TDK·Lambda

dataTec

Mess- und Prüftechnik. Die Experten.

GENESYS™

Programmable Power Supplies

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.

+High functionality

+Versatile communication protocols

+Smallest and lightest product on the market

+Simplifies control

+Speeds up test times

+Highest power density on the market

Features

General

- 1U benchtop and 19 Inch standard rack package
- Constant voltage/constant current operation modes/constant power (CP) Limit
- Internal Resistance Simulation

Control interfaces

- High resolution 16 bit ADCs & DACs
- LAN (LXI 1.5), USB, RS-232/RS-485 built-in as standard
- Isolated Analogue interface built-in as standard
- Optional EtherCAT, Modbus-TCP, IEEE (488.2) Interfaces
- Communications compatible with Z+ and Genesys™

Programming

- Arbitrary Waveform Generator with Auto-Triggering (store up to 100 steps into four internal memory cells)
- Slew-Rate Control (V/I)
- Two user programmable output control pins (open drain) to activate external devices
- Easy auto-configuration for parallel systems up to 60kW
- Safe or Auto re-start and last settings memory
- Certified LabWindows TM/CVI, LabView TM and IVI Drivers

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
- Rackmount-Kit for Half-Rack models option

Specifications

- 1kW, 1.5kW models in 1U, half 19" Rack-Mount
- 1, 1.7, 2.7, 3.4, 5kW models in 1U
- 10kW in 2U / 15kW in 3U
- Wide Range of popular worldwide AC inputs:
  GH1kW/1.5kW: 1Ø (85~265Vac)
  G1kW/1.7kW: 1Ø (85~265Vac)
  G2.7/3.4kW: 1Ø (170~265Vac), 3Ø (208, 400 & 480Vac)
  G5kW - G15kW: 3Ø (208, 400 & 480Vac),
  Wide range 3Ø 480Vac (342~528Vac)
- Output Voltage up to 600V, Current up to 1500A
- 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 twelve (12) 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

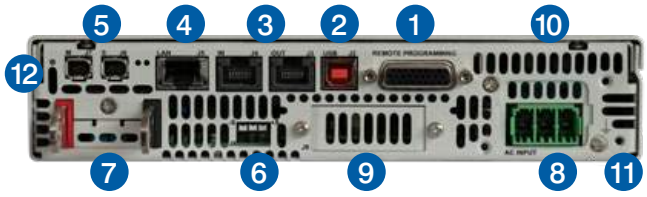
Find out more at: www.emea.lambda.tdk.com/genplus

GENESYS™ Panel Description

Front Panel GENESYS+™ GH (1-1.5kW)

1. Input Power 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 GENESYS+™ GH (1-1.5kW)



1. Isolated Analogue Programming, Monitoring and other control connector (DB26 Female)
2. USB Interface connector (Type B)
3. RS-232/RS-485 IN/OUT Remote Digital Interface (RJ-45 type) for Multi-Drop connection
4. LAN (LXI 1.5) Interface connector (RJ-45 type with LAN status indicators)
5. Auto paralleling Bus connectors (mini I/O type) for connecting Master unit-to-Slave and slave unit-to-slave unit
6. Remote/Local Output Voltage Sense Connections (spring cage)
7. Output Connections: Rugged busbars (shown) for models up to and including 100V Output;
   Output connector: PHOENIX CONTACT GIC 2.5/4-G-7.62 for models with Outputs >100V
   Plug connector: PHOENIX CONTACT GIC 2.5/4-ST-7.62 for models with Outputs >100V
8. GH1.5kW Input: 85~265Vac, Single Phase, 50/60Hz
   AC Input Connector: PHOENIX CONTACT Power Combicon PC 5/3-G-7.62
   AC Input Plug Connector: PHOENIX CONTACT Power Combicon PC 5/3-STCL1-7.62 Series with strain relief (Model shown)
   GH1kW AC Input Connector: IEC320 C16
9. Optional Interface Position for IEEE 488.2 SCPI or Anybus Interface
10. Exhaust air assures reliable operation when units are zero stacked
11. Functional Ground connection (M3x8mm screw)
12. Reset button. Set default Power Supply settings

Front Panel GENESYS+™ G (1-5kW)

1. Input Power 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

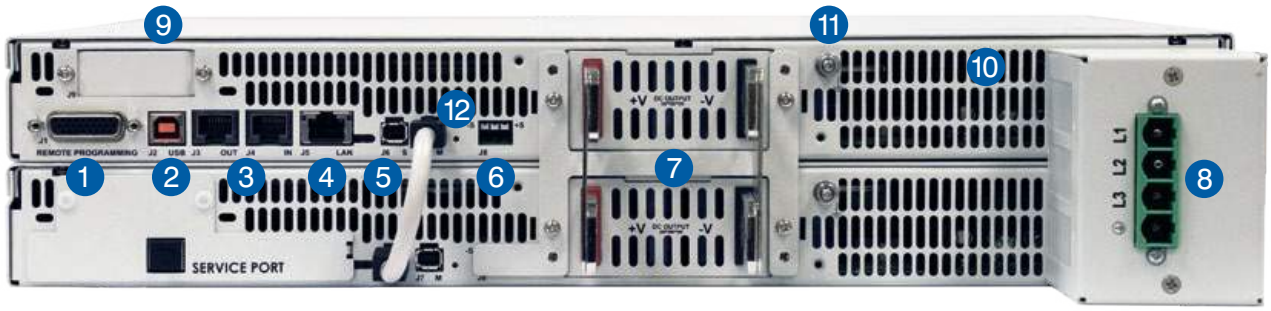
Rear Panel GENESYS+™ G (1-5kW)

1. Isolated Analogue Programming, Monitoring and other control connector (DB26 Female)
2. USB Interface connector (Type B)
3. RS-232/RS-485 IN/OUT Remote Digital Interface (RJ-45 type) for Multi-Drop connection
4. LAN (LXI 1.5) Interface connector (RJ-45 type with LAN status indicators)
5. Auto paralleling Bus connectors (mini I/O type) for connecting Master unit-to-Slave and slave unit-to-slave unit
6. Remote/Local Output Voltage Sense Connections (spring cage)
7. Output Connections: Rugged busbars (shown) for models up to and including 100V Output;
   Plug connector: PHOENIX CONTACT IPC 5/4-STF-7.62 for models with Outputs >100V
8. G2.7kW / G3.4kW / G5kW AC Input: 208, 400 & 480Vac, Three Phase, 50/60Hz (Model shown)
   AC Input Plug Connector: PHOENIX CONTACT Power Combicon PC 5/4-STCL1-7.62 Series with strain relief
   G1.7kW / G2.7kW / G3.4kW AC Input Single Phase, 50/60Hz
   AC Input Plug Connector: PHOENIX CONTACT Power Combicon PC 5/3-STCL1-7.62 Series with strain relief
   G1kW AC Input Connector: IEC320 C16
9. Optional Interface Position for IEEE 488.2 SCPI or Anybus Interface
10. Exhaust air assures reliable operation when units are zero stacked
11. Functional Ground connection (M4x8mm stud)
12. Reset button. Set default Power Supply settings

Front Panel GENESYS+™ GSP (10kW)

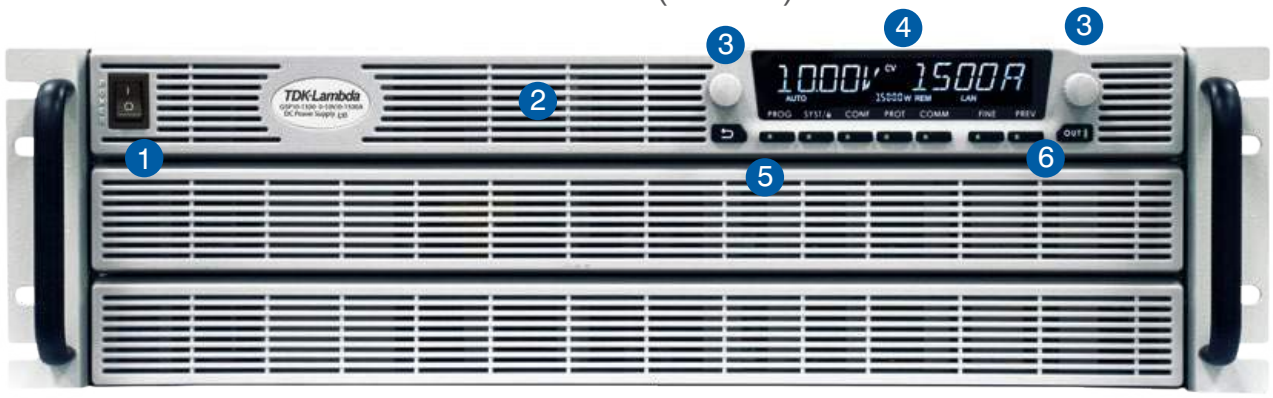
1. Input Power ON/OFF Switch
2. Air Intake allows zero stacking for maximum system flexibility and power density
3. Reliable Detent Encoders for settings and Menu navigation
4. High Contrast/Brightness display with wide viewing angle, 16 segment LCD
5. Function/Status LEDs: Active modes and function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

Rear Panel GENESYS+™ GSP (10kW)



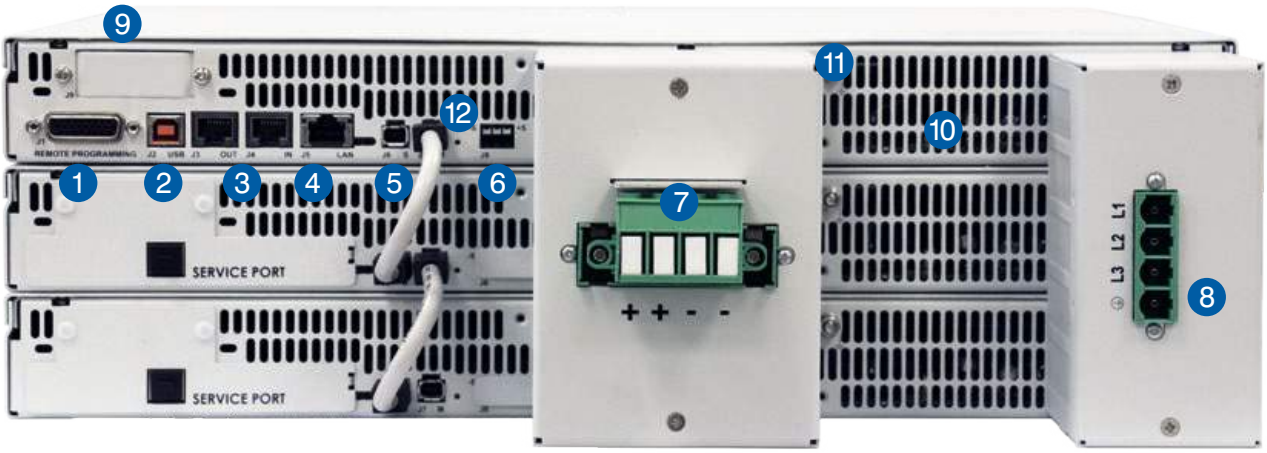
1. Isolated Analogue Programming, Monitoring and other control connector (DB26 Female)
2. USB Interface connector (Type B)
3. RS-232/RS-485 IN/OUT Remote Digital Interface (RJ-45 type) for Multi-Drop connection
4. LAN (LXI 1.5) Interface connector (RJ-45 type with LAN status indicators)
5. Auto paralleling Bus connectors (mini I/O type) for connecting Master unit-to-Slave and slave unit-to-slave unit
6. Remote/Local Output Voltage Sense Connections (spring cage)
7. Output Connections: Rugged busbars (shown) for models up to and including 100V Output;
   Plug connector: PHOENIX CONTACT DFK-IPC 16/4-STF-10.16 for models with Outputs >100V
8. Input: 208, 400 & 480Vac Three Phase, 50/60Hz
   AC Input Plug Connector: PHOENIX CONTACT DFK-IPC 16/4-STF-10.16 with strain relief
9. Optional Interface Position for IEEE 488.2 SCPI or Anybus Interface
10. Exhaust air assures reliable operation when zero stacked
11. Functional Ground connection (M4x8mm stud)
12. Reset button. Set default Power Supply settings

Front Panel GENESYS+™ GSP (15kW)



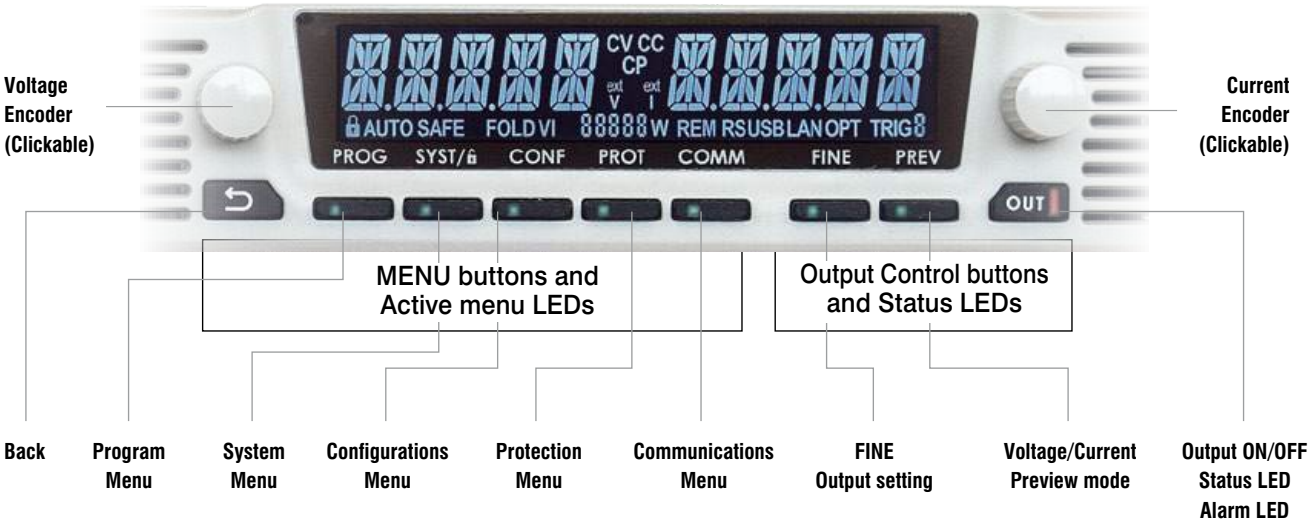
1. Input Power ON/OFF Switch
2. Air Intake allows zero stacking for maximum system flexibility and power density
3. Reliable Detent Encoders for settings and Menu navigation
4. High Contrast/Brightness display with wide viewing angle, 16 segment LCD
5. Function/Status LEDs: Active modes and function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

Rear Panel GENESYS+™ GSP (15kW)

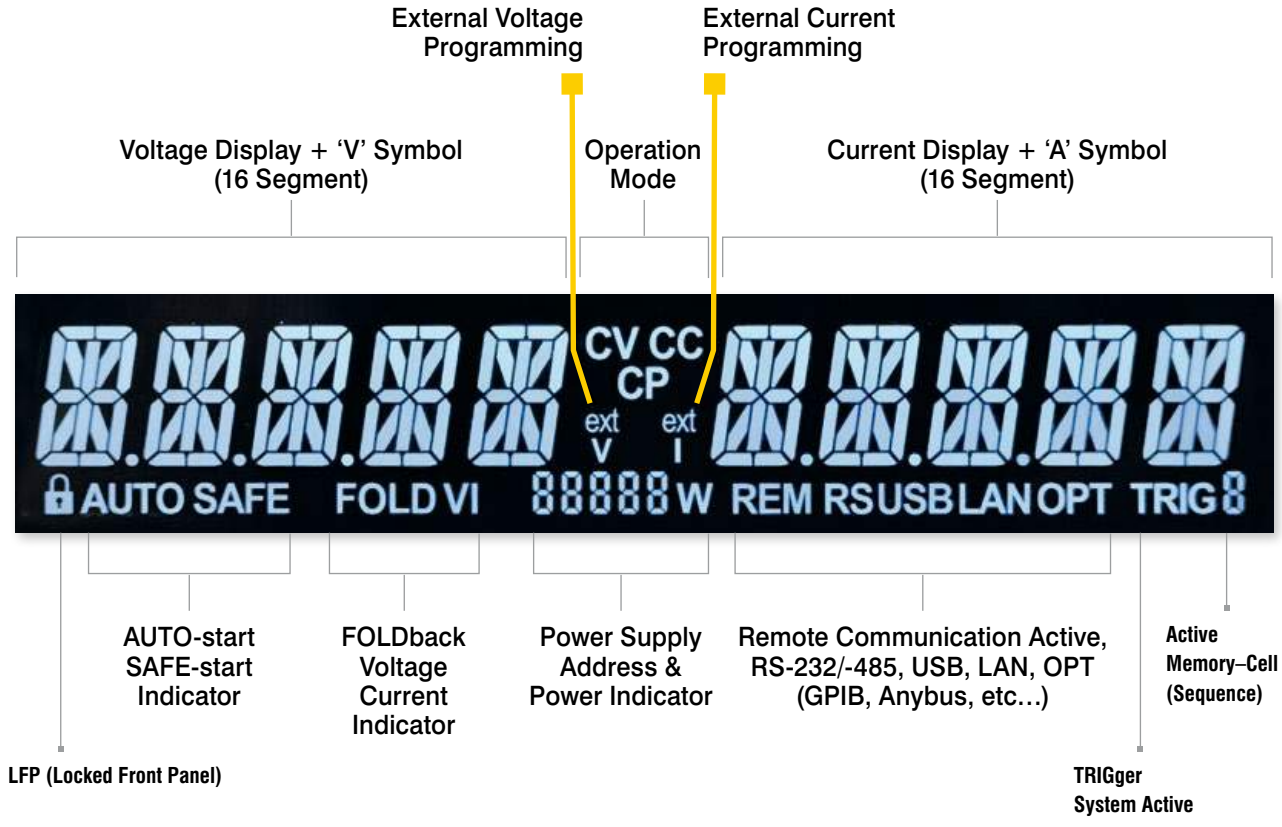


1. Isolated Analogue Programming, Monitoring and other control connector (DB26 Female)
2. USB Interface connector (Type B)
3. RS-232/RS-485 IN/OUT Remote Digital Interface (RJ-45 type) for Multi-Drop connection
4. LAN (LXI 1.5) Interface connector (RJ-45 type with LAN status indicators)
5. Auto paralleling Bus connectors (mini I/O type) for connecting Master unit-to-Slave and slave unit-to-slave unit
6. Remote/Local Output Voltage Sense Connections (spring cage)
7. Output Connections: Rugged busbars for models up to and including 100V Output;
   Plug connector: PHOENIX CONTACT DFK-IPC 16/4-STF-10.16 for models with Outputs >100V (shown)
8. Input: 208, 400 & 480Vac Three Phase, 50/60 Hz
   AC Input Plug Connector: PHOENIX CONTACT DFK-PC 16/4-ST-10.16 with strain relief
9. Optional Interface Position for IEEE 488.2 SCPI or Anybus Interface
10. Exhaust air assures reliable operation when zero stacked
11. Functional Ground connection (M4x8mm stud)
12. Reset button. Set default Power Supply settings

Front Panel Display MENU/CONTROL buttons



Front Panel Display indicators



GENESYS+ ™ GHB 1-1.5kW Series Blank Front Panel

A 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.

