

**5113/5111A
5110**

2 MHz MAINFRAME OSCILLOSCOPES

Low Cost Real Time and Storage Mainframes.

- DC to 2 MHz Bandwidth
- Dual X-Y Operation
- Single- and Dual-Beam Bistable-Storage Mainframes
- Split-Screen Display
- High Speed Storage (Option 03)
- Two Independent Verticals (5113)

ORDERING INFORMATION

5113/R5113 2 MHz Storage Oscilloscope Mainframe*¹
Includes: Instruction/Service manual (070-2137-01).

5113 \$5,995
R5113 \$5,995

5111A/R5111A 2 MHz Storage Oscilloscope Mainframe*¹
Includes: Instruction/Service manual (070-3934-00).

5111A \$4,195
R5111A \$4,295

5110A/R5110A 2 MHz Oscilloscope Mainframe*¹
Includes: Instruction/Service manual (070-2137-01).

5110 \$2,895
R5110 \$2,995

INSTRUMENT OPTIONS

Opt. 02 - Protective Cover (5113/5111A/5110) +\$45
Opt. 03 - Fast-Write crt (5113) +\$160
Opt. 03 - Fast-Write crt (5111A) +\$215
Opt. 07 - Rear Panel Outputs +\$135

INTERNATIONAL POWER PLUG OPTIONS

Opt. A1 - A5 - Available NC
See page 78 for description.

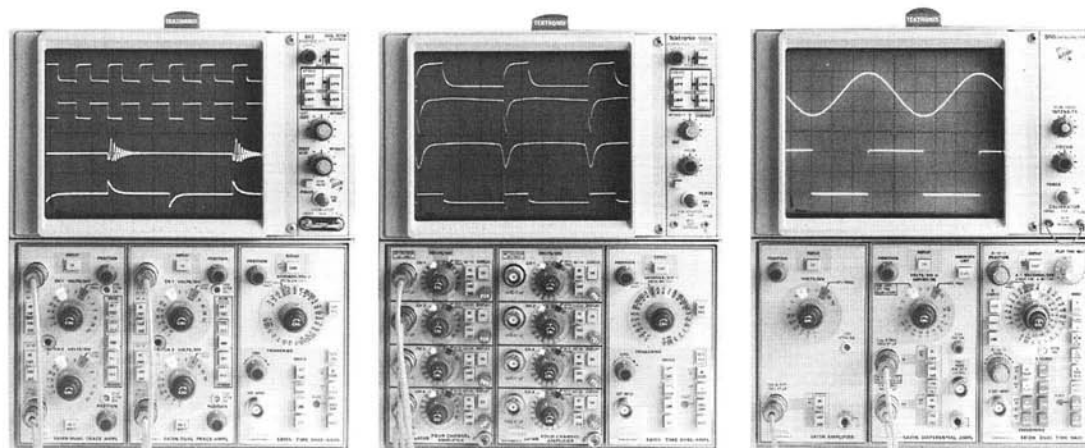
ACCESSORIES

See page 78 for recommended accessories.

PHYSICAL CHARACTERISTICS

	Cabinet		Rackmount	
Dimensions	mm	in.	mm	in.
Width	213	8.4	483	19.0
Height	302	11.9	135	5.3
Depth	518	20.4	483	19.0
Weight	kg	lb	kg	lb
Net	10.4	23.0	10.9	24.0
Shipping	14.5	32.0	19.5	43.0

*¹ "R" prefix indicates rackmount version.



5113

5111A

5110

5113

The 5113 is a dual-beam, bistable-storage oscilloscope featuring split-screen storage. Stored writing speed is at least 20 div/ms (200 div/ms with Option 03). View times of one to ten hours are possible.

The 5113 can display two simultaneous events, either single-shot or repetitive, against a common time base.

5111A

The 5111A is a single-beam, split-screen, bistable-storage oscilloscope. The 5111A extends measurement capability into areas requiring retention of single and multitrace displays for long-term examination and/or photography.

The standard 5111A provides writing speeds to 50 div/ms; Option 03 extends the writing speed to 800 div/ms, suitable for capturing a single-shot display of a four-division 60 kHz sine wave.

5110

The 5110 is a single-beam real-time oscilloscope featuring a large 6 1/2-inch diagonal (1.27 cm/div) crt.

PLUG-INS

Tailor your measurement needs with the appropriate plug-in units to obtain a high-gain differential display (10 μ V/div), four-channel differential display, or eight-channel display. You can also choose from single-trace or dual-trace basic amplifiers and time bases to suit the special needs of industry and education.

When using two amplifiers and the 5B12N in the dual-sweep mode, the two sweeps are slaved individually to the left and right amplifiers.

CHARACTERISTICS

VERTICAL SYSTEM (Left and Center Compartments)

Bandwidth & Rise Time (-3 dB) - 2 MHz and 175 ns.

Chop Mode - 5110/5111A: The vertical amplifier will chop between left and center plug-ins, and/or between two or more channels. 5113: The left and right vertical to the left and center compartments, respectively. Each vertical amplifier will chop between two or more channels in their associated plug-in compartments.

Alt Mode - 5110/5111A: Each amplifier plug-in is swept twice before switching to the next. Each channel of a multi-trace amplifier is swept once.

5113: Single-trace amplifiers are swept full time. Each channel of a multi-trace amplifier is swept once before switching to the next channel.

HORIZONTAL SYSTEM (Right Compartment)

Fastest Sweep - 0.1 μ s/div (x10).

X-Y Phase Shift - $\leq 1^\circ$ from dc to 100 kHz.

CRT AND DISPLAY FEATURES

CRT - 8 x 10 div, nonilluminated.

