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TECHNICAL PRODUCT INFORMATION

Test & measurement instruments
high - quality
moderate prices
excellent precision

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ASR-3000 Series

Programmable AC/DC Power Source

FEATURES

- Output Rating: AC 0 ~ 400 Vrms, DC 0 ~ \pm 570 V
- Output Frequency up to 999.9Hz (5kHz for ASR-3400HF only)
- 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
- OCP, OPP, OTP, AC Fail Detection and Fan Fail Alarm
- Support Arbitrary Waveform Function
- Output Capacity: 2kVA/3kVA/4kVA
- Customized Phase Angle for Output On/Off
- Sequence and Simulation Function(up to 10 sets)
- Interface(std): USB, LAN, RS-232, GPIB
- 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



The ASR-3000 Series is an AC+DC power source, featuring high-speed DC voltage rising and falling time (\leq 100us). There are four models of the series: ASR-3200(2kVA), ASR-3300(3kVA) and ASR-3400/3400HF (4kVA). The series can provide rated power output during AC output and DC output. Ten ASR-3000 Series 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 superimposition mode (AC-DC ADD Mode), 7) External AC/DC signal superimposition mode (AC+DC-ADD Mode), 8) External AC signal synchronization mode (AC-SYNC Mode)10) External DC voltage control of AC output mode(AC-VCA).

ASR-3000 Series is ideal for the development of On-board Chargers, Server Powers, LED modules, AC Motors, AC Fans, UPS and various electronic components, as well as for testing applications of automotive electrical equipment and home appliances.

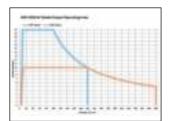
The ASR-3000 Series provides users with waveform output capabilities including 1) Sequence mode generates waveform fallings, surges, sags, changes and other abnormal power line conditions; 2) Arbitrary waveform function allows users to store/upload userdefined waveforms; and 3) Simulate mode simulates power outage, voltage rise, voltage fall, and frequency variations. When the ASR-3000 Series power source outputs, it can also measure Vrms, Vavg, Vpeak, Irms, Iavg, Ipeak, IpkH, P, S, Q, PF, CF, 100th-order Voltage Harmonic and Current Harmonic. In addition, the remote sensing function ensures accurate voltage output, and the Customized Phase Angle for Output On/Off function can set the start and end angles of the voltage output according to the test requirements. The protection limits of V-Limit, Ipeak-Limit and F-Limit can be set according to user requirements. Over voltage limit, OCP, OPP will protect the DUT during the output process. The Fan Fail Alarm function and the AC fail alarm function are also designed in the ASR-3000 Series.

The front panel of the ASR-3000 Series provides a universal socket or a European socket, which allows users to plug and use so as to save wiring time. Since the power socket specification has a maximum current of 15A, the rear panel of ASR-3000 Series is designed with a current circuit breaker. When the socket current is greater than 15A, it will automatically open the circuit to protect users. The ASR-3000 Series supports I/O interface and is standardly equipped with USB, LAN, External I/O, RS-232C and GPIB.

CE RS-232 USB LAN GPIB Ext I/O 1. Air Inlet 2. LCD Screen 3. Display Mode Select key 4. Function Keys 5. Scroll Wheel 6. Output Key 7. Hardcopy Key 8. Lock/Unlock Button 9. USB Interface Connector(A Type) 10. Power Switch Button 11. Output Socket 12. External I/O Connector 13. GPIB Connector 14. Remote Sensing Input Terminal 15. Output Terminal 16. Line Input 17. External Signal Input/External Synchronized Signal Input 18. RS-232C Connector 19. LAN Connector 20. USB Interface Connector (B Type) 21. Circuit Breaker

PANEL INTRODUCTION

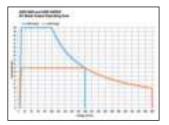
OPERATING AREA FOR ASR-3000 SERIES

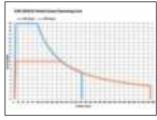


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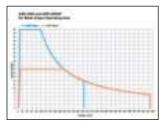
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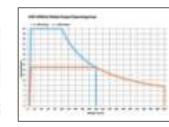
AC Output for ASR-3200

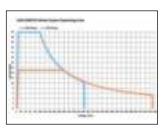




DC Output for ASR-3200







AC Output for ASR-3300

DC Output for ASR-3300

Model Name	Power Rating	Max. Output Current	Max. Output Voltage
ASR-3200	2k VA	20 / 10 A	400 Vrms / ±570 Vdc
ASR-3300	3k VA	30 / 15 A	400 Vrms / ±570 Vdc
ASR-3400	4k VA	40 / 20 A	400 Vrms / ±570 Vdc
ASR-3400HF	4k VA	40 / 20 A	400 Vrms / ±570 Vdc

The ASR-3000 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.

AC Output for ASR-3400/3400HF

DC Output for ASR-3400/3400HF

MEASUREMENT ITEMS FOR ASR-3000 SERIES



RMS Meas Display



AVG Meas Display



Peak Meas Display

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100	-		104	I III Arms	6.0%	2

Current Harmonic

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.

Voltage Harmonic

The ASR-3000 Series provides users with measurement capabilities including Vrms, Vavg, Vpeak, Irms, Iavg, Ipeak, IpkH, P, S, Q, PF, CF, 100th-order Voltage Harmonic and Current Harmonic. During the power output, the measurement

SEQUENCE MODE AND BUILT-IN ISO-16750-2 WAVEFORMS



SEQ6: Momentary Drop in Supply Voltage



SEQ7: Reset Behavior at Voltage Drop with 12V System

The sequence mode provides editable 10 sets of SEQ0~SEQ9, each set has 0~999 steps, each step time setting range is 0.0001~999.9999 seconds. Users can combine multiple sets of steps to generate the required waveforms, including waveform falling, surges, sags and other abnormal power line conditions to meet the needs of the test applications.



SEQ8: Starting Profile Waveform



In addition, ASR-3000 Series also built in common ISO-16750-2 test waveforms in the Sequence Mode preset waveforms, including Momentary Drop in Supply Voltage built in at SEQ6, Reset Behavior at Voltage Drop with 12V system built in at SEQ7, Starting Profile Waveform built in at SEQ8 and Load Dump with Tr_10ms, and Td_40ms built in at SEQ9.

SIMULATE MODE D







Voltage Fall

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

FUNCTION WAVEFORM (ARBITRARY EDIT) MODE



in seven categories, allowing users to quickly simulate different AC voltage waveforms. Adjust the desired waveform type directly

through the panel (displayed synchronously on the screen),

ASR-3000 Series provides more than 20,000 waveform combinations then the waveform is loaded into the ARB 1~16 waveform register through the access procedures, and return to the main menu output mode to perform ARB Waveform output.

PC SOFTWARE

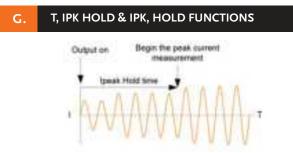




Basic Controller

Sequence Mode

The ASR-3000 Series software includes basic settings, the Simulate Mode, the Sequence Mode, Data Log and the arbitrary waveform editing function. Users can directly set output voltage, frequency, start/stop phase on ASR-3000 Series through the software. The Simulate Mode can quickly simulate different transient waveforms such as power outage, voltage rise, voltage fall... etc.



T, Ipk Measurement

T, Ipk Hold is used to set the delay time after the output (1ms \sim 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.

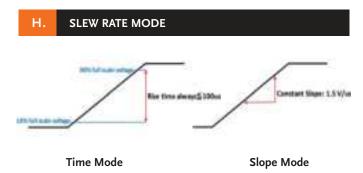




ARB Waveform Edit

The Waveform is Observed with DSO

The Sequence Mode can edit the editing parameters read back from ASR-3000 Series, or directly edit the parameters and control ASR-3000 Series to output waveforms according to the set sequence. The arbitrary waveform editing function not only combines various waveforms, including sine waves, square waves, triangle waves, and noise waveforms, but also allows uses to draw arbitrary waveforms and output them.



The ASR-3000 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-3000 Series can increase output to 10~90% of the set voltage within 100 $\mu s;$ and when selecting "Slope" mode, ASR-3000 Series increases output voltage by a fixed rising slope of 1.5V/µs 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-3000 Series voltage by editing the Sequence mode.

