

Table 1-1. Specifications.

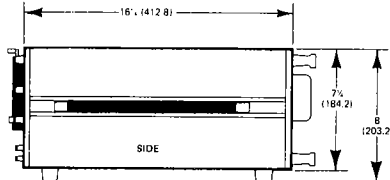
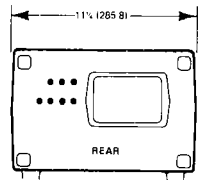
<p>FREQUENCY</p> <p>Display Accuracy: ± 3 Hz</p> <p>AFC Pull-In Range: $> 5 \times$ Bandwidth for 3 Hz thru 100 Hz Bandwidth; > 800 Hz for 300 Hz Bandwidth.</p> <p>AFC Hold-In Range: ± 800 Hz</p> <p>AFC Lock Frequency: center of passband ± 1 Hz</p> <p>AMPLITUDE</p> <p>Amplitude Accuracy:</p> <table border="1"> <thead> <tr> <th>Frequency Response</th> <th>LOG</th> <th>LINEAR</th> </tr> </thead> <tbody> <tr> <td>3581A and 3581C Unbalanced 15 Hz to 50 kHz</td> <td>± 0.4 dB</td> <td>$\pm 4\%$</td> </tr> <tr> <td>3581C Balanced Inputs: * 40 Hz to 20 kHz, + 20 dBm max</td> <td>± 0.5 dB</td> <td>$\pm 5\%$</td> </tr> <tr> <td>Switching Between Bandwidths:</td> <td>± 0.5 dB</td> <td>$\pm 5\%$</td> </tr> <tr> <td>Amplitude Display:</td> <td>± 2 dB</td> <td>$\pm 2\%$</td> </tr> <tr> <td>Input Attenuator:</td> <td>± 0.3 dB</td> <td>$\pm 3\%$</td> </tr> <tr> <td>Amplitude Reference Level (IF Attenuator)</td> <td></td> <td></td> </tr> <tr> <td>Most Sensitive Range:</td> <td>± 1 dB</td> <td>$\pm 10\%$</td> </tr> <tr> <td>All Other Ranges:</td> <td>± 1 dB</td> <td>$\pm 3\%$</td> </tr> </tbody> </table> <p>*for signals below + 20 dBm</p> <p>Dynamic Range:</p> <p>Display Range (90 dB scale): > 80 dB</p> <p>Noise Level:</p>	Frequency Response	LOG	LINEAR	3581A and 3581C Unbalanced 15 Hz to 50 kHz	± 0.4 dB	$\pm 4\%$	3581C Balanced Inputs: * 40 Hz to 20 kHz, + 20 dBm max	± 0.5 dB	$\pm 5\%$	Switching Between Bandwidths:	± 0.5 dB	$\pm 5\%$	Amplitude Display:	± 2 dB	$\pm 2\%$	Input Attenuator:	± 0.3 dB	$\pm 3\%$	Amplitude Reference Level (IF Attenuator)			Most Sensitive Range:	± 1 dB	$\pm 10\%$	All Other Ranges:	± 1 dB	$\pm 3\%$	<p>Noise Sidebands: > 70 dB below CW signal 10 Bandwidths away from signal.</p> <p>Spurious Responses: > 80 dB for signals less than 0 dBm above 100 Hz.</p> <p>Line-Related Spurious: > 80 dB below input reference level or - 140 dBV (0.1 μV). Below - 90 dBm for 3581C Balanced-Terminated input.</p> <p>IF Feedthru:</p> <table border="1"> <thead> <tr> <th>Input</th> <th>Feedthru</th> </tr> </thead> <tbody> <tr> <td>> 10 V</td> <td>- 60 dB or lower</td> </tr> <tr> <td>< 10 V</td> <td>- 70 dB or lower</td> </tr> </tbody> </table> <p>Zero Response: > 30 dB below input reference level</p> <p>BALANCED INPUT (3581C only)</p> <p>Frequency Response: 40 Hz to 20 kHz ± 0.5 dB for signals below + 20 dBm</p> <p>Common Mode Rejection: > 64 dB at 60 Hz</p> <p>OUTPUTS</p> <p>Recorder Outputs:</p> <p>X-Axis: 0 V to + 5 V $\pm 2.5\%$ Y-Axis: 0 V to + 5 V $\pm 2.5\%$</p> <p>Tracking Oscillator Output</p> <p>Frequency Accuracy: ± 1 Hz relative to center of passband</p> <p>Frequency Response 3581A: $\pm 3\%$ 15 Hz to 50 kHz 3581C: ± 0.5 dB 100 Hz to 20 kHz, 10 kHz reference, into 600 Ω load</p> <p>THD and Spurious: > 40 dB below 1 V signal level</p>	Input	Feedthru	> 10 V	- 60 dB or lower	< 10 V	- 70 dB or lower
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Frequency (Hz)	Noise Level (dBV) - BW = 300 Hz	Noise Level (dBV) - BW = 30 Hz	Noise Level (dBV) - BW = 3 Hz
15	-135	-140	-145
100	-138	-143	-148
1K	-141	-146	-151
10K	-144	-149	-154
100K	-147	-152	-157

Table 1-2. General Information.

