The GX Touch 50 and the CERBO GX are enlarged visible in this drawing.

GX TOUCH 50

BMV-712 SMART

CERBO GX

RJ45 UTP CABLE

VE.Direct from MPPT

VE.Direct from Orion XS

VE.Bus from VE.Bus BMS NG

ETHERNET

VE.Direct from BMV

The VE.Bus BMS NG is enlarged visible in this drawing. There is NO BMS negative connection to prevent ground loops. Ground comes through the VE.Bus UTP cable.

BMS AC POWER ADAPTER

VE.Bus BMS NG

Fuses

BMS POWER+

CERBO POWER +

AUX POWER +

BMS LOAD DISCONNECT

BMS CHARGE_DISCONNECT

PRE-ALARM -

PRE-ALARM

PRE-ALARM +

PRE-ALARM

PIEZO BUZZER

12 VOLT/30mA

BMS ON/OFF SWITCH

VE.Bus from VE.Bus BMS NG to CERBO

VE.Bus from MultiPlus-II to VE.Bus BMS NG

PRE-ALARM ERR/FAIL

SMART BATTERY PROTECT 220 (SBP)

SBP 220 Out

SBP 220-IN +

SBP 220 GND

Smart BatteryProtect 12/24 | 220 | 12

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 or charge disconnect output of the VE.Bus BMS NG to Remote H terminal.

CERBO Power +

CERBO Power -

SMART MPPT

SmartSolar charge controller MPPT 100 | 50

PV BREAKER/ISOLATOR

MCB

SOLAR ARRAY

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

ORION-XS 12/12-50A

Orion XS 12/12 - 50A DC-DC battery charger

IP65

IN GND OUT

Main Fuse Orion-XS Input as close to Main Switch-3 as possible !

Lynx DC Distributor

MS-2 Common

Single Circuit

SBP 220 IN +

MAIN SWITCH-2

Negative Busbar

MPPT Negative

MAIN SWITCH-1

MS-1 Common

Single Circuit Dual Output

MultiPlus-II Batt +

MultiPlus-II Batt +

MPPT-Orion-Spare

MultiPlus-II Batt-

MultiPlus-II Batt-

NEGATIVE BUSBAR

Load 1 -

Load 2 -

Load 3 -

Load 4 -

Load 5 -

POSITIVE BUSBAR

Load 1 +

Load 2 +

Load 3 +

Load 4 +

Load 5 +

POSITIVE BUSBAR

MPPT +

ORION XS+

SPARE +

ALTERNATOR

STARTER-MOTOR

INTERNAL ALTERNATOR FUSE

FROM ALTERNATOR D+

FROM STARTER MOTOR

STARTER MOTOR

Charge light

IGNITION

FUSE xx AMP

ENGINE SYSTEM

ALTERNATOR 12V-150A

MAIN SWITCH-3

Single Circuit

Starter Battery

12V-125Ah Starter Battery

BMV-702 / 1A FUSE

Blue Smart Charger 12V-5A

12V Charger 10A FUSE

WARNING ! PROTECTIVE COVERS ARE NEEDED HERE.

BMV POWER +

LI-DISTRIBUTION

Positive Busbars

9x30mm FUSES

Battery Pre Main Fuses

Class T 250A

Class T 300A

Pre Alarm Buzzer-

SBP 220 GND-

Ext. BMS Power Source-

CERBO-

Spare-

Spare-

Spare-

Spare-

Engine-

MultiPlus-II CG

CENTRAL NEGATIVE BUSBAR

Starter Battery +

BMV-712 Smart

SUPPLIED UTP CABLE

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

MultiPlus-II / 3kVA/12V/120A 2x120V-60Hz AC INVERTER/CHARGER

MultiPlus-II

12.1/3000/120

Starter Battery +

Shore power

ISOLATION TRANSFORMER OR GALVANIC ISOLATOR SHOULD BE INSERTED HERE IF NEEDED, INCLUDING NECESSARY BREAKERS

MAIN INCOMING AC BREAKERS TOWARDS MultiPlus-II

Generator power

GENERATOR 4KW 120V/60Hz AC

SHORE POWER CONNECTION 120V/240V/60Hz AC

MCB

Shore power

Generator power

Shore

Gen

MultiPlus-II AC IN

MultiPlus-II AC OUT-2

MultiPlus-II AC OUT-1

Blue Smart charger

2 x Lithium 12.8V-200Ah NG-LiFePO4

M8 CIRCULAR CONNECTOR & CABLE

victron energy

Lithium 12.8V-200Ah NG-LiFePO4

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

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

Drawing BJE-325C

VE.Bus to VE.Bus BMS NG

Conn-G Batt+

Conn-G Batt+

Conn-H Batt-

Conn-H Batt-

Conn-E Case ground

MPPT -

Engine-

MultiPlus-II Batt +

MultiPlus-II Batt +

MultiPlus-II Batt -

MultiPlus-II Batt -

MultiPlus-II Case ground

Starter Battery +

VE.Bus to VE.Bus BMS NG

IMPORTANT INFORMATION !

