

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!

Recommended AC Out cable/breaker size MultiPlus  
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+5.6=21.6A. An Earth leakage with breaker or a combination MCB/RCD must be installed on the output. Cable size must be adjusted accordingly.

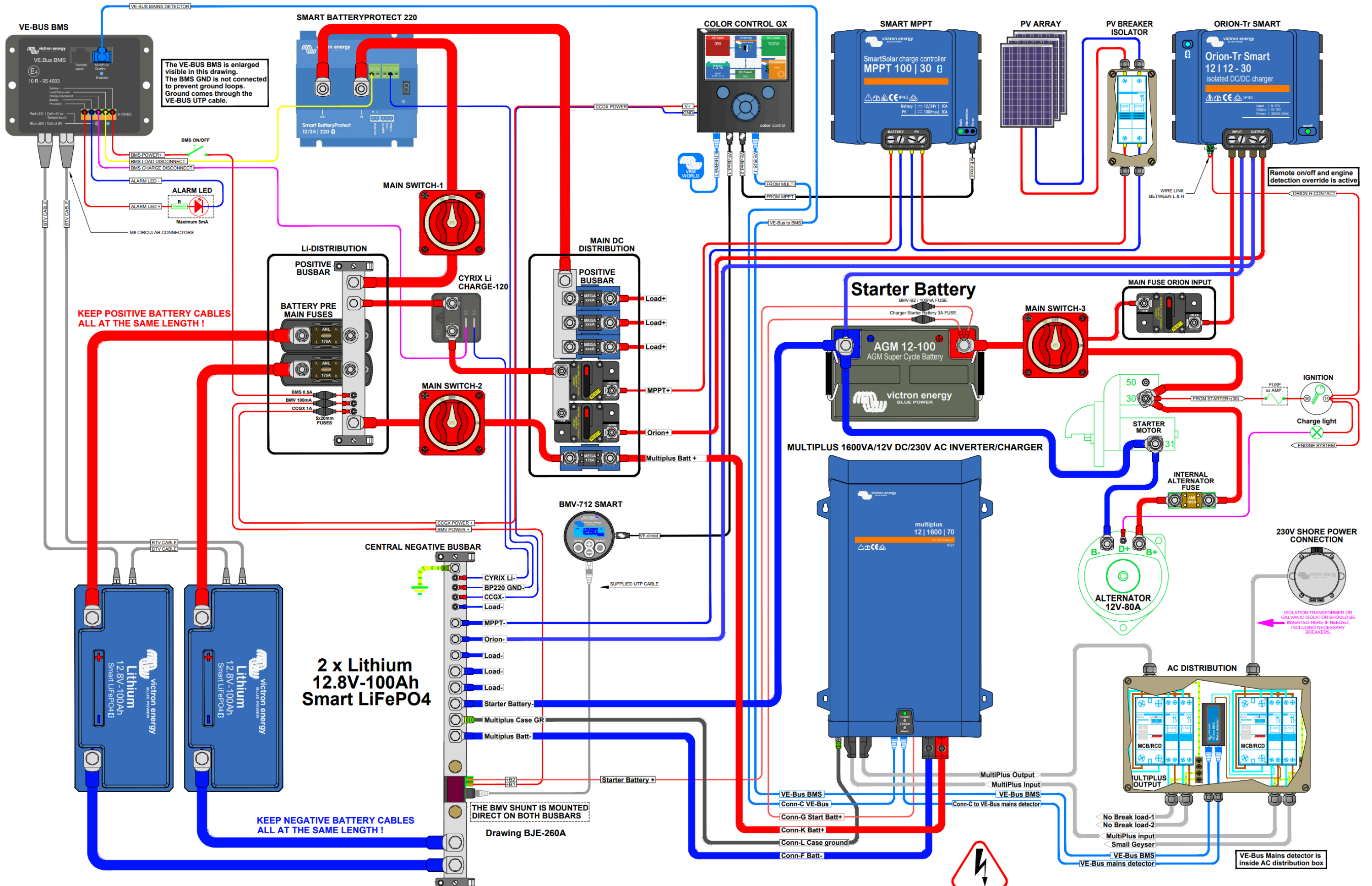
Recommended DC cable/fuse size MultiPlus  
0-5 m cable length: 50SQmm  
Cable length stands for the total distance between the battery connections plus and minus and the MultiPlus connections! Recommendations are without other loads in the system and these also should be taken into account for proper main battery, main fuse & main switch cables!  
INTERNAL Fuse size should be 200A.

