

BUYING GUIDE

POWER & CONTROL

CHOOSE THE RIGHT DOMETIC PRODUCTS FOR YOUR APPLICATION

Mobile living made easy.

 **DOMETIC**



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FREEDOM MEANS DOING YOUR OWN THING

The kind of freedom to decide where to go, just change your plans and stay a bit longer in or at a place you really like. For most people this is the main reason for going on holiday in a motorhome, caravan or boat.

Alas, many of the things that add to our enjoyment and comfort on board require energy, and that is not available in unlimited quantity on the way. Electronic appliances need recharging, and you don't want to go without convenience items such as the coffee pad machine either. Power demands have been growing continuously over the last few years so that the standard power system installed by vehicle manufacturers soon reaches its limits.

If you wish to be independent for any length of time you will therefore have to consider the significance of your travelling habits. Are you going to use 230-volt devices on board? Is it important to have the batteries fully recharged on mains power within a short time? Is there a continuous change between independent standing times and periods of driving to the next destination, allowing the batteries to be smartly recharged? Provided the vehicle is equipped with a cleverly optimized energy management system there will always be sufficient energy available.



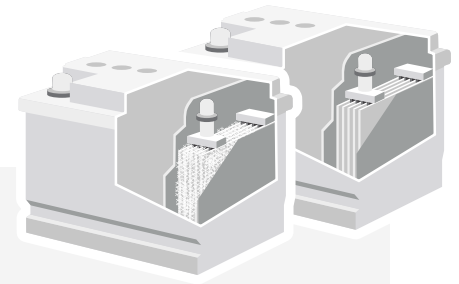
CUSTOMIZED BATTERY CHARGING

THE RIGHT STRATEGY TO CHARGE YOUR BATTERIES

The batteries in motorhomes, caravans or boats are responsible for the power supply in remote places where mains power is unavailable. Specially designed for self-sufficient energy supply, these batteries feature a high cycle stability and thus a long life expectancy – provided they are properly recharged. If a battery fails earlier than normal, this is most often due to the fact that it was not recharged in good time or, even worse, the wrong charging strategy was applied.

PROPER RECHARGING PREVENTS DAMAGE

Batteries have to be recharged 100 percent, because insufficient charging leads to sulphate build-up and premature ageing. During the discharging process, lead is dissolved from the battery poles. The lead reacts with the sulphuric acid to form smaller sulphate crystals, which will break down back into lead and sulphuric acid in the next charging process. If you wait too long before you recharge your battery, though, the crystals will grow and get harder. This detracts more and more substance from the chemical process, the active surface of the electrodes decreases, and crystals sink to the bottom of the cell to form a layer of sludge which cannot be dissolved again. Creeping capacity loss and premature battery death are the consequences of this scenario.



CAUTION

Improper recharging causes sulphate build-up on the battery's lead plates. The sulphate crystals sink to the bottom, where they form a sludge that reduces the battery capacity.



THE RIGHT CHARGING STRATEGY

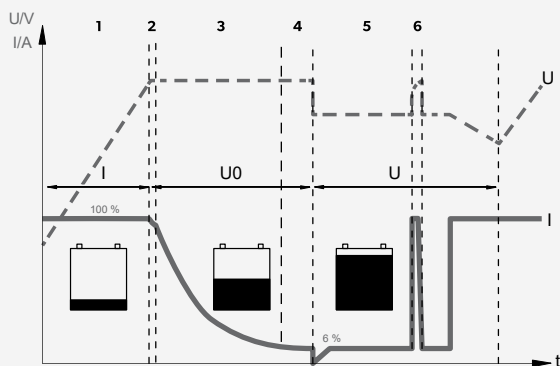
Recreational vehicles and boats are typically fitted with two different types of battery: batteries with a lead-acid fill (wet, AGM or gel) and lithium ion batteries. For optimal recharging, each battery type requires a specific charging curve, which should be programmed on the battery charger.

If the starter battery and vehicle battery are recharged via a battery charger, the specific battery design and the corresponding current draw have to be taken into account.

Starter batteries and supply batteries are designed for different tasks. To start the engine, starter batteries must initially supply a high current level and will then serve as an energy buffer with smaller current drain and charging cycles. Supply or leisure batteries, by contrast, are discharged at lower current levels over longer periods of time before they are recharged again. This means they are subjected to considerably higher loads. These special features must be factored into the charging technology to protect the batteries from damage and give them a long service life.

Dometic PerfectCharge series battery chargers are adapted to the battery types installed. Using a six-step IUOU charging cycle, they provide optimal charging for all gel, AGM and wet batteries, because they charge quickly and gently at the same time. Lithium ion batteries can be quickly recharged at extremely high charging currents thanks to the integrated battery management system. The Dometic battery chargers in the PerfectPower MCA and DCC series are already equipped with the matching charging strategy for modern batteries.

IUOU CHARGING CHARACTERISTICS



6-stage IUOU charging characteristics

- 1 I-phase: The discharged battery is charged with constant current until the battery voltage reaches the charge voltage.
- 2 – 4 U0-phase: 3-stage absorption charging phase with constant voltage (U0). The battery charge is determined within the first two minutes, after which the main charging phase follows. This ends when the battery is fully charged or the charge current is less than 6 % of the nominal charging current for 15 mins.
- 5 U-phase: The charger switches over to float charging.
- 6 Conditioning: Every 12 days, the charger switches back into phase I to revitalise the battery and prevent sulphation.



TIP! WINTER BREAK

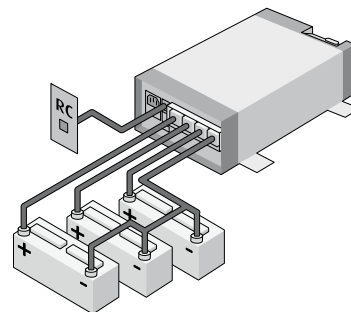
During longer periods of standstill the vehicle or boat should remain connected to a mains supply. Fitted with smart charging technology, Dometic battery chargers control the conservation charging – no need to monitor the process. The fully charged battery is periodically subjected to a regeneration phase, which prevents sulphate build-up and premature ageing. When the season starts, you will always have a fully charged battery – ready for new adventures.

REGULAR FULL CHARGING

The manufacturers of brand name batteries recommend that batteries be completely recharged at least every eight weeks. Generally, each journey should be started with a full battery. After the journey and prior to a longer period of standstill, the battery should be charged on an IUOU battery charger for at least 24 hours. Our recommendation: completely recharge the batteries before the winter break, then disconnect them and leave them in the vehicle – self-discharging is slower in cool surroundings than e.g. in a heated room. If your winter store has a power socket, the Dometic battery charger should remain connected all the time. This allows proper conservation charging and prevents premature battery ageing (see tip).

SIMULTANEOUS CHARGING OF SEVERAL BATTERIES

When two or more batteries are used independently, the load on each of them will be different. They will then have to be recharged accordingly. The Dometic PerfectCharge MCA chargers, featuring two or three charging outputs, do that automatically. The integrated diodes interrupt the charging current and thus prevent charge balancing between the batteries. While charging, the weaker battery is initially brought to the same charge level as the fuller one. Charging then continues for both (or all three) batteries at the same voltage level until the end of the charging process. Naturally, it is also possible to connect only one battery to a charger with several outputs.



