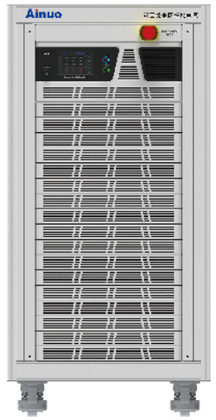
Regenerative Grid Simulator
ANRGS(F) Series



Product Introduction

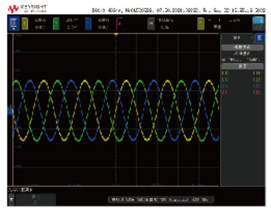
The ANRGS(F) Series Regenerative Grid Simulator adopts advanced SPWM technology, FPGA digital processing technology and high-power switching power supply technology, and it can output AC, DC, and AC+DC, providing precise power input for AC load, DC load, rectifier load, etc. The power supply has the function of 100% energy feedback to the grid, enabling four-quadrant operation and significant energy savings to reduce operating costs. It can set waveform switch-on and switch-off angles for testing surge current and output maintenance time. It can also set the rate of change of voltage and frequency to scan the range of power input specifications for the object to be tested. The power supply can simulate abnormal instantaneous rise, drop, short circuit, jitter and other phenomena in the power grid. It can also provide accurate and fast measurement of power parameters. The ANRGS(F) Series Regenerative Grid Simulator adopts advanced SPWM technology with excellent power output quality, widely used in laboratories and production lines in the photovoltaic, new energy vehicle, and other industries.

Features

- It has advanced SPWM technology and FPGA digital processing technology and high-power switching power supply technology with high power density.
- It has output modes include AC, DC, and AC+DC.
- It has 100% energy feedback to the grid, and the power supply can operate in all four quadrants.
- It can realize three-phase and single-phase parallel operation, and the single-phase output after parallel connection can reach the maximum capacity of the whole unit.
- It has harmonic synthesis function for 2-50 times harmonics with a synthesis bandwidth of 3,000Hz.
- It has three programming functions: sequence, pulse, and step, which simulate the interference in the actual grid, with a minimum programming step size of 1ms.
- It has a 5-inch LCD, which is small in size, light in weight and 4U in height, meeting the installation requirements of standard cabinets.
- It is equipped with RS485 and Ethernet communication interfaces as standard, with optional RS232 and GPIB communication interfaces.
- It comes with upper computer software, which can import and export arbitrary waveforms and set parameters through the upper computer.

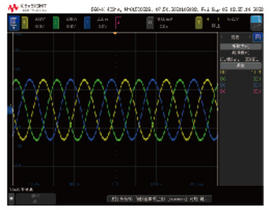
Applications

AC+DC output mode: AC, DC, and AC+DC

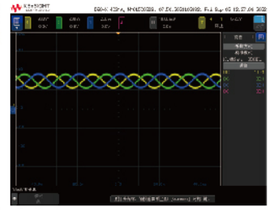


AC mode

DC mode

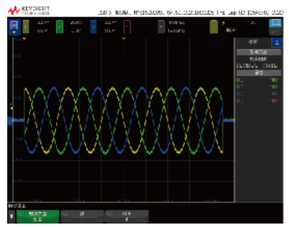


AC+DC mode



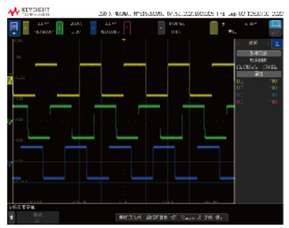
AC+DC mode

Start-stop angle: in the conventional mode, the start-stop angles of the waveform can be set to facilitate surge current tests.

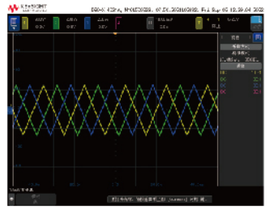


U-phase starts at 90° and stops at 270° waveform

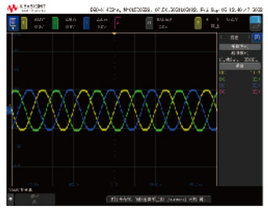
Output waveform can be set: the three-phase output waveform can be independently set to select sine wave, square wave, triangular wave, clipped sine wave, 30 sets of built-in waveforms, and 6 sets of user-defined waveforms.



