

# AC or DC, Your Own Way



**GW Instek**

**ASR-2000 Series Programmable AC/DC Power Source**

**New Product Announcement**

This document allows GW Instek's partners to quickly grasp product's main features, FAB and ordering information

The ASR-2000 series, an AC+DC power source aiming for system integration or desktop applications, provides both rated power output for AC output and rated power output for DC output. Nine ASR-2000 output modes are available, including 1) AC power output mode (AC-INT Mode), 2) DC power output mode (DC-INT Mode), 3) AC/DC power output mode (AC+DC-INT Mode), 4) External AC signal source mode (AC-EXT Mode), 5) External AC/DC signal source mode (AC+DC-EXT Mode), 6) External AC signal superposition mode (AC-ADD Mode), 7) External AC/DC signal superposition mode (AC+DC-ADD Mode), 8) External AC signal synchronization mode (AC-SYNC Mode), 9) External AC/DC signal synchronization mode (AC+DC-SYNC Mode).



The ASR-2000 series provides users with waveform output capabilities to meet the test requirements of different electronic component development, automotive electrical devices and home appliance, including 1) Sequence mode generates waveform fallings, surges, sags, changes and other abnormal power line conditions; 2) Arbitrary waveform function allows users to store/upload user-defined waveforms; and 3) Simulate mode simulates power outage, voltage rise, voltage fall, and frequency variations. When the ASR-2000 series power source outputs, it can also measure  $V_{rms}$ ,  $V_{avg}$ ,  $V_{peak}$ ,  $I_{rms}$ ,  $I_{avg}$ ,  $I_{peak}$ ,  $I_{pkH}$ ,  $P$ ,  $S$ ,  $Q$ ,  $PF$ ,  $CF$ , 40th-order Voltage Harmonic and Current Harmonic. In addition, the Remote sense function ensures accurate voltage output. The Customized Phase Angle for Output On/Off function can set the starting angle and ending angle of the voltage output according to the test requirements. V-Limit, Ipeak-Limit, F-Limit, OVP, OCP, OPP function settings can protect the DUT during the measurement process. In addition to OTP, OCP, and OPP protection, the ASR-2000 series also incorporates the Fan fail alarm function and AC fail alarm function.

The front panel of the ASR-2050/2100 provides a universal socket or a European socket, which allows users to plug and use so as to save wiring time. The ASR-2050R/2100R is 3U height and 1/2 Rack width design, which is compatible with ATS assembly. The ASR-2000 series supports I/O interface and is equipped with USB, LAN, External I/O and optional RS-232C and GPIB.

*ASR-2000 Programmable AC/DC Power Source*

## Features

---

- Output Rating: AC 0 – 350 Vrms,  
DC 0 -  $\pm$  500 V
- Output Frequency up to 999.9 Hz
- DC Output (100% of Rated Power)
- Measurement Items: Vrms, Vavg, Vpeak, Irms, IpkH, Iavg, Ipeak, P, S, Q, PF, CF
- Voltage and Current Harmonic Analysis(THDv, THDi)
- Remote Sensing Capability
- OVP, OCP, OPP, OTP, AC Fail Detection and Fan Fail Alarm.
- Support Arbitrary Waveform Function
- Output Capacity: 500VA/ 1000VA
- Customized Phase Angle for Output On/Off
- Sequence and Simulation Function(up to 10 sets)
- Interface: USB, LAN(std.);  
RS-232+GPIB(opt)
- Built-in External Control I/O and External Signal Input
- Built-in Output Relay Control
- Memory Function (up to 10 sets)
- Built-in Web Server

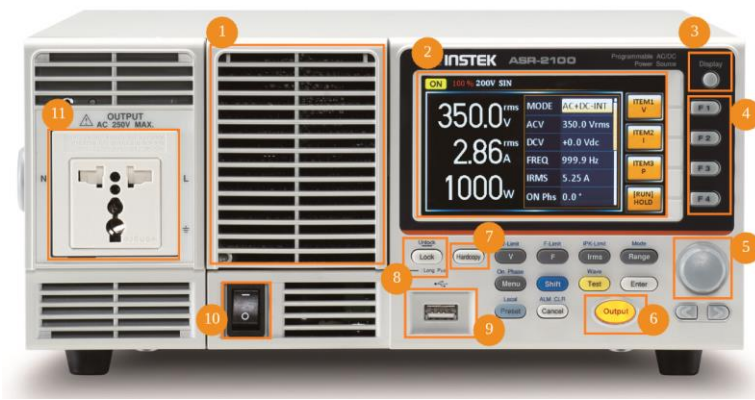
## Applications

---

Electronic products / electronic component development test  
Automotive electrical device simulation test  
Household appliance application test

# Appearance

## Front panel



ASR-2050/2100



ASR-2050R/2100R

## Rear panel



ASR-2000 Series

Front panel	Rear panel
1. Air inlet	12. External I/O connector
2. LCD screen	13. Exhaust fan
3. Display mode select key	14. Remote sensing input terminal
4. Function keys	15. Output terminal
5. Scroll wheel	16. Line input
6. Output key	17. External signal input/ External synchronized signal input
7. Hardcopy key	18. RS-232C & GPIB connectors
8. Lock/Unlock button	19. LAN connector
9. USB interface connector(A Type)	20. USB interface connector(B Type)
10. Power switch button	
11. Output socket	

## Important Information of Product Ordering

---

### Key Dates for Product Announcement

1. NPI release and sample order (Nov 27, 2019)
2. Global announcement (Dec 16, 2019)

### Service Policy

1. ASR-2000 Series Programmable AC/DC Power Source carries one year warranty
2. Contact GW Instek Service Department for maintenance information.

