SPECIFICATIONS

GENERAL

Resolution	Front panel keyboard input select 0.1 Hz to 1 GHz (0.1 Hz resolution in Band 1 only; no frequency offset or multiplier in 0.1 Hz resolution).
Gate Time	1 ms for 1 kHz resolution; 1 s for 1 Hz resolution
Display	12 digit LED
Accuracy	±1 count ±timebase error
Sample Rate	Controls time between measurements variable from 100 ms typ. to 10 s. Switchable Hold position freezes display indefinitely.
Reset	Resets display to zero and initiates new reading
Offsets	Keyboard control of frequency offsets (standard) and power offsets (standard with power measurement Option 02). Displayed frequency (power) is offset by entering value to 1 Hz resolution (0.1 dB power).
Operation Temp.	0 to 50 °C
Power	100/120/220/240 VAC ±10% (selectable) 50 to 60 Hz
Weight, Net	26 lb (11.8 kg)
Weight, Shipping	32 lb (14.5 kg)
Dimensions (hwd)	3.5" x 16.75" x 14" (89 mm x 425 mm x 356 mm)
Accessories Furnished	Power Cord and Operation Manual

BAND 1

Frequency Range	10 Hz to 100 MHz
Sensitivity	25 mV rms
Impedance	1 MΩ/20 pF
Connector	BNC (female)
Max. Input Level	1 V rms
Damage Level	150 V rms (above 1 kHz, damage level will decrease at 6 dB/octave down to 3.0 V rms)

BAND 2	
Frequency Range	10 MHz to 1 GHz
Sensitivity	-20 dBm
Dynamic Range	30 dB
Impedance	50 Ω nominal
Connector	BNC (female)
Max. Input Level	+10 dBm
Damage Level	+27 dBm
Acquisition Time	<50 ms

BAND 3	
Frequency Range	1 GHz to 20 GHz (26.5 GHz for Model 548B)
Sensitivity	-30 dBm (1 GHz to 12.4 GHz) -25 dBm (12.4 GHz to 20 GHz) -20 dBm (20 GHz to 26.5 GHz)
Dynamic Range	40 dB (1 GHz to 12.4 GHz) 35 dB (12.4 GHz to 20 GHz) 30 dB (20 GHz to 26.5 GHz)
Impedance	50 Ω nominal
Connector	Precision Type N (female) (Model 545B) APC 3.5 (female) (Model 548B)
Max. Input Level	+10 dBm
Damage Level	30 watts (+45 dBm)
Acquisition Time	<200 ms independent of frequency
Amplitude Discrimination	10 dB, if <10 dB, will count one signal accurately if separated by >200 MHz
FM Tolerance	20 MHz p-p up to 10 MHz rate
VSWR	<2.5:1 typical
Frequency Limits	Keyboard control of desired limits (standard). Counter will measure largest signal within programmed limits. Signal outside operating band must be separated by at least 100 MHz from either limit. For signal more than 10 dB above desired signal, required separation is typically 200 MHz.

TCXO TIMEBASE

Frequency	10 MHz
Aging Rate	$<\|1 \times 10^{-7}\|$ per month, $<\|1 \times 10^{-6}\|$ per year
Short Term Stability	$<\|1 \times 10^{-9}\|$ rms for one second averaging time
Temperature Stability	$<\|1 \times 10^{-6}\|$ 0 to 50 °C when set at 25 °C
Line Variation Stability	$<\|1 \times 10^{-7}\|$ ±10% change
Warm-up Time	30 minutes
Output Frequency	10 MHz, square-wave, 1 V p-p minimum into 50 Ω
Ext. Time Base	Requires 10 MHz 1 V p-p minimum into 300 Ω
Phase Noise	-95 dBc/Hz at 10 Hz from carrier

OPTION 01 - DIGITAL TO ANALOG CONVERTER

Output Voltage	0.000 V to 0.999 V (relative to input frequency)
Accuracy (25 °C)	±0.5% ±1 mV
Temp. Stability (0 to 50 °C)	±0.01%/°C
Resolution	1 mV
Load Impedance	1 kW minimum
Connector	BNC female (on rear panel)
Protection	±10 V ac or dc applied to output connector will not cause damage. No damage will occur by any load.

OPTION 02 - POWER METER

Range	Entire Operating Range of Band 3
Accuracy	±1.2 dB Typical 0 to 50 °C ±0.5 dB Typical 25 °C
Resolution	0.1 dB from sensitivity to -10 dBm 0.2 dBm to maximum input
Power Offset	Math function. Allows displayed reading to be offset to 0.1 dB resolution. Selectable from front panel or via GPIB.
Conversion Time	1 gate time +50 ms

OPTION 05 - OVENIZED HIGH STABILITY TIMEBASE

Frequency	10 MHz
Aging Rate	$<5 \times 10^{-10}$/24 hours (after one hour warm-up), 1×10^{-7}/year
Short Term Stability (1 s average)	$<1 \times 10^{-10}$ rms
0 to +50 °C Temperature Stability	$<3 \times 10^{-8}$
±10% Line Voltage Change	$<2 \times 10^{-10}$
Warm-up Time	Within $\leq 5 \times 10^{-9}$ of final value 10 minutes after turn-on at 25 °C Within 1×10^{-9} of final value 30 minutes after turn-on at 25 °C
Phase Noise	-120 dBc/Hz at 10 Hz from carrier

OPTION 06 - FREQUENCY EXTENSION (548B ONLY)