Recommended AC In cable/breaker size MultiPlus  
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.

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

**BBAtechniek**  
specialist in camper- en caravanaccessoires

# 1.6kVA 12V MultiPlus 230 Volt system example 4 PIN VE-Bus BMS-Lithium Orion-Tr



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!

THE BMV SHUNT IS MOUNTED DIRECT ON BOTH BUSBARS

**Recommended AC Out cable/breaker size MultiPlus**  
 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+5.6=21.6A. An Earth leakage with breaker or a combination MCB/RCD must be installed on the output. Cable size must be adjusted accordingly.

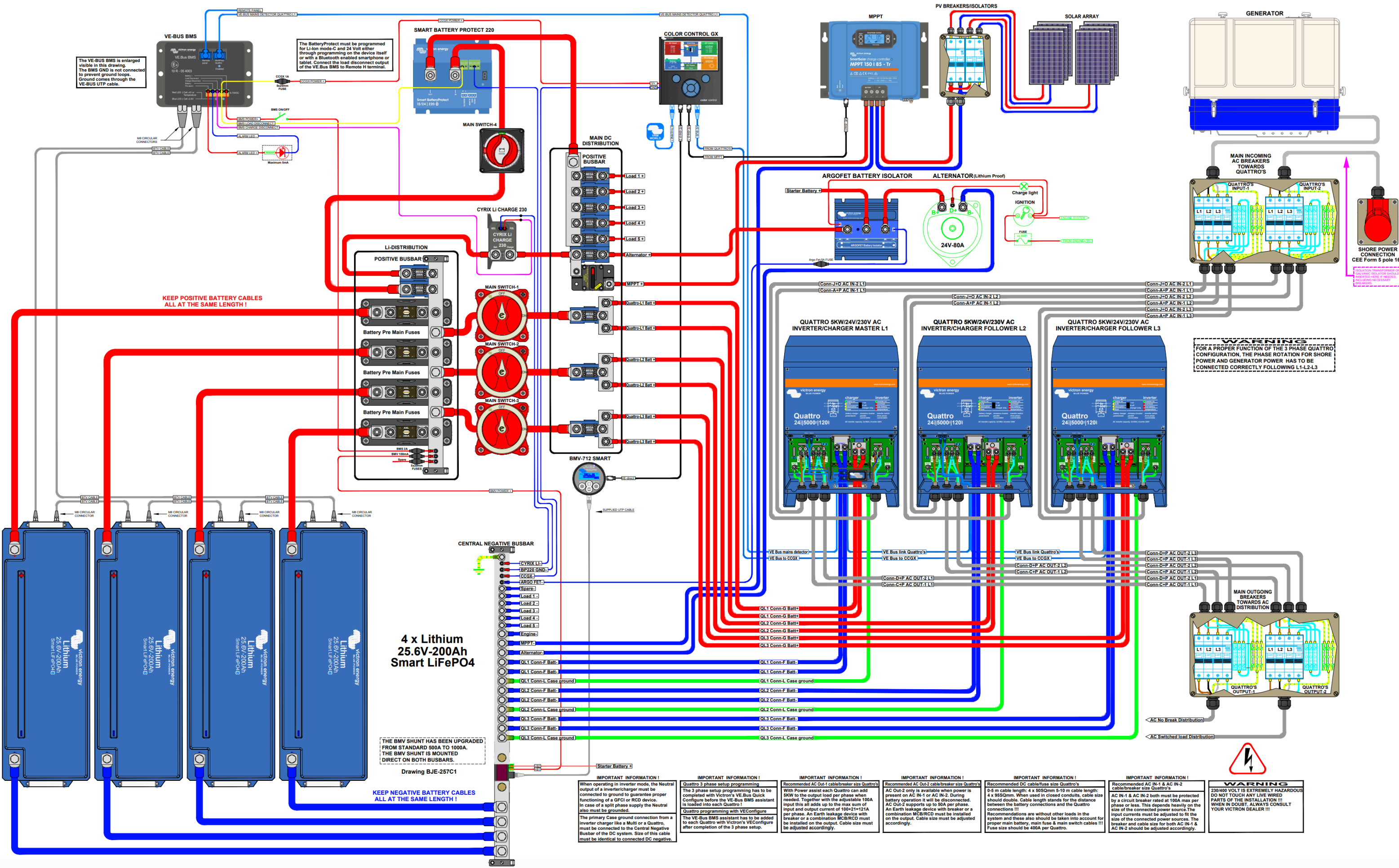
**Recommended DC cable/fuse size MultiPlus**  
 0-5 m cable length: 50SQmm  
 Cable length stands for the total distance between the battery connections plus and minus and the MultiPlus connections! Recommendations are without other loads in the system and these also should be taken into account for proper main battery, main fuse & main switch cables! INTERNAL Fuse size should be 200A.

