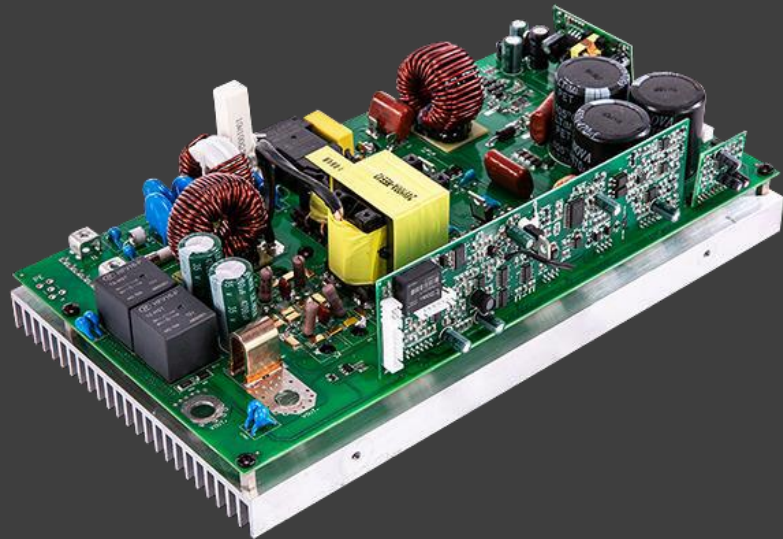




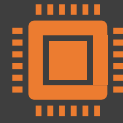
## High Efficiency Charger

For Lithium Battery / Lead-Acid Battery /  
Gel Battery

 **Product Philosophy : Simplicity & Reliability**



**EFFIC Power Module (3KW, 6KW, 10KW)**  
**Fully owned and in-house developed**



“Phase-Shifting Full-Bridge Converter” technology, if compared with “LLC Resonant Converter” technology which is commonly applied in current market, it is more reliable for low-voltage and high current power supply.



EFFIC module is with “AC current limit”, to minimize the AC shock to charger, due to the un-stable grid supply in many countries.



EFFIC module is with “Aluminum Radiator Unit” in the bottom of PCB board, which can better withstand heavy-duty operation, even with vibration.

## Features of EFFIC High Efficiency Smart Charger

- Energy efficiency up to 92%, voltage and current accuracy  $\pm 1\%$ , PFC > 0.99 (Energy efficiency of Transformer type Charger varies from 73% to 85%.)
- Suitable for tough industrial applications, environment temperature lower to -20 degree, can withstand major input voltage fluctuation (-16~30%)
- Smart management of Lead-Acid Battery : IU1a, pulse charging, initial charging, ampere equalization charging, full charging, temperature compensation and other charging management
- High safety features such as overvoltage protection, anti-reverse polarity protection, and certified by SGS according to IEC norms.



## High Frequency Charger V.S Transformer Type Charger

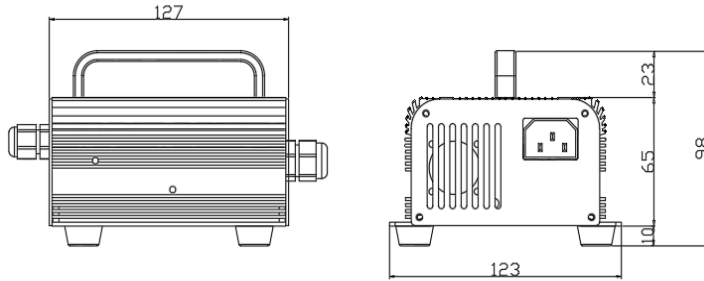
### Replace Transformer Type Charger now !

- Energy difference per charge:  $40.65 - 31.9 = 8.75$  KWH
- Annual energy savings:  $365 \text{ days} * 2 \text{ charges per day} * 8.75 \text{ KWH} = \underline{6387.5 \text{ KWH}}$
- ROI : Your return on investment is usually 1.5 Years