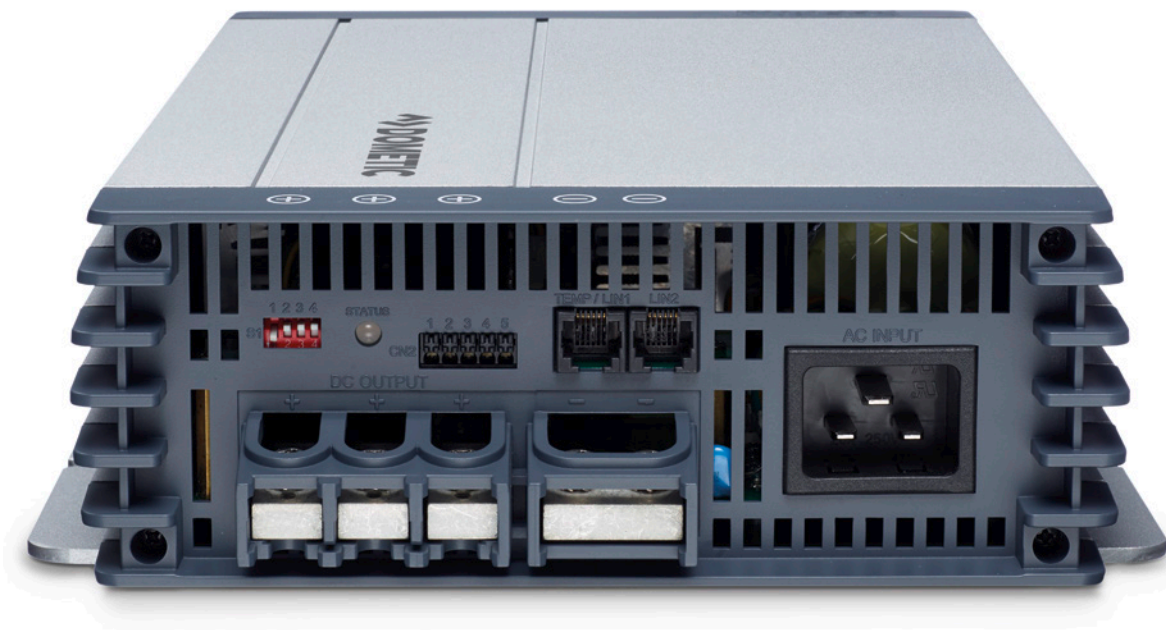
RETROFITTING A BATTERY CHARGER

Electronic devices used (or retrofitted) on board can quickly strain the vehicle batteries to their limits. If you stock up on battery capacity, you will also have to install the matching charging technology. To ensure that the batteries can be quickly recharged, the charger should be dimensioned accordingly.

The performance rating of the battery charger depends on the capacity of the battery/batteries. Battery manufacturers strictly advise against using an insufficiently dimensioned battery charger. They recommend using a charging current of at least 10 to 20 percent of the charging capacity of the connected battery/batteries. This is the only way to get a battery-saving full charge within a reasonable period of time.

Calculation example: For a battery with a capacity of 150 amp-hours, the charging current should be at least 15 amps. If two batteries of 100 amp-hours each are connected in parallel (= 200 amp-hours in total), the battery charger should be able to deliver at least 20 amps. Rule of thumb: The larger the battery charger's charging capacity, the shorter the charging time (for the same battery capacity). Please do not forget that devices like the water pump, the TV set or lights are used during the charging periods, so they will simultaneously consume battery capacity. These devices have to be added to the charging current.

It makes absolute sense to have a high-performance battery charger on board, if you want to leave the campsite or marina with fully charged batteries the next morning.



FIT FOR THE FUTURE

PerfectCharge IUOU battery chargers from Dometic charge particularly gently and are optimally equipped for future innovations in the caravan sector. Thanks to a series-standard bus interface, they harmonise perfectly in bus systems used in the RV or boatbuilding industry. They can just as easily be integrated into the battery management systems Dometic MPC 01 or DSP EM, which optimise the charging process and reduce the charging time by up to 30 %. With their lightweight, ultra-compact design and practically placed screw connections, these battery chargers can be installed quickly and hassle-free. Their suitability for use all over the world makes them interesting for frequent and worldwide travellers. Featuring an input voltage range of 110 – 230 volts, they will even charge reliably when the input voltage drops.

BATTERY CHARGER AND ON-BOARD ELECTRONICS

Most motorhomes and boats are fitted in the factory with a battery charger in the form of an electronics block which also controls other functions in the vehicle. The capacity of the built-in charger is usually low and unable to cope with an upgraded battery capacity. Dometic battery chargers can be operated in parallel to the factory-fitted electronics block. The smart electronics system of the battery charger takes over the major part of the recharging process and ensures optimal battery charging with its IUOU charging characteristics. That means the battery capacity can be adapted to additional loads without any problems.



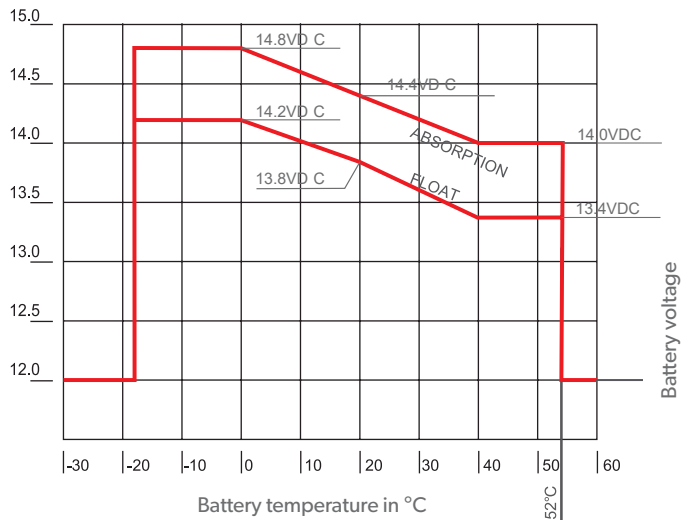
TEMPERATURE CONTROLLED CHARGING

The ambient temperature is an important factor for proper battery charging, because the temperature of the battery has a significant influence on the optimal charging voltage. In cold batteries, for example, the gassing voltage is higher than in warm batteries. The optional temperature sensor MCA-TS1 can be used for all Dometic MCA automatic chargers. It is recommendable for charging in varying or extreme ambient temperatures. Otherwise it may happen that the battery is not fully charged in a cold environment, or charged too long when outside temperatures are high.

The sensor is attached to (or nearby) the battery and measures the temperature. Depending on the result, the battery charger automatically adjusts the charging or float charging voltage. The voltage is reduced at high temperatures (battery gassing prevention), and increased accordingly at low temperatures to achieve improved full charging.

Temperature measurement and compensation can also be entrusted to the optional battery sensor. Besides temperature, the battery sensor also determines other battery parameters (terminal voltage, charging current, charging status) to help the battery charger to optimise the charging process.

Charging voltage in V



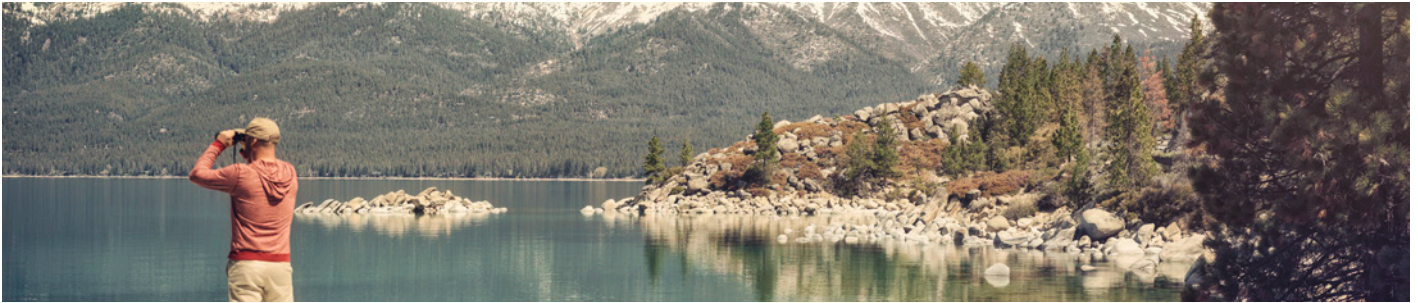
The temperature controlled charging voltage allows optimal battery charging regardless of the ambient temperature



TIP!

Using a battery sensor can reduce the charging time by up to 30%.