**Recommended AC In cable/breaker size MultiPlus**  
 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.

**WARNING**  
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# 1.6kVA 12V MultiPlus 230 Volt system example 5 PIN VE-Bus BMS-Lithium Orion-Tr



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.

The BatteryProtect must be programmed for Li-Ion mode-C and 24 Volt either through programming on the device itself or with a Bluetooth enabled smartphone or tablet. Connect the load disconnect output of the VE-Bus BMS to Remote H terminal.

KEEP POSITIVE BATTERY CABLES ALL AT THE SAME LENGTH!

4 x Lithium 25.6V-200Ah Smart LiFePO4

THE BMV SHUNT HAS BEEN UPGRADED FROM STANDARD 500A TO 1000A. THE BMV SHUNT IS MOUNTED DIRECT ON BOTH BUSBARS.

Drawing BJE-257C1

KEEP NEGATIVE BATTERY CABLES ALL AT THE SAME LENGTH!

**IMPORTANT INFORMATION!**  
When operating in inverter mode, the Neutral output of a 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!**  
Quattro 3 phase setup programming  
The 3 phase setup programming has to be completed with Victron's VE-Bus Quick Configure before the VE-Bus BMS assistant is loaded into each Quattro!  
Quattro programming with VEConfigure  
The VE-Bus BMS assistant has to be added to each Quattro with Victron's VEConfigure after completion of the 3 phase setup.

**IMPORTANT INFORMATION!**  
Recommended AC Out-1 cable/breaker size Quattro's  
With Power assist each Quattro can add 50kW to the output load per phase when needed. Together with the adjustable 100A input this all adds up to the max sum of input and output current of 100+2\*121A per phase. An Earth leakage device with breaker or a combination MCB/RCD must be installed on the output. Cable size must be adjusted accordingly.

