

RH SERIES PORTABLE BATTERY TESTERS



Innovative Solutions for Your High Integrity Power Needs



RedHawk Energy Systems, LLC was formed in 2004 as a manufacturing subsidiary of the Arthur N. Ulrich Company.

We Specialize In:

- Renewable & "Green" Energy Systems
- Remote Site Power Systems
- Battery Systems, Testers, Monitors & Accessories

Our Products Include:

- Photovoltaic (Solar) Power Systems
- Wind Generators
- Fuel Cells
- Extended Run Engine Generators
- Thermoelectric Generators
- Hybrid Power Systems
- RP Series Retractable Masts
- Retractable Wind Generator Pole Adaptors
- Nickel Cadmium Batteries
- Lead Acid Batteries
- RH Series Portable Battery Testers
- Battery Enclosures
- Battery Watering Tools
- Battery Lifting Slings

Product Overview

RedHawk Energy Systems, LLC and Microlynx Systems, Ltd., have teamed up to develop the RH1 and RH2 Series Portable Battery Testers. Built upon the foundation of the successful Microlynx M0024 Series of Battery Testers, the RH1 and RH2 provide enhanced capabilities and features in a convenient and economical package. The RH1 and RH2 are specifically designed to provide accurate capacity measurements of batteries that are in-service as well as batteries at the shop or laboratory.

How It Works

For a variety of reasons, batteries lose capacity over time. Determining the true capacity cannot be accomplished by simply measuring the voltage of the battery or its cells, even under load conditions. The only reliable method of determining the capacity is to measure the time it takes to discharge the batteries into a known load.

Operation of the RH1 and RH2 is straightforward and allows a capacity test to be run unattended. At the end of the test, the RH1 and RH2 automatically reconnects the battery to the charger to allow recharging to start. In the event of an AC power failure during a test, the RH1 and RH2 terminates the test to allow the remaining capacity of the permanent backup battery to be used to power the protected systems.

In order to provide adequate and continuous protection, the RH1 and RH2 allows an auxiliary battery to be used during a test to temporarily replace the permanent backup battery. This portable battery - which must be of the same nominal voltage as the permanent battery - will provide continuous, failsafe power to the protected system. For example, in the event of an AC mains failure during a test, the RH1 and RH2 will terminate the test to make the remaining capacity of the permanent battery available to the load.



| Feature | RH1 | RH2 |
|-------------------------------|--|---|
| Color | Red | Black |
| Measurement Modes | Constant Current | Constant Current Constant Power Constant Resistance |
| Measurement Range | 2 - 50 A | 2 - 50 A 25 - 500 W 0.2 - 25 Ohm |
| Termination Condition | Percentage Voltage Absolute Voltage | Percentage Voltage Absolute Voltage Fixed Time |
| Accuracy | 1% | 1% |
| Contactor | 75 A Continuous | 125 A Continuous |
| Input Voltage Range | 10 - 48 V | 10 - 48 V |
| Safe Operating Area Detection | Yes | Yes |
| Battery Voltage Measurement | Internal | Internal External (Kelvin) |
| Real Time Clock | Yes | Yes |
| Audio Indicator | Yes | Yes |
| Internal Memory | 48KB Internal (>50 hours) | 96KB Internal (> 100 hours) |
| External Memory | SD Card | SD Card |
| Programmable Interface | Front Panel USB | Front Panel USB |

Model Information

The **RH1** is suitable for many basic applications. It features a wide input voltage range, constant current discharge mode with user-settable discharge rate, and user-settable termination conditions. USB connection can be used to read back data from internal memory and to set the operating parameters directly. It supports memory logging to external SD memory card.

The **RH2** has all the features of the RH1 with additional enhancements that make it suitable for a wider range of applications. In addition to the constant current discharge mode of the RH1, the RH2 also allows constant power and constant resistance discharge profiles to be defined. The RH2 has a more robust internal contactor that can tolerate higher charger currents, particularly the inrush currents that can occur when a discharged battery is reconnected to the charger at the end of a test. The RH2 allows the battery voltage to be measured using dedicated Kelvin terminals connected directly to the battery posts, eliminating the errors associated with voltage drop across the discharge cables.



