Service Guide

Model SR780
Network Signal Analyzer

Stanford Research Systems

1290-D Reamwood Avenue
Sunnyvale, CA 94089 U.S.A.
Phone: (408) 744-9040 • Fax: (408) 744-9049
Email: info@thinkSRS.com • www.thinkSRS.com

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Certification

Stanford Research Systems certifies that this product met its published specifications at the time of shipment. Stanford Research Systems further certifies that its calibration measurements are traceable to the United States National Institute of Standards and Technology (NIST).

Warranty

This Stanford Research Systems product is warranted against defects in materials and workmanship for a period of one (1) year from the date of shipment.

Service

For warranty service or repair, this product must be returned to a Stanford Research Systems authorized service facility. Contact Stanford Research Systems or an authorized representative before returning this product for repair.

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Stanford Research Systems, Inc.
1290-D Reamwood Avenue
Sunnyvale, California 94089

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Safety and Preparation For Use

WARNING!

Dangerous voltages, capable of causing injury or death, are present in this instrument. Use extreme caution whenever the instrument cover is removed. Do not remove the cover while the unit is plugged into a live outlet.

Caution

This instrument may be damaged if operated with the LINE VOLTAGE SELECTOR set for the wrong AC line voltage or if the wrong fuse is installed.

Line Voltage Selection

The SR780 operates from a 100V, 120V, 220V, or 240V nominal AC power source having a line frequency of 50 or 60 Hz. Before connecting the power cord to a power source, verify that the LINE VOLTAGE SELECTOR card, located in the rear panel fuse holder, is set so that the correct AC input voltage value is visible.

Conversion to other AC input voltages requires a change in the fuse holder voltage card position and fuse value. Disconnect the power cord, open the fuse holder cover door and rotate the fuse-pull lever to remove the fuse. Remove the small printed circuit board and select the operating voltage by orienting the printed circuit board so that the desired voltage is visible when pushed firmly into its slot. Rotate the fuse-pull lever back into its normal position and insert the correct fuse into the fuse holder.

Line Fuse

Verify that the correct line fuse is installed before connecting the line cord. For 100V/120V, use a 1.5 Amp fuse. For 220V/240V, use a 3/4 Amp fuse.

Line Cord

The SR780 has a detachable, three-wire power cord for connection to the power source and to a protective ground. The exposed metal parts of the instrument are connected to the outlet ground to protect against electrical shock. Always use an outlet which has a properly connected protective ground.

Service

Do not attempt to service or adjust this instrument unless another person, capable of providing first aid or resuscitation, is present.

Do not install substitute parts or perform any unauthorized modifications to this instrument. Contact the factory for instructions on how to return the instrument for authorized service and adjustment.

Fan

The fans in the SR780 are required to maintain proper operation. Do not block the vents in the chassis or the unit may not operate properly.

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Chapter 1

Performance Tests

The performance tests described in this section are designed to verify with a high degree of confidence that the unit is performing within the specifications.

The results of each test should be recorded on the test sheet at the end of this section.

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Getting Ready

[Hardkeys]

The keypad consists of four groups of hardkeys (keys with printed labels).

Hardkeys are referenced in braces like [Active Display] or [Input].

The ENTRY keys are used to enter numeric parameters which have been highlighted by a soft key. The MENU keys select a menu of soft keys. Pressing a menu key will change the menu boxes which are displayed next to the soft keys. Each menu presents a group of similar or related parameters and functions. The CONTROL keys start and stop data acquisition, toggle the active display and link parameters and functions. These keys are not in a menu since they are used frequently and within any menu. The FUNCTION keys perform common functions such as Auto Scale and Auto Range. These keys can be accessed at any time.

<Softkeys>

The SR780 has a menu driven user interface. The Menu keys each display a menu of softkeys. The softkeys are at the right of the video display and have different functions depending upon the displayed menu.

Softkeys are referenced in brackets like <Span> or <Units>.

There are three types of softkeys - buttons, lists and numeric values. A button performs a function, such as <Full Span>. A list presents a list of choices or options in the entry field (at the top of the screen). Use the knob to make a selection and press [Enter]. <Measurement> is an example of a list. A numeric value presents the current value in the entry field and awaits numeric entry. Enter a new value with the entry keys and press [Enter]. <Start Freq> is an example of a numeric value.

Knob

The knob normally moves the markers within the displays. If a parameter has been highlighted by its softkey, the knob adjusts the parameter. List parameters are most easily modified with the knob. Numeric parameters may also be adjusted with the knob.

Knob list selections are referenced in parenthesis like (Hanning).

Reset

Throughout this section, it will be necessary to reset the analyzer into a known default state. To do this, press [System] to display the System menu and then press <Preset> and [Enter] to confirm. The unit will perform power up tests and then assume the default settings. Each test generally starts with a reset.

Serial Number

If you need to contact Stanford Research Systems, please have the serial number of your unit available. The serial number is printed on a label affixed to the rear panel. The serial number is also displayed on the screen when the unit is powered on.

Firmware Revision

The firmware revision code is displayed on the screen when the unit is powered on.

Necessary Equipment

The following equipment is necessary to complete the performance tests. The suggested equipment or its equivalent should be used.

Frequency Synthesizer

Freq Range	1 Hz to 1 MHz
Freq Accuracy	better than 5 ppm
Amplitude Accuracy	0.2 dB from 1 Hz to 100 kHz
Harmonic Distortion	≤ -65 dBc
Spurious	≤-55 dBc
Recommended	SRS DS345

AC Calibrator

Freq Range	10 Hz to 100 kHz
Amplitude	1 mV to 10 V
Accuracy	0.1%
External phase locking capability	
Recommended	Fluke 5200A

Feedthrough Terminations

Impedance	50 Ω

Warm Up

The analyzer should be turned on and allowed to warm up for at least an hour before any tests are performed. The self test does not require any warm up period.

It is necessary to turn the unit off and on to reset it. As long as the unit is powered within a minute, this will not affect the test results.

Auto Offset must be left enabled (On) in the [Input] <More> menu. Disabling Auto Offset may invalidate the results of some tests.

The Test Record

Make a copy of the SR780 Performance Test Record at the end of this section. Fill in the results of the tests on this record. This record will allow you to determine whether the tests pass or fail and also preserve a record of the tests.

If A Test Fails

If a test fails, you should check the settings and connections of any external equipment and, if possible, verify its operation using a DVM, scope or some other piece of test equipment.

After checking the setup, repeat the test from the beginning to make sure that the test was performed correctly.

If the test continues to fail, contact Stanford Research Systems for further instructions. Make sure that you have the unit serial number and firmware revision code handy. Have the test record on hand as well.

1. Self Tests

The self tests check the analyzer hardware. These are functional tests and do not relate to the specifications. These tests should be run before any of the performance tests.

Note that the Test menu offers more tests than are required here. Only those tests which require no additional equipment are discussed in this section. The computer interface and disk drive tests are not required but should be periodically checked. See the System menu for more information about those tests.

Setup

No external setup is required for this test.

Procedure

1) Reset the unit by pressing [System] <Preset> and then [Enter] to confirm.
   During re-boot, the DSP memory and calibration tests should all be OK.
   To review this power on screen, use [System] <Show Version>.

2) Press the keys in the following sequence:

```
[System]
    <Diagnostics>
        <Keypad Test>
            Press all of the front panel keys until all of the boxes are filled in.
            Then press any key to exit this screen.

    <Knob Test>
            Rotate the knob to verify rotation and direction.
        <Return>

    <Memory >
        <System RAM>
            <Begin>
                All of the system memory chips should Pass.
            <Return>

    <System ROM>
            <Begin>
                All of the system memory chips should Pass.
            <Return>

    <Video RAM>
            <Begin>
                All of the video memory chips should Pass.
            <Return>
```

<Help ROM>
<Begin>
All of the memory chips should Pass.
<Return>

<Return>

3) This completes the functional hardware tests. Enter the results of this test in the test record at the end of this section.

2. DC Offset

This test measures the DC offset of the input.

Setup

Connect a 50Ω feedthrough termination to the Ch1 A and Ch2 A inputs. This shorts the inputs so the analyzer's own DC offset will be measured.

Procedure

1) Reset the unit by pressing [System] <Preset> and then [Enter] to confirm.

2) Press the keys in the following sequence:

    [Freq]
        <Span>
            [1] [.] [6] select (kHz) [Enter]

    [Marker]
        <Marker>
            Select (Link) [Enter]
        Use the knob to move the markers to 0 Hz.

    [Average]
        <Averaging Type>
            Select (Linear) [Enter]
        <# Avgs>
            [1] [0] [Enter]
        <Averaging>
            Select (On) [Enter]

3) a) Press
    [Input]
        <Ch1 Input Range>
            [-] [3] [0] [Enter]

        <Ch2 Input Range>
            [-] [3] [0] [Enter]

    [Start/Reset]
        Wait for the average to finish.
    [Auto Scale A]
    [Auto Scale B]

   b) Record the marker Y values for both displays on the -30 dBV range.

   c) Press
    <Ch1 Input Range>
        [-] [5] [0] [Enter]

<Ch2 Input Range>
[-] [5] [0] [Enter]

[Start/Reset]
Wait for the average to finish.
[Auto Scale A]
[Auto Scale B]

d) Record the marker Y values for both displays for the -50 dBV range.

4) This completes the DC measurement test. Enter the results of this test in the test record at the end of this section.

3. Common Mode Rejection

This test measures the common mode rejection of the analyzer inputs.

Setup

We will use the frequency synthesizer to provide the signal.

Connect the frequency synthesizer output to both the Ch1 A and Ch1 B inputs of the analyzer. Use equal length cables from A and B to a BNC TEE. Connect the cable from the synthesizer output to the TEE.

Procedure

1) Reset the unit by pressing [System] <Preset> and then [Enter] to confirm.

2) Set the frequency synthesizer to a frequency of 1 kHz and an amplitude of 500 mVrms.

3) Setup the measurement. Press the keys in the following sequence:

```
[Freq]
    <Span>
        [1] [.] [6] Select (kHz) [Enter]
    <Center Freq.>
        [1] Select (kHz) [Enter]

[Input]
    <Ch1 Input Range>
        [-] [2] [Enter]

[Average]
    <Averaging Type>
        Select (Linear) [Enter]
    <# Avgs>
        [1] [0] [Enter]
    <Averaging>
        Select (On) [Enter]
    Wait for the average to finish.

[Auto Scale A]
[Marker Max]
[Marker Ref]

[Input]
    <Ch1 Input Mode>
        Select (A-B) [Enter]

[Start/Reset]
    Wait for the average to finish.
```

4) Record the marker Y reading. This is the Ch1 CMRR (in dB) at 1 kHz.

5) Move the input cables from Ch1 A and B to Ch2 A and B.
   Repeat the measurement for Ch2.
   Press the keys in the following sequence:

   [Active Display]
   Make DisplayB the active display.

   [Input]
   <Ch2 Input Range>
   [-] [2] [Enter]

   [Start/Reset]
   Wait for the average to finish.

   [Auto Scale B]
   [Marker Max]
   [Marker Ref]

   [Input]
   <Ch2 Input Mode>
   Select (A-B) [Enter]

   [Start/Reset]
   Wait for the average to finish.

6) Record the marker Y reading. This is the Ch2 CMRR (in dB) at 1 kHz.

7) This completes the CMRR measurement test. Enter the results of this test in the test record at the end of this section.

4. Amplitude Accuracy and Flatness

This test measures the input amplitude accuracy and frequency response.

Setup

We will use the frequency synthesizer to provide an accurate frequency and the AC calibrator to provide a sine wave with an exact amplitude.

Connect the output of the frequency synthesizer to the phase lock input of the calibrator. Connect the output of the AC calibrator to the Ch1 A and Ch2 A inputs of the analyzer. Be sure to use the appropriate terminations where required.

Set the Synthesizer to:

Function	Sine
Frequency	1.0 kHz
Amplitude	0.5 Vrms
Offset	off or 0V
Sweep	off
Modulation	none

Set the AC Calibrator to:

Frequency	1.0 kHz
Amplitude	0.707 mVrms
Voltage	Off
Phase Lock	On
Sense	Internal

Procedure

1) Reset the unit by pressing [System] <Preset> and then [Enter] to confirm.

2) Press the keys in the following sequence:

[Window]
- <Window>
  - Select (Flattop) [Enter]

[Freq]
- <Span>
  - [1] [.] [6] Select (kHz) [Enter]
- <Center Freq.>
  - [1] Select (kHz) [Enter]

[Input]
- <Ch1 Coupling>
  - Select (AC) [Enter]
- <Ch2 Coupling>
  - Select (AC) [Enter]

[Average]
- <Averaging Type>
  - Select (Linear) [Enter]
- <# Avgs>
  - [1] [0] [Enter]
- <Averaging>
  - Select (On) [Enter]

3) Amplitude accuracy is verified at 1.0 kHz and various input ranges. For each range setting in the table below, perform steps 3a through 3d.

Input Range (pk)	AC Calibrator Amplitude
-46 dBV	2.509 mVrms
-38 dBV	6.302 mVrms
-30 dBV	15.830 mVrms
-14 dBV	99.881 mVrms
4 dBV	0.7934 Vrms
10 dBV	1.5830 Vrms
22 dBV	6.3021 Vrms
34 dBV	25.089 Vrms

a) Set the AC calibrator to the amplitude shown in the table.

b) Press
[Input]
<Ch1 Input Range>
Enter the range from the table.
<Ch2 Input Range>
Enter the range from the table.

c) Press
[Start/Reset]
Wait for the average to finish.
[Auto Scale A]
[Auto Scale B]

[Link] [Marker Max]

d) Record the marker Y reading for both displays for each range.

4) Frequency response is checked at frequencies above 1 kHz. The test frequencies are listed below. The measurements are performed for two different input ranges.

Test Frequencies
24 kHz
48 kHz
72 kHz
96 kHz

a) Set the AC calibrator to 1.0 kHz and an amplitude of 99.881 mVrms.

b) Set the frequency synthesizer to 1.0 kHz.

c) Press
[Frequency]
<Center Frequency.>
[1] Select (kHz) [Enter]

[Input]
<Ch1 Input Range>
[-] [1] [4] [Enter]
<Ch2 Input Range>
[-] [1] [4] [Enter]

[Start/Reset]
Wait for the average to finish.
[Auto Scale A]
[Auto Scale B]

[Link] [Marker Max]
The Y value of the markers should both read -17.0 dB (± 0.15 dB).

d) Set the AC calibrator and frequency synthesizer to the frequency in the table.

e) Press
[Frequency]
<Center Freq.>
Enter the signal frequency.

[Start/Reset]
Wait for the average to settle.

[Link] [Marker Max]

f) Record the marker Y reading for both displays. Repeat steps 4d and 4e for all of the frequencies listed.

5) Now repeat the frequency response measurements at a different input range.

a) Set the AC calibrator to 1 kHz and an amplitude of 6.3021 Vrms.

b) Set the frequency synthesizer to 1 kHz.

c) Press
[Freq]
<Center Freq..>
[1] <kHz>

[Input]
<Ch1 Input Range>
[2] [2] [Enter]
<Ch2 Input Range>
[2] [2] [Enter]

[Start/Reset]
Wait for the average to finish.
[Auto Scale A]

[Auto Scale B]

[Link] [Marker Max]
The Y value of the marker should now read +19.0 dB (±0.15 dB).

d) Repeat steps 4d through 4f above.

6) This completes the amplitude accuracy and frequency response test. Enter the results of this test in the test record at the end of this section.

5. Amplitude Linearity

This test measures the amplitude linearity. This tests how accurately the analyzer measures a signal smaller than full scale.

Setup

We will use the frequency synthesizer to provide an accurate frequency and the AC calibrator to provide a sine wave with an exact amplitude.

Connect the output of the frequency synthesizer to the phase lock input of the calibrator. Connect the output of the AC calibrator to the Ch1 A and Ch2 A inputs of the analyzer. Be sure to use the appropriate terminations where required.

Set the Synthesizer to:

Function	Sine
Frequency	1.0 kHz
Amplitude	0.5 Vrms
Offset	off or 0V
Sweep	off
Modulation	none

Set the AC Calibrator to:

Frequency	1.0 kHz
Amplitude	6.3021 Vrms
Voltage	Off
Phase Lock	On
Sense	Internal

Procedure

1) Reset the unit by pressing [System] <Preset> and then [Enter] to confirm.

2) Press the keys in the following sequence:

[Window]
<Window>
Select (Flattop) [Enter]

[Freq]
<Span>
[1] [.] [6] Select (kHz) [Enter]
<Center Freq.>
[1] Select (kHz) [Enter]

[Input]
<Ch1 Coupling>
Select (AC) [Enter]
<Ch2 Coupling>
Select (AC) [Enter]
<Ch1 Input Range>
[2] [2] [Enter]
<Ch2 Input Range>
[2] [2] [Enter]

[Average]
<Averaging Type>
Select (Linear) [Enter]
<# Avgs>
[1] [0] [Enter]
<Averaging>
Select On [Enter]

[Start/Reset]
Wait for the average to finish.
[Auto Scale A]
[Auto Scale B]

[Link] [Marker Max]

3) For each of the amplitudes listed below, perform steps 3a through 3c.

AC Calibrator Amplitudes
6.3021 Vrms
1.1207 Vrms
141.09 mVrms
22.361 mVrms
3.544 mVrms

a) Set the AC calibrator to the amplitude in the table.

b) Press [Start/Reset] and wait for the average to finish.

c) Record the marker Y reading for both displays.

4) This completes the amplitude linearity test. Enter the results of this test in the test record at the end of this section.

6. Anti-alias Filter Attenuation

This test measures the attenuation of the anti-alias filters. This tests how well the analyzer rejects frequencies outside the 102.4 kHz frequency range.

Setup

We will use the frequency synthesizer to provide the signal.

Connect the output of the frequency synthesizer to the Ch1 A and Ch2 A inputs of the analyzer. Be sure to use the appropriate terminations where required.

Procedure

1) Reset the unit by pressing [System] <Preset> and then [Enter] to confirm.

2) Set the frequency synthesizer to a frequency of 160.144 kHz and an amplitude of 500 mVrms.

3) Press the keys in the following sequence:

```
[Freq]
    <Span>
        [8] [0] [0] Select (Hz) [Enter]
    <Center Freq.>
        [1] [0] [2] Select (kHz) [Enter]

[Input]
    <More>
        <Ch1 AA Filter>
            Select (Off) [Enter]
        <Ch2 AA Filter>
            Select (Off) [Enter]

[Average]
    <Averaging Type>
        Select (Linear) [Enter]
    <# Avgs>
        [1] [0] [Enter]
    <Averaging>
        Select On [Enter]

[Start/Reset]
    Wait for the average to finish.
[Auto Scale A]
[Auto Scale B]

[Link] [Marker Max]
[Link] [Marker Ref]
    This references the un-filtered out of band signal at 160.144 kHz aliased to
    102.0 kHz.
```

4) Measure the anti-alias filter attenuation. Press

    [Input]

        <More>

            <Ch1 AA Filter>

                Select (On) [Enter]

            <Ch2 AA Filter>

                Select (On) [Enter]

    [Start/Reset]

        Wait for the average to finish.

    Record the marker Y readings for both displays.

5) This completes the anti-alias filter attenuation test. Enter the results of this test in the test record at the end of this section.

7. Frequency Accuracy

This test measures the frequency accuracy of the analyzer. This tests the accuracy of the fundamental crystal timebase inside the unit.

Setup

We will use the frequency synthesizer to provide the signal.

Connect the output of the frequency synthesizer to the Ch1 A input of the analyzer. Be sure to use the appropriate terminations where required.

Procedure

1) Reset the unit by pressing [System] <Preset> and then [Enter] to confirm.

2) Set the frequency synthesizer to a frequency of 96.000 kHz and an amplitude of 500 mVrms.

3) Press the keys in the following sequence:

    [Freq]
        <Span>
            [2] [0] [0] Select (Hz) [Enter]
        <Center Freq.>
            [9] [6] Select (kHz) [Enter]

    [Auto Scale A]

    [Marker Max]

4) Wait for the spectrum to settle (at least 5 seconds), then record the marker frequency reading for DisplayA.

5) This completes the frequency accuracy test. Enter the results of this test in the test record at the end of this section.

8. Phase Accuracy

This test measures the phase accuracy of the analyzer. This test measures the phase of a signal relative to the trigger.

Setup

We will use the frequency synthesizer to provide the signal.

Connect the output of the frequency synthesizer to the Trigger, Ch1 A and Ch2 A inputs of the analyzer. Be sure to use the appropriate terminations where required.

Procedure

1) Reset the unit by pressing [System] <Preset> and then [Enter] to confirm.

2) Set the frequency synthesizer to a frequency of 10.240 kHz and an amplitude of 500 mVrms.

3) Press the keys in the following sequence:

```
[Input]
    <Ch1 Input Range>
        [-] [2] <dBV>
    <Ch2 Input Range>
        [-] [2] <dBV>
    <Ch1 Coupling>
        Select (AC) [Enter]
    <Ch2 Coupling>
        Select (AC) [Enter]

[Trigger]
    <Trigger Source>
        Select (Ch1) [Enter]
    <Trigger Mode>
        Select (Auto Arm) [Enter]

[Auto Scale A]
[Auto Scale B]

[Marker]
    <Marker>
        Select (Link) [Enter]

[Marker Max]

[Display Setup]
    <View>
        Select (Phase) [Enter]
```

[Active Display]
Make DisplayB the active display.

[Display Setup]
<View>
Select (Phase) [Enter]

[Auto Scale A]
[Auto Scale B]

[Average]
<# Avgs>
[1] [0] [Enter]
<Average Mode>
Select (Vector) [Enter]
<Averaging Type>
Select (Linear) [Enter]
<Averaging>
Select On [Enter]

4) Record the marker Y readings for both displays. (Make sure that the marker frequency is 10.24 kHz)

5) This completes the phase accuracy test. Enter the results of this test in the test record at the end of this section.

9. Noise and Spurious Signals

This test measures the analyzer noise floor and checks for spurious signals.

Setup

Connect 50Ω feedthrough terminations to the Ch1 A and Ch2 A inputs. This grounds the inputs so the analyzer's input noise is measured.

Procedure

1) Reset the unit by pressing [System] <Preset> and then [Enter] to confirm.

2) Press the keys in the following sequence:

[Freq]
- <Span>
  - [5] [1] [.] [2] Select (kHz) [Enter]
- <Start Freq.>
  - [5] [1] [2] Select (Hz) [Enter]

[Window]
- <Window>
  - Select (Hanning) [Enter]

[Input]
- <Ch1 Input Range>
  - [-] [5] [0] [Enter]
- <Ch2 Input Range>
  - [-] [5] [0] [Enter]
- <Ch1 Coupling>
  - Select (AC) [Enter]
- <Ch2 Coupling>
  - Select (AC) [Enter]
- <Ch1 Grounding>
  - Select (Ground) [Enter]
- <Ch2 Grounding>
  - Select (Ground) [Enter]

[Display Options]
- <PSD Units>
  - [Link] Select (On) [Enter]

[Display Setup]
- <Units>
  - [Link] Select (dBVrms/√Hz) [Enter]
- <Y max>
  - [Link] [-] [1] [0] [0] [Enter]

[Average]
<# Avgs>
[2] [0] [Enter]
<Averaging Type>
Select (Linear) [Enter]
<Averaging>
Select On [Enter]

[Marker]
<Width>
[Link] Select (Wide) [Enter]
<Seeks>
[Link] Select (Mean) [Enter]

[Start/Reset]
Wait for the average to finish.

[Link] [Marker Max]

3) Record the marker Y readings for both displays.

4) Press
[Freq]
<Start Freq.>
[5] [1] [.] [2] Select (kHz) [Enter]

[Start/Reset]
Wait for the average to finish.

[Link] [Marker Max]

5) Record the marker Y readings for both displays.

6) Press
[Display Options]
<PSD Units>
Select (Off) [Enter]

[Display Setup]
<Units>
Select (dBVpk) [Enter]

[Marker]
<Seeks>
Select (Max) [Enter]

7) For each of the spans listed below, perform steps 7a through 7c.

Center Frequency	Span
230 Hz	400 Hz
500 Hz	400 Hz
1 kHz	1.6 kHz
5 kHz	1.6 kHz
10 kHz	1.6 kHz
25 kHz	1.6 kHz
50 kHz	1.6 kHz
75 kHz	1.6 kHz
101 kHz	1.6 kHz

a) Press
[Freq]
<Span>
Enter the span from the table
<Center Freq.>
Enter the center frequency from the table

b) Wait for the average to finish (20 averages).
[Link] [Marker Max]

c) Record the marker Y readings for both displays.

8) This completes the noise and spurious signal test. Enter the results of this test in the test record at the end of this section.

10. Sine Source

This test measures the source sine output.

Setup

Connect the Source output to the Ch1 A input.

Procedure

1) Reset the unit by pressing [System] <Preset> and then [Enter] to confirm.

2) Press the keys in the following sequence:

   [Source]
   <Amplitude 1>
   [1] [0] [0] [0] [Enter]

   [Auto Range Ch1] and wait until the range stops changing.

   [Auto Scale A]

   [Marker Max]

3) Record the marker Y reading for DisplayA.

4) Press
   <Amplitude 1>
   [1] [0] [0] [Enter]

5) Record the marker Y reading for DisplayA.

6) Press
   <Amplitude 1>
   [1] [0] [Enter]

7) Record the marker Y reading for DisplayA.

8) Press
   <Amplitude 1>
   [1] [0] [0] [0] [Enter]

9) For each of the frequencies below, perform steps 9a and 9b.

Frequency
20.48 kHz
40.96 kHz
61.44 kHz
81.92 kHz
99.072 kHz

a) Press

<Frequency 1>

Enter the frequency from the table.

[Marker Max]

b) Record the marker Y reading for DisplayA.

8) This completes the source sine test. Enter the results of this test in the test record.

11. Harmonic Distortion

This test measures the harmonic distortion of the analyzer source and inputs.

