



Inverter-chargers

Battery monitoring



Engineered power

Inverters

Battery chargers

Battery splitters

Battery separators

DC/DC converters

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Experience and competences

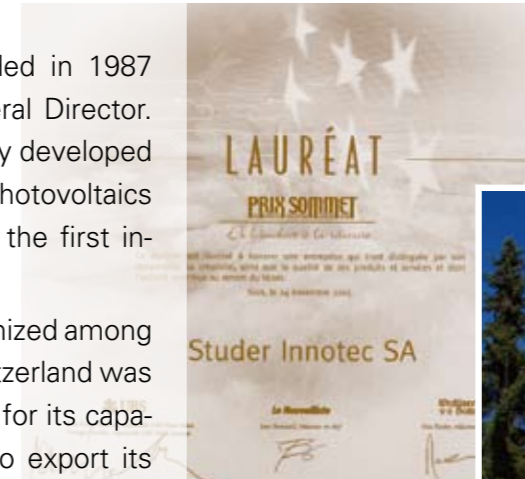
Studer Innotec Ltd. was founded in 1987 by Roland Studer, current General Director. From 1987 to 1991, the company developed its core competences in solar photovoltaics and in energy conversion, with the first inverters (DC/AC).

In 2005, the Sommet Prize, organized among others by the Union Bank of Switzerland was awarded to Studer Innotec Ltd., for its capabilities to innovate as well as to export its inverters.

95% Export Sales

The Twinpower launch in 1994, then the SI launch in 1995; two sine wave inverters with many years of unbeatable performances, make Studer Innotec's offer very attractive to demanding foreign markets.

These products are rooted in the start of Studer Innotec's export sales, which now account for more than 95% of the company turnover.



Photos credits
 Robert Hofer: Studer's products; Getek AS: p16; Jeanneau: p. 8 top; Meteorisk: p. 3, 36; Perspective: p. 5, 24; Siblik: p. 23; Steca: p. 6 bottom; Studer Innotec Ltd.: p. 13.

Graphism
 Atelier Perspective, R. Gigon, Sion.
 April 2011



Leadership

Today, Studer Innotec Ltd. is one of the world leaders in the inverter market. The company also manages a network of more than hundred « Distributors » around the world.

It manages a network of more than one hundred distributors in more than 70 countries.

Thanks to its exceptionally extensive product range, it is the only inverter manufacturer able to collectively cover the solar, nautical, mobile, backup and telecom markets.

Production Integration and Flexibility

The company's philosophy has always been to master the complete process: from development to product sales. This is why Studer Innotec Ltd., since its beginning, is a company vertically integrated; therefore, capable of far greater flexibility than its competitors.

In other respects, to turn the markets expectations into products and services, an 8 people team is fully dedicated to Research & Development.

The Performance Choice

Studer Innotec's high-tech concept of its products as well as the performance and reliability selection, drive Studer Innotec Ltd. to choose its components with the greatest care. This is the reason why the company has selected the latest technologies; such as digital signal processors (DSP) that provide higher efficiency to its inverters.

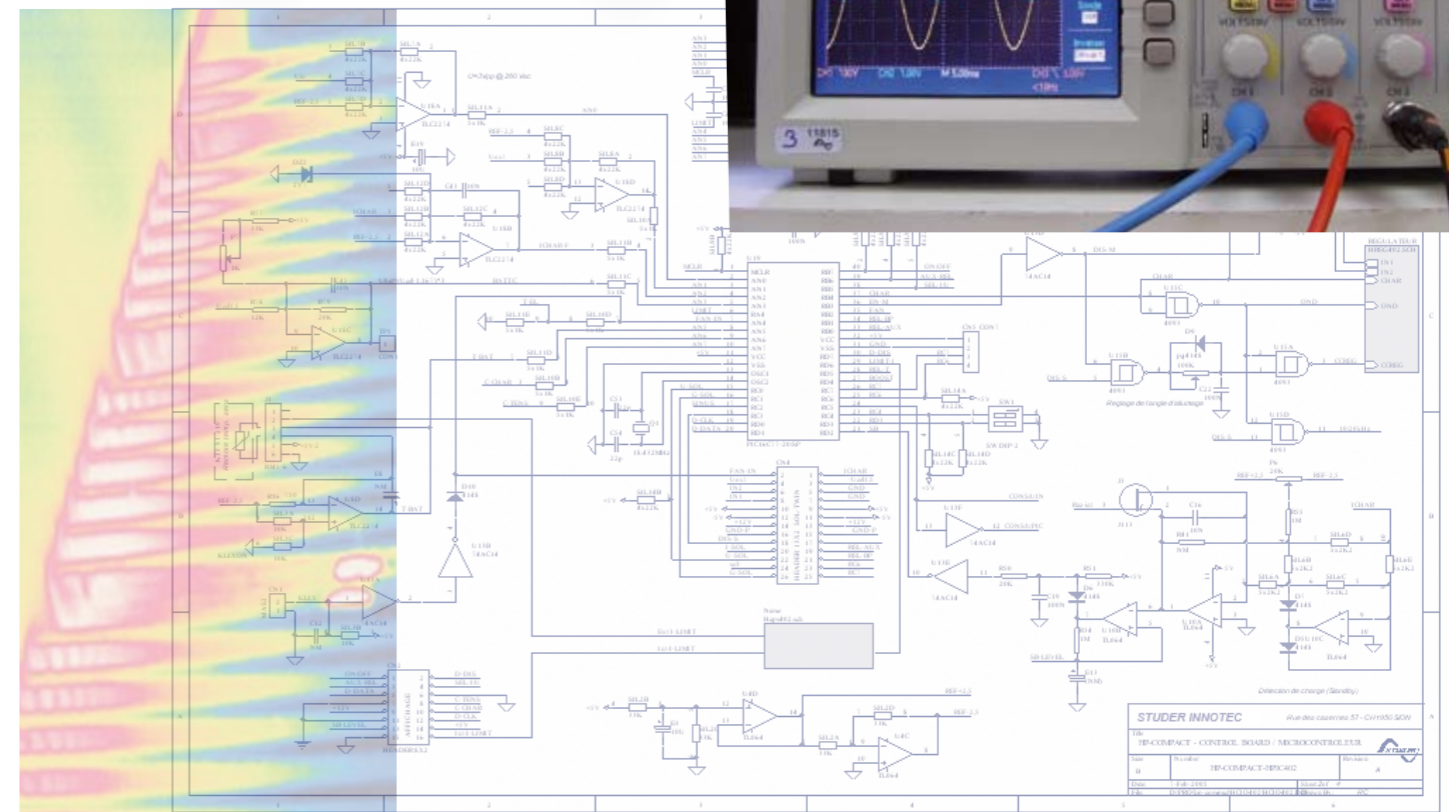
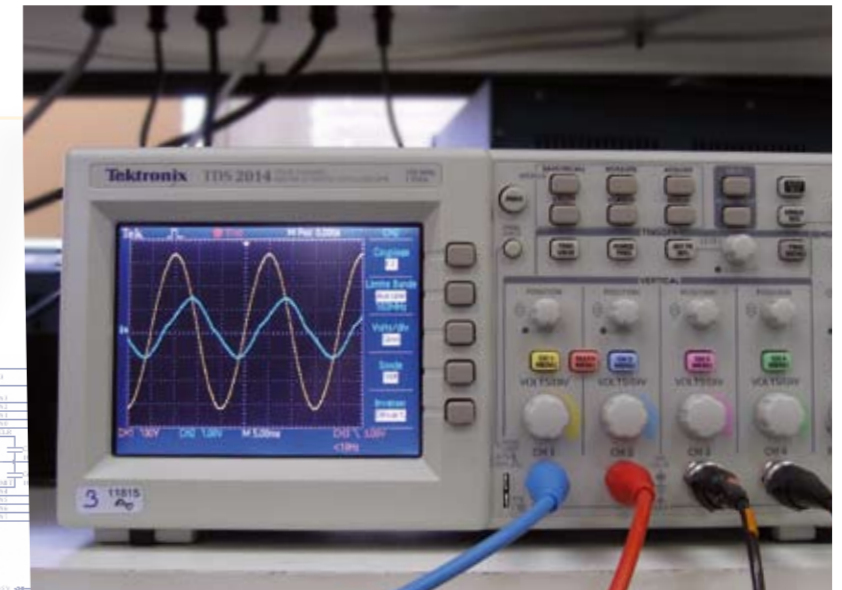


Ease in Use and Product Versatility

Quality choice will continue to guide Studer Innotec's strategic axis towards the future. Beyond performances, the next inverters will have increased ease in use and will offer greater versatility to the users.

Proximity with Clients

From research to industrialization, Studer Innotec Ltd. endeavors to carry on its human and financial investments in order to keep its lead in terms of global offer and proximity with clients. This closeness is maintained by a network of qualified service partners. Partner addresses can be found on the company website, under « Distributors ».



Applications in remote areas



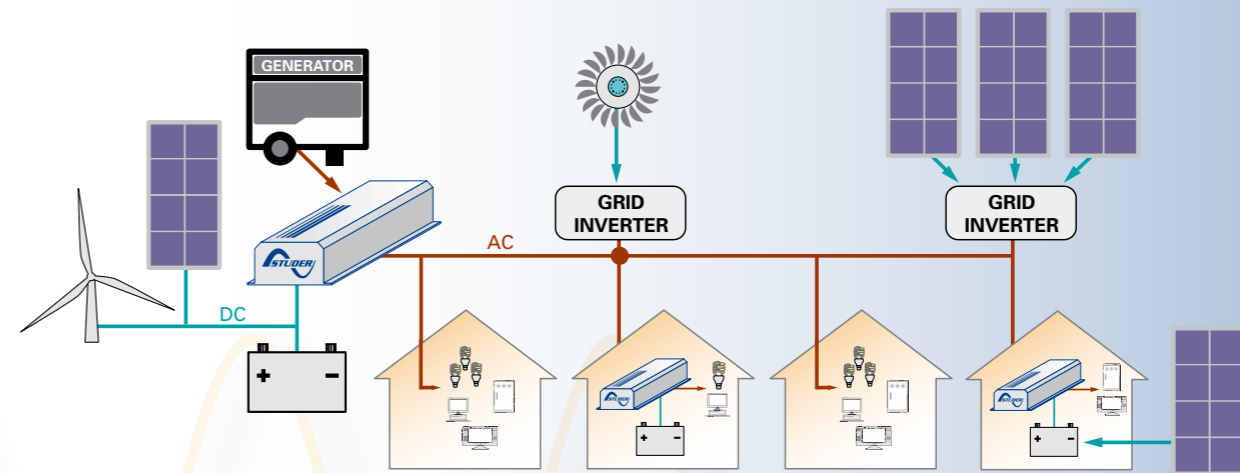
Security and comfort (lighting, heating, household appliances, leisure electronics, telecoms...) can now be provided by autonomous energy systems; when far away from any electrical grid, either by choice or reason.

These systems consist firstly of an energy source; normally a genset, a solar generator, a wind turbine or a combination of these; secondly of a battery storage, and then thirdly of devices (inverter-charger, battery charger) able to charge the battery from this energy source and to supply users with AC voltage (inverter, inverter-charger).

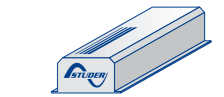
The examples below show the products in some stand-alone applications.



Village electrification

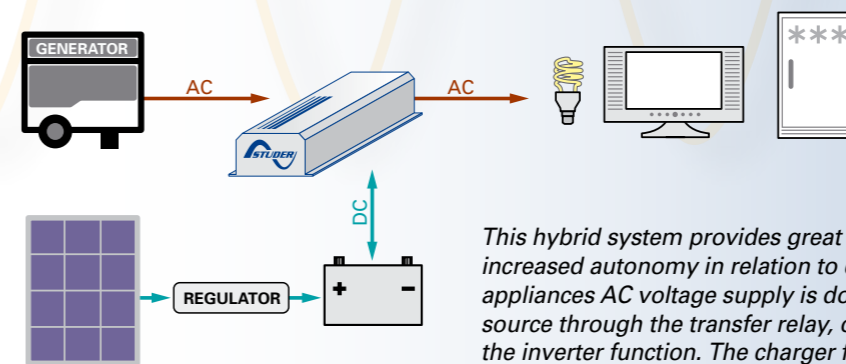


Various power sources supply energy to several consumer points.

