

## MT2A

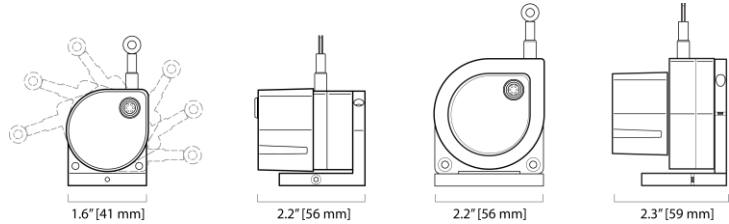
### Cable Actuated Sensor Test Applications • Voltage Divider

**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**

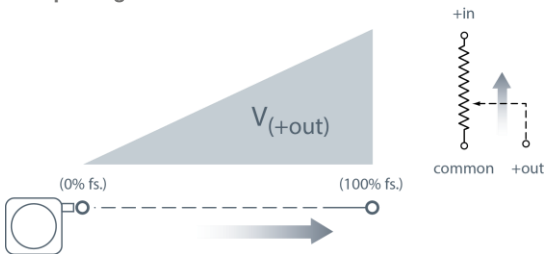


The MT2A is a member of our family of rugged, accurate miniature cable-extension position transducers designed specifically for test applications. One of the major benefits to this sensor is its 2-axis 360° rotating mounting bracket to allow for fast and simple installation in any direction.

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                             |