CORRECT CHARGING IN THE CARAVAN

SUFFICIENT POWER FOR THE MOVER

Caravan movers are growing increasingly popular. The independence of being able to move the heavy trailer backwards and forwards unassisted, simply at the touch of a finger, also appeals to younger caravanners. If you add a mover to your caravan, you will also need a matching battery – plus a reliable battery charger to recharge it.

This is where the PerfectCharge IU 812 compact charger comes in very handy. Conceived for charging leisure batteries up to 100 Ah, it is also ideal for mover batteries. With its large input voltage range it compensates mains fluctuations with ease. Contemporary switch-mode technology ensures high energy efficiency, and the modified IUOU charging curve is the optimal choice for charging wet, gel and AGM batteries.

The compact and lightweight charger has sufficient capacity to get the batteries back to full charge after manoeuvring, so the caravan can be moved to the next parking position with equal ease again.

Those wishing to use the enhanced freedom provided by a vehicle battery for self-sufficient caravan operation, should install a battery charger of the MCA or DCC series. Thus equipped, the caravan can remain connected to a mains supply in the winter quarters. The battery charger makes sure that the battery is optimally charged at all times and protects it from premature ageing with regular regeneration phases.





CHARGING ON THE MOVE

PERFECT BATTERY CHARGING WITH A CHARGING CONVERTER

Vehicle engines that are energy-saving and environmentally compatible have their drawbacks: the owners of vehicles with regulated alternators often notice that their vehicle battery is not fully charged, even though they have been travelling long distances. The reason is that the supposedly smart alternator reduces its performance drastically once the starter battery has reached a certain voltage level.

The power circuit in the leisure part of the vehicle is independent from the chassis circuit, which is why the alternator does not recognize the charging level of the vehicle battery – there is nothing left for charging the battery. Clever mobile holiday makers therefore use a little trick and turn the dipped headlights or seat heating on

permanently. The high-performance consumer takes power from the starter battery and indicates demand – the alternator runs at a high level again and charges the vehicle battery at the same time. However, who wants to travel with the seat heating on in the summer? This is where specially designed charging converters (charging boosters) such as the Dometic PerfectPower DCC come in. Simplified, the complex process that takes place in the unit may be explained as follows: the charging converter controls the charging level of the vehicle battery. If this is not charged, it takes power from the starter battery to charge the vehicle battery and “simulates” to the alternator that a high-power consumer is turned on. This process is continued until the vehicle battery is fully charged.

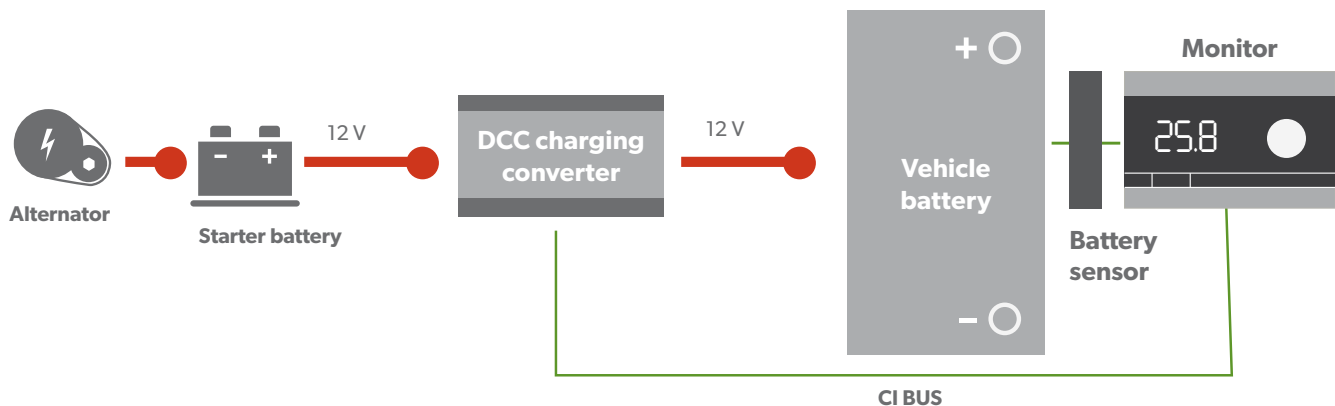
A CHARGING STRATEGY TO MATCH

There are quite a few charging converters in the market. Not all of them provide the charging strategy required for a motorhome or boat, however. Unlike cheap systems with simple IU characteristic, Dometic PerfectPower DCC units work with an IUOU curve that always ensures the battery is optimally and fully charged, independent from the charging level and the travelling distance.

PerfectPower DCC charging converters have another decisive advantage: the integrated voltage stabilization guarantees the gentle operation of particularly sensitive appliances such as e-book readers or smartphones. The Dometic charging converters even protect them from voltage peaks in the alternator charging current. The lightweight, compact units can easily be fitted anywhere in the vehicle or boat. All that is important is to make sure that there is sufficient ventilation. It makes sense to install the unit in vicinity of the vehicle batteries and observe the cross sections of all supply cables as recommended by the manufacturer. A battery temperature sensor is optionally available to complement the PerfectPower DCC charging converters. It is a sensible accessory for AGM or gel batteries, as the optimal charging voltage of these batteries changes in cold or hot temperatures. A charging strategy optimally adapted to the battery temperature ensures that AGM or gel batteries will always get the correct charging characteristic and, as a result, a full charge.



Special variants of Dometic charging converters are particularly interesting for the owners of vehicles with truck chassis. These units are designed as converters from 24 volts to 12 volts. They use the alternator as the higher-voltage power source to recharge a 12-volt vehicle power supply.





