

The SmartBattery/protect must be programmed for Li-Ion mode-C and 12 Volt either through programming on the device itself or with a Bluetooth enabled smartphone or tablet. Connect the load disconnect output of the Small BMS to Remote H terminal.

The smallBMS is enlarged visible in this drawing.

There are several configuration options possible. Read the Orion-Tr manual carefully and choose the one fitting your installation.

KEEP POSITIVE BATTERY CABLES ALL AT THE SAME LENGTH!

KEEP NEGATIVE BATTERY CABLES ALL AT THE SAME LENGTH!

**SERVICE BATTERIES**  
2 x Lithium  
12.8V-100Ah  
Smart LiFePO4

**Setup and change of settings trough Bluetooth**  
All Bluetooth accessible devices can be setup and monitored with use of the VE.Smart Network by using the freely downloadable Victron Connect App. When in doubt, consult your Victron dealer.

**Recommended DC cable/fuse size Phoenix charger**  
50A charger 0-4 m cable length: 16Sqm  
Cable length stands for the total distance between the battery connections plus and minus and the Phoenix smart charger connections! Fuse size should be 60-80A max. Max cable size to connect is 16Sqm.

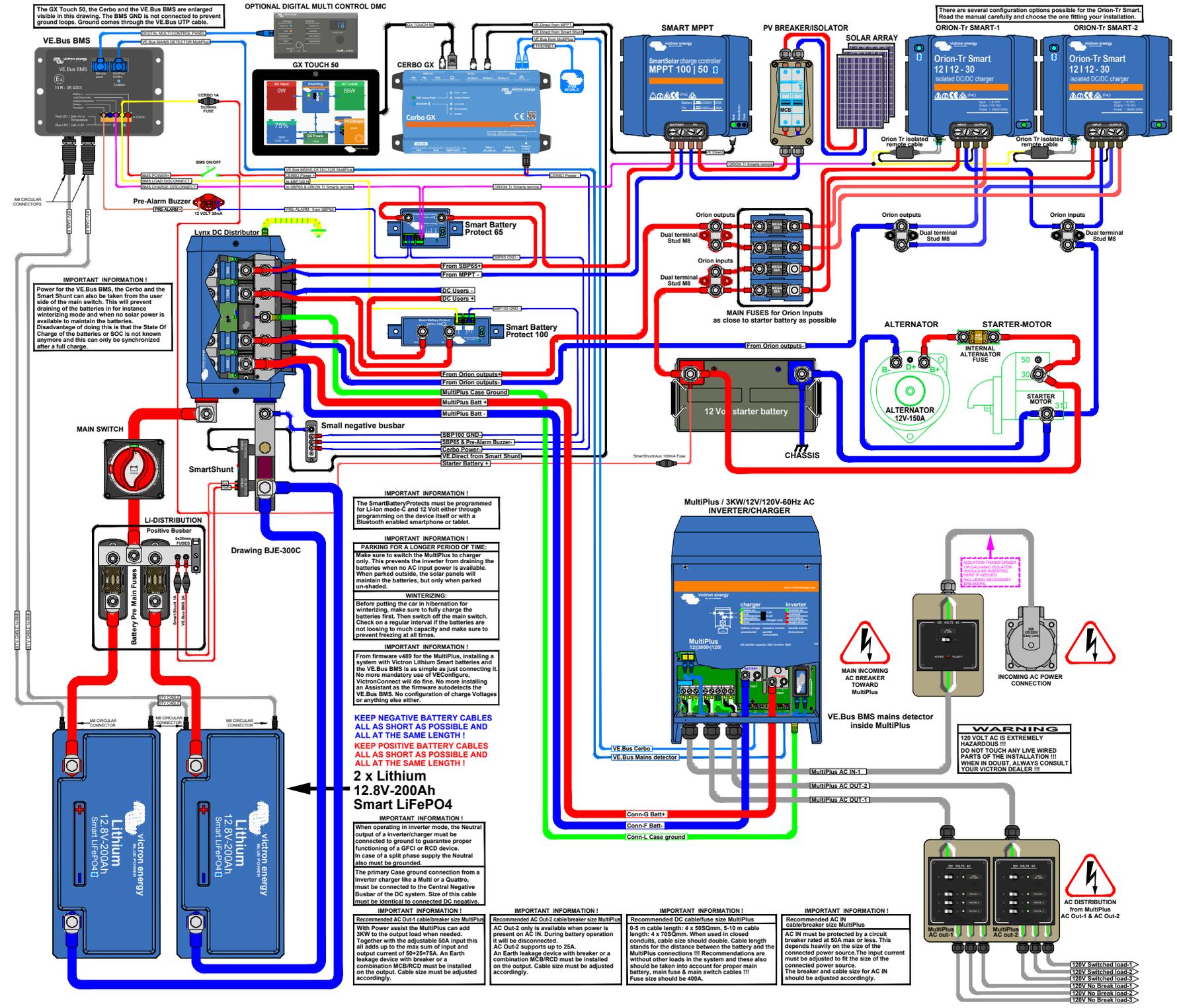
**Recommended DC cable/fuse size Phoenix Inverter**  
375W Inverter with 0-1,5 m cable length: 6Sqm  
10Sqm  
Cable length stands for the total distance between the battery connections plus and minus and the Phoenix inverter connections! External Fuse size should be 40-50A max.

