Table 1. Specifications

VERTICAL AMPLIFIERS (2)

BANDWIDTH: (3 dB down from a 6 div reference signal.)

DC-Coupled:

1715A: dc to 200 MHz in both 50-ohm and high impedance input modes 10 mV/div to 5 V/div, to 150 MHz at 5 mV/div.

1725A: dc to 275 MHz in both 50-ohm and high impedance input modes 10 mV/div to 5 V/div.

AC-Coupled: lower limit is approx 10 Hz.

BANDWIDTH LIMIT: limits upper bandwidth to approx 20 MHz.

RISE TIME: <1.75 ns 10 mV/div to 5 V/div, <2.3 ns at 5 mV/div. (calculated by t_r = 0.35/BANDWIDTH in MHz).

DEFLECTION FACTOR

Ranges: 1715A: 5 mV/div to 5 V/div (10 calibrated positions) in 1, 2, 5 sequence, ±2% attenuator accuracy.

1725A: 10 mV/div to 5 V/div (9 calibrated positions) in 1, 2, 5 sequence, ±2% attenuator accuracy.

Vernier: continuously variable between all ranges; extends maximum deflection factor to at least 12.5 V/div. Front panel indicator lights when vernier is not in CAL position.

INPUT RC (selectable)

AC and DC: 1 megohm ±2% shunted by approx 11 pF.

50 Ohm: 50 ohms ±2%; SWR ≤1.3 on 5, 10, 20, and 50 m V ranges and ≤1.15 on all other ranges.

MAXIMUM INPUT

AC and DC: ±250 V (dc + peak ac) at 1 kHz or less.

50 Ohm: 5 V rms.

A+B OPERATION

Amplifier: bandwidth and deflection factors are unchanged, channel B may be inverted for A—B operation.

Differential (A—B) Common-Mode: CMR is at least 40 dB from dc to 5 MHz decreasing to 26 dB at 50 MHz. Common mode signal amplitude equivalent to 12 cm with one vernier adjusted for optimum rejection.

VERTICAL OUTPUT

AMPLITUDE: one division of vertical deflection produces approx 100 mV output (dc to 25 MHz in 1715A; dc to 50 MHz in 1725A).

CASCADED DEFLECTION FACTOR: 1 mV/div with both vertical channels set to 10 mV/div.

CASCADED BANDWIDTH: dc to 5 MHz with bandwidth limit engaged.

SOURCE RESISTANCE: approx 100 ohms.

SOURCE SELECTION: trigger source set to channel A selects channel A output, to channel B selects channel B output.

Table 1. Specifications (Cont'd)

MAIN TIME BASE

SWEEP

Ranges: 10 ns/div to 0.5 s/div (24 ranges) 1, 2, 5 sequence.

Accuracy

Main Sweep Time/Div	Accuracy (0°C to +55°C)	
	X1	X10
10 ns to 50 ns	±3%	±5%
100 ns to 20 ms	±2%	±3%
50 ms to 0.5 s	±3%	±3%

Vernier: continuously variable between all ranges; extends slowest sweep to at least 1.25 s/div. Vernier uncalibrated indicator lights when vernier is not in CAL position.

Magnifier: expands all sweeps by a factor of 10; extends fastest sweep to 1 ns/div.

TRIGGERING

Internal: dc to 100 MHz on signals causing 0.5 division or more vertical deflection, increasing to 1 division of vertical deflection at 300 MHz in all display modes. Triggering on line frequency is also selectable.

External: dc to 100 MHz on signals of 50 mV p-p or more increasing to 100 mV p-p at 300 MHz. Maximum input, ±250 V (dc + peak ac) at 1 kHz or less.

External Input RC: approx 1 megohm shunted by approx 15 pF.

TRIGGER LEVEL and SLOPE

Internal: at any point on the vertical waveform displayed.

External: continuously variable from +1.0 V to —1.0 V on either slope of the trigger signal, +10 V to —10 V in divide by 10 mode (÷10).

COUPLING: AC, DC, LF REJ, or HF REJ.

AC: attenuates signals below approx 10 Hz.

LF Reject: attenuates signals below approx 7 kHz.

HF Reject: attenuates signals above approx 7 kHz.

TRIGGER HOLDOFF: time between sweeps continuously variable, exceeding one full sweep from 10 ns/div to 50 ms/div.

