



## bar TJE Precision Gage/Absolute, Pressure Transducer

Model TJE pressure transducers are all-welded stainless steel sensors built for rugged industrial applications that require high accuracy and measurement stability. The Model TJE is available with a variety of options for extended temperature operation, electrical terminations and high-level outputs including 5 Vdc or 10 Vdc and 4 mA to 20 mA. Most high-level output models have internal shunt calibration circuits as a standard feature to allow easy set-up of the sensor to the data system. An optional internal signature calibration chip provides calibration information for automatic set up with the Model SC four-or-twelve channel digital indicator.

The gage Model TJE is a strain gage based transducer and features a unique "true gage" design which utilizes a second welded stainless steel diaphragm that hermetically seals the strain gage circuitry from atmospheric contamination. This design references the primary pressure sensing diaphragm to the atmosphere, and provides a stable zero regardless of the transducer environment.

The absolute Model TJE has an all-welded vacuum reference chamber assuring long-term stability.



### FEATURES

- 0.1 % accuracy
- 0.0025 % F.S./°F temperature effect
- 1 psig/a to 60000 psig/a range
- mV/V, 4 mA to 20 mA, 0 Vdc to 5 Vdc, or 0 Vdc to 10 Vdc output
- All-welded, stainless steel construction
- Intrinsically safe available (2N option only)18
- CE19



**SPECIFICATIONS**

**PERFORMANCE SPECIFICATIONS**

Characteristic	Measure
Accuracy <sup>1</sup>	±0.10 % full scale
Linearity	±0.10 % full scale
Hysteresis	±0.05 % full scale
Media	All gases/liquids compatible with wetted parts
Resolution	Infinite
Calibration	5-point calibration: 0 %, 50 %, and 100 % of full scale

**ENVIRONMENTAL SPECIFICATIONS**

Characteristic	Measure
Temperature compensated	15 °C to 71 °C [60 °F to 160 °F]
Temperature effect, zero	0.0025 % full scale/°F
Temperature effect, span	0.0025 % reading/°F
Sealing	Hermetically sealed IP68/NEMA 6P

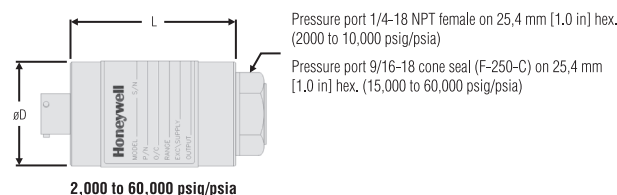
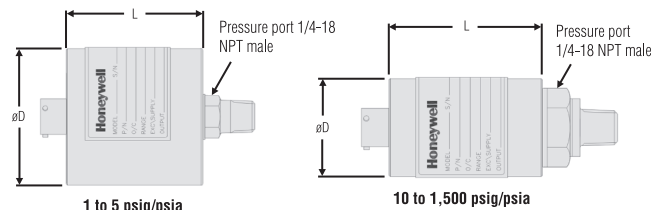
**ELECTRICAL SPECIFICATIONS**

Characteristic	Measure
Strain gage type	Bonded foil
Insulation resistance	5000 mOhm @ 50 Vdc
Bridge resistance	350 ohm
Shunt calibration data	Included
Electrical termination (std)	PTIH-10-6P or equiv. (hermetic stainless)
Mating connector (not incl)	PT06A-10-6S or equiv. (AA111)

