

## Three phase input 3,000W Programmable CVCC AC-DC Power Supplies



The compact HWS3000GT AC-DC power supplies can deliver 3,000W with a 3-phase input voltage of 170 - 265Vac. The nominal output voltages (24V, 48V, 60V, 80V, 130V or 250V) and output current are fully programmable from zero up to their maximum rating. This can be achieved using a serial RS485 interface (MODBus protocol) or analog 1-5V or 4-20mA signal. Up to three units can be connected in series and / or ten units in parallel. The HWS3000GT is packaged in a compact 270 x 150 x 61mm (10.6 x 5.9 x 2.4") footprint and has conservatively rated electrolytic capacitor temperatures for long field life. The /HD option code includes dual sided board coating and designed to meet shock and vibration for MIL-STD-810G. The warranty period is seven years<sup>(1)</sup>.

Features	Benefits
• Serial or Analog Programming (CV/CC)	• Choice of Programming Interfaces
• Series and/or Parallel Operation	• Scalable Voltage and Current
• Compact 270 x 150 x 61mm (10.6 x 5.9 x 2.4") Footprint	• Space Saving in End Equipment
• Single and Three Phase Models (See Related Products)	• Global Use
• Seven Year Warranty <sup>(1)</sup>	• Low Cost of Ownership
• Optional Board Coating & Ruggedization	• Designed to meet MIL-STD-810G (Shock and Vibration) (HD Option Code)

Model Selector						
Model	Nominal Output Voltage (V)	Output Adjustment (Potentiometer) (V)	Output Adjustment (Programming) (V)	Output Current (A) (3-phase 170 - 265Vac Input) (Programming)	Max Power (3-phase 170 - 265Vac Input) (W)	Efficiency (220 / 230Vac) (%)
HWS3000GT-24	24	19.2 - 28.8	0 - 28.8	0 - 125	3000	91
HWS3000GT-48	48	38.4 - 52.8	0 - 52.8	0 - 62.6	3004.8	92
HWS3000GT-60	60	48.0 - 66.0	0 - 66.0	0 - 50	3000	92
HWS3000GT-80	80	64.0 - 96.0	0 - 96.0	0 - 37.5	3000	92
HWS3000GT-130	130	104.0 - 156.0	0 - 156.0	0 - 23.2	3016	93
HWS3000GT-250	250	200.0 - 300.0	0 - 300.0	0 - 12.0	3000	93

<b>HWS3000GT</b>	-	<b>24</b>	/	<b>HD</b>
Series		Output voltage 24, 48, 60, 80, 130, 250		Option Code
				Blank HD RF
				No Options Board coating + MIL-STD-810 Reverse Fan (Intake Airflow)

Related Products		
Type	Part Number(s)	Description
EMC filter	<a href="#">RTMN-5020</a>	High attenuation 20A 500Vac two stage filter
3kW Programmable Power Supplies	<a href="#">HWS3000G</a>	Single phase 85 - 265Vac input
100-800W Programmable Power Supplies	<a href="#">Z+ Low Voltage</a>	Z+ 10V to 100V Programmable Power Supplies
100-800W Programmable Power Supplies	<a href="#">Z+ High Voltage</a>	Z+ 160V to 650V Programmable Power Supplies

Specifications						
Model		HWS3000GT-24	HWS3000GT-48	HWS3000GT-80	HWS3000GT-130	HWS3000GT-250
<b>Input</b>						
Input Voltage Range (Operating)	Vac	3-phase 170- 265				
Nominal Input Voltage Range	Vac	3-phase 200 - 240 (Note: Safety certified for 180 - 264Vac only)				
Input Frequency	Hz	47 - 63 (Note: Safety certified for 50-60Hz)				
Input Current at 200 / 230Vac	A	10	9.9	9.9	9.9	9.9
Inrush Current at 200Vac (Cold Start)	A	80 (at 2nd Inrush)				
Leakage Current	mA	<3 at 240Vac 60Hz				
Power Factor (200Vac)	-	0.95				
Harmonic Compliance	-	Meets IEC61000-3-2				
No Load Power Consumption	W	See evaluation data on website				
Hold Up Time (typ)	ms	20 at 1500W load, 10 at 3000W				
Efficiency	-	See model selector				
Conducted & Radiated EMI	-	EN55032A, EN55011-A, FCC-A				
Immunity	-	IEC61000-6-2, IEC61000-4.2, -3, -4, -5, -6, -8, -11				
Insulation Class	-	Class I				
Safety Certifications and Markings	-	IEC/EN/UL/CSA62368-1, IEC/EN62477-1 (OVC III, 2,000m altitude). CE Mark and UKCA Mark				

