Preface

Dear Customer,
Thank you for using this Momentum 400S/H series single/three phase programmable AC power supply, a product developed & manufactured by APM Technologies. We sincerely hope this product will meet your needs.

The sections outlined in this user manual are suitable for the following product models.

400H Series

Models	Input Mode & Voltage	Max Input Current	Output Voltage	Output Current*1	Output Phase	Output Power	Height
MH350VAC10000W	3Φ(Δ): 198~300Vac	3Φ: 26A	350V	1Φ: 90	1Φ/3Φ	7500VA	3U
	3Φ(Δ): 340~520Vac			3Φ: 30A		10000VA	
MH350VAC13000W	3Φ(Δ): 198~300Vac	3Φ: 26A	350V	1Φ: 90A	1Φ/3Φ	6500VA	3U
	3Φ(Δ): 340~520Vac			3Φ: 30A		13000VA	
MH350VAC15000W	3Φ(Δ): 198~300Vac	3Φ:30A	350V	1Φ: 90A	1Φ/3Φ	7500VA	3U
	3Φ(Δ): 340~520Vac			3Φ: 30A		15000VA	
MH700VAC30000W	3Φ(Δ): 198~300Vac	3Φ: 60A	350V/700V	1Φ: 150A	1Φ/3Φ	15000VA	6U
	3Φ(Δ): 340~520Vac			3Φ: 30A		30000VA	
MH350VAC30000W	3Φ(Δ): 198~300Vac	3Φ: 60A	350V	1Φ: 165A	1Φ/3Φ	15000VA	6U
	3Φ(Δ): 340~520Vac			3Φ: 55A		30000VA	
MH350VAC42000W	3Φ(Δ): 198~300Vac	3Φ: 90A	350V	1Φ: 252A	1Φ/3Φ	21000VA	9U
	3Φ(Δ): 340~520Vac			3Φ: 84A		42000VA	

*1 The current is the maximum current in the rated voltage range.

Model		MH350VAC10000W	MH350VAC13000W	MH350VAC15000W
Input				
Voltage	3 Phase	198~300Vac, Derating to 75% of rated power 340~460Vac 432~520Vac	198~300Vac, Derating to 50% of rated power 340~460Vac 432~520Vac	198~300Vac, Derating to 50% of rated power 340~460Vac 432~520Vac
Current	3 Phase	Max. 26A(L-L)	Max. 26A(L-L)	Max. 30A(L-L)
Connection	3 Phase	L1,L2,L3,PE		
Frequency		45~65Hz		
Fuse (Internal)		3* T50A	3* T40A	3* T50A
Power Factor		>0.98 (Rate Input Voltage, Full Load)	>0.97 (Rate Input Voltage, Full Load)	>0.98 (Rate Input Voltage, Full Load)
Input Power		Max.11.9kVA	Max.15.5kVA	Max.17.8kVA
Efficiency (Full Load, 50~5000Hz/DC)		>72%(Rate: 208/277Vac) >82%(Other)	>73.5%(Rate: 208/277Vac) >83.5%(Other)	>75%(Rate: 208/277Vac) >85%(Other)
AC Output				
AC Output Power		10000VA	13000VA	15000VA
Phase		1 Phase / 3Phase		
Voltage (AC/AC+DC)	Range[1]	AUTO：0~350Vac		
	Resolution	≤0.02 V (AC and AC+DC mode)		
	Accuracy	0.05%F.S. @ 10~100Hz, AC mode 0.1% of actual + 0.1%F.S. @ DC mode 0.1% of actual + 0.1%F.S. @ 101~500Hz, AC mode 0.1% of actual + 0.2%F.S. @ 101~500Hz, AC+ DC mode 0.1% of actual + 0.2%F.S. @ 501~1000Hz, AC mode 0.1% of actual + 0.3%F.S. @ 501~1000Hz, AC+ DC mode 0.1% of actual + 0.2%F.S. + 0.2%*kHz*F.S. @ >1kHz, AC mode 0.1% of actual + 0.3%F.S. + 0.2%*kHz*F.S. @ >1kHz, AC+ DC mode Valid from 5% of full-scale; with sense leads connected.		
	Display Bits	0.001V		
Max. Current (r.m.s)	Range	3 Phase: 30A 1 Phase: 90A		
	Display Bits	0.001A		
	Resolution	3 Phase: 4mA 1 Phase: 12mA		
Max. Current (Peak)	Range	3 Phase: 105Apk 1 Phase: 315Apk		
Frequency	Range	Advanced Version: 10~2500Hz Professional Version: 10~2500Hz Profession-HF Version: 10~5000Hz		
	Resolution	0.01 Hz @ 10~81.99 Hz; 0.05 Hz @ 82~819.99 Hz; 0.1Hz @ 820~ 5000Hz;		
	Accuracy	0.01% of actual + 0.005Hz @10~81.99Hz 0.01% of actual + 0.025Hz @82~819.99Hz 0.01% of actual + 0.05Hz @820~1000Hz 0.1% of actual + 0.05Hz @1001~5000Hz Frequency set specifications valid for output voltage >5% of full-scale. Note: 7.0V <Vout< 17.5V (L range) can be extended 1.5 times, Less Than 7.0V, no range.		
Total Harmonic Distortion (THD)		<0.3% @ 10~100Hz, 80~350Vac (Resistive Load) <0.5% @ 101~500Hz, 80~350Vac (Resistive Load) <1% @ 501~1000Hz, 80~350Vac (Resistive Load) <2% @ 1001~2000Hz, 80~350Vac (Resistive Load) <3% @ 2001~3000Hz, 80~350Vac (Resistive Load) <4% @ 3001~4000Hz, 80~350Vac (Resistive Load) <5% @ 4001~5000Hz, 80~350Vac (Resistive Load) Note: 40V <Vout< 80V (L range) can be extended 1.5 times, Less Than 40V, no range.		

