



# Marine Systems

*System examples*



**victron energy**  
BLUE POWER



**Freedom. Powered by know-how.**

When you need robust power solutions that go anywhere you go,  
it's good to know the power of know-how is by your side.

**Energy. Anytime. Anywhere.**



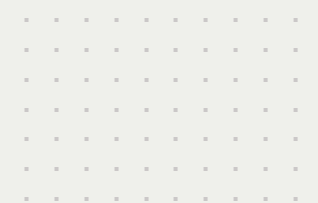
MARINE SYSTEMS

## How do you build robust power systems that take you to the horizon and beyond?

The solution is powered by know-how. With over 45 years of experience, Victron Energy has learned what it takes to build marine systems that stand the test of time and the environment. Our customers value the reassurance that our power solutions deliver knowing they have a worldwide network of authorized dealers by their side. They know we don't cut corners. They know our family-owned and operated business is built on a foundation of trust they can always depend on.

**Energy. Anytime. Anywhere.**





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# Experience the power of Victron Energy Monitoring



Bring the best of Victron systems together in a powerful experience that will redefine life off the grid. Thanks to the know-how that powers our connected products, you can monitor and control your systems, prevent issues and resolve challenges straight from your glass bridge, GX touchscreens, Victron-Connect app and VRM - remote monitoring portal.

Know more at  
[victronenergy.com/monitoring](https://www.victronenergy.com/monitoring)

**Energy. Anytime. Anywhere.**

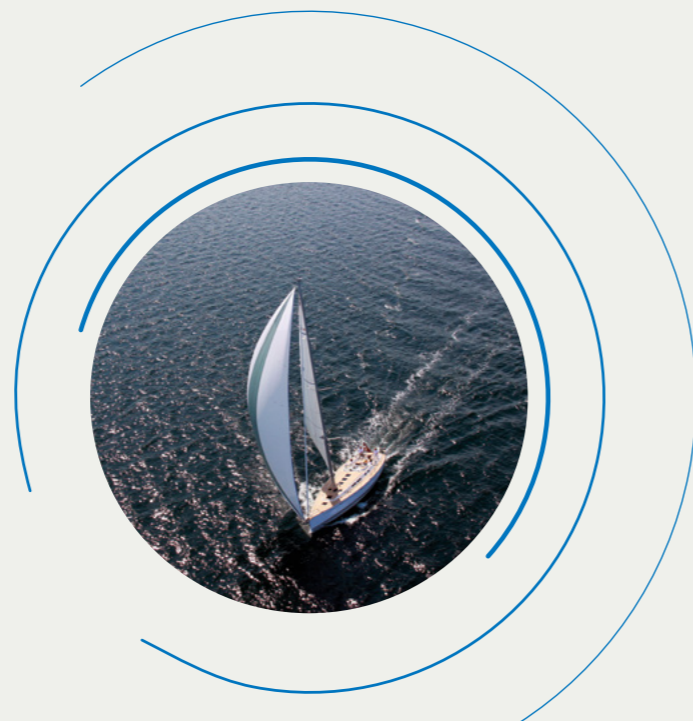
Works  
with



## Introduction to systems design and helpful resources

Victron Energy offers one of the largest product ranges in the market to cover almost every power challenge. Admitted, choosing the right system concept and products can be overwhelming. This booklet intends to assist with basics in systems design, covering a number of different system concepts and solutions for Marine Systems. Alternatively, check our helpful resources or feel free to discuss your ideas with a local Victron specialist.

Check our [Marine](#) market webpage to explore our deepdive with example calculations.



### Product & design information

Our [product pages](#) on the website provide all necessary product information, such as product data sheets, product manuals, more system examples, enclosure drawings and certificates.

### Knowledge base & forum

Search in the [knowledge base](#) for questions and answers or ask our large and active community of experienced Victron users who can help answer your questions.

### Victron Professional Training

Join the professionals and access a large range of on-line training courses. Training includes videos, reference resources and exams to test your knowledge. Successful completion is rewarded with a certificate. On-line training requires a free [Victron Professional](#) account.

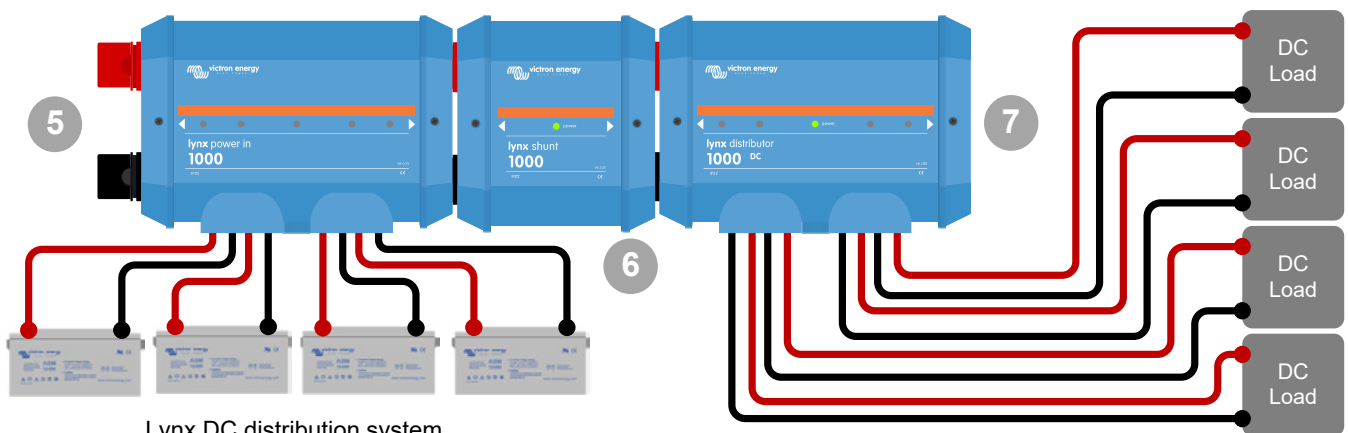
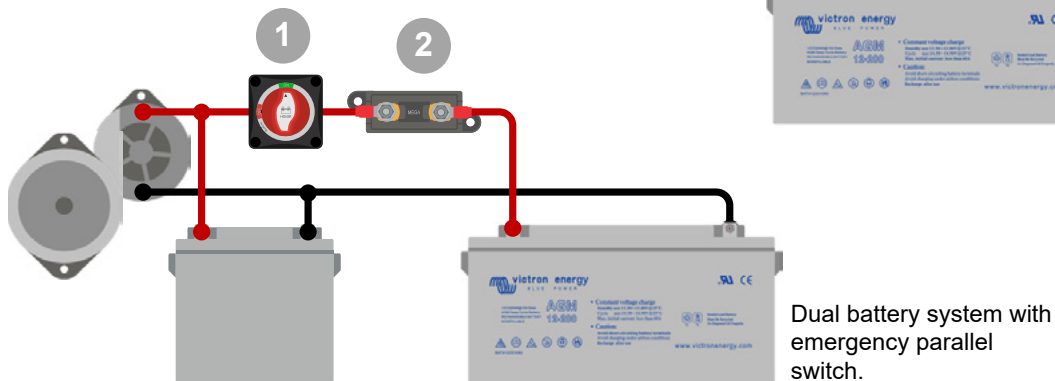
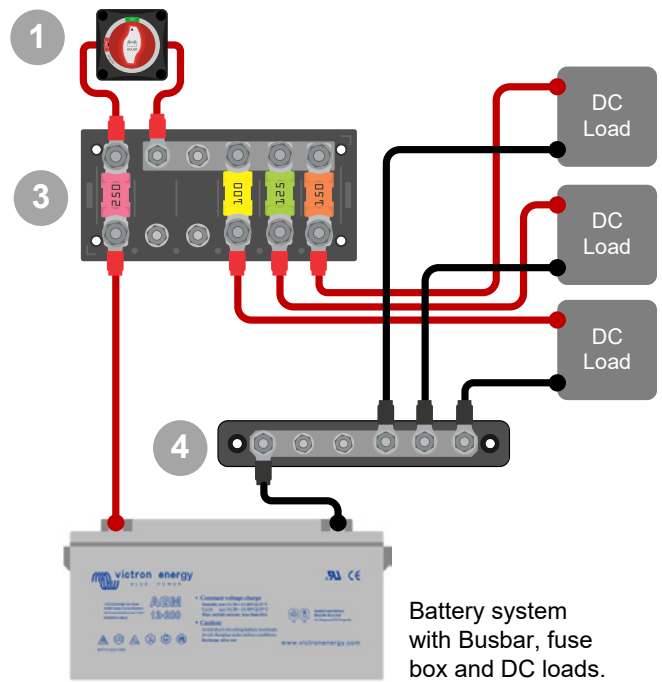
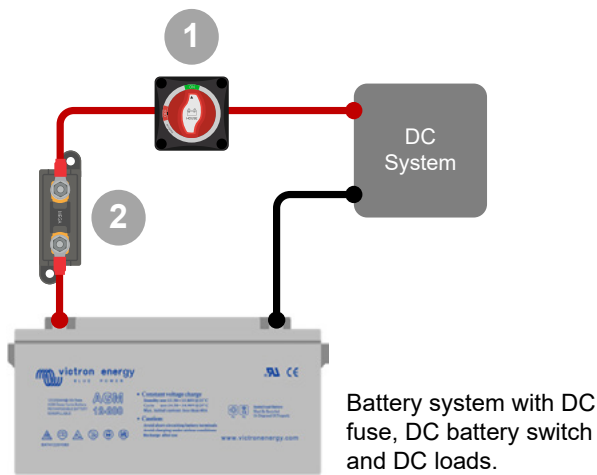
### Energy Unlimited & Wiring Unlimited white papers

Understand the principles behind off-grid power systems and get your wiring right with Wiring Unlimited. Find these white papers and a large variety of technical papers and example system schematics in the [download section](#).

### Contact your local Victron Energy dealer

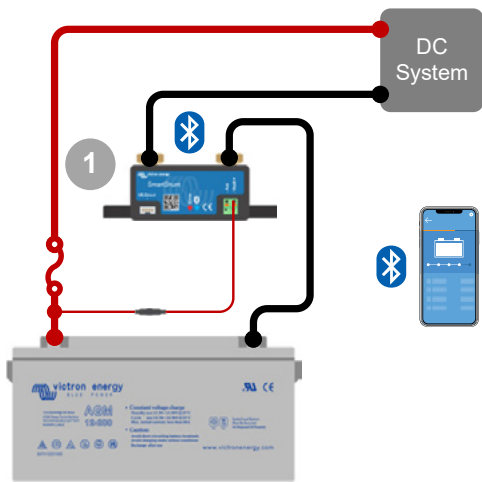
Authorized Victron Energy dealers are trained with the highest level of know-how, so they can translate your exact needs into robust solutions. They are ready and happy to help you with system design and, of course, can provide all the necessary and correct Victron Energy products for your system.



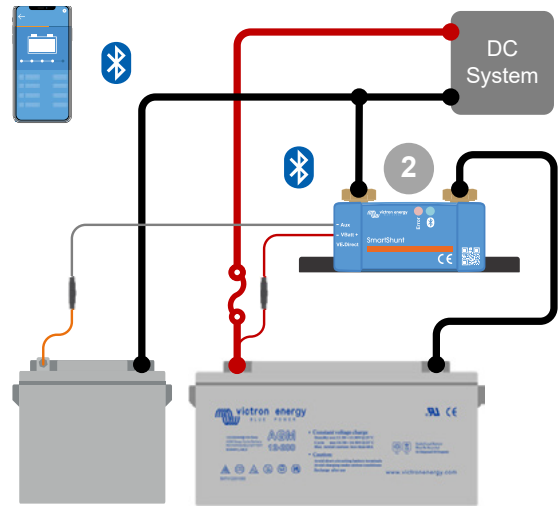


ID	Items and notes
1	Battery Switch, rated 275A, suitable for 12, 24 or 48V systems.
2	Fuse holder with fuse. Fuses and holders available for Midi, Mega and ANL fuses.
3	Fuse box 6-way with a 250A busbar for Mega fuses.
4	Busbar, available in 150, 250 or 600A rating. A variety of models with 4 up to 12 connection points.
5	Lynx Power In, contains a 1000A positive and negative busbar with connection points for 4 batteries or battery banks.
6	Lynx Shunt, contains a battery monitor and space for a main fuse.
7	Lynx Distributor, contains a 1000A positive and negative busbar with connections for 4 fuses and their DC circuits.
	Alternator.
	Starter battery.
	12, 24 or 48V battery or battery bank consisting of multiple batteries in series, parallel or series/parallel.
	Positive (red) and negative (black) DC cables. For the correct cable sizing see the Wiring Unlimited book.

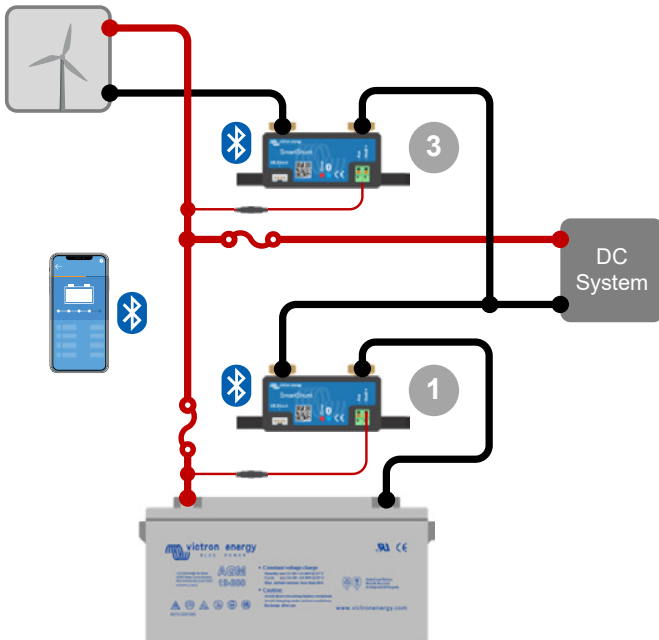




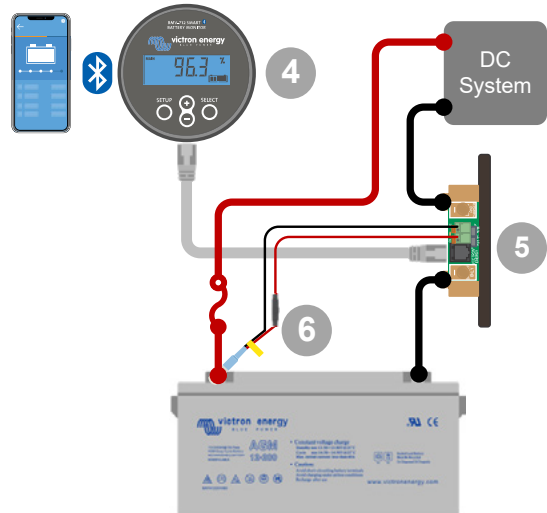
System with a SmartShunt battery monitor.









System with a SmartShunt IP65 battery monitor. The auxiliary connection is used to monitor the voltage of a starter battery



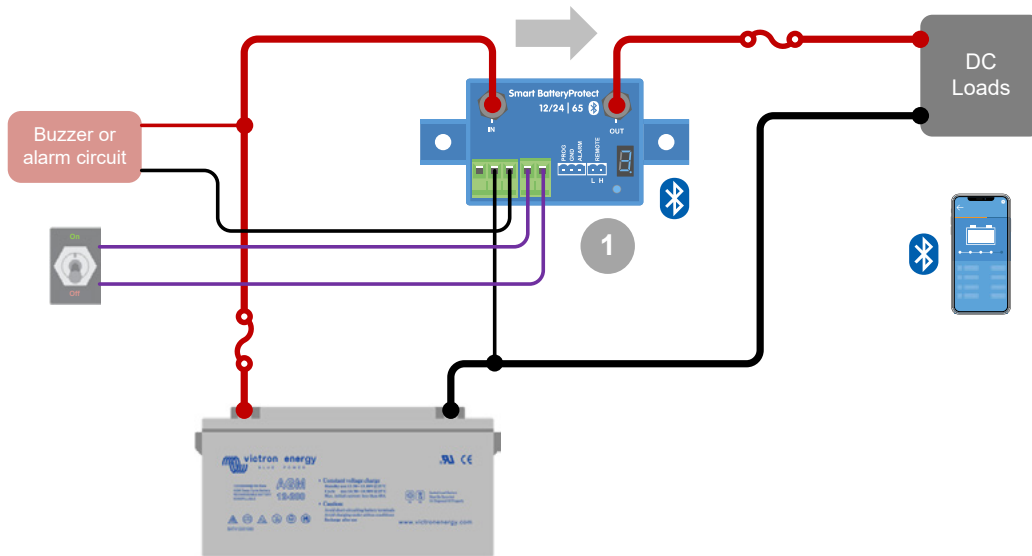
System with a SmartShunt battery monitor and a SmartShunt used as a DC meter.



