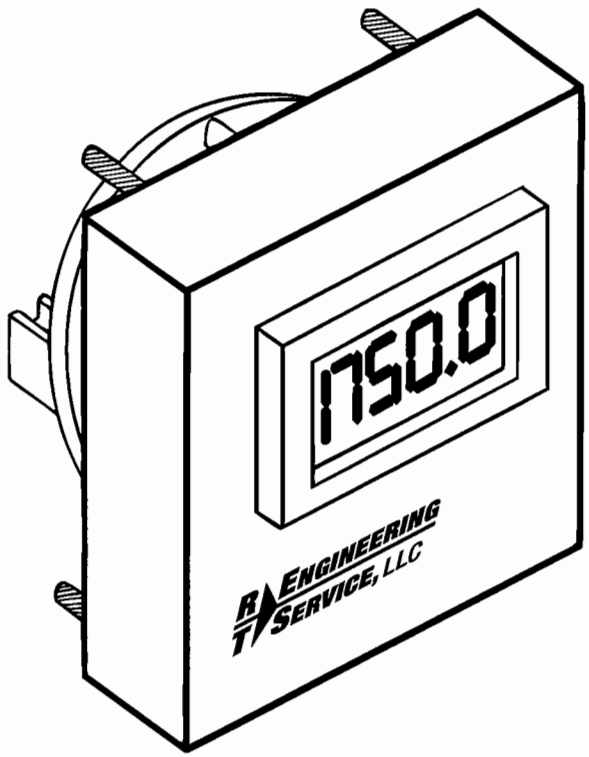
# Universatile™

## DIGITAL PANEL METERS




# INSTALLATION, WIRING & CALIBRATION

FOR THE

# DPM45BP

PANEL METERS

RT ENGINEERING SERVICE, LLC
MFG IN USA

(800) 343-1182 www.rteng.com

The R.T. Engineering series DPM45BP panel meter is designed to fit in the same mounting cutout as a standard 4 1/2" analog meter. The meter is calibrated by adjusting the two pots on the reverse side of the meter.

Four ranges accept input voltage from 50 millivolts DC to 500 volts DC. The broad range of input voltages will allow this meter to accept a variety of signal sources.

## SPECIFICATIONS

| | |
|---|---|
| Input Ranges the minimum voltage required to make the meter read full scale | -(A) 50 millivolts DC<br>(B) .5 volt DC<br>(C) 5 volts DC<br>(D) 50 volts DC |
| Maximum input and overvoltage | -1000% of range or 500 volts DC whichever is less |
| Accuracy | -.5% linear |
| Input resistance at nominal scale values | -20K ohms per volt DC |
| Response time, zero to full scale | -5 seconds |
| Power requirement | -115 volts AC (+10 volts), 50/60 Hz, 2 watts, (230 volts AC, 50/60 Hz optional) |
| Operating temperature | -5° C to 50° C |
| Display | -4 1/2 active digits (0 to 1.999) .5 inch LED optional decimal points at locations 1.8.8.8.8 are user selectable |
| Overrange | -Indication is by flashing zeros |
| Weight | -1 pound |
| Typical signal inputs | D.C. signals from: line voltage, reference voltage, tachometer, force transducers (load cells), shunts, pressure and flow transducers |

CAUTION: The common mode voltage present between the input terminals and ground (case) should never exceed 600 volts

## INSTALLATION AND CALIBRATION

A) Installation:

All that should be required to install this meter is to remove the old 4 1/2" meter and insert and rewire the DPM45BP. If the proper cutout does not already exist, cut out the proper pattern using the attached layout template and install the meter in place using the four retaining nuts included with the meter. (The four retaining nuts are supplied loosely attached to the studs on the back of the meter.)

B) Wiring:

Refer to diagram "A". Meter is internally fused. Connect signal from source to terminals. Input is a D.C. source, note polarity connection. Low voltage signals such as current shunts, should be run in a shielded cable to minimize any noise pick-up. The shield should be connected to the meter common (+input). The other end of the shield should remain unconnected and insulated with electrical tape.

