产品手册

仪器型号：TDK-Lambda GSPS45kW - 90kW系列可编程电源

西安安泰测试科技有限公司

仪器维修|租赁|销售|测试

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45kW - 90kW, 20 to 1500V Programmable Power Systems

https://product.tdk.com/en/power/gsps
https://www.emea.lambda.tdk.com/uk/products/gsps-high-power-systems

Medical Industrial Test COMM Renewable

The 19" rack mount 20U high configurable GSPS programmable power systems offers power levels from 45kW to 90kW, output voltages from 0-20 to 0-1,500V and currents of up to 4,500A. The units can operate in constant current, constant voltage or constant power modes with multiple remote programming methods including built-in LAN, USB, RS232 & RS485 and optional Optional EtherCAT, Modbus-TCP, IEEE (488.2) and IS420 interfaces.. Like other models in the GENESYS+ series, they feature a multi-functional front panel display, last setting memory, user selectable Auto-Start, Safe Start, and an arbitrary waveform generator with auto-trigger capability. Up to to 100 steps can be stored into four internal memory cells. The GUI software provides a "virtual front panel" for programing or monitoring units and the Realtime Graph and Waveform creator can store or load sequences. The product is backed with a five year warranty.

Model Selector

Model Note see "how to order" section for part number configuration	Voltage Adjustment Range (V)(*1)	Current Adjustment Range (A)(*2)	Maximum Power (W)	Efficiency (%) At 380Vac 3-Phase (*3)(*5)
GSPS20-4500	0 - 20	0 - 4500	90,000	89
GSPS30-3000	0 - 30	0 - 3000	90,000	89
GSPS40-2256	0 - 40	0 - 2256	90,240	89
GSPS60-1500	0 - 60	0 - 1500	90,000	90
GSPS80-1128	0 - 80	0 - 1128	90,240	90
GSPS100-900	0 - 100	0 - 900	90,000	90
GSPS150-600	0 - 150	0 - 600	90,000	90
GSPS200-450	0 - 200	0 - 450	90,000	90
GSPS300-300	0 - 300	0 - 300	90,000	90
GSPS600-150	0 - 600	0 - 150	90,000	90
GSPS1000-45	0 - 1000	0 - 45	45,000	90
GSPS1000-67.5	0 - 1000	0 - 67.5	67,500	90
GSPS1000-90	0 - 1000	0 - 90	90,000	90
GSPS1500-30	0 - 1500	0 - 30	45,000	90
GSPS1500-45	0 - 1500	0 - 45	67,500	90
GSPS1500-60	0 - 1500	0 - 60	90,000	90

How to order

G	SPS	-1500	- 60	- IEEE	- 3P480	- M
G = Front panel display fitted GB = No front panel display		Max. Output Voltage	Max. Current		AC Input option - 3P480 (Three Phase 342-528Vac)	Printed User Manual

Interface Options	
Standard: LAN, USB, RS-232/485, Isolated Analog Program/Monitor	
IEEE (488.2 & SCPI compliant with Multi-Drop capability installed)	- IEEE
Modbus-TCP	- MDBS
EtherCAT	- ECAT
Isolated Analog Programming (4-20mA)	- IS420

Specification

Model		GSPS45kW - 90kW Series
Input		
Input Voltage Range (Operating) (*4)	Vac	3-phase 342 - 528 (Covers 380, 400, 415, 440, 460 and 480V nominal inputs)
Nominal Input Voltage Range	Vac	380 - 480 (Note: Safety certified for 342 - 528Vac)
Input Frequency	Hz	47 - 63 (Note: Safety certified for 50/60Hz only)
Input Current (380Vac)	A	162 (max)
Inrush Current at 200Vac (typ) (Cold Start)	A	GSPS45kW: <390, GSPS67.5kW: 585, GSPS 90kW: 780
Leakage Current (380Vac)	mA	Contact Technical Support
Power Factor (380ac)	-	0.94
Hold Up Time (typical at 100% load)	ms	5
Efficiency	-	See Model Selector Table

