



Marine System booklet



Energy. Anytime. Anywhere.

Photo on front cover

Engine room of the Swiss Passenger vessels Forch and Zimmermann from the Zürichsee Schifffahrtsgesellschaft showing a hybrid electric three phase inverter/charger system installed by LEAB.

For more information see:

<https://www.victronenergy.com/blog/2020/08/25/hybrid-electric-vessel-powering-across-zurich-lake/>

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Introduction

Victron Energy has a very large range of components. Enabling you to construct basic, advanced, complex and bespoke systems. This booklet assists in system design, it covers a number of basic systems and system concepts.

For more information on the products used in these systems, navigate to the product pages on www.victronenergy.com. Each product has a dedicated product page that provides all necessary product information, such as product data sheets, product manuals, more system examples, enclosure drawings and certificates.

You might already know how to design a system or you might need help with this. Either way, there are a variety of avenues for you:

- Use the Victron design resources, such as the Victron product pages on the [Victron Energy website](http://www.victronenergy.com).
- The Victron website also contains additional resources, such as the [Energy Unlimited](#) book, the [Wiring Unlimited](#) book and a large variety of [technical papers](#).
- If you need to up-skill, navigate to the [Victron Professional](#) website and access a large range of training modules.
- If you need help, hop on to the [Victron Community](#) website. Here you will find a large and active group of experienced Victron users who can help you answer your questions, or alternatively use the very large and easy searchable database of already answered questions.
- Last, but not least, get in touch with one of our [dealers or distributors](#), 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 bespoke electrical system.

Victron Energy website



<https://ve3.nl/s9th>

Wiring Unlimited book



<https://ve3.nl/wiringunlimited>

Victron Professional



https://ve3.nl/victron_professional

Victron Community



https://ve3.nl/Victron_Community

Victron Energy - Where to buy

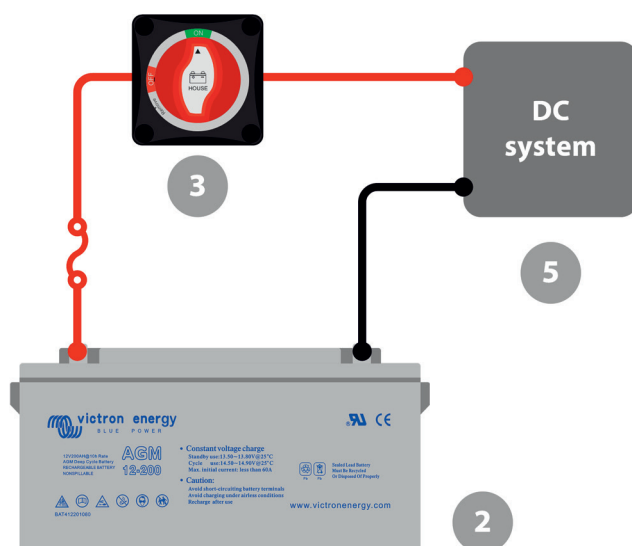


https://ve3.nl/where_to_buy

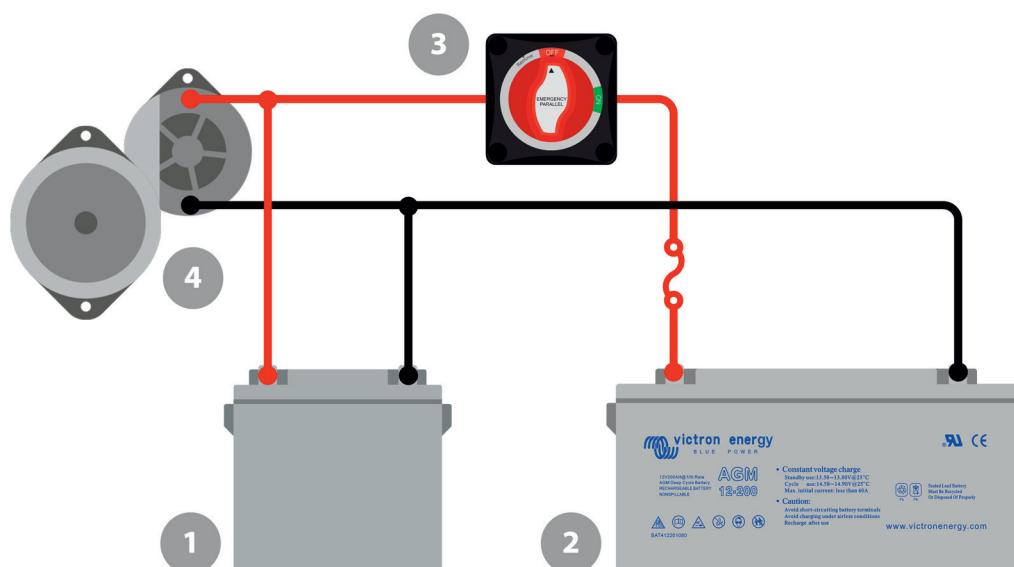
This booklet and the above mentioned product and technical information is also available in other languages on our website.

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Battery Switch systems



The Battery Switch used to "emergency parallel" the starter battery to the main (house) battery.

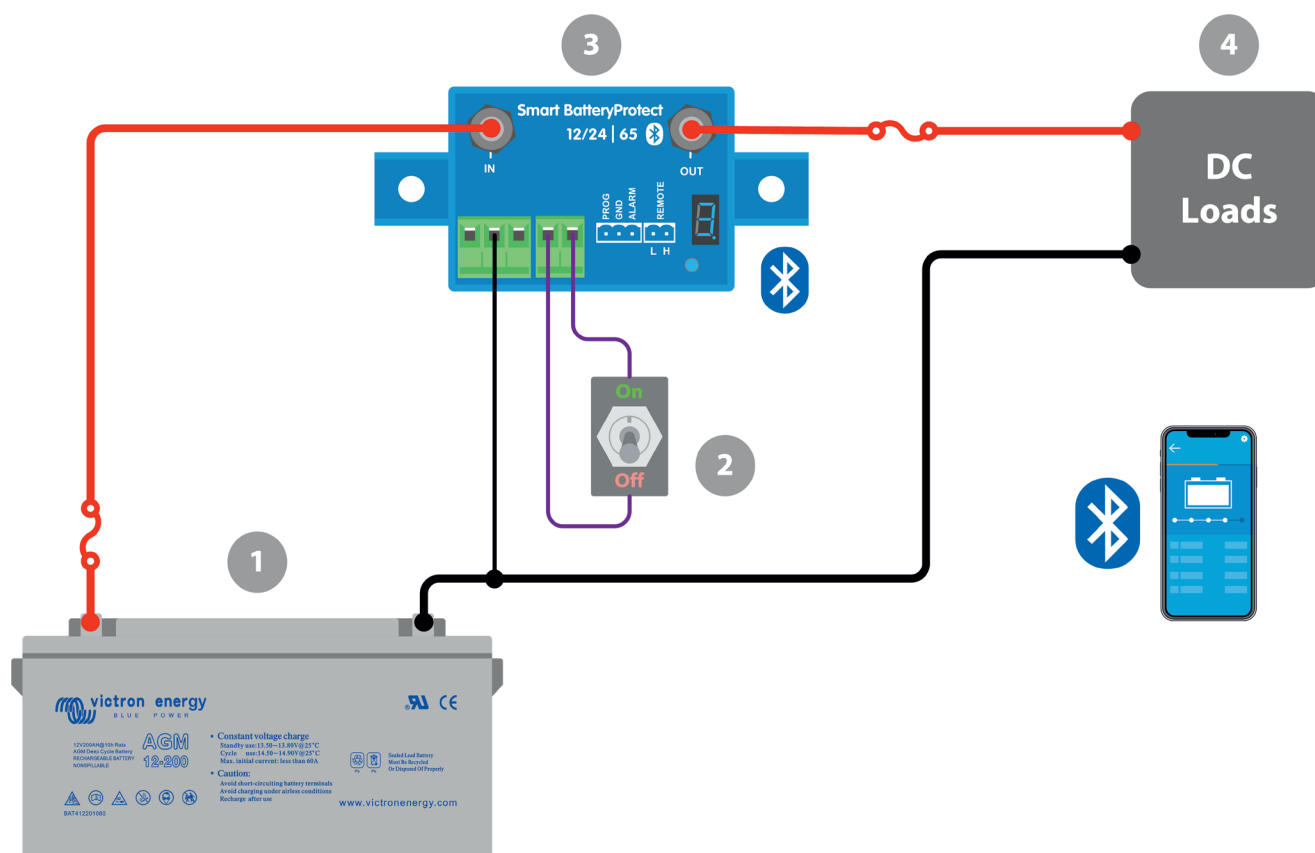


The Battery Switch used to connect or disconnect the DC system (house system) from the battery.

ID	Item and notes
1	Starter battery.
2	Main battery (house battery).
3	Battery Switch 275A, suitable for 12, 24 or 48V systems.
4	Engine and alternator.
5	DC system (chargers and loads).
	Positive (red) and negative (black) DC wiring. For more information on wiring see the Wiring Unlimited book .
	DC fuse. A wide range of DC fuses and fuse holders are available from Victron Energy. For fuse ratings see the product manuals or the Wiring Unlimited book .

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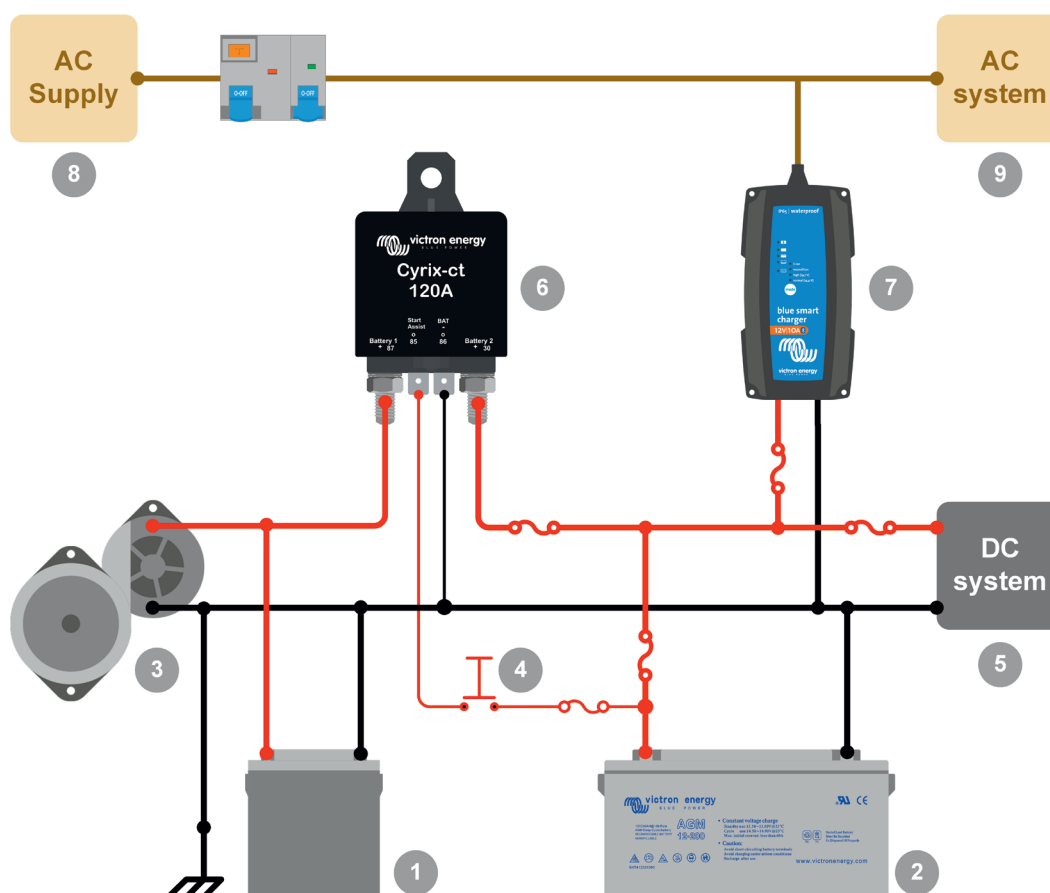
BatteryProtect system



ID	Item and notes
1	Main battery (house battery).
2	Remote on/off switch.
3	The Smart BatteryProtect disconnects the DC loads as soon as the battery voltage gets too low. Available in versions with Bluetooth (Smart BatteryProtect) or without Bluetooth (BatteryProtect) for 12V, 24V or 48V systems in 65A, 100A and 220A current ratings.
4	DC loads (no chargers).
	Bluetooth communication, use with the VictronConnect app for monitoring, configuration and inter-product communication (VE.Smart Networking).
	VictronConnect app to monitor and configure all Bluetooth enabled Victron "Smart" products.
	Positive (red) and negative (black) DC wiring. For more information on wiring see the Wiring Unlimited book .
	DC fuse. A wide range of DC fuses and fuse holders are available from Victron Energy. For fuse ratings see the product manuals or the Wiring Unlimited book .

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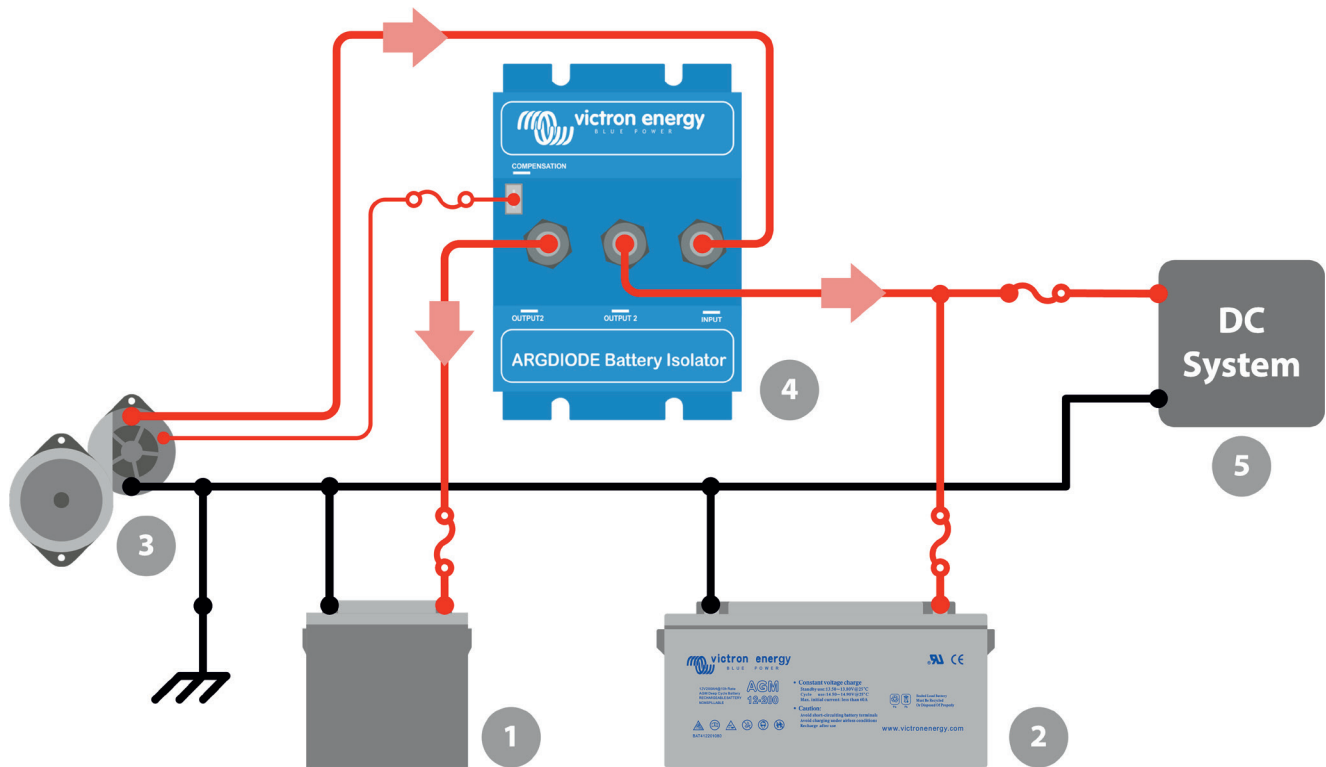
Cyrix dual battery system






ID	Item and notes
1	Starter battery.
2	Main battery (house battery).
3	Engine and alternator.
4	Emergency parallel switch.
5	DC system (chargers and loads).
6	The Cyrix-ct intelligent battery combiner connects the starter battery to the house battery when the starter battery is being charged from the alternator, or the house battery is being charged from the battery charger. Available in 120A, 230A and 400A versions, for 12V, 24V or 48V systems.
7	Blue Smart battery charger or any other battery charger or solar charger can be used.
8	AC supply from the grid (shore power) or a generator.
9	AC system.
	Positive (red) and negative (black) DC wiring. For more information on wiring see the Wiring Unlimited book .
	AC wiring.
	DC fuse. A wide range of DC fuses and fuse holders are available from Victron Energy. For fuse ratings see the product manuals or the Wiring Unlimited book .
	Circuit breaker (MCB) and residual current device (RCD).
	Chassis or ground.

