

JFW Industries, Inc.



50SA-251 MANUAL

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Additional Documents Provided on CD:

1. Specification Sheet
2. Outline Drawing
3. Manual for ICS #4803 GPIB interface board

1. Unit Description

Introduction

The JFW model 50SA-251 is a RF switch assembly that consists of one Normally Open 1P6T Electro-mechanical RF switch. The 50SA-251 is controlled via a SCPI compatible GPIB interface located on the back panel. The GPIB address of the unit is factory defaulted to “4”, but can be changed to any value from 0 to 30. When the unit is turned on, the switch is set to port 1.

The CD that comes with this manual contains the following documentation:

- 1) Specification Sheet
- 2) Outline Drawing
- 3) Manual for 50SA-251
- 4) Manual for ICS #4803 GPIB interface board

Mechanical Specifications

The 50SA-251 is designed in a benchtop style enclosure. The outline drawing details all necessary package dimensions and connector layouts. The front panel has five LEDs labeled Ready, Talk, Listen, SRQ, and Error that display the operations of the GPIB card.

The 50SA-251 is AC current protected by a 2 Amp “Slo-Blo” AC fuse. The fuse is field replaceable in the event of any failure to the fuse. The fuse itself is a 5x20 mm “Slo-Blo” type fuse and can be ordered through JFW (#25-021) or directly from Littelfuse (#215-002).

2. GPIB Card Information

Introduction

The GPIB card used inside the 50SA-251 is made by ICS Electronics and is model #4803. The GPIB bus interface meets the IEEE STD 488.1-1987 standard and has the following capabilities: SH1, AH1, T6, L4, SR1, PP0, DC1, RL0, DT1, C0, and E2 drivers. A printed ICS manual is provided with test system. A copy of this manual is also provided in PDF format on the test system CD.

The 50SA-251 is factory defaulted to SINGLE mode GPIB addressing with a bus address of 4. In SINGLE mode addressing, the unit can be changed to any bus address between 0 and 30. The 50SA-251 setup configuration parameters are saved in nonvolatile Flash memory on the unit. These parameters are defaulted to the values listed in TABLE 1-2 of the ICS manual (page 1-12) but are modified by JFW before installation into the 50SA-251. The modified settings are shown below.

<u>Command</u>	<u>Function</u>	<u>Setting</u>
:ADDRESS	sets 50SA-251's GPIB bus address	4
:EXTernal	enables external address switch	OFF
:MODE	sets GPIB address mode	SINGLE
:INPut	sets number of Talk bytes	1
:POLarity	sets input polarity	1
:HANDshake	enables input handshaking	OFF
:TALK	selects input format	ASCii
:TRANslation	sets input conversion table	use standard table
:OUTput	sets number of Listen bytes	4
:POLarity	sets output polarity	1
:LISTen	sets output format	ASCii
:HANDshake	enables output handshaking	OFF
:EDR	sets EDR input active level	1
:INHibit	sets Inhibit output active level	1
:REMote	sets Remote output active level	1
:RESet	sets Reset pulse output active level	1
:STRobe	sets Data Strobe pulse active level	1
:TRIGger	sets Trigger Pulse active level	1
:ASTATus	sets Status A input active level	1
:BSTATus	sets Status B input active level	1
:LOCK	blocks items from changes	ON

SCPI Command Compatibility

There is a full list of SCPI Commands in Tables 3-2 and 3-3 in the ICS manual. The 50SA-251 conforms to IEEE STD 488.2-1987 standard and responds to the following required 488.2 commands:

***CLS, *ESE, *ESE?, *ESR?, *IDN?, *OPC, *OPC?, *PSC, *PSC?, *RCL, *RST, *SAV, *SRE, *SRE?, *STB, *TRG, *TST?, and *WAI**

3. Commonly Used SCPI Commands

Reset Command

Syntax: *RST

This command resets the unit to its default start-up configuration without modifying the GPIB address or ESR register. You can use this command to return to this state without cycling the power.