			ASR-3200	ASB 2200	ASR-3400	
INPUT RATING (AC)			A3R-32VU	ASR-3300	Nor-Jak-	ASR-3400HF
NOMINAL INPUT VOLTAGE		200 Vac to 240 Vac				
INPUT VOLTAGE RANGE		180 Vac to 264 Vac				
PHASE NOMINAL INPUT FREQUENCY		Single phase, Two-wire 50 Hz to 60 Hz				
INPUT FREQUENCY	RANGE		47 Hz to 63 Hz			
MAX. POWER CONSU	JMPTION	2001/	2500 VA or less	3750 VA or less	5000 VA or less	5000 VA or less
POWER FACTOR *1 MAX. INPUT CURREN	π	200Vac 200Vac	0.95 (TYP) 15 A	22.5 A	30 A	30 A
*1. For an output voltage of 10	0 V / 200 V (100V / 200V range), maximum current, and a load po				
AC MODE OUTPUT R	ATINGS (AC rms)	1				
VOLTAGE		Setting Range " Setting Resolution	0.0 V to 200.0 V / 0.0 V to 400.0 V 0.1 V			
		Accuracy *2	±(1 % of set + 1 V / 2 V)			
OUTPUT PHASE	-		Single phase, Two-wire			
MAXIMUM CURRENT	Г ^{*3}	100 V 200 V	20 A 10 A	30 A 15 A	40 A 20 A	40 A 20 A
MAXIMUM PEAK CUI	RRENT *4	100 V	120 A	180 A	240 A	160 A
		200 V	60 A	90 A	120 A	80 A
LOAD POWER FACTO POWER CAPACITY	DR		0 to 1 (leading phase or lagging phase 2000 VA	se) 3000 VA	4000 VA	4000 VA
FREQUENCY		Setting Range	AC Mode: 40.0 Hz to 999.9 Hz,	3000 VA	4000 VA	AC Mode: 40.0 Hz to 5000 Hz
			AC+DC Mode: 1 Hz to 999.9 Hz	AC+DC Mode: 1 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)	0.01 Hz (1.00 to 99.99 Hz), 0.1 Hz (100.0 to 999.9 Hz)		
		Accuracy Stability *5	0.02% of set (23 °C ± 5 °C) ± 0.005%			
OUTPUT ON PHASE			0° to 359° variable (setting resolutio	n 1°)		
*1. 100 V / 200 V range.			Within ± 20 mV (TYP)			
*3. For an output voltage of 1 \ If there is the DC superimpo *4. With respect to the capacito	/ to 100 V / 2 V to 200 V. Limit osition, the current of AC+DC m or-input rectifying load. Limited ed output voltage, no load and and $23^{\circ}C \pm 5^{\circ}C$.	node satisfies the maximum currer I by the maximum current.	In the log in the 2 C C C C C C C C C C C C C C C C C C	; temperature, the maximum current will be decrease.		
VOLTAGE		Setting Range *1	-285 V to +285 V / -570 V to +570 V			
		Setting Resolution	0.1 V			
MAXIMUM CURRENT	. *3	Accuracy ⁺² 100 V	±(1 % of set + 1 V / 2 V) 20 A	30 A	40 A	40 A
MAXIMUM CURRENT		200 V	10 A	15 A	20 A	20 A
MAXIMUM PEAK CUP	RRENT *4	100 V	120 A	180 A	240 A	160 A
POWER CAPACITY		200 V	60 A 2000 W	90 A 3000 W	120 A 4000 W	80 A 4000 W
		V / -570 V to -57 V, +57 V to +570 imited by the power capacity when	the output voltage is 100 V to 250 V / 200 V to 500 V.			
*4. Limited by the maximum cu OUTPUT VOLTAGE S LINE REGULATION	urrent. TABILITY			terminal)		
*4. Limited by the maximum cu OUTPUT VOLTAGE S LINE REGULATION * LOAD REGULATION RIPPLE NOISE *3	urrent. TABILITY *2	imited by the power capacity when	the output voltage is 100 V to 250 V / 200 V to 500 V. 0.2% or less	terminal)		
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⁴⁴ Limited by the maximum or OUTPUT VOLTAGE S LINE REGULATION ⁴⁷ LOAD RECULATION ⁴⁷ 10. Downer source input voltage ⁴³ . For S Hz to 1 MHz compor OUTPUT VOLTAGE N TOTAL HARMONIC C OUTPUT VOLTAGE R EFFICIENCY ⁴⁵ ⁴¹ . At an output voltage of 50 V ⁴² . For an output voltage of 50 V ⁴³ . For X - mds 4 an output voltage of 50 V ⁴³ . For X - mds 4 an output voltage of 50 V ⁴³ . For X - mds 4 an output voltage of 50 V ⁴³ . For X - mds 4 an output voltage of 50 V ⁴³ . For X - mds 4 an output voltage of 50 V ⁴³ . For X - mds 4 an output voltage of 50 V ⁴³ . For X - mds 4 an output voltage of 50 V ⁴³ . For X - mds 4 an output voltage of 50 V ⁴³ . For X - mds 4 an output voltage of 50 V ⁴³ . For X - mds 4 an output voltage of 50 V ⁴³ . For X - mds 4 an output voltage of 50 V ⁴³ . For X - mds 4 an output voltage of 50 V ⁴³ . For X - mds 4 an output voltage of 50 V ⁴³ . For X - mds 4 an output voltage of 50 V ⁴³ . For X - mds 4 an output voltage of 50 V ⁴³ . For X - mds 4 an output voltage of 50 V ⁴³ . For X - mds 4 an output voltage of 50 V ⁴³ . For X - mds 4 an output voltage of 50 V ⁴³ . For X - mds 4 an output voltage of 50 V ⁴³ . For X - mds 4 an output voltage of 50 V ⁴³ . For X - mds 4 an output voltage of 50 V ⁴⁴ . For X - mds 4 an output voltage of 50 V ⁴⁴ . For X - mds 4 an output voltage of 50 V ⁴⁴ . For X - mds 4 an output voltage of 50 V ⁴⁴ . For X - mds 4 an output voltage of 50 V ⁴⁴ . For X - mds 4 an output voltage of 50 V ⁴⁴ . For X - mds 4 an output voltage of 50 V ⁴⁴ . For X - mds 4 an output voltage 50 V ⁴⁴ . For X - mds 4 an output voltage 50 V ⁴⁴ . For X - mds 4 an output voltage 50 V ⁴⁴ . For X - mds 4 an output voltage 50 V ⁴⁴ . For X - mds 4 an output voltage 50 V ⁴⁴ . For X - mds 4 an output voltage 50 V ⁴⁴ . For X - mds 4 an output voltage 50 V ⁴⁴ . For X - mds 4 an output voltage 50 V ⁴⁴ . For X - mds 4 an output voltage 50 V ⁴⁴ . For X - mds 4 an output voltage 50 V ⁴⁴ . For X - mds 4 an output voltage 50 V ⁴⁴ . For X - mds 4 an output voltage 50	urrent. TABILITY *2 is 200 V, 220 V, or 240 V, no 16 0 V to 200 V / 200 V to 400 V, a ments in DC mode using the out (AVEFORM DISTORTION DISTORTION(THD) ESPONSE TIME *2 /* to 200 V / 100 V to 400 V, a 104 ge of 100 V / 200 V, a load power factor outlage of 100 V / 200 V, a load power factor 200, maxim	imited by the power capacity when ad, rated output. Ioad power factor of 1, stepwise c tput terminal on the rear panel. ON RATIO, OUTPUT VO and power factor of 1, and in AC m r of 1, with respect to stepwise chan m current, and load power factor Resolution	be output voltage is 100 V to 250 V / 200 V to 500 V. 0.29% or less 0.55% or less (0 to 100%, via output 1 Vrms / 2 Vrms (TYP) hange from an output current of 0 A to maximum currer LTACE RESPONSE TIME, EFFICIENCY < 0.2% @ 50/60Hz	nt (or its reverse), using the output terminal on the rear p	unel.	< 0.5% @<500Hz < 1.0% @500.1Hz~2000Hz
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⁴⁴ Limited by the maximum or OUTPUT VOLTAGE S LINE REGULATION ¹⁷ LOAD REGULATION ¹⁷ RIPPLE NOISE ¹⁵ ⁴² . For an output voltage of 10 ³³ . For 3 Hz to 1 MHz compone OUTPUT VOLTAGE W TOTAL HARMONIC C OUTPUT VOLTAGE R EFFICIENCY ¹³ ⁴¹ . At an output voltage of 50 ⁴² . For an output voltage of 50 ⁴² . For an output voltage of 50 ⁴³ . For AC mode, at an output MEASURED VALUE D	urrent. TABILITY *2 is 200 V, 220 V, or 240 V, no lo 0 V to 200 V / 200 V to 400 V, a To Exponse Time *2 XAVEFORM DISTORTION(THD) *1 ESPONSE TIME *2 / to 200 V / 100 V to 400 V, a load power factor Voltage of 100 V / 200 V, maxin ISPLAY	Imited by the power capacity when ad, rated output. Ioad power factor of 1, stepswise c tput terminal on the rear panel. ON RATIO, OUTPUT VO ad power factor of 1, and in AC m r of 1, with respect to stepwise cha num current, and load power facto Resolution Resolution Resolution Resolution	whe output voltage is 100 V to 250 V / 200 V to 500 V. 0.2% or less 0.5% or less (0 to 100%, via output 1 Vrms / 2 Vrms (TYP) hange from an output current of 0 A to maximum currer LTACE RESPONSE TIME, EFFICIENCY < 0.2% @50/60Hz	ent (or its reverse), using the output terminal on the rear p ent (or its reverse), ent (or its reverse), 6 of reading + 0.5 V / 1 V) freading + 1 V / 2 V)	anel.	< 0.5% @<500Hz < 1.0% @500.1Hz~2000Hz
⁴⁴ Limited by the maximum of OUTPUT VOLTAGE S LINE REGULATION ⁴⁷ (LOAD REGULATION ⁴⁷) ⁴⁷	Internet TABILITY TABILITY Is 200 V, 220 V, or 240 V, no Io 0 V to 200 V / 200 V to 400 V, a Io C mode using the out IAVEFORM DISTORTION ISSTORTION(THD) ESPONSE TIME V / 200 V, 100 V to 400 V, a Io V / 200 V, a load power factor V / 200 V / 200 V, a load power factor V / 200 V / 200 V, a load power factor V / 200 V / 200 V, a load power factor V / 200 V / 200 V / 200 V, a load power factor V / 200 V / 200 V / 200 V / 200 V / 20	Imited by the power capacity when ad, rated output. Ioad power factor of 1, stepwise c put terminal on the rear panel. ON RATIO, OUTPUT VO ad power factor of 1, and in AC m of 1, with respect to stepwise cha num current, and load power factor f Resolution Accuracy Resolution Accuracy	0.2% or less 0.5% or less 0.0% or long <0.2% @500/bHz	ent (or its reverse), using the output terminal on the rear p ent (or its reverse), ent (or its reverse), 6 of reading + 0.5 V / 1 V) freading + 1 V / 2 V)	unel.	< 0.5% @<500Hz < 1.0% @500.1Hz~2000Hz
⁴⁴ Limited by the maximum or OUTPUT VOLTAGE S LINE REGULATION ¹⁷ LOAD REGULATION ¹⁷ RIPPLE NOISE ¹⁵ ⁴² . For an output voltage of 10 ³³ . For 3 Hz to 1 MHz compone OUTPUT VOLTAGE W TOTAL HARMONIC C OUTPUT VOLTAGE R EFFICIENCY ¹³ ⁴¹ . At an output voltage of 50 ⁴² . For an output voltage of 50 ⁴² . For an output voltage of 50 ⁴³ . For AC mode, at an output MEASURED VALUE D	Arrent. TABILITY TABILITY TABILITY TO A Constrain the second se	Imited by the power capacity when ad, rated output. Ioad power factor of 1, stepswise c tput terminal on the rear panel. ON RATIO, OUTPUT VO ad power factor of 1, and in AC m r of 1, with respect to stepwise cha num current, and load power facto Resolution Resolution Resolution Resolution	be output voltage is 100 V to 250 V / 200 V to 500 V. 0.2% or less 0.5% or less (0 to 100%, via output 1 Vrms / 2 Vrms (TYP) hange from an output current of 0 A to maximum currer LTAGE RESPONSE TIME, EFFICIENCY < 0.2% @50/60Hz	at (or its reverse), using the output terminal on the rear p ent (or its reverse).	For 45 Hz to 65 Hz and DC: ±(0.5 % of reading+0.2 A/0.1 A) For all other frequencies:	< 0.5% @<500Hz < 1.0% @500.1Hz~2000Hz