Model		MH350VAC10000W	MH350VAC13000W	MH350VAC15000W
Crest Factor (CF)		⩽5		
Load Regulation(ALC=ON)		0.1% of actual + 0.1%F.S. @10~1000Hz, AC mode 0.1% of actual + 0.2%F.S. @10~1000Hz, AC+ DC mode 0.1% of actual + 0.1%F.S. + 0.2%*kHz*F.S. @ >1kHz, AC mode 0.1% of actual + 0.2%F.S. + 0.2%*kHz*F.S. @ >1kHz, AC+ DC mode Valid from 5% to 100% of full-scale with sense leads connected.		
Line Regulation	ALC=ON	0.05%F.S. @ 3Ø Δ187-300Vac; 0.025%F.S. @ 3Ø Δ340-460Vac/3Ø Δ432-520Vac; Input voltage change in ±10%, DC output or 10Hz~5000Hz AC output.		
	ALC=OFF	0.1%F.S. @ 3Ø Δ187-300Vac; 0.05%F.S. @ 3Ø Δ340-460Vac/3Ø Δ432-520Vac; Input voltage change in ±10%, DC output or 10Hz~800Hz AC output.		
Phase Angle (Starting / Ending)	Range	0~360°		
	Resolution	0.4 °		
	Accuracy	1° @ 10~100Hz; 2° @ 101~1200Hz; 3° @ 1201~2200Hz; 4° @ 2201~3200Hz; 5° @ 3201~4200Hz; 6° @ 4201~5000Hz;		
Current CC Fold Mode	Range	0~200%F.S.		
	Resolution	3 Phase:50 mA 1 Phase:150mA		
	Accuracy	0.3% of actual + 0.5%F.S. @ DC mode 0.3% of actual + 0.5%F.S. @ 10~500Hz, AC mode 0.3% of actual + 0.6%F.S. @ 10~500Hz, DC + AC mode Valid from 5% of full scale to 100% of full-scale. 0.3% of actual + 0.6%F.S. @ 501Hz~1200Hz, AC mode 0.3% of actual + 0.7%F.S. @ 501Hz~1200Hz, DC + AC mode Valid from 5% of full-scale to 200% of full-scale. Note: Above 1.2KHZ, No Rang, only for refernce.		
	Response Time	<180mS		
Noise Level, Typical (r.m.s)		500mV at ≥40Hz outputfrequency; bandwidth, 20kHz to 1MHz;		
DC Output				
DC Output Power		10000W	13000W	15000W
Voltage (DC)	Range	±450Vdc		
	Resolution	20mV		
	Accuracy	±(0.1% of actual + 0.1% of full-scale); valid in low-range from 5% of full-scale; with sense leads connected.		
Max. Current (DC)	Range	16.5A(Every phase)		
	Accuracy	±(0.25% of actual + 0.25% of full-scale); valid from 5% of full-scale to 100% of full-scale.		
DC Offset Voltage, Typical		20mVDC, ≥40 Hz		
Ripple & Noise(r.m.s)/ (Pk-Pk)	Range	500mV(r.m.s), 3V(Pk-Pk) bandwidth, 10Hz to 1MHz		
Programmable Output Impedance[2]		0Ω +200μH ~ 1Ω +1mH		
Harmonics & Inter-harmonics Simulation[2]		10Hz to 5kHz; 2nd to 50th harmonic, 48KHz BW max[3]		
Measurement				
Voltage (AC + DC)	Range	AC 0~350Vac DC 0~450Vdc AC + DC 0-450V(RMS)		
	Resolution	20 mV		
	Accuracy	0.1% of actual + 0.1%F.S. @ 10~1000Hz, AC mode 0.1% of actual + 0.2%F.S. @ 10~1000Hz, AC+ DC mode 0.1% of actual + 0.1%F.S. + 0.2%*kHz*F.S. @ >1kHz, AC mode 0.1% of actual + 0.2%F.S. + 0.2%*kHz*F.S. @ >1kHz, AC+ DC mode Valid from 5% to 100% of full-scale with sense leads connected.		

Model		MH350VAC10000W	MH350VAC13000W	MH350VAC15000W
Voltage (DC)	Range	DC 0~450Vdc		
	Resolution	20 mV		
	Accuracy	±(0.1% of actual + 0.1% of full-scale); valid in low-range from 5% of full-scale; with sense leads connected.		
Frequency	Range	10~5000Hz		
	Resolution	0.01 Hz @ 10~81.99 Hz; 0.05 Hz @ 82~819.99 Hz; 0.1Hz @ 820~ 5000Hz;		
	Accuracy	0.01% of actual + 0.005Hz @ 10~81.91Hz 0.01% of actual + 0.025Hz @ 82~819.1Hz 0.01% of actual + 0.05Hz @ 820~1000Hz 0.1% of actual + 0.05Hz @ 1001~5000Hz Frequency measurement specifications valid for output voltage >5% of full-scale. Note: 7.0V <Vout< 17.5V (L range) can be extended 1.5 times, Less Than 7.0V, no range.		
Current (r.m.s)	Range	0~110% F.S. (H: F.S.=100% Irms, M: F.S.=25% Irms, L: F.S.=5% Irms)		
	Resolution	3 Phase: 4mA 1 Phase:12mA		
	Accuracy	0.3% of actual + 0.3%F.S. @ 10~1000Hz, AC mode 0.3% of actual + 0.4%F.S. @ 10~1000Hz, AC + DC mode 0.3% of actual + 0.3%F.S. + 0.1%*kHz*F.S. @ >1kHz, AC mode 0.3% of actual + 0.4%F.S. + 0.1%*kHz*F.S. @ >1kHz, AC + DC mode Valid from 5% of full-scale to 100% of full-scale.		
Current (Peak)	Range	0~110% F.S. H：F.S=100% Ipeak, M：F.S=25% Ipeak, L：F.S=8% Ipeak	0~110% F.S. H：F.S=100% Ipeak, M：F.S=25% Ipeak, L：F.S=8% Ipeak	0~110% F.S. H：F.S=100% Ipeak, M：F.S=25% Ipeak, L：F.S=5% Ipeak
	Resolution	3 Phase:14mA 1 Phase:42mA		
	Accuracy	0.4% of actual + 0.6%F.S. @ 10~1000Hz, AC mode 0.4% of actual + 0.7%F.S. @ 10~1000Hz, AC + DC mode 0.4% of actual + 0.6%F.S. + 0.2%*kHz*F.S. @ >1kHz, AC mode 0.4% of actual + 0.7%F.S. + 0.2%*kHz*F.S. @ >1kHz, AC + DC mode Valid from 5% of full-scale to 100% of full-scale.		
Power (Watts)	Range	0~10000W	0~13000W	0~15000W
	Resolution	3 Phase:4W 1 Phase:12W		
	Accuracy	0.4% of actual + 0.7%F.S. @ 10~1000Hz, AC mode 0.4% of actual + 0.9%F.S. @ 10~1000Hz, AC + DC mode 0.4% of actual + 0.7%F.S. + 0.4%*kHz*F.S. @ >1kHz, AC mode 0.4% of actual + 0.9%F.S. 0.4%*kHz*F.S. @ >1kHz, AC + DC mode		
Power Apparent (VA)	Range	0~10000VA	0~13000VA	0~15000VA
	Resolution	3 Phase:4VA 1 Phase:12VA		
	Accuracy	0.4% of actual + 0.7%F.S. @ 10~1000Hz, AC mode 0.4% of actual + 0.9%F.S. @ 10~1000Hz, AC + DC mode 0.4% of actual + 0.7%F.S. + 0.4%*kHz*F.S. @ >1kHz, AC mode 0.4% of actual + 0.9%F.S. 0.4%*kHz*F.S. @ >1kHz, AC + DC mode		
Power Resistive (VAR)	Range	0~10000VAR	0~13000VAR	0~15000VAR
	Resolution	3 Phase: 4VAR 1 Phase: 12VAR		
	Accuracy	$\sqrt{(VA)^2-(W)^2}$, Calculated value		

