

Bidirectional DC Power Supply

Bi-directional Programmable DC Power Supply TBD- Series

Product description:

TBD-Series is a bidirectional programmable DC power supply that integrates a DC power supply and a regenerative load. It can realize the SOURCE function to provide energy to the load, and also has the SINK function to absorb load energy and feed back to the grid to achieve dual-quadrant operation. TBD-Series has a maximum voltage of 2250V and supports multiple parallel machines to achieve power expansion. It is widely used in automotive electronics, power batteries, photovoltaics, energy storage testing and other fields.



Applications

- ◆ Automotive electronics
- ◆ Power semiconductors
- ◆ Precision electroplating, electric welding
- ◆ Bidirectional DCDC
- ◆ On-board chargers
- ◆ Photovoltaic, energy storage Inverters
- ◆ Power batteries
- ◆ Automotive motors

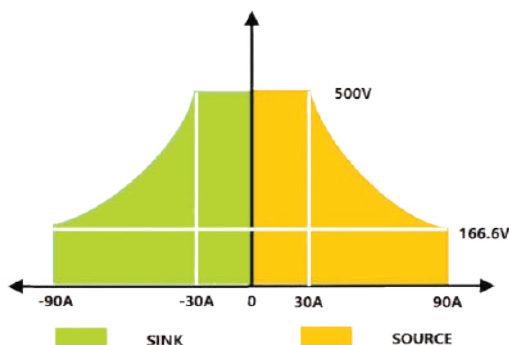
Features

- ◆ Integrated source and load design, bidirectional energy flow.
- ◆ Feedback efficiency of 95%, green and environmentally friendly, energy saving and consumption reduction
- ◆ Maximum voltage of a single machine is 2250V, and the maximum power of a single machine is 30kW
- ◆ With parallel function, the output power can be expanded
- ◆ With constant voltage (CV), constant current (CC), constant power (CP), and constant resistance (CR) modes
- ◆ Complete protection functions: OVP, OCP, OPP, OTP, and input over-voltage and under-voltage protection, etc.
- ◆ With photovoltaic array simulation function and with battery simulation function.
- ◆ With battery charging and discharging function.
- ◆ With "black box" function, automatically record operating parameters under abnormal conditions, which is convenient for later viewing and maintenance.
- ◆ Supports multiple remote controls, RS232, RS485, CAN, LAN, USB, etc., optional analog control.

Type Recommendation

• Energy flows in both directions, fast switching

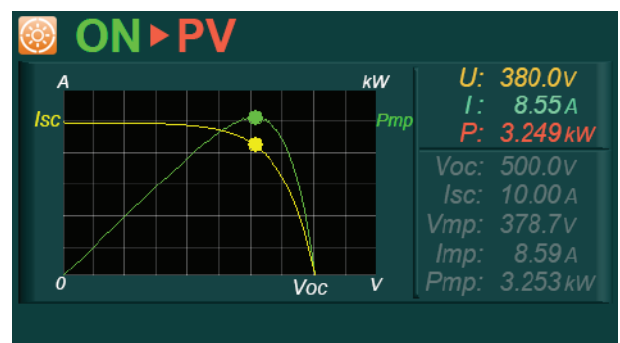
TBD-Series integrates source and load into one design, achieving high-speed source and load current mode conversion, thereby quickly switching between output current and absorption current, effectively avoiding voltage or current overshoot.



• Oscilloscope mode displays the simulated curve of the photovoltaic array in real time

TBD-Series power supply has built-in EN50530, Sandia and other

standard SAS models, which can simulate the IV/PV curve of the solar cell array. After the user sets the parameters, curve can be generated and output internally to test the static and dynamic maximum power tracking performance of the inverter. At the same time, this mode has an oscilloscope function, which can display the IV/PV curve on the interface and display the current working coordinate point in real time, which is simple and intuitive.

