

# 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 and an indication of instrument transformers irregularities
- Variable test voltage up to 2 kV 50/60 Hz
- User-friendly interface
- Full range of CT tests



## Description

The new powerful DV Power 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 saturation, knee point, ratio, and polarity test on all taps. The automated test feature performs all required measurements in one test including CT demagnetization, insulation resistance, winding resistance, and burden test without any operator intervention. This significantly reduces testing time and helps to avoid possible issues caused by operators.

## Application

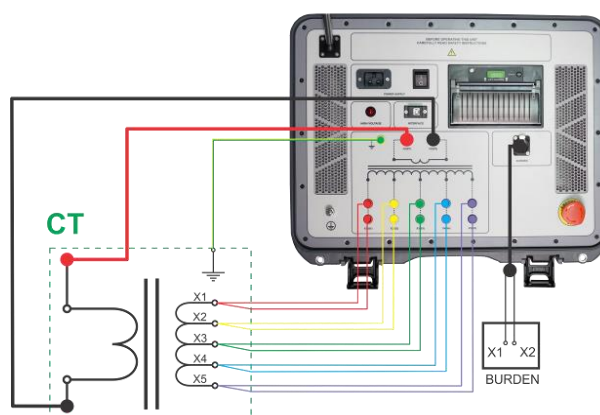
The list of instrument application includes a full range of tests:

- 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

The CT saturation testing method uses the variable 50/60 Hz AC voltage (up to 2000 V). CVA500 applies a sinusoidal voltage at mains frequency (50/60 Hz) directly to the low-voltage CT terminals (or high-voltage VT terminals). Thus the device simulates the same operation conditions which also occur in instrument transformer nominal operation and performs direct parameter measurement. The CTs parameters are affected when the frequency deviates from the nominal frequency. This is main advantage of using variable 50/60 Hz voltage when compared to the variable frequency signals. All results are obtained by direct measurement, not by using additional estimation and calculation methods.

## 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 50/60 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 of all required measurements in one test, including the insulation resistance and burden test. 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 rated 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.

### Ratio and Polarity Test

The CVA500 performs turns ratio measurement by applying a voltage on the CT secondary side and comparing it with the measured induced voltage on the CT primary side. CT winding polarity test indicates result as a “positive” (in-phase) or a “negative” (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.

### Winding Resistance Test

The CVA500 measures the CT secondary winding resistance by injecting DC current and measuring the voltage drop across the CT 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. 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,  $\cos \varphi$ , and burden impedance) are displayed on the screen and printed on the test report. The voltage drops,  $\cos \varphi$ , and burden impedance are measured and used for calculating the burden VA. The test verifies the actual burden and confirms its compatibilities 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

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

### 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 (optional)

- Built-in thermal printer
- Paper width 112 mm / 4.4 in
- Printer operating temperature:  
0 °C – +50 °C / +32 °F – +122 °F
- Printer density is guaranteed in this range:  
+5 °C – +40 °C / +41 °F – +104 °F  
20 – 85% relative humidity, non-condensing

### 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