

GPP-3060/6030/3650

Triple-Channel Programmable DC Power Supply

FEATURES

- 4.3"TFT LCD Display
- Setting Resolution: 1mV / 0.1mA; Read Back Resolution: 0.1mV/0.1mA
- Low Ripple Noise: ≤1mVrms/≤2mArms
- Transient Response Time: $\leq 100 \mu s$
- Load Function (CC, CV, CR mode)
- Tracking Series and Parallel Function without Additional External Wiring
- Utilizing Hardware to Realize Over Voltage Protection/ Over Current Protection/Over Temperature Protection
- Delay Function/Output Monitoring Function/Output Recorder Function
- Supports Setting Value, Measurement Value and Output Waveform Display
- Sequential Output Function and Built-in 8 Template Waveforms
- The Output Recorder Function Records the Output Voltage & Current Parameters with a Minimum Recording Interval of 1 Second
- Provides 10 Sets of Memory for Each Sequence/Delay/Recorder/ Panel Setting Condition
- Supports a USB (Type A) Output Terminal
- Intelligent Temperature Control Fan Effectively Reduces Noise
- Standard: RS-232, USB, Ext I/O
 Optional(manufacturer installed only): LAN, LAN+GPIB



Meet Your Necessity of High Resolution in Multi-Channel Measurement

GPP-3060 and GPP-6030 triple-channel programmable DC power supplies are extension models of the GPP-X323 series. The maximum output power of these three models is 385W. GPP-3650 supports CH1/CH2: $0 \sim 36V / 0 \sim 5A$ output; CH3 supports 1.8V, 2.5V, 3.3V, 5.0V / 5A. GPP-3060 supports CH1/CH2: $0 \sim 30V / 0 \sim 6A$ output; GPP-6030 supports CH1/CH2: $0 \sim 60V / 0 \sim 3A$ output; CH3 of both models supports 1.8V, 2.5V, 3.3V, 5.0V/5A.

GPP-3650, GPP-3060 and GPP-6030 inherit the high program resolution (1mV/0.1mA) and read back resolution (0.1mV/0.1mA) of the GPP series with low-ripple noise characteristics ≤ 1 mVrms/ ≤ 2 mArms and ≤ 100 µs output transient recovery ability. An independent output on-off switch is provided for each channel.

For series and parallel applications of CH1 and CH2, the tracking function can automatically switch to series or parallel output without additional external wiring. Multiple display modes including single channel or multi-channel setting value, measurement value and waveform display to collocate with the built-in output monitoring function allow users to set the monitoring conditions according to their needs so as to generate an alarm or stop the output during the measurement process in order to stop the measurement and protect the customer's DUT. The output recorder function can record the voltage/current of the output process in the internal memory, and save the result as a (*.REC) or (*.CSV) file, and then save it to a USB flash drive. The unique load function of the GPP series can arbitrarily set CH1/CH2 as power supply or load function. For example, one channel is set as power output, and the other channel is set as load function to consume the power of the DUT to satisfy simple battery charging and discharging or load characteristic test by a single power supply. The sequence output function allows users to edit the power output waveforms by themselves, and also allows users to set the sequential constant voltage (CV) or constant current (CC) load waveforms such as serial power output or dynamic load simulation test. Channel 3 (CH3) incorporates 3A USB (Type A) output terminal, which can be used for USB charging test.

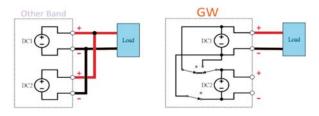
Pertaining to measurement protections, OVP/OCP/OPP/OTP protection functions are provided. The protection mechanism of OVP/OCP/OTP is implemented by hardware circuits, which has a faster response time to protect equipment or DUT while comparing with competitors who use software for protection. The OVP and OCP functions allow users to set the protection action point according to the conditions of the DUT. OPP only provides protection during the operation of the load function.

In addition, GPP-3650, GPP-3060 and GPP-6030 incorporate terminal output on the rear panel, and include a voltage remote sensing terminal. Users can choose front panel or rear panel terminal output, which is convenient for stand-alone or rack operation. Output value setting and Sequence/ The Delay/Recorder functions provide 10 sets of internal memory, which can be uploaded/stored by a USB flash drive.



