

EXPLOSION - PROOF PRESSURE TRANSMITTER



FEATURES

- Fixed range or field-adjustable Pressure Transmitter
- 4-20 mA or 1-5 VDC output
- 0.25% accuracy
- Compact, 316 Stainless Steel, hermetically sealed enclosure
- cULus & ATEX approved for hazardous locations worldwide
- Pressure Ranges up to 25,000 psi (1723,7)



OVERVIEW

United Electric's TX200™ is a compact, rugged pressure transmitter designed for process control industries worldwide, and ideally suited for petrochemical and offshore platform applications. All welded, 316 stainless steel hermetic construction provides airtight and watertight protection in the harshest environments. A bonded foil strain gage sensor provides reliability and durability.

FEATURES

- Explosion Proof
- Enclosure type 4X
- Welded stainless steel wetted material
- Submersible to 100 feet
- Autoclave pressure connection for high pressure applications
- Non-interactive zero and span adjustment
- 5:1 pressure range turndown
- Adjustable version may be calibrated in-place



Model TX200A is field adjustable for zero and span using external stainless steel control buttons. Each control button is 316 stainless steel, and magnetically coupled through the hermetically sealed enclosure. For ease of calibration, the transmitter does not require a calibrated pressure source and can be calibrated in-place. Model TX200A span control allows a 5:1 pressure range turndown.

Protective Shield. Affixed to the TX200 is a 316 stainless steel, rotatable protective cover, which helps protect product markings, and adjustment buttons (TX200A) from the elements and tampering.

Model TX200B is a fixed range transmitter providing a 4-20 mA or (optional) 1-5 VDC signal over the full pressure range. For applications where the process is consistent and field adjustability is not required or desired, model TX200B is a cost-effective transmitter versus other conventional process transmitters.

APPLICATIONS

cULus and ATEX approvals assure most worldwide hazardous location requirements are met. TX200 pressure transmitters are used to monitor pressures up to 25,000 psi on applications involving:

- Offshore oil rigs
- Blow Out Preventors (BOP)
- Well head monitoring
- Tubing and casing pressures
- Gas pipelines, gas flow measurement
- RTU's and SCADA packages
- Petroleum refining
- Rotating equipment
- Water and wastewater treatment
- Process monitoring



Offshore and Onshore Exploration and Production



Refineries



Instrument Panels



Pipelines

TECHNOLOGY

Pressure transmitters convert applied pressure to an electronic signal through various technologies. The TX200 pressure transmitter features bonded foil strain gage technology, considered one of the most durable and abuse-resistant technologies available. It can be used in ultra high pressure applications and its durability makes it suitable for applications that experience pressure cycling, shock, and vibration.

The bonded foil strain gage measures pressure when a fluid or gas is introduced into a simple low volume chamber (port), where it acts against the diaphragm. Strain gage resistance changes, proportional to the applied pressure, are sensed and conditioned by internal electronics to produce the transmitters' output. The output can be specified as either a 4 - 20 mA or (optional) 1 - 5 VDC signal.



SPECIFICATIONS

Performance

Full Scale Pressure Range (FSPR):	0 to 100 (0 to 6,9 bar) through 0 to 25,000 psi (0 to 1723,7 bar)
Non-linearity (L):	0 to 100 (0 to 6,9 bar) 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%
Full Scale Output (FSO):	16 mA (4 - 20 mA) or optional 4 VDC (1-5 VDC)
Resolution:	Infinite
Zero Balance:	± 0.5% (FSO)
Temperature Effect on Zero:	±0.5% per 100°F (38°C)
Temperature Effect on Span:	±0.5% per 100°F (38°C)
Compensated Temperature Range:	0°F to + 176°F (-18°C to 80°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:	-65°F to + 250°F (-54°C to 121 °C)

