Drawings, Schematics, & Maps

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Mauna Loa Strip Dilatometer

4.0" casing inside 4.5" borehole
with 4" cored section from 356'10" to 387'5"

total length of borehole cemented back to 50' of surface

Inclination of hole = 1.75 degrees
Pinnacle Self leveling Tiltmeter
at 50 ft, sand packed

1.25" fill pipe top of seismometer
Oyo/wilcoxon
seismometer/accelerometer
277' seismometer

356'10" casing depth

bottom 14' 8" filled with rocks to 372'4" T.D.

372'2" bottom of strainmeter

From notes of 09/01/00
G.D. Myren

T.D. = 387' 5"
Hokukano Dilatometer

4.0" casing inside 4.5" borehole
with 4" cored section from 399.5’ to 425’ 6”

total length of borehole cemented back to 50’ of surface

Pinnacle Self leveling Tiltmeter
at 50 ft, sand packed

Inclination of hole = 0.0 degrees

Oyo/wilcoxon
seismometer/accelerometer
300’ seismometer

SET Grout to casing

425’ bottom of strainmeter

From notes of 09/01/00
G.D. Myren

T.D. = 428’ 9”
bottom 3’ filled with rock
Mauna Loa Observatory Dilatometer

4.0" casing inside 4.5" borehole
with 4" cored section from 350' to 367'3"

total length of borehole cemented back to 45' of surface

Pinnacle Self leveling Tiltmeter
at 50 ft, sand packed

Inclination of hole = 0.0 degrees

1.25" fill pipe top of seismometer

Oyo/wilcoxon
seismometer/accelerometer
243.5' seismometer

From notes of 09/01/00
G.D. Myren

T.D. = 367'3"
13.0” casing to 1000’

Casing set at 1000’

Strainmeter at 1198’

1.25” fill pipe to top of strainmeter

Tiltmeter sandpacked at 50’

1.5” to 3” Bell fitting

50’ of 1.5” Stainless tubing as pass by of 2.875” o.d.
Strainmeter installed in 8” borehole

Cement Umbrella set at 1205’

Drilling Mud at 1600’

Open hole to 3800’

From notes 05/18/04
G.D. Myren
## SET® GROUT

**General-construction mineral-aggregate nonshrink grout**

### PRODUCT DATA

| 3 09600 | Grouts |

### Description

Set® Grout is a Portland cement-based construction grout containing mineral aggregate. It is designed to meet all of the performance requirements of the Corps of Engineers Specification (CSC-62) and ASTM C 1102, Grades B and C, at a consistency from flowable to damppack.

### Features

<table>
<thead>
<tr>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural gray color</td>
</tr>
<tr>
<td>Free of inorganic accelerators, including chlorides or other salts</td>
</tr>
<tr>
<td>Can be extended with clean, well-ground coarse aggregate</td>
</tr>
<tr>
<td>Hardens free of bleeding at tilt, plastic, or flowable consistencies</td>
</tr>
</tbody>
</table>

### Yield

One 50 lb (22.7 kg) bag of Set® Grout mixed with 1.0 gallon (3.8 L) of water provides approximately 0.42 ft³ (0.012 m³) of mixed grout (at a flowable mix).

### Packaging

50 lb (22.7 kg) multi-wall paper bag.

### Shelf Life

1 year when properly stored.

### Storage

Store in unopened packaging in a clean, dry environment.