⁴⁴ Limited by the maximum of OUTPUT VOLTAGE S LINE REGULATION ⁴⁷ LOAD REGULATION ⁴⁷ 1. Dever source input voltage ⁴⁷ 1 ⁴³ . Por State 1 MHz compor OUTPUT VOLTAGE W TOTAL HARMONIC D OUTPUT VOLTAGE R EFFICIENCY ⁴³ 1 ⁴³ . As no output voltage of 10 ⁴³ . For AC Mode, at an output MEASURED VALUE D VOLTAGE	Internet TABILITY TABILITY Is 200 V, 220 V, or 240 V, no Io 0 V to 200 V / 200 V to 400 V, a Io C mode using the out IAVEFORM DISTORTION ISSTORTION(THD) ESPONSE TIME V / 200 V, 100 V to 400 V, a Io V / 200 V, a load power factor V / 200 V / 200 V, a load power factor V / 200 V / 200 V, a load power factor V / 200 V / 200 V, a load power factor V / 200 V / 200 V / 200 V, a load power factor V / 200 V / 200 V / 200 V / 200 V / 20	Imited by the power capacity when had, rated output: load power factor of 1, stepwise c oN RATIO, OUTPUT VC had power factor of 1, and in AC m of 1, with respect to stepwise cha num current, and load power fact factor factor of 1, and in AC m of 1, with respect to stepwise cha current of a current factor factor of 1, and in AC m of 1, stepwise cha current of the step in the s	0.2% or less 0.5% or less 0.7% or less 0.7% or less 0.7% or less 0.7% or less 0.1% 0.2% @50/60Hz < 0.5% @500.1Hz-999.9Hz	ent (or its reverse), using the output terminal on the rear p ent (or its reverse), for freading + 0.5 V / 1 V) freading + 1 V / 2 V) of reading + 1 V / 2 V) For 45 Hz to 65 Hz and DC: ±(0.5 % of reading+0.15 A/0.08 A)	For 45 Hz to 65 Hz and DC: ±(0.5 % of reading+0.2 A/0.1 A)	< 0.5% @<500Hz < 1.0% @500.1Hz~2000Hz
*4. Linked by the maximum of OUTPUT VOLTAGE S LINE REGULATION " IDAD REGULATION RIPPLE NOISE " *1. For an output voltage of 10 *3. For 5 At 21 1 MHz comport OUTPUT VOLTAGE W TOTAL HARMONIC D OUTPUT VOLTAGE R EFFICIENCY " *1. At an output voltage of 50 *2. For Am Output voltage of 50 *3. For Am Output voltage of 50 *5. For Am Output voltage of 50	urrent. TABILITY *2 is 200 V, 220 V, or 240 V, no lo 0 V to 200 V / 200 V to 400 V, a is 20 The condensing the output of the condensing the output of the condensing the output of the condensity of the cond	Inited by the power capacity when ad, rated output. Load power factor of 1, stepwise c on RATIO, OUTPUT VC add power factor of 1, and in AC m of 1, with respect to stepwise ch num current, and load power fact f Resolution Accuracy Resolution Accuracy Resolution Accuracy	the output voltage is 100 V to 250 V / 200 V to 500 V. 0.2% or less 0.5% or less (0 to 100%, via output 1 Vrms / 2 Vrms (TYP) hange from an output current of 0 A to maximum currer LTAGE RESPONSE TIME, EFFCIENCY <0.2% @50/60Hz <0.3% @ <500Hz <0.3% @ <500Hz <0.3% @ <500Hz <0.3% @ <500.1 Hz-999.9 Hz 100 µs (TYP) 80 % or more >de. for 45 Hz to 65 Hz and DC: ±(0.5 % For all other frequencies: ±(0.7 % of reading+0.1 A to 5A Hz and DC: ±(12 % <0.1 A For 45 Hz to 65 Hz and DC: ±(12 % <0.1 A For 45 Hz to 65 Hz and DC: ±(0.5 A) For 45 Hz to 65 Hz and DC: ±(0.5 A) For 45 Hz to 65 Hz and DC: ±(0.7 % of reading+0.1 A/O.5 A) For 45 Hz to 65 Hz and DC: ±(0.7 % of reading+0.2 A/O.1 A) <0.1 A For 45 Hz to 65 Hz and DC: ±(0.7 % of reading+0.2 A/O.1 A) <td>ent (or its reverse), using the output terminal on the rear p ent (or its reverse), for freading + 0.5 V / 1 V) freading + 1 V / 2 V) of reading + 1 V / 2 V) For 45 Hz to 65 Hz and DC: ±(0.5 % of reading+0.15 A/0.08 A) For all other frequencies: ±(0.7 % of reading+0.3 A/0.15 A)</td> <td>For 45 Hz to 65 Hz and DC: ±(0.5 % of reading+0.2 A/0.1 A) For all other frequencies: ±(0.7 % of reading+0.4 A/0.2 A)</td> <td>< 0.5% @<500Hz < 1.0% @500.1Hz~2000Hz</td>	ent (or its reverse), using the output terminal on the rear p ent (or its reverse), for freading + 0.5 V / 1 V) freading + 1 V / 2 V) of reading + 1 V / 2 V) For 45 Hz to 65 Hz and DC: ±(0.5 % of reading+0.15 A/0.08 A) For all other frequencies: ±(0.7 % of reading+0.3 A/0.15 A)	For 45 Hz to 65 Hz and DC: ±(0.5 % of reading+0.2 A/0.1 A) For all other frequencies: ±(0.7 % of reading+0.4 A/0.2 A)	< 0.5% @<500Hz < 1.0% @500.1Hz~2000Hz
⁴⁴ Limited by the maximum of OUTPUT VOLTAGE S LINE REGULATION ⁴⁷ LOAD REGULATION ⁴⁷ 1. Dever source input voltage ⁴⁷ 1 ⁴³ . Por State 1 MHz compor OUTPUT VOLTAGE W TOTAL HARMONIC D OUTPUT VOLTAGE R EFFICIENCY ⁴³ 1 ⁴³ . As no output voltage of 10 ⁴³ . For AC Mode, at an output MEASURED VALUE D VOLTAGE	Irrent: TABILITY TABILITY	Imited by the power capacity when ad, rated output. Ioad power factor of 1, stepwise co tput terminal on the rear panel. ON RATIO, OUTPUT VO ad power factor of 1, and in AC m of 1, with respect to stepwise ch num current, and load power fact at Resolution Accuracy Resolution Accuracy Resolution Accuracy Resolution Resolution Accuracy Resolution	the output voltage is 100 V to 250 V / 200 V to 500 V.	ent (or its reverse), using the output terminal on the rear p ent (or its reverse). for freading + 0.5 V / 1 V) freading + 1 V / 2 V) of reading + 1 V / 2 V) For 45 Hz to 65 Hz and DC: $\pm (0.5 \% \text{ of reading}\pm 0.15 \text{ A}/0.08 \text{ A})$ For all other frequencies: $\pm (0.7 \% \text{ of reading}\pm 0.3 \text{ A}/0.15 \text{ A})$ For 45 Hz to 65 Hz and DC:	For 45 Hz to 65 Hz and DC: ±(0.5 % of reading+0.2 A/0.1 A) For all other frequencies: ±(0.7 % of reading+0.4 A/0.2 A) For 45 Hz to 65 Hz and DC:	< 0.5% @<500Hz < 1.0% @500.1Hz~2000Hz
*4. Limbed by the maximum of OUTPUT VOLTAGE S LINE REGULATION " ILOAD RECULATION" RIPPLE NOISE '' 1. Power source input voltage of 10 3. for 5 hz to 1 MHz comport OUTPUT VOLTAGE W TOTAL HARMONIC D OUTPUT VOLTAGE W EFFICIENCY '' 1. At an output voltage of 50 3. For X - mode, at an output '' 2. For an output voltage of 50 3. For X - mode, at an output WEASURED VALUE D VOLTAGE	urrent. TABILITY *2 is 200 V, 220 V, or 240 V, no lo 0 V to 200 V / 200 V to 400 V, a is 20 The condensing the output of the condensing the output of the condensing the output of the condensity of the cond	Inited by the power capacity when ad, rated output. Ioad power factor of 1, stepwise c on RATIO, OUTPUT VC ad power factor of 1, and in AC m of 1, with respect to stepwise channer factor of 1, and in ad power factor fill Resolution Accuracy	the output voltage is 100 V to 250 V / 200 V to 500 V. 0.2% or less 0.5% or less (0 to 100%, via output 1 Vrms / 2 Vrms (TYP) hange from an output current of 0 A to maximum current LTAGE RESPONSE TIME, EFFCIENCY < 0.2% @50(60Hz < 0.2% @50(60Hz < 0.3% @ 5000Hz < 0.1 V For 45 Hz to 65 Hz and DC: \pm (0.5 % For all other frequencies: \pm (0.7 % of 0.1 V For 45 Hz to 65 Hz and DC: \pm (2% of reading+0.1 A/0.05 A) For 45 Hz to 65 Hz and DC: \pm (0.5 % of reading+0.2 A/0.1 A) 0.1 A For 45 Hz to 65 Hz and DC: \pm (0.7 % of reading+0.2 A/0.1 A) 0.1 A For 45 Hz to 65 Hz and DC: \pm (0.7 % of reading+0.2 A/0.1 A) 0.1 A For 45 Hz to 65 Hz and DC: \pm (0.2 % of reading+0.5 A/0.25 A) 1 W \pm (2 % of reading +2 W) 1 VA	at (or its reverse), using the output terminal on the rear p ent (or its reverse).	For 45 Hz to 65 Hz and DC: ±(0.5 % of reading+0.2 A/0.1 A) For all other frequencies: ±(0.7 % of reading+0.4 A/0.2 A) For 45 Hz to 65 Hz and DC: ±(12 % of reading + 1 A/0.5 A) ±(2 % of reading +4 W)	< 0.5% @<500Hz < 1.0% @500.1Hz~2000Hz
*4. Limbed by the maximum of OUTPUT VOLTAGE S LINE REGULATION " ILOAD RECULATION" RIPPLE NOISE '' 1. Power source input voltage of 10 3. for 5 hz to 1 MHz comport OUTPUT VOLTAGE W TOTAL HARMONIC D OUTPUT VOLTAGE W EFFICIENCY '' 1. At an output voltage of 50 3. For X - mode, at an output '' 2. For an output voltage of 50 3. For X - mode, at an output WEASURED VALUE D VOLTAGE	TABILITY TABILITY TABLITY TABLITY TABLITY TABLITY TABLITY TABLITY TABLITY TABLITY TABLITY TO ADD THE TABLE T	Imited by the power capacity when ad, rated output. Isod power factor of 1, stepwise c tput terminal on the rear panel. ON RATIO, OUTPUT VO ad power factor of 1, and in AC m of 1, with respect to stepwise ch num current, and load power fact accuracy *2 Resolution Accuracy Resolution Accuracy *3 Resolution Accuracy *4 Resolution Accuracy *5 Resolution Resolution Accuracy *5 Resoluti Accur	the output voltage is 100 V to 250 V / 200 V to 500 V. 0.2% or less 0.5% or less (0 to 100%, via output 1 Vrms / 2 Vrms (TYP) hange from an output current of 0 A to maximum currer LTACE RESPONSE TIME, EFFICIENCY < 0.2% @ 50/60Hz < 0.3% @ 5000Hz < 0.3% @ 5000Hz < 0.5% @ 5000Hz < 0.7% @ 5000Hz < 0.1 V For 45 Hz to 65 Hz and DC: $\pm (0.5\% Mz)$ for 45 Hz to 65 Hz and DC: $\pm (0.7\% Mz)$ $= 100 \mu frequencies: \pm (0.7\% Mz)$ $\pm (0.7\% Mz)$ for eading+0.1 A/0.05 A) For 45 Hz to 65 Hz and DC: $\pm (0.5\% Mz)$ and DC: $\pm (0.5\% Mz)$ $\pm (0.7\% Mz)$ freading+0.2 A/0.1 A) 0.1 A For 45 Hz to 65 Hz and DC: $\pm (0.2\% Mz)$ $\pm (0.7\% Mz)$ freading+0.2 A/0.2 A) 1 W $\pm (2\% Mz)$ freading +2 W) 1 VA $\pm (2\% Mz)$ freading +2 VA)	ent (or its reverse), using the output terminal on the rear p ent (or its reverse), ent (or its reverse), for freading + 0.5 V / 1 V) freading + 1 V / 2 V) of reading + 1 V / 2 V) For 45 Hz to 65 Hz and DC: $\pm (0.5 \% \text{ of reading}+0.3 \text{ A}/0.15 \text{ A})$ For all other frequencies: $\pm (0.7 \% \text{ of reading}+0.3 \text{ A}/0.15 \text{ A})$ For 45 Hz to 65 Hz and DC: $\pm (2\% \text{ of reading}+0.8 \text{ A}/0.4 \text{ A})$	For 45 Hz to 65 Hz and DC: ±(0.5 % of reading+0.2 A/0.1 A) For all other frequencies: ±(0.7 % of reading+0.4 A/0.2 A) For 45 Hz to 65 Hz and DC: ±(12 % of reading + 1 A/0.5 A)	< 0.5% @<500Hz < 1.0% @500.1Hz~2000Hz