The 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 Remote digital interface (LAN, USB, RS-232/RS-485) or via the remote Isolated Analogue interface.

GENESYS+™ GH 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

Series operation

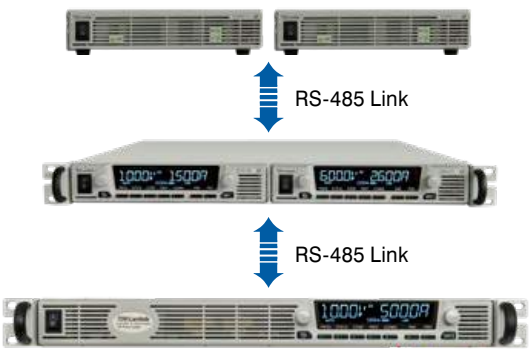
Two units may be connected in series to increase the output voltage or to provide bipolar output. (Max. 600V to Chassis Ground).

Multi-Drop Remote Programming via Communication Interface

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

- First unit is LAN, USB, RS-232, RS-485, etc.
- All other units use RS-485 daisy chain with linking cable.

LAN, USB, RS-232,
RS-485, IEEE, Anybus



GENESYS+ ™ G&GSP Series Blank Front Panel

A 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.

The 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 Remote digital interface (LAN, USB, RS-232/RS-485) or via the remote Isolated Analogue interface.

GENESYS+™ Parallel and Series Configurations

Parallel operation – Master/Slave

- Auto paralleling Scalable Master-Slave Operation
- Active current sharing allows up to twelve (12) identical units to be connected
- Total Real Current is programmed, measured and reported by the Master
- Up to twelve (12) supplies operate as one

Standard Unit - Zero stacked up to 12 units

Standard & Blank - Zero stacked up to 12 units

Scalable Power Systems

Factory assembly and test available for two and three unit systems 10kW/15kW.
Parallel kit available for six unit systems 30kW. Order P/N: G/P - 6U

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).

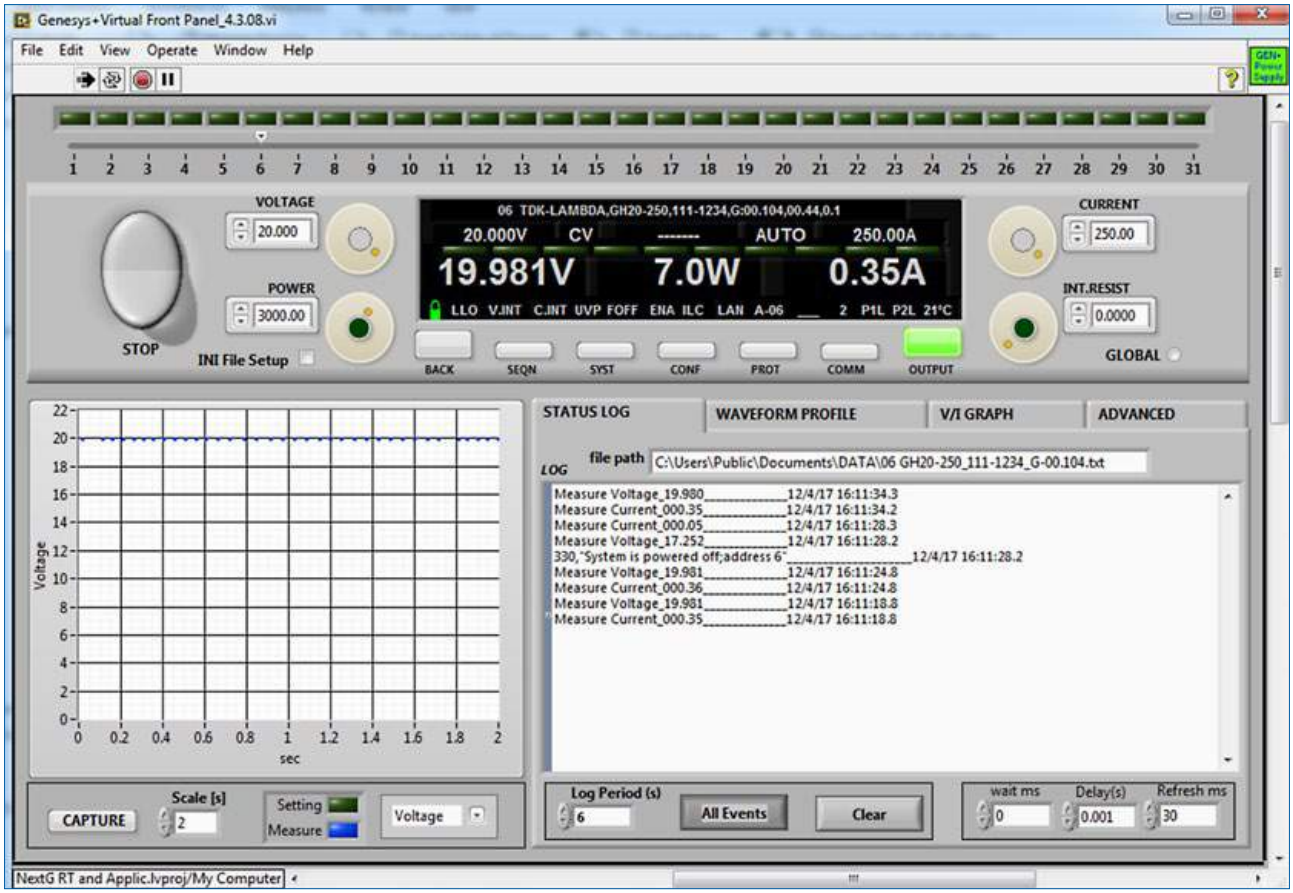
GENESYS™ User Interface

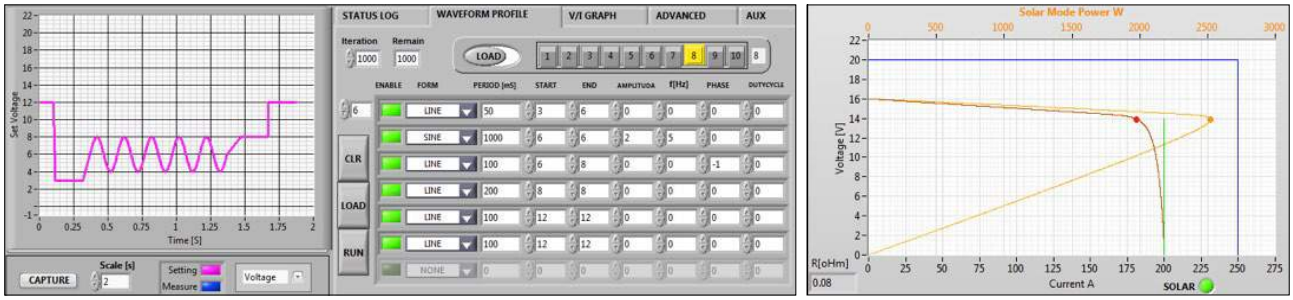
Graphical User Interface

Advanced “Virtual Front Panel” allows programming and monitoring units with or without front panel display.

- Control and monitor up-to 31 units with “Address” bar
- Front panel set-up menu control (PROGram, SYSTem, CONFIguration, PROTection and COMMunication)
- Informative “Parameters” status bar
- Individual unit and Global command control
- Data logging including errors, events and recovery
- Realtime Graph and Waveform creator, store/load sequence
- Solar array mode - calculate MPP (Max Peak Power) for solar array
- Registers View: Operation Status, Fault, Event Status, ENABLE and INTERLOCK signals
- Remote communication state LOC, REM, LLO
- Programmed signals 1&2

GUI Waveform Profile generator





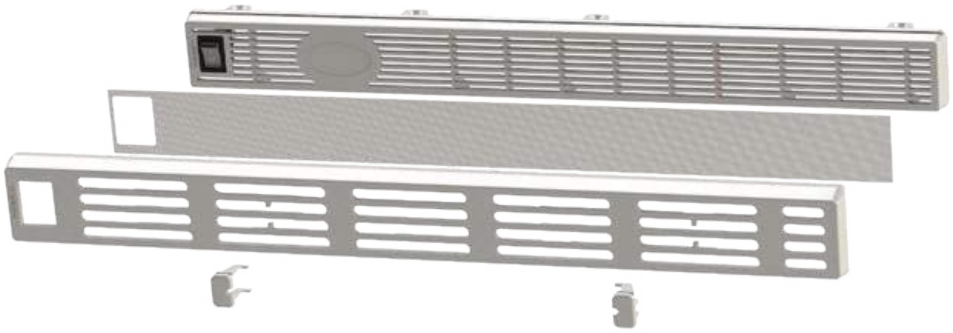
GENESYS™ Air Filter Kit

GENESYS+™ Front Panel Air Filter Assembly

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

Part Number (for standard unit):
G-AFK

Part Number (for unit with blank front panel): **GB-AFK**



For GSP 10kW/15kW series order part number: GSP10kW-AFK / GSP15kW-AFK

Technical Specifications: Unit with Air Filter Assembly Installed

- Derating (enviromental)
- Operating Temperature
- For all models (except 10V): 0°C to +40°C full load
  For 10V model: 0°C to +30°C, derate 5A/°C
  for 30°C < TA < +40°C
- Altitude
- For all models (except 10V): derate 2°C/100m
  or 2% of load/100m (above 2000m)
- For 10V model: derate 1°C/100m
  or 2% of load/100m (above 2000m)

Air Filter Assembly Components Standard Unit (P/N: G-AFK)

- Air Filter Cover (two pieces)
- Slide Button #1 (two locations:
  near AC ON/OFF switch and near left-hand side
  of front panel display)
- Slide Button #2 (one location: right-hand side
  of front panel display)
- Filter foam (two pieces)

Filter Foam Technical Specifications

- Material: reticulated polyurethane foam
- Thickness: 3.8mm
- Porosity: 45ppi
- Operating Temperature Range: 0°C to +60°C
- Storage Temperature Range: -40°C to +85°C
- Humidity: 95% RH

Blank Front Panel Unit (P/N: GB-AFK)

- Air Filter Cover (one piece)
- Slide Button #1 (two locations)
- Filter foam (one piece)

GENESYS™ Product Summary

GENESYS+ ™ Family Output Voltage and Current

Model	G (Std Front Panel Display) / GB (Blank Front Panel Display)					GSP / GBSP (Scalable Power)	
Rated Power	1kW	1.7kW	2.7kW	3.4kW	5kW	10kW	15kW
Voltage Range [V]	Current Range [A]						
0~10	0~100	0~170	0~265	0~340	0~500	0~1000	0~1500
0~20	0~50	0~85	0~135	0~170	0~250	0~500	0~750
0~30	0~34	0~56	0~90	0~112	0~170	0~340	0~510
0~40	0~25	0~42	0~68	0~85	0~125	0~250	0~375
0~50	-	-	-	-	0~100	0~200	0~300
0~60	0~17	0~28	0~45	0~56	0~85	0~170	0~255
0~80	0~12.5	0~21	0~34	0~42	0~65	0~130	0~195
0~100	0~10	0~17	0~27	0~34	0~50	0~100	0~150
0~150	0~7	0~11.2	0~18	0~22.5	0~34	0~68	0~102
0~200	-	-	-	-	0~25	0~50	0~75
0~300	0~3.5	0~5.6	0~9	0~11.5	0~17	0~34	0~51
0~400	-	-	-	-	0~13	0~26	0~39
0~500	-	-	-	-	0~10	0~20	0~30
0~600	0~1.7	0~2.8	0~4.5	0~5.6	0~8.5	0~17	0~25.5
Weight [kg/lb]	5/11	5/11	6.25/14.3	6.25/14.3	7.5/16.5	15.5/34.2	23.5/51.8

AC Input Range

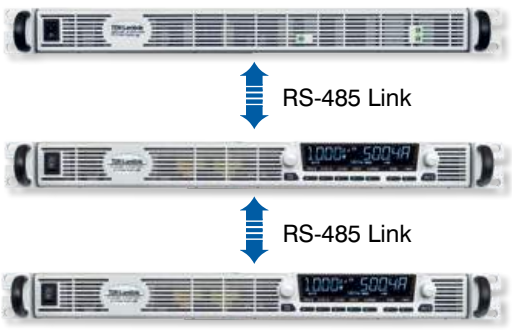
Rated Power	1kW	1.7kW	2.7kW	3.4kW	5kW	10kW	15kW
1Ø, 85-265Vac	*	*	N/A	N/A	N/A	N/A	N/A
1Ø, 170-265Vac			*	*	N/A	N/A	N/A
3P208	N/A	N/A	*	*	*	*	*
3P400	N/A	N/A	*	*	*	*	*
3P480	N/A	N/A	*	*	*	*	*

Multi-Drop Remote Programming via Communication Interface

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

- First unit is LAN, USB, RS-232, RS-485, etc.
- All other units use RS-485 daisy chain with linking cable.

LAN, USB,
RS-232/RS-485,
IEEE, Anybus



Models GENESYS+™ GH (1/1.5kW)

Models 1kW

Model	Voltage [V]	Current [A]	Power [W]
GH10-100	0~10	0~100	1000
GH20-50	0~20	0~50	1000
GH30-34	0~30	0~34	1020
GH40-25	0~40	0~25	1000
GH60-17	0~60	0~17	1020
GH80-12.5	0~80	0~12.5	1000
GH100-10	0~100	0~10	1000
GH150-7	0~150	0~7	1050
GH300-3.5	0~300	0~3.5	1050
GH600-1.7	0~600	0~1.7	1020
Weight [kg/lb]	3.5/7.7		

Models 1.5kW

Model	Voltage [V]	Current [A]	Power [W]
GH10-150	0~10	0~150	1500
GH20-75	0~20	0~75	1500
GH30-50	0~30	0~50	1500
GH40-38	0~40	0~38	1520
GH60-25	0~60	0~25	1500
GH80-19	0~80	0~19	1520
GH100-15	0~100	0~15	1500
GH150-10	0~150	0~10	1500
GH300-5	0~300	0~5	1500
GH600-2.6	0~600	0~2.6	1560
Weight [kg/lb]	3.5/7.7		

Product Code

GH		-	10	-	150	-		-		-	
Series Name			**Output Voltage** (0~10V)		**Output Current** (0~150A)		**Interface Options**		**AC Cable Options** (only for 1kW)		**Accessories Options**

Front Panel Type	**P/N:**
Standard	-
Blank Front Panel	**B**

AC Inputs (All Models):
Single Phase: 85~265Vac

Interface Options (Factory installed)	**P/N:**
LAN (LXI 1.5 compliant with Multi-Drop capability)	-
USB 2.0 compliant with Multi-Drop capability	-
RS-232/RS-485	-
Isolated Analogue Program/Monitor Interface (5V/10V Pgm/Mon with 600V isolation)	-

Interface Options (Optional)	**P/N:**
IEEE (488.2 & SCPI compliant with Multi-Drop capability installed)	IEEE
Modbus-TCP	MDBS
EtherCat	ECAT

AC Cable Options *1kW only*	**P/N:**
Europe	E
North America	U
Japan	J
China	C
Middle East	I

Accessories Options	**P/N:**
Printed User Manual (User Manual & GUI on website)	M
Bus Paralleling Cable	P

Accessories **P/N:**

Rack Mounitng applications
The Rack Mounted kit allows the units to be zero stacking for maximum system flexibility and power density without increasing the 1U height of the units. To install one GH1-1.5kW unit or two units side-by-side in a standard 19" rack in 1U(1.75") height, use option kit — GH/RM

Single unit installation
Single GH1kW/1.5kW power supply in a standard 19" rack in 1U(1.75") height

Dual unit installation
Two GH1kW/1.5kW power supplies side-by-side in a standard 19" rack in 1U (1.75") height

Benchtop applications Multi Output — GH/MO

The benchtop stacking kit allows the units to be Zero stacked for maximum system flexibility and power density without increasing the 1U height of the units.
To install a GH1kW/1.5kW two units one on top of the other use option kit — GH/MO-2U

Models GENESYS+™ G (1/1.7kW)

Models 1kW

Model	Voltage [V]	Current [A]	Power [W]
G10-100	0~10	0~100	1000
G20-50	0~20	0~50	1000
G30-34	0~30	0~34	1020
G40-25	0~40	0~25	1000
G60-17	0~60	0~17	1020
G80-12.5	0~80	0~12.5	1000
G100-10	0~100	0~10	1000
G150-7	0~150	0~7	1050
G300-3.5	0~300	0~3.5	1050
G600-1.7	0~600	0~1.7	1020

Models 1.7kW

Model	Voltage [V]	Current [A]	Power [W]
G10-170	0~10	0~170	1700
G20-85	0~20	0~85	1700
G30-56	0~30	0~56	1680
G40-42	0~40	0~42	1680
G60-28	0~60	0~28	1680
G80-21	0~80	0~21	1680
G100-17	0~100	0~17	1700
G150-11.2	0~150	0~11.2	1680
G300-5.6	0~300	0~5.6	1680
G600-2.8	0~600	0~2.8	1680

Product Code

G		-	10	-	170	-		-		-	
Series Name			**Output Voltage** (0~10V)		**Output Current** (0~170A)		**Interface Options**		**AC Cable Options** (only for 1kW)		**Accessories Options**

Front Panel Type	**P/N:**
Standard	-
Blank Front Panel	**B**

AC Inputs (All Models):
Single Phase: 85~265Vac

Interface Options (Factory installed)	**P/N:**
LAN (LXI 1.5 compliant with Multi-Drop capability)	-
USB 2.0 compliant with Multi-Drop capability	-
RS-232/RS-485	-
Isolated Analogue Program/Monitor Interface (5V/10V Pgm/Mon with 600V isolation)	-

Interface Options (Optional)	**P/N:**
IEEE (488.2 & SCPI compliant with Multi-Drop capability installed)	IEEE
Modbus-TCP	MDBS
EtherCat	ECAT

AC Cable Options *1kW only*	**P/N:**
Europe	E
North America	U
Japan	J
China	C
Middle East	I

Accessories Options	**P/N:**
Printed User Manual (User Manual & GUI on website)	M
Bus Paralleling Cable	P

Accessories

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

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

4. User Manual

Printed User Manual	G/M

Models GENESYS+™ G (2.7/3.4kW)

Models 2.7kW

Model	Voltage [V]	Current [A]	Power [W]
G10-265	0~10	0~265	2650
G20-135	0~20	0~135	2700
G30-90	0~30	0~90	2700
G40-68	0~40	0~68	2720
G60-45	0~60	0~45	2700
G80-34	0~80	0~34	2720
G100-27	0~100	0~27	2700
G150-18	0~150	0~18	2700
G300-9	0~300	0~9	2700
G600-4.5	0~600	0~4.5	2700

Models 3.4kW

Model	Voltage [V]	Current [A]	Power [W]
G10-340	0~10	0~340	3400
G20-170	0~20	0~170	3400
G30-112	0~30	0~112	3360
G40-85	0~40	0~85	3400
G60-56	0~60	0~56	3360
G80-42	0~80	0~42	3360
G100-34	0~100	0~34	3400
G150-22.5	0~150	0~22.5	3375
G300-11.5	0~300	0~11.5	3450
G600-5.6	0~600	0~5.6	3360