### Where to Use

- Normal loads for column and baseplates
- Anchoring bolts and reinforcing bars
- Bedding grout for prestressed panels
- Replacing of cartels resulting from ineffective concrete consolidation
- Caulking concrete pipe
- Backfilling, undermining foundations, and pressure grouting of slab-heaving alignment
- General-construction applications

### For Best Performance

- Contact your local representative for a pre-job conference to plan the installation.
- When grouting in temperature below 50°F (10°C) or above 90°F (32°C), special procedures are required. Store and mix grout to produce the desired mixed-grout temperature. If bagged material is hot, use cold water; if bagged material is cold, use warm water to achieve a mixed product temperature as close to 70°F (21°C) as possible. Consult with your Degussa representative for use of Set® Grout outside of the recommended temperature range.
- Do not use Set® Grout where it will contact steel designed for stresses above 80,000 psi (552 MPa). Use Masterflow® 476, Masterflow® 1341, or Masterflow® 1205 post-tensioning cable grouts instead.
- Do not add plasticizers, accelerators, retarders, or other admixtures or additives without the specific written authorization of Degussa Technical Service.
- For best results, do not attempt to place Set® Grout under a baseplate or within 1" (25 mm) vertical clearance.
- Do not place Set® Grout in any lift greater than 6" (15 cm) unless the product is extended with aggregate.

### How to Apply

**APPLICATION**

- Normal loads for column and baseplates
- Anchoring bolts and reinforcing bars
- Bedding grout for prestressed panels
- Replacing of cartels resulting from ineffective concrete consolidation
- Caulking concrete pipe
- Backfilling, undermining foundations, and pressure grouting of slab-heaving alignment
- General-construction applications

**Curing**

- Cure all exposed grout shoulders by wet curing for 24 hours and then applying a recommended curing compound compliant with ASTM C 309 or preferably ASTM C 1315.

www.DegussaBuildingSystems.com
Technical Data

Composition

Set® Grount is a Portland-cement-based grout containing mineral aggregate.

Compliance

- CRD C 621, Grades B and C, and ASTM C 1100, Grades B and C, are consistent from flowable to dry pack
- City of Los Angeles Research Report Number RR 22137

Test Data

<table>
<thead>
<tr>
<th>PROPERTY</th>
<th>RESULTS</th>
<th>TEST METHODS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flowable Mix</td>
<td>1.0 (0.9)</td>
<td>ASTM C 200</td>
</tr>
<tr>
<td>Aggregate water, gallons (L)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flow, 5 days, %</td>
<td>126 – 145</td>
<td></td>
</tr>
<tr>
<td>Compressive strength, psi (MPa)</td>
<td></td>
<td>ASTM C 492, according to ASTM C 1107</td>
</tr>
<tr>
<td>Consistency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flowable*</td>
<td>3,800 (2)</td>
<td>4,500*</td>
</tr>
<tr>
<td>Plastic*</td>
<td>5,300 (7)</td>
<td>6,300 (4)</td>
</tr>
<tr>
<td>Semi*</td>
<td>8,300 (9)</td>
<td>9,800 (6)</td>
</tr>
<tr>
<td>2 day</td>
<td>7,060 (6)</td>
<td>9,300 (6)</td>
</tr>
<tr>
<td>7 day</td>
<td>7,000 (6)</td>
<td>9,300 (6)</td>
</tr>
<tr>
<td>28 day</td>
<td>7,000 (6)</td>
<td>9,300 (6)</td>
</tr>
</tbody>
</table>

*At a constant speed of ways, consistency will vary with temperature. Final setting time is at approximately 6 hours at a flowable consistency of 70°F (21°C)

- 1% H/V: Flowable: ASTM C 200; 3.5 in. in 5 seconds
- 9% B/V: Flowable: ASTM C 200; 5.5 in. in 5 seconds
- 74% B/V: Flowable: ASTM C 200; 8.5 in. in 5 seconds

Expected loose variants are not offered because of varying temperature and atmospheric conditions at the job site. Control field and laboratory tests rather than visual observation or the ability to turn on and off water content.

- Where precision alignment and severe service, such as heavy loading, rolling, or impact resistance, are required, use metallic-reinforced, non-stabilized Emseal® Type C grout. If the amount of impact resistance needed is not great enough to require metallic reinforcement, use mineral-aggregate Masterflow® Type D grout.

While we believe the information on this page is current, we cannot guarantee the accuracy of the information. We do not guarantee the accuracy of the information on this page. If you have any questions or concerns about the information on this page, please contact us directly.

