

E2F Explosion-Proof Pressure Transducer

Features

- Flameproof approval for explosion-proof, hazardous applications.
- FM, CSA, ATEX and IECEx approvals
- Ranges vac through 25,000 psi
- IP66/67 Ingress rating
- Wide selection of process connections available
- Customizable configurations
- External magnetic offset & span adjustment
- Barometric pressure ranges available (standard & custom ranges)
- Single-Seal rated per CSA

Typical Uses

- Oil field equipment
- Upstream oil & gas production
- Natural gas compression
- Alternative energy projects
- Engine monitoring
- Process & pneumatic sensing
- Hydrogen applications

Performance Specifications

Reference Temperature: 70 °F ± 3.6 °F, (21 °C ± 2 °C)

Static Accuracy: $\pm 0.25\%$ of span, $\pm 0.50\%$ of span, $\pm 1.0\%$ of span, (0-1.5# Range only available in $\pm 0.5\%$ and 1.0% accuracy) Terminal Point Method includes: hysteresis, linearity, repeatability, offset and span

Stability: $\pm 0.25\%$ year at reference conditions

Environmental Specifications

Thermal Coefficients: Offset: $\pm 0.005\%$ /°F from -40 °F to 257 °F ($\pm 0.009\%$ /°C from -40 °C to 125 °C)
 Span: $\pm 0.005\%$ /°F from -40 °F to 257 °F ($\pm 0.009\%$ /°C from -40 °C to 125 °C)

Temperature Limits: Storage: -58 °F to 257 °F (-50 °C to 125 °C)
 Operating: -40 °F to 176 °F (-40 °C to 80 °C)
 Media: -40 °F to 176 °F (-40 °C to 80 °C)

Humidity: 0-100% (non-condensing)

Functional Specifications

Response Time (Output): 4 ms

Gauge/Compound Pressure Ranges: VAC to 25,000 psig

Shock: 80g, 6 ms, Haversine

Vibration: Random: 10g RMS 20-2000 Hz

Absolute Pressure Ranges: 0 to 7500 psia

Proof Pressure: 1.2X - 2X (See Table 1 on page 2)

Burst Pressure: 3X - 8X (See Table 1 on page 2)




E2F

Pressure Transducer



Key Benefits

- Highly configurable
- Easy calibration of offset and span
- SIL Certified (SIL 3 Capable)

Electrical Specifications

Circuit Protection: Reverse polarity protected

Supply Voltage Output

9-36 Vdc: 4-20 mA, 20-4 mA (2-wire), 0-5 Vdc, 1-5 Vdc, 1-6 Vdc, 0.5-4.5 Vdc

14-36 Vdc: 0-10 Vdc, 1-11 Vdc

Adjustability: $\pm 5\%$ of span non-interactive offset & span

Supply Current: < 8 mA (Vout)

Current Source/Sink for Voltage Output: 1 mA (source)/ 0.1 mA (sink) MAX.

Withstand/Breakdown: 100 Vdc/Vac, optional 500 Vdc/Vac

Single Seal: The E2F Flameproof/explosion proof transducer is designed to meet the requirements of CSA C22.2 No. 60079-40:20 for process sealing between electrical systems and flammable/combustible materials

Contact Us

1 800-328-8258

ashcroft.com

All specifications are subject to change without notice. All sales subject to standard terms and conditions.

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E2F Explosion-Proof Pressure Transducer

Physical Specifications

Ingress Rating: IP66 (NEMA 4X) (STD.)
IP67 (IP69K Consult Factory)

Wetted Material

Diaphragm:	Sensor:	Material:
	A	17-4PH® Stainless steel
	B	316L Stainless steel
	C	316L Stainless steel, liquid isolated
	D	A286

Process Connection: 316L Stainless steel

Non-wetted Material

Housing: 316L Stainless steel

EMC: Directive 2014/30/EU, and EN61326-1,
EN61326-2-3 (Industrial Env.)

