ASR-6000 Series Parallel Models Specifications

Electrical specifications

Input ratings

Model	ASR-6450-13.5	ASR-6600-18
Power type	Three-phase Four-wire Y connection	
Voltage range[*1]	380 Vac to 460 Vac (Line Voltage)	
Frequency range	47 Hz to 63 Hz	
Power factor[*2]	0.95 or higher (typ.)	
Efficiency[*2]	80 % or higher	
Maximum power consumption	18 kVA or lower	24 kVA or lower

AC output

Model		ASR-6450-13.5		ASR-6600-18	
Multi-phase output		Single-phase output	Polyphase output	Single-phase output	Polyphase output
Output capacity		13.5 kVA	1P3W: 9 kVA 3P4W: 13.5 kVA	18 kVA	1P3W: 12 kVA 3P4W: 18 kVA
Mode		1P2W	1P3W 3P4W (Y-connection)	1P2W	1P3W 3P4W (Y-connection)
Setting mode[*3]		---	Unbalance, Balanced	---	Unbalance, Balanced
Phase voltage	Setting Range[*4]	0.00 V to 175.0 V / 0.0 V to 350.0 V (sine and square wave), Setting Resolution: 0.01 V / 0.1 V			
		0.00 Vpp to 500.0 Vpp / 0.00 Vpp to 1000 Vpp (triangle and arbitrary wave), Setting Resolution: 0.01 Vpp / 0.1 Vpp / 1 Vpp			
	Accuracy[*5]	±(0.3 % of set + 0.5 V / 1 V)			
Line voltage setting range[*6]		---	1P3W: 0.00 V to 350.0 V / 0.00 V to 700.0 V 3P4W: 0.00 V to 303.1 V / 0.00 V to 606.2 V (sine wave only) Setting Resolution: 0.01 V / 0.1 V	---	1P3W: 0.00 V to 350.0 V / 0.00 V to 700.0 V 3P4W: 0.00 V to 303.1 V / 0.00 V to 606.2 V (sine wave only) Setting Resolution: 0.01 V / 0.1 V
Maximum current[*7]		135 A / 67.5 A	45 A / 22.5 A	180 A / 90 A	60 A / 30 A
Maximum peak current[*8]		Four times of the maximum RMS current			
Load power factor[*9]		0 to 1 (leading phase or lagging phase, 45 Hz to 65Hz)			
Frequency	Setting range	AC Mode: 15.00 Hz to 1000.0 Hz, AC+DC Mode: 1.00 Hz to 1000.0 Hz, Setting resolution: 0.01 Hz / 0.1 Hz			
	Accuracy	± 0.01% of set			
	Stability[*10]	± 0.005%			
Output on phase setting range[*11]		0.0° to 359.9° variable (Free / Fix selectable), 0.1° (1 Hz to 500 Hz), 1° (500 Hz to 1000 Hz)			
Output off phase setting range[*11]		0.0° to 359.9° variable (Free / Fix selectable), 0.1° (1 Hz to 500 Hz), 1° (500 Hz to 1000 Hz)			
Setting range of the phase angle[*12]		---	3P4W: L2 phase: 0° to 359.9° L3 phase: 0° to 359.9° Setting Resolution: 0.1°	---	3P4W: L2 phase: 0° to 359.9° L3 phase: 0° to 359.9° Setting Resolution: 0.1°
Phase angle accuracy[*13]		---	45 Hz to 65 Hz: ±1.0° 15 Hz to 1000 Hz: ±2.0°	---	45 Hz to 65 Hz: ±1.0° 15 Hz to 1000 Hz: ±2.0°
DC offset[*14]		± 20 mV (typ.)			

DC output (only single phase output)

Model		ASR-6450-13.5	ASR-6600-18
Output capacity		13.5 kW	18 kW
Mode		Floating output, the N terminal can be grounded	
Voltage	Setting Range	-250.0 V to +250.0 V / -500.0 V to +500.0 V, Setting Resolution: 0.01 V / 0.1 V	
	Accuracy[*15]	±(|0.3 % of set| + 0.3 V / 0.6 V)	
Maximum current[*16]		135 A / 67.5 A	180 A / 90 A
Maximum peak current[*17]		Four times of the maximum current	

Output Stability, Total Harmonic Distortion, Output voltage rising time and Ripple noise

Model	ASR-6450-13.5	ASR-6600-18
Line regulation	±0.1% or less (Phase voltage)	
Load regulation[*18]	±0.5 V / ±1.0 V (phase voltage, 0 to 100%, via output terminal)	
Distortion of Output[*19]	<0.3 % @1Hz to 100Hz, <0.5 % @100.1 Hz to 500 Hz, <1 % @500.1 Hz to 1000 Hz	
Output voltage response time[*20]	Medium: 100 μs (typ.) Slow: 300 μs (typ.)	
Ripple noise[*21]	0.5 Vrms / 1 Vrms (TYP)	

