# hivolt.de



# **G**ENESYS<sup>™</sup>

# Programmable Power Supplies



**TDK**·Lambda

### **G**∉NESYS<sup>™</sup>

# 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

+Smallest and lightest product on the market

+Versatile communication protocols

+Simplifies control

+Speeds up test times



#### **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
- RS-232/RS-485, USB, LAN ( 1.5) built-in as standard
- Isolated Analogue interface built-in as standard
- Integrated Anybus CompactCom interface platform
- Communications compatible with Z+ and Genesys<sup>™</sup>

#### **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 20kW
- Safe or Auto re-start and last settings memory

#### **Environmental**

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

#### Mechanical

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

### **Specifications**

- 1.7-5kW in 1U
- 10kW in 2U / 15kW in 3U
- Wide Range of popular worldwide AC inputs: G5kW - G15kW: 3Ø (208, 400 & 480Vac), Wide range 3Ø 480Vac (342~528Vac) G1.7kW: 1Ø (85~265Vac)
- 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 four 5kW units. Each unit is 1U with zero space between them (zero stack)
- OEM Designers have a wide variety of inputs and outputs from which to select depending on application and location

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



# **G**ENESYS<sup>™</sup> Panel Description

### Front Panel GENESYS+™ G (1.7-5kW) **NEW**



- 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 (1.7-5kW) NEW



- 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 (LN 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 unti-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. G5kW 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 Input: 85~265Vac, Single Phase, 50/60Hz
  AC Input Plug Connector: PHOENIX CONTACT Power Combicon PC 5/3-STCL1-7.62 Series with strain relief
- 9. Optional Interface Position for IEEE 488.2 SCPI or Anybus Interface
- 10. Exhaust air assures reliable operation when units are zero stacked
- 11. Functional Ground connection (M4x8mm stud)

### Front Panel GENESYS+™ GSP (10kW) NEW



- 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) NEW



- 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)

Front Panel GENESYS+™ GSP (15kW) NEW



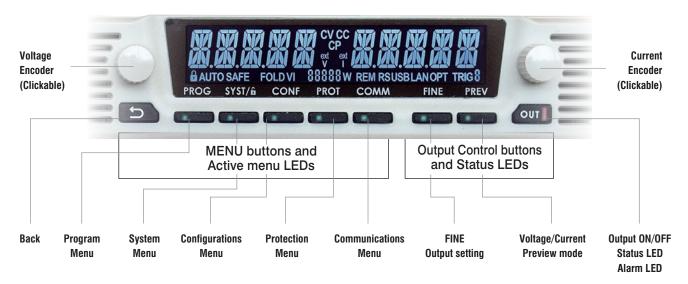
- 1. Input Power ON/OFF Switch
- 2. Air Intake allows zero stacking for maximum system flexibility and power density
- 3. Reliable Detent Encoders for settings and Menu navigation
- 4. High Contrast/Brightness display with wide viewing angle, 16 segment LCD
- 5. Function/Status LEDs: Active modes and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

### Rear Panel GENESYS+™ GSP (15kW) NEW

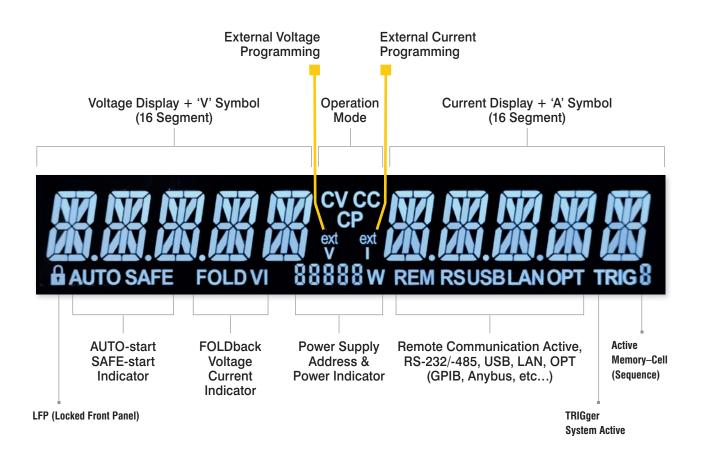


- 1. Isolated Analogue Programming, Monitoring and other control connector (DB26 Female)
- 2. USB Interface connector (Type B)
- 3. RS-232/RS-485 IN/OUT Remote Digital Interface (RJ-45 type) for Multi-Drop connection
- 4. LAN (LXI 1.5) Interface connector (RJ-45 type with LAN status indicators)
- 5. 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)

### Front Panel Display MENU/CONTROL buttons



### Front Panel Display indicators



### 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 four identical units to be connected
- Total Real Current is programmed, measured and reported by the Master
- Up to four supplies operate as one





Standard Unit - Zero stacked up to 4 units

Standard & Blank - Zero stacked up to 4 units

#### **Scalable Power Systems**

Factory assembly and test available for two and three unit systems 10kW/15kW. Parallel kit available for four unit systems 20kW. Order P/N: G/P - 4U





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).

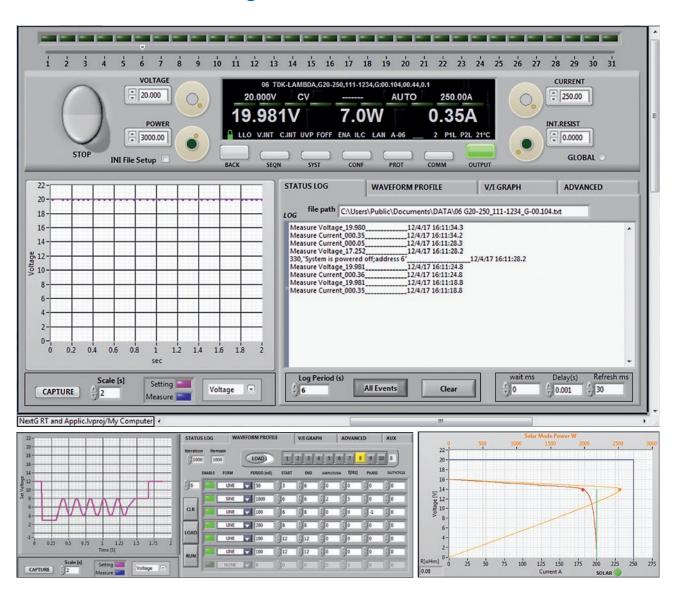
# **G**ENESYS<sup>™</sup> User Interface

### 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



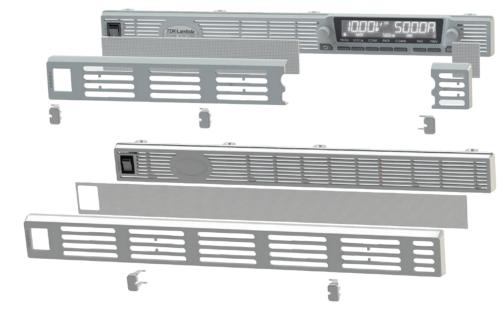
# **G**ENESYS<sup>™</sup> Air Filter Kit

### 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 (environmental)
- Operating Temperature
- For all models (except 10V): 0°C to +40°C
   For 10V model: 0°C to +30°C, derate 5A/°C
   for 30°C < TA < +40°C</li>
- Altitude
- For all modells (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: 4.0mm
- Porosity: 30ppi
- $\bullet$  Operating Temperature Range: 0°C to +60°C
- $\bullet$  Storage Temperature Range: -40°C to  $+85^{\circ}\text{C}$
- 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)

# **G**ENESYS<sup>™</sup> Product Summary

### GENESYS+™ Family Output Voltage and Current

Models Series	G (Std Front Panel Display) /	GB (Blank Front Panel Display)	GSP (Scalable Power)	
Rated Power	1.7kW	5kW	10kW	15kW
Output Voltage [Vdc]	Output Current [A]			
0~10	0~170	0~500	0~1000	0~1500
0~20	0~85	0~250	0~500	0~750
0~30	0~56	0~170	0~340	0~510
0~40	0~42	0~125	0~250	0~375
0~60	0~28	0~85	0~170	0~255
0~80	0~21	0~65	0~130	0~195
0~100	0~17	0~50	0~100	0~150
0~150	0~11.2	0~34	0~68	0~102
0~300	0~5.6	0~17	0~34	0~51
0~600	0~2.8	0~8.5	0~17	0~25.5
Weight [kg/lb]	5/11	7.5/16.5	15.5/34.2	23.5/51.8

### **AC Input Range**

Rated Power	1.7kW	5kW	10kW	15kW
1Ø, 85-265Vac	*	N/A	N/A	N/A
3P208	N/A	*	*	*
3P400	N/A	*	*	*
3P480	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 untis use RS-485 daisy chain with linking cable.





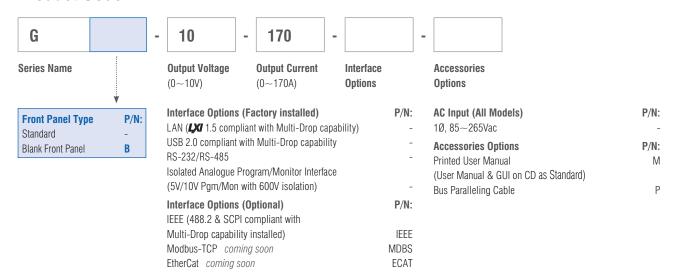


### Models GENESYS+™ G (1.7kW) NEW

Model	Output Voltage [Vdc]	Output Current [A]	Output 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

Model	Output Voltage [Vdc]	Output Current [A]	Output Power [W]
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**



#### **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+ $^{\text{TM}}$ 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

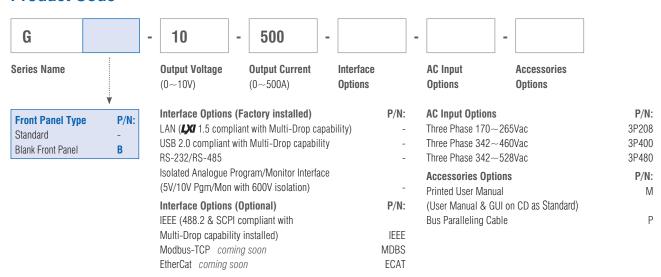
4. User Manual		
Printed User Manual		G/M

### Models GENESYS+™ G (5kW)

Model	Output Voltage [Vdc]	Output Current [A]	Output 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
G60-85	0~60	0~85	5100

