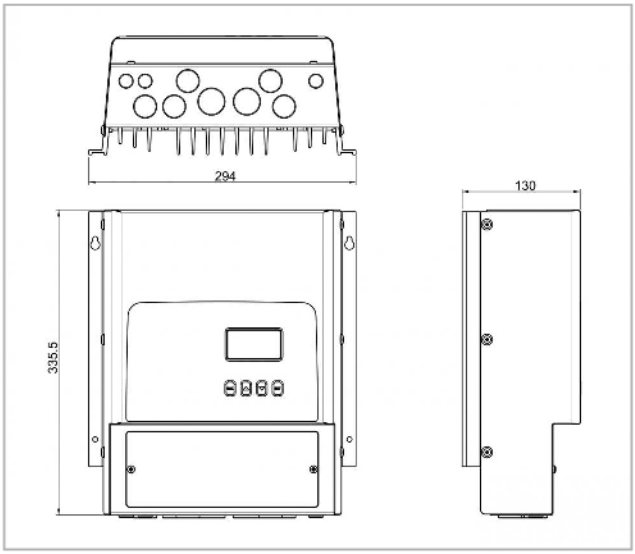
Steca Tarom MPPT

6000-S, 6000-M

The new design for the Steca Tarom sets new standards in this power class. The graphic display informs the user of all important system data. The data are saved by the integrated data logger.

Thanks to the significantly improved state of charge determination, the system is optimally controlled and the batteries are protected. The Steca Tarom charge controller is the ideal choice for larger systems at three voltage levels (12 V, 24 V, 48 V).

Two additional switching contacts can be freely configured as a timer, a night light function, to start generators or as surplus management.



Product features
- Two independent maximum power point trackers (MPP trackers)
- Two inputs (connected in parallel or used separately for two different module arrays)
- Robust metal casing
- Comprehensive data logging of energy values for up to 20 years
- MicroSD slot for data logging of all minute values (6000-M only)
- Voltage and current regulation
- Temperature compensation
- Monthly equalisation charge
- Three configurable multifunctional contacts (6000-M only)
- Adjustable cut-off voltages
- Battery type: gel/liquid lead battery (for 6000-M also Li and NiCd batteries)
- Integrated, automatic module switch
- 36 V and 60 V batteries can be charged with special settings in expert menu level
- Parallel connectable

Electronic protection functions
- Overcharge protection
- Reverse polarity protection of module and battery
- Automatic electronic fuse
- Open circuit protection without battery
- Reverse current protection at night
- Overtemperature and overload protection
- PE connection

Displays
- Multifunction graphical LC display with backlighting

Interfaces
- StecaLink Bus
- Open Steca RS-232 interface
- Battery emergency off signal connection (optional, 6000-M only)

Options
- Connection for battery voltage sensor cable

Certificates
- Compliant with European Standards (CE)
- RoHS compliant
- Made in EU
- Manufactured according to ISO 9001 and ISO 14001

Accessories
- Data cable Steca PA CAB3 Tarcom (6000-M only)
- Current sensor Steca PA HS400 (6000-M only)
- External temperature sensor Steca PA TS-S (for 6000-M included in the scope of delivery)