Model		MH350VAC10000W	MH350VAC13000W	MH350VAC15000W
Power Factor (PF)	Range	0.00~1.00		
	Resolution	0.01		
	Accuracy	2%F.S.		
Phase	Range	0~360°		
	Resolution	0.4 °		
	Accuracy	1° @ 10~100Hz; 2° @ 101~1200Hz; 3° @ 1201~2200Hz; 4° @ 2201~3200Hz; 5° @ 3201~4200Hz; 6° @ 4201~5000Hz;		
Harmonic[3]		2~50 orders		
Extra Function				
Remote Sense		5V(rms), Max. Total power less than rated power.		
Slew Rate	Range	AC Voltage: 0.001-10000.00V/ms and Disable		
		DC Voltage: 0.001-10000.00V/ms and Disable		
		Frequency: 0.001-1600.000Hz/ms and Disable		
Transient Generator (only for 15~70Hz)	Range	Trans-Start: 0.0~66.5ms/10Hz, Resolution: 0.1ms		
		Trans-Volt: -450V ~ +450V(L), Resolution: 0.1V		
		Trans-Time: 0.0~66.5ms/10Hz, Resolution: 0.1ms		
		Trans-Count: 0~9999, Constant		
Calibration Function		Built-in calibration function		
Multi-operation[4]	Parallel Output	Max. 64 Units (Option: Optical fiber parallel card)		
	Series Output	Max. 2 Units (Option: Optical fiber parallel card)		
General				
Graphic Display		7" Color touch LCD		
Operation Key Feature		Switch key, Rotary Knob, USB port for transfer and upgrading firmware		
Rack mount Handles		Yes		
FAN		Temperature Control		
Protection Circuits		OVP, OCP, OPP, OFP, RMP		
Interface		USB, RS232, RS485 (Standard) ; GPIB&LAN, CAN (Optional)		
Remote Control Input/Output (Option)				
Analog input		Set A/B/C phase voltage RMS, set current limit.		
Analog output		A/B/C phase output voltage RMS value monitoring, output power monitoring.		
Digital input		Single/three output mode selection, external control function enable selection, power output ON/OFF state control, enable analog input control, stored data recall, output suppression (OFF/LIVE/LATCHING), phase/frequency synchronization signal, List file run trigger.		
Digital output		Power output ON/OFF status indicator, fault status indicator, List file output/output status change/parameter change indicator.		
Environment				
Operating Temperature		0°C~50°C		
Storage Temperature		-20°C~70°C		
Fan Noise		-		
Altitude		2000m		
Relative Humidity		<95%, non-condensing≤45°C; <80%, non-condensing≤50°C		
Temperature Coefficient		≤100ppm/°C F.S. (Voltage); ≤200ppm/°C F.S. (Current); 10ppm/°C.F.S. (Frequency)		
Mechanical				
Dimensions (W*H*D)		423 x 133 x 685 mm	423 x 133 x 685 mm	423 x 133 x 685 mm
Package Dimensions (W*H*D)		638 x 347 x 975 mm	638 x 347 x 975 mm	638 x 347 x 975 mm
Unit Weight		43.5kg	43.5kg	43.5kg
Shipping Weight		-	-	-
Regulatory Compliance				
EMC		CE marked for EMC Directive 2014/30/EU/EN61326-1: 2013 Class A for emissions and immunity standard as required for EU CE Mark. FCC Verification of conformity for CFR 47 Part 15 of the FCC Rules.		
Safety		It meets the safety requirements of EU EN 61010-1:2010 for electrical equipment used in measurement, control and laboratories.		
CE Mark		Installation Overvoltage Category II; Pollution Degree 2; Class II equipment; indoor use only.		
Isolation Voltage		2828VDC, AC output to chassis; 2828VDC, AC input to chassis; 4242VDC, AC input to AC output		
RoHS		Meet to EU Directive 2011/65/EU for restriction of hazardous substances in Electrical and Electronic Equipment.		

[1] According to the output frequency, the AC output voltage will be reduced, and the rated voltage can be output within 3500Hz;
At low level, the maximum output voltage is 187.5V at 4000Hz, and the maximum output voltage is 150V at 5000HZ. The calculation formula is: output voltage =750000/ output frequency.
At high level, the maximum output voltage is 375V at 4000Hz, and the maximum output voltage is 300V at 5000HZ. The calculation formula is: output voltage =1500000/ output frequency.
[2] Only professional version/Professional-HF version support these functions.
[3] According to the output frequency, the number of harmonics will be reduced, up to 50 timeswithin 960Hz, up to 16 times at 3000Hz, up to 9 times at 5000Hz,
the calculation formula is : harmonic number =48000/ output frequency.
[4] It is suggest to derate to 90% output in parallel connection.

All specifications are subject to change without notice.

