



# Morning Solar Ltd.

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## Inverter (Solar Series with change over switch)

### Introduction

#### 1.1 Theories:

This series Inverters use DSP technology. Main circuit use the latest Mitsubishi or Toshiba IPM (IGBT) module/ German IXYS MOSFET. It makes DC current into AC pure sine wave current. Power frequency with transformer isolation from loads.

#### 1.2 Application:

This series Pure sine wave electronic Inverter is specifically designed for photovoltaic and electric power system, which requires high quality, good reliability and various kinds of loads

#### 1.3 Features:

- 2 32-bit DSP Controllers
- 2 The fifth generation Mitsubishi IPM modules
- 2 High inversion efficiency
- 2 Pure Sine Wave, THD <3%
- 2 Auto change over between grid and inverter, less than 5ms
- 2 Multilingual LCD display
- 2 Standard RS485/232 communication interfaces
- 2 Perfect Protection
- 2 Failure logging
- 2 Good capability for high starting power

#### Parameters

Types		MS0.5 KC	MS1KC	MS2KD	MS3KD	MS 5KD	MS 6KE
Rated Capacitance (KVA)		0.5	1	2	3	5	6
DC Input	Rated Voltage VDC)	24.0		48			110
	Low voltage point (VDC)	21.6		43.2			97
	Recovery point (VDC)	25.2		50.4			113
	Over voltage point (VDC)	35.0		70			150
Grid Input	Range of input gridvoltage (VAC)	220±15 %					
	Working ways	Main power supply, by battery or by grid, can be chosen by the customer					
AC Output	Rated Voltage (VAC)	220					
	Rated Power (Hz)	50					
	Output Wave	Pure Sine Wave					
	Over load ability	120% 1 minute					
	Output Voltage (AC)	220±3%					
	Frequency (Hz)	50±0.04					
	Total Harmonic Distortion (THD)	≤3% (line character loads)					
	Dynamic response (0~100%)	5%					
	Power Factor (PF)	0.8					
	Efficiency	≥85%					
	Crest factor(CF)	3:1					



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Working time		Can be 24 hours per day
Environment	Noise (dB、1m)	≤50
	Working environment temperature (°C)	-10~+50
	Storage temperature (°C)	-20~+70
	Altitude (m)	≤5000

Type		MS 7.5KF	MS 10KF	MS GN12KF	MS 15KF
Rated Capacitance (KVA)		7.5	10	12	15
DC Input	Rated Voltage VDC)	220			
	Low voltage point (VDC)	194			
	Recovery point (VDC)	227			
	Over voltage point (VDC)	300			
Grid Input	Range of input grid voltage (VAC)	220±15%			
	Working ways	Main power supply, by battery or by grid, can be chosen by the customer			
AC Output	Rated Voltage (VAC)	220			
	Rated Power (Hz)	50			
	Output Wave	Pure Sine Wave			
	Over load ability	120% 1 minute			
	Output Voltage (AC)	220±3%			
	Frequency (Hz)	50±0.04			
	Total Harmonic Distortion (THD)	≤3% (line character loads)			
	Dynamic response (0~100%)	5%			
	Power Factor (PF)	0.8			
	Efficiency	≥85%			
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**MS 0.5K-GN3K**



**MS 5K-GN12K**



**MS 15K**