RT3-100P / 100L Digital Micro-Ohmmeters

User's Guide



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Safety Information

- Except as explained in this manual, do not attempt to service Albércorp equipment yourself. Opening the equipment may expose you to dangerous voltages. Refer servicing beyond that described in this manual to authorized personnel.
- Do not allow liquids or moisture to get into the equipment. If liquid does get into the equipment, unplug it immediately and contact your nearest authorized service center or Albércorp directly.
- Ensure equipment is provided adequate ventilation. Do not block equipment ventilation openings.
- Do not exceed equipment voltage or power ratings and capabilities.
- Make sure that equipment is properly grounded.
- Do not let unauthorized persons operate or service the equipment.
- Use of this product in a manner not specified could compromise the designed-in safety of this product.

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1. Receiving

Upon receipt, visually inspect the RT3-100 Digital Micro-Ohmmeter to verify there is no shipping damage. It is your responsibility to initiate and settle damage claims with the shipper. Albércorp will assist with claims if necessary, but will not be liable for shipping damage not reported to the shipper. You should also verify the items received match the packing slip. Albércorp is not responsible for missing items not reported within ten days after receipt by the customer.

1.1. Contact Information

Proper connection of equipment to the device under test is essential to the correct functioning of your system. If you have any questions about equipment connection or operation, please contact us. Call Albércorp at (561) 997-2299, or fax us at (561) 997-5588. Request RT3-100 assistance.

2. General Description

The Albércorp RT3-100 Digital Micro-Ohmmeter is a highly accurate, low resistance measurement instrument designed for both field and laboratory use. The unit has a removable cover and two handles on the case to facilitate handling. Test leads are carried separately and connect via main panel connectors.

- High drive capability allows the instrument to be operated with long test leads.
- Calibration shunt provided with each instrument.
- Protected against active circuits.
- Automatic circuitry reduces power drain on the internal batteries. (RT3-100P)
- Fully portable and easy to use both in shop and field. (RT3-100P)
- Operator safe because the unit operates on low voltage batteries. (RT3-100P)

Designed to meet NEMA and ANSI standards for power equipment testing, the RT3-100P is ideally suited for use with switchgear, power circuit breakers, welds, high current joints or bonds, and intercell connections on batteries. The RT3-100L, a 100 Amp continuous rated current instrument, is similar to the RT3-100P, but offers the additional feature of operating from AC power, which allows it to be used continuously.

NOTE: This manual describes both the RT3-100P and the RT3-100L. If a feature applies to both models, then the reference RT3-100 is used.

Instrument operation consists of selecting the required measuring range and pressing the Read button or Momentary / Continuous switch. The LED display provides readings in microhms or milliohms, depending on the range selected.

The RT3-100P is powered by rechargeable batteries that must be charged prior to first use. The unit may be operated with or without the AC line cord plugged in. Refer to the *Batteries* section. The RT3-100L is powered from 115VAC, which drives internal power supplies that provide the test current. Featuring one microhm resolution and high drive capability, the RT3-100 models may be used wherever there is a need for accurately measuring extremely low resistances.

2.1. Acceptance Test

WARNING: Unless marked otherwise, the unit is factory set for 115VAC operation.

To perform an acceptance test, connect the RT3-100 to an AC power source. If testing an RT3-100P, allow the batteries to charge for at least one hour. Connect the test leads to the precision 1000 microhm shunt provided with the unit, and verify the resistance reading on both ranges is within 1%.

On the RT3-100P, verify the Charging LED lights. This LED is lit when the unit is plugged into an AC source and the internal battery charger is functioning.

3. Controls and Indicators RT3-100P

This section describes the items on the main (top) panel of the RT3-100P. Additional item descriptions may appear elsewhere in this manual or in related manuals.



Figure 1. RT3-100P Main Panel

3.1. Main Panel Controls

On / Off switch - Turns the RT3-100P main power off or on. Does not initiate the test.

2000 Microhms / 20 Milliohms switch - Selects the appropriate resistance range for the load under test.

Long / Short Pulse Mode switch - Selects the length of time a test current is applied. Does not initiate the test.

Read push button switch - Activates the test.

¹/₂ Amp fuse - A ¹/₂ amp replaceable fuse.

3.2. Main Panel Connectors

Power - Connects the AC cord to allow battery charging.

Potential - Connects the Potential leads that measure the voltage drop when current is applied.

Current - Connects the Current leads that provide the current required for the test.

