

Programmable DC Power Supply

GPP-1000 Series

USER MANUAL

GW INSTEK PART NO.



ISO-9001 CERTIFIED MANUFACTURER

GW INSTEK

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Good Will Instrument Co., Ltd.
No. 7-1, Jhongsing Rd., Tucheng Dist., New Taipei City 236, Taiwan

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S SAFETY INSTRUCTIONS

This chapter contains important safety instructions that you must follow during operation and storage. Read the following before any operation to insure your safety and to keep the instrument in the best possible condition.

Safety Symbols

These safety symbols may appear in this manual or on the instrument.



WARNING

Warning: Identifies conditions or practices that could result in injury or loss of life.



CAUTION

Caution: Identifies conditions or practices that could result in damage to the GPP-1000 series or to other properties.



DANGER High Voltage



Attention Refer to the Manual



Protective Conductor Terminal



Earth (ground) Terminal



Do not dispose electronic equipment as unsorted municipal waste. Please use a separate collection facility or contact the supplier from which this instrument was purchased.

Safety Guidelines

General Guidelines



CAUTION

- Do not place any heavy object on the device.
 - Avoid severe impacts or rough handling that leads to damaging the device.
 - Do not discharge static electricity to the device.
 - Do not block or obstruct the cooling fan vent opening.
 - Do not disassemble the device unless you are qualified as service personnel.
-

Power Supply



CAUTION

- AC Input voltage:
100 V / 120 V / 220 V / 240 VAC $\pm 10\%$, 50 / 60 Hz
 - Frequency: 47 Hz to 63 Hz
 - Before connecting the power plug to an AC line outlet, make sure the voltage selector switches of the bottom panel in the correct position.
-



WARNING

- The fuse specification is as following:
100 V / 120 V: T3.15 A / 250 V
220 V / 240 V: T1.6 A / 250 V
 - Disconnect power cord and test leads before replacing fuse.
 - To avoid electrical shock connect the protective grounding conductor of the AC power cord to an earth ground.
-

Cleaning the device

- Disconnect the power cord before cleaning.
- Use a soft cloth dampened in a solution of mild detergent and water. Do not spray any liquid.
- Do not use chemicals or cleaners containing harsh products such as benzene, toluene, xylene, and acetone.

**Operation
Environment**

- Location: Indoor, no direct sunlight, dust free, almost non-conductive pollution (note below)
- Relative Humidity: < 80 %
- Altitude: < 2000 m
- Temperature: 0 °C to 40 °C

(Pollution Degree) EN 61010-1:2010 specifies the pollution degrees and their requirements as follows. The GPP-1000 series falls under degree 2.

Pollution refers to "addition of foreign matter, solid, liquid, or gaseous (ionized gases), that may produce a reduction of dielectric strength or surface resistivity".

- Pollution degree 1: No pollution or only dry, non-conductive pollution occurs. The pollution has no influence.
- Pollution degree 2: Normally only non-conductive pollution occurs. Occasionally, however, a temporary conductivity caused by condensation must be expected.
- Pollution degree 3: Conductive pollution occurs, or dry, non-conductive pollution occurs which becomes conductive due to condensation which is expected. In such conditions, equipment is normally protected against exposure to direct sunlight, precipitation, and full wind pressure, but neither temperature nor humidity is controlled.

**Storage
environment**

- Location: Indoor
- Relative Humidity: < 70 %
- Temperature: -10 °C to 70 °C

GETTING STARTED

This chapter describes the power supply in a nutshell, including its main features and front / rear panel introduction. After going through the overview, please read the theory of operation to become familiar with the operating modes, protection modes and other safety considerations.

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GPP-1000 Series Overview

Series lineup

The GPP-1000 Series consists of 2 models: GPP-1323 and GPP-1205. Note that throughout the user manual, the term “GPP-1000” refers to all the models in the GPP-1000 Series lineup, unless stated otherwise.

