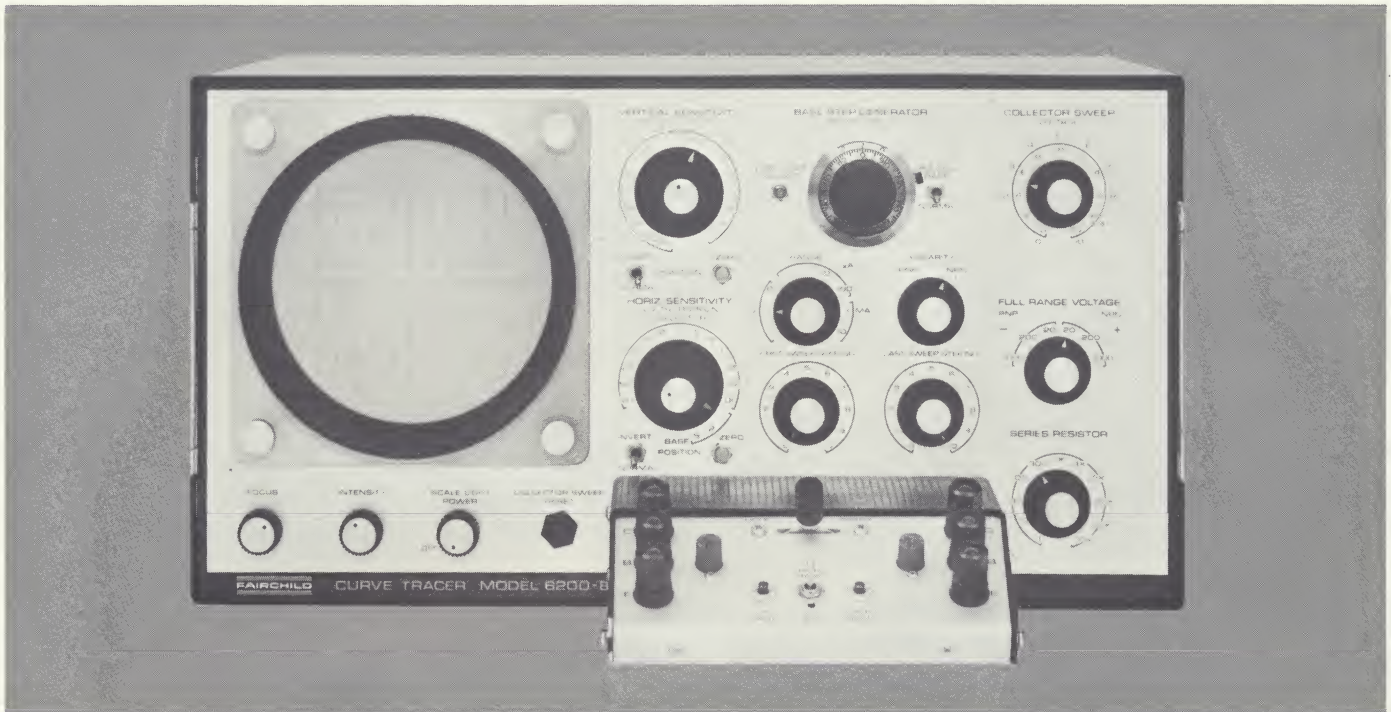


MODEL 6200B

Curve Tracer



FEATURES

- **Extremely Versatile**
Tests FET's, MOS-FET's, bipolars, unijunctions, and diodes.
- **Pulse Mode Operation**
Low duty cycle operation permits device evaluation at higher current levels without destruction.
- **Wide Range Sweep Generator**
1000 V for high voltage measurement; 5 amps for high current tests.
- **Extended Base Drive**
Down to 100 nA for high gain devices; up to 35 V for FET's.
- **Independent Selection of First and Last Base Steps**
One, two, three, or more curves may be selected for optimum display.
- **Display Inversion Capability**
Orient display into any quadrant.
- **Detachable Test Fixture**
Test fixture can be operated in remote location.
- **Compact - Light Weight - Rack Mountable**
- **Solid State Silicon Reliability**
Everything except the CRT.

DESCRIPTION

The Fairchild Model 6200B is a semiconductor curve tracer with emphasis on the features needed to test the latest devices. Continuous control of the base drive amplitude, low drive levels, and pulsed operation make the instrument a versatile laboratory tool.

The Model 6200B Curve Tracer displays one or more characteristic curves of two and three terminal devices. Each curve is developed by driving one terminal with a constant voltage or current and then sweeping the other with a half sine wave of voltage. If more than one curve is to be drawn, the driving source is stepped through several values and the sweep repeated once for each step. The horizontal deflection of the CRT trace is chosen to correspond either to the driving voltage or to the sweep voltage across the device under test. The vertical circuit deflection corresponds to the current drawn from the sweep source. In the usual grounded emitter configuration for testing transistors, this results in a CRT plot of base or collector voltage versus collector current at the various drive levels. The connections can be interchanged to show curves for a grounded base configuration. For an FET, the curves show gate or drain voltage versus drain current; and, for an SCR, gate or anode voltage versus anode current.

COLLECTOR SWEEP GENERATOR

The collector sweep generator provides the full wave rectified

sine wave sweep voltages. Both positive and negative sweeps are provided with continuously adjustable peak values of 0-1000 volts, 0-200 volts, and 0-20 volts. A selectable resistance is inserted in series with the collector sweep generator. This resistance limits the maximum current to help protect devices in the breakdown region. It also establishes a load line for the device under test.

BASE STEP GENERATOR

The driving source or input to the device under test is the base step generator. The step levels of the generator are determined by range, multiplier, and step number controls. The first and last steps from the generator are selected from the front panel of the instrument.

The multiplier is a calibrated ten turn vernier which adds considerable convenience to the curve trace. Not only does it allow precise selection of the drive levels, but also it permits rapid determination of SCR firing voltage and simplifies β measurements.

SPECIFICATIONS: 6200B

COLLECTOR SWEEP GENERATOR

Sweep Ranges	0 to 1000 V, 100 mA 0 to 200 V, 500 mA 0 to 20 V, 5 Amps
Sweep Frequency	Twice power line frequency
Polarity	Positive or negative
Overload Protection	Circuit Breaker, with front panel reset
Collector Series Resistance	Selectable 3 ohms to 1 meg in eleven steps

BASE STEP GENERATOR

Voltage Range (Continuously Variable)	10 mV to 35 volts
Current Range (Continuously Variable)	100 nA to 500 mA
Continuous Sweep Duty Cycle	100%
Pulse Mode Duty Cycle	Less than 10%
Number of Steps	0 to 10. First and last steps selected independently
Polarity	Positive or negative

PULSED OPERATION

In addition to continuous voltage or continuous current drive, the 6200B provides "pulsed" operation. In this mode the drive is applied at the peak of the sweep and the device is only turned on for short periods of time. Thus the CRT shows the end points of the characteristic curves, and the power applied to the device is greatly reduced. Pulsed operation permits many devices to be checked without heat sinks and allows characteristics to be viewed at higher powers without exceeding safe dissipation levels.

HORIZONTAL AND VERTICAL DEFLECTION

The deflection system combines high stability with excellent sensitivity. The vertical sensitivity extends to 1 μ A/division to accommodate the latest devices. Both the horizontal and vertical axis of the display can be inverted if desired. This permits PNP and "P" channel FET's to be viewed in a normal manner instead of upside down.

VERTICAL DISPLAY

Collector Current	1 μ amp/division to 500 mA/division
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HORIZONTAL DISPLAY

Collector Voltage	10mV/division to 100 V/division
Base Voltage	100 mV/division, 200 mV/division, 500 mV/division

POWER

Voltage	115/230 \pm 10%, approximately 250 W
Frequency	50-60 Hz

MECHANICAL

Dimensions	Height: 9 $\frac{1}{4}$ inches (23.5 cm) Width: 16 $\frac{3}{4}$ inches (42.5 cm) Depth: 19 $\frac{1}{2}$ inches (49.5 cm)
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PRICE	\$1495.
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Instrumentation

MODEL 6200B/P—3509B Programmable Curve Tracer



FEATURES

- **Extremely Versatile**
Manual or programed tests of FET's, bipolars, and unijunctions, SCR's, diodes.
- **Easily Programmed for Complex Tests**
Uses simple printed circuit programing cards with a diode voltage distribution matrix for up to five tests per device.
- **Fast Testing of Up to Five Parameters per Device**
Automatic (or manual) and adjustable from 20 to 180 milliseconds per test. Includes skip switches for omitting particular tests.
- **Pulsed Base Mode**
Lower duty cycle allows higher current device evaluation without destruction.
- **Wide Range Sweep**
From 20 volts at 5 amps to 1000 volts at 100ma.
- **Extended Base Drive**
Down to 100 na for high-gain devices; up to 35V for FET's.
- **Quick, Easy Base Generator Readout**
Accurate, direct readout of multiplier vernier.
- **Independent First and Last Base Step Selection**
Number of curves may be selected for optimum display.
- **Detachable Test Fixture**
May be operated from a remote location.
- **Optional Accessories and Modifications**
For ease in operation and fast product testing.
- **Compact — Lightweight — Rackmountable**
- **Solid-State Silicon Reliability**

FAIRCHILD
INSTRUMENTATION

475 Ellis Street, Mtn. View, Calif. 94040
Phone (415) 962-2011 / TWX: 910-379-6944

DESCRIPTION

The Fairchild Model 6200B/P is a programmable semiconductor curve tracer with emphasis on those features needed to quickly test the latest devices. Sequential tests of different parameters may be performed by appropriate programming of its companion unit, the 3509B. Thus, the programming options extend its capability into the areas of quality control, receiving inspection and production testing, without sacrificing its versatility as a laboratory instrument.