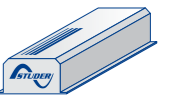


Xtender series p. 12
(1'000 - 72'000VA)

Hybrid system: more autonomy and flexibility



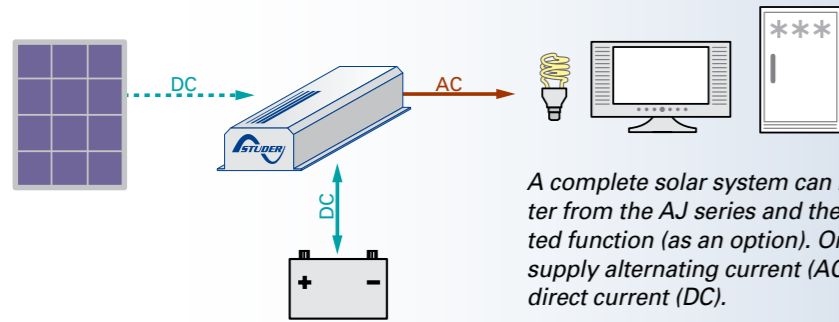
This hybrid system provides great flexibility in supply and increased autonomy in relation to each energy source. The appliances AC voltage supply is done directly from the energy source through the transfer relay, or from the battery through the inverter function. The charger function allows battery charging with the genset. The genset's size can be reduced thanks to the Smart-Boost function. (Application Note AN007/www.studer-innotec.com)



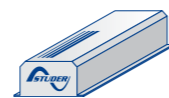
Xtender series p. 12
(1'000 - 72'000VA)

Compact series p. 18
(1'400 - 4'000VA)

A complete solar system

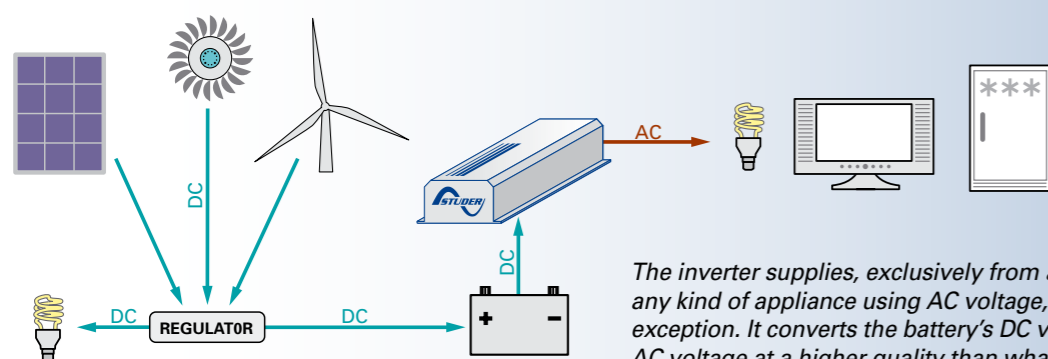


A complete solar system can be built by combining an inverter from the AJ series and the «solar charge control» integrated function (as an option). One single device can then both supply alternating current (AC) and charge the battery with direct current (DC).

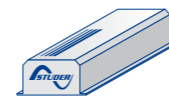


AJ series p. 20
(275 - 2'400VA)

Quality AC voltage for all electrical appliances



The inverter supplies, exclusively from a battery, any kind of appliance using AC voltage, without exception. It converts the battery's DC voltage into AC voltage at a higher quality than what is available from the public grid.

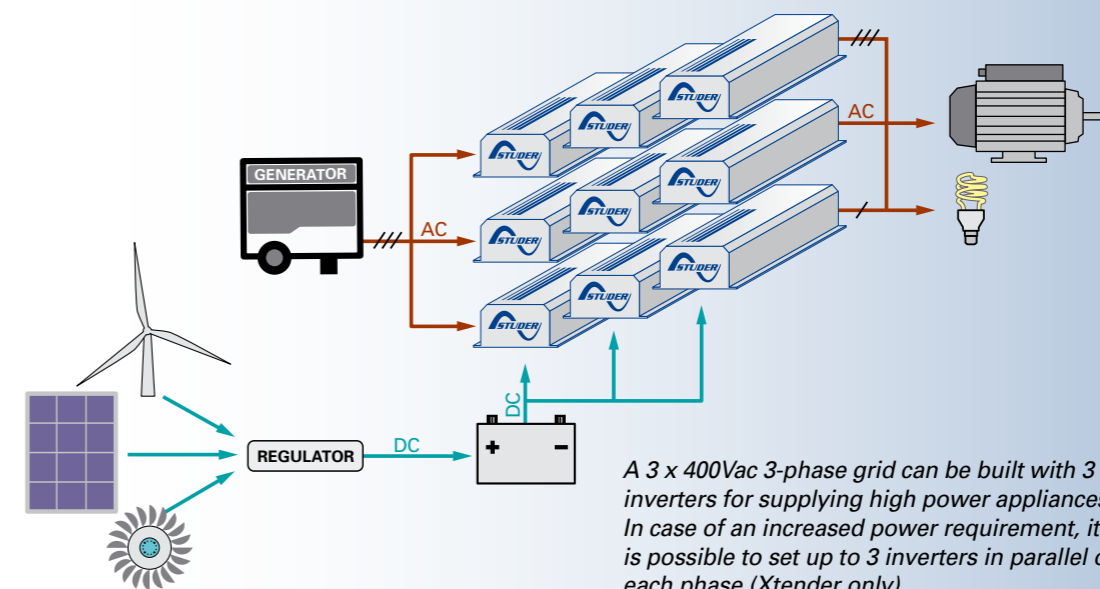


Xtender series p. 12
(1'000 - 72'000VA)

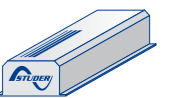
Compact series p. 18
(1'400 - 4'000VA)

AJ series p. 20
(275 - 2'400VA)

3-phase grid 3 x 400Vac for high power appliances



A 3 x 400Vac 3-phase grid can be built with 3 inverters for supplying high power appliances. In case of an increased power requirement, it is possible to set up to 3 inverters in parallel on each phase (Xtender only).



Xtender series p. 12
(1'000 - 72'000VA)

Mobile applications



A simple on-board energy system is often necessary to power the AC voltage appliances, while the vehicle or the boat is away from the electrical grid (port, garage, camping...).

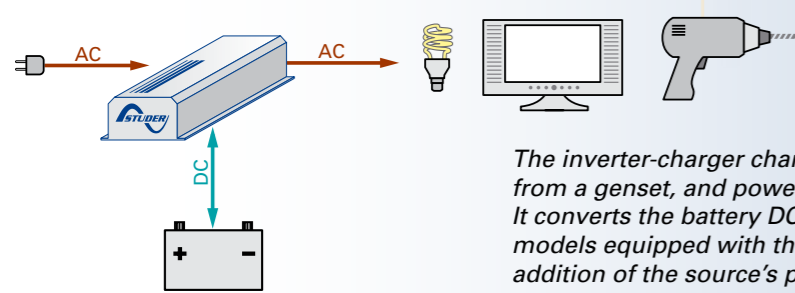
In this case, energy is stored in the battery, which is actually charged by power sources on-board, such as a genset, solar generator, wind turbine, alternator or a combination of these. Studer Innotec offers the product range that secures the management and conversion of

this energy, while securing an optimal power supply to the on-board appliances.

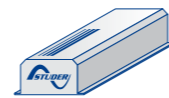
The examples below show our products in some mobile applications.



A simple and reliable on-board system



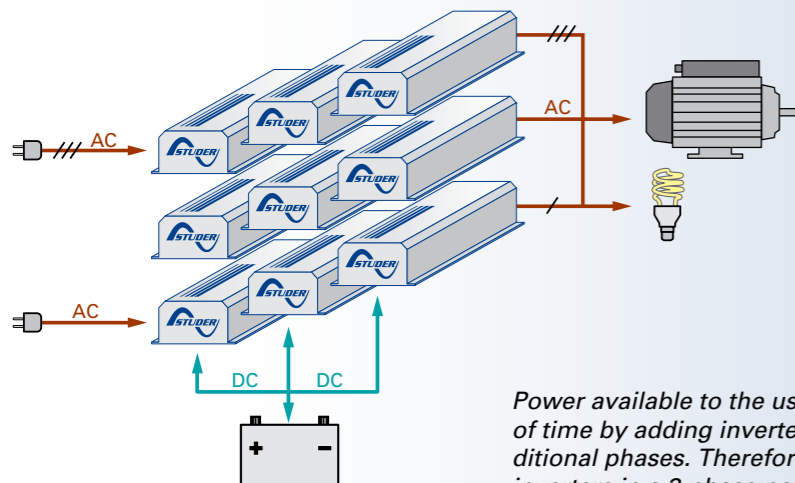
The inverter-charger charges the battery from the grid or from a genset, and powers any kind of electrical appliance. It converts the battery DC voltage to AC voltage. The models equipped with the Smart-Boost system enable the addition of the source's power to that of the inverter.



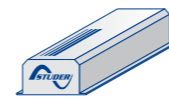
Xtender series p. 12 (1'000 - 72'000VA)

Compact series p. 18 (1'400 - 4'000VA)

An upgradeable power

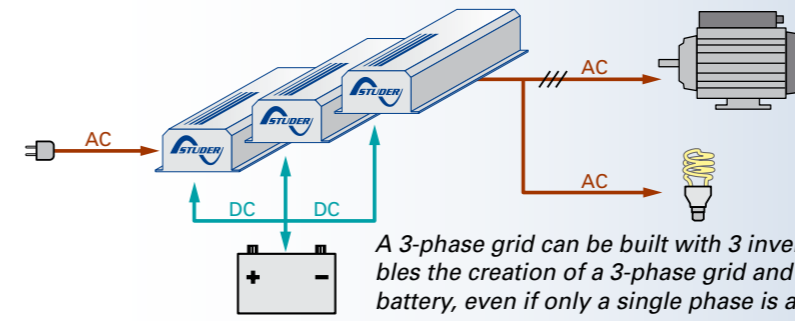


Power available to the users can be adapted in the course of time by adding inverters in parallel or by creating additional phases. Therefore, it is possible to install up to 9 inverters in a 3-phase power system.

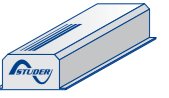


Xtender series p. 12 (1'000 - 72'000VA)

3 x 400Vac 3-phase grid on-board

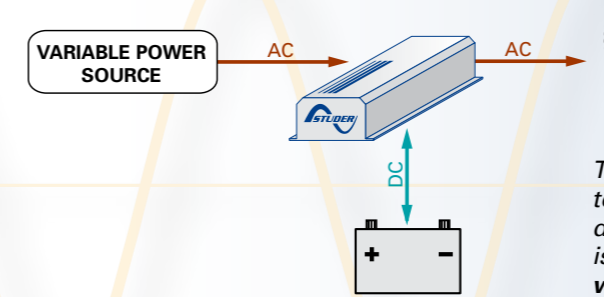


A 3-phase grid can be built with 3 inverters. The Xtender series enables the creation of a 3-phase grid and to simultaneously charge the battery, even if only a single phase is available as a power source.

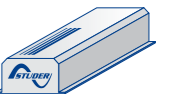


Xtender series p. 12 (1'000 - 72'000VA)

Variable power source assistance

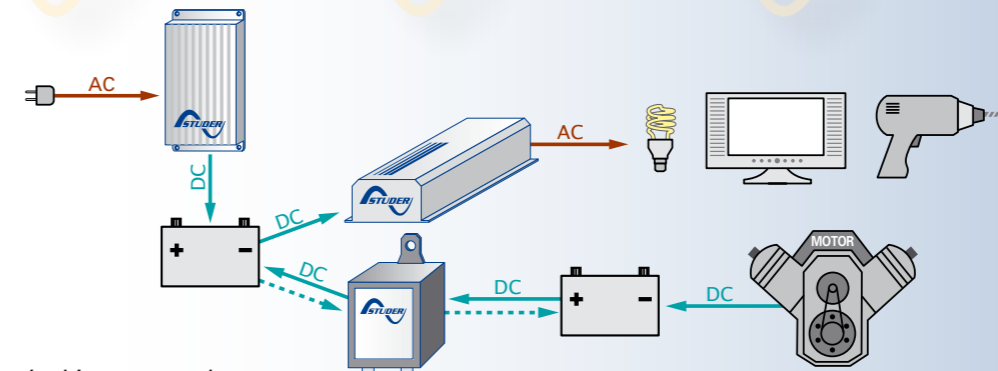


The source being a variable power alternator, the Smart-boost will supply the power difference in order that the power delivered is always the same (Application Note AN004/ www.studer-innotec.com).



Xtender series p. 12 (1'000 - 72'000VA)

Successive battery charging



In this system, a battery separator enables one or several auxiliary batteries to be charged, once the primary battery is charged.

