



Configuration Utility Notes Discover CAN-Enabled Batteries

These instructions and accompanying wiring and connection diagrams represent a “best practice” approach for charging Discover Battery’s CANbus-enabled Lithium Pro batteries.



Required Components:

- WS500 Alternator Regulator – Updated to the current firmware revision and configured with the Discover Battery charging profile
- WS500/PH-CAN wiring harness with WS500/M12FI field installable M12 5-pin male Micro DeviceNet connector.

The WS500 regulator, when connected via CANbus cable to the Discover lithium ion battery, will be provided with key information regarding the battery’s state of charge, which is supplied by the battery’s internal BMS.

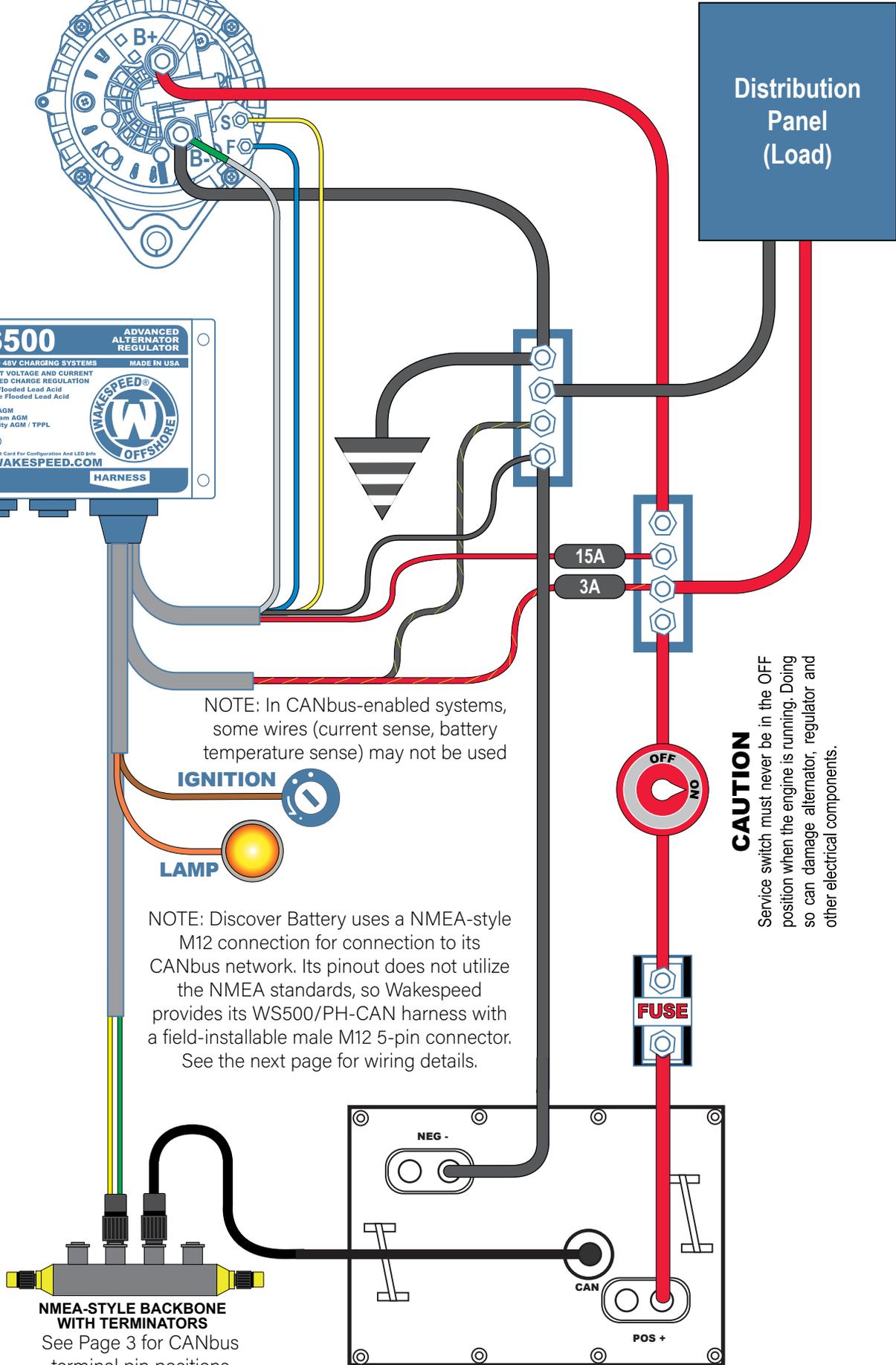
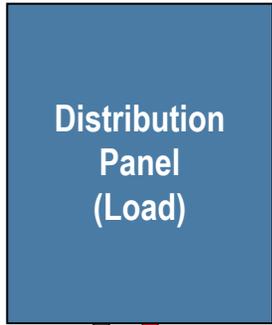
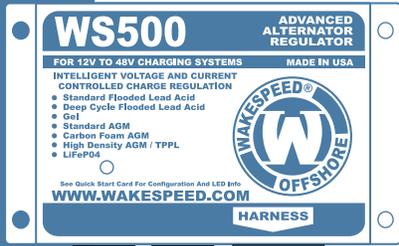
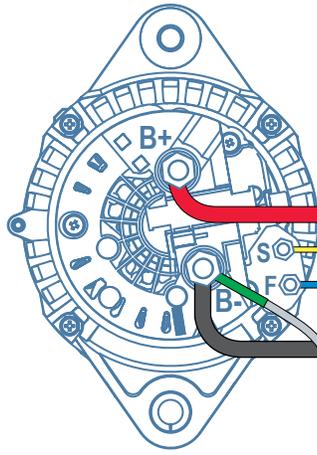
Data, such as battery temperature, charge and discharge current, battery temperature and other critical charging-related information will be supplied to the regulator via the CANbus network.