**MECHANICAL SPECIFICATIONS**

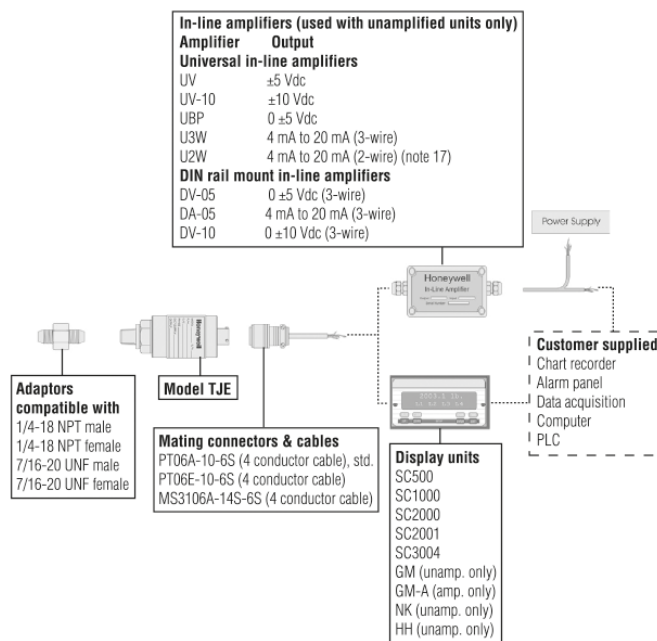
Characteristic	Measure
Wetted parts material	number here
< 2000 psig/a	17-4 PH stainless steel
> 2000 psig/a	15-5 PH stainless steel
Weight	10 oz
Case material	304 stainless steel
Marking	Permanent metal name plate MIL-STD130F 4.3; Individual sequential serial number per sensor; Country of origin and date of manufacture

**MOUNTING DIAGRAM AND CHARACTERISTICS**



For reference only

**TYPICAL SYSTEM DIAGRAM**





**SPECIFICATIONS**

RANGE CODES

Pressure range (psi)	1	2	5	10	15	25	50	75	100	150	200	300	500	750	1000	1500							
RANGE CODE	AP	AR	AT	AV	BJ	BL	BN	BP	BR	CJ	CL	CP	CR	CT	CV	DJ							
D mm [in] psia	57 [2.25]			38 [1.50]																			
D mm [in] psig	57 [2.25]			45 [1.75]			38 [1.50]																
L mm [in] psia	65 [2.54]			60 [2.35]																			
L* mm [in] psia	96 [3.79]			91 [3.60]																			
L mm [in] psig	46 [1.81]			51 [2.00]			51 [2.02]																
L* mm [in] psig	78 [3.06]			83 [3.25]			83 [3.27]																
Over pressure (test) (psi)	150 % full scale			150 % full scale																			
Over pressure (burst) (psi)	50			100			200			400			800			2 k		3 k		3.5 k		4 k	
Port volume cm <sup>3</sup> [in <sup>3</sup> ]	5,2 [0.32]			4,1 [0.25]				2,8 [0.17]															
Natural frequency (Hz)	500	550	1000	1.3 k	2.1 k	2.5 k	2.9 k	3.5 k	4.6 k	6 k	7 k	9 k	9.5 k	12 k	17 k	20 k							

Pressure range (psi)	2000	3000	5000	7500	10000	15000	20000	30000	50000	60000
RANGE CODE	DL	DN	DR	DT	DV	EJ	EL	EN	EP	ES
D mm [in] psia	38 [1.50]					38 [1.50]				
L mm [in] psia	48 [1.90]					56 [2.21]				
L* mm [in] psia	80 [3.15]					89 [3.46]				
Over pressure (test) (psi)	150 % full scale					Consult factory				
Over pressure (burst) (psi)	8 k	12 k	20 k	25 k	25 k	40 k	45 k	60 k	80 k	80 k
Port volume cm <sup>3</sup> [in <sup>3</sup> ]	3,1 [0.12]					1,5 [0.06]				
Natural frequency (Hz)	35 k	40 k	54 k	60 k	80 k	100 k	>100 k	>100 k	>100 k	>100 k

\* Length of pressure transducer with amplified option (see option codes)