Model		MH350VAC30000W	MH350VAC42000W
Input			
Voltage	3 Phase	198~300Vac, Derating to 50% of rated power 340~460Vac 432~520Vac	
Current	3 Phase	Max. 60A(L-L)	Max. 90A(L-L)
Connection	3 Phase	L1,L2,L3,PE	
Frequency		45~65Hz	
Fuse (Internal)		6*T50A	9*T50A
Power Factor		>0.98(Rate Input Voltage, Full Load)	
Input Power		Max.35.6kVA	Max.50kVA
Efficiency (Full Load, 50~5000Hz/DC)		>75%(Rate: 208/277Vac) >88%(Other)	>73.5%(Rate: 208/277Vac) >83.5%(Other)
AC Output			
AC Output Power		30000VA	42000VA
Phase		1 Phase / 3Phase	
Voltage (AC/AC+DC)	Range[n]	AUTO:0~350Vac	
	Resolution	≤0.02 V(AC and AC+DC mode)	
	Accuracy	0.05%F.S. @ 10~100Hz, AC mode 0.1% of actual + 0.1%F.S. @ DC mode 0.1% of actual + 0.1%F.S. @ 101~500Hz, AC mode 0.1% of actual + 0.2%F.S. @ 101~500Hz, AC+ DC mode 0.1% of actual + 0.2%F.S. @ 501~1000Hz, AC mode 0.1% of actual + 0.3%F.S. @ 501~1000Hz, AC+ DC mode 0.1% of actual + 0.2%F.S. + 0.2%*kHz*F.S. @ >1kHz, AC mode 0.1% of actual + 0.3%F.S. + 0.2%*kHz*F.S. @ >1kHz, AC+ DC mode Valid from 5% of full-scale; with sense leads connected.	
	Display Bits	0.001V	
Max. Current (r.m.s)	Range	3 Phase: 55A 1 Phase: 165A	3 Phase: 84A 1 Phase:252A
	Display Bits	0.01A	
	Resolution	3 Phase:8mA 1 Phase: 24mA	3 Phase:12mA 1 Phase: 36mA
Max. Current (Peak)	Range	3 Phase:192.5Apk 1 Phase: 577.5Apk	3 Phase:294Apk 1 Phase: 882Apk
Frequency	Range	Advanced Version: 10~2500Hz Professional Version: 10~2500Hz Profession-HF Version: 10~5000Hz	
	Resolution	0.01 Hz @ 10~81.99 Hz; 0.05 Hz @ 82~819.99 Hz; 0.1Hz @ 820~ 5000Hz;	
	Accuracy	0.01% of actual + 0.005Hz @10~81.99Hz 0.01% of actual + 0.025Hz @82~819.99Hz 0.01% of actual + 0.05Hz @820~1000Hz 0.1% of actual + 0.05Hz @1001~5000Hz Frequency set specifications valid for output voltage >5% of full-scale. Note: 7.0V <Vout< 17.5V (L range) can be extended 1.5 times, Less Than 7.0V, no range.	
Total Harmonic Distortion (THD)		<0.3% @ 10~100Hz, 80~350Vac (Resistive Load) <0.5% @ 101~500Hz, 80~350Vac (Resistive Load) <1% @ 501~1000Hz, 80~350Vac (Resistive Load) <2% @ 1001~2000Hz, 80~350Vac (Resistive Load) <3% @ 2001~3000Hz, 80~350Vac (Resistive Load) <4% @ 3001~4000Hz, 80~350Vac (Resistive Load) <5% @ 4001~5000Hz, 80~350Vac (Resistive Load) Note: 40V <Vout< 80V (L range) can be extended 1.5 times, Less Than 40V, no range.	

Model		MH350VAC30000W	MH350VAC42000W
Crest Factor (CF)		⩽5	
Load Regulation(ALC=ON)		0.1% of actual + 0.1%F.S. @10~1000Hz, AC mode 0.1% of actual + 0.2%F.S. @10~1000Hz, AC+ DC mode 0.1% of actual + 0.1%F.S. + 0.2%*kHz*F.S. @ >1kHz, AC mode 0.1% of actual + 0.2%F.S. + 0.2%*kHz*F.S. @ >1kHz, AC+ DC mode Valid from 5% to 100% of full-scale with sense leads connected.	
Line Regulation	ALC=ON	0.05%F.S. @ 3Ø Δ187-300Vac; 0.025%F.S. @ 3Ø Δ340-460Vac/3Ø Δ432-520Vac; Input voltage change in ±10%, DC output or 10Hz~5000Hz AC output.	
	ALC=OFF	0.1%F.S. @ 3Ø Δ187-300Vac; 0.05%F.S. @ 3Ø Δ340-460Vac/3Ø Δ432-520Vac; Input voltage change in ±10%, DC output or 10Hz~800Hz AC output.	
Phase Angle (Starting / Ending)	Range	0~360°	
	Resolution	0.4 °	
	Accuracy	1° @ 10~100Hz; 2° @ 101~1200Hz; 3° @ 1201~2200Hz; 4° @ 2201~3200Hz; 5° @ 3201~4200Hz; 6° @ 4201~5000Hz;	
Current CC Fold Mode	Range	0~200%F.S.	
	Resolution	3 Phase:75mA 1 Phase:225mA	3 Phase:100mA 1 Phase:300mA
	Accuracy	0.3% of actual + 0.5%F.S. @ DC mode 0.3% of actual + 0.5%F.S. @ 10~500Hz, AC mode 0.3% of actual + 0.6%F.S. @ 10~500Hz, DC + AC mode Valid from 5% of full scale to 100% of full-scale. 0.3% of actual + 0.6%F.S. @ 501Hz~1200Hz, AC mode 0.3% of actual + 0.7%F.S. @ 501Hz~1200Hz, DC + AC mode Valid from 5% of full-scale to 200% of full-scale. Note: Above 1.2KHZ, No Rang, only for refernce.	
	Response Time	<180mS	
Noise Level, Typical (r.m.s)		500mV at ≥40Hz outputfrequency; bandwidth, 20kHz to 1MHz;	
DC Output			
DC Output Power		30000W	42000W
Voltage (DC)	Range	±450Vdc	
	Resolution	20mV	
	Accuracy	±(0.1% of actual + 0.1% of full-scale); valid in low-range from 5% of full-scale; with sense leads connected.	
Max. Current (DC)	Range	33A(Every phase)	49.5A(Every phase)
	Accuracy	±(0.25% of actual + 0.25% of full-scale); valid from 5% of full-scale to 100% of full-scale.	
DC Offset Voltage, Typical		20mVDC, ≥40 Hz	
Ripple & Noise(r.m.s)/ (Pk-Pk)	Range	500mV(r.m.s), 3V(Pk-Pk) bandwidth, 10Hz to 1MHz	
Programmable Output Impedance[2]		0Ω +200μH ~ 1Ω +1mH	
Harmonics & Inter-harmonics Simulation[2]		10Hz to 5kHz; 2nd to 50th harmonic, 48KHz BW max[3]	
Measurement			
Voltage (AC + DC)	Range	AC 0~350Vac DC 0~450Vdc AC + DC 0-450V(RMS)	
	Resolution	20 mV	
	Accuracy	0.1% of actual + 0.1%F.S. @ 10~1000Hz, AC mode 0.1% of actual + 0.2%F.S. @ 10~1000Hz, AC+ DC mode 0.1% of actual + 0.1%F.S. + 0.2%*kHz*F.S. @ >1kHz, AC mode 0.1% of actual + 0.2%F.S. + 0.2%*kHz*F.S. @ >1kHz, AC+ DC mode Valid from 5% to 100% of full-scale with sense leads connected.	