Immunity:	61000-4-2 (ESD)	±4kV/±8kV (Contact/Air)
	61000-4-3 (Radiated RF)	10 V/m to 1GHz, 3 V/m to 2GHz, 1 V/m to 2.7GHz
	61000-4-4 (EFT/Burst)	±1kV (5/50ns, 5kHz)
	61000-4-5 (Surge)	±1kV, Earth to Shield over all I/O lines
	61000-4-6 (Conducted RF)	3V (0.15 to 80MHz)
	61000-4-8 (Line Freq. Magnetic)	30A/m

Emissions: EN 55011 (CISPR 11) Class A, Group 1 & FCC (47 CFR 15)

Hazardous Area Certifications

Explosion Proof/Flameproof/Dust Ignition Proof Installations

FM

Class I Division 1, Groups A, B, C, D T4, -40°C < Ta < 80°C
Class II Division 1, Groups E, F, G T4, -40°C < Ta < 80°C
Class III T4, -40°C < Ta < 80°C

Class I, Zone 1, AEx db IIC T4 Gb -40°C < Ta < 80°C
Class II, Zone 21, AEx tb IIIC T135°C Db -40°C < Ta < 80°C

CSA

Class I, Division 1, Groups A, B, C and D T4
Class II, Division 1, Groups E, F and G T135°C
Class III, Division 1, T135°C
Ex db IIC T4 Gb
Ex tb IIIC T135°C Db

ATEX

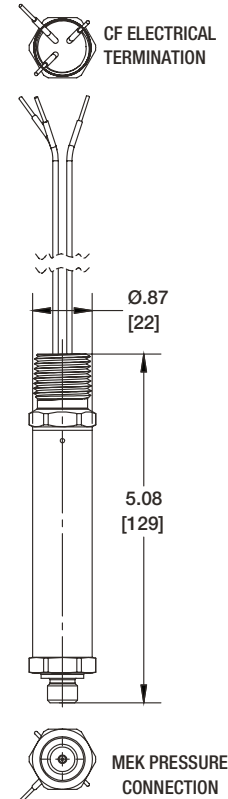
II 2 G Ex db IIC T4 Gb -40°C < Ta < 80°C
II 2 D Ex tb IIIC T135°C Db -40°C < Ta < 80°C

IECEX

Ex db IIC T4 Gb -40°C < Ta < 80°C
Ex tb IIIC T135°C Db -40°C < Ta < 80°C

Dimensions

For reference only, consult Ashcroft for specific dimensional drawings



TruAccuracy

What Does It Mean?

Ashcroft's TruAccuracy™ specification is exclusively based on terminal point methodology instead of statistically derived schemes like 'best fit straight line'.

TruAccuracy™ means the Ashcroft E2F has ±0.25% accuracy out of the box. Zero and span setting errors are already included in the ±0.25% accuracy spec.

The E2F is ready to be installed with no additional calibration adjustments required.

A unit from another manufacturer advertised as ±0.25% best fit straight line may actually be a ±1.25% to ±2.25% device. Using best fit straight line method, the accuracy spec does not include zero and span setting errors, which can be as much as ±1.00% each.

E2F Explosion-Proof Pressure Transducer

Table 1: Proof & Burst Pressure Multipliers

Sensor Range	A Sensor - 17-4PH® SS		B Sensor - 316L SS		C Sensor - 316L SS ISO		D Sensor - A286	
	Proof	Burst	Proof	Burst	Proof	Burst	Proof	Burst
(psi)								
1.5					3.3X	5X		
5					3X	5X		
10					2X	5X		
15					2X	5X		
30					2X	5X		
45	1.9X	8X	1.4X	8X	3.1X	5X		
50	2.9X	8X	2.2X	8X	2.8X	5X		
60	2.4X	8X	1.8X	8X	2.3X	5X		
75	1.9X	8X	1.5X	8X	1.9X	5X		
100	2X	8X	1.5X	8X	3.0X	5X		
150	2X	8X	1.5X	8X	2X	4X		
200	2X	8X	1.5X	8X	3.0X	3X		
300	1.9X	8X	1.5X	8X	2X	3X		
500	2X	8X	1.2X	5X	2X	3X		
750	1.9X	8X	1.2X	5X				
1000	2X	8X	1.2X	5X				
1500	1.9X	8X	1.2X	5X				
2000	2X	8X	1.2X	5X				
3000	1.9X	5X	1.2X	5X				
5000	1.5X	5X	1.2X	5X			2.4X	5X
7500	1.5X	3X					1.6X	5X
10000	1.2X	3X					1.2X	5X
15000	1.7X	3X					1.7X	5X
20000	1.3X	3X					1.3X	3X
25000	1.2X	3X					1.2X	3X

