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› Runleader RL-BI022AC Digital Battery Level Indicator and Volt Meter User Manual

Runleader RL-BI022AC

Runleader RL-BI022AC Digital Battery Level Indicator and Volt Meter User Manual

Model: RL-BI022AC

1. PRODUCT OVERVIEW

The Runleader RL-BI022AC is a multifunctional digital gauge designed to monitor battery power, voltage, and total operating hours for various DC-powered equipment. It features a clear LCD display with backlight, CAN data transfer capabilities, and a waterproof design, making it suitable for demanding environments.

Key functions include:

- **Battery Level Indication:** Displays battery power percentage and progress bars during charge and discharge cycles.
- **Maintenance Hour Meter:** Tracks total machine operating hours and provides maintenance reminders.
- **Volt Meter:** Monitors real-time voltage and alerts for voltage exceedance or deficiency based on preset values.
- **CAN Data Transfer:** Facilitates data exchange via standard (Std) and extended (Eld) CAN frames.
- **Waterproof Design:** Constructed with 100% epoxy resin and ABS housing, offering IP68 water resistance.



Figure 1: Runleader RL-BI022AC Digital Battery Level Indicator and Volt Meter.

2. SETUP AND INSTALLATION

2.1 Panel Cut-out and Mounting

The RL-BI022AC is designed for drill-in and snap-in mounting. Ensure the panel cut-out dimensions are accurate for a secure fit.

- **Panel Cut-out Size:** 44.5mm x 44.5mm (1.75 x 1.75 inches).
- **Mounting Method:** Snap-in mounting for easy installation.

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

2.2 Connection Ports and Wiring

The device utilizes a connection port for power and signal connections. Follow the wiring diagrams carefully.

- **Direct Power Connection:** Connect directly to the battery for continuous power.
- **Key Switch Power Connection:** Integrate with a key switch to power the device on/off with the equipment.
- **CAN Communication Connection:** For data exchange, connect to your machine's CAN system.

Note: Port 3 must be connected with Port '+' to correctly display battery power progress bars.

2.3 Programmable Battery Types and Voltages

The RL-BI022AC supports various battery types and voltages. These settings are programmable to ensure accurate readings.



Figure 3: Programmable battery types and voltage settings.

- **Applicable Battery Types:** Lead acid (bt-1/bt-7/bt-8/bt-9), GEL (bt-2), LiFePO4 (bt-3), Trojan (bt-4), AGM (bt-5), 18650 lithium (bt-6).
- **Programmable Voltages:** 12V (U-12), 24V (U-24), 36V (U-36), 48V (U-48).

3. OPERATING INSTRUCTIONS

3.1 Battery Power Percentage Display

The device provides real-time battery power information through percentage and a 5-bar LCD progress indicator. Each bar represents 20% of battery power.



Figure 4: Battery power display and low battery reminders.

- **Real-time Display:** Shows current battery charge level.
- **Low Battery Reminder:** The red backlight will activate when battery power falls below a preset threshold (e.g., 10% or 30%).

3.2 Total Hours (TOT) and Service Hours (SVC)

The RL-BI022AC tracks total operating hours and provides a service reminder function.



Figure 5: Total hours (TOT) and Service hours (SVC) display.

- **TOT (Total Hours):** Records the cumulative running hours of the machine when power is on. Initial hours can be set for new meter replacement.
- **SVC (Service Hours):** Performs regular maintenance task reminders by countdown. A flashing LED light indicates when service hours are approaching or have arrived.

3.3 Battery Voltage Measurement

The device measures and displays the real-time battery voltage. It also provides alerts for voltage anomalies.

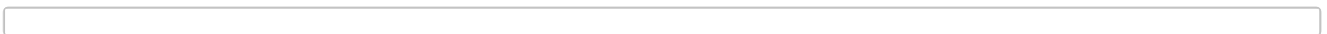


Figure 6: Battery voltage measurement and alert indicators.

- **Real-time Voltage:** Displays the current battery voltage when powered on.
- **Voltage Alerts:** Reminds the user of voltage exceedance (range: 12V to 60V) or lack (range: 8.5V to 59V)

based on preset alert values.

3.4 CAN for Data Transfer

The RL-BI022AC can exchange working data via two built-in CAN frames, provided your machine has a corresponding CAN setup.

- **Standard Frame (Std):** Default ID: ID0X18FF0b50.
- **Extended Frame (Eld):** Default ID: ID0X201.

3.5 Backlight Display

The white backlight assists in viewing the display in low-light conditions. The backlight can be configured for always-on, off, or automatic mode. A red backlight indicates low battery status or voltage alerts.

4. MAINTENANCE

The RL-BI022AC is designed for durability and minimal maintenance. Regular checks and adherence to service hour reminders are recommended.

- **Scheduled Maintenance:** Utilize the SVC hour function to arrange and perform regular maintenance tasks for your equipment.
- **Cleaning:** Wipe the display with a soft, damp cloth. Avoid abrasive cleaners.
- **Water Resistance:** The device features IP68 water resistance, allowing it to function normally up to 10 meters underwater. However, avoid prolonged submersion unless necessary and ensure all connections are properly sealed.



Figure 7: Water resistance demonstration.

5. TROUBLESHOOTING

If you encounter issues with your Runleader RL-BI022AC, consider the following general troubleshooting steps:

- **No Display:** Check power connections and ensure the device is receiving adequate voltage. Verify that Port 3 is correctly connected to Port '+'.
- **Incorrect Readings:** Ensure the correct battery type and voltage settings are programmed for your specific battery.
- **CAN Communication Issues:** Verify your machine's CAN setup and ensure proper wiring to the device's CAN ports.
- **Backlight Malfunction:** Check backlight settings (always-on, off, automatic).

For persistent issues or specific error codes not covered here, please refer to the support section for contact information.

6. SPECIFICATIONS

Feature	Specification
Model Number	RL-BI022AC

Feature	Specification
Product Dimensions	1.95 x 1.95 x 1.18 inches
Item Weight	2.08 ounces
Power Source	Battery Powered (DC 12V to 48V)
Waterproof Rating	IP68
Display Type	LCD with Backlight
CAN Frames	Standard (Std), Extended (Eld)
Applicable Battery Types	Lead acid, GEL, LiFePO4, Trojan, AGM, 18650 lithium
Voltage Alert Range	Over voltage: 12V to 60V; Under voltage: 8.5V to 59V



Figure 8: Product dimensions and included accessories.

7. APPLICATION

The Runleader RL-BI022AC is suitable for a wide range of DC 12V to 48V powered equipment, including but not limited to:



Figure 9: Common applications for the RL-BI022AC.

- Golf carts
- Forklifts
- Motorhomes
- Lawn mowers
- Leaf trimmers
- Scrubber machines

8. SAFETY WARNINGS

Please observe the following safety warnings to ensure safe operation and prevent damage to the device or injury.



Figure 10: Important safety warnings.

- Keep the device away from fire.
- Keep the device out of reach of children and babies.

9. WARRANTY AND SUPPORT

The Runleader RL-BI022AC comes with a **2-year warranty** from the date of purchase. This warranty covers manufacturing defects and malfunctions under normal use.

For technical support, warranty claims, or any inquiries regarding the product, please contact Runleader customer service. Our team provides excellent after-sales and technical support to assist you.
Please retain your proof of purchase for warranty validation.

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