The Model 6200B/P Programmable Curve Tracer is capable of displacing up to five independent characteristic curves automatically and in sequential order. Each curve is developed by driving one terminal of a semiconductor with a constant voltage or current and then sweeping the others with a half sine wave of voltage. If more than one curve is to be drawn per display, the driving source is stepped through several values and the sweep is repeated once for each step. The horizontal deflection of the CRT trace is chosen to correspond with either the driving voltage or to the sweep voltage across the device under test. The vertical deflection corresponds to the current drawn from the sweep source. The adjustment of the display sensitivity for each tested parameter is fundamental to the instrument's operation and therefore, must also be programmable. All of the functions of the Model 6200B/P which can be directly controlled through its reed relays by the Model 3509B Programmer, are indicated in the specifications section.

If you use the usual grounded emitter configuration for testing transistors, it results in a CRT plot of base or collector voltage versus collector current at the various drive levels. The connections can be interchanged to show curves for a grounded base configuration. For a FET, the curves show the gate or drain current and for an SCR, gate or anode voltage versus anode current.

COLLECTOR SWEEP GENERATOR

The collector sweep generator provides the full wave rectified sine wave sweep voltages. Both positive and negative sweeps over the three ranges of voltages are programmable. The fully adjustable peak values of 0-1000, 0-200 and 0-20 volts are controlled from the front panel. Two selectable series resistances, for programming, are also provided. These limit the maximum current to help protect the devices in the breakdown region. It also establishes the load line for the device under test.

BASE STEP GENERATOR

The driving source or input to the device under test is the base step generator. The step levels of the generator are determined by the range, multiplier and step number controls. The multiplier is a calibrated ten turn vernier which adds considerable convenience to the curve tracer. Not only does it allow precise selection of the drive levels, but it also permits rapid determination of SCR firing voltage and simplifies Beta measurements.

Full range, polarity and vernier settings are programmable. In addition to the manual vernier setting, three other fixed multiplier values are programmable. i.e. X1, X2 and X5.

PULSED OPERATION

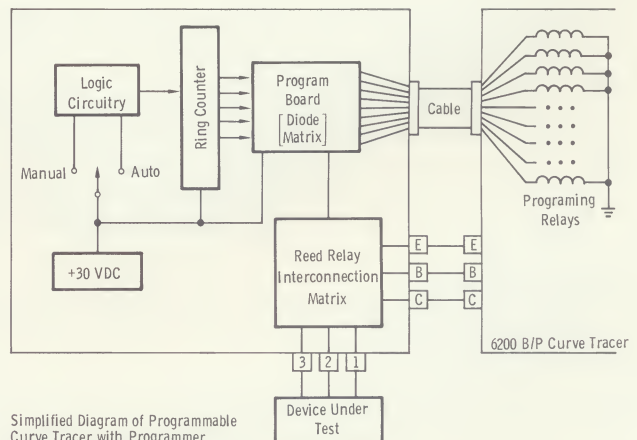
In addition to continuous voltage or continuous current drive, the 6200B provides "pulsed" operation. In this mode the drive is applied at the peak of the sweep and the device is only turned on for short periods of time. Thus the CRT shows the end points of the characteristic curves, and the power applied to the device is greatly reduced. Pulsed operation permits many devices to be checked without heat sinks and allows characteristics to be viewed at higher powers without exceeding safe dissipation levels. This mode of operation is also available as a programmable function.

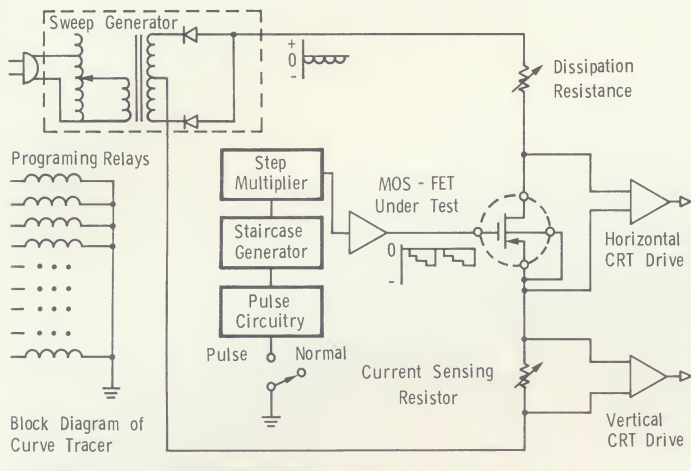
HORIZONTAL AND VERTICAL DEFLECTION

The deflection system combines high stability with excellent sensitivity. The vertical sensitivity extends to $1\mu\text{A}/\text{division}$ to accommodate the latest devices. Both the horizontal and vertical axis of the display can be inverted if desired. This permits PNP and "P" channel FET's to be viewed in a normal manner instead of upside down. Again, each position on these controls, may be operated by the companion unit Model 3509B.

MODEL 3509B PROGRAMMER

In order to actually program the various functions of the curve tracer, a voltage is required to energize each function's relay. This voltage is supplied by the Curve Tracer to the Model 3509B. A +30VDC supply provides the necessary voltage for these relays through the programmer's special circuits. Each unit contains a +30V supply, a six stage ring counter, a 9 reed relay matrix, and two printed circuit diode voltage distribution matrix cards. These matrix cards provide the actual program wiring as shown in the figure below. The relay matrix in the 3509B interconnects the leads of the device being tested with the 6200B/P in the correct configuration for the particular test of the moment. The ring counter provides for the proper sequence (either manually or automatically) of tests. The time per test is controlled by a knob on the front panel. If desired, any test may be skipped by moving its slide switch. Thus, five complete tests of specific parameters may be quickly displayed without touching any controls on the 6200B/P. Programming is simple and fast through the use of the plug-in diode matrix. Extra plug-in cards are available at a small additional charge.





SPECIFICATIONS: 6200B/P

COLLECTOR SWEEP GENERATOR

Sweep Ranges* — 0 to 1000 V, 100 mA.
 0 to 200 V, 50 mA.
 0 to 20 V, 5 Amps.

Sweep Frequency — Twice power line frequency.

Polarity* — Positive or negative.

Overload Protection — Magnet relay, with front panel reset.

Collector Series Resistance* — Selectable 3 ohms to 1 meg in eleven steps (Two programmable values).

BASE STEP GENERATOR

Voltage Range*† (Continuously Variable) — 10 mV to 35 volts.

Current Range*† (Continuously Variable) — 100 nA to 500 mA.

Continuous Sweep Duty Cycle — 100%.

Pulse Mode Duty Cycle* — Less than 10%.

Number of Steps — 0 to 10. First and last steps selected independently.

Polarity* — Positive or negative.

VERTICAL DISPLAY

Collector Current* — 1 μ amp/division to 500 mA/division.

HORIZONTAL DISPLAY

Collector Voltage* — 10mV/division to 100 V/division.

Base Voltage* — 100 mV/division, 200 mV/division, 500 mV/division.

POWER

Voltage — 115/230 \pm 10%, approximately.

Frequency — 50-60 Hz.

MECHANICAL

Dimensions — Height: 9¼ inches (23.5 cm).

Width: 16¾ inches (42.5 cm).

Depth: 19½ inches (49.5 cm).

Weight — Less than 50 lbs.

Price \$2,350.00

*Each function fully programmable.

†Multiplier vernier setting and/or fixed values X1, X2, X5 (internal).

SPECIFICATIONS: 3509B

General — This unit will program the Model 6200B/P Curve Tracer to automatically display up to five tests on a single device.

Number of Tests — 1 to 5. (Up to 10 maximum on a special modification.)

Number of Output Lines — 50.

Device Lead Connection — The connections between the leads of the device under test and the 6200B/P Curve Tracer are controlled by a reed relay matrix in the 3509B.

Modes of Operation — Manual or automatic, selected by front panel switch.

Test Time (Automatic Mode) — Adjustable from 20 to 180 milliseconds per test, from front panel.

Power — From the Curve Tracer.

MECHANICAL

Dimensions — Height: 5¼ inches (13.3 cm).

Width: 16¾ inches (42.5 cm).

Depth: 19½ inches (49.5 cm).

Weight — Less than 20 lbs.

Price \$600.00

ACCESSORIES & SPECIAL MODIFICATIONS

The Model 6200B/P when ordered with 3509B Programmer includes the following at no additional charge:

6200B/P — 3509B interconnect cabling, dual transistor test fixture, power cable, one set of programming cards (less diodes and program), and one instruction manual.

Additional Accessories

Dual Transistor Test Fixture (P/N 6620-30)\$65.00 each
 High Speed Transistor Test Jig (P/N 3401-1560) \$50.00 each
 High Speed Diode Test Jig (P/N 3401-1570)\$35.00 each
 Long Lead Transistor Test Jig (P/N 3401-1580) \$10.00 each
 Instruction Manual (P/N 8320-17)\$10.00 each
 Plug-in Program Cards (2 ea. P/N 6114-25)\$50.00 each
 Extender Card (P/N 6950-30)\$15.00 each

Additional Modifications

3509B-S03 Programmer for use with a standard 6200B/P and 3509B in order to extend total number of tests to ten. Must be ordered concurrently with 6200B/P and 3509B.
 \$850.00 each

7100A-S42 Digital Voltmeter plus curve tracer "D" option for digital readout of desired test parameter. V_{ce} , I_c , V_{be} , I_b , and the ratio of any two parameters including $H_{fe} = I_c/I_b$ may be readout with an accuracy of better than 2 per cent.

7100A-S42\$2550.00 each
 Curve Tracer "D" Option\$955.00 each

Special Services

If desired, factory programming of program cards is available. Price per set of five parameters including diodes (customer furnishes sequence and parameters desired) but less cards:\$125.00 each

PARAMETER TEST CAPABILITIES

The following parameters are representative of those which can be automatically tested using the Model 6200B/P and its companion unit, the Model 3509B.

Diodes — BV_f , BV_r , I_a etc.

