

GENESYS™ Programmable Power Supplies



TDK-Lambda

NEW

GENESYS™

The next generation has arrived.
And it's small and mighty.

The GENESYS™ family of programmable power supplies sets a new standard for flexible, reliable, AC-DC power systems in OEM, Industrial and Laboratory applications.

VERSATILE
COMMUNICATION
PROTOCOLS

SMALLEST AND
LIGHTEST PRODUCT
ON THE MARKET

HIGH FUNCTIONALITY

SPEEDS UP
TEST TIMES

SIMPLIFIES CONTROL

HIGHEST POWER
DENSITY ON THE MARKET



Features

General:

- 1U benchtop and 19 Inch standard rack package
- Constant voltage/constant current/constant power
- Internal resistance programming function

Control interfaces:

- High resolution 16 bit ADCs & DACs
- RS232/485, USB, LAN (**LAN** 1.5) built-in, isolated analogue as standard
- Integrated Anybus CompactCom interface platform
- Isolated analogue remote control and monitoring
- Communications compatible with Z+ and Genesys™

Programming:

- Arbitrary waveform (up to 100 steps) generation and storage (4 storage locations)
- Fast programming response time with user adjustable voltage and current slew rate
- Two user programmable output control pins (open drain) to activate external devices
- Easy auto-configuration for parallel systems up to 20kW
- Safe or Auto re-start and last settings memory

Environmental:

- Fan speed profile controlled by ambient temperature and load
- Efficiency up to 92%

Mechanical:

- High contrast, wide viewing angle LCD display with brightness and dimming control
- Blank front panel option
- Front Panel dust filter option

Specifications

- 5kW output power in 1U
- Light weight <7.5 Kg
- Wide Range of popular worldwide AC inputs, 3ø (208VAC, 400VAC & 480VAC)
- Output voltage up to 600V, current up to 500A
- 5 year warranty

Applications

- Test & Measurement systems, Component Device Testing, Manufacturing and process control
- Semiconductor Processing & Burn-In, Aerospace & Satellite Testing, Medical Imaging, Green Technology
- ATE, Automotive, Automation, Laser diodes, Battery simulation
- Higher power systems can be configured with up to four 5kW units. Each unit is 1U with zero space between them (zero stack)
- OEM Designers have a wide variety of inputs and outputs from which to select depending on application and location



Industrial



Automation



Test

Find out more at:
uk.tdk-lambda.com/genesysplus

Front Panel Description



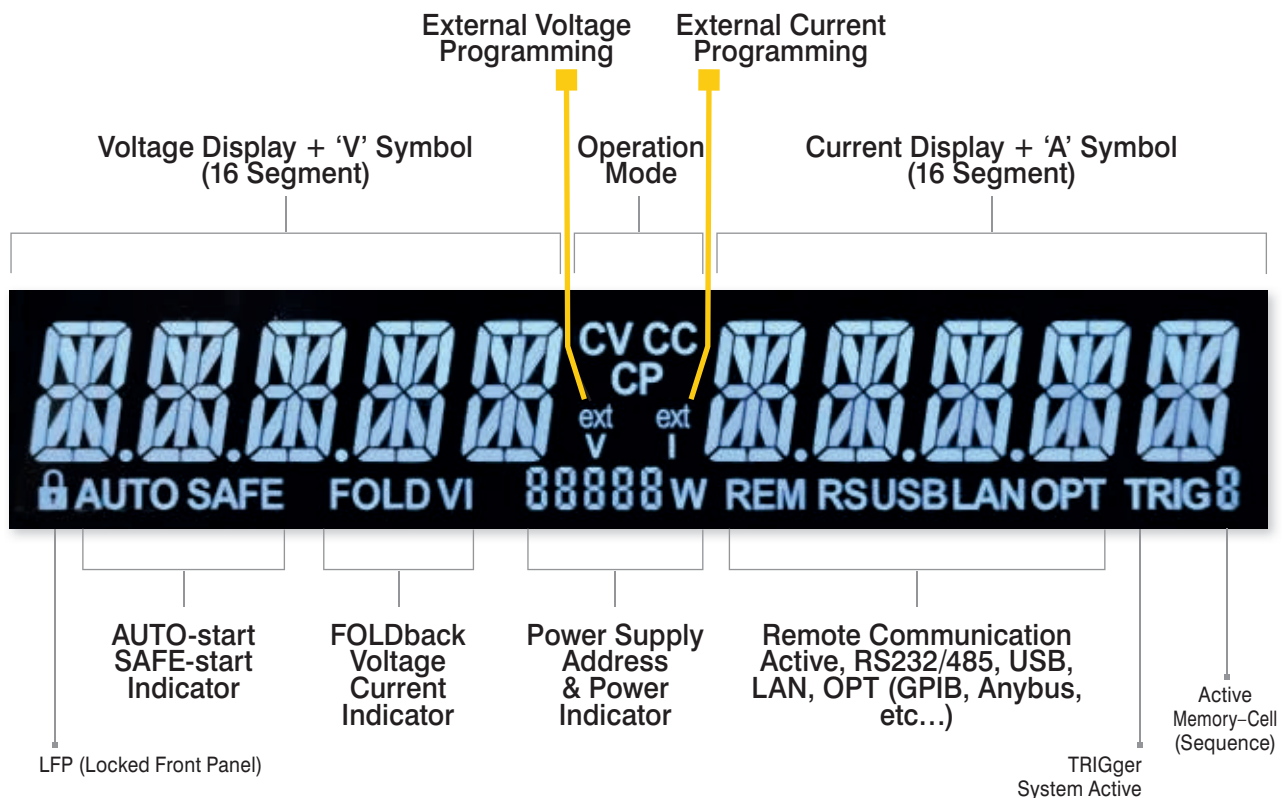
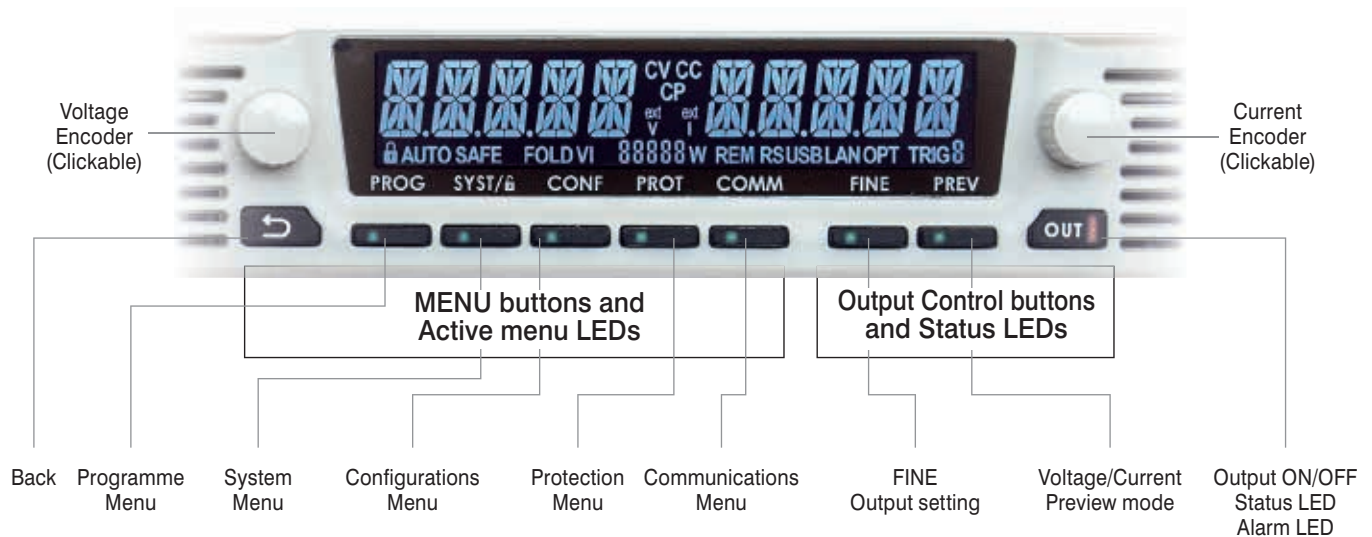
1. ON/OFF Switch
2. Air Intake allows zero stacking for maximum system flexibility and power density
3. Reliable Detent Encoders for settings and Menu navigation
4. High Contrast/Brightness display with wide viewing angle, 16 segment LCD
5. Function/Status LEDs: Active modes and function indicators
6. Pushbuttons allow flexible user configuration