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Key Features & Benefits

| | |
|---------------------------------------|--|
| True Capacity Measurement | The tester measures the time it takes to discharge the battery. This provides a true measure of the battery, regardless of battery chemistry. |
| Versatile | The tester can be set to discharge at either a constant current (RH1 and RH2), constant power or constant resistance rate (RH2 only) to meet the requirements of all typical applications. |
| Self-Powered | The tester is powered from the battery being tested and requires no connection to the AC power grid. |
| Simplicity of Use | The tester has an easy-to-use, intuitive user interface that allows all parameters to be set as required. The parameters are stored in memory and the unit will power up to the same state as it was last used. |
| Wide Operating Range | Both testers can be used with a wide range of battery voltages and chemistries. Each tester automatically adjusts to the battery voltage within the operating range of the model. |
| Automatic Operation | The tester automatically finishes the test when the battery voltage has reached a preset absolute voltage or percentage of the initial discharge voltage. The battery is then reconnected to the charger to allow it to be recharged. |
| Continuous Protection | The tester allows a temporary battery to be connected to the charging system to provide protection while a test is in progress. |
| Failsafe | The tester uses a normally-closed electro-mechanical relay to interrupt the current path between the battery and charger. In the event of a failure of the tester, the relay defaults to connect the permanent battery to the charger. The load path is fused to protect the system in the event of a short circuit in the tester. |
| Accurate | The tester uses an active feedback control loop to control the discharge current. Each tester is calibrated to provide a measurement accuracy of better than 1%. |
| Memory Backup and Data Logging | The tester stores all operating parameters in memory and records the discharge current, battery voltages, charger voltages and heat-sink temperature in internal memory or removable SD card. |
| Rugged and Durable | The tester is packaged in a compact, durable aluminum case designed to withstand the rigors of field use. Its integrated carrying handle makes transporting the tester easy. |

Physical Specifications

| Description | Unit | Typ. |
|--|--------------|-------------------------------------|
| Dimensions (including handles, connectors and feet) | cm (Inch) | 27 x 27 x 14 (10.6 x 10.6 x 5.5) |
| Weight (Tester only) | kg (lb) | |
| | RH1 RH2 | 5.8 (12.8) 6.2 (13.6) |
| Cable Gauge (Std.) | AWG | 6 |
| Cable Length (Std.) | m (ft) | 1.2 (4) |



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Absolute Maximum Conditions

| Description | Unit | Min. | Typ. | Max. |
|--|---------|-----------|------|----------|
| Ambient Operating Temperature | °C (°F) | -20 (-5) | - | 35 (95) |
| Storage Temperature | °C (°F) | -40 (-40) | - | 85 (185) |
| Ambient Relative Humidity (Non-Condensing) | % RH | 10 | - | 90 |
| Peak Charger Current (1 Minute Max.) | A | | | |
| | RH1 | - | - | 150 |
| | RH2 | - | - | 250 |
| Continuous Charger Current | A | | | |
| | RH1 | - | - | 75 |
| | RH2 | - | - | 100 |
| Maximum Charger Voltage | V | - | - | 60 |
| Maximum Discharge Current | A | - | - | 50 |
| Discharge Power Dissipation | W | 60 | - | 500 |

Electrical Specifications

| Description | Unit | Min. | Typ. | Max. |
|---|------|------|------|------|
| Discharge Rate (Constant Current Mode) | A | 2 | - | 50 |
| Discharge Rate (Constant Power Mode) * | W | 80 | - | 500 |
| Resistance Range (Constant Resistance Mode) * | ohm | 0.2 | - | 25 |
| Measurement Accuracy (Calibrated) | % | - | 0.5 | 1 |
| Initial Battery Discharge Voltage | V | 10 | - | 52 |
| End Voltage Percentage (Relative to Discharge Voltage at Start of Test) | % | 70 | 80 | 90 |
| Absolute End Voltage | V | 8 | - | - |
| Power Dissipation Before/After Test (Fan Off) | W | - | 4 | - |

* Constant Power and Constant Resistance operation is only available with the RH2.

Visit us online at www.redhawkenergy.net to learn more about the RH Series Portable Battery Testers

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