



Optidrive Applications Support Library

Application Note	AN-ODE-3-011
Title	Using the Display Scaling Function
Related Products	Optidrive E3
Level 1	1 – Fundamental - No previous experience necessary 2 – Basic – Some Basic drives knowledge recommended 3 – Advanced – Some Basic drives knowledge required 4 – Expert – Good experience in topic of subject matter recommended

Overview

In some applications, it can be desirable to scale the output display of the Optidrive E3 to show different units that are more useful or applicable to the application being performed. E.g. where the motor drives a load via a gearbox, the user may wish to display the output speed of the gearbox rather than that of the motor shaft. This can be done by using the display scaling function.

Parameters

P-40 Display Scaling

Index 1 : Display Scaling Factor

If this parameter is zero (0.000), the display-scaling function is disabled.

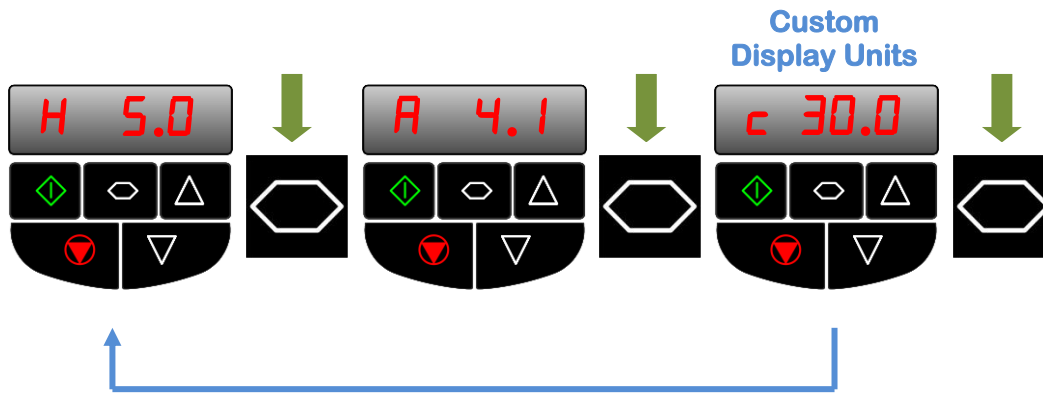
If this parameter is > 0 , the custom display scaling function is enabled, with the source selected as shown in the table below by Index 2.

Index 2 : Display Scaling Source

P-40 Index 2 Setting	P-10 Motor Rated Speed Setting	Display Scaling Source	Displayed Value
0	= 0	Output Frequency (Hz)	Output Frequency (Hz) x P-40 Index 1
0	> 0	Motor Speed (RPM)	Motor Rpm x P-40 Index 1
1	Any Value	Motor Current (A)	Motor A x P-40 Index 1
2	Any Value	Analog Input 2 (%)	Analog Input 2 % x P-40 Index 1
3	Any Value	PI Feedback (%)	PI Feedback % x P-40 Index 1

Reading the Display

The scaled display value can be viewed as one of the main real-time values on the drive display whenever the drive is running. The <navigate> key is used to scroll through the available display values. Provided a value has been entered in P-40 Index 1, the custom units display will be visible in the available display options, and are denoted by a 'c' on the left side of the display.



Examples

Displaying Gearbox Output Rpm

If the controlled motor is connected to a gearbox and it is desired to display the gearbox output shaft speed rather than the motor shaft speed, this can be achieved in the following way :-

- Enter the **Motor** nameplate speed into P-10
- Enter the scaling factor in P-40 Index 1= 1 / Gearbox Ratio
- E.g. Gearbox ratio = 10:1, P-40 = 1/10 = 0.1
- Select the display scaling source in P-40 Index 2 as Motor Speed (P-40 Index 2 = 0)

The scaled display will now show the gearbox output Rpm.

Displaying Feedback Pressure in a PI Controlled Pumping Application

When Optidrive E3 is used to control a pump, with a feedback pressure transducer connected to analog input 2, the display can show the actual pressure in the system as follows :-

- Calculate the display scaling factor as follows
- P-40 Index 1 = Transducer Full Scale Output / 100
- E.g. for a 0 – 5 Bar Pressure transducer, P-40 Index 1 = 5 / 100 = 0.05
- Set P-40 Index 2 = 2, 2nd Analog Input Level

Appendix

Revision History			
Issue	Comments	Author	Date
01	Document Creation	KB	30/10/15
02	Corrected type in parameter reference	KB	04/05/16