DTC3 absolute and gauge pressure transmitter

Key features

- True analog design – no microprocessor or firmware/software
- Dustproof and waterproof construction, no humidity effect
- Mounted using the Rosemount 1151 mounting bracket
- Local test points for field adjustability
- No special tools required for installation

Overview

The DTC3 is an analog differential pressure transmitter designed and manufactured by Ultra Energy for non-safety nuclear applications. It is a drop-in replacement for the almost ubiquitous but now discontinued Rosemount™ 1151 analog pressure transmitter. The DTC3 provides precision pressure measurements in applications requiring reliable performance and functional safety. It has a true analog design with no microprocessors, firmware or required software and was developed to offer differential, gauge and absolute pressure measurement. With reduced calibration times, the DTC3 offers significantly reduced installation times.

Technical data

Feature	Description
Reference accuracy	±0.2% span, includes combined effects of linearity, hysteresis, deadband, settability and repeatability
Drift	±0.25% of URL for six months
Temperature effects	±0.5% URL +0.5% of span temperature effect per 100°F (56°C)
Overpressure effects	±0.25% URL - over pressure limit is 2x
Electromagnetic compatibility	European EMC Directive 2014/30/EU by conforming to applicable EN and IEC Standards: compliance testing to the EN 61000 Series standards, CE Marking, declaration of conformity
Load effect	With limits set by the line voltage, the output current is independent of load resistance
Power supply effects	0.005% of calibration span/volt
Power supply and load limits (10-50 mA option available)	Operating region: 4-20 mA: 12-45 VDC 10-50 mA: 30-85 VDC
Span and zero	Continuously adjustable external to the electronics, non-interacting
Zero elevation, zero suppression	Elevated zero and zero suppression must be factory set in order to achieve the specified temperature performance
Direct or reverse acting	Factory set
Range-down	6 to 1 (Min. span is 16.7% URL)
Output 4-20 mA standard	Low saturation <3.8 mA, high saturation 21 mA, supply voltage 12-45 Vdc

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Technical data

Feature	Description
Output 10-50 mA option	Low saturation <8 mA, high saturation 52.4mA, supply voltage 30-85 Vdc
Temperature limits	0°F-185°F (-17.8°C to 85°C). Storage limits: -40°F to 212 °F (-40°C to 100°C)
Volumetric displacement	Less than 0.01 cubic inches (0.16 cubic centimeters)
Enclosure Rating	NEMA 4X (IP 66)
Response Time	0.2 second sensor response time to 50% with a 100% of span step change
Humidity limits	0 to 100% relative humidity (NEMA 4X)
Turn-on time	5 seconds for 99%;1 minute for rated accuracy
Over pressure limit	2 x URL
Diaphragm sensor	15.5 SST
Drain vent valve	316 SST
Process flange	316 SST
Process seal	EPDM
Electronics housing O-ring	BUNA-N
Fill fluid	Silicone oil: DC550 standard, DC200 optional (faster response), no fill fluid on the AP capsule

Technical data

Feature	Description
Sensor module housing	316 SST
Flange Bolt	Medium carbon alloy steel, SAE J429, grade 8, zinc yellow-chromate plated finish per ASTM B633
Electronics housing	Low-copper aluminum with polyurethane paint
Mounting bracket	304 SST
Mounting bolts	300 series stainless steel, ASTM F593
Process connections	¼-18 NPT standard, optional welded fittings or process adapters; IEC 61518 compliant
Electrical Connections	Half inch NPT conduit with screw terminals, standard
Weight (transmitter only)	14.7 lbs (6.7 kg)
Cable	Quick disconnect connector (QDC) mating cable
Gauge sensor technology	Advanced thin film metal strain
Further options	Loop powered, 2 wire, 4-20 mA, 10-50mA available

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DTC3 model matrix

Model	Transmitter type	DP	GP	AP
DTC3DP	Differential pressure transmitter [1]	●		
DTC3GP	Gauge pressure transmitter [2]		●	
DTC3AP	Absolute pressure transmitter [2]			●
Capsule URL		**DP**	**GP**	**AP**
10	30 inH2O, 7.46kPa, 74.6 mBar	●	● [3]	
20	150 inH2O, 37.3 kPa, 373 mBar	●	● [3]	
30	750 inH2O, 186.5 kPa, 1865 mBar	●	● [3]	
40	2770 inH2O (100 psi) , 689.5 kPa, 6.895 Bar		●	●
50	300 psia/g, 2.068 MPa, 20.68 Bar		●	●
60	1000 psia/g, 6.895 MPa, 68.95 Bar		●	●
70	3000 psia/g, 20.68 MPa, 206.8 Bar		●	●
80	6000 psia/g, 41.4 MPa, 414 Bar		●	●
Transmitter output (select one)		**DP**	**GP**	**AP**
E	4-20 mA output with variable damping	●	●	●
G	10-50 mA output with variable damping	●	●	●

