

SPECIFICATION

The electrical characteristics listed in Table 1-4 apply when the following conditions are met: (1) Adjustment of the instrument must have taken place at an ambient temperature between +20° and +30° C; (2) The instrument must be allowed a 30-minute warm-up period; (3) All specifications are valid at an ambient temperature of 0° to +50° C, unless otherwise stated; (4) All specifications are valid in Full Scan (0.9 cm/div) and Reduced Scan (0.45 cm/div) modes, unless otherwise stated; (5) The instrument must be in an environment that meets the limits described in Table 1-5.

Any applicable conditions not listed above are expressly stated as part of that characteristic.

TABLE 1-4
Electrical Characteristics

Characteristic	Performance Requirement
VERTICAL SYSTEM	
Deflection Factor	Compatible with all 7000-series plug-in units.
Difference Between Vertical Compartments	1% or less.
Low-Frequency Linearity	0.1 div or less compression or expansion of a center-screen 2-div display positioned anywhere vertically within graticule area.
Bandwidth	Varies with plug-in unit selected. See 7834 Oscilloscope Vertical Systems Specification, Table 1-7.
Isolation Between Vertical Compartments	
All Vertical Modes	At least 100:1 from dc to 150 MHz and at least 30:1 from 150 MHz to 400 MHz.
Delay Line	Permits viewing the leading edge of triggering signal. NOTE <i>Not all 7850-series time-base units can display the leading edge of the trigger signal in the 7834. Refer to Tektronix Products catalog under the specific time-base unit for recommended mainframe use.</i>
Vertical Display Modes	Selected by front-panel VERTICAL MODE switch.
LEFT	Left vertical-unit displayed.
ALT	Display alternates between left and right vertical units.
ADD	Display shows algebraic sum of left and right vertical units.
CHOP	Display chops between left and right vertical units.

TABLE 1-4 (CONT.)
Electrical Characteristics

Characteristic	Performance Requirement
RIGHT	Right vertical-unit displayed.
Chopped Mode	
Repetition Rate	1 MHz within 20%.
VERT TRACE SEPARATION (B)	Positions "B" trace at least 4 div above and below "A" trace, when 7834 operates in dual-sweep mode.

HORIZONTAL SYSTEM

Deflection Factor	Compatible with all 7000-series plug-in units.
Difference Between Horizontal Compartments	1% or less.
Fastest Calibrated Sweep Rate	1 ns/div.
Horizontal Display Mode	Selected by front-panel HORIZONTAL MODE switch.
A	A horizontal unit displayed.
ALT	Display alternates between A and B horizontal units.
CHOP	Display chops between A and B horizontal units.
B	B horizontal unit displayed.
Chopped Mode	
Repetition Rate	200 kHz within 20%.
Phase Shift Between Vertical and Horizontal Deflection Systems	2° or less from dc to at least 35 kHz.
With Option 2 (B HORIZ Compartment Only)	2° or less from dc to 1 MHz.
Bandwidth (7834 Horizontal Only with 10 Div Reference)	From dc to at least 1 MHz.
With Option 2 (B HORIZ Compartment Only)	From dc to at least 1 MHz.

TRIGGER SYSTEM

A and B TRIGGER SOURCE	Selected by front-panel switches.
VERT MODE	From vertical unit selected by VERTICAL MODE switch; except that in CHOP mode signals are added algebraically.
LEFT VERT	From left vertical unit only.
RIGHT VERT	From right vertical unit only.