Product Code

G		-	10	-	340	-		-		-	
Series Name			**Output Voltage** (0~10V)		**Output Current** (0~340A)		**Interface Options**		**AC Input Options**		**Accessories Options**

Front Panel Type	**P/N:**
Standard	-
Blank Front Panel	**B**

Interface Options (Factory installed)	**P/N:**
LAN (LXI 1.5 compliant with Multi-Drop capability)	-
USB 2.0 compliant with Multi-Drop capability	-
RS-232/RS-485	-
Isolated Analogue Program/Monitor Interface (5V/10V Pgm/Mon with 600V isolation)	-
Interface Options (Optional)	**P/N:**
IEEE (488.2 & SCPI compliant with Multi-Drop capability installed)	IEEE
Modbus-TCP	MDBS
EtherCat	ECAT

AC Input Options	**P/N:**
Single Phase 170~265Vac	1P208
Three Phase 170~265Vac	3P208
Three Phase 342~460Vac	3P400
Three Phase 342~528Vac	3P480
Accessories Options	**P/N:**
Printed User Manual (User Manual & GUI on website)	M
Bus Paralleling Cable	P

Accessories

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

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

4. User Manual

Printed User Manual	G/M

Models GENESYS+™ G (5kW)

Model	Voltage [V]	Current [A]	Power [W]
G10-500	0~10	0~500	5000
G20-250	0~20	0~250	5000
G30-170	0~30	0~170	5100
G40-125	0~40	0~125	5000
G50-100	0~50	0~100	5000
G60-85	0~60	0~85	5100
G80-65	0~80	0~65	5200

Model	Voltage [V]	Current [A]	Power [W]
G100-50	0~100	0~50	5000
G150-34	0~150	0~34	5100
G200-25	0~200	0~25	5000
G300-17	0~300	0~17	5100
G400-13	0~400	0~13	5200
G500-10	0~500	0~10	5000
G600-8.5	0~600	0~8.5	5100

Product Code

G		-	10	-	500	-		-		-	
Series Name			Output Voltage (0~10V)		Output Current (0~500A)		Interface Options		AC Input Options		Accessories Options

Front Panel Type	P/N:
Standard	-
Blank Front Panel	B

Interface Options (Factory installed)	P/N:
LAN (LXI 1.5 compliant with Multi-Drop capability)	-
USB 2.0 compliant with Multi-Drop capability	-
RS-232/RS-485	-
Isolated Analogue Program/Monitor Interface (5V/10V Pgm/Mon with 600V isolation)	-

Interface Options (Optional)	P/N:
IEEE (488.2 & SCPI compliant with Multi-Drop capability installed)	IEEE
Modbus-TCP	MDBS
EtherCat	ECAT

AC Input Options	P/N:
Three Phase 170~265Vac	3P208
Three Phase 342~460Vac	3P400
Three Phase 342~528Vac	3P480

Accessories Options	P/N:
Printed User Manual (User Manual & GUI on website)	M
Bus Paralleling Cable	P

Accessories

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

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

4. User Manual

Printed User Manual	G/M

5. Parallel Kit: 20/30kW

BusBar Parallel Kit for 20 kW operation (5kW Models where Vout up to 100V)	G/P-4U
BusBar Parallel Kit for 30 kW operation (5kW Models where Vout up to 100V)	G/P-6U

Models GENESYS+™ GSP (10/15kW)

Models 10kW

Model	Voltage [V]	Current [A]	Power [kW]
GSP10-1000	0~10	0~1000	10
GSP20-500	0~20	0~500	10
GSP30-340	0~30	0~340	10.2
GSP40-250	0~40	0~250	10
GSP50-200	0~50	0~200	10
GSP60-170	0~60	0~170	10.2
GSP80-130	0~80	0~130	10.4
GSP100-100	0~100	0~100	10
GSP150-68	0~150	0~68	10.2
GSP200-50	0~200	0~50	10
GSP300-34	0~300	0~34	10.2
GSP400-26	0~400	0~26	10.4
GSP500-20	0~500	0~20	10
GSP600-17	0~600	0~17	10.2

Models 15kW

Model	Voltage [V]	Current [A]	Power [kW]
GSP10-1500	0~10	0~1500	15
GSP20-750	0~20	0~750	15
GSP30-510	0~30	0~510	15.3
GSP40-375	0~40	0~375	15
GSP50-300	0~50	0~300	15
GSP60-255	0~60	0~255	15.3
GSP80-195	0~80	0~195	15.6
GSP100-150	0~100	0~150	15
GSP150-102	0~150	0~102	15.3
GSP200-75	0~200	0~75	15
GSP300-51	0~300	0~51	15.3
GSP400-39	0~400	0~39	15.6
GSP500-30	0~500	0~30	15
GSP600-25.5	0~600	0~25.5	15.3

Product Code

G		SP	-	10	-	1500	-		-		-	
Series Name				Output Voltage (0~10V)		Output Current (0~1500A)		Interface Options		AC Input Options		Accessories Options

Front Panel Type	P/N:
Standard	-
Blank Front Panel	B

Interface Options (Factory installed)	P/N:
LAN (LXI 1.5 compliant with Multi-Drop capability)	-
USB 2.0 compliant with Multi-Drop capability	-
RS-232/RS-485	-
Isolated Analogue Program/Monitor Interface (5V/10V Pgm/Mon with 600V isolation)	-

Interface Options (Optional)	P/N:
IEEE (488.2 & SCPI compliant with Multi-Drop capability installed)	IEEE
Modbus-TCP	MDBS
EtherCat	ECAT

AC Input Options:	P/N:
Three Phase 170~265Vac	3P208
Three Phase 342~460Vac	3P400
Three Phase 342~528Vac	3P480

Accessories Options:	P/N:
Printed User Manual (User Manual & GUI on website)	M

Accessories

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

3. Bus Paralleling cable (included with the power supply)

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

3. User Manual

Printed User Manual	G/M

GENESYS™ Specifications

Specifications GENESYS+™ GH (1kW)

Output Rating	GH	10-100	20-50	30-34	40-25	60-17	80-12.5	100-10	150-7	300-3.5	600-1.7
1. Rated output voltage(*1)	V	10	20	30	40	60	80	100	150	300	600
2. Rated output current (*2)	A	100	50	34	25	17	12.5	10	7	3.5	1.7
3. Rated output power	W	1000	1000	1020	1000	1020	1000	1000	1050	1050	1020
Input Characteristics	**V**	**10**	**20**	**30**	**40**	**60**	**80**	**100**	**150**	**300**	**600**
1. Input voltage/freq. (*3)	---	85～265Vac, continuous, 47～63Hz, Single Phase									
2. Maximum Input current at 100% load (100/200)	A	12.5/6.5									
3. Power Factor (Typ)	---	0.99 @ 100Vac 0.98 @ 200Vac, rated output power.									
4. Efficiency at 100Vac/200Vac, rated output (*17)	%	86/88	87/89	87/89	87/89	87/89	87/89	88/90	88/90	88/90	88/90
5. Inrush current (*5)	A	Less than 50A									
Constant Voltage Mode	**V**	**10**	**20**	**30**	**40**	**60**	**80**	**100**	**150**	**300**	**600**
1. Max. Line regulation (*6)	---	0.01% of rated output voltage									
2. Max. Load regulation (*7)	---	0.01% of rated output voltage +2mV									
3. Ripple and noise (p-p, 20MHz) (*8)	mV	50	50	50	60	60	75	75	75	200	500
4. Ripple r.m.s. 5Hz～1MHz (*8)	mV	6	6	6	7	7	10	20	20	50	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 0.01% 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	35	35	35	35	35	35	40	50	100	100
10. Down-prog.response time: Full load (*12)	mS	30	30	60	60	60	60	80	120	220	220
No load (*12)	mS	500	700	900	1200	1500	1700	2000	2500	3300	3500
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. Start up delay	Sec	Less than 6 Sec									
13. Hold-up time	mS	20mS typical, rated output power									
Constant Current Mode	**V**	**10**	**20**	**30**	**40**	**60**	**80**	**100**	**150**	**300**	**600**
1. Max. Line regulation (*6)	---	0.01% of rated output current. +2mA									
2. Max. Load regulation (*9)	---	0.02% of rated output current. +5mA									
3. Ripple r.m.s. @ rated voltage. B.W 5Hz～1MHz. (*13)	mA	≤420	≤160	≤100	≤60	≤50	≤30	≤20	≤10	≤8	≤5
4. Temperature coefficient	PPM/°C	10V～100V 100PPM/°C from rated output current, following 30 minutes warm-up. 150V～600V 70PPM/°C from rated output current, following 30 minutes warm-up.									
5. Temperature stability	---	0.02% of rated Iout over 8hrs. interval following 30 minutes warm-up. Constant line, load & temperature.									
6. Warm-up drift	---	10V～100V model: Less than +/-0.25% of rated output current over 30 minutes following power on. 150V～600V: Less than +/-0.15% of rated output current over 30 minutes following power on.									
Analogue 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 (*14)	---	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 (*14)	---	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% of rated Vout.									
6. Output current monitor (*14)	---	0～5V or 0～10V, user selectable. Accuracy: +/-0.5% of rated Iout.									
Signals and Controls (Isolated from the Output)											
1. Power supply OK #1 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	---	Enable/Disable PS output by electrical signal or dry contact. 0～0.6V or short, 2～30V or open. User selectable logic.									
6. INTERLOCK (ILC) control	---	Enable/Disable 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.									
9. DAISY_IN/SO control signal	---	By electrical Voltage: 0～0.6V/2～30V or dry contact.									
10. DAISY_OUT/PS_OK #2 signal	---	4～5V=OK, 0V (500ohm impedance)=Fail									
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: 1～1000mΩ. Programming via the communication ports or the front panel.									
6. Slew rate control	---	Programmable Output rise and Output fall slew rate. Programming range: 0.0001～999.99V/mS or A/mS. 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, RS-232/ RS-485, Optional IEEE (*16) Interface)	**V**	**10**	**20**	**30**	**40**	**60**	**80**	**100**	**150**	**300**	**600**
1. Vout programming accuracy (*15)	---	0.05% of rated output voltage									
2. Iout programming accuracy (*14)	---	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	---	0.0025% of rated output current									
5. Vout readback accuracy	---	0.05% of rated output voltage									
6. Iout readback accuracy (*14)	---	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)	%	0.011%	0.003%	0.004%	0.005%	0.007%	0.009%	0.011%	0.015%	0.004%	0.007%

Specifications GENESYS+™ GH (1.5kW)

Output Rating	GH	10-150	20-75	30-50	40-38	60-25	80-19	100-15	150-10	300-5	600-2.6
1. Rated output voltage(*1)	V	10	20	30	40	60	80	100	150	300	600
2. Rated output current (*2)	A	150	75	50	38	25	19	15	10	5	2.6
3. Rated output power	W	1500	1500	1500	1520	1500	1520	1500	1500	1500	1560
Input Characteristics	**V**	**10**	**20**	**30**	**40**	**60**	**80**	**100**	**150**	**300**	**600**
1. Input voltage/freq. (*3)	---	85~265Vac, continuous, 47~63Hz, Single Phase									
2. Maximum Input current at 100% load (100/200)	A	18.5/9									
3. Power Factor (Typ)	---	0.99 @ 100Vac 0.98 @ 200Vac, rated output power.									
4. Efficiency at 100Vac/200Vac, rated output (*19)	%	86/88	87/89	87/89	87/89	87/89	87/89	88/90	88/90	88/90	88/90
5. Inrush current (*5)	A	Less than 50A									
Constant Voltage Mode	**V**	**10**	**20**	**30**	**40**	**60**	**80**	**100**	**150**	**300**	**600**
1. Max. Line regulation (*6)	---	0.01% of rated output voltage									
2. Max. Load regulation (*7)	---	0.01% of rated output voltage +2mV									
3. Ripple and noise (p-p, 20MHz) (*8)	mV	50	50	50	60	60	75	130	75	180	500
4. Ripple r.m.s. 5Hz~1MHz (*8)	mV	6	6	6	7	7	8	30	20	45	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 0.01% 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	20	20	20	20	20	20	20	30	30	40
10. Down-prog.response time: Full load (*12)	mS	20	20	20	30	30	50	50	60	70	80
No load (*12)	mS	300	500	600	900	1200	1300	1700	2200	2700	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. Start up delay	Sec	Less than 6 Sec									
13. Hold-up time	mS	20mS typical, rated output power									
Constant Current Mode	**V**	**10**	**20**	**30**	**40**	**60**	**80**	**100**	**150**	**300**	**600**
1. Max. Line regulation (*6)	---	0.01% of rated output current. +2mA									
2. Max. Load regulation (*9)	---	0.02% of rated output current. +5mA									
3. Ripple r.m.s. @ rated voltage. B.W 5Hz~1MHz. (*13)	mA	≤250	≤130	≤100	≤60	≤50	≤30	≤40	≤10	≤8	≤5
4. Temperature coefficient	PPM/°C	10V~100V 100PPM/°C from rated output current, following 30 minutes warm-up. 150V~600V 70PPM/°C from rated output current, following 30 minutes warm-up.									
5. Temperature stability	---	0.01% of rated Iout over 8hrs. interval following 30 minutes warm-up. Constant line, load & temperature.									
6. Warm-up drift	---	10V~100V model: Less than +/-0.25% of rated output current over 30 minutes following power on. 150V~600V: Less than +/-0.15% of rated output current over 30 minutes following power on.									
Analogue 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 (*14)	---	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 (*14)	---	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% of rated Vout.									
6. Output current monitor (*14)	---	0~5V or 0~10V, user selectable. Accuracy: +/-0.5% of rated Iout.									
Signals and Controls (Isolated from the Output)											
1. Power supply OK #1 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	---	Enable/Disable PS output by electrical signal or dry contact. 0~0.6V or short, 2~30V or open. User selectable logic.									
6. INTERLOCK (ILC) control	---	Enable/Disable 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.									
9. DAISY_IN/SO control signal	---	By electrical Voltage: 0~0.6V/2~30V or dry contact.									
10. DAISY_OUT/PS_OK #2 signal	---	4~5V=OK, 0V (500ohm impedance)=Fail									
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: 1~1000mΩ. Programming via the communication ports or the front panel.									
6. Slew rate control	---	Programmable Output rise and Output fall slew rate. Programming range: 0.0001~999.99V/mS or A/mS. 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, RS-232/ RS-485, Optional IEEE (*18) Interface)	**V**	**10**	**20**	**30**	**40**	**60**	**80**	**100**	**150**	**300**	**600**
1. Vout programming accuracy (*15)	---	0.05% of rated output voltage									
2. Iout programming accuracy (*14)	---	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	---	0.0025% of rated output current									
5. Vout readback accuracy	---	0.05% of rated output voltage									
6. Iout readback accuracy (*14)	---	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)	%	0.01%	0.002%	0.003%	0.003%	0.005%	0.006%	0.007%	0.015%	0.003%	0.004%

Specifications GENESYS+™ GH (1/1.5kW)

Protective Functions	V	10	20	30	40	60	80	100	150	300	600
1. Foldback protection	---	Output shut-down when power supply changes mode from CV or Power Limit to CC mode or from CC or Power Limit to CV mode. User presetable. Reset by AC input recycle in autostart mode, by Power Switch, 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	2~44.1	5~66.15	5~88.2	5~110.25	5~165.37	5~330.75	5~661.5
4. Over-voltage programming accuracy	---	+/-1% of rated output voltage									
5. Output under voltage limit (UVL)	---	Prevents from adjusting Vout below limit. Does not apply 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 Power Switch, by OUTPUT button, by rear panel or by communication.									
Front Panel											
1. Control functions	---	Multiple options with 2 Encoders Vout/Iout/Power Limit manual adjust OVP/UVL/UVP manual adjust Protection Functions - OVP, UVL,UVP, Foldback, OCL, ENA, ILC Communication Functions - Selection of LAN,IEEE,RS-232,RS-485,USB or Optional communication interface. Output ON/OFF. Front Panel Lock. Communication Functions - Selection of Baud Rate, Address, IP and communication language. Analogue Control Functions - Selection Voltage/resistive programming, 5V/10V, 5K/10K programming Analogue Monitor Functions - Selection of Voltage/Current Monitoring 5V/10V.									
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	---	-30~85°C									
3. Operating humidity	%	20~90% RH (no condensation).									
4. Storage humidity	%	10~95% RH (no condensation).									
5. Altitude	---	Operating: 10000ft (3000m), output current derating 2%/100m or Ta derating 1°C/100m above 2000m. Non operating: 40000ft (12000m).									
Mechanical											
1. Cooling	---	Forced air cooling by internal fans. Air flow direction: from Front panel to power supply rear									
2. Weight	kg	Less than 3.5kg.									
3. Dimensions (WxHxD)	mm	W: 214, H: 43.6, D: 432 (Without busbars and busbars cover), W: 214, H: 43.6, D: 493 (Including busbars and busbars cover) (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, 11mS. Unit is unpacked.									
Safety/EMC											
1. Applicable standards: Safety GH1/1.5kW	---	UL61010-1, CSA22.2 No. 61010-1, IEC61010-1, EN61010-1.									
1.1 Interface classification GH1/1.5kW	---	Vout≤50V Models: Output, J1, J2, J3, J4, J5, J6, J7, J8 (sense) & J9 (communication options) are Non Hazardous. 60≤Vout≤600V Models: Output & J8 (sense) are hazardous, J1, J2, J3, J4, J5, J6, J7 & J9 (communication options) are Non Hazardous.									
1.2 Withstand voltage GH1/1.5kW	---	Vout≤50V Models: Input – Output & J8 (sense), J1, J2, J3, J4, J5, J6, J7 & J9 (communication options): 4242Vdc 1min, Input - Ground: 2835Vdc 1min. 60V≤Vout≤100V Models: Input – Output & J8 (sense), J1, J2, J3, J4, J5, J6, J7 & J9 (communication options): 4242Vdc 1min, Output & J8 (sense) - J1, J2, J3, J4, J5, J6, J7 & J9 (communication options): 850Vdc 1min. Output & J8 (sense) - Ground: 1500Vdc 1min, Input - Ground: 2835Vdc 1min. 100V<Vout≤600V Models: Input – Output & J8 (sense), J1, J2, J3, J4, J5, J6, J7 and J9 (communication options): 4242Vdc 1min. Output & J8 (sense) - J1, J2, J3, J4, J5, J6, J7 & J9 (communication options): 1275Vdc 1min. Output & J8 (sense) - Ground: 2500Vdc 1min, Input - Ground: 2835Vdc 1min.									
1.3 Insulation resistance	---	100Mohm at 25°C, 70%RH. Output to Ground 500Vdc									
2. Conducted emission	---	IEC/EN61204-3 Industrial environment, Annex H table H.1 , FCC Part 15-A, VCCI-A .									
3. Radiated emission	---	IEC/EN61204-3 Industrial environment, Annex H table H.3 and H4, FCC Part 15-A, VCCI-A									
4. EMC compliance EMC(*4)	---	IEC/EN61204-3 Industrial environment									

Unless otherwise noted, specifications are warranted over the ambient temperature range of 0°C to 50°C

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: For cases where conformance to various safety standards (UL, IEC, etc…) is required, to be described as 100-240Vac (50/60Hz).

