MODEL 110 FREQUENCY SELECTIVE VOLTMETER TECHNICAL SPECIFICATIONS

Input Connectors:
BNC type connector & Banana Jacks (WECO 241A/310).

Ground:
One binding post Banana Jack.

Input Range:
+53 dBm to -120 dBm, including Internal Attenuator.

Impedance:
Balanced/Unbalanced Inputs: 50 Ω, 75 Ω, 135 Ω, 600 Ω and High Impedance, Selectable.
Internal Attenuator Input: > 20 kΩ

Internal Attenuator Input (High Level Input)**:**
100 Vrms max. / 141 Vp max.
+ 53 dBm @ 50 Ω
+ 51.25 dBm @ 75 Ω

Balanced/Unbalanced Input (Low Level Input)**:**
1.98 Vrms max. / 2.8 Vp max.
+ 18 dBm @ 50 Ω
+ 16.5 dBm @ 75 Ω
+ 14 dBm @ 135 Ω
+ 7.5 dBm @ 600 Ω

Typical Amplitude Accuracy:

	Low Level Input	High Level Input
50 Hz to 100 kHz:	± 0.10 dB	± 0.20 dB
100 kHz to 1 MHz:	± 0.15 dB	± 0.25 dB
1 MHz to 5 MHz:	± 0.30 dB	± 0.40 dB

Amplitude Temperature Stability:
± 0.1 dB.

Frequency Range:
50 Hz to 5 MHz.

Frequency Accuracy:
± 3 ppm, ± 5 ppm max. for 10 years.

Frequency Temperature Stability:
± 1.5 ppm.

Bandwidths:
25 Hz, 100 Hz, 1.95 kHz, 3.1 kHz and Wideband.

Signal DC Input Voltage:
100 V Balanced.

Tuning Accuracy:
± 1 Hz.

Frequency Display:
7 digit, resolution: 1 Hz.

AFC Capture Range:
Input Level: 0 dBm.
25 Hz: ± 21 Hz, 100 Hz: ± 65 Hz, 1.95 kHz: ± 1.31 kHz,
3.1 kHz: ± 1.87 kHz

Level Display:
Digital display, maximum resolution 0.01 dB or 10 nVrms.
5 digit for dB and Vrms.
Bargraph, automatic.

Oscillator:
Frequency: 50 Hz to 5 MHz Sinewave.
50 Ω Output Impedance:
　　　　Maximum Output: + 12 dBm, 50 Hz to 5 MHz.
　　　　Typical Amplitude Accuracy: ± 0.1 dB
600 Ω Output Impedance:
　　　　Maximum Output: + 3 dBm, 50Hz to 250 kHz.
　　　　Typical Amplitude Accuracy: ± 0.2 dB
Output: BNC connector.
Total Harmonic Distortion: 1%.
Frequency Accuracy: 3 ppm, ± 5 ppm max. for 10 years.

Demodulator:
AM, Single (LSB, USB) and Double Sideband Demodulation; selectable. Built in speaker and volume control.

Memory:
24 Set-Up memories can be stored with one additional default setting.
99 Readings (with Set-up information) can be stored.

Power Supply:
Sealed Lead Acid: 2 @ 6 V 10 AH.
AC line operation via an AC line cord. Built-in 120 VAC/ 240 VAC option, 50/60 Hz.
85 VAC to 264 VAC, 47 to 63 Hz.

Operating Times:
AC input: continuous. Battery: 20 hours.

Ambient Conditions:
Ambient Temperature:
Nominal Operating Range: 0 to + 55°C
Storage: - 40 to + 70°C
Relative Humidity: 5 to 95% @ 40°C. (Non-condensing)
Case Dimensions: 9.75"W x 5.75"H x 12.875"D
Weight with batteries installed: Approximately 19 lbs.

Accessories:
2 - 6' Coax Cable (One Black and One White); 1 - Banana Plug Adaptor and Alligator Clips; 2 - BNC to Alligator Adaptor; 2 - Banana to Safety Plug Adaptor; 1 - AC Cable; 1 - 6' Ground Lead; 1 - User Guide; 1 - Quick Reference Guide; 1 - Carrying Case; 1 - Download Software (CD, Windows™ Format)

MODEL 110

Frequency Selective Voltmeter

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All The Features You Need - Standard!

The keypad, LCD display and nomenclature on the unit make the Model 110 features easily accessible and understandable.