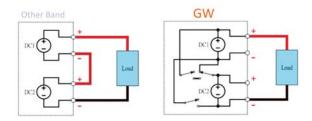


A. TRACKING SERIES AND PARALLEL FUNCTION



Output in Parallel Connections

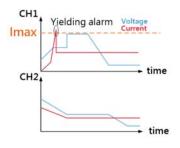
For series and parallel applications of CH1 and CH2, the tracking function of the GPP-Series utilizes the internal circuit to automatically switch the output to serial or parallel output without additional external wiring, providing users with convenience not only in operating procedures but also a more stable output.



Output in Series Connections

The tracking function design of other brands requires additional external wiring connections for the output in series or parallel. However, excessively long, thin or inconsistent external wiring may cause inaccurate voltage or current output.

B. OUTPUT MONITORING FUNCTION



Output Monitoring

The output monitoring function allows users to set the monitoring conditions according to the requirements, including the voltage, current, and power greater than or less than the setting and the logical relationship of AND, OR. It also allows users to sound

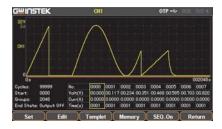


Monitoring Function Setting

alarms or stop the output during the measurement process, stop the measurement, and protect the customer's DUT. Both Channel could be monitored simultaneously as well.

* Channel 3 does not support the output monitoring function.

C. SEQUENCE OUTPUT FUNCTION



Sequence Output Waveform

The GPP-Series provides a sequential output function on Channel 1 and Channel 2. This function not only allows users to edit the power output waveform, but also allows users to set the sequential constant voltage (CV) or constant current (CC) load waveform, i.e. a serial power output or a simulation test of a dynamic load. The maximum settable points for sequence function are 2048, and interval range of each point can be set from 1 to 300 seconds. In order to simplify the setting of waveform editing, the GPP-Series has 8 built-in Templet waveforms in sequence output function for

users to directly apply for output, including Sine, Pulse, Ramp, Stair Up, Stair Dn, Stair UpDn, Exp Rise, and Exp Fall waveforms.

The editing data of the sequence output can be stored in the internal 10 sets of the memory, or to be saved by USB flash drive (Save/Recall) and saved as *.SEQ or *.CSV file; The stored *.CSV can be exported into Excel for editing and analysis. The final edited file can be imported to (Save/Recall) of the power supply using a USB flash drive.

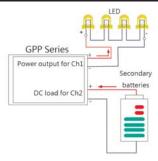
D. HARDWARE PROTECTION FUNCTION(OVP/OCP/OTP)

Hardware is utilized to realize the OVP function with fast response time is 45 ms.

OVP Trigger

The protection mechanism of OVP/OCP/OTP is implemented by hardware circuit, which has the advantage of faster response time than competitors who use software to achieve protection. When it is detected that the voltage of the DUT exceeds the setting value of the OVP, the output of the power supply can be stopped in a short time to achieve the purpose of protecting the DUT.

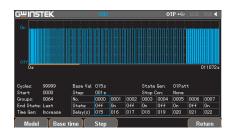
E. LOAD FUNCTION



GPP-Series Application

The CH1/CH2 of the GPP series is designed with the load function. A single power supply can meet the basic battery charging and discharging test requirements. It can provide power output in channel 1 and channel 2. The rated constant voltage load (CV), rated constant current load (CC) and maximum $1k\Omega$ constant resistance load (CR) function are built-in to allow users to conduct discharging test without using an electronic load. In application, users can also set either that one channel of the single GPP series as the power output, one channel as the load function to consume the power of the DUT, or that both channels as load functions to consume the power of different loads simultaneously.

OUTPUT DELAY FUNCTION

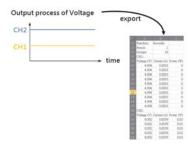


GPP-Series Delayed Waveform

Output delay function allows users to edit the timing waveform of the power output on/off when the front panel voltage and current settings are unchanged. In order to simplify the setting of waveform editing, the GPP-Series has three built-in timing modes in the delay output function, including Fixtime, Increase, Decline for users to apply directly. The editing data of the output delay can be stored in

the internal 10 sets of memory, or to be saved by USB flash drive (Save/Recall) and saved as *.DLY or *.CSV file. The stored *.CSV can be exported into Excel for editing and analysis. The final edited file can be exported to (Save/Recall) of the power supply using a USB flash drive.

