

# AN 1500 M Load Monitor/ Signal Conditioner/Display

## FEATURES

- 1 or 2 transducer power supplies:  
5 V or 10 V; 60 mA DC
- 5 digits ( $\pm 32000$ ) with programmable color;  
14 mm height; 96 x 48 mm format
- 20 acquisitions per second
- Logic inputs for remote functions
- Hold, Tare, Peak and Valley functions
- Panel or DIN rail mounting
- IP 65 front panel (indoor use)
- Programmable with front-panel keys
- Quick wiring using WAGO connectors

## OPTIONS

- Relay outputs (thresholds): 2 SPDT or 4 SPST
- Analog output: 0–10 V or 4–20 mA
- Serial output: RS-232C or RS-485



## DESCRIPTION

The AN 1500 M Load Monitor is designed to process and display signals coming from various types of transducers (weight, load, pressure, torque, etc.) that use standard strain-gauge bridges. It can also receive any signal within the  $\pm 150$  mVDC range coming from a shunt, a converter or any type of transmitter.

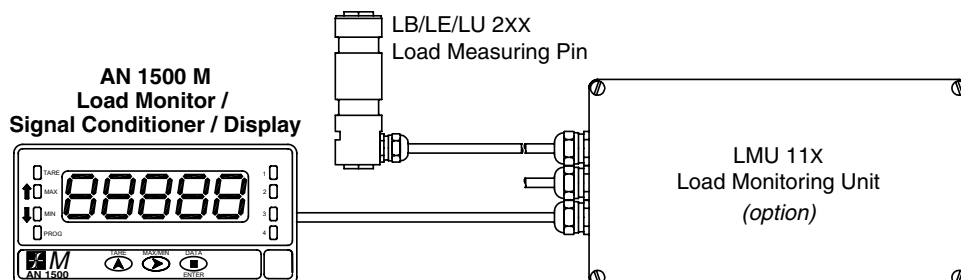
The monitor provides selectable input ranges (15 mV, 30 mV or 150 mV) and excitation voltages (5 V or 10 V +24 V) to accommodate cells of various types

and sensitivities. Two programming methods allow scaling the meter to operate in the desired engineering units.

The AN 1500 M is used with Magtrol Load Measuring Pins to measure load and force and provide overload protection. Magtrol also offers a wide range of Load-Force-Weight Transducers in various executions and accuracy classes and our Load Monitoring Units (LMUs) constitute an ideal safe measurement system which continuously checks for short-circuits and interrupted signal lines.

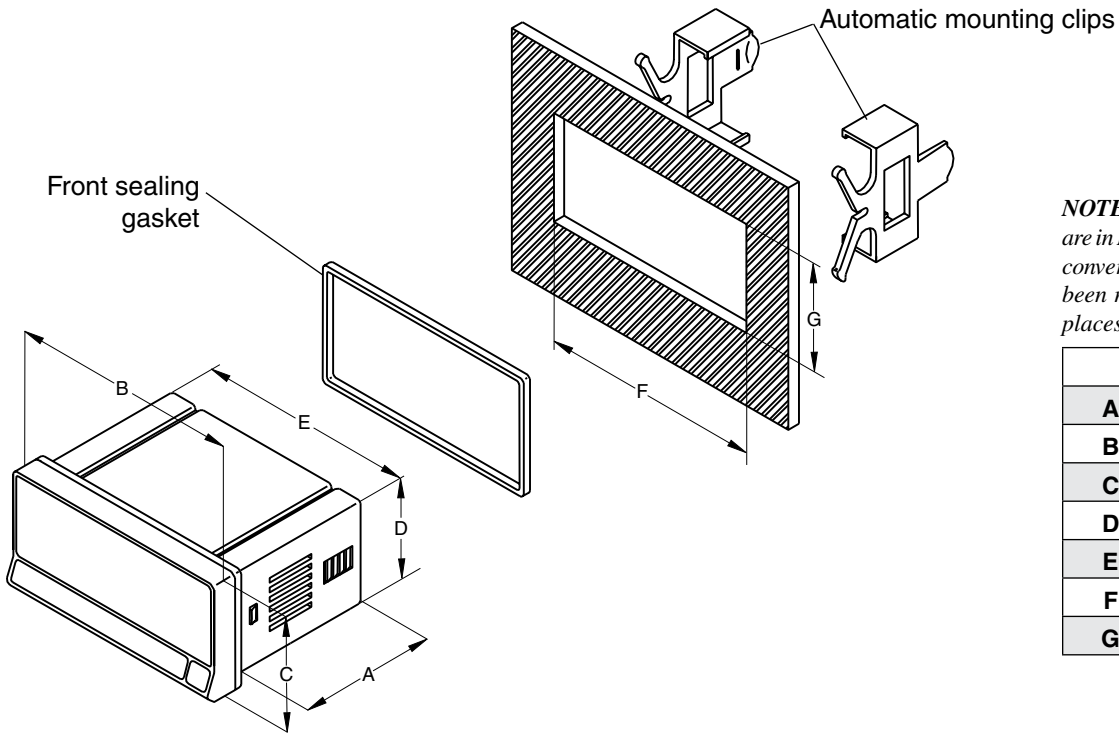
The basic instrument is a soldered assembly composed of a main board, a tri-color programmable display and a power circuit. Standard features include the reading of the input variable as well as remote hold, reading and memorization of max and min values (peak / valley), tare and reset function, and a full complement of programmable logic functions.