Setup

Connect the source output to the Ch1 A and Ch2 A inputs of the analyzer.

Procedure

1) Reset the unit by pressing [System] <Preset> and then [Enter] to confirm.
   This sets the source to sine output at 10.24 kHz and 500 mVpk amplitude.

2) Press the keys in the following sequence:

   [Input]
   - <Ch1 Input Range>
     - [-] [4] [Enter]
   - <Ch2 Input Range>
     - [-] [4] [Enter]

   [Auto Scale A]
   [Auto Scale B]

   [Average]
   - <# Avgs>
     - [2] [5] [Enter]
   - <Averaging Mode>
     - Select (Vector) [Enter]
   - <Averaging>
     - Select (On) [Enter]

   [Marker]
   - <Mode>
     - [Link] Select (Harmonic) [Enter]
   - <# Harmonics>
     - [Link] [5] [Enter]

   [Link] [Marker Max]

3) Record the THD reading for DisplayA (from the THD menu box).

4) Press
   [Active Display]
   - Make DisplayB the active display.

5) Record the THD reading for DisplayB (from the THD menu box).

6) This completes the harmonic distortion test. Enter the results of this test in the test record at the end of this section.

SR780 Performance Test Record

Serial Number _____ Tested By _____
Firmware Revision _____ Date _____

Equipment Used _____
_____

1. Self Tests

Test	Pass	Fail
Power On Test	____	____
Keypad	____	____
Knob	____	____
System RAM	____	____
System ROM	____	____
Video RAM	____	____
Help ROM	____	____

2. DC Offset

Input Range	DispA (Ch1)	DispB (Ch2)	Upper Limit
-30 dBV	_____	_____	< -80 dBV
-50 dBV	_____	_____	< -80 dBV

3. Common Mode Rejection

Input Range	Frequency	DispA (Ch1)	DispB (Ch2)	Upper Limit
-2 dBV	1.0 kHz	_____	_____	< -90 dB

4. Amplitude Accuracy and Flatness

Input Range	Calibrator Ampl.	Lower Limit	DispA (Ch1)	DispB (Ch2)	Upper Limit
-46 dBV	2.509 mVrms	-49.20 dBV	_____	_____	-48.80 dBV
-38 dBV	6.302 mVrms	-41.20 dBV	_____	_____	-40.80 dBV
-30 dBV	15.830 mVrms	-33.20 dBV	_____	_____	-32.80 dBV
-14 dBV	99.881 mVrms	-17.20 dBV	_____	_____	-16.80 dBV
4 dBV	0.7934 Vrms	0.80 dBV	_____	_____	1.20 dBV
10 dBV	1.5830 Vrms	6.80 dBV	_____	_____	7.20 dBV
22 dBV	6.3021 Vrms	18.80 dBV	_____	_____	19.20 dBV
34 dBV	25.089 Vrms	30.80 dBV	_____	_____	31.20 dBV

Flatness relative to 1 kHz

Input Range	Frequency	Lower Limit	DispA (Ch1)	DispB (Ch2)	Upper Limit
-14 dBV	24 kHz	-17.20 dBV	_____	_____	-16.80 dBV
-14 dBV	48 kHz	-17.20 dBV	_____	_____	-16.80 dBV
-14 dBV	76 kHz	-17.20 dBV	_____	_____	-16.80 dBV
-14 dBV	99 kHz	-17.20 dBV	_____	_____	-16.80 dBV

SR780 Performance Test Record

4. Amplitude Accuracy and Flatness (Continued)

Flatness relative to 1 kHz

Input Range	Frequency	Lower Limit	DispA (Ch1)	DispB (Ch2)	Upper Limit
22 dBV	24 kHz	18.80 dBV	_____	_____	19.20 dBV
22 dBV	48 kHz	18.80 dBV	_____	_____	19.20 dBV
22 dBV	72 kHz	18.80 dBV	_____	_____	19.20 dBV
22 dBV	96 kHz	18.80 dBV	_____	_____	19.20 dBV

5. Amplitude Linearity

Input Range	Calibrator Ampl.	Lower Limit	DispA (Ch1)	DispB (Ch2)	Upper Limit
22 dBV	6.3021 Vrms	18.80 dBV	_____	_____	19.20 dBV
	1.1207 Vrms	3.80 dBV	_____	_____	4.20 dBV
	141.09 mVrms	-14.20 dBV	_____	_____	-13.80 dBV
	22.361 mVrms	-30.20 dBV	_____	_____	-29.80 dBV
	3.544 mVrms	-46.20 dBV	_____	_____	-45.80 dBV

6. Anti-Alias Filter Attenuation

Input Frequency	DispA (Ch1)	DispB (Ch2)	Upper Limit
160.144 kHz	_____	_____	< -90 dB

7. Frequency Accuracy

Input Frequency	Lower Limit	DispA	Upper Limit
96.000 kHz	95.9976 kHz	_____	96.0024 kHz

8. Phase Accuracy

Frequency	Trigger Source	Lower Limit	DispA (Ch1)	DispB (Ch2)	Upper Limit
10.24 kHz	Ch1	-93.0 deg	_____	_____	-87.0 deg

9. Noise and Spurious Signals

Noise floor	Start Frequency	Span	DispA (Ch1)	DispB (Ch2)	Upper Limit
	512 Hz	51.2 kHz	_____	_____	-160 dBVrms/√Hz
	51.2 kHz	51.2 kHz	_____	_____	-160 dBVrms/√Hz

Spurious signals	Center Frequency	Span	DispA (Ch1)	DispB (Ch2)	Upper Limit
	230 Hz	400 Hz	_____	_____	-135 dBVpk
	500 Hz	400 Hz	_____	_____	-140 dBVpk
	1 kHz	1.6 kHz	_____	_____	-140 dBVpk
	5 kHz	1.6 kHz	_____	_____	-140 dBVpk
	10 kHz	1.6 kHz	_____	_____	-140 dBVpk
	25 kHz	1.6 kHz	_____	_____	-140 dBVpk
	50 kHz	1.6 kHz	_____	_____	-140 dBVpk
	75 kHz	1.6 kHz	_____	_____	-140 dBVpk
	101 kHz	1.6 kHz	_____	_____	-140 dBVpk

SR780 Performance Test Record

10. Sine Source

Amplitude

Frequency	Level	Lower Limit	DispA	Upper Limit
1 kHz	1000 mV	-0.3 dBV	_____	0.3 dBV
1 kHz	100 mV	-20.3 dBV	_____	-19.7 dBV
1 kHz	10 mV	-40.3 dBV	_____	-39.7 dBV

Amplitude Flatness

Frequency	Level	Lower Limit	DispA	Upper Limit
20.48 kHz	1000 mV	-0.3 dBV	_____	0.3 dBV
40.96 kHz	1000 mV	-0.3 dBV	_____	0.3 dBV
61.44 kHz	1000 mV	-0.3 dBV	_____	0.3 dBV
81.92 kHz	1000 mV	-0.3 dBV	_____	0.3 dBV
99.072 kHz	1000 mV	-0.3 dBV	_____	0.3 dBV

11. Harmonic Distortion

Fundamental	DispA THD	DispB THD	Upper Limit
10.24 kHz	_____	_____	< -80 dB

Chapter 2

Circuit Description

This chapter provides descriptions of the circuitry in the SR780. Each circuit board's function and operation is discussed. The schematics for each board are shown in Chapter 10.

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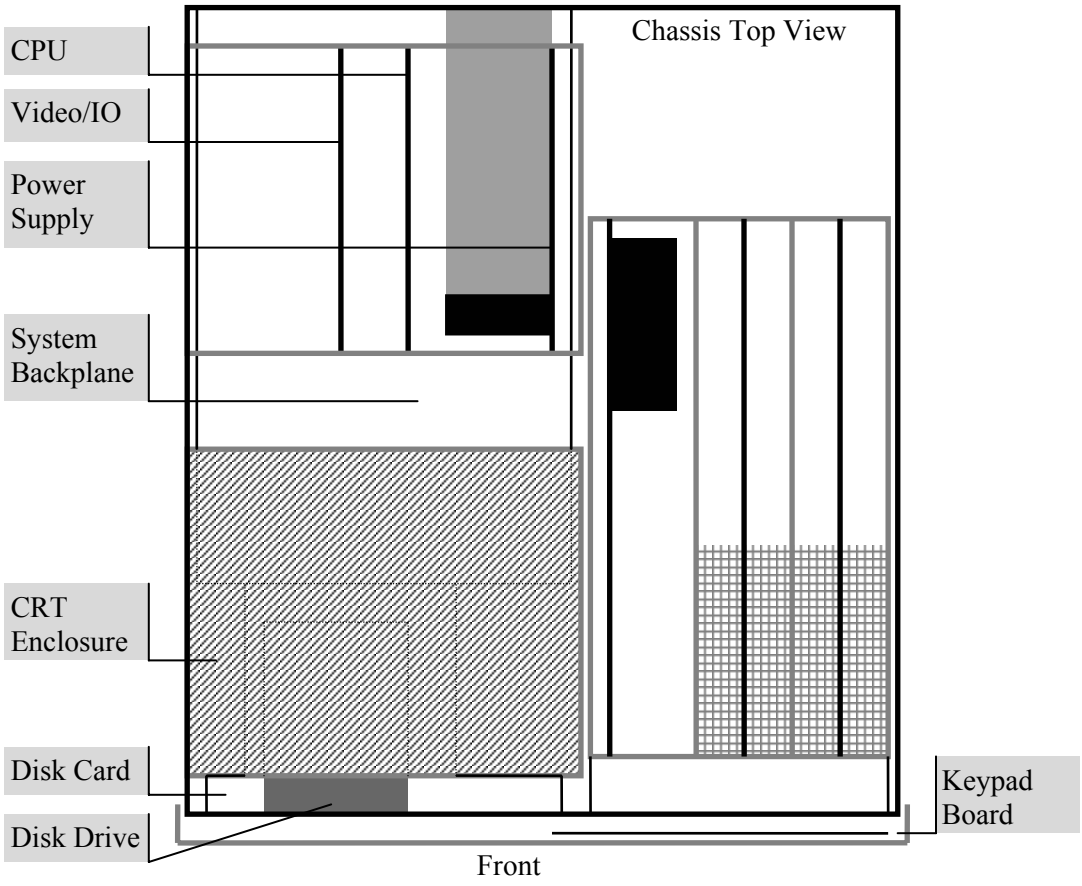
Overview

The SR780's circuitry is divided into two major sections - the *system section* and the *analyzer section*. The system section contains the main processor (CPU), video display, external interfaces, power supply and front panel. The analyzer section contains the digital signal processor (DSP), source output and analog inputs.

System Components

The system section components are located in the left half of the chassis, behind and below the CRT (video display). The card cage behind the CRT contains the power supply, main CPU card and the video/IO card. The cards are interconnected by a backplane board under the card cage. The disk drive is mounted to a small board beneath the CRT. This card can be removed from the front. The keypad connects to the disk board at the front of the chassis.

Figure 2-1 System Components

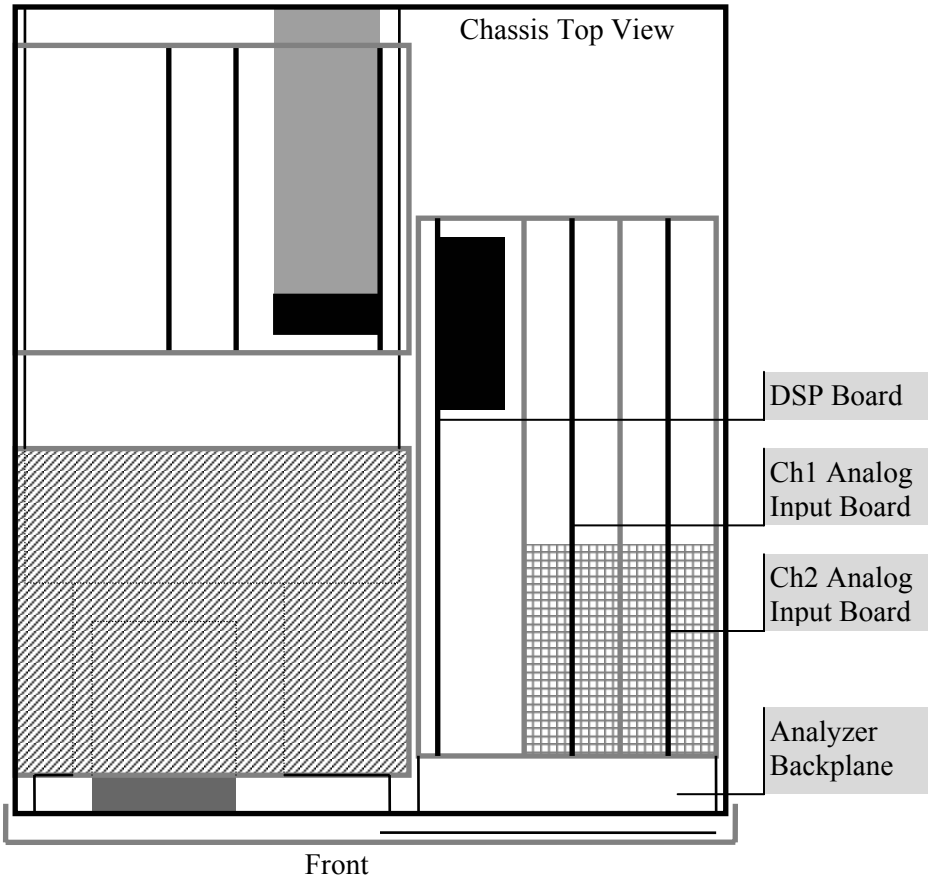


Analyzer Components

The analyzer section is in the right half of the chassis, directly behind the keypad. A card cage contains the DSP board and two identical analog input boards. The analyzer boards are interconnected by a backplane board under the card cage. This backplane extends all

the way to the front panel BNC connectors. The analyzer backplane connects to the system backplane via two short cables at the center of the chassis just behind the CRT.

Figure 2-2 Analyzer Components



Both the system and the analyzer backplanes are passive and contain no active circuitry. They only provide power distribution, signal routing between the various boards and to external ports or devices.

Schematic Diagram Locations

Schematic diagrams are located in Chapter 5.

Board/Assembly	Schematic #'s (see Chapter 10)
CPU Board	MCPU-1 through MCPU-9
Video/IO Board	MVID-10 through MVID-14
Power Supply	MPWR-1 through MPWR-2
System Backplane	MBKPL-20 through MBKPL-23
Disk Card	MBKPL-24
Keypad Board	MKEY-1
DSP Board	D780-1 through D780-9
Analog Input Boards	A780-1 through A780-7
Analyzer Backplane	M780-1 through M780-4

CPU Board

This section covers schematics MCPU-1 through MCPU-9 in Chapter 5.

The CPU board contains the main microprocessor system. CPU memory, front panel and printer interfaces are on this board. Two off-board data buses are also driven from this board. The I/O Expansion data bus connects the CPU board with the Video/IO and Aux slots on the System backplane. The External data bus connects to the DSP Board via the Analyzer backplane.

Microprocessor System

The microprocessor, U101, is an 80C186XL (or 80C186EA) microcontroller which integrates a fast 16 bit processor, counter-timers, interrupt controller, DMA controller, and I/O decoding into a single component.

The 80C186 is clocked at 40.00 MHz by crystal oscillator U103. The external clock period is 2 oscillator cycles or 20.0 MHz. The data and lower 16 bits of address are multiplexed on processor lines AD0-AD15. U201, U202, U203 latch the address A0-A19 at the beginning of each memory or I/O cycle. U204 and U205 are bi-directional data bus drivers which are active during the data read/write portion of each memory or I/O cycle. U201-U205 provide the on-board System bus.

Memory Map

The 80C186 can address 1 Mbyte of memory and 64k of I/O space. The memory is mapped into 5 blocks. Each block has 2 sockets, one for the low byte and one for the high byte of data.

U301-U304 are 128 kbyte EPROMS mapped from 80000H to FFFFFH. EPROMS U305 and U306 are mapped from 50000H to 7FFFFH for a total of 704 kbytes of program ROM.

U401-U404 are 128 kbyte CMOS static RAMs mapped from 00000H to 4FFFFH (320 kbytes). U401 and U402 (256 kbytes) are battery backed up.

I/O Map

U209 and U210 are the data bus drivers for the off-board I/O Expansion bus. U206 and U207 are the data bus drivers for the off-board External (DSP) bus. U208 is the address driver for the External bus.

U213 is a PAL which enables the correct bus drivers depending upon the I/O address space being accessed. All memory accesses and on-board I/O use the System bus.

The 80C186 generates 7 peripheral chip select strobes, each covering 128 byte I/O addresses. -PCS0 enables on-board I/O peripherals (front panel, clock and printer port). -PCS1 enables the peripherals on the Video/IO board. -PCS2 enables the AUX connectors on the System backplane. -PCS1 and -PCS2 enable the Expansion data bus. -PCS4 and -PCS5 enable the External (DSP) bus. -PCS4 enables processor addressable peripherals on the DSP board.

U501 and U503 decode the on-board I/O locations enabled by -PCS0. These are the knob, keypad and keyboard, the clock, the printer port and the system status port.

U508 is a wait state generator. Extra wait states are generated by all I/O accesses. These extra wait states are canceled if the access is to the External bus. The -Video_Rdy signal also ends the wait generation. -Video_Rdy signals that the graphics processor (on the Video/IO board) has acknowledged an IO cycle and is ready.

Interrupts generated by system peripherals (on both the CPU and Video/IO boards) are combined in U505 into a single prioritized interrupt. The highest priority pending interrupt will be encoded on U505's outputs and read via the status port, U608. The UART directly interrupts the processor since it can never be masked.

String ROM

U801 and U802 are 256 kbyte EPROMS containing the on-screen help information. These memories are mapped into the upper 32k of I/O space. One of the sixteen 32k banks is selected by BA15..BA18 set in the system status port. This keeps ROM data from using up program memory space.

Keypad Interface

The keypad is organized as 8 columns and 8 rows of switch closures. The conductive rubber keys provide the switch closures. U607 strobes the columns and U606 detects the switch closure. The diodes D601-D608 prevent one column from affecting another. All of the outputs from U607 are set high and U606 is read periodically by the processor. As long as 00H is read, no key is pressed and the strobes are left on. When a non-zero value is read, then the key strobes are activated individually in order to decode which key is down.

Spin Knob

The knob is an optical encoder buffered by U612. Each transition of its quadrature outputs is clocked into U610 or U611 and generates an interrupt at the output of U507B. The processor keeps track of the knob's direction and speed.

Keyboard Interface

The PC keyboard interface uses U603 to convert serial data from the keyboard into a parallel byte for the processor to read. The data format from the keyboard is a leading start bit followed by 8 data bits. U603 is reset by a processor read. When a key is pressed, the bits are shifted into U603. When the start bit appears at the QH output, 7 bits of the data byte are in U603. U601 is the 9th bit of the shift register. When U601 clocks in the start bit, U601 must have the 8 bits of the data. U601 then latches the serial data in U601 and interrupts the processor.

Only keyboards which operate in the PC or 8088 mode will function with this interface.

Speaker

The speaker is driven by a timer on the 80C186. The timer outputs a square wave which is enabled by U507A and drives the speaker through Q705.

Clock/Calendar

U702 is an MC146818 real time clock chip which keeps track of time and date. The time base is a 32.768 kHz oscillator made by U706. Both U702 and U706 are battery backed up.

Reset/Battery Switch

U701 is the processor supervisor. Power on reset is detected by U701 and signaled to the processor via -Pwr_Reset. In addition, the chip enables to the battery backed-up memory U401 and U402 are protected by U701. Q701 provides normal 5V power to the battery circuits when the power is on.

Printer Interface

The printer interface is a normal Centronics style parallel port. Output data is buffered by U703, an LS octal latch. Output control bits are buffered by the open collector driver U704, and input control bits are discriminated by U705A and U705B.

Expansion Connector

The 120 pin connector carries all of the necessary interconnections to the System backplane. Both the Expansion and External buses are carried off-board via this connector. Power is also delivered through this connector.

Video/IO Board

This section covers schematics MVID-10 through MVID-14 in Chapter 5.

The Video/IO board contains the display generation hardware, the GPIB and RS232 interfaces and the disk controller.

Video Graphics Interface

The video graphics interface is centered around U1003, an HD63484 graphics controller. The HD63484 generates the video sync signals, controls the video memory, draws graphic primitives such as lines, circles, polygons, etc. and performs many memory to memory functions. The HD63484 relieves the 80C186 from having to calculate each video image and greatly increases display speed.

Commands and data are sent from the 80C186 to the HD63484 using a DMA channel. This allows the HD63484 to process commands without having to wait for the 80C186 to send them.

U1006 and U1007 are 128 kbyte RAMs which make up the 256k video memory. Each pixel is made up of 2 bits. The video screen is 800H by 600V and requires 120,000 bytes of memory. The remaining memory is used to store patterns and fonts as well as a second display screen. The data and address are multiplexed and U1004 and U1005 are the address latches.

Memory is accessed twice during each display cycle. The first access reads the 16 bits of video data for the current display cycle. The second access is used by the controller for drawing purposes. During the drawing access, data at any address may be read or written. This allows drawing to take place as fast as possible.

Data is read 16 bits at a time. When data is required for the display, the even data bits are latched into U1008 and the odd data bits are latched into U1009. U1008 and U1009 are parallel to serial converters. The video data is shifted out at 19.59 MHz and synchronized by U1013. U1014A synchronizes the Display_Enable to disable the video data except during active display times.

The display consists of two layers or planes. Data on the front plane appears in front of data on the rear plane. Each pixel requires two bits of information. The even bit is drawn on the front plane and the odd bit is drawn on the rear plane. The even bit disables the odd bit which puts it in front. U1012 handles the layering logic. The display planes make it simple to draw a graph in front of a grid.

The two display planes each have their own display brightness. This gives the display a three dimensional appearance. Current sources Q1101 and Q1102 set the brightness for the front and rear planes. U1101 is a dual DAC which programs the two current sources.

Disk Controller

U1201 is a DP8473 disk controller which integrates all of the functions of the PC disk interface into a single IC. All motor controls, read and write signals, and data are controlled by the DP8473. A DMA channel is used to send and receive data from the controller in order to satisfy the disk drive timing.

GPIB Interface

The GPIB (IEEE-488) interface is provided by U1202, a TMS9914A controller. U1203 and U1204 buffer data I/O to the GPIB connector. U1202 is programmed to provide an interrupt to the processor whenever there is bus activity addressed to the unit.

RS232 Interface

The SCN2641 UART, U1303, provides all of the UART functions including baud rate generation. Standard baud rates up to 19.2k can be generated from the 3.6864 MHz clock. U1305 buffers the outgoing data and control signals. Incoming signals are received by U1304.

The RS232 port is a DCE and may be connected to a PC using a standard serial cable (not a "null modem" cable).

Expansion Connector

The 120 pin connector carries all of the necessary interconnections to the System backplane. Power is also delivered through this connector. Peripherals on this board are accessed whenever -PCS1 from the CPU is active. U1401 and U1402 provide on-board decoding.

Power Supply Board

This section covers schematics MPWR-1 through MPWR-2 in Chapter 5.

Caution

Dangerous voltages are present on this circuit board whenever the instrument is attached to an AC power source and the rear panel power switch is "ON".

Always disconnect the power cord and wait at least one minute before opening the unit. Check the LED at the top edge of the power supply board. The unit is safe only if the LED is OFF. If the LED is ON, then DO NOT attempt any service on the unit.

Removing the Power Supply

Never remove or replace this board when the power cord is attached!

The Power Supply Board is held in by two rear panel screws which hold the power supply shield to the chassis. These screws prevent accidental removal of this board. The unit should never be operated without these screws in place.

Power Supply Connector

The 120 pin connector carries all of the necessary interconnections to the System backplane. Switch AC and the transformer secondaries are carried by this connector. The supply outputs to the System and Analyzer backplanes is also carried by this connector. For safety, this board cannot be inserted backwards.

Test Points

The test points along the top edge of the board are provided for supply testing while the instrument is powered ON. These test points are current limited for safety. Always measure the supply voltages relative to the correct ground test point as labeled on the board.

System Power

The system power for the System backplane, CPU, Video/IO, disk drive and CRT is provided by the switching power supply module mounted on the Power Supply board. This switcher is inside the power supply shield. The switcher accepts AC line input and generates +5V, -5V, +12V and -12V. The +5V powers all of the system logic (CPU and Video/IO) as well as the DSP logic. +12V powers the CRT and the fans.

Analog Power

Analog power to the Analyzer backplane is generated by a linear power supply. The transformer on the rear panel provides two 41VAC center tapped secondaries and two 26VAC secondaries. The 41VAC secondaries are used to generate ±20VDC supplies for the analog inputs and the source output. The 26VAC secondaries generate +30V isolated supplies for the ICP power.

Bridge rectifiers D1-D4 and D5-D8 rectify the 41VAC secondaries. Filter capacitors C10-C11 and C20-C21 provide filtered 28 VDC. Resistors provide a bleed current on all of the unregulated supply filter capacitors. Because of the large capacitance in this circuit, the time for the voltages to bleed to zero is about a minute after the power is turned off.

The ±20VDC supplies are generated by voltage regulators U10-U11 and U20-U21. These supplies are floating on this board. The ground reference for ±20V_D (source power) is on the DSP board. This supply floats if no DSP board is plugged in. The ground reference for ±20V_A (analog power) is on the analog input boards. This supply floats if no analog input board is plugged in.

The +30V supplies are very low current and only require small 100 mA regulators U30 and U40.

DSP Board

This section covers schematics D780-1 through D780-6 in Chapter 5.

The DSP board takes digital inputs from the A/D Converters on the Analog Input boards and performs all of the computations related to the measurement before it is displayed on the screen. This includes digital heterodyning (frequency shifting), digital filtering and downsampling, Fast Fourier Transforming, averaging, and output display processing (scaling, magnitude calc, log, sqrt, etc.) These functions are implemented within a system comprised of four functional blocks: the Digital Signal Processor (DSP), the Timing Generator, the I/O Interface and the Trigger Input.

