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GENESYS™ G Series

Programmable DC Power Supplies
GSPL 15kW/22.5kW in 2U/3U 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 Remote Isolated Analog Interface
- Built-In LAN (LXI 1.5), USB, and RS-232/RS-485 Interfaces
- Optional EtherCAT, Modbus-TCP, IEEE (488.2) Interfaces
- Blank Front Panel Option Available

TDK·Lambda

Trusted • Innovative • Reliable

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

Features include:

- Leading DC Programmable power density (15kW/22.5kW in 2U/3U height) in 19" rack-mount
- Light-weight GSPL 15kW<18 kg, 22kW<25 kg
- Wide Range of popular worldwide AC inputs:
  GSPL10kW / GSPL15kW: 3ø (208VAC, 480VAC), Wide-range 3ø 208VAC (170VAC ~ 265VAC)
  Wide-range 3ø 480VAC (342VAC ~ 528VAC)
- Active PFC (0.94 typical)
- Output Voltage up to 1500V, Current up to 1125A
- Built-in LAN (LXI 1.5), USB, RS-232/RS-485 Interface
- Multi-Drop capability (RS-485)
- Multi-functional front panel display
- Last-Setting Memory
- Auto-Start / Safe-Start: user selectable
- High Resolution 16 bit ADCs & DACs
- Arbitrary Waveform Generator with Auto-Trigger Capability
- Store up to 100 steps into four internal memory cells
- High-speed Programming
- Constant Voltage/Constant Current operation modes
- Constant Power (CP) Limit
- Slew-Rate Control (V/I)
- Internal Resistance Programming Simulation • Local / Remote Sensing - software controlled • Built-In Remote Isolated Analog Program/Monitor and Control Interface
- Protection functions (OVP, UVP, UVL, FOLD (CV/CC), OCL, OTP, AC FAIL)
- Fan speed controlled by ambient temperature and load
- Certified LabWindows™/CVI, LabVIEW™, and IVI Drivers
- Optional EtherCAT, Modbus-TCP, IEEE (488.2) Interfaces
- 19" Rack Mount capability for ATE and OEM application
- Scalable Power Systems of 15kW and 22.5kW
- Parallel Systems (up to 90kW) with Auto-Configure
- Worldwide Safety Agency approvals
- CE Mark for Low Voltage, EMC and RoHS3 Directives
- Five year warranty

Applications

GENESYS™ power supplies have been designed to meet the demands of a wide variety of applications.

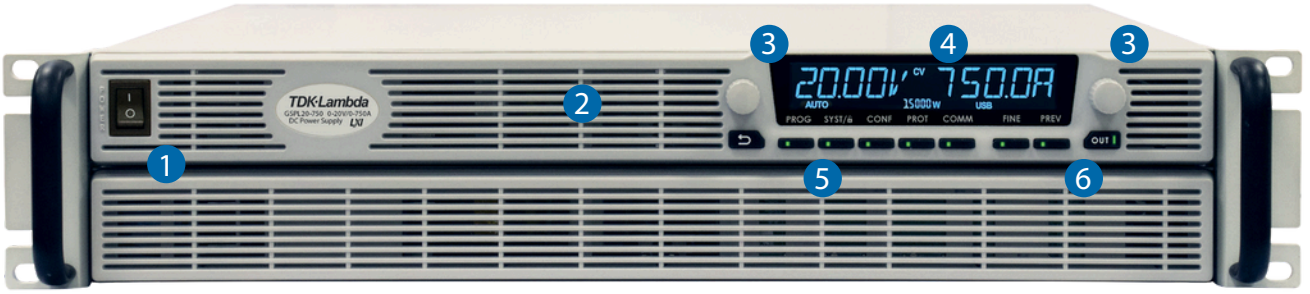
Test & Measurement systems, Component Device Testing, Manufacturing and process control.

Semiconductor Processing & Burn-In, Aerospace & Satellite Testing, Medical Imaging, Green Technology.

Higher power systems can be configured with up to four (4) GSPL 22.5kW units. Each unit is 3U with zero space between them (zero stack).

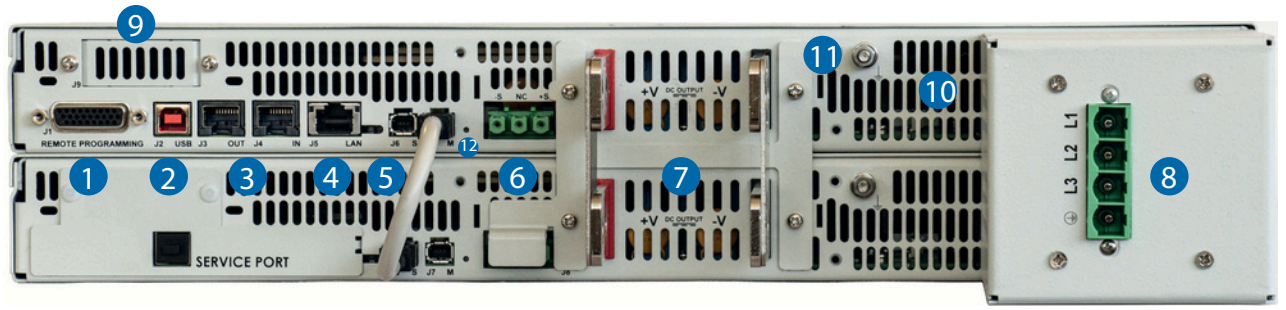
OEM Designers have a wide variety of Inputs and Outputs from which to select depending on application and location.

GSPL15kW Front Panel Description



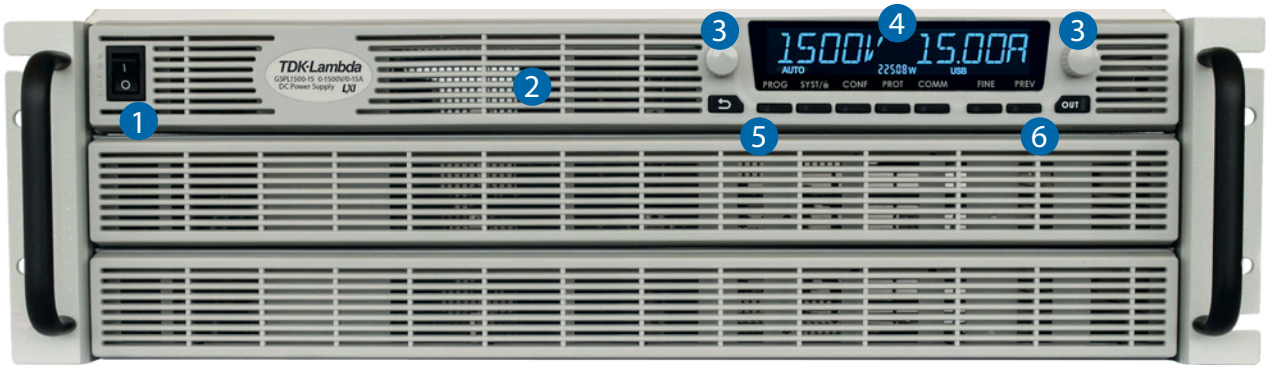
1. Input Power ON/OFF Switch
2. Air Intake allows zero stacking for maximum system flexibility and power density.
3. Reliable Detent Encoders for settings and Menu navigation.
4. High Contrast/Brightness display with wide viewing angle, 16 segment LCD
5. Function/Status LEDs: Active modes and function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

GSPL15kW 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 (PHOENIX CONTACT GIC 2,5 HCV/3-ST-7,62).
7. Output Connections: Rugged busbars (shown) for models up to and including 1500V Output;
8. Input Connector: 208VAC, 480VAC Three Phase, 50/60 Hz.
   AC Input Plug Connector: PHOENIX CONTACT DFK-IPC 16/4-STF-10.16 with strain relief.
9. Optional Interface Position for IEEE 488.2 SCPI or AnyBus Interface.
10. Exhaust air assures reliable operation when zero stacked.
11. Functional Ground connection (M4x8mm stud).
12. Reset button. Set default Power Supply settings.

