ENDEVCO
AN AMPHENOL COMPANY

PERFORMANCE SPECIFICATION
PRESSURE TRANSDUCER
(Model 8515CM35-XX-ZZZ)

Document Number	Rev	Date	Entered by	Description of Change	Change Accountable Engineer	ECO
79466	A	8/29/24	NAD	Move Mounting Instructions to Drawing	BAB	55158

1.0 DESCRIPTION

The ENDEVCO® Model 8515CM35 is rugged, miniature, high-sensitivity piezoresistive absolute pressure transducer available in 15 and 50 psia full scale ranges. It is surface-mounted and measures 0.030 inch thick by 0.250 inch diameter (0.76mm x 6.3mm). Full scale output is 200 mV with high overload capability, high frequency response, very low base strain sensitivity and improved temperature performance.

Because of its very small size, the Model 8515CM35 can be installed on curved surfaces with minimal effect on laminar air or hot gas flow. For a flush fit, the 8515CM35 and leadwires can be recessed into the mounting surface. For on-surface installations, a rubber mounting pad is available that smooths out air flow. A protective screen is also provided to protect against particle impingement.

The Model 8515CM35 is suitable for use on small-scale models in wind tunnel tests, as well as on aerodynamic surfaces during flight tests. Other uses are for blast effect studies and helicopter or turbine blade surface pressure measurements. The circuit board is coated with a gel to enhance moisture protection.

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 -15	-50
2.1	RANGE	psia	0 - 15	0 - 50
2.2	POSITIVE SENSITIVITY RANGE	mV/psi Typical (Minimum)	13.3 (8.67)	4.0 (2.6)
2.3	COMBINED: NON-LINEARITY, [1] NON-REPEATABILITY AND PRESSURE HYSTERESIS	% FSO RSS Max	0.50	0.50
2.3.1	Non-Linearity, Independent	% FSO Max (Typical)	0.50 (0.20)	0.50 (0.20)
2.3.2	Hysteresis	% FSO Max (Typical)	0.2 (0.1)	0.2 (0.1)

		Units	Range Dash Number -15	-50
2.3.3	Non-Repeatability	% FSO Max (Typical)	0.2 (0.1)	0.2 (0.1)
2.4	ZERO MEASURAND OUTPUT	Mv Max	±20	±20
2.5	ZERO SHIFT AFTER 3X RANGE	%3 X FSO Max	0.5	0.5
2.6	THERMAL ZERO SHIFT FROM 0°F to +200°F (-18°C to 93°C), Ref. to 75°F (24°C)	% FSO Max (Typical)	2.5 (0.7)	2.5 (0.7)
2.7	THERMAL SENSITIVITY SHIFT FROM 0°F to +200°F (-18°C to 93°C), Ref. to 75°F (24°C)	% Max (Typical)	3.0 (1.2)	3.0 (1.2)

3.0 TYPICAL PERFORMANCE CHARACTERISTICS

The following parameters are established from testing of sample units.

3.1	DIAPHRAGM RESONANT FREQUENCY	Hz	180000	320000
3.2	NON-LINEARITY AT 3X RANGE	% 3X FSO	1.0	1.0
3.3	PHASE CHANGE ERROR [3]	% FSO	0.001	0.001
3.4	THERMAL TRANSIENT [3] RESPONSE PER ISA-S37.10, PARA. 6.7, PROCEDURE I	psi/°F	0.003	0.005
3.5	PHOTOFLASH RESPONSE, EQUIV. PSI PER ISA-S37.10, PARA. 6.7, PROCEDURE II	psi	0.25	0.8
3.6	WARM-UP TIME TO 1% [4] ACCURACY	ms	1	1
3.7	ACCELERATION SENSITIVITY	psi/g	0.0002	0.0002
3.8	BURST PRESSURE (Minimum, Diaphragm)	psia	75	250
3.9	BASE STRAIN SENSITIVITY AT 250 MICROSTRAIN			
3.9.1	Elastomer Mounting	psi	0.004	0.013
3.9.2	Rigid Mounting	psi	0.007	0.023