3.3. Main Panel Indicators

Charging LED - Lights when 115VAC power is connected to the unit. Does not indicate battery charge status.

Meter - A digital display that indicates test results in microhms or milliohms, depending on the range selected. Maximum indications are 1999 microhms or 19.99 milliohms. If the resistance under test exceeds the selected range, an overrange indication (1 followed by three spaces) appears.

Error LED - Lights if the load current is not maintained at 90 amps or greater. If it remains lit, it indicates insufficient current through the load and an invalid test.

Sonalert (no label) - Beeps if unit is connected to an energized circuit. When such a connection error occurs, testing is automatically inhibited.

4. Controls and Indicators RT3-100L

This section describes the items on the main (top) panel of the RT3-100L. Additional item descriptions may appear elsewhere in this manual or in related manuals.



Figure 2. RT3-100L Main Panel

4.1. Main Panel Controls

On / Off switch - Turns the RT3-100L main power off or on. Does not initiate the test.

Microhms / **Milliohms** switch - Selects the appropriate resistance range for the load under test. The available ranges are 2000 microhms and 20 milliohms.

Continuous / Off / Momentary Test switch - Selects the length of time test current is applied. Activates the test. When set to Momentary, test current flows for as long as the switch is held. In the Continuous position, test current flows until the switch is set to Off.

10 Amp fuse - A 10 amp replaceable fuse.

4.2. Main Panel Connectors

Power - Connects the AC cord to allow instrument operation.

Potential - Connects the Potential leads that measure the voltage drop when current is applied.

Current Flow - Connects the Current leads that provide the current required for the test.

4.3. Main Panel Indicators

Meter - A digital display that indicates test results in microhms or milliohms, depending on the range selected. Maximum indications are 1999 microhms or 19.99 milliohms. If the resistance under test exceeds the selected range, an overrange indication (1 followed by three spaces) appears.

Error LED - Lights when the test leads are connected to an energized circuit. When such a connection error occurs, testing is automatically inhibited.

Current Flow LED - On while test current is flowing. Indicates a test is in progress.

Sonalert (no label) - Beeps if unit is connected to an energized circuit. When such a connection error occurs, testing is automatically inhibited.

5. Functional Operation

This section describes the functional operation and features of the RT3-100P and RT3-100L micro-ohmmeters.

5.1. Operating Principle

The RT3-100 operates on a four-wire measurement principle in which a current of known value is driven through the load under test, thereby developing a voltage across that load. The Potential leads then couple the developed voltage back to the unit, where the sensed potential is compared to the known current to determine the resistance of the load. The meter displays the result in microhms or milliohms, depending on the range switch setting.



Figure 3. RT3-100P Block Diagram

As the block diagram shows, with the control power switch on, the RT3-100P is in a reduced power consumption state. Power for the RT3-100L is derived from a 115VAC source.

5.2. Measurement Accuracy

In practice, total resistance in the test current path varies with the changing load resistance, and the test current can deviate from its nominal value. However, one of the advantages of the four-wire ratio measurement method is accuracy over a wide range of test current variations.

In a properly adjusted system, the test current power supply delivers a nominal 100 amps to the load under test. Output from the supply is enabled only while performing a test. In addition to regulating load current, accuracy is further assured by the use of a ratio-type panel meter, which senses actual load current across an internal shunt. If current regulation changes, the meter senses the percent change and compensates scaling of input voltage.

Accuracy is constant for load current variations from 85 to 135 amps. This means the current regulator and Error LED calibrations are not critical and can usually be done quickly. The recommended calibration settings are:

Load Current..... 100A ±3A Error Monitor 90A ±2A

5.3. Error Monitor

When a connect error exists or when the unit is powered up but no test has been initiated, the test current output is inhibited. The Error LED lights if the actual load current drops below approximately 90 amps, indicating low load current due to high load resistance (more than 25 milliohms) or low batteries. The Error LED remains on for the same length of time as the meter reading. If there is doubt about a reading, check the instrument using the calibration shunt. Even if the Error LED is lit, the unit may read correctly because of the ratio-type meter. If the Error LED continues to light during tests, charge the batteries.

The connect error logic circuit ensures a test cannot be initiated if the test leads are connected to an energized circuit. On the RT3-100L, after measurement is complete and the Test switch is set to Off, the connect error circuit reverts to its quiescent condition.

