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PERFORMANCE SPECIFICATION
PRESSURE TRANSDUCER
(Model 8507C)

Document Number	Rev	Date	Entered by	Description of Change	Change Accountable Engineer	ECO
80488	A	1/21/26	NAD	Add typ TSS ant TZS to specification	RF	56386

1.0 DESCRIPTION

The ENDEVCO® Model 8507C is a rugged, miniature, high sensitivity piezoresistive pressure transducer. It has a 0.09-inch cylindrical case and is available in ranges from 2 psi to 15 psi with full scale output of 300 mV. Its high sensitivity combined with high resonance suits it ideally to measuring dynamic pressure.

ENDEVCO pressure transducers feature an active four-arm strain gage bridge diffused into a sculptured silicon diaphragm for maximum sensitivity and wideband 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 (even to proof pressure), high shock resistance, and excellent stability during temperature transients.

The Model 8507C is designed for installations which do not require threaded mounting and can be installed in locations which are difficult to reach. Its small size permits flush mounting on curved surfaces. Its high sensitivity combined with small size and high resonance makes the Model 8507C ideal for use on small-scale models in wind tunnels.

2.0 CERTIFIED PERFORMANCE

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

		Units Range	Dash Number			
			-1	**-2**	**-5**	**-15**
2.1	RANGE	psig	0-1	0-2	0-5	0-15
2.2	SENSITIVITY	mV/psi	200±50	100 +55/-25	60±20	20±6.7
2.3	Accuracy [1]	% Span, Max	1.5	1.5	0.75	0.50
2.3.1	Non-Linearity	% Span, typical	1.0	1.0	0.5	0.2
2.3.2	Hysteresis	%Span, typical	0.1	0.1	0.1	0.1
2.3.3	Non-Repeatability	%Span, typical	0.1	0.1	0.1	0.05

EDVED279-1 REV G   DOCUMENT 80488 Revision A   Page 1 of 4

		Units Range	Dash Number			
			-1	**-2**	**-5**	**-15**
2.4	ZERO MEASURAND OUTPUT	mV Max	±20	±20	±20	±20
2.5	ZERO SHIFT AFTER Proof Pressure	% Proof Pressure Span, Max	±0.2	±0.2	±0.2	±0.2
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	± 3.5
2.6.2		% Span Typ	± 1.0	± 1.0	± 1.0	± 1.0
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	± 4.5
2.7.2		% Typ	± 2.0	± 2.0	± 2.0	± 2.0
2.8	Proof Pressure	psi	3	6	15	45

3.0   TYPICAL PERFORMANCE CHARACTERISTICS

The following parameters are established from testing of sample units.

		Units Range	-1	-2	-5	-15
3.1	DIAPHRAGM RESONANT FREQUENCY	Hz	55,000	70,000	85,000	130,000
3.2	NON-LINEARITY AT Proof Pressure	% Proof Pressure Span	2.5	2.5	2.0	1.0
3.3	THERMAL TRANSIENT [2] RESPONSE PER ISA-S37.10, PARA. 6.7, PROCEDURE I	psi/°F	0.003	0.003	0.003	0.003
3.4	PHOTOFLASH RESPONSE [3], EQUIV. PSI PER ISA-S37.10, PARA. 6.7, PROCEDURE II	psi	0.01	0.01	0.03	0.1
3.5	WARM-UP TIME TO 1% [4] ACCURACY	ms	1	1	1	1
3.6	ACCELERATION SENSITIVITY	psi/g	0.0002	0.0002	0.0002	0.0002
3.7	BURST PRESSURE (Minimum, Diaphragm/Reference)	psi	20/20	40/40	100/50	150/50

4.0   **ELECTRICAL**

4.1   Span   300 mV nominal at 10.0 Vdc

4.2   SUPPLY VOLTAGE [5]   10 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 at 50 Vdc
                                                              Leads to case, leads to shield, shield to case.

4.6   NOISE   5 micro Vrms typical; dc to 50 000Hz
                                                              50 micro Vms maximum; dc to 50 000Hz

5.0   **MECHANICAL**

5.1   CASE, MATERIAL   Nickel - Iron Alloy

5.2   CABLE, INTEGRAL   Leadwires No. 36 AWG Teflon® insulated leads,
                                                              braided shield, PVC jacket.

5.3   DEAD VOLUME   0.00005 in ^{3} (0.0008 cm ^{3})

5.4   MOUNTING   Refer to document EDVIM8500 Instruction Manual
                                                              and installation/outline drawing

5.5   WEIGHT   0.3 grams (cable weighs 3.6 gram/meter)

6.0   **ENVIRONMENTAL**

6.1   MEDIA   Internal seals are epoxy and are compatible with
                                                              clean dry gas media. Media in (+) measurand port is
                                                              exposed to nickel-iron alloy, silicon, ceramic, Parylene C,
                                                              and epoxy. Media in (-) measurand port is exposed to the
                                                              above and RTV silicone coating.

6.2   TEMPERATURE   -65°F to 225°F (-54°C to +107°C)

6.3   VIBRATION   1000 g

6.4   STATIC ACCELERATION   1000 g

6.5   SHOCK   10 000g, 100 µsec, haversine

| 6.6 | HUMIDITY | Isolation resistance greater than 100 megohms at 50 Vdc when tested per MIL-STD-202F, Method 103B, 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.

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UKCA   See Declaration of Conformity PS279

8.0 OPTIONAL ACCESSORIES/COMPATIBLE PRODUCTS

8.1   Vent tube extension. Tygon® micro bore tubing, ".020 I.D X .060 O.D.", -31º C (-25º F) to +85º C (185º F), is available from Cole-Parmer. For broader temperature range, use silicone tubing

9.0 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] Significant higher thermal transient errors occur if the excitation voltage exceeds 10 Vdc. For sensitive phase change studies, many users reduce the excitation to 5 Vdc

[3] The metal screen partially shields the silicon diaphragm from incident radiation. Accordingly, light incident at acute angles to the screen generally increases the error by a factor of 2 or 3

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

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

[6] Model number definition

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8507C  -   XX  -  YYY -   D
  |        |      |        |____ Excitation voltage (if no voltage is specified, the default is 10VDC)
  |        |      |             D = 5VDC
  |        |      |
  |        |      |
  |        |      |_____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)
  |        |
  |        |_____Denotes Pressure Range
  |        |                   -1
  |        |                   -2
  |        |                   -5
  |        |                   -15
  |        |
  |_____Basic Model Number
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