

# CT-3500

Circuit Breaker Timer



Vanguard Instruments Company

[www.vanguard-instruments.com](http://www.vanguard-instruments.com)



## CT-3500

The CT-3500 is Vanguard's second generation, stand-alone, digital, microprocessor-controlled, circuit-breaker timer. It measures the elapsed time from the instant a breaker coil is energized to the instant of opening or closing of a circuit-breaker's dry contacts. In addition to timing a breaker's contact response time, the CT-3500 can also time relays or other switching functions that use an initiating trigger voltage (24-300 Volts DC or AC). The timer-triggering voltage starts three independent electronic timers. Each timer is individually stopped by its respective dry-contact closing or opening. The CT-3500 can fully analyze the timing of all breaker contact operations (Open, Close, Open – Close, and Close – Open). Timing results are displayed in milli-seconds and cycles on the unit's back-lit LCD screen and can be printed on the built-in 2.5-inch wide thermal printer. Test results are also dated and time stamped by the unit's real-time clock.

### Contact Timing Inputs

The CT-3500 features three dry-contact, timer-channel monitoring inputs. The dry-contact channel power supply is fuse-protected. All inputs are shunted to ground until the instant a test is initiated. All contact timing inputs are protected against static discharge. A contact self-test cable-mode is also available for testing cables or connections to the breaker.

### User Interface

The CT-3500 features a back-lit LCD screen (20 characters by 4 lines) that is viewable in both bright sunlight and low-light levels. A rugged, alpha-numeric, membrane keypad is used to control the unit, and the built-in 2.5-inch wide thermal printer can be used to print test reports.

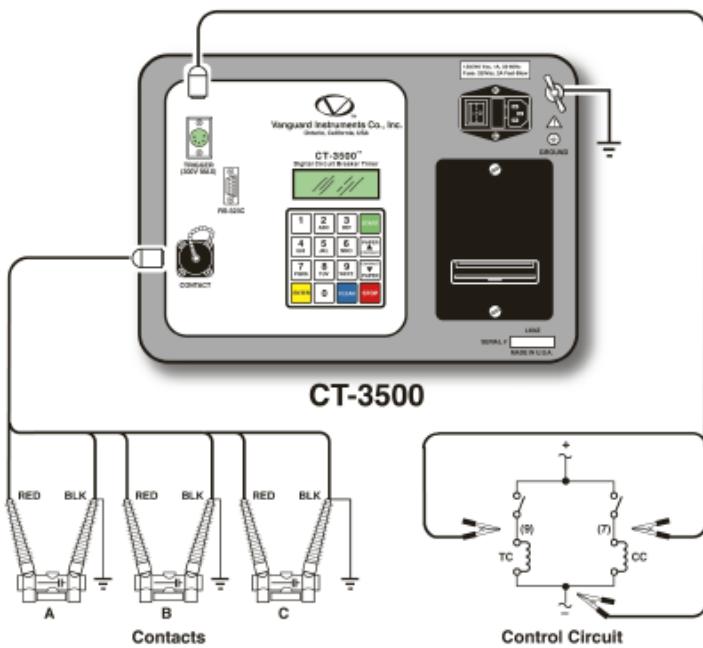
### Internal Test Record Storage

The CT-3500 can store up to 128 test records in Flash EEPROM. Test records can be retrieved and printed on the built-in thermal printer, or they can be transferred to a PC via the unit's RS-232C interface. The RS-232C interface can also be used for diagnostic testing and for updating firmware. A Windows® XP/Vista-based software application is provided with each unit and can be used to transfer test records to a PC. Test records can also be reviewed, printed or exported in text or Microsoft® Excel format via the software application.

# Simplify the

1. TIME BREAKER
2. GET RESULTS
3. SETUP
4. DIAGNOSTIC

01/15/08  
12:01:37



### FEATURES

- Displays timing results in milli-seconds and cycles
- Timing results from all three timers are displayed simultaneously
- Back-lit LCD screen is viewable in both bright sunlight or low-light conditions
- Fully analyzes all breaker operations (Open, Close, Open – Close, Close – Open )
- Built-in 2.5-inch wide thermal printer
- Stores 128 timing records