Health and Safety

SET GROUP

Carbides

Risks


Precautions

KEEP OUT OF THE REACH OF CHILDREN. Avoid contact with eyes. Wear suitable protective eyewear. Avoid prolonged or repeated contact with skin. Wear suitable gloves. Wear suitable protective clothing. Do not breathe dust. If in case of insufficient ventilation, wear suitable respiratory equipment. Wash soiled clothing before reuse.

First Aid

Wash exposed skin with soap and water. Flush eyes with large quantities of water. If breathing is difficult, move to fresh air.

Waste Disposal Method

This product when discarded or disposed of is not listed as a hazardous waste in federal regulations. Dispose of it at a landfill in accordance with local regulations.

For additional information on personal protective equipment, first aid, and emergency procedures, refer to the product Material Safety Data Sheet (MSDS) on the job site or contact the company at the address or phone number given below.

Preparation 65

This product contains materials listed by the state of California as known to cause cancer, birth defects, or reproductive harm.

V.O.C. Content

0 (0.0g/l or 0.0%)

For medical emergencies only, call ChemTel (1-800-488-5000).

Degrease Building Systems

106 Valley Park Drive

Shalekane, NY 10574

www.degreasebuilding systems.com

Customer Service: 1-800-222-7001

Technical Support: 1-800-243-0728

For professional use only. Not for sale or use by the general public.
Borehole Signals Wires

#4 AWG Ground attached to casing

Strainmeter Signals from Borehole

Pinnacle Technologies Self Leveling Tiltmeter Borehole Package

Y axis signal
X axis signal
Power & Signal Ground
+12 power

Black/White = Dt2 Com out
Blue/Black = Dt2 sig out
Red/Black = Dt1 com out
White/Black = Dt1 sig out
Green/Black = Dt2 Supply Power
Orange/Black = Dt1 & Dt2 Supply common
Blue = Dt1 & Dt2 Supply common
Orange = Dt1 Supply Power
Red = + Valve 2 Close & - Valve 2 Open
Black = + Valve 1 Close & - Valve 1 Open
Green = + Valve 2 Open
White = - Valve 1 Open

#4 AWG Ground attached to casing


Seismic

Strap Road

Telemetry Wiring

From Hole

<table>
<thead>
<tr>
<th>Color</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>Accel Vert+</td>
</tr>
<tr>
<td>Blk</td>
<td>Accel Vert-</td>
</tr>
<tr>
<td>Drk Brn</td>
<td>Horiz1 +</td>
</tr>
<tr>
<td>Pink</td>
<td>Horiz1 -</td>
</tr>
<tr>
<td>Orange</td>
<td>Horiz2 +</td>
</tr>
<tr>
<td>Yellow</td>
<td>Horiz2 -</td>
</tr>
<tr>
<td>Blue</td>
<td>Velocity</td>
</tr>
<tr>
<td>Green</td>
<td>Vert +</td>
</tr>
<tr>
<td>Grey</td>
<td>Vert -</td>
</tr>
<tr>
<td>White</td>
<td>Horiz1 +</td>
</tr>
<tr>
<td>Purple</td>
<td>Horiz1 -</td>
</tr>
<tr>
<td>Lt. Brown</td>
<td>Horiz2 +</td>
</tr>
<tr>
<td></td>
<td>Horiz2 -</td>
</tr>
</tbody>
</table>

Seismic Cable

Strain Cable

Reftek Inputs

<table>
<thead>
<tr>
<th>Channel</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Accel V+</td>
</tr>
<tr>
<td></td>
<td>Accel V -</td>
</tr>
<tr>
<td>2</td>
<td>Accel H1 +</td>
</tr>
<tr>
<td></td>
<td>Accel H1 -</td>
</tr>
<tr>
<td>3</td>
<td>Accel H2 +</td>
</tr>
<tr>
<td></td>
<td>Accel H2 -</td>
</tr>
<tr>
<td>4</td>
<td>Vel. V +</td>
</tr>
<tr>
<td></td>
<td>Vel. V -</td>
</tr>
<tr>
<td>5</td>
<td>Strain DT1 +</td>
</tr>
<tr>
<td>6</td>
<td>Common -</td>
</tr>
<tr>
<td></td>
<td>Pressure +</td>
</tr>
<tr>
<td></td>
<td>Common -</td>
</tr>
</tbody>
</table>
Seismic Telemetry Wiring

