STUDER

Battery chargers

Inverter/chargers

Battery monitoring

Energy for a better life

Inverters

Battery splitters

Battery separators

MPPT solar charge controllers

DC/DC converters

SWISS MADE

Summary

By scanning the QR Codes you can find more information on the concerned chapter or product

Graphism
Atelier Perspective, R. Gigon, Sion.
August 2018

From Swiss chalets to the entire world

Roland Studer created Studer Innotec in 1987 with the mission to supply reliable and high-performing inverters and solar charge controllers for the emerging Swiss solar market.

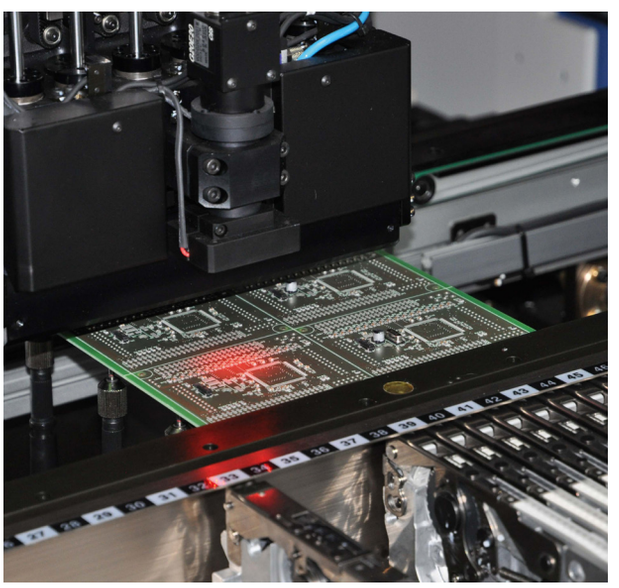
Rapidly, the business expanded worldwide to other applications within the renewable energy sector such as mobile, back-up and telecom systems.

Today 90% of our products are exported outside Switzerland through our global network of over 100 qualified partners.

Energy for a better life

Studer Innotec is a Swiss company, working in line with the Swiss culture of innovation, quality and reliability. In addition, a considerate and sustainable approach to our environment is very important to us.

Our team is fully committed to these values, which are also our promises to you. And we keep what we promise.



One mission: excellence

Studer products benefit from 30 years of experience in battery based systems, developed in the Swiss industrial tradition of excellence.

We believe that excellence is achieved through innovation, which is why we devote over 20 % of our resources to research and development every year.

The company's solid reputation, built on the robustness and reliability of its products, is further reflected in our unsurpassed product warranty. With up to 10 years warranty, we make a clear statement on the quality and longevity of our products.

Flexibility & profitability

Studer products are designed to work with all other components of an energy system, regardless of brand or technology. This flexibility ensures a perfect product compatibility and a maximal system efficiency.

The future of energy: improve working conditions and living standards

Demographic shifts and lifestyle changes have led to an ever increasing demand for energy. This energy should preferably be non-polluting, sustainable, low in maintenance and often available where there is no grid or a weak grid. Ever more innovating, "smart" solutions are required. These "Smart Grids" are central in the development of Studer products.

Timeline

Over the last 30 years, the demand on products for battery systems has evolved continuously. This evolution can also be seen in our company's Timeline, showing Studer's most important products and historical dates.

1985

1987

The beginning
Studer Innotec founded by Roland Studer

1987

SST-02
1st solar charge controller 200Wp for 12 & 24V system with analog display

1988

SST-04
Solar charge controller 300Wp for 12 & 24V systems with digital display

1990

1990

Miniconverter
Inverter with 30 - 120VA and load disconnection timer

1990

SolarInverter
Inverter from 0.3 - 2kW with integrated solar charge controller

1994

Sunwave
Inverter from 0.35 - 2kVA with integrated solar charge controller

1994

Moving to Granges
New headquarters and production site

1995

1995

Twinpower
1st sinewave inverter from 1-2kVA with on consumption below 0.5W

1996

Sinewave inverter SI
Sinewave inverter from 0.6 to 3.5kVA with high overload capability of 3.5x Pnom

1996

Soldering machine
1st in-house wave soldering machine

1998

1998

Sinewave inverter AJ
Sinwave inverter from 0.2 - 2kVA optional with integrated solar charge controller

1998

Compact C
1st Inverter/charger from 1.6 - 4kVA, compact all-in-one unit with integrated solar charge controller

1999

Moving to Sion
New headquarters and production site

2000

2002

HPC Compact
Inverter/charger from 2.8 - 8kVA;
1st 8kVA inverter

2003

XPC Compact
Inverter/charger from 1.4 - 2.2kVA; compact all-in-one unit with integrated solar charge controller

2005

2005

Prix Sommet
Winner of the UBS award for Entrepreneur of the year

2007

Xtender XTH
Birth of the famous Xtender series, XTH inverter/charger up to 72kVA, including Smart-Boost

2007

SMD Machine
1st in-house SMD soldering machine

2009

2009

Xtender XTM
Middle range of the Xtender series with power from 1.5 - 4kVA

2009

Studer China
Studer opens a sales office in Qingdao, Shandong, China

2010

2011

Xtender XTS
Small range of the Xtender series with power from 0.5 - 1.4kVA

2011

VarioTrack VT-65/VT-80
MPPT solar charge controller with a charge current of 65/80A and PV input 150Vdc

2012

ISO certification
Whole company ISO certification for Quality and Environment Management

2013

VarioString VS-120
MPPT solar charge controller with a charge current of 120A and PV input up to 900Vdc

2013

Studer India
Studer opens a sales office in Bangalore, India.

2014

2014

Solar Award 2014
Winner of the International Solar Award "Balance of System" for the VS-120 in Amsterdam

2014

Valais Excellence
Certification for sustainable companies with high environmental and social responsibility

2015

2015

VarioString VS-70
MPPT solar charge controller with a charge current of 70A and PV input up to 600Vdc

2016

New Battery Technologies
Studer products compatible with Lithium, NiFe, RedoxFlow, SaltWater batteries

2018

10 year Warranty!
We grant a warranty period of up to 10 years for the products of the AJ, Xtender & Vario series.

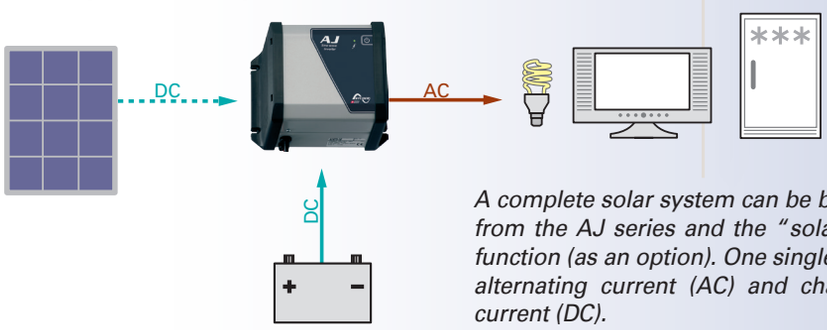
Applications in remote areas

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

These systems consist of three main components: first an energy source; normally a genset, a solar generator, a wind turbine or a combination of these; second battery storage; and third devices (inverter/charger, battery charger) able to charge the battery from the energy source(s) and to supply users with AC voltage (inverter, inverter/charger).

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

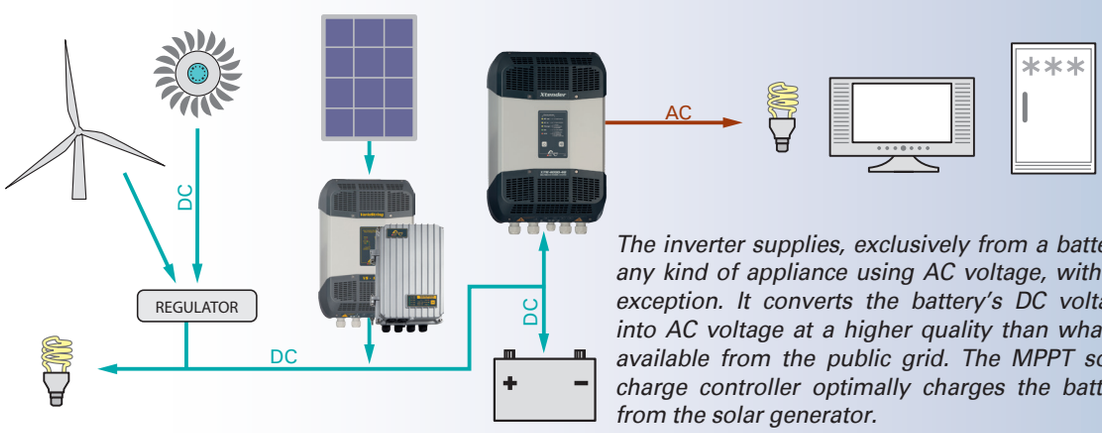
A complete solar system



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).

Inverters
AJ Series p. 28
(275 - 2'400VA)

Quality AC voltage for all electrical appliances

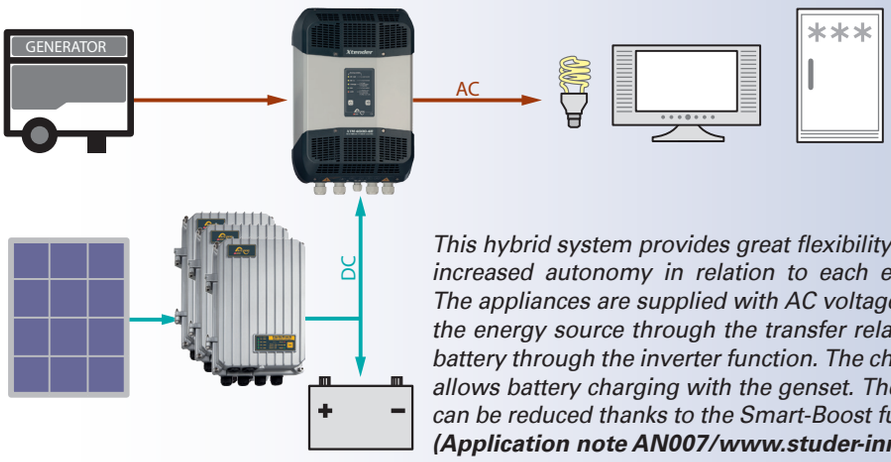


The inverter supplies, exclusively from a battery, any kind of appliance using AC voltage, without exception. It converts the battery's DC voltage into AC voltage at a higher quality than what is available from the public grid. The MPPT solar charge controller optimally charges the battery from the solar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

Inverters
Xtender Series p. 18
(900 - 72'000VA)
Compact Series p. 26
(1'400 - 4'000VA)
AJ Series p. 28
(275 - 2'400VA)

MPPT solar charge controllers
VarioTrack Series p. 14
(65 - 80A)
VarioString Series S. 16
(70 -120A)

Hybrid system: more autonomy and flexibility

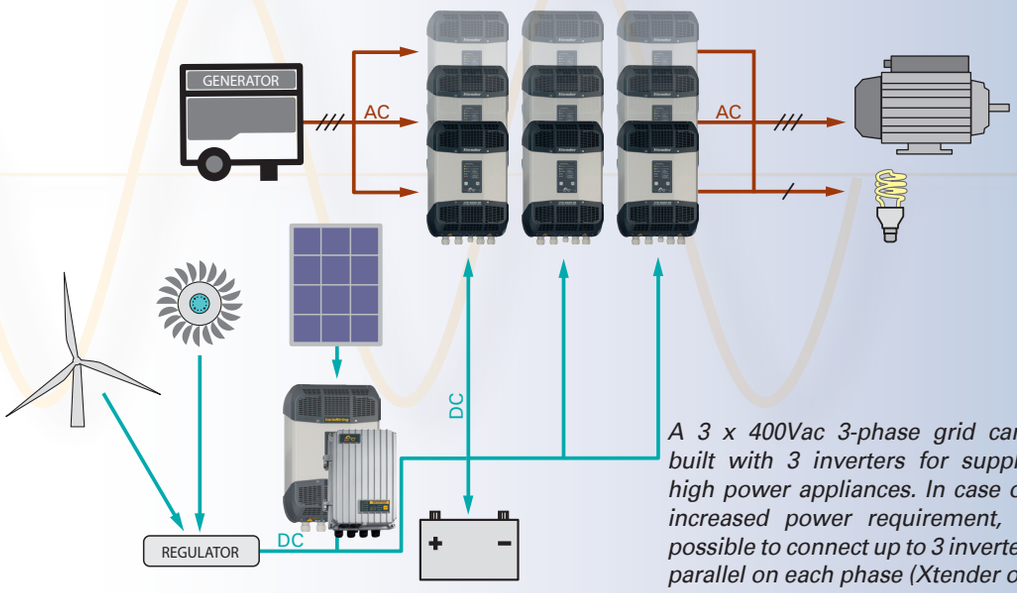


This hybrid system provides great flexibility in supply and increased autonomy in relation to each energy source. The appliances are supplied with AC voltage directly from the energy source through the transfer relay, or from the battery through the inverter function. The charger function allows battery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

Inverters
Xtender Series p. 18
(900 - 72'000VA)
Compact Series p. 26
(1'400 - 4'000VA)

MPPT solar charge controllers
VarioTrack Series p. 14
(65 - 80A)
VarioString Series p. 16
(70 -120A)

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

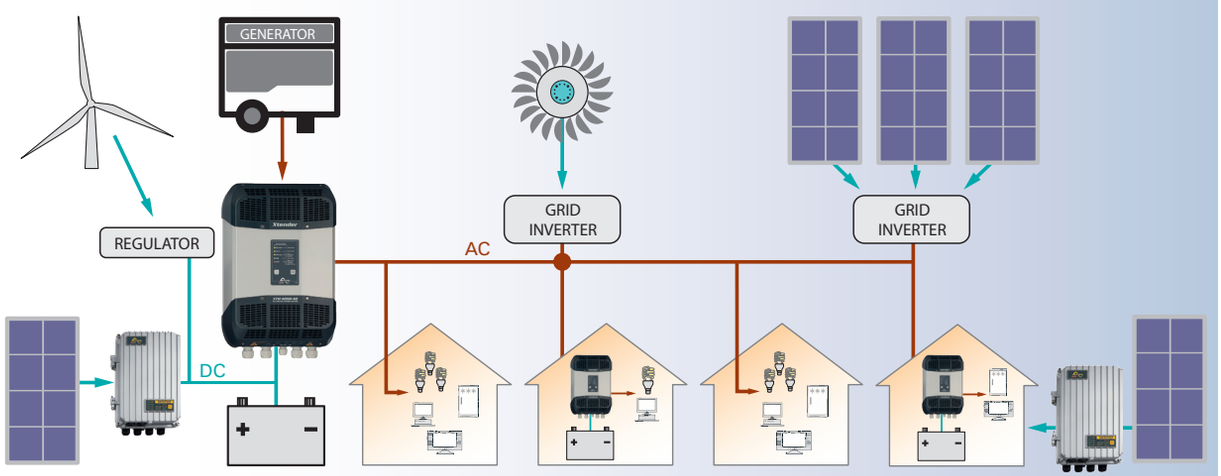


A 3 x 400Vac 3-phase grid can be built with 3 inverters for supplying high power appliances. In case of an increased power requirement, it is possible to connect up to 3 inverters in parallel on each phase (Xtender only).