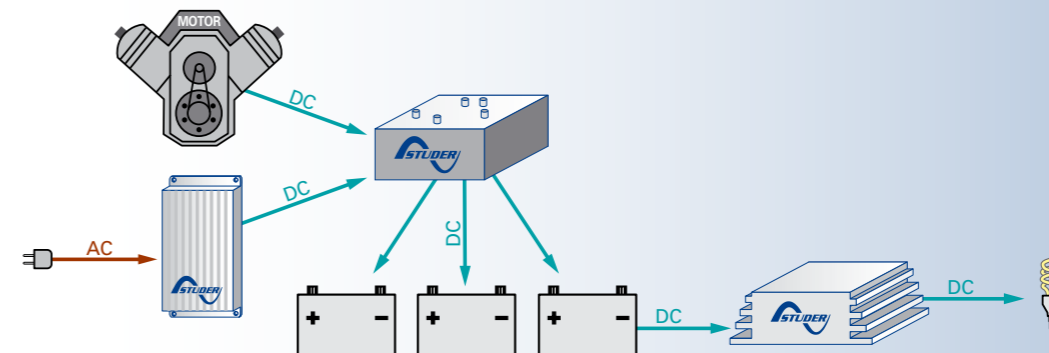


MBR series p. 26

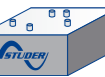


MBC series p. 24

Simultaneous battery charging and DC/DC conversion



A MOSFET splitter, with almost no voltage losses, splits the charge current to and among several batteries. From the battery pack, a DC/DC converter will step up or step down the voltage according to the voltage of the users, 12, 24 or 48Vdc.



MBI series p. 26



MBC series p. 24



MDCI-MDC series p. 25

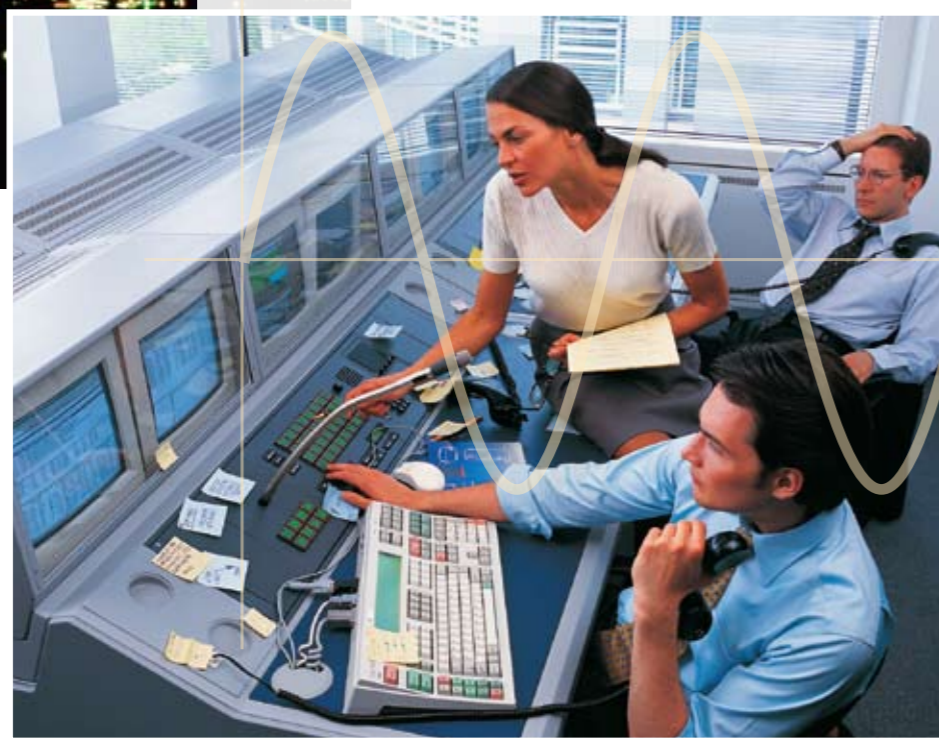
Backup applications



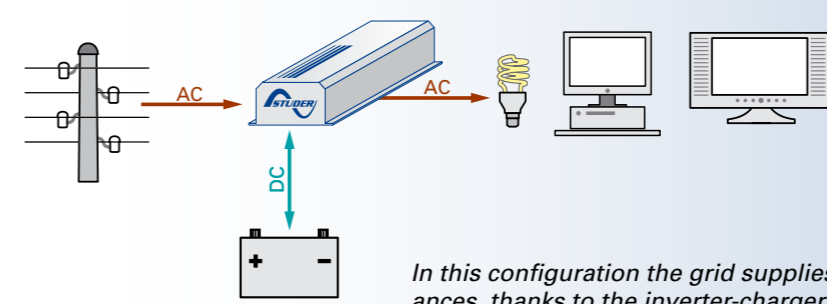
Appliances such as fridges, PCs, emergency lights, etc. which are supplied by the public grid and cannot afford any power cut, are electrically secured.

An inverter-charger with transfer relay or a combination of an inverter and a charger guarantees that the battery is well maintained and that an uninterrupted power supply to strategic appliances is sustained.

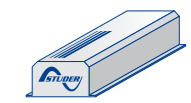
Studer Innotec Ltd. offers solutions from 275VA up to 72kVA with a one of a kind product choice that remains unchallenged on the market.



Uninterruptible power supply off-line



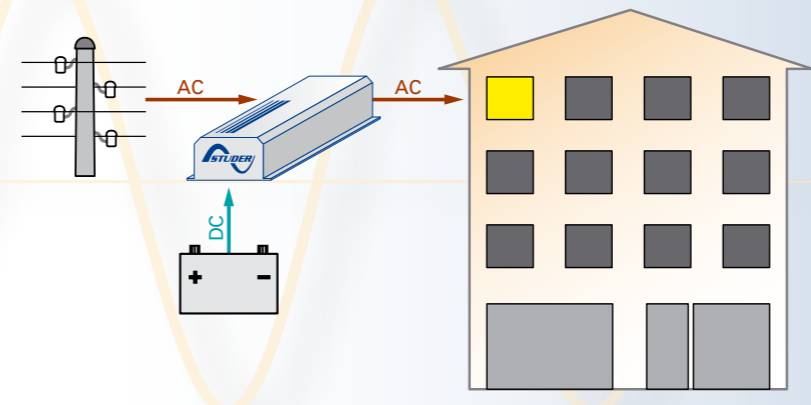
In this configuration the grid supplies directly to the appliances, thanks to the inverter-charger's by-pass function. In case of a power drop or cut in the grid, the inverter-charger guarantees the appliances' power supply.



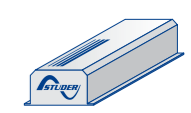
Xtender series p. 12
(1'000 - 72'000VA)

Compact series p. 18
(1'400 - 4'000VA)

Individual Home backup



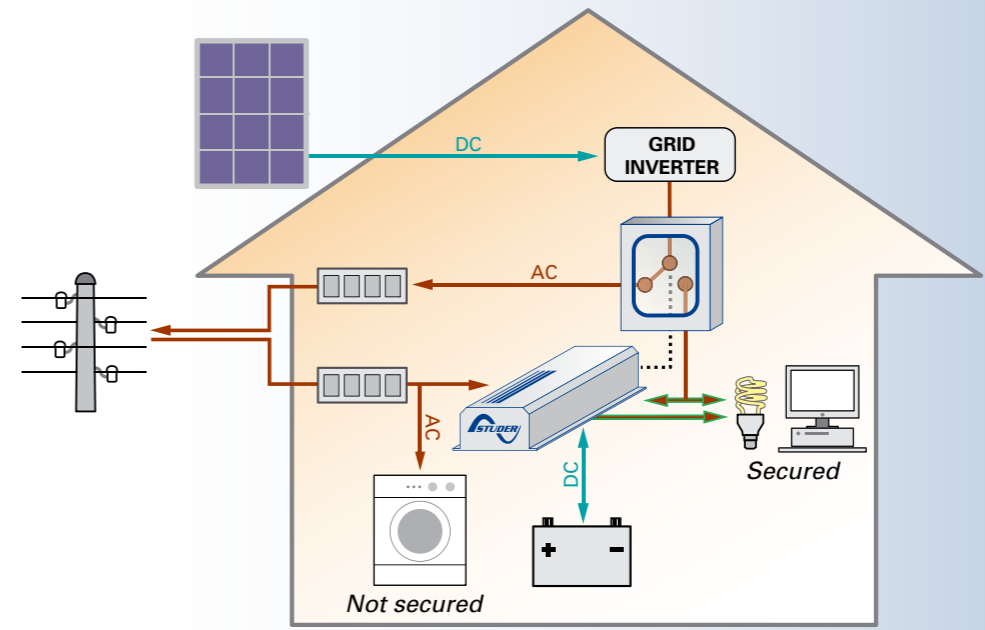
An inverter-charger is used there to provide a backup power in case of public grid outage. As soon as the power shuts off the inverter-charger switches on inverter mode and assures an uninterruptible power supply.



Xtender series p. 12
(1'000 - 72'000VA)

Compact series p. 18
(1'400 - 4'000VA)

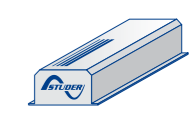
Solsafe – a backup system for grid connected solar installations



The installation of our solution Solsafe in a grid connected solar system totally or partially secures the power supply in case of a power cut, and thus maintains the ongoing use of solar energy being produced (Application Note AN003/www.studer-innotec.com).



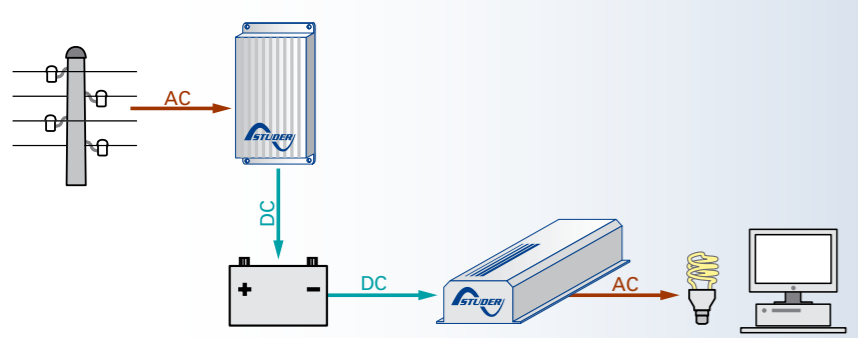
Solsafe S-Box p. 17



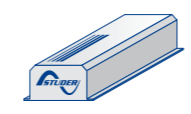
Xtender series p. 12
(1'000 - 72'000VA)

Compact series p. 18
(1'400 - 4'000VA)

Uninterruptible power supply on-line



In this system, the battery charge functions and appliances' power supply are separated : On one side is a battery charger, and on the other, an inverter. Grid current fluctuations have no impact on the appliances.



AJ series p. 20
(275 - 2'400VA)



MBC series p. 24

Sine wave inverter-chargers



Xtender Series

The Xtender series provides unmatched freedom of use due to its many functions. In a basic application, it offers a total package: the functions of inverter, battery charger, transfer system and assistance to the source. These functions can be combined and controlled in a totally automatic way for exceptional ease and optimal management of available energy.

The Xtender is equipped with a command entry and 2 configurable auxiliary contacts. This allows an automatic control of the genset or a loadshedding when the battery voltage is too low. The flexibility then obtained makes it possible to implement special functionalities, often necessary for a good energy management in standalone systems.

Xtender XTS
XTS 1000-12
XTS 1200-24
XTS 1400-48



Xtender XTM
XTM 1500-12
XTM 2000-12
XTM 2400-24
XTM 2600-48
XTM 3500-24
XTM 4000-48

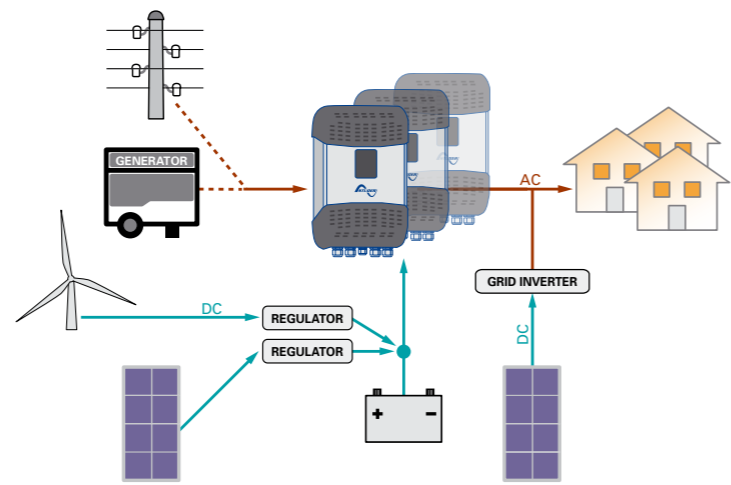


Xtender XTH
XTH 3000-12
XTH 5000-24
XTH 6000-48
XTH 8000-48



Features and performances

- Outstanding efficiency and overload.
- Perfect management and limitation of AC sources.
- Power shaving of the consumption peaks.
- Automatic allocation of the power available.
- Active filtering of the load steps on the genset.
- Automatic protection of the sources against overload.
- Battery priority (or to renewable sources).
- Parallel and three-phase setting, up to 9 units (72kVA).
- Powerful multi-stage PFC charger.
- Ultra-short transfer time (from 0 to 15ms max.).
- Automatic and efficient stand-by.
- 2 programmable auxiliary contacts (optional on the XTS).
- Compatible with AC coupling.
- XTS electronically protected against reverse polarity.
- Display, programming and data logging integrated in the remote control RCC.
- Interactive with the Battery Status Processor (BSP).
- RS-232 communication for remote supervision.