Rear Panel Description



1. DB26 (Female) connector for Isolated Analogue Programming, Monitoring and other functions
2. USB Interface
3. RS-232/RS-485 IN/OUT Remote Serial Programming
4. LAN (**LAN** 1.5) Interface
5. Auto paralleling Bus connectors
6. Remote/Local Output Voltage Sense Connections (spring cage)
7. Output Connections: Rugged busbars (shown) for models up to 150V Output;
Plug connector: PHOENIX CONTACT IPC 5/4-STF-7.62 for models with Outputs >150V
8. Input: 208VAC, 400VAC & 480VAC Three Phase, 50/60 Hz.
AC Input Connector: PHOENIX CONTACT Power Combicon PC 5/4-STCL1-7.62 Series with strain relief
9. Optional Interface Position for IEEE 488.2 SCPI or AnyBus Interface
10. Exhaust air assures reliable operation when zero stacked

Front Panel Display



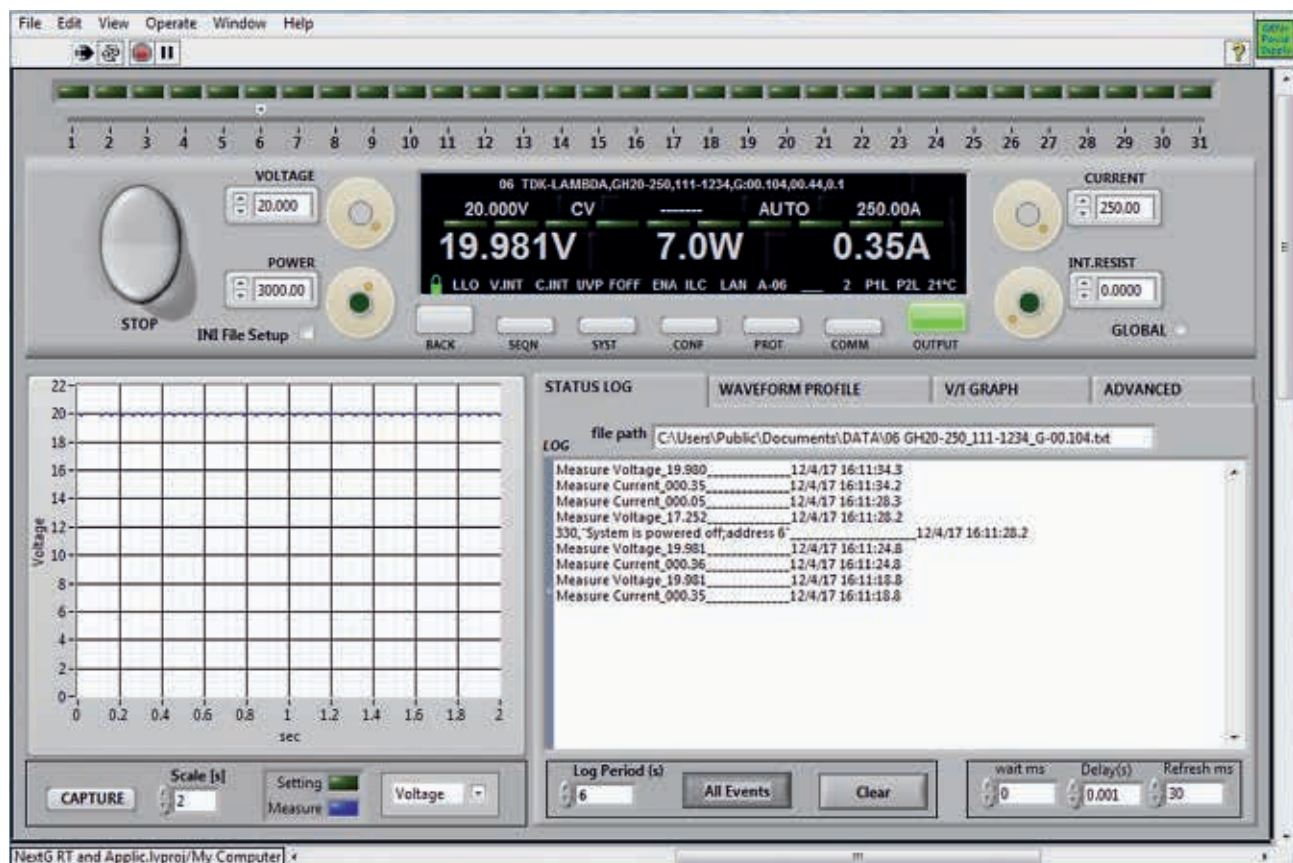
Programmable Power Supplies **GENESYS™**

GENESYS™ Graphical User Interface

Virtual Panel allows programming and monitoring units with or without front panel.

1. Control and monitor up-to 31 units
2. Data logging including errors, events and recovery
3. Realtime Graph and Waveform creator, store/load sequence
4. Solar array mode - calculate MPP (Max Peak Power) for solar array
5. Registers View: Operation Status, Fault, Event Status, ENABLE and INTERLOCK signals
6. Remote communication state LOC, REM, LLO
7. Programmed signals 1&2

