

VERY HIGH DIFFERENTIAL PRESSURE TRANSDUCER/TRANSMITTER

Models 114, 214, 314

WORKING & OPERATION OF MODEL 14

Most differential pressure transducers have a sensor in the center of two passive diaphragms, which are normally only between .001 and .004 of an inch thick. An oil fill is used to transfer the pressure from the passive diaphragms to the sensor. As the sensor is cycled in the positive and negative direction, in the course of normal operation, there may be a slight zero shift due to a change in the sensor's neutral axis. These diaphragms and oil fill can also influence the overall performance of the unit by damping pressure spikes and causing pressure shifts.

The Model 14 was designed to solve these problems. This model connects two precisely matched sensors to a common electronic package which subtracts and then amplifies their outputs to provide a differential signal. If required, additional electronics can be added to the unit to provide signals proportional to either or both of the line pressures, as well.

Each sensor of the Model 14 is cycled in only one direction, which helps achieve a greater zero stability. Also, since no oil fill is required, there is no damping of response time, and temperature effects are minimized. In addition, because the sensing diaphragms are much thicker than the above mentioned passive diaphragms, this unit can be used in high cyclic or more rugged applications.



GENERAL PURPOSE

FEATURES:


- Rugged
- No fill
- Intrinsically Safe

PRESSURE RANGES:

- From 500 to 20,000 psid
(See ordering guide.)

ACCURACY:

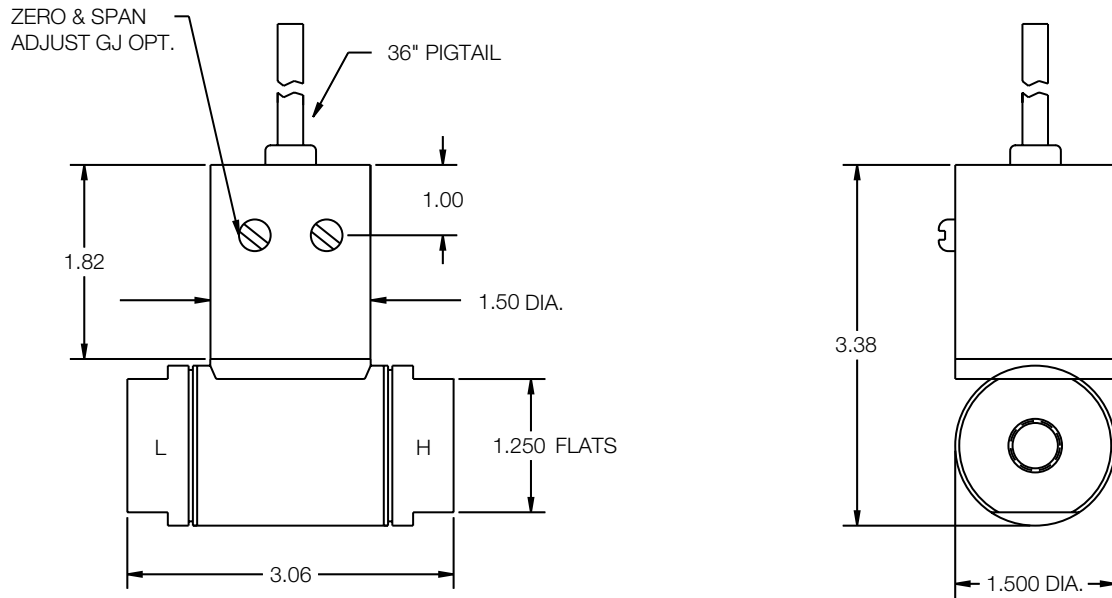
- From $\pm 1.0\%$ FSO (RSS) to $\pm 0.2\%$ FSO (RSS)
(See specifications & ordering guide.)

MODEL	OUTPUT @ 70°F	EXCITATION
114	3.0 mV/V $\pm 2\%$ FSO	3.5-15 Vdc
214	5.0 Vdc $\pm 2\%$ FSO	9.0 - 40 Vdc
314	16.0 (4-20 mA) $\pm 2\%$ FSO	9.0 - 36 Vdc
314Z	4-20 mA $\pm 2\%$ FSO	9-36 Vdc
	Intrinsically Safe Class I, II, III, Division I, II Groups A, B, C, D, E, F, & G.	

OUTLINE



Some options will affect dimensions.
Consult factory if important. Consult
factory for Intrinsically Safe approved
options.



WIRING CODE

	114	214	314
A/1 Red	+ Excit.	+ Excit.	+ Excit./Signal
B/2 Green	+ Signal	+ Signal	NC
C/3 White	- Signal	NC	NC
D/4 Black	- Excit.	- Excit./Signals	- Excit./Signal
E/5 Blue	NC Option GH	NC Option GH	NC Option GH
F/6 Brown	NC Option GH	NC Option GH	NC Option GH
Shield	Open	Open	Open

SPECIFICATIONS

Unless otherwise stated, these specifications are the standards to which the units are normally constructed. Alterations may be easily and readily accomplished by the standard modification code or by discussion with the factory. We invite your inquiry.

