

**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. When 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.

*For more information, contact Viatran.*

**Visit Website**



Viatran  
3829 Forest Parkway  
Suite 500  
Wheatfield, NY 14120

Hotline: 1-800-688-0030  
Phone: 1-716-629-3800  
Fax: 1-716-693-9162  
Email: solutions@viatran.com

**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% FS
Hysteresis & Repeatability .....	≤±0.10% FSO
Full Scale Output (FSO) 509 .....	16 mA ±1%
709 .....	5 Vdc ±1%
809 .....	30 mVc ±1% at 10 V excitation
Zero Balance 509 .....	4 mA ±1% FSO
709 .....	0 Vdc ±1% FSO
809 .....	0 mV ±1% FSO
Long-Term Stability .....	≤±0.5% 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 .....	40°F to 140°F (4°C to 60°C)
Operating Temperature .....	-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 (12 to 28 Vdc w/approval)
709 .....	9-30 Vdc (12 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 for <1% FSO attenuation
809 .....	350 Ohms minimum for <1% FSO attenuation
Range Calibration Signal .....	100% of FSPR
Calibration Power 509 .....	9-30 Vdc at 15 mA nominal
709 .....	Short pins E & F
807 .....	Short pins E & F
Calibration Signal Accuracy .....	≤±0.2% FSO. The exact signal to pressure correlation is provided with each unit
Circuit Protection .....	Varistor protected across the input leads for surges to 1000V at 50 mSec. Reverse polarity protected
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
Shock Limitation .....	100 G's
Weight .....	5.5 lbs nominal (2.4 kg)
Identification .....	Laser etched onto body
Enclosure Classification .....	NEMA 4X



**CERTIFICATIONS (Consult Factory for Available Options)**

FM	<u>Intrinsically Safe</u> : 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	<u>EMC Directive 89/336/EEC</u> and <u>Low Voltage Directive 72/23/EEC</u> EN 61010-1 (2001) - Safety Requirements EN 61326-(1997) - EMC Requirements <u>PED Directive 89/336/EC</u> and <u>Low Voltage Directive 72/23/EEC</u> EN 61010-1 (1993)/Safety Requirements EN 61326-(2001)/EMC Requirements <u>PED Directive 97/23/EC</u>

**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
<b>PIN A</b>	+Power/Signal	+Power	+Power
<b>PIN B</b>	-Power/Signal	-Power	-Power
<b>PIN C</b>	No connection	+Signal	+Signal
<b>PIN D</b>	No Connection	-Signal	-Signal
<b>PIN E</b>	+Calibration	-Calibration	-Calibration
<b>PIN F</b>	-Calibration	+Calibration	+Calibration

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