Frequency Range	26.5 GHz to 110 GHz in bands with external sensors
Sensitivity	-25 dBm
Dynamic Range	30 dB
Connector	As required by remote sensor
Max. Input Level	+5 dBm
Damage Level	+10 dBm
Amplitude Discrimination	20 dBm
Acquisition Time	<1 s

REMOTE SENSOR	BAND	FREQUENCY RANGE (GHz)	WAVEGUIDE SIZE	WAVEGUIDE FLANGE	POWER RANGE (dBm)	DAMAGE LEVEL (dBm)
91	4-1	26.5 - 40	WR-28	UG-599/U	-25/-20 to +5	+10
92	4-2	40 - 60	WR-19	UG-383/U	-25 to +5	+10
93	4-3	60 - 90	WR-12	UG-387/U	-25 to +5	+10
94	4-4	90 - 110	WR-10	UG-387/U	-25 to +5	+10
95	4-2 or 4-3	50 - 75	WR-15	UG-385/U	-25 to +5	+10
96	4-1 or 4-2	33 - 50	WR-22	UG-383/U	-25 to +5	+10
97	4-1 or 4-2	26.5 - 50	K-Connector	UG-387/U	-20 to +5	+10

OPTION 09- REAR PANEL INPUT CONNECTORS

Band 1 Connector	BNC (female)
Band 2 Connector	BNC (female)
Band 3 Connector	Precision Type N (female) (Model 545B) APC 3.5 (female) (Model 548B)

OPTION 10- CHASSIS SLIDES

Dimensions	See figure on following page.

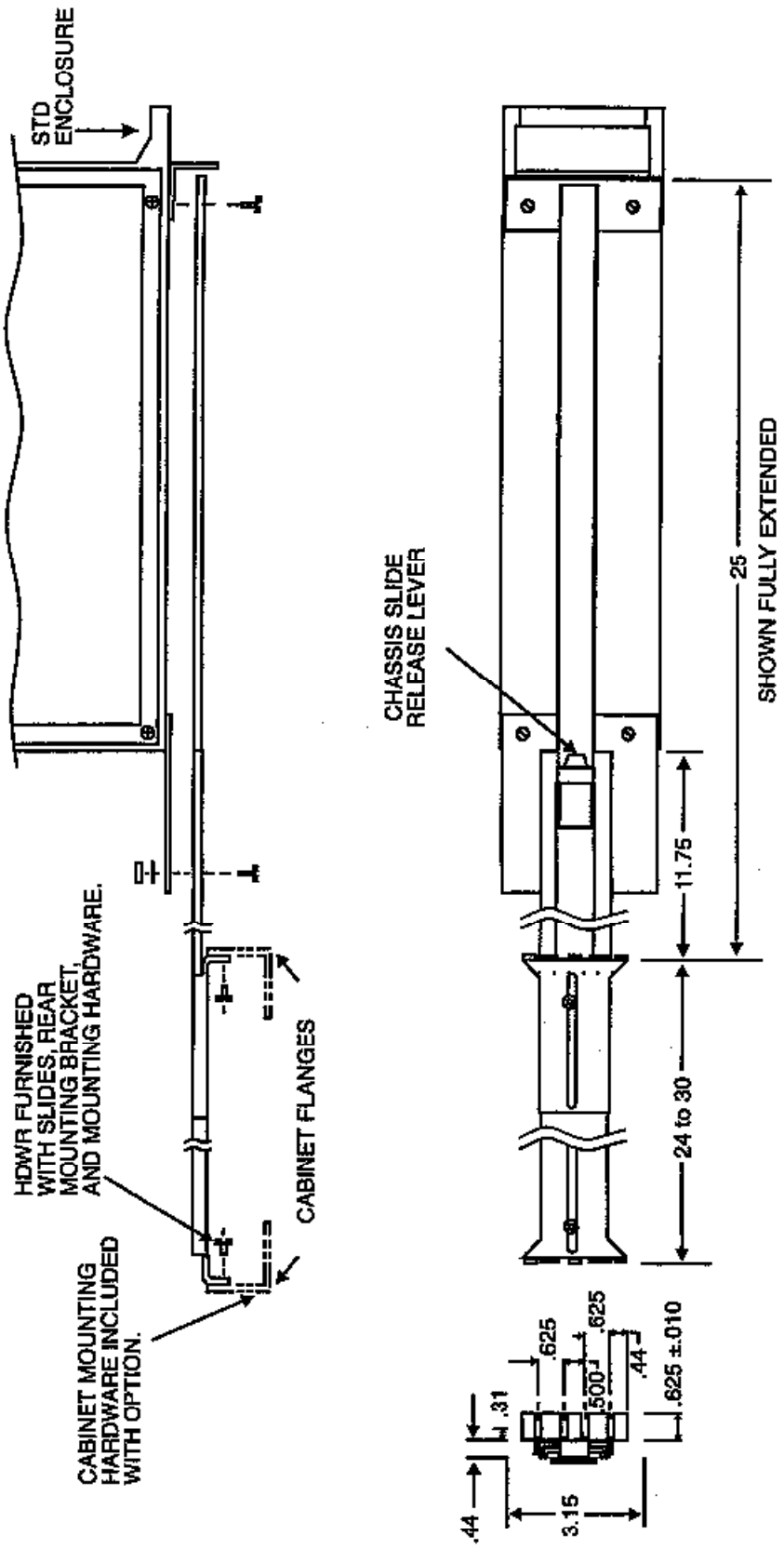

Figure 1-1. Option 10, Chassis Slides