



# CHOOSE THE ENERGY SPECIALIST

PRODUCTS CATALOGUE 2022/2023

ENGLISH  
REV. 1





**BATTERIES**



**CHARGING  
SYSTEMS**



**INVERTER**



**SOLAR  
ENERGY**



**MANAGEMENT  
AND CONTROL**



A scenic mountain landscape featuring a winding asphalt road with metal guardrails. The foreground is a grassy hillside with scattered rocks and a single tall evergreen tree. The middle ground shows a valley with more trees and a road curving through it. The background is a dense forest of evergreen trees covering a mountain slope. The lighting is warm, suggesting late afternoon or early morning.

**NDS** |  **DOMETIC**

# CHOOSE THE ENERGY SPECIALIST



Since 1999, **NDS | Dometic** is the right partner for people looking for energy while travelling.

Currently our product catalogue includes: accumulators for every type of vehicle and with the most widespread construction technologies, charging systems, solar panels and charge regulators, converters and all that concerns the management and control of energy on recreational vehicles.

We are among the most competitive manufacturers for the camper industry in Europe and we can count on a widespread distribution network including Countries as: Spain, Germany, France, England, Benelux, Denmark, Sweden, Norway, Finland and of course Italy.

Italy is our headquarters, the core of our business: we focus on product quality combined with excellent service, which is why we have chosen to hold "in-house" the departments: repair, research and development, managed by a team of engineers, and the customer/after-sales service department.

Our standards are aligned every year with the rigorous parameters **CSQ ISO9001:2015 9160 NDSE** and **IQNet REG. NR.: IT-100663**, to ensure maximum efficiency for those who prefer our brand.



4 HIGHLIGHTS

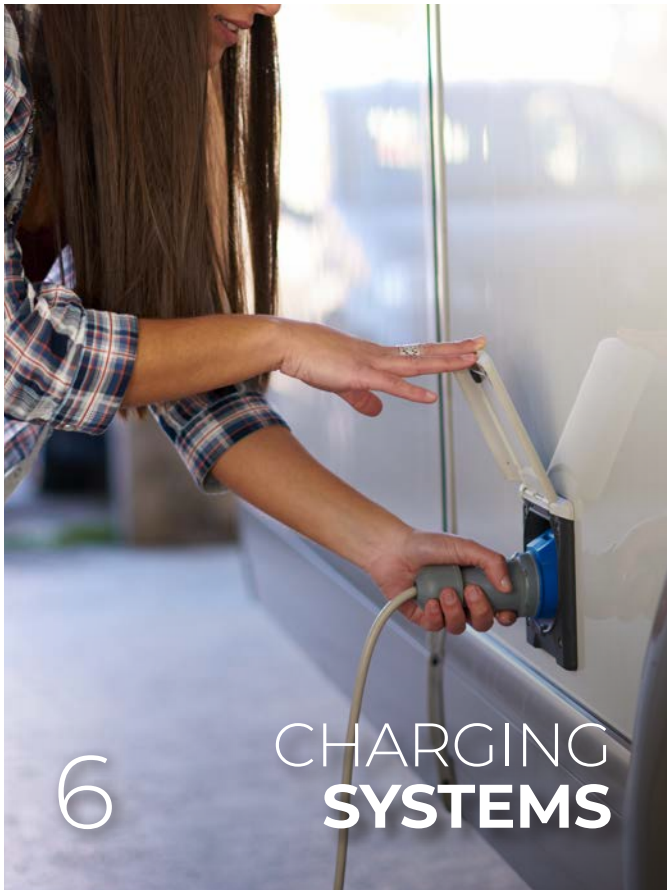


**CHOOSE  
THE ENERGY  
SPECIALIST**



30 MANAGEMENT AND CONTROL





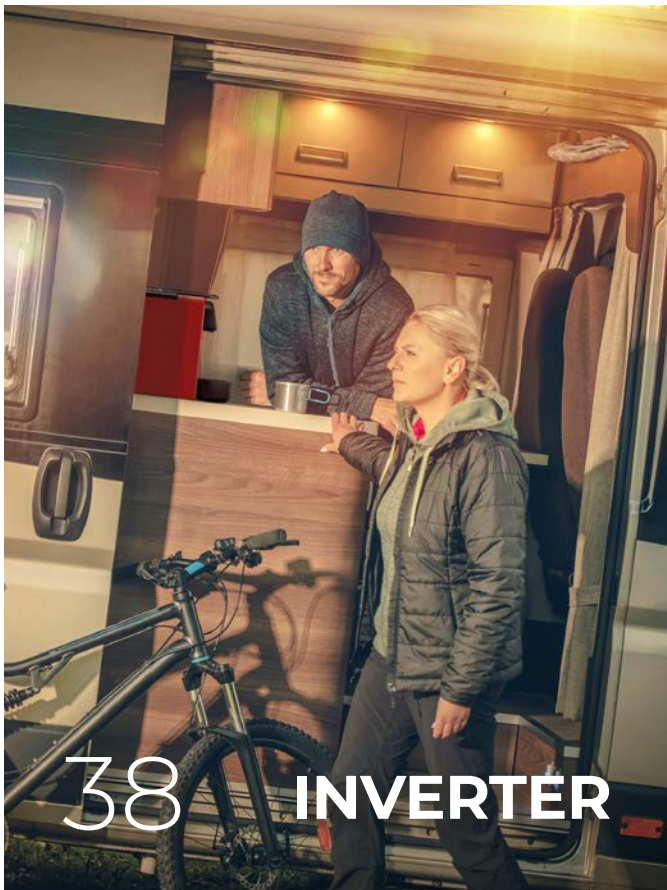
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SYSTEMS**



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**BATTERIES**



# HIGHLIGHTS!

## Many new devices, one **Controller!**

Modern motorhomes have nothing to envy to a regular house, but the devices needed to make everything work at its best are many: battery, solar panel regulator, inverter, battery charger and much more.

With the new NDS Controllers: Touch Screen Display and Mobile App, you can now control your entire energy system from a single device.

The synergy between the **N-BUS** protocol and the **NDS controllers** allows on-board devices to communicate with each other, and the user to control them all from a single controller.

The **NDS** controller is available both on a full colour touch screen display, which you can keep in your

motorhome at all times, and as a mobile version available for iOS and Android (if only one NDS device with Bluetooth is present in the on-board network).



**Display Bus DTB01**



**NDS Mobile App**



## **POWER SERVICE PSB** 8

New Generation **DC-DC** Booster

Powerful travel chargers with **Buck Booster**, also **effective with Smart Alternator** devices (Euro 6).

**Up to 80A** of power to quickly recharge Lithium Batteries (LiFePO4) or traditional high capacity systems (AGM, Gel, Free Acid).

All PSBs are equipped with **N-BUS** communication protocol, **AUX bypass** to maximise battery charging, Opticharge optimisation algorithm and alternator and engine battery protection systems.



## **SUNCONTROL 2** 26

**MPPT** controller with enhanced connectivity

The **MPPT SUNCONTROL 2** solar controller has been updated with new Ci-Bus compatible **N-BUS** communication protocols and a bluetooth version has also been added.

Now all the energy coming from can be monitored from a **Display Bus DTB01** and from the **NDS Mobile App** (for the Bluetooth version).





## TEMPRA LITHIUM BATTERY

Top notch **Lithium LiFePO4** leisure battery

Design, power, technology, connectivity, in less space!

The new **TEMPRA Lithium battery** combines **NDS** experience and technology in a **classic L5 standard cassette: you get 50% more capacity in the same size as a classic Lithium battery.**

Fully operational down to **-30°C**, for models with built-in heating function.

The **revolutionary BMS**, integrated into the battery and completely redesigned, simplifies the connections and management of the **TEMPRA** automatically adjusts all the parameters necessary to keep the battery safe and efficient at all times.

With the new **BMS** it is possible to connect any type of battery charger, even if it is designed for lead-acid batteries, **TEMPRA** will

automatically adjust the charge and usage parameters.

The **Smart Balance** function of the **BMS** keeps the cells inside the battery efficient over time.

Tempra is equipped with **N-BUS** communication protocol: with just one **Display Bus** and the **NDS** mobile app you can monitor and program all the devices on board!





CHARGING  
**SYSTEMS**





## POWERSERVICE PSB

8

New Generation **DC-DC Booster**



## POWERSERVICE

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**DC-DC** travel battery charger



## POWERCHARGERPRO

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**AC-DC Professional** battery charger



## SMARTCHARGER

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**AC-DC Universal** battery charger





# POWERSERVICE PSB

New Generation **DC-DC** Booster

**UP TO 80A CHARGING POWER** ALSO WITH SMART ALTERNATOR (EURO6)

**CHARGING CURVES** SUITABLE FOR ALL BATTERY TECHNOLOGIES

**UP TO 8 CHARGING STEPS** WITH OPTICHARGE ALGORITHM

The new DC-DCs of the POWERSERVICE PSB series are powerful travel chargers that are also highly efficient with Smart Alternator (Euro 6) vehicles. High charging currents (up to 80A) make PSBs ideal for fast charging Lithium batteries or high capacity traditional systems; Buck Booster technology, stabilizes the charge making PSBs ideal for all vehicles or boats, where fast and correct charging of leisure batteries of any technology is important: Lithium LiFePO<sub>4</sub>, AGM, Gel, Flooded.

All PSBs are equipped with the intelligent OPTICHARGE system which optimises the performance and yield of Leisure batteries by selecting a specific charging curve for each technology and specific charging curve selection and the state of charge analysis algorithm developed by the NDS Software Team. The POWERSERVICE PSB is the only device on the market with an AUX connection, allowing the PSB to be installed in vehicles with existing charging systems.

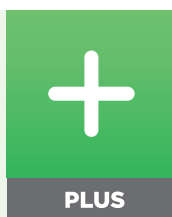


When the vehicle is in motion, the AUX relay shifts all the loads connected in the control unit to the engine battery, thus bypassing the existing parallel charging connection, so the leisure battery will be recharged directly, at maximum performance.

As well as power, safety is also important. PSB protection systems prevent the alternator from overloading and the engine battery from running out of power.

## MAIN FEATURES:

- Up to **80A** power
- Selectable charging power (for higher performance models)
- Up to **8 charging** steps with **Opticharge** algorithm
- **Buck Booster** technology for super stable charging
- **Aux bypass** for direct connection of extra loads to the alternator
- **N-Bus** communication protocol
- Optional Bus display
- Specific charging curve for batteries: Lithium LiFePO<sub>4</sub>, AGM, Gel, Flooded
- Alternator and starter battery always safe from overload, unexpected stress and undervoltage

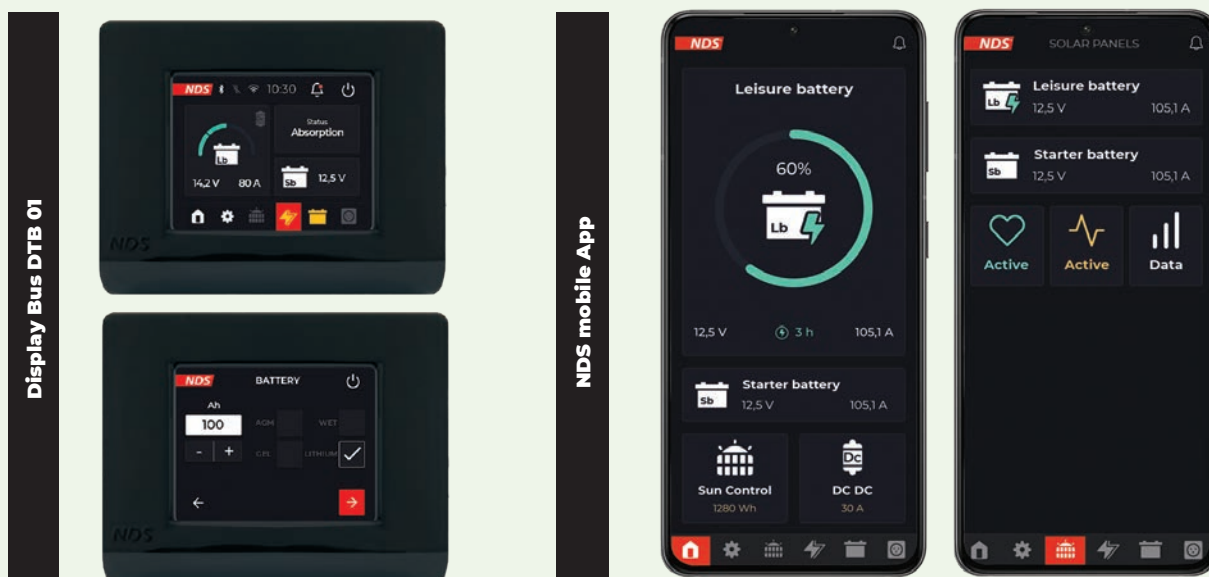


## NDS CONTROLLER

### Display Bus and NDS App mobile

Devices with **N-BUS** protocol, such as **POWERSERVICE PSB**, can be managed by a single **Display Bus** (optional) and **NDS Mobile App** (if there is a Bluetooth **NDS** device in the same network).

