

RBS-Series

Regenerative Bidirectional DC Source

FEATURES

- Bidirectional Power Supply, Integrating Power Supply and Load Functions
- Voltage Output: 100 V, 500 V, 750 V, 1000 V, 1500 V, 2250 V
- Power Output: High power density 5 kW/10 kW/15 kW/20 kW/30 kW @ 3U Height
- Maximum Output Current: 510 A
- Standard SAS Function, Battery Simulation Function, Battery Charge/ Discharge Function and Sequence Programming Function
- Simple Master-Slave Parallel Connection, up to 10 Units of the Same Model Can be Connected in Parallel, With a Maximum Parallel Power of 300 kW
- Complete Protection Mechanism: Including OVP, OCP, OTP and Input Over-voltage and Under-voltage Protection
- Intuitive Touch Panel Human-machine Operation Interface
- Standard Dedicated PC Control Software
- Interface Options: All-in-one Interface(USB, RS-232, RS-485,LAN, CAN) or GPIB Interface *

* Two Alternative Optional Interface.

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GW INSTEK
Simply Reliable

The RBS Series regenerative bidirectional DC source is a versatile, programmable power solution with both power (source) and load (sink) absorption capabilities. It is specifically designed for testing power conversion devices and energy storage components in the new energy sector. Widely used in the development and production testing of electric vehicles, energy storage systems, and related products, The RBS series supports energy recovery, enabling enterprises to "implement ESG from the equipment selection stage" and incorporate energy-saving performance indicators into their ESG reports.

The RBS series regenerative bidirectional DC source features built-in SAS (EN50530, Sandia), SAS2, and customizable models. It also supports static/dynamic MPPT testing as well as complex solar irradiation simulations, such as cloud shading and cloud movement.

The RBS series is capable of simulating battery characteristics in practical applications, including charging and discharging behaviors, to assist with various tests. the RBS series has 8 fixed battery models + one custom battery model. (models are based on relevant research papers and test data published domestically and internationally): lithium manganate (LMO), lithium cobalt oxide (LCO), lithium iron phosphate (LFP), ternary lithium (NCM), lithium titanate (LTO), lead-acid (Pb), nickel-metal hydride (NiMH), and nickel-cadmium (NiCd) batteries.

In traditional motor driver testing setups, a conventional DC power supply typically requires an external diode at the output to prevent reverse current flow, and an additional electronic load is needed to consume the regenerative current generated during motor braking or downhill operation. However, the RBS Series can function both as a DC power source and as a DC electronic load. This dual functionality simplifies configuration, saves space, and is ideal for motor driver testing. Moreover, it can feed the regenerative energy back into the grid, enhancing energy efficiency.

The RBS series is positioned as a high-performance power testing solution, purpose-built for testing power equipment in both R&D and manufacturing processes. Its market focus centers on new energy applications, including photovoltaic (PV) power generation systems, electric vehicle charging modules, and battery testing. Featuring high-precision bidirectional power capability, energy regeneration, and fast transient response, the RBS series addresses the demands of high power density and green energy efficiency. It is ideal for laboratory testing, product development, and quality assurance, delivering highly flexible and reliable test support for customers.

Model	Output Power	Output Voltage	Output Current	Input Voltage (3P3W)
RBS05K-100[*1]	5 kW	100 V	-170 A to +170 A	342 Vac to 510 Vac
RBS10K-100[*1]	10 kW	100 V	-340 A to +340 A	342 Vac to 510 Vac
RBS15K-100[*1]	15 kW	100 V	-510 A to +510 A	342 Vac to 510 Vac
RBS05K-500	5 kW	500 V	-40 A to +40 A	342 Vac to 510 Vac
RBS10K-500	10 kW	500 V	-80 A to +80 A	342 Vac to 510 Vac
RBS15K-500	15 kW	500 V	-120 A to +120 A	342 Vac to 510 Vac
RBS20K-500	20 kW	500 V	-160 A to +160 A	342 Vac to 510 Vac
RBS30K-500	30 kW	500 V	-240 A to +240 A	342 Vac to 510 Vac
RBS05K-750	5 kW	750 V	-25 A to +25 A	342 Vac to 510 Vac
RBS10K-750	10 kW	750 V	-50 A to +50 A	342 Vac to 510 Vac
RBS15K-750	15 kW	750 V	-75 A to +75 A	342 Vac to 510 Vac
RBS20K-750	20 kW	750 V	-120 A to +120 A	342 Vac to 510 Vac
RBS30K-750	30 kW	750 V	-180 A to +180 A	342 Vac to 510 Vac
RBS10K-1000	10 kW	1000 V	-40 A to +40 A	342 Vac to 510 Vac
RBS20K-1000	20 kW	1000 V	-80 A to +80 A	342 Vac to 510 Vac
RBS15K-1500	15 kW	1500 V	-40 A to +40 A	342 Vac to 510 Vac
RBS20K-1500	20 kW	1500 V	-60 A to +60 A	342 Vac to 510 Vac
RBS30K-1500	30 kW	1500 V	-80 A to +80 A	342 Vac to 510 Vac
RBS15K-2250	15 kW	2250 V	-25 A to +25 A	342 Vac to 510 Vac
RBS30K-2250	30 kW	2250 V	-60 A to +60 A	342 Vac to 510 Vac

