GW INSTEK
Simply Reliable

ASR-6000 Series

4.5kVA/6.5kVA
高性能交流/直流電源

CE | RS-232 | USB | LAN | CAN | Device Net | GPIB

當 Alpha Go 憑藉超高速運算力打敗人類棋王那一刻起，人工智慧技術(AI)在全球飛速發展，現今具備先進AI功能的伺服器在2個CPU+8GPU的高速運算架構下處理大量資料。然而AI伺服器需要大量電力來維持高速運算！為了滿足這一需求，伺服器電源功率,密度與效能已經大幅提升，高功率伺服器電源模組需要高效能轉換和節省電力消耗，為此可採用AC單相輸入、HVDC 400V 輸入或提高DC輸出電壓等設計。為確保高功率伺服器運作時電力穩定，具有熱插拔冗餘電源規格的電源模組(如:CRPS)已經廣泛使用在伺服器機架上。具備冗餘功能的電源模組需要一次測試多個電源模組，以確保所有模組在高功率輸出期間能夠保持正常工作。基於伺服器電源發展的快速變化下，固緯開發全新ASR系列的旗艦機種 ASR-6000系列 來滿足客戶需求。ASR-6000系列 主要有兩個機型— ASR-6450 AC/DC 4.5Kva 和 ASR-6600系列 AC/DC 6Kva 是固緯第一台單機可支援AC單/三相輸入和輸出，並有足功率DC輸出，使用第三代半導體碳化矽(SiC)技術，造就 4U 6kVA 高功率密度和高性能AC/DC電源供應器。ASR-6000系列 具備模擬更多樣化的電源環境變化的能力，例如:三相平衡和三相不平衡、欠相...等，並且在三相輸出模式下具備多通道輸出功能，可程式輸出阻抗調整、多達上萬種任意波形輸出.. 固緯電子 ASR-6000系列旗艦機種 ASR-6000系列強勢上市，宣告固緯在大功率電源能夠提供完整的測試解決方案 ASR-6000系列為固緯電源供應器中的最佳明星(MVP)。

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* 使用第三代半導體碳化矽(SiC)技術, 造就 4U 6kVA 高功率密度的高性能交/直流電源
* AC 輸入支援單相與三相, 相電壓200V ~ 240V±10% (Delta or Y連接可選擇)
* 10種輸出模式 : 包含AC市電頻率同步輸出(SYNC)，外部電壓控制內部放大器輸出(VCA)
* 具備多通道輸出功能
* 支援1P2W, 1P3W,3P4W輸出
* AC 最大輸出相電壓: 350Vrms 線電壓: 700Vrms
* 具備 AC 三相平衡和不平衡，缺相輸出功能
* 可程式輸出阻抗調整
* 雙通道電壓/電流輸出監控功能
* 電壓輸出上升時間三段可調整
* 支援序列編輯與模擬輸出模式
* 強大任意波型編輯輸出功能,可做上萬種波型編輯輸出
* 進階網頁伺服器控制,支援資料擷取功能
* 100 階諧波量測功能
* 支援外部並聯提升輸出功率
* 標準介面: RS-232C, USB, LAN
* 選配介面 CAN, Device Net, GPIB

應 用 範 圍

* 伺服器/通信電源
* 6.6kW 車載充電器
* 不斷電系統(UPS)
* 軍工,科研,教育
* 交流變頻器
* 交流電機控制器和保護裝置

機　種	ASR-6450	ASR-6600
交流輸入電壓	Single/Three Phase 200 Vac to 240 Vac ±10 %	
交流輸出電壓	Phase Voltage 0~175V/0~350V Line Voltage 0~700V	
交流輸出電流	1P2W 45A/22.5A;1P3W & 3P4W;15A/7.5A	1P2W 60A/30A;1P3W & 3P4W;20A/10A
輸出頻率	2000Hz	2000Hz
額定輸出功率	1P2W--4.5KVA;1P3W--3KVA;3P4W--4.5KVA	1P2W--6KVA;1P3W--4KVA;3P4W--6KVA
直流輸出電壓	-250.0 V ~ +250.0 V/-500.0 V ~ +500.0 V	

