

Strain / Temperature Sensors

Model DT3715 Series

Columbia Series DT3715 sensors were designed to accurately measure both strain and temperature on curved mounting surfaces. These sensors offer all the accuracy, ruggedness and ease of installation of the flight-qualified Series DTD2684 sensors and also incorporate a DIN standard 1000Ω platinum RTD which provides accurate temperature measurements at the exact point of sensor mounting. Similar devices have been utilized to monitor rocket body expansion. They can also be used in many industrial and military applications involving pipe expansion measurements, explosive body applications, aircraft surface load, and engine monitoring of all types

Series DT3715 sensors are customized to measure circumferential strain around the diameter of the surface to which it is mounted. The specified mounting radius is custom molded into the body of the sensor providing a method of controlling operator alignment during sensor mounting. Models are available to compensate materials commonly used in aircraft structural fabrication as well as other materials as specified. Columbia Model 5802 Strain Gage Amplifier is also available to power and signal condition both the strain and temperature outputs of the sensors.

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).

SPECIFICATIONS

Operational ¹	Series DT3715
DC Input Resistance	1000Ω, ±2%
DC Output Resistance	1000Ω, ±2%
Sensitivity	1.025(±1%)mV/V/1000μC
Rated Excitation Voltage	10.0VDC
Linearity	±0.5% Max.
Zero Strain Offset	±0.5mV/V Max.
Operating Range	-3500 to +5000μC
Sensitivity Shift	±0.005% / °F
Hysteresis, Repeatability	±0.013% Max.
Zero Shift	±0.00025mV/V/°F Typ.
Creep	<0.5%, 5 Min. @ 5000μC
Temperature Sensor	Platinum RTD, 1000Ω @ 0°C DIN EN 60751, Class 2B (0.3mA Max. Current)

Environmental ²

Temperature Range	-54° 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	100 Meg. min @ 500VDC
Dielectric Strength	1050VRMS, 60Hz, 1 Min.
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 hydraulic fluids

Physical

Size	0.562"Sq (Thickness Varies w/ Specified Mounting Radius)
Encapsulation	Silicone Rubber per MIL-S-23586A Type I, Class 2, Grade A
Weight	Approx. 15gms (Depending on radius selected)
Matrix	0.001" Polyimide
Leads	#26AWG, Teflon Ins, SPC, 24" Nom.

¹ @25°C

² Installed Gage

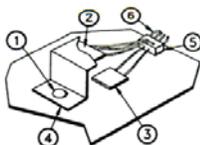


Fig. 1 - Typical Installation of Old Style Strain Gages

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 intertwined and soldered to junction block.
6. Entire unit covered with protective material.

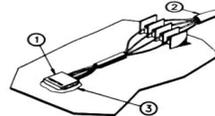


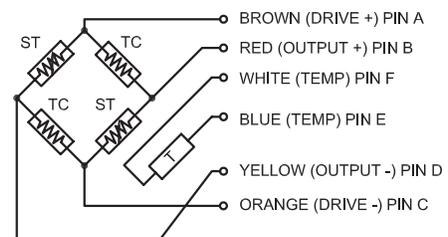
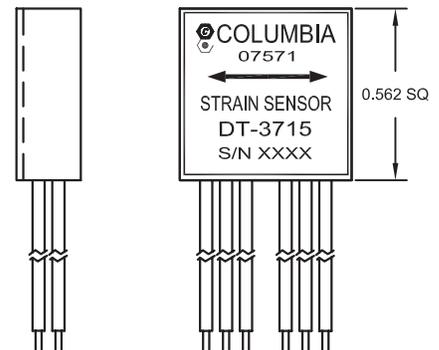
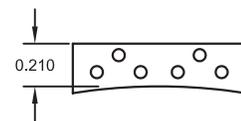
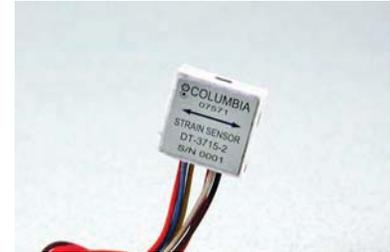
Fig. 2 Installation of Columbia Strain Sensor

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

- Strain & Temperature Outputs
- Choice of Cylindrical Mounting Radius
- Self Temperature Compensating



SCHEMATIC DIAGRAM

Ordering Information*

Model	Lead Length	Compensating Material
DT3715-1	24"	Aluminum 7075-T6 or 7050-T73651, IVD
DT3715-2	24"	Steel, AISI 4130 or HP9-4-.20
DT3715-3	24"	Titanium TI-6AL-4V Annealed
DT3715-4	24"	Carbon/Epoxy MMS 549 Type 1

*Mounting Radius Required upon Ordering