

Nomenclature

TYPE BCN2/3/4/5/6 SMART ELECTRONIC PRESSURE TRANSMITTER

Pos.	4	5	6	7	8	9	10	11																																																																																																		
BCN	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SMART ELECTRONIC PRESSURE TRANSMITTER BCN2 through BCN6																																																																																																	
2 3 4 5 6 3 4 5 6 7 8 9 2 3 4 7 0 1 2 0 1 3 4 5 6 7 8 9	Pg. 1-4 TYPE Medium Range (3600 psi maximum static pressure) High Range (2000 psi maximum static pressure) BCN38 or (3600 psi maximum static pressure) BCN36, 37 High Static Pressure (6000 psi maximum static pressure) Gage Pressure Absolute Pressure SPAN (min to max span) TYPE 3 to 30 inches H ₂ O BCN2, 5 20 to 200 inches H ₂ O BCN2, 4, 5, 6 (Medium) 75 to 750 inches H ₂ O BCN2, 4, 5, 6 (Medium) 10 to 100 psi BCN3, 4, 5, 6 (High) 30 to 300 psi BCN3, 5, 6 (High) 150 to 1500 psi or 250 to 2500 psi BCN38 (High) 600 to 6000 psi BCN58 (High) BCN59 (High) DIAPHRAGM/TRIM MATERIAL (NOTE 1) 316L Stainless Steel (BCN2, 3, 4, 53-57, BCN6) Hastelloy C-276 (BCN2, 3, 4, 53-57, BCN6) Monel 400 (BCN2, 53-57, BCN6) 17-4PH Stainless Steel (Required for BCN58 or 59 only) FILL FLUID None (BCN58/59 only) Silicone Fluid Fluorinated Oil MATERIAL <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th colspan="4" style="text-align: center;">HI-SIDE &/OR LO-SIDE</th> <th style="text-align: center;">HI-SIDE</th> <th style="text-align: center;">LO-SIDE</th> <th></th> </tr> <tr> <th style="text-align: center;">FLANGE</th> <th style="text-align: center;">VENT</th> <th style="text-align: center;">ADAPTER KIT</th> <th style="text-align: center;">DRAIN PLUG</th> <th style="text-align: center;">REMOTE SEAL CAP/ FLANGE</th> <th style="text-align: center;">REMOTE SEAL CAP/ FLANGE</th> <th style="text-align: left;">(Notes 1 & 2)</th> </tr> </thead> <tbody> <tr> <td>316</td> <td>316</td> <td>None</td> <td>None</td> <td>None</td> <td>None</td> <td>(for BCN2-4, 53-55, 64 & 65)</td> </tr> <tr> <td>316</td> <td>None</td> <td>None</td> <td>None</td> <td>None</td> <td>None</td> <td>(for BCN56, 57, 66 & 67)</td> </tr> <tr> <td>316</td> <td>None</td> <td>316</td> <td>None</td> <td>None</td> <td>None</td> <td>(for BCN58 and BCN59)</td> </tr> <tr> <td>C-276</td> <td>C-276</td> <td>C-276</td> <td>C-276</td> <td>None</td> <td>None</td> <td>(for BCN2, 53-55, 64 & 65)</td> </tr> <tr> <td>C-276</td> <td>None</td> <td>None</td> <td>None</td> <td>None</td> <td>None</td> <td>(for BCN56, 57, 66 & 67)</td> </tr> <tr> <td>400</td> <td>400</td> <td>400</td> <td>400</td> <td>None</td> <td>None</td> <td>(for BCN2, 53-55, 64 & 65)</td> </tr> <tr> <td>400</td> <td>None</td> <td>None</td> <td>None</td> <td>None</td> <td>None</td> <td>(for BCN56, 57, 66 & 67)</td> </tr> <tr> <td>316</td> <td>316</td> <td>316</td> <td>316</td> <td>None</td> <td>None</td> <td>(for BCN2-4, 53-55, 64 & 65)</td> </tr> <tr> <td>316</td> <td>316</td> <td>316</td> <td>316</td> <td>Stainless</td> <td>None</td> <td>(for BCN2, 53-55, 64 & 65)</td> </tr> <tr> <td>C-276</td> <td>C-276</td> <td>C-276</td> <td>C-276</td> <td>Stainless</td> <td>None</td> <td>(for BCN2 only)</td> </tr> <tr> <td>400</td> <td>400</td> <td>400</td> <td>400</td> <td>Stainless</td> <td>None</td> <td>(for BCN2 only)</td> </tr> <tr> <td>None</td> <td>None</td> <td>None</td> <td>None</td> <td>Stainless</td> <td>Stainless</td> <td>(for BCN2 only)</td> </tr> </tbody> </table>								HI-SIDE &/OR LO-SIDE				HI-SIDE	LO-SIDE		FLANGE	VENT	ADAPTER KIT	DRAIN PLUG	REMOTE SEAL CAP/ FLANGE	REMOTE SEAL CAP/ FLANGE	(Notes 1 & 2)	316	316	None	None	None	None	(for BCN2-4, 53-55, 64 & 65)	316	None	None	None	None	None	(for BCN56, 57, 66 & 67)	316	None	316	None	None	None	(for BCN58 and BCN59)	C-276	C-276	C-276	C-276	None	None	(for BCN2, 53-55, 64 & 65)	C-276	None	None	None	None	None	(for BCN56, 57, 66 & 67)	400	400	400	400	None	None	(for BCN2, 53-55, 64 & 65)	400	None	None	None	None	None	(for BCN56, 57, 66 & 67)	316	316	316	316	None	None	(for BCN2-4, 53-55, 64 & 65)	316	316	316	316	Stainless	None	(for BCN2, 53-55, 64 & 65)	C-276	C-276	C-276	C-276	Stainless	None	(for BCN2 only)	400	400	400	400	Stainless	None	(for BCN2 only)	None	None	None	None	Stainless	Stainless	(for BCN2 only)
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316 = 316 Stainless, C-276 = C-276 Hastelloy, 400 = 400 Monel