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規　格

Model		ASR-6450		ASR-6600	
Input Ratings					
Power type		Single-phase ; Three-phase, Delta or Y connection selectable			
Voltage range*1		200 Vac to 240 Vac ±10 % phase voltage (Delta: L-L, Y: L-N)			
Frequency range		47 Hz to 63 Hz			
Power factor*2		0.95 or higher (typ.)			
Efficiency*2		80 % or higher			
Maximum power consumption		6 kVA or lower		8 kVA or lower	
AC Output					
Multi-phase output		Single-phase output	Polyphase output	Single-phase output	Polyphase output
Output capacity		4.5 kVA	1P3W: 3 kVA ; 3P4W: 4.5 kVA	6 kVA	1P3W: 4 kVA ; 3P4W: 6 kVA
Mode		1P2W	1P3W ; 3P4W (Y-connection)	1P2W	1P3W ; 3P4W (Y-connection)
Setting mode*3		---	Independ, Balanced	---	Independ, 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 and square wave) 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 and square wave) Setting Resolution: 0.01 V / 0.1 V
			1P3W: 0.00 Vpp to 1000 Vpp / 0.00 Vpp to 2000 Vpp 3P4W: 0.00 Vpp to 866.0 Vpp / 0.00 Vpp to 1732 Vpp (triangle and arbitrary wave) Setting Resolution: 0.01 Vpp / 0.1 Vpp / 1 Vpp		1P3W: 0.00 Vpp to 1000 Vpp / 0.00 Vpp to 2000 Vpp 3P4W: 0.00 Vpp to 866.0 Vpp / 0.00 Vpp to 1732 Vpp (triangle and arbitrary wave) Setting Resolution: 0.01 Vpp / 0.1 Vpp / 1 Vpp
Maximum current*7		45 A / 22.5 A	15 A / 7.5 A	60 A / 30 A	20 A / 10 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 2000.0 Hz, AC+DC Mode: 1.00 Hz to 2000.0 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 2000 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 2000 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 2000 Hz: ±2.0°	---	45 Hz to 65 Hz: ±1.0° 15 Hz to 2000 Hz: ±2.0°
DC offset*14		± 20 mV (typ.)			
DC Output (Only Single Phase Output)					
Output capacity		4.5 kW		6 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		45 A / 22.5 A		60 A / 30 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		±0.1 V / ±0.2 V, @DC (only single-phase output) ±0.1 V / ±0.2 V, @45 Hz to 65 Hz (phase voltage, 0 to 100%, via output terminal) ±0.5 V / ±1.0 V, @all other frequencies (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 2000 Hz			
Output voltage response time*20		Fast: 50 µs (typ.) ; Middle: 80 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 phase 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 superimmpositions, 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.
*16. If the output voltage is higher than rated value, this is limited to satisfy the power capacity. If there is the AC superimmpositions , 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 within 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 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) 15 Hz to 2000 Hz: ± (0.7 % of rdg + 1 V / 2 V)	45 Hz to 65 Hz: ± (0.5 % of rdg + 0.5 V / 1 V) 15 Hz to 2000 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 + 0.1 A / 0.05 A) 15 Hz to 2000 Hz: ±(0.7 % of rdg + 0.2 A / 0.1 A)	45 Hz to 65 Hz: ±(0.5 % of rdg + 0.05 A / 0.03 A) 15 Hz to 2000 Hz: ±(0.7 % of rdg + 0.1 A / 0.05 A)
	AVG value accuracy	DC: ± (|0.5 % of rdg| + 0.2 A / 0.1 A)	DC: ± (|0.5 % of rdg| + 0.1 A / 0.05 A)
	PEAK value accuracy*5	45 Hz to 65 Hz and DC: ±(|2 % of rdg| + 1 A / 0.5 A)	45 Hz to 65 Hz: ±(|2 % of rdg| + 0.5 A / 0.25 A)

規　格

Model			ASR-6450	ASR-6600
Power*7*8	Active (W)	Resolution	0.1 W /1 W	
		Accuracy*9	±(1 % of rdg + 3 W)	±(1 % of rdg + 1 W)
	Apparent (VA)	Resolution	0.1 VA / 1 VA	
		Accuracy	±(2 % of rdg + 6 VA)	±(2 % of rdg + 2 VA)
	Reactive (VAR)	Resolution	0.1 VAR / 1 VAR	
		Accuracy*10	±(2 % of rdg + 6 VAR)	±(2 % of rdg + 2 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) ; 20th 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	63 A / 31.5 A, 100%	21 A / 10.5 A, 100%
		Resolution	0.01 A / 0.1 A, 0.1%	
		Accuracy*13	Up to 20th: ±(1 % of rdg + 1.5 A / 0.75 A) 20th to 100th: ±(1.5 % of rdg + 1.5 A / 0.75 A)	Up to 20th: ±(1 % of rdg + 0.5 A / 0.25 A) 20th to 100th: ±(1.5 % of rdg + 0.5 A / 0.25 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
Parallel function			Up to 3 units
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: 1.1/2.0, 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	DeviceNet	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/-3-12 (Class A, Group 1) EN 61000-3-3/-3-11 (Class A, Group 1) EN 61000-4-2/-4-3/-4-4/-4-5/-4-6/-4-8/-4-11/-4-34 (Class A, Group 1) EN 55011 (Class A, Group1)
Safety			EN 61010-1
Vibration, Shock and Transportation Integrity			ISTA 2A Test Procedure
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)			430(W)×176(H)×590(D) (not including protrusions)
Weight			Approx. 40 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.

規格若有局部變更，恕不另行通知！ASR-6000CD1DH

購 買 資 訊

ASR-6450 4.5kVA 可程式交/直流電源供應器
ASR-6600 6kVA 可程式交/直流電源供應器

標 準 配 件

使用手冊, 電源線, 安全指南, 輸入端子蓋, 輸出端子蓋,
三角形連接輸入用銅板, 單相和Y連接輸入用銅板,
三角形連接輸入用銅板, 1P輸出用銅板,
GRA-451-E Rack mount adapter (EIA)
GTL-246 USB cable (USB 2.0 Type A - Type B cable, approx. 1.2M)

選 購 配 件

ASR-003	GPIB Interface Card	**GTL-232**	RS-232C Cable, approx. 2M
ASR-004	DeviceNet Interface Card	**GTL-248**	GPIB Cable, approx. 2M
ASR-005	CAN BUS Interface Card	**GRA-451-E**	Rack mount adapter(EIA)
ASR-006	External Parallel Cable	**GRA-451-J**	Rack mount adapter(JIS)

GPW-008 6RV3 Power Cord; 10AWG/3C, 3m Max Length, , RV5-5*3P, RV5-5*3P UL Type
GPW-011 6RV5 UL Power Cord; 10AWG/5C, 3m, RV5-5*5P,RV5-5*5P UL Type
GPW-012 6RVV5 VDE Power Cord; 2.5mm2/5C, 3m Max Length, RVS3-5*5P, RVS3-5*5P VDE Type
GPW-013 6RVT5 PSE Power Cord; 2.0mm2/5C, 3m Max Length, RVS2-5*5P, RVS2-5*5P PSE Type
GPW-014 6RV4 UL Power Cord; 10AWG/4C, 3m, RV5-5*4P,RV5-5*4P UL TYPE
GET-006 Universal Extension

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