

Solar Technology and Electronics



MOBILE HOME | CARAVAN | MARINE | LEISURE





Solar energy – the clever alternative

■ In the leisure-time sector and especially in caravans, where the onboard battery is already available as energy storage, solar technology is the optimal supplement for the onboard power supply.

Setup and function:

A solar power system has a very simple setup. One or several solar modules are mounted on the roof. From there, a connecting cable first runs to the solar charge controller inside the caravan and then to the already existing onboard battery. During light irradiation, the solar cell generated power is supplied to the connected onboard battery via the solar charge controller. This process continues until the controller recognises a fully charged battery and interrupts the power flow. By this, the control ensures optimal battery charging at all times.

By the way, all other charging possibilities already existing at the battery (charger, motor charging) will remain unchanged.

Which solar power system for which application

At Büttner Elektronik, we only sell solar modules proven and tested for many years

and especially suitable for mobile application. Some manufacturers of solar modules only offer a limited guarantee when modules are used in caravans. We do not offer these types of modules, on principle. All attached and surface-mounted parts must also be suitable for the rough application in caravans without any restriction. Therefore, we use water pressure resistant cable ducts and high-quality brackets of polyurethane (not ABS) with an extremely long service life. The solar control was also especially designed for caravans and offers some important additional functions such as gel/acid/AGM changeover or charging of a second battery.

All solar modules offered by us are state-of-the-art products. Depending on the module type, there are also very specific advantages. These should be taken into consideration depending on the setup and application conditions. For further information please see page 4.



Which output should I choose?

■ Solar power system with 55/60 watt (wp) approx. 220/240 wh/d*

Vehicle category:

Smaller caravans without TV/SAT

Travelling time:

Spring to autumn

Consumers:

Lights, water pump, radio

■ Solar power system with 80/85 watt (wp) approx. 320/340 wh/d*

Vehicle category:

Smaller to medium-sized caravans

Travelling time:

Spring to autumn

Consumers:

Lights, water pump, radio, Truma, TV/SAT (2-3 hours)

■ Solar power system from 100 Watt (Wp) approx. 400 Wh/d*

Vehicle category:

Medium-sized to large caravans

Travelling time:

Spring to autumn

Consumers:

Lights, water pump, radio, Truma, TV/SAT

■ Solar power system from 160 Watt (Wp) approx. 640 Wh/d*

Vehicle category:

Medium-sized to large caravans

Travelling time:

Whole year (depending on weather conditions and battery capacity)

Consumers:

Lights, water pump, radio, Truma, TV/SAT, compressor refrigerator

■ Solar power system from 240 Watt (Wp) approx. 960 Wh/d*

Vehicle category:

Large caravans

Travelling time:

Whole year (depending on weather conditions and battery capacity)

Consumers:

Lights, water pump, radio, Truma, TV/SAT, compressor refrigerator

* Most manufacturers state the output in wp, some in wh/d (watt hours per day)



Complete solar systems for caravans

■ Solar systems are among the most prudent purchases regarding caravans. Solar power is free of maintenance and charge. It is generated without noise and turns a caravan into a leisure vehicle that no longer is dependent on the mains. Solar systems of **Büttner Elektronik** are easy to mount and simply connected to the existing onboard battery.

Complete solar systems of Büttner Elektronik include everything that is needed to give caravans a solar system:

All complete systems are supplied with suitable spoiler profiles and a solid roof duct. These components from high-quality PUR plastic are protected against harmful UV radiation and extremely weather-proof. The solar modules are affixed to the spoiler

profiles. This allows the system to be taken down when you change your vehicle. The fixture itself is affixed to the roof with a special adhesive set, which has been

Mobile Technology of Büttner-Elektronik Always a step ahead!

As can be seen on the following pages, only high-quality components are used for the MT complete solar power systems.

All systems are specially designed for application in caravans.

Not listed, but of course included with each installation set is an EBL connection cable set. This fits to the existing electronics block in all vehicles with EBL inlet.

tested and approved by the TÜV (German Technical Inspection Agency). The adhesive method has the advantage that no holes have to be bored into the roof.

Adhesive and fixture
TÜV-tested + approved



Each system is equipped with a dual solar controller. These have the latest characteristic curves and can be switched to gel/AGM/acid batteries. All solar controllers have a second charge output (starter battery) and a connection for the solar remote display (optional).

