

# MODEL HCM-300 CAPACITANCE MANOMETER POWER SUPPLY



Contains Operating and Programming Information



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MODEL HCM-300  
CAPACITANCE  
MANOMETER  
POWER SUPPLY

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## Manual Print History

The print history shown below lists the printing dates of all revisions and addenda created for this manual. The revision level letter increases alphabetically as the manual undergoes subsequent updates. Addenda, which are released between revisions, contain important change information that the user should incorporate immediately into the manual. Addenda are numbered sequentially. When a new revision is created, all addenda associated with the previous revision of the manual are incorporated into the new revision of the manual. Each new revision includes a revised copy of this print history page.

Revision A (Document Number 145-1096) ..... November 1996  
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## Warranty

Hastings Instruments warrants this product, for a period of one year from the date of shipment, to be free from defects in material and workmanship. This warranty does not apply to defects or failures resulting from unauthorized modification, misuse or mishandling of the product. This warranty does not apply to batteries or other expendable parts, nor to damage caused by leaking batteries or any similar occurrence.

This warranty is in lieu of all other warranties, expressed or implied, including any implied warranty as to fitness for a particular use. Hastings Instruments shall not be liable for any indirect or consequential damages.

Hastings Instruments will, at its option, repair, replace, or refund the selling price of the product if Hastings Instruments determines in good faith, that it is defective in materials or workmanship during the warranty period. Defective instruments should be returned to Hastings Instruments together with a written statement of the problem and a repair authorization number.

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**SECTION 1**

**General Information**

## Introduction

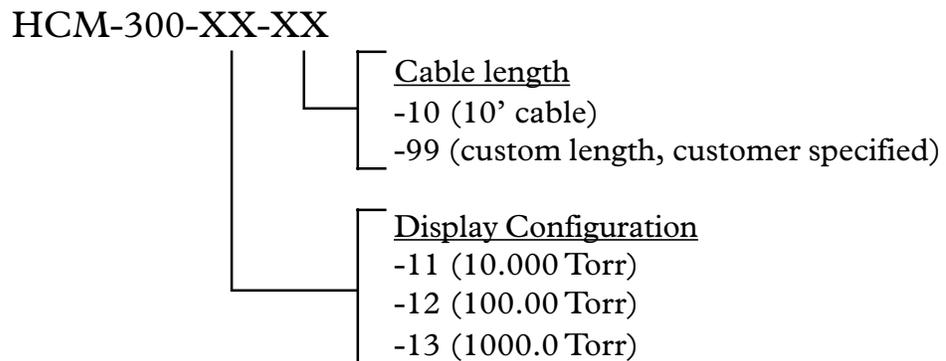
The Hastings Capacitance Manometer Power Supply (HCM-300) supplies stable  $\pm 15$  VDC specifically for operating the Hastings Capacitance Manometer Transducer. The transducer returns a signal to the HCM-300 which displays an accurate pressure reading.

## Specifications

Output Voltage .....	$\pm 15$ VDC $\pm 2.5$ %
Power Input .....	115 VAC $\pm 10\%$ , 50/60 Hz
Signal Input .....	0 - 10 VDC
Display .....	4½ digit
Analog Output Voltage .....	0 - 10 VDC
Min. Load Impedance .....	10 kW
Display Type .....	0.52" (13.2mm) red LEDs
Warm up Time .....	15 min
Operating Temperature .....	0 - 50°C
Load Regulation .....	$\pm 1\%$ (10 mA-30 mA)
Accuracy .....	$\pm 3$ counts

## Ordering Information

Ordering options for the HCM-300 series power supply:



**SECTION 2**

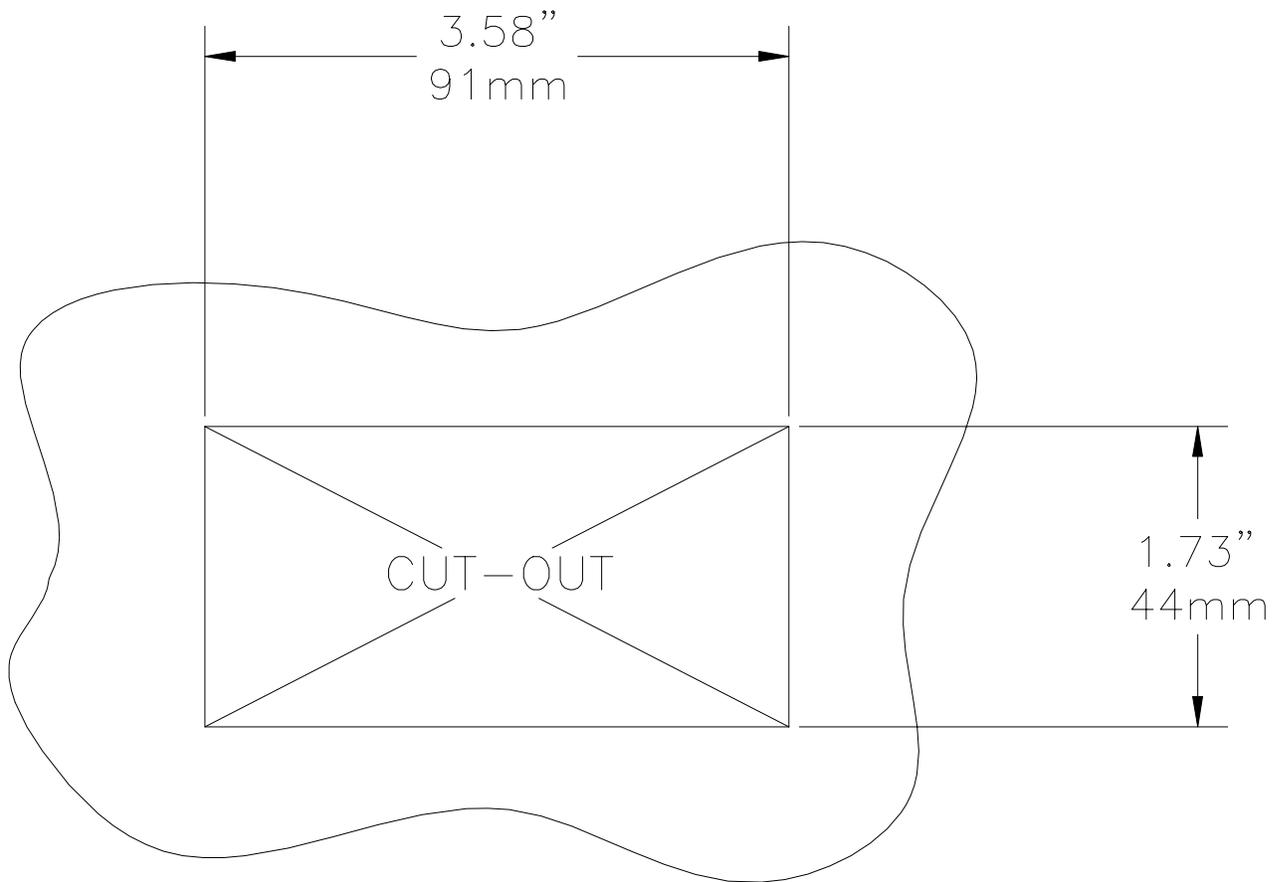
**Installation**

## Receiving Inspection

Carefully unpack the HCM-300. Inspect all items received at this time for any obvious damage that may have occurred during shipment. Immediately advise the shipping agent if there is any damage to items in your shipment. Identify each item and the quantity received with those listed on the packing list.