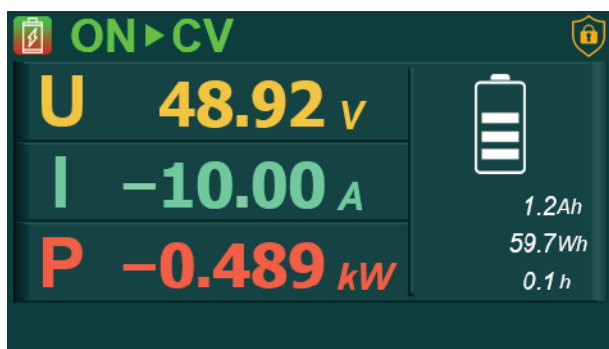


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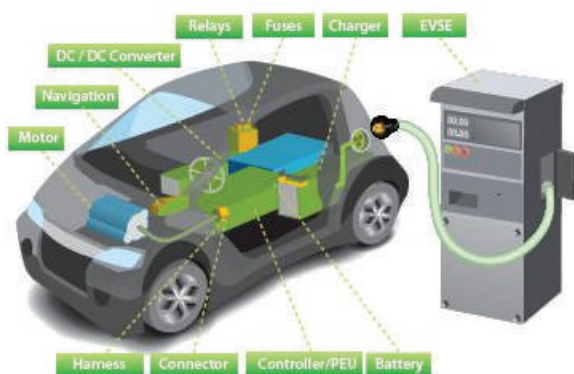
- It can simulate the charge and discharge characteristics of various types of batteries. Common power battery characteristic curves can be directly called and battery characteristic curves can also be customized.



- Capable of charging and discharging the battery and testing its capacity, cycle life and power characteristics.



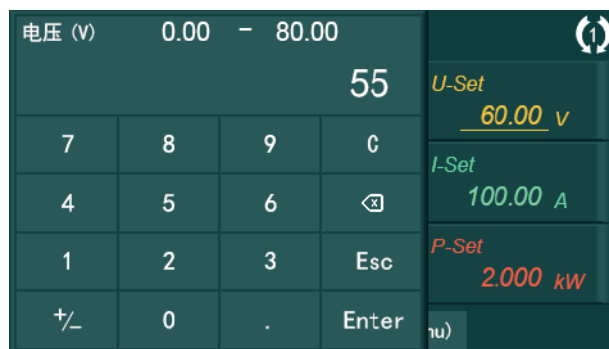
- Realize various standard curves for automotive power network
Automotive electronic equipment may encounter power transient interference during startup and operation. To ensure that the equipment can withstand the test, it is necessary to simulate harsh working conditions during testing. According to relevant industry standards, TBD-series can output various standard curves to achieve instantaneous voltage drop at car startup and various automotive electronic test pulses to test the performance of electronic equipment.



- When high power output is required, power supplies of same specification can be connected in parallel to achieve capacity expansion. Parallel connection is simple, without complicated operation, hardware synchronization, accurate and reliable.

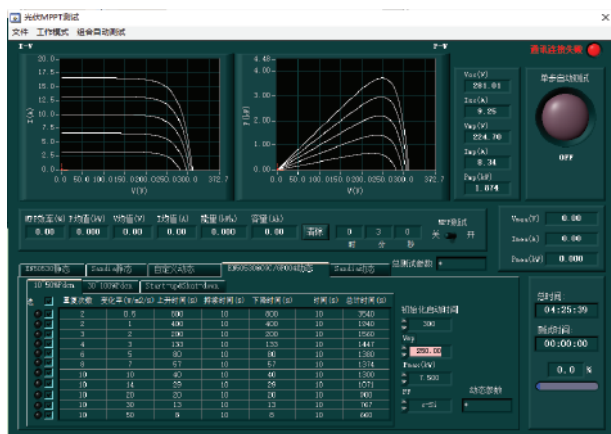
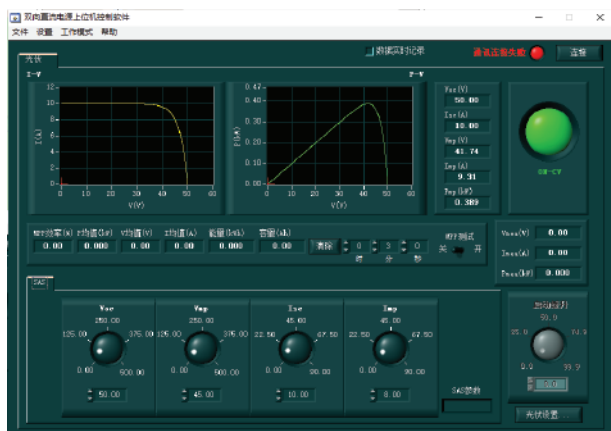


- Color touch screen combined with physical buttons, flexible operation and comfortable use.



