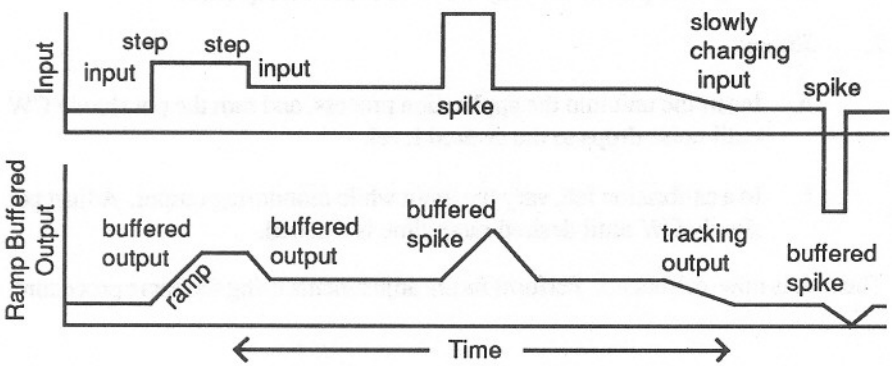
Purpose

A ramp buffer takes an input containing unwanted variations and flattens out the signal so that the equipment receiving the output does not react to extreme fluctuations in the original input data.

The ramp buffer receives input from the Series 8000 input board. This input may have large changes over short periods of time (spikes). "Ramp" refers to the rate of change over time; increases in the measured data are upward slopes, decreases are downward slopes as shown in the diagram below.

Adjusting the ramp time potentiometer sets the rate of change at a constant, user-specified level. The amount of change passed on by the ramp buffer is a function of how long the change in input lasts, not how much change has occurred. The ramp buffer tracks the input signal until the rate of change exceeds the specified rate. It registers changes at the set rate until the change rate drops below that level. Changes that occur below the specified rate are passed unmodified. As a result, the equipment receiving the Series 8000 output receives a "buffered" signal with a uniform rate of change.



Specifications

Output Rate:	Adjustable linearly from 1 second to 20 minutes (20-turn pot, approximately 60 seconds per turn).
Repeatability:	± 0.1%
Linearity:	1% up-to-down ramp
Stability:	0.02% of span per °C.

For Series 8000 unit specifications, see the Series 8000 manual, which provides general information for the entire series.

Setup Procedure

The Series 8000 with ramp buffer, as shipped to the customer, does not require disassembly or special set-up before calibration. The input/output boards are already configured by the distributor to the specifications requested by the customer.

Calibration

Calibration of the ramp buffer is done from the outside of the unit, with the case on and power on. Calibration adjusts the ramp time, using the ramp time potentiometer (pot), which is accessed through the top of the case. Use a small screwdriver or other adjustment tool to perform the calibration. Turning the pot all the way counter-clockwise (CCW) gives the one-second setting; all the way clockwise (CW) is the 20-minute setting.

Adjusting the pot one full turn is approximately 80 seconds of ramp time. Note that there are one to two turns of non-reaction at each end of the pot, so adjust slowly until output begins to react. After this point, count turns for rough calibration.

Calibration Procedure

1. Set ramp time pot all the way CCW (1 second ramp time).

2. Either:

    a. Insert the unit into the application process, and turn the pot slowly CW until noise drops to the desired level.

    b. In a calibration lab, vary the input while monitoring output. Adjust pot slowly CW until desired ramp time is reached.

The unit is now calibrated. Perform future adjustments using the same procedure.