



GENESYS™ GH1.5 kW Series Programmable DC Power Supplies Half-Rack 1.5kW in 1U Height

! Advanced Features Built-In !

- **Arbitrary Waveform Generator with Auto-Trigger Capability**
 - **Programmable Slew Rate Control (Vout/Iout)**
- **Constant Power Limit Operation • Internal Resistance Programming**
 - **Built-In LAN (LXI 1.5), USB, and RS-232/RS-485 Interfaces**
 - **Built-In Remote Isolated Analog Interface**
 - **Blank Front Panel Option Available**



Helios Power Solutions is TDK Lambda Authorized Distributor



Genesys + GH

1U Half-Rack Lab Variable DC Power Supply 1.5kW



Description:

The new, five year warranty, Genesys+ GH1.5kW half rack, 1U programmable power supply series can deliver power ratings up to 1500W, with the highest power density and lightest weight (< 3.5kg) available in a half rack size.

It offers voltages of up to 600V and output current up to 150A with constant voltage, constant current and constant power operation. Control of voltage and current slew rate, arbitrary waveform generation and storage, internal resistance simulation and display brightness control are all standard features. Multiple remote programming methods are available including LAN, USB ,RS232 /RS485 and isolated analogue interfaces built in as standard . Interface options will include IEEE488, Modbus-TCP, Ether-CAT and more. A unique, easy auto configuring master / slave paralleling system enables scalable power systems to be configured.

Applications:

- Test & Measurements Systems
- Test & Measurement Systems
- Component Device Testing
- Manufacturing and Process Control
- Semiconductor Processing & Burn-in
- Aerospace & Satellite Testing
- Medical Imaging
- Green Technology

OEM Designers have a wide variety of Inputs and Outputs from which to select depending on application and location.

Features:

- Single Phase Input 85-265 Vac
- Multi-functional front panel display
- Active three-phase PFC (0.94 typical)
- Output Voltage up to 600V. Current up to 150A
- Built-in LAN (1.5), USB, RS-232/RS-485 Interface
- Constant Voltage/Constant Current operation modes
- Internal Resistance Programming Simulation
- Protection functions (OVP, UVP, UVL, FOLD (CV/CC), OCL, OTP, AC FAIL)
- Certified Lab Windows™/CVI, LabVIEW™, and IVI Drivers
- Optional IEEE Interface
- Parallel Systems with Auto-Configure up to 6kW
- High-speed Programming
- Fan Speed profile controlled by ambient temperature and load
- Worldwide Safety Agency Approvals
- CE Mark for Low Voltage, EMC and RoHS2 Directives

Series Table 1.5kW Models

Model	Output Voltage (VDC)	Output Current (A)	Output Power (W)
GH10 -150	0~10V	0~150	1500
GH20-75	0~20V	0~75	1500
GH30-50	0~30V	0~50	1500
GH40-38	0~40V	0~38	1520
GH60-25	0~60V	0~25	1500
GH80-19	0~80V	0~19	1520
GH100 -15	0~100V	0~15	1500
GH150 -10	0~150V	0~10	1500
GH300-5	0~300V	0~5	1500
GH600-2.6	0~600V	0~2.6	1560

Dual Unit Installation



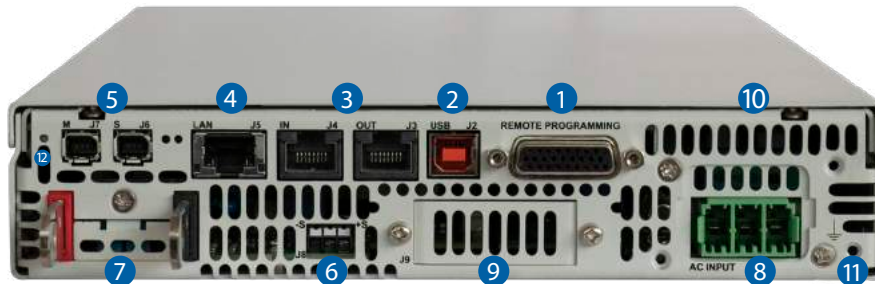
Two GH1500W power supplies side-by-side in a standard 19" rack in 1U(1.75") height.

