



# Marine

Products  
2015



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PRODUCTS  
FOR:**



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# DEFA PowerSystems

Traditionally, power supply from the mains and aboard boats has always been a problem area due to corrosion and the problems of tension. Harmonising and standardisation have resulted in guidelines being drawn up for shore power and power aboard ships.

## SHORE POWER REGULATIONS

EN 400-7-709, set down rules for marinas supplying vessels with power. These are all-encompassing and set standards for the plant used by both “supplier” and “receiver”. The marina shall provide information as to how and where the “receiver’s” plant is to be positioned in the form of obvious markings and clear instructions.

## BOAT REGULATIONS

EN ISO 13297 regulations apply to pleasure boats up to 24 metres. These describe how and where earthing problems are to be dealt with. It is important to note that only authorised fitters can conduct such installations on board.

## WHY REGULATIONS FOR INSTALLATION ON BOARD BOATS?

Faults in, or sub-standard earthing connections from shore to boats have on some occasions led to fatalities onboard or when people have been in the water and current has searched for earth through their bodies. The establishment of standard conditions and regulations for shore and boat is designed to save lives.

## HOW CAN THE PROBLEM BE SOLVED?

Current regulations state there shall be circuit breakers and fuses on shore and in the boat when plant is permanent. In addition, there should be a separator or isolator fitted in the boat. This is to avoid electrolytic corrosion in the boat and in neighbouring boats. The latter is especially important in boats built of steel and aluminium.

DEFA aims to continue to be present in the area of charging. Our concept is to give customers optimum use of products powered by lead/acid (AGM/GEL) batteries.

DEFA PowerSystems consists of a series of charging products which give the user maximal utilization of their batteries. Our battery chargers and charging systems have gone through a continuous development over decades and appear today as state-of-the-art for the customer who demands functionality, flexibility, safety and high quality.

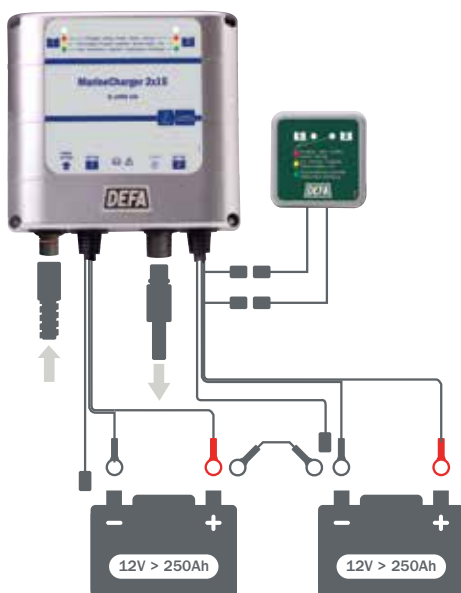
Areas such as rescue vehicles and boats, ambulances, lifeboats, electric wheelchairs and other lifesaving equipment impose the strictest standards both on us and our products.

DEFA PowerSystems has been developed to include our own splash proof and protected cables with DEFA PlugIn connectors. The system has been developed to ease installation of complete 230VAC for boats, buses, trucks, mobile units, defence and 42VAC charging systems for rescue and lifeboats.

The system eliminates need of tools for connection, which means the system can be installed without assistance from authorized personnel. The system is very simple, reliable and durable.

The 230VAC shore power system for boats features a power distribution box which contains fuses, ground leakage circuit breaker, galvanic isolators to reduce the risk of galvanic corrosion and ground leakage from shore power, main connections, outlets and DEFA PlugIn battery chargers. This is a module based system, facilitating the addition of other functions such as engine heaters and auxiliary equipment.

Our customers are professional and private users in such areas where strict demands are required to meet expectations on functionality and a high degree of readiness. Quality control, knowledge and customer demand is an important part of our development and product philosophy.



*Avoid negative charging in 24V installations.  
Charge each battery separately with MarineCharger 2x15.*

# The battery determines the charging process

The lead battery is an over one hundred year old invention. Thirty years after production started in 1868, technical development had produced a battery that is approximate to those we use today.

Over the next 100 years development more or less confined itself to keep production costs down, the chemical make-up of the battery is the same as it always has been and the maximum capacity in the battery charging process has therefore not changed much. And here we provide some simple truths that we at DEFA must take into account in order to provide our customers with efficient charging and maximum economic life for their batteries.

## **WHAT YOU GET FOR YOUR MONEY**

When you buy a lead battery marked 100Ah it means the capacity of the battery is 100-Ampere hours. Ideally you should be able, for example, to use 5 Amperes for 20 hours ( $5A \times 20H = 100Ah$ ). However, this does not happen in reality. One of the properties of a lead battery is that when you discharge it by more than 50% every further discharge will reduce the capacity and economic life of the battery. This means that you only get a 50Ah capacity when you think you have bought 100Ah.

Another characteristic of the lead battery, and this has to do with chemistry, is that it charges up to 80-85% of capacity fairly quickly, but the remaining 15-20% takes a longer time (8-16 hours) irrespective of the size of your charger. The battery itself resists charging, and this means most batteries are never fully charged, usually they are about 85% charged.

## **CHOOSE A SUFFICIENTLY LARGE BATTERY!**

Batteries take time to charge. Because the battery takes a long time to fully charge, it is a good idea to remember that only half the printed capacity is available. If you need 100Ah, in order to be sure of obtaining sufficient power you need to buy 200Ah.

## **BATTERIES ARE CHARGED FOR LESS THAN 8 HOURS**

Because batteries are not charged for more than 8 to 10 hours between each discharge, the battery is not given enough time to absorb the last 15-20% of its maximum capacity. When batteries are used in this way, you should use a battery set providing 300Ah to cover a requirement of 100Ah without overworking your battery.