From Hole

Seismic Cable

Color
Red
black
red/blk
blk/gy
org
org/blk
blue
brown
wht/blk
wht
blue/wht
grey/bk

Component
Accel.
Vert +
Vert -
Horiz1. +
Horiz1. -
Horiz2 +
Horiz2 -
Velocity
Vert. +
Vert -
Horiz1 +
Horiz1 -
Horiz2 +
Horiz2 -

Strain Cable

Red
Black
Green

DT1 Strain
Pressure
Common

Reftek Inputs

Channel
1
2
3
4
5
6
Component
Accel. V+
Accel. V -
Accel. H1 +
Accel. H1 -
Accel. H2 +
Accel. H2 -
Vel. V +
Vel. V -
Strain DT1 +
Common -
Pressure +
Common -
Seismic

Mauna Loa Telemetry Wiring

**From Hole**

- **Seismic Cable**
  - Red
  - black
  - red/blk
  - blk/gray
  - org
  - org/blk

- **Strain Cable**
  - Red
  - Black
  - Green

**Component**

- Accel.
- Vert +
- Vert -
- Horiz1. +
- Horiz1. -
- Horiz2 +
- Horiz2 -
- Velocity
- Vert. +
- Vert -
- Horiz1 +
- Horiz1 -
- Horiz2 +
- Horiz2 -

**Reftek Inputs**

<table>
<thead>
<tr>
<th>Channel</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Accel. V+</td>
</tr>
<tr>
<td></td>
<td>Accel. V -</td>
</tr>
<tr>
<td>2</td>
<td>Accel. H1 +</td>
</tr>
<tr>
<td></td>
<td>Accel. H1 -</td>
</tr>
<tr>
<td>3</td>
<td>Accel. H2 +</td>
</tr>
<tr>
<td></td>
<td>Accel. H2 -</td>
</tr>
<tr>
<td>4</td>
<td>Vel. V +</td>
</tr>
<tr>
<td></td>
<td>Vel. V -</td>
</tr>
<tr>
<td>5</td>
<td>Strain DT1 +</td>
</tr>
<tr>
<td></td>
<td>Common -</td>
</tr>
<tr>
<td>6</td>
<td>Pressure +</td>
</tr>
<tr>
<td></td>
<td>Common -</td>
</tr>
</tbody>
</table>
Keller Seismic Telemetry Wiring

From Hole

Seismic Cable

- Red: Vert +
- Black (Blk): Vert -
- Dark Brown (Drk Brn): Horiz 1 +
- Pink: Horiz 1 -
- Orange: Horiz 2 +
- Yellow: Horiz 2 -
- Blue: Velocity Vert +
- Green: Velocity Vert -
- Grey: Horiz 1 +
- White: Horiz 1 -
- Purple: Horiz 2 +
- Light Brown (Lt. Brown): Horiz 2 -

Strain Cable

- Red: DT1 Strain
- Black: Pressure
- Green: Common

Reftek Inputs

<table>
<thead>
<tr>
<th>Channel</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Accelerometer V+</td>
</tr>
<tr>
<td></td>
<td>Accelerometer V -</td>
</tr>
<tr>
<td>2</td>
<td>Accelerometer H1 +</td>
</tr>
<tr>
<td></td>
<td>Accelerometer H1 -</td>
</tr>
<tr>
<td>3</td>
<td>Accelerometer H2 +</td>
</tr>
<tr>
<td></td>
<td>Accelerometer H2 -</td>
</tr>
<tr>
<td>4</td>
<td>Velocity V +</td>
</tr>
<tr>
<td></td>
<td>Velocity V -</td>
</tr>
<tr>
<td>5</td>
<td>Strain DT1 +</td>
</tr>
<tr>
<td></td>
<td>Common -</td>
</tr>
<tr>
<td>6</td>
<td>Pressure +</td>
</tr>
<tr>
<td></td>
<td>Common -</td>
</tr>
</tbody>
</table>
## Wilcoxon Box Inputs

