







EXPLOSION - PROOF PRESSURE TRANSMITTER









FEATURES

- Fixed range or field-adjustable
- 4-20 mA, 1-5 or 0-10 VDC output
- 0.25% accuracy
- Compact, 316 stainless steel, hermetically sealed enclosure
- cULus & ATEX certified for Class I, Div. 1, Zone 1
- Pressure ranges:
 0 to 15 psi to 0 to 25,000 psi
 (0 to 1 bar to 0 to 1723,7 bar)













OVERVIEW

United Electric's TX200™ is a compact, rugged pressure transmitter designed for process control industries worldwide, and ideally suited for petrochemical and upstream oil and gas applications. All welded, 316 stainless steel hermetic construction provides airtight and watertight protection within the harshest environments. A bonded foil strain gauge sensor or piezo-resistive strain gauge sensor provide reliability and durability.

FEATURES

- Enclosure type 4X/IP66
- Welded stainless steel wetted material
- Submersible to 100 feet
- Wide variety of pressure connections
- Non-interactive zero and span adjustment
- 5:1 pressure range turndown
- · Adjustable version may be calibrated in-place











APPLICATIONS

cULus and ATEX approvals assure most worldwide hazardous location requirements are met. TX200 pressure transmitters are used to monitor pressure in a variety of upstream, midstream, and downstream applications.



Instrument Panels



- Offshore rigs and pumping platforms
- RTU's & SCADA systems
- Sub-sea valve monitoring
- Flow line manifold monitoring
- Oil/gas separator systems



- Gas flow monitoring
- Pipeline compressor stations for maintaining flow and pressure levels along gas pipelines
- Pipeline monitoring of both surface and subterranean pipeline's physical and mechanical integrity
- Pump monitoring



- Onshore drilling rigs
- Wellhead monitoring
- Monitoring tubing & casing pressures
- CO2 injection skids
- Blowout preventor (BOP) accumulator
 - Emergency shutdown and safety monitoring

TECHNOLOGY

Pressure transmitters convert applied pressure to an electronic signal through various technologies. The TX200 pressure transmitter utilizes two of these - a piezo-resistive pressure sensor for low-pressure applications and a bonded foil strain gage pressure sensor for high-pressure applications, both using ASIC technology to provide optimum sensor signal conditioning and temperature compensation of the sensor output.















SPECIFICATIONS

PERFORMANCE

Full Scale Pressure Range (FSPR): 0 to 15 (0 to 1,0 bar) through 0 to 25,000 psi (0 to 1723,7 bar)

Non-linearity (L): 0 to 15 (0 to 1,0 bar) typical 0.3%, 0 to 30 psi through 0 to 250 psi (0 to 17,2 bar)

typical @ 0.2% FSO 0 to 500 (0 to 34,5 bar) through 0 to 25,000 psi (0 to 1723,7

bar) typical @ 0.1% FSO

Hysteresis (H) and

Repeatability (R): ±0.1% FSO

Accuracy (L, H, R): 0.25% (0.5% for 15 psi range)

Full Scale Output (FSO): 16 mA (4 - 20 mA), 4 VDC (1-5 VDC), 10 VDC (0-10 VDC)

Resolution: Infinite **Zero Balance:** $\pm 0.5\%$ (FSO)

Response Time: 10 mSec (typical 90% final value)

Temperature Effect on Zero: $\pm 0.5\%$ per 100°F (55°C)

Temperature Effect on Span: $\pm 0.5\%$ per 100°F (55°C)

Compensated Temperature

Range: $0^{\circ}F$ to $+ 176^{\circ}F$ ($-18^{\circ}C$ to $80^{\circ}C$) **Media Temperature:** $-40^{\circ}F$ to $257^{\circ}F$ ($-40^{\circ}C$ to $125^{\circ}C$)

Operating Temperature: -40°F to 185°F (-40°C to 85°C) per UL, cUL

-40°F to 176°F (-40°C to 80°C) per ATEX

Storage Temperature Range: -67°F to + 221°F (-55°C to 105°C)

ELECTRICAL

Supply Voltage: 10 to 36 VDC for 4-20 mA output

10 to 30 VDC for 1-5 VDC output 14 to 30 VDC for 0-10 VDC output

Output Signal: 4-20 mA or 1-5 VDC or 0-10 VDC

Range adjustment/calibration for TX200A only Span adjustment: rangeable down 5:1 FSPR

Range calibration signal: mominal 20% of FSPR, externally switched

Calibration signal accuracy: ±1.0% FSO (a certificate of calibration with the exact

signal to pressure correlation is provided with each unit).