GH1.5kW Front Panel Description



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

GH1.5kW Rear Panel Description



1. Isolated Analog 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 GIC 2.5/4-G-7,62 for models with Outputs >100V.
8. GH1.5kW Input: 85~265VAC, Single Phase, 50/60 Hz.
AC Input Plug Connector: PHOENIX CONTACT Power Combicon PC 3/4-G-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 (M3x8mm screw).
12. Reset button. Set default Power Supply settings.



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

GENESYS™ Parallel and Series Configurations

Standard Unit - zero stacked up to 4 units

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.



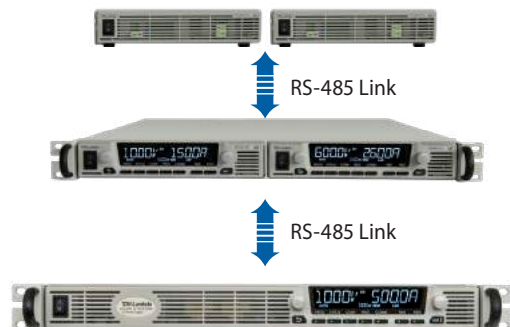
Series operation

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.

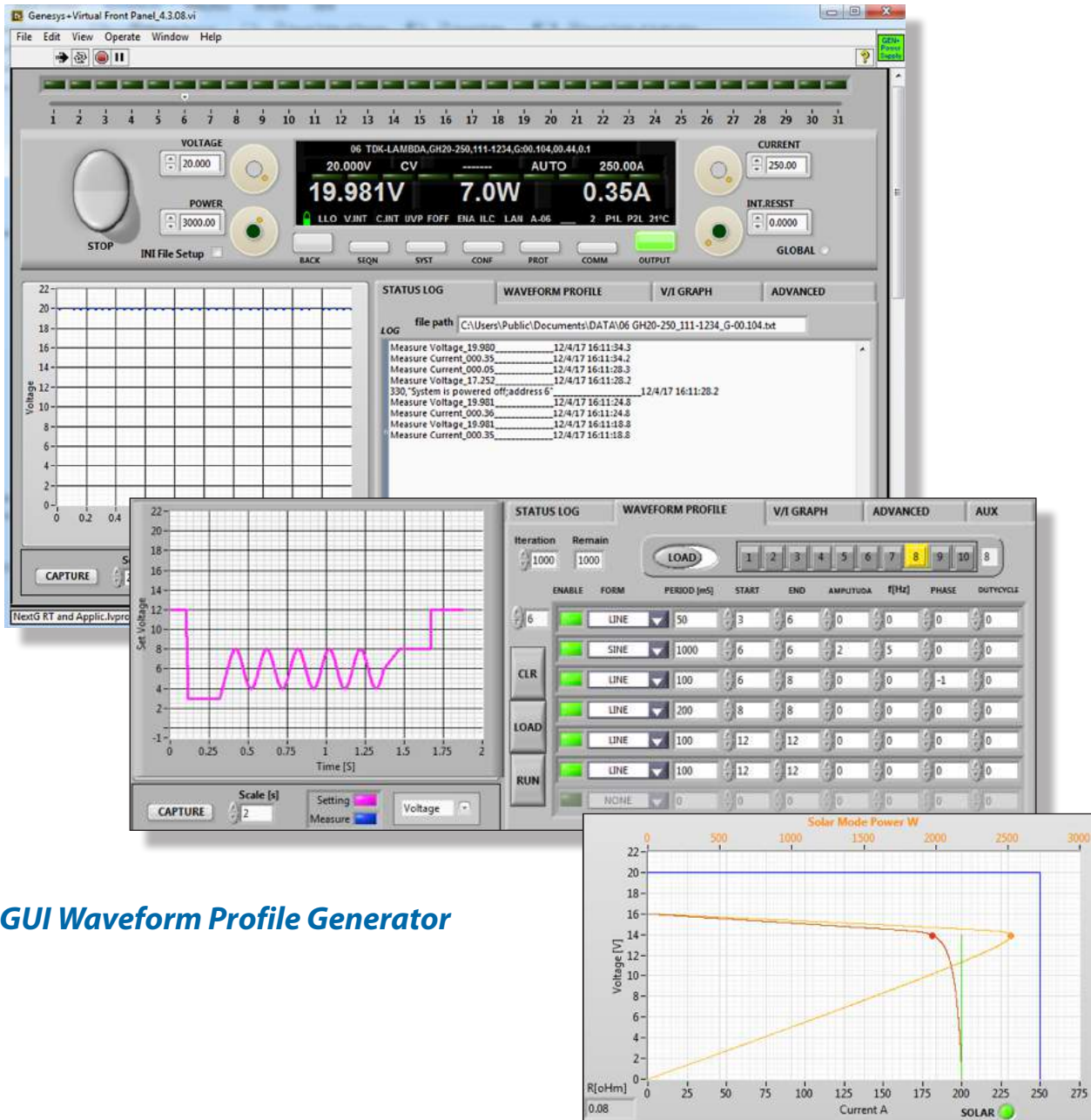
- First unit is LAN, USB, RS-232, RS-485, etc.
- All other units use RS-485 daisy chain with linking cable.