Inverters
Xtender Series p. 18
(900 - 72'000VA)

MPPT solar charge controllers
VarioTrack Series p. 14
(65 - 80A)
VarioString Series p. 16
(70 - 120A)

Mini-Grid



Various power sources supply energy to several consumer points.

Inverters
Xtender Series p. 18
(900 - 72'000VA)

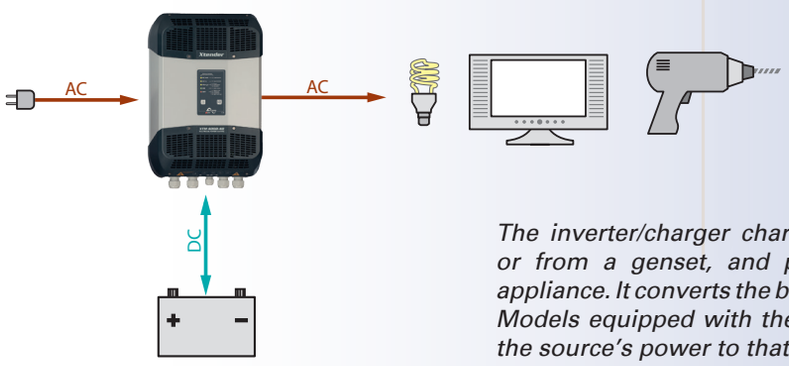
Mobile applications

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 a complete product range that ensures 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.

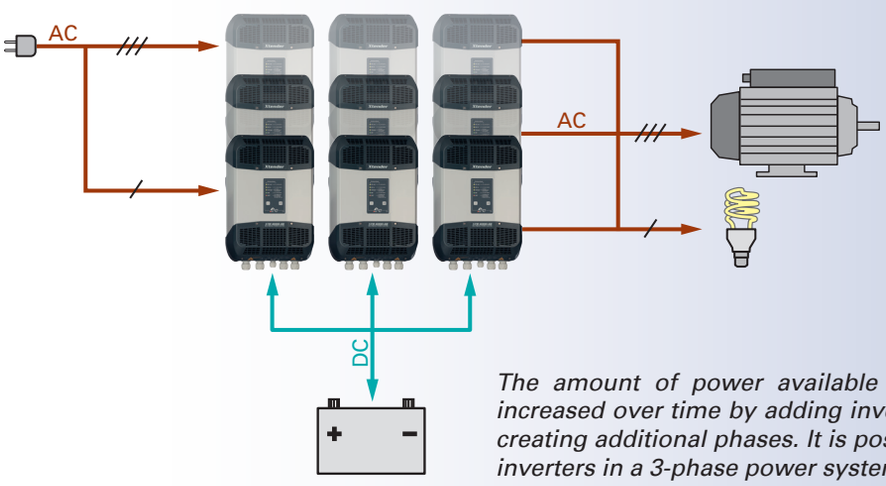
A simple and reliable on-board system



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. Models equipped with the Smart-Boost system can add the source's power to that of the inverter.

Inverters
Xtender Series p. 18
(900 - 72'000VA)
Compact Series p. 26
(1'400 - 4'000VA)

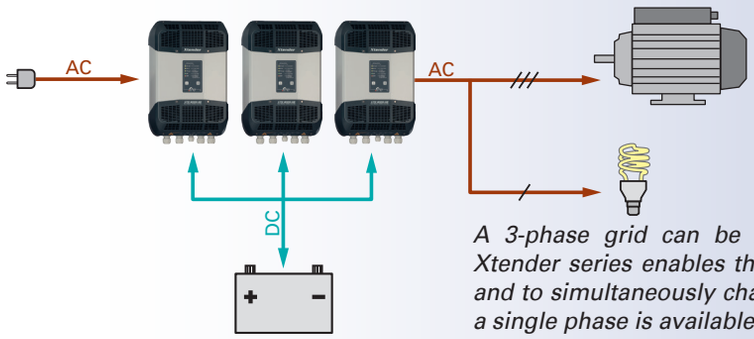
An upgradeable power



The amount of power available to the users can be increased over time by adding inverters in parallel or by creating additional phases. It is possible to install up to 9 inverters in a 3-phase power system.

Inverters
Xtender Series p. 18
(900 - 72'000VA)

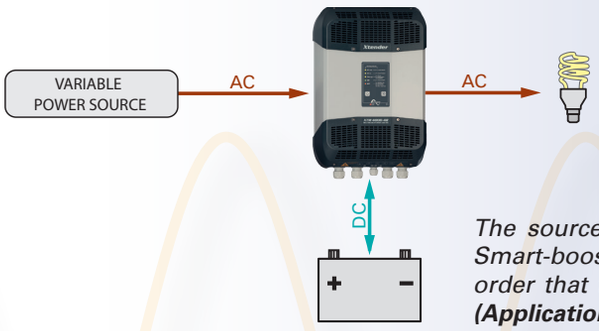
3 x 400Vac 3-phase grid on-board



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.

Inverters
Xtender Series p. 18
(900 - 72'000VA)

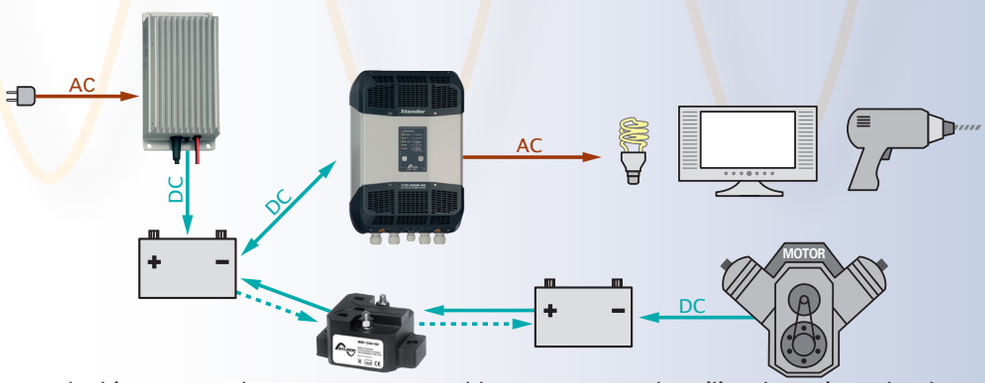
Variable power source assistance



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).***

Inverters
Xtender Series p. 18
(900 - 72'000VA)

Successive battery charging

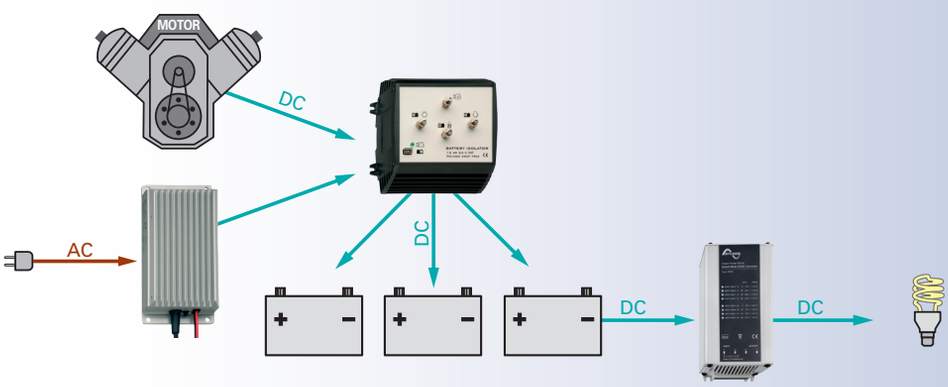


In this system, a battery separator enables one or several auxiliary batteries to be charged, once the primary battery is charged.

Battery separators
MBR Series p. 32

Battery chargers
MBC series p. 30

Simultaneous battery charging and DC/DC conversion



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

MOSFET battery splitters
MBI Series p. 32

Battery chargers
MBC Series p. 30

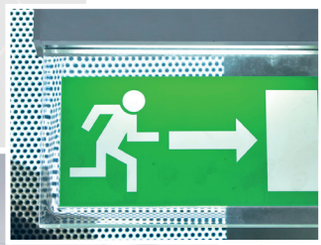
DC/DC converters
MDCI-MDC Series p. 31

Backup applications

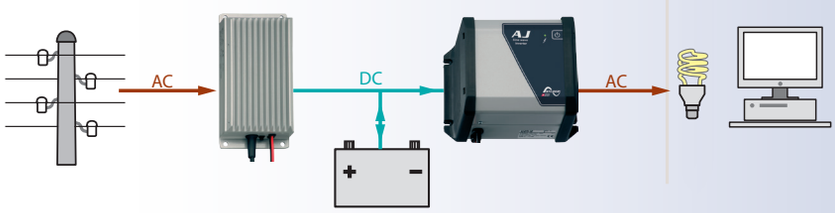
Appliances such as fridges, PCs, emergency lights, etc. which are supplied by the public grid and cannot afford any power cut, are electrically secured.

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



Uninterruptible power supply on-line

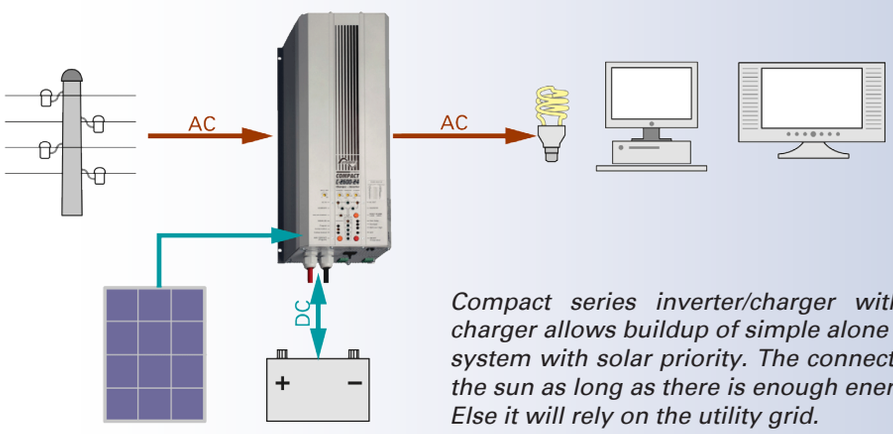


In this system, the battery charge functions and appliances' power supply are separated: On one side is a battery charger, and on the other, an inverter. Grid current fluctuations have no impact on the appliances.

Inverters
AJ Series p. 28
(275 - 2'400VA)

Battery chargers
MBC Series p. 30

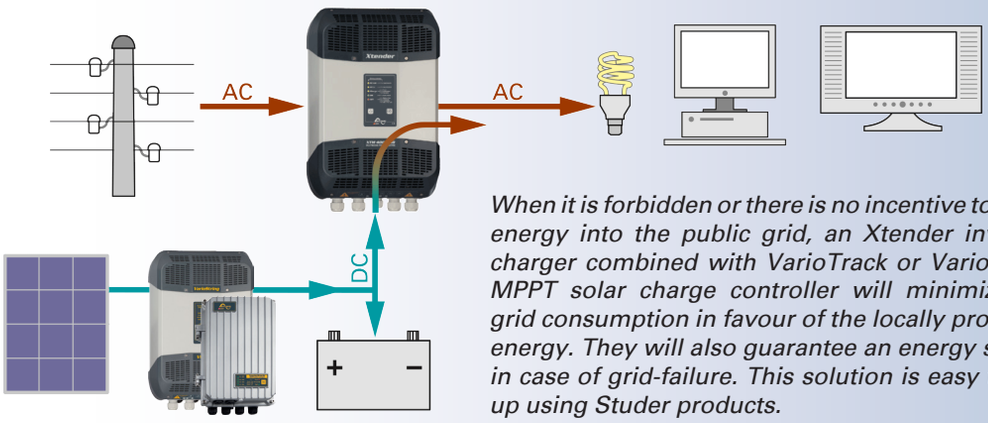
Uninterruptible power supply off-line



Compact series inverter/charger with built in solar charger allows buildup of simple alone one solar backup system with solar priority. The connected loads runs on the sun as long as there is enough energy in the system. Else it will rely on the utility grid.

Inverters
Compact Series p. 26
(1'400 - 4'000VA)

UPS with solar backup and solar priority



When it is forbidden or there is no incentive to inject energy into the public grid, an Xtender inverter/charger combined with VarioTrack or VarioString MPPT solar charge controller will minimize the grid consumption in favour of the locally produced energy. They will also guarantee an energy supply in case of grid-failure. This solution is easy to set-up using Studer products.