In addition, the battery’s BMS will provide the regulator with charging direction and advanced warning if the BMS initiates a disconnect from the charging system. Regulator will automatically fault out if the CANbus connection is lost between the WS500 and battery.

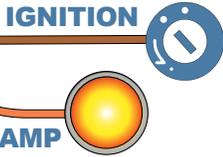
In applications where multiple WS500 alternator regulators are supplying power to multiple Lithium Pro batteries, the CANbus network will allow the system to respond when multiple battery banks increase and decrease in total capacity when individual batteries go on or offline.

Discover Battery Configuration Data Points	
Alternator Temperature Setpoint	100°C
Default Battery Capacity Multiplier	500ah = 0.0
Engine Warmup Delay	30 Sec.
Charging Decisions	Determined by Discover BMS
Float Voltage Target	13.2 (Std. 12V system)
Hard Temperature Limits	0°C to 45°C

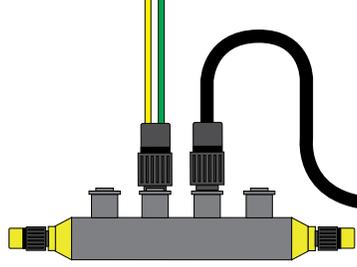
IMPORTANT: The information is provided for reference, and is intended to provide guidance required to tailor the configuration profile to your system. Please refer to the Wakespeed Communications and Configuration Guide and Configuration Utility Users Guide for detailed configuration instructions.



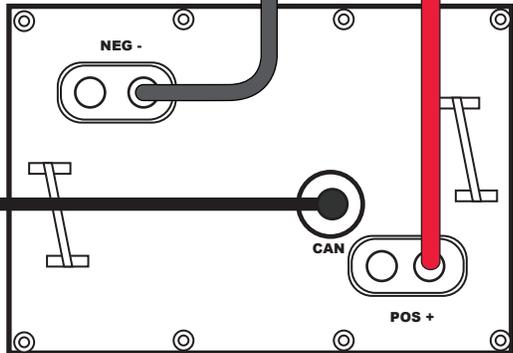
NOTE: In CANbus-enabled systems, some wires (current sense, battery temperature sense) may not be used



NOTE: Discover Battery uses a NMEA-style M12 connection for connection to its CANbus network. Its pinout does not utilize the NMEA standards, so Wakespeed provides its WS500/PH-CAN harness with a field-installable male M12 5-pin connector. See the next page for wiring details.



NMEA-STYLE BACKBONE WITH TERMINATORS See Page 3 for CANbus terminal pin positions



CAUTION

Service switch must never be in the OFF position when the engine is running. Doing so can damage alternator, regulator and other electrical components.



WS500 Alternator Regulator CANbus Connection With Discover CAN-enabled LiFePo4 Batteries

Discover® Lithium Professional batteries provide a high level of integration when connected to the Wakespeed WS500 alternator regulator via CANbus network connection. Much like a NMEA N2K network, Discover's Lithium Professional batteries utilize circular DeviceNet type connectors, which provide a dependable and secure backbone for connecting multiple batteries and charge sources (like a WS500-connected alternator) in an aggregated environment.

