

Here's Digital Storage and Analog Familiarity Plus Documentation at an Affordable Price.

2211

- 50 MHz Analog Bandwidth
- 20 MS/s Per Channel Sampling
- 500 μ V/div Vertical Sensitivity
- 4 K Per Channel Record Length
- CRT Readout, Including Trigger Level Voltage
- Cursors Operate in Storage and Non-Storage Modes
- Hardcopy Interface (RS-232-C)
- External Clock Inputs from DC to 10 MHz

2201

- 20 MHz Analog Bandwidth
- 10 MS/s Per Channel Sampling
- 2 K Per Channel Record Length
- Hardcopy Interface Optional (RS-232-C)

2211/2201 OSCILLOSCOPES

FAMILIAR ANALOG CONVENIENCE

Tek brings you familiar analog operation, plus crt readout, on-screen cursors, and an RS-232-C hardcopy interface in a portable package. Now, with a 2211 or 2201, you can have an inexpensive yet versatile oscilloscope with modern digital storage, without giving up the familiarity of analog operation.

With a friendly and familiar control panel, these scopes make it easy to switch between conventional analog and digital storage operation. Just select storage or non-storage with the push of a button and the crt switches between digital dot display and real-time mode.

POWERFUL FEATURES FOR THE NOVICE OR EXPERT

In the digital storage mode, you can capture and display single-shot events and view low repetition rate signals without the usual flicker of an analog display. With digital pre-trigger you can view events that occurred before the trigger point, making it easy to identify trigger conditions.

The 2211's crt readout provides scale factors, cursor measurements, and trigger level voltage directly on screen. This is especially useful for precision measurements, documentation or single-shot waveform capture. For example, you can trigger on a predetermined voltage spike, store the waveform and see pretrigger events while babysitting a process control application.

By automatically calculating time and voltage differentials, waveform cursors increase accuracy and repeatability. You'll view calculated values on-screen, along with front-panel scale factors. Time measurements made in store mode are particularly accurate, because they're waveform-based, not screen-based. Plus, you can use horizontal magnification to position a cursor off-screen for ultra-precise analysis.

With the RS-232-C hardcopy interface (optional on the 2201), you can send your results to a printer or plotter for convenient hardcopy documentation. Using this same interface you can transfer waveforms to a PC for further study.

These features make the 2211 and 2201 the right instruments for a wide variety of applications. They are ideal for first-time users and seasoned operators.

PREMIUM SPECIFICATIONS

The 2211 provides 50 MHz analog bandwidth, two-channel sampling at 20 MS/s per channel, a 4 K record length per channel, and excellent vertical sensitivity. The 2201 provides 20 MHz analog bandwidth, two-channel sampling at 10 MS/s per channel, and a 2 K record length per channel. Since both instruments have dual digitizers, you don't sacrifice sampling speed or record length in two channel measurements.

With the 500 μ V vertical sensitivity of the 2211 you can evaluate low-level signals which cannot be seen with less sensitive oscilloscopes. For difficult measurements, the enhanced trigger and 8:1 holdoff features make it easy to display almost any signal.

A time base multiplier on both instruments allows you to extend storage mode sweep speeds up to 50 s/div. Using the horizontal magnification, you can view delayed portions of the waveform similar to a dual time base oscilloscope. This allows analysis and documentation of slow or transient events found in physical measurement or electro-mechanical environments.

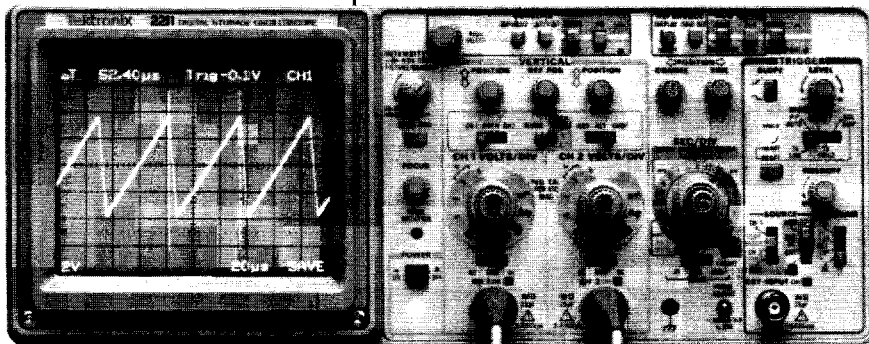
PUSH BUTTON DOCUMENTATION

An RS-232-C hardcopy output serial interface is standard on the 2211, optional on the 2201. Hardcopy documentation with HPGL and EPSON compatible plotters and printers, simply by pressing a button. Recommended Hardcopy devices are: Tek HC100 (4-color plots), HC200 (black and white prints).