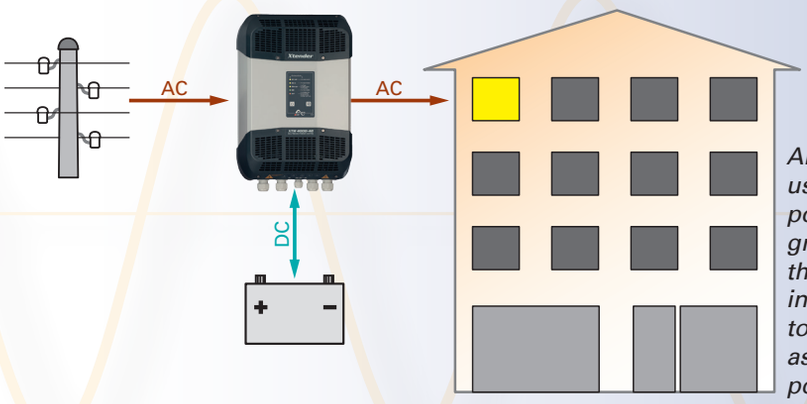
Inverters

Xtender Series p. 18
(900 - 72'000VA)
Compact Series p. 26
(1'400 - 4'000VA)

MPPT solar charge controllers

VarioTrack Series p. 14
(65-80A)
VarioString Series p. 16
(70 - 120A)

Individual Home backup



An inverter/charger is used to provide backup power in case of public grid outage. As soon as the power shuts down the inverter/charger switches to inverter mode and assures an uninterrupted power supply.

Inverters

Xtender Series p. 18
(900 - 72'000VA)
Compact Series p. 26
(1'400 - 4'000VA)

Back-up installation, Johannesburg, 6 x XTH 6000-48 Sinetech

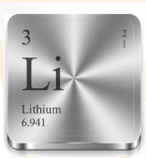
Self-consumption systems

In order to give priority to consumption of the energy generated from your own solar or renewable installation, different systems including the Xtender inverter/chargers can be set up.

These systems store excess energy produced during daytime in batteries to be used at a later time, maximizing self-consumption. The public grid will only be used to import or export small amounts of energy if absolutely necessary.

Studer works with Lithium

Lithium batteries are being used more and more in off-grid, self-consumption, mobile and energy storage applications. Studer Innotec is compatible with many important lithium battery manufacturers, to give to the customer the widest possible choice to find its best solution.



An example of Lithium battery brands we work with:

ATEPS · AutarcTech enjoy independence · BLUE NOVA energy · BMZ THE INNOVATION GROUP · BYD · GARAMANTA · industrie automation · Leclanché · LG Chem · orion BMS · PALLAS · PowerTech systems · REC Control Your Power! · RELiON Lithium For Life · simpliphi power · SOLÁRNÍ PANELY.CZ · SUPER B · TESVOLT STORAGETECHNOLOGY · torqeedo

Inverters

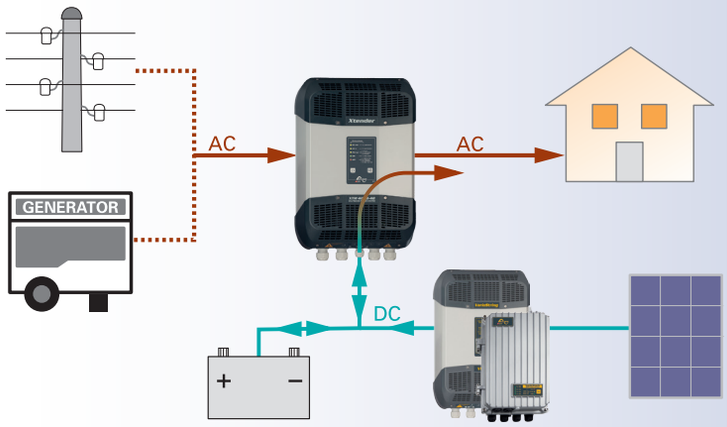
Xtender Series p. 18
(900 - 72'000VA)

MPPT solar charge controllers

VarioTrack Series p. 14
(65-80A)

VarioString Series p. 16
(70 - 120A)

Priority to renewable energy without grid-injection

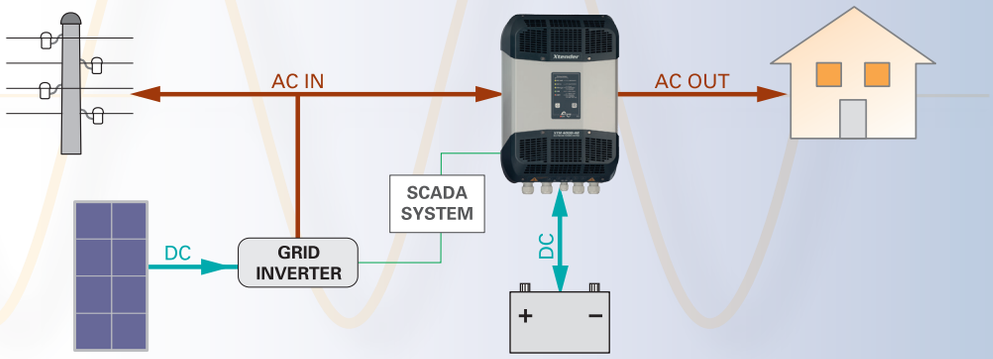


When it is forbidden or there is no incentive to inject energy into the public grid, an Xtender inverter-charger combined with VarioTrack or VarioString MPPT solar charge controller will minimize the grid consumption in favour of the locally produced energy. They will also guarantee an energy supply in case of grid-failure. This solution is easy to set-up using Studer products.

Inverters
Xtender Series p. 18
(900 - 72'000VA)

MPPT solar charge controllers
VarioTrack Series p. 14
(65-80A)
VarioString Series p. 16
(70 - 120A)

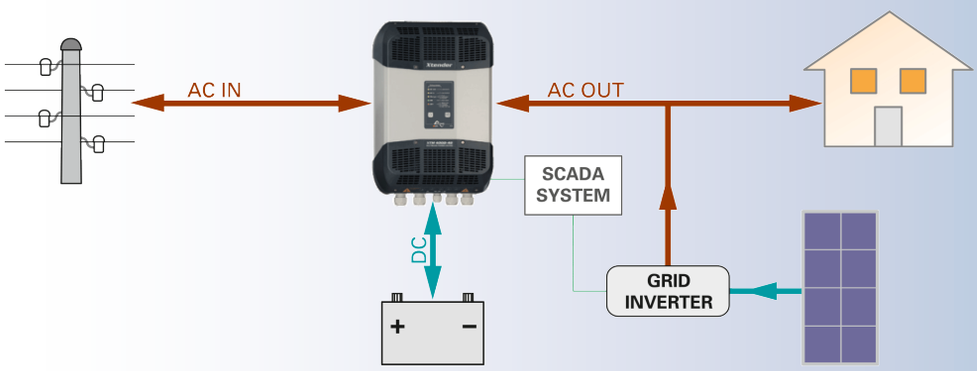
Optimising self-consumption with partial backup



This system has the advantage of being easily integrated into an existing grid-feeding installation even when its power is higher than that of the Xtender. The self-consumption is optimized by means of an expert control system (SCADA) supplied by partners of Studer Innotec. This system also allows creating a separate secure grid adapted for selected backup appliances (e.g. lights, cooling systems and communication).

Inverters
Xtender Series p. 18
(900 - 72'000VA)

Optimising self-consumption with full backup



This system will secure all user (household) appliances however it requires that the power of the Xtender is at least equivalent to the grid inverter and that it covers the household's power needs. The self-consumption is optimized by means of an expert control system (SCADA) supplied by partners of Studer Innotec. A correctly sized system adapted to meet the customer's needs guarantees the energy supply during power outages of the public grid.

Inverters
Xtender Series p. 18
(3500 - 72'000VA)

MPPT solar charge controllers

VarioTrack Series

The VarioTrack solar charge controller maximizes the energy generated from solar panels in any solar installation. It contains an MPPT (Maximum Power Point Tracking) algorithm that continuously tracks the maximum power point and automatically charges the batteries in an optimal way with all the available solar power.

VarioTrack
VT-65

VarioTrack
VT-80

Main features

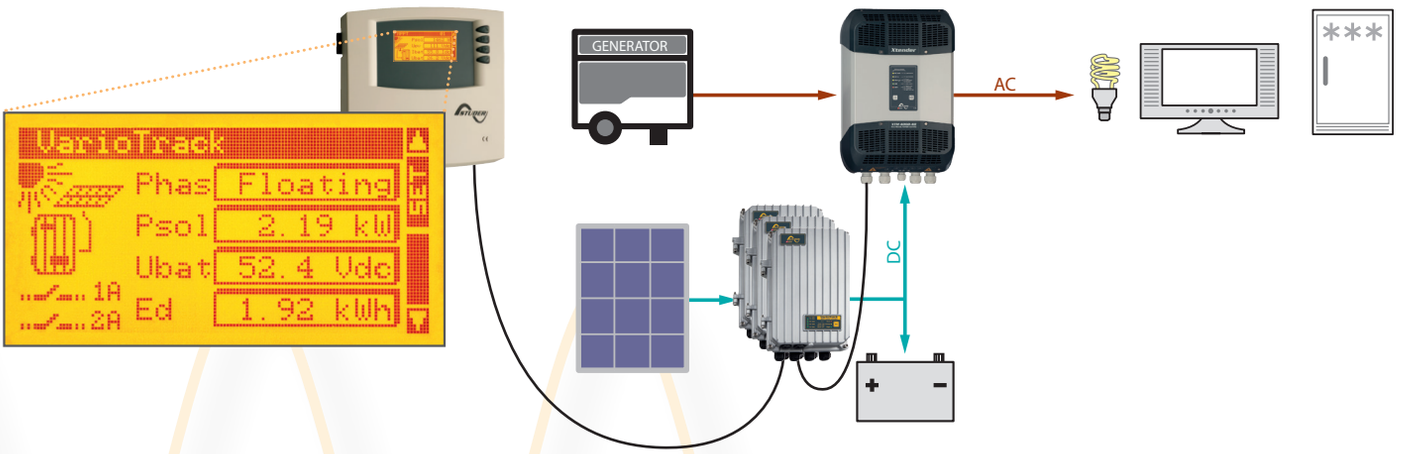
- Easy and safe commissioning with full protection against incorrect wiring
- Rugged and durable, this device is designed to perform in harsh environmental conditions (IP54)
- High conversion efficiency >99%
- Up to 15 VarioTrack in parallel on the same communication bus
- 4 step charger for longer battery life
- Low self-consumption: <1W in night time mode
- Display with 7 LEDs showing status and current
- Comprehensive display, programming and datalogging with RCC-02/-03
- Communication sets with Xcom-LAN, Xcom-GSM, Xcom-SMS (opt.)
- Suitable for any solar system
- Optimal usage in an Xtender system with synchronized battery management

VarioTrack Series	Nominal battery voltage	Maximum power of the solar generator	Maximum voltage of the solar generator	Maximum charging current to the battery
VT-65	12 V	1000 W	75 Vdc	65A
	24 V	2000 W	150 Vdc	
	48 V	4000 W	150 Vdc	
VT-80	12 V	1250 W	75 Vdc	80A
	24 V	2500 W	150 Vdc	
	48 V	5000 W	150 Vdc	

* Complete technical specifications on page 34

The VarioTrack in an Xtender system

Designed to function in any solar installation, the VarioTrack works optimally in an Xtender system. The communication between the two devices allows for synchronized battery management.



Display and programming possibilities

The VarioTrack is fitted with several indicator lights and a control button for its basic operation. It is also possible to do basic programming using the DIP switches situated inside the device.

By adding a remote control and programming centre RCC-02/-03, the VarioTrack can use all functions available in the remote control such as display, programming, data logging etc.

Mini-Grid, Tanzania, 4 x XTH 8000-48, 12 x VT-80

Ensol Tanzania Ltd

MPPT solar charge controllers

VarioString Series

The VarioString family is comprised of 2 models of MPPT solar charge controllers with 70A or 120A battery charge current for 48V batteries. The devices have one (VS-70) or two (VS-120) MPPT inputs to connect PV modules and, due to the use of transformers, have full isolation between the PV and battery circuits. When connected independently or in parallel, the MPPT inputs allow for a PV voltage range of 200 to 600V. The VS-120, with its MPPT inputs connected in series, provides the option of a PV voltage from 400 to 900V.

VarioString
VS-120

awards solar WINNER 2014

VarioString
VS-70

Main features

- Reduces Balance of System costs (eliminates expensive wiring for parallel strings, saving wires, connectors, junction boxes, fuses, space, time, etc.)
- Safe, simple and trouble free connection with SUNCLIX™ (Phoenix Contact "tool free") PV connector
- Safety, guaranteed, thanks to the reinforced isolation between the PV generator and battery and between the two PV inputs of the VS-120. This allows for independent earthing of the battery and/or solar modules
- World champion for efficiency in isolated converter with >98 % conversion efficiency
- 7kW per unit and up to 15 units in parallel: 105kW
- 4 step charger fully programmable for longer battery life
- 9 LEDs to monitor status and current
- Full display, configuration and data acquisition with RCC-02/03 and/or via the internet with the Xcom LAN/Xcom-GSM or via SMS with Xcom-SMS (see p. 23-24)

10 YEAR WARRANTY

VarioString Series	VS-70	VS-120		
	MPPT	MPPT 1 or 2	1 + 2 in parallel	1 + 2 in serie
Maximum Solar Power recommended	4200 W	3500 W	7000 W	7000 W
Maximum PV Current	13 A	13 A	26 A	13 A
Maximum open circuit voltage	600 V	600 V	600 V	900 V
Minimum functional circuit voltage	200 V	200 V	200 V	400 V
Recommended MPPT voltage	250-500 V	250-500 V	250-500 V	500-750 V
Maximum output current	70 A	60 A	120 A	120 A
Battery voltage	48 V nom. (38-68 V)			

* Complete technical specifications on page 35

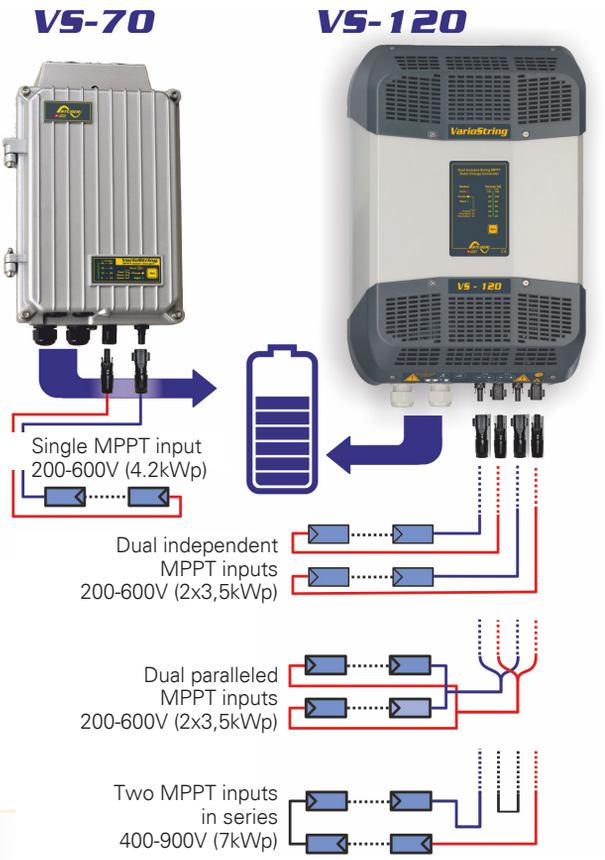
VS-70 and VS-120: Flexible & complementary

Both VarioString models complement each other so that they are able to meet the diverse requirements of a given system. For example, the choice of an IP54 casing for the VS-70 or the elevated power of the VS-120.