Discover how easy it is to control **PSB** via the **Display Bus** (or via dip switches): set the desired charge curve, the charge current limit, is always at your disposal, just a click away.





## MAXIMUM CHARGING POWER, WHILE TRAVELLING. EVEN WITH EURO6 AND SMART ALTERNATOR!

Charge while you travel, arrive at your destination with 100% batteries, don't run out of power, avoid all generators and extra fuel, travel lighter and above all enjoy your holidays!

PSB Power Service: up to 80A of power always available to charge your batteries quickly, anywhere.

### POWERSERVICE PSB MODELS:

CODE	ALTERNATOR MINIMUM POWER	NOMINAL VOLTAGE		MAXIMUM SELECTABLE
		INPUT	OUTPUT	CHARGING CURRENT
<b>PSB 12-40</b>	90A	12V	12V	40A
<b>PSB 12-80</b>	140A	12V	12V	40A / 60A / 80A
<b>PSB 24-30</b>	70A	24V	24V	30A
<b>PSB 24-60</b>	100A	24V	24V	30A / 45A / 60A
<b>PSB 24/12-40</b>	55A	24V	12V	40A
<b>PSB 24/12-80</b>	70A	24V	12V	40A / 60A / 80A
<b>PSB 12/24-20</b>	90A	12V	24V	20A
<b>PSB 12/24-40</b>	140A	12V	24V	40A



# POWERSERVICE

DC-DC Travel battery charger

ALSO SUITABLE FOR **LiFePO<sub>4</sub> BATTERIES**

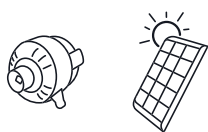
SOLID AND DURABLE CONSTRUCTION

UP TO **5 CHARGING STEPS**

## POWER SERVICE PLUS

### MAIN FEATURES:

- Two different supply sources
- Microprocessor charge management
- 5 stage charge with desulfation
- **Lithium**, AGM, Gel, Wet, battery type selection
- Up to 40 Ampère recharge each travel hour



### POWERED BY:

- Solar Panel
- Alternator

## POWER SERVICE GOLD

### MAIN FEATURES:

- Three different supply sources
- Microprocessor charge management
- 5 stage charge with desulfation
- **Lithium**, AGM, Gel, Wet, battery type selection
- Up to 40 Ampère recharge each travel hour



### POWERED BY:

- Alternator
- Solar Panel
- Main power supply

Choose the **POWERSERVICE** for you!

CODE	CHARGING VOLTAGE	POWER INPUT			MAXIMUM CHARGING CURRENT		
		ALTERNATOR (P.MIN)	SOLAR (MAX)	MAIN POWER SUPPLY	ALTERNATOR	SOLAR	MAIN POWER SUPPLY
<b>PLUS 25</b>	12V	70A-12V	250W	NO	25A	20A	NO
<b>PLUS 30</b>	12V	90A-12V	250W	NO	30A	20A	NO
<b>PLUS 40</b>	12V	110A-12V	250W	NO	40A	20A	NO
<b>GOLD 25-M</b>	12V	70A-12V	250W	100/240VAC	25A	20A	20A
<b>GOLD 30-M</b>	12V	90A-12V	250W	100/240VAC	30A	20A	20A
<b>GOLD 40-M</b>	12V	110A-12V	250W	100/240VAC	40A	20A	20A





# POWERCHARGER PRO

## AC-DC Professional Battery Charger

🎯 SUITABLE ALSO FOR  
**LiFePO<sub>4</sub> BATTERIES**

🎯 SOLID AND  
DURABLE BUILD

🎯 UP TO **5 CHARGING**  
**STEPS**

The NDS chargers at high frequency line POWERCHARGERPRO, are designed both for traditional and on-board use. The efficiency rate of 91% and the high reliability result from a careful development of the PCBs with components of the highest quality, for a professional use. The micro-processor automatically manages up to 5 steps of charge, optimizing them to have always correct charges and preserving the battery life. The technical staff ensures a complete and quick assistance to solve any issues, besides the possibility to customize the charger according to the type of application.

### MAIN FEATURES:

- High frequency system
- Circuit with PFC
- Compact design
- 5 Charging steps
- High efficiency up to 91%
- Charge curves selector  
**Lithium**, AGM, Gel, Wet
- Protection over temperature, short circuit and anomalies
- State of charge indicator



## Models **POWERCHARGER** PRO

	CODE	OUTPUT	SIZE (mm.)			BATTERY TYPE SELECTOR
			LENGTH	WIDTH	HEIGHT	
12V	PFC0150-12CH10S	12V 10A	106	128	56,5	YES
	PFC0300-12CH15S	12V 15A	145	128	56,5	YES
	PFC0600-12CH20S	12V 20A	223,2	128	56,5	YES
	PFC0600-12CH25S	12V 25A	223,2	128	56,5	YES
24V	PFC0300-24CH10S	24V 10A	145	128	56,5	YES
	PFC0600-24CH15S	24V 15A	223,2	128	56,5	YES
	PFC0600-24CH20S	24V 20A	223,2	128	56,5	YES
	PFC1200-24CH30S	24V 30A	280	134	77,2	YES
36V	PFC1200-36CH25S	36V 25A	280	134	77,2	YES





# SMARTCHARGER

## AC-DC Universal battery charger

SMARTCHARGER is a line of advanced charger, equipped with advanced microcontroller to meet the daily needs, for applications such as boating, motorcycles, cars, etc.

According to the model, it performs up to 9 charging steps; steps include the diagnosis, to check whether the battery is able to accept and maintain the charge, the desulfation which helps maintain

the plates clean from sulfate and extend the life of batteries, the maintenance (*last generation*) that keeps the battery to the 95-100% of the capacity, supplying the current when the battery starts to discharge, in order to not "stress" it during long periods of charge.

*(Ex. Maintenance of a motorcycle battery during the winter).*

### MAIN FEATURES:

- Suitable also for  $\text{LiFePO}_4$  batteries
- New **OPTICHARGE** firmware
- Selectable Charging curves
- Up to **9 charging** steps
- IP65 protection

**OPTICHARGE**, the new firmware from **NDS**, software team, for always ready and healthy batteries.

Charge is optimized using technical specifications selected by **NDS** specialists, and voltage and current levels are always monitored.





<b>SCS2</b>	
Nominal Voltage	12V
Charging current	2A
Charging curves	AGM, Gel, Wet
Charging method	3 steps
Activation Voltage	2V
Battery Charge Capacity	3-40Ah
Battery Maintenance Capacity	Up to 80Ah
Protection	IP65



<b>SCS4</b>	
Nominal Voltage	12V
Charging current	1 - 4A
Charging curves	AGM, Gel, Wet, Lithium
Charging method	9 steps
Activation Voltage	2V
Battery Charge Capacity	5-80Ah
Battery Maintenance Capacity	Up to 100Ah
Protection	IP65



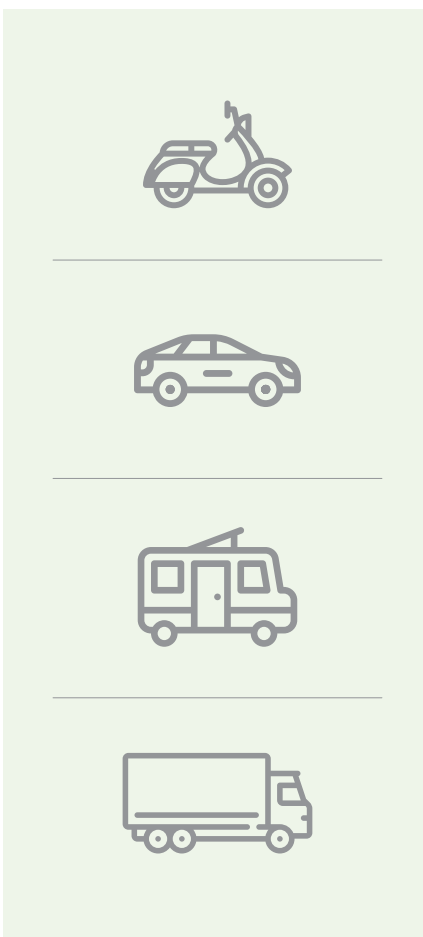
<b>SCS8</b>	
Nominal Voltage	12V
Charging current	2 - 8A
Charging curves	AGM, Gel, Wet, Lithium
Charging method	9 steps
Activation Voltage	2V
Battery Charge Capacity	10-160Ah
Battery Maintenance Capacity	Up to 250Ah
Protection	IP65



<b>SCS15</b>	
Nominal Voltage	12V
Charging current	2 - 15A
Charging curves	AGM, Gel, Wet, Lithium
Charging method	9 steps
Activation Voltage	2V
Battery Charge Capacity	10-250Ah
Battery Maintenance Capacity	Up to 400Ah
Protection	IP20



<b>SCM25</b>	
Nominal Voltage	12V - 24V
Charging current	25A - 12,5A
Charging curves	AGM, Gel, Wet, Lithium
Charging method	9 steps
Activation Voltage	2V
Battery Charge Capacity	50-350Ah
Battery Maintenance Capacity	Up to 500Ah
Protection	IP20







# SOLAR ENERGY





## SOLENERGY

Silver solar panels

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## BLACKSOLAR

Black solar panels

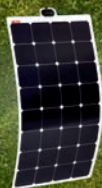
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## LIGHTSOLAR

Lightweight solar panels

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## SOLARFLEXEVO

Flexible solar panels

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## SUNCONTROL2

MPPT Regulators with N-BUS

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## SUNCONTROL

Charge Regulators

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- MONOCRYSTALLINE CELLS
- EASY INSTALLATION
- BUILT-IN BRACKETS



# SOLENERGY

## Silver solar panels

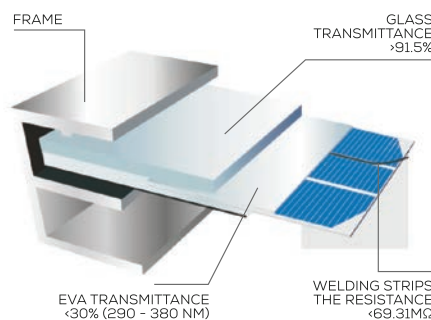
The solar panels SOLENERGY combine modern construction technologies in the photovoltaic sector with a complete setup and easy installation. The paneled bracket integrated into the panel guarantees superior steadiness and sturdiness, allowing the panel to be kept at the correct distance from the vehicle body by facilitating ventilation and avoiding any leakage.

Each module is made with high pure monocrystalline silicon cells, protected by a Tedlar sheet and textured tempered glass characterized by: high transparency, low iron content and anti-reflective coating that increases the efficiency up to 18.5%, all enclosed in two sheets of EVA (Ethylene Vinyl Acetate). Special by-pass diodes protect the cells from overvoltages and minimize the loss of power due to possible shading phenomena.



### INTEGRATED BRACKET

Alluminum brackets integrated into the panel, with aerodynamic frame and plastic side covers make the panel sturdy, safe, easy and quick to install..



