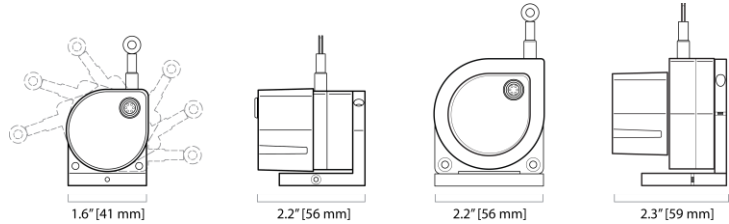


# MT2A

## Cable Actuated Sensor

### Test Applications • Voltage Divider

**Compact String Pot • Flight/Crash Test Applications**  
**Dual Axis 360° Mounting Bracket**  
**3, 9, 15, 30 and 50-inch Stroke Range Options**  
**Aluminum & Polycarbonate Enclosure • GAM Certification**

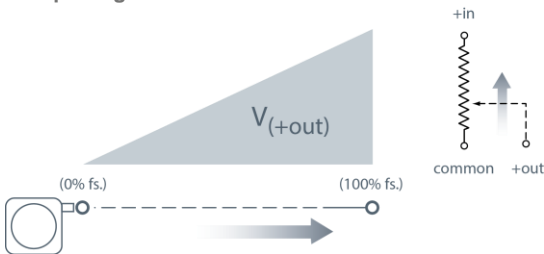


The MT2A is a member of our family of rugged, accurate miniature cable-extension position transducers designed specifically for test applications. One of the major benefits to this sensor is its 2-axis 360° rotating mounting bracket to allow for fast and simple installation in any direction.

The MT2A comes in 5 different measuring ranges: 0-3", 0-9", 0-15", 0-30", 0-50" and features a highly-tensioned heavy-duty measuring cable designed for the high-acceleration demands encountered in flight testing and automotive crash tests.

For extreme impact applications, a new rugged all aluminum sensor cover is now available!

#### Output Signal



#### General

|                                  |  |
|----------------------------------|--|
| <b>Full Stroke Range Options</b> | 0-3, 0-9, 0-15, 0-30, 0-50 inches, min.                |
| <b>Output Signal</b>             | voltage divider (potentiometer)                        |
| <b>Accuracy</b>                  | ± 1.1% to 0.15% full stroke (see ordering information) |
| <b>Repeatability</b>             | ± 0.02% full stroke                                    |
| <b>Resolution</b>                | essentially infinite                                   |
| <b>Measuring Cable</b>           | Ø.019-in. nylon-coated stainless steel                 |
| <b>Enclosure Material</b>        | anodized aluminum                                      |
| <b>Sensor Cover Options</b>      | aluminum or polycarbonate                              |
| <b>Sensor</b>                    | conductive plastic-hybrid potentiometer                |
| <b>Weight</b>                    | 0.5 lb. max.   |

#### Electrical

|  |  |
|--|--|
| <b>Input Resistance</b>                  | 10K ohms (± 10%)                                   |
| <b>Power Rating, Watts</b>               | 2.0 at 158°F (70° C), derated to 0 @ 255°F (125°C) |
| <b>Recommended Maximum Input Voltage</b> | 30V (AC or DC)                                     |
| <b>Electrical Stroke</b>                 | 94% ±4% of input voltage                           |
| <b>Mating Plug</b>                       | LEMO FGG.OB.304.CLAD52                             |

