



Raytech is a world leader in the design and production of testing instruments and systems.

- Winding Resistance Meters with Demagnetization and Discharge
- Turns Ratio Meters
- Contact Resistance Meters
- Power Factor Test Sets
- CT Test Sets
- Software

The Solution Company



A world leader in the design and production of high quality and rugged measuring instruments and systems.

Measuring Up to Your High Standards for Precision AND Accuracy

About Raytech

Since 1997, Raytech has been a world leader in the design and production of precision measuring instruments and systems. Our products are used in the manufacturing, maintenance, and acceptance testing of electrical apparatus. Raytech USA fully supports sales and services throughout North, South and Central America, Australia, Taiwan, Thailand, and Egypt. Raytech GmbH supports sales and service throughout Europe, Asia, and Africa.

Our Instruments

Raytech develops and produces measuring instruments with laboratory precision for the electrical testing industry. The unique design approach of our engineering team has resulted in the development of the highest quality measuring instruments, which have set new standards in the electrical testing industry. Our rugged test equipment is designed for easy operation and fast, accurate results.

Our portable products are housed in durable field cases designed to withstand shocks, vibration, and the harsh conditions associated with field testing. We also offer durable rack-mountable equipment which can be integrated into systems for factories, laboratories, and development facilities.

Raytech products are designed for many years of trouble-free use, which is why we can offer a standard five-year warranty, guaranteeing the highest quality instrumentation available.

Our Precision Engineering

We always focus on our customers' needs and have produced innovative engineering solutions which meet, and often exceed, our customers' expectations and the industry standards. The products designed at Raytech undergo long-term development of three (3) years or more to ensure that the products have all of the features desired by our customers, along with the highest accuracy available.

Service & Support

Trouble-Free and Guaranteed with our 5-Year Warranty

Raytech offers superior service, support, and traceable certifications for all Raytech test instruments. Once received, your product will be documented, serviced, calibrated, cleaned and then carefully packed and shipped back to you quickly and efficiently.

Our Service & Support Group provides our customers with:

- Professional, expert service and advice
- No-charge service evaluations
- Hardware, firmware, and software updates
- Full and continued support on all retired products
- Certification services provided
- Shortest repair turnaround times

All Raytech equipment comes with a standard 5-year warranty. For more information, see your equipment instruction manual.

To contact our Service & Support Group, call toll free at 888 484 3779 or email service@RaytechUSA.com



PORTABLE PRODUCTS

Power Factor

2 CAPO 2.5

Turns Ratio

4 TR-Mark III 250V

6 TR-1 / TR-1P

7 T-Rex

Current Transformer Test Systems

8 CT-T1

Winding Resistance

9 WR14

10 WR50-12

11 WR50-13

Contact Resistance

12 Micro Junior 2

13 MC2

RACKMOUNT

Turns Ratio

14 TR-Mark III R 250V

16 T-Rex R

Winding Resistance

17 WR14 R

18 WR50-12R

20 WR50-13R

22 WR100-12R

23 WR100-13R

Automation

24 ATOS

25 MUX R

25 ISU R

SOFTWARE

26 T-Base Pro

27 T-Base Remote

27 T-Base Sequence

28 SDK (Software Development Kit)

28 Heat-Run Software (AHRT-01)

29 Raytech Toolbox

OPTIONS

30 Options



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CAPO 2.5: Battery-Operated, 2.5 kV Capacitance Power Factor Test Set

The CAPO 2.5 is designed for fast and easy measurements, made with the well-known high precision and quality of Raytech.

This easy-to-use, battery-operated test set measures dissipation factor ($\tan \delta$), power factor ($\cos \varphi$), capacitance, inductance, quality factor, and power (watts) which can be converted to 10kV. Built to stand up to the harsh conditions of field testing, this instrument provides reliable test results in any situation.

Features

- Battery-operated, making it convenient to use
- Very light and portable – complete system less than 22 kg
- Built-in standard capacitor
- Power factor $\cos \varphi$ / dissipation factor $\tan \delta$ reading
- Accurate and reliable
- Test frequency 10 Hz to 400 Hz
- Easy export of results with USB key
- Internal storage for over 10,000 test results
- External safety switch and safety ground detect for safe operation
- Temperature channel with user-selectable correction
- Simple to operate using the color LCD touch screen with LED backlight
- Internal printer for printing results in the field
- 5-Year standard warranty



CAPO 2.5

Accuracy

	Range	Accuracy	Resolution
Dissipation Factor $\tan \delta$	0 ... 0.1	$\pm 0.5\% \text{ Rdg} \pm 1 \times 10^{-4}$	1×10^{-5}
	0.1 ... 1	$\pm 0.5\% \text{ Rdg} \pm 1 \times 10^{-4}$	1×10^{-4}
	>1	$\pm 0.5\% \text{ Rdg}$	3 Digits
Power Factor $\cos \varphi$	0 ... 0.1	$\pm 0.5\% \text{ Rdg} \pm 1 \times 10^{-4}$	1×10^{-5}
	0.1 ... 1	$\pm 0.5\% \text{ Rdg} \pm 1 \times 10^{-4}$	1×10^{-4}
Capacitance @ 60 Hz	0.00pF to 1.1 μ F @500V	$\pm 0.3\% \text{ Rdg} \pm 0.3\text{pF}$	0.01pF or 5 Digits
	0.00pF to 212nF @2.5kV	$\pm 0.3\% \text{ Rdg} \pm 0.3\text{pF}$	0.01pF or 5 Digits
Capacitance @ 50 Hz	0.00pF to 1.3 μ F @500V	$\pm 0.3\% \text{ Rdg} \pm 0.3\text{pF}$	0.01pF or 5 Digits
	0.00pF to 254nF @2.5kV	$\pm 0.3\% \text{ Rdg} \pm 0.3\text{pF}$	0.01pF or 5 Digits
Test Voltage	Up to 2500V _{rms} (45 ... 400 Hz)	$\pm 0.5\% \text{ Rdg} \pm 1\text{V}$	1V
Test Current	Up to 200mA _{rms}	$\pm 0.3\% \text{ Rdg} \pm 1\mu\text{A}$	0.1 μ A or 4 Digits
Output Power	0 ... 500VA		
Output Frequency	10 Hz ... 400 Hz (Step 0.5 Hz)	$\pm 0.01\%$	0.1 Hz

Specs

Size: L: 521 mm (20.5") W: 432 mm (17") H: 216 mm (8.5")

Weight: 22.2 kg (49 lbs.)

Input Power: 85 to 264 VAC, 250W, or Battery Operated

Test Voltage: Up to 2,500V

Output Frequency: 10 Hz to 400 Hz

Temperature: **Operating:** -10°C to 60°C (14°F to 140°F), **Storage:** -20°C to 70°C (-4°F to 158°F)

See Instruction Manual for more parameters. Specifications subject to improvement at any time.

Test Current: Up to 200 mA_{rms}

Panel Display: 5.7" Color LCD with LED backlight and touch screen

Interface: 2 USB 2.0 interfaces (host and device) and 9 Pin RS-232 serial

Memory Storage: More than 10,000 measurements

Front Panel: Sealed, anodized

CAPO 2.5: Battery-Operated, 2.5 kV Capacitance Power Factor Test Set *(continued)*

Standard Accessories Included

HV Cable – 10m (32 ft.)

HV Ground Cable – 10m (32 ft.)

Test Lead A – Red, 10m (32 ft.)

Test Lead B – Blue, 10m (32 ft.)

Safety Ground Lead – 10m (32 ft.)

Safety Switch – 2m (6.5 ft.)

Power Cord – 6.09m (20 ft.)

RS-232 Cable – 3m (10 ft.)

A-B USB Cable – 3m (10 ft.)

Cable Bag with Shoulder Strap

External USB Drive and Touch Screen Stylus

Paper Refill for Printer, Qty. 5

Instruction Manual

Certificate of Accuracy

Optional Items Available

2021N-26001: Temperature Probe – 10m (32 ft.)

3071N-31000: Safety Switch – 10m (32 ft.)

5090N-15001: Annual Warranty Extension

TR-Mark III 250V: Fully Automatic, Three Phase Transformer Turns Ratio Meter

Features

- Extended test voltage measurement range of up to 250V
- Automatic measurements of voltage, turns ratio, current, and phase displacement
- Easy one-time hook up to the transformer
- Automatic test voltage range
- Displays deviation from a nominal ratio
- Tap changer interface with graphic results
- Load on test object <0.05 VA
- Measures power transformers, PTs and CTs
- Automatic vector group detection
- Enhanced heavy-duty protection circuitry
- Emergency stop button immediately turns off output
- Internal printer
- Data storage of over 10,000 measurements
- Simple to operate color LCD touch screen with backlight
- Two USB interfaces
- 5-Year standard warranty



TR-Mark III 250V

Accuracy

Range	Accuracy at 100V or 40V	Accuracy at 10V	Resolution
0.8 ... 2,000	±0.06% Rdg ±1 LSD	±0.15% Rdg ±1 LSD	5 Digits
2,001 ... 4,000	±0.1% Rdg ±1 LSD	±0.3% Rdg ±1 LSD	5 Digits
4,001 ... 13,000	±0.3% Rdg ±1 LSD	not specified	5 Digits
13,001 ... 16,000	±0.4% Rdg ±1 LSD		5 Digits

Range	Accuracy at 250V	Resolution
0.8 ... 5,000	±0.06% Rdg ±1 LSD	5 Digits
5,001 ... 10,000	±0.1% Rdg ±1 LSD	5 Digits
10,001 ... 32,500	±0.3% Rdg ±1 LSD	5 Digits
32,501 ... 40,000	±0.4% Rdg ±1 LSD	5 Digits

Current	Accuracy	Resolution
0 ... 1A	±0.001A	0.1mA

Phase Angle	Accuracy	Resolution
±90 Degree	±0.05 Degree	0.01 Degree

Specs

Size: L: 470 mm (18.5") W: 371 mm (14.6") H: 190 mm (7.5")
 Weight: 10.2 kg (22.4 lbs.)
 Input Power: 100 to 250 VAC, 50/60 Hz, auto ranging. Fuse: 2A
 Turns Ratio Range: 0.8 to 40,000
 Test Voltage: User Selectable: 250, 100, 40, 10, and 1VAC
 Temperature: **Operating:** -10°C to 60°C (14°F to 140°F); **Storage:** -20°C to 70°C (-4°F to 158°F)
 See Instruction Manual for more Parameters. Specifications subject to improvement at any time.

Panel Display: 5.7" Color LCD with backlight and touch screen
 Front Panel: Sealed, anodized
 Interface: 2 USB 2.0 (1 host/1 device) and 9 Pin RS-232 serial
 Memory Storage: Internally stores more than 10,000 test results
 Max. Test Current: 1A

TR-Mark III 250V: Fully Automatic, Three Phase Transformer Turns Ratio Meter *(continued)*

Standard Accessories Included

H and X Lead Set – 5m (16 ft.)

Red Extension Lead Set (2) – 10m (32 ft.) each

Power Cord – 6.09m (20 ft.)

Ground Lead – 5m (16 ft.)

A-B USB Cable – 3m (10 ft.)

External USB Drive and Touch Screen Stylus

Cable Bag with Shoulder Strap

Paper Refill for Printer – 5 rolls

Spare Fuse Set

Instruction Manual

Certificate of Accuracy

Optional Items Available

1003N-31001: External Trigger Switch for Tap Changer Testing – 10m (32 ft.)

TR-Mark III R 250V: Rackmount Version

1002A-05002: Red Extension Lead – 10m (32 ft.)

T-Rex: 3 Phase Test Voltage Option for TR-Mark III 250V

1004N-15002: Annual Warranty Extension

Need a Rental?

Sometimes renting a piece of equipment is a better alternative to purchasing. While Raytech does not rent its equipment directly, we can assist you in finding a suitable rental company to meet your needs.

Call us at 888 484 3779.