Immunity				
Test	Standard	Test Level	Criteria	Notes
ESD	EN61000-4-2	Contact Discharge: 1, 2	B	-
		Air Discharge: 1, 2, 3	B	-
Radiated Susceptibility	EN61000-4-3	2	A	1.4 - 6.0GHz
		3	A	80 - 1000MHz
Electrical Fast Transient Burst Surge	EN61000-4-4	1, 2, 3	B	-
	EN61000-4-5	1, 2, 3	B	Common mode
		1, 2	B	Normal mode
Conducted Susceptibility	EN61000-4-6	1, 2, 3	A	
Magnetic fields	EN61000-4-8	1, 2, 3, 4	A	
Voltage Dips and Input Interruptions	EN61000-4-11	30% 500ms	A	L1 - L2, L2 - L3, L3 - L1
		60% 200ms	A	L1 - L2, L2 - L3, L3 - L1
		100% 20ms	A	L1 - L2, L2 - L3, L3 - L1
		100% 5000ms	C	L1 - L2
			C	L2 - L3
	A	L3 - L1		
SEMI F47 Line Dip	SEMI F47	-	-	At input voltages > 200Vac

Specifications					
Model		HWS3000GT-24	HWS3000GT-48	HWS3000GT-60	HWS3000GT-130
<b>Output</b>					
Switching Frequency	kHz	Primary: 120, secondary: 240			
Line Regulation	mV	24V: 96, 48V: 192, 60V: 240, 80V: 320, 130V: 520, 250V: 1000			
Load Regulation	mV	24V: 192, 48V: 384, 60V: 480, 80V: 640, 130V: 1040, 250V: 2000			
Ripple & Noise	mV	24V: 300, 48V: 400, 60V: 500, 80V: 600 130V: 866, 250V: 1250			
Standby Voltage	-	5V 2A			
Series Operation	-	See Instruction Manual			
Parallel Operation	-	Up to ten units, see the Instruction Manual			
External Load Capacitance	uF	Not applicable			
Temperature Coefficient	%/°C	±0.02			
Minimum Load	-	No minimum load required			
Overcurrent Protection <sup>(2)</sup>	A	24V: 131.2<, 48V: 65.7<, 60V: 52.5<, 80V: 39.3 <, 130V: 24.3<, 250V: 12.6 <			
Overvoltage Protection	V	24V: 30.4 - 31.5, 48V: 56.1 - 58.1, 60V: 70.2 - 72.6, 80V: 101.6 -104.8, 130V: 165.1 - 170.3, 250V: 317.5 - 327.5			
Remote Sense	-	0.3V compensation			
Remote On/Off	-	Yes, see Instruction Manual			
Signals	-	AC Fail, Voltage and Current Good, Fan Fail (Open collector)			
<b>Output (Constant Current Mode)</b>					
Line Regulation	mA	24V: 500, 48V: 250.4, 60V: 200, 80V: 150, 130V: 92.8, 250V: 48			
Load Regulation	mA	24V: 1000, 48V: 500.8, 60V: 400, 80V: 300 130V: 185.6, 250V: 96			
<b>Programming and monitoring</b>					
Communication Interface	-	Modbus RTU (RS-485): Controls output voltage and current, product status (including product life) Operational history - OCP, OVP, AC Fail, etc.			
Output Voltage Monitor using VB terminal	-	Output Voltage : 0% - Nominal output voltage, VB terminal voltage : 1 - 5V			
Output Current Monitor using CB terminal	-	Output Current : 0% - Maximum, CB terminal voltage : 1 - 5V			
Output Voltage Ext. Control Using CV Terminal	-	Apply external voltage or current : 1 - 5V or 4 - 20mA, Output Voltage: 0% - Nominal output voltage			
Output Current Ext. Control Using CC Terminal	-	Apply external voltage or current (1 - 5V or 4 - 20mA). Output Current: 0% - Max.			
Output Voltage Ext. Control Using Modbus RTU	-	0 - 4,000. Output Voltage: 0% - Nominal output voltage			
Output Current Ext. Control Using Modbus RTU	-	0 - 4,000. Output Current: 0% - Max.			
<b>Environmental</b>					
Operating Temperature (-40°C start-up)	°C	-20 to +70, derate output current linearly to 50% load from 50 to 70			
Storage Temperature	°C	-40 to +85			
Humidity (non condensing)	%RH	Operating: 20 - 90, Storage: 10 - 95			
Cooling	-	Variable speed fan, air exits across rear. Fan noise is 45dB (typ) at 25°C and 70% load			
Altitude	m	5,000. Operating, transportation and storage. IEC/EN62477-1 (OVC III, 2,000m altitude)			
Withstand Voltage (For 1 minute)	Vac	Input to Ground 2,000, Input to Output 3,000, Output to Ground 1,500			
Isolation Resistance	MΩ	>100 at 25°C, 70%RH & 500Vdc			
Vibration (Non Operating)	-	10-55Hz (1 min sweep). Maximum 19.6m/s <sup>2</sup> , 1 hour each			
Shock	-	<196m/s <sup>2</sup>			
<b>Other</b>					
Weight (Typ)	g	2,300			
Size (LxWxH)	mm	270 x 150 x 61			
Size (LxWxH)	Inches	10.63 x 5.91 x 2.4			
Connectors	-	Input/Output: Screw terminals, Output connector is user configurable for vertical or horizontal orientation			
MTBF - Telcordia SR-332*	-	25°C: 825,678, 40°C: 527,785			
Warranty	yrs	7 <sup>(1)</sup>			