Model		MH350VAC30000W	MH350VAC42000W
Voltage (DC)	Range	DC 0~450Vdc	
	Resolution	20 mV	
	Accuracy	±(0.1% of actual + 0.1% of full-scale); valid in low-range from 5% of full-scale; with sense leads connected.	
Frequency	Range	10~5000Hz	
	Resolution	0.01 Hz @ 10~81.99 Hz; 0.05 Hz @ 82~819.99 Hz; 0.1Hz @ 820~ 5000Hz;	
	Accuracy	0.01% of actual + 0.005Hz @ 10~81.91Hz 0.01% of actual + 0.025Hz @ 82~819.1Hz 0.01% of actual + 0.05Hz @ 820~1000Hz 0.1% of actual + 0.05Hz @ 1001~5000Hz Frequency measurement specifications valid for output voltage >5% of full-scale. Note: 7.0V <Vout< 17.5V (L range) can be extended 1.5 times, Less Than 7.0V, no range.	
Current (r.m.s)	Range	0~110% F.S. (H: F.S.=100% Irms, M: F.S.=25% Irms, L: F.S.=5% Irms)	
	Resolution	3 Phase: 8mA 1 Phase: 24mA	3 Phase: 12mA 1 Phase: 36mA
	Accuracy	0.3% of actual + 0.3%F.S. @ 10~1000Hz, AC mode 0.3% of actual + 0.4%F.S. @ 10~1000Hz, AC + DC mode 0.3% of actual + 0.3%F.S. + 0.1%*kHz*F.S. @ >1kHz, AC mode 0.3% of actual + 0.4%F.S. + 0.1%*kHz*F.S. @ >1kHz, AC + DC mode Valid from 5% of full-scale to 100% of full-scale.	
Current (Peak)	Range	0~110% F.S. (H:F.S=100% Ipeak, M:F.S=25% Ipeak, L:F.S=5% Ipeak)	
	Resolution	3 Phase: 14mA 1 Phase: 42mA	3 Phase: 21mA 1 Phase:63mA
	Accuracy	0.4% of actual + 0.6%F.S. @ 10~1000Hz, AC mode 0.4% of actual + 0.7%F.S. @ 10~1000Hz, AC + DC mode 0.4% of actual + 0.6%F.S. + 0.2%*kHz*F.S. @ >1kHz, AC mode 0.4% of actual + 0.7%F.S. + 0.2%*kHz*F.S. @ >1kHz, AC + DC mode Valid from 5% of full-scale to 100% of full-scale.	
Power (Watts)	Range	0~30000W	0~42000W
	Resolution	3 Phase: 8W 1 Phase:24W	3 Phase: 12W 1 Phase:36W
	Accuracy	0.4% of actual + 0.7%F.S. @ 10~1000Hz, AC mode 0.4% of actual + 0.9%F.S. @ 10~1000Hz, AC + DC mode 0.4% of actual + 0.7%F.S. + 0.4%*kHz*F.S. @ >1kHz, AC mode 0.4% of actual + 0.9%F.S. 0.4%*kHz*F.S. @ >1kHz, AC + DC mode	
Power Apparent (VA)	Range	0~30000VA	0~42000VA
	Resolution	3 Phase: 8VA 1 Phase:24VA	3 Phase: 12VA 1 Phase:36VA
	Accuracy	0.4% of actual + 0.7%F.S. @ 10~1000Hz, AC mode 0.4% of actual + 0.9%F.S. @ 10~1000Hz, AC + DC mode 0.4% of actual + 0.7%F.S. + 0.4%*kHz*F.S. @ >1kHz, AC mode 0.4% of actual + 0.9%F.S. 0.4%*kHz*F.S. @ >1kHz, AC + DC mode	
Power Resistive (VAR)	Range	0~30000VAR	0~42000VAR
	Resolution	3 Phase: 8VAR 1 Phase: 24VAR	3 Phase: 12VAR 1 Phase: 36VAR
	Accuracy	$\sqrt{(VA)^2-(W)^2}$, Calculated value	

