



A Benny Lee Company

PRODUCT USER GUIDE

RU2-4012-BMS

Power Supply and Battery Management System Owners Guide

(These instructions are intended for use by a technician familiar with electronic products)

- RU2-4012-BMS is a continuous duty power supply with built-in smart charger, diode isolation, and low voltage disconnect.
- Remote Control / Remote Sense
- Recommended for use with battery banks up to 240 Ah
- 3 year warranty



DESCRIPTION

The RU2-4012-BMS is a power supply and battery management system. The RU2-4012-BMS offers continuous duty power supply with a built in smart charger, diode isolation and low voltage disconnect (LVD). This unit is recommended for use with battery banks up to 240 Ah.

SPECIFICATIONS

| | |
|---|--|
| Output Voltage..... | 13.8 VDC |
| Output Voltage Tolerance..... | +/- 1 pct |
| Output Amperage | 40 Amps, <30 sec, 35 Amps cont. |
| Maximum Power, continuous | .500 watts |
| Output Voltage Adjustment..... | 12-15 VDC |
| Maximum Ripple and Noise..... | 100 mV p-p max |
| Input Voltage, (Switch Selectable)..... | 90-130 / 180-260 VAC |
| Input Frequency Range | 47-63 Hz |
| Maximum AC Current | 7 Amps/120 VAC; 3.5 Amps/240 VAC |
| Typical Efficiency | >80 pct |
| Max Inrush Current, Single Cycle | 35 Amps |
| Short Circuit Protection..... | Foldback Limiting |
| Overload Protection (operates) | typical 110-120 pct |
| Line Regulation..... | 50 mV |
| Load Regulation | 100 mV (20-100 pct load) |
| Fan Control..... | Heat sink temp >140 F (60 C) = ON |
| Over Temperature | >195 F (90 C) auto output shutdown |
| Rise Time Following ON | 50 mS |
| Hold Time Following OFF..... | 10 mS |
| Working Temperature Range | -4 – 140 F (-20 – + 60 C) |
| Storage Temperature | -40 – 185 F (-40 – +85 C) |
| Withstand Voltage* | 1.5 KV @ 10 ma (I/P-O/P, I/P-FG)/1 min |
| (Continued) | 500 V @ 10 ma (O/P-FG)/1 min |
| Dimensions..... | 3.5H x 19W x 13D inches, nominal |
| Weight | 15 lbs, nominal |

METER CIRCUITS

The panel meter VOLT/AMP switch provides DC output voltage measurement and output load current measurement for the power module when using AC power. If AC power fails the meter will indicate DC output from Battery Back-up, but will not measure load current (amps).

When set to the VOLT position, the full-scale reading is 30 volts.

When set to the AMP position, the full-scale reading is 60 amps.

The meter and associated circuitry accuracy is 10 percent of full-scale deflection. Since full-scale is 60 amps, a 20 amp current can vary from 18 to 22 amps indicated. To prevent unnecessary output voltage drops, the meter circuits' use the voltage drop of the black negative return to the module as a meter shunt. The meter sensitivity for voltage measurement is 1000 ohms per volt.

BATTERY BACK UP & CHARGER

| | |
|--|--|
| Maximum Power, continuous | 500 Watts |
| Auto-revert to Battery or Power Supply | Provided by dual Shottky diode in OR configuration |
| Maximum Output Current in Battery Mode | 75 amps (limited by Shottky diode) |
| Maximum Charge Voltage | 13.8 VDC |
| Maximum Recharge Rate | 24 amps with auto sensing of charge current |
| Charger Protection | Overload/voltage/temperature/reverse polarity protected |
| Dead Battery Protection | Short circuit protected with deep discharge start function |
| AC Input..... | 90-130 / 180-260 VAC, 47-63 Hz, switch selected |
| Visual Indication | LED indication: Red = AC or Power Module Fail, System operating on Battery |

LOW VOLTAGE DISCONNECT with RELAY

| | |
|--|---|
| Maximum Interrupt Current / Continuous Current | 75 amps DC |
| Disconnect Voltage..... | 11.5 VDC |
| Reconnect Voltage | 12.5 VDC |
| Disconnect Delay..... | 2 minutes @ less than preset disconnect voltage |

GENERAL APPLICATION NOTES AND WARNINGS

WARNING: THERE ARE NO USER SERVICEABLE PARTS INSIDE. HAZARDOUS VOLTAGES EXIST INSIDE THE UNIT. SERVICE AND REPAIR MUST BE REFERRED TO QUALIFIED FACTORY PERSONNEL.