Load Impedance: 4-20 mA output: 1300 ohms max. at 36 VDC or 700 ohms max. at 24 VDC

1-5 VDC or 0-10 VDC output: 2000 ohms min.

Circuit Protection: The TX200 input is protected against transient surges using both varistor and TVS

transient voltage suppressor technology, and is reverse polarity protected.

Electrical Connection: 1/2" NPT (male), 72" 18 AWG, color coded leadwires

Wiring: Red: +VDC Black: -VDC

Green: Earth Ground

Blue: 1-5 V or 0-10 V output (only)











MECHANICAL

Wetted Materials: 316, 15-5 stainless steel; Hastelloy C and Monel available, please consult UE

Pressure Connections: 1/4" NPT, 1/2" NPT, 7/16-20 SAE, G-1/4, G-1/2, and medium pressure and high pressure

autoclave (see pressure connection chart page 10), 316 stainless steel

Model 03-08, 15929: 316 stainless steel welded diaphragm, micro-machined piezo-resistive strain Sensors

gauge silicon element, 0.25 ml silicon oil fill

Model 09-20: 15-5 stainless steel welded diaphragm, bonded foil strain gauge element

Proof Pressure: ≤10,000 psi (689,5 bar) 3 times FSPR; ≥15,000 psi (1034,2 bar) 2 times FSPR

15 to 2000 psi (6,9 to 137,9 bar) 10 times FSPR; 2500 to 6000 psi (172,4 to 413,7 bar) 8 times **Burst Pressure:**

FSPR or 30,000 psi, whichever is less; 7500 to 25,000 psi(517,1 to 1723,7 bar) 4 times FSPR or

90,000, whichever is less

200 G's, one millisecond duration Shock:

Vibration: Tested to MIL-STD-810F, modified to 2000 Hz at 15 G's peak

Enclosure: 316 stainless steel

Enclosure Classification: Welded, hermetically sealed, enclosure type 4X. Certified to IP66 requirements

TX200A: approx. 1.5 lbs (.68 kg), TX200B: approx. 1.3 lbs (.59 kg) Weight:













APPROVALS



UNITED STATES AND CANADA

Class I, Division 1 & 2, Groups A, B, C & D Class II, Division 1 & 2, Groups E, F & G Class III

Class I, Zone 1, Group IIC Enclosure Type 4X **UL** Listed, **cUL** Certified UL 698, 1203, 61010-1; CSA No. 25, 30, 61010-1 - File # E226592



EUROPEAN UNION

ATEX Directive 94/9/EC



II 2 G Ex d IIC T5 II 2 D Ex tD A21 IP66 T+90C Tamb = -40C to +80CEN 60079-0, 60079-1, 61241-0, 61241-1 UL Intenational DEMKO A/S (N.B.# 0539) Certificate # DEMKO 08 ATEX 0810742X

Pressure Equipment Directive (PED) (97/23/EC)

Sound Engineering Practice (SEP)

Electromagnetic Compatibility Directive (EMC) (89/336/EEC, 92/31/EEC & 93/68/EEC)

UL International EMC Services Certificate File # NC4525 EN 55011, 61000-6-4, 61000-6-2, 61326