Model		MH420VAC30000W	MH420VAC42000W
Power Factor (PF)	Range	0.00~1.00	
	Resolution	0.01	
	Accuracy	2%F.S.	
Phase	Range	0~360°	
	Resolution	0.4 °	
	Accuracy	1° @ 10~100Hz; 2° @ 101~1200Hz; 3° @ 1201~2200Hz; 4° @ 2201~3200Hz; 5° @ 3201~4200Hz; 6° @ 4201~5000Hz;	
Harmonic[2]		2~50 orders	
Extra Function			
Remote Sense		5V(rms), Max. Total power less than rated power.	
Slew Rate	Range	AC Voltage: 0.001-10000.00V/ms and Disable	
		DC Voltage: 0.001-10000.00V/ms and Disable	
		Frequency: 0.001-1600.000Hz/ms and Disable	
Transient Generator (only for 15~70Hz)	Range	Trans-Start: 0.0~66.5ms/10Hz, Resolution: 0.1ms	
		Trans-Volt: -450V ~ +450V(L), Resolution: 0.1V	
		Trans-Time: 0.0~66.5ms/10Hz, Resolution: 0.1ms	
		Trans-Count: 0~9999, Constant	
Calibration Function		Built-in calibration function	
Multi-operation[4]	Parallel Output	Max. 64 Units (Option: Optical fiber parallel card)	
	Series Output	Max. 2 Units (Option: Optical fiber parallel card)	
General			
Graphic Display		7" Color touch LCD	
Operation Key Feature		Switch key, Rotary Knob, USB port for transfer and upgrading firmware	
Rack mount Handles		Yes	
FAN		Temperature Control	
Protection Circuits		OVP, OCP, OPP, OFP, RMP	
Interface		USB, RS232, RS485 (Standard) ; GPIB&LAN, CAN (Optional)	
Remote Control Input/Output (Option)			
Analog input		Set A/B/C phase voltage RMS, set current limit.	
Analog output		A/B/C phase output voltage RMS value monitoring, output power monitoring.	
Digital input		Single/three output mode selection, external control function enable selection, power output ON/OFF state control, enable analog input control, stored data recall, output suppression (OFF/LIVE/LATCHING), phase/frequency synchronization signal, List file run trigger.	
Digital output		Power output ON/OFF status indicator, fault status indicator, List file output/output status change/parameter change indicator.	
Environment			
Operating Temperature		0°C~50°C	
Storage Temperature		-20°C~70°C	
Fan Noise		-	
Altitude		2000m	
Relative Humidity		<95%, non-condensing≤45°C; <80%, non-condensing≤50°C	
Temperature Coefficient		≤100ppm/°C F.S. (Voltage); ≤200ppm/°C F.S. (Current); 10ppm/°C.F.S. (Frequency)	
Mechanical			
Dimensions (W*H*D)		423 x 265 x 685 mm	423 x 398x 685 mm
Package Dimensions (W*H*D)		553 x 536x 885 mm	553 x 669 x 885 mm
Unit Weight		-	-
Shipping Weight		-	-
Regulatory Compliance			
EMC		CE marked for EMC Directive 2014/30/EU/EN61326-1: 2013 Class A for emissions and immunity standard as required for EU CE Mark. FCC Verification of conformity for CFR 47 Part 15 of the FCC Rules.	
Safety		It meets the safety requirements of EU EN 61010-1:2010 for electrical equipment used in measurement, control and laboratories.	
CE Mark		Installation Overvoltage Category II; Pollution Degree 2; Class II equipment; indoor use only.	
Isolation Voltage		2828VDC, AC output to chassis; 2828VDC, AC input to chassis; 4242VDC, AC input to AC output	
RoHS		Meet to EU Directive 2011/65/EU for restriction of hazardous substances in Electrical and Electronic Equipment.	

[1] According to the output frequency, the AC output voltage will be reduced, and the rated voltage can be output within 3500Hz;
At low level, the maximum output voltage is 187.5V at 4000Hz, and the maximum output voltage is 150V at 5000HZ. The calculation formula is: output voltage =750000/ output frequency.
At high level, the maximum output voltage is 375V at 4000Hz, and the maximum output voltage is 300V at 5000HZ. The calculation formula is: output voltage =1500000/ output frequency.
[2] Only professional version/Professional-HF version support these functions.
[3] According to the output frequency, the number of harmonics will be reduced, up to 50 timeswithin 960Hz, up to 16 times at 3000Hz, up to 9 times at 5000Hz,
the calculation formula is : harmonic number =48000/ output frequency.
[4] It is suggest to derate to 90% output in parallel connection.

All specifications are subject to change without notice.

Model		MH700VAC30000W
Input		
Voltage	3 Phase	198~300Vac, Derating to 50% of rated power 340~460Vac 432~520Vac
Current	3 Phase	Max. 60A(L-L)
Connection	3 Phase	L1,L2,L3,PE
Frequency		45~65Hz
Fuse (Internal)		6*T50A
Power Factor		>0.98(Rate Input Voltage, Full Load)
Input Power		Max.35.6kVA
Efficiency (Full Load, 50~5000Hz/DC)		>75%(Rate: 208/277Vac) >88%(Other)
AC Output		
AC Output Power		30000VA
Phase		1 Phase / 3Phase
Voltage (AC/AC+DC)	Range[1]	AUTO:0~700Vac
	Resolution	≤0.04 V(AC and AC+DC mode)
	Accuracy	0.05%F.S. @ 10~100Hz, AC mode 0.1% of actual + 0.1%F.S. @ DC mode 0.1% of actual + 0.1%F.S. @ 101~500Hz, AC mode 0.1% of actual + 0.2%F.S. @ 101~500Hz, AC+ DC mode 0.1% of actual + 0.2%F.S. @ 501~1000Hz, AC mode 0.1% of actual + 0.3%F.S. @ 501~1000Hz, AC+ DC mode 0.1% of actual + 0.2%F.S. + 0.2%*kHz*F.S. @ >1kHz, AC mode 0.1% of actual + 0.3%F.S. + 0.2%*kHz*F.S. @ >1kHz, AC+ DC mode Valid from 5% of full-scale; with sense leads connected.
	Display Bits	0.001V
Max. Current (r.m.s)	Range	3 Phase: 30A 1 Phase: 150A
	Display Bits	0.001A
	Resolution	3 Phase:4mA 1 Phase: 12mA
Max. Current (Peak)	Range	3 Phase:105Apk 1 Phase: 315Apk
Frequency	Range	Advanced Version: 10~2500Hz Professional Version: 10~2500Hz Profession-HF Version: 10~5000Hz
	Resolution	0.01 Hz @ 10~81.99 Hz; 0.05 Hz @ 82~819.99 Hz; 0.1Hz @ 820~ 5000Hz;
	Accuracy	0.01% of actual + 0.005Hz @10~81.99Hz 0.01% of actual + 0.025Hz @82~819.99Hz 0.01% of actual + 0.05Hz @820~1000Hz 0.1% of actual + 0.05Hz @1001~5000Hz Frequency set specifications valid for output voltage >5% of full-scale. Note: 7.0V <Vout< 17.5V (L range) can be extended 1.5 times, Less Than 7.0V, no range.
Total Harmonic Distortion (THD)		<0.3% @ 10~100Hz, 80~350Vac (Resistive Load) <0.5% @ 101~500Hz, 80~350Vac (Resistive Load) <1% @ 501~1000Hz, 80~350Vac (Resistive Load) <2% @ 1001~2000Hz, 80~350Vac (Resistive Load) <3% @ 2001~3000Hz, 80~350Vac (Resistive Load) <4% @ 3001~4000Hz, 80~350Vac (Resistive Load) <5% @ 4001~5000Hz, 80~350Vac (Resistive Load) Note: 40V <Vout< 80V (L range) can be extended 1.5 times, Less Than 40V, no range.

