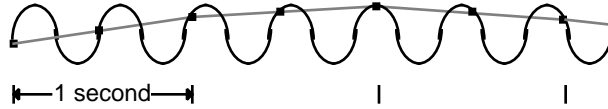


Aliasing Effects

In any sampled data stream, it is possible to sample a high frequency signal such that it will appear to be a much lower frequency. This is called aliasing.

For example, suppose the lock-in is detecting a signal near 1 Hz with a relatively short time constant. The X output will have a DC component and a 2 Hz component (2xf). If the sample rate is 2 Hz, then the samples may be taken as illustrated below.



The samples represent a sine wave much slower than 2 Hz that isn't actually present in the output! In this case, a much higher sampling rate will solve the problem.

Aliasing occurs whenever the output signal being sampled contains signals at frequencies greater than 1/2 the sample rate. The effect is most noticeable when trying to sample an output frequency at an integer multiple of the sample rate (as above). The above aliasing problem will be the same for a 1 kHz output (500 times the sample rate) as for the 2 Hz output.

Generally, the highest possible sample rate should be used given the desired storage time. The lock-in time constant and filter slope should be chosen to attenuate signals at frequencies higher than 1/2 the sample rate as much as possible.

SRAT (?) {i}

The SRAT command sets or queries the data sample rate. The parameter i selects the sample rate listed below.

i	quantity	i	quantity
0	62.5 mHz	7	8 Hz
1	125 mHz	8	16 Hz
2	250 mHz	9	32 Hz
3	500 mHz	10	64 Hz
4	1 Hz	11	128 Hz
5	2 Hz	12	256 Hz
6	4 Hz	13	512 Hz
		14	Trigger

SEND (?) {i}

The SEND command sets or queries the end of buffer mode. The parameter i selects 1 Shot (i=0) or Loop (i=1). If Loop mode is used, make sure to pause data storage before reading the data to avoid confusion about which point is the most recent.

TRIG

The TRIG command is the software trigger command. This command has the same effect as a trigger at the rear panel trigger input.

TSTR (?) {i}

The TSTR command sets or queries the trigger start mode. The parameter i=1 selects trigger starts the scan and i=0 turns the trigger start feature off.

STRT

The STRT command starts or resumes data storage. STRT is ignored if storage is already in progress.