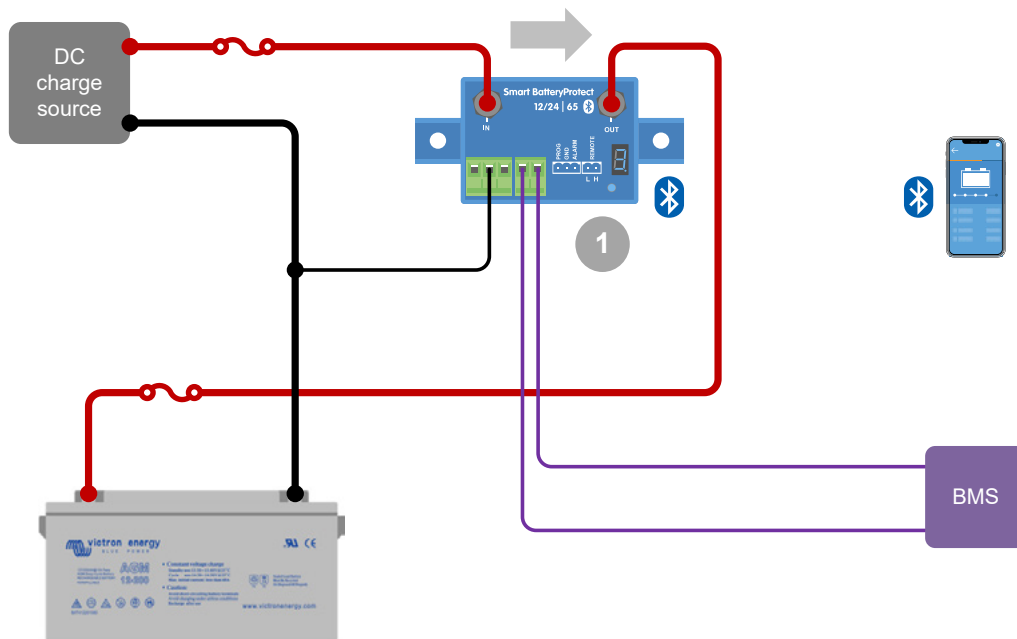
System with a BMV-712 Smart battery monitor. The auxiliary connection is used to monitor the temperature of the battery.

ID	Items and notes
1	SmartShunt battery monitor, available in 500A, 100A or 2000A model.
2	SmartShunt IP65 battery monitor, available in a 500A, 1000A or 2000A model (future model).
3	SmartShunt battery monitor configured as a DC meter, to measure the current from a DC charge source or DC load.
4	BMV-712 Smart battery monitor, available in various models, with and without auxiliary connection and/or Bluetooth.
5	Shunt for the BMV battery monitor, the shunt is included with the battery monitor.
6	Temperature sensor for BMV-712 Smart and BMV-702.
	Starter battery, can have a different voltage than the main battery.
	12, 24 or 48V battery or battery bank consisting of multiple batteries in series, parallel or series/parallel.
	RJ12 UTP cable (10m), included with the BMV battery monitor. Also available in lengths ranging from 30cm to 30m.
	Small DC fuse, included with the product.
	DC fuse.
	Positive (red) and negative (black) DC cables. For the correct cable sizing see the Wiring Unlimited book.










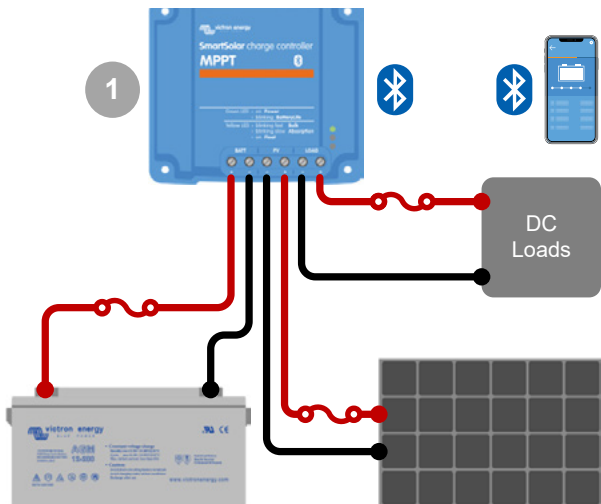
System with a BatteryProtect to protect the battery from being too far discharged by a DC load or DC load circuit.



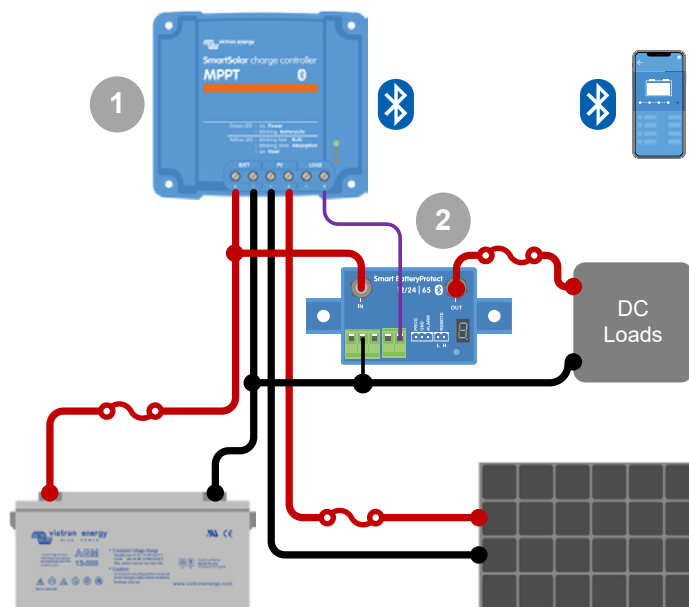
System with a BatteryProtect to interrupt battery charging when an external device, for example a battery management system (BMS), dictates that the battery is not allowed to be charged.

ID	Items and notes
1	BatteryProtect, available in 65, 100 or 220A models, for 12, 24 or 48V, with or without Bluetooth.
	Remote on/off switch. Can also be an ignition switch or a signal from a battery management system.
	Remote on/off signal wire.
	12, 24 or 48V battery or battery bank consisting of multiple batteries in series, parallel or series/parallel.
	DC fuse.
	Positive (red) and negative (black) DC cables. For the correct cable sizing see the Wiring Unlimited book.

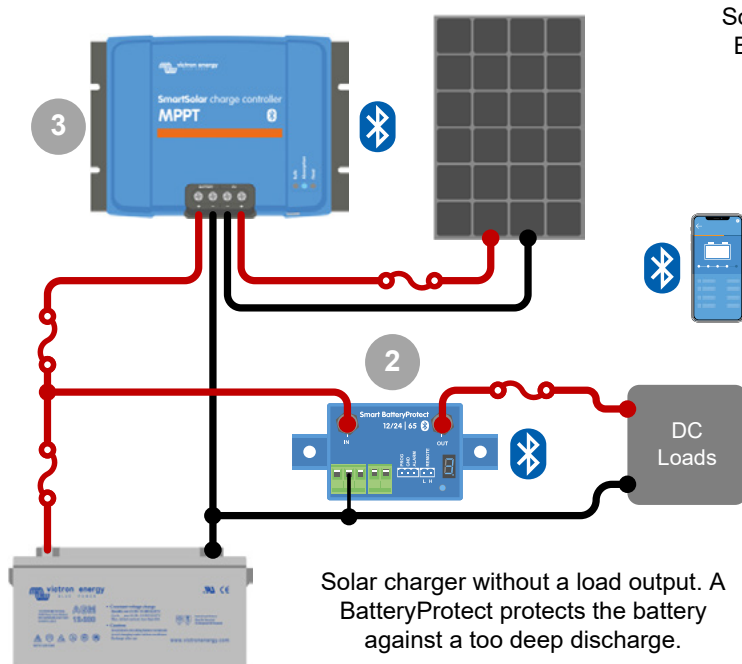









Solar charger with a load output. The load output protects the battery against a too deep discharge.

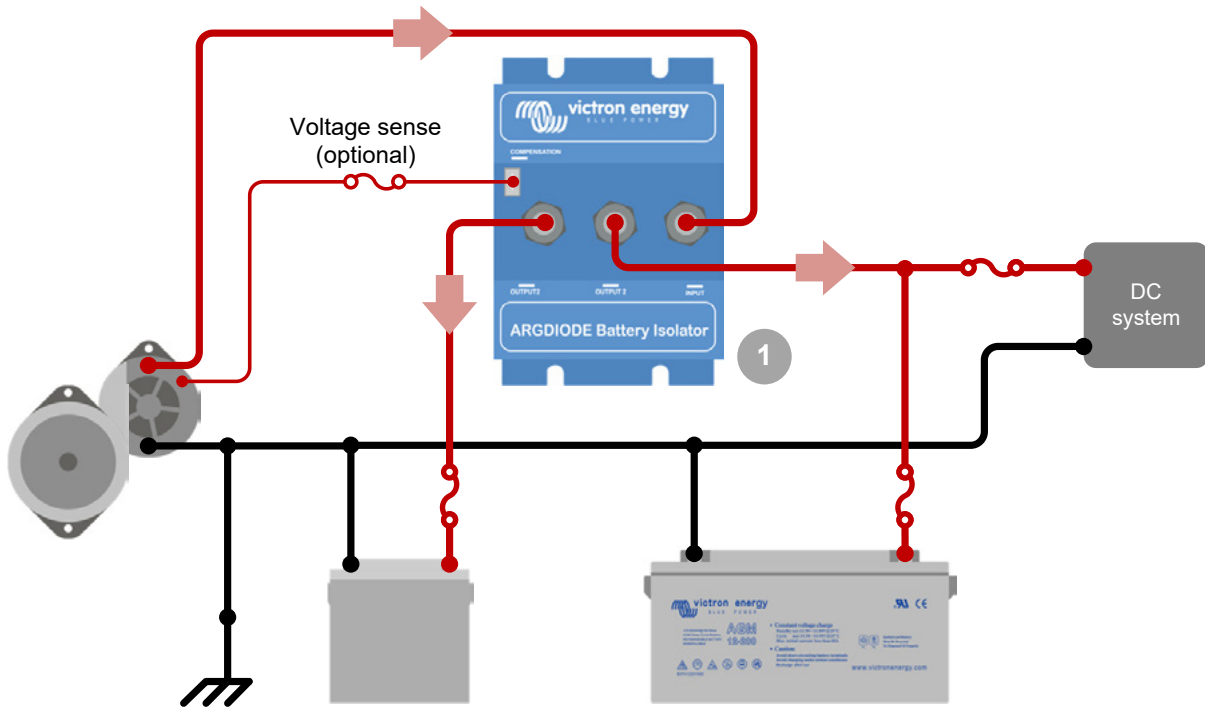


Solar charger with a load output. The load output drives a BatteryProtect, to be able to disconnect a larger load to protect the battery against a too deep discharge.

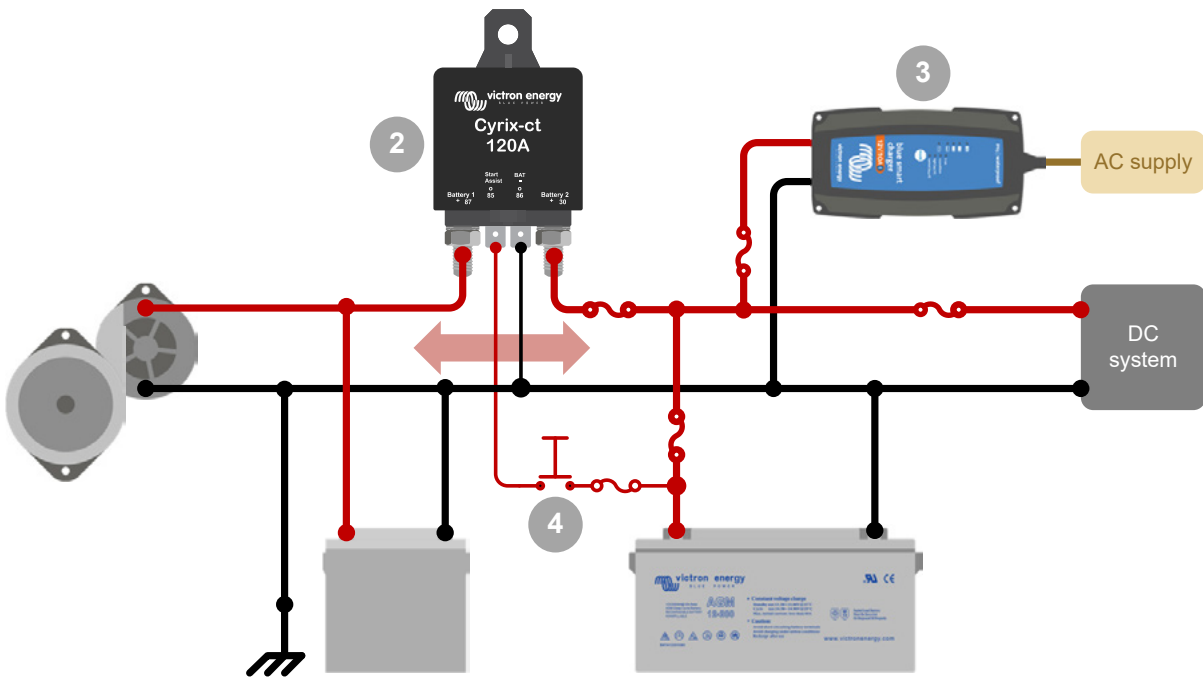


Solar charger without a load output. A BatteryProtect protects the battery against a too deep discharge.

ID	Items and notes
1	Solar charger with load output, available in 10, 15 or 20A models, for 12, 24 or 48V, with or without Bluetooth.
2	BatteryProtect, available in 65, 100 or 220A models, for 12, 24 or 48V, with or without Bluetooth.
3	Solar charger, available up to 100A, for 12, 24 or 48V, with or without Bluetooth.
	Solar panel or solar array.
	12, 24 or 48V battery or battery bank consisting of multiple batteries in series, parallel or series/parallel.
	Remote on/off signal wire.
	DC fuse.
	Positive (red) and negative (black) DC cables. For the correct cable sizing see the Wiring Unlimited book.



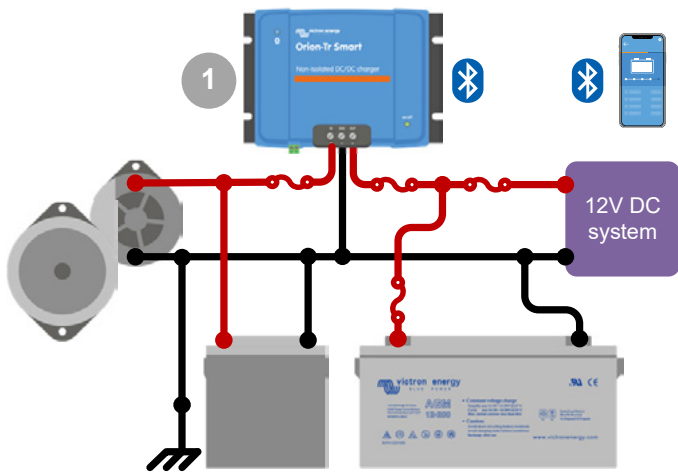
The Argodiode or Argofet isolator allows multiple battery banks to be charged from one charge source.



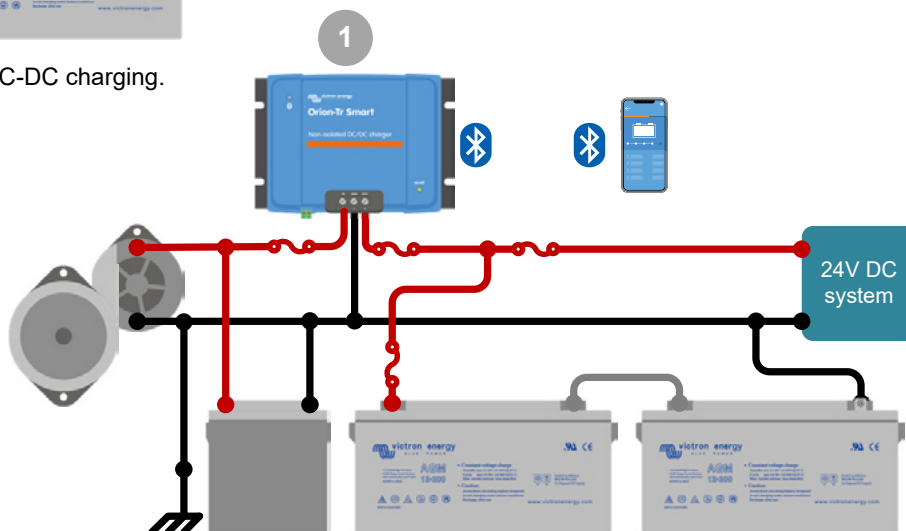
Dual battery system with Cyrix-ct intelligent battery combiner, both the starter battery and the main battery can be charged by the alternator and/or the battery charger.

ID	Items and notes
1	Argodiode or Argofet battery isolator, for 2 or 3 batteries, models ranging from 80 up to 200A, for 12 or 24V systems.
2	Cyrix-ct intelligent battery combiner, available in 120, 230 and 400A models for 12, 24 or 48V systems.
3	Battery charger, such as a Blue Smart charger.
4	Emergency parallel switch.
	Positive (red) and negative (black) DC cables. For the correct cable sizing see the Wiring Unlimited book.
	12, 24 or 48V battery or battery bank consisting of multiple batteries in series, parallel or series/parallel.
	DC fuse.
	Chassis.
	Alternator.
	Starter battery.

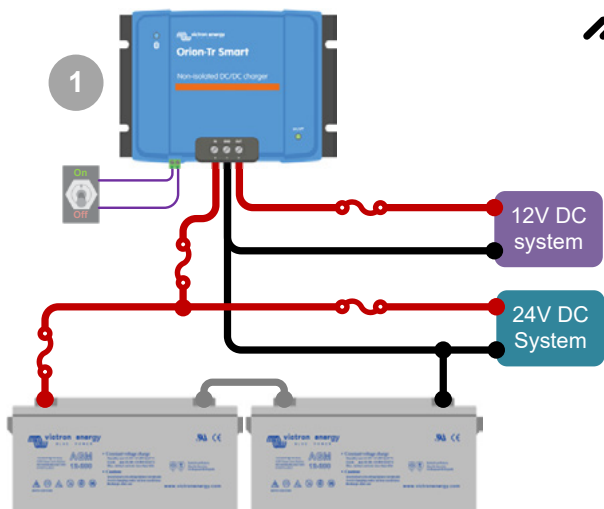




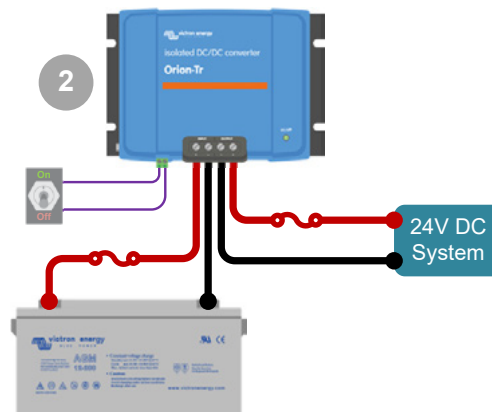
Dual battery system with DC-DC charging.