*4: Signal and control ports interface cables length: Less than 3m, DC output power port cables length: Less than 30m.

*5: Not including EMI filter inrush current, less than 0.2mS.

*6: 85~132Vac or 170~265Vac. Constant load.

*7: From No-Load to Full-Load, constant input voltage. Measured at the sensing point in Remote Sense.

*8: For 10V~150V models: Measured with JEITA RC-9131C (1:1) probe. For 200~600V model: Measured with 100:1 probe.

*9: For load voltage change, equal to the unit voltage rating, constant input voltage.

*10: The maximum voltage on the power supply terminals must not exceed the rated voltage.

*11: From 10% to 90% of Rated Output Voltage, with rated, resistive load.

*12: From 90% to 10% of Rated Output Voltage.

*13: For 10V model, the ripple is measured at 20~100% of rated output voltage and rated output current.
For other models, the ripple is measured at 10~100% of rated output voltage and rated output current. B.W 5Hz~1MHz.

*14: The Constant Current programming, readback and monitoring accuracy do not include the warm-up and Load regulation thermal drift.

*15: Measured at the sensing point.

*16: Max. ambient temperature for using IEEE is 40°C.

*17: Ta=25°C, rated output power.

Specifications GENESYS+™ G (1kW)

Output Rating	**G**	**10-100**	**20-50**	**30-34**	**40-25**	**60-17**	**80-12.5**	**100-10**	**150-7**	**300-3.5**	**600-1.7**
1. Rated output voltage(*1)	V	10	20	30	40	60	80	100	150	300	600
2. Rated output current (*2)	A	100	50	34	25	17	12.5	10	7	3.5	1.7
3. Rated output power	W	1000	1000	1020	1000	1020	1000	1000	1050	1050	1020
Input Characteristics	**V**	**10**	**20**	**30**	**40**	**60**	**80**	**100**	**150**	**300**	**600**
1. Input voltage/freq. (*3)	---	85～265Vac, continuous, 47～63Hz, Single Phase									
2. Maximum Input current at 100% load (100/200)	A	12.5/6.5									
3. Power Factor (Typ)	---	0.99 @ 100Vac 0.98 @ 200Vac, rated output power.									
4. Efficiency at 100Vac/200Vac, rated output (*17)	%	86/88	87/89	87/89	87/89	87/89	87/89	88/90	88/90	88/90	88/90
5. Inrush current (*5)	A	Less than 50A									
Constant Voltage Mode	**V**	**10**	**20**	**30**	**40**	**60**	**80**	**100**	**150**	**300**	**600**
1. Max. Line regulation (*6)	---	0.01% of rated output voltage									
2. Max. Load regulation (*7)	---	0.01% of rated output voltage +2mV									
3. Ripple and noise (p-p, 20MHz) (*8)	mV	50	50	50	60	60	75	75	75	120	500
4. Ripple r.m.s. 5Hz～1MHz (*8)	mV	6	6	6	7	7	10	12	9	20	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 0.01% 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	35	35	35	35	35	35	40	50	100	100
10. Down-prog.response time: Full load (*12)	mS	35	30	60	60	60	60	80	120	220	220
No load (*12)	mS	500	700	1000	1200	1500	1700	2600	2900	4600	4600
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. Start up delay	Sec	Less than 6 Sec									
13. Hold-up time	mS	20mS typical, rated output power									
Constant Current Mode	**V**	**10**	**20**	**30**	**40**	**60**	**80**	**100**	**150**	**300**	**600**
1. Max. Line regulation (*6)	---	0.02% of rated output current. +2mA									
2. Max. Load regulation (*9)	---	0.02% of rated output current. +5mA									
3. Ripple r.m.s. @ rated voltage. B.W 5Hz～1MHz. (*13)	mA	≤420	≤160	≤100	≤60	≤50	≤30	≤20	≤10	≤8	≤5
4. Temperature coefficient	PPM/°C	10V～100V 100PPM/°C from rated output current, following 30 minutes warm-up. 150V～600V 70PPM/°C from rated output current, following 30 minutes warm-up.									
5. Temperature stability	---	0.01% of rated Iout over 8hrs. interval following 30 minutes warm-up. Constant line, load & temperature.									
6. Warm-up drift	---	10V～100V model: Less than +/-0.25% of rated output current over 30 minutes following power on. 150V～600V: Less than +/-0.15% of rated output current over 30 minutes following power on.									
Analogue 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 (*14)	---	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 (*14)	---	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% of rated Vout.									
6. Output current monitor (*14)	---	0～5V or 0～10V, user selectable. Accuracy: +/-0.5% of rated Iout.									
Signals and Controls (Isolated from the Output)											
1. Power supply OK #1 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	---	Enable/Disable PS output by electrical signal or dry contact. 0～0.6V or short, 2～30V or open. User selectable logic.									
6. INTERLOCK (ILC) control	---	Enable/Disable 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.									
9. DAISY_IN/SO control signal	---	By electrical Voltage: 0～0.6V/2～30V or dry contact.									
10. DAISY_OUT/PS_OK #2 signal	---	4～5V=OK, 0V (500ohm impedance)=Fail									
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: 1～1000mΩ. Programming via the communication ports or the front panel.									
6. Slew rate control	---	Programmable Output rise and Output fall slew rate. Programming range: 0.0001～999.99V/mS or A/mS. 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, RS-232/ RS-485, Optional IEEE (*16) Interface)	**V**	**10**	**20**	**30**	**40**	**60**	**80**	**100**	**150**	**300**	**600**
1. Vout programming accuracy (*15)	---	0.05% of rated output voltage									
2. Iout programming accuracy (*14)	---	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 (*14)	---	0.2% of rated output current							0.25% 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)	%	0.011%	0.003%	0.004%	0.005%	0.007%	0.009%	0.011%	0.015%	0.004%	0.007%

Specifications GENESYS+™ G (1.7kW)

Output Rating	**G**	**10-170**	**20-85**	**30-56**	**40-42**	**60-28**	**80-21**	**100-17**	**150-11.2**	**300-5.6**	**600-2.8**
1. Rated output voltage(*1)	V	10	20	30	40	60	80	100	150	300	600
2. Rated output current (*2)	A	170	85	56	42	28	21	17	11.2	5.6	2.8
3. Rated output power	W	1700	1700	1680	1680	1680	1680	1700	1680	1680	1680
Input Characteristics	**V**	**10**	**20**	**30**	**40**	**60**	**80**	**100**	**150**	**300**	**600**
1. Input voltage/freq. (*3)	---	85～265Vac, continuous, 47～63Hz, Single Phase									
2. Maximum Input current at 100% load (100/200)	A	20/10									
3. Power Factor (Typ)	---	0.99 @ 100Vac 0.98 @ 200Vac, rated output power.									
4. Efficiency at 100Vac/200Vac, rated output (*19)	%	86/88	87/89	87/89	87/89	87/89	87/89	88/90	88/90	88/90	88/90
5. Inrush current (*5)	A	Less than 50A									
Constant Voltage Mode	**V**	**10**	**20**	**30**	**40**	**60**	**80**	**100**	**150**	**300**	**600**
1. Max. Line regulation (*6)	---	0.01% of rated output voltage									
2. Max. Load regulation (*7)	---	0.01% of rated output voltage +2mV									
3. Ripple and noise (p-p, 20MHz) (*8)	mV	50	50	50	60	60	75	75	75	120	500
4. Ripple r.m.s. 5Hz～1MHz (*8)	mV	6	6	6	7	7	10	12	8	20	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 0.01% 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	20	20	20	20	20	20	25	50	100	100
10. Down-prog.response time: Full load (*12)	mS	30	30	60	60	60	60	60	120	220	200
No load (*12)	mS	450	700	1000	1200	1500	1700	2600	2900	4600	4600
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. Start up delay	Sec	Less than 6 Sec									
13. Hold-up time	mS	16mS typical, rated output power									
Constant Current Mode	**V**	**10**	**20**	**30**	**40**	**60**	**80**	**100**	**150**	**300**	**600**
1. Max. Line regulation (*6)	---	0.01% of rated output current. +2mA									
2. Max. Load regulation (*9)	---	0.02% of rated output current. +5mA									
3. Ripple r.m.s. @ rated voltage. B.W 5Hz～1MHz. (*13)	mA	≤420	≤160	≤100	≤60	≤50	≤30	≤20	≤10	≤8	≤5
4. Temperature coefficient	PPM/°C	10V～100V 100PPM/°C from rated output current, following 30 minutes warm-up. 150V～600V 70PPM/°C from rated output current, following 30 minutes warm-up.									
5. Temperature stability	---	0.01% of rated Iout over 8hrs. interval following 30 minutes warm-up. Constant line, load & temperature.									
6. Warm-up drift	---	10V～100V model: Less than +/-0.25% of rated output current over 30 minutes following power on. 150V～600V: Less than +/-0.15% of rated output current over 30 minutes following power on.									
Analogue 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 (*14)	---	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 (*14)	---	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% of rated Vout.									
6. Output current monitor (*14)	---	0～5V or 0～10V, user selectable. Accuracy: +/-0.5% of rated Iout.									
Signals and Controls (Isolated from the Output)											
1. Power supply OK #1 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	---	Enable/Disable PS output by electrical signal or dry contact. 0～0.6V or short, 2～30V or open. User selectable logic.									
6. INTERLOCK (ILC) control	---	Enable/Disable 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.									
9. DAISY_IN/SO control signal	---	By electrical Voltage: 0～0.6V/2～30V or dry contact.									
10. DAISY_OUT/PS_OK #2 signal	---	4～5V=OK, 0V (500ohm impedance)=Fail									
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: 1～1000mΩ. Programming via the communication ports or the front panel.									
6. Slew rate control	---	Programmable Output rise and Output fall slew rate. Programming range: 0.0001～999.99V/mS or A/mS. 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, RS-232/ RS-485, Optional IEEE (*18) Interface)	**V**	**10**	**20**	**30**	**40**	**60**	**80**	**100**	**150**	**300**	**600**
1. Vout programming accuracy (*15)	---	0.05% of rated output voltage									
2. Iout programming accuracy (*14)	---	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 (*14)	---	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)	%	0.007%	0.002%	0.003%	0.003%	0.005%	0.006%	0.007%	0.010%	0.003%	0.004%

Specifications GENESYS+™ G (1/1.7kW)

Protective Functions		V	10	20	30	40	60	80	100	150	300	600
1. Foldback protection		---	Output shut-down when power supply changes mode from CV or Power Limit to CC mode or from CC or Power Limit to CV mode. User presetable. Reset by AC input recycle in autostart mode, by Power Switch, 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	2~44.1	5~66.15	5~88.2	5~110.25	5~165.37	5~330.75	5~661.5
4. Over-voltage programming accuracy		---	+/-1% of rated output voltage									
5. Output under voltage limit (UVL)		---	Prevents from adjusting Vout below limit. Does not apply 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 Power Switch, by OUTPUT button, by rear panel or by communication.									
Front Panel												
1. Control functions		---	Multiple options with 2 Encoders Vout/Iout/Power Limit manual adjust OVP/UVL/UVP manual adjust Protection Functions - OVP, UVL,UVP, Foldback, OCL, ENA, ILC Communication Functions - Selection of LAN,IEEE,RS-232,RS-485,USB or Optional communication interface. Output ON/OFF. Front Panel Lock. Communication Functions - Selection of Baud Rate, Address, IP and communication language. Analogue Control Functions - Selection Voltage/resistive programming, 5V/10V, 5K/10K programming Analogue Monitor Functions - Selection of Voltage/Current Monitoring 5V/10V.									
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		---	-30~85°C									
3. Operating humidity		%	20~90% RH (no condensation).									
4. Storage humidity		%	10~95% RH (no condensation).									
5. Altitude		---	Operating: 10000ft (3000m), output current derating 2%/100m or Ta derating 1°C/100m above 2000m. Non operating: 40000ft (12000m).									
Mechanical												
1. Cooling		---	Forced air cooling by internal fans. Air flow direction: from Front panel to power supply rear									
2. Weight		kg	Less than 5kg.									
3. Dimensions (WxHxD)		mm	W: 423, H: 43.6, D: 441.5 (Without busbars and busbars cover), W: 423, H: 43.6, D: 553.2 (Including busbars and busbars cover) (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, 11mS. Unit is unpacked.									
Safety/EMC												
1. Applicable standards:	Safety G1kW/G1.7kW	---	UL61010-1, CSA22.2 No.61010-1, IEC61010-1, EN61010-1									
1.1 Interface classification	G1kW/1.7kW	---	Vout≤50V Models: Output, J1, J2, J3, J4, J5, J6, J7, J8 (sense) & J9 (communication options) are Non Hazardous. 60≤Vout≤600V Models: Output & J8 (sense) are hazardous, J1, J2, J3, J4, J5, J6, J7 & J9 (communication options) are Non Hazardous.									
1.2 Withstand voltage	G1kW/1.7kW	---	Vout≤50V Models: Input – Output & J8 (sense), J1, J2, J3, J4, J5, J6, J7 & J9 (communication options): 4242Vdc 1min, Input - Ground: 2835Vdc 1min. 60V≤Vout≤100V Models: Input – Output & J8 (sense), J1, J2, J3, J4, J5, J6, J7 & J9 (communication options): 4242Vdc 1min, Output & J8 (sense) - J1, J2, J3, J4, J5, J6, J7 & J9 (communication options): 850Vdc 1min. Output & J8 (sense) - Ground: 1500Vdc 1min, Input - Ground: 2835Vdc 1min. 100V<Vout≤600V Models: Input – Output & J8 (sense), J1, J2, J3, J4, J5, J6, J7 and J9 (communication options): 4242Vdc 1min. Output & J8 (sense) - J1, J2, J3, J4, J5, J6, J7 & J9 (communication options): 1275Vdc 1min. Output & J8 (sense) - Ground: 2500Vdc 1min, Input - Ground: 2835Vdc 1min.									
1.3 Insulation resistance		---	100Mohm at 25°C, 70%RH. Output to Ground 500Vdc									
2. Conducted emission		---	IEC/EN61204-3 Industrial environment, Annex H table H.1 , FCC Part 15-A, VCCI-A .									
3. Radiated emission		---	IEC/EN61204-3 Industrial environment, Annex H table H.3 and H4, FCC Part 15-A, VCCI-A									
4. EMC compliance	EMC(*4)	---	According to IEC/EN61204-3 Industrial environment									

Unless otherwise noted, specifications are warranted over the ambient temperature range of 0°C to 50°C

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: For cases where conformance to various safety standards (UL, IEC, etc…) is required, to be described as 100-240Vac (50/60Hz).

*4: Signal and control ports interface cables length: Less than 3m, DC output power port cables length: Less than 30m.

*5: Not including EMI filter inrush current, less than 0.2mS.

*6: 85~132Vac or 170~265Vac. Constant load.

*7: From No-Load to Full-Load, constant input voltage. Measured at the sensing point in Remote Sense.

*8: For 10V~150V models: Measured with JEITA RC-9131C (1:1) probe. For 200~600V model: Measured with 100:1 probe.

*9: For load voltage change, equal to the unit voltage rating, constant input voltage.

*10: The maximum voltage on the power supply terminals must not exceed the rated voltage.

*11: From 10% to 90% of Rated Output Voltage, with rated, resistive load.

*12: From 90% to 10% of Rated Output Voltage.

*13: For 10V model, the ripple is measured at 20~100% of rated output voltage and rated output current.
For other models, the ripple is measured at 10~100% of rated output voltage and rated output current. B.W 5Hz~1MHz.

*14: The Constant Current programming, readback and monitoring accuracy do not include the warm-up and Load regulation thermal drift.

*15: Measured at the sensing point.

*16: Maximum ambient temperature for IEEE option is 40°C.

*17: Ta=25°C, rated output power.

Specifications GENESYS+™ G (2.7kW)

Output Rating	G	10-265	20-135	30-90	40-68	60-45	80-34	100-27	150-18	300-9	600-4.5
1. Rated output voltage(*1)	V	10	20	30	40	60	80	100	150	300	600
2. Rated output current (*2)	A	265	135	90	68	45	34	27	18	9	4.5
3. Rated output power	W	2650	2700	2700	2720	2700	2720	2700	2700	2700	2700
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) 1-Phase, 200V models: 170~265Vac, 47~63Hz (Covers 200/208/230/240Vac)									
2. Maximum Input current at 100% load	---	3-Phase, 200V models: 10A @ 200Vac 3-Phase, 400V models: 5.5A @ 380Vac 3-Phase, 480V models: 5.5A @ 380Vac 1-Phase, 200V models: 16.5A @ 200Vac									
3. Power Factor (Typ)	---	For 3-Phase: 0.94 @ 200/380Vac, rated output power. For 1-Phase: 0.99 @ 200Vac, rated output power.									
4. Efficiency (Typ) (*5) (*22)	%	88	89	89.5	90	90	90.5	90.5	90.5	90.5	90.5
5. Inrush current (*6)	A	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	80	80	100	120	200	480
4. Ripple r.m.s. 5Hz~1MHz (*9)	mV	8	10	10	12	15	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	450	600	800	900	1100	1300	2100	2000	3200	3100
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. Start up delay	Sec	Less than 6 Sec									
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. Ripple r.m.s. @ rated voltage. 3-Phase (*14)	mA	≤800	≤450	≤300	≤150	≤100	≤70	≤45	≤30	≤12	≤5
4. Ripple r.m.s. @ rated voltage. 1-Phase (*14)	mA	≤1200	≤600	≤300	≤300	≤200	≤100	≤60	≤40	≤12	≤8
5. Temperature coefficient	PPM/°C	10V~100V: 100PPM/°C, 150V~600V: 70PPM/°C from rated output current, following 30 minutes warm-up.									
6. Temperature stability	---	0.01% of rated Iout over 8hrs. interval following 30 minutes warm-up. Constant line, load & temperature.									
7. Warm-up drift	---	10V~100V: Less than +/-0.25%, 150V~600V: Less than +/-0.15% of rated output current over 30 minutes following power on.									
Analogue 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 #1 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	---	Enable/Disable PS output by electrical signal or dry contact. 0~0.6V or short, 2~30V or open. User selectable logic.									
6. INTERLOCK (ILC) control	---	Enable/Disable 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.									
9. DAISY_IN/SO control signal	---	By electrical Voltage: 0~0.6V/2~30V or dry contact.									
10. DAISY_OUT/PS_OK #2 signal	---	4~5V=OK, 0V (500ohm impedance)=Fail									
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: 1~1000mΩ. Programming via the communication ports or the front panel.									
6. Slew rate control	---	Programmable Output rise and Output fall slew rate. Programming range: 0.0001~999.99V/mS or A/mS. 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(*19)(*20) Interfaces)											
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)	%	0.005%	0.008%	0.002%	0.002%	0.003%	0.004%	0.005%	0.007%	0.002%	0.003%

Specifications GENESYS+™ G (3.4kW)

