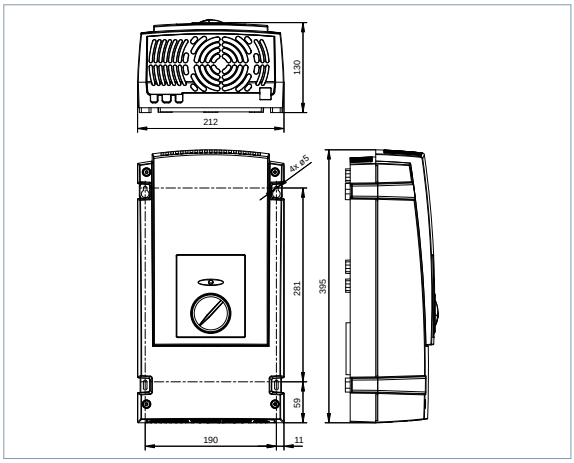
Steca Solarix PI

550, 550-L60, 1100, 1100-L60

In developing the Solarix PI sine wave inverter, Steca has brought about some innovations which are unprecedented in this form. These are, above all, parallel connection, the novel operating concept which uses a single rotary switch, direct communication in order to calculate the state of charge (SOC) with Steca Tarom and Steca Power Tarom, and the electronic fuse. Furthermore, our many years of experience have come into play for deploying these inverters specifically in photovoltaic systems. This comes through, for instance, in the way that a most diverse range of appliances is provided with a low operating consumption and a stable energy supply.

[550 W ... 1.100 W]



Product features

- True sine wave voltage
- Can be connected to the Steca Tarom with a Steca PAx4 parallel switch box
- Excellent overload capabilities
- Optimal battery protection
- Automatic load detection
- Parallel connectable
- Best reliability
- Protective insulation according to protection class II
- Control by digital signal processor (DSP)

Electronic protection functions

- Deep discharge protection
- Battery overvoltage shutdown
- Overtemperature and overload protection
- Short circuit protection
- Reverse polarity protection
- Automatic electronic fuse

Displays

- Multi-coloured LED shows operating states

Operation

- Main switch
- Adjustable load detection

Certificates

- Compliant with European Standards (CE)
- Made in Germany
- Developed in Germany
- Manufactured according to ISO 9001 and ISO 14001

	550	550-L60	1100	1100-L60
Characterisation of the operating performance				
System voltage	12 V		24 V	
Continuous power	500 VA		1,000 VA	
Power 30 min.	550 VA		1,110 VA	
Power 5 sec.	1,500 VA		3,000 VA	
Power asymmetric	350 VA		500 VA	
Max. efficiency	93 %		94 %	
Own consumption standby / ON	0.5 W / 6 W		0.7 W / 10 W	
DC input side				
Battery voltage	10.5 V ... 16 V		21 V ... 32 V	
Reconnection voltage (LVR)	12.5 V		25 V	
Deep discharge protection (LVD)	current driven or by Tarom			
AC output side				
Output voltage	230 V AC +/-10 %	115 V AC +/-10 %	230 V AC +/-10 %	115 V AC +/-10 %
Output frequency	50 Hz	60 Hz	50 Hz	60 Hz
Load detection (standby)	adjustable: 2 W ... 50 W			
Safety				
Safety class	II (double insulated)			
Electrical protection	reverse polarity battery, reverse polarity AC, over voltage, over current, over temperature			
Operating conditions				
Ambient temperature	-20 °C ... +50 °C			
Fitting and construction				
Cable length battery / AC	1.5 m / 1.5 m			
Cable cross-section battery / AC	16 mm² / 1.5 mm²			
Degree of protection	IP 20			
Dimensions (X x Y x Z)	212 x 395 x 130 mm			
Weight	6.6 kg		9 kg	

Technical data at 25 °C / 77 °F

[areas of application]

Steca Solarix PI: flexible and versatile

Parallel connection

A stand-alone PV system is relatively difficult to size, since often the loads and their average running times are not adequately known, or because, when the system is subsequently expanded, more loads are added.

This is where the simple expandability of the Steca Solarix PI inverters pays off. Up to four devices can be operated in parallel. The connections are made via an external box, the Steca PAx4.

From the outside, the combination of two, three or four inverters functions like one device with a correspondingly higher capacity. Internally, in case of open-circuit operation or low output, e.g. for the lighting, only one inverter continues to operate. This has a positive effect on the electricity consumption, since the devices which are not turned on do not consume any power. Only when a higher capacity is called for, for example when a refrigerator is turned on, are all the inverters automatically switched on, thus ensuring trouble-free operation.