Graphical User Interface

Advanced "Virtual Front Panel" allows programming and monitoring unit(s) with or without front panel display.

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



GUI Waveform Profile Generator



How to order GH1.5kW - Power Supply Identification / Accessories

GH	10	150		
Series Name	Output Voltage	Output Current	Interface Options	Accessories Options
Front Panel Type	(0~10V)	(0~150A)		M - Printed *User Manual
Empty: standard				* User Manual & GUI are provided on CD as Standard
B: Blank Front Panel				P - Bus Parralleling Cable

AC Inputs (All Models)

1Ø, 85 ~ 265Vac

Interface Options (Factory installed)

LAN (LX) 1.5 compliant with Multi-Drop capability) - built-in

USB 2.0 compliant with Multi-Drop capability - built-in

RS-232/RS-485 - built-in

Isolated Analog Program/Monitor Interface

(5V/10V Pgm/Mon with 600V isolation) - built-in

IEEE (488.2 & SCPI compliant with Multi-Drop capability installed)

Modbus-TCP

EtherCAT

P/N

-

-

-

-

IEEE

Available

MDBS

coming soon

ECAT

coming soon

Models 1.5kW

Model	Output Voltage VDC	Output Current (A)	Output Power (W)	Model	Output Voltage VDC	Output Current (A)	Output Power (W)
GH10-150	0~10V	0~150	1500	GH80-19	0~80V	0~19	1520
GH20-75	0~20V	0~75	1500	GH100-15	0~100V	0~15	1500
GH30-50	0~30V	0~50	1500	GH150-10	0~150V	0~10	1500
GH40-38	0~40V	0~38	1520	GH300-5	0~300V	0~5	1500
GH60-25	0~60V	0~25	1500	GH600-2.6	0~600V	0~2.6	1560

Accessories

Rack Mounting applications P/N:GH/RM

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 GH1500W unit or two units side-by-side in a standard 19" rack in 1U(1.75") height, use option kit P/N:GH/RM

Single unit installation

Single GH1500W power supply in a standard 19" rack in 1U(1.75") height,



Dual unit installation

Two GH1500W power supplies side-by-side in a standard 19" rack in 1U (1.75") height,



Benchtop applications P/N: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 GH1500W two units one on top of the other use option kit P/N:GH/MO-2U



