

**DURATRAN LOW RANGE
INDICATING PRESSURE
TRANSMITTER
MODEL 2288**

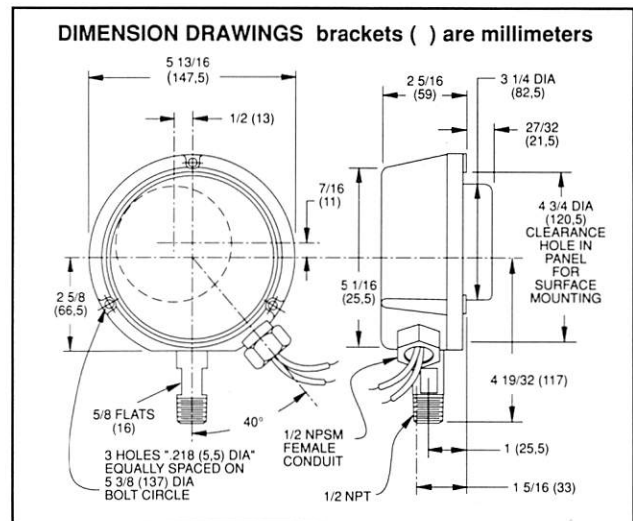
FEATURING

- Solid state hybrid circuitry
- Built in surge and EMI protection
- Local indication in engineering units
- Epoxy potted conduit connection
- Serves gauge pressure and tank level applications
- Available in vacuum, compound, and zero based ranges
- Easily adapts to Ashcroft Viton® diaphragm seal

The new Ashcroft Duratran is an ideal transmitter for tank level applications. Available in vacuum, compound and a variety of zero based ranges, this new model assists in rounding out a complete line of transmitters.

It's now possible to order a variety of transmitters and accessories from a single source - that is recognized as a leader in pressure instrumentation. The new Duratran adapts easily to Ashcroft diaphragm seals that are commonly used in tank level applications.

This low pressure Duratran is presently being used in waste water, process, pulp and paper applications.



FUNCTIONAL SPECIFICATIONS

Service:
Liquid, gas or vapor

Input Ranges:
See range table

Zero Adjustment:
±15% of span

Span Adjustment:
±10% of span

Local Indication:
4 1/2" analog dial indication in engineering units

Ambient Temp. Limits:
-20°F to 160°F

Supply Voltage:
24 VDC nominal, 40 VDC maximum. Transmitter requires 16 VDC no load, minimum.

Output:
4-20 mA DC proportional to input pressure. Current limited to 22 mA DC maximum. Reverse polarity protected.

Overpressure Limits:
10" H₂O to 150" H₂O: 500% of span without a shift in calibration.
5 PSI to 10 PSI: 300% of span without a shift in calibration.

Humidity Limits:
Up to 95% relative humidity at 130°F maximum.

Signal Damping:
Fixed electronic damping time constant of 0.2 seconds.

Surge Withstand:
250 VDC for 50 microseconds

Shock and Vibration:
This low pressure instrument will not function properly if subject to severe shock or vibration. It is not recommended that this instrument be installed in such applications. This instrument may not be liquid filled and therefore remote mounting may be required.

PERFORMANCE SPECIFICATIONS

Accuracy:
Electronic output: ±1% of calibrated span. Includes the combined effects of linearity, hysteresis and repeatability.
Local indication: ±2%/1%/2% of calibrated span corresponding to lower quarter/middle half/upper quarter of the dial.

Repeatability:
Less than ±0.3% of span.

Stability:

Less than ±0.5% of calibrated span total shift for six months.

Temperature Effect:

Less than ±0.02% of span/°F.

Power Supply Effect:

Less than 0.005% of span per volt.

Mounting Position Effect:

Ranges 0/10" H₂O to 0/150" H₂O:
Mount within 5 degrees of vertical.

Ranges 0/5 psi to 0/10 psi:
Mount within 10 degrees of vertical.