### STRUCTURE

Alluminum Frame  
 High transmittance glass: **91,5%**  
 Low Resistance Connection Strips: **<69,31MΩ**  
 Eva transmittance: **<30%** (290-380MN).



### UP TO 6m CABLE LENGTH

Each panel is equipped with a up to **6 meters**, long bipolar connection cable, with an external protection sheath resistant to any climatic condition.

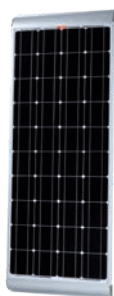




### PSM 85WP

Cell Number	36
Nominal Voltage	12V
Maximum Power	85WP±3%
Size mm	1165x530x60
Weight	9,0 kg

Open Circuit Voltage	22,79V
Short Circuit Current	4,81A
Maximum Power Voltage	18,83V
Maximum Power Current	4,52A
Cable Length 6m	2X2,5mm <sup>2</sup>



### PSM 100WP

Cell Number	36
Nominal Voltage	12V
Maximum Power	100WP±3%
Size mm	1320x530x60
Weight	9,5 kg

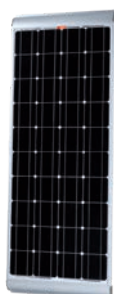
Open Circuit Voltage	23,7V
Short Circuit Current	5,5A
Maximum Power Voltage	19,57V
Maximum Power Current	5,11A
Cable Length 6m	2X2,5mm <sup>2</sup>



### PSM 100WP-S

Cell Number	36
Nominal Voltage	12V
Maximum Power	100WP±3%
Size mm	1727x416x60
Weight	10 kg

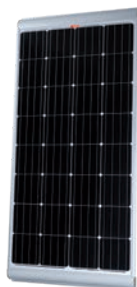
Open Circuit Voltage	22,74V
Short Circuit Current	5,66A
Maximum Power Voltage	18,94V
Maximum Power Current	5,28A
Cable Length 6m	2X2,5mm <sup>2</sup>



### PSM 120WP

Cell Number	36
Nominal Voltage	12V
Maximum Power	120WP±3%
Size mm	1520x530x60
Weight	10,5 kg

Open Circuit Voltage	23,75V
Short Circuit Current	6,54A
Maximum Power Voltage	19,62V
Maximum Power Current	6,12A
Cable Length 6m	2X2,5mm <sup>2</sup>



### PSM 150WP

Cell Number	32
Nominal Voltage	12V
Maximum Power	150WP±3%
Size mm	1475x676x60
Weight	12,5 kg

Open Circuit Voltage	20,85V
Short Circuit Current	9,30A
Maximum Power Voltage	17,23V
Maximum Power Current	8,71A
Cable Length 6m	2X2,5mm <sup>2</sup>






### PSM 175WP

Cell Number	36
Nominal Voltage	12V
Maximum Power	175WP±3%
Size mm	1625x676x60
Weight	14,5 kg

Open Circuit Voltage	23,67V
Short Circuit Current	9,58A
Maximum Power Voltage	19,56V
Maximum Power Current	8,95A
Cable Length 4m	2X4mm <sup>2</sup>



-  **PERC CELLS**  
MORE POWER, LESS SPACE
-  **TOTAL BLACK**
-  **BUILT-IN BRACKETS**



# BLACKSOLAR

## Black solar panel

Frame, structure, cells, strings all completely black: the BLACKSOLAR panels capture a greater amount of solar energy and, in conditions of grazing light, such as sunrise and sunset, allowing a production of electricity higher than the standard modules.

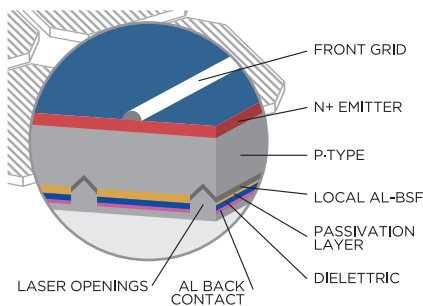
High efficiency monocrystalline cells and excellent raw materials make BLACKSOLAR a cutting-edge panel in the photovoltaic sector, reaching an efficiency of 19,0%.

### MORE POWER, less space



#### INTEGRATED BRACKET

Alluminum brackets integrated into the panel, with aerodynamic frame and plastic side covers make the panel sturdy, safe, easy and quick to install.



#### CELLE PERC

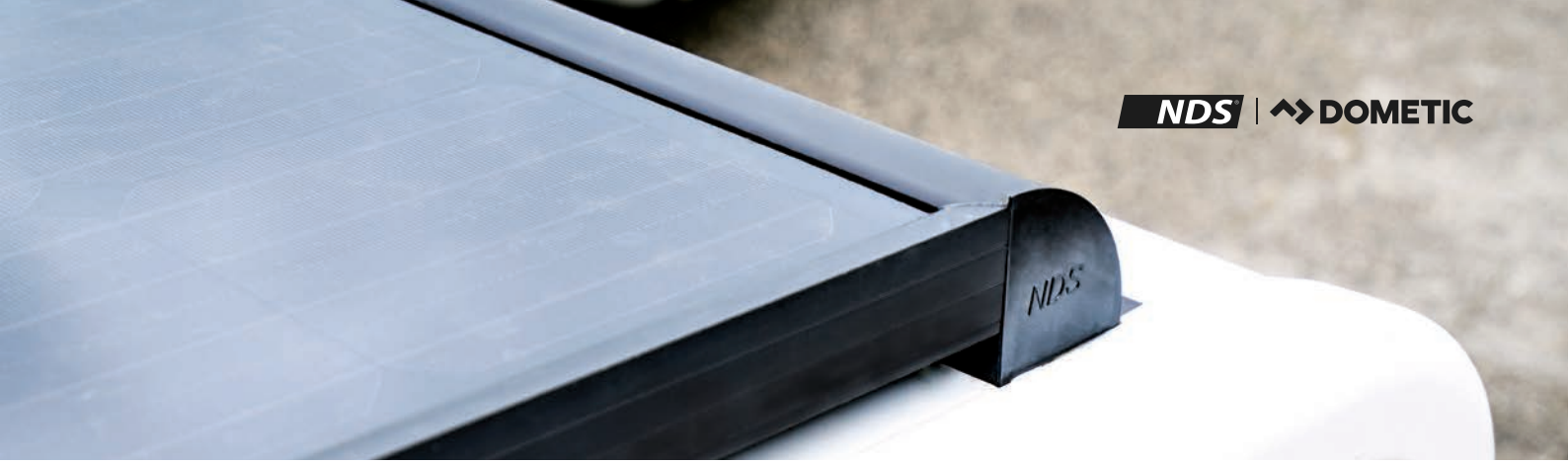
**Passivated Emitter and Rear Cell:** a new technology to increase the conversion efficiency by adding a dielectric passivation layer on the rear of the cell.



#### UP TO 6m CABLE LENGTH

Each panel is equipped with a up to **6 meters**, long bipolar connection cable, with an external protection sheath resistant to any climatic condition.





### BS 115WP

Cell Number	33	Open Circuit Voltage	22,41V
Nominal Voltage	12V	Short Circuit Current	6,63A
Maximum Power	115WP±3%	Maximum Power Voltage	18,5V
Size mm	1385x530x60	Maximum Power Current	6,22A
Weight	10 kg	Cable Length 6m	2X2,5mm <sup>2</sup>



### BS 165WP

Cell Number	32	Open Circuit Voltage	21,6V
Nominal Voltage	12V	Short Circuit Current	9,78A
Maximum Power	165WP±3%	Maximum Power Voltage	17,84V
Size mm	1495x680x60	Maximum Power Current	9,25A
Weight	14 kg	Cable Length 6m	2X2,5mm <sup>2</sup>



### BS 185WP




Cell Number	36	Open Circuit Voltage	24,08V
Nominal Voltage	12V	Short Circuit Current	9,81A
Maximum Power	185WP±3%	Maximum Power Voltage	19,9V
Size mm	1645x680x60	Maximum Power Current	9,3A
Weight	15,5 kg	Cable Length 4m	2X4mm <sup>2</sup>



### BS 230WP

Cell Number	160	Open Circuit Voltage	27,05V
Nominal Voltage	12V	Short Circuit Current	10,91A
Maximum Power	230WP±3%	Maximum Power Voltage	21,99V
Size mm	1885x720x60	Maximum Power Current	10,46A
Weight	17,5Kg	Cable Length 4m	2X4mm <sup>2</sup>



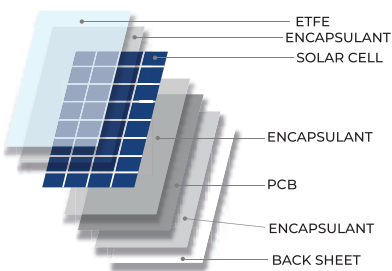
- 
**5% FLEXIBILITY**
- 
**THIN, LIGHT AND ROBUST**
- 
**HIDDEN CONNECTION AVAILABLE, IDEAL FOR TOP HOP ROOF**

# LIGHTSOLAR

## Lightweight solar panels

LIGHTSOLAR is the “Glass & Frameless” solar panels range designed for applications where weight, thickness and resistance are fundamental characteristics. The cells, with an efficiency of 18.75%, are embedded in an exclusive multi-layer structure: the upper layer is a plastic polymer called ETFE highly resistant to corrosion and weathering, such that it can be defined as self-repairing. The surface of the panel, always exposed to scratches or other accidental shocks, is able to self-model, returning to the initial shape ideal for capturing sunlight.

The lower layer of the structure is composed by an PCB sheet to contain and dissipate as much as possible the heat generated by the cells and to give the panel such strength that it is also perfect for nautical applications, where (with suitable and soft footwear) it is possible to step on the panel.



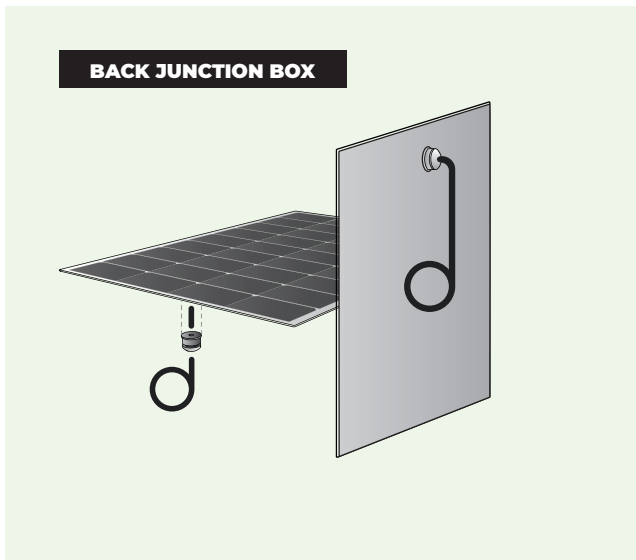
### STRUCTURE

7 layers, including the ETFE surface, the best surface in terms of efficiency and durability, and an PCB sheet improving the heat dissipation and hardness.



### JUNCTION BOX

The NDS aerodynamic box contains the 3 meters supplied connection cable, and the bypass diodes to reduce shading.







