WAKESPEED WS500 AND VICTRON CERBO GX SETUP GUIDE







WAKESPEED™

CHARGE SMARTER

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INTRODUCTION

The WS500 is an external smart alternator regulator with CAN-bus and NMEA 2000 communication, which is especially applicable in Marine and RV applications. The Wakespeed WS500 is supported by Venus OS and offers the possibility to monitor the performance of your alternators via a GX device.

REQUIREMENTS

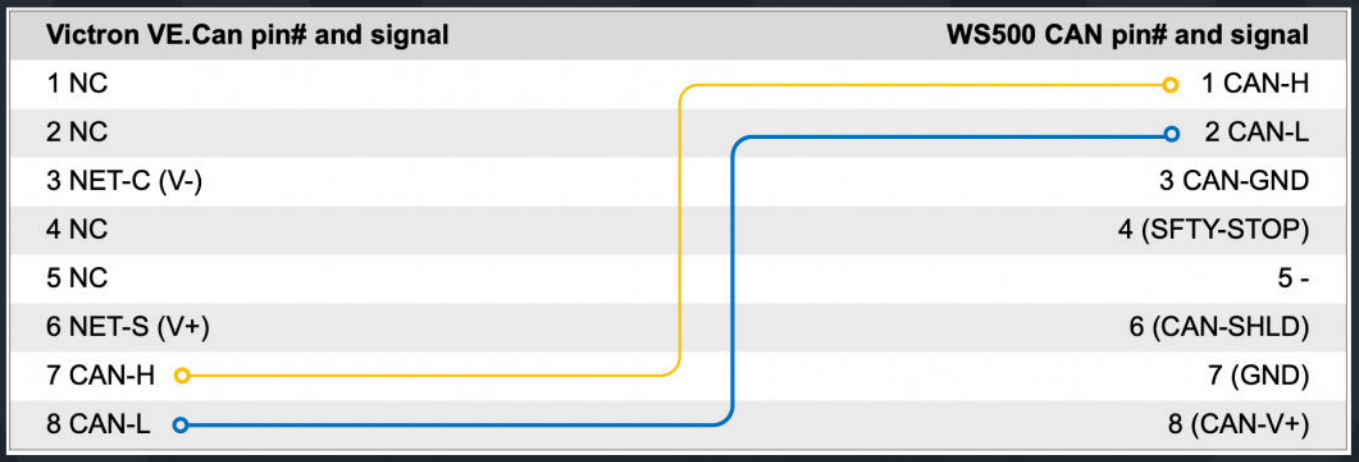
Necessary requirements for the integration of the WS500 are:

1. VenusOS firmware v2.90 or higher installed on your GX device
2. Wakespeed WS500 firmware 2.5.0 or higher installed on the WS500 controller
3. The WS500 must connect to the VE.Can port of the GX device. It is not possible to monitor the WS500 when connected to the BMS-Can port of a Cerbo GX

WIRING THE WS500 TO VE.CAN

Both, the WS500 and VE.Can, use RJ45 connectors for their CAN ports.

However, both have different pin outs. This means that a normal (straight UTP cable) network cable cannot be used. A crossover cable is required, contact us today for purchasing or this cable may be made by yourself. The following diagram reflect the pin out of the two devices.



The important pins to look at are pin 7 and pin 8 for CAN-H and CAN-L on the VE.Can side and pin 1 and 2 for Can-H and CAN-L on the WS500 side.

Therefore a cable is needed where pin 1 and 2 on one side are connected to pin 7 and pin 8 on the other side. Pin 7 goes to pin 1 and pin 8 to pin 2.

The RJ45 connector with pin 7 and 8 on one end connects to the VE.Can port of the GX device. The other end of the cable with pin 1 and 2 connects to the WS500 controller. Both sides must be terminated.

The cable colors do not matter for the do-it-yourself cable. Wakespeed also offers a ready-configured cable with a blue RJ45 connector on one end that must be connected to the VE.Can port.

