



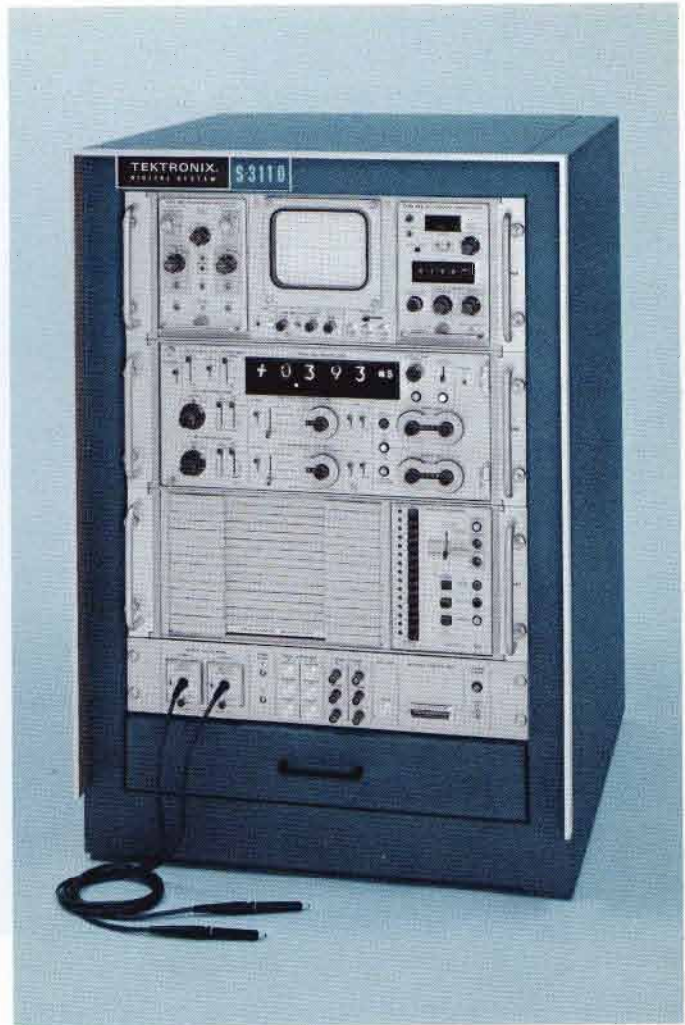
TYPE S-3110 DIGITAL MEASUREMENT SYSTEM

- **DYNAMIC MEASUREMENTS**
 - PULSE RISETIME AND FALLTIME**
 - PULSE WIDTH AND PERIOD**
 - PROPAGATION DELAY AND STORAGE TIME**
 - PULSE AMPLITUDE AND SATURATION VOLTAGE**
 - MANY OTHER SPECIFIC MEASUREMENTS**
- **AUTOMATIC MEASUREMENT SEQUENCE**
 - UP TO 15 MEASUREMENTS**
 - AUTOMATIC STOP SEQUENCE**
- **GO/NO-GO TESTING**
- **400-ps RISETIME**
- **100 ps/DIV to 500 ms/DIV**
 - CALIBRATED SWEEP RANGE**
- **20 mV/DIV to 2 V/DIV**
 - CALIBRATED VOLTAGE RANGE**

The Type S-3110 Digital Measurement System is a dynamic measurement system intended for measuring the performance of active devices under simulated operating conditions. It is designed to test integrated circuits, transistors, diodes, circuit modules, circuit boards and sub-assemblies in all segments of the electronic industry. The Type S-3110 can sequence through up to 15 measurements at a rate of 100 measurements per second. High and low measurement limits may be programmed and the Type S-3110 will stop on any combination of limits (high, go, low) if desired. A foot switch permits remote operation of the Type S-3110's advance and reset program functions.

The Type S-3110 features up to 15 measurement programs. Each measurement program has a card that is easily programmed by inserting diodes between the proper clips. Typically 15 to 20 diodes will provide the necessary program conditions. They are inserted with an easy-to-use tool.

The following instruments comprise the Type S-3110: Type R568 Oscilloscope with the Type 3T6 Programmable Sampling Sweep and Type 3S6 Programmable Sampling Unit, two Type S-3 Sampling Heads, Type R241 Programmer, 33³/₈-inch high equipment rack, a drawer, a foot switch, a utility panel and two probe choppers. The utility panel provides mounting for the Type S-3 Sampling Heads, a trigger input connector, power supply output connectors, pulse generator output and trigger input connectors, and a program connector that has 14 program lines available for programming peripheral equipment plus the necessary lines for operating the probe choppers.



CHARACTERISTICS

VERTICAL AMPLIFIER

The included 10X or 100X probe attenuators must be used with the included probe choppers. Vertical characteristics are stated with the 10X attenuator.