TABLE 1-4 (CONT.)
Electrical Characteristics

Characteristic	Performance Requirement
CALIBRATOR	
Waveshape	Square wave.
Polarity	Positive going with baseline near ground.
Source Impedance	450 Ω .
Output Voltage	(Selected by front-panel CALIBRATOR switch.)
Into 100 k Ω or greater	40 mV, 0.4 V, 4 V.
Into 50 Ω	4 mV, 40 mV, 0.4 V.
Output Current	40 mA available through CALIBRATOR output with optional BNC-to-Current Loop adapter. CALIBRATOR switch must be set to 4 V for calibrated output.
Amplitude Accuracy (P-P Voltage)	Within 1%.
Repetition Rate	1 kHz within 0.25%.
Duty Factor	49.8 to 50.2%.
Rise Time and Fall Time	250 ns or less into 100 pF or less.
SIGNAL OUTPUTS	
+SAWTOOTH OUT	
Source	A HORIZ time-base unit or B HORIZ time-base unit.
Polarity	Positive going with baseline at 0 V within 1 V into 1 M Ω .
Output Voltage	
Rate of Rise	
Into 50 Ω	50 mV/unit of time selected by time-base unit time/div switch, within 15%; 100 ns/div max.
Into 1 M Ω	1 V/unit of time selected by time-base unit time/div switch, within 10%; 1 μ s/div max.
Output Resistance	Approximately 950 Ω .

TABLE 1-4 (CONT.)
Electrical Characteristics

Characteristic	Performance Requirement
+ GATE OUT	
Source	A HORIZ time-base unit or B HORIZ time-base unit.
A Gate	Derived from the A HORIZ time-base unit main gate.
B Gate	Derived from the B HORIZ time-base unit main gate.
Dly'd Gate	Derived from the A HORIZ time-base unit delayed gate.
Polarity	
A or B Gate	Positive going with baseline at 0 V within 1.0 V (into 1 M Ω).
A Dly'd Gate	Positive level when A time-base delayed sweep or B sweep is enabled. 0 V within 1.0 V (into 1 M Ω) when sweeps are disabled. Output is always positive when no plug-in is used or plug-in does not provide delayed gate.
Output Voltage	
Into 50 Ω	0.5 V within 10%.
Into 1 M Ω	10 V within 10% (up to 1 μ s/div).
Rise Time Into 50 Ω	20 ns or less.
Output Resistance	Approximately 950 Ω .
VERT SIG OUT	
Source	Selected by A TRIGGER SOURCE switch.
Output Voltage	Same as A TRIGGER SOURCE.
Into 50 Ω	25 mV/div of vertical deflection within 25%.
Into 1 M Ω	0.5 V/div of vertical deflection within 25%.
Bandwidth Into 50 Ω	Varies with vertical plug-in selected; see 7834-Series Oscilloscope Vertical Systems Specification, Table 1-7.
DC Centering	0 V within 1 V into 1 M Ω .
Aberrations	15% or less p-p within 50 ns of step.
Output Resistance	Approximately 950 Ω .

TABLE 1-4 (CONT.)
Electrical Characteristics

Characteristic	Performance Requirement
Z-AXIS SYSTEM	
External Z-Axis Input	
Polarity and Sensitivity	Positive 2 V provides complete blanking from maximum-intensity condition; negative 2 V provides complete unblanking from minimum-intensity condition.
Low-Frequency Response	To dc.
Input Resistance	Approximately 470 Ω .
Input Capacitance	Less than 50 pF.
Open-Circuit Voltage	Approximately 0 V.
Maximum Input Voltage	Within 15 V (dc plus peak ac).
Maximum Repetition Rate	1 MHz.
READOUT DISPLAY	
Readout Modes	
FREE RUN	Selected by front-panel switch.
Storage Mode	
NON-STORE	Continuously displayed.
BISTABLE or VAR PERSIST	Continuously displayed, except turns off during erase cycle.
FAST BISTABLE or FAST VAR PERSIST	Continuously displayed, except turns off at beginning of erase cycle or at initiation of single sweep reset until end of transfer cycle. Also, turns off when displayed time base operates in other than single-sweep mode and MULTI TRACE DLY control is not in detent.
SAVE	Displayed for approximately 1 s after save mode is entered, then turns off.
GATED	
Storage Mode	
NON-STORE	One frame of readout is provided at end of displayed sweep.
BISTABLE	Continuously displayed except turns off from beginning of erase cycle until end of first displayed sweep.