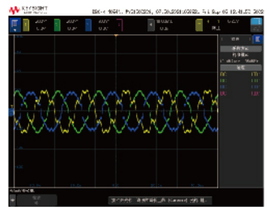
Square wave



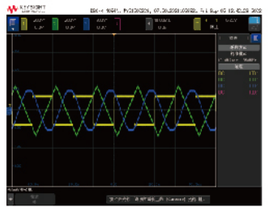
Triangular wave



Clipped sine wave CEVROT

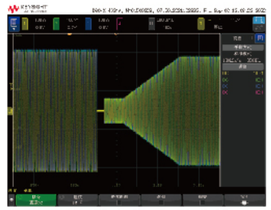


Built-in waveform

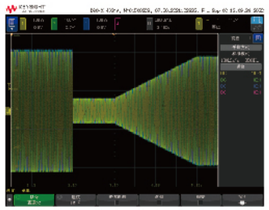


Different waveforms set for three phases

Sequence mode: it has universally programmable settings, where each phase of AC voltage, DC voltage, frequency, phase, waveform, and time can be independently set according to single-step settings. Trigger phase and cycle count can be set, and parameters of three phase outputs can be separately configured. Any phase abrupt change/crossing test can be achieved. Rich sequence combinations with high degree of freedom in parameter settings. By setting different combined sequence parameters, high and low voltage crossing tests can be completed. Minimum programming setting time is 1ms, capable of completing a 1ms stop test. Each sequence in each phase can independently set one of the 6 waveforms.

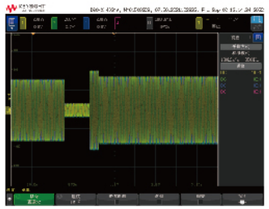


Zero voltage crossing test

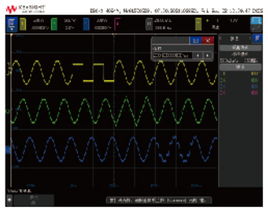


Low voltage crossing test

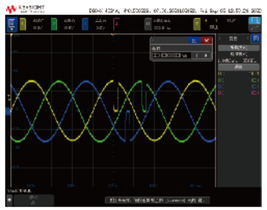
High voltage crossing test



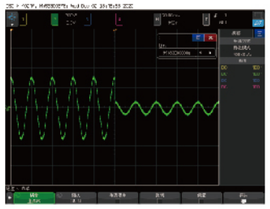
High and low voltage crossing tests



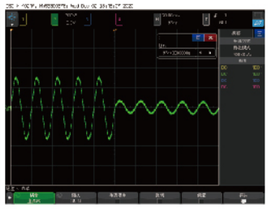
Different waveforms can be selected during testing



Each phase stops within 1ms at 90°

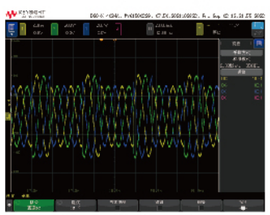


90° crossing

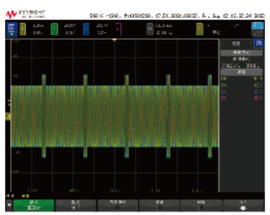


0°crossing

Pulse mode: it periodically changes the output state, where the power output will cyclically vary between regular power supply and pulse voltage. Each phase of AC voltage, DC voltage, frequency, angle, waveform, time, etc. can be independently set.

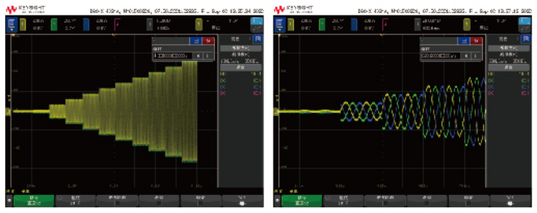


Pulse output waveform



Pulse output waveform

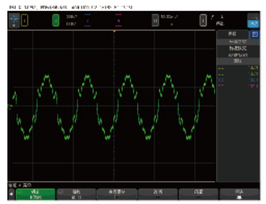
Step mode: also known as staircase mode, where the output voltage gradually increases or decreases according to the set step size from the initial value. Each phase's AC voltage, DC voltage, and frequency can be independently set for initial value and change amount. Angle, waveform, step count, and step time for each phase can also be set independently.



