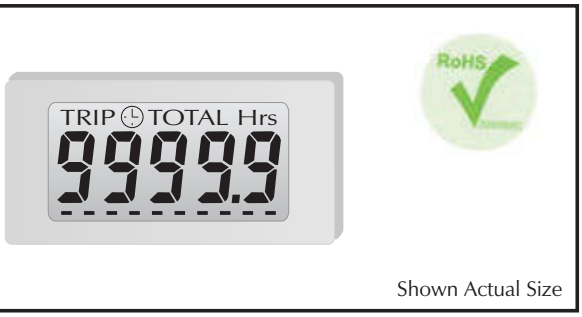
# EMC 1500

## Single Hole Mounting Elapsed Hour Meter

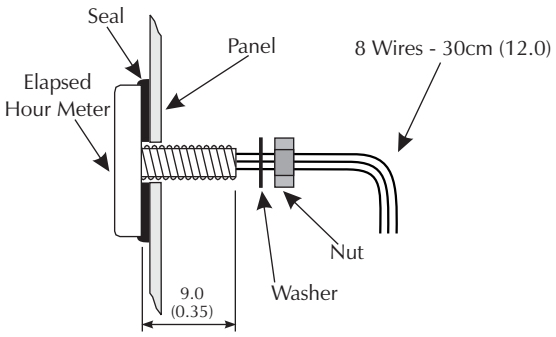


EMC 1500 is an easy to mount LCD digital elapsed hour meter. The module features 9999.9 and 99999 hour ranges, resulting in 1/10 hour and 1 hour resolution respectively. A leading zero blanking input is provided allowing the user to switch off unwanted leading zeros. The module incorporates an output that pulses high after every hour counted. This is particularly useful in applications where maintenance or inspection is required at regular time intervals. The timer features Trip and Total ranges. The Trip range can be reset to zero. The meter's readings are stored in the module's internal memory and are retained even when the unit is not powered. To mount the module, drill a single 5.5mm / $^{7}/_{32}$" hole, locate its screw threaded stud through the hole and secure with the washer and nut provided. The module's 8 connection wires pass through the hollow stud into the target application. A rubber seal is included, providing splashproof protection for the unit when fitted to the meter during installation.

- **Single Hole Mounting**
- **9999.9 and 99999 Hour Ranges**
- **9mm / 0.35" LCD Digit Height**
- **Reset and Trip/Total Inputs**
- **Leading Zero Blanking Input**
- **Pulse Output Every Hour**
- **Splashproof**




Shown Actual Size




| Easy Mounting Elapsed Hour Meter | | | | | Stock Number EMC 1500 |
|---|---|---|---|---|---|
| **Specification** | | **Min.** | **Typ.** | **Max.** | **Unit** |
| Resolution | Range 9999.9 | | 0.1 | | Hour |
| | Range 99999 | | 1 | | Hour |
| Accuracy* | | | ±2 | ±6 | Sec./24Hrs. |
| Operating temperature range | | 0 | | 50 | °C |
| Supply voltage (V+) | | 5 | | 27 | V d.c. |
| Supply current | | | 1.5 | | mA |
| Input Low Voltage ($V_{IL}$)** | | 0 | | 0.5 | V |
| Input High Voltage ($V_{IH}$)*** | | 2 | | V+ | V |

* Based upon constant running. There is potential for ±2 seconds error each time the module is powered down and then up again. Over time, the accumulated error approximates to zero.

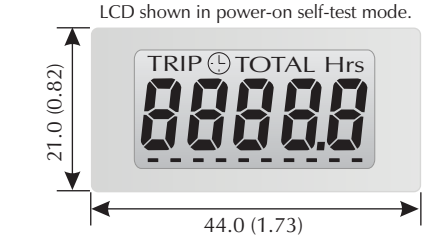
** Applies to the inputs: Range, V-Sense, LZB, Reset and Trip/Total

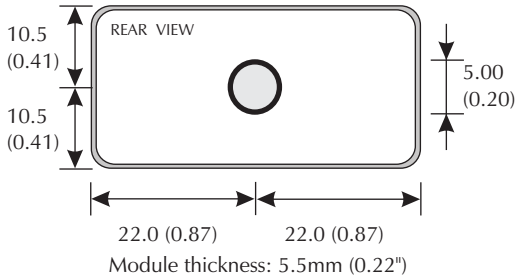
*** Applies to V-Sense input only.

## SAFETY

To comply with the Low Voltage Directive (LVD 93/68/EEC), input voltages to the module's wires must not exceed 60Vd.c. The user must ensure that the incorporation of the meter into equipment conforms to the relevant sections of BS EN 61010 (Safety Requirements for Electrical Equipment for Measuring, Control and Laboratory Use).

