

# Model HPT-100

## Ultra High Purity Transducers



### Description

As evolving semiconductor manufacturing environments have placed ever greater challenges on the compressed gas distribution system, the pressure sensing components have become a key link in the information and control chain.

AMETEK has applied its thirty years of experience in pressure sensing technology to raise the standards for transducers for the industry's UHP applications.

This family of flow-through and single-ended transducers solves problems that the industry's facilities maintenance technicians, gas suppliers and process engineers have lived with for many years.

#### Issues such as:

- Instability and output errors due to Joule-Thompson cooling, operating temperature sensitivity, repeatability and hysteresis.
- RFI/EMI induced interferences
- Signal processing circuit failures
- Coupling-induced stress errors during installation

AMETEK utilizes the most stable sensor available for UHP transducers, sputtered METAL THIN FILM

technology. The gas wetted surfaces are reduced sulfur 316L, with a passivated 7-10RA surface finish and Hastelloy® diaphragm, and are certified to be free of all detectable contaminants. The circuits are isolated from external interferences with RFI/EMI filters and a power limiting circuit which has been agency approved to meet Class I, Div. 1 intrinsic safety standards. HPT-100 transducers are also NEMA 4x rated to meet the demanding needs of outdoor installations.

AMETEK supplies the product through its global distribution partner network so each operating facility will receive personal support throughout the life of the gas distribution system.

The product is backed by the financial stability of a \$1 billion company which is committed to gaining a leadership position in this exciting industry.

The HPT-100 is a series of pressure transmitters specifically designed to meet the ultra-clean and ultra-high stability and reliability requirements of the semiconductor industry. Because most of the process gases to be measured by the HPT-100 are highly reactive and pose toxic threats to the facility personnel, the manufacturing tolerances and operating specifications are very strict.

Many of these units will be permanently welded into the gas distribution system, so the design includes external access to the electronic circuitry by qualified repair personnel and zero and span pots for field calibration.

An internal diagnostics circuit is standard on all HPT-100 transducers. This gives a quick check of zero and span to determine if the unit is functioning properly.

The HPT-100F is a flow-through style transmitter while the HPT-100S is a single-ended style. Each style is available with a variety of tube stub and face seal connections. Electrical connection is via either a Bendix® compatible 4-pin connector or a flying lead pigtail. The small size and light weight of the HPT-100 eliminates the need for bulky mounting hardware and mechanical supports.

All HPT-100 units are labeled with the C.E. mark certifying compliance with European standards for the RFI/EMI immunity.

HPT-100 units with the suffix "1" in the model number are labeled with agency approval from the Canadian

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Standards Association (CSA) and L.C.I.E. (GENELEC) for Intrinsically Safe Systems for operation in hazardous locations when used with an approved barrier.

HPT-100 units with the suffix "2" in the model number are labeled with CSA approval for operation in Division 2 Locations.

HPT-100 units with the electrical connection suffix "N", "C", or "P" are rated NEMA 4X Enclosure by CSA. Electrical connection suffix "N" and "C" are recommended for outdoor use.

