PERFORMANCE SPECIFICATION
PRESSURE TRANSDUCER
(Model 8511A)

Document Number	Rev	Date	Entered by	Description of Change	Change Accountable Engineer	ECO
80202	A	1/21/26	NAD	add typ TSS and TZS to specification	RF	56386

1.0 DESCRIPTION

The ENDEVCO® Model 8511A is a rugged, piezoresistive pressure transducer for high gage pressure measurements. It has a 3/8-inch mounting thread and is available in ranges from 5000 to 20000 psig.

ENDEVCO pressure transducers feature an active four-arm strain gage bridge diffused into a sculptured silicon diaphragm for maximum sensitivity and wide band frequency response. Self-contained hybrid temperature compensation provides stable performance over the wide temperature range of 0°F to +200°F (-18°C to +93°C). ENDEVCO transducers also feature excellent linearity, high shock resistance and high stability during temperature transients.

The Model 8511A is widely used for high pressure applications such as studies of structural loading by shock waves resulting from explosive blasts, pulsation's in hydraulic systems and combustion efficiencies. The Model 8511A is designed to operate in the gage mode, i.e. the back of the diaphragm is referenced to atmospheric pressure.

2.0 CERTIFIED PERFORMANCE

All specifications assume +75°F(+24°C) and 10Vdc excitation unless otherwise stated.
The following parameters are 100% tested. Calibration data, traceable to the National Institute Standards and Technology (NIST), is supplied.

		Units Range	Dash Number		
			-5K	-10K	-20K
2.1	RANGE	psig	0-5000	0-10000	0-20000
2.2	SENSITIVITY	mV/psi	.100 ±.035	.050±.020	.020±.010
2.3	Accuracy [1]	% Span, Max	1.5	3	3
2.3.1	Non-Linearity	% Span, typical	0.5	1.5	1.5
2.3.2	Hysteresis	%Span, typical	0.5	0.5	0.5
2.3.3	Non-Repeatability	%Span, typical	0.5	0.5	0.5
2.4	ZERO MEASURAND OUTPUT	mV Max	±20	±20	±20

		Units Range	Dash Number -5K	-10K	-20K
2.5	ZERO SHIFT AFTER Proof Pressure	% Proof Pressure Span, Max	±0.1	±0.2	±1.0
2.6	THERMAL ZERO SHIFT FROM 0°F to +200°F (-18°C to 93°C)				
2.6.1		% Span Max	± 3.5	± 3.5	± 3.5
2.6.2		% Span Typ	± 0.5	± 0.5	± 0.5
2.7	THERMAL SENSITIVITY SHIFT FROM 0°F to +200°F (-18°C to 93°C)				
2.7.1		% Max	± 4.5	± 4.5	± 4.5
2.7.2		% Typ	± 2.0	± 2.0	± 2.0
2.8	Proof Pressure	psi	12,500	25,000	30,000

3.0 TYPICAL PERFORMANCE CHARACTERISTICS

The following parameters are established from testing of sample units.

3.1	DIAPHRAGM RESONANT FREQUENCY	Hz	>1000000	>1000000	>1000000
3.2	NON-LINEARITY AT Proof Pressure	% Proof Pressure Span	0.3	0.8	1.0
3.3	PHOTOFLASH RESPONSE, EQUIV. PSI PER ISA-S37.10, PARA. 6.7, PROCEDURE II	psi	12	25	50
3.4	WARM-UP TIME TO 1% [2] ACCURACY	ms	1	1	1
3.5	ACCELERATION SENSITIVITY	psi/g	0.001	0.002	0.003
3.6	BURST PRESSURE (Minimum, Diaphragm)	psi	20,000	30,000	40,000

4.0 ELECTRICAL

4.1	Span	500 mV nominal at 10 Vdc
4.2	SUPPLY VOLTAGE [3]	10.00 Vdc recommended 18 Vdc maximum

4.3	ELECTRICAL CONFIGURATION	Active four-arm piezoresistive bridge
4.4	POLARITY	Positive output for increasing pressure into (+) port
4.5	RESISTANCE	
4.5.1	Input	2000 ohms, ±800 ohms
4.5.2	Output	1500 ohms, ±600 ohms
4.5.3	Isolation	Greater than 100 megohms minimum at 50 Vdc Leads to case Leads to shield Shield to case

5.0 MECHANICAL

5.1	CASE, MATERIAL	Stainless steel
5.2	CABLE, INTEGRAL	Integral 4 conductor No.32 AWG Teflon® insulated leads, braided shield, gray silicone jacket.
5.3	DEAD VOLUME, MEASURAND (+) PORT	0.004 in^3 (0.006 cm 3)
5.4	MOUNTING	Refer to document EDVIM8500 Instruction Manual and installation/outline drawing
5.5	WEIGHT	11 grams (cable weighs 9 grams/meter)

6.0 ENVIRONMENTAL

6.1	MEDIA	Internal seals are epoxy and are compatible with clean dry Gas media. Media in(+) measure and port is exposed to nickel-iron 4 alloy, Parylene C and epoxy
6.2	TEMPERATURE	-65°F to 250°F (-54°C to 121°C)
6.3	VIBRATION	1000 g
6.4	STATIC ACCELERATION	1000 g
6.5	SHOCK	20000g, 100 micro second haversine
6.6	HUMIDITY	Isolation resistance greater than 100 megohms at 50 Vdc When tested per Mil-Std-202E, Method103B, Test Condition B

7.0 CALIBRATION DATA

EPCS-1 Calibration Code = ISO17025 calibration of piezo-resistive sensors to full scale pressure range: providing sensitivity, linearity, hysteresis, repeatability, ZMO, zero shift after proof pressure, thermal zero shift, thermal sensitivity shift, & Input/Output/Isolation resistance. For "-D" version: EPCS-2 Calibration code includes the noted above calibration (EPCS-1) as well as sensitivity and ZMO provided at at 5Vdc.

CE
UK CA See Declaration of Conformity PS281

8.0 SUPPLIED ACCESSORIES

EDV22688 Copper Gasket (-5K, -10K)
EDV22686 Washer, High Pressure (-20K)

9.0 OPTIONAL ACCESSORIES/COMPATIBLE PRODUCTS

24328-3/XXX 4 Conductor Shielded Cable, White

10.0 NOTES

[1] Span is defined as transducer output from ZMO to full scale output. Accuracy is defined as the RSS of non-linearity, hysteresis, and non-repeatability.

[2] Warm up time is defined as elapsed time excitation voltage "turn on" until the transducer output is the ±1% of reading accuracy.

[3] Transducer calibrated at 10 Vdc. Calibration at 5 Vdc available upon request (see -D option)

[11] Model number definition

8511A - XX - ZZZ - D

- D: Excitation voltage (If no voltage is specified, the default is 10 VDC) — D = 5VDC
- ZZZ: Cable length is in inches (if no cable length is specified the default length is 30 inches.) — For lengths ≤ 10 ft specify 1 ft increments (12", 24"...120") — for lengths > 10 ft specify 5 ft increment (180", 240"...etc)
- XX: Denotes Pressure Range — -5K, -10K, -20K
- 8511A: Basic Model Number