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› Runleader RL-BI022A Battery Indicator Volt Meter and Hour Meter User Manual

## Runleader RL-BI022A

# Runleader RL-BI022A Battery Indicator Volt Meter and Hour Meter User Manual

Model: RL-BI022A

## 1. PRODUCT OVERVIEW

The Runleader RL-BI022A is a versatile digital instrument designed to monitor battery capacity, voltage, and record working hours for various battery-powered equipment. It supports 12V to 48V battery systems, including Lead Acid, GEL, LiFePO4, Trojan, AGM, and 18650 battery types. This device provides essential data for efficient equipment management and maintenance.

## 2. KEY FEATURES

- **Battery Capacity Meter:** Displays remaining battery power by percentage and progress bars. Compatible with 12V, 24V, 36V, and 48V battery types.
- **Battery Voltage Gauge:** Monitors real-time battery voltage (DC 8V to 65V). Features configurable over-voltage (DC 12V to 60V) and under-voltage (DC 8.5V to 59V) alerts.
- **Maintenance Hour Meter:** Records total running hours (TOT: 0 to 99,999 hours) and allows setting initial hours. Includes a Service (SVC) hour reminder (0 to 2000 hours) for scheduled maintenance tasks.
- **Backlight Display:** Adjustable modes for always on, off, or sleeping.
- **Water Resistance:** 100% epoxy resin craft ensures strong water resistance up to IP68.
- **Easy Installation:** Designed for drill-in and snap-in mounting with a panel cut-out size of 45.00mm x 45.00mm (1.77 inches x 1.77 inches).

## 3. SPECIFICATIONS

| Parameter                   | Value                                                   |
|-----------------------------|---------------------------------------------------------|
| Brand                       | Runleader                                               |
| Model                       | RL-BI022A                                               |
| Material                    | Acrylonitrile Butadiene Styrene (ABS)                   |
| Item Dimensions (L x W x H) | 1.95 x 1.95 x 1.18 inches (49.00mm x 49.00mm x 29.98mm) |
| Item Weight                 | 60 Grams                                                |

|                               |                   |
|-------------------------------|-------------------|
| Voltage Measurement Range     | DC 8V to 65V      |
| Over-voltage Alert Range      | DC 12V to 60V     |
| Under-voltage Alert Range     | DC 8.5V to 59V    |
| Total Hours (TOT) Range       | 0 to 99,999 hours |
| Maintenance Hours (SVC) Range | 0 to 2000 hours   |
| Waterproof Rate               | IP68              |

# APPLICABLE BATTERY TYPES & VOLTAGE



- You can program the applicable battery types to 4 types of Lead acid (bt-1/bt-7/bt-8/bt-9), GEL(bt-2), LiFe PO4 (bt-3), Trojan(bt-4), AGM(bt-5), 18650 lithium(bt-6).



- You can program the applicable battery voltage to 12V(U-12), 24V (U-24), 36V(U-36), 48V(U-48).

Figure 1: Product dimensions and included accessories.

## 4. INSTALLATION

### 4.1 Panel Cut-out and Mounting

The RL-BI022A is designed for drill-in and snap-in mounting. Ensure the panel cut-out matches the specified dimensions for a secure fit.

- **Panel Cut-out Size:** 45.00mm x 45.00mm (1.77 inches x 1.77 inches).
- Insert the meter into the cut-out and secure it using the snap-in mechanism.



Figure 2: Panel cut-out dimensions and snap-in mounting illustration.

## 4.2 Wiring Connections

Connect the meter to your equipment following the wiring diagram. Ensure correct polarity for proper operation.

- Connect the positive and negative terminals of the meter to the corresponding terminals of your equipment's power source.
- For accurate battery power progress bar display, ensure "Port 3" is connected to the positive terminal.
- A key switch port is available for controlled power activation.

# BATTERY VOLTAGE MEASUREMENT



Over voltage alert  
(range:12V to 60V)



Under voltage alert  
(range:8.5V to 59V)

- It measure the real-time battery voltage value when power is on.
- It remind the voltage exceed and voltage lackness based on preset voltage alert value.

Figure 3: Detailed wiring connections for direct power and key switch integration.

## 5. OPERATING INSTRUCTIONS

### 5.1 Battery Capacity Display

The meter displays the remaining battery power as a percentage and through a series of progress bars. Each bar typically represents 20% of the battery's capacity.

- The display shows the current battery charge level.
- A low battery reminder system indicates when the battery charge falls below critical levels (e.g., <10% or <30%) with visual alerts.