(Compound)

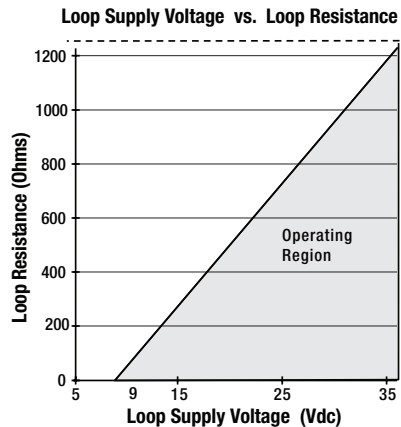
VAC#					2X	5X		
V&15#					2X	5X		
V&30#					2X	5X		
V&45#	2X	8X	1.5X	8X	3X	7.7X		
V&60#	2X	8X	1.5X	8X	2X	5X		
V&100#	2X	8X	1.5X	8X	3.3X	6X		
V&150#	2X	8X	1.5X	8X	2X	4X		
V&200#	2X	8X	1.5X	8X	3X	4.5X		
V&300#	2X	8X	1.5X	8X	2X	3X		

Table 1: Proof & Burst Pressure Multipliers continued

Sensor Range	A Sensor - 17-4PH® SS		B Sensor - 316L SS		C Sensor - 316L SS ISO		D Sensor - A286	
	Proof	Burst	Proof	Burst	Proof	Burst	Proof	Burst
(psia)								
15					2X	5X		
30					2X	5X		
70					2X	5X		
150					2X	4X		
300					2X	3X		
500					2X	3X		
750					2X	3X		
1000					2X	3X		
3000					2X	3X		
5000					2X	3X		
7500					1.5X	3X		

Loop Supply Voltage Chart

FOR TRANSMITTERS WITH 4-20 mA OUTPUT SIGNAL,
THE MINIMUM VOLTAGE AT THE TERMINAL IS 9 VDC



$$V_{MIN} = 9V + (0.022^*A \times R_{LOOP}) \quad (*\text{includes a 10\% safety factor})$$

$$R_{LOOP} = R_{SENSE} + R_{WIRING}$$

$$R_{LOOP} = \text{Loop Resistance (Ohms)}$$

$$R_{SENSE} = \text{Sense Resistance (Ohms)}$$

$$R_{WIRING} = \text{Wire Resistance (Ohms)}$$

NOTE: See power supply requirement chart
for maximum supply voltage limits

E2F Explosion-Proof Pressure Transducer

Ordering Code	Example:	E2F	B	3	C	F02	42	CF	X	10	100#	-XNH
Model												
E2F - Flame proof		E2F										
Sensor Materials - See Table 2 on page 4 for more options												
A - 17-4PH® Stainless steel												
B - 316L Stainless steel			B									
C - 316L Stainless steel (liquid isolated)												
D - A286												
Accuracy												
3 - 0.25% span (not available with 1.5 psi range)				3								
5 - 0.50% span												
7 - 1.00% span												
Calibration Chart												
N - Without calibration chart												
C - With Traceable calibration certificate					C							
Pressure Connections - See Table 3 on page 5 for more options												
F02 - (¼ NPT Female)						F02						
Output Type - Consult factory for additional outputs												
05 - 0-5 Vdc (not available with X1L variation)												
10 - 0-10 Vdc (not available with X1L variation)												
11 - 1-11 Vdc												
15 - 1-5 Vdc												
16 - 1-6 Vdc												
24 - 20-4 mA												
42 - 4-20 mA							42					
45 - 0.5-4.5 Vdc non-ratiometric												
00 - Custom												
Electrical Connections - See Table 4 on page 6 for more options												
CF - (½ NPT conduit w/flying leads)								CF				
Mating Connector												
X - Without mating connector									X			
Flying Lead or Cable Length*												
Max cable length of 30 ft for 05, 10, 11, 15, 16 and 45 output codes, Max cable length 99 ft for 42 and 24 output codes												
03F - 3 Feet of cable or lead wire										10		
06F - 6 Feet of cable or lead wire												
10F - 10 feet of cable or lead wire												
15F - 15 feet of cable or lead wire												
30F - 30 Feet of cable or lead wire												
Pressure Ranges - Coding example only, see Table 5 on page 7 for more options												
100# - 100 psig											100#	

