




## 3.5PV Inverter Electrical Specification



*Solar Energy Doesn't Get Any Better!  
PCM Supports Total Solutions.*

### 3.5.1 Input data

Model	SLK-1500	SLK-2000	<b>SLK-3000</b>	SLK-4000
Machine view				
Maximum Input power	1875W	2500W	<b>3750W</b>	5000W
Max. input voltage Maximum PV open voltage	500VDC	500VDC	<b>500VDC</b>	500VDC



Nominal DC voltage	400V			
MPPT voltage range	150V to 500V ±5%			
System start-up voltage	100V ±5%			
Working voltage range	100±5% ~ 500-5%+0%V			
Initial feeding voltage	150V±5%			
Full rating working range	250V to 500V	250V to 500V	<b>200V to 500V</b>	250V to 500V
Shutdown voltage	80V typical			
Max. input current	7.5ADC	10ADC	<b>15.2ADC</b>	20ADC
DC voltage ripple	< 10%			
DC insulation resistance	>8M ohm			
DC switch	ON/OFF 20A			
DC connector	Tyco-contact (1 pair)			
Attached DC connector	Tyco-contact (1 pair)-cable type			Tyco-contact (3 pair)

### 3.5.1 Output data

Model	SLK-1500	SLK-2000	SLK-3000	SLK-4000
Nominal output power	1500W	2000W	<b>3000W<sup>7</sup></b>	4000W
Maximum output power	1650W	2200W	<b>3300W<sup>8</sup></b>	4400W
Operational voltage range <sup>2</sup>	190V, minimum 270V, maximum			
Operational normal voltage	230Vac			
Operational frequency range	$49.8 \leq f_{50} \leq 50.2$ for 50Hz <sup>3</sup>			
Nominal output current	6.6A	8.7A	<b>13A</b>	17.4A
O/P current distortion <sup>4</sup>	THD<5%, each harmonics<3%			
Power Factor	>0.99			
DC current injection	<0.5% of rated inverter output current			

<sup>2</sup> Based on the limit of DK5940

<sup>3</sup> Based on the limit of DK5940

<sup>7</sup> Based on the output voltage is higher than 200Vac

<sup>8</sup> Based on the output voltage is higher than 220Vac

Once input V is less than 250V, the relation of I/P V and load % is

$$Load\% = 0.4 \times V_i$$

### 3.5.1 General data

Model	SLK-1500	SLK-2000	SLK-3000	SLK-4000
Internal power consumption	<7W			
Standby power (at night)	<0.1W			
Minimum conversion efficiency (DC/AC)	>90% Under input voltage>210V, load >20%			
Maximum Conversion Efficiency (DC/AC) <sup>5</sup>	>94%	>95%	>95%	>96%
European Efficiency	>93%	>94%	>94%	>95%
GFCI threshold <sup>6</sup>	See ground fault current detection			
Ground current detection range	0~500mA			
Ground current detection frequency	0~700Hz			
Protection degree	IP 65 or IP43			
Operation temperature	-25 to <b>55</b> °C			
Humidity	0 to 95%, non-condensing			
Heat Dissipation	Convection			
Acoustic noise level	<40dB, A-weighted, frequency up to 20kHz			
Altitude	Up to 3000m without power de-rating, 5°C de-rated for each additional 500m			

### 3.5.2 Mechanical Requirements

#### Dimension & color

The color can be changed by customer request.

#### Dimension & Weight

Model	1.5 kW	2 kW	3 kW	4 kW
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<sup>5</sup> under input voltage  $\geq$  400V, full rated output power, 25°C ambient

<sup>6</sup> According to DK5940 requirement



Physical: W×D×H (mm)	380x300x133	380x300x133	380x300x143	550x300x133
Physical: Weight (kg)	14	14	14	21
Shipping: W×D×H (mm)	495*465*285	495*465*285	495*465*285	665*465*285
Shipping: Weight (kg)	16	16	16	23

The dimension and weight here could be changed due to product modification

#### Mounting method:

It is a wall-mounting unit. A mounting frame or mounting holes on the unit is necessary. To mount the unit on the wall, there is no need to disassembly the unit itself.

#### Transportation

Packing material must be capable of withstanding multiple shipments without internal damage. The test standard follows ISTA procedure 2A.

### 3.5.3 Reliability and maintenance

MTBF: Basically, the lifetime must be larger than 10 years.

MTBS: No servicing at all during operation. The time is same as MTBF.

MTTR: Mean Time to Repair, 30 minutes

### 3.5.4 Communication capability

#### Communication interface

A female 9-pin RS232 communication port is on the unit. In addition, a extension slot that can accommodate RS485 and USB is on the unit.

