

DigitMR

Circuit Breaker Analyzer



Vanguard Instruments Company

H.V. TEST (PTY) LTD

3 Gaiety Ave Robindale, Randburg, South Africa, 2010

Tel: +27(11) 782 1010 Fax: +27(11) 782 2770

P.O. Box 651287, Benmore, 2010

Email: sales@hvtest.co.za

Website: www.hvtest.co.za



DigiTMR™

Inexpensive and Easy to Use

The DigiTMR is a stand-alone, microprocessor-controlled Circuit-Breaker Analyzer. It is inexpensive and easy to use. The DigiTMR fully analyzes circuit-breaker performance: contact time, stroke, velocity, over-travel, and contact wipe. Contact-motion analysis includes: Open, Close, Open-Close, Close-Open, and Open-Close-Open. The DigiTMR timing window is selectable: 1-second, 10-second, or 20-second periods. The 10-second or 20-second timing windows allow timing the long duration events (Circuit-Switcher contacts).

Contact Timing Inputs

Breaker contact timing uses dry-contact input channels. Each contact-input channel can detect main contact and insertion-resistor contact times (milliseconds and cycles). Three contact timing channels are available on the DigiTMR.

Voltage Monitoring Inputs (V1 & V2)

One analog voltage input channel (designated as V1) is dedicated to monitoring a circuit-breaker dc power supply or coil voltage (0-300 volts, dc or peak ac). A second voltage input channel (designated as V2) is dedicated to detecting voltage on/off status (present or absence) of an A/B switch.

Trip/Close Current Monitoring

A built-in Hall-effect current sensor records Trip/Close current level and duration. The breaker's operate-coil current waveform duration (effectively, a performance "fingerprint" or "current profile") can be used as a diagnostic tool for analysis of a breaker's performance.

Breaker Stroke and Velocity

One travel transducer digital channel lets the DigiTMR measure stroke, over-travel, and bounce-back. Unlike other types of transducers, the digital transducer requires neither calibration nor setup. A breaker contact-velocity calculation is based on a contact's travel distance over a period of time, which is defined by the breaker manufacturer's performance parameters. A special feature allows users to "slow-close" test a breaker and get a test result report.

Timing Shot Storage Capabilities

The DigiTMR uses Flash Electrically Erasable PROMs (EEPROMs) to store timing-shot data. Unlike other storage media, EEPROMs are immune to shock, temperature, and humidity. Stored timing shots can be recalled by users to re-analyze test data, to print copies, or to transfer data to an IBM-compatible PC for record keeping. Up to 100 timing shots can be stored in EEPROMs.

Breaker Test Plan

Up to 99 circuit-breaker test plans can be stored in the DigiTMR. Test plans comprise all circuit-breaker performance specifications (stroke, velocity, contact time). By recalling a test plan, the user can immediately test circuit-breakers and view a pass/fail report (made by comparing actual performance with the specifications in the stored test plan). Test plans can be downloaded to the DigiTMR via an RS-232C serial port.

Breaker Initiate Features

A built-in solid-state initiate device lets users operate the breaker from the DigiTMR. The operational mode includes: Open, Close, Open-Close, Close-Open, and Open-Close-Open. Multiple operation (e.g., Open-Close, Open-Close-Open) can be initiated by using programmable delay time or by sensing breaker's contact condition.

Diagnostic Capabilities

The DigiTMR can perform diagnostics on its internal electronics. Self testing of transducer and contact-test cables lets users check out the Timer whenever verification is wanted.

Computer Interface

An RS-232C Interface port permits the control of the DigiTMR with an IBM-PC compatible computer. From the PC, circuit breakers can be timed, and users can retrieve timing shots saved in the DigiTMR flash EEPROM. Windows® 95/98/NT/XP Breaker-Analysis software package lets users retrieve test-shot data stored in the computer's hard-drive disk, re-analyze the stored data, and generate reports on an IBM-compatible computer. Available database software lets users generate customized test-result reports. Users may also create a circuit-breaker database library. Additionally, users can create circuit-breaker test plans to be downloaded to the DigiTMR.

User Interface

Users enter breaker ID and control functions via a 16-key alpha-numeric keypad. A 4-line by 20-character LCD readout displays user messages. The LCD is back lighted so messages can be viewed in low light levels.

Built-in Thermal Printer

A built-in 4.5-inch thermal printer prints the breaker contact analysis results in both tabular and graphic formats.

**Order
Info**

DigiTMR CIRCUIT BREAKER TIMER
DigiTMR, cables, PC software
DigiTMR carrying case
Printer paper, Thermally sensitive

