

# ATRTR-01 S3/ATRTR-01B S3

*transformer turns ratio testers*



**Vanguard Instruments Company, Inc.**  
[www.vanguard-instruments.com](http://www.vanguard-instruments.com)



# ATRT-01 S3

## *transformer turns ratio testers*

The ATRT-01 S3 is Vanguard's fourth generation, micro-processor based, single phase, automatic transformer turns-ratio tester. This portable test unit is available in two models, the ATRT-01 S3 (line power only), and the ATRT-01B S3 (rechargeable-battery powered).

The ATRT-01 S3 uses the IEEE C57.12.90 measuring method to determine the transformer turns-ratio. The transformer turns-ratio is determined by precisely measuring the voltages across the unloaded transformer windings. The ATRT-01 S3's measuring circuitry self adjusts before each measurement to ensure turns-ratio accuracy. Two selectable test voltages, 4Vac and 40Vac, offer flexibility in testing different types of transformers.

The ATR-01 S3 can measure transformer turns-ratios ranging from 0.8 to 15,000 and can be used to test voltage regulators, power transformers, current transformers (CT), and potential transformers (PT). The ATRT-01 S3 also measures and displays transformer- winding excitation current, winding polarity, and winding phase angle. Test results are displayed on a back-lit LCD screen (128 x 64 pixels) that is viewable in bright sunlight and low-light conditions.

In addition to measuring a transformer's turns-ratio, the transformer's name plate voltages can also be entered, and the ATRT-01 S3 will then display the turns-ratio percentage error. This convenient feature eliminates any user calculation errors when testing transformers.

When testing a 3-phase transformer, the ATRT-01 S3 provides connection information (H and X test leads to the transformer bushings) for phase A, B and C tests. The three phase test results (turns-ratio, excitation current, winding polarity, phaseangle, and percentage error) are displayed on the LCD screen.

### User Interface

The ATRT-01 S3 features a back-lit LCD screen (128 x 64 pixels) that is viewable in direct sunlight and low-light levels. A rugged 16-key membrane keypad is used to enter test information and to operate the unit.

### Test Record Storage

The ATRT-01 S3 can store 128 records of 33 readings internally, and up to 999 test records on an external USB Flash drive. Test records can be recalled using the included Transformer Analysis PC software.

### Computer Interface

A Windows®-based Transformer Analysis application is provided with each unit and can be used to remotely control the ATRT-01 S3 via the RS-232C port. Using the Transformer Analysis software, the user can retrieve test records (from the ATRT-01 S3's memory or a USB Flash drive), analyze test results, and print test results on a desktop printer. Test results are automatically exported to Excel, PDF and XML formats.

### Battery Power for

### Exceptional Portability

The ATRT-01B S3 is powered by a 6-volt, 7 ampere-hour, lead acid battery. This high capacity battery, coupled with the ATRT-01B S3's low power consuming circuitry, allows the unit to be used continuously for up to 4 hours per charge. A built-in charger allows the unit to be used during charging.