They are also configurable via DIP Switch.

The MPPT inputs are equipped with SUNCLIX™ connectors and, with the VS-120, can be connected separately, in parallel or in series for maximum flexibility in PV array design.

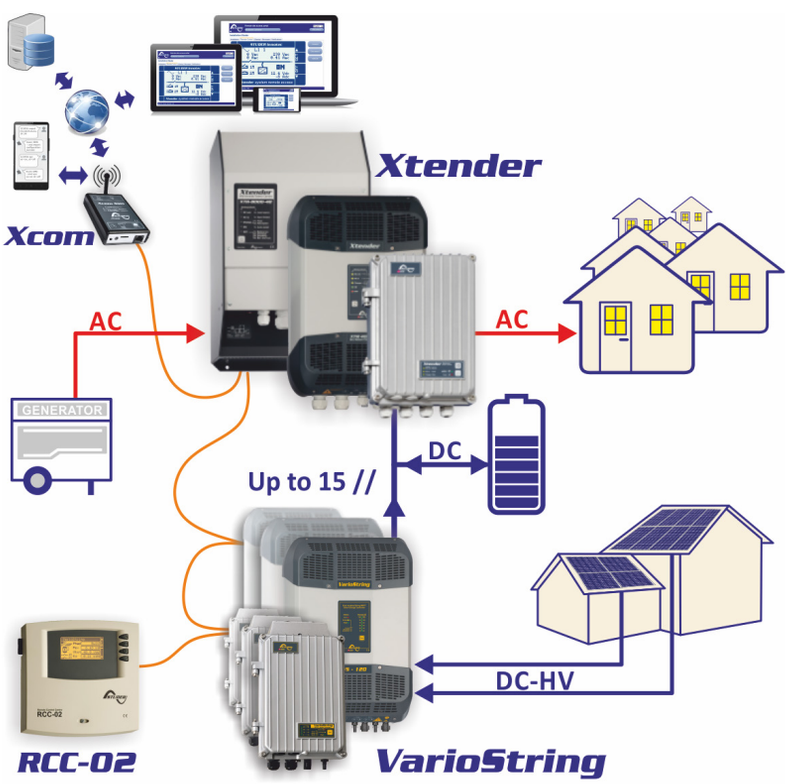
Integrated in an IP54 casing, the features of the VS-70 are similar to the VS-120: both can control 2 auxiliary relays (with ARM-02 accessory) that allow, for example, to control the start-up of a generator or the disconnection of non-priority loads.



Display and programming possibilities

The VarioString devices are equipped with a control button and indicator lights for a clear reading of the state of the device and the battery charge current.

The setting of the battery charge cycle suitable for different battery types is possible using DIP switches within the device. Equipped with Studer CAN bus connections, the VarioString devices are compatible with Xtender family communication, display, and data acquisition accessories (RCC and Xcom see p. 23-24), which allow for custom programming of the system. The VS-70 (and soon the VS-120) has a remote entry which allows it to control the start/stop of the MPPT charge controller or program another function with the RCC-02/03 (such as to force an equalization).



The VarioString in an Xtender system

Designed to work in any solar installation, the VarioString series works best in an Xtender system.

Communication between the devices allows for synchronized battery management and full use of Xtender accessories.

Applications

Xtender Series

10 YEAR WARRANTY

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 automatic control of a genset or loadshedding when the battery voltage is too low. The flexibility obtained makes it possible to implement special functionalities, often necessary for good energy management in standalone systems.

Xtender XTS

XTS 900-12
XTS 1200-24
XTS 1400-48

Xtender XTM

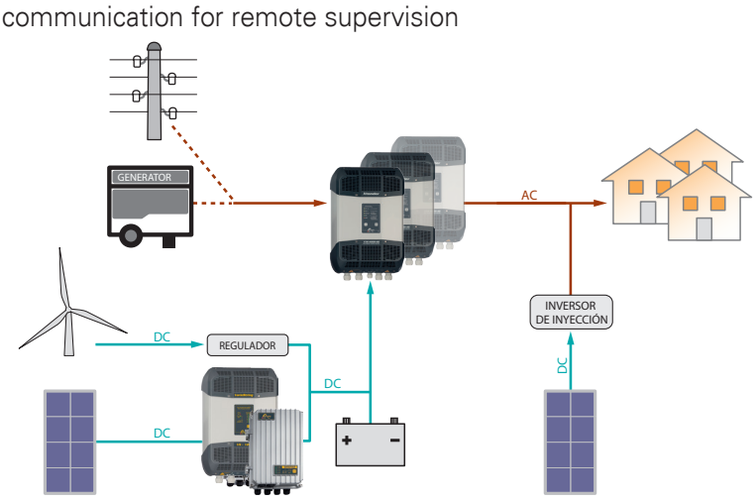
XTM 1500-12
XTM 2000-12
XTM 2400-24
XTM 2600-48
XTM 3500-24
XTM 4000-48

Xtender XTH

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

Main features

- Outstanding efficiency and overload
- Perfect management and limitation of AC sources
- Power shaving of the consumption peaks
- Automatic allocation of available power
- Active filtering of 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 offers 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).

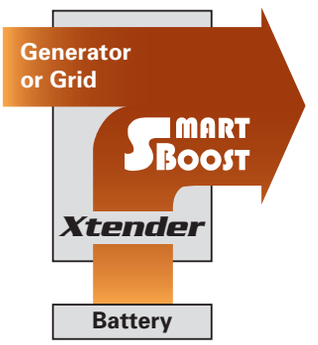
Xtender Series	Output power P30/Pnom	Power Smart-Boost	Battery voltage	AC voltage	Charge current	Transfer current
XTS 900-12	900 VA** / 500 VA	900 VA**	12 V	230 Vac*	0 - 35 A	16 A
XTS 1200-24	1200 VA** / 650 VA	1200 VA**	24 V	230 Vac*	0 - 25 A	16 A
XTS 1400-48	1400 VA** / 750 VA	1400 VA**	48 V	230 Vac*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

* 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 36

Smart-Boost function and active filtering

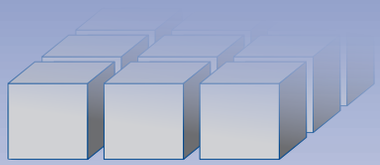
With this function it is possible to interact directly with the AC source (Genset or grid) and to implement some basic functions such as:

- Efficient and immediate limitation of the current of the source, including none linear or inductive/ capacitive loads, protecting efficiently the breakers during connection to shore power or to a camping power meter with limited current (function of power shaving and 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 an optimal sizing of the generator and assuring the best possible efficiency of the fossil 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).**

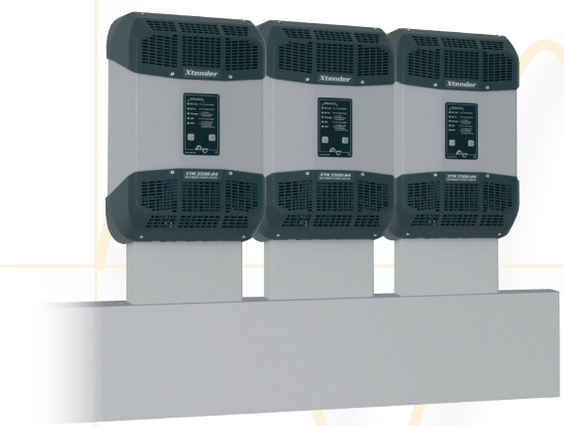
Hörnlihütte, Off-Grid application, Switzerland, 9 x XTH 8000-48, 3 x VS-120 — Solarbau Lowel GMBH



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 can be combined together for up to 72kVA!

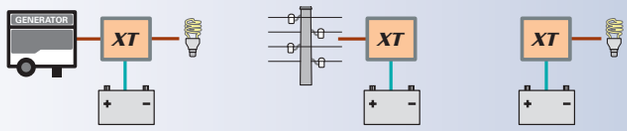


Compatible with standard cable channel (230 x 60mm)

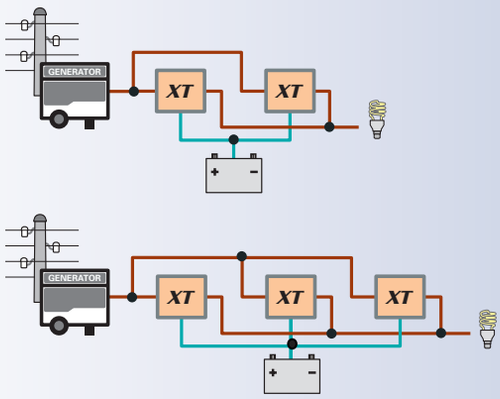
Off-Grid residence, South Africa, 9 x XTH 8000-48, 12 VS-120

Rubicon SA

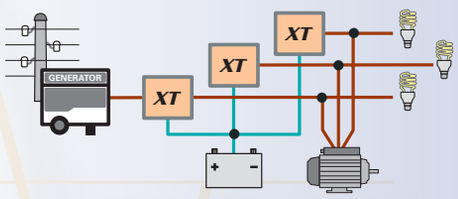
Inverter, charger and transfer relay
The Xtender works as an inverter and as a charger, combined with a transfer relay.



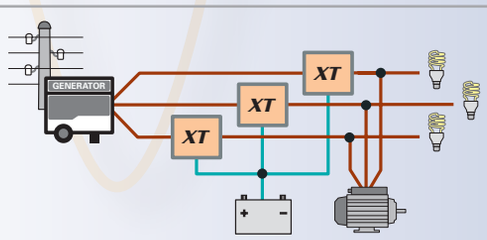
2 or 3 units in parallel on 1 phase
Increase the power on one phase by connecting 2 or 3 Xtender in parallel.



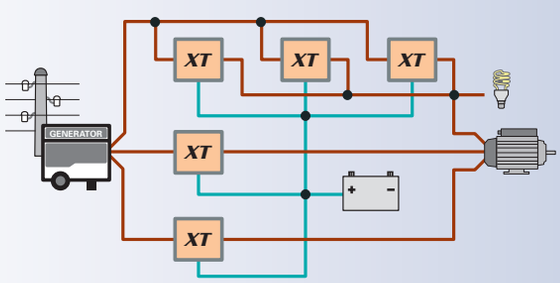
1 phase in and 3 phase out
Three-phase power supply from a single phase source.



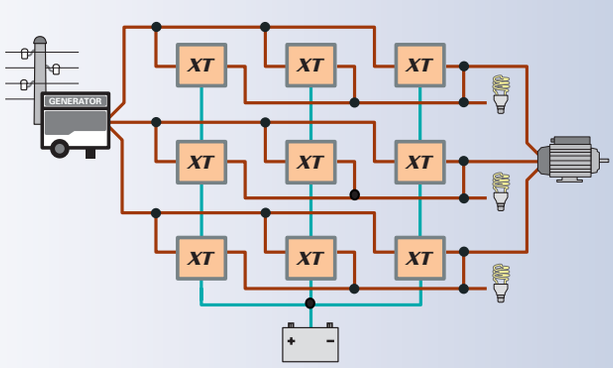
3 phase in and 3 phase out
Three-phase source for a three-phase power supply.



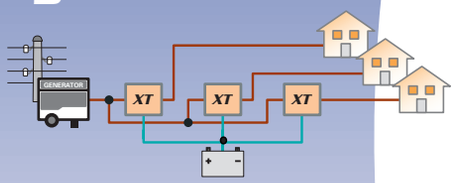
3 phase + with one reinforced phase
Three-phase power supply with increase of the power on one phase by connecting 2 or 3 Xtender in parallel on this phase.



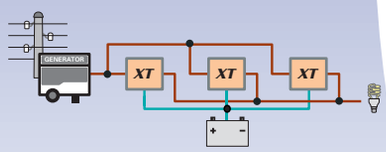
3 Xtender in parallel on 3 phases
Three-phase power supply with 3 Xtender on each phase, for power up to 72kVA.