Plus, Tek's GRABBER 2 software lets you transfer waveform data from the scope to an IBM PC/XT/AT (or compatible) for display, mass storage, or evaluation. This software creates an HPGL plot file which can be archived, converted to other formats or printed out for documentation. By using a word processor which accepts HPGL files you can even import stored waveforms to your documents. No complex communication protocols or cabling are required.

USEFUL BATTERY POWER OPERATION

With the optional internal 12 VDC inverter and a power source like the 1104A battery pack (mounts on rear of scope) the 2211 can be used in remote locations or when a floating measurement is required as in automotive testing. Order option 07 to get the internal inverter and option 30 to get the inverter plus an 1104A battery pack.



The 2211 is ideally suited for applications such as physical measurements, production testing process control, service, or repair.



The 2201 provides the power of digital storage, the familiarity of analog operation, and the affordability of Tek's lowest priced DSO.

50 MHz, 20 MS/s & 20 MHz, 10 MS/s DIGITAL PLUS ANALOG OSCILLOSCOPES

2211/2201

CHARACTERISTICS

DIGITAL STORAGE SYSTEM

Sample Rate— 2211: 20 MS/s max. per channel.
2201: 10 MS/s max. per channel.

Resolution— Vertical: 8 bits (25 levels per division).
Horizontal: 2211: 12 bits (400 points per division).
2201: 11 bits (200 points per division).

Record Length— 2211: 4 K per channel.
2201: 2 K per channel.

Pre/Post Trigger— 2211: 25% or 75% trigger position selectable.
2201: 0% or 50% trigger position selectable.

Acquisition Mode— Sample.

Save Reference Memory— One acquisition.

VERTICAL SYSTEM (2 Identical Channels)

Bandwidth (-3 dB) and Rise Time— 2211: 50 MHz and 7.0 ns (+5°C to +35°C); 40 MHz and 8.8 ns (0°C to +40°C).
2201: 20 MHz and 17.5 ns

Deflection Factor and Accuracy— 5 mV/div to 5 V/div, ±3%.
2211: 500 µV/div, ±5% with X10 vertical mag.

Vertical Operating Modes— CH 1, CH 2, CH 2 INVERT, ADD, ALT, CHOP (500 kHz), X10 vertical mag (2211 only).

CMRR— 2211: At least 10:1 at 20 MHz.
2201: At least 10:1 at 10 MHz.

Input R and C— 1 MΩ, 25 pF.

Max Input Voltage— 400 V (dc + peak ac), 800 V p-p.

Channel Isolation— 100:1 at 10 MHz.

HORIZONTAL SYSTEM

Sweep Speeds— 0.5 s/div to 0.05 µs/div, extended to 5 ns/div with X10 MAG. 0.5 s/div to 20 µs/div in store mode, extended to 50 s/div with X100 (store uncal).

Accuracy— X1: ±3%; X10: ±4%; X50: ±5% (all +15°C to +35°C).
X1: ±4%; X10: ±5%; X50: ±8% (all 0°C to +40°C).

Horizontal Operating Modes— X1, X10, X50 (2211 only), X-Y (non-store).

TRIGGER SYSTEM

Trigger Sensitivity— Internal: 0.35 div at 5 MHz, 1.0 div at 50 MHz. External: 40 mV at 5 MHz, 150 mV at 50 MHz.

Trigger Operating Modes— Peak-Peak AUTO (also TV LINE), NORM, TV FIELD, SGL SWP.

Trigger Source— VERT MODE, CH 1, CH 2, LINE, EXT, EXT/10.

Trigger Coupling— 2211: ac, dc, HF REJ, (attenuates above 30 kHz), LF REJ (attenuates below 30 kHz).
2201: dc.

Variable Holdoff— At least 8:1 (2211 only).

X-Y OPERATION

Deflection Factors— Same as vertical system.

Bandwidth— X-Axis: 2 MHz. Y-Axis: same as vertical

Phase Difference— 2211: ±3° from dc to 150 kHz.
2201: ±3° from dc to 50 kHz.

ADVANCED FUNCTIONS

Cursor Function and Accuracy— 2211: ΔVolts: ±3% of reading. ΔTime: ±4% (unmagnified, 15°C to 35°C); ±5% (unmagnified, 0°C to 40°C).