C) Calibration:

The general method used to calibrate the meter is to select one of the four input ranges which corresponds to the signal voltage you will be using. The voltages that can be used on the ranges are as follows:

A - 50 milivolts DC to 500 millivolts DC

B - 500 millivolts DC to 10 volts DC

C - 5 volts DC to 100 volts DC

D - 50 volts DC to 50-0 volts DC

Choose the range you select by moving J1 to the correct terminal (A thru D) refer to diagram "A". If the maximum voltage is not known leave jumper on the "D" range. Apply maximum signal and adjust "readout scale" pots located on the back of the meter until desired readout is obtained. If the desired readout cannot be reached, remove signal input and mover jumper down one range to the "C" range. Reapply input signal and adjust the pots to obtain the desired readout. If necessary repeat the above on the next lower scale until desired readout is obtained.

* Although this unit has been tested for peak operational voltage insulation integrity both between input terminals and input to case, we recommend that on input voltages greater than 200 volts RMS a 100K 1/2 watt metalfilm resistor be placed in series with each leg of the input signal wires. This is solely for protection of the signal device in the event of a fault to ground or short within the meter itself.

D) Service Notes:

1. A display with flashing zeros indicates an overscale reading, and requires recalibration via the "readout scale" pots and/or a new range selection (REFER TO SECTION C).

2. With the indicator installed, wired, power applied and with no signal input, the display should read zero plus or minus a count. If this is not the case, remove the signal input leads and install a short jumper between the signal input terminals and check for zero readings as above. If zero is now obtained this indicates a "noise" signal is being induced via the signal input cable. This can be corrected with shielded cable (see wiring notes on Page 3, Section B). If a zero reading cannot be obtained with the input shorted, please consult the factory.

3. A display of "0000" may indicate reversed polarity of the input signal or a zero input signal

4. The input signal stage of the indicator will accept a voltage up to 20 times the rated value for the given range or 500 volts whichever is less. (eg; range "C" is rated 5 VDC, will accept up to 100 VDC).

5. As with any piece of electronic equipment, care is recommended in handling and applying voltages. For further information or service contact:

   R.T. Engineering Service, Inc.