Electrical

Supply Voltage:	10 to 36 VDC for 4-20 mA output 10 to 30 VDC for 1-5 VDC output										
Output Signal:	4-20 mA or 1-5 VDC (Option M204)										
Load Impedance:	4-20 mA output: 1300 ohms max. at 36 VDC or 700 ohms max. at 24 VDC 1-5 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:	<table> <thead> <tr> <th>4-20 mA Output</th> <th>1-5 VDC Output</th> </tr> </thead> <tbody> <tr> <td>Red: +VDC</td> <td>+VDC</td> </tr> <tr> <td>Black: -VDC</td> <td>-VDC</td> </tr> <tr> <td>Green: Earth Ground</td> <td>Earth Ground</td> </tr> <tr> <td>Blue: N/A</td> <td>1-5 V Output</td> </tr> </tbody> </table>	4-20 mA Output	1-5 VDC Output	Red: +VDC	+VDC	Black: -VDC	-VDC	Green: Earth Ground	Earth Ground	Blue: N/A	1-5 V Output
4-20 mA Output	1-5 VDC Output										
Red: +VDC	+VDC										
Black: -VDC	-VDC										
Green: Earth Ground	Earth Ground										
Blue: N/A	1-5 V Output										

Range Adjustment/Calibration (TX200A only)

Span Adjustment: Rangeable down 5:1 FSPR
 Range Calibration Signal: Nominal 20% of FSPR, externally switched
 Calibration Signal Accuracy: ±1.0% FSO. A calibration certificate with the exact signal to pressure correlation is provided with each unit.

Mechanical

Pressure Connections:	1/4" NPT (female), Autoclave Type F-250-C
Proof Pressure:	≤10,000 psi (689,5 bar) 3 times FSPR; ≥15,000 psi (1034,2 bar) 2 times FSPR
Burst Pressure:	100 to 2000 psi (6,9 to 137,9 bar) 10 times FSPR; 2500 to 6000 psi (172,4 to 413,7 bar) 8 times 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
Enclosure Metals:	316 Stainless steel
Wetted Materials:	316, 15-5 Stainless steel
Enclosure Classification:	Welded, Hermetically Sealed, Enclosure Type 4X. Certified to IP66 requirements
Weight:	TX200A: 1.5 lbs (.68 kg) , TX200B: 1.3 lbs (.59 kg)

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

UL International DEMKO A/S (N.B.# 0539)
 Certificate #DEMKO 04 ATEX 045830X



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



EUROPE
ATEX Directive (94/9 EC)
 II 2 G EEx d IIC T5,
 II 2 DT + 90°C
 Tamb = -40°C to +80°C (-40°F to +176°F)
 IP 66
 EN 50014, 50018, 50281



PRESSURE MODEL CHART

Model	Pressure Range		Proof Pressure**		Burst Pressure***	
	psi	bar	psi	bar	psi	bar
Welded 15-5 stainless steel diaphragm with 316 stainless steel 1/4" NPT (female) pressure connection						
06	0 - 100	0 - 6,9	300	20,7	1000	68,9
07	0 - 250	0 - 17,2	750	51,7	2500	172,4
08	0 - 500	0 - 34,5	1500	103,4	5000	344,7
09	0 - 1000	0 - 68,9	3000	206,8	10,000	689,5
17	0 - 1500	0 - 103,4	4500	310,3	15,000	1034,2
18	0 - 2000	0 - 137,9	6000	413,7	20,000	1379,0
10	0 - 2500	0 - 172,4	7500	517,1	20,000	1379,0
19	0 - 3000	0 - 206,8	9000	620,5	25,000	1723,7
11	0 - 5000	0 - 344,7	15,000	1034,2	25,000	1723,7
20	0 - 6000	0 - 413,7	18,000	1241,1	30,000	2068,4
12	0 - 7500	0 - 517,1	22,500	1551,3	30,000	2068,4
13	0 - 10,000	0 - 689,5	30,000	2068,4	40,000	2757,9
14	0 - 15,000	0 - 1034,2	30,000	2068,4	60,000	4136,9
Welded 15-5 stainless steel diaphragm with 316 stainless steel Autoclave type F-250-C pressure connection						
15	0 - 20,000	0 - 1379,0	40,000	2757,9	80,000	5515,8
16	0 - 25,000	0 - 1723,7	50,000	3447,4	90,000	6205,3

** **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

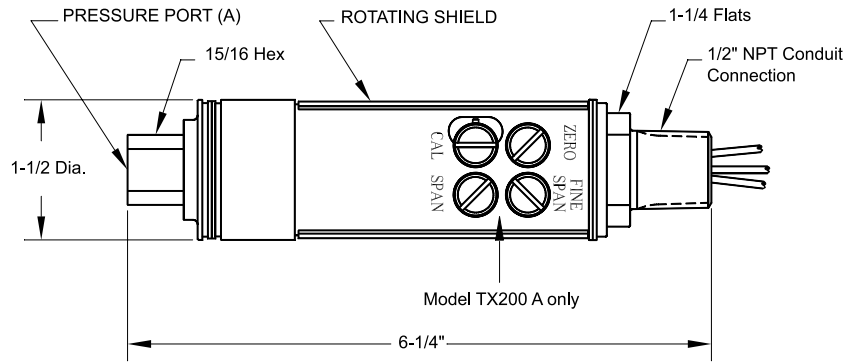
Select letter or number codes to make up part number.