GSPL22.5kW Front Panel Description



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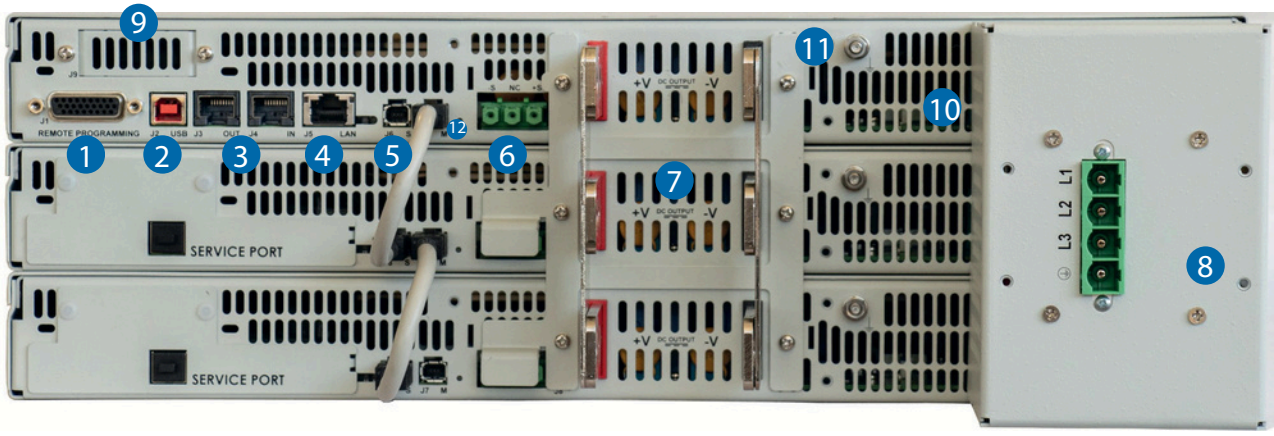
GSPL22.5kW Rear Panel Description



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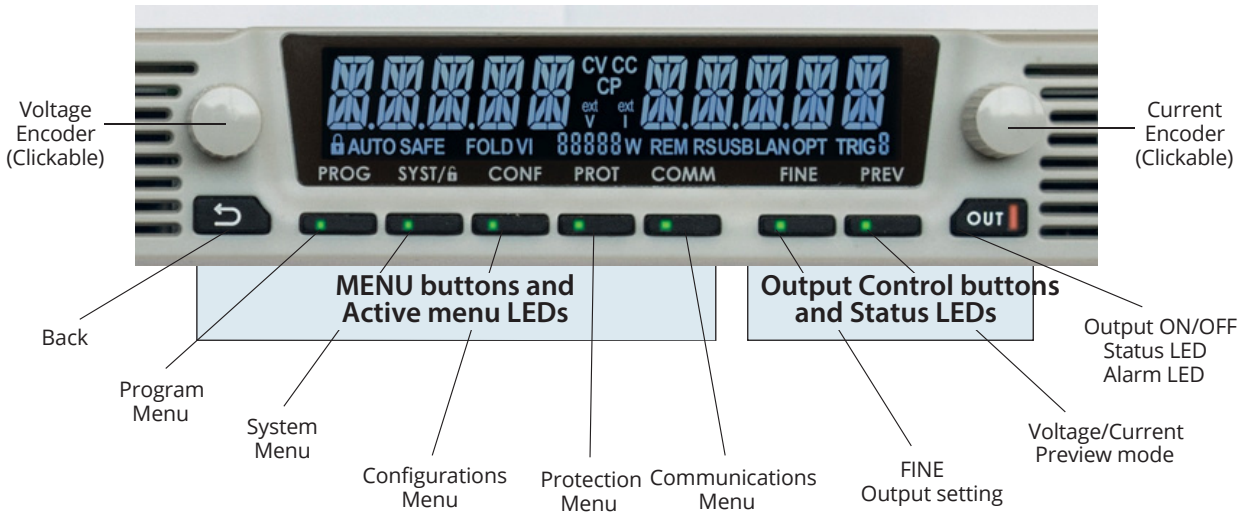
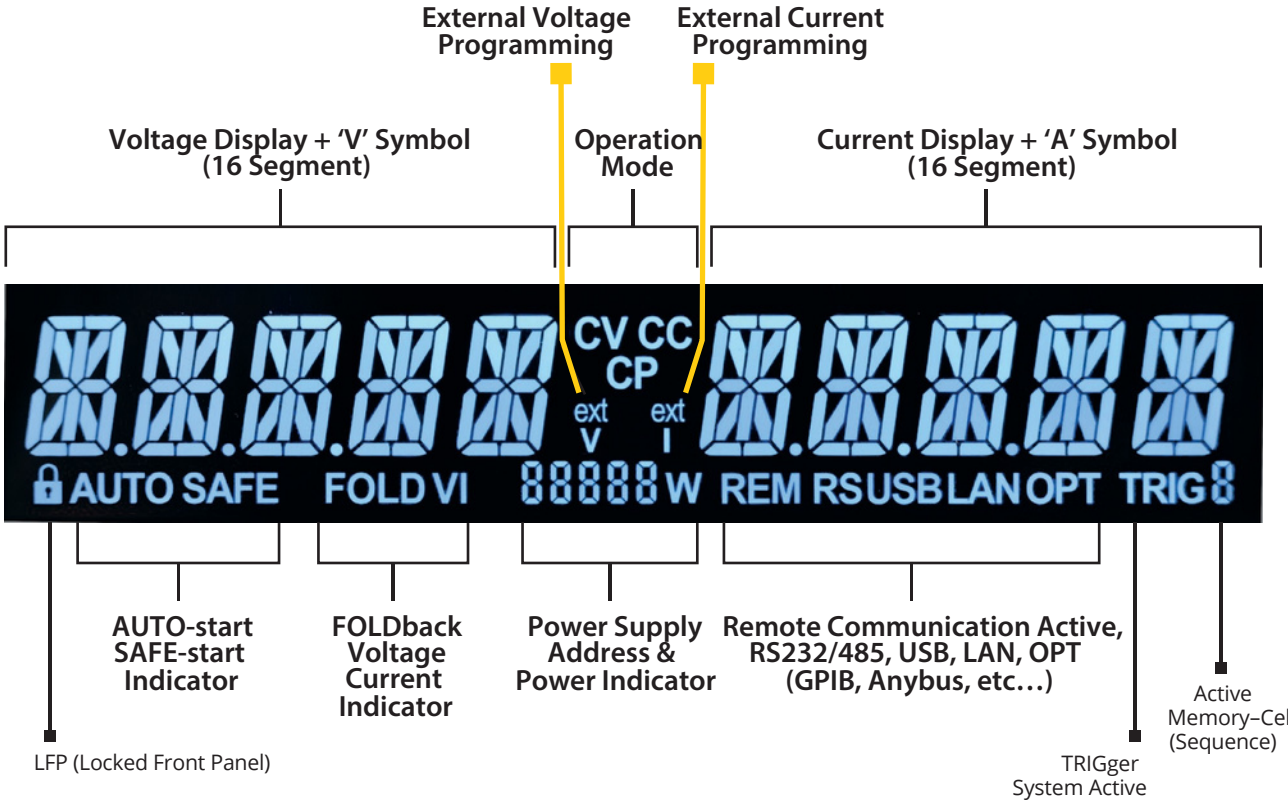
6. Remote/Local Output Voltage Sense Connections (PHOENIX CONTACT GIC 2,5 HCV/3-ST-7,62).
7. Output Connections: Rugged busbars for models up to and including 1500V Output;
8. Input: 208VAC, 480VAC Three Phase, 50/60 Hz.
   AC Input Plug Connector: 3-Phase 208: PC 35 HC/ 4-GF-15,00 Phoenix Contact.
   3-Phase 480: DFK-PC 16/ 4-STF-10, 16 PHOENIX CONTACT.
9. Optional Interface Position for IEEE 488.2 SCPI or AnyBus Interface.
10. Exhaust air assures reliable operation when zero stacked.
11. Functional Ground connection (M4x8mm stud).
12. Reset button. Set default Power Supply settings.

Front Panel Display MENU/CONTROL buttons:



Front Panel Display indicators



GENESYS™ G, GSP & GSPL Series
Blank Front Panel (ATE version)

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

Parallel operation - Master/Slave:

Auto paralleling Scalable Master-Slave Operation.

Active current sharing allows up to thirty (30) identical units to be connected

Total real current is programmed measured and reported by the Master. Up to thirty (30) power supplies operate as one.

