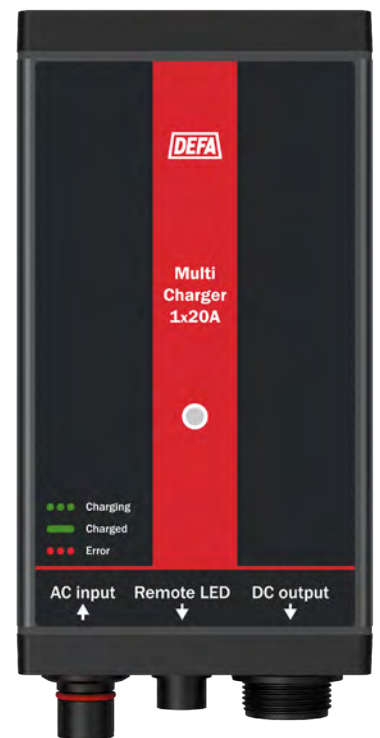




DEFA Catalogue

Vehicle preheating – Cable systems – Battery chargers – Alarm systems
2021



Distribution by





THIS CATALOGUE COVERS PRODUCTS FOR:



Passenger vehicles from compact cars to SUVs



Small vans (e. g. courier or tradesman vehicles)



Rescue vehicles: Ambulances, vehicles for fire and civil protection



Urban and public transport buses, long-distance coaches



Trucks for delivery and long-haul transport



Construction vehicles, earth-moving vehicles and heavy haulage vehicles, communal vehicles



Agricultural vehicles (e. g. tractors or forklift trucks)



Recreational boats



Lifeboats



Stationary motors (e. g. power generation)

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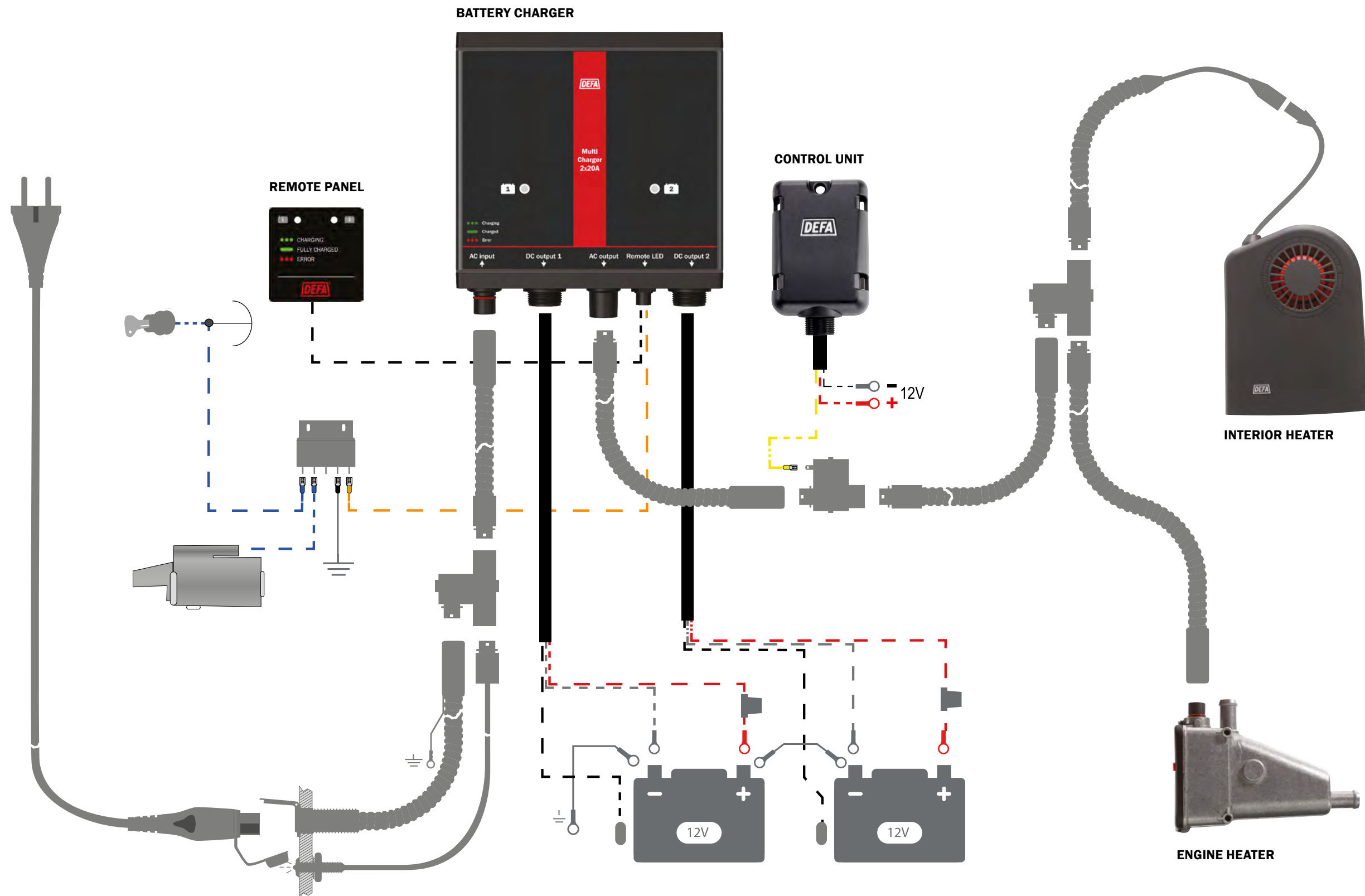
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System overview

This system solution is comprised of an engine pre-heater, an interior heater, and a battery charger.

The DEFA Bluetooth® timer controls the engine pre-heating and the interior heater by means of pre-programmed time settings, or according to the outside temperature (automatic mode). The control unit is also used as a winter/summer switch. The function of the battery charger does not depend on winter or summer settings. It supplies the two heaters and charges the two 12V batteries at the same time. The respective charge level is indicated by the LED display (red, green, or yellow LED).





Easy installation, easy to use

Innumerable hours of development work were spent making today's vehicles more aerodynamic, more environmentally friendly, and more fuel-efficient. The product developers at DEFA have risen to this challenge by consistently adapting the DEFA WarmUp vehicle pre-heating systems to the progressively evolving requirements.

The most important requirements include quick and easy installation by ensuring that mistakes can't be made during installation, as well as by providing intuitive, convenient operation for the user.

Users place great value on the appearance of their vehicles, both on the outside and inside. The aerodynamic design of new vehicle models and the increased need for room for convenience features necessitate adaptation of the DEFA WarmUp systems, ensuring both vehicle workshops and vehicle owners are satisfied in equal measure.

The use of space-saving components and customised cable lengths allows DEFA WarmUp to be installed in just about every vehicle. The unique PlugIn system, comprised of specially developed 230-volt cables and connection accessories for connecting the main DEFA WarmUp components, helps prevent any risk of installation errors and ensures safe, robust connections.

A warm interior, an engine ready to start – all the time!

Even new vehicles can lack a certain something – that good mood that comes from getting into a warm vehicle on a cold morning and being able to make a relaxed start to the day. DEFA WarmUp conveniently and reliably warms up the engine and interior in advance, and ensures a smooth start – as if the vehicle had already put a few kilometres behind it. This makes the driver happy, ensures safety and is good for the environment.

DEFA WarmUp is a straightforward, user-friendly system that is operated using a control unit. The driver can ensure that the engine is ready to start, that a comfortable temperature prevails in the interior, the windows are ice-free and the battery remains fully charged throughout the winter, all by pressing just a few buttons.

Manufacturers and environmentally-conscious drivers alike are placing increasing value on environmentally-friendly vehicles. A cold engine, regardless of its quality, always releases large quantities of exhaust, and pushes fuel consumption upwards. Only a pre-heated engine can heat up the catalytic converter quickly and thereby reduce consumption significantly. A pre-heated engine not only uses less fuel, but is also much easier to start, and is subject to less wear. These are the reasons that vehicle owners are easily convinced of the benefits of DEFA WarmUp.



Termini™ II 1400 interior heater

The most streamlined and efficient interior heater on the market. Termini™ II 1400. Termini™ II 1900 is available for larger vehicles.



SafeStart engine pre-heater*

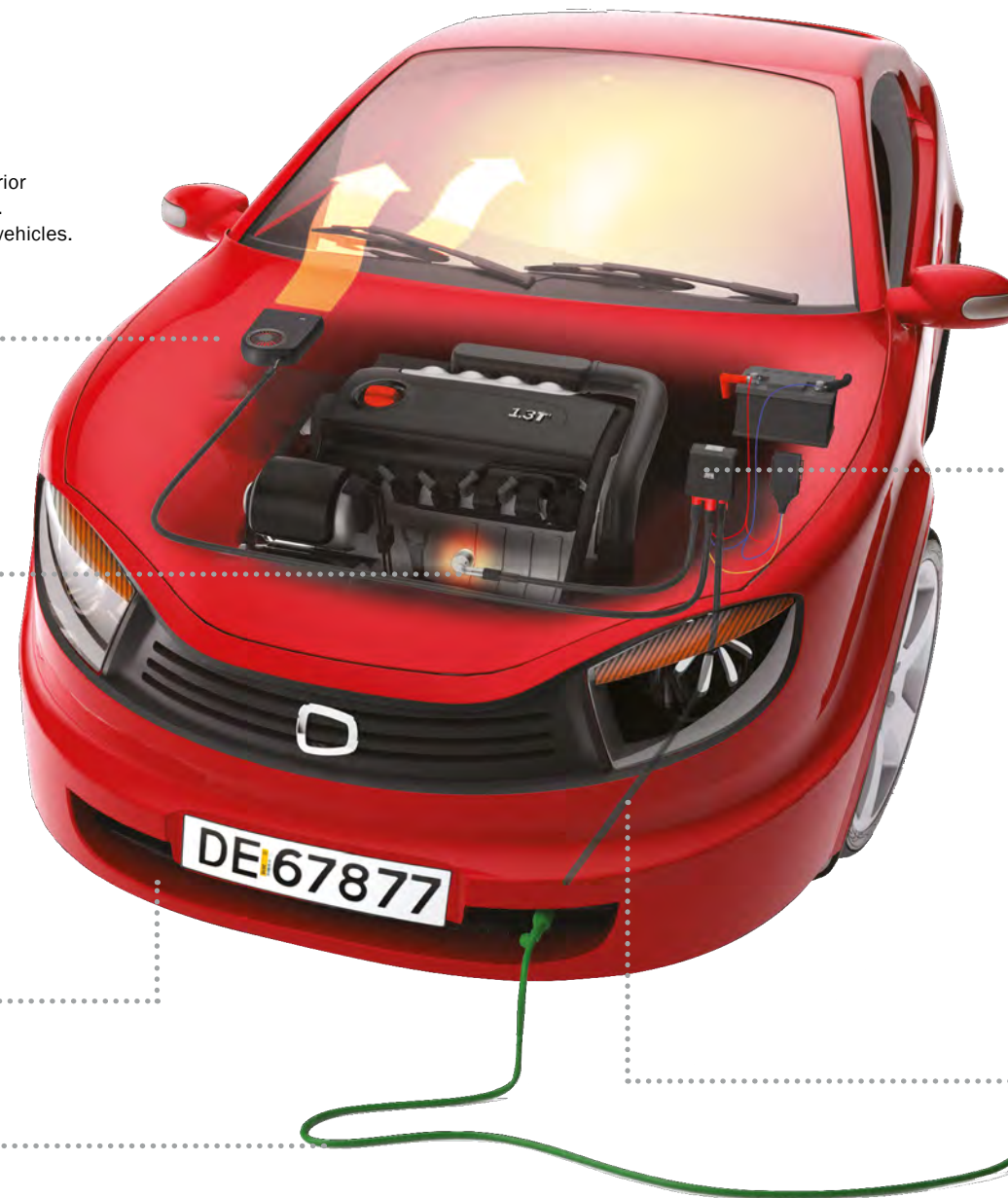
The engine can be started more easily, is subject to less wear, consumes less fuel and minimises its impact on the environment.

* The engine pre-heater must be ordered separately.



MiniPlug connecting cable

Temperature sensor



NEW! MultiCharger 1205 Flex

The battery is fully charged in every situation. Hi-tech charging electronics prevent overcharging, allowing the battery to remain connected all the time.



MiniPlug inlet cable

Minute and discreet: The power supply cable was adapted to the front design of today's cars.





Rescue vehicles

This DEFA system solution was specifically developed for rescue vehicles. It includes many useful components – from the transformer for galvanic isolation of the batteries from the external power supply, to battery isolator switches for optimally charging starter and power supply batteries.