**Recommended AC cable/breaker sizes**  
AC Shore power IN must be protected by a MCB/RCD circuit breaker rated at 16A max or less depending on the size of the connected users. AC Inverter OUT must be protected by MCB/RCD circuit breaker combination rated at the size of the inverter. Cable sizes need to be adjusted accordingly.

**WARNING**  
230 VOLT IS EXTREMELY HAZARDOUS DO NOT TOUCH ANY LIVE WIRED PARTS OF THE INSTALLATION! WHEN IN DOUBT, ALWAYS CONSULT YOUR VICTRON DEALER!



Drawing BJE-273D



The GX Touch 50, the Cerbo and the VE-Bus BMS are enlarged visible in this drawing. The BMS GND is not connected to prevent ground loops. Ground comes through the VE-Bus UTP cable.

**OPTIONAL DIGITAL MULTI CONTROL DMC**

There are several configuration options possible for the Orion-Tr Smart. Read the manual carefully and choose the one fitting your installation.

**IMPORTANT INFORMATION!**  
Power for the VE-Bus BMS, the Cerbo and the Smart Shunt can also be taken from the user side of the main switch. This will prevent draining of the batteries in for instance winterizing mode and when no solar power is available to maintain the batteries. Disadvantage of doing this is that the State of Charge of the batteries or SOC is not known anymore and this can only be synchronized after a full charge.

**IMPORTANT INFORMATION!**  
The SmartBatteryProtects must be programmed for Li-Ion mode-c and 12 Volt either through programming on the device itself or with a Bluetooth enabled smartphone or tablet.

**IMPORTANT INFORMATION!**  
**PARKING FOR A LONGER PERIOD OF TIME:**  
Make sure to switch the MultiPlus to charger only. This prevents the inverter from draining the batteries when no AC input power is available. When parked outside, the solar panels will maintain the batteries, but only when parked un-shaded.

**WINTERIZING:**  
Before putting the car in hibernation for winterizing, make sure to fully charge the batteries first. Then switch off the main switch. Check on a regular interval if the batteries are not loosing to much capacity and make sure to prevent freezing at all times.

**IMPORTANT INFORMATION!**  
From firmware v489 for the MultiPlus, installing a system with Victron Lithium Smart batteries and the VE-Bus BMS is as simple as just connecting it. No more mandatory use of VECconfigure, VictronConnect will do fine. No more installing an Assistant as the firmware autodetects the VE-Bus BMS. No configuration of charge Voltages or anything else either.

**KEEP NEGATIVE BATTERY CABLES ALL AS SHORT AS POSSIBLE AND ALL AT THE SAME LENGTH!**  
**KEEP POSITIVE BATTERY CABLES ALL AS SHORT AS POSSIBLE AND ALL AT THE SAME LENGTH!**

**2 x Lithium 12.8V-200Ah Smart LiFePO4**

**IMPORTANT INFORMATION!**  
When operating in inverter mode, the Neutral output of an inverter/charger must be connected to ground to guarantee proper functioning of a GFCI or RCD device. In case of a split phase supply the Neutral also must be grounded.

The primary Case ground connection from a inverter charger like a Multi or a Quattro, must be connected to the Central Negative Busbar of the DC system. Size of this cable must be identical to connected DC negative.

**IMPORTANT INFORMATION!**  
Recommended AC Out-1 cable/breaker size MultiPlus  
With Power assist the MultiPlus can add 3kW to the output load when needed. Together with the adjustable 50A input this all adds up to the max sum of input and output current of 50+32=82A. An Earth leakage device with breaker or a combination MCB/RCD must be installed on the output. Cable size must be adjusted accordingly.

**IMPORTANT INFORMATION!**  
Recommended AC Out-2 cable/breaker size MultiPlus  
AC Out-2 only is available when power is present on AC IN. During battery operation it will be disconnected. AC Out-2 supports up to 25A. An Earth leakage device with breaker or a combination MCB/RCD must be installed on the output. Cable size must be adjusted accordingly.

**IMPORTANT INFORMATION!**  
Recommended DC cable/fuse size MultiPlus  
0.5 m cable length: 4 x 50S0mm, 5-10 m cable length: 4 x 75S0mm. When used in closed conduits, cable size should double. Cable length stands for the distance between the battery and the MultiPlus connections !!! Recommendations are without other loads in the system and these also should be taken into account for proper main battery, main fuse & main switch cables !!! Fuse size should be 400A.

**IMPORTANT INFORMATION!**  
Recommended AC IN cable/breaker size MultiPlus  
AC IN must be protected by a circuit breaker rated at 50A max or less. This depends heavily on the size of the connected power source. The input current must be adjusted to fit the size of the connected power source. The breaker and cable size for AC IN should be adjusted accordingly.

**IMPORTANT INFORMATION!**  
Power for the VE-Bus BMS, the Cerbo and the Smart Shunt can also be taken from the user side of the main switch. This will prevent draining of the batteries in for instance winterizing mode and when no solar power is available to maintain the batteries. Disadvantage of doing this is that the State of Charge of the batteries or SOC is not known anymore and this can only be synchronized after a full charge.