Mounting position errors can be mechanically and electronically calibrated out.

EMI Effect:

Less than 0.2% of calibrated span for 10 to 500MHz and a field strength of 10V/m.

PHYSICAL SPECIFICATIONS

Case:
Black Phenol, NEMA 3R

Process Connection:
1/2" NPT male connection, lower

Electrical Connection:
1/2" NPT female, liquid tight conduit connection at case.

Bellows & Socket Material:
Brass or 316 stainless steel

Window:
Glass.

Weight:
2.5 lbs.

DRESSER INDUSTRIES **DRESSER**
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STANDARD RANGES

PRESSURE		VACUUM		COMPOUND
Inner Scale	Outer Scale	Inner Scale	Outer Scale	(Vac/Press.)
in. H ₂ O	oz/in 2	in. H ₂ O	mm Hg	in. H ₂ O
0/10	0/6	10/0	18/0	5/0/5
0/15	0/9	15/0	28/0	10/0/10
0/20	0/12	20/0	37/0	30/0/10
0/30	0/18	30/0	56/0	20/0/20
0/40	0/24	40/0	75/0	40/0/20
0/60	0/35	60/0	110/0	10/0/30
0/80	0/45	80/0	150/0	30/0/30
0/100	0/57	100/0	180/0	70/0/30
0/150	0/90	150/0	270/0	20/0/40
psi	in. Hg	in. Hg	ft. H ₂ O	50/0/50
0/5	0/10	10/0	11/0	in. Hg/psi
0/8	0/16	15/0	17/0	5/0/3
0/10	0/20	20/0	23/0	2/0/5
				5/0/5
				10/0/5

HOW TO ORDER

2288 LOW RANGE INDICATING PRESSURE TRANSMITTER

2288	CODE A S	BELLOWS MATERIAL BRASS AISI 316 STAINLESS STEEL
	CODE 04L	PROCESS CONNECTION 1/2 INCH NPT LOWER CONNECTION
	CODE TS PD 6B TP	OPTIONS THROTTLE SCREW PLASTIC WINDOW CLEANING FOR OXYGEN SERVICE SURGE AND TRANSIENT PROTECTOR
	CODE 0/10" H ₂ O	RANGE SEE RANGE TABLE
2288 A 04L - 0/10" H ₂ O → COMPLETE MODEL NUMBER		

ASHCROFT®

Duratran Pressure Transmitter



DURATRAN

Features and Specifications

The Ashcroft Duragauge has earned a reputation as being the finest production gauge on the market where durability and accuracy are required. This maintained standard of excellence continues with the 2279 Duratran pressure transmitter.

The Duratran introduces a unique electronic pressure indicating transmitter with direct mechanical indication, suitable for aggressive environments and process fluids.

In the Duratran, the outstanding quality and craftsmanship of the Duragauge are combined with the latest state-of-the-art solid state photo optic technology. Thus, the transmitter offers long-term stability with minimum maintenance.

Now you can have the outstanding combination of reliable local indication that continues to function without the need for external power, and a stable, self-contained 4/20ma transmitter, both in a hermetically sealed corrosion proof case.

The Duratran includes all the features of the standard 4½" Duragauge, including a solid front phenolic case, hermetic sealing, glass filled polypropylene threaded ring and safety glass window. Available wetted pressure element materials are stainless steel and monel. A broad line of diaphragm seals is available for corrosive fluids beyond the capability of the standard pressure system materials. Pressure ranges extend from 12 to 20,000 psi.

The high performance electronic pressure transmitter has an accuracy of $\pm 0.5\%$ including linearity, hysteresis and repeatability. The operating range is -40°F to 160°F . Output is two wire — 4/20ma.

The wide selection of system materials and hermetically sealed corrosion proof housing meet applications in a number of industries. These include chemical process markets, petrochemical and refining plants, electric and gas utilities, waste water and other industrial markets.

