



FEATURES

- Intrinsically Safe Models available
- 1502 Hammer Union pressure fitting
- Shock and vibration resistant
- Eight gage sensor design
- Pressure up to 20,000 psi (1400 bar)

TYPICAL APPLICATIONS

- Oil Well Drilling and Servicing
 - Cementing
 - Fracturing
 - Acidizing



WELDED DESIGN DILEMA

Users of hammer union pressure transmitters came to Viatran searching for a solution that would resolve the problems they were encountering with "Welded Design" units that were not performing well and were difficult, if not impossible to repair in the field.

VIATRAN'S SOLUTION

Viatran's years of oil field experience helped us with this application. The "X09" series was created to solve zero shift and repair issues that users of welded design hammer union pressure transmitters were having.

Harsh environments require durable transmitters that are protected from the elements while still allowing the end user easy access for minor repairs.

We've learned that welded assemblies require deep weld penetration, creating residual stresses which relieve over time, resulting in zero shift.

Since welded assemblies often cause zero shift over time, Viatran utilized a design with a unique fastening system, requiring no welding.

Along with better stability, the unit is also easily disassembled for minor field repairs.

FINITE ELEMENT ANALYSIS USED

Instability can also come from subtle variations in the Hammer Union fitting 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 also been designed with high overpressure protection, allowing it to withstand the pressure spikes found in oil field applications.

OUR COMMITMENT TO QUALITY

The "X09" series design will perform and maintain on site durability in the most severe applications.

To satisfy your unique application requirements, Viatran will also modify our standard products to meet your needs.

Viatran's vision is to be your fastest, easiest and most trusted solution. Call us today to explore the solutions we have to offer.

1.800.688.0030

Your local applications specialist:

Models 509 / 709 / 809

PERFORMANCE

	Full Scale Pressure Range	0-5K, 10K, 15K, 20K PSIG (0-350, 700, 1000, 1400 bar)
	Accuracy (BFSL)(RSS) (Non-Linearity, Hysteresis & Repeatability).....	≤ ±0.25% 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 718, heat treated per MR0175-2009
Shock Limitation	100 G's
Weight	5.5 lbs nominal (2.4 kg)
Identification.....	Laser etched onto body
Enclosure Classification.....	NEMA 4X

Models 509 / 709 / 809

Model 509 CERTIFICATIONS (CONSULT FACTORY FOR AVAILABLE OPTIONS: FM, CSA, EMC, PED, EAC Ex)

USA	Intrinsically Safe Class I, Div. 1, Groups A-D, Class I, Zone 0 AEx ia IIC T4 at Ta 80°C, T5 at Ta= 40°C. Haz. Loc. Install per CD0641
Canada	Intrinsically Safe Class I, Div. 1, Groups A-D, Class I, Zone 0 Ex ia IIC T4 at Ta=80°C,, T5 at Ta= 40°C. Haz. Loc. Install per CD0640
Europe	Intrinsically Safe II 1 G Ex ia IIC Ga T4 at -20°C ≤ Ta ≤ 80°C T5 at -20°C Ta ≤ 40°C Haz. Loc. Install per CD0639 ATEX Directive 2014/34/EU EMC Directive 2014/30/EU EN 61326-1:2013 PED Directive 2014/68/EU
Russia	Intrinsically Safe 0Ex ia IIC Ga , T4: - 20°C ≤ Ta ≤ +80°C, T5: - 20°C ≤ Ta ≤ +40°C Russian Metrology Certificate

Model 709 CERTIFICATIONS (CONSULT FACTORY FOR AVAILABLE OPTIONS: FM, CSA, EMC, PED, EAC Ex)

USA	Intrinsically Safe Class I, Div. 1, Groups A-D, Haz. Loc. Install per CD0641
Canada	Intrinsically Safe Class I, Div. 1 Groups A-D, ,Class I, Zone 0 Ex ia IIC T4 at Ta = 80 T5 at Ta= 40°C. Haz. Loc. Install per CD0640
Europe	EMC Directive 2014/30/EU EN 61326-1:2013 PED Directive 2014/68/EU
Russia	Intrinsically Safe 0Ex ia IIC Ga , T4: - 20°C ≤ Ta ≤ +80°C, T5: - 20°C ≤ Ta ≤ +40°C Russian Metrology Certificate

Model 809 CERTIFICATIONS (CONSULT FACTORY FOR AVAILABLE OPTIONS: EMC, PED)

EMC Directive	2014/30/EU EN 61326-1:2013
PED Directive	2014/68/EU

OPTIONS

DH.....	Special range
EA.....	Special calibration run
FA.....	Russian Metrology Certificate
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
TW.....	EAC Ex Intrinsic Safety label (509 & 709 only)
ZQ.....	CG379-C-145-2P (Glenair) electrical connector
ZT.....	REC-M-10TP-N-04-16 (Jupiter) connector

ACCESSORIES

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

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.