PART #	TX200	A	09	S	1	M446
	Type	Enclosure	Models, Range	Pressure Reference	Pressure Connection	Options

CODE	DESCRIPTION
ENCLOSURE DESIGNATION	
A	Field-adjustable Transmitter
B	Fixed range Transmitter
MODELS, RANGE	
06-20	See model chart for range specifications
PRESSURE REFERENCE	
S	psi (sealed gage)
PRESSURE CONNECTION	
1	1/4" NPT (female); not available on pressure ranges 15-16 (above 15,000 psi)
4	Autoclave Type F-250-C
OPTIONS	
M204	1-5 VDC output; available on TX200B models only
M276	Pressure range markings in bar
M277	Pressure range markings in kPa
M278	Pressure range markings in Kg/cm ²
M423	ATEX flameproof compliant metallic junction box, pre-wired (not UL approved)
M444	Paper ID tag
M446	Stainless steel ID tag and wire
M460	External ground screw; required by ATEX for non-metallic conduit systems
M513	UL approved junction box, pre-wired (not approved for ATEX or as Enclosure Type 4X)
M550	Oxygen Service Cleaning

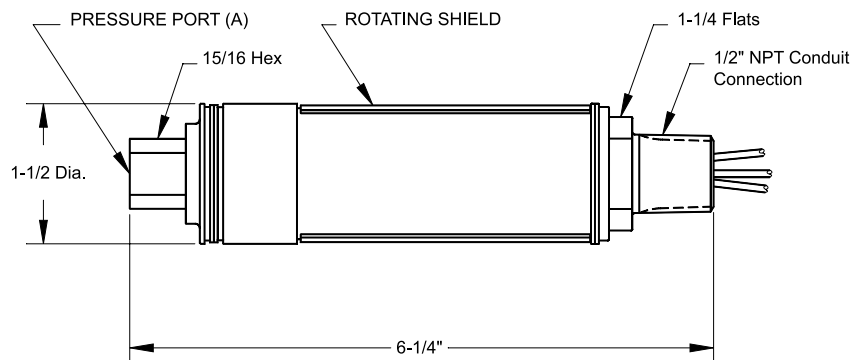
DIMENSIONAL DRAWINGS

FIELD ADJUSTABLE TRANSMITTER (ENCLOSURE A)



Pressure Port (A)	Model/Range
1/4" NPT (female)	06 - 14, 17 - 20
F-250-C Autoclave	06 - 20

FIXED RANGE TRANSMITTER (ENCLOSURE B)



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 personnel.
- 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 sheet.
- 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.

LIMITATION OF SELLER'S LIABILITY

SELLER'S LIABILITY TO BUYER FOR ANY LOSS OR CLAIM, INCLUDING LIABILITY INCURRED IN CONNECTION WITH (I) BREACH OF ANY WARRANTY WHATSOEVER, EXPRESSED OR IMPLIED, (II) A BREACH OF CONTRACT, (III) A NEGLIGENT ACT OR ACTS (OR NEGLIGENT FAILURE TO ACT) COMMITTED BY SELLER, OR (IV) AN ACT FOR WHICH STRICT LIABILITY WILL BE INPUTTED TO SELLER, IS LIMITED TO THE "LIMITED WARRANTY" OF REPAIR AND/OR REPLACEMENT AS SO STATED IN OUR WARRANTY OF PRODUCT. IN NO EVENT SHALL THE SELLER BE LIABLE FOR ANY SPECIAL, INDIRECT, CONSEQUENTIAL OR OTHER DAMAGES OF A LIKE GENERAL NATURE, INCLUDING, WITHOUT LIMITATION, LOSS OF PROFITS OR PRODUCTION, OR LOSS OR EXPENSES OF ANY NATURE INCURRED BY THE BUYER OR ANY THIRD PARTY.

UE specifications subject to change without notice.

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