Standard Unit - zero stacked up to 30 units

Standard & Blank - zero stacked up to 30 units

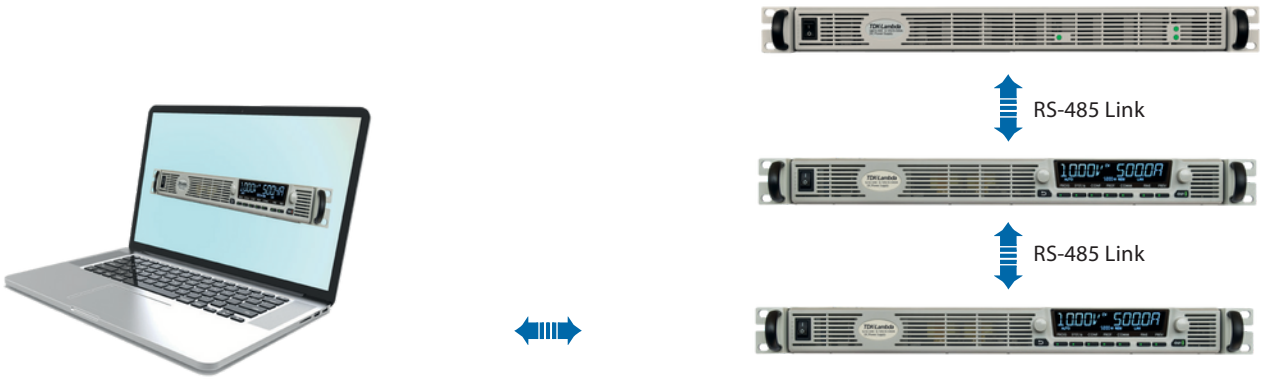
Series operation

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

Multi-Drop Remote Programming via Communication Interface

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

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



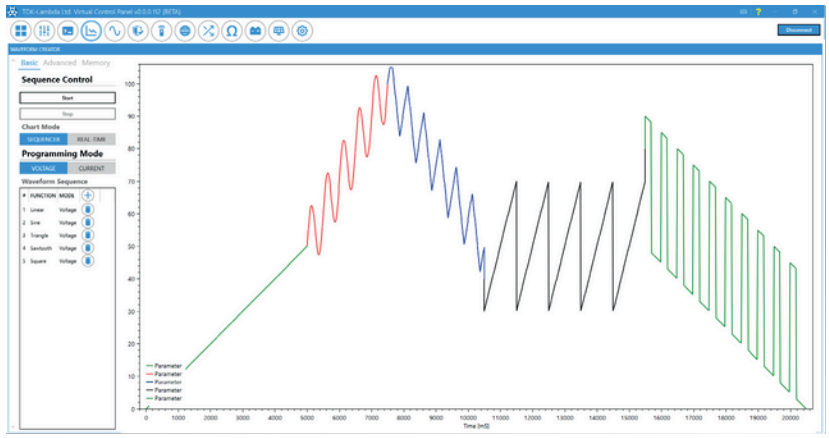
LAN, USB, RS-232, RS-485, IEEE, AnyBus

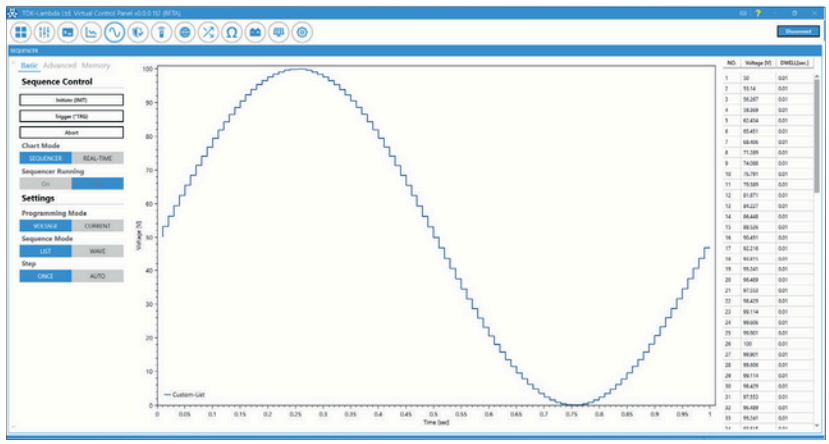
Graphical User Interface

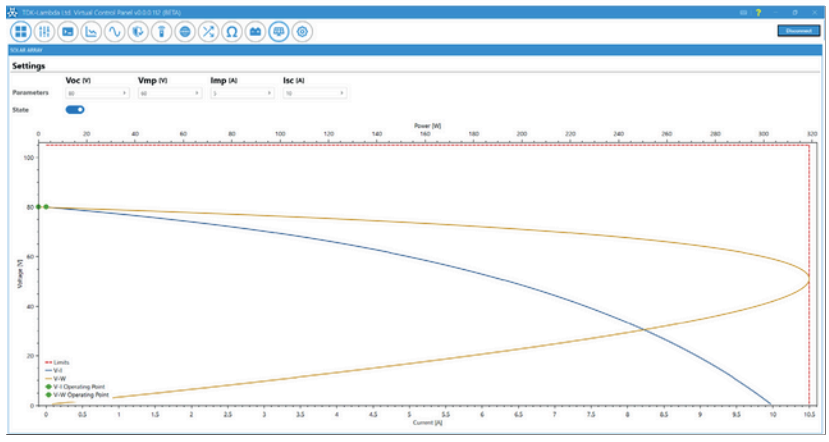
Advanced "Virtual Control Panel" allows programming and monitoring unit(s) with or without front panel display.

1. **Control and monitor DC Programmable Power Supply Series (GENESYS+, GENESYS and Z+).**
2. **Automatically detect power supplies connected to a PC and/or local network.**
3. **Advanced Terminal, including Modbus-TCP and EtherCAT communication interfaces.**
4. **Real-time Graph and Waveform creator, including pre-built functions i.e. Sine, Triangle and Square.**
5. **Solar array simulation based on VOC, VMP, IMP, ISC.**
6. **Advanced functions control – Slew-Rate, Internal Resistance and Constant Power.**
7. **Multi-Model Monitoring and Control Panel.**
8. **Individual and Global commands control.**

GUI Waveform Profile Generator







How to order GSPL15kW-22.5kW - Power Supply Identification / Accessories

G	SPL	20	-750	-		-		-
Series	Name	Output Voltage (0~20V)	Output Current (0~1125A)	**Interface Options**		**AC Input Options** 3P208 (Three Phase 170~265VAC) 3P480 (Three Phase 342~528VAC)		**Accessories Options** M - Printed *User Manual * User Manual & GUI are available on the website

Front Panel Type
Empty: standard
B: Blank Front Panel (ATE version)

Interface Options (Factory installed)

	P/N
LAN (LXI 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	-
Isolated Analog Programming (4-20mA)	IS420
IEEE (488.2 & SCPI compliant with Multi-Drop capability installed)	IEEE
Modbus-TCP	MDBS
EtherCAT	ECAT

Models GSPL 15kW

Model	Voltage (VDC)	Current (A)	Power (kW)
GSPL20-750	0~20V	0 ~750	15
GSPL30-500	0~30V	0 ~50 0	15
GSPL40-376	0~40V	0 ~376	15
GSPL60-250	0~60V	0 ~250	15
GSPL80-188	0~80V	0 ~18 8	15
GSPL100-150	0~100V	0~150	15

Model	Voltage (VDC)	Current (A)	Power (kW)
GSPL150-100	0~150V	0~100	15
GSPL200-75	0~200V	0~75	15
GSPL300-50	0~300V	0~50	15
GSPL600-25	0~600V	0~25	15
GSPL1000-15	0~1000V	0~15	15
GSPL1500-10	0~1500V	0~10	15

Models GSPL22.5kW

Model	Voltage (VDC)	Current (A)	Power (kW)
GSPL20-1125	0~20V	0~1125	22.5
GSPL30-750	0~30V	0 ~750	22.5
GSPL40-564	0~40V	0 ~56 4	22. 56
GSPL60-375	0~60V	0 ~375	22.5
GSPL80-282	0~80V	0 ~282	22. 56
GSPL100-225	0~100V	0 ~225	22.5

Model	Voltage (VDC)	Current (A)	Power (kW)
GSPL150-150	0~150V	0~150	22.5
GSPL200-112.5	0~200V	0~112.5	22.5
GSPL300-75	0~300V	0~75	22.5
GSPL600-37.5	0~600V	0~37.5	22.5
GSPL1000-22.5	0~1000V	0~22.5	22.5
GSPL1500-15	0~1500V	0~15	22.5

Accessories

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

1. Serial Communication cable

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

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

2. Bus Paralleling cable (Included with the power supply)

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

3. Remote Sense Connector

Connectors	Cables	P/N
Phoenix Contact.	Wire AWG - refer to User Manual	GIC 2,5 HCV/ 3-ST-7,62

4. User Manual

Printed User Manual	G/M

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GENESYS™ GSPL 15kW Series Specifications

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

OUTPUT RATING			20-750	30-500	40-376	60-250	80-188	100-150	150-100	200-75	300-50	600-25	1000-15	1500-10
1.Rated output voltage (*1)	V	V	20	30	40	60	80	100	150	200	300	600	1000	1500
2.Rated output current (*2)	A	A	750	500	376	250	188	150	100	75	50	25	15	10
3.Rated output power	W	kW	15000	15000	15040	15000	15040	15000	15000	15000	15000	15000	15000	15000

INPUT CHARACTERISTICS		V	20	30	40	60	80	100	150	200	300	600	1000	1500
1.Input voltage/freq. 3 phase, 3 wire+ground (*4)		---	3-Phase, 200V models: 170~265Vac, 47~63Hz (Covers 200/230Vac). 3-Phase, 480V models: 342~528Vac, 47~63Hz (Covers 380/400/415/440/460/480Vac).											
3-Phase, 200V			51A @ 200Vac.											
3-Phase, 480V models:			27A @ 380Vac.											
2.Max. input current at rated load		---	0.94 @ 200/380Vac, rated output power.											
3.Power Factor (Typ.)		---												
4.Efficiency (Typ.) (*5) (*3)		%	91	91	91	91	91	91	91	91	91	92	92	92
5.Inrush current (*6)		---	Less than 130A.											