The fifth functional block is the Source Generator. The source is synthesized, filtered and attenuated before being passed to the output connector.

Digital Signal Processor

The SR780 utilizes a single ADSP21020 digital signal processor clocked at 33 MHz. All instructions are completed in a single 30 ns cycle. The ADSP21020 has two external data buses - Data Memory (DM) and Program Memory (PM). There is no internal memory. Program memory is 128k x 48 and Data memory is 128k x 40. The memory is mounted on two SIMM modules. Each SIMM module contains 128k words of 20 ns 128k x 8 memory IC's.

In addition, a 2M x 32 DRAM module is located on the DM bus. This module may be upgraded to 4M or 8M x 32. PAL U301 provides simple DRAM refresh and control functions. Accesses to the DRAM are always multi-cycle. The DRAM is used for capture, waterfall and trace storage. These functions do not require fast multiple memory accesses.

Communication between the DSP and the host CPU (80C186) is handled through FIFO memories U302-U304. These are 25 ns, 4k x 9 FIFO's. U302 and U303 provide a 16 bit wide data path from the DSP to the host CPU. This allows data to flow to the host for display as fast as possible. U304 provides an 8 bit data path from the host CPU to the DSP for commands and data. The FIFO's allow the sender and the receiver to run at their full rates without waiting for the other.

The DSP can interrupt the host by raising the ^186INT0 line (output from port U710) and latching the request in U720A. The host clears the interrupt by writing to address -INT0_CLR (decoder U805). The host CPU can interrupt the DSP via -IRQ0 and -IRQ1 by writing to ports in U805. These interrupts are generally used by the sender to signal that a FIFO is full and the receiver should read the FIFO.

Timing Signal Generator

The timing signal generator provides all timing signals for the A/D and D/A Converters and their corresponding serial ports. The master clock is chosen from either U705 (30.208 Mhz) or U706 (30.933 Mhz). U706 is used if the FFT Base Frequency is 102.4 kHz and U705 is used if the FFT Base Frequency is 100.0 kHz. U701-U703 implement a 118 state 7-bit counter. The state machine generates the convert clocks, frame sync and bit clocks for the converters. U716 re-synchronizes the clock signals and drives the off-

board signals to the Analyzer backplane. U712 latches the state of the timing generator when a trigger signal is detected.

The timing generator interrupts the DSP whenever the serial ports (A/D and D/A) are ready (every sample time). The trigger is also synchronized to the state machine and generates an interrupt.

I/O Interface

The A/D converters on the analog boards send a serial data stream to the DSP board. Each analog board uses a dual 16 bit converter with both channels digitizing the signal. Each board returns two data streams for a total of four A/D channels. U401-U404 and U405-U408 are 32 bit serial to parallel converters, each receiving two 16 bit data channels from a single analog board.

U409-U410 is a 16 bit parallel to serial converter which sends DSP data to the source D/A converter.

Trigger

The Trigger input can be a TTL level signal or an analog signal. T601 provides some common-mode rejection for the trigger input. Relay K602 selects TTL or Analog Level Trigger. Relay K601 allows the trigger signal to come from the output of the analog front-end amplifiers or the external "TRIGGER" front panel BNC. Trigger signals pass through the XOR gate U602C where rising or falling edge trigger slope is selected. TTL triggers proceed directly to the XOR gate via some input protection. Analog level signals are first converted to a TTL signal via high-speed comparator U603.

At the heart of the trigger input is the analog high-speed comparator, U603 (LT1016). The input is buffered by U601A and limited by diodes D601 and D6302. N601 divides the trigger signal and trigger level by two to accommodate the input range of the comparator. C604 provides high-frequency hysteresis when the output latch cannot respond fast enough, and U601B and U602A provide low-frequency hysteresis. R603 and N601A determine the level of hysteresis. The DC trigger level is set by the 8-bit DAC U607A. U606 buffers and shifts the DAC output.

The Trig_In signal is latched in PAL U703 which synchronizes the trigger to the A/D clocks and interrupts the DSP.

Source Generator

The source is output by DAC U501 (AD766). Since the DAC is clocked synchronously with the A/D converters, the source is synchronous with the input sampling.

The output of U501 is buffered by U502 (AD744). U505-U507 form an elliptic anti-aliasing filter to remove high frequency components. K501 selects the anti-aliasing filter output or the pink noise filter output (U530) as the source. U509A is used as an 8 bit attenuator and U510 is a divide by 10 or 100 attenuator. U512 is a high current output buffer which provides the low output impedance.

Interface To CPU

The CPU interface provides the communication pathway between the DSP board and the main CPU board. All signal interconnections are made via the 120 pin connector J902. U801-U803 are buffers for the address and data bus connections. These buffer chips are

enabled only when the CPU board is writing to the DSP board. This is signaled by -PCS4 from the 80C186. This helps isolate the activity on the CPU board from affecting circuitry on the DSP board. U808 and U809 are simple latches used to hold configuration data for the DSP board. U805 is a decoder which generates the chip selects and strobes needed by the DSP board. U810 is a serial EEPROM which holds the calibration data required by the source and trigger circuits.

Analog Input Boards

This section covers schematics A780-1 through A780-7 in Chapter 5.

The Analog Input boards provide the very important link between the user's input signal and the DSP processor. From the front panel BNC, the user's signal passes through a low distortion front-end amplifier, gain stages, attenuators, anti-aliasing filter, and finally an A/D Converter. Once converted to digital form, the input signal is ready to be processed by the DSP.

The two inputs use identical Analog Input boards. The routing on the Analyzer backplane keeps them separate.

Input Amplifier

The goal of any measurement instrument is to perform some given measurement while affecting the quantities to be measured as little as possible. As such, the input amplifier is often the most critical stage in the entire signal path. The design of the front end input amplifier in the SR780 was driven by an effort to provide optimum performance in the following areas: input voltage noise, input current noise, input capacitance, harmonic distortion, and common mode rejection (CMR). To provide such performance, an FET differential input amplifier with common-mode feedback architecture was chosen.

The input signal is first passed through a series of relays to select input mode (K102), input coupling (K104) and input attenuation (K105, K108). Relay K101 provides shield grounding. Relay K106 switches in the ICP current supply. The -30 dB input attenuator formed by resistors R103-R106 serves to attenuate very large signals as well as providing protection to the input FET in the presence of very high voltages (> 50 Vpk). To prevent damage to the input FET, the input voltage is monitored by comparators U106 and U107. High voltages cause the input attenuator to be automatically engaged regardless of the user gain setting at the front panel. Resistors R107 and R108 provide some input protection to the input FET, with only a slight penalty in input voltage noise.

The input FET U100 is an extremely low-noise matched pair of FET's with a voltage input noise of approximately 3.5 nV/√Hz. To improve distortion performance, the input FET’s are cascoded to maintain a constant drain-source voltage across each FET. This prevents modulation of the drain-source voltage by the input voltage. U104 senses the source voltage and maintains the same voltage at the drain with some DC offset determined by resistors N102 and N103. U103B provides common-mode feedback and maintains a constant drain current in each FET. U105 provides the single-ended output. The gain of the front end is either 10 dB or 20 dB as selected by relay K107. When a gain of 10 dB is selected, the offset and CMR are adjusted via P104 and P103 respectively. When a gain of 20 dB is selected, offset and CMR are adjusted via P102 and P101 respectively.

Gain Stages And Attenuators

Collectively, the front end amplifier, gain stages and attenuators provide sensitivity ranges from -50 dBV to +34 dBV. This is accomplished through the front-end amplifier, two gain stages and a resistive ladder attenuator.

The two gain stages are identical inverting amplifiers. Each has selectable gain of -10 dB, 0 dB, 10 dB or 20 dB. To achieve the desired gain, the front end attenuator and amplifier and these two gain stages are cascaded together. The signal path always includes the same number of amplifiers.

The resistive ladder attenuator (R211-R216) provides attenuation from 0dB to -10 dB in 2 dB steps. This improves the gain resolution. U206 is the buffered amplifier output.

Comparators U220 and U392 detect overload and half-scale amplifier output based upon the A/D converter reference voltage.

Anti-Aliasing Filter

To prevent aliasing, the input signal passes through a low-pass filter so that all frequency components greater than half the sampling frequency are attenuated by at least 96 dB. This is accomplished with an 8-zero 9-pole elliptical low pass filter (U230-U233). The pass band of this filter is DC to 102.4 kHz with a ripple of 0.5 dB. The stopband begins at 156 kHz. Stopband attenuation is nominally 100 dB.

U234A follows the anti-aliasing filter to sum the DC offset correction from DAC U361 with the signal.

A second 51.2 kHz anti-aliasing filter (U240-U243) is used for two channel octave measurements. Relays K202, K203 and K204 select an anti-aliasing filter (or bypasses the filters altogether). The filter output is buffered by U244A and U244B (to the trigger circuit on the DSP board).

A-Weighting Filter

The A-Weighting filter is constructed with a standard implementation using U310A and U310B. Relay K301 selects the filter.

U317 is a dual amplifier which splits the signal into two paths - inverted and non-inverted. Each signal path drives one of the A/D channels.

Comparator U391 detects overload based upon the A/D converter reference voltage.

A/D Converter

The A/D Converter converts the inverted and non-inverted signals to two digital data streams. Conversion takes place at a rate of 262,144 samples per second (FFT Base=102.4 kHz). A Burr-Brown PCM1750 dual 18-bit A/D converter is used for this purpose. U402A and U402D drive the data signals to the Analyzer backplane and to the DSP board. Timing signals for the A/D Converter are received via U402B and U402C.

I/O Interface

The Analog Input board is configured by the DSP board via its serial I/O Interface. U601-U603 form a 24 bit shift register and latch. Data is shifted in serially from the DSP board and latched to internal latches. The outputs of the latches are used to control relays, switches, etc. During normal operation, this interface is static and no random digital noise is present on this board.

U606 is a serial EEPROM containing the calibrations for the amplifier and anti-aliasing filter. U606 is read by the host CPU (80C186) via a port on the DSP board. This EEPROM is only read at power on and does not contribute digital noise to this board.

Power

Several voltages are generated on the Analog Input board locally. ±15 V is generated for most of the analog IC's (U531-U532). A dedicated ±15 V supply is also generated for the front-end amplifier (U501-U502). ±5 V is generated for the A/D Converter (U521-U522) as well as a digital +5 V for the digital I/O (U690). Analog ±6 V is generated for the analog switches (U541-U542). +12V is provided for the relays (U551). U511 provides the high voltage bias for the ICP supply.

The ±20 VDC supply which is the source of most of the power supplies is not grounded at the power supply. It is grounded by the Analog Input board to reduce ground loops at the analog inputs. Thus, the ±20 VDC floats when no Analog Input boards are present. If either Analog Input board is present, then this supply is grounded.

Chapter 3

Service

This chapter provides a troubleshooting guide with service procedures to debug and repair this unit at a board or assembly level.

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Before Proceeding With Service

Warranty Service

For warranty service or repair, this product must be returned to a Stanford Research Systems authorized service facility.

Do not attempt any service without first contacting Stanford Research Systems or an authorized representative. Replacement parts, boards and assemblies are available only from Stanford Research Systems or its authorized representatives.

CAUTION!

Potentially lethal voltages are present in this instrument. This unit is to be serviced by qualified service personnel only. There are no user serviceable parts inside.

Check the red LED at the top edge of Power Supply board. The unit is safe only if the LED is OFF. If the LED is ON, then voltages are present within the unit - USE CAUTION.

Use caution when checking circuits with the power on.

Always disconnect the power cord before replacing or servicing any component inside the chassis.

Reset

Reset the unit by turning the power off and back on while holding down the backspace key. This clears the stored setup and re-initializes the instrument. If the problem is solved, do not proceed to service any internal components. If the problem continues, proceed with the proper service procedures.

Always reset the instrument after performing any service.

Calibration

The only field service which may be performed is at the board and assembly level. If the DSP board or either Analog Input board is replaced (with factory calibrated replacement boards), the unit will remain calibrated. If individual components are replaced on a board, the calibration is not guaranteed. Individual component replacement on the DSP or Analog boards is not recommended.

Troubleshooting Table

Symptoms	Procedure
Screen is blank when power is turned on.	• Does the unit beep when front panel keys are pressed? Yes - see Display Problems. • After reset, is there a signal at the Source Output? Yes - see Display Problems. • Proceed to Service Procedure A2 (Power Supply Check). If the Power Supply is OK, see Display Problems.
Display Problems	• Is the screen brightness turned down? Press the Brighter button at the lower right of the screen (below the softkeys). • Is the display unstable? Yes - proceed to Service Procedure B2 (CRT Check). • Is the display blank? Yes - proceed to Service Procedure B2 (CRT Check). • If there still a problem, proceed to Service Procedure D3 (Video/IO Board Replacement).
Keypad not functioning	• Is there a key stuck in the down position? Yes - release the stuck key. • Proceed to Service Procedure C1 (Keypad Check).
Knob not functioning	• Proceed to Service Procedure C2 (Knob Check).
[System]<Diagnostics> System RAM check fails	• Proceed to Service Procedure D1 (CPU Board Replacement).
[System]<Diagnostics> System ROM check or Help ROM check fails	• Contact SRS for replacement ROM components. If failure continues proceed to Service Procedure D1 (CPU Board Replacement).
[System]<Diagnostics> Video RAM check fails	• Proceed to Service Procedure D3 (Video/IO Board Replacement).
Unit does not recall settings at power on.	• Proceed to Service Procedure D2 (Battery Check).
Clock does not keep time correctly	• Proceed to Service Procedure D2 (Battery Check).

Symptoms	Procedure
Power On DSP memory check fails. Use [System]<Show Version> to review test results.	• If Data Memory fails, proceed to Service Procedure F7 (Replacing DSP Memory Modules). • If Program Memory fails, proceed to Service Procedure F7 (Replacing DSP Memory Modules). • If DRAM Errors are detected, proceed to Service Procedure F7 (Replacing DSP Memory Modules). • If the DSP Cal ROM is not OK, proceed to Service Procedure F1 (DSP Board Replacement). • Proceed to Service Procedure F1 (DSP Board Replacement).
Source output incorrect	• Proceed to Service Procedure F6 (Checking the Source).
DSP memory upgrade	• To upgrade the DSP DRAM to 4M or 8M, proceed to Service Procedure F7 (Replacing DSP Memory Modules).
Power On Analog memory check fails. Use [System]<Show Version> to review test results.	• If the Ch1 or Ch2 Analog Cal ROM is not OK, proceed to Service Procedure F2 (Analog Board Replacement).
Disk Drive problems	• Check that your disk is DS/DD or DS/HD. Try a new disk. • Check that the disk write protect tab is closed. • Perform the disk drive test in the [System]<Diagnostics> menu. • Proceed to Service Procedure G1 (Disk Drive Replacement). • If there is still a problem, proceed to Service Procedure D3 (Video/IO Board Replacement).

Symptoms	Procedure
RS232 problems	• Check that the RS232 cable is attached securely to the RS232 port on the rear panel (NOT to the Printer port). Use a tested cable. • Check that the SR780 is set to output data to the RS232 interface (NOT the GPIB interface). The output interface is set in the [System]<Remote> menu. • Check the RS232 setup in the [System]<Remote> menu. Make sure that the proper baud rate, word length and parity is selected. • Place a 'loop back' connector on the RS232 port. A loop back connector is a male DB25 connector with pins 2 and 3 connected together. Perform the RS232 test in the [System]<Diagnostics> menu. If the test fails, proceed to Service Procedure D3 (Video/IO Board Replacement).
GPIB problems	• Check that the GPIB cable is securely fastened to the rear panel GPIB port. Use a tested cable. • Check that the SR780 is set to output data to the GPIB interface (NOT the RS232 interface). The output interface is set in the [System]<Remote> menu. • Check the instrument GPIB address. The address is set in the [System]<Remote> menu. • Proceed to Service Procedure D3 (Video/IO Board Replacement).
Printer problems	• Check that the printer cable is attached securely to the Printer port on the rear panel (NOT the RS232 port). Use a tested cable. • Check the Printer Type selected in the [Output] menu. The SR780 can output to Epson compatible dot matrix printers or HP LaserJet/InkJet compatible laser printers. • Make sure that the printer is On-Line and has paper. • Proceed to Service Procedure D1 (CPU Board Replacement).

Symptoms	Procedure
Unit displays an active baseline spectrum but no signal.	• Apply a known 10 kHz 0.5 Vrms sine wave to the A input of the non-functioning channel. Does the signal appear in the spectrum? No - proceed to Service Procedure F3 (Checking the Analog Inputs). • Does the unit pass the DSP memory checks? Use [System]<Show Version> to review the power on test results. No - see DSP memory check fails. • Does the unit pass the Analog board memory checks? Use [System]<Show Version> to review the power on test results. No - see Analog memory check fails.
No data graphed in the displays.	• Does the unit pass the DSP memory checks? Use [System]<Show Version> to review the power on test results. No - see DSP memory check fails. • Proceed to Service Procedure D1 (CPU Board Replacement).
Input problems (coupling, grounding or input range).	• Apply a known 10 kHz 0.5 Vrms sine wave to the A input of the non-functioning channel. Does the signal appear in the spectrum? No - proceed to Service Procedure F3 (Checking the Analog Inputs). • Proceed to Service Procedure F2 (Analog Board Replacement).
Measured amplitude of signal not correct.	• Proceed to Service Procedure F4 (Amplitude Check).
Unit does not trigger or trigger is unstable when in triggered mode.	• Proceed to Service Procedure F5 (Trigger Check).
Large DC offset on spectrum.	• Proceed to Service Procedure J1 (Adjusting DC Offset and CMR).
Common Mode Rejection problem.	• Proceed to Service Procedure J1 (Adjusting DC Offset and CMR).

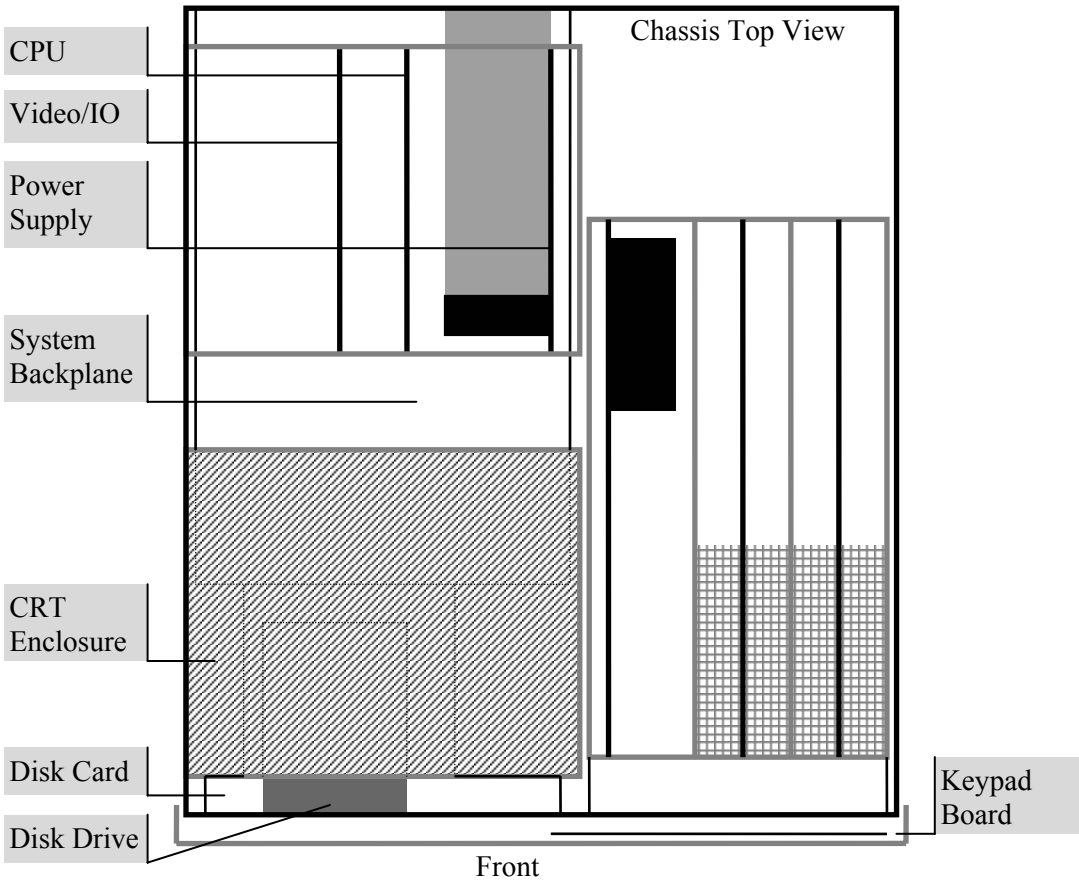
Circuit Board Locations

The SR780's circuitry is divided into two major sections - the *system section* and the *analyzer section*. The system section contains the main processor (CPU), video display, external interfaces, power supply and front panel. The analyzer section contains the digital signal processor (DSP), source output and analog inputs.

System Components

The system section components are located in the left half of the chassis, behind and below the CRT (video display). The card cage behind the CRT contains the power supply, main CPU card and the video/IO card. The cards are interconnected by a backplane board under the card cage. The disk drive is mounted to a small board beneath the CRT. This card can be removed from the front. The keypad connects to the disk board at the front of the chassis.

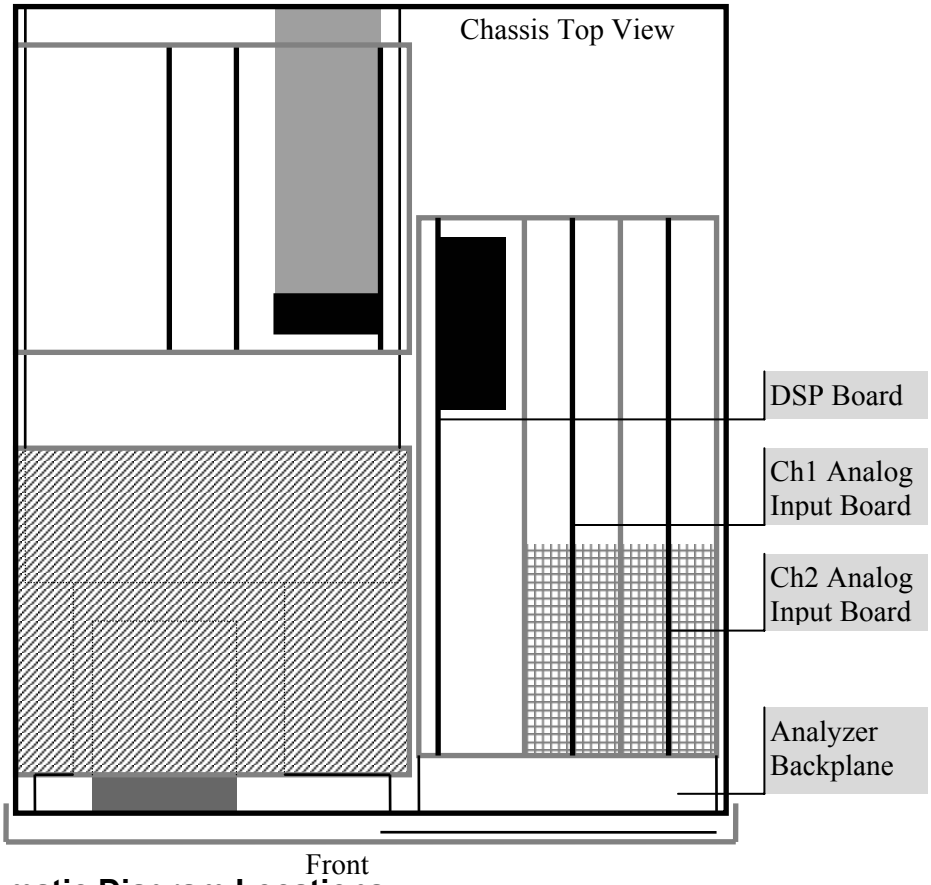
Figure 3-1 System Components



Analyzer Components

The analyzer section is in the right half of the chassis, directly behind the keypad. A card cage contains the DSP board and two identical analog input boards. The analyzer boards are interconnected by a backplane board under the card cage. This backplane extends all the way to the front panel BNC connectors. The analyzer backplane connects to the system backplane via two short cables at the center of the chassis just behind the CRT.

Figure 3-2 Analyzer Components



Schematic Diagram Locations

Schematic diagrams are located in Chapter 5.

Board/Assembly	Schematic #'s (see Chapter 5)
CPU Board	MCPU-1 through MCPU-9
Video/IO Board	MVID-10 through MVID-14
Power Supply	MPWR-1 through MPWR-2
System Backplane	MBKPL-20 through MBKPL-23
Disk Card	MBKPL-24
Keypad Board	MKEY-1
DSP Board	D780-1 through D780-9
Analog Input Boards	A780-1 through A780-7
Analyzer Backplane	M780-1 through M780-4

Service Procedures

Caution

Potentially lethal voltages are present in this instrument. This unit is to be serviced by qualified service personnel only. There are no user serviceable parts inside.

Check the red LED at the top edge of Power Supply board. The unit is safe only if the LED is OFF. If the LED is ON, then voltages are present within the unit - USE CAUTION.

Use caution when checking circuits with the power on.

Always disconnect the power cord before replacing or servicing any component inside the chassis.

Required Equipment

1. DC/AC Voltmeter (DVM)
   5 1/2 digit accuracy
   True RMS AC to 100 kHz

   Recommended: Fluke 8840A with Option 09 (or equivalent).

2. Frequency Synthesizer (function generator)
   1 Hz to 100 kHz
   0.2 dB amplitude accuracy

   Recommended: SRS DS335 (or equivalent).