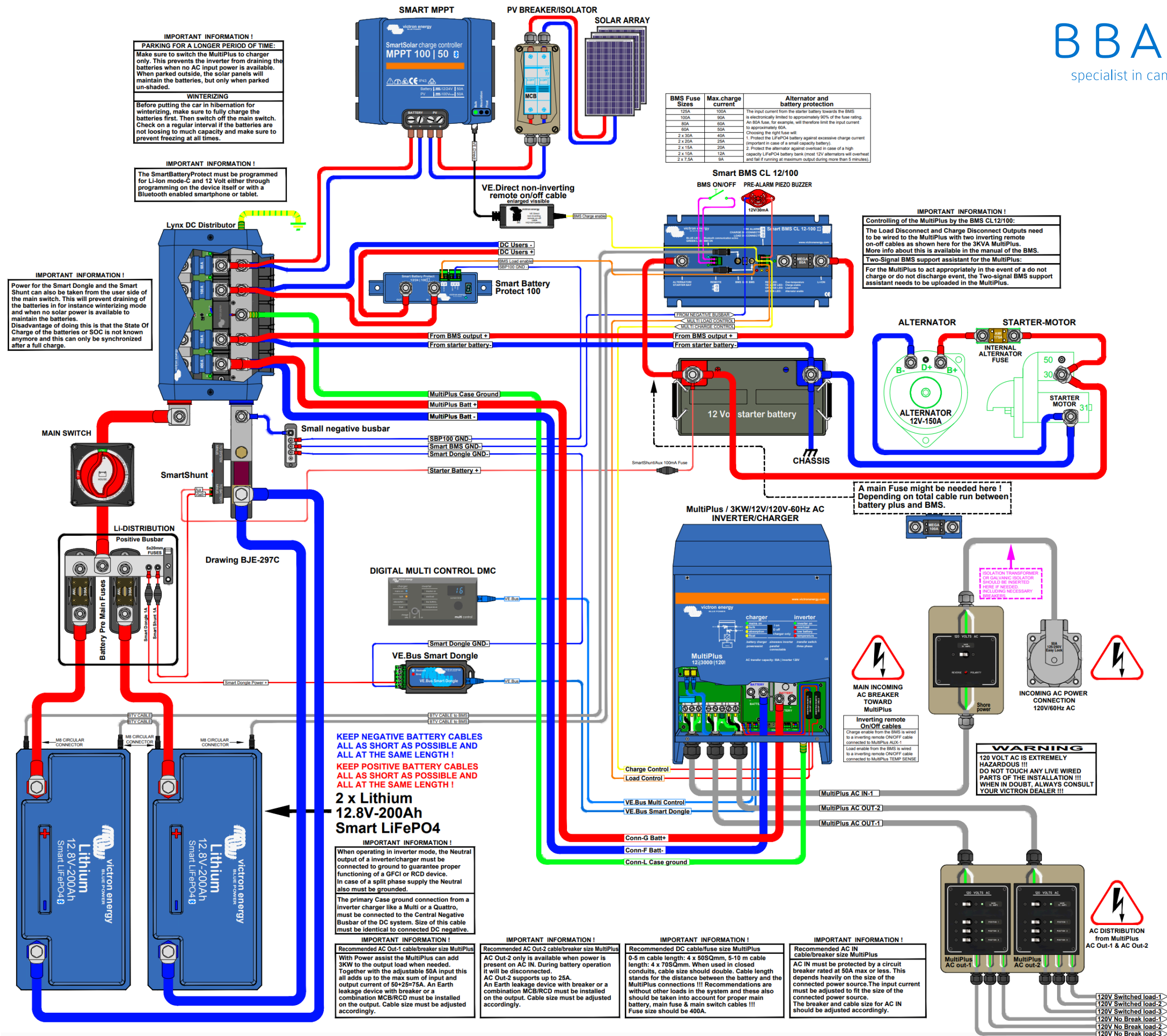
**IMPORTANT INFORMATION!**  
Recommended AC Out-2 cable/breaker size Quattro's  
AC Out-2 only is available when power is present on AC IN-1 or AC IN-2. During battery operation it will be disconnected. AC Out-2 supports up to 50A per phase. An Earth leakage device with breaker or a combination MCB/RCD must be installed on the output. Cable size must be adjusted accordingly.

**IMPORTANT INFORMATION!**  
Recommended DC cable/fuse size Quattro's  
0-5 m cable length: 4 x 60SQmm 5-10 m cable length: 4 x 95SQmm. When used in closed conduits, cable size should double. Cable length stands for the distance between the battery connections and the Quattro 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 per Quattro.

