Strain Sensors

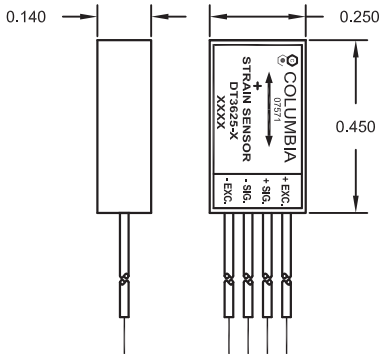
Model DT3625 Series

- **Smallest Size**
- **Self Temperature Compensating**
- **Ease of Installation**
- **High Output - Two Active Arms**

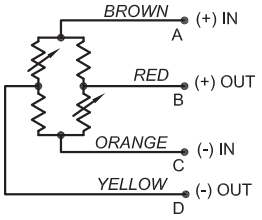
Columbia's Strain Sensors measure fatigue loading experienced by aircraft under various conditions of speed, weight and mission configuration more accurately than by older, less accurate counting accelerometer methods. These sensors allow critical undercarriage structures and surfaces to be more accurately monitored for potential fatigue damage induced by thousands of flight hours, high stress maneuvers and landings. The simplicity and reliability of these sensors also makes them suitable for routine use in the laboratory.

Series DT3625 sensors were developed in response to the need for fatigue measurements in tight spaces, and these sensors offer all the accuracy, ruggedness and ease of installation of the flight-qualified Series DTD2684 sensors. Models are available to compensate materials commonly used in aircraft structural fabrication. Columbia Model 5802 Strain Gage Amplifier is designed to amplify the sensor signals providing both strain and temperature outputs.

Note: Exports from the United States are subject to the licensing requirements of the Export Administration Regulations (EAR) and/or the International Traffic in Arms Regulations (ITAR).



SCHEMATIC DIAGRAM



A=EXCITATION(+) -BROWN
B=SIGNAL OUT(+) -RED
C=EXCITATION(-) -ORANGE
D=SIGNAL OUT(-) -YELLOW

SPECIFICATIONS

Operational [1]	Series DT3625
Operating Range (Repetitive)	±3000µЄ, 100 Cycles ±2000µЄ, 10,000 Cycles
Input Resistance	1000Ω, ±2%
Sensitivity	1.025mV/V/1000µЄ Nominal
Rated Excitation Voltage	10.0VDC
Linearity	±0.75% Full Scale Maximum
Zero Offset	±0.5mV/V Typical
Output Resistance	1000Ω, ±2%
Hysteresis & Repeatability	±0.5% Maximum
Zero Shift	±0.005mV/V/°F Maximum
Creep	Less than 0.5%, 5 Minutes @ 2000µЄ
Sensitivity vs. Temperature	0.05%/°F Maximum

Environmental [2]	
Temperature Range	-55° to +125°C
Vibration	30g, 10Hz to 2KHz
Humidity	MIL-STD-202 Method 103B
Salt Spray	MIL-STD-202 Method 101D (168 Hours)
Insulation Resistance	100MΩ Minimum @ 500VDC
Dielectric Strength	1050VRMS, 60Hz, 1 Minimum
Altitude	Sea Level to 70,000 Ft.
Shock	100g, 11mSec
Flammability	MIL-STD-202 Method 111A
Fluids	Resistance to short term exposure to fuel, lubricating oils and hydrolic fluids

Physical	
Size	0.450" x 0.250" x 0.140" Thick
Encapsulation	Silicone Rubber per MIL-S-23586A Type I, Class 2, Grade A
Weight	Approx. 13gms (Depending on length of leads)
Matrix	0.001" Polyimide
Leads	#26AWG, Teflon Ins, SPC, 12" Minimum

[1] @25°C [2] Installed Gage

Ordering Information

Model	Lead Length	Compensating Material
DT3625-1	48"	Aluminum 7075-T6 or7050-T73651, IVD
DT3625-2	48"	Steel, AISI 4130 or HP9-4-.20
DT3625-3	48"	Titanium TI-6AL-4V, B Annealed
DT3625-4	48"	Carbon/Epoxy MMS 549 Type 1
DT3625-5	48"	Steel, Aermet 100
DT3625-6	48"	Copper Alloy C110

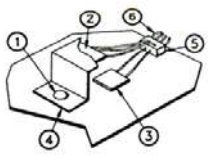


Fig. 1 - Typical Installation of Old Style Strain Gages

1. Bolt or rivet removed from assembly
2. Dummy gage(s) bonded to "Z Tab" of same material as structure.
3. Active gage bonded to structure under test.
4. "Z Tab" mounted to structure with bond or rivet.
5. Strain gage leads interwired and soldered to junction block.
6. Entire unit covered with protective material.

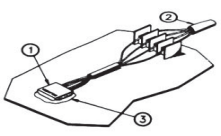


Fig. 2 Installation of Columbia Strain Sensor

1. Strain Sensor bonded to surface under test.
2. Leads connected to wire harness.
3. Coat sensor and wires with waterproofing material.

ADVANTAGES

- **Higher level accuracy**
- **Twice the output**
- **Less installation time**
- **No loss of structural integrity**
- **Optimum temperature compensation**

Columbia Research Laboratories, Inc. 1925 MacDade Blvd. Woodlyn, PA 19094 USA

Phone: 1.800.813.8471 / Fax: 610.872.3882 / email: sales@crlsensors.com / Web: *www.crlsensors.com*