TABLE 1-4 (CONT.)
Electrical Characteristics

Characteristic	Performance Requirement
VAR PERSIST	One frame of readout is provided at the end of displayed sweep. Erase cycle inhibits readout display.
FAST BISTABLE	Continuously displayed except turns off at beginning of erase cycle, or at initiation of single-sweep reset until end of transfer cycle. Also, turns off when displayed time base operates in other than single sweep mode and when MULTI TRACE DLY control is not in detent.
FAST VAR PERSIST	One frame of readout is provided in end of transfer cycle; turns off when displayed time base operates in other than single sweep mode and when MULTI TRACE DLY control is not in detent.
SAVE	
BISTABLE or FAST BISTABLE	Displayed for approximately 1 s after save mode is entered, then turns off.
VAR PERSIST	Allows one frame of readout to be displayed at end of displayed sweep.
FAST VAR PERSIST	Allows one frame of readout to be displayed at end of transfer cycle.
Character Height	
Full Scan	0.35 div to 0.5 div.
Reduced Scan	at least 0.2 div.
DISPLAY	
Cathode Ray Tube	
Graticule	
Type	Internal; illuminated with variable edge lighting.
Area	
Full Scan	8 x 10 div; 0.9 cm/div.
Reduced Scan	8 x 10 div; 0.45 cm/div centered on faceplate.
Phosphor	P31.
Stored Vertical and Horizontal Resolution in VAR PERSIST and VAR PERSIST FAST	
Full Scan	10 lines/div.

TABLE 1-4 (CONT.)
Electrical Characteristics

Characteristic	Performance Requirement
High Voltage	
Overall Accelerating Voltage	Approximately 10 kV (approximately 12 kV in reduced scan).
Geometry	Within 0.1 div of vertical and horizontal graticule lines.
BEAMFINDER	Actuating BEAMFINDER limits display to within graticule area.

STORAGE

Stored Writing Speed	
Full Scan (Center 6 x 8 div at 0.9 cm/div)	
FAST VAR PERSIST	300 div/ μ s (270 cm/ μ s).
FAST BISTABLE	50 div/ μ s (45 cm/ μ s).
VAR PERSIST	2 div/ μ s (1.8 cm/ μ s).
BISTABLE	0.03 div/ μ s (0.027 cm/ μ s).
Reduced Scan (Center 8 x 10 div at 0.45 cm/div)	
FAST VAR PERSIST	5,500 div/ μ s (2,500 cm/ μ s).
FAST BISTABLE	776 div/ μ s (350 cm/ μ s).
VAR PERSIST	12 div/ μ s (5.4 cm/ μ s).
BISTABLE	0.2 div/ μ s (0.09 cm/ μ s).
Stored View Time	
BISTABLE and FAST BISTABLE	At least 30 minutes (SAVE INTENSITY at MIN).
VAR PERSIST and FAST VAR PERSIST	30 s or more at maximum persistence.
AUTO ERASE VIEW TIME	
Minimum	Less than 1 s.
Maximum	Greater than 4 s.

REMOTE CONNECTORS & SWITCHES

CONTROL ILLUMINATION	High, medium and off. (Three position switch located on rear of instrument).
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TABLE 1-4 (CONT.)
Electrical Characteristics

Characteristics	Performance Requirement
REMOTE RESET INPUT	Input for reset of single-sweep function of time-base units installed in A and B HORIZ compartments (compatible time-base units only).
Signal Required	Switching from high level (+15 V to +10 V; sink less than 40 μ A) to low level (+0.5 V to -15 V; sink less than 10 mA), in less than 1 ms, resets the sweep.
Minimum Pulse Width	10 μ s at 50% amplitude points.
Maximum Input Voltage	+ or -15 V (dc plus peak ac).
PROBE POWER	2 probe power connectors.
REMOTE STORAGE GATE INPUT	Allows remote operation of high speed transfer. Low- to high-level transition enables High Speed Target to receive information to be stored. High-to-low transition initiates transfer from High Speed Target to Storage Target.
Signal Required	TTL voltage compatible.
Rise Time	1 μ s or less.
Fall Time	1 μ s or less.
Minimum Pulse Width	50 ns at 50% amplitude.
Input Resistance	Greater than 15 k Ω from -0.6 to +5 V input.
Input Capacitance	Approximately 100 pF.
Open Circuit Voltage	Approximately 0 V.
Maximum Input Voltage	+ or -15 V (dc plus peak ac)
REMOTE ERASE INPUT	Allows remote erasure of stored display. High-to-low transition initiates an erase cycle when in a storage mode.
Signal Required	TTL voltage compatible.
Rise Time	1 ms or less.
Fall Time	10 μ s or less.
Minimum Pulse Width	1 ms at 50% amplitude.
Input Resistance	Greater than 27 k Ω .
Input Capacitance	Approximately 100 pF.

