ATRT-01/01B S3

automatic, single-phase transformer turns ratio testers

Vanguard Instruments
A DOBLE COMPANY

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ATRT-01/01B 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.

Product Overview

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

Vanguard's Windows®-based transformer analysis software, TTRA S2, 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

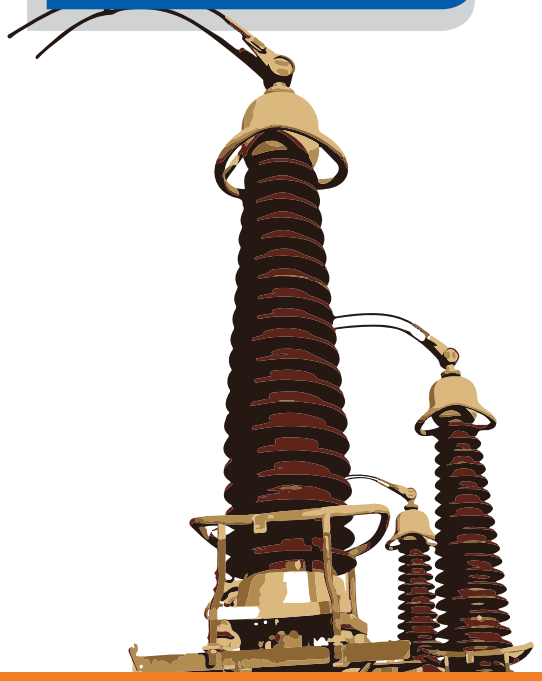
The ATRT-01B S3 is powered by a 6-volt, 7 ampere-hour, lead acid battery. This high capacity battery, coupled with the ATRT-01B S3's low power consuming circuitry, allows the unit to be used continuously for up to 4 hours per charge. A built-in charger allows the unit to be used during charging.

outstanding features

- Inexpensive
- Standalone or computer-controlled
- Displays turns-ratio from 0.8-15,000 : 1
- Calculates turns-ratio percentage error
- Displays winding polarity and phase angle
- Displays excitation current
- Battery or AC-powered (ATRT-01B S3 only)

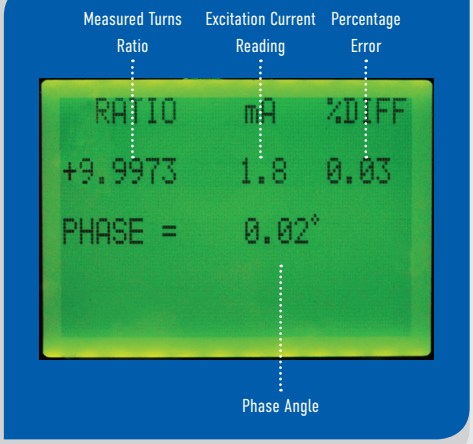
ordering information

Part No.	Description
9023-UC	ATRT-01 S3, cables, and PC software
9036-UC	ATRT-01B S3, cables, and PC software
9023-SC	ATRT-01 S3 shipping case
9036-SC	ATRT-01B S3 shipping case

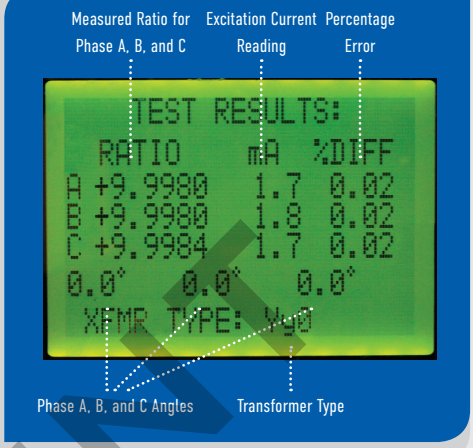


Sample Test Results

Single Phase Test Results



Three Phase Test Results



ATRT-01/01B S3 technical specifications

physical specifications	**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)
operating voltage	**ATRT-01 S3:** 120 or 240 Vac (selectable), 50/60 Hz **ATRT-01B S3:** ATRT-01B S3: 90 – 240 Vac, 50/60 Hz
turns-ratio accuracy	**4 Vac:** 0.8–1,000 (±0.08%), 1,001–4,000 (±0.1%), 4,001–15,000 (±0.25%) **40 Vac:** 0.8–1,000 (±0.08%), 1,001–4,000 (±0.1%), 4,001–15,000 (±0.25%)
test voltages	**ATRT-01 S3:** 4 Vac @ 1.0A, 40 Vac @ 0.6A **ATRT-01B S3:** 4 Vac @ 300mA, 40 Vac @ 70mA
current reading range	0 – 2 Amperes, Accuracy: 2% of reading (±1 mA)
display	128 x 64 pixels back-lit LCD viewable in direct sunlight and low light levels
pc software	Windows®-based transformer analysis software (included with purchase)
safety	**IEC/EN 61010-1, EN 61326-1, EN 61000-3, and EN 61000-4 certified.** designed to meet UL 61010A-1, and CSA-C22.2 standards.
temperature	**Operating:** -10°C to +50°C (+15°F to +122°F) **Storage:** -30°C to +70°C (-22°F to +158°F)
cables	one 15 ft (4.6m) single phase cable, one power cord, one RS-232C cable, one cable bag
options	shipping case (can hold unit and cables)

ATRT-01B S3 battery	SLA battery delivering up to 4 hours of continuous operation per charge
measuring method	ANSI/IEEE C57.12.90
phase angle measurement	0 – 360 degrees accuracy: ±0.2 degree (±1 digit)
polarity reading	in-phase or out of phase indication
computer interface	RS-232C
internal data storage	128 records of 33 readings
external data storage	up to 999 test records on external USB flash drive (drive not included)
humidity	90% RH @ 40°C (104°F) non-condensing
altitude	2,000 m (6,562 ft) to full safety specifications
warranty	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.

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

Founded in 1991 and located in Ontario, California, USA, Vanguard Instruments™ offers a wide range of diagnostic test equipment that accurately and efficiently measures the health of critical substation equipment, such as transformers, circuit breakers, and protective relays.

Our first product was a computerized, extra high voltage (EHV) circuit breaker analyzer, which became the forerunner of an entire line of EHV circuit breaker test equipment. Over the years, our portfolio has grown tremendously 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 application-specific products.

Our instruments are rugged, reliable, accurate, and user friendly. They eliminate tedious and time-consuming operations, while providing fast, complex test-result calculations. Using our equipment helps reduce errors and eliminates the need to memorize long sequences of procedural steps.

In 2017, Vanguard Instruments became a part of Doble Engineering Company, an energy industry leader in hardware, software, and services that diagnose and monitor the health of critical assets.

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