Transistors — H_{fe} (min. & max.), H_{fb} (min. & max.), V_{ce} (sat), V_{be} (sat), V_{be} (on), BV_{ces} , BV_{ceo} , BV_{cer} , BV_{cbo} , BV_{ebo} , BV_{eco} , LV_{ceo} , LV_{ces} , LV_{cer} , I_{ceo} , I_{cbo} , I_{ebo} , I_{ecs} , I_f etc.

Unijunctions — V_p , V_v , I_v , and above parameters.

SCR'S — BV_{gk} , BV_{ak} , I_{gf} , V_{gf} , V_f , V_r , I_h , V_{bo} .

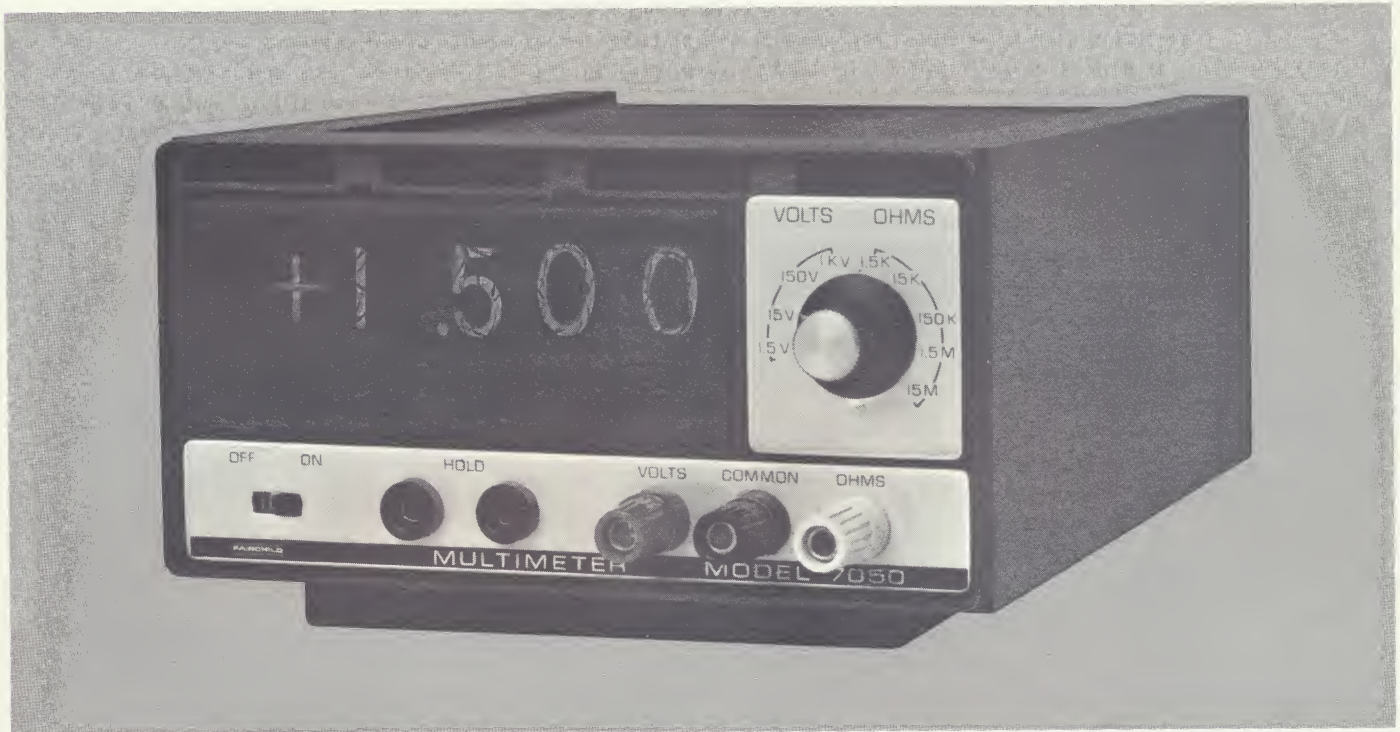
FET'S — BV_{dss} , BV_{gss} , BV_{sgo} , BV_{dso} , BV_{dgo} , I_{dss} , V_p , V_{gsf} , G_m .

From most of the above, one can calculate all the "H" parameters.

FAIRCHILD
INSTRUMENTATION

475 Ellis Street, Mtn. View, Calif. 94040
Phone (415) 962-2011/TWX: 910-379-6944

MODEL 7050 3½ Digit Digital Multimeter



FEATURES

- Measures volts and ohms
- 0.1% accuracy
- 1mV or 1 ohm resolution
- Dual slope integration
- Six samples per second
- Automatic polarity
- Floating input
- High input impedance
- Integrated circuit reliability
- Optional DC current measurement
- Infinite display time
- Compact
- Low cost
- Display storage

DESCRIPTION

The Model 7050 Digital Multimeter incorporates latest design concepts with cost savings and space advantages gained by the use of integrated circuits. The result of this combination is a low cost, accurate instrument that is ideally suitable for use in pro-

duction, general test and quality assurance, servicing and educational applications. The Model 7050 is rugged, easy to operate, read, and calibrate; and as such, is an ideal replacement for "old-fashioned" analog-type meters and panel indicators and for more expensive digital voltmeters. Its low cost and high performance capabilities make it an attractive choice for use in the O.E.M. market.

It utilizes the dual slope integrating technique which combines the noise rejection capabilities of integration with the accuracy and stability of automatic comparison to an internal standard. Fast response time is assured by its speed of six measurement samples per second.

The basic instrument provides both DC voltage and resistance capability. Optional precision shunt resistors extend its capability to DC current measurements.

Readout is easy to read, in-line indicators; three full decades plus fourth digit give full scale readout of 1500. This is equivalent to 50% over-ranging with no degradation of accuracy. Some of the standard features in the Model 7050 are input impedance of greater than 1000 megohms on its most sensitive range, floating input which may be operated 500 volts above ground, readout storage (non-blinking display), and remote controlled infinite display time.

FAIRCHILD
INSTRUMENTATION

475 Ellis Street, Mtn. View, Calif. 94040
Phone (415) 962-2011/TWX: 910-379-6944

SPECIFICATIONS

Functions —

DC Volts; Ohms; External Current Shunts Available

DC VOLTS —

1.500 V Full Scale (1 mV Resolution)
 15.00 V Full Scale
 150.0 V Full Scale
 1000. V Full Scale

Input Impedance —

1.5 V Range > 1000 M Ω
 15 V to 1000 V Ranges 10 M Ω

Maximum Voltage — 1000 V may be safely applied to any range without damage

Voltage Coefficient: $\pm 0.0005\%/V$ when input exceeds 500 volts.

RESISTANCE —

1.500 K Ω Full Scale (1 Ω Resolution)
 15.00 K Ω Full Scale
 150.0 K Ω Full Scale
 1.500 M Ω Full Scale
 15.00 M Ω Full Scale

Input Current —

1.5 K Ω Range 1 mA
 15 K Ω Range 100 μA
 150 K Ω Range 10 μA
 1.500 M Ω Range 1 μA
 15 M Ω Range 100 nA

ALTERNATE POWER MODELS

Line Voltage	Order
220 Volt $\pm 10\%$	Model 7050 - 220
100 Volt $\pm 10\%$	Model 7050 - 100



Model 7050 with combination Tilt Stand/Handle

Maximum Voltage — 125 V may be safely applied to any range without damage

Accuracy —

From 15°C to 35°C
 DC Volts $\pm 0.1\%$ of reading, ± 1 digit
 K Ohms $\pm 0.2\%$ of reading, ± 1 digit
 M Ohms $\pm 1\%$ of reading, ± 1 digit
 From 0°C to 15°C and
 35°C to 45°C
 DC Volts $\pm 0.3\%$ of reading, ± 2 digits
 K Ohms $\pm 0.3\%$ of reading, ± 2 digits
 M Ohms $\pm 3.0\%$ of reading, ± 2 digits

Readout —

Three digital readout indicators; One over-range digit; Decimal point indicators; Plus and minus polarity indicators; Display storage (non-blinking)

Power —

115 VAC $\pm 10\%$; 50-400 cps; 7 watts (See Alternate Power Models Below)

Size and Weight —

Dimensions 3 $\frac{1}{4}$ " high x 6 $\frac{1}{4}$ " wide x
 7 $\frac{1}{4}$ " deep
 Weight Less than four lbs.

Price —

Model 7050, F.O.B. Factory	
1 - 4	299.00
5 - 9	275.00
10 - 24	260.00
25 & up	249.00

ACCESSORIES

Current Shunts (Always use 1.5 V Range)

Stock No.	Full Scale Current	Shunt Resistor	Tolerance	Price
09045091	150 μA	10 K Ω	$\pm 0.1\%$	\$10
09045101	1.5 MA	1 K Ω	$\pm 0.1\%$	\$10
09045111	15 MA	100 Ω	$\pm 0.1\%$	\$10
09045121	150 MA	10 Ω	$\pm 0.1\%$	\$10
09045131	1.5 A	1 Ω	$\pm 0.3\%$	\$20

NOTE: Complete set of above 5 shunt resistors Price \$45

Rack Mount 3 $\frac{1}{2}$ " High; Will hold one or two 7050's.