1. Transmitter is supplied with aluminum housing, 316 SS Flange and Diaphragm, 316 SS Bleed Valves, Plated Carbon Steel Bolts, and Silicone Fill Fluid.
2. Transmitter is supplied with aluminum housing, 316 SS Flange, 15/5 SS Diaphragm, Plated Carbon Steel Bolts, and Silicone Fill Fluid (GP only).
3. DP transmitter with low side screen vented to atmosphere in order to function as a GP transmitter.
4. Transmitter is supplied with direct acting output standard.
5. Transmitter is supplied with a terminal block electrical connection standard.
6. Transmitter is supplied with a 1/4" NPT process connection standard.
7. Transmitter is supplied with bleed valves installed and no side drain/vent standard.

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DTC3 model matrix

Options		DP	GP	AP
Transmitter output action [4]				
R	Reverse acting output	●	●	●
Electrical Connection with dual cavity Al housing [5]				
C1	QDC	●	●	●
C2	Seal gland	●	●	●
C3	Souriau 8N45 connector	●	●	●
C4	Harting connector	●	●	●
Mounting bracket				
B0	4-20 mA output with variable damping	●	●	●
Process connection [6]				
P1	Welded 3/8" Swagelok process fitting	●	●	●
P2	1/2" process connection adapter (football)	●	●	●
P3	1/4" Pprocess connection adapter (football)	●	●	●
Drain/vent [7]				
D1	Side drain/vent top	●	●	●
D2	Side drain/vent bottom	●	●	●
Remote seals/capillaries				
RS	Consult factory (additional information required)	●	●	●

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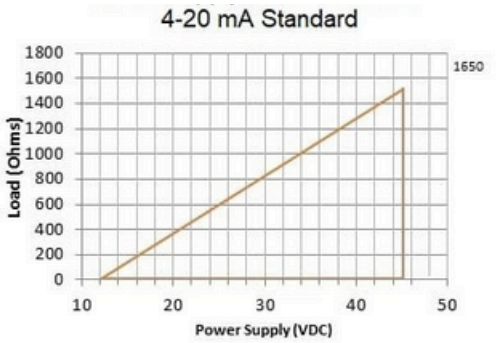
DTC3DP - 30 G R - B0 P2 D1
DTC3 Differential Pressure Transmitter, 750 inH2O Range, 10-50 mA Output, Reverse Acting, Terminal Block Electrical Connection (no code), Universal Mounting Bracket, 1/2" Process Connection Adapter, Side Drain/Vent Top.

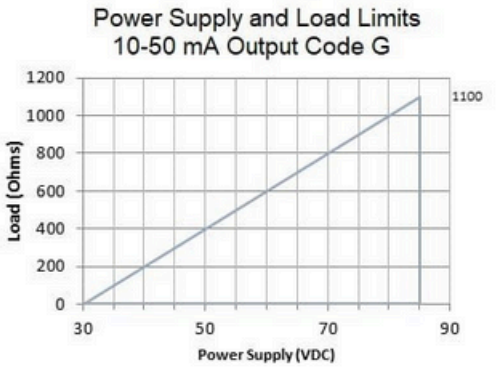
DTC3GP - 50 E - C1 B0 P1
DTC3 Gauge Pressure Transmitter, 300 psi Range, 4-20 mA output, Direct Acting (no code), EGS Connector, Universal Mounting Bracket, Welded 3/8" Swagelok Process Fitting.

DTC3AP - 70 E - B0 D2
DTC3 Gauge Pressure Transmitter, 3000 psi Range, 4-20 mA output, Direct Acting (no code), Terminal Block Electrical Connection (no code), Universal Mounting Bracket, Side Drain/Vent Bottom.