GUI Waveform Profile generator



Programmable Power Supplies **GENESYS™**

GENESYS™ Blank Panel

Blank Front Panel is available for applications where the front panel display and controls are not required and only remote interface (digital/analogue) is needed.

Blank Front Panel option has all the standard product functions and features except the display. The power supply can be controlled via the rear panel connectors (LAN, USB, RS-232/RS-485, Isolated analogue programming and monitoring).



GENESYS™ Parallel and Series Configurations

Parallel operation - Master/Slave:

- Auto paralleling Scalable Master-Slave Operation
- Active current sharing allows up to four identical units to be connected
- Total Real Current is Programmed, Measured and reported by the Master
- Up to four supplies operate as one

Standard Unit - Zero stacked up to 4 units



Standard & Blank - Zero stacked up to 4 units

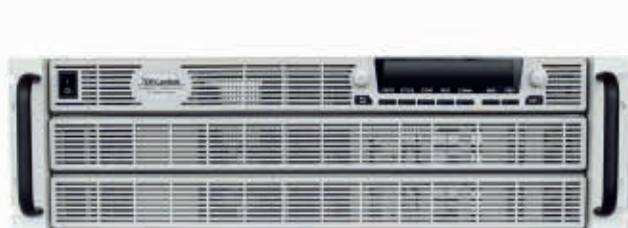


Scalable Power Systems:

Factory assembly and test available for two and three unit systems 10kW/15kW. Parallel kit available for four unit systems 20kW.



GSP 10kW in 2U



GSP 15kW in 3U

Series operation:

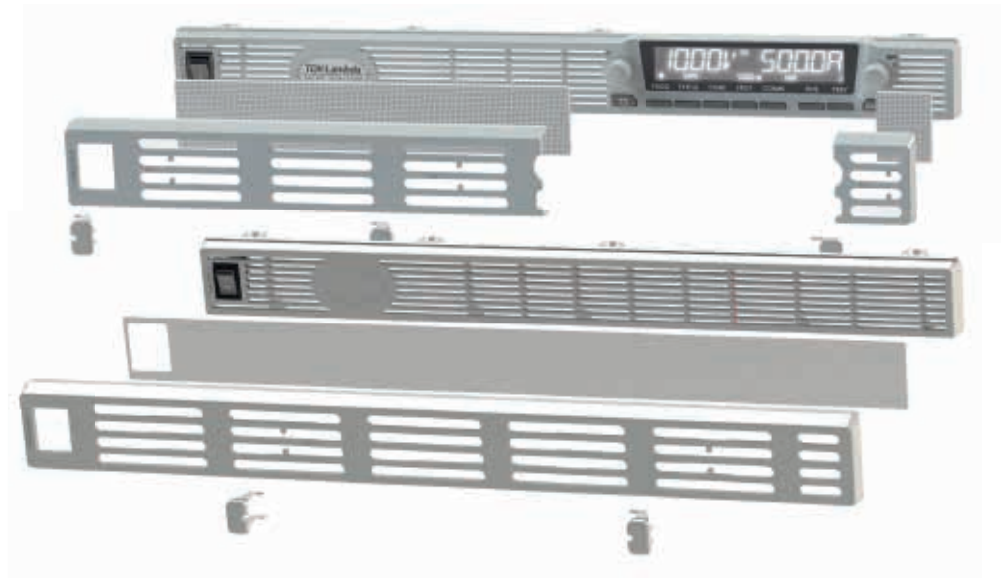
Two units may be connected in series to increase the output voltage or to provide bipolar output. (Max. 600V to Chassis Ground).

