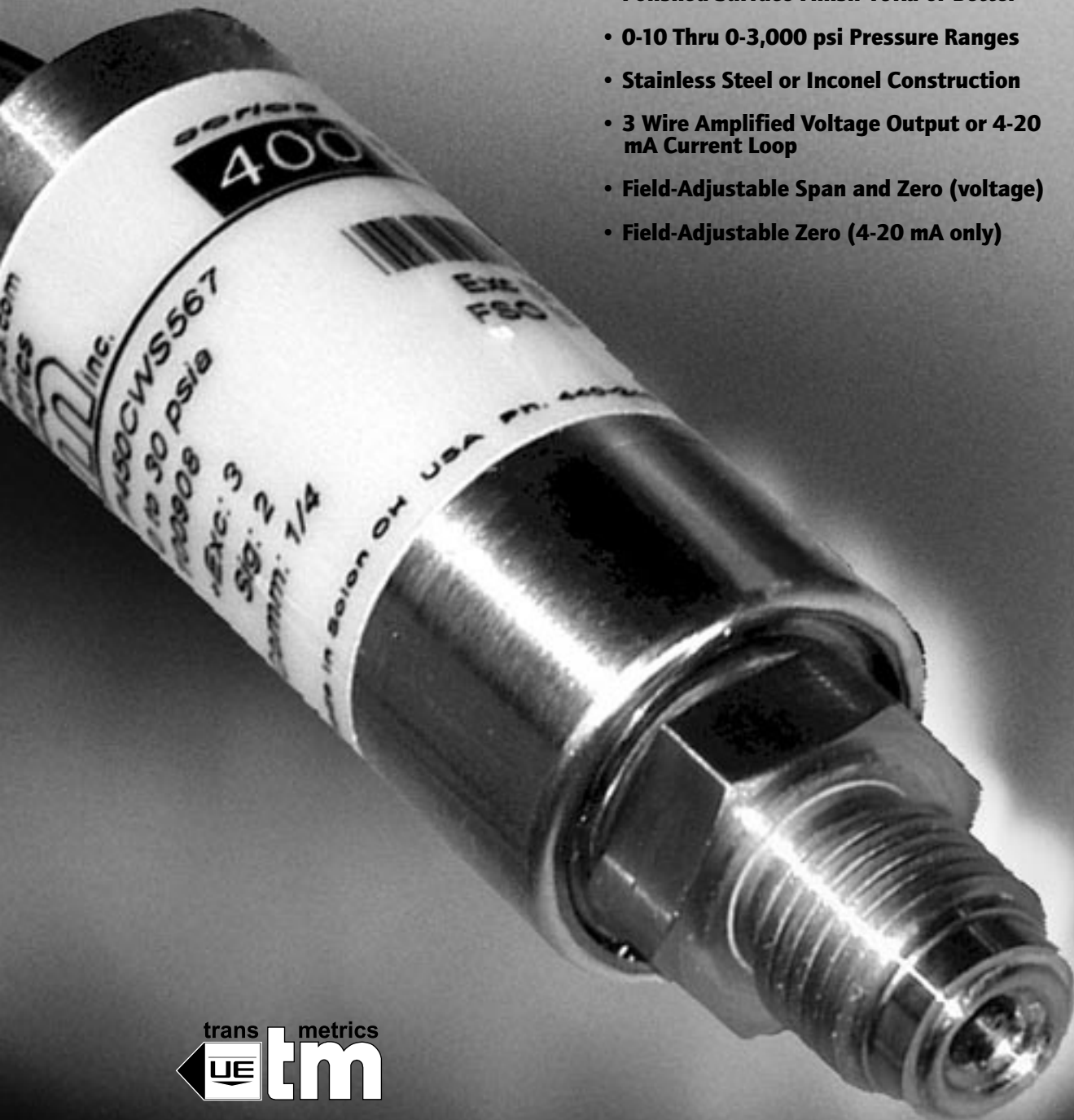


HIGH PURITY GAS PRESSURE TRANSDUCER

FEATURES

- **Reliable Bonded Foil Strain Gage Technology**
- **Integral Male or Female VCR® Connection**
- **Polished Surface Finish 10Ra or Better**
- **0-10 Thru 0-3,000 psi Pressure Ranges**
- **Stainless Steel or Inconel Construction**
- **3 Wire Amplified Voltage Output or 4-20 mA Current Loop**
- **Field-Adjustable Span and Zero (voltage)**
- **Field-Adjustable Zero (4-20 mA only)**





OVERVIEW

The P400 series pressure transducer is designed for high purity gas applications and for a wide variety of industrial type applications requiring a high output signal combined with high reliability, durability and accuracy. They are designed to withstand temperature, shock and vibration.