	MPPT 6000-S / MPPT 6000-M
Characterisation of the operating performance	
System voltage	12 / 24 / 48 V
Nominal power	900 W / 1800 W / 3600 W
Max. DC-DC efficiency	99.4 % (Ubatt=48 V; Uin=70 V; P=0.65*Pnom)
European efficiency	96.6 % (Ubatt=24 V; Uin=30 V) 98.9 % (Ubatt=48 V; Uin=70 V)
European efficiency (weighted across all Ubatt and Uin)	96.4 %
Static MPP efficiency	99.9 % (DIN EN 50530)
Dynamic MPP efficiency	99.8 % (DIN EN 50530)
Weighted REW (Realistic Equally Weighted efficiency)	94.8 %
Own consumption	< 1 W
DC input side	
Min. MPP voltage / input	17 V / 34 V / 68 V
Max. MPP voltage / input	180 V
Min. Open circuit voltage solar module / input (at minimum operating temperature)	20 V / 40 V / 80 V
Max. Open circuit voltage solar module / input (at minimum operating temperature)	200 V
Module current	2 x 30 A / 1 x 60 A
Battery side	
Charge current	60 A
End-of-charge voltage	14.1 V / 28.2 V / 56.4 V
Boost charge voltage	14.4 V / 28.8 V / 57.6 V
Equalisation charge	15 V / 30 V / 60 V
Set battery type	liquid (adjustable via menu)
Operating conditions	
Ambient temperature	-25 °C ... +50 °C
Fitting and construction	
Terminal (fine / single wire)	35 mm² - AWG 2
Degree of protection	IP 31
Dimensions (X x Y x Z)	294 x 335 x 130 mm
Weight	6300 g

- Technical data at 25 °C / 77 °F

DOUBLE AWARDEE

The Steca Tarom MPPT solar charge controller sets new standards in the area of Maximum Power Point trackers. Therefore the Steca Tarom MPPT 6000-M has won even two famous awards

The Steca Tarom MPPT 6000-M dual MPPT peak charge controller, which won the renowned OTTI Innovation Prize, was awarded the Intersolar Award 2014 at the world's largest trade fair for the solar sector.

This innovative product won over the judges due to its outstanding benefits. At 3.6 kW, the appliance is suitable for nearly all lithium-ion batteries. In addition to complex charging algorithms, the charge controller features battery diagnosis, a long-term data logger, interfaces and exceptionally high efficiency: the Steca Tarom MPPT 6000-M is the first charge controller to achieve a conversion efficiency of 99 percent as measured in the field. The unit provides extremely practical answers to issues raised by the current wave of technological change gripping the photovoltaic sector.

inter solar award 2014 WINNER

WINNER
OTTI INNOVATION AWARD 2014

Overview of functions:

	Tarom MPPT 6000-S	Tarom MPPT 6000-M
Comprehensive, integrated data logger for 20 years of data recording	✓	✓
Buzzer for alarms	✓	✓
Three configurable multifunctional contacts for... • ... programmable deep discharge protection (LVD) • ... generator/surplus manager • ... automatic switch functions (day, evening, night) • ... four timers		 ✓ ✓ ✓ ✓
Unique lithium-ion battery charge strategy		✓
Innovative charge strategy for NiCd batteries (PA HS400 required)		✓
Battery capacity test during operation (PA HS400 required)		✓
Optimised SOC algorithm (PA HS400 required)		✓
IUIa charging for increased battery capacity (optional)		✓

Lead acid

Revolutionary innovative algorithms for lead batteries

State of charge (SOC):
The Steca Tarom MPPT 6000-M is equipped with a new type of highly flexible algorithm for precise SOC calculations for nearly all lead-acid batteries enabling automatic adaptation to battery and user behaviour. This enables the current state of charge to be assessed at any time.

Battery capacity test
The Steca Tarom MPPT 6000-M has an entirely new and professional battery capacity measurement system, which determines the actual capacity of the battery. To date, capacity generally had to be measured by the battery manufacturer in a complex process or locally with additional measuring equipment. In the Steca Tarom MPPT 6000-M, the Steca PA HS400 electricity sensor can measure the capacity and supply information on battery ageing.

This revolutionary new development provides advanced inspection options for users, operators and manufacturers – e.g. for awarding battery warranties based on the actual residual capacity.

IUIa charging:
Depending on the battery type and its condition, the battery capacity can be increased by up to 20 percent with a constant current charging phase following a full charge of the lead-acid batteries (IUIa charge). This function is now available for the first time for stand-alone PV systems too in the Steca Tarom MPPT 6000-M.