3. Philips screwdrivers (various sizes).

4. Slot head screwdrivers (various sizes).

5. Hex keys (various sizes).

6. Oscilloscope (10 MHz bandwidth or greater).

Service Procedure A1 (Power Supply Board Replacement)

1. **Turn the power OFF. Remove the power cord from the power entry module.**
2. Remove the eight black screws which secure the top lid. There are four screws on each side, two at the front and two at the rear. Remove the lid by pulling the lid towards the back and upwards.

3. See Figure 3-1 to locate the Power Supply board. Make sure that the red LED at the top edge of the board is OFF before proceeding. Release the bar which secures the boards in place.
4. Remove the two screws which secure the power supply shield to the rear panel. These are located on the rear panel directly in back of the power supply board.
5. Remove the Power Supply board by using the card ejectors to release the board and pull the board up and out.
6. Insert the new board making sure to align the board edges with the plastic card guides before pressing the board into place. Make sure that the board is seated completely in its socket.
7. Replace the two screws which secure the power supply shield to the rear panel.
8. Replace the bar which secures the boards in place.
9. Replace the top lid and refasten the eight lid screws.

Service Procedure A2 (Power Supply Check)

1. **Turn the power OFF. Remove the power cord from the power entry module.**
2. Remove the eight black screws which secure the top lid. There are four screws on each side, two at the front and two at the rear. Remove the lid by pulling the lid towards the back and upwards.
3. Check the AC power source for the correct line voltage, either 100V, 120V, 220V or 240V (AC rms). Make sure that the power cord is OK.
4. Verify that the Line Voltage Selector card, located in the rear panel fuse holder, is set so that the correct AC input voltage value is visible. Conversion to other AC input voltages requires a change in the fuse holder voltage card position and fuse value. Disconnect the power cord, open the fuse holder cover door and rotate the fuse-pull lever to remove the fuse. Remove the small printed circuit board and select the operating voltage by orienting the printed circuit board so that the desired voltage is visible when pushed firmly into its slot. Rotate the fuse-pull lever back into its normal position and insert the correct fuse into the fuse holder.
5. Verify that the correct fuse is installed. For 100V/120V, use a 1.5 A fuse. For 220V/240V, use a 3/4 A fuse. Use the DVM to verify that the fuse is not blown or damaged.

6. **Disconnect the power cord!**

   Use the DVM to check that the GND test point on the Power Supply board is connected to the chassis and also to the ground pin of the power entry module. The GND test point is at the top edge of the board directly behind the notch. If GND is not shorted to chassis or power ground, check the GND (green) wires on the rear panel chassis ground connection (above the power switch on the inside). One green wire connects directly to the power entry module ground, the other to the System backplane via the AC power connector.

Do not continue if there is a fault in the chassis or power grounds!

7. Connect the power cord and turn the power ON. The fans should turn and the red LED at the top of the board should be ON. If the fans do not turn or the LED stays off, turn the power OFF and remove the power cord. Check the AC power connector and transformer connector integrity. You may need to remove the Power Supply board to do this. See Procedure A1 for details on removing the Power Supply board.

8. Check the voltages on the power supply test points. This procedure measures the supply voltages under load (all other boards are present) and with all grounding paths present. If the DSP or Analog boards are not present, then the voltages labeled ANLG, CH1+30V, CH2+30V and DIG must be measured relative to the AGND, CH1RET, CH2RET and DGND test points.

   Assuming that all other boards are present, connect the negative lead of the DVM to the chassis. Use the positive lead to measure the test points along the top of the power supply board, starting at the rear.

   Digital Power

Test Point	Nominal
-12V	-12V ±5%
-5V	-5V ±5%
+12V	-12V ±5%
+5V	+5V ±5%
Ground	0V

   ANLG Power

Test Point	Nominal
-28V	<-23V
+28V	>+23V
-20V	-20V ±5%
+20V	+20V ±5%
AGND	0V

   CH2

Test Point	Nominal
+30V	+30V ±5%
RET	0V

   CH1

Test Point	Nominal
+30V	+30V ±5%
RET	0V

   DIG Power

Test Point	Nominal
-28V	<-23V
+28V	>+23V
-20V	-20V ±5%
+20V	+20V ±5%
DGND	0V

9. If the supplies check ok, then replace the top lid and refasten the eight lid screws.

10. If the supplies are not correct, try one or both of the following.

    A. Follow procedure A1 to replace the power supply board and repeat this check.

    B. Remove one or more of the other boards and recheck the power supply. This assumes that the supply voltage is being affected by a bad board elsewhere in the unit.

    The Digital power drives the CPU, Video/IO, Disk cards and the CRT assembly.

    The ANLG and CH1 power drives the Ch1 analog input board.

    The ANLG and CH2 power drives the Ch2 analog input board.

    The DIG power drives the DSP board.

    If removing a board fixes the supply voltage, then proceed to replace the suspect board or assembly.

    If nothing seems to help, contact Stanford Research Systems or an authorized representative.

Service Procedure B1 (Replacing the CRT)

1. **Turn the power OFF. Remove the power cord from the power entry module.**
2. Remove the eight black screws which secure the top lid. There are four screws on each side, two at the front and two at the rear. Remove the lid by pulling the lid towards the back and upwards.
3. Release the CRT connector cable from the System backplane (behind the CRT enclosure).
4. The CRT enclosure is secured by four screws, two on the left and two on the right. These screws are in slots in the enclosure. Remove these screws.
5. Slide the CRT enclosure back until the front clears the front panel bezel. Lift the enclosure up and out (it's heavy).
6. Lower the new CRT enclosure into the chassis and slide it forward. Make sure that the slots in the enclosure overlap the mounting screw holes along the sides.
7. Insert the four screws which secure the enclosure. Do not tighten them.
8. Gently slide the CRT enclosure forward until the front of the CRT just touches the plastic anti-glare screen. Slide the CRT back 1/8" so that the front of the CRT is just behind the anti-glare screen. Tighten the four screws to secure the enclosure in place.
9. Connect the CRT cable to the System backplane (behind the CRT enclosure). Make sure that the cable is locked into place.
10. Replace the top lid and refasten the eight lid screws.

Service Procedure B2 (CRT Check)

1. **Turn the power OFF.**

2. Remove the eight black screws which secure the top lid. There are four screws on each side, two at the front and two at the rear. Remove the lid by pulling the lid towards the back and upwards.
3. **Turn the power ON.**

   Use the DVM to check the +12V power supply to the CRT. See Figure 3-1 to locate the Power Supply board. Measure the +12V test point on the Power Supply board relative to the chassis. The voltage should be within 5% of nominal. If the +12V supply is fine, proceed to Procedure B1 and replace the CRT assembly.
4. If the +12V supply is not within nominal, check the supply voltage without the CRT connected. Turn the power OFF. Remove the CRT cable from the connector on the System backplane (behind the CRT enclosure). Turn the power back ON. Measure the +12V test point on the Power Supply board relative to the chassis. The voltage should be within 5% of nominal. If the +12V supply is fine, proceed to Procedure B1 and replace the CRT assembly. If the +12V supply is still not within nominal, turn the power OFF, replace the CRT cable and proceed to Procedure A1 (Power Supply Replacement).

Service Procedure C1 (Keypad Check)

1. Perform the Keypad check in the [System]<Diagnostics> menu. If the test passes, then the keypad is OK. If the test fails or cannot be completed, then proceed.

2. **Turn the power OFF. Remove the power cord from the power entry module.**
3. Remove the eight black screws which secure the top lid. There are four screws on each side, two at the front and two at the rear. Remove the lid by pulling the lid towards the back and upwards.
4. Remove the two hex screws which connect the handle arms to the chassis. Remove the handle by pulling the arms apart slightly.
5. Remove the eight screws which secure the front panel bezel to the chassis. These screws are exposed when the lid is removed. There are two screws along each side and the top and bottom.
6. Remove the front panel bezel by pulling it slowly off towards the front. The keypad is attached to the bezel. There is a ground wire and cable extending from the keypad back to the main chassis.
7. The keypad and knob are attached to the Disk card by a ribbon cable. This cable attaches next to the Keyboard connector below the CRT. The cable attaches to the back of the keypad board (on the front panel). Make sure that the cable is firmly attached at both ends and that the cable is not damaged.
8. Check that the ground wire is attached firmly to the chassis and to the keypad board.
9. Push the Disk card inward to make sure that it is seated properly. The keypad signals are carried to the System backplane via this card.
10. Replace the front panel bezel, being careful to engage the slots which secure the front of the Disk card.
11. Replace the eight bezel screws. Replace the handle and the pivot screws.

12. If the keypad still does not function, then the problem may be on the CPU board. The keypad circuit board contains no active circuitry and the rubber keys are very unlikely to fail. To replace the CPU board, follow Procedure D1 (CPU Board Replacement).
13. Replace the top lid and refasten the eight lid screws.

Service Procedure C2 (Knob Check)

1. Perform the Knob check in the [System]<Diagnostics> menu. Verify knob rotation and direction. If the test passes, then the knob is OK. If the test fails or cannot be completed, then proceed.

2. **Turn the power OFF. Remove the power cord from the power entry module.**
3. Remove the eight black screws which secure the top lid. There are four screws on each side, two at the front and two at the rear. Remove the lid by pulling the lid towards the back and upwards.
4. Remove the two hex screws which connect the handle arms to the chassis. Remove the handle by pulling the arms apart slightly.
5. Remove the eight screws which secure the front panel bezel to the chassis. These screws are exposed when the lid is removed. There are two screws along each side and the top and bottom.
6. Remove the front panel bezel by pulling it slowly off towards the front. The knob is attached to the bezel. There is a ground wire and cable extending from the keypad back to the main chassis.
7. The knob is connected by a 5 wire ribbon cable to the keypad assembly. Check that the cable is secure at both ends.
8. The keypad and knob are attached to the Disk card by a ribbon cable. This cable attaches next to the Keyboard connector below the CRT. The cable attaches to the back of the keypad board (on the front panel). Make sure that the cable is firmly attached at both ends and that the cable is not damaged.
9. Check that the ground wire is attached firmly to the chassis and to the keypad board.
10. Push the Disk card inward to make sure that it is seated properly. The knob signals are carried to the System backplane via this card.
11. If the knob still fails to function, proceed to replace the digital pot.
12. The digital pot is secured to the front panel bezel by a nut underneath the plastic knob (on the outside). Pry off the front cover of the plastic knob with a small screwdriver or your fingertips. (The cover is the plastic disk with the dimple in it.) Remove the plastic knob by loosening the nut which holds the plastic knob onto the digital pot's shaft.
13. Remove the mounting nut at the base of the shaft. Once this nut is removed, the pot can be removed from the bezel. Pull the pot free while leaving the cable attached. Move the cable from the old pot to the new pot maintaining the correct cable orientation.

14. Place the new pot shaft into the hole in the bezel and secure the shaft with the mounting nut. Replace the plastic knob on the shaft and tighten the nut at the center. Replace the knob cover.
15. Replace the front panel bezel, being careful to engage the slots which secure the front of the Disk card.
16. Replace the eight bezel screws. Replace the handle and the pivot screws.
17. If the knob still does not function, then the problem may be on the CPU board. The keypad circuit board contains no active circuitry and is very unlikely to fail. To replace the CPU board, follow Procedure D1 (CPU Board Replacement).
18. Replace the top lid and refasten the eight lid screws.

Service Procedure D1 (CPU Board Replacement)

1. Before replacing the CPU board, reset the unit by turning the power OFF and ON while holding down the backspace key. If this does not fix the problem, continue.

2. **Turn the power OFF. Remove the power cord from the power entry module.**
3. Remove the eight black screws which secure the top lid. There are four screws on each side, two at the front and two at the rear. Remove the lid by pulling the lid towards the back and upwards.
4. See Figure 3-1 to locate the Power Supply board. Make sure that the red LED at the top edge of the board is OFF before proceeding. Release the bar which secures the boards in place.
5. See Figure 3-1 to locate the CPU board (it's next to the Power Supply board).
6. Remove the CPU board by using the card ejectors to release the board and pull the board up and out.
7. Insert the new board making sure to align the board edges with the plastic card guides before pressing the board into place. Make sure that the board is seated completely in its socket.
8. Replace the bar which secures the boards in place.
9. Replace the top lid and refasten the eight lid screws.
10. Reset the unit by turning the power ON while holding down the backspace key.

Service Procedure D2 (Battery Check)

1. **Turn the power OFF. Remove the power cord from the power entry module.**
2. Remove the eight black screws which secure the top lid. There are four screws on each side, two at the front and two at the rear. Remove the lid by pulling the lid towards the back and upwards.
3. See Figure 3-1 to locate the Power Supply board. Make sure that the red LED at the top edge of the board is OFF before proceeding.

4. See Figure 3-1 to locate the CPU board (it's next to the Power Supply board). Use the DVM to measure the battery voltage at the BATT test point at the top of the board. (There are two test points, BATT is the one towards the rear.) The battery voltage should be at least 2.7V relative to the chassis. If the battery voltage is low, then proceed to replace the battery.
5. Release the bar which secures the boards in place. Remove the CPU board by using the card ejectors to release the board and pull the board up and out. Desolder the two battery pins. Cut the plastic tie which secures the battery and remove the battery. Insert a new battery (check the polarity!) solder the two pins. Secure the battery with a new tie if available.
6. Replace the CPU board making sure to align the board edges with the plastic card guides before pressing the board into place. Make sure that the board is seated completely in its socket.
7. Reset the unit by turning the power ON while holding down the backspace key. If the unit continues to have battery problems, then follow Procedure D1 to replace the CPU board.

Service Procedure D3 (Video/IO Board Replacement)

1. Before replacing the Video/IO board, reset the unit by turning the power OFF and ON while holding down the backspace key. If this does not fix the problem, continue.

2. **Turn the power OFF. Remove the power cord from the power entry module.**
3. Remove the eight black screws which secure the top lid. There are four screws on each side, two at the front and two at the rear. Remove the lid by pulling the lid towards the back and upwards.
4. See Figure 3-1 to locate the Power Supply board. Make sure that the red LED at the top edge of the board is OFF before proceeding. Release the bar which secures the boards in place.
5. See Figure 3-1 to locate the Video/IO board (it's farthest from the Power Supply board).
6. Remove the Video/IO board by using the card ejectors to release the board and pull the board up and out.
7. Insert the new board making sure to align the board edges with the plastic card guides before pressing the board into place. Make sure that the board is seated completely in its socket.
8. Replace the bar which secures the boards in place.
9. Replace the top lid and refasten the eight lid screws.
10. Reset the unit by turning the power ON while holding down the backspace key.

Service Procedure F1 (DSP Board Replacement)

1. Before replacing the DSP board, reset the unit by turning the power OFF and ON while holding down the backspace key. If this does not fix the problem, continue.

2. **Turn the power OFF. Remove the power cord from the power entry module.**
3. Remove the eight black screws which secure the top lid. There are four screws on each side, two at the front and two at the rear. Remove the lid by pulling the lid towards the back and upwards.
4. See Figure 3-1 to locate the Power Supply board. Make sure that the red LED at the top edge of the board is OFF before proceeding.
5. See Figure 3-2 to locate the DSP board (in the Analyzer card cage nearest the CRT). Remove the card cage cover by loosening the five screws in the cover.
6. Remove the DSP board by using the card ejectors to release the board and pull the board up and out.
7. Insert the new board making sure to align the board edges with the plastic card guides. Make sure that the board is aligned with the connectors and jacks at the bottom of the card cage before pressing the board into place. Do not press the board in if the jacks at the front are not engaged properly. **These jacks are easily damaged!** Make sure that the board is seated completely in its socket.
8. Replace the card cage cover and tighten the cover screws.
9. Replace the top lid and refasten the eight lid screws.
10. Reset the unit by turning the power ON while holding down the backspace key.

Service Procedure F2 (Analog Board Replacement)

1. Before replacing an Analog board, reset the unit by turning the power OFF and ON while holding down the backspace key. If this does not fix the problem, continue.
2. **Turn the power OFF. Remove the power cord from the power entry module.**
3. Remove the eight black screws which secure the top lid. There are four screws on each side, two at the front and two at the rear. Remove the lid by pulling the lid towards the back and upwards.
4. See Figure 3-1 to locate the Power Supply board. Make sure that the red LED at the top edge of the board is OFF before proceeding.
5. See Figure 3-2 to locate the Analog boards (in the Analyzer card cage behind the input BNC connectors). Remove the card cage cover by loosening the five screws in the cover.
6. The Channel 1 Analog board is in the center of the card cage. The Channel 2 Analog board is on the right. Pull off the small shield at the front using the finger hole. Remove the correct Analog board by using the card ejectors to release the board and pull the board up and out.
7. Insert the new board making sure to align the board edges with the plastic card guides. Make sure that the board is aligned with the connectors and jacks at the bottom of the card cage before pressing the board into place. Do not press the board in if the jacks at the front are not engaged properly. **These jacks are easily damaged!** Make sure that the board is seated completely in its socket.

8. Replace the small shield at the front. Replace the card cage cover and tighten the cover screws.
9. Replace the top lid and refasten the eight lid screws.
10. Reset the unit by turning the power ON while holding down the backspace key.

Service Procedure F3 (Checking the Analog Inputs)

1. Before proceeding, reset the unit by turning the power OFF and ON while holding down the backspace key. If this does not fix the problem, continue.

2. **Turn the power OFF. Remove the power cord from the power entry module.**
3. Remove the eight black screws which secure the top lid. There are four screws on each side, two at the front and two at the rear. Remove the lid by pulling the lid towards the back and upwards.
4. See Figure 3-1 to locate the Power Supply board. Make sure that the red LED at the top edge of the board is OFF before proceeding.
5. See Figure 3-2 to locate the Analog boards (in the Analyzer card cage behind the input BNC connectors). Remove the card cage cover by loosening the five screws in the cover.
6. The Channel 1 Analog board is in the center of the card cage. The Channel 2 Analog board is on the right. Pull off the small shield at the front using the finger hole. Remove the correct Analog board by using the card ejectors to release the board and pull the board up and out.
7. Use the DVM to verify that the A input BNC center conductor and shield are connected to the front most SMB jack at the bottom of the card cage (directly behind the inputs). The BNC center conductor connects to the female center of the SMB jack. The BNC shield connects to the SMB shield. Use the DVM to verify that the B input BNC connects properly to the rear most SMB jack. If both connections are OK, proceed to Procedure F2 to replace the Analog board. Otherwise contact SRS for more information.

Service Procedure F4 (Checking the Amplitude)

1. Check the amplitude accuracy by following the procedure outlined in Performance Test 4 (Amplitude Accuracy and Flatness) in Chapter 6 of the SR780 Operating Manual. If the test passes, then check the signal source in question. If the test fails, follow Procedure F2 to replace an Analog board.

Service Procedure F5 (Checking the Trigger)

1. Internal Trigger check: Reset the unit by holding down the backspace key while turning the power ON. Use the function generator to apply a known 10 kHz, 0.5 Vrms sine wave to both A inputs. Verify that the signal appears in both spectra (do not change any settings). In the [Trigger] menu, set the Trigger Mode to Auto Arm. Set the Trigger Source to Ch1 and verify that the Trig indicator in the display turns on. Set the Trigger Source to Ch2 and verify that the Trig indicator turns on. If

neither trigger source works, follow Procedure F1 to replace the DSP board. If one of the internal sources fails, the problem is probably with the Analog board for that channel. Follow Procedure F2 to replace the Analog board. If both trigger sources are OK, continue.

2. External Trigger check: Reset the unit by holding down the backspace key while turning the power ON. Use the function generator to apply a known 10 kHz, 0.5 Vrms sine wave to the Ch1 A input. Use a BNC cable to connect the signal to the Trigger Input as well. Verify that the signal appears in the top spectrum (do not change any settings). In the [Trigger] menu, set the Trigger Mode to Auto Arm. Set the Trigger Source to External and verify that the Trig indicator in the display turns on. If the unit does not trigger, proceed to step 4.
3. External TTL Trigger check: Reset the unit by holding down the backspace key while turning the power ON. Use the function generator to apply a known 10 kHz, 0.5 Vrms sine wave to the Ch1 A input. Use a BNC cable to connect the function generator TTL SYNC output to the Trigger Input as well. Verify that the signal appears in the top spectrum (do not change any settings). In the [Trigger] menu, set the Trigger Mode to Auto Arm. Set the Trigger Source to Ext TTL and verify that the Trig indicator in the display turns on. If the unit does not trigger, proceed to step 4.

4. **Turn the power OFF. Remove the power cord from the power entry module.**
5. Remove the eight black screws which secure the top lid. There are four screws on each side, two at the front and two at the rear. Remove the lid by pulling the lid towards the back and upwards.
6. See Figure 3-1 to locate the Power Supply board. Make sure that the red LED at the top edge of the board is OFF before proceeding.
7. See Figure 3-2 to locate the DSP board (in the Analyzer card cage closest to the CRT). Remove the card cage cover by loosening the five screws in the cover.
8. Remove the DSP board by using the card ejectors to release the board and pull the board up and out.
9. Use the DVM to verify that the Trigger Input BNC center conductor and shield are connected to the rear most SMB jack at the bottom of the card cage (directly behind the Trigger Input). The BNC center conductor connects to the female center of the SMB jack. The BNC shield connects to the SMB shield. If the connection is OK, follow Procedure F1 to replace the DSP board. Otherwise contact SRS for more information.

Service Procedure F6 (Checking the Source)

1. Check the source output on the oscilloscope. Reset the unit by holding down the backspace key while turning the power ON. Connect the Source Output to the oscilloscope. In the [Source] menu, choose Sine. A 10.24 kHz, 1.0 Vpp sine wave should be displayed on the oscilloscope. If not, continue.

2. **Turn the power OFF. Remove the power cord from the power entry module.**

3. Remove the eight black screws which secure the top lid. There are four screws on each side, two at the front and two at the rear. Remove the lid by pulling the lid towards the back and upwards.
4. See Figure 3-1 to locate the Power Supply board. Make sure that the red LED at the top edge of the board is OFF before proceeding.
5. See Figure 3-2 to locate the DSP board (in the Analyzer card cage closest to the CRT). Remove the card cage cover by loosening the five screws in the cover.
6. Remove the DSP board by using the card ejectors to release the board and pull the board up and out.
7. Use the DVM to verify that the Source Output BNC center conductor and shield are connected to the front most SMB jack at the bottom of the card cage (directly behind the Source Output). The BNC center conductor connects to the female center of the SMB jack. The BNC shield connects to the SMB shield. If the connection is OK, follow Procedure F1 to replace the DSP board. Otherwise, contact SRS for more information.

Service Procedure F7 (DSP Memory Module Replacement)

1. Before replacing a memory module, reset the unit by turning the power OFF and ON while holding down the backspace key. If this does not fix the problem, continue.

2. **Turn the power OFF. Remove the power cord from the power entry module.**
3. Remove the eight black screws which secure the top lid. There are four screws on each side, two at the front and two at the rear. Remove the lid by pulling the lid towards the back and upwards.
4. See Figure 3-1 to locate the Power Supply board. Make sure that the red LED at the top edge of the board is OFF before proceeding.
5. See Figure 3-2 to locate the DSP board (in the Analyzer card cage nearest the CRT). Remove the card cage cover by loosening the five screws in the cover.
6. Remove the DSP board by using the card ejectors to release the board and pull the board up and out.
7. There are three memory SIMM modules on the DSP board. They are the DRAM, Data Memory and Program Memory. The Data and Program modules are SRS custom parts and must be replaced with SRS supplied parts. The standard DRAM buffer is a 2Mx32, 70ns (or faster), 72 pin SIMM.

   The DRAM upgrades are 4Mx32 and 8Mx32, 70ns (or faster), 72 pin SIMM's. The DRAM module must have its identification pin(s) grounded in order to work in the SR780. These pins are standard in all modules but may not be connected in modules not supplied by SRS. Check the data sheet for the module to ensure that the correct ID pins are connected.
8. To remove a memory module, simply release the spring latches at each end of the socket.
9. Insert the new module, making sure that the notch end is correctly positioned. Make sure that the spring latches are engaged around the edge of the board.

10. Replace the DSP board making sure to align the board edges with the plastic card guides. Make sure that the board is aligned with the connectors and jacks at the bottom of the card cage before pressing the board into place. Do not press the board in if the jacks at the front are not engaged properly. **These jacks are easily damaged!** Make sure that the board is seated completely in its socket.
11. Replace the card cage cover and tighten the cover screws.
12. Replace the top lid and refasten the eight lid screws.
13. Reset the unit by turning the power ON while holding down the backspace key.

Service Procedure G1 (Replacing the Disk Drive)

1. **Turn the power OFF. Remove the power cord from the power entry module.**
2. Remove the eight black screws which secure the top lid. There are four screws on each side, two at the front and two at the rear. Remove the lid by pulling the lid towards the back and upwards.
3. Remove the two hex screws which connect the handle arms to the chassis. Remove the handle by pulling the arms apart slightly.
4. Remove the eight screws which secure the front panel bezel to the chassis. These screws are exposed when the lid is removed. There are two screws along each side and the top and bottom.
5. Remove the front panel bezel by pulling it slowly off towards the front. The keypad is attached to the bezel. There is a ground wire and cable extending from the keypad back to the main chassis.
6. The keypad and knob are attached to the Disk card by a ribbon cable. This cable attaches next to the Keyboard connector below the CRT. Note the cable orientation and remove the cable from the Disk card.
7. Pull the Disk card straight out to remove it.
8. Insert the new Disk card. Make sure that the card is in the plastic card guides under the CRT. Do not force the card in if the card is not in the guides. Push the card in until the connector is secure.
9. Reattach the keypad cable to the Disk card.
10. Replace the front panel bezel, being careful to engage the slots which secure the front of the Disk card.
11. Replace the eight bezel screws. Replace the handle and the pivot screws.
12. Replace the top lid and refasten the eight lid screws.
13. Replace the power cord. Reset the unit by turning the power ON while holding down the backspace key. Run the Disk test in the [System]<Diagnostics> menu.

Service Procedure J1 (Adjusting the DC Offset and CMR)

1. The DC Offset and CMR adjustments affect each other and must be done together. This procedure requires a 50Ω terminator. A small (but long) slotted screwdriver is required to adjust the potentiometers.
2. Reset the unit by turning the power ON while holding down the backspace key. Let it warm up for at least an hour.