### Ordering Information

- ASR-2050 500VA Programmable AC/DC Power Source
- ASR-2100 1000VA Programmable AC/DC Power Source
- ASR-2050R 500VA Programmable AC/DC Power Source for 3U 1/2 Rack Mount
- ASR-2100R 1000VA Programmable AC/DC Power Source for 3U 1/2 Rack Mount

### Standard Accessories

CD (User Manual/ Programming Manual)

Power Cord

Safety Guide

Mains Terminal Cover Set

Remote Sense Terminal Cover Set

GTL-123 Test Leads

GTL-246 USB Cable

### Optional Accessories (factory installed)

Opt01: RS232+GPIB Communication Functions

Opt02: European Output Outlet(ASR-2000 only)

*ASR-2000 Programmable AC/DC Power Source*

### **Optional Accessories**

GET-003 Extended Universal Power Socket(ASR-2000R only)

GET-004 Extended European Power Socket(ASR-2000R only)

GRA-439-E Rack Mount Kit(EIA)

GRA-439-J Rack Mount Kit(JIS)

GTL-232 RS-232C Cable, approx. 2M

GTL-258 GPIB Cable, approx. 2M, including 25 pins Micro-D connector

ASR-001 Air inlet filter

## Detailed Product Information

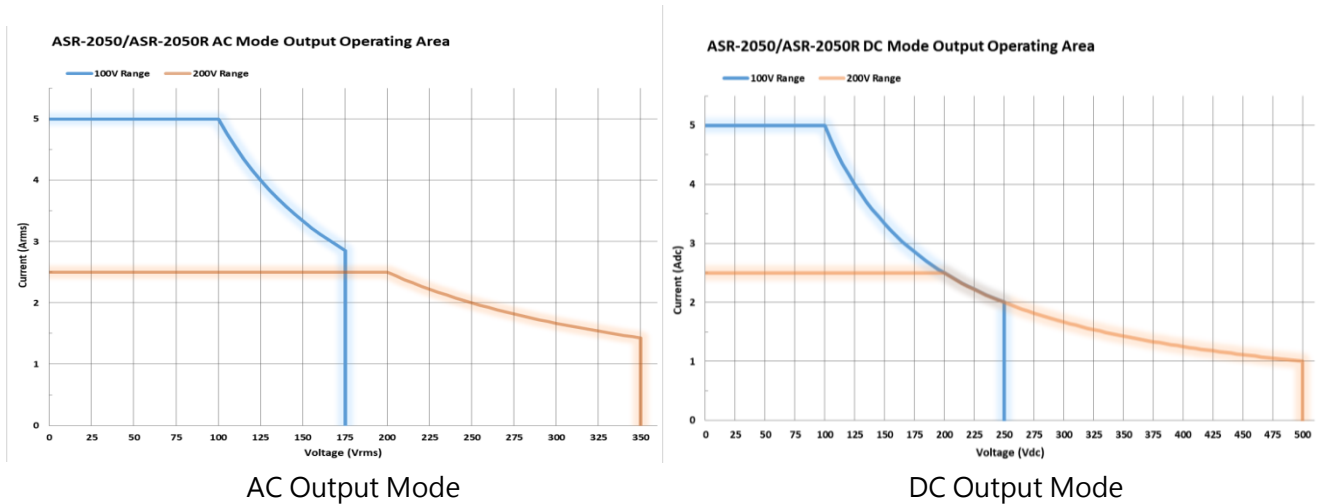
Detailed Descriptions for Features.....	8
Operating Mode .....	8
Measurement Items for ASR-2000 Series .....	9
Sequence Mode and Applications .....	11
Simulate Mode .....	12
T, Ipk Hold & Ipk, Hold functions .....	13
Slew Rate Mode .....	14
Remote Sense Function .....	15
Comparison .....	16
Features, Advantages and Benefits .....	16
Features Comparison .....	18
Specifications .....	20

# Detailed Descriptions for Features

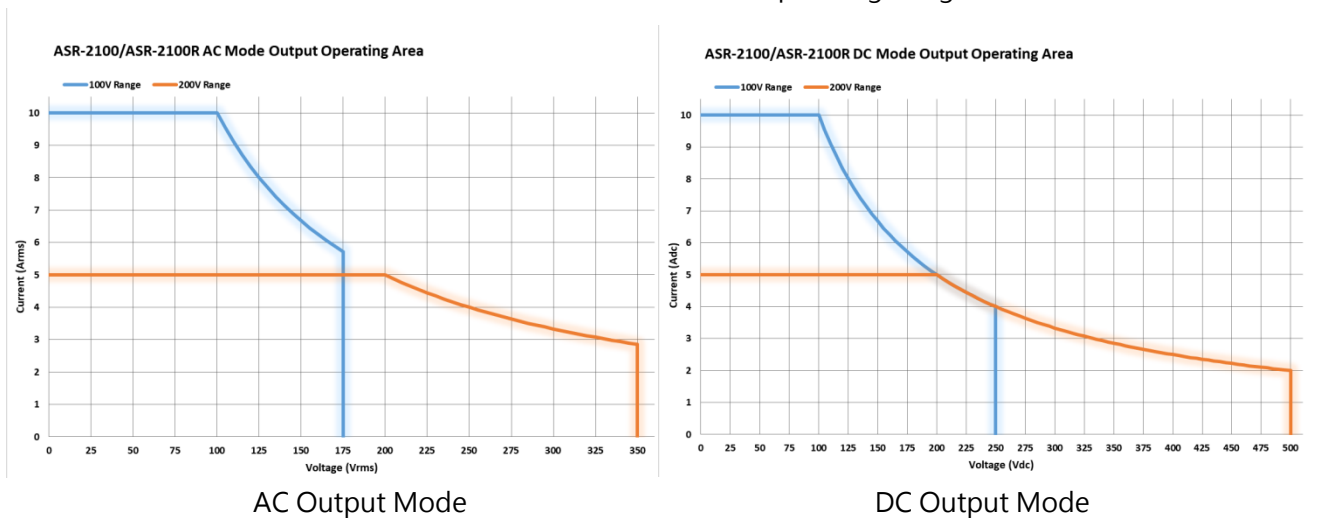
## Operating Mode

Model Name	Power Rating	Max. Output Current	Max. Output Voltage
ASR-2050	500 VA	5 / 2.5 A	350 Vrms / 500 Vdc
ASR-2100	1000 VA	10 / 5 A	350 Vrms / 500 Vdc
ASR-2050R	500 VA	5 / 2.5 A	350 Vrms / 500 Vdc
ASR-2100R	1000 VA	10 / 5 A	350 Vrms / 500 Vdc

The ASR-2000 series is an AC + DC power source that provides not only rated power output for AC output, but also rated power output for DC output. The operation areas are shown below:



ASR-2050/ASR-2050R Operating Range



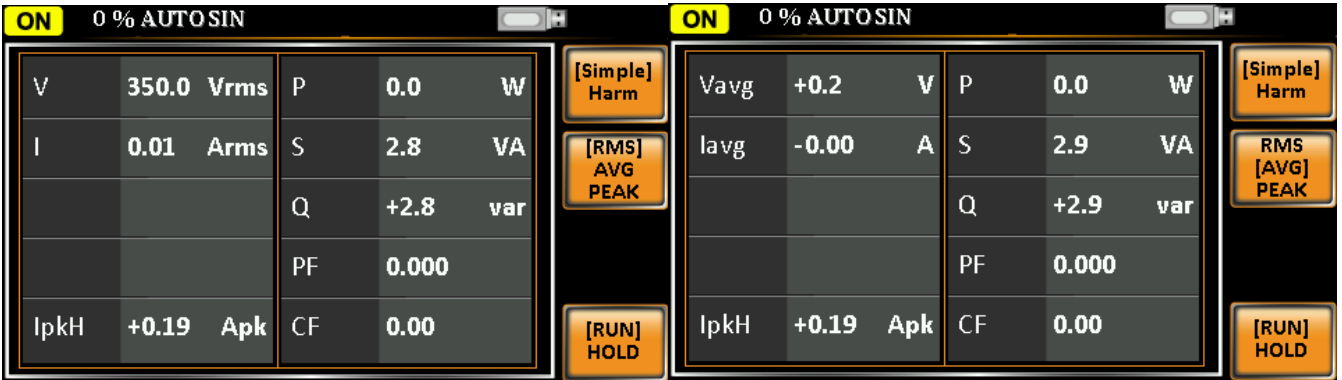
ASR-2100/ASR-2100R Operating Range

*ASR-2000 Programmable AC/DC Power Source*



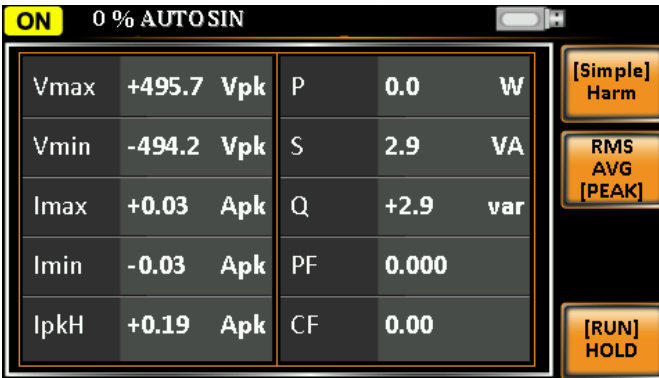
## Measurement Items for ASR-2000 Series

The ASR-2000 series provides users with measurement capabilities including Vrms, Vavg, Vpeak, Irms, Iavg, Ipeak, IpkH, P, S, Q, PF, CF, 40th-order Voltage Harmonic and Current Harmonic. During the power output, the measurement parameters including Vrms/Irms, Vavg/Iavg and Vmax/Vmin/ Imax/ Imin can be switched by users at any time to display the instantaneous calculation reading.

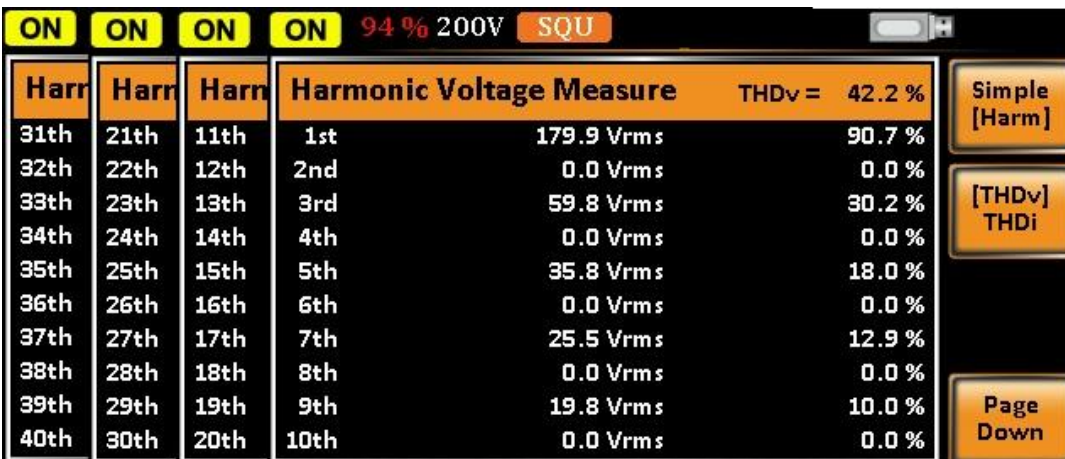


RMS Meas Display

AVG Meas Display



Peak Meas Display



Voltage Harmonic

ON ON ON ON 94 % 200V SQU				THDi = 42.2 %	
Harm	Harm	Harm	Harmonic Current Measure		
31th	21th	11th	1st	4.31 Arms	90.7 %
32th	22th	12th	2nd	0.00 Arms	0.0 %
33th	23th	13th	3rd	1.44 Arms	30.2 %
34th	24th	14th	4th	0.00 Arms	0.0 %
35th	25th	15th	5th	0.86 Arms	18.0 %
36th	26th	16th	6th	0.00 Arms	0.0 %
37th	27th	17th	7th	0.61 Arms	12.8 %
38th	28th	18th	8th	0.00 Arms	0.0 %
39th	29th	19th	9th	0.47 Arms	9.9 %
40th	30th	20th	10th	0.00 Arms	0.0 %

Simple [Harm]

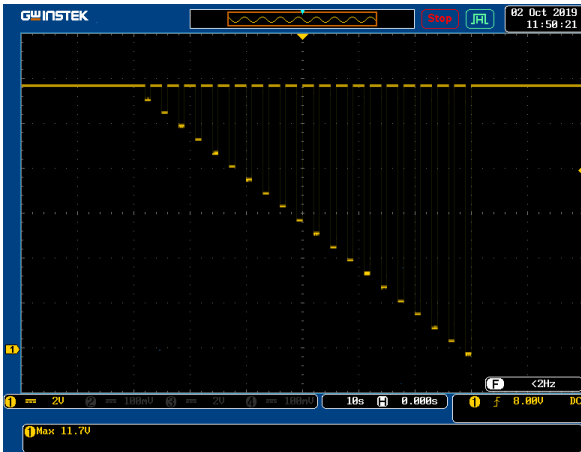
THDv [THDi]