Stock No. 93000256 Price \$30

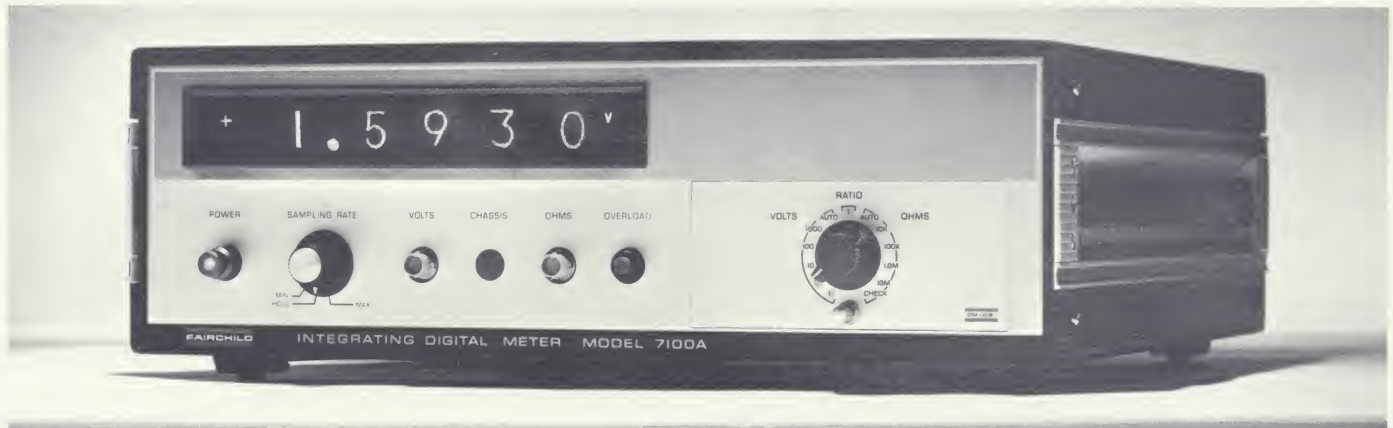
Tilt Stand/Handle;

Stock No. 64020251 Price \$16

Probe with pushbutton "hold" control and "Volts" - "Ohms" select switch and two input connections.

Stock No. 93000257 Price \$22

Model 7100A Digital Voltmeter



TECHNICAL SPECIFICATIONS

DC VOLTAGE MEASUREMENTS

Ranges — ± 100.00 mV, ± 1.0000 V, ± 10.000 V, ± 100.00 V, ± 1000.0 V Full Scale. A full 60% over-ranging with no loss in accuracy on 4 lowest ranges, 10% over-ranging with no loss in accuracy on 1000.0 V range.

Accuracy — $\pm 0.01\%$ of Reading, ± 1 digit; 100 mV range $\pm 0.01\%$ of Reading, ± 2 digits.

Stability — Internal Reference $\pm 0.01\%$ for 3 months.

Input Resistance — > 1000 megohms; 100 V and 1000 V ranges 10 Megohms.

Autoranging — Operates on both DC volts and resistance. Up-ranges at 16000 and downranges at 01399.

Input Circuit — Floated and guarded, may be operated up to ± 500 V from chassis ground. Special 2-pin insulated BNC connector maintains guard shield at front panel. Separate banana jack for chassis ground.

Maximum Input — 1100 V can be safely applied to all ranges.

Measurement Time — 250 ms, rear panel switch provides a fast setting of 50 ms on four high ranges.

Integration Time — 83-1/3 ms; 16-2/3 ms on fast setting. Controlled by a crystal oscillator.

Common Mode Rejection — 140 db at dc, 120 db at 60Hz with up to 1000 ohms connected between either side of the source and the voltmeter input for short integration time. 140 db at dc, 120 db at all frequencies to 1 kHz with up to 1000 ohms connected from either side of the source and the voltmeter input for long integration time.

Normal Mode Rejection — Greater than 20 db at 55 Hz with 83-1/3 ms integration time, increases 20 db/decade increase in frequency. Virtually infinite rejection at 60 Hz and its harmonics. The combined DC signal and normal mode noise shouldn't exceed full scale. The polarity indication is determined by the integrated input and is stable even in the presence of severe noise.

VOLTAGE RATIO MEASUREMENT

Range — $\pm 1.0000:1$ Full Scale. A full 60% over-ranging with no loss in accuracy.

Unknown Input — ± 1 mV to ± 16 V, input resistance > 1000 Megohms.

Reference Input — $+5$ V to $+16$ V, input resistance 3 kilohms, 30 V maximum input.

Accuracy — $+9$ V to $+16$ V; $\pm 0.02\%$ of Reading, ± 1 digit.

Measurement Time — Same as DC volts.

RESISTANCE MEASUREMENT

Ranges — 10.000 K, 100.00 K, 1.0000 M, 10.000 M ohms Full Scale. A full 60% over-ranging on all ranges with no loss in accuracy.

Accuracy — $\pm 0.01\%$ of Reading, ± 1 digit; $\pm 0.02\%$ of Reading, ± 1 digit on 10.000 megohm range.

Measurement Current — 1 mA, 100 μ A, 10 μ A, and 1 μ A on the 10 K Ω through 10 M Ω ranges respectively.

Measurement Time — Same as DC volts.

GENERAL

READOUT

Visual — Amperex ZM-1030 numeric tubes; four full decades plus fifth digit gives full range readout of 16000 with display storage. Polarity, decimal point, and measurement units are indicated.

Electrical — See options.

Operating Temperature Range — 10 to 50°C.

Temperature Coefficient — $\pm 0.0008\%$ of full scale, $\pm 0.002\%$ of reading per degree centigrade.

POWER

Standard — 105-125 V or 210-250 V selected by rear panel switch, 50-60 Hz, approximately 50 watts. (See option 02 for special 50 Hz version.)

Model 7100A (continued)

MECHANICAL DIMENSIONS

Weight — 27 lbs. (12 kg); shipping approximately 36 lbs. (16 kg).

ACCESSORIES FURNISHED

5911-18 — Power Cable, 7½ feet long.

5911-26 — Input cable, two furnished with each 7100A.

DM-01B — Provides function control for the 7100A.

Price — 7100A. F.O.B. Factory. \$2075.00

OPTIONS

02 50 Hz Operation — Crystal time base changes to give 1/50 and 1/10 second integration time for maximum normal mode rejection at 50 Hz.

03 122'4 BCD/Programing — See below. Price \$175.00

04 1248 BCD/Programing — See below. Price \$175.00

BCD/Programming Options Provide:

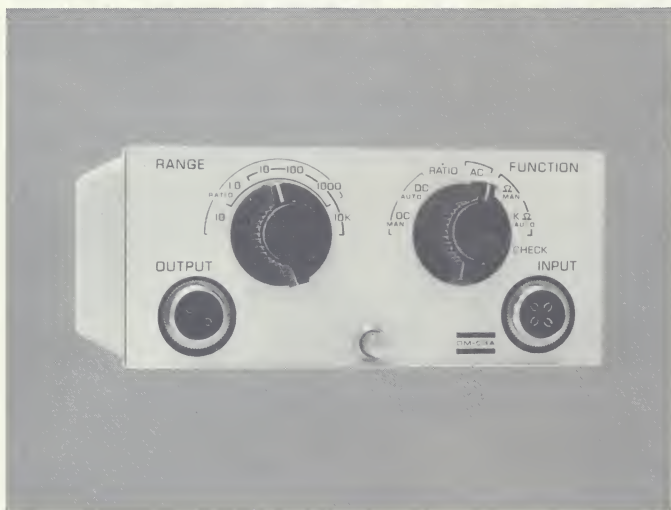
BCD — Positive True Logic. Numerals, decimal point, negative polarity, and function (dc volts, resistance, ratio, ac volts) indicated by a "0" state of +0.5 V and a "1" state of +30 V, 20 k Ω source impedance.

Print Command — +30 V pulse, 3.6 k Ω source impedance, 3 μ sec maximum rise time, 1.5 msec (± 0.5) width.

Programming — Range and mode controlled by external NPN transistor gate or contact closure to ground corresponding to selected switch position. A rear panel remote/local switch selects the control point. Remote trigger providing up to 20 measurement samples per second initiated by +10 V pulse into 20 k Ω , width 10 μ sec minimum and 10 msec maximum.

Connector — A mating connector, Winchester MRAC-50P-JTP-H8, is provided.

Model DM-03A AC/DC Converter



DESCRIPTION

The Fairchild DM-03A AC/DC Converter adds AC voltage measurement to the basic capabilities of the 7100A. The AC conversion produces readings which are proportional to the average value of the applied AC voltage; the readings are calibrated in rms based on the assumption of a sine wave input. Four manually selected AC ranges provide full scale readings of 1.0000, 10.000, 100.00 and 1000.0 volts. In addition, the 1, 10, and 100 volt ranges provide 50% over-range with full accuracy.

The input of the DM-03A is floating and guarded to permit accurate differential measurements and to provide high common mode rejection. A 5-foot input cable maintains the guard circuit as it enters the instrument and also protects the operator from exposure to the high common mode voltages frequently associated with differential AC measurements.

THE DM-03A range switch controls the AC voltage ranges and also the DC volts, ratio, and ohm functions built into the Series 7100A instrument.

TECHNICAL SPECIFICATIONS

AC Voltage Ranges — Four manually selected full scale ranges of 1.0000, 10.000, 100.00, and 1000.0 volts rms.

Over-Ranging — 50% on all ranges except 1000.0 volts.

Frequency Response — 30Hz-10kHz plus extended response to 30kHz (see table).

Accuracy — (Reference condition 23°C $\pm 1^\circ$ C) $\pm 0.05\%$ of reading $\pm 0.02\%$ of full scale.

Below 10% full scale: $\pm 0.03\%$ of full scale.

Voltage Coefficient — $\pm 0.0005\%$ /volt for input signals above 500 volts rms.

Temperature Coefficient —

30Hz-8kHz $\pm 0.005\%$ of reading $\pm 0.002\%$ of full scale/ $^\circ$ C.

8kHz-15kHz $\pm 0.01\%$ of reading $\pm 0.004\%$ of full scale/ $^\circ$ C.

15kHz-30kHz $\pm 0.02\%$ of reading $\pm 0.01\%$ of full scale/ $^\circ$ C.

Input Impedance — 5 megohms $\pm 1\%$ shunted by < 50 pf.

Weight — Net 3 lbs. (1.4kg). Shipping, 6 lbs. (3kg).

ACCESSORIES FURNISHED

Input Cable — 5 ft. (170cm) long, < 100 pf.

Output Cable — 13" (33cm) long, 100pf.