### Ordering Information

CT-3500 Digital Circuit Breaker Timer

CT-3500 with Hookup Cables

CT-3500 Shipping Case

2.5 Inch Printer Paper

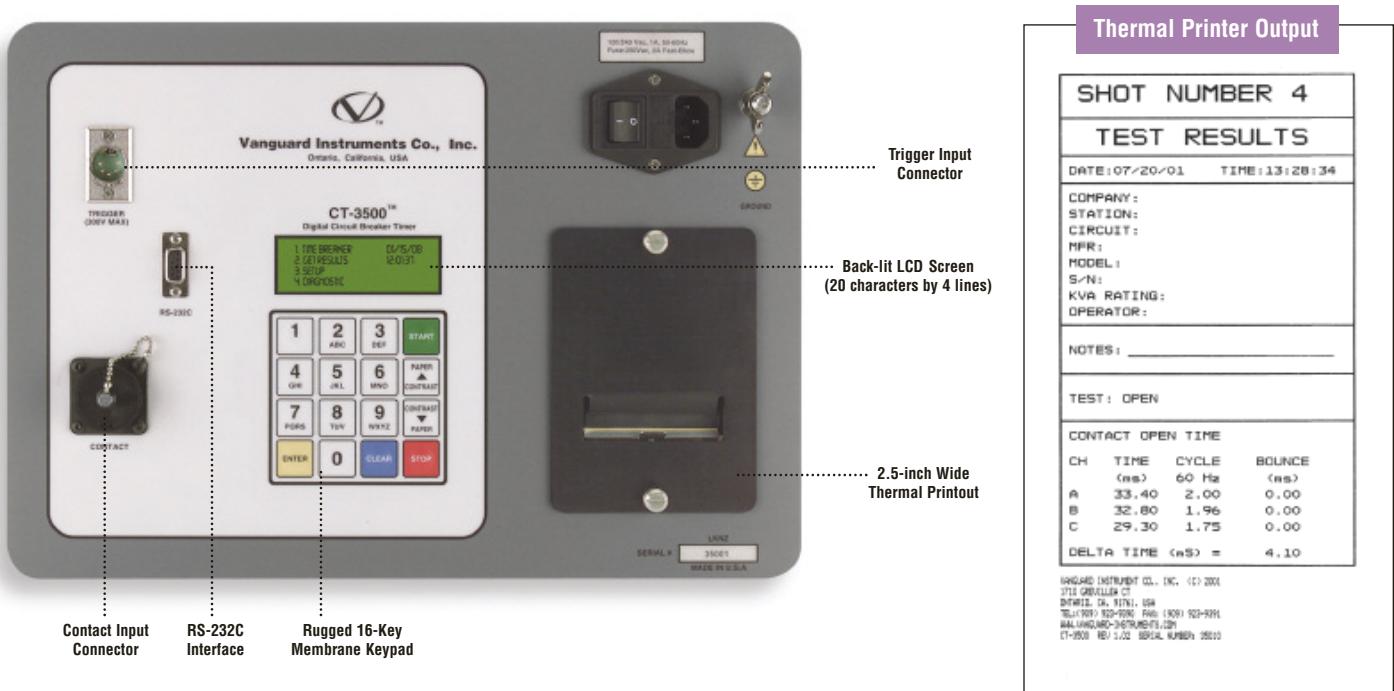
Part No. CT-3500

Part No. CT-3500 Case

Part No. TP-3

# Digital Circuit Breaker Analyzer

# Timing of EHV Circuit Breakers, Relay Operations and Switching Gear



## SPECIFICATIONS

<b>TYPE</b>	Digital circuit-breaker timer
<b>PHYSICAL SPECIFICATIONS</b>	15"W x 7"H x 13"D (38.1 cm x 17.8 cm x 33.0 cm); Weight: less than 15 lbs (6.8 kg)
<b>INPUT POWER</b>	100 – 120 Vac or 200 – 240 Vac (selectable), 50/60 Hz
<b>DRY CONTACT INPUTS</b>	3 channels
<b>TRIGGER INPUT VOLTAGE</b>	Open/Close: 30 – 300 V, dc/peak ac
<b>TEST OPERATIONS</b>	Open, Close, Open – Close, Close – Open
<b>TIMING RESOLUTION</b>	± 1/10 millisecond; Accuracy: 0.05% of reading ± 0.1ms
<b>DISPLAY</b>	Back-lit LCD Screen (20 characters by 4 lines); viewable in bright sunlight and low-light levels
<b>PRINTER</b>	Built-in 2.5-inch wide thermal printer
<b>KEYPAD</b>	Rugged membrane keypad (10 alpha-numeric keys, 6 function keys)
<b>INTERNAL TEST RECORD STORAGE</b>	Stores 128 Timing Records
<b>COMPUTER INTERFACE</b>	RS-232C port (19,200 baud)
<b>PC SOFTWARE</b>	Windows® XP/Vista-based software is included with purchase price
<b>SAFETY</b>	Designed to meet IEC61010 (1995), UL61010A-1, CSA-C22.2 standards
<b>ENVIRONMENT</b>	Operating: -10°C to 50° C (15°F to +122° F); Storage: -30° C to 70° C (-22°F to +158° F) 90% RH @ 40°C (104°F) non-condensing
<b>HUMIDITY</b>	2,000m (6,562 ft) to full safety specifications
<b>ALTITUDE</b>	One 20-foot contact test lead cable, one trigger cable with extension cable, one ground cable with attaching clips, cable carrying bag, power cord
<b>CABLES</b>	Transportation case
<b>OPTIONS</b>	One year on parts and labor
<b>WARRANTY</b>	

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

## **Vanguard Instruments Company, Inc.**

Vanguard Instruments Co., (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 circuit-breaker analyzer, which was a resounding success. It became the forerunner of an entire series of circuit-breaker 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, winding-resistance meters, transformer tap-changing controllers, megaohm 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 products are available from:**



## **Vanguard Instruments Company, Inc.**

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