Step output waveform

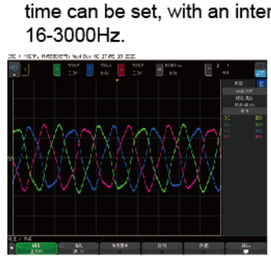
Harmonic synthesis: the power supply has harmonic editing function (2-50 times), and various harmonic components can be added to the standard sine wave.

It has 3 sets of percentage harmonic storage groups and 3 sets of amplitude harmonic storage groups that can be quickly called. The fundamental voltage, harmonic content, angle, etc., of each phase can be independently set. Under the percentage mode, the content and angle of each harmonic can be set, with a single harmonic up to 30%, no limit on total harmonic content, and no limit on the number of harmonic superimpositions. Under the amplitude mode, specific voltage values can be set for harmonic components, without any percentage relationship with fundamental voltage.



Harmonic output waveform

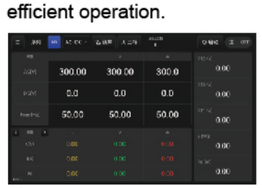
Interharmonic synthesis: the power supply has interharmonic editing function, allowing addition of interharmonic components to the standard sine wave. Interharmonic trigger angle, start-stop frequencies, content, and scanning time can be set, with an interharmonic frequency range of 16-3000Hz.

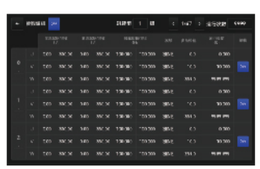


Interharmonic output waveform

Operation: A 5-inch color capacitive touchscreen and knobs can adjust the voltage and frequency in normal mode, while buttons are responsible for starting and stopping the normal mode.

PC control software: Comes with PC control software, featuring a graphical user interface for convenient and efficient operation.





Specifications

Model			ANRGS 005S -350(F)	ANRGS 010S -350(F)	ANRGS 006A -350(F)	ANRGS 009A -350(F)	ANRGS 012A -350(F)	ANRGS 015A -350(F)	ANRGS 018A -350(F)	ANRGS 030B -350(F)	ANRGS 036B -350(F)	ANRGS 045B -350(F)	ANRGS 054B -350(F)	ANRGS 060B -350(F)	ANRGS 072B -350(F)
Capacity			5000VA	10000VA	6000VA	9000VA	12000VA	15000VA	18000VA	30000VA	36000VA	45000VA	54000VA	60000VA	72000VA
AC output	Number of phase		Single-phase		Three-phase & single-phase							Three-phase	Three-phase & single-phase		
	Power	Total power	5000VA	10000VA	6000VA	9000VA	12000VA	15000VA	18000VA	30000VA	36000VA	45000VA	54000VA	60000VA	72000VA
		Power per phase	5000VA	10000VA	2000VA	3000VA	4000VA	5000VA	6000VA	10000VA	12000VA	15000VA	18000VA	20000VA	24000VA
	Voltage	Range	0.00-350.00V												
		Resolution	0.01V												
	Current	RMS range (three-phase mode/phase)	----	----	35A	35A	35A	35A	35A	70A	70A	105A	105A	140A	140A
		RMS range (single-phase mode/phase)	35A	70A	105A	105A	105A	105A	105A	210A	210A	270A	270A	420A	420A
		Peak range (three-phase mode/phase)	----	----	105A	105A	105A	105A	105A	210A	210A	270A	270A	420A	420A
		Peak range (single-phase mode/phase)	105A	210A	315A	315A	315A	315A	315A	630A	630A	945A	945A	1260A	1260A
	Frequency	Range	30.000-100.000Hz												
		Resolution	0.001Hz												
DC output	Power	Total power	5000W	10000W	6000W	9000W	12000W	15000W	18000W	30000W	36000W	45000W	54000W	60000W	72000W
		Single power	5000W	10000W	2000W	3000W	4000W	5000W	6000W	10000W	12000W	15000W	18000W	20000W	24000W
	Voltage	Range	-495.00-495.00V												
		Resolution	0.01V												
	Current	RMS range (single)	35A	70A	35A	35A	35A	35A	35A	70A	70A	105A	105A	140A	140A
		RMS range (parallel)	----	---	105A	105A	105A	105A	105A	210A	210A	270A	270A	420A	420A
Shape	Dimensions W×H×D (mm)		432×175×700							600×1230×1000					
Weight (Kg)			25	35	45	45	45	45	45	320	320	365	365	410	410

Any changes to the above parameter specifications will not be notified separately.

