Model 3683C

High Temperature Charge Mode Triaxial Accelerometer

(+1000°F)
Key Sensor Features

- Charge mode, triaxial sensor with a temperature rating of 1,000°F (538°C)
- Ground isolated — no need for an additional mounting block
- Hermetically sealed — features our patented Silver Window™ technology
- Center through hole mount for 360° multi-directional cable orientation
- Lightweight (65 grams | 2.28 oz), small mounting footprint
- High frequency response of 3,000 Hz upper frequency range (±3dB)
- Custom hardline cables available
What Can This Sensor Do For You?

- Unique ground isolated triaxial design eliminates the need for using three separate single-axis accelerometers which are typically mounted on a bulky triaxial mounting block. *This reduces the weight affecting the test structure.*

- Thrives in extreme environments and measures vibration at high temperatures of up to 1,000°F (583°C). Can even survive short excursions at temperatures up to 1,100°F (593°C)

- Low weight, coupled with unique internal construction, allows for a 3,000 Hz upper frequency range (±3dB)

- Small size allows the sensor to be used in situations where vertical space is limited

- Hermetically sealed housing and patented Silver Window™ technology ensures *reliable operation at extremely high temperatures*
Silver Window™ Technology

Patented Dytran technology

A "silver window" on the top cover of the sensor’s housing allows diffused oxygen molecules to pass through at high temperatures, replenishing the crystal with oxygen while maintaining the hermetic seal’s integrity. This innovative feature assures continued high temperature operation with very minimal loss of insulation resistance due to oxygen deprivation.
# Specification Summary

<table>
<thead>
<tr>
<th>Physical</th>
<th>Performance Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Weight: 2.28 oz [65 grams]</td>
<td>▪ Sensitivities: 1 to 2 pC/g</td>
</tr>
<tr>
<td>▪ Nickel alloy 600 housing, hermetically sealed</td>
<td>▪ Frequency range: 3,000 Hz (±3dB)</td>
</tr>
</tbody>
</table>
| ▪ 10-32 center through hole mount  
  ▪ Model 6543 screw included | ▪ Max shock: 3,000 g\textit{\textsubscript{peak}} |
| ▪ Three 10-32 coaxial connectors | ▪ Operating temperature  
  ▪ -67 to +1000°F  
  ▪ -55 to +538°C |
| ▪ Case isolated | |
Specification Summary

Dimensions

1.2 in [30.5 mm] x 1.36 in [34.6 mm] .92 in [23.4 mm]
Sensor Housing Features

Lockwire Holes

3X 10-32 Coaxial Connectors

Through Hole for 10-32 Mounting Screw

Silver Window™

(Enhanced View)
Compatible Accessories

Hardline Cable Assemblies

Model 60061A – High Temperature Cable
10-32 right angle plug to 10-32 plug, operation to 1100°F, stainless steel, insulated

Model 60016A – Specialty Cable
10-32 plug to 10-32 plug, operation to 1100°F, stainless steel, insulated
Compatible Accessories

In-Line Charge Amplifier

Model 4753B
Available in three ranges (500pC, 1000pC, 5000pC), 10-32 jack to BNC connector, -40 to 185°F operation, stainless steel, 25 gram

Model 4754B
Available in three ranges (500pC, 5000pC, 5000pC), 10-32 jack to 10-32 jack, -40 to 185°F operation, stainless steel, 17 gram
Typical Response Graphs

TYPICAL LOW FREQUENCY RESPONSE

Frequency (Hz)

Sensitivity Deviation (%)

TC 1 SEC
TC 0.7 SEC
TC 0.4 SEC
TC 0.1 SEC

TYPICAL TEMPERATURE RESPONSE

Temperature (°F)

Sensitivity Deviation (%)
PERFORMANCE SPECIFICATION
TRIAXIAL, CHARGE MODE ACCELEROMETER

This family also includes:

Model | Sensitivity (pC/g) | Range F.S. (0’s) | Output Polarity | Temperature (°F)
---|---|---|---|---