Lithium

Professional charging strategy for all lithium-ion batteries

only with TAROM MPPT 6000-M

The Steca Tarom MPPT 6000-M is the first MPPT charge controller to also offer the option of charging lithium-ion batteries professionally using PV current. The latest research results in this area were used in its development, which took place in close cooperation with renowned, international research institutes. A self-developed charge strategy can be perfectly adapted to all available lithium chemistries using a wide range of parameters.

NiCd

Professional charging of NiCd batteries

Alkaline chemicals like NiCd batteries can also be charged using the innovative Steca Tarom MPPT 6000-M (Steca PA HS400 required). A professional, configurable charging characteristic curve is available for this, which can be adapted to special battery and system prerequisites. Particularly with professional use, this charge strategy opens up entirely new possibilities.

Greater efficiency. Greater flexibility. Greater comfort. Less devices. Less modules. Less costs.

Save in the right places with Steca Tarom MPPT

With its innovative functions, the Steca Tarom MPPT not only offers greater efficiency, flexibility and comfort but also helps to avoid certain unnecessary costs that are incurred during the planning, implementation and ongoing operation of PV systems.

No need for additional devices!

... due to added flexibility as a result of the wide input voltage range

The Steca Tarom MPPT can be used with a wide input voltage range, which allows greater flexibility when selecting modules.

... due to the two separate inputs

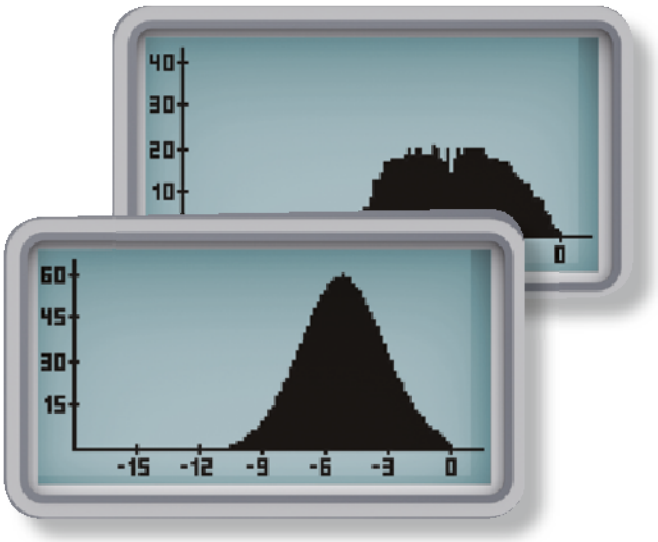
Two inputs each with independent MPP tracking in one charge controller provide greater options when it comes to system planning. With the Steca Tarom MPPT you can not only vary the module types for each input but the circuits too. Series and parallel circuits can be combined easily in one system using the universal and flexible Steca Tarom MPPT. There is no need for an external module circuit box as all module strings can be connected directly to the charge controller leading to savings on installation costs.

... due to two maximum power point trackers (MPPT)

The two independent separate maximum power point trackers enable various module types to be used with just one Steca Tarom MPPT charge controller. Leftover module stock can also be used in a system without any problems. Significantly greater options are also available when upgrading existing systems – without the extra cost of replacing an existing charge controller. The Steca Tarom MPPT is particularly suitable for systems where partial shading of the module array is unavoidable. Due to the two separate MPP trackers, the charge controller can power different strings with an individually adjusted MPP. This enables the maximum efficiency to be exploited for each string enhancing the total output of the system – in spite of partial shading. The same principle applies also for use on roofs or areas with various angles of inclination or orientations.

... due to the comprehensive, integrated data logger

The Steca Tarom MPPT is equipped with a unique, comprehensive data logger, which enables data of the two inputs to be monitored and saved independently over a period of up to twenty years. The previous 18 hours can be graphically displayed. Daily, monthly and annual totals are summarised automatically for an outstanding overview of system utilisation at a glance.