FEATURES

- Gage, sealed gage or absolute pressure reference
- EMI/RFI, reverse polarity protection
- 3,000 psi burst protection for absolute units 50 psi and below
- CE mark (amplified voltage units only)



APPLICATIONS

- Semiconductor industry
- Ion implant machines
- Clean rooms



TECHNOLOGY

The P400 series features bonded foil strain gage technology, considered one of the most durable and abuse resistant technologies available today. The bonded foil strain gage transducer measures pressure when a fluid is introduced into a simple low volume chamber (port), where it acts against the diaphragm. Proportional to the applied pressure, the resistance change is conditioned by internal circuit devices to produce the transducer's output.



SPECIFICATIONS

MODEL:	P450
PRESSURE RANGE:	0-10 psi thru 0-3000 psi 0-,7 bar thru 0-200 bar
OUTPUT RANGE:	0-5 VDC $\pm 1.0\%$ (Type C) 1-5 VDC $\pm 1.0\%$ (Type D) 4-20 mA $\pm 1.0\%$ (Type T)
ZERO BALANCE: (Field-Adjustable $\pm 5\%$ typical)	$\pm 1.0\%$
STATIC ERROR BAND: (BSL - Nonlinearity, Hysteresis, and Nonrepeatability combined) BSL - Best Straight Line	$\pm 0.50\%$ FSO
NONREPEATABILITY:	$\pm 0.1\%$ FSO (≤ 50 psi) $\pm 0.2\%$ FSO (> 50 psi)
THERMAL EFFECTS:	$\pm 0.02\%$ FSO/ $^{\circ}$ F $\pm 0.036\%$ / $^{\circ}$ C
OPERATING TEMPERATURE RANGE:	-40 $^{\circ}$ F to 185 $^{\circ}$ F -40 $^{\circ}$ C to 85 $^{\circ}$ C
COMPENSATED TEMPERATURE RANGE:	0 $^{\circ}$ F to 160 $^{\circ}$ F -20 $^{\circ}$ C to 70 $^{\circ}$ C
MAX. SAFE EXPOSURE TEMP.:	+250 $^{\circ}$ F, +125 $^{\circ}$ C
EMI FILTERS:	10 MHz 5dB, 100 MHz 20 dB, 10 GHz 40dB (Min. Insertion Loss)
INTERNAL SURFACES:	Polished surface finish is 10 Ra or better
SECONDARY CONTAINMENT:	For Absolute version only and 50 psi and below, 3,000 psi burst protection

AS SHIPPED:

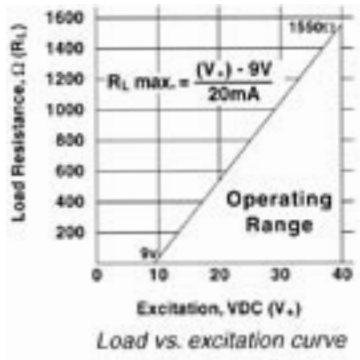
Oxygen cleaned
 Certificate of calibration
 NIST traceable

ELECTRICAL PROTECTION:

Reverse Polarity on Input
 Overvoltage Protection
 Clamping Diodes on Signal

EXCITATION:

9 to 28 VDC (Type C, D)
 9 to 40 VDC at the transmitter (Type T)



**Important Note: T type circuit
 4-20 mA has an overscale limit
 of 34mA**

CURRENT CONSUMPTION:

13 mA (Type C, D) (typical)
 4-20 mA (Type T)

RESOLUTION:

Continuous

RISE TIME:

Less than 1 ms typical (10-90%)

PROOF PRESSURE:

1.5 times rated pressure

BURST PRESSURE:

5 times rated pressure

MATERIAL (sensor/housing):

Above 50 psi: 316L/300 series S.S.
 50 psi and below: 316L, Inconel/300 series S.S.

WEIGHT:

Approximately 3.5 oz. or 100 g

IDENTIFICATION:

Model, range, serial #, connections, manufacturer
 & country of origin are displayed on the case.
 Private label available



MODEL CHART

The chart below will assist you in selecting a transducer configuration.