## DIMENSIONS All dimensions in mm (inches)




Module thickness: 5.5mm (0.22")

## CONNECTION

| | | |
|---|---|---|
| 0 | Black | 0V |
| 1 | Brown | 9999.9/99999 |
| 2 | Red | V+ |
| 3 | Orange | Voltage Sense |
| 4 | Yellow | 1 Hr Pulse |
| 5 | Green | Leading Zero Blanking |
| 6 | Blue | Reset |
| 7 | Violet | Trip/Total |

## FITTING THE Hour Meter

Drill a 5.5mm / $^{7}/_{32}$" hole in the panel. Fit seal to the rear of the module. Fit the module to the panel by passing its screw threaded stud and the wires through the hole, fitting the washer and spring washer and tightening the nut provided. Take care not to trap any of the connecting wires. Do not overtighten the nut as this may damage the meter.

DO NOT PULL THE WIRES AND DO NOT ALLOW SCREW TERMINALS OR OTHER WIRES TO HANG FROM THE MODULE'S WIRES, AS THIS MAY DAMAGE THE PRODUCT.

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## WIRE FUNCTIONS

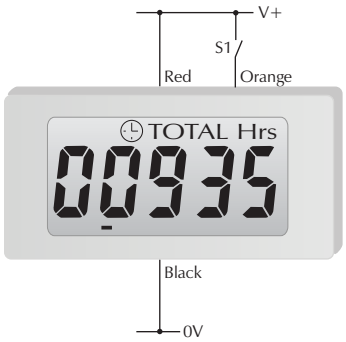
| | | | |
|---|---|---|---|
| 0. | Black | 0V | Negative power supply connection. |
| 1. | Brown | RANGE | Do not connect for 99999 Hour range.<br>Connect to 0V for 9999.9 Hour range. |
| 2. | Red | V+ | Positive power supply connection. |
| 3. | Orange | V-SENSE | Connect to V+ to start/continue counting elapsed hours.<br>Connect to 0V or do not connect to read TRIP or TOTAL value without counting elapsed hours. |
| 4. | Yellow | PULSE | Normally at 0V, this output goes High (+3.3V) every hour in the selected mode. |
| 5. | Green | LZB | Do not connect to display leading zeros.<br>Connect to 0V to blank all leading zeros.<br>When reading is 0000.0 or 00000, leading zeros are not blanked. |
| 6. | Blue | RESET | Connect momentarily to 0V to reset the display to zero (internally connected to V+ via pull-up resistor). |
| 7. | Violet | TRIP/TOTAL | Do not connect for TOTAL mode operation. In TOTAL mode, the elapsed hour meter cannot be reset to zero.<br>Connect to 0V for TRIP mode operation. In TRIP mode, the elapsed hour meter can be reset to zero. |

**<u>Warning</u> : Do not connect the following wires to V+: RANGE, PULSE, LZB, RESET, TRIP/TOTAL, as this may damage the meter. The user must incorporate suitable protection circuitry in applications where the voltage to any of the meter's wires can exceed 27V d.c., including transient conditions, else damage to the meter may occur. In particular, for applications in harsh electrical environments, e.g. automotive, suitable external protection must be provided to protect against "load dump" conditions, transients, etc.**

## DISPLAY FUNCTIONS

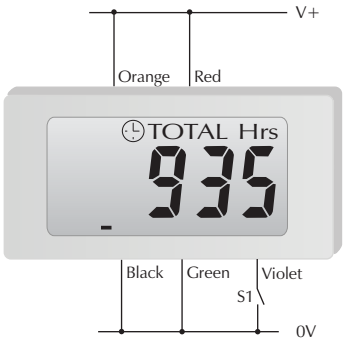
| | |
|---|---|
| **8888.8** | The 5 digit readout displays elapsed time in hours. |
| TRIP | This symbol is displayed when trip mode is selected (see Wire Functions above) |
| TOTAL | This symbol is displayed when total mode is selected (see Wire Functions above) |
| ---------- | The 10-segment incrementing bar indicates that the module is working correctly and counting hours. |

## APPLICATIONS

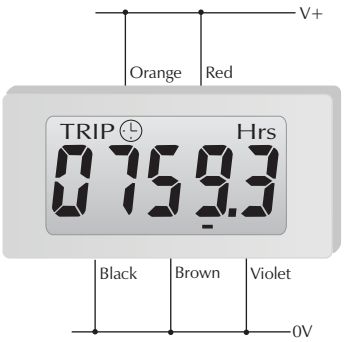



Basic 3-wire operation:
- 99999 Hour range
- Leading Zeros are displayed
- Timing in TOTAL mode

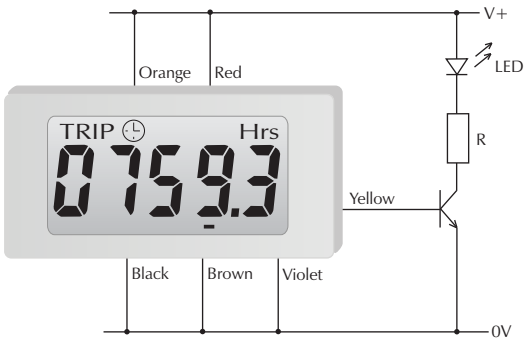
Open S1 to read TOTAL value without counting hours.




Leading zeros blanked.
Close S1 to select TRIP mode.




9999.9 Hour range
- Leading Zeros are displayed
- Timing in TRIP mode




Using the PULSE O/P to drive an LED.
The LED will illuminate once after every hour.