuracy and simplified conditioning of electronics, while eliminating the need for calibration over elevated temperatures as a transducer.

FLEXIBILITY FOR MANY APPLICATIONS

Setra understands the importance of quality in OEM applications, which is why we are always looking for ways to improve the quality rating of our products. Over the last two years, the Model 3100 failure rate is less than 0.1%, a quality rating unmatched by the competition. The worst thing that could happen to an engineer is to shut down their work because of quality issues. Setra takes this seriously, which is why we have worked hard to ensure that product quality issues will never be a concern for our customers.

TRUSTED RELIABILITY

The Model 3100's compact welded stainless steel design is constructed to protect the sensor in demanding industrial environments. The electrical connectors are tested to an environmental protection specification of IP67, and a robust internal design ensures that the transducers can survive high levels of vibration. A high level of EMC protection allows the transmitters to perform to the most stringent of industrial standards, and all devices are RoHS compliant.

Model 3100

OEM INDUSTRIAL PRESSURE TRANSDUCER

SPECIFICATIONS

PERFORMANCE DATA		PHYSICAL DESCRIPTION	
Accuracy ¹	±0.25% FS	Pressure Port	See ordering information
THERMAL EFFECTS²		Enclosure	IP67 (IP65 for Electrical Code A)
Compensated Range	-40 to +257°F (-40 to +125°C)	Elec. Connections	See Ordering Instructions
Zero/Span Shift %FS/100°F (%FS/100°C)	±0.83 (1.5)	Wetted Parts	17-4PH SS (Diaphragm), 304 SS Fittings
Zero/Span Tolerance	±0.5% of Span	Vibration	40G Peak to Peak Sinusoidal to 2000Hz (Random Vibration: 20 to 1000Hz @ approx. 40G Peak per MIL-STD-810E)
Response Time	1 millisecond	Shock	Withstand free fall to IEC 68-2-32 procedure 1
Long Term Drift	±0.2% FS for <1000 PSI (60 BAR)	Weight	35 Grams
Proof/Burst Pressure	See Table	ELECTRICAL DATA (VOLTAGE)⁶	
Fatigue Life	Designed for more than 100M cycles	Circuit	3-Wire (Exc, Out, Com)
Operating/Storage Temp ^{3,4,5}	-40 to +257°F (-40 to +125°C)	Output	1 to 6 VDC, 1 to 5 VDC, 0.5 to 4.5 VDC, 0 to 5 VDC, 0 to 10 VDC ⁷
ELECTRICAL DATA (RATIOMETRIC)		Excitation	2 Volts above FS to max 30 Volts @ 4.5 mA (6.5mA Dual Output Version)
Output	0.5 to 4.5 VDC @ 4mA (6.5 mA on Dual Output Version)	Source & Sinks	2mA
Excitation	5 VDC ± 10%	ELECTRICAL DATA (CURRENT)	
OPTIONS		Circuit	2-Wire
Full miswire protection between all signal and power lines (any combination). Full short-circuit protection for Vout1 to 0V or Vout1 connected to supply, indefinitely. Ratiometric output not available. Supply Voltage must be 4V above the maximum Vout1 output. This also accounts for worse-case customer output leads.		Output	4 to 20mA
APPROVALS		Excitation	8 to 30 VDC (24 VDC max. above 110° C applications)
CE, RoHS, UL (E312651)		Max. Loop Resistance	(Supply Voltage-8) x50 ohms

¹RSS of Non-Linearity, Hysteresis, and Non-Repeatability.
²Note: Hydrogen not recommended for use with 17-4 PH Stainless Steel.
³Temperature outputs are for voltage output pressure sensors only and limited to connections that have 4 pins (Electrical Codes -D, -E, -8).
⁴Requires additional 2 mA of power.
⁵For use with pull-down resistors, contact factory before ordering.
⁶Reverse Wiring Protected.
⁷Not available for pressure ranges lower than 100 PSI (7 BAR).

Specifications subject to change without notice.

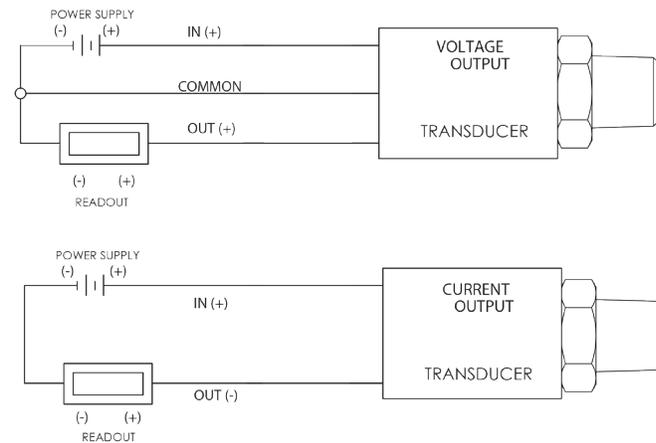
OVERPRESSURE CAPABILITY

Pressure Range PSI (BAR)	Proof Pressure (x Full Scale)	Burst Pressure (x Full Scale)
75-300 (3.5-25)	3.00 x FS	40 x FS
500-1,500 (35-100)	2.00 x FS	20 x FS
2,000-6,000 (160-400)	2.00 x FS	10 x FS
7,500-9,000 (600)	2.00 x FS	4 x FS
10,000 (700)	2.00 x FS	<60,000 PSI
15,000 (1,000)	2.00 x FS	<60,000 PSI
25,000 (1,600)	1.40 x FS	<60,000 PSI
30,000 (2,200)	1.40 x FS	<60,000 PSI

The data in this table is "times rate ranges" (xRR)

Application pressure should be restricted to the rated-range of the transducer. The maximum overpressure is the pressure limit at which the transducer will not show significant offset shift. The minimum burst pressure is the test-rating for fluid containment.

WIRING



(continue Model 3100 on next page)

Model 3100

OEM INDUSTRIAL PRESSURE TRANSDUCER



ELECTRICAL FITTINGS

	Din 9.4 mm		M12 x 1P		Amp Superseal 1.5		Deutsch DT4-4P		Packard Metri Pack		3-Pin Deutsch			
	Code B		Code E		Code 6		Code 8		Code 9		Code C			
Pin #	Voltage Mode	Current Mode		Voltage Mode	Current Mode									
1	V _{out1} (pressure)	No Connect	V _{supply}	V _{supply}	V _{out1} (pressure)	No Connect	Ground	Return	V _{out1} (pressure)	No Connect	C	V _{supply}	V _{supply}	A
2	V _{supply}	V _{supply}	V _{out1} (pressure)	No Connect	Ground	Return	V _{supply}	V _{supply}	Ground	Return	A	Ground	Return	B
3	V _{out2} (temp)	No Connect	Ground	Return	V _{supply}	V _{supply}	V _{out2} (temp)	No Connect	V _{supply}	V _{supply}	B	V _{out1} (pressure)	No Connect	C
4	Ground	Return	V _{out2} (temp)	No Connect	-	-	V _{out1} (pressure)	No Connect	-	-	-	-	-	-

PRESSURE FITTINGS

SAE Dimensions in Inches					
Fitting Code	OL = M12 x 1.5	O1 = G1/4 Ext.	1G = 1/4-SAE Female 7/16 UNF w/Schraeder	1J = 7/16-20Ext.(SAE#4, J1926-2)w/O-Ring	1P = SAE6 (9/16-18UNF 2A)
Torque	28-30 NM	30-35 NM	18-20 NM	18-20 NM	18-20 NM
Fitting Code	2T = M12 x 1.5	O4 = 7/16-20 Ext. (SAE #4, J514 w/37°Flare)	4C = 1/4NPTF Dryseal EXT.	4D = 1/8NPTF Dryseal EXT.	O5 = G 1/4 Ext. Face Seal
Torque	30-35 NM	15-16 NM	2-3 TFFT*	2-3 TFFT*	Dimensions: in. (mm)
Fitting Code	O2 = 1/4-18 PT Ext.	OE = Female 1/4-18NPT	O8 = 1/8-27 NPT Ext.	OK = M14 x 1.5 Straight	
Torque	2-3 TFFT*	2-3 TFFT*	2-3 TFFT*	2-3 TFFT*	

*O-Rings are not supplied with pressure fittings.