The solar controllers of the systems MT 60; MT 85; MT 130; MT 55CIS; MT 80CIS; MT 100; MT 70FL and MT 70FG are designed in such a way that they can be expanded by a module of the same output, if necessary.

For vehicles with EBL base station (vehicles of the Hymer group) a suitable connecting cable set is supplied.

Vehicles with EBL base station

Manufacturer	Model year
Hymer	all
Bürstner	from 2000
Dethleffs	from 2000
Frankia	from 1998
LMC	from 2000
TEC	from 2000
Adria	from 1998
Carthago	from 2002
Pilote	from 2004



Which solar system should I choose ?

MT Complete Solar Systems



■ Mono-crystalline solar modules have been used for many decades. Due to this long practical experience they are one of the most long-lived energy sources available. All modules of this standard range have a robust aluminium frame and are protected against weather influences with special glass. To achieve the full output in all application areas, these modules must be ventilated from below. The bracket to be affixed with adhesive will ensure this. The installation height of approx. 7cm should be taken into consideration. In most cases, however, this is not any higher than an existing standard skylight. When planning it should also be observed that any already mounted components (SAT equipment etc.) do not shade the solar plate. The price/performance ratio of this module series can be rated 'very good'.

MT CIS Complete Solar Systems



■ One of the most outstanding features of CIS solar modules is their absolutely high-quality finishing. This module series also has a robust mounting frame and special glass on the back. This and the slightly bigger surface area are the reasons that these modules are slightly heavier than conventional standard modules. An advantage is that due to their longitudinal strip technology they react a lot less sensitive to partial shading than any other module type. Especially in mobile applications the energy yield is a lot higher since it is not always possible to prevent – depending on the location – that branches of trees, a mounted roof-case or the SAT equipment partially shade the solar modules. The installation height of 7cm should also be considered here. This, however, should not create any problems with most caravans since other components add considerably more height.

MT Power Line Complete Solar Systems



■ MT-Power Line solar modules achieve an extremely high efficiency level. This allows for a great solar output even with restricted space conditions. The setup and function of the solar modules of the Power Line series are identical to the mono-crystalline series described above and have a solar output of 110 wp each.

As with all complete systems, the Power Line series is supplied as a set with all accessories required for the installation. The robust, all-round aluminium frame as well as the specially hardened glass protect the modules even under the most adverse application conditions.

MT Ultraflat Complete Solar Systems



■ While solar modules with aluminium frames are screwed to mounting spoilers – to ensure optimal ventilation from below – these solar modules can be affixed directly onto the vehicle's roof with adhesive. We only produce these solar modules with a higher number of cells (40 cells instead of the conventional 36), so that there is no output loss even in Southern holiday regions where due to the vehicle insulation the heat can only be discharged poorly and therefore the solar output drops.

This series is mostly used when clearance heights must be observed and/or it should be possible to walk on the modules. The modules are available in two versions: As 'FG' with solid glass surface – suitable for all level roof surfaces – as well as 'FL', which is equipped with a Teflon foil and therefore can be bent slightly in longitudinal direction (30 mm maximum) and affixed to slightly curved roof surfaces.

All solar systems – overview

The new generation of mono-crystalline solar modules:
BLACK LINE
by Mobile Technology



MT Complete Solar Systems

This series of solar modules is characterised by its level of efficiency and high-quality finish. The modules are integrated into a robust housing frame and protected by safety glass from the top.

Type	Output (Wp)	Module number	Dimensions L x W x H (mm)	Price (€)
MT 60	60	1	1115 x 450 x 66	629.00
MT 90	90	1	1320 x 530 x 66	789.00
MT 140	140	1	1600 x 660 x 66	1,079.00
MT 120-2	120	2	2 x 1115 x 450 x 66	1,099.00
MT 180-2	180	2	2 x 1320 x 530 x 66	1,469.00
MT 280-2	280	2	2 x 1600 x 660 x 66	2,059.00

Equipment of the complete solar systems: Mono-crystalline MT solar module/s · Dual solar charge controller · Roof spoiler set, incl. accessories · Roof duct · Service/distributor block · Adhesive set for spoilers and roof duct · Cable set for inside/outside · Cable set for vehicles with EBL · Mounting material · Incidentals · Installation instructions

Shading-free solar modules:
CIS LINE
by Mobile Technology



MT CIS Complete Solar Systems

CIS solar modules are significantly less sensitive to partial shading and achieve a higher yield than all conventional solar modules under these more difficult circumstances.