Model	Output Voltage	Output Current	Output Power
GPP-1323	32 V	3 A	96 W
GPP-1205	20 V	5 A	100 W

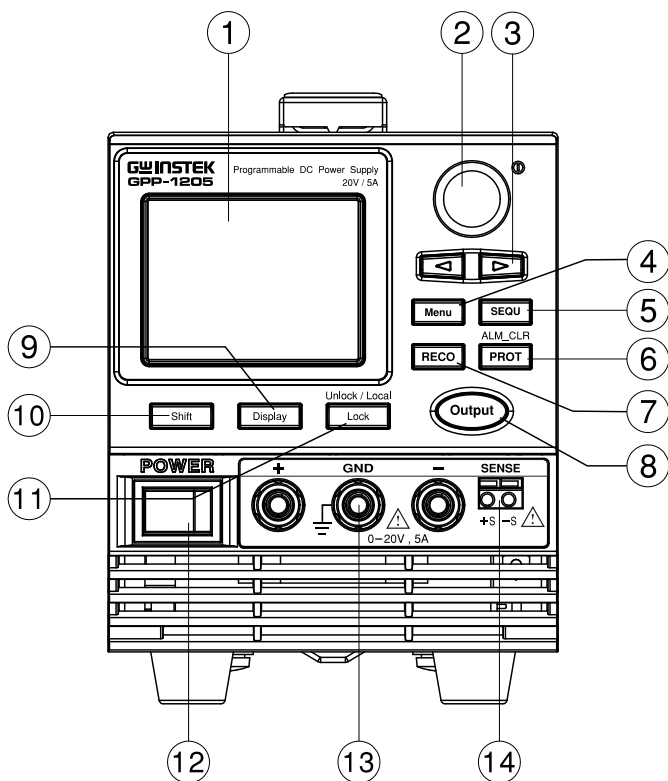
Main Features

- Features
 - 2.4-inch TFT-LCD Panel.
 - Low noise: Temperature controlled cooling fan.
 - Remote sensing to compensate for voltage drop in load leads .
 - Output On/Off delay control.
 - CV, CC priority start function. (prevents overshoot with output ON)
 - Adjustable voltage and current slew rates.
 - Bleeder circuit ON/OFF setting.
 - OVP, OCP and OTP protection.
 - Supports test sequence.
 - With 3 measuring currents function.
- Interface
 - Built-in USB and LAN interface.
 - Optional GPIB interface.
 - External trigger control function.

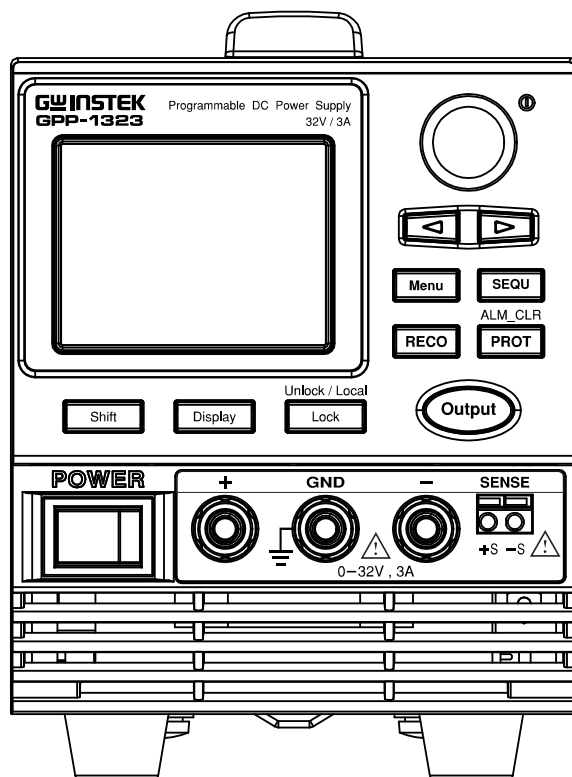
Appearance

Front Panel Overview

GPP-1205

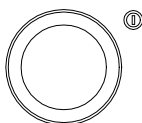


GPP-1323

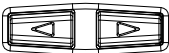


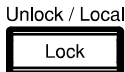
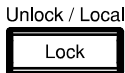
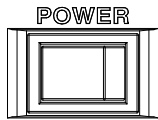
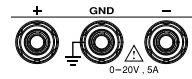
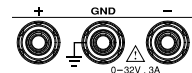
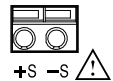
1. Display area