Specifications

Model			ANRGS 005S-350(F)	ANRGS 010S-350(F)	ANRGS 006A-350(F)	ANRGS 009A-350(F)	ANRGS 012A-350(F)	ANRGS 015A-350(F)	ANRGS 018A-350(F)
Capacity			5000VA	10000VA	6000VA	9000VA	12000VA	15000VA	18000VA
AC input	Voltage		Line voltage: 342V-480V: 3-phase 3-wire+PE						
	Current (@342V)		20A Max	35A Max	20A Max	25A Max	30A Max	35A Max	40A Max
	Frequency		47-63Hz						
	Power factor *1		≥0.98						
AC output	Number of phase		Single-phase	Single-phase	Three-phase & single-phase				
	Power	Total power	5000VA	10000VA	6000VA	9000VA	12000VA	15000VA	18000VA
		Power per phase	5000VA	10000VA	2000VA	3000VA	4000VA	5000VA	6000VA
	Voltage	Range	0.00-350.00V						
		Resolution	0.01V						
		Accuracy	0.1%F.S.						
		Distortion *2	0.3%@50/60Hz:1%@30-100Hz						
		Source effect *3	≤0.02%						
		Load effect *4	≤0.02%						
	Current/ phase	RMS range (three-phase mode)	----	----	35A	35A	35A	35A	35A
		RMS range single-phase mode)	35A	70A	105A	105A	105A	105A	105A
		Peak range (three-phase mode)	----	----	105A	105A	105A	105A	105A
		Peak range single-phase mode)	105A	210A	315A	315A	315A	315A	315A
	Frequ- ency	Range	30.000-100.000Hz						
		Resolution	0.001Hz						
		Accuracy	0.01%						
DC output	Power	Total power	5000VA	10000VA	6000VA	9000VA	12000VA	15000VA	18000VA
		Single power	5000VA	10000VA	2000VA	3000VA	4000VA	5000VA	6000VA
	Voltage	Range	-495.00-495.00V						
		Resolution	0.01V						
		Accuracy	0.1%F.S.						
	Current range	Single	35A	70A	35A	35A	35A	35A	35A
		Parallel	----	----	105A	105A	105A	105A	105A
Measu- rement accu- racy	Voltage	Range	AC: 350V: DC: 495.00V						
		Resolution	0.01V						
		Accuracy *5	0.1%F.S.						
		RMS	35A	70A	105A	105A	105A	105A	105A
		Peak	105A	210A	315A	315A	315A	315A	315A
		Resolution	0.01A						
		RMS accuracy *6	0.2%F.S.						
		Peak accuracy *6	0.5%F.S.						
	Power	Resolution	0.01W						
		Accuracy *7	0.3%F.S.						
Fun- ction	Display		5-inch color touch screen LCD						
	Waveform selection		Sine wave, triangle wave, square wave, clipped sine wave, 30 sets of built-in waveforms, and 6 sets of custom waveforms						
	Start-stop angle		0-359.9°						
	Knob function		Knob adjustment available for conventional mode voltage and frequency settings						
	Parallel operation function		Can achieve parallel operation of multiple units						
	Harmonics		2-50 times						
	Harmonic and interharmonic simulation bandwidth		3000Hz						
	Sequence mode		200 steps with 9999 loops. Voltage, frequency, and phase angle can be programmatically outputted						
	Pulse mode		9999 loops. Cyclic changes in voltage amplitude, frequency, and angle						
	Step mode		9999 loops. Change the voltage frequency according to the set voltage and frequency step values						
	Online adjustment function		Under the conventional mode, the output voltage and frequency can be adjusted online, and the waveform can be switched online						
	Line drop compensation		The device has Sense terminals that allow remote sampling compensation						
	Communication interface		RS485 (standard), Ethernet (standard), synchronous signal (standard), RS232 (optional) and GPIB (optional)						
	Remote control		Simulation control port (optional)						
Working environment	Temperature		0~40℃						
	humidity		30~90%RH						
Efficiency *8			≥92%						
Protection			Input abnormality, bus overvoltage, output overvoltage and undervoltage, output overcurrent, output overload, and module overheating						
Shape	High		4U						
	Dimensions W×H×D (mm)		432×175×700 The width of 432mm is the standard 19-inch chassis size without handles, with handles the width is 480mm. The height of 175mm is without feet, with feet the height is 188mm. The feet are detachable. The depth of 700mm is the front and rear panel size excluding terminals and protective parts, including terminals the depth is 779mm.						
Weight (Kg)			25	35	45	45	45	45	45