*4. Limbed by the maximum of OUTPUT VOLTAGE S LINE REGULATION " ILOAD RECULATION" RIPPLE NOISE '' 1. Power source input voltage of 10 3. for 5 hz to 1 MHz comport OUTPUT VOLTAGE W TOTAL HARMONIC D OUTPUT VOLTAGE W EFFICIENCY '' 1. At an output voltage of 50 3. For X - mode, at an output '' 2. For an output voltage of 50 3. For X - mode, at an output WEASURED VALUE D VOLTAGE	Arrent. TABILITY TABILITY TABILITY TABILITY TABILITY Table Tab	Inited by the power capacity when Inited by the power capacity when Isod power factor of 1, stepwise c put terminal on the rear panel. ON RATIO, OUTPUT VO Inite terminal on the rear panel. INITED STATES INTERPORT IN THE INITED STATES INITED STATES INTO INTO INTERPORT INTO INTERPORT INTO INTERPORT INTO INTO INTERPORT INTO INTO INTO INTO INTO INTO INTO INT	the output voltage is 100 ∨ to 250 ∨ / 200 ∨ to 500 ∨. 0.2% or less 0.5% or less 0.5% or less (0 to 100%, via output 1 ∨rms / 2 ∨rms (TYP) hange from an output current of 0 A to maximum currer LTACE RESPONSE TIME, EFFICIENCY <0.2% @>500/60Hz <0.3% @>c900Hz <0.5% @>500.1Hz-999.9Hz 100 µs (TYP) 80 % or more de. ange from an output current of 0 A to the maximum currer of 1. O.1 V For 45 Hz to 65 Hz and DC: ±(0.5 % For all other frequencies: ±(0.7 % of 0.1 V For 45 Hz to 65 Hz and DC: ±(12 % 0.01 A For 45 Hz to 65 Hz and DC: ±(12 % 0.01 A For 45 Hz to 65 Hz and DC: ±(12 % 0.01 A For 45 Hz to 65 Hz and DC: ±(12 % 0.01 A For 45 Hz to 65 Hz and DC: ±(12 % 0.01 A For 45 Hz to 65 Hz and DC: ±(12 % 0.01 A For 45 Hz to 65 Hz and DC: ±(12 % 0.01 A For 45 Hz to 65 Hz and DC: ±(12 % 0.01 A For 45 Hz to 65 Hz and DC: ±(12 % 0.01 A For 45 Hz to 65 Hz and DC: ±(12 % 0.01 A For 45 Hz to 65 Hz and DC: ±(12 % 0.01 A For 45 Hz to 65 Hz and DC: ±(12 % 0.1 A) For 45 Hz to 65 Hz and DC: ±(12 % 0.1 A) 1 VA ±(2 % of reading +0.2 A)(0.1 A) 1 VA	ent (or its reverse), using the output terminal on the rear p ent (or its reverse), for freading + 0.5 V / 1 V) freading + 1 V / 2 V) for ading + 1 V / 2 V) For 45 Hz to 65 Hz and DC: $\pm (0.5 \% \text{ of reading}+0.3 \text{ A}/0.08 \text{ A})$ For all other frequencies: $\pm (0.7 \% \text{ of reading}+0.3 \text{ A}/0.15 \text{ A})$ For 45 Hz to 65 Hz and DC: $\pm (2\% \text{ of reading}+3 \text{ W})$ $\pm (2\% \text{ of reading}+3 \text{ W})$	For 45 Hz to 65 Hz and DC: ±(0.5 % of reading+0.2 A/0.1 A) For all other frequencies: ±(0.7 % of reading+0.4 A/0.2 A) For 45 Hz to 65 Hz and DC: ±(12 % of reading + 1 A/0.5 A) ±(2 % of reading +4 W) ±(2 % of reading +4 VA)	< 0.5% @<500Hz < 1.0% @500.1Hz~2000Hz
*4. Limbed by the maximum of OUTPUT VOLTAGE S LINE REGULATION " ILOAD RECULATION" RIPPLE NOISE '' 1. Power source input voltage of 10 3. for 5 hz to 1 MHz comport OUTPUT VOLTAGE W TOTAL HARMONIC D OUTPUT VOLTAGE W EFFICIENCY '' 1. At an output voltage of 50 3. For X - mode, at an output '' 2. For an output voltage of 50 3. For X - mode, at an output WEASURED VALUE D VOLTAGE	TABILITY TABILITY TABLITY TABLITY TABLITY TABLITY TABLITY TABLITY TOTAL STATES	inited by the power capacity when inited by the power capacity when ito ad power factor of 1, stepwise c ito at power factor of 1, and in AC m of 1, with respect to stepwise ch anum current, and load power fact ito ad power factor of 1, and in AC m of 1, with respect to stepwise ch anum current, and load power fact ito ad power factor of 1, and in AC m of 1, with respect to stepwise ch anum current, and load power fact ito ad power factor of 1, and in AC m of 1, with respect to stepwise ch anum current, and load power fact ito ad power factor of 1, and in AC m of 1, with respect to stepwise ch anum current, and load power fact ito ad power factor of 1, and in AC m of 1, with respect to stepwise ch anum current, and load power fact ito ad power factor of 1, and in AC m of 1, with respect to stepwise ch anum current, and load power factor ito ad power factor of 1, and in AC m of 1, with respect to stepwise ch anum current, and load power factor ito ad power factor of 1, and in AC m of 1, with respect to stepwise ch anum current, and load power factor ito ad power factor ito ad power factor of 1, and in AC m of 1, with respect to stepwise ch anum current, and load power factor ito ad power factor i	the output voltage is 100 V to 250 V / 200 V to 500 V. 0.2% or less 0.5% or less (0 to 100%, via output 1 Vrms / 2 Vrms (TYP) hange from an output current of 0 A to maximum current LTAGE RESPONSE TIME, EFFCIENCY < 0.2% @50/60Hz < 0.2% @500/60Hz < 0.3% @-500Hz < 0.3% @-500Hz < 0.3% @-500Hz < 0.3% @ 500.1Hz-999.9Hz 100 µs (TYP) 80 % or more ode. and output current of 0 A to the maximum curr of 1. 0.1 V For 45 Hz to 65 Hz and DC: \pm (0.5 % For all other frequencies: \pm (0.7 % of 0.1 V For 45 Hz to 65 Hz and DC: \pm (2% 0.01 A For 45 Hz to 65 Hz and DC: \pm (2% 0.01 A For 45 Hz to 65 Hz and DC: \pm (0.7% of reading+0.1 A/0.05 A) For 45 Hz to 65 Hz and DC: \pm (0.7% of reading+0.2 A/0.1 A) 0.1 A For 45 Hz to 65 Hz and DC: \pm (2% of reading +0.5 A/0.25 A) 1 W \pm (2% of reading +2 VA) 1 VAR \pm (2% of reading +2 VAR) 0.000 to 1.000	at (or its reverse), using the output terminal on the rear p ent (or its reverse).	For 45 Hz to 65 Hz and DC: ±(0.5 % of reading+0.2 A/0.1 A) For all other frequencies: ±(0.7 % of reading+0.4 A/0.2 A) For 45 Hz to 65 Hz and DC: ±(12 % of reading + 1 A/0.5 A) ±(2 % of reading +4 W)	< 0.5% @<500Hz < 1.0% @500.1Hz~2000Hz
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*4. Linked by the maximum c OUTPUT VOLTAGE S LINE REGULATION *1 LOAD RECULATION *1 IN PRESULTION *1 *1. Power Source input voltage *1 *1. Power Source input voltage *1 *1. Power Source input voltage *1 *1. As an output voltage for OUTPUT VOLTAGE & TOTAL HARMONIC E OUTPUT VOLTAGE & TOTAL HARMONIC E *1. As an output voltage of \$0 *1. As a	TABILITY TABILITY TABILITY	inited by the power capacity when ad, rated output. Ioad power factor of 1, stepwise c put terminal on the rear panel. ON RATIO, OUTPUT VC ad power factor of 1, and in AC m of 0, with respect to stepwise d num current, and load power facto T Resolution Accuracy Resolution Resoluti Resoluti Resolution Resolution Resolution Resol	the output voltage is 100 V to 250 V / 200 V to 500 V. 0.2% or less 0.5% or less (0 to 100%, via output 1 Vrms / 2 Vrms (TYP) hange from an output current of 0 A to maximum current LTAGE RESPONSE TIME, EFFICIENCY < 0.2% @500(BHz < 0.2% @500(BHz < 0.3% @ 500(BHz) < 0.1 V For 45 Hz to 65 Hz and DC: $\pm (0.5\% \text{ for all other frequencies: } \pm (0.7\% \text{ of } 1.2\% $	ent (or its reverse), using the output terminal on the rear p ent (or its reverse). 6 of reading + 0.5 V / 1 V) freading + 1 V / 2 V) 6 of reading + 1 V / 2 V) For 45 Hz to 65 Hz and DC: $\pm (0.5 \% 6 f reading+0.3 A/0.18 A)$ For 45 Hz to 65 Hz and DC: $\pm (0.7 \% 6 f reading+0.3 A/0.15 A)$ For 45 Hz to 65 Hz and DC: $\pm (12 \% 6 f reading) + 0.8 A/0.4 A)$ $\pm (2 \% 6 f reading + 3 WA)$ $\pm (2 \% 6 f reading + 3 VAR)$	For 45 Hz to 65 Hz and DC: ±(0.5 % of reading+0.2 A/0.1 A) For all other frequencies: ±(0.7 % of reading+0.4 A/0.2 A) For 45 Hz to 65 Hz and DC: ±(12 % of reading + 1 A/0.5 A) ±(2 % of reading +4 W) ±(2 % of reading +4 VA)	< 0.5% @<500Hz < 1.0% @500.1Hz~2000Hz