G. OUTPUT RECORDER FUNCTION



Recorder: On REC OTP = O



Schematic Diagram for Recorder Function

Recorder Function Setting

Save as*.REC

The output recorder function records the voltage & current parameters of the output process. The recording interval of each point can be set according to user's requirements, and the shortest interval is 1 second and the longest is 300 seconds. The results can be stored in *.REC or *.CSV format to the power supply or directly

saved in the USB flash drive. The stored *.CSV can be exported into Excel to conduct the future analysis. (*.REC can be saved to 2048 records, *.CSV can be saved to 614400 records)

^{*} Channel 3 does not support the output recorder function



GRA-437-J Rack Mount Kit (JIS)



GRA-437-E Rack Mount Kit (EIA)



OPERATING RANGE

Model Number	Number of Output	Max. Power	CH1 CH2		CH3	Interface	
GPP-3060	3	385W	0-30V/0-6A	0-30V/0-6A	1.8V/2.5V/3.3V/5V; 5A	USB, RS-232, LAN, GPIB	
GPP-6030	3	385W	0-60V/0-3A	0-60V/0-3A	1.8V/2.5V/3.3V/5V; 5A	USB, RS-232, LAN, GPIB	
GPP-3650	3	385W	0-36V/0-5A	0-36V/0-5A	1.8V/2.5V/3.3V/5V; 5A	USB, RS-232, LAN, GPIB	

^{*} GPIB interfaces cannot be retrofitted after the shipment. When ordering the model, please confirm whether to order GPIB. * Model ordering varies by region.

OUTPUT FUNCTION LIST

Model Number	GPP-3060/GPP-6030/3650					
Functions	CH1	CH2	CH3			
Sequence Output Function	✓	✓	_			
Load Functions (CC, CV, CR mode)	✓	✓	_			
Output Delay Function	✓	✓	_			
Output Monitoring Function (10 sets)	✓	✓	-			
Output Recorder Function	✓	✓	_			
Panel Save/Recall	✓	✓	✓			