Dual battery system with voltage conversion and DC-DC charging.

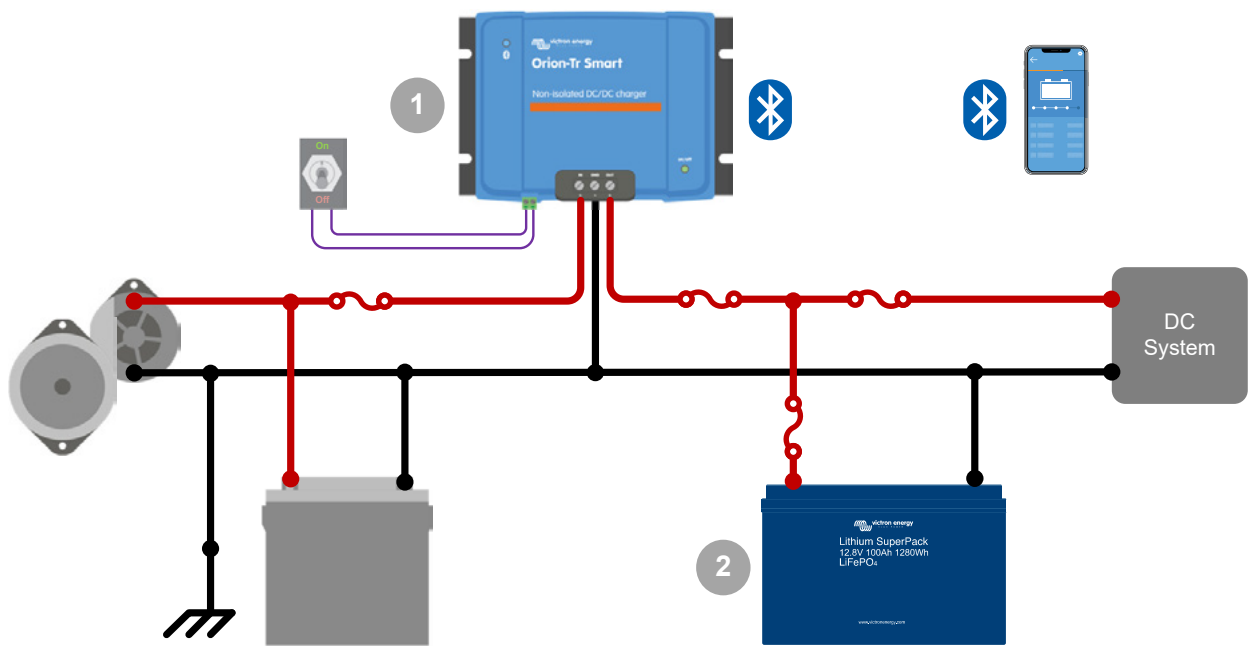


System with DC-DC conversion, the DC load or circuit has a different voltage than the battery. In this example powering 12V loads from a 24V battery bank.

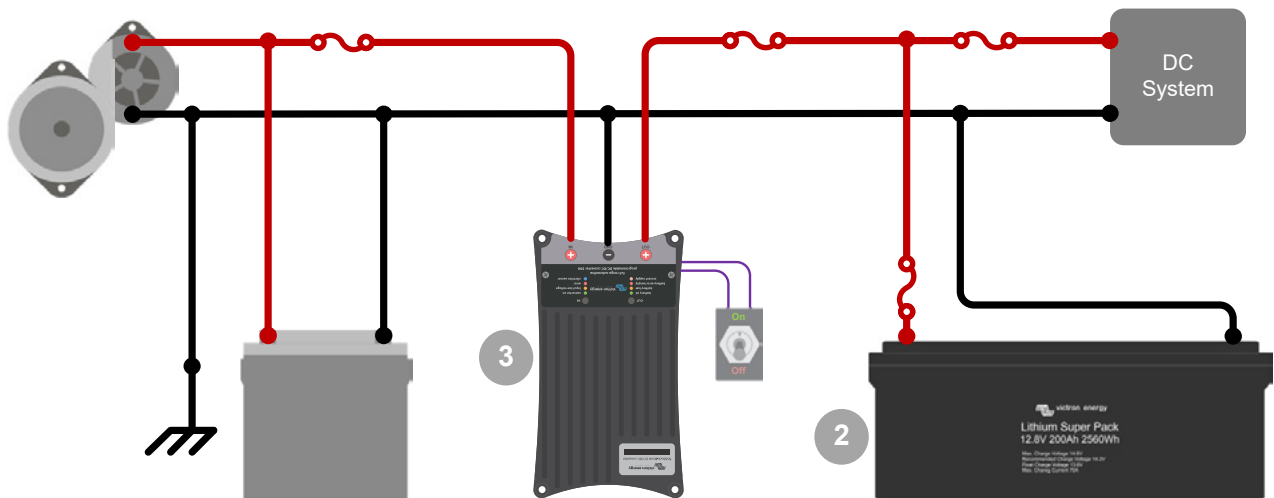


System with DC-DC converter, providing galvanic isolation between the battery and the DC load or circuit.

ID	Items and notes
1	Orion DC-DC Converter, isolated or non isolated, converts one voltage to another and/or can charge a battery.
2	Isolated Orion DC-DC Converter, a variety of models available with 12, 24 or 48V input and 12 or 24V output.
	Remote on/off switch, an engine ignition contact can also be used instead of using an actual switch.
	Remote on/off signal wire.
	Positive (red) and negative (black) DC cables. For the correct cable sizing see the Wiring Unlimited book.
	12, 24 or 48V battery or battery bank consisting of multiple batteries in series, parallel or series/parallel.
	DC fuse.
	Chassis.
	Alternator.
	Starter battery.



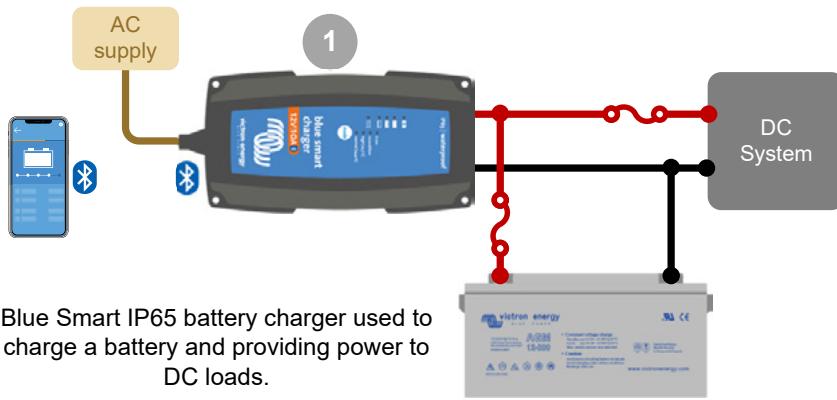
Orion-Tr Smart charging a lithium battery.



Buck-Boost system with a lithium battery.

ID	Items and notes
1	Orion DC-DC Converter, isolated or non isolated, converts one voltage to another and/or can charge a battery.
2	Lithium SuperPack 12,8V & 25,6V with integrated BMS and safety switch.
3	Buck-Boost DC-DC converter.
	Remote on/off switch, instead of a switch the engine start contact can also be used.
	Remote on/off signal wire.
	Positive (red) and negative (black) DC cables. For the correct cable sizing see the Wiring Unlimited book.
	DC fuse.
	Chassis.
	Alternator.
	Starter battery.

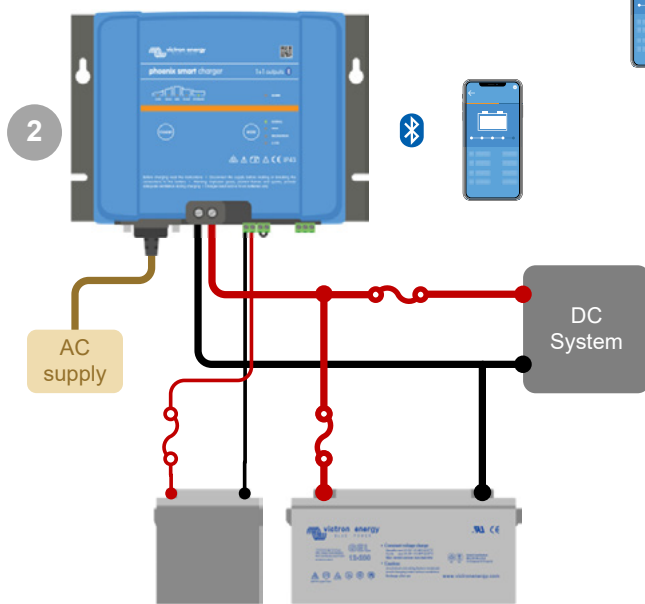




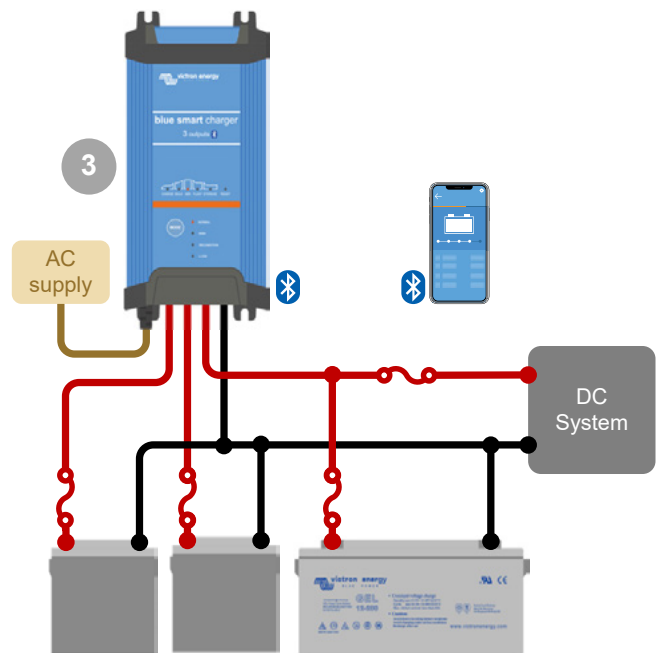
Blue Smart IP65 battery charger used to charge a battery and providing power to DC loads.



Blue Smart IP65 battery charger used as a power supply.

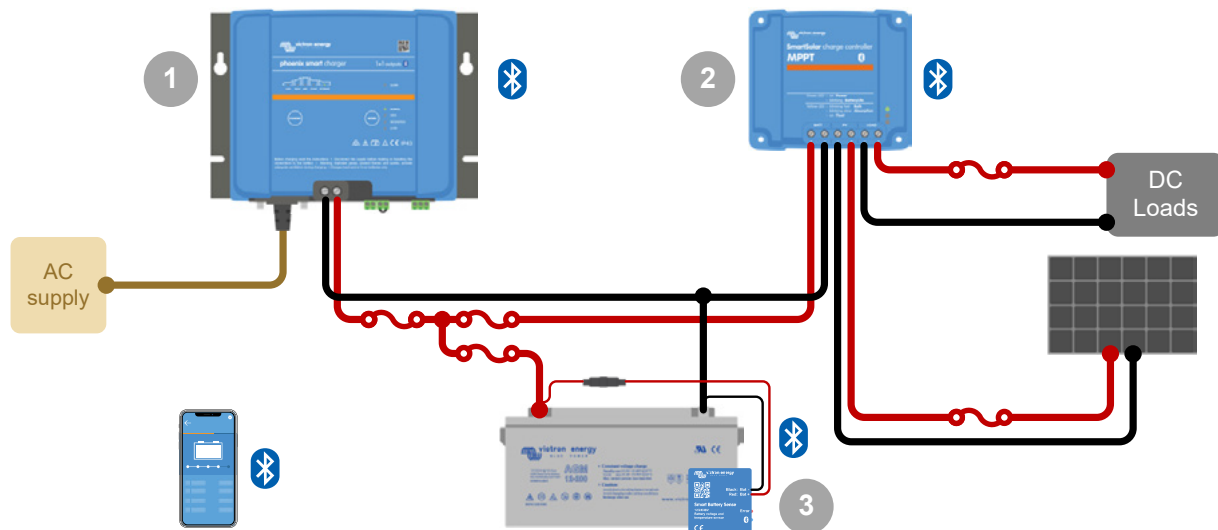


Phoenix Smart IP43 battery charger used to charge a main battery and provides a maintenance charge to a smaller battery, like a generator starter battery.

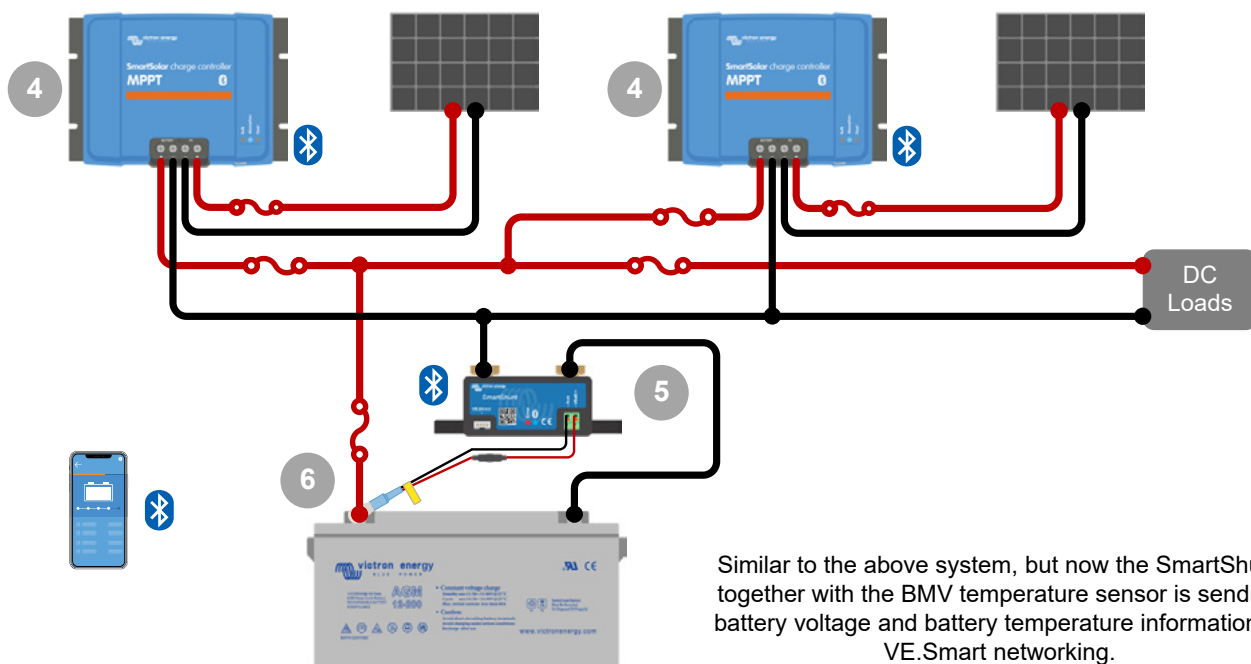


Blue Smart IP22 battery charger with 3 full rated charge outputs, charging 3 batteries simultaneously.

ID	Items and notes
①	Blue Smart IP65 battery charger, available in 12 or 24V, up to 25A. Suitable for lead-acid or for lithium batteries.
②	Phoenix Smart IP43 Charger, available in 1+1 models and in 3 output models in 12 or 24V up to 50A.
③	Blue Smart IP22 Charger, available in single output or 3 output models for 12 or 24V up to 30A.
■	Starter battery.
■	12, 24 or 48V battery or battery bank consisting of multiple batteries in series, parallel or series/parallel.
—	Positive (red) and negative (black) DC cables. For the correct cable sizing see the Wiring Unlimited book.
⚡	DC fuse.



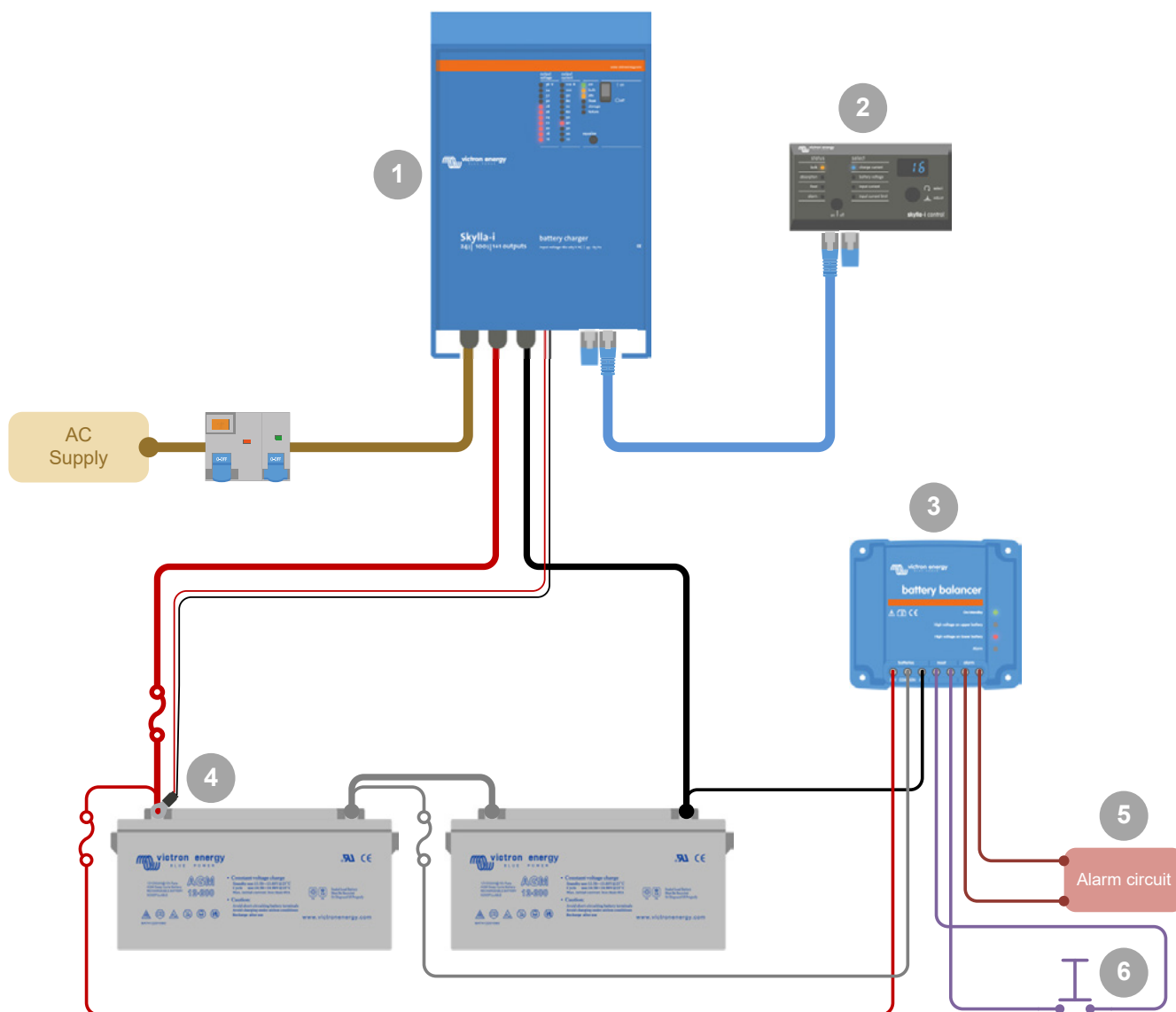
The Smart Battery Sense sends battery temperature and voltage information via Bluetooth and VE.Smart Networking to the solar charger and the AC charger and is used for temperature and voltage compensated charging.