Model 3100

OEM INDUSTRIAL PRESSURE TRANSDUCER



ORDERING INFORMATION

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MODEL	OUTPUT	RANGE CODE	PRESSURE TYPE	PRESSURE FITTING	ELEC. CONNECTION
See Table 1	B 4-20 mA	See Table 2	C Compound	See Table 3	See Table 4
	C 1-6 VDC		G Gauge		
	H 1-5 VDC		S Sealed Gauge ²		
	N 0.5-4.5 VDC				
	R 0-5 VDC				
	S 0-10 VDC				
	T 0.5-4.5 Ratiometric				

TABLE 1: MODEL SPEC

CODE	DESCRIPTION
3100	Std. 3100
VOLTAGE UNITS W/TEMP. OUTPUT	
3101¹	Temp. Output Range: -40°C to +125°C
3102¹	Temp. Output Range: -0°C to +100°C
3103¹	Temp. Output Range: -0°C to +80°C

TABLE 2: RANGE SPEC

RANGE CODE	PSI	RANGE CODE	BAR
075P²	75	0005²	5
100P²	100	0007²	7
150P²	150	0010²	10
230P²	230	0016²	16
250P	250	0020²	20
300P²	300	0035²	35
500P²	500	0070²	70
10CP²	1,000	0100²	100
15CP²	1,500	0160	160
23CP	2,300	0250	250
36CP	3,600	0400	400
60CP	6,000	0700	700
10KP	10,000	1000³	1,000
15KP³	15,000	1800³	1,800
25KP³	25,000	1600³	1,600
32KP^{3,6}	32,000		

TABLE 3: FITTING SPEC

CODE	DESCRIPTION
08	1/8-27 NPT Ext.
02	1/4-18 NPT Ext.
4C	1/4 NPTF Dryseal Ext.
4D	1/8 NPTF Dryseal Ext.
04	7/16-20 Ext. (SAE #4, J514) w/37° Flare
1J	7/16-20 Ext.(SAE #4, J1926-2) w/O-Ring
1G⁵	1/4 -SAE Int. 7/16 UNF w/ Schraeder Deflater/European Threads
1P	SAE6 (9/16-18UNF 2A)
01	G 1/4 Ext.
05	G 1/4 Ext. Face Seal
0L	M12 x 1.5 (<1000 bar, <15,000 PSI)
2T³	M12 x 1.5 (6g) (≥1000 bar, ≥15,000 PSI)
0K	M14 x 1.5 Straight
0E⁵	Int. 1/4-18NPT

NOTES

- ¹ Temperature outputs are for voltage output pressure sensors only (applies temperature span. Requires additional 2mA of power.
- ² Sealed gauge not available on ranges ≤1500 PSI (≤100 bar).
- ³ Ranges 1000 bar (15,000 PSI) and above available with 2T pressure port only. Ranges above 1,000 BAR are not UL Labeled.
- ⁴ Pressure ports 0E and 1G are NOT available with the Restrictor option.
- ⁵ 0 to 50 PSI (4 bar) - Not available with 4 to 20 mA or 0 to 10 VDC outputs.
- ⁶ Temperature outputs not available with Option 1 Miswire Protection PCB Ratiometric output not available

TABLE 4: ELEC. SPEC

CODE	DESCRIPTION
B	Industrial DIN
C	3-Pin Deutsch (Sealed Only)
E	M12xP, 4-Pin
6	AMP Superseal 1.5 Series
8	Deutsch DT04-4P
9	Packard Metri Pack

ACCESSORIES - MATING CONNECTORS

PART NO.	DESCRIPTION	CODE	PART NO.	DESCRIPTION	CODE
557230	Mini Din Connector, Strain Relief	B		Recommended Mating Parts (AMP p/n: Socket Conn. 1-967325-1, Consult AMP for Contacts, Wire Seal and Strain Relief options)	6
557703-01M0	M12 Cord Set - 1 Meter (Red 1, Green 2, Blue 3, Yellow 4)	E	210730	AMP 12" Flying Leads Cord Set	6
557703-03M0	M12 Cord Set - 3 Meters (Red 1, Green 2, Blue 3, Yellow 4)	E		Recommended Mating Parts (Deutsch p/n: Housing Plug DT064S-P012; Wedge W4S-P012; Sockets 4X 0462-201-1631)	8
557703-04M0	M12 Cord Set - 4 Meters (Red 1, Green 2, Blue 3, Yellow 4)	E	224153	Deutsch Cord Set 3' Long (18 AWG PVC Cable - Black 1, Red 2, Green 3, White, 4 Recommended Mating Parts (Delphi Packard MetriPack p/n: Body 12065268; Seal 12052893; Consult Delphi for Contacts)	8
557703-05M0	M12 Cord Set - 5 Meters (Red 1, Green 2, Blue 3, Yellow 4)	E		Packard Mate Kit	9
	Recommended Mating Parts (AMP p/n: Housing 282087-1; Contacts 3X 183025-1; Seal 281934-1; Boot 880811-2)	6	577	Packard Cord Set 3' Long	9
557701 210729	AMP Superseal Mate Kit	6	581	Packard Cord Set 6' Long	9
	AMP 3.5' Cable Cord Set - Clear Pos 1, Black Pos 2, Red Pos 3	6	582		9

Model 3200

HEAVY DUTY OEM INDUSTRIAL PRESSURE TRANSDUCER



- **>2.5 FS Proof Pressure**
- **High Quality: <0.1% Failure Rate**
- **Long-Term Stability (<0.2%FS/YR)**

- $\pm 0.5\%$ FS Accuracy
- No Oil Fill - Prevents Thermal Instability & Leakage
- Wide Choice of Pressure Ranges: 75 PSI-25,000 PSI
- Accuracy Specified Over Full Temperature Range
- Small Footprint - Less than 1" Diameter
- Dual Temperature and Pressure Output
- Choice of Current, Voltage, or Ratiometric Outputs
- Reverse Wiring Protection
- All Welded Stainless Steel Construction
- CE & RoHS Compliant, UL Approved
- IP67 Rated

Applications

- Power Generation
- Hydraulic Systems
- Booster Pump Systems
- Irrigation Systems
- Off Highway Vehicles

The Model 3200 sputtered thin film pressure sensor is designed for OEMs who require top of the line performance, reliability, stability and maximum durability at an affordable price. The Model 3200 is ideal for the most heavy duty industrial applications by providing the maximum performance to durability ratio available. The Model 3200 offers exceptional $\pm 0.5\%$ FS accuracy in pressure ranges from 75 PSI to 32,000 PSI; features an all welded stainless steel construction for a robust design, and IP67 seal for moisture and humidity protection. The Model 3200 offers a variety of different outputs, pressure connectors and electrical connectors, to satisfy the most challenging application requirements.

BUILT TO LAST

The Model 3200 is a heavy duty pressure device with long term stability, product reliability and accuracy built in. The compact welded stainless steel design is constructed to protect the sensor in the most demanding of industrial environments. The Model 3200 provides a 3x overpressure (0 to 10k PSI) and a 2.5x overpressure (10k to 14.5 PSI) rating, ensuring that the sensor does not fail during unexpected pressure spikes. The electrical connectors are tested to an environmental protection specification of IP67, and a robust internal design ensures that the transducers can survive high levels of vibration.

FLEXIBILITY FOR MANY APPLICATIONS

Strain Gauge technology provides a very linear and predictable output signal over a wide temperature range, which enables Setra to provide an inherently stable and accurate sensor element in high volumes and at low cost. To ensure best in class accuracy and long term stability, each sensing element is thermally compensated to an accuracy of less than $0.005\%^\circ\text{C}$ prior to leaving the clean room for final assembly. Thermally compensating the unit ensures improved accuracy and simplified conditioning electronics, while eliminating the need for calibration over elevated temperatures as a transducer.

UNRIVALED QUALITY

Setra understands the importance of quality in OEM applications, which is why we are always looking for ways to improve the quality rating of our products. Over the last two years, the Model 3200 failure rate is less than 0.1%, a quality rating unmatched by the competition. The worst thing that could happen to an engineer is to shut down their work because of quality issues, Setra takes this seriously which is why we have worked hard to ensure that product quality issues will never be a concern for our customers.

Model 3200

HEAVY DUTY OEM INDUSTRIAL PRESSURE TRANSDUCER

SPECIFICATIONS

PERFORMANCE DATA	
Accuracy ¹	±0.5% FS
THERMAL EFFECTS ²	
Compensated Range	-40 to +257°F (-40 to +125°C)
Zero/Span Shift %FS/100°F (%FS/100°C)	0.94 (2.0) for <1000 PSI (60 BAR)
Zero/Span Tolerance	1% FS for <1000 PSI (60 BAR)
Response Time	1 millisecond
Long Term Stability	±0.2% FS for <1000 PSI (60 BAR)
Proof/Burst Pressure	See overpressure capability
Fatigue Life	Designed for more than 100M cycles
Operating/Storage Temp ^{3,4,5}	-40 to +257°F (-40 to +125°C)
ELECTRICAL DATA (RATIOMETRIC)	
Output	0.5 to 4.5 VDC @ 4mA (6.5 mA on Dual Output Version)
Excitation	5 VDC ± 10%
OPTIONS	
Full miswire protection between all signal and power lines (any combination). Full short-circuit protection for Vout1 to 0V or Vout1 connected to supply, indefinitely. Ratiometric output not available. Supply Voltage must be 4V above the maximum Vout1 output. This also accounts for worse-case customer output leads.	
APPROVALS	
CE, RoHS, UL (E312651)	