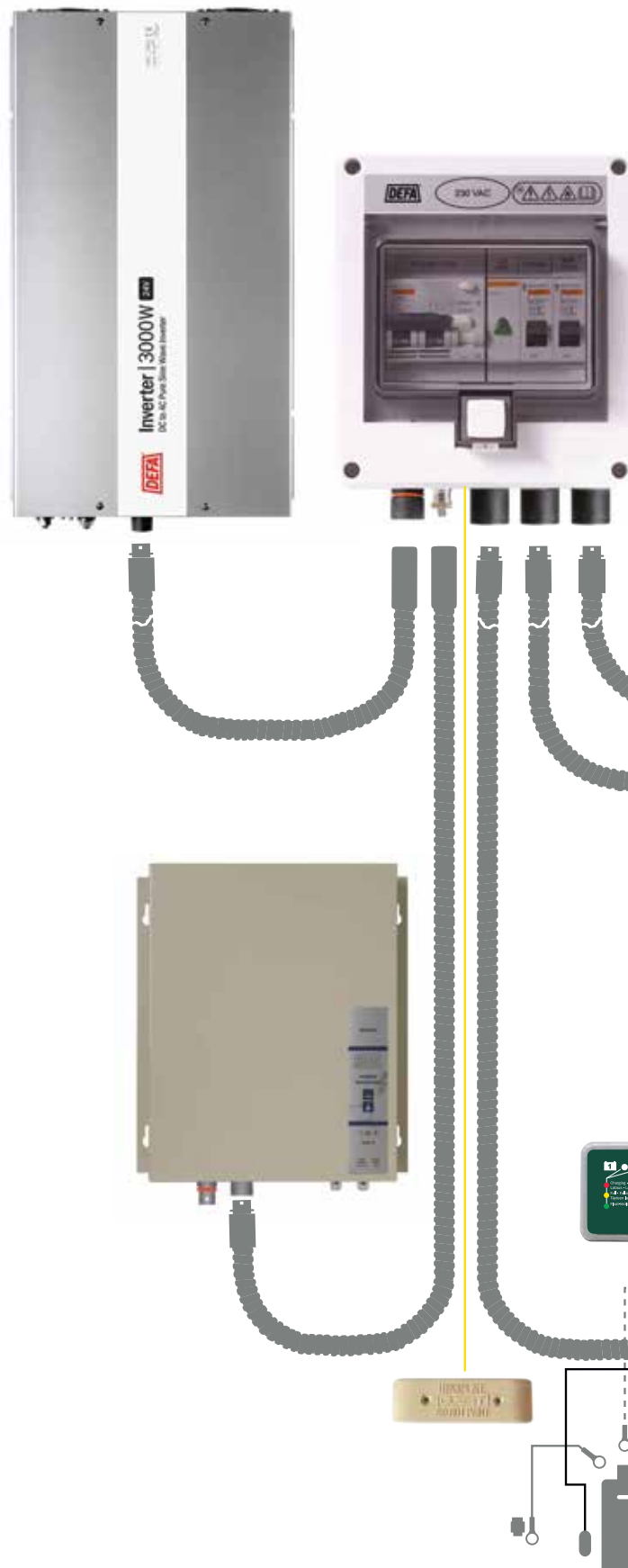
# 230 VAC shore power system for boats

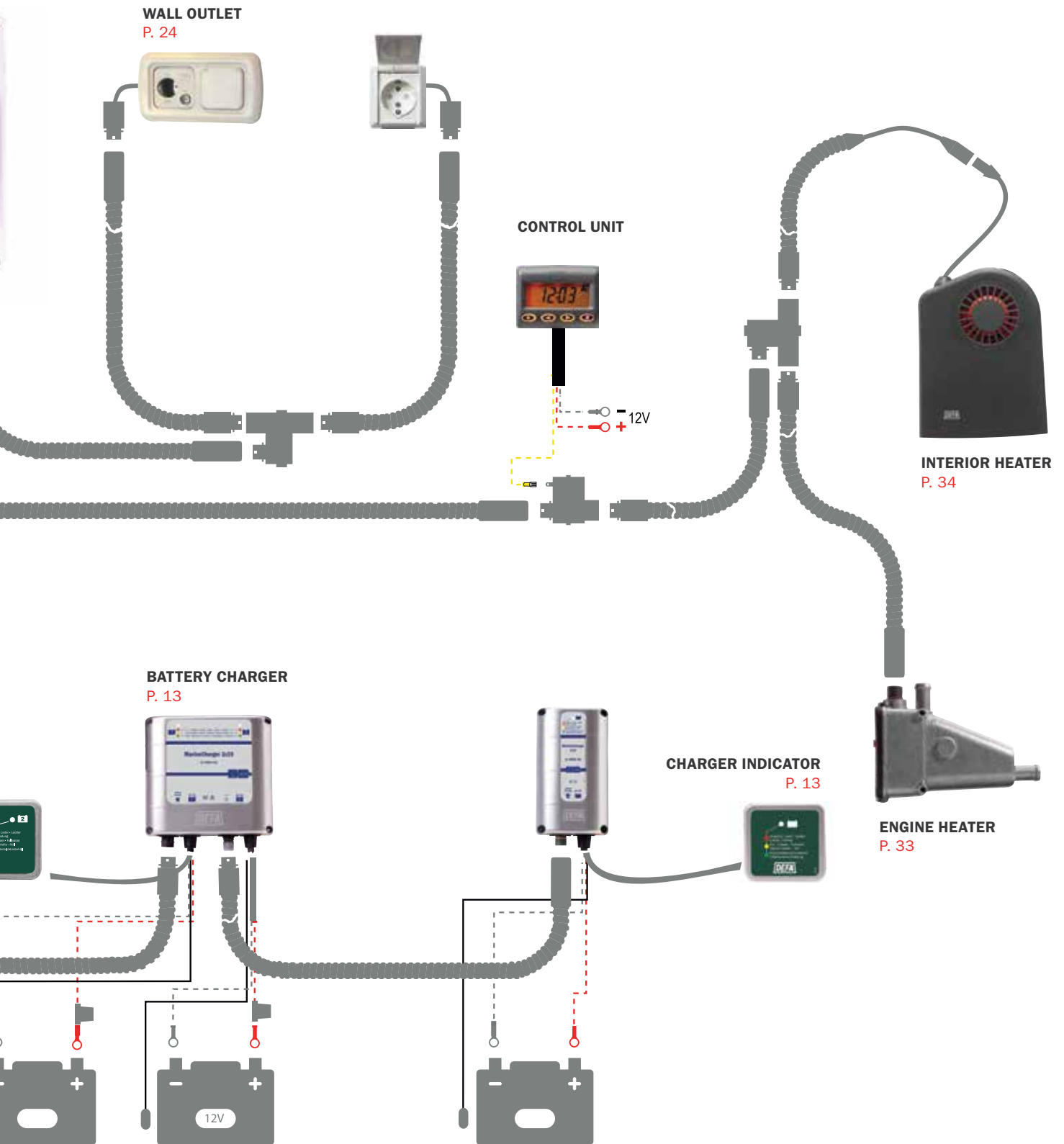
DEFA PowerSystems has been developed to ease 250VAC installations and connections. The system eases and enables connections with splash proof DEFA PlugIn plugs and ready-cut and fitted cables.

The system eliminates need for tools for connection, which means the system can be installed without assistance from authorized personnel. The system is very simple, reliable and durable. There are different functional demands for boat installation.

In addition, the boat system features a distribution box. This contains fuses, earth leakage circuit breaker and galvanic isolators to reduce the risk of galvanic corrosion and earth leakage from shore power. The best way to protect you against galvanic corrosion is to use an ISO transformer. DEFA PowerSystems is a module-based system, facilitating the addition of other functions (e.g. engine heaters) and auxiliary equipment.

INVERTER





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**Winner of the Norwegian Design Council's  
'Award for Design Excellence 2013'  
and the 'Design for All Prize'!**



**AWARD FOR DESIGN EXCELLENCE**  
NORWEGIAN DESIGN COUNCIL



**EASY TO USE**

- One-button solution.
- Backlit user friendly interface and display.
- Adapts automatically to the size (Ah) of your battery.
- A meter to easily read the actual power level of your battery.
- Integrated cable storage solution.
- It will never over-charge your battery. Ever.
- Temperature compensated charging cycle.



## SmartCharge 4A

SmartCharge 4A is an intelligent charger which makes it easy and safe to charge your batteries. All you have to do is plug the charger to the mains, attach the clips to the battery and push the ON-button. SmartCharge recognizes the type of battery you connect it to, and will charge it accordingly. When you are done, wind it up, click the parts in place and keep it handy.



### SmartCharge 4A

Item No.	701515
Height/Width/Depth - mm	210/90/54
Weight - gr	620
IP rate	65

## SmartCharge 8A

SmartCharge 8A a larger and more powerful charger which is suitable for a more effective charging of larger batteries in for instance a car and a boat.



### SmartCharge 8A

Item No.	701785
Height/Width/Depth - mm	235/90/54
Weight - gr	750
IP rate	65

#### CHARGING BATTERIES WITH LOW VOLTAGE

If your battery is running low then what you need is the SmartCharge 8A! Will charge 12V batteries with voltage as low as 2V.