DELAYED TIME BASE

SWEEP

Ranges: 10 ns/div to 20 ms/div (20 ranges) in 1, 2, 5 sequence.

Table 1. Specifications (Cont'd)

Accuracy (0°C to +55°C): same as main time base.
Magnifier (0°C to +55°C): same as main time base.

TRIGGERING

Internal: same as main time base except there is no Line Frequency triggering.

External: dc to 100 MHz on signals of 50 m V p-p or more, increasing to 100 m V p-p at 300 MHz. Maximum input, ±250 V (dc + peak ac) at 1 kHz or less.

External Input RC: approx 1 megohm shunted by approx 15 pF.

TRIGGER LEVEL and SLOPE

Internal: at any point on the vertical waveform displayed when in triggered mode.

External: continuously variable from +1.0 V to —1.0 V on either slope of the trigger signal, +10 V to —10 V in divide by 10 mode (÷10).

COUPLING: AC, DC, LF REJ, or HF REJ.

AC: attenuates signals below approx 10 Hz.

LF Reject: attenuates signals below approx 7 kHz.

HF Reject: attenuates signals above approx 7 kHz.

DELAY TIME RANGE: 0.5 to 10X Main Time/Div settings of 20 ns to 0.5 s (minimum delay 50 ns).

DIFFERENTIAL TIME MEASUREMENT ACCURACY

Main Time Base Setting	Accuracy (+15°C to +35°C)
50 ns/div to 20 ms/div	±(0.5% ±0.1% of full scale)
20 ns/div	±(1% ±0.2% of full scale)
50 ms/div to 0.5 s/div	±3%

DELAY JITTER: <0.005% (1 part in 20 000) of maximum delay in each step.

TIME INTERVAL (Δ TIME MODE)

TIME INTERVAL OUTPUT VOLTAGE: varies from 50 V to 100 mV full scale. Full scale output voltage can be determined by multiplying the number on the TIME/DIV dial by 10 V (e.g., 0.05 s, 0.05 ms, or 0.05 μs per div gives 0.5 V output full-scale).

ACCURACY (1715A or 1725A): measurement accuracy is the Time Interval Accuracy plus the external DVM accuracy.

Table 1. Specifications (Cont'd)

Main Time Base Setting	Accuracy (+20°C to +30°C)
100 ns/div to 20 ms/div	±0.5% of reading ±0.05% of fs
50 ns/div	±0.5% of reading ±0.1% of fs
20 ns/div*	±0.5% of reading ±0.2% of fs
50 ms/div to 0.5 s/div	±3%

*Starting after 60 ns of sweep.

ACCURACY (1715A or 1725A Opt 034/035)	
Main Time Base Setting	**Accuracy (+20°C to +30°C)**
100 ns/div to 20 ms/div	±0.5% of reading ±0.05% of fs
50 ns/div	±0.5% of reading ±0.06% of fs
20 ns/div*	±0.5% of reading ±0.15% of fs
50 ms/div to 0.5 s/div	±3%

*Starting after 60 ns of sweep.

Table 1. Specifications (Cont'd)

STABILITY (0°C to +55°C): short-term 0.005%. Temperature, ±0.03%/°C deviation from calibration temperature range.

X-Y OPERATION

BANDWIDTH

Y-Axis (channel A): same as channel A.
X-Axis (channel B): dc to >1 MHz.
DEFLECTION FACTOR: 5 mV/div to 5 V/div (10 calibrated positions) in 1, 2, 5 sequence.
PHASE DIFFERENCE BETWEEN CHANNELS: <3°, dc to 1 MHz.

INTENSITY MODULATION (Z-AXIS)

+8 V, ≥50 ns width pulse blanks trace of any intensity, usable to 20 MHz for normal intensities. Input R, 1 kΩ ±10%. Maximum input, ±10 V (dc + peak ac).

GENERAL

REAR PANEL OUTPUTS: Vertical Output, main and delayed gates, —0.7 V to +1.3 V capable of supplying approx 3mA.
CALIBRATOR: type, 1 kHz ±15% square wave; 3 V p-p ±1%, <0.1 μs rise time.

Table 2. General Characteristics

VERTICAL DISPLAY MODES

Channel A; channel B; channels A and B displayed alternately on successive sweeps (ALT); channels A and B displayed by switching between channels at approx 1 MHz rate with blanking during switching (CHOP); channel A plus channel B (algebraic addition); X-Y (channel A vs channel B).
POLARITY: channel B may be inverted, front panel pushbutton.

