ANGS(F) Series Programmable Grid Simulator



Product Features /

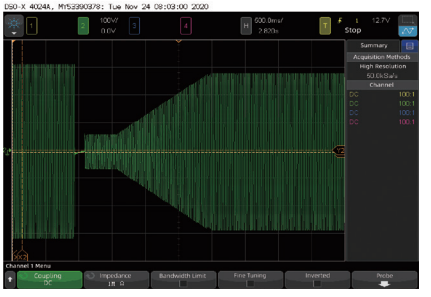
- It adopts FPGA digital control technology, able to completely realize the intelligent test process of inverters.
- It has high-performance high and low (zero) voltage ride-through, step, dip, flicker and other test functions, capable of performing 1ms ride-through test.
- It can set complex programming modes for voltage and frequency, able to easily realize the overvoltage/undervoltage, overfrequency/underfrequency tests.
- It has the function of 2-50 harmonic outputs and interharmonic outputs.
- It has the three-phase unbalance mode, capable of adjusting three-phase voltage and three-phase phase difference, realizing the three-phase unbalance test.
- It is able to withstand 2S for 3 times the rated current impact, with strong load capacity.
- It has complete measurement functions: voltage, current, current peak value, frequency, active power, apparent power, power factor, and voltage peak factor.
- It has the online monitoring function: monitor parameters such as IGBT temperature, transformer temperature, fan speed and input voltage under output state.
- It has the "black box" function: automatically record power supply status, alarm codes, etc. to greatly reduce maintenance time.
- The fan speed is automatically adjusted according to the power supply temperature, reducing noise.
- It provides a Lock key, with a user-friendly design that automatically locks after 5 minutes of inactivity to prevent misoperation.
- The chassis is in the form of a combination cabinet, with an 8-inch large-screen color LCD display.
- It is equipped with a standard RS232 communication interface and can be optionally equipped with RS485, GPIB, Ethernet communication interfaces or analog control mode.

Product Overview /

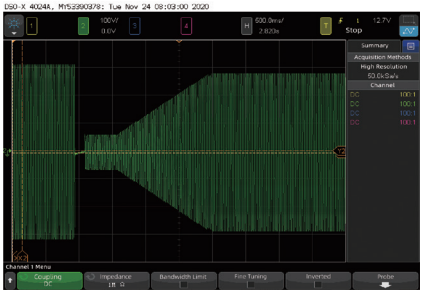
The ANGS(F) Series Programmable Grid Simulator is specially developed for the new energy industries such as photovoltaic and wind power, applicable to inverter testing and verification. The power supply adopts FPGA digital control technology, able to completely realize the intelligent test process of inverters; With sine wave output mode and a variety of harmonic superposition output mode, single-phase, two-phase or three-phase low (zero) voltage ride-through, it is capable of fully simulating various abnormal grid conditions, able to assist in completing the overvoltage/undervoltage, overfrequency/underfrequency, unbalance and anti-islanding protection function tests, meeting the testing requirements of the relevant laws and regulations.

Product Application /

- High and low voltage ride-through: The programmed output mode set for the photovoltaic industry is used to simulate the process of grid fall and recovery, and is capable of simulating a variety of modes such as zero voltage ride-through, low voltage ride-through, high voltage ride-through, and a combination of high and low voltage ride-through, and arbitrarily setting the voltage, maintenance time, ride-through angle, recovery voltage, etc.

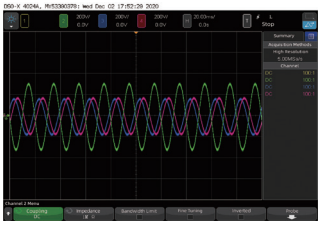


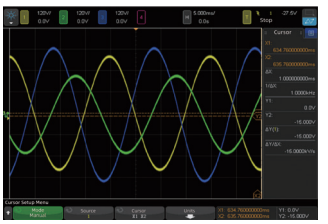
Zero Voltage Ride-through



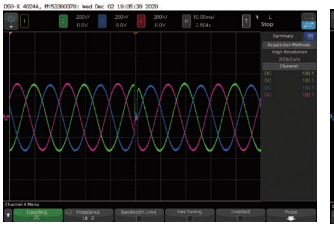
Combination of High and Low Voltage Ride-through

- Unbalance: U, V and W phases and voltages can be set separately, or the degree of unbalance can be set directly.

