

D5100

Industrial Differential Pressure Transducer

- ▣ Measurement ranges 0 ... 0.07 bar to 0 ... 35 bar
- ▣ Differential pressure
- ▣ Accuracy 0.1 % (for ranges ≥ 0.35 bar)
- ▣ Output [supply voltage]:
 - 0 ... 100 mV [10 VDC, max. 14 VDC],
 - 0.5 ... 4.5 ratiom. [5 VDC], 1 ... 5 V [8 ... 30 VDC]
 - 4 ... 20 mA [9 ... 30 VDC]



The D5100 series sets the price and performance standard for differential pressure transducers used in demanding environments.

The amplified model of the D5100 series exceeds the latest heavy industrial CE requirements including surge protection and reverse polarity protection. The amplified and mV output pressure transducers both have two pressure ports for high and low pressures and all wetted parts are made of 316L stainless steel. They come in a variety of electrical configurations and ranges from 1 to 500 psi (up to 35 bar).

▣ Features

- Heavy industrial CE approval (amplified only)
- As low as ± 0.1 % pressure non linearity
- Rugged construction: Can withstand 50 g shock/20 g vibration
- Up to -40°C to $+125^{\circ}\text{C}$ operating temperature range
- Excellent stability
- Various output, pressure ports and electrical connections

▣ Applications

- Process controls
- Tank level measurement
- Filter performance monitoring
- Corrosive fluids and gas measurement systems
- Flow measurements

▣ Standard Ranges, Differential pressure

Ranges in psi	Ranges in bar
0 ... 1	0 ... 0.07
0 ... 5	0 ... 0.35
0 ... 15	0 ... 1
0 ... 30	0 ... 2
0 ... 50	0 ... 3.5
0 ... 100	0 ... 7
0 ... 300	0 ... 20
0 ... 500	0 ... 35

■ Performance Specification (Amplified Output)

Typical Drive: See Output Options Table
Ambient Temperature: 25°C (unless otherwise specified)

Parameter	Range 1 psi (0.07 bar)	Range 5 psi (0.35 bar)	Ranges 15 psi to 500 psi (1 bar to 35 bar)	Notes
Accuracy:	±0.3 % span	±0.25 % span	±0.1 % span	1
Isolation, body to any lead:	1 MΩ @ 25 VDC			
Pressure cycles, min.:	1 x 10 ⁶ FS cycles			
Proof pressure (high side), max:	10x rated	3x rated	3x rated	2
Proof pressure (low side), max:	10x rated	3x rated	3x rated	3
Burst pressure (high side), max:	12x rated	4x rated	4x rated	2
Burst pressure (low side), max:	12x rated	4x rated	4x rated	3
Line (common) pressure, max:	1000 psi (68 bar)			
Line pressure effect on zero, typ.:	0.004 % span/psi	0.0008 % span/psi	0.0005 % span/psi	
Long term stability, typ.:	±0.25 % span/year	±0.1 % span/year	±0.1 % span/year	
Total error band:	±0.1 % span	±1.0 % span	±1.0 % span	
Compensated temperature:	-20 ... +85 °C			
Operating temperature:	-40 ... +85 °C	-40 ... +125 °C	-40 ... +125 °C	4
Storage temperature:	-40 ... +125 °C			4
Load resistance (R _L):	R _L > 100 kΩ			5
Sensor type:	Differential pressure sensor with unidirectional calibration			
Pressure port material:	316L stainless steel			
Bandwidth, typ:	DC to 1 kHz			
Shock:	50 g, 11 ms. Half sine shock per MIL-STD-202F, method 213B, condition A			
Vibration:	±20 g, MIL-STD-810C, procedure 514.2, fig 514.2-2, curve L			

Notes

1. TEB (Total Error Band) of linearity, hysteresis and repeatability using Best fit straight line.
2. 1000 psi, whichever is less.
3. 150 psi, whichever is less.
4. Except cable 105°C Max.
5. Voltage output.