<table>
<thead>
<tr>
<th>Wilcoxon Box Inputs</th>
<th>Hokukano &amp; Mauna Loa</th>
<th>Keller &amp; Strip</th>
</tr>
</thead>
<tbody>
<tr>
<td>V1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whit</td>
<td>red</td>
<td>red</td>
</tr>
<tr>
<td>Blk</td>
<td>black</td>
<td>blk</td>
</tr>
<tr>
<td>H1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red</td>
<td>red/blk</td>
<td>dkr bm</td>
</tr>
<tr>
<td>Blk</td>
<td>blk/gry</td>
<td>pink</td>
</tr>
<tr>
<td>H2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gray</td>
<td>org</td>
<td>org</td>
</tr>
<tr>
<td>Blk</td>
<td>org/blk</td>
<td>ytw</td>
</tr>
</tbody>
</table>

## Wilcoxon Outputs

- V1 BNC Cable
- H1 BNC Cable
- H2 BNC Cable
Wilcoxon Wiring

From Borehole
Burndy 10 pin connector

V red/black

BNC V1

+24V

1N5305

10 uF

200 Kohm

To Telemetry
Individual BNC Cables

+12 Bat

-BAT

DC/DC HL01R

H1 bed-black/black-grey

F

BNC H1

H2 orange/orange-black

J

BNC H2

E
* Not Used

Carlon #C2420A4
24"x20"x7.5"
Hinged cover NEMA Circuit Safe
Cabinet Enclosure

@ ZENO & Telonics share the same power, but are switched separately.
ZEN®-3200 Specifications

I. INPUT AND OUTPUT
A. Minimum Triggering. Seven levels of external or front-panel control of multiple input lines.
   - Software list expansion: +3.3V or 5V TTL levels.
   - High Resolution: 150mV peak-to-peak
   - Low Noise: 100mV peak-to-peak
   - Bandwidth: 10MHz or 5MHz
   - Slew Rate: 500V/us

B. Digital Memory. 4096 x 14-bit or 2048 x 16-bit
   - Temperature: -40°C to +85°C
   - Power Supplies: 5VDC, 12VDC
   - Power Consumption: 100W

II. SPECIFICATIONS
A. CPU: Motorola 68000, 25MHz microprocessor
B. Memory: 1MB, expandable to 4MB
C. Display: 14.8-inch, 1280 x 1024 pixels
D. Printer: Epson LQ-2090, 24-pin dot matrix

III. SYSTEM POWER REQUIREMENTS
A. AC Power: 120V or 230V, 50/60Hz
B. DC Power: 24VDC, 5A
C. Environmental: Temperature range: 5°C to 40°C

IV. SPECIAL FEATURES
A. Hardware Monitoring and Power Management
B. Software Yielding Timeouts
C. Real-Time Clock, Real-Time Monitor
D. Advanced System Management
E. Dual-Slot Channel Programming
F. High-Speed Data Transfer

V. ENVIRONMENTAL
A. Temperature: 18°C to 28°C
B. Humidity: 20% to 80% non-condensing

VI. CUSTOMER SUPPORT
A. Warranty: 90 days
B. Technical Support: 24/7

VII. WEB SITE
A. www.coastal.com

ZEN®-3200—ADVANCED MEASUREMENT, CONTROL, DATA STORAGE AND TELEMETRY

The ZEN®-3200 is a high-performance, multi-channel data acquisition system designed for demanding scientific applications. It is equipped with a powerful Motorola 68000 microprocessor and a variety of input modules, including thermocouples, resistive temperature detectors, and other sensors. The system is capable of collecting, storing, and processing data in real-time, making it ideal for applications in fields such as astrophysics, geophysics, and environmental science.

