



**SG110CX**

Q at night

**SUNGROW**

## 1. Introduction

This document describes the 'Q at Night' function of the PV inverter SG110CX.

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## 2. Q at night Function

In clear weather, the PV inverter outputs energy during daytime but no energy at night, characterized with strong cycle. In cloudy weather, the inverter outputs energy intermittently with the features of variability and impact. The change in the output power definitely causes frequent voltage fluctuation at the grid-connected point. During the daytime, with the reactive power limitation function, the inverter can compensate reactive power according to actual conditions. At night, reactive devices such as the transformer need to consume reactive power; and if the power is provided only by the utility grid, power factor of the grid will be affected. To keep the grid stable, power station should output some reactive power to support the grid. To this end, the Q at night function can be used at night.

### 2.1. Description of Q at night for SG110CX

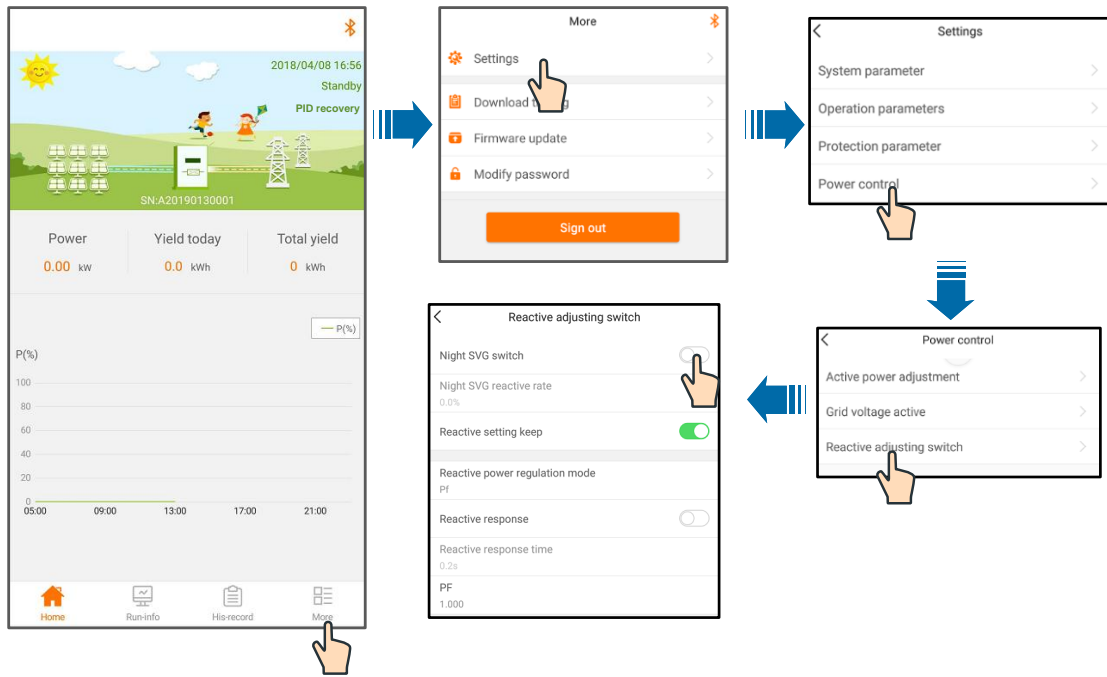
The SG110CX inverter implements phase difference between the inverter output voltage and the grid voltage by means of reactive current vector control, thereby achieving the necessary reactive power compensation. This makes grid connection friendlier and can adapt to future grid system connection requirements.

The 'Q at night' function requires the inverter to keep feeding reactive power in the absence of DC voltage, which involves additional hardware components and software development.

Once the 'Q at night switch' is enabled, the 'Q at night' function will be activated. When the DC input power has dropped to a preset value for a while, the inverter enters the 'Q at night' mode and feeds reactive power as required.

The inverter's output reactive power ranges between -66kVar and +66kVar.

The Q at night function can be enabled or disabled via the iSolarcloud app. As shown in the figure below, tap "More" -> "Parameters setting"-> "Power control"-> "Reactive adjusting switch" -> "Night SVG switch" to turn on the SVG switch.



**Fig.1. Q AT NIGHTswitch setting**

When the Q at night function is activated, the inverter should be set to the Qt (reactive power ratio) mode, that is, the output reactive power percentage is set, and the inverter continuously outputs a fixed amount of reactive power according to the setting. When there is no power output at night, the inverter controls the stableness of bus voltage, the AC relay does not trip, and the inverter stays in the "grid-connected" state.

After the Q at night switch is activated, if the DC input voltage is lower than 220V and the AC output power is lower than 30W for 30min, the inverter enters the Q at night working mode.

**2.2. Q at night During LVRT**

When operating in the "Q at night" mode, the inverter supports the utility grid in the event of instant grid-voltage drop. In this case, the inverter will stay connected to the grid and waits to restart feeding reactive power after the voltage drop ends or feeds reactive power during the voltage drop according to local grid code. During the LVRT (low voltage ride through), there must be some power to keep the inverter operating.