[*1] SAS (Solar Array Simulation) function : Applicable to models with 500 V and above

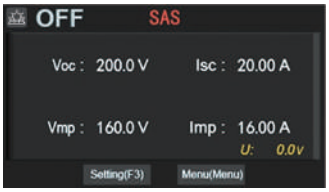
PANEL INTRODUCTION



CE | PC Software | RS-485 | RS-232 | LAN | CAN | USB | GPIB

1. Power Switch
2. LCD 4.3-inch Color Touch LCD
3. Knob
4. Direction Keys
5. Function Key Area
6. Numeric Key Area
7. Output Key
8. Parallel Interface
9. Remote Sense
10. Communications Interface Selection:
    One Out of Two (Factory Installation)
    IF-01 USB, RS-232/RS-485, CAN, LAN
    IF-02 GPIB
11. DC Output Terminal
12. AC Input Terminal

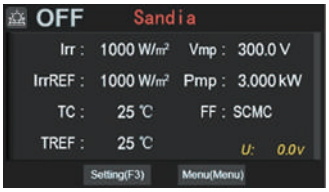
A. PHOTOVOLTAIC FUNCTION: APPLICABLE TO MODELS 500V AND ABOVE



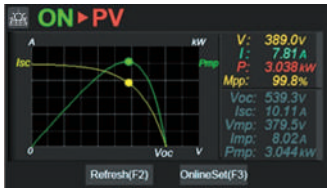
PV SAS Mode



PV EN50530 Mode



PV Sandia Mode

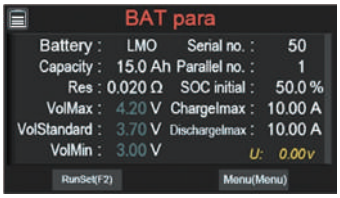


PV Operation Interface

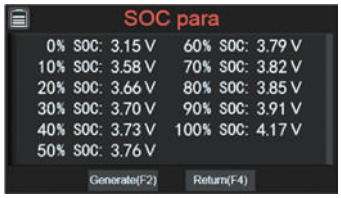
The power supply's photovoltaic (PV) mode can simulate a solar panel or a solar panel array via computer software, enabling testing of PV inverter characteristics and performance.

The software also allows simulation of complex irradiance conditions, including standard static MPPT testing, dynamic MPPT testing, cloud shading, and cloud movement.

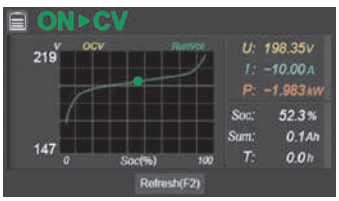
B. BATTERY SIMULATION FUNCTION



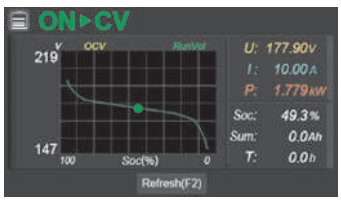
Battery Parameter Interface-lmo Battery



SOC Parameter Interface



Battery Simulation Operation-charging Display

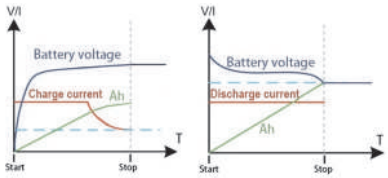


Battery Simulation Operation-discharge Display

The RBS Series is capable of simulating battery characteristics in practical applications, including charging and discharging behaviors, to assist with various tests.

The RBS series has 8 fixed battery models + one custom battery model. (models are based on relevant research papers and test data published domestically and internationally): lithium manganate (LMO), lithium cobalt oxide (LCO), lithium iron phosphate (LFP), ternary lithium (NCM), lithium titanate (LTO), lead-acid (Pb), nickel-metal hydride (NiMH), and nickel-cadmium (NiCd) batteries.