The Xtender series offer an optimal use of all sources that can be found in hybrid systems, whatever their connecting mode (AC or DC bus), up to the nominal power of the Xtender system (single, parallel and/or three-phase).

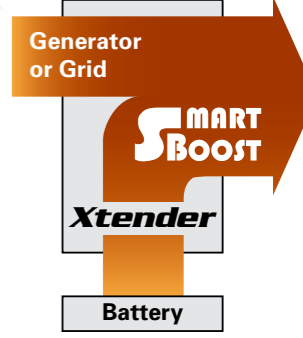
Xtender range	Battery voltage	AC voltage	Output power P30/Pnom	Power Smart-Boost	Charge current	Transfer current
XTS 900-12	12V	230Vac*	900VA** / 500VA	900VA**	0 - 35A	16A
XTS 1200-24	24V	230Vac*	1200VA** / 650VA	1200VA**	0 - 25A	16A
XTS 1400-48	48V	230Vac*	1400VA** / 750VA	1400VA**	0 - 12A	16A
XTM 1500-12	12V	230Vac*	1500VA / 1500VA	1500VA	0 - 70A	50A
XTM 2000-12	12V	230Vac*	2000VA / 2000VA	2000VA	0 - 100A	50A
XTM 2400-24	24V	230Vac*	2400VA / 2000VA	2400VA	0 - 55A	50A
XTM 2600-48	48V	230Vac*	2600VA / 2000VA	2600VA	0 - 30A	50A
XTM 3500-24	24V	230Vac*	3500VA / 3000VA	3500VA	0 - 90A	50A
XTM 4000-48	48V	230Vac*	4000VA / 3500VA	4000VA	0 - 50A	50A
XTH 3000-12	12V	230Vac*	3000VA / 2500VA	3000VA	0 - 160A	50A
XTH 5000-24	24V	230Vac*	5000VA / 4500VA	5000VA	0 - 140A	50A
XTH 6000-48	48V	230Vac*	6000VA / 5000VA	6000VA	0 - 100A	50A
XTH 8000-48	48V	230Vac	8000VA / 7000VA	8000VA	0 - 120A	50A

* For the 120Vac/60Hz version, -01 is added to the model designation.
** These features are valid only when using the cooling module ECF-01. Complete technical specifications on page 28.

Function Smart-Boost and active filtering

With this function it is possible to interact directly with the AC source (Genset or grid) and to implement some basic functions such as:

- Efficient and immediate limitation of the current of the source, including fore non linear or inductive/ capacitive loads, protecting efficiently the breakers during connection to shore power or to a camping power counter with limited current (function of power shaving and of power assistance) **(more information on our website and in the Application Note AN001/www.studer-innotec.com).**
- Power shaving of load steps on the generator allowing therefore an optimal sizing of the generator and assuring the best possible efficiency of the fossile fuels (function of filtering and of power assistance).



The function of assistance to the source enables also to implement advanced functions such as the priority use of renewable energy, even when the grid is available **(more information on our website and in the Application Note AN002/www.studer-innotec.com).**



The new alpine cabin of Monte-Rosa with a system Xtender



RCC-02



RCC-03



Remote control and programming centre RCC-02 or RCC-03

Apart from the enclosure difference, adapted for wall or panel mounting, both units have exactly the same features and allow the user to survey his system and fully customize it to his needs. RCC gives a controlled access to the many adjustable parameters of the Xtender. It enables the setting of the charge curve of the battery, the programming of the auxiliary contacts and gives access to a lot of operation options. Thanks to its graphic display RCC provides clear and comprehensive indications on the state of the system in selectable language. The unit memorizes and displays the events that occurred on an installation and so it does anticipate the problems that might appear. A slot for a SD card is available and it allow the parameters record and download as well as the full software update.



Data logging and analysis

Analyze easily your data with the RCC-02/03 Data logger function that will record on the SD card the main electrical values of your Xtender system during its operation.

These standards enable the follow up on the system's energy consumption evolution, to check the power cuts, the state of the auxiliary contacts, the input currents and voltages, etc.

Studer Innotec Ltd. offers for free two graphical and analysis tools, Xtender Data Analysis Tool

and Xtender Matlab® Data Analysis (more information on our website and in the Application Note AN006/www.studer-innotec.com).

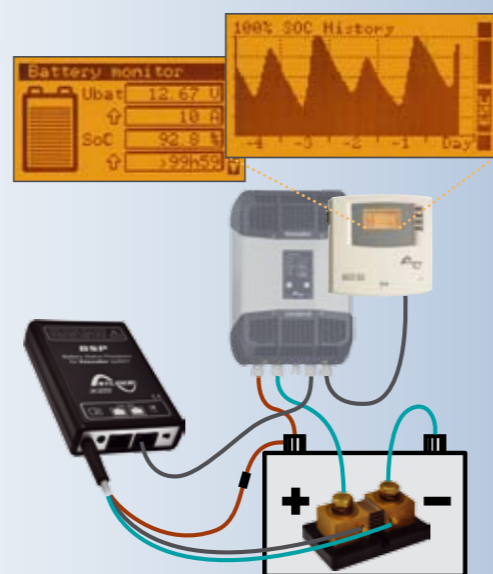
Battery Status Processor BSP for XTENDER systems

One of the most important information for a safe and effective operating of an energy system with batteries is their state of charge. The BSP offers, for Xtender systems, a highly precise measuring and an extremely efficient algorithm that calculates the state of charge in the most accurate way.

The remote control RCC-02/03 provides the display, the data logging, the graphical display of the state of charge history and the settings. Values of the BSP can be used in the programming of the Xtender system. Besides, 17 different values can be displayed like for instance:

- State of charge
- Voltage (12-24-48Vdc)
- Current
- Time to go
- Throughput energy
- Battery temperature

The 2 models BSP 500 and BSP 1200 are supplied respectively with a shunt 500/1200A and 2 m cable for battery connection, as well as with 5 m communication cable.



Accessories

		XTS	XTM	XTH
	<p>RCC-02/-03 The remote control module (with 2m cable) enables the setting of the parameters as well as the display of the values measured. By means of a SD card it is possible to log the system data, to save and restore the parameters of the system. This module is available either for wall mounting (model RCC-02), or for panel mounting (model RCC-03). It requires the accessory TCM-01 in order to be used with the models XTS.</p>	•	•	•
	<p>TCM-01 Communication and internal clock module mandatory for a connection between the XTS and the following accessories: RCC, ARM-02, RCM-10 and Xcom. It is also mandatory to interconnect several units together in parallel or in 3ph systems. One module only is necessary for each XTS whatever the number and the type of accessories connected to it. Mounting inside the inverter.</p>	•		
	<p>BTS-01 Battery temperature sensor (with 5 m cable) offering the automatic compensation of the adjustable thresholds of the battery voltage.</p>	•	•	•
	<p>RCM-10 Module for rail DIN mounting (with 5 m cable) giving access to the main ON/OFF and to the command entry with the models XTS and XTM. It needs the accessory TCM-01 for a use with the models XTS.</p>	•	•	•
	<p>BSP 500/1200 Module meant for the measuring and calculating of the battery state of charge (with 5 m cable). This module is connected to the communication bus of the Xtender. It allows the display and the datalogging of the values measured and calculated (see opposite screens) and also the control of the 2 auxiliary contacts of the Xtender. The accessory TCM-01 is required to use the BSP with the models XTS.</p>	•	•	•
	<p>Xcom-232i Communication module with RS-232 port and 2 m RJ45 cable, allowing access to the parameters and measured values of the Xtender system. It makes the link between an Xtender system and a SCADA supervision or control system (not supplied). The accessory TCM-01 is required to use this module with the models XTS.</p>	•	•	•
	<p>Xcom-MS Bridge for a communication between an Xtender system and one or several MPPT chargers Tristar (with 2 m cable). With this module it is possible to set the parameters and to have access to the values measured in the solar charger, as well as to synchronize the charging profile of the battery. The main values can be stored in the SD card of the module RCC or are accessible by means of the communication module Xcom-232i. The accessory TCM-01 is required to use this module with the models XTS.</p>	•	•	•
	<p>ARM-02 This module only meant for the XTS models and for rail DIN mounting, is equipped with 2 auxiliary contacts controlled by the XTS. The accessory TCM-01 is required to use this module with the models XTS. This function is already integrated in the models XTM and XTH.</p>	•		
	<p>ECF-01 External cooling module (IP54) for models XTS. The use of this accessory will increase the power of the XTS. The ECF-01 is directly installed on top of the XTS casing and its mounting can be done at any time after installation.</p>	•		
	<p>X-Connect Mounting frame for multi-XTH system, supplied as a kit. The frame is equipped with DC breakers and fuses, and with rail DIN for the mounting of protection devices upstream and downstream (see p. 18).</p>			•
	<p>CAB-RJ45-8-xx Communication cable for the connection between Xtenders and to all external accessories. The cables are available in the following lengths: 2, 5, 10, 20 or 50 m (xx stands for the length). For instance: one system with 3 Xtenders requires 2 cables of 2 m. One cable is supplied with every accessory. However a longer cable can be ordered when necessary.</p>	•	•	•



The main configurations offered by the Xtender series

Wide modularity

By the implementation of several units, it is possible to create a 3-phase source or to set them in parallel to increase the power available without extra cost. Up to 9 inverters of the Xtender series shall therefore be combined together up to 72kVA!



Easy set up of multi-units

Compatible with standard cable channel (230 x 60 mm)

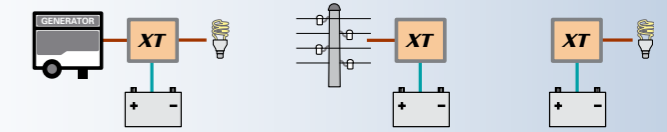


Xtenders in the heart of the Spitzbergen...



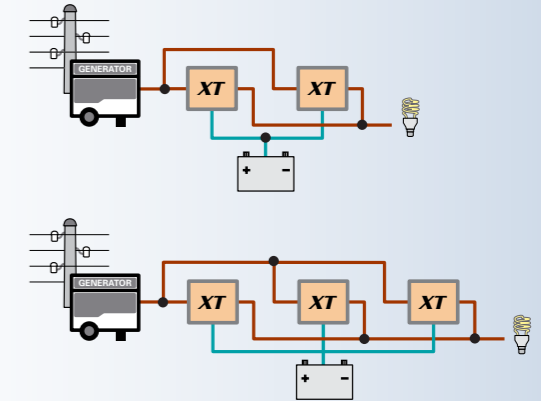
Inverter, charger and transfer relay

The Xtender basically works as an inverter and as a charger, combined with a transfer relay.



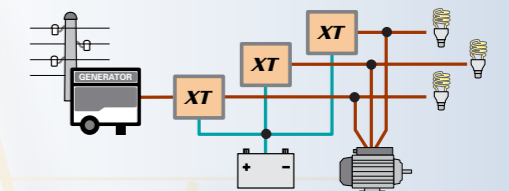
2 or 3 units in parallel on 1 phase

Increase of the power on one phase by setting 2 or 3 Xtender in parallel.



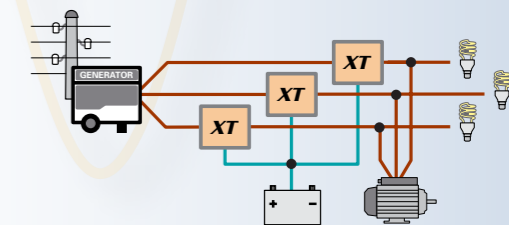
1 phase in and 3 phase out

Three-phase power supply from a single phase source.



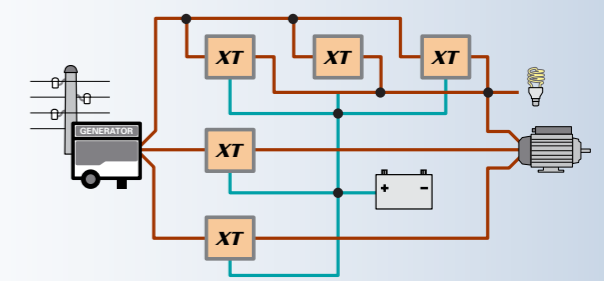
3 phase in and 3 phase out

Three-phase source for a three-phase power supply.