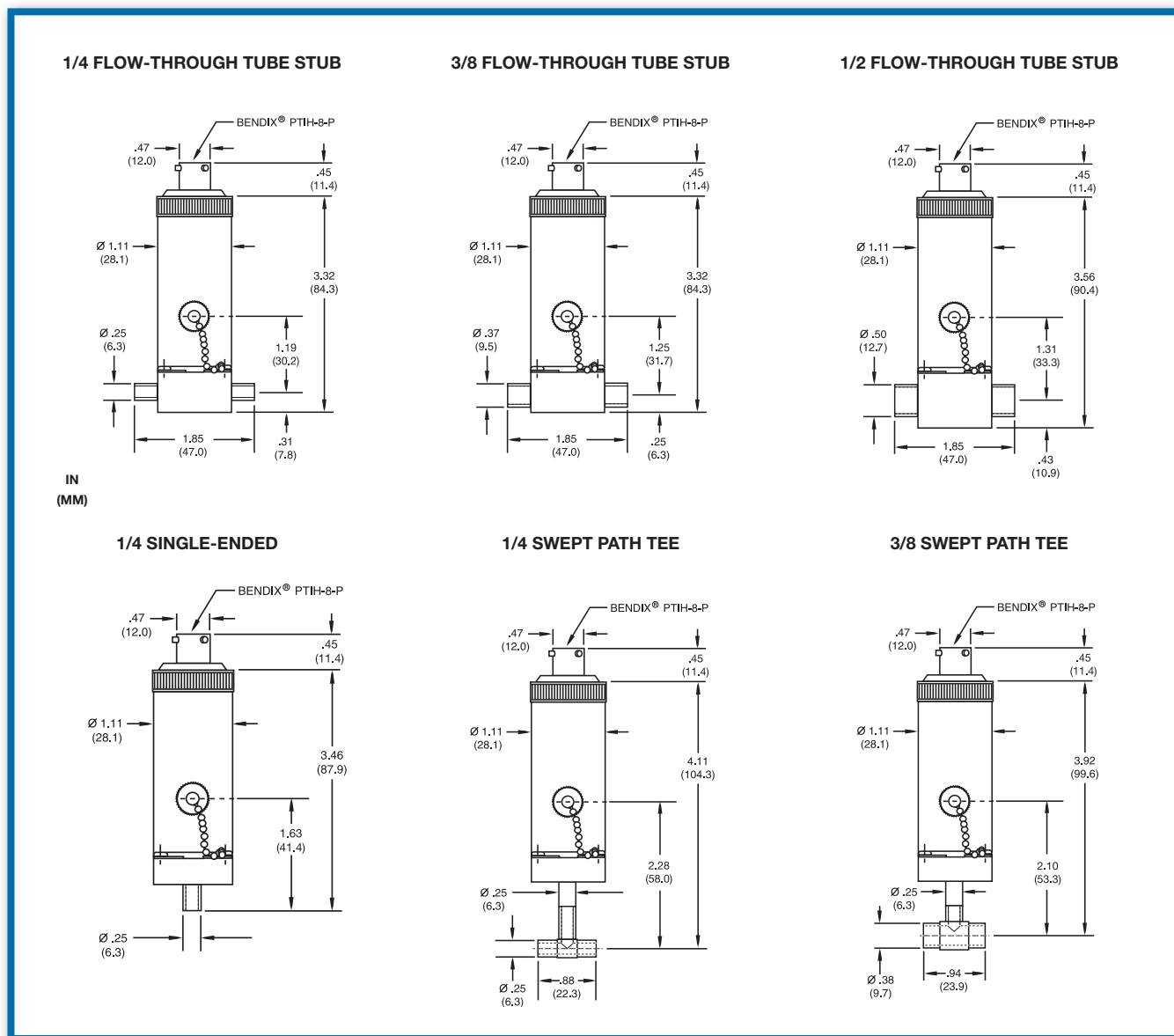
The HPT-100 Series transmitters are packaged in a Class 100 cleanroom environment. The units are carefully double-bagged within a clean, dry, nitrogen environment to maintain the UHP condition during shipment.

## Specifications

### Functional Specifications

- **Service:** Liquid, gas or vapor
- **Available Standard Ranges:** 100 psig, 250 psig, 1000 psig, 2000 psig, 3000 psig. Alternate ranges, including bar also available. Please inquire.
- **Output:** 4 to 20 mA, 2 wire, current limited; 0 to 5 VDC
- **Power Supply:** 12 to 30 VDC with reverse polarity protection
- **Loop resistance:** 0 ohms at 12 VDC; 900 ohms at 30 VDC, (4 to 20 mA only)
- **Output Loading:** >50 Kohm (voltage output only)

## Dimensions

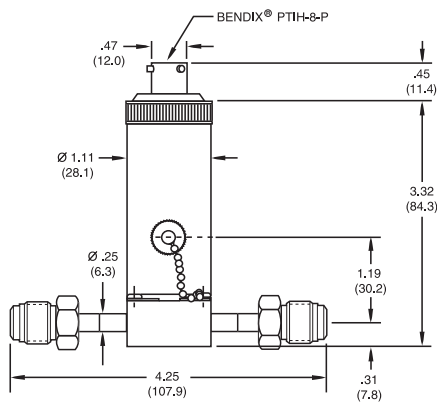


- **Span/Zero Adjustment:**  $\pm 5\%$  of full scale
- **Temperature Limits:**  
Operating:  $-25^{\circ}\text{C}$  to  $85^{\circ}\text{C}$   
Storage:  $-40^{\circ}\text{C}$  to  $85^{\circ}\text{C}$
- **Humidity:** 0 to 95% RH, pigtail model\*
- **Overrange:** 150% of full scale
- **Burst Pressure:** 400% of full scale
- **Hazardous Locations:**  
Class I, Division 1 Intrinsic Safety/Non-Incendive (with barrier)  
Class I, Division 2 (protective enclosure required on all but electrical connection option "C")
- **Dielectric Withstand:** 100 volt DC  
\*Atmospheric Reference: Transmitter vents through cable.

