🔧 Revel Balmar to Nations & WS500 Conversion Installation Guide

🧰 Parts List

- N62-280XP-WS Alternator -2.0, or -3.0 engines
- M10x100x1.5 bolt x2
- Gates K060523HD for 3.0L or A0009935800 for 2.0L
- WS500 regulator
- M12 to Weatherpak CAN adapter, Splitter for 2 batteries
- Y adapter with terminator
- Shunt & Temp Sensor for Non-CAN batteries
- Note: Early 125AH batteries without CAN require a shunt and battery temps sensor
- Note: 320AH batteries must have the M12 port for CAN communication
- WS500 regulators are programmed for battery system

Repairs meant to be performed by a qualified technician using proper safety precautions.

⚙️ Step 1: System Shutdown & Alternator Removal

- **Power down the system and turn off all batteries and circuit breaker to ensure no current is present.**
- **Remove the Balmar alternator bolts and remove the belt. On the 3.0L you'll have to adjust the tensioner to remove the belt. On the 2.0L you'll have to remove the pulley cap and loosen the securing bolt.**
- **Loosen the B+ cable and harness connections to remove the alternator**
- **Install the Nations alternator to the Mercedes bracket with the provided bolts**

    - **Mounting bolts should be tightened to 35 ft lbs**
    - **Ground cable should be attached to mounting bolt**
    - **Attach B+ cable to the output post and tighten to 12-13 ft lbs being careful not to use excessive force. Do Not use air tools to tighten electrical connections**
    - **Connect the alternator temp sensor to the harness (blue heat shrink)**
    - **Connect the field wire to the harness**
    - **Harness has to be routed and secured from the Wakespeed to the alternator using the alternator branch of the harness**

🧵 Step 2: Regulator & Harness Removal

- Remove the Balmar regulator and harness.
- Pull the harness out, then remove the panels needs to access the batteries and
- Remove batteries to expose the harness routing area.
- Route the new harness through the under-seat holes (ample space available).
- Replace the Balmar harness with the new long-run harness including field wire and alternator temp sensor.

📦 Step 3: Wakespeed Installation

- Mount the WS500 regulator securely to an optimal position where the wiring connectors are accessible
- For CAN batteries the Lithionics M12 to weather pack harness to battery ports , if you have more than 1 battery you'll need a splitter
- Use the Y adapters & data terminator connect to the green and yellow twisted pair
- For Non CAN batteries you'll need to install a shunt on either the positive or negative cable and use a battery temp sensor to the blue heat shrink connector