PHYSICAL DESCRIPTION	
Pressure Port	See ordering information
Enclosure	IP67 (IP65 for Electrical Code A)
Elec. Connections	See ordering information
Wetted Parts	17-4PH SS (Diaphragm), 304 SS Fittings
Vibration	40G Peak to Peak Sinusoidal to 2000Hz (Random Vibration: 20 to 1000Hz @ approx. 40G Peak per MIL-STD-810E)
Shock	Withstand free fall to IEC 68-2-32 procedure 1
Weight	35 Grams
ELECTRICAL DATA (VOLTAGE) ⁶	
Circuit	3-Wire (Exc, Out, Com)
Output	1 to 6 VDC, 1 to 5 VDC, 0.5 to 4.5 VDC, 0 to 5 VDC, 0 to 10 VDC ⁷
Excitation	2 Volts above FS to max 30 Volts @ 4.5 mA (6.5mA Dual Output Version)
Source & Sinks	2mA
ELECTRICAL DATA (CURRENT)	
Circuit	2-Wire
Output	4 to 20mA
Excitation	8 to 30 VDC (24 VDC max. above 110° C applications)
Max. Loop Resistance	(Supply Voltage-8) x50 ohms

¹RSS of Non-Linearity, Hysteresis, and Non-Repeatability.
²Note: Hydrogen not recommended for use with 17-4 PH Stainless Steel.
³Temperature outputs are for voltage output pressure sensors only and limited to connections that have 4 pins (Electrical Codes -D, -E, -8).
⁴Requires additional 2 mA of power.
⁵For use with pull-down resistors, contact factory before ordering.
⁶Reverse Wiring Protected.
⁷Not available for pressure ranges lower than 100 PSI (7 BAR)

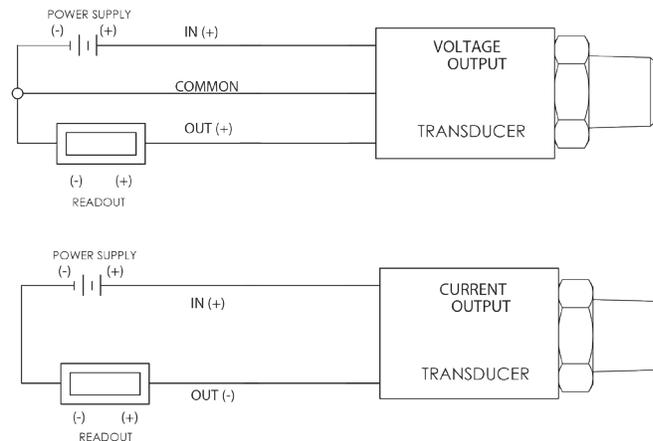
OVERPRESSURE CAPABILITY

Pressure Range PSI (BAR)	Proof Pressure (x Full Scale)	Burst Pressure (x Full Scale)
75-300 (3.5-25)	3.00 x FS	40 x FS
500-1,500 (35-100)	3.00 x FS	20 x FS
2,000-6,000 (160-400)	3.00 x FS	10 x FS
7,500-9,000 (600)	3.00 x FS	10 x FS
10,000 (700)	3.00 x FS	>60,000 PSI (4,000 BAR)
15,000 (1,000)	2.50 x FS	>60,000 PSI (4,000 BAR)
25,000 (1,600)	2.50 x FS	>60,000 PSI (4,000 BAR)

The data in this table is "times rate ranges" (xRR)

Application pressure should be restricted to the rated-range of the transducer. The maximum overpressure is the pressure limit at which the transducer will not show significant offset shift. The minimum burst pressure is the test-rating for fluid containment.

WIRING



(continue Model 3200 on next page)

Model 3200

HEAVY DUTY OEM INDUSTRIAL PRESSURE TRANSDUCER



ELECTRICAL FITTINGS

	Din 9.4 mm			M12 x 1P		Amp Superseal 1.5		Deutsch DT4-4P		Packard Metri Pack			3-Pin Deutsch		
	Code B			Code E		Code 6		Code 8		Code 9			Code C		
Pin #	Voltage Mode	Current Mode		Voltage Mode	Current Mode										
1	V _{out1} (pressure)	No Connect	V _{supply}	V _{supply}	V _{out1} (pressure)	No Connect	Ground	Return	V _{out1} (pressure)	No Connect	C	V _{supply}	V _{supply}	A	
2	V _{supply}	V _{supply}	V _{out1} (pressure)	No Connect	Ground	Return	V _{supply}	V _{supply}	Ground	Return	A	Ground	Return	B	
3	V _{out2} (temp)	No Connect	Ground	Return	V _{supply}	V _{supply}	V _{out2} (temp)	No Connect	V _{supply}	V _{supply}	B	V _{out1} (pressure)	No Connect	C	
4	Ground	Return	V _{out2} (temp)	No Connect	-	-	V _{out1} (pressure)	No Connect	-	-	-	-	-	-	

PRESSURE FITTINGS

SAE Dimensions in Inches					
Fitting Code	OL = M12 x 1.5	O1 = G1/4 Ext.	1G = 1/4-SAE Female 7/16 UNF w/Schraeder	1J = 7/16-20Ext.(SAE#4, J1926-2)w/O-Ring	1P = SAE6 (9/16-18UNF 2A)
Torque	28-30 NM	30-35 NM	18-20 NM	18-20 NM	18-20 NM
Fitting Code	2T = M12 x 1.5	O4 = 7/16-20 Ext. (SAE #4, J514 w/37°Flare)	4C = 1/4NPTF Dryseal EXT.	4D = 1/8NPTF Dryseal EXT.	O5 = G 1/4 Ext. Face Seal
Torque	30-35 NM	15-16 NM	2-3 TFFT*	2-3 TFFT*	Dimensions: in. (mm)
Fitting Code	O2 = 1/4-18 PT Ext.	OE = Female 1/4-18NPT	O8 = 1/8-27 NPT Ext.	OK = M14 x 1.5 Straight	
Torque	2-3 TFFT*	2-3 TFFT*	2-3 TFFT*	2-3 TFFT*	

*O-Rings are not supplied with pressure fittings.

Model 3200

HEAVY DUTY OEM INDUSTRIAL PRESSURE TRANSDUCER

ORDERING INFORMATION

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MODEL	OUTPUT	RANGE CODE	PRESSURE TYPE	PRESSURE FITTING	ELEC. CONNECTION	RESTRICTOR
See Table 1	B 4-20 mA	See Table 2	C Compound	See Table 3	See Table 4	O No Restrictor
	C 1-6 VDC		G Gauge			R Restrictor
	H 1-5 VDC		S Sealed Gauge ²			
	N 0.5-4.5 VDC					
	R 0-5 VDC					
	S 0-10 VDC					
	T 0.5-4.5 Ratiometric					

TABLE 1: MODEL SPEC

CODE	DESCRIPTION
3200	Std. 3200
VOLTAGE UNITS W/TEMP. OUTPUT	
3201¹	Temp. Output Range: -40°C to +125°C
3202¹	Temp. Output Range: -0°C to +100°C
32 03¹	Temp. Output Range: -0°C to +80°C

TABLE 2: RANGE SPEC

RANGE CODE	PSI	RANGE CODE	BAR
050P^{2,5}	50	0004^{2,5}	4
075P²	75	0005²	5
100P²	100	0007²	7
150P²	150	0010²	10
230P²	230	0016²	16
250P	250	0020²	20
300P²	300	0035²	35
500P²	500	0070²	70
10CP²	1,000	0100²	100
15CP²	1,500	0160	160
23CP	2,300	0250	250
36CP	3,600	0400	400
60CP	6,000	0700	700
10KP	10,000	1000³	1,000
15KP³	15,000	1800³	1,800
25KP³	25,000	1600³	1,600

TABLE 3: FITTING SPEC

CODE	DESCRIPTION
08	1/8-27 NPT Ext.
02	1/4-18 NPT Ext.
4C	1/4 NPTF Dryseal Ext.
4D	1/8 NPTF Dryseal Ext.
04	7/16-20 Ext. (SAE #4, J514) w/37° Flare
1J	7/16-20 Ext.(SAE #4, J1926-2) w/O-Ring
1G⁴	1/4 -SAE Int. 7/16 UNF w/ Schraeder Deflater/European Threads
1P	SAE6 (9/16-18UNF 2A)
01	G 1/4 Ext.
05	G 1/4 Ext. Face Seal
0L	M12 x 1.5 (<1000 bar, <15,000 PSI)
2T³	M12 x 1.5 (6g) (≥1000 bar, ≥15,000 PSI)
0K	M14 x 1.5 Straight
0E⁴	Int. 1/4-18NPT

NOTES

- ¹ Temperature outputs are for voltage output pressure sensors only (applies temperature span. Requires additional 2mA of power.
- ² Sealed gauge not available on ranges ≤1500 PSI (≤100 bar).
- ³ Ranges 1000 bar (15,000 PSI) and above available with 2T pressure port only. Ranges above 1,000 BAR are not UL Labeled.
- ⁴ Pressure ports 0E and 1G are NOT available with the Restrictor option.
- ⁵ 0 to 50 PSI (4 bar) - Not available with 4 to 20 mA or 0 to 10 VDC outputs.