5.4. Operating Temperature

The operating temperature range of the RT3-100 is 20°F to 140°F. The temperature coefficient is less than 0.015% per degree Fahrenheit, which means that even under worst-case consideration, instrument accuracy is better than $\pm 1\%$.

NOTE: Because the RT3-100P is battery powered, do not use it outside the operating temperature range. The effect of cold temperature is a loss of battery capacity: battery capacity at 0°F is approximately 75% of rated.

WARNING: The unit may be charged only between 40°F to 85°F. Charging the batteries outside this temperature range may damage the batteries or the instrument.

5.5. Overrange Indication

The maximum meter reading is 19.99 or 1999. If the load being measured exceeds the range, the meter indicates an overrange by displaying a 1 followed by three spaces. In circuit breaker testing, an overrange plus error indicates the circuit breaker is open. An Error LED with a meter reading at or near zero indicates an open circuit in the loop somewhere other than in the breaker. This indication is typical of a current clip making poor contact.

5.6. Connecting to the Load

When connecting test leads, make sure the connecting surfaces on the load, clamps, and clips are clean, and the current clamps solidly contact the metal surface. Dirt, grease, and paint may prevent the required current flow (90 amps or greater) and result in inaccurate readings. A poor load connection is indicated by the Error LED staying on. If the meter reading is erratic, check all the test lead connections.

When testing in a high voltage environment such as a switchyard, make sure that one side of the load under test is earth grounded for operator and instrument safety. Refer to *Circuit Breaker Testing*. For more test lead information, refer to *Test Leads*.

5.7. Circuit Breaker Testing

WARNING: Before connecting the RT3-100 to a circuit breaker, close the breaker and ground one side of it.

For safety, it is important that one side of the power circuit breaker be grounded prior to connecting the RT3-100 unit. Although the RT3-100 is protected against high static voltages, it should not be used to discharge high voltages to ground.

If the circuit breaker under test has current transformers (CTs) associated with it, the meter reading may take up to seven seconds to stabilize, due to the inductive transients induced by the CTs. Because of transients, use the RT3-100 in Long mode when testing circuit breakers.

6. Batteries RT3-100P

The RT3-100P is powered by sealed, lead-acid batteries. Battery life depends on use and percent of discharge and is normally measured in number of discharge cycles. The number of cycles obtainable from the batteries is a function of the depth of discharge. Batteries discharged 25% before recharge will last five times longer than batteries discharged 85%. This usage philosophy for lead-acid batteries is in sharp contrast to that for Ni-Cd batteries, where the batteries should be discharged 80% before recharge.

The batteries should last more than four years, even in constant usage applications. The Error LED indicates the batteries are approximately 80% discharged. Battery end-of-life is defined as a failure to achieve 70% of rated capacity.

6.1. Battery Charging

NOTE: The RT3-100P is shipped with partially charged batteries. You must charge the unit for 10 to 12 hours prior to first use and on a regular basis following test sessions.

The battery charger is active whenever the instrument is connected to 115VAC. The RT3-100P may be used with or without the charger connected. When the Error LED remains lit at the end of a current pulse, it indicates either a high load resistance or the batteries must be charged.

WARNING: Do not use the instrument with the AC cord connected when ambient temperature exceeds 85°F. The RT3-100P may only be charged between 40°F to 85°F. Refer to *Operating Temperature*.

The charger, a constant potential, current limited type, supplies 40% of full charge within two hours and a trickle current after the batteries are fully charged. This means the RT3-100P is essentially ready to use any time and can be left on charge for extended periods of time without damaging the batteries. The Charging LED indicates the unit is plugged into 115VAC and the charger is functioning. This LED does not indicate battery charge status.

If the batteries have run down to the point at which the Error LED is on continuously, do the following:

- If instrument use is not immediately required, connect the unit to 115VAC power and allow the instrument to charge overnight. Approximately 12 hours are required to fully charge the batteries.
- If the instrument is needed immediately, connect it to AC and allow it to charge for one hour prior to use. After the one hour charge, you may use the instrument, but it should remain plugged into AC power.

6.2. Battery Replacement

If it is necessary to replace the batteries inside the RT3-100P, follow the steps in this section. Only technically qualified personnel should replace the batteries.

WARNING: Before starting this procedure, disconnect all external leads and power sources from the RT3-100P.

- 1. Power off the RT3-100P unit.
- 2. Disconnect all external leads from the unit, including power supply leads and load cables.
- 3. Remove the six screws holding the main (top) panel to the enclosure and lift the panel up.