CONSTANT VOLTAGE MODE		V	20	30	40	60	80	100	150	200	300	600	1000	1500
1.Max. Line regulation (*7)		---	0.01% of rated output voltage.											
2.Max. Load regulation (*8)		---	0.01% of rated output voltage +5mV.											
3.Ripple and noise (p-p, 20MHz) (*9)		mV	80	80	80	80	90	90	150	250	250	450	1400	1700
4.Ripple r.m.s. 5Hz~1MHz (*9)		mV	10	10	10	12	15	15	20	45	60	100	400	600
5.Temperature coefficient		---	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 & temperature.											
7.Warm-up drift		---	Less than 0.05% of rated output voltage +2mV over 30 minutes following power on.											
8.Remote sense compensation/wire (*10)		V	2	5										
9.Up-prog. response time (*11)		mS	30	30	30	50	50	50	50	50	50	100	150	200
10.Down-prog. response time	Full load (*12)	mS	50	80	80	80	100	100	100	100	100	100	100	100
	No load (*12)		600	600	1000	1000	1000	1500	2500	2500	3000	3000	3000	3000
11.Transient response time		---	Time for output voltage to recover within 1% of its rated output for 20~30V; 0.5% of its rated output for 40~1500V, for a load change 10~90% of rated output current Local sense. Output set point: 10~100%. Less than 1mS for models up to and including 100V. 2mS for models above 100V.											
12. Hold-up time		---	Less than 7Sec.											
13.Start-up delay		---	5mS Typical. Rated output power.											

CONSTANT CURRENT MODE		V	20	30	40	60	80	100	150	200	300	600	1000	1500
1.Max. Line regulation (*7)		---	0.05% of rated output current.											
2.Max. Load regulation (*13)		---	0.08% of rated output current.											
3.Ripple r.m.s. 5Hz~1MHz (*14)		mA	≤1800	≤1000	≤600	≤300	≤200	≤140	≤90	≤40	≤30	≤28	≤20	≤20
4.Temperature coefficient		---	20V~100V models: 100PPM/°C from rated output current, following 30 minutes warm-up.											
5.Temperature stability		---	150V~1500V models: 70PPM/°C from rated output current, following 30 minutes warm-up.											
6.Warm-up drift		---	0.01% of rated Iout over 8hrs. interval following 30 minutes warm-up. Constant line, load & temperature.											
			20V~100V models: Less than +/-0.25% of rated output current over 30 minutes following power on. 150V~1500V models: 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 (*15)	---	0~100%, 0~5V or 0~10V, user selectable. Accuracy and linearity: +/-0.4% of rated Iout.
3.Vout resistor programming	---	0~100%, 0~5/10KΩ full scale, user selectable. Accuracy and linearity: +/-0.5% of rated Vout.
4.Iout resistor programming (*15)	---	0~100%, 0~5/10KΩ full scale, user selectable. Accuracy and linearity: +/-0.5% of rated Iout.
5.Output voltage monitor	---	0~5V or 0~10V, user selectable. Accuracy: +/-0.5% of rated Vout.
6.Output current monitor (*15)	---	0~5V or 0~10V, user selectable. Accuracy: +/-0.5% of rated Iout.

SIGNALS AND CONTROLS (ISOLATED FROM THE OUTPUT)		
1.Power supply OK #1 signal	---	Power supply output monitor. Open collector. Output On: On. Output Off: Off. Maximum Voltage: 30V. Maximum Sink Current: 10mA.
2.CV/CC signal	---	CV/CC Monitor. Open collector. CC mode: On. CV mode: Off. Maximum Voltage: 30V. Maximum Sink Current: 10mA.
3.LOCAL/REMOTE 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.
6.INTERLOCK (ILC) control	---	0~0.6V or short, 2~30V or open. User selectable logic. Enable/Disable PS output by electrical signal or dry contact.
7.Programmed signals	---	Output ON: 0~0.6V or short. Output OFF: 2~30V or open. Two open drain programmable signals. Maximum voltage 25V. Maximum sink current 100mA
8.TRIGGER IN / TRIGGER OUT signals	---	(shunted by 27V zener). Maximum low level input voltage = 0.8V. Minimum high level input voltage = 2.5V.
9.DAISY_IN/SO control signal	---	Maximum high level input = 5V positive edge trigger: tw = 10us minimum. Tr,Tf = 1us maximum.
10.DAISY_OUT/PS_OK #2 signal	---	Min delay between 2 pulses 1ms. By electrical Voltage: 0~0.6V/2~30V or dry contact. 4~5V = OK, 0V (500Ω 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 communication ports or front panel.
6.Slew rate control	- -- - -- - -- -	Programmable Output rise and Output fall slew rate. Programming range: 0.0001~999.99 V/mS. or A/mS. Programming via communication ports or front panel.

PROGRAMMING AND READBACK (USB, LAN, RS232/485, Optional (*17) (*18) Interfaces)

PROGRAMMING AND READBACK (USB, LAN, RS232/485, Optional (*17) (*20) Interfaces)													
	V	20	30	40	60	80	100	150	200	300	600	1000	1500
1.Vout programming accuracy (*16)	---	0.05% of rated output voltage.											
2.Iout programming accuracy (*15)	---	0.1% of actual output current +0.2% of rated output current.											
3.Vout programming resolution	---	0.002% of rated output voltage.											
4.Iout programming resolution	---	0.002% of rated output current.											
5.Vout readback accuracy	---	0.1% of rated output voltage.											
6.Iout readback accuracy (*15)	---	0.2% of rated output current.											
7.Vout readback resolution	% of rated output voltage	0.006%	0.004%	0.004%	0.003%	0.002%	0.011%	0.008%	0.006%	0.004%	0.003%	0.011%	0.008%
8.Iout readback resolution	% of rated output current	0.002%	0.003%	0.004%	0.005%	0.006%	0.008%	0.011%	0.002%	0.003%	0.005%	0.008%	0.011%

7.Arbitrary waveforms	% of rated output	Profiles of up to 100 steps can be stored in 4 memory cells. Activation by command via communication ports or front panel.

PROTECTIVE FUNCTIONS	V	20	30	40	60	80	100	150	200	300	600	1000	1500
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 Power Switch, by OUTPUT button, by rear panel or by communication.											
3.Over-voltage programming range	V	1~24	2~36	2~44.1	5~66.15	5~88.2	5~110.25	5~165.37	5~220.5	5~330.75	5~661.5	5~1212.75	5~1653.75
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 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, 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, 5KΩ/10KΩ 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. OUTPUT ON, ALARM, PREVIEW, FINE, COMMUNICATION, PROTECTION, CONFIGURATION, SYSTEM, SEQUENCER.
3.Front Panel Buttons Indications	---	Voltage, Current, Power, CV, CC, CP, External Voltage, External Current, Address, LFP Autostart, Safetstart, Foldback V/I, Remote (communication), RS/USB/LAN/Optional communication interface, Trigger, Load/Store Cell.
4.Front Panel Display Indications	---	

ENVIRONMENTAL CONDITIONS		
1.Operating temperature	--	0~50°C, 100% load.
2.Storage temperature	- -	-30~85°C.
3.Operating humidity	--	20~90% RH (no condensation).
4.Storage humidity	--	10~95% RH (no condensation).
5.Altitude (*17)	- -	Operating: 10000ft (3000m), output current derating 2%/100m or Ta derating 1°C/100m above 1500m. Non-operating: 40000ft (12000m).
	--	