The ZEN®-3200 is also equipped with advanced communication features, allowing it to transmit data in real-time to a remote server or database. This makes it ideal for remote monitoring applications, where data needs to be collected and processed in real-time.

Customer support is available 24/7, with a team of experienced engineers ready to assist with any questions or concerns. Whether you need help setting up your system, troubleshooting issues, or integrating the ZEN®-3200 into your existing workflow, our team is here to support you.

For more information, please visit our website at www.coastal.com.
For many years, high accuracy environmental and test & measurement applications around the world have relied on the consistent performance of the Setra Model 270 pressure transducer. Applications range from remote weather monitoring and avionics systems, endorsed by government agencies, to crucial compensation for barometric pressure variations in laser interferometers.

Long-term reliability and stability in such demanding application environments are achieved in the 270 with the combination of the SETRACERAM™ capacitive sensor and Setra's proprietary custom IC analog circuit. The fundamentally simple design and thermally stable glass fused ceramic sensing capsule is coupled with the sophisticated capacitance charge balance IC circuit, where accurate signal conditioning and environmental compensation is performed. Standard accuracy is 0.05% Full Scale, end point method. Higher accuracy and thermal specifications are also available.

### Applications
- High Accuracy Barometric Pressure Measurement
- Weather and Environmental Data
- Data Buoys and Remote Weather Stations
- Engine Test Cells
- High Accuracy Transfer Standard for Calibration
- CE Mark Compliance

### Features
- SETRACERAM™ Sensor
- High Accuracy ±0.05% FS
- ±0.03% FS Optional Accuracy
- Repeatability Within 0.01% FS
- Excellent Long-Term Stability
- Low Power Consumption
- Instant Warm-Up
- Fast Response

### Specifications

<table>
<thead>
<tr>
<th>Type of Pressure</th>
<th>Pressure Range</th>
<th>Maximum Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barometric</td>
<td>800 to 1100 hPa/mb</td>
<td>20 psia</td>
</tr>
<tr>
<td></td>
<td>600 to 1100 hPa/mb</td>
<td></td>
</tr>
<tr>
<td>Absolute</td>
<td>0 to 10, 20, 50, 100 psia</td>
<td>1.5 x rated</td>
</tr>
<tr>
<td>Gauge</td>
<td>0 to 5, 10, 20, 50, 100 psig</td>
<td>1.5 x rated</td>
</tr>
</tbody>
</table>

NOTE: Setra conform to strict quality standards including ISO 9001 and NIST20A1. The calibration of this product is NIST traceable.

U.S. Patent nos. 9,000,013, 10,000,013

159 Swanson Rd., Boxborough, MA Telephone 978-283-1400 Fax 978-264-0292

Visit Setra Online: http://www.setra.com

ISO 9001 Certified

Setra
800-257-3872
**Performance Data**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
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<tbody>
<tr>
<td>Accuracy</td>
<td>≤±0.005% FS</td>
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<tr>
<td>Non-Linearity</td>
<td>±0.005% FS</td>
</tr>
<tr>
<td>End Point</td>
<td>±0.005% FS</td>
</tr>
<tr>
<td>Best Fit Straight Line</td>
<td>±0.005% FS</td>
</tr>
<tr>
<td>Hysteresis</td>
<td>0.005% FS</td>
</tr>
<tr>
<td>Non-Repeatability</td>
<td>0.01% FS</td>
</tr>
<tr>
<td>Resolution</td>
<td>Infinitesimal</td>
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</table>