**IMPORTANT INFORMATION!**  
The SmartBatteryProtects must be programmed for Li-Ion mode-c and 12 Volt either through programming on the device itself or with a Bluetooth enabled smartphone or tablet.

**IMPORTANT INFORMATION!**  
**PARKING FOR A LONGER PERIOD OF TIME:**  
Make sure to switch the MultiPlus to charger only. This prevents the inverter from draining the batteries when no AC input power is available. When parked outside, the solar panels will maintain the batteries, but only when parked un-shaded.

**WINTERIZING:**  
Before putting the car in hibernation for winterizing, make sure to fully charge the batteries first. Then switch off the main switch. Check on a regular interval if the batteries are not loosing to much capacity and make sure to prevent freezing at all times.

**IMPORTANT INFORMATION!**  
From firmware v489 for the MultiPlus, installing a system with Victron Lithium Smart batteries and the VE-Bus BMS is as simple as just connecting it. No more mandatory use of VECconfigure, VictronConnect will do fine. No more installing an Assistant as the firmware autodetects the VE-Bus BMS. No configuration of charge Voltages or anything else either.

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**2 x Lithium 12.8V-200Ah Smart LiFePO4**

**IMPORTANT INFORMATION!**  
When operating in inverter mode, the Neutral output of an inverter/charger must be connected to ground to guarantee proper functioning of a GFCI or RCD device. In case of a split phase supply the Neutral also must be grounded.

The primary Case ground connection from a inverter charger like a Multi or a Quattro, must be connected to the Central Negative Busbar of the DC system. Size of this cable must be identical to connected DC negative.

**IMPORTANT INFORMATION!**  
Recommended AC Out-1 cable/breaker size MultiPlus  
With Power assist the MultiPlus can add 3kW to the output load when needed. Together with the adjustable 50A input this all adds up to the max sum of input and output current of 50+32=82A. An Earth leakage device with breaker or a combination MCB/RCD must be installed on the output. Cable size must be adjusted accordingly.

**IMPORTANT INFORMATION!**  
Recommended AC Out-2 cable/breaker size MultiPlus  
AC Out-2 only is available when power is present on AC IN. During battery operation it will be disconnected. AC Out-2 supports up to 25A. An Earth leakage device with breaker or a combination MCB/RCD must be installed on the output. Cable size must be adjusted accordingly.

**IMPORTANT INFORMATION!**  
Recommended DC cable/fuse size MultiPlus  
0.5 m cable length: 4 x 50S0mm, 5-10 m cable length: 4 x 75S0mm. When used in closed conduits, cable size should double. Cable length stands for the distance between the battery and the MultiPlus connections !!! Recommendations are without other loads in the system and these also should be taken into account for proper main battery, main fuse & main switch cables !!! Fuse size should be 400A.

**IMPORTANT INFORMATION!**  
Recommended AC IN cable/breaker size MultiPlus  
AC IN must be protected by a circuit breaker rated at 50A max or less. This depends heavily on the size of the connected power source. The input current must be adjusted to fit the size of the connected power source. The breaker and cable size for AC IN should be adjusted accordingly.

**WARNING**  
120 VOLT AC IS EXTREMELY HAZARDOUS !!! DO NOT TOUCH ANY LIVE WIRED PARTS OF THE INSTALLATION !!! WHEN IN DOUBT, ALWAYS CONSULT YOUR VICTRON DEALER !!!

**AC DISTRIBUTION**  
from MultiPlus AC Out-1 & AC Out-2

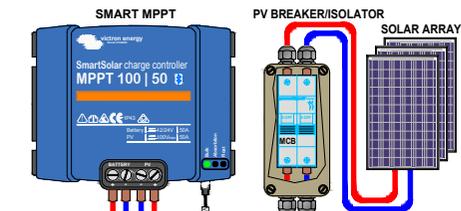
- 120V Switched load-1
- 120V Switched load-2
- 120V Switched load-3
- 120V No Break load-1
- 120V No Break load-2
- 120V No Break load-3

**IMPORTANT INFORMATION !**  
**PARKING FOR A LONGER PERIOD OF TIME:**  
 Make sure to switch the MultiPlus to charger only. This prevents the inverter from draining the batteries when no AC input power is available. When parked outside, the solar panels will maintain the batteries, but only when parked un-shaded.

**WINTERIZING**  
 Before putting the car in hibernation for winterizing, make sure to fully charge the batteries first. Then switch off the main switch. Check on a regular interval if the batteries are not losing too much capacity and make sure to prevent freezing at all times.

**IMPORTANT INFORMATION !**  
 The SmartBatteryProtect must be programmed for Li-Ion mode-C and 12 Volt either through programming on the device itself or with a Bluetooth enabled smartphone or tablet.

