

# AN 1500 M

## LOAD MONITOR SIGNAL CONDITIONER | DISPLAY

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

### FEATURES

- 1 or 2 Transducer Power Supplies: 5/10V; 60 mA DC
- 5 Digits (-19999/+39999) with programmable color; 14 mm height; 96 x 48 mm format
- 20 Acquisitions per second
- HOLD, TARE, PEAK & VALLEY functions
- IP65 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 ... 10V or 4 ... 20 mA



Fig. 1: AN 1500 M | Load Monitor/Signal Conditioner/Display

### DESCRIPTION

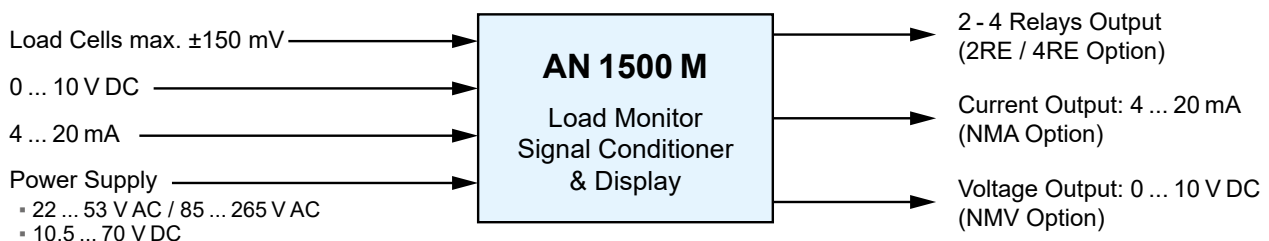
As a **Signal Conditioner**, the AN 1500 M is designed to process and display signals coming from various types of transducers (weight, load, pressure, torque, etc.) that use standard strain-gauge bridges. As a **Load Monitor** the AN 1500 M can also receive any signal within the  $\pm 150$  mV DC range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

The Load Monitor provides selectable input ranges ( $\pm 15$  mV,  $\pm 30$  mV,  $\pm 150$  mV) and excitation voltages (5V, 10V) to accommodate cells of various types and sensitivities. Two program-

ming methods allow scaling of the meter to operate in the desired engineering units.

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), the reading and memorization of minimum/maximum values (PEAK/VALLEY), TARE and RESET function, and a full complement of programmable logic functions.