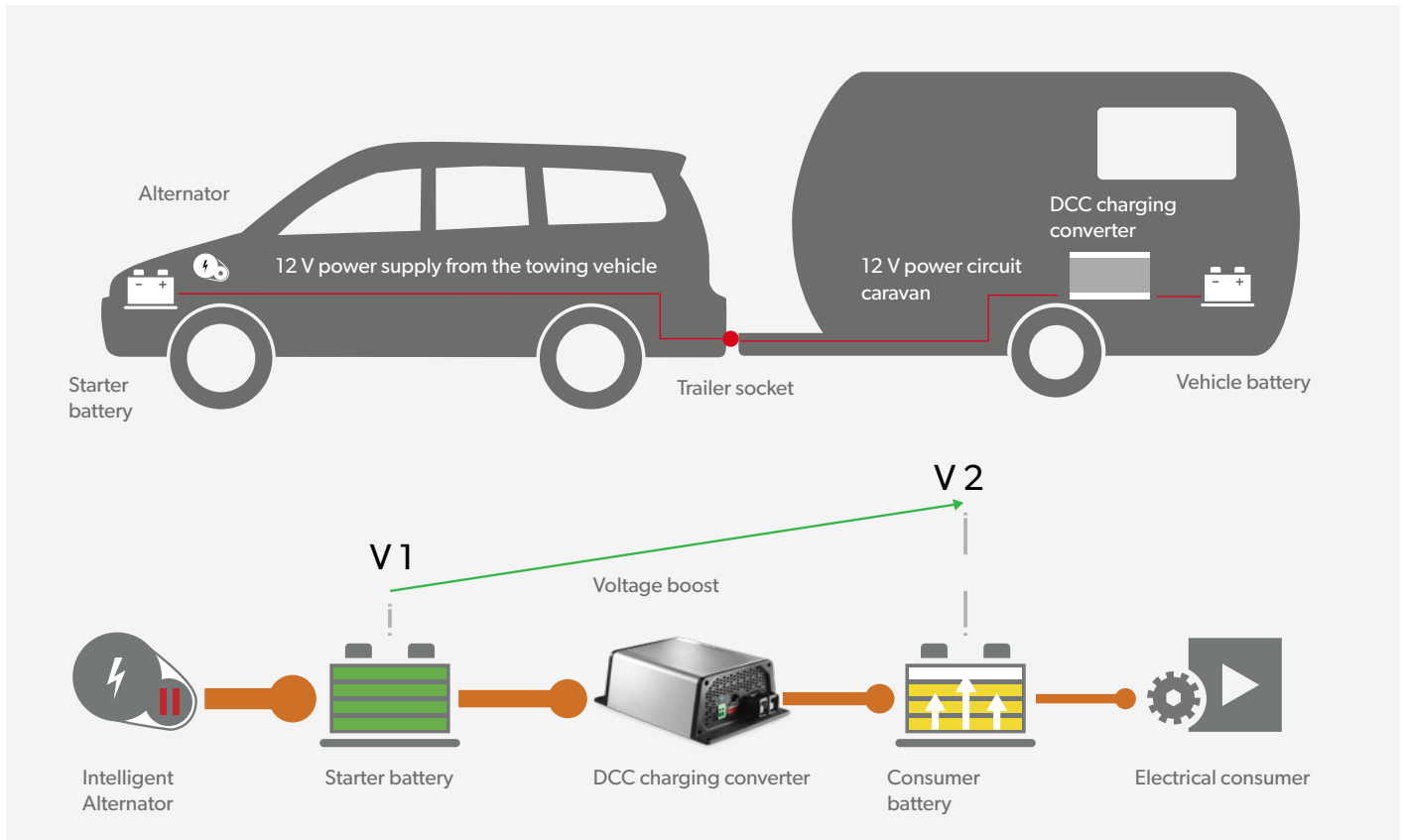
FULL CHARGE FROM THE TOWING VEHICLE

THE CORRECT WAY TO CHARGE THE CARAVAN BATTERIES

Just manoeuvre the fully loaded caravan using the mover and off you go. By the time you get to your holiday destination, the power supply of the towing vehicle should have charged the battery completely. Nevertheless, after a bit of shunting at the campsite, it gives up again.

The caravan's lighting system and the vehicle battery are charged via a cable from the towing vehicle. The cable comes all the way from the starter battery via the caravan socket to the power distribution in the caravan. Taking the diameter of the cable connected to the

caravan socket into account it is obvious that it cannot enable large amounts of current to flow. The starter battery is charged by the alternator. Once it is fully charged the alternator turns off the charge. The amount of power that has reached the caravan battery up to this point is by no means sufficient to replace the quantity drawn for shunting. If the vehicle battery is now used for self sufficient operation during a longer stay, the capacity that is actually needed for shunting at the holiday destination is quickly reduced.



A charging converter is the correct solution. It ensures that the vehicle battery continues to receive power from the alternator even if the starter battery is full. It is installed in the caravan and monitors the charging condition of the vehicle battery. If the battery is not charged, the charging converter draws power from the starter battery in the towing vehicle to recharge it. The alternator does not shut off, but continues to charge the starter battery. This process is repeated by the charging converter until the vehicle battery is fully charged.

The actual amount of power that arrives at the charging converter is limited because of the long cabling distance. That makes the 10-amp

Dometic PerfectPower DCC charging converter the ideal solution for supplying the vehicle batteries. Equipped with state-of-the-art IUOU charging technology, the converter can be used with all common battery types. It should be installed in a place close to the vehicle battery.

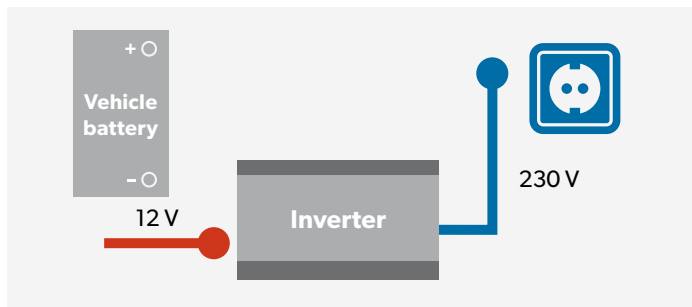
It makes sense to connect an optional temperature sensor, as the temperatures inside a caravan tend to vary considerably en route. In this manner you make sure that the charging strategy is adapted to the ambient temperature and each battery type is optimally charged.

YOUR FAVOURITE PLACES HAVE A SOCKET CONNECTION NOW

230 VOLTS FROM THE VEHICLE BATTERY

When you travel in a recreational vehicle you use the power from the vehicle battery for all the electrical equipment installed inside. All connected devices such as illumination, refrigerator, heating or water pump are normally designed for 12 volts DC. This is quite sufficient en route, unless you wish to take 230-volt equipment. In this case it makes sense to have your own power supply on board. Hair drying, preparing your espresso, charging your laptop – an inverter converts the 12-volt DC voltage of the vehicle battery into the required 230-volt AC voltage.

Dometic offers a broad selection of inverters designed to convert 12 or 24-volt battery power into 230 volts AC. On one side they are connected to the vehicle battery, on the other side they deliver 230 volts on an ordinary household socket. As simple as that may sound, there are a few points to consider when choosing the right appliance, as it is not possible to operate each inverter with each electric device.



CONNECTED DEVICES

The choice of the right inverter is determined by two decisive factors:

1. **What is going to be connected?**
2. **How much battery capacity is available?**

On principle all 230-volt domestic appliances can be operated using an inverter: coffee machine, vacuum cleaner, microwave, electric toothbrush, hair drier, laptop, etc. The maximum performance of the inverter depends on the power consumption of the equipment to be connected to it. Regardless of whether a 60-watt TV set is operated via a simple 350-watt inverter or a 2000-watt SinePower unit, its power consumption will be about 6 amps in each case. Calculating the power consumption is easy enough: 12 volts x 1.10 = power consumption/per hour. This calculation takes the power consumption of the inverter for the actual conversion into account as well.

If you only wish to connect a laptop or a charger, a small inverter will be sufficient. If you do not want to go without the convenience of the hair drier or espresso machine, however, you will need a strong system capable of supplying high continuous voltage. Provided there is sufficient storage room in the vehicle it is recommendable to install a high-performance inverter. Judging by experience, the convenience an inverter provides will soon raise the number of 230-volt appliances taken on board.



The capacity that the vehicle battery is able to deliver is the second important point. In this respect, too, it is important to remember that the appliance connected to the inverter is responsible for the amount of power taken from the vehicle battery, not the performance of the inverter itself. A laptop for instance may remain connected for a long time, even if the battery capacity is only small, while a hair drier will soon give up on the same given capacity. If you want to run high-power device on an inverter for any length of time, you should therefore have a correspondingly high battery capacity in your vehicle.

Where room and weight do not set the limits, the battery capacity may be chosen as large as possible to provide the optimum and most long-lasting power supply. Generally, a lead-acid battery should not be used to more than half of its capacity. For a 120-Ah battery that would mean a good 60 Ah. You also need to take into consideration that most inverters have an energy efficiency of no more than 80 percent. So if you need 1000 watts for a 230-volt device, 1200 watts are actually taken from the battery. The high-performance SinePower inverters have a better balance. At an efficiency rate of 90 to 92 percent their consumption for a 1000-watt device merely amounts to 1080 watts.

Naturally, the 12-volt devices installed in the vehicle have to be added to the capacity that the inverter requires: water pump, illumination, heating fan etc. use power from the battery as well. There should always be sufficient capacity available so that the vehicle battery is not overloaded. Calculation example: inverter performance/10 = capacity in Ah. Thus, there should be at least 180 Ah battery capacity for a 1800-watt inverter. Correct recharging is important so that the vehicle batteries retain their capacity for a long time. Please read more about smart charging technology and the right charging strategy on pages 4 – 9.

THE CORRECT VOLTAGE

All inverters have one thing in common: they turn 12 or 24 V DC battery power into 230 V AC for electric devices. The difference is in the type of voltage their power socket provides. This, as well as the inverter's output rating, decides if an appliance can be operated via the inverter. As opposed to the straight-line direct current supplied by the vehicle batteries, the 230 V alternating current features a wavelike voltage curve. Common inverters generate AC voltage in different ways. The result is a modified or pure sine wave voltage (see diagram).