RS485: An option module can be added to inverter providing RS485 communication capability Extension slot

This extension slot is used to accept optional card or module for communication and other future functions. The pin assignment is same as PCM Standard.

The Customer can download the information of “Vdc ,Adc,Vac,Aac,kWac,kWHac and

output frequency “ of each inverter for series of multi string inverters. The protocol will be provided together with the inverter for use of the customer system integration.

### 3.5.5GFCI

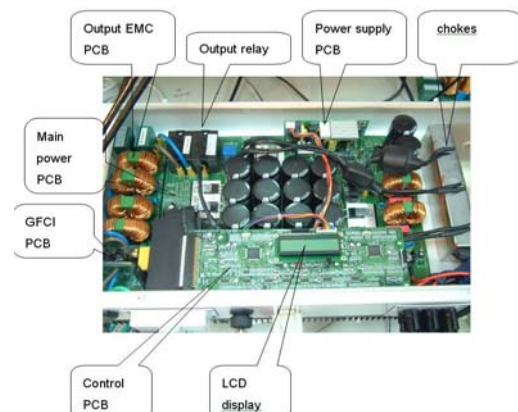
#### Description:

In the system, a GFCI (Ground Fault Current Interruption) is used to detect ground fault current, residual current, flowing through system ground. The GFCI operates by sensing the difference between the currents in the system Line and Neutral conductors. Under normal conditions, these currents should be equal. However, in abnormal cases, these currents will not be equal as the path is to Ground - a ground fault - and not to the Neutral. This might occur if a short circuit developed inside an ungrounded appliance or if someone was working on a live circuit and accidentally touched a live wire.

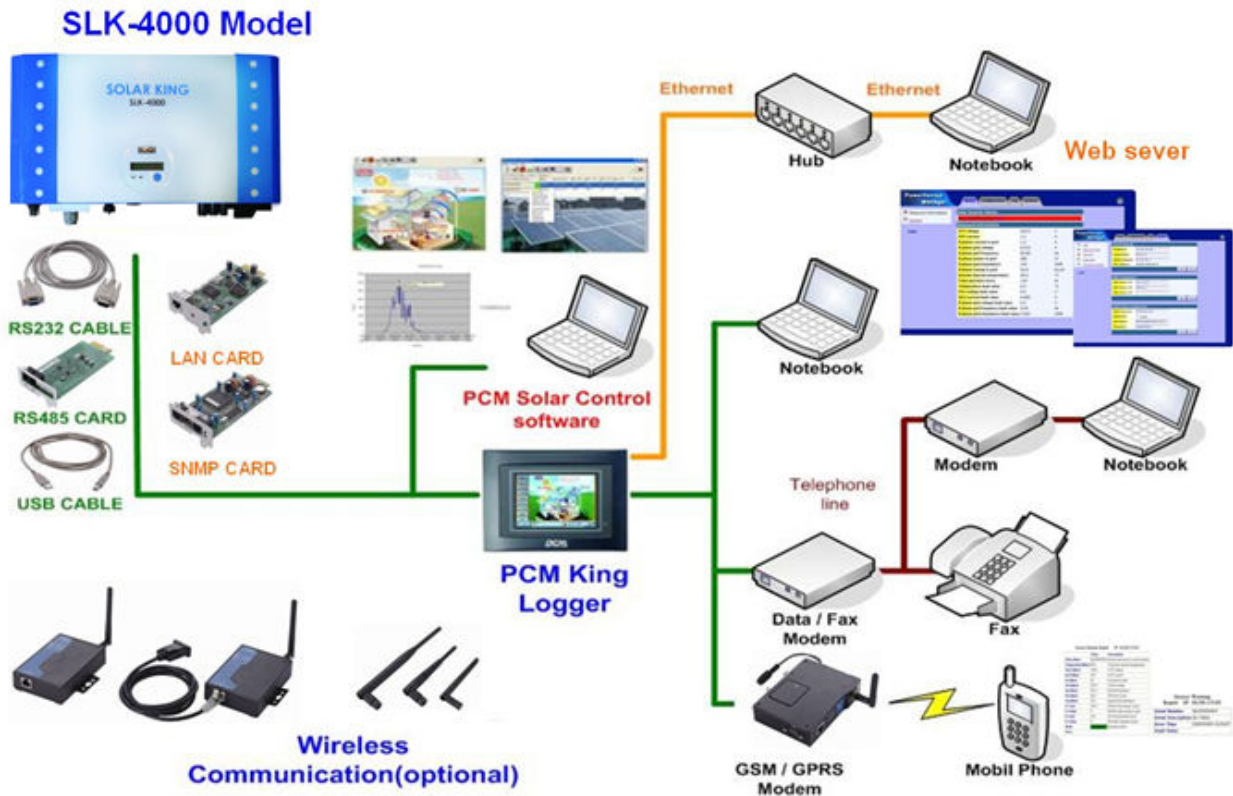
The detection circuit will send an analog signal proportional to fault current  $I_{\Delta}$  (current difference between L and N) amount ( $|I_{\Delta}|$ ) to main controller for judgment. The judgment criteria are based on VDE0126.