SPECIFI	CATIONS									
		GPP-3060			GPP-60)30	GPP-3650			
Output Mode Number of Channel		CH1 CH2		CH3	CH1 CH2	CH3	CH1 CH2	CH3		
Voltage			~ 30.000V	1.8V/2.5V/3.3V/5.0V,±5%	0 ~ 60.000V 0 ~ 60.000V	1.8V/2.5V/3.3V/5.0V,±5%	0 ~ 36.000V 0 ~ 36.000V	1.8V/2.5V/3.3V/5.0V,±5%		
	Current Tracking Series Voltage / Current		~ 6.0000A	5A (USB Port 3A)	0 ~ 3.0000A	5A (USB Port 3A)	0 ~ 5.0000A	5A (USB Port 3A)		
Tracking Series Voltage / Current Tracking Parallel Voltage / Current		0 ~ 60.000V / 0 ~ 6 0 ~ 30.000V / 0 ~ 1		-	0 ~ 60.000V / 0 ~ 6.0000A	-	0 ~ 36.000V / 0 ~ 10.0000A	-		
Warning		·			The CH3 output current from the 2 terr	ninals should Not exceed 5A	i.			
Constant Voltage Op Line Regulation	peration	< 0.01% 2n	٠\/	≤ 3 mV	≤ 0.01% + 3mV	≤ 3mV	≤ 0.01% + 3mV	≤ 3 mV		
Load regulation		\leq 0.01% + 3mV \leq 0.01% + 5mV (rating current \leq 10A)			\leq 0.01% + 5mV (rating current \leq 10A)	≤ 5mV	$\leq 0.01\% + 5 \text{mV}$ (rating current $\leq 10 \text{A}$)	≤ 5mV		
Ripple & noise (5Hz	-1MHz)	≤1mVrms		≤ 2mVrms			≤1mVrms	≤ 2mVrms		
Transient recovery ti	me			≤100µs			•			
Temperature coeffic					(50% load change, mini					
Constant Current Operation		≤300ppm/°C								
Line Regulation		≤ 0.01% + 3mA								
Load regulation Ripple & noise		≤ 0.01% + 3mA ≤ 2mArms								
Resolution					≤ ZIIIAIIIIS	•				
Programming	Voltage	1mV			2mV		2mV			
	Current Voltage	0.2mA 0.1mV		-	0.1mA 0.1mV		0.1mA 0.1mV	-		
Reedback	Current	0.1mA		1	0.1mA	1	0.1mA	1		
Tracking Operation(1		
Tracking error		≤ 0.1% +10mV of (No Load, with load		-	≤ 0.2% +20mV of Master (No Load, with load add load	-	≤ 0.1% +10mV of Master (No Load, with load add load	-		
		regulation ≤200]	regulation ≤200mV)	_	regulation ≤200mV)]		
	Line	≤ 0.01% + 3n	٦V	1	≤ 0.01% + 3mV	4	≤ 0.01% + 3mV			
Parallel regulation	Load	≤ 0.01% + 5mV (rating of		- · .	≤ 0.01% + 5mV (rating current ≤ 10A)	-	≤ 0.01% + 5mV (rating current ≤ 10A)	· '		
 	Line	\leq 0.02% + 5mV (rating of \leq 0.01% + 5m		1	\leq 0.02% + 5mV (rating current > 10A) \leq 0.01% + 5mV	1	\leq 0.02% + 5mV (rating current > 10A) \leq 0.01% + 5mV	1		
Series regulation	Load	≤ 200mV			≤ 200mV		≤ 200mV			
Ripple & noise Note		≤2mVrms(5Hz-1	MHz)		≤2mVrms(5Hz-1MHz)	in LOAD was do	≤2mVrms(5Hz-1MHz)			
Meter					Tracking is not supported	III LOAD Mode.				
Full Scale	Voltage	32.0000V		1.8V/2.5V/3.3V/5.0V	62.0000V	1.8V/2.5V/3.3V/5.0V	36.0000V	1.8V/2.5V/3.3V/5.0V		
Programming	Current Voltage	6.2000A 5 digits		-	3.2000A 5 digits	4	5.2000A 5 digits			
Resolution	Current	5 digits			5 digits		5 digits			
Reedback	Voltage	6 digits			6 digits		6 digits			
Resolution	Current Voltage	5 digits ± (0.03% of reading	+ 10mV)	•	5 digits ± (0.03% of reading + 10mV)	-	5 digits ± (0.03% of reading + 10mV)	-		
Setting accuracy	Current	± (0.3% of reading	+ 10mA)		± (0.3% of reading + 10mA)		± (0.3% of reading + 10mA)			
Readback accuracy	Voltage Current	± (0.03% of reading ± (0.3% of reading			± (0.03% of reading + 10mV) ± (0.3% of reading + 10mA)		± (0.03% of reading + 10mV) ± (0.3% of reading + 10mA)			
DC Load Mode	Current	± (0.570 of reading	i Torring		± (0.570 OFFCading F Toffin)		1 (0.570 of reading 1 101117)			
s	Voltage	1 ~ 32.00V			1 ~ 62.00V		1 ~ 36.5.00V			