The modules are integrated into a robust housing frame and protected by safety glass from the top and bottom.

Type	Output (Wp)	Module number	Dimensions L x W x H (mm)	Price (€)
MT 55 CIS	55	1	1025 x 605 x 66	689.00
MT 80 CIS	80	1	1325 x 605 x 66	879.00
MT 110 CIS	110	2	2 x 1025 x 605 x 66	1,239.00
MT 160 CIS	160	2	2 x 1325 x 605 x 66	1,599.00

Equipment of the complete solar systems: Mono-crystalline MT-CIS solar module/s · Dual solar charge controller · Roof spoiler set, incl. accessories · Roof duct · Service/distributor block · Adhesive set for spoiler set and roof duct · Cable set for inside/outside · Cable set for vehicles with EBL · Incidentals · Mounting material/instructions

The new generation of mono-crystalline solar modules:
POWER LINE
by Mobile Technology



MT Power Line Complete Systems

Complete solar systems with the mono-crystalline 100 wp high-performance module. It guarantees extremely high output and requires only little space.

Type	Output (Wp)	Module number	Dimensions L x W x H (mm)	Price (€)
MT 110	110	1	1261 x 550 x 66	1,079.00
MT 220-2	220	2	2 x 1261 x 550 x 66	1,949.00

Equipment of the complete solar systems: Mono-crystalline 100wp MT solar module/s · Dual solar charge controller · Roof spoiler set, incl. accessories · Roof duct · Service/distributor block · Adhesive set for spoiler set and roof duct · Cable set for inside/outside · Cable set for vehicles with EBL · Incidentals · Mounting material/instructions

Ultra-flat solar modules:
FLAT LINE
by Mobile Technology



MT Ultra-flat Complete Solar Systems

These crystalline flat solar modules can be affixed with adhesive directly without ventilation from underneath. The modules are ideal for circumstances when clearance heights must be observed and/or it should be possible to walk on the modules.

Type	Output (Wp)	Module number	Dimensions L x W x H (mm)	Price (€)
MT 70 FG	70	1	1135 x 450	920.00
MT 140 FG-2	140	2	2 x 1135 x 450	1,690.00
MT 70 FL	70	1	1135 x 450	1,019.00
MT 140 FL-2	140	2	2 x 1135 x 450	1,879.00

Equipment of the complete solar systems: Ultra-flat solar module/s with crystalline cell technology · Dual solar charge controller · Diode distributor · Roof duct · Adhesive set for module and roof duct · Cable set for inside/outside · Cable set for vehicles with EBL · Mounting material · Instructions for affixing with adhesive and installation

MOBILE
technology
by BÜTTNER-ELEKTRONIKEFOY
ENERGY FOR YOU

Hybrid Autarkic System

Intelligent combination of solar and fuel cells

■ This complete MT solar system can be combined with an EFOY fuel cell. Both systems are designed for each other and can be connected by a simple plug-in connector.

The system is controlled by either the special MPP solar control electronics or the battery computer MT 3000-H (available as an option). The control decides whether and when the fuel cell is connected. It takes into consideration the used power, the battery capacity and the respective weather conditions. If the solar electronics determines on the basis of the data that the solar output is insufficient or currently too low to recharge the battery completely until the evening, the fuel cell – until then kept on stand-by – is activated. The hybrid system, that makes optimal use of the advantages of both systems, ensures that always the most cost-efficient and sufficient output is available onboard.

The complete solar systems are operated by one (MT-110-H) or two (MT-220-H) power module/s MT-110 in connection with a state-of-the-art MPP solar controller with hybrid control function. The system MT-110-H is ideally suitable for small to medium-sized vehicles, while MT-220-H ensures optimal charging performance even in bigger vehicles that are used all year round. The complete systems are supplied ready-to-install with all required accessories, **but without fuel cell.**

Please order the required fuel cell separately!

