

EZCT-10

current transformer test set



Vanguard Instruments Company, Inc.
www.vanguard-instruments.com



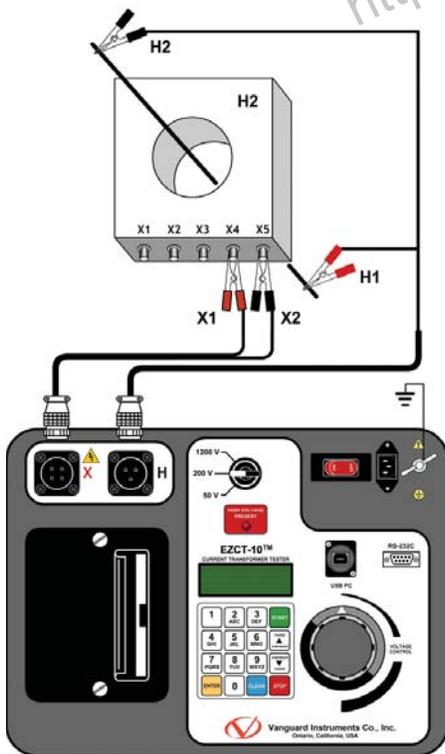
EZCT-10

current transformer test set

The EZCT-10 is a microprocessor-based, current-transformer test set. This rugged and portable test set can perform the current transformer (CT) excitation, CT current-ratio, and winding polarity tests. Current transformers can be tested in their field-mounted configuration, eliminating the need to remove bushings or current transformers from the host equipment.

The EZCT-10 uses a heavy-duty transformer to perform the CT excitation test. It is capable of outputting 50 Vac at 10A and 200 Vac at 10A.

EZCT-10 connections



Excitation Test

The CT excitation test is performed using the ANSI/IEEE C57.12.1, IEC 60044-1 test method. The EZCT-10 applies an AC variable test voltage (up to 1,200 Vac) to the CT's secondary windings. The EZCT-10 records and displays the test voltage and excitation current applied to the current transformer during the excitation test. Once tests are completed, up to 10 excitation curves and knee-point voltages of the tests can be plotted on the built-in thermal printer. IEEE-30, IEEE-45, ANSI/IEC 60044-1 (10/50) knee point voltages are also calculated and printed on the test report.

User Interface

The EZCT-10 features a back-lit LCD screen (4 lines by 20 characters) that is viewable in both bright sunlight and low-light levels. A rugged, alpha-numeric, membrane keypad is used to enter test information and to control the unit's functions, and a voltage control knob is used to control the variable test voltage output. The test voltage range (50V at 10A, 200V at 10A, 1,200V at 1.5A) is selected with a switch on the control panel.

Built-in Thermal Printer

A built-in 4.5-inch wide thermal printer can print the current transformer test report and plot the excitation curves.

CT Ratio and Polarity Tests

The EZCT-10 determines the CT current-ratio using the ANSI/IEEE C57.12.90 measurement method. A test voltage is applied on the CT's X terminals and the induced voltage is measured across the CT's H1 and H2 terminals. The current-ratio is displayed on the screen and stored in memory. The current-ratio measuring range is from 0.8 to 5,000. Winding polarity is displayed as a "+" sign (in-phase) or "-" sign (out-of-phase) and is annotated with the phase angle in degrees.

Internal Test Record Storage

The EZCT-10 can store up to 128 current-transformer test records in Flash EEPROM. Each test record may contain up to 10 excitation curves, polarity, and current-ratio test data sets. Test records can be recalled and printed on the built-in thermal printer.

Computer Interface

The EZCT-10 can be used as a stand-alone unit or can be computer-controlled via the built-in RS-232C or USB interfaces. Windows®-based Current Transformer Analysis software is provided with each EZCT-10. This software can be used to retrieve test records from the EZCT-10 and can also be used to run CT tests from the PC. Tabulated test records can be exported in PDF, Excel, and XML formats for further analysis.

ordering information

Part number EZCT-10	EZCT-10, cables, and PC software
Part number EZCT-10-CASE	EZCT-10 shipping case
Part number Paper-TP4	thermal printer paper