*4. Limited by the maximum of OUTPUT VOLTAGE S LINE REGULATION " ILOAD REGULATION RIPPLE NOISE '5 *1. For an output voltage of 10 *3. For 5 Hz to 1 MHz comport OUTPUT VOLTAGE R EFFICIENCY '5 EFFICIENCY '5 *1. At an output voltage of 50 *2. For an output voltage of 50 *3. For an output voltage of 50 *5. For an outp	TABILITY TABILITY TABLITY TO A CONSTRUCT TABLE TABLE TO A CONSTRUCT TABLE TABLE TO A CONSTRUCT TABLE TABLE TABLET TABL	Inited by the power capacity when Index power factor of 1, stepwise c Ioad power factor of 1, and in AC m rof 1, with respect to stepwise cha mun current, and load power fact rof 1 Resolution Accuracy r Resolution Accuracy Resolution Accuracy r Resolution Resolution Resolution Range Resolution Re	the output voltage is 100 V to 250 V / 200 V to 500 V. 0.2% or less 0.5% or less (0 to 100%, via output 1 Vrms / 2 Vrms (TYP) hange from an output current of 0 A to maximum current LTAGE RESPONSE TIME, EFFICIENCY < 0.2% @50(0Hz < 0.2% @50(0Hz < 0.3% @ c500Hz < 0.5% @ 500.1Hz-999.9Hz 100 µs (TYP) 80 % or more de. nge from an output current of 0 A to the maximum current 1 0.1 V For 45 Hz to 65 Hz and DC: \pm (0.5 % For all other frequencies: \pm (0.7 % of 0.1 V For 45 Hz to 65 Hz and DC: \pm (12 % 0.01 A For 45 Hz to 65 Hz and DC: \pm (12 % 0.01 A For 45 Hz to 65 Hz and DC: \pm (0.7 % of reading+0.1 A/0.05 A) For 45 Hz to 65 Hz and DC: \pm (0.7 % of reading+0.2 A/0.1 A) 0.1 A For 45 Hz to 65 Hz and DC: \pm (12 % of reading +0.5 A/0.25 A) 1 W \pm (2 % of reading +2 VA) 1 VAR \pm (2 % of reading +2 VA) 1 VAR \pm (2 % of reading +2 VA) 1 VAR \pm (2 % of reading +2 VA) 1 UAR \pm (2 % of reading +2 VA) 1 UAR \pm (2 % of reading +2 VA) 1 VAR \pm (2 % of reading +2 VA) 1 VAR \pm (2 % of reading +2 VA) 1 VAR \pm (2 % of reading +2 VA) 1 0.001 to 1.000 0.001 to 50.00 0.01 Up to 100th order of the fundament 200 V / 400 V, 100% 0.1 V, 0.1%	ent (or its reverse), using the output terminal on the rear p ent (or its reverse). 6 of reading + 0.5 V / 1 V) freading + 1 V / 2 V) 6 of reading + 1 V / 2 V) For 45 Hz to 65 Hz and DC: $\pm (0.5 \% 6 f reading+0.15 A/0.08 A)$ For all other frequencies: $\pm (0.7 \% 6 f reading+0.3 A/0.15 A)$ For 45 Hz to 65 Hz and DC: $\pm ([2 \% 6 f reading] + 0.8 A/0.4 A)$ $\pm (2 \% 6 f reading + 3 WA)$ $\pm (2 \% 6 f reading + 3 VAR)$	For 45 Hz to 65 Hz and DC: ±(0.5 % of reading+0.2 A/0.1 A) For all other frequencies: ±(0.7 % of reading+0.4 A/0.2 A) For 45 Hz to 65 Hz and DC: ±(12 % of reading + 1 A/0.5 A) ±(2 % of reading +4 W) ±(2 % of reading +4 VA)	< 0.5% @<500Hz < 1.0% @500.1Hz~2000Hz
*4. Linded by the maximum of OUTPUT VOLTAGE S LINE REGULATION ¹⁹ LOAD RECULATION ¹⁹ *1. Power Source input voltage *2. For a nutput voltage of 10 *3. For S Hz to 1 MHz compor OUTPUT VOLTAGE W TOTAL HARMONIC E EFFICIENCY ³⁰ *1. At an output voltage of 50 *2. For a nutput voltage of 50 *2. For a nutput voltage of 50 *3. For X mds at an output WOLTAGE CURRENT	TABILITY TABILITY TABILITY TABILITY TABILITY TABILITY TABILITY TO A Constrain the second seco	inited by the power capacity when ad, rated output. Ioad power factor of 1, stepwise c put terminal on the rear panel. ON RATIO, OUTPUT VC ad power factor of 1, and in AC m of 0, with respect to stepwise d num current, and load power facto T Resolution Accuracy Resolution Resoluti Resoluti Resolution Resolution Resolution Resol	the output voltage is 100 V to 250 V / 200 V to 500 V. 0.2% or less 0.5% or less (0 to 100%, via output 1 Vrms / 2 Vrms (TYP) hange from an output current of 0 A to maximum current LTACE RESPONSE TIME, EFFICIENCY < 0.2% @500/60Hz < 0.2% @500/1Hz-999.9Hz 100 µs (TYP) 80 % or more de. ng from an output current of 0 A to the maximum current of 1. 0.1 V For 45 Hz to 65 Hz and DC: \pm (0.5 % For all other frequencies: \pm (0.7 % of 0.1 V For 45 Hz to 65 Hz and DC: \pm (12 % 0.01 A For 45 Hz to 65 Hz and DC: \pm (12 % 0.01 A For 45 Hz to 65 Hz and DC: \pm (12 % 0.01 A For 45 Hz to 65 Hz and DC: \pm (12 % 0.01 A For 45 Hz to 65 Hz and DC: \pm (12 % 0.01 A For 45 Hz to 65 Hz and DC: \pm (12 % 0.1 A For 45 Hz to 65 Hz and DC: \pm (12 % of reading+0.2 A/0.1 A) 0.1 A For 45 Hz to 65 Hz and DC: \pm (12 % of reading +2 VA) 1 VA \pm (2 % of reading +2 VA) 1 VA \pm (2 % of reading +2 VA) 0.000 to 1.000 0.001 0.00 to 50.00 0.01 Up to 100th order of the fundament 200 V / 400 V, 100% 0.1 1, 0, 0.% Up to 20th : \pm (0.2 % of reading +0. 20th to 100th : \pm (0.3 % of reading +0. 20th to 100th : \pm (0.3 % of reading +0. 20th to 100th : \pm (0.3 % of reading +0. 20th to 100th : \pm (0.3 % of reading +0. 20th to 100th : \pm (0.3 % of reading +0. 20th to 100th : \pm (0.3 % of reading +0. 20th to 100th : \pm (0.3 % of reading +0. 20th to 100th : \pm (0.3 % of reading +0. 20th to 100th : \pm (0.3 % of reading +0. 20th to 100th : \pm (0.3 % of reading +0. 20th to 100th : \pm (0.3 % of reading +0. 20th to 100th : \pm (0.3 % of reading +0. 20th to 100th : \pm (0.3 % of reading +0. 20th to 100th : \pm (0.3 % of reading +0. 20th to 100th : \pm (0.3 % of reading +0. 20th to 100th : \pm (0.3 % of reading +0. 20th to 100th : \pm (0.3 % of reading +0. 20th to 100th : \pm (0.3 % of reading +0. 20th to 100th : \pm (0.3 % of reading +0. 20th to 100th : \pm (0.3 % of reading +0. 20th to 100th : \pm (0.3 % of reading +0. 20th to 100th : \pm (0.3 % of reading +0. 20th to 100th : \pm (0.3 % of reading +0. 20th to 100t	ent (or its reverse), using the output terminal on the rear p ent (or its reverse), 6 of reading + 0.5 V / 1 V) freading + 1 V / 2 V) 6 freading + 1 V / 2 V) 7 For 45 Hz to 65 Hz and DC: $\pm (0.5 \% \text{ of reading}+0.15 \text{ A}/0.08 \text{ A})$ For all other frequencies: $\pm (0.7 \% \text{ of reading}+0.3 \text{ A}/0.15 \text{ A})$ For 45 Hz to 65 Hz and DC: $\pm ((2\% \text{ of reading}+3 \text{ A}/0.15 \text{ A})$ $\pm (2\% \text{ of reading}+3 \text{ W})$ $\pm (2\% \text{ of reading}+3 \text{ VA})$ $\pm (2\% \text{ of reading}+3 \text{ VAR})$ $\pm (2\% \text{ of reading}+3 \text{ VAR})$	For 45 Hz to 65 Hz and DC: ±(0.5 % of reading+0.2 A/0.1 A) For all other frequencies: ±(0.7 % of reading+0.4 A/0.2 A) For 45 Hz to 65 Hz and DC: ±(12 % of reading + 1 A/0.5 A) ±(2 % of reading +4 W) ±(2 % of reading +4 VA)	< 0.5% @<500Hz < 1.0% @500.1Hz~2000Hz
*4. Limited by the maximum of OUTPUT VOLTAGE S LINE REGULATION " ILOAD REGULATION RIPPLE NOISE '5 *1. Powr source input voltage *2. For a notput voltage of 10 *3. For S rists in 1. Mits. compor OUTPUT VOLTAGE W TOTAL HARMONIC C EFFICIENCY '9 *1. As an output voltage of 10 *2. For an	TABILITY TABILITY TABILITY TABILITY TABILITY TABILITY TABILITY TO A Conservation of the second secon	Inited by the power capacity when ad, rated output. Ioad power factor of 1, stepwise c put terminal on the rear panel. ON RATIO, OUTPUT VO ad power factor of 1, and in AC m r of N with respect to stepwise cha num current, and load power fact r Resolution Accuracy Resolution Range Resolution Resolution Range Resolution Resolution Range Resolution Range Resol	the output voltage is 100 V to 250 V / 200 V to 500 V. 0.2% or less 0.5% or less (0 to 100%, via output 1 Vrms / 2 Vrms (TYP) hange from an output current of 0 A to maximum current LTAGE RESPONSE TIME, EFFICIENCY < 0.2% @50/60Hz < 0.2% @50/60Hz < 0.3% @ 500.1Hz-999.9Hz 100 µs (TYP) 80 % or more de. nge from an output current of 0 A to the maximum curr of 1. 0.1 V For 45 Hz to 65 Hz and DC: \pm (0.5 % For all other frequencies: \pm (0.7 % of 0.1 V For 45 Hz to 65 Hz and DC: \pm (12 % 0.01 A For 45 Hz to 65 Hz and DC: \pm (12 % 0.01 A For 45 Hz to 65 Hz and DC: \pm (12 % 0.01 A For 45 Hz to 65 Hz and DC: \pm (12 % 0.01 A For 45 Hz to 65 Hz and DC: \pm (12 % 0.01 A For 45 Hz to 65 Hz and DC: \pm (12 % 0.01 A For 45 Hz to 65 Hz and DC: \pm (12 % of reading+0.1 A/0.05 A) For 45 Hz to 65 Hz and DC: \pm (12 % of reading) + 0.5 A/0.25 A) 1 W \pm (2 % of reading + 2 W) 1 VA \pm (2 % of reading + 0.3 % of reading + 0. 0.001 to 50.00 0.001 0.001 to 50.00 0.01 Up to 100th order of the fundament 200 V / 400 V, 100% 0.1 V, 0.1% Up to 100th order of the fundament 200 V / 400 V, 100% of reading + 0. 201 V / 400 V, 100% of reading + 0. 201 V / 400 V, 100% of reading + 0. 201 V / 400 V, 100% of reading + 0. 201 V / 400 V, 100% of reading + 0. 201 V / 400 V, 100% of reading + 0. 201 V / 400 V, 100% of reading + 0. 201 V / 100th order of the fundament	ent (or its reverse), using the output terminal on the rear p ent (or its reverse).	For 45 Hz to 65 Hz and DC: ±(0.5 % of reading+0.2 A/0.1 A) For all other frequencies: ±(0.7 % of reading+0.4 A/0.2 A) For 45 Hz to 65 Hz and DC: ±(12 % of reading + 1 A/0.5 A) ±(2 % of reading +4 W) ±(2 % of reading +4 VA) ±(2 % of reading +4 VA)	< 0.5% @<500Hz < 1.0% @500.1Hz~2000Hz