GENESYS™ Front Panel dust filter

Front panel dust cover is available for dusty air environment applications.
Dust cover is removable snap-in filter (for easy maintenance)

Order part number: G-AFK

Order part number: GB-AFK



Accessories

Front Panel dust filter / Field installation kit:

Air Filter

1. Material: Reticulated polyurethane Foam
2. Thickness 4.0 mm
3. 30 PPI
4. Storage temperature : -40° ~ 85°C
5. Operating temperature : 0° ~ 60°C
6. Humidity 95% RH

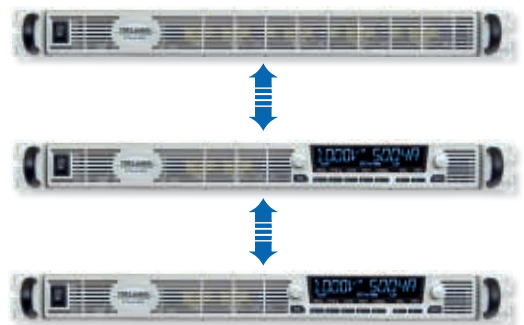
Thermal derating:

For all models derate 10°C up to 2000 meter.

Above 2000 m derate 2°C / 100 meter or 2% of current rated / 100m.

Remote Programming via communication Interface

Standard Built-in LAN, USB, RS-232 & RS-485 allows daisy-chain control of up to 31 power supplies on the same communication bus. Can be Daisy chained via built-in RS-485 Interface.



Models 5kW

Model	Output Voltage [VDC]	Output Current [A]	Output Power [W]
G10-500	0~10V	0~500	5000
G20-250	0~20V	0~250	5000
G30-170	0~30V	0~170	5100
G300-17	0~300V	0~17	5100
G600-8.5	0~600V	0~8.5	5100

Available: Sep 2017

Model	Output Voltage [VDC]	Output Current [A]	Output Power [W]
G40-125	0~40V	0~125	5000
G60-85	0~60V	0~85	5100
G80-65	0~80V	0~65	5200
G100-50	0~100V	0~50	5000
G150-34	0~150V	0~34	5100

Available: Feb 2018

How to order

G	-	10	-	500	-		-	
Series Name		Output Voltage (0~10V)		Output Current (0~500A)		Interface Options		AC Input Options
Front Panel Type								
Empty: standard								
B: Blank Front Panel								
SP: Scalable Power Systems (Factory assembled)								
		(0~10V)		(0~1000A)				
Interface Options (Factory installed)						Accessories Options		
LAN (1.5) - built-in						3P208 (Three Phase 170~265VAC)		
USB - built-in						3P400 (Three Phase 342~460VAC)		
RS-232/RS-485 - built-in						3P480 (Three Phase 342~528VAC)		
Isolated Analogue Voltage/Resistive Programming/Monitoring control interface (600V Isolation) - built-in								
IEEE						M- Printed* User Manual		
Modbus-TCP						*User Manual & GUI are provided on CD as Standard		
EtherCAT						P - Bus Paralleling cable		
P/N								
-								
-								
-								
-								
IEEE						Available		
MDBS						coming soon		
ECAT						coming soon		

Accessories

Accessories will be sent separately from the Power Supply packing, according to order.

1. Serial Communication cable – RS-232/RS-485 cable is used to connect the power supply to the Host PC.

Mode	RS-485	RS-232
PC Connector	DB-9F	DB-9F
Communication Cable	Shielded L=2m	Shielded L=2m
Power Supply Connector	RJ-45	RJ-45
P/N	GEN/485-9	GEN/232-9

2. Serial Link cable (included with the power supply)

Daisy-chain up to 31 **GENESYS™** power supplies.

Mode	Power Supply Connector	Communication Cable	P/N
RS-485	RJ-45	Shielded L=50cm	GEN/RJ45

3. Bus Paralleling cable

Connectors	Cables	P/N
2013595-1 (TYCO)	Shielded L=11cm	G/P

Specifications **GENESYS™ 5000 W**

OUTPUT RATING		GEN	10-500	20-250	30-170	40-125	60-85	80-65	100-50	150-34	300-17	600-8.5
1. Rated output voltage(*1)	V		10	20	30	40	60	80	100	150	300	600
2. Rated output current (*2)	A		500 (*3)	250	170	125	85	65	50	34	17	8.5
3. Rated output power	W		5000	5000	5100	5000	5100	5200	5000	5100	5100	5100

INPUT CHARACTERISTICS		V	10	20	30	40	60	80	100	150	300	600
1. Input voltage/freq. 3 phase, 3 wire + Ground (*4)	---		3-Phase, 200V models: 170~265Vac, 47~63Hz (Covers 200/230Vac) 3-Phase, 400V models: 342~460Vac, 47~63Hz (Covers 380/400/415Vac) 3-Phase, 480V models: 342~528Vac, 47~63Hz (Covers 380/400/415/440/460/480Vac)									
2. Maximum Input current at 100% load	3-Phase, 200V models:	---	17.5A @ 200Vac									
	3-Phase, 400V models:	---	9.2A @ 380Vac									
	3-Phase, 480V models:	---	9.2A @ 380Vac									
3. Power Factor (Typ)	---		0.94 @ 200/380Vac, rated output power.									
4. Efficiency (*5)	%		90	91	91	91	91	91	91	91	92	92
5. Inrush current (*6)	---		Less than 50A									

