# ASR-6000 Series Parallel Models Specifications

## SPECIFICATIONS

| Model | | ASR-6600-24 | |
|---|---|---|---|
| **Input Ratings** | | | |
| Power type | | Three-phase Three-wire Delta connection<br>Three-phase Four-wire Y connection | |
| Voltage range*1 | | 200 Vac to 240 Vac (Phase Voltage)<br>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 | | 32 kVA or lower | |
| **AC Output** | | | |
| Multi-phase output | | Single-phase output | Polyphase output |
| Output capacity | | 24 kVA | 1P3W: 16 kVA<br>3P4W: 24 kVA |
| Mode | | 1P2W | 1P3W<br>3P4W (Y-connection) |
| Setting mode*3 | | --- | 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<br>3P4W: 0.00 V to 303.1 V / 0.00 V to 606.2 V<br>(sine wave only)<br>Setting Resolution: 0.01 V / 0.1 V |
| Maximum current*7 | | 240 A / 120 A | 80 A / 40 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 550.0 Hz, AC+DC Mode: 1.00 Hz to 550.0 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 550 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 550 Hz) | |
| Setting range of the phase angle*12 | | --- | 3P4W:<br>L2 phase: 0° to 359.9°<br>L3 phase: 0° to 359.9°<br>Setting Resolution: 0.1° |
| Phase angle accuracy*13 | | --- | 45 Hz to 65 Hz: ±1.0°<br>15 Hz to 550 Hz: ±2.0° |
| DC offset*14 | | ± 20 mV (typ.) | |
| **DC output (only single phase output)** | | | |
| **Output Capacity** | | **24 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 | | 240 A / 120 A | |
| Maximum peak current*17 | | Four times of the maximum current | |
| **Output Stability, Total Harmonic Distortion, Output voltage rising time and Ripple noise** | | | |
| Line regulation | | ±0.1% or less (Phase voltage) | |
| Load regulation*18 | | ±1 V / ±2 V (phase voltage, 0 to 100%, via output terminal) | |
| Distortion of Output*19 | | <0.3 % @1Hz to 100Hz, <0.5 % @100.1 Hz to 550 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.
*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 3P4W 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)<br>15 Hz to 550 Hz: ± (0.7 % of rdg + 1 V / 2 V) | 45 Hz to 65 Hz: ± (0.5 % of rdg + 0.5 V / 1 V)<br>15 Hz to 550 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)<br>15 Hz to 550 Hz: ±(0.7 % of rdg + 0.6 A / 0.4 A) | 45 Hz to 65 Hz: ±(0.5 % of rdg + 0.15 A / 0.08 A)<br>15 Hz to 550 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 + 9 W) | ±(2 % of rdg + 3 W) |
| | Apparent (VA) | Resolution | 0.1 VA / 1 VA / 10VA | |
| | | Accuracy | ±(2 % of rdg + 18 VA) | ±(2 % of rdg + 6 VA) |
| | Reactive (VAR) | Resolution | 0.1 VAR / 1 VAR / 10VAR | |
| | | Accuracy*10 | ±(2 % of rdg + 18 VAR) | ±(2 % of rdg + 6 VAR) |
| Power factor | | Range | 0.000 to 1.000 | |
| | | Resolution | 0.001 | |
| Harmonic voltage<br>Effective value (rms)<br>Percent (%)<br>(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)<br>21th to 100th: ±(0.3 % of rdg + 0.5 V / 1 V) | |
| Harmonic current<br>Effective value (rms)<br>Percent (%)<br>(AC-INT and 50/60 Hz only)*11 | | Range | Up to 100th order of the fundamental wave | |
| | | Full Scale | 252 A / 126 A, 100% | 84 A / 42 A, 100% |
| | | Resolution | 0.01 A / 0.1 A / 1 A, 0.1% | |
| | | Accuracy*13 | Up to 20th: ±(1 % of rdg + 3 A / 1.5 A)<br>21th to 100th: ±(1.5 % of rdg + 3 A / 1.5 A) | Up to 20th: ±(1 % of rdg + 1 A / 0.5 A)<br>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** | | | |
|---|---|---|---|
| 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** | | | |
| 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<br>External Control I/O<br>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)<br>EN 61326-2-1/-2-2 (Class A)<br>EN 61000-3-2 (Class A, Group 1)<br>EN 61000-3-3 (Class A, Group 1)<br>EN 61000-4-2/-4-3/-4-4/-4-5/-4-6/-4-8/-4-11 (Class A, Group 1)<br>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) (not including protrusions) | | | 598(W)×1294(H)×906(D) |
| Weight | | | Approx. 250 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.