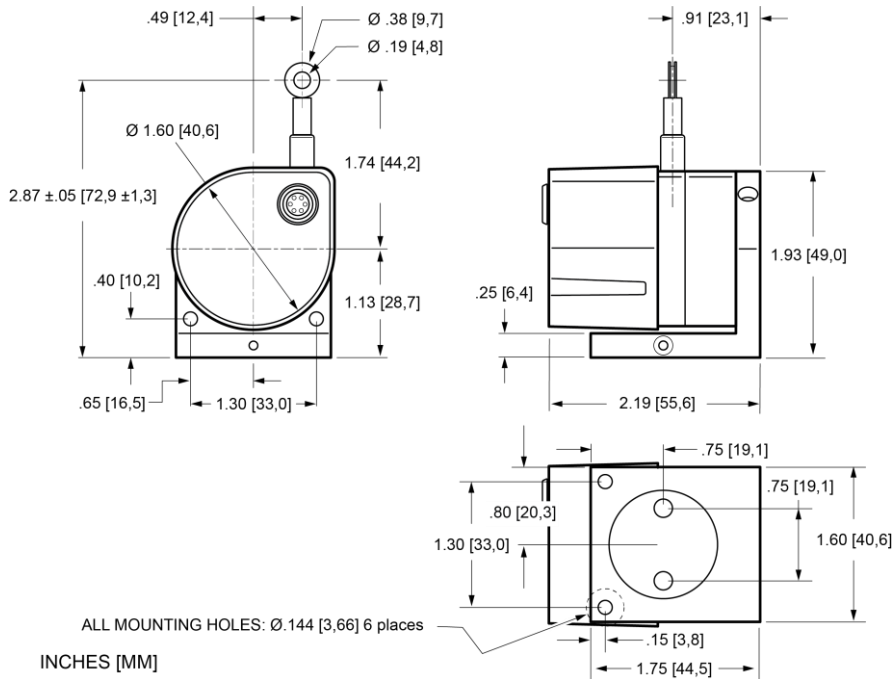
#### Mechanical

|   |                          |
|---|--------------------------|
| <b>Measuring Cable Tension Options</b>      | see ordering information |
| <b>Maximum Measuring Cable Acceleration</b> | 136 g                    |

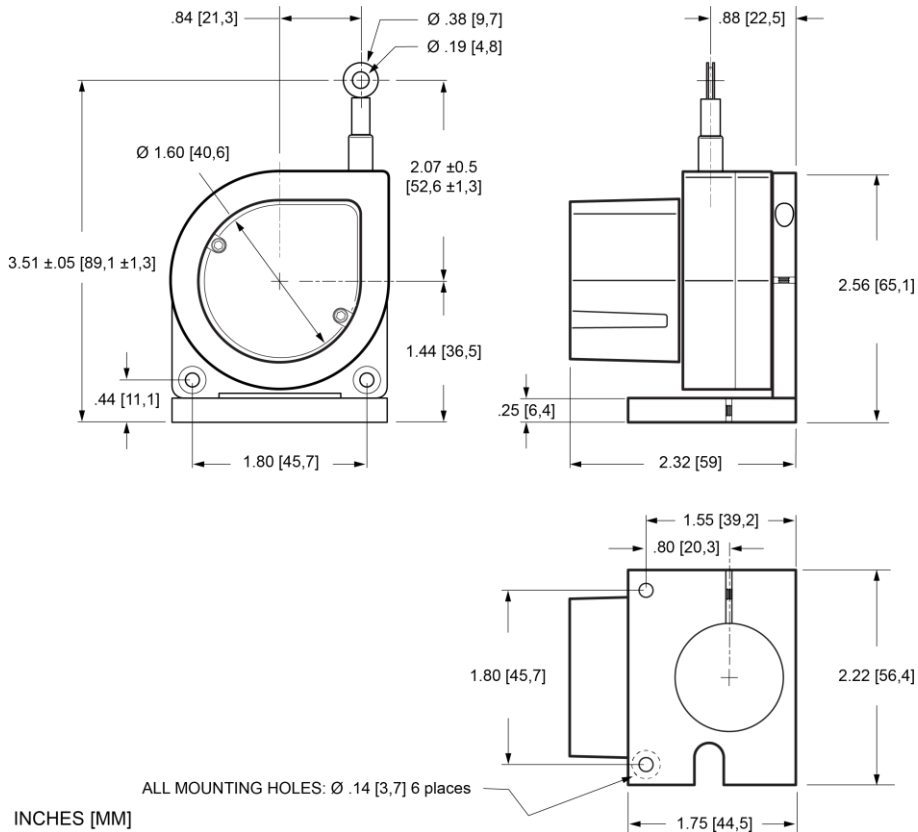
#### Environmental

|                              |                                 |
|------------------------------|---------------------------------|
| <b>Operating Temperature</b> | -65° to 255° F ( -55° to 125°C) |
|------------------------------|---------------------------------|