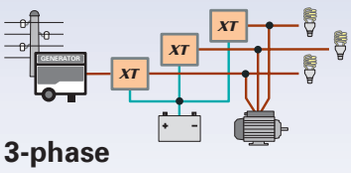
X-Connect system



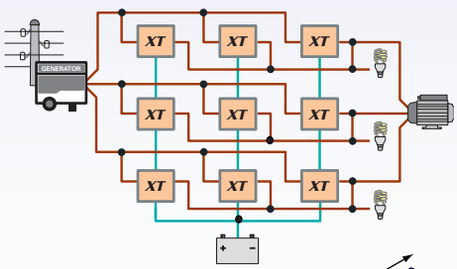
Centralized



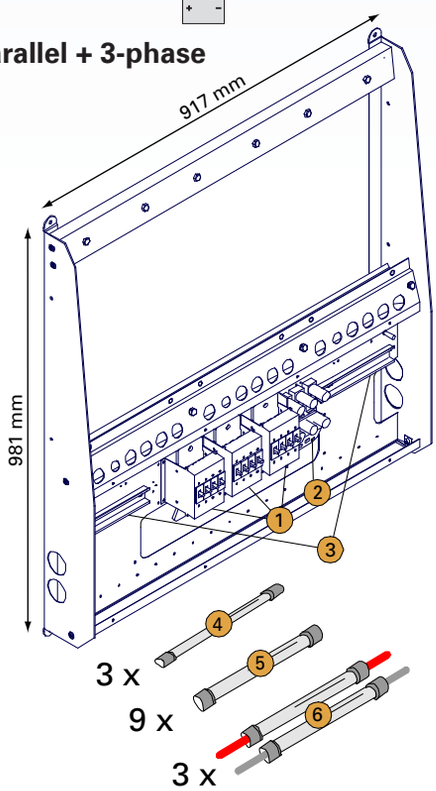
Parallel



3-phase



Parallel + 3-phase



Mounting frame for multi-Xtender system

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

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 + 90mm² wire terminated with appropriate ring tongues for DC wiring from Xtender to breakers and fuses

Screws set for frame assembly

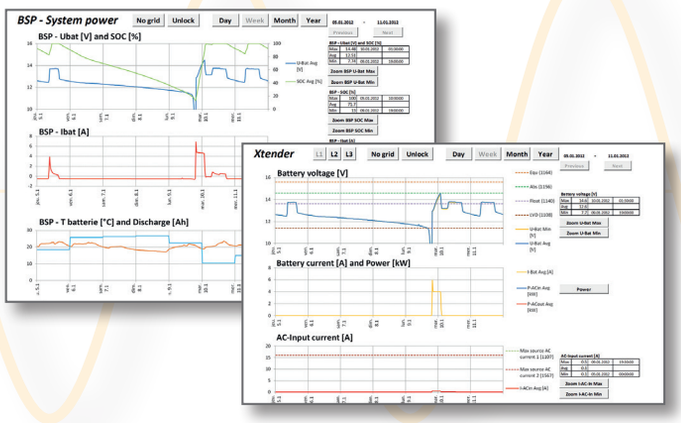
Xtender/VarioTrack/VarioString Accessories

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. The RCC gives a controlled access to the many adjustable parameters of the Xtender and the VarioTrack/VarioString. 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 the RCC provides clear and comprehensive indications on the state of the system in a selectable language. The unit records and displays the events that occurred on an installation and so it anticipates the problems that might appear. A slot for an SD card is incorporated in the RCC which allows parameters and log data to be recorded as well as a software update of the entire system.



Data logging and analysis

Analyse 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.

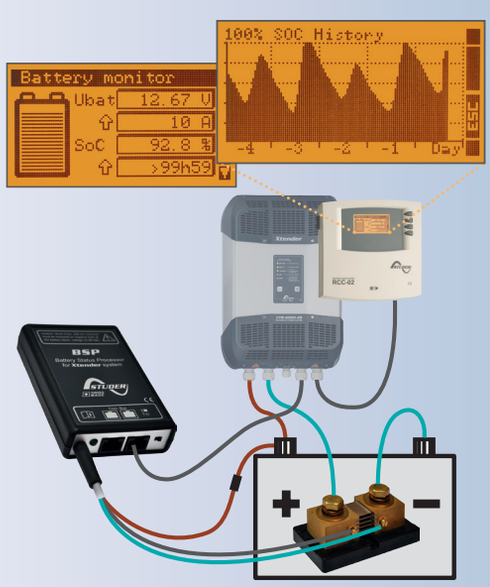
These standards enable the analysis of the system's energy consumption evolution, to check the power cuts, the state of the auxiliary contacts, the input currents and voltages, etc.

Studer Innotec offers for free a graphical and analysis tools, Xtender Data Analysis Tool. **(more information on our website and in the Application note AN006/www.studer-innotec.com).**

Battery Status Processor BSP for Xtender and VarioTrack/VarioString systems

One of the most important values for safe and effective operating of an energy system with batteries is their state of charge.
The BSP offers, for Xtender and VarioTrack/VarioString 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 data logging, the display of values and the graphical display of the state of charge history and the settings. Values of the BSP can be used in the programming of Xtender and VarioTrack/VarioString systems. In addition, 17 different values can be displayed such as:

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



The two models, BSP 500 and BSP 1200, are supplied with a 500A or 1200A shunt respectively, a 5m cable for battery connection, and a 5m communication cable.

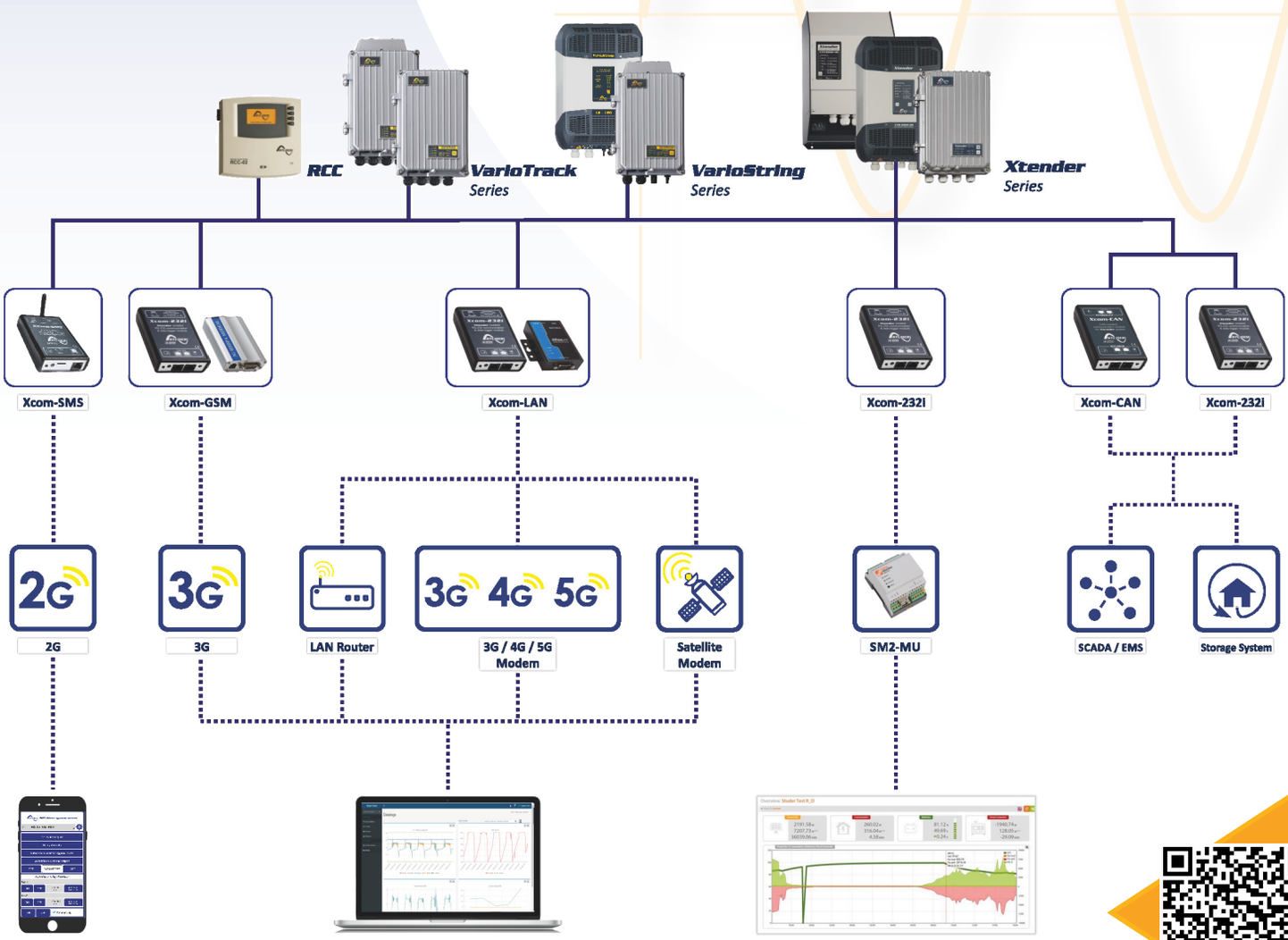
Communication for Xtender/ VarioTrack/VarioString

Communication by SMS or internet

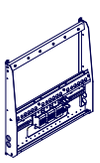
Xtender/Vario systems can be entirely and remotely controlled by mobile phone with the **Xcom-SMS** that requires a basic GSM (2G) coverage. The information exchange – change of parameters, data request, alarms or report sending, etc. – is then done by sending a simple SMS, secured by password.

In addition, total control of the system is also possible via internet on our secured server. The connection with internet is carried out either by **Xcom-LAN**, provided the site has internet access via a local network; or by **Xcom-GSM**, if the site has access to a mobile phone network with data (3G) coverage.

Our server will provide secure and full access – parameters, real time data, data log, configuration of alarms by SMS or E-Mail, etc. – to all sites with an **Xcom-LAN** or **Xcom-GSM** installed, and by means of any device with an internet browser: smartphone, PC or tablet.



Xtender/VarioTrack/VarioString Accessories

		XTS	XTM	XTH	VT	VS
	***RCC-02/-03*** *Remote control and programming units with real-time data display for system monitoring and setting of system parameters. Integrated SD memory card with automatic recording of log data.* *The remote control is available in version RCC-02 (surface-mounted) or RCC-03 (built-in device).*	●	●	●	●	●
	***BTS-01*** *Battery temperature sensor offering the automatic compensation of the adjustable thresholds of the battery voltage.*	●	●	●	●	●
	***Xcom-SMS*** *Communication set for worldwide system access with SMS communication with simple GSM network coverage (2G). A very low cost solution where local pre-paid SIM cards can be used.*	●	●	●	●	●
	***Xcom-GSM / Xcom-LAN*** *Communication sets for system access via the Internet to the Studer web portal. This means that the system can be controlled and monitored from a distance at anytime, anywhere in the world. The Xcom-LAN includes a LAN module for access to a local area network (LAN) and the Xcom-GSM a GSM module (3G).* *In addition, notifications can be sent to the user(s) via email and SMS.*	●	●	●	●	●
	***BSP 500/1200*** *Measuring module incl. shunt resistor for calculating the exact battery state of charge (SOC). The SOC values can be used to actively control the auxiliary contacts. The BSP 500 comes with a 500A shunt and the BSP 1200 with a 1200A shunt.*	●	●	●	●	●
	***Xcom-232i / Xcom-CAN*** *Communication module with RS-232 / CAN port and 2m RJ45 cable, allowing access to the parameters and measured values of the Xtender system.* *It makes the link between an Xtender system or via a SCADA system (not supplied).* *In addition, the Xcom-CAN enables direct communication and integration of lithium batteries into the Studer systems.*	●	●	●	●	●
	***ARM-02*** *This module, only meant for the XTS and for the VT/VS models and for rail DIN mounting, is equipped with 2 auxiliary contacts controlled by the XTS or by the VT/VS. This function is already integrated in the models XTM and XTH.*	●			●	●
	***RCM-10*** *Module for rail DIN mounting (with 5m cable) giving access to the main ON/OFF and to the command entry with the models XTS and XTM.*	●	●			
	***ECF-01*** *A subsequent plug & play installation directly on the device is possible without expert intervention. (Replacement text for the last two sentences)*	●			●	
	***X-Connect*** *Assembly structure in a compact design (<1m2) for a maximum of 3 units of the XTH series. A flexible, space- and time-saving solution which reduces installation costs. Completely equipped with the DC breakers and fuses, and DIN rails for the AC devices.*			●		
	***CAB-RJ45-8-xx*** *Communication cables are needed to interconnect the Xtender / VarioTrack / VarioString. The 2m standard cables are already included in the accessories listed above. The cables can be ordered in lengths of up to 50m.*	●	●	●	●	●

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

Main features

- 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

Compact Series	Output power P30/Pnom	Battery voltage	AC voltage	Charge current	Transfer current	Solar option (-S)
XPC+1400-12	1400 VA / 1100 VA	12 Vdc	230 Vac*	0 - 45 A	16 A	30 A
XPC+ 2200-24	2200 VA / 1600 VA	24 Vdc	230 Vac*	0 - 37 A	16 A	30 A
XPC+ 2200-48	2200 VA / 1600 VA	48 Vdc	230 Vac*	0 - 20 A	16 A	20 A
C 1600-12	1600 VA / 1300 VA	12 Vdc	230 Vac	0 - 55 A	16 A	30 A
C 2600-24	2600 VA / 2300 VA	24 Vdc	230 Vac	0 - 55 A	16 A	30 A
C 4000-48	4000 VA / 3500 VA	48 Vdc	230 Vac	0 - 50 A	16 A	20 A

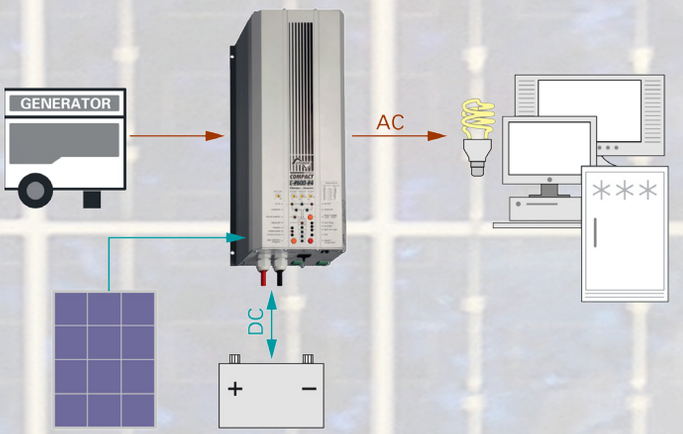
* For the 120Vac/60Hz version, -01 is added to the model designation

Complete technical specifications on page 37

Optional built-in solar charge controller (-S)
Simple and robust hybrid system

Compact or XP-Compact series inverter/ charger with built in **PWM** solar charger allows for a simple stand-alone solar/ diesel hybrid system. Compact, efficient, robust and delivered with battery cables. It is it a cost effective choice for small solar hybrid systems.

