

## SCALING MICRO P DISPLAY FOR ENGINEERING UNITS

The following supplement to the Micro P Manual describes two different methods of programming to obtain correct engineering units: **A** Scale factor and offset; **B** Coordinates of 2 points.

### A “SCALE FACTOR & OFFSET” SCALING METHOD (POSITION)

#### (i) UniMeasure “PA” Series Transducers

- 1** Prior to connecting the transducer to the display, program the display for a voltage input per the Display manual but program the **SEtuP** function to allow scale factor and offset inputs.
- 2** Set the **SCALE** factor to 1.0, the **OFFSt** to zero and **dEc.Pt** to **dd.ddd**
- 3** On the rear of the display, carefully connect the +excitation terminal to the +Vin terminal and read the value on the display. The value should be near 10.0 VDC. Record the actual value, Vr. Disconnect +excitation from +Vin.
- 4** Create the scale factor with the following formula:  

$$SF = 1 / ((S / 1000) \times Vr)$$
 where S = Average Sensitivity in mV/V/unit of measurement (ie. inch, mm, etc.) from the UniMeasure calibration sheet and Vr = the reference voltage recorded above. The scale factor, SF, is in measurement units (inches, millimeters, etc) per volt.
- 5** Reset the decimal point (**dEc.Pt**) to the number of decimal places for the application. Multiply the scale factor for the decimal place requirement per the applicable multiplier shown below.

Decimal Place	Multiplier for scale factor
dd.ddd	1
ddd.dd	0.1
dddd.d	0.01
dddd	0.001

- 6** Input the calculated scale factor into **SCALE**.
- 7** Disconnect power to the display and connect the UniMeasure transducer to the display per the display connection diagram attached.
- 8** With the transducer mounted and the wire rope extended to the desired zero position, apply power to the display and record the value displayed.
- 9** Reprogram the **OFFSt** function with a negative offset value equal to the value recorded above for the zero position to occur with transducer position set as described in step **8** above.

#### (ii) UniMeasure “V” Series Transducer

- 1** Connect the transducer to the display per the attached diagram for velocity measurement.
- 2** Create the scale factor to display velocity in inches/minute with the following formula:  

$$SF = 1 / (S / 100000)$$
 where S=Average Sensitivity in mV/100 inch/min from the UniMeasure calibration sheet.
- 3** Program the display for a voltage input per the Display manual but program the **SEtuP** function to allow scale factor and offset inputs.
- 4** From the table in section (i) step 5 above, determine the decade multiplier necessary for the desired decimal point location. Multiply the scale factor by the decade multiplier.
- 5** Input the necessary decimal point location and the new scale factor derived in step **5**.

### B “COORDINATES OF 2 POINTS” SCALING METHOD (POSITION)

The “Coordinates of 2 points” method may be used to program the display when two extremes of transducer travel are well defined. The general procedure to implement “Coordinates of 2 points” is to take data at two points with the display set in the “Scale Factor and Offset” mode with scale factor = 1.0000 and offset = 0.0000 (ie. the display is set as a voltmeter). The data taken is used to program the Coordinates of 2 points scaling method. Set up the display as follows:

- 1** Prior to connecting the transducer to the display, program the display with the desired parameters per the Display manual but program the **SEtuP** function to allow scale factor and offset inputs (ie. **00000**)
- 2** Set **SCALE** to **1.0000** and **OFFSt** to **0.0000**. Set **dEc.Pt** to **dd.ddd**
- 3** Connect the UniMeasure transducer to the display per the display connection diagram attached.
- 4** With the transducer mounted and the wire rope extended to the desired zero position, apply power to the display and record the value (Vo) displayed. Extend the wire rope of the transducer to the desired maximum position and record the value (Vmax) displayed.
- 5** Reprogram the display with the following changes:
  - a.) **SEtuP** function—set for “coordinates of 2 points” scaling (ie. **00010**)
  - b.) **dEc.Pt** function—set this to the desired number of decimal points.
  - c.) **Lo in** parameter—input Vo from step **4** above.
  - d.) **Lo rd** parameter—input the reading desired for the wire rope of the transducer extended to the zero position. (This value is typically zero but may be other than zero)
  - e.) **Hi in** parameter—input Vmax from step **4** above.
  - f.) **Hi rd** parameter—input the desired maximum reading. This is typically the known distance that the wire rope of the transducer must extend.

The display is now programmed to read in correct engineering units.

### ZEROING THE DISPLAY AT ANY POINT (TARE)

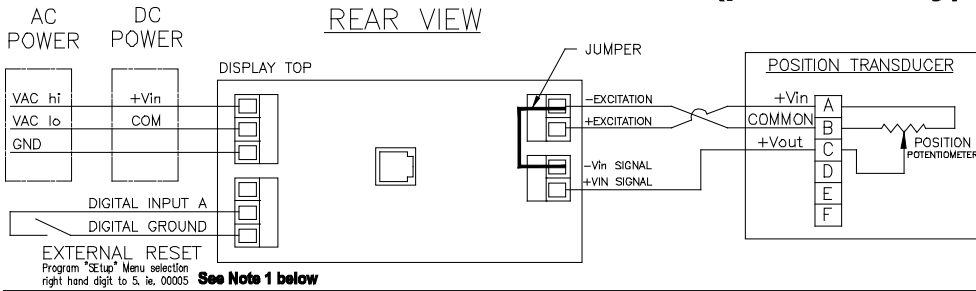
To be able to zero the display at any point using a momentary switch wired to the ‘External Reset’ connections on the back panel of the display, the value of the right most digit in the **SEtuP** function must be 5 (eg. **00005**).

