REDARC BCDC1240D

REDARC 40A In-Vehicle DC to DC Charger User Manual

Model: BCDC1240D

1. Product Overview

The REDARC 40A In-Vehicle DC to DC Charger (Model BCDC1240D) is designed to ensure your auxiliary and secondary battery banks are fully charged while on the move. This advanced charger features dual input capabilities, allowing it to draw power from both your vehicle's alternator and connected solar panels. It incorporates Maximum Power Point Tracking (MPPT) solar regulation to maximize solar energy harvesting and Green Power Priority, which prioritizes solar charging to reduce the load on your vehicle's alternator. Built for durability, the BCDC1240D is suitable for high-performance engine bay installations, offering resistance to heat, water, and dust, making it ideal for demanding off-road and camping environments.

Image 1.1: The REDARC BCDC1240D 40A In-Vehicle DC to DC Charger, a robust unit designed for efficient battery charging.

2. Key Features

- **Dual Input Charging:** Charges from both the vehicle's alternator and solar panels simultaneously.
- **MPPT Solar Regulation:** Maximizes power harvested from solar panels for efficient charging.
- **Green Power Priority:** Prioritizes solar charging to reduce strain on the alternator.
- **Wide Battery Compatibility:** Supports AGM, GEL, Lead Acid, Calcium, and LiFePO4 battery types.
- **12V and 24V System Compatibility:** Works with both 12V and 24V vehicle systems, including standard and smart alternators.
- **Rugged Construction:** Potted design for resistance to heat, water, dust, and vibration, suitable for harsh conditions.
- **Engine Bay Installation:** Designed for high-performance installation in engine bays.

3. Setup and Installation

Proper installation is crucial for the optimal performance and longevity of your REDARC BCDC1240D charger. While installation is designed to be straightforward, it is recommended that installation be performed by a qualified auto electrician or technician.

3.1 Mounting Location

The charger is designed for engine bay installation due to its robust, potted construction. Choose a location that is:

- Secure and free from excessive vibration.
- Accessible for wiring connections.
- Allows for adequate airflow around the unit for cooling, especially if using a 304 stainless steel bracket for cooler operation as suggested by REDARC.

3.2 Wiring Connections

The BCDC1240D requires connections to your vehicle's starting battery (input from alternator), auxiliary battery (output to charge), and solar panel (if applicable). Ensure all wiring is of appropriate gauge for the current draw and is properly fused. Refer to the detailed wiring diagram provided in the product packaging for specific connection points and fuse ratings.

1. Connect the input from the starting battery/alternator.
2. Connect the output to the auxiliary battery.
3. Connect the solar panel input (if applicable).
4. Ensure proper grounding of the unit.

Note: Incorrect wiring can damage the unit or vehicle electrical system. Always disconnect the vehicle's main battery before beginning installation.

4. Operating Instructions

The REDARC BCDC1240D operates automatically once correctly installed. It intelligently manages charging from both the alternator and solar panels to ensure your auxiliary battery is charged efficiently.

4.1 Charging Process

- When the vehicle engine is running, the charger will draw power from the alternator to charge the auxiliary battery.
- If solar panels are connected and sufficient sunlight is available, the MPPT controller will optimize solar power input.
- The Green Power Priority feature ensures that solar power is utilized first, reducing the load on the alternator and conserving fuel.
- The charger employs a multi-stage charging profile (e.g., Boost, Absorption, Float) to optimize battery life and ensure a full charge.

4.2 Status Indicators

The unit features LED indicators to provide feedback on its operational status and charging progress. Consult the product manual for a detailed explanation of each indicator light. Typically, these lights will show:

- Input source (Solar, Vehicle)
- Charge stage (e.g., Bulk, Absorption, Float)
- Fault conditions (if any)

5. Compatibility

The REDARC BCDC1240D is designed for broad compatibility with various vehicle electrical systems and battery types.

5.1 Battery Types

This charger is compatible with the following battery chemistries:

- AGM (Absorbed Glass Mat)
- GEL
- Standard Lead Acid
- Calcium
- LiFePO4 (Lithium Iron Phosphate)

It is suitable for lead acid battery banks over 200Ah and lithium batteries over 100Ah.

5.2 Vehicle Systems

The charger is optimized for both 12V and 24V vehicle systems and can adapt to various alternator types, including:

- Standard Alternators
- Smart Alternators (Variable Voltage Alternators)

6. Maintenance

The REDARC BCDC1240D is designed for minimal maintenance due to its robust construction. However, periodic checks can help ensure its continued optimal performance.