TR-1 / TR-1P: Battery-Operated, Fully Automatic, Single Phase Transformer Turns Ratio Meter

Features

Fully automatic, continuous operation system
 System is housed in a rugged, lightweight, waterproof case
 Battery-operated instrument, rechargeable with line voltage, or with an optional DC Car Adapter
 Reverse Polarity Test
 Continuity Test
 Test current up to 1A for CT testing
 Internal storage for the last 50 test results
 RS-232 interface with optional adapter
 Pass / Fail Function
 Save up to 16 Transformers for comparison
 Performs over 1,000 measurements without recharging
 Install the TinyFlashLoader software, and you will be able to update the firmware using the optional RS-232 Interface Cable Adapter (TinyFlashLoader software is free to download from our website – www.RaytechUSA.com)
 TR-1P Model Unit houses a built-in printer
 5-Year standard warranty



TR-1

TR-1P

Accuracy

Range	Accuracy in PT Mode (40V)	Accuracy in CT Mode (1...5V)	Resolution
0.8 ... 100	±0.08% Rdg ±1 LSD	±0.08% Rdg ±1 LSD	5 Digits
101 ... 4,000	±0.08% Rdg ±1 LSD		5 Digits

Current	Accuracy	Resolution
PT-Mode: 0 ... 0.1A	±1mA	0.1mA
CT-Mode: 0 ... 1A	±1mA	0.1mA

Specs

Size: **L:** 270 mm (10.62") **W:** 245 mm (9.68") **H:** 125 mm (4.87")
 Weight: 3.2 kg (7.1 lbs.)
 Input Power: 85 to 264 VAC, 47 ... 63 Hz, 12 VDC (optional)
 Battery: Lithium Ion 14.4V / 2.15 Ah
 Turns Ratio Range: 0.8 to 4,000
 Output Voltage PT Mode: 40 VAC, 10 VAC, 5 VAC, 1 VAC
 Temperature: **Operating:** -10°C to 60°C (14°F to 140°F); **Storage:** -20°C to 70°C (-4°F to 158°F)
 See Instruction Manual for more parameters. Specifications subject to improvement at any time.

Output Voltage CT Mode: 1 ... 5 VAC, auto ranging
 Panel Display: LCD Graphic with back light
 Front Panel: Sealed, anodized with a multi-actuation rotary knob
 Interface: RS-232 serial (with optional interface adapter)
 Memory Storage: Internally stores 50 test results

Standard Accessories Included

H and X Lead Set – 5m (16 ft.)	Power Cord – 3m (10 ft.)	Instruction Manual
Paper Refill for Printer – 5 rolls (with the TR-1P)	Cable Bag with Shoulder Strap	Certificate of Accuracy
Ground Lead – 5m (16 ft.)		

Optional Items Available

1011N-05001: Red Extension Lead – 5m (16 ft.)	1011N-24002: 12VDC Automotive Adapter
1011N-23001: RS-232 Interface Cable Adapter	1011N-15001: Annual Warranty Extension

T-Rex: Fully Automatic, Three Phase Voltage Extension to Three Phase Turns Ratio Meters

Features

- Optional system accessory for 3-phase transformer turns ratio meter test sets designed by Raytech
- Fully remote-controlled by TR-Mark II, TR-Mark III, and TR-Mark III 250V
- Single hook up to the transformer
- Outputs a pure three phase sine wave
- Automatic selection of test voltage frequency
- Measures phase relationships other than multiples of 30°
- Measures phase shifting transformer
- Measures power rectifier transformer
- Unique system on the market
- Extremely rugged (can withstand a drop test of 1 meter)
- 5-Year standard warranty



T-Rex

Accuracy

Voltage	Voltage Accuracy*	Phase Accuracy*	Current
3 x 24 Vac	± 0.08%	0.08 Degree	0 ... 200mA

*between phases

Specs

- Size: L: 470 mm (18.5") W: 371 mm (14.6") H: 190 mm (7.5")
- Weight: 8.4 kg (18.5 lbs.)
- Input Power: 100 to 250 VAC, 50/60 Hz, auto ranging
- Turns Ratio Range: 0.8 to 4,000
- Test Voltage: 3 phase 24 VAC 50/60 Hz, auto selecting
- Front Panel: Sealed, anodized
- Temperature: **Operating:** -10°C to 60°C (14°F to 140°F); **Storage:** -20°C to 70°C (-4°F to 158°F)

See Instruction Manual for more parameters. Specifications subject to improvement at any time.

Standard Accessories Included

- Power Cord – 3m (10 ft.)
- Interconnect Power Cord – 1.8m (6 ft.)
- Interface Cable (TR-Spy and TR-Mark II)
- Interface Cable (TR-Mark III)
- Red Interconnect Cables (2) – 1m (3.3 ft.) each
- Cable Bag with Shoulder Strap
- Spare Fuse Set
- Instruction Manual
- Certificate of Accuracy

Optional Items Available

- T-Rex R: Rackmount Version
- 1050N-15001: Annual Warranty Extension

Portable Products: Current Transformer Test Systems

CT-T1: Fully Automatic, Current Transformer (CT) Test Set

The CT-T1 is a microprocessor-based Current Transformer Test System that measures CT Excitation, Current Ratio, and Winding Polarity. Single connection permits all taps on the current transformer to be tested automatically, without operator intervention.

This CT Test System is precision-made, just like all of the Raytech products you already know. Built to stand up to the harsh environments of field testing, the CT-T1 comes with a 5-year warranty to guarantee years of accurate and reliable usage.

Features

- Fully automatic knee point detection
- Ratio range of 0.9 to 15,000
- 5 low side tap connections
- Performs CT excitation, current ratio, and polarity tests on current transformers
- Manual or automatic measurements
- Easy, one-time hook up for up to 5 CT taps
- Automatic test voltage range with adjustable limits
- Easy to use tap selector interface
- Data storage of more than 10,000 measurements
- Simple to operate color LCD touch screen with backlight
- 3" graphic-capable printer
- Two USB interfaces and one RS-232 serial port
- 5-Year standard warranty



CT-T1

Accuracy

Ratio Range	Accuracy	Resolution
0.9–5,000	±0.05%	5 Digits
5,001–10,000	±0.5%	5 Digits
10,001–15,000	±1%	5 Digits

Voltage Range	Accuracy	Resolution
0–2,000 V	1% Rdg, ±0.1 V	0.01 V

Current	Accuracy	Resolution
0 – 10 A	1% Rdg, ±0.001 A	0.01 mA

Specs

- Size: L: 521 mm (20.5") W: 432 mm (17") H: 216 mm (8.5")
- Weight: 20 kg (44 lbs.)
- Input Power: 115/230 VAC, 50/60 Hz, auto ranging
- Temperature: **Operating:** –10°C to 60°C (14°F to 140°F), **Storage:** –20°C to 70°C (–4°F to 158°F)
- See Instruction Manual for more parameters. Specifications subject to improvement at anytime.
- Panel Display: 5.7" Color LCD with backlight and touch screen, additional digipot
- Interface: 2 USB interfaces (host and device) and RS-232
- Memory Storage: More than 10,000 measurements

Standard Accessories Included

- H Lead – 5m (16 ft.), Qty. 1
- X Leads – 5m (16 ft.), Qty. 5
- Safety Ground Lead – 10m (32 ft.)
- Safety Switch – 2m (6.5 ft.)
- H Lead Extension – 5m (16 ft.), Qty.1
- X Lead Clip Adapters
- H Lead Adapter
- Power Cord
- External USB Drive and Touch Screen Stylus
- A-B USB Cable – 3m (10 ft.)
- Cable Bag with Shoulder Strap
- Paper Refill for Printer – 5 rolls
- Spare Fuse Set (16A), Qty. 5
- Instruction Manual
- Certificate of Accuracy

Optional Items Available

- 4080N-05001: H Lead Extensions – 5m (16 ft.)
- Custom Clips: Customer Spec
- 4080N-15001: Annual Warranty Extension

WR14: Battery-Operated, 15 Amp, 2 Channel Winding Resistance Meter with Demagnetization and Discharge

Features

- Pure, filtered DC power source for the highest accuracy readings
- Charges inductive loads up to 1,500 Henry
- Battery operated
- High power DC supply (15A / 30V)
- 2 independent measuring channels
- Automatic measurements of resistance from 0.00 $\mu\Omega$. . . 100 k Ω
- Demagnetizing Circuit (Advanced design)
- Microprocessor-based system with internal storage for over 10,000 test results
- Temperature channels with automatic resistance correction
- Panel-mounted Emergency Stop Switch
- Fully automatic cooling curve analysis (option AHRT-01)
- Fast discharge with discharge indicator – visible and audible indicator for discharge status
- Simple to operate color LCD touch screen with backlight
- Standard USB 2.0 & RS-232 (serial) Interface
- 5-Year standard warranty



WR14

Accuracy

Current Range	Measuring Range	Accuracy	Resolution
10 – 15A	0.00 $\mu\Omega$. . . 1 Ω	$\pm 0.1\%$ Rdg $\pm 0.1 \mu\Omega$	5 Digits or 0.05 $\mu\Omega$
5 – 10A	0.0 $\mu\Omega$. . . 3 Ω	$\pm 0.1\%$ Rdg $\pm 0.2 \mu\Omega$	5 Digits or 0.1 $\mu\Omega$
1 – 5A	0.0000m Ω . . . 15 Ω	$\pm 0.1\%$ Rdg $\pm 0.5 \mu\Omega$	5 Digits or 0.5 $\mu\Omega$
0.5 – 1A	0.000 m Ω . . . 30 Ω	$\pm 0.1\%$ Rdg $\pm 2 \mu\Omega$	5 Digits or 1 $\mu\Omega$
0.1 – 0.5A	0.000 m Ω . . . 300 Ω	$\pm 0.1\%$ Rdg $\pm 5 \mu\Omega$	5 Digits or 2 $\mu\Omega$
25m – 0.1A	0.00 m Ω . . . 1200 Ω	$\pm 0.1\%$ Rdg $\pm 20 \mu\Omega$	5 Digits or 10 $\mu\Omega$
< 25 mA	1.2 k Ω . . . 10 k Ω	$\pm 0.1\%$ Rdg $\pm 100 \text{ m}\Omega$	5 Digits or 200 m Ω
< 25 mA	10 k Ω . . . 100 k Ω	$\pm 0.5\%$ Rdg $\pm 10 \Omega$	4 Digits or 20 Ω

Specs

- Size: L: 470 mm (18.5") W: 357 mm (14.1") H: 176 mm (6.9")
- Weight: 9.6 kg (21.1 lbs.)
- Input Power: 88 to 264 VAC, 47 . . . 63 Hz, auto ranging
- Output Voltage: 0 to 30V DC
- Test Current: User Selectable: 25mA . . . 15A
- Inductance Range: 0 to 1,500 Henry
- Temperature: **Operating:** -10°C to 60°C (14°F to 140°F); **Storage:** -20°C to 70°C (-4°F to 158°F)
- See Instruction Manual for more parameters. Specifications subject to improvement at any time.
- Resistance Range: 0.00 $\mu\Omega$ to 100 k Ω
- Panel Display: 5.7" Color LCD with backlight and touch screen
- Front Panel: Sealed, anodized
- Interface: 2 USB 2.0 (1 host, 1 device) and 9 Pin RS-232 serial
- Memory Storage: Internally stores more than 10,000 test results
- Battery Duration: 200 single measurements at 15A

Standard Accessories Included

- Current and Potential Lead Set – 10m (32 ft.)
- Jumper Cable – 10m (32 ft.)
- Power Cord – 6.09m (20 ft.)
- Ground Lead – 10m (32 ft.)
- A-B USB Cable – 3m (10 ft.)
- External USB Drive and Touch Screen Stylus
- Cable Bag with Shoulder Strap
- Paper Refill for Printer – 5 rolls
- Instruction Manual
- Certificate of Accuracy

Optional Items Available

- 2043N-05013: Current and Potential Leads - 20m (65 ft.)
- 2021N-26001: Temperature Probe – 10m (32 ft.)
- 2042N-11001: Heat-Run Curve Analysis Software (AHRT-01)
- WR14 R: Rackmount Version
- 2043N-15001: Annual Warranty Extension

WR50-12: 50 Amp, 2 Channel Winding Resistance Meter with Demagnetization and Discharge