Identification Query Command

Syntax: *IDN?

This command returns the model number and firmware revision level.

Example: *IDN? Returns "JFW Industries Inc., Model 50SA-251, Firmware Rev A"
 *idn? Returns "JFW Industries Inc., Model 50SA-251, Firmware Rev A"

Notes: There must NOT be a space between the "*", "I", "D", "N", or "?".
 Command is not case sensitive.

Event Status Register Query

Syntax: *ESR?

This command will return the contents of the Event Status Register. When this command is sent, it clears the contents of the ESR. When the ESR is cleared, the "Error" LED on the front panel will turn off. The Event Status Register is an eight-bit register, where each bit represents a condition that can be checked. Here is a chart of the representation of each bit in the ESR.

Bit 0 – Operation Complete	(1) LSB
Bit 1 – 4803 EDR #2	(2)
Bit 2 – Query Error	(4)
Bit 3 – Flash Data Corrupted	(8)
Bit 4 – Execution Error	(16)
Bit 5 – Command Error	(32)
Bit 6 – External Data Ready	(64)
Bit 7 – Power On	(128) MSB

These bits are combined together and sent to you as a single number. For example, if you are trying to set the switch in the 50SA-251 and you type "SD1 2" instead of "SS1 2", the "Error" LED on the front panel of the unit will turn on. Typing the *ESR? command will return a (32) to you and turn off the "Error" LED. A (32) is bit five from the chart above and thus a "Command Error".

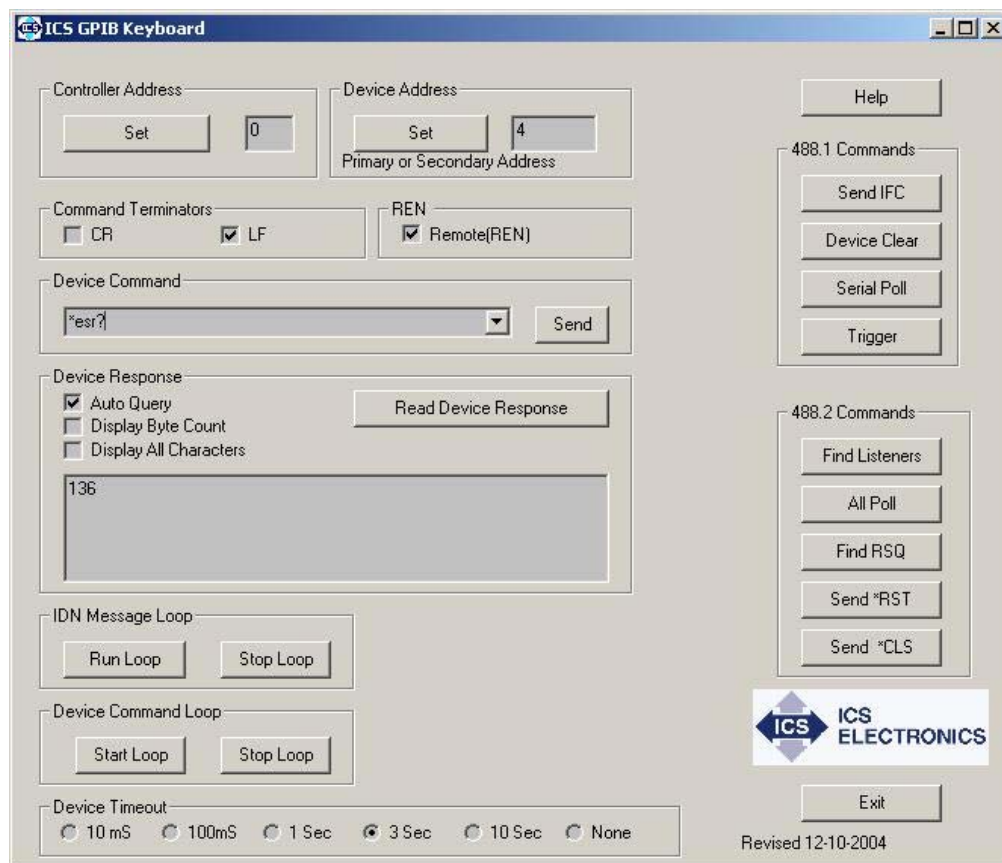
The *ESR? command is also useful to tell if the unit is powered up. If you send a *ESR? just after you have turned on the power switch on the 50SA-251, the unit will return a (128), telling you that the unit has power and is functioning.