Type	Output (Wp)	Module number	Dimensions LxWxH (mm)	Price (€)
MT 110-H	110	1	1261x550x66	1,299.00*
MT 220-2-H	220	2	2 x 1261x550x66	2,199.00*

*Price excluding fuel cell

Equipment of the Hybrid Autarkic Systems: Mono-crystalline 110wp MT solar module/s · MPP Hybrid control electronics · Roof spoiler set incl. accessories · Roof duct · Service/distributor block · Adhesive set for spoiler set and roof duct · Cable set for inside/outside · Cable set for vehicles with EBL · Mounting material · Incidentals · Mounting instructions · Control cable to EFOY fuel cell

HYBRID INFO



Solar systems are ideally suited for the time between spring and autumn. With good weather, a solar system is the most cost-efficient and durable alternative for generating power free of charge.

As opposed to solar systems, fuel cells operate independently of climatic influences, but they need fuel and are – depending on the operating time – of a limited life cycle.

Since the disadvantages of the system cancel each other out, it is logical to connect both energy sources. But it is not enough just to install both systems in parallel without system control. For the fuel cell would start up anyway, even if the solar system is delivering sufficient power with the existing weather conditions..

The Hybrid Autarkic System of **Büttner Elektronik** and **EFOY**, that makes optimal use of the advantages of both systems, ensures that always the most cost-efficient and sufficient output is available onboard.

Battery computer MT 3000-H

■ Optionally, this battery computer can be used. After the connection to the existing Hybrid Autarkic System, the computer takes over the system control and its display shows data of the current charging/discharging power and the remaining capacity of the onboard battery. Its 400A shunt allows even very high currents to be measured.

Voltage: 12/24 V, **Power consump.:** 8 mA,
Dimensions (H/W/D): 85 x 80 x 20 mm,
Installation depth: 15 mm, **Base colour:**
silver metallic

With 400 A Shunt € 499.00

Accessories: surface-mounted housing silver € 19.50



Fuel gauge for the battery

Battery computer: SIMPLE - ACCURATE - INFORMATIVE

Battery computer MT 2000

■ Compact display instrument. Just press one button and you will see all information on battery voltage, charging/discharging current and the capacity of the onboard battery/batteries in Ah still available.

The battery computer displays – like a fuel gauge – the exact remaining capacity of the onboard battery/batteries. However, it does not only calculate the theoretically available battery capacity – like simple capacity displays – the discharging time and certain other parameters are also taken into consideration. This means, that as a result the actually available and not only theoretically available battery capacity is displayed in Ah. The battery computer may be universally set to max. 999 Ah battery capacity. The unit is available with a 100A, 200A or 400A measuring shunt.

Technical data

- Operating voltage (V): 12 or 24
- Installation depth (mm): 15 (installation template enclosed)
- Dimensions:
H x W x D (mm): 85 x 80 x 20
- Colour: black

Battery computer with 100A shunt

€ 235.00

Battery computer with 200A shunt

€ 269.00

Battery computer with 400A shunt

€ 299.00

Accessories:

Surface-mounted housing black

€ 19.50



Battery computer MT 3000 iQ

■ Equipped like the above standard battery computer, but additionally equipped with a display of the remaining battery capacity in per cent and display lighting. Furthermore, a switching threshold can be added in order to automatically switch on/off a consumer at a certain capacity value.

The measuring range of the battery computer can be programmed individually to the existing battery capacity (adjustable up to 999 Ah). The device is available with a 200 A or 400 A measuring shunt.

Technical data

- Operating voltage (V): 12 or 24
- Installation depth (mm): 15 (installation template enclosed)
- Dimensions: HxWxD (mm): 85x80x20
- Colour: silver metallic

Battery computer with 200A Shunt

€ 369.00

Battery computer with 400A Shunt

€ 399.00

Accessories:

Surface-mounted housing silver

€ 19.50



PROFESSIONAL HINT



Remaining capacity

■ Like a fuel gauge, the battery computer displays the exact remaining capacity of the battery/batteries. It is not comparable to cheap devices that are designed to draw attention to the capacity level with LEDs or red/green display fields. Those devices are only measuring the battery voltage and are unsuitable to determine the capacity.

Battery computers are not cheap, but in contrast to some other displays these devices are really expedient since the remaining capacity of the battery/batteries is the most important value for service life without fixed power connection. The battery computer can be used in mobile and also stationary systems.

For marine use it is important to know that the display is not waterproof and can therefore only be installed below deck protected against water spray.

