Series 9000
Flow Totalization

Application Note

Introduction

This note describes two methods of totalization. One uses pulse inputs, the other uses flow rate inputs. Selecting the correct method requires knowledge of the process requirements.

The most accurate way of metering total volumetric flow is with a pulse input from a positive displacement flow meter. This provides precise volume measurement but may not provide a good indication of the instantaneous flow rate. If flow rate is controlled by a PID block, the flow transmitter signal must be flow rate.

Totalizer

A totalizer block has been added to the Series 9000 Continuous Control Chart. This block is interfaced to the Pulse Input Module (model selection guide option "D"). The totalizer block handles the roll-over, reset and enables interface to the pulse input module. It also provides digital outputs that indicate "approach" to target and "at" target total. This simplifies the integration of dribble control which enables precise filling operations.

The totalizer block also provides a flow rate output. This rate signal is not intended for use as a controlled variable. It is too slow responding for practical use in a PID loop. It is, however, useful for indication and alarm.

Totalizing a Rate of Flow Input

For applications that don't require as accurate a totalized flow, but do need an instantaneous flow input, the total flow can be integrated on the control chart. Figure 1 is a control chart that will perform the totalization. Since the minimum resolution of the integration is the cycle time of the Loop processor, the dynamics of the process can effect the accuracy of the integration.

When You Must Control Both Flow and Volume

Sometimes it may be desirable for the flow transmitter to have two types of output forms. This is the case if the total volume must be accurate, and the flow rate must be responsive. To provide this, a positive displacement flow meter is fitted with a converter that outputs a 4-20 mA flow rate signal.

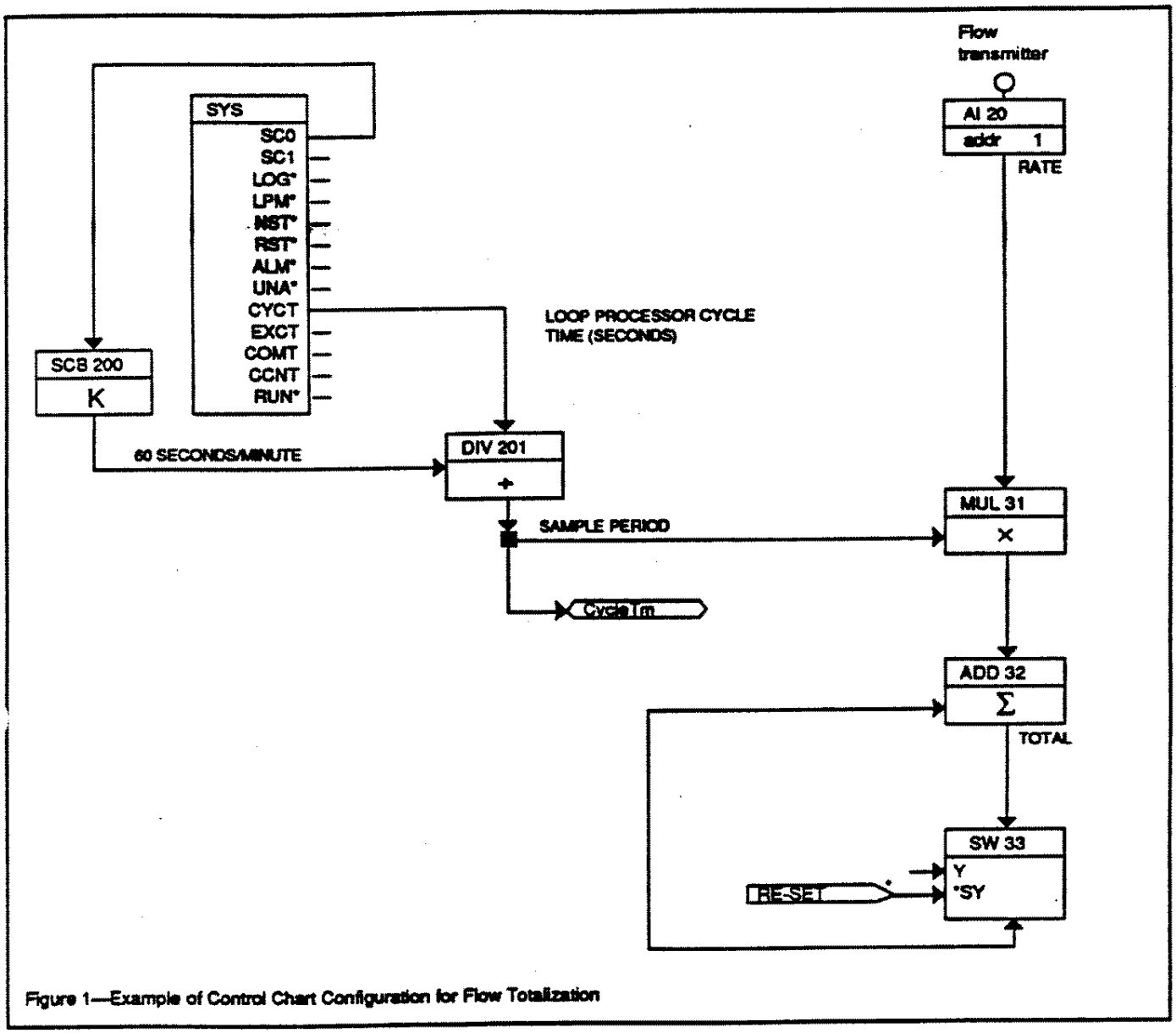

Figure 1—Example of Control Chart Configuration for Flow Totalization