Output Rating	G	10-340	20-170	30-112	40-85	60-56	80-42	100-34	150-22.5	300-11.5	600-5.6
1. Rated output voltage(*1)	V	10	20	30	40	60	80	100	150	300	600
2. Rated output current (*2)	A	340 (*3)	170	112	85	56	42	34	22.5	11.5	5.6
3. Rated output power	W	3400	3400	3360	3400	3360	3360	3400	3375	3450	3360
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) 1-Phase, 200V models: 170~265Vac, 47~63Hz (Covers 200/208/230/240Vac)									
2. Maximum Input current at 100% load	---	3-Phase, 200V models: 12.5A @ 200Vac 3-Phase, 400V models: 6.5A @ 380Vac 3-Phase, 480V models: 6.5A @ 380Vac 1-Phase, 200V models: 21A @ 200Vac									
3. Power Factor (Typ)	---	For 3-Phase: 0.94 @ 200/380Vac, rated output power. For 1-Phase: 0.99 @ 200Vac, rated output power.									
4. Efficiency (Typ) (*5) (*22)	%	88	89	89.5	90	90	90.5	90.5	90.5	90.5	90.5
5. Inrush current (*6)	A	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	80	80	100	120	200	480
4. Ripple r.m.s. 5Hz~1MHz (*9)	mV	8	10	10	12	15	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	450	600	800	900	1100	1300	2100	2000	3000	3100
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. Start up delay	Sec	Less than 6 Sec									
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. Ripple r.m.s. @ rated voltage. 3-Phase (*14)	mA	≤800	≤450	≤300	≤150	≤100	≤70	≤45	≤30	≤12	≤5
4. Ripple r.m.s. @ rated voltage. 1-Phase (*14)	mA	≤1200	≤600	≤300	≤300	≤200	≤100	≤60	≤40	≤12	≤8
5. Temperature coefficient	PPM/°C	10V~100V: 100PPM/°C, 150V~600V: 70PPM/°C from rated output current, following 30 minutes warm-up.									
6. Temperature stability	---	0.01% of rated Iout over 8hrs. interval following 30 minutes warm-up. Constant line, load & temperature.									
7. Warm-up drift	---	10V~100V: Less than +/-0.25%, 150V~600V: Less than +/-0.15% of rated output current over 30 minutes following power on.									
Analogue 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 #1 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	---	Enable/Disable PS output by electrical signal or dry contact. 0~0.6V or short, 2~30V or open. User selectable logic.									
6. INTERLOCK (ILC) control	---	Enable/Disable 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.									
9. DAISY_IN/SO control signal	---	By electrical Voltage: 0~0.6V/2~30V or dry contact.									
10. DAISY_OUT/PS_OK #2 signal	---	4~5V=OK, 0V (500ohm impedance)=Fail									
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: 1~1000mΩ. Programming via the communication ports or the front panel.									
6. Slew rate control	---	Programmable Output rise and Output fall slew rate. Programming range: 0.0001~999.99V/mS or A/mS. 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(*19)(*20) Interfaces)											
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)	%	0.004%	0.007%	0.010%	0.002%	0.003%	0.004%	0.004%	0.006%	0.010%	0.003%

Specifications GENESYS+™ G (5kW)

Output Rating	G	10-500	20-250	30-170	40-125	50-100	60-85	80-65	100-50	150-34	200-25	300-17	400-13	500-10	600-8.5
1. Rated output voltage(*1)	V	10	20	30	40	50	60	80	100	150	200	300	400	500	600
2. Rated output current (*2)	A	500(*3)	250	170	125	100	85	65	50	34	25	17	13	10	8.5
3. Rated output power	W	5000	5000	5100	5000	5000	5100	5200	5000	5100	5000	5100	5200	5000	5100
Input Characteristics	**V**	**10**	**20**	**30**	**40**	**50**	**60**	**80**	**100**	**150**	**200**	**300**	**400**	**500**	**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 (Typ) (*5) (*22)	%	89(*21)	91	91	91	90	91	91	91	91	91	92	92	92	92
5. Inrush current (*6)	A	Less than 50A													
Constant Voltage Mode	**V**	**10**	**20**	**30**	**40**	**50**	**60**	**80**	**100**	**150**	**200**	**300**	**400**	**500**	**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	75	80	90	120	200	200	400	450	480
4. Ripple r.m.s. 5Hz~1MHz (*9)	mV	8	10	12	12	12	12	15	15	20	45	60	80	80	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	5	5	5	5
9. Up-prog. Response time (*11)	mS	30	30	30	30	50	50	50	50	50	50	50	100	100	100
10. Down-prog.response time: Full load (*11)	mS	50	50	80	80	80	80	100	100	100	100	100	150	200	200
No load (*12)	mS	300	600	800	900	950	1000	1200	1900	2000	2500	3000	4000	4000	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. Start up delay	Sec	Less than 5 Sec													
Constant Current Mode	**V**	**10**	**20**	**30**	**40**	**50**	**60**	**80**	**100**	**150**	**200**	**300**	**400**	**500**	**600**
1. Max. Line regulation (*7)	---	0.05% of rated output current.													
2. Max. Load regulation (*13)	---	0.08% of rated output current.													
3. Ripple r.m.s. @ rated voltage. B.W 5Hz~1MHz (*14)	mA	≤1200	≤600	≤300	≤150	≤130	≤100	≤70	≤45	≤45	≤45	≤15	≤12	≤10	≤8
4. Temperature coefficient	PPM/°C	10V~100V: 100PPM/°C, 150V~600V: 70PPM/°C from rated output current, following 30 minutes warm-up.													
5. Temperature stability	---	0.01% of rated Iout over 8hrs. interval following 30 minutes warm-up. Constant line, load & temperature.													
6. Warm-up drift	---	10V~100V: Less than +/-0.25%, 150V~600V: Less than +/-0.15% of rated output current over 30 minutes following power on.													
Analogue 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% of rated Vout.													
6. Output current monitor (*15)	---	0~5V or 0~10V, user selectable. Accuracy: +/-0.5% of rated Iout.													
Signals and Controls (Isolated from the Output)															
1. Power supply OK #1 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	---	Enable/Disable PS output by electrical signal or dry contact. 0~0.6V or short, 2~30V or open. User selectable logic.													
6. INTERLOCK (ILC) control	---	Enable/Disable 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.													
9. DAISY_IN/SO control signal	---	By electrical Voltage: 0~0.6V/2~30V or dry contact.													
10. DAISY_OUT/PS_OK #2 signal	---	4~5V=OK, 0V (500ohm impedance)=Fail													
Functions and Features															
1. Parallel operation	---	Possible. Up to twelve (12) identical units in Master/Slave mode. Refer to instruction manual. For more power please consult with Factory.													
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: 1~1000mΩ. Programming via the communication ports or the front panel.													
6. Slew rate control	---	Programmable Output rise and Output fall slew rate. Programming range: 0.0001~999.99V/mS or A/mS. 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(*19)(*20) Interfaces)															
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%	0.003%	0.002%	0.002%	0.011%	0.007%	0.005%	0.004%	0.003%	0.003%	0.002%
8. Iout readback resolution (of rated output current)	%	0.003%	0.005%	0.006%	0.009%	0.011%	0.002%	0.002%	0.003%	0.004%	0.004%	0.006%	0.008%	0.001%	0.002%

Specifications GENESYS+™ G (2.7/3.4/5kW)

Protective Functions	V	10	20	30	40	50	60	80	100	150	200	300	400	500	600
1. Foldback protection	---	Output shut-down when power supply changes mode from CV or Power Limit to CC mode or from CC or Power Limit to CV mode. User presetable. Reset by AC input recycle in autostart mode, by Power Switch, 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	2~44.1	5~55.125	5~66.15	5~88.2	5~110.25	5~165.37	5~220.5	5~330.75	5~441	5~551.25	5~661.5
4. Over-voltage programming accuracy	---	+/-1% of rated output voltage													
5. Output under voltage limit (UVL)	---	Prevents from adjusting Vout below limit. Does not apply 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 Power Switch, by OUTPUT button, by rear panel or by communication.													
Front Panel															
1. Control functions	---	Multiple options with 2 Encoders Vout/Iout/Power Limit manual adjust OVP/UVL/UVP manual adjust Protection Functions - OVP, UVL,UVP, Foldback, OCL, ENA, ILC Communication Functions - Selection of LAN,IEEE,RS-232,RS-485,USB or Optional communication interface. Output ON/OFF. Front Panel Lock. Communication Functions - Selection of Baud Rate, Address, IP and communication language. Analogue Control Functions - Selection Voltage/resistive programming, 5V/10V, 5K/10K programming Analogue Monitor Functions - Selection of Voltage/Current Monitoring 5V/10V.													
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	---	-30~85°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).													
Mechanical															
1. Cooling	---	Forced air cooling by internal fans. Air flow direction: from Front panel to power supply rear													
2. Weight	kg	2.7kW/3.4kW: Less than 6.25kg 5kW: Less than 7.5kg													
3. Dimensions (WxHxD)	mm	W: 423, H: 43.6, D: 441.5 (Without busbars and busbars cover), W: 423, H: 43.6, D: 553.2 (Including busbars and busbars cover) (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, 11mS. Unit is unpacked.													
Safety/EMC															
1. Applicable standards: Safety	---	UL61010-1, CSA22.2 No.61010-1, IEC61010-1, EN61010-1													
1.1 Interface classification	---	Vout≤50V Models: Output, J1, J2, J3, J4, J5, J6, J7, J8 (sense) & J9 (communication options) are Non Hazardous. 60≤Vout≤600V Models: Output & J8 (sense) are hazardous, J1, J2, J3, J4, J5, J6, J7 & J9 (communication options) are Non Hazardous.													
1.2 Withstand voltage	---	Vout≤50V Models: Input – Output & J8 (sense), J1, J2, J3, J4, J5, J6, J7 & J9 (communication options): 4242Vdc 1min, Input - Ground: 2835Vdc 1min. 60V≤Vout≤100V Models: Input – Output & J8 (sense), J1, J2, J3, J4, J5, J6, J7 & J9 (communication options): 4242Vdc 1min, Output & J8 (sense) - J1, J2, J3, J4, J5, J6, J7 & J9 (communication options): 850Vdc 1min. Output & J8 (sense) - Ground: 1500Vdc 1min, Input - Ground: 2835Vdc 1min. 100V<Vout≤600V Models: Input – Output & J8 (sense), J1, J2, J3, J4, J5, J6, J7 and J9 (communication options): 4242Vdc 1min. Output & J8 (sense) - J1, J2, J3, J4, J5, J6, J7 & J9 (communication options): 1275Vdc 1min. Output & J8 (sense) - Ground: 2500Vdc 1min, Input - Ground: 2835Vdc 1min.													
1.3 Insulation resistance	---	100Mohm at 25°C, 70%RH. Output to Ground 500Vdc													
2. Conducted emission	---	IEC/EN61204-3 Industrial environment, Annex H table H.1 , FCC Part 15-A, VCCI-A .													
3. Radiated emission	---	IEC/EN61204-3 Industrial environment, Annex H table H.3 and H4, FCC Part 15-A, VCCI-A													
4. EMC compliance EMC(*18)	---	According to IEC/EN61204-3 Industrial environment													

Unless otherwise noted, specifications are warranted over the ambient temperature range of 0° to 50° C.

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: G5kW: Derate 5A/1°C above 40°C G3.4kW: 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 0.2mS.
* 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-9131C (1:1) probe. For 200~600V 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 20~100% of rated output voltage and rated output current. For other models, the ripple is measured at 10~100% of rated output voltage and rated output current. 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.
* 18: Signal and control ports interface cables length: Less than 3m, DC output power port cables length: Less than 30m.
* 19: Max. ambient temperature for using IEEE is 40°C.
* 20: For 10V model only: Max. output current for using IEEE is 400A up to 40°C and 450A up to 30°C.
* 21: For 10V model only: For 3-Phase 200V efficiency is 88.5%
* 22: Typ. at Ta=25°C, rated output power.

Specifications GENESYS+™ GSP (10kW)

Output Rating	GSP	10-1000	20-500	30-340	40-250	50-200	60-170	80-130	100-100	150-68	200-50	300-34	400-26	500-20	600-17
1. Rated output voltage(*1)	V	10	20	30	40	50	60	80	100	150	200	300	400	500	600
2. Rated output current (*2)	A	1000(*3)	500	340	250	200	170	130	100	68	50	34	26	20	17
3. Rated output power	kW	10	10	10.2	10	10	10.2	10.4	10	10.2	10	10.2	10.4	10	10.2
Input Characteristics	**V**	**10**	**20**	**30**	**40**	**50**	**60**	**80**	**100**	**150**	**200**	**300**	**400**	**500**	**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: 35A @ 200Vac 3-Phase, 400V models: 18.4A @ 380Vac 3-Phase, 480V models: 18.4A @ 380Vac													
3. Power Factor (Typ)	---	0.94 @ 200/380Vac, rated output power.													
4. Efficiency (Typ) (*5) (*22)	%	89(*21)	90	91	91	91	91	91	91	91	91	92	92	91	92
5. Inrush current (*6)	A	Less than 100A													
6. AC line phase imbalance	%	< 5%													
Constant Voltage Mode	**V**	**10**	**20**	**30**	**40**	**50**	**60**	**80**	**100**	**150**	**200**	**300**	**400**	**500**	**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	75	80	90	120	200	200	400	450	480
4. Ripple r.m.s. 5Hz~1MHz (*9)	mV	8	10	12	12	12	12	15	15	20	45	60	80	80	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	5	5	5	5
9. Up-prog. Response time (*11)	mS	30	30	30	30	50	50	50	50	50	50	50	100	100	100
10. Down-prog.response time: Full load (*11)	mS	50	50	80	80	80	80	100	100	100	100	100	150	200	200
No load (*12)	mS	300	600	800	900	950	1000	1200	1900	2000	2500	3000	4000	4000	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. Start up delay	Sec	Less than 7 Sec													
Constant Current Mode	**V**	**10**	**20**	**30**	**40**	**50**	**60**	**80**	**100**	**150**	**200**	**300**	**400**	**500**	**600**
1. Max. Line regulation (*7)	---	0.05% of rated output current.													
2. Max. Load regulation (*13)	---	0.08% of rated output current.													
3. Ripple r.m.s. @ 10% rated voltage (*14)	mA	1500	1200	600	300	200	150	100	70	45	45	15	15	12	10
4. Ripple r.m.s. @ 100% rated voltage (TA25°C) (*14)		1200	700	300	150	100	75	50	35	23	23	7.5	7.5	8	6
5. Temperature coefficient	PPM/°C	10V~100V: 100PPM/°C, 150V~600V: 70PPM/°C from rated output current, following 30 minutes warm-up.													
6. Temperature stability	---	0.01% of rated Iout over 8hrs. interval following 30 minutes warm-up. Constant line, load & temperature.													
7. Warm-up drift	---	10V~100V: Less than +/-0.25%, 150V~600V: Less than +/-0.15% of rated output current over 30 minutes following power on.													
Analogue 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% of rated Vout.													
6. Output current monitor (*15)	---	0~5V or 0~10V, user selectable. Accuracy: +/-0.5% of rated Iout.													
Signals and Controls (Isolated from the Output)															
1. Power supply OK #1 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	---	Enable/Disable PS output by electrical signal or dry contact. 0~0.6V or short, 2~30V or open. User selectable logic.													
6. INTERLOCK (ILC) control	---	Enable/Disable 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.													
9. DAISY_IN/SO control signal	---	By electrical Voltage: 0~0.6V/2~30V or dry contact.													
10. DAISY_OUT/PS_OK #2 signal	---	4~5V=OK, 0V (500ohm impedance)=Fail													
Functions and Features															
1. Parallel operation	---	Possible. Up to four (4) identical GSP units. For more power please consult with Factory.													
2. Series operation	---	Consult with Factory													
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: 1~1000mΩ. Programming via the communication ports or the front panel.													
6. Slew rate control	---	Programmable Output rise and Output fall slew rate. Programming range: 0.0001~999.99V/mS or A/mS. 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(*19)(*20) Interfaces)															
1. Vout programming accuracy (*16)	---	0.05% of rated output voltage													
2. Iout programming accuracy (*15)	---	0.3% 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%	0.003%	0.002%	0.002%	0.011%	0.007%	0.005%	0.004%	0.003%	0.003%	0.002%
8. Iout readback resolution (of rated output current)	%	0.012%	0.003%	0.004%	0.005%	0.006%	0.007%	0.009%	0.012%	0.002%	0.003%	0.003%	0.004%	0.006%	0.006%

Specifications GENESYS+™ GSP (15kW)

Output Rating	GSP	10-1500	20-750	30-510	40-375	50-300	60-255	80-195	100-150	150-102	200-75	300-51	400-39	500-30	600-25.5
1. Rated output voltage(*1)	V	10	20	30	40	50	60	80	100	150	200	300	400	500	600
2. Rated output current (*2)	A	1500(*3)	750	510	375	300	255	195	150	102	75	51	39	30	25.5
3. Rated output power	kW	15	15	15.3	15	15	15.3	15.6	15	15.3	15	15.3	15.6	15	15.3
Input Characteristics	**V**	**10**	**20**	**30**	**40**	**50**	**60**	**80**	**100**	**150**	**200**	**300**	**400**	**500**	**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: 52.5A @ 200Vac 3-Phase, 400V models: 27.6A @ 380Vac 3-Phase, 480V models: 27.6A @ 380Vac													
3. Power Factor (Typ)	---	0.94 @ 200/380Vac, rated output power.													
4. Efficiency (Typ) (*5) (*22)	%	89(*21)	90	91	91	91	91	91	91	91	91	92	92	91	92
5. Inrush current (*6)	A	Less than 150A													
6. AC line phase imbalance	%	< 5%													
Constant Voltage Mode	**V**	**10**	**20**	**30**	**40**	**50**	**60**	**80**	**100**	**150**	**200**	**300**	**400**	**500**	**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	75	80	90	120	200	200	400	450	480
4. Ripple r.m.s. 5Hz~1MHz (*9)	mV	8	10	12	12	12	12	15	15	20	45	60	80	80	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	5	5	5	5
9. Up-prog. Response time (*11)	mS	30	30	30	30	50	50	50	50	50	50	50	100	100	100
10. Down-prog.response time: Full load (*11)	mS	50	50	80	80	80	80	100	100	100	100	100	150	200	200
No load (*12)	mS	300	600	800	900	950	1000	1200	1900	2000	2500	3000	4000	4000	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. Start up delay	Sec	Less than 7 Sec													
Constant Current Mode	**V**	**10**	**20**	**30**	**40**	**50**	**60**	**80**	**100**	**150**	**200**	**300**	**400**	**500**	**600**
1. Max. Line regulation (*7)	---	0.05% of rated output current.													
2. Max. Load regulation (*13)	---	0.08% of rated output current.													
3. Ripple r.m.s. @ 10% rated voltage (*14)	mA	2000	1200	600	300	250	180	100	70	45	45	15	15	12	10
4. Ripple r.m.s. @ 100% rated voltage (TA25°C) (*14)		1200	700	300	150	130	90	60	35	23	23	7.5	7.5	8	6
5. Temperature coefficient	PPM/°C	10V~100V: 100PPM/°C, 150V~600V: 70PPM/°C from rated output current, following 30 minutes warm-up.													
6. Temperature stability	---	0.01% of rated Iout over 8hrs. interval following 30 minutes warm-up. Constant line, load & temperature.													
7. Warm-up drift	---	10V~100V: Less than +/-0.25%, 150V~600V: Less than +/-0.15% of rated output current over 30 minutes following power on.													
Analogue 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 (*23)	---	0~5V or 0~10V, user selectable. Accuracy: +/-0.5% of rated Vout.													
6. Output current monitor (*15) (*23)	---	0~5V or 0~10V, user selectable. Accuracy: +/-0.5% of rated Iout.													
Signals and Controls (Isolated from the Output)															
1. Power supply OK #1 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	---	Enable/Disable PS output by electrical signal or dry contact. 0~0.6V or short, 2~30V or open. User selectable logic.													
6. INTERLOCK (ILC) control	---	Enable/Disable 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.													
9. DAISY_IN/SO control signal	---	By electrical Voltage: 0~0.6V/2~30V or dry contact.													
10. DAISY_OUT/PS_OK #2 signal	---	4~5V=OK, 0V (500ohm impedance)=Fail													
Functions and Features															
1. Parallel operation	---	Possible. Up to four (4) identical GSP units. For more power please consult with Factory.													
2. Series operation	---	Consult with Factory													
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: 1~1000mΩ. Programming via the communication ports or the front panel.													
6. Slew rate control	---	Programmable Output rise and Output fall slew rate. Programming range: 0.0001~999.99V/mS or A/mS. 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(*19)(*20) Interfaces)															
1. Vout programming accuracy (*16)	---	0.05% of rated output voltage													
2. Iout programming accuracy (*15)	---	0.3% 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%	0.003%	0.002%	0.002%	0.011%	0.007%	0.005%	0.004%	0.003%	0.003%	0.002%
8. Iout readback resolution (of rated output current)	%	0.012%	0.003%	0.003%	0.004%	0.004%	0.005%	0.006%	0.008%	0.012%	0.002%	0.003%	0.003%	0.003%	0.005%