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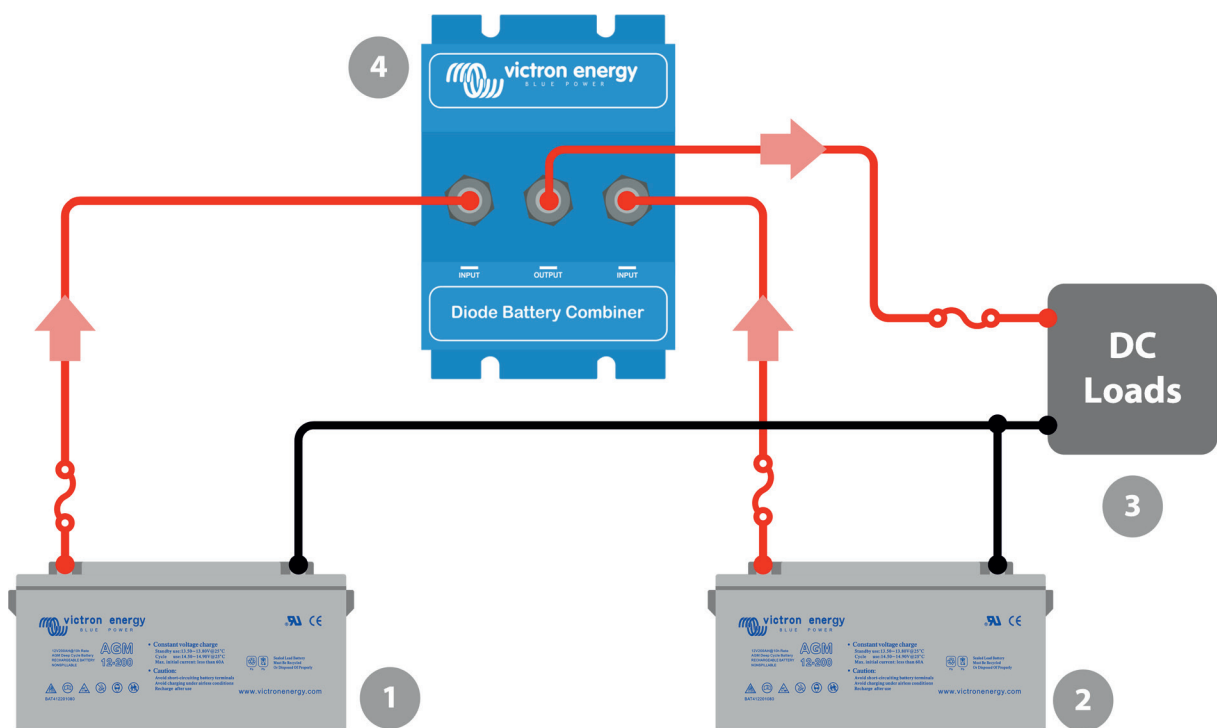
Argo battery isolator system



ID	Item and notes
1	Starter battery.
2	Main battery (house battery).
3	Engine and alternator.
4	The Argodiode or Argofet battery isolator allows for two different battery banks to be charged from the same DC charge source like an alternator or battery charger.
5	DC system (chargers and loads).
	Positive (red) and negative (black) DC wiring. For more information on wiring see the Wiring Unlimited book .
	DC fuse. A wide range of DC fuses and fuse holders are available from Victron Energy. For fuse ratings see the product manuals or the Wiring Unlimited book .
	Chassis or ground.

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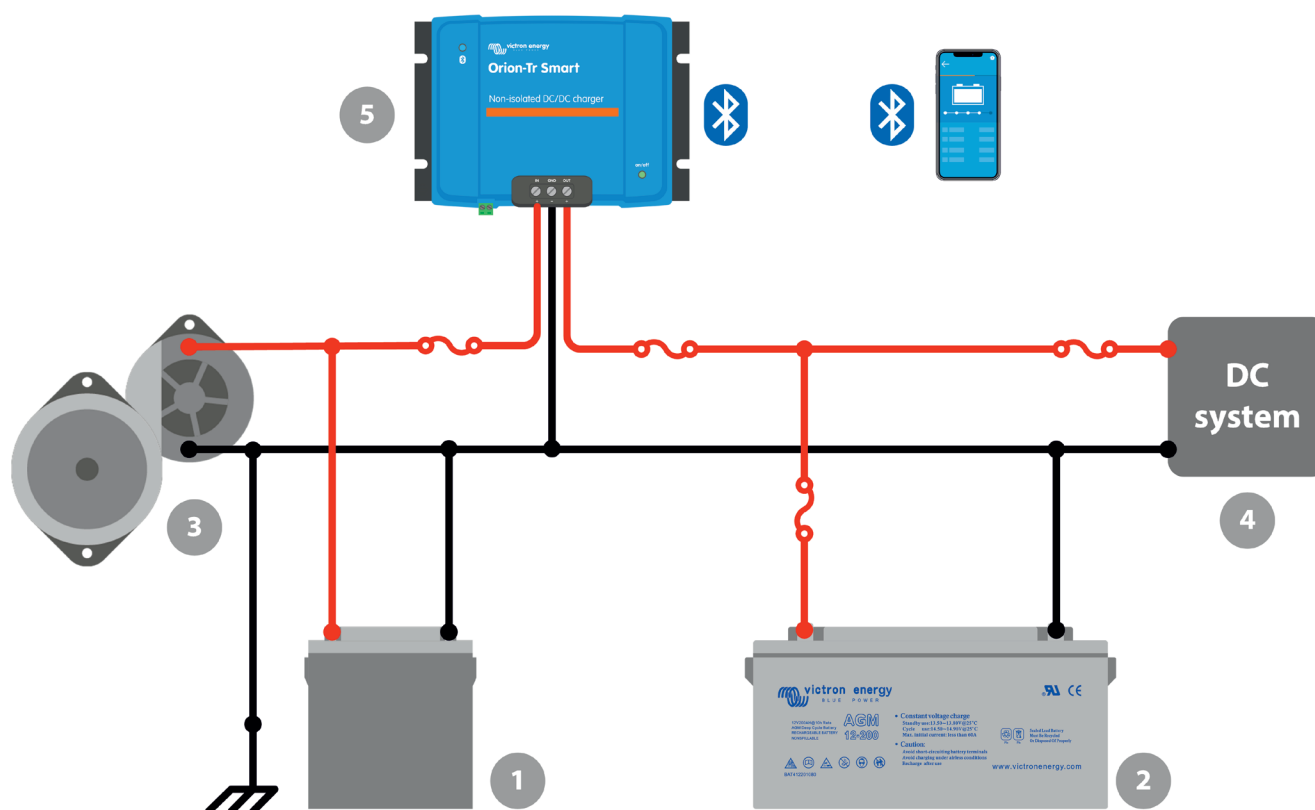
Argo battery combiner system (battery backup)



ID	Item and notes
1	Starter battery.
2	Main battery (house battery).
3	DC loads (no chargers).
4	The Argodiode Battery Combiner safely combines two individual battery banks to run mission critical DC load(s). If one battery is empty (or failed) the other battery will still supply the load. Can be used in 12V or 24V systems.
	Positive (red) and negative (black) DC wiring. For more information on wiring see the Wiring Unlimited book .
	DC fuse. A wide range of DC fuses and fuse holders are available from Victron Energy. For fuse ratings see the product manuals or the Wiring Unlimited book .

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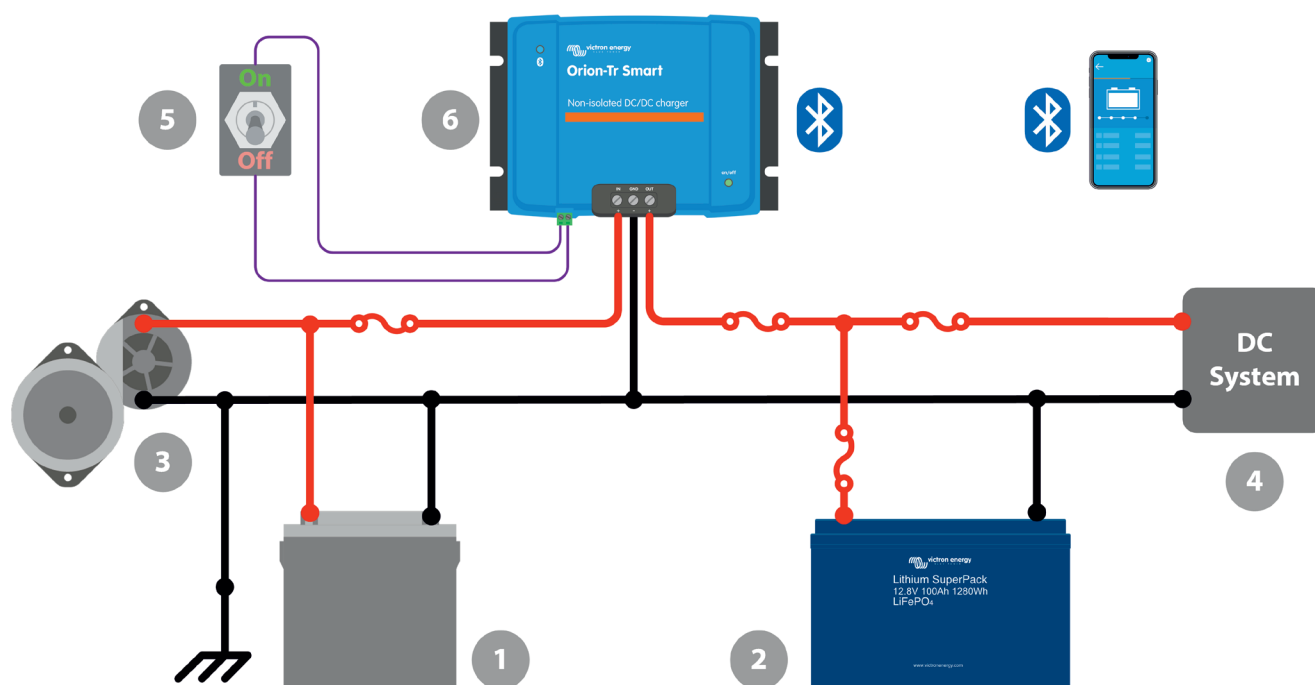
Orion DC-DC charging



ID	Item and notes
1	Starter battery.
2	Main battery (house battery).
3	Engine and alternator.
4	DC system (chargers and loads).
5	The Orion-Tr Smart DC-DC Charger Non-Isolated charges the main battery from the alternator and is able to boost the voltage of a smart alternator. Available in models with 12 or 24V and 12 or 24V output with 360W output power. Also available in isolated models. Multiple units can be paralleled if a higher power rating is needed, creating redundancy or a larger charge current.
	Bluetooth communication, use with the VictronConnect app for monitoring, configuration and inter-product communication (VE.Smart Networking).
	VictronConnect app to monitor and configure all Bluetooth enabled Victron "Smart" products.
	Positive (red) and negative (black) DC wiring. For more information on wiring see the Wiring Unlimited book .
	DC fuse. A wide range of DC fuses and fuse holders are available from Victron Energy. For fuse ratings see the product manuals or the Wiring Unlimited book .
	Chassis or ground.

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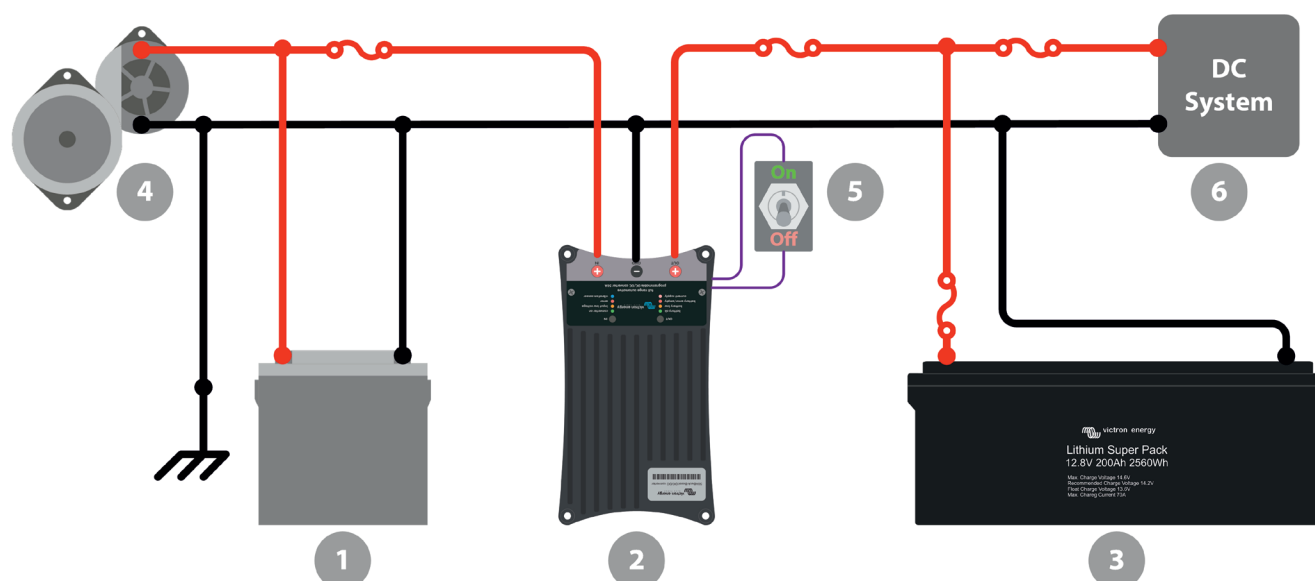
Orion DC-DC charging lithium battery






ID	Item and notes
1	Starter battery.
2	Lithium SuperPack main (house battery). Available in 12.8V or 25.6V. This battery has an internal BMS and contactor. Up to 5 batteries can be connected in parallel (series connecting is not allowed).
3	Engine and alternator.
4	DC system (chargers and loads).
5	Remote on/off switch. Alternatively use the engine ignition switch. It is also possible to not use a switch and use the built-in engine detection.
6	The Orion-Tr Smart DC-DC Charger Non-Isolated charges the main battery from the alternator and is able to boost the voltage of a smart alternator. Available in models with 12 or 24V and 12 or 24V output with 360W output power. Also available in isolated models. Multiple units can be paralleled if a higher power rating is needed, creating redundancy or a larger charge current. The Orion will limit the current and therefore protects the alternator against overheating when charging the lithium battery.
	Bluetooth communication, use with the VictronConnect app for monitoring, configuration and inter-product communication (VE.Smart Networking).
	VictronConnect app to monitor and configure all Bluetooth enabled Victron "Smart" products.
	Positive (red) and negative (black) DC wiring. For more information on wiring see the Wiring Unlimited book .
	DC fuse. A wide range of DC fuses and fuse holders are available from Victron Energy. For fuse ratings see the product manuals or the Wiring Unlimited book .
	Chassis or ground.

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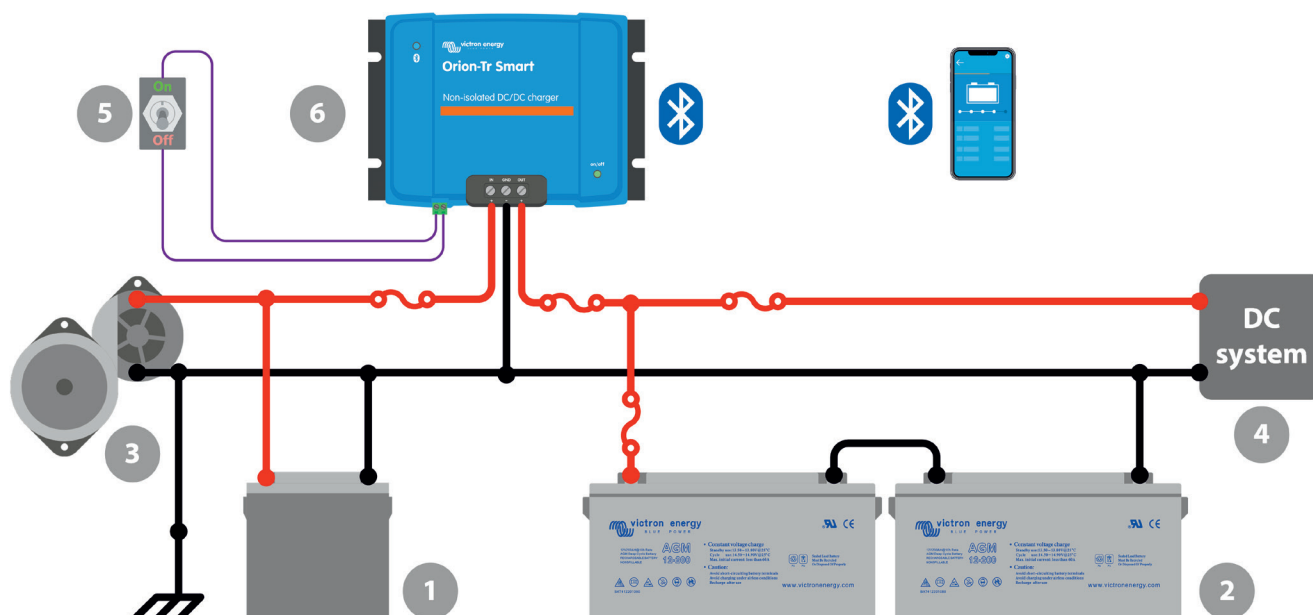
Buck-Boost system with lithium battery



ID	Item and notes
1	Starter battery.
2	The Buck-Boost DC-DC converter with 12V or 24V input and 12V or 24V output will charge the house battery from the starter battery and will boost voltage in case of an smart alternator. Available in 25A, 50A or 100A models. The Buck Boost will current limit and therefore protect the alternator against overheating when charging the lithium battery.
3	Lithium SuperPack main (house battery). Available in 12.8V or 25.6V. This battery has an internal BMS and contactor. Up to 5 batteries can be connected in parallel (series connecting is not allowed).
4	Engine and alternator.
5	Remote on/off switch. Alternatively use the engine ignition switch. It is also possible to not use a switch and use the built-in engine detection.
6	DC loads (no chargers).
	Positive (red) and negative (black) DC wiring. For more information on wiring see the Wiring Unlimited book .
	DC fuse. A wide range of DC fuses and fuse holders are available from Victron Energy. For fuse ratings see the product manuals or the Wiring Unlimited book .
	Chassis or ground.