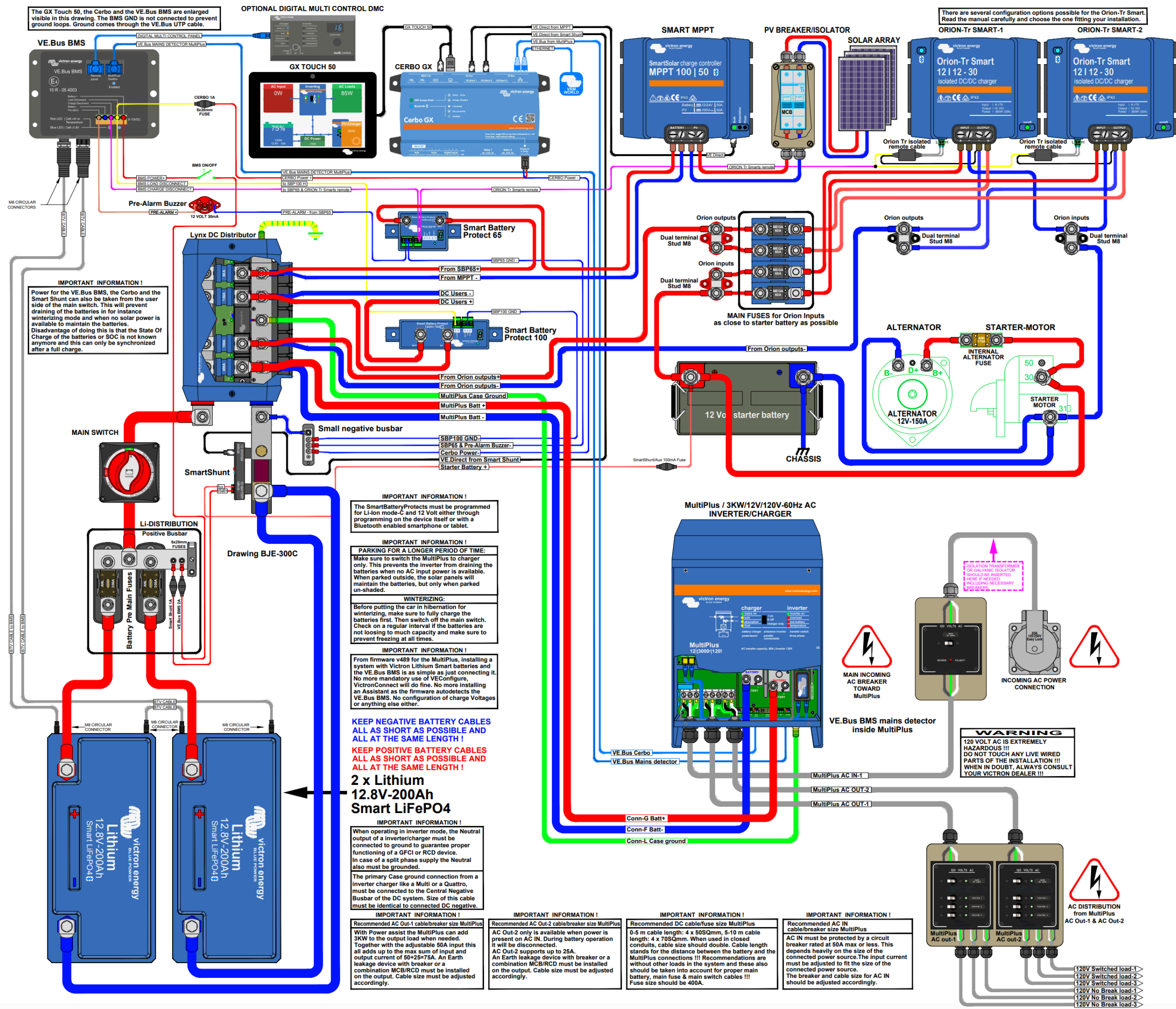
**IMPORTANT INFORMATION!**  
Recommended AC IN-1 & AC IN-2 cable/breaker size Quattro's  
AC IN-1 & AC IN-2 both must be protected by a circuit breaker rated at 100A max per phase or less. This depends heavily on the size of the connected power source. The input currents must be adjusted to fit the size of the connected power sources. The breaker and cable size for both AC IN-1 & AC IN-2 should be adjusted accordingly.