The higher the electricity cost, the shorter the ROI

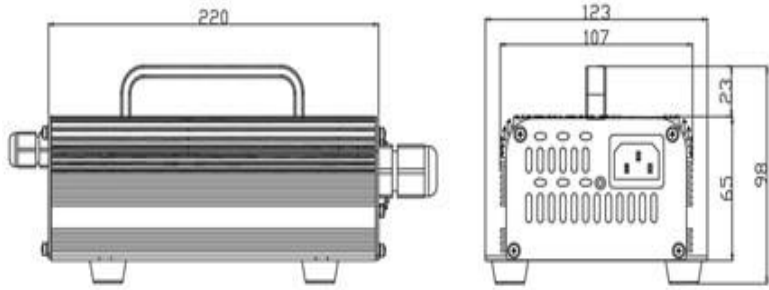


# 300W-B Series



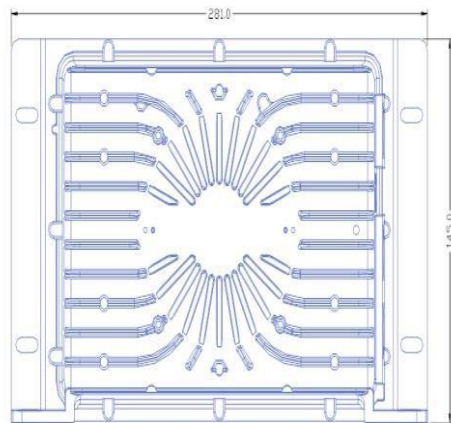
300W-B	Model	12V15A	24V8A	24V10A	48V5A
<b>INPUT</b>	AC Voltage	AC100-240V	AC100-240V	AC100-240V	AC100-240V
	AC Phase	Single Phase	Single Phase	Single Phase	Single Phase
	Rated Frequency	50/60Hz	50/60Hz	50/60Hz	50/60Hz
	Input Current (Max)	$\leq 2.4A@Input$ AC100	$\leq 2.7A@Input$ AC100	$\leq 3.4A@Input$ AC100	$\leq 3.4A$
	Power factor	$\geq 0.99$	$\geq 0.99$	$\geq 0.99$	$\geq 0.99$
	Input power	$\leq 240W$	$\leq 267W$	$\leq 335W$	$\leq 335W$
	AC Plug	L+N+PE	L+N+PE	L+N+PE	L+N+PE
	Conversion efficiency	$\geq 0.86$	$\geq 0.86$	$\geq 0.86$	$\geq 0.86$
<b>OUTPUT</b>	Rated output voltage	14.4V	28.8V	28.8V	57.6V
	Rated output current	15A	8A	10A	5A
	Rated output power	216W	230W	288W	288W
	DC output voltage	6Vdc~16Vdc	10Vdc~32Vdc	10Vdc~32Vdc	10Vdc~60Vdc
	Output plug	Anderson SB50	Anderson SB50	Anderson SB50	Anderson SB50
	<b>COMM</b>	CAN-BUS	N/A	N/A	N/A
Protocol		Customized	Customized	Customized	Customized
<b>OTHER</b>	Battery Type	Lead-Acid / Lithium	Lead-Acid / Lithium	Lead-Acid / Lithium	Lead-Acid / Lithium
	Dimension	127X123X98(mm)	127X123X98(mm)	127X123X98(mm)	127X123X98(mm)
	Weight	1.24KG	1.24KG	1.24KG	1.24KG
	Cooling mode	Air cooling	Air cooling	Air cooling	Air cooling
	Ambient Temperature	-20° C~50° C	-20° C~50° C	-20° C~50° C	-20° C~50° C
	Working humidity	0% ~ 95%	0% ~ 95%	0% ~ 95%	0% ~ 95%
	IP Rating	IP55	IP55	IP55	IP55
	IP Rating (Optional)	N/A	N/A	N/A	N/A
	Noise	<65dB	<65dB	<65dB	<65dB
	Altitude	<2000m	<2000m	<2000m	<2000m

