# ATO-400

## Micro-ohm Meter


**Vanguard Instruments Company**

www.vanguard-instruments.com

# Accurately

# ATO-400

## *Microprocessor-controlled Accuracy and Reliability*

Designed specifically for sub-station applications, the ATO-400 micro-ohm meter measures EHV circuit-breaker contact resistance, bushing contact joints, or any low-resistance measuring application. This microprocessor controlled micro-ohm meter can accurately measure low resistances ranging from 1 micro-ohm to 300 milliohms at any test current from 10A to 400A. The digital readout displays directly in micro-ohms or milliohms. No calculation is required to compensate for lead resistances. A custom switching power supply keeps the ATO-400 weight at 40 lbs (18.1 kg) making it ideal for field use.

The ATO-400 outputs an unfiltered direct current from 10A to 400A to the resistance load being measured. Test record input, test current and function selection is selected via the 16-key keypad located on the front panel. A typical resistance test allows the user to select a burn-in time from 5 second to 60 seconds. A second test mode, the Auto Test Mode, allows the user to initiate a test by simply applying the sensor cables leads across the two points of interest. This feature is handy when the operator needs to measure a sequence of several resistance values in a breaker contact.

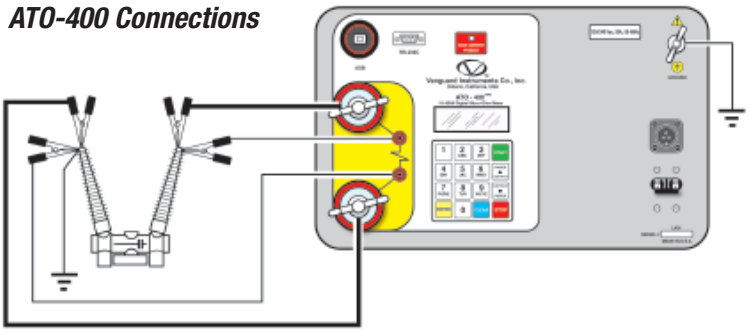
The test current and micro-ohm readout displays on a 4-line by 20-character back-lighted LCD. Up to 63 records (each may contain up to 64 readings) can be stored in the ATO-400 FLASH EEPROM. Stored test reports can be recalled by the users for review or transferred to an IBM-compatible PC via the RS-232C or USB serial interface ports. A Windows-based software package (provided with each unit) allows the users to download test record to a PC. The user can then review, print or export test records.

The ATO-400 is supplied with two #1/0 15-ft current cables and two 15-ft sensing test leads. Optional custom cable lengths are also available. Heavy-duty welding-type C-clamps are also available as an optional accessory, which allows the user to connect test-leads to a wide variety of bushing sizes, bus-bars, and other conductors requiring low-resistance measurement. The ATO-400 power supply is thermally protected. Contact-sensing inputs are protected against static-discharge damage.

**FEATURES**

- 10 to 400 Amperes Unfiltered Direct Current
- Digital Resistance Reading from 1 Micro-Ohm to 300 Milliohms
- Microprocessor based, No Adjustment is Required
- Store 4,000 Readings
- Computer Interface via RS-232C or USB Port