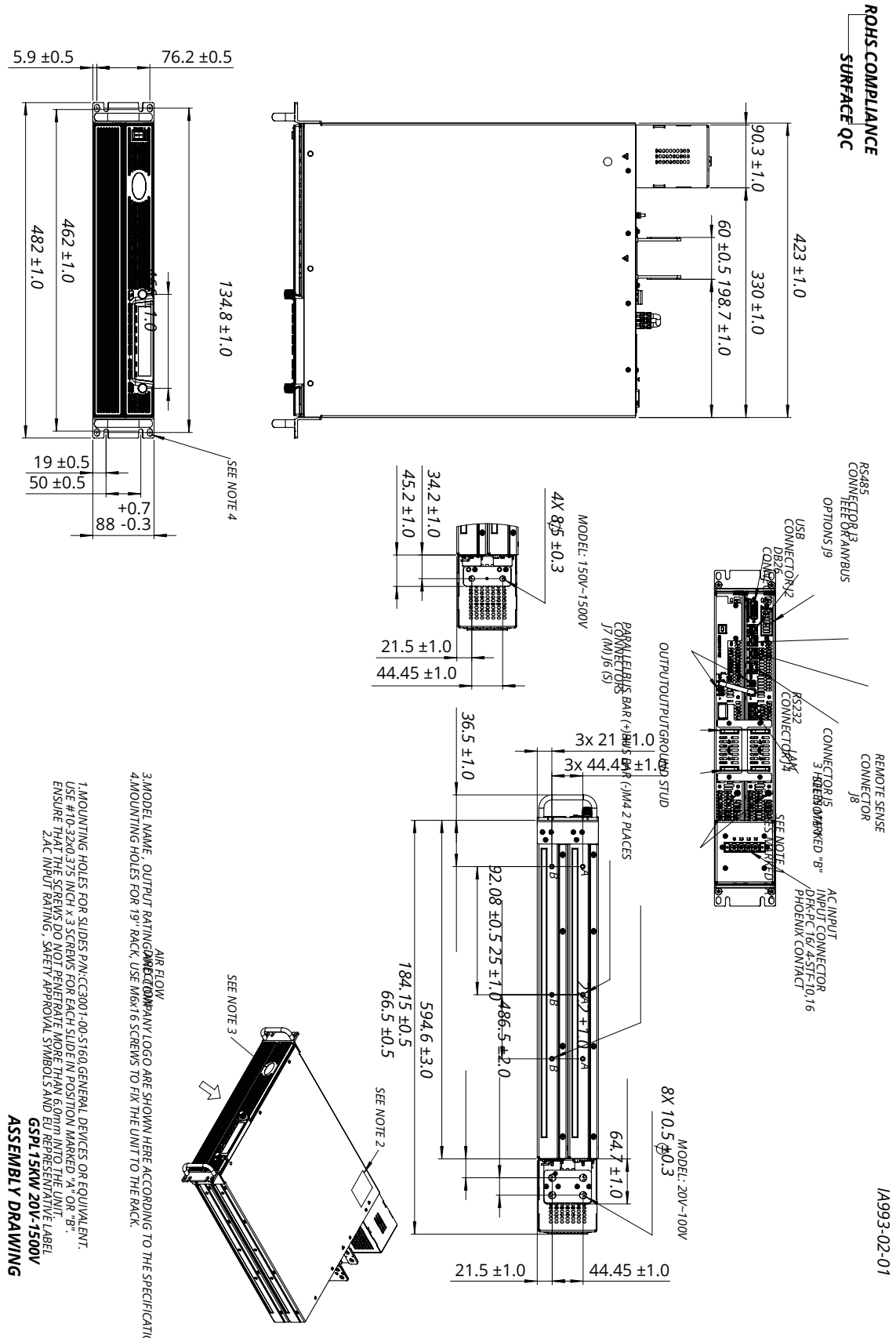
MECHANICAL		

1.Cooling	---	Forced air cooling by internal fans. Airflow direction: From front panel to power supply rear.
2.Weight	Kg	Less than 18.
3.Dimensions (WxHxD)	mm	W: 423, H: 88.0, D: 594.6. Refer to outline drawing.
4.Vibration	---	MIL-810G, method 514.6, Procedure I, test condition Annex C - 2.1.3.1
5.Shock	---	Less than 20G, half sine, 11mS. Unit is unpacked.

SAFETY/EMC		
1.Safety standards	---	UL61010-1, CSA22.2 No.61010-1, IEC61010-1, EN61010-1.
1.1.Interface classification	---	Vout≤50V Models: Output, J1, J2, J3, J4, J5, J6, J7, J8 (sense) & J9 (communication options) are Non Hazardous. 60≤Vout≤1500V Models: Output & J8 (sense) are hazardous, J1, J2, J3, J4, J5, J6, J7 & J9 (communication options) are Non Hazardous.
1.2.Withstand voltage	---	Vout≤50V Models: Input – Output & J8 (sense), J1, J2, J3, J4, J5, J6, J7 & J9 (communication options): 4242VDC 1min, Input - Ground: 2835VDC 1min. 60V<Vout≤100V Models: Input – Output & J8 (sense), J1, J2, J3, J4, J5, J6, J7 & J9 (communication options): 4242VDC 1min, Output & J8 (sense) - J1, J2, J3, J4, J5, J6, J7 & J9 (communication options): 850VDC 1min, Output & J8 (sense) - Ground: 1500VDC 1min, Input - Ground: 2835VDC 1min. 100V<Vout≤600V Models: Input – Output & J8 (sense), J1, J2, J3, J4, J5, J6, J7 and J9 (communication options): 4242VDC 1min, Output & J8 (sense) - J1, J2, J3, J4, J5, J6, J7 & J9 (communication options): 1275VDC 1min, Output & J8 (sense) - Ground: 2500VDC 1min. Input - Ground: 2835VDC 1min. 1000V<Vout≤1500V Models: Input – Output & J8 (sense), J1, J2, J3, J4, J5, J6, J7 and J9 (communication options): 4000VDC 1min, Output & J8 (sense) - J1, J2, J3, J4, J5, J6, J7 & J9 (communication options): 2000VDC 1min, Output & J8 (sense) - Ground: 3280VDC 1min. Input - Ground: 2835VDC 1min. >60Mohm at 25°C, 70%RH, Output to Ground 500VDC.
1.3.Isolation resistance	---	IEC/EN61204-3 Industrial environment.
2.EMC standards (*18)	---	IEC/EN61204-3 Industrial environment, Annex H table H.1, FCC Part 15-A, VCCI-A.
2.1.Conducted emission	---	IEC/EN61204-3 Industrial environment, Annex H table H.3 and H.4, FCC Part 15-A, VCCI-A.
2.2.Radiated emission	---	

NOTES:
*1: Minimum voltage is guaranteed to maximum 0.15% of rated output voltage for 20V and 30V models; 0.1% of rated output voltage for 40V~1500V models.
*2: Minimum current is guaranteed to maximum 0.2% of rated output current.
*3: Typ. at Ta=25°C, rated output power.
*4: For cases where conformance to various safety standards (UL, IEC, etc…) is required, to be described as 190-240Vac (50/60Hz) for 3-Phase 200V models and 380~480Vac (50/60Hz) for 3-Phase 480V models.
*5: 3-Phase 200V models: At 200Vac input voltage, 3-Phase 480V: At 380Vac input voltage. With rated output power.
*6: Not including EMI filter inrush current, less than 0.2mS.
*7: 3-Phase 200V models: 170~265Vac, 3-Phase 480V models: 342~528Vac. Constant load.
*8: From No-Load to Full-Load, constant input voltage. Measured at the sensing point in Remote Sense.
*9: For 20V~150V models: Measured with JEITA RC-9131C (1:1) probe. For 200~1500V models: Measured with 100:1 probe.
*10: The maximum voltage on the power supply terminals must not exceed the rated voltage.
*11: From 10% to 90% of Rated Output Voltage at rated resistive load.
*12: From 90% to 10% of Rated Output Voltage.
*13: For load voltage change, equal to the unit voltage rating, constant input voltage.
*14: The ripple is measured at 10~100% of rated output voltage and rated output current. B.W 5Hz~1MHz.
*15: The Constant Current programming, readback and monitoring accuracy do not include the warm-up and Load regulation thermal drift.
*16: Measured at the sensing point.
*17: Max. ambient temperature for IEEE is 40°C.
*18: Signal and control ports interface cables length: Less than 3m, DC output power port cables length: Less than 30m.