*Note: Ashcroft can supply custom cable lengths in Inches (N) or Meters (M), Consult Factory for options and cost.

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Ordering Code (continued)	Example:	E2F	B	3	C	F02	42	CF	X	10	100#	-XNH
Options (if choosing an option(s) must include an "X")												-X__
CK - Silicone oil fill fluid - only available with S15 & S20 process connection code												
IM - INMETRO approval												
LO - Welded fitting (Applies to 10,000 psi range and rated process connections)												
MY - Mineral oil fill fluid - only available with S15 & S20 process connection code												
NH - Stainless steel tag												
NN - Paper tag												NH
TU - Throttle plug												
UJ - Protective cap - Only available with IM (INMETRO approval)												
UP - Grease fill												
C3 - Material tracability per EN10201.3.1 (Mounting socket only)												
X1 - Fast response time												
1L - SIL Certification												
3W - PLTCR-ER Cable												
6B - Oxygen cleaned for oxygen service												
6W - Oxygen cleaned for non-oxygen service												

Accessory	Part Number
Offset and Span Adjustment Magnet	266A143-01
Accessories must be ordered separately	

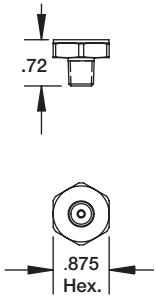
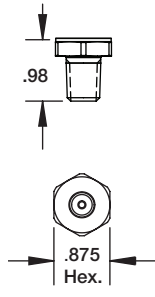
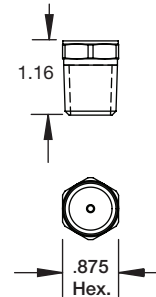
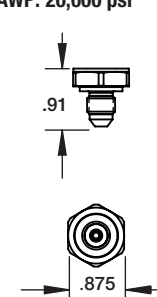
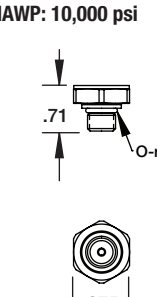
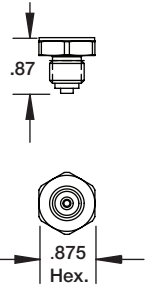
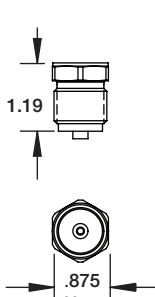
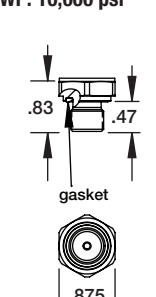
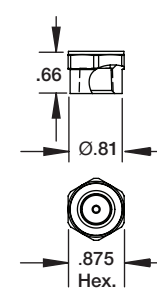
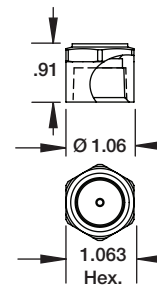
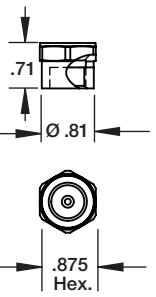
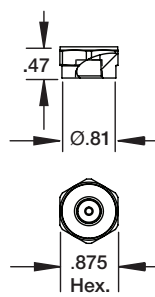
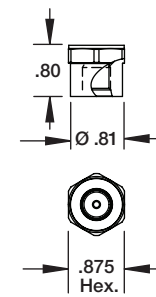
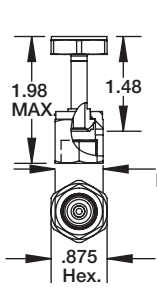
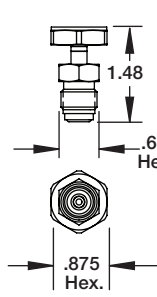
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TABLE 2 - SENSOR PRESSURE RANGE