PHYSICAL

<table>
<thead>
<tr>
<th>Physical</th>
<th>Units</th>
<th>SI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight, Max.</td>
<td>2.28 oz</td>
<td>65 grams</td>
</tr>
<tr>
<td>Connector</td>
<td>3X 10-32</td>
<td>3X 10-32</td>
</tr>
<tr>
<td>Mounting Provision</td>
<td>Thru Hole, #10 Screw</td>
<td>Thru Hole, #10 Screw</td>
</tr>
<tr>
<td>Material</td>
<td>Alloy 600</td>
<td>Alloy 600</td>
</tr>
<tr>
<td>Element Style</td>
<td>Single Crystal</td>
<td>Single Crystal</td>
</tr>
<tr>
<td>Type</td>
<td>Shear</td>
<td>Shear</td>
</tr>
</tbody>
</table>

PERFORMANCE

<table>
<thead>
<tr>
<th>Performance</th>
<th>Units</th>
<th>SI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitivity [1]</td>
<td>1 to 2 pC/g</td>
<td>0.10 to 0.20 pC/m/s²</td>
</tr>
<tr>
<td>Frequency Range, ±5%</td>
<td>[3] to 1000 Hz</td>
<td>[3] to 1000 Hz</td>
</tr>
<tr>
<td>Resonant Frequency</td>
<td>3 kHz</td>
<td>3 kHz</td>
</tr>
<tr>
<td>Capacitance</td>
<td>120 pF</td>
<td>120 pF</td>
</tr>
<tr>
<td>Linearity [2]</td>
<td>±1.5% F.S.</td>
<td>±1.5% F.S.</td>
</tr>
<tr>
<td>Maximum Transverse Sensitivity</td>
<td>6 %</td>
<td>6 %</td>
</tr>
<tr>
<td>Base Strain Sensitivity</td>
<td>0.91 g/µs</td>
<td>0.10 mV/µs</td>
</tr>
<tr>
<td>Insulation Resistance</td>
<td>at 75°F &gt;3,000 Ω</td>
<td>at 75°F &gt;3,000 Ω</td>
</tr>
<tr>
<td>Output Polarity</td>
<td>Negative</td>
<td>Negative</td>
</tr>
</tbody>
</table>

ENVIRONMENTAL

<table>
<thead>
<tr>
<th>Environmental</th>
<th>Units</th>
<th>SI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Vibration</td>
<td>±1000 G, peak</td>
<td>±9810 m/s², peak</td>
</tr>
<tr>
<td>Maximum Shock</td>
<td>±3000 G, peak</td>
<td>±29430 m/s², peak</td>
</tr>
<tr>
<td>Temperature Range</td>
<td>-67 to +100°C</td>
<td>-55 to +38°C</td>
</tr>
<tr>
<td>Seal</td>
<td>Hermetic</td>
<td>Hermetic</td>
</tr>
<tr>
<td>Ground Isolation</td>
<td>Case Isolated</td>
<td>Case Isolated</td>
</tr>
</tbody>
</table>

NOTES:
1. Measured at 100Hz, 1 Gms per ISA RP 37.2
2. Measured using zero-based straight line method, % of F.S. or any lesser range.
3. Low frequency response and phase response is function of charge amplifier. See graph below for example.
4. In the interest of constant product improvement, we reserve the right to change specifications without notice.
5. U.S. Patent number US 8,375,793 B2 applies to this unit.

The information, descriptions, specifications, photos, and illustrations contained herein are confidential and proprietary. No part of this document may be disclosed or reproduced in any form to any third party without written permission of Dytran Instruments, Inc.
Applications

- Turbine engines
- Power plants
- Exhaust manifold testing
- Hypersonic applications
- Turbocharger testing
- Brake rotor testing
- HALT/HASS
- Vibration monitoring of components in ultra-high temperature environments
Resources

Product page on website
(www.dytran.com/Model-3683C-High-Temperature-Triaxial-Accelerometer/)

Call to speak to a Dytran sales engineer: (818) 700-7818

Product Cutsheet
(www.dytran.com/literature)

The information, descriptions, specifications, photos, and illustrations contained herein are confidential and proprietary. No part of this document may be disclosed or reproduced in any form to any third party without written permission of Dytran Instruments, Inc.
Discover Exciting New Innovations at www.Dytran.com
Discover Our Entire Sensing Line at www.Dytran.com