

# Flow Proportional Sampling

Using the 4-20mA Feature on the SIRCO Controller

In order to use the 4-20mA interface with a SIRCO Sampler, calculations must be made based on flow. The 4-20mA input is a signal that corresponds to the flow meter's output. 20mA is equal to the maximum flow, and 4mA is equal to the minimum flow. The controller requires a number which reflects the maximum flow going through the sampler.

The SIRCO Controller generates 100 pulses per minute internally at the maximum flow. This number decreases with the amount of flow proportional to the 4-20mA scale. The Controller requires the number of pulses at maximum flow. In order to calculate this, use the following formula:

1. Calculate Q. Q = Average flow rate divided by the maximum flow rate.

$$Q = \frac{\text{Average Flow Rate}}{\text{Maximum Flow Rate}}$$

2. Calculate t.  $t = \frac{\text{Volume between samples}}{\text{Average volume per minute}}$

t is the number of minutes per sample you would like for an average flow rate. Either choose how long between samples you'd like for average flow, or calculate based on volume above.

3. Multiply Q x t x 100 (100 pulses at max flow)

This is the number you will input into the Controller at the 4-20mA dialogue.

## Example

You want to collect samples every 30 minutes. On average 175gal/min flows by. Maximum is 300gal/min.

1. Calculate Q.

$$Q = \frac{\text{Average Flow Rate}}{\text{Maximum Flow Rate}} = \frac{175\text{gal/min}}{300\text{gal/min}} = .58333$$

2. Calculate t.

$$t = 30 \text{ min/sample} \quad \text{or} \quad \frac{5250 \text{ Gallons btwn samples}}{\text{Average 175 Gal/min}}$$

3. Multiply Q x t x 100pulses = 1750 pulses/sample

Enter 1750 into the Controller at the 4-20mA dialogue.