The DEFA MultiCharger 1x20A was specifically developed for short charging times in rescue vehicles, and guarantees that the on-board batteries are optimally charged at all times. We recommend the orange connection and extension cables to make it easier to distinguish cables conducting 230VAC and 12/24VDC within the vehicle.



TIP



Sine wave inverter with high peak power

Available in two different versions: as SinePower DSP model or as a SinePower DSP-T high-power inverter with an integrated main priority circuit.

- ▶ Very high peak power – ideal for consumer units with high start-up currents
- ▶ Compact design, lightweight
- ▶ Quick and easy installation
- ▶ Mains priority circuit as series standard, or as a separate accessory



Sine wave inverter
Dometic SinePower



Vehicle pre-heating systems

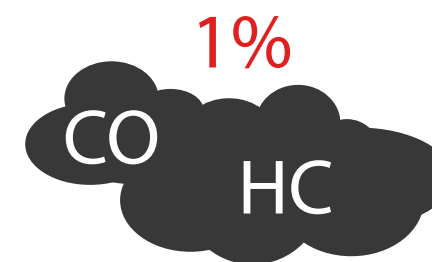
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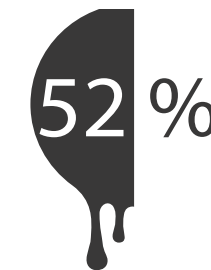
When winter comes around and temperatures start plunging, politics and media return their focus to the ever-present topic of exhaust emissions produced by cars. The typical solutions proposed are fines, driving bans, and restrictions. We offer a more inexpensive and efficient alternative – DEFA WarmUp.

VTT, an independent research institute in Finland, conducted a series of emissions tests which involved comparing vehicles pre-heated using DEFA WarmUp with vehicles performing a normal cold start. The findings: Pre-heating a vehicle using DEFA dramatically reduces all exhaust emissions on cold days. But that's not all, DEFA WarmUp also reduces fuel consumption, and therefore helps save a lot of money.

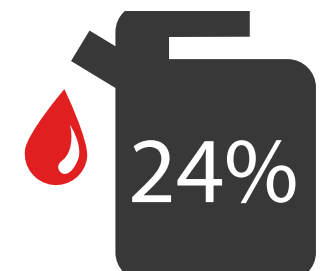
The findings can be seen in the following overview*:



Hydrocarbon (HC) and carbon monoxide (CO) emissions are reduced by up to 99%.



Nitrogen oxide (NOx) emissions are reduced by up to 52%.



Fuel consumption is reduced by up to 24%.

* The independent Finnish test institute VTT conducted extensive tests on cars with and without DEFA WarmUp. The New European Driving Cycle (NEDC) provided the basis for the tests. The primary focus of those conducting the tests was placed on the effects of electric pre-heating on Euro 5 and Euro 6 diesel vehicles. More information can be found at defa.com.



Engine heaters

An engine heater from DEFA gives you an engine that is ready to start at all times, is subject to less wear, consumes less fuel and produces fewer exhaust emissions.



DEFA PTC hose heaters – flexible and safe

Extremely flexible
Configured for different hose dimensions and installation angles

Reduced pressure drop
By means of a special aluminum housing design

Leaks between the heater element and the coolant line are impossible
The heater element is physically isolated from the coolant line (no seals)



Reduced power consumption
Self-regulating PTC element

Heater element burn-out impossible
The PTC element is comprised of a ceramic material, and does not include a heating filament

Overheating/excess pressure protection
An integrated thermostat shuts off the power supply

Effective coolant pre-heating
Heater elements are installed in the middle of the aluminium housing

DEFA PTC Hose heater 90°
Configurable for different hose dimensions and installation angles



DEFA SafeStart

A pre-heated engine starts more easily, is subject to less wear, consumes less fuel, and produces up to 71% less exhaust emissions within the first 20 minutes on cold days (more information can be found at www.defa.com). An electric engine pre-heater is the most environmentally friendly way of pre-heating an engine. An engine pre-heater should generate heat and transfer it to the engine in the most effective way possible. This is possible by direct means, involving heating the coolant or oil, or by indirect means, which involves heating the engine block or the oil sump by using a contact heater.

When a DEFA engine pre-heater is connected, the temperature at the engine increases by 30 to 40°C above the outside temperature, depending on the installation location of the pre-heater, the type of heater, and the coolant volume. The ideal operating time depends on the outside temperature. After three hours' operation at -15°C, a thermal balance is achieved. All energy supplied after this would only be used to maintain the temperature.

DEFA offers a range of different engine pre-heater systems – for vehicles with air cooling or water cooling, for large or small coolant volumes. We also offer intelligent solutions for tractors, trucks, and other vehicles, as well as for stationary motors.

Attention! Please only use the engine heater recommended for the corresponding vehicle type!

Installation of a device that was not recommended, or non-observance of the installation instructions, may result in an engine pre-heater failing to function and may impair the engine electronics. The suitable engine pre-heater can be found at www.defa.com under "Find an engine pre-heater". Once you have selected the right vehicle model and engine type, you can download the latest version of the installation instructions.

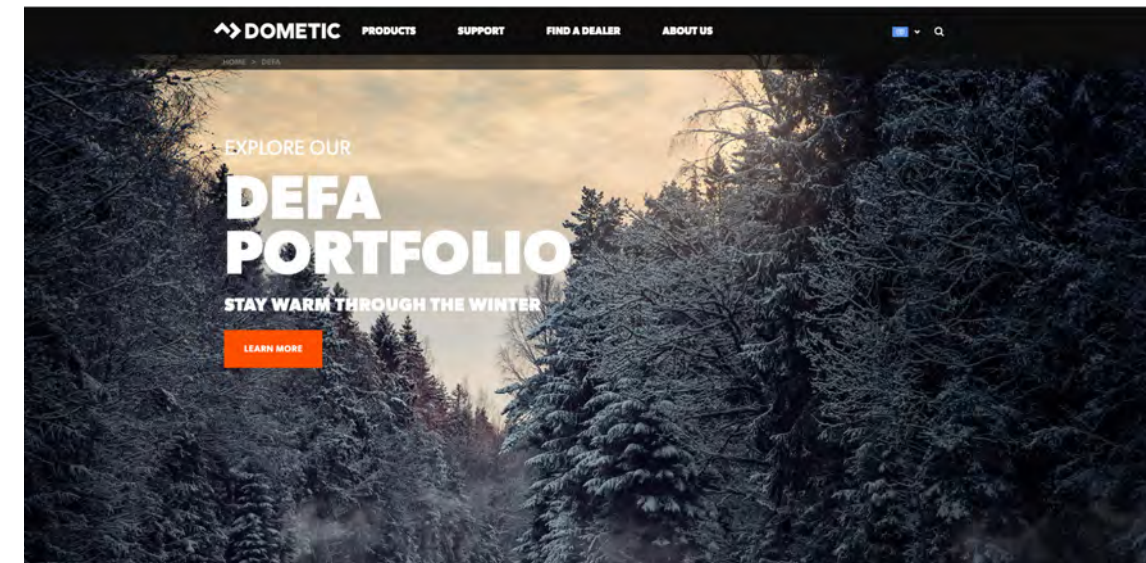
PTC Hose heater kits 230V	Item no.
PTC Hose heater Ø16 mm	A412761
PTC Hose heater Ø18 mm	A412762
PTC Hose heater Ø19 mm	A412763
PTC Hose heater 90°Ø16 mm	A413791
PTC Hose heater 90°Ø18 mm	A413792
PTC Hose heater 90°Ø19 mm	A413793



DEFA pages on dometic.com

This is how you find DEFA products on dometic.com:

Go to dometic.com/defa. Here you get a brief overview of the three different product groups DEFA WarmUp, DEFA Onboard Battery Chargers and the DEFA Alarm System DVS90. Explore the main products and get a general insight of the benefits. For more detailed information we guide you to the corresponding pages on defa.com.

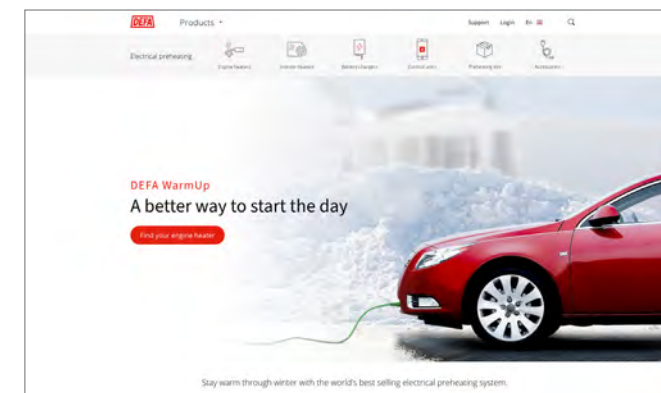


dometic.com/defa

Find your engine heater

This is how to find the right engine heater:

Go to defa.com and 'Find your engine heater'. Our search engine for selecting the suitable engine pre-heater for your type of vehicle allows you to search by manufacturer, model, and engine code. You may require a mounting kit for installation of your pre-heater. The item number of this kit is listed along with your engine pre-heater, along with the installation instructions. The installation instructions are updated regularly. In order to make sure you are using the latest version, you should print them out before starting installation.



www.defa.com/electrical-preheating/engine-heaters/find-engine-heater/



Termini™

Termini™ accessories



Termini™ II 1400

Item no. with MiniPlug/CEE 7/17 plug	A430055 / A430056
Power output -25°C [W]	0/1400
Power output +20°C [W]	0/1150
Width/Height/Depth [mm]	138/28/182
Weight incl. bracket [g]	595
IP protection class [IP]	20
Operating temperature	-40°C to +80°C
Connection cable	0.60 m
Protection class	II



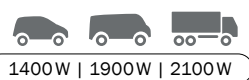
Termini™ II 1900

Item no. with MiniPlug/CEE 7/17 plug	A430065 / A430066
Power output -25°C [W]	0/1150/1900
Power output +20°C [W]	0/960/1550
Width/Height/Depth [mm]	138/36/182
Weight incl. bracket [g]	665
IP protection class [IP]	20
Operating temperature	-40°C to +80°C
Connection cable	0.40 m
Protection class	II



Termini™ 2100

Item no. with MiniPlug/CEE 7/17 plug	A430060 / A430061
Power output -25°C [W]	0/1300/2100
Power output +20°C [W]	0/1060/1700
Width/Height/Depth [mm]	141/49/182
Weight incl. bracket [g]	750
IP protection class [IP]	20
Operating temperature	-40°C to +80°C
Connection cable	0.40 m
Protection class	II



1400W | 1900W | 2100W



Termini™ Base

Item No.	A430100
Width/Height/Depth [mm]	127/145/65
Weight [g]	112

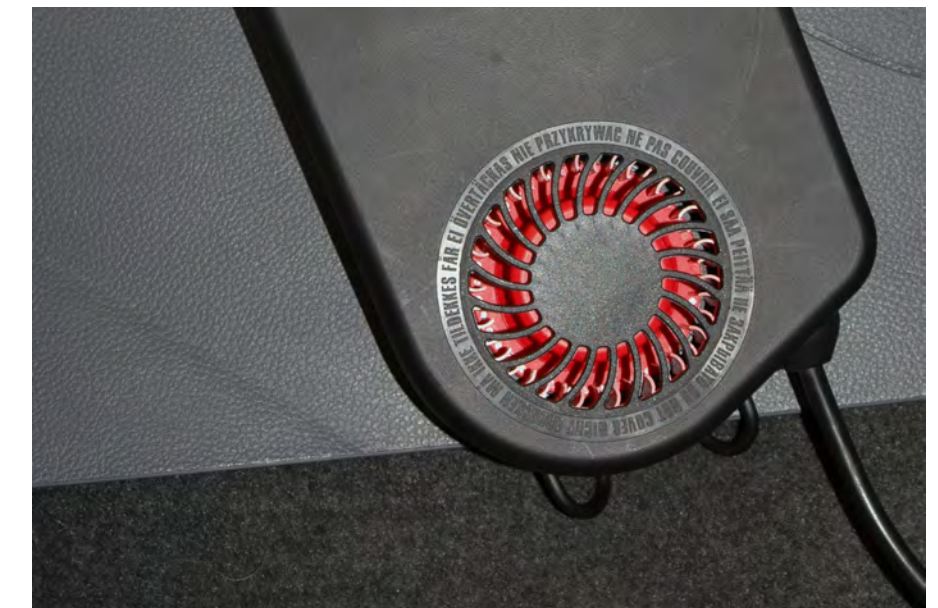
The Termini™ base allows all Termini™ heaters to be fastened in the footwell on the passenger's side without bolts. Simply slide the stand under the floor mat and align the fan.



Termini™ Clip

Item No.	A430101
Height [mm]	145x70
Weight [g]	112

Sold separately, and can be used together with all Termini™ interior heaters.