EXTENDED RESPONSE

Range	Frequency	
1 and 10V	10kHz-15kHz	15kHz-20kHz
	$\pm 0.06\%$ of Reading $\pm 0.04\%$ of Full Scale	$\pm 0.10\%$ of Reading $\pm 0.05\%$ of Full Scale
1 and 10V	20kHz-25kHz	25kHz-30kHz
	$\pm 0.15\%$ of Reading $\pm 0.05\%$ of Full Scale	$\pm 0.20\%$ of Reading $\pm 0.05\%$ of Full Scale
100 and 1000V	$\pm 0.20\%$ of Reading $\pm 0.04\%$ of Full Scale	

Notes — 1. Reference, rated, and extreme operating conditions per American Standard C39.6 except maximum humidity not to exceed 75% at rated accuracy.

Price — DM-03A. F.O.B. Factory. \$500.00

MODEL 7200 Integrating Multimeter



FEATURES

- True integrating technique provides maximum noise rejection. The 100 ms and 1 second time bases are ideal for both 50 Hz and 60 Hz power line noise rejections.
- Resolution to 1 part in 110,000 with standard 6 digit display.
- Accuracy of $\pm 0.005\%$ of reading ± 1 digit.
- Automatic comparison to internal standard during each measurement cycle eliminates need for front panel calibration adjustments.
- Three manual and programable integrating time base periods allow optimum combination of speed and resolution, to 30 readings per second.
- $>1,000$ megohm input impedance on 1V, 10V, 100V ranges.
- DC ratio input impedance >1000 megohms for both unknown signal and external reference voltage inputs.
- Power consumption $\bullet <30$ watts — no fan required.

DESCRIPTION

The Fairchild Model 7200 represents the new generation of $5\frac{1}{2}$ digit integrating digital voltmeters. It is an all solid state instrument, making maximum use of integrated circuits and combines the extreme precision, stability, and measurement flexibility ex-

pected from a laboratory instrument with the programming and electrical output features necessary for automated systems use. Special design features virtually eliminate errors due to extraneous noise without imposing any restrictions on the grounding of the signal source, recording device, or programming source. The principle of operation is based on a unique measurement concept where high accuracy and long term stability is achieved by a Fairchild developed approach called "Digital Time Base Memory." (Pat Pending)

The instrument is fully guarded for high common mode rejection, and the basic unit provides three functions: (1) DC volts, (2) DC ratio, and (3) count. A plug-in board (optional) provides a time base for frequency measurements. Optional plug-in units provide AC, mV, and $K\Omega$ measurement capabilities.

The controls and input/output features of the 7200 are designed to permit maximum versatility of application, yet the instrument is simple and straightforward to use. An example of the amount of "human engineering" designed into the 7200 is that all controls have a logic interlock which minimizes human error in the operation of the instrument.

Readout is in-line, with polarity and function indicators, and space is provided for several options: various output decoders, remote programming, and special input filters.

FAIRCHILD
INSTRUMENTATION

475 Ellis Street, Mtn. View, Calif. 94040
Phone (415) 962-2011/TWX: 910-379-6944

SPECIFICATIONS

NOTE: All specifications are published in the recommended American Standards format. Reference conditions, rated operating conditions and extreme operating conditions per A.S.A. C39 recommendations.

DC VOLTAGE

Ranges Manual (and remote) — Four ranges:

- 1.00000 V f.s. + 10% overrange.
- 10.0000 V f.s. + 10% overrange.
- 100.000 V f.s. + 10% overrange.
- 1000.00 V f.s.

Auto Range — Three ranges:

- 10.0000 V f.s.
- 100.000 V f.s.
- 1000.00 V f.s.

Accuracy (one second integrating time base)

At Reference Condition (7 hours) —

- 10V, 100V and 1000V ranges: $\pm 0.005\%$ Rdg $\pm 0.001\%$ f.s.
- 1V range: $\pm 0.01\%$ Rdg $\pm 0.002\%$ f.s.

Short Term Stability (24 hours) — $\pm 0.01\%$ Rdg $\pm 0.002\%$ f.s.

Long Term Stability (6 months) —

- At reference conditions: $\pm 0.01\%$ Rdg $\pm 0.002\%$ f.s.

Long Term Stability (6 months) —

- At rated operating conditions: $\pm 0.02\%$ Rdg $\pm 0.003\%$ f.s.

Resolution — 0.001% f.s., regardless of reading.

Integrating Time Base —

- Manual and programable: 1.0 sec., 0.1 sec., 0.01 sec.

Polarity — Automatic.

Range Response Time — 30 ms, regardless of range.

Input Impedance — Manual range:

- 1V > 1KM Ω
- 10V > 1KM Ω
- 100V > 1KM Ω
- 1000V > 10M Ω

Auto range: All ranges—10M Ω

DC RATIO

Range — 1: 1.00000 +10% overrange.

Accuracy at Reference Condition (7 hours)—At reference voltages of 10V, 30V, 60V and 100V: $\pm 0.005\%$ Rdg $\pm 0.001\%$ f.s.

Short Term Stability (24 hours) — $\pm 0.005\%$ Rdg $\pm 0.002\%$ f.s.

Long Term Stability (6 months) — $\pm 0.008\%$ Rdg $\pm 0.002\%$ f.s.

Resolution — 0.001% f.s.

Polarity — Automatic.

Input Impedance for unknown signal input — $> 1\text{KM}\Omega$.

Input Impedance for external reference voltage — $> 1\text{KM}\Omega$.

Maximum Input Signal — $\pm 110\text{V}$.

External Reference Voltage Range — $\pm 0.5\text{V}$ to 110V DC.

COUNTER

Manual (and programable) start, stop and reset, for totalizer applications. Through separate BNC connector on front panel.

Maximum Count Rate — 1 MHz.

Maximum Display — 199999.

Minimum Input Level — 100mV rms.

Maximum Input Level — 100V rms.

Input Impedance — 500K Ω , shunted by $< 100\text{pf}$.

GENERAL

Common Mode Rejection

(With 1K Ω unbalance in either input lead.)

DC: $> 140\text{ Db}$.

AC: 60 Hz $> 120\text{ Db}$.

Maximum Common Mode Voltage — 750V DC or 500V rms AC.

Normal Mode Rejection

True integrating technique provides maximum noise rejection. The 100 ms and 1 sec. time bases are ideal for both 50 Hz and 60 Hz power line noise rejections.

Notch Filter —The standard instrument has a 60 Hz Twin-T input filter (front panel switch, and programable). Provisions are made for other types of input filters, e.g., 50 Hz Twin-T.

Signal Circuit

Insulated and guarded connectors provide for signal input from front or rear. Automatic signal switching to plug-in unit or DVM is controlled internally by the function switch. One additional connector is provided on the rear panel for a four-wire Ω -input. This connector can also be used as a direct input (by passing the input selector) to the Lo-level preamplifier. This eliminates the effects of thermal emf's in the input selector.

Display Time

Five position switch: min., med., max., hold and remote. In the "hold" position the instrument displays the last reading until a new "Read" command is issued (front panel push-button, also remotely programable).

Readout Storage —Slide switch on rear panel to disable storage.

Size — 17" x 5 $\frac{1}{4}$ " front panel, 20" deep.

Power — 117-220V, 50-400Hz $< 30\text{W}$, No fan.

Price — Model 7200 \$3500.00

OPTIONS

Print Output

All functions, decimal points, polarity, numbers and print command are available through a plug-in harness. Digital output is BCD, 1-2-4-8. Available logic levels are: +30V, +12V, +4V, -30V.

Programing

All switches of the instrument are programable through a plug-in harness. Two modes of programing are available.

- a) Isolated contact closure to the internal +12V logic level (approximately 5 mA each), resistive load;
- b) Provisions are made for two standard size plug-in cards. These cards accommodate level shifts and gates for programing by contact closure or saturated NPN to logic common. Open circuit voltage: +12V, contact load: $< 1\text{mA}$, resistive.

Frequency Time Base —(optional plug-in board) Provides time base for frequency measurements.

Display —in KHz.

Maximum Frequency — 1 MHz.

Minimum Frequency — 10 Hz.

Time Base — 1 sec., 0.1 sec., 0.01 sec., front panel and remote control.

Accuracy — $\pm 0.005\%$ Rdg ± 1 count.

MODEL DM-10 AC/DC Converter



DESCRIPTION

This AC converter is designed to operate as a plug-in unit in the 7200 Integrating Multimeter. It is completely guarded for high common mode rejection. All circuitry is solid state. Power supplies are self-contained so that the unit can be adapted into a AC/AC ratiometer.

Excellent frequency response, high accuracy and good stability make it an ideal instrument for laboratory and systems use.

SPECIFICATIONS

Ranges — Four ranges, manual and programable:

- 1.00000 V f.s. + 10% overrange.
- 10.0000 V f.s. + 10% overrange.
- 100.000 V f.s. + 10% overrange.
- 1000.00 V f.s.

Combined Accuracy and Frequency Response (when plugged into 7200) — 10V, 100V and 1000V ranges:

- 30Hz—10KHz $\pm 0.05\%$ Rdg $\pm 0.02\%$ f.s.
- 10KHz—20KHz $\pm 0.1\%$ Rdg $\pm 0.03\%$ f.s.
- 20KHz—50KHz $\pm 0.2\%$ Rdg $\pm 0.05\%$ f.s.
- 50KHz—100KHz $\pm 0.5\%$ Rdg $\pm 0.1\%$ f.s.

1V range:

- 30Hz—10KHz $\pm 0.1\%$ Rdg $\pm 0.05\%$ f.s.
- 10KHz—20KHz $\pm 0.2\%$ Rdg $\pm 0.1\%$ f.s.
- 20KHz—50KHz $\pm 0.5\%$ Rdg $\pm 0.2\%$ f.s.
- 50KHz—100KHz $\pm 1.0\%$ Rdg $\pm 0.5\%$ f.s.

