EZCT S2A

current transformer test set

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

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The EZCT S2A is Vanguard's third-generation, microprocessor-based, current transformer test set. The EZCT S2A can perform the current transformer (CT) excitation, CT current-ratio, and winding polarity tests automatically. The EZCT S2A automatically raises and lowers the excitation test voltage without any operator intervention. With up to 1500 Vac excitation test voltage available, the EZCT S2A can easily perform excitation tests on very large CT's.

Excitation Test

The CT excitation test is performed using the ANSI/IEEE C57.13.1, IEC 60044-1 test method. The test voltage range for the CT excitation test (50 Vac, 250 Vac, 500 Vac, or 1500 Vac) can be selected, and then the test voltage is raised and lowered automatically by the EZCT S2A. The test voltage and current data are collected and stored in the unit's internal memory. Up to 10 CT excitation and current-ratio tests can be stored in one test record. IEEE-30, IEEE-45, ANSI/IEC 60044-1 (10/50) knee point voltages are also calculated and printed on the test report. Once the test is completed, test results can be printed and excitation curves can be plotted on the built-in 4.5-inch wide thermal printer.

Thermal Printer

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

User Interface and Display

The EZCT S2A features a back-lit LCD screen (240 x 128 pixels) that is viewable in both bright sunlight and low-light levels. A rugged, alpha-numeric, membrane keypad is used to control the unit.

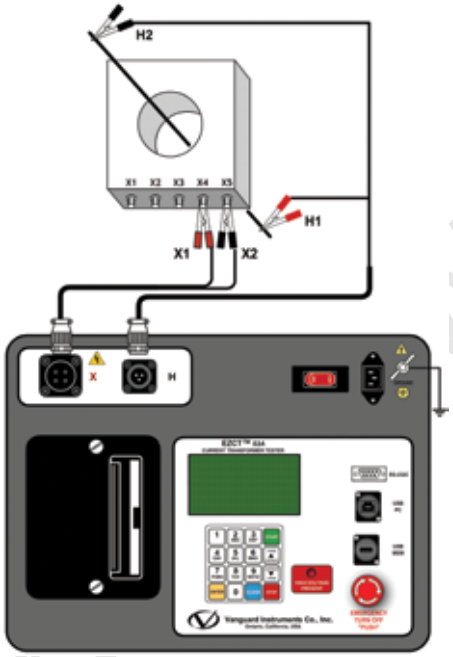
CT Ratio and Polarity Tests

The EZCT S2A determines the CT current-ratio using the ANSI/IEEE C57.12.90 measurement method. A test voltage is applied to the CT's secondary terminals and the induced voltage is measured through the CT's H1 and H2 terminals. The CT current-ratio and polarity are displayed on the screen and stored in memory. The current-ratio measuring range is from 0.8 to 5,000. The CT winding polarity is displayed as a "+" sign (in-phase) or a "-" sign (out-of-phase) and is annotated with the phase angle in degrees.

Test Record Header Information

The test record header information can include the company name, substation name, circuit ID, manufacturer, CT serial number, operator's name, and test record comments. In addition to the test record header, a 20-character test description for each test in the record can also be entered.

EZCT S2A *connections*



ordering information

Part number **EZCT S2A**	EZCT S2A, cables, and PC software
Part number **EZCT-S2A-CASE**	EZCT S2A shipping case
Part number **Paper-TP4**	thermal printer paper

EZCT S2A Controls & Indicators

Internal Test Record Storage

The EZCT S2A can store up to 140 test records in Flash EEPROM. Each test record may contain up to 10 excitation curves, current-ratio readings, and winding polarity readings. Test records can be recalled and printed on the built-in thermal printer.

External Data Storage

The EZCT S2A features a standard USB Flash drive interface that makes it very convenient to store and transfer test records and test plans. By plugging in a USB Flash drive, you can quickly transfer your test records and test plans between a computer and the EZCT S2A without the need to connect the unit to the computer.

Computer Interface

The EZCT S2A 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 S2A. This software can be used to retrieve test records from the EZCT S2A, create test plans, download test plans to the EZCT S2A, and can also be used to run CT tests from the PC. Tabulated test records can be exported in PDF, Excel, and XML formats.