Specification

Model		GSPS45kW - 90kW Series											
Constant Voltage Mode	**Vout**	**20**	**30**	**40**	**60**	**80**	**100**	**150**	**200**	**300**	**600**	**1000**	**1500**
Maximum Line Regulation (*6)	%	0.01 of rated output voltage											
Max. Load regulation (*7)	%	0.01 of rated output voltage +5mV											
Temperature coefficient	ppm/°C	50 from rated output voltage, following 30 minutes warm-up											
Temperature stability	-	0.01% of rated Vout over an 8 hour interval following 30 minutes warm-up. Constant line, load & temperature											
Warm-up drift	-	Less than 0.05% of rated output voltage +2mV over 30 minutes following power on											
Remote sense compensation/wire (*8)	V	2	5										
Up-prog. response time (*9)	ms	30	30	30	50	50	50	50	50	50	100	150	200
Down-prog. Response time full load (*10)	ms	50	80	80	80	100	100	100	100	100	100	100	100
Down-prog. Response time no load (*10)	ms	600	600	1000	1000	1000	1500	2500	2500	3000	3000	3000	3000
Transient response time (local sense) (load change 10-90% of rated output current). Output set point: 10-100%.	-	Time for output voltage to recover within 1% of its rated output for 20 to 30V models, 0.5% of it's rated output for 40 to 1500V. For a output set point of 10-100%. Less than 1ms for models up to and including 100V, 2ms for models above 100V. Less than 1ms for models up to and including 100V, 2ms for models above 100V.											
Constant Current Mode	**Vout**	**20**	**30**	**40**	**60**	**80**	**100**	**150**	**200**	**300**	**600**	**1000**	**1500**
Maximum Line Regulation (*6)	-	0.05% of rated output current											
Max. Load regulation (*11)	-	0.08% of rated output current											
Temperature coefficient	ppm/°C	20-100V models: 100, 150-1500V models: 70. From rated output current, following 30 minutes warm-up											
Temperature stability	-	0.01% of rated Iout over an 8 hour interval following 30 minutes warm-up. Constant line, load & temperature											
Warm-up drift	-	20-100V models: Less than ±0.25% of rated output current over 30 minutes following power on, 150-1500V models: Less than ±0.15%											
Analog programming/monitoring. (Isolated from the output)													
Vout voltage programming	-	0-100%, 0-5V or 0-10V, user selectable. Accuracy and linearity: ±0.15% of rated Vout.											
Iout voltage programming (*13)	-	0-100%, 0-5V or 0-10V, user selectable. Accuracy and linearity: ±0.4% of rated Iout.											
Vout resistor programming	-	0-100%, 0-5/10kΩ full scale, user selectable. Accuracy and linearity: ±0.5% of rated Vout.											
Iout resistor programming (*13)	-	0-100%, 0-5/10kΩ full scale, user selectable. Accuracy and linearity: ±0.5% of rated Vout.											
Output voltage monitor (*12)	-	0-5V or 0-10V, user selectable. Accuracy: ±0.5% of rated Vout.											
Output current monitor (*12) (*13)	-	0-5V or 0-10V, user selectable. Accuracy: ±0.5% of rated Iout.											

Notes
See website for detailed specifications, test methods and installation manual
*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 40~1500V 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 380~480Vac (50/60Hz) for 3-Phase 480V models.
*5:3-Phase 480V: At 380Vac input voltage. With rated output power.
*6:3-Phase 480V models: 342~528Vac. Constant load.
*7:From No-Load to Full-Load, constant input voltage. Measured at the sensing point in Remote Sense.
*8:The maximum voltage on the power supply terminals must not exceed the rated voltage.
*9:From 10% to 90% of Rated Output Voltage at rated resistive load.
*10:From 90% to 10% of Rated Output Voltage.
*11:For load voltage change, equal to the unit voltage rating, constant input voltage.
*12:For steady state only.
*13:The Constant Current programming, readback and monitoring accuracy do not include the warm-up and Load regulation thermal drift.
*14:Measured at the sensing point.
*15:Max. ambient temperature for IEEE is 40°C.
*16:Signal and control ports interface cables length: Less than 3m, DC output power port cables length: Less than 30m.
*17:EMC specs based on GSPL22.5kW series.