# 900W-B Series



900W-B	Model	24V20A	24V30A	48V10A	48V15A	60V13A
<b>INPUT</b>	AC Voltage	AC100-240V	AC100-240V	AC100-240V	AC100-240V	AC100-240V
	AC Phase	Single Phase	Single Phase	Single Phase	Single Phase	Single Phase
	Rated Frequency	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz
	Input Current (Max)	<=6.5A	<=9.6A	<=6.4A	<=9.6A	<=10.5A
	Power factor	≥0.99	≥0.99	≥0.99	≥0.99	≥0.99
	Input power	<=640W	<=960W	<=640W	<=960W	<=1054W
	AC Plug	L+N+PE	L+N+PE	L+N+PE	IL+N+PE	L+N+PE
<b>OUTPUT</b>	Conversion efficiency	≥0.9	≥0.9	≥0.9	≥0.9	≥0.9
	Rated output voltage	28.8V	28.8V	57.6V	57.6V	73V
	Rated output current	20A	8A	10A	15A	13A
	Rated output power	576W	860W	576W	864W	949W
	DC output voltage	10Vdc~32Vdc	10Vdc~32Vdc	10Vdc~60Vdc	10Vdc~60Vdc	10Vdc~75Vdc
	Output plug	Anderson SB50	Anderson SB50	Anderson SB50	Anderson SB50	Anderson SB50
<b>COMM</b>	CAN-BUS	Optional	Optional	Optional	Optional	Optional
	Protocol	Customized	Customized	Customized	Customized	Customized
<b>OTHER</b>	Battery Type	Lead-Acid / Lithium	Lead-Acid / Lithium	Lead-Acid / Lithium	Lead-Acid / Lithium	Lead-Acid / Lithium
	Dimension	220X123X98(mm)	220X123X98(mm)	220X123X98(mm)	220X123X98(mm)	220X123X98(mm)
	Weight	2KG	2KG	2KG	2KG	2KG
	Cooling mode	Air cooling	Air cooling	Air cooling	Air cooling	Air cooling
	Ambient Temperature	-20°C~50°C	-20°C~50°C	-20°C~50°C	-20°C~50°C	-20°C~50°C
	Working humidity	0%~95%	0%~95%	0%~95%	0%~95%	0%~95%
	IP Rating	IP55	IP55	IP55	IP55	IP55
	IP Rating (Optional)	N/A	N/A	N/A	N/A	N/A
	Noise	<65dB	<65dB	<65dB	<65dB	<65dB
	Altitude	<2000m	<2000m	<2000m	<2000m	<2000m

# 1200W-A Series



**IP67**

1200W-A	Model	48V20A	60V15A	72V13A
<b>INPUT</b>	AC Voltage	AC220V±15%	AC220V±15%	AC220V±15%
	AC Phase	Single Phase	Single Phase	Single Phase
	Rated Frequency	50/60Hz	50/60Hz	50/60Hz
	Input Current (Max)	≤8A	≤7.6A	≤7.9A
	Power factor	≥0.7	≥0.7	≥0.7
	Input power	≤1226W	≤1165W	≤1211W
	AC Plug	Industrial/L+N+PE	Industrial/L+N+PE	Industrial/L+N+PE
<b>OUTPUT</b>	Conversion efficiency	≥0.9	≥0.9	≥0.9
	Rated output voltage	57.6V	73V	87.6V
	Rated output current	20A	15A	13A
	Rated output power	1152W	1095W	1139W
	DC output voltage	10Vdc~60Vdc	10Vdc~75Vdc	10Vdc~100Vdc
	Output plug	Anderson SB175	Anderson SB175	Anderson SB175,
<b>COMM</b>	CAN-BUS	Optional	Optional	Optional
	Protocol	Customized	Customized	Customized
<b>OTHER</b>	Battery Type	Lead-Acid / Lithium	Lead-Acid / Lithium	Lead-Acid / Lithium
	Dimension	353X204X156(mm)	353X204X156(mm)	353X204X156(mm)
	Weight	6KG	6KG	6KG
	Cooling mode	Air cooling	Air cooling	Air cooling
	Ambient Temperature	-20°C~50°C	-20°C~50°C	-20°C~50°C
	Working humidity	0%~95%	0%~95%	0%~95%
	IP Rating	IP67	IP67	IP67
	IP Rating (Optional)	N/A	N/A	N/A
	Noise	<65dB	<65dB	<65dB
	Altitude	<2000m	<2000m	<2000m