Figure 4. RT3-100P Battery Replacement

WARNING: When connecting or disconnecting the internal battery leads, do not reverse the leads or allow them to touch other circuits or the metal enclosure.

- 4. Disconnect three negative () battery connections (A) from the batteries.
- 5. Disconnect three positive (+) battery connections (B) from the batteries.
- 6. Disconnect the 10V series connection wire (C) from the batteries.
- 7. Remove four screws (D) securing the battery mounting plate (E) to the enclosure.
- 8. Remove the battery mounting plate with batteries from the enclosure.
- 9. Remove ten screws (F) that hold the batteries to the mounting plate.
- 10. Discard the batteries following recommended environmental procedures.

Replace each battery with the same or equivalent battery type as follows.

- 11. Observing battery polarity, use the ten screws (F) to install the new batteries onto the mounting plate.
- 12. Using four screws (D), secure the battery mounting plate (E) with batteries into the RT3-100P enclosure.
- 13. Connect the 10V series connection wire (C) to the batteries.
- 14. Connect the three positive (+) battery connections (B) to the batteries.
- 15. Connect three negative () battery connections (A) to the batteries.
- 16. Replace the main (top) panel onto the enclosure and secure with six screws.
- 17. Power on the unit before connecting to external sources to confirm proper operation.

7. Test Leads

The RT3-100 does not require calibrated leads, so you may repair damaged leads. You may also keep different sets of leads on hand for various applications.

Because of the high drive capability of the unit, you may use small, easy-to-handle current leads. The standard 20 foot leads are #4 AWG flexible welding cable. For optimum battery usage, total current lead resistance should be between 12 to 22 milliohms.

The Potential leads can be practically any length or gauge wire; the only requirement is that a braided shield wire be used. When repairing Potential leads, it is important that the shield not touch the test clip.

7.1. Types of Leads

Kelvin Clip Cables - Kelvin clip cables employ only two clips, with one current lead and one sense lead connected to each clip. When connected in this manner, test current flows through the entire shunt, the sense leads are positioned exactly at the calibration points, and the small resistance between the screw head and the load is in series with the high input impedance of the meter circuit, thus being totally insignificant in its effect on reading accuracy.

Kantwist/Mueller Cables - The Kantwist/Mueller test cable is arranged with four separate attachments, with two heavy-duty clamps for the current leads and two smaller clips for the sense leads. When using this cable, connect the sense leads to the calibration points and connect the current leads so the test current passes both calibration points as it flows through the load.

Spiked Probe Cables - Spike probes speed up the taking of repetitive readings. Some spiked probes have a read button, making use of the instrument a fast, one person operation. Spiked probe cables have two current and two sense leads, but the sense leads are terminated with probes rather than clips. To use these cables, connect the current leads across the load in the same manner as the Kantwist/Mueller cables, and connect the probes to the calibration points.

8. Using the RT3-100P

Some RT3-100P and RT3-100L controls differ, but the functions of both units are the same. Follow these steps to use the RT3-100P.

WARNING: Do not use the instrument with the AC cord connected when ambient temperature exceeds 85°F. Refer to *Operating Temperature*.

- 1. Make certain the batteries in the unit are charged. Refer to *Battery Charging*.
- 2. Set the RT3-100P power switch to Off.
- 3. Connect the AC power (optional for charging), potential, and current leads to the RT3-100P connectors.
- 4. Connect the current clamps to the exposed metal portions of the equipment to be tested. Connect the potential clips to the same metal as the current clamps. Make sure the potential clips are between the current clamps and the load under test.

WARNING: If testing a circuit breaker, one side of the power circuit breaker must be grounded prior to connecting the RT3-100. Refer to *Circuit Breaker Testing*.

- 5. Set the meter range switch to the desired position.
- 6. Power on the RT3-100P.
- 7. Set the Pulse Mode switch to the Short or Long position. NOTE: Use the Short mode for purely resistive load testing. Use the Long mode for inductive loads such as circuit breakers with current transformers.
- 8. Press the Read button. In about one second (for resistive load) or after the reading has settled (for inductive load), the meter displays the resistance of the equipment under test. The reading is retained for about 30 seconds, then the unit powers down.

NOTE: A cool down circuit inhibits subsequent testing for a few seconds. After cool down, you make take another reading.