**Electrical Data**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Voltage (V)</td>
<td>4-20mA (±Exc., -Exc., +Out, -Out)</td>
</tr>
<tr>
<td>Isolation Voltage (VDC)</td>
<td>22 to 32 VDC</td>
</tr>
<tr>
<td>Output Impedance (Ohms)</td>
<td>≤5 Ohms</td>
</tr>
<tr>
<td>Output Noise</td>
<td>≤200 microvolts</td>
</tr>
<tr>
<td>Current Consumption (mA)</td>
<td>8mA (0.02 W)</td>
</tr>
</tbody>
</table>

**Environmental Data**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature Operating</td>
<td>0 to +70°F</td>
</tr>
<tr>
<td>Temperature Storage</td>
<td>-50 to +200°F</td>
</tr>
<tr>
<td>Vibration</td>
<td>2g from 10Hz to 10kHz</td>
</tr>
<tr>
<td>Acceleration</td>
<td>10g</td>
</tr>
<tr>
<td>Shock</td>
<td>80g Operating 1/2 sine 10ms</td>
</tr>
<tr>
<td>Pressure Reliefing</td>
<td>1/8&quot;-27 NPT Internal</td>
</tr>
<tr>
<td>Electrical Connection</td>
<td>2-Foot Multi-conductor Cable</td>
</tr>
<tr>
<td>Weight (approx)</td>
<td>0.9 pounds (0.41 kg)</td>
</tr>
</tbody>
</table>

**Model 1270 Specifications**

**Options**

- **Electrical Options**
  - 623: 12 VDC isolation (11 to 15 VDC)

- **Environmental Options**
  - 701: Compressed temperature -10°F to +120°F

**Pressure Media**

- Non-condensing air tested with stainless and aluminum, aluminum oxides, gold, fluorocarbon or butyrate sealant & Buna-N O-ring

**Specifications subject to change without notice.**
Strainmeter Inputs

<table>
<thead>
<tr>
<th>Borehole Cable</th>
<th>Strainmeter to</th>
<th>19 pin DCP BOX Connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>black</td>
<td>1</td>
<td>A</td>
</tr>
<tr>
<td>white</td>
<td>2</td>
<td>B</td>
</tr>
<tr>
<td>red</td>
<td>3</td>
<td>C</td>
</tr>
<tr>
<td>green</td>
<td>4</td>
<td>D</td>
</tr>
<tr>
<td>orange</td>
<td>5</td>
<td>E</td>
</tr>
<tr>
<td>blue</td>
<td>6</td>
<td>F</td>
</tr>
<tr>
<td>wht/blk trace</td>
<td>7</td>
<td>G</td>
</tr>
<tr>
<td>red/blk trace</td>
<td>8</td>
<td>H</td>
</tr>
<tr>
<td>grn/blk trace</td>
<td>9</td>
<td>J</td>
</tr>
<tr>
<td>org/blk trace</td>
<td>10</td>
<td>K</td>
</tr>
<tr>
<td>blu/blk trace</td>
<td>11</td>
<td>L</td>
</tr>
<tr>
<td>blk/wht trace</td>
<td>12</td>
<td>M</td>
</tr>
<tr>
<td>red/wht trace</td>
<td>13</td>
<td>N</td>
</tr>
<tr>
<td>grn/wht trace</td>
<td>14</td>
<td>P</td>
</tr>
<tr>
<td>blu/wht trace</td>
<td>15</td>
<td>R</td>
</tr>
<tr>
<td>blk/red trace</td>
<td>16</td>
<td>S</td>
</tr>
</tbody>
</table>

**Strainmeter Electronics Box Connector**

```
12 & 17 - valve 1 & 2 close
1 +valve 1 close
9 DT1 C sig out -
11 valve #2 close
2 DT 1 A, B, C IN +
13 DT 1 & 2 A, B, C IN -
4 DT 1 A sig out +
5 DT 1 A sig out -
3 DT 2 A, B, C IN +
7 DT 1 B out -
10 DT 2 A out +
14 DT 2 A, B, C out -
16 DT 2 B out +
15 DT 2 C out +
6 DT 1 B out +
8 DT 1 C out +
```