Model	Output Voltage [Vdc]	Output Current [A]	Output Power [W]
G80-65	0~80	0~65	5200
G100-50	0~100	0~50	5000
G150-34	0~150	0~34	5100
G300-17	0~300	0~17	5100
G600-8.5	0~600	0~8.5	5100

#### **Product Code**



#### **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: 20kW

J. Faranci Rit. Zukw	
BusBar Parallel Kit for 20 kW operation (5kW Models where Vout up to 100V)	G/P-4U

### Models GENESYS+™ GSP (10kW) NEW

Model	Output Voltage [Vdc]	Output Current [A]	Output 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			
GSP60-170	0~60	0~170	10.2			

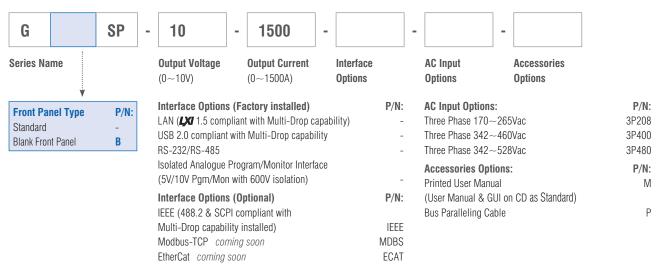
Model	Output Voltage [Vdc]	Output Current [A]	Output Power [kW]
GSP80-130	0~80	0~130	10.4
GSP100-100	0~100	0~100	10
GSP150-68	0~150	0~68	10.2
GSP300-34	0~300	0~34	10.2
GSP600-17	0~600	0~17	10.2

### Models GENESYS+™ GSP (15kW)

Model	Output Voltage [Vdc]	Output Current [A]	Output 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
GSP60-255	0~60	0~255	15.3

Model	Output Voltage [Vdc]	Output Current [A]	Output Power [kW]
GSP80-195	0~80	0~195	15.6
GSP100-150	0~100	0~150	15
GSP150-102	0~150	0~102	15.3
GSP300-51	0~300	0~51	15.3
GSP600-25.5	0~600	0~25.5	15.3

#### **Product Code**



#### **Accessories**

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

### $\underline{\text{1. Serial Communication cable} - \text{RS-232/RS-485 cable is used to connect the power supply to the Host PC.}\\$

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

0. 0001 munuu	
Printed User Manual	GSP/M

# **G**ENESYS<sup>™</sup> Specifications

### 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)		85~265Va	c, continuou	s, 47~63Hz,	Single Phase						
2. Maximum Input current at 100% load (100/200)	A	20/10									
3. Power Factor (Typ)		0.99 @ 100	OVac 0.98	@ 200Vac, r	ated output p	ower.					
4. Efficiency (at 100 Vac/200Vac, rated output)	%	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 50	DA								
Constant Voltage Mode	V	10	20	30	40	60	80	100	150	300	600
1. Max. Line regulation (*6)		0.01% of rat	ted output vo	oltage							
2. Max. Load regulation (*7)		0.01% of rat	ted output vo	oltage +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 f	rom rated o	utput voltage,	following 30	minutes warm	-up.				
6. Temperature stability		0.01% of ra	ted Vout ove	r 8hrs interval	l following 30	minutes warm	n-up. Constan	t line, load & t	emp.		
7. Warm-up drift		Less than 0.	.01% of rate	d output volta	ge+2mV ove	r 30 minutes f	ollowing powe	er on.			
8. Remote sense compensation/wire (*10)	V	1	1	1.5	2	2	3	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								of rated output OV. 2mS, for n		100V.
12. Hold-up time	mS	16mS typica	al, rated out	out power							
Constant Current Mode	V	10	20	30	40	60	80	100	150	300	600
1. Max. Line regulation (*6)		0.01% of rat	ted output c	urrent. +2mA	1						
2. Max. Load regulation (*9)		0.02% of rat	ted output c	urrent. +5mA	1						
3. Ripple r.m.s. @ 10% rated voltage (*13)	mA	400	160	100	60	50	30	30	10	8	5
4. Ripple r.m.s. @ rated voltage. B.W. 5Hz~1MHz.	mA	250	120	70	60	50	25	15	10	8	5
5. Temperature coefficient	PPM/°C	10V~100V 150V~600				ent, following 3 t, following 30					
6. Temperature stability		0.01% of rat	ted lout over	8hrs. interval	I following 30	minutes warm	-up. Constan	t line, load & to	emperature.		
7. Warm-up drift								es following po owing power o			
Analogue Programming and Monitoring (Isolate	d from th	e Output)									
1. Vout voltage programming		0~100%, 0	~5V or 0~	10V, user sel	ectable. Accu	racy and linea	rity: +/-0.159	% of rated Vout	t.		
2. lout voltage programming (*14)		0~100%, 0	$\sim$ 5V or 0 $\sim$	10V, user sel	ectable. Accu	racy and linea	rity: +/-0.4%	of rated lout.			
3. Vout resistor programming		0~100%, 0	~5/10Kohr	n full scale, u	ser selectable	. Accuracy and	d linearity: +,	/-0.5% of rated	l Vout.		
4. lout resistor programming (*14)		0~100%, 0	~5/10Kohr	n full scale, u	ser selectable	. Accuracy and	d linearity: +,	/-0.5% of rated	l lout.		
5. Output voltage monitor		0~5V or 0-	~10V, user	selectable. Ac	curacy: +/-0	.5%.					
6. Output current monitor (*14)		0~5V or 0-	~10V, user:	selectable. Ac	curacy: +/-0	.5%.					
Signals and Controls (Isolated from the Output)											
1. Power supply OK #1 signal		Power supp	ly output mo	nitor. Open c	ollector. Outp	ut On: On. Out	put Off: Off. N	laximum Volta	ge: 30V, Maxin	num Sink Cur	rent: 10mA
2. CV/CC signal		CV/CC Mon	itor. Open c	ollector. CC m	node: On. CV	mode: Off. Ma	ximum Voltag	e: 30V, Maxim	num Sink Curre	nt: 10mA.	
3. LOCAL/REMOTE Analogue control		Enable/Disa	ble analogu	e programmin	g control by	electrical signa	I or dry conta	ct. Remote: 0-	~0.6V or short	. Local: 2~30	OV or open.
4. LOCAL/REMOTE Analogue signal		0 1	0 0		0 1				Voltage: 30V, N		Current: 10
5. ENABLE/DISABLE signal		Enable/Disa	ble PS outp	ut by electrica	al signal or dr	y contact. 0∼0	0.6V or short,	2~30V or ope	en. User selecta	able logic.	
6. INTERLOCK (ILC) control									: 2~30V or op		
7. Programmed signals		Two open d	rain program	nmable signal	s. Maximum v	voltage 25V, M	aximum sink	current 100mA	A (Shunted by 2	27V zener)	
8. TRIGGER IN / TRIGGER OUT signals						n high level inp Min delay bet			m high level ir	put = 5V po	sitive edge
9. DAISY_IN/SO control signal		By electrica	l Voltage: 0-	~0.6V/2~30'	V or dry conta	ıct.					
10. DAISY_OUT/PS_OK #2 signal		-		m impedance							
Functions and Features											
1. Parallel operation		Possible, U	o to 4 identi	cal units in Ma	aster/Slave m	ode. Refer to i	nstruction ma	nual.			
2. Series operation											
3. Daisy chain		Possible. Two identical units. Refer to instruction manual.  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 proggrammed value. Programming via the communication ports or the front panel.								
5. Output resistance control									ation ports or t		
6. Slew rate control					-			01~999.9V/m	· ·	no nont parte	
		Programmir	ng via the co	mmunication	ports or the fi	ont panel.	-				
7. Arbitrary waveforms		Profiles of u	p to 100 ste	ps can be sto	irea in 4 mem	ory cells. Activ	ration by com	mand via the c	communication	ports or by the	ie iront par

### Specifications GENESYS+™ G (1.7kW)

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 rat	ted output vol	tage							
2. lout programming accuracy (*14)		0.1% of actu	ual output cur	rent +0.2% o	f rated output	current					
3. Vout programming resolution		0.002% of ra	ated output v	oltage							
4. lout programming resolution		0.002% of ra	ated output c	urrent							
5. Vout readback accuracy		0.05% of ra	ited output vo	Itage							
6. lout readback accuracy (*14)		0.2% of rate	d output curr	ent							
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. lout 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%
Protective Functions	٧	10	20	30	40	60	80	100	150	300	600
1. Foldback protection						from CV or P art mode, by P					
2. Over-voltage protection (OVP)		Output shut-	-down. Reset	by AC input re	ecycle in auto	start mode, by	OUTPUT butto	on, by rear par	nel or by com	munication.	
3. Over-voltage programming range	٧	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 ra	ated output vo	Itage							
5. Output under voltage limit (UVL)		Prevents from	events from adjusting Vout below limit. Does not apply in analogue programming. Preset by front panel or communication port.								ion port.
6. Over temperature protection		Shuts down	the output. A	uto recovery b	y autostart mo	ode.					
7. Output under voltage limit (UVL)		Prevents adj	justment of V	out below limi	t.						
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/lout/Power Limit manual adjust OVP/UVL/UVP 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 digit	ts, accuracy:		l output voltag	je +/-1 count					
3. Front Panel Buttons Indications						TION, PROTEC	TION CONFIG	LIBATION SYS	STEM SEOUE	NCFR	
Front Panel Display Indications		Voltage, Cur	rrent, Power,	CV, CC, CP, E	xternal Voltag	e, External Cur unication, Trig	rent, Address,	LFP, Autostai			
Environmental Conditions	ļ	1		., ., .,	,	<u> </u>	3-,,				
1. Operating temperature		0~50°C, 10	00% load.								_
Storage temperature		-30~85°C									
3. Operating humidity	%		H (no conden	sation)							
Storage humidity	%		H (no conden								
5. Altitude					rent derating 2	%/100m or Ta	derating 1°C/	100m ahove 2	NOOm Non o	nerating: 4000	10ft (12000m)
Mechanical		Operating. 1	000011 (0000	iii), output cuii	Torit dording 2	. 70/ 100111 01 10	defating 1 0/	100111 00000 2	OOOIII. NOII O	poracing. 4000	1011 (12000111)
1. Cooling		Forced air o	ooling by inte	ernal fanc Air	flow direction	: from Front pa	inel to nower	unnly rear			
•				mai iaris. All	now uncolldli	. monn i tonii pa	mor to power s	ouppry (Gai			
Weight     Dimensions (WxHxD)	kg mm	W: 423, H: W: 423, H:	43.6, D: 441	.5 (Without bi	usbars and bu busbars and h	sbars cover), ousbars cover)	(Refer to Outl	ine drawing).			
4. Vibration		,	,	, ,		n Annex C - 2.	,	3/-			
5. Shock				11mS. Unit is							
Safety/EMC			,								
Applicable standards: Safety		UI 60950-1	CSA22 2 No	.60950-1, IEC	60950-1 FN	60950-1					
1.1 Interface classification		Vout ≤40V N	Models: Outp	ut, J1,J2,J3,J4	1,J5,J6,J7,J8	(sense) and J				ptions) are SF	ELV
1.2 Withstand voltage		Vout ≤40V M 60V≤ Vout ≤ Output - Gro 100 < Vout ≤	60≤ Vout ≤600V Models: Output, J8 (sense) are hazardous, J1,J2,J3,J4,J5,J6,J7 and J9 (communication options) are SELV  Vout ≤40V Models: Input - Output (SELV): 4242Vdc 1min, Input - Ground: 2835Vdc 1min.  60V≤ Vout ≤100V Models: Input - Output: 4242Vdc 1min, Input - SELV: 4242Vdc 1min, Output - SELV: 850Vdc 1min,  Output - Ground: 1500Vdc 1min, Input - Ground: 2835Vdc 1min.  100 < Vout ≤600V Models: Input - Output: 4242Vdc 1min, Input - SELV: 4242Vdc 1min, Output - SELV: 1275Vdc 1min,  Output - Ground: 2500Vdc 1min, Input - Ground: 2835Vdc 1min.								
1.3 Insulation resistance		100Mohm a	it 25°C, 70%F	RH.							
2. Conducted emission		IEC/EN6120	04-3 Industria	I environment	, Annex H tabl	e H.1 , FCC Pa	art 15-A, VCCI	-A .			
3. Radiated emission		IEC/EN6120	04-3 Industria	I environment	, Annex H tabl	e H.3 and H4	FCC Part 15-	A, VCCI-A			
		1									