Introduction

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	Pg. 1-3								
									O-RING/BOLTING MATERIAL (NOTE 1)
						1			Viton/Carbon Steel (for BCN2 – 6)
						2			Teflon/Carbon Steel (for BCN2 – 6)
						3			Viton/300 Series Stainless Steel (for all except BCN4)
						4			Teflon/300 Series Stainless Steel (for all except BCN4)
						7			Viton/4140 Carbon Steel, ASTM A193, GR. B7 (NACE CL. 3) (for all except BCN4)
						8			Teflon/4140 Carbon Steel, ASTM A193, GR. B7 (NACE CL. 3) (for all except BCN4,58/59)
									INTEGRAL METER
							5		None
							6		Digital Meter
									FLANGE ADAPTER KIT &/OR MOUNTING BRACKET
							0		Both Kits, if applicable, provided with basic transmitter
							1		Delete Mounting Bracket Kit (for BCN2 – 6)
							2		Delete 316 Stainless Flange Adapter Kit (for all except BCN56,57,66 & 67)
							3		Delete 316 Stless Flg. Adptr. & Mtg. Brkt. Kits (for all except BCN56,57,66 & 67)
							4		Delete C-276 Hastelloy Flange Adapter Kit (for BCN2,53,54,55,64 & 65)
							5		Delete C-276 Hastelloy Flg. Adptr. & Mtg. Brkt. Kits (for BCN2,53,54,55,64 & 65)
							6		Delete 400 Monel Flange Adapter Kit (for BCN2,53,54,55,64 & 65)
							7		Delete 400 Monel Flg. Adapter Kit & Mtg. Brkt. Kit (for BCN2,53,54,55,64 & 65)

- NOTES:**
- The following material combinations are required to comply with the National Association of Corrosion Engineers (NACE) Std. MR-01-75 :
 Diaphragm/Trim _____ Hastelloy C-276.
 Flange/Vent/Adapter/Drain Plug _____ 316 Stainless Steel.
 Bolting _____ 4140 Carbon Steel, per ASTM A193, Grade B7.
 - The Remote Seal Cap is No.304 Stainless Steel and the Remote Seal Flange is No.316 Stainless Steel.