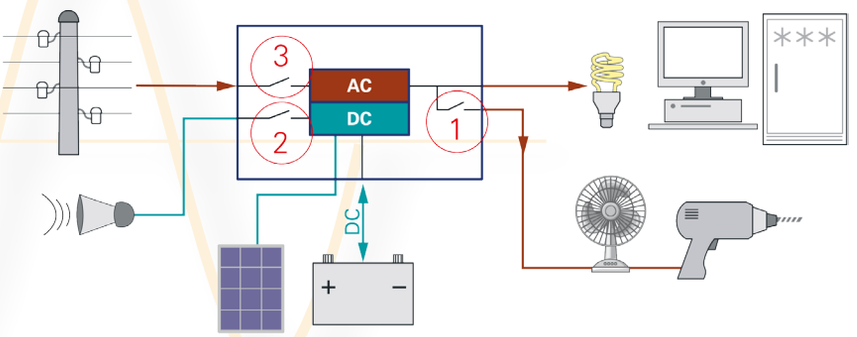
12V/24V model => solar charge controller: 30A
48V model => solar charge controller: 20A



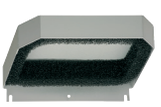
Multifunction programmable auxiliary relay

The 16A 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, presence of public grid or sunlight...), and can be used for many diverse applications such as:

1. Load shedding according to battery status
2. Alarm signalization or start of genset according to battery status or power output
3. Conditional connection to AC source to increase self consumption of renewable energy



Accessories

		XP COMPACT	COMPACT
	***RCC-01*** *The remote control provides state of the system displayed by LED and remote programming* (supplied with a 20m cable).* **compulsory for the programming of the XP Compacts*	●	●
	***CT-35*** *This temperature sensor adapts charge levels to the battery's temperature variations (supplied with 3m cable).*	●	●
	***ARM-01*** *The 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*** *This cover provides additional connection protection by means of glands.*	●	●
	***C-IP22*** *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.*	●	●

Applications

AJ Series

The AJ range consists of sine wave inverter that convert battery voltage into utility quality 230Vac* which can be used with all usual electrical appliances.

Its proven reliability and outstanding performance make it the optimal solution for many applications. Delivered with battery and AC cables it is a true «plug and forget solution».

10 YEAR WARRANTY

Main features

- 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

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

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

AJ
AJ 1000-12
AJ 1300-24

AJ
AJ 2100-12
AJ 2400-24

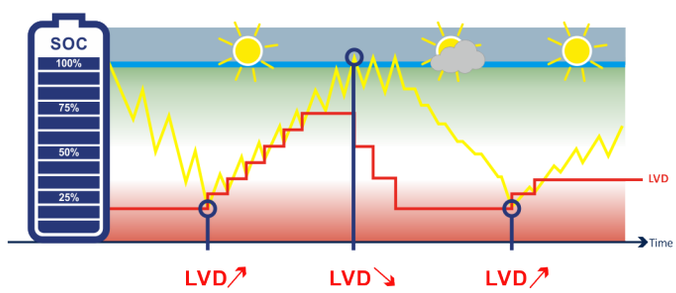
AJ Series	Output power P30/Pnom	Battery voltage	Solar option (-S)
AJ 275-12 (-S)	275 VA / 200 VA	12 Vdc	10 A
AJ 350-24 (-S)	350 VA / 300 VA	24 Vdc	10 A
AJ 400-48 (-S)	400 VA / 300 VA	48 Vdc	10 A
AJ 500-12 (-S)	500 VA / 400 VA	12 Vdc	15 A
AJ 600-24 (-S)	600 VA / 500 VA	24 Vdc	15 A
AJ 700-48 (-S)	700 VA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

For the 120Vac/60HZ version, -01 is added to the model designation

Complete technical specifications on pages 38-39

B.L.O Battery Lifetime Optimizer:

The B.L.O. function offers an advanced battery protection through the smart management of low voltage disconnection (LVD).



Rural electrification (Solar Home System)

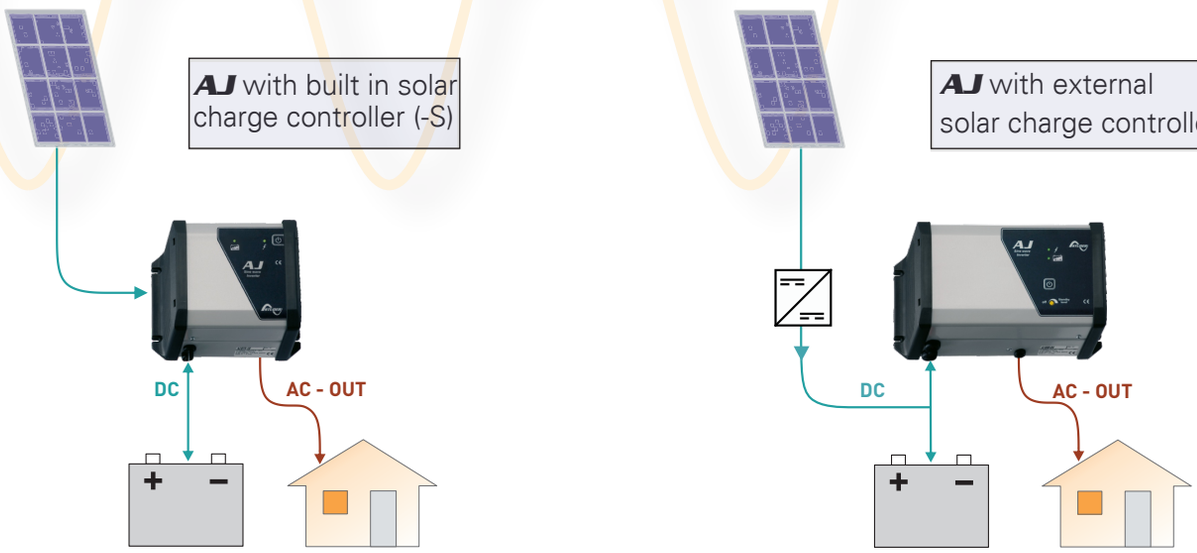
AJ series inverters for rural electrification provide excellence that benefit the development of remote areas and populations. Choosing AC for rural electrification systems improves simplicity, reliability and cost savings. Indeed, compared with a DC system, one with an inverter that supplies loads in AC, is often more efficient for systems with 100W of solar power or more.

The AJ series is, due to its overload capability and to its very reliable stand-by system adjustable from 2W, the most suitable range of inverters to meet the technical and economic requirements of rural electrification projects.

Off-Grid, Switzerland, AJ 2400-24-S

Studer Innotec SA

Solar Home System with AJ

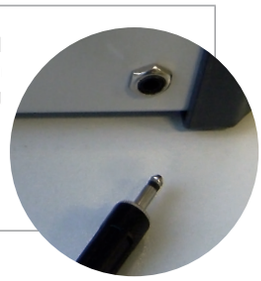


Option built-in solar charge controller

For a complete solar system! The AJ series can be supplied with an optional integrated **PWM** solar charge controller, making the inverter an "all in one" device for a solar home system.

Accessories

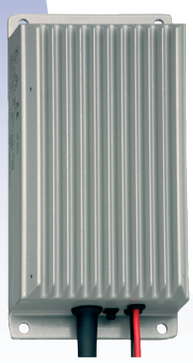
	***JT8 Remote control:*** (supplied with a 5m cable) For AJ 1000-12 and bigger model. Enables the control (ON/OFF) and the status display of the inverter: On, Standby, temporary Off	NOTE: For all other units from AJ275 to AJ700 its special version with remote control feature is available through a 3,2mm connector jack with 2 poles with the following 3 options: RCM-01: inverter ON when contact is closed RCM-02: inverter ON when voltage is across contacts RCM-03: inverter is ON when contact is open



Applications

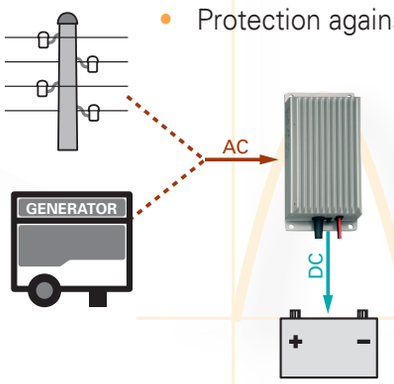
MBC Series

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



Main features

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



MBC Series	Battery voltage	Input voltage	Output current	Output
MBC 12-06/1	12 Vdc	230 Vac ± 15 %	6 A	1
MBC 12-15/1	12 Vdc	230 Vac ± 15 %	15 A	1
MBC 24-03/1	24 Vdc	230 Vac ± 15 %	3 A	1
MBC 24-08/1	24 Vdc	230 Vac ± 15 %	8 A	1
MBC 24-15/1	24 Vdc	230 Vac ± 15 %	15 A	1

Complete technical specifications on page 40

Mobile application, Netherlands, 1 x XTH 8000-48 Duurzaam Jacht

Applications

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.

Main features

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

MDCI Series	Power	Input variant	Output variant	Output Current	Isolated
MDCI 100	100 W	A / B / C / D	12.5 / 24.5 Vdc	8 / 4 A	Yes
MDCI 200	200 W	A / B / C / D	12.5 / 24.5 Vdc	16.5 / 8 A	Yes
MDCI 360	360 W	A / B / C / D	12.5 / 24.5 Vdc	30 / 15 A	Yes
MDCI 360 A24 Charger	360 W	A	27.6 Vdc	13 A	Yes

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

MDC Series	Power	Input voltage	Output voltage	Output Current	Isolated
MDC 1224-7	170 W	9 - 18 Vdc	24 Vdc	7 A	No
MDC 2412-5	65 W	18 - 35 Vdc	13.2 Vdc	5.5 A	No
MDC 2412-8	105 W	18 - 35 Vdc	13.2 Vdc	8 A	No
MDC 2412-12	160 W	20 - 35 Vdc	13.2 Vdc	12 A	No
MDC 2412-20	275 W	20 - 35 Vdc	13.8 Vdc	20 A	No
MDC 2412-30	415 W	20 - 35 Vdc	13.8 Vdc	30 A	No

Complete technical specifications on page 40

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

Applications

MBI Series

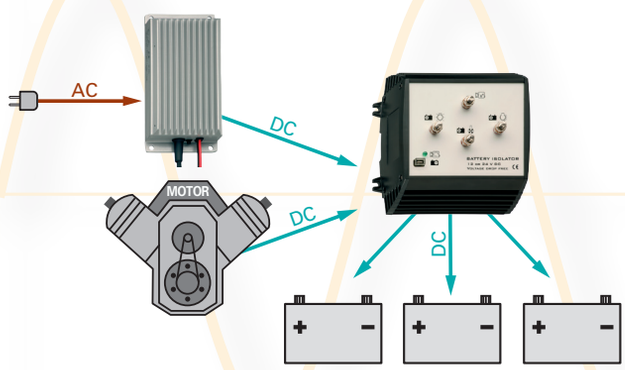
The MBI MOSFET battery splitters supply current from the charger or alternator to several batteries. They generate an insignificant voltage drop. All batteries are thus charged at the same time, and therefore will not charge or discharge each other.

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

Complete technical specifications on page 41

Main features

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



Battery separators

Applications

MBR Series

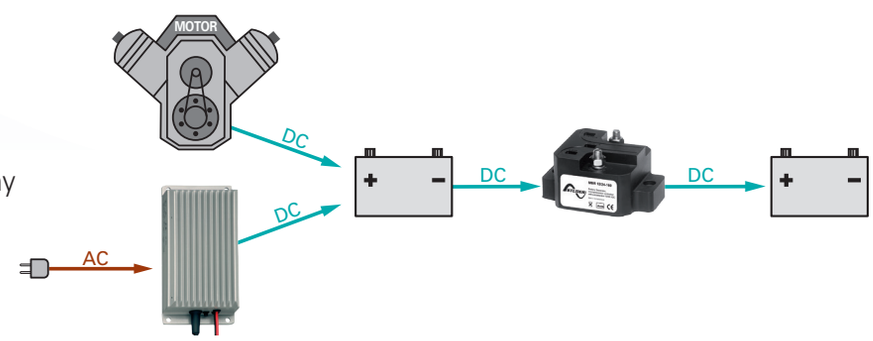
The MBR battery separators allow to supply the auxiliary battery or the appliances, as soon as the main battery voltage is high enough.

MBR Series	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 41

Main features

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

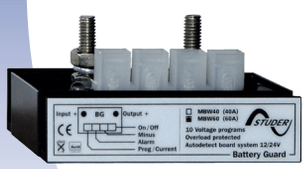


Battery protection

Applications

MBW Series

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

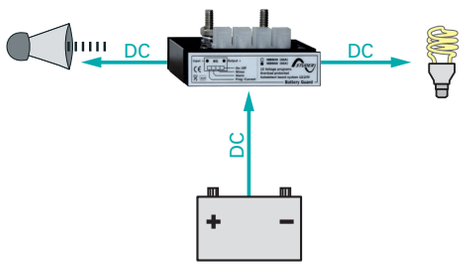


Main features and performances

- Programmed Connection and disconnection voltages by jumpers
- MOSFET switches, therefore no sparks
- Alarm output to indicate excessive voltage drops

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

Complete technical specifications on page 42

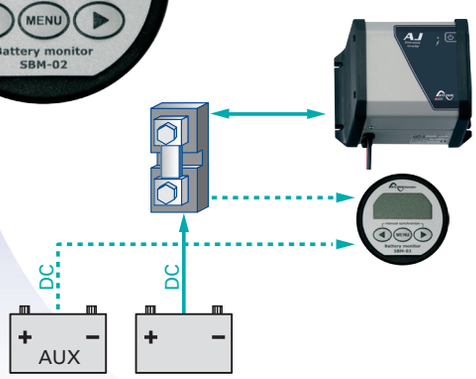


Battery monitoring

Applications

SBM-02

The SBM-02 is a highly accurate battery monitor with a data history 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.