Voltage measurements are from 20 mV/div to 2 V/div (8 div full scale) accurate within 3%.

Bandwidth is equivalent to DC to 875 MHz.

Risetime is less than or equal to 400 ps.

Input characteristics are 1 M Ω paralleled by 2 pF.

Programmable DC offset is from +9.95 V to -9.95 V in 50-mV steps.

TYPE S-3110

TIME BASE

Programmable sweep time/div is from 100 ps/div to 0.5 s/div in 30 calibrated steps, accurate within 3%.

Programmable digital delay range is from 0 to 999.9 μ s in increments of 100 ps, 1 ns or 100 ns, depending on the sweep time/div.

Automatic triggering eliminates the need for trigger adjustments over a wide range of trigger amplitudes, shapes and repetition rates. Automatically triggers on signals of 100 mV to 500 mV amplitude over a frequency range from DC to 100 MHz.

DIGITAL UNIT

Units of measure are read out in V, mV, ns, μ s, ms, s.

Numerical readout is from -3999 to +3999.

Programmable measurement limits are from -3999 to +3999.

Data output is in parallel BCD code, 29 lines, (1, 2, 4, 8, true = ground, false = +12 V).

PROGRAMMER

Programs up to 15 measurements. Test modes include automatic sequence of up to 15 measurements, manual or external program sequence through 15 measurements or single measurement operation. Out-of-limits measurements can stop the automatic sequence if desired. Each program has one program card with 159 bits that are selected by inserting diodes between the proper clips. Typically 15 to 20 diodes will provide the necessary program conditions. A foot switch provides remote operation of the Programmers advance and reset functions.

DISPLAY UNIT

CRT display is 8 x 10 cm with P31 phosphor.

Calibrator provides 20 kHz accurate within 0.05%, and approximately 1-kHz signals; amplitudes of 0.5 V and 5 V P-P within 2% into ≥ 100 -k Ω load, or 50 mV and 500 mV P-P within 2% into a 1% 50- Ω load.

INPUT-OUTPUT PANEL

The input-output panel of the Type S-3110 provides in one convenient location the input and output facilities of the system. The panel is 3 1/2 inches high and provides the following facilities: mountings for 2 Sampling Heads; 2 probe power connections for FET probes (room is available for mounting probe power supplies inside); 2 sets of pulse generator trigger and output connectors; 2 sets of power supply output connectors; Type 3T6 trigger input; a 36-pin connector which provides probe-chopper drive lines and 14 program lines for peripheral equipment; and a system master power switch and pilot light.

POWER REQUIREMENTS

105 V to 125 V or 180 V to 272 V, 48 Hz to 66 Hz, 340 watts at 115 V and 60 Hz. Rear panel selector on each instrument provides rapid accommodations for six line-voltage ranges.

DIMENSIONS

The Type S-3110 is 33 3/8 inches high, 23 inches wide and 25 1/2 inches deep. Instruments are mounted on slide-out tracks and individually can be pulled out, tilted and locked in any one of seven positions for convenient access.

Includes: Type R568 Oscilloscope; Type 3T6 Programmable Sampling Sweep; Type 3S6 Programmable Sampling Unit; two Type S-3 Sampling Heads; Type R230 Digital Unit; Type R241 Program Unit; equipment rack and storage drawer; two probe choppers; foot switch; utility panel; and includes the standard accessories of the above instruments.

TYPE S-3111

The Type S-3111 is identical to the standard Type S-3110 with the exception that a pulse generator and power supply are added, and supplied in a 42-inch high equipment rack. The pulse generator is a Tektronix Type 115 MOD 814R, mounted in a rack adapter that permits adding another pulse generator at a later date. The power supply is a Power Designs, Inc. Model 2005 mounted in a rack adapter that permits adding another supply at a later date.

The Tektronix Type 115 MOD 814R features output connectors on the rear panel, 10-ns to 100- μ s separate and variable risetimes and falltimes, 100-ns to 10-ms pulse periods, 50-ns to 500- μ s pulse delay or burst time, 50-ns to 500- μ s pulse width, +5 V to -5 V DC offset and up to ± 10 V amplitude into 50 Ω . See page 18 for further information.

The Power Designs, Inc. Model 2005 Precision Power Source features a digitally-selected operating range from 0 to 20 V, 0 to 500 mA; accuracy is within 0.1% ± 1 mV; load and line regulation is less than 0.0005% or 100 μ V; noise and ripple is less than 100 μ V, P-P; and stability is less than 100 μ V drift per 8 hours.

The Type S-3110 and S-3111 Digital Measurement Systems are available with different Sampling Heads featuring up to 25-ps risetimes, and data recording options. Consult your Field Engineer, Representative or Distributor for further information.