PRESSURE MODEL CHART

Model	Pressure Rang	je	Proof Pressur	e*	Burst	Pressure**
	psi	bar	psi	bar	psi	bar
Welded 316 st	Welded 316 stainless steel diaphragm and pressure connection (see page 9 for available connections)					
03	0 to 15	0 to 1	45	3,1	150	10,3
04	0 to 30	0 to 2,1	90	6,2	300	20,7
05	0 to 50	0 to 3,4	150	10,3	500	34,5
06	0 to 100	0 to 6,9	300	20,7	1000	68,9
07	0 to 250	0 to 17,2	750	51,7	2500	172,4
08	0 to 500	0 to 34,5	1500	103,4	5000	344,7
Welded 15-5 s	stainless steel diap	hragm with 316 stai	nless steel pressu	re connection (see	e page 9 for availa	ble connections)
09	0 to 1000	0 to 68,9	3000	206,8	10,000	689,5
17	0 to 1500	0 to 103,4	4500	310,3	15,000	1034,2
18	0 to 2000	0 to 137,9	6000	413,7	20,000	1379,0
10	0 to 2500	0 to 172,4	7500	517,1	20,000	1379,0
19	0 to 3000	0 to 206,8	9000	620,5	25,000	1723,7
11	0 to 5000	0 to 344,7	15,000	1034,2	25,000	1723,7
20	0 to 6000	0 to 413,7	18,000	1241,1	30,000	2068,4
12	0 to 7500	0 to 517,1	22,500	1551,3	30,000	2068,4
13	0 to 10,000	0 to 689,5	30,000	2068,4	40,000	2757,9
14	0 to 15,000	0 to 1034,2	30,000	2068,4	60,000	4136,9
15	0 to 20,000	0 to 1379,0	40,000	2757,9	80,000	5515,8
16	0 to 25,000	0 to 1723,7	50,000	3447,4	90,000	6205,3
316 stainless steel 1/4" NPT (female) pressure connection and welded diaphragm with 4-20 mA output (fixed range only)						
15929	0 to 300	0 to 20,7	750	51,7	2500	172,4

^{*} Proof Pressure: The maximum pressure to which a pressure sensor may be occasionally subjected (e.g., start-up, testing), which causes no permanent damage. The unit may require re-calibration if subjected to pressure above proof.

** Burst Pressure: Pressure which may cause failure of the pressure element, resulting in permanent damage.













HOW TO ORDER

Select letter or number codes to construct part number.

Type Enclosure Models, Range Pressure Pressure Connection Signal	PART #	TX200	A	9	S	1	T	M446
ENCLOSURE DESIGNATION A Field-adjustable transmitter B Fixed range transmitter 15929† Fixed range transmitter MODELS, PRESSURE RANGE 03 0 to 15 04 0 to 30 05 0 to 50 06 0 to 100 07 0 to 250 08 0 to 500 09 0 to 1000 17 0 to 1500 18 0 to 2000 10 0 to 2500 19 0 to 3000 11 0 to 5000 20 0 to 6000 12 0 to 7500 13 0 to 10,000 14 0 to 15,000 15 0 to 20,000 16 0 to 25,000 PRESSURE REFERENCE		Туре	Enclosure					Options
A Field-adjustable transmitter B Fixed range transmitter 15929† Fixed range transmitter MODELS, PRESSURE RANGE 03 0 to 15 04 0 to 30 05 0 to 50 06 0 to 100 07 0 to 250 08 0 to 500 09 0 to 1000 17 0 to 1500 18 0 to 2000 10 0 to 2500 19 0 to 3000 11 0 to 5000 20 0 to 6000 12 0 to 7500 13 0 to 10,000 14 0 to 15,000 15 0 to 20,000 16 0 to 25,000 PRESSURE REFERENCE	CODE	DESCRIPTIO	N					
Fixed range transmitter	ENCLOSUF	RE DESIGNAT	ION —					
03	В	Fixed range	transmitter					
04	MODELS, F	PRESSURE RA	NGE					
S psi (sealed gage)	04 05 06 07 08 09 17 18 10 19 11 20 12 13 14 15	0 to 30 0 to 50 0 to 100 0 to 250 0 to 500 0 to 1000 0 to 1500 0 to 2500 0 to 2500 0 to 3000 0 to 5000 0 to 6000 0 to 7500 0 to 10,000 0 to 15,000 0 to 20,000 0 to 25,000						
			age)					

[†] Model incorporates enclosure, pressure range & connection, and output (see pressure model chart on page 7)











M446

HOW TO ORDER (CONTINUED)