Termini™ spare parts

Termini™ fastening kit	A418070
Termina fastening kit	A418050



Bluetooth®

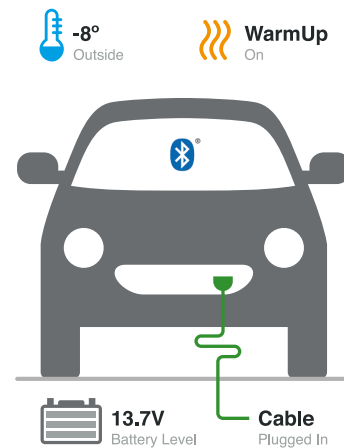
Control DEFA WarmUp with Bluetooth® from your mobile without the need for a subscription. Pre-program the system in the vicinity of the car when Bluetooth is activated, and you never have to get into a cold car again. The Bluetooth Hub control unit can be installed in the engine compartment, without any cables into the interior compartment. **Upgrade your existing DEFA system in your car to a Smartphone controlled device!**

THE FOLLOWING PROGRAMS CAN BE USED

- Automatic start controlled by the outside temperature
- 1 hour preheating time
- 2/3/4 hours preheating time
- DEFA WarmUp ON
- DEFA WarmUp OFF

ADDITIONAL FUNCTIONS:

- Monitor battery status
- Monitor outside temperature of the car
- Receive alerts if 230V is not connected
- Receive alerts if 230V power cable is connected when car is started



DEFA Bluetooth® App

Control your WarmUp preheating-system using Bluetooth® Smart technology on your mobile. To pre-program heating times when you are in or around the car you need to download the DEFA-App to get started, and your phone must support Bluetooth® Smart*. The App requires no subscription. Requires Bluetooth 4.0 or newer. To see which versions of iOS/Android are currently supported, please refer to the App Store/Google Play Store.

* The Bluetooth® word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by DEFA is under license.



Download the DEFA App from AppStore or GooglePlay Store

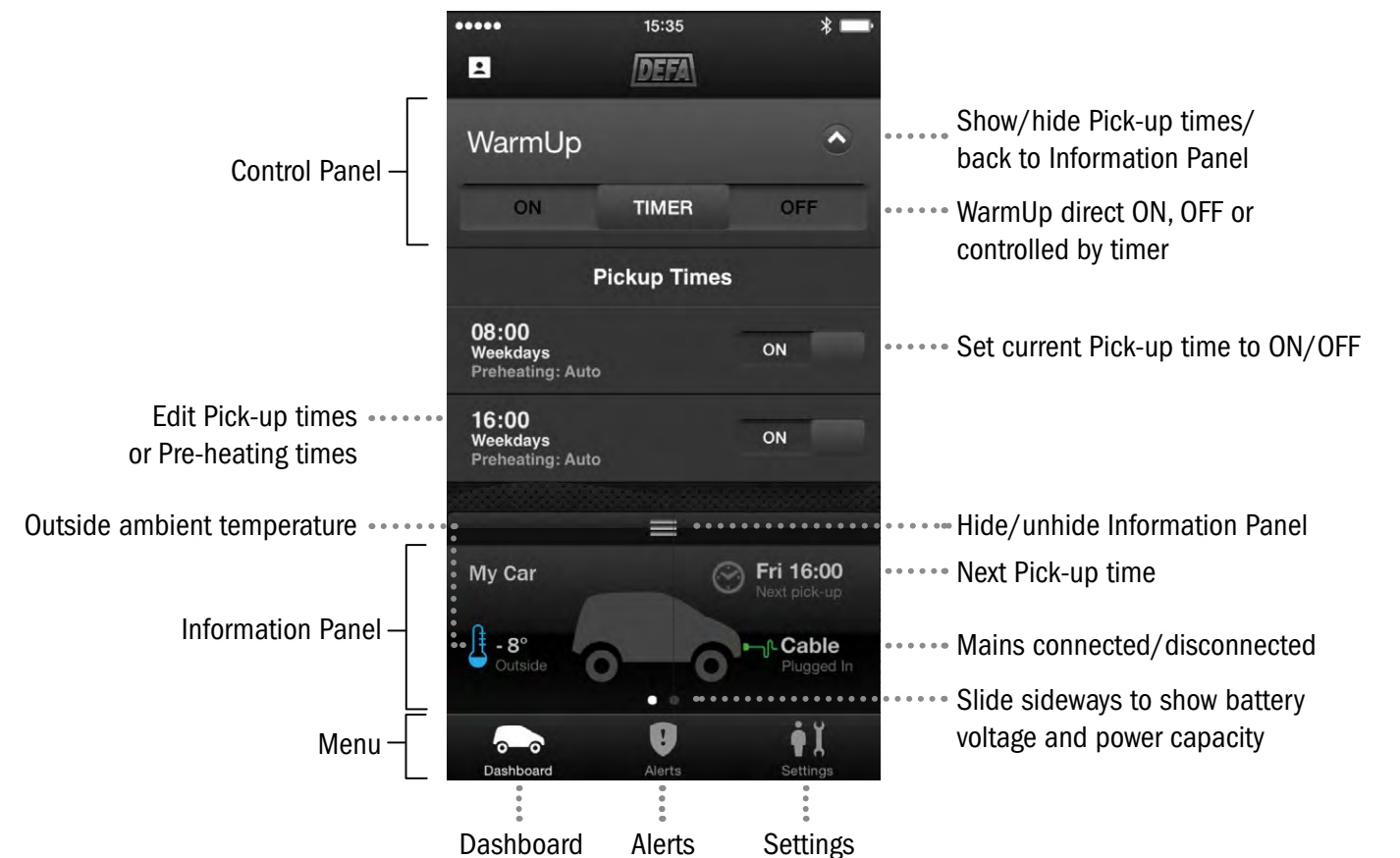


Bluetooth® Hub Control Unit	A440051
Operating temperature	-40°C – +80°C
Voltage [V]	8 – 32V DC
Average current consumption [mA]	2 mA
Height/Width/Depth [mm]	112/46/24
IP rate	IP6k9k
Frequency/Radio protocol	2.4 GHz /Bluetooth Smart
Range	In and around the car
Weight, Bluetooth® Hub	35 g
Weight, cables	150g

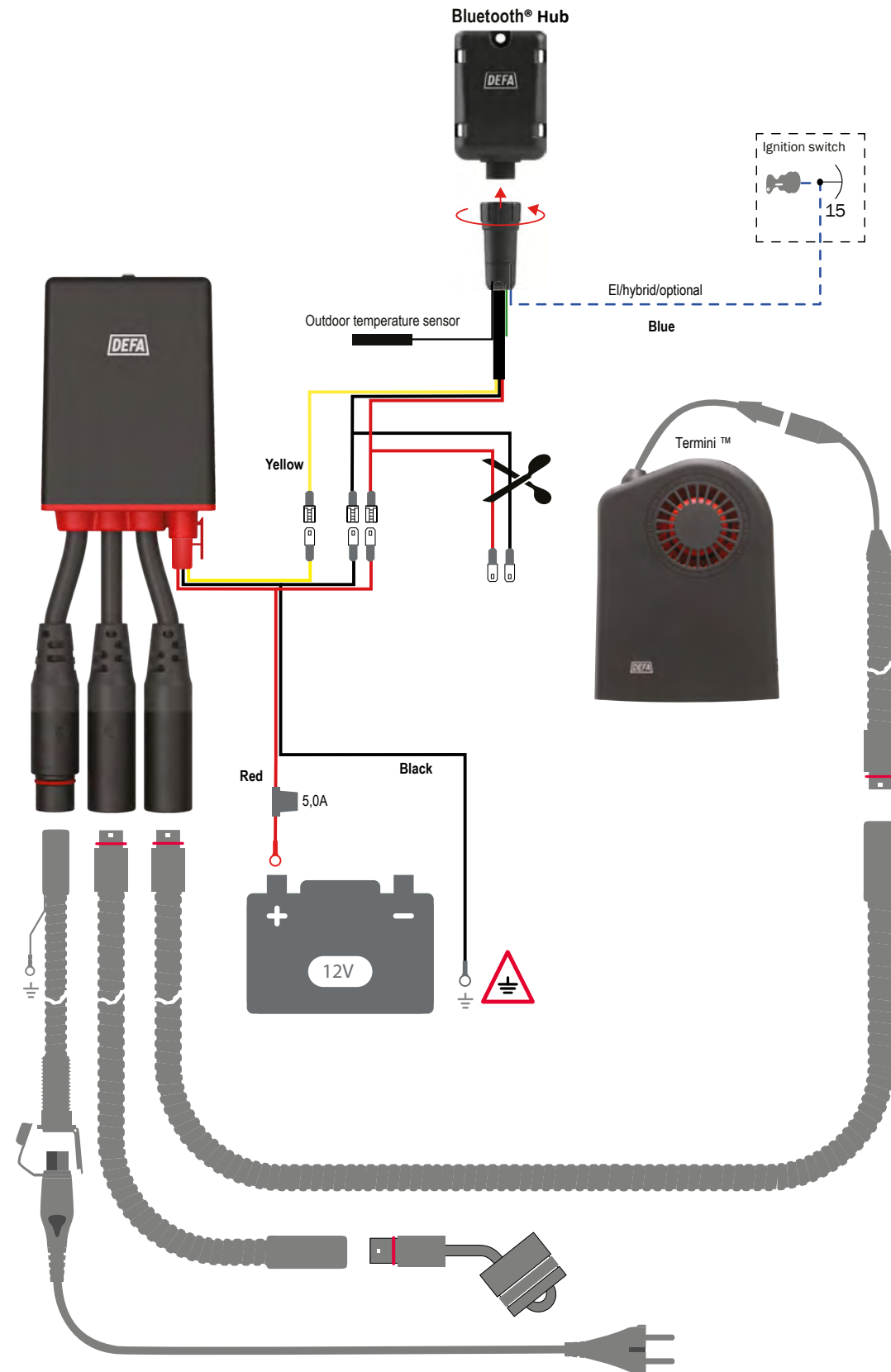
Bluetooth Upgrade	A440052
Comprised of:	
Bluetooth Hub Control Unit	A440051
Power cable with fuse	A418105
PlugIn Relay connector	A460854
PlugIn Extension cable 0.5 m	A460802

Power cable with fuse	
Item No.	A418105
This power cable with fuse must be ordered separately in case of:	
<ul style="list-style-type: none"> • Upgrade of existing pre-heating systems without control unit • Installation of Bluetooth® Hub and relay 	

App Overview



Bluetooth® system overview



Futura

The DEFA control units are components of the DEFA WarmUp system and ensure that the vehicle has been warmed up at the preferred time. DEFA Futura is installed in the vehicle interior.

THE FOLLOWING PROGRAMS CAN BE USED

- 2 pickup times
- 1 / 2 / 3 hours preheating time
- Automatic mode controlled by the outside temperature*
- DEFA WarmUp ON
- DEFA WarmUp OFF
- Monitor battery voltage
- Outdoor temp. in °C*
- Zero-condition warning*
- Display light

* These features require the outdoor temperature sensor A418071.

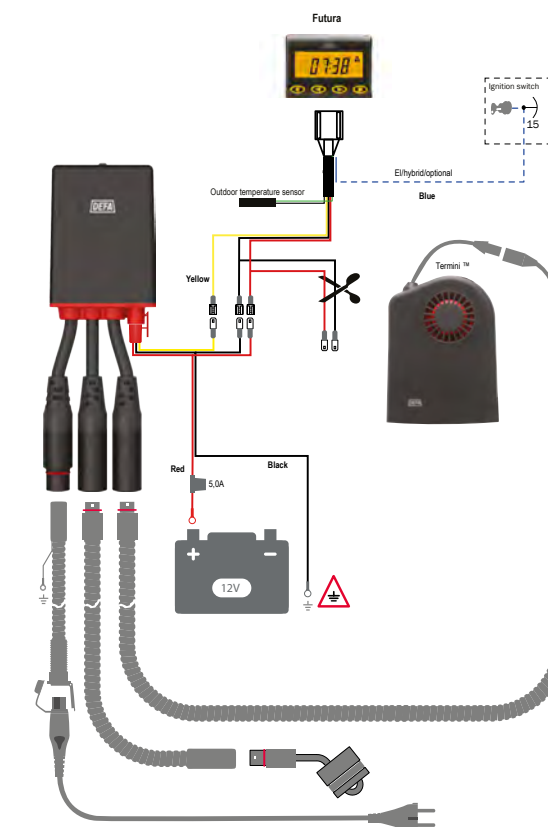


Futura control unit

Item No. without relay/with relay	A440010 / A440011
Voltage [V]	12
Current consumption [mA]	3.5
Height/Width/Depth [mm]	37/47/13
Weight [gr]	19
Test and approval	EN 50081-1, EN 50082-1

Futura spare parts

Wire harness WarmUp Futura with temperature sensor	A418007
Wire harness Futura without temperature sensor	A418059
Temperature sensor	A418071





ComfortKit

The easiest way to pre-heat the engine and vehicle interior.

