



# RADIATION-TOLERANT MV/V PRESSURE TRANSDUCER

Whether the radiation environment is in power generation, material storage, or on deep space missions, the **SST 643-RT Series** pressure transducer's radiation-tolerant mV/V output design is ideal for use where budget, mass, or available space limit the use of larger, more expensive radiation hardened products. The **SST 643-RT Series** provides the highest level of radiation tolerance through detailed material selection to mitigate the degrading effects of radiation on traditional bonded foil sensor materials. The **SST 643-RT** offers all of the same performance of Sigma-Netics' **SST 64X Series** of pressure transducers with the added reliability required to perform and survive high TID environments.

With the option to fully customize all aspects of this sensor, the **SST 643-RT** is the best choice for rate control thrusters, propulsion systems, nuclear reactors, waste storage, etc. The **SST 643-RT Series** offers the shortest lead times of any other radiation tolerant sensor.

## FEATURES

- Vibration and shock resistant
- Radiation-tolerant
- Low mass
- 1.0" OD
- Available in 15-5 PH SS, Titanium and Inconel
- Full thermal/pressure characterization STD

## APPLICATIONS

- Satellite propulsion systems
- ECLSS
- Rate control/altitude control thrusters
- Second stage propulsion systems
- Spent fuel storage tank pressure
- Reactor pressure measurement

## MECHANICAL CHARACTERISTICS

Standard Ranges	0-25, 30, 50, 75, 100, 250, 500, 750, 1000, 1500, 2500, 3000, 5000, 7500, 10000 PSIA / PSIS
Proof Pressure	1.8x range or 500 PSI (whichever is greater)
Burst Pressure	2.5x range
Operating Media	Fluids and gases compatible with 15-5 stainless steel (Inconel and other materials optional)
Enclosure	Body of stainless steel
Pressure Fitting	7/16"-20 per AS4395E4 / MS33656-4 (Male) (standard)
	1" x 1/4" Weld Tube (no charge option)
	7/16"-20 per AS5202E4 / MS33649-4 (Female) (no charge option)
	<i>(For ranges 15,000 psi through 40,000 psi) AE F250-C, 9/16"-18 UNF, or equivalent (standard)</i> <i>For additional pressure fittings, please consult factory</i>
Natural Frequency of Sensing Diaphragm	2 kHz at 50 psi to 347 kHz at 40,000 psi
Acceleration Response	Less than ±0.15% FS/G at 50 psi to ±0.0015% FS/G at 40,000 psi
Mass	Less than 4.0 oz.

## ELECTRICAL CHARACTERISTICS

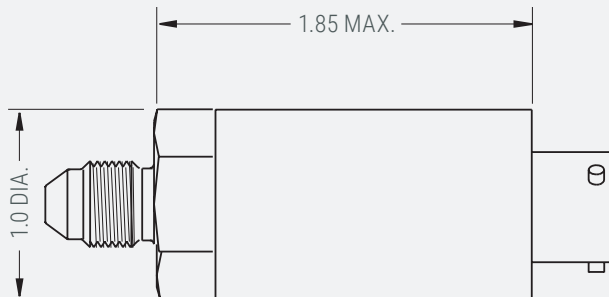
### ANALOG OUTPUTS

Output	3mV/V $\pm$ 0.015m/V
Excitation	10 VDC (standard), 15 VDC Max.
Internal Shunt Calibration	80% FSO (-EXC to -SIG)

### COMMON

Insulation Resistance	> 100 megohms at 50 Vdc at 70°F
Electrical Termination	MIL-C-26482 Class, No. 3113H-10-6P, or 18" integral cable
	1/2" NPT Conduit Fitting (\$50 option)
	<i>Optional electrical terminations available</i>
Input/Output Resistance	5000 Ohm $\pm$ 75 Ohm at 70°F (standard)
	350 Ohm $\pm$ 35 Ohm at 70°F (optional)

## DIMENSIONS (INCHES)



## ENVIRONMENTAL CHARACTERISTICS

Compensated Temperature Range	-65°F to +250°F (Process Temperature)
	<i>Options available</i>
Operating Temperature Range	-65°F to +250°F (Ambient and Process Temperature)
	<i>Options available</i>

## PERFORMANCE

### STATIC ACCURACY

Linearity:  $\pm$ 0.20% FSO  
 Hysteresis:  $\pm$ 0.20% FSO  
 Repeatability:  $\pm$ 0.10% FSO

### RESOLUTION

Analog: Infinite

### THERMAL ZERO SHIFT

<  $\pm$ 0.005% FSO/°F (standard)

### THERMAL SPAN SHIFT

<  $\pm$ 0.005% FSO/°F (standard)

### ZERO BALANCE

$\pm$ 0.25% FSO

### SPAN

$\pm$ 1.0% FSO at 70°F <  $\pm$ 0.25% FSO

### RELIABILITY

#### Electronics Classification

Class S per GSFC INST-EEE-002

#### Radiation Tolerance

10 Mrad TID

#### MTBF per MIL-STD-271

Greater than 500,000 hours in service

#### Mechanical

Vibe: > 30grms

Shock: > 5000g at 10kHz

### AVAILABLE OPTIONS

- Custom ATP
- Program management
- NDE traceability
- Customizable non-standard pressure ranges
- Custom thermal compensation ranges (-320°F to 400°F)
- Internal thermal measurement