9

S

TX200

PART#

	Type	Enclosure	Models,	Pressure	Pressure	Output	Options	
			Range	Reference	Connection	Signal		
					1			
PRESS	URE CONNECTIO	N						
1	1/4" NPT (female); NOT AVAILABLE MODELS 15-16							
2	1/2" NPT (femal	•						
3	1/2" NPT (male)	, .						
4	HF4 high pressur				MODELS 03-05	5		
5	HF6 high pressur	e autoclave 3/8	B" (female); N	OT AVAILABLE	MODELS 03-05	5		
6	LF4 medium pres	sure autoclave 1	/4" (female)	; NOT AVAILAI	BLE MODELS 03	3-05		
7	LF6 medium pres	ssure autoclave 3	3/8" (female)	; NOT AVAILAI	BLE MODELS 03	3-05		
8	1/4" NPT (male)							
9	7/16-20 SAE (female); NOT AVAILABLE MODELS 14-16							
Α	G-1/4 (female); NOT AVAILABLE MODELS 14-16							
В	G-1/2 (female); NOT AVAILABLE MODELS 14-16							
С	7/16-20 SAE (male); NOT AVAILABLE MODELS 14-16							
D	HM4 high pressure autoclave 1/4" (male); NOT AVAILABLE MODELS 03-05							
E	HM6 high pressure autoclave 3/8" (male); NOT AVAILABLE MODELS 03-05							
F G	LM4 medium pressure autoclave 1/4" (male); NOT AVAILABLE MODELS 03-05							
Н	LM6 medium pressure autoclave 3/8" (male); NOT AVAILABLE MODELS 03-05							
J	G-1/4 (male); NOT AVAILABLE MODELS 14-16 G-1/2 (male); NOT AVAILABLE MODELS 14-16							
OUTPI T	4-20 mA							
D	4-20 MA 1-5 VDC							
P	0-10 VDC; NOT AVAILABLE MODELS 03-06							
OPTIO	NS							
M276	Pressure rai	nge markings in	bar					
M277	3 3							
M278		nge markings in						
M423							AVAILABLE ON M20	
23	METRIC THREAD ELECTRICAL CONDUIT VERSION							
M441								
M444	· ,							

M446 M460

M513

M550

Stainless steel ID tag and wire

External ground screw; required by ATEX for non-metallic conduit systems

UL approved junction box, pre-wired, meets enclosure type 4. NOT ATEX COMPLIANT

Oxygen service cleaning; alcohol cleaning to remove residue from the process connection











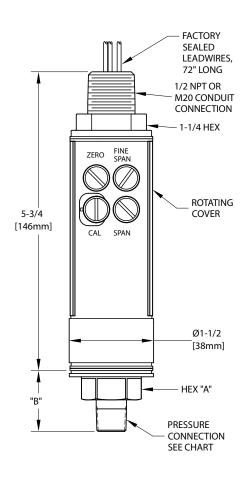






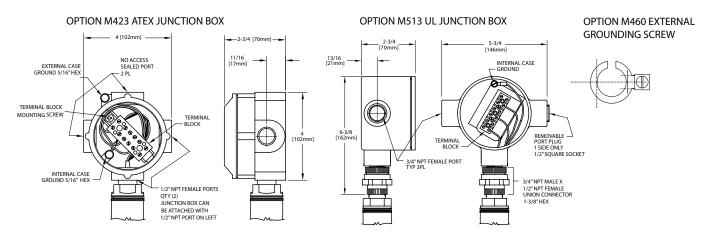
DIMENSIONAL DRAWING

Dimensional drawings for all models may be found at www.ueonline.com



	Pressure Connect	ion Chart	
Code	Description	Hex "A"in	Length "B"in [mm]
1	1/4" NPT (female)	15/16	0.54 [13.7]
2	1/2" NPT (female)	1-3/8	1.01 [25.7]
3	1/2" NPT (male)	15/16	1.26 [32.0]
4	HF4 autoclave (female)	15/16	0.54 [13.7]
5	FH6 autoclave (female)	1-3/8	0.90 [22.9]
6	LF4 autoclave (female)	15/16	0.54 [13.7]
7	LF6 autoclave (female)	15/16	0.65 [16.5]
8	1/4" NPT (male)	15/16	0.97 [24.6]
9	7/16-20 SAE (female)	15/16	0.54 [13.7]
Α	G-1/4 (female)	15/16	0.54 [13.7]
В	G-1/2 (female)	1-3/8	1.01 [25.7]
С	7/16-20 SAE (male)	15/16	0.77 [19.6]
D	HM4 autoclave (male)	15/16	1.10 [27.9]
Е	HM6 autoclave (male)	15/16	1.29 [32.8]
F	LM4 autoclave (male)	15/16	1.18 [30.0]
G	LM6 autoclave (male)	15/16	1.32 [33.5]
Н	G-1/4 (male)	15/16	1.03 [26.2]
J	G-1/2 (male)	1-3/8	1.78 [45.2]