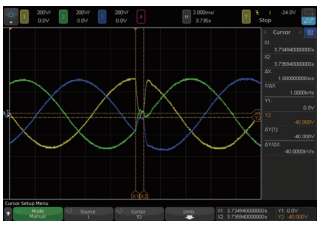




- Transient change: An output method that simulates transient change in voltage, able to perform 1ms zero voltage ride-through.

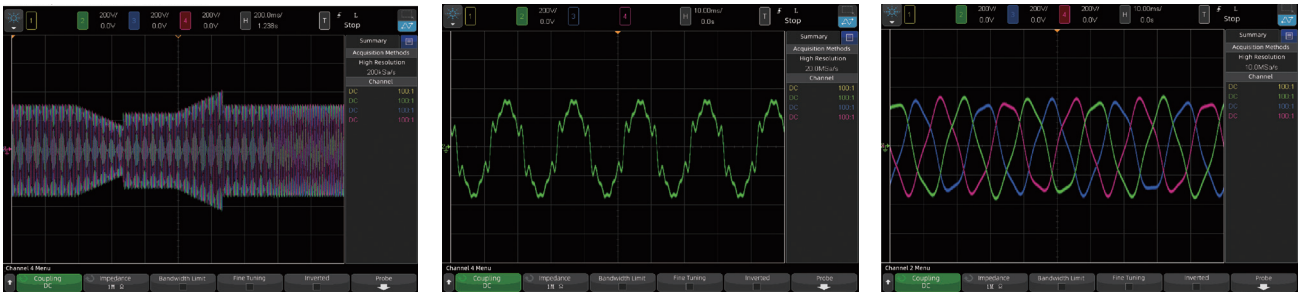


1ms Ride-through

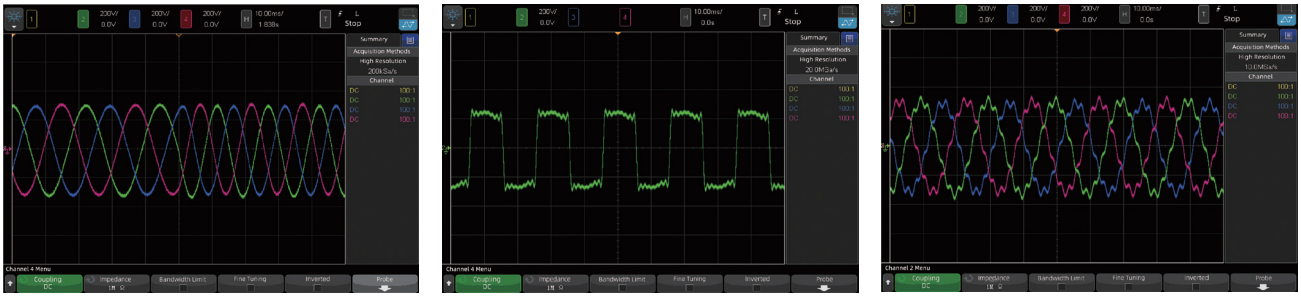


1ms Ride-through

- Programming: It has universally programmable settings, where voltage, frequency and phase can be changed according to single-step settings. Trigger phase and loop count can be set, and parameters of three-phase outputs can be separately configured. Any phase jump/ride-through test can be achieved.
- Harmonics: The power supply has the harmonic editing function (2 - 50 times), able to add harmonics based on the standard sine wave, and set the harmonic content and angle, with single harmonic up to 30%, and the total harmonic content and number of harmonic superpositions unlimited. Moreover, it has 50 harmonic storage groups for quick call.
- Interharmonics: The power supply has the interharmonic editing function, allowing addition of interharmonics based on the standard sine wave. Interharmonic trigger angle, frequency, content, and scan time can be set, with an interharmonic frequency range of 16 - 2,500Hz.