 $<sup>^{\</sup>star}1:$  Minimum voltage is guaranteed to maximum 0.1% of rated output voltage.

- \*13: 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.
- \*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.

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<sup>\*2:</sup> 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).

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

<sup>\*5:</sup> Not including EMI filter inrush current, less than 0.2mS.
\*6: 85~132Vac or 170~265Vac. Constant load.

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

<sup>\*8:</sup> For 10V $\sim$ 150V models: Measured with JEITA RC-9131C (1:1) probe. For 300 $\sim$ 600V model: Measured with 100:1 probe.

<sup>\*9:</sup> For load voltage change, equal to the unit voltage rating, constant input voltage.

<sup>\*10:</sup> 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.

<sup>\*12:</sup> From 90% to 10% of Rated Output Voltage.

### Specifications GENESYS+™ G (5kW)

Output Rating	G	10-500	20-250	30-170	40-125	60-85	80-65	100-50	150-34	300-17	600-8.			
Rated output voltage(*1)	V	10	20	30	40	60	80	100	150	300	600			
2. Rated output current (*2)	Α	500 (*3)	250	170	125	85	65	50	34	17	8.5			
3. Rated output power	W	5000	5000	5100	5000	5100	5200	5000	5100	5100	5100			
nput Characteristics	V	10	20	30	40	60	80	100	150	300	600			
. Input voltage/freq. 3 phase, 3 wire + Ground (*4)		3-Phase, 2	00V models:	170~265Vac	, 47~63Hz (0	Covers 200/2	30Vac)							
		3-Phase, 4	00V models:	342~460Vac	, 47~63Hz (0	Covers 380/4	00/415Vac)							
		3-Phase, 4	80V models:	342~528Vac	, 47~63Hz (0	Covers 380/4	00/415/440/4	60/480Vac)						
. Maximum Input current at 100% load		3-Phase, 2	00V models:	17.5A @ 200	Vac									
		3-Phase, 4	00V models:	9.2A @ 380V	ac									
		3-Phase, 480V models: 9.2A @ 380Vac												
B. Power Factor (Typ)				ted output pov										
1. Efficiency (*5)	%	89.5	91	91	91	91	91	91	91	92	92			
5. Inrush current (*6)	Α	Less than 5		1			1				1			
Constant Voltage Mode	V	10	20	30	40	60	80	100	150	300	600			
I. Max. Line regulation (*7)		_	ited output vo		1.0	1	1 2 2	1 1 1 1 1	1.00	1 4 4 4	1 000			
2. Max. Load regulation (*8)			ited output vo											
B. Ripple and noise (p-p, 20MHz) (*9)	mV	75	75	75	75	75	80	90	120	200	480			
. Ripple r.m.s. 5Hz~1MHz (*9)	mV	8	10	12	12	12	15	15	20	60	100			
. Temperature coefficient	PPM/°C	-		itput voltage, f				10	20	00	100			
i. Temperature stability	PPIVI/ C			1 0,			•	t line, load & to	amn					
							· ·		лпр.					
. Warm-up drift				l output voltag		1			E	E	1			
Remote sense compensation/wire (*10)	V	2	2	5	5	5	5	5	5	5	5			
. Up-prog. Response time (*11)	mS	30	30	30	30	50	50	50	50	50	100			
0. Down-prog.response time: Full load (*11)	mS	50	50	80	80	80	100	100	100	100	200			
No load (*12)	mS	300	600	800	900	1000	1200	1900	2000	3000	3000			
Transient response time	mS		,					nge 10~90%			1001/			
2. Start up delay	Sec	Less than 5		JU /0, LUCAI SEI	IISE. LESS IIIdi	1 11113, 101 1110	iueis up to am	d including 10	UV. ZIIIS, IUI I	HOURIS ADOVE	1007.			
constant Current Mode	V	10	20	30	40	60	80	100	150	300	600			
	V	_			40	00	00	100	130	300	000			
. Max. Line regulation (*7)			ited output cu											
Max. Load regulation (*13)			ited output cu		450	100	70	45	45	45				
. Ripple r.m.s. @ 10% rated voltage (*14)	mA	1200	600	300	150	100	70	45	45	15	8			
. Ripple r.m.s. @ rated voltage. B.W. 5Hz~1MHz.	mA	700	300	150	75	50	35	23	23	7.5	4			
. Temperature coefficient	PPM/°C	10V~100V	,	/°C from rated °C from rated o										
5. Temperature stability								t line, load & te	mnoraturo					
7. Warm-up drift								es following po						
. Walli up allic								owing power o						
Analogue Programming and Monitoring (Isolate	d from th	e Output)												
. Vout voltage programming		0~100%, 0	0~5V or 0~	10V, user sele	ctable. Accura	acy and linea	rity: +/-0.159	6 of rated Vout						
2. lout voltage programming (*15)		0~100%, 0	0~5V or 0~	10V, user sele	ctable. Accura	acy and linea	rity: +/-0.4%	of rated lout.						
B. Vout resistor programming		0~100%, 0	0~5/10Kohm	n full scale, us	er selectable.	Accuracy and	d linearity: +/	'-0.5% of rated	Vout.					
1. lout resistor programming (*15)								'-0.5% of rated						
5. Output voltage monitor				selectable. Acc										
5. Output current monitor (*15)				selectable. Acc										
Signals and Controls (Isolated from the Output)	I.		,		, , , , , , , , , , , , , , , , , , , ,									
. Power supply OK #1 signal		Power sunn	ly output mon	nitor. Open col	lector. Outnut	On: On. Outni	it Off: Off. Max	ximum Voltage:	30V, Maximu	m Sink Curren	t: 10mA.			
. CV/CC signal			, ,	'				e: 30V, Maxim			,, "			
L LOCAL/REMOTE Analogue control								Remote: 0~0			or open			
. LOCAL/REMOTE Analogue control								Maximum Volta						
i. ENABLE/DISABLE signal		0 1			· ·			2~30V or ope	,		IVIIIA.			
i. INTERLOCK (ILC) control								$z\sim$ 50 V of ope or short. Local		-				
								or short. Local current 100mA						
. Programmed signals									(Siluilled by	ZIV Zellel)				
. TRIGGER IN / TRIGGER OUT signals				t voltage = 0. ut = 5V positi				2.5V, Tf=1us Maxim	num. Min dela	v between 2 n	ulses 1ms			
. DAISY IN/SO control signal				~0.6V/2~30V			rami II,	. ao manii	,	, p				
0. DAISY OUT/PS OK #2 signal		-		n impedance)										
unctions and Features			, (30001111											
. Parallel operation		Possible II	In to 4 identic	al units in Ma	ster/Slave mo	de Refer to i	nstruction mai	nual						
· · · · · · · · · · · · · · · · · · ·							ion uonon IIIdi	iiuai.						
. Series operation				units. Refer to			noir turn	ad turn off						
. Daisy chain				onnected in D					or the fee	unal				
0		i i imite tha r	Withlit bower t		rriog value Dr	narammina v	ia the commu	nication ports	or the front ba	mei.				
· · · · · · · · · · · · · · · · · · ·														
Constant power control     Output resistance control		Emulates s	eries resistan	ce. Resistance	e range: 1~1	000mΩ. Prog	ramming via	the communic	ation ports or	the front panel	l.			
· · · · · · · · · · · · · · · · · · ·		Emulates si Programma	eries resistano able Output ris	ce. Resistance	e range: 1~1 fall slew rate.	000mΩ. Prog Programming	ramming via		ation ports or	the front panel	l.			