*1 Y connection is three-phase, five-wire, Delta connection is three-phase, four-wire. (Accessories will be provided)
*2. In the case of AC-INT mode, the rate output voltage, resistance load at maximum output current, 45 Hz to 65 Hz and sine wave output only.
*3. Can be only set in polyphase mode.
*4. For phase voltage setting in polyphase output. In balance mode all phase are collectively set and in unbalance mode each phases are individually set.
*5. For an output voltage of 10 V to 175 V / 20 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. For phase voltage setting in the polyphase output.
*6. Line voltage only can be set in balance mode.
*7. If the output voltage is higher than rated value, this is limited to satisfy the power capacity. If there is the DC superimmposition, the active current of AC+DC satisfies the maximum current. In the case of 40 Hz or lower or 400 Hz or higher, and that the ambient temperature is 40 degree or higher, the maximum current may decrease.
*8. With respect to the capacitor-input rectifying load. Limited by the maximum current.
*9. External power injection or regeneration which is over short reverse power flow capacity is not available.
*10. For 45 Hz to 65 Hz, the rated output voltage, no load and the resistance load for the maximum current, and the operating temperature range.
*11. L1, L2 and L3 phase can be set independ at independ mode in the polyphase output.
*12. Can be set only with independ mode in polyphase output.
*13. For an output voltage of 50V or higher, sine wave, same load and voltage condition for all phase.
*14. In the case of the AC mode and output voltage setting to 0 V, 23°C ± 5°C
*15. For an output voltage of -250 V to -10 V, +10 V to +250 V / -500 V to -20 V, +20 V to +500 V, no load, AC voltage set to 0V (AC+DC mode) and 23°C ± 5°C
*16. If the output voltage is higher than rated value, this is limited to satisfy the power capacity. If there is the AC superimmposition, the active current of AC+DC satisfies the maximum current.
       And the ambient temperature is 40 degree or higher, the maximum current may decrease.
*17. Instantaneous eithin 3 ms, limited by the maximum current at rated output voltage.
*18. 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.
*19. 50 % or higher of the rated output voltage, the maximum current or lower, AC and AC+DC modes, THD+N. For the polyphase output, it is a specification for phase voltage setting.
*20. 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.
*21. For 5 Hz to 1 MHz components in DC mode using the output terminal on the rear panel.

Measured value display

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

			Single-phase output	Polyphase output[6]
Voltage[1][2]		Resolution	0.01 V / 0.1 V	
		RMS value accuracy	45 Hz to 65 Hz and DC: ± (0.5 % of rdg + 0.5 V / 1 V)	45 Hz to 65 Hz: ± (0.5 % of rdg + 0.5 V / 1 V)
			15 Hz to 1000 Hz: ± (0.7 % of rdg + 1 V / 2 V)	15 Hz to 1000 Hz: ± (0.7 % of rdg + 1 V / 2 V)
		AVG value accuracy	DC: ± (|0.5 % of rdg| + 0.5 V / 1 V)	DC: ± (|0.5 % of rdg| + 0.5 V / 1 V)
		PEAK value accuracy[3]	45 Hz to 65 Hz and DC: ±(|2 % of rdg| + 1 V / 2 V)	45 Hz to 65 Hz: ±(|2 % of rdg| + 1 V / 2 V)
Current[4]		Resolution	0.01 A / 0.1 A	
		RMS value accuracy	45 Hz to 65 Hz and DC: ±(0.5 % of rdg + 0.3 A / 0.15 A)	45 Hz to 65 Hz: ±(0.5 % of rdg + 0.15 A / 0.08 A)
			15 Hz to 1000 Hz: ±(0.7 % of rdg + 0.6 A / 0.4 A)	15 Hz to 1000 Hz: ±(0.7 % of rdg + 0.3 A / 0.15 A)
		AVG value accuracy	DC: ± (|0.5 % of rdg| + 0.6 A / 0.4 A)	DC: ± (|0.5 % of rdg| + 0.3 A / 0.15 A)
		PEAK value accuracy[5]	45 Hz to 65 Hz and DC: ±(|2 % of rdg| + 3 A / 1.5 A)	45 Hz to 65 Hz: ±(|2 % of rdg| + 1.5 A / 0.75 A)
Power[7][8]	Active (W)	Resolution	0.1 W / 1 W / 10 W	
		Accuracy[9]	±(2 % of rdg + 6 W)	±(2 % of rdg + 2 W)
	Apparent (VA)	Resolution	0.1 VA / 1 VA / 10VA	
		Accuracy	±(2 % of rdg + 9 VA)	±(2 % of rdg + 3 VA)
	Reactive (VAR)	Resolution	0.1 VAR / 1 VAR / 10VAR	
		Accuracy[10]	±(2 % of rdg + 9 VAR)	±(2 % of rdg + 3 VAR)
Power factor		Range	0.000 to 1.000	
		Resolution	0.001	
Harmonic voltage Effective value (rms) Percent (%) (AC-INT and 50/60 Hz only)[11]		Range	Up to 100th order of the fundamental wave	
		Full Scale	200 V / 400 V, 100%	
		Resolution	0.01 V /0.1 V, 0.1%	
		Accuracy[12]	Up to 20th: ±(0.2 % of rdg + 0.5 V / 1 V)	
			21th to 100th: ±(0.3 % of rdg + 0.5 V / 1 V)	
Harmonic current Effective value (rms) Percent (%) (AC-INT and 50/60 Hz only)[11]		Range	Up to 100th order of the fundamental wave	
		Full Scale	189 A / 94.5 A, 100%	63 A / 31.5 A, 100%
		Resolution	0.01 A / 0.1 A, 0.1%	
		Accuracy[13]	Up to 20th: ±(1 % of rdg + 3 A / 1.5 A)	Up to 20th: ±(1 % of rdg + 1 A / 0.5 A)
			21th to 100th: ±(1.5 % of rdg + 3 A / 1.5 A)	21th to 100th: ±(1.5 % of rdg + 1 A / 0.5 A)