### *ATO-400 Connections*

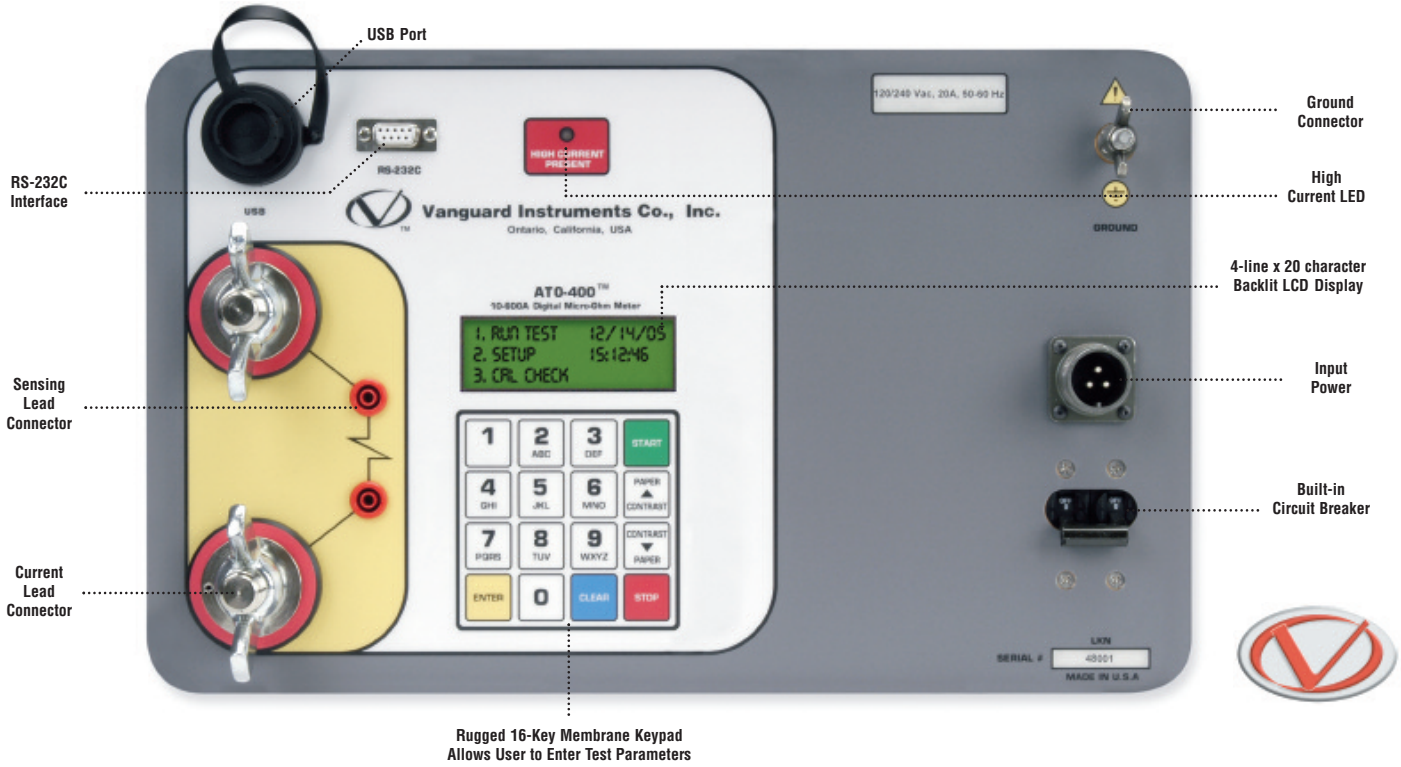



### *Ordering Information* ATO-400

| | |
|---|---|
| ATO-400 with 15-ft Test Cables | Part No: ATO-400 |
| ATO-400 Shipping Case | Part No: ATO-400 Case |
| 15-foot Test Cable | Part No: ATO-400 Cable-15ft |
| 30-foot Test Cable | Part No: ATO-400 Cable-30ft |
| C-Clamp Set (2 clamps) | Part No: C-Clamps |
| Alligator Clamp Set (2 clamps) | Part No: Alligator-Clamps |

# Special-Purpose Micro-ohmmeter

# Measure *Resistance from 1 Micro-ohm to 300 Milliohms*




## SPECIFICATIONS

| | |
|---|---|
| ***TYPE*** | Special-purpose test equipment, portable, micro-ohmmeter |
| ***PHYSICAL SPECIFICATIONS*** | 16.8" W by 12.6" H by 10.6" D (42.6 cm x 32.0 cm x 27 cm), Weight < 40 lbs (18.1 kg) |
| ***INPUT POWER*** | 90 to 240 Vac 50/60 Hz |
| ***RESISTANCE READING RANGE*** | 1 micro-ohm to 300 milliohms (1 micro-ohm resolution) |
| ***ACCURACY*** | ±1% reading, ± 1 count |
| ***TEST CURRENT RANGE*** | 10 Amperes to 400 Amperes, Selectable in 1 Ampere Steps |
| ***DISPLAY*** | Backlit LCD, 4 lines by 20 characters |
| ***KEYBOARD*** | Heavy-duty keypad: 10 number keys, 6 function keys |
| ***TEST RECORD STORAGE*** | Store 63 Records of up to 64 Readings |
| ***COMPUTER INTERFACE*** | One RS-232C Port, One USB Port |
| ***PC SOFTWARE*** | Windows® 98/XP-Based, included with purchase price |
| ***SAFETY*** | Designed to meet IEC61010 (1995), UL61010A-1, CSA-C22.2 |
| ***ENVIRONMENT*** | Operating: -10˚C to 50˚C (15˚F to 122˚F); Storage: -30˚ C to 70˚C (-22˚F to 158˚F) |
| ***CABLES*** | 15-ft (#1/0 AWG) Current Cables and Sensing Cables |
| ***OPTIONS*** | Transportation Case |
| ***WARRANTY*** | One Year Parts & Labor, Post Warranty Service Contract Available |

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 Instruments Company, Inc.**
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