Similar to the above system, but now the SmartShunt together with the BMV temperature sensor is sending battery voltage and battery temperature information to VE.Smart networking.

ID	Items and notes
1	12, 24 or 48V Battery charger.
2	Solar charger with load output, available in 10, 15 or 20A models, for 12, 24 or 48V, with or without Bluetooth.
3	Smart Battery Sense, a wireless battery voltage and temperature sensor.
4	Solar charger, available up to 100A, for 12, 24 or 48V, with or without Bluetooth.
5	SmartShunt battery monitor, available in 500, 100 or 2000A model.
6	Temperature sensor for BMV-712 Smart and BMV-702.
	Solar panel or solar array.
	Small DC fuse, included with the product.
	DC fuse.
	12, 24 or 48V battery or battery bank consisting of multiple batteries in series, parallel or series/parallel.
	Positive (red) and negative (black) DC cables. For the correct cable sizing see the Wiring Unlimited book.

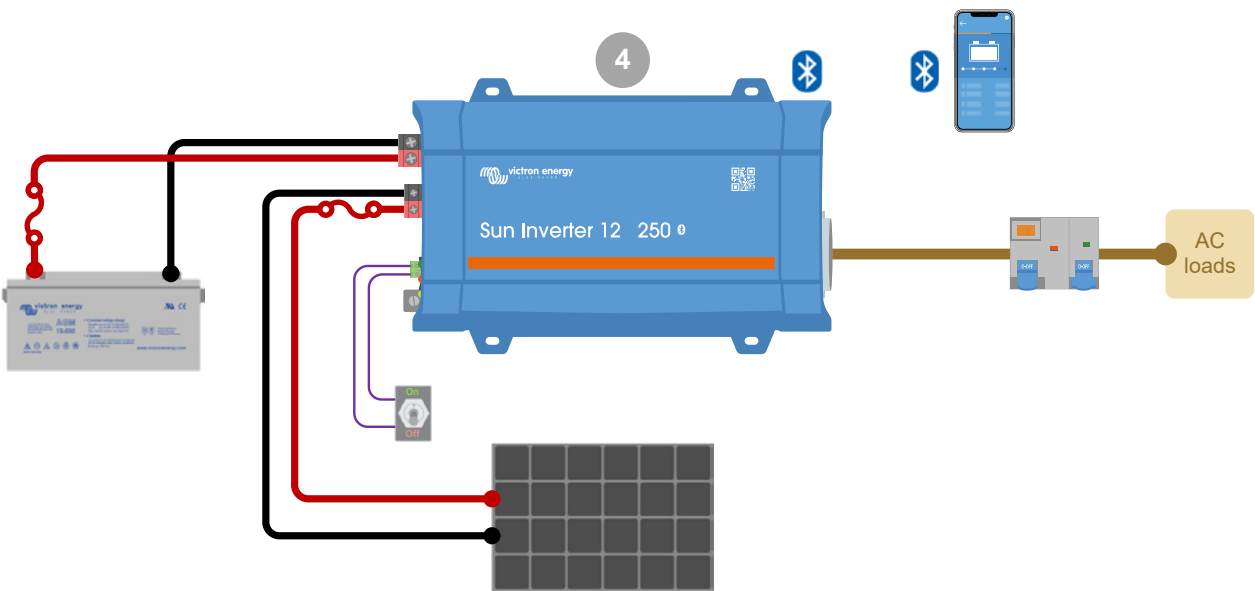
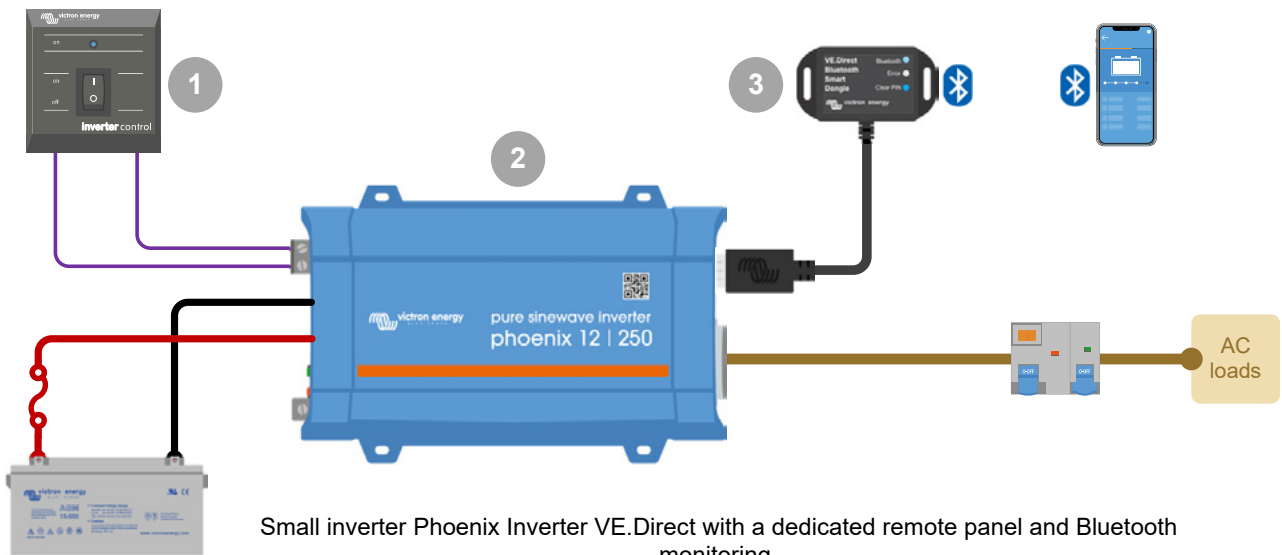











System with a Skylla-i battery charger and a battery balancer. The battery balancer ensures that all individual 12V batteries in a 24V system are charged equally.

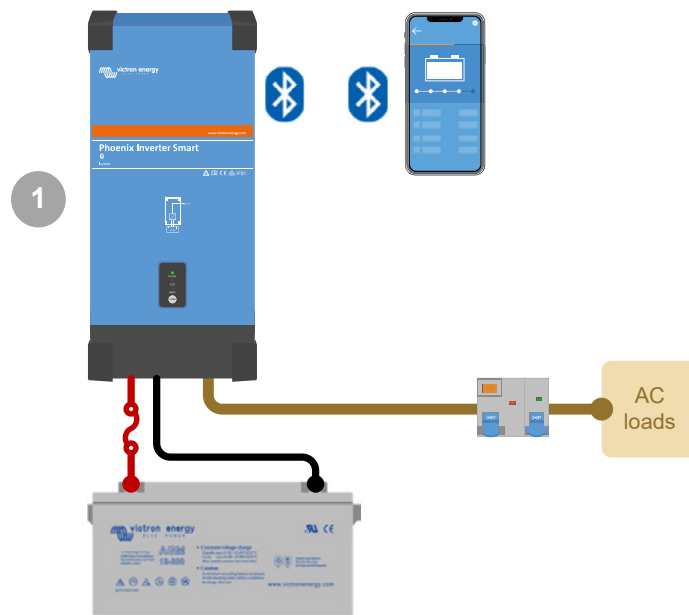
ID	Items and notes
1	Skylla-i battery charger, 24V up to 100A. Or use a Skylla-TG Charger, 24 or 48V up to 100A (also a 3 phase model).
2	The Skylla-i Control GX monitors and controls the Skylla-i battery charger.
3	Battery Balancer. Can be used in 24 or 48V systems. In case of a 48V system 3 balancers are needed.
4	Temperature sensor, ships together with the Skylla-i.
5	Alarm circuit, connected to the battery balancer alarm relay.
6	Alarm reset switch.
	AC cable and AC circuit breaker (CB or MCB) and AC earth fault detector (RCD, RCB or GFC).
	RJ45 UTP cable, available in lengths ranging from 30cm to 30m.
	RJ45 terminator.
	Positive (red) and negative (black) DC cables. For the correct cable sizing see the Wiring Unlimited book.
	12, 24 or 48V battery or battery bank consisting of multiple batteries in series, parallel or series/parallel.
	DC fuse.



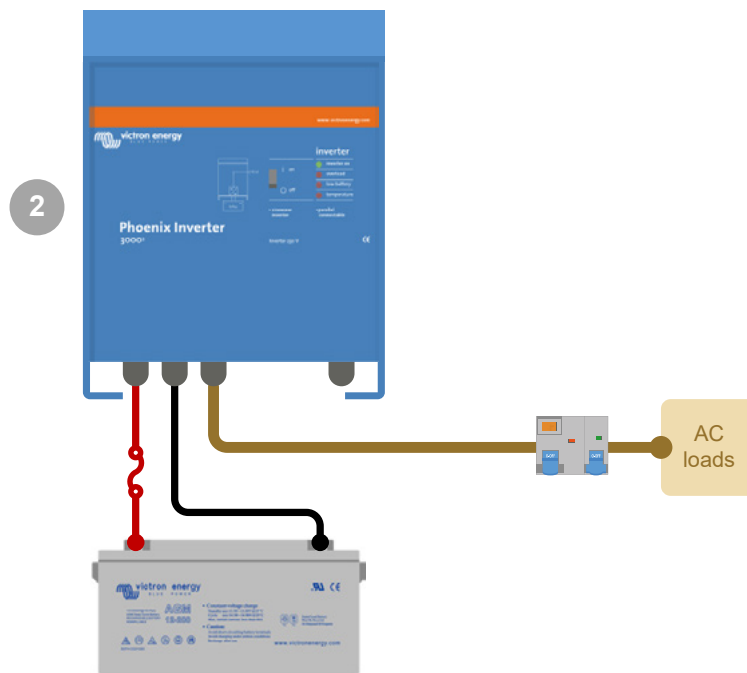


ID	Items and notes
1	Phoenix Inverter Control VE.Direct for on/off control of the Phoenix VE.Direct inverter.
2	Phoenix Inverter VE.Direct, available in 12, 24 or 48V models ranging from 250 up to 1200VA.
3	VE.Direct Bluetooth Smart dongle to enable a Bluetooth connection to the VictronConnect app.
4	Sun Inverter, a 12 or 24V, 250VA inverter with a PWM solar charger rated at 15A for 12V or 10A for 24V.
	Solar panel or solar array.
	AC cable and AC circuit breaker (CB or MCB) and AC earth fault detector (RCD, RCB or GFC).
	Optional remote on/off switch.
	Remote on/off signal wire.
	Positive (red) and negative (black) DC cables. For the correct cable sizing see the Wiring Unlimited book.
	12, 24 or 48V battery or battery bank consisting of multiple batteries in series, parallel or series/parallel.
	DC fuse.







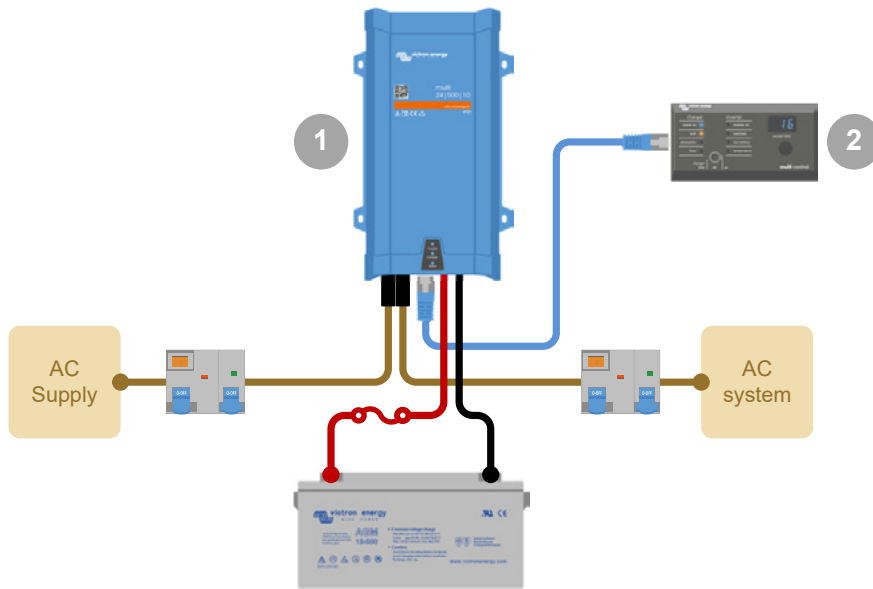


Phoenix Inverter Smart system.

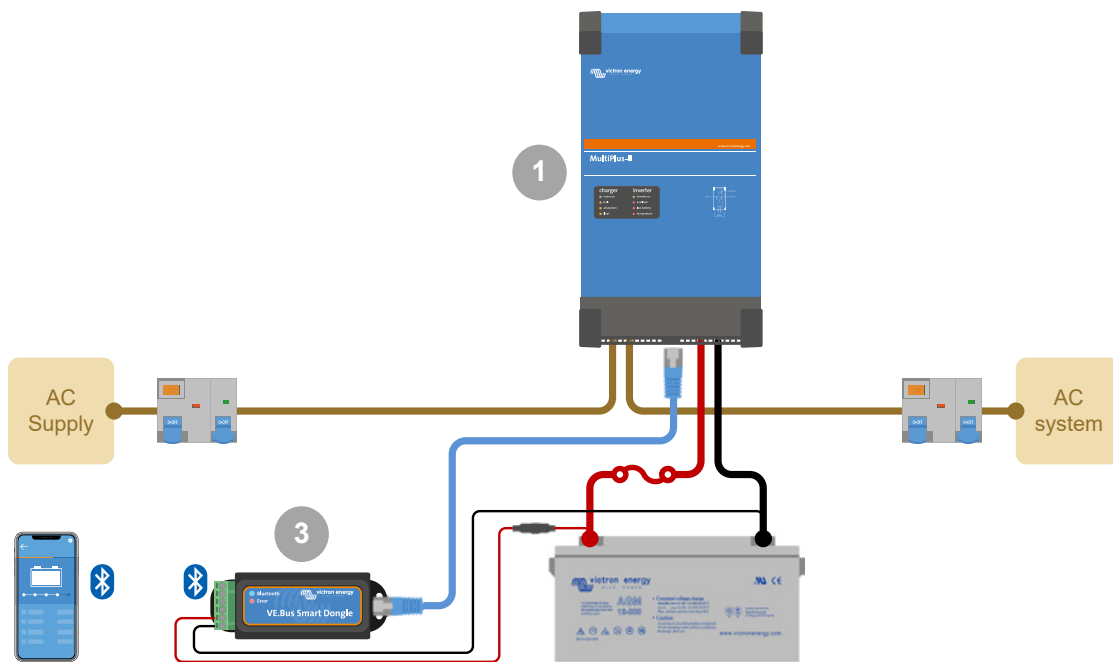


Phoenix Inverter system. Multiple inverters can be connected in parallel and/or in single or 3-phase configurations.






ID	Items and notes
1	The Phoenix Inverter Smart for 12, 24 or 48V systems, available in models ranging from 1600VA to 5kVA.
2	The Phoenix Inverter for 12, 24 or 48V systems, available in a 3 or a 5kVA model.
	AC cable and AC circuit breaker (CB or MCB) and AC earth fault detector (RCD, RCB or GFC).
	Positive (red) and negative (black) DC cables. For the correct cable sizing see the Wiring Unlimited book.
	12, 24 or 48V battery or battery bank consisting of multiple batteries in series, parallel or series/parallel.
	DC fuse.



