

#### A. INTRODUCTION

Congratulations on purchasing a high quality BlueNova® product.

This document covers product assembly & installation, troubleshooting, safety & maintenance instructions, storage guidelines as well as emergency & first aid procedures.

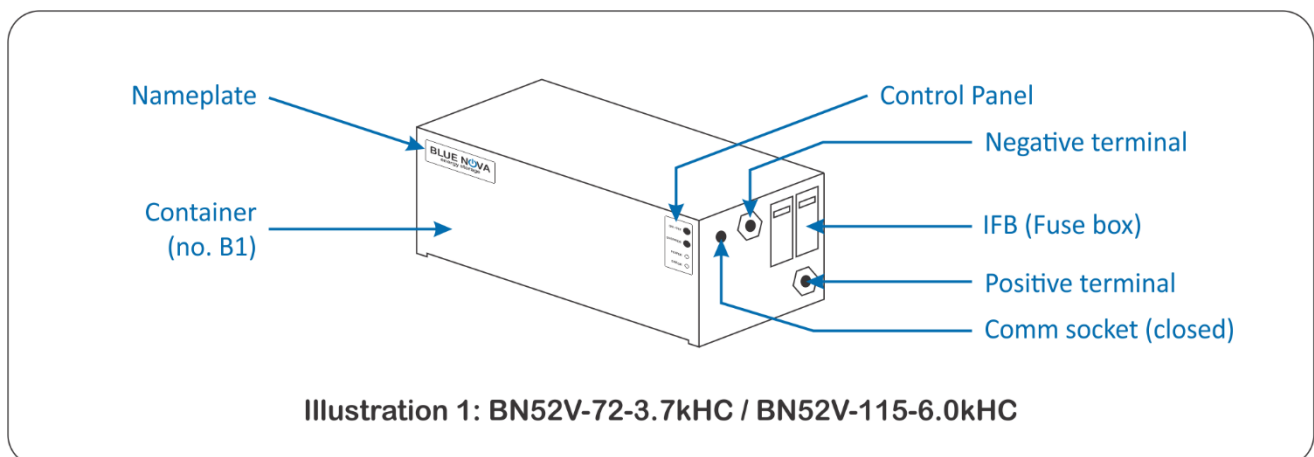
Please do not discard this document as it contains valuable information that might have to be referenced at a later stage.

Should you have any queries, kindly contact BlueNova® Technical Support:

☎ Office: +27 21 205 2000    ✉ E-mail: [support@bluenova.co.za](mailto:support@bluenova.co.za)

#### B. COMPONENT DIAGRAM

A BlueNova® single unit battery requires no assembly before installation:



#### C. INSTALLATION

The following highlighted values have to be set on the inverter/charger. **Note:** Disable *equalisation*.

Parameter	Cell V	Value	12V Eq	Comment
V high cut-off	4.00 V	64.0 V	16.0 V	Over voltage. Battery will isolate automatically.
V high set	3.51 V	56.2 V	14.1 V	100% SoC. Constant voltage set point. Charger must pause until V float is reached.
V bypass	3.50 V	56.0 V	14.0 V	Internal set to battery for balancing.
V float	3.40 V	54.4 V	13.6 V	Charger must reconnect when this voltage is reached.
V reconnect	3.00 V	48.0 V	12.0 V	Mains or generator must reconnect to charge batteries.
V low set	2.90 V	46.4 V	11.6 V	Inverter must switch off the load.
V low cut-off	2.80 V	44.8 V	11.2 V	Under voltage. Battery will isolate automatically.

#### IMPORTANT: Voltage calibration

Experience has shown that some inverter/charger voltage measurement circuits are inaccurate.

Compare the voltage values displayed by the inverter/charger with that of a calibrated voltmeter. If the actual voltage differs by more than 100mV from that measured by the inverter/charger, apply this difference to the highlighted values above (i.e. if actual voltage = 56V while inverter voltage = 56.5V, the voltage difference = 0.5V should be subtracted from each of the set values above).

#### D. TROUBLESHOOTING

Every BlueNova® product contains integrated circuitry as a safety measure against possible damage from electrical malfunction. Under such conditions, the red Error LED on the Control Panel will flash to indicate a specific error.

Before troubleshooting any errors, first check the following:

- Ensure that units are stacked in the correct order. Refer to Illustration 2A.
- Ensure that the signal cable and busbars are tightly connected.
- Ensure that fuses are fitted correctly and in working order (i.e. not *blown*).

The following table explains each error LED flash sequence, and the procedures to follow:

Flash Seq.	Error	Procedure
1 x flash	Fuse	1. Check fuses and replace with the same type if necessary.
2 x flashes	Comm Cable	1. Ensure all connections are securely tightened.
3 x flashes	Over-charge	1. Check settings on inverter / charger. Refer to C. Installation
4 x flashes	Over-discharge	1. Check settings on inverter / charger. Refer to C. Installation 2. Ensure that the charger will switch on. 3. Keep Reset button depressed until battery switches on.
No flashes	Comm Cable	1. Check battery output & inverter input connections. 2. Ensure Comm cable connections are securely tightened.

#### IMPORTANT: Deep Discharge Lockout (DDL) Mode

BlueNova® batteries have been designed with protective countermeasures against malfunction and abuse. Whenever  $V_{low\ cut-off}$  is reached (refer to C. Installation), the battery will isolate itself automatically from the inverter/charger and load. The battery will enter **Sleep Mode** at this point, and may be switched on again by following the procedure detailed above for an over-discharged battery.

Should a battery in Sleep Mode not be recharged within 8 weeks of switch-off date, the small load resulting from the standby circuitry will drain the battery sufficiently to result in the battery entering **DDL Mode**. Recovery from DDL Mode is a lengthy process, and would involve a product recall to BlueNova® facilities as well as a service fee. See F. Battery Storage Guidelines for more information.

#### E. SAFETY & MAINTENANCE

1. Do not short circuit the battery terminals.
2. Do not use the battery without a BlueNova® approved integrated BMS solution.
3. Do not disassemble, pierce, cut or in any way physically alter any part of the battery.
4. Do not burn, incinerate or otherwise subject the battery to extreme heat.

#### F. BATTERY STORAGE GUIDELINES

1. Ensure that the battery is switched off when stored.
2. Disconnect the communication cable.
3. Always store batteries in a cool and well-ventilated area – ideally  $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$ .
4. Store away from moisture and heat.
5. Do not store batteries upside down for overly long periods.
6. Check the open circuit voltage of stored batteries at least once per month. In order to prevent Deep Discharge Lockout (DDL) mode, recharge batteries sufficiently and frequently enough to prevent the open circuit voltage falling below 40V.
7. Ensure that the stored battery's state of charge is above 50% at all times. 100% SOC is optimal.

#### G. EMERGENCY & FIRST AID

1. In case of fire
  - a. Evacuate danger zone. Open ventilation in the room.
  - b. Extinguish fire with water. Alternatively, use a CO<sub>2</sub> fire extinguisher.
  - c. Immerse any smoking items completely in water.
2. Skin contact
  - a. Wash immediately with soap and water.
  - b. If irritation persists, seek medical attention.
3. Eye contact
  - a. Rinse eyes immediately with clean water for at least 15 minutes.
  - b. Seek medical attention immediately afterwards.
4. Ingestion
  - a. Refrain from taking any emetic or vomit-inducing medicine.
  - b. Seek medical attention immediately.