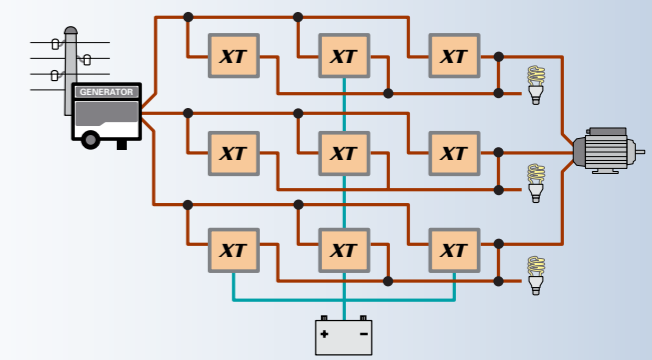
3 phase + with one reinforced phase

Three-phase power supply with increase of the power on one phase by setting 2 or 3 Xtender in parallel on this phase.



3 Xtender in parallel on 3 phases

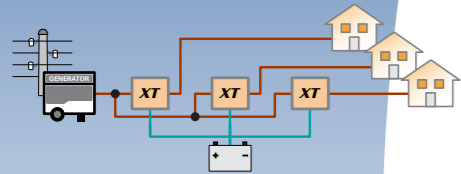
Three-phase power supply with 3 Xtender on each phase, for power up to 72kVA.



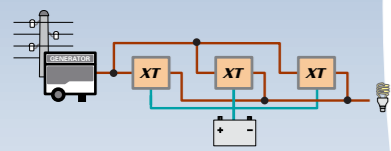
X-Connect system

Mounting frame for Xtender multi-system

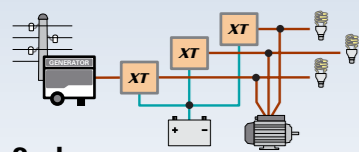
Offers a flexible and cost effective solution for high power systems based on the XTH inverter.



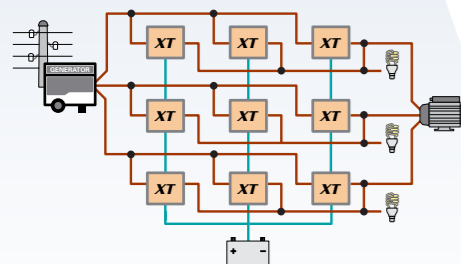
Centralized



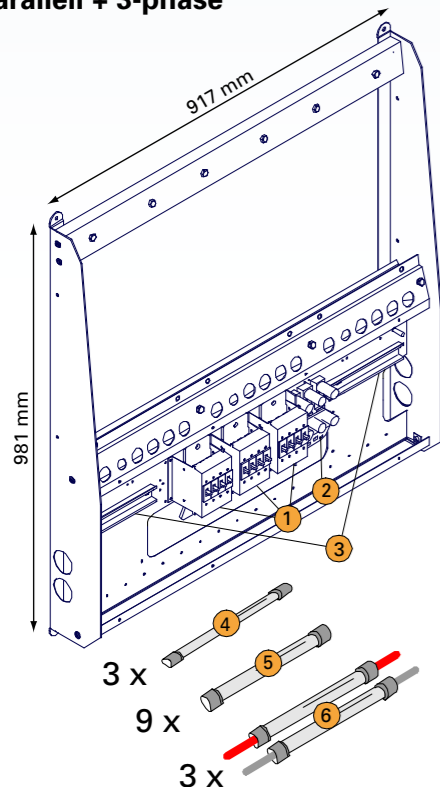
Parallell



3-phase



Parallell + 3-phase



Up to 72kVA multi-unit system

Frame is supplied with:

- ① Pre-installed DC circuit breakers
- ② Pre-installed DC fuses
- ③ Pre-installed DIN rails
- ④ Interconnection pipes and gland for auxiliary contact wiring
- ⑤ Interconnection pipes and gland for AC wiring
- ⑥ Interconnection pipes and gland + 90 mm² wire terminated with appropriate ring tongues for DC wiring from Xtender to breakers and fuses

Screws set for frame assembly



Solsafe: the anti-blackout system for grid connected solar installations

Despite a solar system on your house, in case of power outage, the grid inverters will shut off and the solar generator, whatever its size, will be useless. Studer Innotec Ltd has developed, already in 2004, a concept in which its inverter-chargers allow to keep energy available from the solar generator, even in case of a power cut.

Solsafe S-Box



Compared to other similar solutions, it offers:

- Great system flexibility by choosing both the grid inverter power (matching the solar generator) and the stand-alone power (matching the needs for autonomous energy) independently, as long as the stand-alone inverter is as big as, or bigger than the grid inverter.
- The choice of the grid inverter allows working with standard well known products.
- To choose the grid inverter with any voltage input range, independently from the battery voltage.
- A possible and easy upgrade of existing grid-connected solar installations.

S-Box: a genuine cabling solution to implement the Solsafe

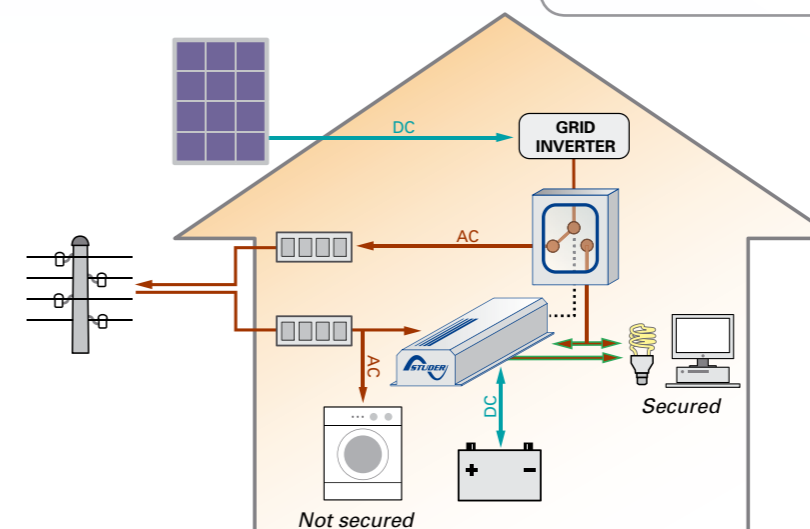
- Hassle free cabling
- Quick installation
- Easy commissioning

The S-Box can be supplied in 4 versions:

For single phase application:

- Solsafe box 25A for Compact..... S-Box-25C
- Solsafe box 25A for Xtender..... S-Box-25X
- Solsafe box 25A for Compact with ENS-26..... S-Box-25C-E
- Solsafe box 25A for Xtender with ENS-26..... S-Box-25X-E

For Solsafe implementation in 3ph systems, a schematic is at disposal on simple request.



Solsafe – a backup system for grid connected solar installations

The installation of our solution Solsafe in a grid connected solar system enables to secured totally or partially the power supply in case of a power cut, and so to keep on using the solar energy being produced (**Application Note AN003/ www.studer-innotec.com**).

Sine wave inverter-chargers

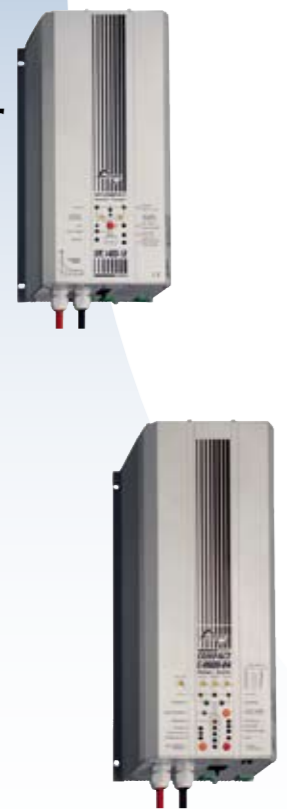


Compact series

The Compact series models consist of 3 fully automatic functions: a sine wave inverter, a battery charger and a transfer system. Equipped with high-end technology, they optimally perform, thanks to Studer Innotec's extensive experience in the field of electrical supply.

XP COMPACT

XPC 1400-12
XPC 2200-24
XPC 2200-48



COMPACT

C 1600-12
C 2600-24
C 4000-48

Features and performances

- True sine wave voltage.
- Suitable for any kind of electrical appliance.
- Reliable and silent working with all kind of loads.
- Outstanding overload capabilities.
- Stand-by level adjustable over a large range and from a very low threshold.
- 4 STEP battery charger with PFC.
- Ultra-fast transfer relay.
- High efficiency.
- Full internal protection.
- Ultra-fast regulation.
- Microprocessor controlled.

E₂₄ Norm E certification

The XPC 1400-12, XPC 2200-24, C 1600-12 and C 2600-24 are certified to the ECE-R 10 norm.

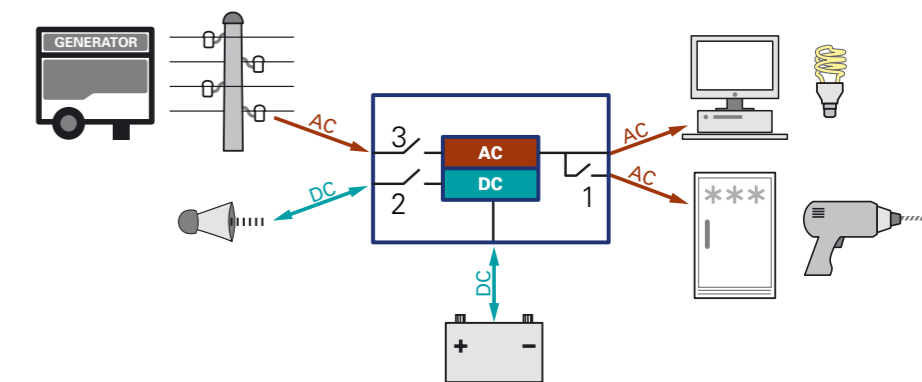
Compact range	Output power P30/Pnom	Battery voltage	AC voltage	Charge current	Transfer current
XPC 1400-12	1400VA / 1100VA	12Vdc	230Vac*	0 - 45A	16A
XPC 2200-24	2200VA / 1600VA	24Vdc	230Vac*	0 - 37A	16A
XPC 2200-48	2200VA / 1600VA	48Vdc	230Vac*	0 - 20A	16A
C 1600-12	1600VA / 1300VA	12Vdc	230Vac	0 - 55A	16A
C 2600-24	2600VA / 2300VA	24Vdc	230Vac	0 - 55A	16A
C 4000-48	4000VA / 3500VA	48Vdc	230Vac	0 - 50A	16A

* For the 120Vac/60Hz version, -01 is added to the model designation. Complete technical specifications on page 29.

Multifunctional contact

The 16 A. potential free contact can be programmed according to the user wishes. It reacts according to battery levels, as well as to the system status (alarm conditions, public grid presence, sunlight's presence...), and provides:

- 1/ Automatic disconnection of second priority users (conditional supply).
- 2/ Alarm signalization, acoustic signal, MODEM, radio alarm etc.
- 3/ Conditional battery charge.

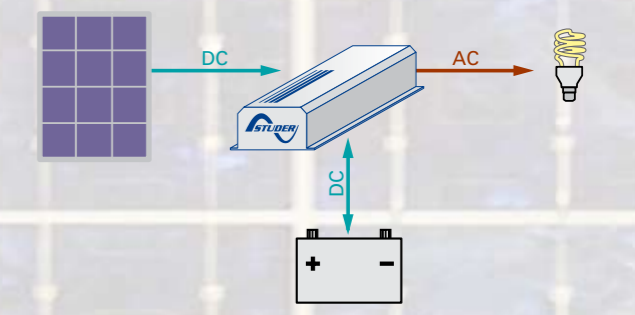


Accessories

		XP COMPACT	COMPACT
	RCC-01 Remote control State of the system displayed by LED and remote programming* (supplied with a 20 m cable). *compulsory for the programming of the XP Compacts	•	•
	CT-35 Temperature sensor This sensor adapts charge levels to the battery's temperature variations (supplied with 3 m cable).	•	•
	RPS-01 Remote control The setting of the power sharing can be remotely controlled by means of the remote control supplied with a 20 m cable.		•
	ARM-01 Auxiliary relay module Equipped with 3 programmed relays and a fourth one which is like the inverter-charger's auxiliary contact, this module allows the Solsafe system to be implemented (see page 11).	•	•
	CFC-01 Cover This cover provides additional connection protection by means of glands.	•	•
	C-IP22 Cover Cover for a protection against intrusions or projections, installed after the mounting of the device. It extends the protection index of the XP Compacts and Compacts from IP 20 to IP 22.	•	•

Optional built-in solar charge controller (-S)

The XP Compact and Compact models are available with an optional built-in charge controller (I/U/Uo); making the inverter-charger an « all in one » device for a solar installation.