### LSE 105 BF

Cell Number	36
Nominal Voltage	12V
Maximum Power	105WP±3%
Size mm	1068x503x4
Weight	3,97 kg

Open Circuit Voltage	23,3V
Short Circuit Current	5,45A
Maximum Power Voltage	19,8V
Maximum Power Current	5,3A
Frontal Cable Length 3m	2X2,5mm <sup>2</sup>



### LSE 160 BF

Cell Number	36
Nominal Voltage	12V
Maximum Power	160WP±3%
Size mm	1253x673x4
Weight	5,82 kg

Open Circuit Voltage	23,3V
Short Circuit Current	8,72A
Maximum Power Voltage	19,8V
Maximum Power Current	8,08A
Frontal Cable Length 3m	2X2,5mm <sup>2</sup>



### LSE 195BF

Cell Number	35
Nominal Voltage	12V
Maximum Power	195WP±3%
Size mm	1488x673x4
Weight	6,75 kg

Open Circuit Voltage	22,3V
Short Circuit Current	11,08A
Maximum Power Voltage	19V
Maximum Power Current	10,3A
Back Cable Length 3m	2X2,5mm <sup>2</sup>

FRONT CONNECTION



### LSE 105 BR

Cell Number	36
Nominal Voltage	12V
Maximum Power	105WP±3%
Size mm	1018x503x4
Weight	3,93 kg

Open Circuit Voltage	23,3V
Short Circuit Current	5,45A
Maximum Power Voltage	19,8V
Maximum Power Current	5,3A
Frontal Cable Length 3m	2X2,5mm <sup>2</sup>



### LSE 200BR

Cell Number	36
Nominal Voltage	12V
Maximum Power	200WP±3%
Size mm	1488x673x4
Weight	6,79 kg

Open Circuit Voltage	23,3V
Short Circuit Current	10,9A
Maximum Power Voltage	19,8V
Maximum Power Current	10,1A
Back Cable Length 3m	2X2,5mm <sup>2</sup>

BACK CONNECTION

A completely flat surface, thanks to the use of a new connection method called the Back Junction Box, and laminated diodes included in the structure of the panel itself. The connection cable, located at the back, removes the Junction Box from the exposed surface of the panel. The round box, only 30mm in diameter, tightens the cable, making the connection firm and secure. This version is ideal for gusseted roofs, minimising clutter and eliminating cable tangles as well as unsightly and complex Cable gland.





- ULTRA LIGHTWEIGHT
- HIGH EFFICIENCY  
MONOCRYSTALLINE CELLS
- 30% FLEXIBILITY

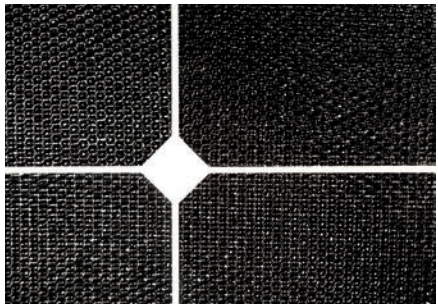
# SOLARFLEXEVO

## Flexible solar panels

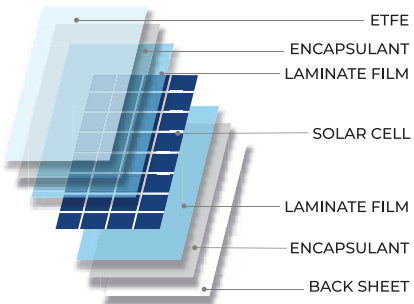
Adapts to nonlinear surfaces thanks to a high degree of flexibility, provides maximum performance with the minimum possible footprint: all this is SOLARFLEXEVO.

solarflexevo is the ideal choice in the Nautical and Camper sectors where the yield is optimal. To ensure the best results in the smallest possible space, the SOLARFLEXEVO range is built with quality and 20% high-efficiency cells.

### Energy has never been so **FLEXIBLE**



**MONOCRYSTALLINE CELLS**  
The photovoltaic cells of the Solar Flex EVO panel are designed for maximum performance in small spaces. The evolution of pure monocrystalline silicon in the smallest possible space and with maximum efficiency



**STRUCTURE**  
Built with **7 layers**, including the **ETFE** surface, the best surface in terms of efficiency and durability.



**JUNCTION BOX**  
Each panel is equipped with a special **Junction Box**: location of the bipolar connection cable **3 meters** long, with external protective sheath resistant to all weather conditions.



**MAIN FEATURES:**

- Monocrystalline cells
- Encapsulated with 9 layers
- Immune from micro-cracks
- Efficiency 20%
- Excellent efficiency at high temperatures
- Low power loss in case of shading



**SFS 60WP**

Cell Number	32
Nominal Voltage	12V
Maximum Power	60WP±3%
Size mm	600x540x2
Weight	1,6 Kg

Open Circuit Voltage	20,7V
Short Circuit Current	3,3A
Maximum Power Voltage	18,23V
Maximum Power Current	3,29A
Cable Length 3m	2X2,5mm²



**SFS 115WP**

Cell Number	32
Nominal Voltage	12V
Maximum Power	115WP±3%
Size mm	1110x540x2
Weight	2,4 kg

Open Circuit Voltage	21,9V
Short Circuit Current	6,26A
Maximum Power Voltage	18,72V
Maximum Power Current	6,14A
Cable Length 3m	2X2,5mm²



**SFS 140WP**

Cell Number	40
Nominal Voltage	12V
Maximum Power	140WP±3%
Size mm	1360x540x2
Weight	2,8 kg

Open Circuit Voltage	27V
Short Circuit Current	6,21A
Maximum Power Voltage	23,1V
Maximum Power Current	6,06A
Cable Length 3m	2X2,5mm²



**SFS 155WP**

Cell Number	44
Nominal Voltage	12V
Maximum Power	155WP±3%
Size mm	1480x540x2
Weight	3,1 kg

Open Circuit Voltage	30V
Short Circuit Current	6,23A
Maximum Power Voltage	25,6V
Maximum Power Current	6,05A
Cable Length 3m	2X2,5mm²



**OPTIONAL**  
Solar Panels

Cod. PST / PG 9 / PG 13.5

**Cablebox for cable routing**  
with **PG** configuration





## **SUNCONTROL2** MPPT regulator with **N-BUS**

**MPPT +30% MORE FROM YOUR SOLAR PANELS**

**ALSO SUITABLE FOR LiFePO<sub>4</sub> BATTERIES**

**STARTER BATTERY CHARGING LINE OUTPUT**

SUNCONTROL2 is the latest and innovative charge controller for photovoltaic modules from NDS with separate inputs for two solar panels.

The MPPT technology, allows you to maximise the energy from any type of solar panel (12V nominal), performing the most modern charging curves, even for LiFePO<sub>4</sub> batteries.

The special OPTICHARGE algorithm developed by the NDS Software Team optimises charging according to the battery needs and extends its life.

SUNCONTROL2 is equipped with the new N-BUS communication protocol, compatible with Ci-Bus: now you can monitor, control and update all on-board devices from a single NDS Controller.

SUNCONTROL2 is available in two different versions: SCE 320 for up to 320W total, and SCE 360 that supports up to 360W total. Both models are available in a Bluetooth version with which the NDS App can be used.



## SUNCONTROL2 MAIN FEATURES:

- Selector for Lithium LiFePO<sub>4</sub>, AGM, Gel and Wet
- **6-stage** charging curves with **Opticharge** algorithm
- **N-Bus** communication protocol Ci-Bus compatible
- **Display Bus DTB01** e **NDS App Mobile** connection
- Starter battery charge
- Separate inputs for two solar panels
- Desuprtion option
- Temperature sensors (optional)
- Display Bus DTB01 (optional)
- Bluetooth version (for NDS App Control)



TIPS

### WHAT DOES MPPT MEANS?

This is the algorithm that allows to always exploit the “Maximum power point track”

supplied by the panel. A charge regulator with MPPT technology can achieve a significantly higher efficiency than PWM technology (up to 25% more). The MPPT regulator is ideal where space is limited because in less space you get more energy!



PLUS

### WHAT IS N-BUS?

**N-BUS** is the multi-device communication protocol developed entirely by **NDS** and compatible with **CI-BUS**.

With **N-BUS** your energy devices are connected to each other and exchange information for more efficient on-board energy management.

The device network has many advantages, such as easy firmware updates and simplified control with one simple interface.

Read more about **N-BUS** on Page 32.





PLUS

# NDS CONTROLLER

## Display Bus and NDS Mobile App

**Display Bus** e **NDS App mobile** are the NDS controllers that allow you to manage the entire new **NDS** energy system.

The new generation of **NDS** energy devices equipped with **N-BUS**, such as **SUNCONTROL2**, can be controlled and managed via **Display Bus DTB01**, or via **NDS App** (with **SUNCONTROL2** in Bluetooth version).

With the controller it is possible to monitor the status and technical parameters of all devices and the on-board energy situation, it is also possible to change the settings of each device, and if a device with Bluetooth Master is present in the **N-BUS** network, it is also possible to update the firmware of all connected devices.



Display Bus DTB01



NDS Mobile App

## Models **SUNCONTROL2**

CODE	SCE 320	SCE 320B	SCE 360	SCE 360B
Nominal voltage	12V	12V	12V	12V
Module Max Power	320W	320W	360W	360W
Maximum input voltage	30V	30V	30V	30V
Max Charging Current	20A	20A	25A	25A
MPPT System	Yes	Yes	Yes	Yes
Protection fuse	30A	30A	30A	30A
Starter battery charge	Yes	Yes	Yes	Yes
Fan	No	No	Yes	Yes
Bluetooth	No	Yes	No	Yes
Size (mm)	151x90x48	151x90x48	151x90x48	151x90x48



# SUNCONTROL

## Charge Regulators

SUNCONTROL, depending on the model is capable of handling up to 300W in input, with a maximum charge of 18A. The microprocessor is capable of up to four charge phases, including the important phase of desulfation, which guarantees longer life to your batteries.

There are two versions of SUNCONTROL: the SC15-240 model with PWM technology and the SC300M model with MPPT technology, which maximizes the potential of the solar panel, improving its yield by up to 25%.



CODE	SC 15-240
Nominal Voltage	12V
Module Max Power	240W
Max Charging Current	15A
Technology	PWM
Protection Fuse	25A
Starter Battery Charge	YES
Size(mm)	103x86x50
Display	NO



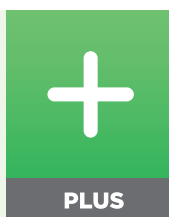
CODE	SC 300M
Nominal Voltage	12V
Module Max Power	300W
Max Charging Current	18A
Technology	MPPT
Protection Fuse	25A
Starter Battery Charge	YES
Size (mm)	103x86x50
Display	Optional

### MAIN FEATURES SC 15-240:

- PWM Technology
- Dedicated output for starting battery
- Wet, Gel and AGM battery selector
- Input power up to 240 W

### MAIN FEATURES SC 300M:

- MPPT Technology
- 4 step charging curves
- Wet, Gel, AGM and Lithium battery selector
- Input power up 300W



## DISPLAY

DT 001

This LCD touch screen display provides a **quick and easy way** to view the charge status of the panels and a general indication of the status of the leisure batteries. Equipped with a 6-meter communication cable, it is directly connected to the **SUNCONTROL**.



COMPATIBLE ONLY WITH:

**SC 300M**

A woman with blonde hair in a bun is sitting on a bed in a camper, looking at a tablet. She is wearing a brown top and black pants. The bed has a blue and white patterned blanket and an orange pillow. In the background, there is a whiteboard with handwritten notes and a window showing a view of the outdoors. The text "MANAGEMENT AND CONTROL" is overlaid on the image.

MANAGEMENT  
AND **CONTROL**





**IMANAGER**  
Multi-battery management

34



**POWERSWITCH**  
Automatic battery **Switch**

36



**BATTERYSAVER**  
Automatic battery **Switch-off**

36



**SMARTSEPARATOR**  
Automatic **paralleling**

37



**POWERRELAIS**  
Split charge relay / isolator

37

# SEARCH FOR **N-BUS**

To find out if the device is equipped with the new NDS communication protocol



## Everything connected by **N-BUS**

**Connect and Control** all your devices easily

N-BUS is the plug&play network for easy connection of all on-board electronic devices.

Integrated control of electronic devices in our home is a reality with home automation. We can turn on the TV, run the air conditioning, start the washing machine and much more with a simple touch on the smartphone.

N-BUS was developed with the purpose to create a practical and functional network between energy management devices, after careful studies and meticulous design. The NDS N-BUS (Ci-BUS compatible) it's a substantial technological upgrade that enables all devices in the NDS network to communicate with each other via a standard data cable.