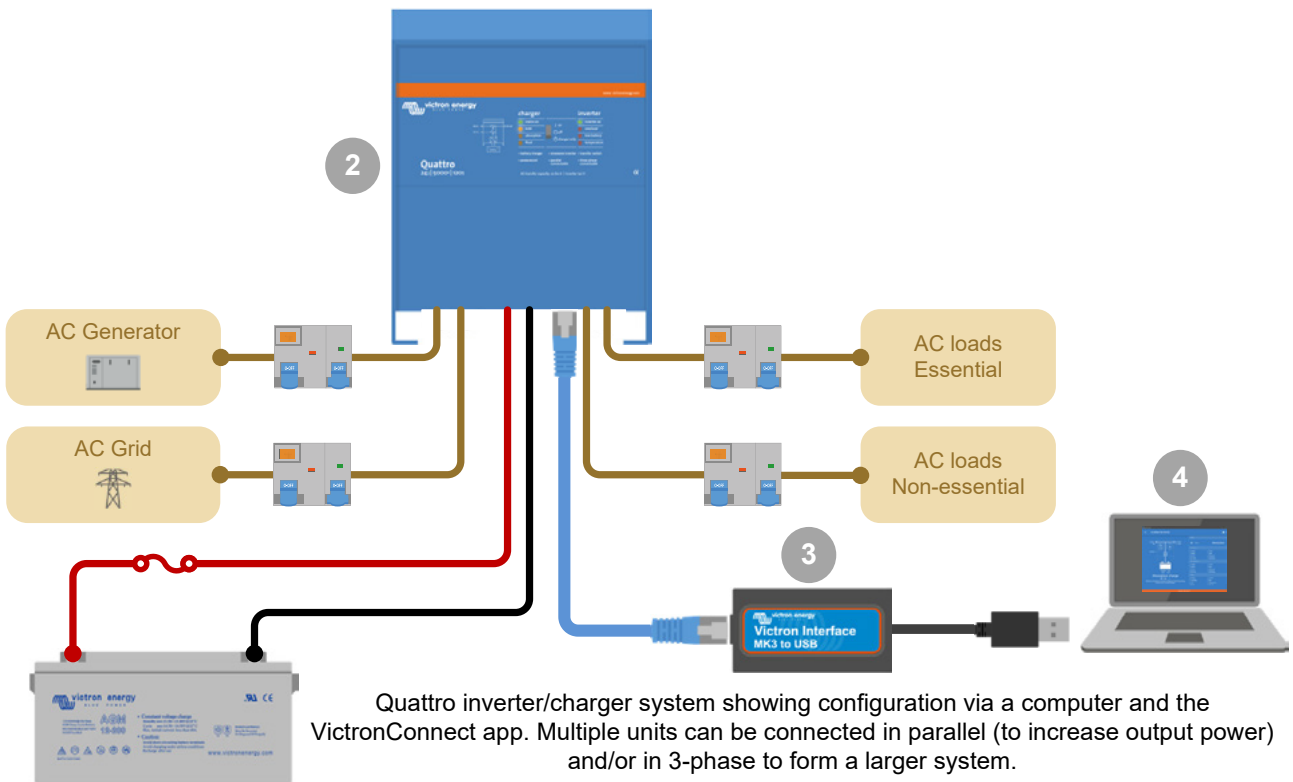
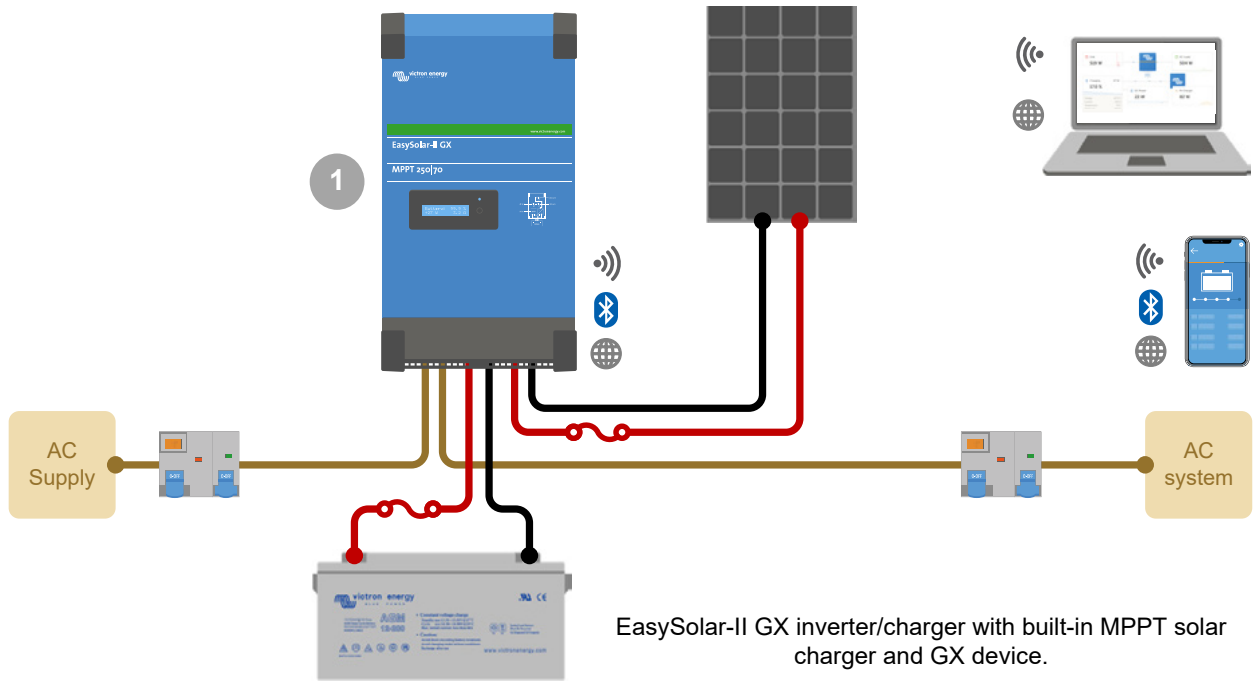
MultiPlus inverter/charger being controlled by a Digital Multi Control panel. Multiple units can be connected in parallel (to increase output power) and/or in 3-phase to form a larger system.








MultiPlus-II inverter/charger being monitored via Bluetooth and the VictronConnect app, via the VE.Bus Smart dongle.

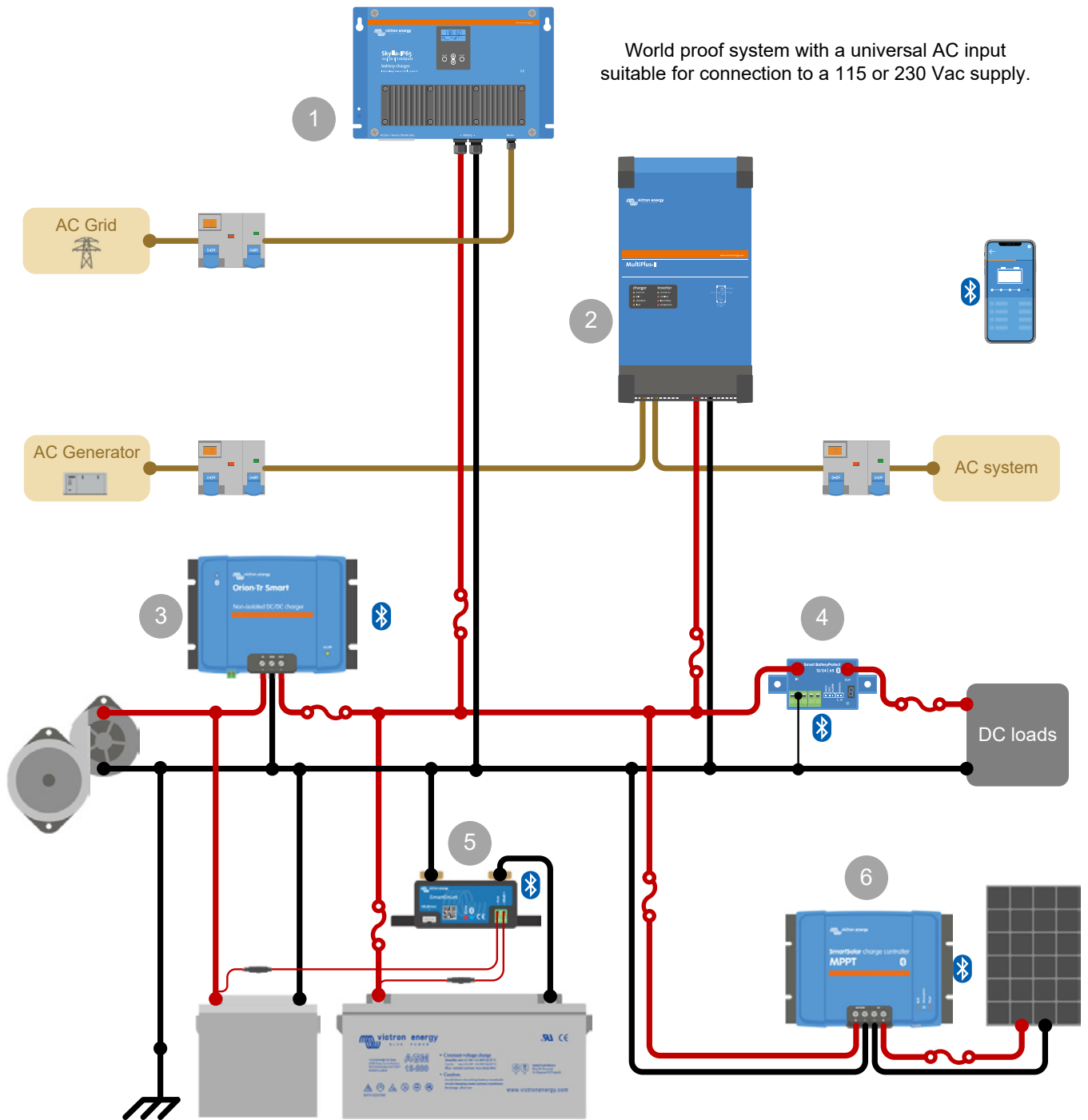
ID	Items and notes
1	MultiPlus or MultiPlus-II inverter/charger for 12, 24 or 48V systems, models ranging from 500VA up to 15kVA.
2	Digital Multi Control 200/200A GX, to remotely view and control the inverter/charger.
3	The VE.Bus Smart dongle for Bluetooth monitoring via the VictronConnect app.
	AC cable and AC circuit breaker (CB or MCB) and AC earth fault detector (RCD, RCB or GFC).
	RJ45 UTP cable, available in lengths ranging from 30cm to 30m.
	Positive (red) and negative (black) DC cables. For the correct cable sizing see the Wiring Unlimited book.
	12, 24 or 48V battery or battery bank consisting of multiple batteries in series, parallel or series/parallel.
	DC fuse.





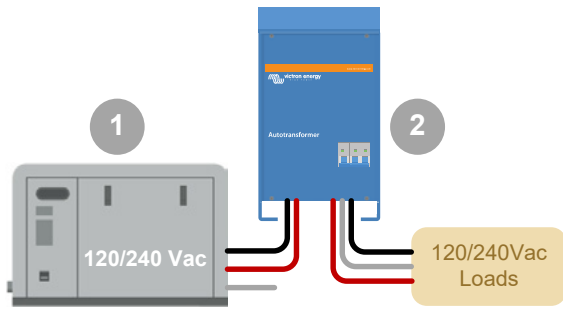
ID	Items and notes
1	EasySolar-II GX inverter/charger with built-in MPPT solar charger and GX device.
2	Quattro inverter/charger, for 12, 24 or 48V systems with power rating ranging from 3 up to 15KVA.
3	Interface MK3-USB for configuration of single and multiple inverter/charger systems via a computer.
4	Computer and the VictronConnect app for inverter/charger configuration
	AC cable and AC circuit breaker (CB or MCB) and AC earth fault detector (RCD, RCB or GFC).
	RJ45 UTP cable, available in lengths ranging from 30cm to 30m.
	Positive (red) and negative (black) DC cables. For the correct cable sizing see the Wiring Unlimited book.
	12, 24 or 48V battery or battery bank consisting of multiple batteries in series, parallel or series/parallel.
	DC fuse.

World proof system with a universal AC input suitable for connection to a 115 or 230 Vac supply.

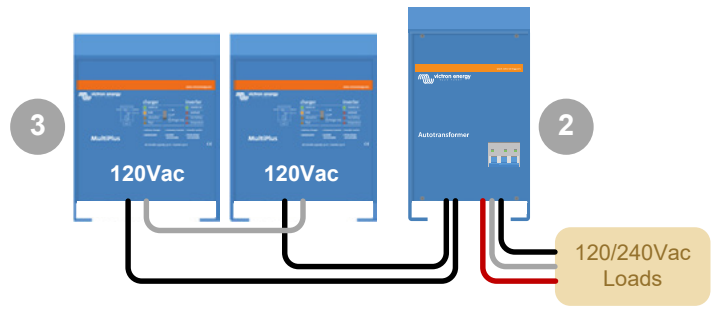


ID	Items and notes
1	Skylla-IP65 battery charger with universal AC input, available in a 12V/70A and 24V/35A model, can be multiple units.
2	MultiPlus(-II) or Quattro(-II) inverter/charger for 12 or 24V systems, models ranging from 500VA up to 15000VA.
3	Orion-Tr Smart DC-DC charger, available with 12 or 24V input and 12 or 24V output.
4	BatteryProtect, available in 65, 100 or 220A models, with or without Bluetooth.
5	SmartShunt battery monitor, available in 500, 1000 or 2000A model.
6	Solar charger, available up to 100A, with or without Bluetooth.
	AC cable and AC circuit breaker (CB or MCB) and AC earth fault detector (RCD, RCB or GFC).
	Positive (red) and negative (black) DC cables. For the correct cable sizing see the Wiring Unlimited book.
	12, 24 or 48V battery or battery bank consisting of multiple batteries in series, parallel or series/parallel.
	DC fuse.
	Solar panel or array.
	Alternator.
	Starter battery.

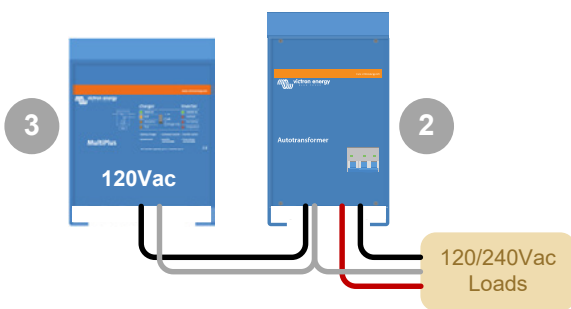




Autotransformer for split phase generator balancing.



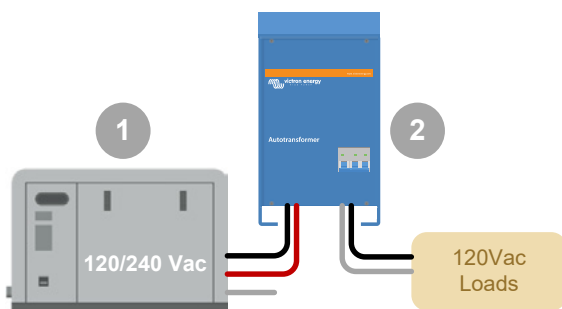
Autotransformer for inverter/charger split phase system balancing.



Autotransformer stepping up a single phase 120Vac supply into a split phase supply



Autotransformer stepping up a single phase 120Vac supply into a single phase 240Vac supply

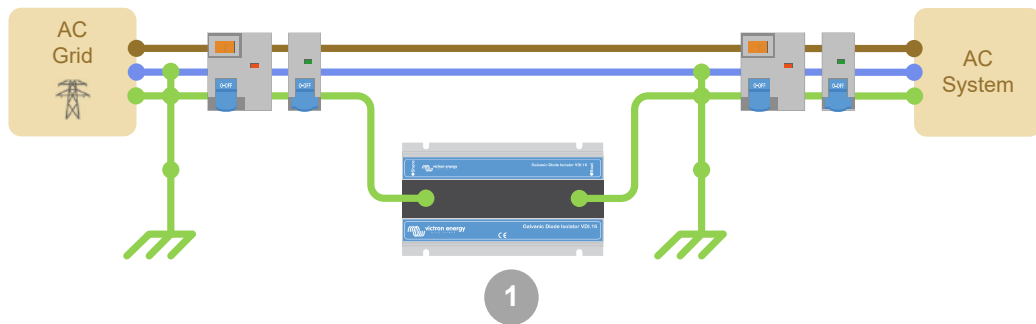


Autotransformer stepping down a split phase generator to run a single phase 120Vac load to utilize the full generator power.

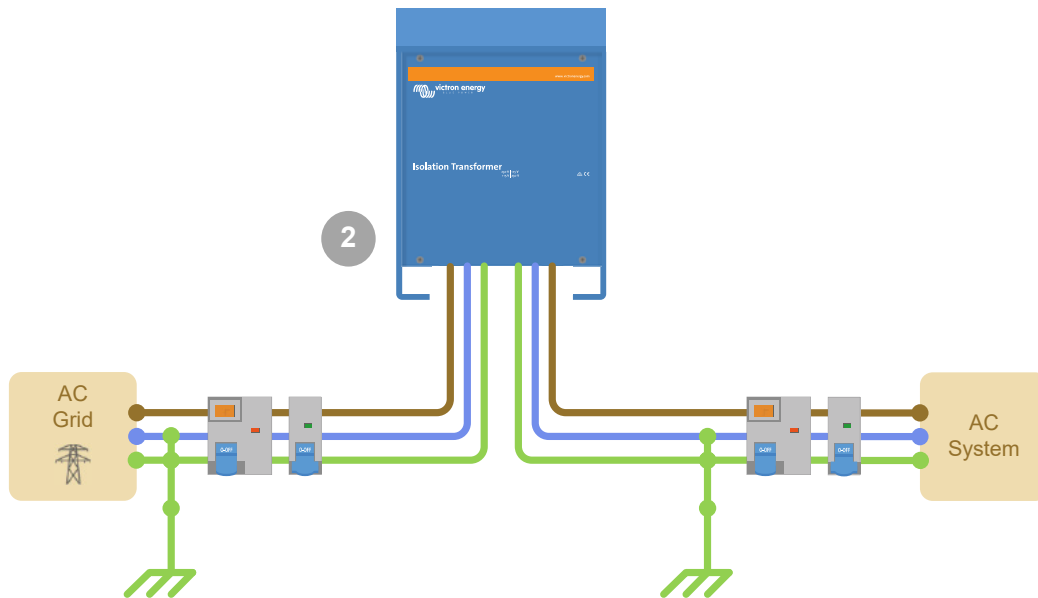


Autotransformer stepping down a single phase 240Vac supply into a single phase 120Vac supply







ID	Items and notes
1	Split phase generator.
2	Auto transformer, available in a 32A and 100A model.
3	Single phase inverter/charger.
— (black)	AC Phase conductor (L1)
— (red)	AC Phase conductor (L2)
— (grey)	AC Neutral conductor (N)



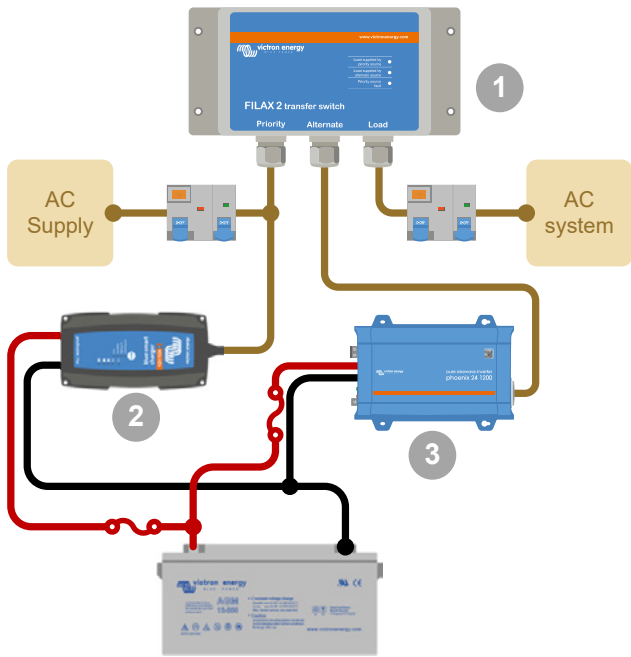
Galvanic isolation, using a Galvanic Isolator.