CE Compliance:

EN55022 Emissions Class A and B
IEC61000-4-2 Electrostatic Discharge Immunity (6 kV contact / 8 kV air)
IEC61000-4-3 EM Field Immunity (30 V/m)
IEC61000-4-4 Electrical Fast Transient Immunity (1kV)
IEC61000-4-5 Surge (1 kV)
IEC61000-4-6 Conducted Immunity (10 V)
IEC61000-4-9 Pulsed Magnetic Field Immunity (100 A/m)

Options:

			Order Code
Pressure Port Options:	1/4-19 BSPP male	dim C 3.08 in (78.3 mm)	2
	1/4-18 NPT male	dim C 3.18 in (80.8 mm)	5
	1/4-19 BSPP female	dim C 2.18 in (55.42 mm)	F
	1/4-18 NPT female	dim C 2.18 in (55.42 mm)	G
Electrical Connection Options:	2 ft cable		1
	Packard connector		4
	Bendix connector		5
	Hirschmann connector		6
Output Options:	0.5 ... 4.5 V (ratiometric)	typ. 5 V (4.75 ... 5.25 V)	3
	1 ... 5 V	8 ... 30 V	4
	4 ... 20 mA	9 ... 30 V	5

■ Performance Specification (mV Output)

Supply Voltage: 10 VDC

Ambient Temperature: 25°C (unless otherwise specified)

Parameter	Range 1 psi (0.07 bar)	Range 5 psi (0.35 bar)	Ranges 15 psi to 500 psi (1 bar to 35 bar)	Notes
Supply voltage:	10 VDC, max. 14 VDC			
Zero pressure output:	±2 mV	±2 mV	±1 mV	
Span:	80 mV (77 ... 83 mV)	100 mV (98 ... 102 mV)	100 mV (99 ... 101 mV)	
Accuracy:	±0.3 % span	±0.25 % span	±0.1 % span	1
Input resistance:	typ. 9.0 kΩ (5.5 ... 12.5 kΩ)			
Output resistance:	4.0 ... 30.0 kΩ	4.0 ... 30.0 kΩ	4.0 ... 25.0 kΩ	
Isolation, body to any lead:	50 MΩ @ 50VDC			
Pressure cycles, min.:	1 x 10 ⁶ FS cycles			
Proof pressure (high side), max:	10x rated	3x rated	3x rated	2
Proof pressure (low side), max:	10x rated	3x rated	3x rated	3
Burst pressure (high side), max:	12x rated	4x rated	4x rated	2
Burst pressure (low side), max:	12x rated	4x rated	4x rated	3
Line (common) pressure, max:	1000 psi (68 bar)			
Line pressure effect on zero, typ.:	0.004 % span/psi	0.0008 % span/psi	0.0005 % span/psi	
Long term stability, typ.:	±0.25 % span/year	±0.1 % span/year	±0.1 % span/year	
Temperature coefficient, span:	±1.5 % span	±1.5 % span	±1.0 % span	
Temperature coefficient, offset:	±2.5 % span	±1.5 % span	±1.0 % span	
Output load resistance:	5 MΩ			
Output noise (10 Hz to 1 kHz):	1.0 μV _{p-p}			
Response time (10 % to 90 %):	0.1 ms			
Compensated temperature:	0 ... +50 °C	0 ... +70 °C	-20 ... +85 °C	
Operating temperature:	-40 ... +85 °C	-40 ... +125 °C	-40 ... +125 °C	
Storage temperature:	-40 ... +125 °C			4
Voltage breakdown:	500 V _{rms} @ 50 Hz, leakage current <1 mA			
Sensor type:	Differential pressure sensor with unidirectional calibration			
Pressure port material:	316L stainless steel			
Shock:	50 g, 11 ms. Half sine shock per MIL-STD-202F, method 213B, condition A			

Notes

1. RSS of linearity, hysteresis, and repeatability using Best fit straight line.
2. 1000psi, whichever is less.
3. 150psi, whichever is less.
4. Except cable 105°C Max.

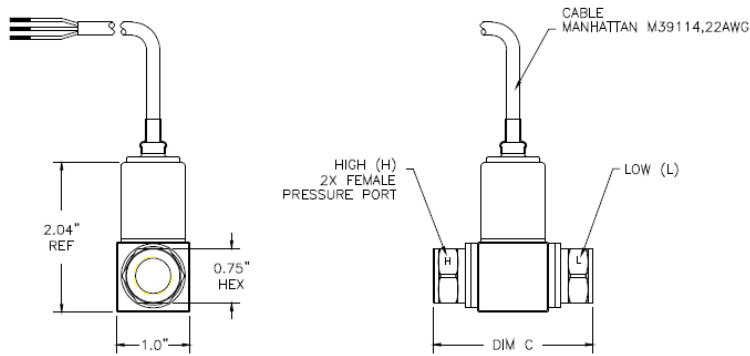
Options:

			Order Code
Pressure Port Options:	1/4-19 BSPP male	dim C 3.08 in (78.3 mm)	2
	1/4-18 NPT male	dim C 3.18 in (80.8 mm)	5
	1/4-19 BSPP female	dim C 2.18 in (55.42 mm)	F
	1/4-18 NPT female	dim C 2.18 in (55.42 mm)	G
Electrical Connection Option:	2 ft cable		1
Output Option:	80 mV (1 psi)	typ. 10 VDC, max. 14 VDC	2
	100 mV (≥5 psi)		



■ Dimensions and Wiring

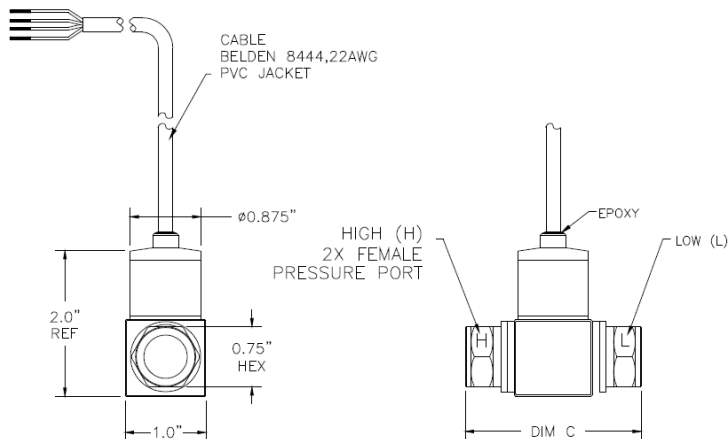
Cable (amplified output), IP67



4 ... 20 mA output
 red: + supply
 black: - supply

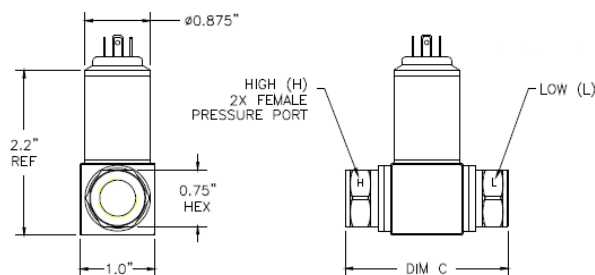
V output:
 red: + supply
 white: + output
 black: common

Cable (mV output), IP67



mV output:
 red: + supply
 black: - supply
 green: + output
 white: - output

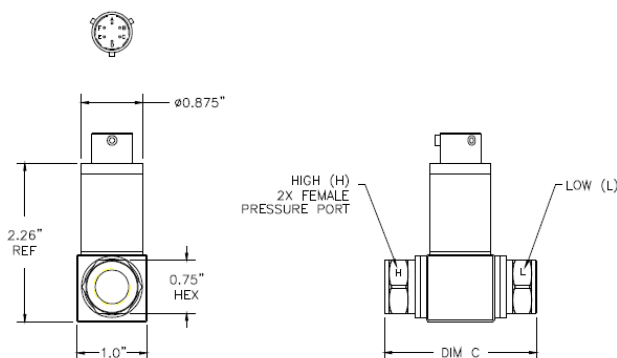
Hirschmann connector DIN43650-C, IP65



4 ... 20 mA output:
 Pin 1: + supply
 Pin 2: - supply
 Pin 3: nicht belegt
 Pin 4: case ground

V output:
 Pin 1: + supply
 Pin 2: + output
 Pin 3: common
 Pin 4: case ground

Bendix PTIH-10-6P connector, IP66



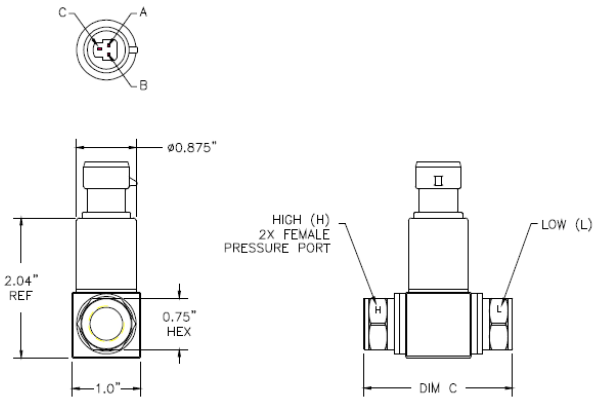
4 ... 20 mA output:
 Pin A and B: + supply (internally connected)
 Pin C and D: - supply (internally connected)
 Pin E: not connected
 Pin F: not connected