Notes:

See website for detailed specifications, test methods and Instruction Manual.

Specification parameters apply at 25°C ambient temperature unless otherwise stated.

(1) The Americas and EMEA regions: 7 years. Other regions: 5 years. See applicable regional terms of sale.

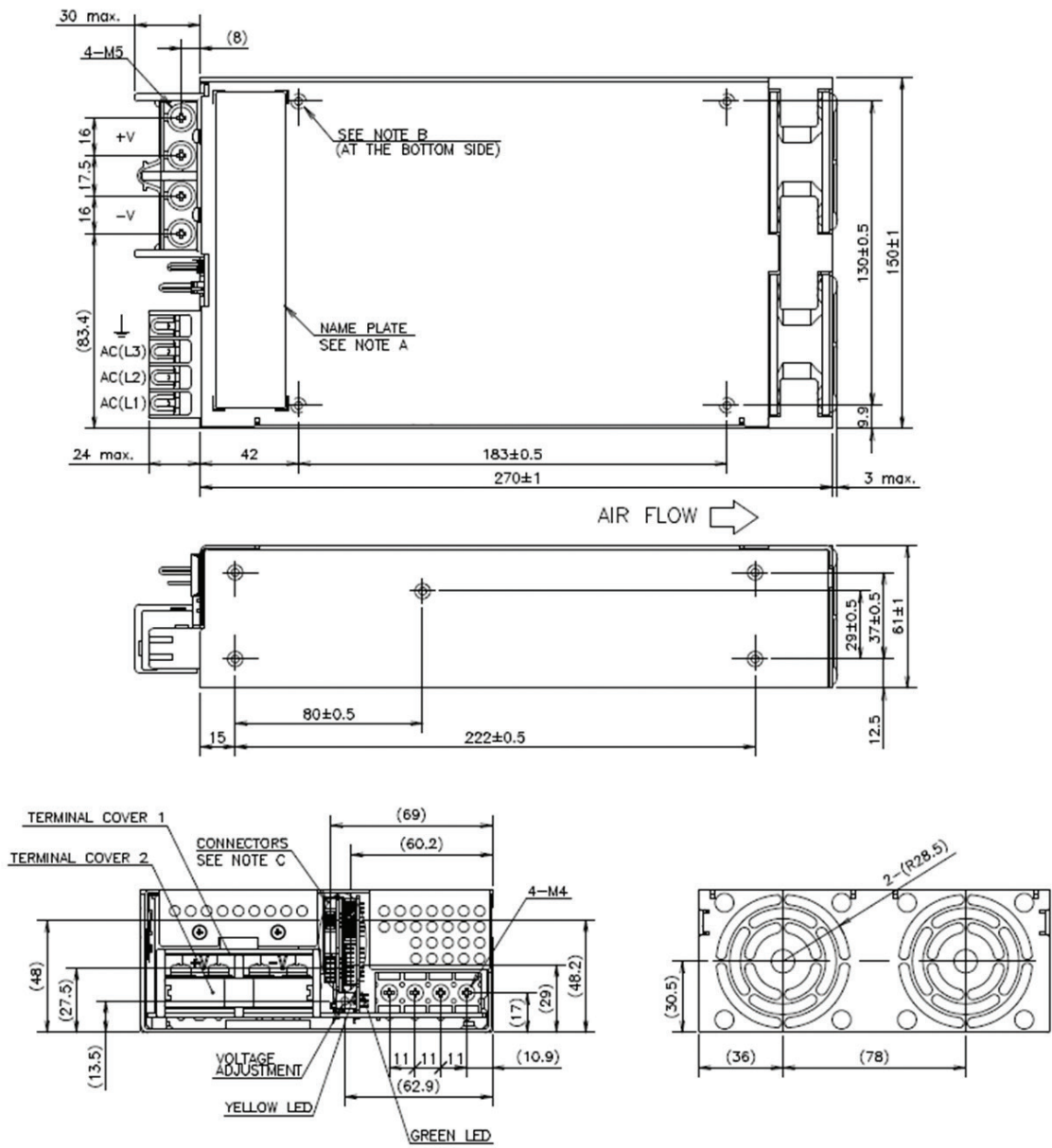
(2) Constant current with automatic recovery. If the overload lasts more than 30s, the output will shutdown