2. Knob Key

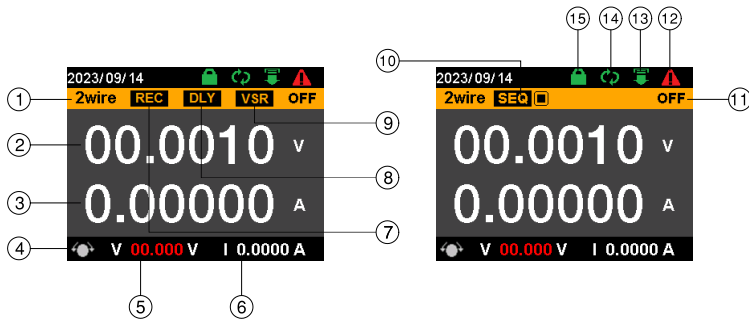


The display area shows set values, output values and parameter settings. Used to navigate menu, and to configure or confirm voltage/current/time values, among others. Also, the indicator on the upper-right corner shows current state and power mode.

- | | | | |
|-----|--------------------------|---|--|
| 3. | Left/Right
Arrow Keys |  | Used to select a parameter number in the Function settings. Also the left arrow key can be used as backspace. |
| 4. | Menu Button |  | Used to enter the Menu page. Refer to page 87 for detail. |
| 5. | SEQU Button |  | Used to run customized test sequence. Refer to page 61 for detail. |
| 6. | PROT Button | ALM_CLR
 | Used to set OVP, OCP protecting functions. Refer to page 46 for details. |
| | ALM_CLR
Button | Shift
 | (+Shift) Used to release protection functions that have been activated. The tripped protection alarms include the following: OVP Alarm, OCP Alarm, OTP Alarm, Sense Alarm. |
| | | +
ALM_CLR
 | |
| 7. | RECO Button |  | Used to run recorder function. Refer to page 60 for detail. |
| 8. | Output
Button |  | Used to turn the output on or off. |
| 9. | Display
Button |  | Used to switch among 3 different display modes. |
| 10. | Shift Button |  | Used to enable the functions that are written in blue characters above certain buttons. |

- | | | | |
|-----|---------------------|--|---|
| 11. | Lock Button |  | Used to lock all front panel buttons other than the Output Button. Refer to page 60 for detail. |
| | Unlock/Local Button |  | (+Shift) Used to unlock the front panel buttons or it switches to local mode. |
| | + |  | |
| 12. | Power Switch |  | Used to turn the power on/off. |
| 13. | Output terminal | 
 | <p>DC output terminal for GPP-1000 is European Type Jack Terminal.</p> <p>GPP-1205 the max. output is 20 V / 5 A / 100 W</p> <p>DC output terminal for GPP-1000 is European Type Jack Terminal.</p> <p>GPP-1323 the max. output is 32 V / 3 A / 96 W</p> <p>Terminal to connect the sensing cables, which compensate voltage drop occurred in load leads.</p> |
| 14. | Sensing Terminal |  | |