Specifications GENESYS+™ GSP (10/15kW)

Protective Functions	V	10	20	30	40	50	60	80	100	150	200	300	400	500	600
1. Foldback protection	---	Output shut-down when power supply changes mode from CV or Power Limit to CC mode or from CC or Power Limit to CV mode. User presetable. Reset by AC input recycle in autostart mode, by Power Switch, 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	2~44.1	5-55.125	5~66.15	5~88.2	5~110.25	5~165.37	5~220.5	5~330.75	5~441	5~551.25	5~661.5
4. Over-voltage programming accuracy	---	+/-1% of rated output voltage													
5. Output under voltage limit (UVL)	---	Prevents from adjusting Vout below limit. Does not apply 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 Power Switch, by OUTPUT button, by rear panel or by communication.													
Front Panel															
1. Control functions	---	Multiple options with 2 Encoders Vout/Iout/Power Limit manual adjust OVP/UVL/UVP manual adjust Protection Functions - OVP, UVL,UVP, Foldback, OCL, ENA, ILC Communication Functions - Selection of LAN,IEEE,RS-232,RS-485,USB or Optional communication interface. Output ON/OFF. Front Panel Lock. Communication Functions - Selection of Baud Rate, Address, IP and communication language. Analogue Control Functions - Selection Voltage/resistive programming, 5V/10V, 5K/10K programming Analogue Monitor Functions - Selection of Voltage/Current Monitoring 5V/10V.													
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	---	-30~85°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).													
Mechanical															
1. Cooling	---	Forced air cooling by internal fans. Air flow direction: from Front panel to power supply rear													
2. Weight GSP 10kW GSP 15kW	kg	Less than 15.5kg Less than 23.5kg													
3. Dimensions (WxHxD) GSP 10kW GSP 15kW	mm	W: 423, H: 88, D: 441.5 (Without busbars and busbars cover), W: 423, H: 88, D: 640 (Including busbars and busbars cover, and strain relief) (Refer to Outline drawing) W: 423, H: 132.5, D: 441.5 (Without busbars and busbars cover), W: 423, H: 132.5, D: 640 (Including busbars and busbars cover, and strain relief) (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, 11mS. Unit is unpacked.													
Safety/EMC															
1. Applicable standards: Safety	---	UL61010-1, CSA22.2 No.61010-1, IEC61010-1, EN61010-1													
1.1 Interface classification	---	Vout≤50V Models: Output, J1, J2, J3, J4, J5, J6, J7, J8 (sense) & J9 (communication options) are Non Hazardous. 60≤Vout≤600V Models: Output & J8 (sense) are hazardous, J1, J2, J3, J4, J5, J6, J7 & J9 (communication options) are Non Hazardous.													
1.2 Withstand voltage	---	Vout≤50V Models: Input – Output & J8 (sense), J1, J2, J3, J4, J5, J6, J7 & J9 (communication options): 4242Vdc 1min, Input - Ground: 2835Vdc 1min. 60V≤Vout≤100V Models: Input – Output & J8 (sense), J1, J2, J3, J4, J5, J6, J7 & J9 (communication options): 4242Vdc 1min, Output & J8 (sense) - J1, J2, J3, J4, J5, J6, J7 & J9 (communication options): 850Vdc 1min. Output & J8 (sense) - Ground: 1500Vdc 1min, Input - Ground: 2835Vdc 1min. 100V<Vout≤600V Models: Input – Output & J8 (sense), J1, J2, J3, J4, J5, J6, J7 and J9 (communication options): 4242Vdc 1min. Output & J8 (sense) - J1, J2, J3, J4, J5, J6, J7 & J9 (communication options): 1275Vdc 1min. Output & J8 (sense) - Ground: 2500Vdc 1min, Input - Ground: 2835Vdc 1min.													
1.3 Insulation resistance	---	GSP10kW/15kW: 60Mohm at 25°C, 70%RH. Output to Ground 500Vdc													
2. Conducted emission	---	IEC/EN61204-3 Industrial environment, Annex H table H.1 , FCC Part 15-A, VCCI-A .													
3. Radiated emission	---	IEC/EN61204-3 Industrial environment, Annex H table H.3 and H4, FCC Part 15-A, VCCI-A													
4. EMC compliance EMC(*18)	---	IEC/EN61204-3 Industrial environment													

Unless otherwise noted, specifications are warranted over the ambient temperature range of 0° to 50° C.

"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: GSP10kW: Derate 10A/1°C above 40°C GSP15kW: Derate 15A/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 0.2mS.

*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-9131C (1:1) probe. For 200~600V models: 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."

*18: "Signal and control ports interface cables length: Less than 3m, DC output power port cables length: Less than 30m.

*19: Max. ambient temperature for using IEEE is 40°C.

*20: GSP10kW For 10V model only: Max. output current for using IEEE is 800A up to 40°C and 900A up to 30°C.

*20: GSP15kW For 10V model only: Max. output current for using IEEE is 1200A up to 40°C and 1350A up to 30°C.

*21: For 10V model only: For 3-Phase 200V efficiency is 88.5%

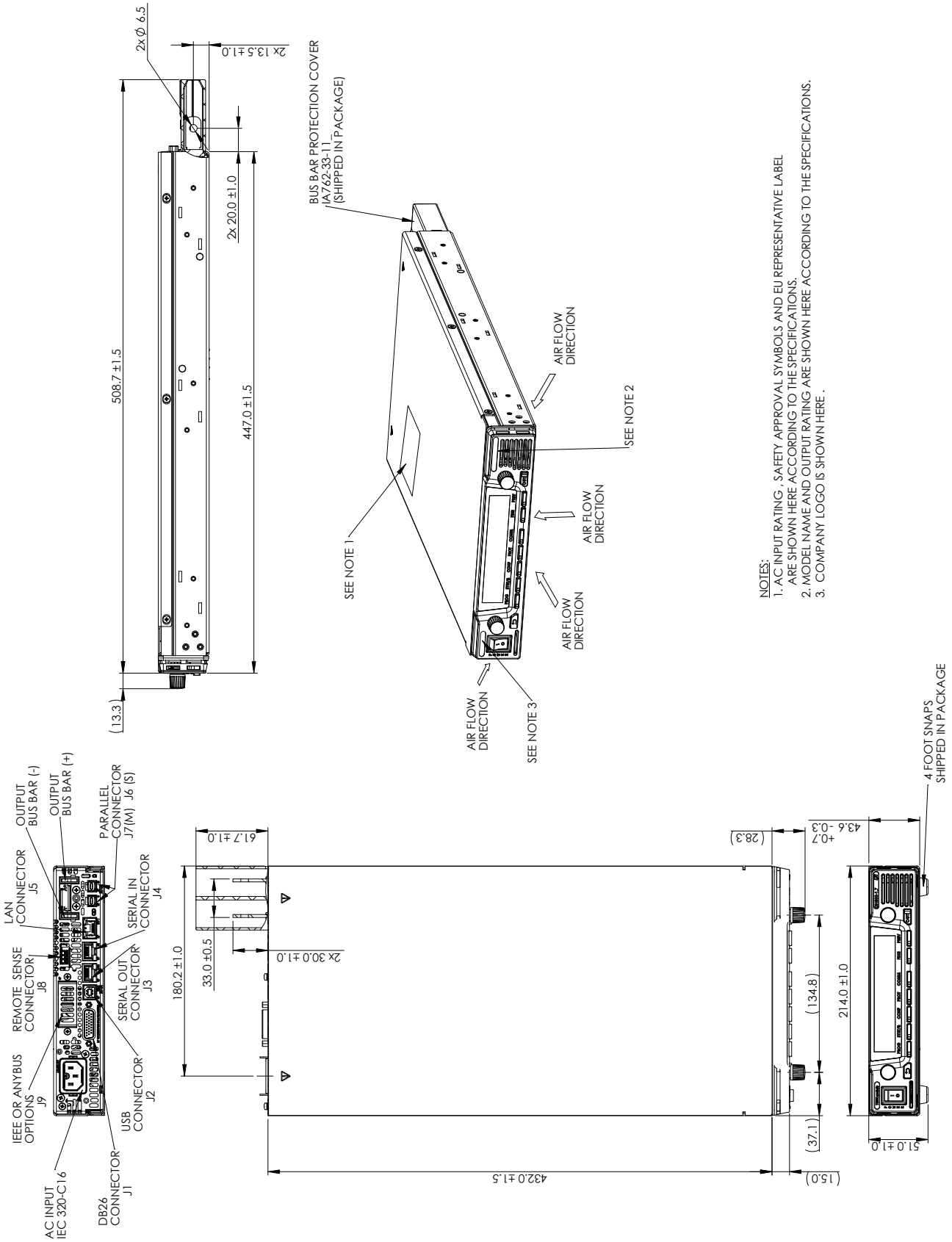
*22: Typ. at Ta=25°C, rated output power.

*23: For steady state only.

GENESYS™ Outline Drawings

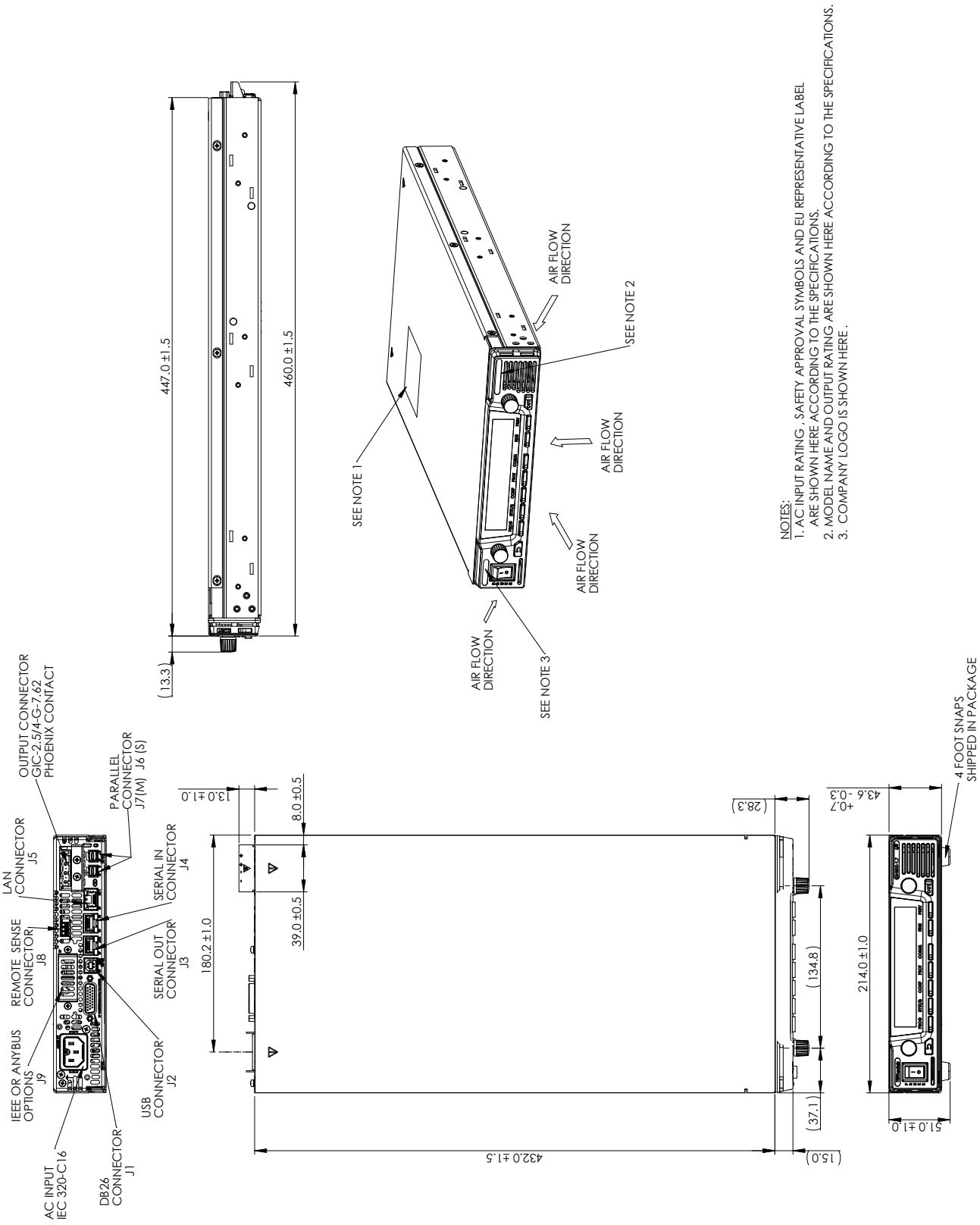
Outline Drawing GENESYS+™ GH (1kW)

(Models 10V-100V)



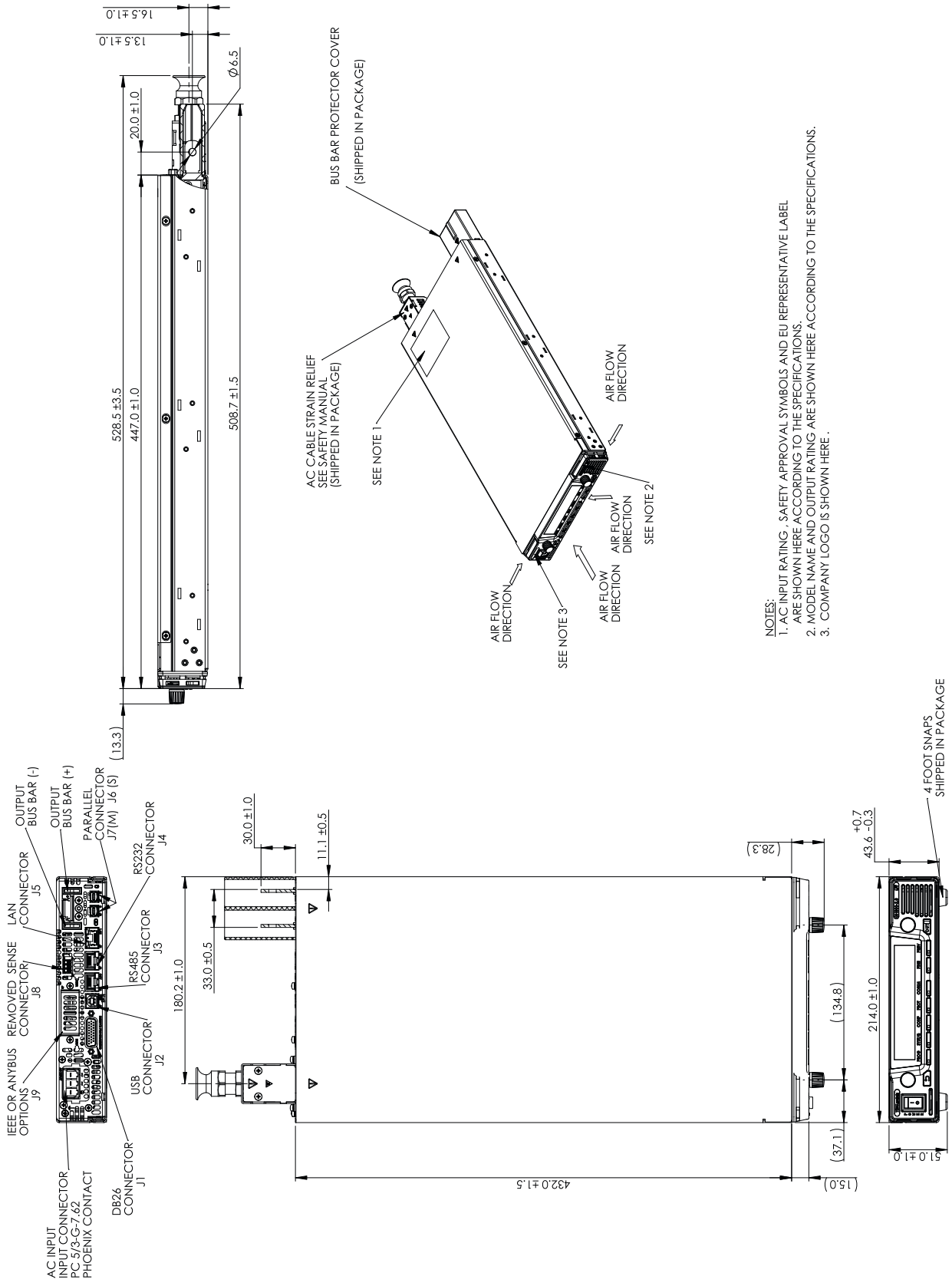
Outline Drawing GENESYS+™ GH (1kW)

(Models 150V-600V)