TABLE 1-4 (CONT.)
Electrical Characteristics

Characteristic	Performance Requirement
Open Circuit Voltage	
In Nonstore Mode	Approximately 0 V.
In Store Mode	Approximately +5.6 V.
Max Input Voltage	+ or -15 V (dc plus peak ac).
REMOTE SAVE INPUT	Allows remote control of save mode. High state allows control from front panel. Low state holds storage circuitry in save mode when in storage mode.
Signal Required	TTL voltage compatible.
Rise Time	1 ms or less.
Fall Time	1 ms or less.
Open Circuit Voltage	Approximately 2.5 V.
Input Resistance	Approximately 10 k Ω .
Input Capacitance	Approximately 100 pF.
Maximum Input Voltage	+ or -15 V (dc plus peak ac).

POWER SOURCE

Voltage Range (ac, rms)	Selected by rear-panel LINE VOLTAGE SELECTOR switch.
115 V Nominal	From 90 V to 132 V.
230 V Nominal	From 180 V to 250 V.
Line Frequency	From 48 Hz to 440 Hz.
Maximum Power Consumption	215 W.
Maximum Current	
90 V Input	3.3 A at 60 Hz.
180 V Input	1.7 A at 60 Hz.
Fuse Data (F1200)	See Electrical Parts list.

TABLE 1-5
Environmental

Characteristic	Information
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NOTE

This instrument will meet the electrical characteristics given in the Performance Requirement column of Table 1-4 over the following environmental limits.

Temperature Range	
Operating	0° to +50° C.
Nonoperating	-55° to +75° C.
Altitude	
Operating	15,000 feet.
Nonoperating	Test limit 50,000 feet.
EMC (Electro Magnetic Compatibility) in accordance with MIL-STD-462A (when equipped with Option 3)	<p>NOTE</p> <p><i>Any unused plug-in compartments must be covered with a blank plug-in panel (EMC shielded) in order to meet EMC specifications. See Instrument Options section for additional information.</i></p>
Radiated Interference	Interference radiated from the instrument under test within the given limits from 150 kHz to 1000 MHz.
Conducted Interference	Interference conducted out of the instrument under test through the power cord within the given limits from 150 kHz to 25 MHz.
Transportation (packaged instrument, without plug-ins)	Qualifies under National Safe Transit Committee test procedure 1A, Category 11.

TABLE 1-6

Physical

Characteristic	Information
Ventilation	Safe operating temperature maintained by dc fan. Automatic resetting thermal cutout protects instrument from overheating.
Warm-up Time	30 minutes for rated accuracy.
Finish	Anodized front- and rear-panel with blue-vinyl painted aluminum cabinet.
Overall Dimensions (measured at maximum points); see fig. 1-1 for dimensional drawing.	
Height	13.6 inches 34.5 cm
Width	12.0 inches 30.5 cm
Length	23.2 inches 58.9 cm
Net Weight (Instrument Only)	37.5 lbs. 17.0 kg

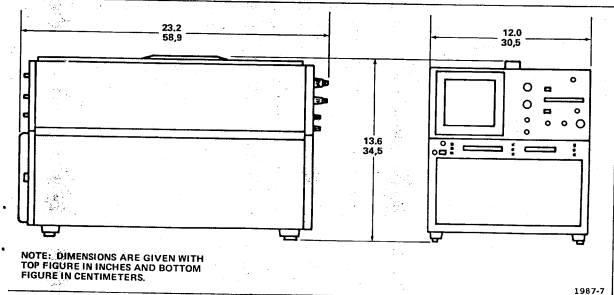


Figure 1-1. 7834 dimensional drawing.