



MEDCO
Modelling Engineering & Development Company Limited

Pressure Transmitter

MODEL #509/709/809



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 "09" Series has been designed with high overpressure protection, allowing it to withstand pressure spikes found in oil field equipment.

APPROVAL OPTIONS AVAILABLE

The 509 and 709 can be supplied with FM, CSA and ATEX intrinsically safe approvals and is designed to meet all applicable CE directives.

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 09, and the various other oil and gas solutions are shining examples of this success.

Viatran's "09" Series pressure transmitters are equipped with a Hammer Union fitting for use in oil well cementing, fracturing and acidizing. They have been designed to be accurate yet rugged instruments ideally suited to the harsh oil field environment.

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

TYPICAL APPLICATIONS

- Oil well servicing
 - Cementing
 - Fracturing
 - Acidizing

Contact Viatran for approval options



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Viatran Model 509/709/809

PRESSURE TRANSDUCER

SPECIFICATIONS

PERFORMANCE

Full Scale Pressure Range (FSPR)	0-5K, 10K, 15K, 20K PSIG
Non-Linearity (Best Fit Straight Line)	$\leq 0.25\%$ FS
Hysteresis & Repeatability	$\leq \pm 0.10\%$ FSO
Full Scale Output (FSO)	
509	16 mA $\pm 1\%$
709	5 VDC $\pm 1\%$
809	30 mV $\pm 1\%$ at 10 V excitation
Zero Balance	
509	4 mA $\pm 1\%$ FSO
709	0 VDC $\pm 1\%$ FSO
809	0 mV $\pm 1\%$ FSO
Long Term Stability	$\leq \pm 0.5\%$ FSO per 6 months
Response Time	≤ 2.5 mSec to reach 90% of FSO
Temperature Effect on Zero	$\leq \pm 1\%$ FSO per 100° F
Temperature Effect on Span	$\leq \pm 1\%$ FSO per 100° F
Compensated Temperature Range	40° F to +140° F
Operating Temperature Limits	-40° F to +250° F
Storage Temperature Limits	-67° F to +302° F

ELECTRICAL

Supply Voltage

509	9 to 30 VDC (12 to 28 VDC w/ approval)
709	9 to 30 VDC (12 to 28 VDC w/ approval)
809	10 VDC nominal (15 VDC max)

Power Supply Regulation (Calibrated @ 12VDC)

509	$\leq \pm 0.01\%$ FSO per Volt
709	$\leq \pm 0.01\%$ FSO per Volt
809	Output varies with input (cal. at 10.00 VDC)

Output Signal

509	4-20 mA at 70°
709	0-5 Volts at 70°
809	3 mV/Volt at 70°

Current Draw

709	7.5 mA
809	1 mA @ 10VDC nominal

Load Impedance

509	750K Ohms maximum at 24 VDC
709	410K Ohms minimum for $< 1\%$ FSO attenuation
809	350K Ohms minimum for $< 1\%$ FSO attenuation

Range Calibration Signal

100% of FSPR

Calibration Power

509	9 to 30 VDC at 15 mA nominal
709	Short pins E & F
809	Short pins E & F

Calibration Signal Accuracy

$\leq \pm 0.2\%$ FSO. The exact signal to pressure correlation is provided with each unit.
Varistor protected across the input leads for surges to 1000V @ 50 microseconds. Reverse polarity protected.

Circuit Protection

10K Ohms nominal
 ≥ 100 MegOhms to case ground
Mates with Bendix P/N PT06E-10-6S or equivalent. See table for pin connections.

Bridge Resistance

≥ 100 MegOhms to case ground

Insulation Resistance

Mates with Bendix P/N PT06E-10-6S or equivalent. See table for pin connections.

Electrical Connection

Mates with Bendix P/N PT06E-10-6S or equivalent. See table for pin connections.

MECHANICAL

Pressure Connection	Male hammer union 2 inch #1502
Pressure Cavity Volume	0.4 cubic inches
Proof Pressure	1.67 times the FSPR or 22,500 PSI (1550 Bar), whichever is less
Burst Pressure	≥ 3 times the FSPR, limited by union fitting 1502: 22,500 PSI (1530 Bar)
Shock Limitation	100 G's
Weight	5.5 lbs. nominal
Enclosure Materials	304 stainless steel
Wetted Materials	Inconel X-750
Identification	Laser etched onto body
Enclosure Classification	NEMA 4X

CERTIFICATIONS

FM	Optionally Available 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/ T5 at Ta=80°C/40°C DNV-2003-OSL- ATEX-0188 CE0575 (509 & 709 only)
CE	EMC Directive 89/336/EEC and Low Voltage Directive 72/23/EEC EN 61010-1 (1993) Safety Requirements EN 61326-(2001) - EMC Requirements PED Directive 97/23/EC

OPTIONS

Codes

DH	Customer modification
EA	Special range
NK	Special calibration
NJ	ATEX IS label (509 & 709 only)
NX	CE label
TF	CSA IS label (509 & 709 only)
TP	FM IS label (509 & 709 only)
ZQ	Low cavity volume sensor design
ZT	GC379-2-145-2P (Glenair) electrical connector. REC-M-10TP-N-04-16 (Jupiter) connector

ACCESSORIES

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

STANDARD PIN CONNECTIONS

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