Sine wave inverters



AJ series

The AJ range consists of sine wave inverters that convert a battery's DC voltage into AC voltage, which can be used by all electrical appliances.

Features and performances

- High and steady efficiency.
- Outstanding overload capabilities.
- Digital regulation and control by microprocessor.
- Electrical supply to any type of appliance.
- Full internal protection.
- Battery lifetime optimization (B.L.O.) function.
- Supplied with battery and AC cables.

E24 Norm E certification
The AJs in 12 and 24Vdc are certified to the ECE-R 10 norm.

AJ series

- AJ 275-12
- AJ 350-24
- AJ 400-48



AJ series

- AJ 500-12
- AJ 600-24
- AJ 700-48



AJ series

- AJ 1000-12
- AJ 1300-24



AJ series

- AJ 2100-12
- AJ 2400-24

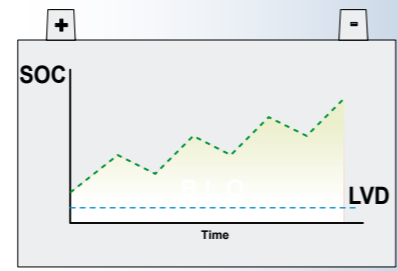


AJ range	Output power P30/Pnom	Battery voltage	AC voltage	Solar option (-S)
AJ 275-12 (-S)	275 VA / 200 VA	12 Vdc	230 Vac*	10 A
AJ 350-24 (-S)	350 VA / 300 VA	24 Vdc	230 Vac*	10 A
AJ 400-48 (-S)	400 VA / 300 VA	48 Vdc	230 Vac*	10 A
AJ 500-12 (-S)	500 VA / 400 VA	12 Vdc	230 Vac*	15 A
AJ 600-24 (-S)	600 VA / 500 VA	24 Vdc	230 Vac*	15 A
AJ 700-48 (-S)	700 VA / 500 VA	48 Vdc	230 Vac*	15 A
AJ 1000-12 (-S)	1000 VA / 800 VA	12 Vdc	230 Vac*	25 A
AJ 1300-24 (-S)	1300 VA / 1000 VA	24 Vdc	230 Vac*	25 A
AJ 2100-12 (-S)	2100 VA / 2000 VA	12 Vdc	230 Vac*	30 A
AJ 2400-24 (-S)	2400 VA / 2000 VA	24 Vdc	230 Vac*	30 A

* For the 120Vac/60HZ version, -01 is added to the model designation. Complete technical specifications on pages 30-31.

Battery Lifetime Optimization: B.L.O.

With this function the AJ inverters offer an advanced protection of the battery, by a smart management of the low voltage disconnection (LVD).



Accessoire



JT8 Remote control
Enables the control (ON/OFF) and the remote display (ON / Standby / Temporary off).
(supplied with a 5 m cable)

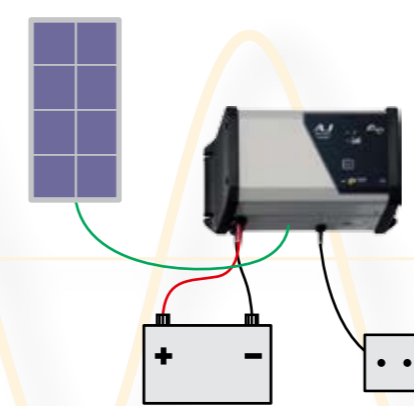
AJ 1000-12, AJ 1300-24
AJ 2100-12, AJ 2400-24

Option plug for remote control RCM

Connection (plugs male and female) to start/stop an inverter AJ under certain circumstances:

- RCM 01: ON when a contact is closed.
- RCM 02: ON when a voltage is present on the plug.
- RCM 03: ON when a contact is open.

For the AJ inverters 275 to 700VA.
Supplied with a «connector Jack» 3.5 mm.



Option built-in solar charge controller

For a complete solar system!
The models AJ can be supplied equipped with an optional integrated solar charge controller, making the inverter an «all in one» device for a solar installation.

Rural electrification (Solar Home System)

The rural electrification and the inverters of the AJ series: excellence to the benefit of the development of remote areas and populations. Choosing AC voltage for the rural electrification systems is going for simplicity, reliability and cost saving. Indeed, compared with a DC voltage one, a system with an inverter is often more efficient from 100W of solar power.

The AJ series, due to its overload capability and to its very reliable stand-by system adjustable from 1W, is the most suitable range of inverters to meet the rural electrification technical and economical requirements.



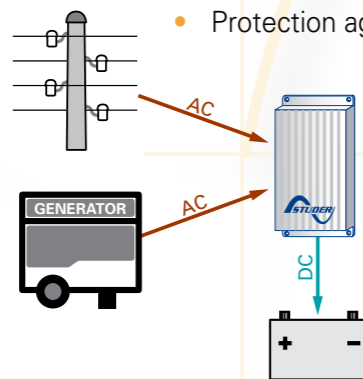
Battery chargers

MBC series

The MBC chargers enable battery charging from an AC voltage supply source (genset, public grid, shorepower, etc.). These chargers are also watertight and therefore especially designed for outdoor applications (IP 65).

Features and performances

- Universal input voltage.
- Charge of lead acid batteries with liquid or gelled (GEL) electrolyte.
- Protection against battery overcharge.



MBC range	Battery voltage	Input voltage	Output current	Output
<i>MBC 12-06/1</i>	12 Vdc	100-260 Vac	6 A	1
<i>MBC 12-15/1</i>	12 Vdc	100-260 Vac	15 A	1
<i>MBC 24-03/1</i>	24 Vdc	100-260 Vac	3 A	1
<i>MBC 24-08/1</i>	24 Vdc	100-260 Vac	8 A	1
<i>MBC 24-32/1</i>	24 Vdc	100-260 Vac	32 A	1

Complete technical specifications on page 32.



DC/DC converters

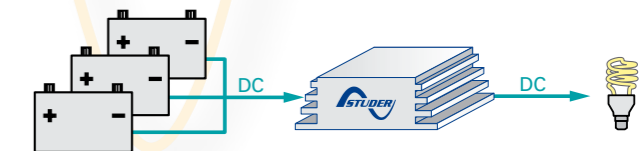
MDCI and MDC series

The DC/DC converters type MDCI and MDC are used, depending on the model, either to step up or to step down a DC voltage.

The MDCI range converters are electrically isolated.

Features and performances

- High efficiency.
- Low consumption.
- Protection against short-circuit, overheat, overvoltage and reverse polarity.
- Great stability of the output voltage for a more reliable system.



MDCI range	Power	Output Current	Input variant	Output variant	Isolated
<i>MDCI 100</i>	100 W	8/4 A	A/B/C/D	12.5 or 24 Vdc	Yes
<i>MDCI 200</i>	200 W	16.5/8 A	A/B/C/D	12.5 or 24 Vdc	Yes
<i>MDCI 360</i>	360 W	30/15 A	A/B/C/D	12.5 or 24 Vdc	Yes
<i>MDCI 360 A24 Charger</i>	330 W	30/15 A	A	24 Vdc	Yes

A = 9-18 Vdc B = 20-35 Vdc C = 30-60 Vdc D = 60-120 Vdc (ex. MDCI 200 D24)

MDC range	Power	Output Current	Input voltage	Output voltage	Isolated
<i>MDC 1224-7</i>	170 W	7 A	9-18 Vdc	24 Vdc	No
<i>MDC 2412-5</i>	65 W	5 A	18-35 Vdc	13.2 Vdc	No
<i>MDC 2412-8</i>	105 W	8 A	18-35 Vdc	13.2 Vdc	No
<i>MDC 2412-12</i>	160 W	12 A	20-35 Vdc	13.2 Vdc	No
<i>MDC 2412-20</i>	275 W	20 A	20-35 Vdc	13.8 Vdc	No
<i>MDC 2412-30</i>	415 W	30 A	20-35 Vdc	13.8 Vdc	No

Complete technical specifications on page 32.

The MDC 2412-20 and 2412-30, as well as the MDCI 360 A24 «Charger» can also be used to charge a battery.

MOSFET battery splitters

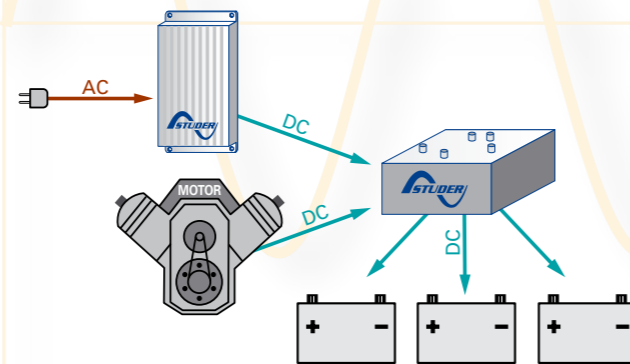


MBI series

The MBI MOSFET battery splitters generate an insignificant voltage drop. They supply the charger's or alternator's current to several batteries. All batteries are thus charged at the same time, and therefore will not charge or discharge each other.

MBI range	Input	Charge current	Charge input	Outputs
MBI 100/2	12/24 Vdc	100 A	1	2
MBI 150/2	12/24 Vdc	150 A	1	2
MBI 100/3	12/24 Vdc	100 A	1	3
MBI 150/3	12/24 Vdc	150 A	1	3
MBI 200/3	12/24 Vdc	200 A	1	3
MBI 2-100/3	12/24 Vdc	100 A	2	3

Complete technical specifications on page 33.



Features and performances

- Automatic adjustment to the batteries voltage.
- Possible charge of the battery from an alternator
- Voltage drop < 0.4 V at 100 Amp.
- Suitable for electronic alternators.

Batteries separators

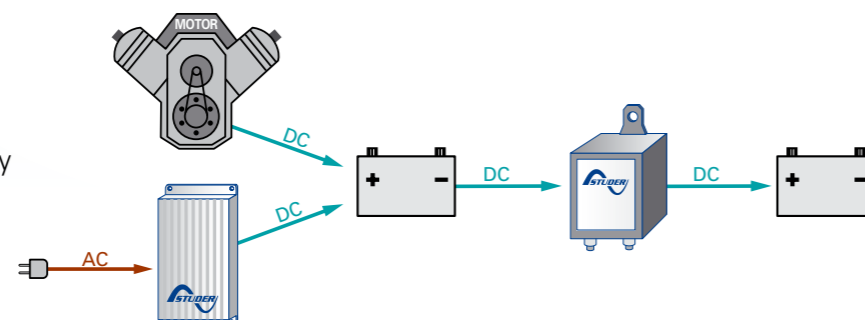


MBR series

The MBR batteries separators allow to supply the auxiliary battery or the appliances, as soon as the mainbattery voltage is high enough.

MBR range	Battery voltage	Charge current	Batteries
MBR 12/24-100	12/24 Vdc	100 A	2
MBR 12/24-160	12/24 Vdc	160 A	2
MBR 12/24-500	12/24 Vdc	500 A	2

Complete technical specifications on page 33.



Features and performances

- Insignificant voltage drop.
- Protects the auxiliary battery from any overvoltage.

Battery protection



MBW series

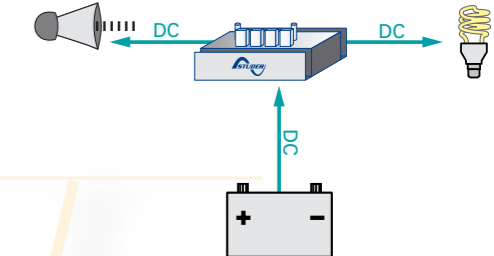
The Battery Watch protects the battery from an excessive discharge and also the consumers in case of overvoltage.

Features and performances

- Programming the connection and disconnection voltages by jumpers.
- MOSFET switches, therefore no sparks.
- Alarm output to indicate excessive voltage drops.

MBW range	Maximum current	Operating voltage range (Vdc)
MBW 40	40	6-35
MBW 60	60	6-35
MBW 200	200	8-32

Complete technical specifications on page 34.



Battery monitoring



SBM-02

The SBM-02 is a highly accurate battery monitor with a history data memory. It is supplied together with a 500A/50mV shunt. This device is designed for 12 and 24V batteries. The optional SBM-PS-02 voltage pre-scaler extends the use of the SBM-01 to 27-175V batteries.

