

# Mac Plus series: Boost the charging voltage of your service battery!

Charging the service batteries on board of a vehicle or vessel can be challenging. Recharging tends to take a long time and batteries may not receive a full charge. This is a common problem found in boats, service vans, campers and trucks. Smart alternators and start/stop systems make the problem even worse.

## Robust DC-DC charger guarantees optimal condition of your service battery

Traditionally, a service battery is linked to the starter battery by means of a charge relay. The starter battery is located close to the alternator and receives most of the charge current. However, the service battery is usually further away. Long cables cause voltage drop, leading to slow charging, resulting in failing appliances and premature failure of the battery.

Modern, fuel efficient engines are equipped with smart alternators, following regulations such as Euro 5 and Euro 6. Instead of a constant output, smart alternators provide a variable voltage; after a brief charging period, voltage is reduced and the charging stops. Furthermore, the energy produced by regenerative braking leads to voltage peaks. Service batteries coupled in the traditional way will receive hardly any charge and may be damaged by these peak voltages.

To solve these issues, Mastervolt introduces the Mac Plus DC-DC chargers, available in 12 V or 24 V. The Mac Plus monitors the service battery and compensates the voltage loss. The proven 3-step charge method ensures a quick and safe charge. Moreover, by stabilizing the charge voltage, Mac Plus protects your service battery and sensitive equipment.

## Applications

Boost charge voltage when service battery is located further from charging source or in systems with a smart alternator. When a stable power supply or different system voltage is needed.



## FEATURES

- Fast and safe charging during short trips.
- Fanless design for silent operation.
- Suitable for flooded, Gel, AGM and Li-Ion batteries (incl. LiFePO4).
- Charges even fully depleted batteries.
- Engine run detection protects starter battery.
- Adjustable current limits to meet Euro 5/6 requirements.
- Voltage stabilisation protects sensitive equipment, lights and loads.
- Parallel operation to obtain charging capacities well over 100 Amps.
- MasterBus for intelligent system monitoring and automation.
- Temperature compensation and voltage sense for an optimal charging result.
- E-mark certification for mobile applications.
- Power supply mode.
- Heavy duty connections for easy installation and quick set up via DIP switches.

## Battery's Best Friend



The Mac Plus is your battery's best friend. It monitors your service battery and makes sure it's always fully charged, maximising the lifetime of your battery.



## Parallel operation








The parallel configuration of several units will provide you over 100 amperes. Advanced high-frequency technology with modern microprocessors ensures minimum power loss when switching from 24 to 12 V and vice versa.