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- ◆ It has a graphical upper computer operation interface, which can easily realize functions such as sequence test, photovoltaic simulation, battery simulation, battery charge and discharge test, etc.



Ordering Information

Voltage	Model	Current	Power	Voltage	Model	Current	Power
0 ~ 100V	TBD100-120M	±120A	±1.8kW	0 ~ 300V	TBD300-25M	±25A	±1.8kW
	TBD100-150M	±150A	±3kW		TBD300-50M	±50A	±3kW
	TBD100-170	±170A	±5kW		TBD300-75	±75A	±5kW
	TBD100-340	±340A	±10kW		TBD300-150	±150A	±10kW
	TBD100-510	±510A	±15kW		TBD300-225	±225A	±15kW
Voltage	Model	Current	Power	Voltage	Model	Current	Power
0 ~ 500V	TBD500-20M	±20A	±1.8kW	0 ~ 750V	TBD750-15M	±15A	±1.8kW
	TBD500-30M	±30A	±3kW		TBD750-20M	±20A	±3kW
	TBD500-40	±40A	±5kW		TBD750-25	±25A	±5kW
	TBD500-80	±80A	±10kW		TBD750-50	±50A	±10kW
	TBD500-120	±120A	±15kW		TBD750-75	±75A	±15kW
	TBD500-160	±160A	±20kW		TBD750-120	±120A	±20kW
0 ~ 1000V	TBD1000-40	±40A	±10kW	0 ~ 1500V	TBD1500-40	±40A	±15kW
	TBD1000-80	±80A	±20kW		TBD1500-80	±80A	±30kW
0 ~ 2250V	TBD2250-25	±25A	±15kW				
	TBD2250-60	±60A	±30kW				

- ◆ Can be customized as requirement.
- ◆ Customized specifications and functions acceptable

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Specifications

TBD100 - XXX Series

Model		TBD100-120M	TBD100-150M	TBD100-170	TBD100-340	TBD100-510
Output Range	Voltage	0 ~ 100V				
	Current	-120A ~ 120A	-150A ~ 150A	-170A ~ 170A	-340A ~ 340A	-510A ~ 510A
	Power	-1.8kW ~ 1.8kW	-3kW ~ 3kW	-5kW ~ 5kW	-10kW ~ 10kW	-15kW ~ 15kW
	Resistance	0 ~ 100Ω				
Set Accuracy	Voltage	≤0.05%FS				
	Current	≤0.10%FS				
	Power	≤0.50%FS				
Set Resolution	Voltage	0.01V				
	Current	0.01A				
	Power	0.001kW				
Readback Accuracy	Voltage	≤0.05%FS				
	Current	≤0.01%FS				
	Power	≤0.50%FS				
Readback Resolution	Voltage	0.01V				
	Current	0.01A				
	Power	0.001kW				
Ripple (20Hz-2MHz)	Vrms	35mV				
	Vpp	250mV				
Dynamic Response Time		≤15ms				
Rise Time		30ms (10% ~ 90%)				
Source Switching Time		2ms (+90% ~ -90%)				
Power Regulation	Voltage	≤0.02%FS				
	Current	≤0.05%FS				
Load Regulation	Voltage	≤0.05%FS				
	Current	≤0.15%FS				
Overvoltage Protection (OVP)		0 ~ 110%FS adjustment				
Sense Compensation Vlotage		5V				
Protection Function		OVP, OCP, OPP, OTP, Vsense reverse connection protection, Input over-voltage and under-voltage protection				
Parallel Function		Support multiple parallel output				
Communication Interface		RS232, RS485, CAN, LAN, USB				
Analog Control Interface		Start, Stop, Alarm, 0-5V, 0-10V or 4-20mA				
Efficiency		~ 93%				
Working Tempertaure		0 ~ 40℃				
Storage Tempertaure		-10℃ ~ 70℃				
Humidity		20% ~ 90%RH, No condensation				
Input Range	Number of Phase	Single-phase Two-wire + PE		Three-phase, Three-wire + PE		
	Voltage	198 ~ 242V		342 ~ 528V		
	Frequency	47 ~ 63Hz				
	Power Fatcor	0.99				
	Feedback Efficiency	93%				
Dimension (WxHxD mm.)		19" standard chassis 3U height, 482x133.3x790				
Weight (kg)		23	23	24	32	40

