PRESSURE TRANSMITTER

Models 509 / 709 / 809



FEATURES

- FM, CSA and ATEX Intrinsically Safe Models available
- Hammer Union pressure fitting
- Shock and vibration resistant
- Eight gage sensor design
- Pressure up to 20,000 psi (1379 bar)

TYPICAL APPLICATIONS

- Oil Well Servicing
  - Cementing
  - Fracturing
  - Acidizing

OIL EXTRACTION EXPERIENCE

Viatran's years of oil field experience helps us solve typical application problems. The X09 was created as a solution to the application that a customer couldn't solve. Once solved, we modified the unit to accomplish even more in oil extraction.

VIATRAN'S ALTERNATIVE

Viatran's unique fastening system locks under severe vibrations ensuring that the environmental integrity of the assembly is maintained much like a welded unit without welding.

FINITE ELEMENT ANALYSIS

Instability can also come from subtle variations in the Hammer Union and tightening torque. These variances generate point loading of stress on the sensor. Viatran's product development engineers used Finite Element Analysis (FEA) to determine the most effective distribution of the strain gages to reduce the clamping effect. The resulting eight gage sensor design is unaffected by the orientation or tightness of the nut. Using FEA, the X09 Series has been designed with high overpressure protection, allowing it to withstand pressure spikes found in oil field equipment.

SEMI FLUSH

Our exclusive semi flush design provides a lower cavity volume to prevent clogging. This eliminates the need for tedious cleaning, especially in cementing applications.

Viatran is oil field proven. What often begins as a nagging application turns into a successful solution. The X09 Series, and the various other oil and gas solutions, are shining examples of this success.

MECO MEASUREMENTS & CONTROLS
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Models 509 / 709 / 809

PERFORMANCE

Full Scale Pressure Range		0-5K, 10K, 15K, 20K PSIG (0-345, 689, 1034, 1379 bar)
Non-Linearity (Best Fit Straight Line)		≤0.25% FSO (BFSL)
Hysteresis & Repeatability		≤±0.10% FSO
Full Scale Output (FSO)	509	16 mA ±1% FSO
	709	5 Vdc ±1% FSO
	809	30 mVC ±1% FSO at 10 V excitation
Zero Balance	509	4 mA ±1% FSO
	709	0 Vdc ±1% FSO
	809	0 mV ±1% FSO
Long-Term Stability		≤±0.25% FSO per 6 months
Response Time		≤2.5 mSec to reach 90% of FSO
Temperature Effect on Zero		≤±1% FSO per 100°F (37°C)
Temperature Effect on Span		≤±1% FSO per 100°F (37°C)
Compensated Temperature		-20°F to 185°F (-29°C to 85°C)
Operating Temperature 509		-40°F to 200°F (-40°C to 93°C)
Operating Temperature 709 & 809		-40°F to 250°F (-40°C to 121°C)
Storage Temperature Limits		-67°F to 302°F (-55°C to 150°C)

ELECTRICAL

Supply Voltage	509	9-30 Vdc (10.5 to 28 Vdc w/approval)
	709	9-30 Vdc (10.5 to 28 Vdc w/approval)
	809	10 Vdc nominal (15 Vdc max)
Power Supply Regulation Effect (Calibrated at 12 Vdc)	509	≤±0.01% FSO per Volt
	709	≤±0.01% FSO per Volt
	809	Output varies with input (calibrated at 10 Vdc)
Output Signal	509	4 - 20 mA at 70°F (21°C)
	709	0 - 5 Volts at 70°F (21°C)
	809	3 mV/Volt at 70°F (21°C)
Current Draw	709	7.5 mA
	809	1 mA at 10 Vdc nominal
Load Impedance	509	750 Ohms maximum at 24 Vdc
	709	410K Ohms minimum
	809	350,000 Ohms minimum for <0.1% FSO attenuation
Range Calibration Signal		100% of FSPR
Calibration Power	509	9-30 Vdc at 15 mA nominal
	709	Short pins E & F
	809	Short pins E & F
Calibration Signal Accuracy		≤±0.2% FSO. The exact signal to pressure correlation is provided with each unit
Circuit Protection	509 & 709	Varistor protected across the input leads for surges above 1000V at 50 microseconds
	809	Varistor protected across the input leads for surges above 34V to 20a. @ 0.02 milliseconds
Bridge Resistance		10K Ohms nominal
Insulation Resistance		≥100 MegOhms to case ground
Electrical Connection		Mates with Bendix P/N PT06E-10-6S or equivalent. See table for pin connections

MECHANICAL

Pressure Connections	Male hammer union 2 inch #1502
Pressure Cavity Volume	0.4 cubic inches
Proof Pressure	1.67 times the FS or 22.5K PSI (1550 bar) for union #1502, 30K PSI (2068 for union #2002 whichever is less)
Burst Pressure	≥3 times FSPR, limited by union #1502: 22.5K PSI (1550 bar)

MATERIALS OF CONSTRUCTION

Enclosure Materials	304 stainless steel
Wetted Materials	Inconel X-750, heat treated per MR0175-2000
Shock Limitation	100 G's
Weight	5.5 lbs nominal (2.4 kg)
Identification	Laser etched onto body
Enclosure Classification	NEMA 4X