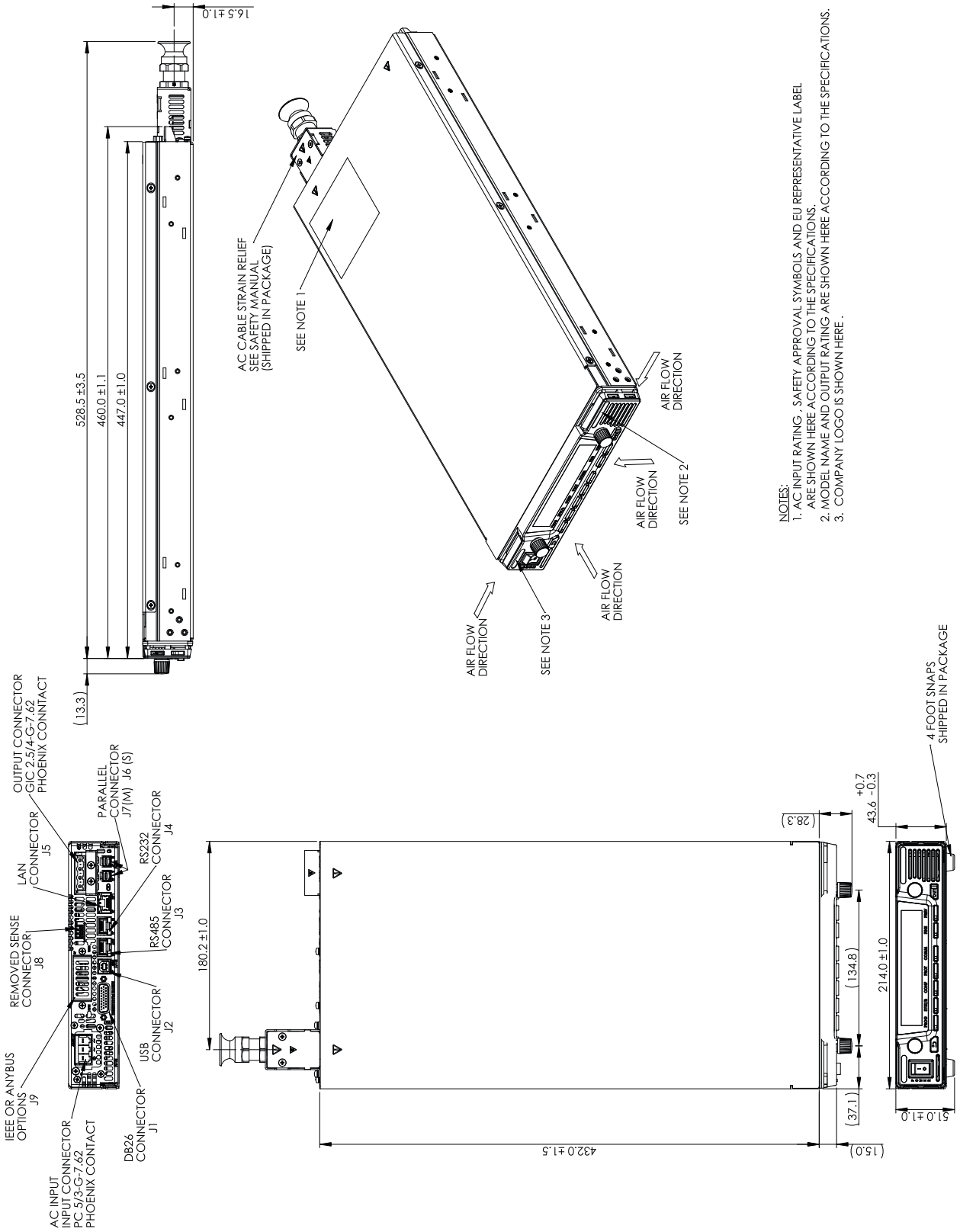
Outline Drawing GENESYS+™ GH (1.5kW)

(Models 10V-100V)



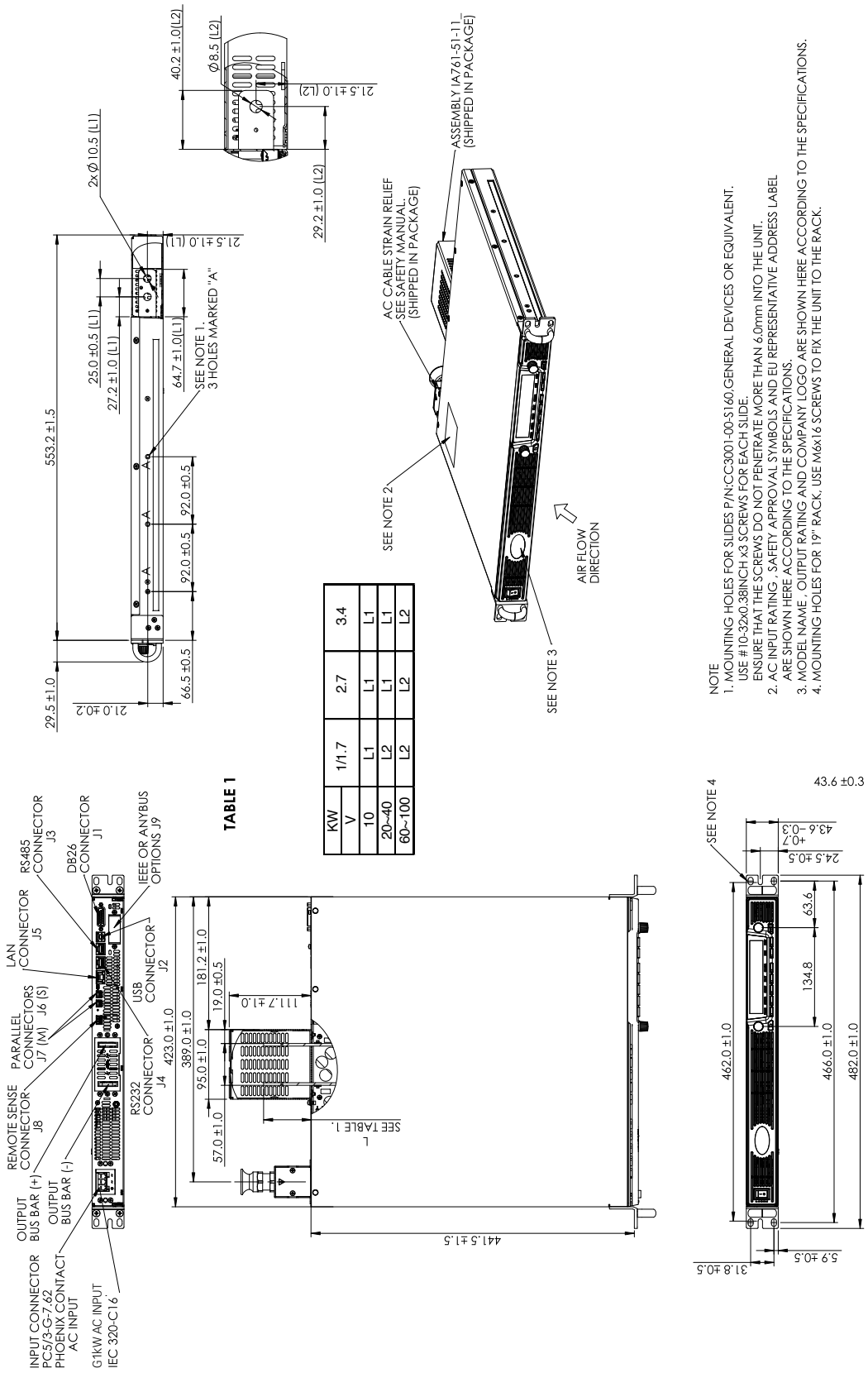
Outline Drawing GENESYS+™ GH (1.5kW)

(Models 150V-600V)



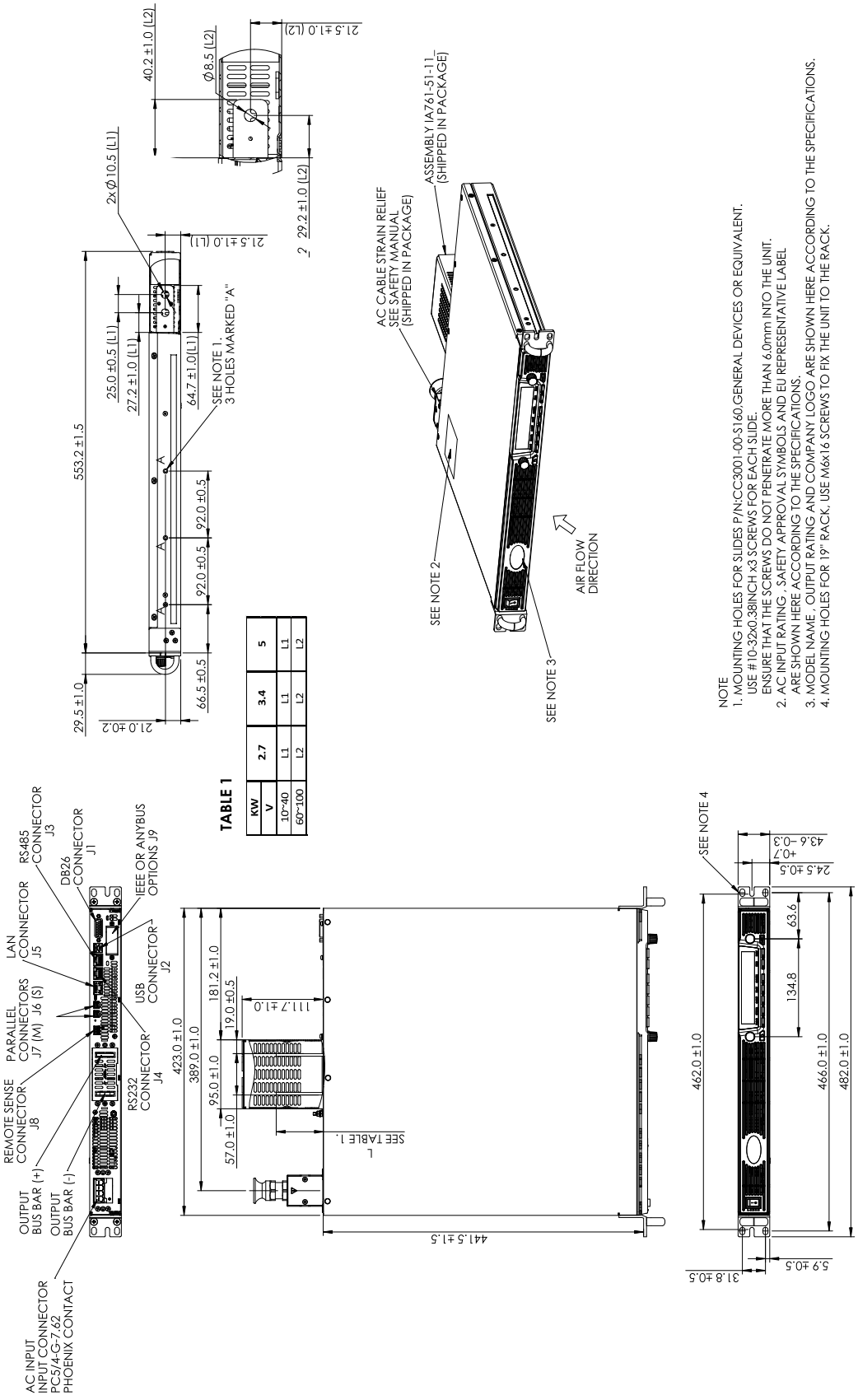
Outline Drawing GENESYS+™ G (1/1.7/2.7/3.4kW)

(1-Phase)

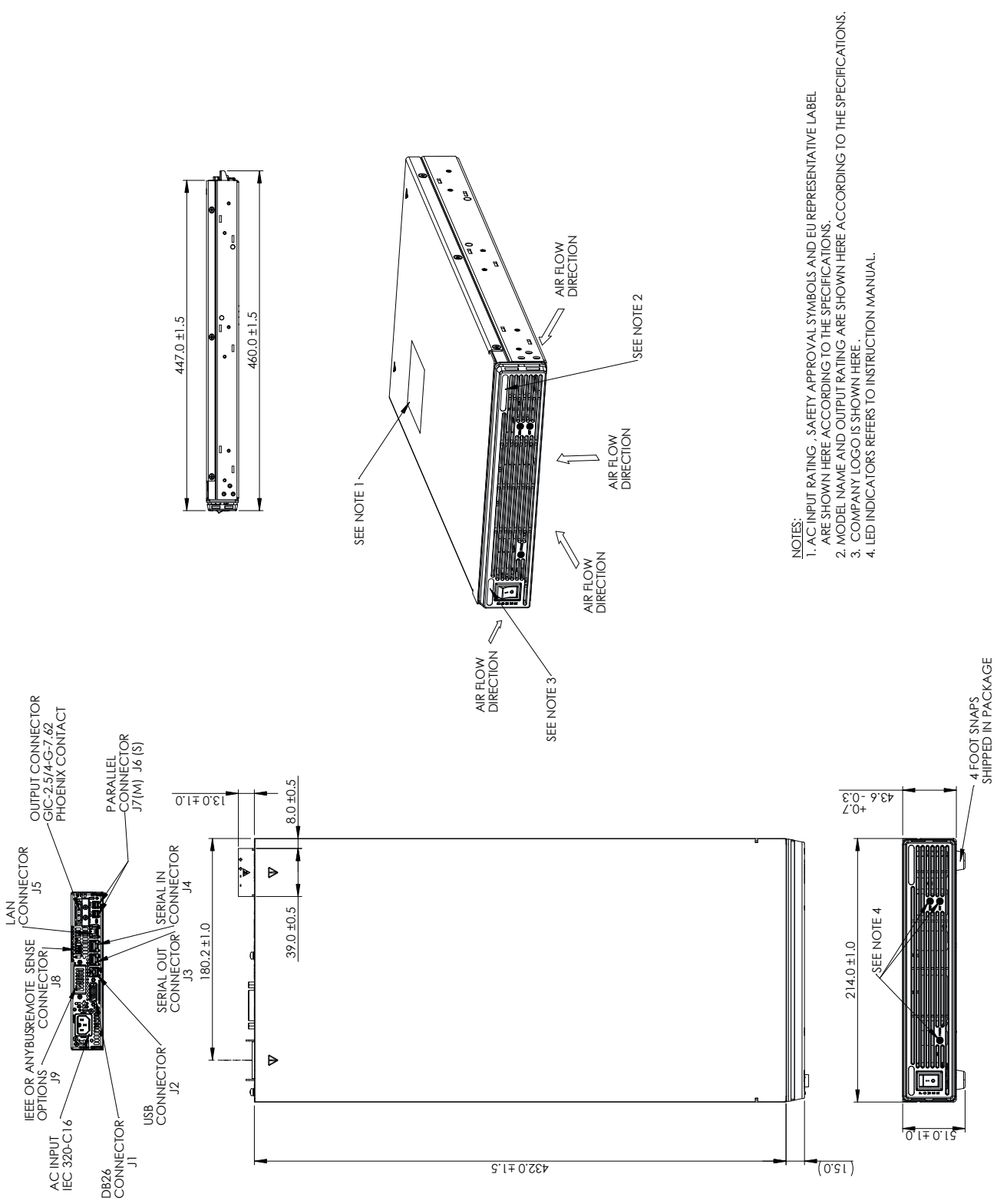


Outline Drawing GENESYS+™ G (2.7/3.4/5kW)

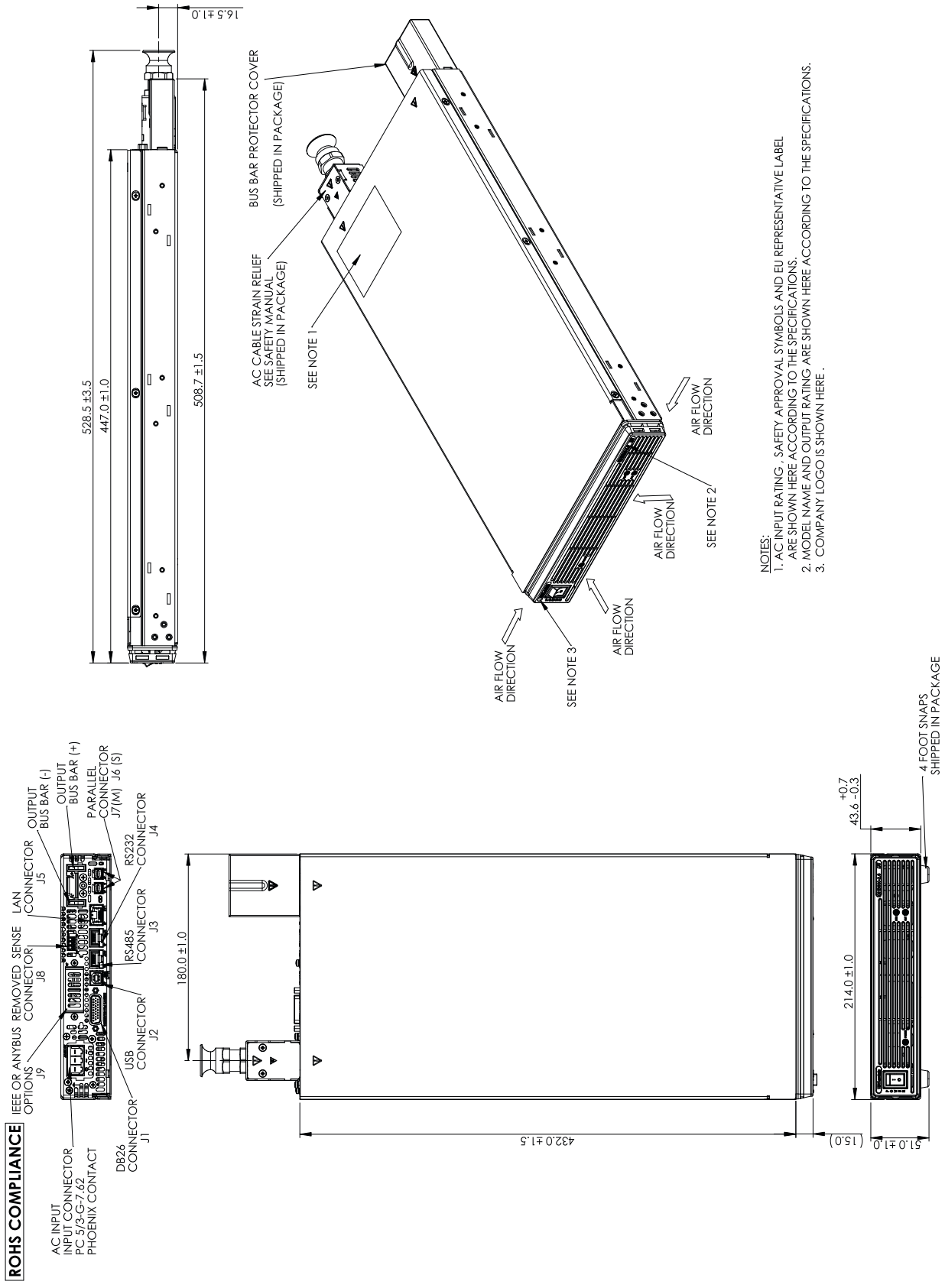
(3-Phase)



Outline Drawing GENESYS+™ GHB (1kW)