TABLE 4: ELEC. SPEC

CODE	DESCRIPTION
B	Industrial DIN
C	3-Pin Deutsch (Sealed Only)
E	M12xP, 4-Pin
6	AMP Superseal 1.5 Series
8	Deutsch DT04-4P
9	Packard Metri Pack

ACCESSORIES - MATING CONNECTORS

PART NO.	DESCRIPTION	CODE	PART NO.	DESCRIPTION	CODE
557230	Mini Din Connector, Strain Relief	B		Recommended Mating Parts (AMP p/n: Socket Conn. 1-967325-1, Consult AMP for Contacts, Wire Seal and Strain Relief options)	6
557703-01M0	M12 Cord Set - 1 Meter (Red 1, Green 2, Blue 3, Yellow 4)	E	210730	AMP 12" Flying Leads Cord Set	6
557703-03M0	M12 Cord Set - 3 Meters (Red 1, Green 2, Blue 3, Yellow 4)	E		Recommended Mating Parts (Deutsch p/n: Housing Plug DT064S-P012; Wedge W4S-P012; Sockets 4X 0462-201-1631)	8
557703-04M0	M12 Cord Set - 4 Meters (Red 1, Green 2, Blue 3, Yellow 4)	E		Deutsch Cord Set 3' Long (18 AWG PVC Cable - Black 1, Red 2, Green 3, White, 4)	8
557703-05M0	M12 Cord Set - 5 Meters (Red 1, Green 2, Blue 3, Yellow 4)	E	224153	Recommended Mating Parts (Delphi Packard MetriPack p/n: Body 12065268; Seal 12052893; Consult Delphi for Contacts)	9
	Recommended Mating Parts (AMP p/n: Housing 282087-1; Contacts 3X 183025-1; Seal 281934-1; Boot 880811-2)	6		Packard Mate Kit	9
557701 210729	AMP Superseal Mate Kit	6	577	Packard Cord Set 3' Long	9
	AMP 3.5' Cable Cord Set - Clear Pos 1, Black Pos 2, Red Pos 3	6	581	Packard Cord Set 6' Long	9
			582		

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RELATIVE HUMIDITY

Model SRH : Wall Mount	102
Model SRH : Duct Mount	104
Model SRH : Outdoor Air	106

Model SRH: Wall Mount

RELATIVE HUMIDITY SENSOR



- **Low Profile**
- **Robust Capacitive Sensor Design**
- **0 to 99% Full Scale RH Measurement**

- ±2%, ±3% and ±5% FS Accuracy
- Active Temperature With Jumper Selectable
- Replaceable Sensor Tip
- Excellent Reliability Through ASIC Technology
- Quick Mount, 2 Screw Install With Plug-In Terminal Wiring
- 5 Year Warranty on Electronics
- 2 Year Warranty on Sensor Module
- CE and RoHS Compliant

Applications

- HVAC/R Control
- Indoor Air Quality (IAQ)
- Laboratories
- Antique Preservation
- Museums

Setra's SRH low profile wall mount humidity sensor offers both humidity and temperature with multiple options for accuracy, temperature and outputs. It features a removable sensor tip, optional NIST traceability, and a durable capacitive sensor that is capable of a 0 to 99% full scale RH measurement and recovery from 100% saturation. The SRH offers accuracies of 2%, 3% and 5% to meet the most stringent HVAC applications. The SRH can be ordered with either a passive (RTD Thermistor) or Active (Analog) temperature output, enabling 2 measurements from the same device.

REPLACEABLE SENSOR TIP FOR EASY CALIBRATION

The SRH offers the industry's easiest replaceable sensor tip. Removing it requires no special training and can be easily replaced by the end user. No calibration is needed because each sensor module is factory calibrated before shipping, reducing downtime during service intervals.

ACTIVE & PASSIVE TEMPERATURE OUTPUTS

The SRH can be ordered with either a passive (RTD Thermistor) or Active (Analog) temperature output, enabling 2 measurement from 1 device. Units configured with the active temperature options feature jumper selectable Tspan ranges of 40°C, 50°C, and 60°C.

WORRY FREE 5 YEAR WARRANTY

The SRH comes with a 5 year warranty on the electronics and a 2 year warranty on the sensor module, giving the user peace of mind over the life of the product.

Model SRH: Wall Mount

RELATIVE HUMIDITY SENSOR

SPECIFICATIONS

RH PERFORMANCE DATA	
Sensing Element	Capacitive Polymer
Humidity Operating Range	0 to 99% RH (non-condensing)
Accuracy @ 68°F (20°C)	2%, 3%, 5% ¹
Non-Repeatability	0.05% FS
Long Term Stability	<1%/Year @ 68°F (20°C), 50% RH
ELECTRICAL DATA	
Signal Outputs	
Current (2-Wire)	4 to 20mA
Field-Selectable Voltage (3-Wire)	0 to 5 VDC, 0 to 10 VDC
Excitation	13.5 to 30 VDC (10 VDC Output) 12 to 30 VDC (4 to 20 Ma, 5 VDC Output)
Maximum Load (Current Only)	=(Supply - 10) - 0.02
Electrical Termination	Pluggable Terminal Block (5mm Pitch)
Wiring Protection	Reverse Excitation
CE Compliance	EMC Directive 2004/108/EC

TEMPERATURE SENSING OPTIONS (PASSIVE)	
T1: Thermistor	NTC 10K Ω 77°F/25°C (Direct Connect) Type II
T2: RTD Output	1000 Ω 32°F/0°C (Direct Connect)
T6: Thermistor	NTC 10K Ω 77°F/25°C Type III
TEMPERATURE SENSING OPTIONS (ACTIVE)	
T3: Ranges °F (°C) Accuracy @ 68°F (20°C)	-58 to +140 (-50 to +60) Typ @ 50% ±1.1 (±0.6) ²
T5: °F (°C) Accuracy @ 68°F (20°C)	+14 to +140 (-10 to +60) Typ @ 50% ±0.7 (±0.4) ²
Signal Output Options (includes humidity output)	
Current	4 to 20mA
Field-Selectable Voltage	0 to 5 VDC, 0 to 10 VDC

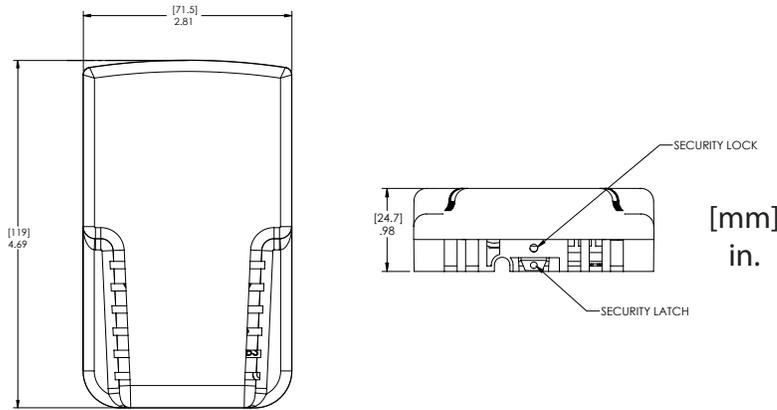
ENVIRONMENTAL DATA	
Operating Temperature	-40 to 140°F (-40 to 60°C)
Storage Temperature	-40 to 158°F (-40 to 70°C)
Moisture Resistance	IP65, NEMA-4 (Duct & Outside Air)
Solar	UV Resistant (Outside Air)
Flammability Rating	94-V0
Compliance	RoHS Compliant, CE Compliant
PHYSICAL DESCRIPTION	
Enclosure Materials	
Wall Mount	VA 94-V0
Duct & Outside Air	Polycarbonate 94-V0
Probe (Duct & Outside Air)	Aluminum
Weather Shield	Porous Polyethylene
Sensor Tip Filter	70 Micron Polypropylene
Dimensions	See Dimensions Drawings

¹ 5% units available only with passive temperature option.

² Excitation 24 VDC ±10%

Specifications subject to change without notice.

DIMENSIONS



ORDERING INFORMATION



MODEL	ACCURACY	CONFIGURATION	OUTPUTS	TEMPERATURE OUTPUTS	DISPLAY	OPTIONS						
SRH1 = SRH	2P	2%	W	Wall Mount	1T	4 - 20 mA	T0	None (RH only)	N	None	C	NIST Certificate of Performance
	3P	3%			2C	0 - 5 or 0-10 VDC ¹ (user-selectable)	T1	10K Ω Type II Thermistor (Passive)				
	5P	5%				T2	1000 ohms RTD (Passive)					
							T3	-58 to 140°F (-50 to 60°C [Active]) ^{2,3}				
							T5	+14 to 140°F (-10 to 60°C [Active]) ^{2,3}				
							T6	10K Ω Type III Thermistor [Passive]				

Ordering Example: SRH12PW11TONC = Model SRH, 2% Accuracy, Wall Mount, 4 to 20 mA Output, RH only, No Display, NIST Certificate of Conformance



MODEL	ACCURACY	TEMPERATURE OUTPUTS		
SRH3 = SRH	2P	2%	T0	None (RH only)
	3P	3%	T1	10K ohms Type II Thermistor (Passive)
	5P	5%	T2	1000 ohms RTD (Passive)
			T3	-58 to 140°F (-50 to 60°C [Active]) ³
			T5	+14 to 140°F (-10 to 60°C [Active]) ³
			T6	10K ohms Type III Thermistor [Passive]

Ordering Example: SRH32PT0 = 2% Accuracy, RH only.