\*24V 125A, 230Vac input

[Link to GUI](#)

[Link to Communication manual](#)

Outline Drawing



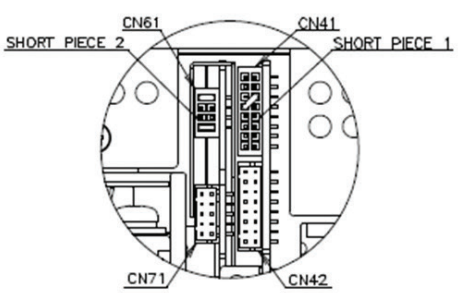
== NOTES ==

- A : MODEL NAME, INPUT VOLTAGE RANGE, NOMINAL OUTPUT VOLTAGE, MAXIMUM OUTPUT CURRENT, COUNTRY OF MANUFACTURE AND SAFETY MARKING (FOR ONLY APPROVED PRODUCTS) ARE SHOWN HERE IN ACCORDANCE WITH THE SPECIFICATIONS.
- B : 9-M4 BR & COUNTERSINK ARE FOR CUSTOMER'S CHASSIS MOUNTING. (SCREW PENETRATION DEPTH 6mm MAX.)

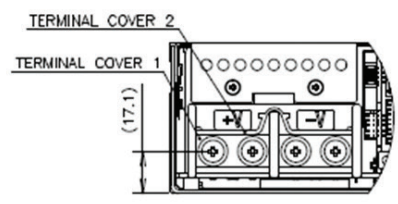
== ACCESSORIES ==

- \* TERMINAL COVER 1 ----- (NET 1)  
(ATTACHED ON TERMINAL AT SHIPMENT)
- \* TERMINAL COVER 2 ----- (NET 1)  
(ATTACHED ON TERMINAL AT SHIPMENT)
- \* SHORT PIECE 1 ----- (NET 1)  
SHORTING -R - AG  
(ATTACHED ON CN41 AT SHIPMENT)
- \* SHORT PIECE 2 ----- (NET 1)  
SHORTING +L - +S, -L - -S  
(ATTACHED ON CN61 AT SHIPMENT)

C :



== FRONT SIDE SCREW ==





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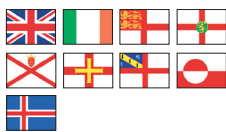
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