Page Down

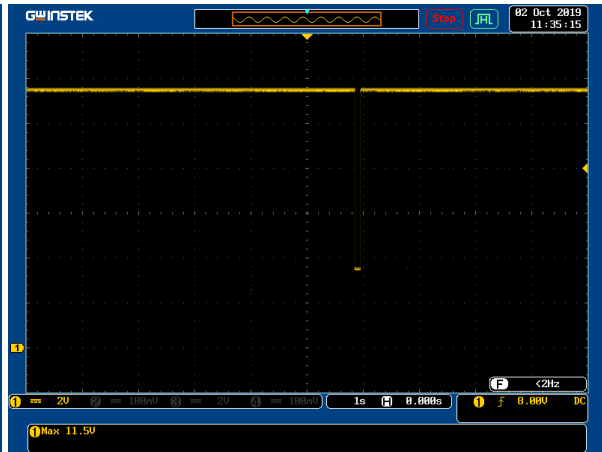
Current Harmonic

## Sequence Mode and Applications

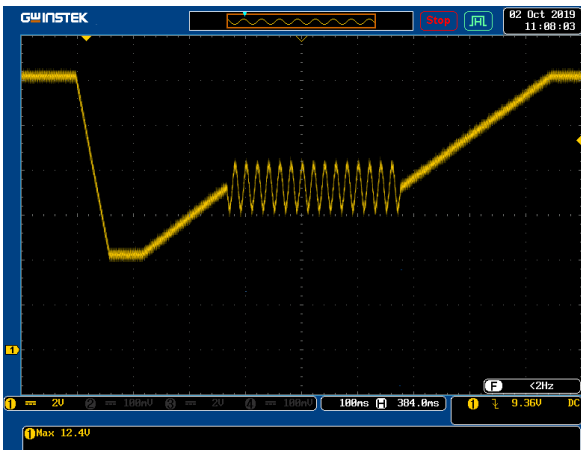
There are 10 sets of Sequence mode and each set has 0~999 steps. The time setting range of each step is 0.0001 ~ 999.9999 seconds. Users can combine multiple sets of steps to generate the desired waveforms, including waveform fallings, surges, sags, changes and other abnormal power line conditions to meet the needs of the test application.



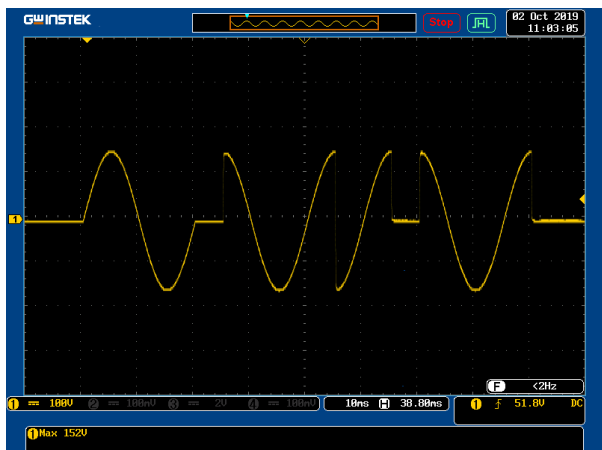
Reset Behavior at Voltage Drop



Momentary Drop in Supply Voltage

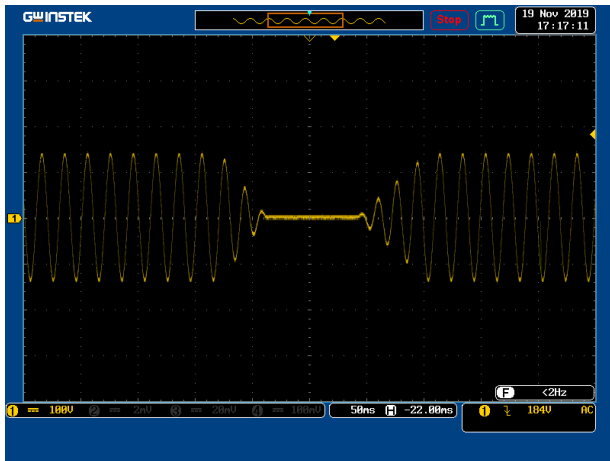


Starting Profile Waveform



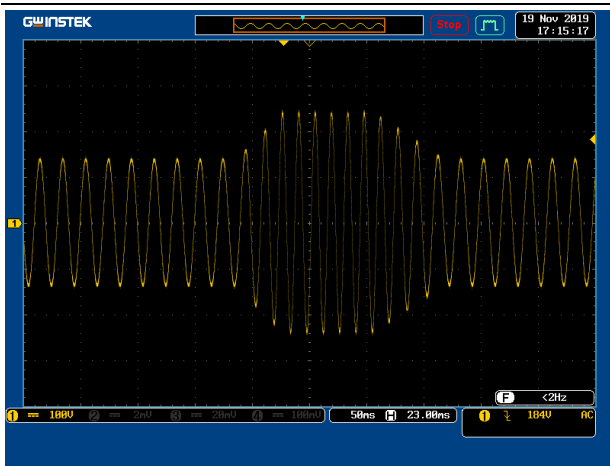
Instantaneous Power Failure

## Simulate Mode

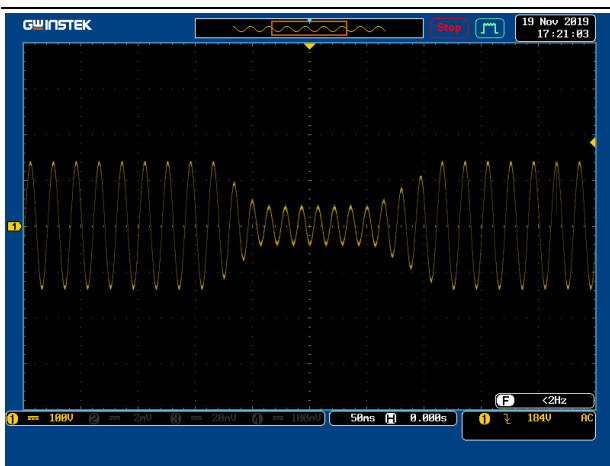


Simulate Mode can quickly simulate different transient waveforms, such as power outage, voltage rise, voltage fall, etc., for engineers to evaluate the impact of transient phenomena on the DUT. Ex: Capacitance durability test.