Replaceable Sensor Tip

¹ Voltage outputs (2C) are factory configured for 0 to 5 VDC operation. User-selectable jumper for 0 to 10 VDC operation.
² Tspan jumper factory configured for 60°C. User-selectable Tspan for 40°C and 50°C option provided.
³ SRH1 units originally ordered with either a T3 or T5 temperature option Must be replaced with the same T(x) version.

Model SRH: Duct Mount

RELATIVE HUMIDITY SENSOR

- **Suitable for Harsh Environments**
- **Robust Capacitive Sensor Design**
- **Passive or Active Temperature Outputs**

- $\pm 2\%$, $\pm 3\%$ and $\pm 5\%$ FS Accuracy
- Active Temperature With Jumper Selectable
- Replaceable Sensor Tip
- Excellent Reliability Through ASIC Technology
- Quick Mount, 2 Screw Install With Plug-In Terminal Wiring
- 5 Year Warranty on Electronics
- 2 Year Warranty on Sensor Module
- CE and RoHS Compliant

Applications

- HVAC/R Control
- Indoor Air Quality (IAQ)
- Laboratories
- Antique Preservation
- Museums



Setra's SRH duct mount humidity sensor offers optional active temperature with choice of 4 to 20 mA or user-selectable 0 to 5 and 0 to 10 VDC output and passive temperature with choice of thermistor or RDT output. The sensor is housed in a polycarbonate 94 V-0, NEMA 4 enclosure making it suitable for harsh environments. The SRH duct mount sensor gives the user the choice of 2%, 3% and 5% RH accuracy to meet the requirements of typical HVAC applications. It features a removable sensor tip, optional NIST traceability and a durable capacitive sensor capable of a 0 to 99% full scale RH measurement and recovery of 100% saturation.

REPLACEABLE SENSOR TIP FOR EASY CALIBRATION

The SRH offers the industry's easiest replaceable sensor tip. Removing it requires no special training and can be easily replaced by the end user. No calibration is needed because each sensor module is factory calibrated before shipping, reducing downtime during service intervals.

ACTIVE & PASSIVE TEMPERATURE OUTPUTS

The SRH can be ordered with either a passive (RTD Thermistor) or Active (Analog) temperature output, enabling 2 measurement from 1 device. Units configured with the active temperature options feature jumper selectable Tspan ranges of 40°C, 50°C, and 60°C.

WORRY FREE 5 YEAR WARRANTY

The SRH comes with a 5 year warranty on the electronics and a 2 year warranty on the sensor module, giving the user peace of mind over the life of the product.

Model SRH: Duct Mount

RELATIVE HUMIDITY SENSOR

SPECIFICATIONS

RH PERFORMANCE DATA	
Sensing Element	Capacitive Polymer
Humidity Operating Range	0 to 99% RH (non-condensing)
Accuracy @ 68°F (20°C)	±2%, ±3%, ±5% ¹
Non-Repeatability	0.05% FS
Long Term Stability	<1%/Year @ 68°F (20°C), 50% RH
ELECTRICAL DATA	
Signal Outputs	
Current (2-Wire)	4 to 20mA
Field-Selectable Voltage (3-Wire)	0 to 5 VDC, 0 to 10 VDC
Excitation	13.5 to 30 VDC (10 VDC Output) 12 to 30 VDC (4 to 20 Ma, 5 VDC Output)
Maximum Load (Current Only)	=(Supply - 10) - 0.02
Electrical Termination	Pluggable Terminal Block (5mm Pitch)
Wiring Protection	Reverse Excitation
CE Compliance	EMC Directive 2004/108/EC

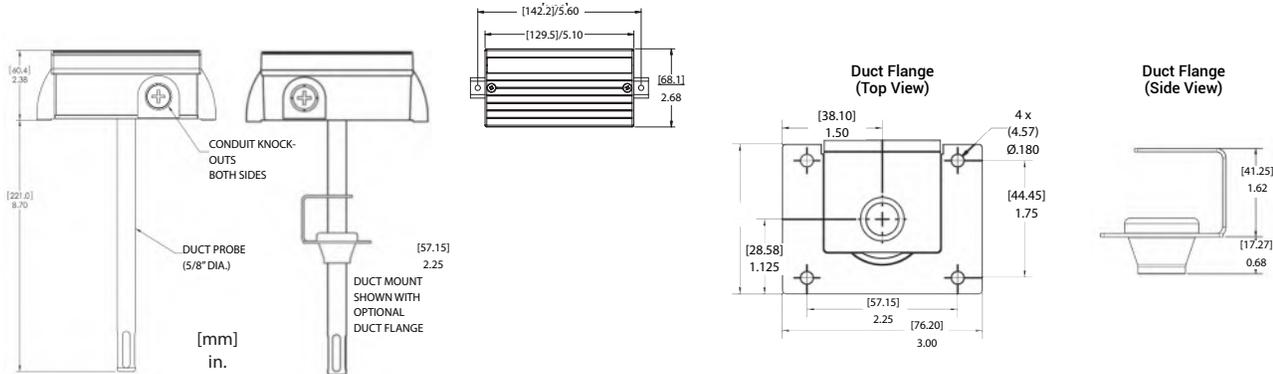
TEMPERATURE SENSING OPTIONS (PASSIVE)	
T1: Thermistor	NTC 10K Ω 77°F/25°C (Direct Connect) Type II
T2: RTD Output	1000 Ω 32°F/0°C (Direct Connect)
T6: Thermistor	NTC 10K Ω 77°F/25°C Type III
TEMPERATURE SENSING OPTIONS (ACTIVE)	
T3: Ranges °F (°C) Accuracy @ 68°F (20°C)	-58 to +140 (-50 to +60) Typ @ 50% ±1.1 (±0.6) ²
T5: °F (°C) Accuracy @ 68°F (20°C)	+14 to +140 (-10 to +60) Typ @ 50% ±0.7 (±0.4) ²
Signal Output Options (includes humidity output)	
Current	4 to 20mA
Field-Selectable Voltage	0 to 5 VDC, 0 to 10 VDC

ENVIRONMENTAL DATA	
Operating Temperature	-40 to 140°F (-40 to 60°C)
Storage Temperature	-40 to 158°F (-40 to 70°C)
Moisture Resistance	IP65, NEMA-4 (Duct & Outside Air)
Solar	UV Resistant (Outside Air)
Flammability Rating	94-V0
Compliance	RoHS Compliant, CE Compliant
PHYSICAL DESCRIPTION	
Enclosure Materials	
Wall Mount	VA 94-V0
Duct & Outside Air	Polycarbonate 94-V0
Probe (Duct & Outside Air)	Aluminum
Weather Shield	Porous Polyethylene
Sensor Tip Filter	70 Micron Polypropylene
Dimensions	See Dimensions Drawings

¹ 5% units available only with passive temperature option.
² Excitation 24 VDC ±10%

Specifications subject to change without notice.

DIMENSIONS



ORDERING INFORMATION

SRH1 - [] - D - [] - [] - N - []

MODEL	ACCURACY	CONFIGURATION	OUTPUTS	TEMPERATURE OUTPUTS	DISPLAY	OPTIONS
SRH1 = SRH	2P 2%	D Duct Mount	11 4 - 20 mA	T0 None (RH only)	N None	C NIST Certificate of Performance
	3P 3%		2C 0 - 5 or 0-10 VDC ¹ (user-selectable)	T1 10K Ω Type II Thermistor (Passive)		
	5P 5%			T2 1000 ohms RTD (Passive)		
				T3 -58 to 140°F (-50 to 60°C [Active]) ^{2,3}		
				T5 +14 to 140°F (-10 to 60°C [Active]) ^{2,3}		
				T6 10K Ω Type III Thermistor [Passive]		

Ordering Example: SRH12PD11TONC = Model SRH, 2% Accuracy, Duct Mount, 4 to 20 mA Output, RH only, No Display, NIST Certificate of Conformance

SRH3 - [] - []

MODEL	ACCURACY	TEMPERATURE OUTPUTS
SRH3 = SRH	2P 2%	T0 None (RH only)
	3P 3%	T1 10K ohms Type II Thermistor (Passive)
	5P 5%	T2 1000 ohms RTD (Passive)
		T3 -58 to 140°F (-50 to 60°C [Active]) ³
		T5 +14 to 140°F (-10 to 60°C [Active]) ³
		T6 10K ohms Type III Thermistor [Passive]

Ordering Example: SRH32PT0 = 2% Accuracy, RH only.

Replaceable Sensor Tip

¹ Voltage outputs (2C) are factory configured for 0 to 5 VDC operation. User-selectable jumper for 0 to 10 VDC operation.
² Tspan jumper factory configured for 60°C. User-selectable Tspan for 40°C and 50°C option provided.
³ SRH1 units originally ordered with either a T3 or 5T temperature option Must be replaced with the same T(x) version.

