

Multi-tap Current and Voltage Transformer Analyzer **CVA500**

- Solution for testing of CTs, VTs, and CVTs
- 10.1-inch touch screen display
- Multi-tap CTs testing with a single-step cable setup
- Automated test mode
- Variable test voltage up to 2 kV 50 or 60 Hz
- User-friendly interface
- Full range of CT tests



Description

The new powerful DV Power Current and Voltage Transformer Analyzer CVA500 with a large 10.1-inch touch screen display represents an evolution testing technology that provides user-friendly and fast test execution of the full range of current transformer (CT), voltage transformer (VT), and capacitive voltage transformer (CVT) tests.

CVA500 simultaneously measures CT knee point, turns ratio, polarity, and winding resistance in all taps. The automated test

feature performs all these measurements in one test, including CT demagnetization, insulation resistance, and burden test, without any operator intervention. This significantly reduces testing time and helps to avoid possible issues caused by operators.

The CT knee point (saturation) testing method uses the variable 50/60 Hz AC voltage (up to 2000 V). CVA500 applies a sinusoidal voltage at mains frequency (50 or 60 Hz) directly to the low-voltage CT terminals.

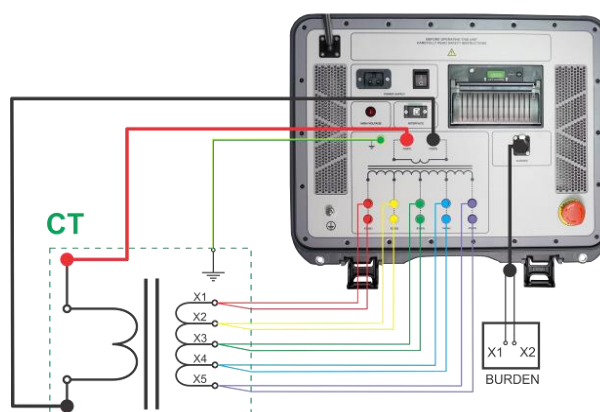
Application

The list of instrument application includes a full range of tests:

- Saturation curve and knee point for CTs
- Turns ratio, polarity, and phase angle tests for CTs, VTs, and CVTs
- Demagnetization
- Insulation resistance for CTs, VTs and CVTs
- Winding resistance for CTs, VTs and CVTs
- Burden test for CTs, VTs, and CVTs

Connecting CVA500 to Test Object

CVA500 allows one-time connection to all CT measurement terminals including primary side, up to 5 taps on the secondary side, and burden. An internal sophisticated relay matrix enables performing all previously mentioned measurements in one test without any operator intervention and cables reconnection.



Connecting CVA500 to a multi-tap CT

Benefits and Features

High Output Power

The high output power allows a real saturation of the CT by using a nominal 50 or 60 Hz frequency. The maximum output power is 2000 VA. The CVA500 generates the AC test voltage up to 2000 V and the test currents up to 5 A.

Fast and Automated Multiple Tests

CVA500 has a unique feature that allows performing all available measurements – turns ratio, polarity, saturation, demagnetization, winding resistance, insulation resistance, and burden test – at once. The one-time connection system enables performing all previously mentioned tests without the need to reconnect cables.

Saturation Test

The CT saturation test is performed using the relevant standards ANSI 10/50, IEEE C57.13.1, IEC 61869, IEC 60044-1, or IEC 60044-6. This test is important to verify the CT accuracy rating, to detect shorted turns in the CT, etc. The test voltage is raised and decreased automatically by the device. The device allows the connection of all tests leads to the CT output terminals (X1, X2, X3, X4, and X5). The CVA500 provides the graphs of the saturation curves and calculates the knee point in compliance with relevant standards. One test covers testing up to 10 possible combinations of X1 to X5 and plots up to 10 saturation curves.

Knee Point Detection Up To 2 kV

CT knee points up to 2 kV are measured by applying AC voltage of rated 50 or 60 Hz frequency.

Ratio and Polarity Test

The CVA500 performs turns ratio measurement by applying a voltage on the CT secondary side (or VT/CVT primary side) and comparing it with the measured induced voltage on the CT primary side (or VT/CVT secondary side). CT winding polarity test indicates result as a “correct” (in-phase) or a “reversed” (out-of-phase), and also shows the measured phase angle in degrees. The ratio and polarity test can be performed on the VTs and CVTs as well. Additionally, ratio error (%) and phase displacement error (minute) at different rated currents and burdens can be calculated. This helps to determine if CT is within its accuracy class limits.

Winding Resistance Test

The CVA500 measures winding resistance by injecting DC current and measuring the voltage drop across the winding. The resistance value is calculated using Ohm’s law. Winding resistance temperature compensation is also taken into consideration. It is important to perform CT demagnetization after this test.

Demagnetization

The CVA500 has an automated CT demagnetization feature. After CT saturation tests, the test voltage is slowly decreased to zero to demagnetize the CT.