## Mounting

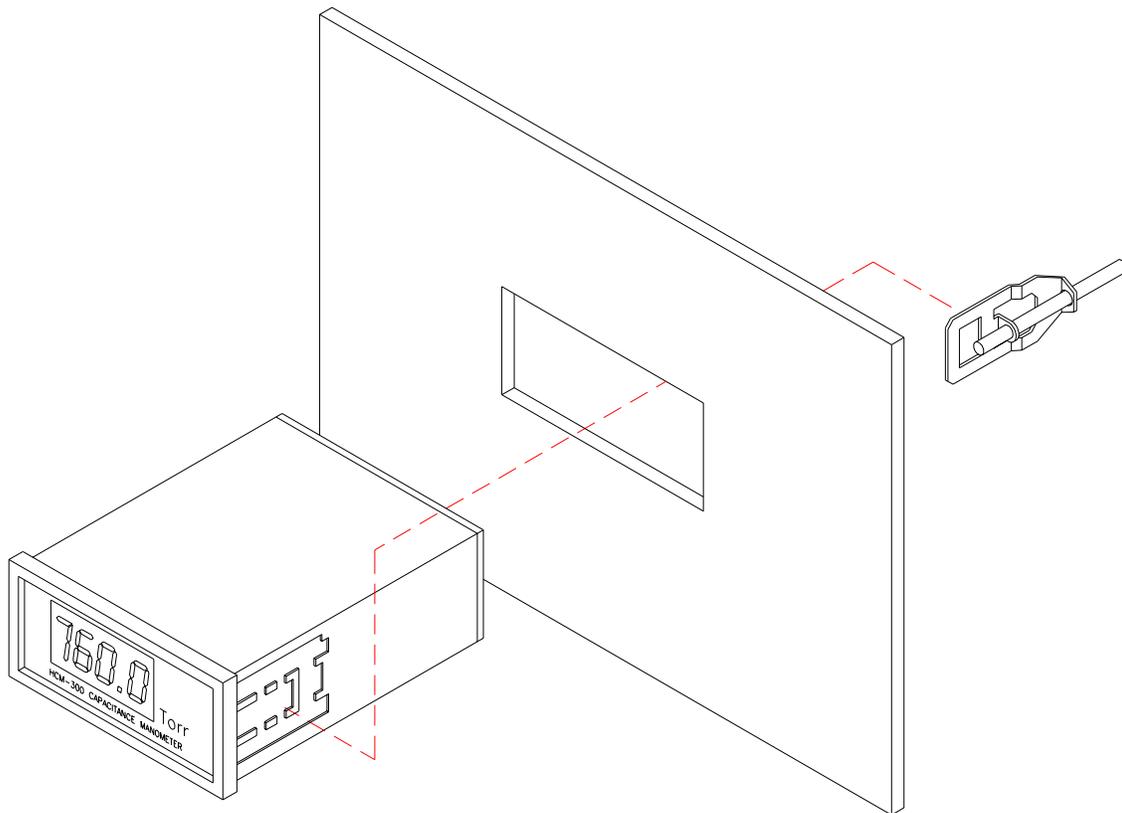
Cut out panel as shown in the diagram below.



To panel mount the HCM-300:

- 1) Slide power supply into panel from the front.
- 2) Attach brackets to the side of the power supply.
- 3) Tighten screws against panel.

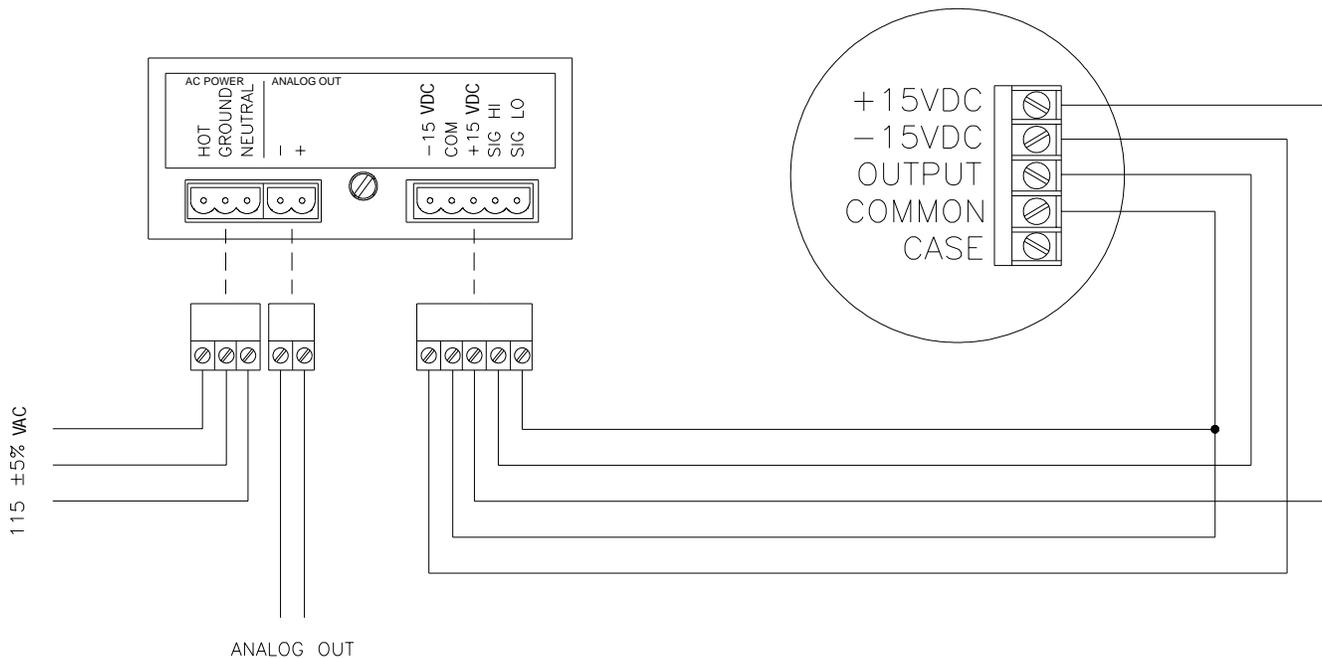
See Figure below:



## Hastings Capacitance Manometer Power Supply Cable Connections

The HCM-300 is supplied with a power cable. The 3-wire cable plugs into the back of the instrument in the socket marked “AC Power”.

A 5-wire cable connects the instrument to the transducer. The diagram below shows the proper connections.



**SECTION 3**

**Operating Information**

## Normal Start-up

- 1) Connect the interface cable from the HCM-300 to the transducer.  
(See figure on page 2-4 of this manual)
- 2) Verify that the AC power to be applied to the HCM-300 is correct (115 VAC).
- 3) Apply AC power to the HCM-300.
- 4) The HCM transducer has a local zero adjustment. Follow the zero adjustment procedure described in the HCM-6000 series manual.

### **Caution**

***Before applying power to the instrument, ensure that the line voltage being applied is correct. Failure to do so may result in damage to the instrument which is not covered by the warranty.***

## Analog Output

The HCM-300 generates an analog signal which is directly proportional to the displayed pressure. The analog output signal is given by:

$$V_{\text{out}} = 10 * \frac{\text{Pressure (Torr)}}{\text{Transducer's Full Range (Torr)}} \quad (1)$$

The output signal is a DC voltage with a full scale reading for a given capacitance manometer transducer corresponding to +10 VDC. For example, if one has a 100 Torr HCM transducer with a displayed pressure of 35 Torr, then the output voltage will be:

$$V_{\text{out}} = 10 * \frac{35 \text{ Torr}}{100 \text{ Torr}} = 3.5 \text{ Volts} \quad (2)$$

The uncertainty associated with the analog output voltage is given by:

$$\Delta V = \pm \left[ .05 * \frac{\text{Pressure (Torr)}}{\text{Transducer's Full Range (Torr)}} + .002 \right] \text{ Volts} \quad (3)$$

Conversely, if the analog output voltage is measured, then the pressure reading is given by:

$$\text{Pressure (Torr)} = \frac{V_{\text{out}}(\text{V}) * \text{Transducer's Full Range (Torr)}}{10} \quad (4)$$

## Internal Adjustments

The internal adjustments are factory set and should never need to be changed. However, if the need arises and suitable standards are available the following adjustments can be made. (see figure on page 3-4)

### Full Scale

The full scale potentiometer changes the display by changing the sensitivity of the instrument. Apply a calibrated +10 VDC signal to the **Sig Hi** and **Sig Lo** pins on the back of the power supply. The display of the instrument should read “1000.0”, “100.00” or “10.000” depending upon the configuration. Adjust the full scale potentiometer (R11) if needed.