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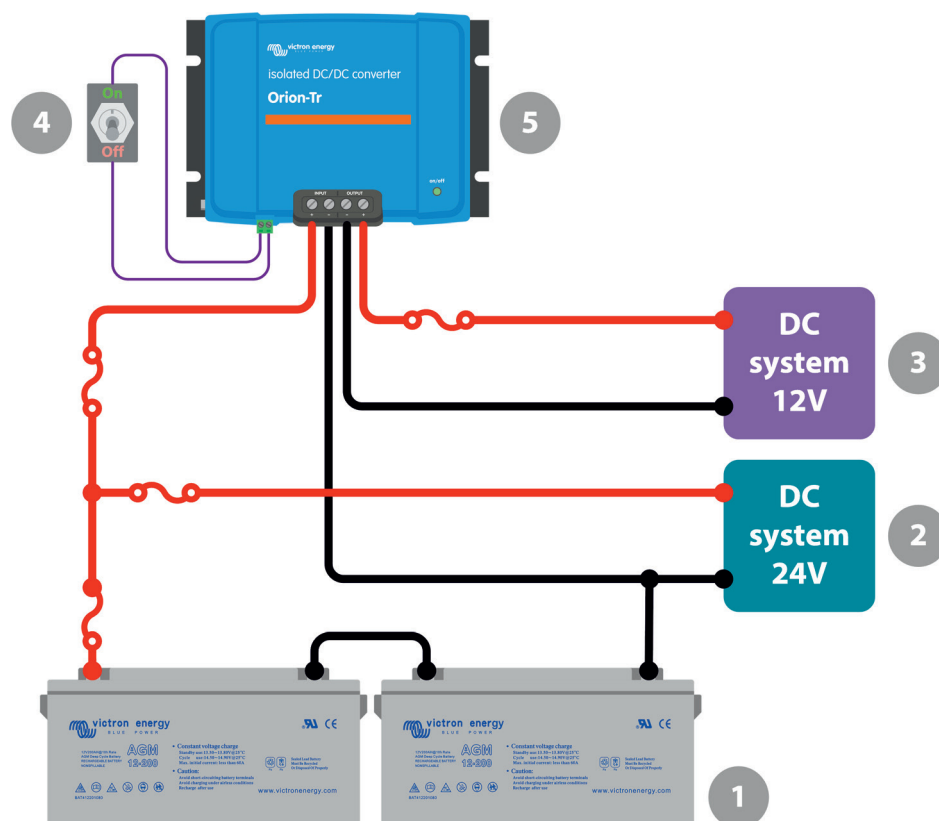
Orion DC-DC charger converting different battery voltages





ID	Item and notes
1	Starter battery with a different voltage than the main battery.
2	Main battery (house battery) with a different voltage than the starter battery.
3	Engine and alternator.
4	DC system (chargers and loads).
5	Remote on/off switch. Alternatively use the engine ignition switch. It is also possible to not use a switch and use the built-in engine detection.
6	The Orion-Tr Smart DC-DC Charger Non-Isolated charges the main battery from the alternator and is able to boost the voltage of a smart alternator. Available in models with 12 or 24V and 12 or 24V output with 360W output power. Also available in isolated models. Multiple units can be paralleled if a higher power rating is needed, creating redundancy or a larger charge current.
8	Bluetooth communication, use with the VictronConnect app for monitoring, configuration and inter-product communication (VE.Smart Networking).
7	VictronConnect app to monitor and configure all Bluetooth enabled Victron "Smart" products.
— —	Positive (red) and negative (black) DC wiring. For more information on wiring see the Wiring Unlimited book.
⚡	DC fuse. A wide range of DC fuses and fuse holders are available from Victron Energy. For fuse ratings see the product manuals or the Wiring Unlimited book.
⏏	Chassis or ground.

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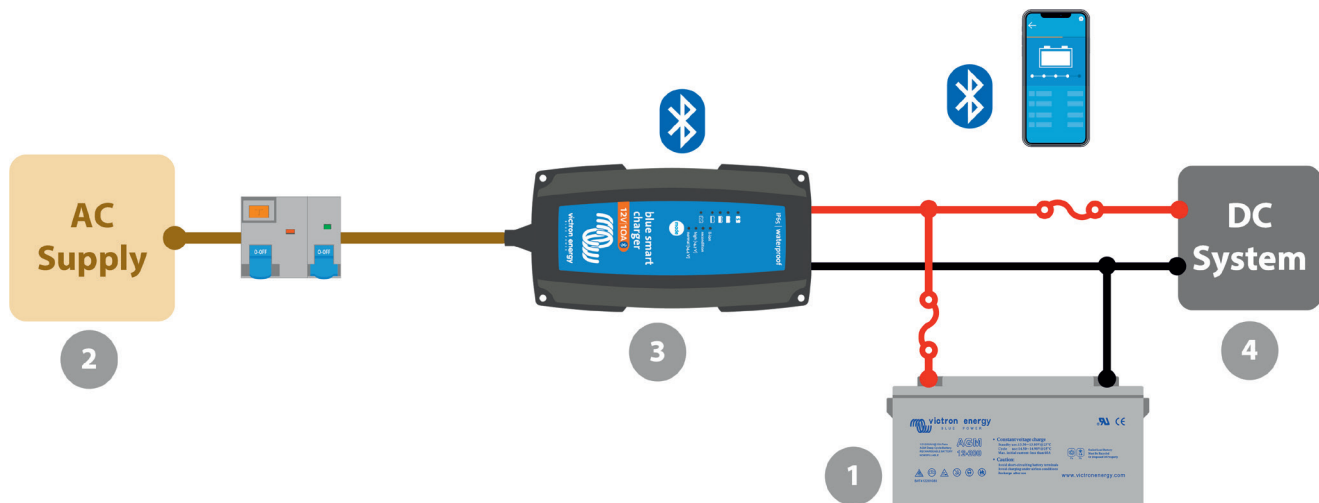
Orion DC-DC converter converting battery voltage



ID	Item and notes
1	Main battery (house battery).
2	24V DC system
3	12V DC system
4	Remote on/off switch.
5	The Orion DC-DC converter converts the 24V system voltage into 12V to created a 12V DC circuit to feed 12V loads. There are a wide range of DC-DC converters available, with a variety of different input and output voltages, from 12V, 24V or 48V to 12V, 24V or 48V. These are available in isolated or non isolated models.
	Positive (red) and negative (black) DC wiring. For more information on wiring see the Wiring Unlimited book .
	DC fuse. A wide range of DC fuses and fuse holders are available from Victron Energy. For fuse ratings see the product manuals or the Wiring Unlimited book .

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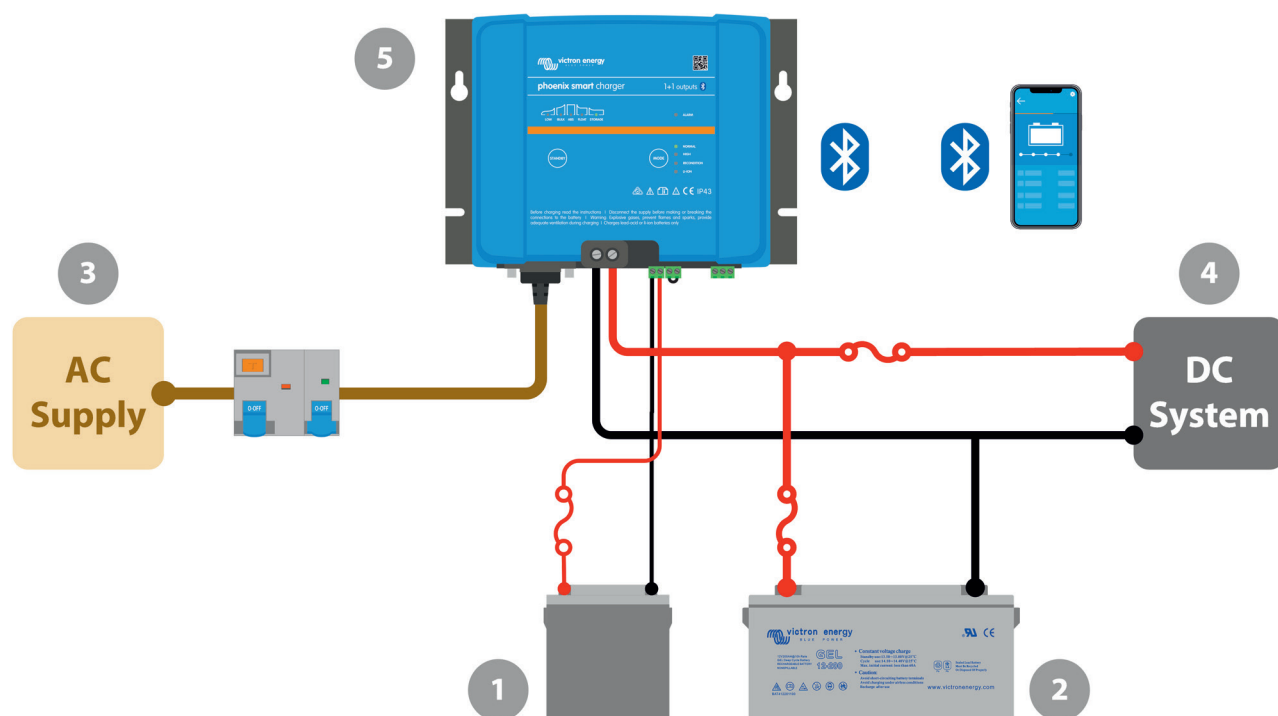
Battery charger with 1 output



ID	Item and notes
1	Battery (can be a lead acid or a lithium battery).
2	AC supply from the grid (shore power) or a generator.
3	Blue Smart battery charger or any other battery charger or solar charger can be used.
4	DC system (chargers and loads).
	Bluetooth communication, use with the VictronConnect app for monitoring, configuration and inter-product communication (VE.Smart Networking).
	VictronConnect app to monitor and configure all Bluetooth enabled Victron "Smart" products.
	Positive (red) and negative (black) DC wiring. For more information on wiring see the Wiring Unlimited book .
	AC wiring.
	DC fuse. A wide range of DC fuses and fuse holders are available from Victron Energy. For fuse ratings see the product manuals or the Wiring Unlimited book .
	Circuit breaker (MCB) and residual current device (RCD).

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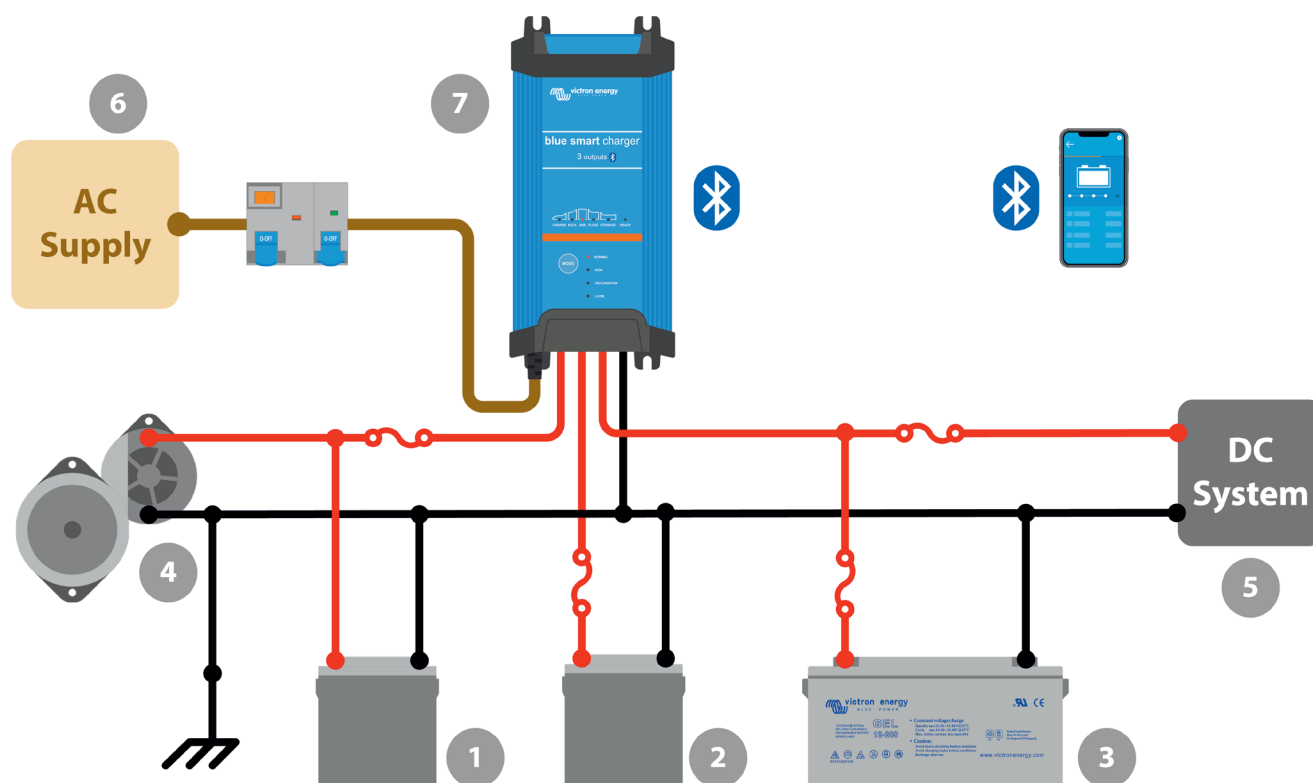
Battery charger 1+1 output



ID	Item and notes
1	Starter battery.
2	Battery (can be a lead acid or a lithium battery).
3	AC supply from the grid (shore power) or a generator.
4	DC system (chargers and loads).
5	Phoenix Smart IP43 Charger is available in 1+1 models and in 3 output models in 12 or 24V up to 50A. The second output, is limited to approximately 3A to keep a starter battery topped up. A number of other Victron battery chargers are also available in a 1+1 configuration.
	Bluetooth communication, use with the VictronConnect app for monitoring, configuration and inter-product communication (VE.Smart Networking).
	VictronConnect app to monitor and configure all Bluetooth enabled Victron "Smart" products.
	Positive (red) and negative (black) DC wiring. For more information on wiring see the Wiring Unlimited book .
	AC wiring.
	DC fuse. A wide range of DC fuses and fuse holders are available from Victron Energy. For fuse ratings see the product manuals or the Wiring Unlimited book .
	Circuit breaker (MCB) and residual current device (RCD).

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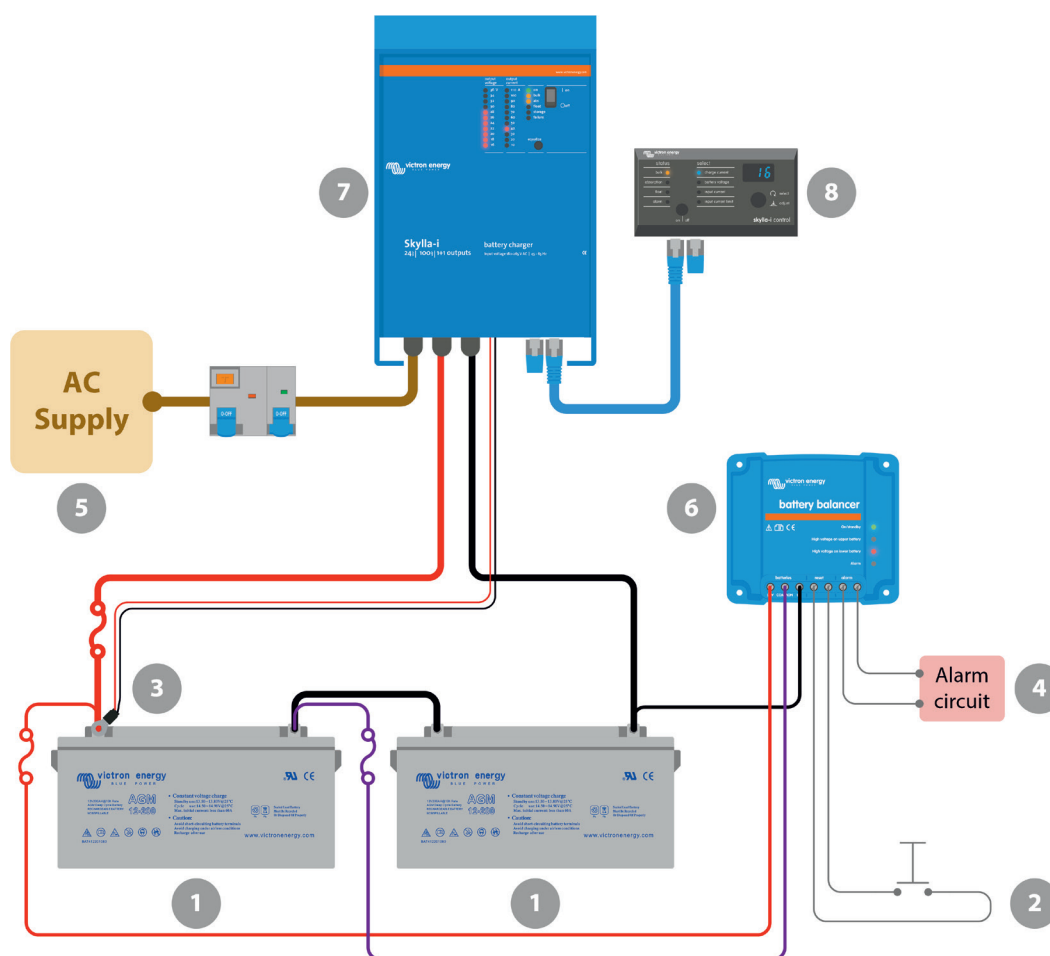
Battery charger 3 outputs



ID	Item and notes
1	Starter battery.
2	Other battery, for example a second engine starter battery, a generator starter battery or bow thruster battery.
3	Battery (can be a lead acid or a lithium battery).
4	Engine and alternator.
5	DC system (chargers and loads).
6	AC supply from the grid (shore power) or a generator.
7	The Blue Smart IP22 Charger, is available in single output or 3 output models for 12 or 24V up to 30A. The Victron chargers are also available in 3 output models.
	Bluetooth communication, use with the VictronConnect app for monitoring, configuration and inter-product communication (VE.Smart Networking).
	VictronConnect app to monitor and configure all Bluetooth enabled Victron "Smart" products.
	Positive (red) and negative (black) DC wiring. For more information on wiring see the Wiring Unlimited book.
	AC wiring.
	DC fuse. A wide range of DC fuses and fuse holders are available from Victron Energy. For fuse ratings see the product manuals or the Wiring Unlimited book.
	Circuit breaker (MCB) and residual current device (RCD).
	Chassis or ground.