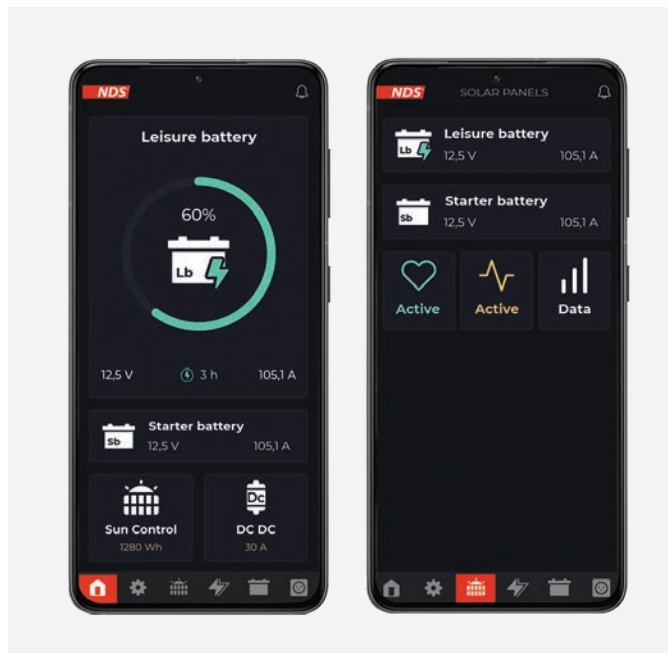
This type of connection allows for a continuous exchange of information between devices of different kinds connected together (Battery, DC-DC, Solar regulator, etc...), and makes the on-board energy system more efficient and safer, but above all, as with the most advanced home automation, the interconnection makes it possible to manage all devices in the network from a single controller.

Until now, several devices or applications were needed to manage various elements of the system. Now, with NDS Controllers, everything is easy: a display or the Mobile App (if there is at least one N-BUS and Bluetooth device in the network) is enough to control the entire on-board energy system.





Display Bus DTB01



NDS mobile App

# NDS Controller for N-BUS

## One display for all devices

You only need one display to monitor, control and update all connected devices.

Thanks to the multi-device N-BUS network, it is no longer necessary to purchase a control display for each device, nor is it necessary to disconnect the Bluetooth app to switch between devices.

NDS Controllers are available in two versions:

- Display Bus DTB01 with wired connection for all devices with N-BUS protocol.
- NDS App for iOS and Android smartphones, if the N-BUS device to be controlled is equipped with Bluetooth.

It is now possible to monitor and control all data from installed devices such as POWER SERVICE PSB, SUNCONTROL2 and TEMPRA Lithium Battery from a single interface and change the settings of different devices in the N-BUS network.

With the NDS Controller you can for example: adjust the settings of the DC-DC booster PSB and set the correct charging curve, check the SoC of the Leisure and Starting battery, check the status of the solar panels and regulator, activate or deactivate a device and much more.

Last but not least, if there is a Master device in the network (such as the TEMPRA Lithium battery), by activating the NDS mobile app you can update all connected devices to the latest firmware release.



PLUS

## N-BUS CONNECTION CABLE

Cod. BC 03M / BC 06M / BC 10M

The connection cable for **N-BUS** systems allows **NDS** energy devices to be connected together in the same network:

- 3 metres (9,84 Ft) - BC 03M
- 6 metres (19,685 Ft)- BC 06M
- 10 metres (32,80 Ft) - BC 10M





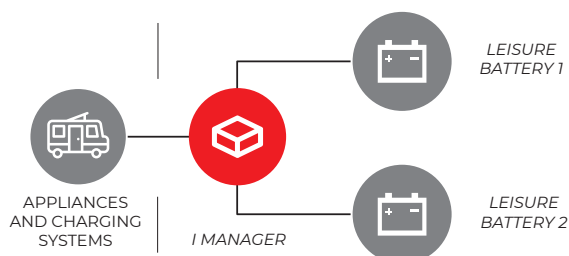
# IMANAGER

## Multi-battery management

- TWO LEISURE BATTERIES AUTOMATIC MANAGEMENT
- DEDICATED FULL COLOUR TOUCH SCREEN DISPLAY
- BATTERY STATE OF CHARGE ACCURATE CALCULATION

IMANAGER is the innovative system that manages all the on-board batteries and energy needs. It mainly allows avoiding the connection in “permanently parallel” of leisure batteries. It manages, simultaneously or separately, up to three batteries with different technologies and amperage. It improves their efficiency and preserves their duration, thanks to the automatic battery cut-off.

The IMANAGER Touchscreen displays any available information on both the accumulators charge level and the possible uses, and it allows you to manually activate or deactivate batteries by one touch, for a more customised management IMANAGER constantly monitors the voltage of its two batteries keeping into account the charge and discharge currents, decides and automatically selects the battery to be used, and aims at keeping the same level of charge to improve their performances.



### Why do you need **IMANAGER**?

To install two service batteries in total safety, avoiding the obsolete and not recommended parallel, requires an electronic device that manages the system. **iManager** permits the installation of batteries different from each other in: technology (AGM, Gel, Wet), power and date of production. Choose your batteries in total freedom, iManager takes care of the rest!



**MAIN FEATURES:**

- Automatic or manual management of one or two leisure batteries, even of different technology and amperage
- Specific starting battery output, when leisure batteries are 100% charged (e.g.: storage)
- It shows the batteries charging state
- Shows charge and discharge Ampere and tension
- Date and time visualization
- Battery switch-off automatic (below 11V) or manual, through the Touchscreen.
- It shows information and recommendations on the batteries management and maintenance
- Temperature monitoring during charge/discharge, for an improved security
- BlackBox/Display connection available through cable (cod. iM 12-150) and wireless (cod. iM 12-150W).



Sample screenshot Automatic and/or Manual

BLACKBOX		
Code	IM 12-150	IM 12-150W
Consum. with connected batt.	8mA	22mA
Consum. with disconnected batt.	4mA	4,2mA
Functional Mode	Automatic and Manual	
Relays Maximum Current	100A + 100A	
Rated Voltage	12V (9V - 18V)	
Working Temperature	-15°C / +65°C	
Batteries Disconnection Range	Voltage: 10,5V Temperature: 70°C	

DISPLAY TOUCH		
Code	IM 12-150	IM 12-150W
Maximum Bright Consumption	86mA	90mA
Display Off Consumption	38mA	40mA
Consum. with disconnected batt.	8mA	8mA
Connection Type	7mm Cable with Low Profile Connector	Wireless
Working Mode	Normal and Low Consumption	
Display Type	TFT2,83" / 262 k colors / touchscreen	
Working Temperature	-10°C / +70°C	

Among its multiple features, one of the most noteworthy is the automatic battery switch-off, which is activated under three different circumstances:

- When the voltage of one or both batteries is below the critical limit of 10,5V.
- When the voltage of one or both batteries stays below 11V for more than 15 minutes.
- When the temperature measured on one or both batteries is above the limit of 70°.

In this way, decreased efficiency and fatal damages are avoided.



TIPS

**Why avoiding the parallel?**

The parallel between several batteries, as well as not representing the maximum efficiency, constraints the purchase of batteries as similar as possible as brand, model, power. The two batteries will work together as one and the deficits of one will affect the other, reducing both their performances and durability.

When the parallel system experiences a fault, or a loss of efficiency, both batteries will need to be replaced.

# POWERSWITCH

## Automatic battery Switch

Cod. PS 12-100

POWERSWITCH is an automatic switch which allows managing two leisure batteries separately. Since electric consumption in Camper increases, you need greater quantities of energy available.

A second leisure battery can meet this need, as it ensures a broader range although it cannot be connected in parallel in case they are not "twins" (which means identical in terms of technology, amperage, brand and production lot).

### MAIN FEATURES:

- Automatic management of two batteries, also of a different technology and capacity
- Automatic (*below 11V*) or manual battery switch-off
- Up to 2000W management both input and output
- Remote control provided



### TECHNICAL FEATURES

Rated Voltage	12V
Relays Maximum Current	100A
Appliances Disconnection Voltage	10,5V
Self-Consumption	15mA
Display Cable Length	3mt
Size	121x108x50mm

# BATTERYSAVER

## Automatic battery switch-off

Cod. BS 12-100

BATTERYSAVER is an automatic battery switch-off which constantly monitors the battery voltage, disconnecting it from any utility in case it goes below the critical 11V threshold.

It thus protects the battery against any efficiency loss or fatal damage due to deep discharges. It also has a "Manual" mode button which allows disconnecting all the utilities at any moment.

Therefore, a manual restart is possible or automatic reset through a charging source (*e.g.: alternator, 230V charger or solar panel*).

### MAIN FEATURES:

- Automatic (*below 11V*) or manual battery switch-off
- Up to 1200W management both input and output
- Led Operation indicator
- Automatic battery switch back on (*when a charging source is available*)



### TECHNICAL FEATURES

Rated Voltage	12V
Maximum Current	100A
Appliances Disconnection Voltage	10,5V
Self-Consumption	4,5mA
Size	121x108x50mm



# SMARTSEPARATOR

## Automatic paralleling

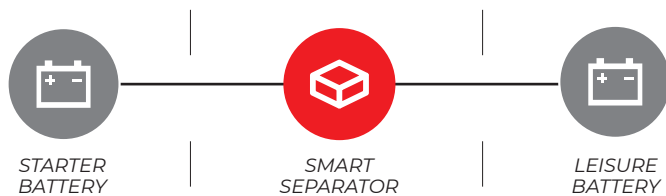
Cod. SS 12-100

SMARTSEPARATOR is an automatic device that allows the on-board management of a starting battery and a leisure battery.

Thanks to the integrated microprocessor, it will be able to monitor automatically the voltages of the connected batteries and will manage the main function of putting the starting and the leisure battery in parallel only in the event that the first one is in a state of charge.

This function allows vehicles to recharge the leisure battery with a simple and quick installation without having to use a parallel relay controlled by an ignition switch or D+.

Another important function is the manual or automatic battery switch-off that prevents deep discharges: if the leisure battery voltage drops below the critical threshold of 10.5V.



### TECHNICAL FEATURES

Rated Voltage	12V
Maximum Current	100A
Self-Consumption	5mA
ON / OFF Split-Charge Relay Voltage	13,3V / 12,7V
ON / OFF Battery Switch-Off	10,6V / 12V
Size	121x108x50mm

# POWERRELAIS

## Split charge relay / isolator

Cod. RL 12-200

POWERRELAIS is a paralleler, isolator between the engine battery and service battery compatible with all 12V battery technologies: lead/acid (AGM, Gel, Wet), Lithium.

### MAIN FEATURES:

- Maximum supported current 200A
- D+ or Ignition+ signal activation
- High conductivity contacts



### TECHNICAL FEATURES

Rated voltage	12 V
Maximum Current	200 A
Coil power	2 W
Operate time	≤ 10 m <sup>5</sup>
Release time	≤ 5 m <sup>5</sup>
Size	85X50X51mm



**INVERTER**





**SMART-IN**  
The **high-quality** inverter

40



**SMART-LINK**  
DC Link manager

44



**PRIORITY SWITCH**  
IVT Function

45



**POWERNEGATIVE**  
Negative Booster

45





# SMART-IN

The **high-quality** inverter

-  HIGH EFFICIENCY
-  PROFESSIONAL COMPONENTS
-  INTEGRATED PRIORITY CIRCUIT (IVT) OPTION

SMART-IN are the inverters, remarkable for design and quality. Designed to provide high performances, maximum safety, reliability and, above all, silent operation, important for those who install the inverter inside the recreational vehicle.

The SMART-IN family consists of two lines: Modified and Pure distinguished by the output waveform. The two product lines cover a wide range of powers from 400W to 3000W, with the possibility (for some models) to have 24V input voltage.



### PROFESSIONAL CONNECTORS

Connections welded directly to the PCB with high conductivity bars prevent voltage drops, power losses and lower battery consumption.



### IN/OUT IVT INVERTER

The standard versions have one or two output sockets, while for the models with IVT (*integrated priority function*), there is one output socket and one input socket (IEC), protected by a fuse, where the external main is connected.



### EASY INSTALLATION

The integrated mounting feet allow a safe installation in any position. Supplied with ultra-flexible input connection cables, specific and already sized for the device.