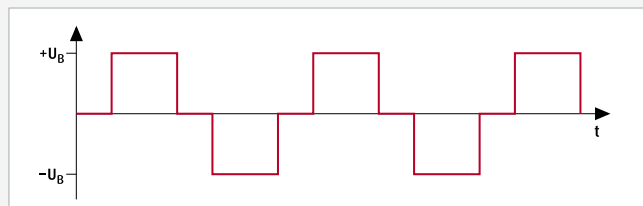
Generating a modified (trapezoidal or rectangular) sine wave voltage is less demanding from a technical point of view, which explains the more favourable inverter price. For simple devices like toasters, water kettles or filter coffee machines, a modified sine curve is perfectly adequate.



Sensitive electronic devices, such as laptops, DVD players, electric toothbrushes, capsule or pad coffee machines require a clean (wave shaped) sine wave voltage – similar to that from a domestic power socket. A sine-like voltage can do damage to these devices, or worse, result in a total breakdown. Given the increasing amount of sensitive electric devices used on the go nowadays, a Dometic SinePower sine wave inverter is often the best choice.

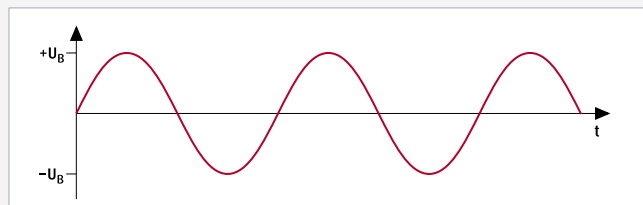
MODIFIED SINE WAVE VOLTAGE

The stepped voltage curve simulates a pure sine wave curve. Featuring a stable voltage and frequency, this output voltage is fine for less sensitive devices like filter coffee machines, toasters and vacuum cleaners.



PURE SINE WAVE VOLTAGE

The voltage curve is regulated electronically to generate a clean sine wave output voltage, like that from a home power socket. It can be used for all sensitive devices, such as electric toothbrushes, laptops, DVD players or espresso machines.





INFO

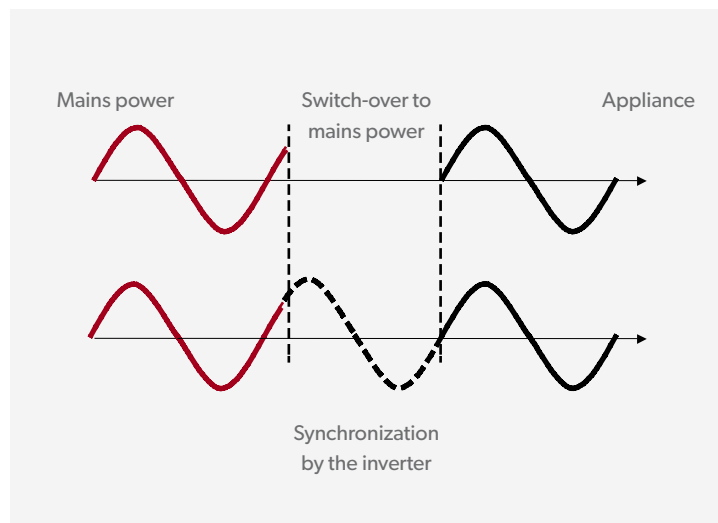
Laptops, e-book readers and the popular capsule coffee machines require a pure sine wave voltage to operate failure-free. When buying an inverter, it's not only important to make sure you get the right watt rating, but also the right type of voltage curve.



ONE POWER SOCKET – TWO TYPES OF POWER SUPPLY

All Dometic inverters feature a common household power socket to which you can directly connect your devices. As inverters should be installed close to the batteries, it is not always easy to plug in the electric appliances. To make things easier, you can use the 230-volt power grid of the vehicle. The household power sockets integrated inside the vehicle get “live” as soon as they are connected to a 230-volt mains hook-up. Alas, connecting a simple inverter to this grid would inevitably destroy the unit when mains power is applied. For this reason, it would actually be necessary to install a second 230-volt grid for operating the inverter. As it makes sense to supply the existing sockets via the inverter as well, Dometic has developed a practical solution: a smart control system recognises when external mains power is applied. The system automatically conducts the electricity to the power sockets and deactivates the inverter.

This function is referred to as “mains priority circuit”. It is included as standard in all Dometic inverters of the SinePower DSP-T series and the smart high-tech system can do even more. Many 230-volt devices require an uninterrupted voltage supply and, equally important, a gentle switch-over from one voltage to another. This is why these inverters switch over in an instant and simultaneously synchronize the mains voltage to produce a uniform sine wave curve.



TIP!

High-performance inverters typically involve high currents flowing from the battery to the powered device. For this reason the inverter should be installed close to the battery. The specified cable cross sections should also be adhered to. The Dometic accessory range offers suitable connection cables for 12-volt or 24-volt DC grids. To avoid capacity loss, make sure not to exceed the specified cable length.



PLEASANT CLIMATE

CAIR CONDITIONING VIA INVERTER

The consumption values of air conditioners make it very obvious that their stationary operation using an inverter would soon bring the battery capacity to its limits. A large battery capacity permits cooling the vehicle interior to a pleasant temperature for a short time, yet even recharging for example with solar energy will not allow for continuous independent operation.

EVERYTHING UNDER CONTROL – DC KITS

What does not work on a permanent basis during standing times can easily be achieved on the move. All Dometic RV air conditioners are available with matching DC kits for operation on the 12- or 24-volt vehicle battery. That means you do not need to wait until you get to your holiday destination before creating a pleasant climate in the leisure area of your vehicle, but it is kept cool en route already. This is even more pleasant when you are travelling with several people or when you are taking animals as well. The Dometic accessories range includes a choice of six DC kits in different performance and convenience classes. Their main components include a sine inverter or inverter with sine-like output voltage and a charging current distributor. While travelling, the available power sources include the

starter battery, the vehicle battery and the alternator. The charging current distributor controls the power management between the energy suppliers. If the starter or the leisure battery is in danger of discharging en route, the charging current distributor turns the air conditioner off. As soon as the alternator performance is sufficient, it is automatically turned on again. Provided the air conditioner, cabling, generator performance and battery capacity are well coordinated, a pleasant interior climate can be created while travelling.



INTELLIGENT POWER MANAGEMENT

BATTERY CHARGERS WITH INTEGRATED INVERTER

There is no better solution for the complete power supply in motorhomes, caravans or boats: SinePower DSP-C inverters/battery chargers recharge the batteries and provide 230 volts

AC from the 12 or 24-volt vehicle power supply at the same time.

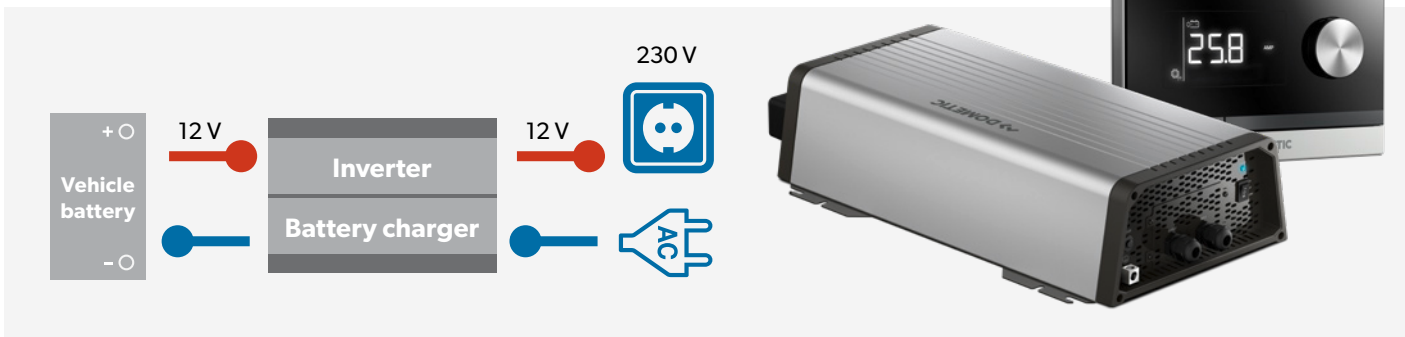
SMARTLY CONTROLLED

As soon as mains power is connected, the battery charger automatically starts the controlled recharging process and supplies power to the vehicle battery. When no mains power is available and 230 volts are required, the integrated inverter delivers pure sine wave voltage that permits hassle-free operation of all connected appliances. The changeover is effected automatically by the smart unit control.