<p>INPUT CHARACTERISTICS (3581A)</p> <p>Connector: female banana plug</p> <p>Impedance: 1 megohm, 30 pF</p> <p>Maximum (ac) Input Level:</p> <table border="0" style="width: 100%;"> <thead> <tr> <th style="text-align: center;">Input Sensitivity</th> <th style="text-align: center;">Maximum Input</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">+ 30 dB (20 V) to - 10 dB (0.2 V)</td> <td style="text-align: center;">100 V rms</td> </tr> <tr> <td style="text-align: center;">- 20 dB (0.1 V) to - 70 dB (0.2 mV)</td> <td style="text-align: center;">50 V rms</td> </tr> </tbody> </table> <p>Maximum (dc) Input Voltage: ± 100 V dc</p> <p>Coupling: capacitive</p> <p>DC Isolation: none (input common referenced to frame ground)</p>	Input Sensitivity	Maximum Input	+ 30 dB (20 V) to - 10 dB (0.2 V)	100 V rms	- 20 dB (0.1 V) to - 70 dB (0.2 mV)	50 V rms	<p>Full-Scale Sensitivity:</p> <p>Volts Scale:</p> <p style="padding-left: 20px;">Calibrated: 30 V rms to 0.1 μV rms (18 ranges) Uncalibrated: 100 V rms to 0.2 μV rms</p> <p>Log 90 dB Scale:</p> <p style="padding-left: 20px;">Calibrated: + 30 dBV/dBm to - 70 dBV/dBm (11 ranges) Uncalibrated: + 40 dBV/dBm to - 60 dBV/dBm</p> <p>Overload Indicator: An LED Overload indicator on the front panel lights to indicate that the input signal exceeds the maximum (full scale) input level set by the INPUT SENSITIVITY switch and amplitude VERNIER.</p> <p>Internal Calibration Signal: An internally generated calibration signal can be used to calibrate the amplitude section (following input attenuator) to an accuracy of $\pm 1.5\%$ at 10 kHz. The calibration signal can also be used to verify the frequency accuracy of the instrument.</p>
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+ 30 dB (20 V) to - 10 dB (0.2 V)	100 V rms						
- 20 dB (0.1 V) to - 70 dB (0.2 mV)	50 V rms						
<p>INPUT CHARACTERISTICS (3581C)</p> <p>Selectable Input Configurations:</p> <ul style="list-style-type: none"> Unbalanced Balanced Bridged Balanced Terminated <p>Connector: accepts WECO Type 310 mating plug</p> <p>Impedance:</p> <ul style="list-style-type: none"> Unbalanced: 1 megohm, 40 pF Bridged: greater than 12 K (typically 14 K at 1 kHz) Terminated: 600 ohms or 900 ohms <p>Maximum Input Levels:</p> <ul style="list-style-type: none"> Unbalanced: same as 3581A Bridged: 100 vdc max, 35 vrms ac max Terminated: + 27 dBm, at 0 V dc <p>DC Isolation:</p> <ul style="list-style-type: none"> Unbalanced: none (input common referenced to frame ground) Bridged and Terminated: floating input 	<p>FREQUENCY CHARACTERISTICS:</p> <p>Frequency Range: 15 Hz to 50 kHz</p> <p>Frequency Control: The front panel FREQUENCY control tunes the frequency of the analyzer over the 0 Hz to 50 kHz range. The control can be used to set the start frequency of electronic or manual sweeps.</p> <p>Coarse or Fine Tuning: Coarse tuning is selected by pushing the crank toward the front panel; fine tuning is selected by pulling the crank outward. In the coarse position, one revolution of the crank changes the frequency by approximately 2.7 kHz. In the fine position, one revolution of the crank changes the frequency by approximately 73 Hz.</p> <p>Frequency Display: 5-digit LED display indicates tuned frequency in Hz.</p> <p>Accuracy: ± 3 Hz</p> <p>Range: 0 Hz to approximately 51,000 Hz</p> <p>Out of Range Indication: Frequency digits blank and decimal points light when frequency is tuned below 0 Hz.</p> <p>Typical Frequency Stability: ± 10 Hz/hr. after 1 hour; ± 5 Hz/$^{\circ}$C</p> <p>Remote Tuning: 3581A/C can be remotely tuned by applying an externally generated 1 MHz to 1.5 MHz signal to L.O. IN connector.</p> <p>Bandwidth Settings: 3 Hz, 10 Hz, 30 Hz, 100 Hz, 300 Hz</p> <p>Bandpass Characteristic: closely approximates a gaussian response.</p> <p>Shape Factor: 10:1 on 3 Hz thru 100 Hz bandwidths; 8:1 on 300 Hz bandwidth</p> <p>Equivalent Noise Bandwidth: Typically 12% wider than <i>absolute</i> 3 dB bandwidth.</p>						
<p>AMPLITUDE CHARACTERISTICS:</p> <p>Scale Settings:</p> <p>Volts: Absolute measurements in rms volts (average responding); relative measurements in percent of full scale.</p> <p>Log 90 dB:</p> <p style="padding-left: 20px;">3581A: Absolute measurements in dBV (1 V rms = 0 dBV) or dBm/600 ohms; relative measurements in dB.</p> <p style="padding-left: 20px;">3581C: Absolute measurements in dBm/900 ohms or dBm/600 ohms; relative measurements in dB.</p> <p style="padding-left: 20px;">Display Range: 80 dB</p> <p>Log 10 dB: Display sensitivity is 1 dB per division; display range is 10 dB. Any 10 dB portion of 80 dB range can be displayed by changing AMPLITUDE REF LEVEL setting.</p>	<p>Display Smoothing (noise filtering):</p> <p style="padding-left: 20px;">3 Settings: min, med max</p> <p style="padding-left: 20px;">Response: determined by Bandwidth setting.</p>						

Table 1-2. General Information (Cont'd).