V output:
 Pin A: + supply
 Pin B: + output
 Pin C: common
 Pin D: common
 Pin E: not connected
 Pin F: not connected

All dimensions in inches, approx. values.

These drawings are for information only and not intended for construction purpose. Please ask for detailed drawings.

Packard connector, IP66



4 ... 20 mA output:

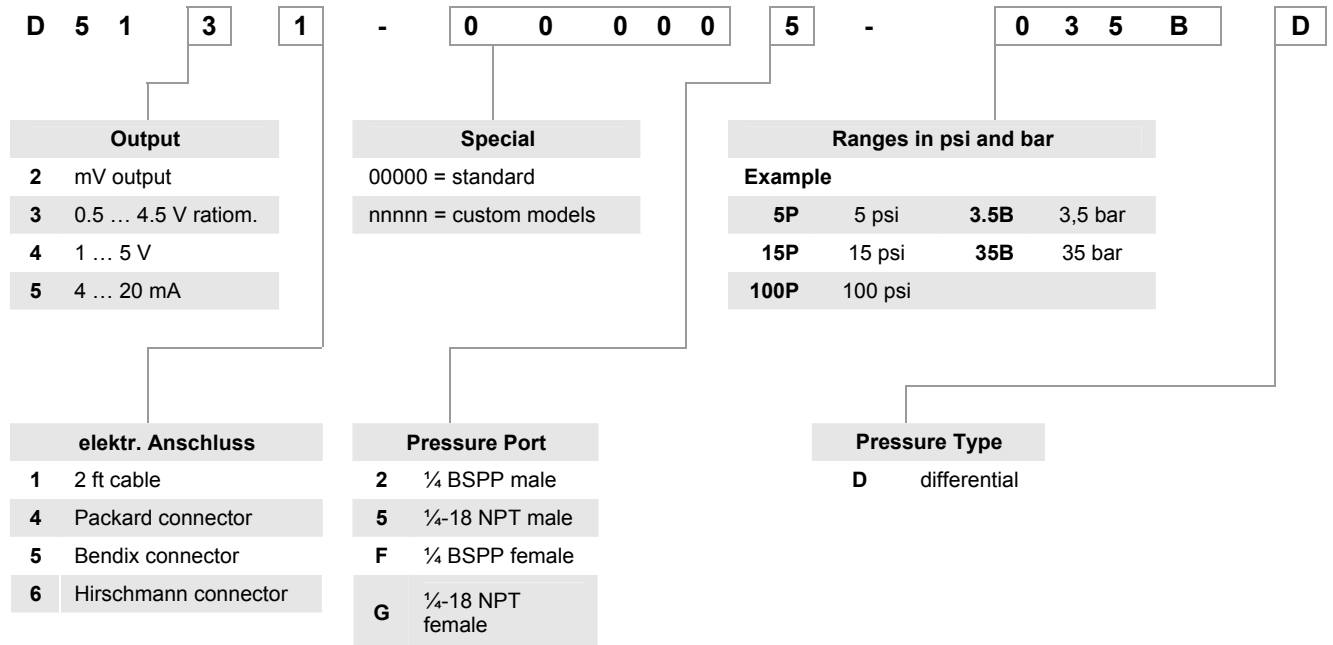
Pin A: + supply
Pin B: - supply
Pin C: not connected

V output:

Pin A: + supply
Pin B: common
Pin C: + output

All dimensions in inches, approx. values.
These drawings are for information only and not intended for construction purpose.
Please ask for detailed drawings.

Ordering Information



Example: D5131-000005-035BD

D5100 standard model with supply voltage 5 V, output 0.5 ... 4.5 V ratiometric, cable, pressure port ¼ NPT and range 0 ... 35 bar differential pressure.

Due to continual product development, ALTHEN and partners reserve the right to vary the foregoing details without prior notice.