CONSTANT VOLTAGE MODE		V	10	20	30	40	60	80	100	150	300	600
1. Max. Line regulation (*7)	---		0.01% of rated output voltage									
2. Max. Load regulation (*8)	---		0.01% of rated output voltage +5mV									
3. Ripple and noise (p-p, 20MHz) (*9)	mV		75	75	75	75	75	80	90	120	200	480
4. Ripple r.m.s. 5Hz~1MHz (*9)	mV		8	10	12	12	12	15	15	20	60	100
5. Temperature coefficient	PPM/°C		50PPM/°C from rated output voltage, following 30 minutes warm-up.									
6. Temperature stability	---		0.01% of rated Vout over 8hrs interval following 30 minutes warm-up. Constant line, load & temp.									
7. Warm-up drift	---		Less than 0.05% of rated output voltage+2mV over 30 minutes following power on.									
8. Remote sense compensation/ wire (*10)	V		2	2	5	5	5	5	5	5	5	5
9. Up-prog. Response time (*11)	mS		30	30	30	30	50	50	50	50	50	100
10. Down-prog. response time:	Full load (*11)	mS	50	50	80	80	80	100	100	100	100	200
	No load (*12)	mS	300	600	800	900	1000	1200	1500	2000	3000	3000
11. Transient response time	mS		Time for output voltage to recover within 0.5% of its rated output for a load change 10~90% of rated output current. Output set-point: 10~100%. Local sense. Less than 1mS, for models up to and including 100V. 2mS, for models above 100V.									
12. Hold-up time	---											

CONSTANT CURRENT MODE		V	10	20	30	40	60	80	100	150	300	600
1. Max. Line regulation (*7)	---		0.05% of rated output current.									
2. Max. Load regulation (*13)	---		0.08% of rated output current.									
3. Load regulation thermal drift	---		Less than 0.03% of rated output current over 30 minutes following load change.									
4. Ripple r.m.s. @ 10% rated voltage (*14)	mA		1200	600	300	150	100	70	45	45	15	8
5. Ripple r.m.s. @ rated voltage. B.W 5Hz~1MHz.	mA		700	300	150	75	50	35	23	23	7.5	4
6. Temperature coefficient	PPM/°C		70PPM/°C from rated output current, following 30 minutes warm-up.									
7. Temperature stability	---		0.01% of rated Iout over 8hrs. interval following 30 minutes warm-up. Constant line, load & temperature.									
8. Warm-up drift			10V model: Less than +/-0.2% of rated output current over 30 minutes following power on.									
			20V~600V: Less than +/-0.1% of rated output current over 30 minutes following power on.									

Specifications **GENESYS™** 5000 W

ANALOG PROGRAMMING AND MONITORING (ISOLATED FROM THE OUTPUT)

1. Vout voltage programming	---	0~100%, 0~5V or 0~10V, user selectable. Accuracy and linearity: +/-0.15% of rated Vout.
2. Iout voltage programming (*15)	---	0~100%, 0~5V or 0~10V, user selectable. Accuracy and linearity: +/-0.4% of rated Iout.
3. Vout resistor programming	---	0~100%, 0~5/10Kohm full scale, user selectable. Accuracy and linearity: +/-0.5% of rated Vout.
4. Iout resistor programming (*15)	---	0~100%, 0~5/10Kohm full scale, user selectable. Accuracy and linearity: +/-0.5% of rated Iout.
5. Output voltage monitor	---	0~5V or 0~10V, user selectable. Accuracy: +/-0.5%.
6. Output current monitor (*15)	---	0~5V or 0~10V, user selectable. Accuracy: +/-0.5%.

SIGNALS AND CONTROLS (ISOLATED FROM THE OUTPUT)

1. Power supply OK signal	---	Power supply output monitor. Open collector. Output On: On. Output Off: Off. Maximum Voltage: 30V, maximum Sink Current: 10mA.
2. CV/CC signal	---	CV/CC Monitor. Open collector. CC mode: On. CV mode: Off. Maximum Voltage: 30V, maximum Sink Current: 10mA.
3. LOCAL/REMOTE Analogue control	---	Enable/Disable analogue programming control by electrical signal or dry contact. Remote: 0~0.6V or short. Local: 2~30V or open.
4. LOCAL/REMOTE Analogue signal	---	analogue programming control monitor signal. Open collector. Remote: On. Local: Off. Maximum Voltage: 30V, maximum Sink Current: 10mA.
5. ENABLE/DISABLE Signal	---	Enables/Disables the PS output by electrical signal or dry contact. 0~0.6V or short, 2~30V or open. User selectable logic.
6. INTERLOCK (ILC) control	---	Enables/Disables the PS output by electrical signal or dry contact. Remote: 0~0.6V or short. Local: 2~30V or open.
7. Programmed signals	---	Two open drain programmable signals. Maximum voltage 25V, maximum sink current 100mA (Shunted by 27V zener).
8. TRIGGER IN / TRIGGER OUT signals	---	Maximum low level input voltage = 0.8V, Minimum high level input voltage = 2.5V, Maximum high level input = 5V positive edge trigger: tw=10us minimum. Tr, Tf=1us maximum, Min delay between 2 pulses 1ms.