**MAIN FEATURES:**

- High efficiency up to 93%
- Low self-consumption
- Input with professional connectors
- Predisposition for remote control ON/OFF
- Input and output completely isolated

**PROTECTIONS:**

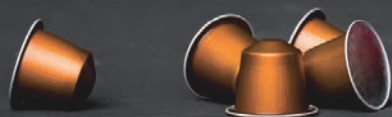
- Soft Start
- Protection against overload and Short circuit
- Low battery alarm
- Protection against polarity inversion
- Over-temperature protection

**You just need a good inverter for a good coffee.**

SMART-IN PURE:

- **SP - 1500**
- **SP - 1500-i**
- **SP - 2000-i**
- **SP - 3000**

*In RV, like at home!*



TIPS

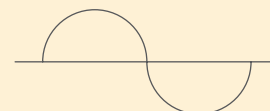
**Pure or Modified Wave?**

**Smart-In Pure**, with sophisticated electronics, generates a 230V output with “*pure sine wave*”, the same type of domestic electrical network. An essential solution for sensitive and valuable devices, such as laptop PCs, air conditioners, coffee machines.

**Smart-In Modified**, with a relatively simpler and cheaper electronic circuit than the Pure version, generates a “*modified sine wave*”, **similar to a square wave**.

This series is recommended for simpler loads, such as lighting, resistive loads... etc.

*Remember: The modified wave may shorten the life of your devices.*



PURE SINE WAVE



MODIFIED SINE WAVE



PLUS

DISCOVER ALL ACCESSORIES FOR INVERTERS AT PAG. 44

# SMART-IN MODIFIED

**Modified** sine wave



## TECHNICAL FEATURES

CODE	INPUT VOLTAGE	CONTINUOUS POWER	PEAK OUTPUT POWER	OUTPUT VOLTAGE	USB OUTPUTS	SIZE (mm)	CABLE INCLUDED
SM 400	12V	400W	800W	230Vac	5V 2,1A	185x140x70h	6mm <sup>2</sup> length 80cm
SM 600	12V	600W	1200W	230Vac	5V 2,1A	215x140x70h	10mm <sup>2</sup> length 80cm
SM 1000	12V	1000W	2000W	230Vac	5V 2,1A	270x270x108h	16mm <sup>2</sup> length 80cm
SM 1500	12V	1500W	3000W	230Vac	5V 2,1A	270x270x108h	25mm <sup>2</sup> length 80cm

### 24V

SM 600-24	24V	600W	1200W	230Vac	5V 2,1A	215x140x70h	10mm <sup>2</sup> length 80cm
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# SMART-IN PURE

**Pure** sine wave



## TECHNICAL FEATURES

CODE	INPUT VOLTAGE	CONTINUOUS POWER	PEAK OUTPUT POWER	OUTPUT VOLTAGE	USB OUTPUTS	SIZE (mm)	CABLE INCLUDED
SP 400	12V	400W	1000W	230Vac	5V 2,1A	215x140x70h	6mm <sup>2</sup> length 80cm
SP 600	12V	600W	1500W	230Vac	5V 2,1A	245x140x70h	10mm <sup>2</sup> length 80cm
SP 1000	12V	1000W	3000W	230Vac	5V 2,1A	305x270x108h	16mm <sup>2</sup> length 80cm
SP 1500	12V	1500W	4000W	230Vac	5V 2,1A	325x270x108h	25mm <sup>2</sup> length 80cm
SP 3000	12V	3000W	8000W	230Vac	5V 2,1A	450x270x108h	35mm <sup>2</sup> length 80cm

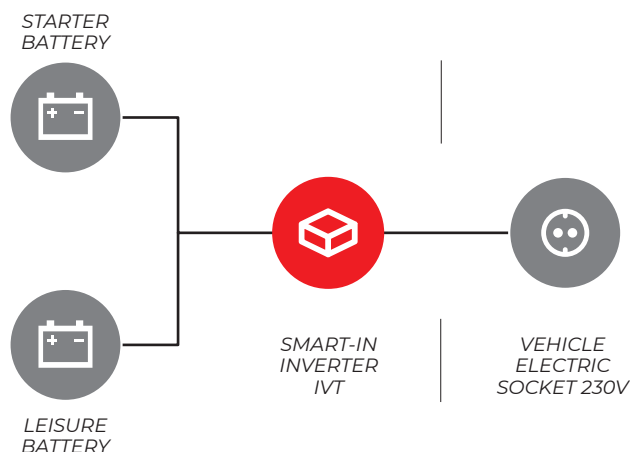
### 24V

SP 600-24	24V	600W	1500W	230Vac	5V 2,1A	245x140x70h	10mm <sup>2</sup> length 80cm
SP 1500-24	24V	1500W	4000W	230Vac	5V 2,1A	325x270x108h	25mm <sup>2</sup> length 80cm
SP 3000-24	24V	3000W	8000W	230Vac	5V 2,1A	450x270x108h	35mm <sup>2</sup> length 80cm



# SMART-INPUREIVT

Pure sine wave



SMART-INPURE with IVT function is a line of inverters with an integrated system of priority (Priority Switch type). This special IVT function, through the two input and output 230V sockets, allows the management of the voltage that comes out from the inverter connected to the battery and to the external mains.

When the electronic network is available is connected to the external grid, it will have the priority in order to preserve the battery; otherwise, when the main is disconnected, the inverter use the battery to supply the 230V.

### DISTINCTIVE FEATURES:

- By-pass integrated function
- Relay time change from inverter 230 VAC to external main= 20 ms
- Relay time change from 230 VAC



### TECHNICAL FEATURES

CODE	INPUT VOLTAGE	CONTINUOUS POWER	PEAK OUTPUT POWER	OUTPUT VOLTAGE	USB OUTPUTS	SIZE (mm)	CABLE INCLUDED
SP 1000-I	12V	1000W	3000W	230Vac	5V 2,1A	305x270x108h	16mm <sup>2</sup> length 80cm
SP 1500-I	12V	1500W	4000W	230Vac	5V 2,1A	365x270x108h	25mm <sup>2</sup> length 80cm
SP 2000-I	12V	2000W	6000W	230Vac	5V 2,1A	390x270x108h	35mm <sup>2</sup> length 80cm



TIPS

## What is the **IVT** function?

More frequently, the inverter is the only solution for powering loads in the vehicle, but its dimensions and power (*above 1000W*) make it impractical to move as required. The **IVT** function is a priority system that allows the inverter to automatically power itself from the 230V mains, when available, and return to using the battery when necessary.

This function makes it possible to safely connect the inverter output to the vehicle's electrical circuit, so as to always have all the sockets powered, leaving the inverter conveniently installed near the leisure battery.



# SMART-LINK

## DC Link Manager

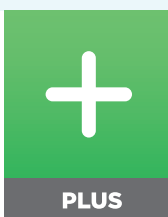
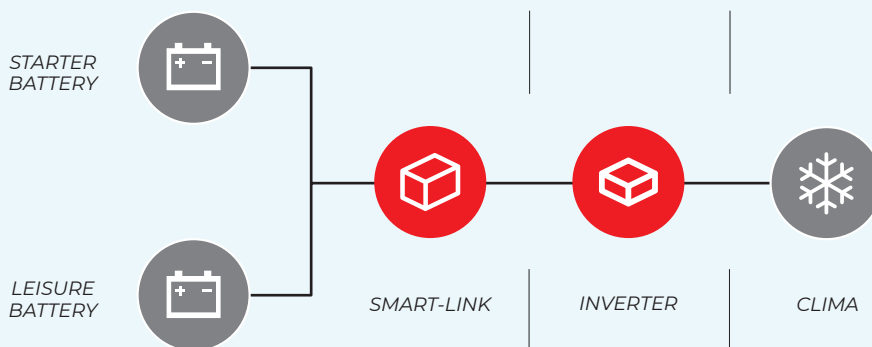
Cod. SL 12-100

It is an intelligent 12V DC power distributor that can be installed on any system, and combined with an inverter, allows the use of heavy loads, even when the vehicle is running, always keeping the electrical system and the batteries safe.

By connecting to SMART-LINK: inverter, starting battery and leisure battery you can use air conditioners,

without risk (*with batteries of adequate capacity*).

The device is equipped with a three-way connector to which are connected the contacts of a dedicated relay (A, B and C) that can be used, e.g. to manage air conditioners with an economy function, temporarily turning off the compressor and leaving the rest of the circuit active.



# ACCESSORIES

## Inverter



### REMOTE CONTROL

Remote control for inverter. Allows to turn the inverter on and off from distance.

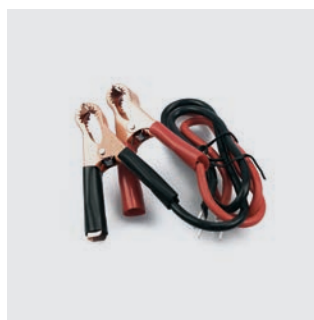
Cod. **RC02 • RC03**



### FUNCTIONAL CONNECTOR

ON/OFF Remote control adaptor for inverters, to connect to every remote control.

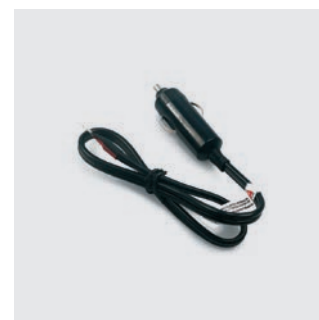
Cod. **FC02**



### 4mm<sup>2</sup>/6mm<sup>2</sup> CABLES

4 mm<sup>2</sup> cables with clips, 60cm length.  
6 mm<sup>2</sup> cables with clips, 60cm length.

Cod. **BVR4 • BVR6**



### CAR LIGHT ADAPTER

2,5 mm<sup>2</sup> cables 50 cm length, with connector.

Cod. **CLB01**



# PRIORITYSWITCH

Cod. SP 230

## IVT Function

PRIORITYSWITCH is an intelligent system that allows the use of the inverter and batteries only when it is really necessary. It is a management system of the 230V, useful when the system has two power sources: electrical network and an inverter connected to the battery.

By connecting the two power sources to the input of the PRIORITYSWITCH, the external main will always have the priority. There are two outputs, the first one to connect all loads to be used only when the main network is present, such as air conditioners, refrigerators and other big loads; the second output, instead, is dedicated to all the accessories that can be powered either by the inverter than from the main, for example, the 230V sockets of the vehicle.



### TECHNICAL FEATURES

Voltage Input/Output	230Vac / 230Vac
Maximum Output Current	13A
Fuse	15A
Inverter Maximum Power	3000W
Self-consumption	30mA only grid
Size	145x133x55mm

# POWERNEGATIVE

## Negative Booster

The DC-DC voltage converters **NDS** line are electronic devices that can reduce a voltage of 17 ~ 32VDC in a constant of 14V ± 10%. Three different versions are available, with an output power of 10A, 30A, 60A depending on the model. The devices appear to be very useful in all those situations where it is necessary to supply utilities with 12V rated voltage but the vehicle or the power source has a voltage of 24V.



### MAIN FEATURES:

- DC-DC reducer
- Automatic charge limitation
- Soft start
- Ideal for 24V vehicles with 12V loads

CODE	PN 2412-10	PN 2412-30	PN 2412-60
Input Voltage	13V - 40V	13V - 40V	13V - 40V
Output Voltage	14V ± 10%	14V ± 10%	14V ± 10%
Maximum Output Power	10A	30A	60A
Maximum Power	140W	400W	800W
Self-Consumption	35mA	98mA	220mA
Size	121x91x48mm	152x91x48mm	238x178x68mm

A photograph of a motorhome at night. The interior lights are on, and the scene is illuminated by two lanterns on a table in the foreground. The word "BATTERIES" is overlaid in white text.

# **BATTERIES**





**TEMPRA**  
Top Notch **Lithium** battery

48



**3LION**  
**Lithium** leisure battery

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**ENERGYSERVICE**  
**Wet** leisure battery

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**STARTPOWER**  
**Wet** starter battery

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**GREENPOWER**  
**AGM** high performances leisure battery

54



# TEMPRA

Top notch **LITHIUM BATTERY**

🎯 150Ah IN A STANDARD L5 (100Ah)

🎯 OPERATIONAL EVEN AT LOW TEMPERATURES

🎯 EVERYTHING UNDER CONTROL WITH DISPLAY DTB01 AND MOBILE APP

TEMPRA Lithium battery is the new generation LiFePO<sub>4</sub> top notch battery, designed and manufactured entirely in Italy.