If the mains power supply has an insufficient circuit protection and the fuse blows, the SinePower inverter will smoothly switch over to the power supply from the vehicle battery and supply the sockets with 230 volts. Once mains power is available again, the inverter is turned off and the batteries are automatically recharged with an IUOU characteristic.

ENERGY-SAVING

No matter where you go – thanks to their large input voltage range, the inverters in the SinePower DSP-C series can be operated worldwide. Their integrated load detection ensures that the units switch to standby mode when no loads are connected and the battery is fully charged. As a result, their own power consumption is minimal and standing times without mains power connection are extended.



EVERYTHING UNDER CONTROL

SMART BATTERY MANAGEMENT SYSTEM

Smart energy management with DSP-T sine wave inverter, DSP-EM control panel, DCC charging converter and battery sensor. Included in the delivery kit of DSP-C inverters/battery chargers.



The control panel in your boat or recreational vehicle keeps you informed on the filling levels of the water or waste water tanks and lets you know whether you are connected to the mains and if the water pump is switched on. It provides very little information on the energy system of the vehicle, however. If you really want to know how much power the battery can still deliver, taking the current rate of power consumption into account, and how long it will take until the battery reaches undervoltage, you should install a modern battery management system.

If you use your motorhome, caravan or boat without recharging for some time, you should always be able to check the available battery capacity. A battery deep discharge leads to rapid ageing and may even entail untimely loss. The SinePower DSP-EM battery management system delivers an accurate analysis at any time. Voltage, current and temperature are measured by an optional battery sensor. The system calculates the available and dischargeable capacity as well as the charging level and indicates the remaining periods for charging or discharging. All values can be read on the clearly structured, self-explaining display. In this manner campers have the entire energy management under control at all times.

DISPLAY OF THE FUTURE

The smart SinePower DSP-EM not only permits controlling the battery charger and inverter. It also features a future-oriented interface for perfect integration into the BUS system of the caravan industry. As a result it is possible to operated appliances equipped with the corresponding technology via the control panel.

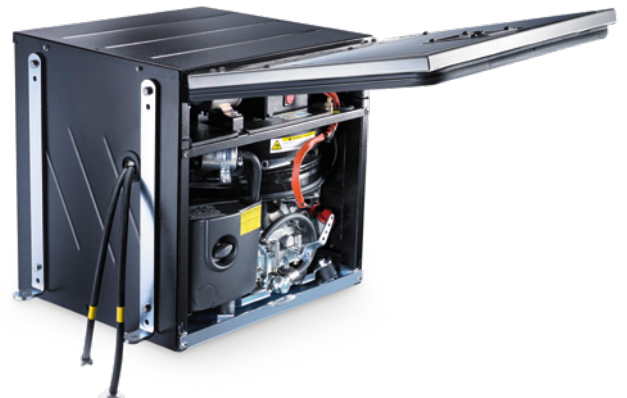


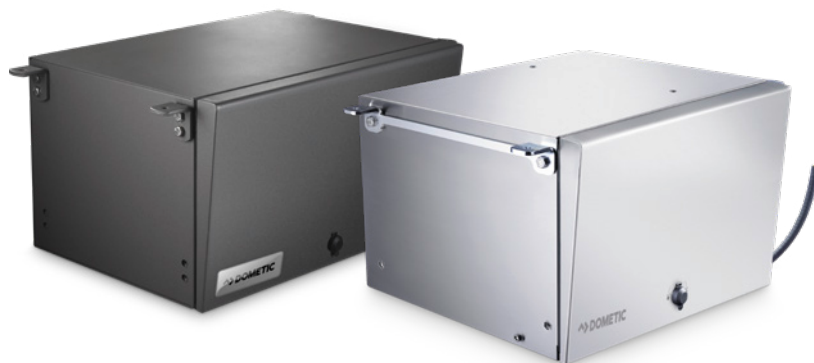


RELIABLE ENERGY SOURCE

INDEPENDENCE WITH A POWER GENERATOR

Miles from the next mains connection there are a few possibilities to charge batteries or run an air conditioner. Unless, of course, there is a generator on board and delivers reliable 230 volts at the push of a button.





STRONG POWER SUPPLIERS

Designed for permanent installation, Dometic generators are a good choice. Thanks to optimized noise-proofing and correct installation in the vehicle, running noises are hardly audible outside. They provide a reliable power supply wherever mains power is unavailable, so they are indispensable for outdoor enthusiasts looking for maximum freedom and independence. Performance, combined with low fuel consumption and high product quality, is the hallmark of the entire series. Equipped with petrol or diesel engines, the well-proven generators deliver 230 volts on the move. They keep the air conditioner going when there is no mains connection and enable the operation of all connected appliances by delivering a sine wave output voltage.

THE CORRECT WATT RATING

The watt rating that has to be generated for one's own demand is the decisive factor when choosing a power generator. To assess this demand, the watt ratings of the electric devices operated at the same time need to be added together. If you intend to run engine powered appliances (inductive loads) such as high-performance tools or compressor air conditioners, it is important to consider the startup current required for a short time. The generator should also have sufficient power reserves to accommodate high startup currents (depending on the type of appliance, 3 to 6 times the rated power). Dometic recommends consulting the specialist dealer.

FULLY AUTOMATIC RECHARGING

All TEC series generators come with an additional convenience feature, the auto-start function. When it is activated, these generators automatically start as soon as the voltage of the battery is no longer sufficient in order to recharge it. The compact units are best installed on the vehicle floor or in a storage compartment accessible from outside. They come with remote control for easy operation.

THE CORRECT FUEL

It's important to decide on which fuel the generator is to be run. Dometic offers two different versions for perfect integration into the fuel system of the basic vehicle so that it is unnecessary to install an additional tank for the generator, at a mere 0.7 to 1.4 litres per hour under full load, consumption is almost negligible.



MOBILE ENERGY FOR PORTABLE COOLERS AND MORE

TRAVEL OFF-GRID FOR LONGER.

↗ DOMETIC

↗ DOMETIC

Mobile energy for 12 V devices

No need to compromise on comfort when you are the adventurous sort and love camping in the great outdoors! With the right equipment you can power your cooling boxes and other devices even at a lonely bay, a romantic seaside resort, or a hidden forest glade. You don't have to invest in a generator to keep your cooler/freezer box running on site. A high-performance 12-volt battery will do – ideally, one with advanced lithium technology and an integrated battery charger for recharging during the journey.

DOMETIC PLB40 – COMPACT AND ULTRA-LIGHT BATTERY

Cool refreshment wherever you want: This mobile power pack will energize a CFX3 compressor cooler for up to 53 hours on a single charge! and it will gladly serve as a power source for other 12-volt devices as well. Advanced lithium-ion technology makes it happen. Two USB ports and two different 12-volt sockets provide plenty of connection options. You enjoy the same flexibility when it comes to battery recharging. The integrated DC charger unit allows charging via the 12-volt socket of your vehicle, a solar panel or a 230-volt socket. A quick glance at the LCD display is enough to check the charging status. The integrated battery management system delivers the current consumption levels. It also protects the battery against overheating, overvoltage, short circuit faults and deep-discharging.

DOMETIC PLB40

The Dometic PLB40 Ah lithium iron phosphate battery delivers high levels of mobile power – e.g. for up to 53 hours of cooling with a Dometic CFX3 (fridge temperature +4 °C, ambient temperature +25 °C). It was designed for supplying powered coolers and other 12 V appliances while being off-grid. Thanks to its lightweight and compact design, you can enjoy true independence and travel off-grid for longer.