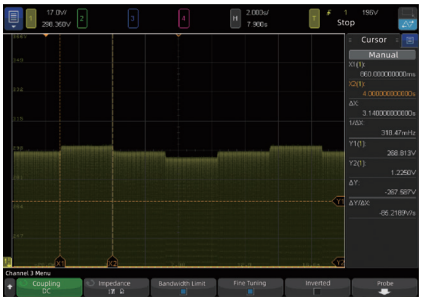


Gradual Change in Voltage + Sudden Change in Voltage + Sudden Change in Frequency

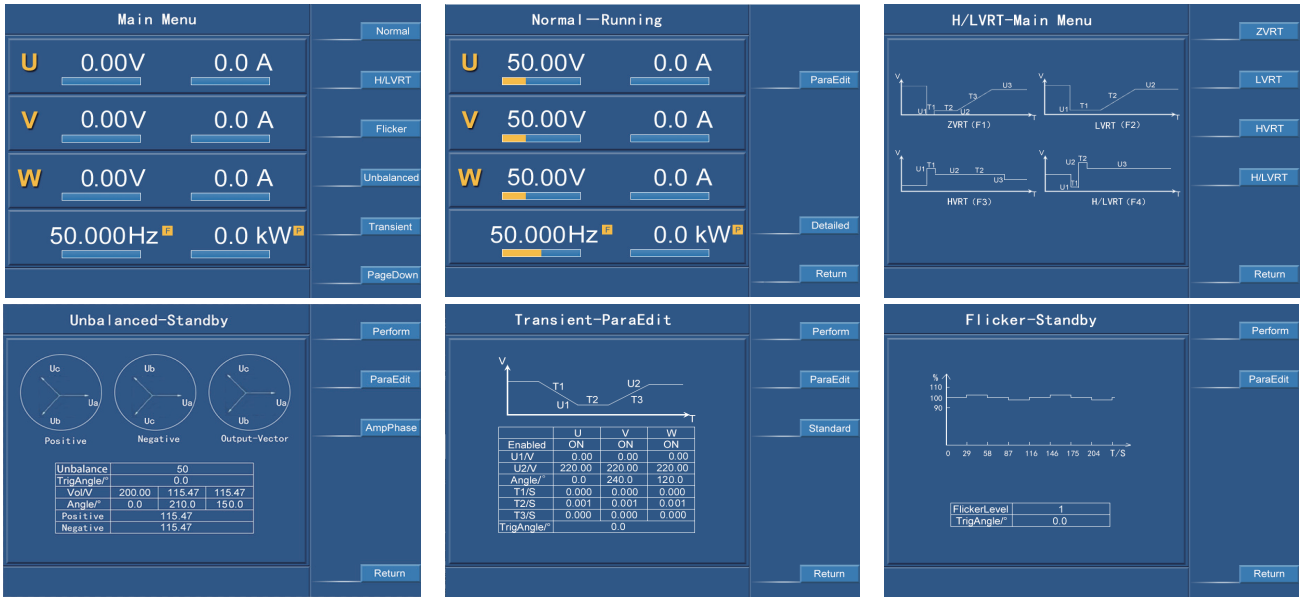


Sudden Change in Frequency at 0°

- Flicker: The power supply can simulate the flicker characteristics of the power grid and test the flicker adaptation of the DUT.

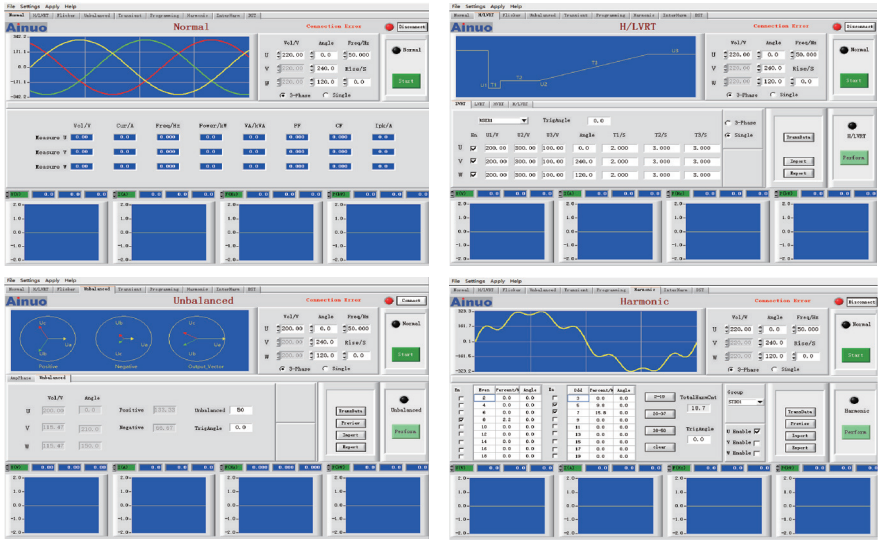


- Large-size color LCD: numeric key input, knob operationt.



