

## SECTION 1 GENERAL INFORMATION

### 1.3 SPECIFICATIONS

#### FREQUENCY CHARACTERISTICS

<b>Frequency Range:</b>	SA500A: 2-500 MHz
<b>Resolution Band</b>	500 KHz. standard, to +/- 5 KHz variable. Vertical Calibration at 500 KHz
<b>Width (R.B.W.)</b>	Variable R.B.W settings can be used at any Frequency Span Width, 0 MHz to Max. MHz. (a slower Sweep Speed may be required at wide Frequency Span Widths).
<b>Frequency Span:</b>	Variable form 0 MHz/div 30 MHz/div, & Max.
<b>Video Filter:</b>	Off, plus adjustable from 100 KHz to 1 KHz.
<b>Sweep Rate:</b>	Variable to 3 ms/div. May be adjusted to view TV video signals.
<b>In band spurs Base line lift:</b>	In band spurs: Model SA500A, from 2 MHz to 500 MHz, better then -60 dB; Model Base line lift can occur at the IF frequencies if to much signal is induced.

#### AMPLITUDE CHARACTERISTICS

<b>Measurement Range: (Sensitivity)</b>	Sensitivity from -100dBm to 0dBm with standard 50 ohm input impedance (Includes up to 10dB of noise floor). The noise floor depends on R.B.W. & video filter settings. A noise floor from -100dBm.
<b>Reference Level:</b>	Input - Attenuator Variable from < 0dB to >30dB
<b>Maximum Input level:</b>	Maximum Input Level is 0dBm (with 50 ohms standard input impedance) Do not exceed the input levels selected on the Input Attenuator Select Switch. External pads must be used to reduce inputs larger than the selected reference levels.
<b>Frequency Response:</b>	+/- 6dB from 2 MHz to 50 MHz on model SA500ADP +/- 3dB from 50 MHz to 500 MHz for model SA500ADP
<b>Dynamic Range:</b>	70dB of Dynamic Range on screen. A Total Dynamic Range >100dBm includes up to 10 dB noise floor
<b>Input Impedance:</b>	50 Ohms standard (75 Ohms special order)

#### GENERAL CHARACTERISTICS

<b>Operating Temperature Range:</b>	15°C (59°F) to 35°C (95°F). Maximum accuracy is achieved after 30 Minute warm-up, at 25°C (77°F).
<b>Power Requirements:</b>	22 to 24 VAC @ 400 mA
<b>Dimensions, Weight:</b>	Dimensions: 4" x 9" x 12" (H x W x D) Weight 3 lbs. (Shipping weight 5 lb.)
<b>Accessories included:</b>	AC adopter, Instruction Manual,

## SECTION 2

# INSTALLATION & PREPARATION FOR USE

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### 2.1 INTRODUCTION

2.1.1 This section provides information on unpacking and inspection, reshipment, power connections, storage and temperature.

### 2.2 UNPACKING AND INSPECTION

2.2.1 Before unpacking the Spectrum Analyzer Adaptor, check the exterior of the shipping carton for any sign of damage. All irregularities should be noted on the shipping bill. Unpack and remove the instrument carefully from its carton, preserving the factory packaging as much as possible. Inspect the Spectrum Analyzer for any defect or damage. Notify the carrier immediately if any damage is apparent. Have qualified personnel check the instrument before use.