#### Specification:

- a) Input ( $I_{\Delta}$ ) range:  $\pm 500\text{mA}$
- b) Detecting frequency range: 0~700Hz
- c) Output error: +20% ~ 0%, compared to actual difference between L and N



**On grid PCM Solar Inverter communication system diagram.**



**Other brand competitive**

Differential item	xxx	Solar King4K	Special Key
Electrical specification	Competitive		For 1~4K Model
Efficiency	> 96%	>96.5%	More than 0.5%
W x H x D (mm)	453 x 395 x 155	550 x 300 x133	Downsize (20%)
Frame appearance	Square	Rectangle	Golden ratio(16:9)



			Easy to install
<b>Weight (kg)</b>	< 20	<b>&lt;21.5</b>	More Steel material
<b>Internal DC Switch</b>	No	<b>Yes</b>	Easy to isolate
<b>Acoustic noise level</b>	<35dB	<b>&lt;33dB</b>	Low noise
<b>DC connector</b>	Multi-contact (old)	<b>Multi-contact (new)</b>	Accord with the market
<b>Communication</b>	No	<b>Yes</b>	USB (Type B)
<b>MPPT tracking time</b>	Slow	<b>Fast</b>	Operation effective<10ms
<b>Application software</b>	No	<b>Optional</b>	Information record
<b>Data logger system</b>	No	<b>Optional</b>	Touch panel (embedded system)
<b>Wireless communication</b>	No	<b>Optional</b>	Wireless module solution



### 1The Efficiency test of SLK- 4000

(A) The Maximum Efficiency table (In different input dc voltage & different output power) :