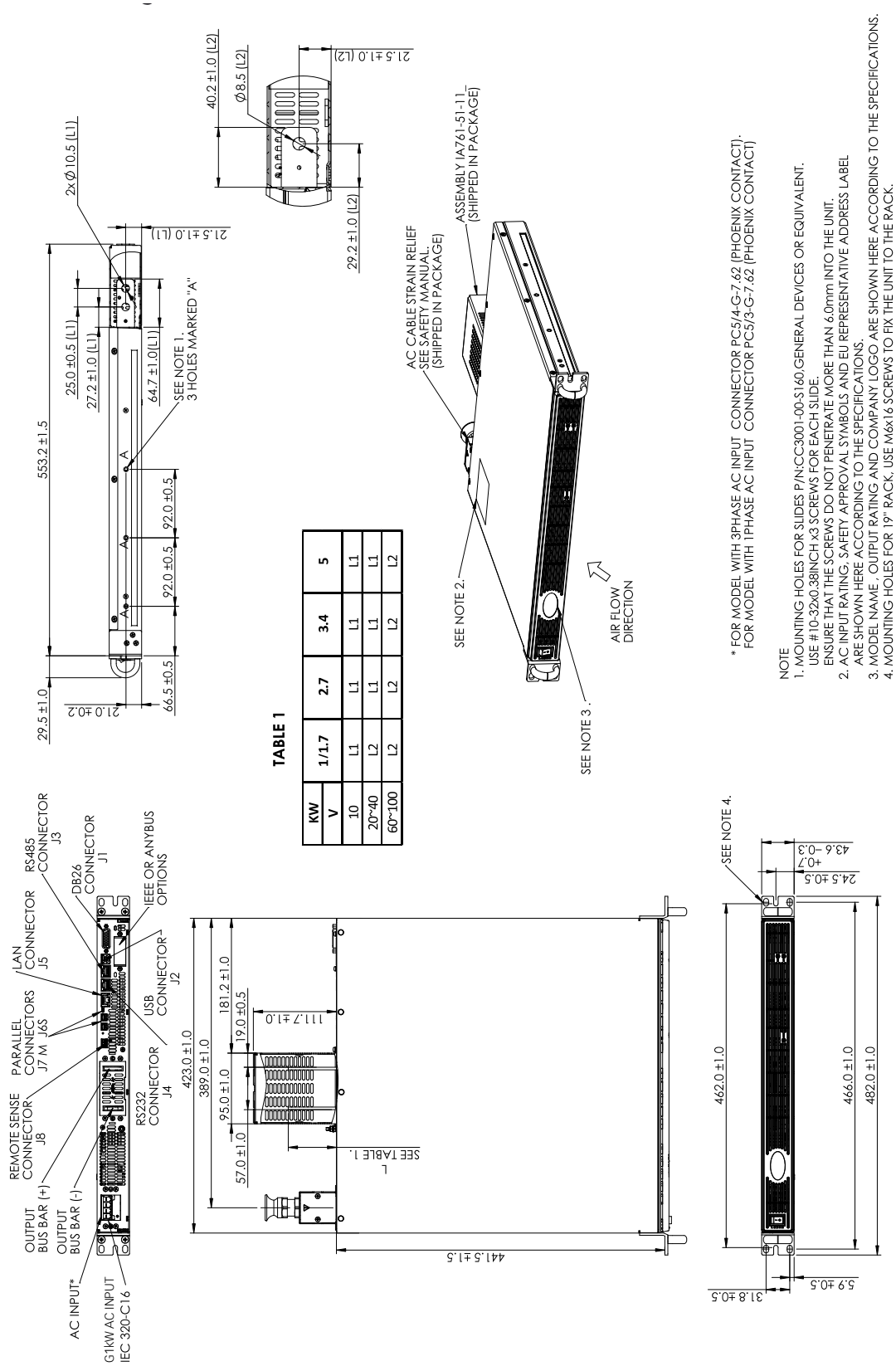


Outline Drawing GENESYS+™ GHB (1.5kW)

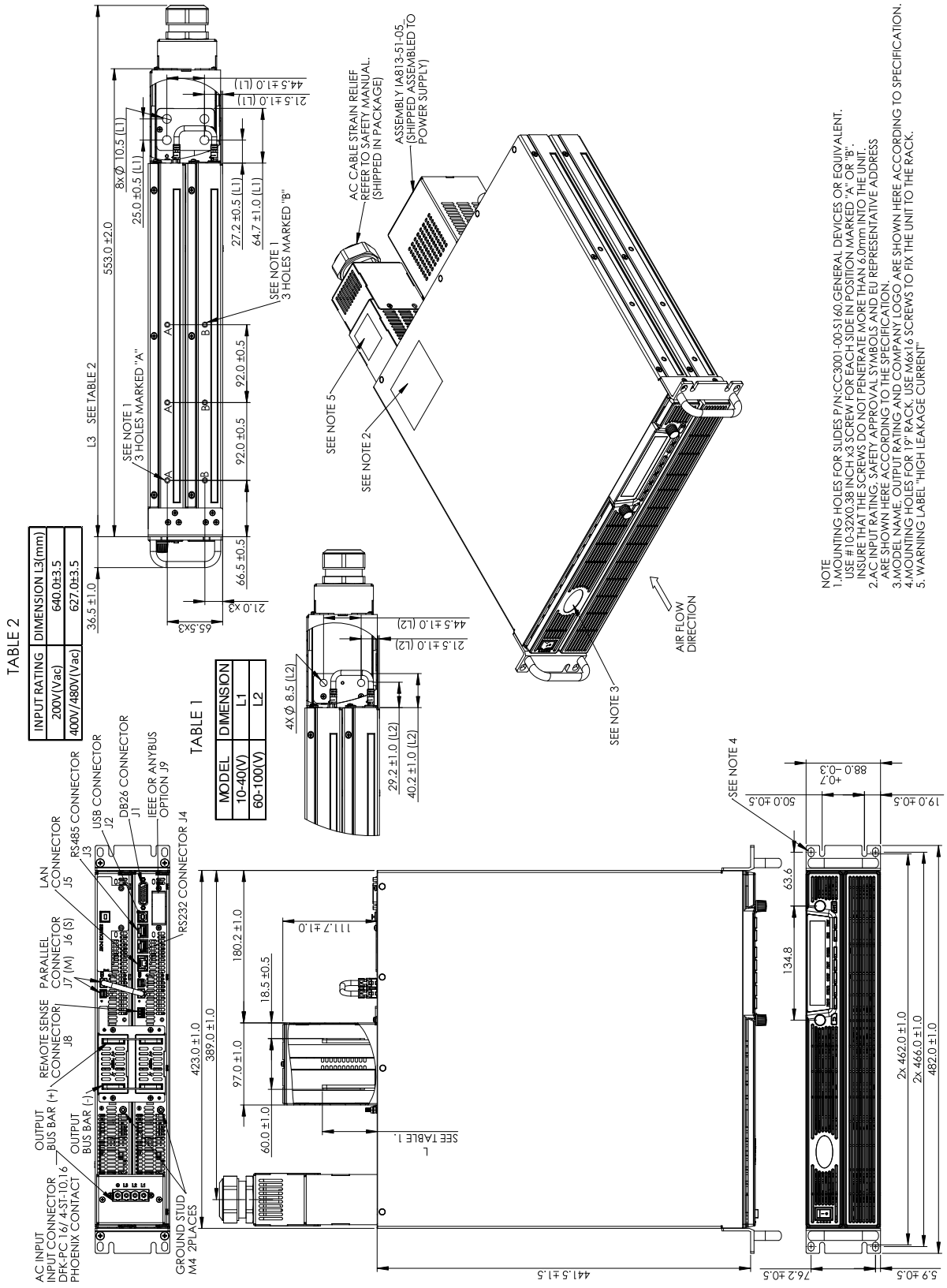


Outline Drawing GENESYS+™ GB (1/1.7/2.7/3.4/5kW)

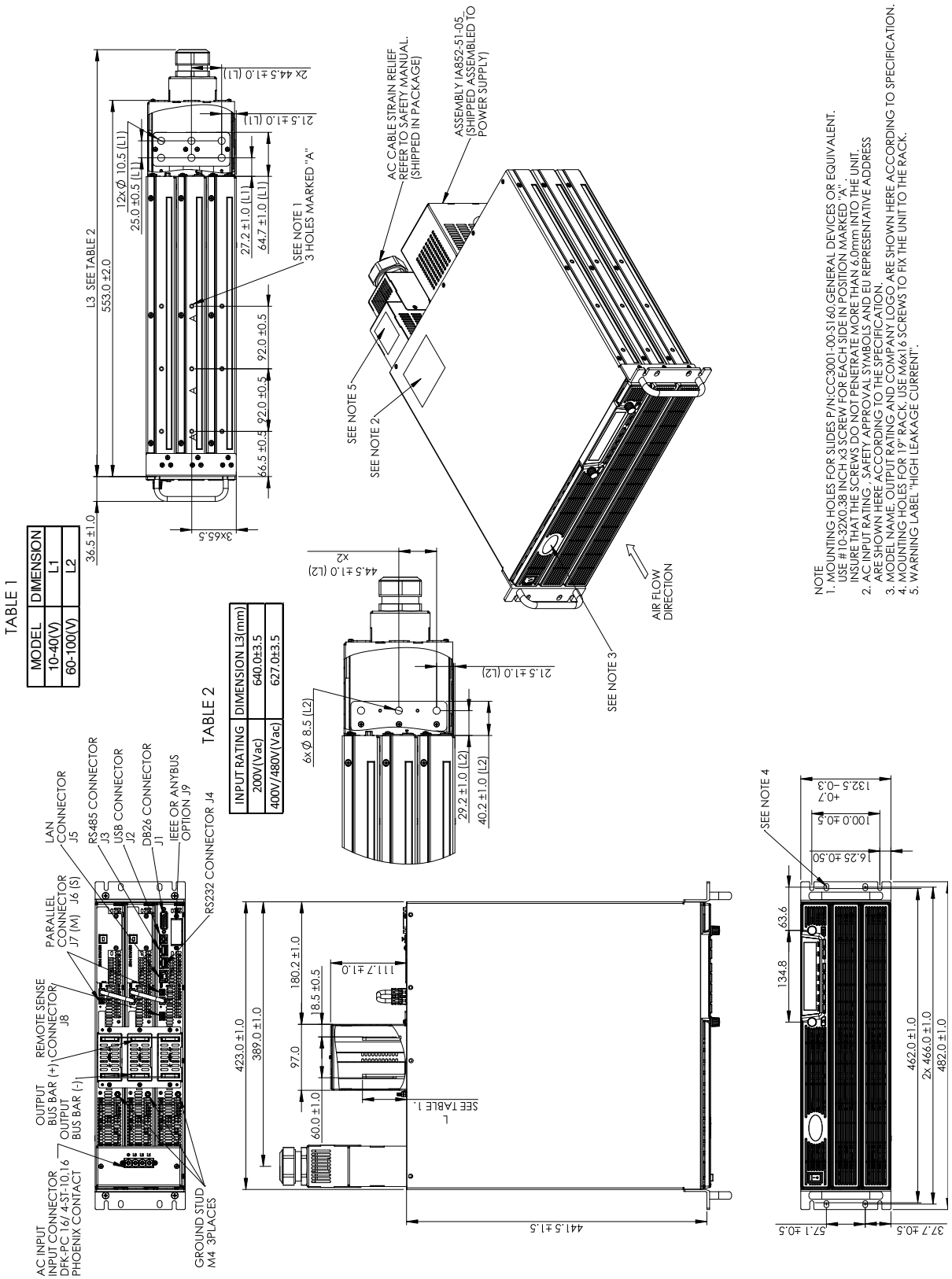
(ATE Version)



Outline Drawing GENESYS+™ GSP (10kW)

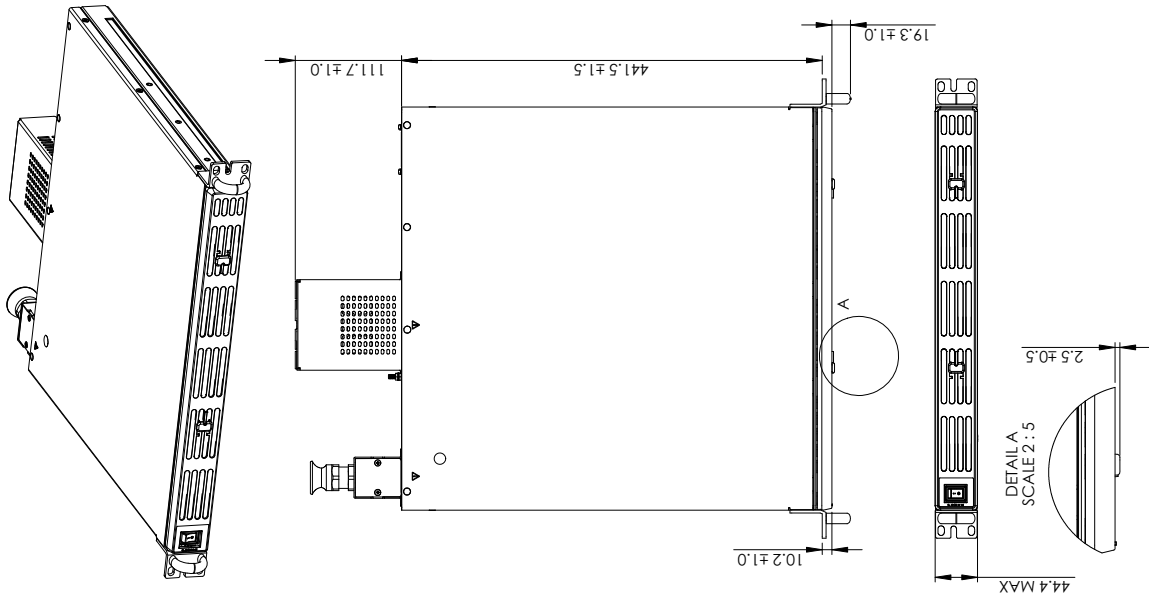


Outline Drawing GENESYS+™ GSP (15kW)

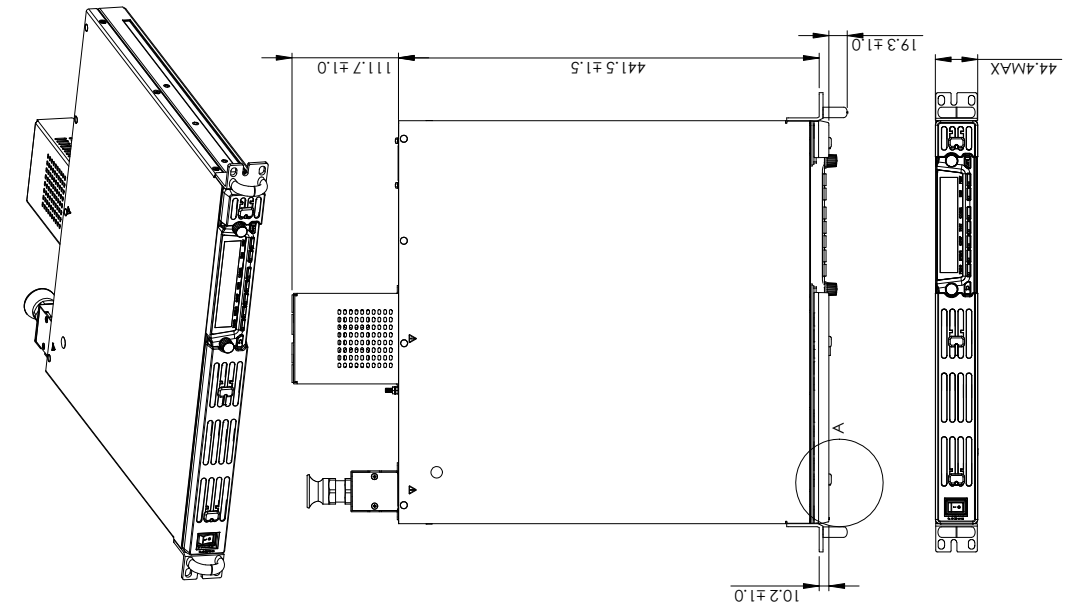


Outline Drawing GENESYS+™ Air Filter Kit

BLANK AIR FILTER (GB-AFK)



STANDARD AIR FILTER (G-AFK)



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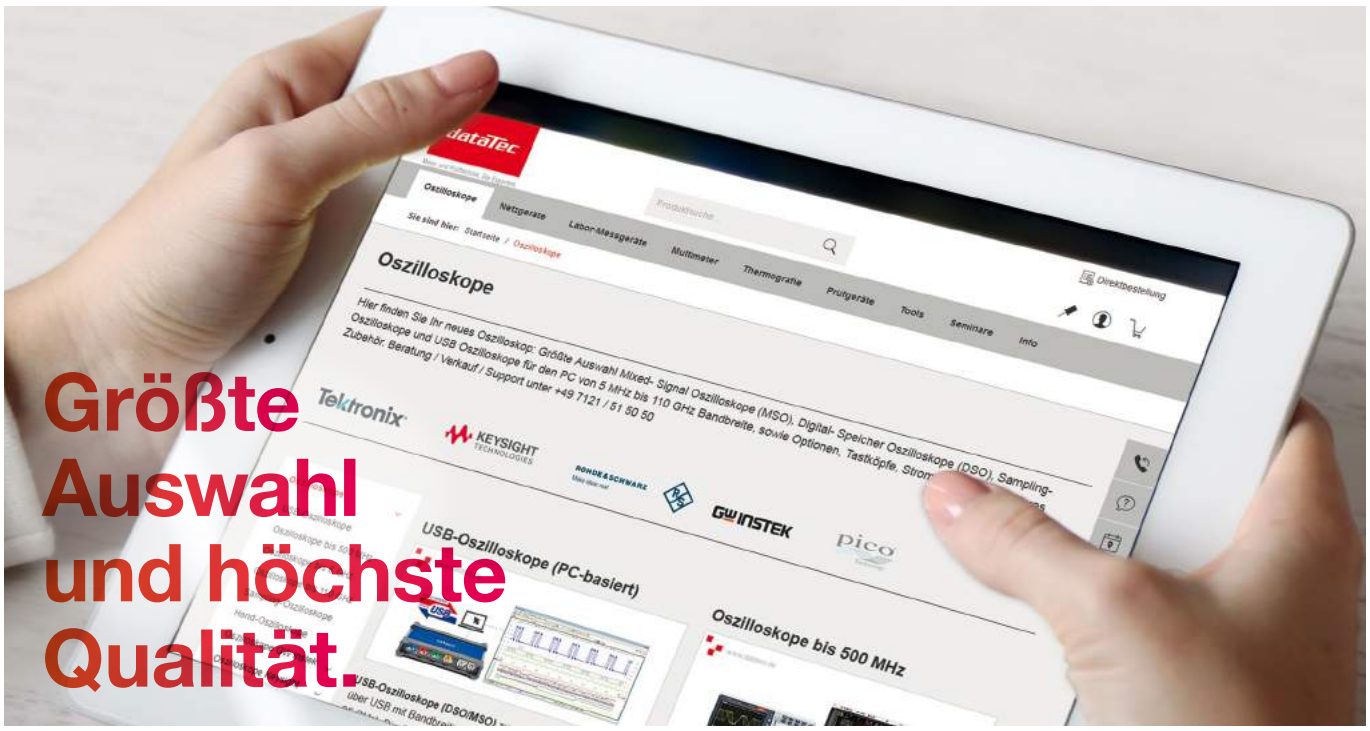

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