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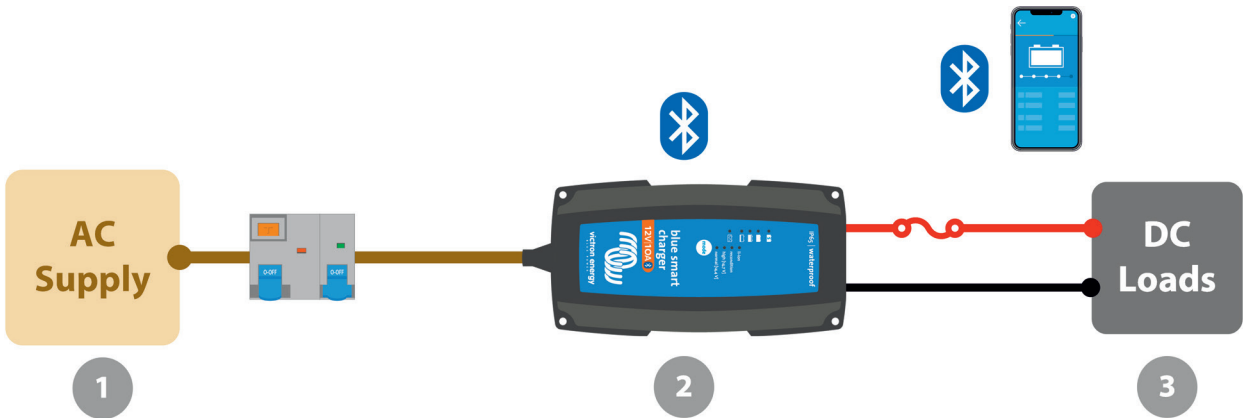
Battery charger with battery balancer



ID	Item and notes
1	24V battery bank consisting of two 12V batteries connected in series.
2	Alarm reset switch.
3	Temperature sensor, ships together with the Skylla-i.
4	Alarm circuit connected to the battery balancer alarm relay.
5	AC supply from the grid (shore power) or a generator.
6	The Battery Balancer ensures that both batteries in a 24V system are charged equally.
7	Skylla-i battery charger 24V available in 80A or 100A.
8	The Skylla-i Control GX monitors and controls the Skylla-i battery charger.
	Positive (red) and negative (black) DC wiring. For more information on wiring see the Wiring Unlimited book .
	AC wiring.
	RJ45 UTP cable available in lengths from 0.3m to 30m. To prevent communication issues always use a manufactured cable.
	RJ45 VE.Can terminator, use in the vacant RJ45 port of the first and last "daisy chained" VE.Can device. Two terminators ship with each VE.Can product.
	DC fuse. A wide range of DC fuses and fuse holders are available from Victron Energy. For fuse ratings see the product manuals or the Wiring Unlimited book .
	Circuit breaker (MCB) and residual current device (RCD).

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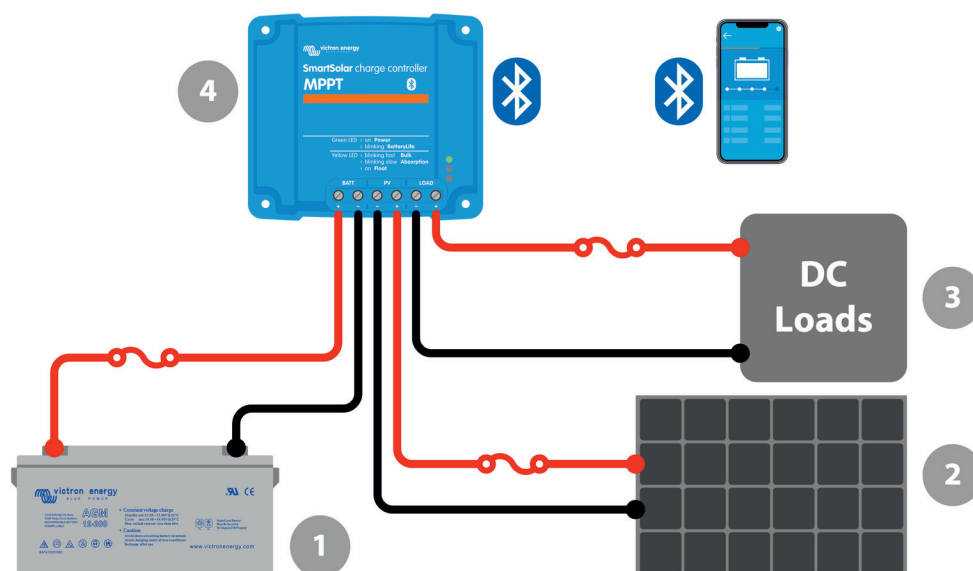
Battery charger as power supply



ID	Item and notes
1	AC supply from the grid (shore power) or a generator.
2	Blue Smart battery charger or any other Victron battery charger can be used.
3	DC loads (no chargers).
	Bluetooth communication, use with the VictronConnect app for monitoring, configuration and inter-product communication (VE.Smart Networking).
	VictronConnect app to monitor and configure all Bluetooth enabled Victron "Smart" products.
	Positive (red) and negative (black) DC wiring. For more information on wiring see the Wiring Unlimited book .
	AC wiring.
	DC fuse. A wide range of DC fuses and fuse holders are available from Victron Energy. For fuse ratings see the product manuals or the Wiring Unlimited book .
	Circuit breaker (MCB) and residual current device (RCD).

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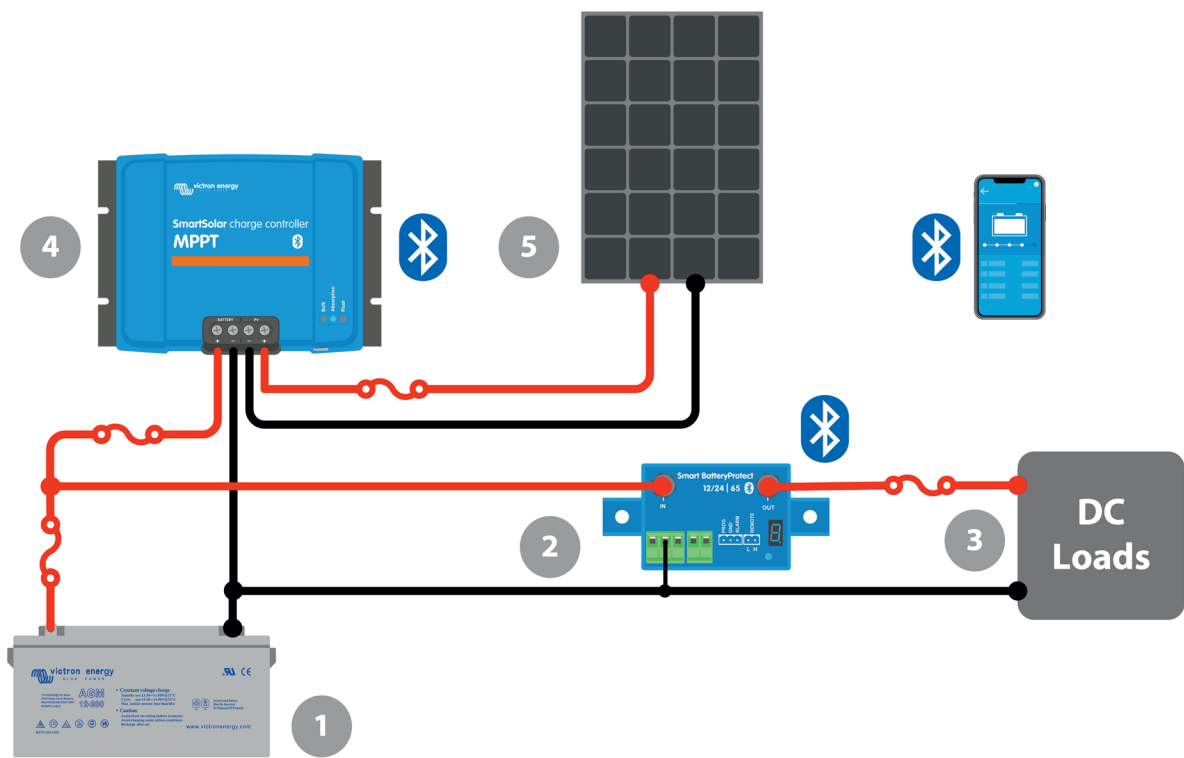
Solar system with load output



ID	Item and notes
1	Battery (can be a lead acid or a lithium battery).
2	Solar array consisting of a single or multiple solar panels .
3	DC system (chargers and loads).
4	SmartSolar MPPT solar charge controller with load output , for 12, 24 or 48V systems with a charge current of 10, 15 or 20A or with a BlueSolar MPPT solar charge controller with load output without Bluetooth .
	Bluetooth communication, use with the VictronConnect app for monitoring, configuration and inter-product communication (VE.Smart Networking).
	VictronConnect app to monitor and configure all Bluetooth enabled Victron "Smart" products.
	Positive (red) and negative (black) DC wiring. For more information on wiring see the Wiring Unlimited book .
	DC fuse. A wide range of DC fuses and fuse holders are available from Victron Energy. For fuse ratings see the product manuals or the Wiring Unlimited book .

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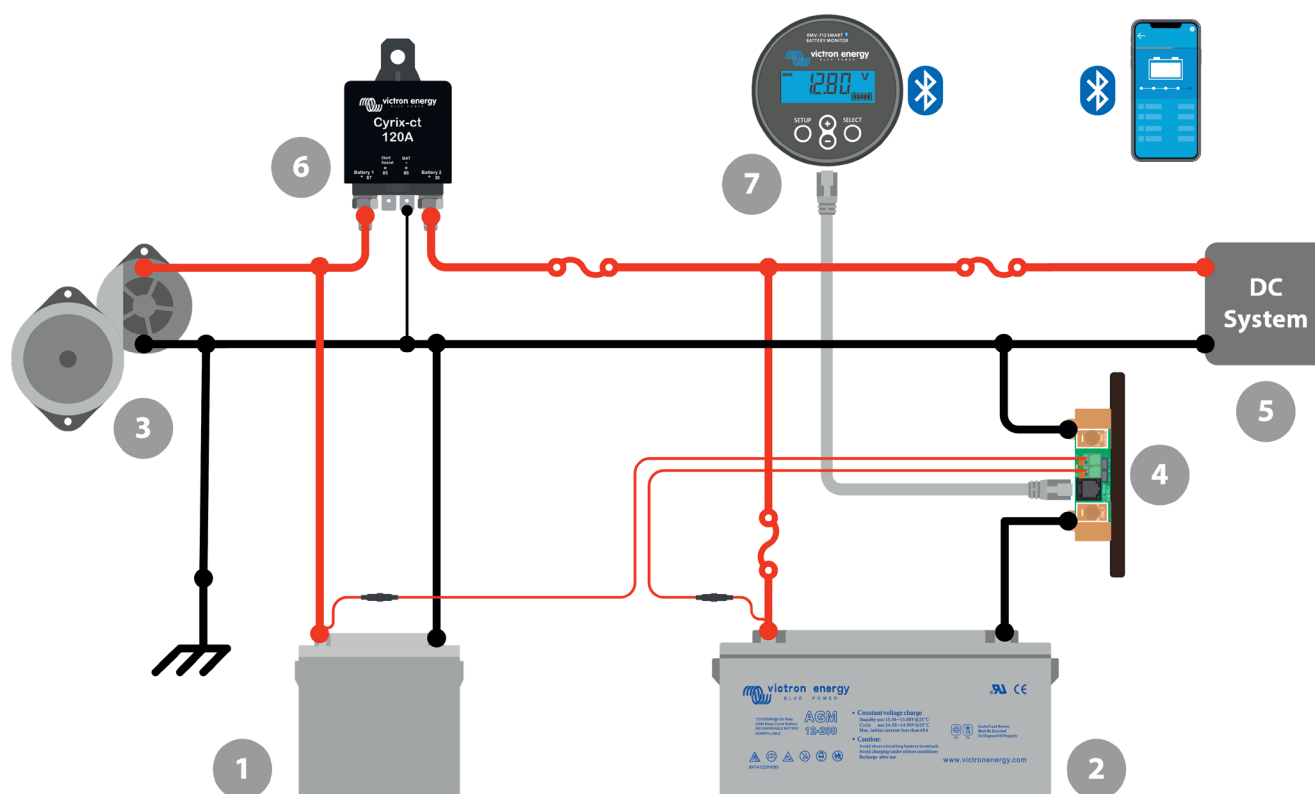
Solar system with BatteryProtect



ID	Item and notes
1	Battery (can be a lead acid or a lithium battery).
2	The Smart BatteryProtect disconnects the DC loads as soon as the battery voltage gets too low. Available in versions with Bluetooth (Smart BatteryProtect) or without Bluetooth (BatteryProtect) for 12V, 24V or 48V systems in 65A, 100A and 220A current ratings.
3	DC loads (no chargers).
4	SmartSolar MPPT solar charge controller , for 12, 24 or 48V systems with a charge current of 15A up to 100A or a BlueSolar MPPT solar charge controller without Bluetooth.
5	Solar array consisting of a single or multiple solar panels .
	Bluetooth communication, use with the VictronConnect app for monitoring, configuration and inter-product communication (VE.Smart Networking).
	VictronConnect app to monitor and configure all Bluetooth enabled Victron "Smart" products.
	Positive (red) and negative (black) DC wiring. For more information on wiring see the Wiring Unlimited book .
	DC fuse. A wide range of DC fuses and fuse holders are available from Victron Energy. For fuse ratings see the product manuals or the Wiring Unlimited book .

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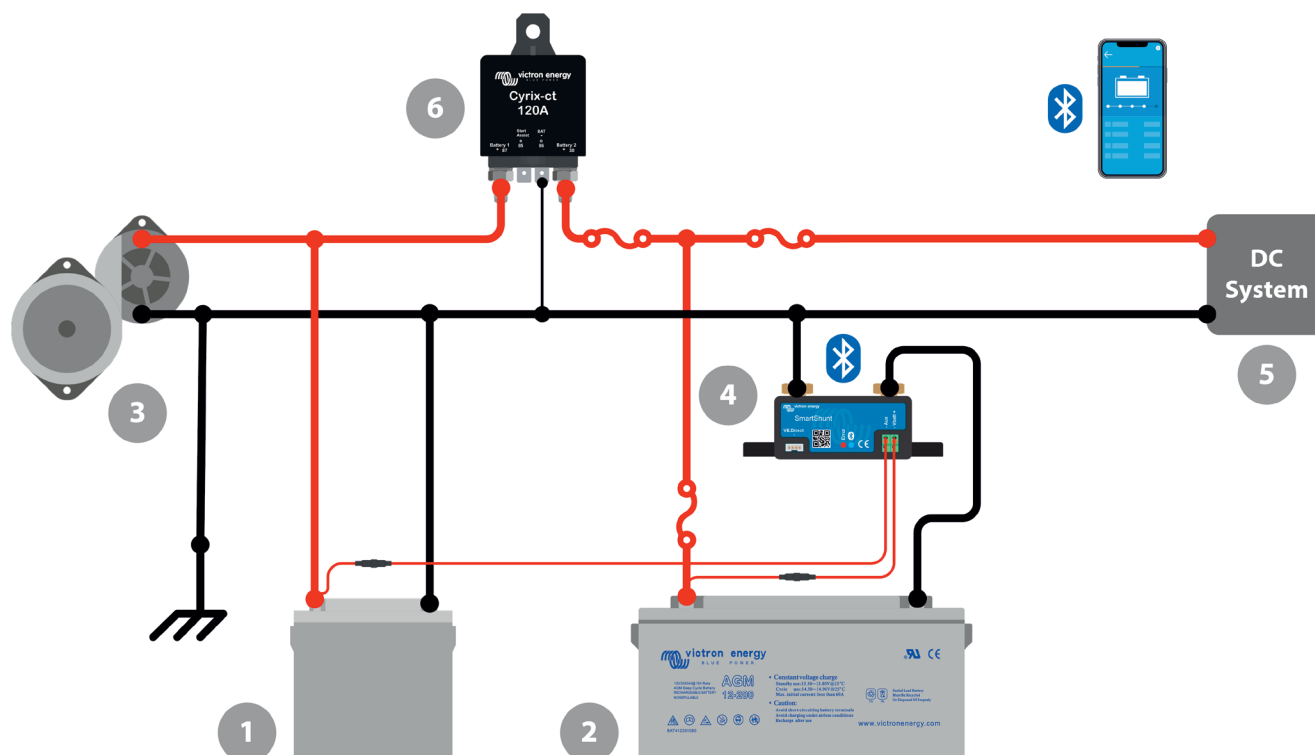
Battery Monitor BMV-712 system



ID	Item and notes
1	Starter battery.
2	Main battery (house battery).
3	Engine and alternator.
4	Battery Monitor shunt (ships together with the Battery Monitor). The BMV-712 shunt's auxiliary connection, is connected to the starter battery.
5	DC system (chargers and loads).
6	The Cyrix-ct intelligent battery combiner connects the starter battery to the house battery when the starter battery is being charged from the alternator, or the house battery is being charged from the battery charger. Available in 120A, 230A and 400A versions, for 12V, 24V or 48V systems.
7	BMV-712 Battery Monitor head unit (ships together with the Battery Monitor). The BMV-712, in this example the main battery, is fully monitored and the starter battery voltage is monitored.
	Bluetooth communication, use with the VictronConnect app for monitoring, configuration and inter-product communication (VE.Smart Networking).
	VictronConnect app to monitor and configure all Bluetooth enabled Victron "Smart" products.
	Positive (red) and negative (black) DC wiring. For more information on wiring see the Wiring Unlimited book.
	RJ12 UTP cable for communication between the BMV head unit and the shunt. A 10m cable ships with the BMV. Different sizes cables from 0.3m to 30m are also available.
	DC fuse. A wide range of DC fuses and fuse holders are available from Victron Energy. For fuse ratings see the product manuals or the Wiring Unlimited book.
	Fuse holder with DC fuse. This fuse ships together with the product.
	Chassis or ground.