# Specifications






## Mac & Mac Plus

### DC-DC converters

MAC PLUS

Specifications Mac & Mac Plus DC-DC converters						
	<b>Mac 24/12-20</b>	<b>Mac Plus 12/12-50</b>	<b>Mac Plus 12/24-30</b>	<b>Mac Plus 24/12-50</b>	<b>Mac Plus 24/24-30</b>	
Product code	81200100	81205100	81205300	81205200	81205400	
GENERAL SPECIFICATIONS						
Battery voltage sense	n.a.	yes	yes	yes	yes	
Status indicator	n.a.	yes, 3-color LED	yes, 3-color LED	yes, 3-color LED	yes, 3-color LED	
Output voltage	10-15 V DC	10-15 V DC	20-30 V DC	10-15 V DC	20-30 V DC	
Nominal output voltage*	13.6 V DC	12 V DC	24 V DC	12 V DC	24 V DC	
Output voltage dimmer*	4-13 V DC	n.a.	n.a.	n.a.	n.a.	
Output voltage stabilisation	2 % at extremes of temps, load and input					
Output voltage ripple	max. 1 % peak peak	max. 1 % peak peak	max. 1 % peak peak	max. 1 % peak peak	max. 1 % peak peak	
Output power (max./nominal)	300 / 270 W	725 / 675 W	725 / 675 W	750 / 710 W	850 / 810 W	
Max. output current	20 A	50 A	30 A	50 A	30 A	
Output charge current - 3-step mode	16 A	50 A	30 A	50 A	30 A	
Nominal input voltage	24 V	12 V	12 V	24 V	24 V	
Input voltage range	20-32 V DC	10-16 V DC	10-16 V DC	19-30 V DC	19-30 V DC	
Max. input current	n.a.	50 A	50 A	50 A	50 A	
Galvanic isolation	no	no	no	no	no	
Voltage limited	yes	yes	yes	yes	yes	
Efficiency	>90 % (nom. input voltage, full load); 92 % peak	> 95 % (at nom. input voltage, full load); 97 % peak				
Parallel configuration	yes	yes	yes	yes	yes	
Alarm contact	no	yes, through MasterBus	yes, through MasterBus	yes, through MasterBus	yes, through MasterBus	
MasterBus powering	no	no	no	no	no	
Engine run signal input	n.a.	yes (active high/active low)				
DIP switches	n.a.	yes, for basic setup	yes, for basic setup	yes, for basic setup	yes, for basic setup	
Dimensions, hxxwxd	190 x 130 x 61 mm 7.5 x 5.1 x 2.4 inch	255 x 165 x 66 mm 10 x 6.5 x 2.6 inch	255 x 165 x 66 mm 10 x 6.5 x 2.6 inch	255 x 165 x 66 mm 10 x 6.5 x 2.6 inch	255 x 165 x 66 mm 10 x 6.5 x 2.6 inch	
Weight	1 kg / 2.2 lb	2 kg / 4.4 lb	2 kg / 4.4 lb	2 kg / 4.4 lb	2 kg / 4.4 lb	
Approvals	CE	CE, E-Mark, SAE J1171 & ISO 8846 Ignition Protected				
TECHNICAL SPECIFICATIONS						
No-load consumption	n.a.	< 2 mA	< 2 mA	< 2 mA	< 2 mA	
Battery types	flooded, Gel, AGM, spiral, Lithium Ion, traction, user defined					
3-Step charge option (dip switch settings)	yes	yes	yes	yes	yes	
DC consumption	< 30 mA	< 5 mA	< 5 mA	< 5 mA	< 5 mA	
Connections input/output	screw terminals, max. wire size 16 mm² / AWG5	3 x M8 terminal for cable diameters of 10-50 mm², (positive input, positive output, joint negative connection) 6-pole screw connection for cable diameters of 0.75-1.5 mm² (remote on/off, temperature sensor, voltage measurement)				
Temperature range (ambient temp.)	-25 °C to 60 °C; > 40 °C derating power / -13 °F to 140 °F; > 104 °F derating power					
Cooling	natural cooling	natural cooling	natural cooling	natural cooling	natural cooling	
Protection degree	IP21	IP23	IP23	IP23	IP23	
Protections	overload, over-temperature	overload, over-temperature, DC short circuit, reversed polarity (fuse)				
MasterBus compatible	yes, in combination with MasterBus Serial Interface	yes	yes	yes	yes	

\* Adjustable with MasterAdjust software.

ACCESSORIES		PC-Link 21730300	option	n.a.	n.a.	n.a.	n.a.
	Interface between Mac converter and PC, in combination with the MasterAdjust software (free to download). The PC-Link can be directly connected to a computer serial port.						
		EasyView 5 77010310	option	option	option	option	option
	In combination with a MasterBus Serial Interface. Waterproof system monitor with 'daylight readable' colour display and intuitive multi-language touchscreen to show the key system information at a glance. There is also a logbook feature for warnings and alarms, along with a buzzer and alarm notifications. The home button gives access to favorite pages.						
		MasterBus Serial Interface 77030450	option	n.a.	n.a.	n.a.	option
	Integrates the Mac & Magic converters in a MasterBus network.						
	Temperature sensor 6m 41500500	delivered as standard	delivered as standard	delivered as standard	delivered as standard	delivered as standard	delivered as standard
	Temperature sensor 15m 41500800	option	option	option	option	option	option

## ISOLATED OR NON-ISOLATED?

The non-isolated Mac (Plus) and DC Master models have an electrical connection between the input and output.

Features:

- Low costs.
- Efficient: low heat generation.
- Compact.
- Suited to applications with negative earthing.

The isolated Magic and DC Master models provide galvanic isolation between input and output circuits.

Features:

- Extra touch-proof.
- Interference suppression for sensitive equipment.
- Available with negative or positive grounding.



### Magic as power supply

The Magic models can be fully used as a stabilised power supply: From 12 to 24 V, from 24 to 12 V or from 24 to 24 V. Inputs and outputs are galvanically isolated.

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