#### CHARGES BOTH LARGE AND SMALL BATTERIES

SmartCharge 8A is suitable for batteries from 8 to 225Ah.

#### POWERSUPPLY

Every so often you need access to continuous current, for instance when changing the car battery. PowerSupply is what you need when you do not want to disconnect power and reset all settings in the car, or if you only want to use a 12V unit such as a cooling box.

SmartCharge 8A has this function which you can easily activate by holding down the ON button for 5 seconds. The charger will automatically produce 13,6V and maximum 8 ampere. This is indicated when all 5 LED segments are illuminated.



## Diskdisplay combinations

Item No:

8 stk SmartCharge 4A	703627
4x4A and 4x8A	705188
8 stk SmartCharge 8A	705187

## SmartCharge Accessories

There exists a wide range of accessories for DEFA SmartCharge. These products reflect your everyday need for charging - that be for your boat, car or other battery-operated elements. The selection consists of cables, connectors, status displays and outlets which can be adapted to any need. For more information about the different accessories on [www.defa.com](http://www.defa.com).

### CHARGE CONNECTOR AND POWER OUTLET - BOTH COMBINED AT THE SAME CONNECTOR POINT

With an extra DEFA power outlet installed in your vehicle, you can easily charge your mobile phone, connect your cooling box or other equipment which requires power. When the battery needs to be charged you connect SmartCharge directly through the same power outlet and charge the battery when docking and you have access to 230V - it could not be easier!



# SmartCharge accessories



## 12V Battery status indicator

Item No.	701758
Length - mm	48
Cross section - mm <sup>2</sup>	28
IP rate	65



## 12V Charger cable, compact

Item No.	701762
Cable length - m	1,3
Cross section - mm <sup>2</sup>	1,3
IP rate	65



## 12V Charger cable, compact, with clips

Item No.	701764
Cable length - m	1,3
Cross section - mm <sup>2</sup>	1,3
IP rate	65



## 12V Charger connector

Item No.	701759
Cable length - m	2,0
Cross section - mm <sup>2</sup>	2,5
IP rate Flush-/Bracket mounted	65/20



## 12V Charger cable

Item No.	701760
Cable length - mm	0,75
Cross section - mm <sup>2</sup>	1,3
IP rate	65



## 12V Charger cable kit

Item No.	701761
Consist of	701760 and 701759

# MarineCharger 1x7

DEFA MarineCharger 1x7 is a 12V/7A battery charger.

The charger is suitable for fitting in vehicles with battery sizes up to 200Ah.

It gives a galvanic isolation between net earth and the battery (dual isolation).

DEFA MarineCharger 1x7 tolerates parallel loads up to 5A usage, charging the batteries at the same time.

The charging voltage is temperature compensated. DEFA MarineCharger 1x7A is filled with silicon compound and is therefore 100% waterproof.



## MarineCharger 1x7

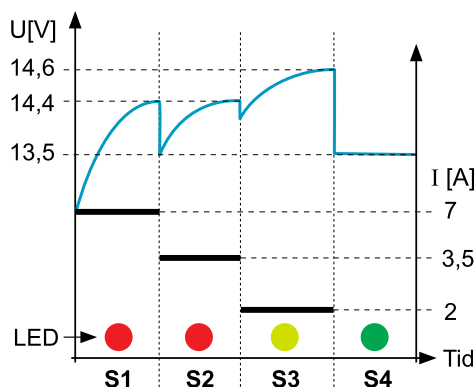
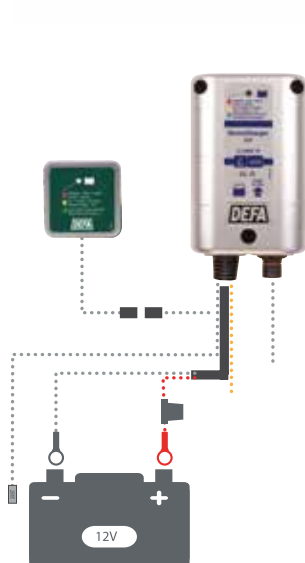
Item No. with PlugIn	701227
Item No. with Schuko	701228
Mains voltage - VAC/Hz	230/50-60
Charging voltage - VDC	14,4
Float voltage - VDC	13,5
Charging current - A	7
Height/Width/Depth - mm	147/100/40
Weight - kg	1,0
IP rate (PlugIn/Schuko)	66/67



## Remote LED panel with 10m cable

Item No. (for 1 battery)	700129
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Remote light diode shows the charging status of one battery with red, yellow or green LED light.



- S1: Rød - Hovedlading (3-300 min.).
- S2: Rød - Hovedlading (3-300 min.).
- S3: Gul - Sluttlading: mer enn 80% oppladet (2-360 min.).
- S4: Grønn - Vedlikeholdslading.
- S5: Rød blink - Feil / Polvendt
- S6: Orange blink - Ikke tilkoblet batteri.

# MarineCharger 2x7

DEFA MarineCharger 2X7 is a 12V/2X7A battery charger. The charger is suitable for fitting in vehicles with battery sizes up to 400Ah. It gives a galvanic isolation between net earth and the battery (dual isolation).

DEFA MarineCharger 2x7 tolerates a parallel load up to 10A usage charging batteries at the same time. The charging voltage is temperature compensated. DEFA MarineCharger 2x7A is filled with silicon compound and is therefore 100% waterproof. The charger is suitable for 24V installations.



## MarineCharger 2x7

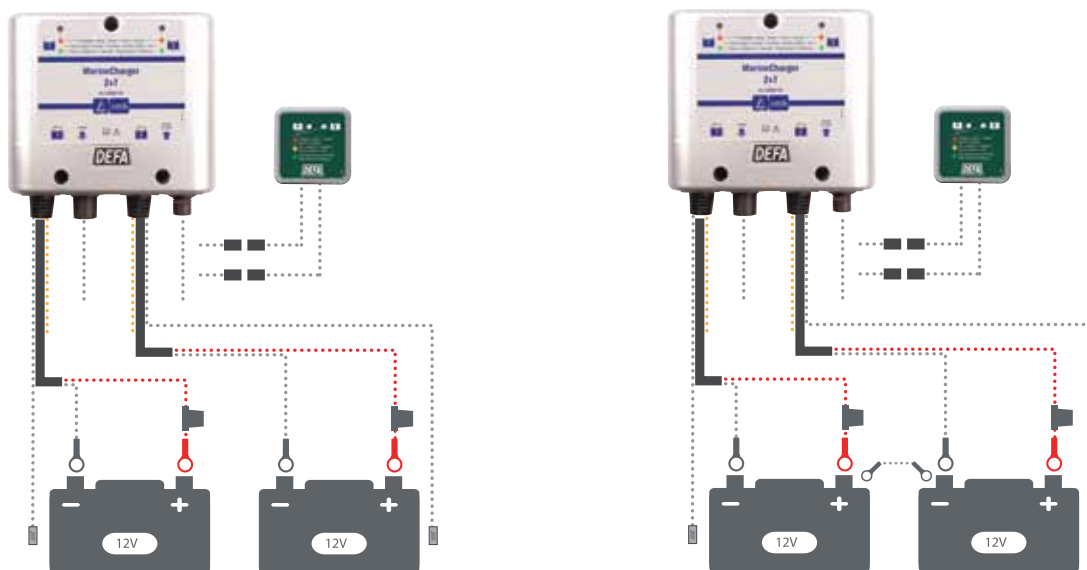
Item No. with PlugIn	701229
Item No. with Schuko	701230
Mains voltage - VAC/Hz	230/50-60
Charging voltage - VDC	14,4
Float voltage - VDC	13,5
Charging current - A	14/2x7
Height/Width/Depth - mm	155/185/40
Weight - kg	1,7
IP rate (PlugIn/Schuko)	66/67



## Remote LED panel with 10m cable

Item No. (for 2 batteries)	700136
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Remote light diode shows the charging status of two batteries with red, yellow or green LED light.