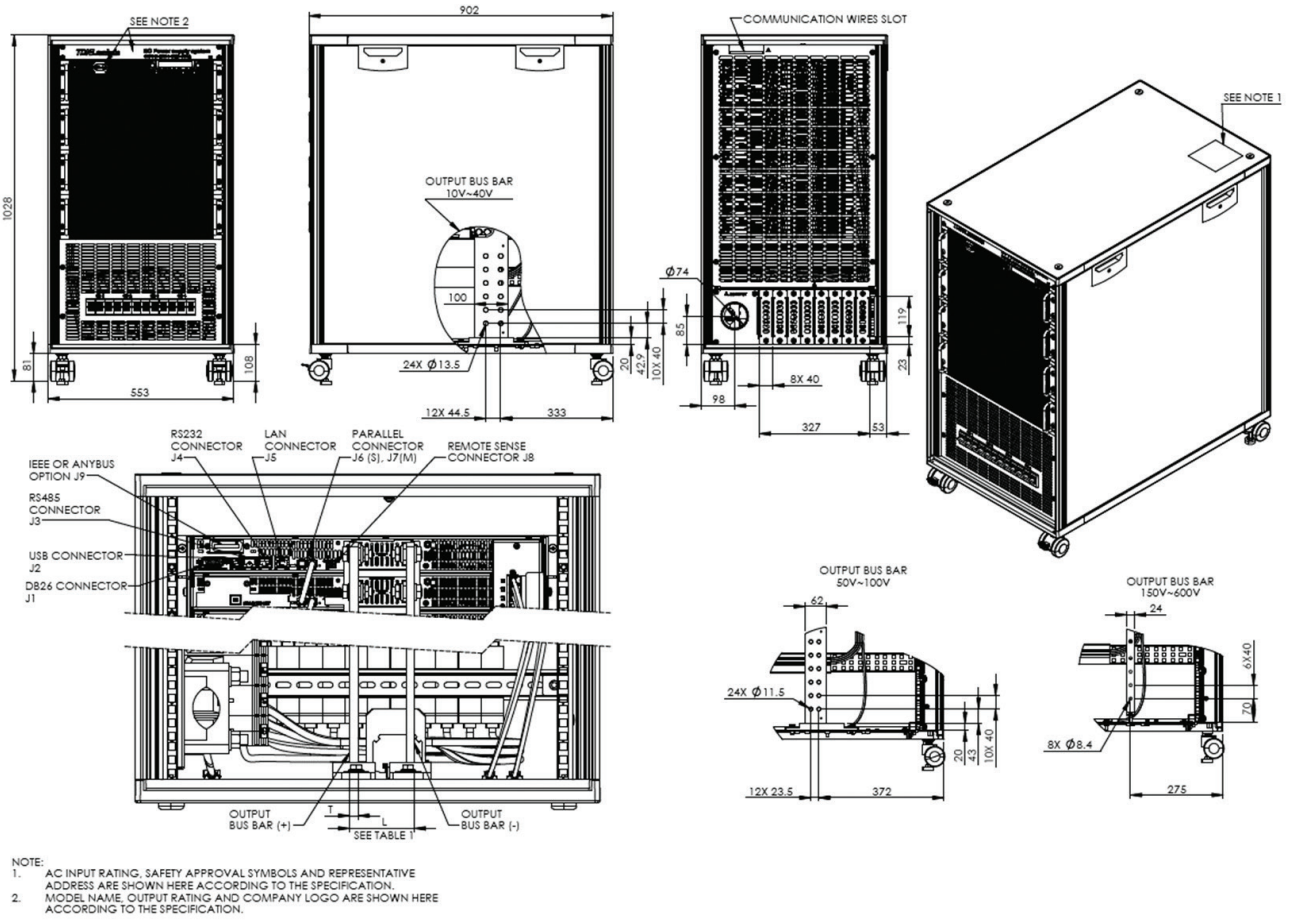
Specification

Model		GSPS45kW - 90kW Series											
Signals and Controls. (Isolated from the output)													
Power supply OK #1 signal	-	Power supply output monitor. Open collector. Output On: On. Output Off: Off. Maximum Voltage: 30V. Maximum Sink Current: 10mA.											
CV/CC signal	-	CV/CC Monitor. Open collector. CC mode: On. CV mode: Off. Maximum Voltage: 30V. Maximum Sink Current: 10mA											
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.											
LOCAL/REMOTE Analog signal	-	Analog programming control monitor signal. Open collector. Remote: On. Local: Off. Maximum Voltage: 30V. Maximum Sink Current: 10mA.											
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.											
INTERLOCK (ILC) control	-	Enable/Disable PS output by electrical signal or dry contact. Output ON: 0-0.6V or short. Output OFF: 2-30V or open.											
Programmed signals	-	Two open drain programmable signals. Maximum voltage 25V. Maximum sink current 100mA (shunted by a 27V Zener)											
TRIGGER IN / TRIGGER OUT signals	-	Max. low level input voltage = 0.8V. Min. high level input voltage = 2.5V. Max. high level input = 5V positive edge trigger: tw = 10µs min. Tr,Tf = 1µs max. Min delay between 2 pulses 1ms.											
DAISY_IN/SO control signal	-	By electrical voltage: 0-0.6V/2-30V or dry contact											
DAISY_OUT/PS_OK #2 signal	-	4-5V = OK, 0V (500Ω impedance) = Fail											
Functions and Features													
Parallel operation	-	Consult with manufacturer											
Constant power control	-	Limits the output power to a programmed value. Programming via the communication ports or the front panel											
Output resistance control	-	Emulates series resistance. Resistance range: 1-1000mΩ. Programming via communication ports or front panel											