Model SRH: Outdoor Air

RELATIVE HUMIDITY SENSOR



- **Suitable for Harsh Environments**
- **Robust Capacitive Sensor Design**
- **Passive or Active Temperature Outputs**

- $\pm 2\%$, $\pm 3\%$ and $\pm 5\%$ FS Accuracy
- Active Temperature With Jumper Selectable
- Replaceable Sensor Tip
- Excellent Reliability Through ASIC Technology
- Quick Mount, 2 Screw Install With Plug-In Terminal Wiring
- 5 Year Warranty on Electronics
- 2 Year Warranty on Sensor Module
- CE and RoHS Compliant

Setra's SRH outdoor humidity sensor offers optional active temperature with choice of 4 to 20 mA or user-selectable 0 to 5 and 0 to 10 VDC output and passive temperature with choice of thermistor or RDT output. The sensor is housed in a polycarbonate 94 V-0, NEMA 4 enclosure making it suitable for harsh environments. The SRH outdoor air sensor gives the user the choice of 2%, 3% and 5% RH accuracy to meet the requirements of typical HVAC applications. It features a removable sensor tip, optional NIST traceability, and a durable capacitive sensor capable of a 0 to 99% full scale RH measurement and recovery from 100% saturation.

REPLACEABLE SENSOR TIP FOR EASY CALIBRATION

The SRH offers the industry's easiest replaceable sensor tip. Removing it requires no special training and can be easily replaced by the end user. No calibration is needed because each sensor module is factory calibrated before shipping, reducing downtime during service intervals.

ACTIVE & PASSIVE TEMPERATURE OUTPUTS

The SRH can be ordered with either a passive (RTD Thermistor) or Active (Analog) temperature output, enabling 2 measurement from 1 device. Units configured with the active temperature options feature jumper selectable Tspan ranges of 40°C, 50°C, and 60°C.

WORRY FREE 5 YEAR WARRANTY

The SRH comes with a 5 year warranty on the electronics and a 2 year warranty on the sensor module, giving the user peace of mind over the life of the product.

Model SRH: Outdoor Air

RELATIVE HUMIDITY SENSOR

SPECIFICATIONS

RH PERFORMANCE DATA	
Sensing Element	Capacitive Polymer
Humidity Operating Range	0 to 99% RH (non-condensing)
Accuracy @ 68°F (20°C)	2%, 3%, 5% ¹
Non-Repeatability	0.05% FS
Long Term Stability	<1%/Year @ 68°F (20°C), 50% RH
ELECTRICAL DATA	
Signal Outputs	
Current (2-Wire)	4 to 20mA
Field-Selectable Voltage (3-Wire)	0 to 5 VDC, 0 to 10 VDC
Excitation	13.5 to 30 VDC (10 VDC Output) 12 to 30 VDC (4 to 20 Ma, 5 VDC Output)
Maximum Load (Current Only)	=(Supply - 10) - 0.02
Electrical Termination	Pluggable Terminal Block (5mm Pitch)
Wiring Protection	Reverse Excitation
CE Compliance	EMC Directive 2004/108/EC

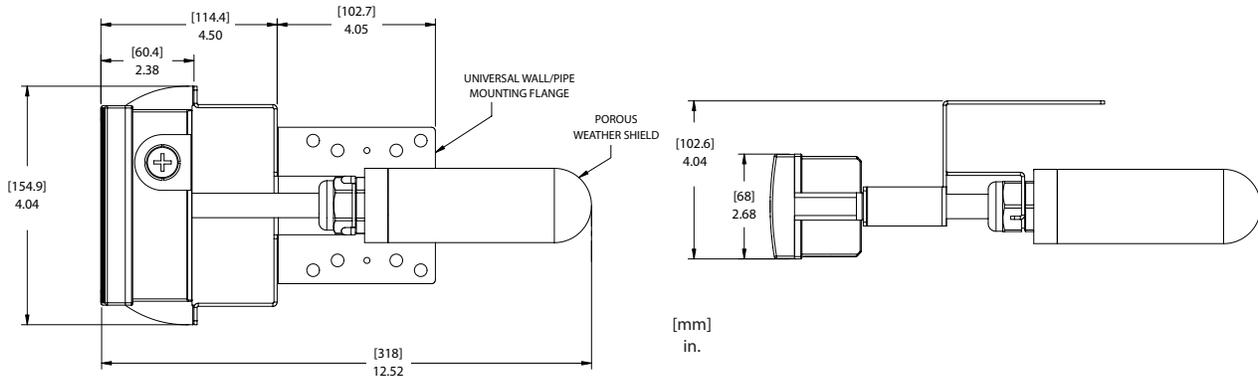
TEMPERATURE SENSING OPTIONS (PASSIVE)	
T1: Thermistor	NTC 10K Ω 77°F/25°C (Direct Connect) Type II
T2: RTD Output	1000 Ω 32°F/0°C (Direct Connect)
T6: Thermistor	NTC 10K Ω 77°F/25°C Type III
TEMPERATURE SENSING OPTIONS (ACTIVE)	
T3: Ranges °F (°C) Accuracy @ 68°F (20°C)	-58 to +140 (-50 to +60) Typ @ 50% ±1.1 (±0.6) ²
T5: °F (°C) Accuracy @ 68°F (20°C)	+14 to +140 (-10 to +60) Typ @ 50% ±0.7 (±0.4) ²
Signal Output Options (includes humidity output)	
Current	4 to 20mA
Field-Selectable Voltage	0 to 5 VDC, 0 to 10 VDC

ENVIRONMENTAL DATA	
Operating Temperature	-40 to 140°F (-40 to 60°C)
Storage Temperature	-40 to 158°F (-40 to 70°C)
Moisture Resistance	IP65, NEMA-4 (Duct & Outside Air)
Solar	UV Resistant (Outside Air)
Flammability Rating	94-V0
Compliance	RoHS Compliant, CE Compliant
PHYSICAL DESCRIPTION	
Enclosure Materials	
Wall Mount	VA 94-V0
Duct & Outside Air	Polycarbonate 94-V0
Probe (Duct & Outside Air)	Aluminum
Weather Shield	Porous Polyethylene
Sensor Tip Filter	70 Micron Polypropylene
Dimensions	See Dimensions Drawings

¹ 5% units available only with passive temperature option.
² Excitation 24 VDC ±10%

Specifications subject to change without notice.

DIMENSIONS



ORDERING INFORMATION

S R H 1 - [] - [] - [] - [] - N - []

MODEL	ACCURACY	CONFIGURATION	OUTPUTS	TEMPERATURE OUTPUTS	DISPLAY	OPTIONS
SRH1 = SRH	2P	2%	0 Outdoor Air	11 4 - 20 mA	T0 None (RH only)	N None
	3P	3%		2C 0 - 5 or 0-10 VDC ¹ (user-selectable)	T1 10K Ω Type II Thermistor (Passive)	C NIST Certificate of Performance
	5P	5%			T2 1000 ohms RTD (Passive)	
				T3 -58 to 140°F (-50 to 60°C) [Active] ^{2,3}		
				T5 +14 to 140°F (-10 to 60°C) [Active] ^{2,3}		
				T6 10K Ω Type III Thermistor [Passive]		

Ordering Example: SRH12PW11TONC = Model SRH, 2% Accuracy, Wall Mount, 4 to 20 mA Output, RH only, No Display, NIST Certificate of Conformance

S R H 3 - [] - []

MODEL	ACCURACY	TEMPERATURE OUTPUTS
SRH3 = SRH	2P	2%
	3P	3%
	5P	5%
		T0 None (RH only)
		T1 10K ohms Type II Thermistor (Passive)
		T2 1000 ohms RTD (Passive)
		T3 -58 to 140°F (-50 to 60°C) [Active] ³
		T5 +14 to 140°F (-10 to 60°C) [Active] ³
		T6 10K ohms Type III Thermistor [Passive]

Ordering Example: SRH32PT0 = 2% Accuracy, RH only.

Replaceable Sensor Tip

¹ Voltage outputs (2C) are factory configured for 0 to 5 VDC operation. User-selectable jumper for 0 to 10 VDC operation.
² Tspan jumper factory configured for 60°C. User-selectable Tspan for 40°C and 50°C option provided.
³ SRH1 units originally ordered with either a T3 or T5 temperature option Must be replaced with the same T(x) version.



setra®



ULTRA-LOW PRESSURE & DOCUMENTING CALIBRATOR

MicroCal™

110

MicroCal™

ADVANCED MODULAR PRESSURE CALIBRATOR



- **Best-in-Class Pressure Generation**
- **Immediate ROI**
- **Increased Calibration Ratios**

- Modular Pressure References
- Up to 8 Hours of Battery Life
- Easy Step-by-Step User Interface Process
- Built-In Leak Test Function
- Provides Accuracy & Stability Plots
- Closed-Loop Pressure Generation & Monitoring Modes to Verify System Performance
- True Low Range Dual Reference Pressure Sensors with NIST Traceability

The MicroCal™ automated pressure calibrator is used as a stand-alone calibration standard for differential and gauge pressure sensors found in critical environments. Setra partnered with NASA to develop the industry's quickest and most stable pressure control for low range applications. The MicroCal™ combines precise pressure control with high accuracy modular pressure references providing the quickest and most accurate calibration solution available on the market today. The MicroCal™ is an easy-to-use solution that significantly improves labor productivity and efficiency when compared to the leading competitors, providing immediate ROI.