### Analog Output

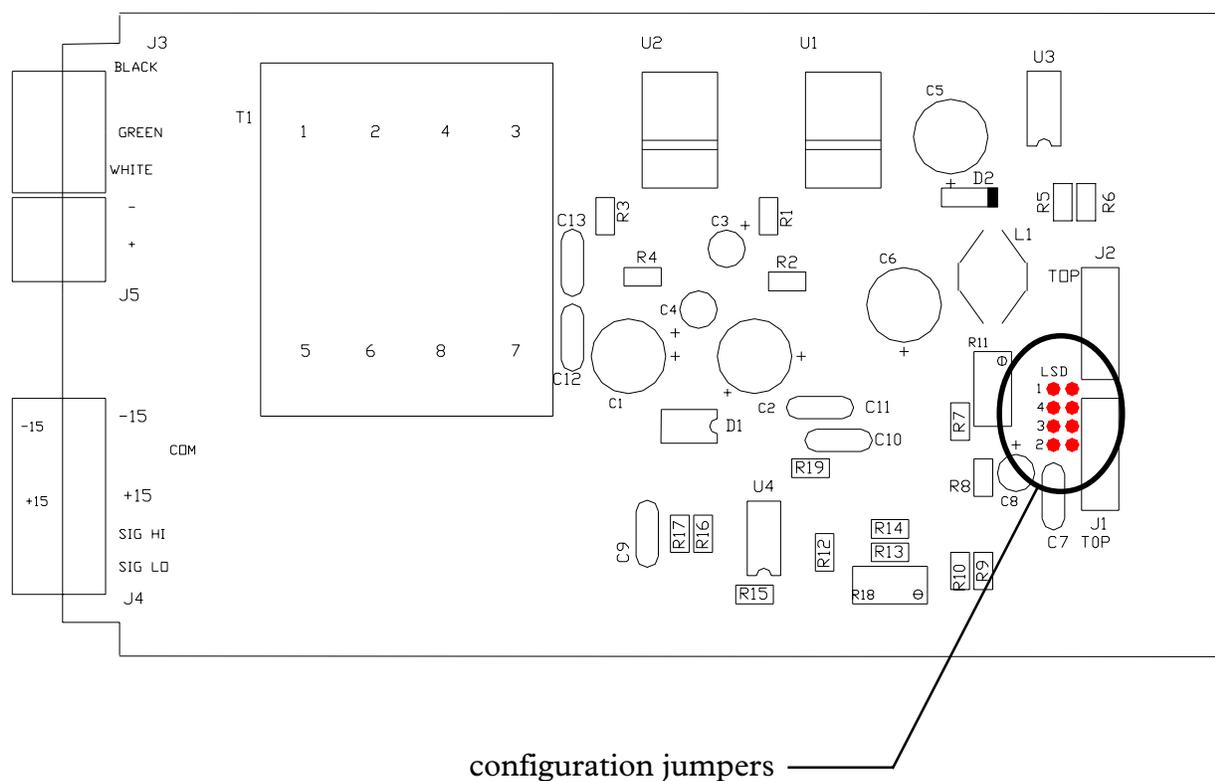
The analog output potentiometer changes the analog output voltage by changing the gain on the output buffer amplifier. Apply a calibrated pressure standard to the transducer and refer to equation (1). Adjust the potentiometer (R18) as needed.

Notes on internal adjustments:

- \* Both the full scale reading and the analog output voltage can change by only  $\pm 10\%$ .
- \*\* Zero adjustment can only be performed on the transducer itself. See the HCM-6000 series transducer manual Section 3.

# Display Configuration

The jumper position on the power supply circuit board determines the location of the decimal on the display. The jumper is factory set to match the configuration specified by the customer. Should the need arise to change the display configuration, this jumper can be easily moved (see figure below).



Jumper Location	Display Configuration
<b>1</b>	<b>1000.0 Torr</b>
<b>4</b>	<b>not used</b>
<b>3</b>	<b>10.000 Torr</b>
<b>2</b>	<b>100.00 Torr</b>

**SECTION 4**

**Warranty and Repair**

## Warranty Repair

Hastings Instruments will repair or replace, at their option, any product covered under the warranty expressed in the front of this manual, that is returned transportation prepaid to their plant in Hampton, Virginia. All products returned must be accompanied by a Return Materials Authorization (RMA) form or a written description of the problem with the instrument. Please consult the factory for your RMA number before returning any product for repair.

## Non-Warranty Repair

Any product returned for a non-warranty repair must be accompanied by a purchase order authorizing repair up to 1/3 the list cost of a new product and the RMA form or a written description of the problem with the instrument. If the repair cost is higher, you will be contacted for authorization before we proceed with any repairs. If you then choose not to have the product repaired, a minimum will be charged to cover the processing and inspection. Please consult the factory for your RMA number before returning any product for repair.

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Attn: Repair Department**

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                          800-950-2468  
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