



# TECHNICAL NOTE    TNDA16

## **Title: Determining the Scale Factor of a Red Lion Counter**

### **Product(s): Red Lion Counters**

Many Red Lion Controls counters has the ability to scale input signals in order to obtain the desired displayed value. This is accomplished by using the counter's scale factor. It could be used, for example, to scale a number of counts from a length sensor to display a length such as feet or meters. A scale factor of 1.00000 will result in the display of the actual number of input counts. A scale factor of 0.50000 will result in the display of half the actual number of inputs. The methods for determining the required scale factor for your application is as follows:

#### **Method 1:** If you know pulses per unit

First determine where you want the decimal point to be located.

0=1

0.0=10

0.00=100

0.000=1000

0.0000=10000

Now determine the number pulses the counter will receive per engineering unit.

Engineering Unit – The units being represented on the display. For example, for a distance measurement application, the displayed engineering units may be in feet, inches, miles, etc.

To determine the scale factor, divide the desired decimal point location number by the number of pulses per engineering unit.

Example: If you want to display 2 decimal positions (0.00) and you have 200 pulses per unit. Your scale factor would be:  $100/200=0.5$

#### **Method 2:** If you don't know pulses per unit

Program the decimal place where you would like it and set the scale factor to 1.

Reset the counter to 0 and run the input pulses until the desired unit has been achieved. For example, if you have an application measuring feet, run the application until 1 foot has been measured.

The number being displayed on the counter will be your pulses per unit because the scale factor has been set to 1.

Now calculate the scale factor using the formula described in method 2.

Example: The meter is to display a 1 after a distance of 15 feet has been traveled. The display is to read in 1/10ths of a unit. Program the decimal location for 0.0. Reset the counter and run 15 feet. The counter reads 75.6. So your scale factor is  $10/75.6 = 0.13227$ .

#### **Links to other related topics:**

Visit the Red Lion Controls Virtual Help Desk to watch tutorials on this subject and others at:  
<http://www.redlion.net/Support/VirtualHelpDesk.html>