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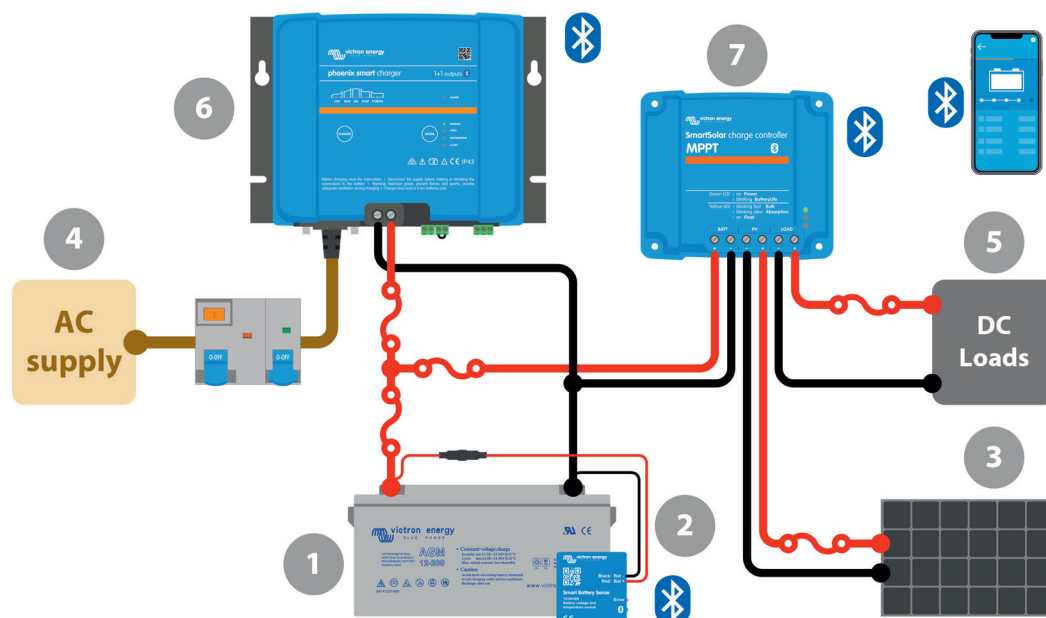
Battery Monitor SmartShunt system



ID	Item and notes
1	Starter battery.
2	Main battery (house battery).
3	Engine and alternator.
4	SmartShunt battery monitor. In this example the main battery is fully monitored and the starter battery voltage is monitored. The SmartShunt can be accessed via Bluetooth using the VictronConnect app .
5	DC system (chargers and loads).
6	The Cyrix-ct intelligent battery combiner connects the starter battery to the house battery when the starter battery is being charged from the alternator, or the house battery is being charged from the battery charger. Available in 120A, 230A and 400A versions, for 12V, 24V or 48V systems.
	Bluetooth communication, use with the VictronConnect app for monitoring, configuration and inter-product communication (VE.Smart Networking).
	VictronConnect app to monitor and configure all Bluetooth enabled Victron "Smart" products.
	Positive (red) and negative (black) DC wiring. For more information on wiring see the Wiring Unlimited book .
	DC fuse. A wide range of DC fuses and fuse holders are available from Victron Energy. For fuse ratings see the product manuals or the Wiring Unlimited book .
	Fuse holder with DC fuse. This fuse ships together with the product.
	Chassis or ground.

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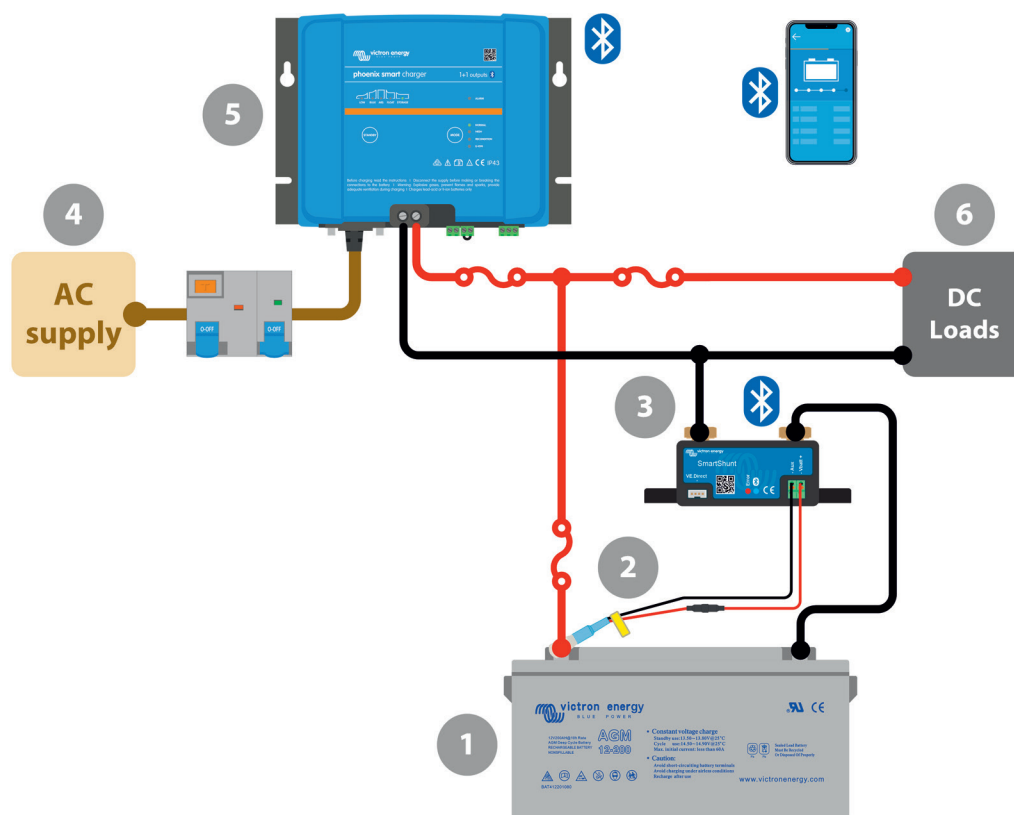
VE.Smart system with Smart Battery Sense



ID	Item and notes
1	Battery (can be a lead acid or a lithium battery).
2	The Smart Battery Sense measures voltage and temperature and sends it to the solar charger and the Phoenix charger. This data is used by the chargers for temperature and voltage compensated charging. The VE.Smart network communicates via Bluetooth and is configured using the VictronConnect app. Synchronized charging between the solar charger and the AC charger is scheduled for a future release.
3	Solar array consisting of a single or multiple solar panels .
4	AC supply from the grid (shore power) or a generator.
5	DC loads
6	Phoenix Smart IP43 Charger is available in 1+1 models and in 3 output models in 12 or 24V up to 50A.
7	SmartSolar MPPT solar charge controller with load output , for 12, 24 or 48V systems with a charge current of 10, 15 or 20A.
	Bluetooth communication, use with the VictronConnect app for monitoring, configuration and inter-product communication (VE.Smart Networking).
	VictronConnect app to monitor and configure all Bluetooth enabled Victron "Smart" products.
	Positive (red) and negative (black) DC wiring. For more information on wiring see the Wiring Unlimited book .
	Fuse holder with DC fuse. This fuse ships together with the product.
	DC fuse. A wide range of DC fuses and fuse holders are available from Victron Energy. For fuse ratings see the product manuals or the Wiring Unlimited book .

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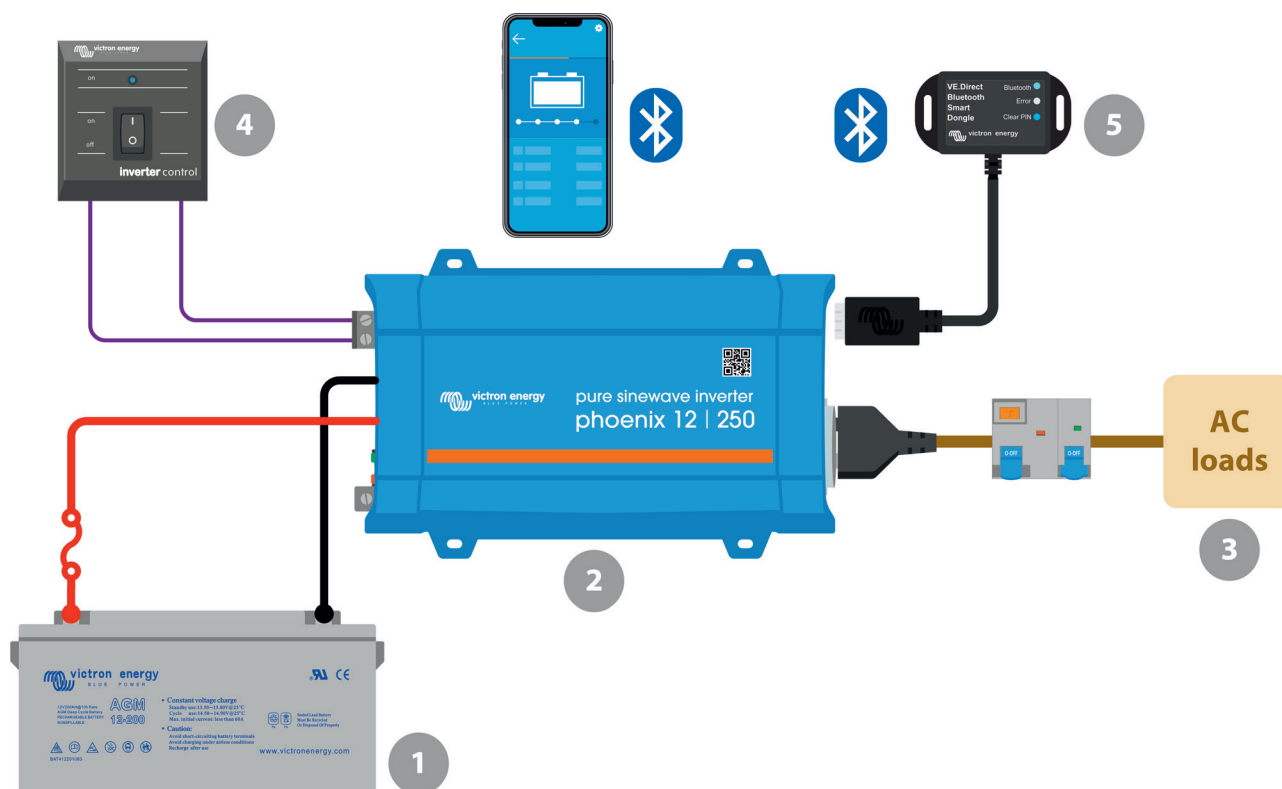
VE.Smart system with battery monitor and temperature sensor



ID	Item and notes
1	Battery (can be a lead acid or a lithium battery).
2	Temperature sensor for BMV-712 Smart and BMV-702.
3	SmartShunt battery monitor. The SmartShunt together with the BMV temperature sensor is sending battery voltage and battery temperature information to the VE.Smart network.
4	AC supply from the grid (shore power) or a generator.
5	Phoenix Smart IP43 Charger is available in 1+1 models and in 3 output models in 12 or 24V up to 50A.
6	DC loads
	Bluetooth communication, use with the VictronConnect app for monitoring, configuration and inter-product communication (VE.Smart Networking).
	VictronConnect app to monitor and configure all Bluetooth enabled Victron "Smart" products.
	Positive (red) and negative (black) DC wiring. For more information on wiring see the Wiring Unlimited book .
	Fuse holder with DC fuse. This fuse ships together with the product.
	DC fuse. A wide range of DC fuses and fuse holders are available from Victron Energy. For fuse ratings see the product manuals or the Wiring Unlimited book .

Marine System booklet

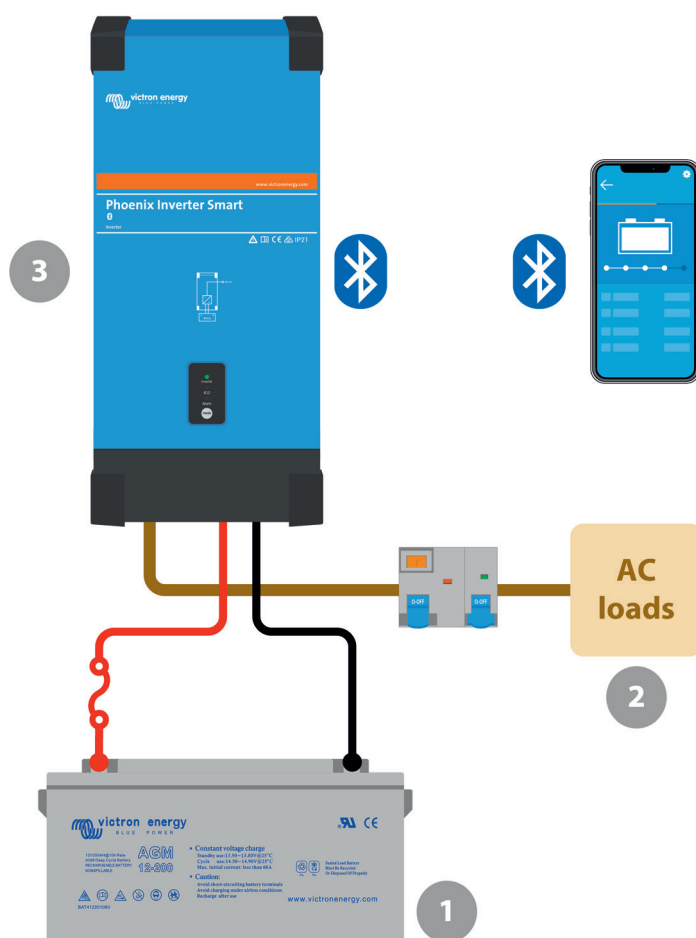
Inverter VE.Direct system



ID	Item and notes
1	Main battery (house battery).
2	Phoenix Inverter VE.Direct , available in models ranging from 250VA up to 1200VA.
3	AC system.
4	Phoenix Inverter Control VE.Direct for on/off control of the Phoenix VE.Direct inverter.
5	VE.Direct Bluetooth Smart dongle to enable a Bluetooth connection to the VictronConnect app .
	Bluetooth communication, use with the VictronConnect app for monitoring, configuration and inter-product communication (VE.Smart Networking).
	VictronConnect app to monitor and configure all Bluetooth enabled Victron "Smart" products.
	Positive (red) and negative (black) DC wiring. For more information on wiring see the Wiring Unlimited book .
	AC wiring.
	DC fuse. A wide range of DC fuses and fuse holders are available from Victron Energy. For fuse ratings see the product manuals or the Wiring Unlimited book .
	Circuit breaker (MCB) and residual current device (RCD).

Marine System booklet

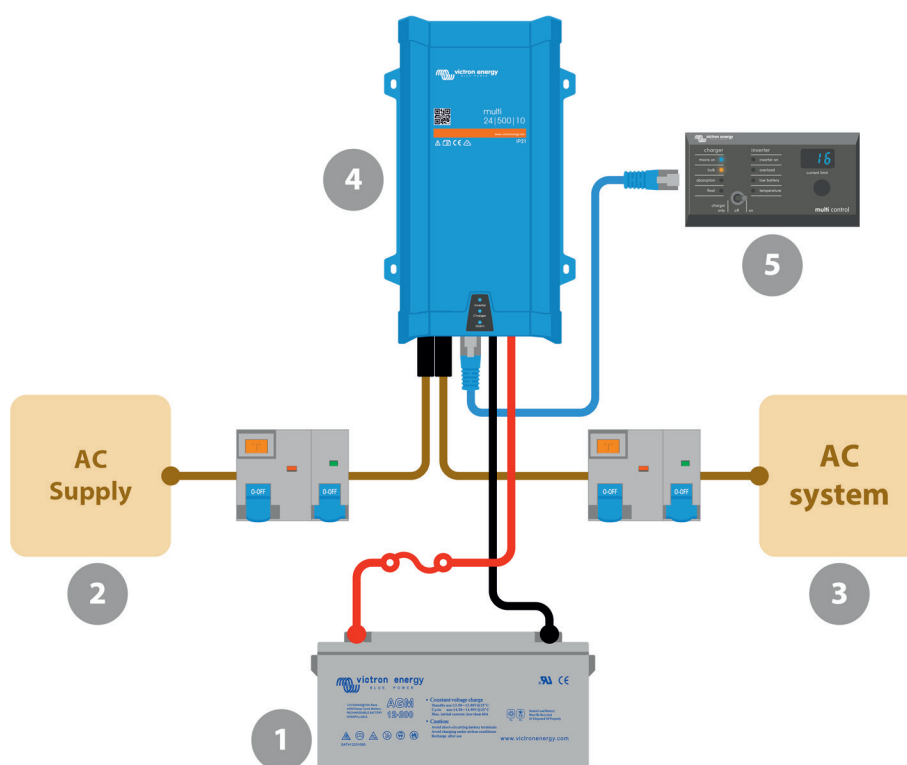
Inverter Smart system



ID	Item and notes
1	Main battery (house battery).
2	Phoenix Inverter Smart , available in models for 12V, 24V or 48V systems ranging from 1600VA up to 5000VA.
3	AC system.
	Bluetooth communication, use with the VictronConnect app for monitoring, configuration and inter-product communication (VE.Smart Networking).
	VictronConnect app to monitor and configure all Bluetooth enabled Victron "Smart" products.
	Positive (red) and negative (black) DC wiring. For more information on wiring see the Wiring Unlimited book .
	AC wiring.
	DC fuse. A wide range of DC fuses and fuse holders are available from Victron Energy. For fuse ratings see the product manuals or the Wiring Unlimited book .
	Circuit breaker (MCB) and residual current device (RCD).

Marine System booklet

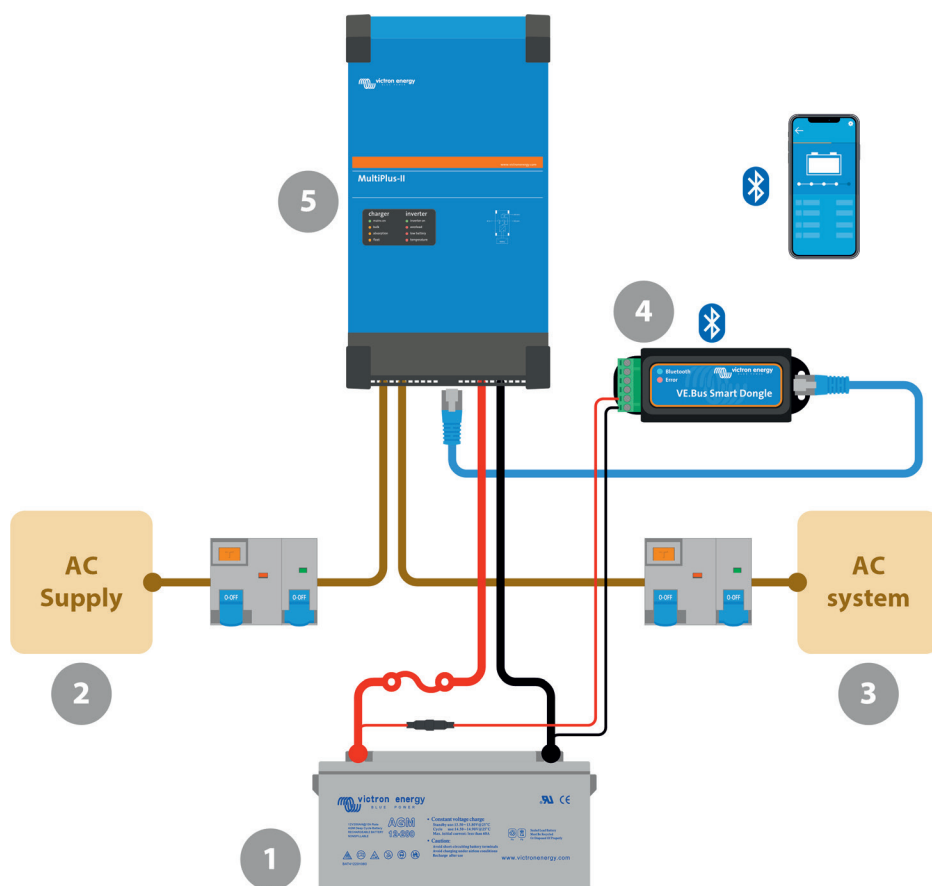
MultiPlus system basic



ID	Item and notes
1	Main battery (house battery).
2	AC supply from the grid (shore power) or a generator.
3	AC system.
4	MultiPlus inverter/charger , available for 12V, 24V 48V systems rating from 500 until 15000VA. Multiple units can be connected in parallel (to increase output power) and/or in 3-phase to form a larger system.
5	Digital Multi Control 200/200A GX , to remotely view and control the inverter/charger.
	Bluetooth communication, use with the VictronConnect app for monitoring, configuration and inter-product communication (VE.Smart Networking).
	VictronConnect app to monitor and configure all Bluetooth enabled Victron "Smart" products.
	Positive (red) and negative (black) DC wiring. For more information on wiring see the Wiring Unlimited book .
	AC wiring.
	RJ45 UTP cable available in lengths from 0.3m to 30m. To prevent communication issues always use a manufactured cable.
	DC fuse. A wide range of DC fuses and fuse holders are available from Victron Energy. For fuse ratings see the product manuals or the Wiring Unlimited book .
	Circuit breaker (MCB) and residual current device (RCD).