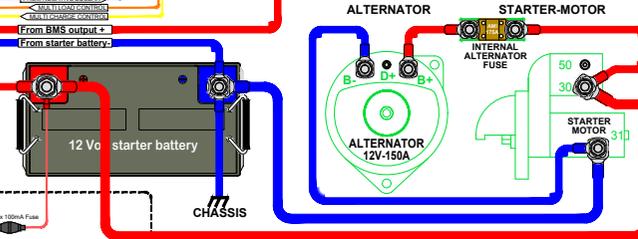
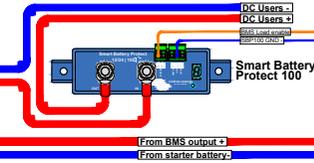
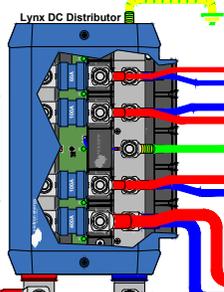
**IMPORTANT INFORMATION !**  
 Power for the Smart Dongle and the Smart Shunt can also be taken from the user side of the main switch. This will prevent draining of the batteries in for instance winterizing mode and when no solar power is available to maintain the batteries. Disadvantage of doing this is that the State of Charge of the batteries or SOC is not known anymore and this can only be synchronized after a full charge.



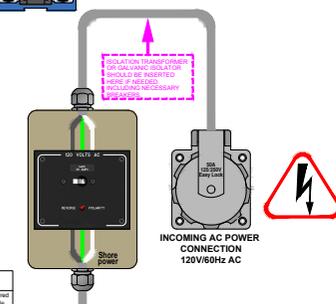
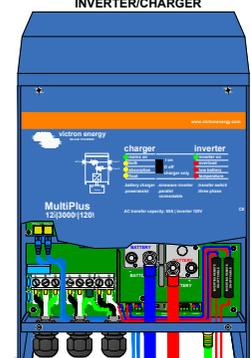
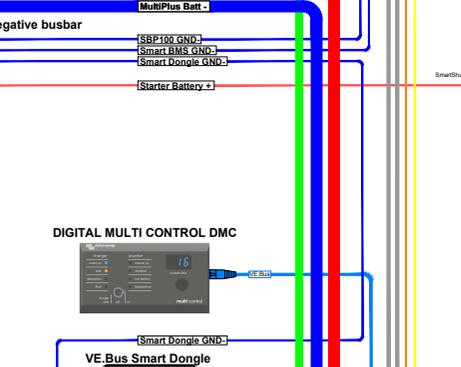
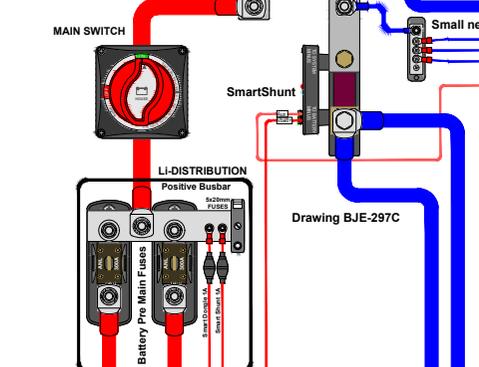
BMS Fuse Sizes	Max. charge current	Alternator and battery protection
125A	100A	The input current from the starter battery towards the BMS is electrically limited to approximately 90% of the fuse rating. An 80A fuse, for example, will therefore limit the input current to approximately 60A. Choosing the right fuse will: 1. Protect the LiFePO4 battery against excessive charge current (important in case of a small capacity battery). 2. Protect the alternator against overload in case of a high capacity LiFePO4 battery bank (most 12V alternators will overload and fail if current at maximum output stays more than 10 minutes).
150A	120A	
200A	150A	
250A	200A	
300A	250A	
350A	300A	



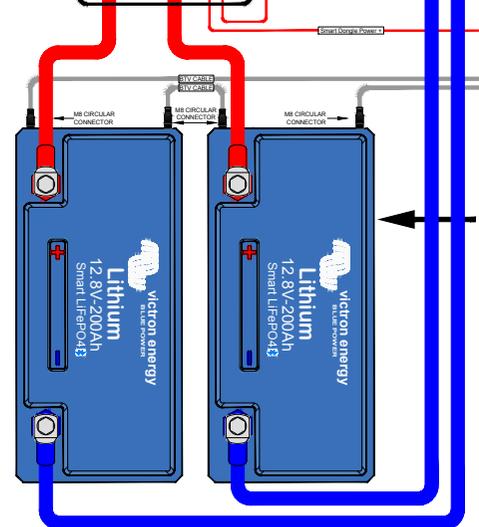
**IMPORTANT INFORMATION !**  
**Controlling of the MultiPlus by the BMS CL12/100:**  
 The Load Disconnect and Charge Disconnect Outputs need to be wired to the MultiPlus with two inverting remote on-off cables as shown here for the 3kVA MultiPlus. More info about this is available in the manual of the BMS. Two-Signal BMS support assistant for the MultiPlus.  
 For the MultiPlus to act appropriately in the event of a do not charge or do not discharge event, the Two-signal BMS support assistant needs to be uploaded in the MultiPlus.



A main Fuse might be needed here !  
 Depending on total cable run between battery plus and BMS.