   65 Maple Street
   Mansfield, Ma. 02048
   1-800-372-2123 (MA)
   1-800-434-1182 (OUTSIDE MA)

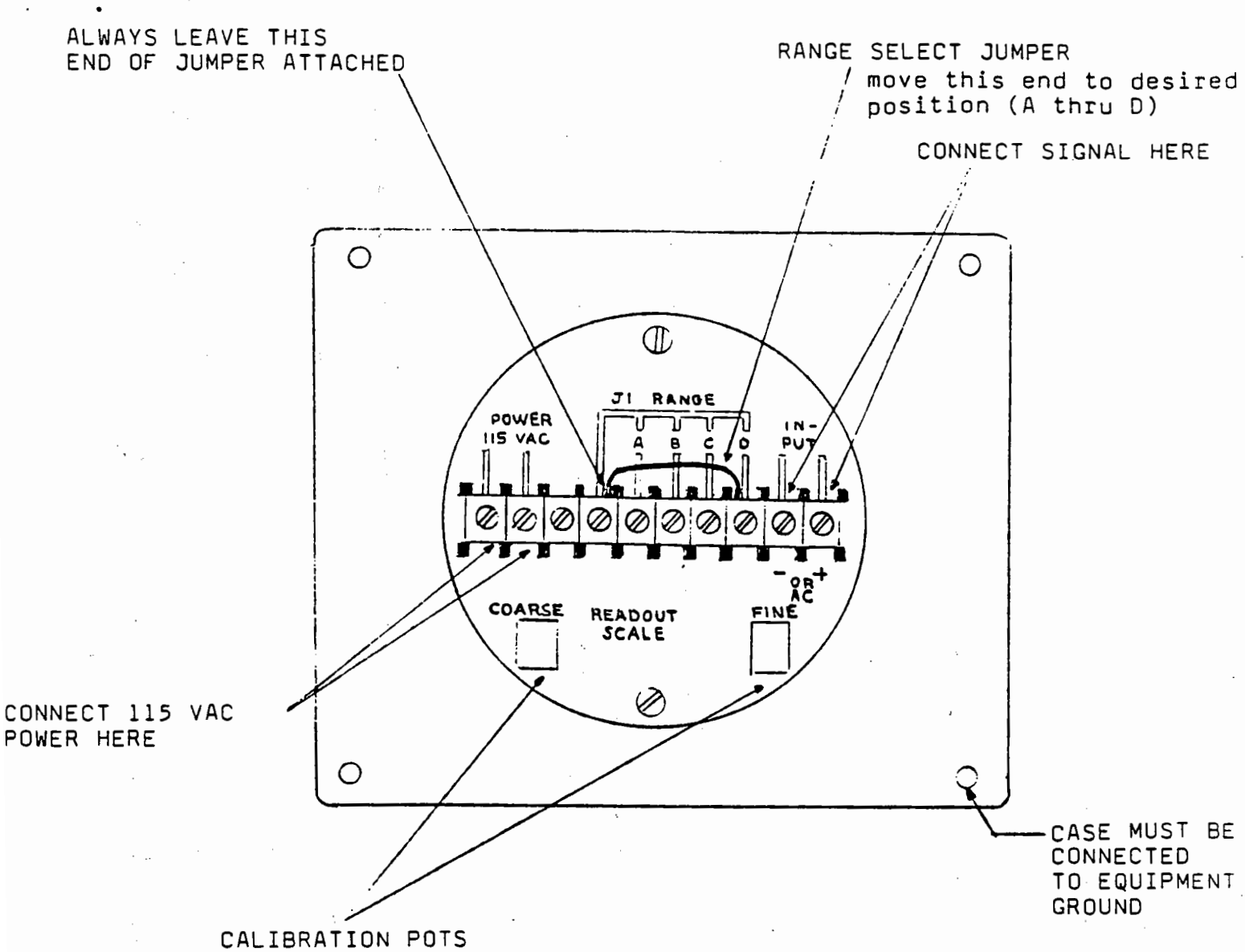

ALWAYS LEAVE THIS END OF JUMPER ATTACHED
RANGE SELECT JUMPER
move this end to desired position (A thru D)
CONNECT SIGNAL HERE
J1 RANGE
POWER 115 VAC
A
B
C
D
IN-PUT
- OR AC +
COARSE
READOUT SCALE
FINE
CONNECT 115 VAC POWER HERE
CASE MUST BE CONNECTED TO EQUIPMENT GROUND
CALIBRATION POTS

DIAGRAM "A"