### Specifications GENESYS+™ G (5kW)

Programming and Readback (USB, LAN, RS-232/ RS-485, Optional IEEE(*19)(*20) Interface)	V	10	20	30	40	60	80	100	150	300	600	
1. Vout programming accuracy (*16)		0.05% of	rated output v	oltage								
2. lout programming accuracy (*15)		0.1% of a	ctual output c	urrent+0.2% d	of rated output	current						
3. Vout programming resolution		0.002% o	f rated output	voltage								
4. lout programming resolution		0.002% o	f rated output	current								
5. Vout readback accuracy		0.05% of	rated output	voltage								
6. lout readback accuracy (*15)		0.2% of ra	ited output cu	rrent								
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. lout readback resolution (of rated output current)	%	0.003%	0.005%	0.006%	0.009%	0.002%	0.002%	0.003%	0.004%	0.006%	0.002	
Protective Functions	٧	10	20	30	40	60	80	100	150	300	600	
1. Foldback protection				power supply c y AC input recy								
2. Over-voltage protection (OVP)		Output sh	ut-down. Res	et by AC input i	recycle in auto	ostart mode, b	OUTPUT but	ton, by rear p	anel or by cor	nmunication.		
3. Over-voltage programming range	٧	0.5~12	1~24	2~36	2~44.1	5~66.15	5~88.2	5~110.2	5 5~165.37	7 5~330.7	5 5~66	
4. Over-voltage programming accuracy		+/-1% of	rated output	voltage								
5. Output under voltage limit (UVL)		Prevents f	rom adjusting	Vout below lin	nit. Does not	apply in analo	gue programm	ning. Preset b	y front panel o	r communica	tion port.	
6. Over temperature protection		Shuts dov	n the output.	Auto recovery	by autostart n	node.						
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												
		Vout/lout/ OVP/UVL/ Protection Communi Output ON Communi Analogue	UVP manual : Functions - Cation Function I/OFF. Front F Cation Function Control Func	nanual adjust adjust OVP, UVL,UVP, ons - Selection	of LAN,IEEE,I of Baud Rate in Voltage/res	RS-232,RS-48 , Address, IP a istive program	nd communic ming, 5V/10V	ation languaç	je.	ce.		
2. Display		Vout: 4 di	gits, accuracy	: 0.05% of rate : 0.2% of rated	d output volta	ige +/-1 coun						
3. Front Panel Buttons Indications		OUTPUT ON, ALARM, PREVIEW, FINE, COMMUNICATION, PROTECTION, CONFIGURATION, SYSTEM, SEQUENCER.										
4. Front Panel Display Indications				r, CV, CC, CP, I in), RS/USB/LA					tart, Safetstart,	Foldback V/I	,	
Environmental Conditions												
1. Operating temperature		0~50°C,	100% load.									
2. Storage temperature		-30~85°	2									
3. Operating humidity	%	20~90%	RH (no conde	ensation).								
4. Storage humidity	%	10~95%	RH (no conde	ensation).								
5. Altitude (*17)		Operating:	10000ft (3000	Om), output curr	ent derating 29	6/100m or Ta d	erating 1°C/10	0m above 200	00m. Non opera	ting: 40000ft	(12000m).	
Mechanical		, ,		, , , , , , , , , , , , , , , , , , ,					•		, ,	
1. Cooling		Forced air	cooling by ir	nternal fans. Air	flow direction	n: from Front p	anel to power	supply rear				
2. Weight	kg	Less than	- ,									
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-8100	, method 514	1.6, Procedure	I, test condition	n Annex C - 2	.1.3.1					
5. Shock		Less than	20G, half sin	e, 11mS. Unit i	s unpacked.							
Safety/EMC												
1. Applicable standards: Safety		UL60950-	1, CSA22.2 I	No.60950-1, IE	C60950-1, EI	N60950-1.						
1.1 Interface classification				tput, J1,J2,J3,J Is: Output, J8 (						options) are S	ELV	
1.2 Withstand voltage		Vout ≤40° 60V≤ Vou Output - 6 100 < Vou	/ Models: Inp t ≤100V Mod fround: 1500 t≤600VMode	ut - Output (SE els: Input - Out Vdc 1min, Inpu Is: Input - Outp Vdc 1min, Inpu	ELV): 4242Vdd tput: 4242Vdd t - Ground: 28 put: 4242Vdc	c 1min, Input - 1min, Input - 335Vdc 1min. 1min, Input - S	Ground: 2835 SELV: 4242V	5Vdc 1min. dc 1min, Out	put - SELV: 85	0Vdc 1min,		
1.3 Insulation resistance		100Mohm	at 25°C, 709	%RH.								
2. Conducted emission		IEC/EN61	204-3 Industr	ial environmen	t, Annex H tab	le H.1 , FCC F	art 15-A, VC0	CI-A .				
3. Radiated emission		IEC/EN61	204-3 Industr	ial environmen	t, Annex H tal	ole H.3 and H	I, FCC Part 15	-A, VCCI-A				
4. EMC compliance EMC(*18)		According	to IEC/EN61	204-3 Industria	al environmen	t						

<sup>\*1:</sup> Minimum voltage is guaranteed to maximum 0.1% of rated output voltage.

- \*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.

<sup>\*2:</sup> Minimum current is guaranteed to maximum 0.2% of rated output current.

<sup>\*3:</sup> Derate 5A/1°C above 40°C.

<sup>3.</sup> Belate 24.7 V acceptable 3. A consider a conformance to various safety standards (UL, IEC, etc...) is required, to be described as 190-240Vac (50/60Hz) for 3-Phase 200V models, 380—415Vac (50/60Hz) for 3-Phase 400V models and 380—480Vac (50/60Hz) for 3-Phase models.

<sup>\*5: 3-</sup>Phase 200V models: At 200Vac input voltage, 3-Phase 400/480V: At 380Vac input voltage. With rated output power

<sup>\*6:</sup> 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.

<sup>\*8:</sup> From No-Load to Full-Load, constant input voltage. Measured at the sensing point in Remote Sense.

<sup>\*9:</sup> For 10V—150V models: Measured with JEITA RC-9131C (1:1) probe. For 300—600V model: Measured with 100:1 probe. \*10: The maximum voltage on the power supply terminals must not exceed the rated voltage. \*11: From 10% to 90% or 90% to 10% of Rated Output Voltage, with rated, resistive load.

<sup>\*15:</sup> 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.

<sup>\*17:</sup> For 10V model Ta derating 2°C/100m.

<sup>\*18:</sup> Signal and control ports interface cables length: Less than 3m, DC output power port cables length: Less than 30m.

<sup>\*19:</sup> Max. ambient temperature for using IEEE is 40°C.

 $<sup>^*20</sup>$ : For 10V model only: Max. output current for using IEEE is 400A up to 40°C and 450A up to 30°C.