The Discover LYNK communication port uses an M12 A-Code, 5-pin connector for transferring data between multiple batteries and compatible charging sources via a standard J1939 CAN connection. In the case of the WS500 regulator, the Lithium Professional battery can share important charging data like current into and out of the battery, battery temperature, and charging direction – including direction to discontinue charging when the batteries are fully charged or a fault condition occurs. In an aggregated setting, where multiple WS500 regulators and CAN-connected batteries exist, the network can allow regulators to respond when individual batteries go on or offline or when system loads charge.

The pin assignment on the Discover LYNK port is a bit different than that used in traditional NMEA system backbones, so care must be taken when setting up the CANbus connection between the WS500 and the Discover system. The diagrams included on this page indicate how to use Wakespeed's WS500/PH-CAN harness and WS500/M12FI connector to match the regulator's CAN high and CAN low wires to properly communicate with the Lithium Professional batteries. Note that the only wires required to be connected in the WS500 harness are the CAN high (yellow) and CAN low (green) wires. Note, also, that all CANbus networks require termination at each end of the network (see illustration on previous page). Contact your battery distributor for recommendations on system backbone and termination design.

5.5.1 LYNK Port PIN Assignment

PIN Number	Function
1	ON/OFF Switch
2	LYNK Bus CAN L
3	LYNK Bus CAN H
4	LYNK Bus 12V +
5	LYNK Bus GND

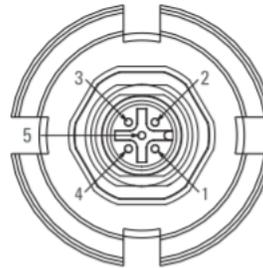
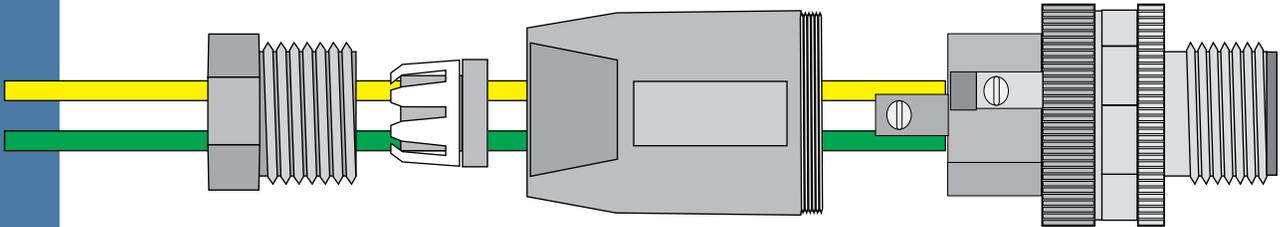


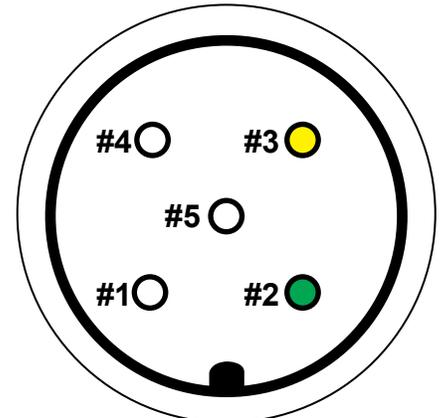
Figure 3. 5 PIN M12 A-Code Circular Metric Connectors.

WS500/M12FI 5-Pin Micro Devicenet Connector Installation Instructions



The WS500/M12FI field-installable M12 Micro connector provides a simple method for conversion of Wakespeed's CAN-enabled wiring harnesses to be connected directly to an N2K-style communication backbone. Installation directions are as follows:

1. Remove the Deutsch DTM connector from the yellow/green twisted wires in the WS500 wiring harness.
2. Disassemble the field installable connector into the four parts shown above.
3. Insert the yellow/green twisted wires into the connector's four elements in the order shown from left to right.
4. Bare 1/4" of wire at the ends of the yellow and green wires.
5. Insert the green (CAN low) wire into the #2 terminal of the five-pin connector and tighten the set screw.
6. Insert the yellow (CAN high) wire into the #3 terminal of the connector and tighten the set screw.
7. When wires are properly secured, tighten the knurled and hex connectors. The harness is now ready for connection to the network backbone.



Male M12 5-pin Connector
(End View)