FUNCTIONS AND FEATURES

1. Parallel operation	---	Possible. Up to 4 identical units in Master/Slave mode. Refer to instruction manual.
2. Series operation	---	Possible. Two identical units. Refer to instruction manual.
3. Daisy chain	---	Power supplies can be connected in Daisy chain to synchronize their turn-on and turn-off.
4. Constant power control	---	Limits the output power to a programmed value. Programming via the communication ports or the front panel.
5. Output resistance control	---	Emulates series resistance. Resistance range: 0~1000mΩ. Programming via the communication ports or the front panel.
6. Slew rate control	---	Programmable Output rise and Output fall slew rate. Programming range: 0.0001~999.9 V/mSec. or A/mSec. Programming via the communication ports or the front panel.
7. Arbitrary waveforms	---	Profiles of up to 100 steps can be stored in 4 memory cells. Activation by command via the communication ports or by the front panel.

PROGRAMMING AND READBACK (USB, LAN, RS232/485, Optional IEEE Interface)

	V	10	20	30	40	60	80	100	150	300	600
1. Vout programming accuracy (*16)	---	0.05% of rated output voltage									
2. Iout programming accuracy (*15)	---	0.1% of actual output current+0.2% of rated output current									
3. Vout programming resolution	---	0.002% of rated output voltage									
4. Iout programming resolution	---	0.002% of rated output current									
5. Vout readback accuracy	---	0.05% of rated output voltage									
6. Iout readback accuracy (*15)	---	0.2% of rated output current									
7. Vout readback resolution (of rated output voltage)	%	0.011%	0.006%	0.004%	0.003%	0.002%	0.002%	0.011%	0.007%	0.004%	0.002%
8. Iout readback resolution (of rated output current)	%	0.003%	0.005%	0.006%	0.009%	0.002%	0.002%	0.003%	0.004%	0.006%	0.002%

Specifications **GENESYS™ 5000 W**

PROTECTIVE FUNCTIONS	V	10	20	30	40	60	80	100	150	300	600
1. Foldback protection	---	Output shut-down when power supply change mode from CV to CC or Power Limit mode or from CC to CV or Power Limit mode. User presetable. Reset by AC input recycle in autostart mode, by OUTPUT button, by rear panel or by communication.									
2. Over-voltage protection (OVP)	---	Output shut-down. Reset by AC input recycle in autostart mode, by OUTPUT button, by rear panel or by communication.									
3. Over-voltage programming range	V	0.5~12	1~24	2~36	2~44	5~66	5~88	5~110	5~165	5~330	5~660
4. Over-voltage programming accuracy	---	+/-1% of rated output voltage									
5. Output under voltage limit (UVL)	---	Prevents from adjusting Vout below limit. Does not affect in analogue programming. Preset by front panel or communication port.									
6. Over temperature protection	---	Shuts down the output. Auto recovery by autostart mode.									
7. Output under voltage limit (UVL)	---	Prevents adjustment of Vout below limit.									
8. Output under voltage protection (UVP)	---	Prevents adjustment of Vout below limit. P.S output turns Off during under voltage condition. Reset by AC input recycle in autostart mode, by OUTPUT button, by rear panel or by communication.									

FRONT PANEL		
1. Control functions	---	Mutiple options with 2 Encoders
	---	Vout/Iout/Power Limit manual adjust
	---	OVP/UVL/UVP manual adjust
	---	Protection Functions - OVP, UVL, UVP, Foldback, OCP, ENA, ILC
	---	Communication Functions - Selection of LAN, IEEE, RS232, RS485, USB
	---	Communication Functions - Selection of Baud Rate, Address
	---	Analogue Control Functions - Selection Voltage/resistive programming, 5V/10V, 5K/10K programming
	---	Analogue Control Functions - Selection of Voltage/Current Monitoring 5V/10V, Output ON/OFF, Front Panel Lock.
2. Display	---	Vout: 4 digits, accuracy: 0.05% of rated output voltage +/-1 count.
	---	Iout: 4 digits, accuracy: 0.2% of rated output current +/-1 count.
3. Front Panel Buttons Indications	---	OUTPUT ON, ALARM, PREVIEW, FINE, COMMUNICATION, PROTECTION, CONFIGURATION, SYSTEM, SEQUENCER.
4. Front Panel Display Indications	---	Voltage, Current, Power, CV, CC, CP, External Voltage, External Current, Address, LFP, Autostart, Safetstart, Foldback V/I, Remote (communication), RS/USB/LAN/IEEE communication, Trigger, Load/Store Cell.

ENVIRONMENTAL CONDITIONS		
1. Operating temperature	---	0~50°C, 100% load.
2. Storage temperature	---	-20~85°C
3. Operating humidity	%	20~90% RH (no condensation).
4. Storage humidity	%	10~95% RH (no condensation).
5. Altitude (*17)	---	Operating: 10000ft (3000m), output current derating 2%/100m or Ta derating 1°C/100m above 2000m. Non operating: 40000ft (12000m).