Power Outage



Voltage Rise

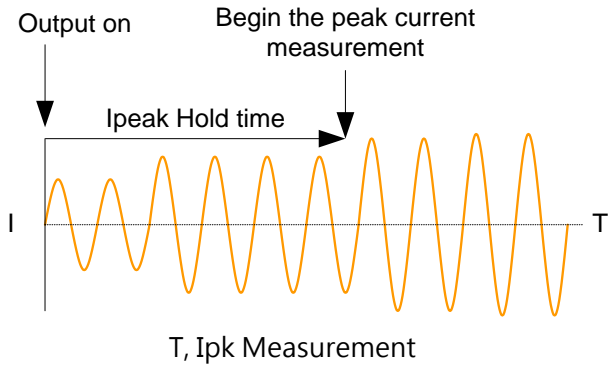


Voltage Fall

*ASR-2000 Programmable AC/DC Power Source*

## T, Ipk Hold & Ipk, Hold functions

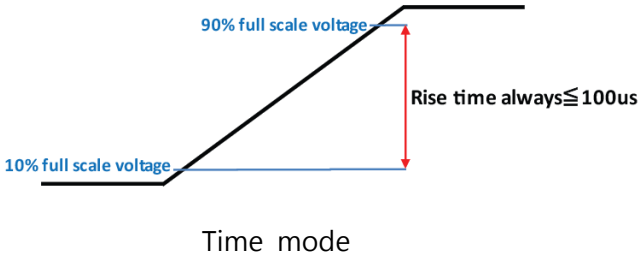
---



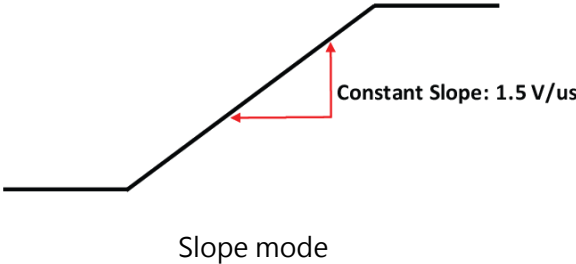
T, Ipk Hold is used to set the delay time after the output (1ms ~ 60,000ms) to capture the Ipeak value and keep the maximum value. The update only functions when the measurement value is greater than the original value. The T, Ipk Hold delay time setting can be used to measure surge current at the power on process of the DUT.

Ipk Hold can be used to measure the transient surge current of the DUT at power on without using an oscilloscope and a current probe.

# Slew Rate Mode



Time mode

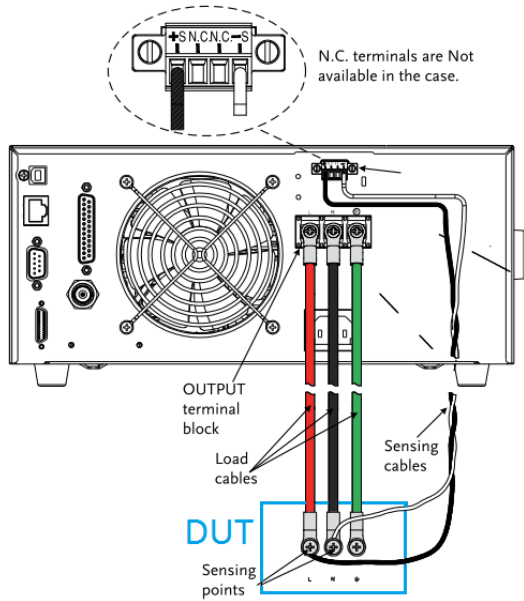


Slope mode

The ASR-2000 series can set the Slew Rate Mode to determine the rise time of the voltage according to the test requirements of the DUT. Slew Rate Mode provides "Time" and "Slope" modes. When setting "Time" mode, ASR-2000 can increase output to 10~90% of the set voltage within  $100\mu s$ ; and when selecting "Slope" mode, ASR-2000 increases output voltage by a fixed rising slope of  $1.5V/\mu s$  until reaching the set voltage value.

In addition, if users decide to self-define the rise time of the output voltage, users can flexibly set the rise time of the ASR-2000 series voltage by editing the Sequence mode.

## Remote Sense Function



Remote Sense Diagram

For high current output applications, the voltage drop caused by large current passing through the load cables will affect the measurement results. The ASR-2000 series provides the remote sense function that can sense the voltage drop of the DUT to the ASR-2000 series and the DUT will be compensated by the ASR-2000 series. The maximum voltage that the remote sense function can compensate is 5% of the output voltage.

## Comparison

### Features, Advantages and Benefits

Features	Advantages	Benefits
Vrms, Vavg, Vpeak, Irms, Iavg, Ipeak, IpkH, P, S, Q, PF, CF, 40th-order Voltage Harmonic and Current Harmonic measurement Functions	Provide complete AC power measurements	Provide the most complete power measurements in AC source of the same category. Even S, CF, and Voltage Harmonic are included.
Sequence mode	Incorporate AC and DC settings to meet user demands for highly complicate waveforms	For users to generate test waveforms according to different needs, including 1) simulate different input power, and 2) generate various test waveforms.
Simulate mode	Simulate various AC power outputs	Convenient for users to quickly generate a variety of abnormal AC power outputs
9 power output modes	The ASR-2000 series voltage output modes can be AC, DC, AC+DC, Power Amplifier, external signal superposition output mode.	Meet user' s different test application requirements with one power source, including AC, DC, signal amplification, and signal superposition.
AC 0 ~ 350.0V DC -500 ~ +500V	ASR-2000 offers a wider range of applications than the AC/DC power sources	Provide AC 350V output to simulate test applications for US single phase voltage