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											
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 & Readback (USB, RS232/485, Optional (*15) Interfaces)													
Vout		20	30	40	60	80	100	150	200	300	600	1000	1500
Vout programming accuracy (*14)	-	0.05% of rated output voltage											
Iout programming accuracy (*13)	-	0.3% of rated output current											
Vout programming resolution	-	0.002% of rated output voltage											
Iout programming resolution	-	0.002% of rated output current											
Vout readback accuracy	-	0.1% of rated output voltage											
Iout readback accuracy (*13)	-	0.2% of rated output current											
Vout readback resolution	% of rated Vout	0.006%	0.004%	0.004%	0.003%	0.002%	0.011%	0.080%	0.006%	0.004%	0.003%	0.011%	0.008%
Iout readback resolution	% of rated Iout	0.002%	0.002%	0.002%	0.002%	0.002%	0.002%	0.002%	0.003%	0.002%	0.002%	0.002%	0.002%
Protective Functions													
Vout		20	30	40	60	80	100	150	200	300	600	1000	1500
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. Preset by user. Reset by AC input recycle in autostart mode, by Power Switch, by OUTPUT button, by rear panel or by communication											
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											
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	5-1102.5	5-1653.75
Over-voltage programming accuracy	%	±1% of rated output voltage											
Output under voltage limit (UVL)	-	Prevents from adjusting Vout below limit. Does not apply in analog programming.											
		Preset by front panel or communication port.											
Over temperature protection	-	Shuts down the output. Auto recovery by autostart mode.											
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											