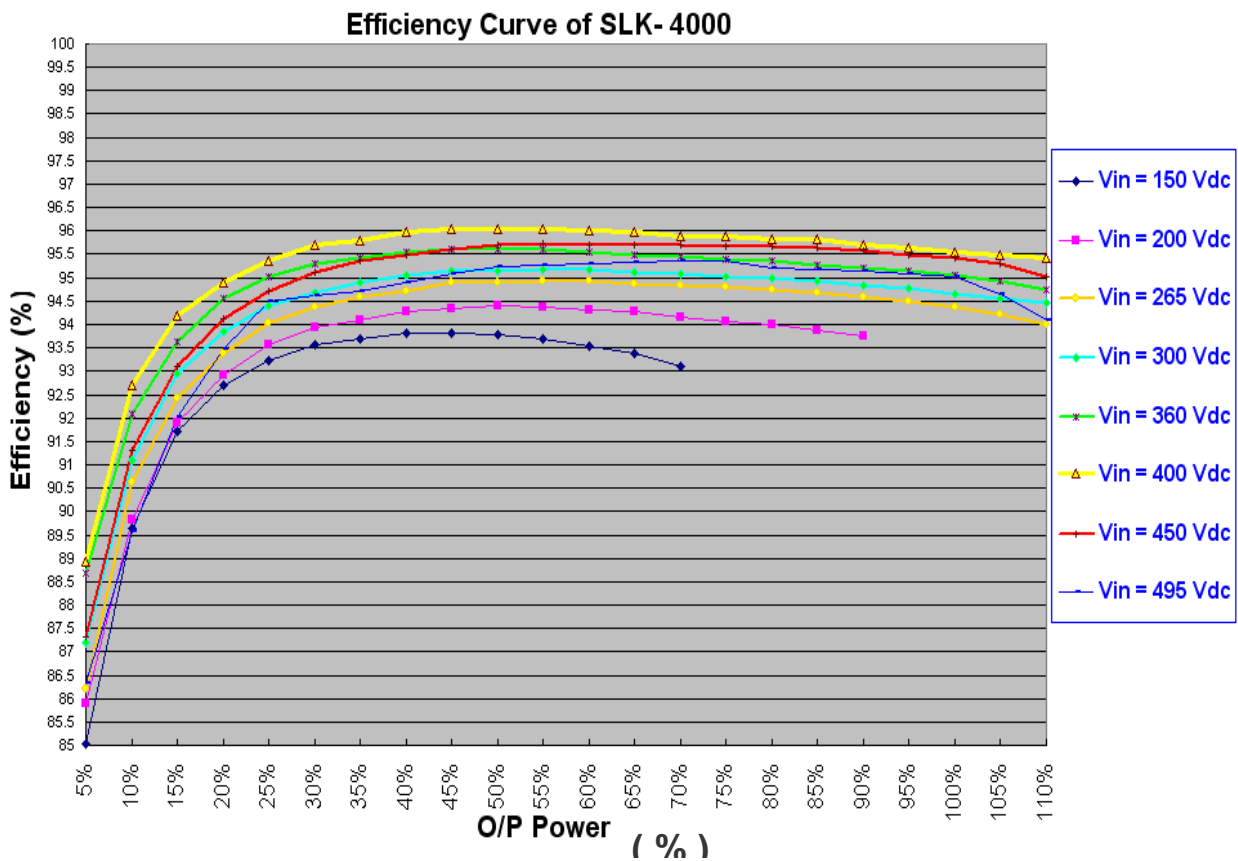
Input O/P Power	150	200	265	300	360	400	450	495
	Vdc	Vdc	Vdc	Vdc	Vdc	Vdc	Vdc	Vdc
200 w	85.04%	85.89%	86.22%	87.19%	88.67%	88.93%	87.32%	86.33%
400 w	89.63%	89.84%	90.63%	91.1%	92.07%	92.69%	91.3%	89.59%
600 w	91.7%	91.9%	92.41%	92.95%	93.63%	94.2%	93.09%	92.01%
800 w	92.71%	92.93%	93.39%	93.85%	94.55%	94.91%	94.11%	93.48%
1000 w	93.23%	93.57%	94.02%	94.41%	95.02%	95.36%	94.71%	94.5%
1200 w	93.57%	93.94%	94.38%	94.69%	95.29%	95.71%	95.12%	94.61%
1400 w	93.7%	94.08%	94.58%	94.91%	95.41%	95.8%	95.35%	94.72%
1600 w	93.81%	94.28%	94.72%	95.06%	95.55%	95.98%	95.49%	94.91%
1800 w	93.82%	94.34%	94.89%	95.13%	95.61%	<b>96.03 %</b>	95.62%	95.09%
2000 w	93.77%	94.4%	94.89%	95.15%	95.6%	<b>96.04 %</b>	95.7%	95.23%
2200 w	93.69%	94.36%	94.92%	95.16%	95.6%	<b>96.03 %</b>	95.72%	95.27%
2400 w	93.55%	94.32%	94.92%	95.16%	95.56%	<b>96 %</b>	95.7%	95.31%
2600 w	93.39%	94.28%	94.87%	95.12%	95.5%	95.98%	95.7%	95.34%
2800 w	93.09%	94.17%	94.83%	95.08%	95.45%	95.9%	95.7%	95.36%





3000 w	NA	94.07%	94.79%	95.03%	95.38%	95.88%	95.68%	95.35%
3200 w	NA	94.01%	94.74%	94.98%	95.37%	95.84%	95.68%	95.21%
3400 w	NA	93.88%	94.68%	94.94%	95.28%	95.81%	95.63%	95.16%
3600 w	NA	93.75%	94.59%	94.84%	95.22%	95.71%	95.58%	95.13%
3800 w	NA	NA	94.48%	94.76%	95.15%	95.63%	95.5%	95.07%
4000 w	NA	NA	94.37%	94.66%	95.04%	95.56%	95.41%	95.01%
4200 w	NA	NA	94.23%	94.56%	94.93%	95.5%	95.31%	94.66%
4400 w	NA	NA	94.01%	94.47%	94.75%	95.42%	95.01%	94.1%

**(B) The Maximum Efficiency curve :**



**(C) Calculate the European Efficiency :**



The formula :

$$\eta_{EU} = (0.03 \times \eta_5\%) + (0.06 \times \eta_{10\%}) + (0.13 \times \eta_{20\%}) + (0.1 \times \eta_{30\%}) + (0.48 \times \eta_{50\%}) + (0.2 \times \eta_{100\%})$$

Input Vdc	150	200	265	300	360	400	450	495
European Efficiency ( $\eta_{EU}$ )	NA	NA	94.02 %	94.36 %	94.90 %	95.35 %	94.86 %	94.29 %

Note : When input voltage is 150Vdc or 200Vdc , both of these conditions can't match PV inverter's output power

to 100% ( 4000 w ) . the test doesn't measured the full load efficiency ( $\eta_{100\%}$ ) ,and the European Efficiency is "NA".