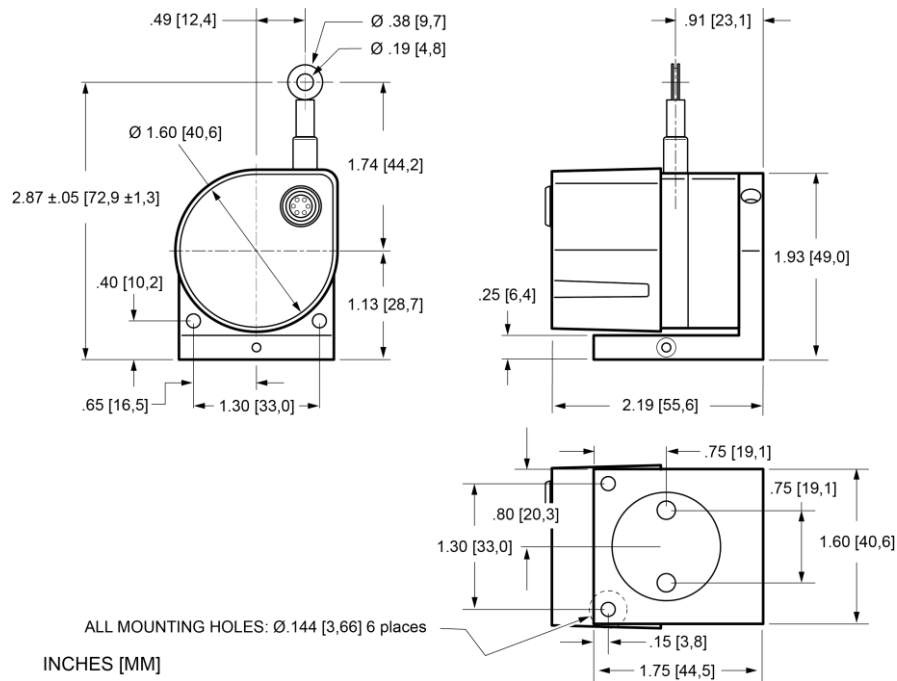
#### Mechanical

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

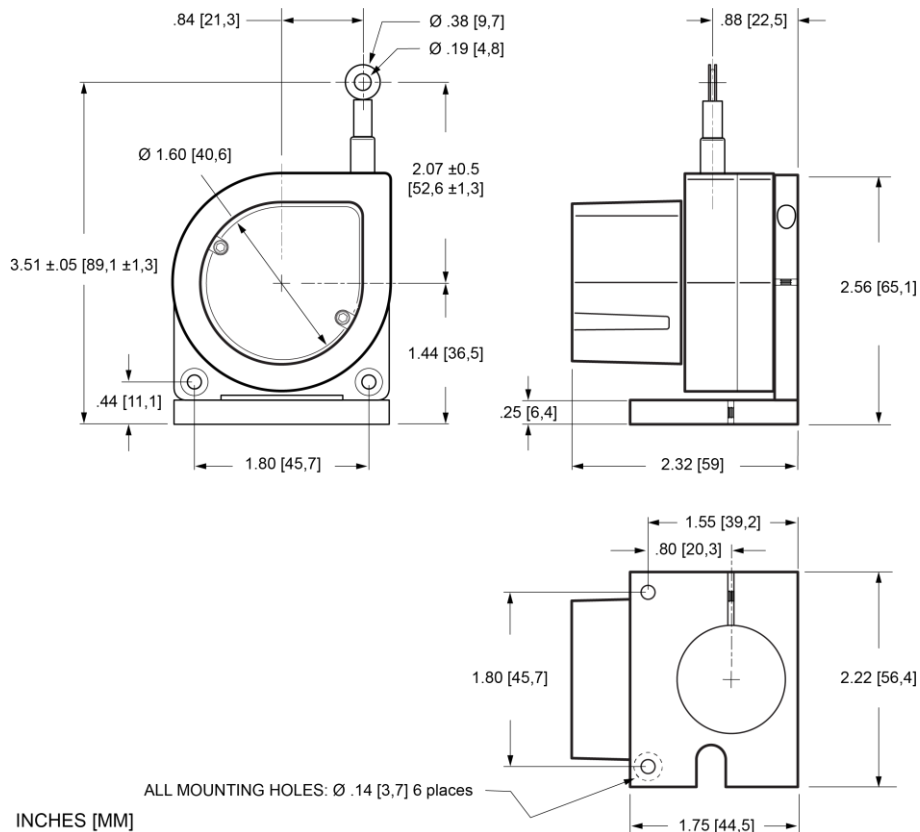
#### Environmental

|                              |                                 |
|------------------------------|---------------------------------|
| <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:

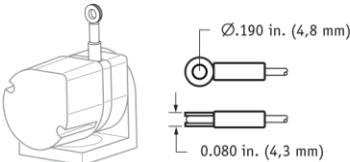
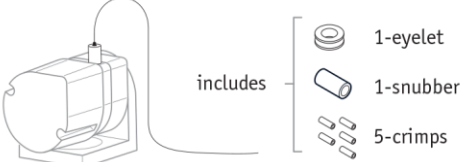
**MT2A - 9E - 33 - 10K - M1A**

**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> order code:         | <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:

| <b>A</b> order code: | <b>E</b>                                                                            | <b>L</b>                                                                              |
|----------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                      | Eyelet                                                                              | Leader Cable (24 in. long)                                                            |
|                      |  |  |

### Measuring Cable Tension:

| <b>B</b> order code:            | <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> order code:            | <b>9</b>   | <b>22</b>   |             |
| 50-in. range options:           | 9 (±2) oz. | 22 (±6) oz. |             |
| max. cable acceleration:        | 46 g       | 68 g        |             |

| C order code:          |  | M1                                                                                |  | M1A                  |  | M2                                                                                |  | M2A                   |  | M3                                                                                  |  | M3A                  |  |                                                                                     |  |
|------------------------|--|-----------------------------------------------------------------------------------|--|----------------------|--|-----------------------------------------------------------------------------------|--|-----------------------|--|-------------------------------------------------------------------------------------|--|----------------------|--|-------------------------------------------------------------------------------------|--|
| sensor cover:          |  | polycarbonate                                                                     |  | aluminum             |  | polycarbonate                                                                     |  | aluminum              |  | polycarbonate                                                                       |  | aluminum             |  |                                                                                     |  |
| electrical connection: |  |  |  | end-mount connector* |  |  |  | side-mount connector* |  |  |  | top-mount connector* |  |                                                                                     |  |
| C order code:          |  | C1                                                                                |  | C1A                  |  | C2                                                                                |  | C2A                   |  | C3                                                                                  |  | C3A                  |  | S                                                                                   |  |
| 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                                                                    |  |

**4-pin mating plug**



contact view



Lemo FGG.0B.304.CLAD52

| pin# | signal |
|------|--------|
| 1    | +in    |
| 2    | common |
| 3    | +out   |

**Instrumentation Cable**



24 ga., shielded

| color | signal |
|-------|--------|
| Red   | +in    |
| Black | common |
| Green | +out   |

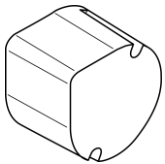
**Solder Terminals**

| terminal | signal |
|----------|--------|
| CW       | +in    |
| CCW      | common |
| S        | +out   |

## 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 g2/ Hz.

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

Steady Acceleration, operating (GAM EG 13 Fasc.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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