### BLOCK DIAGRAM



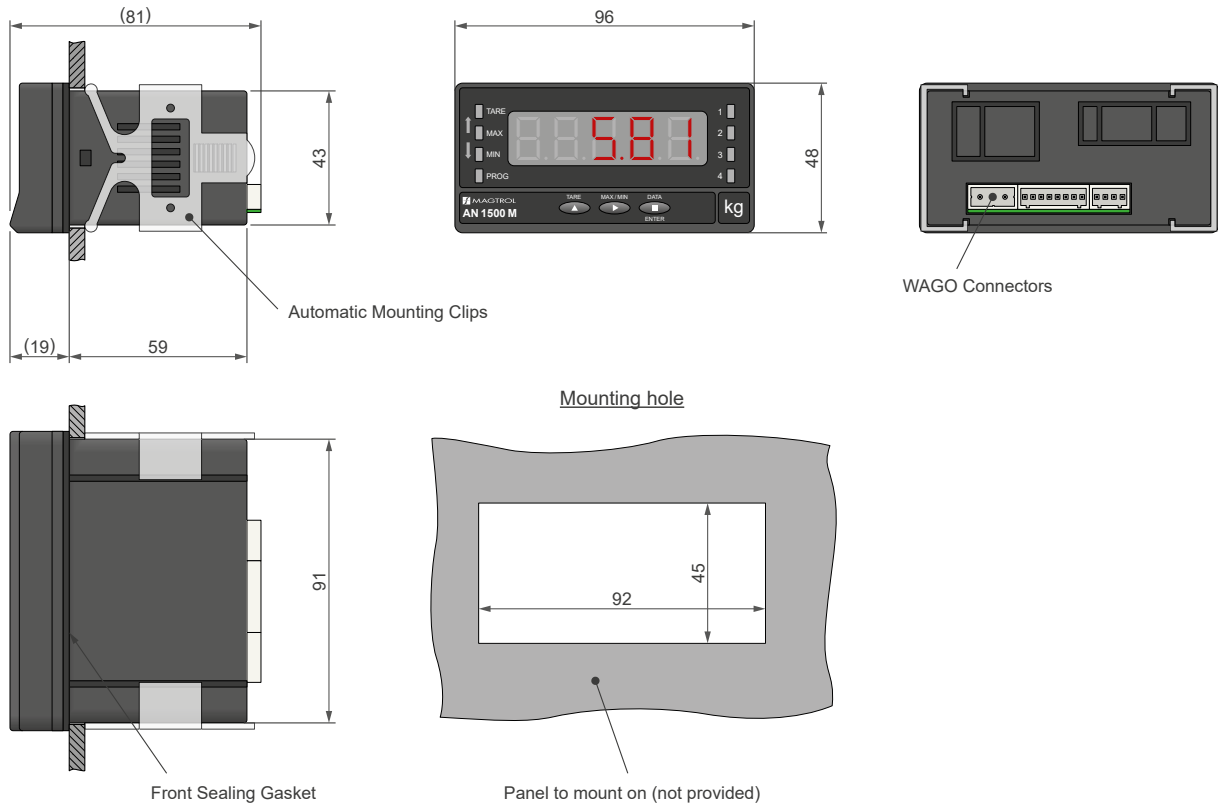
**SPECIFICATIONS**

INPUT SIGNAL		
<b>SIGNAL PROCESSING</b>	<b>VOLTAGE</b>	<b>CURRENT</b>
Input	± 10 VDC	± 20 mADC
Resolution	1 mV	1 µA
Input Impedance	1 MΩ	15 Ω
Excitation	24 V @ 60 mA, 5 V / 10 V @ 60 mA	
Transducer Power Supply	5 V / 10 V; 60 mA	
LOAD CELL		
Input <sup>a)</sup>	± 15 mV, ± 30 mV, ± 150 mV	
Max. Resolution	1 µV	
Input Impedance	100 MΩ	
Excitation	10 V @ 60 mA, 5 V @ 60 mA	
A/D CONVERSION & FILTERS		
Resolution	± 15 bits	
Rate	20 values/second	
Cut-off Frequency	0.05 ... 4 Hz	
Slope	20 dB / 10	
DISPLAY		
Type	7-Segment alpha-numeric Display	
Range	-19999 / +39999	
Digits	5 Digits; tricolor LED; 14 mm height Programmable Color (red, green, amber)	
Display Refresh Rate	20 values/second	
Overrange Indication	-oUEr, oUEr	
ACCURACY		
Maximum Error	± 0.1 % of the reading + 1 Digit	
Temperature Coefficient	100 ppm/°C	
Warm-Up Time	15 min	
ELECTRICAL CHARACTERISTICS & CONNECTION		
AC Power Supply	22 ... 53 VAC / 85 ... 265 VAC	
DC Power Supply	10.5 ... 70 VDC	
Consumption	5 ... 8 W <sup>b)</sup>	
Connection	WAGO connectors (on the back of the device)	
MECHANICAL CHARACTERISTICS & ENVIRONMENT		
Operating Temperature	-10 °C ... +60 °C	
Storage Temperature	-25 °C ... +80 °C	
Relative Humidity	< 95 % @ 40 °C	
Protection Class	IP65 Front Panel (IP45 Housing)	
Housing Material	UL 94 V-0 Polycarbonate	
Weight	135 ... 200 g <sup>b)</sup>	