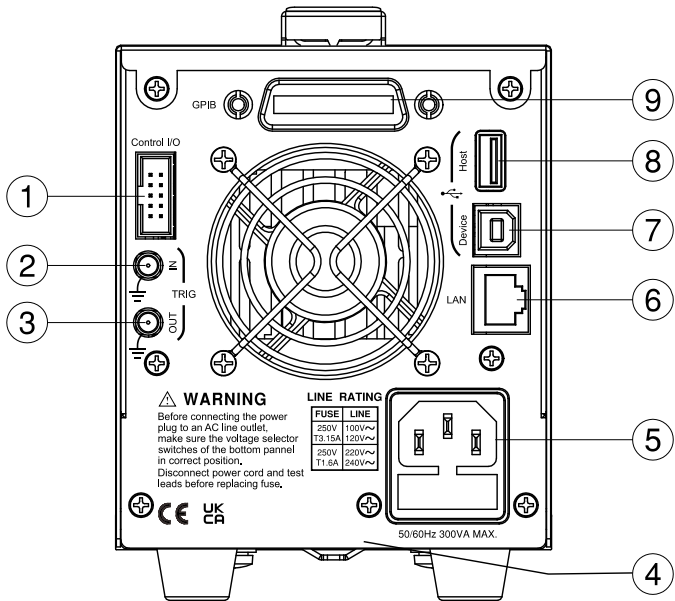
Display Area



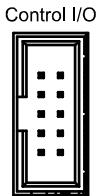
- | | | |
|-----|------------------|---|
| 1. | 2Wire/4Wire | 2-wire or 4-wire indicator. |
| 2. | Voltage Meter | Displays the voltage. |
| 3. | Current Meter | Displays the current. |
| 4. | V/A Set Guidance | The scrolling symbol indicates to select between V and A set via scrolling knob key. |
| 5. | V Set | Manually sets voltage. |
| 6. | I(A) Set | Manually sets current. |
| 7. | REC Icon | When Recorder is enabled, the icon will be shown accordingly. Note that when SEQ appears, the icon will be faded out. |
| 8. | DLY Icon | When Output On/Off delay is enabled, the icon will be shown accordingly. Note that when SEQ appears, the icon will be faded out. |
| 9. | VSR/ISR Icon | When CV/CC Slew Rate Priority (CVLS/CCLS) is activated, the icon will be shown. Note that when SEQ appears, the icon will be faded out. |
| 10. | SEQ Icon | When Sequence function is turned On, the icon will be shown accordingly. |

- | | |
|-------------------------------------|--|
| 11. CC/CV indicator | It shows when constant voltage or constant current mode is ongoing. However, when output is unregulated, which means neither in CV mode nor CC mode. If it is not under power output, it simply shows Off. |
| 12. Error Indicator | When error occurs from command of remote control, the icon will be shown. |
| 13. Remote Control Indicator | When remote control (USB/LAN/GPIB) is underway, the icon will be shown |
| 14. Communication Monitor Indicator | When communication monitor is enabled, the icon will be shown. |
| 15. Lock Indicator | When the lock mode is activated, the icon will be shown. |

Rear Panel Overview

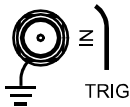


1. Control I/O



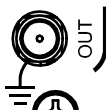
External Operation and Status Monitoring

2. Trigger-IN



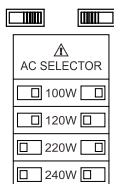
External Trigger Signal Input Terminal

3. Trigger-
OUT



Trigger Signal Output
Terminal

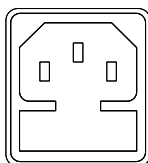
4. AC Select
Switch



The AC selector is located
at the bottom side of the
unit.

Switch Voltage to 100 V,
120 V, 220 V or 240 V.

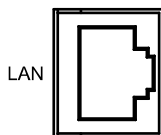
5. Power Cord
/ Fuse
Socket



The power cord socket
accepts the AC mains. For
power up details, [see page 29](#).

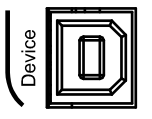
The fuse holder contains
the AC mains fuse. For fuse
replacement details, [see page 144](#).

6. LAN



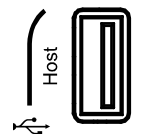
Ethernet port for
controlling the GPP-1000
remotely

7. USB



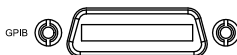
USB port for controlling the
GPP-1000 remotely.

8. USB A Port



USB A port for data
transfer, loading test scripts
and firmware update.

9. GPIB



GPIB connector for units
equipped with IEEE
programming option.
(Factory Installed Options)

Theory of Operation

The theory of operation chapter describes the basic principles of operation, protection modes and important considerations that must be taken into account before use.

Operating Description

Background The GPP-1000 power supplies are regulated DC power supplies with a stable voltage and current output. These operate within a switch automatically between constant voltage and constant current according to changes in the load.



Note

Suitable supply cord set for use with the equipment:

Mains plug: shall be national approval

Mains connector: C13 type

Cable:

1. Length of power supply cord: less than 3 m
2. Cross-section of conductors: at least 0.75 mm²
3. Cord type: shall meet the requirements of IEC 60227 or IEC 60245 (e.g.: H05VV-F, H05RN-F)



