GPP-1000 Series

Programming Linear DC Power Supply

FEATURES

- Voltage Resolution: 1 mV / 0.1 mV
- Current Resolution: Three levels: 0.1 mA / 0.01 mA (H), 10 µA / 1 µA (M), 1 µA / 0.1 µA (L)
- Output Modes: Constant Voltage (CV) / Constant Current (CC)
- Switchable Power Supply & Electronic Load Function
- Output Control: On/Off with delay function
- Slew Rate Control for Voltage & Current
- Remote Sense for Voltage Compensation
- Sequence Programming for Power Output
- Bleeder Circuit Control
- Voltage Averaging & Data Collection
- External Series & Parallel Connection Support
- Safety Protections: OVP, OCP, OTP, Reverse Polarity, Panel Lock
- Communication Interfaces: USB-TMC/CDC, LAN, Optional GPIB
- Display: 2.4-inch TFT-LCD with three modes
- Temperature-Controlled Fan
- Rack Compatibility: Supports GRA-441-J/E

GW INSTEK

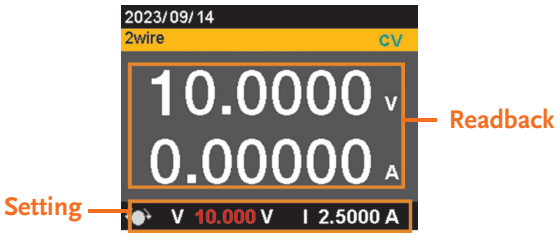
Simply Reliable

The GPP-1000 series is a high-precision programmable DC power supply designed for accuracy in precision testing. It features voltage resolution up to 1 µmV / 0.1 µmV and three levels of current resolution, with a maximum of 1 µA / 0.1 µA. Supporting both Constant Voltage (CV) and Constant Current (CC) modes, it also includes a switchable power supply and electronic load function. The series consists of two models: GPP-1205 (20 V / 5 A / 100 W) and GPP-1323 (32 V / 3 A / 96 W), offering flexible output options.

Equipped with Remote Sense functionality, the GPP-1000 series compensates for voltage drops due to lead resistance, ensuring accurate output. It supports data logging and external series/parallel connections of up to four units for higher power applications. Safety features include OVP, OCP, OTP, and reverse polarity protection, along with a front panel lock to prevent accidental operation. Communication interfaces include USB-TMC/CDC and LAN, with optional GPIB for remote control. A 2.4-inch TFT-LCD provides clear data visualization, while an intelligent temperature-controlled fan enhances cooling efficiency.

With its high resolution, versatile communication options, robust safety protections, and flexible application modes, the GPP-1000 series is a powerful solution for R&D, testing, and production environments. It exemplifies modern test equipment trends, making testing more accurate, convenient, and efficient.

A. HIGH MEASUREMENT RESOLUTION

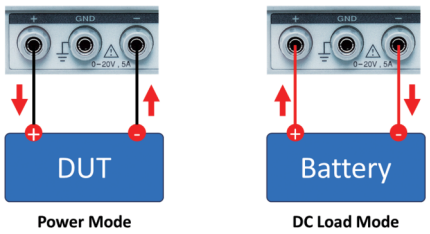


The GPP-1000 series features a synchronous display function, showing both set and actual readback values for precise testing.

Voltage Resolution: Up to 1 mV / 0.1 mV for fine control.

Current Resolution: Three levels for set/readback:
* High (H): 0.1 mA / 0.01 mA
* Middle (M): 10 µA / 1 µA
* Low (L): 1 µA / 0.1 µA

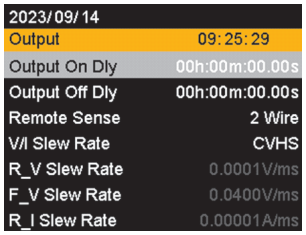
B. ELECTRONIC LOAD FUNCTION



The GPP-1000 series can switch between Power Mode and DC Load Mode. In Power Mode, it can provide the stable power required by the DUT, while Electronic Load Mode is suitable for applications such as battery discharge testing.

The electronic load function supports two setting modes: CV (constant voltage) and CC (constant current), allowing users to flexibly adjust load conditions according to test requirements to ensure accurate test results.