Burden Test

The measurement of burden provides information about the connected load on the instrument transformer secondary side. A burden is isolated from all instrument transformer secondary connections for this test. CVA500 can inject rated CT secondary current (1 A or 5 A AC) or apply rated VT/CVT secondary voltage ($100/\sqrt{3}$ V, $110/\sqrt{3}$ V, 100 V, or 110 V). The CT burden measurements (voltage, current, $\cos \phi$, and burden impedance) are displayed on the screen and printed on the test report. The voltage drop, test current, $\cos \phi$, and burden impedance are measured and used for calculating the burden VA. The test verifies the actual burden and confirms its compatibility with nameplate specifications.

Insulation Resistance Test

The CVA500 provides the insulation resistance test by using test voltage up to 1 kV DC. The device automatically switches the connections to perform all three insulation tests (primary side to ground, secondary windings to the ground, and primary to secondary side). The operator can measure insulation resistance between other points of interest (for example, between one secondary and other secondaries) by connecting the primary and secondary CVA500 terminals to appropriate points.

Large 10.1" Graphical Touch Screen Display

CVA500 comes equipped with a large 10.1" graphical touch screen display. This makes test preparation, test execution, and analysis of test results as easy as possible. Test templates can be prepared and saved in the office, making the test execution in the field possible with only a few clicks. All test results are presented both numerically and graphically, for easy and convenient analysis.

Memory

CVA500 has an internal SD card of 16 GB memory space. This enables saving tens of thousands of results and templates.

DV-TR Software

The CVA500 can be fully operated by using DV-TR software. The software shows both numerical and graphical results which help supervisors to analyze the results. The test reports can be automatically generated. The software is included in the purchase price.

Technical Data

Mains Power Supply

- Connection: according to IEC/EN60320-1; UL498, CSA 22.2
- Mains supply: 90 – 264 V AC, 50/60 Hz

Output AC Source

- Up to 2000 V AC (Ratio and saturation test)
- Up to 5 A AC (Burden test)

Output DC Source

- Up to 1000 V DC (Insulation resistance test)
- Up to 6 A DC (Winding resistance test)

Display

- 10.1" graphical touch screen display

Interface

- USB
- Ethernet

Internal Memory

- SD card 16 GB

Environmental Conditions

- Operating temperature:
-20 °C – +55 °C / -4 °F – +131 °F
- Storage & transportation:
-40 °C – +70°C / -40 °F – +158 °F
- Humidity: 0% – 95% relative humidity, non-condensing

Dimensions

- Dimensions (W x H x D):
505 x 257 x 409 mm / 19.9 x 10.1 x 16.1 in

Warranty

- 3 years + additional 1 year upon registration
[on DV Power official website](#)

Printer

- Built-in thermal printer
- Paper width 112 mm / 4.4 in
- Printer operating temperature:
-10 °C – +60 °C / +14 °F – +140 °F

Applicable Standards

- Installation/Overvoltage category: II
- Pollution degree: 2
- Safety: LVD 2014/35/EU (CE Conform)
Standard EN 61010-1:2010
- EMC: Directive 2014/30/EU (CE Conform)
Standard EN 61326-1:2013

*All specifications herein are valid at ambient temperature of +25 °C (+77 °F) and standard accessories.
Specifications are subject to change without notice.*

Ordering Info

Instrument	Article No
Multi-tap Current and Voltage Transformer Analyzer CVA500	CVA500X-N-01

Included Accessories
Built-in thermal printer 112 mm (4.4 in)
Windows-based DV-TR PC software
USB cable
Ethernet cable
Mains power cable
Ground (PE) cable
Debug adapter
Transport case

Standard Accessories	Article No
Primary side cables set 4 x 10 m (32.8 ft) with banana plugs	PR4-10-ABPBP
TTA clamps with banana plugs (red)	TTA-CL0-2RBP
TTA clamps with banana plugs (black)	TTA-CL0-2BBP
Secondary side cables set 10 x 5 m (16.4 ft) with banana plugs	S10-05-ABPBP
Cable lug adapter set	CABLE-LUG-10
Flex wire adapter set	WIRE-FLEX-10
Secondary side cables set 5 x 0.5 m (1.64 ft) with dolphin clips (Kelvin)	S05-0Z5-BPDC
Cable coupler set	CABLE-CPL-10
Grounding cable set 1 x 5 m (16.4 ft) with dolphin clip	GND1-05-BPDC
Burden cables set 2 x 5 m (16.4 ft) with dolphin clips (Kelvin)	BUR2-05-BPDC
Cable bag	CABLE-BAG-00

Optional Accessories	Article No
Safety strobe light with 5 m cable	SFTY-STRB-05
Thermal paper roll 112 mm (4.4 in)	PRINT-112-RO
Transport case for 500 series	HARD-CASE-NC
Transport case for 500 series with wheels	HARD-CASE-NW
Cable bag	CABLE-BAG-00
Cable plastic case – small size	CABLE-CAS-01
Cable plastic case – medium size	CABLE-CAS-02
Cable plastic case with wheels – medium size	CABLE-CAS-W2
Cable plastic case – large size	CABLE-CAS-03
Cable plastic case with wheels – large size	CABLE-CAS-W3