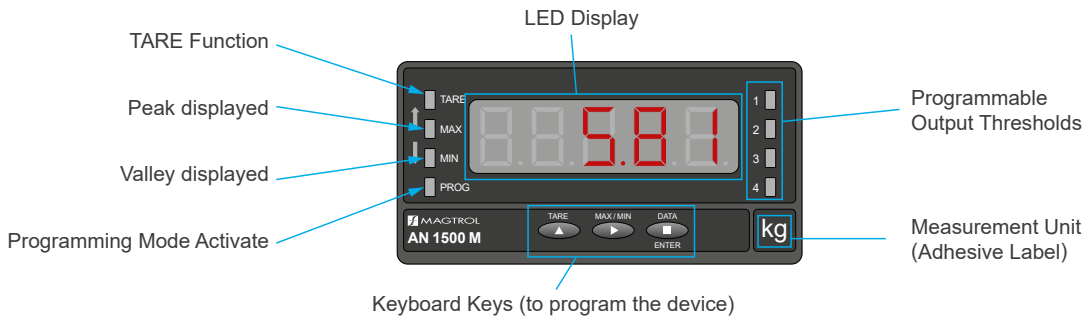
a) Three measurement ranges are available depending on the signal received from the sensor

b) Depending on options

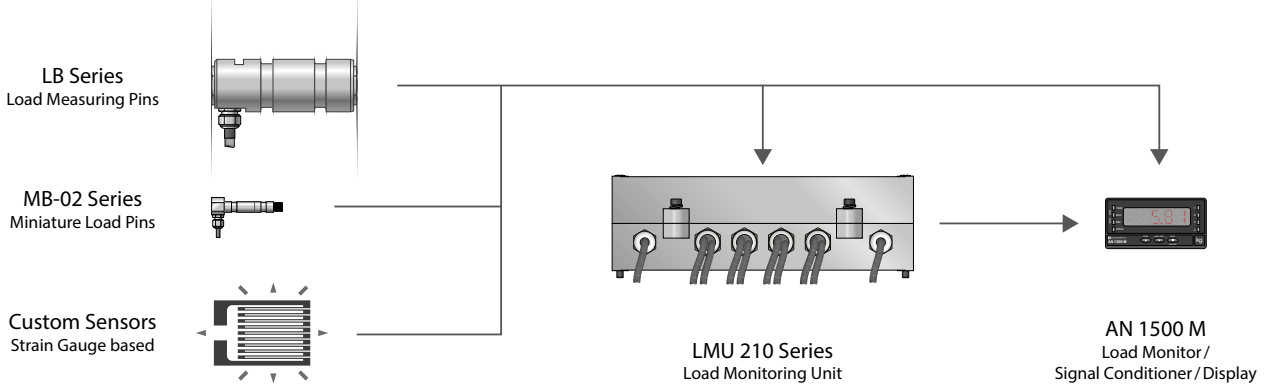
DIMENSIONS



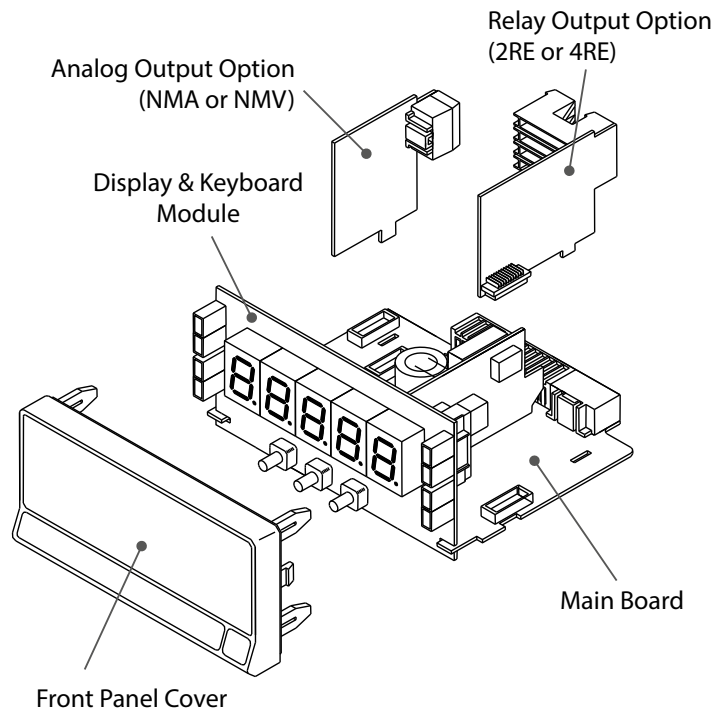
USER INTERFACE



SYSTEM CONFIGURATION



DEVICE CONFIGURATION



OUTPUT OPTIONS

The AN 1500M Load Monitor, Signal Conditioner & Display can be completed with optional output interfaces. It is possible to add a board component allowing the control of 2 to 4 relays (2RE-4RE) as well as an analog current output (NMA) or an analog voltage output (NMV). These components are available when ordering and you will receive your AN 1500M completely assembled.