The sketches show an optimal charging of 24V constructions where each battery is charged separately in order to avoid offset charging. The charger can together with interconnected outputs be used as a 12V/14A charger. The charge cycle for each channel equals the charge cycle for MarineCharger 1x7.

# MarineCharger 1x15

DEFA MarineCharger 1X15 is a 12V/15A battery charger.

The charger is suitable for fitting in vessels with battery sizes up to 250Ah.

It gives a galvanic isolation between net earth and the battery (dual isolation).

DEFA MarineCharger 1x15 tolerates parallel loads up to 10A usage, charging the batteries at the same time. The charging voltage is temperature compensated. DEFA MarineCharger 1x15A is filled with silicon compound and is therefore 100% waterproof.



## MarineCharger 1x15

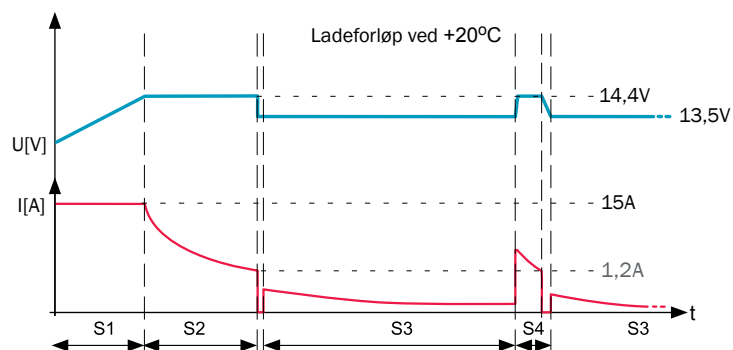
Item No. with PlugIn	700124
Item No. with Schuko	700125
Mains voltage - VAC/Hz	230/50-60
Charging voltage - VDC	14,4
Float voltage - VDC	13,5
Charging current - A	15
Height/Width//Depth - mm	200/115/45
Weight - kg	1,9
IP rate (PlugIn/Schuko)	66/67



## Remote LED panel with 10m cable

Item No. (for 1 battery)	700129
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Remote light diode shows the charging status of one battery with red, yellow or green LED light.



The charging progress shows voltage (U) over time (t) and current (I) over time (t). The LED indicator, which is placed at the top of the front of the charger, indicates the status of the different charging steps (S1,S2...). The LED indicates:

- Red: (S1) Main charging
- Yellow: (S2) Sluttlading - End charging: more than 80% recharged / battery disruption.\*
- Green: (S3) Float voltage with lower voltage which starts after a minimum of four hours and after maximum sixteen hours of main charging.
- Red pulse:(S4) Fully charged

\*) The yellow lamp will light up (end charging mode) in cases of disruption of battery or change of fuse. This continues until the charger is reset (net on/off).

# MarineCharger 2x15

DEFA MarineCharger 2X15 is a 12V/2X15A battery charger. The charger is suitable for fitting in vehicles with battery sizes up to 500Ah. It gives a galvanic isolation between net earth and the battery (dual isolation).

DEFA MarineCharger 2x15 tolerates parallel loads up to 20A usage charging batteries at the same time. The charging voltage is temperature compensated. DEFA MarineCharger 2x15A is filled with silicon compound and is therefore 100% waterproof. The charger is suitable for 24V installations.



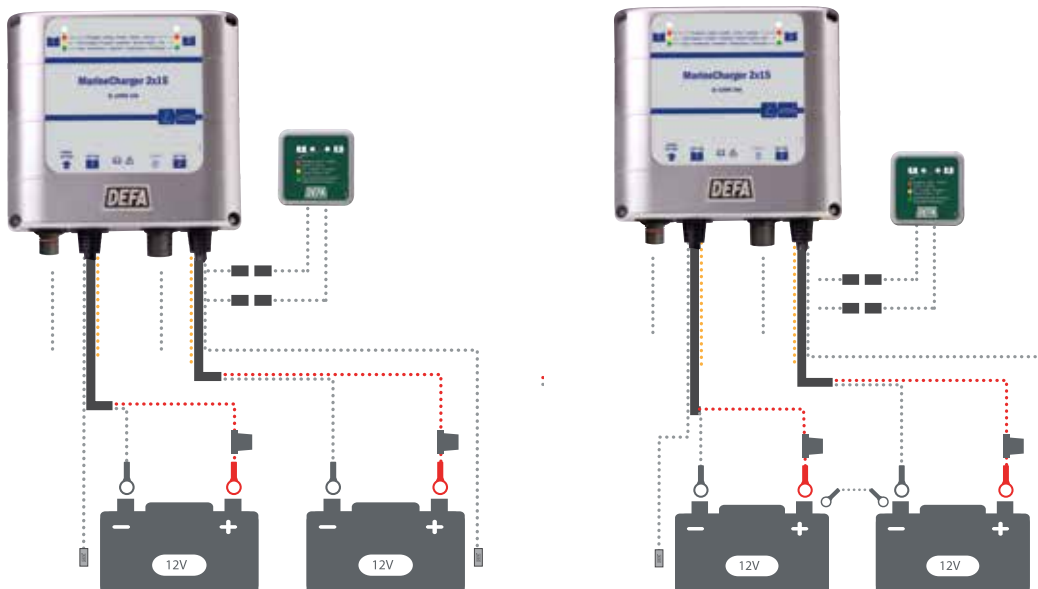
## MultiCharger 2x15

Item No. with PlugIn	700127
Item No. with Schuko	700128
Mains voltage - VAC/Hz	230/50-60
Charging voltage - VDC	14,4
Float voltage - VDC	13,5
Charging current - A	30/2x15
Height/Width/Depth - mm	200/215/45
Weight - kg	3,5
IP rate (PlugIn/Schuko)	66/67



## Remote LED panel with 10m cable

Item No. (for 2 batteries)	700136
Remote light diode shows the charging status of two batteries with red, yellow or green LED light.	



The sketches show an optimal charging of 24V constructions where each battery is charged separately in order to avoid offset charging. The charger can together with interconnected outputs be used as a 12V/30A charger. The charge cycle for each channel equals the charge cycle for MarineCharger 1x15.



# MarineCharger 1x35A

DEFA MarineCharger 1x35A is a small and powerful charger for use in all kinds of boats, under all kinds of conditions. For a flexible solution the charger comes without DC cables, which are ordered separately in desired lengths.