Marine System booklet

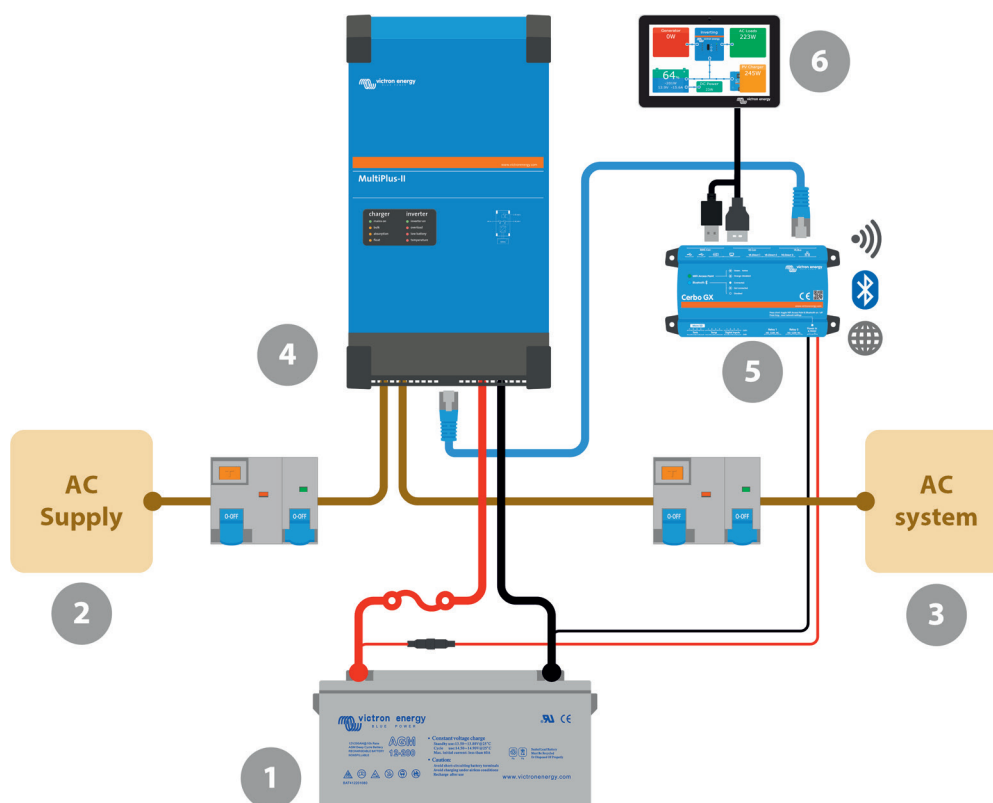
MultiPlus system with Bluetooth dongle



ID	Item and notes
1	Main battery (house battery).
2	AC supply from the grid (shore power) or a generator.
3	AC system.
4	The VE.Bus Smart dongle allows Bluetooth access to the inverter/charger for monitoring and /or configuration via the VictronConnect app.
5	MultiPlus inverter/charger , available for 12V, 24V 48V systems rating from 500 until 15000VA. Multiple units can be connected in parallel (to increase output power) and/or in 3-phase to form a larger system.
	Bluetooth communication, use with the VictronConnect app for monitoring, configuration and inter-product communication (VE.Smart Networking).
	VictronConnect app to monitor and configure all Bluetooth enabled Victron "Smart" products.
	Positive (red) and negative (black) DC wiring. For more information on wiring see the Wiring Unlimited book .
	AC wiring.
	RJ45 UTP cable available in lengths from 0.3m to 30m. To prevent communication issues always use a manufactured cable.
	DC fuse. A wide range of DC fuses and fuse holders are available from Victron Energy. For fuse ratings see the product manuals or the Wiring Unlimited book .
	Fuse holder with DC fuse. This fuse ships together with the product.
	Circuit breaker (MCB) and residual current device (RCD).

Marine System booklet

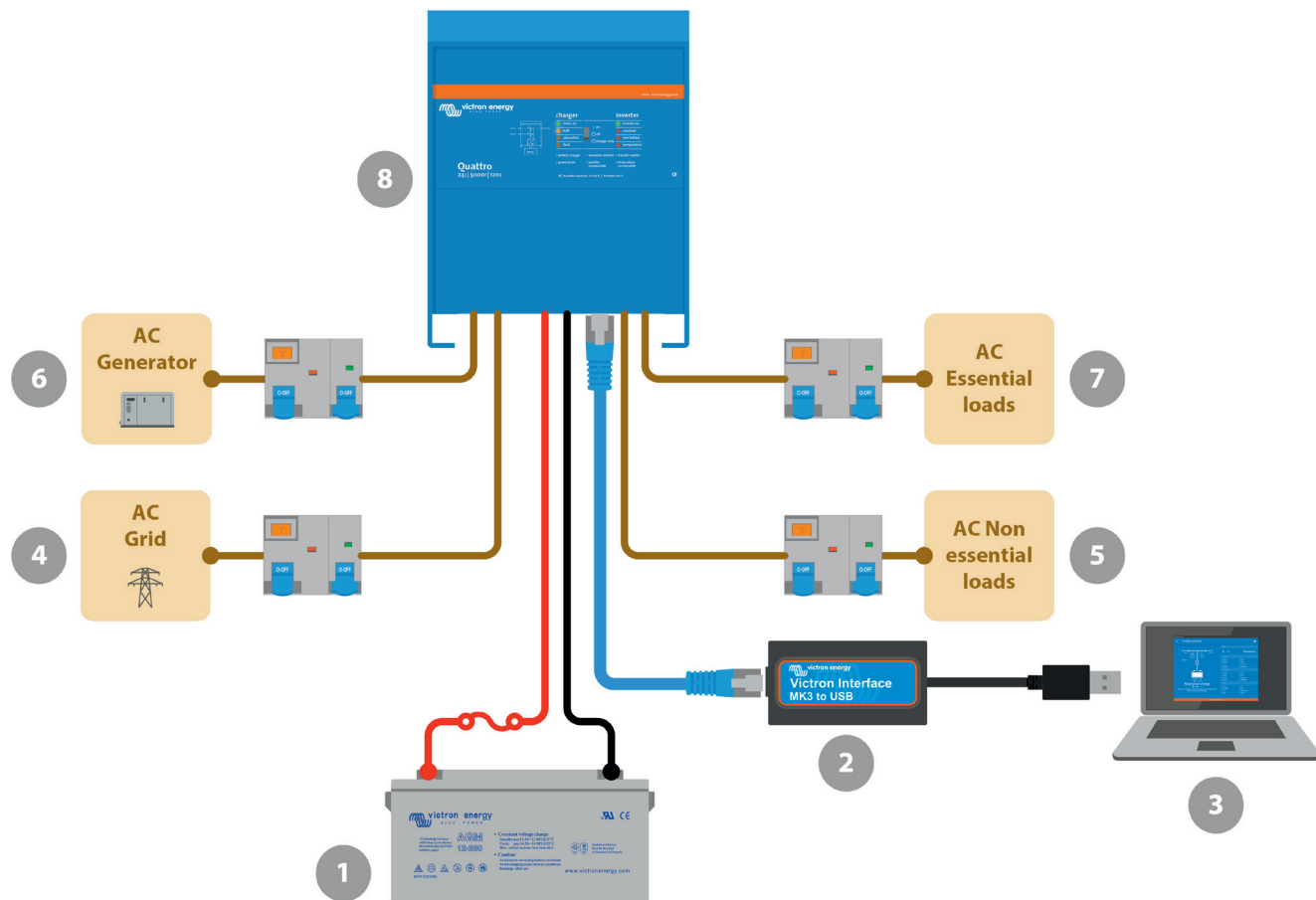
MultiPlus system with Cerbo GX








ID	Item and notes
1	Main battery (house battery).
2	AC supply from the grid (shore power) or a generator.
3	AC system.
4	MultiPlus inverter/charger , available for 12V, 24V 48V systems rating from 500 until 15000VA. Multiple units can be connected in parallel (to increase output power) and/or in 3-phase to form a larger system.
5	Cerbo GX for local and remote system monitoring and configuration.
6	GX Touch display gives an instant overview of your system.
	Bluetooth communication, use with the VictronConnect app for monitoring, configuration and inter-product communication (VE.Smart Networking).
	Internet
	Wi-Fi
	Positive (red) and negative (black) DC wiring. For more information on wiring see the Wiring Unlimited book .
	AC wiring.
	RJ45 UTP cable available in lengths from 0.3m to 30m. To prevent communication issues always use a manufactured cable.
	DC fuse. A wide range of DC fuses and fuse holders are available from Victron Energy. For fuse ratings see the product manuals or the Wiring Unlimited book .
	Fuse holder with DC fuse. This fuse ships together with the product.
	Circuit breaker (MCB) and residual current device (RCD).

Marine System booklet

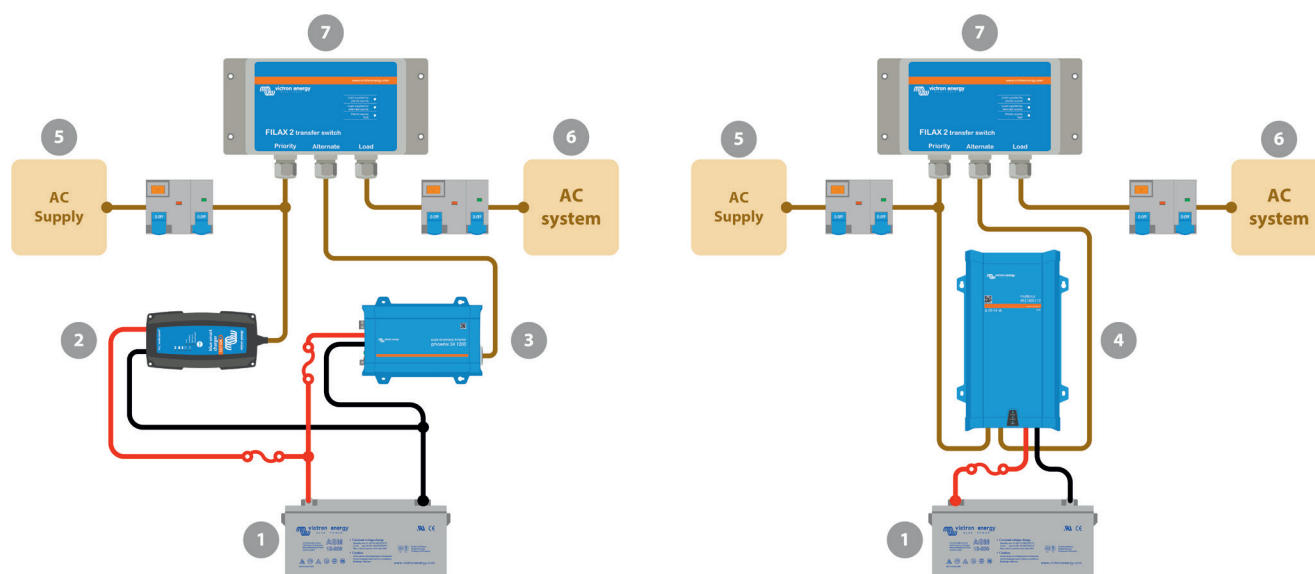
Quattro system with computer configuration







ID	Item and notes
1	Main battery (house battery).
2	Interface MK3-USB for configuration of single and multiple inverter/charger systems via a computer.
3	Computer or laptop running the VictronConnect app or VE.Configure configuration tools.
4	AC grid (mains).
5	AC non essential load, this output will be de-powered when grid or generator is not available.
6	AC generator.
7	AC essential loads, will always be powered, either from generator or grid, or when these are not available, from inverter power.
8	Quattro inverter/charger , available for 12V, 24V 48V systems rating from 3000VA up to 15000VA. Multiple units can be connected in parallel (to increase output power) and/or in 3-phase to form a larger system.
	Positive (red) and negative (black) DC wiring. For more information on wiring see the Wiring Unlimited book .
	AC wiring.
	RJ45 UTP cable available in lengths from 0.3m to 30m. To prevent communication issues always use a manufactured cable.
	DC fuse. A wide range of DC fuses and fuse holders are available from Victron Energy. For fuse ratings see the product manuals or the Wiring Unlimited book .
	Circuit breaker (MCB) and residual current device (RCD).

Marine System booklet

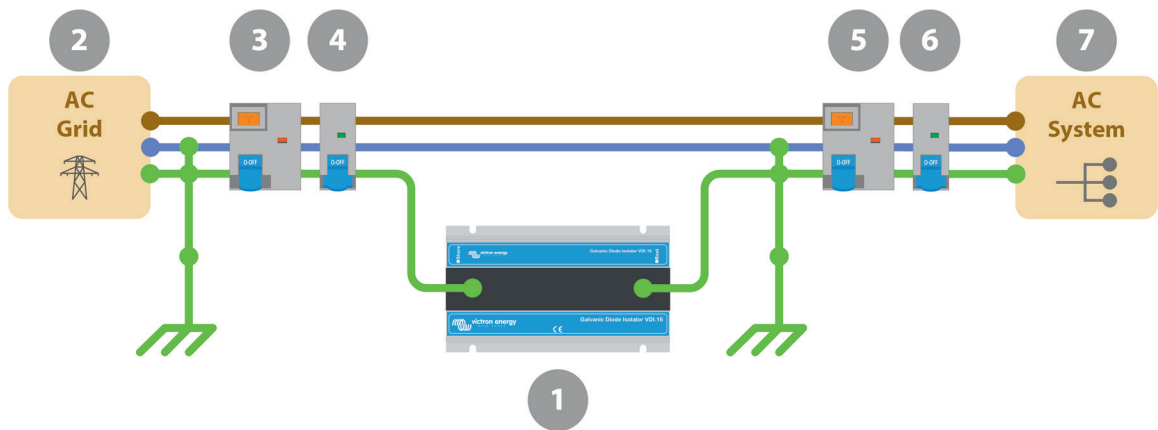
Filax systems



ID	Item and notes
1	Main battery (house battery).
2	Blue Smart battery charger or any other battery charger or solar charger can be used.
3	Inverter , available in models ranging from 250VA up to 5000VA.
4	MultiPlus inverter/charger , available for 12V, 24V 48V systems rating from 500 until 15000VA. Multiple units can be connected in parallel (to increase output power) and/or in 3-phase to form a larger system.
5	AC supply from the grid (shore power) or a generator.
6	AC system.
7	The Filax is a 16A transfer switch. It accommodates a no-break transfer between a priority AC source and a secondary (backup) AC source. Use for AC backup systems.
	AC wiring.
	Positive (red) and negative (black) DC wiring. For more information on wiring see the Wiring Unlimited book .
	DC fuse. A wide range of DC fuses and fuse holders are available from Victron Energy. For fuse ratings see the product manuals or the Wiring Unlimited book .
	Circuit breaker (MCB) and residual current device (RCD).

