

# LTCA-40™

Load Tap Changer Analyzer



**Vanguard Instruments Company**



# LTCA-40™

Vanguard's LTCA-40™ Analyzer is a second generation load tap changer analyzer. The LTCA-40™ accurately measures winding resistance of highly inductive power transformers. Triple resistance-reading channels allow the measurement of three winding resistances simultaneously. Four-wire (Kelvin) connections provide high accuracy and require no lead compensation. A special feature of this device is its ability to measure and graph the resistance trace of a transformer LTC during operation. One resistance input channel is dedicated for this feature. Using a 60Vdc power supply is capable of outputting 40 amperes. The LTCA-40™ provides fast and stable readings of very large transformers.

## Resistance Reading Features

Three resistance-reading channels measure resistance from 1 micro-ohm to 500 ohms. Test current is programmable (1A, 5A, 10A, 40A). The LTCA-40™ also can be used to measure EHV circuit-breaker contact resistance, motor winding resistance or other low resistance test applications. Transformer winding temperature can be input to the LTCA-40™, which will calculate the equivalent resistance value of the

(aluminum or copper) winding at any standard reference temperature. A special test mode allows the LTCA-40™ to run a test for up to 45 minutes while saving resistance readings at one-minute intervals.

## Dynamic Resistance Test Features

One resistance reading channel is dedicated for the dynamic resistance test. The dynamic resistance test feature permits the user to monitor the LTC contact resistance during its operation. A resistance plot allows the user to view the LTC contact and winding resistance and detect LTC contact problems.

## AC Motor Current Monitoring Feature

One AC current monitoring channel is dedicated to monitor the LTC motor current during operation. This current plot permits the user to detect LTC motor problems. An AC clamp-on current sensor is provided with the LTCA-40™.

## Built-in Safety Features

To ensure the Operator's safety, the LTCA-40™ automatically dissipates the energy stored in the transformer at the end of each test. This discharge circuit will continue to work even if the LTCA-40™ supply voltage is lost.

## User Interface

A rugged, 16-key alphanumeric key pad allows the user to enter test information and select control functions. Current and resistance readings display on a 64 x 128 graphic back-lit LCD.

## Built-in Thermal Printer

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

## Test Results Storage Capacity

The LTCA-40™ can store 50 static resistance test records and 20 dynamic resistance test records in its internal memory. Test records can be recalled locally or downloaded to an IBM compatible PC via the interface ports (RS-232C or USB) or stored and retrieved to/from a USB Flash Drive.

## USB Flash Drive & PC Interface

A built-in USB Flash Drive interface port allows the user to transfer test records to and from the LTCA-40™ and a USB Flash Drive. The LTCA-40™ can also interface directly to the PC via the RS-232C or USB ports. The user can then simply plug the USB Flash Drive into a PC to view the test records using the supplied PC software.

## Transformer Load Tap Changer Control

A built-in transformer load tap changer allows the user to change transformer tap positions remotely. This remote-controlled tap changer feature eliminates the need to manually change the transformer's step-up and step-down taps.

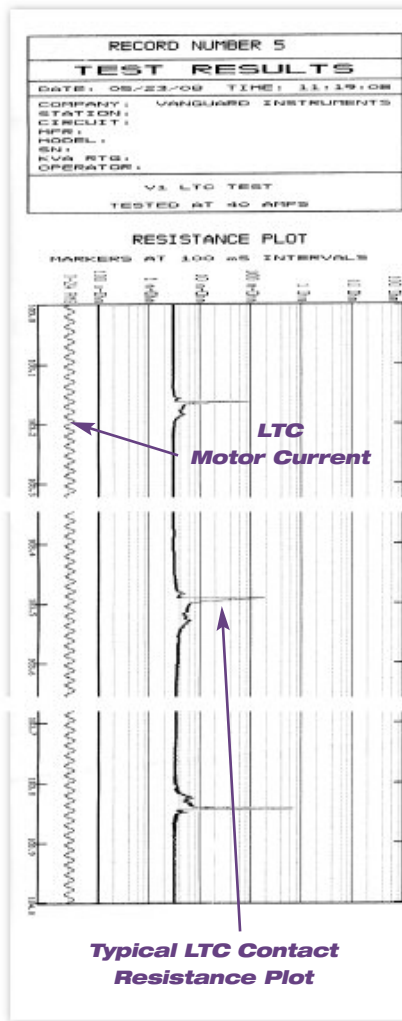
## SPECIFICATIONS

<b>PHYSICAL SPECIFICATIONS</b>	25" W by 8.5" H by 20" D (63.5 cm x 21.6 cm x 50 cm), Weight 44 lbs (20 kg)
<b>OPERATING VOLTAGE</b>	90–240 VAC, 50/60 Hz
<b>RESISTANCE READING RANGE</b>	1 micro-ohm to 500 ohms
<b>RESISTANCE CHANNELS</b>	3 static resistance reading channels. One dynamic resistance channel
<b>TEST VOLTAGE</b>	60 Vdc max
<b>TEST CURRENT</b>	1 ampere, 5 amperes, 10 amperes, 40 amperes
<b>AC CURRENT INPUT</b>	Clamp-on current sensor, 1 to 20 Ampere
<b>DISPLAY</b>	Backlit LCD, 64 x 128 dot graphic display, viewable in bright sunlight
<b>PRINTER</b>	4.5-inch wide Thermal Printer
<b>USB FLASH INTERFACE</b>	One USB Flash Drive Interface port
<b>COMPUTER INTERFACE</b>	USB, RS-232C port, 19,200 Baud
<b>TEST RECORD STORAGE</b>	50 static resistance test records and 20 dynamic resistance test records; up to 999 test records on the USB Flash Drive.
<b>LOAD TAP CHANGER CONTACT</b>	240 Vac, 1A
<b>SAFETY</b>	Designed to meet UL 61010A-1 and CAN/CSA C22.2 No. 1010.1-92
<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)
<b>CABLES</b>	(1) 50ft current cable set, (3) 50ft resistance cable set, (1) ground cable, (1) USB cable, (1) RS-232C cable, power cord, (1) LTC Cable Transportation Case
<b>OPTIONS</b>	
<b>WARRANTY</b>	One Year Parts & Labor, Post Warranty Service Contract Available