- Enables you to travel off-grid for longer
- Charging via 12 V socket, solar panel or AC grid
- Extremely lightweight, ergonomic stainless steel carrying handle
- Integrated LCD display: capacity, charging state and output
- Specifically designed for Dometic CFX and other powered coolers
- Powerful battery cells with 512 Wh or 40 Ah
- Energizes a Dometic CFX3 cooler for up to 53 hours (fridge temperature +4 °C, ambient temperature +25 °C)



A SIMPLE LIFESTYLE, CLOSE TO NATURE

MARIA VANONEN



As a child, Finnish entrepreneur and vanlife enthusiast, Maria Vanonen traveled all over with her grandfather who built his first van in the 1970s. Maria would sleep in the back of the van as they roamed from sight to sight, instilling in her love for adventure and a lifelong desire for the simplicity of mobile living. When it comes to making her own vanlife adventuress, Maria started by taking a trip to New Zealand ten years ago. She slept



small space of the rebuilt 1995 Mercedes 308D van, which first enjoyed a career as a German mail delivery van. Two years ago, Maria sold most of her possessions and began working nonstop to transform Urho into a fully functioning cabin on wheels with the help of family and friends, online tutorials, and a lot of hard work. The final step was a coat of light blue paint to make Urho complete. The vanlife lifestyle is about staying



constant attention to keep food dry and ice can be hard to come by when camping in remote locations. Standard portable refrigerators are more suited for a dorm room than for the great outdoors and Maria found that most could not keep up with her needs in the summertime. For this reason, Maria chose the Dometic Coolmatic CRX 80S, a 78 litres compressor refrigerator with a stainless steel design. It runs quiet and offers temperature



in a station wagon with her surfboard on the roof so she could wake up on the beach and catch the best waves without obstacles or hotel fees. This allowed her to live in the moment and spend more time making memories than making plans.

Now, she travels with her beloved jack russell terrier, Yoda, in their own DIY camper van that Maria has affectionately dubbed Urho. Everything she needs fits perfectly in the

close to nature and getting to feel fully immersed in one's surroundings. Essential to the journey is the right equipment to make every trip safe and smooth so the only concern Maria has is where to go next. For a space so small but mighty, the gear needs to be compact, lightweight, and reliable for off-grid adventures.

For any mobile lifestyle, keeping food cold and fresh is a daily challenge. Coolers need






control in any environment. The fridge can hold enough food to keep Maria supplied for two weeks and also has an optional 7.5 litres of freezer space when needed. This was the first of a long line of Dometic products that have been used to make Urho the perfect home on the go.



[instagram.com/mariavanonen](https://www.instagram.com/mariavanonen)

POWER & CONTROL
BUYING GUIDE

3.16 / Dometic PerfectCharge MCA





TECHNICAL DATA					
IUOU-AUTOMATIC CHARGERS	MCA 1215	MCA 1225	MCA 1235	MCA 1250	MCA 1280
Ref. No.	9600000028	9600000029	9600000030	9600000031	9600000032
Ref. No. UK	9600000179	9600000180	9600000181	9600000182	9600000183
Charge outputs	1 + 1	2 + 1	2 + 1	3	3
Input voltage (V)	90 – 260				
Frequency (Hz)	50 – 60				
End-of-charging voltage (V)	14.4 / 14.7				
Float charging voltage (V)	13.8				
Recommended battery capacity (Ah)	40 – 170	75 – 300	100 – 400	150 – 600	200 – 800
Max. battery capacity (Ah)	–	–	–	–	–
UO phase limited at (h)	8				
Energy efficiency up to (%)	92				
Charging current (A)	15	25	35	50	80
Charging characteristics	–	–	–	–	–
Operating temperature (°C)	–20 to +50				
Dimensions (W x H x D, mm)	179 x 63 x 238	179 x 63 x 238	179 x 63 x 274	208.5 x 75 x 283	208.5 x 75 x 303
Weight (kg)	1.6	1.7	1.9	3.1	4
6-stage charging characteristics	•	•	•	•	•
Overload/short-circuit protection	•	•	•	•	•
Can be used as mains supply unit	–	–	–	–	–
Sleep mode	Using the remote control or dip switch on the device				
Battery types	Lead-acid batteries (liquid, gel, AGM)				
Type of protection	equivalent to IP 21				
/ Optional extras					
Temperature sensor MCA-TS1	9600000099	9600000099	9600000099	9600000099	9600000099
Remote control MCA-RC1	9600000100	9600000100	9600000100	9600000100	9600000100
Controller MPC 01	9102500073	9102500073	9102500073	9102500073	9102500073
Hella sensor MCA-HS1	9600000101	9600000101	9600000101	9600000101	9600000101







**MCA 2415****MCA 2425****MCA 2440****IU 812**

9600000033	9600000034	9600000035	9600000037
9600000184	9600000185	9600000186	-
2	3	3	1
	90 – 260		230 (180 – 253)
	50 – 60		50 – 60
	28.8 / 29.4		14.4
	27.6		13.6
40 – 170	75 – 300	100 – 400	-
-	-	-	100
	8		-
	92		-
12.5	25	40	8
-	-	-	IU0U with limit time of the IU0 phase
	-20 to +50		0 to +50
179 x 63 x 238	208.5 x 75 x 283	208.5 x 75 x 303	120 x 70 x 200
1.6	2.9	3.9	0.9
•	•	•	-
•	•	•	•
-	-	-	•
Using the remote control or dip switch on the device			-
Lead-acid batteries (liquid, gel, AGM)			-
equivalent to IP 21			-
9600000099	9600000099	9600000099	-
9600000100	9600000100	9600000100	-
-	-	-	-
-	-	-	-

POWER & CONTROL BUYING GUIDE

3.30 / Dometic SinePower





TECHNICAL DATA				
SINE WAVE INVERTERS	DSP 212 / DSP 224	DSP 412 / DSP 424	DSP 612 / DSP 624	DSP 1012 / DSP 1024
Ref. No.	9600002603 / 9600002540	9600002541 / 9600002542	9600002543 / 9600002544	9600002545 / 9600002546
Ref. No. UK	9600003593 / 9600003594	9600003595 / 9600003596	9600003597 / 9600003598	9600003599 / 9600003600
Input voltage (V DC)	12 (10 – 16,5 V) / 24 (20 – 33 V)			
Output voltage (V AC) / shape	230 / pure sine wave \sim			
Output frequency (Hz)	50	50	50	50
No-load current input (A)	0.6 / 0.4	0.6 / 0.4	<0.8 / <0.5	1.0 / 0.6
Standby current consumption (A)	–	–	0.3 / 0.2	0.35 / 0.2
Continuous output (W)	150	350	600	1000
Peak power (W)	300	700	1200	2000
Energy efficiency up to (%)	90	90	90	90
Dimensions (W x H x D, mm)	127 x 52 x 210	127 x 52 x 210	230 x 80 x 220	230 x 80 x 240
Weight (kg, approx.)	1.1	1.2	2.8	3.1
Integrated mains priority circuit with voltage synchronisation	–	–	–	–
Test mark	e-certified (Automotive EMC Directive)			
Type of protection	equivalent to IP 21			
/ Optional extras				
DC connection cable	Scope of delivery	Scope of delivery	9600000268	9600000268
Standard remote control DSP-RCT	–	–	Scope of delivery	Scope of delivery
Convenience remote control DSP-EM	–	–	–	–
Mains priority circuit VS-230	–	–	9600000324	9600000324