Marine System booklet

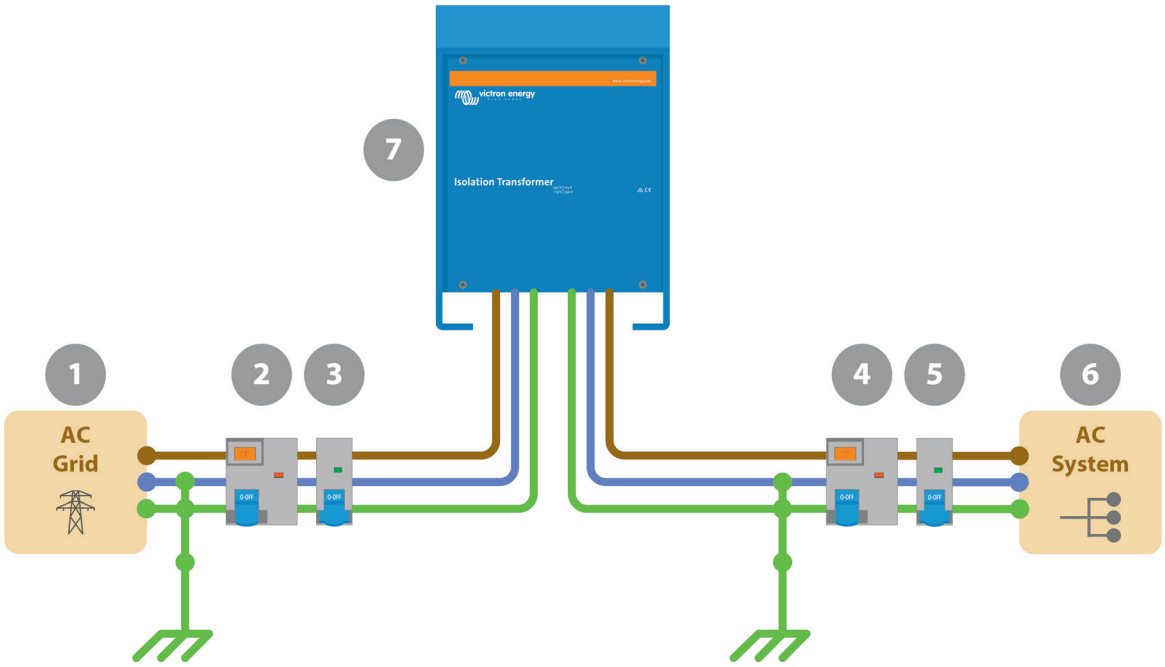
System with a galvanic isolator



ID	Item and notes
1	The Galvanic Isolator prevents electrolytic corrosion. It blocks low voltage DC currents that enter your boat via the shore power earth wire. The galvanic isolator is available in 16A, 32A and 64A models.
2	Shore power connection from the public grid (mains).
3	Residual current device (RCD), located in the shore connection.
4	Circuit breaker (MCB), located in the shore connection.
5	Residual current device (RCD), located on the boat.
6	Circuit breaker (MCB), located on the boat.
7	The boat AC system.
	AC wiring. Brown is phase (L1), blue is Neutral (N), Green is Protective Earth (PE). Note that a Neutral to Earth link needs to be present for the RCD to be functional.
	Ground

Marine System booklet

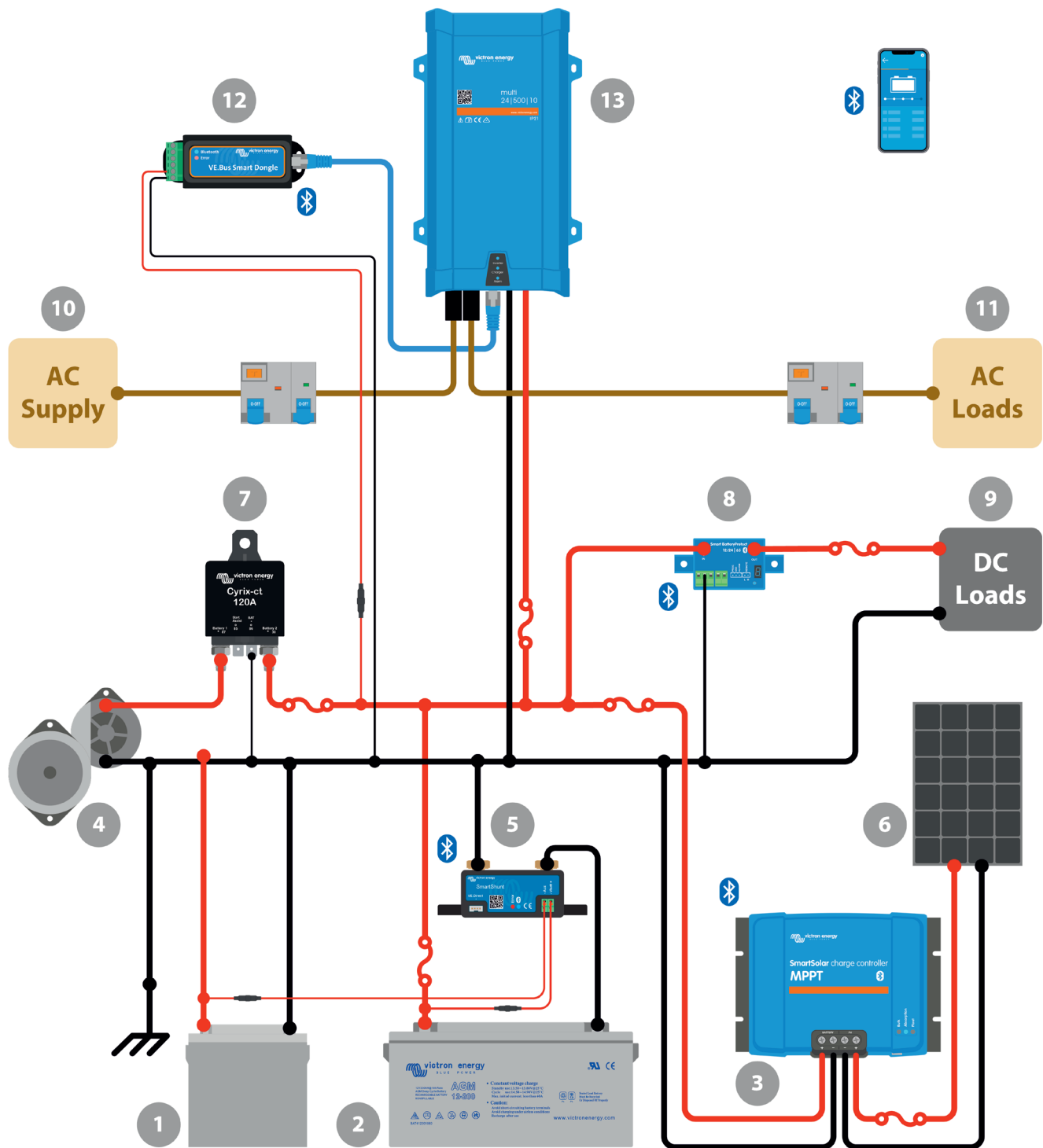
Isolation Transformer system



ID	Item and notes
1	Shore power connection from the public grid (mains).
2	Residual current device (RCD), located in the shore connection.
3	Circuit breaker (MCB), located in the shore connection.
4	Residual current device (RCD), located on the boat.
5	Circuit breaker (MCB), located on the boat.
6	The boat AC system.
7	The Isolation Transformer prevents electrolytic corrosion. It blocks low voltage DC currents that enter your boat via the shore power earth wire and guarantees a safe electric system. The Isolation Transformer is available in 2000VA, 3600VA and 7000VA models. Some models can also be set up to convert 230Vac to 115Vac and vice versa.
	AC wiring. Brown is phase (L1), blue is Neutral (N), Green is Protective Earth (PE). Note that a Neutral to Earth link needs to be present for the RCD to be functional.
	Ground























Marine System booklet

Complete simple system with VictronConnect monitoring



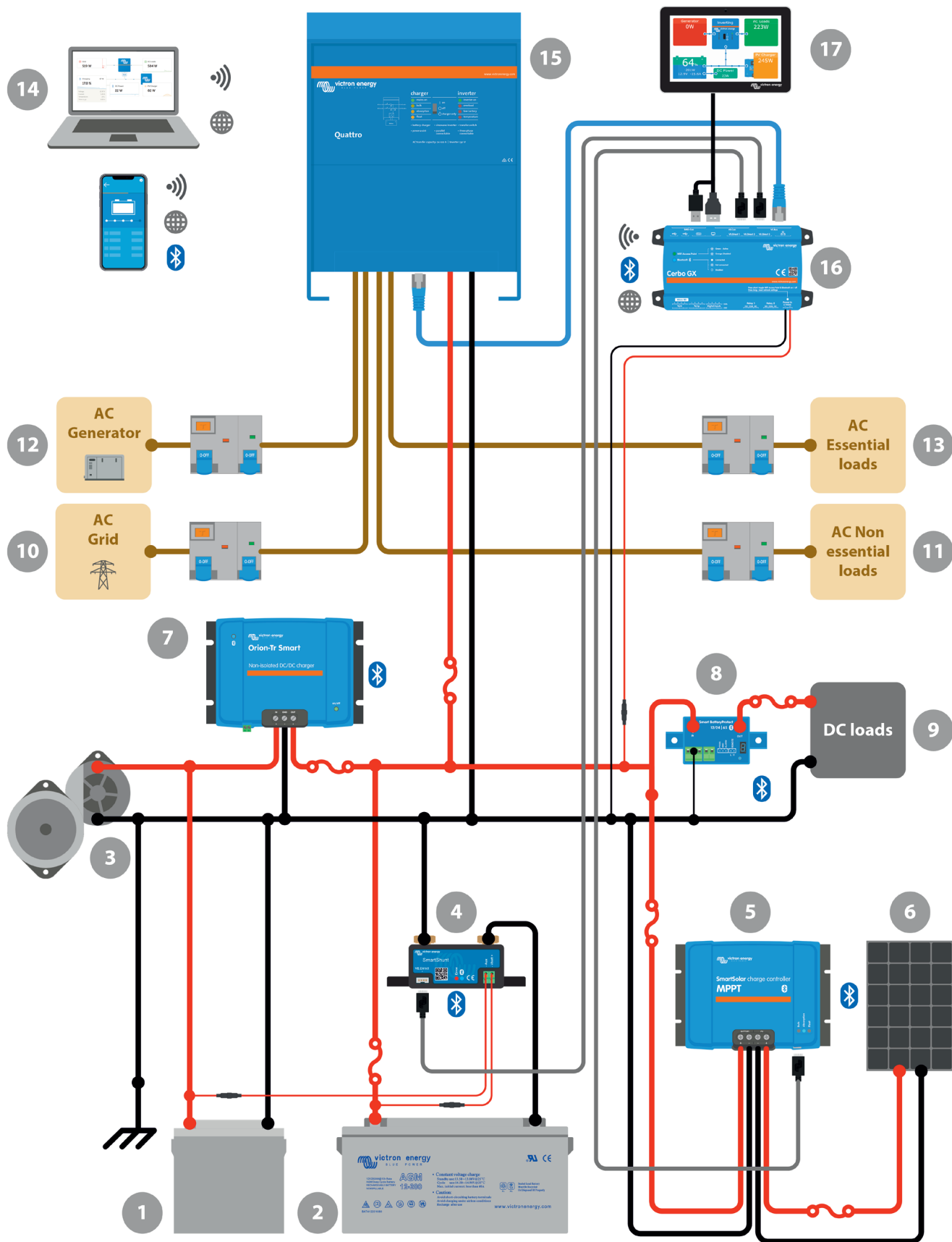
Marine System booklet

Complete simple system with VictronConnect monitoring

ID	Item and notes
	Starter battery.
	Main battery (house battery).
	SmartSolar MPPT solar charge controller , for 12, 24 or 48V systems with a charge current of 15A up to 100A or a BlueSolar MPPT solar charge controller without Bluetooth.
	Engine and alternator.
	SmartShunt battery monitor.
	Solar array consisting of a single or multiple solar panels .
	The Cyrix-ct intelligent battery combiner connects the starter battery to the house battery when the starter battery is being charged from the alternator, or the house battery is being charged from the battery charger. Available in 120A, 230A and 400A versions, for 12V, 24V or 48V systems.
	The Smart BatteryProtect disconnects the DC loads as soon as the battery voltage gets too low. Available in versions with Bluetooth (Smart BatteryProtect) or without Bluetooth (BatteryProtect) for 12V, 24V or 48V systems in 65A, 100A and 220A current ratings.
	DC loads (no chargers).
	AC supply from the grid (shore power) or a generator.
	AC system.
	MultiPlus inverter/charger , available for 12V, 24V 48V systems rating from 500 until 15000VA. Multiple units can be connected in parallel (to increase output power) and/or in 3-phase to form a larger system.
	The VE.Bus Smart dongle allows Bluetooth access to the inverter/charger for monitoring and /or configuration via the VictronConnect app.
	Bluetooth communication, use with the VictronConnect app for monitoring, configuration and inter-product communication (VE.Smart Networking).
	VictronConnect app to monitor and configure all Bluetooth enabled Victron "Smart" products.
	Positive (red) and negative (black) DC wiring. For more information on wiring see the Wiring Unlimited book .
	AC wiring.
	RJ45 UTP cable available in lengths from 0.3m to 30m. To prevent communication issues always use a manufactured cable.
	DC fuse. A wide range of DC fuses and fuse holders are available from Victron Energy. For fuse ratings see the product manuals or the Wiring Unlimited book .
	Fuse holder with DC fuse. This fuse ships together with the product.
	Circuit breaker (MCB) and residual current device (RCD).
	Chassis or ground.













Marine System booklet

Complete system with Quattro and GX monitoring



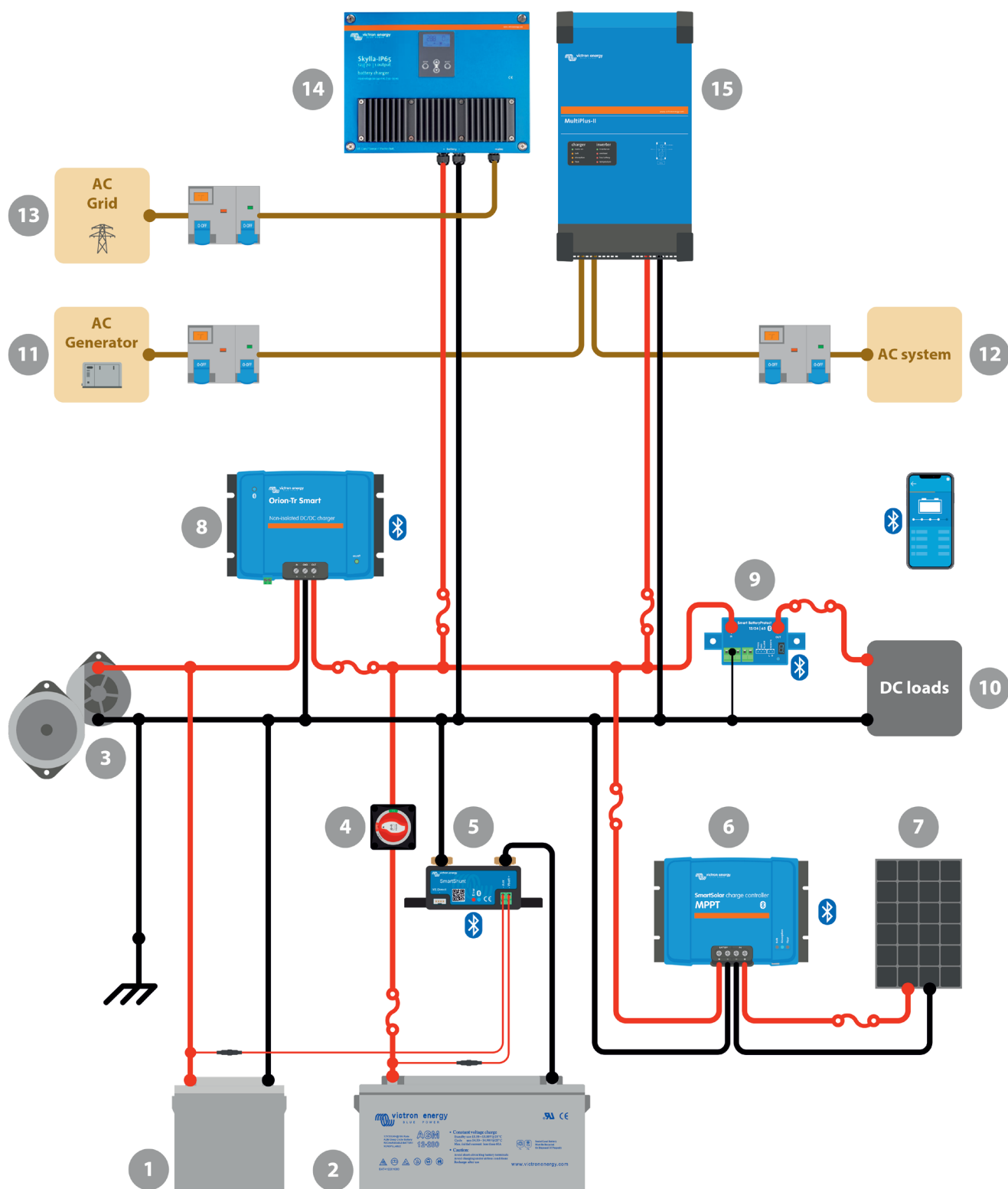
Marine System booklet

Complete system with Quattro and GX monitoring

ID	Item and notes
1	Starter battery.
2	Main battery (house battery).
3	Engine and alternator.
4	SmartShunt battery monitor.
5	SmartSolar MPPT solar charge controller , for 12, 24 or 48V systems with a charge current of 15A up to 100A or a BlueSolar MPPT solar charge controller without Bluetooth.
6	Solar array consisting of a single or multiple solar panels .
7	The Orion-Tr Smart DC-DC Charger Non-Isolated charges the main battery from the alternator and is able to boost the voltage of a smart alternator. Available in models with 12 or 24V and 12 or 24V output with 360W output power. Also available in isolated models. Multiple units can be paralleled if a higher power rating is needed, creating redundancy or a larger charge current.
8	The Smart BatteryProtect disconnects the DC loads as soon as the battery voltage gets too low. Available in versions with Bluetooth (Smart BatteryProtect) or without Bluetooth (BatteryProtect) for 12V, 24V or 48V systems in 65A, 100A and 220A current ratings.
9	DC loads (no chargers).
10	AC grid (mains).
11	AC non essential load, this output will be de-powered when grid or generator is not available.
12	AC generator.
13	AC essential loads, will always be powered, either from generator or grid, or when these are not available, from inverter power.
14	VRM portal for local or remote system monitoring and configuring.
15	Quattro inverter/charger , available for 12V, 24V 48V systems rating from 3000VA up to 15000VA. Multiple units can be connected in parallel (to increase output power) and/or in 3-phase to form a larger system.
16	Cerbo GX for local and remote system monitoring and configuration.
17	GX Touch , a display for the Cerbo GX . Available in two sizes.
	Bluetooth communication, use with the VictronConnect app for monitoring, configuration and inter-product communication (VE.Smart Networking).
	VictronConnect app to monitor and configure all Bluetooth enabled Victron "Smart" products.
	Internet
	Wi-Fi
	Positive (red) and negative (black) DC wiring. For more information on wiring see the Wiring Unlimited book .
	AC wiring.
	RJ45 UTP cable available in lengths from 0.3m to 30m. To prevent communication issues always use a manufactured cable.
	VE.Direct cable , available in lengths from 0.3m up to 10m.
	DC fuse. A wide range of DC fuses and fuse holders are available from Victron Energy. For fuse ratings see the product manuals or the Wiring Unlimited book .
	Fuse holder with DC fuse. This fuse ships together with the product.
	Circuit breaker (MCB) and residual current device (RCD).
	Chassis or ground.