Outline Drawing GENESYS™ GSPL15kW

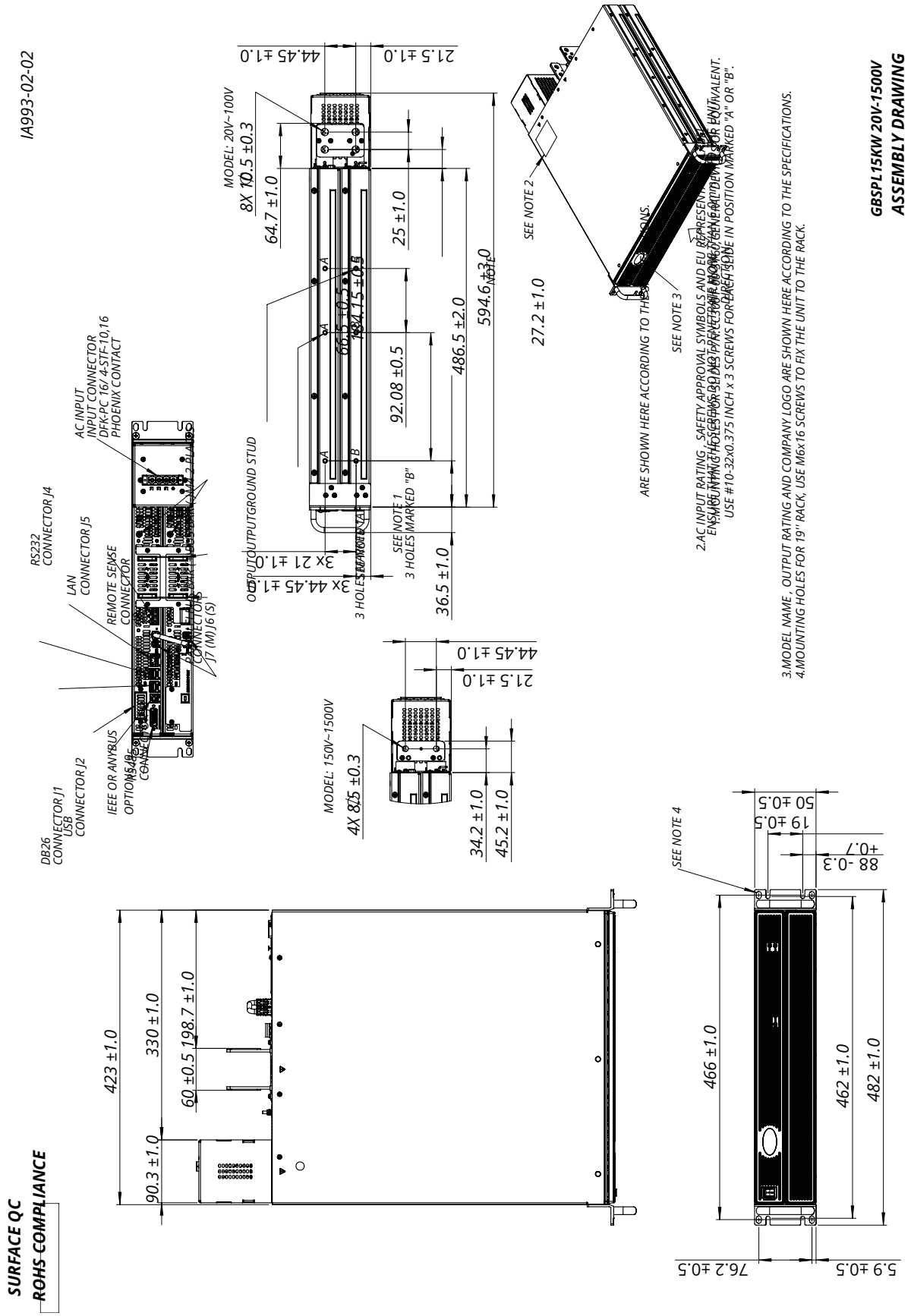


NOTE

1.MOUNTING HOLES FOR SLIDES P/N:CC3001-00-S160 GENERAL DEVICES OR EQUIVALENT. USE #10-32x0.375 INCH x 3 SCREWS FOR EACH SLIDE IN POSITION MARKED "A" OR "B". ENSURE THAT THE SCREWS DO NOT PENETRATE MORE THAN 6.0mm INTO THE UNIT.
2.AC INPUT RATING , SAFETY APPROVAL SYMBOLS AND EU REPRESENTATIVE LABEL ARE SHOWN HERE ACCORDING TO THE SPECIFICATIONS.
3.MODEL NAME, OUTPUT RATING,DIRECTION,COMPANY LOGO ARE SHOWN HERE ACCORDING TO THE SPECIFICATIONS.
4.MOUNTING HOLES FOR 19" RACK, USE M6x16 SCREWS TO FIX THE UNIT TO THE RACK.

ASSEMBLY DRAWING
GSPL15KW 20V-1500V

Outline Drawing GENESYS™ GSPL15kW



bmf system parts

GENESYS™ GSPL 22.5kW Series Specifications

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

OUTPUT RATING		20-1125	30-750	40-564	60-375	80-282	100-225	150-150	200-112.5	300-75	600-37.5	1000-22.5	1500-15
1.Rated output voltage (*1)	V	20	30	40	60	80	100	150	200	300	600	1000	1500
2.Rated output current (*2)	A	1125	750	564	375	282	225	150	112.5	75	37.5	22.5	15
3.Rated output power	W	22500	22500	22560	22500	22560	22500	22500	22500	22500	22500	22500	22500

INPUT CHARACTERISTICS	V	20	30	40	60	80	100	150	200	300	600	1000	1500
1.Input voltage/freq. 3 phase, 3 wire+ground (*4)	---	3-Phase, 200V models: 170~265Vac, 47~63Hz (Covers 200/230Vac).											
	---	3-Phase, 480V models: 342~528Vac, 47~63Hz (Covers 380/400/415/440/460/480Vac).											
2.Maximum Input current at 100% load — 3-Phase, 200V models:	---	75.5A @ 200Vac.											
2.Maximum Input current at 100% load — 3-Phase, 480V models:	---	40.5A @ 380Vac.											
3.Power Factor (Typ.)	---	0.94 @ 200/380Vac, rated output power.											
4.Efficiency (Typ.) (*5) (*3)	%	91	91	91	91	91	91	91	91	92	92	92	92
5.Inrush current (*6)	---	Less than 195A.											

CONSTANT VOLTAGE MODE	V	20	30	40	60	80	100	150	200	300	600	1000	1500
1.Max. Line regulation (*7)	---	0.01% of rated output voltage.											
2.Max. Load regulation (*8)	---	0.01% of rated output voltage +5mV.											
3.Ripple and noise (p-p, 20MHz) (*9)	mV	80	80	80	80	90	90	150	250	250	450	2000	2500
4.Ripple r.m.s. 5Hz~1MHz (*9)	mV	10	10	10	12	15	15	20	45	60	100	550	700
5.Temperature coefficient	---	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 & temperature.											
7.Warm-up drift	---	Less than 0.05% of rated output voltage +2mV over 30 minutes following power on.											
8.Remote sense compensation/wire (*10)	V	2	5										
9.Up-prog. response time (*11)	mS	30	30	30	50	50	50	50	50	50	100	150	200
10.Down-prog. response time — Full load (*12)	mS	50	80	80	80	100	100	100	100	100	100	100	100
10.Down-prog. response time — No load (*12)		600	600	1000	1000	1000	1500	2500	2500	3000	3000	3000	3000
11.Transient response time	---	Time for output voltage to recover within 1% of its rated output for 20~30V; 0.5% of its rated output for 40~1500V, for a load change 10~90% of rated output current Local sense. Output set point: 10~100%. Less than 1mS for models up to and including 100V. 2mS for models above 100V.											
12.Start-up delay	---	Less than 7Sec.											
13.Hold-up time	---	5mS Typical. Rated output power.											

CONSTANT CURRENT MODE	V	20	30	40	60	80	100	150	200	300	600	1000	1500
1.Max. Line regulation (*7)	---	0.05% of rated output current.											
2.Max. Load regulation (*13)	---	0.08% of rated output current.											
3.Ripple r.m.s. 5Hz~1MHz (*14)	mA	≤2700	≤1500	≤900	≤450	≤300	≤210	≤135		≤45	≤42	≤25	≤25
4.Temperature coefficient	---	20V~100V models: 100PPM/°C from rated output current, following 30 minutes warm-up.											
	---	150V~1500V models: 70PPM/°C from rated output current, following 30 minutes warm-up.											
5.Temperature stability		0.01% of rated Iout over 8hrs. interval following 30 minutes warm-up. Constant line, load & temperature.											
6.Warm-up drift		20V~100V models: Less than +/-0.25% of rated output current over 30 minutes following power on. 150V~1500V models: 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 (*15)	---	0~100%, 0~5V or 0~10V, user selectable. Accuracy and linearity: +/-0.4% of rated Iout.
3.Vout resistor programming	---	0~100%, 0~5/10KΩ full scale, user selectable. Accuracy and linearity: +/-0.5% of rated Vout.
4.Iout resistor programming (*15)	---	0~100%, 0~5/10KΩ full scale, user selectable. Accuracy and linearity: +/-0.5% of rated Iout.
5.Output voltage monitor	---	0~5V or 0~10V, user selectable. Accuracy: +/-0.5% of rated Vout.
6.Output current monitor (*15)	---	0~5V or 0~10V, user selectable. Accuracy: +/-0.5% of rated Iout.

SIGNALS AND CONTROLS (ISOLATED FROM THE OUTPUT)		
1.Power supply OK #1 signal 2.CV/CC signal	--- ---	Power supply output monitor. Open collector. Output On: On. Output Off: Off. Maximum Voltage: 30V. Maximum Sink Current: 10mA.
3.LOCAL/REMOTE Analog control 4.LOCAL/REMOTE Analog signal	- ---	CV/CC Monitor. Open collector. CC mode: On. CV mode: Off. Maximum Voltage: 30V. Maximum Sink Current: 10mA.
5.ENABLE/DISABLE signal	-	Enable/Disable analog programming control by electrical signal or dry contact. Remote: 0~0.6V or short. Local: 2~30V or open.
6.INTERLOCK (ILC) control	--	Analog programming control monitor signal. Open collector. Remote: On. Local: Off. Maximum Voltage: 30V. Maximum Sink Current: 10mA.
7.Programmed signals	- -	Enable/Disable PS output by electrical signal or dry contact. 0~0.6V or short, 2~30V or open. User selectable logic.
8.TRIGGER IN / TRIGGER OUT signals	--	Enable/Disable PS output by electrical signal or dry contact. Output ON: 0~0.6V or short. Output OFF: 2~30V or open.
	-- - -	Two open drain programmable signals. Maximum voltage 25V. Maximum sink current 100mA (shunted by 27V zener).
	--- ---	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 (500Ω 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 communication ports or front panel.
6.Slew rate control	---	Programmable Output rise and Output fall slew rate. Programming range: 0.0001~999.99 V/mS. or A/mS. Programming via communication ports or front panel.
7.Arbitrary waveforms	---	Profiles of up to 100 steps can be stored in 4 memory cells. Activation by command via communication ports or front panel.