Features and performances

- Digital display of the 6 most important parameters of a DC power system :
 1. Battery voltage (V)
 2. Current (A)
 3. Consumed Ampere-hours (Ah)
 4. Sate-of-charge (%)
 5. Time-to-go (h:m)
 6. Temperature (°C or °F)

Optional accessories

- Connection kit, type SBM-CAB-20, including 20 m of twisted pair cable (3 x 2 x 0.5 mm²) and 2 fuseholders.
- Communication kit, type SBM-COM, including RS232 interface box, 1.8 m of 9p DSUB serial cable and software.
- Communication kit, type SBM-COM-USB, including USB interface box, 1.8 m of USB cable and software.
- Temperature kit, type SBM-TEMP-20, with a temperature sensor and 20 m cable.
- Shunt 1200 A / 50 mV, type SH-1200-50, for battery monitoring in large system.

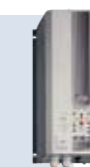
Xtender series



Model	XTS 900-12	XTS 1200-24	XTS 1400-48	XTM 1500-12	XTM 2000-12	XTM 2400-24	XTM 2600-48	XTM 3500-24	XTM 4000-48	XTH 3000-12	XTH 5000-24	XTH 6000-48	XTH 8000-48	
Inverter														
Nominal battery voltage	12V	24V	48V	12V	24V	48V	24V	48V	12V		24V	48V		
Input voltage range	9.5 - 17V	19 - 34V	38 - 68V	9.5 - 17V	19 - 34V	38 - 68V	19 - 34V	38 - 68V	9.5 - 17V		19 - 34V	38 - 68V		
Continuous power @ 25°C	650**/500VA	800**/650VA	900**/750VA	1500VA	2000VA	2400VA	2600VA	3000VA	3500VA	2500VA	4500VA	5000VA	7000VA	
Power 30 min. @ 25°C	900**/700VA	1200**/1000VA	1400**/1200VA	1500VA	2000VA	2400VA	2600VA	3000VA	3500VA	3000VA	5000VA	6000VA	8000VA	
Power 5 sec. @ 25°C	2.3kVA	2.5kVA	2.8kVA	3.4kVA	4.8kVA	6kVA	6.5kVA	9kVA	10.5kVA	7.5kVA	12kVA	15kVA	21kVA	
Maximum load	Up to short-circuit													
Maximum asymmetric load	Up to Pcont.													
* Load detection (stand-by)	2 to 25 W													
Cos φ	0.1-1													
Maximum efficiency	93%	93%	93%	93%	94%	96%	94%	96%	93%		94%	96%		
Consumption OFF/Stand-by/ON	1.1W/1.4W/7W	1.2W/1.5W/8W	1.3W/1.6W/8W	1.2W/1.4W/8W	1.2W/1.4W/10W	1.4W/1.6W/9W	1.8W/2W/10W	1.4W/1.6W/12W	1.8W/2.1W/14W	1.2W/1.4W/14W	1.4W/1.8W/18W	1.8W/2.2W/22W	1.8W/2.4W/30W	
* Output voltage	Pure sine wave 230Vac (+/- 2%) / 120Vac ⁽¹⁾													
* Output frequency	50Hz / 60Hz ⁽¹⁾ +/- 0.05% (crystal controlled)													
Harmonic distortion	<2%													
Overload and short-circuit protection	Automatic disconnection with 3 time restart attempt													
Overheat protection	Warning before shut-off - with automatic restart													
Battery charger														
* Charge Characteristic	6 steps: Bulk-Absorption-Floating-Equalization-reduced floating-periodic absorption Number of steps, thresholds, end current and times completely adjustable with the RCC-02/03													
* Maximum charging current	35A	25A	12A	70A	100A	55A	30A	90A	50A	160A	140A	100A	120A	
* Temperature compensation	With BTS-01 or BSP 500/1200													
Power Factor Correction (PFC)	EN 61000-3-2													
General data														
* Input voltage range	XTS 900-12	XTS 1200-24	XTS 1400-48	XTM 1500-12	XTM 2000-12	XTM 2400-24	XTM 2600-48	XTM 3500-24	XTM 4000-48	XTH 3000-12	XTH 5000-24	XTH 6000-48	XTH 8000-48	
Input frequency	150 to 265Vac / 50 to 140Vac (1)													
Input current max. (transfer relay) / Output current max.	16A/20A			50A/56A							50A/80A			
Transfer time	<15ms													
Multifunction contacts	Module ARM-02 with 2 contacts, in option			2 independent contacts (potential free 3 points, 16Aac/5Aac)										
Weight	8.2 kg	9 kg	9.3 kg	15 kg	18.5 kg	16.2 kg	21.2 kg	22.9 kg	34 kg		40 kg	42 kg	46 kg	
Dimension hxxwxl [mm]	110x210x310	110x210x310	110x210x310	133x322x466				133x322x466			230x300x500	230x300x500	230x300x500	
Protection index	IP54			IP20										
Conformity	Directive EMC 2004/108/EC: EN 61000-6-1, EN 61000-6-3, EN 55014, EN 55022, EN 61000-3-2, 62040-2 Low voltage directive 2006/95/EC: EN 62040-1-1, EN 50091-2, EN 60950-1													
Operating temperature range	-20 à 55°C													
Relative humidity in operation	100%			95% without condensation										
Ventilation	Optional cooling module ECF-01			Forced from 55°C										
Acoustic level	<40dB / <45dB (without/with ventilation)													
Warranty	5 years													
Accessoires														
Remote control RCC-02 or RCC-03	•	•	•	•	•	•	•	•	•	•	•	•	•	
Module XCOM-232i	•	•	•	•	•	•	•	•	•	•	•	•	•	
Bridge XCOM-MS	•	•	•	•	•	•	•	•	•	•	•	•	•	
Remote Control Module RCM-10 (3 m)	•	•	•	•	•	•	•	•	•	•	•	•	•	
Communication module TCM-01	•	•	•	•	•	•	•	•	•	•	•	•	•	
2 aux. contacts module ARM-02	•	•	•	•	•	•	•	•	•	•	•	•	•	
Cooling Module ECF-01	•	•	•	•	•	•	•	•	•	•	•	•	•	
Battery temp. sensor BTS-01 (3 m)	•	•	•	•	•	•	•	•	•	•	•	•	•	
Communication cable for 3ph and // CAB-RJ45-8-2	•	•	•	•	•	•	•	•	•	•	•	•	•	
Mounting frame X-Connect	•	•	•	•	•	•	•	•	•	•	•	•	•	

* Adjustable with the RCC-02/03
 ** These features are valid only when using the cooling module ECF-01.
⁽¹⁾ With -01 at the end of the reference, means 120V/60Hz. Available for all Xtenders except XTH 8000-48

COMPACT series



Model	XPC 1400-12	XPC 2200-24	XPC 2200-48	C 1600-12	C 2600-24	C 4000-48
Inverter						
Nominal battery voltage	12V	24V	48V	12V	24V	48V
Input voltage range	9.5 - 16V	19 - 32V	38 - 64V	9.5 - 16V	19 - 32V	38 - 64V
Continuous power @ 25°C	1100VA	1600VA	1600VA	1300VA	2300VA	3500VA
Power 30 min. @ 25°C	1400VA	2200VA	2200VA	1600VA	2600VA	4000VA
Power 5 sec. @ 25°C	3 x Pnom					
Maximum power	Up to short-circuit					
Maximum asymmetric load	Up to Pcont.					
Stand-by adjustment	1 to 25W					
Cos φ	0.1 - 1					
Maximum efficiency	94%	95%	94%	94%	95%	
Consumption OFF/Stand-by/ON	0.5/0.6/4W	0.8/0.9/7W	1.2/1.3/7W	0.5/0.6/6W	0.8/0.9/9W	1.2/1.4/12W
Output voltage	Sine wave 230Vac (+0/- 10%) (XPC also available in 120Vac)					
Output frequency	50Hz +/- 0.05% (crystal controlled)					
Total harmonic distortion	< 4%	< 2%				
Dynamic behaviour	0.5 ms (on load change 0 to 100%)					
Overload and short-circuit protection	Automatic disconnection with 3 time restart attempt					
Overheat protection	Acoustic warning before shut-off - with automatic restart					
Battery charger (4 STEP) I-U-Uo-Equalize (every 25 cycles)						
Charging current adjustable	0 - 45A	0 - 37A	0 - 20A	0 - 55A	0 - 50A	
Input current balance adjustment	Not available			1 - 16A		
Maximum input voltage	265Vac					
Input AC voltage range	Adjustable threshold from 150 to 230Vac (XPC also available in 120Vac)					
Input frequency	45 - 65Hz					
Power Factor Correction (PFC)	EN 61000-3-2					
Battery control (thresholds and times adjustable by the user)						
Absorption time	0-4 h					
End charge cycle voltage*	14.4V	28.8V	57.6V	14.4V	28.8V	57.6V
Floating voltage	13.6V	27.2V	54.4V	13.6V	27.2V	54.4V
Equalization time	0-4 h					
Equalization voltage	15.6V	31.2V	62.4V	15.6V	31.2V	62.4V
Deep-discharge protection	10.8V	21.6V	43.2V	10.8V	21.6V	43.2V
Temperature compensation (optional CT-35)	-3mV / °C / Cell					
General data						
Multifunction contact programmable	16A - 250Vac (potential free 3 points)					
Max. current on transfer relay	16A					
Transfer time	< 40 ms					
Weight	11.7 kg	12.6 kg	16 kg	17.1 kg	29.4 kg	
Dimension hxxwxl [mm]	124x215x410			124x215x480		124x215x670
Protection index	IP20 (IP22 with top cover C-IP22)					
Certification ECE-R 10 (E24)	•	•	Not available	•	•	Not available
EC conformity	EN 61000-6-1, EN 61000-6-3, EN 55014, EN 55022, EN 61000-3-2, Low voltage directive 2006/95/EC: EN 62040-1-1, EN 50091-2, EN 60950-1					
Operating temperature range	-20°C up to +55°C					
Relative humidity in operation	95% without condensation					
Ventilation	From 45°C					
Acoustic level	<40dB / <45dB (without/with ventilation)					
Warranty	5 years					
Option solar charger (4 stages) I-U-Uo-Equalize (every 25 cycles)						
Maximum PV open circuit voltage (V)	25V	45V	90V	25V	45V	90V
Maximum charge current (A)	30A	30A	20A	30A	30A	20A
Charging curve	I-U-Uo-Equalize (every 25 cycles)					

* Factory settings

AJ series



Model	AJ 275-12	AJ 350-24	AJ 400-48	AJ 500-12	AJ 600-24	AJ 700-48	
Inverter							
Nominal battery voltage	12V	24V	48V	12V	24V	48V	
Input voltage range	10.5 – 16V (24V max.)	21 – 32V (44V max.)	42 – 64V (64V max.)	10.5 – 16V (24V max.)	21 – 32V (44V max.)	42 – 64V (64V max.)	
Continuous power @ 25°C	200VA	300VA	300VA	400VA	500VA	500VA	
Power 30 min. @ 25°C	275VA	350VA	400VA	500VA	600VA	700VA	
Power 5 min. @ 25°C	350VA	500VA	600VA	575VA	675VA	900VA	
Power 5 sec. @ 25°C	450VA	650VA	1000VA	1000VA	1200VA	1400VA	
Maximum asymmetric load	150VA	150VA	200VA	250VA	300VA	300VA	
Max. efficiency (%)	93%	94%	94%	93%	94%	94%	
Cos φ max.	0.1 – 1 up to 200 VA	0.1 – 1 up to 300 VA	0.1 – 1 up to 300 VA	0.1 – 1 up to 400VA	0.1 – 1 up to 500VA	0.1 – 1 up to 500VA	
Detection of the load	2W (only with the solar option -S)		Adjustable: 1 → 20W				
Current of short-circuit 2 sec. (exit)	2.3A (4.6A*)	3.2A (6.4A*)	4.6A (9.2A*)	5.2A (10.4A*)	5.7A (11.4A*)	7A (14A*)	
Output voltage	Sine wave 230Vac (120Vac*) 0 / - 10%						
Frequency	50Hz (60Hz*) ± 0.05% (crystal controlled)						
Distortion THD (resistive load)	< 5% (@ Pnom.)						
Consumption Stand-by	0.3W**	0.5W**	1.1W**	0.4W	0.6W	1.5W	
Consumption «ON» no load	2.4W	3.5W	5.2W	4.6W	7.2W	12W	
Overheat protection (+/-5°C)	Shut down @ 75°C - Auto-restart @ 70°C						
Overload and short circuit protection	Automatic disconnection with 2 time restart attempt						
Reverse polarity protection	Protected by internal fuse						
Deep discharge battery protection	Shut off @ 0.87 x Unom - Automatic restart @ Unom						
Max. battery voltage	Shut off @ >1.33 x Unom - Automatic restart @ < Umax						
Acoustic alarm	Before low battery or overheating disconnection						
General data							
Weight	2.4 kg	2.6 kg			4.5 kg		
Dimensions	142mm x 163mm x 84mm		142mm x 240mm x 84mm				
Protection index IP	IP 30 conforms to DIN 40050						
Certification ECE-R 10 (E24)	•	•	Not available	•	•	Not available	
EC conformity	EN 61000-6-1, EN 61000-6-3, EN 55014, EN 55022, EN 60950-1						
Operating temperature	-20°C up to +50°C						
Relative humidity in operation	95% without condensation						
Ventilation forced	From 45°C ± 5°C						
Acoustic level	< 45 dB (with ventilation)						
Warranty	5 years						
Approximate correction of Pnom	-1.5%/°C since +25°C						
Recommended battery capacity	> 5 x Pnom/Unom (recommended value in Ah)						
Length cables (Battery/left AC)	1.2m / 1m		1.5m / 1m				
Options							
Solar regulator	Voltage max.	25V	45V	90V	25V	45V	
	Current max.	10A		15A			
	Principle	Floating 3 stages (I/U/UO)					
	Absorption voltage	14.4V	28.8V	57.6V	14.4V	28.8V	57.6V
	Floating voltage	13.6V	27.2V	54.4V	13.6V	27.2V	54.4V
Plug for remote control (RCM)	•	•	•	•	•	•	

* 120Vac/60Hz on request
** Standby with solar option -S

Data may change without any notice.