Features

- Pure, filtered DC power source for the highest accuracy readings
- Highest Accuracy and Precision of any high current test system
- Complete, automatic calibration system and system diagnostics
- Automatic measurements of resistance from 0.00 $\mu\Omega$... 100 k Ω
- Demagnetizing Circuit (Advanced design)
- Microprocessor-based system with internal storage for over 10,000 test results
- Data exchange via USB-Key or USB / RS Connection
- Printing and storing of test results while the test system is measuring
- Temperature channels with automatic resistance correction
- Automatic, high efficiency cooling system to dissipate internal heat
- Automatic shut off for over-temperature condition
- Simple to operate color LCD touch screen with backlight
- Panel-mounted Emergency Stop Switch
- Fully automatic cooling curve analysis (option AHRT-01)
- Fastest discharge time on the market
- 5-Year standard warranty



WR50-12

Accuracy

Current Range	Measuring Range	Accuracy	Resolution
30 – 50A	0.00 $\mu\Omega$... 1.3 Ω	$\pm 0.1\%$ Rdg $\pm 0.05 \mu\Omega$	5 Digits or 0.05 $\mu\Omega$
15 – 30A	0.0 $\mu\Omega$... 3.3 Ω	$\pm 0.1\%$ Rdg $\pm 0.1 \mu\Omega$	5 Digits or 0.1 $\mu\Omega$
8 – 15A	0.0000 m Ω ... 6.3 Ω	$\pm 0.1\%$ Rdg $\pm 0.2 \mu\Omega$	5 Digits or 0.2 $\mu\Omega$
3 – 8A	0.0000 m Ω ... 16.7 Ω	$\pm 0.1\%$ Rdg $\pm 0.5 \mu\Omega$	5 Digits or 0.5 $\mu\Omega$
1 – 3A	0.000 m Ω ... 47.2 Ω	$\pm 0.1\%$ Rdg $\pm 1 \mu\Omega$	5 Digits or 1 $\mu\Omega$
0.7 – 1A	0.000 m Ω ... 71.4 Ω	$\pm 0.1\%$ Rdg $\pm 2 \mu\Omega$	5 Digits or 2 $\mu\Omega$
0.3 – 0.7A	0.000 m Ω ... 167 Ω	$\pm 0.1\%$ Rdg $\pm 5 \mu\Omega$	5 Digits or 5 $\mu\Omega$
0.1 – 0.3A	0.00 m Ω ... 500 Ω	$\pm 0.1\%$ Rdg $\pm 10 \mu\Omega$	5 Digits or 10 $\mu\Omega$
25 – 100 mA	0.00 m Ω ... 2 k Ω	$\pm 0.1\%$ Rdg $\pm 20 \mu\Omega$	5 Digits or 20 $\mu\Omega$
< 25 mA	2 k Ω ... 10 k Ω	$\pm 0.2\%$ Rdg $\pm 200 m\Omega$	5 Digits or 200 m Ω
< 25 mA	10 k Ω ... 100 k Ω	$\pm 0.8\%$ Rdg $\pm 20 \Omega$	4 Digits or 20 Ω

Specs

Size: L: 521 mm (20.5") W: 432 mm (17") H: 216 mm (8.5")

Weight: 17.2 kg (37.9 lbs.)

Input Power: 90 to 264 VAC (1.5 kW max.), 47 ... 63 Hz, auto ranging

Output Voltage: 0 to 50V DC

Test Current: User Selectable: 25 mA ... 50 A

Inductance Range: 0 to 1,500 Henry

Temperature: **Operating:** -10°C to 60°C (14°F to 140°F); **Storage:** -20°C to 70°C (-4°F to 158°F)

See Instruction Manual for more parameters. Specifications subject to improvement at any time.

Resistance Range: 0.00 $\mu\Omega$ to 100 k Ω

Panel Display: 5.7" Color LCD with backlight and touch screen

Front Panel: Sealed, anodized

Interface: 2 USB 2.0 (1 host, 1 device) and 9 Pin RS-232 serial

Memory Storage: Internally stores more than 10,000 test results

Standard Accessories Included

Current and Potential Lead Set – 10m (32 ft.)

Ground Lead – 10m (32 ft.)

Jumper Cable – 10m (32 ft.)

Power Cord – 7.62m (25 ft.)

External USB Drive and Touch Screen Stylus

A-B USB Cable – 3m (10 ft.)

Cable Bag with Shoulder Strap

Spare Fuse Set (10A), Qty. 5

Paper Refill for Printer – 5 rolls

Instruction Manual

Certificate of Accuracy

Optional Items Available

2040N-05003: Cable Extension Set – 10m (32 ft.)

2021N-26001: Temperature Probe – 10m (32 ft.)

2042N-11001: Heat-Run Curve Analysis Software (AHRT-01)

WR50-12R: Rackmount Version

2042N-15001: Annual Warranty Extension

WR50-13: 50 Amp, 3 Channel Winding Resistance Meter with Demagnetization and Discharge

Features

- Pure, filtered DC power source for the highest accuracy readings
- Highest Accuracy and Precision of any high current test system
- Complete, automatic calibration system and system diagnostics
- Automatic measurements of resistance from 0.00 $\mu\Omega$... 100 k Ω
- Demagnetizing Circuit (Advanced design)
- Microprocessor-based system with internal storage for over 10,000 test results
- Data exchange via USB-Key or USB / RS Connection
- Printing and storing of test results while the test system is measuring
- Temperature channels with automatic resistance correction
- Automatic, high efficiency cooling system to dissipate internal temperatures
- Automatic shut off for over-temperature conditions
- Simple to operate color LCD touch screen with backlight
- Panel-mounted Emergency Stop Switch
- Mounted in a rugged case for field testing
- Fully automatic cooling curve analysis (option AHRT-01)
- Fastest discharge time on the market
- 5-Year standard warranty



WR50-13

Accuracy

Current Range	Measuring Range	Accuracy	Resolution
30 – 50A	0.00 $\mu\Omega$... 1.3 Ω	$\pm 0.1\%$ Rdg $\pm 0.05 \mu\Omega$	5 Digits or 0.05 $\mu\Omega$
15 – 30A	0.0 $\mu\Omega$... 3.3 Ω	$\pm 0.1\%$ Rdg $\pm 0.1 \mu\Omega$	5 Digits or 0.1 $\mu\Omega$
8 – 15A	0.0000 m Ω ... 6.3 Ω	$\pm 0.1\%$ Rdg $\pm 0.2 \mu\Omega$	5 Digits or 0.2 $\mu\Omega$
3 – 8A	0.0000 m Ω ... 16.7 Ω	$\pm 0.1\%$ Rdg $\pm 0.5 \mu\Omega$	5 Digits or 0.5 $\mu\Omega$
1 – 3A	0.000 m Ω ... 47.2 Ω	$\pm 0.1\%$ Rdg $\pm 1 \mu\Omega$	5 Digits or 1 $\mu\Omega$
0.7 – 1A	0.000 m Ω ... 71.4 Ω	$\pm 0.1\%$ Rdg $\pm 2 \mu\Omega$	5 Digits or 2 $\mu\Omega$
0.3 – 0.7A	0.000 m Ω ... 167 Ω	$\pm 0.1\%$ Rdg $\pm 5 \mu\Omega$	5 Digits or 5 $\mu\Omega$
0.1 – 0.3A	0.00 m Ω ... 500 Ω	$\pm 0.1\%$ Rdg $\pm 10 \mu\Omega$	5 Digits or 10 $\mu\Omega$
25 – 100 mA	0.00 m Ω ... 2 k Ω	$\pm 0.1\%$ Rdg $\pm 20 \mu\Omega$	5 Digits or 20 $\mu\Omega$
< 25 mA	2 k Ω ... 10 k Ω	$\pm 0.2\%$ Rdg $\pm 200 m\Omega$	5 Digits or 200 m Ω
< 25 mA	10 k Ω ... 100 k Ω	$\pm 0.8\%$ Rdg $\pm 20 \Omega$	4 Digits or 20 Ω

Specs

- Size: L: 521 mm (20.5") W: 432 mm (17") H: 216 mm (8.5")
 - Weight: 17.2 kg (37.9 lbs.)
 - Input Power: 90 to 264 VAC (1.5 kW max.), 47...63 Hz, auto ranging
 - Output Voltage: 0 to 50V DC
 - Test Current: User Selectable: 25 mA ... 50 A
 - Inductance Range: 0 to 1,500 Henry
 - Temperature: **Operating:** -10°C to 60°C (14°F to 140°F); **Storage:** -20°C to 70°C (-4°F to 158°F)
 - Resistance Range: 0.00 $\mu\Omega$ to 100 k Ω
 - Panel Display: 5.7" Color LCD with backlight and touch screen
 - Front Panel: Sealed, anodized
 - Interface: 2 USB 2.0 (1 host, 1 device) and 9 Pin RS-232 serial
 - Memory Storage: Internally stores more than 10,000 test results
- See Instruction Manual for more parameters. Specifications subject to improvement at any time.

Standard Accessories Included

- Current and Potential Lead Set – 10m (32 ft.)
- Ground Lead – 10m (32 ft.)
- Jumper Cables, (2) – 10m (32 ft.) each
- Power Cord – 6.09m (20 ft.)
- External USB Drive and Touch Screen Stylus
- A-B USB Cable – 3m (10 ft.)
- Cable Bag with Shoulder Strap
- Spare Fuse Set (10A), Qty. 5
- Paper Refill for Printer – 5 rolls
- Instruction Manual
- Certificate of Accuracy

Optional Items Available

- 2041N-05003: Cable Extension Set – 10m (32 ft.)
- 2042N-11001: Heat-Run Curve Analysis Software (AHRT-01)
- 2041N-15001: Annual Warranty Extension
- 2021N-26001: Temperature Probe – 10m (32 ft.)
- WR50-13R: Rackmount Version

Micro Junior 2: Battery-Operated, Fully Automatic, 10 Amp Micro Ohm Meter

Features

- Pure, filtered DC power source for the highest accuracy readings
- Complete automatic calibration system and system diagnostics
- Automatic measurements of resistance from 0.00 $\mu\Omega$... 400 k Ω
- Microprocessor-based system with internal storage for over 2,000 test results
- Single or continuous measurements with automatic data storage
- Preset a number of tests, at various timed intervals, for automatic data storage
- Automatic current reversal mode for highest accuracy
- Cable length correction for Cable Manufacturer
- Internal printer
- Printing and storing of test results while the test system is measuring
- Lithium-Ion Battery power source
- Standard RS-232 (serial) interface
- Runs for more than 5 hours continuously at 10 amps
- Single push button operation
- Response time less than 2 seconds
- LCD display screen with backlight
- 5-Year standard warranty



Micro Junior 2

Accuracy

Current Range	Measuring Range	Accuracy	Resolution
10 A F/R*	0.00 $\mu\Omega$... 40 m Ω	$\pm 0.1\%$ Rdg $\pm 0.01 \mu\Omega$	5 Digits or 0.01 $\mu\Omega$
10 A	0.0 $\mu\Omega$... 40 m Ω	$\pm 0.1\%$ Rdg $\pm 1 \mu\Omega$	5 Digits or 0.1 $\mu\Omega$
1 A F/R*	0.0 $\mu\Omega$... 1 Ω	$\pm 0.1\%$ Rdg $\pm 1 \mu\Omega$	5 Digits or 0.1 $\mu\Omega$
1 A	0.000 m Ω ... 1 Ω	$\pm 0.1\%$ Rdg $\pm 10 \mu\Omega$	5 Digits or 0.001 m Ω
0.1 A	0.00 m Ω ... 10 Ω	$\pm 0.1\%$ Rdg $\pm 0.1 m\Omega$	5 Digits or 0.01 m Ω
10 mA	0.0 m Ω ... 400 Ω	$\pm 0.1\%$ Rdg $\pm 1 m\Omega$	5 Digits or 0.1 m Ω
1 mA	0.0 Ω ... 40 k Ω	$\pm 0.1\%$ Rdg $\pm 0.1 \Omega$	5 Digits or 0.1 Ω
1 mA	40 k Ω ... 400 k Ω	$\pm 0.1\%$ Rdg	5 Digits

*F/R = automatic Forward / Reverse current measurements

Specs

Size: L: 410 mm (16.1") W: 337 mm (13.3") H: 178 mm (7")

Weight: 5.9 kg (13 lbs.)

Power: Lithium-Ion battery, 14.4V / 6.5 Ah

Panel Display: LCD graphic with backlight

Interface: 9 Pin RS-232 serial

Temperature: **Operating:** -10°C to 60°C (14°F to 140°F); **Storage:** -20°C to 70°C (-4°F to 158°F)

See Instruction Manual for more parameters. Specifications subject to improvements at any time.