PROGRAMMING AND READBACK (USB, LAN, RS232/485, Optional (*17) (*20) Interfaces)													
	V	20	30	40	60	80	100	150	200	300	600	1000	1500
1.Vout programming accuracy (*16)	---	0.05% of rated output voltage.											
2.Iout programming accuracy (*15)	---	0.1% of actual output current +0.2% of rated output current.											
3.Vout programming resolution	---	0.002% of rated output voltage.											
4.Iout programming resolution	---	0.002% of rated output current.											
5.Vout readback accuracy	---	0.1% of rated output voltage.											
6.Iout readback accuracy (*15)	---	0.2% of rated output current.											
7.Vout readback resolution	% of rated output voltage	0.006%	0.004% 0.002%	0.004% 0.003%	0.003% 0.004%	0.002% 0.005%	0.011%	0.008% 0.008%	0.006%	0.004% 0.002%	0.003% 0.004%	0.011%	0.008 % 0.008 %
8.Iout readback resolution	% of rated outputcurrent	0.01%					0.005%		0.01%			0.005%	

PROTECTIVE FUNCTIONS	V	20	30	40	60	80	100	150	200	300	600	1000	1500
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 Power Switch, by OUTPUT button, by rear panel or by communication.											
3.Over-voltage programming range	V	1~24	2~36	2~44.1	5~66.15	5~88.2	5~110.25	5~165.37	5~220.5	5~330.75	5~661.5	5~1212.75	5~1653.75
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.											
6.Over temperature protection	---	Preset by front panel or communication port.											
7.Output under voltage protection (UVP)	---	Shuts down the output. Auto recovery by autostart mode.											
		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, 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, 5KΩ/10KΩ 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/Optional communication interface, Trigger, Load/Store Cell.

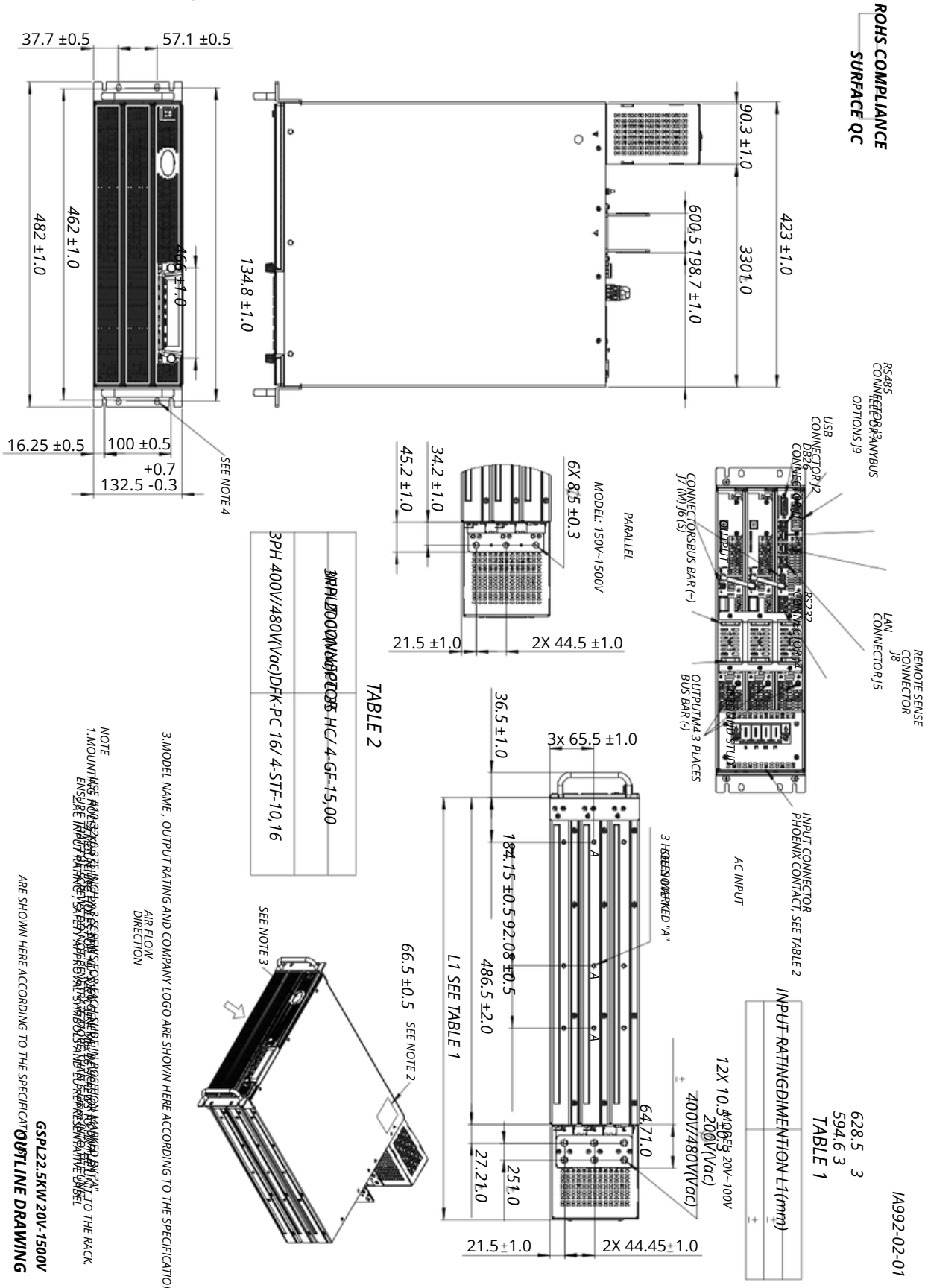
ENVIRONMENTAL CONDITIONS		
1.Operating temperature	---	0~50°C, 100% load.
2.Storage temperature	---	-30~85°C.
3.Operating humidity	---	20~90% RH (no condensation).
4.Storage humidity	---	10~95% RH (no condensation).
5.Altitude (*17)	---	Operating: 10000ft (3000m), output current derating 2%/100m or Ta derating 1°C/100m above 1500m. Non-operating: 40000ft (12000m).

MECHANICAL		
1.Cooling	---	Forced air cooling by internal fans. Airflow direction: From front panel to power supply rear.
2.Weight	Kg	Less than 25.
3.Dimensions (WxHxD)	mm	W: 423, H: 132.5, D: 628.5. Refer to outline drawing.
4.Vibration	---	MIL-810G, method 514.6, Procedure I, test condition Annex C - 2.1.3.1
5.Shock	---	Less than 20G, half sine, 11mS. Unit is unpacked.