The correct shunt

■ **Warning!** Since the total flowing current must be conducted over the measuring shunt (installed in the onboard battery), it is important to know how much current is flowing. For the most cases – if no large inverters (up to 1000 w) or windlasses and bow thrusters are used – a 100 A shunt is sufficient. Otherwise, a 200 A (inverters up to 2000 watt) or 400 A shunt must be used.



Regenerating and protecting 12V onboard batteries

■ Due to their specific use, special demands are made on batteries for onboard supply. Due to their complicated panel design combined with extremely increased raw material prices, the purchase price for onboard batteries has increased significantly. Therefore it is more important than ever to ensure a long service life and optimal capacity use of these batteries.

If they are not already, the batteries should be equipped with low voltage protection (**MT 100-iQ**). This switches off

the consumers in time to avoid a drastic drop in battery voltage.

Really a must, but unfortunately not planned by any vehicle manufacturer are also activating electronics that prevent harmful sulphate buildup on onboard batteries. For this purpose we have developed the **MT-Battery-iQ**. This device can be adjusted to the used batteries and their capacities and thus ensures the optimal service life of the battery with high capacity usage.

MT Battery-iQ

Remote control
optionally available



■ The MT-iQ-DUO is specifically designed for use in caravans; it prevents the buildup of harmful sulphate deposits and keeps the battery in shape with various programme intervals. Depending of the operational mode (driving mode/charging operation or downtime) intervals are used according to exactly defined engine operating maps. Switchable to battery type (starter or onboard, acid, gel or AGM) and its respective capacity.

Type	Voltage	Dimensions (mm)	Price
MT-Battery-iQ Duo	12V	86 x 76 x 38	€ 119,00
Accessories:			
Remote control (cable length 5m)			€ 29,00
Cable extension for remote control (5m)			€ 13,50

Battery controller MT 100-iQ

Remote control
optionally available



■ Connected to the battery cable, it protects the battery and connected consumers against overvoltage and undervoltage.

The latest switching threshold technology also protects the onboard battery against harmful discharge by small consumers. Side outlet for Truma valve and Stand-by (Radio) provided. Optionally, a remote control (main switch function) can be connected. This also displays the operating state by means of LEDs.

Type	Switching current	Dimensions (mm)	Price
MT 100-iQ	12V/24V 100 A	86 x 76 x 38	€ 159,00
Accessories:			
Remote control (cable length 5m)			€ 29,00
Cable extension for remote control (5m)			€ 13,50



detachable
operating unit

**HIGH TECH
+ DESIGN**
at a reasonable price
by Mobile Technology



MT Automatic dual chargers

Like all other devices by **Mobile Technology**, the chargers 'Made in Germany' are also precisely adjusted to their range of applications.

Optimal performance is ensured by:

- latest IUoU charging characteristics
- long-time activating
- AGM/gel/acid battery changeover

This also ensures monitor-free charging with automatic battery regeneration in case of long standing times or when the caravan is stored in winter.

To increase the charging output all devices can be switched in parallel to already existing chargers and are protected against short circuit, overload, reverse polarisation etc. A voltage stabilisation is integrated and ensures sufficient charging output

even when the mains supply is weak or unstable. The operating unit with display functions and optional night mode can be removed and fitted in the vehicle as remote control (cable extension optionally available).

From the series MT-1230 the chargers have an integrated second main charging output. This enables charging of battery banks being operated separately. These units also have a 3-step switch to reduce the output rating on parking grounds with weak fuse protection.

A temperature sensor for optimal charging in all climate zones is available for all MT chargers (optional). When using AGM and gel batteries, this sensor is recommended on principle by the battery manufacturers.

ELECTRONICS INFO

What charging performance is necessary?

The greater the charging performance, the quicker the onboard battery is recharged. Chargers that are too small do not achieve a full recharge in case of short downtimes.

If you have to recharge 90Ah with a 10 Ampere charger, you'll need at least 9 hours – provided that it does not consume power simultaneously. If you have 20 Ampere charging current, you can fully recharge in only 4.5 hours.

As a guideline, a minimum of 10 per cent of the Ah capacity should be defined as charging current.

