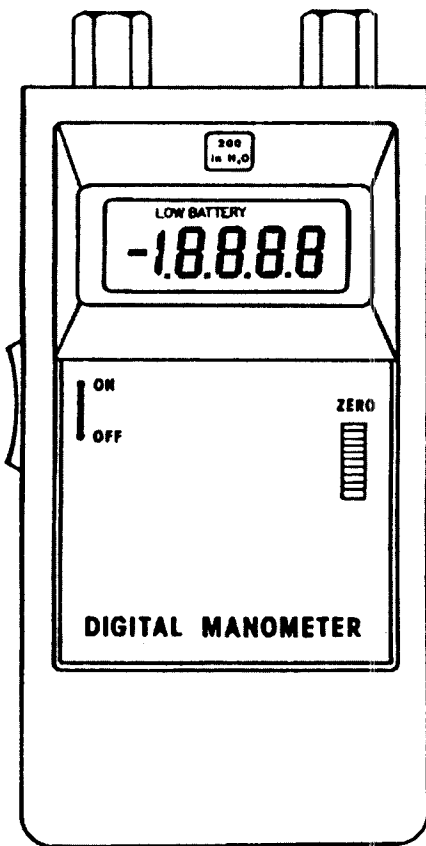




# User's Guide



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## HHP-201 Digital Manometer



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The information contained in this document is believed to be correct, but OMEGA Engineering, Inc. accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.

**WARNING:** These products are not designed for use in, and should not be used for, patient-connected applications.

## SECTION 1 INTRODUCTION

### 1.1 DESCRIPTION

The OMEGA HHP-201 series handheld pressure meter is ideal for portable pressure measurement in the field, factory, or laboratory. All of the differential models can measure gage or vacuum, as well as differential, by venting the low and high ports to the atmosphere, respectively. The instrument has a front zero knob for easy offset adjustment, and its rugged construction add to its versatility. The HHP-201 can be ordered by itself, or as a calibration kit which includes the meter, a pump, fittings, tubing and a rugged carrying case.

### 1.2 FEATURES

- Available scales include: in. H<sub>2</sub>O, mBar, Bar, mm Hg and in. Hg
- Impact resistant ABS plastic case
- Front panel zero adjustment knob
- Simple one-handed operation
- Optional calibration kit
- Low battery indication

### 1.3 AVAILABLE MODELS

The HHP-201 series pressure meter is available in 13 types. They are:

| <u>PART NUMBER</u> | <u>RANGE</u>                   |
|--------------------|--------------------------------|
| HHP-201A           | 0-20.00 in. H <sub>2</sub> O   |
| HHP-201B           | 0-200.00 in. H <sub>2</sub> O  |
| HHP-201C           | 0-1000.00 in. H <sub>2</sub> O |
| HHP-201D           | 0-10.000 PSI                   |
| HHP-201E           | 0-30.00 PSI                    |
| HHP-201F           | 0-100.00 PSI                   |
| HHP-201G           | 0-50.0 mBar                    |
| HHP-201H           | 0-500.0 mBar                   |
| HHP-201I           | 0-2000.0 mBar                  |
| HHP-201J           | 0-7.000 Bar                    |
| HHP-201K           | 0-30.00 PSIA                   |
| HHP-201L           | 0-1500.0 mm HgA                |
| HHP-201M           | 0-60.00 in. HgA                |

## SECTION 2 UNPACKING

Remove the Packing List and verify that you have received all equipment. If you have any questions about the shipment, please call the OMEGA Customer Service Department at 1-800-622-2378 or (203) 359-1660.

When you receive the shipment, inspect the container and equipment for any signs for damage. Note any evidence of rough handling in transit. Immediately report any damage to the shipping agent.

### NOTE

The carrier will not honor any claims unless all shipping material is saved for their examination. After examining and removing contents, save packing material in event reshipment is necessary.

The packing box should include the HHP-201, 9V battery, and operator's manual.

## SECTION 3 OPERATION

Install the 9V battery at the back of the unit (refer to Section 4 for details about how to remove the cover). Turn on the unit and set zero. When the zero is stable for 10 seconds or more, the unit is ready for use. Models may display values beyond specified range. These values or any negative readings cannot be considered accurate.



VACUUM APPLICATION  
USE LOW PORT

Figure 1. Top of Unit

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### CAUTION

Use clean, dry, non-corrosive gas. Do not exceed maximum pressure. Do not rotate bulkhead fittings since this will cause failure of instrument.

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## SECTION 4 BATTERY INSTALLATION/REPLACEMENT

A "LOW BATTERY" warning will be displayed when the battery should be replaced. Remove the battery compartment cover on the back of the unit by inserting a small screwdriver in the slot, then open the compartment cover with a prying motion. Remove the dead battery if necessary, and insert a fresh 9V alkaline battery. Then reinstall compartment cover.

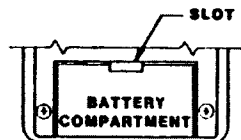


Figure 2. Battery Compartment

## SECTION 5 MANOMETER RECALIBRATION

This procedure uses three adjustment potentiometers: the fine zero adjustment, the coarse zero adjustment, and gain adjustment. The fine zero adjustment is the adjustment knob located on the front face of the unit. The coarse zero and gain adjustments are located on the circuit board inside the unit and are labeled accordingly. The circuit board is accessed by removing the four screws located on the rear panel of the unit.