### DISPLAY SETUP PARAMETERS

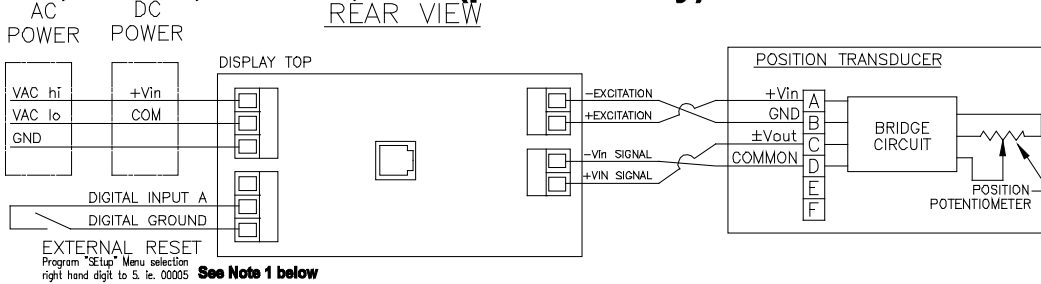
Date:		
Model No:		
Serial No:		
MENU Key	DIGIT SELECT Key	VALUE SELECT Setting
InPut	dcU	2.0U
	dcU	20.0U
	dcA	20.0a
SEtuP	00000	
ConFG	00000	
FILtr	00000	
dEc.Pt	d.dddd	
SCALE	0.0000	
OFFSt	0.0000	
Lo in	0.0000	
Lo rd	0.0000	
Hi In	0.0000	
Hi rd	0.0000	
ALSEt	00000	
dEU1b	00000	
dEU2b	00000	
AnSet	00	
An Lo	0.0000	
An Hi	0.0000	
Ser_1	000	
Ser 2	0000	
Loc 1	00000	
Loc 2	0000	
Loc 3	0000	

## CONNECTION DIAGRAMS — MICRO-P DISPLAY TO UNIMEASURE TRANSDUCER

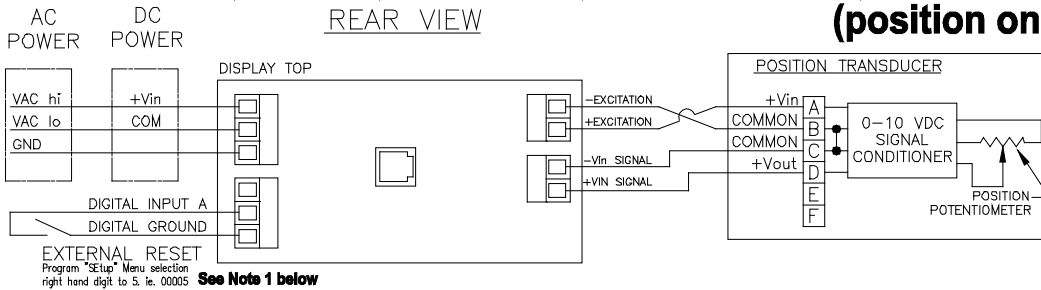
### PA, LX-PA, JX-PA, HX-PA, HX-VPA, VPA (position only)



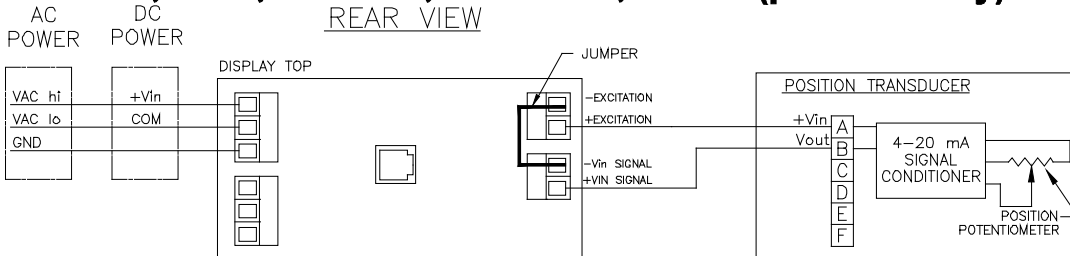
### PB, HX-PB, HX-VPB, VPB (position only)



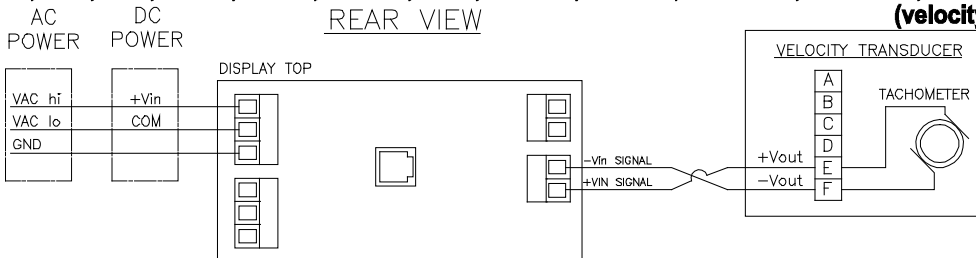
### P510, P1010-SI, HX-P510, HX-P1010-SI, VP510, HX-VP510, HX-VP1010-SI (position only)



### JX-P420, P420, HX-P420, HX-VP420, VP420 (position only)



### V, VPA, VPB, VP420, VP510, VP1010, HX-V, HX-VPA, HX-VPB, HX-VP420, HX-VP510, HX-VP1010 (velocity only)



**Note 1:** The external reset is a "tare" function. The display will default to the original zero position if the meter is reset or if power is interrupted.

**CAUTION:** Before applying electrical power, check the label of the Micro-P display to determine the correct input voltage and type.

# DISPLAY

## DIMENSIONAL INFORMATION