Internal Test Plan Storage

The EZCT S2A can store up to 128 CT test plans in Flash EEPROM. A test plan defines the excitation test voltage and current selection, CT nameplate ratio, and CT winding terminal connection instructions for each test. Up to 10 test definitions can be stored in each test plan. The use of a test plan greatly simplifies the CT testing process since it also provides instructions for making the proper CT cable connections. Test plans can be created on the EZCT S2A itself or created on a PC and downloaded to the EZCT S2A via the unit's built-in RS-232C or USB port.

EZCT S2A and Tri-Phase at Eskom, South Africa

EZCT S2A *thermal printer output*

RECORD NUMBER 1

CT EXCITATION TEST RESULTS

DATE:04/10/12 TIME:14:18:06

COMPANY: VANGUARD INSTRUMENTS
STATION: LAB
CIRCUIT: NA
MFR: ABB
MODEL: CT NO 4905B60A01
S/N: 19945280
COMMENTS: PINETOPS NC USA
OPERATOR: VN

TEST NUMBER: 1

TESTED TAP: X1-X5

TST NOTE:

TEST VTG RANGE: 1500 V
TEST CUR RANGE: 1.2 A

IEC 10/50 Vkp: 641.8 VOLTS
IEC 10/50 Ikp: 0.0286 AMPS

IEEE 30° Vkp: 597.5 VOLTS
IEEE 30° Ikp: 0.0244 AMPS

IEEE 45° Vkp: 490.9 VOLTS
IEEE 45° Ikp: 0.0192 AMPS

NAME PLATE RATIO: 600:1
MEASURED RATIO: 599.63
PERCENT ERROR: 0.06 %
POLARITY: IN PHASE
PHASE ANGLE: + 0.02°
EXCITATION VTG: 401.0 VOLTS
EXCITATION CUR: 0.0162 AMPS

TEST NUMBER: 2

TESTED TAP: X1-X4

TST NOTE:

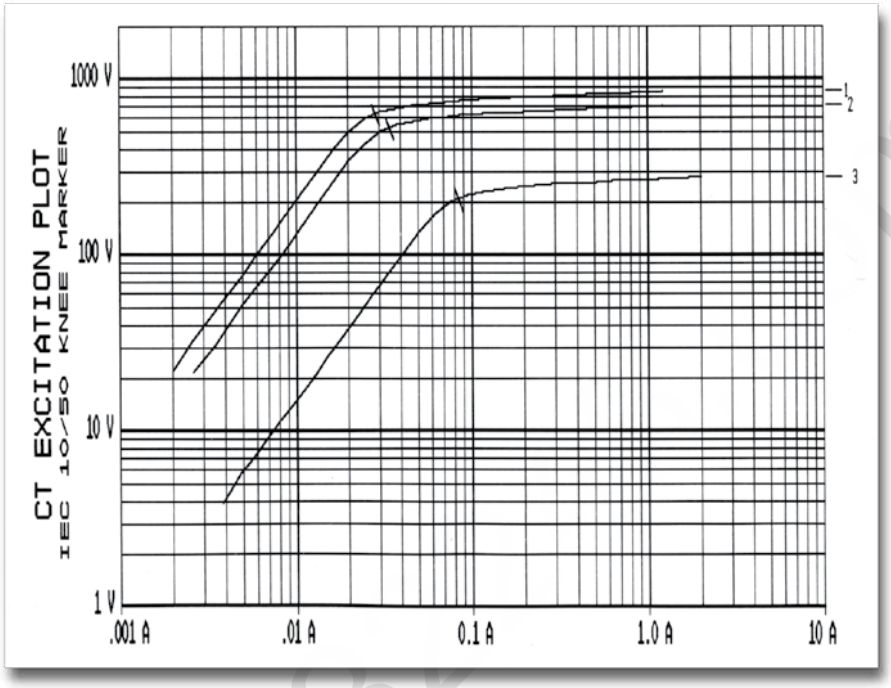
TEST VTG RANGE: 1500 V
TEST CUR RANGE: 1.2 A

