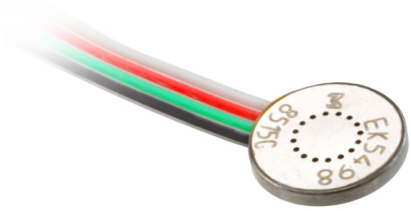
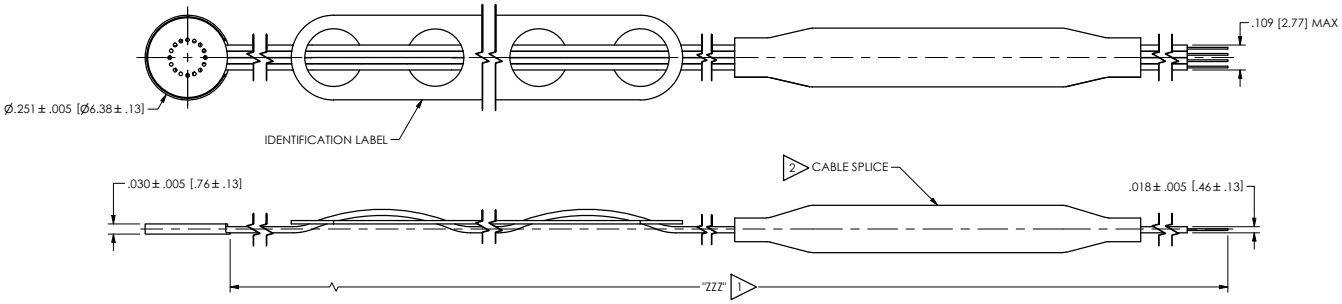
ENDEVCO
AN AMPHENOL COMPANY

Piezoresistive pressure sensor

Model 8515C





Key features

- 15 and 50 psia ranges
- Adhesive mount
- Low profile, 0.030 inch thin
- Accuracy 0.5% Span

Description

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

Because of its very small size, model 8515C can be installed on curved surfaces with minimal effect on laminar air or hot gas flow. For a flush fit, 8515C and leadwires can be recessed into the mounting surface. A protective screen is provided to protect against particle impingement. 8515C is suitable for use on small-scale models in wind tunnel tests, as well as on aerodynamic surfaces during flight tests. Other uses include helicopter or turbine blade surface pressure measurements.

A rubber fairing, PN 30042, is an available accessory for airflow smoothing for flight test applications.

Piezoresistive pressure sensor | Model 8515C

The following performance specifications are referenced at +75˚F (+24˚C) and 100 Hz, unless otherwise noted. Calibration data, traceable to National Institute of Standards and Technology (NIST), is supplied.

Specifications

Dynamic characteristics	Units	-15	-50
Range	psia	0–15	0–50
Positive Sensitivity	mV/psi	13.3 (±6.3)	4.0 (±2)
Accuracy [1]	% Span, max	0.5	0.5
Non-linearity	% Span, typ	0.2	0.2
Non-repeatability	% Span, typ	0.1	0.1
Pressure Hysteresis	% Span, typ	0.1	0.1
Zero measurand output	mV max	±20	±20
Zero shift after proof pressure	% Proof pressure Span, max	±0.5	±0.5
Thermal zero shift	% Span, typ	±1.0	±1.0
from 0˚F to +200˚F (-18˚C to +93˚C), Ref to 75˚F (24˚C)	% Span, max	±3.5	±3.5
Thermal sensitivity shift	% typ	±1.0	±1.0
from 0˚F to +200˚F (-18˚C to +93˚C), Ref to 75˚F (24˚C)	% max	±3.5	±3.5
Resonance frequency [2]	Hz	180,000	320,000
Non-linearity at proof pressure	% Proof pressue Span	1.0	1.0
Thermal transient response per ISA-S37.10, para. 6.7, procedure I	psi/˚F	0.003	0.005
Photoflash response	psi	0.25	0.8
Warm-up time to 1% accuracy [3]	ms	1	1
Acceleration sensitivity	psi/g	0.0002	0.0002
Proof pressure	psia	45	150
Burst pressure (diaphragm)	psia min	75	250
Base strain sensitivity at 250 microstrain			
Elastomer mounting	psi	0.004	0.013
Rigid mounting	psi	0.007	0.023

Electrical	
Span	200 mV typical at 10.0 Vdc
Supply voltage [4]	10.0 Vdc recommended, 12 Vdc maximum
Electrical configuration	Active four-arm piezoresistive bridge
Polarity	Positive output for increasing pressure
Resistance	
Input	3000 (+2000/-1000) ohms
Output	1500 (±700) ohms
Isolation	100 megohms minimum at 50 volts; leads to case
Noise	5 microvolts rms typical, dc to 50,000 Hz; 50 microvolts rms maximum, dc to 50,000 Hz

Mechanical	
Case material	Stainless steel 300 series CRES
Cable, integral [5]	4 conductor ribbon cable No. 36 AWG solid S.P.C., ETFE insulated
Dead volume	0.0004 cubic inches (0.0065 cm^3)
Mounting	Adhesive, refer to IM8500
Weight	0.08 grams (cable weighs 2.5 grams/meter)

Environmental	
Media	Compatible with clean, dry gases. Pressure media is exposed to CRES, epoxy, silicon, and Paralyne C.
Temperature (operating & storage)	-65°F to +250°F (-54°C to +121°C)
Vibration	1000 g
Static acceleration	1000 g
Shock	10,000 g, 100 microsecond, haversine
Humidity	Not recommended for long term operation in humid environments

Calibration

Each unit supplied with an ISO17025 compliant calibration which includes sensitivity, ZMO, Input resistance, output resistance, isolation resistance, linearity, hysteresis, repeatability, accuracy, thermal zero shift and thermal sensitivity shift.

Accessories

Options	Description	8515C
30042	Mounting pad	Optional
EDVEW862	4 conductor ribbon cable	Optional

Options

Options	Description
M30	Special temp comp -65° to 135°F & Gel
M32	A screen and black grease for blast testing
M35	Gel option for improved moisture resistance
M43	Special temp comp -30° to 170°F & Gel

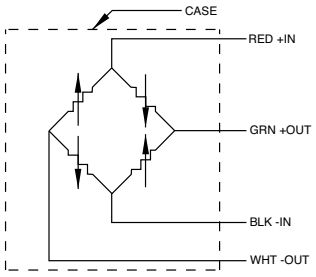
Notes

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. The cavity in the housing around the diaphragm may result in a low amplitude minor resonance near 70 kHz.
3. Warm-up time is defined as lapsed time from excitation voltage "turn on" until the transducer output is within 1% of reading accuracy.
4. Standard calibration is performed at 10V. Sensitivity and ZMO at 5V also included with "-D" option.
5. Cable lengths longer than 36 inches include a splice due to test equipment limitations.
6. Maintain high levels of precision and accuracy using Endevco's factory calibration services. Call Endevco's inside sales force at 866-ENDEVCO for recommended intervals, pricing and turn-around time for these services as well as for quotations on our standard products.

Model number definition:

8515C – 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
  15 = 15 PSIA
  50 = 50 PSIA
- 8515C: Basic Model Number



ENDEVCO
AN AMPHENOL COMPANY

10869 NC Highway 903, Halifax, NC 27839 USA
endevco.com | sales@endevco.com | 866 363 3826