## MarineCharger 1x35A **NEW!**

Item No. with PlugIn 1x35A	704800
Mains voltage - VAC/Hz	230/50-60
Ambient temperature - oC	-35 +50
Charging voltage* S1 - VDC	14,4
Float voltage S2 - VDC	13,5
Max charging current - A	35
Recommended battery max - Ah	1000
IP rate - IP	44
Weight - kg	2
Height/Width/Depth - mm	200x98x53
Certifications:	EN60335-1, EN60335-2-29, EN55014-1, EN55014-2, EN61003-3/2

### 12V SYSTEM



### ACCESSORIES:

Item No:	
705099	2m Charging cable
705147	4m Charging cable
705159	6m Charging cable
705160	8m Charging cable
705294	5m Remote panel
705295	10m Remote panel
705296	20m Remote panel
705297	25m Remote panel
705463	Connection Schuko - PlugIn

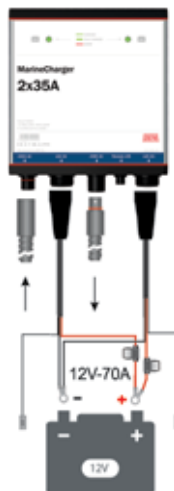


# MarineCharger 2x35A

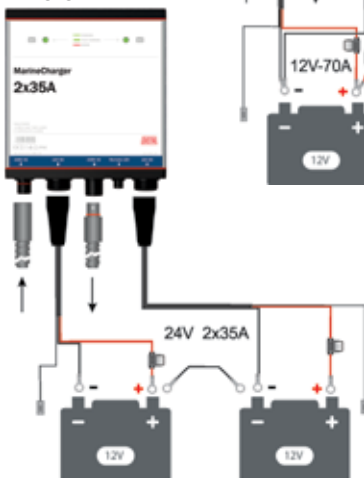
DEFA MarineCharger 1x35A is a small and powerful charger for use in all kinds of boats, under all kinds of conditions. For a flexible solution the charger comes without DC cables, which are ordered separately in desired lengths.



12V SYSTEM



24V SYSTEM



## MarineCharger 2x35A **NEW**

Item no. with PlugIn 2x35A	704900
Mains voltage - VAC/Hz	230/50-60
Ambient temperature - °C	-35 +50
Max charging voltage* S1 - VDC	14,4
Float voltage S2 - VDC	13,5
Max charging current - A	2x35
Recommended battery max - Ah	2x1000
IP rate - IP	44
Weight - kg	4
Height/Weight/Depth - mm	200x190x53
Certifications:	EN60335-1, EN60335-2-29, EN55014-1, EN55014-2, EN61003-3/2

## ACCESSORIES:

### Best.nr.

705099	2m Charging cable
705147	4m Charging cable
705159	6m Charging cable
705160	8m Charging cable
705162	5m Remote panel
705163	10m Remote panel
705164	20m Remote panel
705165	25m Remote panel
705463	Connection Schuko - PlugIn

# Boat packages

There are three different boat packs to choose from and they can all be installed without the need of an electrician. A charger has to be bought separately as the size of this depends on the size and number of battery banks in the boat. The system is rated for 16A and is easily be expanded as it is based on the DEFA PlugIn system.



## Boat package No 1

Item No.	701182
Shore power cable 10m, 2,5mm <sup>2</sup> - 1 pcs	701108
Adapter CEE2166 Male - Schuko Female - yellow - 1 pcs	701096
Inlet cable 1,5m - 1 pcs	701099
EI-central 230VAC - 1 pcs	701433
Extention cable 1,0m - 1 pcs	460803
Bag for shore power system - 1 pcs	701097





Boat package 2

Item No.	701183
Shore power cable 25m, 2,5mm <sup>2</sup> CEE2166 Male - yellow	700577
Adapter Schuko Male CEE 2166 Female - yellow - 1 pcs	700574
Inlet cable 1,5m - 1 stk	700459
EI-central 230VAC/16A - 1 pcs	700437
Extention cable 1,0m - 2 pcs	460803
Extention cable 2m - 3 pcs	460804
Strømuttak, enkel - 1 pcs	700401
Bag for shore power system - 1 pcs	701097



Boat package No 3



Item No.	703409
Shore power cable 10m, 2,5mm <sup>2</sup> IP67 - 1 pcs	701818
Adapter CEE2166 Male - Schuko Female - yellow - 1 pcs	701096
Inlet cable 0,6m, IP67 - 1 pcs	701821
EI-central 230VAC - 1 pcs	700437
Extention cable 2,0m - 3 pcs	460804
Wall outlet single - 1 pcs	700401
Bag for shore power system - 1 pcs	701097



# PlugIn extension cables



## Inlet, stainless steel

Item No. - m - colour	701821 - 0,6 - krom
Item No. - m - colour	701822 - 1,5 - krom
Item No. - m - colour	701823 - 3,0 - krom
Voltage - VAC	230
Current - A, max.	16
Weight - gr	915/410 - 939/570
Test and approval	EN 50066-, EN 60309-1



## Shore power cable 2,5mm<sup>2</sup>

Item No. with MiniPlug, 10,0 m	701818
Item No. with MiniPlug, 15,0 m	701819
Item No. with MiniPlug, 25,0 m	701820
Voltage - VAC	230
Current, max. - A	16
Weight - gr - m	1565/2260/3745 - 10,0/15,0/25,0
Test and approval	EN 50066-1, EN 60309-1



## Bag for shore power cable

Item No.	701097
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## PlugIn extension cables

Item No. black	Item No. orange	Length
460802	704547	0,5 m
460803	704548	1,0 m
460843	704549	1,5 m
460804	704550	2,0 m
460844	704551	3,0 m
460846	704552	4,0 m
460809	704553	5,0 m
460847	704554	8,0 m
460851	704555	10,0 m
460850	704556	12,0 m

Voltage 230 VAC, max. current 16A, IP 44.  
Test and approval EN 50066 -, EN 60309-1



## LED Indicator kit

Item No.	460881
Mains voltage - VAC	110-240
Current, max. - A	16
IP rate, PlugIn/LED	44/67

# Inlet and shore power cables



## Inlet stainless steel

Item No. Inlet stainless steel	700578
Voltage - VAC	230
Current - A, max.	16
IP rate	67



## Inlet stainless steel

Item No. with DEFA PlugIn, Inlet stainless steel	700459
Voltage - VAC	230
Current - A, max.	6
IP rate	67



## Shore power cable

Item No.	700577
Voltage - VAC	230
Current - A, max.	16
Dimensions - mm <sup>2</sup> - m	2,5 - 25
IP rate	67



## Main adapter

Item No. adapter schuko male/CEE female - yellow	700574
Item No. adapter schuko female/CEE male - yellow	701096
Voltage - VAC	230
Current - A, max.	16



## Inlet MiniPlug

Item No. - m - colour	701098 - 0,6 - chrome
Item No. - m - colour	701099 - 1,5 - chrome
Item No. - m - colour	701100 - 3,0 - chrome
Voltage - VAC	230
Current - A, max.	16
Weight - gr	915/410 - 939/570
Test and approval	EN 50066-, EN 60309-1



## Shore power cable 2,5mm<sup>2</sup>

Item No. with MiniPlug, 2,5 m	460960
Item No. with MiniPlug, 5,0 m	701107
Item No. with MiniPlug, 10,0 m	701108
Item No. with MiniPlug, 15,0 m	701279
Item No. with MiniPlug, 25,0 m	701109
Voltage - VAC	230
Current - A, max.	16
Weight - gr	530/840/1565/2260/3745
Length - m	2,5/5,0/10,0/15,0/25,0
Test and approval	EN 50066-1, EN 60309-1

# PlugIn branches and contacts

DEFA relay contact is adapted to DEFA PlugIn contacts and used for controlling the engine and interior heater together with DEFA control units. Can also be used for separat control of engine and interior heater together with DEFA SmartStart. At branching, use T- or Y- connectors.