NOTE: The individual user should take care to determine, prior to use or installation, whether this device is suitable, adequate or safe for the use intended. Since individual applications are subject to great variation, DuraComm makes no representation or warranty as to the merchantability, suitability or fitness of these units for any specific application.

NOTE: The precision regulated power supplies operate internally from voltages in excess of 12/24/48 volts. In rare cases, voltage spikes or transients on the AC power line, or over heating, may cause a component failure in the power supply. Overloading the output will cause the over current feature to operate. In either case, the cause must be determined and corrected. Failures require investigation as to cause and/or repair of the unit.

INSTALLER NOTES

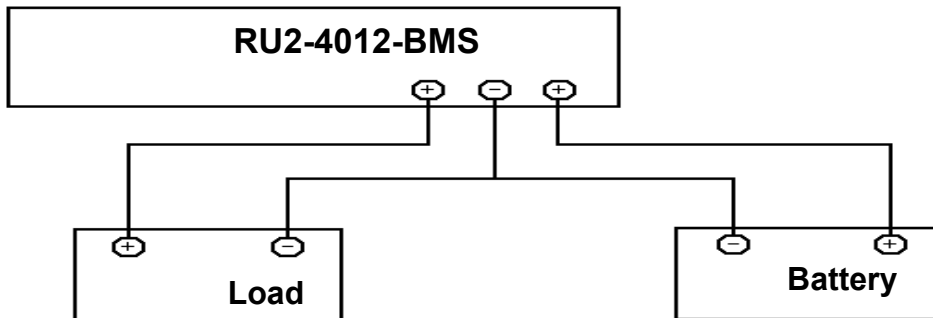
NOTE: The outputs are NOT referenced to the chassis. The Modular System can be used either positive or negative ground.

NOTE: **DO NOT** block any of the cooling vents on the sides or top and always allow adequate ventilation by not installing the unit inside tightly closed spaces. Physical mounting position is not critical but the cooling vents and the internal thermostatically controlled cooling fans must not be blocked.

WARNING: Be certain to locate the battery in a well ventilated area. During recharging, small amounts of hydrogen gas may be produced. Hydrogen gas is highly flammable and under the right conditions, explosive.

RU2-4012-BMS Wiring Layout

This system setup will provide continuous power to the load and maintain battery bank with smart charger while AC power is on. There is a seamless transfer of the load to the battery when the AC power goes off. The LVD will disconnect the battery if the voltage drops below 10.4 VDC. The battery reconnects once AC power is restored and voltage reaches 12.5 VDC.



DC-OK / Power Good (P.G.) - (Pok) and Power Fail (P.F.) Signal

When the power supply is powered on or off., PG/Pok, or PF signals are sent out for status monitoring.
 P.G. :A TTL (+5V) signal will be sent out with a delay of 10~500ms after output voltage reached 90% of rated value.

P.F.:The TTL signal will be turned off at least 1ms before the output voltage drops to 90% of rated value.
 Pok:A TTL signal is sent out in synchronization with output voltage. It is without functionality in time sequence.

DC-OK Signal

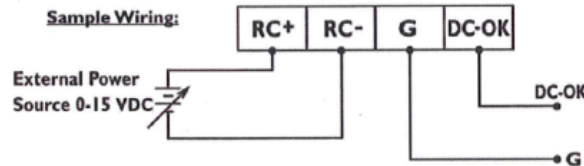
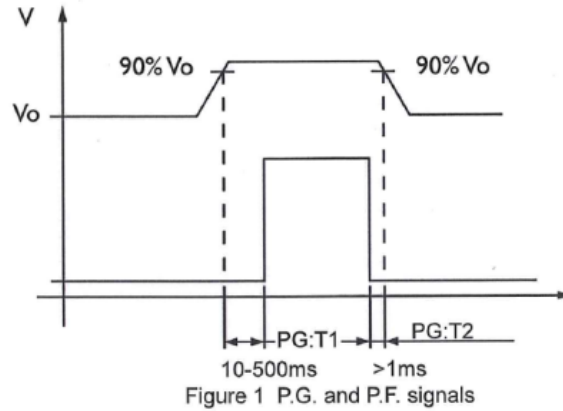
DC-OK Signal is the voltage difference between "DC-OK" and "G" pin output