Display	Current Power	0 ~ 6.200A 0 ~ 50.00W		-	0 ~ 3.200A 0 ~ 50.00W	_	0 ~ 5.200A 0 ~ 50.00W	-		
	CH1/CH2	1.500V - 32.0			1.500V - 62.00V		1.500V - 36.50V			
CV Mode	Setting Accuracy Reedback Accuracy	≤±(0.1% + 30r			≤±(0.1% + 30mV)		≤±(0.1% + 30mV)	-		
	Resoltion	≤±(0.1% + 30r 10mV	riv)	-	≤±(0.1% + 30mV) 10mV	-	≤±(0.1% + 30mV) 10mV			
	CH1/CH2	0 ~ 6.200A			0 ~ 3.200A		0 ~ 5.200A			
CC Mode	Setting Accuracy Reedback Accuracy	≤±(0.3% + 10r ≤±(0.3% + 10r		-	≤±(0.3% + 10mA) ≤±(0.3% + 10mA)	ē	≤±(0.3% + 10mA) ≤±(0.3% + 10mA)	•		
	Resoltion	1mA	11111		1mA		1mA	1		
	CH1/CH2	1Ω- 1kΩ			1Ω- 1kΩ		1Ω- 1kΩ			
	Setting Accuracy	≤±(3% + 1Ω (voltage≥0.1V, and cu		-	$\leq \pm (3\% + 1\Omega)$ (voltage \geq 0.1V, and current \geq 0.1A)		$\leq \pm (3\% + 1\Omega)$ (voltage $\geq 0.1V$, and current $\geq 0.1A$)			
CR Mode	Reedback Accuracy	$\leq \pm (3\% + 1\Omega)$ (voltage \geq 0.1V, and current \geq 0.1A)		1	(voltage≥0.1V, and current≥0.1A) ≤±(3% + 1Ω)	-	(voltage_0.1v, and current_0.1A) ≤±(3% + 1Ω)	1		
					(voltage≥0.1V, and current≥0.1A)		(voltage≥0.1V, and current≥0.1A)			
Protection	Resoltion	1Ω			1Ω		1Ω			
	Power Mode	OFF,ON (0.5V-3		Fixed 5.5V	OFF,ON(0.5V-65.0V)	Fixed 5.5V	OFF,ON(0.5V-38.0V)	Fixed 5.5V		
OVP	Load Mode	OFF,ON(1.5V-3	5.0V)	· ·	OFF,ON(1.5V-65.0V)	<u> </u>	OFF,ON(1.5V-38.0V)			
	Setting Accuracy Resoltion				±100mV					
	Power Mode	OFF,ON(0.05A-6		3.1A(USB port)	OFF,ON (0.05A-3.50A)	3.1A(USB port)	OFF,ON (0.05A-5.50A)	3.1A(USB port)		
ОСР	Load Mode Setting Accuracy	OFF,ON(0.05A-6	5.50A)	-	OFF,ON (0.05A-3.50A) ±20mA	-	OFF,ON (0.05A-5.50A)	-		
	Resoltion				10mA					
In an Indian	Between chassis		20MΩ or above (DC 500V)							
Insulation resistance	and terminal Between chassis					· ·				
	and DC power cord				30MΩ or above (D	C 500V)				
General		Indoor use, Altitude: ≤ 2000m								
Operation Environment		Indoor us, Alttude: ≤ 2000m Ambient temperature 0 - 40°C								
		Relative humidity: ≤ 80%								
		Installation category: II / Pollution degree: 2 TEMPERATURE: -10°C ~ 70°C								
Storage Environment		TEMPERATURE: -10 C ~ 70 C HUMIDITY: ≤70%								
Power Input		AC 100V/120V/230V±10%, 50/60Hz								
Power Consumption		900VA, 680W CD User manual x1, Quick Start manual x1, Power Code x1								
Accessories		CD User manual x1, vower Code x1 Test lead: GTL-104A x 3								
		(Europe) Test lead: GTL-204A x 3, GTL-201A x1								
Dimensions Weight		213 (W) x 145 (H) x 362 (D) mm Anners (N)								
Weight		Approx. 10kg								

ORDERING INFORMATION

GPP-3060 385W Triple-channel Programmable DC Power Supply GPP-6030 385W Triple-channel Programmable DC Power Supply GPP-3650 385W Triple-channel Programmable DC Power Supply

CD (User manual), Quick start manual, Power cord, Test lead : GTL-104A x 3, European test leads: GTL-204A x 3, GTL-201A x 1

OPTIONAL ACCESSORIES

GTL-246 **USB** Cable GRA-449-E

Rack Mount Kit (EIA) GRA-449-J Rack Mount Kit (JIS)

Standard: RS-232, USB, LAN, Ext I/O $Optional (manufacturer\ installed\ only): GPIB$

Specifications subject to change without notice.

NOTE: Contact local sales if you have issues with Interface purchase.

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