*ASR-2000 Programmable AC/DC Power Source*



Wide power output range	of the same power category from other brands.	AC 277V ± 10%
Remote Sense Function	Compensate for the voltage drop caused by current passing through the load cables, which affects the measurement results	During the measurement process, users do not need to worry about the difference in the measured value due to the change of the current.
Ipk Hold and T, Ipk Hold functions	Measure the surge current during the power on of the DUT	Users can complete the measurement of surge current without oscilloscope and current probe
Universal socket	Applicable to all regional outlets	Users can set and use with plug-in, saving terminal wiring time
ASR-2000 provides sine, square, triangle, and 16 ARB waveforms for user applications.	Users can quickly convert the original output waveform into another output waveform without complicated settings.	Users can quickly apply different test waveforms - test to evaluate the DUT

## Features Comparison

Model			ASR-2000	ASR-2000R	APS-1102A	PCR-500MA	
AC Output	Output Capacity		VA	500 / 1000	500 / 1000	1000	500
	Output Range			175 / 350	175 / 350	155 / 310	155 / 310
	Maximum Output Current	Low	A	5 / 10	5 / 10	10	5
		High	A	2.5 / 5	2.5 / 5	5	2.5
	Frequency		Hz	1.0 - 999.9	1.0 - 999.9	1.0 - 550.0	40.0 - 500.0
Total Harmonic Distortion		%	≤0.5	≤0.5	≤0.5	≤0.5	
DC Output	Output Capacity		W	500 / 1000	500 / 1000	1000	400
	Output Range		Vp-p	±250 / ±500	±250 / ±500	±220 / ±440	±219 / ±438
	Maximum Output Current	Low	A	5 / 10	5 / 10	10	4
High		A	2.5 / 5	2.5 / 5	5	2	
Front Panel	USB A Port			V	V	X	X
	Display			LCD	LCD	LCD	7 Segment display
	Function Keys			V	V	V	X
	Menu Key			V	V	V	X
	Test Key			V	V	V	X
	Preset Key			V	V	V	X
	Scroll wheel			V	V	X	X
	Output Socket	Universal		V	V(option)	V	X
Euro Type			V	V(option)	X	X	
Terminal	External Signal Input			V	V	V	V(opt.)
	External Control I/O			V	V	V	X
Interface	LAN			V	V	X	V
	USB Device			V	V	V	V
	GPIB		Option	V	V	X	V
	RS-232		Option	V	V	X	X
Function	Output Waveform	Sine		V	V	V	V
		Square		V	V	V	V
		Triangle		V	V	V	V
		DC		V	V	V	V
	ON / OFF Phase			V	V	V	V
	Sequence Mode			V	V	V	X
	Simulate Mode			V	V	V	X
	T Ipeak, hold function			V	V	X	X
Power ON Output function			V	V	X	X	
Preset Settings			V	V	X	X	

ASR-2000 Programmable AC/DC Power Source

Measurement	Output Relay Control		V	V	X	X	
	Remote Sensing		V	V	X	X	
	Vrms · Vdc · Vpk		V	V	V	V	
	Irms · Idc · Ipk		V	V	V	V	
	Ipk-hold		V	V	V	X	
	P		V	V	V	V	
	VA · S		V	V	V	X	
	PF		V	V	V	X	
	CF		V	V	X	X	
	Harmonic Voltage		V	V	X	X	
	Harmonic Current		V	V	V	X	
General	CE mark		V	V	V	V	
	Dimensions (W × H × D)	500VA	mm	285 × 124 × 480	213 × 124 × 480	---	213 × 124 × 350
		1000VA	mm	285 × 124 × 480	213 × 124 × 580	258 × 176 × 440	---
	Weight (approximately)	500VA	kg	11	10.5	---	6
1000VA		kg	11	10.5	9.7	---	

V: Support / X: No support

## Specifications

### Input Ratings (AC rms)

Model	ASR-2050/ASR-2050R	ASR-2100/ASR-2100R	
Nominal input voltage	100 Vac to 240 Vac		
Input voltage range	90 Vac to 264 Vac		
Phase	Single phase, Two-wire		
Input frequency range	47 Hz to 63 Hz		
Max. power consumption	800 VA or less	1500 VA or less	
Power factor <sup>*1</sup>	100Vac	0.95 (typ.)	
	200Vac	0.90 (typ.)	
Max. input current	100Vac	8 A	15 A
	200Vac	4 A	7.5 A

\*1. For an output voltage of 100 V/200 V (100V / 200V range), maximum current, and a load power factor of 1.

### AC Mode Output Ratings (AC rms)

Model	ASR-2050/ASR-2050R	ASR-2100/ASR-2100R	
Voltage	Setting Range <sup>*1</sup>	0.0 V to 175.0 V / 0.0 V to 350.0 V	
	Setting Resolution	0.1 V	
	Accuracy <sup>*2</sup>	±(0.5 % of set + 0.6 V / 1.2 V)	
Output phase	Single phase, Two-wire		
Maximum current <sup>*3</sup>	100 V	5 A	10 A
	200 V	2.5 A	5 A
Maximum peak current <sup>*4</sup>	100 V	20 A	40 A
	200 V	10 A	20 A
Power capacity	500 VA	1000 VA	
Frequency	Setting range	AC Mode: 40.00 Hz to 999.9 Hz, AC+DC Mode: 1.00 Hz to 999.9 Hz	
	Setting resolution	0.01 Hz (1.00 to 99.99 Hz), 0.1 Hz (100.0 to 999.9 Hz)	
	Accuracy	For 45 Hz to 65 Hz: 0.01% of set For 40 Hz to 999.9 Hz: 0.02% of set	
	Stability <sup>*5</sup>	± 0.005%	
Output on phase	0.0° to 359.9° variable (setting resolution 0.1°)		
DC offset <sup>*6</sup>	Within ± 20 mV (TYP)		

\*1. 100 V / 200 V range

\*2. For an output voltage of 17.5 V to 175 V / 35 V to 350 V, sine wave, an output frequency of 45 Hz to 65 Hz, no load, DC voltage setting 0V (AC+DC mode) and 23°C ± 5°C

\*3. For an output voltage of 1 V to 100 V / 2 V to 200 V.

Limited by the power capacity when the output voltage is 100 V to 175 V / 200 V to 350 V.

\*4. With respect to the capacitor-input rectifying load. Limited by the maximum current.

*ASR-2000 Programmable AC/DC Power Source*

\*5. For 45 Hz to 65 Hz, the rated output voltage, no load and the resistance load for the maximum current, and the operating temperature.