Figure 4: Real-time battery power percentage and progress bar display.



Figure 5: Low battery reminder indicators.

## 5.2 Battery Voltage Measurement

The device continuously monitors and displays the real-time voltage of the connected battery. You can configure alert thresholds for both over-voltage and under-voltage conditions.

- The display shows the current battery voltage in Volts (V).
- Set an over-voltage alert (H-value) to be reminded if the voltage exceeds a safe limit (range: 12V to 60V).
- Set an under-voltage alert (L-value) to be reminded if the voltage drops below a critical level (range: 8.5V to 59V).



5 DIGITS  
DISPLAY



POWER PERCENTAGE  
DISPLAY



VOLT METER



VOLT ALERT



BACKLIGHT



TOT



WATERPROOF  
RATE IP68



USER SHUTDOWN



SVC

Figure 6: Battery voltage measurement and alert settings.

### 5.3 Hour Meter Functions (TOT & SVC)

The RL-BI022A includes two hour meter functions: Total Hours (TOT) and Service Hours (SVC).

- **TOT (Total Hours):** Tracks the cumulative operating time of the machine when power is on. An initial hour value can be set when replacing an old meter.
- **SVC (Service Hours):** A programmable countdown timer for regular maintenance tasks. A flashing LED light will remind you when the service interval is due.



Figure 7: Total hours and service hour display with maintenance reminders.

### 5.4 Programming Battery Types and Voltage

The meter can be programmed to match various battery types and voltage configurations to ensure accurate readings.

- **Battery Types:** Program the meter for Lead Acid (bt-1 / bt-7 / bt-8 / bt-9), GEL (bt-2), LiFePO4 (bt-3), Trojan (bt-4), AGM (bt-5), or 18650 lithium (bt-6).
- **Battery Voltage:** Set the applicable battery voltage to 12V (U-12), 24V (U-24), 36V (U-36), or 48V (U-48).



Figure 8: Programming interface for battery type and voltage selection.

## 6. MAINTENANCE

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The RL-BI022A is designed for durability and requires minimal maintenance. The SVC hour function helps in scheduling regular maintenance for the equipment it monitors.

- Keep the display clean and free from dust and debris. Use a soft, dry cloth for cleaning.
- Regularly check wiring connections to ensure they are secure and free from corrosion.
- Utilize the SVC hour reminder to perform scheduled maintenance on your equipment, such as battery checks or component servicing.

## 7. TROUBLESHOOTING

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If you encounter issues with your Runleader RL-BI022A, consider the following basic troubleshooting steps:

- **No Display/Power:** Check all wiring connections, especially the positive and negative terminals, and ensure the power source is active. Verify that the voltage is within the operating range (DC 8V to 65V).
- **Incorrect Readings:** Ensure the correct battery type and voltage have been programmed into the device according to your battery specifications.
- **Alerts Triggering Incorrectly:** Review your set over-voltage and under-voltage alert thresholds to ensure they are appropriate for your battery system.
- **Progress Bars Not Displaying:** Confirm that "Port 3" is correctly connected to the positive terminal as per the installation instructions.

For persistent issues, refer to the contact information in the Warranty and Support section.

## 8. WATER RESISTANCE

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The Runleader RL-BI022A features an IP68 waterproof rating, indicating its high resistance to dust and water ingress. This makes it suitable for use in demanding environments.

# STRONG WATER RESISTANCE



Figure 9: The RL-BI022A undergoing a water resistance test, highlighting its IP68 rating.

## 9. APPLICATIONS

This battery indicator and hour meter is suitable for a wide range of DC 12V to 48V battery-powered equipment, including but not limited to:

- Golf Carts
- Forklifts
- Motorhomes
- Lawn Mowers
- Leaf Trimmers
- Scrubber Machines



Golf Cart



Forklift



Scrubber Machine

## 10. WARRANTY AND SUPPORT

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Runleader is committed to providing reliable technical and after-sales service for its products.

- For technical assistance, product inquiries, or warranty claims, please contact Runleader customer support through the official website or your purchase platform.
- Please retain your proof of purchase for warranty validation.

## ASK A QUESTION ABOUT THIS MANUAL

Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question and use this page's manual context to help answer it.

### Name

Anonymous

### Email

you@example.com

After a successful submission, we securely hash the supplied account or form email before sending it to Microsoft Advertising for conversion attribution. [Privacy details](#).

### Question

Example: How do I reset this device or fix this error?

### Details

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question