Victron Lithium Batteries charge & discharge controlled by BMS & GX Device

In systems with Victron Lithium NG Batteries, it's important that all charging devices as well as loads are controlled by the BMS and GX Device. Here is how that is taken care of in this system:

1 - MultiPlus-II Inverter/charger: digitally via the GX Device, DVCC feature.
2 - Solar charger: digitally via the GX Device, DVCC feature.
3 - Orion XS: digitally via the GX Device DVCC feature.
4 - DC Loads: via SmartBattery Protect 220 and LD signal from BMS NG.
5 - AC Loads: controlled together with the MultiPlus-II Inverter/Charger.

IMPORTANT INFORMATION !

Installing a system with Victron Lithium NG batteries and the VE.Bus BMS NG is as simple as just connecting it. No more mandatory use of VEConfigure, VictronConnect will do fine. No more installing an Assistant as the firmware autodetects the VE.Bus BMS NG. No configuration of charge Voltages or anything else either.

The MultiPlus-II series do not need a VE.Bus mains detector anymore. This functionality has been build inside the MultiPlus-II Inverter Charger.

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 should be one size smaller compared to its total connected DC negatives per device (ABYC).

IMPORTANT INFORMATION !

Short functional overview MultiPlus-II 12/3000/120-50 2x120V InverterCharger

The AC input can be supplied from a split phase 120/240V or a single phase 120V power source. When AC is available the MultiPlus will feed AC power trough to its AC outputs as a mirror image from its input. The MultiPlus connects to the preferred input L1 and Neutral. Power needed to charge the batteries will be drawn from L1. The MultiPlus switches to inverter mode when no AC is available on the input. The inverter output is 120V single phase. The MultiPlus connects both output lines L1 & L2 of output-1 together to provide 120VAC to loads on either line. Any 240VAC loads will therefore only be supplied when the MultiPlus is connected to a split phase AC power source at its input. This will prevent heavy loads such as 240VAC water heaters or air-conditioning units from draining the batteries.

IMPORTANT INFORMATION !

Recommended AC Out-1 cable/breaker size MultiPlus-II

With Power assist the MultiPlus-II can add 3KW to the output load of L1 only. 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 for each 120V leg and 240V. Cable size must be adjusted accordingly.

IMPORTANT INFORMATION !

Recommended AC Out-2 cable/breaker size MultiPlus-II

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 50A.
An Earth leakage device with breaker or a combination MCB/RCD must be installed on the output for each 120V leg and 240V.
Cable size must be adjusted accordingly.

AC Out-2 of an early production batch of this product was rated at 35A instead of 50A. This batch has serial numbers starting with HQ2107. Later batches, with 50A for AC Out-2 have serial numbers starting with HQ2114 or higher.

IMPORTANT INFORMATION !

Recommended DC cable/fuse size MultiPlus-II

0-5 m cable length: 4 x AWG 1/0, 5-10 m cable length: 4 x AWG 2/0. 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-II

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 its connected power source.
The breaker and cable size for AC IN should be adjusted accordingly.

WARNING

120 & 240 VOLT AC IS EXTREMELY HAZARDOUS !!! DO NOT TOUCH ANY LIVE WIRED PARTS OF THE INSTALLATION !!! WHEN IN DOUBT, ALWAYS CONSULT YOUR VICTRON DEALER !!!

MultiPlus-II AC OUT-1 SPLIT PHASE SUPPLY 2 X 120VAC AND 1 X 240VAC

AC OUT-1

MultiPlus-II AC out L1

MultiPlus-II AC out L2

MultiPlus-II 240V out

<120V L1 No Break load-1>
<120V L1 No Break load-2>
<120V L2 No Break load-1>
<120V L2 No Break load-2>
<240V L1-L2 No Break load-1>
<240V L1-L2 No Break load-2>

MultiPlus-II AC OUT-2 SPLIT PHASE SUPPLY 2 X 120VAC AND 1 X 240VAC

AC OUT-2

MultiPlus-II AC out L1

MultiPlus-II AC out L2

MultiPlus-II 240V out

<120V L1 Switched load-1>
<120V L1 Switched load-2>
<120V L2 Switched load-1>
<120V L2 Switched load-2>
<240V L1-L2 Switched load-1>
<240V L1-L2 Switched load-2>