\*\* 0.5 psi is available for gage only



**INTERNAL AMPLIFIERS**

Amplifier specifications	mV/V output standard	Voltage output: Option 2a <sup>4</sup>	Vehicle voltage output: Option 2c <sup>4</sup>	Vehicle voltage output: Option 2t <sup>4</sup>	Current three-wire: Option 2j <sup>4</sup>	Current two-wire: Option 2k <sup>4</sup>	Intrinsically safe amp: Option 2N (2n)
Output signal	3 mV/V <sup>2</sup>	0 Vdc to 5 Vdc	0-5 Vdc or ±5 Vdc @ 5 mA	0-10 Vdc or ±10 Vdc @ 5 mA	4 mA to 20 mA	4 mA to 20 mA	4 mA to 20 mA
Input power (voltage)	10 Vdc regulated	±15 Vdc or 26-32 Vdc	11 Vdc to 28 Vdc	15 Vdc to 28 Vdc	22 Vdc to 32 Vdc <sup>3</sup>	9 Vdc to 32 Vdc <sup>3</sup>	9 Vdc to 28 Vdc <sup>3</sup>
Input power (current)	28.5 mA @ 10 Vdc	45 mA	40 mA	40 mA	65 mA	4 mA to 28 mA	4 mA to 24 mA
Freq. resp (amp)	Natural frequency	2000 Hz	3000 Hz	3000 Hz	2500 Hz	2500 Hz	2000 Hz
Power supply rej.	NA	60 db	60 db	60 db	60 db	60 db	60 db
Operating temp.	-73 °C to 121 °C [-100 °F to 250 °F]	-28 °C to 85 °C [-20 °F to 185 °F]	-40 °C to 93 °C [-40 °F to 200 °F]	-40 °C to 85 °C [-40 °F to 185 °F]	-40 °C to 85 °C [-40 °F to 185 °F]	-40 °C to 85 °C [-40 °F to 185 °F]	-28 °C to 85 °C [-20 °F to 185 °F]
Reverse volt. prot.	NA	Yes	Yes	Yes	Yes	Yes	Yes
Short cir. protection	NA	Momentary	Momentary	Momentary	Yes	Yes	Yes
Wiring code: connector (std) <sup>5</sup>	A (+) Excitation B (+) Excitation C (-) Excitation D (-) Excitation E (-) Output F (+) Output	A (+) Supply B Output com. C Supply ret. D (+) Output E Shunt Cal 1 F Shunt Cal 2	A (+) Supply B Output com ** C Supply ret ** D (+) Output E Shunt Cal 1 F Shunt Cal 2	A (+) Supply B Output com ** C Supply ret ** D (+) Output E Shunt Cal 1 F Shunt Cal 2	A (+) Supply B Output com ** C Supply ret ** D (+) Output E Shunt Cal 1 F Shunt Cal 2	A (+) Supply B No conn. C No conn. D (+) Output E Case ground F No conn.	A (+) Supply B No conn. C No conn. D (+) Output E Case ground F No conn.
Wiring code: cable <sup>5,6,7</sup>	R (+) Excitation Bl (-) Excitation G (-) Output W (+) Output	R (+) Supply Bl Output com. G Supply ret. W (+) Output B Shunt Cal 1 Br Shunt Cal 2	R (+) Supply Bl Output com* G Supply ret.* W (+) Output B Shunt Cal 1 Br Shunt Cal 2	R (+) Supply Bl Output com* G Supply ret.* W (+) Output B Shunt Cal 1 Br Shunt Cal 2	R (+) Supply Bl Output com* G Supply ret.* W (+) Output B Shunt Cal 1 Br Shunt Cal 2	R (+) Supply Bl (+) Output W Case ground	R (+) Supply Bl (+) Output W Case ground

\* Black and green wires are internally connected. · \*\* Pins B and C are internally connected.