Outline Drawing (0-3 to 0-30 inch ranges)



Outline Drawing (0-50 inch range)



Ordering Information

Model Number:

**MT2A** -           -      - **10K** -       
*order code:*      **R**      **A**      **B**      **C**

Sample Model Number:

**MT2A - 9E - 33 - 10K - M1A**

- R** range: 9 inches
- A** measuring cable termination: eyelet
- B** measuring cable tension: 33 oz. (±6 oz.)
- C** electrical connection: end-mounted connector w/ aluminum sensor cover

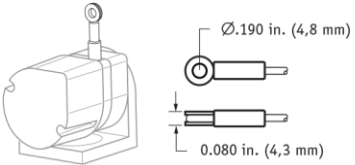
Full Stroke Range:

| <b>R</b> <i>order code:</i>  | <b>3</b>          | <b>9</b>          | <b>15</b>         | <b>30</b>         | <b>50</b>         |
|------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| full stroke range, min:      | 3 inches          | 9 inches          | 15 inches         | 30 inches         | 50 inches         |
| potentiometer cycle-life:    | $2.5 \times 10^6$ | $8.3 \times 10^5$ | $5.0 \times 10^5$ | $2.5 \times 10^5$ | $2.5 \times 10^5$ |
| accuracy (% of full stroke): | 1.1 %             | .25%              | .20%              | .15%              | .15%              |

Measuring Cable Termination:

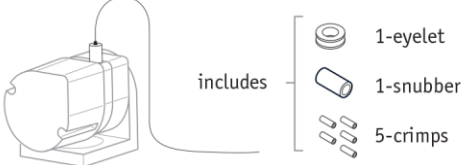
**A** *order code:*      **E**      **L**

Eyelet      Leader Cable (24 in. long)



Ø.190 in. (4,8 mm)

0.080 in. (4,3 mm)






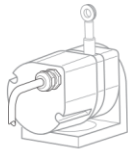
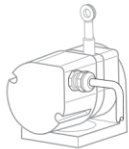


includes

- 1-eyelet
- 1-snubber
- 5-crimps

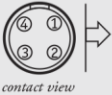
Measuring Cable Tension:

|                                 |            |             |             |
|---------------------------------|------------|-------------|-------------|
| <b>B</b> <i>order code:</i>     | <b>9</b>   | <b>14</b>   | <b>33</b>   |
| 3, 9, 15, 30-in. range options: | 9 (±2) oz. | 14 (±4) oz. | 33 (±6) oz. |
| max. cable acceleration:        | 99 g       | 136 g       | 136 g       |
| <b>B</b> <i>order code:</i>     | <b>9</b>   | <b>22</b>   |             |
| 50-in. range options:           | 9 (±2) oz. | 22 (±6) oz. |             |
| max. cable acceleration:        | 46 g       | 68 g        |             |

Electrical Connection/ Sensor Cover:

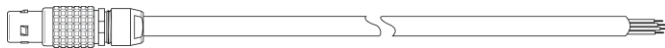
|                        |   |   |   |  |   |   |   |                  |
|------------------------|---|---|---|--|---|---|---|------------------|
| <b>C</b> order code:   | <b>M1</b>   | <b>M1A</b>  | <b>M2</b>   | <b>M2A</b>   | <b>M3</b>   | <b>M3A</b>  |   |                  |
| sensor cover:          | polycarbonate   | aluminum  | polycarbonate   | aluminum   | polycarbonate   | aluminum  |   |                  |
| electrical connection: |  | end-mount connector*  |  | side-mount connector*  |  | top-mount connector*  |   |                  |
| <b>C</b> order code:   | <b>C1</b>   | <b>C1A</b>  | <b>C2</b>   | <b>C2A</b>   | <b>C3</b>   | <b>C3A</b>  | <b>S</b>  |                  |
| sensor cover:          | polycarbonate   | aluminum  | polycarbonate   | aluminum   | polycarbonate   | aluminum  | none**  |                  |
| electrical connection: |  | end-mount, instrumentation cable<br>(15-ft. long, 24 ga., shielded) |  | side-mount, instrumentation cable<br>(15-ft. long, 24 ga., shielded) |  | top-mount, instrumentation cable<br>(15-ft. long, 24 ga., shielded) |  | solder terminals |