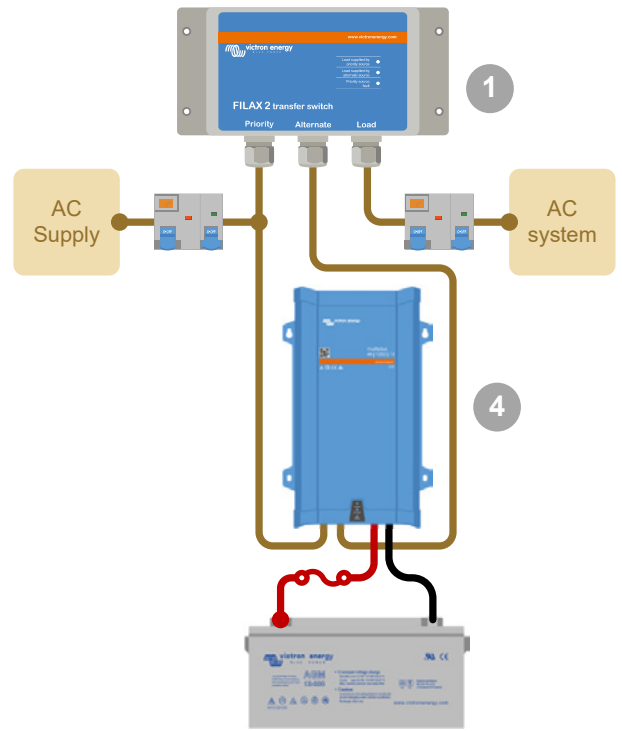
Galvanic isolation or AC voltage conversion, using an Isolation Transformer.

ID	Items and notes
1	Galvanic Isolator
2	Isolation Transformer available in 2000, 3600 and 7000 W models. The 2000 and 3600W models can also convert 120Vac to 240Vac and vice versa.
	AC phase conductor (L1)
	AC neutral conductor (N)
	AC earth conductor (PE)
	AC ground or earth connection
	AC circuit breaker (CB or MCB)
	AC earth fault detector (RCD, RCB or GFC).

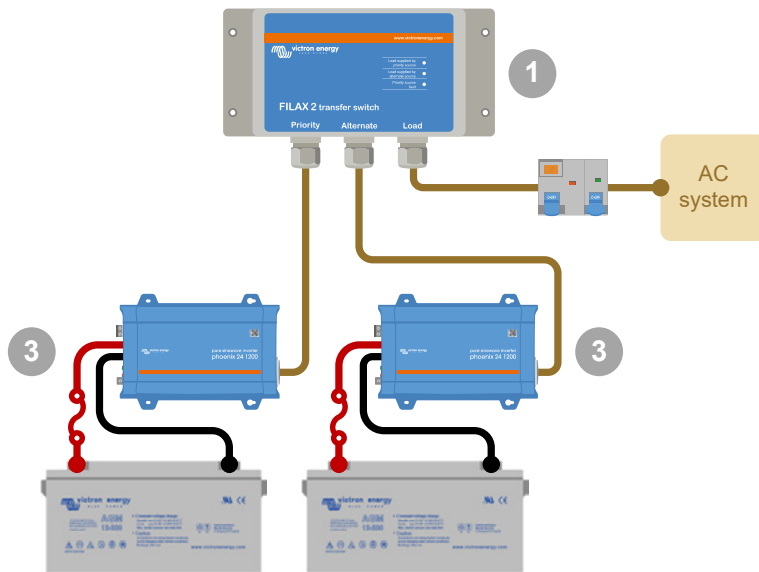




AC backup system, an inverter is the backup for the AC supply (gid or generator). The charger ensures that the battery is charged from the AC supply.



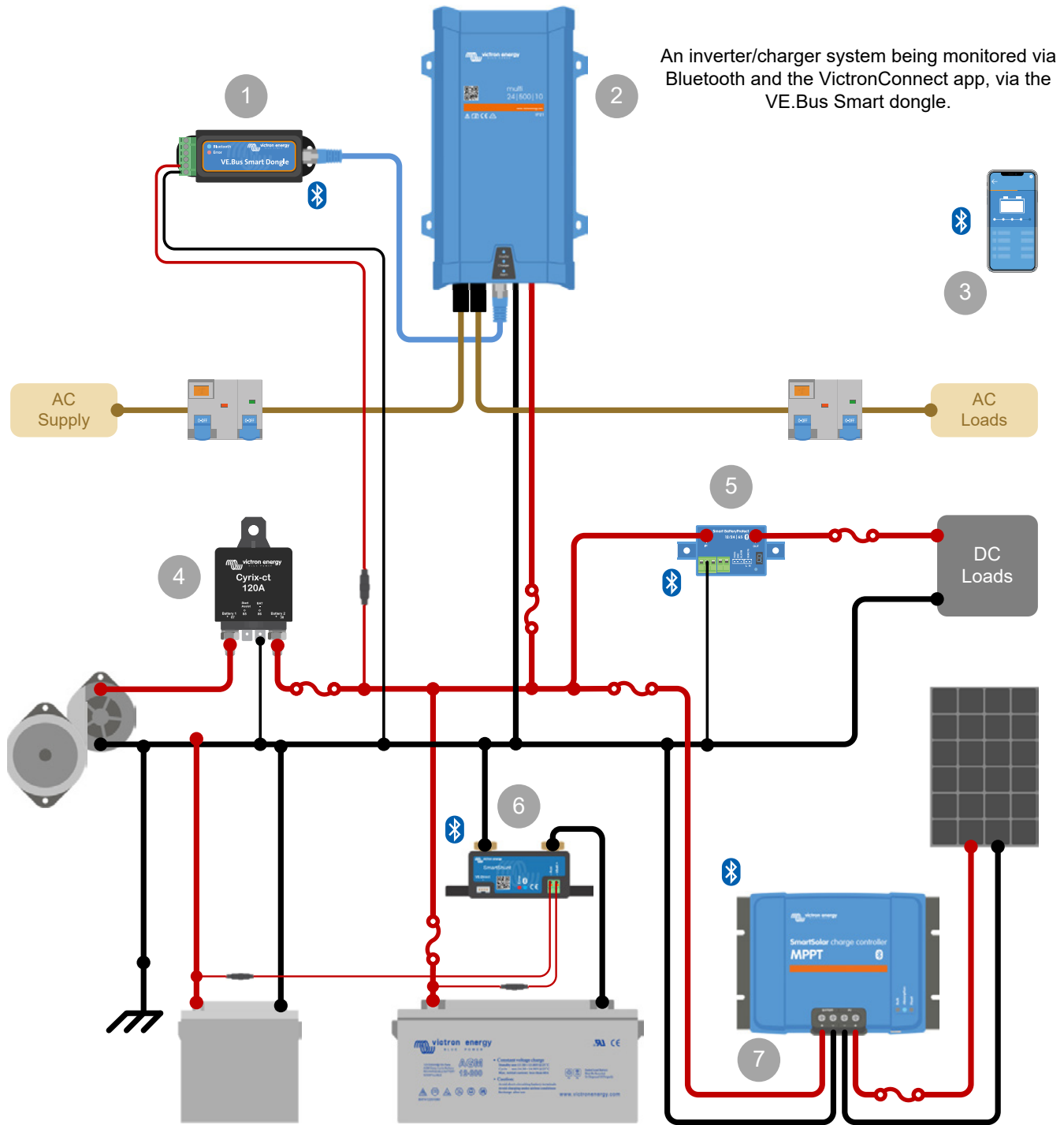
AC backup system, an inverter/charger is the backup for the AC supply (gid or generator).










AC backup system, One inverter is the backup for the other inverter.

ID	Items and notes
1	The Filax 2 is an ultra-fast AC transfer switch, rated to 16A, available in a 230 and a 110Vac model.
2	Blue Smart battery charger or any other battery charger or solar charger can be used.
3	Inverter, any model up to 3kVA for 230Vac systems (or 1600VA for 110Vac systems) can be used.
4	Inverter/charger, any model up to 3kVA for 230Vac systems (or 1600VA for 110Vac systems) can be used.
	AC cable and AC circuit breaker (CB or MCB) and AC earth fault detector (RCD, RCB or GFC).
	12, 24 or 48V battery or battery bank consisting of multiple batteries in series, parallel or series/parallel.
	DC fuse
	Positive (red) and negative (black) DC cables. For the correct cable sizing see the Wiring Unlimited book.

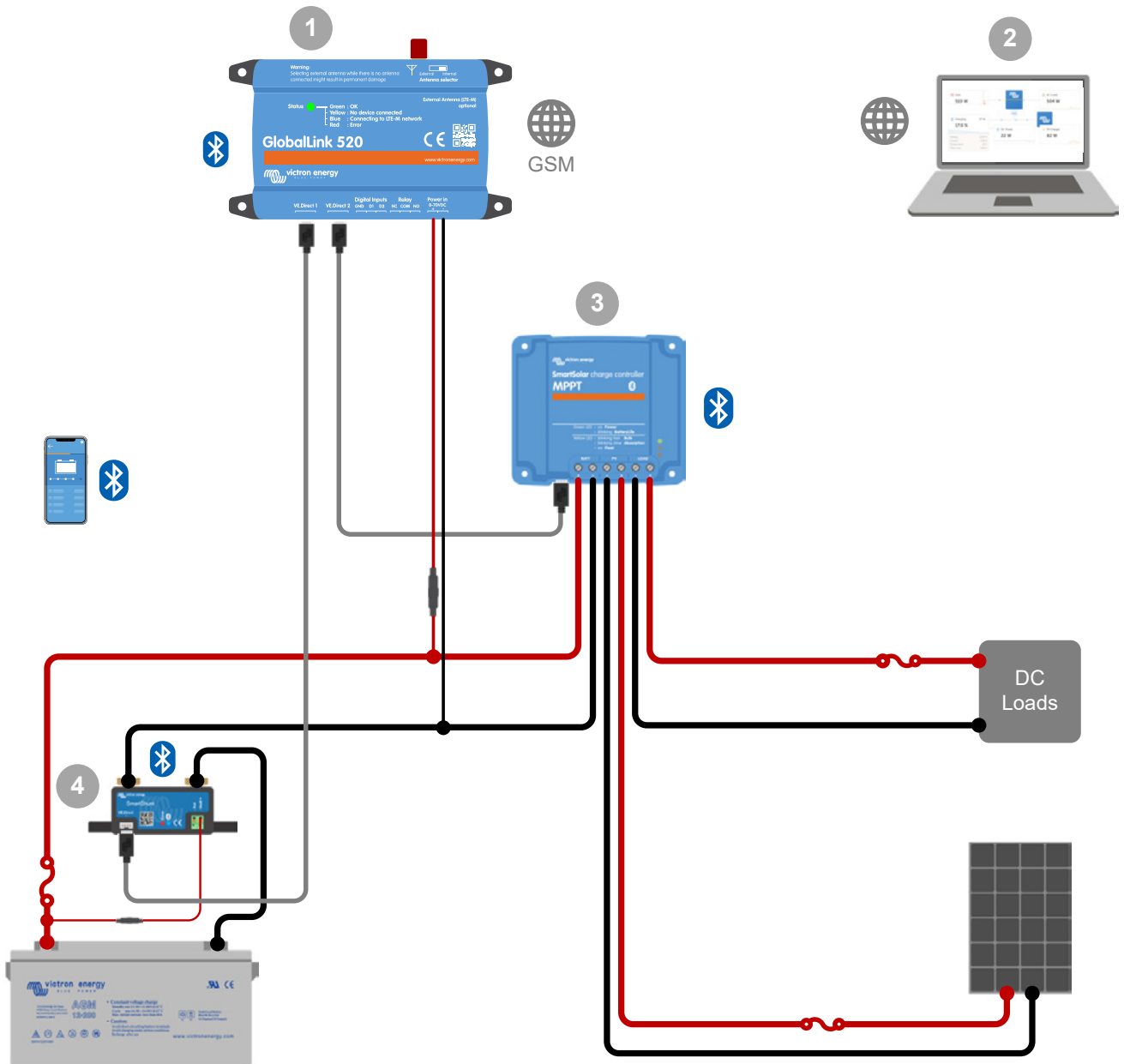








An inverter/charger system being monitored via Bluetooth and the VictronConnect app, via the VE.Bus Smart dongle.

ID	Items and notes
1	VE.Bus Smart dongle allows inverter/charger monitoring via Bluetooth.
2	MultiPlus(-II) or Quattro(-II) inverter/charger for 12, 24 or 48V systems, models ranging from 500VA up to 15kVA.
3	VictronConnect app for monitoring "smart" system parts via Bluetooth and/or use for VE.Smart networking.
4	Cyrix-ct intelligent battery combiner
5	Smart BatteryProtect, available in 65, 100 or 220A models, for 12, 24 or 48V.
6	SmartShunt battery monitor, available in 500, 1000 or 2000A model.
7	Solar charger, available up to 100A, with or without Bluetooth.
	AC cable and AC circuit breaker (CB or MCB) and AC earth fault detector (RCD, RCB or GFC).
	Positive (red) and negative (black) DC cables. For the correct cable sizing see the Wiring Unlimited book.
	12, 24 or 48V battery or battery bank consisting of multiple batteries in series, parallel or series/parallel.
	DC fuse.
	Solar panel or array.
	Alternator.
	Starter battery.

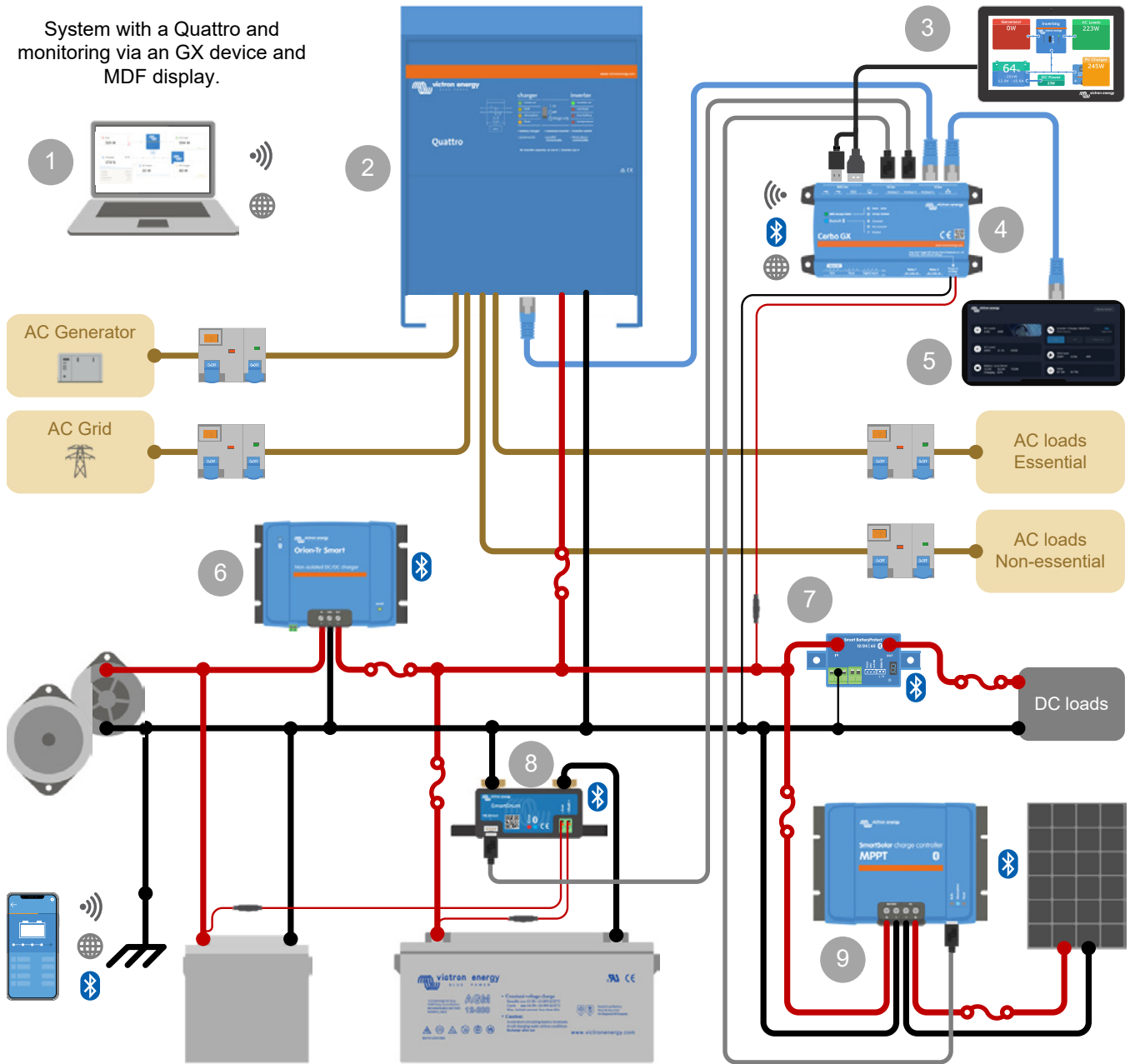













System with a GlobalLink 520, monitoring 2 VE.Direct products via GSM on the VRM portal.