Besides the DEFA ComfortKit, you only need the suitable engine heating element. The installation kits available differ according to the output of the interior heaters (Termini™ II 1400 or 1900). A battery charger and engine pre-heater are NOT included in the scope of delivery of the DEFA ComfortKit.



ComfortKit Plus

Vehicle-specific full set for the installation of the engine pre-heater system, 12V battery charger and 1400 or 1900 W (watts) interior heating. Suitable for vehicle sizes from compact cars to mid-size estate cars (1400 W) or for vans, minibuses and vans (1900 W). The engine pre-heater is NOT included in the scope of delivery of the DEFA ComfortKit Plus.



ComfortKit 1400	A470066
Comprised of:	
Termini™ II 1400 (interior heater)	A430055
MiniPlug input cable 1.5 m	A460915
PlugIn extension cable 1.0 m	A460803
PlugIn Y-piece	A460853
Termini™ extension cable 1.75 m	A460860
MiniPlug input cable – installation accessories	A418801
MiniPlug connection cable 2.5 m	A460920
Installation accessories	+
Engine pre-heater element (vehicle-specific)	A41xxxx*

ComfortKit 1900	A470067
Comprised of:	
Termini™ II 1900 (interior heater)	A430065
MiniPlug inlet cable 1.5 m	A460915
PlugIn extension cable 1.0 m	A460803
PlugIn Y-piece	A460853
Termini™ extension cable 1.75 m	A460860
MiniPlug input cable – installation accessories	A418801
MiniPlug connection cable 2.5 m	A460920
Installation accessories	+
Engine pre-heater element (vehicle-specific)	A41xxxx*

* Please order the vehicle-specific engine pre-heater element separately.



ComfortKit II 1400 Plus	A470073
Comprised of:	
Termini™ II 1400 (interior heater)	A430055
MiniPlug connection cable 2.5 m	A460920
MiniPlug input cable 1.5 m	A460915
Termini™ extension cable 1.75 m	A460860
MultiCharger 1205 Flex	A450016
PlugIn extension cable 0.5 m	A460802
PlugIn extension cable 1.0 m	A460803
PlugIn Y-piece	+
Engine pre-heater element (vehicle-specific)	A41xxxx*

ComfortKit II 1900 Plus	A470074
Comprised of:	
Termini™ II 1900 (interior heater)	A430065
MiniPlug connection cable 2.5 m	A460920
MiniPlug input cable 1.5 m	A460915
Termini™ extension cable 1.75 m	A460860
MultiCharger 1205 Flex	A450016
PlugIn extension cable 0.5 m	A460802
PlugIn extension cable 1.0 m	A460803
PlugIn Y-piece	+
Engine pre-heater element (vehicle-specific)	A41xxxx*

* Please order the vehicle-specific engine pre-heater element separately.



WarmUp Futura

WarmUp Futura is a complete interior pre-heating system that is controlled by an integrated timer.

WarmUp Futura ensures your vehicle is always warm and that your battery is always fully charged and ready to start. Furthermore, WarmUp reduces fuel consumption and reduces exhaust emissions.

- The scope of delivery of WarmUp Futura includes a control unit with a straightforward, clearly structured display that is integrated into the vehicle.
- WarmUp Futura is available in two different versions according to the power output of the DEFA Termini™ interior heater. Everything required for a WarmUp Futura interior pre-heating system is included in the scope of delivery. An engine preheater can be ordered separately and be integrated into the system.

WarmUp 1400 Futura	A471284
Comprised of:	
Termini™ 1400	A430055
MultiCharger 1205R Flex	A450015
MiniPlug input cable 1.5m	A460915
PlugIn extension cable 0.5m	A460802
PlugIn extension cable 1.0m	A460803
Futura control unit	A440010
Termini™ extension cable 1.75m	A460860
MiniPlug input cable – installation accessories	A418801
MiniPlug connection cable 2.5m	A460955
Installation accessories	

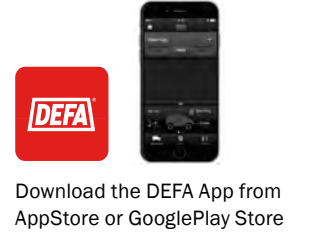
WarmUp 1900 Futura	A471285
Comprised of:	
Termini™ 1900	A430065
MultiCharger 1205R Flex	A450015
MiniPlug input cable 1.5m	A460915
PlugIn extension cable 0.5m	A460802
PlugIn extension cable 1.0m	A460803
Futura control unit	A440010
Termini™ extension cable 1.75m	A460860
MiniPlug input cable – installation accessories	A418801
MiniPlug connection cable 2.5m	A460955
Installation accessories	

WarmUp Bluetooth®

WarmUp Bluetooth® is a complete preheating system that can be controlled with the DEFA app and Bluetooth Smart technology.

With WarmUp your car will always be warm and comfortable, and your battery will always be fully charged and ready to go. WarmUp also reduces fuel consumption and harmful emissions. Pre-program your WarmUp system when you are in the vicinity of your car.

- WarmUp Bluetooth® is available in two different versions depending on the required power of the Termini™ interior heater.
- WarmUp Bluetooth® includes everything besides the engine heater, which must be ordered separately and integrated into the system.



WarmUp 1400 Bluetooth®	A471282
Comprised of:	
Termini™ 1400	A430055
MultiCharger 1205R Flex	A450015
MiniPlug input cable 1.5m	A460915
PlugIn extension cable 1.0m	A460803
PlugIn extension cable 0.5m	A460802
Termini™ extension cable 1.75m	A460860
MiniPlug Xtreme connection cable 2.5m	A460955
MiniPlug inlet cable – installation accessories	A418801
Bluetooth® Hub	A440051

WarmUp 1900 Bluetooth®	A471283
Comprised of:	
Termini™ 1900	A430065
MultiCharger 1205R Flex	A450015
MiniPlug input cable 1.5m	A460915
PlugIn extension cable 1.0m	A460803
PlugIn extension cable 0.5m	A460802
Termini™ extension cable 1.75m	A460860
MiniPlug Xtreme connection cable 2.5m	A460955
MiniPlug inlet cable – installation accessories	A418801
Bluetooth® Hub	A440051


MiniPlug Cabling System

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- Complete energy systems for interior fittings 34
- Sockets, frames, input fuses 35

A reliable power supply – all the time, and wherever you are

Research, quality control, and close cooperation with our customers are central aspects of our product development philosophy.

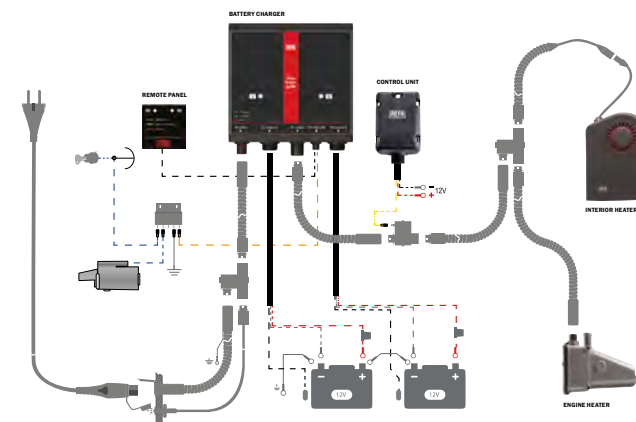
Our research and development take place in our own factories, and our products undergo rigorous testing to ensure that they meet the most stringent requirements in the market. This ensures that our products can meet the high demands of our customers – even in emergency services.

The unique PlugIn connector is the foundation of our system.

It is carefully designed to guarantee safe and effective power and to prevent moisture and dirt from infiltrating the connection.

Installation is quick, easy and safe – in fact, no license is required to install the system.



The PlugIn system is modular and can be supplemented with additional components if the need arises.

Simple and safe PlugIn connections also makes it easy to upgrade or replace components. This means that you get a future proof system that you can adapt to changed requirements.



It is essential to choose a system that is easy to install, and that can handle rough environments and heavy loads.

The PlugIn system, in combination with a large selection of cables and connectors, provides both. Our products are compact and easy to mount, even when space is limited. Remote panels make the installation flexible since components don't need to be accessible for the user.

MiniPlug connection cable

The **MiniPlug connection cable with a cross section of 1.5 mm²** is fitted with a DEFA MiniPlug connector, and allows the power outlet and vehicle to be reliably connected.



MiniPlug Connection cable 1.5 mm²

Item No. 2.5 m	A460920
Item No. 5.0 m	A460921
Item No. 10.0 m	A460924
Voltage [V]	230
Current, max. [A]	16
Weight [g]	920/420 – 921/695 – 924/1180 – 936/1700

MiniPlug connection cable 2.5 mm² is used for specific requirements, for example in ambulances and firefighting vehicles. Despite the larger cable cross section of 2.5 mm², the maximum current consumption is 16A. The cables are available with Schuko plug (CEE 7/17) or CEE plug on the wall side.



MiniPlug Connection cable 2.5 mm²

Item no. 2.5 m / 5.0 m	A460960 / A460961
Item no. 10.0 m / 15.0 m	A460962 / A460963
Item no. 25.0 m	A701109
Voltage [V]	230
Current, max. [A]	16
Weight 2.5m / 5.0m [g]	530 / 915
Weight 10.0m / 15.0m [g]	1520 / 2100
Weight 25.0m [g]	3400



MiniPlug Connection cable CEE 2.5 mm²

Item No. 2.5 m	A707111
Item No. 5.0 m	A706284
Item No. 10.0 m	A706285
Item No. 15.0 m	A706286
Item No. 25.0 m	A706287
Voltage [V]	230
Current, max. [A]	16
Weight [g]	530/840/1565/2260/3745



MiniPlug/PlugIn cable

MiniPlug inlet cables are suitable for use in all new vehicles. The functional, easy-to-install cables can be installed both flush-mounted or with a bracket. When developing the DEFA MiniPlug, we placed a particular focus on correct design, safety, and easy of installation and use.



MiniPlug inlet cable, Black

Item No. 0.6 m	A460902
Item No. 1.0 m	A460901
Item No. 1.5 m	A460915
Item No. 2.0 m	A460939
Item No. 2.5 m	A460940
Voltage [V]	230
Current [A]	16
Weight (Length/Weight) [m/g]	0.6/250 – 1.0/290 – 1.5/410 – 2.0/570 – 2.5/800



MiniPlug inlet cable, Orange

Item No. 0.6 m	A704557
Item No. 1.0 m	A704558
Item No. 1.5 m	A704559
Item No. 2.0 m	A704561
Voltage [V]	230
Current [A]	16
Weight (Length/Weight) [m/g]	0.6/250 – 1.0/290 – 1.5/410 – 2.0/570



PlugIn extension cables

Item no. Black	Item no. Orange	Length [m]	Weight [g]
A460802	A704547	0.5m	145
A460803	A704548	1.0m	265
A460843	A704549	1.5m	380
A460804	A704550	2.0m	497
A460844	A704551	3.0m	731
A460846	A704552	4.0m	965
A460809	A704553	5.0m	1200
A460847	A704554	8.0m	1900
A460851	A704555	10.0m	2400
A460850	A704556	12.0m	2838

The components of the DEFA WarmUp vehicle pre-heating systems are easy to connect to PlugIn extension cables. The PlugIn system guarantees a safe and waterproof connection. Mechanically encoded contacts prevent any mistakes during connection.



PlugIn connection sets

DEFA connection sets are comprised of DEFA PlugIn extension cables in different lengths and a DEFA PlugIn Y-piece for connecting the interior heater and the engine pre-heater.

The sets are also suitable for upgrading an existing engine pre-heating systems with an interior heater. For interior heaters featuring an earthed safety plug, please use the product with item no. A460764. The sets are otherwise distinguished by the length of the cables.

PlugIn connection sets, orange

DEFA connection cables are fitted with a DEFA MiniPlug connector and a power plug, and allow the power outlet and vehicle to be reliably connected. Available in two versions – with a 1.5 mm cross-section or a 2.5 mm cross-section for special requirements.

The cables installed in the vehicle are now available in an orange signal colour, making them easier to distinguish visually from the cables conducting DC power (12/24 V). Contact with cables conducting 230 V in the vehicle poses a danger to life and limb, and requires utmost caution.