**WARNING**  
 120 VOLT AC IS EXTREMELY HAZARDOUS !!!  
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**KEEP NEGATIVE BATTERY CABLES ALL AS SHORT AS POSSIBLE AND ALL AT THE SAME LENGTH !**  
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**2 x Lithium 12.8V-200Ah Smart LiFePO4**

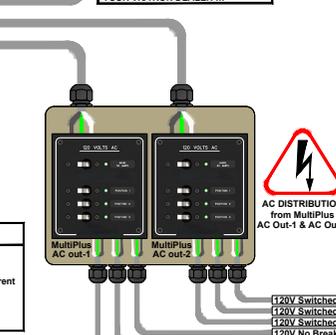
**IMPORTANT INFORMATION !**  
 When operating in inverter mode, the Neutral output of an inverter-charger must be connected to ground to guarantee proper functioning of a GFCI or RCD device. In case of a split phase supply the Neutral also must be grounded.  
 The primary Case ground connection from an inverter charger like a Multi or a Quattro, must be connected to the Central Negative Busbar of the DC system. Size of this cable must be identical to connected DC negative.

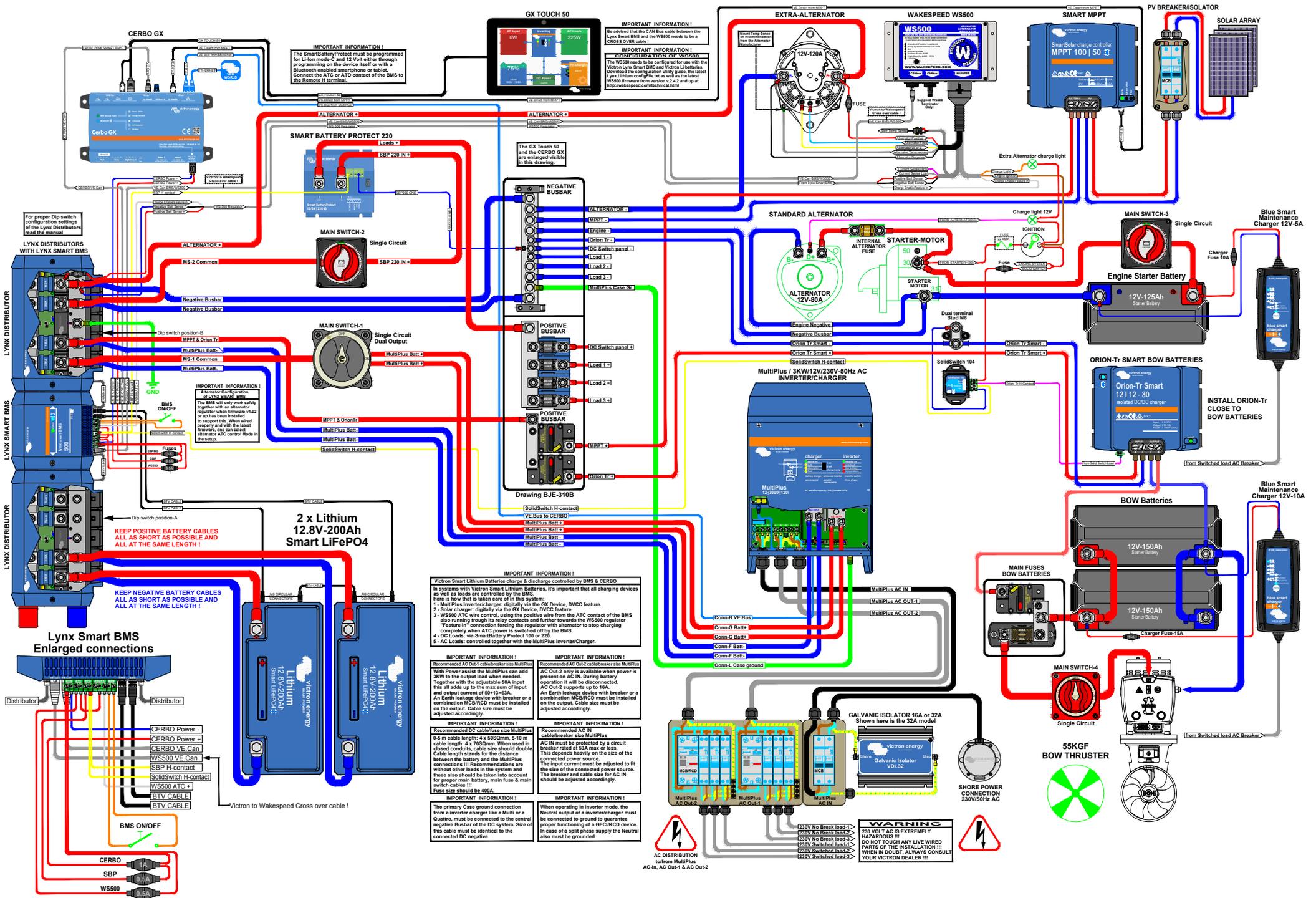
**IMPORTANT INFORMATION !**  
 Recommended AC Out-1 cable/breaker size MultiPlus  
 With Power assist the MultiPlus can add 3kW to the output load when needed. Together with the adjustable 50A input this all adds up to the max sum of input and output current of 50+25=75A. An Earth leakage device with breaker or a combination MCB/RCD must be installed on the output. Cable size must be adjusted accordingly.

**IMPORTANT INFORMATION !**  
 Recommended AC Out-2 cable/breaker size MultiPlus  
 AC Out-2 only is available when power is present on AC IN. During battery operation it will be disconnected.  
 AC Out-2 supports up to 25A. An Earth leakage device with breaker or a combination MCB/RCD must be installed on the output. Cable size must be adjusted accordingly.