   The adjustment procedure for the two channels is the same. The procedure described below uses Channel 1 as the example. To adjust Channel 2, press [Active Display] to switch to DisplayB (Spectrum of Ch2) and when necessary, adjust the Ch2 input parameters in the [Input] menu and make the input connections to the Ch2 A and B inputs. Press [Auto Scale B] instead of [Auto Scale A] when necessary.
3. Remove the eight black screws which secure the top lid. There are four screws on each side, two at the front and two at the rear. Remove the lid by pulling the lid towards the back and upwards. Remove the card cage cover by loosening the five screws which secure it.
4. The adjustment pots on the Analog board are towards the front. Remove the small shield cover at the front of the Analog board. Simply pull the shield up using the finger hole.
5. The five adjustment pots are shown in Figure 3-3. Do not make any other adjustments!

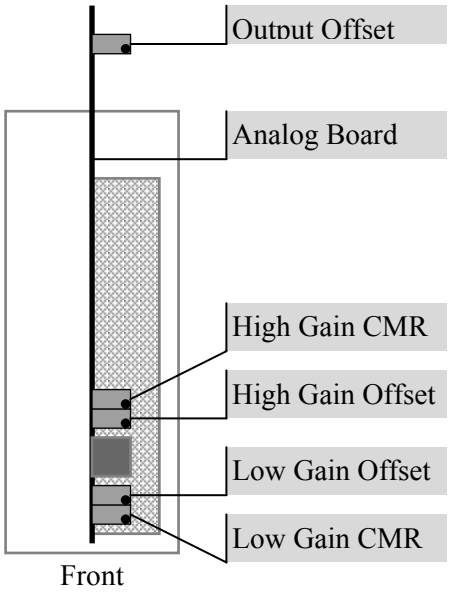


Figure 3-3 Analog Adjustments

6. Press the following keys to clear the internal offset calibrations and turn Auto Offset Off.

   [System]
   <Diagnostics>
   <Kill AutoOff>

7. Press the following keys to set the input configuration and frequency span.

   [Input]
   <Ch1 Input Range> (<Ch2 Input Range>)
   [0] [Enter]
   <Ch1 Grounding> (<Ch2 Grounding>)
   Select (Ground) [Enter]
   <Ch1 Coupling> (<Ch1 Coupling>)
   Select (DC) [Enter]

   [Freq]
   <Span>
   [1] [.] [6] Select (kHz) [Enter]
   <Start Freq.>
   [0] [Enter]

   [Marker]
   <Width>
   [Link] Select (Spot) [Enter]

8. Connect a 50Ω termination to the Ch1 (Ch2) A input. This shorts the input to ground so the analyzer's own DC offset is measured.

   Rotate the knob so that the marker is at 0 Hz. The marker positions display above the graph should read 0 Hz. The marker amplitude is the DC offset.

   If the marker reading is less than -50 dBV (remember, -40 dBV is greater than -50 dBV and -60 dBV is less than -50 dBV) then proceed to the next step. If the reading is greater than -50 dBV, adjust the **Output Offset** pot to minimize the marker reading (see Fig 3-3).

9. Press

   [Input]
   <Ch1 Input Range> (<Ch2 Input Range>)
   [-] [2] [0] [Enter]

   [Auto Scale A] [Auto Scale B]

   If the marker reading is less than -70 dBV (remember, -60 dBV is greater than -70 dBV and -80 dBV is less than -70 dBV) then proceed to the next step. If the reading is greater than -70 dBV, adjust the **High Gain Offset** pot to minimize the marker reading (see Fig 3-3).

10. Press

    [Input]
    <Ch1 Input Range> (<Ch2 Input Range>)
    [-] [5] [0] [Enter]

    [Auto Scale A] [Auto Scale B]

    If the marker reading is less than -85 dBV (remember, -80 dBV is greater than -85 dBV and -90 dBV is less than -85 dBV) then proceed to the next step. If the reading is greater than -85 dBV, adjust the **High Gain Offset** pot to minimize the marker reading (see Fig 3-3).

11. Press

[Input]
<Ch1 Input Range> (<Ch2 Input Range>)
[0] [Enter]

[Auto Scale A] [Auto Scale B]

If the marker reading is less than -50 dBV (remember, -40 dBV is greater than -50 dBV and -60 dBV is less than -50 dBV) then proceed to the next step. If the reading is greater than -50 dBV, adjust the **Low Gain Offset** pot to minimize the marker reading (see Fig 3-3).

12. Connect the Source Output to both the Ch1 A and B inputs (Ch2 A and B). Use equal length cables from A and B to a BNC TEE. Connect the cable from the Source Output to the TEE.

    Press

    [Source]
    <Sine>
    <Frequency 1>
    [1] [.] [0] [2] [4] Select (kHz) [Enter]

    [Input]
    <Ch1 Input Range> (<Ch2 Input Range>)
    [-] [2] [Enter]

    [Auto Scale A] [Auto Scale B]

    Use the knob to move the marker to 1.024 kHz. The amplitude should be -6 dBV.

    [Marker Ref] {Marker now reads relative to the signal amplitude}

    [Input]
    <Ch1 Input Mode> <Ch2 Input Mode>
    Select (A-B) [Enter]

    Do not move the marker. The marker reading is the common mode rejection ration (CMRR). If the reading is below -100 dB, then do not make any adjustment. If the reading is above -100 dB, then adjust the **High Gain CMR** pot to minimize the reading (see Fig 3-3).

13. Press

    [Input]
    <Ch1 Input Range> (<Ch2 Input Range>)
    [0] [Enter]
    <Ch1 Input Mode> <Ch2 Input Mode>
    Select (A) [Enter]

    [Auto Scale A] [Auto Scale B]

    [Marker Ref] {Marker now reads absolute signal amplitude}

    Use the knob to move the marker to 1.024 kHz. The amplitude should be -6 dBV.

    [Marker Ref] {Marker now reads relative to the signal amplitude}

[Input]
<Ch1 Input Mode> <Ch2 Input Mode>
Select (A-B) [Enter]

Do not move the marker. The marker reading is the common mode rejection ration (CMRR). If the reading is below -80 dB, then do not make any adjustment. If the reading is above -80 dB, then adjust the **Low Gain CMR** pot to minimize the reading (see Fig 3-3).

14. Remove the cables from the A and B inputs. Connect a 50Ω termination to the Ch1 (Ch2) A input. This shorts the input to ground so the analyzer's own DC offset is measured.

    [Input]
    <Ch1 Input Range> (<Ch2 Input Range>)
    [-] [5] [0] [Enter]
    <Ch1 Input Mode> <Ch2 Input Mode>
    Select (A) [Enter]

    [Marker Ref] {Marker now reads absolute signal amplitude}

    Use the knob to move the marker to 0 Hz. The marker position should display 0 Hz. The marker reading is the DC offset.

    [Auto Scale A] [Auto Scale B]

    If the marker reading is less than -85 dBV (remember, -80 dBV is greater than -85 dBV and -90 dBV is less than -85 dBV) then proceed to the next step. If the reading is greater than -85 dBV, adjust the **High Gain Offset** pot to minimize the marker reading (see Fig 3-3).

15. Press

    [Input]
    <Ch1 Input Range> (<Ch2 Input Range>)
    [0] [Enter]

    [Auto Scale A] [Auto Scale B]

    If the marker reading is less than -50 dBV (remember, -40 dBV is greater than -50 dBV and -60 dBV is less than -50 dBV) then proceed to the next step. If the reading is greater than -50 dBV, adjust the **Low Gain Offset** pot to minimize the marker reading (see Fig 3-3).

16. This completes the adjustment procedure.

17 Replace the small shield at the front. Replace the card cage cover and tighten the cover screws.

18. Replace the top lid and refasten the eight lid screws.

19. Reset the unit by turning the power ON while holding down the backspace key. If the DC offset or Common Mode Rejection are still a problem, repeat this procedure one more time. Otherwise, follow Procedure F2 to replace the Analog board.

Chapter 4

Parts Lists

This chapter lists the components on the major circuit assemblies in the SR780. The schematics for each board are shown in Chapter 5.

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System Backplane Parts List	**4-13**
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CPU Board Parts List

This section covers schematics MCPU-1 through MCPU-9 in Chapter 5.

CPU Board Parts List			
Ref No.	**SRS Part No.**	**Value**	**Component Description**
BT701	6-00001-612	BR-2/3A 2PIN PC	Battery
C 101	5-00134-529	100P	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 102	5-00134-529	100P	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 401	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 602	5-00012-501	330P	Capacitor, Ceramic Disc, 50V, 10%, SL
C 603	5-00012-501	330P	Capacitor, Ceramic Disc, 50V, 10%, SL
C 701	5-00064-513	.0047U	Capacitor, Mylar/Poly, 50V, 5%, Rad
C 704	5-00012-501	330P	Capacitor, Ceramic Disc, 50V, 10%, SL
C 705	5-00012-501	330P	Capacitor, Ceramic Disc, 50V, 10%, SL
C 706	5-00022-501	.001U	Capacitor, Ceramic Disc, 50V, 10%, SL
C 901	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 902	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 903	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 904	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 905	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 906	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 907	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 908	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 909	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 910	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 911	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 912	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 913	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 914	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 915	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 916	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 917	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 918	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 919	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 920	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 921	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 922	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 923	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 924	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 925	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 926	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 927	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 928	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 929	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 930	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 931	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 932	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 933	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 934	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 935	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 936	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX

CPU Board Parts List			
Ref No.	**SRS Part No.**	**Value**	**Component Description**
C 937	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 938	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 939	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 950	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 951	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 952	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 953	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 954	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 955	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 956	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 957	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 958	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 959	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 970	5-00038-509	10U	Capacitor, Electrolytic, 50V, 20%, Rad
C 971	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 972	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
D 601	3-00004-301	1N4148	Diode
D 602	3-00004-301	1N4148	Diode
D 603	3-00004-301	1N4148	Diode
D 604	3-00004-301	1N4148	Diode
D 605	3-00004-301	1N4148	Diode
D 606	3-00004-301	1N4148	Diode
D 607	3-00004-301	1N4148	Diode
D 608	3-00004-301	1N4148	Diode
D 702	3-00004-301	1N4148	Diode
D 703	3-00004-301	1N4148	Diode
D 704	3-00004-301	1N4148	Diode
D 705	3-00004-301	1N4148	Diode
J 901	1-00236-109	120 PIN RT ANGL	DIN Connector, Male
N 101	4-00707-425	2.2KX7	Resistor Network SIP 1/4W 2% (Common)
N 201	4-00852-420	82X8	Resistor Network, DIP, 1/4W,2%,8 Ind
N 202	4-00852-420	82X8	Resistor Network, DIP, 1/4W,2%,8 Ind
N 203	4-00852-420	82X8	Resistor Network, DIP, 1/4W,2%,8 Ind
N 204	4-00707-425	2.2KX7	Resistor Network SIP 1/4W 2% (Common)
N 205	4-00422-421	82X5	Res. Network, SIP, 1/4W,2% (Isolated)
N 501	4-00261-425	2.2KX9	Resistor Network SIP 1/4W 2% (Common)
N 601	4-00261-425	2.2KX9	Resistor Network SIP 1/4W 2% (Common)
N 602	4-00220-420	10KX8	Resistor Network, DIP, 1/4W,2%,8 Ind
N 603	4-00244-421	10KX4	Res. Network, SIP, 1/4W,2% (Isolated)
N 701	4-00856-421	1.0KX5	Res. Network, SIP, 1/4W,2% (Isolated)
PC1	7-00522-701	MEGAPLAT CPU	Printed Circuit Board
Q 701	3-00022-325	2N3906	Transistor, TO-92 Package
Q 705	3-00022-325	2N3906	Transistor, TO-92 Package
R 201	4-00065-401	3.3K	Resistor, Carbon Film, 1/4W, 5%
R 202	4-00065-401	3.3K	Resistor, Carbon Film, 1/4W, 5%
R 502	4-00065-401	3.3K	Resistor, Carbon Film, 1/4W, 5%
R 707	4-00065-401	3.3K	Resistor, Carbon Film, 1/4W, 5%
R 710	4-00080-401	47	Resistor, Carbon Film, 1/4W, 5%
R 711	4-00080-401	47	Resistor, Carbon Film, 1/4W, 5%
R 712	4-00021-401	1.0K	Resistor, Carbon Film, 1/4W, 5%
R 713	4-00080-401	47	Resistor, Carbon Film, 1/4W, 5%

CPU Board Parts List			
Ref No.	**SRS Part No.**	**Value**	**Component Description**
R 714	4-00021-401	1.0K	Resistor, Carbon Film, 1/4W, 5%
R 716	4-00054-401	200K	Resistor, Carbon Film, 1/4W, 5%
SO101	1-00108-150	PLCC 68 TH	Socket, THRU-HOLE
SO301	1-00156-150	32 PIN 600 MIL	Socket, THRU-HOLE
SO302	1-00156-150	32 PIN 600 MIL	Socket, THRU-HOLE
SO303	1-00156-150	32 PIN 600 MIL	Socket, THRU-HOLE
SO304	1-00156-150	32 PIN 600 MIL	Socket, THRU-HOLE
SO305	1-00156-150	32 PIN 600 MIL	Socket, THRU-HOLE
SO306	1-00156-150	32 PIN 600 MIL	Socket, THRU-HOLE
SO801	1-00156-150	32 PIN 600 MIL	Socket, THRU-HOLE
SO802	1-00156-150	32 PIN 600 MIL	Socket, THRU-HOLE
TP701	1-00143-101	TEST JACK	Vertical Test Jack
TP702	1-00143-101	TEST JACK	Vertical Test Jack
U 101	3-00595-360	80C186-20	Integrated Circuit (Surface Mount Pkg)
U 102	3-00591-340	74ACT04	Integrated Circuit (Thru-hole Pkg)
U 103	6-00147-621	40.000 MHZ	Crystal Oscillator
U 201	3-00585-340	74ACT573	Integrated Circuit (Thru-hole Pkg)
U 202	3-00585-340	74ACT573	Integrated Circuit (Thru-hole Pkg)
U 203	3-00585-340	74ACT573	Integrated Circuit (Thru-hole Pkg)
U 204	3-00586-340	74ACT245	Integrated Circuit (Thru-hole Pkg)
U 205	3-00586-340	74ACT245	Integrated Circuit (Thru-hole Pkg)
U 206	3-00586-340	74ACT245	Integrated Circuit (Thru-hole Pkg)
U 207	3-00586-340	74ACT245	Integrated Circuit (Thru-hole Pkg)
U 208	3-00585-340	74ACT573	Integrated Circuit (Thru-hole Pkg)
U 209	3-00586-340	74ACT245	Integrated Circuit (Thru-hole Pkg)
U 210	3-00586-340	74ACT245	Integrated Circuit (Thru-hole Pkg)
U 211	3-00587-340	74ACT32	Integrated Circuit (Thru-hole Pkg)
U 212	3-00588-340	74ACT08	Integrated Circuit (Thru-hole Pkg)
U 213	3-00693-343	SR780 U213	GAL/PAL, I.C.
U 214	3-00692-343	SR780 U214	GAL/PAL, I.C.
U 216	3-00587-340	74ACT32	Integrated Circuit (Thru-hole Pkg)
U 401	3-00551-341	128KX8-70	STATIC RAM, I.C.
U 402	3-00551-341	128KX8-70	STATIC RAM, I.C.
U 403	3-00551-341	128KX8-70	STATIC RAM, I.C.
U 404	3-00551-341	128KX8-70	STATIC RAM, I.C.
U 501	3-00342-340	74ALS138	Integrated Circuit (Thru-hole Pkg)
U 503	3-00342-340	74ALS138	Integrated Circuit (Thru-hole Pkg)
U 504	3-00274-340	74AC74	Integrated Circuit (Thru-hole Pkg)
U 505	3-00347-340	74LS148	Integrated Circuit (Thru-hole Pkg)
U 506	3-00440-340	74HC573	Integrated Circuit (Thru-hole Pkg)
U 507	3-00043-340	74HC21	Integrated Circuit (Thru-hole Pkg)
U 508	3-00303-340	74HC164	Integrated Circuit (Thru-hole Pkg)
U 601	3-00467-340	74HCT74	Integrated Circuit (Thru-hole Pkg)
U 603	3-00265-340	74HC595	Integrated Circuit (Thru-hole Pkg)
U 606	3-00440-340	74HC573	Integrated Circuit (Thru-hole Pkg)
U 607	3-00454-340	74HC574	Integrated Circuit (Thru-hole Pkg)
U 608	3-00440-340	74HC573	Integrated Circuit (Thru-hole Pkg)
U 609	3-00411-340	74HC273	Integrated Circuit (Thru-hole Pkg)
U 610	3-00467-340	74HCT74	Integrated Circuit (Thru-hole Pkg)
U 611	3-00467-340	74HCT74	Integrated Circuit (Thru-hole Pkg)
U 612	3-00039-340	74HC14	Integrated Circuit (Thru-hole Pkg)

CPU Board Parts List			
Ref No.	**SRS Part No.**	**Value**	**Component Description**
U 701	3-00594-340	MAX693A	Integrated Circuit (Thru-hole Pkg)
U 702	3-00900-340	DS12C887	Integrated Circuit (Thru-hole Pkg)
U 703	3-00046-340	74HC374	Integrated Circuit (Thru-hole Pkg)
U 704	3-00263-340	DS75451N	Integrated Circuit (Thru-hole Pkg)
U 705	3-00039-340	74HC14	Integrated Circuit (Thru-hole Pkg)
Z 0	0-00089-033	4"	Tie
Z 0	0-00373-000	CARD EJECTOR	Hardware, Misc.

Video/IO Board Parts List

This section covers schematics MVID-10 through MVID-14 in Chapter 5.

Video/IO Board Parts List			
Ref No.	**SRS Part No.**	**Value**	**Component Description**
C 1101	5-00134-529	100P	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 1102	5-00219-529	.01U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 1103	5-00219-529	.01U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 1104	5-00218-529	120P	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 1105	5-00134-529	100P	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 1106	5-00219-529	.01U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 1107	5-00219-529	.01U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 1108	5-00218-529	120P	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 1109	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 1110	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 1201	5-00003-501	10P	Capacitor, Ceramic Disc, 50V, 10%, SL
C 1202	5-00003-501	10P	Capacitor, Ceramic Disc, 50V, 10%, SL
C 1203	5-00022-501	.001U	Capacitor, Ceramic Disc, 50V, 10%, SL
C 1204	5-00316-512	.027U	Cap, Stacked Metal Film 50V 5% -40/+85c
C 1205	5-00054-512	.047U	Cap, Stacked Metal Film 50V 5% -40/+85c
C 1206	5-00022-501	.001U	Capacitor, Ceramic Disc, 50V, 10%, SL
C 1303	5-00012-501	330P	Capacitor, Ceramic Disc, 50V, 10%, SL
C 1304	5-00012-501	330P	Capacitor, Ceramic Disc, 50V, 10%, SL
C 1305	5-00178-501	62P	Capacitor, Ceramic Disc, 50V, 10%, SL
C 1306	5-00178-501	62P	Capacitor, Ceramic Disc, 50V, 10%, SL
C 1401	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 1402	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 1403	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 1404	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 1405	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 1406	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 1407	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 1408	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 1409	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 1410	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 1411	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 1412	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 1413	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 1414	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 1415	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 1416	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 1417	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 1418	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 1419	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 1420	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 1440	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 1441	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 1442	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 1445	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 1446	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX

Video/IO Board Parts List			
Ref No.	**SRS Part No.**	**Value**	**Component Description**
C 1447	5-00262-548	.01U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 1450	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 1451	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 1452	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 1453	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 1454	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
J 1401	1-00236-109	120 PIN RT ANGL	DIN Connector, Male
N 1001	4-00334-425	10KX5	Resistor Network SIP 1/4W 2% (Common)
N 1101	4-00284-421	1.0KX4	Res. Network, SIP, 1/4W,2% (Isolated)
N 1102	4-00863-421	1.2KX4	Res. Network, SIP, 1/4W,2% (Isolated)
N 1201	4-00221-425	150X5	Resistor Network SIP 1/4W 2% (Common)
PC1	7-00523-701	MEGA VIDEO	Printed Circuit Board
Q 1001	3-00021-325	2N3904	Transistor, TO-92 Package
Q 1002	3-00022-325	2N3906	Transistor, TO-92 Package
Q 1101	3-00022-325	2N3906	Transistor, TO-92 Package
Q 1102	3-00022-325	2N3906	Transistor, TO-92 Package
Q 1103	3-00022-325	2N3906	Transistor, TO-92 Package
Q 1104	3-00022-325	2N3906	Transistor, TO-92 Package
Q 1105	3-00022-325	2N3906	Transistor, TO-92 Package
Q 1106	3-00022-325	2N3906	Transistor, TO-92 Package
R 1001	4-00088-401	51K	Resistor, Carbon Film, 1/4W, 5%
R 1002	4-00034-401	10K	Resistor, Carbon Film, 1/4W, 5%
R 1003	4-00021-401	1.0K	Resistor, Carbon Film, 1/4W, 5%
R 1004	4-00785-402	100	Resistor, Carbon Comp, 1/2W, 5%
R 1101	4-00472-407	806	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 1102	4-00080-401	47	Resistor, Carbon Film, 1/4W, 5%
R 1103	4-00165-407	200	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 1104	4-00165-407	200	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 1105	4-00472-407	806	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 1106	4-00141-407	100	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 1107	4-00215-407	909	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 1108	4-00027-401	1.5K	Resistor, Carbon Film, 1/4W, 5%
R 1109	4-00472-407	806	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 1110	4-00080-401	47	Resistor, Carbon Film, 1/4W, 5%
R 1111	4-00165-407	200	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 1112	4-00472-407	806	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 1113	4-00165-407	200	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 1114	4-00141-407	100	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 1115	4-00215-407	909	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 1116	4-00027-401	1.5K	Resistor, Carbon Film, 1/4W, 5%
R 1117	4-00041-401	150	Resistor, Carbon Film, 1/4W, 5%
R 1201	4-00273-401	5.6K	Resistor, Carbon Film, 1/4W, 5%
R 1202	4-00034-401	10K	Resistor, Carbon Film, 1/4W, 5%
R 1204	4-00090-401	560	Resistor, Carbon Film, 1/4W, 5%
R 1205	4-00090-401	560	Resistor, Carbon Film, 1/4W, 5%
R 1301	4-00022-401	1.0M	Resistor, Carbon Film, 1/4W, 5%
R 1302	4-00062-401	270	Resistor, Carbon Film, 1/4W, 5%
R 1303	4-00034-401	10K	Resistor, Carbon Film, 1/4W, 5%
R 1304	4-00084-401	5.1K	Resistor, Carbon Film, 1/4W, 5%
SO1201	1-00232-150	52 PLCC TH	Socket, THRU-HOLE

Video/IO Board Parts List			
Ref No.	**SRS Part No.**	**Value**	**Component Description**
TP2	1-00143-101	TEST JACK	Vertical Test Jack
TP101	1-00143-101	TEST JACK	Vertical Test Jack
TP102	1-00143-101	TEST JACK	Vertical Test Jack
TP103	1-00143-101	TEST JACK	Vertical Test Jack
TP104	1-00143-101	TEST JACK	Vertical Test Jack
TP105	1-00143-101	TEST JACK	Vertical Test Jack
TP106	1-00143-101	TEST JACK	Vertical Test Jack
U 1001	6-00178-621	19.590 MHZ	Crystal Oscillator
U 1002	3-00274-340	74AC74	Integrated Circuit (Thru-hole Pkg)
U 1003	3-00598-340	63484P-98	Integrated Circuit (Thru-hole Pkg)
U 1004	3-00585-340	74ACT573	Integrated Circuit (Thru-hole Pkg)
U 1005	3-00585-340	74ACT573	Integrated Circuit (Thru-hole Pkg)
U 1006	3-00551-341	128KX8-70	STATIC RAM, I.C.
U 1007	3-00551-341	128KX8-70	STATIC RAM, I.C.
U 1008	3-00592-340	74ACT299	Integrated Circuit (Thru-hole Pkg)
U 1009	3-00592-340	74ACT299	Integrated Circuit (Thru-hole Pkg)
U 1010	3-00592-340	74ACT299	Integrated Circuit (Thru-hole Pkg)
U 1011	3-00592-340	74ACT299	Integrated Circuit (Thru-hole Pkg)
U 1012	3-00277-340	74HC11	Integrated Circuit (Thru-hole Pkg)
U 1013	3-00274-340	74AC74	Integrated Circuit (Thru-hole Pkg)
U 1014	3-00274-340	74AC74	Integrated Circuit (Thru-hole Pkg)
U 1016	3-00591-340	74ACT04	Integrated Circuit (Thru-hole Pkg)
U 1017	3-00588-340	74ACT08	Integrated Circuit (Thru-hole Pkg)
U 1101	3-00241-340	AD7528JN	Integrated Circuit (Thru-hole Pkg)
U 1102	3-00087-340	LF347	Integrated Circuit (Thru-hole Pkg)
U 1103	3-00122-325	79L05	Transistor, TO-92 Package
U 1201	3-00596-360	DP8473AV	Integrated Circuit (Surface Mount Pkg)
U 1202	3-00645-340	NAT9914BPD	Integrated Circuit (Thru-hole Pkg)
U 1203	3-00078-340	DS75160A	Integrated Circuit (Thru-hole Pkg)
U 1204	3-00079-340	DS75161A	Integrated Circuit (Thru-hole Pkg)
U 1301	3-00051-340	74HCU04	Integrated Circuit (Thru-hole Pkg)
U 1303	8-00091-860	SR215	SRS sub assemblies
U 1304	3-00110-340	MC1489	Integrated Circuit (Thru-hole Pkg)
U 1305	3-00109-340	MC1488	Integrated Circuit (Thru-hole Pkg)
U 1401	3-00342-340	74ALS138	Integrated Circuit (Thru-hole Pkg)
U 1402	3-00342-340	74ALS138	Integrated Circuit (Thru-hole Pkg)
X 1201	6-00068-620	24.000 MHZ	Crystal
X 1301	6-00037-620	3.6864 MHZ	Crystal
Z 0	0-00373-000	CARD EJECTOR	Hardware, Misc.