## SYSTEM CONFIGURATION



| <b>MEASUREMENT CHARACTERISTICS</b>   |  |   |
|--|--|---|
| Transducer Power Supply  | 5 V or 10 V; 60 mA   |   |
| Signal Processing:   | Voltage  | Current   |
| <ul style="list-style-type: none"> <li>Type</li> <li>Voltage</li> <li>Maximum Resolution</li> <li>Input Impedance</li> </ul>   | Asymmetric differential<br>$\pm 10$ VDC<br>1 mV<br>1 M $\Omega$  | Asymmetric differential<br>$\pm 20$ mA DC<br>1 $\mu$ V<br>15 $\Omega$ |
| <ul style="list-style-type: none"> <li>Excitation:               <ul style="list-style-type: none"> <li>Strain Gauges</li> <li>Conditioner</li> </ul> </li> <li>Conversion Speed</li> <li>Conversion Definition</li> <li>Response Delay (P filter):               <ul style="list-style-type: none"> <li>Cut-off Frequency</li> <li>Slope</li> </ul> </li> </ul> | 5 V or 10 V; 60 mA<br>5 V, 10 V or 24 V; 60 mA<br>20 conversions/second<br>15 bits<br>4 Hz to 0.05 Hz<br>20 dB/decade                          |   |
| Load Cell Input: <ul style="list-style-type: none"> <li>Maximum Value</li> <li>Resolution</li> <li>Input Impedance</li> <li>Excitation</li> </ul>  | $\pm 150$ mV<br>1 $\mu$ V<br>100 M $\Omega$<br>5 V or 10 V; 60 mA  |   |
| Measurement Display: <ul style="list-style-type: none"> <li>Type</li> <li>Number of Digits</li> <li>Digit Height</li> <li>Programmable Digit Color</li> <li>Display Refresh Rate</li> <li>Decimal Point</li> </ul>   | 7-segment alphanumeric display<br>5<br>14 mm high ( $\approx 0.55$ in.)<br>red, green and amber<br>20/s<br>programmable                        |   |
| Accuracy <ul style="list-style-type: none"> <li>Maximum Error</li> <li>Temperature Coefficient</li> <li>Warm-Up Time</li> </ul>  | $\pm (0.1\%$ of the reading + 1 digit)<br>100 ppm/ $^{\circ}$ C<br>15 min  |   |
| Overrange Indication   | -oUeR and oUEr   |   |
| <b>OPERATING INDICATIONS (LEDs)</b>  |  |   |
| PROG Mode  | 1 LED  |   |
| Thresholds 1, 2, 3 and 4   | 4 red LEDs   |   |
| Control Indication (4 LEDs)  | TARE, MAX, MIN, PROG   |   |
| Display of Program Steps   | one 7-segment green LED  |   |
| <b>KEYBOARD</b>  |  |   |
| Operating Keys   | TARE, MAX/MIN, DATA  |   |
| Programming Keys   | ▲ , ► ENTER  |   |
| <b>PROGRAMMING</b>   |  |   |
| 5 Program Menus  | 1) Input configuration<br>2) Display configuration<br>3) Setpoint input<br>4) Analog output configuration<br>5) Serial RS-output configuration | Cn Inp<br>Cn dSP<br>SEt P<br>An out<br>rS out                         |
| <b>POWER SUPPLY</b>  |  |   |
| AC   | 85 to 265 VAC or<br>22 to 53 VAC   |   |
| DC   | 100 to 300 VDC or<br>10.5 to 70 VDC  |   |
| <b>ENVIRONMENTAL AND MECHANICAL CHARACTERISTICS</b>  |  |   |
| Operating Temperature  | -10 $^{\circ}$ C to +60 $^{\circ}$ C   |   |
| Storage Temperature  | -25 $^{\circ}$ C to +85 $^{\circ}$ C   |   |
| Relative Humidity, Non-Condensing  | <95% at 40 $^{\circ}$ C  |   |
| Protection Class   | IP 65 front panel; IP 45 housing   |   |
| Housing Material   | UL 94V-0 polycarbonate   |   |
| Weight   | 135 g (0.297 lb)   |   |