No need for additional modules!

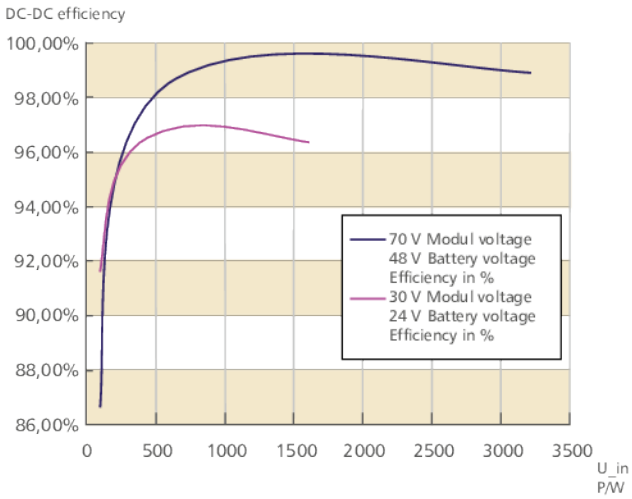
... due to the extra high efficiency

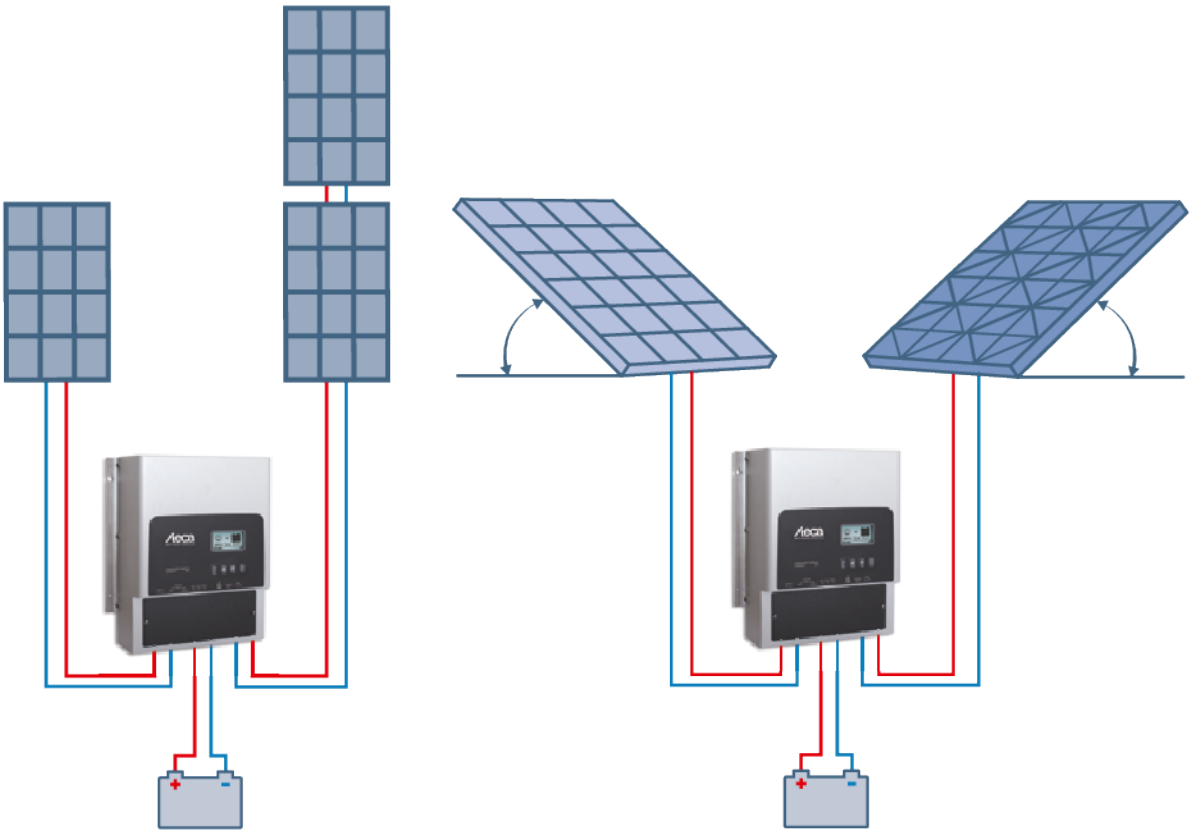
The Steca Tarom MPPT is one of the few MPPT charge controllers that can reliably attain a high and – more importantly – constant efficiency across all input and output voltage ranges. The high level of reliability of the MPPT solar charge controller enables you to obtain even more power from your PV system. For example, significantly less energy is lost due to unnecessary heat losses. Conversely this means that, using the same power, as much as an entire module can be saved during planning if required. Particularly with limited mounting options or a limited budget this is an indisputable benefit.

