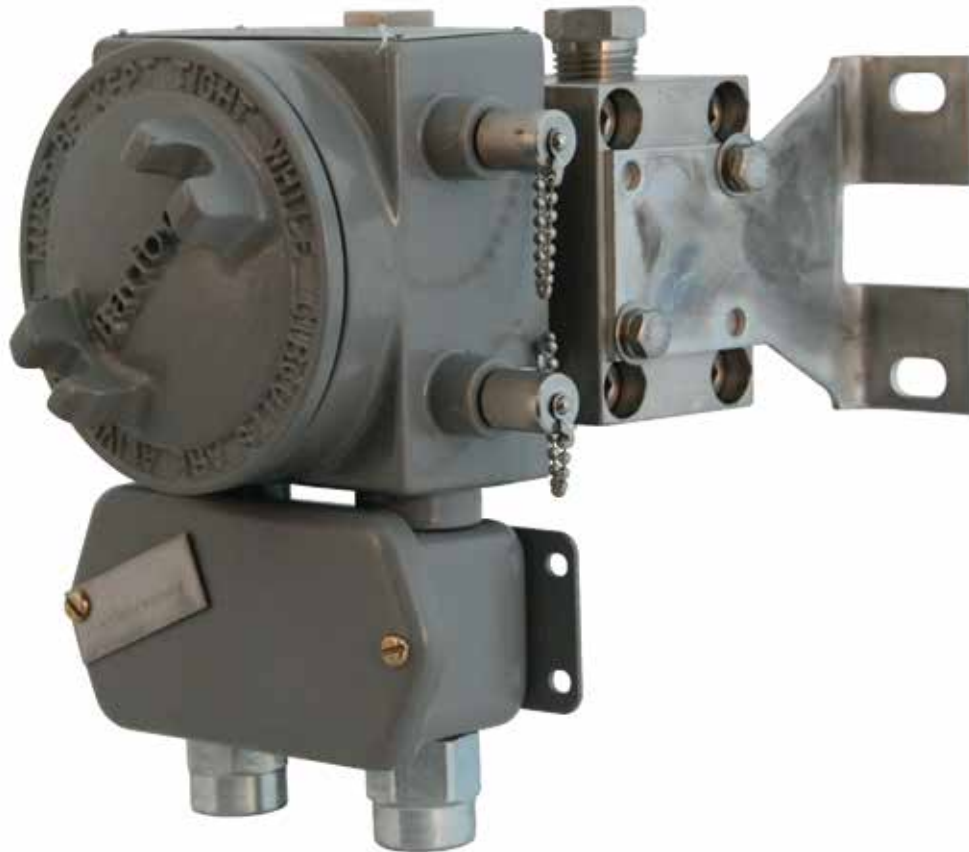


## BARTON Model 752A Differential Pressure Electronic Transmitter



Cameron's BARTON® Model 752A Differential Pressure Electronic Transmitter delivers 0.5% accuracy with static pressure to 3000 psig.

### Operating Principle

Ruggedness and accuracy are combined in the Model 752A to provide a premium-grade electronic transmitter in a compact, weatherproof enclosure.

The strain gauge beam is internally mounted within the DPU, so there are no mechanical connections to break the pressure boundary or contribute to hysteresis. The transmitter delivers an output signal that is precisely proportional to the differential pressure. A molecularly-bonded silicon strain gauge with a high gauge factor is used to convert mechanical force into a regulated and measurable signal.

The electronic components used in the transmitting unit are all solid-state and mounted on a high quality, pluggable, laminated printed circuit board. A small replaceable circuit board is provided for overvoltage protection in the event of lightning or other high voltage spikes. The two-wire electrical output is 4 to 20 mA or 10 to 50 mA, which is compatible with most electronic receiving devices.

### Enclosure

Electronics are enclosed in a case that provides a moisture-free and dust-free environment. All process wetted parts are fabricated from 316 stainless steel. No aluminum is used in the construction of a Model 752A transmitter.

### Actuating Unit

The differential pressure unit that actuates the transmitter features dual rupture-proof bellows that are filled with clean, non-corrosive silicone oil. Overrange pressures up to 3000 psig, in either direction, will not damage the unit or impair its accuracy. Temperature compensation is provided by a free-floating bellows on the high-pressure side of the meter body and by electronic techniques.

Standard differential pressure ranges are rated from 0-30" to 0-500 psid. The static pressure range rating is 0 to 3000 psig. Consult factory for other ranges.

### Electronic Transmitting Unit

During operation, the differential pressure unit bellows move in proportion to the differential pressure applied across the bellows unit assembly. The linear motion is transmitted directly to the strain gauge sensor located in the differential pressure unit (DPU). The strain gauges, constructed of high-grade piezo-resistive silicon, provide current flow variations proportional to the detected differential pressure. The resulting electrical signal is then conditioned to a 4 to 20 mA or 10 to 50 mA

output by means of the hybrid-integrated circuitry. The circuit is operable up to 70 VDC per load. This higher voltage allows the transmitter to operate over very long distances, so customers have fewer installation challenges. With proper installation, the transmitter is insensitive to RFI. An optional EMI/RFI filter feature is also available.