Full Scale Differential Pressure Ranges	±500, 600, 750, 1000, 1500, 2000, 2500, 3000, 5000, 7500, 10K, 15K, 20K psid
Base Pressure	5 times differential pressure range or 22,500 psi, whichever is less
Materials in contact with Measured fluids	316 and 15-5 PH Stainless Steel.
Accuracy	(Static error band includes non-linearity, hysteresis, non-repeatability)
Series A	±1.0% FSO (RSS)
Series B	±0.5% FSO (RSS)
Series C	±0.2% FSO (RSS)
Zero Shift with Base Pressure	Less than ±1.0% FSO/1000 psid
Temperature Limits	
Compensated	0°F to +180°F
Operating	-20°F to +190°F
Storage	-65°F to +250°F
Temperature Compensation	
Zero	±2.0% FSO/100°F
Span	±2.0% FSO/100°F
Excitation Voltage	
Model 114	3.5 - 15 Vdc
Model 214	9.0 - 40 Vdc
Model 314	9.0 - 36 Vdc
Full Scale Output (Span) High Side (@ 0 psid)	
Model 114	3.0 mV/V ±2% @ 70°F
Model 214	5.0 Vdc ±2% @ 70°F
Model 314	16.0 (4-20mA) ±2% @ 70°F
Zero Balance (@ 0 psid)	
Model 114	0.0 mV/V ±5% FSO @ 70°F
Model 214	0.0 Vdc ±5% FSO @ 70°F
Model 314	4.0 mA ±5% FSO @ 70°F
Range Calibration Signal	Shunt resistance value provided on Calibration Card for 100% FSO. (Std. on Model 114)
Proof Pressure	5 times rated Differential Pressure Range, or 22,500 psi, whichever is less
Burst Pressure	10 times rated Differential Pressure Range, or 22,500 psi, whichever is less
Pressure Connections	1/4" NPT (F)
Electrical Connections	6 conductor cable, 24 AWG 36" long, Standard Optional Connectors available
Enclosure Material	316 Stainless Steel
Identification	Imprinted Stainless Steel nameplate welded to body

* See modifications on ordering guide.

ORDERING GUIDE

Ordering: Specify model, and pressure range and indicate modifications or accessories required. Consult factory for Intrinsically Safe approved options.

Use the following codes to identify desired item.

MODEL	SERIES	RANGE	OPTIONS			
•	—	•	—	•	—	• / • / •

Example: 314-C-RV-CA

MODEL

114 3 mV/V
 214 5 Vdc
 314 4 - 20 mA
 314Z 4 - 20 mA (Intrinsically Safe)

SERIES

A ±1.0% FSO (RSS)
 B ±0.5% FSO (RSS)
 C ±0.2% FSO (RSS)

PRESSURE RANGE

psid
 RH 500
 RJ 600
 RK 750
 RM 1000
 RO 1500
 RR 2000
 RS 2500
 RT 3000
 RV 5000
 RX 7500
 RZ 10000
 SB 15000
 SD 20000
 SZ Other

GP:50 reserves the right to make product improvements and amendments to the product specification stated throughout this brochure without prior notification. Please contact the factory on all critical dimensions and specifications for verification.

OPTIONS

AA None

ALTERNATE CONNECTOR OR CABLE

CA Bendix PTIH-10-6P
 (Mate: PT06E-10-6S [SR] not included)
 CB MS3102E-14S-6P
 CD Cannon WK6-32S (Mate WK6-21C not supplied)
 CE Terminal Block
 CF 1/2" NPT(M) thread with 36" potted leads
 CJ DIN 43650 (includes mate) (Hirschmann type)
 CK Lumberg RSF-3/12 mm
 CM Bendix PTIH-8-4P, or equal
 CO Junction Box (thermocouple type) with terminal block
 CP Cannon WK4-32S
 CW Submersible housing, 8' polyurethane jacket non-vented cable, neoprene grommet and 1/2" NPT(M) conduit fitting (0-500 psi max. For non-vented units only.)
 CZ Alternate Connector/Cable/Other
 HK NEMA-4X w/24" Cable

PRESSURE PORT

FA MS33649-4 (1/4 AN-10050, female)
 FC 3/8" NPT(F)
 FD MS33656-4 (7/16-20 UNF-3A, for 1/4" tube)
 FH 1/8" NPT(F)
 FJ 1/4" NPT(M)
 FL 1/8" NPT(M)
 LG SAE-4 (F) O-ring seal thread
 LH SAE-6 (M) O-ring seal straight thread (with O-ring)
 LP 1/4" BSPP(F)
 LT SAE-4 (M) O-ring seal straight thread (with O-ring)
 FZ Other

GENERAL

GA Standardized Output to ±0.5% FSO
 GB Alternate full scale outputs. Set to ±2% FSO
 GE Improved temperature compensation to ±0.5% FSO/100°F for zero and span respectively
 GG Alternate calibration signal
 GH Internal calibration resistor, set to 100 ±0.5% FSO unless otherwise specified
 GJ Add zero and span controls
 GK Inconel Pressure cavity.
 GS 0-10 Vdc FSO, Model 211. Requires 16-32 Vdc exc.)
 HL RFI protection (for unit in proximity to radio transmitter)
 MA 1-5 Vdc FSO
 GZ Customer special