

## Data Sheet

- Dual or single trace operation  
5 mV/div sensitivity
- AUTO/NORM triggered sweep operation with AC,

TVH, TVV and line coupling

- Calibrated 23 step time base with x 10 magnifier
- Compact low-profile design
- Built-in 50 MHz frequency counter



## Specifications

model

2121

### VERTICAL AMPLIFIERS (Ch 1 and CH 2)

|                       |   |
|-----------------------|---|
| Sensitivity           | 5 mV/div to 5 V/div, 1 mV/div to 1 V/div at X5                                      |
| Attenuator            | 10 steps in 1-2-5 sequence. Vernier control provides full adjustment between steps. |
| Accuracy              | ±3%, ±5% at X5  |
| Input Resistance      | 1 MΩ ±2%  |
| Input Capacitance     | 25 pF ±10pF   |
| Frequency Response    | 5 mV to 5 V/div: DC to 30 MHz (-3dB). X5: DC to 10 MHz (-3dB)                       |
| Rise Time             | 12 ns (Overshoot ≤5%)   |
| Operating Modes       | CH 1: CH 1, single trace<br>CH 2, single trace                                      |
| ALT                   | dual trace, alternating   |
| CHOP                  | dual trace, chopped   |
| ADD                   | algebraic sum of CH 1 + CH 2  |
| Polarity Reversal     | CH 2 only   |
| Maximum Input Voltage | 400 V (DC + AC peak)  |

### SWEEP SYSTEM

|                     |   |
|---------------------|---|
| Sweep Speed         | 0.1 μs/div to 2s/div in 1-2-5 sequence, 23 steps<br>Vernier control provides fully adjustable sweep time between steps. |
| Accuracy            | ±3%   |
| Sweep Magnification | 10x   |

### TRIGGERING

|                  |   |
|------------------|---|
| Triggering Modes | AUTO (free run) or NORM, TV-V, TV-H             |
| Trigger Source   | CH 1, CH 2, ALT, EXT, LINE                      |
| Maximum External |   |
| Trigger Voltage  | 300 V (DC + AC peak)                            |
| Trigger Coupling | AC 30 Hz to 30 MHz                              |
| TV H             | Used for triggering from horizontal sync pulses |
| TV V             | Used for triggering from vertical sync pulses   |

### TRIGGER SENSITIVITY

| Coupling | Bandwidth     | Int     | Ext    |
|----------|---------------|---------|--------|
| Auto     | 100 Hz-30 MHz | 1.5 div | 100 mV |
| Norm     | DC to 30 MHz  | 1.5 div | 100 mV |
| TV V     | 20 Hz-1 kHz   | .5 div  | 100 mV |
| TV H     | 1 kHz-100 kHz | .5 div  | 100 mV |

### HORIZONTAL AMPLIFIER (Input through channel 2 input)

|                       |   |
|-----------------------|---|
| X-Y Mode              | Switch selectable using X-Y switch. CH 1: X axis<br>CH 2 Y axis |
| Sensitivity           | Same as vertical channel 1                                      |
| Input Impedance       | Same as vertical channel 1                                      |
| Frequency Response    | DC to 1 MHz typical (-3 dB)                                     |
| X-Y Phase Difference  | Approximately 3° at 50 kHz                                      |
| Maximum Input Voltage | Same as vertical channel 1                                      |

### Frequency Counter

|                       |   |
|-----------------------|---|
| Display Resolution    | Auto select from 0.001Hz to 1kHz depending on the frequency |
| Max. Counter Range    | 0.1Hz to 50MHz  |
| Max. External Voltage | 300V dc + ac peak   |
| Accuracy              | +0.01% + 1 digit or 1/99999 + 1 digit                       |
| Time Base             | 18,432MHz + 10ppm (23°C ±5°C)                               |

Sensitivity Note:

1- The Counter must be set at "DC COUPLING" operation then the input signal is less than 10HZ.

2- The counter is operated by the "Trigger Source" CH1, CH2, or EXT.

| Mode | Range       | Sensitivity |
|------|-------------|-------------|
| INT  | 2Hz~40MHz   | ≥ 1Div      |
| INT  | 1Hz~45MHz   | ≥ 2Div      |
| INT  | 0.2Hz~50MHz | ≥ 3Div      |
| EXT  | 10Hz~50MHz  | ≥ 200mVrms  |
| EXT  | 1Hz~50MHz   | ≥ 400mVrms  |

### CRT

|                      |                                     |
|----------------------|-------------------------------------|
| Type                 | Rectangular with internal graticule |
| Display Area         | 8 x 10 div (1 div = 1 cm)           |
| Accelerating Voltage | 2 kV                                |
| Phosphor             | P31                                 |
| Trace Rotation       | Electrical, front panel adjustable  |

## Other Specifications

|                     |  |
|---------------------|--|
| Calibrating Voltage | 1 kHz (±10%) Positive Square Wave, 2 V p-p (±3%) |
|---------------------|--|

### ENVIRONMENT

|                    |   |
|--------------------|---|
| Within Specified   |   |
| Accuracy           | 50° to 95°F (10° to 35°C), ≤ 85% RH                     |
| Full Operation     | 32° to 104°F (0° to 40°C), ≤ 85% RH                     |
| Storage            | -4° to 158°F (-20° to +70°C)                            |
| Power Requirements | 100/120/220/240 VAC ±10%, 50/60 Hz, approximately 40 W. |
| Dimensions (WxHxD) | 12.8" x 5.2" x 15.7" (180 x 370 x 440 mm)               |
| Weight             | Approximately 16.8 lbs (7.6 kg)                         |

## Accessories

Two Year Warranty

|           |   |
|-----------|---|
| SUPPLIED: | Instruction Manual, Two PR-33A x1/x10 Probes or equivalent, AC Power Cord, Spare Fuse   |
| OPTIONAL: | PR-32A Demodulator Probe, PR-37A x1/x10/REF. Probe, PR-100A x100 Probe, PR-55 High Voltage x1000 Probe, LC-210A Carrying Case |

Specifications subject to change without notice