GENESYS™ GH1.5kW SERIES SPECIFICATIONS

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 100 Vac/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 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.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	≤400 ≤160 ≤100 ≤60 ≤50 ≤30 ≤30 ≤10 ≤8 ≤5											
5.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.											
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 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.											
ANALOG PROGRAMMING AND MONITORING (ISOLATED FROM THE OUTPUT)													
1.Vout voltage programming	---	0~100%, 0~5V or 0~10V, user selectable. Accuracy and linearity: +/-0.15% of rated Vout.											
2.Iout voltage programming (*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%.											
6.Output current monitor (*14)	---	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 Analog control	---	Enable/Disable analog programming control by electrical signal or dry contact. Remote: 0~0.6V or short. Local: 2~30V or open.											
4. LOCAL/REMOTE Analog signal	---	analog 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: 0.0001~999.9 V/mSec. or A/mSec. Programming via the communication ports or the front panel.											
7. Arbitrary waveforms	---	Profiles of up to 100 steps can be stored in 4 memory cells. Activation by command via the communication ports or by the front panel.											
PROGRAMMING AND READBACK (USB, LAN, RS232/485, Optional IEEE (*18) Interfaces)		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%											

GENESYS™ GH1.5kW SERIES SPECIFICATIONS

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 analog 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, RS232, RS485, USB or Optional communication interface.
	---	Output ON/OFF. Front Panel Lock.
	---	Communication Functions - Selection of Baud Rate, Address, IP and communication language.
	---	Analog Control Functions - Selection Voltage/resistive programming, 5V/10V, 5K/10K programming
	---	Analog 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 (*16)	---	Operating: 10000ft (3000m), output current derating 2%/100m or Ta derating 1°C/100m above 2000m. Non operating: 40000ft (12000m).

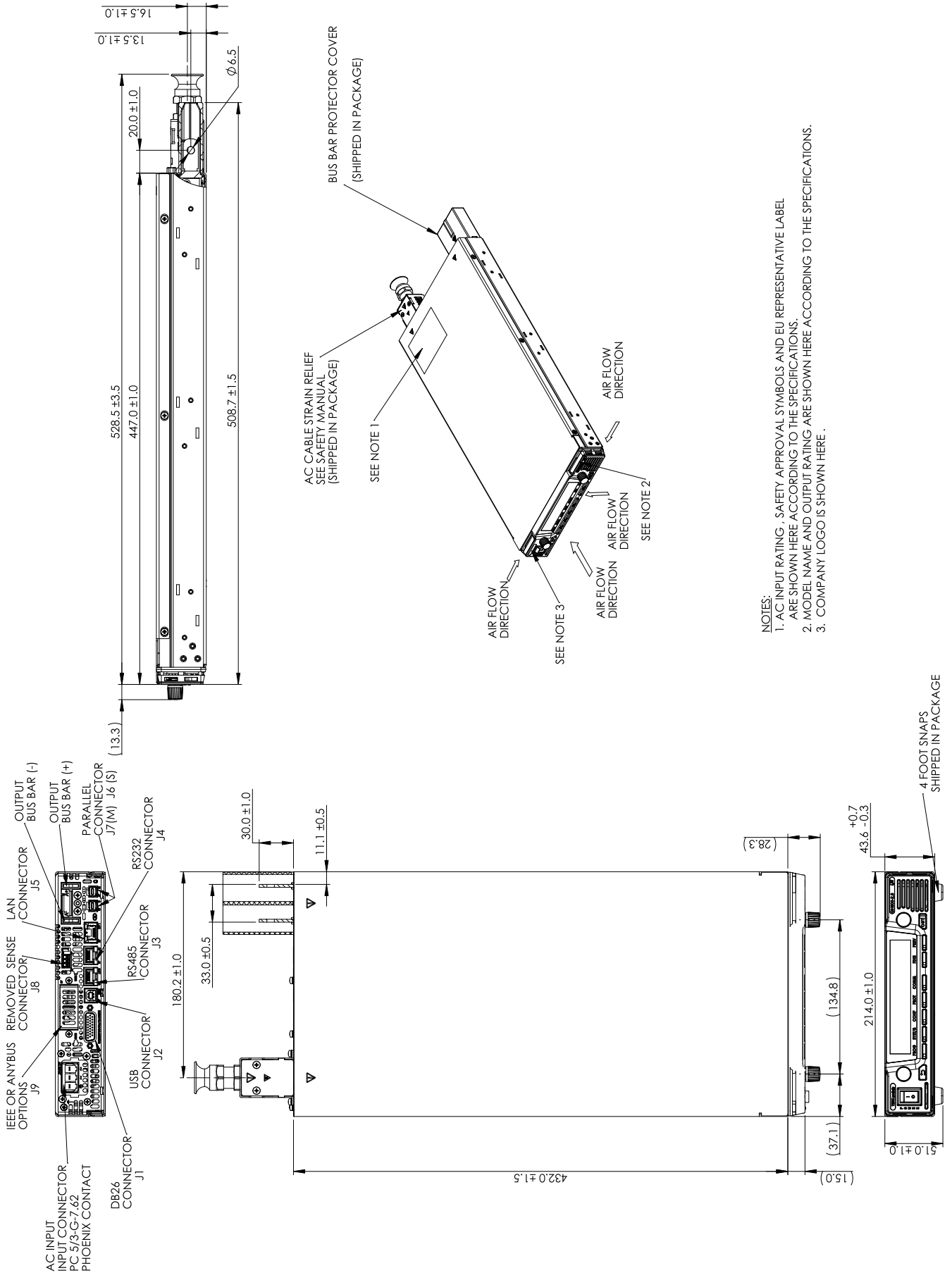
MECHANICAL		
1.Cooling	---	Forced air cooling by internal fans. Air flow direction: from Front panel to power supply rear
2.Weight	kg	Less than 3.5kg.
3.Dimensions (WxHxD)	mm	W: 214, H: 43.6, D: 441.5 (Without busbars and busbars cover), W: 214, H: 43.6, D: 493 (Including busbars and busbars cover) (Refer 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, 11mSec. Unit is unpacked.