It is also possible to order the components separately and assemble them as required.

ATTENTION: it is possible to install only one relay option and one analog option at a time (e.g. it is not possible to combine the 2RE and 4RE options simultaneously; it is the same for the analog output)

RELAY OUTPUT BOARDS (OPTION) <sup>a)</sup>		
Model	2 RE	4 RE
Number of Thresholds	2	4
Max. Current	8A	5A
Max. Voltage	250VAC / 150VDC	277VAC / 125VDC
Maximum Power	2000 VA / 192W	1250 VA / 150W
Function	SPDT (Single Pole Dual Throw)	SPST(Single Pole Single Throw) 1 common for 4 relays
Response Time	10 ms	

a) 2RE and 4RE output boards cannot be installed simultaneously in the monitor

ANALOG OUTPUT BOARD (OPTION) <sup>a)</sup>		
Model	NMV (Analog Voltage)	NMA (Analog Current)
Output	0 ... 10V <sup>b)</sup>	4 ... 20mA <sup>b)</sup>
Resolution / Accuracy	13 bits / 0.1% FSD ±1 bit	
Response Time	50 ms	
Temperature Drift	0.2mV/°C	0.5µA/°C
Maximum Load	≥ 10kΩ	≤ 500Ω

a) NMA & NMV output boards cannot be installed simultaneously in the monitor.

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

RELATED PRODUCTS

LB & LE SERIES - LOAD MEASURING PINS



Fig.2: LB210 & LB217 | Load Measuring Pins

LB & LE Series Load Measuring Pins are used to measure load and force and to provide overload protection. The pins are mounted into machines in place of normal shafts and fitted with strain gauges, allowing them to produce a signal proportional to the measured load. Manufactured in Switzerland, Magtrol's Load Pins are rugged with high resistance stainless steel and tight construction, designed specifically for use in hostile industrial environments.

LB & LE Series are used for load measuring devices and overload protection on cranes, hoisting gear, elevators, winches, and force measurement for regulation processes in industrial installations and machinery production. Moreover it is an ideally transducer to detect and measure forces in harsh, tropical, offshore, marine and harbor environments.

Further information on accessories are available in their specific data sheets. Please, visit our website: [www.magtrol.com](http://www.magtrol.com)

LMU SERIES - LOAD MONITORING UNITS



Fig.3: LMU 217 | Load Monitoring Unit

The Magtrol Load Monitoring Unit is specially designed for strain gauge transducer applications. Specifically developed for use with Magtrol load measuring pins and load-force-weight sensors, the LMU Series provides excitation current and amplifies the output signal of full-bridge strain gauges. Configurable relays and analog outputs are also available.

Its IP 65 aluminum housing allows the system to be used in harsh environments.

ORDERING INFORMATION

ORDERING NUMBER	AN 1500 M /	-	/	-	/	-	/ 0 /	-
1 : 85 ... 265 VAC	POWER SUPPLY							
2 : 22 ... 53 VAC								
3 : 10.5 ... 70 VDC								
0 : None	OUTPUT OPTION							
1 : 0 ... 10 V (NMV Option)								
2 : 4 ... 20 mA (NMA Option)								
0 : None	RELAY OPTION							
1 : 2 Relay Outputs (2RE Option)								
2 : 4 Relay Outputs (4RE Option)								
0 : None	CALIBRATION							
C : With calibration								

Example: AN 1500 M, power supply 22... 53 VAC, no output and relay option, with calibration would be ordered as: **AN 1500 M/2/0/0/0/C**

AN 1500 M, power supply 85 ... 265 VAC, with NMV option and 2RE option, without calibration would be ordered as: **AN 1500 M/1/1/1/0/0**