Temperature Coefficient — $\pm 0.005\%/^{\circ}\text{C}$.

Maximum Input Voltage —

- 30Hz—10KHz 1000 V.
- 10KHz—20KHz 750 V.
- 20KHz—50KHz 500 V.
- 50KHz—100KHz 350 V.

Voltage Coefficient — $\pm 0.001\%/V$ if input exceeds 750V.

Input Impedance (measured at the DM-10 rear connector) — 5 M Ω , shunted by <50 pf.

Note: Standard input cable and 7200 internal wiring will add approximately 200pf. As a special, a DM-10 can be built with terminals or connector on its front panel to provide low shunt capacity.

Response Time — Manual and programable: fast/slow with cross-over at approximately 400Hz.

Fast: 500ms; Slow: 5 sec.

Size — Approximately 4" x 4", 12" deep.

Power — 117-220V, 50-400Hz, <5W.

Price — Model DM-10 \$995.00

MODEL DM-11 OHMS Converter



DESCRIPTION

The DM-11 is a four-wire ohms-converter, designed to operate as a plug-in unit in the 7200 Integrating Multimeter. It is completely guarded for high common mode rejection. All circuitry is solid

state. Power supplies are self-contained so that the unit can be adapted into low-ohms measurement systems.

SPECIFICATIONS

Ranges — Five, manual and programable:

- 1.00000 K Ω f.s. + 10% overrange.
- 10.0000 K Ω f.s. + 10% overrange.
- 100.000 K Ω f.s. + 10% overrange.
- 1000.00 K Ω f.s. + 10% overrange.
- 10000.0 K Ω f.s. + 10% overrange.

Combined Accuracy (when plugged into 7200) —

- 1 K—100 K Ω $\pm 0.02\%$ Rdg $\pm 0.002\%$ f.s.
- 1 M Ω $\pm 0.05\%$ Rdg $\pm 0.003\%$ f.s.
- 10 M Ω $\pm 0.10\%$ Rdg $\pm 0.005\%$ f.s.

Termination — Special input cable with four-wire Kelvin clips.

Size — Approximately 4" x 4", 12" deep.

Power — 117-220V, 50-400Hz, 5W.

Price — Model DM-11 \$995.00

MODEL DM-12 Low Level Preamplifier



DESCRIPTION

The DM-12 is designed to operate as a plug-in unit in the 7200 Integrating Multimeter. It is completely guarded for high common mode rejection. All circuitry is solid state. Power supplies are self-contained so that the unit can be adapted into low- Ω systems.

Low drift, low noise and good stability are achieved with Fairchild Photochoppers. When the DM-12 is operated in conjunction with the 7200, it extends the measurement ranges to 100.000 mV and 10.0000 mV f.s.

SPECIFICATIONS

Ranges — Four manual and programmable gain settings $\times 1$, $\times 10$, $\times 100$, $\times 1000$.

Accuracy —

$\times 1$	$\pm 0.01\%$ Rdg $\pm 0.005\%$ f.s.
$\times 10$	$\pm 0.01\%$ Rdg $\pm 0.005\%$ f.s.
$\times 100$	$\pm 0.02\%$ Rdg $\pm 0.01\%$ f.s.
$\times 1000$	$\pm 0.03\%$ Rdg $\pm 0.02\%$ f.s.

Input Impedance — $\times 1$, $\times 10$ $>1K$ M Ω ; $\times 100$ >100 M Ω ; $\times 1000$ >10 M Ω .

Offset Current — <1 pA.

Size — Approximately 4" x 4", 12" deep.

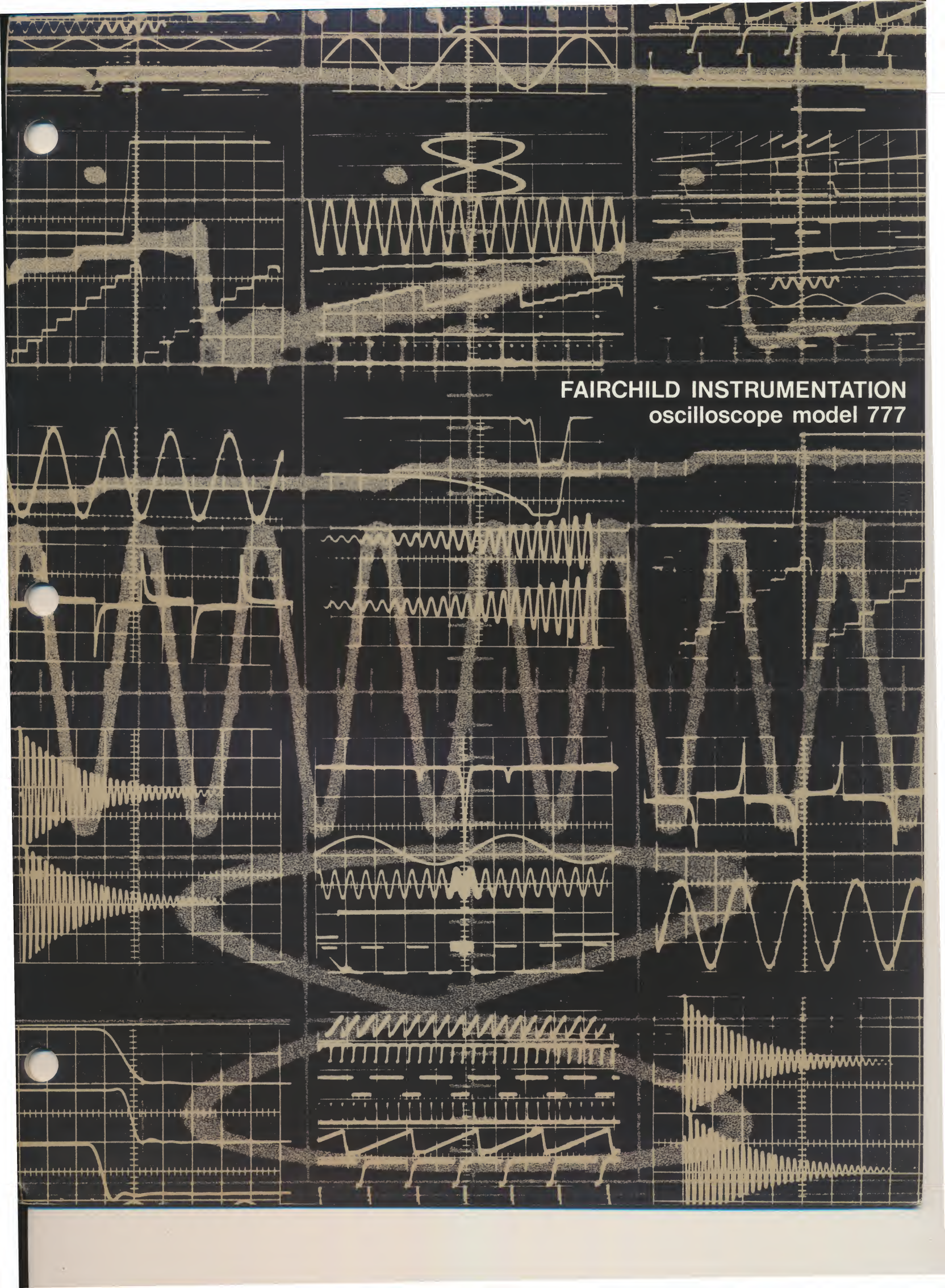
Power — 117-220 V, 50-400 Hz, <5 W.

Price — Model DM-12 \$995.00

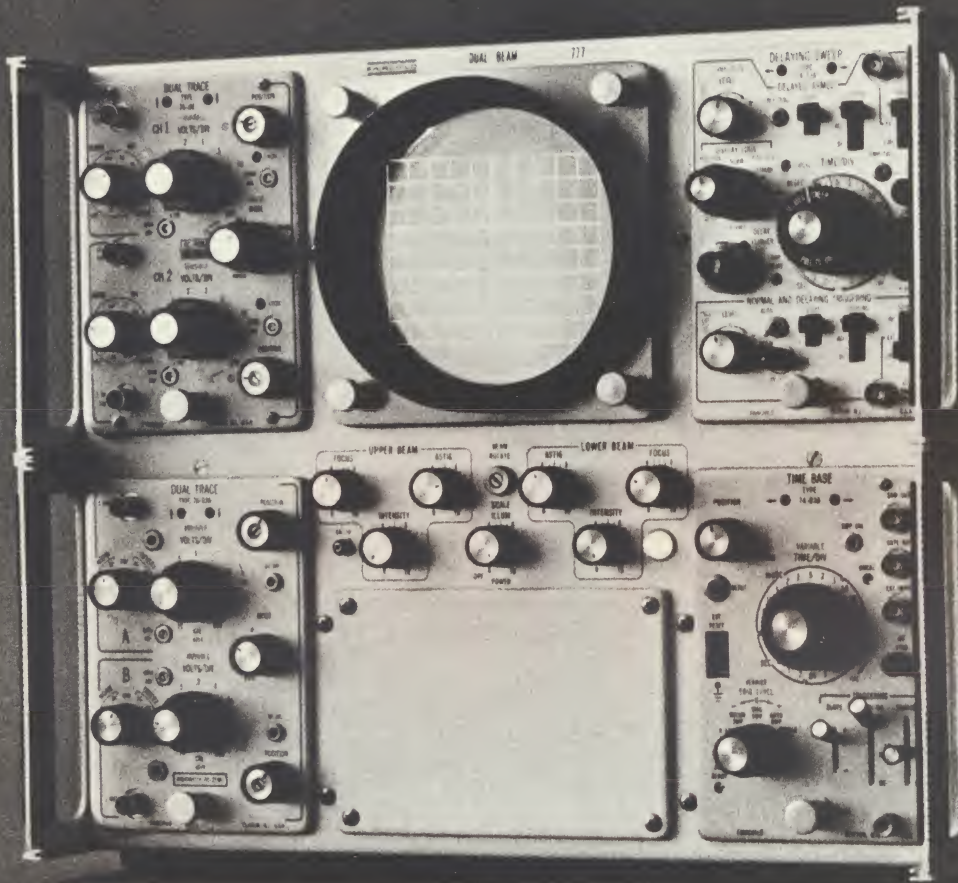
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FAIRCHILD
INSTRUMENTATION

475 Ellis Street, Mtn. View, Calif. 94040
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FAIRCHILD INSTRUMENTATION
oscilloscope model 777



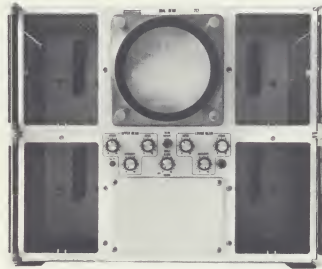
777 Scope

Dual Beam High Frequency Oscilloscope —

Two independent beams, dual gun CRT, dc to 100MHz passband capabilities

The 777 Main Frame

The 777 main frame contains a dual beam cathode ray tube and regulated power supplies. Four cavities on the frame accept a wide variety of plug-in modules providing an almost infinite number of capabilities.