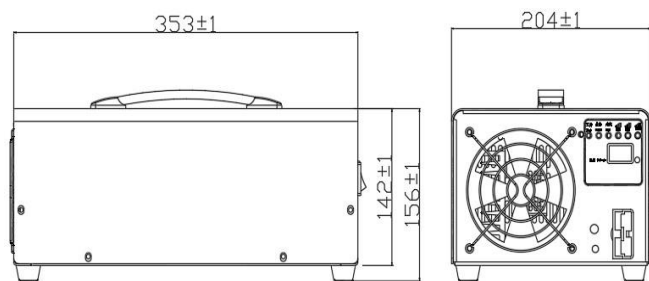
# 1200W-B Series



1200W-B	Model	48V20A	60V15A	72V13A
INPUT	AC Voltage	AC220V±15%	AC220V±15%	AC220V±15%
	AC Phase	Single Phase	Single Phase	Single Phase
	Rated Frequency	50/60Hz	50/60Hz	50/60Hz
	Input Current (Max)	≤8A	≤7.6A	≤7.9A
	Power factor	≥0.7	≥0.7	≥0.7
	Input power	≤1226W	≤1165W	≤1211W
	AC Plug	Industrial/L+N+PE	Industrial/L+N+PE	Industrial/L+N+PE
OUTPUT	Conversion efficiency	≥0.9	≥0.9	≥0.9
	Rated output voltage	57.6V	73V	87.6V
	Rated output current	20A	15A	13A
	Rated output power	1152W	1095W	1139W
	DC output voltage	10Vdc~60Vdc	10Vdc~75Vdc	10Vdc~100Vdc
	Output plug	Anderson SB175, Male or Female plug, optional	Anderson SB175, Male or Female plug, optional	Anderson SB175, Male or Female plug, optional
COMM	CAN-BUS	Optional	Optional	Optional
	Protocol	Customized	Customized	Customized
OTHER	Battery Type	Lead-Acid / Lithium	Lead-Acid / Lithium	Lead-Acid / Lithium
	Dimension	353X204X156(mm)	353X204X156(mm)	353X204X156(mm)
	Weight	6KG	6KG	6KG
	Cooling mode	Air cooling	Air cooling	Air cooling
	Ambient Temperature	-20° C~50° C	-20° C~50° C	-20° C~50° C
	Working humidity	0%~95%	0%~95%	0%~95%
	IP Rating	IP55	IP55	IP55
	IP Rating (Optional)	N/A	N/A	N/A
	Noise	<65dB	<65dB	<65dB
	Altitude	<2000m	<2000m	<2000m

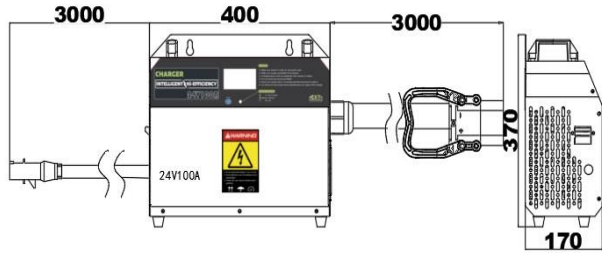


## 1500W-B Series



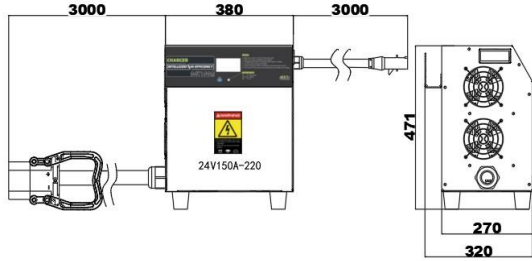
1500W-B	Model	24V40A	24V50A	48V30A	60V30A	72V25A
<b>INPUT</b>	AC Voltage	AC220V±15%	AC220V±15%	AC220V±15%	AC220V±15%	AC220V±15%
	AC Phase	Single Phase	Single Phase	Single Phase	Single Phase	Single Phase
	Rated Frequency	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz
	Input Current (Max)	≤8A	≤10A	≤12A	≤15.1A	≤15.1A
	Power factor	≥0.7	≥0.7	≥0.7	≥0.7	≥0.7
	Input power	≤1226W	≤1532W	≤1838W	≤2330W	≤2330W
	AC Plug	Industrial/L+N+PE	Industrial/L+N+PE	Industrial/L+N+PE	Industrial/L+N+PE	Industrial/L+N+PE
<b>OUTPUT</b>	Conversion efficiency	≥0.9	≥0.9	≥0.9	≥0.9	≥0.9
	Rated output voltage	28.8V	28.8V	57.6V	73V	87.6V
	Rated output current	40A	50A	30A	30A	25A
	Rated output power	1152W	1440W	1728W	2190W	2190W
	DC output voltage	10Vdc~32Vdc	10Vdc~32Vdc	10Vdc~60Vdc	10Vdc~75Vdc	10Vdc~100Vdc
	Output plug	Anderson SB175, Male or Female plug, optional	Anderson SB175, Male or Female plug, optional	Anderson SB175, Male or Female plug, optional	Anderson SB175, Male or Female plug, optional	Anderson SB175, Male or Female plug, optional
<b>COMM</b>	CAN-BUS	Optional	Optional	Optional	Optional	Optional
	Protocol	Customized	Customized	Customized	Customized	Customized
<b>OTHER</b>	Battery Type	Lead-Acid / Lithium	Lead-Acid / Lithium	Lead-Acid / Lithium	Lead-Acid / Lithium	Lead-Acid / Lithium
	Dimension	353X204X156(mm)	353X204X156(mm)	353X204X156(mm)	353X204X156(mm)	353X204X156(mm)
	Weight	6KG	6KG	6KG	6KG	6KG
	Cooling mode	Air cooling	Air cooling	Air cooling	Air cooling	Air cooling
	Ambient Temperature	-20° C~50° C	-20° C~50° C	-20° C~50° C	-20° C~50° C	-20° C~50° C
	Working humidity	0%~95%	0%~95%	0%~95%	0%~95%	0%~95%
	IP Rating	IP55	IP55	IP55	IP55	IP55
	IP Rating (Optional)	N/A	N/A	N/A	N/A	N/A
	Noise	<65dB	<65dB	<65dB	<65dB	<65dB
	Altitude	<2000m	<2000m	<2000m	<2000m	<2000m