The TEMPRA battery has the best power-to-weight ratio on the market thanks to the new NDS HDP (high density power) cells, a concentration of power in reduced space!

Where before there were 100Ah, now there are 150Ah: 50% more autonomy for your holidays. Up to 150Ah capacity in the size of a standard L5 box (fits under the Fiat Ducato seat).

The safety systems of the new BMS also include optimal charge management, so you can connect your TEMPRA battery to any charger, even those designed for lead-acid batteries. The charge management and Smart Balance of the BMS ensure that the cells are always efficient and perform over time.

The heated versions provide for use in extreme temperatures, down to a maximum of -30°C, so that the batteries can be used in all weather conditions.

The N-BUS system makes the TEMPRA battery an integral part of the NDS energy ecosystem that can be controlled via Display Bus and NDS Mobile app.





**50% MORE CAPACITY  
SAME SIZE**

New NDS HDP cells, the best weight to power ratio in the category



**COMPATIBLE WITH  
ANY CHARGER**

and charging source



**OPERATIONAL EVEN  
AT LOW TEMPERATURES**

down to -30°C with the heated version



**SMART BMS**

for optimal battery management in any situation



**EVERYTHING UNDER CONTROL**

with Display Bus DTB01 and NDS Mobile App

Choose the right **TEMPRA** model for your needs

**AVAILABLE MODELS AND TECHNICAL FEATURES**

Code	TLB 100	TLB 100 F	TLB 120	TLB 120 F	TLB 150	TLB 150 F
Voltage	12,8V	12,8V	12,8V	12,8V	12,8V	12,8V
Capacity	100Ah	100Ah	120Ah	120Ah	150Ah	150Ah
Max continuous discharging current	100A	100A	120A	120A	135A	135A
Max discharging current 15 min.	150A	150A	155A	155A	160A	160A
Max charging current	1C	1C	1C	1C	1C	1C
Charging temperature	-10° C / +45° C	-20° C / +45° C	-10° C / +45° C	-20° C / +45° C	-10° C / +45° C	-20° C / +45° C
Discharge temperature	-30° C / +60° C	-30° C / +60° C	-30° C / +60° C	-30° C / +60° C	-30° C / +60° C	-30° C / +60° C
Heating	No	Yes	No	Yes	No	Yes
Weight	12,7Kg	12,8Kg	13,4Kg	13,5Kg	16Kg	16,1Kg
Size (mm)	341x176x190h	341x176x190h	341x176x190h	341x176x190h	341x176x190h	341x176x190h

With **TEMPRA** you can connect up to 4 batteries



**COFFEE  
MACHINE**



**MICROWAVE  
OVEN**



**AIR  
CONDITIONER**



**HAIRDRYER**



**E-BIKE**

Relaxing at the perfect temperature thanks to the air-conditioning, enjoys a hot coffee at the touch of a button, showering and being able to dry your hair afterwards, are luxuries that you can usually only enjoy when your motorhome is connected to the mains hook-up. Not anymore, thanks to **TEMPRA Lithium battery**.



PLUS

# NDS CONTROLLER

## Display Bus and NDS App mobile

Devices with **N-BUS** protocol, such as **TEMPRA Lithium battery**, can be controlled –by a single **Display Bus** (optional) and **NDS mobile app**.

Controlling **TEMPRA** via the **Display Bus** or via the **NDS mobile app** is easy and intuitive, you can monitor all battery parameters, check state of

charge (SoC), charge and discharge current, health status, automatic or manual battery disconnect function, battery temperature, remaining charge or discharge time.

With **Display Bus** and **NDS App Mobile**, your entire energy system is just a click away.

Display Bus DTB 01



NDS mobile App



## BENEFITS



### FAST CHARGE

The **TEMPRA** battery accepts super-fast charges up to 1C. Simply switch on the vehicle engine for 30 minutes to ensure a day's autonomy!



### 70% LESS WEIGHT

The high-density HDP NDS cells with chemistry (Li-FePO<sub>4</sub>) make **TEMPRA** a powerhouse, and the weight saving is incredible: **over 70% less weight** than a lead/acid battery of the same capacity!



### HEAVY DUTY

Up to 4 hours with air conditioning on and **up to 50% longer battery life** than a conventional lithium battery. The **TEMPRA** battery withstands, without damage, heavy energy demands such as air conditioning, coffee machines, hair dryers and general inverter use.



### ZERO MAINTENANCE

Chemistry and internal electronics combine to make this type of battery **completely maintenance-free**.



### HIGH CYCLE LIFE

The charging cycles of a lithium battery can seem almost infinite! **It is possible to reach 3000 cycles with 80% depth of discharge, but avoiding excessive discharges, it can reach up to 5000!**



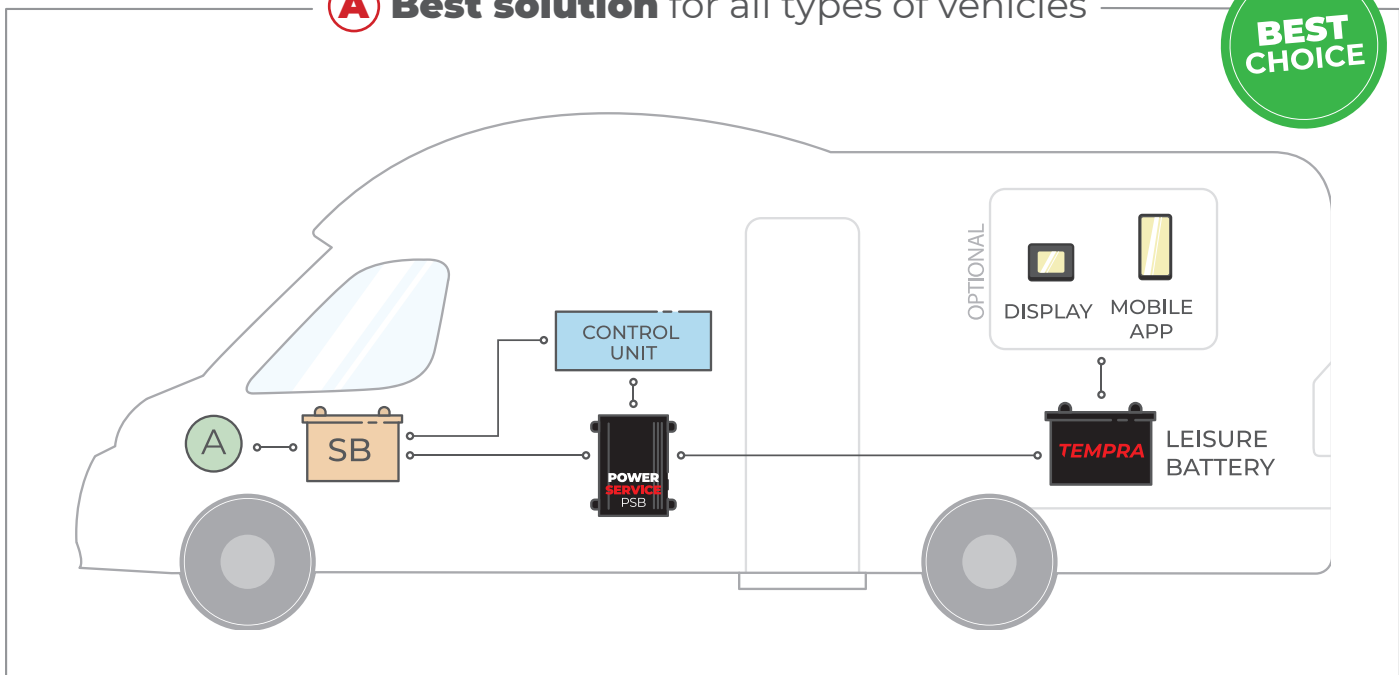
### SAFE AND RELIABLE

The chemistry (LiFePO<sub>4</sub>) gives the battery an innate thermodynamic stability, the powerful integrated **BMS** (Battery Management System) protects the battery from incorrect charging voltages, short circuit/polarity reversal, overvoltage, over-discharge.



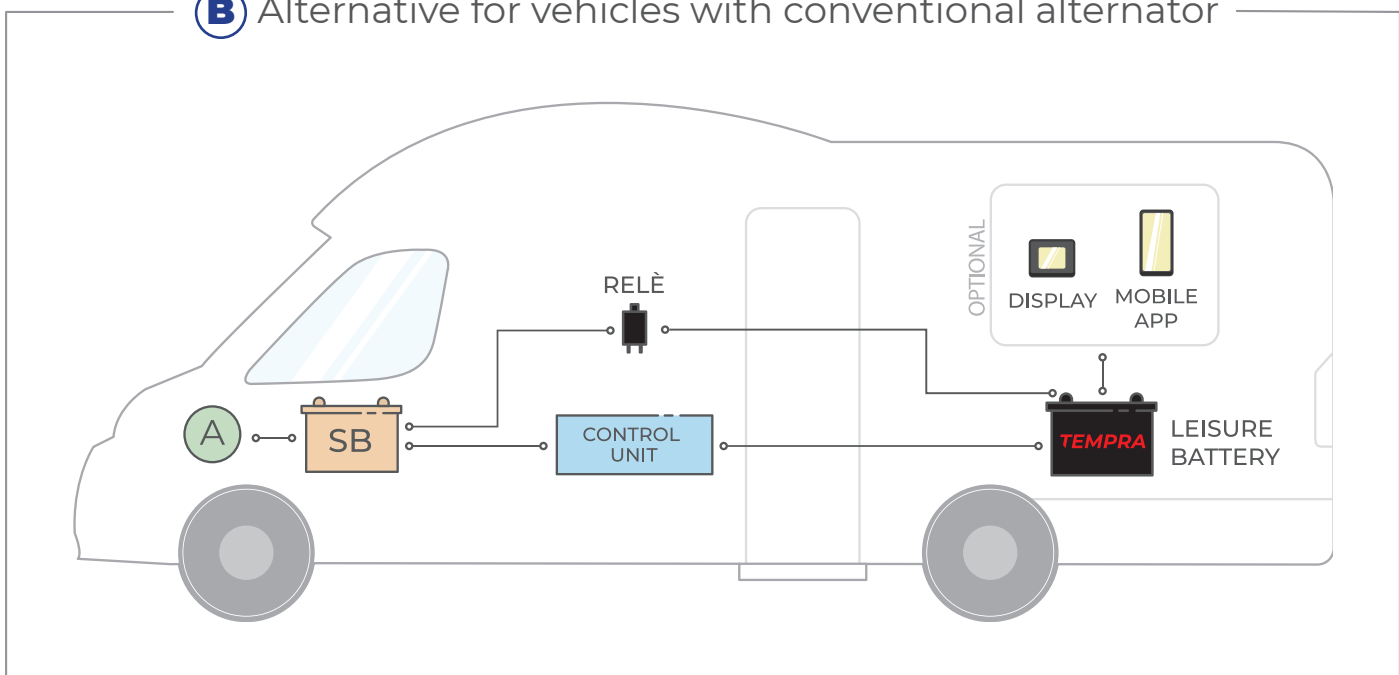
# Choose the right solution for you

**A** Best solution for all types of vehicles



Using Power Service as the charging system, the battery will always be charged quickly and with the correct charging parameters for each battery type: Lithium or Lead/Acid (AGM, Gel, Wet). Display DTB01 and Mobile App are optional.

**B** Alternative for vehicles with conventional alternator



In vehicles with conventional alternators, if a DC-DC (Best Choice) is not installed, the use of the Power-Relais NDS Separator Relay is recommended. This creates a direct charging line from the starter battery, bypassing the vehicle's original electrical system and preserving it from any stress and damage.

# 3LION Lithium leisure battery



3LION Lithium batteries are ideal in all applications with higher efficiency, where previously Lead acid battery was used!