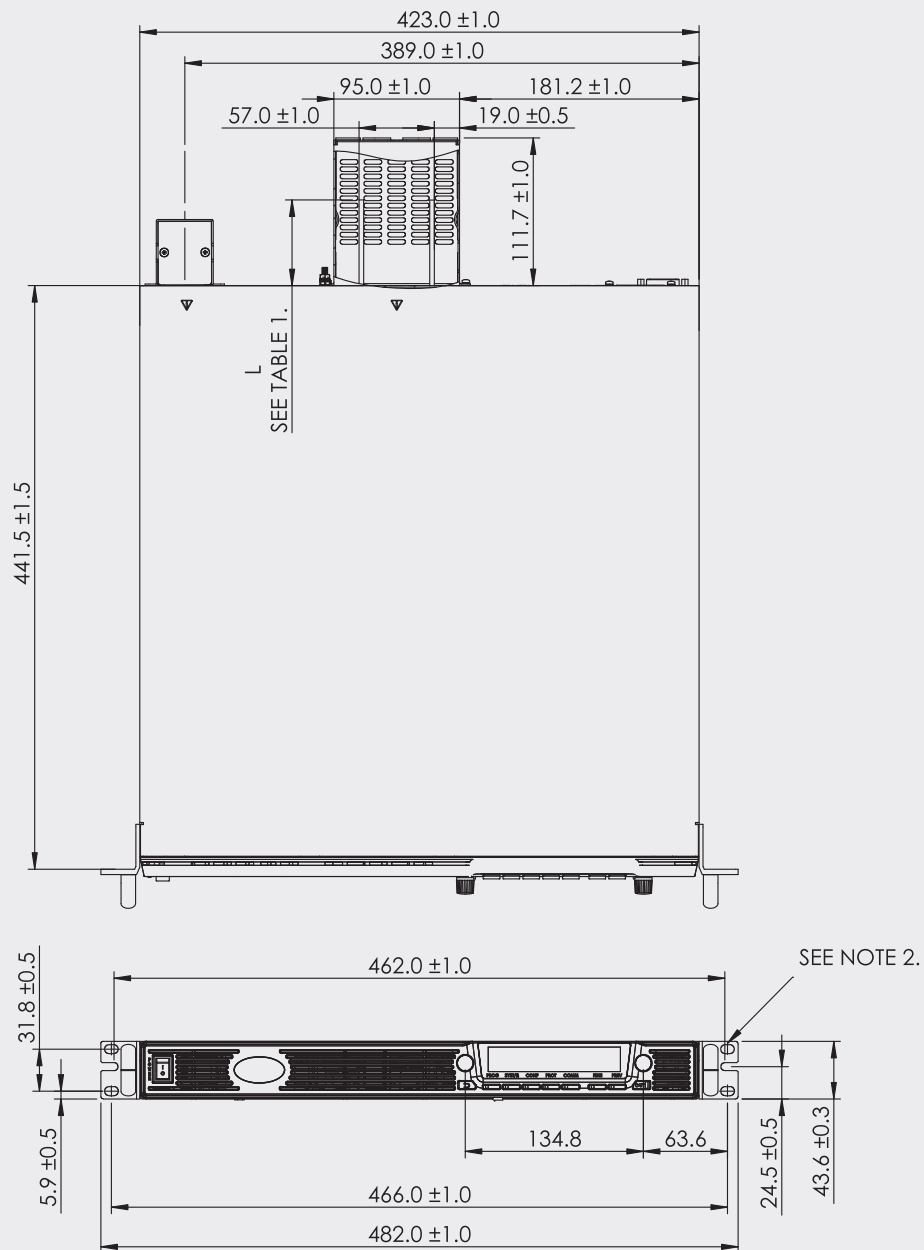
Specifications **GENESYS™** 5000 W

MECHANICAL		
1. Cooling	---	Forced air cooling by internal fans. Air flow direction: from Front panel to power supply rear
2. Weight	Kg	Less than 7.5Kg.
3. Dimensions (WxHxD)	mm	W: 423, H: 43.6, D: 441.5 (Refer to Outline drawing).
4. Vibration	---	MIL-810G, method 514.6, Procedure I, test condition Annex C - 2.1.3.1
5. Shock	---	Less than 20G, half sine, 11mSec.

SAFETY/EMC		
1. Applicable standards:	Safety	UL60950-1, CSA22.2 No.60950-1, IEC60950-1, EN60950-1
	---	Vout ≤50V: Output, J1, J2, J3, J4, J5, J6, J7, J8 (sense), J9 (communication options) are SELV
	---	60 ≤ Vout ≤ 600V: Output, J8 (sense) is hazardous, J1, J2, J3, J4, J5, J6, J7, J9 (communication options) are SELV
	EMC	---
	---	IEC/EN61204-3 Industrial environment
2. Withstand voltage	---	10V ≤ Vout ≤ 100V models: Input - Output: 4242VDC 1min, Input - SELV: 4242VDC 1min, SELV-Ground: 707VDC 1min, Output - SELV: 707VDC 1min, Output - Ground: 707VDC 1min, Input - Ground: 2835VDC 1min.
	---	150V ≤ Vout ≤ 600V models: Input - Output: 3656VDC 1min, Input - SELV: 4242VDC 1min, SELV-Ground: 707VDC 1min, Output - SELV: 1132VDC 1min, Output - Ground: 707VDC 1min, Input - Ground: 2835VDC 1min.
3. Insulation resistance	---	More than 100Mohm at 25°C, 70%RH.
4. Conducted emission	---	IEC/EN61204-3 Industrial environment, Annex H table H.1, FCC Part 15-A, VCCI-A.
5. Radiated emission	---	IEC/EN61204-3 Industrial environment, Annex H table H.3 and H.4, FCC Part 15-A, VCCI-A
6. EMC compliance	---	According to IEC/EN61204-3 Industrial environment