**SPECIFICATIONS**

INTERNAL AMPLIFIERS

Amplifier Specifications	mV/V output standard	Voltage out - put: Option 2a <sup>4</sup>	Vehicle volt - age output: Option 2c <sup>4</sup>	Vehicle volt - age output: Option 2t <sup>4</sup>	Current three-wire: Option 2j <sup>4</sup>	Current two-wire: Option 2k <sup>4</sup>	Intrinsically safe amp: Option 2n <sup>***</sup>
Output signal	2 mV/V	0 Vdc to 5 Vdc	0-5 Vdc or ±5 Vdc @ 5 mA	0-10 Vdc or ±10 Vdc @ 5 mA	4 mA to 20 mA	4 mA to 20 mA	4 mA to 20 mA
Input power (voltage)	10 Vdc regu - lated	±15 Vdc or 26-32 Vdc	11 Vdc to 28 Vdc	15 Vdc to 28 Vdc	22 Vdc to 32 Vdc <sup>3</sup>	9 Vdc to 32 Vdc <sup>3</sup>	9 Vdc to 28 Vdc <sup>3</sup>
Input power (current)	28.5 mA @ 10 Vdc	45 mA	40 mA	40 mA	65 mA	4 mA to 28 mA	4 mA to 24 mA
Freq. resp. (amp)	Natural fre - quency	2000 Hz	3000 Hz	3000 Hz	2500 Hz	2500 Hz	2000 Hz
Power supply rej.	NA	60 db	60 db	60 db	60 db	60 db	60 db
Operating temp.	-100 °F to 250 °F	-20 °F to 185 °F	-40 °F to 200 °F	-40 °F to 185 °F	-40 °F to 185 °F	-40 °F to 185 °F	-20 °F to 185 °F
Reverse voltage protection	NA	Yes	Yes	Yes	Yes	Yes	Yes
Short cir. protection	NA	Momentary	Momentary	Momentary	Yes	Yes	Yes
Wiring code: connector (std) <sup>3</sup>	A (+) Excitation B (+) Excitation C (-) Excitation D (-) Excitation E (-) Output F (+) Output	A (+) Supply B Output com. C Supply ret. D (+) Output E Shunt Cal 1 F Shunt Cal 2	A (+) Supply B Output com.** C Supply ret.** D (+) Output E Shunt Cal 1 F Shunt Cal 2	A (+) Supply B Output com.** C Supply ret.** D (+) Output E Shunt Cal 1 F Shunt Cal 2	A (+) Supply B Output com.** C Supply ret.** D (+) Output E Shunt Cal 1 F Shunt Cal 2	A (+) Supply B No conn. C No conn. D (+) Output E Case ground F No conn.	A (+) Supply B No conn. C No conn. D (+) Output E Case ground F No conn.
Wiring code: cable <sup>3,8,9</sup>	R (+) Excitation BI (-) Excitation G (-) Output W (+) Output	R (+) Supply BI Output com. G Supply ret. W (+) Output B Shunt Cal 1 Br Shunt Cal 2	R (+) Supply BI Output com* G Supply ret.* W (+) Output B Shunt Cal 1 Br Shunt Cal 2	R (+) Supply BI Output com* G Supply ret.* W (+) Output B Shunt Cal 1 Br Shunt Cal 2	R (+) Supply BI Output com* G Supply ret.* W (+) Output B Shunt Cal 1 Br Shunt Cal 2	R (+) Supply BI (+) Output W Case ground	R (+) Supply BI (+) Output W Case ground

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\*\* Pins B and C are internally connected.



## NOTES

1. Accuracies stated are expected for best fit straight line for all errors including linearity, hysteresis & non-repeatability thru zero.
2. Output for 0.5 psig/a, 1 psig/a, 2 psig/a units is 1 mV/V to 2 mV/V.
3. Input power (voltage) for internal amplifier options 2j, 2k, 2n(2N) depends on load resistance.
4. CE mark requires options 6a & 3d.
5. Interconnecting shunt cal. 1 with shunt cal. 2 terminal provides 50 % (unamplified units), 75% (4 mA to 20 mA three-wire units), or 80 % (voltage amp. units) of full scale output for quick calibration. Shunt calibration comes standard with internal amplifier options 2a, 2b, 2c, 2t and 2j.
6. G=Green; B=Blue; W=White; Bl=Black; Br=Brown; Y=Yellow; R=Red; O=Orange. Color specifying cable and number or letter specifying connector.
7. No mating connector necessary with cable option.
8. Options 2k, 2n(2N) only available with option 12b.
9. Availability varies according to range.
10. Not available with temperatures below -29 °C [-20 °F] or above 85 °C [185 °F].
11. Cannot be used with amplified option.
12. Gage pressure units greater than 500 psi are sealed at atmospheric pressure.
13. No pot access available with MS type connector.
14. Temperature 82 °C [180 °F] max., non-shielded standard, shielded available.
15. Input/output isolation only available with voltage output (options 2a, 2b, 2c).
16. Consult factory for TEDS availability with amplified models.
17. 5000 ohm bridge required.
18. Range dependent; consult factory. Termination dependent; consult factory.
19. Internal amp and termination dependent; consult factory.