4. ICS's GPIB Keyboard Program

The ICS manual comes with a CD. This ICS CD includes ICS's Windows software called *GPIB Keyboard*. The *GPIB Keyboard* program can be used to send remote commands to the test system to verify its functionality.

To install the program go to the folder called “GPIBkybd” on the ICS CD. In this folder is a file called “ICS_GPIBkybd_Install.exe”. The executable will install the GPIB Keyboard program onto any WIN32 based PC. This software can be used with ICS, Measurement Computing, National Instruments and any other GPIB Controller card that has an industry compatible GPIB-32.DLL.

The remote commands are typed and sent in the “Device Command” text box. The test system response from queries are displayed in the “Device Response” window. The “Device Address” text box can be used to change the address of the test system. JFW test systems are set to address 4 at the factory. The “Help” button will pop up a help window that gives a quick explanation of all buttons on the GPIB Keyboard program.



5. JFW Command Set

The following remote commands are used to control the 1P6T RF switch. The GPIB card does not require the commands to be terminated by a carriage return. However, the GPIB card will accept remote commands that are terminated with carriage returns.

Set Switch Command

Syntax: SSx y
 x = switch number
 y = port number

Description: This command sets switch “x” to port “y”.

Examples: SS1 0 Sets switch #1 to it's normally open position.
 SS1 1 Sets switch #1 to Port 1. Switch #1 is a 1P6T switch.
 SS1 6 Sets switch #1 to Port 6. Switch #1 is a 1P6T switch.

Notes: There must be a space between the “x” and “y”.
 There must NOT be a space between the “SS” and the “x”.
 “x” must be 1 (Total of one switch in this test system).
 “y” must be 0-6 for the normally open 1P6T switch.
 Command is not case sensitive.

Read Switch Command

Syntax: RSx?
 x = switch number to query

Description: This command returns the current port setting for switch “x”.

Examples: SS1 2 Sets switch #1 to port 2. Switch #1 is a 1P6T switch.
 RS1? Reads port setting of switch #1. Sends back “2”.

 SS1 0 Sets switch #1 to normally open position. Switch #1 is a 1P6T switch.
 RS1? Reads port setting of switch #1. Sends back “0”.

Notes: There must NOT be any spaces between the “RS”, “x”, and “?”.
 “x” must be 1 (Total of one switch in this test system).
 Command is not case sensitive.

6. Changing the GPIB Address

The unit is factory defaulted to SINGLE mode GPIB addressing with a bus address of 04. In SINGLE mode addressing, the unit can be changed to any bus address between 0 and 30. The following example shows how to change the GPIB address using any software. The GPIB address can also be changed using the ICS program *GPIB Keyboard* that is described earlier in this manual.

The following example shows how to change the GPIB address:

SYST:COMM:GPIB:ADDR? (returns the current address of the GPIB card)
SYST:COMM:GPIB:ADDR 12 (sets GPIB board to new address of 12)

Note: Change the address of your test software to 12.

SYST:COMM:GPIB:ADDR? (returns a "12")
***SAV 0** (to save the address change)

Note: If you don't send the "*sav 0" command, then the address change will be lost after you turn the test system off.

If the current GPIB address is not known, you can query the unit as shown above or you can power the unit off and then back on. At power up, the LEDs on the front panel of the test system will blink the current GPIB address in a binary pattern. After the address is displayed by the LED's, the "Power" and "Ready" LED's will turn on. The binary pattern is:

READY	16
TALK	8
LISTEN	4
SRQ	2
ERROR	1