IEC 10/50 Vkp: 533.5 VOLTS
IEC 10/50 Ikp: 0.0344 AMPS

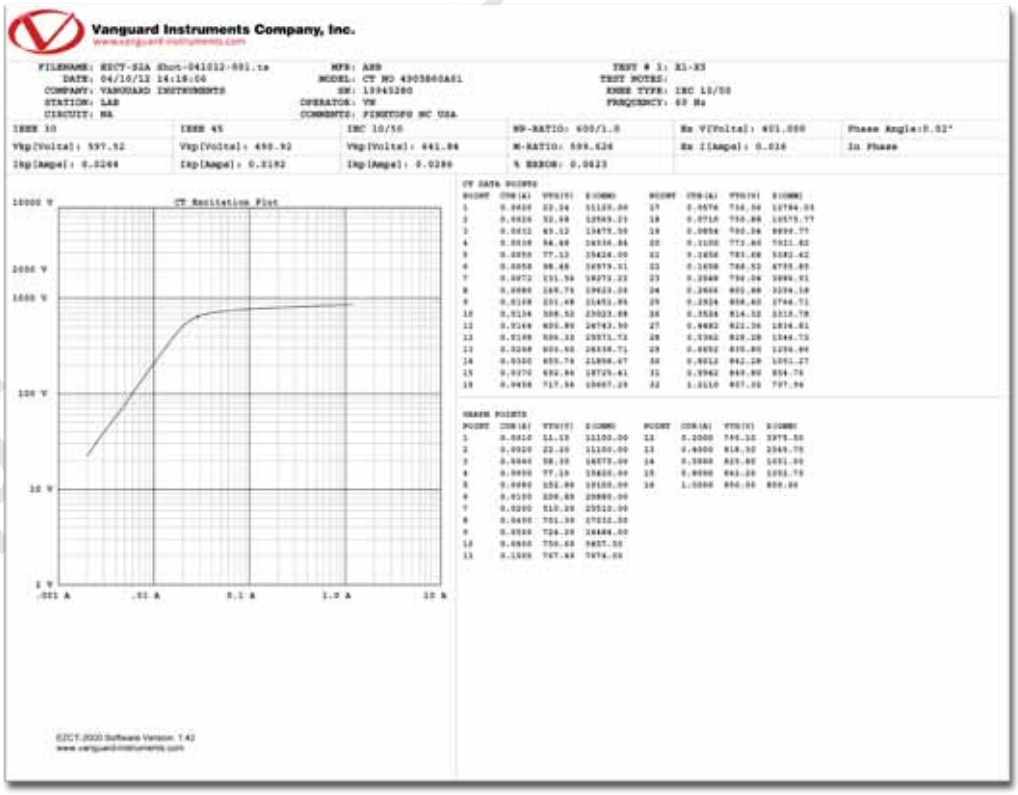
IEEE 30° Vkp: 496.6 VOLTS
IEEE 30° Ikp: 0.0296 AMPS

IEEE 45° Vkp: 402.6 VOLTS
IEEE 45° Ikp: 0.0230 AMPS

NAME PLATE RATIO: 500:1
MEASURED RATIO: 499.91
PERCENT ERROR: 0.02 %
POLARITY: IN PHASE
PHASE ANGLE: + 0.06°
EXCITATION VTG: 339.3 VOLTS
EXCITATION CUR: 0.0198 AMPS



EZCT S2A *desktop printer output*



Computer control and analysis with included EZCT-2000 Software

The EZCT S2A comes with the Vanguard EZCT-2000 PC software. The EZCT-2000 software can be used to test a current transformer directly from a PC, create and transfer test plans, retrieve test records from the EZCT S2A, and export test records in Excel format for further analysis.

EZCT S2A 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: 48 lbs (21 kg)
input power	100 – 120 Vac or 200 – 240 Vac (factory pre-set), 50/60 Hz
measurement method	ANSI/IEEE C57.12.90 and ANSI/IEEE C57.13.1 standards
output test voltages	0 – 50 Vac @ 10A max, 0 – 250 Vac @ 10A max, 0 – 500 Vac @ 5A max, 0 – 1500 Vac @ 1.2A max
voltage reading range	0 – 2,200 Vac; Accuracy: ±1.0% of reading, ±1 volt
current reading range	0 – 10A; Accuracy: ±1.0% of reading, ±0.02A
current ratio range	0.8 – 999: 0.1%, 1000 – 1999: 0.3%, 2000 – 5000: 1%
phase angle measurement	0 – 360 degrees; Accuracy: ±1.0 degree
display	Backlit LCD Screen (240 x 128 pixels; 114mm x 64mm); 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
external data storage	one USB Flash drive interface port (Flash drive not included)
pc software	Windows®-based CT Analysis software is included with purchase price
internal test record storage	stores 140 test records. Each test record may contain up to 10 sets of excitation, resistance and ratio data
internal test plan storage	stores 128 test plans. Each test plan can store 10 excitation test voltage and current settings
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	two 20-foot (6.10m) X cable sets, one 35-foot (10.69m) H cable set, power cord, one cable-carrying duffel bag
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.

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