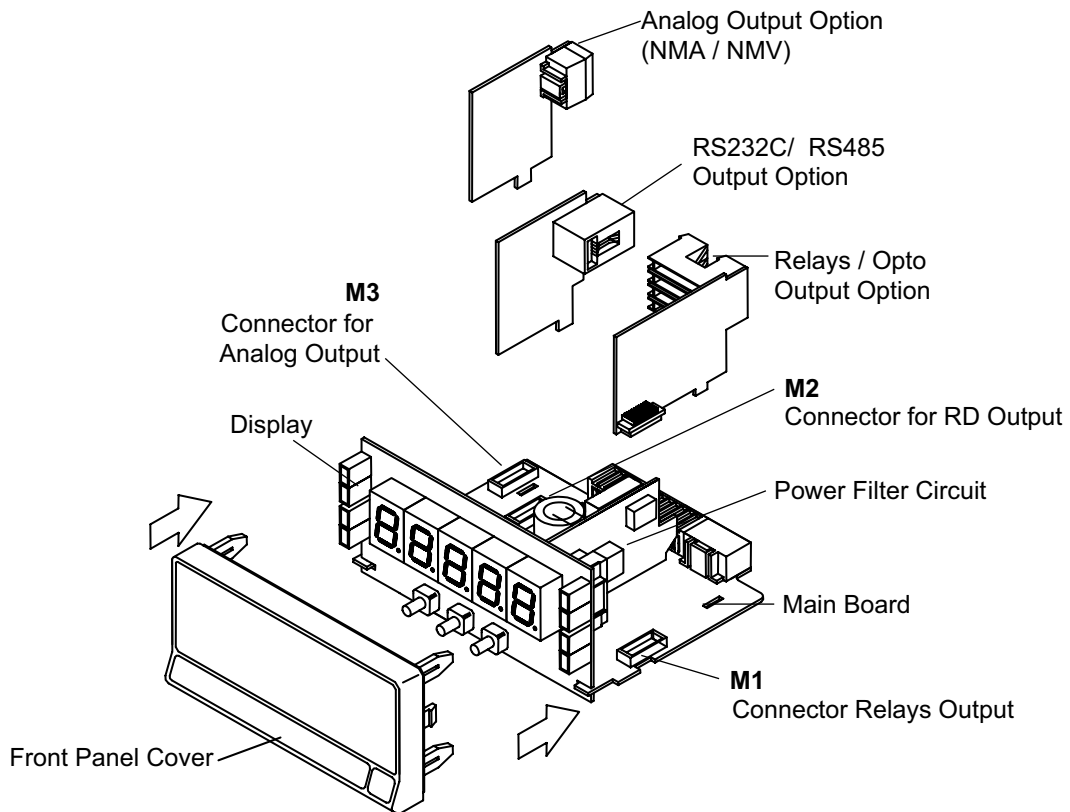
**DIMENSIONS**



*NOTE: Original dimensions are in Metric units. Dimensions converted to English units have been rounded up to 2 decimal places.*

|          | mm | in   |
|----------|----|------|
| <b>A</b> | 60 | 2.36 |
| <b>B</b> | 96 | 3.78 |
| <b>C</b> | 48 | 1.89 |
| <b>D</b> | 42 | 1.65 |
| <b>E</b> | 90 | 3.54 |
| <b>F</b> | 92 | 3.62 |
| <b>G</b> | 45 | 1.77 |