Caution

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

CC and CV Mode

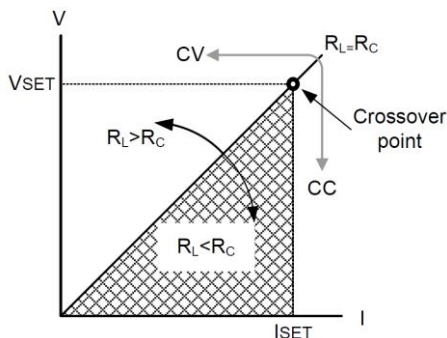
CC and CV mode	When the power supply is operating in constant current mode (CC) a constant current will be supplied to the load. When in constant current mode the voltage output can vary, whilst the current remains constant. When the load resistance increases to the point where the set current limit(ISET) can no longer be sustained the power supply switches to CV mode. The point where the power supply switches modes is the crossover point.
Description	

When the power supply is operating in CV mode, a constant voltage will be supplied to the load, whilst the current will vary as the load varies. At the point that the load resistance is too low to maintain a constant voltage, the power supply will switch to CC mode and maintain the set current limit.

The conditions that determine whether the power supply operates in CC or CV(VSET), the load resistance (R_L) and the critical resistance (R_C). The critical resistance is determined by $VSET/ISET$. The power supply will operate in CV mode when the load resistance is greater than the critical resistance. This means that the voltage output will be equal to the VSET voltage but the current will be less than ISET. If the load resistance is reduced to the point that the current output reaches the ISET level, the power supply switches to CC mode.

Conversely the power supply will operate in CC mode when the load resistance is less than the critical resistance. In CC mode the current output is equal to ISET and the voltage output is less than VSET.

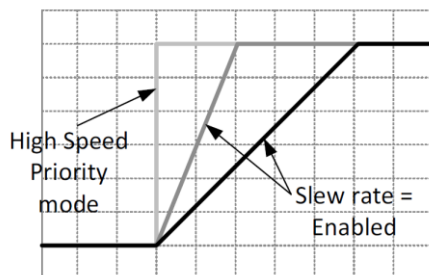
Diagram



Slew Rate

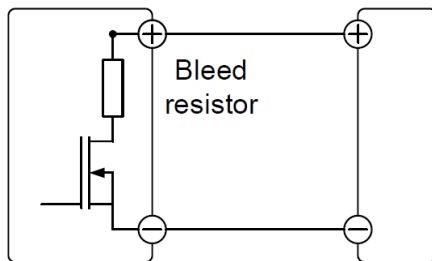
Theory

The GPP-1000 has selectable slew rates for CC and CV mode. This gives the GPP-1000 power supply the ability to limit the current/voltage draw of the power supply. Slew rate settings are divided into High Speed Priority and Slew Rate Priority. High speed priority mode will use the fastest slew rate for the instrument. Slew Rate Priority mode allows for user adjustable slew rates for CC or CV mode. The rising and falling slew rate can be set independently.



Bleeder Control

Background The GPP-1000 DC power supplies employ a bleed resistor in parallel with the output terminals.



Bleed resistors are designed to dissipate the power from the power supply filter capacitors when power is turned off and the load is disconnected. Without a bleed resistor, power may remain charged on the filter capacitors for some time and be potentially hazardous.

In addition, bleed resistors also allow for smoother voltage regulation of the power supply as the bleed resistor acts as a minimum voltage load.

The bleed resistance can be turned on or off using the configuration settings.



Note

By default the bleed resistance is on. For battery charging applications, be sure to turn the bleed resistance off as the bleed resistor can discharge the connected battery when the unit is off.

Alarms

The GPP-1000 power supplies have a number of protection features. When one of the protection alarms is tripped, an alarm message will appear on the display, the corresponding alarm icon (OCP, OVP etc) will appear in the status bar. When an alarm has been tripped, the output will be automatically turned off or the power supply will turn off, depending on the type of alarm and on the Breaker Control

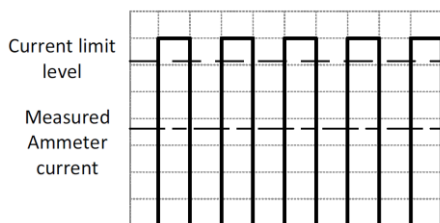
settings (page 46). For details on how to clear an alarm or to set the protection modes, please see pages 48.

OVP	Over voltage protection (OVP) prevents a high voltage from damaging the load. This alarm can be set by the user.
OCP	Over current protection prevents high current from damaging the load. This alarm can be set by the user.
OTP	Over temperature protection protect the instrument from overheating.