					
DSP 1512 / DSP 1524	DSP 2012 / DSP 2024	DSP 1312T / DSP 1324T	DSP 1812T / DSP 1824T	DSP 2312T / DSP 2324T	DSP 3512T / DSP 3524T
9600002547 / 9600002548	9600002549 / 9600002550	9600002551 / 9600002552	9600002553 / 9600002554	9600002555 / 9600002556	9600002557 / 9600002558
9600003601 / 9600003602	9600003603 / 9600003604	9600005002 / 9600005003	9600005004 / 9600005005	9600005006 / 9600005007	9600005008 / 9600005009
12 (10 – 16,5 V) / 24 (20 – 33 V)		12 (10,5 – 16 V) 24 (21 – 32 V)			
230 / pure sine wave \sim					
50	50	50 / 60	50 / 60	50 / 60	50 / 60
<1.2 / <0.6	<1.5 / <0.8	2.5 / 1.3	2.5 / 1.3	2.8 / 1.4	3.6 / 1.8
0.4 / 0.25	0.5 / 0.3	0.2 / 0.1	0.2 / 0.1	0.2 / 0.15	0.2 / 0.15
1500	2000	1300*	1800	2300*	3500*
3000	4000	2400	3200	4000	6000
90	90	90	90	90	90
272 x 97 x 340	272 x 97 x 360	284 x 118 x 405	284 x 118 x 405	284 x 118 x 481	324 x 122 x 490
4.9	5.2	4.8	6.1	6.6	10.9
–	–	•	•	•	•
e-certified (Automotive EMC Directive)					
equivalent to IP 21					
12 V: 9102700003 24 V: 9600000268	12 V: 9600000269 24 V: 9600000268	9600000268	12 V: 9102700003 24 V: 9600000268	12 V: 9600000269 24 V: 9600000268	12 V: on request 24 V: 9600000268
Scope of delivery	Scope of delivery	9600002564	9600002564	9600002564	9600002564
–	–	9600002565	9600002565	9600002565	9600002565
9600000324	9600000324	–	–	–	–

* 10 minutes continuous power, permanent power: 50 % peak power

POWER & CONTROL
BUYING GUIDE





3.30 / Dometic SinePower DSP-C

TECHNICAL DATA				
BATTERY CHARGER INCL. SINE WAVE INVERTERS	DSP 1212C	DSP 1224C	DSP 2012C	DSP 2024C
Ref. No.	9600002559	9600002560	9600002561	9600002562
Input voltage (V DC)	12 (10 – 16.5 V)	24 V (20 – 33 V)	12 (10 – 16.5 V)	24 V (20 – 33 V)
Input voltage (V AC)	180 – 260			
Output voltage (V AC)/Form	230 / pure sine wave \sim +3%			
Output frequency (Hz)	50/60 +- 3%			
No-load current input (A)	3	1.5	4	2
Standby current consumption (A)	<0.3	<0.2	<0.3	<0.2
Continuous output (W)	1200	1200	2000	2000
Peak power (W)	2400	2400	4000	4000
Energy efficiency up to (%)	> 88	> 89	> 88	> 89
End-of-charge voltage (V)	13.8 / 14.4 / 14.7			
Maintenance-charge voltage (V)	13.8			
Recommended battery capacity (Ah)	120	60	200	100
Charging current (A)	50	25	100	50
Ambient temperature Operating (°C)	-20 to +60			
Dimensions (W x H x D, mm)	248 x 188 x 405	248 x 188 x 405	248 x 188 x 481	248 x 188 x 481
Weight (kg, approx.)	5.6	5.6	7.2	7.2
Integrated mains priority circuit with voltage synchronisation	•	•	•	•
Test mark	e-certified (Automotive EMC Directive)			
Type of protection	equivalent to IP 21			
/ Optional extras				
Convenience remote control DSP-EM	Scope of delivery	Scope of delivery	Scope of delivery	Scope of delivery
IBS Multiplexer	9600002566	9600002566	9600002566	9600002566
Hella Sensor MCA-HS1	9600000101	9600000101	9600000101	9600000101

TECHNICAL DATA				
GENERATORS	TEC 29	TEC 30EV	TEC 40D	T 2500H
Ref. No.	9102900299	9102900033	9102900295	9102900005
Output voltage		230 volts AC $\pm 1\%$ (continuous)/ pure sine wave \sim		230 volts AC $\pm 10\%$ (continuous)/ pure sine wave \sim
Total distortion factor (%)	1	1	5	5
Frequency (Hz)	50 $\pm 1\%$	50 $\pm 1\%$	50 $\pm 1\%$	50 $\pm 5\%$
Max. starting current (A)	33	33	45	24
Continuous output (W)	2,600	2,500	3,500	2,000
Peak power (W)	2,900	2,900	3,900	2,200
Engine output (kW (PS))	4.0 (5.5)	3.3 (4.5)	4.7 (6.4)	4.0 (5.5)
Operating mode/fuel	Normal unleaded ROZ 91 petrol	Diesel	Diesel	Normal unleaded ROZ 91 petrol
Power consumption	max. 1.2 l/h	max. 0.7 l	max. 1.4 l	max. 1.2 l
Sound level at 7 metres (dBA)	54–59	60	64	60
Guaranteed sound level (dBA)	86	84	89	86
Size (W x H x D mm)	480 x 290 x 385	465 x 465 x 466	765 x 457 x 467	530 x 290 x 385
Width with suspension (mm)	580	572	765	640
Housing finish	Stainless steel	Stainless steel	Stainless steel	Stainless steel
Weight (kg)	44	70	96.5	50
Auto-start function	•	•	•	—
12-volt output for battery charging	•	•	•	• with optional charging regulator
Quality Features	Automatic low-oil cut-off, electrical starter, short circuit protection, soundproofed operation via external control panel, alarm functions, variable generator speed	Automatic low-oil cut-off, electrical starter, short circuit protection, soundproofed operation via external control panel, alarm functions		Automatic low-oil cut-off, electrical starter, short circuit protection, soundproofed operation via external control panel
Test marks	E13	E13	E24	E3

POWER & CONTROL
BUYING GUIDE

3.16 / Dometic PerfectPower DCC

TECHNICAL DATA				
DCC CHARGING CONVERTERS	DCC 1212-10	DCC 1212-20	DCC 1212-40	DCC 2412-20
Ref. No.	9600003753	9600003754	9600003755	9600003750
Input voltage (V)	12 (8 – 16)	12 (8 – 16)	12 (8 – 16)	24 (16 – 32)
Output voltage (V)	12 (13.2 – 14.7)	12 (13.2 – 14.7)	12 (13.2 – 14.7)	12 (13.2 – 14.7)
Output voltage shape	3-stage charging characteristic or fixed value			
Charging current (A)	10	20	40	20
Battery types	Lead-acid batteries (liquid, gel, AGM) Dometic eStore lithium battery			
Energy efficiency up to (%)	89 %	89 %	89 %	89 %
Dimensions (W x H x D, mm)	153 x 73 x 180	153 x 73 x 220	153 x 73 x 260	153 x 73 x 220
Weight (kg)	1.25	1.55	1.85	1.55
Test mark	e-certified (Automotive EMC Directive)			
/ Optional extras				
Temperature sensor MCA-TS1	9600000099	9600000099	9600000099	9600000099

**DCC 2412-40****DCC 1224-10****DCC 1224-20****DCC 2424-10**

9600003751
 24 (16 – 32)
 12 (13.2 – 14.7)

9600003748
 12 (8 – 16)
 24 (26.4 – 29.4)

9600003749
 12 (8 – 16)
 24 (26.4 – 29.4)

9600003752
 24 (16 – 32)
 24 (26.4 – 29.4)

3-stage charging characteristic or fixed value

40

10

20

10

Lead-acid batteries (liquid, gel, AGM) Dometic eStore lithium battery

89 %

89 %

89 %

89 %

153 x 73 x 260

153 x 73 x 220

153 x 73 x 260

153 x 73 x 220

1.85

1.55

1.85

1.55

e-certified (Automotive EMC Directive)

9600000099

9600000099

9600000099

9600000099

POWER & CONTROL
BUYING GUIDE



PLB40

TECHNICAL DATA	
LITHIUM ION BATTERY	
Ref. No.	9600012878
Battery capacity (Ah)	40 / 512 Wh
Chemistry	LiFePO4
Battery voltage (V, DC)	12.8
DC output amps	15
Continuous output (W)	150 (per 12 V connection)
Dimensions (W x H x D,mm)	197 x 257 x 197
Weight (kg)	7.54

FOR THE MOST REMOTE EXPEDITIONS



THE FULL COMFORT RANGE

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