psi	Sensor Material				bar	Sensor Material				inHg	Sensor Material			
	A 17-4PH® SS	B 316L SS	C 316 ISO	D A286		A 17-4PH® SS	B 316L SS	C 316 ISO	D A286		A 17-4PH® SS	B 316L SS	C 316 ISO	D A286
1.5#			•											
5#			•		400MB			•		10IM			•	
10#			•		600MB			•		20IM			•	
15#			•		1BR			•		30IM			•	
30#	•	•	•		1.6BR	•	•	•		50IM	•	•	•	
45#	•	•	•		2BR	•	•	•		100IM	•	•	•	
50#	•	•	•		2.5BR	•	•	•		200IM	•	•	•	
60#	•	•	•		4BR	•	•	•		300IM	•	•	•	
75#	•	•	•		6BR	•	•	•		500IM	•	•	•	
100#	•	•	•		10BR	•	•	•		1000IM	•	•	•	
150#	•	•	•		16BR	•	•	•		VACIM			•	
200#	•	•	•		20BR	•	•	•		V&30IM			•	
250#	•	•	•		25BR	•	•	•		V&60IM	•	•	•	
300#	•	•	•		40BR	•	•			V&100IM	•	•	•	
500#	•	•	•		60BR	•	•			V&200IM	•	•	•	
750#	•	•			100BR	•	•			30IMA			•	
1000#	•	•			160BR	•	•			50IMA			•	
1500#	•	•			200BR	•	•			100IMA			•	
2000#	•	•			250BR	•			•	200IMA			•	
2500#	•	•			400BR	•			•	300IMA			•	
3000#	•	•			600BR	•			•	500IMA			•	
5000#	•	•		•	1000BR	•			•	1000IMA			•	
7500#	•			•	1400BR				•	20&32IMA			•	
10000#	•			•	17000BR			•		26&32IMA			•	
15000#	•			•	VACBR			•		700&1100MBA			•	
20000#	•			•	V&1BR	•	•	•		900&1100MBA			•	
25000#	•			•	V&1.6BR									
VAC#			•		V&2BR	•	•	•						
V&15#			•		V&4BR	•	•	•						
V&30#	•	•	•		V&6BR	•	•	•						
V&45#	•	•	•		1BRA			•						
V&60#	•	•	•		1.6BRA			•						
V&100#	•	•	•		2BRA			•						
V&150#	•	•	•		2.5BRA			•						
V&200#	•	•	•		4BRA			•						
V&300#	•	•	•		6BRA			•						
15#A			•		10BRA			•						
30#A			•		16BRA			•						
50#A			•		20BRA			•						
100#A			•		25BRA			•						
120#A			•		35BRA			•						
200#A			•		70BRA			•						
300#A			•		200BRA			•						
500#A			•		350BRA			•						
750#A			•		500BRA			•						
1000#A			•											
3000#A			•											
5000#A			•											
7500#A			•											

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Table 3 - Pressure Connection Dimensions

1/8 NPT Male Code: M01 MAWP: 20,000 psi 	1/4 NPT Male Code: M02 MAWP: 20,000 psi 	1/2 NPT Male Code: M04 MAWP: 10,000 psi 	7/16-20 UNJF-3A 37° Flare (SAE AS4395) Code: M76 MAWP: 20,000 psi 	7/16-20 UNJF-2A SAE-Male (SAE J1926 O-Ring Boss seal) Code: MEK MAWP: 10,000 psi 
G1/4 B-Male (EN837-1) Code: MG2 MAWP: 20,000 psi 	G1/2 B Male (EN837-1) Code: MG4 MAWP: 20,000 psi 	G1/4 A-MALE (stud end DIN 3852-E G1/4) Code: MGA MAWP: 10,000 psi 	1/4-18 NPT Female Code: F02 MAWP: 10,000 psi 	1/2-14 NPT Female Code: F04 MAWP: 5,000 psi 
9/16-18 UNF-2B Female Code: F09 MAWP: 25,000 psi 	1/8-27 NPT Female Code: F01 MAWP: 10,000 psi 	7/16-20 UNF-2B SAEJ1926 Code: FRW MAWP: 9,100 psi 	1/4" VCR® gland with 9/16-18 Female Swivel Nut Code: FV2 MAWP: 5,100 psi 	1/4" VCR® gland with 9/16-18 Male Swivel Nut Code: MV2 MAWP: 5,100 psi 