Any changes to the above parameter specifications will not be notified separately.

Specifications

Model			ANRGS 030B-350(F)	ANRGS 036B-350(F)	ANRGS 045B-350(F)	ANRGS 054B-350(F)	ANRGS 060B-350(F)	ANRGS 072B-350(F)
Capacity			30000VA	36000VA	45000VA	54000VA	60000VA	72000VA
AC input	Voltage		Line voltage: 342V-480V: 3-phase 3-wire+PE					
	Current (@342V)		70AMax	80A Max	105A Max	120A Max	140A Max	160A Max
	Frequency		47-63Hz					
	Power factor *1		≥0.98					
AC output	Number of phase		Three-phase & single-phase					
	Power	Total power	30000VA	36000VA	45000VA	54000VA	60000VA	72000VA
		Power per phase	10000VA	12000VA	15000VA	18000VA	20000VA	24000VA
	Voltage	Range	0.00-350.00V					
		Resolution	0.01V					
		Accuracy	0.1%F.S.					
		Distortion *2	0.3%@50/60Hz: 1%@30-100Hz					
		Source effect *3	≤0.02%					
		Load effect *4	≤0.02%					
	Current/ phase	RMS range (three-phase mode)	70A	70A	105A	105A	140A	140A
		RMS range single-phase mode)	210A	210A	270A	270A	420A	420A
		Peak range (three-phase mode)	210A	210A	270A	270A	420A	420A
		Peak range single-phase mode)	630A	630A	945A	945A	1,260A	1,260A
	Frequ- ency	Range	30.000-100.000Hz					
		Resolution	0.001Hz					
		Accuracy	0.01%					
DC output	Power	Total power	30000VA	36000VA	45000VA	54000VA	60000VA	72000VA
		Single power	10000VA	12000VA	15000VA	18000VA	20000VA	24000VA
	Voltage	Range	-495.00-495.00V					
		Resolution	0.01V					
		Accuracy	0.1%F.S.					
	Current range	Single	70A	70A	105A	105A	140A	140A
		Parallel	210A	210A	315A	315A	420A	420A
Measu- rement accu- racy	Voltage	Range	AC: 350V: DC: 495.00V					
		Resolution	0.01V					
		Accuracy *5	0.1%F.S.					
	Current	RMS	210A	210A	315A	315A	420A	420A
		Peak	630A	630A	945A	945A	1260A	1260A
		Resolution	0.01A					
		RMS accuracy *6	0.2%F.S.					
		Peak accuracy *6	0.5%F.S.					
	Power	Resolution	0.01W(<10kW): 0.1W(≥10kW)					
		Accuracy *7	0.3%F.S.					
Fun- ction	Display		5-inch color touch screen LCD					
	Waveform selection		Sine wave, triangle wave, square wave, clipped sine wave, 30 sets of built-in waveforms, and 6 sets of custom waveforms					
	Start-stop angle		0-359.9					
	Knob function		Knob adjustment available for conventional mode voltage and frequency settings					
	Parallel operation function		None					
	Harmonics		2-50 times					
	Harmonic and interharmonic simulation bandwidth		3000Hz					
	Sequence mode		200 steps with 9999 loops. Voltage, frequency, and phase angle can be programmatically outputted					
	Pulse mode		9999 loops. Cyclic changes in voltage amplitude, frequency, and angle					
	Step mode		9999 loops. Change the voltage frequency according to the set voltage and frequency step values					
	Online adjustment function		Under the conventional mode, the output voltage and frequency can be adjusted online, and the waveform can be switched online					
	Line drop compensation		The device has Sense terminals that allow remote sampling compensation					
	Communication interface		RS485 (standard), Ethernet (standard), synchronous signal (standard), RS232 (optional) and GPIB (optional)					
	Remote control		Simulation control port (optional)					
Working environment	Temperature/ humidity		0-40℃ 30-90%RH					
Efficiency *8			≥92%					
Protection			Input abnormality, bus overvoltage, output overvoltage and undervoltage, output overcurrent, output overload, and module overheating					
Shape	Dimensions W×H×D (mm)		600×1230 (the height with casters is 118)×1000					
Weight (Kg)			320	320	365	365	410	410