*4. Limited by the maximum of OUTPUT VOLTAGE S OUTPUT VOLTAGE S ILINE REGULATION RIPPLE NOISE '5 *1. For an output voltage of 10 *3. For 3 fat to 1 M41: comport OUTPUT VOLTAGE W TOTAL HARMONIC C OUTPUT VOLTAGE W OUTPUT VOLTAGE W TOTAL HARMONIC C OUTPUT VOLTAGE W EFFICIENCY '3 *1. As an output voltage of 10 *2. For AC mode, at an output MEASURED VALUE D VOLTAGE CURRENT LOAD POWER FACTCO IOAD CREST FACTOO HARMONIC VOLTAGE EFFECTIVE VALUE (A) (AC-INT and 50/60 Hz HARMONIC CURREN EFFECTIVE VALUE (R)	TABILITY TABILITY TABILITY TABILITY TABILITY TABILITY TABILITY TO A Conservation of the second secon	imited by the power capacity when ad, rated output. Ioad power factor of 1, stepwise co tput terminal on the rear panel. ON RATIO, OUTPUT VO ad power factor of 1, and in AC m of 1, with respect to stepwise ch num current, and load power fact	the output voltage is 100 V to 200 V to 500 V. 0.2% or less 0.5% or less (0 to 100%, via output 1 Vrms / 2 Vrms (TYP) hange from an output current of 0 A to maximum currer LTACE RESPONSE TIME, EFFICIENCY < 0.2% @ 50/60Hz < 0.2% @ 50/60Hz < 0.3% @ -500Hz < 0.5% @ 500.1Hz-999.9Hz 100 µs (TYP) 80 % or more de. ng from an output current of 0 A to the maximum currer of 1. 0.1 V For 45 Hz to 65 Hz and DC: ±(0.5 % For all other frequencies: ±(0.7 % of 0.1 V For 45 Hz to 65 Hz and DC: ±(12 % 0.01 A For 45 Hz to 65 Hz and DC: ±(12 % 0.01 A For 45 Hz to 65 Hz and DC: ±(2 % 0.01 A For 45 Hz to 65 Hz and DC: ±(2 % of reading+0.1 A/0.05 A) For 45 Hz to 65 Hz and DC: ±(2 % of reading+0.2 A/0.1 A) 0.1 A For 45 Hz to 65 Hz and DC: ±(2 % of reading +2 W) 1 VA ±(2 % of reading +2 WA) 1 VAR ±(2 % of reading +2 VA) 0.000 to 1.000 0.001 Up to 100th order of the fundament 200 V / 400 V, 100% 0.1 V, 0.1% Up to 20th : ±(0.2 % of reading + 0. 20 Å / 10 Å, 100%	ent (or its reverse), using the output terminal on the rear p ent (or its reverse), 6 of reading + 0.5 V / 1 V) freading + 1 V / 2 V) 6 freading + 1 V / 2 V) 7 For 45 Hz to 65 Hz and DC: $\pm (0.5 \% \text{ of reading}+0.15 \text{ A}/0.08 \text{ A})$ For all other frequencies: $\pm (0.7 \% \text{ of reading}+0.3 \text{ A}/0.15 \text{ A})$ For 45 Hz to 65 Hz and DC: $\pm ((2\% \text{ of reading}+3 \text{ A}/0.15 \text{ A})$ $\pm (2\% \text{ of reading}+3 \text{ W})$ $\pm (2\% \text{ of reading}+3 \text{ VA})$ $\pm (2\% \text{ of reading}+3 \text{ VAR})$ $\pm (2\% \text{ of reading}+3 \text{ VAR})$	For 45 Hz to 65 Hz and DC: ±(0.5 % of reading+0.2 A/0.1 A) For all other frequencies: ±(0.7 % of reading+0.4 A/0.2 A) For 45 Hz to 65 Hz and DC: ±(12 % of reading + 1 A/0.5 A) ±(2 % of reading +4 W) ±(2 % of reading +4 VA)	< 0.5% @<500Hz < 1.0% @500.1Hz~2000Hz
*4. Linded by the maximum of OUTPUT VOLTAGE S LINE REGULATION *1 ILOAD REGULATION RIPPLE NOISE *3 *1. Power source input voltage of *1. For a nutput voltage of 10 *3. For 5 Hz to 1 MHz compor OUTPUT VOLTAGE W TOTAL HARMONIC E FFICIENCY *3 *1. At an output voltage of 50 *2. For an output voltage of 50 *5. For Amedia *5.	TABILITY TABILITY TABILITY	Inited by the power capacity when ad, rated output. Ioad power factor of 1, stepwise c put terminal on the rear panel. ON RATIO, OUTPUT VO ad power factor of 1, and in AC m r of N with respect to stepwise cha num current, and load power fact r Resolution Accuracy Resolution Range Resolution Resolution Range Resolution Resolution Range Resolution Range Resol	the output voltage is 100 V to 250 V / 200 V to 500 V. 0.2% or less 0.5% or less (0 to 100%, via output 1 Vrms / 2 Vrms (TYP) hange from an output current of 0 A to maximum current LTAGE RESPONSE TIME, EFFICIENCY < 0.2% @50/60Hz < 0.2% @50/60Hz < 0.3% @ 500.1Hz-999.9Hz 100 µs (TYP) 80 % or more de. nge from an output current of 0 A to the maximum curr of 1. 0.1 V For 45 Hz to 65 Hz and DC: \pm (0.5 % For all other frequencies: \pm (0.7 % of 0.1 V For 45 Hz to 65 Hz and DC: \pm (12 % 0.01 A For 45 Hz to 65 Hz and DC: \pm (12 % 0.01 A For 45 Hz to 65 Hz and DC: \pm (12 % 0.01 A For 45 Hz to 65 Hz and DC: \pm (12 % 0.01 A For 45 Hz to 65 Hz and DC: \pm (12 % 0.01 A For 45 Hz to 65 Hz and DC: \pm (12 % 0.01 A For 45 Hz to 65 Hz and DC: \pm (12 % of reading+0.1 A/0.05 A) For 45 Hz to 65 Hz and DC: \pm (12 % of reading) + 0.5 A/0.25 A) 1 W \pm (2 % of reading + 2 W) 1 VA \pm (2 % of reading + 0.3 % of reading + 0. 0.001 to 50.00 0.001 0.001 to 50.00 0.01 Up to 100th order of the fundament 200 V / 400 V, 100% 0.1 V, 0.1% Up to 100th order of the fundament 200 V / 400 V, 100% of reading + 0. 201 V / 400 V, 100% of reading + 0. 201 V / 400 V, 100% of reading + 0. 201 V / 400 V, 100% of reading + 0. 201 V / 400 V, 100% of reading + 0. 201 V / 400 V, 100% of reading + 0. 201 V / 400 V, 100% of reading + 0. 201 V / 100th order of the fundament	ent (or its reverse), using the output terminal on the rear p ent (or its reverse).	For 45 Hz to 65 Hz and DC: ±(0.5 % of reading+0.2 A/0.1 A) For all other frequencies: ±(0.7 % of reading+0.4 A/0.2 A) For 45 Hz to 65 Hz and DC: ±(12 % of reading + 1 A/0.5 A) ±(2 % of reading +4 W) ±(2 % of reading +4 VA) ±(2 % of reading +4 VA)	< 0.5% @<500Hz < 1.0% @500.1Hz~2000Hz
44. Linket by the maximum of OUTPUT VOLTAGE S OUTPUT VOLTAGE S 11. NE REGULATION 11. INE REGULATION 11. INE REGULATION 12. For an output voltage of 10 13. For 5 Hz to 1 MHz compor OUTPUT VOLTAGE W TOTAL HARMONIC E OUTPUT VOLTAGE R EFFCIENCY 13. For A output voltage of 10 13. For A compared to the second sec	TABILITY TABILITY TABILITY	Inited by the power capacity when ad, rated output. I load power factor of 1, stepwise c Ty terminal on the rear panel. ON RATIO, OUTPUT VO ad power factor of 1, and in AC m of 1, with respect to stepwise chanum current, and load power factor rol 1, with respect to stepwise chanum current, and load power factor rol 2, with respect to stepwise chanum current, and load power factor rol 2, with respect to stepwise chanum current, and load power factor rol 2, with respect to stepwise chanum current, and load power factor rol 2, with respect to stepwise chanum current, and load power factor rol 2, with respect to stepwise chanum current, and load power factor rol 2, with respect to stepwise chanum current, and load power factor rol 2, with respect to stepwise chanum current, and load power factor rol 2, with respect to stepwise chanum current, and load power factor rol 2, with respect to stepwise chanum current, and load power factor rol 2, with respect to stepwise chanum current, and load power factor rol 2, with respect to stepwise chanum current, and load power factor rol 2, with respect to stepwise chanum current, and load power factor rol 2, with respect to stepwise chanum current, and load power factor rol 2, with respect to stepwise chanum current, and load power factor rol 2, with respect to stepwise chanum current, and load power factor rol 2, with respect to stepwise chanum current, and load power factor rol 2, with respect to stepwise chanum current, and load power factor rol 2, with respect to stepwise chanum current, and load power factor rol 2, with respect to stepwise chanum current, and load power factor rol 2, with respect to stepwise chanum current, and load power factor rol 2, with respect to stepwise chanum current, and load power factor rol 2, with respect to stepwise chanum current, and load power factor rol 2, with respect to stepwise chanum current, and load power factor rol 2, with respect to stepwise chanum current, and load power factor rol 2, with respect	the output voltage is 100 V to 200 V to 500 V. 0.2% or less 0.5% or less (0 to 100%, via output 1 Vrms / 2 Vrms (TYP) hange from an output current of 0 A to maximum current LTAGE RESPONSE TIME, EFFICIENCY < 0.2% @ 500/60Hz $< 0.3% @ -500Hz< 0.3% @ -500Hz< 0.5% @ 500.1Hz-999.9Hz100 µs (TYP)80 % or morede.ng from an output current of 0 A to the maximum currentof 1.0.1 VFor 45 Hz to 65 Hz and DC: \pm (0.5 \%For all other frequencies: \pm (0.7 \% of0.1 VFor 45 Hz to 65 Hz and DC: \pm (0.5 \%For all other frequencies: \pm (0.7 \% of0.1 VFor 45 Hz to 65 Hz and DC: \pm (0.5 \%for all other frequencies: \pm (0.7 \% of0.1 AFor 45 Hz to 65 Hz and DC: \pm (12 \%0.01 AFor 45 Hz to 65 Hz and DC: \pm (12 \%0.01 AFor 45 Hz to 65 Hz and DC: \pm (2 \% of reading+0.1 A/0.05 A)For all other frequencies:\pm (0.7 \% of reading+0.2 A/0.1 A)0.1 AFor 45 Hz to 65 Hz and DC:\pm (2 \% of reading +2 W)1 VA\pm (2 \% of reading +2 VA)1 0.0000.0010.0010.0010.0010.01Up to 100th order of the fundament200 V / 400 V, 100%0.1 V, 0.1%Coll A, 0.10%$	ent (or its reverse), using the output terminal on the rear p ent (or its reverse). 6 of reading + 0.5 V / 1 V) freading + 1 V / 2 V) 6 reading + 1 V / 2 V) 7 for 45 Hz to 65 Hz and DC: $\pm (0.5 \% \text{ of reading+0.3 A}/0.15 \text{ A})$ For 45 Hz to 65 Hz and DC: $\pm (0.7 \% \text{ of reading+0.3 A}/0.15 \text{ A})$ For 45 Hz to 65 Hz and DC: $\pm (2\% \text{ of reading}+3 \text{ A}/0.15 \text{ A})$ $\pm (2\% \text{ of reading}+3 \text{ W})$ $\pm (2\% \text{ of reading}+3 \text{ W})$ $\pm (2\% \text{ of reading}+3 \text{ VA})$ $\pm (2\% \text{ of reading}+3 \text{ VA})$ $\pm (2\% \text{ of reading}+3 \text{ VAR})$ $\pm (2\% \text{ of reading}+3 \text{ VAR})$ $\pm (2\% \text{ of reading}+3 \text{ VAR})$	For 45 Hz to 65 Hz and DC: ±(0.5 % of reading+0.2 A/0.1 A) For all other frequencies: ±(0.7 % of reading+0.4 A/0.2 A) For 45 Hz to 65 Hz and DC: ±(12 % of reading +1 A/0.5 A) ±(2 % of reading +4 W) ±(2 % of reading +4 VA) ±(2 % of reading +4 VA) ±(2 % of reading +4 VA) ±(2 % of reading +4 VA)	< 0.5% @<500Hz < 1.0% @500.1Hz~2000Hz