# Specifications GENESYS+™ GSP (10kW)

Output Rating	GSP	10-1000	20-500	30-340	40-250	60-170	80-130	100-100	150-68	300-34	600-1
1. Rated output voltage(*1)	V	10	20	30	40	60	80	100	150	300	600
2. Rated output current (*2)	А	1000 (*3)	500	340	250	170	130	100	68	34	17
3. Rated output power	kW	10	10	10.2	10	10.2	10.4	10	10.2	10.2	10.2
nput Characteristics	V	10	20	30	40	60	80	100	150	300	600
I. Input voltage/freq. 3 phase, 3 wire + Ground (*4)		3-Phase, 20	00V models: 1	170~265Vac	, 47~63Hz (0	Covers 200/23	0Vac)				
		3-Phase, 40	00V models: 3	342~460Vac	, 47~63Hz (0	Covers 380/4	00/415Vac)				
		3-Phase, 48	30V models: 3	342~528Vac	, 47~63Hz (0	Covers 380/40	0/415/440/46	60/480Vac)			
2. Maximum Input current at 100% load		3-Phase, 20	00V models: 3	35A @ 200Va	1C						
		3-Phase, 40	00V models: <sup>1</sup>	18.4A @ 380	Vac						
		3-Phase, 48	30V models: <sup>1</sup>	18.4A @ 380	Vac						
3. Power Factor (Typ)		0.94 @ 200	0/380Vac, rat	ed output pov	ver.						
4. Efficiency (*5)	%	89.5	90	91	91	91	91	91	91	92	92
5. Inrush current (*6)	Α	Less than 1	00A								
5. AC line phase imbalance	%	< 5%									
Constant Voltage Mode	V	10	20	30	40	60	80	100	150	300	600
1. Max. Line regulation (*7)		_	ted output vo		1.0	100	1	100	1.00	1 2 2 2	1
2. Max. Load regulation (*8)			ted output vo								
3. Ripple and noise (p-p, 20MHz) (*9)	mV	75	75	75	75	75	80	90	120	200	480
4. Ripple r.m.s. 5Hz~1MHz (*9)	mV	8	10	12	12	12	15	15	20	60	100
- 11		-	1					10	20	00	100
5. Temperature coefficient	PPM/°C					ninutes warm-		line lead o	mn		
6. Temperature stability							· ·	line, load & te	лир.		
7. Warm-up drift					1	30 minutes fo			l e	-	-
8. Remote sense compensation/wire (*10)	V	2	2	5	5	5	5	5	5	5	5
9. Up-prog. Response time (*11)	mS	30	30	30	30	50	50	50	50	50	100
10. Down-prog.response time: Full load (*11)	mS	50	50	80	80	80	100	100	100	100	200
No load (*12)	mS	300	600	800	900	1000	1200	1900	2000	3000	3000
11. Transient response time	mS							ge 10~90% (			4001/
40.01.1.1.1	0	· · ·		IU%, LOCAI SE	ise. Less thar	1 1mS, for mo	deis up to and	including 100	JV. 2MS for r	nodels above	100V.
12. Start up delay	Sec	Less than 7	Sec								
Constant Current Mode											
1. Max. Line regulation (*7)			ted output cu								
2. Max. Load regulation (*13)			ted output cu								
3. Ripple r.m.s. @ 10% rated voltage (*14)	mA	1500	1200	600	300	150	100	70	45	15	10
4. Ripple r.m.s. @ rated voltage. B.W. 5Hz~1MHz.	mA	1200	700	300	150	75	50	35	23	7.5	6
5. Temperature coefficient	PPM/°C	10V~100V 150V~600				t, following 30 following 30					
6. Temperature stability		0.01% of rat	ted lout over	8hrs. interval	following 30 r	minutes warm	-up. Constant	line, load & te	mperature.		
7. Warm-up drift								s following po			
			V: Less than	+/-0.15% 01	rated output c	urrent over 30	minutes follo	wing power or	n.		
Analogue Programming and Monitoring (Isolate	Ť .										
1. Vout voltage programming								of rated Vout.			
2. lout voltage programming (*15)		0~100%, 0	)~5V or 0~1	0V, user sele	ctable. Accura	acy and linear	ty: +/-0.4% (	of rated lout.			
3. Vout resistor programming		0~100%, 0	)~5/10Kohm	full scale, us	er selectable.	Accuracy and	linearity: +/-	0.5% of rated	Vout.		
4. lout resistor programming (*15)		0~100%, 0	~5/10Kohm	full scale, us	er selectable.	Accuracy and	linearity: +/-	0.5% of rated	lout.		
5. Output voltage monitor		0~5V or 0-	~10V, user s	electable. Acc	curacy: +/-0.	5%.					
6. Output current monitor (*15)		0~5V or 0-	~10V, user s	electable. Acc	curacy: +/-0.	5%.					
Signals and Controls (Isolated from the Output)											
1. Power supply OK #1 signal		Power suppl	ly output mon	itor. Open col	lector. Output	On: On. Outpu	t Off: Off. Maxi	mum Voltage:	30V, Maximu	ım Sink Curren	t: 10mA.
2. CV/CC signal								: 30V, Maximi			-
3. LOCAL/REMOTE Analogue control			· · · · · · · · · · · · · · · · · · ·					· · · · · · · · · · · · · · · · · · ·		_ocal: 2~30V	or onen
4. LOCAL/REMOTE Analogue signal											
	Analogue programming control monitor signal. Open collector. Remote: On. Local: Off. Maximum Voltage: 30V, Maximum Sink Current: 10										I JIIIA.
		Fnahla/Hies		L DV UIGULIIUAI	orginal of uly	oonaot. U~U	.0 4 01 311011, 2				
5. ENABLE/DISABLE signal		Enable/Disa	•	•	cional or day	contact Dom	to. 0 0 61/ 6	ir chart I acai.		nan	
5. ENABLE/DISABLE signal 6. INTERLOCK (ILC) control		Enable/Disa	ıble PS outpu	t by electrical		contact. Remo					
5. ENABLE/DISABLE signal 6. INTERLOCK (ILC) control 7. Programmed signals		Enable/Disa Two open d	able PS outpu rain programi	t by electrical mable signals	. Maximum vo	oltage 25V, Ma	aximum sink c	urrent 100mA			
5. ENABLE/DISABLE signal 6. INTERLOCK (ILC) control 7. Programmed signals 8. TRIGGER IN / TRIGGER OUT signals		Enable/Disa Two open d Maximum lo Maximum h	able PS outpu rain programi ow level input igh level inpu	t by electrical mable signals voltage = 0. t = 5V positi	. Maximum vo 8V,Minimum ve edge trigge	oltage 25V, Ma high level inp r: tw=10us m	aximum sink o ut voltage = 2	urrent 100mA 2.5V,	(Shunted by		lses 1ms
5. ENABLE/DISABLE signal 6. INTERLOCK (ILC) control 7. Programmed signals 8. TRIGGER IN / TRIGGER OUT signals 9. DAISY_IN/SO control signal		Enable/Disa Two open d Maximum lo Maximum h By electrica	able PS outpurain programmow level inputigh level inputigh level inputigh level inpution	t by electrical mable signals voltage = 0. t = 5V positiv -0.6V/2~30V	. Maximum vo 8V,Minimum ve edge trigge or dry contact	oltage 25V, Ma high level inp r: tw=10us m	aximum sink o ut voltage = 2	urrent 100mA 2.5V,	(Shunted by	27V zener)	lses 1ms
5. ENABLE/DISABLE signal 6. INTERLOCK (ILC) control 7. Programmed signals 8. TRIGGER IN / TRIGGER OUT signals 9. DAISY_IN/SO control signal		Enable/Disa Two open d Maximum lo Maximum h By electrica	able PS outpurain programmow level inputigh level inputigh level inputigh level inpution	t by electrical mable signals voltage = 0. t = 5V positi	. Maximum vo 8V,Minimum ve edge trigge or dry contact	oltage 25V, Ma high level inp r: tw=10us m	aximum sink o ut voltage = 2	urrent 100mA 2.5V,	(Shunted by	27V zener)	lses 1ms
5. ENABLE/DISABLE signal 6. INTERLOCK (ILC) control 7. Programmed signals 8. TRIGGER IN / TRIGGER OUT signals 9. DAISY_IN/SO control signal 10. DAISY_OUT/PS_OK #2 signal		Enable/Disa Two open d Maximum lo Maximum h By electrica	able PS outpurain programmow level inputigh level inputigh level inputigh level inpution	t by electrical mable signals voltage = 0. t = 5V positiv -0.6V/2~30V	. Maximum vo 8V,Minimum ve edge trigge or dry contact	oltage 25V, Ma high level inp r: tw=10us m	aximum sink o ut voltage = 2	urrent 100mA 2.5V,	(Shunted by	27V zener)	Ises 1ms
5. ENABLE/DISABLE signal 6. INTERLOCK (ILC) control 7. Programmed signals 8. TRIGGER IN / TRIGGER OUT signals 9. DAISY_IN/SO control signal 10. DAISY_OUT/PS_OK #2 signal Functions and Features		Enable/Disa Two open d Maximum lo Maximum h By electrica	nble PS output rain programic ow level input igh level input Il Voltage: 0~ , 0V (500ohm	t by electrical mable signals voltage = 0. t = 5V positiv -0.6V/2~30V	. Maximum vo 8V,Minimum ve edge trigge or dry contact	oltage 25V, Ma high level inp r: tw=10us m	aximum sink o ut voltage = 2	urrent 100mA 2.5V,	(Shunted by	27V zener)	lses 1ms
5. ENABLE/DISABLE signal 6. INTERLOCK (ILC) control 7. Programmed signals 8. TRIGGER IN / TRIGGER OUT signals 9. DAISY_IN/SO control signal 10. DAISY_OUT/PS_OK #2 signal Functions and Features 1. Parallel operation		Enable/Disa Two open di Maximum lo Maximum h By electrica 4~5V=0K	able PS output rain programm ow level input igh level input Il Voltage: 0~ , 0V (500ohm	t by electrical mable signals voltage = 0. t = 5V positiv -0.6V/2~30V	. Maximum vo 8V,Minimum ve edge trigge or dry contact	oltage 25V, Ma high level inp r: tw=10us m	aximum sink o ut voltage = 2	urrent 100mA 2.5V,	(Shunted by	27V zener)	Ises 1ms
5. ENABLE/DISABLE signal		Enable/Disa Two open di Maximum lo Maximum h By electrica 4~5V=0K  Consult with	able PS output rain programs ow level input igh level input igh level input il Voltage: 0~, 0V (500ohm) h Factory	t by electrical mable signals voltage = 0. t = 5V positi -0.6V/2~30V n impedance)	. Maximum vo 8V,Minimum ve edge trigge or dry contac = Fail	oltage 25V, Ma high level inp r: tw=10us m	aximum sink c ut voltage = 2 inimum. Tr,Tf	urrent 100mA 2.5V, =1us Maximu	(Shunted by	27V zener)	lses 1ms
5. ENABLE/DISABLE signal 6. INTERLOCK (ILC) control 7. Programmed signals 8. TRIGGER IN / TRIGGER OUT signals 9. DAISY_IN/SO control signal 10. DAISY_OUT/PS_OK #2 signal Functions and Features 1. Parallel operation 2. Series operation		Enable/Disa Two open di Maximum lo Maximum h By electrica 4~5V=0K  Consult with Power supp	able PS output rain programs ow level input ight level input igh level input il Voltage: 0 ~, 0V (500ohm h Factory lifes can be co	t by electrical mable signals voltage = 0. t = 5V positi -0.6V/2~30V n impedance)	. Maximum vo 8V,Minimum ve edge trigge or dry contac = Fail	oltage 25V, Ma high level inp r: tw=10us m tt.	aximum sink c ut voltage = 7 inimum. Tr,Tf	urrent 100mA 2.5V, =1us Maximu	(Shunted by	27V zener) / between 2 pu	lses 1ms
5. ENABLE/DISABLE signal 6. INTERLOCK (ILC) control 7. Programmed signals 8. TRIGGER IN / TRIGGER OUT signals 9. DAISY_IN/SO control signal 10. DAISY_OUT/PS_OK #2 signal Functions and Features 1. Parallel operation 2. Series operation 3. Daisy chain 4. Constant power control		Enable/Disa Two open di Maximum lo Maximum ho By electrica 4~5V=0K  Consult with Consult with Power supp Limits the o	table PS output rain programs ow level input igh level input igh level input il Voltage: 0 ~ , 0V (500ohm h Factory ilies can be countput power to	t by electrical mable signals voltage = 0. t = 5V positivol. 60.6V/2~30W impedance)	. Maximum vo 8V,Minimum ve edge trigge or dry contact = Fail	oltage 25V, Mahigh level inp r: tw=10us m st.	aximum sink c ut voltage = ; inimum. Tr,Tf eir turn-on an a the commur	urrent 100mA 2.5V, = 1us Maximu d turn-off. nication ports (	(Shunted by im, Min delay or the front p.	27V zener)  v between 2 pu	
5. ENABLE/DISABLE signal 6. INTERLOCK (ILC) control 7. Programmed signals 8. TRIGGER IN / TRIGGER OUT signals 9. DAISY_IN/SO control signal 10. DAISY_OUT/PS_OK #2 signal Functions and Features 1. Parallel operation 2. Series operation 3. Daisy chain 4. Constant power control 5. Output resistance control		Enable/Disa Two open d Maximum lo Maximum h By electrica 4~5V=0K  Consult with Power supp Limits the o Emulates se	able PS output rain programs ow level input igh level input igh level input igh level input igh level input if Voltage: 0 ~, 0V (500ohm h Factory lies can be courtput power teries resistance.	t by electrical mable signals voltage = 0. t = 5V positivoloc6V/2~30W n impedance) on a proggram in the program in the program in the proggram	. Maximum vo 8V,Minimum ve edge trigge or dry contact = Fail aisy chain to : med value. Pr e range: 1~1	oltage 25V, Mahigh level inp r: tw=10us m et.	eir turn-on an a the commur amming via til	d turn-off. nication ports of	(Shunted by im, Min delay or the front pa	27V zener) / between 2 pu	
5. ENABLE/DISABLE signal 6. INTERLOCK (ILC) control 7. Programmed signals 8. TRIGGER IN / TRIGGER OUT signals 9. DAISY_IN/SO control signal 10. DAISY_OUT/PS_OK #2 signal Functions and Features 1. Parallel operation 2. Series operation 3. Daisy chain		Enable/Disa Two open d Maximum In Maximum In By electrica 4~5V=0K  Consult with Power supp Limits the o Emulates se Programma	able PS output rain programming well-bell input light level in Factory lies can be consulted in the consultation of the light level light light light level light light level light	t by electrical mable signals voltage = 0. t = 5V positir 0.6V/2~30V n impedance) on nected in D o a proggram te. Resistance and Output	. Maximum vo 8V,Minimum ve edge trigge or dry contact = Fail aisy chain to : med value. Pr e range: 1~1	oltage 25V, Mahigh level inp r: tw=10us mot. synchronize the ogramming vi 000mΩ. Progr	eir turn-on an a the commur amming via til	urrent 100mA 2.5V, = 1us Maximu d turn-off. nication ports (	(Shunted by im, Min delay or the front pa	27V zener)  v between 2 pu	