MODULAR DESIGN TO COVER MANY APPLICATIONS

The MicroCal™ utilizes modular pressure references, enabling the user to utilize the most accurate reference for calibrating the unit under test. Competitive calibrators often use fixed higher range reference sensors that do not allow for proper calibration ratios at the low end of the pressure range. The modular rechargeable battery offers further flexibility to extend available calibration time beyond the standard 8 hours.

NASA PATENTED TECHNOLOGY

The MicroCal™ is designed to perform calibration checks on installed sensors, pressure switches and gauges that monitor critical applications. The on-board, closed-loop pressure generation system allows for stable & accurate pressure to be applied to the unit under test during calibration, while providing isolation from process background disturbances. This NASA patented technology achieves 0.0002"W.C./step resolution; when combined with the high accuracy MCPM pressure module the MicroCal™ is the ultimate low-pressure calibration device.

REDUCE CALIBRATION TIME

When the fast and stable pressure control is combined with high accuracy reference modules and easy to use interface, the MicroCal™ can reduce overall calibration time up to 80%. This time savings provides almost immediate ROI based on the number of calibrations performed annually.

7" TOUCH SCREEN WITH INTUITIVE USER INTERFACE

The easy to use 7" touch screen interface, combined with an intuitive menu structure, provides the user with all the features needed for verification and calibration of differential pressure instrumentation. The MicroCal™ offers the Expert System feature, which detects and automatically calibrates Setra's Model 269 digital pressure transducer.

SPECIFICATIONS

MEASUREMENT UNCERTAINTY (1 YR)		CONTROL	
Pressure	±0.12% Reading ±0.028% FS	Controlled Pressure Stability	0.0002" W.C.
Voltage	±0.015% Reading ±0.002V	Minimum Controlled Pressure	0.00005" W.C.
Current	±0.015% Reading ±0.002 mA	TEMPERATURE EFFECT (OUTSIDE OPERATING TEMPERATURE)	
PHYSICAL		Zero	None, Zero Tare
Operating Temperature	50° to 95°F (10° to 35°C)	Span	Additional ±0.005% FS/°F
Storage Temperature	32° to 160°F (0° to 71°C)	GENERAL	
Power Requirements	24 VDC (110/220V Power Adapter Included)	Engineering Units	Field Selectable (20 Options)
Battery (included)	Li-ion, 6.75 AH, Recharge Time < 3 hours	Warm up	20 Minutes
Case Dimensions	18.6" x 14.7" x 7.1"	Communications	RS232
Weight	18-22 lbs.	Display	7" Touchscreen
		Pressure Connections	Plug-In O-Ring Quick Connects
		Electrical Connections	Banana Plug Jacks

Specifications subject to change without notice.

ORDERING INFORMATION

M C A L - L - [] - [] - N

MODEL	PRESSURE CONTROL RANGE	ELECTRO-PNEUMATIC INTERFACE	OPTIONS
MCAL = MicroCal™	L Low; Up to 0-30" W.C	N Standard user interface with 6' tubing	N None
		M Standard user interface with 12' tubing	
		E Expert system interface with 6' cable and tubing	
		L Expert system interface with 12' cable and tubing	

Ordering Example: MCALLMN = MicroCal™, Range 30"W.C., Standard user interface with 12' tubing, No Options

REFERENCE MODULES

M C P M - [] [] [] [] [] []

MODEL	RANGE	
	"W.C	PASCAL
MCPM = MicroCal™ Pressure Modules		
UNIDIRECTIONAL		
0R5WD	0 to 0.5	100LD 0 to 100
001WD	0 to 1	250LD 0 to 250
005WD	0 to 5	500LD 0 to 500
2R5WD	0 to 2.5	10CLD 0 to 1000
015WD	0 to 15	35CLD 0 to 3500
BIDIRECTIONAL		
R25WB	±0.25	050LB ±50
0R5WB	±0.5	100LB ±100
001WB	±1	250LB ±250
2R5WB	±2.5	500LB ±500
005WB	±5	10CLB ±1,000
015WB	±15	35CLB ±3,500



ACCESSORIES

869783-G	Spare Battery
869974-G	Desktop Charger
869923	Accessory Kit (Screwdriver, Silicone Tubing, Misc. Fittings)
869920	Harness Cable End Ass'y, 2-Wire
869904-10	2-Wire Electro-Pneumatic Harness: 10 ft.
869921	Harness Cable End Ass'y, 4-Wire
869905-10	4-Wire Electro-pneumatic Harness: 10 ft.

NOTE: Users must order reference modules in order to use the MicroCal™.
Ordering Example: MCPMR25WB=MicroCal™ Pressure Module, Range ±0.25"W.C

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ACCESSORIES

Power Supplies	114
Room Pressure Accessories	115
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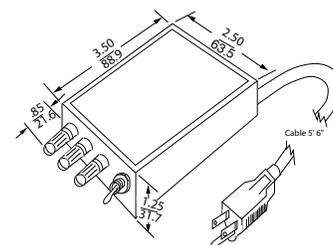
24 VDC Power Supplies

Model 868

The Model 868 modular 100% encapsulated package offers the advantage of compact size, ruggedness, long life and environmental immunity. Packaging features such as #4-40 threaded inserts for mounting. AC power cord, banana jacks and on/off toggle switch facilitate its use as a stand alone unit or integral part of a pressure measurement system.

- Low Output Ripple
- Excellent Line & Load Regulation
- Short-Circuit Current Limiting
- 100% Encapsulated Package
- 24 VDC Excitation

SPECIFICATIONS	
Input Voltages	105 to 125VAC
Input Frequency	50 to 440Hz
Output Voltage	Isolated ± 12 VDC 100 mA (use as 24VDC w/ Setra transducers). Some require 12VDC Excitation
Line Regulation	0.05% LL-HL
Load Regulation	0.1% NL-FL
Ripple	<1 mV RMS
I/O Isolation	50 megaohms/min.
Short Circuit Protection	Current Limiting (140%)
Storage Temperature	55°C to ± 85 °C
Operating Temperature	-25°C to 71°C
Temperature Coefficient	0.02%/°C (typical)
Wiring Instructions	Red: +Out, White: common, Black: -Out

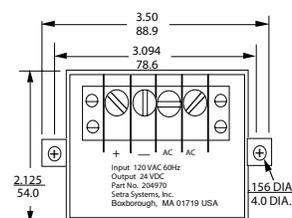
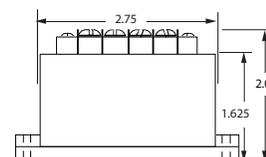


Model 867/867 30V

Models 867 and 867 30V are low cost power supplies that have the advantage of being able to withstand a momentary short circuit without failure. Mounting holes are located on both sides of the unit for easy panel installation.

- Small Size & Light Weight
- Integral Barrier Strip Terminal for Input & Output Wiring
- Convenient Mounting Tabs
- Withstands Momentary Short Circuit without Failure
- 24 or 30 VDC Excitation

SPECIFICATIONS	
OUTPUT	
867	24VDC unregulated filtered <29VDC with no load, >21VDC at 100mA, no more than 0.7 pk-pk ripple
867 30V	30VDC unregulated filtered
INPUT	
867	120VAC, 60Hz
867 30V	220-240VAC, 50/60Hz

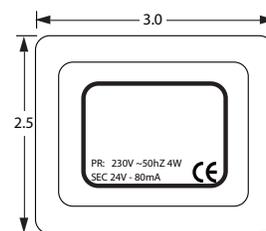


Model 890

The Model 890 offers an enclosure for applications where exposed terminal strips are not allowed. The input cord has the standard European two prong adapter and is 6 feet long. The output cord is 6 feet long #8 gauge wire.

- Standard European Style Adapter
- No Exposed Terminal
- 24 VDC Excitation

SPECIFICATIONS	
Input Voltage	220 to 240VAC
Input Frequency	50/60Hz
Output Voltages	24VDC @ 80mA



Room Pressure Accessories



Model SRAN

Setra's Remote Annunciator (SRAN) allows remote indication of room pressure status at monitoring/nurses station. A Green LED indicates Normal room condition, a Red LED and Audible Alarm signal a breach in room pressure status.

The SRAN is the same size as a standard electrical wall plate (2.75"W x 4.5"H) and fits flush to the wall. It can be mounted to the wall using a standard electrical box.

Under normal conditions the Green LED remains. When an alarmed condition occurs (i.e., room pressure falls outside preset range) a signal is triggered by the SRPM, the Green LED shuts off, the Red LED flashes and the audible alarm sounds. The acknowledge button can be pressed to momentarily turn-off the audible alarm and the Red LED will continue to flash until the alarmed condition is corrected. When the alarmed condition is corrected the annunciator will reset itself. The Green LED will turn-on, the Red LED and audible alarm will shut off.



