



# TX 200

# **EXPLOSION-PROOF ASIC OR HART PRESSURE TRANSMITTER**







# **FEATURES**

- HART<sup>®</sup> 7 communication protocol with 4-20 mA output
- ASIC 4-20 mA or 1-5 or 0-10 voltage outputs
- 0.25% accuracy
- Compact, 316 stainless steel, hermetically sealed enclosure
- cULus & ATEX certified for Class I, Div. 1, Zone 1
- 3-year warranty
- Pressure ranges:
   0 to 15 psi to 0 to 25,000 psi
   (0 to 1 bar to 0 to 1723,7 bar)





T X 2 0 0 - B - 0 6





# OVERVIEW

### **TX200 ASIC Fixed Range and Field Adjustable Models**

The TX200 is a compact, rugged pressure transmitter utilizing ASIC technology to provide optimum sensor signal conditioning and temperature compensation of the sensor output. It is designed for process control industries worldwide and ideally suited for petrochemical and upstream oil and gas applications. The TX200 provides a cost-effective solution to using conventional process transmitters.

The fixed range model **TX200B** is recommended for use where process pressure is consistent within the range and where physical access to the transmitter is limited or not required.

The field adjustable model **TX200A** allows access to zero and span the transmitter. The transmitter may be spanned up to 5:1 and for ease of calibration, does not require a calibrated pressure source and can be calibrated in-place.

Both TX200 models feature an all welded, 316 stainless steel hermetically sealed enclosure providing airtight and watertight protection within the harshest environments. A 316 stainless steel, rotatable cover protects product markings and adjustment buttons (TX200A) from the elements and tampering. The TX200 lends itself to control panel mounting or direct process mounting due to its light-weight, cylindrical design.

### **TX200H HART Models**

The **TX200H** is a HART Smart pressure transmitter that provides simplified field adjustment while reliably communicating asset management data utilizing the latest HART 7 specification. A proprietary calibration process insures optimum temperature compensation limiting thermal effects on the sensor output. As with the ASIC TX200, it is suited for process control industries worldwide and provides a cost-effective solution to using conventional HART transmitters.

Reduced inventory levels and maintenance costs are added benefits of using the TX200H. A flexible 10:1 turndown allows users to range the transmitter to cover multiple application requirements and reduce inventory levels through model reduction. Real-time diagnostics report device health status and process performance, alerting users to potential problems to troubleshoot before escalation occurs and avoiding process downtime and emergency maintenance.

Integrating the TX200H into most process systems is simple since the TX200H can use existing wiring as an upgraded, drop-in replacement for a standard analog 4-20 mA transmitter. A user may easily communicate with the TX200H utilizing a handheld device or PC equipped with commercially available HART software.

# FEATURES

- 5:1 & 10:1 pressure range turndowns
- Welded stainless steel wetted material
- Enclosure type 4X/IP66
- Submersible to 100 feet (when used with appropriate watertight conduit connection)
- Wide variety of pressure connections
- Certification of calibration accompanies every unit



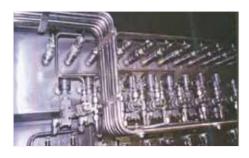


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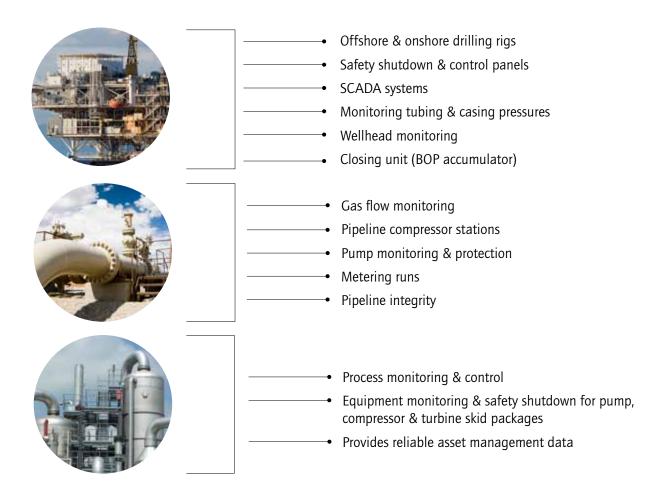


# APPLICATIONS

The TX200 and TX200H pressure transmitters may be used to safely monitor and control a variety of process applications, but are ideally suited for upstream, midstream, and downstream oil & gas applications. cULus approval and ATEX/CE compliance assure that most worldwide hazardous requirements are met.