3LION batteries don't suffer deep discharges and can support heavy-duty equipment such as caravan movers, small electric motors such as winches or lifts, and other similar loads.

## MAIN FEATURES:

- Maximum power, minimum space required
- Fast Charge Ready
- Long life, over 2500 cycles
- Low weight: 60% less than traditional batteries
- Sulphation and maintenance free
- Maximum safety and reliability

Model	L20	L30	L60	L100 B	L100	L150 P
Capacity	20Ah	30Ah	60Ah	100Ah	100Ah	150Ah
Energy	256Wh	384Wh	768Wh	1280Wh	1280Wh	1920Wh
Tecnology	LiFePO <sub>4</sub>	LiFePO <sub>4</sub>	LiFePO <sub>4</sub>	LiFePO <sub>4</sub>	LiFePO <sub>4</sub>	LiFePO <sub>4</sub>
Rated Voltage	12,8V	12,8V	12,8V	12,8V	12,8V	12,8V
Self-discharge	3% month	3% month	3% month	<3% month	<3% month	<3% month
Max discharging current	20A	30A	60A	140A	140A	175A
Max charging current	20A	30A	60A	100A	100A	150A
Max charging voltage	14,4V	14,4V	14,4V	14,4V	14,4V	14,4V
Weight	2,7 Kg	4,2 Kg	7,9 Kg	13,3 Kg	13,8 Kg	20,7 Kg
Size mm	181x76x166	194x130x162	257x132x200	337x175x190	327x172x227	485x172x241



BEST WITH

## 3LINK Black Box e Display

3LINK is the control unit with touch screen display for managing and monitoring the 3Lion system. Leaving the original system unchanged, and connecting the 3LINK: 3LION Battery, Engine Battery and all on-board appliances (control unit, battery charger, inverter etc.), it will be possible to optimally recharge the Lithium battery with high currents while driving, without damaging the original electrical system on all types of vehicles.





# ENERGYSERVICE Wet leisure battery



ENERGYSERVICE are semi-traction batteries specific for services, built with thicker plates with radial geometry and microporous glass mat separator, which ensure a high performance.

**MAIN FEATURES:**

- Designed for Deep Cycles
- Vibration resistant
- Corrosion resistant thanks to a perfect contact with the active material
- Longer battery “life”

CODE	VOLTAGE	CAPACITY (Ah)			SIZE (mm)		
	VOLT	20h	10h	5h	LENGTH	WIDTH	HEIGHT
ES 80	12	80	74	66	278	175	190
ES 100B	12	100	96	85	353	175	190
ES 100	12	100	96	85	323	175	223

# STARTPOWER Wet starter battery



STARTPOWER are high-performance batteries, built with high-efficiency lead/calcium alloy plates. The high cranking power Premium line has lids Magic Eye charge battery indicator.

**MAIN FEATURES:**

- Designed for starter
- Vibration resistant
- Low water consumption

CODE	BOX	Ah	A (EN)	SIZE (mm)		
				LENGTH	WIDTH	HEIGHT
STANDARD						
600.115.072	D31	100	720	308	175	223
610.042.095	L6	110	950	393	175	190
610.110.072	CB	110	720	345	175	230
PREMIUM						
580.121.072	L3/B	80	720	278	175	175
590.122.080	L4/B	90	800	315	175	175
600.044.085	L5	100	850	353	175	190



# GREENPOWER

## AGM high performances leisure battery

- ⊙ AUTONOMY, 40% MORE THAN A CONVENTIONAL BATTERY
- ⊙ BATTERY LIFE, 4-7 YEARS UP TO 1200 CYCLES
- ⊙ USE, PLACEABLE IN ANY POSITION AND MAINTENANCE-FREE

Non-stop research led NDS technicians to create in 2000 the GREENPOWER, an AGM (Absorbent Glass Mat) battery with gas (VRLA) recombination for specific use in services or leisure vehicles.

GREENPOWER The “LONG LIFE” oxygen-recombination leisure battery with slow discharge.

The **BEST** for leisure vehicles!

GREENPOWER is built with special high- density lead-calcium alloy plates, which raise charge retention for a low self-discharge (Fig.1) and a high number of cycles (Fig.2).

The electrolyte liquid is absorbed by its special glass mat separators, which prevent any leaks and allow to place batteries in any position and/or inclination, keeping constant efficiency.

The reinforced grids of the separators ensure a higher resistance against vibrations.



**CHARGE RETENTION**

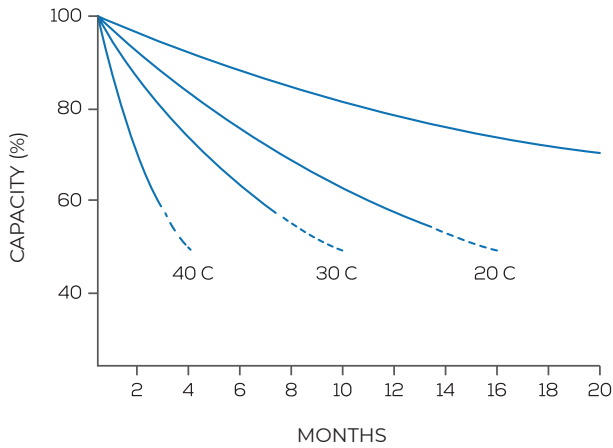


Fig. 1

**LIFE CYCLES**

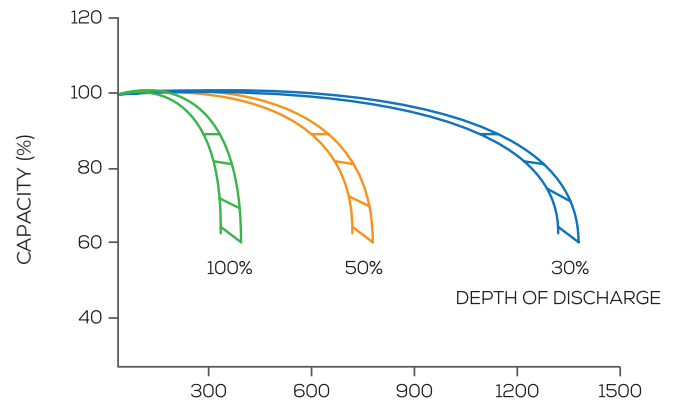


Fig. 2

GREENPOWER VRLA (Valve Regulated Lead-acid) system can recombine the gasses generated during charge and discharge, making GREENPOWER a totally hermetic and safe battery, free of any kind of maintenance. The case is ABS flame retardant (UL 94-VO), the rust-proof terminals resist corrosion and the cover includes the VRLA safety pressure valves.

The battery life can be affected by several factors.

- The Depth of discharge: avoid discharging the battery beyond the maximum 11V;
- The duration of discharge: do not leave the battery discharged after use;

The charging method: provide the best and most appropriate level of charge.

GREENPOWER batteries can be charged by an alternator, electronic charger and solar panels, complying with the recommended parameters (Fig. 3).

**CHARGING PARAMETERS**

CONTROL USE	CHARGING METHOD	CHARGING VOLTAGE AT 20°C (V/EL.)		TEMPERATURE COEFFICIENT FOR CHARGING VOLTAGE (mV/°C/EL.)	MAX CHARGING CURRENT (CA 100%)	CHARGING TIME AT 0,1 CA TEMP. 20°C (in hours)		CHARGING TEMPERATURE (°C)
		12V	6V			FLAT	50% FLAT	
STAND-BY	CONSTANT VOLTAGE CONSTANT CURRENT (with control ON charging current)	13,5 - 13,8	6,75 - 6,90	-3,0mV °C/EL	0,3 C	24	20	FROM -10°C TO 60°C
CYCLIC		14,4 - 14,9	7,20 - 7,45	-5mV °C/EL	0,3 C	16	10	

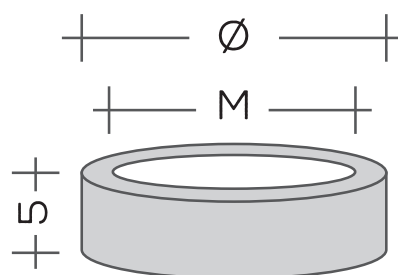
Tabella 3

## Available **models** and technical features

CODE	VOLTAGE	CAPACITY (Ah)			SIZE (mm)			TERMINALS
	VOLT	20h	10h	5h	LENGTH	WIDTH	HEIGHT	
GP 60	12	60	58	54	260	168	214	F11
GP 80	12	80	74	66	350	167	179	F11
GP 80S	12	80	74	66	260	168	214	F11
GP 90	12	90	85	75	306	169	214	F11
GP 90 B	12	90	85	75	350	166	185	F12
GP 100	12	100	96	85	330	171	220	F12
GP 100B	12	100	93	82	350	166	185	F12
GP 120	12	120	115	92	330	171	220	F12
GP 140	12	140	130	119	342	172	285	F12
GP 150	12	150	142	135	485	172	242	F12
GP 200	12	200	192	170	532	207	219	F12
GP 210	12	210	198	183	522	238	221	F12
GP 250	12	250	236	210	521	269	223	F12
GP 6-235	6	235	220	198	243	187	276	F12

### TERMINALS

TYPE	M	Ø
F11	6	14
F12	8	16
F13	5	12
F14	6	18
F15	8	18



### TECHNICAL SPECIFICATIONS

HERMETIC	TEMPERATURE	CONSTRUCTION TECHNOLOGY	STANDARD
Without exhalations and acid leakage Free of maintenance <b>DO NOT OPEN</b> Inclinations MAX 90°	Stated capacity at 25°C 3°C Operating range from -25°C / 55°C	Lead/Calcium alloy Glass matt separators ABS Case (UL 94-HB)	Compliance with the regulations IEC, JIS, EN Classified as NON HAZARDOUS



# TOOLS



## POWERCHARGER BATTERY

The Powercharger battery has a built-in system that can manually allow an up to 72 hour intensive desulfation process.

This lets the battery recover its efficiency lost due to sulfate crystals on plates. Lab tests prove that more than 80% of low yield batteries are 100% recovered (if sulfation is not irreversible).

Cod. **PCB 12-20**



## POWERTEST BATTERY

PowerTest battery lets you measure how many Ampère/hour a battery can have, therefore establishing its actual capacity.

This is useful to know the efficiency status of leisure batteries.

Cod. **PTB 12-20**



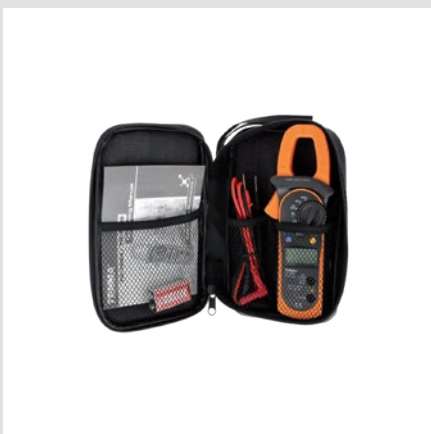
## ELECTRONIC SWITCH

Electronicswitch is an electronic device that can be used instead of the alternator's D+.

According to the starting battery voltage variation, it enables or disables with an hysteresis of about 500mV.

The Electronicswitch lets the PowerService switch on and can also be used to commute any 12V relay.

Cod. **INT 12T**



## DIGITAL AMPEROMETRIC CLAMP

Digital amperometric clamp with a digital multimeter. LCD 3 1/2 Digit (3200 counts) display with 33-item bar graph.

Auto/manual indication of functions and symbols. Jaw-spread fit for 50 mm cable section. Case and leads supplied.

Cod. **MTA 101**



## BATTERY POLES

Pair of automotive poles for modification  $\varnothing 6$  and  $\varnothing 8$  mm hole.

Cod. **CPL 06 / CPL08**



## DENSIMETER

A densimeter is an ideal tool to determine the state of charge of a conventional lead acid battery.

It measures the specific weight of the electrolyte with a high precision scale in degrees Baume and specific weight with colored sections for rapid reading.

Cod. **DEN 100**







[WWW.NDSENERGY.UK](http://WWW.NDSENERGY.UK)

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