**ASSEMBLY OVERVIEW**



## CONTROL OPTIONS

### Relay Output Boards (2RE and 4RE)

| Characteristics      | 2 Threshold Values (2RE)        | 4 Threshold Values (4RE)                                     |
|----------------------|---------------------------------|--|
| Number of Thresholds | 2                               | 4  |
| Switching Capacity   | 8 A / 250 VAC / 150 VDC         | 5 A / 250 VAC / 50 VDC                                       |
| Maximum Power        | 2000 VA / 192 W                 | 25 VA / 10 W   |
| Function             | SPDT<br>Single Pole Dual Toggle | SPST<br>Single Pole Single Toggle<br>(1 common for 4 relays) |
| Response Time        | 10 ms                           | 6 ms   |
| Weight               | ≈40 g / ≈1.41 oz                |  |

*NOTE: The 2RE and 4RE output boards cannot be installed simultaneously in the monitor.*

### Analog Output Board (NMV or NMA)

| Characteristics   | NMV                       | NMA       |
|-------------------|---------------------------|-----------|
| Output            | 0–10 V                    | 4–20 mA   |
| Resolution        | 13 bits / 0.1% FSD ±1 bit |           |
| Response Time     | 50 ms                     |           |
| Temperature Drift | 0.2 mV/°C                 | 0.5 μA/°C |
| Maximum Load      | ≥ 10 kΩ                   | ≤ 500 Ω   |
| Weight            | ≈20 g / ≈0.71 oz          |           |

This board is used to transmit displayed values (full or partial measuring range) by means of a 0–10 V or 4–20 mA isolated analog signal.

## COMMUNICATION OPTIONS

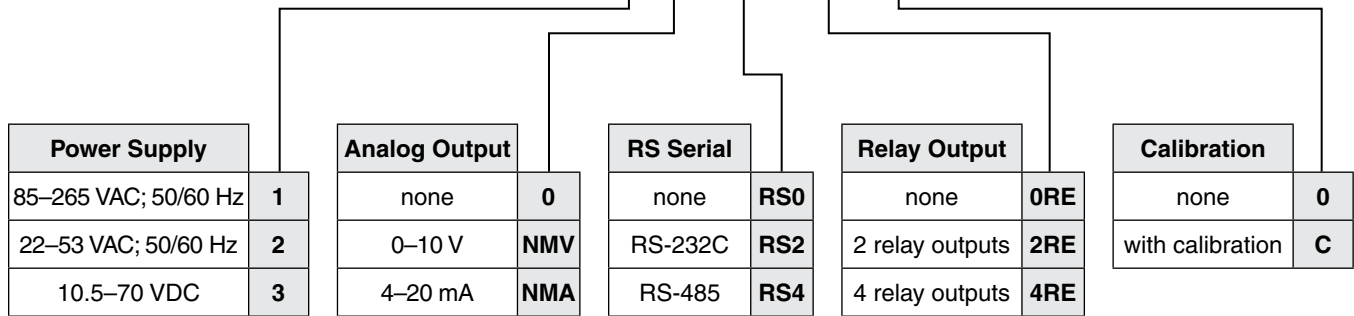
### Serial Output Boards (RS2 & RS4)

| Characteristics                                     | RS-232C Board (RS2)  | RS-485 Board (RS4) |
|---|--|--------------------|
| Baud Rate   | 1200, 2400, 4800, 9600, 19200                                  |                    |
| Protocol  | Standard, ISO 1745 or Modbus RTU                               |                    |
| Address   | 00 to 99   |                    |
| Reading Functions of Displayed and Memorized Values | Valley, Peak, Tare, Measure, Thresholds 1 to 4                 |                    |
| Changing of Threshold Values                        | Thresholds 1 to 4<br>Digital indication of the threshold value |                    |
| Remote Controls (Reset)                             | Valley, Peak, Set Tare, Clear Tare                             |                    |
| Software Transfer                                   | Only with ISO 1745 protocol                                    |                    |
| Weight  | ≈45 g / ≈1.59 oz   |                    |

The RS2 and RS4 output boards allow serial communication with a personal computer or any other unit using a serial RS-232C or RS-485 transmission protocol, respectively. Both boards are also compatible with various graphic display and data acquisition software programs.

*NOTE: The RS2 and RS4 output boards cannot be installed simultaneously in the monitor.*

*NOTE: All outputs are opto-insulated with regard to the input signal.*

**ORDERING INFORMATION**
**Part Number:**
**AN 1500M / X / X / RSX / XRE / X**


**Example:** An AN 1500 M with a 230 VAC / 50/60 Hz power supply, 0–10 V analog output, RS-232C serial, 4 relay outputs and calibration would be ordered as part number AN 1500M / 1 / NMV / RS2 / 4RE / C .

*Due to the continual development of our products, we reserve the right to modify specifications without forewarning.*


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