External Clock Input— Dc to 10 MHz (2211 only).

Hardcopy Interface (RS-232-C)— Plots all displayed records (X1 MAG), crt readout and graticule (selectable). Baud rate: 300 to 9600. Plotter Devices: HPGL, Epson FX-Series. Connector: 9-pin DTE (male).

Communication Software (Grabber 2)— Comes with the instrument and transfers waveform data from the 2211 or 2201 to an IBM PC/XT/AT (or compatible). Uses the RS-232-C interface.

CRT SYSTEM

Display— 8 cm x 10 cm, 12.6 kV nominal voltage.

Controls— INTENSITY, TRACE ROTATION, BEAM FIND, FOCUS.

Z-Axis— 5 V causes modulation, usable to 5 MHz.

POWER REQUIREMENTS

Line Voltage Range— Low: 95 VAC to 128 VAC. High: 185 VAC to 250 VAC.

Line Frequency— 48 Hz to 440 Hz.

Maximum Power Consumption— 2211: 85 W (95 VA). 2201: 70 W (80 VA).

Opt. 07— 2211 Inverter Input Volts: 11.8 VDC to 30 VDC (not retrofitable).

1104A Battery Pack— 2211 only. Couples to rear of scope. For use with opt. 07; Output: 12 V, 8 amps; Input: 95 VAC to 128 VAC or 185 VAC to 250 VAC (48 Hz to 440 Hz); Operating time: 2 hrs; Charge time: Approx. 16 hrs (longer when scope is operating); Weight: 14 lbs/6.5 kg.

Warranty— 3 years (Opt. 07); 1 year (1104A).

ENVIRONMENTAL CHARACTERISTICS

See page 108.

PHYSICAL CHARACTERISTICS

Dimensions— Width (with handles): 15.0 in; Height: 5.4 in; Depth (without cover): 17.2 in; Weight: 16.8 lbs/7.6 kg.

OTHER CHARACTERISTICS

Safety— UL 1244 listed, CSA certification.

Warranty— 3 years.

ORDERING INFORMATION

2211 50 MHz Digital Plus Analog Oscilloscope **\$2,795**

Includes:
Two 10X Voltage Probes (P6109), Operators Manual (070-7233-00), Users Ref. Manual (070-7235-00), 9-pin to 25-pin RS-232-C Serial Interface Printer/Plotter Cable, GRABBER 2 software, 3 Year Warranty, Power Cord.

2201 20 MHz Digital Plus Analog Oscilloscope **\$1,695**

Includes:
Two 10X Voltage Probes (P6103), Operators Manual (070-7190-00), Users Ref. Guide (070-7232-00), 3 Year Warranty, Power Cord.

INSTRUMENT OPTIONS

Opt. 07 — Internal 12 VDC Inverter (2211) **+\$445**

Opt. 30 — 1104A Battery + Opt. 07 (option 07, 30 for 2211 only) **+\$845**

Opt. 12 — RS-232-C (2201) **+\$300**

Opt. 3R — Rackmount Kit **+\$250**

Opt. 2V — 2201 Training Package **+\$60**

Opt. 2F — 2211 QuickStart (US) **+\$199**

ACCESSORY OPTIONS

Opt. 1C — C-9 Opt. 01 Camera **+\$610**

Opt. 1K — K212 Instrument Cart **+\$385**

Opt. 1P — HC 100 Plotter (120V) **†**

Opt. 1T — Transit Carrying Case **+\$345**

Opt. 02 — Pouch and Front Cover **+\$60**

INTERNATIONAL POWER PLUG OPTIONS

Opt. A1- A5 — Available **NC**

See page 108 for description.

WARRANTY-PLUS SERVICE PLANS

2211:

Opt. M2 — +2 yrs service **+\$285**

Opt. M8 — +4 annual calibrations **+\$195**

2201:

Opt. M2 — +2 yrs service **+\$170**

Opt. M8 — +4 annual calibrations **+\$190**

RECOMMENDED ACCESSORIES

Service Manuals —

2211: Order 070-7234-00 **\$95**

2201: Order 070-7189-00 **\$95**

RS-232-C Interface Cable —

Order 012-1298-00 **\$35**

Rackmount Kit — 016-0819-03 **\$250**

Battery Pack for Opt. 07 — 1104A **\$450**

(See page 108 for more accessories.)

† Product available within 24 hours through Tek Direct. Call 1-800-426-2200.

†† Contact your local sales office.



For convenient documentation you can link the 2211 or 2201 to a 4-color plotter such as the HC100, to print the waveform record.