Specification

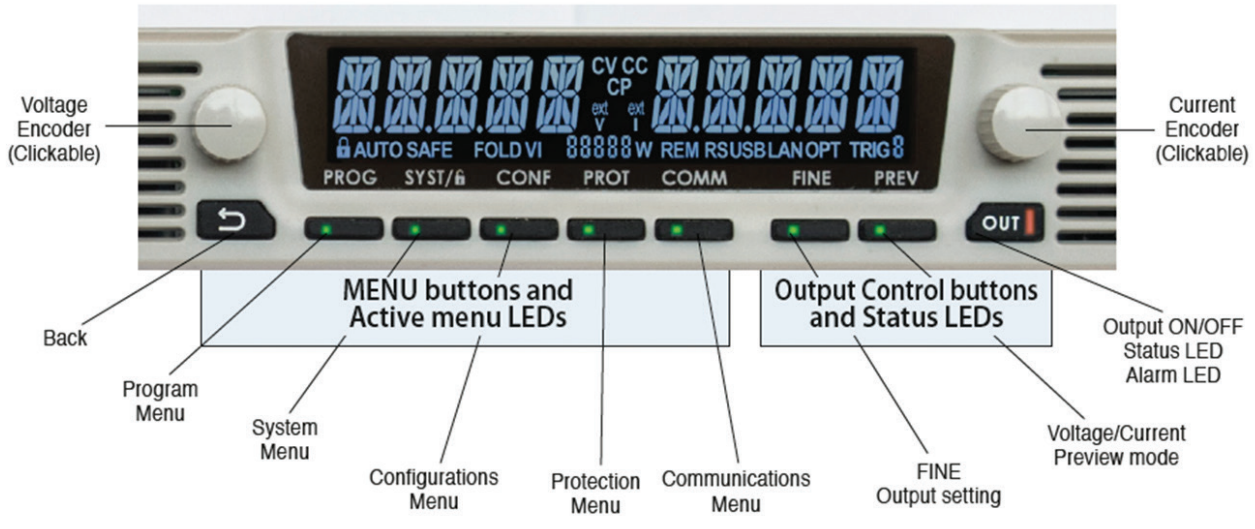
Model		GSPS45kW - 90kW Series
Front Panel		
Control functions	-	Multiple options with 2 Encoders.
	-	Vout/Iout/Power Limit manual adjust
	-	OVP/UVL/UVP manual adjust
	-	Protection Functions - OVP, UVL, UVP, Foldback, OCL, ENA, ILC.
	-	Communication Functions - Selection of LAN, RS232, RS485, USB or Optional 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
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.
Front Panel Buttons Indications	-	OUTPUT ON, ALARM, PREVIEW, FINE, COMMUNICATION, PROTECTION, CONFIGURATION, SYSTEM, SEQUENCER.
Front Panel Display Indications	-	Voltage, Current, Power, CV, CC, CP, External Voltage, External Current, Address, LFP Autostart, Safe-start, Foldback V/I, Remote (communication), RS/USB/LAN/Optional communication interface, Trigger, Load/Store Cell
Circuit breakers	-	The AC supply is protected by 4 x 80A circuit breakers, accessible on the front panel of the cabinet.
Environmental Conditions		
Operating temperature	°C	0 - 50, 100% load.
Storage temperature	°C	-25 - 65
Humidity (Non condensing)	%RH	20 - 90 operating, 10 - 95 storage
Altitude (*15)	m	Operating: 3,000. Derate output current by 2%/100m or derate ambient temperature by 1°C/100m above 2,000. Non-operating: 12,000m.
Mechanical		
Cooling		Forced air cooling by power supply internal fans. Airflow direction from cabinet front panel to rear.
Weight	kg	< 200
Dimensions (WxHxD)	mm	553 x 1028 x 902 (without castors height is 947)
Vibration (Package transportation)	-	ISTA 1H: 2014, Method: ASTM D4728 Random vibration test.
Shock & Drop (Package transportation)	-	ISTA 1H: 2014, Drop test Method: ASTM D5276 free fall; Rotation edge drop test: ASTM D6179 Rotational drop.
Safety and EMC		
Safety Certifications and Markings	-	IEC/EN61010-1, CE Mark and UKCA Mark
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.
Withstand voltage	Vdc	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.
EMC standards (*16) (*17)	-	IEC/EN61204-3 Industrial environment
Conducted emission (*17)	-	IEC/EN61204-3 Industrial environment, Annex H table H.1, FCC Part 15-A, VCCI-A.
Radiated emission (*17)	-	IEC/EN61204-3 Industrial environment, Annex H table H.3 and H.4, FCC Part 15-A, VCCI-A.