Resistance Range: 0.00 $\mu\Omega$ to 400 k Ω

Test Current: User selectable: 10, 1, 0.1, 0.01, 0.001A DC

Front Panel: Sealed, anodized with a multi-actuation rotary knob

Memory Storage: Internally stores up to 2,000 test results

Standard Accessories Included

Current and Potential Lead Set, Positive and Negative – 5m (16 ft.)

Lithium-Ion Battery Charger with power cord

Ground Lead – 5m (16 ft.)

RS-232 Cable – 3m (10 ft.)

Cable Bag with Shoulder Strap

Paper Refill for Printer – 5 rolls

Instruction Manual

Certificate of Accuracy

Optional Items Available

2020N-26002: Temperature Probe – 10m (32 ft.)

2020N-33001: Kelvin Spike Probes – 4m (13 ft.)

2020N-33005: Kelvin Spike Probes – 5m (16 ft.)

2020N-15001: Annual Warranty Extension

MC2: Fully Automatic, 200 Amp Micro Ohm Meter

Features

- Pure, filtered DC power source for the highest accuracy readings
- Highest accuracy and precision of any high current test system
- Complete, automatic calibration system and self-diagnostics
- Automatic measurements of resistance from 0.00 $\mu\Omega$... 5 Ω
- Microprocessor-based system with internal storage for over 2,000 test results
- Single or continuous measurements with automatic data storage
- Preset a number of tests, at various timed intervals, for automatic data storage
- Cable length correction for Cable Manufacturer
- Internal printer
- Printing and storing of test results while the test system is measuring
- Standard centronics (parallel) interface & RS-232 (serial) interface
- Automatic, high efficiency cooling system to dissipate internal heat
- Automatic shut off for over-temperature conditions
- Panel-mounted emergency stop switch
- LCD display screen with backlight
- Wide input power source range
- 5-Year standard warranty



MC2

Accuracy

Current Range	Measuring Range	Accuracy	Resolution
200A	0.00 $\mu\Omega$... 20 m Ω	$\pm 0.1\%$ Rdg $\pm 0.01 \mu\Omega$	5 Digits or 0.01 $\mu\Omega$
100A	0.00 $\mu\Omega$... 40 m Ω	$\pm 0.1\%$ Rdg $\pm 0.02 \mu\Omega$	5 Digits or 0.02 $\mu\Omega$
50A	0.00 $\mu\Omega$... 100 m Ω	$\pm 0.1\%$ Rdg $\pm 0.04 \mu\Omega$	5 Digits or 0.05 $\mu\Omega$
20A	0.0 $\mu\Omega$... 1.0 Ω	$\pm 0.1\%$ Rdg $\pm 0.1 \mu\Omega$	5 Digits or 0.1 $\mu\Omega$
10A	0.0 $\mu\Omega$... 5.0 Ω	$\pm 0.1\%$ Rdg $\pm 0.2 \mu\Omega$	5 Digits or 0.2 $\mu\Omega$

Specs

Size: L: 521 mm (20.5") W: 432 mm (17") H: 216 mm (8.5")

Weight: 14.4 kg (31.5 lbs)

Input Power: 100 to 250 VAC, 50/60 Hz, auto ranging

Output Power: 1000 Watt

Test Current: User Selectable: 200, 100, 50, 20, 10A DC

Panel Display: LCD graphic with backlight

Front Panel: Sealed, anodized with a multi-actuation rotary knob

Temperature: **Operating:** -10°C to 60°C (14°F to 140°F); **Storage:** -20°C to 70°C (-4°F to 158°F)

See Instruction Manual for more parameters. Specifications subject to improvement at any time.

Interface: 9 Pin RS-232 serial / 25 Pin Centronics parallel

Memory Storage: Internally stores up to 2,000 test results

Resistance Range: 0.00 $\mu\Omega$ to 5 Ω

Measuring duty cycle: 200A: 10 min. on, 2 min. off
100A and below: continuous

Standard Accessories Included

Current and Potential Lead Set, Positive and Negative – 5m (16 ft.)

Power Cord – 7.62m (25 ft.)

Ground Lead – 5m (16 ft.)

RS-232 Cable – 3m (10 ft.)

Cable Bag with Shoulder Strap

Paper Refill for Printer – 5 rolls

Spare Fuse Set (10A), Qty. 5

Instruction Manual

Certificate of Accuracy

Optional Items Available

2021N-26001: Temperature Probe – 10m (32 ft.)

2021N-15001: Annual Warranty Extension

TR-Mark III R 250V: Fully Automatic, Three Phase Transformer Turns Ratio Meter

Features

- Extended test voltage measurement range of up to 250V
- Automatic measurements of voltage, turns ratio, current, and phase displacement
- Easy one-time hook up to the transformer
- Automatic test voltage range
- Displays deviation from a nominal ratio
- Tap changer interface with graphic results
- Load on test object <0.05 VA
- Measures power transformers, PTs and CTs
- Automatic vector group detection
- Enhanced heavy-duty protection circuitry
- Emergency stop button immediately turns off output
- Data storage of over 10,000 measurements
- Simple to operate color LCD touch screen with backlight
- Four USB interfaces
- 5-Year standard warranty



TR-Mark III R 250V

Accuracy

Range	Accuracy at 100V or 40V	Accuracy at 10V	Resolution
0.8 ... 2,000	±0.06% Rdg ±1 LSD	±0.15% Rdg ±1 LSD	5 Digits
2,001 ... 4,000	±0.1% Rdg ±1 LSD	±0.3% Rdg ±1 LSD	5 Digits
4,001 ... 13,000	±0.3% Rdg ±1 LSD	not specified	5 Digits
13,001 ... 16,000	±0.4% Rdg ±1 LSD		5 Digits

Range	Accuracy at 250V	Resolution
0.8 ... 5,000	±0.06% Rdg ±1 LSD	5 Digits
5,001 ... 10,000	±0.1% Rdg ±1 LSD	5 Digits
10,001 ... 32,500	±0.3% Rdg ±1 LSD	5 Digits
32,501 ... 40,000	±0.4% Rdg ±1 LSD	5 Digits

Current	Accuracy	Resolution
0 ... 1A	±0.001A	0.1mA

Phase Angle	Accuracy	Resolution
±90 Degree	±0.05 Degree	0.01 Degree

Specs

Size: L: 490 mm (19.3") W: 436 mm (17.2") H: 177 mm (7"), Rack Unit: 4U
 Weight: 8.1 kg (17.9 lbs.)
 Input Power: 100 to 250 VAC, 50/60 Hz, auto ranging. Fuse: 2A
 Turns Ratio Range: 0.8 to 40,000
 Test Voltage: User Selectable: 250, 100, 40, 10, and 1VAC
 Max. Test Current: 1A
 Panel Display: 5.7" Color LCD with backlight and touch screen
 Front Panel: Sealed, anodized
 Interface: 4 USB 2.0 (3 host/1 device) and 9 Pin RS-232 serial
 Memory Storage: Internally stores more than 10,000 test results
 Temperature: **Operating:** -10°C to 60°C (14°F to 140°F); **Storage:** -20°C to 70°C (-4°F to 158°F)
 See Instruction Manual for more parameters. Specifications subject to improvement at any time.

TR-Mark III R 250V: Fully Automatic, Three Phase Transformer Turns Ratio Meter *(continued)*

Standard Accessories Included

H and X Lead Set – 5m (16 ft.)
Red Extension Lead Set (2) – 10m (32 ft.)
Power Cord – 6.09m (20 ft.)
Ground Lead – 5m (16 ft.)
A-B USB Cable – 3.05m (10 ft.)

External USB Drive and Touch Screen Stylus
Cable Bag with Shoulder Strap
Instruction Manual
Certificate of Accuracy

Optional Items Available

1003N-31001: External Trigger Switch for Tap Changer Testing – 10m (32 ft.)
1002A-05002: Red Extension Cable – 10m (32 ft.)
T-Rex R: 3 Phase Test Voltage Option for TR-Mark III R 250V
TR-Mark III 250V: Field Case Version
1004N-15002: Annual Warranty Extension



Rear View

Even though our instruments are built to be extra durable and rugged, we package them for shipping to fully withstand the sometimes harsh conditions they may encounter.



T-Rex R: Fully Automatic, Three Phase Voltage Extension to Turns Ratio Meter

Features

- Optional system accessory for 3-phase transformer ratio meter test sets designed by Raytech
- Fully remote controlled by TR-Mark II R, TR-Mark III R, and TR-Mark III R 250V
- Single hook up to the transformer
- Outputs a pure three phase sine wave
- Automatic selection of test voltage frequency
- Measures phase relationships other than multiples of 30°
- Measures phase shifting transformer
- Measures power rectifier transformer
- Unique system on the market
- 5-Year standard warranty



T-Rex R

Accuracy

Voltage	Voltage Accuracy*	Phase Accuracy*	Current
3 x 24 Vac	± 0.08%	0.08 Degree	0 ... 200mA

*between phases

Specs

- Size: L: 490 mm (19.3") W: 436 mm (17.2") H: 88 mm (3.5"), Rack Unit: 2U
- Weight: 5.4 kg (12.0 lbs.)
- Input Power: 100 to 250 VAC, 50/60 Hz, auto ranging
- Turns Ratio Range: 0.8 to 4,000
- Test Voltage: 3 phase 24 VAC, 50/60 Hz, auto selecting
- Front Panel: Sealed, anodized
- Temperature: **Operating:** -10°C to 60°C (14°F to 140°F); **Storage:** -20°C to 70°C (-4°F to 158°F)
- See Instruction Manual for more parameters. Specifications subject to improvement at any time.

Standard Accessories Included

- Power Cord – 2.4m (8 ft.)
- Interface Cable (TR-Spy and TR-Mark II)
- Interface Cable (TR-Mark III)
- Red Interconnect Cables (2) – 1m (3.3 ft.) each
- Cable Bag with Shoulder Strap
- Instruction Manual
- Certificate of Accuracy

Optional Items Available

- T-Rex: Field Case Version
- 1050N-15001: Annual Warranty Extension



Rear View

WR14 R: 15 Amp, 2 Channel Winding Resistance Meter with Demagnetization and Discharge

Features

- Pure, filtered DC power source for the highest accuracy readings
- Charges inductive loads up to 1,500 Henry
- High power DC supply (15A / 30V)
- 2 independent measuring channels
- Automatic measurements of resistance from 0.00 $\mu\Omega$... 100 k Ω
- Demagnetizing Circuit (Advanced design)
- Microprocessor-based system with internal storage for over 10,000 test results
- Temperature channels with automatic resistance correction
- Panel-mounted Emergency Stop Switch
- Fully automatic cooling curve analysis (option AHR- 01)
- Fast discharge with discharge indicator – visible and audible indicator for discharge status
- Simple to operate color LCD touch screen with backlight
- Four USB 2.0 & RS-232 (serial) Interface
- 5-Year standard warranty



WR14 R

Accuracy

Current Range	Measuring Range	Accuracy	Resolution
10 – 15A	0.00 $\mu\Omega$... 1 Ω	$\pm 0.1\%$ Rdg $\pm 0.1 \mu\Omega$	5 Digits or 0.05 $\mu\Omega$
5 – 10A	0.0 $\mu\Omega$... 3 Ω	$\pm 0.1\%$ Rdg $\pm 0.2 \mu\Omega$	5 Digits or 0.1 $\mu\Omega$
1 – 5A	0.0000m Ω ... 15 Ω	$\pm 0.1\%$ Rdg $\pm 0.5 \mu\Omega$	5 Digits or 0.5 $\mu\Omega$
0.5 – 1A	0.000 m Ω ... 30 Ω	$\pm 0.1\%$ Rdg $\pm 2 \mu\Omega$	5 Digits or 1 $\mu\Omega$
0.1 – 0.5A	0.000 m Ω ... 300 Ω	$\pm 0.1\%$ Rdg $\pm 5 \mu\Omega$	5 Digits or 2 $\mu\Omega$
25m – 0.1A	0.00 m Ω ... 1200 Ω	$\pm 0.1\%$ Rdg $\pm 20 \mu\Omega$	5 Digits or 10 $\mu\Omega$
< 25 mA	1.2 k Ω ... 10 k Ω	$\pm 0.1\%$ Rdg $\pm 100 m\Omega$	5 Digits or 200 m Ω
< 25 mA	10 k Ω ... 100 k Ω	$\pm 0.5\%$ Rdg $\pm 10 \Omega$	4 Digits or 20 Ω

Specs

Size: L: 395 mm (15.6") W: 436 mm (17.2") H: 177 mm (7.0"), Rack Unit: 4U
 Weight: 7.9 kg (17.4 lbs.)

