Characteristics

Electrical Characteristics

The electrical characteristics listed in Table 1-1 are valid when the CT-4 is used with a calibrated oscilloscope and a calibrated A6312/A6302/A6302XL current probe with the AM503X amplifier, TCP202 current probe, or P6021 current probe. The instruments must be operated within the environmental limitations stated in Table 1-3.

Table 1-1
Electrical Characteristics

Characteristic	Performance Requirement	Supplemental Information
TCP202 or A6302/A6312 and AM503X	0.5 Hz to 20 MHz	
A6302XL and AM503B or AM5030	0.5 Hz to 17 MHz	
P6021	120 Hz to 20 MHz	
TCP202/A6312/A6302/ A6302XL and optional DC Bucking Coil	1 Hz to 1 MHz	
Transient Response		
Current Ranges with A6312/A6302/A6302XL and AM503/A/B or AM5030 20:1 Receptacle		20 mA to 100 A/div
1000:1 Receptacle		1 A/div to 5,000 A/div
TCP202 20:1 Receptacle		200 mA/div to 100 A/div
1000:1 Receptacle		10 A/div to 5,000 A/div
P6021 20:1 Receptacle		20 mA/div to 20 A/div
1000:1 Receptacle		1 A/div to 1,000 A/div
Accuracy	±4% with less than 20 A dc current present.	(In addition to system accuracy.) Accuracy deteriorates with higher dc current; see Fig. 2-11.
Maximum Continuous Input Current (25°C ambient)	2,000 A peak-to-peak at 1 kHz (sinewave).	Derated with frequency (see Figs. 2-3 through 2-6). Calculated from the magnetic materials. Tested to 500 A p-p.

Table 1-1 (cont.)
Electrical Characteristics

Characteristic	Performance Requirement	Supplemental Information
Maximum Pulse Current	20,000 A peak, not to exceed 50% duty factor	Calculated from the magnetic materials. Derated with repetition rate and pulse duration. Maximum pulse limitation of the associated current probe must also be considered (with respect to the stepped-down amplitude). See Section 2.
Maximum Ampere-Second Product (CT-4 Only)		5 Ampere-Seconds. Calculated from the magnetic materials. Refer to the probe manuals for system limitations.
Insertion Impedance		Typically 20 $\mu\Omega$ at 60 Hz, increasing to 30 mΩ at 1 MHz. See Fig. 2-9. Dependent on conductor placement in the sense loop cross-sectional area. Review circuit under test for adverse effects.
Maximum Input Voltage	1,000 V CAT III with uninsulated conductor	3,000 V peak, < 11% duty factor, < 100 msec period
With HV Insulation included	10 kV (rms) or 14 kV (peak).	
External Magnetic Field Susceptibility		Typically $\pm$35 mA on the output signal when the probe is in an external field of 1 Gauss (20:1 receptacle).
Voltage Feedthrough Susceptibility		Typically < 3 mA/V to 5 MHz, < 30 mA/V at 20 MHz.
CT-4 With DC Bucking Coil (optional)		
Maximum DC Bucking Current		300 ampere turns. (300 mA $\times$ 1,000 turns.)

Table 1-1 (cont.)
Electrical Characteristics

Characteristic	Performance Requirement	Supplemental Information
CT-4 With Optional DC Bucking Coil (cont.)		
Power Supply Requirement		1 V for 20 A bucking, 300 mA 15 V maximum. (1,000 turns.)
External Magnetic Field Susceptibility		Typically 500 mA/Gauss. May be improved by selecting physical placement.

Table 1-2
Physical Characteristics

Characteristic	Information
Dimensions	
CT-4	10.5 inches L × 2.2 inches W × 9.7 inches H (includes handle).
DC Bucking Coil (optional)	
Coil	3 inches L × 3.5 inches W × 1.6 inches H.
Base	5.4 inches L × 3.6 inches W × 1.7 inches H.
Maximum Conductor Size	
CT-4 Only	1.5 inch × 1.6 inch rectangle.
with DC Bucking Coil	0.89 inch × 1.6 inch rectangle.
Weight	
CT-4	4 lbs, 4 oz.
DC Bucking Coil	2 lbs, 5 oz.

Table 1-3
Environmental Characteristics

Characteristic	Information
Temperature	
Non-Operating	
In Carrying Case	−40°C to +60°C
CT-4 Only	−55°C to +75°C.
Bucking Coil	−40°C to +60°C.
Operating	0°C to +50°C.
Altitude	
Non-Operating	To 15,240 m (50,000 ft)
Operating	4,572 m (15,000 ft) 600 V CAT III or 1,000 V CAT II 2,000 m (6,562 ft) 1,000 V CAT III
Vibration (Non-Operating)	15 minutes along each axis to 0.015 inch total displacement with frequency varied from 10 Hz to 55 Hz to 10 Hz in 1 minute cycles. Three minutes at any resonant point or at 50 Hz (probe locked).
Shock (Non-Operating)	30 g's, one-half sine, 11 ms duration, 3 shocks per axis (with probe locked). Per Tek Standard 062-2858-00, Class 5.
Packaged Product Vibration and Shock	The packaged product qualifies under the National Safe Transit Association's Pre-Shipment Test Procedures, Project 1A-B-1. Tek Standard 062-2858-00.

Table 1-4
Certifications and compliances

EC Declaration of Conformity – Low Voltage	Compliance was demonstrated to the following specification as listed in the Official Journal of the European Communities: Low Voltage Directive 73/23/EEC as amended by 93/68/EEC. EN 61010-1:1993/A2 Safety requirements for electrical equipment for measurement, control, and laboratory use. EN 61010-2-032:1995 Particular requirements for hand-held current clamps for electrical measurements and test.