Main 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 20m of twisted pair cable (3 x 2 x 0.5mm^2) and 2 fuseholders
- Communication kit, type SBM-COM, including RS-232 interface box, 1.8m of 9p DSUB serial cable and software
- Communication kit, type SBM-COM-USB, including USB interface box, 1.8m of USB cable and software.
- Temperature kit, type SBM-TEMP-20, with a temperature sensor and 20 m cable
- Shunt 1200A / 50mV, type SH-1200-50, for battery monitoring in large system

VarioTrack Series

Model	VT-65			VT-80		
Electrical characteristics PV array side						
At nominal battery voltage	12 V	24 V	48 V	12 V	24 V	48 V
Maximum solar power recommended (@STC)	1000 W	2000 W	4000 W	1250 W	2500 W	5000 W
Maximum solar open circuit voltage	75 V	150 V		75 V	150 V	
Maximum solar functional circuit voltage	75 V	145 V		75 V	145 V	
Minimum solar functional circuit voltage	Above battery voltage					
Electrical characteristics battery side						
Maximum output current	65 A			80 A		
Nominal battery voltages	Automatic / manual set to 12, 24 or 48 V					
Operating voltage range	7 - 68 V					
Performances of the device						
Power conversion efficiency (in a 48 V typical-system)	> 99 %					
Maximum stand-by self-consumption (48 V)	< 25 mA (1.2 W)					
Maximum stand-by self-consumption (24 V)	< 30 mA (0.8 W)					
Maximum stand-by self-consumption (12 V)	< 35 mA (0.5 W)					
Charging stages	4 stages: Bulk, Absorption, Float, Equalization					
Battery temperature compensation (available with accessory BTS-01)	–3 mV / °C /cell (25°C ref) default value adjustable -8 to 0 mV / °C					
Electronic protections						
PV reverse polarity	Up to –150 V					
Battery reverse polarity	Up to –150 V					
Battery overvoltage	Up to 150 V					
Over temperature	Protected					
Reverse current at night	Prevented by relays					
Environment						
Operating ambient temperature range	–20 to 55°C					
Humidity	100 %					
Ingress protection of enclosures	IP54					
Mounting location	indoor					
General data						
Warranty	5 + 5 years					
ISO Certification	9001:2008 / 14001:2004					
Weight	5.2 kg			5.5 kg		
Dimensions h/w/l [mm]	120 / 220 / 310			120 / 220 / 350		
Parallel operation (separated PV arrays)	Up to 15 devices					
Max wire size	35 mm^2					
Glands	M 20 x 1,5					
Communication						
Network cabling	STUDER communication BUS					
Remote control & Communication	RCC-02/-03, Xcom-232i / Xcom-LAN / Xcom-GSM / Xcom-SMS					
Menu languages	English / French / German / Spanish					
Data logging	With RCC-02/03, Xcom-232i on SD card · One point every minute					
Accordance to standards						
EU declaration of conformity	**Low Voltage Directive (LVD) 2014/35/EU:** - EN 50178:1997 **Electromagnetic Compliance (EMC) Directive 2014/30/EU:** - EN 61000-6-2:2005, - EN 61000-6-4:2007/A1:2011					
Accessories						
Remote control RCC-02 or RCC-03	•			•		
Module Xcom-232i	•			•		
Communication sets Xcom-LAN / Xcom-GSM / Xcom -SMS	•			•		
Battery Status Processor BSP	•			•		
2 aux. contacts module ARM-02	•			•		
Cooling Module ECF-01	•			Included		
Battery temp. sensor BTS-01 (3 m)	•			•		
Communication cable CAB-RJ45-8-2	•			•		

Data may change without any notice

10 YEAR WARRANTY

VarioString Series

Model	VS-70	VS-120			
Electrical characteristics PV array side	MPPT	MPPT 1	MPPT 2	1 + 2 in parallel	1 + 2 in series
Maximum solar power recommended (@STC)	4200 W	3500 W	3500 W	7000 W	7000 W
Maximum current	13 A	13 A	13 A	26 A	13 A
Maximum solar open circuit voltage	600 V	600 V	600 V	600 V	900 V
Minimum solar functional circuit voltage	200 V	200 V	200 V	200 V	400 V
Recommended MPPT voltage	250-500 V	250-500 V	250-500 V	250-500 V	500-750 V
Electrical characteristics battery side					
Maximum output current	70 A	60 A	60 A	120 A	
Nominal battery voltages	48 V				
Operating voltage range	38 - 68 V				
Battery grounding possibility	Battery + or battery -				
Performances of the device					
Maximum efficiency	> 98 %				
MPPT efficiency	> 99.8 %				
Maximum stand-by self-consumption (48 V)	< 20 mA (1 W)	< 25 mA (1.25 W)			
Charging stages	4 stages: Bulk, Absorption, Float, Equalization				
Battery temperature compensation (with accessory BTS-01)	–3 mV /°C / cell (25°C ref) default value adjustable -8 to 0 mV /°C				
Electronic protections					
PV reverse polarity	•				
Over temperature	•				
Reverse current at night	•				
Galvanic isolation	•				
PV grounding possibility	PV +, PV -, floating				
Ground fault Protection	Programmable				
Environment					
Operating ambient temperature range	–20 to 55°C				
Humidity	100 %	maximum 95 %, non-condensing			
Ingress protection of enclosures, IEC/EN 60529:2001	IP54	IP20			
Mounting location	indoor				
General data					
Warranty	5 + 5 years				
ISO Certification	9001:2008 / 14001:2004				
Weight	5.51 kg	7.5 kg			
Dimensions h/w/l [mm]	120 / 220 / 350	133 / 322 / 466			
Solar generation connection (6mm²)	SUNCLIX™ (Phoenix Contact Tool Free)				
Parallel operation (separated PV arrays)	Up to 15 devices				
Max wire size	35 mm²	70 mm²			
Glands	M 20 x 1,5	2 x PG21			
Communication					
Network cabling	STUDER communication BUS				
Remote control & Communication	RCC-02/-03, Xcom-232i / Xcom-LAN / Xcom-GSM / Xcom-SMS				
Menu languages	English / French / German / Spanish				
Data logging	With RCC-02/03, Xcom-232i on SD card · One point every minute				
Accordance to standards					
EU declaration of conformity	**Low Voltage Directive (LVD) 2014/35/EU:** - EN 62109-1:2010 **Electromagnetic Compliance (EMC) Directive 2014/30/EU:** - EN 61000-6-2:2005, - EN 61000-6-4:2007/A1:2011				
Accessories					
Remote control RCC-02 or RCC-03	•	•			
Module Xcom-232i	•	•			
Communication sets Xcom-LAN / Xcom-GSM / Xcom-SMS	•	•			
Battery Status Processor BSP	•	•			
2 aux. contacts module ARM-02	•	•			
Battery temp. sensor BTS-01 (3 m)	•	•			
Communication cable CAB-RJ45-8-2	•	•			

10 YEAR WARRANTY

Data may change without any notice

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
	Inverter										
	Nominal battery voltage	12 Vdc	24 Vdc	48 Vdc	12 Vdc		24 Vdc	48 Vdc	24 Vdc	48 Vdc	12 Vdc
	Input voltage range	9.5 - 17 Vdc	19 - 34 Vdc	38 - 60 Vdc	9.5 - 17 Vdc		19 - 34 Vdc	38 - 60 Vdc	19 - 34 Vdc	38 - 60 Vdc	9.5 - 17 Vdc
	Continuous power @ 25°C	650**/500VA	800**/650VA	900**/750VA	1500 VA	2000 VA			3000 VA	3500 VA	2500 VA
	Power 30 min. @ 25°C	900**/700VA	1200**/1000VA	1400**/1200VA	1500 VA	2000 VA	2400 VA	2600 VA	3500 A	4000 VA	3000 VA
	Power 5 sec. @ 25°C	2.3 kVA	2.5 kVA	2.8kVA	3.4 kVA	4.8 kVA	6 kVA	6.5 kVA	9 kVA	10.5 kVA	7.5 kVA
	Maximum load	Up to short-circuit									
	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 %
	Consumption OFF/Stand-by/ON [W]	1.1 / 1.4 / 7	1.2 / 1.5 / 8	1.3 / 1.6 / 8	1.2 / 1.4 / 8	1.2 /1.4 / 10	1.4 / 1.6 / 9	1.8 / 2 / 10	1.4 / 1.6 / 12	1.8 / 2.1 / 14	1.2 / 1.4 / 14
*	Output voltage	Pure sine wave 230 Vac (± 2 %) / 120 Vac [1]									
*	Output frequency	Adjustable 45 - 65 Hz [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	35 A	25 A	12 A	70 A	100 A	55 A	30 A	90 A	50 A	160 A
*	Temperature compensation	With BTS-01 or BSP 500/1200									
	Power Factor Correction (PFC)	EN 61000-3-2									
	General data	**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**
*	Input voltage range	150 to 265 Vac / 50 to 140 Vac [1]									
	Input frequency	45 to 65 Hz									
	Input current max. (transfer relay) / Output current max.	16 Aac / 20 Aac			50 Aac / 56 Aac						
	Transfer time	< 15 ms									
	Multifunction contacts	Module ARM-02 with 2 contacts, in option			2 independent contacts (potential free 3 points, 16 Aac / 5 Adc)						
	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
	Dimension h/w/l [mm]	110 / 210 / 310			133 / 322 / 466						230 /300 /500
	Protection index	IP54			IP20						
	EU declaration of conformity	**Low Voltage Directive (LVD) 2014/35/EU:** - EN 50178:1997 **Electromagnetic Compliance (EMC) Directive 2014/30/EU:** - EN 62040-2:2006, EN 61000-3-2:2014			**Low Voltage Directive (LVD) 2014/35/EU:** -EN 50178:1997, EN 62109-1:2010 **Electromagnetic Compliance (EMC) Directive 2014/30/EU:** - EN 62040-2:2006, EN 61000-3-2:2014, EN 61000-3-12:2011						
	Operating temperature range	-20 to 55°C									
	Relative humidity in operation	100 %			95 % without condensation						
	Ventilation	Optional cooling module ECF-01			Forced from 55°C						
	Acoustic level	< 40 dB / < 45 dB (without/with ventilation)									
	Warranty	5 + 5 years									
	ISO Certification	9001:2008 / 14001:2004									
	Accessories										
	Remote control RCC-02 or RCC-03	•	•	•	•	•	•	•	•	•	•
	Module Xcom-232i	•	•	•	•	•	•	•	•	•	•
	Communication sets Xcom-LAN / Xcom-GSM / Xcom -SMS	•	•	•	•	•	•	•	•	•	•
	Battery Status Processor BSP	•	•	•	•	•	•	•	•	•	•
	Remote Control Module RCM-10 (3 m)	•	•	•	•	•	•	•	•	•	
	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										•

[1] With -01 at the end of the reference, means 120V/60Hz. Available for all Xtenders except XTH 8000-48

** These features are valid only when using the cooling module ECF-01.

* Adjustable with the RCC-02/-03

	XTH 5000-24	XTH 6000-48	XTH 8000-48
	24 Vdc	48 Vdc	
	19 - 34 Vdc	38 - 60 Vdc	
	4500 VA	5000 VA	7000 VA
	5000 VA	6000 VA	8000 VA
	12 kVA	15 kVA	21 kVA
	94 %	96 %	
	1.4 / 1.8 / 18	1.8 / 2.2 / 22	1.8 / 2.4 / 30
	140 A	100 A	120 A
	XTH 5000-24	**XTH 6000-48**	**XTH 8000-48**
			50Aac/80Aac
	40 kg	42 kg	46 kg
	230 / 300 / 500		
	Low Voltage Directive (LVD) 2014/35/EU: - EN 50178:1997 **Electromagnetic Compliance (EMC) Directive 2014/30/EU:** - EN 62040-2:2006, EN 61000-3-2:2014 EN 61000-3-12:2011		
	•	•	•
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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	12 Vdc	24 Vdc	48 Vdc	12 Vdc	24 Vdc	48 Vdc
Input voltage range	9.5 - 16 Vdc	19 - 32 Vdc	38 - 60 Vdc	9.5 - 16 Vdc	19 - 32 Vdc	38 - 60 Vdc
Continuous power @ 25°C	1100 VA	1600 VA	1600 VA	1300 VA	2300 VA	3500 VA
Power 30 min. @ 25°C	1400 VA	2200 VA	2200 VA	1600 VA	2600 VA	4000 VA
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 25 W					
Cos φ	0.1 - 1					
Maximum efficiency	94 %	95 %		94 %	95 %	
Consumption OFF/Stand-by/ON [W]	0.5 / 0.6 / 4	0.8 / 0.9 / 7	1.2 / 1.3 / 7	0.5 / 0.6 / 6	0.8 / 0.9 / 9	1.2 / 1.4 / 12
Output voltage	Sine wave 230 Vac (±5 %) (XPC also available in 120 Vac)					
Output frequency	50 Hz ± 0.05 % (crystal controlled)					
Total harmonic distortion	< 4 %	< 2 %				
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 - 45 Adc	0 - 37 Adc	0 - 20 Adc	0 - 55 Adc		0 - 50 Adc
Input current balance adjustment	Not available			1 - 16 A		
Maximum input voltage	265 Vac					
Input AC voltage range	Adjustable threshold from 150 to 230 Vac (XPC also available in 120 Vac)					
Input frequency	45 - 65 Hz					
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*	14.4 Vdc	28.8 Vdc	57.6 Vdc	14.4 Vdc	28.8 Vdc	57.6 Vdc
Floating voltage*	13.6 Vdc	27.2 Vdc	54.4 Vdc	13.6 Vdc	27.2 Vdc	54.4 Vdc
Equalization time*	0 - 4 h					
Equalization voltage*	15.6 Vdc	31.2 Vdc	62.4 Vdc	15.6 Vdc	31.2 Vdc	62.4 Vdc
Deep-discharge protection*	10.8 Vdc	21.6 Vdc	43.2 Vdc	10.8 Vdc	21.6 Vdc	43.2 Vdc
Temparature compensation (CT-35)	-3mV / ° C / Cell					
General data						
Multifunction contact programmable	16 A - 250 Vac (potential free 3 points)					
Max. current on transfer relay	16 Aac					
Transfer time	< 40 ms					
Weight	11.7 kg	12.6 kg		16 kg	17.1 kg	29.4 kg
Dimensions h/w/l [mm]	124 / 215 / 410			124 / 215 / 480		124 / 215 / 670
Protection index	IP20 (IP22 with top cover C-IP22)					
Certification ECE-R 10 (E24)	•	•	Not available	•	•	Not available
EU declaration of conformity	**Low Voltage Directive (LVD) 2014/35/EU:** - EN 50178:1997 **Electromagnetic Compliance (EMC) Directive 2014/30/EU:** -EN 61000-3-2:2014, -EN 61000-3-3:2013 -EN 61000-6-1:2007, -EN 61000-6-2:2005/AC:2005 -EN 61000-6-4:2007/A1:2011			**Low Voltage Directive (LVD) 2014/35/EU:**- EN 50178:1997 **Electromagnetic Compliance (EMC) Directive 2014/30/EU:** - EN 62040-2:2006, - EN 61000-3-2:2014 - EN 61000-3-12:2011		
Operating temperature range	-20°C to +55°C					
Relative humidity in operation	95 % without condensation					
Ventilation	From 45°C					
Accoustic level	<40 dB / <45 dB (without/with ventilation)					
Warranty	5 years					
ISO Certification	9001:2008 / 14001:2004					
Option solar charger (4 stages)						
Maximum PV open circuit voltage (V)	25 Vdc	45 Vdc	90 Vdc	25 Vdc	45 Vdc	90 Vdc
Maximum charge current (A)	30 Adc	30 Adc	20 Adc	30 Adc	30 Adc	20 Adc
Charging curve	I-U-Uo-Equalize (every 25 cycles)					
Accessories						
RCC-01 Remote control	•					
CT-35 Temperature sensor	•					
ARM-01 Auxiliary relay module	•					
CFC-01 Cover, C-IP22 Cover	•					