Power Supply Board Parts List

This section covers schematics MPRW-1 through MPRW-2 in Chapter 5.

Power Supply Board Parts List			
Ref No.	**SRS Part No.**	**Value**	**Component Description**
C 1	5-00134-529	100P	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 2	5-00219-529	.01U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 3	5-00022-501	.001U	Capacitor, Ceramic Disc, 50V, 10%, SL
C 4	5-00134-529	100P	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 5	5-00219-529	.01U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 6	5-00022-501	.001U	Capacitor, Ceramic Disc, 50V, 10%, SL
C 10	5-00124-526	5600U	Capacitor, Electrolytic, 35V, 20%, Rad
C 11	5-00124-526	5600U	Capacitor, Electrolytic, 35V, 20%, Rad
C 12	5-00127-524	2.2U	Capacitor, Tantalum, 50V, 20%, Rad
C 13	5-00127-524	2.2U	Capacitor, Tantalum, 50V, 20%, Rad
C 14	5-00127-524	2.2U	Capacitor, Tantalum, 50V, 20%, Rad
C 15	5-00127-524	2.2U	Capacitor, Tantalum, 50V, 20%, Rad
C 20	5-00124-526	5600U	Capacitor, Electrolytic, 35V, 20%, Rad
C 21	5-00124-526	5600U	Capacitor, Electrolytic, 35V, 20%, Rad
C 22	5-00127-524	2.2U	Capacitor, Tantalum, 50V, 20%, Rad
C 23	5-00127-524	2.2U	Capacitor, Tantalum, 50V, 20%, Rad
C 24	5-00127-524	2.2U	Capacitor, Tantalum, 50V, 20%, Rad
C 25	5-00127-524	2.2U	Capacitor, Tantalum, 50V, 20%, Rad
C 30	5-00041-509	220U	Capacitor, Electrolytic, 50V, 20%, Rad
C 31	5-00127-524	2.2U	Capacitor, Tantalum, 50V, 20%, Rad
C 32	5-00127-524	2.2U	Capacitor, Tantalum, 50V, 20%, Rad
C 40	5-00041-509	220U	Capacitor, Electrolytic, 50V, 20%, Rad
C 41	5-00127-524	2.2U	Capacitor, Tantalum, 50V, 20%, Rad
C 42	5-00127-524	2.2U	Capacitor, Tantalum, 50V, 20%, Rad
C 50	5-00127-524	2.2U	Capacitor, Tantalum, 50V, 20%, Rad
C 51	5-00127-524	2.2U	Capacitor, Tantalum, 50V, 20%, Rad
C 52	5-00127-524	2.2U	Capacitor, Tantalum, 50V, 20%, Rad
C 53	5-00127-524	2.2U	Capacitor, Tantalum, 50V, 20%, Rad
D 1	3-00479-301	MUR410	Diode
D 2	3-00479-301	MUR410	Diode
D 3	3-00479-301	MUR410	Diode
D 4	3-00479-301	MUR410	Diode
D 5	3-00479-301	MUR410	Diode
D 6	3-00479-301	MUR410	Diode
D 7	3-00479-301	MUR410	Diode
D 8	3-00479-301	MUR410	Diode
D 9	3-00004-301	1N4148	Diode
D 10	3-00004-301	1N4148	Diode
D 11	3-00004-301	1N4148	Diode
D 12	3-00004-301	1N4148	Diode
D 13	3-00011-303	RED	LED, T1 Package
D 14	3-00004-301	1N4148	Diode
D 15	3-00004-301	1N4148	Diode
D 16	3-00004-301	1N4148	Diode
D 17	3-00004-301	1N4148	Diode

Power Supply Board Parts List			
Ref No.	**SRS Part No.**	**Value**	**Component Description**
JP1	1-00236-109	120 PIN RT ANGL	DIN Connector, Male
JP2	1-00039-116	5 PIN, WHITE	Header, Amp, MTA-156
JP3	1-00114-116	10 PIN, WHITE	Header, Amp, MTA-156
N 1	4-00244-421	10KX4	Res. Network, SIP, 1/4W,2% (Isolated)
PC1	7-00526-701	SR780-P/S	Printed Circuit Board
R 10	4-00618-402	2.2K	Resistor, Carbon Comp, 1/2W, 5%
R 11	4-00618-402	2.2K	Resistor, Carbon Comp, 1/2W, 5%
R 12	4-00522-407	243	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 13	4-00444-407	3.65K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 14	4-00522-407	243	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 15	4-00444-407	3.65K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 20	4-00618-402	2.2K	Resistor, Carbon Comp, 1/2W, 5%
R 21	4-00618-402	2.2K	Resistor, Carbon Comp, 1/2W, 5%
R 22	4-00522-407	243	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 23	4-00444-407	3.65K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 24	4-00522-407	243	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 25	4-00444-407	3.65K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 31	4-00034-401	10K	Resistor, Carbon Film, 1/4W, 5%
R 32	4-00522-407	243	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 33	4-00705-407	5.62K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 41	4-00034-401	10K	Resistor, Carbon Film, 1/4W, 5%
R 42	4-00522-407	243	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 43	4-00705-407	5.62K	Resistor, Metal Film, 1/8W, 1%, 50PPM
TP1	1-00143-101	TEST JACK	Vertical Test Jack
TP2	1-00143-101	TEST JACK	Vertical Test Jack
TP3	1-00143-101	TEST JACK	Vertical Test Jack
TP4	1-00143-101	TEST JACK	Vertical Test Jack
TP5	1-00143-101	TEST JACK	Vertical Test Jack
TP10	1-00143-101	TEST JACK	Vertical Test Jack
TP11	1-00143-101	TEST JACK	Vertical Test Jack
TP12	1-00143-101	TEST JACK	Vertical Test Jack
TP13	1-00143-101	TEST JACK	Vertical Test Jack
TP14	1-00143-101	TEST JACK	Vertical Test Jack
TP15	1-00143-101	TEST JACK	Vertical Test Jack
TP16	1-00143-101	TEST JACK	Vertical Test Jack
TP17	1-00143-101	TEST JACK	Vertical Test Jack
TP18	1-00143-101	TEST JACK	Vertical Test Jack
TP19	1-00143-101	TEST JACK	Vertical Test Jack
TP20	1-00143-101	TEST JACK	Vertical Test Jack
TP21	1-00143-101	TEST JACK	Vertical Test Jack
TP22	1-00143-101	TEST JACK	Vertical Test Jack
TP23	1-00143-101	TEST JACK	Vertical Test Jack
U 10	3-00149-329	LM317T	Voltage Reg., TO-220 (TAB) Package
U 11	3-00141-329	LM337T	Voltage Reg., TO-220 (TAB) Package
U 20	3-00149-329	LM317T	Voltage Reg., TO-220 (TAB) Package
U 21	3-00141-329	LM337T	Voltage Reg., TO-220 (TAB) Package
U 30	3-00096-340	LM317L	Integrated Circuit (Thru-hole Pkg)
U 40	3-00096-340	LM317L	Integrated Circuit (Thru-hole Pkg)
Z 0	0-00121-050	2-1/2" #18	Wire #18 UL1007 Stripped 3/8x3/8 No Tin
Z 0	0-00127-050	4" #18 RED	Wire #18 UL1007 Stripped 3/8x3/8 No Tin

Power Supply Board Parts List			
Ref No.	**SRS Part No.**	**Value**	**Component Description**
Z 0	0-00168-023	6-32X5/16R	Screw, Roundhead Phillips
Z 0	0-00187-021	4-40X1/4PP	Screw, Panhead Phillips
Z 0	0-00231-043	1-32, #4 SHOULD	Washer, nylon
Z 0	0-00244-021	6-32X1-1/8PP	Screw, Panhead Phillips
Z 0	0-00316-003	PLTFM-28	Insulators
Z 0	0-00373-000	CARD EJECTOR	Hardware, Misc.
Z 0	0-00509-070	60MM 12V	Fans, & Hardware
Z 0	0-01046-003	K4-AC-34	Insulators
Z 0	1-00002-113	10 PIN,18AWG/OR	Connector, Amp, MTA-156
Z 0	1-00033-113	5 PIN, 18AWG/OR	Connector, Amp, MTA-156
Z 0	6-00179-615	MAP55-4000	Power Supply
Z 0	7-00541-720	SR780-27	Fabricated Part

System Backplane Board Parts List

This section covers schematics MBKPL-20 through MBKPL-23 in Chapter 5.

System Backplane Parts List			
Ref No.	**SRS Part No.**	**Value**	**Component Description**
C 1	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 2	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 3	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
J 2A	1-00240-108	96 PIN RT ANGLE	DIN Connector, Female
JP1A	1-00237-108	120 PIN VERTICA	DIN Connector, Female
JP3A	1-00016-160	RS232 25 PIN D	Connector, D-Sub, Right Angle PC, Female
JP4A	1-00272-130	34 PIN DI	Connector, Male
JP5A	0-00112-053	1-3/4"#24R	Wire #24 UL1007 Strip 1/4x1/4 Tin
JP6A	0-00112-053	1-3/4"#24R	Wire #24 UL1007 Strip 1/4x1/4 Tin
JP10A	1-00237-108	120 PIN VERTICA	DIN Connector, Female
JP11A	1-00238-161	GPIB SHIELDED	Connector, IEEE488, Reverse, R/A, Female
JP12A	1-00016-160	RS232 25 PIN D	Connector, D-Sub, Right Angle PC, Female
JP13A	1-00242-130	20 PIN ELH VERT	Connector, Male
JP20A	1-00237-108	120 PIN VERTICA	DIN Connector, Female
JP21A	1-00119-116	3 PIN, WHITE	Header, Amp, MTA-156
JP22A	1-00272-130	34 PIN DI	Connector, Male
JP23A	1-00152-116	11 PIN, WHITE	Header, Amp, MTA-156
JP24A	1-00250-116	2 PIN, WHITE	Header, Amp, MTA-156
PC1A	7-00524-701	SR780 MOTHER	Printed Circuit Board
R 1A	4-00772-402	33	Resistor, Carbon Comp, 1/2W, 5%
Z 0	0-00043-011	4-40 KEP	Nut, Kep
Z 0	0-00187-021	4-40X1/4PP	Screw, Panhead Phillips
Z 0	0-00390-024	1-72X1/4	Screw, Slotted
Z 0	0-00391-010	1-72X5/32X3/64	Nut, Hex
Z 0	0-00415-031	4-40X1/2 M/F	Standoff
Z 0A	6-00076-600	2" SPKR	Misc. Components

Disk Card Parts List

This section covers schematics MBKPL-24 in Chapter 5.

Disk Card Parts List			
Ref No.	**SRS Part No.**	**Value**	**Component Description**
C 1	5-00192-542	22U MIN	Cap, Mini Electrolytic, 50V, 20% Radial
D 1	3-00610-303	GREEN RT ANGLE	LED, T1 Package
JP1B	1-00234-109	96 PIN RT ANGLE	DIN Connector, Male
JP2B	1-00272-130	34 PIN DI	Connector, Male
JP3B	1-00116-130	4 PIN DI DISK	Connector, Male
JP4B	1-00113-100	DIN 5	Connector, Misc.
JP5B	1-00242-130	20 PIN ELH VERT	Connector, Male
PC1B	7-00626-701	MEGAPLAT D/D	Printed Circuit Board
R 1	4-00098-401	680	Resistor, Carbon Film, 1/4W, 5%
Z 0	0-00187-021	4-40X1/4PP	Screw, Panhead Phillips
Z 0	1-00141-171	5 PIN SIL	Cable Assembly, Ribbon
Z 0	1-00252-171	34 COND	Cable Assembly, Ribbon
Z 0B	8-00034-850	FLOPPY	Disk Drive

DSP Board Parts List

This section covers schematics D780-1 through D780-6 in Chapter 5.

DSP Board Parts List			
Ref No.	**SRS Part No.**	**Value**	**Component Description**
C 101	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 102	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 103	5-00134-529	100P	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 501	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 502	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 505	5-00148-545	1000P - 50V	Capacitor, Monolythic Ceramic, COG, 1%
C 506	5-00148-545	1000P - 50V	Capacitor, Monolythic Ceramic, COG, 1%
C 507	5-00148-545	1000P - 50V	Capacitor, Monolythic Ceramic, COG, 1%
C 508	5-00148-545	1000P - 50V	Capacitor, Monolythic Ceramic, COG, 1%
C 509	5-00148-545	1000P - 50V	Capacitor, Monolythic Ceramic, COG, 1%
C 510	5-00148-545	1000P - 50V	Capacitor, Monolythic Ceramic, COG, 1%
C 511	5-00134-529	100P	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 513	5-00148-545	1000P - 50V	Capacitor, Monolythic Ceramic, COG, 1%
C 514	5-00003-501	10P	Capacitor, Ceramic Disc, 50V, 10%, SL
C 515	5-00134-529	100P	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 516	5-00219-529	.01U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 517	5-00134-529	100P	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 520	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 521	5-00003-501	10P	Capacitor, Ceramic Disc, 50V, 10%, SL
C 530	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 531	5-00053-512	.033U	Cap, Stacked Metal Film 50V 5% -40/+85c
C 532	5-00052-512	.01U	Cap, Stacked Metal Film 50V 5% -40/+85c
C 533	5-00050-566	.0033U	Cap, Polyester Film 50V 5% -40/+85c Rad
C 534	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 550	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 551	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 554	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 555	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 556	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 557	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 558	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 559	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 560	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 561	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 562	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 563	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 564	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 565	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 566	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 567	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 570	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 571	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 572	5-00034-526	100U	Capacitor, Electrolytic, 35V, 20%, Rad
C 573	5-00034-526	100U	Capacitor, Electrolytic, 35V, 20%, Rad
C 574	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U

DSP Board Parts List			
Ref No.	**SRS Part No.**	**Value**	**Component Description**
C 575	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 576	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 577	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 601	5-00134-529	100P	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 602	5-00016-501	470P	Capacitor, Ceramic Disc, 50V, 10%, SL
C 603	5-00013-501	33P	Capacitor, Ceramic Disc, 50V, 10%, SL
C 604	5-00013-501	33P	Capacitor, Ceramic Disc, 50V, 10%, SL
C 630	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 631	5-00134-529	100P	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 632	5-00134-529	100P	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 640	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 650	5-00093-517	.15U	Capacitor, Tantalum, 35V, 20%, Rad
C 651	5-00093-517	.15U	Capacitor, Tantalum, 35V, 20%, Rad
C 654	5-00093-517	.15U	Capacitor, Tantalum, 35V, 20%, Rad
C 655	5-00093-517	.15U	Capacitor, Tantalum, 35V, 20%, Rad
C 658	5-00093-517	.15U	Capacitor, Tantalum, 35V, 20%, Rad
C 659	5-00093-517	.15U	Capacitor, Tantalum, 35V, 20%, Rad
C 660	5-00098-517	10U	Capacitor, Tantalum, 35V, 20%, Rad
C 661	5-00098-517	10U	Capacitor, Tantalum, 35V, 20%, Rad
C 662	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 663	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 701	5-00232-520	470U	Capacitor, Electrolytic, 16V, 20%, Rad
C 702	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 703	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 704	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 705	5-00013-501	33P	Capacitor, Ceramic Disc, 50V, 10%, SL
C 706	5-00013-501	33P	Capacitor, Ceramic Disc, 50V, 10%, SL
C 901	5-00038-509	10U	Capacitor, Electrolytic, 50V, 20%, Rad
C 902	5-00038-509	10U	Capacitor, Electrolytic, 50V, 20%, Rad
C 903	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 904	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 905	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 906	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 907	5-00232-520	470U	Capacitor, Electrolytic, 16V, 20%, Rad
C 908	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 920	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 921	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 922	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 923	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 924	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 925	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 926	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 927	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 928	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 929	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 930	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 931	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 932	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 933	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 934	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX

DSP Board Parts List			
Ref No.	**SRS Part No.**	**Value**	**Component Description**
C 935	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 936	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 937	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 938	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 939	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 940	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 941	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 942	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 943	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 944	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 945	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 946	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 947	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 948	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 949	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 950	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 951	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 952	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 953	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 954	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 955	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 956	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 957	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 958	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 959	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 960	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 961	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 962	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 963	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 964	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 965	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 966	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 967	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 968	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 969	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 970	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 971	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 972	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 973	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 974	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 975	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 976	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 977	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 978	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 979	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 980	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 981	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 982	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 983	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 984	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX

DSP Board Parts List			
Ref No.	**SRS Part No.**	**Value**	**Component Description**
C 985	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 986	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 987	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 988	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 989	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
C 990	5-00225-548	.1U AXIAL	Capacitor, Ceramic, 50V,+80/-20% Z5U AX
D 501	3-00004-301	1N4148	Diode
D 502	3-00004-301	1N4148	Diode
D 601	3-00204-301	1N5230	Diode
D 602	3-00204-301	1N5230	Diode
D 603	3-00004-301	1N4148	Diode
D 604	3-00004-301	1N4148	Diode
D 660	3-00004-301	1N4148	Diode
D 661	3-00004-301	1N4148	Diode
J 201	1-00239-135	72 PIN SIMM	Connector, Card Edge
J 202	1-00239-135	72 PIN SIMM	Connector, Card Edge
J 501	1-00241-141	RT ANGLE JACK	SMB Connector
J 601	1-00241-141	RT ANGLE JACK	SMB Connector
J 901	1-00234-109	96 PIN RT ANGLE	DIN Connector, Male
J 902	1-00234-109	96 PIN RT ANGLE	DIN Connector, Male
JP301	1-00239-135	72 PIN SIMM	Connector, Card Edge
K 501	3-00444-335	BS-211-DC5 GF	Relay
K 601	3-00196-335	HS-212S-5	Relay
K 602	3-00196-335	HS-212S-5	Relay
K 603	3-00196-335	HS-212S-5	Relay
K 701	3-00444-335	BS-211-DC5 GF	Relay
L 701	6-00180-603	560U	Inductor, Axial
N 101	4-00270-425	1.0KX5	Resistor Network SIP 1/4W 2% (Common)
N 501	4-00262-425	100X7	Resistor Network SIP 1/4W 2% (Common)
N 502	4-00262-425	100X7	Resistor Network SIP 1/4W 2% (Common)
N 601	4-00856-421	1.0KX5	Res. Network, SIP, 1/4W,2% (Isolated)
N 702	4-00852-420	82X8	Resistor Network, DIP, 1/4W,2%,8 Ind
N 703	4-00265-421	100X4	Res. Network, SIP, 1/4W,2% (Isolated)
N 801	4-00690-421	3.3KX4	Res. Network, SIP, 1/4W,2% (Isolated)
N 802	4-00767-420	270X8	Resistor Network, DIP, 1/4W,2%,8 Ind
N 803	4-00767-420	270X8	Resistor Network, DIP, 1/4W,2%,8 Ind
PC1	7-00494-701	SR780 DIGITAL	Printed Circuit Board
Q 701	3-00022-325	2N3906	Transistor, TO-92 Package
Q 702	3-00022-325	2N3906	Transistor, TO-92 Package
R 101	4-00029-401	1.8K	Resistor, Carbon Film, 1/4W, 5%
R 102	4-00471-401	82	Resistor, Carbon Film, 1/4W, 5%
R 103	4-00471-401	82	Resistor, Carbon Film, 1/4W, 5%
R 301	4-00079-401	4.7K	Resistor, Carbon Film, 1/4W, 5%
R 302	4-00079-401	4.7K	Resistor, Carbon Film, 1/4W, 5%
R 501	4-00177-407	3.48K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 502	4-00177-407	3.48K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 504	4-00771-407	66.5	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 505	4-00163-407	2.80K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 506	4-00409-408	1.210K	Resistor, Metal Film, 1/8W, 0.1%, 25ppm
R 507	4-00409-408	1.210K	Resistor, Metal Film, 1/8W, 0.1%, 25ppm

DSP Board Parts List			
Ref No.	**SRS Part No.**	**Value**	**Component Description**
R 508	4-00467-407	2.43K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 509	4-00193-407	499	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 510	4-00158-407	2.00K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 511	4-00409-408	1.210K	Resistor, Metal Film, 1/8W, 0.1%, 25ppm
R 512	4-00409-408	1.210K	Resistor, Metal Film, 1/8W, 0.1%, 25ppm
R 513	4-00746-407	2.05K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 514	4-00317-407	422	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 515	4-00652-407	1.58K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 516	4-00409-408	1.210K	Resistor, Metal Film, 1/8W, 0.1%, 25ppm
R 517	4-00409-408	1.210K	Resistor, Metal Film, 1/8W, 0.1%, 25ppm
R 518	4-00523-407	649	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 519	4-00158-407	2.00K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 520	4-00193-407	499	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 521	4-00136-407	1.82K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 522	4-00654-407	182	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 523	4-00356-407	20	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 524	4-00057-401	220	Resistor, Carbon Film, 1/4W, 5%
R 525	4-00233-424	47	Resistor, Carbon Comp, 2W, 5%
R 527	4-00031-401	100	Resistor, Carbon Film, 1/4W, 5%
R 530	4-00479-407	66.5K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 531	4-00457-407	33.2K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 532	4-00138-407	10.0K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 533	4-00161-407	2.49K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 534	4-00130-407	1.00K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 535	4-00066-401	3.3M	Resistor, Carbon Film, 1/4W, 5%
R 536	4-00210-407	9.09K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 537	4-00193-407	499	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 570	4-00107-402	10	Resistor, Carbon Comp, 1/2W, 5%
R 571	4-00107-402	10	Resistor, Carbon Comp, 1/2W, 5%
R 572	4-00080-401	47	Resistor, Carbon Film, 1/4W, 5%
R 573	4-00080-401	47	Resistor, Carbon Film, 1/4W, 5%
R 600	4-00045-401	2.0K	Resistor, Carbon Film, 1/4W, 5%
R 601	4-00022-401	1.0M	Resistor, Carbon Film, 1/4W, 5%
R 602	4-00130-407	1.00K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 603	4-00032-401	100K	Resistor, Carbon Film, 1/4W, 5%
R 604	4-00034-401	10K	Resistor, Carbon Film, 1/4W, 5%
R 605	4-00045-401	2.0K	Resistor, Carbon Film, 1/4W, 5%
R 606	4-00062-401	270	Resistor, Carbon Film, 1/4W, 5%
R 607	4-00034-401	10K	Resistor, Carbon Film, 1/4W, 5%
R 608	4-00022-401	1.0M	Resistor, Carbon Film, 1/4W, 5%
R 609	4-00130-407	1.00K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 610	4-00241-407	787	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 630	4-00048-401	2.2K	Resistor, Carbon Film, 1/4W, 5%
R 631	4-00188-407	4.99K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 632	4-00161-407	2.49K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 633	4-00188-407	4.99K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 635	4-00188-407	4.99K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 636	4-00161-407	2.49K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 637	4-00188-407	4.99K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 640	4-00031-401	100	Resistor, Carbon Film, 1/4W, 5%

DSP Board Parts List			
Ref No.	**SRS Part No.**	**Value**	**Component Description**
R 660	4-00781-402	56	Resistor, Carbon Comp, 1/2W, 5%
R 661	4-00781-402	56	Resistor, Carbon Comp, 1/2W, 5%
R 701	4-00034-401	10K	Resistor, Carbon Film, 1/4W, 5%
R 702	4-00034-401	10K	Resistor, Carbon Film, 1/4W, 5%
R 703	4-00471-401	82	Resistor, Carbon Film, 1/4W, 5%
R 704	4-00471-401	82	Resistor, Carbon Film, 1/4W, 5%
R 705	4-00471-401	82	Resistor, Carbon Film, 1/4W, 5%
R 706	4-00060-401	240	Resistor, Carbon Film, 1/4W, 5%
R 707	4-00060-401	240	Resistor, Carbon Film, 1/4W, 5%
R 708	4-00471-401	82	Resistor, Carbon Film, 1/4W, 5%
R 901	4-00021-401	1.0K	Resistor, Carbon Film, 1/4W, 5%
SO101	1-00231-150	PGA 223 PIN	Socket, THRU-HOLE
T 501	6-00137-601	15MH	Inductor
T 601	6-00009-610	T1-1-X65	Transformer
TP502	1-00143-101	TEST JACK	Vertical Test Jack
TP503	1-00143-101	TEST JACK	Vertical Test Jack
TP506	1-00143-101	TEST JACK	Vertical Test Jack
TP507	1-00143-101	TEST JACK	Vertical Test Jack
TP601	1-00143-101	TEST JACK	Vertical Test Jack
TP602	1-00143-101	TEST JACK	Vertical Test Jack
TP603	1-00143-101	TEST JACK	Vertical Test Jack
TP604	1-00143-101	TEST JACK	Vertical Test Jack
TP901	1-00143-101	TEST JACK	Vertical Test Jack
TP902	1-00143-101	TEST JACK	Vertical Test Jack
TP903	1-00143-101	TEST JACK	Vertical Test Jack
U 101	3-00577-340	ADSP21020KG-133	Integrated Circuit (Thru-hole Pkg)
U 102	6-00177-621	33.333 MHZ	Crystal Oscillator
U 301	3-00699-343	SR780 U301	GAL/PAL, I.C.
U 302	3-00597-340	7204L25TP	Integrated Circuit (Thru-hole Pkg)
U 303	3-00597-340	7204L25TP	Integrated Circuit (Thru-hole Pkg)
U 304	3-00597-340	7204L25TP	Integrated Circuit (Thru-hole Pkg)
U 401	3-00265-340	74HC595	Integrated Circuit (Thru-hole Pkg)
U 402	3-00265-340	74HC595	Integrated Circuit (Thru-hole Pkg)
U 403	3-00265-340	74HC595	Integrated Circuit (Thru-hole Pkg)
U 404	3-00265-340	74HC595	Integrated Circuit (Thru-hole Pkg)
U 405	3-00265-340	74HC595	Integrated Circuit (Thru-hole Pkg)
U 406	3-00265-340	74HC595	Integrated Circuit (Thru-hole Pkg)
U 407	3-00265-340	74HC595	Integrated Circuit (Thru-hole Pkg)
U 408	3-00265-340	74HC595	Integrated Circuit (Thru-hole Pkg)
U 409	3-00488-340	74HC597	Integrated Circuit (Thru-hole Pkg)
U 410	3-00488-340	74HC597	Integrated Circuit (Thru-hole Pkg)
U 411	3-00350-340	74ALS04	Integrated Circuit (Thru-hole Pkg)
U 501	3-00531-340	AD766JN	Integrated Circuit (Thru-hole Pkg)
U 502	3-00532-340	AD744	Integrated Circuit (Thru-hole Pkg)
U 505	3-00130-340	5532A	Integrated Circuit (Thru-hole Pkg)
U 506	3-00130-340	5532A	Integrated Circuit (Thru-hole Pkg)
U 507	3-00130-340	5532A	Integrated Circuit (Thru-hole Pkg)
U 508	3-00423-340	5534A	Integrated Circuit (Thru-hole Pkg)
U 509	3-00241-340	AD7528JN	Integrated Circuit (Thru-hole Pkg)
U 510	3-00371-340	DG444	Integrated Circuit (Thru-hole Pkg)