Input Power: 88 to 264 VAC, 47 ... 63 Hz, auto ranging

Output Voltage: 0 to 30V DC

Test Current: User Selectable: 25 mA ... 15A

Inductance Range: 0 to 1,500 Henry

Temperature: **Operating:** -10°C to 60°C (14°F to 140°F); **Storage:** -20°C to 70°C (-4°F to 158°F)

See Instruction Manual for more parameters. Specifications subject to improvement at any time.

Resistance Range: 0.00 $\mu\Omega$ to 100 k Ω

Panel Display: 5.7" Color LCD with backlight and touch screen

Front Panel: Sealed, anodized

Interface: 4 USB 2.0 (3 host, 1 device) and 9 Pin RS-232 serial

Memory Storage: Internally stores more than 10,000 test results

Standard Accessories Included

Current and Potential Lead Set – 10m (32 ft.)

Power Cord – 6.09m (20 ft.)

Jumper Cable – 10m (32 ft.)

Ground Lead – 10m (32 ft.)

A-B USB Cable – 3.05m (10 ft.)

External USB Drive and Touch Screen Stylus

Cable Bag with Shoulder Strap

Instruction Manual

Certificate of Accuracy

Optional Items Available

2043N-05048: Cable Extension Set – 10m (32 ft.)

2021N-26001: Temperature Probe – 10m (32 ft.)

2042N-11001: Heat-Run Curve Analysis Software (AHRT-01)

WR14: Field Case Version

2043N-15001: Annual Warranty Extension

WR50-12R: 50 Amp, 2 Channel Winding Resistance Meter with Demagnetization and Discharge

Features

- Pure, filtered DC power source for the highest accuracy readings
- Highest Accuracy and Precision of any high current test system
- Complete, automatic calibration system and system diagnostics
- Automatic measurements of resistance from 0.00 $\mu\Omega$... 100 k Ω
- Demagnetizing Circuit (Advanced design)
- Microprocessor-based system with internal storage for over 10,000 test results
- Data exchange via USB-Key or USB / RS Connection
- Storage of test results while the test system is measuring
- Temperature channels with automatic resistance correction
- Automatic, high efficiency cooling system to dissipate internal heat
- Automatic shut off for over-temperature condition
- Four USB 2.0 & RS-232 (serial) Interface
- Simple to operate color LCD touch screen with backlight
- Panel-mounted Emergency Stop Switch
- 19" rack-mounting casing
- Fully automatic cooling curve analysis (option AHRT-01)
- Fastest discharge time on the market
- 5-Year standard warranty



WR50-12R

Accuracy

Current Range	Measuring Range	Accuracy	Resolution
30 – 50A	0.00 $\mu\Omega$... 1.3 Ω	$\pm 0.1\%$ Rdg $\pm 0.05 \mu\Omega$	5 Digits or 0.05 $\mu\Omega$
15 – 30A	0.0 $\mu\Omega$... 3.3 Ω	$\pm 0.1\%$ Rdg $\pm 0.1 \mu\Omega$	5 Digits or 0.1 $\mu\Omega$
8 – 15A	0.0000 m Ω ... 6.3 Ω	$\pm 0.1\%$ Rdg $\pm 0.2 \mu\Omega$	5 Digits or 0.2 $\mu\Omega$
3 – 8A	0.0000 m Ω ... 16.7 Ω	$\pm 0.1\%$ Rdg $\pm 0.5 \mu\Omega$	5 Digits or 0.5 $\mu\Omega$
1 – 3A	0.000 m Ω ... 47.2 Ω	$\pm 0.1\%$ Rdg $\pm 1 \mu\Omega$	5 Digits or 1 $\mu\Omega$
0.7 – 1A	0.000 m Ω ... 71.4 Ω	$\pm 0.1\%$ Rdg $\pm 2 \mu\Omega$	5 Digits or 2 $\mu\Omega$
0.3 – 0.7A	0.000 m Ω ... 167 Ω	$\pm 0.1\%$ Rdg $\pm 5 \mu\Omega$	5 Digits or 5 $\mu\Omega$
0.1 – 0.3A	0.00 m Ω ... 500 Ω	$\pm 0.1\%$ Rdg $\pm 10 \mu\Omega$	5 Digits or 10 $\mu\Omega$
25 – 100 mA	0.00 m Ω ... 2 k Ω	$\pm 0.1\%$ Rdg $\pm 20 \mu\Omega$	5 Digits or 20 $\mu\Omega$
< 25 mA	2 k Ω ... 10 k Ω	$\pm 0.2\%$ Rdg $\pm 200 m\Omega$	5 Digits or 200 m Ω
< 25 mA	10 k Ω ... 100 k Ω	$\pm 0.8\%$ Rdg $\pm 20 \Omega$	4 Digits or 20 Ω

Specs

- Size: L: 490 mm (19.3") W: 436 mm (17.2") H: 177 mm (7"), Rack Unit: 4U
 - Weight: 13.8 kg (29.7 lbs.)
 - Input Power: 90 to 264 VAC (1.5 kW max.), 47...63 Hz, auto ranging
 - Output Voltage: 0 to 50V DC
 - Test Current: User Selectable: 25 mA ... 50 A
 - Inductance Range: 0 to 1,500 Henry
 - Resistance Range: 0.00 $\mu\Omega$ to 100 k Ω
 - Panel Display: 5.7" Color LCD with backlight and touch screen
 - Front Panel: Sealed, anodized
 - Interface: 4 USB 2.0 (3 host, 1 device) and 9 Pin RS-232 serial
 - Memory Storage: Internally stores more than 10,000 test results
 - Temperature: **Operating:** -10°C to 60°C (14°F to 140°F); **Storage:** -20°C to 70°C (-4°F to 158°F)
- See Instruction Manual for more parameters. Specifications subject to improvement at any time.

WR50-12R: 50 Amp, 2 Channel Winding Resistance Meter with Demagnetization and Discharge *(continued)*

Standard Accessories Included

Current and Potential Lead Set – 10m (32 ft.)
Ground Lead – 10m (32 ft.)
Jumper Cable – 10m (32 ft.)
Power Cord – 6.09m (20 ft.)

A-B USB Cable – 3.05m (10 ft.)
External USB Drive and Touch Screen Stylus
Cable Bag with Shoulder Strap

Spare Fuse Set (16A), Qty. 5
Instruction Manual
Certificate of Accuracy

Optional Items Available

2040N-05003: Cable Extension Set – 10m (32 ft.)
2021N-26001: Temperature Probe – 10m (32 ft.)
2042N-11001: Heat-Run Curve Analysis Software (AHRT-01)
WR50-12: Field Case Version
2042N-15001: Annual Warranty Extension



Rear View

Complete Measuring Systems, right out of the box.



Every Raytech instrument comes complete with all the necessary accessories to test right out of the box – nothing extra needs to be purchased.

Unpack, set up, and start testing.

WR50-13R: 50 Amp, 3 Channel Winding Resistance Meter with Demagnetization and Discharge

Features

- Pure, filtered DC power source for the highest accuracy readings
- Highest Accuracy and Precision of any high current test system
- Complete, automatic calibration system and system diagnostics
- Automatic measurements of resistance from 0.00 $\mu\Omega$... 100 k Ω
- Demagnetizing Circuit (Advanced design)
- Microprocessor-based system with internal storage for over 10,000 test results
- Data exchange via USB-Key or USB / RS Connection
- Storage of test results while the test system is measuring
- Temperature channels with automatic resistance correction
- Automatic, high efficiency cooling system to dissipate internal temperatures
- Automatic shut off for over-temperature conditions
- Four USB 2.0 & RS-232 (serial) Interface
- Simple to operate color LCD touch screen with backlight
- Panel-mounted Emergency Stop Switch
- 19" rack-mounting casing
- Fully automatic cooling curve analysis (option AHRT-01)
- Fastest discharge time on the market
- 5-Year standard warranty



WR50-13R

Accuracy

Current Range	Measuring Range	Accuracy	Resolution
30 – 50A	0.00 $\mu\Omega$... 1.3 Ω	$\pm 0.1\%$ Rdg $\pm 0.05 \mu\Omega$	5 Digits or 0.05 $\mu\Omega$
15 – 30A	0.0 $\mu\Omega$... 3.3 Ω	$\pm 0.1\%$ Rdg $\pm 0.1 \mu\Omega$	5 Digits or 0.1 $\mu\Omega$
8 – 15A	0.0000 m Ω ... 6.3 Ω	$\pm 0.1\%$ Rdg $\pm 0.2 \mu\Omega$	5 Digits or 0.2 $\mu\Omega$
3 – 8A	0.0000 m Ω ... 16.7 Ω	$\pm 0.1\%$ Rdg $\pm 0.5 \mu\Omega$	5 Digits or 0.5 $\mu\Omega$
1 – 3A	0.000 m Ω ... 47.2 Ω	$\pm 0.1\%$ Rdg $\pm 1 \mu\Omega$	5 Digits or 1 $\mu\Omega$
0.7 – 1A	0.000 m Ω ... 71.4 Ω	$\pm 0.1\%$ Rdg $\pm 2 \mu\Omega$	5 Digits or 2 $\mu\Omega$
0.3 – 0.7A	0.000 m Ω ... 167 Ω	$\pm 0.1\%$ Rdg $\pm 5 \mu\Omega$	5 Digits or 5 $\mu\Omega$
0.1 – 0.3A	0.00 m Ω ... 500 Ω	$\pm 0.1\%$ Rdg $\pm 10 \mu\Omega$	5 Digits or 10 $\mu\Omega$
25 – 100 mA	0.00 m Ω ... 2 k Ω	$\pm 0.1\%$ Rdg $\pm 20 \mu\Omega$	5 Digits or 20 $\mu\Omega$
< 25 mA	2 k Ω ... 10 k Ω	$\pm 0.2\%$ Rdg $\pm 200 \text{ m}\Omega$	5 Digits or 200 m Ω
< 25 mA	10 k Ω ... 100 k Ω	$\pm 0.8\%$ Rdg $\pm 20 \Omega$	4 Digits or 20 Ω

Specs

- Size: **L:** 490 mm (19.3") **W:** 436 mm (17.2") **H:** 177 mm (7"), Rack Unit: 4U
 - Weight: 13.8 kg (29.7 lbs.)
 - Input Power: 90 to 264 VAC (1.5 kW max.), 47...63 Hz, auto ranging
 - Output Voltage: 0 to 50V DC
 - Test Current: User Selectable: 25 mA ... 50 A
 - Inductance Range: 0 to 1,500 Henry
 - Resistance Range: 0.00 $\mu\Omega$ to 100 k Ω
 - Panel Display: 5.7" Color LCD with backlight and touch screen
 - Front Panel: Sealed, anodized
 - Interface: 4 USB 2.0 (3 host, 1 device) and 9 Pin RS-232 serial
 - Memory Storage: Internally stores more than 10,000 test results
 - Temperature: **Operating:** -10°C to 60°C (14°F to 140°F); **Storage:** -20°C to 70°C (-4°F to 158°F)
- See Instruction Manual for more parameters. Specifications subject to improvement at any time.

WR50-13R: 50 Amp, 3 Channel Winding Resistance Meter with Demagnetization and Discharge *(continued)*

Standard Accessories Included

Current and Potential Lead Set – 10m (32 ft.)
Ground Lead – 10m (32 ft.)
Jumper Cables (2) - 10m (32 ft.) each
Power Cord – 6.09m (20 ft.)

A-B USB Cable – 3.05m (10 ft.)
External USB Drive and Touch Screen Stylus
Cable Bag with Shoulder Strap
Spare Fuse Set (16A), Qty. 5

Instruction Manual
Certificate of Accuracy

Optional Items Available

2041N-05003: Cable Extension Set – 10m (32 ft.)
2021N-26001: Temperature Probe – 10m (32 ft.)
2042N-11001: Heat-Run Curve Analysis Software (AHRT-01)
WR50-13: Field Case Version
2041N-15001: Annual Warranty Extension



Rear View



What does a 5-Year Warranty mean to you?