### 2.3 RESHIPMENT INSTRUCTIONS

2.3.1 Use the original packaging if it is necessary to return the Analyzer to ITC for calibration and/or servicing. The original shipping carton and the instrument's plastic-foam form will provide the necessary support for safe shipment or reshipment. If the original packaging is unavailable, reconstruct it as much as possible. Wrap the instrument in plastic, then use plastic spray foam to surround and protect the instrument. Reship in either the original or a new sturdy shipping carton. Always insure the package for the full replacement value. Most carriers only provide one hundred to two hundred dollars of insurance at no additional cost. Additional insurance is usually only five dollars to ten dollars, a good investment when shipping the Spectrum Analyzer. **ITC will not be responsible for any damage or loss during return shipment.**

2.4. Before operating the instrument, verify that the AC Voltage to the adp is correct.

### 2.5 STORAGE AND TEMPERATURE

2.5.1 The SA series instruments can be stored at temperatures ranging from -40°C (-40°F) to +75°C (167°F) at 75% relative humidity without adverse effects to PCBs or components. The Analyzer must be brought within its specified operating range of 0°C (32°F) to 40°C (104°F) before power is applied to the instrument.

## SECTION 3

## CONTROLS AND INDICATORS

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### 3.1 INTRODUCTION

3.1.1 This section provides information on panel layout, control position and placement.

### 3.2 FRONT PANEL CONTROLS AND INDICATORS (Refer to Figure 1)

1. **POWER** (Push - Push, On/Off Switch).  
Applies operating power to the Spectrum Analyzer. The **POWER LED** lights when operating.
2. **POWER LED**  
Lights to indicate application of power (The Spectrum Analyzer is turned on).
3. **ATTENUATION CONTROL**  
Varies the input signal >30 dB 0 dB is calibrated
4. **RF INPUT CONNECTOR (BNC Connector)**  
50-ohm standard input impedance (75-ohm input impedance available on special order). Accepts all signals applied for spectrum analysis.
5. **BASE LINE CLIPPER / RESOLUTION BAND WIDTH CONTROL**  
All current units have option 3A narrow band filter installed. The Baseline Clipper is used to go from <10 KHz to over 1 MHz resolution bandwidth. The min. position is from the 1 MHz RBW and also provides a vertical calibration for the SA500ADP
6. **VIDEO FILTER**  
Provides RF video filtering, from OFF (fully counter clockwise) to 1KHz.
7. **SWEEP SPEED CONTROL**  
Varies the sweep speed of the display. *Caution* A greater frequency span width requires a slower sweep speed to maintain vertical calibration. If vertical linearity degradation occurs, decrease the sweep speed until the linearity degradation stops. The sweep speed can be varied to synchronize or freeze an FSK-Digital or TV wave form (in the 0 MHz per/div Span position ) and analyze the Digital Data or video signal between synchronizing pulses.

## SECTION 3 CONTROLS AND INDICATORS

### 8. MARKER /CALIBRATOR (Option 1)

Places a frequency marker each 50 MHz from 50 MHz to 500MHz

### 9. VERTICAL OUTPUT BNC

Connect a cable to your scopes vertical input and set the vertical gain switches to 20mV. The SA500ADP has been calibrated to 20 mV per Div. Vertical see control #19 for calibration other than 20 mV.

### 10. HORIZONTAL OUTPUT BNC

Connect a cable to your scopes external trigger input and set the trigger select switch on your scope to external .

### 11. FREQUENCY RANGE SELECT SWITCH

The coarse frequency selector switch has 11 preset positions from 50 MHz intervals from 0 to 500MHz.

### 12. FINE FREQUENCY TUNE CONTROL

Provides for fine tune control of the Center Frequency displayed on the CRT screen. +/- 50 MHz from preset switch position.

### 13. FREQUENCY DISPERSION CONTROL

Provide the variable frequency span, or the amount of frequency dispersed on the screen at any one time. This switch is calibrated from 0 MHz per/div to > 30 MHz per/div, and Max. MHz per/div (which is uncalibrated). The last position allows total span widths  $\geq$  500 MHz for Spectrum Analyzer model SA500A,

### 14. TRACKING GENERATOR CONTROL (Option 5)

Turns the tracking generator on and off, and provides an adjustable generator output from -50 dBm to -110 dBm (Typically the Tracking Generator output maintains a 60 dB Dynamic Range from 10 MHz to 1000 MHz). The tracking generator BNC output connector is located at the rear of the unit. *Caution:* The Tracking Generator Control must be in the full counter clockwise (Off) position when not in use. .