9. Set the power switch to Off after completing all tests.

WARNING: Because of the energy stored in a magnetic field, high voltages can be generated when the test connections are opened. Take the following precautions when disconnecting the leads after testing inductive loads.

- 10. Verify the On/Off switch is set to Off. Do not touch the winding terminals.
- 11. Using one hand only, disconnect the potential (sense) leads, one at a time, then disconnect the current (power) leads, also one at a time.

NOTE: Under normal operation, the Error LED lights at the start of current flow, then goes out. If the Error LED remains on, this indicates insufficient current through the load, and the reading should be considered invalid. Check that the current lead connections are secure and the unit is fully charged. If, at any time, the accuracy of the instrument is in question, test the instrument using the 1000 microhm test shunt provided.

After the reading is erased, the RT3-100P is ready for another reading. Several readings can be taken in quick succession without affecting the accuracy of the instrument; however, repeated readings can cause internal heating.

CAUTION: To prevent instrument damage from excessive heating, do not take more than six long readings within a ten minute period. Short pulse readings may be taken continually.

9. Using the RT3-100L

Some RT3-100P and RT3-100L controls differ, but the functions of both units are the same. The RT3-100L can be used immediately upon receipt. When Continuous mode is selected, you must set the Test switch to Off to stop test current flow. Follow these steps to use the RT3-100L.

- 1. Set the RT3-100L power switch to Off.
- 2. Connect the AC power, potential, and current leads to the RT3-100L connectors.
- 3. Connect the unit to an AC power source.
- 4. Connect the current clamps to the exposed metal portions of the equipment to be tested. Connect the potential clips to the same metal as the current clamps. Make sure the potential clips are between the current clamps and the load under test.

WARNING: If testing a circuit breaker, one side of the power circuit breaker must be grounded prior to connecting the RT3-100. Refer to *Circuit Breaker Testing*.

- 5. Set the meter range switch to the desired position.
- 6. Power on the RT3-100L.
- 7. Set the Test switch to either Momentary or Continuous. For momentary operation, hold the switch for at least one second. NOTE: Use the Momentary mode for purely resistive load testing. Use the Continuous mode for inductive loads such as circuit breakers with current transformers.
- 8. In about one second (for resistive load) or after the reading has settled (for inductive load), the meter displays the resistance of the equipment under test. This reading is displayed until either the On/Off switch is set to Off or a new test is initiated.

NOTE: A cool down circuit inhibits subsequent testing for a few seconds. After cool down, you make take another reading.

9. Set the power switch to Off after completing all tests.

WARNING: Because of the energy stored in a magnetic field, high voltages can be generated when the test connections are opened. Take the following precautions when disconnecting the leads after testing inductive loads.

- 10. Verify the On/Off switch is set to Off. Do not touch the winding terminals.
- 11. Using one hand only, disconnect the potential (sense) leads, one at a time, then disconnect the current (power) leads, also one at a time.

NOTE: Under normal operation, the Error LED lights at the start of current flow, then goes out. If the Error LED remains on, this indicates insufficient current through the load, and the reading should be considered invalid. Check that the current lead connections are secure. If, at any time, the accuracy of the instrument is in question, test the instrument using the 1000 microhm test shunt provided.

After it displays the results of the test, the RT3-100L is ready for another reading. Several readings may be taken in quick succession without affecting instrument accuracy.

10. Calibrating the RT3-100P

The RT3-100P has four adjustments that must be checked at yearly intervals or whenever readings become suspect. Calibration requires a millivoltmeter and the 1000 microhm (50 amp/50 mV) shunt packed with the unit. Using the shunt, the RT3-100 must indicate 1000 microhms ±1 microhm. To access the calibration adjustments on the PC board, remove the six main panel screws and lift the panel up. This exposes the PC board. Adjust the unit as follows.

- 1. Connect the RT3-100P potential and current leads to the calibration shunt.
- 2. Connect the millivoltmeter to the shunt calibration points.

10.1. Error LED Adjustment

- 1. Set the Pulse Mode switch to Long. Current duration is about 8.5 seconds in this mode.
- 2. Press the Read button and adjust P3 for a reading of 86mV to 88mV on the millivoltmeter. (This equals 86 to 88 amps current flow though the shunt.) Clockwise adjustment decreases current.

The Error LED should remain lit at the end of the current pulse when the current is below 88 amps and should go out at the end of the current pulse when the current flow is 90 amps or greater. The Error LED threshold setting is not critical, and the tolerances may be opened up by 2% to 3%. Adjust threshold adjustment P2 in small increments (45°) until the Error LED is set. Clockwise adjustment lowers the threshold setting.