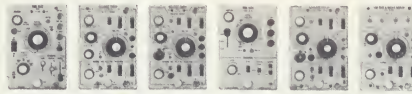


Main Frame Specifications

CRT	Dual gun; 13kv accelerating potential
Display Area	6 x 10cm for each beam with 4cm overlap between beams
Z Axis	Each gun can be independently blanked, 20 volts of signal is required to dim trace
Beam Intensifier	A switch provided for each beam enables switching from beam gate blanking to cathode gate blanking for high writing rate
Power Consumption	350 watts
Mounting	Rack mount ears are provided for rack mounting the frame
Weight	Net 44 pounds
Price	\$1,600.00

The Plug-In Modules

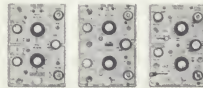
Time Base Modules (Pages 4 & 5)



Amplifier & Comparator Modules (Pages 6 & 7)



Dual Trace Modules (Pages 8 & 9)

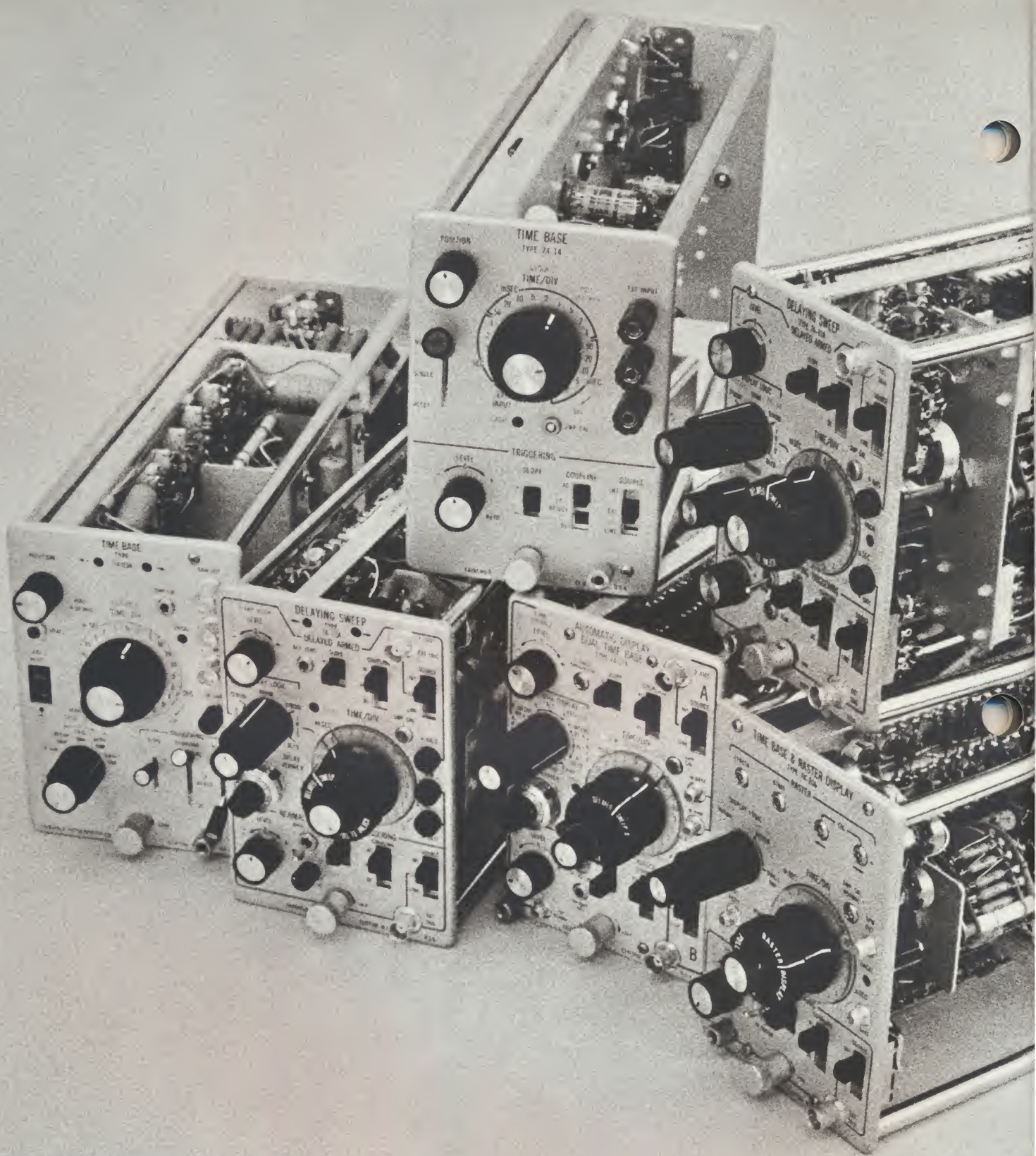


Spectrum Analyzer Modules (Pages 10 & 11)



25MHz & 100MHz Modules
100MHz 4-Trace Module (Pages 12 & 13)



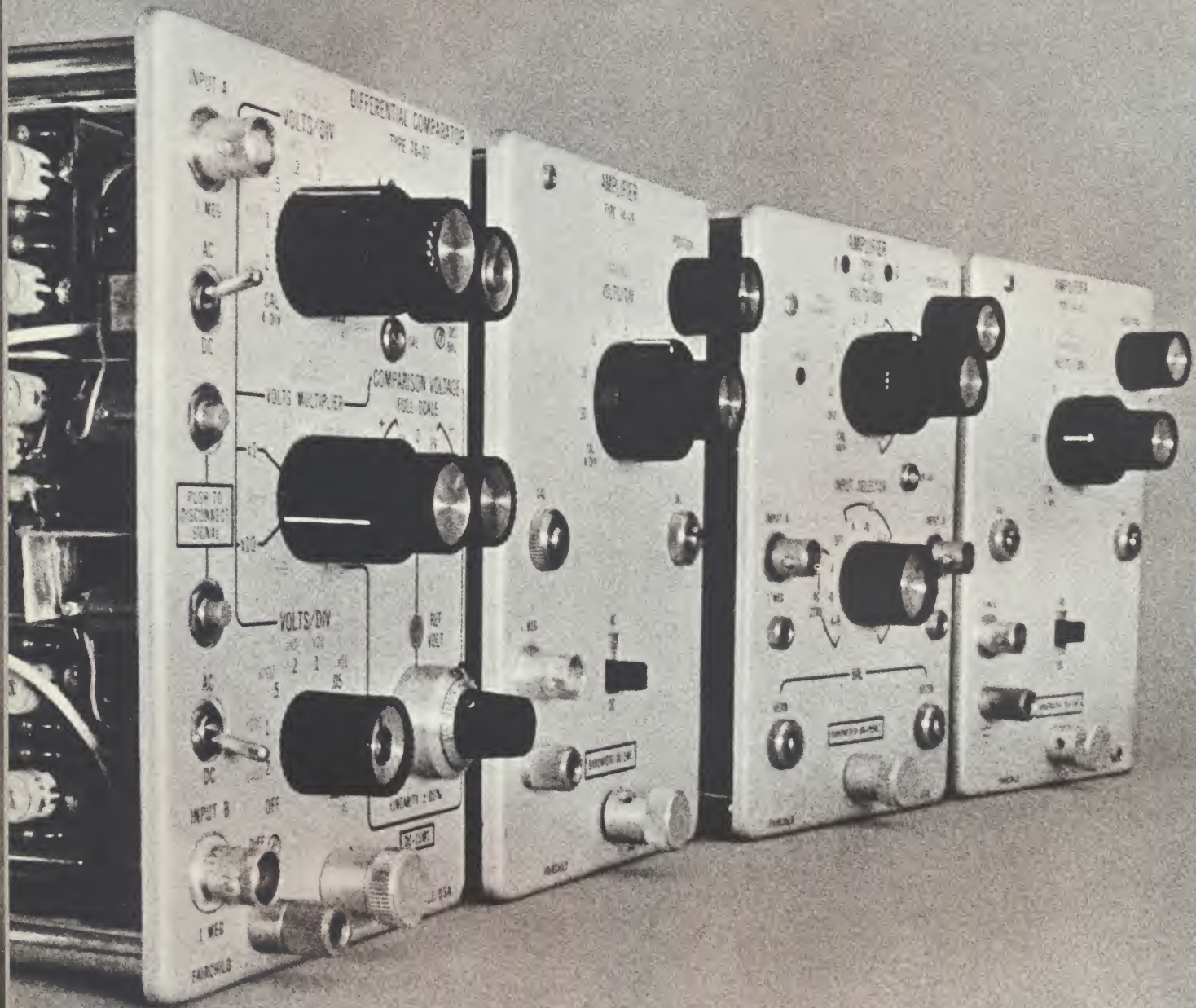


Time Base Plug-In Modules

- 74-03A** Wide Range Time Base Generator — 5ns/cm, sensitive sync circuitry, 4MHz horizontal amplifier
- 74-11A** Dual Time Base Delaying Sweep — 10ns/cm, fast tunnel diode triggering, X10 expander
- 74-13A** Calibrated Delaying Sweep — 10ns/cm, precision delay interval, single shot operation
- 74-14** General Purpose Time Base Generator — 100ns/cm, single sweep capability
- 74-17A** Automatic Beam Switching and Delaying Sweep—2 independent sweeps, 5ns/cm sweep rate
- 74-20** Time Base and Raster Display Generator — Resolve up to one part in 5000