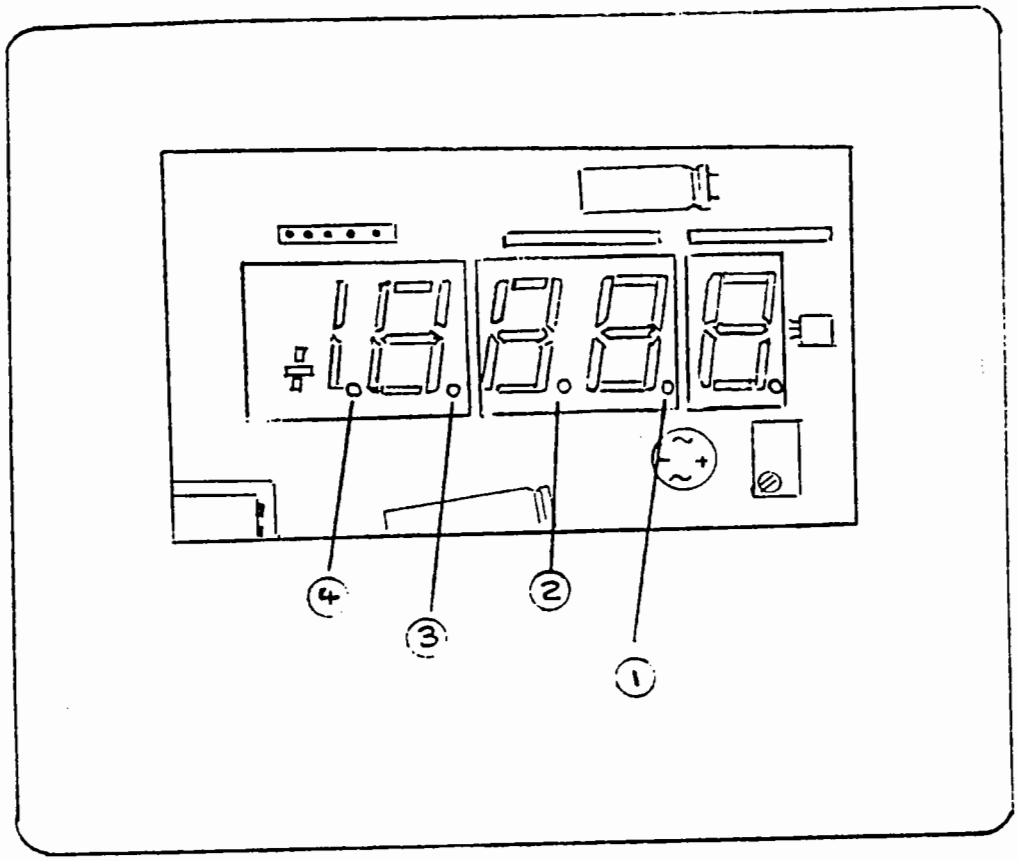
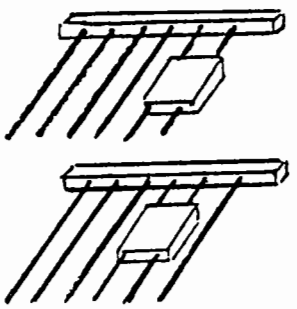



DIAGRAM "B"

DECIMAL POINT SELECTION

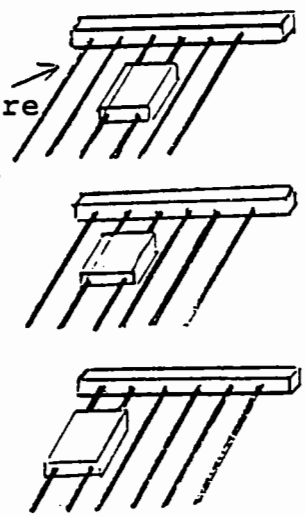
slide off the jumper clip, and place in one of these locations to light the corresponding decimal point



