



Scaling Micro C Display with Quadrature Input for Position Reading in Engineering Units

The Micro-C display allows two methods of programming to obtain correct engineering units:

(a) Scale factor and offset; (b) Coordinates of 2 points.

Use the Coordinates of 2 points method when a known distance is to be traversed.

A) “Scale Factor & Offset” Scaling Method

The following assumes that the display has been connected to the transducer per the attachment diagrams shown on sheet 2 of this document.

- 1) Set the third digit of the SEtuP parameter to zero (ie. XX0XX)
- 2) Obtain the transducer resolution (counts per inch or counts per millimeter) from the UniMeasure calibration sheet. If times 4 counting mode is used, multiply the resolution by a factor of 4. Calculate the Scale Factor with the following formula:

SF = M ÷ Resolution where M is the multiplier from the table below for the desired number of decimal places and resolution is from step 2 above.

<u>Decimal Place</u>	<u>Multiplier for sensitivity (M)</u>
dd.ddd	1000
ddd.dd	100
dddd.d	10
ddddd	1

- 3) Input the result of the above multiplication into the SCALE setting. For best accuracy use as many digits of the scale setting as possible and use the decade multiplier in the scale factor to compensate.
- 4) Input an appropriate offset value into the OFFSt1 parameter. If no offset is required, input zero.

B) “Coordinates of 2 Points” Scaling Method

When the transducer is to be extended a known distance, the “Coordinates of 2 points” method may be used to program the display.

The following assumes that the display has been connected to the transducer per the attachment diagrams shown on sheet 2 of this document and power has been applied to the display.

- 1) Set the third digit of the SEtuP parameter to zero (ie. XX0XX)
- 2) Set the dEc.Pt1 parameter to 111111.
- 3) Set the SCALE parameter to 1.00000. Make sure that the scale factor is set to 1. (When in the SCALE parameter the scale factor may be accessed by pressing the digit select key once more after the digit on the extreme right is blinking.)
- 4) Set the OFFSEt parameter to 0
- 5) With the wire rope of the transducer extended to the initial position, zero the display by simultaneously pressing the **view/reset** and **menu** keys (or use remote recess from terminals on rear of display). Extend the wire rope of the transducer to the desired maximum position and record the maximum value displayed.

Alternatively: Two values for the “Coordinates of 2 Points” scaling method may be obtained from the UniMeasure calibration data supplied with the transducer.

- 6) Reprogram the display with the following changes:
 - a) **SEtuP** function---set for “coordinates of 2 points” scaling (XX1XX)
 - b) Set the **dEc.Pt1** parameter as desired.
 - c) **Lo in** parameter---input the initial count value 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 the maximum count value 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.

Display Setup Parameters

Date _____

Model _____

No.: _____

Serial _____

Number _____

<u>Menu Key</u>	<u>Digit Select Key</u>	<u>Value Select Setting</u>
InPut	quAdr	totAL
SEtuP	00000	_____
ConFIG	0_00	_____
PULSES	00000	_____
GAtEt	000.00	_____
dSPyt	000.00	_____
ti Out	000.00	_____
bAtch	0000	_____
FiLtr	00000	_____
SLOPE	00	_____
dEc.Pt 1	1.1111	_____
SCALE factor	0.00000	_____
SCALE Multiplier	1	_____
OFFSt1	0000.00	_____
Lo in1	0.0000	_____
Lo rd1	0.0000	_____
Hi in1	0.0000	_____
Hi rd1	0.0000	_____
SourcE	00	_____
AL SEt	00000	_____
dEUn 1b	000000	_____
dEUn 2b	000000	_____
An Set	00	_____
An Lo	0.0000	_____
An Hi	0.0000	_____
Ser 1	000	_____
Ser 2	0000	_____
Ser 3	00000	_____
CALib	000000	_____
Loc 1	0000	_____
Loc 2	0000	_____
Loc 3	0000	_____
Loc 4	0000	_____

Programmed output reads in units of:

Scaling Extended Version Micro C (MCRE) Display with Quadrature Input for Velocity (Rate) Reading in Engineering Units