DSP Board Parts List			
Ref No.	**SRS Part No.**	**Value**	**Component Description**
U 511	3-00423-340	5534A	Integrated Circuit (Thru-hole Pkg)
U 512	3-00383-340	LM6321	Integrated Circuit (Thru-hole Pkg)
U 513	3-00423-340	5534A	Integrated Circuit (Thru-hole Pkg)
U 520	3-00117-325	78L12	Transistor, TO-92 Package
U 521	3-00123-325	79L12	Transistor, TO-92 Package
U 530	3-00089-340	LF357	Integrated Circuit (Thru-hole Pkg)
U 601	3-00461-340	OPA2604	Integrated Circuit (Thru-hole Pkg)
U 602	3-00262-340	74HC86	Integrated Circuit (Thru-hole Pkg)
U 603	3-00211-340	LT1016	Integrated Circuit (Thru-hole Pkg)
U 606	3-00087-340	LF347	Integrated Circuit (Thru-hole Pkg)
U 607	3-00241-340	AD7528JN	Integrated Circuit (Thru-hole Pkg)
U 608	3-00116-325	78L05	Transistor, TO-92 Package
U 610	3-00116-325	78L05	Transistor, TO-92 Package
U 611	3-00122-325	79L05	Transistor, TO-92 Package
U 701	3-00695-343	SR780 U701	GAL/PAL, I.C.
U 702	3-00696-343	SR780 U702	GAL/PAL, I.C.
U 703	3-00697-343	SR780 U703	GAL/PAL, I.C.
U 704	3-00698-343	SR780 U704	GAL/PAL, I.C.
U 705	6-00110-621	30.208 MHZ	Crystal Oscillator
U 706	6-00181-621	30.933 MHZ	Crystal Oscillator
U 707	3-00411-340	74HC273	Integrated Circuit (Thru-hole Pkg)
U 708	3-00411-340	74HC273	Integrated Circuit (Thru-hole Pkg)
U 709	3-00411-340	74HC273	Integrated Circuit (Thru-hole Pkg)
U 710	3-00411-340	74HC273	Integrated Circuit (Thru-hole Pkg)
U 711	3-00603-340	74ALS573	Integrated Circuit (Thru-hole Pkg)
U 712	3-00584-340	74ACT574	Integrated Circuit (Thru-hole Pkg)
U 716	3-00584-340	74ACT574	Integrated Circuit (Thru-hole Pkg)
U 720	3-00049-340	74HC74	Integrated Circuit (Thru-hole Pkg)
U 721	3-00055-340	74LS74	Integrated Circuit (Thru-hole Pkg)
U 722	3-00055-340	74LS74	Integrated Circuit (Thru-hole Pkg)
U 725	3-00195-340	CA3082	Integrated Circuit (Thru-hole Pkg)
U 801	3-00440-340	74HC573	Integrated Circuit (Thru-hole Pkg)
U 802	3-00387-340	74HC245	Integrated Circuit (Thru-hole Pkg)
U 803	3-00387-340	74HC245	Integrated Circuit (Thru-hole Pkg)
U 804	3-00036-340	74HC00	Integrated Circuit (Thru-hole Pkg)
U 805	3-00037-340	74HC138	Integrated Circuit (Thru-hole Pkg)
U 806	3-00440-340	74HC573	Integrated Circuit (Thru-hole Pkg)
U 807	3-00440-340	74HC573	Integrated Circuit (Thru-hole Pkg)
U 808	3-00411-340	74HC273	Integrated Circuit (Thru-hole Pkg)
U 809	3-00411-340	74HC273	Integrated Circuit (Thru-hole Pkg)
U 810	3-00604-342	2KX8 SERIAL	EPROM/PROM, I.C.
U 901	3-00114-329	7815	Voltage Reg., TO-220 (TAB) Package
U 902	3-00120-329	7915	Voltage Reg., TO-220 (TAB) Package
Z 0	0-00012-007	TO-220	Heat Sinks
Z 0	0-00043-011	4-40 KEP	Nut, Kep
Z 0	0-00209-021	4-40X3/8PP	Screw, Panhead Phillips
Z 0	0-00231-043	1-32, #4 SHOULD	Washer, nylon
Z 0	0-00243-003	TO-220	Insulators
Z 0	0-00341-010	2-56 HEX	Nut, Hex
Z 0	0-00373-000	CARD EJECTOR	Hardware, Misc.

DSP Board Parts List			
Ref No.	**SRS Part No.**	**Value**	**Component Description**
Z 0	0-00728-021	2-56X1/2PP	Screw, Panhead Phillips

Analog Input Board Parts List

This section covers schematics A780-1 through A780-7 in Chapter 5. The SR780 uses two of these boards.

Analog Input Board Parts List			
Ref No.	**SRS Part No.**	**Value**	**Component Description**
C 101	5-00060-512	1.0U	Cap, Stacked Metal Film 50V 5% -40/+85c
C 102	5-00060-512	1.0U	Cap, Stacked Metal Film 50V 5% -40/+85c
C 104	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 105	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 106	5-00159-501	6.8P	Capacitor, Ceramic Disc, 50V, 10%, SL
C 110	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 156	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 157	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 158	5-00093-517	.15U	Capacitor, Tantalum, 35V, 20%, Rad
C 159	5-00093-517	.15U	Capacitor, Tantalum, 35V, 20%, Rad
C 160	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 161	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 162	5-00093-517	.15U	Capacitor, Tantalum, 35V, 20%, Rad
C 163	5-00093-517	.15U	Capacitor, Tantalum, 35V, 20%, Rad
C 165	5-00227-526	100U	Capacitor, Electrolytic, 35V, 20%, Rad
C 166	5-00093-517	.15U	Capacitor, Tantalum, 35V, 20%, Rad
C 167	5-00093-517	.15U	Capacitor, Tantalum, 35V, 20%, Rad
C 180	5-00134-529	100P	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 181	5-00219-529	.01U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 182	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 201	5-00008-501	22P	Capacitor, Ceramic Disc, 50V, 10%, SL
C 202	5-00005-501	150P	Capacitor, Ceramic Disc, 50V, 10%, SL
C 203	5-00017-501	47P	Capacitor, Ceramic Disc, 50V, 10%, SL
C 204	5-00008-501	22P	Capacitor, Ceramic Disc, 50V, 10%, SL
C 205	5-00005-501	150P	Capacitor, Ceramic Disc, 50V, 10%, SL
C 206	5-00017-501	47P	Capacitor, Ceramic Disc, 50V, 10%, SL
C 210	5-00148-545	1000P - 50V	Capacitor, Monolythic Ceramic, COG, 1%
C 211	5-00148-545	1000P - 50V	Capacitor, Monolythic Ceramic, COG, 1%
C 212	5-00148-545	1000P - 50V	Capacitor, Monolythic Ceramic, COG, 1%
C 213	5-00148-545	1000P - 50V	Capacitor, Monolythic Ceramic, COG, 1%
C 214	5-00148-545	1000P - 50V	Capacitor, Monolythic Ceramic, COG, 1%
C 215	5-00148-545	1000P - 50V	Capacitor, Monolythic Ceramic, COG, 1%
C 216	5-00148-545	1000P - 50V	Capacitor, Monolythic Ceramic, COG, 1%
C 217	5-00148-545	1000P - 50V	Capacitor, Monolythic Ceramic, COG, 1%
C 218	5-00148-545	1000P - 50V	Capacitor, Monolythic Ceramic, COG, 1%
C 219	5-00134-529	100P	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 220	5-00148-545	1000P - 50V	Capacitor, Monolythic Ceramic, COG, 1%
C 221	5-00148-545	1000P - 50V	Capacitor, Monolythic Ceramic, COG, 1%
C 222	5-00148-545	1000P - 50V	Capacitor, Monolythic Ceramic, COG, 1%
C 223	5-00148-545	1000P - 50V	Capacitor, Monolythic Ceramic, COG, 1%
C 224	5-00148-545	1000P - 50V	Capacitor, Monolythic Ceramic, COG, 1%
C 225	5-00148-545	1000P - 50V	Capacitor, Monolythic Ceramic, COG, 1%
C 226	5-00148-545	1000P - 50V	Capacitor, Monolythic Ceramic, COG, 1%
C 227	5-00148-545	1000P - 50V	Capacitor, Monolythic Ceramic, COG, 1%

Analog Input Board Parts List			
Ref No.	**SRS Part No.**	**Value**	**Component Description**
C 228	5-00148-545	1000P - 50V	Capacitor, Monolythic Ceramic, COG, 1%
C 229	5-00219-529	.01U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 230	5-00219-529	.01U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 250	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 251	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 252	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 253	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 254	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 255	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 256	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 257	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 258	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 259	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 260	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 261	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 262	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 263	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 264	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 265	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 266	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 267	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 268	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 269	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 270	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 271	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 272	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 273	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 274	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 275	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 276	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 277	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 278	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 279	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 280	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 281	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 282	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 301	5-00219-529	.01U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 310	5-00049-566	.001U	Cap, Polyester Film 50V 5% -40/+85c Rad
C 311	5-00056-512	.1U	Cap, Stacked Metal Film 50V 5% -40/+85c
C 312	5-00056-512	.1U	Cap, Stacked Metal Film 50V 5% -40/+85c
C 313	5-00056-512	.1U	Cap, Stacked Metal Film 50V 5% -40/+85c
C 314	5-00317-501	750P	Capacitor, Ceramic Disc, 50V, 10%, SL
C 315	5-00056-512	.1U	Cap, Stacked Metal Film 50V 5% -40/+85c
C 341	5-00134-529	100P	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 342	5-00134-529	100P	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 354	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 355	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 356	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 357	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 360	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U

Analog Input Board Parts List			
Ref No.	**SRS Part No.**	**Value**	**Component Description**
C 361	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 362	5-00134-529	100P	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 371	5-00269-501	300P	Capacitor, Ceramic Disc, 50V, 10%, SL
C 372	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 373	5-00006-501	15P	Capacitor, Ceramic Disc, 50V, 10%, SL
C 378	5-00093-517	.15U	Capacitor, Tantalum, 35V, 20%, Rad
C 379	5-00093-517	.15U	Capacitor, Tantalum, 35V, 20%, Rad
C 388	5-00093-517	.15U	Capacitor, Tantalum, 35V, 20%, Rad
C 389	5-00093-517	.15U	Capacitor, Tantalum, 35V, 20%, Rad
C 390	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 391	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 394	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 395	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 401	5-00219-529	.01U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 402	5-00219-529	.01U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 403	5-00219-529	.01U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 404	5-00219-529	.01U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 410	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 411	5-00098-517	10U	Capacitor, Tantalum, 35V, 20%, Rad
C 414	5-00098-517	10U	Capacitor, Tantalum, 35V, 20%, Rad
C 420	5-00219-529	.01U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 421	5-00219-529	.01U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 422	5-00219-529	.01U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 423	5-00219-529	.01U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 424	5-00219-529	.01U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 425	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 426	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 427	5-00219-529	.01U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 428	5-00219-529	.01U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 429	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 440	5-00287-562	22P	Cap., NPO Monolitic Ceramic, 50v, 5% Ra
C 441	5-00287-562	22P	Cap., NPO Monolitic Ceramic, 50v, 5% Ra
C 456	5-00093-517	.15U	Capacitor, Tantalum, 35V, 20%, Rad
C 501	5-00038-509	10U	Capacitor, Electrolytic, 50V, 20%, Rad
C 502	5-00038-509	10U	Capacitor, Electrolytic, 50V, 20%, Rad
C 503	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 504	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 505	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 506	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 511	5-00038-509	10U	Capacitor, Electrolytic, 50V, 20%, Rad
C 512	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 513	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 521	5-00098-517	10U	Capacitor, Tantalum, 35V, 20%, Rad
C 522	5-00098-517	10U	Capacitor, Tantalum, 35V, 20%, Rad
C 523	5-00098-517	10U	Capacitor, Tantalum, 35V, 20%, Rad
C 524	5-00098-517	10U	Capacitor, Tantalum, 35V, 20%, Rad
C 525	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 526	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 531	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 532	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad

Analog Input Board Parts List			
Ref No.	**SRS Part No.**	**Value**	**Component Description**
C 533	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 534	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 541	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 542	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 543	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 544	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 551	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 552	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 601	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 690	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 691	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
C 692	5-00023-529	.1U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 701	5-00100-517	2.2U	Capacitor, Tantalum, 35V, 20%, Rad
D 101	3-00004-301	1N4148	Diode
D 102	3-00004-301	1N4148	Diode
D 103	3-00004-301	1N4148	Diode
D 104	3-00004-301	1N4148	Diode
D 105	3-00004-301	1N4148	Diode
D 106	3-00004-301	1N4148	Diode
D 107	3-00004-301	1N4148	Diode
D 120	3-00457-301	1N5241B	Diode
D 201	3-00004-301	1N4148	Diode
D 202	3-00004-301	1N4148	Diode
D 301	3-00004-301	1N4148	Diode
D 302	3-00004-301	1N4148	Diode
D 303	3-00004-301	1N4148	Diode
D 501	3-00004-301	1N4148	Diode
D 502	3-00004-301	1N4148	Diode
D 511	3-00004-301	1N4148	Diode
J 101	1-00241-141	RT ANGLE JACK	SMB Connector
J 102	1-00241-141	RT ANGLE JACK	SMB Connector
J 701	1-00234-109	96 PIN RT ANGLE	DIN Connector, Male
K 101	3-00240-335	BS-211-DC12 GF	Relay
K 102	3-00240-335	BS-211-DC12 GF	Relay
K 103	3-00239-335	HS-212-12	Relay
K 104	3-00239-335	HS-212-12	Relay
K 105	3-00239-335	HS-212-12	Relay
K 106	3-00239-335	HS-212-12	Relay
K 107	3-00240-335	BS-211-DC12 GF	Relay
K 108	3-00239-335	HS-212-12	Relay
K 201	3-00240-335	BS-211-DC12 GF	Relay
K 202	3-00240-335	BS-211-DC12 GF	Relay
K 203	3-00240-335	BS-211-DC12 GF	Relay
K 204	3-00240-335	BS-211-DC12 GF	Relay
K 301	3-00240-335	BS-211-DC12 GF	Relay
N 102	4-00244-421	10KX4	Res. Network, SIP, 1/4W,2% (Isolated)
N 103	4-00690-421	3.3KX4	Res. Network, SIP, 1/4W,2% (Isolated)
N 210	4-00252-425	100X5	Resistor Network SIP 1/4W 2% (Common)
N 211	4-00252-425	100X5	Resistor Network SIP 1/4W 2% (Common)
N 212	4-00252-425	100X5	Resistor Network SIP 1/4W 2% (Common)

Analog Input Board Parts List

Ref No.	SRS Part No.	Value	Component Description
N 213	4-00252-425	100X5	Resistor Network SIP 1/4W 2% (Common)
N 301	4-00675-456	2.000KX7	Res. Network, DIP, 1/4W, 0.1%
N 402	4-00463-421	82X4	Res. Network, SIP, 1/4W,2% (Isolated)
N 601	4-00243-420	1.0KX8	Resistor Network, DIP, 1/4W,2%,8 Ind
N 602	4-00254-421	1.0KX3	Res. Network, SIP, 1/4W,2% (Isolated)
P 101	4-00354-445	20	Pot, Multi-Turn, Side Adjust
P 102	4-00015-445	100K	Pot, Multi-Turn, Side Adjust
P 103	4-00730-445	100	Pot, Multi-Turn, Side Adjust
P 104	4-00015-445	100K	Pot, Multi-Turn, Side Adjust
P 201	4-00015-445	100K	Pot, Multi-Turn, Side Adjust
P 301	4-00731-445	200	Pot, Multi-Turn, Side Adjust
P 310	4-00015-445	100K	Pot, Multi-Turn, Side Adjust
P 311	4-00760-445	500	Pot, Multi-Turn, Side Adjust
P 360	4-00271-445	2.0K	Pot, Multi-Turn, Side Adjust
PC1	7-00616-701	SR780 ANALOG	Printed Circuit Board
Q 101	3-00022-325	2N3906	Transistor, TO-92 Package
Q 102	3-00021-325	2N3904	Transistor, TO-92 Package
Q 201	3-00021-325	2N3904	Transistor, TO-92 Package
Q 202	3-00021-325	2N3904	Transistor, TO-92 Package
Q 301	3-00021-325	2N3904	Transistor, TO-92 Package
Q 601	3-00021-325	2N3904	Transistor, TO-92 Package
R 100	4-00071-401	33	Resistor, Carbon Film, 1/4W, 5%
R 101	4-00616-453	49.9	Resistor, 2W, 1%
R 102	4-00071-401	33	Resistor, Carbon Film, 1/4W, 5%
R 103	4-00593-408	965.0K	Resistor, Metal Film, 1/8W, 0.1%, 25ppm
R 104	4-00515-407	31.6K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 105	4-00593-408	965.0K	Resistor, Metal Film, 1/8W, 0.1%, 25ppm
R 106	4-00515-407	31.6K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 107	4-00580-407	475	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 108	4-00580-407	475	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 109	4-00544-407	165	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 110	4-00193-407	499	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 111	4-00193-407	499	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 112	4-00143-407	102K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 113	4-00143-407	102K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 114	4-00145-407	110	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 115	4-00145-407	110	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 116	4-00217-408	1.000K	Resistor, Metal Film, 1/8W, 0.1%, 25ppm
R 117	4-00217-408	1.000K	Resistor, Metal Film, 1/8W, 0.1%, 25ppm
R 118	4-00234-407	10	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 119	4-00375-407	348	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 120	4-00375-407	348	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 121	4-00234-407	10	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 122	4-00234-407	10	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 123	4-00203-407	75.0K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 124	4-00143-407	102K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 125	4-00130-407	1.00K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 126	4-00034-401	10K	Resistor, Carbon Film, 1/4W, 5%
R 127	4-00192-407	49.9K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 128	4-00143-407	102K	Resistor, Metal Film, 1/8W, 1%, 50PPM

Analog Input Board Parts List			
Ref No.	**SRS Part No.**	**Value**	**Component Description**
R 129	4-00143-407	102K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 141	4-00138-407	10.0K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 142	4-00411-407	1.37K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 143	4-00411-407	1.37K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 144	4-00138-407	10.0K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 146	4-00696-407	43.2K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 152	4-00031-401	100	Resistor, Carbon Film, 1/4W, 5%
R 153	4-00031-401	100	Resistor, Carbon Film, 1/4W, 5%
R 154	4-00030-401	10	Resistor, Carbon Film, 1/4W, 5%
R 155	4-00030-401	10	Resistor, Carbon Film, 1/4W, 5%
R 156	4-00030-401	10	Resistor, Carbon Film, 1/4W, 5%
R 157	4-00030-401	10	Resistor, Carbon Film, 1/4W, 5%
R 160	4-00329-407	402	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 161	4-00086-401	51	Resistor, Carbon Film, 1/4W, 5%
R 162	4-00192-407	49.9K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 163	4-00138-407	10.0K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 164	4-00440-407	121K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 165	4-00031-401	100	Resistor, Carbon Film, 1/4W, 5%
R 166	4-00022-401	1.0M	Resistor, Carbon Film, 1/4W, 5%
R 201	4-00380-407	6.34K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 202	4-00556-407	2.94K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 203	4-00164-407	20.0K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 204	4-00556-407	2.94K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 205	4-00764-407	9.31K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 206	4-00380-407	6.34K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 207	4-00556-407	2.94K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 208	4-00164-407	20.0K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 209	4-00556-407	2.94K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 210	4-00764-407	9.31K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 211	4-00568-407	215	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 212	4-00543-407	169	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 213	4-00873-407	137	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 214	4-00144-407	107	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 215	4-00874-407	84.5	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 216	4-00671-407	332	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 220	4-00059-401	22K	Resistor, Carbon Film, 1/4W, 5%
R 221	4-00158-407	2.00K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 222	4-00158-407	2.00K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 223	4-00553-407	2.55K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 224	4-00553-407	2.55K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 225	4-00031-401	100	Resistor, Carbon Film, 1/4W, 5%
R 226	4-00031-401	100	Resistor, Carbon Film, 1/4W, 5%
R 227	4-00031-401	100	Resistor, Carbon Film, 1/4W, 5%
R 228	4-00031-401	100	Resistor, Carbon Film, 1/4W, 5%
R 230	4-00034-401	10K	Resistor, Carbon Film, 1/4W, 5%
R 231	4-00142-407	100K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 232	4-00348-407	2.21K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 233	4-00765-407	56.2	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 234	4-00475-407	2.61K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 235	4-00748-408	2.000K	Resistor, Metal Film, 1/8W, 0.1%, 25ppm

Analog Input Board Parts List			
Ref No.	**SRS Part No.**	**Value**	**Component Description**
R 236	4-00748-408	2.000K	Resistor, Metal Film, 1/8W, 0.1%, 25ppm
R 237	4-00467-407	2.43K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 238	4-00698-407	357	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 239	4-00582-407	2.15K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 240	4-00748-408	2.000K	Resistor, Metal Film, 1/8W, 0.1%, 25ppm
R 241	4-00748-408	2.000K	Resistor, Metal Film, 1/8W, 0.1%, 25ppm
R 242	4-00159-407	2.10K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 243	4-00429-407	511	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 244	4-00136-407	1.82K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 245	4-00748-408	2.000K	Resistor, Metal Film, 1/8W, 0.1%, 25ppm
R 246	4-00748-408	2.000K	Resistor, Metal Film, 1/8W, 0.1%, 25ppm
R 247	4-00137-407	1.91K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 248	4-00583-407	309	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 249	4-00699-407	1.54K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 250	4-00748-408	2.000K	Resistor, Metal Film, 1/8W, 0.1%, 25ppm
R 251	4-00748-408	2.000K	Resistor, Metal Film, 1/8W, 0.1%, 25ppm
R 252	4-00200-407	619	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 253	4-00130-407	1.00K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 254	4-00130-407	1.00K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 255	4-00188-407	4.99K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 256	4-00031-401	100	Resistor, Carbon Film, 1/4W, 5%
R 257	4-00577-407	1.21K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 258	4-00130-407	1.00K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 260	4-00034-401	10K	Resistor, Carbon Film, 1/4W, 5%
R 261	4-00448-407	8.87K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 262	4-00448-407	8.87K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 263	4-00739-407	113	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 264	4-00894-407	5.23K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 265	4-00748-408	2.000K	Resistor, Metal Film, 1/8W, 0.1%, 25ppm
R 266	4-00748-408	2.000K	Resistor, Metal Film, 1/8W, 0.1%, 25ppm
R 267	4-00237-407	4.87K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 268	4-00280-407	715	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 269	4-00895-407	4.32K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 270	4-00748-408	2.000K	Resistor, Metal Film, 1/8W, 0.1%, 25ppm
R 271	4-00748-408	2.000K	Resistor, Metal Film, 1/8W, 0.1%, 25ppm
R 272	4-00186-407	4.22K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 273	4-00308-407	1.02K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 274	4-00444-407	3.65K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 275	4-00748-408	2.000K	Resistor, Metal Film, 1/8W, 0.1%, 25ppm
R 276	4-00748-408	2.000K	Resistor, Metal Film, 1/8W, 0.1%, 25ppm
R 277	4-00178-407	3.83K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 278	4-00200-407	619	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 279	4-00279-407	3.09K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 280	4-00748-408	2.000K	Resistor, Metal Film, 1/8W, 0.1%, 25ppm
R 281	4-00748-408	2.000K	Resistor, Metal Film, 1/8W, 0.1%, 25ppm
R 282	4-00134-407	1.24K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 283	4-00130-407	1.00K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 284	4-00130-407	1.00K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 285	4-00142-407	100K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 290	4-00031-401	100	Resistor, Carbon Film, 1/4W, 5%