C. POWER ON/OFF DELAY FUNCTION

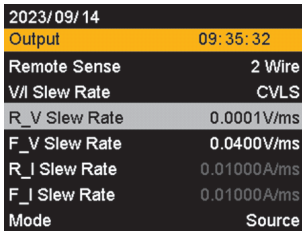


The output on/off delay time can be set to improve test flexibility.

Support 2-Wire / 4-Wire output, suitable for different test environments.

Can be set from 00h:00m:00.00 s to 99h:59m:59.99 s, providing precise time control.

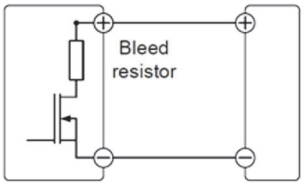
D. POWER OUTPUT SLEW RATE SETTING FUNCTION



The GPP-1000 series offers slew rate control for voltage and current to ensure stability and accuracy in testing.

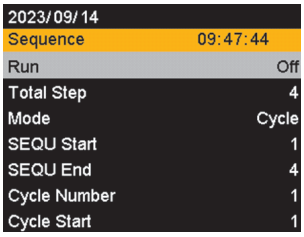
High-Speed Mode (CVHS, CCHS): Uses the fastest slew rate for rapid response; User-Defined Mode (CVLS, CCLS): Allows customized slew rate settings for precise control.

E. BLEEDER RESISTOR DESIGN



This series adopts the parallel bleeder resistor design for the first time, which can quickly release the stored energy of the power filter capacitor to avoid the impact of surges. This design can also serve as a minimum voltage load to ensure stable voltage regulation and improve system reliability.

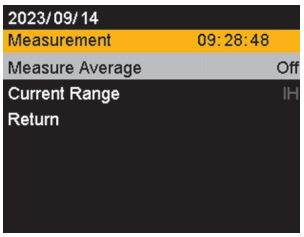
F. SEQUENCE POWER OUTPUT



The GPP-1000 series supports waveform editing and sequence output, allowing CV/CC loading for various tests.

- Stores up to 5 test scripts in internal memory or USB.
- Supports CSV files, editable in Excel and importable via USB(Save/Recall).
- Enhances test efficiency with flexible data management.

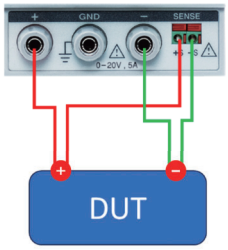
G. VOLTAGE AVERAGE OUTPUT FUNCTION

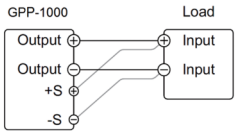


The adjustable sampling speed function ensures stable test results by controlling voltage averaging.

- Low: Slowest speed, ideal for steady measurements.
- Middle: Balanced accuracy and responsiveness.
- High: Fastest speed, suited for dynamic testing.

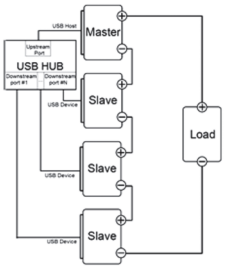
H. REMOTE SENSING FUNCTION





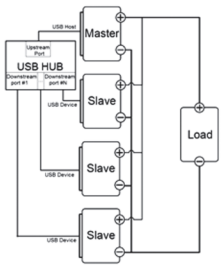
Remote Sensing compensates for voltage drops between the power supply output and the load, preventing the resistance of the test leads from affecting accuracy. When testing, users should choose a connection line with a voltage drop less than the power supply compensation range to ensure stable output.

I. EXTERNAL SERIES-PARALLEL CONNECTION CONTROL



Number of Series Unit (Max V / I)		
Model	GPP-1205	GPP-1323
1 unit	20V / 5A	32V / 3A
2 units	40V / 5A	64V / 3A
3 units	60V / 5A	96V / 3A
4 units	80V / 5A	128V / 3A

Provides external series-parallel connection application to flexibly expand output capacity. A maximum of 4 units can be connected in series or in parallel, which is suitable for high-power testing needs.



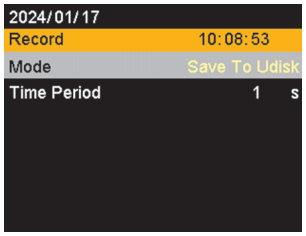
Number of Parallel Unit (Max V / I)		
Model	GPP-1205	GPP-1323
1 unit	20V / 5A	32V / 3A
2 units	20V / 10A	32V / 6A
3 units	20V / 15A	32V / 9A
4 units	20V / 20A	32V / 12A

- External series connection: 1 to 4 units, can increase the output voltage, up to 128 V (GPP-1323).
- External parallel connection: 1 to 4 units, can increase output current, up to 20 A (GPP-1205).