Display Setup Parameters

Model No.: _____

Date: _____

Serial Number _____

<u>Menu Key</u>	<u>Digit Select Key</u>	<u>Value Select Setting</u>
InPut	QuAdr	rAtE
SEtuP	00000	_____
ConFIG	0000	_____
PULSES	00000	_____
GatE t	000.00	_____
dSPyt	000.00	_____
ti Out	000.00	_____
bAtch	0000	_____
FiLteR	00000	_____
SLOPE	00	_____
dEC.Pt 1	1.11111	_____
dEC.Pt 2	2.22222	_____
SCALE 1*	1.00000	_____
Decade Multiplier	1	_____
OFFSt 1	0000.00	_____
Lo in1	0.0000	_____
Lo rd1	0.0000	_____
Hi in1	0.0000	_____
Hi rd1	0.0000	_____
SCALE 2	1.00000	_____
Decade Multiplier	2	_____
OFFSt 2	0000.00	_____
rESoLn	0.00001	_____
Lo in2	0.0000	_____
Lo rd2	0.0000	_____
Hi in2	0.0000	_____
Hi rd2	0.0000	_____
Source	00	_____
AL SEt	00000	_____
dEU n 1b	000000	_____
dEU n 2b	000000	_____
An Set	00	_____
An Lo	0.0000	_____
An Hi	0.0000	_____
Ser 1	000	_____
Ser 2	0000	_____
Ser 3	00000	_____
CALib	000000	_____
Loc 1	0000	_____
Loc 2	0000	_____
Loc 3	0000	_____
Loc 4	0000	_____

Programmed output reads in units of :

Scale Factor

For program items **SCALE 1** and **SCALE 2**, the count increment for a UniMeasure digital transducer may be used as a scale factor to obtain rate. Note that for the display to read in the same units in both the extending and retracting modes of the transducer, SCALE 1 and SCALE 2 must be the same. Specifically, enter one of the following in SCALE1 and SCALE2 to obtain the rate units shown.

For Quadrature Card set in TIMES 1 counting mode:

- inches per second**—enter the “inch/count with times 1 counting mode” from the UniMeasure calibration sheet.
- inches per minute**—multiply 60 times the “inch/count with times 1 counting mode” from the UniMeasure calibration sheet.
- millimeters per second**—enter the “mm/count with times 1 counting mode” from the UniMeasure calibration sheet.
- millimeters per minute**—multiply 60 times the “mm/count with times 1 counting mode” from the UniMeasure calibration sheet.

For Quadrature Card set in TIMES 4 counting mode:

- inches per second**—enter the “inch/count with times 4 counting mode” from the UniMeasure calibration sheet.
- inches per minute**—multiply 60 times the “inch/count with times 4 counting mode” from the UniMeasure calibration sheet.
- millimeters per second**—enter the “mm/count with times 4 counting mode” from the UniMeasure calibration sheet.
- millimeters per minute**—multiply 60 times the “mm/count with times 4 counting mode” from the UniMeasure calibration sheet.

Resolution Parameter (rESoLn)
The rESoLn parameter corrects the output for the number of decimal places selected with the dEC.Pt 1 & 2 parameter. For the output to read with the correct decade, the rESoLn parameter should be as follows:

DEC.Pt	rESoLn
xxxxxxx	1
xxxxx.x10	
xxxx.xx100	
xxx.xxx1000	

Display Electrical Connections

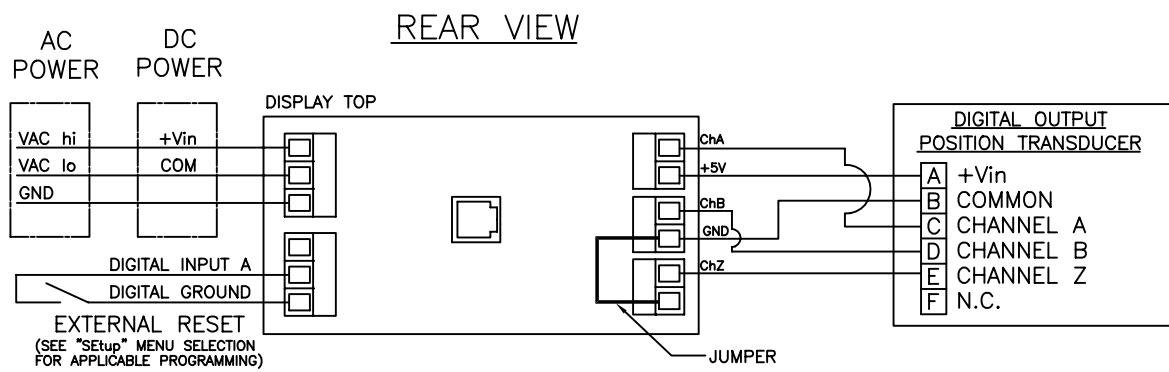
CAUTION

Before applying electrical power, check the top of the Micro-C display to determine the correct input voltage and type.

Standard TTL Connection

MCR or MCG Display—Position Measurement

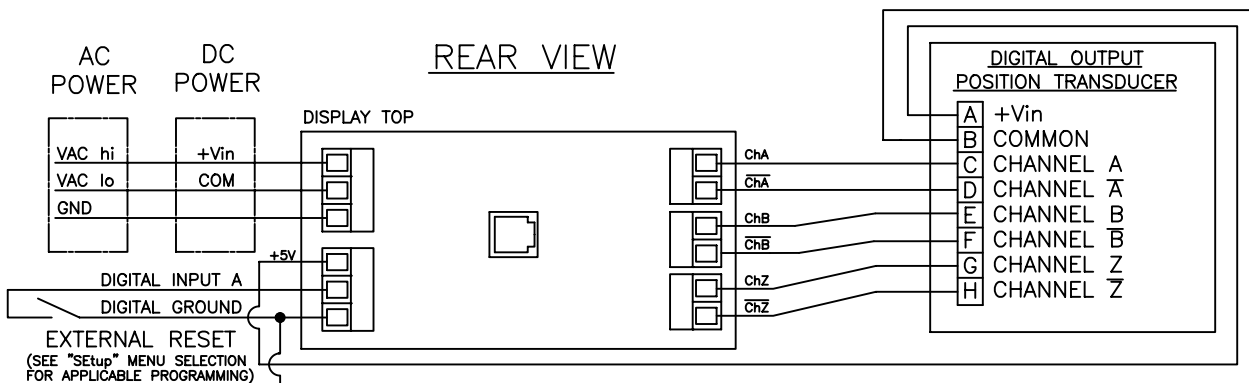
MCRE Display—Position or Velocity Measurement



5 VDC Differential Connection

MCR or MCG Display—Position Measurement

MCRE Display—Position or Velocity Measurement



Jumper Settings

Quadrature Signal Conditioner

(Refer to page 30 in the Micro C manual for jumper locations and meaning)

Jumper configuration as indicated in circled areas.

<u>Jumper</u>	<u>Jumper Setting</u>		
E2	a c b	(Input type: Single Ended a,c	Differential b)
E4	a c b	(Input type: Single Ended a,c	Differential b)
E6	a c b	(Input type: Single Ended a,c	Differential b)
E1	jumper	none	(Long cable runs—jumper short cable runs—none)
E3	jumper	none	(Long cable runs—jumper short cable runs—none)
E5	jumper	none	(Long cable runs—jumper short cable runs—none)
E7	jumper	none	(Phasing: B leads A—jumper A leads B—none)
E9	a b	none	(Counting mode: X1—none X2—a X4—b)

Power Supply PCA

Refer to page 44 in the Micro C manual.

Jumper configuration as indicated in circled areas.

<u>Jumper</u>	<u>Jumper Setting</u>					
E3	b d e	5 VDC Output	b d f	10 VDC Output	c	24 VDC Output
E1		none	(Front panel programming enabled)		a	(Front panel programming disabled)
E4		h	(Input B connected to J1-4)		g	(+5 VDC connected to J1-4)
		none				

DISPLAY

DIMENSIONAL INFORMATION