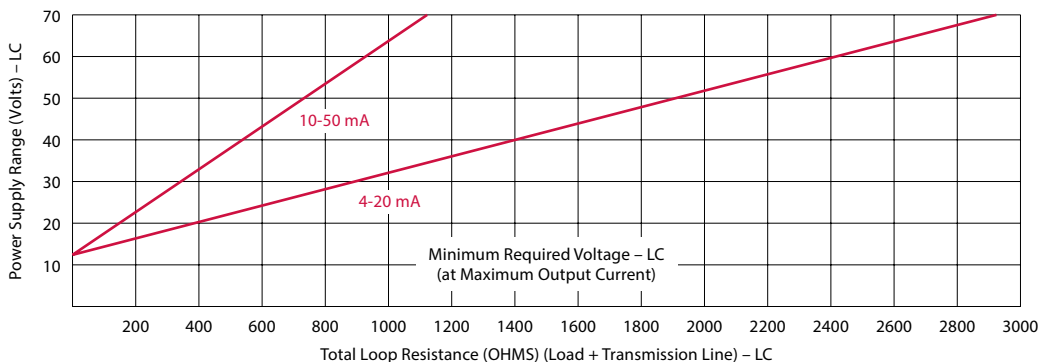
Zero center or split ranges are available on order. For example, a 0-60" w.c. range may be ordered 30-0-30" w.c. or 15-0-45" w.c.

#### Model 752 is replaced by 752A:

Some critical parts used to manufacture the hybrid circuits in the BARTON Model 752 and 753 transmitters are no longer commercially available and suitable alternate parts are not available that will work within the hybrid package. Cameron Measurement Systems' division has redesigned the circuit that makes these transmitters function and has created a discrete component circuit board that is equivalent in operation with improved reliability and stability. Transmitters manufactured with this discrete component circuit board are now designated BARTON Model 752A and 753A transmitters. The performance of these new products remains identical with the original products as does the factory parts testing and product assembly, calibration and compensation processes. Because the overall form of the transmitters remains unchanged, the revised circuit functions in the same manner as the previous circuit. Because the mass of the new discrete component circuit board is essentially the same as the mass of the original circuit board using the hybrid circuit, with respect to the overall mass of the transmitter, the qualification of the Model 752A transmitter remains as documented in Cameron Engineering Report 9A-CR3-752-2.

Figure 1

Power Supply vs. Load Resistance



## General Specifications

Performance	
Input range	0-30" water column to 0-500 psid (consult Cameron for other ranges)
Output	4 to 20 mA or 10 to 50 mA, direct and reverse acting
Reference accuracy*	± 0.5% of factory calibrated span, including effects of non-linearity, hysteresis, and repeatability (± 0.25% accuracy optional)
Zero/span adjustments	Combined zero/span field adjustments are limited to ± 5% of factory-calibrated span See zero suppression and custom span for additional options.
Zero suppression	Available as an option (no suppression on standard units) Up to 50% suppression of factory-calibrated span
Custom span	Available as an option 20% to 100% of factory-calibrated span. Minimum span is 30" w.c.
Sensitivity	± 0.01% of factory calibrated span
Power requirements 4 to 20 mA	(see Figure 1 on previous page) 12 VDC plus 2 VDC per 100 ohm load (to 70 VDC max)
10 to 20 mA	12 VDC plus 5 VDC per 100 ohm load (to 70 VDC max)
Load range 4 to 20 mA	(includes line and receiver; see Figure 1) 50 ohm per volt above 12 V (to 2900 ohm max)
10 to 50 mA	20 ohm per volt above 12 V (to 1150 ohm max)
Load effect* 4 to 20 mA	± 0.025% of factory-calibrated span per 100 ohm change
10 to 50 mA	± 0.05% of factory-calibrated span per 100 ohm change
Power supply effect* 4 to 20 mA	± 0.025% of factory-calibrated span per 1 V change
10 to 50 mA	± 0.05% of factory-calibrated span per 1 V change
Noise*	0.2% peak-to-peak maximum of factory-calibrated span
Thermal effect*	± 1.0% of factory-calibrated span per 100° F (38° C) change within the operating temperature range selected (combined effect on zero and span)
Operating temperature	40° F to 135° F (standard) -15° F to 135° F (optional)
Maximum safe working pressure	3000 psig

Static pressure effects* 1 to 30 psid 30 to 200 psid 200 to 500 psid	± 0.2% of factory-calibrated span per 1000 psig ± 0.5% of factory-calibrated span per 1000 psig ± 1.0% of factory-calibrated span per 1000 psig
Overpressure effects* 1 to 30 psid 30 to 200 psid 200 to 500 psid	± 0.5% of factory-calibrated span per 1000 psig ± 1.5% of factory-calibrated span per 1000 psig ± 3.0% of factory-calibrated span per 1000 psig
Overpressure limit	Up to 3000 psig on either side of DPU without damage to unit
Process connections	1/4" and 1/2" NPT (female) on both high and low pressure sides
Weight	8 lb
Electrical connections	1/2" conduit connections to internal screw terminals (external junction box optional)