C. BATTERY CHARGING AND DISCHARGING MODE



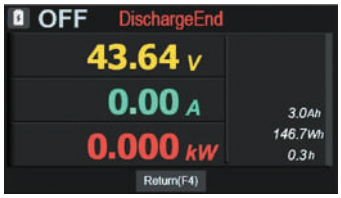
Battery Charging and Discharging Status Diagram



Battery Charge/Discharge Setting Interface



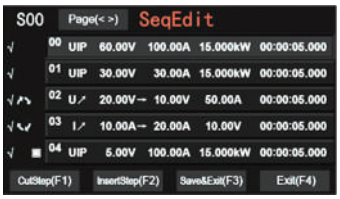
Battery Charge/Discharge Operation Interface



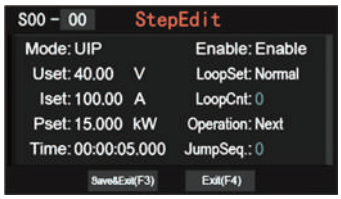
Battery Operation End-discharge Display

The RBS series features a battery charge and discharge operating mode and can be connected to battery type loads to perform charging and discharging operations.

D. SEQUENCE FUNCTION



Sequence Editing

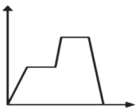


Step Editing



Sequence Operation Interface

No.	Mode	Para1	Para2	Para3	Time	Enable	Loop Set	Operation
0	U ramp	0V	40V	510A	2s	Enable	Normal	Next
1	UIP	40V	510A	15kW	3s	Enable	Normal	Next
2	U ramp	40V	70V	510A	1s	Enable	Normal	Next
3	UIP	70V	510A	15kW	3s	Enable	Normal	Next
4	U ramp	70V	0V	510A	2s	Enable	Normal	Stop



Example

In serial test mode, users can set a series of voltage or voltage change values, current or converter change values, power levels, operation modes, time durations, and other parameters. The series automatically outputs thee settings in defined steps to better support applications such as automatic testing and aging.

The list test feature can store up to 50 sequences (sequence numbers 0 to 49), with each sequence containing 20 steps (step numbers 0 to 19). Each step can be configured independently, including settings for enable, loop, ramp mode output, and other control functions.

E. LOAD MODE



Load Standby State



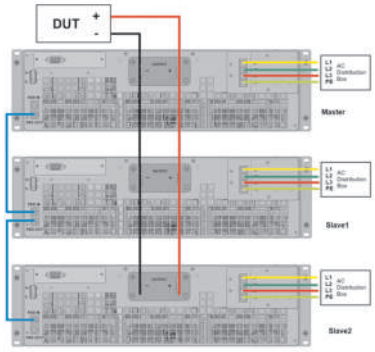
Load Working Mode Operation Interface

Load operating modes: A total of 8 modes are supported, including Constant Current (CC), Constant Voltage (CV), Constant Power (CP), Constant Resistance (CR), as well as composite modes CV→CC, CV→CR, CC→CR, and AUTO mode.

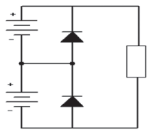
In load mode, there will be an output voltage of about 1 V after startup. To ensure that the load mode works normally, the external power supply should have an output of more than 1 V to ensure normal operation of the load mode.

When the resistance is set to 0 ohms, it means that the power supply CR function is turned off, and only the CC function ad CP function are valid.

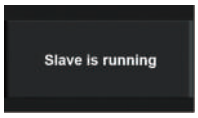
F. SERIES-PARALLEL CONNECTIONS



Parallel Connection Diagram



Series Connection Diagram



Slave Panel Display

Supports 10 Units in Parallel :

- For more than 10 units, please contact GW nstek
- 100 V models can connect two units in series (voltage does not exceed 300 V)

Series and Parallel Operation Steps :

- Change the connection setting to master or slave
- Connect the parallel control cable and output cable

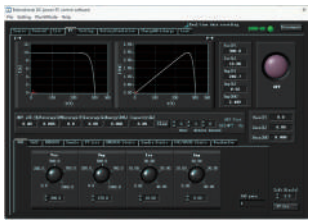
G. SOFTWARE INTERFACE



Source Mode



List Mode



PV Mode



Source Sink Mode



List Edit



PV Inverter Mppt Auto Test



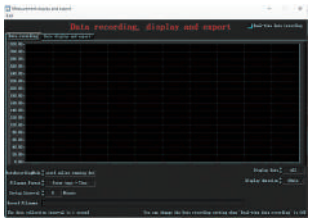
Battery Simulation



Charge Discharge Mode



Load Mode



Data Recording

The main interface contains all the main functions of the bidirectional power supply, as shown in above Figure.