TBD300 - XXX Series

Model		TBD300-25M	TBD300-50M	TBD300-75	TBD300-150	TBD300-225
Output Range	Voltage	0 ~ 300V				
	Current	-25A ~ 25A	-50A ~ 50A	-75A ~ 75A	-150A ~ 150A	-225A ~ 225A
	Power	-1.8kW ~ 1.8kW	-3kW ~ 3kW	-5kW ~ 5kW	-10kW ~ 10kW	-15kW ~ 15kW
	Resistance	0 ~ 300Ω				
Set Accuracy	Voltage	≤0.05%FS				
	Current	≤0.10%FS				
	Power	≤0.50%FS				
Set Resolution	Voltage	0.01V				
	Current	0.01A				
	Power	0.001kW				
Readback Accuracy	Voltage	≤0.05%FS				
	Current	≤0.10%FS				
	Power	≤0.50%FS				
Readback Resolution	Voltage	0.01V				
	Current	0.01A				
	Power	0.001kW				
Ripple (20Hz-2MHz)	Vrms	90mV				
	Vpp	650mV				
Dynamic Response Time		≤15ms				
Rise Time		30ms (10% ~ 90%)				

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TBD300 - XXX Series (Continuous)

Model		TBD100-120M	TBD100-150M	TBD100-170	TBD100-340	TBD100-510
Source Switching Time		2ms (+90% ~ -90%)				
Power Regulation	Voltage	≤0.02%FS				
	Current	≤0.05%FS				
Load Regulation	Voltage	≤0.05%FS				
	Current	≤0.15%FS				
Overvoltage Protection (OVP)		0 ~ 110%FS adjustment				
Sense Compensation Vlotage		5V				
Protection Function		OVP, OCP, OPP, OTP, Vsense reverse connection protection, Input over-voltage and under-voltage protection				
Parallel Function		Support multiple parallel output				
Communication Interface		RS232, RS485, CAN, LAN, USB				
Analog Control Interface		Start, Stop, Alarm, 0-5V, 0-10V or 4-20mA				
Efficiency		~ 93%				
Working Tempertaure		0 ~ 40℃				
Storage Tempertaure		-10℃ ~ 70℃				
Humidity		20% ~ 90%RH, No condensation				
Input Range	Number of Phase	Single-phase Two-wire + PE		Three-phase, Three-wire + PE		
	Voltage	198 ~ 242V		342 ~ 528V		
	Frequency	47 ~ 63Hz				
	Power Fatcor	0.99				
	Feedback Efficiency	93%				
Dimension (WxHxD mm.)		19" standard chassis 3U height, 482x133.3x790				
Weight (kg)		23	23	24	32	40

TBD500 - XXX Series

Model		TBD500-20M	TBD500-30M	TBD500-40	TBD500-80	TBD500-120	TBD500-160	TBD500-240
Output Range	Voltage	0 ~ 500V						
	Current	-20A ~ 20A	-30A ~ 30A	-40A ~ 40A	-80A ~ 80A	-120A ~ 120A	-160A ~ 160A	-240A ~ 240A
	Power	-1.8kW ~ 1.8kW	-3kW ~ 3kW	-5kW ~ 5kW	-10kW ~ 10kW	-15kW ~ 15kW	-20kW ~ 20kW	-30kW ~ 30kW
	Resistance	0 ~ 500Ω						
Set Accuracy	Voltage	≤0.05%FS						
	Current	≤0.10%FS						
	Power	≤0.50%FS						
Set Resolution	Voltage	0.01V						
	Current	0.01A						
	Power	0.001kW						
Readback Accuracy	Voltage	≤0.05%FS						
	Current	≤0.10%FS						
	Power	≤0.50%FS						
Readback Resolution	Voltage	0.01V						
	Current	0.01A						
	Power	0.001kW						
Ripple (20Hz-2MHz)	Vrms	95mV						
	Vpp	600mV						
Dynamic Response Time		≤1.5ms						
Rise Time		30ms (10% ~ 90%)						
Source Switching Time		2ms (+90% ~ -90%)						
Power Regulation	Voltage	≤0.02%FS						
	Current	≤0.05%FS						
Load Regulation	Voltage	≤0.05%FS						
	Current	≤0.15%FS						
Overvoltage Protection (OVP)		0 ~ 110%FS adjustment						
Sense Compensation Vlotage		25V						
Protection Function		OVP, OCP, OPP, OTP, Vsense reverse connection protection, Input over-voltage and under-voltage protection						
Parallel Function		Support multiple parallel output						
Communication Interface		RS232, RS485, CAN, LAN, USB						
Analog Control Interface		Start, Stop, Alarm, 0-5V, 0-10V or 4-20mA						
Efficiency		~ 93%						
Working Tempertaure		0 ~ 40℃						
Storage Tempertaure		-10℃ ~ 70℃						
Humidity		20% ~ 90%RH, No condensation						
Input Range	Number of Phase	Single-phase Two-wire + PE			Three-phase, Three-wire + PE			
	Voltage	198 ~ 242V			342 ~ 528V			
	Frequency	47 ~ 63Hz						
	Power Fatcor	0.99						
	Feedback Efficiency	93%						
Dimension (WxHxD mm.)		19" standard chassis 3U height, 482x133.3x790						
Weight (kg)		23	23	24	32	40	34	43