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 HASTELLOY C[®] is a registered trademark of Cabot Corp., Stellite Div.
 VITON[®] and TEFLON[®] are registered trademarks of E.I. DuPont de Nemours & Co.

PERFORMANCE/FUNCTIONAL SPECIFICATIONS (Zero-Based Spans)

Service	Liquid, gas or vapor.
Accuracy	BCN2, BCN44/45, BCN53/54/55, and BCN64/65: $\pm 0.10\%$ of calibrated span; BCN3, BCN46, BCN56/57/58/59 and BCN66/67: $\pm 0.25\%$ of calibrated span. (All percentages include effects of linearity, hysteresis, repeatability, and dead band).
Stability	$\pm 0.10\%$ of upper range limit for six months.
Long Term Stability	Drift less than $\pm 0.20\%$ of upper range limit for 12 months.
Output Signal	Analog Output: 4 to 20 mA; user-selectable for linear, square root, 3/2 power, 5/2 power, volume or function generator output. (See Figure 1 for square root output.) Digital Output: Digital process variable reports up to ten times per second for control purposes.
Output Current	25 mA maximum.
Supply Voltage	13 to 42 V dc.
Power Supply Effect	Point-to-Point Mode: 0.005% of span per volt. Field Bus Mode: No effect.
Loop Load Limits	See Figure 2.
Static Pressure Limit	BCN2 and BCN36/37: 3600 psig (24822 kPa). BCN38: 2000 psig (13790 kPa). BCN4: 6000 psig (41370 kPa). (Not applicable to BCN5/6).
Static Pressure Effect	Zero error: BCN23/24: $\pm 0.25\%$ of upper range limit/2000 psig (13790 kPa); BCN25: 1.00% of upper range limit/2000 psig (13790 kPa); BCN3: $\pm 0.75\%$ of upper range limit/2000 psig (13790 kPa); BCN4: $\pm 0.3\%$ of upper range limit/6000 psig (41370 kPa). Span error: BCN2 and BCN3: $\pm 0.25\%$ of upper range limit/2000 psig (13790 kPa); BCN4: 0.3% of upper range limit/6000 psig (41370 kPa).
Overpressure Limit	BCN2 and BCN36/37: 3600 psig (24822 kPa); BCN38, BCN53/54/55 and BCN64/65: 2000 psig (13790 kPa); BCN4: 6000 psig (41370 kPa); BCN56/57, and BCN66/67: 300% of upper range. BCN58: 200% of upper range limit. BCN59: 165% of upper range limit.

Overpressure Limit (Cont)	Full vacuum to overpressure limit on either or both sides will not damage the transmitter. Any zero shift due to overpressure condition should be calibrated out.
Mounting Position Effect	No span effect. No zero effect in plane of diaphragm. Maximum of 2 in. H ₂ O (0.49 kPa) zero shift in any other plane; can be calibrated out.
Damping	Continuously adjustable from 0.00 to 32.00 seconds.
Temperature Limits	Operating: From -13° to $+185^{\circ}\text{F}$ (-25° to $+85^{\circ}\text{C}$) transmitter will operate within specifications; From -40° to $+212^{\circ}\text{F}$ (-40° to $+100^{\circ}\text{C}$) transmitter will operate without damage to the unit. Storage: -58° to 212°F (-50° to 100°C).
Units with Optional LCD Meter	Operating and Visibility Range: $+32^{\circ}$ to $+122^{\circ}\text{F}$ (0° to $+50^{\circ}\text{C}$). Temperatures outside of this range will cause the display to go blank until temperatures return to operating range. Storage: -5° to $+158^{\circ}\text{F}$ (-20° to $+70^{\circ}\text{C}$)
Temperature Effects	Operating: From -13° to $+185^{\circ}\text{F}$ (-25° to $+85^{\circ}\text{C}$) Total error: $\pm 0.25\%$ of upper range limit for any temperature changes of not more than $\pm 50^{\circ}\text{F}$ ($\pm 28^{\circ}\text{C}$). (Reference conditions of 80°F [27°C]).
Elevation/Suppression	Maximum zero elevation is 1000% of calibrated span.* Maximum zero suppression is 900% of calibrated span. Neither span nor upper or lower range value may exceed 100% of upper range limit.
RFI Effect	$\pm 1.0\%$ of calibrated span for 20–1000 MHz @ 30 V/m field strength.
Turn Down	10:1
Turn on Time	4 seconds at minimum dampening.
Humidity Limits	0–100% continuous when covers on correctly and conduit is sealed.
Response Time (electronics only)	Point-to-Point Mode: 250 milliseconds. Field Bus Mode: Process variable reported up to ten times a second.