SPECIFICATIONS									
			ASR-3200	ASR-3300	ASR-3400	ASR-3400HF			
 An output current in the ra An output current in the ra For an output voltage of 50 The apparent and reactive j The reactive power is for th An output voltage in the ra THERS 	sitage of 20 V to 200 V / 40 V nge of 5 % to 100 % of the r nge of 5 % to 100 % of the r N or greater, an output cun powers are not displayed in te load with the power factor	/ to 400 V and 23 °C ± 5 °C. DC m maximum current, and 23 °C ± 5 ' maximum peak current in AC mos rent in the range of 10 % to 100 9 the DC mode. • 0.5 or lower.	fe, an output current in the range of 5 % to 100 % of the ma is of the maximum current, DC or an output frequency of 45	ximum instantaneous current in DC mode, and 23 °C	± 5 °C. The accuracy of the peak value is for a wave	form of DC or sine wave.			
ROTECTIONS			UVP, OCP, OTP, OPP, Fan Fail						
DISPLAY			TFT-LCD, 4.3 inch						
MEMORY FUNCTION			Store and recall settings, Basic setti	ngs: 10 (0~9 numeric keys)					
ARBITRARY WAVE	Number of Mer		16 (nonvolatile)						
	Waveform Leng		4096 words						
NTERFACE	Standard	USB	Type A: Host, Type B: Slave, Speed:						
		LAN	MAC Address, DNS IP Address, User Password, Gateway IP Address, Instrument IP Address, Subnet Mask						
		RS-232C		Complies with the EIA-RS-232 specifications					
		EXT Control	External Signal Input; External Control I/O						
		GPIB	SCPI-1993, IEEE 488.2 compliant in	terface					
INSULATION RESIST			500 Vdc, 30 MΩ or more						
Between input and chassis		nput and output							
WITHSTAND VOLTAG	_		1500 Vac, 1 minute						
Between input and chassis	s, output and chassis, ir	put and output							
EMC			EN 61326-1, EN 61326-2-1, EN 61000-3-2, EN 61000-3-3, EN 61000-3-11, EN 61000-3-12						
			EN 61000-4-2/-4-3/-4-4/-4-5/-4-6/-4-8/-4-11/-4-34, EN 55011 (Class A), EN 55032						
SAFETY			EN 61010-1						
ENVIRONMENT	Operating Envi		Indoor use, Overvoltage Category II						
	Operating Tem		0 °C to 40 °C						
	Storage Temper		-10 °C to 70 °C						
	Operating Hum		20 % to 80 % RH (no condensation						
	Storage Humid	ity Range	90 % RH or less (no condensation)						
	Altitude		Up to 2000 m						
DIMENSIONS & WEIG	GHT		430(W)×176(H)×530(D) mm (not i	ncluding protrusions); Approx. 25kg					
				S	pecifications subject to change wit	hout notice. ASR-3000CD2			
ORDERING I	NFORMATIC	ON		OPTIONAL ACCESSORIES					
ASR-3200 ASR-3300 ASR-3400 ASR-3400HI	2kVA Programmable AC/DC Power Source 3kVA Programmable AC/DC Power Source 4kVA Programmable AC/DC Power Source		OC Power Source	GPW-005 Power Cord, 3m, 105 GPW-006 Power Cord, 3m, 10 GPW-007 Power Cord, 3m, 10 GRA-442-J Rack mount adapte	05℃, VDE Type ASR-002 05℃, PSE Type	GPIB Cable, approx. 2m External three phase contr unit for IP2W, IP3W, 3P4W output			
ACCESSORIE				GTL-137 Output power wire	(Load wire_ APS-008	3 Air inlet filter			