Connection set 785 A460785

Comprised of:

MiniPlug power supply cable 1.5 m	A460915
MiniPlug connection cable 2.5 m	A460920
MiniPlug power supply cable – installation accessories	A418901



Connection set 787 A460787

Comprised of:

MiniPlug power supply cable 1.5 m	A460915
MiniPlug connection cable 5.0 m	A460921
MiniPlug power supply cable – installation accessories	A418901



PlugIn connection set 760 A460760

Comprised of:

PlugIn extension cable 0.5 m	A460802
PlugIn extension cable 1.0 m	A460803
PlugIn Y-piece	A460853
PlugIn socket for the interior heater	A460829



PlugIn connection set 764 A460764

Comprised of:

MiniPlug connection cable 2.5 m	A460920
MiniPlug input cable 2.5 m	A460940
PlugIn socket for the interior heater	A460829



Connection set, Orange 960 A706960

Comprised of:

MiniPlug input cable, Orange 1.5 m	A704559
MiniPlug connection cable, Orange 2.5 m	A460960
MiniPlug power supply cable – installation accessories	A418901



Connection set, Orange 961 A706961

Comprised of:

MiniPlug input cable, Orange 1.5 m	A704559
MiniPlug connection cable, Orange 5.0 m	A460961
MiniPlug power supply cable – installation accessories	A418901

The MiniPlug connection cable in orange (2.5 mm²) is used in vehicles which have specific requirements of the connection cables, for example ambulances or firefighting vehicles with special equipment. Despite the 2.5 mm² cross section, the maximum current consumption is 16 A.



Connection set, Orange CEE 962 A706962

Comprised of:

MiniPlug input cable, Orange 1.5 m	A704559
MiniPlug connection cable, Orange CEE 2.5 m	A707111
MiniPlug power supply cable – installation accessories	A418901



Connection set, Orange CEE 963 A706963

Comprised of:

MiniPlug input cable, Orange 1.5 m	A704559
MiniPlug connection cable, Orange CEE 5.0 m	A706284
MiniPlug power supply cable – installation accessories	A418901

The MiniPlug connection cable in orange CEE (2.5 mm²) is used in vehicles which have specific requirements of the connection cables, for example ambulances or firefighting vehicles with special equipment. Despite the 2.5 mm² cross section, the maximum current consumption is 16 A.

Accessories for the input cable

DEFA MiniPlug inlet cables are available in versions suitable for all new passenger car models, with improved installation material to make installation straightforward. The installation accessories are comprised of one set of fastening rings for optimal installation on the front of the vehicle, and a bracket for fastening behind the number plate.



MiniPlug fastening set

Item no.	A418801
Ring diameter [mm]	55 - 45 - 40

The set of rings is comprised of two fastening rings and one support disc, which ensures optimal and flexible installation of the input cable. This allows the cable to be installed unobtrusively and without drilling in the front of the vehicle. Straightforward installations reduces the installation time. The discs are also included in the input cable installation set for the device.



MiniPlug bracket

Item no.	A460996
Height/Width/Thickness [mm]	160/40/2
Diameter of the installation holes [mm]	6

The bracket, which is fastened behind the number plate, allows the input cable to be installed in the front area of the vehicle – vertically or horizontally, depending on the vehicle characteristics.



MiniPlug repair set

Item no.	A418901
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Set comprised of cap and spring for all MiniPlug input cables.



MiniPlug LED Clip-on light

Item no.	A460964
Height/Width/Thickness [mm]	12/18/28
Weight [g]	8
Battery type	CR 1632



LED indicator

Item no.	A460881
Voltage [V]	110 - 240
Max. current [A]	16
IP protection class [IP], PlugIn/LED	44/67

Special tools

Tools for installing cables through the vehicle firewall and for removing frost plugs from the engine.



Pullwire kit 866

Item no.	A460866
Quantity	1 set

Tool for straightforward installation of PlugIn extension cables with plug or socket through the bulkhead. Supplied with two extensions of 1 m each.



Cable pull kit 868

Item no.	A460868
Quantity	2

Tool for straightforward installation of PlugIn extension cables with plug or socket through the bulkhead. Supplied with two extensions of 1 m each.



Extractor tool

Item no. complete set (4 extractors)	A491006
Item no. (Ø20 mm)	A491001
Item no. (Ø27 mm)	A491002
Item no. (Ø34 mm)	A491003
Item no. (Ø41 mm)	A491004



Complete extractor tools

Item no.	A491012
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Comprised of the basic set (491011), 4 extractors (491006) and 4 tapered clamp sleeves (491005).



Main tools

Item no.	A491011
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Special applications

In some cases special accessories are necessary to achieve additional functions for professional use.



Connection socket CEE PlugIn

Item No.	701150
Voltage, AC [V]	230
Current rating [A]	16



Cable drum

Item no. 5.0 m	A499900
Item no. 10.0 m	A499901
Input/output voltage, AC [V]	230
Power consumption [A]	16
Cable cross section	2.5 mm ²
Max. power rating [W]	coiled: 1200 uncoiled: 2500
Width/height/depth [mm]	400/160/280
Length of power supply line [m]	1.5
Weight [kg]	5.0 m: 4.8 / 10.0 m: 5.7
IP protection class [IP]	20



Manual summer and winter switch

Item No.	701123
Height/Width/Depth [mm]	67/135/76
Weight [kg]	0.2

The summer/winter switch is manual and makes it possible to disconnect the engine/interior heater in the summer, without also having to disconnect the battery charger.



Position SUMMER:
only outlet no. 1 is
connected



Position WINTER:
all 3 outlets are
connected

PlugIn branch pieces and sockets

DEFA relay contacts and relay boxes are available in versions for 12 and 24 volts, and can be used in combination with the DEFA SmartStart™, DEFA Futura and DEFA Bluetooth® control elements.



PlugIn relay contact 12 V/24 V

Item no. 12 V	A460854
Item no. 24 V	A460856
Width/height/depth [mm]	31/61/67
Voltage [V]	230/12, 230/24
Max. current [A]	16
IP protection class [IP]	44



PlugIn relay contact 12 V/24 V

Item no. 12 V	A460838
Item no. 24 V	A460863
Width/height/depth [mm]	56/63/70
Voltage [V]	230/12 – 230/24
Max. current [A]	16
IP protection class [IP]	44



PlugIn Y-connector

Item no. 12 V	A460853
Width/height/depth [mm]	48/53/24
Voltage [V]	230
Max. current [A]	16
IP protection class [IP]	44



PlugIn	T-connector	NEW! H-connector
Item no. 12 V	A460831	A460857
Width/height/depth [mm]	63/42/21	63/42/21
Voltage [V]	230	230
Max. current [A]	16	16
IP protection class [IP]	44	44



PlugIn interior socket

Item no. 12 V	A460829
Width/height/depth [mm]	70/54/41
Voltage [V]	230
Max. current [A]	16
IP protection class [IP]	44







Complete energy systems for interior fittings

Convenient installation: All 230 volt Schuko sockets are fitted with a DEFA PlugIn connection.
The DEFA product range includes sockets and surface-mounted sockets in a single or double version.

	Schuko socket, single, stainless steel
Item no.	700399
Mains voltage, AC [V]	230
IP protection class	44
	Schuko socket, double
Item no.	700405
Mains voltage, AC [V]	230
IP protection class	44
	Surface-mounted socket, single
Item no.	700401
Mains voltage, AC [V]	230
IP protection class	44
	Surface-mounted socket, double
Item no.	700403
Mains voltage, AC [V]	230
IP protection class	44
	Surface-mounted socket, double, with PlugIn input and PlugIn output
Item no.	702779
Mains voltage, AC [V]	230
IP protection class	44

Sockets, frames, input fuses

	Socket, single	Item no.
	(White)	701317
	(Grey)	701315
	Frame for socket	Item no.
	Frame for socket – White	701307
	Frame for socket – Grey	701305
	Double frame for socket – White	701310
	Double frame for socket – Grey	701308
	Input fuse	Item no.
	Input fuse 230V AC/16A 1x DEFA PlugIn input, 1x DEFA PlugIn output – Schuko socket – Grey, including 30 mA RCD	700433
	Input fuse	Item no.
	Input fuse 230V AC/16A 1x DEFA PlugIn input, 3x DEFA PlugIn outputs – Grey	700437
	Input fuse 230V AC/16A 2x DEFA PlugIn inputs, 3x DEFA PlugIn outputs, with main switch – Grey, including 30 mA RCD	700441

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DEFA Onboard battery chargers Charging solutions for every demand



For many drivers, the truck is a mobile home where they spend their everyday life, both day and night. Make sure to keep a comfortable home! As the demand for power in trucks is growing, the need for efficient battery charging is self-evident. Proper battery maintenance allows the driver to enjoy the comfort and convenience of being able to watch TV, charge their phone, or use the coffee maker, without worrying that the batteries will become drained.



If you depend on power from your battery, you need a quality system for 230VAC power supply and battery charging. Using your battery for power supply wears it down, and if you work from your vehicle, you need to know that it will start. A fixed DEFA battery charger provides optimal charging so that you can focus on your job.



Our power supply and charging solutions for emergency vehicles provide the highest possible standard of performance and reliability. The DEFA PlugIn system provides flexible access to 230VAC power and ensures optimal battery performance when it counts the most. When lives are on the line, failure is not an option. DEFA chargers and cables meet the most stringent requirements, so that emergency workers can perform to the best of their ability.



Our products are designed to handle extreme conditions and are rigorously tested to ensure that they can handle heavy use and harsh environments. Intelligent battery chargers help maintain battery performance. Our chargers analyze the batteries and provide optimal and temperature adjusted charging curves. Customized charging extends battery lifetimes and minimizes waste. DEFA chargers are compact and water, dust, and shock-resistant.



Interesting facts about batteries

Before we come to battery chargers and power supplies, we would like to start by telling you a few facts about lead batteries.

A battery is not simply a battery!

Two different types of batteries are usually found in a vehicle. On the one hand, there is a starter battery, and on the other hand, there are auxiliary batteries. The high-current starter batteries are designed to provide an overproportionally high engine starting current for a brief moment, and are recharged by the alternator right afterwards. The energy discharged is very low.

While deep-cycle auxiliary batteries cannot produce high currents, they can be discharged considerably more often even with a higher energy throughput. This makes them ideal for storing energy for consumer units that run on electricity, and which are also used when the vehicle is idle.

Fully charged? This is almost never the case!

One of the simple truths about lead batteries is that 80% to 85% of capacity is quickly charged, while the remaining 15% to 20% often takes significantly longer – in fact, just as long as the first 80–85%. It doesn't matter how large the battery or battery charger is. This means that most batteries are never really fully charged, and an 85% charge state is usually the maximum.

Make sure the battery has an adequate capacity!

While the service life of a battery does depend on its actual age, it mostly depends on the number of discharge cycles. One cycle is usually equivalent to an 80% discharge. If the battery is, for example, only charged by 40%, then the number of cycles that can be reached with this battery also doubles. This means that a battery with larger dimensions can be discharged more frequently than a smaller one, despite the same current draw.

As a rule of thumb, we recommend dimensioning the battery to be double as much as your energy requirements. If you therefore require 100Ah, then you should invest in a battery with at least 200Ah to be on the safe side.

A new phenomenon: Discharging the battery during the journey!

Many owners of vehicles, trucks, and buses are still unfamiliar with the phenomenon of discharge during the journey. This is because the increasing number of consumer units of all types results in energy requirements being unable to be met by the alternator during the journey. This not only results in the battery not being discharged during the journey, but in the battery discharging as well.

This effect is exacerbated by new technologies such as the start-stop technology, and smart alternators. While the engine is switch off or when there is a heavy load on the engine, for example when accelerating, then all the consumer units are supplied with power from the battery instead of from the alternator. This makes a full battery charge a matter of chance.



Long service life!

The end-of-charge voltage and float charge voltage of a battery largely depends on the ambient temperature of the battery. While charge voltage should be raised at low temperatures to ensure full charging can occur, it should be lowered accordingly at high temperatures to prevent overheating and the associated reduction in the battery service life.

Why is fully charging a battery so important?

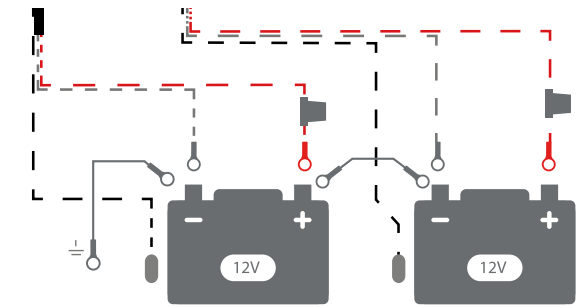
If your battery is not fully charged, this may result in discharging the battery to the extent that you cannot draw the required energy from it. This can, under certain circumstances, damage the internal structure of the battery so severely that recharging becomes impossible. The entire battery will then need to be replaced.

One of the most frequent causes of battery failure is incorrect maintenance. Batteries that are not fully charged facilitate what is known as sulphation. The formation of lead sulphate during the discharge process is a perfectly normal process. In the best case, this lead sulphate can be converted back into lead during the next charging process. However, if the battery cannot be fully charged, then some of the sulphate will not be converted back into lead, and instead forms a crystalline structure. Once these crystals reach a critical size, the lead sulphate can no longer be used for the chemical reaction during the charging processes, which results in a corresponding loss of capacity.