10 YEAR WARRANTY

* Factory settings
Data may change without any notice

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		12 Vdc	24 Vdc	48 Vdc	12 Vdc	24 Vdc	48 Vdc
Input voltage range		10.5 – 16 Vdc	21 – 32 Vdc	42 – 60 Vdc	10.5 – 16 Vdc	21 – 32 Vdc	42 – 64 Vdc
Continuous power @ 25°C		200 VA	300 VA	300 VA	400 VA	500 VA	500 VA
Power 30 min. @ 25°C		275 VA	350 VA	400 VA	500 VA	600 VA	700 VA
Power 5 min. @ 25°C		350 VA	500 VA	600 VA	575 VA	675 VA	900 VA
Power 5 sec. @ 25°C		450 VA	650 VA	1000 VA	1000 VA	1200 VA	1400 VA
Asymmetric load		150 VA	150 VA	200 VA	250 VA	300 VA	300 VA
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 400 VA	0.1 – 1 up to 500 VA	0.1 – 1 up to 500 VA
Detection of the load		2 W only with the solar option -S			Adjustable: 1 to 20 W		
Short-circuit current AC 2 sec.		2.3 Aac (4.6 Aac*)	3.2 Aac (6.4 Aac*)	4.6 Aac (9.2 Aac*)	5.2 Aac (10.4 Aac*)	5.7 Aac (11.4 Aac*)	7 Aac (14 Aac*)
Output voltage		Sine wave 230 Vac (120 Vac*) ±5 %					
Frequency		50 Hz (60 Hz*) ± 0.05 % (crystal controlled)					
Distortion THD (resistive load)		< 3 % (@ Pnom & Uin nom.)					
Consumption Stand-by		0.3 W**	0.5 W**	1.1 W**	0.4 W	0.6 W	1.5 W
Consumption «ON» no load		2.4 W	3.5 W	5.2 W	4.6 W	7.2 W	12 W
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 as internal fuse		60 A	40 A	25 A	120 A	90 A	60 A
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 h/w/l [mm]		142 /163 / 84			142 / 240 / 84		
Protection index IP		IP 30 conforms to DIN 40050					
Certification ECE-R 10 (E24)		•	•	Not available	•	•	Not available
EU declaration of conformity		**Low Voltage Directive (LVD) 2014/35/EU:** - EN 62109-1:2010 **Electromagnetic Compliance (EMC) Directive 2014/30/EU:** - EN 61000-6-2:2005, EN 61000-6-4:2007 / A1:2011					
Operating temperature		-20°C 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 + 5 years					
ISO Certification		9001:2008 / 14001:2004					
Approximate correction of Pnom		-1.5 % / °C from + 25°C					
Recommended battery capacity		> 5 x Pnom/Unom (recommended value in Ah)					
Length cables (Battery/AC out)		1.2 m / 1 m			1.5 m / 1 m		
Options		**AJ 275-12-S**	**AJ 350-24-S**	**AJ 400-48-S**	**AJ 500-12-S**	**AJ 600-24-S**	**AJ 700-48-S**
Solar regulator	Voltage max.	25 Vdc	45 Vdc	90 Vdc	25 Vdc	45 Vdc	90 Vdc
	Current max.	10 Adc			15 Adc		
	Principle	Floating 3 stages (I/U/UO)					
	Absorption voltage	14.4 Vdc	28.8 Vdc	57.6 Vdc	14.4 Vdc	28.8 Vdc	57.6 Vdc
	Floating voltage	13.6 Vdc	27.2 Vdc	54.4 Vdc	13.6 Vdc	27.2 Vdc	54.4 Vdc
Plug for remote control (RCM)		•	•	•	•	•	•

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

Data may change without any notice

10 YEAR WARRANTY

AJ Series

Model		AJ 1000-12	AJ 1300-24	AJ 2100-12	AJ 2400-24
Inverter					
Nominal battery voltage		12 Vdc	24 Vdc	12 Vdc	24 Vdc
Input voltage range		10.5 – 16 Vdc	21 – 32 Vdc	10.5 – 16 Vdc	21 – 32 Vdc
Continuous power @ 25°C		800 VA	1000VA	2000 VA	2000 VA
Power 30 min. @ 25°C		1000 VA	1300 VA	2100 VA	2400 VA
Power 5 min. @ 25°C		1200 VA	2000 VA	2450 VA	2800 VA
Power 5 sec. @ 25°C		2200 VA	2800 VA	5000 VA	5200 VA
Asymmetric load		500 VA	600 VA	1000 VA	1200 VA
Max. efficiency (%)		93 %	94 %	92 %	94%
Cos φ max.		0.1 – 1 up to 800 VA	0.1 – 1 up to 1000 VA	0.1 – 1 up to 2000 VA	0.1 – 1 up to 2000 VA
Detection of the load		Adjustable: 1 to 20 W			
Short-circuit current AC 2 sec.		10 Aac (20 Aac*)	13 Aac (26 Aac*)	26 Aac (52 Aac*)	30 Aac (60 Aac*)
Output voltage		Sine wave 230 Vac (120 Vac*) ±5%			
Frequency		50 Hz (60 Hz*) ± 0.05 % (crystal controlled)			
Distortion THD (resistive load)		< 3 % (@ Pnom & Uin nom.)			
Consumption Stand-by		0.7 W	1.2 W	0.7 W	1.2 W
Consumption «ON» no load		10 W	13 W	16 W	16 W
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 by internal fuse		125 A	100 A	Not protected	150 A
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 h/w/l [mm]		142 / 428 / 84		273 / 399 / 117	
Protection index IP		IP 30 conforms to DIN 40050		IP 20 conforms to DIN 40050	
Certification ECE-R 10 (E24)		•	•	•	•
EU declaration of conformity		**Low Voltage Directive (LVD) 2014/35/EU:** - EN 62109-1:2010 **Electromagnetic Compliance (EMC) Directive 2014/30/EU:** - EN 61000-6-2:2005, EN 61000-6-4:2007 / A1:2011			
Operating temperature		-20°C 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 + 5 years			
ISO Certification		9001:2008 / 14001:2004			
Approximate correction of Pnom		-1.5 % / °C from +25°C			
Recommended battery capacity		> 5 x Pnom/Unom (recommended value in Ah)			
Length cables (Battery/IAC out)		1.5 m / 1 m		1.7 m / 1 m	
Options		**AJ 1000-12-S**	**AJ 1300-24-S**	**AJ 2100-12-S**	**AJ 2400-24-S**
Solar regulator	Voltage max.	25 Vdc	45 Vdc	25 Vdc	45 Vdc
	Current max.	25 Adc		30 Adc	
	Principle	Floating 3 stages (I/U/UO)			
	Absorption voltage	14.4 Vdc	28.8 Vdc	14.4 Vdc	28.8 Vdc
	Floating voltage	13.6 Vdc	27.2 Vdc	13.6 Vdc	27.2 Vdc
Accessories					
JT8 Remote control		•	•	•	•

* 120Vac/60Hz on request

Data may change without any notice

10 YEAR WARRANTY

MBC Series

MBC - Battery charger

Model	MBC 12-06/1	MBC 12-15/1	MBC 24-03/1	MBC 24-08/1	MBC 24-15/1
Battery voltage (Vdc)	12	12	24	24	24
Input voltage (Vac)	230 ±15 % (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	27.6
Output (A)	6	15	3	8	15
Cooling	Heat sink				
Outputs	1				
Efficiency	> 85 %				
Ambient temp. range	-25 to 50°C				
Dimensions L/W/H [mm]	155 / 80 / 36	195 /100 / 47	155 / 80 / 36	195 / 100 / 46	193 / 99 / 46
Weight (kg)	0.9	1.8	0.9	1.8	1.8
Switch to Floating mode (A)	0.2	0.8	0.2	0.4	1.5
Secondary fuse (A)	7.5	20	7.5	15	20
Input wired	•	•	•	•	•
Ouput 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	360
Input variants (Vdc)*	A-B-C-D	A-B-C-D	A-B-C-D	A
Output variants (Vdc) ± 2%	12.5 / 24.5	12.5 / 24.5	12.5 / 24.5	27.6 / 13
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 H/W/D [mm]	49 / 88 / 152	49 / 88 / 182	83 /132.8 / 190.5	
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 H/W/D [mm]	49 / 88 / 98	49 / 88 / 68	49 / 98 / 88		49 / 88 / 126	49 / 88 / 151
Weight (gr)	300	170	250	260	480	600

Common features MDCI & MDC		
Paralleling (only MDCI)		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	0.24 mA @ 24 V 0.12 mA @ 12 V					
Alternator start	•	•	•	•	•	
Operating temperature (°C)	-40 / +85					
Dimensions L/H/D [mm]	146 / 85 / 92		146 / 85 / 152			
Weight (gr)	780	810	780	810	815	780
Nominal voltage 12 or 24V	Automatic detection					
Insulation to ground	> 500 V @ 60 Hz					
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	12.8 / 25.6
Battery banks	2		
Alternator start	•	•	•
Start contact for batteries paralleling		•	•
Micro switch for remote status indication			•
Dimensions L/H/D [mm]	46 / 46 / 80	46 / 93 / 96	72 / 70 / 80
Weight (gr)	110	300	417
Consumption	< 5 mA		
Protection of the auxiliary battery against overvoltage	16 / 32 Vdc		
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' (A)	40	60	200
Peak current (A)	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	0.2 V	2 %	0.1 V
Casework	Anodized aluminium, black		
Weight (gr)	200		580
Dimensions H/D/L [mm]	80 / 60 / 40	80 / 60 / 40	145 / 92 / 85
Battery protection	Against excessive discharge		
Users protection	Against overvoltages (16 / 32 Vdc)		Against overvoltages (15.5 / 31 Vdc)
MOSFET switches	No sparks		
Warranty	2 years		
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
Warranty		2 years

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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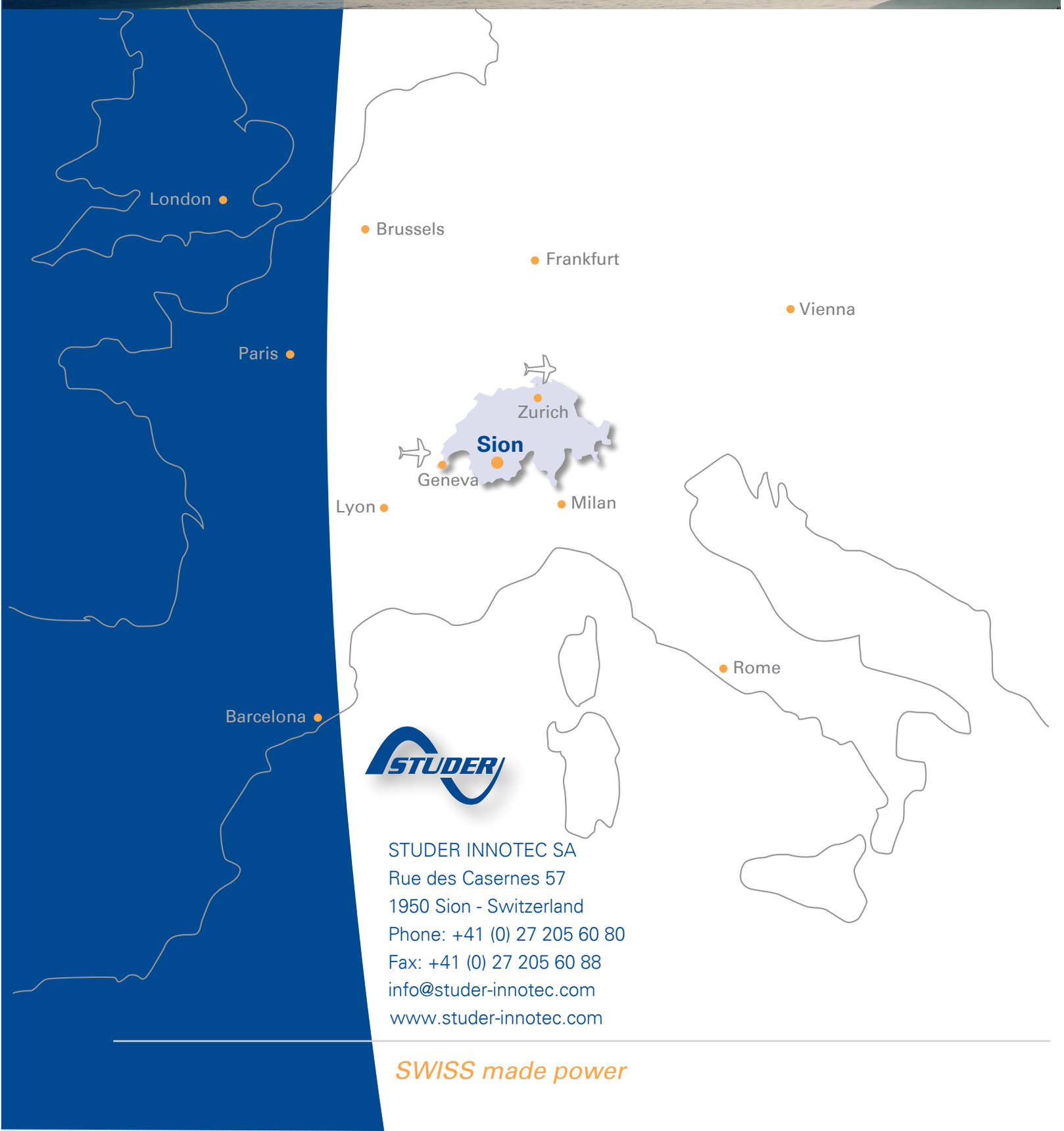

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