<p>Automatic Frequency Control (AFC):</p> <p>Typical Pull-In Range: see Table 3-5 (Section III) Hold-In Range: ± 800 Hz (frequency drift rate below maximum drift rate listed in following table) Maximum Drift Rate:</p> <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>BANDWIDTH</th> <th>MAXIMUM DRIFT RATE</th> </tr> </thead> <tbody> <tr> <td>300 Hz</td> <td>400 Hz/sec</td> </tr> <tr> <td>100 Hz</td> <td>400 Hz/sec</td> </tr> <tr> <td>30 Hz</td> <td>40 Hz/sec</td> </tr> <tr> <td>10 Hz</td> <td>4 Hz/sec</td> </tr> <tr> <td>3 Hz</td> <td>0.4 Hz/sec</td> </tr> </tbody> </table> <p>Lock Frequency: center of passband ± 1 Hz</p> <p>SWEEP CHARACTERISTICS:</p> <p>Sweep Modes:</p> <p>Repetitive: The instrument sweeps continuously over the selected frequency range. Single: The instrument sweeps one time over the selected frequency range and stops at the end frequency. Reset: Sweep is reset; instrument remains at start frequency of sweep. Manual: The electronic sweep is disabled and a front panel potentiometer is used to manually sweep the frequency. Off: Sweep circuits disabled.</p> <p>Frequency Span Settings: 0 Hz*, 50 Hz to 50 kHz (10 settings)</p> <p>*When the 0 Hz span setting is selected, the instrument remains at the frequency indicated on the frequency display. The sweep generator, however, remains operative and an X-Y recorder or scope connected to the X-Axis recorder output can be swept at the rate selected by the SWEEP TIME control. This provides a graphical display of amplitude vs. time.</p> <p>Typical Frequency Span Accuracy: $\pm 2\%$ of setting</p> <p>Sweep Time Settings: 0.1 sec to 2,000 sec (14 settings)</p> <p>Typical Sweep Time Accuracy: $\pm 5\%$ of setting</p> <p>Typical Sweep Linearity: $\pm 1\%$</p> <p>Sweep Error Light: A front panel LED indicator lights when sweep rate is too fast.</p> <p>External Triggering: A rear panel External Trigger input is provided to allow the frequency sweep to be remotely triggered using a contact closure or TTL output. External triggering can be used in the Single or Repetitive mode.</p> <p>OUTPUTS</p> <p>Recorder Outputs:</p> <p>X-Axis: Supplies dc voltage proportional to frequency sweep.</p> <p>Output Voltage: 0 V (start freq.) to + 5 V (end freq.) Output Resistance: 1 kilohm</p>	BANDWIDTH	MAXIMUM DRIFT RATE	300 Hz	400 Hz/sec	100 Hz	400 Hz/sec	30 Hz	40 Hz/sec	10 Hz	4 Hz/sec	3 Hz	0.4 Hz/sec	<p>Y-Axis: Supplies dc voltage proportional to meter reading.</p> <p>Output Voltage: 0 V to + 5 V full scale Output Resistance: 1 kilohm</p> <p>Tracking Oscillator/Restored Output</p> <p>Frequency: 15 Hz to 50 kHz; tracks tuned or swept frequency of instrument.</p> <p>Output Level:</p> <p>Tracking Oscillator: constant level signal; can be adjusted from 0 V to > 1 V rms into 600 Ω Restored: proportional to signal being measured; full-scale level adjustable from 0 V to > 1 V rms into 600 Ω Flatness: ± 0.5 dB 100 Hz to 20 kHz, 10 kHz reference, 600 ohm load</p> <p>Output Impedance: 3581A: 600 ohms, unbalanced 3581C: 600 ohms, balanced</p> <p>L.O. Output:</p> <p>Frequency: Varies from 1.0 MHz to 1.5 MHz as 3581 frequency is tuned from 0 Hz to 50 kHz. Output Level: 100 mV rms, nominal value, varies with frequency Output Impedance: 1 kilohm</p> <p>GENERAL:</p> <p>Operating Temperature Range:</p> <p>Standard 3581: 0°C to + 55°C Option 001: 0°C to + 40°C</p> <p>Storage Temperature Range:</p> <p>Standard 3580A - 40°C to + 75°C Option 001: - 40°C to + 50°C</p> <p>Charge Temperature Range (Option 001): 0°C to + 40°C</p> <p>Power Requirements: 100 V, 120 V, 220V or 240 V + 5% - 10%, 48 Hz to 66 Hz, 10 watts typical</p> <p>Battery Characteristics (Option 001):</p> <p>Operating Time: 12 hours from full charge Charge Time: 14 hours to recharge fully discharged battery pack Battery Life: more than 100 charge/discharge cycles Protection: The batteries are protected from excessive discharge by an automatic cut out.</p> <p>Dimensions:</p> <p style="text-align: center;">DIMENSIONS SHOWN IN INCHES AND (MILLIMETERS)</p> <div style="display: flex; justify-content: space-around;">   </div>
BANDWIDTH	MAXIMUM DRIFT RATE												
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