SAFETY/EMC		
1.Applicable standards:	Safety	---
1.1. Interface classification		---
1.2 Withstand voltage		---
1.3 Insulation resistance		---
2.Conducted emission		---
3.Radiated emission		---
4. EMC compliance	EMC(*17)	---

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: 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 0.2mSec.
- *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~300V models: Measured with JEITA RC-9131C (1:1) probe. For 400~600V 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. BW 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: For 10V model Ta derating 2°C/100m.
- *17: Signal and control ports interface cables length: Less than 3m, DC output power port cables length: Less than 30m.
- *18: Max. ambient temperature for using IEEE is 40°C.
- *19: Ta=25°C, rated output power.

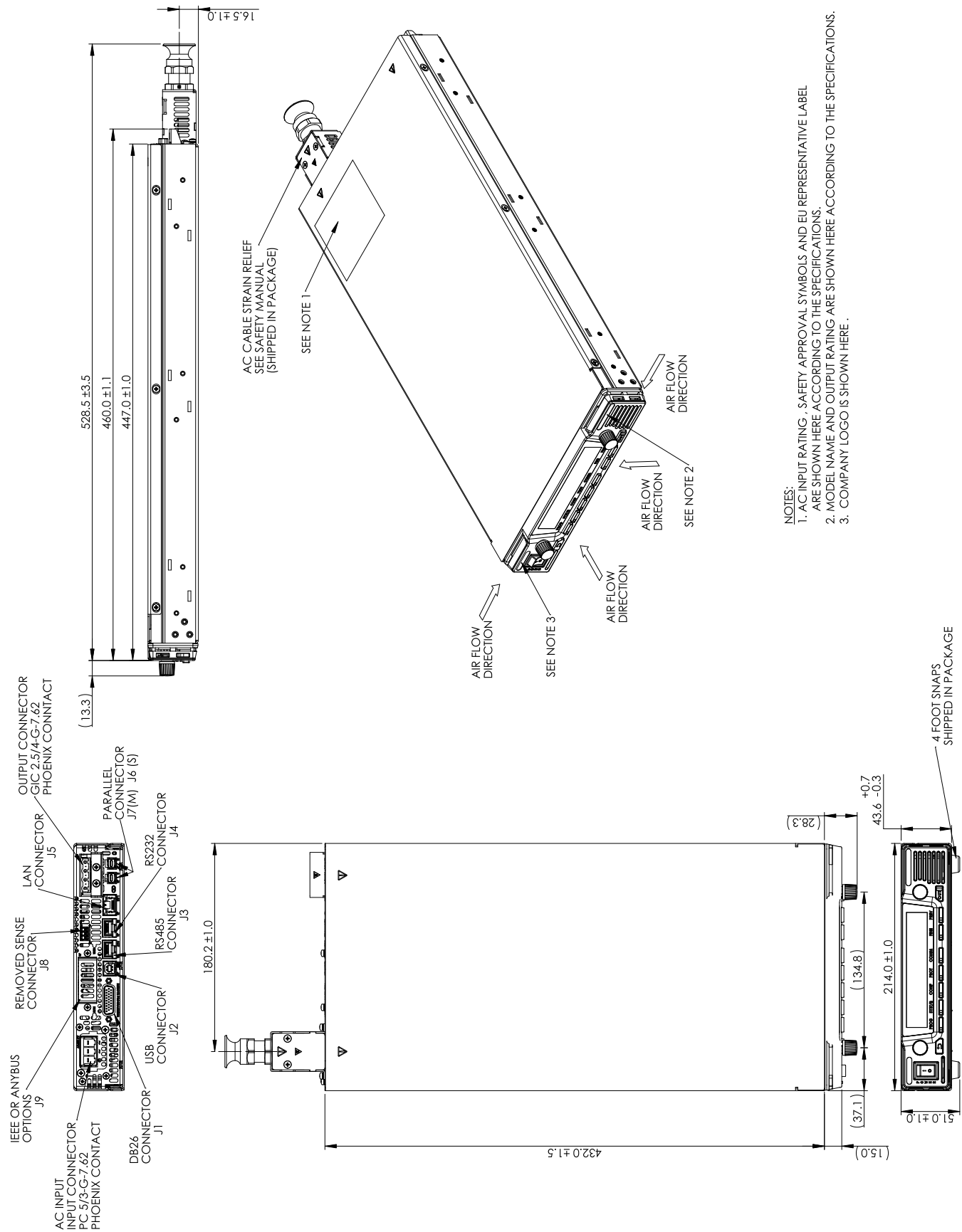
Outline Drawing GENESYS™ GH1.5kW (10V-100V)



NOTES:

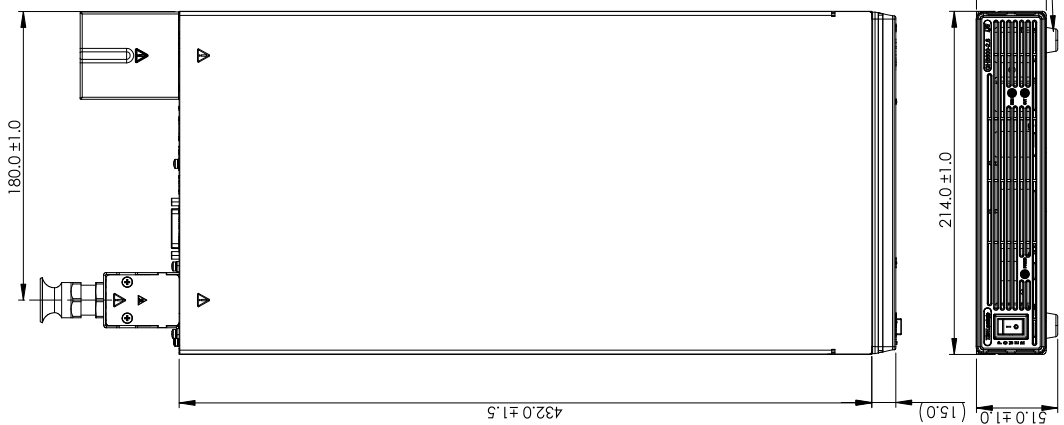
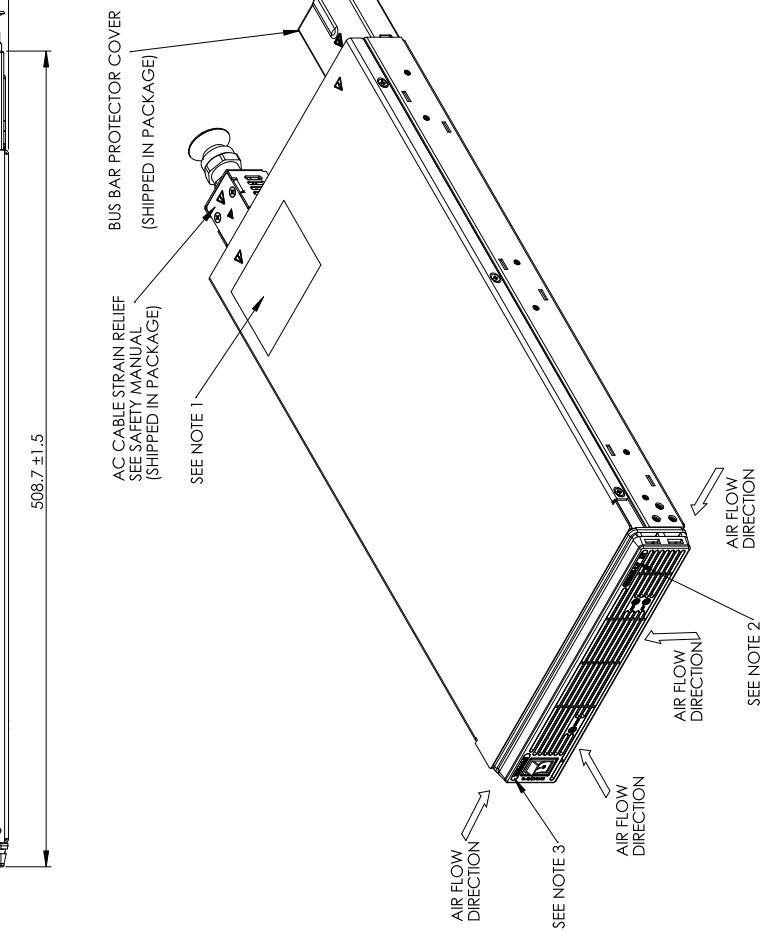
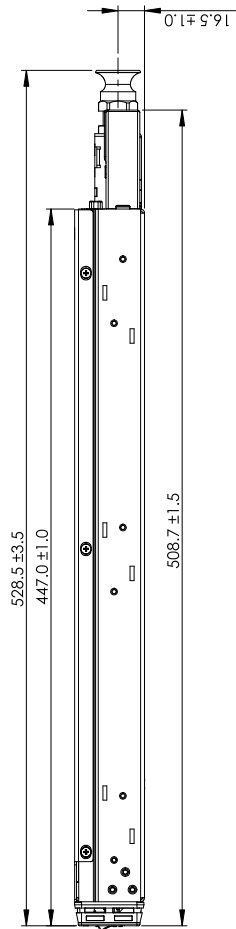
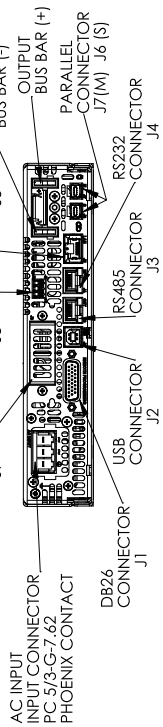
1. AC INPUT RATING, SAFETY APPROVAL SYMBOLS AND EU REPRESENTATIVE LABEL ARE SHOWN HERE ACCORDING TO THE SPECIFICATIONS.
2. MODEL NAME AND OUTPUT RATING ARE SHOWN HERE ACCORDING TO THE SPECIFICATIONS.
3. COMPANY LOGO IS SHOWN HERE.

Outline Drawing GENESYS™ GH1.5kW (150V-600V)



Outline Drawing GENESYS™ GHB1.5kW

ROHS COMPLIANCE



- NOTES:**
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