- **Visual Inspection:** Periodically inspect the unit and its wiring for any signs of damage, corrosion, or loose connections. Ensure all connections are secure.
- **Cleaning:** Keep the exterior of the unit clean and free from excessive dirt or debris. Use a soft, dry cloth for cleaning. Do not use harsh chemicals or abrasive cleaners.
- **Ventilation:** Ensure that the area around the charger remains clear to allow for proper heat dissipation.

- **Battery Health:** Regularly check the health and charge level of your auxiliary battery to ensure it is functioning correctly.

Note: Do not attempt to open or service the unit yourself. Refer all servicing to qualified personnel.

7. Troubleshooting

If you encounter issues with your REDARC BCDC1240D, refer to the table below for common problems and their potential solutions.

Problem	Possible Cause	Solution
Charger not activating/charging	◦ Loose or incorrect wiring connections. ◦ Blown fuse in input line. ◦ Insufficient input voltage from alternator or solar. ◦ Auxiliary battery fully charged.	◦ Check all wiring connections for security and correctness. ◦ Inspect and replace any blown fuses. ◦ Verify alternator output or solar panel connection and sunlight. ◦ Check auxiliary battery voltage; if full, charger will not activate.
Overheating	◦ Inadequate ventilation around the unit. ◦ Operating in extreme ambient temperatures.	◦ Ensure clear space around the charger for airflow. ◦ Consider relocating if consistently overheating in extreme conditions.
LED indicators not functioning as expected	◦ Internal fault. ◦ Power supply issue.	◦ Verify power connections. ◦ If problem persists, contact REDARC support.

For issues not listed above or if troubleshooting steps do not resolve the problem, please contact REDARC customer support.

8. Specifications

Specification	Detail
Model Number	BCDC1240D
Brand	REDARC
Input Voltage	12 Volts (compatible with 12V and 24V vehicle systems)
Output Voltage	12 Volts (DC)
Max Charge Current	40 Amps
Dimensions (Package)	12.95 x 5.12 x 2.4 inches
Item Weight	2.21 pounds (approx. 35.3 ounces)
Color	Black
Manufacturer	REDARC

9. Warranty and Support

REDARC stands behind the quality and durability of its products. For specific warranty terms and conditions, please refer to the warranty information included with your product packaging or visit the official REDARC website.
For technical support, product inquiries, or assistance with troubleshooting, please contact REDARC customer service through their official channels.

Online Resources: Visit the REDARC website for FAQs, product manuals, and support documents.

Customer Service: Contact details for phone or email support can be found on the REDARC website.

Related Documents - BCDC1240D

	REDARC BCDC Dual Input Multi-Stage In-Vehicle Battery Charger Manual Comprehensive guide to the REDARC BCDC1225D, BCDC1240D, and BCDC1250D Dual Input Multi-Stage In-Vehicle Battery Chargers, covering installation, operation, troubleshooting, and specifications for optimal auxiliary battery charging.
	REDARC BCDC Dual Input Multi-Stage In-Vehicle Battery Charger - Installation and User Guide Comprehensive guide for the REDARC BCDC1225D, BCDC1240D, and BCDC1250D Dual Input Multi-Stage In-Vehicle Battery Chargers. Covers specifications, installation, troubleshooting, and warranty.
	REDARC BCDC2420 In-Vehicle Battery Charger Manual Comprehensive guide to the REDARC BCDC2420 and BCDC2420-LV 24V DC-DC battery chargers, covering product overview, specifications, installation, troubleshooting, and warranty.
	REDARC BCDC Wiring Kit Installation and Compatibility Guide This guide provides detailed information on the REDARC BCDC Wiring Kit, covering compatibility across six models (BCDCWK-001 to BCDCWK-006), installation procedures, wiring connections, safety precautions, and technical specifications for connecting REDARC BCDC Battery Chargers to vehicle auxiliary batteries.

	[REDARC HBA1224/HBA1224-003 Handbrake Alarm: Safety and Installation Guide] Enhance vehicle safety with the REDARC HBA1224 and HBA1224-003 Handbrake Alarms. These 12V/24V automotive devices provide audible and visual warnings for unapplied handbrakes, preventing accidental rollaways. Features include compact size, latching alarm, and external output options. Detailed installation and wiring information available.
	[REDARC SRPA Series Solar Regulators: SRPA0120, SRPA0240, SRPA0360 - User Manual & Specs] Get detailed information on REDARC's SRPA series PWM solar regulators (SRPA0120, SRPA0240, SRPA0360). This manual covers installation, safety, specifications, system wiring, and warranty for 12V and 24V battery systems.