Data Transfer — SR800 Series

Application Note #13

Continuous Data Transfer Using the SR810, SR830 and SR850

FAST command

Problem:

Some users have needed a way to continuously transfer data from SRS DSP lock-in amplifiers to a host computer using the GPIB interface. The FAST command was developed to send the X and Y data over GPIB synchronously with the lock-in's internal data storage buffer. The original version of the FAST command was only suitable for DOS host programs or other dedicated data collection computers. Specifically, FAST would not work if the host computer was running a multi-tasking OS, such as Windows. This is because the host computer was required to accept data bytes from the lock-in with no more than a 50 µs delay or the lock-in would "time out" and abort the FAST transfer mode.

Solution:

A new version of the FAST command is available in the current shipping firmware of the SR810, SR830, and SR850 DSP Lock-In amplifers. To use the new version of FAST, the syntax is FAST2 instead of FAST1. The same sequence of commands (using STRD to execute a "delayed" start) is required. The FAST2 version uses the lock-in transmit queue to buffer the GPIB data being sent to the host. Since the transmit queue can buffer a maximum of 63 X and Y data pairs, the host can only be diverted for short periods of time (120 ms at the 512 Hz sample rate) without causing the lock-in to "time out" and abort the FAST mode data transfer.

In most cases, firmware upgrade ROM are available free of charge. We will need the serial number of the lockin in order to maintain calibration. Alternatively, you can send the unit back to SRS for calibration (standard calibration charges will apply) and the latest version of the firmware will be included automatically. The minimum firmware versions that support the new FAST2 command are:

SR850 version 1.08
SR810 and SR830 version 1.06