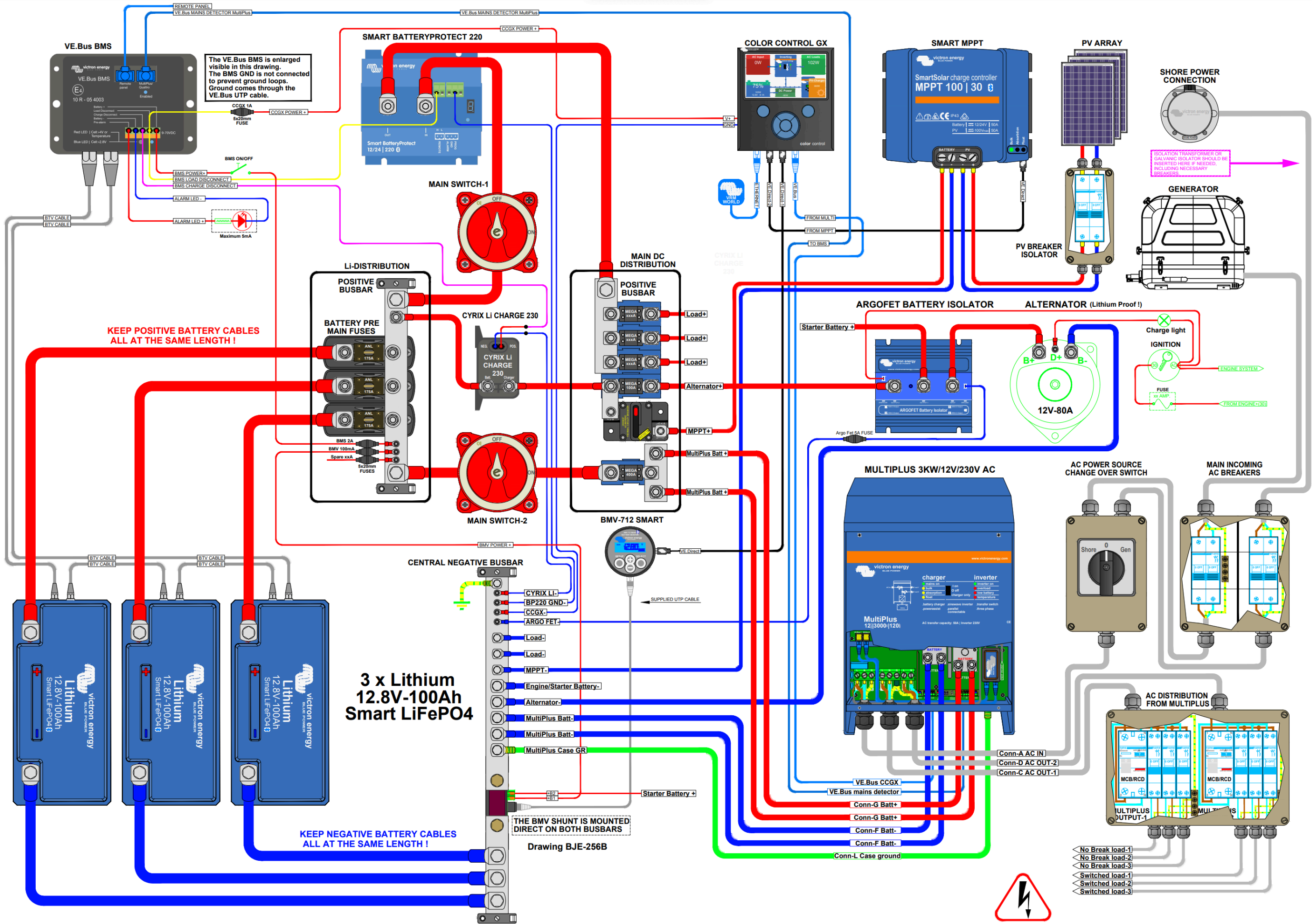
**WARNING**  
230/400 VOLT IS EXTREMELY HAZARDOUS. DO NOT TOUCH ANY LIVE WIRED PARTS OF THE INSTALLATION !!! WHEN IN DOUBT, ALWAYS CONSULT YOUR VICTRON DEALER !!!

**WARNING**  
FOR A PROPER FUNCTION OF THE 3 PHASE QUATTRO CONFIGURATION, THE PHASE ROTATION FOR SHORE POWER AND GENERATOR POWER HAS TO BE CONNECTED CORRECTLY FOLLOWING L1-L2-L3



# US-VAN Drawing Smart BMS CL12/100 MultiPlus 3KW DMC 400Ah Li VEBus Smart Dongle & Shunt SBP 100A MPPT 100/50





**Smart BatteryProtect programming**  
 The BatteryProtect must be programmed for Li-Ion mode 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 VE.Bus BMS to Remote H terminal.

**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 16A. An Earth leakage device with breaker or a combination MCB/RCD must be installed on the output. Cable size must be adjusted accordingly.

**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+13=63A. An Earth leakage device with breaker or a combination MCB/RCD must be installed on the output. Cable size must be adjusted accordingly.

**Recommended DC cable/fuse size MultiPlus**  
 0-5 m cable length: 4 x 50SQmm, 5-10 m cable length: 4 x 70SQmm. 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.