# 3000W Series



3000W	Model	24V100A	48V50A	36V50A	36V100A	72V35A
<b>INPUT</b>	AC Voltage	AC100-240V	AC100-240V	AC100-240V	AC100-240V	AC100-240V
	AC Phase	Single Phase	Single Phase	Single Phase	Single Phase	Single Phase
	Rated Frequency	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz
	Input Current (Max)	≤14.6A	≤14.4	10.8	21.6	≤15.3A
	Power factor	≥0.99	≥0.99	≥0.99	≥0.99	≥0.99
	Input power	≤3164W	≤3164W	2373	4752	≤3369W
	AC Plug	L+N+PE	L+N+PE	L+N+PE	L+N+PE	L+N+PE
<b>OUTPUT</b>	Conversion efficiency	≥0.91	≥0.91	≥0.91	≥0.91	≥0.91
	Rated output voltage	28.8V	57.6V	43.2	43.2	87.6V
	Rated output current	100A	50A	50A	100A	35A
	Rated output power	2880W	2880W	2160	4320	3066W
	DC output voltage	10Vdc~32Vdc	10Vdc~60Vdc	10Vdc~60Vdc	10Vdc~60Vdc	10Vdc~100Vdc
	Output plug	Rema160A	Rema80A	Rema80A	Rema80A	Rema80A
	DC output current	100A	50A	50A	100A	35A
<b>COMM</b>	CAN-BUS	Y	Y	Y	Y	Y
	Protocol	Customized	Customized	Customized	Customized	Customized
<b>OTHER</b>	Battery Type	Lead-Acid / Lithium	Lead-Acid / Lithium	Lead-Acid / Lithium	Lead-Acid / Lithium	Lead-Acid / Lithium
	Dimension	400x170x370(mm)	400x170x370(mm)	400x170x370(mm)	400x170x370(mm)	400x170x370(mm)
	Weight	11KG	11KG	11KG	11KG	11KG
	Cooling mode	Air cooling	Air cooling	Air cooling	Air cooling	Air cooling
	Ambient Temperature	-20° C~50° C	-20° C~50° C	-20° C~50° C	-20° C~50° C	-20° C~50° C
	Working humidity	0% ~ 95%	0% ~ 95%	0% ~ 95%	0% ~ 95%	0% ~ 95%
	IP Rating	IP20	IP20	IP20	IP20	IP20
	IP Rating (Optional)	IP54	IP54	IP54	IP54	IP54
	Noise	<65dB	<65dB	<65dB	<65dB	<65dB
	Altitude	<2000m	<2000m	<2000m	<2000m	<2000m