Follow the following procedure for recalibration:

1. Turn unit on and after 5 minutes center the fine zero pot.
2. Zeroing:

Differential pressure units:

Remove all pressure from the inputs. Adjust coarse zero pot until display reads near zero. Now use the fine zero pot to adjust the display to 0000.

Absolute units:

Apply a vacuum of 200 microns or less. Adjust coarse zero pot until display reads near zero. Now use the fine zero pot to adjust the display to 0000.

3. Setting the calibration point:

Apply pressure equal to the pressure range listed below for the appropriate model. Use the coarse and fine gain pots to set the display to the calibration point listed in the table. Repeat steps 2 and 3 until no adjustments are required.

| DESCRIPTION | RANGE                          |
|-------------|--------------------------------|
| HHP-201A    | 0-20.00 in. H <sub>2</sub> O   |
| HHP-201B    | 0-200.00 in. H <sub>2</sub> O  |
| HHP-201C    | 0-1000.00 in. H <sub>2</sub> O |
| HHP-201D    | 0-10.000 PSI                   |
| HHP-201E    | 0-30.00 PSI                    |
| HHP-201F    | 0-100.00 PSI                   |
| HHP-201G    | 0-50.0 mBar                    |
| HHP-201H    | 0-500.0 mBar                   |
| HHP-201I    | 0-2000.0 mBar                  |
| HHP-201J    | 0-7.000 Bar                    |
| HHP-201K    | 0-30.00 PSIA                   |
| HHP-201L    | 0-1500.0 mm HgA                |
| HHP-201M    | 0-60.00 in. HgA                |

## SECTION 6 SPECIFICATIONS

|   |   |
|---|---|
| <b>ACCURACY:</b>                                      | ±0.2% FS ± significant digit<br>(includes linearity, hysteresis, and repeatability) |
| <b>OPERATING TEMPERATURE:</b>                         | 32° to 100°F<br>(0° to 40°C)  |
| <b>STORAGE TEMPERATURE:</b>                           | -40° to 140°F<br>(-40° to 60°C)   |
| <b>TEMPERATURE EFFECTS:</b>                           | <b>ZERO:</b> ± 0.006%/°F 0.01%/°C)<br><b>SPAN:</b> ± 0.006%/°F 0.01%/°C)            |
| <b>PROOF PRESSURE:</b>                                | 300% FS   |
| <b>MAXIMUM STATIC PRESSURE (DIFFERENTIAL MODELS):</b> | 125 PSI   |

## SPECIFICATIONS (CONT'D)

|                                |   |
|--------------------------------|---|
| <b>PRESSURE CONNECTION:</b>    | 1/8 NPTF Brass fitting  |
| <b>MEDIA COMPATIBILITY:</b>    | Clean, dry, non-corrosive gases   |
| <b>DISPLAY:</b>                | 4-1/2 digit LCD display, 0.4" high digits                                 |
| <b>LOW BATTERY INDICATION:</b> | display shows "LOW BATTERY"   |
| <b>POWER:</b>                  | field replaceable 9V battery over 100 hours continuous use at 68°F (20°C) |
| <b>SIZE:</b>                   | 6.5" x 3.2" x 1.17" (see below)<br>(165.1 mm x 81.3mm x 29.7mm)           |
| <b>WEIGHT:</b>                 | 8 oz (226.8 g)  |

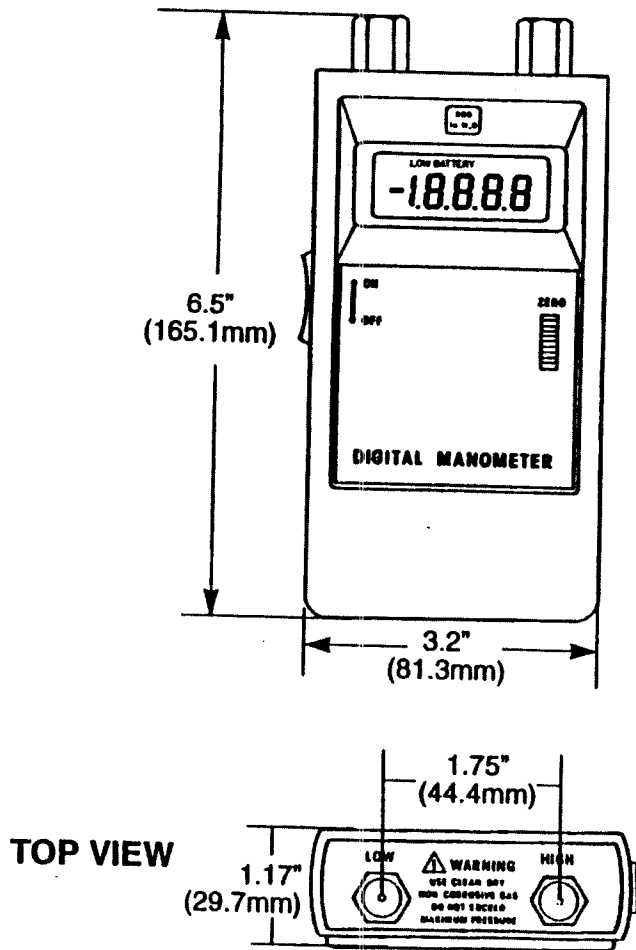


Figure 3. Dimensions



## WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's Warranty adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components which wear are not warranted, including but not limited to contact points, fuses, and triacs.

**OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by it will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESS OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.**

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## RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. **BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS).** The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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