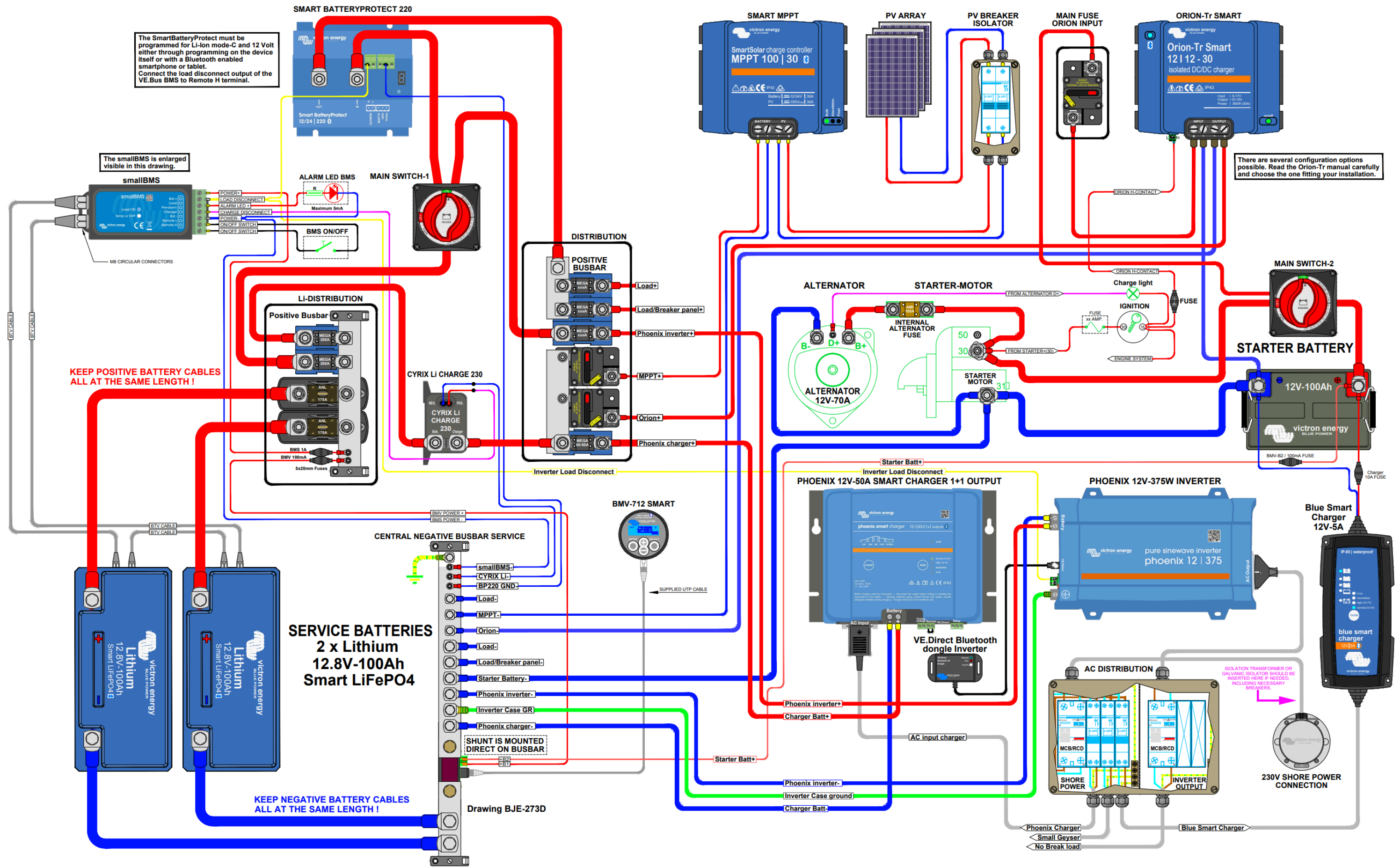
**Recommended AC IN cable/breaker size MultiPlus**  
 AC IN must be protected by a circuit breaker rated at 50A max or less. This depends heavily on the size of the connected power source. The input current must be adjusted to fit the size of the connected power source. The breaker and cable size for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

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

- < No Break load-1
- < No Break load-2
- < No Break load-3
- < Switched load-1
- < Switched load-2
- < Switched load-3

THE BMV SHUNT IS MOUNTED DIRECT ON BOTH BUSBARS  
 Drawing BJE-256B

# VE.Bus BMS example with 3kW 12V MultiPlus 230V



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 load disconnect output of the VE.Bus 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!

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: 16SQmm  
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 16SQmm.

Recommended DC cable/fuse size Phoenix Inverter  
375W inverter with 0-1,5 m cable length: 6SQmm  
375W inverter with 1,5-3 m cable length: 10SQmm  
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.



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# VE.Direct drawing with Phoenix charger 12/50-1 inverter 375W Li Batt smallBMS MPPT 100/30 Orion-Tr Smart