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TBD750 -XXX Series

Model		TBD750-15M	TBD750-20M	TBD750-25	TBD750-50	TBD750-75	TBD750-120	TBD750-180
Output Range	Voltage	0 ~ 100V						
	Current	-15A ~ 15A	-20A ~ 20A	-25A ~ 25A	-50A ~ 50A	-75A ~ 75A	-120A ~ 120A	-180A ~ 180A
	Power	-1.8kW ~ 1.8kW	-3kW ~ 3kW	-5kW ~ 5kW	-10kW ~ 10kW	-15kW ~ 15kW	-20kW ~ 20kW	-30kW ~ 30kW
	Resistance	0 ~ 750Ω						
Set Accuracy	Voltage	≤0.05%FS						
	Current	≤0.10%FS						
	Power	≤0.50%FS						
Set Resolution	Voltage	0.01V						
	Current	0.01A						
	Power	0.001kW						
Readback Accuracy	Voltage	≤0.05%FS						
	Current	≤0.10%FS						
	Power	≤0.50%FS						
Readback Resolution	Voltage	0.01V						
	Current	0.01A						
	Power	0.001kW						
Ripple (20Hz-2MHz)	Vrms	100mV						
	Vpp	900mV						
Dynamic Response Time		≤1.5ms						
Rise Time		30ms (10% ~ 90%)						
Source Switching Time		2ms (+90% ~ -90%)						
Power Regulation	Voltage	≤0.02%FS						
	Current	≤0.05%FS						
Load Regulation	Voltage	≤0.05%FS						
	Current	≤0.15%FS						
Overvoltage Protection (OVP)		0 ~ 110%FS adjustment						
Sense Compensation Voltage		37.5V						
Protection Function		OVP, OCP, OPP, OTP, Vsense reverse connection protection, Input over-voltage and under-voltage protection						
Parallel Function		Support multiple parallel output						
Communication Interface		RS232, RS485, CAN, LAN, USB						
Analog Control Interface		Start, Stop, Alarm, 0-5V, 0-10V or 4-20mA						
Efficiency		~ 93%						
Working Tempertaure		0 ~ 40℃						
Storage Tempertaure		-10℃ ~ 70℃						
Humidity		20% ~ 90%RH, No condensation						
Input Range	Number of Phase	Single-phase Two-wire + PE			Three-phase, Three-wire + PE			
	Voltage per Phase	198 ~ 242V			342 ~ 528V			
	Frequency	47 ~ 63Hz						
	Power Factor	0.99						
	Feedback Efficiency	93%						
Dimension (WxHxD mm.)		19" standard chassis 3U height, 482x133.3x790						
Weight (kg)		23	23	24	32	40	34	43