J. RECORDING FUNCTION

Mode	Contents
None	The Recording function will not be executed
Save to Udisk	To store data in USB, users need to insert
Remote (LAN)	Stores data to a remote location via LAN
Remote (USB)	Stores data on a remote PC via USB

The data logging and remote transmission function records voltage, current, and time data to a USB flash drive or transmits it remotely for analysis.

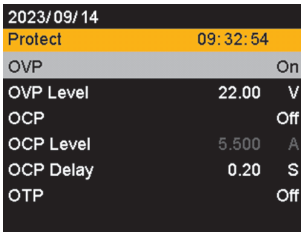


- Record function accessible via the RECO button.
- Recording time adjustable from 1 to 999 seconds for long-term testing.
- Three data collection modes enhance flexibility and accuracy.

K. OUTPUT ON/OFF FUNCTION

With output On/Off control function, it can effectively avoid unnecessary damage caused by pre-output when the DUT is connected to the power supply. Users can first set voltage and current parameters and confirm that all wiring is complete, and then manually execute output through the front panel to ensure the safety and accuracy of the test process.

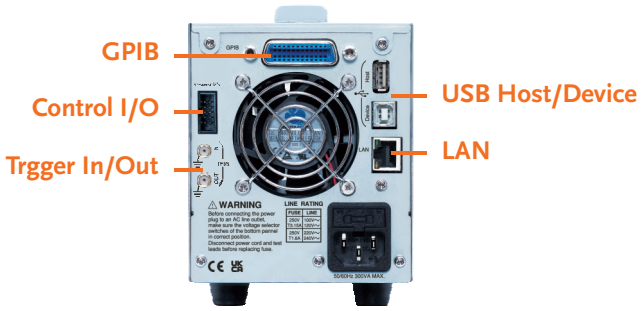
L. MULTIPLE PROTECTION FUNCTIONS



The protection mechanisms ensure reliability and safety.

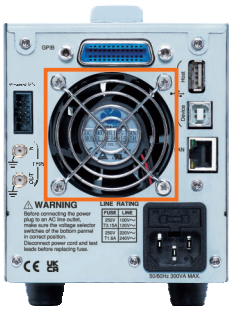
- Hardware-based OVP, OCP, OTP: Faster response than software protections, immediately stopping output when limits are exceeded.
- Panel Lock Function: Prevents unauthorized parameter changes, safeguarding the DUT and test environment.

M. PROVIDES MULTIPLE COMMUNICATION INTERFACES



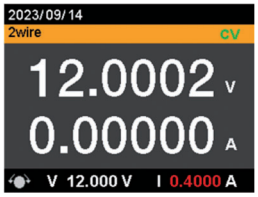
This series offers versatile communication interfaces, including USB Host/Device, LAN, and optional GPIB, with USB Device supporting both USB-TMC and USB-CDC for flexible remote control. Additionally, Control I/O and Trigger In/Out enable seamless integration with external devices, enhancing automation capabilities in testing.

N. TEMPERATURE CONTROLLED FAN FUNCTION

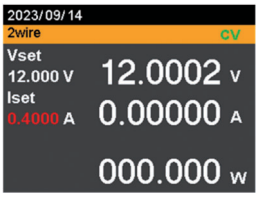


The GPP-1000 series uses a 2.4-inch TFT LCD to provide clear data display and supports three display modes: V/I, V/I/W and V/I + Sequence. Users can flexibly choose the appropriate display mode according to test requirements, improving operational convenience and data visualization.

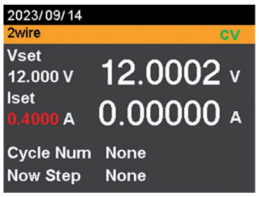
O. THREE SCREEN DISPLAY MODES



Voltage / Current



Voltage / Current / Watt



Voltage / Current / Sequence

The GPP-1000 series uses a temperature-controlled fan design that adjusts the speed according to the internal temperature of the machine to ensure stable operation and maintain specification consistency.