SPECIFICATIONS

Model			RBS05K-100	RBS10K-100	RBS15K-100
Output Rating					
Rated power			± 5000 W	± 10000 W	± 15000 W
Rated voltage (source)			0 V to 100 V		
Operating voltage (sink)			5 V to 100 V		
Rated current			± 170 A	± 340 A	± 510 A
Output Voltage					
Maximum settable voltage			100 V		
Setting accuracy			0.05 %+0.05 % FS		
Setting resolution			0.1 V		
Load regulation CV			0.05 % FS		
Line regulation CV			0.015 % FS		
Temperature coefficient CV			100 ppm		
Remote sensing (compensation voltage)			5 V		
Source only	Transient response(*1)		2 ms		
	Ripple noise	p-p(*2)	500 mV		
		rms(*3)	35 mV		
	Rise time(*4)	Full load	60 ms		
		No load	15 ms		
	Fall time(*5)	Full load	15 ms		
		No load	30 ms		
Output Current					
Settable maximum source current			170 A	340 A	510 A
Settable maximum sink current			-170 A	-340 A	-510 A
Setting accuracy			0.4 %+0.4 % FS		
Setting resolution			0.01 A		
Load regulation CC			0.2 % FS		
Line regulation CC			0.05 % FS		
Ripple and noise(*6)		rms(*3)	0.1 % FS		
Temperature coefficient CC			200 ppm		
Output Power					
Settable maximum source power			5000 W	10000 W	15000 W
Settable maximum sink power			-5000 W	-10000 W	-15000 W
Setting accuracy			0.5 %+0.5 % FS		
Setting resolution			1 W		
DC Output Resistor					
Resistance range			0 Ω to 100 Ω		
Setting accuracy(*7)			≤5 % Rmax(0 % to 10 % Rmax) ; ≤10 % Rmax(10 % to 100 % Rmax)		
Setting resolution			0.01 Ω		
Protective Functions					
OVP		Range	0 % FS to 110 % FS		
		Accuracy	0.1 %FS		
OCP		Range	0 % FS to 110 % FS		
		Accuracy	0.2 % FS		
OTP			√	√	√
Vsense reverse protection			√	√	√
Input voltage protection (OVP, UVP)			√	√	√
Display Accuracy					
Voltage		Accuracy	0.05 %+0.05 % FS		
		Resolution	0.1 V		
Current		Accuracy	0.4 %+0.4 % FS		
		Resolution	0.01 A		
Power		Accuracy	0.5 %+0.5 % FS		
		Resolution	0.001 kW		
Interfaces Digital					
All-in-One(USB,RS-232/RS-485,CAN,LAN)(*8)			All-in-On / GPIB		
GPIB(*8)			All-in-On / GPIB		
400 V Three-phase Three-wire Input					
Nominal input rating			380 Vac to 460 Vac		
Input voltage range			342 Vac to 510 Vac		
Input frequency range			47 Hz to 63 Hz		
Output Power			5000 W	10000 W	15000 W
Input current (MAX)		at 342 Vac	9.2 A	27.6 A	27.6 A
Input power (MAX)			5.5 kVA	11 kVA	16.5 kVA
Power factor (TYP)			0.99		
Leakage current			5 mA		
Efficiency sink/source (up to)			93 %		
General Specifications					
Environmental conditions	Operating temperature		0 °C to 40 °C		
	Operating humidity		20 % to 90 % RH		
	Storage temperature		-10 °C to 70 °C		
	Storage humidity		20 % to 90 % RH		
	Altitude		1000 m		
Withstand voltage	AC input to case (PE)		DC 2300 V		
Insulation resistance	Between output and GND		DC 500 V		
Mechanical construction	Dimensions (W x H x D) mm		482 mm x 133.3 mm x 790 mm		
	Weight		24 kg	32 kg	40 kg
Parallel operation			√	√	√

*1. When the load changes from 50 % to 100 %, or from 100 % to 50 %, the voltage returns to within 0.75 % of the rating.
*2. Measurement frequency bandwidth is 20 Hz to 20 MHz.
*3. Measurement frequency bandwidth is 20 Hz to 2 MHz.
*4. First set the 0 V output, from 10 % to 90 % of the rated output voltage, with pure resistance.
*5. Rated voltage output, then set to 0 V,from 90 % to 10 % of rated output voltage, with pure resistance.
*6. The ripple is measured with the output voltage set between (20 to 100) % of the rated output voltage and at full output current.
The ripple specification is 0.1 % FS in Source mode and 0.2 % FS in Sink and Load modes.
For the 20 kW and 30 kW models, the ripple specification is 0.5 % FS. For the 2250 V, 15 kW model, the ripple specification is 0.15 % FS.
*7. When the input voltage is within 10 % to 100 % of the RBS voltage range and the load current is within 10 % to 100 % of the RBS current range.
*8. Communication interface: one of two, factory-installed.

