**MP-2000**
Dual Channel LVDT/RVDT Readout/Controller

**SPECIFICATIONS**
- Large backlit dual channel display
- Menu driven setup and calibration
- 100 to 240 VAC line powered
- MIN, MAX, TIR, A+B and A-B functions
- 2.5, 3.3, 5 and 10kHz selectable excitation
- Analog and RS-232 outputs
- Four user programmable set-points
- Splash-proof front panel with status LEDs
- ¼ DIN standard panel mounting

The MP-2000 is a dual channel, microprocessor based readout and set-point controller designed for industrial and process control applications utilizing any LVDT/RVDT-based measurement device. In addition to displaying real-time readings of LVDTs, RVDTs and gage heads, the MP2000 is also capable of displaying values such as MIN, MAX, TIR (Total Indicated Run-out), A+B (sum of two channels) and A-B (difference between two channels). A 17-bit analog-to-digital converter provides excellent performance and resolution, while a standard 9-pin RS-232 communications interface provides serial data output to a PLC or PC COM port.

The MP-2000 features four user-programmable, opto-isolated, open-collector set-point outputs, which can be used to monitor any display parameter. Any combination of high or low set-points may be selected, while programmable high and low hysteresis values may be used to create 'set-point dead band' for prevention of control relay chatter. An optional 'Relay Board' with a current handling capability of 5A per relay is available and highly recommended.

A front panel pushbutton permits auto-zeroing (tare) over the full range. Auto-calibration eliminates calculation of slope or gain factors. All calibration and setup parameters are stored in nonvolatile memory for retention on power down or interruption. The zero and min/max reset functions can be hard wired for remote control. The large, easy to read, bit-mapped display provides user-friendly, menu driven prompts for simple push-button system setup, calibration, and monitoring of in-process measurement parameters. A real-time scaled analog output, proportional to the digital readout is provided for each LVDT/RVDT channel. An RS-232 output is provided for data transfer to a computer at 1200 to 19.2K baud.
### PERFORMANCE SPECIFICATIONS

#### ELECTRICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
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<tbody>
<tr>
<td><strong>Power requirements</strong></td>
<td>100 to 240 VAC ±10%, 47 to 63Hz</td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td>0.4 [10] high, bitmaped LCD, electroluminescent backlit</td>
</tr>
<tr>
<td><strong>Range</strong></td>
<td>±99999</td>
</tr>
<tr>
<td><strong>Decimal point position</strong></td>
<td>User selectable</td>
</tr>
<tr>
<td><strong>Annunciator lights (LED)</strong></td>
<td>Each of the four set-points, zero, and preset</td>
</tr>
<tr>
<td><strong>Transducer excitation</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Voltage</strong></td>
<td>1 or 3 VRMS (user selectable)</td>
</tr>
<tr>
<td><strong>Oscillator frequency</strong></td>
<td>2.5, 3.3, 5 or 10kHz (user selectable)</td>
</tr>
<tr>
<td><strong>Current drive capability</strong></td>
<td>25mA maximum per LVDT</td>
</tr>
<tr>
<td><strong>Transducer requirements</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Transducer type</strong></td>
<td>LVDT or RVDT with 5 or 6 electrical connections</td>
</tr>
<tr>
<td><strong>Full scale output</strong></td>
<td>1.2VRMS maximum with 1 or 3 VRMS excitation</td>
</tr>
<tr>
<td><strong>Input (primary) impedance</strong></td>
<td>40Ω min with 1 VRMS excitation; 120Ω min with 3V RMS excitation</td>
</tr>
<tr>
<td><strong>Amplifier characteristics (transducer input)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Input sensitivity range</strong></td>
<td>High gain: 0.6 VRMS; Low gain: 1.2 VRMS</td>
</tr>
<tr>
<td><strong>Input impedance</strong></td>
<td>100kΩ minimum</td>
</tr>
<tr>
<td><strong>Non-linearity</strong></td>
<td>±0.02% of FSO, maximum</td>
</tr>
<tr>
<td><strong>Analog output</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Unipolar voltage output</strong></td>
<td>0 to +10VDC</td>
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<tr>
<td><strong>Bipolar voltage output</strong></td>
<td>±5VDC (may be over-ranged to ±10VDC)</td>
</tr>
<tr>
<td><strong>Response</strong></td>
<td>20mS</td>
</tr>
<tr>
<td><strong>Set-points</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>4 user programmable, high or low, with LED indicators</td>
</tr>
<tr>
<td><strong>Hysteresis (dead band)</strong></td>
<td>User programmable</td>
</tr>
<tr>
<td><strong>Outputs</strong></td>
<td>Opto-isolated, open collector logic outputs, 5VDC, 4mA per set-point</td>
</tr>
<tr>
<td><strong>Relay board (optional and highly recommended)</strong></td>
<td>Four relays, Normally Open and Normally Closed contacts Maximum switching capability (each relay): 50VAC/30VDC, 5A</td>
</tr>
<tr>
<td><strong>Serial communications</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Type</strong></td>
<td>RS-232</td>
</tr>
<tr>
<td><strong>Speed</strong></td>
<td>1200, 2400, 4800, 9600, or 19200 Baud (user selectable)</td>
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</tbody>
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#### ENVIRONMENTAL AND MECHANICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating temperature range</strong></td>
<td>+32°F to +131°F [0°C to +55°C]</td>
</tr>
<tr>
<td><strong>IP rating</strong></td>
<td>IP61 (front panel only)</td>
</tr>
<tr>
<td><strong>Mounting</strong></td>
<td>¼ DIN panel mount</td>
</tr>
<tr>
<td><strong>Depth behind panel (installed)</strong></td>
<td>7.7 [196] with optional relay board installed (plugged into J4 connector)</td>
</tr>
</tbody>
</table>

**Note:**

- All values are nominal unless otherwise noted
- Dimensions are in inch [mm]
- FSO (Full Scale Output) is the largest absolute value of the outputs measured at the range ends
CONNECTIONS (REAR PANEL)

DIMENSIONS

Dimensions are in inch [mm]
RELAY BOARD (SOLD SEPARATELY)

Jumpers

- SW1: Pin #1 and #2 shorted
- SW2: Pin #2 and #3 shorted

Function:
- SVdc relay power supplied by MP-2000
- Internal SVdc relay power required on terminal #12 on J2

RACK ADAPTOR (SOLD SEPARATELY)

Accommodates up to four MP-2000 Readout/Controllers

Dimensions are in inch (mm)
## ORDERING INFORMATION

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP-2000 Dual Channel LVDT/RVDT Readout/Controller</td>
<td>02291335-000</td>
</tr>
<tr>
<td>Rack Adaptor for up to 4 readout/controllers</td>
<td>05290032-000</td>
</tr>
<tr>
<td>(optional - MP-2000 readout/controllers not included)</td>
<td></td>
</tr>
<tr>
<td>Relay Board (optional and highly recommended)</td>
<td>74170000-000</td>
</tr>
<tr>
<td>Cable to connect HCA/HCI/GCA/R36AS to MP2000, PTO6A-10-6S to 05BL5M (1)</td>
<td>04290560-000</td>
</tr>
<tr>
<td>Extension cable to connect LBB (option -001) to MP2000, PTO6A-10-6S to 05BL5M (1)</td>
<td>04290562-000</td>
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</tbody>
</table>

(1) All cables are shielded, 10 foot long, and rated 80°C [176°F] operating. Consult factory for other lengths.