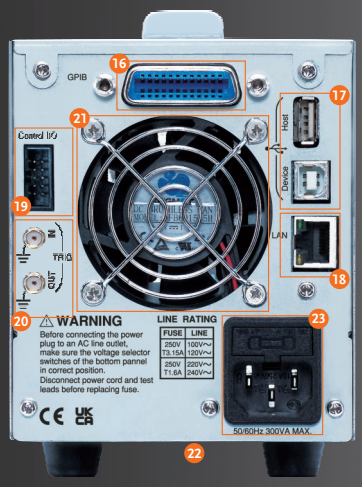
This design not only effectively controls the temperature inside the machine, but also reduces the noise generated by the fan speed, providing a quieter operating environment.

O. APPLICATIONS

- **Scientific Research and Experimental Testing**
- **Battery Charge and Discharge Test**
- **Applications Requiring Low Noise and Stable Voltage Output**
- **Electronic Parts Measurement**
- **3C Electronic Product Measurement**

PANEL INTRODUCTION

CE | USB Host | USB Device | GPIB | Contro I/O



1. 2.4-Inch LCD
2. Value Adjustment / Confirmation Knob
3. Arrow Keys, Used to Select the Number of Digits
4. Detailed Function Keys
5. Sequence Function Keys
6. Data Log Function Key
7. Protection Function Setting Key
8. Output On/Off Switch
9. Panel Lock Key
10. Display Screen Selection Key
11. Shift Key
12. Power Switch
13. Power Output Terminals
14. Remote Voltage Compensation Terminal
15. Heat Dissipation Area
16. GPIB Interface
17. USB Host & Device Interface
18. Network Interface
19. Control I/O Interface
20. Trigger IN/OUT Interface
21. Cooling Fan
22. AC Input Voltage Selection Switch (Bottom of The Machine)
23. AC Input Power Port

SPECIFICATIONS

		GPP-1323	GPP-1205
OUTPUT RATING			
Output Voltage		0.000 V to 32.000 V	0.000 V to 20.000 V
Output Current		0.0000 A to 3.0000 A	0.0000 A to 5.0000 A
Output Power		96 W	100 W
CONSTANT VOLTAGE OPERATION			
Line Regulation		± (0.01 % of setting + 3 mV)	
Load Regulation		≤ 0.01 % + 3 mV (rating current ≤ 3 A) ≤ 0.02 % + 5 mV (rating current > 3 A)	
Transient Response		< 100 µs	
Ripple Noise		0.8 mVrms	
Setting Range		0 V to 33.600 V	0 V to 21.000 V
Rise Time		≤ 100 ms	
Fall Time		≤ 100 ms	
Maximum Remote Sensing Compensation Voltage (Single Line)		0.5 V	
Temperature Coefficient (TYP.)		300 ppm/°C	
CONSTANT CURRENT OPERATION			
Line Regulation		≤ 0.1 % + 3 mA	
Load Regulation		≤ 0.1 % + 3 mA	
Setting Range		0 A to 3.1500 A	0 A to 5.2500 A
Ripple Noise (Arms)		≤ 2 mArms	
Temperature Coefficient (TYP.)		300 ppm/°C	
RESOLUTION			
Voltage	Programming/Readback	1 mV / 0.1 mV	
Current	Programming/Readback	(High) 0.1 mA / 0.01 mA; (Middle) 10 µA / 1 µA; (Low) 1 µA/ 0.1 µA	
METER			
Full Scale	Voltage/Current	33.6000 V / 3.1500 A	21.0000 V / 5.2500 A
Programming	Voltage/Current	5 digits / 5 digits	
Readback Resolution	Voltage/Current	6 digits / 6 digits	
Setting Accuracy		Voltage: ± (0.03 % of reading + 10 mV); Current: ± (0.3 % of reading + 10 mA) (H) Current: ± (0.3 % of reading + 1 mA) (M); Current: ± (0.3 % of reading + 0.1 mA) (L)	
Readback Accuracy		Voltage: ± (0.03 % of reading + 10 mV); Current: ± (0.3 % of reading + 10 mA) (H) Current: ± (0.3 % of reading + 1 mA) (M); Current: ± (0.3 % of reading + 0.1 mA) (L)	