SPECIFICATIONS

Model			RBS05K-500	RBS10K-500	RBS15K-500	RBS20K-500	RBS30K-500
Output Rating							
Rated power			± 5000 W	± 10000 W	± 15000 W	± 20000 W	± 30000 W
Rated voltage (source)			0 V to 500 V				
Operating voltage (sink)			10 V to 500 V				
Rated current			± 40 A	± 80 A	± 120 A	± 160 A	± 240 A
Output Voltage							
Maximum settable voltage			500 V				
Setting accuracy			0.05 %+0.05 % FS				
Setting resolution			0.01 V				
Load regulation CV			0.03 % FS				
Line regulation CV			0.015 % FS				
Temperature coefficient CV			100 ppm				
Remote sensing (compensation voltage)			25 V				
Source only	Transient response(*1)		2 ms				
	Ripple noise	p-p(*2)	600 mV				
		rms(*3)	95 mV				
	Rise time(*4)	Full load	30 ms				
		No load	15 ms				
	Fall time(*5)	Full load	15 ms				
		No load	30 ms				
Output Current							
Settable maximum source current			40 A	80 A	120 A	160 A	240 A
Settable maximum sink current			-40 A	-80 A	-120 A	-160 A	-240 A
Setting accuracy			0.15 %+0.15 % FS				
Setting resolution			0.01 A				
Load regulation CC			0.1 % FS				
Line regulation CC			0.05 % FS				
Ripple and noise(*6)		rms(*3)	0.1 % FS			0.5 % FS	
Temperature coefficient CC			200 ppm				
Output Power							
Settable maximum source power			5000 W	10000 W	15000 W	20000 W	30000 W
Settable maximum sink power			-5000 W	-10000 W	-15000 W	-20000 W	-30000 W
Setting accuracy			0.5 %+0.5 % FS				
Setting resolution			1 W				
DC Output Resistor							
Resistance range			0 Ω to 500 Ω				
Setting accuracy(*7)			≤5 % Rmax(0 % to 10 % Rmax) ; ≤10 % Rmax(10 % to 100 % Rmax)				
Setting resolution			0.01 Ω				
Protective Functions							
OVP		Range	0 % FS to 110 % FS				
		Accuracy	0.1 %FS				
OCP		Range	0 % FS to 110 % FS				
		Accuracy	0.2 % FS				
OTP			√	√	√	√	√
Vsense reverse protection			√	√	√	√	√
Input voltage protection (OVP, UVP)			√	√	√	√	√
Display Accuracy							
Voltage		Accuracy	0.05 %+0.05 % FS				
		Resolution	0.01 V				
Current		Accuracy	0.15 %+0.15 % FS				
		Resolution	0.01 A				
Power		Accuracy	0.5 %+0.5 % FS				
		Resolution	0.001 kW				
Interfaces Digital							
All-in-One(USB,RS-232/RS-485,CAN,LAN)(*8)			All-in-One / GPIB				
GPIB(*8)			All-in-One / GPIB				
400 V Three-phase Three-wire Input							
Nominal input rating			380 Vac to 460 Vac				
Input voltage range			342 Vac to 510 Vac				
Input frequency range			47 Hz to 63 Hz				
Output Power			5000 W	10000 W	15000 W	20000 W	30000 W
Input current (MAX)		at 342 Vac	9.2 A	27.6 A	27.6 A	55.2 A	55.2 A
Input power (MAX)			5.5 kVA	11 kVA	16.5 kVA	22 kVA	33 kVA
Power factor (TYP)			0.99				
Leakage current			5 mA				
Efficiency sink/source (up to)			93 %				
General Specifications							
Environmental conditions	Operating temperature		0 °C to 40 °C				
	Operating humidity		20 % to 90 % RH				
	Storage temperature		-10 °C to 70 °C				
	Storage humidity		20 % to 90 % RH				
	Altitude		1000 m				
Withstand voltage	AC input to case (PE)		DC 2300 V				
Insulation resistance	Between output and GND		DC 500 V				
Mechanical construction	Dimensions (W x H x D) mm		482 mm x 133.3 mm x 790 mm				
	Weight		24 kg	32 kg	40 kg	34 kg	43 kg
Parallel operation			√	√	√	√	√

*1. When the load changes from 50 % to 100 %, or from 100 % to 50 %, the voltage returns to within 0.75 % of the rating.
*2. Measurement frequency bandwidth is 20 Hz to 20 MHz.
*3. Measurement frequency bandwidth is 20 Hz to 2 MHz.
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*5. Rated voltage output, then set to 0 V, from 90 % to 10 % of rated output voltage, with pure resistance.
*6. The ripple is measured with the output voltage set between (20 to 100) % of the rated output voltage and at full output current.
The ripple specification is 0.1 % FS in Source mode and 0.2 % FS in Sink and Load modes.
For the 20 kW and 30 kW models, the ripple specification is 0.5 % FS. For the 2250 V, 15 kW model, the ripple specification is 0.15 % FS.
*7. When the input voltage is within 10 % to 100 % of the RBS voltage range and the load current is within 10 % to 100 % of the RBS current range.
*8. Communication interface: one of two, factory-installed.