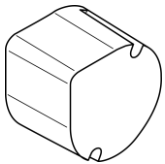
|  | <b>4-pin mating plug</b><br>Lemo FGG.OB.304.CLAD52 | <table border="1"> <tr> <th>pin#</th> <th>signal</th> </tr> <tr> <td>1</td> <td>+in</td> </tr> <tr> <td>2</td> <td>common</td> </tr> <tr> <td>3</td> <td>+out</td> </tr> </table> | pin# | signal | 1 | +in | 2 | common | 3 | +out | <table border="1"> <tr> <th>color</th> <th>signal</th> </tr> <tr> <td>Red</td> <td>+in</td> </tr> <tr> <td>Black</td> <td>common</td> </tr> <tr> <td>Green</td> <td>+out</td> </tr> </table> | color | signal | Red | +in | Black | common | Green | +out | <table border="1"> <tr> <th>terminal</th> <th>signal</th> </tr> <tr> <td>CW</td> <td>+in</td> </tr> <tr> <td>CCW</td> <td>common</td> </tr> <tr> <td>S</td> <td>+out</td> </tr> </table> | terminal | signal | CW | +in | CCW | common | S | +out |
|--|--|---|------|--------|---|-----|---|--------|---|------|--|-------|--------|-----|-----|-------|--------|-------|------|--|----------|--------|----|-----|-----|--------|---|------|
| pin#   | signal   |   |      |        |   |     |   |        |   |      |  |       |        |     |     |       |        |       |      |  |          |        |    |     |     |        |   |      |
| 1  | +in  |   |      |        |   |     |   |        |   |      |  |       |        |     |     |       |        |       |      |  |          |        |    |     |     |        |   |      |
| 2  | common   |   |      |        |   |     |   |        |   |      |  |       |        |     |     |       |        |       |      |  |          |        |    |     |     |        |   |      |
| 3  | +out   |   |      |        |   |     |   |        |   |      |  |       |        |     |     |       |        |       |      |  |          |        |    |     |     |        |   |      |
| color  | signal   |   |      |        |   |     |   |        |   |      |  |       |        |     |     |       |        |       |      |  |          |        |    |     |     |        |   |      |
| Red  | +in  |   |      |        |   |     |   |        |   |      |  |       |        |     |     |       |        |       |      |  |          |        |    |     |     |        |   |      |
| Black  | common   |   |      |        |   |     |   |        |   |      |  |       |        |     |     |       |        |       |      |  |          |        |    |     |     |        |   |      |
| Green  | +out   |   |      |        |   |     |   |        |   |      |  |       |        |     |     |       |        |       |      |  |          |        |    |     |     |        |   |      |
| terminal   | signal   |   |      |        |   |     |   |        |   |      |  |       |        |     |     |       |        |       |      |  |          |        |    |     |     |        |   |      |
| CW   | +in  |   |      |        |   |     |   |        |   |      |  |       |        |     |     |       |        |       |      |  |          |        |    |     |     |        |   |      |
| CCW  | common   |   |      |        |   |     |   |        |   |      |  |       |        |     |     |       |        |       |      |  |          |        |    |     |     |        |   |      |
| S  | +out   |   |      |        |   |     |   |        |   |      |  |       |        |     |     |       |        |       |      |  |          |        |    |     |     |        |   |      |

\*mating plug included \*\*blank cover available, see Accessories on next page

Accessories



| Part Number  | Description   |
|--------------|---|
| 9603957-0015 | 15 ft. long cordset. Includes mating connector with 15 ft., 24 gauge, shielded multiconductor cable |



