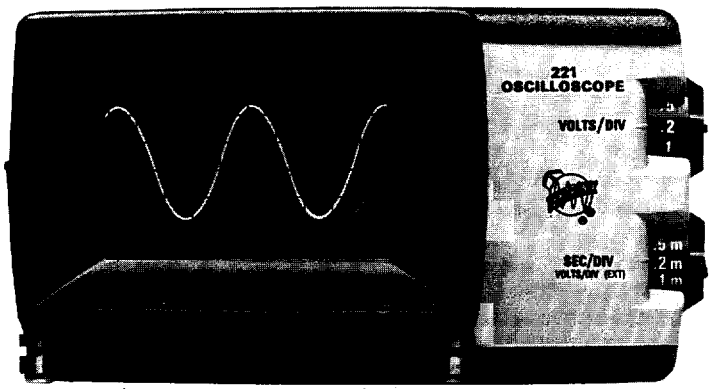
221/214 212 *HANDHELD, 500 kHz TO 5 MHz MINISCOPES*

- *DC to 5 MHz (221)*
- *5 mV/Div to 100 V div (221)*
- *DC to 500 kHz (214/212)*
- *1 mV/Div to 50 V/Div (214/212)*
- *CRT Storage (214)*
- *Floatable to 600 V*
- *Internal Battery Pack*
- *Integral Probe*



With bandwidths from 500 kHz (212/214) to 5 MHz (221), neckstraps for convenient viewing, and side mounted control knobs, the 200 Series miniscopes are ideal for industrial maintenance applications where portability is a must.

The 221/214/212 are lightweight, compact, and built of impact-resistant, double insulated plastic. Since they are double insulated they allow you to make "floating" measurements and can be elevated to 600 V (dc + peak ac) above ground when operated from batteries.

The 214 CRT Storage scope allows you to save waveforms for comparison to other signals. The 221, at 5 MHz, offers the ability to view the higher voltages and higher speeds found in motor controllers. Internal rechargeable batteries allow at least two hours operation away from external power sources.

ORDERING INFORMATION

212 500 kHz, Dual-Channel ☎ **$2,450**
Includes: Integral probes, Viewing Hood (016-0099-01), Carry Case (016-0512-00), Carry Strap (346-0104-00), Oprs. Manual (070-5052-00), Service Manual (070-5053-00).

214 500 kHz, Dual Channel ☎ **$3,225**
CRT Storage Oscilloscope
Includes: Same as 212, except Operators Manual (070-5054-00), Service Manual(070-5055-00).

221 5 MHz, Single Channel ☎ **$2,950**
Includes: Integral probe, Viewing Hood (016-0199-01), Carrying Case (016-0512- 00), Neck Strap (346-0104-00), Service Manual (070-1573-01), Operator Manual (070-1572-00), Battery.

OPTIONS (212/214 only)

Opt. 01 – 220 to 250 V (48 to 52 Hz) **NC**

Opt. 02 – 90 to 110 V (48 to 52 Hz) **NC**

OPTIONAL ACCESSORIES

10X Attenuator Package – (212/214 ONLY) A slip-on tip to provide lower circuit loading (4.4 MΩ, 20 pF) and higher maximum input voltage 1000 V (dc + peak ac).
Includes: Flex Tip, 10X attenuator, Pincher Tip, Banana Tip, IC Adapter.
Order 010-0378-01 **$100**

Alligator Clip Kit – Pair of alligator clips that connect probe and ground lead to large (up to 3/8 inch) conductors.
Includes: Red Clip, Yellow Clip, 6-32 to Probe Adapter.
Order 015-0231-00 **$36**

Probe Tips – To BNC Adapters
(Panel Connector) 013-0084-01 **$11.50**
(Cable Adapter) 103-0096-00. **$15.75**

PHYSICAL CHARACTERISTICS

Dimension	mm	in.
Width	133	5.2
Height	76	3.0
Depth	241	9.5
Weight	**kg**	**lb**
Net, w/o accessories	1.6	3.5
Shipping	3.2	7.0

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

CHARACTERISTICS

VERTICAL SYSTEM

Bandwidth – 221: dc to 5 MHz. 212/214: dc to 500 kHz (10 mV/div to 50 V/div); 100 kHz (1 mV/div).