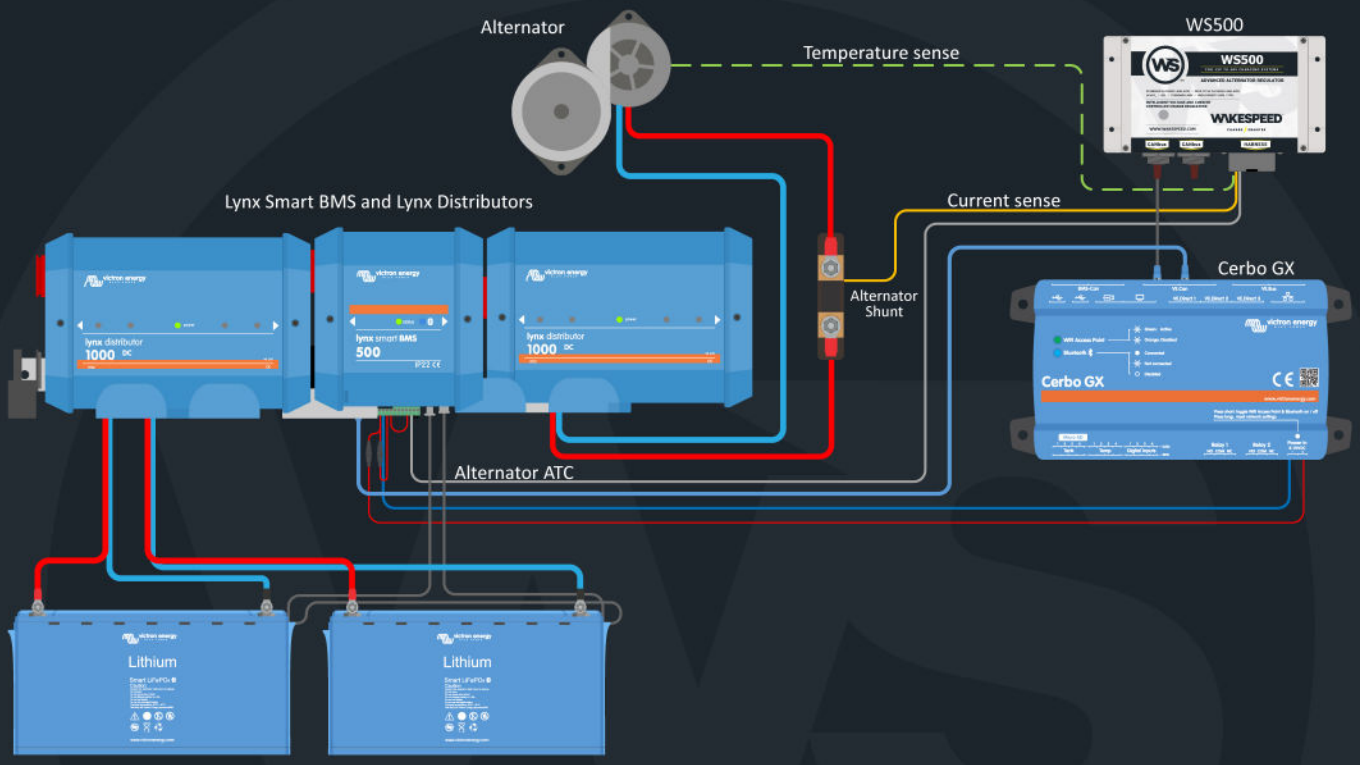
Note: Please note that the black terminators supplied by Wakespeed and the blue terminators supplied by Victron are not interchangeable. Therefore: insert the Victron terminator on the Victron side of the network, and insert the Wakespeed terminator into the Wakespeed.

WIRING EXAMPLE

The example below shows an overview of the recommended wiring based on an installation with a Lynx Smart BMS, Lynx Distributors and a Cerbo GX.

The correct placement of the alternator shunt (not to be confused with the shunt of the BMV or SmartShunt) is important here for the correct connection of the current sense wire.

For complete wiring between the WS500 and alternator, see the WS500 and the alternator manual.



WIRING EXAMPLE

Once the WS500 is connected to the GX device, the Device list contains an entry for the regulator.

The WS500 menu then provides the following information and data:

Output: voltage, current and power as reported from the alternator regulator
Temperature: the alternator temperature as measured by the WS500 temperature sensor
State: the charging state of the WS500

- Off when not charging
- Bulk, Absorption or Float when the WS500 is using its own charging algorithm
- External Control when controlled by a BMS such as Lynx Smart BMS

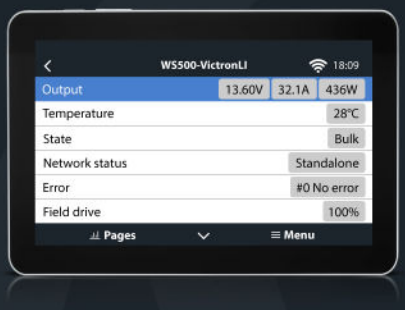
Network Status:

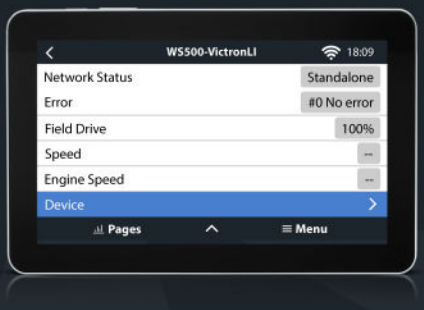
- Standalone, if the regulator is working on its own
- Group Master, when it is supplying charging targets to another WS500 device
- Slave, when it is taking charging directions from another device such as a WS500 or a BMS

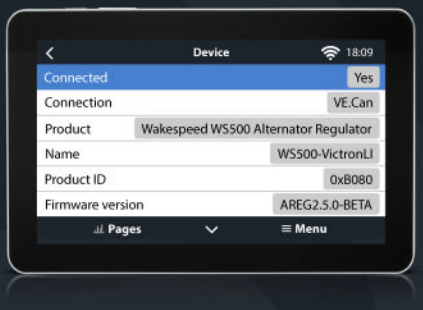
Error: reflects any error state the WS500 might be in. The details of all error codes and messages can be found in the Wakespeed Configuration and Communications guide. See also the appendix for error #91 and error #92
Field Drive: report on the % of field drive being sent by the WS500 to the alternator on the field connection
Speed: the speed in RPM at which the alternator is spinning. This is as reported by the stator feed and if this is wrong can be adjusted by setting the Alt Poles option within the Wakespeed SCT configuration line
Engine Speed: reported in RPM. This is reported by either

- Calculation based on the alternator speed and the Eng/Alt drive ratio as set by the SCT configuration line
- NMEA 2000, if the WS500 is receiving engine RPM from PGN127488
- J1939, if the WS500 is receiving engine RPM from PGN61444

It is also possible to create a custom name for the WS500 in the Device menu. This triggers the WS500 to update the $SCN configuration line of the regulator.