TBD1000 - XXX & TBD1500 - XXX Series

Model		TBD1000-40	TBD1000-80	TBD1500-40	TBD1500-80
Output Range	Voltage	0 ~ 1000V			
	Current	-40A ~ 40A	-80A ~ 80A	-75A ~ 75A	-80A ~ 80A
	Power	-10kW ~ 10kW	-20kW ~ 20kW	-15kW ~ 5kW	-30kW ~ 30kW
	Resistance	0 ~ 1000Ω			
Set Accuracy	Voltage	≤0.05%FS			
	Current	≤0.10%FS			
	Power	≤0.50%FS			
Set Resolution	Voltage	0.01V			
	Current	0.01A			
	Power	0.001kW			
Readback Accuracy	Voltage	≤0.05%FS			
	Current	≤0.10%FS			
	Power	≤0.50%FS			
Readback Resolution	Voltage	0.01V			
	Current	0.01A			
	Power	0.001kW			
Ripple (20Hz-2MHz)	Vrms	295mV	310mV	350mV	370mV
	Vpp	1700mV	2000mV		2400mV
Dynamic Response Time		≤1.5ms			
Rise Time		30ms (10% ~ 90%)			

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TBD1000 - Series & TBD1500 - Series (Continuous)

Model		TBD1000-40	TBD1000-80	TBD1500-40	TBD1500-80
Source Switching Time		2ms (+90% ~ -90%)			
Power Regulation	Voltage	≤0.02%FS			
	Current	≤0.05%FS			
Load Regulation	Voltage	≤0.05%FS			
	Current	≤0.15%FS			
Overvoltage Protection (OVP)		0 ~ 110%FS adjustment			
Sense Compensation Vltage		50V		75V	
Protection Function		OVP, OCP, OPP, OTP, Vsense reverse connection protection, Input over-voltage and under-voltage protection			
Parallel Function		Support multiple parallel output			
Communication Interface		RS232, RS485, CAN, LAN, USB			
Analog Control Interface		Start, Stop, Alarm, 0-5V, 0-10V or 4-20mA			
Efficiency		~ 93%			
Working Tempertaure		0 ~ 40℃			
Storage Tempertaure		-10℃ ~ 70℃			
Humidity		20% ~ 90%RH, No condensation			
Input Range	Number of Phase	Three-phase, Three-wire + PE			
	Voltage	342 ~ 528V			
	Frequency	47 ~ 63Hz			
	Power Fatcor	0.99			
	Feedback Efficiency	93%			
Dimension (WxHxD mm.)		19" standard chassis 3U height, 482x133.3x790			
Weight (kg)		23	34	40	43

TBD2250 - Series

Model		TBD2250-25	TBD2250-60
Output Range	Voltage	0 ~ 2250V	
	Current	-25A ~ 25A	-60A ~ 60A
	Power	-15kW ~ 15kW	-30kW ~ 30kW
	Resistance	0 ~ 2250Ω	
Set Accuracy	Voltage	≤0.05%FS	
	Current	≤0.10%FS	
	Power	≤0.50%FS	
Set Resolution	Voltage	0.1V	
	Current	0.01A	
	Power	0.001kW	
Readback Accuracy	Voltage	≤0.05%FS	
	Current	≤0.10%FS	
	Power	≤0.50%FS	
Readback Resolution	Voltage	0.01V	
	Current	0.01A	
	Power	0.001kW	
Ripple (20Hz-2MHz)	Vrms	200mV	300mV
	Vpp	2100mV	2700mV
Dynamic Response Time		≤1.5ms	
Rise Time		30ms (10% ~ 90%)	
Source Switching Time		2ms (+90% ~ -90%)	
Power Regulation	Voltage	≤0.02%FS	
	Current	≤0.05%FS	
Load Regulation	Voltage	≤0.05%FS	
	Current	≤0.15%FS	
Overvoltage Protection (OVP)		0 ~ 110%FS adjustment	
Sense Compensation Vltage		37.5V	
Protection Function		OVP, OCP, OPP, OTP, Vsense reverse connection protection, Input over-voltage and under-voltage protection	
Parallel Function		Support multiple parallel output	
Communication Interface		RS232, RS485, CAN, LAN, USB	
Analog Control Interface		Start, Stop, Alarm, 0-5V, 0-10V or 4-20mA	
Efficiency		~ 93%	
Working Tempertaure		0 ~ 40℃	
Storage Tempertaure		-10℃ ~ 70℃	
Humidity		20% ~ 90%RH, No condensation	
Input Range	Number of Phase	Three-phase, Three-wire + PE	
	Voltage per Phase	342 ~ 528V	
	Frequency	47 ~ 63Hz	
	Power Fatcor	0.99	
	Feedback Efficiency	93%	
Dimension (WxHxD mm.)		19" standard chassis 3U height, 482x133.3x790	
Weight (kg)		23	43