AJ series



Model	AJ 1000-12	AJ 1300-24	AJ 2100-12	AJ 2400-24	
Inverter					
Nominal battery voltage	12V	24V	12V	24V	
Input voltage range	10.5 – 16V (24V max.)	21–32V (44V max.)	10.5 – 16V (20V max.)	21–32V (40V max.)	
Continuous power @ 25°C	800VA	1000VA	2000VA	2000VA	
Power 30 min. @ 25°C	1000VA	1300VA	2100VA	2400VA	
Power 5 min. @ 25°C	1200VA	2000VA	2450VA	2800VA	
Power 5 sec. @ 25°C	2200VA	2800VA	5000VA	5200VA	
Maximum asymmetric load	500VA	600VA	1000VA	1200VA	
Max. efficiency (%)	93%	94%	92% @ 300VA	94% @ 300VA	
Cos φ max.	0.1 – 1 up to 800VA	0.1 – 1 up to 1000VA	0.1 – 1 up to 2000VA	0.1 – 1 up to 2000VA	
Detection of the load	Adjustable: 1 → 20W				
Current of short-circuit 2 sec. (exit)	10A (20A*)	13A (26A*)	26A (52A*)	30A (60A*)	
Output voltage	Sine wave 230Vac (120Vac*) 0 / - 10%				
Frequency	50 Hz (60Hz*) ± 0.05% (crystal controlled)				
Distortion THD (resistive load)	< 5% (@ Pnom. & Uin nom.)			< 3% (@ Pnom & Uin nom.)	
Consumption Stand-by	0.7W	1.2W	0.7W	1.2W	
Consumption «ON» no load	10W	13W	16W	16W	
Overheat protection (+/-5°C)	Shut down @ 75°C - Auto-restart @ 70°C				
Short circuit protection	Automatic disconnection with 2 time restart attempt				
Reverse polarity protection	Protected by internal fuse 125A	Protected by internal fuse 100A	Not protected	Protected by internal fuse 150A	
Deep discharge battery protection	Shut off @ 0.87 x Unom - Automatic restart @ Unom				
Max. battery voltage	Shut off @ >1.33 x Unom - Automatic restart @ < Umax				
Acoustic alarm	Before low battery or overheating disconnection				
General data					
Weight	8.5 kg		19 kg	18 kg	
Dimensions	142mm x 428mm x 84mm		273mm x 399mm x 117mm		
Protection index IP	IP 30 conforms to DIN 40050		IP 20 conforms to DIN 40050		
Certification ECE-R 10 (E24)	•	•	•	•	
EC conformity	EN 61000-6-1, EN 61000-6-3, EN 55014, EN 55022, EN 60950-1				
Operating temperature	-20°C up to +50°C				
Relative humidity in operation	95% without condensation				
Ventilation forced	From 45°C ± 5°C				
Acoustic level	< 45 dB (with ventilation)				
Warranty	5 years				
Approximate correction of Pnom	-1.5%/°C since +25°C				
Recommended battery capacity	> 5 x Pnom/Unom (recommended value in Ah)				
Length cables (Battery/left AC)	1.5m / 1m		1.7m / 1m		
Options					
Solar regulator	Voltage max.	25V	45V	25V	45V
	Current max.	25A		30A	
	Principle	Floating 3 stages (I/U/UO)			
	Absorption voltage	14.4V	28.8V	14.4V	28.8V
	Floating voltage	13.6V	27.2V	13.6V	27.2V
Remote control JT8 supplied with 5 m cable	•	•	•	•	

* 120Vac/60Hz on request

Data may change without any notice.

MBC series



Model	MBC 12-06/1	MBC 12-15/1	MBC 24-03/1	MBC 24-08/1	MBC 24-32/1
Battery voltage (Vdc)	12	12	24	24	24
Input voltage (Vac)	100-260 (40 - 60 Hz)				
Charge voltage (boost) (Vdc)	14.4	14.4	28.8	28.8	28.8
Charge voltage (float) (Vdc)	13.8	13.8	27.6	27.6	27.2
Output (A)	6	15	3	8	32
Cooling	Heat sink				
Outputs	1				
Efficiency	> 85 %				
Ambient temp. range	-25 to 50°C				
Dimensions lxxwxh (mm)	155x80x36	195x100x47	155x80x36	195x100x46	158x245x47.5
Weight (kg)	0.9	1.8	0.9	1.8	3.8
Switch to Floating mode (A)	0.2	0.8	0.2	0.4	3.5
Secondary fuse (A)	7.5	20	7.5	15	40
Input wired	•	•	•	•	•
Output wired	•	•	•	•	•
Warranty	2 years				

MDCI and MDC series



MDCI – DC/DC converter, switch-mode, isolated

Model	MDCI 100	MDCI 200	MDCI 360	MDCI 360 Charger
Power (W)	100	200	360	330
Input variants (Vdc)	A-B-C-D	A-B-C-D	A-B-C-D	A
Output variants (Vdc/A) ± 2%	12.5/8-24/4	12.5/16-24/8	12.5/30-24/15	27.6/12
Output current (A)	8/4	16.5/8	30/15	13
Galvanic isolation	•	•	•	•
Isolation voltage (V)	400			
Efficiency @ full load (%)	> 85			
Off-load current (mA)	< 25			
Operating temperature	-20 / +45°C			
Ambiant temp. (20°) increase after 30 min. @ full load	25°C		30°C	
Cooling	Convection		Fan	
Dimensions HxWxD (mm)	49x88x152	49x88x182	64x163x160	
Weight (gr)	500	600	1400	

* A = 9-18 Vdc B = 20-35 Vdc C = 30-60 Vdc D = 60-120 Vdc

MDC –DC/DC converter, switch-mode, not-isolated

Model	MDC 1224-7	MDC 2412-5	MDC 2412-8	MDC 2412-12	MDC 2412-20	MDC 2412-30
Power (W)	170	65	105	160	275	415
Output current (A)	7	5.5	8	12	20	30
Input (Vdc)	9-18	18-35		20-35		
Output (Vdc)	24	13.2		13.8		
Efficiency @ full load (%)	90					
Off-load current (mA)	< 15	< 5		25		
Operating temperature	-20 / +40°C					
Ambiant temp. (20°) increase after 30 min. @ full load	30°C		20°C	30°C	33°C	
Cooling	Convection					Fan
Dimensions HxWxD (mm)	49x88x98	49x88x68	49x98x88		49x88x126	49x88x151
Weight (gr)	300	170	250	260	480	600

Common features MDCI & MDC		
Paralleling	Max. 2 converters	
Humidity	Max. 95% non condensing	
Protection	Overload	Up to short-circuit
	Overheating	Output voltage reduction
	Overvoltage	Transient protection by Varistor
	Reverse polarity	Fuse
Casework	Anodized aluminium	
Connections	6.3 mm Faston	
Warranty	2 years	
Norms	EN 50081-1 (emission) EN 50082-1 (immunity) 95/54/EC (automotive directive)	

Data may change without any notice.



MBI series



MBI – Battery isolator, voltage drop free

Model	MBI 100/2 IG	MBI 150/2 IG	MBI 100/3 IG	MBI 150/3 IG	MBI 200/3 IG	MBI 2-100/3
Input nominal voltage (Vdc)	12/24					
Input voltage range (Vdc)	8-30					
Charge current max. (A)	100	150	100	150	200	100
Input number	1			2		
Battery banks	2		3			
Voltage drop @ 10a/20A (V)	0.05 / 0.1					
Consumption (mA)	0					
Alternator start	•	•	•	•	•	•
Operating temperature (°C)	-40 / +85					
Dimensions LxHxD (mm)	146x85x92			146x85x152		
Weight (gr)	780	810	780	810	815	780
Nominal voltage 12 or 24V	Automatic detection					
Insulation to ground	> 500V @ 60Hz					
Warranty	2 years					
Norms	EN 50081-1 (emission) EN 50082-1 (immunity) EN 60950-1 (safety)					

MBR series



MBR – Microprocessor controlled battery separator

Model	MBR 12/24-100	MBR 12/24-160	MBR 12/24-500
Nominal voltage (Vdc)	12/24	12/24	12/24
Charge current max. (Amp)	100	160	500
Connection threshold (Vdc) ± 2%	13.2/26.4	13.2/26.4	13.2/26.4
Disconnection threshold (Vdc) ± 2%	12.8/25.6	12.8/25.6	11.8/23.6
Battery banks	2		
Alternator start	•	•	•
Start contact for batteries paralleling	•	•	•
Micro switch for remote status indication	•	•	•
Dimensions LxHxD (mm)	46x46x80	46x93x96	72x70x80
Weight (gr)	110	300	417
Consumption	< 5mA		
Protection of the auxiliary battery against overvoltage	16 / 32Vdc		
Connection on the battery side	M6		M8
Other connections	6.3 mm Faston		
Warranty	2 years		
Norms	EN 50081-1 (emission) EN 50082-1 (immunity) Automotive Directive 95/54/CE		

Data may change without any notice.



MBW series



MBW – Battery watch

Model	MBW 40	MBW 60	MBW 200
Nominal voltage (Vdc) depends on jumpers		12/24	
Max. continuous current 5' (Amp)	40	60	200
Peak current (Amp)	120	120	480
Operating voltage range (Vdc)	6-35		8-32
Consumption (mA)	< 7		< 3
Alarm output delay	15 seconds		
Alarm output max. current (mA)	500		
Load disconnect delay	1 minute		30 secondes
Voltage level accuracy	0.2V	2%	0.1V
Casework	Anodized aluminium, black		
Weight (gr)	200		580
Dimensions HxDxDL (mm)	80x60x40	80x60x40	145x92x85
Battery protection	Against excessive discharge		
Users protection	Against overvoltages (16 / 32 Vdc)		Against overvoltages (15.5 / 31 Vdc)
MOSFET switches	No sparks		
Norms	EN 50081-1 (emission) EN 50082-1 (immunity) Automotive Directive 95/54/CE		EN 50081-1 (emission) Automotive Directive 95/54/CE

Jumper selectable voltage	
Disengage (V)	Engage (V)
10	11.5
10.5	12
11	13
11.5	13.8
21.5	24.5
22	25
22.5	25.5
23	26.5

SBM-02



SBM-02 – Battery monitor 12 and 24 Vdc (27-175 Vdc in option)

Model	SBM-02	
Supply voltage range	9-35 Vdc	
Consumption @ 12Vdc, without BL	9 mA	
Consumption @ 24Vdc, without BL	7 mA	
Input voltage range («Auxiliary» battery)	2...35 Vdc	
Input voltage range («Main» battery)	0...35 Vdc	
Input current range	-9999...+9999 A	
Battery capacity range	20...9990 Ah	
Operating temperature range	-20...50°C	
Protection class	IP20 (Frontpanel IP65)	
Dimensions	Front panel	Ø 64 mm
	Body diameter	Ø 52 mm
	Total depth	79 mm

Standart equipment SBM-02
Potential free alarm contact
500A/50mV current shunt
Optional accessories
SBM-PS-02-Voltage pre-scaler 1:5 (adapting the SBM-02 to input voltage 27-175Vdc)
Connection kit, type SBM-CAB-20, including 20 m of twisted pair cable (3x2x0.5 mm2) and 2 fuseholders
Communication kit, type SBM-COM, including RS232 interface box, 1.8 m of 9p DSUB serial cable and a software
Communication kit, type SBM-COM-USB, including USB interface box, 1.8 m of USB cable and software.
Temperature kit, type SBM;-TEMP-20, with 20 m cable
Shunt 1200 A/50 mV, type SH-1200-50



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