

INTRODUCTION

The SR830 DSP Lock-in Amplifier may be remotely programmed via either the RS232 or GPIB (IEEE-488) interfaces. Any computer supporting one of these interfaces may be used to program the SR830. Both interfaces are receiving at all times, however, **the SR830 will send responses to only one interface. Specify the output interface with the [Setup] key or use the OUTX command at the beginning of every program to direct the responses to the correct interface.**

COMMUNICATING WITH GPIB

The SR830 supports the IEEE-488.1 (1978) interface standard. It also supports the required common commands of the IEEE-488.2 (1987) standard. Before attempting to communicate with the SR830 over the GPIB interface, the SR830's device address must be set. The address is set with the [Setup] key and may be set between 1 and 30.

COMMUNICATING WITH RS232

The SR830 is configured as a DCE (transmit on pin 3, receive on pin 2) device and supports CTS/DTR hardware handshaking. The CTS signal (pin 5) is an output indicating that the SR830 is ready, while the DTR signal (pin 20) is an input that is used to control the SR830's data transmission. If desired, the handshake pins may be ignored and a simple 3 wire interface (pins 2,3 and 7) may be used. The RS232 interface baud rate and parity must be set. These are set with the [Setup] key. The RS232 word length is always 8 bits.

STATUS INDICATORS AND QUEUES

To assist in programming, the SR830 has 4 interface status indicators. The ACTIVE indicator flashes whenever a character is received or transmitted over either interface. The ERROR indicator flashes when an error, such as an illegal command, or parameter out of range, has been detected. The REMOTE indicator is on whenever the SR830 is in a remote state (front panel locked out). The SRQ indicator is on when the SR830 generates a service request. SRQ stays on until a serial poll is

completed.

To help find program errors, the SR830 can display its receive buffer on the displays. Use the [Setup] key to access the QUEUE display. The last 256 characters received by the SR830 may be displayed in hexadecimal ASCII. See the OPERATION section for a complete description.

COMMAND SYNTAX

Communications with the SR830 uses ASCII characters. Commands may be in either UPPER or lower case and may contain any number of embedded space characters. A command to the SR830 consists of a four character command mnemonic, arguments if necessary, and a command terminator. The terminator must be a linefeed <lf> or carriage return <cr> on RS232, or a linefeed <lf> or EOI on GPIB. No command processing occurs until a command terminator is received. Commands function identically on GPIB and RS232 whenever possible. Command mnemonics beginning with an asterisk "*" are IEEE-488.2 (1987) defined common commands. These commands also function identically on RS232. Commands may require one or more parameters. Multiple parameters are separated by commas (,).

Multiple commands may be sent on one command line by separating them with semicolons (;). The difference between sending several commands on the same line and sending several independent commands is that when a command line is parsed and executed, the entire line is executed before any other device action proceeds.

There is no need to wait between commands. The SR830 has a 256 character input buffer and processes commands in the order received. If the buffer fills up, the SR830 will hold off handshaking on the GPIB and attempt to hold off handshaking on RS232. Similarly, the SR830 has a 256 character output buffer to store outputs until the host computer is ready to receive. If either buffer overflows, both buffers are cleared and an error reported.

The present value of a particular parameter may