10.2. Current Setting

Because of the ratio-type circuitry, absolute current flow is not critical. However, for optimum battery usage, set the current as follows.

- 1. Set the Pulse Mode switch to Long.
- 2. Press the Read button and adjust P3 for a current of 100 amps ± 3 amps.

10.3. Panel Meter Adjustment

Only gain adjustments are required for each range, using P1 and P4. The meter has a built-in auto/zero feature.

- 1. Set the Pulse Mode switch to Long and set the Range switch to 2000 microhms.
- 2. Press the Read button and adjust P1 for a panel meter reading of $1000\mu\Omega \pm 5\mu\Omega$. Clockwise lowers the reading.
- 3. Connect the RT3-100P test leads to a known value 10 to 15 milliohm resistor.
- 4. Set the Range switch to 20.00 milliohms.
- 5. Press the Read button and adjust P4 for a panel meter reading equal to the known resistance value.
- 6. Set the On/Off switch to Off and disconnect the leads.

11. Calibrating the RT3-100L

The RT3-100L has two potentiometers that must be checked at yearly intervals or whenever readings become suspect. Calibration requires a millivoltmeter and the 1000 microhm (50 amp/50 mV) shunt packed with the unit. Using the shunt, the RT3-100 must indicate 1000 microhms ±1 microhm. To access the calibration adjustments on the PC board, remove the six main panel screws and lift the panel up. This exposes the PC board. Adjust the unit as follows.

- 1. Connect the RT3-100L potential and current leads to the calibration shunt.
- 2. Connect the millivoltmeter to the shunt calibration points.
- 3. Set the Range switch to microhms.
- 4. Set the On/Off switch to On.
- 5. Set the Test switch to Continuous.
- 6. Adjust P2 so the millivoltmeter reads $100 \text{mV} \pm 3.0 \text{ mV}$.
- 7. Adjust P1 so the RT3-100L panel meter reads $1000\mu\Omega \pm 1\mu\Omega$.
- 8. Set the Test and On/Off switches to Off and disconnect the leads.

12. Preventive Maintenance

The RT3-100 requires minimal preventive maintenance. Inspect the test leads periodically to confirm the clips are firmly attached and clean, especially the contact blocks on current leads. The Potential lead shielded wire must not touch the test clip. To replace the batteries, refer to *Battery Replacement*.

13. Spare Parts List

Item

Part Number

AC Cable	
Potential Leads (20 ft.)	ML-100
Current Leads (20 ft.)	ML-230
Spiked Probe Leads w/read button (20 ft.)	ML-301
Spiked Probe Leads w/o read button (20 ft.)	ML-303
Kelvin Clip Combo (20 ft., standard)	ML-200
(Contact Albércorp sales for additional lengths available.)	

3900-003
3900-005
4720-001
2825-001
2120-012
2120-013
2120-014

14. Specifications

The RT3-100P and RT3-100L have the same specifications except that Momentary or Continuous operating modes are used instead of the Long Pulse/Short Pulse modes, and battery specifications do not apply to the RT3-100L.

Power Source:	RT3-100L	115VAC 60Hz 720 watts or 230VAC 50Hz 720 watts
	RT3-100P	115VAC 60Hz 50 watts, plus rechargeable battery or 230VAC 50Hz 50 watts, plus rechargeable battery
Accuracy		0.25% of reading ±1 microhm
Resolution: 0	to 1999 microhm range	1 microhm (0.1 $\mu\Omega$ optional)
0	to 19.99 microhm range	10 microhms
Temperature C	oefficient	Less than 0.02% per °C
Range		0 to 1999 microhms, 0 to 19.99 microhms
Test Current		100 amps
Test Modes		Short (RT3-100P) or Momentary (RT3-100L)duration current flow for purely resistive loads.
		Long (RT3-100P) or Continuous (RT3-100L) duration current flow for inductive loads.
Battery Capacity		More than 350 short readings or 35 long readings. (RT3-100P)
Battery Charge	Time	12 to 14 hours (RT3-100P)
Weight		27 lbs. (RT3-100P); 25 lbs. (RT3-100L)
Size		16" x 10" x 12"
Operating Tem	perature Range	20°F to 140°F
Charger Temperature Range		40°F to 85°F (RT3-100P)
Test Leads		20 ft standard

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