**Solder side**

```
12 & 17 - valve 1 & 2 close
1 +valve 1 close
9 DT1 C sig out -
11 valve #2 close
2 DT 1 A, B, C IN +
13 DT 1 & 2 A, B, C IN -
4 DT 1 A sig out +
5 DT 1 A sig out -
3 DT 2 A, B, C IN +
7 DT 1 B out -
10 DT 2 A out +
14 DT 2 A, B, C out -
16 DT 2 B out +
15 DT 2 C out +
6 DT 1 B out +
8 DT 1 C out +
```

**Carrol Cable #C0787 multi-conductor**

**Foil shield**

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**Strainmeter Cable to Strainmeter/DCP BOX plug connector, solder side**

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**2001 MAMbox**

---

**BoreholeDCPBox.cdr**

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**REV 9/29/01**
2001 DTM-CIW Strainmeter
Electronics Connectors

**SOLDER SIDE**
**PIN MARKING**

**BAT-POWER**
- 1 BAT
- 2 -BAT
- 4 +BAT
- 5 +BAT

**STRAINMETER**
- 1 BAT
- 2 -BAT
- 4 +BAT
- 5 +BAT

| 12+17 | VALVE 1&2 CL |
| 1     | VALVE 1 CL   |
| 11    | VALVE 2 CL   |

**BUFFERED SIGNAL-OUT**
- 2 A DT1 SUPP
- 13 A DT2 SUPP
- 2 B DT1 SUPP
- 13 B DT2 SUPP
- 2 C DT1 SUPP
- 13 C DT2 SUPP

- 4 A DT1 OUT
- 5 A DT1-COM-OUT
- 10 A DT2 OUT
- 14 A DT2-COM-OUT

**OUTSIDE WORLD**
**BUFFERED SIGNAL-OUT**
- 1 A DT-1 OUT
- 8 A DT1-COM-OUT
- 7 A DT-2 OUT
- 8 A DT2-COM-OUT
- 2 B DT-1 OUT
- 8 B DT1-COM-OUT
- 9 B DT-2 OUT
- 8 B DT2-COM-OUT
- 10 C DT-1 OUT
- 8 C DT1-COM-OUT
- 6 C DT-2 OUT
- 8 C DT2-COM-OUT

- 4 BAROMETER
- 5 BARO-COM-OUT

**DTM DATA LOGGER**
**BUFFERED SIGNAL-OUT**
- 1 A DT-1 OUT
- 8 A DT1-COM-OUT
- 7 A DT-2 OUT
- 8 A DT2-COM-OUT
- 2 B DT-1 OUT
- 8 B DT1-COM-OUT
- 9 B DT-2 OUT
- 8 B DT2-COM-OUT
- 10 C DT-1 OUT
- 8 C DT1-COM-OUT
- 6 C DT-2 OUT
- 8 C DT2-COM-OUT

- 4 BAROMETER
- 5 BARO-COM-OUT

**VC-RS232-OUT**
- 1 TX
- 3 RX
- 4 ISO-GND

**COLOR SCHEME**
- RED
- BLACK
- VIOLET
- GRAY
- BLUE
- GREEN
- WHITE
- BROWN

*Color scheme shown was used to construct cables for use with valve control boxes for use in Hawaii USGS summer 2000 installation.*

2001 MAMbox
Strip Road Strain Site

Photo taken September 2000
Mauna Loa Strain Site

Mauna Kea

Borehole

Electronics Box

Satellite Antenna

Solar Panels

Battery Box
Mauna Loa Strip Rd Strainmeter Site

Approximately 11.76 miles from Volcano Observatory

Mauna Loa Strip Road
19.28.29E by 155.21.39N

4000 ft

Topo USA 2.0 Copyright © 1999 DeLorme Yarmouth, ME 04096 Scale: 1 : 68,750 Detail: 11-5

Mauna Loa Strip Rd Strain Site
Island of Hawaii
Volumetric Strainmeter Sites