Outline Drawing

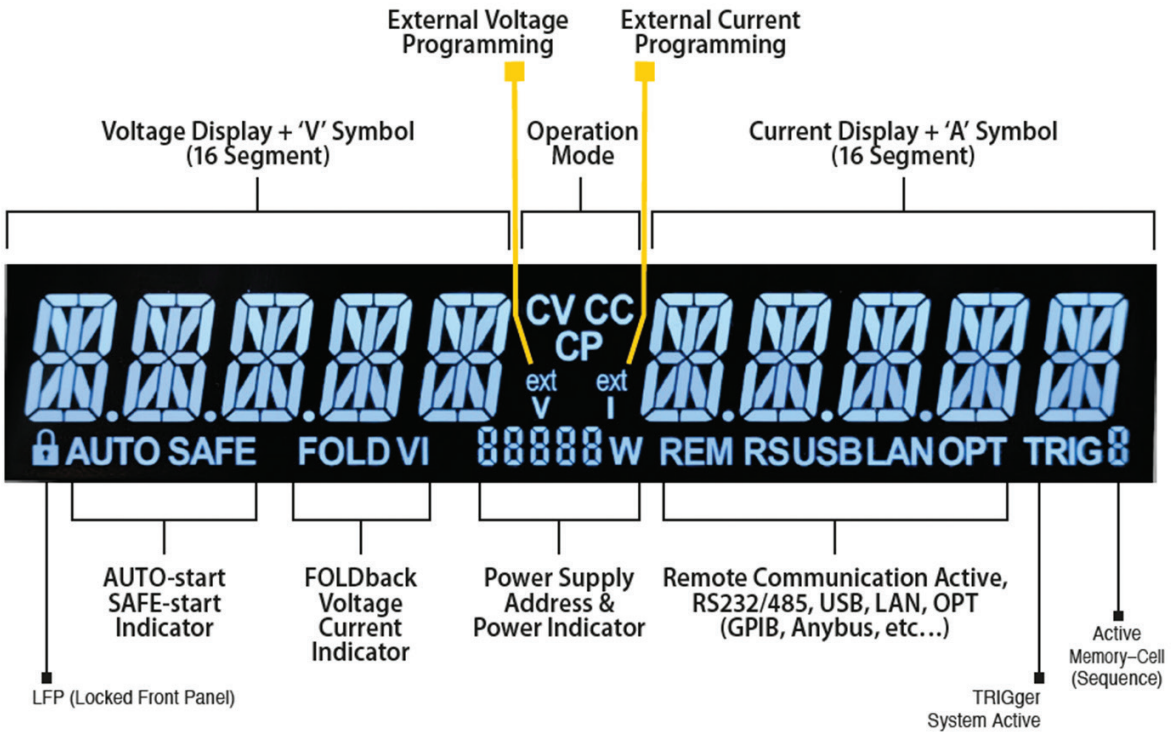


NOTE:
1. AC INPUT RATING, SAFETY APPROVAL SYMBOLS AND REPRESENTATIVE ADDRESS ARE SHOWN HERE ACCORDING TO THE SPECIFICATION.
2. MODEL NAME, OUTPUT RATING AND COMPANY LOGO ARE SHOWN HERE ACCORDING TO THE SPECIFICATION.