* Use of the BCN56/57 products are not recommended for measurements below 14 psig (96.8 kPa). Consult your Bailey Sales Representative for details.

Introduction

PHYSICAL CHARACTERISTICS

Amplifier Housing	Housing is a die cast aluminum alloy with less than 1% copper, protected with a chemical resistant polyurethane coating; rated NEMA 4X.
Process Connections	Refer to Figures 9, 10 and 11 in INSTALLATION .
Electrical Connections	Test, signal, and grounding terminals are accessible through one of the two 1/2" NPT conduit holes provided on opposite sides of the transmitter; unused opening is plugged with a 1/2" stainless steel NPT pipe plug.
Materials Selection	Fill Fluid: Silicone or fluorinated oil for all except: BCN58/59 . Process-wetted parts: Refer to NOMENCLATURE

OPTIONS AND ACCESSORIES

Material Variations	Refer to NOMENCLATURE .
LCD Meter	(Refer to NOMENCLATURE for selection). Integral circuit board provides 12-digit alphanumeric liquid crystal display of transmitter output signal as percent of span or in engineering units (display accurate to 0.1% of span and suitable for calibration of device.) Rotatable in 90 degree increments to yield best viewing orientation. LCD Meter is also available as an add-on option. Kit No. 258453A1.
Flange Adapter	A 1/4-18 NPT or welded socket process piping connection can be used instead of the standard 1/2-14 NPT connection; Part No. 6634268 (1/4-18 NPT), Part No. 683421-T (welded socket), Part No. 6633852-1 (Aminco stainless steel). (Not applicable to BCN56/57/58/59, and BCN66/67).
3-Valve Manifold	Provides the required valving for flow measurement using differential pressure-producing primary elements; Attaches directly to the transmitter in place of the flange adapters. Part No. 6626715-1, 316SS (Anderson, Greenwood and Co. M4AVS); Part No. 6626715-2, carbon steel (Anderson, Greenwood and Co. M4AVS); Part No. 6626715-3, 316SS, special cleaned; Part No. 6626715-4, carbon steel, special cleaned. (Not applicable to BCN5/6.)

Mounting Brackets	Flat bracket for wall or pipe mounting can be supplied with transmitter, Part No. 682603-1; L-shaped bracket for horizontal pipe mounting also available, Part No. 6627204-1.
Conversion Kit (BC to BCN)	Kit No.: 258456-2. This converts any BC Transmitter to the BCN Transmitter.
Smart Transmitter Terminal	Battery-powered portable communications device; allows the user to remotely configure, calibrate, troubleshoot, or verify the operation of a BCN transmitter. Order by NOMENCLATURE : STT02.
Transient Suppressor	Suppresses switching and lightning induced transients; mounts internally or externally; Part No. 1947359-1.
**Special Cleaning	Transmitter wetted parts are cleaned to remove any trace contaminants including grease and oil.
Tag Option	Part No. 1993318A1: Mylar [®] , adhesive backed aluminum finish. Part No. 487436A2: Stainless steel, specify wire attached or permanently affixed. Customer may specify 4 lines of 12 characters.