Any changes to the above parameter specifications will not be notified separately.

Notes:

1. Power factor is the measurement result of resistive load at rated power with input rated voltage of 380VLL and output usage.

2. Distortion is the measurement result of resistive load at rated power with an output voltage of 250V.

3. Source effect is calculated by the measured output voltage under two conditions: input rated voltages of 380VLL and 420VLL during no-load.

4. Load effect is calculated by the measured output voltage under no-load and the output measurement at rated power using a resistive load with an output voltage of 250V.

5. The FS appearing in parameters related to AC and DC voltages in the parameter table refers to the corresponding AC and DC maximum output voltage values of the voltage measurement range of the corresponding model machine.

6. The FS appearing in parameters related to current in the parameter table refers to the maximum measured current effective value and peak value of the current measurement range of the corresponding model machine.

7. The FS appearing in parameters related to power in the parameter table refers to the maximum measured power value of the corresponding model machine.

8. The efficiency is the measurement result of resistive load measured at rated power with input voltage set at the input rated voltage of 380VLL and output voltage at 250V.

Safety Analyzer
AC Power Supply
DC Power Supply
Motor Test Scheme
Power Analyzer
Electronic Load

Regenerative Grid Load
ANRGL(F) Series

Product Introduction

The ANRGL(F) Series Regenerative Grid Load adopts advanced SPWM technology, FPGA digital processing technology and high-power switching power supply technology, and it can output AC, DC, and AC+DC, providing precise power input for AC load, DC load, rectifier load, etc. The product has the function of 100% energy feedback to the grid, enabling four-quadrant operation and significant energy savings to reduce operating costs. It can set waveform switch-on and switch-off angles for testing surge current and output maintenance time. It can also set the rate of change of voltage and frequency to scan the range of power input specifications for the object to be tested. The power supply mode can simulate abnormal instantaneous rise, drop, short circuit, jitter and other phenomena in the power grid. It can also provide accurate and fast measurement of power parameters. The load mode features a full four-quadrant feedback AC/DC electronic load, capable of absorbing full capacity energy and providing high-efficiency grid feedback to reduce power consumption. It also has functions such as constant current, constant resistance, constant power, and RLC analog circuit load. The ANRGL(F) Series Regenerative Grid Load adopts advanced SPWM technology with excellent power output quality, widely used in laboratories and production lines in the photovoltaic, new energy vehicle, and other industries.

Features

- It has advanced SPWM technology and FPGA digital processing technology and high-power switching power supply technology with high power density.
- It has output modes include AC, DC, and AC+DC.
- It has 100% energy feedback to the grid, and the power supply can operate in all four quadrants.
- It can realize three-phase and single-phase parallel operation, and the single-phase output after parallel connection can reach the maximum capacity of the whole unit. It has harmonic synthesis function for 2-50 times harmonics with a synthesis bandwidth of 3,000Hz.
- It has three programming functions: sequence, pulse, and step, which simulate the interference in the actual grid, with a minimum programming step size of 1ms.
- It has a 5-inch LCD, which is small in size, light in weight and 4U in height, meeting the installation requirements of standard cabinets.
- It is equipped with RS485 and Ethernet communication interfaces as standard, with optional RS232 and GPIB communication interfaces.
- It comes with upper computer software, which can import and export arbitrary waveforms and set parameters through the upper computer.