### Specifications GENESYS+™ GSP (15kW)

Output Rating	GSP	10-1500	20-750	30-510	40-375	60-255	80-195	100-150	150-102	300-51	600-25.
1. Rated output voltage(*1)	V	10	20	30	40	60	80	100	150	300	600
2. Rated output current (*2)	A	1500 (*3)	750	510	375	255	195	150	102	51	25.5
3. Rated output power	kW	15	15	15.3	15	15.3	15.6	15	15.3	15.3	15.3
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, 20	OV models: 17	'0~265Vac, 47	~63Hz (Cover	s 200/230Vac)					
		3-Phase, 40	OV models: 34	2~460Vac, 47	~63Hz (Cover	s 380/400/415\	/ac)				
		3-Phase, 48	OV models: 34	2~528Vac, 47	~63Hz (Cover	s 380/400/415/	/440/460/480V	ac)			
2. Maximum Input current at 100% load		3-Phase, 20	OV models: 52	2.5A @ 200Vac	;						
		3-Phase, 40	OV models: 27	.6A @ 380Vad	;						
		3-Phase, 48	OV models: 27	.6A @ 380Vad	;						
3. Power Factor (Typ)		0.94 @ 200	/380Vac, rated	d output power.							
4. Efficiency (*5)	%	89.5	90	91	91	91	91	91	91	92	92
5. Inrush current (*6)	A	Less than 15	i0A								
6. AC line phase imbalance	%	< 5%									
Constant Voltage Mode	V	10	20	30	40	60	80	100	150	300	600
1. Max. Line regulation (*7)		0.01% of rat	ed output volta	ige							
2. Max. Load regulation (*8)		0.01% of rat	ed output volta	ige +5mV							
3. Ripple and noise (p-p, 20MHz) (*9)	mV	75	75	75	75	75	80	90	120	200	480
4. Ripple r.m.s. 5Hz~1MHz (*9)	mV	8	10	12	12	12	15	15	20	60	100
5. Temperature coefficient	PPM/°C	50PPM/°C fr	om rated outp	ut voltage, follo	wing 30 minute	es warm-up.					
6. Temperature stability		0.01% of rat	ed Vout over 8	hrs interval foll	owing 30 minut	es warm-up. Co	onstant line, loa	d & temp.			
7. Warm-up drift		Less than 0.	05% of rated o	utput voltage+	2mV over 30 m	inutes 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 (*		50	50	80	80	80	100	100	100	100	200
No load (*1	2) mS	300	600	800	900	1000	1200	1900	2000	3000	3000
11. Transient response time	mS	Time for output voltage to recover within 0.5% of its rated output for a load change 10~90% of rated output current.  Output set-point: 10~100%, Local sense, Less than 1mS, for models up to and including 100V. 2mS for models above 100V.									
12. Start up delay	Sec	Less than 7 S	Sec								
13. Hold-up time											
Constant Current Mode	٧	10	20	30	40	60	80	100	150	300	600
1. Max. Line regulation (*7)		0.05% of rat	ed output curre	ent.	-						
2. Max. Load regulation (*13)		0.08% of rat	ed output curre	ent.							
3. Ripple r.m.s. @ 10% rated voltage (*14)	mA	2000	1200	600	300	180	100	70	45	15	10
4. Ripple r.m.s. @ rated voltage. B.W. 5Hz~1MHz.	mA	1200	700	300	150	90	60	35	23	7.5	6
5. Temperature coefficient	PPM/°C	10V~100V	100PPM/°0	C from rated ou	tput current, fol	lowing 30 minu	tes warm-up.		'	'	
					out current, follo						
6. Temperature stability								d & temperature	).		
7. Warm-up drift					of rated output of						
A - 1 D	-1-1-1 ( 11-		: Less than +	/-U.15% OT FATE	d output curren	t over 30 minut	es following po	wer on.			
Analogue Programming and Monitoring (Is	ì		EV 0 40	\/	L.L. A	. 1.15 9 7	0.450/ ( )	11/		_	
1. Vout voltage programming					ble. Accuracy a						
2. lout voltage programming (*15)					ble. Accuracy a						
3. Vout resistor programming					ectable. Accura						
4. lout resistor programming (*15)		-			ectable. Accura	cy and linearity	: +/-U.5% of ra	ited lout.			
5. Output voltage monitor				ectable. Accura	, .						
6. Output current monitor (*15)		0~5V or 0~	-10V, user sel	ectable. Accura	ıcy: +/-0.5%.						
Signals and Controls (Isolated from the Ou						0 0 : -	0" 1:				
1. Power supply OK signal								Voltage: 30V, M		urrent: 10mA.	
2. CV/CC signal								Maximum Sink C			
3. LOCAL/REMOTE Analogue control								te: 0~0.6V or s			
4. LOCAL/REMOTE Analogue signal		0 1			, ,			aximum Voltage:		Sink Current:	10mA.
		Enable/Disal	ole PS output b	,	,			or open. User se			
5. ENABLE/DISABLE Signal					inal or dry conta	ct. Remote: 0~	-0.6V or short.	Local: 2~30V c	or open.		
6. INTERLOCK (ILC) control											
5. ENABLE/DISABLE Signal 6. INTERLOCK (ILC) control 7. Programmed signals		Two open dr	ain programma	able signals. M				00mA (Shunted	by 27V zener)		
5. INTERLOCK (ILC) control 7. Programmed signals		Two open dr Maximum Io	ain programma w level input v	able signals. M roltage = 0.8V	Minimum high	level input volta	age = 2.5V,	,	,	nulace 1	
5. INTERLOCK (ILC) control 7. Programmed signals 8. TRIGGER IN / TRIGGER OUT signals		Two open dr Maximum Io	ain programma w level input v	able signals. M roltage = 0.8V	Minimum high	level input volta	age = 2.5V,	00mA (Shunted Maximum, Min o	,	pulses 1ms.	
6. INTERLOCK (ILC) control 7. Programmed signals 8. TRIGGER IN / TRIGGER OUT signals Functions and Features		Two open dr Maximum lo Maximum hi	ain programma w level input v gh level input	able signals. M roltage = 0.8V	Minimum high	level input volta	age = 2.5V,	,	,	pulses 1ms.	
6. INTERLOCK (ILC) control 7. Programmed signals 8. TRIGGER IN / TRIGGER OUT signals  Functions and Features 1. Parallel operation		Two open dr Maximum lo Maximum hi	ain programma w level input v gh level input	able signals. M roltage = 0.8V	Minimum high	level input volta	age = 2.5V,	,	,	pulses 1ms.	
6. INTERLOCK (ILC) control 7. Programmed signals 8. TRIGGER IN / TRIGGER OUT signals  Functions and Features 1. Parallel operation 2. Series operation		Two open dr Maximum lo Maximum hi Consult with	ain programma w level input v gh level input Factory	able signals. M oltage = 0.8V = 5V positive	Minimum high edge trigger: tw	level input volta =10us minimu	age = 2.5V, m. Tr,Tf=1us I	Maximum, Min o	,	pulses 1ms.	
6. INTERLOCK (ILC) control 7. Programmed signals 8. TRIGGER IN / TRIGGER OUT signals  Functions and Features 1. Parallel operation 2. Series operation 3. Daisy chain		Two open dr Maximum lo Maximum hi Consult with Consult with Power suppl	ain programma w level input v gh level input  Factory  Factory  ies can be con	able signals. Moltage = 0.8V = 5V positive	Minimum high edge trigger: tw	level input volta =10us minimu uronize their turr	age = 2.5V, m. Tr,Tf=1us I	Maximum, Min o	delay between 2	pulses 1ms.	
6. INTERLOCK (ILC) control 7. Programmed signals 8. TRIGGER IN / TRIGGER OUT signals  Functions and Features 1. Parallel operation 2. Series operation 3. Daisy chain 4. Constant power control		Two open dr Maximum lo Maximum hi Consult with Consult with Power suppl Limits the ou	ain programma w level input v gh level input  Factory Factory ies can be con utput power to	able signals. Moltage = 0.8V = 5V positive	Minimum high edge trigger: tw y chain to synch value. Program	level input volta = 10us minimu ronize their turr ming via the co	age = 2.5V, m. Tr,Tf=1us I n-on and turn-o mmunication p	Maximum, Min of the first of the front	delay between 2		
6. INTERLOCK (ILC) control 7. Programmed signals 8. TRIGGER IN / TRIGGER OUT signals Functions and Features 1. Parallel operation 2. Series operation 3. Daisy chain 4. Constant power control 5. Output resistance control		Two open dr Maximum lo Maximum hi Consult with Consult with Power suppl Limits the ou Emulates ser	ain programma w level input v gh level input  Factory Factory ies can be con utput power to ries resistance	able signals. M foltage = 0.8V = 5V positive	Minimum high edge trigger: tw  y chain to synct value. Program nge: 1~1000n	level input volta = 10us minimu aronize their turr ming via the co n. Programming	ige = 2.5V, m. Tr,Tf=1us I n-on and turn-o mmunication p via the commu	Maximum, Min of the front orts or the front unication ports o	panel.		
6. INTERLOCK (ILC) control 7. Programmed signals 8. TRIGGER IN / TRIGGER OUT signals  Functions and Features 1. Parallel operation 2. Series operation 3. Daisy chain 4. Constant power control		Two open dr Maximum lo Maximum hi Consult with Consult with Power suppl Limits the ou Emulates ser Programmat	ain programma w level input v gh level input Factory Factory ies can be con utput power to ries resistance	able signals. Moltage = 0.8V = 5V positive superior of the state of th	Minimum high edge trigger: tw  y chain to synct value. Program nge: 1~1000n	level input volta = 10us minimu aronize their turr ming via the co n. Programming ramming range:	ige = 2.5V, m. Tr,Tf=1us I n-on and turn-o mmunication p via the commu	Maximum, Min of the first of the front	panel.		