**IMPORTANT INFORMATION !**  
 Recommended DC cable/fuse size MultiPlus  
 0.5 m cable length: 4 x 50Sqm, 5-10 m cable length: 4 x 70Sqm. When used in close conduits, cable size should double. Cable length stands for the distance between the battery and the MultiPlus connections !!! Recommendations are without other loads in the system and these also should be taken into account for proper main battery, main fuse & main switch cables !!! Fuse size should be 400A.

**IMPORTANT INFORMATION !**  
 Recommended AC IN cable/breaker size MultiPlus  
 AC IN must be protected by a circuit breaker rated at 50A max or less. This depends heavily on the size of the connected power source. The input current must be adjusted to fit the size of the connected power source. The breaker and cable size for AC IN should be adjusted accordingly.





**IMPORTANT INFORMATION!**  
 The SmartBatteryProtect must be programmed for Li-Ion mode-C and 12 Volt either through programming on the device itself or with a Bluetooth enabled smartphone or tablet. Connect the ATC or ATD contact of the BMS to the Remote H terminal.

**IMPORTANT INFORMATION!**  
 The WS500 needs to be configured for use with the Lynx Smart BMS and the WS500 needs to be a CROSS OVER cable!

**IMPORTANT INFORMATION!**  
 The WS500 needs to be configured for use with the Victron Lynx Smart BMS and Victron Li batteries. Download the configuration utility guide, the latest Lynx.Lithium.config.plist as well as the latest WS500 firmware from version 2.4.2 and set up at: <http://wakespeed.com/technical.html>

**IMPORTANT INFORMATION!**  
 Victron Smart Lithium Batteries charge & discharge controlled by BMS & CERBO  
 In systems with Victron Smart Lithium Batteries, it's important that all charging devices as well as loads are controlled by the BMS. Here is how that is taken care of in this system:  
 1- MultiPlus inverter/charger: digitally via the GX Device, DVCC feature.  
 2- Solar charger: digitally via the GX Device, DVCC feature.  
 3- WS500 ATC wire control, using the positive wire from the ATC contact of the BMS also running through its relay contacts and further towards the WS500 regulator "Feature in" connection forcing the regulator with alternator to stop charging completely when ATC power is switched off by the BMS.  
 4- DC Loads: via SmartBattery Protect 100 or 220.  
 5- AC Loads: connected together with the MultiPlus Inverter/Charger.

**IMPORTANT INFORMATION!**  
 Recommended AC Out-1 cable/breaker size MultiPlus  
 With Power assist the MultiPlus can add 30kW to the output load when needed. Together with the adjustable 60A input AC Out-2 supports up to 11kVA, and output current of 50+13-43A. An Earth leakage device with breaker or a combination MCB/RCD must be installed on the output. Cable size must be adjusted accordingly.

**IMPORTANT INFORMATION!**  
 Recommended AC Out-2 cable/breaker size MultiPlus  
 AC Out-2 only is available when power is present on AC-IN. During battery operation it will be disconnected. This all adds up to the max size of input. An Earth leakage device with breaker or a combination MCB/RCD must be installed on the output. Cable size must be adjusted accordingly.

**IMPORTANT INFORMATION!**  
 Recommended DC cable/fuse size MultiPlus  
 0.6 m cable length: 4 x 600mm, 0.10 m cable length: 4 x 750mm. When used in closed conduits, cable size should double. Cable length stands for the distance between the battery and the MultiPlus connections!!! Recommendations are without other loads in the system and these also should be taken into account for proper main battery, main fuse & main switch cables!!!  
 Fuse size should be 400A.

**IMPORTANT INFORMATION!**  
 Recommended AC IN cable/breaker size MultiPlus  
 AC IN must be protected by a circuit breaker rated at 60A max or less. This depends heavily on the size of the connected power source. The input current must be adjusted to fit the size of the connected power source. The breaker and cable size for AC IN should be adjusted accordingly.

**IMPORTANT INFORMATION!**  
 The primary Case ground connection from an inverter charger like a Multi or a Quattro, must be connected to the central negative Busbar of the DC system. Size of this cable must be identical to the connected DC-negative.

**IMPORTANT INFORMATION!**  
 When operating in inverter mode, the Neutral output of an inverter/charger must be connected to ground to guarantee proper functioning of a GFCI/RCD device. In case of a split phase supply the Neutral also must be grounded.