Technical specifications

Power supply and load limits





Specifications subject to change

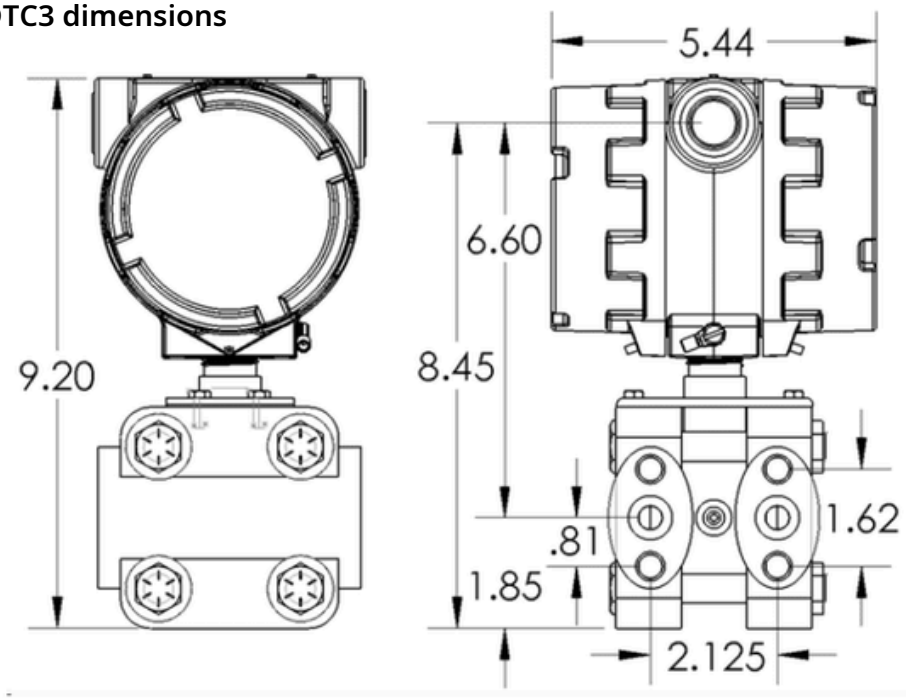
Specification is subject to change without notice. Transmitters are factory calibrated to the customer's specified range. If calibration is not specified, the transmitters are calibrated at maximum range. Calibration is performed at ambient temperature and pressure.

AP/GP ranges and limits

	Range Code	URL	Span Range	Static Pressure / Overpressure
GP*	10	30 inH2O	5 to 30 inH2O	2550 psi
GP*	20	150 inH2O	25 to 150 inH2O	2550 psi
GP*	30	750 inH2O	125 to 750 inH2O	2550 psi
GP/AP	40	100 psi	16.7 to 100 psi	200 psi
GP/AP	50	300 psi	50 to 300 psi	600 psi
GP/AP	60	1000 psi	166.7 to 1000 psi	2000 psi
GP/AP	70	3000 psi	500 to 3000 psi	6000 psi
GP/AP	80	6000 psi	1000 to 6000 psi	9000 psi
	Range Code	**URL**	**Span Range**	**Static Pressure / Overpressure**
GP*	10	7.46 kPa	1.24 to 7.46 kPa	17.58 MPa
GP*	20	37.3 kPa	6.22 to 37.3 kPa	17.58 MPa
GP*	30	186.5 kPa	31.1 to 186.5 kPa	17.58 MPa
GP/AP	40	689.5 kPa	114.9 to 689.5 kPa	1.38 MPa
GP/AP	50	2.068 MPa	0.34 to 2.068 MPa	4.14 MPa
GP/AP	60	6.895 MPa	1.15 to 6.895 MPa	13.8 MPa
GP/AP	70	20.68 MPa	3.45 to 20.68 MPa	41.4 MPa
GP/AP	80	41.4 MPa	6.9 to 41.4 MPa	62.05 MPa
	Range Code	**URL**	**Span Range**	**Static Pressure / Overpressure**
GP*	10	74.6 mBar	12.4 to 74.6 mBar	175.8 Bar
GP*	20	.373 Bar	.062 to .373 Bar	175.8 Bar
GP*	30	1.865 Bar	.311 to 1.865 Bar	175.8 Bar
GP/AP	40	6.895 Bar	1.15 to 6.895 Bar	13.79 Bar
GP/AP	50	20.68 Bar	3.4 to 20.68 Bar	41.37 Bar
GP/AP	60	68.95 Bar	11.5 to 68.95 Bar	137.9 Bar
GP/AP	70	206.8 Bar	34.5 to 206.8 Bar	413.7 Bar
GP/AP	80	413.7 Bar	68.9 to 413.7 Bar	620.5 Bar

*DP configured to operate as a GP.

DTC3 dimensions



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About Ultra Energy

Organizations working with nuclear and industrial technologies must deliver reliable operations at the same time as safeguarding people, the environment and infrastructure. We develop and manufacture measurement and control solutions that give our customers complete, long-term control over systems operating in harsh environments, helping them operate safely and increasing the value derived from their investments over their total lifespan.

Part of Curtiss-Wright, Ultra Energy has worked with nuclear and industrial customers for nearly 70 years. We support customers across the world from facilities located in the US and UK. Our solutions are embedded in strategic national infrastructure and our people are active partners in customer programs that are focused on delivering advanced future nuclear and industrial capabilities.