Marine System booklet

Complete system with universal shore power input



Marine System booklet

Complete system with universal shore power input

ID	Item and notes
1	Starter battery.
2	Main battery (house battery).
3	Engine and alternator.
4	Battery Switch 275A , suitable for 12, 24 or 48V systems.
5	SmartShunt battery monitor.
6	SmartSolar MPPT solar charge controller , for 12, 24 or 48V systems with a charge current of 15A up to 100A or a BlueSolar MPPT solar charge controller without Bluetooth.
7	Solar array consisting of a single or multiple solar panels .
8	The Orion-Tr Smart DC-DC Charger Non-Isolated charges the main battery from the alternator and is able to boost the voltage of a smart alternator. Available in models with 12 or 24V and 12 or 24V output with 360W output power. Also available in isolated models. Multiple units can be paralleled if a higher power rating is needed, creating redundancy or a larger charge current.
9	The Smart BatteryProtect disconnects the DC loads as soon as the battery voltage gets too low. Available in versions with Bluetooth (Smart BatteryProtect) or without Bluetooth (BatteryProtect) for 12V, 24V or 48V systems in 65A, 100A and 220A current ratings.
10	DC loads (no chargers).
11	AC generator.
12	AC system.
13	AC Grid (mains) this can be any voltage between 90Vac and 265Vac and between 45Hz and 60Hz.
14	Sylla-IP65 battery charger with universal AC input voltage. Available in a 12V/70A and 24V/35A model. Multiple units can be paralleled (and synchronised) if a higher charge current is needed, creating a larger charge current or redundancy.
15	MultiPlus inverter/charger , available for 12V, 24V 48V systems rating from 500 until 15000VA. Multiple units can be connected in parallel (to increase output power) and/or in 3-phase to form a larger system.
	Bluetooth communication, use with the VictronConnect app for monitoring, configuration and inter-product communication (VE.Smart Networking).
	VictronConnect app to monitor and configure all Bluetooth enabled Victron "Smart" products.
	Positive (red) and negative (black) DC wiring. For more information on wiring see the Wiring Unlimited book .
	AC wiring.
	DC fuse. A wide range of DC fuses and fuse holders are available from Victron Energy. For fuse ratings see the product manuals or the Wiring Unlimited book .
	Fuse holder with DC fuse. This fuse ships together with the product.
	Circuit breaker (MCB) and residual current device (RCD).
	Chassis or ground.

Lithium system with Smart BMS 12/200



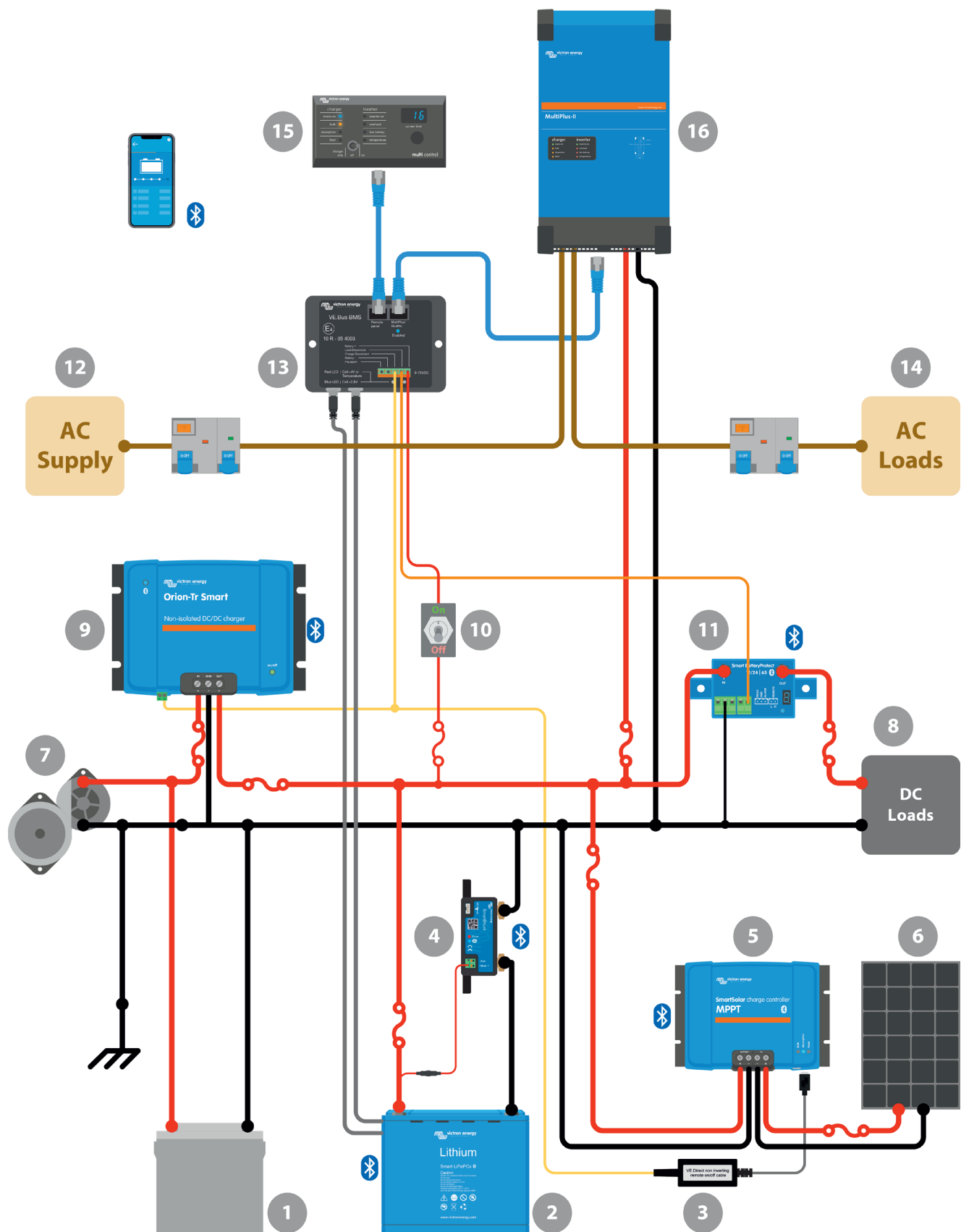
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Lithium system with Smart BMS 12/200

ID	Item and notes
	Starter battery.
	Lithium Battery Smart 12.8V, available from 50Ah up to 330Ah. Up to 5 batteries can be connected in parallel.
	VE.Direct non inverting remote on/off cable , to enable BMS control via the solar charger VE.Direct port.
	Engine and alternator.
	SmartShunt battery monitor.
	Solar charge controller
	Solar array consisting of a single or multiple solar panels .
	Remote on/off switch.
	The Smart BMS 12/200 is a dedicated Battery Management System for Victron Lithium Smart Batteries. It is suitable for 12V systems. It has an 100A current limiting alternator port and a 200A (400A peak) rated DC system port.
	DC system (chargers and loads).
	AC supply from the grid (shore power) or a generator.
	AC system.
	MultiPlus inverter/charger because the DC supply to the MultiPlus travels via the BMS system port, the inverter/charger should not exceed 2000VA.
	Digital Multi Control 200/200A GX , to remotely view and control the inverter/charger.
	Bluetooth communication, use with the VictronConnect app for monitoring, configuration and inter-product communication (VE.Smart Networking).
	VictronConnect app to monitor and configure all Bluetooth enabled Victron "Smart" products.
	Positive (red) and negative (black) DC wiring. For more information on wiring see the Wiring Unlimited book .
	AC wiring.
	VE.Direct cable , available in lengths from 0.3m up to 10m.
	RJ45 UTP cable available in lengths from 0.3m to 30m. To prevent communication issues always use a manufactured cable.
	Lithium Battery Smart BMS communication cables. These are attached to the battery. Use M8 circular connector 3 pole cables if extension cables are needed. These are available in lengths from 1m up to 5m.
	BMS "allowed to discharge" (orange) and BMS "allowed to charge" (yellow) signal wires.
	DC fuse. A wide range of DC fuses and fuse holders are available from Victron Energy. For fuse ratings see the product manuals or the Wiring Unlimited book .
	Fuse holder with DC fuse. This fuse ships together with the product.
	Circuit breaker (MCB) and residual current device (RCD).
	Chassis or ground.





























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Lithium System with VE.Bus BMS



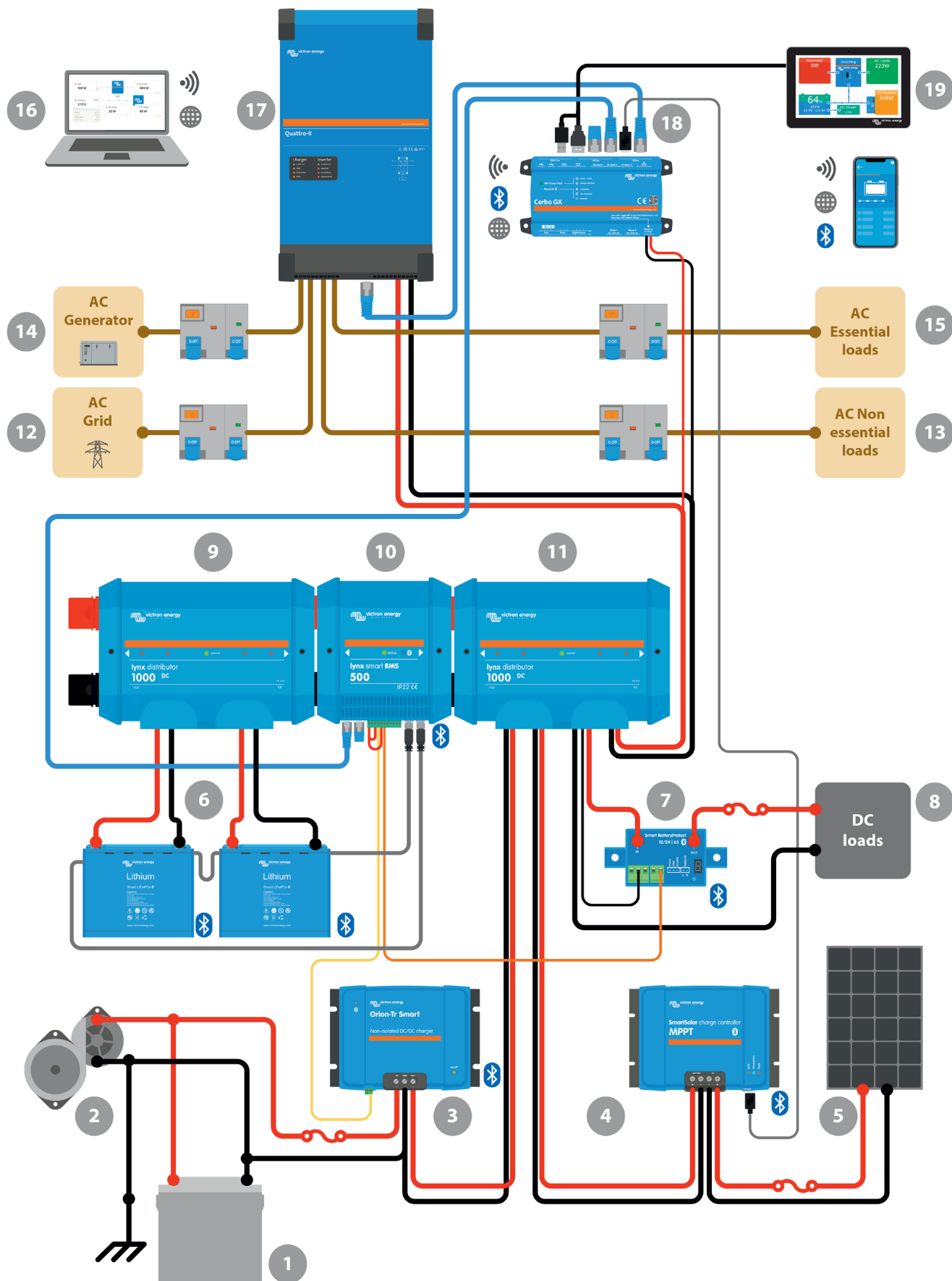
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Lithium System with VE.Bus BMS

ID	Item and notes
	Starter battery.
	Lithium Battery Smart , available in 12.8V and 25.6V models from 50Ah up to 330Ah. Can be series connected to create a 12V, 24V or 48V battery bank. Up to 5 batteries (or series strings) can be connected in parallel.
	VE.Direct non inverting remote on/off cable , to enable BMS control via the solar charger VE.Direct port.
	SmartShunt battery monitor.
	Solar charge controller
	Solar array consisting of a single or multiple solar panels .
	Engine and alternator.
	DC loads (no chargers).
	The Orion-Tr Smart DC-DC Charger Non-Isolated charges the main battery from the alternator and is able to boost the voltage of a smart alternator. Available in models with 12 or 24V and 12 or 24V output with 360W output power. Also available in isolated models. Multiple units can be paralleled if a higher power rating is needed, creating redundancy or a larger charge current.
	Remote on/off switch.
	The Smart BatteryProtect disconnects the DC loads as soon as the battery voltage gets too low. Available in versions with Bluetooth (Smart BatteryProtect) or without Bluetooth (BatteryProtect) for 12V, 24V or 48V systems in 65A, 100A and 220A current ratings.
	AC supply from the grid (shore power) or a generator.
	The VE.Bus BMS is a dedicated Battery Management System for Victron Lithium Smart Batteries. It is suitable for 12V, 24V or 48V systems. It can directly control inverter/chargers via VE.Bus.
	AC system.
	Digital Multi Control 200/200A GX , to remotely view and control the inverter/charger.
	MultiPlus inverter/charger , available for 12V, 24V 48V systems rating from 500 until 15000VA. Multiple units can be connected in parallel (to increase output power) and/or in 3-phase to form a larger system.
	Bluetooth communication, use with the VictronConnect app for monitoring, configuration and inter-product communication (VE.Smart Networking).
	VictronConnect app to monitor and configure all Bluetooth enabled Victron "Smart" products.
	Positive (red) and negative (black) DC wiring. For more information on wiring see the Wiring Unlimited book .
	AC wiring.
	VE.Direct cable , available in lengths from 0.3m up to 10m.
	RJ45 UTP cable available in lengths from 0.3m to 30m. To prevent communication issues always use a manufactured cable.
	Lithium Battery Smart BMS communication cables. These are attached to the battery. Use M8 circular connector 3 pole cables if extension cables are needed. These are available in lengths from 1m up to 5m.
	BMS "allowed to discharge" (orange) and BMS "allowed to charge" (yellow) signal wires.
	DC fuse. A wide range of DC fuses and fuse holders are available from Victron Energy. For fuse ratings see the product manuals or the Wiring Unlimited book .
	Fuse holder with DC fuse. This fuse ships together with the product.
	Circuit breaker (MCB) and residual current device (RCD).
	Chassis or ground.















Marine System booklet

Lithium system with Lynx Smart BMS



Marine System booklet

Lithium system with Lynx Smart BMS

ID	Item and notes
1	Starter battery.
2	Engine and alternator.
3	The Orion-Tr Smart DC-DC Charger Non-Isolated charges the main battery from the alternator. Available in models with 12 or 24V and 12 or 24V output with 360W output power.
4	SmartSolar MPPT solar charge controller , for 12, 24 or 48V systems with a charge current of 15A up to 100A.
5	Solar array consisting of a single or multiple solar panels .
6	Lithium Battery Smart , available in 12.8V and 25.6V models from 50Ah up to 330Ah. Can be series connected to create a 12V, 24V or 48V battery bank. Up to 5 batteries (or series strings) can be connected in parallel.
7	The Smart BatteryProtect disconnects the DC loads as soon as the BMS disallows discharging. For 12V, 24V or 48V systems with 65A, 100A and 220A current ratings.
8	DC loads (no chargers).
9	The Lynx Distributor is a modular DC busbar with locations for four DC fuses and fuse status monitoring.
10	The Lynx Smart BMS is a dedicated Battery Management System for Victron Lithium Smart Batteries. It is suitable for 12V, 24 or 48V systems. It has a built-in DC contactor and battery monitor and can communicate with a GX device.
11	The Lynx Distributor is a modular DC busbar with locations for four DC fuses and fuse status monitoring.
12	AC grid (mains).
13	AC non essential load, this output will be de-powered when grid or generator is not available.
14	AC generator.
15	AC essential loads, will always be powered, either from generator or grid, or when these are not available, from inverter power.
16	VRM portal for local or remote system monitoring and configuring.
17	Quattro inverter/charger , available for 12V, 24V 48V systems rating from 3000VA up to 15000VA. Multiple units can be connected in parallel (to increase output power) and/or in 3-phase to form a larger system.
18	Cerbo GX for local and remote system monitoring and configuration.
19	GX Touch , a display for the Cerbo GX . Available in two sizes.
	Bluetooth communication, use with the VictronConnect app for monitoring, configuration and inter-product communication (VE.Smart Networking).
	VictronConnect app to monitor and configure all Bluetooth enabled Victron "Smart" products.
	Internet
	Wi-Fi
	Positive (red) and negative (black) DC wiring. For more information on wiring see the Wiring Unlimited book .
	AC wiring.
	VE.Direct cable , available in lengths from 0.3m up to 10m.
	RJ45 UTP cable available in lengths from 0.3m to 30m. To prevent communication issues always use a manufactured cable.
	RJ45 VE.Can terminator , use in the vacant RJ45 port of the first and last "daisy chained" VE.Can device. Two terminators ship with each VE.Can product.
	Lithium Battery Smart BMS communication cables. These are attached to the battery. Use M8 circular connector 3 pole cables if extension cables are needed. These are available in lengths from 1m up to 5m.
	BMS "allowed to discharge" (orange) and BMS "allowed to charge" (yellow) signal wires.
	DC fuse. A wide range of DC fuses and fuse holders are available from Victron Energy. For fuse ratings see the product manuals or the Wiring Unlimited book .
	Circuit breaker (MCB) and residual current device (RCD).
	Chassis or ground.

Marine System booklet

Remarks / Notes



Marine System booklet

Remarks / Notes





Battery chargers
Inverters
Inverter/chargers
Battery protection
Argodiode and Argofet splitters
Voltage sensitive relays
Solar chargers
AGM and GEL batteries
Lithium batteries
Battery Management Systems
DC-DC converters and chargers
Battery monitors
System monitoring
Fuses and fuse holders
Busbars
Battery Switch

For more information see www.victronenergy.com

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SAL064137020
2021-11



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