Ainuo AC Power Supply Product Series

- Computer control software



Technical Specifications /

Model			ANGS015T(F)	ANGS030T(F)	ANGS045T(F)	ANGS060T(F)	ANGS090T(F)	ANGS120T(F)	ANGS180T(F)	ANGS240T(F)
Power Supply Capacity			15kVA	30kVA	45kVA	60kVA	90kVA	120kVA	180kVA	240kVA
Input	Voltage, Frequency		Three-phase four-wire +PE; Phase voltage: 220V±33V, line voltage: 380V±57V, and frequency: 50/60Hz±3Hz							
output	Output Mode		Three-phase four-wire standard mode, three-phase unbalance mode							
	Voltage, Frequency		Phase voltage: 0.0 ~ 300.0V, frequency: 40.00 ~ 70.00Hz							
	Rated Current	220V	22.7A	45.4A	68.2A	90.9A	136.3A	181.8A	272.7A	363.6A
	Setting Accuracy	Voltage	Resolution: 0.1V, accuracy: 0.2% × reading value + 0.2% × full range value							
		Frequency	Resolution: 0.01Hz, accuracy: 0.05%							
	Measure-ment Accuracy	Voltage	Resolution: 0.1V, accuracy: 0.2% × reading value + 0.2% × full range value							
		Frequency	Resolution: 0.01Hz, accuracy: 0.05%							
		Current	Resolution: 0.1A/1A, accuracy: 0.3% × reading value + 0.3% × full range value							
		Power	Resolution: 0.1kW/0.01kW/0.001kW, accuracy: 0.45% × reading value + 0.45% × full range value							
	Frequency Stability		≤ 0.02%							
	Voltage Distortion Degree		Linear load: THD < 1%							
	Response Time		1ms							
	Three-phase Phase Difference		Three-phase standard mode: 120°±2°							
			Three-phase unbalance mode: 0.0° ~ 359.9°, adjustable by 0.1°							
	Phase Voltage Wave Peak Facto		1.41±0.1							
	Source Voltage Effect		≤ 1%							
	Load Effect		≤ 1%							
	Overload Capacity		When 105% < Output ≤ 110%, the output will be shut off after 15s; When 110% < Output ≤ 200%, the output will be shut off after 5s; When 200% < Output ≤ 300%, the output will be shut off after 2s; When 300% < Output, the output will be shut off immediately.							
	Protection Device		IGBT overheating, IGBT overcurrent, transformer overheating, input overvoltage, input undervoltage, output overvoltage, output undervoltage, output phase loss, output overcurrent, output overload, output short circuit, bus recharge prevention							
Fun-ctions	Display Mode		8-inch LCD display, resolution: 800*600							
	Output Waveform		Sine wave, harmonic (2 ~ 50 harmonic superpositions)							
	Online Regulation Function		Under the conventional mode, the output voltage and frequency can be adjusted online							
	Transient Mode		Available. Capable of achieving voltage step (voltage dip) from high voltage to low voltage or from low voltage to high voltage							
	Flicker Mode		Available. Capable of calling any one set of flicker parameters from 1 to 39 groups							
	High/Low (Zero) Voltage Ride-through Mode		Available. Users need to make personalized adjustments							
	Unbalance Mode		Available. Capable of adjusting three-phase voltage and three-phase phase difference separately or directly set three-phase unbalance degree							
	Programming Mode		200 steps with 999,999 loops. Voltage, frequency, and phase angle can be programmatically outputted							
	Startup Slow Rising Time		0.0 ~ 99.9s							
	Memory Function		Power-off memory function capable of remembering the last output mode and parameters							
	Line Drop Compensation		0.000 ~ 0.500Ω							
	Communication Interface		RS232 (standard), RS485 (optional), GPIB (optional), Ethernet (optional)							
Environ-ment	Temperature, Humidity		0 ~ 40℃, 20 ~ 90%RH							
Dimensions (W*H*D mm)			1,000*1,990*800			1,200*1,990*800		1,200*1,990*1,000		
Weight			310kg	360kg	500kg	620kg	810kg	1,060kg	1,350kg	1,520kg

* The above specifications are subject to change without notice.