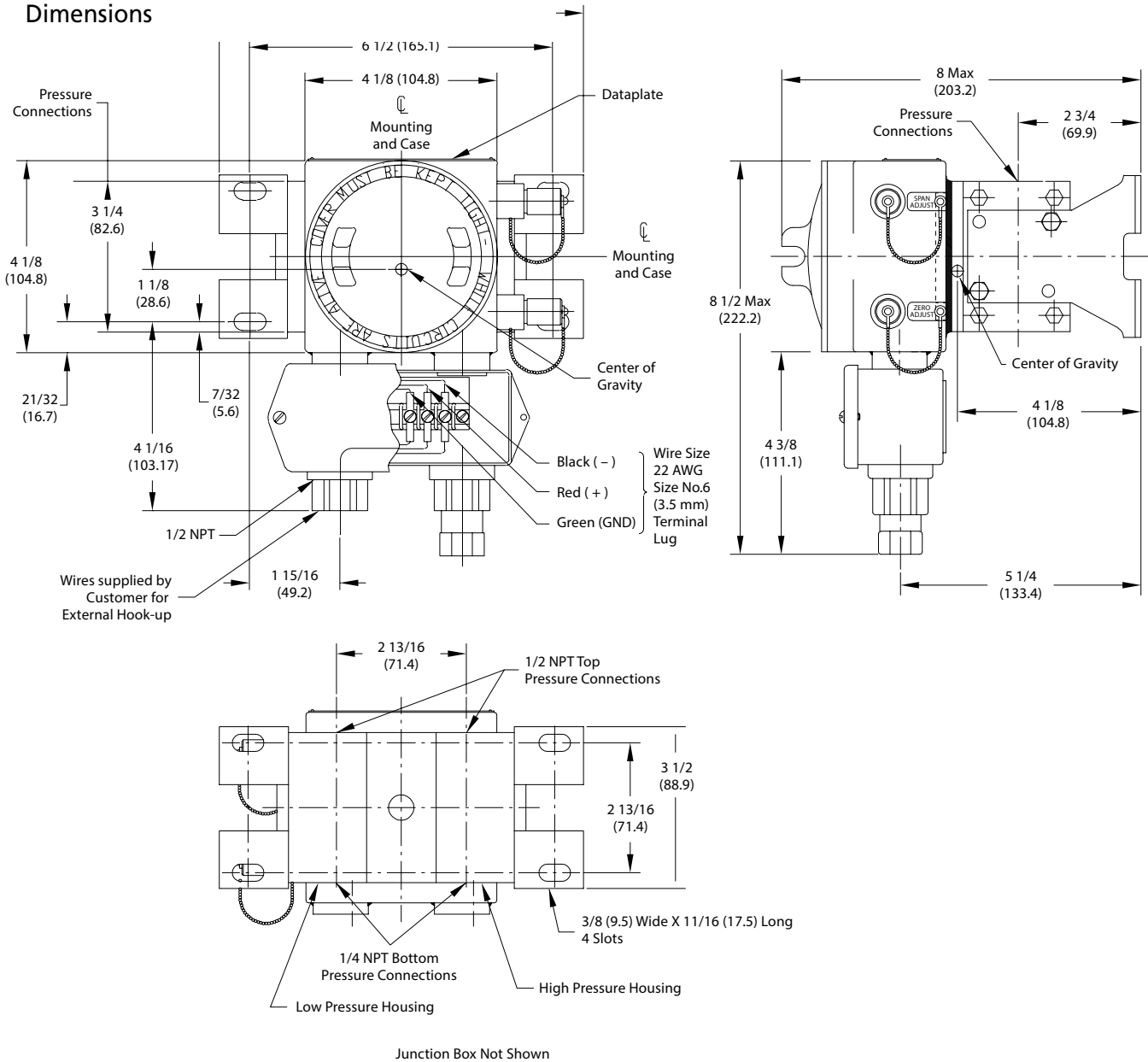
\* Turndown has a directly proportional effect on the indicated specifications. Zero or span field adjustments beyond ± 5% may affect indicated performance. Calibration is by the end-point method with zero and full scale outputs held to ± 0.05% of true calibrated values.

## Materials of Construction

Bellows	316 stainless steel or Inconel 625
Center block	316 stainless steel
Drain/vent plugs	316 stainless steel
Pressure housings	316 stainless steel
Port adapters	316 stainless steel
Case	Alloy steel, cadmium-plated
Mounting bracket	Alloy steel, cadmium-plated
O-rings for pressure boundary	EPT standard, Viton® optional
O-rings for case sealing	EPT
Fill fluid	Silicone oil
Paint	Two-part epoxy
Qualification	

The Model 752A transmitter has been subjected to IEEE-344 qualification testing that demonstrates that the unit will not lose its pressure boundary or structural integrity when subjected to loadings associated with seismic accelerations up to 12Gs.

### Dimensions



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