CD (User manual/Programming manual), Safety guide, Input terminal cover, Output terminal cover Include remote sensing, GRA-442-E Rack mount adapter(EIA), CTL 346 LISE Coble. GTL-246 USB Cable

GPW-005	Power Cord, 3m, 105 $^\circ\! \mathbb{C}$, UL/CSA Type	GTL-248	GPIB Cable, approx. 2m
GPW-006	Power Cord, 3m, 105°C, VDE Type	ASR-002	External three phase control
GPW-007	Power Cord, 3m, 105°C, PSE Type		unit for IP2W, IP3W, 3P4W
GRA-442-J	Rack mount adapter(JIS)		output
GTL-137	Output power wire(Load wire_ 10AWG: 50A, 600V/Sense wire_ 16AWG: 20A, 600V)	APS-008	Air inlet filter
GTL-232	RS232C Cable, approx. 2m	* European (Output Outlet(factory installed)

APS-008







ASR-002 External three phase control unit



* Basis Requirement of ASR-002 to ASR-Series

- 1. Must be the three same models of ASR-Series
- * Functions of ASR-Series are limited when conducts to ASR-002
- 1. No DC Output 2. Measurement Items: only current(A), power(W)and PF for each phase
- No Voltage and Current Harmonic Analysis
 No Remote Sensing Capability
 No Arbitrary Waveform Function
- 6. No Sequence and Simulation Function

- 9. Nol supported External Control I/O 8. No memory Function 9. Only support USB, no LAN port for communication

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GTL-137