### Specifications GENESYS+™ GSP (10/15kW)

Programming and Readback (USB, LAN, RS RS-485, Optional IEEE(*19)(*20) Interface)		10	20	30	40	60	80	100	150	300	600		
1. Vout programming accuracy (*16)		0.05% of	rated output vo	oltage									
2. lout programming accuracy (*15)		0.3% of ra	ated output cui	rrent									
3. Vout programming resolution		0.002% o	f rated output	voltage									
4. lout programming resolution		0.002% o	f rated output	current									
5. Vout readback accuracy		0.05% of	rated output v	oltage									
6. lout readback accuracy (*15)		0.2% of ra	ited output cui	rrent									
7. Vout readback resolution (of rated output vol	tage) %	0.011%	0.006%	0.004%	0.003%	0.002%	0.002%	0.011%	0.007%	0.004%	0.002%		
8. lout readback resolution GSP 10k	W %	0.012%	0.003%	0.004%	0.005%	0.007%	0.009%	0.012%	0.002%	0.003%	0.006%		
(of rated output current) GSP 15k		0.012%	0.003%	0.003%	0.004%	0.005%	0.006%	0.008%	0.012%	0.003%	0.005%		
Protective Functions	V	10	20	30	40	60	80	100	150	300	600		
1. Foldback protection				power supply AC input recy									
2. Over-voltage protection (OVP)		Output sh	ut-down. Rese	t by AC input r	ecycle in auto	start mode, by	OUTPUT but	ton, by rear pa	nel or by com	munication.			
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.		
4. Over-voltage programming accuracy		+/-1% of	rated output v	voltage									
5. Output under voltage limit (UVL)		Prevents f	rom adjusting	Vout below lin	nit. Does not a	ipply in analog	ue programm	ing. Preset by	front panel or	communicat	ion port.		
6. Over temperature protection		Shuts dov	vn the output.	Auto recovery l	by autostart m	ode.							
7. Output under voltage limit (UVL)		Prevents adjustment of Vout below limit.  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.  Multiple options with 2 Encoders • Vout/lout/Power Limit manual adjust • OVP/UVL/UVP manual adjust • Protection Functions: OVP, UVP, UVP, UVP, UVP, UVP, UVP, UVP, U											
8. Output under voltage protection (UVP)													
Front Panel													
1. Control functions		UVP, Fold interface language	Multiple options with 2 Encoders • Vout/lout/Power Limit manual adjust • OVP/UVL/UVP manual adjust • Protection Functions: OVP, 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 communicatio language • Analogue Control Functions: Selection Voltage/resistive programming, 5V/10V, 5K/10K programming • Analogue Mo Functions: Selection of Voltage/Current Monitoring 5V/10V										
2. Display		Vout: 4 digits, accuracy: 0.05% of rated output voltage +/-1 count. lout: 4 digits, accuracy: 0.2% of rated output current +/-1 count.											
3. Front Panel Buttons Indications		OUTPUT (	ON, ALARM, P	REVIEW, FINE,	COMMUNICA	TION, PROTEC	CTION, CONFIG	GURATION, SY	STEM, SEQUE	NCER.			
4. Front Panel Display Indications		OUTPUT ON, ALARM, PREVIEW, FINE, COMMUNICATION, PROTECTION, CONFIGURATION, SYSTEM, SEQUENCER.  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		,		,,			<u> </u>						
1. Operating temperature		0~50°C,	100% load.										
2. Storage temperature		-30~85°											
3. Operating humidity	%	20~90%	RH (no conde	nsation).									
4. Storage humidity	%		RH (no conde										
5. Altitude (*17)				m), output curre	ent derating 2%	/100m or Ta de	erating 1°C/10	Om ahove 2000	Im Non onerat	ing: 40000ft (	12000m)		
Mechanical		opolating.	1000011 (0000	m, output our	on dording 27	, 10011101 14 40		0111 abovo 2000	in. Non opolat	ing. 10000it (	12000111).		
1. Cooling		Forced air	cooling by in	ternal fans. Air	flow direction	· from Front n	anel to nower	sunnly rear					
2. Weight GSP 10k		Less than		terriar raris. Air	now uncerton	. IIOIII I IOIIL P	and to power	συμμιγ τοαι					
3. Dimensions (WxHxD) GSP 10k		W: 423,	H: 88, D: 441	.5 (Without bu			efer to Outline	drawing)					
2. Weight GSP 15k	W kg			, anordaing bu	ocaro ana buo	Jaio 00101) (11	o.or to outillit	aiumnig).					
3. Dimensions (WxHxD) GSP 15k		Less than 23.5kg.  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) (Refer to Outline drawing).											
4. Vibration				.6, Procedure I			,						
5. Shock			,	, 11mS. Unit is									
Safety/EMC		2000 0.001	,,a.r omic	,									
Applicable standards: Safety		UI 60950-	-1. CSA22 2 N	lo.60950-1, IE	C60950-1 FN	160950-1							
1.1 Interface classification				put, J1,J2,J3,J			) (communic	ation ontions)	are SELV				
1.1 interface diagonication				s: Output, J8 (:						otions) are SE	LV		
1.2 Withstand voltage		60V≤ Vou Output - 0 100 < Vou	it ≤100V Mode Ground: 1500V it ≤600V Mode	ut - Output (SE els: Input - Out (dc 1min, Input els: Input - Out (dc 1min, Input	put: 4242Vdc t - Ground: 28 put: 4242Vdc	1min, Input - 35Vdc 1min. 1min, Input -	SELV: 4242V	dc 1min, Outpo					
1.3 Insulation resistance		100MΩ a	t 25°C, 70%RI	H.									
2. Conducted emission		IEC/EN61	204-3 Industri	al environment	t, Annex H tab	le H.1 , FCC P	art 15-A, VCC	I-A .					
3. Radiated emission		IEC/EN61	204-3 Industri	al environmen	t, Annex H tab	le H.3 and H4	, FCC Part 15	-A, VCCI-A					
4. EMC compliance EMC(*18	3)	According	to IEC/EN612	204-3 Industria	l environment								

<sup>\*1:</sup> Minimum voltage is guaranteed to maximum 0.1% of rated output voltage.

<sup>\*2:</sup> Minimum current is guaranteed to maximum 0.2% of rated output current.

<sup>\*3:</sup> Derate 10A/1°C above 40°C.

<sup>\*4:</sup> For cases where conformance to various safety standards (UL, IEC, etc...) is required, to be described as 190-240Vac (50/60Hz) for 3-Phase 200V models, 380—415Vac (50/60Hz) for 3-Phase 480V models and 380—480Vac (50/60Hz) for 3-Phase 480V models.

<sup>\*5: 3-</sup>Phase 200V models: At 200Vac input voltage, 3-Phase 400/480V: At 380Vac input voltage. With rated output power

<sup>\*6:</sup> 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.

<sup>\*8:</sup> From No-Load to Full-Load, constant input voltage. Measured at the sensing point in Remote Sense.

<sup>\*9:</sup> For 10V~150V models: Measured with JEITA RC-9131C (1:1) probe. For 300~600V model: Measured with 100:1 probe

 $<sup>^{\</sup>star}$ 10: The maximum voltage on the power supply terminals must not exceed the rated voltage.

<sup>\*11:</sup> From 10% to 90% or 90% to 10% of Rated Output Voltage, with rated, resistive load.

<sup>\*12:</sup> From 90% to 10% of Rated Output Voltage.

<sup>\*13:</sup> For load voltage change, equal to the unit voltage rating, constant input voltage.

<sup>\*14:</sup> 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.

<sup>\*15:</sup> 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.

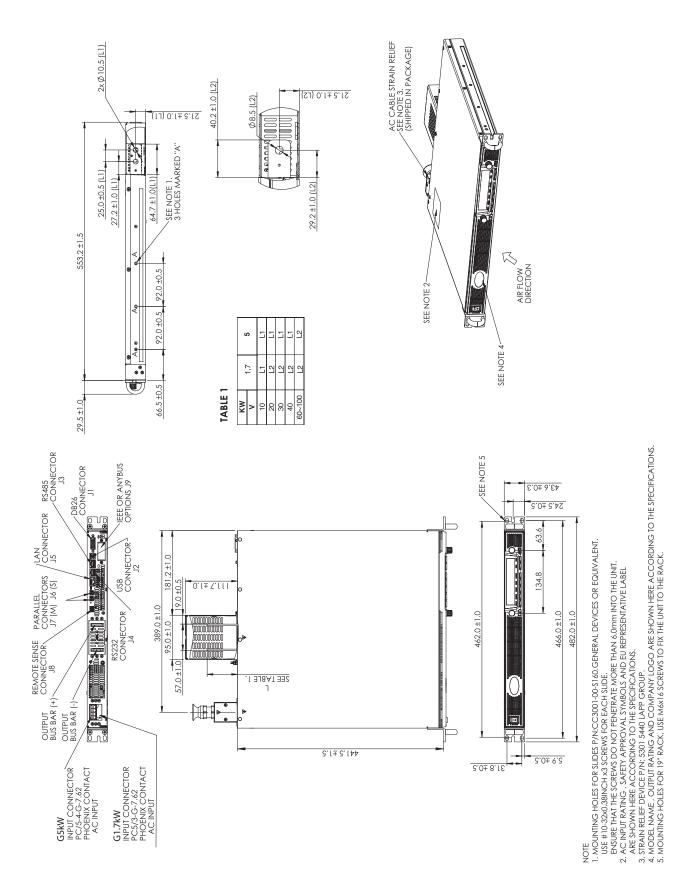
<sup>\*17:</sup> For 10V model Ta derating 2°C/100m.

<sup>\*18:</sup> 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.