Our customers know that the Raytech standard 5-year warranty means they will have years of trouble-free operation, without the cost of replacing their instruments.

WR100-12R: 100 Amp, 2 Channel Winding Resistance Meter with Demagnetization and Discharge

Features

- Pure, filtered DC power source for the highest accuracy readings
- Highest Accuracy and Precision of any high current test system
- Complete, automatic calibration system and system diagnostics
- Automatic measurements of resistance from 0.00 $\mu\Omega$... 100 k Ω
- Demagnetizing Circuit (Advanced design)
- Microprocessor-based system with internal storage for over 10,000 test results
- Data exchange via USB-Key or USB / RS Connection
- Storage of test results while the test system is measuring
- Temperature channels with automatic resistance correction
- Automatic, high efficiency cooling system to dissipate internal heat
- Automatic shut off for over-temperature conditions
- Simple to operate color LCD touch screen with backlight
- Panel-mounted Emergency Stop Switch
- Fully automatic cooling curve analysis (option AHRT-01)
- Fastest discharge time on the market
- 5-Year standard warranty



WR100-12R

Accuracy

Current Range	Measuring Range	Accuracy	Resolution
30 – 100A	0.00 $\mu\Omega$... 1.7 Ω	$\pm 0.1\%$ Rdg $\pm 0.05 \mu\Omega$	5 Digits or 0.05 $\mu\Omega$
15 – 30A	0.0 $\mu\Omega$... 3.3 Ω	$\pm 0.1\%$ Rdg $\pm 0.1 \mu\Omega$	5 Digits or 0.1 $\mu\Omega$
8 – 15A	0.0000 m Ω ... 6.3 Ω	$\pm 0.1\%$ Rdg $\pm 0.2 \mu\Omega$	5 Digits or 0.2 $\mu\Omega$
3 – 8A	0.0000 m Ω ... 16.7 Ω	$\pm 0.1\%$ Rdg $\pm 0.5 \mu\Omega$	5 Digits or 0.5 $\mu\Omega$
1 – 3A	0.000 m Ω ... 47.2 Ω	$\pm 0.1\%$ Rdg $\pm 1 \mu\Omega$	5 Digits or 1 $\mu\Omega$
0.7 – 1A	0.000 m Ω ... 71.4 Ω	$\pm 0.1\%$ Rdg $\pm 2 \mu\Omega$	5 Digits or 2 $\mu\Omega$
0.3 – 0.7A	0.000 m Ω ... 167 Ω	$\pm 0.1\%$ Rdg $\pm 5 \mu\Omega$	5 Digits or 5 $\mu\Omega$
0.1 – 0.3A	0.00 m Ω ... 500 Ω	$\pm 0.1\%$ Rdg $\pm 10 \mu\Omega$	5 Digits or 10 $\mu\Omega$
25 – 100 mA	0.00 m Ω ... 2 k Ω	$\pm 0.1\%$ Rdg $\pm 20 \mu\Omega$	5 Digits or 20 $\mu\Omega$
< 25 mA	2 k Ω ... 10 k Ω	$\pm 0.2\%$ Rdg $\pm 200 \text{ m}\Omega$	5 Digits or 200 m Ω
< 25 mA	10 k Ω ... 100 k Ω	$\pm 0.8\%$ Rdg $\pm 20 \Omega$	4 Digits or 20 Ω

Specs

Size: L: 490 mm (19.3") W: 436 mm (17.2") H: 310 mm (12.2"), Rack Unit: 7U

Weight: 21.9 kg (48.3 lbs.)

Input Power: 2 x 90 to 264 VAC (3 kW max.), 47...63 Hz, auto ranging

Output Voltage: 0 to 50V DC

Test Current: User Selectable: 25 mA ... 100 A

Inductance Range: 0 to 1,500 Henry

Temperature: **Operating:** -10°C to 60°C (14°F to 140°F); **Storage:** -20°C to 70°C (-4°F to 158°F)

See Instruction Manual for more parameters. Specifications subject to improvement at any time.

Resistance Range: 0.00 $\mu\Omega$ to 100 k Ω

Panel Display: 5.7" Color LCD with backlight and touch screen

Front Panel: Sealed, anodized

Interface: 4 USB 2.0 (3 host, 1 device) and 9 Pin RS-232 serial

Memory Storage: Internally stores more than 10,000 test results

Standard Accessories Included

Current and Potential Lead Set – 10m (32 ft.)

Ground Lead – 10m (32 ft.)

Jumper Cable – 10m (32 ft.)

External USB Drive and Touch Screen Stylus

A-B USB Cable – 3.05m (10 ft.)

Spare Fuse Set (16A), Qty. 5

Instruction Manual

Certificate of Accuracy

Optional Items Available

2061N-05001: Cable Extension Set – 10m (32 ft.)

2060A-04001: Pelican Transport Shipping Case

2061N-15001: Annual Warranty Extension

2021N-26001: Temperature Probe – 10m (32 ft.)

2042N-11001: Heat-Run Curve Analysis Software (AHRT-01)

WR100-13R: 100 Amp, 3 Channel Winding Resistance Meter with Demagnetization and Discharge

Features

- Pure, filtered DC power source for the highest accuracy readings
- Highest Accuracy and Precision of any high current test system
- Complete, automatic calibration system and system diagnostics
- Automatic measurements of resistance from 0.00 $\mu\Omega$... 100 k Ω
- Demagnetizing Circuit (Advanced design)
- Microprocessor-based system with internal storage for over 10,000 test results
- Data exchange via USB-Key or USB / RS Connection
- Storage of test results while the test system is measuring
- Temperature channels with automatic resistance correction
- Automatic, high efficiency cooling system to dissipate internal heat
- Automatic shut off for over-temperature conditions
- Simple to operate color LCD touch screen with backlight
- Panel-mounted Emergency Stop Switch
- Fully automatic cooling curve analysis (option AHRT-01)
- Fastest discharge time on the market
- 5-Year standard warranty



WR100-13R

Accuracy

Current Range	Measuring Range	Accuracy	Resolution
30 – 100A	0.00 $\mu\Omega$... 1.7 Ω	$\pm 0.1\%$ Rdg $\pm 0.05 \mu\Omega$	5 Digits or 0.05 $\mu\Omega$
15 – 30A	0.0 $\mu\Omega$... 3.3 Ω	$\pm 0.1\%$ Rdg $\pm 0.1 \mu\Omega$	5 Digits or 0.1 $\mu\Omega$
8 – 15A	0.0000 m Ω ... 6.3 Ω	$\pm 0.1\%$ Rdg $\pm 0.2 \mu\Omega$	5 Digits or 0.2 $\mu\Omega$
3 – 8A	0.0000 m Ω ... 16.7 Ω	$\pm 0.1\%$ Rdg $\pm 0.5 \mu\Omega$	5 Digits or 0.5 $\mu\Omega$
1 – 3A	0.000 m Ω ... 47.2 Ω	$\pm 0.1\%$ Rdg $\pm 1 \mu\Omega$	5 Digits or 1 $\mu\Omega$
0.7 – 1A	0.000 m Ω ... 71.4 Ω	$\pm 0.1\%$ Rdg $\pm 2 \mu\Omega$	5 Digits or 2 $\mu\Omega$
0.3 – 0.7A	0.000 m Ω ... 167 Ω	$\pm 0.1\%$ Rdg $\pm 5 \mu\Omega$	5 Digits or 5 $\mu\Omega$
0.1 – 0.3A	0.00 m Ω ... 500 Ω	$\pm 0.1\%$ Rdg $\pm 10 \mu\Omega$	5 Digits or 10 $\mu\Omega$
25 – 100 mA	0.00 m Ω ... 2 k Ω	$\pm 0.1\%$ Rdg $\pm 20 \mu\Omega$	5 Digits or 20 $\mu\Omega$
< 25 mA	2 k Ω ... 10 k Ω	$\pm 0.2\%$ Rdg $\pm 200 m\Omega$	5 Digits or 200 m Ω
< 25 mA	10 k Ω ... 100 k Ω	$\pm 0.8\%$ Rdg $\pm 20 \Omega$	4 Digits or 20 Ω

Specs

Size: L: 490 mm (19.3") W: 436 mm (17.2") H: 310 mm (12.2"), Rack Unit: 7U
 Weight: 21.9 kg (48.3 lbs.)
 Input Power: 2 x 90 to 264 VAC (3 kW max.), 47...63 Hz, auto ranging
 Output Voltage: 0 to 50V DC
 Test Current: User Selectable: 25 mA ... 100 A
 Inductance Range: 0 to 1,500 Henry
 Temperature: **Operating:** -10°C to 60°C (14°F to 140°F); **Storage:** -20°C to 70°C (-4°F to 158°F)
 See Instruction Manual for more parameters. Specifications subject to improvement at any time.

Resistance Range: 0.00 $\mu\Omega$ to 100 k Ω
 Panel Display: 5.7" Color LCD with backlight and touch screen
 Front Panel: Sealed, anodized
 Interface: 4 USB 2.0 (3 host, 1 device) and 9 Pin RS-232 serial
 Memory Storage: Internally stores more than 10,000 test results

Standard Accessories Included

Current and Potential Lead Set – 10m (32 ft.)	A-B USB Cable – 3.05m (10 ft.)	Instruction Manual
Ground Lead – 10m (32 ft.)	External USB Drive and Touch Screen Stylus	Certificate of Accuracy
Jumper Cables (2) – 10m (32 ft.) each	Spare Fuse Set (16A), Qty. 5	

Optional Items Available

2060N-05001: Cable Extension Set – 10m (32 ft.)	2021N-26001: Temperature Probe – 10m (32 ft.)
2060A-04001: Pelican Transport Shipping Case	2042N-11001: Heat-Run Curve Analysis Software (AHRT-01)
2060N-15001: Annual Warranty Extension	

Automatic Transformer Observation System (ATOS): Create a custom system for any application

Features

Minimizes cabling time, one time transformer connection for winding resistance and ratio

Different currents allowed at the same time on Primary, Secondary, & Tertiary

No precision loss

Modular system with:

- Up to three winding resistance meters
- One turns ratio meter, with or without a T-Rex
- Up to four multiplexers

Provides various rack options or build-on-site capabilities

Operate all instruments on a touch screen or by remote computer control

Control your tap changer with a powerful tap changer interface

Integrated Safety Unit provides fused electrical power, manages external interlocks, and provides a single interface for an external warning lamp

Specs

Turn Ratio Accuracy: Up to 0.06%

Phase Relations: Any angle (not limited to 30° steps)

Winding Resistance Accuracy: Up to 0.1% $\pm 0.05\mu\Omega$

Winding Resistance DC Supply: Up to 100A / 50V

Demagnetizing: Fully Automatic

Heat Run Test: Available on Winding Resistance

Case: Custom 19" Rack Shelf

Interface: USB

Remote Control: Individual software or by Raytech T-Base Pro software

Input Power: 88 to 264 VAC, 47 . . . 63 Hz, auto ranging

See Instruction Manual for the specific instrument for more parameters. Specifications subject to improvement at any time.