Ashcroft, the premier trademark in pressure gauges, now offers an electronic pressure indicating transmitter that promises increased service life and long-term stability.

End users can now integrate their pressure gauge installation into safety and data acquisition systems.

Specifications:

Functional Service:	Liquid, gas or vapor
Ranges:	See Table B
Output:	4-20ma, 2 wire
Power Supply:	12/40 vdc
Loop Resistance:	See Table C
Zero Adjustment:	$\pm 20\%$ of full scale
Span Adjustment:	$\pm 10\%$ of full scale
Temperature Limit:	-40°F to 160°F
Over Pressure Limits:	130% of range without damage to tube
Humidity Limits:	0-100% relative humidity
Signal Damping:	0.2 sec time constant
Turn On Time:	Less than 1 second
Enclosure:	NEMA 4

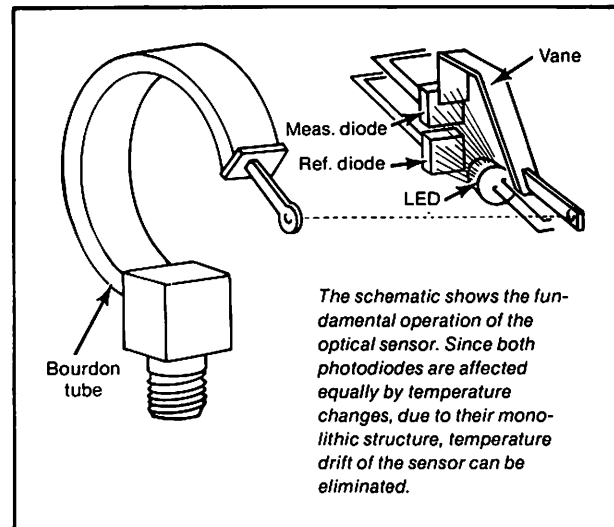
Agency Approval:

Factory Mutual approved as intrinsically safe for Class I, II and III, Division 1, applicable Groups A, B, C, D, E and G in accordance with Dresser drawing 71B185 and entity requirements; non incandive for Class I, II and III, Division 2, Groups A, B, C, D and G hazardous locations.

Principle of Operation

The pressure gauge function utilizes Ashcroft Duragauge technology with its unique, easy calibration, rotary movement and stable pressure element.

The transmitter portion of this fine instrument operates with photo-electronics that continually sense the position of a light, rugged vane that moves directly with the end of the bourdon tube that drives the mechanical indicating mechanism. The opto-electronic system is friction free and self-regulated through electronic feedback to cancel effects of time and temperature. There are no mysterious glues or molecular bonds to creep and degrade accuracy with time. The large measurement motion derived from the basic sensor is inherently linear which simplifies the electronic circuitry and adds reliability.



Performance:

Accuracy:	$\pm 0.5\%$ including linearity, hysteresis, and repeatability
Stability:	$\pm 0.25\%$ F.S. for 6 months
Temperature Effect:	Less than $0.01\%/^{\circ}\text{F}$ plus $0.01 \text{ PSI}/^{\circ}\text{F}$
Position Effect:	Vertical mounting recommended May be re-zeroed to correct error in other positions

Physical:

Dial Size:	4½"
Case:	Solid front, black phenol hermetically sealed
Ring:	Threaded, glass filled polypropylene
Mounting:	Stem, surface, flush (with 1278 M ring)
Pressure Connection:	½ NPT
Window:	Laminated safety glass
Calibration:	Transmitter — Span and zero adjustment on dial Gauge — Zero adjustment with micrometer pointer
Electrical Connection:	30" #18 wire MW, ½ NPT liquid tight conduit connection at case
Weight:	3 lbs.