SPECIFICATIONS

Model			RBS05K-750	RBS10K-750	RBS15K-750	RBS20K-750	RBS30K-750
Output Rating							
Rated power			± 5000 W	± 10000 W	± 15000 W	± 20000 W	± 30000 W
Rated voltage (source)			0 V to 750 V				
Operating voltage (sink)			10 V to 750 V				
Rated current			± 25 A	± 50 A	± 75 A	± 120 A	± 180 A
Output Voltage							
Maximum settable voltage			750 V				
Setting accuracy			0.05 %+0.05 % FS				
Setting resolution			0.1 V				
Load regulation CV			0.03 % FS				
Line regulation CV			0.015 % FS				
Temperature coefficient CV			100 ppm				
Remote sensing (compensation voltage)			37.5 V				
Source only	Transient response(*1)		2 ms				
	Ripple noise	p-p(*2)	900 mV				
		rms(*3)	100 mV				
	Rise time(*4)	Full load	30 ms				
		No load	15 ms				
	Fall time(*5)	Full load	15 ms				
		No load	30 ms				
Output Current							
Settable maximum source current			25 A	50 A	75 A	120 A	180 A
Settable maximum sink current			-25 A	-50 A	-75 A	-120 A	-180 A
Setting accuracy			0.15 %+0.15 % FS				
Setting resolution			0.01 A				
Load regulation CC			0.1 % FS				
Line regulation CC			0.05 % FS				
Ripple and noise(*6)		rms(*3)	0.1 % FS			0.5 % FS	
Temperature coefficient CC			200 ppm				
Output Power							
Settable maximum source power			5000 W	10000 W	15000 W	20000 W	30000 W
Settable maximum sink power			-5000 W	-10000 W	-15000 W	-20000 W	-30000 W
Setting accuracy			0.5 %+0.5 % FS				
Setting resolution			1 W				
DC Output Resistor							
Resistance range			0 Ω to 750 Ω				
Setting accuracy(*7)			≤5 % Rmax(0 % to 10 % Rmax) ; ≤10 % Rmax(10 % to 100 % Rmax)				
Setting resolution			0.01 Ω				
Protective Functions							
OVP		Range	0 % FS to 110 % FS				
		Accuracy	0.1 %FS				
OCP		Range	0 % FS to 110 % FS				
		Accuracy	0.2 % FS				
OTP			√	√	√	√	√
Vsense reverse protection			√	√	√	√	√
Input voltage protection (OVP, UVP)			√	√	√	√	√
Display Accuracy							
Voltage		Accuracy	0.05 %+0.05 % FS				
		Resolution	0.1 V				
Current		Accuracy	0.15 %+0.15 % FS				
		Resolution	0.01 A				
Power		Accuracy	0.5 %+0.5 % FS				
		Resolution	0.001 kW				
Interfaces Digital							
All-in-One(USB,RS-232/RS-485,CAN,LAN)(*8)			All-in-On / GPIB				
GPIB(*8)			All-in-On / GPIB				
400 V Three-phase Three-wire Input							
Nominal input rating			380 Vac to 460 Vac				
Input voltage range			342 Vac to 510 Vac				
Input frequency range			47 Hz to 63 Hz				
Output Power			5000 W	10000 W	15000 W	20000 W	30000 W
Input current (MAX)		at 342 Vac	9.2 A	27.6 A	27.6 A	55.2 A	55.2 A
Input power (MAX)			5.5 kVA	11 kVA	16.5 kVA	22 kVA	33 kVA
Power factor (TYP)			0.99				
Leakage current			5 mA				
Efficiency sink/source (up to)			93 %				
General Specifications							
Environmental conditions	Operating temperature		0 °C to 40 °C				
	Operating humidity		20 % to 90 % RH				
	Storage temperature		-10 °C to 70 °C				
	Storage humidity		20 % to 90 % RH				
	Altitude		1000 m				
Withstand voltage	AC input to case (PE)		DC 2300 V				
Insulation resistance	Between output and GND		DC 500 V				
Mechanical construction	Dimensions (W x H x D) mm		482 mm x 133.3 mm x 790 mm				
	Weight		24 kg	32 kg	40 kg	34 kg	43 kg
Parallel operation			√	√	√	√	√

*1. When the load changes from 50 % to 100 %, or from 100 % to 50 %, the voltage returns to within 0.75 % of the rating.
*2. Measurement frequency bandwidth is 20 Hz to 20 MHz.
*3. Measurement frequency bandwidth is 20 Hz to 2 MHz.
*4. First set the 0 V output,from 10 % to 90 % of the rated output voltage,with pure resistance.
*5. Rated voltage output, then set to 0 V,from 90 % to 10 % of rated output voltage,with pure resistance.
*6. The ripple is measured with the output voltage set between (20 to 100) % of the rated output voltage and at full output current.
The ripple specification is 0.1 % FS in Source mode and 0.2 % FS in Sink and Load modes.
For the 20 kW and 30 kW models, the ripple specification is 0.5 % FS. For the 2250 V, 15 kW model, the ripple specification is 0.15 % FS.
*7. When the input voltage is within 10 % to 100 % of the RBS voltage range and the load current is within 10 % to 100 % of the RBS current range.
*8. Communication interface: one of two, factory-installed.

