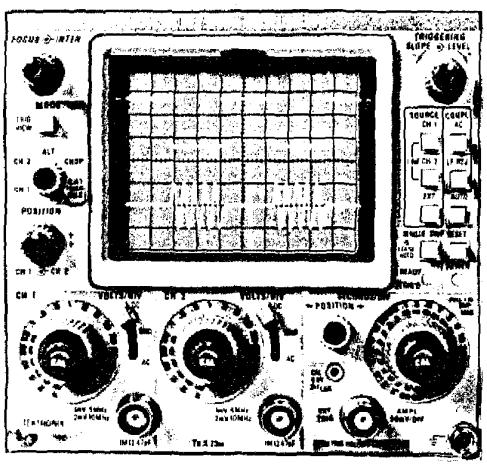
SC 502



15 MHz Dual-Trace Oscilloscope

SC 502

15 MHz Bandwidth

Dual-Trace

20 ns/div Maximum Calibrated Sweep Rate

1 mV/div Maximum Sensitivity

Delay Line

Trigger View

Variable Trigger Hold-off

Enhanced Automatic Triggering

The SC 502 is a compact general-purpose 15 MHz dual-trace oscilloscope designed to operate in any two adjacent compartments of a TM 500 Power Module/Mainframe. It has a high writing speed, a wide range of sweep rates, a wide range of deflection factors, and versatile triggering, including trigger view and enhanced automatic triggering.

As with many Tektronix Products, the SC 502 features circuits, sub-circuits, and components designed and built by Tektronix to fulfill the special design capabilities of the instrument. Among its many recommended uses, the SC 502 is intended to be a powerful tool in the field servicing of digital equipment, where it would be used in association with disk memories, key-to-tape, printers, plotters, punches, readers, and terminals. The CRT of the SC 502 offers a high writing speed as an advantage in the display of digital information, while stable, clean triggering is assured by incorporating well proven circuits. Thus, the SC 502 offers the engineer a unique combination of performance, compactness, and systems capability.

The SC 502 makes many new instrumentation systems feasible, especially in the areas of QA, production testing, maintenance, and field servicing. The rear interfacing capability of the SC 502 and all TM 500 Instrumentation suggests exceptional applicability to systems of built-in test equipment or rackmounted installations. The TM 515 Traveler Mainframe with the SC 502, forms a nucleus for sophisticated, compact field service "packages."

CHARACTERISTICS

VERTICAL DEFLECTION

Bandwidth at −3 dB points — 5 mV to 20 V/div, dc to at least 15 MHz; 2 mV/div, dc to at least 10 MHz; 1 mV/div, dc to at least 5 MHz.

Risetime — 5 mV to 20 V/div, 23 ns or less.

Ac Low-Frequency Response (Lower −3 dB points) — Without probe, 10 Hz; with probe (10X), 1 Hz.

Deflection Factors — Calibrated range: 1 mV to 20 V/div, 14 steps in a 1-2-5 sequence. Accuracy: 5 mV to 20 V/div (+15°C to +35°C) within 2%, (0° to +50°C) within 3%; 1 mV and 2 mV/div within 5%. Uncalibrated (variable) range: At least 2.5:1 range. Continuously variable between calibrated steps. Extends maximum attenuator step to at least 50 V/div.

Modes — CH 1, CH 2, ALT, CHOP, CH 1 MINUS CH 2. Chop rate at least 250 kHz. Triggering waveform is displayed instead of selected display when desired.

Input Impedance — 1 MΩ within 1% paralleled by ≈47 pF.

Maximum Input Voltage — 350 V (dc + peak ac), 700 V p-p at ac 1 kHz or less.

Common-Mode Rejection Ratio (CH 1 minus CH 2 mode) — At least 50:1 at 1 MHz when using same attenuator setting.

Channel Isolation — 2% or less display related crosstalk to 15 MHz.

Displayed Noise — ≤0.2 mV p-p at 1 mV/div.

Position Range — ±6 div.

Calibrator — Voltage, 0.6 V ±1%. Frequency, twice the power line frequency.

HORIZONTAL DEFLECTION

Sweep Generator — Calibrated Sweep Rates: 0.5 s to 0.2 μs/div, 20 steps in a 1-2-5 sequence, plus a X10 magnifier for sweep rates to 20 ns/div. Uncalibrated (variable) Range: the CAL (variable) control provides sweep rates that are continuously variable between the calibrated rates, and extends the slowest sweep rate to at least 1.25 s/div.

Sweep Rate Accuracy — Within 3% unmagnified, 4% magnified, +15°C to +35°C.
Derated by an additional 1% for 0°C to +15°C and +35°C to +50°C.

Trigger Holdoff — CAL (variable) control, if selected by an internal jumper, increases trigger holdoff time by a factor of at least 20.

External Horizontal Amplifier — Bandwidth: dc coupled, dc to at least 2 MHz; ac coupled <50 Hz to at least 2 MHz. Deflection Factor, 50 mV/div within 5%. X and Y Amplifier Phase Difference: <3° at 50 kHz or less. Input Impedance: 1 MΩ within 2% paralleled by ≈47 pF. Maximum Input Voltage: 350 V (dc + peak ac); 350 V p-p at 1 kHz or less.

TRIGGER

Enhanced Automatic Triggering — In the automatic mode, the trigger circuit automatically adjusts to spread the p-p signal over most of the range of the triggering level control. This provides more convenient triggering, especially on low amplitude signals.

Trigger Modes — Auto (enhanced), Normal (auto button out), Single Sweep.

Trigger Sources — CH 1, CH 2, Line Ext.

Trigger Coupling — Dc, ac, ac LF Rej.

Trigger Sensitivity — Minimum p-p signal required.

Source	dc to 5 MHz	5 MHz to 15 MHz
CH 1, CH 2	0.4 div	1.0 div
External	60 mV	150 mV

With ac coupling requirements increase below ≈50 Hz. Ac LF Rej coupling requirements increase below ≈5 kHz.

Triggering Level Range — Internal: at least ±8 div. External: at least ±1.2 V.

External Triggering Input — Input Impedance: 1 MΩ within 2% paralleled by ≈47 pF. Maximum Input Voltage: 350 V (dc + peak ac); 350 V p-p ac at 1 kHz or less.

Auto Mode — Sweep free-runs in the absence of a triggering signal. TRIGGER LEVEL range is reduced to approximately the p-p range of the triggering signal.

Single Sweep — Triggering requirements same as for normal sweep. When triggered, sweep generator produces one sweep only. AUTO pushbutton must be in the OUT position for operation and for setting triggering controls.

CRT

Phosphor — P31.

Deflection — Electrostatic.

Acceleration Potential — ≈12 kV.

Graticule — Scale, 8 x 10 div with 0.25 in/div internal graticule lines.

ENVIRONMENTAL CAPABILITIES

Temperature — Operating: 0°C to +45°C (to +50°C in mainframes equipped with fan). Nonoperating: −55°C to +75°C.

Altitude — Operating: Sea level to 4500 m (15,000 ft). Nonoperating: Sea level to 15 200 m (50,000 ft).

Order SC 502 15 MHz Oscilloscope .. $2,210

RECOMMENDED PROBES

P6101 1X, P6108 10X, P6062B 1X or 10X.