**WARNING!**  
 230V No Break load-  
 230V No Break load-  
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 230V No Break load-  
 230V Switched load-  
 230V AC IS EXTREMELY HAZARDOUS!!!  
 DO NOT TOUCH ANY LIVE WIRED PARTS OF THE INSTALLATION!!!  
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AC DISTRIBUTION to/from MultiPlus  
 AC in, AC Out-1 & AC Out-2

LYNX DISTRIBUTOR WITH LYNX SMART BMS

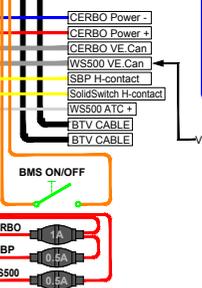
LYNX SMART BMS

LYNX DISTRIBUTOR

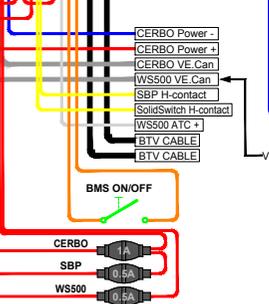
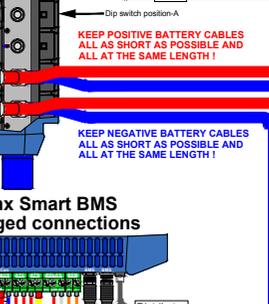
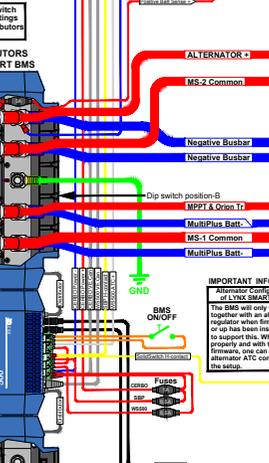
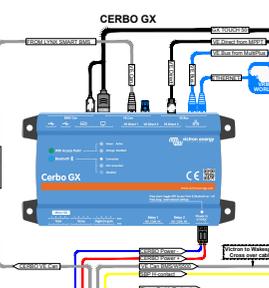
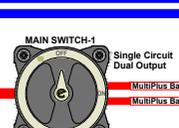
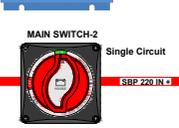
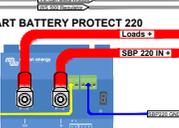
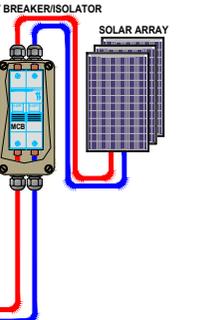
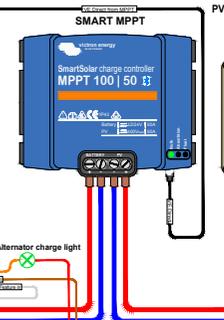
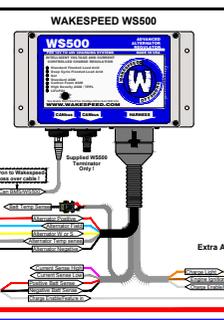
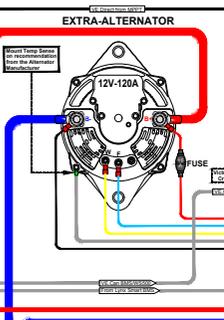
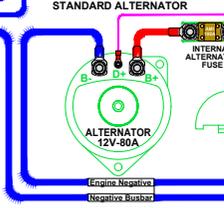
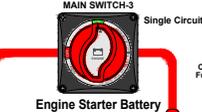
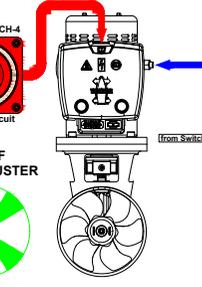
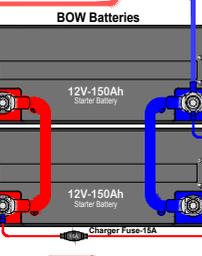
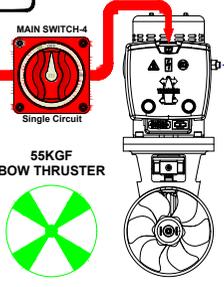
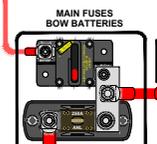
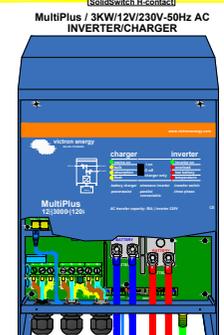
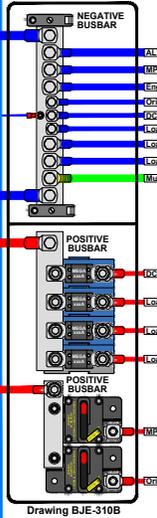
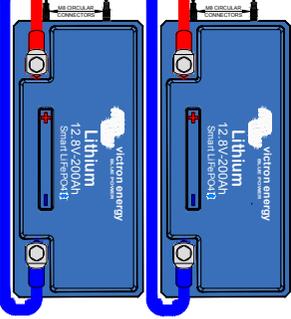
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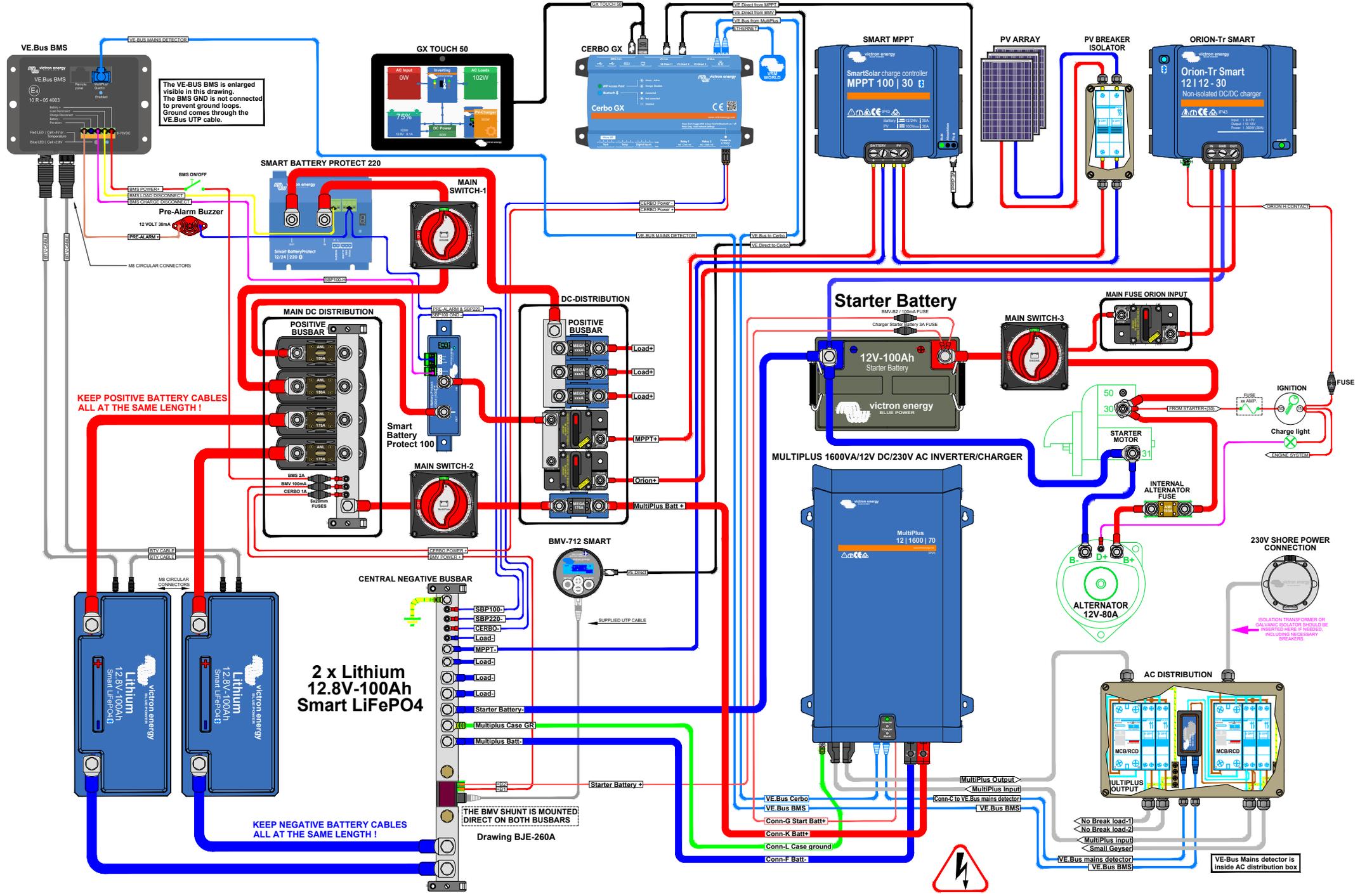
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**Lynx Smart BMS Enlarged connections**