DC-OK Signal is a TTL level signal
 PSU turn on: 3.3 ~ 5.6V
 PSU turn off: 0 ~ 1V

Remote Control ON/OFF:

Remote control ON/OFF: Using a TTL control signal connected to the RC+, RC- terminals on the power supply

| TTL Remote Control | |
|---------------------|--------|
| between RC+ and RC- | output |
| switch OFF (0-0.8V) | ON |
| switch ON (4-10V) | OFF |



CONDUCTOR PRETREATMENT

All kinds of copper conductors can be clamped without treatment. DO NOT solder tin stranded conductors. The solder yields and fractures under high pressure. The result is increased contact resistance and excessive temperature rise. Additionally, corrosion has been observed due to the fluxes. Notch fractures at the transition from the rigid tinned part to the flexible conductors are also possible. Ferrules can be used as a protection when wiring stranded conductors. Copper ferrules prevent the current transfer from being influenced by dissimilar metals and remove the risk of corrosion. Always use the correct tool to crimp the ferrule.

RECOMMENDED COPPER WIRE SIZE FOR CURRENT CAPACITY

(Insulated Wire, Single Conductor in free air)

| Current Level in Amperes | Wire Size |
|--------------------------|---|
| <7 AMPERES | 20 AWG Up to 5 feet 18 AWG Up to 10 feet |
| 14 AMPERES | 18 AWG Up to 5 feet 16 AWG Up to 10 feet |
| 20 AMPERES | 16 AWG Up to 5 feet 14 AWG Up to 10 feet |
| 30 AMPERES | 14 AWG Up to 5 feet 12 AWG Up to 10 feet |
| 40 AMPERES | 12 AWG Up to 5 feet 10 AWG Up to 10 feet |
| 50 AMPERES | 10 AWG Up to 5 feet 8 AWG Up to 10 feet |
| 70 AMPERES | 8 AWG Up to 5 feet 6 AWG Up to 10 feet |
| 100 AMPERES | 6 AWG Up to 5 feet 4 AWG Up to 10 feet |

LIMITED WARRANTY

DuraComm warrants to the initial end user, each power supply manufactured by DuraComm to be free from defects in material and workmanship, when in normal use and service for a period of three year from the date of purchase, from an authorized DuraComm dealer.

Should a product manufactured by DuraComm fail or malfunction due to manufacturing defect, or faulty component, DuraComm, at its option, will repair or replace the faulty product or parts thereof, which, after examination by DuraComm, prove to be defective or not operational according to specifications in effect at the time of sale to the initial end user. The product that is replaced or repaired under the provisions of this warranty, will be warranted for the remainder of the original warranty period, only, and will not extend into a new three year warranty period.

The limited warranty does not extend to any DuraComm product which has been subject to misuse, accidental damage, neglect, incorrect wiring not associated with manufacture, improper charging voltages, or any product which has had the serial number removed, altered, defaced, or changed in any way.

DuraComm reserves the right to change, alter, or improve the specifications of its products at any time, and by so doing, incurs no obligation to install or retrofit any such changes or improvements in or on products manufactured prior to inclusion of such changes.

DuraComm requires any product needing in or out of warranty service to be returned to DuraComm. All requests for warranty service must be accompanied by proof of purchase, such as bill of sale with purchase date identified. DuraComm is not responsible for any expenses or payments incurred for the removal of the product from its place of use, transportation or shipping expenses to the place of repair, or return expenses of a repaired or replacement product to its place of use.

The implied warranties which the law imposes on the sale of this product are expressly LIMITED, in duration, to the three (3) year time period specified herein. DuraComm will not be liable for damages, consequential or otherwise, resulting from the use and operation of this product, or from the breach of this LIMITED WARRANTY.

Some states do not allow limitations on the duration of the implied warranty or exclusions or limitations of incidental or consequential damages, so said limitations or exclusions may not apply to you. This warranty gives you specific legal rights which vary from state to state.

This warranty is given in lieu of all other warranties, whether expressed, implied, or by law. All other warranties, including WITHOUT LIMITATION, warranties of merchantability and fitness or suitability for a particular purpose, are specifically excluded. DuraComm reserves the right to change or modify its warranty and service programs without prior notice.

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