Model		MH700VAC30000W
Crest Factor (CF)		⩽5
Load Regulation(ALC=ON)		0.1% of actual + 0.1%F.S. @10~1000Hz, AC mode 0.1% of actual + 0.2%F.S. @10~1000Hz, AC+ DC mode 0.1% of actual + 0.1%F.S. + 0.2%*kHz*F.S. @ >1kHz, AC mode 0.1% of actual + 0.2%F.S. + 0.2%*kHz*F.S. @ >1kHz, AC+ DC mode Valid from 5% to 100% of full-scale with sense leads connected.
Line Regulation	ALC=ON	0.05%F.S. @ 3Ø Δ187-300Vac； 0.025%F.S. @ 3Ø Δ340-460Vac/3Ø Δ432-520Vac； Input voltage change in ±10%, DC output or 10Hz~5000Hz AC output.
	ALC=OFF	0.1%F.S. @ 3Ø Δ187-300Vac； 0.05%F.S. @ 3Ø Δ340-460Vac/3Ø Δ432-520Vac； Input voltage change in ±10%, DC output or 10Hz~800Hz AC output.
Phase Angle (Starting / Ending)	Range	0~360°
	Resolution	0.4 °
	Accuracy	1° @ 10~100Hz; 2° @ 101~1200Hz; 3° @ 1201~2200Hz; 4° @ 2201~3200Hz; 5° @ 3201~4200Hz; 6° @ 4201~5000Hz;
Current CC Fold Mode	Range	0~200%F.S.
	Resolution	3 Phase:50mA 1 Phase:150mA
	Accuracy	0.3% of actual + 0.5%F.S. @ DC mode 0.3% of actual + 0.5%F.S. @ 10~500Hz, AC mode 0.3% of actual + 0.6%F.S. @ 10~500Hz, DC + AC mode Valid from 5% of full scale to 100% of full-scale. 0.3% of actual + 0.6%F.S. @ 501Hz~1200Hz, AC mode 0.3% of actual + 0.7%F.S. @ 501Hz~1200Hz, DC + AC mode Valid from 5% of full-scale to 200% of full-scale. Note: Above 1.2KHZ, No Rang, only for refernce.
	Response Time	<180mS
Noise Level, Typical (r.m.s)		1000mV at ≥40Hz outputfrequency; bandwidth, 20kHz to 1MHz;
DC Output		
DC Output Power		30000W
Voltage (DC)	Range	±900Vd
	Resolution	40mV
	Accuracy	±(0.1% of actual + 0.1% of full-scale); valid in low-range from 5% of full-scale; with sense leads connected.
Max. Current (DC)	Range	16.5A (Every phase)
	Accuracy	±(0.25% of actual + 0.25% of full-scale); valid from 5% of full-scale to 100% of full-scale.
DC Offset Voltage, Typical		40mVDC, ≥40 Hz
Ripple & Noise(r.m.s)/ (Pk-Pk)	Range	1000mV(r.m.s), 6V(Pk-Pk) bandwidth, 10Hz to 1MHz
Programmable Output Impedance[2]		0Ω +200μH ~ 1Ω +1mH
Harmonics & Inter-harmonics Simulation[2]		10Hz to 5kHz; 2nd to 50th harmonic, 48KHz BW max[3]
Measurement		
Voltage (AC + DC)	Range	AC 0~700Vac DC 0~900Vdc AC + DC 0-900V(RMS)
	Resolution	40 mV
	Accuracy	0.1% of actual + 0.1%F.S. @ 10~1000Hz, AC mode 0.1% of actual + 0.2%F.S. @ 10~1000Hz, AC+ DC mode 0.1% of actual + 0.1%F.S. + 0.2%*kHz*F.S. @ >1kHz, AC mode 0.1% of actual + 0.2%F.S. + 0.2%*kHz*F.S. @ >1kHz, AC+ DC mode Valid from 5% to 100% of full-scale with sense leads connected.