## PlugIn Relay contact

Item No. 12V	460854
Item No. 24V	460856
Range of use °C	-40 / +80
Height/Width/Depth - mm	61/31/67
Mains voltage - VAC	230/12, 230/24
Current, max. - A	16
Weight - gr	59
Insulation class - cl	II
IP rate	44



## PlugIn Y-connector

Item No.	460853
Height/Width/Depth - mm	53/48/24
Mains voltage - VAC	230
Current, max. - A	16
Weight - gr	23
IP rate	44

DEFA Y-connector is an all-welded connector for connecting engine and interior heater or MarineCharger battery charger.



## PlugIn T-connector 90°

Item No.	460831
Height/Width/Depth - mm	42/63/21
Mains voltage - VAC	230
Current, max. - A	16
Weight - kg	0,022
IP rate	44

DEFA T-connector is an all-welded connector for connecting engine and interior heater or MarineCharger battery charger.

# EI-centrals and panels

The system eliminates need of tools for connection, which means the system can be installed without assistance from authorized personnel.



## EI-central

Item No. Main inlet cabinet 230VAC/16A	700433
1 DEFA PlugIn inlet, 1 DEFA PlugIn outlet - Schuko outlet - grey	



## EI-central

Item No. Main inlet cabinet 230VAC/16A	700437
1 DEFA PlugIn inlet, 3 DEFA PlugIn outlet - grey	

Item No. Main inlet cabinet 230VAC/16A	700441
2 DEFA PlugIn inlet, 3 DEFA PlugIn outlet, with general switch - grey	



## Front panel for 700437 / 700441

Item No. Front panel for recessed - white	701103
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Item No. Front panel for recessed - black	701121
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Item No. Front panel for recessed - anthrasite	701122
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## Dynaplate

Item No. Dynaplate 1,12m <sup>2</sup>	700581
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Item No. Dynaplate 1,86m <sup>2</sup>	700582
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# Wall outlets

All 230VAC Schuko connections have DEFA PlugIn connections for single installations. The connections are supplied both for flush mounted and on-wall mounted.



### Wall outlet - flush mounted single stainless steel

Item No.	700399
Mains voltage - VAC	230
Weight - kg	0,200
IP rate	44



### Wall outlet - on-wall mounted single

Item No.	700401
Mains voltage - VAC	230
Weight - kg	0,100
IP rate	44



### Wall outlet - on-wall mounted double

Item No.	700403
Mains voltage - VAC	230
Weight - kg	0,200
IP rate	44



### Wall outlet - on-wall mounted double with PlugIn, in- and output

Item No.	702779
Mains voltage - VAC	230
Weight - kg	0,058
IP rate	44

# PlugIn wall outlets and fuse



## PlugIn wall outlet

Item No. Main outlet double 230VAC/10A, recessed with cover - white 700405



## Wall outlet - flush mounted single

Item No. Single main outlet, 230VAC/10A, recessed - white 701317

Item No. Single main outlet, 230VAC/10A, recessed - brown 701316

Item No. Single main outlet, 230VAC/10A, recessed - grey 701315



## PlugIn fuse

Item No. Automatic fuse 230V 16A PlugIn/Out 700429

# Wall outlets and frames



## Frames for wall outlets

Item No. single frame for wall outlet - white	701307
Item No. single frame for wall outlet - brown	701306
Item No. single frame for wall outlet - grey	701305
Item No. double frame for wall outlet - white	701310
Item No. double frame for wall outlet - brown	701309
Item No. double frame for wall outlet - grey	701308
Item No. tripple frame for wall outlet - brown	701312
Item No. tripple frame for wall outlet - grey	701311



## Wall outlets 12VDC/TV

Item No. wall outlet 12VDC/TV - white	701323
Item No. wall outlet 12VDC/TV - brown	701322
Item No. wall outlet 12VDC/TV - grey	701321



## Wall outlets 12VDC with cover

Item No. Wall outlet 12VDC with cover - white	701320
Item No. Wall outlet 12VDC with cover - brown	701319
Item No. Wall outlet 12VDC with cover - grey	701318



## Switch 12V single, large

Item No. Single switch - white	701342
Item No. Single switch - brown	701341
Item No. Single switch - grey	701340



## Switch 12V double

Item No. Double switch - white	701333
Item No. Double switch - brown	701332
Item No. Double switch - grey	701331

# Switches



### Switch 12V single, small

Item No. single switch - white	701339
Item No. single switch - brown	701338
Item No. single switch - grey	701337



### Switch 12V single, small with LED

Item No. single switch with light - white	701336
Item No. single switch with light - brown	701335
Item No. single switch with light - grey	701334w



### Dimmer

Item No. dimmer 12V/22V 120W/240W - white	701330
Item No. dimmer 12V/22V 120W/240W - brown	701329
Item No. dimmer 12V/22V 120W/240W - grey	701328

# ISO Transformer

The isolation transformer (separation transformer) is the best solution for transferring 250VAC mains shore power to the boat. This ensures personal safety, meets required standards and directives and removes corrosion problems. It makes good total economic sense to have such an isolator fitted, because this can save large amounts of money in corrosion damage.



### ISO Transformator

Item No. with PlugIn	700473
Item No. with PG nipple	700471
Voltage - in/out - VAC	230
Power - W	3600
Charging current - A	16
Height/Width/Depth - mm	295/115/295
Weight - kg	17

# PlugIn Invertere

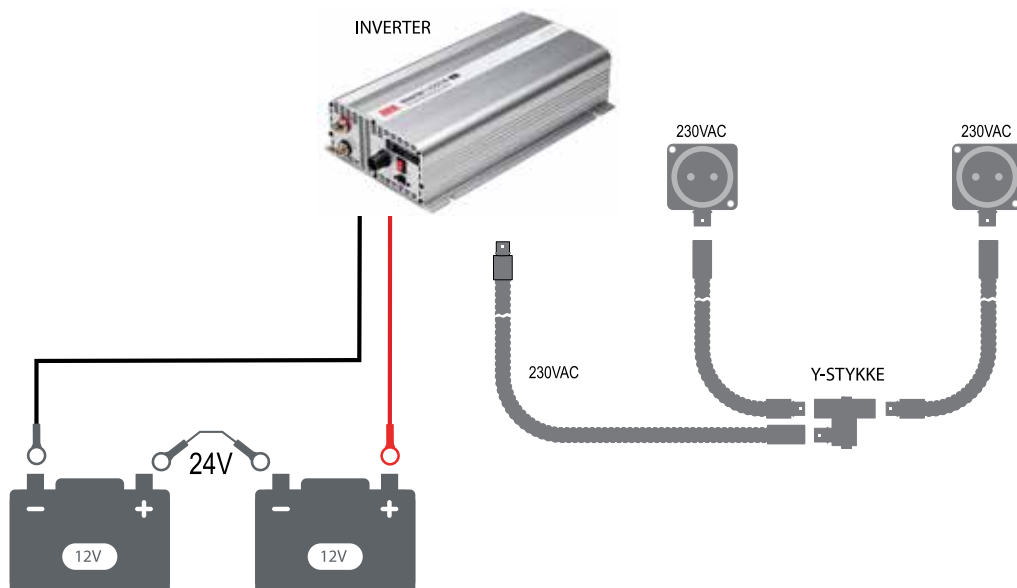
Our high quality inverters are safe to use and make it possible to apply electrical equipment in boats and vehicles.