SPECIFICATIONS

Model			RBS10K-1000	RBS20K-1000	RBS15K-1500	RBS20K-1500	RBS30K-1500	RBS15K-2250	RBS30K-2250
Output Rating									
Rated power			± 10000 W	± 20000 W	± 15000 W	± 20000 W	± 30000 W	± 15000 W	± 30000 W
Rated voltage (source)			0 V to 1000 V		0 V to 1500 V			0 V to 2250 V	
Operating voltage (sink)			10 V to 1000 V		10 V to 1500 V			10 V to 2250 V	
Rated current			± 40 A	± 80 A	± 40 A	± 60 A	± 80 A	± 25 A	± 60 A
Output Voltage									
Maximum settable voltage			1000 V		1500 V			2250 V	
Setting accuracy			0.05 %+0.05 % FS						
Setting resolution			0.1 V						
Load regulation CV			0.03 % FS						
Line regulation CV			0.015 % FS						
Temperature coefficient CV			100 ppm						
Remote sensing (compensation voltage)			50 V		75 V			112.5 V	
Source only	Transient response(*1)		2 ms						
	Ripple noise	p-p(*2)	1700 mV		2000 mV		2400 mV	6000 mV	
		rms(*3)	295 mV		300 mV		370 mV	400 mV	
	Rise time(*4)	Full load	30 ms						
		No load	15 ms						
	Fall time(*5)	Full load	15 ms						
		No load	30 ms						
Output Current									
Settable maximum source current			40 A	80 A	40 A	60 A	80 A	25 A	60 A
Settable maximum sink current			-40 A	-80 A	-40 A	-60 A	-80 A	-25 A	-60 A
Setting accuracy			0.15 %+0.15 % FS					0.2 %+0.2 % FS	
Setting resolution			0.01 A						
Load regulation CC			0.1 % FS						
Line regulation CC			0.05 % FS						
Ripple and noise(*6)		rms(*3)	0.1 % FS	0.5 % FS	0.1 % FS	0.5 % FS		0.15 % FS	0.5 % FS
Temperature coefficient CC			200 ppm						
Output Power									
Settable maximum source power			10000 W	20000 W	15000 W	20000 W	30000 W	15000 W	30000 W
Settable maximum sink power			-10000 W	-20000 W	-15000 W	-20000 W	-30000 W	-15000 W	-30000 W
Setting accuracy			0.5 %+0.5 % FS					1 %+1 % FS	
Setting resolution			1 W						
DC Output Resistor									
Resistance range			0 Ω to 1000 Ω		0 Ω to 1500 Ω			0 Ω to 2250 Ω	
Setting accuracy(*7)			≤5 % Rmax(0 % to 10 % Rmax) ; ≤10 % Rmax(10 % to 100 %Rmax)						
Setting resolution			0.01 Ω						
Protective Functions									
OVP		Range	0 % FS to 110 % FS						
		Accuracy	0.1 %FS						
OCP		Range	0 % FS to 110 % FS						
		Accuracy	0.2 % FS						
OTP			√	√	√	√	√	√	√
Vsense reverse protection			√	√	√	√	√	√	√
Input voltage protection (OVP, UVP)			√	√	√	√	√	√	√
Display Accuracy									
Voltage		Accuracy	0.05 %+0.05 % FS						
		Resolution	0.1 V						
Current		Accuracy	0.15 %+0.15 % FS					0.2 %+0.2 % FS	
		Resolution	0.01 A						
Power		Accuracy	0.5 %+0.5 % FS					1 %+1 % FS	
		Resolution	0.001 kW						
Interfaces Digital									
All-in-One(USB,RS-232/RS-485,CAN,LAN)(*8)			All-in-One / GPIB						
GPIB(*8)			All-in-One / GPIB						
400 V Three-phase Three-wire Input									
Nominal input rating			380 Vac to 460 Vac						
Input voltage range			342 Vac to 510 Vac						
Input frequency range			47 Hz to 63 Hz						
Output Power			10000 W	20000 W	15000 W	20000 W	30000 W	15000 W	30000 W
Input current (MAX)		at 342 Vac	27.6 A	55.2 A	27.6 A	55.2 A	55.2 A	27.6 A	55.2 A
Input power (MAX)			11 kVA	22 kVA	16.5 kVA	22 kVA	33 kVA	16.5 kVA	33 kVA
Power factor (TYP)			0.99						
Leakage current			5 mA						
Efficiency sink/source (up to)			93 %						
General Specifications									
Environmental conditions	Operating temperature		0 °C to 40 °C						
	Operating humidity		20 % to 90 % RH						
	Storage temperature		-10 °C to 70 °C						
	Storage humidity		20 % to 90 % RH						
	Altitude		1000 m						
Withstand voltage	AC input to case (PE)		DC 2300 V						
Insulation resistance	Between output and GND		DC 500 V						
Mechanical construction	Dimensions (W x H x D) mm		482 mm x 133.3 mm x 790 mm						
	Weight		32 kg	34 kg	40 kg	34 kg	43 kg	40 kg	43 kg
Parallel operation			√	√	√	√	√	√	√