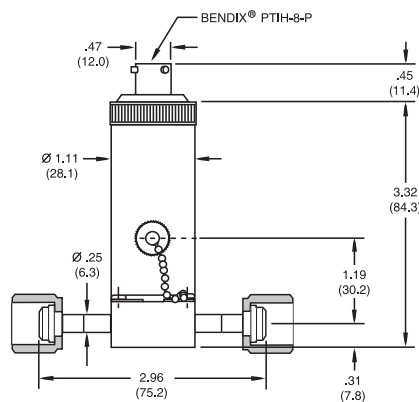
## Performance

- **Accuracy:**  $\pm 0.25\%$  of full scale (BFSL) includes linearity, hysteresis, and repeatability
- **Response Time:** Time constant of less than 20 milliseconds
- **Stability:**  $\pm 0.125\%$  of full scale for 6 months under reference conditions
- **Temperature Effects:**  
Compensated:  $0^{\circ}\text{C}$  to  $50^{\circ}\text{C}$   
Zero:  $\pm 1.0\%*$  of full scale within compensated range  
Span:  $\pm 1.0\%*$  of full scale within compensated range
- **Electromagnetic Compatibility:** CE Marked Per EMC Directive: 89/336/EEC Semi E33-94  
\* $\pm 0.5\%$  for optional electrical connection "C" and "N"