In order to be able to use the full functionality and service life of a battery, this should therefore be charged to 100% capacity whenever possible during the charging process. This can be done using the right characteristic curve and a corresponding temperature compensation.

All of these are features that are integrated into the high-quality DEFA battery chargers. Always remember that a battery seldom fails when your vehicle is parked in the garage. The nature of the problem means that it will always occur when you need the battery most.

You can save unnecessary costs and worry by charging and maintaining your battery with a DEFA battery charger right from the start.



This helps you avoid charging problems in 24-volt systems

When installing a 24-volt system, two 12-volt batteries are usually connected in series. This may lead to problems with the battery that forms the negative terminal never being fully charged. This means that the total capacity is never actually reached. On top of this, an insufficient charge may result in sulphur deposition.

These problems are easy to avoid by choosing a circuit that involves charging the batteries separately (see fig. above). This way, both batteries receive the correct voltage.

Here are a few tips for an economic 24-volt system:

- ▶ Ensure the correct charge voltage (14.4 V at 20°C)
- ▶ Use a battery charger that charges the batteries separately
- ▶ Use a battery charger that switches over to float charging once the batteries are full
- ▶ If applicable, ensure the batteries have the correct fill level



MultiCharger 1205 Flex

DEFA MultiCharger 1205 Flex is a powerful and compact charger for modern cars. It needs 48% less space for installation than its predecessor, and it has flexible cables to allow for easy installation in tight spaces. The bracket allows for easy installation in all cars, and the PlugIn cables integrate it perfectly with the rest of the DEFA system. DEFA MultiCharger 1205 Flex is suitable for batteries from 50 to 100 Ah.



MultiCharger 1205 Flex

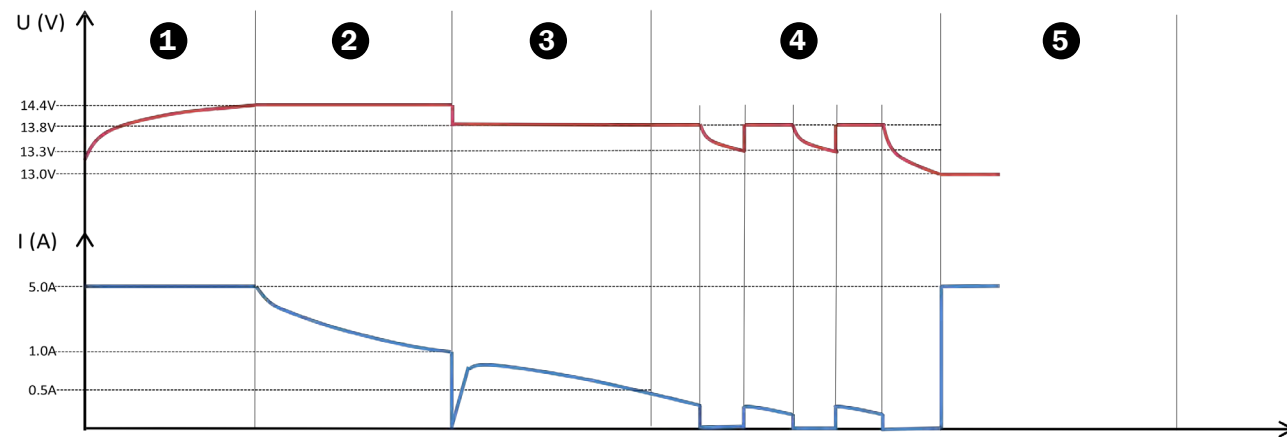
Item no.	A450016
Charging current [A]	5
Charging voltage [V]	> 14.4
Float voltage [V DC]	13.3 - 13.8
Width/Height/Depth [mm]	95/71/38
Weight [gr]	369
Fuse [A]	7.5
IP rate	65



Extremely easy to install
Flexible 230V connections, reduced size and flexible bracket.



CHARGING CURVE:



- 1 Constant current phase – main charging phase
- 2 Constant voltage phase
- 3 Float charging
- 4 Pulse charging
- 5 Return to step 1 when voltage lower than 13V

MultiCharger 1205R Flex

DEFA MultiCharger 1205R Flex is a powerful and compact charger with a built-in relay and the best option for charging the vehicle when a pre-heating system is installed. It needs 60% less space for installation than its predecessor. With a bracket with more optional installation ways and flexible connection cables, it is still 37% smaller than the previous. DEFA MultiCharger 1205R Flex is suitable for batteries from 50 to 100 Ah.



MultiCharger 1205R Flex with relay

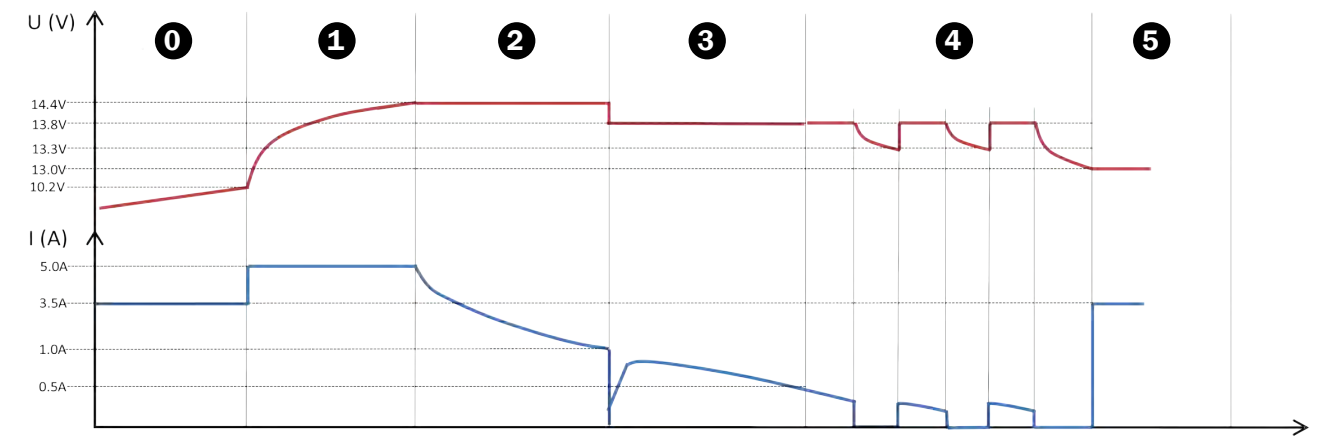
Item no.	A450015
Charging current [A]	5
Charging voltage [V]	> 14.4
Float voltage [V DC]	13.3 - 13.8
Width/Height/Depth [mm]	95/71/38
Weight [gr]	325
Fuse [A]	7.5
IP rate	65



Extremely easy to install
Flexible 230V connections, reduced size and flexible bracket. Including two relay-controlled outputs.



CHARGING CURVE:



- 0 Analysis for checking the battery state
- 1 Constant current phase – main charging phase
- 2 Constant voltage phase
- 3 Float charging
- 4 Pulse charging
- 5 Return to step 1 when voltage lower than 13V



MultiCharger 1210 Flex

MultiCharger 1210 Flex is a 12V/10A battery charger which is more compact than similar chargers in the category. It needs 89% less space for installation than its predecessor. The new 1210 Flex has more flexible cables making the mounting of the charger easier and faster. The new waterproof 12 V connections reduce corrosion risk and improve the durability of the charger. Our most powerful and compact charger for modern cars. DEFA MultiCharger 1210 Flex is suitable for batteries from 100 to 200 Ah.



MultiCharger 1210 Flex

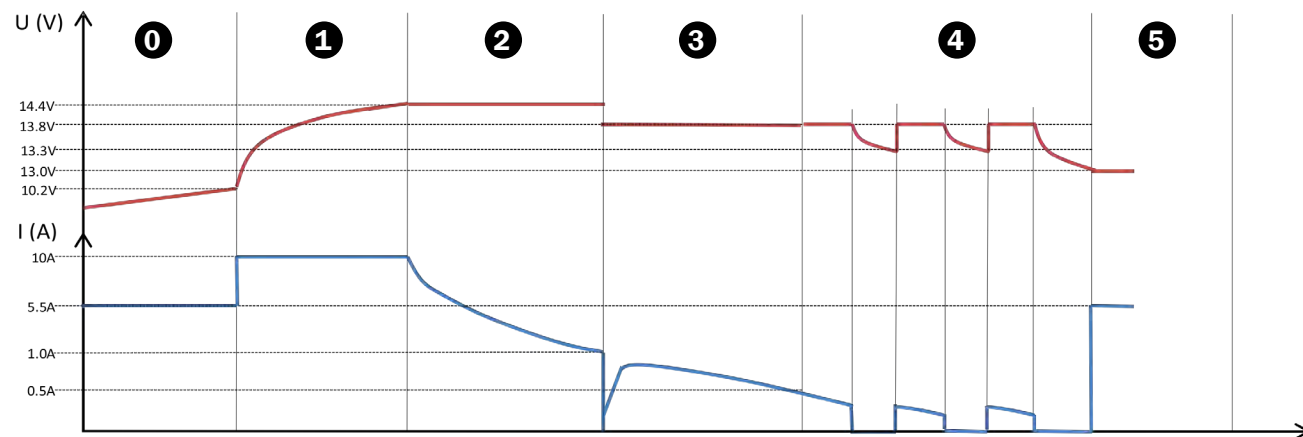
Item no.	A450017
Mains voltage [VAC/Hz]	230
Charging voltage [VDC]	14.4
Maintenance charging [VDC]	13.6
Max. Charging current [A]	10
Width/Height/Depth [mm]	105/71/42
Weight [gr]	384
IP rate [IP]	65



The charger is delivered with a bracket for easier mounting



CHARGING CURVE:



- 0 Analysis for checking the battery state
- 1 Constant current phase – main charging phase
- 2 Constant voltage phase
- 3 Float charging
- 4 Pulse charging
- 5 Return to step 1 when voltage lower than 13V

ChargerKits 1205 Flex and 1210 Flex

A battery charger keeps your batteries fully charged, extends its lifespan, and ensures that your car starts regardless of weather or temperature. DEFA ChargerKit is available with MultiCharger 1205 Flex or MultiCharger 1210 Flex, and the kit includes all necessary cables for easier installation. These ChargerKits are particularly suitable for cars with parking heaters. Choose the ChargerKit 1210 Flex if you appreciate faster charging. Because of the charger's advanced and responsive charging cycle, your battery is charged even when other chargers would fail.



ChargerKit 1205 Flex

Item No.	A450034
Comprised of:	
MultiCharger 1205 Flex	A450016
Cable set 12V	A418109
MiniPlug inlet cable 1.5 m	A460915
MiniPlug Xtreme connection cable 2.5 m	A460955
MiniPlug inlet cable – fitting equipment	A418801



ChargerKit 1210 Flex

Item No	A450033
Comprised of:	
MultiCharger 1210 Flex	A450017
Cable set 12V	A418107
MiniPlug inlet cable 1.5 m	A460915
MiniPlug Xtreme connection cable 2.5 m	A460955
MiniPlug inlet cable – fitting equipment	A418801



QUALITIES

- A highly efficient switch mode and advanced charging profiles prevent damage to the battery
- The charger can therefore be continuously connected
- Temperature-compensated charging voltage ensures that the battery is fully charged regardless of the condition of the battery. No risk for overcharging.
- Light indication of charging mode
- The chargers are protected against short circuits and reverse polarity
- Does not harm advanced electronics
- Small dimensions
- Protects the battery from breaking down (sulphating) and extends the batteries lifetime.

DEFA's chargers are all approved by; EN 60335-2-29:2004 + A2:210, EN 60335-1:2012 + A11:2014, EN 62233:2008, EN 550141:2006 + A1:2009 + A2:2011, EN 61000-3-3:2013, EN 61003-2:2014, EN 55014-2:2015



MultiCharger 1x12 A

The DEFA MultiCharger 1x12 A is a battery charger that was designed for integration into vehicles. It is suitable for lead-acid batteries (as well as AGM, gel, start-stop) up to 150Ah. The DEFA PlugIn connections allow the battery charger to be integrated into the complete DEFA system perfectly. The DEFA MultiCharger 1x12A tolerates a parallel load up to 6A and charges the battery at the same time.

The scope of delivery of the battery charger includes a two-metre long battery connection cable with an integrated temperature sensor and a connecting cable. Should you require an integrated ignition interrupter (starter kill) for your application, please use the MultiCharger 1x20A instead.

Recommendation

The 1x12 A battery charger is exactly right for batteries with up to 150 Ah and that are subject to heavy use in professional applications.