\*6. In the case of the AC mode and output voltage setting to 0 V.

#### Output Rating for DC Mode

Model		ASR-2050/ASR-2050R	ASR-2100/ASR-2100R
Voltage	Setting Range <sup>*1</sup>	-250 V to +250 V / -500 V to +500 V	
	Setting Resolution	0.1 V	
	Accuracy <sup>*2</sup>	±( 0.5 % of set  + 0.6 V / 1.2 V)	
Maximum current <sup>*3</sup>	100 V	5 A	10 A
	200 V	2.5 A	5 A
Maximum peak current <sup>*4</sup>	100 V	20 A	40 A
	200 V	10 A	20 A
Power capacity		500 W	1000 W

\*1. 100 V / 200 V range

\*2. For an output voltage of -250 V to -25 V, +25 V to +250 V / -500 V to -50 V, +50 V to +500 V, no load, AC voltage setting 0V (AC+DC mode) and 23°C ± 5°C

\*3. For an output voltage of 1.4 V to 100 V / 2.8 V to 200 V.

Limited by the power capacity when the output voltage is 100 V to 250 V / 200 V to 500 V.

\*4. Within 5 ms, Limited by the maximum current.

#### Output Voltage Stability

Model	ASR-2050/ASR-2050R	ASR-2100/ASR-2100R
Line regulation <sup>*1</sup>	±0.2% or less	
Load regulation <sup>*2</sup>	0.15% @45 - 65Hz 0.5% @DC, all other frequencies (0 to 100%, via output terminal)	
Ripple noise <sup>*3</sup>	0.7 Vrms / 1.4 Vrms (TYP)	

\*1. Power source input voltage is 100 V, 120 V, or 230 V, no load, rated output.

\*2. For an output voltage of 75 V to 175 V / 150 V to 350 V, a load power factor of 1, stepwise change from an output current of 0 A to maximum current (or its reverse), using the output terminal on the rear panel.

\*3. For 5 Hz to 1 MHz components in DC mode using the output terminal on the rear panel.

#### Output Voltage Waveform Distortion Ratio, Output Voltage Response Time, Efficiency

Model	ASR-2050/ASR-2050R	ASR-2100/ASR-2100R
Output voltage waveform distortion ratio <sup>*1</sup>	0.5 % or less	
Output voltage response time <sup>*2</sup>	100 us (TYP)	
Efficiency <sup>*3</sup>	70 % or more	

\*1. At an output voltage of 50 V to 175 V / 100 V to 350 V, a load power factor of 1, and in AC and AC+DC mode.

\*2. For an output voltage of 100 V / 200 V, a load power factor of 1, with respect to stepwise change from an output current of 0 A to the maximum current (or its reverse). 10% ~ 90% of output voltage

\*3. For AC mode, at an output voltage of 100 V / 200 V, maximum current, and load power factor of 1 and sine wave only.

### Measured Value Display

All accuracy of the measurement function is indicated for 23 °C±5 °C.

Model			ASR-2050/ASR-2050R	ASR-2100/ASR-2100R
Voltage	RMS, AVG value <sup>*1</sup>	Resolution	0.1 V	
		Accuracy <sup>*2</sup>	For 45 Hz to 65 Hz and DC: ±(0.5 % of reading + 0.3 V / 0.6 V) For 40 Hz to 999.9 Hz: ±(0.7 % of reading + 0.9 V / 1.8 V)	
	PEAK value	Resolution	0.1 V	
		Accuracy	For 45 Hz to 65 Hz and DC: ±( 2 % of reading  + 1 V / 2 V)	
Current	RMS, AVG value	Resolution	0.01 A	
		Accuracy <sup>*3</sup>	For 45 Hz to 65 Hz and DC: ±(0.5 % of reading + 0.02 A / 0.02 A) For 40 Hz to 999.9 Hz: ±(0.7 % of reading + 0.04 A / 0.04 A)	For 45 Hz to 65 Hz and DC: ±(0.5 % of reading + 0.04 A / 0.02 A) For 40 Hz to 999.9 Hz: ±(0.7 % of reading + 0.08 A / 0.04 A)
	PEAK value	Resolution	0.1 A	
		Accuracy <sup>*4</sup>	For 45 Hz to 65 Hz and DC: ±( 2 % of reading  + 0.2 A / 0.1 A)	For 45 Hz to 65 Hz and DC: ±( 2 % of reading  + 0.2 A / 0.1 A)
Power	Active (W)	Resolution	0.1 / 1 W	
		Accuracy <sup>*5</sup>	±(2 % of reading + 0.5 W)	±(2 % of reading + 1 W)
	Apparent (VA)	Resolution	0.1 / 1 VA	
		Accuracy <sup>*5*6</sup>	±(2 % of reading + 0.5 VA)	±(2 % of reading + 1 VA)
	Reactive (VAR)	Resolution	0.1 / 1 VAR	
		Accuracy <sup>*5*7</sup>	±(2 % of reading + 0.5 VAR)	±(2 % of reading + 1 VAR)
Load power factor		Range	0.000 to 1.000	
		Resolution	0.001	
Load crest factor		Range	0.00 to 50.00	
		Resolution	0.01	
Harmonic voltage Effective value (rms) Percent (%) (AC-INT and 50/60 Hz only)		Range	Up to 40th order of the fundamental wave	
		Full Scale	175 V / 350 V, 100%	
		Resolution	0.1 V, 0.01%	
		Accuracy <sup>*8</sup>	Up to 20th ±(0.2 % of reading + 0.5 V / 1 V) 20th to 40th ±(0.3 % of reading + 0.5 V / 1 V)	
Harmonic current Effective value (rms) Percent (%)		Range	Up to 40th order of the fundamental wave	
		Full Scale	5 A / 2.5 A, 100%	10 A / 5 A, 100%
		Resolution	0.01 A, 0.01%	

(AC-INT and 50/60 Hz only)	Accuracy <sup>*3</sup>	Up to 20th ±(1 % of reading + 0.1 A / 0.05 A)	Up to 20th ±(1 % of reading + 0.2 A / 0.1 A)
		20th to 40th ±(1.5 % of reading + 0.1 A / 0.05 A)	20th to 40th ±(1.5 % of reading + 0.2 A / 0.1 A)

\*1. The voltage display is set to RMS in AC/AC+DC mode and AVG in DC mode.