The inverters will give access to 230VAC mains voltage. They deliver pure sinus and are therefore excellent for TV and DVD-equipment as well as for computers.

The inverters are also equipped with a warning sound should the inverter get overloaded.



Item No.	Connection	Input - VDC	Output - VAC	Output power - W	Weight - kg	Size - mm
702935	PlugIn	12	230	300	2,6	230x151x64
702937	PlugIn			600	3,5	324x170x68
702939	PlugIn			1000	5,2	390x223x101
702941	PlugIn			1500	6,2	420x223x101
702943	PlugIn			2000	6,5	420x289x100
702949	PlugIn	24		1000	5,2	390x223x101
702951	PlugIn			1500	6,2	420x223x101
702953	PlugIn			2000	6,5	420x289x100
703254	PlugIn			2500	8,0	480x289x100
702955	PlugIn			3000	9,8	520x289x100



# Invertere with schuko

It is possible to only use inverters with a schuko contact (standard wall outlet), without having to connect to a PlugIn system.



Item No.	Connection	Input - VDC	Output - VAC	Output power - W	Weight - kg	Size - mm
702936	Schuko	12	230	300	2,6	230x151x64
702938	Schuko			600	3,5	324x170x68
702940	Schuko			1000	5,2	390x223x101
702942	Schuko			1500	6,2	420x223x101
702950	Schuko	24	230	1000	5,2	390x223x101
702952	Schuko			1500	6,2	420x223x101

## The inverter's control panel

All inverters can be remote controlled from a separat control panel. This makes it easier to use the inverter when it is not easily accessible.



### Remote control Flush mounted

- Item No. 702912 Remote Control for 300/600W inverter, 6 m cable.
- Item No. 702913 Remote Control for 1000/1500/2000/2500/3000W inverter, 6m cable
- Item No. 704030 Remote Control for 1000/1500/2000/2500/3000W inverter, 10m cable.



### Remote control Surface mounted

- Item No. 705115 Remote Control for 300/600W inverter, 6m cable
- Item No. 705116 Remote Control for 1000/1500/2000/2500/3000W inverter, 6m cable
- Item No. 705117 Remote Control for 1000/1500/2000/2500/3000W inverter, 10m cable

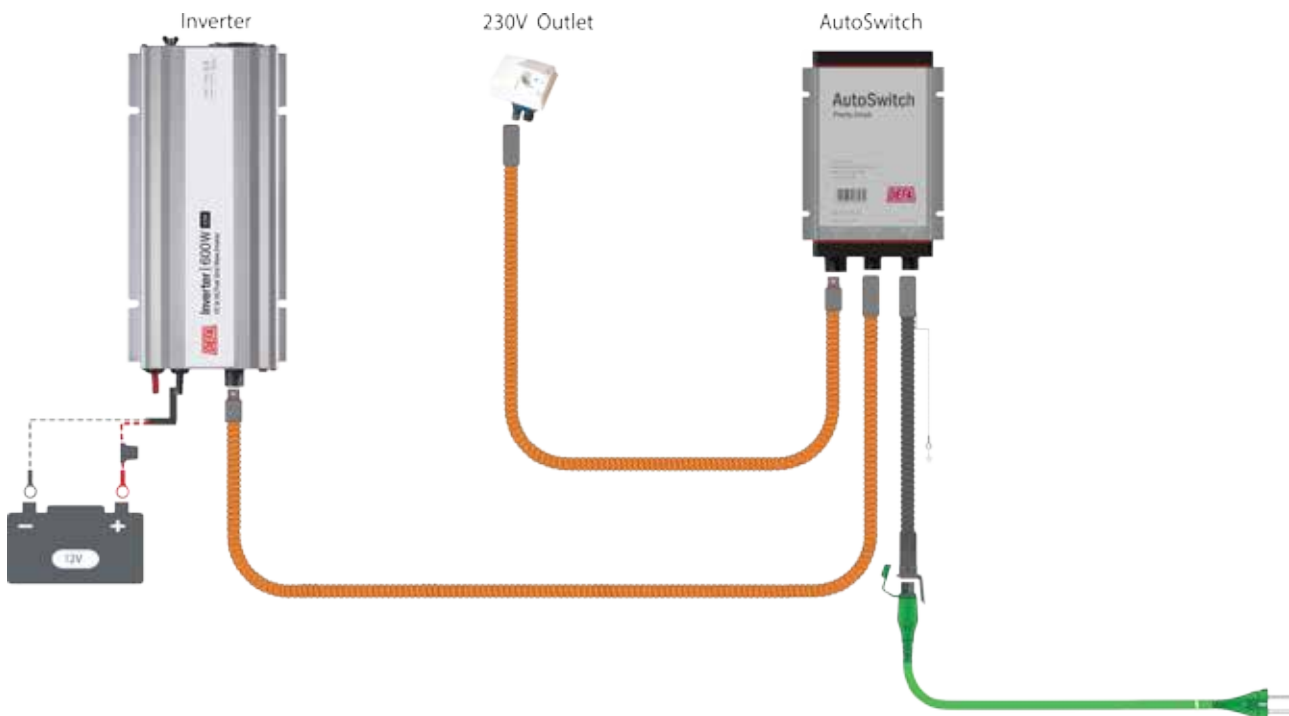
# AutoSwitch

When both mains power and inverter are connected to the same outlets the AutoSwitch makes sure that the mains power always has priority. This ensures that the batteries are not used to power the outlets when the vehicle is plugged into mains. The AutoSwitch also makes sure that there is no power in the mains inlet when the inverter is in use.



## AutoSwitch

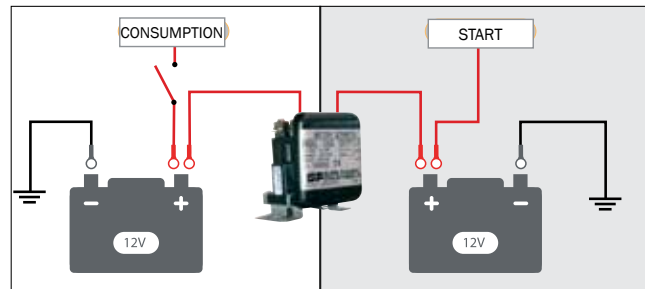
Item no	703697
Input voltage (V/Hz)	230/50-60
Output voltage (VAC)	230
Max current (A)	16
Max power (W)	3680
Fuse (A/V)	16/T250
Height/Width/Depth- mm	58/132/205
IP rate	44



# Battery separators

The battery separator connects two separate battery groups, for instance start and consumption battery during charging. When charging is interrupted the batteries are separated again. The battery separators measure voltage on both battery groups and is activated automatically.

It is very easy to install, including in the existing installation. An optimal and easy solution for a 2-circuit system without having to work on the original installation.



## Battery separator 12V 100A

Item No.	700595
Function	Separator
Continuous current - A	100
Max output - A	400
On function (typical) - V	13,2
Off function (typical) - V	12,8
Height/Width/Depth - mm	76/83/64
Special characteristics: Both batteries will activate the separator.	



## Battery separator 12V 200A

Item No.	700596
Function	Separator
Continuous current - A	200
Max output - A	1000
On function (typical) - V	13,2
Off function (typical) - V	12,8
Height/Width/Depth - mm	76/83/64
Special characteristics: Both batteries will activate the separator.	