Deflection Factor and Accuracy – 221: 5 mV/div to 100 V/div ±3%. 212/214: 1 mV/div to 50 V/div ±5%.

Display Modes – 221: Channel 1 only, XY. 212/214: CH 1, CH 2, CHOP (500 ms/div to 2 ms/div), ALT (1 ms/div to 5 ms/div).

Input R and C – 221: 1 MΩ, 29 pF. 212/214: 1 MΩ, 160 pF (1 mV/div to 50 mV/div); 140 pF (100 mV/div to 50 V/div).

Maximum Input Voltage – 1 mV/div to 50 mV/div: 600 V (dc + peak ac), 2 kHz or less. 0.1 V/div to 50 V/div: 600 V (dc + peak ac), 600 V p-p, ac, 5 MHz or less.

HORIZONTAL SYSTEM

Sweep Speeds – 221: 1 ms/div to 200 ms/div ±3%. 212/214: 5 ms/div to 500 ms/div ±5%.

TRIGGER SYSTEM

Trigger Sensitivity – 221: Internal: 0.5 div at 1 MHz, 1 div at 5 MHz. External: 0.5 V at 1 MHz, 1 V at 5 MHz. 212/214: Internal: 0.2 div at 500 Hz. External: 1 V.

Maximum Ext Trigger Input Voltage – 212/214: 8 V (dc + peak ac), 16 V (p-p ac) at 500 kHz or less.

X-Y OPERATION (221 ONLY)

X-Axis Deflection Factor – 1 V/div ±10%, dc to 500 kHz. 0.1 V/div using X10 mag.

Maximum X-Axis Input Voltage – 200 V (dc + peak ac), 200 V (p-p ac) to 500 kHz, decreasing to 20 V p-p ac at 5 MHz.

CRT SYSTEM

Display – 6 x 10 div (0.52 cm/div).

STORAGE FEATURES (214 Only)

Stored Writing Speed – Normal: 80 div/ms. Enhanced: 500 div/ms (0.1 ms to 5 s/div).

Stored Luminance – At least 8 fL at 25°C.

Storage Viewing Time – One hour.

OTHER CHARACTERISTICS

Insulation Voltage – 500 Vrms or 700 V (dc + peak ac) using internal batteries.

Power Sources – Internal NiCad batteries provide three to five hours operation. Full recharge requires 16 hours.

POWER REQUIREMENTS

Line-Voltage Range – 212/214: 110 to 126 VAC; Option 01: 220 to 250 V; Option 02: 90 to 110 V. 221: 90 to 250 VAC or 80 to 250 VDC.

Line Frequency – 212/214: 58 to 62 Hz; Options 01 and 02: 48 to 52 Hz. 221: 48 to 62 Hz

Maximum Power Consumption – 212/214: 3 W. 221: 5 W.

ENVIRONMENTAL

Ambient Temperature – Operating (Batt. only): –15°C to + 55°C. Charging or ac operation: 0°C to + 40°C. Nonoperating: –40°C to + 60°C.

Altitude – Operating: 7600 m (25,000 ft), Nonoperating: 15,000 m (50,000 ft).

Humidity – 95%, five cycles (120 hours). Referenced to MIL-T-28800C, per par 4.5.5.1.2.2.

Vibration – Operating and Nonoperating: 15 minutes along each of the 3 major axes, 0.06 cm (0.025 in) p-p displacement (4 g's at 55 Hz), 10 to 55 to 10 Hz in 1-minute cycles. Held for 3 minutes at 55 Hz.

Shock – Operating and nonoperating: 100 g's 1/2 sine, 2 ms duration each direction along each major axis. Total of 12 shocks.