Instrument Panels





**SPECIFICATIONS** (for all models unless indicated)

) 0. pri (0 to 17.2 har)				
, ,				
0 pci (0 to 172 hor)				
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				
ution				
ver 4-20 mA signal				
D:1 FSPR nally switched. f calibration with the exa				
'00 ohms max. at 24 VD 0 ohms				
aristors and TVS transien				
ischarge tube.				
ded leadwires				



### MECHANICAL

Wetted Materials:	Models 03-08, 15-16, 15929: 316 stainless steel Models 09-14, 17-20: 15-5, 316 stainless steel <i>Consult UE for alternative materials</i>
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
Sensors	Models 03-08, 15929: welded diaphragm, micro-machined piezo-resistive strain gauge silicon element, 0.25 ml silicon oil fill
	Models 09-14, 17-20: welded diaphragm, bonded foil strain gauge element Models 15-16: one-piece weld-free diaphragm and pressure connection, bonded foil strange gauge element
Proof Pressure:	See pressure model chart on page 7
Burst Pressure:	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 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
Shock:	200 G's, one millisecond duration
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
Weight:	TX200A: approx. 1.5 lbs (.68 kg) TX200B: approx. 1.3 lbs (.59 kg) TX200H: approx. 1.3 lbs (.59 kg)



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# APPROVALS

UE declarations and third-party issued Agency certifications are available for download at www.ueonline.com/prod\_approval.



# 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 +80C EN 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 Range		Proof Pressur	e*	Burst Pressure**	
	psi	bar	psi	bar	psi	bar
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	stainless steel diap	bhragm 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
1-piece, weld-free 316 stainless steel diaphragm and HF4 high pressure autoclave 1/4" (female)						
15	0 to 20,000	0 to 1379,0	37,500	2585,5	80,000	5515,8
16	0 to 25,000	0 to 1723,7	40,000	2757,9	90,000	6205,3
316 stainless steel 1/4" NPT (female) pressure connection and welded diaphragm with 4-20 mA output (TX200B 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.



Select letter or number codes to construct part number.

PART #	TX200	н	9	S	1	Н	M446
	Туре	Model	Range	Pressure	Pressure	Output	Options
				Reference	Connection	Signal	
CODE	DESCRIPTION	I					
MODEL DE	SIGNATION —						
Н	HART Smart tra	insmitter					
А	Field-adjustable	e transmitter					
В	Fixed range tran						
15929 <sup>+</sup>	Fixed range trar	nsmitter					
	(no additional c	odes required)					
PRESSURE	RANGE ——						
03	0 to 15						
04	0 to 30						
05	0 to 50						
06	0 to 100					Continued	
07	0 to 250					on page 9	
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						
DDECCIIDE	REFERENCE -						

# PRESSURE REFERENCE -

S psi (sealed gage)

<sup>+</sup> Model incorporates enclosure, pressure range & connection, and output (see pressure model chart on page 7 for description)

