EZCT-2000B

current transformer test set

Vanguard Instruments Company, Inc.
www.vanguard-instruments.com
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The EZCT-2000B is Vanguard’s third-generation microprocessor-based current transformer test set. Designed specifically for CT testing, the EZCT-2000B has the following outstanding features that can greatly increase productivity and save time during the commissioning stage:

- Performs CT excitation, current-ratio, polarity, and phase angle tests.
- Measures insulation resistance and winding resistance of the CT secondary windings.
- Measures the CT’s load burden.

The EZCT-2000B’s test leads can be connected to all the CT output terminals, and the complete CT test can be performed automatically without any operator intervention.

Excitation Test

The CT excitation test is performed using the ANSI/IEEE C57.13.1 test method. Test voltage ranges from 50, 300, 500, 1200, and 2000 Vac can be selected for the excitation test. The test voltage is raised and lowered automatically by the EZCT-2000B. The excitation test voltage and current data is collected and stored in the EZCT-2000B’s internal memory. Knee point voltages (ANSI 10/50, IEC 60044, IEEE-30, IEEE-45) are calculated and printed on the test report. All of the EZCT-2000B’s test leads can be connected to the CT output terminals (X1, X2, X3, X4 and X5), and there is no lead switching required during testing. This convenient arrangement allows for testing any of the 10 possible combinations of X1 to X5. Up to 10 excitation tests can be stored in one record. Once the test is completed, the test report and CT excitation curves can be printed on the built-in thermal printer.

CT Ratio and Polarity Tests

The CT current-ratio is determined using the ANSI/IEEE C57.12.90 measurement method. A test voltage is applied on any two terminals (X1 to X5) of the CT, and the induced voltage is measured through the H1 and H2 terminals of the CT. The CT current-ratio is displayed and also stored in memory. The current-ratio is measured 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. The CT current ratio error and phase displacement is also calculated based on the CT burden (or rated power) and rated current.

CT Burden Test

The EZCT-2000B can measure the CT’s secondary burden by injecting a 1A or 5A test current into the load. The CT burden measurements (Voltage, current, Cos φ, and burden impedance) are displayed on the screen and printed on the test report. This important test verifies the actual CT burden before putting the CT in service, thus avoiding any potential configuration conflicts.

Demagnetization

The EZCT-2000B automatically demagnetizes the CT under test when performing an excitation test.

ordering information

Part number EZCT-2000B
Part number EZCT-2000B-CASE
Part number Paper-TP4

EZCT-2000B, cables, and PC software
EZCT-2000B shipping case
thermal printer paper
CT Winding Insulation Resistance Test
The EZCT-2000B can also measure the insulation resistance of the CT’s secondary winding using a test voltage up to 1000 Vdc. The DC winding resistance reading range is from 2 to 500 Mega-ohms. The insulation resistance test results are displayed and printed on the report.

Current Source
The EZCT-2000B’s programmable current source (0-20A, 0-15Vac) can be used to verify CT loads. The on-time timer and output current are displayed on the LCD screen.

Test Record Header Information
Test record header information, including the company, substation name, circuit ID, manufacturer, mode, CT serial number, and the operator’s name, can be stored with each record. In addition to the test record header, a 20-character test description for each test in the record (10 tests per record) can also be entered.

User Interface and Display
The EZCT-2000B features a back-lit LCD screen (240 x 128 pixels) that is clearly viewable in both bright sunlight and low-light levels. An alpha-numeric keypad is used to enter test information and to control the unit’s functions.

Thermal Printer
A 4.5-inch wide built-in thermal printer can print the CT test results and excitation curves.

Internal Test Record Storage
The EZCT-2000B can store up to 140 test records in Flash EEPROM. Each test record may contain up to 10 excitation curves, burden test reports, current ratio readings, and polarity and DC resistance readings. Test records can be recalled and printed by the built-in thermal printer. Test records can also be transferred to a PC using the RS-232C port, USB port, or via the USB flash drive interface port.

Computer Interface
The EZCT-2000B can be used as a stand-alone unit or can be computer-controlled. It can be connected to a PC via the standard RS-232C or USB port. In computer-controlled mode, test records can be downloaded from the EZCT-2000B’s memory, or CT tests can be run from the PC. Windows®-based Current Transformer Analysis software is provided with the EZCT-2000B and can be used to transfer test records from the EZCT-2000B to a PC. Test plans can also be created with the provided software. Additionally, tabulated test records can be exported to PDF, Excel, and XML formats for further analysis.

Internal Test Plan Storage
The EZCT-2000B can store up to 128 CT test plans in Flash EEPROM. A test plan is comprised of the excitation test voltage, current range selection, CT nameplate ratios, and CT winding terminal combinations (X1 to X5) for each test and also includes the insulation test definition. Up to 10 test definitions can be stored per test plan. The ability to store test plans makes CT testing an extremely simple process. To perform a test, the EZCT-2000B is connected to the CT terminals and a test plan is selected to run.

Creating test plans for the EZCT-2000B is also a simple process. A test plan can be created using the EZCT-2000B’s keypad or can be created on a PC (with provided software) and then downloaded to the EZCT-2000B via the RS-232C or USB ports. For added convenience, test plans can also be copied from a USB Flash drive to the EZCT-2000B via the USB flash drive interface.

External Data Storage
The EZCT-2000B 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 plans between a computer and the EZCT-2000B without the need to connect the unit to the computer.
**EZCT-2000B** thermal printer output

**EZCT-2000B** desktop printer output
Computer control and analysis with included EZCT-2000 Software

The EZCT-2000B 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-2000B, and export test records in Excel format for further analysis.

EZCT-2000B specifications

**Specifications**

- **Type**: Portable current transformer test set
- **Physical Specifications**: 19”W x 13”H x 16”D (48.3 cm x 33 cm x 40.1 cm); Weight: 73 lbs (33.1 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 – 300 Vac @ 10A max; 0 – 500 Vac @ 5A max; 0 – 1200 Vac @ 1.2A max; 0 – 2000 Vac @ 1A max
- **Current Source**: 1 – 20A @ 0 – 15 Vac
- **Current Source Display**: Test current and current on-time
- **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
- **Resistance Reading Range**: 100 micro-ohms – 10 ohms; Accuracy: 2% of reading, ±10 micro-ohms
- **Insulation Resistance Reading Range**: 2 Mega-ohms – 500 Mega-ohms; Accuracy: 3% of reading, 500 – 1000 Vdc test voltage
- **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**: Five 20-foot X cable sets, one 35-foot H cable set, current source cables, insulation test cables, power cord, ground cable. A transportation case is included with the purchase price
- **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.
The EZCT-2000 Windows®-based software is included with all compatible Vanguard Current Transformer Testers (EZCT S2A, EZCT-2000A, EZCT-2000B, EZCT-2000C) at no additional cost. This robust application can be used to control the current transformer tester from a PC to perform tests. It can also be used to retrieve test records from the current transformer tester, analyze test records, and view test results in tabulated and graphical format. Current transformer test plans can also be created and transferred to the current transformer tester.

Retrieving and Analyzing Test Records

The EZCT software can be used to quickly retrieve test records from a compatible Vanguard current transformer tester. Test results can be viewed in tabular and graphical format and can be saved on the PC hard drive.

Test record header information, such as the company name, station, circuit, operator name, manufacturer, model, and serial number can also be edited.
Creating Test Plans for Faster Testing

The EZCT-2000 software can be used to create current transformer test plans. Test plans can then be run from the PC or transferred to the CT Tester to be run from the CT Tester. Test plans can also be retrieved from a CT Tester using the EZCT-2000 software.
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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