Model SRAN



Model RPS

Model RPS

The RPS (Room Pressure Snubber) is a stainless steel room static pressure sensor that has the same footprint (2.75"W x 4.5"H) as your standard electrical wall plate. It can be mounted to the wall using a standard electrical box.

Model #: SRAN-RPS

SPECIFICATIONS	
Enclosure	2.75"W x 4.5"H aluminum wall cover plugs
Display Panel	Red and Green LED Indicators, Acknowledgment Switch
External Power Supply	15 VDC, 50 mA Max.
Audible Alarm	0 dBA - 85 dBA measured 4 inches from Annunciator
Time Delay	Adjust at (SRPM) Room Pressure Monitor

Note: The SRAN operates with any Setra room pressure monitor.



Static Pressure Tips and Tubes



Stainless Steel Static Pressure Tubes

The Stainless Steel Static Pressure Tips are used to measure static pressure in ducts or rooms. They are to be connected to differential pressure switches and transmitters. Two static pressure sensors are used in applications where differential pressure is required across a filter or coil. These sensors include a mounting flange with integral rubber gasket and two screws for simplifying mounting on a duct.

Brass Static Pressure Tubes

These sensors are for use with manometers, dial gages, pressure switches and other controllers to pick-up or sense static pressure drop across air filters and cooling coils, blower input and discharge pressures, etc. The angled tips shown have 4" insertion depth. Each has four radially drilled 0.040" sensing holes. No. 242904 and 242905 are suitable for use in low velocity systems or where the need for accuracy is less critical.



PART NUMBER		
242901-04	Static Pressure Sensor	4" straight static pressure tip with flange
242901-06	Static Pressure Sensor	6" straight static pressure tip with flange
242901-08	Static Pressure Sensor	8" straight static pressure tip with flange
242902-04	Static Pressure Tip	For 1/4" metal tubing connection
242902-06	Static Pressure Tip	With 6" insertion depth
242902-08	Static Pressure Tip	With 8" insertion depth
242902-12	Static Pressure Tip	With 12" insertion depth
242903-04	Static Pressure Tip	For 3/16" and 1/8" I.D. plastic or rubber tubing
242903-06	Static Pressure Tip	With 6" insertion depth
242904	Static Pressure Fitting	1/4" metal tubing connection
242905	Static Pressure Fitting	For 3/16" and 1/8" I.D. plastic or rubber tubing



Model 299 Dri-Sense

The NEMA 4X rated Model 299 Dri-Sense pressure transducer enclosure is designed for field termination of pressure transducers.

Desiccant material contained within the cover captures and condenses moisture through surface adsorption, providing an effective barrier against the ingress of humidity into the pressure transducer's sensor. When replacement is necessary the user is alerted through the clearly visible desiccant status window, which changes from blue (dry) to pink (saturated).

With a life expectancy of 6 months, the desiccant can be regenerated by removing the cover and baking it in a 200°F oven for 3 to 4 hours or until it returns to its dry status (blue). To ensure uninterrupted system operation, replacement desiccating covers are available.

The Model 299's case is constructed of sturdy plastic glass-filled polycarbonate (U94AB-0) and is designed with easy access to terminal connections. NEMA 4X (IP65) rated for indoor and outdoor installations. The Model 299 includes integral surge protection to protect the circuit board from a voltage surge up to 2000 volts.



- **Visible Desiccant Status**
- **Easily Replaceable**
- **Replaceable Terminal Interface Circuit Board**
- **Surge Suppression**
- **NEMA 4X Industrial Housing**

ORDERING INFORMATION

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MODEL	ELEC. TERMINATION	INPUT/EXCITATION	OPTIONS
2991 = 2991	G2 PG9 Strain Relief	11 4 to 20mA / 5 to 33 VDC	M1 Pipe Mount Kit
		45 DC Volts / 0 to 6 VDC	
		24 DC Volts / 5 to 33 VDC	



Glossary of Terms

Absolute Pressure — Pressure measured relative to full vacuum. Referred to as pounds per square inch absolute (PSIA).

Atmospheric Pressure — Pressure of the atmosphere at the earth's surface NIST standard atmospheric pressure = 1.01325 bar.

BAR — Unit of pressure (or stress). 1 bar = 750.07 mm of mercury at 0°C, at 45°.

Barometric Pressure — Atmospheric pressure, often measured in millibars, in Hg (inches of mercury), or hectopascals.

Burst Pressure — The maximum pressure that may be applied to the positive pressure port without rupturing the sensing element.

Capacitive Sensing — Detection and measurement of pressure through the change in voltage across a capacitor, one plate of which is a diaphragm which deflects slightly with changes in applied pressure.

Compound Pressure — Pressure measured from full vacuum (-14.7 PSIV) to gauge pressure, referencing atmosphere.

Differential Pressure — Pressure measured relative to a reference pressure. Referred to as pounds per square inch differential (PSID).

FS (Full Span or Full Scale) — The range of measured values over which a transducer is intended to measure, specified by the upper and lower limits. EX: 0 to 100 PSIG, FS is 100 PSIG/0 to 5 VDC, FS is 5 VDC, 800-100 MB FS is 300 MB.

Gauge Pressure — Pressure measured relative to ambient atmospheric pressure. Quantified in pounds per square inch gauge (PSIG).

Manometer — An early instrument for measuring pressure; originally, a U-shaped tube containing liquid (water, oil, or mercury), one limb opening to the gas volume to be measured, the other closed or connected to a registering or recording instrument. Modern versions utilize diaphragms, bellows or other devices for sensing relative pressures.

Millibar (mbar) — Unit of pressure generally used in barometric measurements: 1 mbar \pm 100 N/m² or 10 = dyn/cm².

Newton (N) — The unit of force in the International System of Units (SI); the force required to impart an acceleration of 1m/sec² to a mass of 1 kg.

Pascal (Pa) — The standard unit of pressure (or stress) in the SI system; equal to 1 newton per square meter (1 N/m²)

P/I — Term common to process industries meaning pressure-in/current-out. (3-15 PSIG Input to 4 to 20 mA DC Output).

Pressure Transducer — An electromechanical device for translating fluid pressure values into voltages across a high-impedance (5k ohms or greater) load.

Pressure Transmitter — An electromechanical device for translating fluid pressure values into currents (generally 4 to 20 mA) into a low-impedance load.

Proof Pressure — The maximum pressure that may be applied without changing performance beyond specifications (typically, 0.5% FS zero shift).

PSIA — Pounds per square inch absolute.

PSIV — Pounds per square inch vacuum.

Range — The spread between the maximum and minimum pressures between which the transducer has been designed to operate.

Span — The algebraic difference between the limits of the range. Ex: 0.1 to 5.1 Volts DC; span is 5 VDC. Sometimes used to designate full scale output; i.e. 5 VDC.

Vacuum — Generally refers to pressures between 0 and atmospheric; often measured in 0-30 in Hg Vacuum. Referred to as pounds per square inch vacuum (PSIV).

Relative Humidity — Relative humidity is a measurement of water in the air at a given temperature.

Relative Humidity Accuracy — RH accuracy is the error between the actual RH and the RH indicated by the humidity sensor,

Relative Humidity Repeatability — Repeatability is the ability of the sensor to reproduce the output when moving in one direction, either from low to high RH or high to low.

RH Sensor Interchangeability — Interchangeability is the %RH error introduced when replacing a sensor tip with a new sensor tip.

RH Long-Term Stability — Long-term stability is the %RH error of the sensor over time.

RH Sensor Recovery from Condensation — Recovery after exposure to condensing conditions. Sensor should self-recover after the moisture on the surface evaporates.

RH Sensor Recovery from Chemical and Physical Contaminants — Sensing surface coated with a micro-porous metal electrode, allowing the polymer to absorb moisture while protecting it from contamination and exposure to condensation

Current Sensor — A Current Sensor is a device that detects electrical current (AC or DC) in a wire, and generates a signal proportional to it.

HVAC

2017 PRODUCT CATALOG



CELEBRATING 50 YEARS

Founded in 1967, Setra Systems, Inc. is a leading designer and manufacturer of pressure, acceleration, and weight sensing devices. Setra's founders, Dr. Y.T. Li and Dr. S.Y. Lee, were co-developers of the variable capacitance transduction principle, the innovative force sensing technology which is the heart of Setra's products.



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Since our founding, we have been proudly producing all of our transducers for sale in the United States at our 100,000 sq. ft. Boxborough, MA facility.



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Setra is an ISO 9001-2008 certified manufacturer with robust and mature processes at work to continually optimize team performance. From ideation and design, to validation and test, to volume production, quality is built in.

At each stage in Setra's production process there are built-in verifications to ensure that the products being supplied to our customers are of the highest quality. The Setra team has created numerous innovative manufacturing techniques and tools to catch, track and prevent future failures from occurring. Any newly discovered issues learned from the field, engineering labs, validation testing and even from the production line are reviewed on a regular basis and corrective actions are implemented quickly and efficiently to exceed our customers' expectations.



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