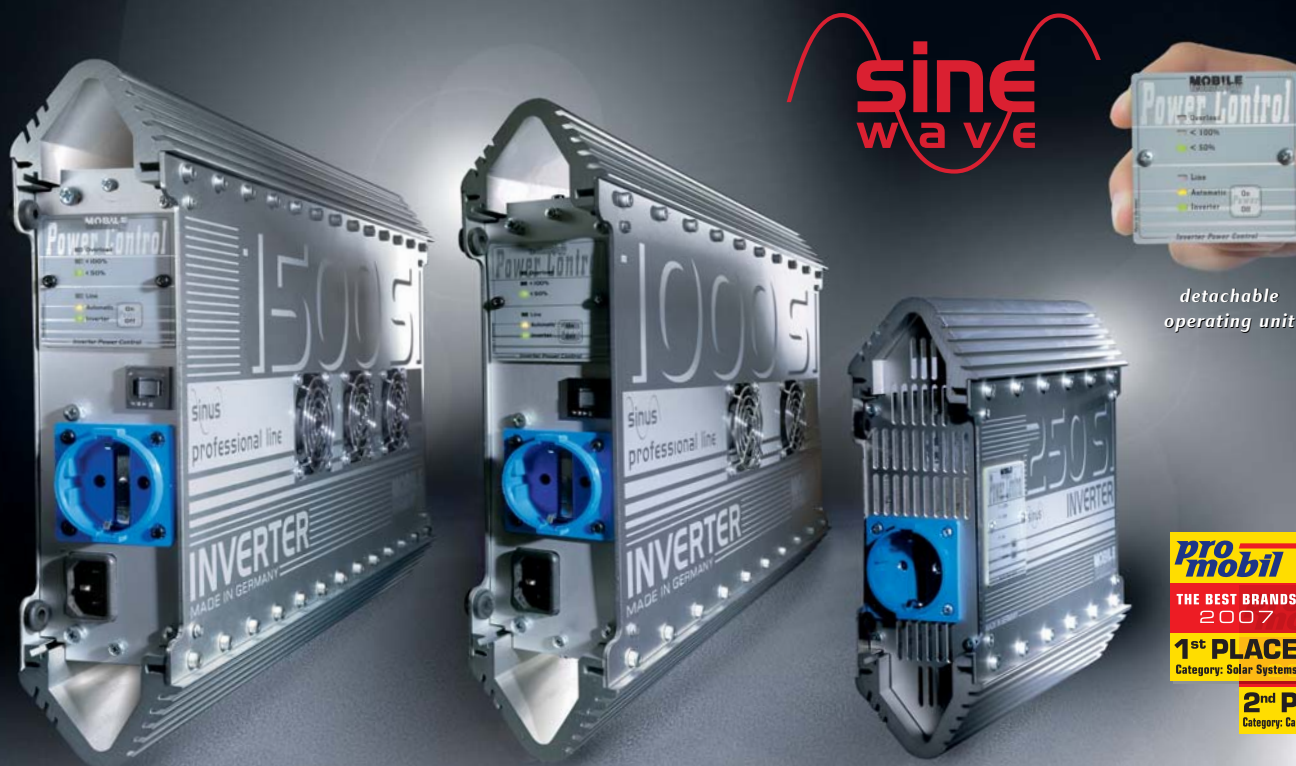
Technical Data	MT 1215	MT 1220	MT 1225	MT 1230	MT 1240	MT 1260
Input voltage	190 V - 255 V	190 V - 255 V	190 V - 255 V	190 V - 255 V*	190 V - 255 V*	190 V - 255 V*
Mains frequency	45 - 65 Hz	45 - 65 Hz	45 - 65 Hz	45 - 65 Hz	45 - 65 Hz	45 - 65 Hz
Battery voltage	12 V	12 V	12 V	12 V	12 V	12 V
Recommended capacity	40 Ah - 170 Ah	65 Ah - 240 Ah	75 Ah - 300 Ah	80 Ah - 360 Ah	85 Ah - 480 Ah	110 Ah - 660 Ah
Charging current	0 - 15 A	0 - 20 A	0 - 25 A	0 - 30 A	0 - 40 A	0 - 60 A
Dimensions (L x W x H mm)	270x223x70	270x223x70	270x223x70	270x223x70	270x299x70	400x299x70
Weight	2650 g	2690 g	2710 g	3100 g	4000 g	5800 g
Price	€ 329.00	€ 395.00	€ 469.00	€ 529.00	€ 629.00	€ 929.00

Separate accessories: **Cable extension** for operating unit (5m) € 13.50

Temperature sensor: absolutely recommended for AGM and gel batteries € 19.50

* full charging output (at 110 V approx. 50% charging output)

24 V chargers available on request



detachable
operating unit



MT inverters: 230 Volt onboard

■ MT inverters are 'Made in Germany' and ensure an optimal supply of 230 Volts always and everywhere.