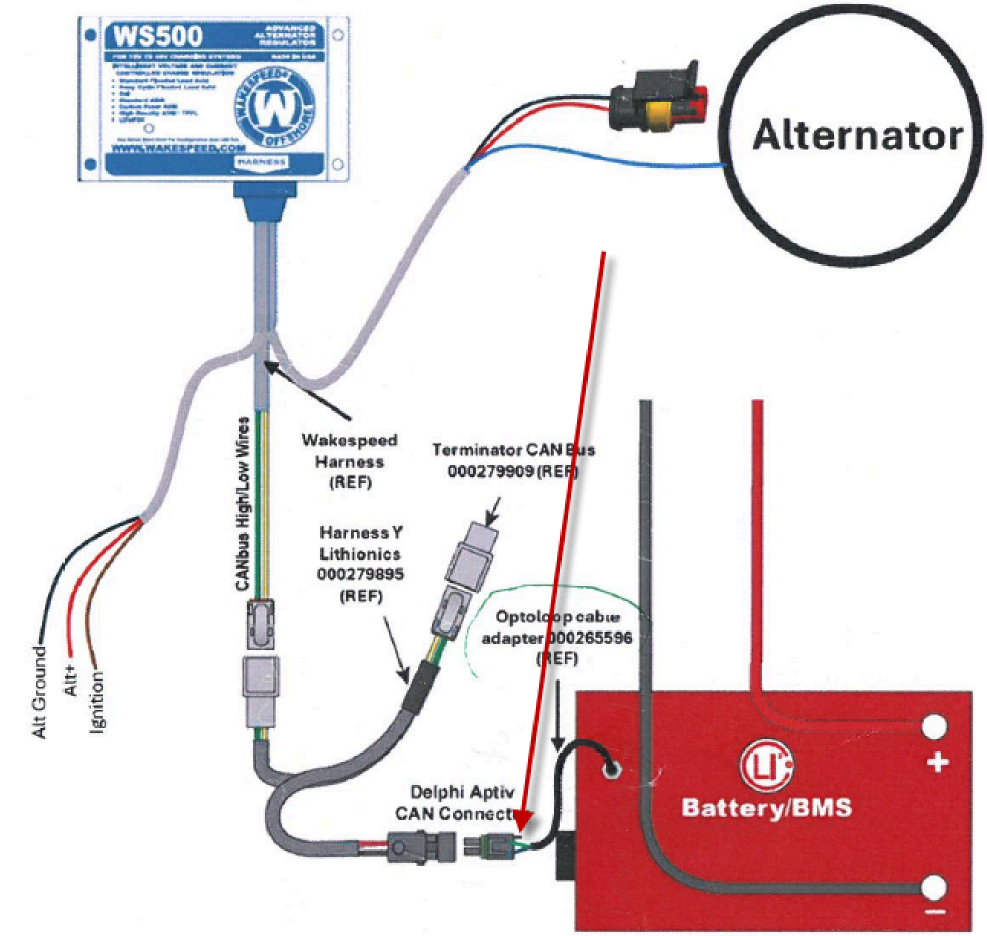
🔌 Step 4: Wiring Integration

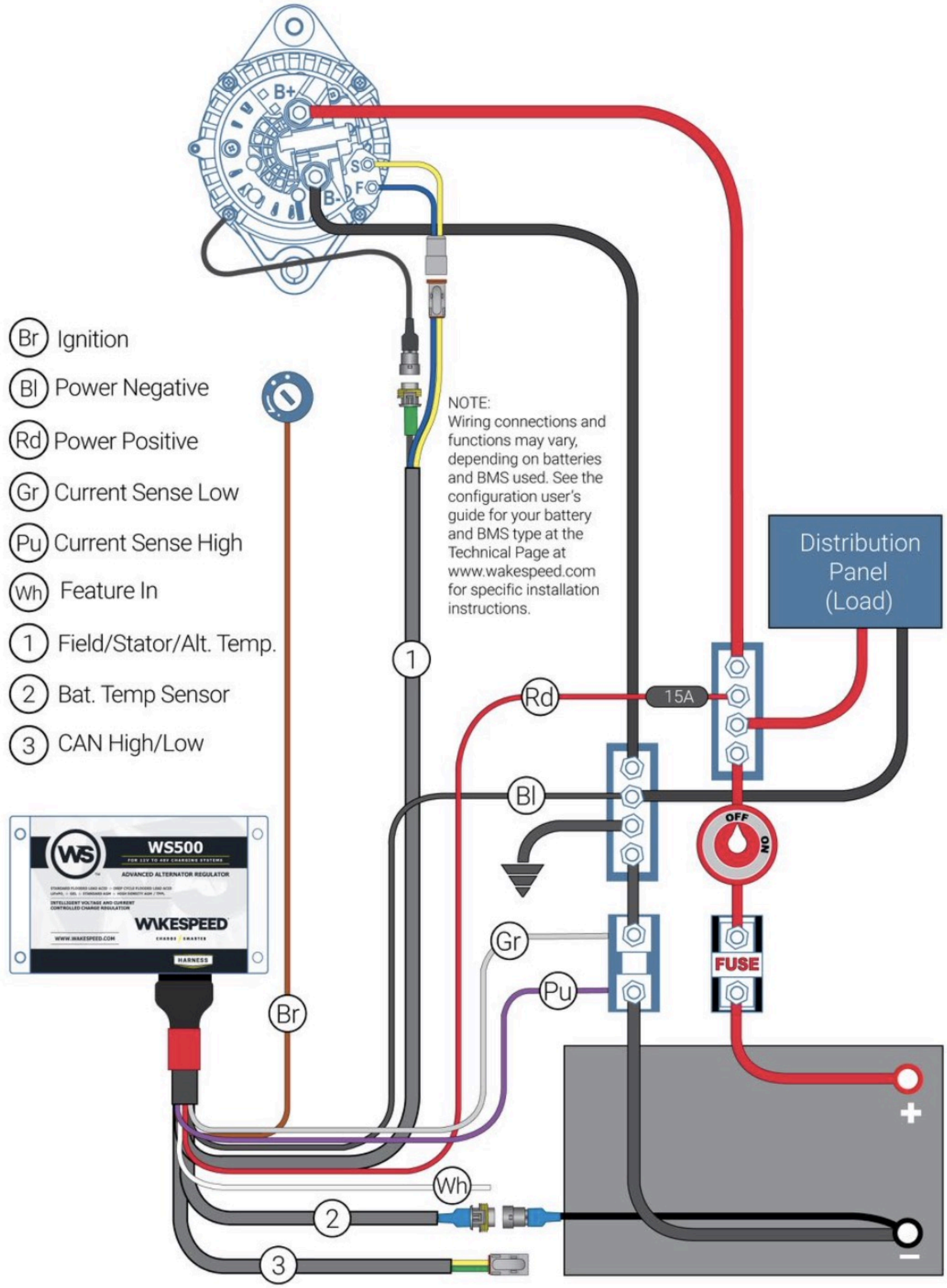
Repurpose Balmar harness wires:

- Brown → Ignition
- Red → Power
- Black → Ground

- Splice these into the Wakespeed harness, the colors are the same.

Wakespeed harness connection, included with:
000306902 - KIT-CHARGING SYSTEM,TRANSIT-EKKO 250AMP (REF)




B+
S
F
B-
Br Ignition
Bl Power Negative
Rd Power Positive
Gr Current Sense Low
Pu Current Sense High
Wh Feature In
1 Field/Stator/Alt. Temp.
2 Bat. Temp Sensor
3 CAN High/Low
NOTE:
Wiring connections and functions may vary, depending on batteries and BMS used. See the configuration user's guide for your battery and BMS type at the Technical Page at www.wakespeed.com for specific installation instructions.
Distribution Panel (Load)
15A
Rd
Bl
Gr
Pu
Br
Wh
1
2
3
OFF
ON
FUSE
WS500
ADVANCED ALTERNATOR REGULATOR
WAKESPEED
HARNESS
+
−

✅ Final Step: System Reassembly & Testing

- Secure all wires.
- Connect blue field wire to alternator.
- Connect the green heat-shrink plug to the alternator temp sensor.
- Connect blue field wire with butt connector to alternator and melt heatshrink
- Reinstall batteries and connect cables using M12 adapter harness for CAN and connect to “Y” adapter from deutsch connector- green and yellow twisted pair
- Power up the system, turn on batteries and circuit breaker
- Taking proper safety precautions verify the vehicle is ready to start and test the system.
    - Expect a 30-second ramp-up phase.
    - Wakespeed should blink green, then orange to confirm CAN-lock communication.
    - Non CAN it will continue to blink green
    - Voltage should increase gradually as the WS500 ramps up

📞 Support

If you have any questions or need assistance, please contact us. Thank you for your purchase!

1-888-334-2632

support@nationsstarteralternator.com

wakespeed.com/learn is a great resource for regulator information.

WS500-Product-Manual-10.21.24-compressed.pdf