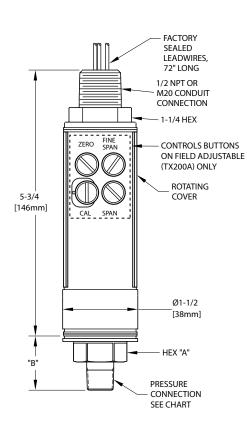


# HOW TO ORDER (CONTINUED)

PART #	ŧ	TX200	Н	9	S	1	Н	M446	
		Туре	Model	Range	Pressure	Pressure	Output	Options	
					Reference	Connection	Signal		
PRESS	JRE CON	NECTION							
1	1/4" NPT (female); NOT AVAILABLE RANGES 15-16								
2			NOT AVAILABLE						
3	1/2″ N	IPT (male); N	OT AVAILABLE F	RANGES 14-16					
4	HF4 hi	gh pressure a	utoclave 1/4" (	female)					
5						GES 03-05, 15-16			
6		•		• •		ANGES 03-05, 15-			
7		-			T AVAILABLE RA	ANGES 03-05, 15-	-16		
8			OT AVAILABLE F						
9		•	le); NOT AVAILA		14-16				
A			T AVAILABLE RA						
B C			T AVAILABLE R <i>A</i> ); NOT AVAILAB		16				
D		•	•			ES 03-05, 15-16			
E		•				ES 03-05, 15-16			
F		•				NGES 03-05, 15-1	6		
G				( )·		NGES 03-05, 15-1			
Н		•	AVAILABLE RAN			· · · · · , ·			
J	G-1/2 (	male); NOT A	VAILABLE RAN	GES 14-16					
OUTPU	и —								
Н	4-20 m	A, HART® 7 c	ommunication p	rotocol					
Т	4-20 m								
D	1-5 VDC 0-10 VDC; NOT AVAILABLE RANGES 03-06								
P		JC; NUT AVA	ILABLE KANGES	03-00					
	-		markings in ha	-					
M276		•	e markings in ba						
M277		-	e markings in kP						
M278									
M423	<ul> <li>ATEX flameproof compliant epoxy-coated aluminum junction box, pre-wired (not UL or cUL approved). NOT AVAILABLE O</li> <li>M20 METRIC THREAD ELECTRICAL CONDUIT VERSION</li> </ul>								
M441	M20 metric thread (male) electrical connection								
M444	Paper ID tag								
M446	S	tainless steel	ID tag and wire	9					
M460	E	xternal grour	nd screw; require	d by ATEX for	non-metallic cor	nduit systems			
M513	UL/CSA approved explosion-proof junction box, pre-wired, meets enclosure type 4 requirements only. NOT ATEX COMPLIA								
M550	C	)xygen servic	e cleaning; alcol	ol cleaning to	remove residue	from the process	connection		
			-	-		-			



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



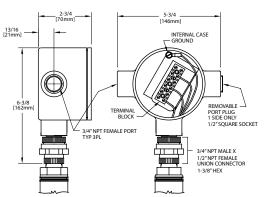
Pressure Connection Chart						
Code	Description	Hex "A"in	Length "B"in [mm]			
1	1/4" NPT (female)	15/16	0.54 [13.7]			
2	1/2" NPT (female)	1-3/8	1.01 [25.7]			
3	1/2" NPT (male)	15/16	1.26 [32.0]			
4	HF4 autoclave (female)	15/16	0.54 [13.7]			
5	FH6 autoclave (female)	1-3/8	0.90 [22.9]			
6	LF4 autoclave (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]			
А	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]			
E	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 output	TX200A & B 1-5 or 0-10 VDC output				
RED	+ VDC	+ VDC				
BLACK	- VDC	- VDC				
GREEN	Earth Ground	Earth Ground				
BLUE	N⁄A	Voltage Output				

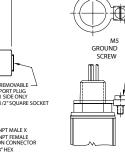


4 [102mm]

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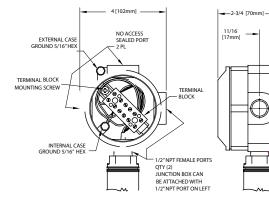


### **OPTION M460 EXTERNAL GROUNDING SCREW**



### T X 2 0 0 - B - 0 6

OPTION M423 ATEX FLAMEPROOF COMPLIANT JUNCTION BOX (Not UL or cUL approved)





# ALTERNATIVE PRODUCTS FROM UE



### **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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