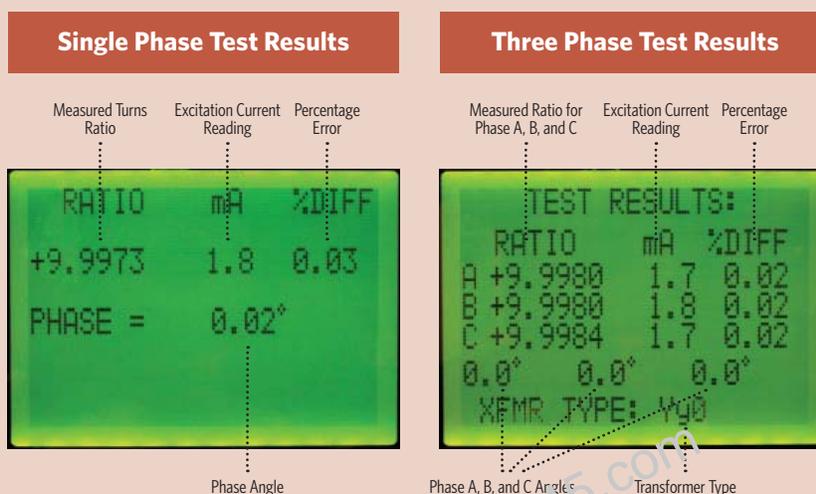
### outstanding features

- Standalone or computer-controlled
- Inexpensive
- Displays turns-ratio from 0.8 – 15,000
- Calculates turns-ratio percentage error
- Displays winding polarity and phase angle
- Displays excitation current
- Battery or AC-powered (ATRT-01B S3 only)

## ordering information

Part number <b>ATRT-01 S3</b>	ATRT-01 S3 turns ratio tester, cables, and PC software
Part number <b>ATRT-01B S3</b>	ATRT-01B S3 turns ratio tester, cables, and PC software
Part number <b>ATRT-01 S3-CABLE</b>	ATRT-01/01B S3 cables
Part number <b>ATRT-01 S3-CASE</b>	ATRT-01/01B S3 shipping case

# Sample Test Results



## ATRT-01/01B S3 specifications

<b>type</b>	transformer turns ratio tester
<b>physical specifications</b>	dimensions: 12"W x 10"H x 8" D (30.4 cm x 25.4 cm x 20.3 cm); ATRT-01 S3 weight: 8 lbs. (3.6 Kg), ATRT-01B S3 weight: 9 lbs. (4.3 Kg)
<b>input power</b>	ATRT-01 S3: 120 or 240 Vac (selectable), 50/60 Hz ATRT-01B S3: 90 – 240 Vac, 50/60 Hz
<b>battery (ATRT-01B S3 only)</b>	SLA battery delivering up to 4 hours of continuous operation per charge
<b>measuring method</b>	ANSI/IEEE C57.12.90
<b>turns ratio accuracy</b>	40 Vac: 0.8 – 1,999 (0.1%), 2,000 – 3,999 (0.25%), 4,000 – 15,000 (1%) 4 Vac: 0.8 – 1,999 (0.1%), 2,000 – 3,999 (0.25%), 4,000 – 15,000 (2%)
<b>test voltages</b>	ATRT-01 S3: 4 Vac @ 1.0A, 40 Vac @ 0.6A ATRT-01B S3: 4 Vac @ 500mA, 40 Vac @ 70mA
<b>phase angle measurement</b>	0 – 360 degrees, Accuracy $\pm 0.2$ degree ( $\pm 1$ digit)
<b>polarity reading</b>	In-Phase or Out of Phase indication
<b>current reading range</b>	0 – 2 Amperes, Accuracy: 2% of reading ( $\pm 1$ mA)
<b>display</b>	Back-lit LCD (128 x 64 pixels), viewable in direct sunlight and low light levels
<b>computer interface</b>	RS-232C
<b>pc software</b>	Windows®-based Transformer Analysis Software (included with purchase)
<b>internal test record storage</b>	128 records of 33 readings
<b>external test record storage</b>	Up to 999 test records on external USB Flash drive
<b>safety</b>	Designed to meet IEC 61010 (1995), UL 61010A-1, and 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)
<b>humidity</b>	90% RH @ 40°C (104°F) non-condensing
<b>altitude</b>	2,000 m (6,562 ft) to full safety specifications
<b>cables</b>	one 15 ft (4.6m) single phase cable, one power cord, one cable bag
<b>options</b>	transportation case (can hold unit and cables)
<b>warranty</b>	one year on parts and labor

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



<http://www.51982245.com>

## Instruments designed and developed by the hearts and minds of utility electricians around the world

Vanguard Instruments Company, (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 circuitbreaker analyzer, which was a resounding success. It became the forerunner of an entire series of circuitbreaker 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, transformer winding-resistance meters, mega-ohm 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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