Stored Writing Speed - 5111A: ≥ 20 div/ms (Normal) and 50 div/ms (Enhanced). 5113: ≥ 20 div/ms.

Opt. 03, Fast-Writing-Speed CRT - ≥ 200 div/ms (Normal) and 800 div/ms (Enhanced - 5111A only).

Opt. 07, Rear-Panel Signal Outputs - Vertical Sensitivity: 0.5 V/div., Sweep Sensitivity: 0.5 V/div., Gate: TTL level.

POWER REQUIREMENTS

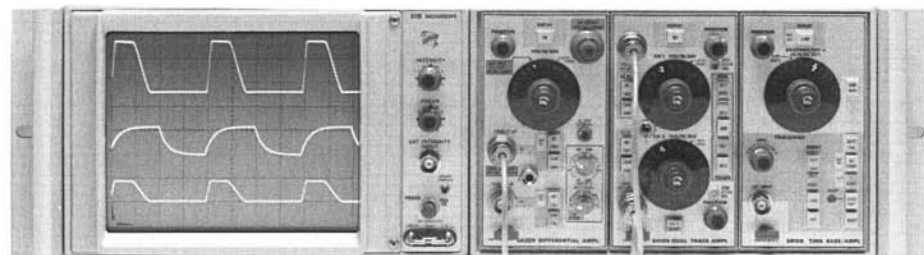
Line Input - 90 VAC to 250 VAC internally selected. 48 Hz to 440 Hz.

Max Power Consumption - 110 W.

ENVIRONMENTAL CHARACTERISTICS

Ambient Temperature - Operating: 0°C to +50°C; Nonoperating: -40°C to +70°C.

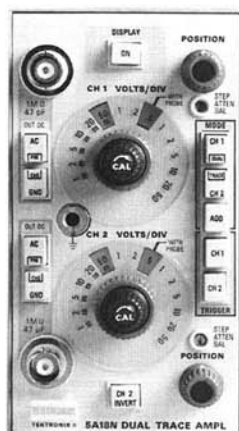
Warranty - One Year. See page 78 for Warranty-Plus options.



5000 Series mainframes also come in low-profile (5 1/4") rackmounts.

PLUG-IN VERTICAL AMPLIFIERS

**5A18N/5A14N
5A15N**



5A18N

5A18N

The 5A18N is a two-channel amplifier that delivers bandwidth of dc to 2 MHz at sensitivities to 1 mV/div. To provide difference measurements of two signals in the ADD mode, simply invert the Channel 2 signal. You can select the internal trigger signal from either Channel 1 or Channel 2. For dual-trace X-Y operation, just plug the amplifier into the right plug-in compartment.

CHARACTERISTICS

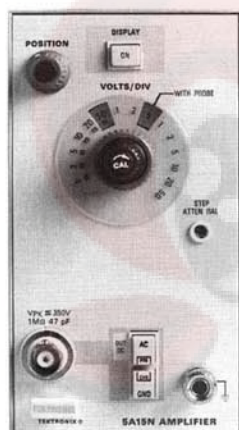
Bandwidth and Rise Time (-3 dB) - Dc to 2 MHz and 175 ns.

Deflection Factor and Accuracy - $\leq 2\%$ at 1 mV to 5 V/div.

Input R and C - $1\text{ M}\Omega$, $\approx 47\text{ pF}$.

Maximum Input Voltage - 350 V (dc + peak ac).

Chop Rate - 25 kHz to 100 kHz depending upon plug-in combinations and number of channels displayed.



5A15N

5A15N

A single-channel amplifier, the 5A15N provides bandwidth of dc to 2 MHz at sensitivities to 1 mV/div. Two 5A15Ns may be used in a mainframe to provide dual-channel operation, or to provide 1 mV/div X-Y operation if one of the amplifiers is inserted in the right plug-in compartment.

CHARACTERISTICS

Bandwidth and Rise Time (-3 dB) - Dc to 2 MHz and 175 ns.

Deflection Factor and Accuracy - $\leq 2\%$ at 1 mV to 5 V/div.

Input R and C - $1\text{ M}\Omega$, $\approx 47\text{ pF}$.

Maximum Input Voltage - 350 V (dc + peak ac).



5A14N

5A14N

The 5A14N is a four-channel amplifier that provides 1 MHz bandwidth and sensitivity to 1 mV/div. Each channel may be displayed separately, or the channels may be alternated or chopped in any combination. Channel 1 provides the triggered signal for the unit. In addition, you can combine two 5A14Ns to provide eight-channel operation in any mainframe.

CHARACTERISTICS

Bandwidth and Rise Time (-3 dB) - Dc to 1 MHz and 350 ns.

Deflection Factor and Accuracy - $\leq 2\%$ at 1 mV to 5 V/div.

Input R and C - $1\text{ M}\Omega$, $\approx 47\text{ pF}$.

Maximum Input Voltage - 350 V (dc + peak ac).

Chop Rate - 25 kHz to 100 kHz depending upon plug-in combinations and number of channels displayed.

Versatile 5000 Series Amplifiers with One to Four Channels.

5A18N

- DC to 2 MHz Bandwidth
- Invert and Add Modes
- 1 mV to 5 V/div

ORDERING INFORMATION

5A18N Two-Channel Amplifier Includes: Instruction/Service manual (070-1137-00).	\$1,095
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5A15N

- DC to 2 MHz Bandwidth
- 1 mV to 5 V/div

ORDERING INFORMATION

5A15N Single-Channel Amplifier Includes: Instruction/Service manual (070-1136-00).	\$595
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5A14N

- DC to 1 MHz Bandwidth
- Four Independent Channels
- 1 mV to 5 V/div

ORDERING INFORMATION

5A14N Four-Channel Amplifier Includes: Instruction/Service manual (070-1229-00).	\$2,195
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