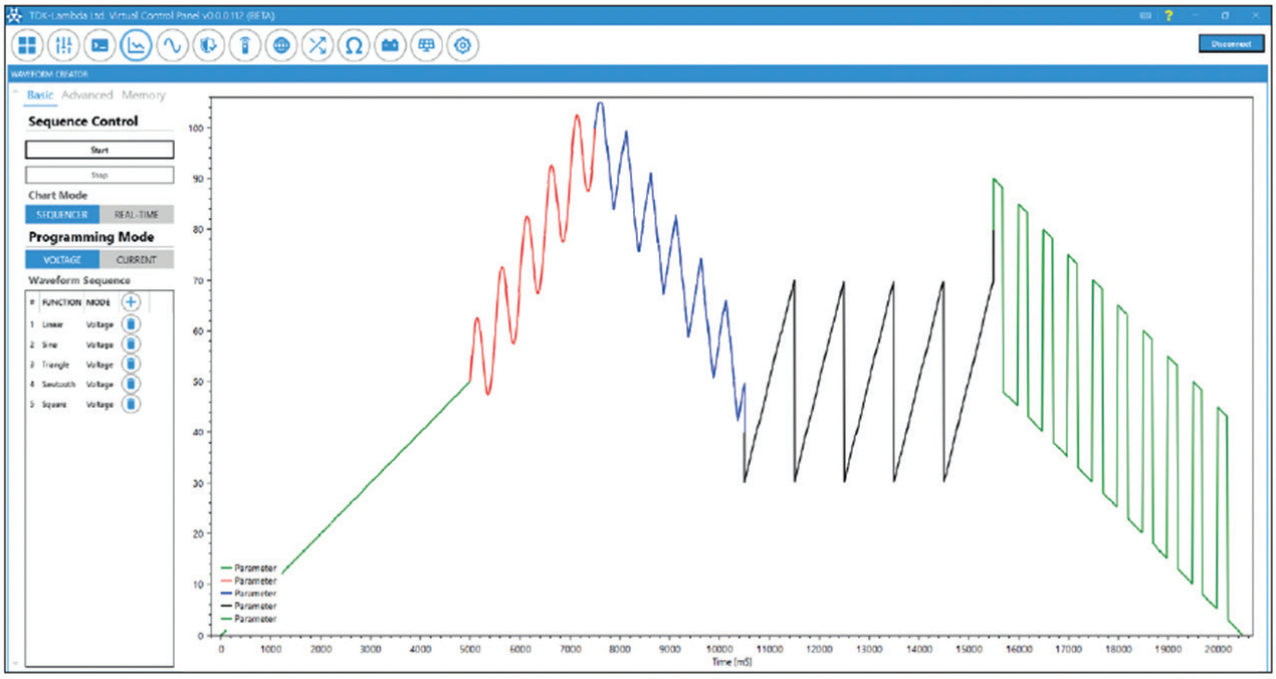
Front Panel Display MENU/CONTROL Buttons



Front Panel Display MENU/CONTROL Buttons



GUI Waveform Profile Generator



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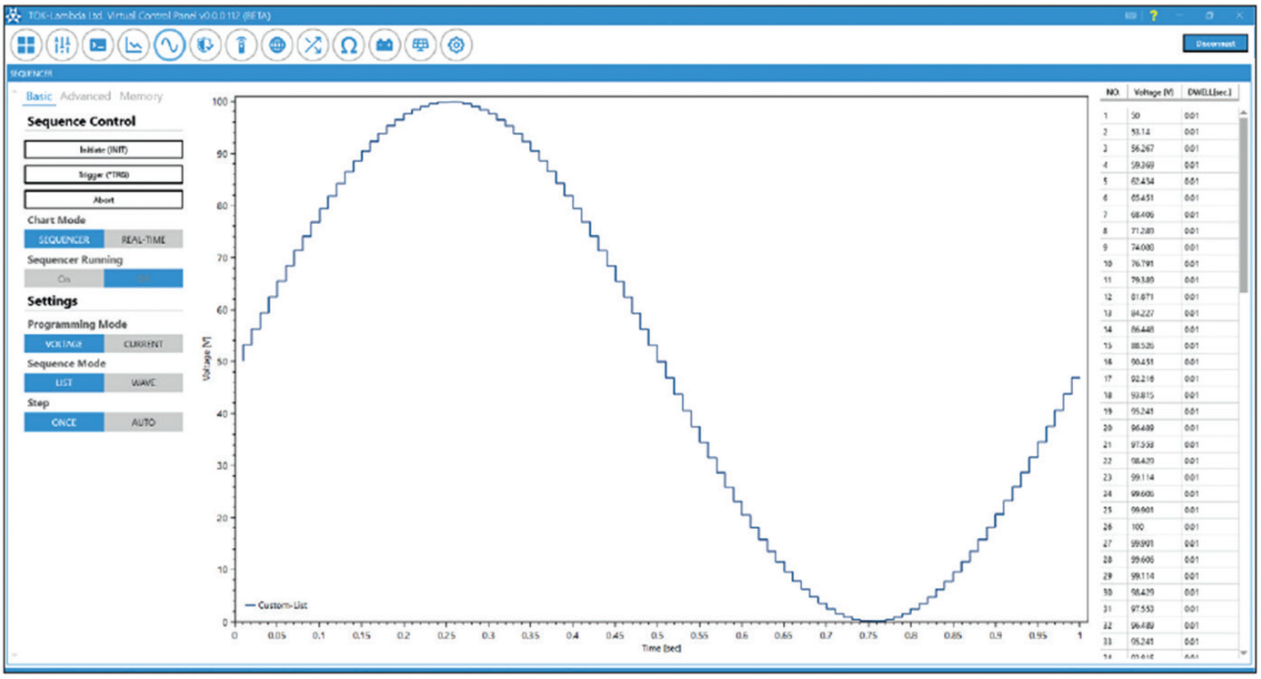