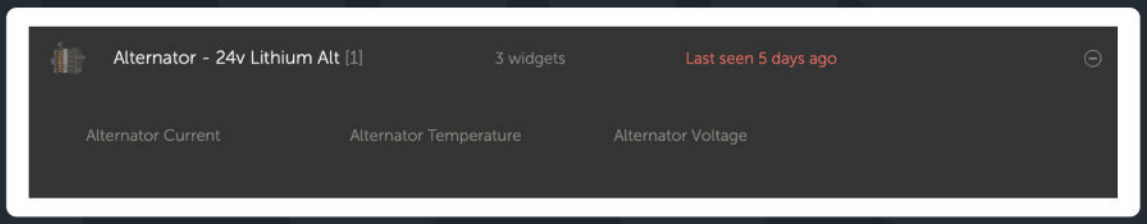




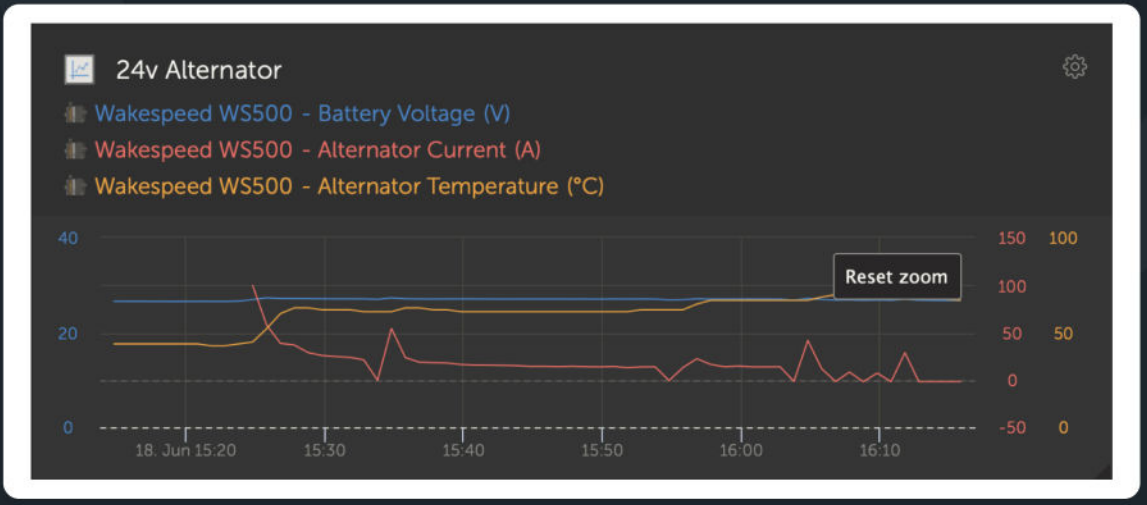


VRM PORTAL

The data from the WS500 that can be displayed on our VRM portal, is current, voltage and temperature.



Currently 3 widgets are available on VRM



VRM custom widget showing WS500 voltage, current and temperature

TROUBLESHOOTING

For further assistance and troubleshooting please contact Wakespeed support directly.

Error code #91 and #92

Venus OS will report all errors that can be generated by the WS500 as defined within the Wakespeed Communications and Configuration guide. In systems with integrated BMS, the following errors are critical as long as the events are active and require special attention.

- #91: Lost connection with BMS; the WS500 has lost communication with the BMS and will drop into the configured get home mode. As soon as communication is restored with the BMS, it will revert to following the charging goals as set by the BMS.
- #92: ATC disabled through feature IN; the BMS has signalled a charge disconnect event through the feature in wire and the WS500 has therefore reverted to an Off status.

Current field contains two dashes

If the current field and therefore power field contain two dashes, then the system is not receiving any current readings from the WS500. This is likely due to one of the following reasons:

- The shunt is configured as being located at the battery and therefore the WS500 does not have any alternator current reading. Check the configuration of the shunt through the Wakespeed CST terminal output. If the CST line has a ShuntAtBat? Set to 1, then this will be the reason.
- The shunt is not connected to the WS500. Make sure a shunt is connected as per WS500 installation instructions.
- The system has been told to ignore the shunt sensor. Check the Wakespeed $SVC terminal output. If the $SVC line is reporting an Ignore Sensor configuration, which includes ignoring the Local Current Shunt, then this would be why. Modify the Ignore Sensor line through the Wakespeed $SCA configuration line.