ID	Items and notes
1	GlobalLink 520 for 4G LTE-M connectivity to all VE.Direct devices, free of charge for 5 years.
2	The VRM portal, via a smartphone, tablet or computer.
3	Solar charger, available up to 100A, with or without Bluetooth.
4	SmartShunt battery monitor, available in 500, 1000 or 2000A model.
	Positive (red) and negative (black) DC cables. For the correct cable sizing see the Wiring Unlimited book.
	12, 24 or 48V battery or battery bank consisting of multiple batteries in series, parallel or series/parallel.
	DC fuse.
	Solar panel or array.

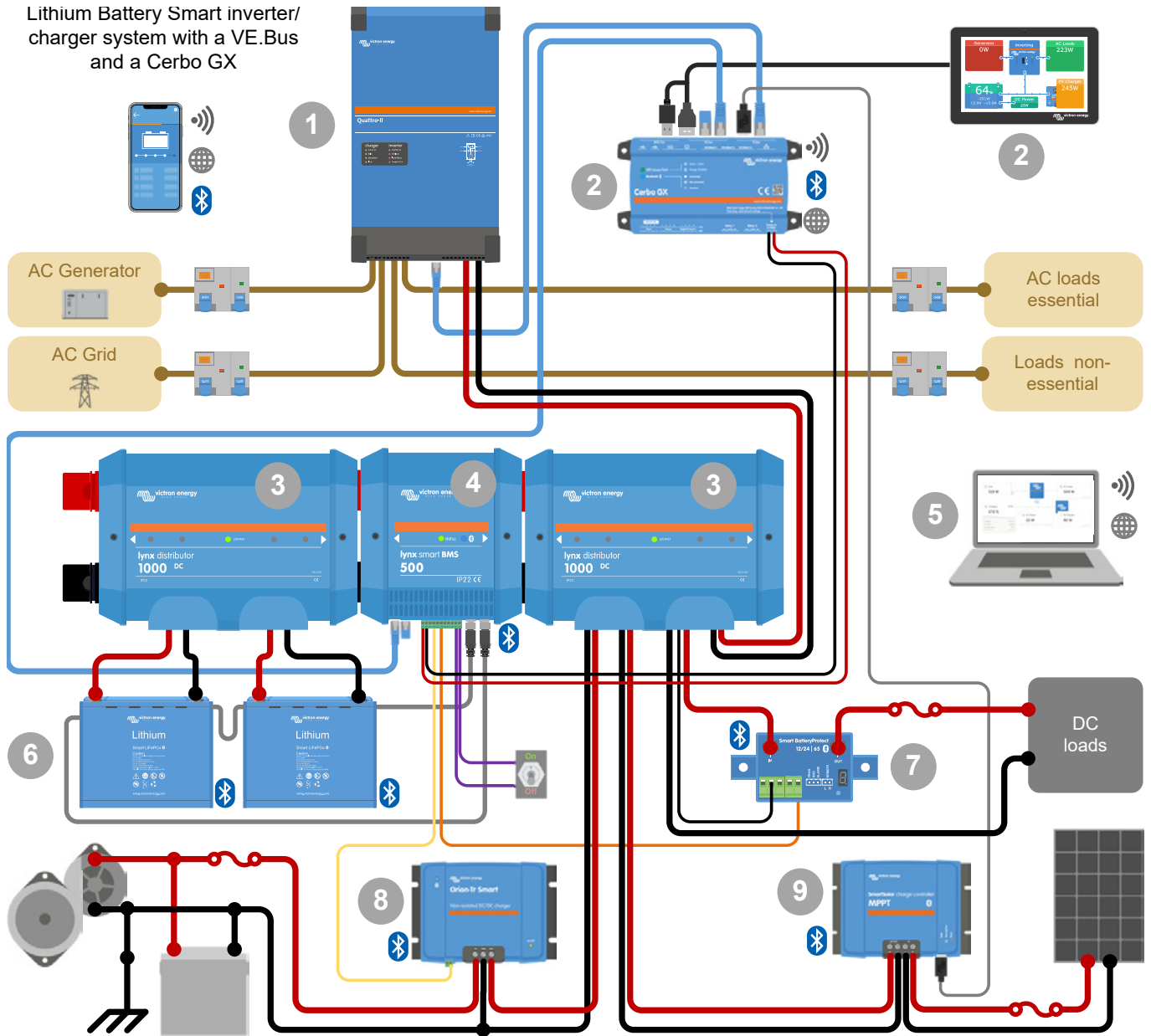
System with a Quattro and monitoring via an GX device and MDF display.



ID	Items and notes
1	The VRM portal, via a smartphone, tablet or computer.
2	MultiPlus(-II) or Quattro(-II) inverter/charger for 12, 24 or 48V systems, models ranging from 500VA up to 15kVA.
3	GX Touch, a display for the Cerbo GX, available in two sizes; 50 or 70, with resolutions; 800 x 480 or 1024 x 600.
4	Cerbo GX for local and remote system monitoring and configuration.
5	Multi-functional display (MFD) receiving system data from the Cerbo GX via an Ethernet connection.
6	Orion-Tr Smart DC-DC charger, available with 12 or 24V input and 12 or 24V output.
7	BatteryProtect, available in 65, 100 or 220A models, for 12, 24 or 48V, with or without Bluetooth.
8	SmartShunt battery monitor, available in 500, 1000 or 2000A model.
9	Solar charger, available up to 100A, for 12, 24 or 48V, with or without Bluetooth.
	RJ45 UTP cable, available in lengths ranging from 30cm to 30m.
	VE.Direct cable is available in lengths ranging from 30cm to 10m.
	AC cable and AC circuit breaker (CB or MCB) and AC earth fault detector (RCD, RCB or GFC).
	Positive (red) and negative (black) DC cables. For the correct cable sizing see the Wiring Unlimited book.
	12, 24 or 48V battery or battery bank consisting of multiple batteries in series, parallel or series/parallel.
	DC fuse.
	Solar panel or array.
	Alternator.
	Starter battery.

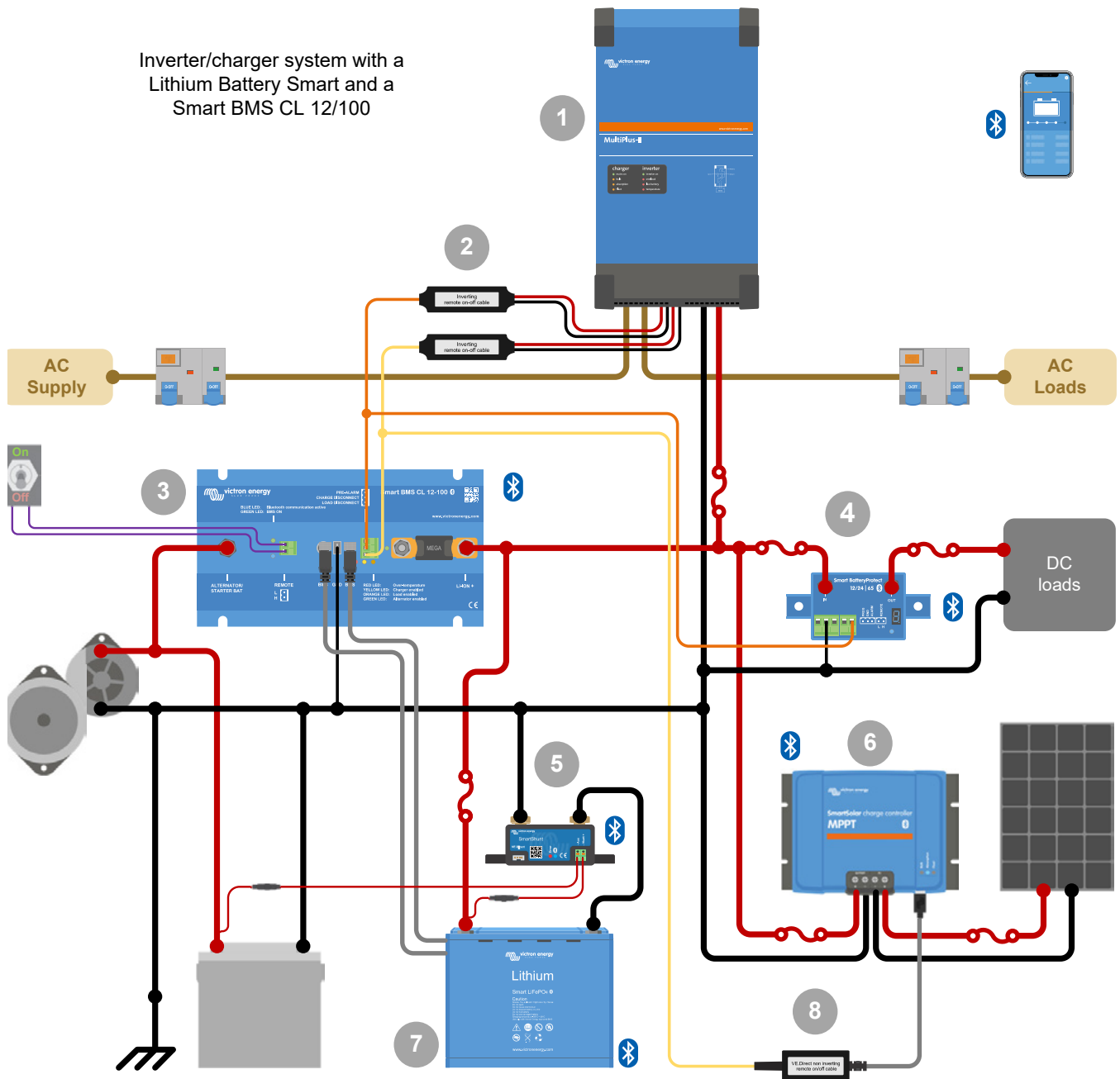


Lithium Battery Smart inverter/charger system with a VE.Bus and a Cerbo GX



ID	Items and notes						
1	MultiPlus(-II) or Quattro(-II) inverter/charger for 12, 24 or 48V systems, models ranging from 500VA up to 15kVA.						
2	Cerbo GX and GX Touch display for local and remote system monitoring and configuration.						
3	The Lynx Distributor is a modular DC busbar with locations for four DC fuses and fuse status monitoring.						
4	Lynx Smart BMS for 12, 24 or 48V, 500A rating with built-in contactor, battery monitor and GX communication.						
5	VRM portal for system monitoring via internet, Wi-Fi or Bluetooth.						
6	A single Lithium Battery Smart or multiples connected in series, creating 12, 24 or 48V.						
7	BatteryProtect, available in 65, 100 or 220A models, for 12, 24 or 48V, with or without Bluetooth.						
8	Orion-Tr Smart DC-DC charger, available with 12 or 24V input and 12 or 24V output.						
9	Solar charger, available up to 100A, for 12, 24 or 48V, with or without Bluetooth.						
	AC cable and AC circuit breaker (CB or MCB) and AC earth fault detector (RCD, RCB or GFC).						
	Orange - do not discharge wire. Yellow - do not charge wire. Purple - remote on/off signal wire.						
	Positive (red) and negative (black) DC cables. For the correct cable sizing see the Wiring Unlimited book.						
	Lithium Battery Smart BMS communication cable is attached to the battery. Extension cables are available.						
	RJ45 UTP cable, available in lengths ranging from 30cm to 30m.		RJ45 terminator.				
	VE.Direct cable is available in lengths ranging from 30cm to 10m.		Remote on/off switch.				
	DC fuse.		Solar panel or array.		Alternator.		Starter battery.

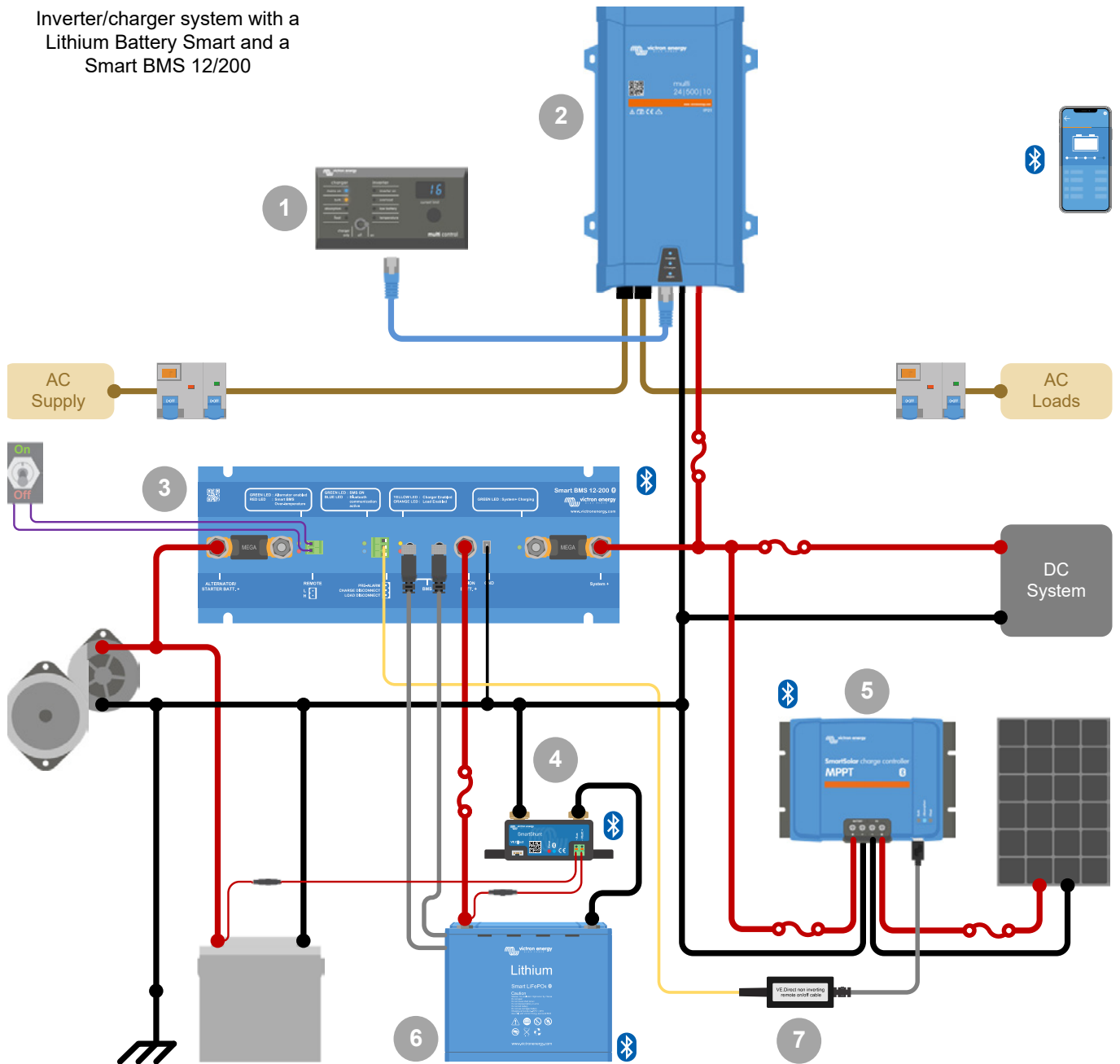
Inverter/charger system with a  
Lithium Battery Smart and a  
Smart BMS CL 12/100