# 6000W-S Series



6000W-S	Model	24V150A	24V200A	48V100V-220	80V65A
<b>INPUT</b>	AC Voltage	AC100-240V	AC100-240V	AC100-240V	AC100-240V
	AC Phase	Single Phase	Single Phase	Single Phase	Single Phase
	Rated Frequency	50/60Hz	50/60Hz	50/60Hz	50/60Hz
	Input Current (Max)	≤24A	≤29A	≤29A	≤29A
	Power factor	≥ 0.99	≥ 0.99	≥ 0.99	≥ 0.99
	Input power	≤ 4.7KW	≤6.3KW	≤ 6.3KW	≤ 6.2KW
	AC Plug	L+N+PE	L+N+PE	L+N+PE	L+N+PE
<b>OUTPUT</b>	Conversion efficiency	≥ 0.92	≥ 0.92	≥ 0.92	≥ 0.92
	Rated output voltage	28.8V	28.8V	57.6V	87.6V
	Rated output current	150A	200A	100A	65A
	Rated output power	4.32KW	5.76KW	5.76KW	5.7KW
	DC output voltage	10Vdc~32Vdc	10Vdc~32Vdc	10Vdc~60Vdc	10Vdc~100Vdc
	Output plug	Rema320A	Rema320A	Rema160A	Rema80A
<b>COMM</b>	CAN-BUS	Y	Y	Y	Y
	Protocol	Customized	Customized	Customized	Customized
<b>OTHER</b>	Battery Type	Lithium	Lithium	Lead-Acid / Lithium	Lead-Acid / Lithium
	Dimension	380X320X471(mm)	380X320X471(mm)	380X320X471(mm)	380X320X471(mm)
	Weight	26KG	26KG	26KG	26KG
	Cooling mode	Air cooling	Air cooling	Air cooling	Air cooling
	Ambient Temperature	-20° C~50° C	-20° C~50° C	-20° C~50° C	-20° C~50° C
	Working humidity	0% ~ 95%	0% ~ 95%	0% ~ 95%	0% ~ 95%
	IP Rating	IP20	IP20	IP20	IP20
	IP Rating (Optional)	IP54	IP54	IP54	IP54
	Noise	<65dB	<65dB	<65dB	<65dB
Altitude	<2000m	<2000m	<2000m	<2000m	







# 12000W Series



12000W	Model	80V65A	80V150A	80V150A	115.2V100A	153.6V70A
<b>INPUT</b>	AC Voltage	AC220V±15%	AC380V±15%	AC480V±15%	AC380V±15%	AC380V±15%
	AC Phase	Three phase four wire	Three phase four wire	Three phase four wire	Three phase four wire	Three phase four wire
	Rated Frequency	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz
	Input Current (Max)	≤16.2A	≤22A	≤17.2A	≤21A	≤20A
	Power factor	≥0.99	≥0.99	≥0.99	≥0.99	≥0.99
	Input power	≤6.2KW	≤14.3KW	≤14.3KW	≤14.1KW	≤13.2KW
	AC Plug	Three Phase + PE	Three Phase + PE	Three Phase + PE	Three Phase + PE	Three Phase + PE
<b>OUTPUT</b>	Conversion efficiency	≥0.92	≥0.92	≥0.92	≥0.92	≥0.92
	Rated output voltage	87.6V	87.6V	87.6V	129.6V	172.8V
	Rated output current	65A	150A	150A	100A	70A
	Rated output power	5.7KW	13.1KW	13.1KW	13KW	12.1KW
	DC output voltage	10Vdc~100Vdc	10Vdc~100Vdc	10Vdc~100Vdc	10Vdc~132Vdc	10Vdc~176Vdc
	Output plug	Rema160A	Rema320A	Rema320A	Rema160A	Rema160A
<b>COMM</b>	CAN-BUS	Y	Y	Y	Y	Y
	Protocol	Customized	Customized	Customized	Customized	Customized
	Battery Type	Lithium	Lithium	Lithium	Lithium	Lithium
<b>OTHER</b>	Dimension	378X428X623(mm)	378X428X623(mm)	378X428X623(mm)	378X428X623(mm)	378X428X623(mm)
	Weight	40KG	40KG	40KG	40KG	40KG
	Cooling mode	Air cooling	Air cooling	Air cooling	Air cooling	Air cooling
	Ambient Temperature	-20°C~50°C	-20°C~50°C	-20°C~50°C	-20°C~50°C	-20°C~50°C
	Working humidity	0%~95%	0%~95%	0%~95%	0%~95%	0%~95%
	IP Rating	IP20	IP20	IP20	IP20	IP20
	IP Rating (Optional)	IP54	IP54	IP54	IP54	IP54
	Noise	<65dB	<65dB	<65dB	<65dB	<65dB
	Altitude	<2000m	<2000m	<2000m	<2000m	<2000m