\*2. AC mode: For an output voltage of 17.5 V to 175 V / 35 V to 350 V and 23 °C ± 5 °C.

DC mode: For an output voltage of 25 V to 250 V / 50 V to 500 V and 23 °C ± 5 °C.

\*3. An output current in the range of 5 % to 100 % of the maximum current, and 23 °C ± 5 °C.

\*4. An output current in the range of 5 % to 100 % of the maximum peak current in AC mode,

an output current in the range of 5 % to 100 % of the maximum instantaneous current in DC mode, and 23 °C ± 5 °C.

The accuracy of the peak value is for a waveform of DC or sine wave

\*5. For an output voltage of 50 V or greater, an output current in the range of 10 % to 100 % of the maximum current,

DC or an output frequency of 45 Hz to 65 Hz, and 23 °C ± 5 °C.

\*6. The apparent and reactive powers are not displayed in the DC mode.

\*7. The reactive power is for the load with the power factor 0.5 or lower.

\*8. An output voltage in the range of 17.5 V to 175 V / 35 V to 350 V and 23 °C ± 5 °C.

#### Others

Model		ASR-2050/ASR-2050R	ASR-2100/ASR-2100R
Protections		OCP, OTP, OPP, FAN Fail	
Display		TFT-LCD, 4.3 inch	
Memory Function		10 sets for Store and Recall settings	
Arbitrary Wave	Number of memories	16 (nonvolatile)	
	Waveform length	4096 words	

#### General Specifications

Model			ASR-2050/ASR-2050R	ASR-2100/ASR-2100R
Interface	Standard	USB	Type A: Host, Type B: Slave, Speed: 1.1/2.0, USB-CDC	
		LAN	MAC Address, DNS IP Address, User Password, Gateway IP Address, Instrument IP Address, Subnet Mask	
		EXT Control	External Signal Input External Control I/O	
	Factory Optional	GPIB	SCPI-1993, IEEE 488.2 compliant interface	
		RS-232C	Complies with the EIA-RS-232 specifications	
Insulation resistance	Between input and chassis, output and chassis, input and output		500 Vdc, 30 MΩ or more	
Withstand voltage	Between input and chassis, output and chassis, input and output		1500 Vac, 1 minute	
EMC			EN 61326-1 (Class A) EN 61326-2-1/-2-2 (Class A) EN 61000-3-2 (Class A, Group 1)	

		EN 61000-3-3 (Class A, Group 1) EN 61000-4-2/-4-3/-4-4/-4-5/-4-6/-4-8/-4-11 (Class A, Group 1) EN 55011 (Class A, Group1)
<b>Safety</b>		EN 61010-1
<b>Environment</b>	<b>Operating environment</b>	Indoor use, Overvoltage Category II
	<b>Operating temperature range</b>	0 °C to 40 °C
	<b>Storage temperature range</b>	-10 °C to 70 °C
	<b>Operating humidity range</b>	20 % to 80 % RH (no condensation)
	<b>Storage humidity range</b>	90 % RH or less (no condensation)
	<b>Altitude</b>	Up to 2000 m
<b>Dimensions (mm)</b>		ASR-2000: 285(W)×124(H)×480(D) (not including protrusions) ASR-2000R: 213(W)×124(H)×480(D) (not including protrusions)
<b>Weight</b>		ASR-2000: Approx. 11.5 kg ASR-2000R: Approx. 10.5 kg

Should you have any questions on the ASR-2000 series announcement, please don't hesitate to contact us.

<p>Global Headquarters  <b>GOOD WILL INSTRUMENT CO., LTD.</b>          No.7-1, Jhongsing Road, Tucheng Dist., New Taipei City 236, Taiwan          T +886-2-2268-0389 F +886-2-2268-0639          E-mail: marketing@goodwill.com.tw</p> <p>China Subsidiary  <b>GOOD WILL INSTRUMENT (SUZHOU) CO., LTD.</b>          No. 521, Zhujiang Road, Snd, Suzhou Jiangsu 215011 China          T +86-512-6661-7177 F +86-512-6661-7277</p> <p>Malaysia Subsidiary  <b>GOOD WILL INSTRUMENT (SEA) SDN. BHD.</b>          No. 1-3-18, Elit Avenue, Jalan Mayang Pasir 3,          11950 Bayan Baru, Penang, Malaysia          T +604-6111122 F +604-6115225</p> <p>Europe Subsidiary  <b>GOOD WILL INSTRUMENT EURO B.V.</b>          De Run 5427A, 5504DG Veldhoven, THE NETHERLANDS          T +31(0)40-2557790 F +31(0)40-2541194</p>	<p>U.S.A. Subsidiary  <b>INSTEK AMERICA CORP.</b>          5198 Brooks Street Montclair, CA 91763, U.S.A.          T +1-909-399-3535 F +1-909-399-0819</p> <p>Japan Subsidiary  <b>TEXIO TECHNOLOGY CORPORATION.</b>          7F Towa Fudosan Shin Yokohama Bldg., 2-18-13 Shin          Yokohama, Kohoku-ku, Yokohama, Kanagawa,          222-0033 Japan          T +81-45-620-2305 F +81-45-534-7181</p> <p>Korea Subsidiary  <b>GOOD WILL INSTRUMENT KOREA CO., LTD.</b>          Room No.503, Gyeonginro 775 (Mullae-Dong 3Ga,          Ace Hightech-City B/D 1Dong), Yeongduengpo-Gu,          Seoul 150093, Korea.          T +82-2-3439-2205 F +82-2-3439-2207</p> <p>India Subsidiary  <b>GW INSTEK INDIA LLP.</b>          No.2707/B&amp;C, 1st Floor UNNATHI Building,          E-Block, Sahakara Nagar, Bengaluru-560 092, India          T +91-80-6811-0600 F +91-80-6811-0626</p>	 <p><b>Simply Reliable</b></p> <div style="display: flex; justify-content: space-around;">    </div> <div style="display: flex; justify-content: space-around; font-size: small;"> <span>Website</span> <span>Facebook</span> <span>LinkedIn</span> </div>
---	--	--

ASR-2000 Programmable AC/DC Power Source