2 x Lithium 12.8V-200Ah Smart LiFePO4





The VE-BUS BMS is enlarged visible in this drawing. The BMS GND is not connected to prevent ground loops. Ground comes through the VE-Bus UTP cable.

KEEP POSITIVE BATTERY CABLES ALL AT THE SAME LENGTH!

KEEP NEGATIVE BATTERY CABLES ALL AT THE SAME LENGTH!

2 x Lithium 12.8V-100Ah Smart LiFePO4

THE BMV SHUNT IS MOUNTED DIRECT ON BOTH BUSBARS  
Drawing BJE-260A

<p><b>Recommended AC out cable/breaker size MultiPlus</b></p> <p>With Power assist the MultiPlus can add 1.3 kW to the output load when needed. Together with the adjustable 16A input this all adds up to the max sum of input and output current of 16+5.8=21.8A. An Earth leakage with breaker or a combination MCB/RCD must be installed on the output. Cable size must be adjusted accordingly.</p>	<p><b>Recommended DC cable/fuse size MultiPlus</b></p> <p>0-5 m cable length: 50SQmm Cable length stands for the total distance between the battery connections plus and minus and the MultiPlus connections! Recommendations are without other loads in the system and these also should be taken into account for proper main battery, main fuse &amp; main switch cables! INTERNAL Fuse size should be 200A.</p>	<p><b>Recommended AC in cable/breaker size MultiPlus</b></p> <p>AC IN must be protected by a circuit breaker rated at 16A max or less. This depends heavily on the size of the connected power source. The input current must be adjusted to fit the size of the connected power source. The breaker and cable size for AC IN should be adjusted accordingly.</p>	<p><b>WARNING</b></p> <p>230 VOLT IS EXTREMELY HAZARDOUS DO NOT TOUCH ANY LIVE WIRED PARTS OF THE INSTALLATION! WHEN IN DOUBT, ALWAYS CONSULT YOUR VICTRON DEALER!</p>
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