Save time and effort during installation!

... due to the easily accessible, easy-to-connect terminals

The extra spacious connection terminal area can be accessed via two screws on the front of the device meaning installation of cables with a thickness of up to 35 mm² is simple, fast and secure. An integrated module switch means the Steca Tarom MPPT can be connected without any voltage connection, sparks or light arcs. Only when the charge controller is switched on via the menu are the module arrays connected up. This makes installation child's play.





Enjoy numerous added benefits!

User-friendly graphical LCD display
The graphical multifunction display of the Tarom MPPT 6000-M and Tarom MPPT 6000-S displays all system states intuitively via icons. This permits a clear understanding of the energy flow. All parameters can be configured using the multi-lingual, intuitive menu.

only with TAROM MPPT 6000-M

Function overview of multifunctional contacts and Communication options

Communication options
The StecaLink bus facilitates communication between a Steca Tarom MPPT 6000-M and up to 22 further Steca Tarom MPPT 6000-S units. The integration of accessories such as the electricity sensor Steca PA HS400 is realised via the StecaLink bus. All currents and other data are recorded in this way in the system and tracked in the data logger. The charge controller determines and displays the battery's current state of charge (SOC) (Steca PA HS400 required). The connected Steca Tarom MPPT 6000-S units even continue working in a special redundancy mode when communication errors occur. The Steca Tarom MPPT 6000-M also has an RS-232 interface, which can output all relevant system data once a minute. A MicroSD card slot allows you to record comprehensive data for all devices in the StecaLink communication system on a standard MicroSD card. Professional control of loads and generators is possible via the multifunctional contacts.

The Steca Tarom MPPT 6000-M is equipped with three multifunctional contacts, which can be programmed independently of one another. These versatile individual functions can be combined virtually as required:

Deep discharge protection
Deep discharge protection automatically protects the battery against harmfully low levels of discharge. All voltage thresholds can be freely configured via a menu based either on the battery's current state of charge (SOC) or on the battery voltage.

Evening, night light and daylight function
The charge controller allows configuration of three different automatic timer functions: evening light, night light and daylight. All the important time and delay values can be set with this. With the evening light function, the load is automatically switched on at sunset and the time after which the load is switched off again can be individually specified. The night light function specifies the time after which the load is switched on after sunset and switched off again before sunrise. With the morning light function, the load is switched on automatically at night and automatically switched off again at sunrise.

Four freely programmable timers with week day function
The four freely programmable timers can be set individually based on day of the week, start and finish time. With the week day function, each timer can be used for just one or several days of the week at a time if required.

Generator function
Using the generator function, the Steca Tarom MPPT 6000-M – based on the SOC or the battery voltage – can start a generator automatically when the battery is discharged, and switch this off again when the battery is full. Using the surplus manager, an additional load can be activated automatically when the battery is full. This is switched off again as soon as no more energy surplus is available in the solar system. This guarantees that all available energy is used.