Standard Accessories Included

10m cables

Various cable accessories

T-Base Pro software program

Optional Items Available

The design of the ATOS system is determined by the customer's needs. Equipment to be used in the ATOS system can include combinations of the following equipment:

- TR-Mark III R 250V: Three Phase Transformer Turns Ratio Meter
- T-Rex R: Three Phase Test Voltage Option
- WR14 R: 15 Amp, 2-Channel Winding Resistance Meter with Core Demagnetization
- WR50-12R: 50 Amp, 2-Channel Winding Resistance Meter with Core Demagnetization
- WR50-13R: 50 Amp, 3-Channel Winding Resistance Meter with Core Demagnetization
- WR100-12R: 100 Amp, 2-Channel Winding Resistance Meter with Core Demagnetization
- WR100-13R: 100 Amp, 3-Channel Winding Resistance Meter with Core Demagnetization
- MUX R: Up to 100 Amp, 3-Channel Multiplexer for Transformer Testing with Core Demagnetization and Discharge
- ISU R: Integrated Safety Unit

Optional T-Base Software Add-ons available to automate the measuring process:

- T-Base Remote: Option for T-Base Pro that remotely controls Raytech test instruments
- T-Base Sequence: Option to T-Base Pro with Remote that performs complete measurements in a programmable measuring process
 - Define complete transformer test sequence
 - Free run testing with error alerts



ATOS

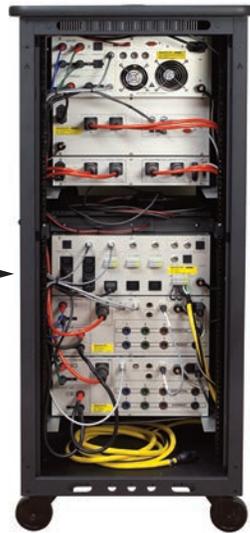
ISU R
Integrated Safety Unit



- Supplies Raytech devices with fused electrical power
- Manages external interlocks
- Provides a single interface for an external warning lamp

Specs

Size: L: 490 mm (19.3") W: 436 mm (17.2") H: 177 mm (7")
 Rack Unit: 4U
 Weight: 10.3 kg (22.7 lbs.)
 Measuring Current: Up to 100 Amps
 Input Power: 88 to 264 VAC,
 47 ... 63 Hz, auto ranging
 Front Panel: Sealed, anodized



Rear View

MUX R Multiplexer
Up to 100 Amps,
3 Channels, Demagnetization & Discharge



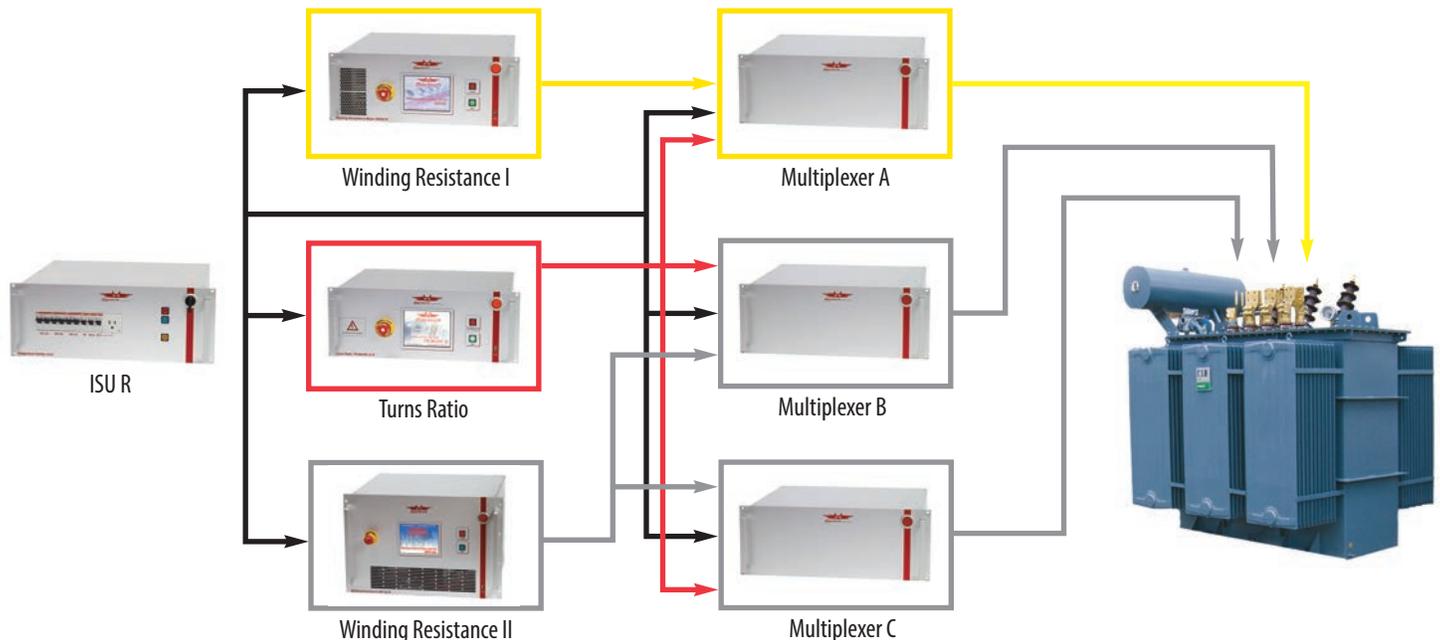
- Designed to drastically reduce cabling & increase test performance
- Controlled by a winding resistance meter's touch screen or by remote

Specs

Size: L: 490 mm (19.3") W: 436 mm (17.2") H: 177 mm (7")
 Rack Unit: 4U
 Weight: 10.3 kg (22.7 lbs.)
 Measuring Current: Up to 100 Amps
 Input Power: 88 to 264 VAC,
 47 ... 63 Hz, auto ranging
 Front Panel: Sealed, anodized

One of many possible ATOS configurations

Whatever the application, there are many possibilities for integration. In this example the yellow outline shows the connection of the primary, and the grey outline shows the connection of secondary and tertiary windings.



T-Base Pro

Raytech's T-Base Pro is a powerful set of tools for data exchange, remote control, visual measurement data analysis, test automation and much more. It comes with a fully integrated database management system for storing measurement data as well as with a fully customizable reporting system which can generate test reports in the most widely used document formats. It uses an advanced add-on ecosystem which makes it suitable for integration with external systems.

Visit the T-Base Pro website for more information and to download your free copy of the software – <http://TBase.Raytech.ch>

Features

Data Management: Create and save measurement profiles and templates. Save and manage your measurement results. Import and export data. Save and print reports. Visualize, inspect, and compare measurement results.

Remote Control: Import and export profiles and results using USB and serial interface. Use your PC as a full remote controller for single or multiple devices and setups. Save complex ATOS setups. Multitasking capabilities.

Measurement: Create and save custom measurement workflows. Let T-Base inform you about measurement progress or errors. Program and edit custom workflows using intuitive graphical interface. Save and exchange workflows.

Expandability: Extend and customize the application according to your needs using our rich APIs interface and MS Visual Studio templates. Make T-Base a part of your environment or write control interface for third-party devices.

Reporting: Export and save your measurement results in many popular formats like Microsoft XPS (Windows document) and XLS (excel document), Adobe PDF, or simple HTML.

Database: Use preconfigured, embedded SQL database or database on network share, Microsoft SQL Express and SQL Professional versions.

User Interface: Modern, graphic user interface that is not only highly functional, it is also a pleasure to use.

Technology: For the development of our software products, we are using the latest technologies provided by Microsoft.

System Requirements

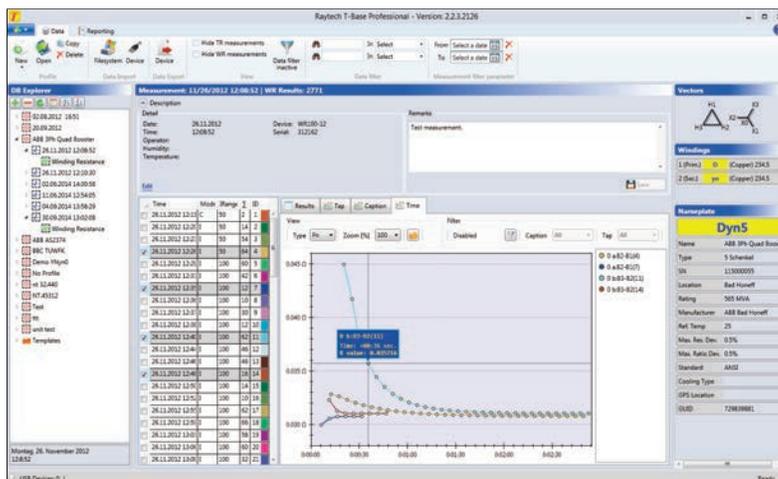
Minimum

- Windows Vista
- Pentium 4, 3.2 GHz or higher
- Screen 1024 x 768 pixels

Recommended

- Windows 7/8/8.1/10 with latest service pack
- 1 GB Ram Core2 requested
- Microsoft .NET framework 4.5
- Screen 1920 x 1080 pixels or higher

See Instruction Manual for more Parameters. Specifications subject to improvement at any time.



*****Test Report*****

Transformer Nameplate:
 Name: Demo YNyn0
 S/N: Demo
 Type: Demo YNyn0
 Manufacturer: Raytech Switzerland
 Max. Ratio Deviation: IEC
 Cooling Type: Standard

Configuration: Ynyn0

Remarks: Demo Transformer.

Measurement
 Date: 1/19/2015 6:03:42PM
 Device Name: WR50-12
 S/N Device: 323132
 Remarks: Demo Dataset, created 19.01.2015

Date: 1/19/2015 6:03:43PM Mode: I

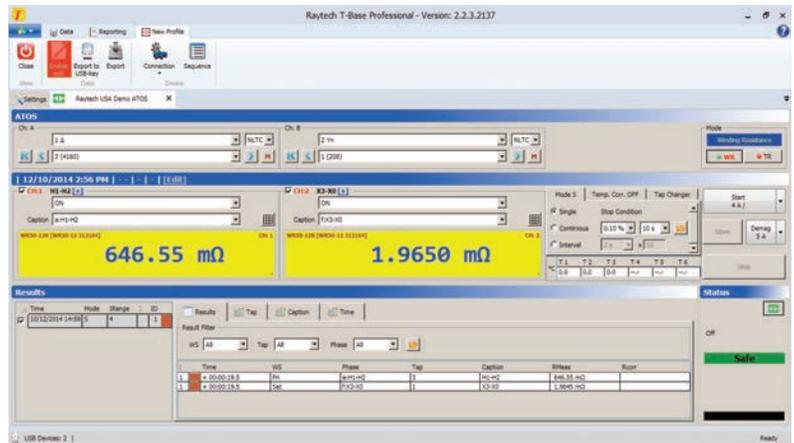
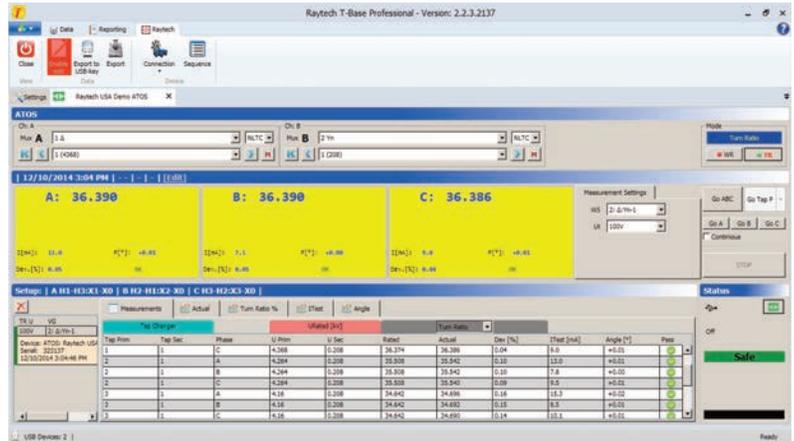
Time	WS	Tap	Phase	Capcion	Rmeas	Rcorr	T1 [C]	T2 [C]	T3 [C]	T Ext [C]	I [Test]
+00:04:40.0	Pri	+1	d H1-H0	H1-H0	418.02 mΩ	418.02 mΩ	76.17	72.60			15.00
+00:04:45.0	Pri	+1	d H1-H0	H1-H0	418.88 mΩ	418.88 mΩ	76.07	72.51			15.00
+00:04:50.0	Pri	+1	d H1-H0	H1-H0	418.76 mΩ	418.76 mΩ	75.98	72.41			15.00
+00:04:55.0	Pri	+1	d H1-H0	H1-H0	418.62 mΩ	418.62 mΩ	75.88	72.32			15.00
+00:05:00.0	Pri	+1	d H1-H0	H1-H0	418.50 mΩ	418.50 mΩ	75.78	72.23			15.00
+00:05:05.0	Pri	+1	d H1-H0	H1-H0	418.36 mΩ	418.36 mΩ	75.68	72.14			15.00
+00:05:10.0	Pri	+1	d H1-H0	H1-H0	418.22 mΩ	418.22 mΩ	75.59	72.05			15.00
+00:05:15.0	Pri	+1	d H1-H0	H1-H0	418.10 mΩ	418.10 mΩ	75.49	71.96			15.00
+00:05:20.0	Pri	+1	d H1-H0	H1-H0	417.96 mΩ	417.96 mΩ	75.39	71.87			15.00
+00:05:25.0	Pri	+1	d H1-H0	H1-H0	417.84 mΩ	417.84 mΩ	75.30	71.78			15.00