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Table 4 - Electrical Connection Dimensions

Maximum temperature range listed

½ NPT Conduit With Flying Leads	M20 Conduit With Flying Leads	½ NPT Conduit With Cable	M20 Conduit With Cable
Code: CF IP67 (NEMA 4X)	Code: MF IP67 (NEMA 4X)	Code: CC, CV IP67 (NEMA 4X)	Code: MC, MV IP67 (NEMA 4X)
-40 °F to 176 °F (-40 °C to 80 °C)	-40 °F to 176 °F (-40 °C to 80 °C)	-40 °F to 257 °F (-40 °C to 125 °C)	-40 °F to 257 °F (-40 °C to 125 °C)
Diagram showing unvented 1/2 NPT conduit with flying leads. Dimensions: .875 Hex. (top view), 1.30 (height to top of leads).	Diagram showing unvented M20 conduit with flying leads. Dimensions: 1.142 Hex. (top view), 1.30 (height to top of leads).	Diagram showing unvented 1/2 NPT conduit with cable. Dimensions: .875 Hex. (top view), 1.10 (height to top of cable).	Diagram showing unvented M20 conduit with cable. Dimensions: 1.142 Hex. (top view), 1.10 (height to top of cable).
Diagram showing vented 1/2 NPT conduit with flying leads. Dimensions: .875 HEX. (top view), 1.36 (height to top of leads).	Diagram showing vented M20 conduit with flying leads. Dimensions: 1.14 HEX. (top view), 1.36 (height to top of leads).		
Unvented	Unvented		
Vented	Vented		

Vented conduit supplied on units with pressure range ≤ to 500#

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Table 5 - Pressure Ranges

Vac.	PSI	bar	inHg
Compound	VAC#	VACBR	VACIM
	V&15#	V&1BR	V&30IM
	—	V&1.6BR	—
	V&30#	V&2BR	V&60IM
	V&45#	—	V&100IM
	V&60#	V&4BR	—
	—	V&6BR	—
	V&100#	—	V&200IM
	V&150#	—	—
	V&200#	—	—
Positive Pressure (psig)	V&300#	—	—
	1.5#	100MB	3IM
	5#	400MB	10IM
	—	600MB	—
	10#	—	20IM
	15#	1BR	30IM
	—	1.6BR	50IM
	30#	2BR	—
	—	2.5BR	—
	45#	—	—
	50#	—	100IM
	60#	4BR	—
	75#	—	—
	—	6BR	—
	100#	—	200IM
	150#	10BR	300IM
	200#	—	—
	—	16BR	—
	250#	—	500IM
	300#	20BR	—
	—	25BR	—
	500#	—	1000IM
	—	40BR	—
	750#	—	—
	—	60BR	—
	1000#	—	—
	1500#	100BR	—
	2000#	160BR	—
	—	200BR	—
	2500#	—	—
	3000#	—	—
	—	250BR	—
	5000#	—	—
	—	400BR	—
	7500#	—	—
	—	600BR	—
	10000#	—	—
	15000#	1000BR	—
	20000#	—	—
	25000#	17000BR	—

Table 5 - Pressure Ranges (continued)

Vac.	PSI	bar	inHg
Absolute Pressure (psia)	15#A	1BRA	30IMA
	—	1.6BRA	50IMA
	30#A	2BRA	—
	—	2.5BRA	—
	50#A	—	100IMA
	—	4BRA	—
	—	6BRA	—
	100#A	—	200IMA
	—	10BRA	300IMA
	200#A	—	—
	—	16BRA	500IMA
	300#A	20BRA	1000IMA
	500#A	25BRA	—
	750#A	50BRA	—
	1000#A	70BRA	—
	3000#A	200BRA	—
	5000#A	350BRA	—
	7500#A	500BRA	—