① ②

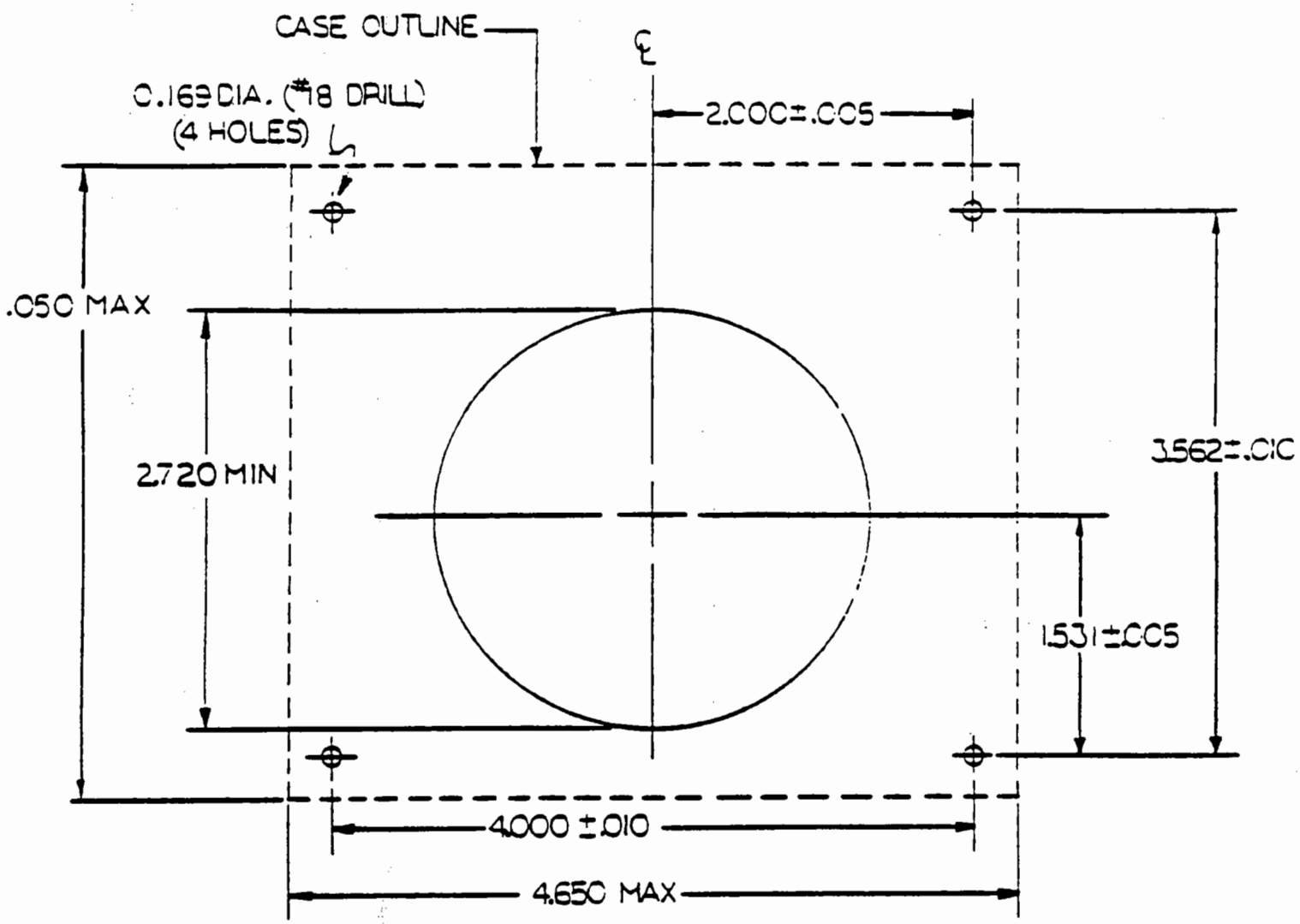
The decimal point may be selected to indicate in one of four places by moving the small blue jumper to the appropriate position. Once a selection has been made, the decimal point will always light in that position until you move the jumper to another position.

This position is used to store the clip, and does not light a decimal.



③ ④

*Decimal point selection only effects the display. And does not effect operation or calibration of the meter.




NOTES:

1) ALL DIMENSIONS ARE IN INCHES.
2) TOLERANCE ON FRACTIONAL DIMENSIONS IS ± 1/32 .
3) THIS IS NOT A TEMPLATE.

# MOUNTING LAYOUT

# WARRANTY

R. T. Engineering Service, LLC (R.T.E.) warrants this equipment against defects in materials or workmanship for a period of two (2) years from date of shipment.

Standard products manufactured by R.T.E. are warranted to be free from defects in workmanship and material for a period of two years from date of shipment, and products which are defective in workmanship or material will be repaired or replaced, at the option of R.T.E., at no charge to the buyer. Final determination as to whether a product is actually defective rests with R.T.E.

Any product found to be defective should be returned, transportation prepaid by buyer, to R.T.E at the above address. This warranty will not apply to any product which has been subjected to misuse, negligence, or accident; or misapplied; or modified or repaired by unauthorized persons; or improperly installed. R.T.E. cannot assume responsibility or accept invoices for unauthorized repairs to its components, even though defective. Any modification made internal or external to the meter may void this warranty as will opening the meter enclosure.

The foregoing warranty is exclusive and in lieu of all other warranties expressed or implied, including but not limited to any warranty of merchantability or of fitness for a particular purpose. R. T. Engineering shall not be liable for consequential damages of any kind.

The aforementioned provisions do not extend the original warranty period of any article which has been either repaired or replaced by R. T. Engineering.