Inverters of the SI model range operate with pure sine wave voltage and are therefore also suitable for the most sensitive consumers (e.g. coffee machines by Saeco, Jura or Senseo etc.). The MT 300 SI is already sufficient to operate TV/SAT, video units, DVD, computers or battery chargers. For larger consumers, inverters with 1000 watts or 1500 watts are available.

All units are capable of handling overloads and are equipped with whisper fan and all monitoring and switchoff functions. The operating unit with display functions can be removed and mounted in the vehicle as remote control. An integrated load detection switches the units to power saving mode when not used and, if required, also completely off.

The large inverters have an optional mains switchover function. These units detect when external shore power is available and fully automatically switch over. As long as shore power is available, the inverter is switched off and shore power is supplied to the interior sockets. When shore power is no longer available, the inverter can be started and the same sockets are now supplied with inverter power.

All inverters are supplied ready for connection with plug and battery cable (1.2m).

Air-conditioning during driving

Air-conditioning systems have an extremely high power consumption. For this reason, a very powerful inverter must be used. The appropriate set, including control electronics that ensure the inverter receives sufficient power and is switched off in time to prevent the total discharge of the batteries, is available on request.

ELECTRONICS INFO

Which inverter should I use?

Inverters produce an AC voltage of 230V out of 12V onboard voltage. Commercial end devices therefore can be operated via the normal onboard battery.

Inverters are available in various output sizes, and depending on the rated input, the appropriate inverter must be selected.

For smaller devices such as TVs or SAT receivers, the MT 300SI can suffice.

Coffee machines or hairdryers may need a more powerful device, depending on the rated input.

Technical Data	MT300SI	MT 1000SI	MT 1000SI-N	MT 1500SI	MT 1500SI-N
Input voltage	190 V - 255 V	190 V - 255 V	190 V - 255 V	190 V - 255 V*	190 V - 255 V*
Output voltage	45 - 65 Hz	45 - 65 Hz	45 - 65 Hz	45 - 65 Hz	45 - 65 Hz
Continuous rating/peak rating	250 W/400 W	1000 W/2000 W	1000 W/2000 W	1500 W/3000 W	1500 W/3000 W
Power consumption stand-by	0,003 A	max. 0,2 A	max. 0,2 A	max. 0,2 A	max. 0,2 A
Mains changeover	no	no	yes	no	yes
Dimensions (L x W x H mm)	270 x 223 x 70	400 x 299 x 70	400 x 299 x 70	480 x 299 x 70	480 x 299 x 70
Weight	2150 g	5950 g	5950 g	7100 g	7100 g
Price	€ 329. ⁰⁰	€ 839. ⁰⁰	€ 939. ⁰⁰	€ 1039. ⁰⁰	€ 1139. ⁰⁰

Separate accessories: **Cable guard set** for MT 1000-SI/SI-N € 31.⁵⁰ **Cable extension** for operating unit (5m) € 13.⁵⁰
Cable guard set for MT 1500-SI/SI-N € 31.⁵⁰ **Inverter for air-conditioning** on request

Hints, info & prices on more than 90 pages

Innovative electronics

Manual XI

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- > BATTERIES
- > BATTERY ACCESSORIES
- > CHARGERS
- > INVERTERS
- > MEASURING, SWITCHING, MONITORING



Available from your **Mobile Technology** specialised dealer € 2.50
(available from summer 2011)



The practical book for even more information

■ The standard literature for all those who think about using solar technology in a caravan or mobile home.

Describes everything on 120 pages, from the design to do-it-yourself installation, with a lot of illustrations and easy to understand.

All those who already have a solar power system will find a lot of hints for accessories and everything regarding troubleshooting.

Available from your **Mobile Technology** specialised dealer

€ 9.80

MOBILE TECHNOLOGY – MOBILE TECHNOLOGY WITHOUT COMPROMISE

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