High Sensitivity Seismometer

1.0 Hz and 2.0 Hz Land or Borehole Seismometer

Features

- Stable Natural Frequency
- Lowest Distortion
- Instrument Quality
- Humbuck Construction
- Very High Output
- No Spring Sag
- Shallow surface hole, borehole and horizontal versions

The L-4 is an INSTRUMENT QUALITY 1 Hz or 2 Hz multi-purpose seismometer that is small, light, and economical. It is designed specifically for scientific studies, yet has the ruggedness required for petroleum exploration work.

L-4 design ELIMINATES the usual causes of failure in VERY LOW FREQUENCY geophones, such as SPRING FATIGUE, OVER-STRESS and INSTABILITY. This seismometer maintains a close frequency tolerance with tilt and temperature and is TRANSPORTED WITHOUT CLAMPING the moving element.

L-4 is available with or without calibration coils and may be obtained as VERTICAL OR HORIZONTAL elements. A variety of fittings are available for custom application.
Specifications

L-4C 1.0 Hz SEISMOMETER

Moving dual coil, humbuck wound

Frequency
1.0 ± 0.05 Hz measured on 200 pound weight at 0.09 inches/second

Frequency change with tilt
Less than 0.05 Hz at 5° from vertical

Frequency change with excitation
Less than 0.05 Hz from 0 to 0.09 inches/second

Suspended mass
1000 g

Standard coil resistances
500, 2000, 5500

Leakage to case
100 megohm minimum at 500 V

Transduction power
0.0948 \( \sqrt{R_c} \)

Open circuit damping
\((bo) = 0.28\) critical

Coil current damping
\((bc) = 1.1\) \(\frac{R_c}{R_s + R_c}\)

Coil inductance
\(L_c = 0.0011 R_c\) (henries)

Case to coil motion
0.250 inches peak-to-peak

Electric analog
\(C_c = 73,500\) (microfarads)

Electric analog of inductance
\(L_m = 0.345 R_c\) (henries)

Case height
13 cm (5 1/8 inches)

Case diameter
7.6 cm (3 inches)

Total density
3.7 g/cm\(^3\)

Total weight
2.15 kg (4 3/4 pounds)

Operating temperature Range:
-29° to 60°C (-20° to 140°F)

COIL RESISTANCE, OHMS

<table>
<thead>
<tr>
<th>Resistances</th>
<th>500</th>
<th>2000</th>
<th>5500</th>
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</thead>
<tbody>
<tr>
<td>Transduction, Volts/in/sec</td>
<td>2.12</td>
<td>4.23</td>
<td>7.03</td>
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<tr>
<td>Coil inductance, henries</td>
<td>0.55</td>
<td>2.20</td>
<td>6.05</td>
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<td>Analog capacitance, microfarads</td>
<td>147</td>
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<td>Shunt for 0.70 damping, ohm</td>
<td>810</td>
<td>3238</td>
<td>8905</td>
</tr>
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</table>

L-4A 2.0 Hz SEISMOMETER

Moving dual coil, humbuck wound

Frequency
2.0 ± 0.25 Hz measured on 200 pound weight at 0.09 inches/second

Frequency change with tilt
Less than 0.10 Hz at 10° from vertical

Frequency change with excitation
Less than 0.10 Hz from 0 to 0.18 inches/second

Suspended mass
500 g

Standard coil resistances
500, 2000, 5500

Leakage to case
100 megohm minimum at 500 V

Transduction power
0.0948 \( \sqrt{R_c} \)

Open circuit damping
\((bo) = 0.28\) critical

Coil current damping
\((bc) = 1.1\) \(\frac{R_c}{R_s + R_c}\)

Coil inductance
\(L_c = 0.0011 R_c\) (henries)

Case to coil motion
0.250 inches peak-to-peak

Electric analog
\(C_c = 36,500\) (microfarads)

Electric analog of inductance
\(L_m = 0.17 R_c\) (henries)

Case height
13 cm (5 1/8 inches)

Case diameter
7.6 cm (3 inches)

Total density
2.9 g/cm\(^3\)

Total weight
1.7 kg (3 3/4 pounds)

Operating temperature Range:
-29° to 60°C (-20° to 140°F)

COIL RESISTANCE, OHMS

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<td>7.03</td>
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<tr>
<td>Coil inductance, henries</td>
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<td>Shunt for 0.70 damping, ohm</td>
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<td>8905</td>
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