** For Oxygen Service Preparation: Normal practice is to specify fluorinated oil sensor fill fluid (refer to **NOMENCLATURE**) and Special Cleaning.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

CERTIFICATION

Certifications by Canadian Standards Association (CSA), Factory Mutual Research (FM), and Standards Association of Australia (SAA) are pending as follows:	
Nonincendive (Nonsparking)	
CSA	Class I; Div 2; Groups B-D
FM	Class I; Div 2; Groups C,D
SAA	Zone 2, Ex n, Group IIC
Intrinsically Safe when used with appropriate barriers per Bailey Controls Co. Drawing B222611.	
CSA	Classes I, II, III; Div 1; Groups A-G, T4
FM	Classes I, II, III; Div 1; Groups A-G, T6
SAA	Zone 0; Ex ia, Group IIC, T6

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CERTIFICATION (Cont)

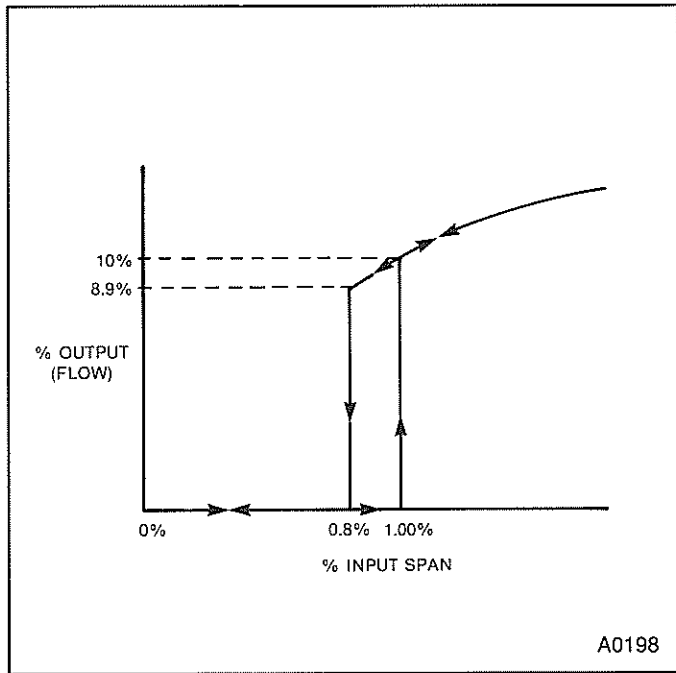
Explosionproof (flameproof)

CSA Class I; Div 1; Groups B-D
 *FM Class I; Div 1; Groups B-D
 SAA Zone 1; Ex d; Group IIB

Dust-ignitionproof

CSA Classes II, III; Div 1; Groups E-G
 *FM Classes II, III; Div 1; Groups E-G
 SAA Zone 1; Ex DIP 13 Enclosures IP65

* Approval received.



Note: Accuracy of square root mode: Below 0.8% of input, the output is forced to 0%. Above 1% of output, the accuracy equals the square root of the accuracy stated in the specifications. Example: BCN2 accuracy equals $\pm 0.1\%$, in the square root mode accuracy equals the square root of 0.1.

FIGURE 1 – Square Root Output

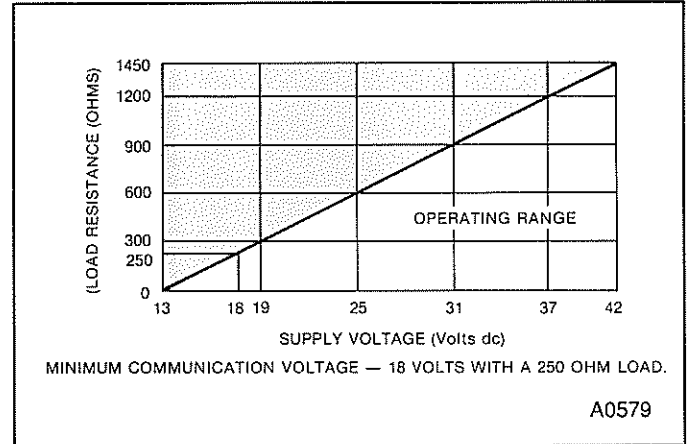


FIGURE 2 – Load Range