SIGNAL DELAY: input signals are delayed sufficiently to view leading edge of input pulse without advanced trigger.
INPUT COUPLING: selectable, AC or DC, 50 ohms (dc) or ground. Ground position disconnects input connector and grounds amplifier input.

TRIGGER SOURCE

Selectable from channel A, channel B, or Composite.

Table 2. General Characteristics (Cont'd)

CHANNEL A: all display modes triggered by channel A signal.

CHANNEL B: all display modes triggered by channel B signal.

COMPOSITE: all display modes triggered by displayed signal.

HORIZONTAL DISPLAY MODES

Main, main intensified, delayed, mixed, X-Y, and mag X10. In main intensified, mixed, and delayed modes, selectable delta time with channel A start or channel B start time interval measurements are available.

TRIGGERING MAIN SWEEP

Normal: sweep is triggered by internal or external signal.

Automatic: bright baseline displayed in absence of input signal. Triggering is same as normal above 40 Hz.

Single: in Normal mode, sweep occurs once with same triggering as normal, reset pushbutton arms sweep and lights indicator; in Auto mode, sweep occurs once each time Reset pushbutton is pressed.

DELAYED SWEEP

Starts After Delay: delayed sweep automatically starts at the end of delay period.

Trigger: with delayed trigger level control out of detent (starts after delay) delayed sweep is triggerable at end of delay period.

MAIN INTENSIFIED

DELAYED SWEEP: intensifies that part of main time base to be expanded to full screen in delayed time base mode. Stop control adjusts position of intensified portion of sweep. Rear panel intensity ratio control sets relative intensity of brightened segment.

ΔTIME MODE: intensifies two parts of main time base to be expanded to full screen in delayed time base mode. "START" control positions the first intensified portion of the sweep: "STOP" control positions the second intensified portion of the sweep. Rear panel intensity control sets relative intensity of brightened segments.

TIME INTERVAL (ΔTIME MODE)

FUNCTION: measures time interval between two events on channel A (channel A display); between

Table 2. General Characteristics (Cont'd)

two events on channel B (channel B display); or between two events starting from an event on either channel A or B and ending with an event on either channel A or B (alternate display).

MIXED TIME BASE

Dual time base in which the main time base drives the first portion of sweep and the delayed time base completes the sweep at the faster delayed sweep. Also operates in single sweep mode.

CATHODE-RAY TUBE and CONTROLS

TYPE: post accelerator, approx 20.5 kV accelerating potential, aluminized P31 phosphor.

GRATICULE: 8 x 10 div internal graticule. 0.2 subdivision markings on major horizontal and vertical axes. 1 div = 1 cm. Rear panel adjustment aligns trace with graticule. Internal flood gun graticule illumination.

BEAM FINDER: returns trace to CRT screen regardless of setting of horizontal, vertical, or intensity controls.

AUTO-FOCUS: automatically maintains beam focus with variations of intensity.

INTENSITY LIMIT: automatically limits beam current to decrease possibility of CRT damage. Circuit response time ensures full writing speed for viewing low duty cycle, fast rise time pulses.

REAR PANEL CONTROLS: astigmatism, pattern, main/delayed intensity ratio, and trace align.

GENERAL

POWER: 100, 120, 220, 240, —10% +5%, 48 to 440 Hz, 110 VA max.

WEIGHT: net, 12.9 kg (28.5 lb); shipping, 17.9 kg (39.5 lb).

OPERATING ENVIRONMENT: temperature, 0°C to +55°C (+32°F to +130°F); humidity, to 95% relative humidity at +40°C (+104°F); altitude, to 4600 m (15 000 ft); vibration, vibrated in three planes for 15 min. each with 0.254 mm (0.010 in.) excursion, 10 to 55 Hz.

DIMENSIONS: see outline drawing.

Table 2. General Characteristics (Cont'd)

NOTES:
1. DIMENSIONS ARE FOR GENERAL INFORMATION ONLY. IF DIMENSIONS ARE REQUIRED FOR BUILDING SPECIAL ENCLOSURES, CONTACT YOUR HP FIELD ENGINEER.

2. DIMENSIONS ARE IN MILLIMETRES AND (INCHES).