Model		MH700VAC30000W
Voltage (DC)	Range	DC 0~900Vdc
	Resolution	40 mV
	Accuracy	±(0.1% of actual + 0.1% of full-scale); valid in low-range from 5% of full-scale; with sense leads connected.
Frequency	Range	10~5000Hz
	Resolution	0.01 Hz @ 10~81.99 Hz; 0.05 Hz @ 82~819.99 Hz; 0.1Hz @ 820~ 5000Hz;
	Accuracy	0.01% of actual + 0.005Hz @ 10~81.91Hz 0.01% of actual + 0.025Hz @ 82~819.1Hz 0.01% of actual + 0.05Hz @ 820~1000Hz 0.1% of actual + 0.05Hz @ 1001~5000Hz Frequency measurement specifications valid for output voltage >5% of full-scale. Note: 7.0V <Vout< 17.5V (L range) can be extended 1.5 times, Less Than 7.0V, no range.
Current (r.m.s)	Range	0~110% F.S. (H: F.S.=100% Irms, M: F.S.=25% Irms, L: F.S.=5% Irms)
	Resolution	3 Phase: 4mA 1 Phase: 12mA
	Accuracy	0.3% of actual + 0.3%F.S. @ 10~1000Hz, AC mode 0.3% of actual + 0.4%F.S. @ 10~1000Hz, AC + DC mode 0.3% of actual + 0.3%F.S. + 0.1%*kHz*F.S. @ >1kHz, AC mode 0.3% of actual + 0.4%F.S. + 0.1%*kHz*F.S. @ >1kHz, AC + DC mode Valid from 5% of full-scale to 100% of full-scale.
Current (Peak)	Range	0~110% F.S. (H：F.S=100% Ipeak, M：F.S=25% Ipeak, L：F.S=5% Ipeak)
	Resolution	3 Phase:14mA 1 Phase: 42mA
	Accuracy	0.4% of actual + 0.6%F.S. @ 10~1000Hz, AC mode 0.4% of actual + 0.7%F.S. @ 10~1000Hz, AC + DC mode 0.4% of actual + 0.6%F.S. + 0.2%*kHz*F.S. @ >1kHz, AC mode 0.4% of actual + 0.7%F.S. + 0.2%*kHz*F.S. @ >1kHz, AC + DC mode Valid from 5% of full-scale to 100% of full-scale.
Power (Watts)	Range	0~30000W
	Resolution	3 Phase:8W 1 Phase:24W
	Accuracy	0.4% of actual + 0.7%F.S. @ 10~1000Hz, AC mode 0.4% of actual + 0.9%F.S. @ 10~1000Hz, AC + DC mode 0.4% of actual + 0.7%F.S. + 0.4%*kHz*F.S. @ >1kHz, AC mode 0.4% of actual + 0.9%F.S. 0.4%*kHz*F.S. @ >1kHz, AC + DC mode
Power Apparent (VA)	Range	0~30000VA
	Resolution	3 Phase:8VA 1 Phase:24VA
	Accuracy	0.4% of actual + 0.7%F.S. @ 10~1000Hz, AC mode 0.4% of actual + 0.9%F.S. @ 10~1000Hz, AC + DC mode 0.4% of actual + 0.7%F.S. + 0.4%*kHz*F.S. @ >1kHz, AC mode 0.4% of actual + 0.9%F.S. 0.4%*kHz*F.S. @ >1kHz, AC + DC mode
Power Resistive (VAR)	Range	0~30000VAR
	Resolution	3 Phase: 8VAR 1 Phase: 24VAR
	Accuracy	$\sqrt{(VA)^2 - (W)^2}$, Calculated value

Model		MH700VAC30000W
Power Factor (PF)	Range	0.00~1.00
	Resolution	0.01
	Accuracy	2%F.S.
Phase	Range	0~360°
	Resolution	0.4 °
	Accuracy	1° @ 10~100Hz; 2° @ 101~1200Hz; 3° @ 1201~2200Hz; 4° @ 2201~3200Hz; 5° @ 3201~4200Hz; 6° @ 4201~5000Hz;
Harmonic[2]		2~50 orders
Extra Function		
Remote Sense		10V(rms), Max. Total power less than rated power.
Slew Rate	Range	AC Voltage: 0.001-10000.00V/ms and Disable
		DC Voltage: 0.001-10000.00V/ms and Disable
		Frequency: 0.001-1600.000Hz/ms and Disable
Transient Generator (only for 15~70Hz)	Range	Trans-Start: 0.0~66.5ms/10Hz, Resolution: 0.1ms
		Trans-Volt: -900V ~ +900V(L), Resolution: 0.1V
		Trans-Time: 0.0~66.5ms/10Hz, Resolution: 0.1ms
		Trans-Count: 0~9999, Constant
Calibration Function		Built-in calibration function
Multi-operation[4]	Parallel Output	Max. 10 Units (Option: Optical fiber parallel card)
	Series Output	Not supported
General		
Graphic Display		7" Color touch LCD
Operation Key Feature		Switch key, Rotary Knob, USB port for transfer and upgrading firmware
Rack mount Handles		Yes
FAN		Temperature Control
Protection Circuits		OVP, OCP, OPP, OFP, RMP
Interface		USB, RS232, RS485 (Standard) ; GPIB&LAN, CAN (Optional)
Remote Control Input/Output (Option)		
Analog input		Set A/B/C phase voltage RMS, set current limit.
Analog output		A/B/C phase output voltage RMS value monitoring, output power monitoring.
Digital input		Single/three output mode selection, external control function enable selection, power output ON/OFF state control, enable analog input control, stored data recall, output suppression (OFF/LIVE/LATCHING), phase/frequency synchronization signal, List file run trigger.
Digital output		Power output ON/OFF status indicator, fault status indicator, List file output/output status change/parameter change indicator.
Environment		
Operating Temperature		0°C~50°C
Storage Temperature		-20°C~70°C
Fan Noise		-
Altitude		2000m
Relative Humidity		<95%, non-condensing≤45°C; <80%, non-condensing≤50°C
Temperature Coefficient		≤100ppm/°C F.S. (Voltage); ≤200ppm/°C F.S. (Current); 10ppm/°C.F.S. (Frequency)
Mechanical		
Dimensions (W*H*D)		423 x 265 x 685 mm
Package Dimensions (W*H*D)		553 x 536 x 885 mm
Unit Weight		-
Shipping Weight		-
Regulatory Compliance		
EMC		CE marked for EMC Directive 2014/30/EU/EN61326-1: 2013 Class A for emissions and immunity standard as required for EU CE Mark. FCC Verification of conformity for CFR 47 Part 15 of the FCC Rules.
Safety		It meets the safety requirements of EU EN 61010-1:2010 for electrical equipment used in measurement, control and laboratories.
CE Mark		Installation Overvoltage Category II; Pollution Degree 2; Class II equipment; indoor use only.
Isolation Voltage		2828VDC, AC output to chassis; 2828VDC, AC input to chassis; 4242VDC, AC input to AC output
RoHS		Meet to EU Directive 2011/65/EU for restriction of hazardous substances in Electrical and Electronic Equipment.

[1] According to the output frequency, the AC output voltage will be reduced, and the rated voltage can be output within 3500Hz;
At low level, the maximum output voltage is 187.5V at 4000Hz, and the maximum output voltage is 150V at 5000HZ. The calculation formula is: output voltage =750000/ output frequency.
At high level, the maximum output voltage is 375V at 4000Hz, and the maximum output voltage is 300V at 5000HZ. The calculation formula is: output voltage =1500000/ output frequency.
[2] Only professional version/Professional-HF version support these functions.
[3] According to the output frequency, the number of harmonics will be reduced, up to 50 timeswithin 960Hz, up to 16 times at 3000Hz, up to 9 times at 5000Hz,
the calculation formula is : harmonic number =48000/ output frequency.
[4] It is suggest to derate to 90% output in parallel connection.

All specifications are subject to change without notice.