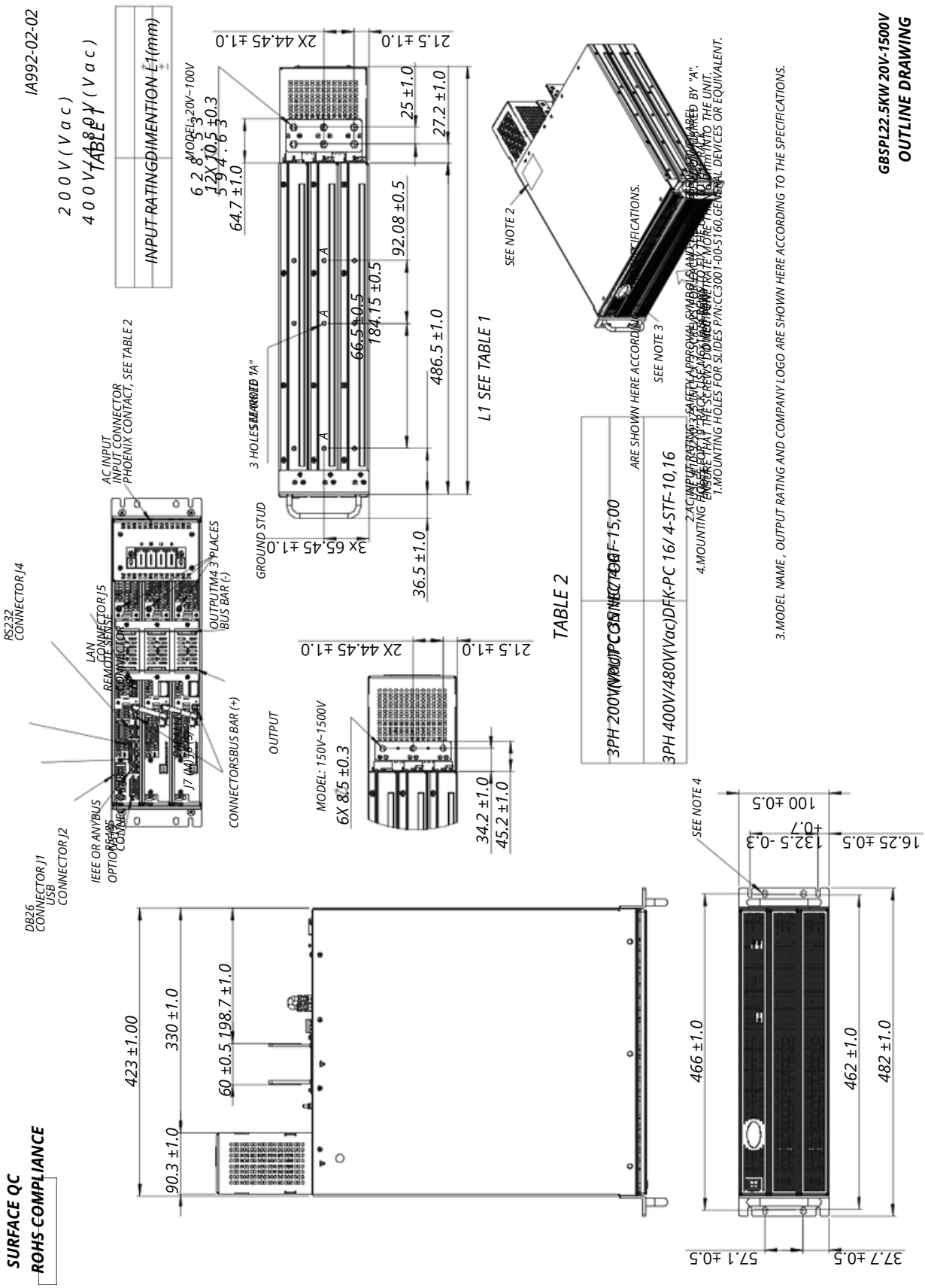
SAFETY/EMC		
1.Safety standards	---	UL61010-1, CSA22.2 No.61010-1, IEC61010-1, EN61010-1.
1.1.Interface classification	---	Vout≤50V Models: Output, J1, J2, J3, J4, J5, J6, J7, J8 (sense) & J9 (communication options) are Non Hazardous. 60≤Vout≤1500V Models: Output & J8 (sense) are hazardous, J1, J2, J3, J4, J5, J6, J7 & J9 (communication options) are Non Hazardous.
1.2.Withstand voltage	---	Vout≤50V Models: Input – Output & J8 (sense), J1, J2, J3, J4, J5, J6, J7 & J9 (communication options): 4242VDC 1min, Input - Ground: 2835VDC 1min. 60V≤Vout≤100V Models: Input – Output & J8 (sense), J1, J2, J3, J4, J5, J6, J7 & J9 (communication options): 4242VDC 1min, Output & J8 (sense) - J1, J2, J3, J4, J5, J6, J7 & J9 (communication options): 850VDC 1min, Output & J8 (sense) - Ground: 1500VDC 1min, Input - Ground: 2835VDC 1min. 100V<Vout≤600V Models: Input – Output & J8 (sense), J1, J2, J3, J4, J5, J6, J7 and J9 (communication options): 4242VDC 1min, Output & J8 (sense) - J1, J2, J3, J4, J5, J6, J7 & J9 (communication options): 1275VDC 1min, Output & J8 (sense) - Ground: 2500VDC 1min. Input - Ground: 2835VDC 1min. 1000V<Vout≤1500V Models: Input – Output & J8 (sense), J1, J2, J3, J4, J5, J6, J7 and J9 (communication options): 4000VDC 1min, Output & J8 (sense) - J1, J2, J3, J4, J5, J6, J7 & J9 (communication options): 2000VDC 1min, Output & J8 (sense) - Ground: 3280VDC 1min. Input - Ground: 2835VDC 1min.
1.3.Isolation resistance	---	>60Mohm at 25°C, 70%RH, Output to Ground 500VDC.
2.EMC standards (*18)	---	IEC/EN61204-3 Industrial environment.
2.1.Conducted emission	---	IEC/EN61204-3 Industrial environment, Annex H table H.1, FCC Part 15-A, VCCI-A.
2.2.Radiated emission	---	IEC/EN61204-3 Industrial environment, Annex H table H.3 and H.4, FCC Part 15-A, VCCI-A.

NOTES:
**: Coming soon
*1: Minimum voltage is guaranteed to maximum 0.15% of rated output voltage for 20V and 30V models; 0.1% of rated output voltage for 40V~1500V models.
*2: Minimum current is guaranteed to maximum 0.2% of rated output current.
*3 Typ. at Ta=25°C, rated output power.
*4: For cases where conformance to various safety standards (UL, IEC, etc…) is required, to be described as 190-240Vac (50/60Hz) for 3-Phase 200V models and 380~480Vac (50/60Hz) for 3-Phase 480V models.
*5: 3-Phase 200V models: At 200Vac input voltage, 3-Phase 480V: At 380Vac input voltage. With rated output power.
*6: Not including EMI filter inrush current, less than 0.2mS.
*7: 3-Phase 200V models: 170~265Vac, 3-Phase 480V models: 342~528Vac. Constant load.
*8: From No-Load to Full-Load, constant input voltage. Measured at the sensing point in Remote Sense.
*9: For 20V~150V models: Measured with JEITA RC-9131C (1:1) probe. For 200~1500V models: Measured with 100:1 probe.
*10: The maximum voltage on the power supply terminals must not exceed the rated voltage.
*11: From 10% to 90% of Rated Output Voltage at rated resistive load.
*12: From 90% to 10% of Rated Output Voltage.
*13: For load voltage change, equal to the unit voltage rating, constant input voltage.
*14:The ripple is measured at 10~100% of rated output voltage and rated output current. B.W 5Hz~1MHz.
*15: The Constant Current programming, readback and monitoring accuracy do not include the warm-up and Load regulation thermal drift.
*16: Measured at the sensing point.
*17 Max. ambient temperature for IEEE is 40°C.
*18: Signal and control ports interface cables length: Less than 3m, DC output power port cables length: Less than 30m.

Outline Drawing GENESYS™ GSPL22.5kW



Outline Drawing GENESYS™ GSPL22.5kW

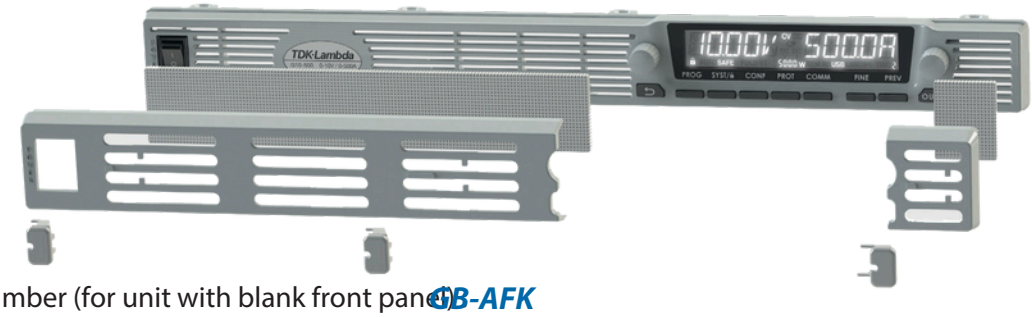


Front Panel Air Filter Assembly

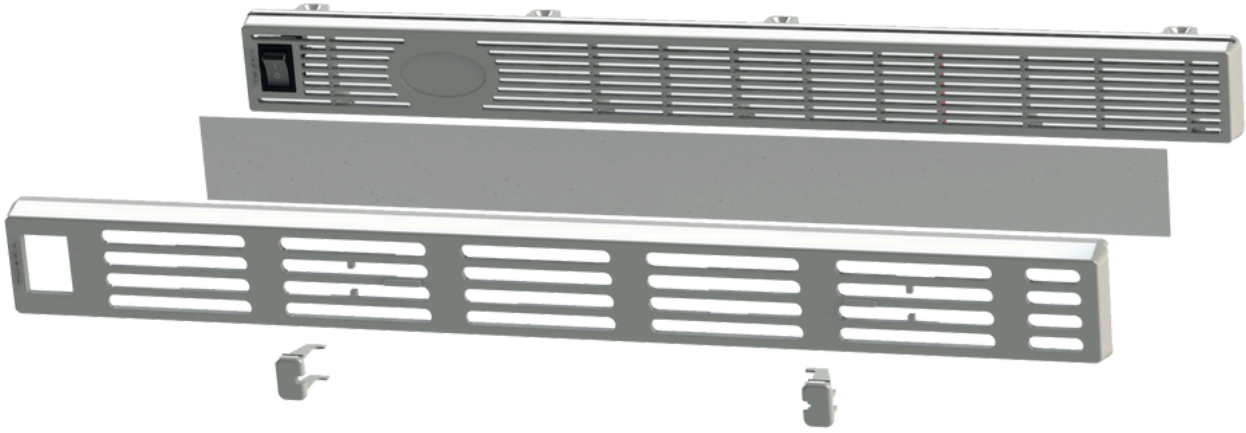
Front panel dust cover is available for dusty air environment applications

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

Accessories

1. Front Panel dust filter / Field installation kit:

Technical Specifications: Unit with Air Filter Assembly Installed

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

Filter Foam Technical Specifications

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

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)

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

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

Contactgegevens

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