Analog Input Board Parts List			
Ref No.	**SRS Part No.**	**Value**	**Component Description**
R 291	4-00031-401	100	Resistor, Carbon Film, 1/4W, 5%
R 292	4-00031-401	100	Resistor, Carbon Film, 1/4W, 5%
R 293	4-00030-401	10	Resistor, Carbon Film, 1/4W, 5%
R 294	4-00030-401	10	Resistor, Carbon Film, 1/4W, 5%
R 295	4-00030-401	10	Resistor, Carbon Film, 1/4W, 5%
R 296	4-00030-401	10	Resistor, Carbon Film, 1/4W, 5%
R 297	4-00030-401	10	Resistor, Carbon Film, 1/4W, 5%
R 298	4-00030-401	10	Resistor, Carbon Film, 1/4W, 5%
R 310	4-00896-407	60.4K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 311	4-00547-407	18.2K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 312	4-00705-407	5.62K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 313	4-00705-407	5.62K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 314	4-00896-407	60.4K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 315	4-00363-407	21.5K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 316	4-00893-407	4.12K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 317	4-00130-407	1.00K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 318	4-00166-407	200K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 320	4-00176-407	3.01K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 321	4-00130-407	1.00K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 335	4-00059-401	22K	Resistor, Carbon Film, 1/4W, 5%
R 350	4-00031-401	100	Resistor, Carbon Film, 1/4W, 5%
R 351	4-00031-401	100	Resistor, Carbon Film, 1/4W, 5%
R 352	4-00030-401	10	Resistor, Carbon Film, 1/4W, 5%
R 353	4-00030-401	10	Resistor, Carbon Film, 1/4W, 5%
R 354	4-00030-401	10	Resistor, Carbon Film, 1/4W, 5%
R 355	4-00030-401	10	Resistor, Carbon Film, 1/4W, 5%
R 356	4-00030-401	10	Resistor, Carbon Film, 1/4W, 5%
R 357	4-00030-401	10	Resistor, Carbon Film, 1/4W, 5%
R 360	4-00031-401	100	Resistor, Carbon Film, 1/4W, 5%
R 361	4-00045-401	2.0K	Resistor, Carbon Film, 1/4W, 5%
R 362	4-00185-407	4.02K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 363	4-00161-407	2.49K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 364	4-00161-407	2.49K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 370	4-00031-401	100	Resistor, Carbon Film, 1/4W, 5%
R 371	4-00234-407	10	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 372	4-00188-407	4.99K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 373	4-00158-407	2.00K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 374	4-00395-407	316K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 375	4-00045-401	2.0K	Resistor, Carbon Film, 1/4W, 5%
R 378	4-00031-401	100	Resistor, Carbon Film, 1/4W, 5%
R 379	4-00031-401	100	Resistor, Carbon Film, 1/4W, 5%
R 386	4-00330-407	1.65K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 387	4-00130-407	1.00K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 390	4-00158-407	2.00K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 391	4-00738-407	442	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 392	4-00158-407	2.00K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 393	4-00738-407	442	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 394	4-00696-407	43.2K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 395	4-00210-407	9.09K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 396	4-00158-407	2.00K	Resistor, Metal Film, 1/8W, 1%, 50PPM

Analog Input Board Parts List

Ref No.	SRS Part No.	Value	Component Description
R 397	4-00158-407	2.00K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 398	4-00210-407	9.09K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 399	4-00696-407	43.2K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 401	4-00471-401	82	Resistor, Carbon Film, 1/4W, 5%
R 402	4-00471-401	82	Resistor, Carbon Film, 1/4W, 5%
R 403	4-00138-407	10.0K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 404	4-00138-407	10.0K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 440	4-00154-407	150	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 441	4-00154-407	150	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 452	4-00031-401	100	Resistor, Carbon Film, 1/4W, 5%
R 501	4-00107-402	10	Resistor, Carbon Comp, 1/2W, 5%
R 502	4-00107-402	10	Resistor, Carbon Comp, 1/2W, 5%
R 511	4-00031-401	100	Resistor, Carbon Film, 1/4W, 5%
R 512	4-00706-407	237	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 513	4-00269-407	4.64K	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 521	4-00108-402	150	Resistor, Carbon Comp, 1/2W, 5%
R 522	4-00108-402	150	Resistor, Carbon Comp, 1/2W, 5%
R 541	4-00108-402	150	Resistor, Carbon Comp, 1/2W, 5%
R 542	4-00108-402	150	Resistor, Carbon Comp, 1/2W, 5%
R 543	4-00215-407	909	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 544	4-00706-407	237	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 545	4-00215-407	909	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 546	4-00706-407	237	Resistor, Metal Film, 1/8W, 1%, 50PPM
R 601	4-00021-401	1.0K	Resistor, Carbon Film, 1/4W, 5%
R 602	4-00042-401	15K	Resistor, Carbon Film, 1/4W, 5%
R 603	4-00042-401	15K	Resistor, Carbon Film, 1/4W, 5%
R 604	4-00042-401	15K	Resistor, Carbon Film, 1/4W, 5%
R 605	4-00021-401	1.0K	Resistor, Carbon Film, 1/4W, 5%
R 606	4-00021-401	1.0K	Resistor, Carbon Film, 1/4W, 5%
R 690	4-00054-401	200K	Resistor, Carbon Film, 1/4W, 5%
R 701	4-00031-401	100	Resistor, Carbon Film, 1/4W, 5%
SO101	1-00173-150	8 PIN MACH	Socket, THRU-HOLE
SO102	1-00173-150	8 PIN MACH	Socket, THRU-HOLE
TP100	1-00143-101	TEST JACK	Vertical Test Jack
TP101	1-00143-101	TEST JACK	Vertical Test Jack
TP201	1-00143-101	TEST JACK	Vertical Test Jack
TP202	1-00143-101	TEST JACK	Vertical Test Jack
TP203	1-00143-101	TEST JACK	Vertical Test Jack
TP204	1-00143-101	TEST JACK	Vertical Test Jack
TP301	1-00143-101	TEST JACK	Vertical Test Jack
TP302	1-00143-101	TEST JACK	Vertical Test Jack
TP303	1-00143-101	TEST JACK	Vertical Test Jack
TP304	1-00143-101	TEST JACK	Vertical Test Jack
TP401	1-00143-101	TEST JACK	Vertical Test Jack
TP402	1-00143-101	TEST JACK	Vertical Test Jack
TP403	1-00143-101	TEST JACK	Vertical Test Jack
TP404	1-00143-101	TEST JACK	Vertical Test Jack
TP501	1-00143-101	TEST JACK	Vertical Test Jack
TP502	1-00143-101	TEST JACK	Vertical Test Jack
TP511	1-00143-101	TEST JACK	Vertical Test Jack

Analog Input Board Parts List			
Ref No.	**SRS Part No.**	**Value**	**Component Description**
TP521	1-00143-101	TEST JACK	Vertical Test Jack
TP522	1-00143-101	TEST JACK	Vertical Test Jack
TP531	1-00143-101	TEST JACK	Vertical Test Jack
TP532	1-00143-101	TEST JACK	Vertical Test Jack
TP541	1-00143-101	TEST JACK	Vertical Test Jack
TP542	1-00143-101	TEST JACK	Vertical Test Jack
TP551	1-00143-101	TEST JACK	Vertical Test Jack
TP690	1-00143-101	TEST JACK	Vertical Test Jack
U 101	3-00246-340	NPD5564	Integrated Circuit (Thru-hole Pkg)
U 102	3-00817-340	NPD5566	Integrated Circuit (Thru-hole Pkg)
U 103	3-00461-340	OPA2604	Integrated Circuit (Thru-hole Pkg)
U 104	3-00461-340	OPA2604	Integrated Circuit (Thru-hole Pkg)
U 105	3-00423-340	5534A	Integrated Circuit (Thru-hole Pkg)
U 106	3-00143-340	LM393	Integrated Circuit (Thru-hole Pkg)
U 107	3-00143-340	LM393	Integrated Circuit (Thru-hole Pkg)
U 108	3-00130-340	5532A	Integrated Circuit (Thru-hole Pkg)
U 109	3-00461-340	OPA2604	Integrated Circuit (Thru-hole Pkg)
U 201	3-00385-340	74HC4053	Integrated Circuit (Thru-hole Pkg)
U 202	3-00423-340	5534A	Integrated Circuit (Thru-hole Pkg)
U 203	3-00385-340	74HC4053	Integrated Circuit (Thru-hole Pkg)
U 204	3-00423-340	5534A	Integrated Circuit (Thru-hole Pkg)
U 206	3-00423-340	5534A	Integrated Circuit (Thru-hole Pkg)
U 207	3-00371-340	DG444	Integrated Circuit (Thru-hole Pkg)
U 208	3-00371-340	DG444	Integrated Circuit (Thru-hole Pkg)
U 220	3-00143-340	LM393	Integrated Circuit (Thru-hole Pkg)
U 230	3-00130-340	5532A	Integrated Circuit (Thru-hole Pkg)
U 231	3-00130-340	5532A	Integrated Circuit (Thru-hole Pkg)
U 232	3-00130-340	5532A	Integrated Circuit (Thru-hole Pkg)
U 233	3-00130-340	5532A	Integrated Circuit (Thru-hole Pkg)
U 234	3-00423-340	5534A	Integrated Circuit (Thru-hole Pkg)
U 240	3-00130-340	5532A	Integrated Circuit (Thru-hole Pkg)
U 241	3-00130-340	5532A	Integrated Circuit (Thru-hole Pkg)
U 242	3-00130-340	5532A	Integrated Circuit (Thru-hole Pkg)
U 243	3-00130-340	5532A	Integrated Circuit (Thru-hole Pkg)
U 244	3-00130-340	5532A	Integrated Circuit (Thru-hole Pkg)
U 310	3-00130-340	5532A	Integrated Circuit (Thru-hole Pkg)
U 317	3-00886-340	OPA2134	Integrated Circuit (Thru-hole Pkg)
U 360	3-00116-325	78L05	Transistor, TO-92 Package
U 361	3-00059-340	7542	Integrated Circuit (Thru-hole Pkg)
U 362	3-00091-340	LF412	Integrated Circuit (Thru-hole Pkg)
U 370	3-00089-340	LF357	Integrated Circuit (Thru-hole Pkg)
U 371	3-00089-340	LF357	Integrated Circuit (Thru-hole Pkg)
U 374	3-00130-340	5532A	Integrated Circuit (Thru-hole Pkg)
U 376	3-00385-340	74HC4053	Integrated Circuit (Thru-hole Pkg)
U 391	3-00143-340	LM393	Integrated Circuit (Thru-hole Pkg)
U 392	3-00143-340	LM393	Integrated Circuit (Thru-hole Pkg)
U 401	3-00392-340	PCM1750P	Integrated Circuit (Thru-hole Pkg)
U 402	3-00155-340	74HC04	Integrated Circuit (Thru-hole Pkg)
U 403	3-00091-340	LF412	Integrated Circuit (Thru-hole Pkg)
U 501	3-00118-325	78L15	Transistor, TO-92 Package

Analog Input Board Parts List			
Ref No.	**SRS Part No.**	**Value**	**Component Description**
U 502	3-00124-325	79L15	Transistor, TO-92 Package
U 511	3-00096-340	LM317L	Integrated Circuit (Thru-hole Pkg)
U 521	3-00116-325	78L05	Transistor, TO-92 Package
U 522	3-00122-325	79L05	Transistor, TO-92 Package
U 531	3-00114-329	7815	Voltage Reg., TO-220 (TAB) Package
U 532	3-00120-329	7915	Voltage Reg., TO-220 (TAB) Package
U 541	3-00096-340	LM317L	Integrated Circuit (Thru-hole Pkg)
U 542	3-00100-340	LM337L	Integrated Circuit (Thru-hole Pkg)
U 551	3-00346-329	7812	Voltage Reg., TO-220 (TAB) Package
U 601	3-00265-340	74HC595	Integrated Circuit (Thru-hole Pkg)
U 602	3-00265-340	74HC595	Integrated Circuit (Thru-hole Pkg)
U 603	3-00265-340	74HC595	Integrated Circuit (Thru-hole Pkg)
U 604	3-00064-340	CA3081	Integrated Circuit (Thru-hole Pkg)
U 605	3-00049-340	74HC74	Integrated Circuit (Thru-hole Pkg)
U 606	3-00604-342	2KX8 SERIAL	EPROM/PROM, I.C.
U 607	3-00694-343	SR780 U607	GAL/PAL, I.C.
U 608	3-00155-340	74HC04	Integrated Circuit (Thru-hole Pkg)
U 609	3-00037-340	74HC138	Integrated Circuit (Thru-hole Pkg)
U 610	3-00265-340	74HC595	Integrated Circuit (Thru-hole Pkg)
U 630	3-00343-340	74ALS32	Integrated Circuit (Thru-hole Pkg)
U 690	3-00116-325	78L05	Transistor, TO-92 Package
Z 0	0-00012-007	TO-220	Heat Sinks
Z 0	0-00043-011	4-40 KEP	Nut, Kep
Z 0	0-00209-021	4-40X3/8PP	Screw, Panhead Phillips
Z 0	0-00231-043	1-32, #4 SHOULD	Washer, nylon
Z 0	0-00243-003	TO-220	Insulators
Z 0	0-00373-000	CARD EJECTOR	Hardware, Misc.
Z 0	0-00516-042	BNC	Washer, lock

Analyzer Backplane Board Parts List

This section covers schematics M780-1 through M780-4 in Chapter 5.

Analyzer Backplane Parts List			
Ref No.	**SRS Part No.**	**Value**	**Component Description**
C 4C	5-00219-529	.01U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 5C	5-00219-529	.01U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 6	5-00134-529	100P	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 7C	5-00219-529	.01U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 8C	5-00219-529	.01U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 9	5-00134-529	100P	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 10C	5-00219-529	.01U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 11C	5-00219-529	.01U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 12	5-00134-529	100P	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 13C	5-00219-529	.01U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 14C	5-00219-529	.01U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 15	5-00134-529	100P	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 16C	5-00219-529	.01U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 17C	5-00219-529	.01U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 18C	5-00134-529	100P	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 19C	5-00134-529	100P	Cap, Monolythic Ceramic, 50V, 20%, Z5U
C 20C	5-00219-529	.01U	Cap, Monolythic Ceramic, 50V, 20%, Z5U
J 1C	1-00233-120	RT ANGLE	Connector, BNC
J 2C	1-00233-120	RT ANGLE	Connector, BNC
J 3C	1-00233-120	RT ANGLE	Connector, BNC
J 4C	1-00233-120	RT ANGLE	Connector, BNC
J 5C	1-00233-120	RT ANGLE	Connector, BNC
J 6C	1-00233-120	RT ANGLE	Connector, BNC
J 10C	1-00235-108	96 PIN VERTICAL	DIN Connector, Female
J 11C	1-00235-108	96 PIN VERTICAL	DIN Connector, Female
J 20C	1-00235-108	96 PIN VERTICAL	DIN Connector, Female
J 30C	1-00224-141	STRAIGHT PLUG	SMB Connector
J 31C	1-00224-141	STRAIGHT PLUG	SMB Connector
J 33C	1-00224-141	STRAIGHT PLUG	SMB Connector
J 34C	1-00224-141	STRAIGHT PLUG	SMB Connector
J 35C	1-00224-141	STRAIGHT PLUG	SMB Connector
J 36C	1-00224-141	STRAIGHT PLUG	SMB Connector
J 40C	1-00235-108	96 PIN VERTICAL	DIN Connector, Female
JP11C	1-00272-130	34 PIN DI	Connector, Male
JP13C	1-00272-130	34 PIN DI	Connector, Male
JP50C	1-00251-130	10 PIN DIL	Connector, Male
PC1C	7-00797-701	SR785 BACKPLANE	Printed Circuit Board
Z 0	0-00472-018	1-329631-2	Jam Nut
Z 0	0-00501-042	1-329632-2	Washer, lock
Z 0	1-00252-171	34 COND	Cable Assembly, Ribbon

Miscellaneous & Chassis Assembly Parts List

Miscellaneous and Chassis Assembly Parts List			
Ref No.	**SRS Part No.**	**Value**	**Component Description**
U 301	3-00552-342	27C010-70DC	EPROM/PROM, I.C.
U 302	3-00552-342	27C010-70DC	EPROM/PROM, I.C.
U 303	3-00552-342	27C010-70DC	EPROM/PROM, I.C.
U 304	3-00552-342	27C010-70DC	EPROM/PROM, I.C.
U 305	3-00552-342	27C010-70DC	EPROM/PROM, I.C.
U 306	3-00552-342	27C010-70DC	EPROM/PROM, I.C.
U 801	3-00639-342	27C020-120	EPROM/PROM, I.C.
U 802	3-00639-342	27C020-120	EPROM/PROM, I.C.
Z 0	0-00014-002	6J4	Power Entry Hardware
Z 0	0-00043-011	4-40 KEP	Nut, Kep
Z 0	0-00079-031	4-40X3/16 M/F	Standoff
Z 0	0-00081-032	320882	Termination
Z 0	0-00089-033	4"	Tie
Z 0	0-00098-042	#6 LOCK	Washer, lock
Z 0	0-00114-050	10-1/8"#18	Wire #18 UL1007 Stripped 3/8x3/8 No Tin
Z 0	0-00135-050	7-5/8" #18	Wire #18 UL1007 Stripped 3/8x3/8 No Tin
Z 0	0-00149-020	4-40X1/4PF	Screw, Flathead Phillips
Z 0	0-00150-026	4-40X1/4PF	Screw, Black, All Types
Z 0	0-00157-000	BNC PLUG	Hardware, Misc.
Z 0	0-00167-023	6-32X1/2RP	Screw, Roundhead Phillips
Z 0	0-00179-000	RIGHT FOOT	Hardware, Misc.
Z 0	0-00180-000	LEFT FOOT	Hardware, Misc.
Z 0	0-00181-020	6-32X1/4PF	Screw, Flathead Phillips
Z 0	0-00185-021	6-32X3/8PP	Screw, Panhead Phillips
Z 0	0-00187-021	4-40X1/4PP	Screw, Panhead Phillips
Z 0	0-00195-020	6-32X3/8PF	Screw, Flathead Phillips
Z 0	0-00204-000	REAR FOOT	Hardware, Misc.
Z 0	0-00209-021	4-40X3/8PP	Screw, Panhead Phillips
Z 0	0-00212-021	6-32X2PP	Screw, Panhead Phillips
Z 0	0-00248-026	10-32X3/8TRUSSP	Screw, Black, All Types
Z 0	0-00249-021	6-32X1-1/2PP	Screw, Panhead Phillips
Z 0	0-00256-043	#6 SHOULDER	Washer, nylon
Z 0	0-00259-021	4-40X1/2"PP	Screw, Panhead Phillips
Z 0	0-00280-050	9" #18	Wire #18 UL1007 Stripped 3/8x3/8 No Tin
Z 0	0-00308-021	4-40X7/8PP	Screw, Panhead Phillips
Z 0	0-00327-050	8" #18 WHITE	Wire #18 UL1007 Stripped 3/8x3/8 No Tin
Z 0	0-00328-050	8" #18 RED	Wire #18 UL1007 Stripped 3/8x3/8 No Tin
Z 0	0-00329-050	8" #18 BLACK	Wire #18 UL1007 Stripped 3/8x3/8 No Tin
Z 0	0-00336-027	#4X1/4PP-B	Screw, Sheet Metal
Z 0	0-00351-029	4-40X1/4TRUSSPH	Screw, Truss Phillips
Z 0	0-00371-026	4-40X3/16PF	Screw, Black, All Types
Z 0	0-00377-004	SR760/830/780	Knobs
Z 0	0-00378-004	CAP 760/830/780	Knobs
Z 0	0-00382-000	CARD GUIDE 4.5"	Hardware, Misc.
Z 0	0-00390-024	1-72X1/4	Screw, Slotted
Z 0	0-00391-010	1-72X5/32X3/64	Nut, Hex
Z 0	0-00415-031	4-40X1/2 M/F	Standoff

Miscellaneous and Chassis Assembly Parts List			
Ref No.	**SRS Part No.**	**Value**	**Component Description**
Z 0	0-00417-057	GROMMET STRIP	Grommet
Z 0	0-00471-021	4-40X1"PP	Screw, Panhead Phillips
Z 0	0-00472-018	1-329631-2	Jam Nut
Z 0	0-00481-000	BUMPER/CORD WRP	Hardware, Misc.
Z 0	0-00500-000	554808-1	Hardware, Misc.
Z 0	0-00501-042	1-329632-2	Washer, lock
Z 0	0-00502-000	CARD GUIDE 6"	Hardware, Misc.
Z 0	0-00503-000	CARD GUIDE 2.5"	Hardware, Misc.
Z 0	0-00505-064	10-32X1/4	Screw, Socket Head Shoulder
Z 0	0-00506-000	HANDLE5	Hardware, Misc.
Z 0	0-00507-070	90MM 12V	Fans, & Hardware
Z 0	0-00508-000	CARD GUIDE 5"	Hardware, Misc.
Z 0	0-00517-000	BINDING POST	Hardware, Misc.
Z 0	0-00519-027	#4X3/16PP-B	Screw, Sheet Metal
Z 0	0-00523-048	5-5/8" #18	Wire, #18 UL1015 Strip 3/8 x 3/8 No Tin
Z 0	0-00525-050	8-1/4" #18 GRN.	Wire #18 UL1007 Stripped 3/8x3/8 No Tin
Z 0	0-00527-050	13" #18	Wire #18 UL1007 Stripped 3/8x3/8 No Tin
Z 0	0-00536-032	31894	Termination
Z 0	0-00598-031	4-40X1-3/8 M/F	Standoff
Z 0	0-00618-025	10-32 X 5/8	Screw, Allen Head
Z 0	1-00120-113	3 PIN, 18AWG/OR	Connector, Amp, MTA-156
Z 0	1-00138-130	5 PIN SI	Connector, Male
Z 0	1-00141-171	5 PIN SIL	Cable Assembly, Ribbon
Z 0	1-00153-113	11 PIN,18AWG/OR	Connector, Amp, MTA-156
Z 0	1-00246-130	20 PIN ELH SHR	Connector, Male
Z 0	1-00252-171	34 COND	Cable Assembly, Ribbon
Z 0	1-00253-171	20 COND	Cable Assembly, Ribbon
Z 0	1-00254-113	2 PIN, 22AWG/RD	Connector, Amp, MTA-156
Z 0	1-00273-171	10 COND DIL	Cable Assembly, Ribbon
Z 0	1-00274-171	20 COND X 8"	Cable Assembly, Ribbon
Z 0	2-00034-220	ENA1J-B20	SOFTPOT
Z 0	2-00040-211	DPDT	Switch, Rocker
Z 0	3-00600-341	128KX8-20	STATIC RAM, I.C.
Z 0	4-00541-435	130V/1200A	Varistor, Zinc Oxide Nonlinear Resistor
Z 0	5-00298-568	.01U	Cap, Ceramic 50V SMT (1206) +/-10% X7R
Z 0	5-00334-569	.1U/T35	Cap, Tantalum, SMT (all case sizes)
Z 0	6-00043-611	1.5A 3AG	Fuse
Z 0	6-00176-610	SR780	Transformer
Z 0	7-00124-720	TRANSCOVER2-MOD	Fabricated Part
Z 0	7-00539-720	SR780-5	Fabricated Part
Z 0	7-00540-720	SR780-6	Fabricated Part
Z 0	7-00544-720	SR780-10,11	Fabricated Part
Z 0	7-00545-720	SR780-12	Fabricated Part
Z 0	7-00546-720	SR780-13	Fabricated Part
Z 0	7-00547-720	SR780-14	Fabricated Part
Z 0	7-00549-720	SR780-16	Fabricated Part
Z 0	7-00550-720	SR780-17	Fabricated Part
Z 0	7-00551-721	SR780-18	Machined Part
Z 0	7-00552-721	SR780-19	Machined Part
Z 0	7-00553-720	SR780-20	Fabricated Part

Miscellaneous and Chassis Assembly Parts List			
Ref No.	**SRS Part No.**	**Value**	**Component Description**
Z 0	7-00554-720	SR780-21	Fabricated Part
Z 0	7-00555-720	SR780-23	Fabricated Part
Z 0	7-00621-720	9" CRT SCREEN	Fabricated Part
Z 0	7-00622-709	SR780	Lexan Overlay
Z 0	7-00623-720	SR780-30	Fabricated Part
Z 0	7-00624-720	SR780-31/32	Fabricated Part
Z 0	7-00625-720	SR780-7	Fabricated Part
Z 0	7-00627-740	SR780-33,-34,	Keypad, Conductive Rubber
Z 0	7-00628-701	MEGA KEYPAD	Printed Circuit Board
Z 0	7-00630-701	SR780/SIMM	Printed Circuit Board
Z 0	7-00632-735	SR780-35	Injection Molded Plastic
Z 0	7-00662-714	SR780-39	Extrusion
Z 0	7-00673-721	SR780-44	Machined Part
Z 0	7-00674-721	SR780-46	Machined Part
Z 0	7-00675-721	SR780-47	Machined Part
Z 0	7-00723-720	SR780-48	Fabricated Part
Z 0	8-00045-840	9" Z-AXIS	CRT Display
Z 0	9-00267-917	GENERIC	Product Labels
Z 0	9-00815-924	DBL-SIDED 1/2"	Tape, All types
Z 0	0-00187-021	4-40X1/4PP	Screw, Panhead Phillips
Z 0	0-00195-020	6-32X3/8PF	Screw, Flathead Phillips
Z 0	3-00599-350	8MB 2X32-60	SIMM (Dynamic Ram)
Z 0	3-00613-350	32MB 8X32-60 2K	SIMM (Dynamic Ram)
Z 0	7-00405-720	SR770-11	Fabricated Part
Z 0	7-00542-720	SR780-8	Fabricated Part
Z 0	7-00543-720	SR780-9	Fabricated Part
Z 0	7-00548-720	SR780-15	Fabricated Part
Z 0	7-00620-720	SR780-26	Fabricated Part
Z 0	7-00631-720	SR780-25	Fabricated Part

Chapter 5

Schematic Diagrams

In This Chapter

Assembly	Board #	Schematic #
CPU Board	7-00522	MCPU-1 through MCPU-9
Video/IO Board	7-00523	MVID-10 through MVID-14
Power Supply	7-00526	MPWR-1 through MPWR-2
System Backplane	7-00524	MBKPL-20 through MBKPL-23
Disk Card	7-00626	MBKPL-24
Keypad Board	7-00628	MKEY-1
DSP Board	7-00494	D780-1 through D780-9
Analog Input Boards	7-00616	A780-1 through A780-7
Analyzer Backplane	7-00614	M780-1 through M780-4
Demo Filter	7-00672	F780-1