*1. When the load changes from 50 % to 100 %, or from 100 % to 50 %, the voltage returns to within 0.75 % of the rating.
*2. Measurement frequency bandwidth is 20 Hz to 20 MHz.
*3. Measurement frequency bandwidth is 20 Hz to 2 MHz.
*4. First set the 0 V output, from 10 % to 90 % of the rated output voltage, with pure resistance.
*5. Rated voltage output, then set to 0 V, from 90 % to 10 % of rated output voltage, with pure resistance.
*6. The ripple is measured with the output voltage set between (20 to 100) % of the rated output voltage and at full output current.
The ripple specification is 0.1 % FS in Source mode and 0.2 % FS in Sink and Load modes.
For the 20 kW and 30 kW models, the ripple specification is 0.5 % FS. For the 2250 V, 15 kW model, the ripple specification is 0.15 % FS.
*7. When the input voltage is within 10 % to 100 % of the RBS voltage range and the load current is within 10 % to 100 % of the RBS current range.
*8. Communication interface: one of two, factory-installed.

ORDERING INFORMATION

RBS05K-100*1	5 kW/100 V	Regenerative Bidirectional DC Power Supply
RBS10K-100*1	10 kW/100 V	Regenerative Bidirectional DC Power Supply
RBS15K-100*1	15 kW/100 V	Regenerative Bidirectional DC Power Supply
RBS05K-500	5 kW/500 V	Regenerative Bidirectional DC Power Supply
RBS10K-500	10 kW/500 V	Regenerative Bidirectional DC Power Supply
RBS15K-500	15 kW/500 V	Regenerative Bidirectional DC Power Supply
RBS20K-500	20 kW/500 V	Regenerative Bidirectional DC Power Supply
RBS30K-500	30 kW/500 V	Regenerative Bidirectional DC Power Supply
RBS05K-750	5 kW/ 750 V	Regenerative Bidirectional DC Power Supply
RBS10K-750	10 kW/750 V	Regenerative Bidirectional DC Power Supply
RBS15K-750	15 kW/750 V	Regenerative Bidirectional DC Power Supply
RBS20K-750	20 kW/750 V	Regenerative Bidirectional DC Power Supply
RBS30K-750	30 kW/750 V	Regenerative Bidirectional DC Power Supply
RBS10K-1000	10 kW/1000 V	Regenerative Bidirectional DC Power Supply
RBS20K-1000	20 kW/1000 V	Regenerative Bidirectional DC Power Supply
RBS15K-1500	15 kW/1500 V	Regenerative Bidirectional DC Power Supply
RBS20K-1500	20 kW/1500 V	Regenerative Bidirectional DC Power Supply
RBS30K-1500	30 kW/1500 V	Regenerative Bidirectional DC Power Supply
RBS15K-2250	15 kW/2250 V	Regenerative Bidirectional DC Power Supply
RBS30K-220	30 kW/2250 V	Regenerative Bidirectional DC Power Supply

ACCESSORIES

AC input connector, Output terminal cover, Power cord, Factory test report, M4 x 10 Screw x 4 Pcs, 3U handle x 2, packing list

OPTION (Two Alternative Optional Interface)

RBS-IF01	USB, RS-232/RS-485, CAN, LAN Interface
RBS-IF02	GPIB Interface

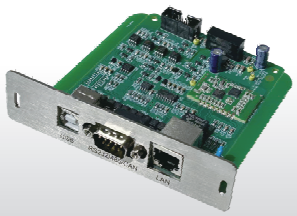
OPTIONAL ACCESSORIES

GTL-133	Load cable, 1.5 m, 100 A
GTL-218	Load cable, 1.5 m, 200 A
GTL-219	Load cable, 3 m, 200 A
GTL-220	Load cable, 1.5 m, 300 A
GTL-221	Load cable, 3 m, 300 A
GTL-222	Load cable, 1.5 m, 400 A
GTL-223	Load cable, 3 m, 400 A

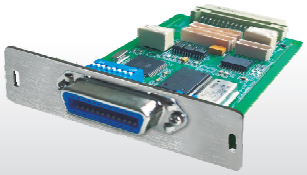
Note : *1 SAS (Solar Array Simulation) function : Applicable to models with 500 V and above

Specifications subject to change without notice. RBS-Series_All_GD2BH

RBS-IF01 USB, RS-232/RS-485, CAN, LAN Interface



RBS-IF02 GPIB Interface



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