SPECIFICATIONS

		GPP-1323	GPP-1205
DC LOAD MODE			
Display	Voltage	3.000 V to 32.000 V	3.000 V to 20.000 V
	Current	0 A to 3.0000 A	0 A to 5.0000 A
	Power	96 W	100 W
CV Mode	Setting Range	3.000 V to 32.000 V	3.000 V to 20.000 V
	Setting/Readback	≤ 0.1 % + 30 mV	
	Resolution	1 mV	
CC Mode	Setting Range	0 A to 3.0000 A	0 A to 5.0000 A
	Setting/Readback	≤ ± 0.3 % + 10 mA	
	Resolution	0.1 mA	
PROTECTION *3			
OVP	Setting Range	1.8 V to 35.2 V	1.0 V to 22.0 V
	Setting Accuracy	± 100 mV	
	Operation	Turns the output off, displays OVP	
OCP	Setting Range	0.15 A to 3.3 A	0.25 A to 5.5 A
	Setting Accuracy	± 20 mA	
	Operation	Turns the output off, displays OCP	
OTP	Operation	Turns the output off, displays OTP	
Insulation Resistance		Between chassis and terminal : 20 MΩ or above (DC 500V) Between chassis and DC power cord : 30 MΩ or above (DC 500V)	
SERIES AND PARALLEL CAPABILITY			
Parallel Number		4 units	
Series Number		4 units	
ADVANCED FUNCTION			
Trigger Signal *1	Trigger Input	A high- or low-level CMOS signal is applied for 100 µs or longer. It receives a pulse to perform actions like power output, V/I set operation or memory recall.	
	Trigger Output	Trigger output: approx. 3.3 V Pulse width: approx. 1ms, Output impedance: approx. 50 Ω It outputs a pulse when power output, V/I set operation or memory recall is executed.	
Status Signal Out *1 *2	OUT ON/OFF Status	Turns on when the output is on	
	CV Status	Turns on during CV operation	
	CC Status	Turns on during CC operation	
	ALM Status	Turns on when an alarm has been activated	
	PWR ON Status	Turns on when the power is turned on	
GENERAL SPECIFICATIONS			
Display		2.4-inch TFT LCD	
Interface	LAN	MAC Address, Gateway IP Address, Instrument IP Address, Subnet Mask	
	USB	Type A: Host, Type B: Slave, Speed: 1.1/2.0, USB-CDC/TMC	
	GPIB (Factory Optional)	SCPI-1993, IEEE 488.2 compliant interface	
Operating Environment		Indoor use, Overvoltage Category II, Altitude: ≤ 2000 m, Ambient temperature: 0 °C to 40 °C, Relative humidity: 20 % to 80 % RH; No condensation	
Storage Environment		Ambient temperature: -20 °C to 70 °C, Relative humidity: 20 % to 85 % RH; No condensation	
Power Source		AC (100 V, 120 V, 220 V, 240 V) ± 10 %, 50 or 60 Hz	
Power Consumption		300 VA	
Max. Inrush Current		30 A max or less	
Dimensions & Weight		107 mm x 124 mm x 313 mm (W x H x D) (not including protrusions), Approx. 5.5 kg	

Note: *1. EXT I/O connector on the rear panel.
*2. Open collector output: Maximum voltage of 30 V and maximum current of 8 mA. The common line for the status pins is floating (isolated voltage of 60 V or less), it is isolated from the output and control circuits.
*3. When the protection function is activated, it turns the output off, displays OVP, OCP, or OTP.

Specifications subject to change without notice. GPP-1000_E_ID1BH

The specifications apply when the GPP-1205/1323 are powered on for at least 30 minutes under +20 °C to +30 °C.

ORDERING INFORMATION

GPP-1205 100 W Single Channel Programming Linear DC Power Supply (USB, LAN) (20 V /5 A)
GPP-1323 96 W Single Channel Programming Linear DC Power Supply (USB, LAN) (32 V/3 A)

ACCESSORIES:
Power Cord x 1, Packing List x 1, Test lead: Non-European: GTL-104A x 1 Test lead: European: GTL-204A x 1

OPTION (Manufacturer Installed Only)
GPIB interface

OPTIONAL ACCESSORIES
GTL-303 RF Cable, for Trigger In/Out use
GTL-246 USB Cable (USB 2.0 A-B Type, approx. 1200mm)
GRA-441-J Rack Mount Kit for JIS type
GRA-441-E Rack Mount Kit for EIA type

FREE DOWNLOAD
PC Software, LabVIEW Driver

GOOD WILL INSTRUMENT CO., LTD.
No.7-1, Jhongsing Road, Tucheng Dist., New Taipei City 236, Taiwan
T +886-2-2268-0389 **F** +886-2-2268-0639
E-mail: marketing@goodwill.com.tw

Website Facebook LinkedIn

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