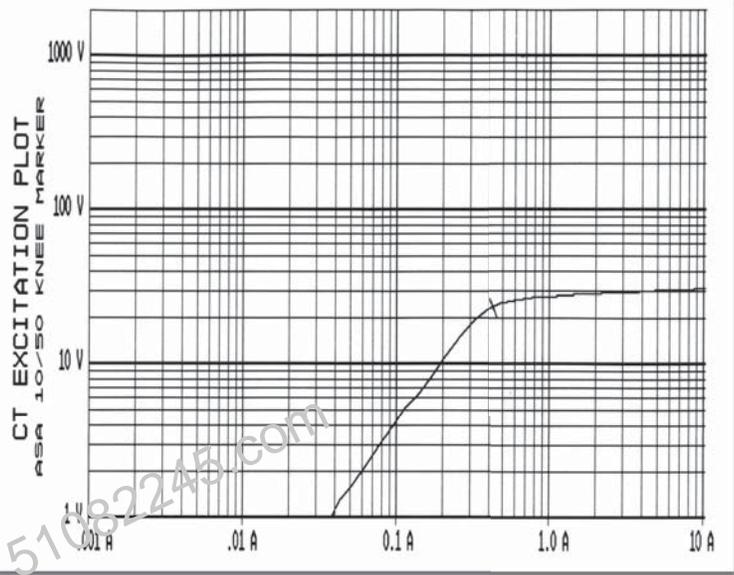
EZCT-10 Controls & Indicators



EZCT-10 in India

EZCT-10 thermal printer output

REC NUMBER 1		
CT EXCITATION TEST RESULTS		
DATE: 04/09/12 TIME: 08:53:45		
COMPANY: VANGUARD INSTRUMENTS		
STATION: LAB		
CIRCUIT: NA		
MFR: VIC		
MODEL: CT		
S/N: 94169		
COMMENTS:		
OPERATOR: VN		
TEST NUMBER: 1		
ASA 10/50 V _{kp} :	23.8	VOLTS
ASA 10/50 I _{kp} :	0.426	AMPS
IEEE 30° V _{kp} :	22.4	VOLTS
IEEE 30° I _{kp} :	0.372	AMPS
IEEE 45° V _{kp} :	18.9	VOLTS
IEEE 45° I _{kp} :	0.304	AMPS
NAMEPLATE RATIO:	40.000	
MEASURED RATIO:	40.041	
PERCENT ERROR:	0.10	%
POLARITY:	+	PH
PHASE ANGLE:	0.07	DEGS
EXCITATION VTG:	0.184	VOLTS
EXCITATION CUR:	0.184	AMPS

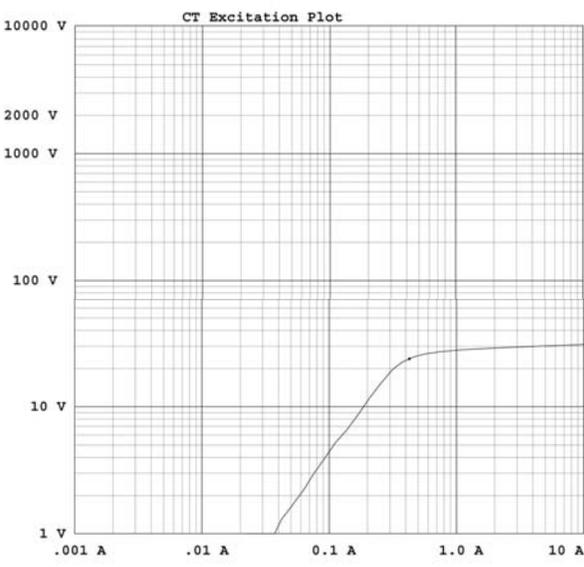


EZCT-10 desktop printer output



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FILENAME: EZCT10 10A test.tst-ecxt		MFR: VIC	TEST # 1:		
DATE: 04/09/12 08:53:45		MODEL: CT	TEST NOTES:		
COMPANY: VANGUARD INSTRUMENTS		SN: 94169	KNEE TYPE: IEC 10/50		
STATION: LAB		OPERATOR: VN	FREQUENCY: 60 Hz		
CIRCUIT: NA		COMMENTS:			
IEEE 30	IEEE 45	IEC 10/50	NP-RATIO: 40/1.0	Ex V[Volts]: 9.700	Phase Angle: 0.00°
V _{kp} [Volts]: 22.37	V _{kp} [Volts]: 18.96	V _{kp} [Volts]: 23.81	M-RATIO: 40.041	Ex I[Amps]: 0.184	In Phase
I _{kp} [Amps]: 0.3730	I _{kp} [Amps]: 0.3054	I _{kp} [Amps]: 0.4273	% ERROR: 0.101		



POINT	CUR(A)	VTG(V)	Z(OHM)	POINT	CUR(A)	VTG(V)	Z(OHM)
1	0.0222	0.30	13.51	17	0.5792	26.20	45.23
2	0.0298	0.60	20.13	18	0.7556	27.20	36.00
3	0.0372	1.00	26.88	19	0.8824	27.50	31.17
4	0.0422	1.30	30.81	20	1.0088	28.10	25.81
5	0.0496	1.60	32.26	21	1.3920	28.50	20.47
6	0.0646	2.30	35.60	22	1.7376	28.80	16.57
7	0.0744	2.90	38.98	23	2.1378	29.10	13.61
8	0.0918	3.90	42.48	24	2.6326	29.40	11.17
9	0.1118	5.20	46.51	25	3.6842	29.70	8.06
10	0.1366	6.50	47.98	26	4.6960	30.10	6.41
11	0.1690	8.70	51.48	27	6.2312	30.40	4.88
12	0.2062	11.60	56.26	28	8.3802	30.70	3.66
13	0.2534	15.20	59.98	29	10.1194	31.00	3.06
14	0.3156	19.70	62.42				
15	0.3778	22.60	59.82				
16	0.4722	24.90	52.73				