4.0	**ELECTRICAL**	
4.1	FULL SCALE OUTPUT	200 mV typ (130 mV min.) at 10.0 Vdc
4.2	SUPPLY VOLTAGE [5]	10.00 Vdc recommended 12 Vdc maximum
4.3	ELECTRICAL CONFIGURATION	Active four-arm piezoresistive bridge
4.4	POLARITY	Positive output for increasing pressure
4.5	RESISTANCE	
4.5.1	Input	2700 ohms typical, 2000 ohms minimum
4.5.2	Output	1500 ohms typical, 2200 ohms maximum
4.5.3	Isolation	100 megohms minimum at 50 Volts Leads to case Leads to shield Shield to case
4.6	NOISE	5 microVrms typical; dc to 50000Hz 50 microVms maximum; dc to 50000Hz
5.0	**MECHANICAL**	
5.1	CASE, MATERIAL	Stainless steel 300 Series CRES
5.2	CABLE, INTEGRAL [6]	4 Conductor Ribbon Cable, No. 36 AWG Solid S.P.C., Teflon® Insulation. See drawing on Page 7 for color code. A cable splice is used in lengths >36"; see outline drawing for details.
5.3	DEAD VOLUME	0.0004 in3 (0.0065 cm 3)
5.4	IDENTIFICATION	Model number, range and serial number printed on cable tag; Model number and Manufacturer logo etched on case.
5.5	WEIGHT	0.08 grams (cable weighs 2.5 grams/meter)
6.0	**ENVIRONMENTAL**	
6.1	MEDIA	The pressure cavity of this transducer model is designed to be compatible with dry clean gases. It is not recommended for use in water or moisture condensing environments. When the pressure media is believed to be degrading to the transducer the factory should be contacted for appropriate recommendations. Pressure media is expose to CRES, epoxy, silicon, and parylene C and dielectric gel.
6.2	TEMPERATURE	-65°F to 250°F (-54°C to 121°C)
6.3	VIBRATION	1000 g
6.4	STATIC ACCELERATION	10000 g

6.5	SHOCK	10000 g, 100 microsecond haversine
6.6	HUMIDITY	The transducer is not recommended for long term operation in humid environments.

7.0 CALIBRATION DATA

Data supplied for all parameters in Certified Performance Section. Optional calibrations available for all parameters in typical performance section. A transducer test report is provided with each transducer shipped. CS610 Calibration Code = ISO17025 calibration of piezo-resistive sensors to full scale pressure range: providing sensitivity, linearity, hysteresis, repeatability, and accuracy; Measured bridge resistances, zero and span values. Thermal sensitivity shift and zero shift at compensated temperature range(s).

8.0 OPTIONAL ACCESSORIES/COMPATIBLE PRODUCTS

30042	Mounting Pad
EW862	4 conducter ribbon cable

CE
UK CA

See Declaration of Conformity PS282

9.0 NOTES

[1] FSO (Full Scale Output) is defined as transducer output from 0 to +FS, which is nominally 200 mV.

[2] The cavity in the housing around the diaphragm may result in a low amplitude minor resonance near 70 kHz.

[3] Significantly higher thermal transient errors occur if the excitation voltage exceeds 10 Vdc.
For sensitive phase change studies, many users reduce the excitation voltage to 5 or even 1 volt.

[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] Use of excitation voltages above 10 Vdc requires manufacture and calibration at that voltage since thermal errors increase with high excitation voltages. If the unit is operated in a vacuum, excitation voltages above 10 volts may damage the unit.

[6] Model number definition

8515C M35 – XX – ZZZ

- **ZZZ** — Cable length in inches (i.e. 8515CM35-XX-120 has a cable length of 120 inches). If no length is specified, default length is 30 ± 3 inches
- **XX** — Denotes Pressure Range
  - 15 = 15 PSIA
  - 50 = 50 PSIA
- **M35** — Modifier
- **8515C** — Basic Model Number