*1. In the polyphase output, the specification is for phase voltage, and the DC average value display cannot be selected.
*2. Accuracy values are in the case that the output voltage is within voltage setting range.
*3. The accuracy is for output waveform DC or sine wave only.
*4. Accuracy values are in the case that the output current is 5% to 100% of the maximum current.
*5. The accuracy is for output waveform DC or sine wave only.
*6. In the polyphase output, these are the specifications for each phase.
*7. 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.
*8. The apparent and reactive powers are not displayed in the DC mode.
*9. For the load with the power factor 0.5 or higher.
*10. For the load with the power factor 0.5 or lower.
*11. The measurement does not conform to the IEC or other standard. Phase Voltage and Phase Current.
*12. For an output voltage of 10 V to 175 V / 20 V to 350 V.
*13. An output current in the range of 5 % to 100 % of the maximum current.

Others

Model		ASR-6450-13.5	ASR-6600-18
Protections		UVP, OVP, OCP, OTP, OPP, Fan Fail, Peak and RMS Current Limit	
Display		TFT-LCD, 7 inch	
Memory function		Store and recall settings, Basic settings: 10	
Arbitrary Wave	Number of memories	253 (nonvolatile)	
	Waveform length	4096 words	
	Amplitude resolution	16 bits	

General Specifications

Model			ASR-6450-13.5	ASR-6600-18
Interface	Standard	USB	Type A: Host, Type B: Slave, Speed: 2.0, USB-CDC / USB-TMC	
		LAN	MAC Address, DNS IP Address, User Password, Gateway IP Address, Instrument IP Address, Subnet Mask	
		External	External Signal Input External Control I/O V/I Monitor Output	
		RS-232C	Complies with the EIA-RS-232 specifications	
	Optional 1	GPIB	SCPI-1993, IEEE 488.2 compliant interface	
	Optional 2	CAN Bus	Complies with CAN 2.0A or 2.0B based protocol	
	Optional 3	Device Net	Complies with CAN 2.0A or 2.0B based protocol	
Insulation resistance	Between input and chassis, output and chassis, input and output		DC 500 V, 30 MΩ or more	
Withstand voltage	Between input and chassis, output and chassis, input and output		AC 1500 V or DC 2130 V , 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)	
Safety			EN 61010-1	
Environment	Operating environment		Indoor use, Overvoltage Category II	
	Operating temperature range		0 °C to 40 °C	
	Storage temperature range		-10 °C to 70 °C	
	Operating humidity range		20 %rh to 80 % RH (no condensation)	
	Storage humidity range		90 % RH or less (no condensation)	
	Altitude		Up to 2000 m	
Dimensions (mm)			598(W)×1116(H)×906(D) (not including protrusions)	
Weight			Approx. 200 kg	

A value with the accuracy is the guaranteed value of the specification. However, an accuracy noted as reference value shows the supplemental data for reference when the product is used, and is not under the guarantee. A value without the accuracy is the nominal value or representative value (shown as typ.).

Product specifications are subject to change without notice.