

**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

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 CRT Storage Oscilloscope ☛ **\$3,225**
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 M Ω , 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**

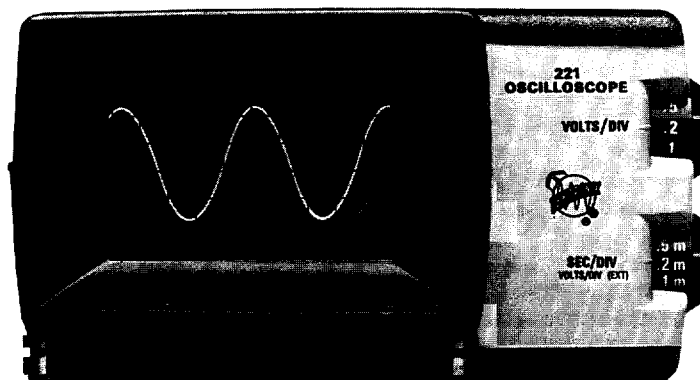
Alligator Clip Kit – Pair of alligator clips that connect probe and ground lead to large (up to 3/8 inch) conductors. Includes: Red Clip, Yellow Clip, 6-32 to Probe Adapter. Order 015-0231-00 **\$36**

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.



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 re-chargeable batteries allow at least two hours operation away from external power sources.

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 $\pm 3\%$. 212/214: 1 mV/div to 50 V/div $\pm 5\%$.

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 M Ω , 29 pF. 212/214: 1 M Ω , 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 $\pm 3\%$. 212/214: 5 ms/div to 500 ms/div $\pm 5\%$.

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 $\pm 10\%$, 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 $+55^{\circ}\text{C}$. Charging or ac operation: 0°C to $+40^{\circ}\text{C}$. Nonoperating: -40°C to $+60^{\circ}\text{C}$.

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.