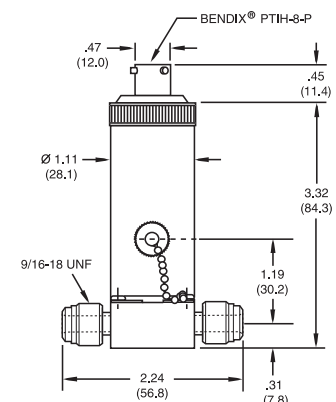
1/4 FLOW-THROUGH SWIVEL MALE



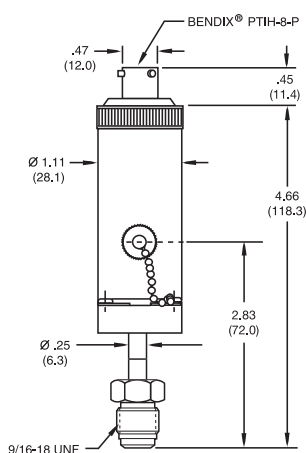
1/4 FLOW-THROUGH SWIVEL FEMALE



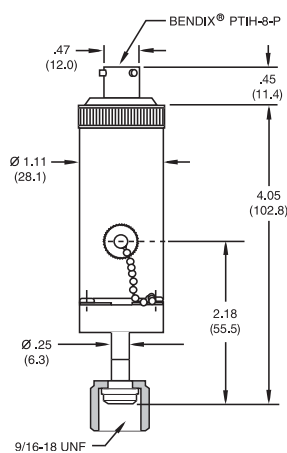
1/4 FLOW-THROUGH FIXED MALE



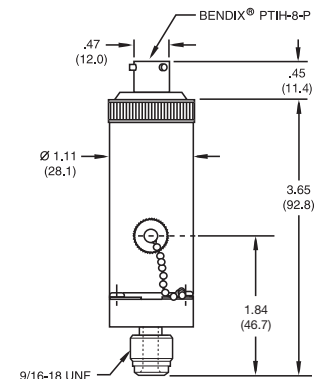
1/4 SINGLE-ENDED SWIVEL MALE



1/4 SINGLE-ENDED SWIVEL FEMALE



1/4 SINGLE-ENDED FIXED MALE



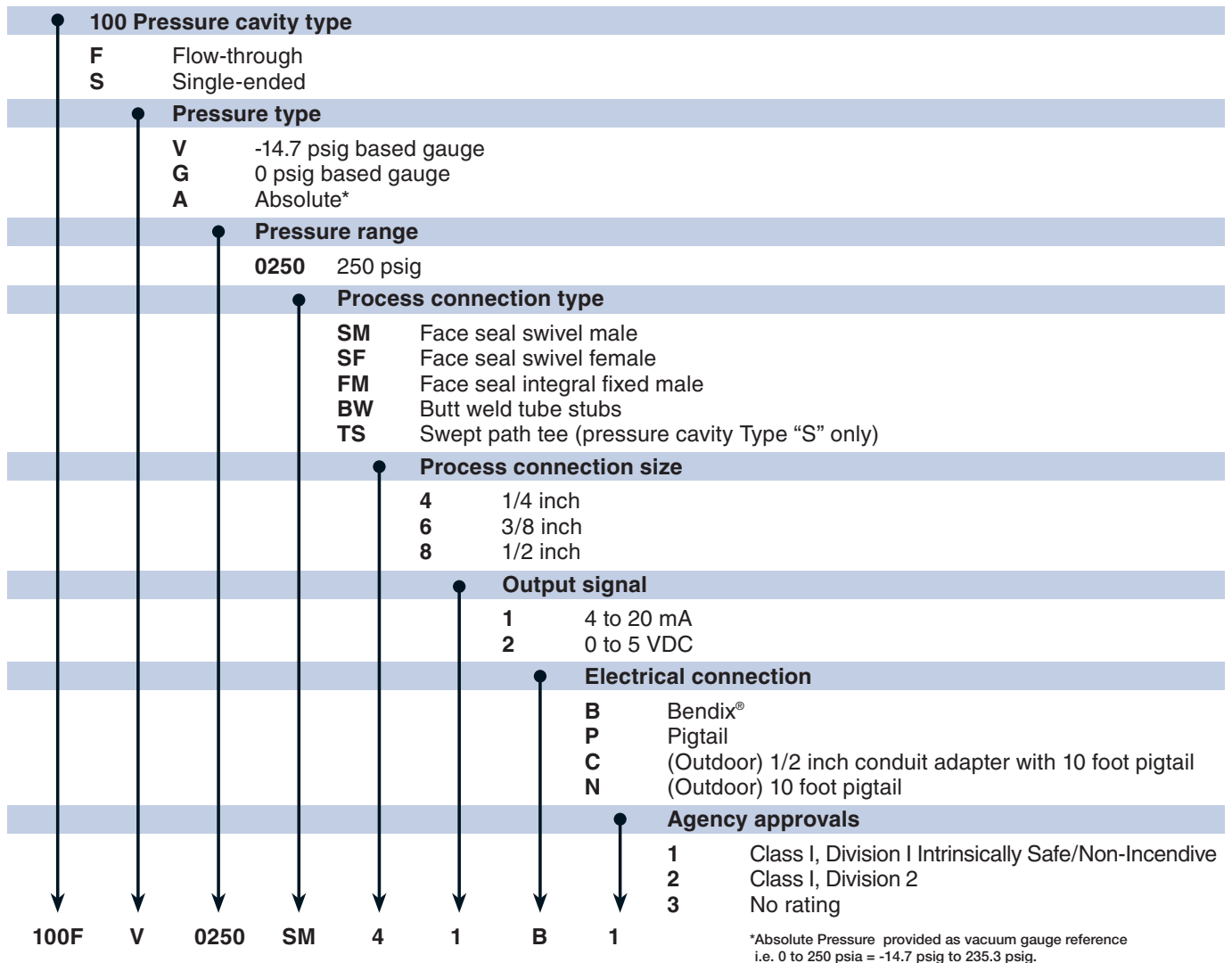
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## Physical

- **Sensing Element:** Metal thin film sensor
- **Wetted Surfaces:** Reduced-sulfur 316L and Hastelloy C22
- **Wetted Surfaces Finish:** Electropolished to 7-10 micro inch (Ra) maximum
- **Housing Material:** 300 series stainless steel
- **Output Connector:** Bendix style PTIH-8-4P® or pigtail (standard length = 10 feet, custom available)
- **Pressure Connections:** 1/4, 3/8, 1/2 inch tube stub or face seal fitting. High flow face seal available.

- **Dimensions:** Conforms to existing installations (reference outline dimensions)
- **Cleaning/Handling:** Per AMETEK Cleaning Specification MS-406-L, class 100 clean room, DI rinse, double bagged
- **Label:** Includes AMETEK logo, pressure range, input and output, date, serialization, regulatory and CE markings, and zero/span and potentiometer locator.
- **Warranty:** 3 years from date of installation or date of shipment
- **Internal Diagnostics Shunt:** Used for go/no go checks and emergency field calibration

## Model Numbering:



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