Visit the T-Base Pro website for more information, to watch instructional tutorials, and to download your free copy of the T-Base software - <http://TBase.Raytech.ch>

T-Base Remote: Control Your Raytech Instruments Remotely

- Full remote control capabilities of selected Raytech instruments
- Automatic device detection and connection management using native Raytech USB drivers for MS Windows
- Direct data import and export over USB or Serial port
- Realtime result displays and data presentation
- Multiple devices, with valid licenses, can be controlled at the same time
- Complex ATOS setups can be saved in the form of a virtual device and used as any real device
- Clear and modern graphical user interface

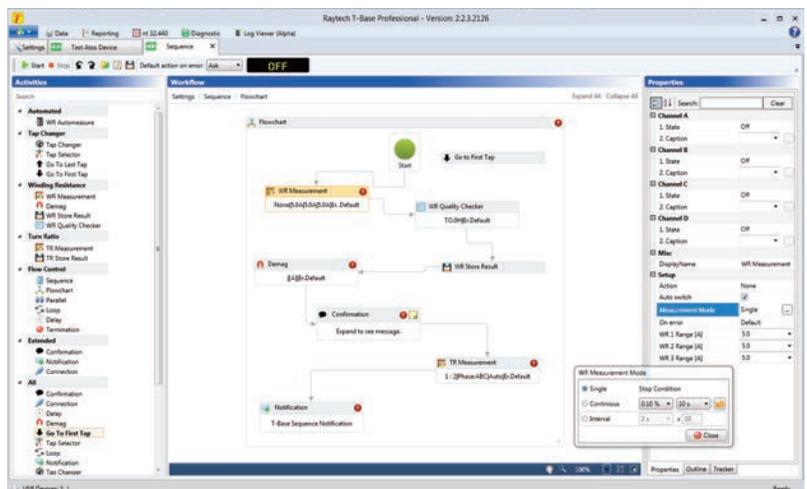


T-Base Sequence: Automate Your Measurement Process

Sequence is the measurement automation module of T-Base Pro that makes it possible to fully automate the measurement process. With this unique and sophisticated graphical programming tool, it is possible to build and automate every possible measurement scenario for the ATOS system.

Notifications about the measurements, confirmations, or tasks that were performed can be sent to the user via email. Workflows can be saved, loaded, customized, and reused. Programming is very easy with the graphical drag-n-drop tool.

Remote Options needed for Raytech devices are included in Sequence.



SDK (Software Development Kit)

Raytech's SDK is a package of libraries, device drivers, example projects and visual studio templates that allows the creation of the programs for the Raytech instruments. SDK is an application programming interface (API) containing protocols, routines and tools for building software applications. It is the same software layer that is used in programs like T-Base to communicate with devices.

Features

Write your own applications

Control the measuring instruments with your own program

Connection of Raytech instruments over the USB or the RS-232 port

It's a .NET Library

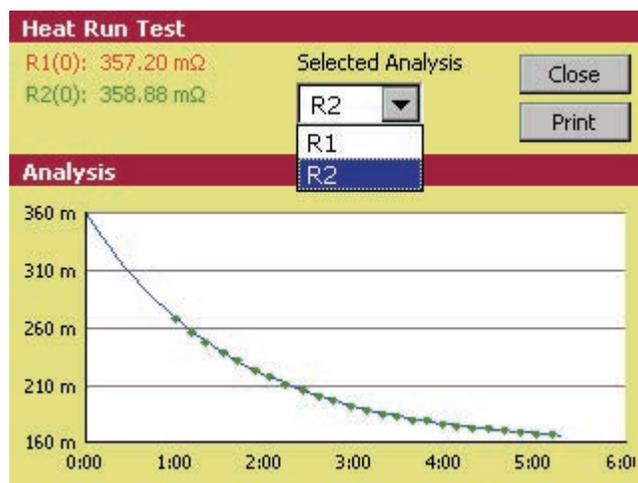
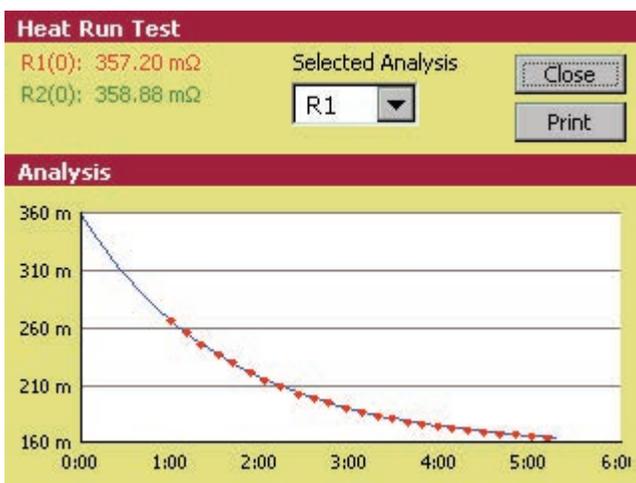
Can be used with the following Raytech test equipment:

TR-Mark III	WR14	WR50-13
TR-Mark III R	WR14 R	WR50-13R
TR-Mark III 250V	WR50-12	WR100-12R
TR-Mark III R 250V	WR50-12R	WR100-13R

Call our Sales Department to get more information on Raytech's SDK Software Program at 267 404 2676.

Heat-Run Software (AHRT-01)

The optional heat-run software allows you to take advantage of the built-in interval measurement and timer features of our winding resistance meters to generate a cooling curve. This curve is then extrapolated back to "Time = 0" using one of several user-selectable logarithmic equations.



Call our Sales Department to get more information on Raytech's AHRT-01 Heat-Run Software Program (Part No. 2042N-11001) at 267 404 2676.

Raytech Toolbox

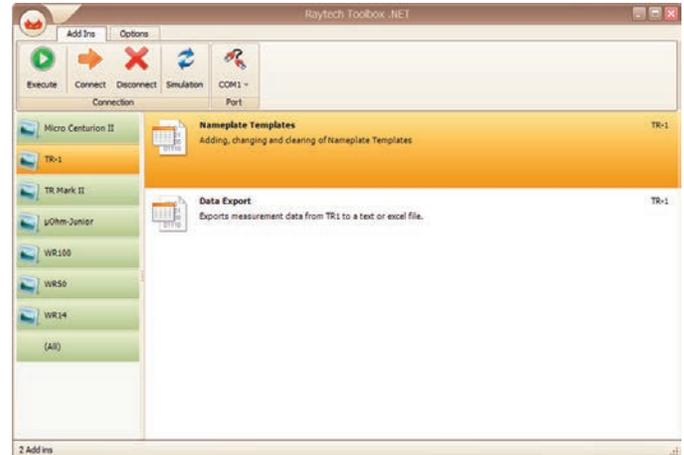
The Toolbox PC program is no longer being updated, however, it is still a fully functioning program which can be downloaded and used with certain Raytech test equipment. Visit our website at www.RaytechUSA.com to download your free software.

Features

- Provides firmware upgrade capabilities
- Provides data transfer stored in internal instrument memory to a PC
- Toolbox is based on Microsoft's .NET Framework 3.5
- It's free of charge and can be used unlimited times
- Data exchange over the RS-232 interface
- Download and convert saved test results in text format, or MS Excel format
- Can be used with all retired Raytech TR and WR series of instruments

System Requirements

- Operation system: Windows XP, Vista or Windows 7
- Installed Microsoft .Net Framework 3.50
- Installed Crystal Reports Runtime
- 20 MB free disk space
- 1 serial port



Visit us at

www.RaytechUSA.com

for more information about our products and helpful resources
such as downloadable firmware, software, and datasheets.

CAPO 2.5

- 2021N-26001: Temperature Probe – 10m (32 ft.)
- 3071N-31000: Safety Switch – 10m (32 ft.)
- 5090N-15001: Annual Warranty Extension

TR-Mark III 250V / TR-Mark III R 250V

- 1003N-31001: External Trigger Switch for Tap Changer Testing – 10m (32 ft.)
- 1002A-05002: Red Extension Lead – 10m (32 ft.)
- T-Rex: 3 Phase Test Voltage Option for TR-Mark III and TR-Mark III 250V
- T-Rex R: 3 Phase Test Voltage Option for TR-Mark III R and TR-Mark III R 250V
- 1004N-15002: Annual Warranty Extension

TR-1 / TR-1P

- 1011N-05001: Red Extension Lead – 5m (16 ft.)
- 1011N-23001: RS-232 Interface Cable Adapter
- 1011N-24002: 12VDC Automotive Adapter
- 1011N-15001: Annual Warranty Extension

CT-T1

- 4080N-05001: H Lead Extensions – 5m (16 ft.)
- 4080N-15001: Annual Warranty Extension

WR14 / WR14 R

- 2043N-05013: Current and Potential Leads for WR14 – 20m (65 ft.)
- 2043N-05048: Cable Extension Set for WR14 R – 10m (32 ft.)
- 2021N-26001: Temperature Probe – 10m (32 ft.)
- 2042N-11001: Heat-Run Curve Analysis Software (AHRT-01)
- 2043N-15001: Annual Warranty Extension

WR50-12 / WR50-12R

- 2040N-05003: Cable Extension Set – 10m (32 ft.)
- 2021N-26001: Temperature Probe – 10m (32 ft.)
- 2042N-11001: Heat-Run Curve Analysis Software (AHRT-01)
- 2042N-15001: Annual Warranty Extension

WR50-13 / WR50-13R

- 2041N-05003: Cable Extension Set – 10m (32 ft.)
- 2021N-26001: Temperature Probe – 10m (32 ft.)
- 2042N-11001: Heat-Run Curve Analysis Software (AHRT-01)
- 2041N-15001: Annual Warranty Extension



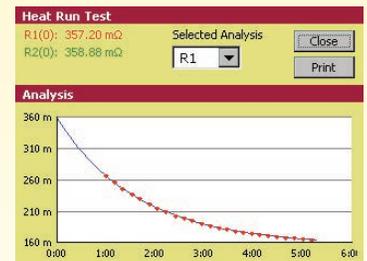
12VDC Automotive Adapter
1011N-24002



External Trigger Switch
1003N-31001



3 Phase Test Voltage Option for TR-Mark III 250V and TR-Mark III R 250V T-Rex



Heat-Run Curve Analysis Software (AHRT-01)
2042N-11001

WR100-12R / WR100-13R

- 2061N-05001: Cable Extension Set – 10m (32 ft.) – WR100-12R
- 2060N-05001: Cable Extension Set – 10m (32 ft.) – WR100-13R
- 2021N-26001: Temperature Probe – 10m (32 ft.)
- 2060A-04001: Pelican Transport Shipping Case
- 2042N-11001: Heat-Run Curve Analysis Software (AHRT-01)
- 2061N-15001: Annual Warranty Extension (WR100-12R)
- 2060N-15001: Annual Warranty Extension (WR100-13R)

Micro Junior 2

- 2020N-26002: Temperature Probe – 10m (32 ft.)
- 2020N-33001: Kelvin Spike Probes – 4m (13 ft.)
- 2020N-33005: Kelvin Spike Probes – 5m (16 ft.)
- 2020N-15001: Annual Warranty Extension

MC2

- 2021N-26001: Temperature Probe – 10m (32 ft.)
- 2021N-15001: Annual Warranty Extension



Temperature Probe - 10m
2021N-26001

Kelvin Spike Probes: For Digital Low Resistance Ohm Meters (Micro Ohm Meters)

Exclusive Design from Raytech:

- 4" insulated spike probe measuring shaft with spring-loaded potential tip centered in dual current points
- 4" easy-grip, robust handle
- Can be used with any 10 Amp contact resistance meter (Kelvin measuring system)
- 2 standard lengths available: 4m and 5m, custom lengths are also available
- 5-Year manufacturer's warranty covers defects resulting from manufacturer's workmanship and cannot cover wear from normal use. Raytech will refurbish your worn spike probes and restore them to "like new" condition for about half the cost of a new set.



Kelvin Spike Probes
2020N-33001 / 2020N-33005

Requesting a quote? Placing an order? Need an answer to a question?
Raytech is here to help you.



Raytech USA

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