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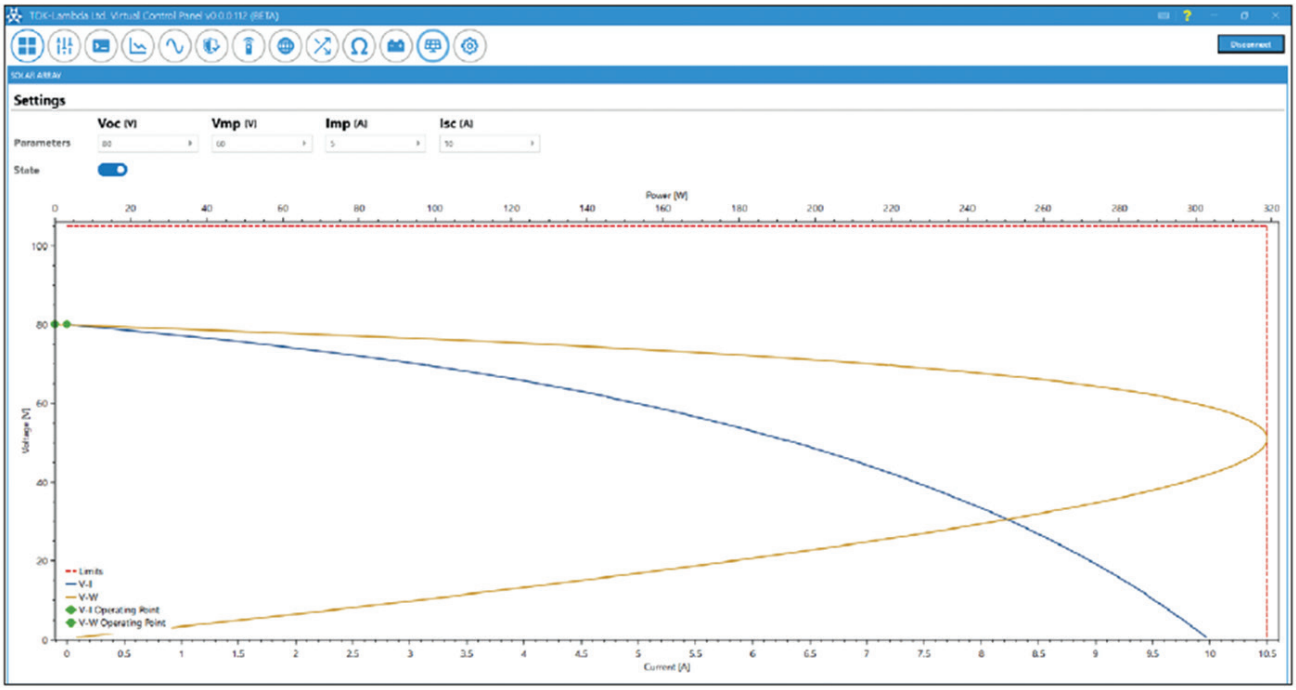

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