### 15. TRACKING GENERATOR BNC OUTPUT( Option 5)

### 16. 24VAC POWER INPUT

Input power requirements are 22VAC to 28VAC @ 400mA do not exceed 29VAC.

### 17. POWER ON / OFF SWITCH

### 18. HORIZONTAL CALIBRATION POT

The horizontal has been set at the factory at 10 mV per division for X - Y operation if the SA500ADP is used in the trigger mode no further adjustment is required. If your X -Y Scope is not 10 mV Horizontal sensitivity you may want to adjust this pot for full screen dispersion

## SECTION 3 CONTROLS AND INDICATORS

### 19. VERTICAL CALIBRATION POT

Vertical calibration is set at the factory at 20 mV per division. If you want to use the vertical output other than 20 mV you must adjust this pot for proper settings. We suggest that unless you have a decade step attenuator and signal source do not attempt to adjust this control.

### 20. RETRACE BLANKING BNC OUTPUT

Connect this to the Z axis (normally found at the rear of your scope) The purpose of this signal is to provide retrace blanking. This should be connected for best results. only necessary in the X -Y mode

#### Horizontal Scale

The graticule scale corresponds to the setting of the FREQUENCY SPAN WIDTH SWITCH. When the FREQUENCY SPAN WIDTH switches (#13) is set to "X" MHz/division, each division of scale is "X" MHz.

#### Vertical Scale

The top line (graticule) is the reference scale, which corresponds to the setting of the INPUT ATTENUATOR SELECT switches (#3).

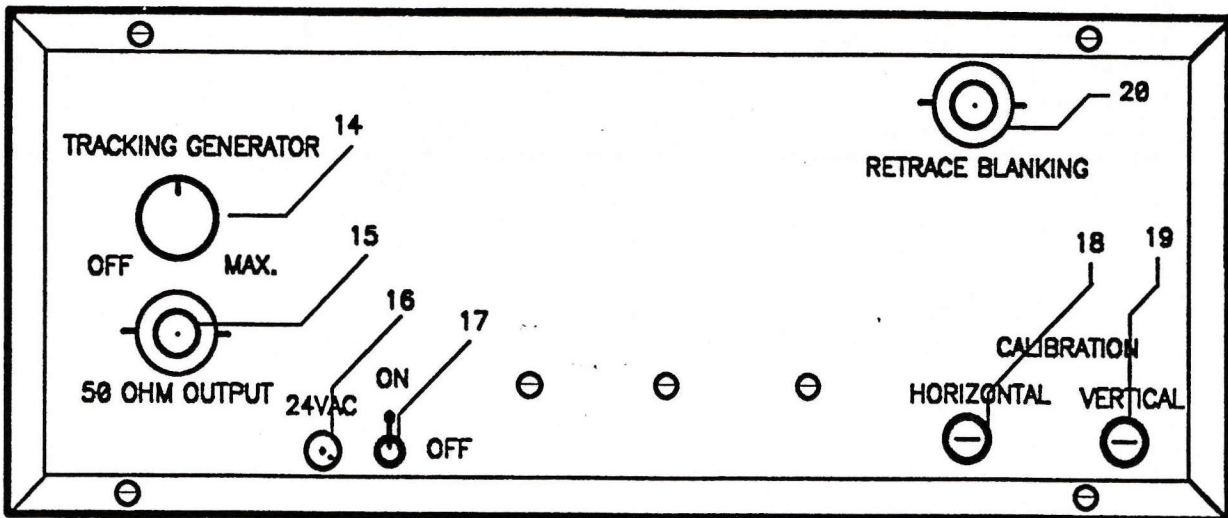


Fig. 2 REAR PANEL CONTROLS

### 3.2.2

### REAR PANEL CONTROLS (REFER TO FIGURE 2)

# SECTION 3 CONTROLS AND INDICATORS