To Order A Transmitter:

Select:

4 1/2" 2279 (S)SH Lower 1/2 NPT XFM w/1278M Ring 0/100psi

1. Dial Size _____

2. Case Type Number _____

3. Bourdon System (ordering code) — Table A _____

4. Connection: Location & Size _____

5. Factory Mutual Approval _____

6. Mounting Accessory or Variation (if required) _____

7. Range — Table B _____

TABLE A — Bourdon Tube Selection

Ordering Code	Bourdon Tube and Tip Material (all joints TIG welded)	Socket Material	Pressure Range Type	(PSI)	NPT Connection ⁽¹⁾
S	AISI 316 stainless steel	AISI 316 stainless steel	Drawn "C" Tube	12/1500	1/2
			Drawn Helical Tube	2000/20,000	
P	K Monel	Monel 400	Drawn "C" Tube	12/1500	1/2
			Drawn Helical Tube	2000/20,000	

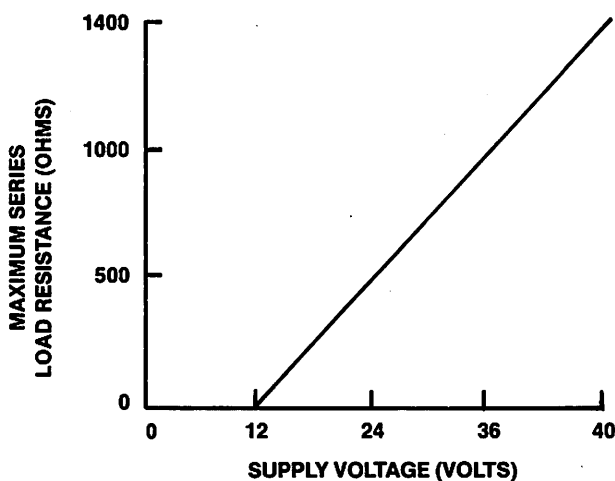
(1) Other connections on application

TABLE B

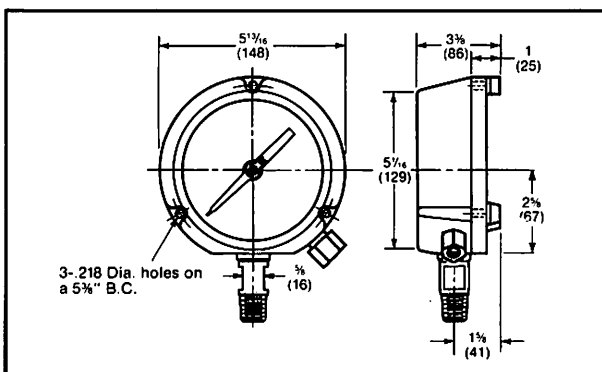
Standard PSI Ranges	Standard Metric Ranges		
	kg/cm ²	bar	kPa
vacuum	0/1	0/1	0/100
compound			
0/12	0/2.5	0/2.5	0/250
0/15	0/4	0/4	0/400
0/30	0/6	0/6	0/600
0/60	0/10	0/10	0/1000
0/100	0/16	0/16	0/1600
0/160	0/25	0/25	0/2500
0/200	0/40	0/40	0/4000
0/300	0/60	0/60	0/6000
0/400	0/100	0/100	0/10,000
0/600	0/160	0/160	0/16,000
0/800	0/250	0/250	0/25,000
0/1000	0/400	0/400	0/40,000
0/1500	0/600	0/600	0/60,000
0/2000	0/1000	0/1000	0/100,000
0/3000	0/1600	0/1600	0/160,000
0/5000	Dual scale and receiver gauge dials available on application		
0/10,000			
0/20,000*			

*Not FM approved range

TABLE C — Loop Resistance



2279 Dimensions In Inches



Optional Flush Mounting Ring

Type 1278M — used to flush mount transmitter. Standard finish is black; chromium plated finish is available at an extra charge.



Gauge Size (Inches)	Ring O.D. (Inches)	Panel Hole I.D. (Inches)	Three Screws Size
4 1/2	6.000	5 37/64	#10-24 x 1 1/8"

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