<sup>\*20:</sup> For 10V model only: Max. output current for using IEEE is 800A up to 40°C and 900A up to 30°C (GSP10kW); 1200A up to 40°C and 1350A up to 30°C (GSP15kW)

# **G**ENESYS<sup>™</sup> Outline Drawings

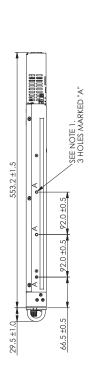
### Outline Drawing GENESYS+™ G (1.7/5kW)

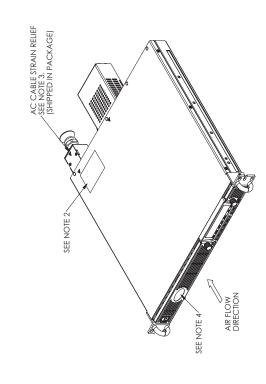


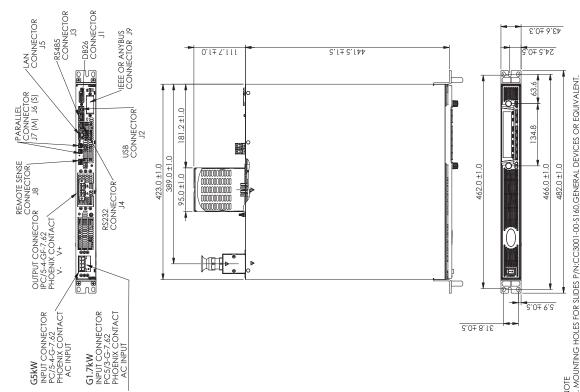
www.emea.tdk-lambda.com

### Outline Drawing GENESYS+™ G (1.7/5kW)

(Models 150V/300V/600V)





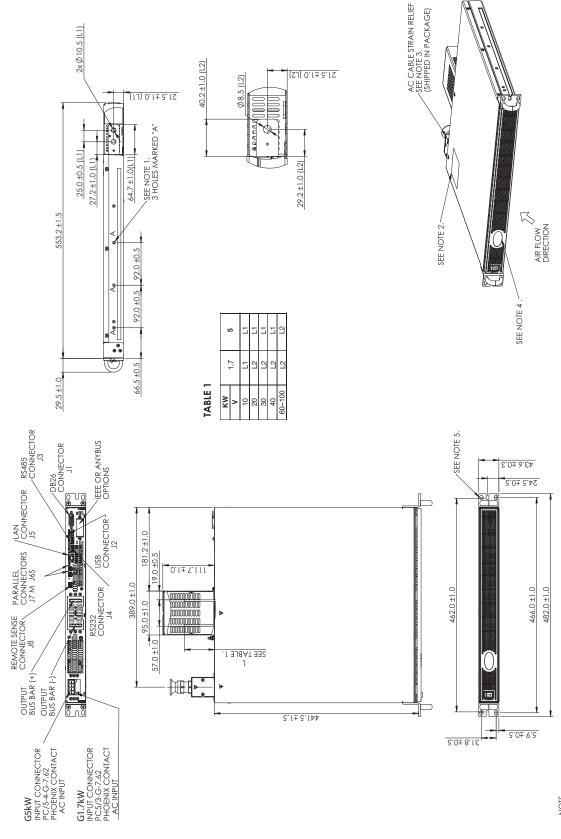


USE #10-32x0.38INCH x3 SCREWS FOR EACH SLIDE.
ENSURE THATTHE SCREWS DO NOT PENETRATE MORE THAN 6.0mm INTO THE UNIT.
2. ACI WIPUT RATING , SAFETY APPROVAL SYMBOLIS AND EU REPRESENTATIVE ADDRESS LABEL.
ARE SHOWN HERE ACCORDING TO THE SPECIFICATIONS.

3. Strain Relief Device P/n: 5301 5440 Lapp Group.
4. Model name , output rating and company Logo are shown here according to the specifications.
5. Mounting holes for 19" rack, use M6x16 screws to fix the unit to the rack.

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### Outline Drawing GENESYS+™ GB (1.7/5kW)



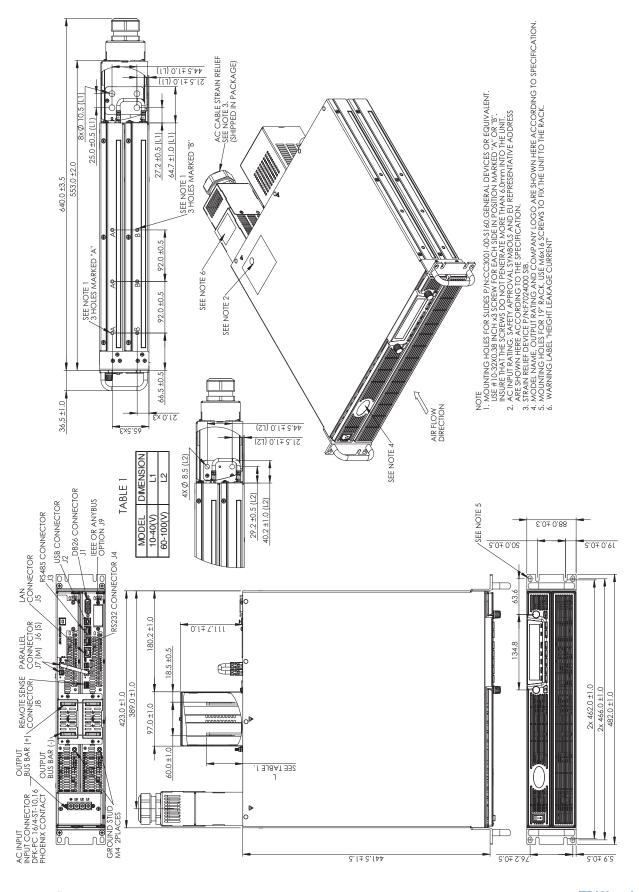
www.emea.tdk-lambda.com

MOUNTING HOLES FOR SLIDES P/N:CC3001-00-\$160, GENERAL DEVICES OR EQUIVALENT.

USE #10-320,38INCH x3 SCREWS FOR EACH SLIDE. ENSURE THAT THE SCREWS DO NOT PENETRATE MORE THAN 6,0mm INTO THE UNIT. AC INPUT RATING AND SAFETY APPROVAL SYMBOLS ARE SHOWN HERE ACCORDING TO THE SPECIFICATIONS.

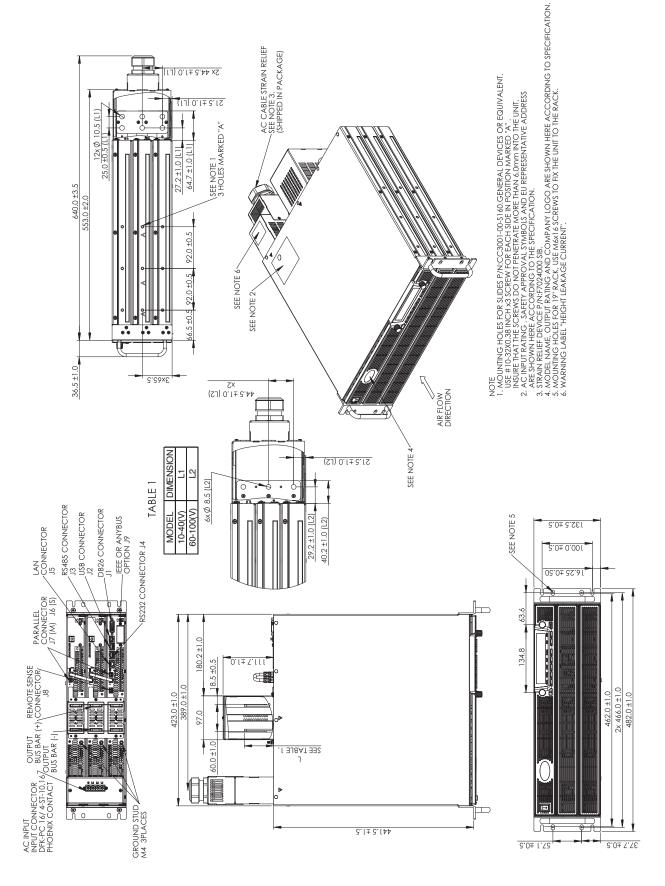
3. STRAIN RELIFE DEVICE P/N: 5301 5440 LAPP GROUP. 4. MODEL NAME , OUTPUT RATING AND COMPANY LOGO ARE SHOWN HERE ACCORDING TO THE SPECIFICATIONS. 5. MOUNTING HOLES FOR 19" RACK, USE M6x16 SCREWS TO FIX THE UNIT TO THE RACK.

### Outline Drawing GENESYS+™ GSP (10kW)



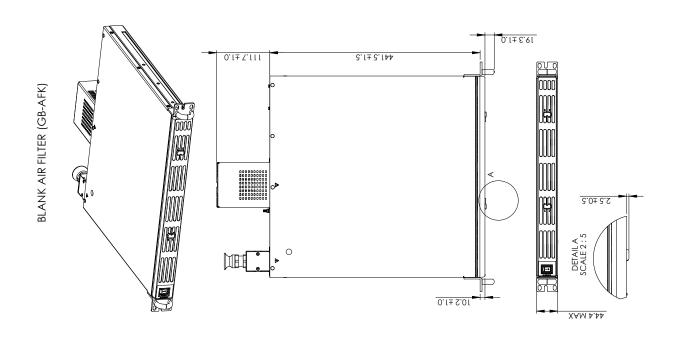
25

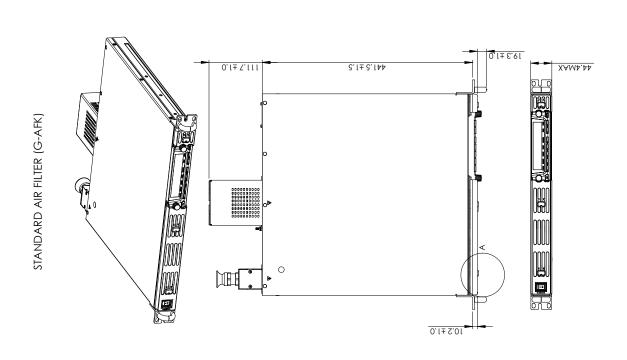
### Outline Drawing GENESYS+™ GSP (15kW)



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### Outline Drawing GENESYS+ $^{\text{\tiny TM}}$ Air Filter Kit





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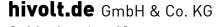


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