Specifications

Features	74-03A	74-11A	74-13A	74-14	74-17A	74-20
Calibrated Sweep Ranges	2sec/cm to .05 μ sec/cm — 1, 2, 5 sequence in 24 steps	2sec/cm to .1 μ sec/cm — 1, 2, 5 sequence in 23 steps	2sec/cm to .1 μ sec/cm — 1, 2, 5 sequence in 23 steps	2sec/cm to 1 μ sec/cm — 1, 2, 5 sequence in 20 steps	2sec/cm to .05 μ sec/cm — 1, 2, 5 sequence in 24 steps	2sec/cm to .05 μ sec/cm — 1, 2, 5 sequence in 24 steps
Sweep Expander	X10 magnifier which makes fast sweep 5ns/cm	X10 magnifier which makes fast sweep 10ns/cm	X10 magnifier which extends to 10ns/cm	X10 magnifier which extends the fast sweep to 0.1 μ sec/cm	X10 magnifier which extends fast sweep to 5ns/cm	X10 magnifier which extends fast sweep to 5ns/cm
Display Modes	Xamp, recur swp., trig. swp., auto-swp., single swp.	5 modes, norm., dlyd. arm, dlyd. arm strobe, dlyd. trigger, dlyd. trig. strobe.	6 modes, norm., dlyd. arm, dlyd. arm strobe, dlyd. trigger, dlyd. trig. strobe, Xamp	3 modes norm. sweep, single sweep & Xamp	12 modes with display logic switch	4 modes single swp., norm. sweep, raster display, raster single swp.
Trigger Sensitivity	3mm p-p up to 1MHz	3mm p-p up to 100kHz ext. 250mV	3mm to 1MHz ext. 250mV 1MHz	5mm to 350kHz ext. 500mV to 350kHz	5mm to 10MHz ext. 500mV 10MHz	5mm to 10MHz ext. 500mV 10MHz
Sweep Accuracy	Within 3% with center 8cm	Within 3% with center 8cm	Within 3% with center 8cm	Within 3% with center 8cm	Always better than 3% norm. 1%	Within 3%
Trigger Source	Internal External Line freq.	Internal External Line freq.	Internal External Line freq.	Internal External Line freq.	Internal (on A External & B Sweep) Line freq.	Internal External Line freq.
Single Sweep	Can be re-armed by front panel reset button or ext. reset	Armed sweep can be used for single sweep	Armed sweep can be used for single sweep	Spring loaded reset provided	Single swp. with a reset button on front panel	Single swp. norm. single sweep raster
Horizontal Amplifier	4MHz with sens. of 100mV/div	No horiz. ampl. input	2.0MHz with sens. of 100mV/div	350kHz sens. with 1V and 10V/div	3MHz sens. 20mV/div	No horiz. ampl. input
Beam Position Indicator Lights	Yes	No beam posi. lights	Yes	No beam posi. lights	No beam posi. lights	No beam posi. lights
Output on Front Panel	Saw out, gate out	Dlyd. gate, norm. gate	Norm. gate out, norm. saw out, dlyd. gate out	No outputs on front panel	Normal gate out, normal saw out, dlyd. gate out	Gate out, saw out



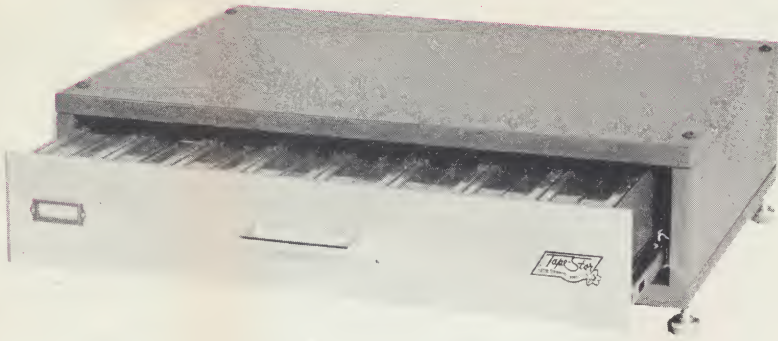
Amplifier & Comparator Plug-In Modules

- 74-12** High Gain Differential Amplifier — 850kHz bandwidth, 500 μ V sensitivity, 40db common mode rejection
- 76-07** Calibrated Differential Comparator — 15MHz bandwidth, 5mV sensitivity, 100 volts common mode operation
- 74-15** 1MHz Amplifier — 20mV/div sensitivity to 20V/div in four calibrated steps
- 74-19** 5MHz Amplifier — 50mV/div sensitivity to 20V/div in nine calibrated steps. Stability nominally less than 1mV drift per hour.

Specifications

Features	74-12	76-07	74-15	74-19
Passband	850kHz	15MHz	1MHz	5MHz
Risetime	0.45 μ sec	23ns	0.35 μ sec	70ns
Sensitivity	1mV/div to 10V/div	5mV/div to 2V/div	20mV/div to 20V/div	50mV/div to 20V/div
Attenuator	1, 2, 5 sequence with 13 steps	1, 2, 5 sequence with 9 steps with 10:1 att. ext. 2V range to 20V/cm	4 decade steps	1, 2, 5 sequence with 9 calibrated steps
Input Impedance	1 meg shunted by 47pf	1 meg shunted by 47pf	1 meg shunted by 33pf	1 meg shunted by 40pf
Input Selector	AC, DC or AC stability for inputs +A, A-B & -B	A, A-VC, Test, VC-B, -B, A-B	AC or DC	AC or DC
Internal Calibrator	Cal Position on att. switch	Cal Position on att. switch	Cal Position on att. switch	Cal Position on att. switch
Variable Gain	Ext. Range to 25V/div	Ext. Range the basic range to 50V/div	Ext. Range to 200V/div	Ext. Range to 60V/div
Common Mode Rejection	Normally 120 to 1 on 1mV/div to 100mV/div	40,000 to 1 minimum		
Attenuator Accuracy	Within 2%	Within 2%	Within 2%	Within 2%
Delay Line	No	(Op.) (7001) 230ns	No	No
Price	\$169.50	\$695.00	\$105.00	\$175.00

FACTORIES • OFFICES • HOSPITALS • LABORATORIES



BASE UNIT MODEL ABC-750 HOLDS 64 No. 3 BOXES or 120 No. 2

Unit consists of base, drawer and removable cover. This model has 3 $\frac{5}{8}$ " high drawer to accommodate larger plastic box size. Same sturdy construction and features as ABC-651. Inside drawer size 3 $\frac{5}{8}$ " high, 21 $\frac{3}{8}$ " wide and 16" deep. Overall size 5 $\frac{3}{4}$ " high, 24 $\frac{1}{2}$ " wide and 16 $\frac{5}{8}$ " deep. Shipping weight approx. 31 lbs. Price \$69.50 F.O.B. Minneapolis.



ADD-A-DRAWER UNIT MODEL ADU-751

Fits on top of any Tape-Stor Add-A-Drawer base unit. Identical drawer size, construction and capacity as Model ABC-750. Individual drawers can be ordered one or more at a time. Unit includes matching drawer, clips and four anchoring screws. Specify color wanted. Approximate weight 20 lbs. Price \$45.00 F.O.B. Minneapolis.



BASE UNIT MODEL ABC-950 (LOWER UNIT)

Three drawer unit. Drawer size is the same as 750 series. Holds 360 No. 2 boxes or 192 No. 3 boxes. Weight is 72 lbs. Price \$145.00 F.O.B. Minneapolis.

ADD-A-DRAWER UNIT MODEL ADU-951 (UPPER UNIT)

Same as above. Just lift the top and add three extra drawers. Fits on top of any Add-A-Drawer Base Unit. Weight is 65 lbs. Price \$130.00 F.O.B. Minneapolis.

Dual Trace Plug-In Modules

- 76-02A** Dual Trace — dc — 25MHz passband sensitivity 5mV — 10V/div, 14.5ns risetime
- 76-08** Dual Trace — dc — 50MHz passband sensitivity 50mV — 20V/div, 7.5ns risetime
- 79-02A** Dual Trace — dc — 100MHz passband sensitivity 100mV — 20V/div, 3.5ns risetime

Specifications

Features	76-02A	76-08	79-02A
Passband	dc — 25MHz	dc — 50MHz	dc — 100MHz
Risetime	14.5ns	7ns	3.5ns
Sensitivity	5mV — 10V/div	50mV — 20V	100mV — 20V 10mV — 2V in X10
Attenuator	11 steps @ 1, 2, 5 sequence	9 steps @ 1, 2, 5 sequence	8 steps @ 1, 2, 5 sequence
Attenuator Accuracy	2%	2%	2%
Input Selector	Norm/invert, ac/dc, gd	Norm/invert, ac/dc, gd	ac/dc or gd
Internal Calibrator	On attn. sw.	On attn. sw.	On attn. sw.
Input Impedance	1m Ω /40pf	1m Ω /23pf	1m Ω /14pf
Variable Gain Extends Range To	25V/div	50V/div	50V/div
Delay Line	Optional 230ns	230ns	230ns
Display Modes	A, B, Alt., Chop, A + B	1, 2, Alt., Chop, Added	1, 2, Alt., Chop, Added
Trace Position Indicators	Yes	Yes	No