## Battery separator 24V 100A

Item No.	700598
Function	Separator
Continuous current - A	100
Max output - A	400
On function (typical) - V	26,8
Off function (typical) - V	25,7
Height/Width/Depth - mm	76/83/64
Special characteristics: Both batteries will activate the separator.	



# WarmUp

When starting a cold engine, pollution and consumption is at its very worst.

### START THE BOAT WITH A WARM ENGINE

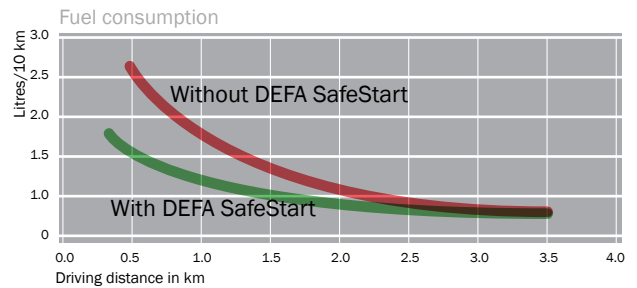
It does not matter if the outside temperature is -15°C or +40 °C. The engine is still cold and cold engines consume a lot more fuel in order to get started. Additionally, the emissions are much higher during this cycle. Electrical boat heating is the most environmentally friendly way to preheat your boat. If you start driving with a warm engine, both emissions, fumes and fuel consumption will be reduced.

### THINK OF THE ENVIRONMENT

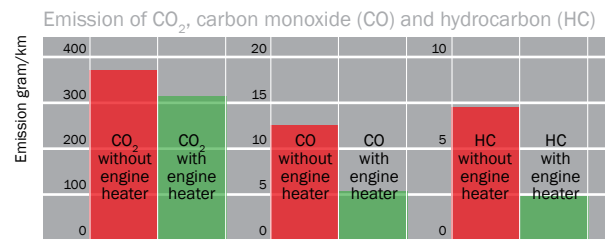
If all boats had engine heaters, the environment would benefit in several ways. Every boat owner is able to give the environment a helping hand by starting their boat with a warm engine.

### ADVANTAGES WITH ELECTRICAL BOAT HEATING

Electrical car heating has only environmental advantages. In contrast to solutions based on fuel, DEFA boat heating ensures less emissions and fuel consumption. A preheated engine during the cold winter season will also ensure less engine wear and tear.



Starting a preheated engine reduces fuel consumption.



Starting a preheated engine reduces pollution.



# Engine preheaters

DEFA offers many types of engine preheaters, depending on whether the engine is air or water cooled.

It is also important how large or small the amount of coolant is. The usage of preheaters also depends on the engine geometry, material and technical setup. Contact your dealer for more information.



## SafeStart 100-series

Characteristic: Conical head flange

No. 101 - 199

100-series heaters are only used on cast iron engine blocks. These heaters have a head-shaped flange so that the heated part of the element can be installed in the head, either entirely or partially. These heaters are for engines which do not have a large enough coolant tank and are fixed by press fit principle.



## SafeStart 400-series

Characteristic: Hose heater

Nr. 420-423 series

DEFA hose heater 400-series is suitable for a wide range of engines, available in four diameters and with 80 degrees thermostat.



## SafeStart 700-series

Characteristic: Hose heater

No. 700 - 799

These can be divided into two categories:  
Heaters without thermostat. Number series from 701-709 and 758-799.  
Heaters with thermostat. Number series 710-757.



## SafeStart 721 - 734 series

Characteristic: Hose heater - Power 700W - 2000W

No. 721 - 734

Coolant volume is vital for choice of engine preheaters. Low power for smaller (6-12 ltr) coolant systems. High power for larger coolant systems. The heater includes an 'overheat' reset function/button.



## Thermostat

Characteristic: Thermostat kit

No. 47040410

To be used together with a DEFA engine preheater.  
The thermostat connects at 30°C (+/- 4C) and discounts the engine preheater at 40°C (+/- 4C).  
Place the thermostat on top of or high on the engine.

# Termini™

DEFA interior heaters use a PTC (PTC = Positive Temperature Coefficient) heating element which self adjusts the output power according to the inside temperature of the boat.

A 20°C temperature increase will result in a 10% power reduction and as the interior temperature increases the power will gradually be reduced accordingly. The interior heater is equipped with an automatic over-temperature protection. All interior heaters are approved by: Safety EN 60335-1 and EN 50408.



## Termini™ II 1900

Item No. Mini contact	430065
Item No. Schuko	430066
Collection box - pcs	12
Output -25°C - W	0/1150/1900
Height/Width/Depth - mm	28/138/182
Weight - gr	645
Bracket weight - gr	20
IP rate	20



## Termini™ II 1400

Item No. Mini contact	430055
Item No. Schuko	430056
Collection box - pcs	12
Output -25°C - W	0/1400
Height/Width/Depth - mm	32/138/182
Weight - gr	595
Bracket weight - gr	20
IP rate	20



## Termini™ 2100

Item No. Mini contact	430060
Item No. Schuko	430061
Collection box - pcs	10
Output -25°C - W	0/1350/2100
Height/Width/Depth - mm	47/141/183
Weight - gr	745
Bracket weight - gr	20
IP rate	20

# Security

DVS90 is a modern alarm system designed on a flexible electronic platform that contributes to a very easy set up and installation. The alarm can be installed in all vessels regardless of type of electric and electronic systems.

## SECURITY ALARM

DEFA Security is a family of flexible and module based products ensuring both boat and engine. The products fit all types of sailboats and motor boats and are controlled by remote controls. Intruders will understand that the boat is secured the moment they see the window decal and the flashing, blue LED inside the boat.



### DVS90 CENTRAL UNIT

The brain of the alarm system, which communicates with sensors, the siren, and the boat's electronic system.



### WINDOW MODULE

The flashing blue LED inside the window shows potential boat thieves that the car is equipped with a DEFA alarm. The built-in glass breakage sensor triggers the alarm if a window is broken.



### SIREN/BACK-UP SIREN

The siren emits a high pitched alarm sound when the alarm is triggered. The back-up siren also sounds if the power wire is cut or the car battery is disconnected. (Accessory).



### WINDOW DECAL

The decals have a preventive effect: they inform intruders that an alarm is installed. Thieves prefer boats without alarms!



### MOTION SENSOR

Registers movement inside the boat. The sensor uses microwave technology to provide optimum security without false alarms. (Accessory).



### REMOTE CONTROL

A remote control for activating and deactivating the system.



### 2-CIRCUIT IMMOBILISER

For starter kill and fuel cut. (Accessory).







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# About DEFA

DEFA is a Norwegian industrial company with more than 350 employees distributed over production, development and sales units in Norway, Sweden and China. Our products are distributed and sold in more than 20 countries in Europe and North America.

DEFA Powersystems develops, manufactures and markets power supply products and safety systems for marine, vehicles, agricultural machinery, and industry. Within the field of power systems we supply everything from fixed charging systems to the home charger SmartCharge that works just as well in the car and on the boat.

We use modern technology throughout the manufacturing process, from concept to development, construction and implementation of manufacturing under our own roof. By bringing state-of-the-art and user-friendly products to the market, we will improve operational safety on the road both for those who have to live with vehicles as their workplace and for the ordinary motorist. This creates satisfied customers. We are based in pleasant offices in Sandvika.

In addition, DEFA's range also includes charging systems for the marine sector, electrical car heaters, car and boat alarms, domestic heat management systems for homes and cabins, as well as interior and exterior lighting.



**WARMUP**



**SECURITY**



**POWERSYSTEMS**