Wire Color Coding					
	4-20 mA ouput	1-5 or 0-10 VDC output			
RED	+ VDC	+ VDC			
BLACK	- VDC	- VDC			
GREEN	Earth Ground	Earth Ground			
BLUE	N/A	Voltage Output			



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ALTERNATIVE PRODUCTS FROM UE

Stainless Steel 12 Series

- Compact, cylindrical 316 stainless steel design
- Hermetically sealed micro-switch
- **Explosion Proof**
- Snap-acting belleville spring mechanism for maximum vibration resistance and set point stability
- Pressure ranges 1 to 12,500 psi; DP working pressure ranges 0 to 2500 psid; temperature ranges -130 to 650°F
- Dual seal compliance to ANSI/ISA 12.27.01











120 Series

- Explosion-proof line of pressure, differential pressure, and temperature models with wide selection of ranges, sensors and pressure connections
- UL, cUL, ATEX certified for hazardous locations
- Single or dual switch outputs
- Welded stainless steel diaphragm pressure sensor
- Internal or external set point adjustment







One Series for Division 1 (Zone 1)

- Electronic pressure and temperature switches with no moving parts
- Fully adjustable deadband and smart self diagnostics
- 4-20 mA output and digital process display
- Explosion-proof enclosure for Division 1 (Zone 1) hazardous areas
- 2-wire, 4-wire and loop powered models available
- Digital display and tamper-proof keypad adjustment of setpoint and deadband











One Series for Division 2 (Zone 2)

- Electronic solid-state reliability
- Two-wire operation
- Digital display with keypad set-up
- 100% of range adjustable on-off deadband
- 4-20 mA output models
- Continuous diagnostic health check









Temperature Sensors

Rugged RTDs and thermocouples for process and energy applications, available with Nema 4X and explosion-proof heads to match heat-trace, turbine, combustion, and stack-emission applications





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RECOMMENDED PRACTICES AND WARNINGS

United Electric Controls Company recommends careful consideration of the following factors when specifying and installing UE pressure transmitters. Before installing a unit, the Installation and Maintenance instructions provided with unit must be read and understood.

- To avoid damaging unit, proof pressure and maximum temperature limits stated in literature and on nameplates must never be exceeded, even by surges in the system. Operation of the unit up to maximum pressure or temperature is acceptable on a limited basis (i.e., start-up, testing) but continuous operation must be restricted to the designated adjustable range. Excessive cycling at maximum pressure or temperature limits could reduce sensor life.
- A back-up unit is necessary for applications where damage to a primary unit could endanger life, limb or property. A high or low limit switch is necessary for applications where a dangerous runaway condition could result.
- Install unit where shock, vibration and ambient temperature fluctuations will not damage unit or affect operation. When applicable, orient unit so that moisture does not enter the enclosure via the electrical connection. When appropriate, this entry point should be sealed to prevent moisture entry.
- Unit must not be altered or modified after shipment. Consult UE if modification is necessary.
- Monitor operation to observe warning signs of possible damage to unit, such as drift. Check unit immediately.
- Preventative maintenance and periodic testing is necessary for critical applications where damage could endanger property or
- Supply voltage stated in literature and on nameplate must not be exceeded. Overload on a transmitter can cause damage, even on the first cycle. Wire unit according to local and national electrical codes, using wire size recommended in installation
- Do not mount unit in ambient temp, exceeding published limits.

LIMITED WARRANTY

Seller warrants that the product hereby purchased is, upon delivery, free from defects in material and workmanship and that any such product which is found to be defective in such workmanship or material will be repaired or replaced by Seller (Ex-works, Factory, Watertown, Massachusetts. INCOTERMS); provided, however, that this warranty applies only to equipment found to be so defective within a period of 36 months from the date of manufacture by the Seller. Seller shall not be obligated under this warranty for alleged defects which examination discloses are due to tampering, misuse, neglect, improper storage, and in any case where products are disassembled by anyone other than authorized Seller's representatives. EXCEPT FOR THE LIMITED WARRANTY OF REPAIR AND REPLACEMENT STATED ABOVE, SELLER DISCLAIMS ALL WARRANTIES WHATSOEVER WITH RESPECT TO THE PRODUCT, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

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