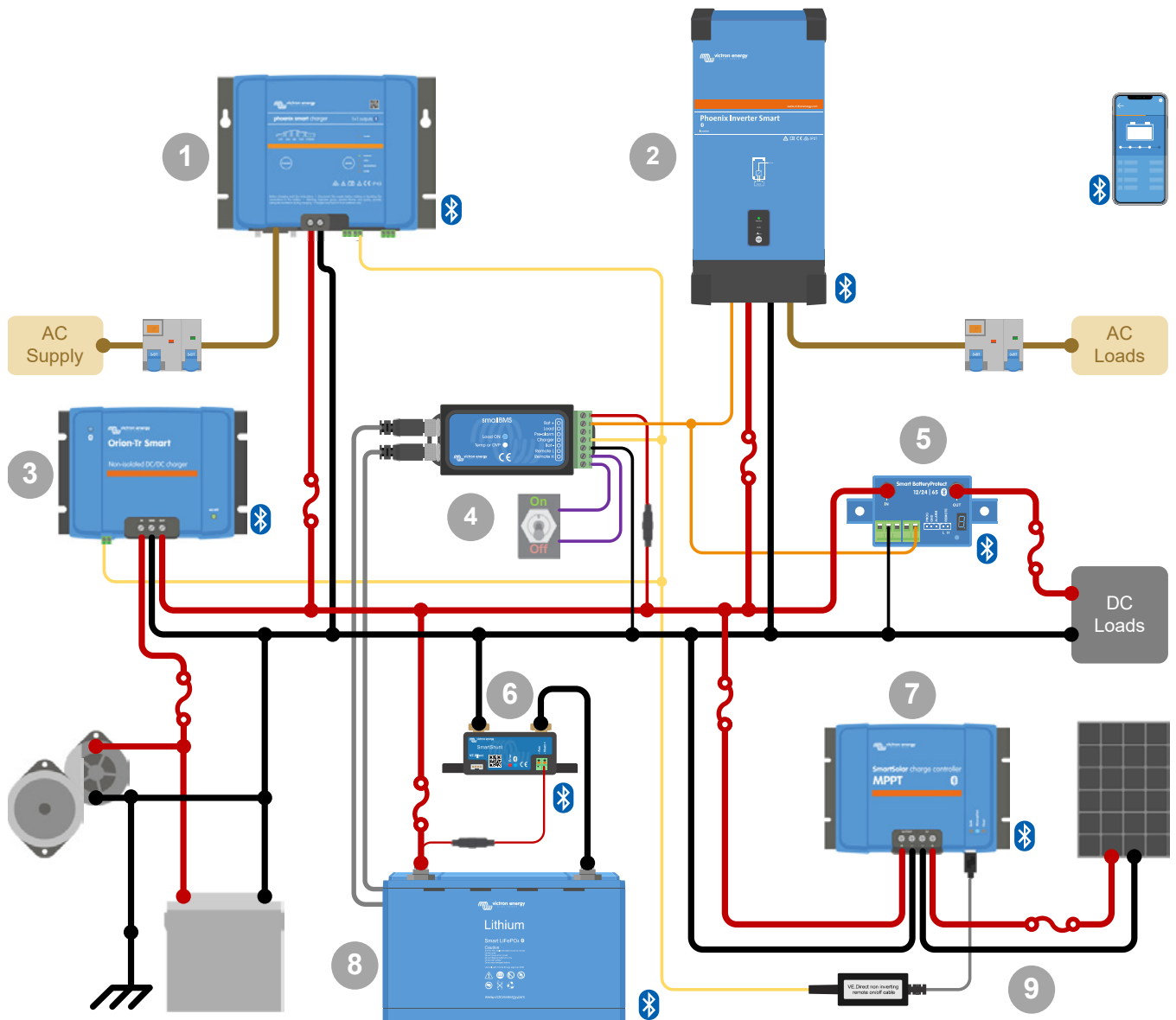
ID	Items and notes
1	Inverter/charger for 12V. Models ranging from 500VA up to 5000VA can be used in this system.
2	2x Inverting remote on/off cable, to stop the inverter/charger charging or inverting controlled by the BMS.
3	Smart BMS CL 12/100 for 12V systems with a 100A alternator port.
4	BatteryProtect, available in 65, 100 or 220A models, with or without Bluetooth.
5	SmartShunt battery monitor, available in 500, 100 or 2000A model.
6	Solar charger, available up to 100A, with or without Bluetooth.
7	A single Lithium Battery Smart 12.8V, or multiples connected in parallel.
8	VE.Direct non inverting remote on/off cable, to enable BMS control via the solar charger VE.Direct port.
	AC cable and AC circuit breaker (CB or MCB) and AC earth fault detector (RCD, RCB or GFC).
	Orange - do not discharge wire. Yellow - do not charge wire.
	Positive (red) and negative (black) DC cables. For the correct cable sizing see the Wiring Unlimited book.
	Lithium Battery Smart BMS communication cable is attached to the battery. Extension cables are available.
	VE.Direct cable is available in lengths ranging from 30cm to 10m.
	Remote on/off switch.
	DC fuse.
	Solar panel or array.
	Alternator.
	Starter battery.



Inverter/charger system with a  
Lithium Battery Smart and a  
Smart BMS 12/200



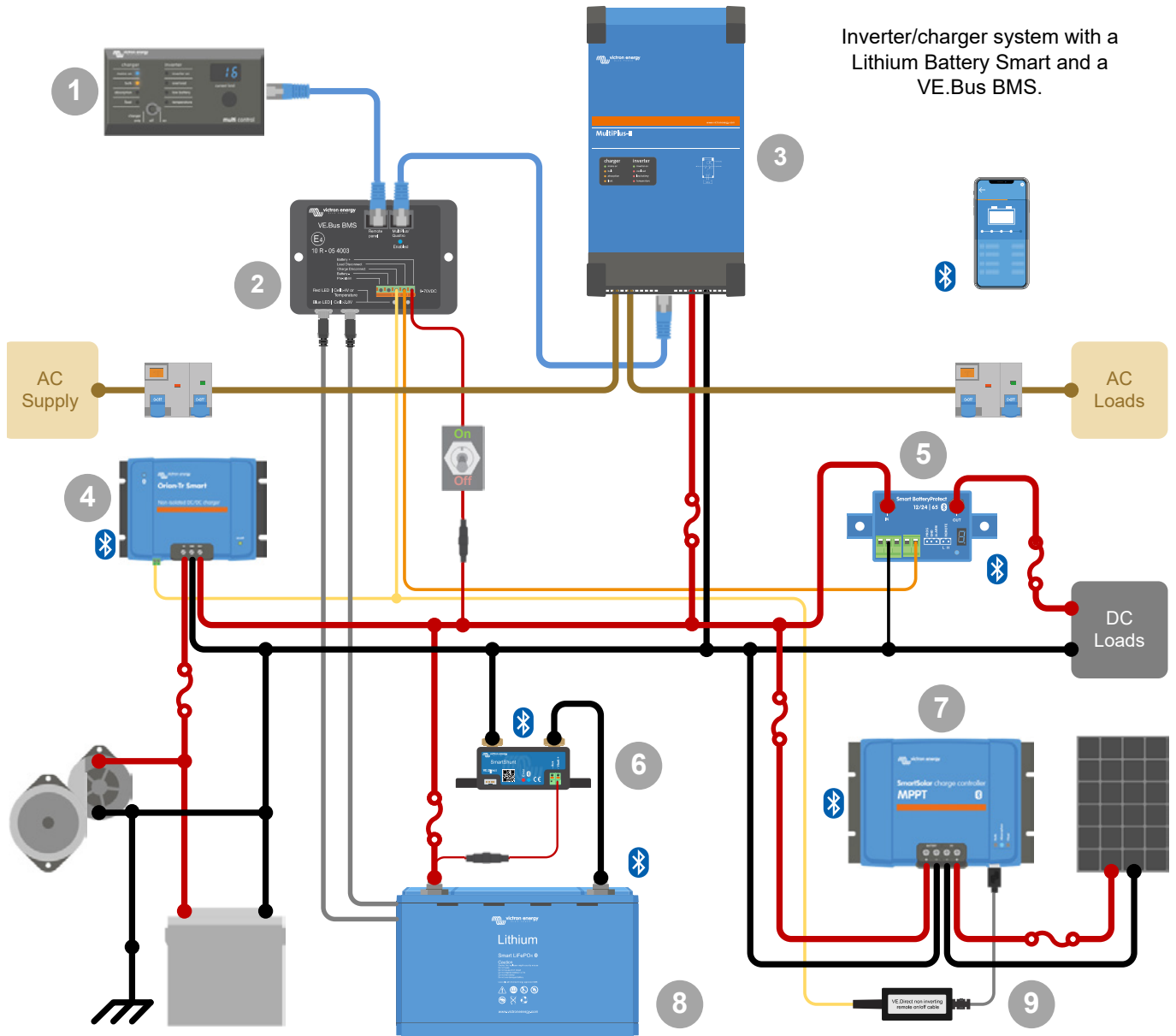
ID	Items and notes						
1	Digital Multi Control 200/200A GX, to remotely view and control the inverter/charger.						
2	Inverter/charger for 12V. Models ranging from 500VA up to 2000VA can be used in this system.						
3	Smart BMS 12/200 for 12V systems with a 100A alternator port and a 200A (400A peak) DC system port.						
4	SmartShunt battery monitor, available in 500, 1000 or 2000A model.						
5	Solar charger, available up to 100A, with or without Bluetooth.						
6	A single Lithium Battery Smart 12.8V, or multiples connected in parallel.						
7	VE.Direct non inverting remote on/off cable, to enable BMS control via the solar charger VE.Direct port.						
	AC cable and AC circuit breaker (CB or MCB) and AC earth fault detector (RCD, RCB or GFC).						
	Yellow - do not charge wire.						
	Positive (red) and negative (black) DC cables. For the correct cable sizing see the Wiring Unlimited book.						
	Lithium Battery Smart BMS communication cable is attached to the battery. Extension cables are available.						
	RJ45 UTP cable, available in lengths ranging from 30cm to 30m.		RJ45 terminator.				
	VE.Direct cable is available in lengths ranging from 30cm to 10m.		Remote on/off switch.				
	DC fuse.		Solar panel or array.		Alternator.		Starter battery.



Inverter/charger system with a Lithium Battery Smart and a smallBMS.

ID	Items and notes						
1	Phoenix Smart IP43 battery charger.						
2	Phoenix Inverter Smart, available for 12, 24 or 48V systems models ranging from 1600VA to 5000VA.						
3	Orion Tr-Smart DC-DC charger, available with 12 or 24V input and 12 or 24V output.						
4	SmallBMS with pre-alarm, a battery management for Lithium battery Smart systems.						
5	BatteryProtect, available in 65, 100 or 220A models, for 12, 24 or 48V, with or without Bluetooth.						
6	SmartShunt battery monitor, available in 500, 1000 or 2000A model.						
7	Solar charger, available up to 100A, for 12, 24 or 48V, with or without Bluetooth.						
8	A single Lithium Battery Smart or multiples connected in series, parallel or series/parallel creating 12, 24 or 48V.						
9	VE.Direct non inverting remote on/off cable, to enable BMS control via the solar charger VE.Direct port.						
	AC cable and AC circuit breaker (CB or MCB) and AC earth fault detector (RCD, RCB or GFC).						
	Orange - do not discharge wire. Yellow - do not charge wire.						
	Positive (red) and negative (black) DC cables. For the correct cable sizing see the Wiring Unlimited book.						
	Lithium Battery Smart BMS communication cable is attached to the battery. Extension cables are available.						
	RJ45 UTP cable, available in lengths ranging from 30cm to 30m.		RJ45 terminator.				
	VE.Direct cable is available in lengths ranging from 30cm to 10m.		Remote on/off switch.				
	DC fuse.		Solar panel or array.		Alternator.		Starter battery.





ID	Items and notes						
1	Digital Multi Control 200/200A GX, to remotely view and control the inverter/charger.						
2	The VE.Bus BMS directly controls inverter/chargers via VE.Bus in a 12, 24 or 48V Lithium Battery Smart system.						
3	MultiPlus(-II) or Quattro(-II) inverter/charger for 12, 24 or 48V systems, models ranging from 500VA up to 15kVA.						
4	Orion-Tr Smart DC-DC charger, available with 12 or 24V input and 12 or 24V output.						
5	BatteryProtect, available in 65, 100 or 220A models, for 12, 24 or 48V, with or without Bluetooth.						
6	SmartShunt battery monitor, available in 500, 1000 or 2000A model.						
7	Solar charger, available up to 100A, for 12, 24 or 48V, with or without Bluetooth.						
8	A single Lithium Battery Smart or multiples connected in series, parallel or series/parallel creating 12, 24 or 48V.						
9	VE.Direct non inverting remote on/off cable, to enable BMS control via the solar charger VE.Direct port.						
	AC cable and AC circuit breaker (CB or MCB) and AC earth fault detector (RCD, RCB or GFC).						
	Orange - do not discharge wire. Yellow - do not charge wire.						
	Positive (red) and negative (black) DC cables. For the correct cable sizing see the Wiring Unlimited book.						
	Lithium Battery Smart BMS communication cable is attached to the battery. Extension cables are available.						
	RJ45 UTP cable, available in lengths ranging from 30cm to 30m.		RJ45 terminator.				
	VE.Direct cable is available in lengths ranging from 30cm to 10m.		Remote on/off switch.				
	DC fuse.		Solar panel or array.		Alternator.		Starter battery.





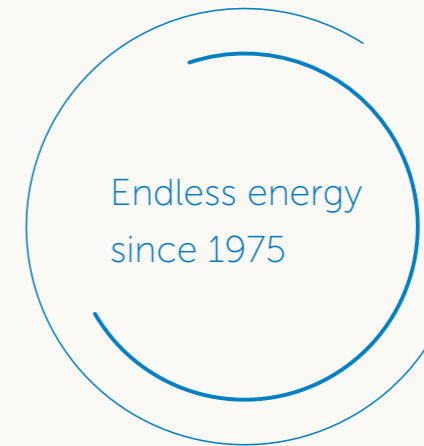
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At Victron Energy we're as dedicated and driven to making and improving power solutions today as we were when we started in 1975. Thanks to our customer feedback loop, data and knowledge sharing, we innovate 24/7. We are powered by know-how, it keeps us going and our users going, ensuring peace of mind in off-grid for years to come.



01



### It's not one thing that makes it all work.

Our modular, robust and connected marine systems have been proven to deliver unequalled reliability time and time again, even in the harshest of climates. But it's our unique combination of up-to-date hard- and software, intelligent monitoring apps, the network of highly trained authorized professionals and widespread repair centers that turns a Victron Energy system into an unbeatable system, that is powered by know-how.

02



### Reliability powers long service life cycles.

When making power supply investment decisions, calculations purely based on price can be deceptive. Their true performance and expected service life cycle are equally important. Good thing Victron Energy equipment lives up to their specifications, both in terms of performance and expected life cycle (when used as designed). Our 5 or 10 year warranty and fair and fast repair policies mean your investments are protected and under most circumstances, won't let you down.

03



### How efficiency translates into great cost-effectiveness.

With battery-based systems, efficiency is always key to providing great levels of cost-effectiveness. From our incredibly efficient SmartSolar Charge Controllers to the way our inverter/chargers can intelligently control and minimise generator use, with a Blue Power system you can be sure that all the details are thought through. This, combined with our reputation for extreme resilience and expected life cycles, translates into cost-effective solutions, especially when compared to 'cheaper' options.

04



### Intelligent monitoring means optimized systems.

Monitoring is crucial to fine tune and optimize energy harvest and use based on ever changing circumstances. With Victron you can experience the power of know-how right from your hand. Through our industry leading and free Victron-Connect app, you always have perfect control over your system from wherever you are. With our app and VRM portal you can monitor the complete system, change settings and catch potential issues early by programming alerts and alarms.

05



### Our worldwide network of authorized dealers is by your side.

Our global network of ±1000 highly trained distributors, installers and service partners are always on hand to help. From stock advice, installation recommendations, after-care and technical support.

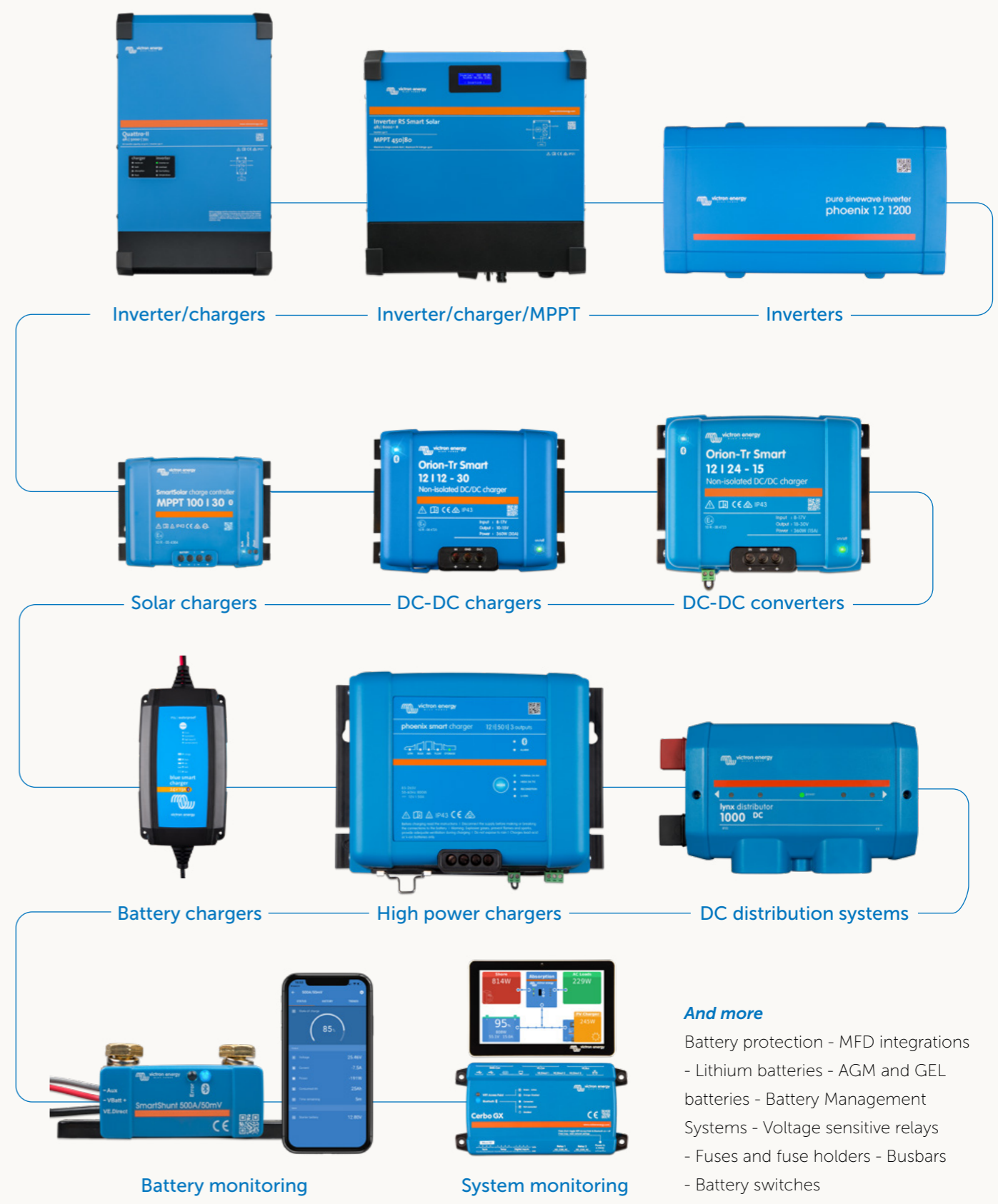
With the Victron Energy team, their partners and lively community you can always be sure the power of know-how is by your side.

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