Information is accurate to the best of Viatran's knowledge.
We reserve the right to change specifications at any time.
98PB120X09 06/10

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Viatran A Dynisco Company

CERTIFICATIONS (Consult Factory for Available Options)

FM	Intrinsically Safe: Class I, Div I, Groups A-D, Class I, Zone 0. AEx ia IIC T5 at Ta=40°C. Hazardous Locations installed per CD0641
CSA	CSA 03 1437390X Class I, Div 1, Groups A-D Ex ia IIC T5 at Ta=40°C per CD0640
ATEX	II 1 G EEx ia IIC T4/Tc at Ta=80°C/40°C DNV 2003-OSL-ATEX 0188 0575
CE	EMC Directive 89/336/EEC and Low Voltage Directive 72/23/EEC EN 61010-1 (2001) - Safety Requirements EN 61326-(1997) - EMC Requirements PED Directive 89/336/EC and Low Voltage Directive 72/23/EEC EN 61010-1 (1993)/Safety Requirements EN 61326-(2001)/EMC Requirements PED Directive 97/23/EC

ACCESSORIES

Carrying handle
Connector fastener kit
Buna-N O-Ring seal
Adapter fastener kit
Retaining ring tool

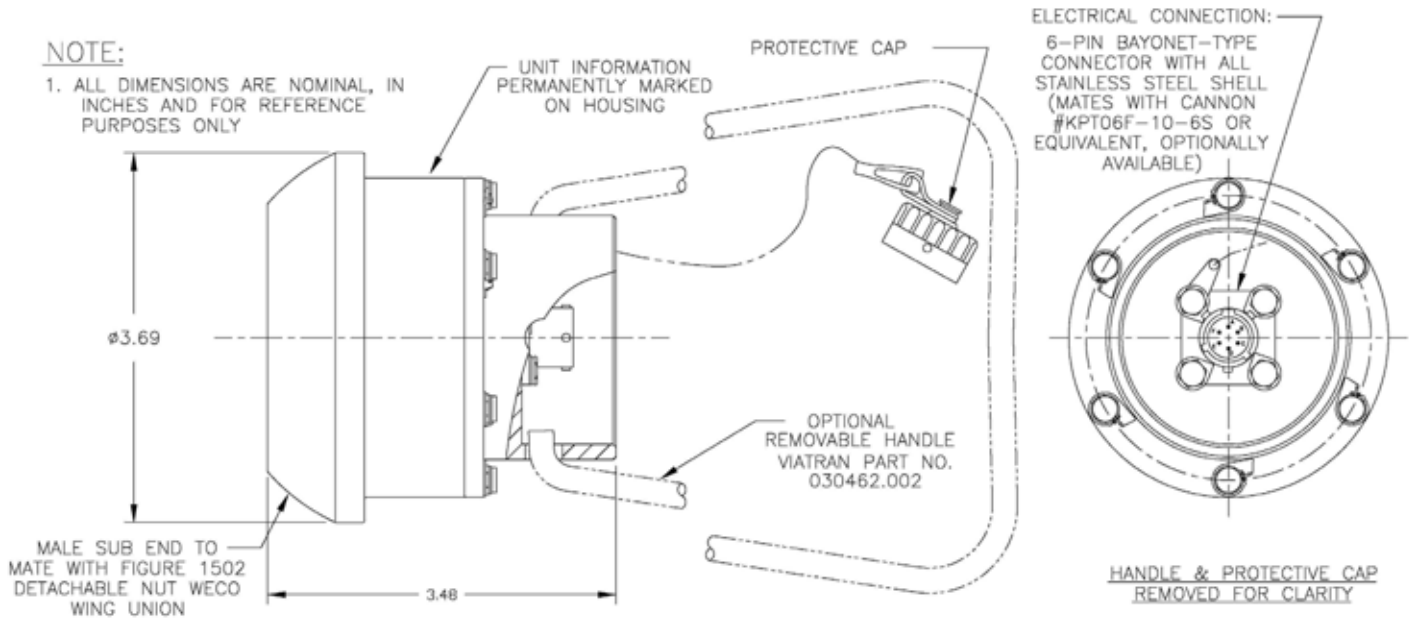
OPTIONS

DH	Special range
EA	Special calibration run
NK	ATEX Intrinsic Safety label (509 & 709 only)
NJ	CE label
NX	CSA Intrinsic Safety label (509 & 709 only)
TF	FM Intrinsic Safety label (509 & 709 only)
TP	Low cavity volume sensor design
ZQ	CG379-C-145-2P (Glenair) electrical connector
ZT	REC-M-10TP-N-04-16 (Jupiter) connector

STANDARD PIN CONNECTIONS

	509	709	809
PIN A	+Power/Signal	+Power	+Power
PIN B	-Power/Signal	-Power	-Power
PIN C	No connection	+Signal	+Signal
PIN D	No Connection	-Signal	-Signal
PIN E	+Calibration	Calibration	Calibration
PIN F	-Calibration	Calibration	Calibration

Some models are provided with customer specified wiring. Consult Viatran for exact wiring connections.



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