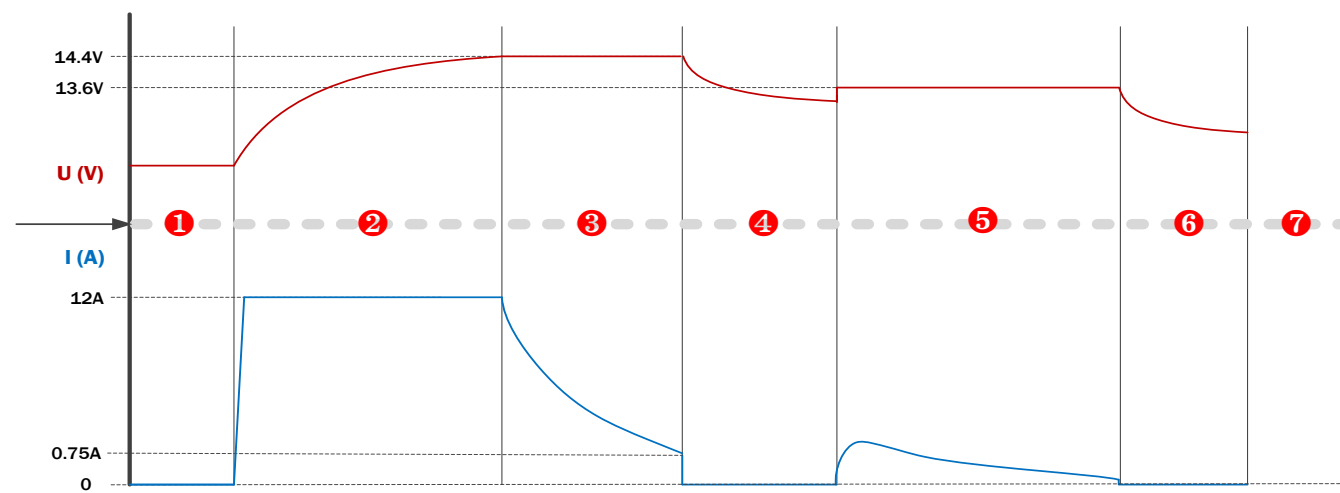


MultiCharger 1x12 A

Item No	705200
Mains Voltage [V AC]	230
Operating temperature [°C]	-35 / +50
Charging voltage [V DC]	14.4
Float voltage [V DC]	13.5
Charging current [A]	12
Battery size [Ah]	150
IP-rate	44
Weight [kg]	1
Height/Width/Depth [mm]	138/98/53
Certifications	EN60335-1, EN60335-2-29, EN55014-1, EN55014-2, EN61003-3/2

Temperature compensated ca 5.0mV/°C/celle. Ref. 25°C

CHARGING CURVE:



- 1 Analysis for checking the battery state
- 2 Constant current phase – main charging phase
- 3 Constant voltage phase
- 4 Analysis for checking the battery state
- 5 Float charging
- 6 + 7 Conditioning: Every 7 days the battery charger changes back to phase 1 to wake up the battery and prevent sulfatation

MultiCharger 2x12 A

The DEFA MultiCharger 2x12 A is comprised of two 12A battery chargers that are installed on a mounting plate. This combination unit was designed for integration into vehicles. It is suitable for lead-acid batteries (as well as AGM, gel, start-stop batteries) up to 2x150Ah. The DEFA PlugIn connections allow the battery charger to be integrated into the complete DEFA system perfectly. The DEFA MultiCharger 2x20 tolerates a parallel load up to 6 A per output and charges the batteries at the same time.

The scope of delivery of the battery charger includes a two-metre long battery connection cable with an integrated temperature sensor and a connecting cable. Should you require an integrated ignition interrupter (starter kill) for your application, please use the MultiCharger 2x20A instead.

Recommendation

The 2x12A battery charger satisfies all professional requirements for 12V and 24V systems. 12V single or system batteries can be effectively charged as needed with up to 300 Ah. 24V systems are optimally charged with a capacity of up to 150 Ah.



MultiCharger 2x12 A

Item No	705300
Mains Voltage [V AC]	230
Operating temperature [°C]	-35 / +50
Charging voltage [V DC]	14.4
Float voltage [V DC]	13.5
Charging current [A]	2×12
Battery size [Ah]	2×150
IP-rate	44
Weight [kg]	2
Height/Width/Depth [mm]	138/201/53
Certifications	EN60335-1, EN60335-2-29, EN55014-1, EN55014-2, EN61003-3/2

Temperature compensated ca 5.0mV/°C/celle. Ref. 25°C



MultiCharger 1x20 A

The DEFA MultiCharger 1x20A is a compact, powerful battery charger. It is suitable for all types of vehicles and all usage conditions.

To make the system more flexible, the cables are ordered separately in the required length. The DEFA MultiCharger 1x20A tolerates a parallel load up to 10A and charges the battery at the same time. The charge voltage is temperature-compensated. Additionally, the battery charger features an external signal wire for integration of an ignition interrupter (starter kill).

Recommendation

The 1x20A battery charger is perfect for batteries up to 250 Ah that are subject to heavy use in professional applications.

MultiCharger 2x20 A

The DEFA MultiCharger 2x20 A is a compact, powerful battery charger. It is suitable for all types of vehicles and all usage conditions.

To make the system more flexible, the cables are ordered separately in the required length. The DEFA MultiCharger 2x20A tolerates a parallel load up to 17 A per output and charges the batteries at the same time. The charge voltage is temperature-compensated. Additionally, the battery charger features an external signal wire for integration of an ignition interrupter (starter kill).

Recommendation

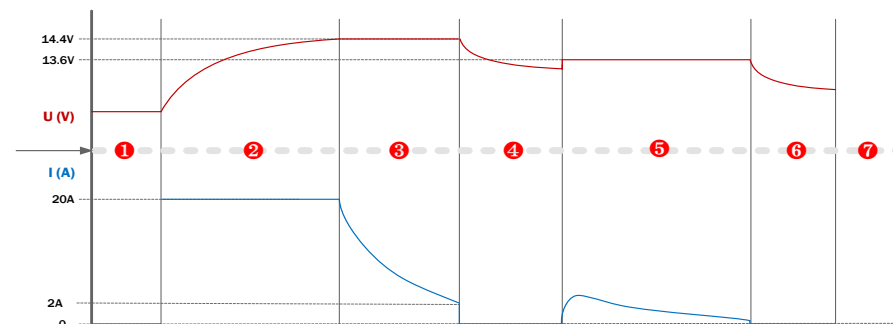
This 2x20A battery charger satisfies all professional requirements for 12V and 24V systems. 12V single or system can be charged as needed with up to 500Ah. 24V systems are optimally charged with a capacity of up to 250Ah.



MultiCharger 1x20 A

Item No.	705800
Mains Voltage [VAC/Hz]	230/50-60
Ambient temperature [°C]	-35 / +50
Charge voltage* S1 [VDC]	14.4
Float charge voltage S2 [VDC]	13.5
Max. Charging current [A]	20
Recommended max. battery capacity [Ah]	250
Protection class [IP]	44
Weight [kg]	2
Height/Width/Depth [mm]	138/98/53
Certifications	EN60335-1, EN60335-2-29, EN55014-1, EN55014-2, EN61003-3/2

CHARGING CURVE:



LED Display for 1 battery

- 1 Analysis for checking the battery state
- 2 Constant current phase – main charging phase
- 3 Constant voltage phase
- 4 Analysis for checking the battery state
- 5 Float charging
- 6+7 Conditioning: Every 7 days the battery charger changes back to phase 1 to wake up the battery and prevent sulfation



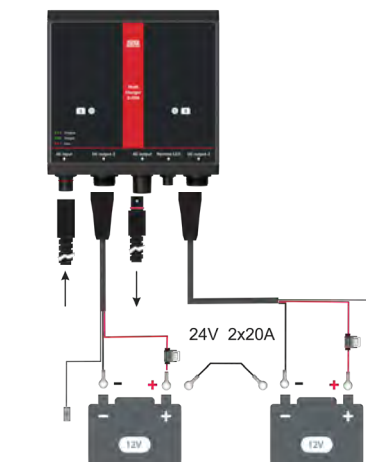
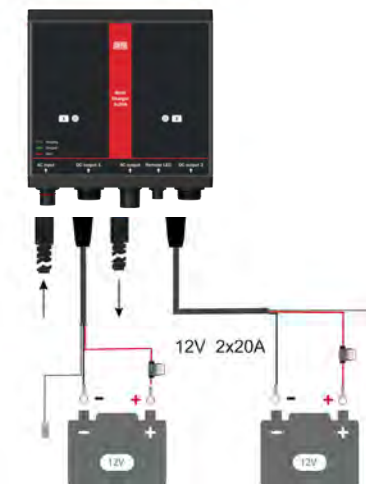
MultiCharger MultiCharger 2x20 A

Item No.	705900
Mains Voltage [VAC/Hz]	230/50-60
Ambient temperature [°C]	-35 / +50
Charge voltage* S1 [VDC]	14.4
Float charge voltage S2 [VDC]	13.5
Max. Charging current [A]	2x20
Recommended max. battery capacity [Ah]	2x250
Protection class [IP]	44
Weight [kg]	3
Height/Width/Depth [mm]	138/190/53
Certifications	EN60335-1, EN60335-2-29, EN55014-1, EN55014-2, EN61003-3/2

Please order separately from the battery charger:	Item No.
Charging cable 2 m, Ø 8 mm ²	706483*
Charging cable 4 m, Ø 8 mm ²	706484*
Charging cable 6 m, Ø 8 mm ²	706485*

* For MultiCharger 2x20A please order 2 pieces!

Accessories:	Item no. 1x20A	Item no. 2x20A
LED display, incl. 5 m connection cable	705294	705162
LED display, incl. 10 m connection cable	705295	705163
LED display, incl. 20 m connection cable	705296	705164
LED display, incl. 25 m connection cable	705297	705165
Input cable (PlugIn – Schuko)	705463	705463



LED Display for 2 batteries



MultiCharger 1x35 A

The DEFA MultiCharger 1x35 A is a compact, powerful battery charger. It is suitable for all types of vehicles and all usage conditions.

To make the system more flexible, the cables are ordered separately in the required length. The DEFA MultiCharger 1x35A tolerates a parallel load up to 20A and charges the battery at the same time. The charge voltage is temperature-compensated. The battery charger also features an external signal wire for integration of an ignition interrupter (starter kill).

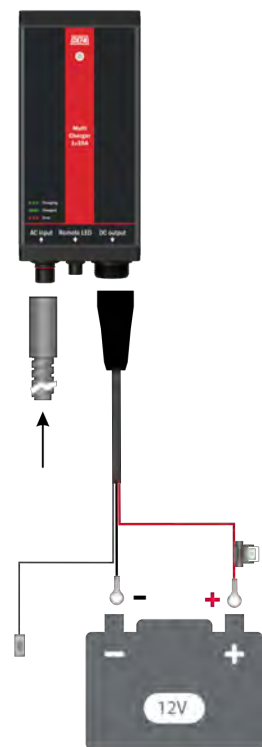
Recommendation

The 1x35A battery charger is exactly right for 12 V batteries with up to 600 Ah and that are subject to heavy use in professional applications.



MultiCharger 1x35A

Item No. with PlugIn 1x35A	708501
Mains Voltage [VAC/Hz]	230/50-60
Ambient temperature [°C]	-35 / +50
Charge voltage* S1 [VDC]	14.4
Float charge voltage S2 [VDC]	13.5
Max. Charging current [A]	35
Recommended max. battery capacity [Ah]	600
Protection class [IP]	44
Weight [kg]	2
Height/Width/Depth [mm]	200/98/53
Certifications	EN60335-1, EN60335-2-29, EN55014-1, EN55014-2, EN61003-3/2

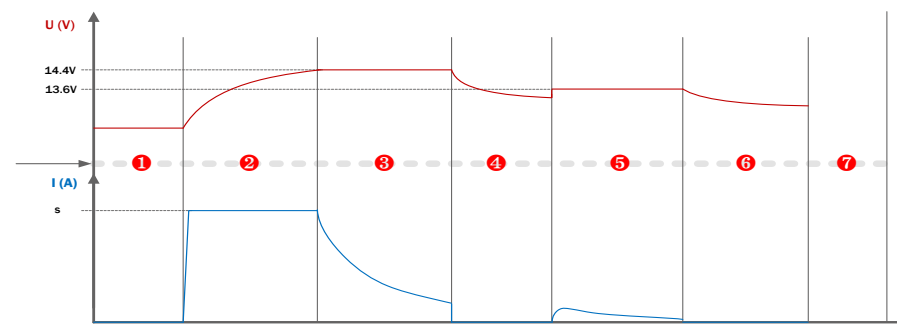


12V 1x35A



LED Display for 1 battery

CHARGING CURVE:



- 1 Analysis for checking the battery state
- 2 Constant current phase – main charging phase
- 3 Constant voltage phase
- 4 Analysis for checking the battery state
- 5 Float charging
- 6+7 Conditioning: Every 7 days the battery charger changes back to phase 1 to wake up the battery and prevent sulfatation

MultiCharger 2x35 A

The DEFA MultiCharger 2x35A is a compact, powerful battery charger. It is suitable for all types of vehicles and all usage conditions.