Additional blank sensor covers can be ordered separately. This cover comes without electrical wiring access holes so customer can drill to their requirements. Includes screws and gasket.

| Part Number  | Description                |
|--------------|----------------------------|
| 9604197-0000 | Aluminum sensor cover      |
| 9603958-0000 | Polycarbonate sensor cover |

**GAM EG 13 Certification (0-3 to 0-30 inch ranges only)****QUALIFICATION LEVEL FOR CLIMATIC AND THERMAL ENVIRONMENT**

External Overpressure, operating (GAM EG 13 Fasc.21)

5 cycles: 1...4.5 Bar in 3 min., 4.5 Bar for 12 hours,  
4.5...1 Bar in 1 min.

1 cycle: 1...3.2 Bar in 7.5 min., 3.2 Bar for 2 min.,  
3.2...8 Bar in 5 sec., 8 Bar for 2 hours,  
8...1 Bar in 2 Bar/sec.

1 cycle: 1...4.5 Bar in 20 msec. 4.5 Bar for 5 sec,  
4.5...1 Bar in 20 msec.

Thermal Vacuum Transitory, operating (GAM EG 13 Fasc.10)  
Room pressure and temperature (1 Bar A; 20°C ±2°C)  
1...10-3 mBar in 100 seconds  
Vacuum (10-3 mBar) for 10 min.

Climatic Cycles (GAM EG 13 Fasc.8)

Dry heat: 24 hours @ 70°C ±2°C Relative Humidity < 50%  
Wet heat: 24 hours @ 70°C ±2°C Relative Humidity = 50%  
Cold: 24 hours @ -10°C ±2°C Relative Humidity < 50%  
Wet heat: 24 hours @ 70°C ±2°C Relative Humidity = 100%

Dry Heat (Relative Humidity <50%)

Room temperature to 70°C in 30 mins  
70°C for 5 hours, non-operating  
70°C for 5 hours, operating  
70°C to room temperature in 20 minutes

**QUALIFICATION LEVEL FOR MECHANICAL ENVIRONMENT**

Random Vibrations (GAM EG 13 Fasc.42 mod. Op1)  
20...2000 Hz, 3 min. per axis, operating, 34 g.  
20...2000 Hz, 20 sec. per axis, operating, 45 g.

Random Vibrations (GAM EG 13 Fasc.41 mod. Op3)  
Compensated Levels, short duration  
3...300 Hz @ .2 – .002 g/ Hz.

Research Critical Frequency  
Logarithmic Run, 1 octave / min., 1...2000 Hz.

Steady Acceleration, operating (GAM EG 13 Fas.45)  
37 g, 3 min. per direction (2 directions per axis)

Sinusoidal Vibrations, operating (Gam EG 13 Fasc.41 mod. Op3)  
Logarithmic run, 1 octave/min. on 3 axis  
3...50 Hz. 9 hours per axis @0.6...1.25 g

Sinusoidal Vibrations, operating (Gam EG 13 Fasc.41 mod. Op3)  
Logarithmic run, 1 octave/min. on 3 axis  
5...2 KHz. 3 axis @12...25 g.

Average Shock (GAM EG 13 Fasc.43 Mode Op1)  
1 shock, 1/2 sinusoidal, 100g. 6 msec. operating,  
with longitudinal and back direction

Free Fall (GAM EG 13 Fasc.43 Mode Op4)  
6 consecutive drops on wood table, height = 100mm

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中国大陆  
西安鑫源宇通电子科技有限公司  
陕西省西安市高新区锦业路70号航  
天恒星园区1号厂房一层南  
Tel: 400-780-9688  
[sales@senstechxyz.com](mailto:sales@senstechxyz.com)

中国香港  
深大实业有限公司  
香港新界沙田安平街6号新贸易  
中心B座13楼06室  
Tel: +86 17792099916  
[info@caltropinstruments.com](mailto:info@caltropinstruments.com)

新加坡  
深大实业有限公司  
香港新界沙田安平街6号新贸易  
中心B座13楼06室  
Tel: +86 17792099919  
[info@senstechxyz.com](mailto:info@senstechxyz.com)