In this regard, Steca Solarix PI inverters are all the same. Only via the connection to the Steca PAx4 parallel switch box is one inverter designated as the master. This device then has control over the system, whilst the other Steca Solarix PI inverters operate as slaves.

Rotary switch

Operating the Steca Solarix PI is made very easy by the large rotary switch on the front of the device.

If the Steca Solarix PI is being used as a single device, three different modes of operation are possible, and these may be selected using the rotary switch. The load detection section follows on from the 'off' setting on the far left. In this section, the switch can be turned continuously to match the power consumption of the smallest load. In order to reduce power consumption, the inverter is then turned off, and it checks periodically whether a load has been turned on. Only if this is the case does the inverter switch itself on. The 'on' setting on the rotary switch follows on from the load detection section. In this operating status, the inverter makes the output voltage continually available.

If several inverters are connected in parallel, the desired mode of operation is selected using the rotary switch of the device connected to the 'master socket'. In addition to the modes of operation described above, there is also the setting 'all on'. This means that not only the master device is continually switched on, but all other connected inverters as well.

The use of the rotary switch makes it possible to see very quickly which mode of operation the inverter is in.

Electronic fuse

One innovation in sine wave inverters is the electronic fuse as it is employed by Steca in solar charge controllers. With this fuse, the Steca Solarix PI is protected against overloads, and also against the accidental connection of the AC output to the public grid. Because the fuse is electronic, it does not need to be replaced after it has been triggered, as is the case with mechanical fuses. As soon as the problem has been remedied, the inverter automatically reverts back to its selected mode of operation.

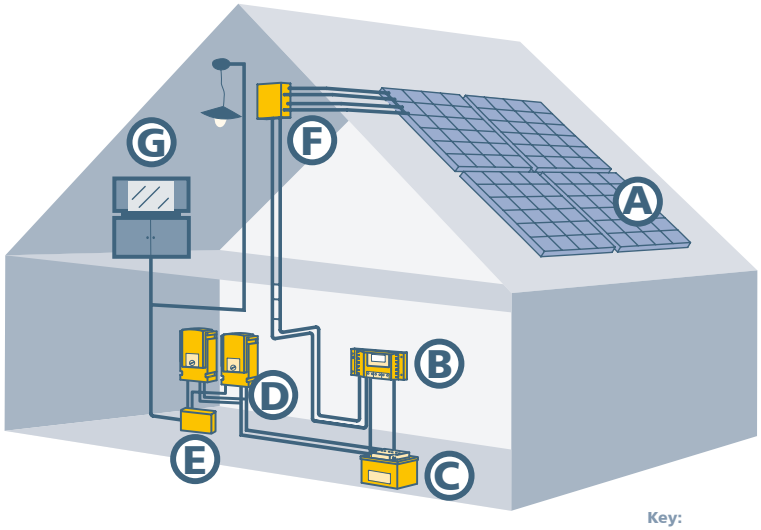
The Steca Solarix PI is also internally protected against an incorrect wiring of the battery. In case of reverse polarity, the device remains undamaged, and there is no need to replace the fuse.

Quick and robust control

The Steca Solarix PI inverter was developed to supply power to a wide range of loads. Even critical loads can be operated, thanks to the quick control. At the heart of the controller is a DSP which takes on the extensive calculation work. The inverter's necessary robustness is supplied by a control software program which was developed in cooperation with a renowned research institute..

Low own consumption

In die Entwicklung des Sinus-Wechselrichters sind 15 Jahre The sine wave inverter has benefited from Steca's 15 years of experience in the field of stand-alone PV systems. This is reflected, for instance, in the low own consumption of the Steca Solarix PI. When used in solar home systems, the inverter is connected to the battery 24 hours a day, and is designed to consume as little as possible of the solar-generated energy whilst in load-detection or open-circuit modes.



Key:

A Solar module
B Solar charge controller
C Battery
D Steca Solarix PI sine wave inverter
E Steca PAx4 parallel switch box
F Generator junction box
G Electrical load (230 V-)

Steca Solarix PI with Steca Tarom

Communication with Steca Tarom solar charge controllers

A further innovation that has gone into the Steca Solarix PI is the communication with the solar charge controllers from the Steca Tarom and Steca Power Tarom series. A data connection to the charge controller can be created via the Steca PAx4 parallel switch box.

In this case, the inverter connected directly to the battery communicates the amount of energy that has been withdrawn to the solar charge controller. The controller is thus able to calculate the correct state of charge (SOC).

This means that these systems no longer need to be switched to voltage-controlled operation or an additional current shunt.

If the switch-off threshold of 30 % SOC is reached, the Steca Solarix PI receives a signal from the solar charge controller and subsequently switches itself off in order to protect the battery from deep discharge. It turns itself back on again once the SOC has reached the 50 % mark.