Model Selections	
1	Series / Accuracy
P450	P400 Series with $\pm 0.5\%$ SEB BSL
2	Circuit Type
C	0-5 VDC Signal Output (Single Ended)
D	1-5 VDC Signal Output
T	4-20mA or 12mA ± 8 mA Signal Output
3	Pressure Connection
V	1/4 in. VCR™ fitting (female)
W	1/4 in. VCR™ fitting (male)
4	Electrical Connection
A	PTIH-10-6P (mate #80002, sold separately)
B	PCIH-10-6P (mate #80001, sold separately)
C	Cable 1 meter 28 AWG PVC
D	Cable 1 meter 24 AWG Teflon®
F	Flying Leads 1 meter 24 AWG Teflon®
I	Mini-Hirschmann (DIN 43650-C, included)
5	Common Options / Modifications
004	Shunt Calibration (N/A on the T Circuit)
005	Shunt Calibration (80% \pm 1%) (N/A on the T Circuit)
009	2.5 - 12.5 VDC FSO (D circuit)
017	0-10 VDC FSO (C Circuit)
066	0-10 VDC FSO + 80% shunt (N/A on the T Circuit)
178	1 - 6 VDC FSO (D circuit)
###	Additional cable lengths / types
###	Special wiring (specify)

Pressure Selections	
6	Pressure Range
min.	0 - 10 psi (0-0,7 bar)
< >	we accommodate any range in between
max.	0 - 3,000 psi (0 - 200 bar)
compound and vacuum available	
7	Units [Available Pressure Range]
psi	25 psi thru 3,000 psi
bar	0,7 bar thru 200 bar
kg/cm ²	0,7 kg/cm ² thru 200 kg/cm ²
KPa	70 KPa thru 20,650 KPa
in Hg	20 in Hg thru 6,000 in Hg
other	consult factory
8	Pressure Reference
gage	Reference to local atmospheric pressure
absolute	Reference to a vacuum
sealed	Reference to standard atmospheric pressure at sea level

SEB: Static Error Band
BSL: Best Straight Line

Teflon® is a registered trademark of E.I. Dupont.
VCR™ Swagelok Company.

HOW TO ORDER

Trans Metrics' P400 series model numbers are constructed as a series of numbers and letters that identify the accuracy, electrical circuit, pressure connection, electrical connection, and any options or features which may be unique to a particular pressure transducer.

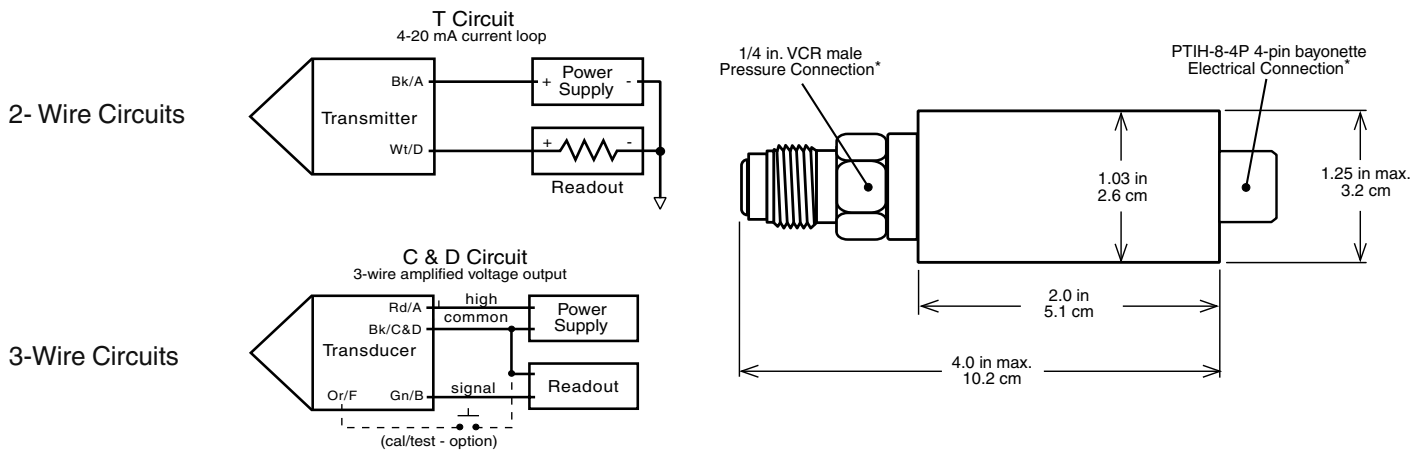
The model number below features **1** a P400 series pressure transducer with P450 specifications, **2** 0-5 VDC output, **3** 1/4 in VCR male pressure connection and **4** a PTIH-10-6P electrical connection. Any other options selected **5** would be assigned a three (3) digit number which would be added to the end of the model number.

