

Status Bit Counting

Local application

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An application for counting status bit occurrences over a period of time is called SCTR. It delivers the resulting count at the end of the time interval and also the ratio of the occurrences over the number of cycles that elapse during the period. It can also use a Supercycle as the period. The initial purpose for writing this LA was to measure the average beam pulse rate in the Linac.

The parameter layout is as follows:

<i>Param</i>		<i>Size</i>	<i>Meaning</i>
ENABLE	B	2	Usual LA enable Bit#
PERIOD		2	Period in cycles, or Supercycle, if zero
STATUS	B	2	Status Bit# to count, with sign bit set to the active state
COUNT	C	2	Result count updated at end of period, Chan#
RATIO	C	2	Ratio of count to cycle length of period, Chan#

If PERIOD is zero, the interpretation is that one Supercycle is to be the period over which the counts are made. A Supercycle is defined by the occurrences of clock event 0x00.

The STATUS Bit is monitored. Its active state is in the sign bit. (If the status bit is active when a "1", the sign bit should be set.)

The COUNT channel is updated at the end of the counting period, whether it be the constant period specified by CYCLES or the length of the Supercycle. The RATIO channel is updated at the same time, and its scaling matches that of volts; *i.e.*, if the ratio were 1.0, the hex value would be 0x0CCC, which is what one volt looks like in a ± 10 volt full scale system. (For this application, the rate cannot exceed 1.0, by definition.) If the cycle rate is 15 Hz, and it is desired to have a rate displayed in Hz, then the full scale value should be 150.