Display
Large, Transflective 4" x 3.5" Monochrome LCD Display

Measurement Options Section

Z/HI Z Selects Z/Hi Z (terminating or bridged)

Int. Atten./Ext. Atten. High Level Input (+ 53 dBm @ 50 Ω) 100 Vrms / Program external attenuation added

Disp. Digital Meter/Option 1 Selects digitally generated analog meter / Selects power budget calculator mode

Vrms dBm / dBREF Selects display units / Activates input reference level

Tune Freq/Max. HLD Selects desired frequency / Displays highest input signal value

Perm./Option 2 Not used (for future features)

Setup / Storage Section

Function Selects parameter to be changed

Clear Displays last parameter; Removes stored reading and set-up

Store Stores readings and set-up parameters

Recall/Threshold Recalls stored readings / Selects minimum signal input during search

(Screen(s) subject to change)

Numeric Keypad Functions

1/Contrast Allows contrast adjustment

2/AFC Adjusts frequency tuner automatically

3/Spkr. Lvl Allows audio level adjustment

2nd Selects alternate key function

4/5/6 - FSVM/WIDE/DEMOD
FSVM - Frequency Selective Voltmeter Mode
WIDE - True RMS Flat Meter
DEMOD - Demodulates AM, SSB and DSB

7/Displ Avg Averages input signals; adjustable

8/Light Turns backlight on/off

9/ UN/BAL Selects balanced or unbalanced inputs

↑↑&↓↓ Scrolls available functions/frequency

. / Z Selects Input Impedance (50, 75, 135, 600 Ω)

0/ BW/3.1kHz Selects input filter bandwidth (25, 100, 1,950, 3,100 Hz)

+/- / Down Load Selects + or - / Transfers stored readings to a computer

Enter Inputs selected function

Search Enables auto-search for signals above threshold level

Oscillator and Input Sections

Osc. Z / Off Selects oscillator Z (50/600 Ω) / Turns oscillator off

Osc. Freq. / Level Selects desired frequency / Selects output level

Inputs Signal inputs, BNC input atten. (Hi level input), BNC unbalanced (Low Level Input), Balanced banana jack (Low Level Input), Ground

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Analog Meter Screen
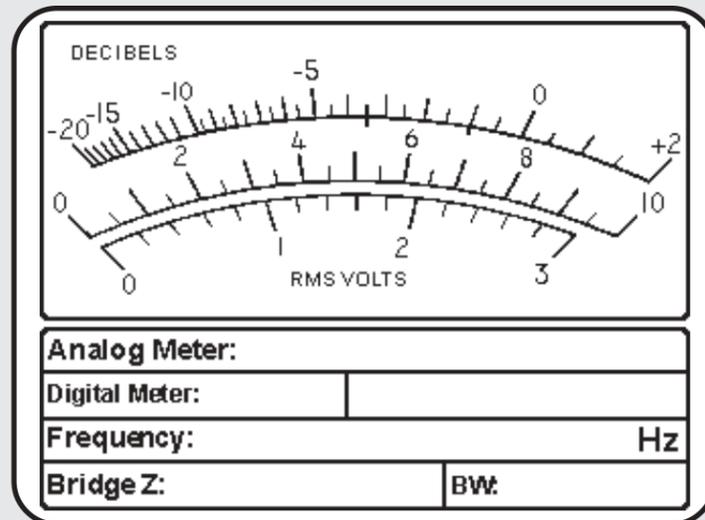
The Analog Meter Screen displays a digitally-drawn analog meter for a familiar look.

■ **Signalcrafters Model 110** is a multi-purpose, portable instrument for measuring voltage levels at frequencies in the range of 50 Hz to 5 MHz. A signal generator covering the same frequency range is also included. Utilizing surface mount technology and battery and/or AC power, the unit is light enough for both field and laboratory use. Storage and recall functions allow for quick set up of the frequency selective voltmeter (FSVM).

■ Incorporated in the design is a Liquid Crystal Display (LCD), which displays results and indicates programming features and selections. The backlight and contrast of the display can be adjusted via the keypad controls for easy visibility. One keypad allows the user to switch between an analog-style meter (digitally generated) and digital readout on the LCD display.

■ An external attenuator selection allows the operator to program the unit to add the amount of attenuation being used. The display prompts the user on the amount of level being added to the reading and automatically displays the result when this feature is selected. An internal attenuator is provided to accommodate the higher levels used in power line carrier systems.

■ A built-in oscillator provides a low level (+ 12 dBm @ 50 Ω) accurate signal source for test tone and other test functions. Its output can be selected as either a 50 or 600 ohm source. Levels, impedances, and frequencies of the generator are selected via the keypad.

■ Other features include self-calibration on start-up, keypad control of speaker level for demodulated AM, single and double sideband signals, search capability, keypad adjustable steps for level and frequency, display average, threshold, maximum hold and reference readings.

■ Software and an RS-232 port (9 pin) is provided to enable users to download stored readings to a computer. The computer can also be used to remotely control operation of the Model 110.

Power Budget Calculator Screen

The Power Budget Calculator with Voltage, Wattage, dBm and Z finder.

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