Pressure selections should be specified including the **6** pressure range, **7** units and **8** pressure reference.

Example:

Model	C	W	A	005	Range	psi	g
P450					10		
1	2	3	4	5	6	7	8
Series/ Accuracy	Circuit Type	Pressure Connection	Electrical Connection	Options	Pressure Range	Units	Pressure Reference

CIRCUIT AND DIMENSIONAL DRAWINGS



RECOMMENDED PRACTICES AND WARNINGS

Trans Metrics recommends careful consideration of the following factors when specifying and installing Trans Metrics pressure units. Before installing a unit, the Installation and Maintenance instructions provided with unit must be read and understood.

- To avoid damaging unit, proof pressure and max. temperature limits stated in literature and on nameplates must never be exceeded, even by surges in the system. Operation of the unit up to proof pressure or max. temperature is acceptable on a limited basis (i.e., start-up, testing) but continuous operation must be restricted to the designated adjustable range. Excessive cycling at proof pressure or maximum temperature limits could reduce sensor life.
- A back-up unit is necessary for applications where damage to a primary unit could endanger life, limb or property. A high or low limit switch is necessary for applications where dangerous runaway conditions could result.
- Install unit where shock, vibration and ambient temperature fluctuations will not damage unit or affect operation. Orient unit so that moisture does not enter the enclosure via the electrical connection.
- Unit must not be altered or modified after shipment. Consult Trans Metrics if modification is necessary.
- Monitor operation to observe warning signs of possible damage to unit. Check unit immediately.
- Preventative maintenance and periodic testing is necessary for critical applications where damage could endanger property or personnel.
- For all applications, a factory set unit should be tested before use.
- Electrical ratings stated in literature and on nameplate must not be exceeded. Wire unit according to local and national electrical codes, using wire size recommended in installation sheet.
- Use only factory authorized replacement parts and procedures.
- Do not mount unit in ambient temp. exceeding published limits.

LIMITED WARRANTY OF REPAIR AND REPLACEMENT

Seller warrants that the product hereby purchased is, upon delivery, free from defects in material and workmanship and that any such product which is found to be defective in such workmanship or material will be repaired or replaced by Seller (F.O.B. Trans Metrics); provided, however, that this warranty applies only to equipment found to be so defective within a period of 12 months from the date of manufacture by the Seller. Seller shall not be obligated under this warranty for alleged defects which examination discloses are due to tampering, misuse, neglect, improper storage, and in any case where products are disassembled by anyone other than authorized Seller's representatives.

EXCEPT FOR THE LIMITED WARRANTY OF REPAIR AND REPLACEMENT STATED ABOVE, SELLER DISCLAIMS ALL WARRANTIES WHATSOEVER WITH RESPECT TO THE PRODUCT, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

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SELLER'S LIABILITY TO BUYER FOR ANY LOSS OR CLAIM, INCLUDING LIABILITY INCURRED IN CONNECTION WITH (I) BREACH OF ANY WARRANTY WHATSOEVER EXPRESSED OR IMPLIED, (II) A BREACH OF CONTRACT, (III) A NEGLIGENT ACT OR ACTS (OR NEGLIGENT FAILURE TO ACT) COMMITTED BY SELLER, OR (IV) AN ACT FOR WHICH STRICT LIABILITY WILL BE IMPUTED TO SELLER IS LIMITED TO THE LIMITED WARRANTY OF REPAIR AND REPLACEMENT STATED HEREIN. IN NO EVENT SHALL THE SELLER BE LIABLE FOR ANY SPECIAL, INDIRECT, CONSEQUENTIAL OR OTHER DAMAGES OF A LIKE GENERAL NATURE, INCLUDING, WITHOUT LIMITATION, LOSS OF PROFITS OR PRODUCTION, OR LOSS OR EXPENSES OF ANY NATURE INCURRED BY THE BUYER OR ANY THIRD PARTY.

Trans Metrics specifications subject to change without notice.

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