To make the system more flexible, the cables are ordered separately in the required length. The DEFA MultiCharger 2x35A tolerates a parallel load up to 20A per output and charges the batteries at the same time. The charge voltage is temperature-compensated. The battery charger also features an external signal wire for integration of an ignition interrupter (starter kill).

Recommendation

The 2x35A battery charger satisfies all professional requirements for 12 V and 24 volt systems. 12 V single or system batteries can be effectively charged as needed with up to 1200 Ah. 24 V systems are optimally charged with a capacity of up to 600 Ah.



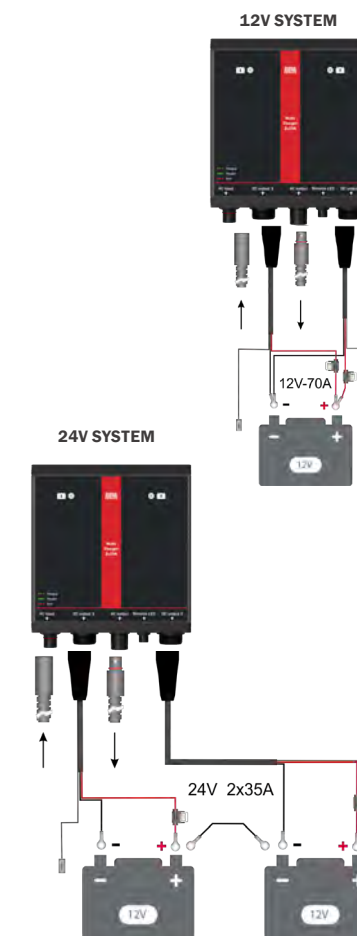
MultiCharger MultiCharger 2x35A

Item No.	708502
Mains Voltage [VAC/Hz]	230/50-60
Ambient temperature [°C]	-35 / +50
Charge voltage* S1 [VDC]	14.4
Float charge voltage S2 [VDC]	2×13.5
Max. Charging current [A]	2×35
Recommended max. battery capacity [Ah]	2×600
Protection class [IP]	44
Weight [kg]	4
Height/Width/Depth [mm]	200/190/53
Certifications	EN60335-1, EN60335-2-29, EN55014-1, EN55014-2, EN61003-3/2

Please order separately from the battery charger:

	Item No.
Charging cable 2 m, Ø 8 mm ²	705099*
Charging cable 4 m, Ø 8 mm ²	705147*
Charging cable 6 m, Ø 8 mm ²	705159*
Charging cable 8 m, Ø 8 mm ²	705160*

* For MultiCharger 2x35A please order 2 pieces!



Accessories:	Item no. 1x35A	Item no. 2x35A
LED display, incl. 5 m connection cable	705294	705162
LED display, incl. 10 m connection cable	705295	705163
LED display, incl. 20 m connection cable	705296	705164
LED display, incl. 25 m connection cable	705297	705165
Input cable (PlugIn – Schuko)	705463	705463



LED Display for 2 batteries

MultiCharger 40A 24V

DEFA MultiCharger 40A 24V is a powerful and compact charger for trucks and heavy vehicles that can be easily installed in any engine compartment by using the existing 24V connections.

It is well suited to charge lead/acid, AGM and GEL batteries up to approx. 500Ah and can maintenance charge the battery for an unlimited time. The charger can stand parallel load up to 35A and charges the batteries at the same time. The MultiCharger 40A 24V is rated IP67 and can be used in tough environments. Should you require an integrated ignition interrupter (starter kill) for your application, please use the MultiCharger 2x20A instead.



NEW



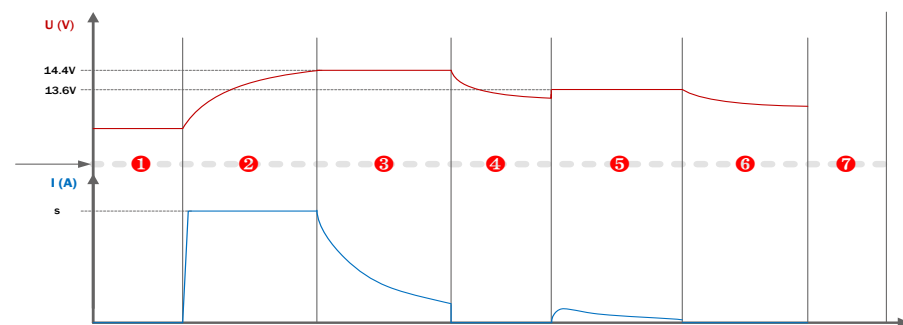
Safety valve

MultiCharger 40A 24V

Item no.	708400
Mains Voltage [VAC/Hz]	230/50-60
Ambient temperature [°C]	-35 / +50
Max charging voltage [VDC]	28.8
Float voltage [VDC]	27.2
Max charging current [A]	40
IP rate [IP]	67
Weight [kg]	4
Height/Width/Depth [mm]	280/175/85
AC Input cable length [m]	2 (fixed, with DEFA PlugIn)
DC Charging cable length [m]	2 (fixed, Ø8 mm ²)
Certifications:	EN60335-1, EN60335-2-29, EN55014-1, EN55014-2, EN61003-3/2

Accessories:	Item No
LED Display, incl. 5 m connection cable	705294
LED Display, incl. 10 m connection cable	705295
LED Display, incl. 20 m connection cable	705296
LED Display, incl. 25 m connection cable	705297
Input cable (PlugIn – Schuko)	705480

CHARGING CURVE:



- | | | | |
|---|--|-----|---|
| 1 | Analysis for checking the battery state | 5 | Float charging |
| 2 | Constant current phase – main charging phase | 6+7 | Conditioning: Every 7 days the battery charger changes back to phase 1 to wake up the battery and prevent sulfatation |
| 3 | Constant voltage phase | | |
| 4 | Analysis for checking the battery state | | |



Battery separator

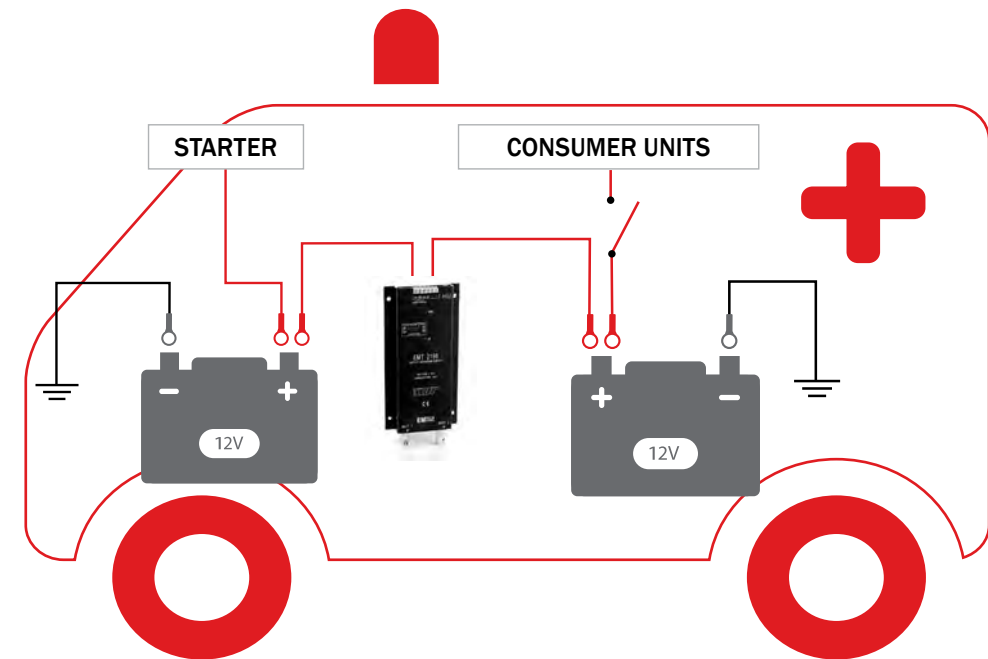
The battery separator connects two separate battery groups (e.g. the starter and consumer battery) during the charging process. If this is interrupted, the batteries are disconnected again. The battery separator measures the voltage on both battery groups and can be automatically activated by both batteries. The DEFA battery separator can be easily integrated into existing circuits. An optimal and straightforward solution for 2-circuit systems that can be integrated without modifying the original installation.



Battery separator 12V/24V

Item No.	707680
Function	Separator
Continuous current [A]	150
Max output [A]	500
On function (typical) 12/24 [V]	10.2-14.85 / 19.5-30.15
Off function (typical) 12/24 [V]	9.7-14.35 / 18.35-29
Height/Width/Depth [mm]	180/100/18

Special characteristics: Both batteries will activate the separator. Adjustable voltage thresholds.





Alarm systems

DVS90 53

DEFA Security DVS90

The “most intelligent car alarm of the world” is based on a 3-step security concept. It responds to tampering attempts, breakage of glass and level changes (theft of tyres) and is able to distinguish between dangerous and harmless movements inside the vehicle. So there won't be any false alarms by flies and the likes. The DVS90 fits almost any vehicle – with or without CAN bus.



Wireless magnetic contact switch. For securing e.g. roof boxes.

DVS90

DVS90	614900*
Motion sensor [incl. 2.5 m cable]	600914
Extension cable [5.0 m]	600920
Splitter kit [incl. 5 m cable]	600921
Tilt sensor with splitter	600922
Hand-held transmitter	600677
2x one-button hand-held transmitter for 2nd authorisation	600678
RRC90 [radio receiver incl. magnetic contact switch]	9600000378

* Comprised of Central unit, BackUp siren, Window module with integrated glass breakage sensor, Motion sensor, Hood contact switch, Wire harnesses, Manual



DVS90

The DVS90 alarm system is based on electronics that can be adapted to individual needs. This makes installation in most vehicles significantly easier than other alarm systems using 12V or 24V battery voltage. It is also suitable for all types of CAN bus in today's vehicles. An interface for all functions of the DEFA 400 and 800 alarm system is also provided.

Level sensor

The level sensor is used for protecting tyres and rims on the vehicle, among other things. The alarm is triggered if the vehicle is jacked up or towed away.



Motion sensor

The interior and cargo compartment are monitored using microwave technology. Several detectors of the same type to be connected to the alarm system.



2nd authorisation

Using the "One button hand-held transmitter" available as an accessory ensure the alarm system is only deactivated after additional confirmation using the one-button hand-held transmitter. If the vehicle is unlocked using the original remote control or the keyless system, the alarm system remains active until the one-button hand-held transmitter is used. This ensures the vehicle remains protected when the locking system is opened by unauthorised persons.



LED

The flashing red LED behind the windscreen indicates to passers-by that the vehicle is protected by the DEFA DVS90 alarm system.



Back-up siren

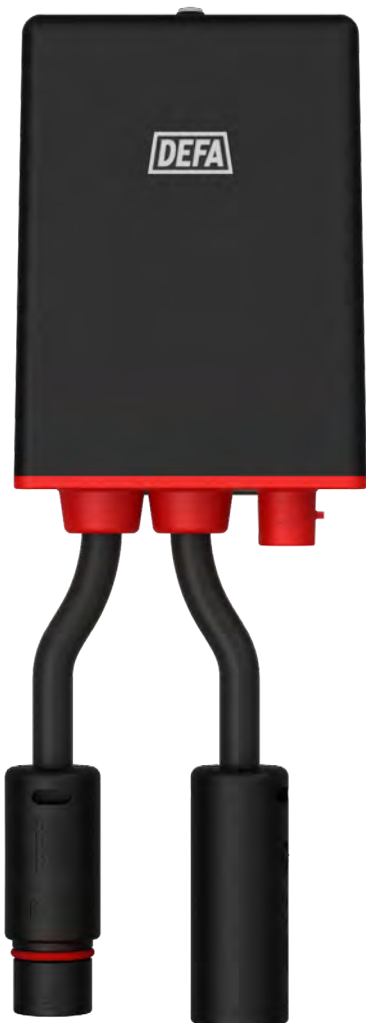
Siren with integrated backup function. The siren is triggered if the external power supply is disconnected, an attempt at sabotage occurs (battery connection removed) or the siren connection cable is severed.



Central unit

The brain of the system. It is used for communicating with the sensors, the siren and the vehicle electrical system. The central unit is delivered without software. The current software is easy to upload to a PC prior to installation.





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