Part No: DigiTMR
Part No: DigiTMR-CASE
Part No: Paper-TP4

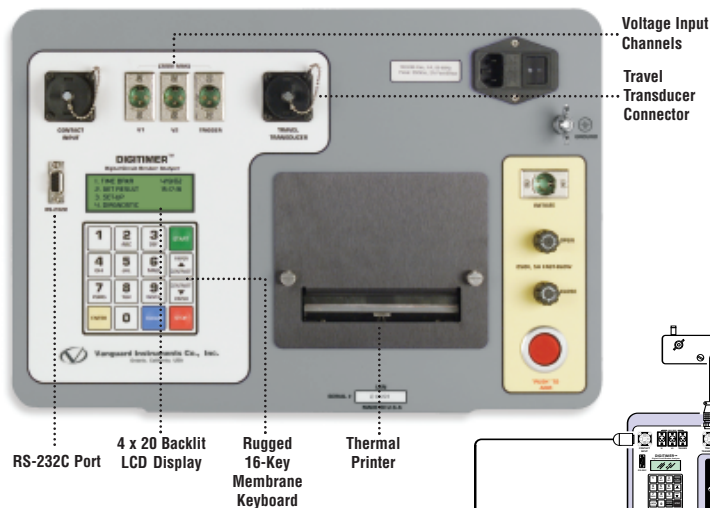
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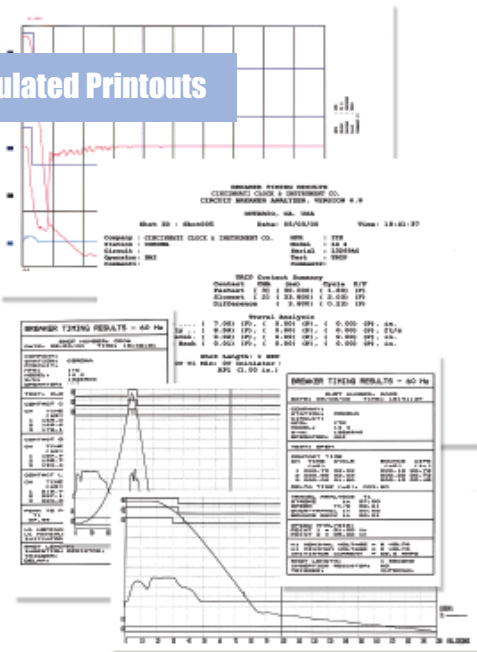
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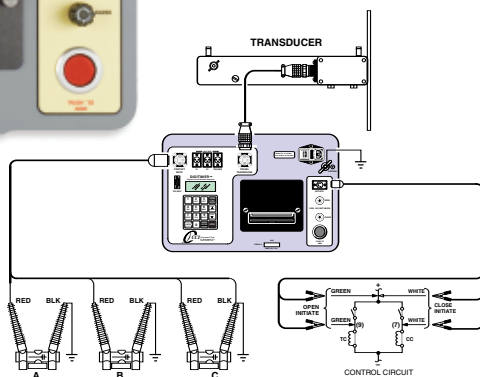
Website: www.hvtest.co.za



Graphic & Tabulated Printouts



Connections



SPECIFICATIONS

TYPE	Special Purpose Test Equipment, Circuit Breaker Analyzer
PHYSICAL SPECIFICATIONS	18 "L x 15"W x 7"H (7.09 cm x 5.9 cm x 2.76 cm); Weight, less than 19 lbs (8.6 kg)
INPUT POWER	3 amps, 90-130Vac or 200-240Vac, 50/60 Hz, selectable
DRY CONTACT INPUT	3 Dry-Input channels; Each channel detects Main and Insertion-Resistor Contacts
TIMING WINDOWS	Selectable: 1-second, 10-seconds, or 20-seconds
TIMING RESOLUTION	±100 microseconds at 1-second duration; ±1.00 milliseconds at 10-second duration; ±2.00 milliseconds at 20-second duration
TIMING ACCURACY	0.05% of reading ±0.1 ms at 1-second duration
DRY CONTACT CHANNEL PROTECTION	Fuses protect all isolated power supplies; All contact inputs are grounded until test; TVS and zener-diode protected
CONTACT DETECTION RANGE	Closed: < 20 ohms, Open: > 5,000 ohms
RESISTOR DETECTION RANGE	Range: 50–5,000 ohms
TRIGGER INPUT VOLTAGE	Open/Close: 30–300V, dc or peak ac
VOLTAGE SENSING INPUT RANGE	V1: analog input; 0-255, dc or peak ac, Sensitivity ±1V; V2: voltage detector (present/absent) input; 30-300V, dc or peak ac
BREAKER OPERATION	Initiate Open, Close, Open-Close, Close-Open, Open-Close-Open
BREAKER INITIATE CAPACITY	30A/250Vac/dc max
INITIATE CURRENT READING RANGE	One, Non-contact, Hall-Effect sensor, 0-20-amp ranges, dc to 5Khz
TRAVEL TRANSDUCER INPUT	1 digital travel transducer channel; Linear Range, 0.0–60.0 in (±0.005 in.); Rotary range: 0–360° (±0.006°)
CONTACT TRAVEL POINT DIFFERENCE	Measures "Slow-close" contact-point distances (hard copy)
DISPLAY	Back-lit LCD, 20-character by 4-line display, viewable in the bright sunlight
PRINTOUT	Both Graphic contact travel waveforms and tabulated results are printed on 4.5-inch thermal paper
TEST RECORD STORAGE	Up to 100 Timing shots, 99 breaker test plans
COMPUTER INTERFACE	RS-232C Port, 19,200 Baud
PC SOFTWARE	Analysis software running under Windows 95/98/NT/XP-based and features graphic display, numerical reports, and data base
SAFETY	Designed to meet UL 61010A-1 Certification and CAN/CSA C22.2 No. 1010.1-92
ENVIRONMENT	Operating: -10°C to 50° C (15°F to +122° F); Storage: -30° C to 70° C (-22°F to +158° F)
OPTIONS	Hard case for shipping: available for both Travel Transducers and the DigiTMR
WARRANTY	One-year warranty on parts and labor; post-warranty service contracts are available

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