POINT	CUR(A)	VTG(V)	Z(OHM)	POINT	CUR(A)	VTG(V)	Z(OHM)
1	0.0100	0.14	13.51	12	2.0000	29.00	14.50
2	0.0200	0.27	13.51	13	4.0000	29.82	7.46
3	0.0400	1.17	29.20	14	5.0000	30.16	6.03
4	0.0500	1.62	32.37	15	8.0000	30.65	3.83
5	0.0800	3.22	40.27	16	10.0000	30.98	3.10
6	0.1000	4.43	44.33				
7	0.2000	11.11	55.58				
8	0.4000	23.14	57.85				
9	0.5000	25.24	50.48				
10	0.8000	27.31	34.13				
11	1.0000	27.84	27.84				

EZCT Software Version: 5.5
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Computer control and analysis with included EZCT Software

The EZCT-10 comes with the Vanguard EZCT PC software. The EZCT software can be used to test a current transformer directly from a PC, create and transfer test plans, retrieve test records from the EZCT-10, and export test records in PDF, Excel, and XML formats for further analysis.

EZCT-10 specifications

type	portable current transformer test set
physical specifications	17"W x 12½"H x 12"D (42.7 cm x 32cm x 26.9 cm); Weight: 55 lbs (25 kg)
input power	100 – 120 Vac or 200 – 240 Vac (factory pre-set), 50/60 Hz
measurement method	ANSI/IEEE C57.12.90, IEC 60044-1 and ANSI/IEEE C57.13.1
output test voltages	0 – 50 Vac @ 10A max; 0 – 200 Vac @ 10A max; 0 – 1200 Vac @ 1.5A max (5 min on, 10 min off)
voltage reading range	0 – 1,250 Vac; Accuracy: ±1.0% of reading, ±0.5 volt
current reading range	0 – 10A; Accuracy: ±1.0% of reading, ±0.02A
current ratio range	0.8 – 99: ±0.5%, 100 – 999: ±1.0%, 1,000 – 5,000: ±2%
phase angle measurement	0 – 360 degrees; Accuracy: ±1.0 degree
display	back-lit LCD Screen (20 characters by 4 lines); viewable in bright sunlight and low-light levels
printer	built-in 4.5-inch wide thermal printer
computer interfaces	one RS-232C port, one USB port
pc software	Windows®-based software is included with purchase price
internal test record storage	stores 128 test records. Each test record may contain up to 10 excitation and ratio data sets
internal test header storage	stores 10 test header records
safety	Designed to meet UL 61010A-1 and CAN/CSA C22.2 No. 1010.1-92 standards
environment	Operating: -10°C to +50°C (+15°F to +122°F); Storage: -30°C to +70°C (-22°F to +158°F)
humidity	90% RH @ 40°C (104°F) non-condensing
altitude	2,000 m (6,562 ft) to full safety specifications
cables	one 20-foot X cable set, one 35-foot H cable set, power cord, one cable carrying duffel bag
options	transportation case
warranty	one year on parts and labor

NOTE : the above specifications are valid at nominal voltage and ambient temperature of +25°C (+77°F). Specifications are subject to change without notice.



Instruments designed and developed
by the hearts and minds of utility
electricians around the world

Vanguard Instruments Company, (VIC), was founded in 1991. Currently, our 28,000 square-foot facility houses Administration, Design & Engineering, and Manufacturing operations. From its inception, VIC's vision was, and is to develop and manufacture innovative test equipment for use in testing substation EHV circuit breakers and other electrical apparatus.

The first VIC product was a computerized circuitbreaker analyzer, which was a resounding success. It became the forerunner of an entire series of circuitbreaker test equipment. Since its beginning, VIC's product line has expanded to include microcomputer-based, precision micro-ohmmeters, single and three phase transformer winding turns-ratio testers, transformer winding-resistance meters, mega-ohm resistance meters, and a variety of other electrical utility maintenance support products.

VIC's performance-oriented products are well suited for the utility industry. They are rugged, reliable, accurate, user friendly, and most are computer controlled. Computer control, with innovative programming, provides many automated testing functions. VIC's instruments eliminate tedious and time-consuming operations, while providing fast, complex, test-result calculations. Errors are reduced and the need to memorize long sequences of procedural steps is eliminated. Every VIC instrument is competitively priced and is covered by a liberal warranty.



Vanguard Instruments Company, Inc.

1520 S. Hellman Avenue • Ontario, California 91761, USA
Phone 909-923-9390 • Fax 909-923-9391
www.vanguard-instruments.com