# Load Tap Changer Analyzer

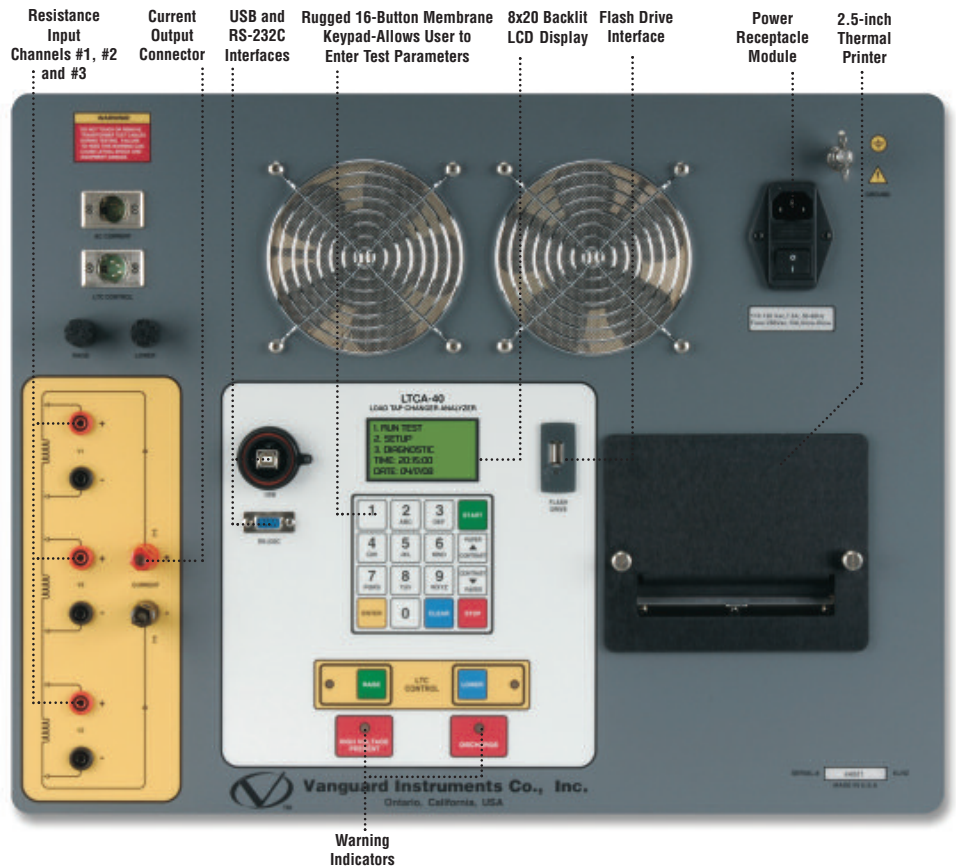
# Accurately measure winding resistances of highly inductive power transformers

## ▲ Thermal Printer Output



## FEATURES

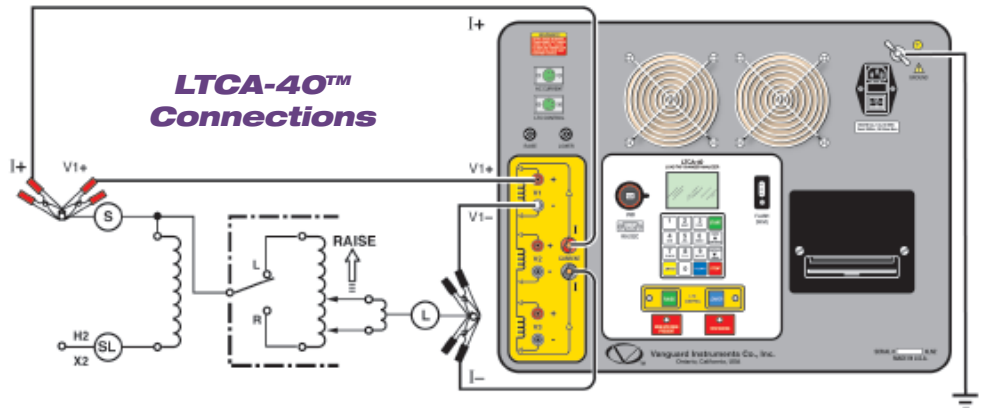
- AUTO DISCHARGE CIRCUIT FOR OPERATOR SAFETY
- 3 RESISTANCE READING CHANNELS INCLUDING ONE DYNAMIC CHANNEL
- DIGITAL RESISTANCE READING FROM 1 MICRO-OHM TO 500 OHMS
- CALCULATE EQUIVALENT RESISTANCE VALUE AT REFERENCE TEMPERATURE
- STORES 50 STATIC RECORDS AND 20 DYNAMIC RECORDS
- BUILT-IN 4.5-INCH THERMAL PRINTER • WEIGHT IS LESS THAN 44 LBS



## Ordering Information

LTCA-40™ Load Tap Changer Analyzer

- LTCA-40™, Cable, Software  
Part No: LTCA-40
- LTCA-40™ Shipping Case  
Part No: LTCA-40 S2 Case
- 50-ft Test Cable  
Part No: LTCA-40 Test Cable
- 4.5-inch Printer Paper  
Part No: Paper TP4



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.



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