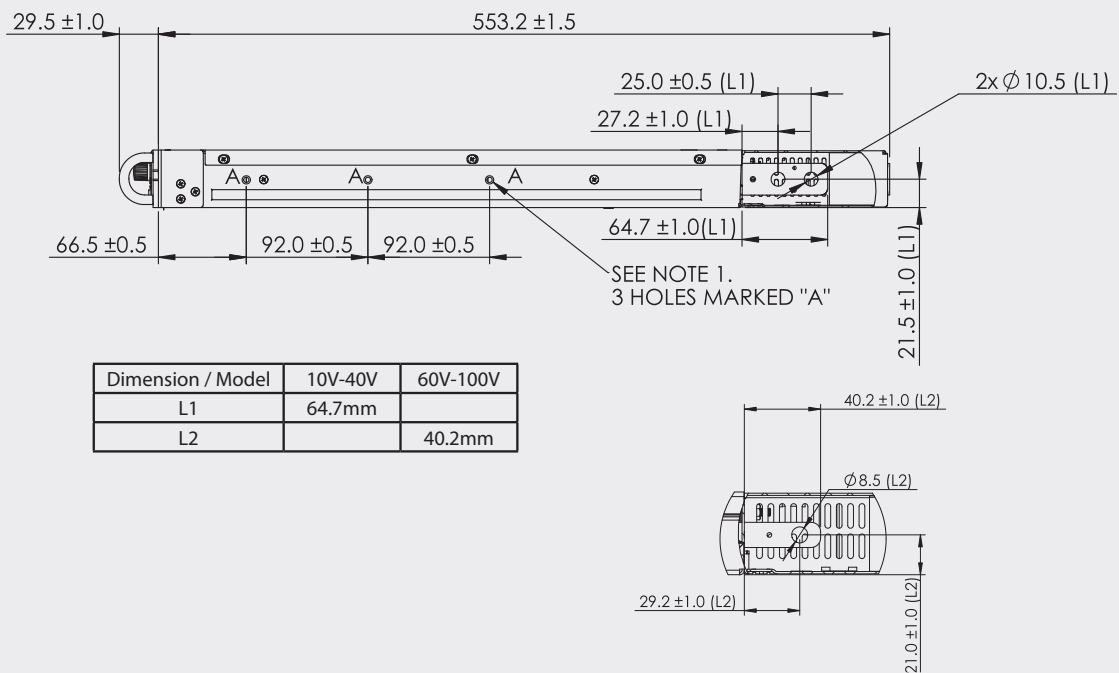
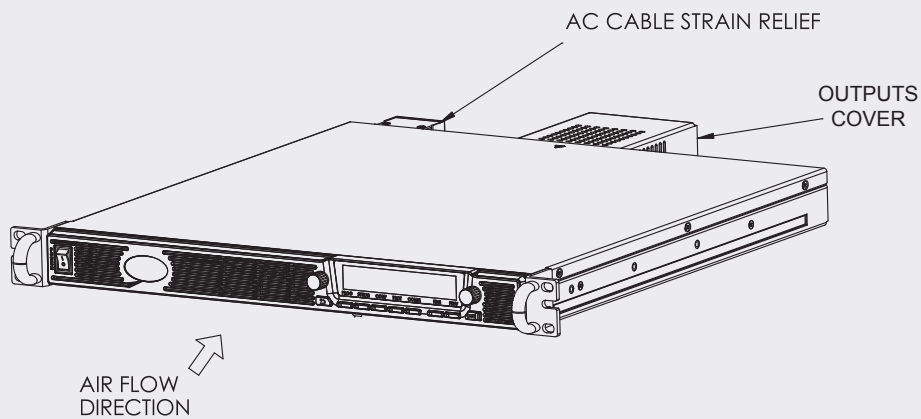
NOTES:

- *1: Minimum voltage is guaranteed to maximum 0.1% of rated output voltage.
- *2: Minimum current is guaranteed to maximum 0.2% of rated output current.
- *3: Derate 5A/1°C above 40°C.
- *4: For cases where conformance to various safety standards (UL, IEC, etc...) is required, to be described as 190-240Vac (50/60Hz) for 3-Phase
- *5: 3-Phase 200V models: At 200Vac input voltage, 3-Phase 400/480V: At 380Vac input voltage. With rated output power.
- *6: Not including EMI filter inrush current, less than 0.2mSec.
- *7: 3-Phase 200V models: 170~265Vac, 3-Phase 400V models: 342~460Vac, 3-Phase 480V models: 342~528Vac. Constant load.
- *8: From No-Load to Full-Load, constant input voltage. Measured at the sensing point in Remote Sense.
- *9: For 10V~150V models: Measured with JEITA RC-9131A (1:1) probe. For 300~600V model: Measured with 100:1 probe.
- *10: The maximum voltage on the power supply terminals must not exceed the rated voltage.
- *11: From 10% to 90% or 90% to 10% of Rated Output Voltage, with rated, resistive load.
- *12: From 90% to 10% of Rated Output Voltage.
- *13: For load voltage change, equal to the unit voltage rating, constant input voltage.
- *14: For 10V model the ripple is measured at 2V and rated output current. For other models, the ripple is measured at 10% of rated output voltage. B.W 5Hz~1MHz.
- *15: The Constant Current programming, readback and monitoring accuracy do not include the warm-up and Load regulation thermal drift.
- *16: Measured at the sensing point.
- *17: For 10V model Ta derating 2°C/100m.



NOTE

1. MOUNTING HOLES FOR SLIDES P/N:CC3001-00-S160, GENERAL DEVICES OR EQUIVALENT.
USE #10-32x0.38INCH x3 SCREWS FOR EACH SLIDE.
ENSURE THAT THE SCREWS DO NOT PENETRATE MORE THAN 6.0mm INTO THE UNIT.
2. MOUNTING HOLES FOR 19" RACK, USE M6x16 SCREWS TO FIX THE UNIT TO THE RACK.



Please contact your local sales office to find the best solution to your application.



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