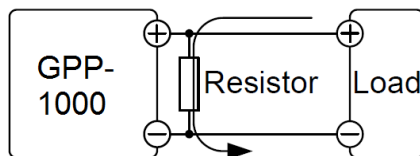
Considerations

The following situations should be taken into consideration when using the power supply.

Inrush current	When the power supply switch is first turned on, an inrush current is generated. Ensure there is enough power available for the power supply when first turned on, especially if a number of units are turned on at the same time.
Pulsed or Peaked loads	When the load has current peaks or is pulsed, it is possible for the maximum current to exceed the mean current value. The GPP-1000 power supply ammeter only indicates mean current values, which means for pulsed current loads, the actual current can exceed the indicated value. For pulsed loads, the current limit must be increased, or a power supply with a greater capacity must be chosen. As shown below, a pulsed load may exceed the current limit and the indicated current on the power supply ammeter.



Reverse Current: When the power supply is connected to a regenerative load such as a transformer or inverter, reverse current will feed back to the power supply. The GPP-1000 power supply cannot absorb reverse current. For loads that create reverse current, connect a resistor in parallel to the power supply to bypass the reverse current. This description only applies when the bleed resistance is off.



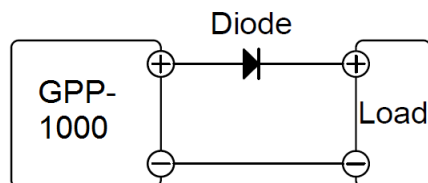
Reverse current



Note

The current output will decrease by the amount of current absorbed by the resistor. Ensure the resistor used can withstand the power capacity of the power supply/load.

Reverse Current: When the power supply is connected to a load such as a battery, reverse current may flow back to the power supply if the bleed resistance is on. To prevent damage to the power supply under this condition, use a reverse-current-protection diode in series between the power supply and load. If the bleed resistor is turned off or set to auto, there is no need to add a diode.



**Caution**

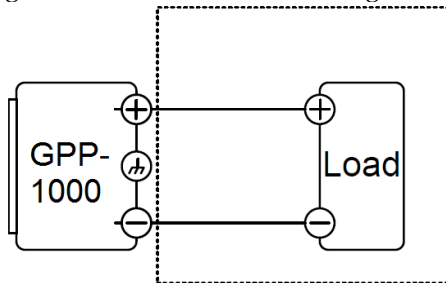
Ensure the reverse withstand voltage of the diode is able to withstand 2 times the rated output voltage of the power supply and the forward current capacity can withstand 3 to 10 times the rated output current of the power supply. Ensure the diode is able to withstand the heat generated in the following scenarios. When the diode is used to limit reverse voltage, remote sensing cannot be used.

Grounding

The output terminals of the GPP-1000 power supplies are isolated with respect to the protective grounding terminal. The insulation capacity of the load, the load cables and other connected devices must be taken into consideration when connected to the protective ground or when floating.

Floating

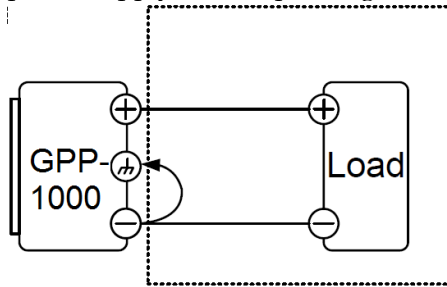
As the output terminals are floating, the load and all load cables must have an insulation capacity that is greater than the isolation voltage of the power supply.

**Warning**

If the insulation capacity of the load and load cables are not greater than the isolation voltage of the power supply, electric shock may occur.

Grounded
output
terminal

If the positive or negative terminal is connected to the protective ground terminal, the insulation capacity needed for the load and load cables is greatly reduced. The insulation capacity only needs to be greater than the maximum output voltage of the power supply with respect to ground.



Caution

If using external voltage control, do not ground the external voltage terminal as this will create a short circuit.

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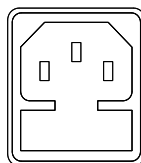
SETUP

This chapter describes how to properly power up and configure the GPP series before operation.

Power Up

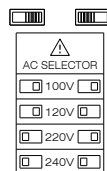
Background Make sure that the power source is shut off. Use the AC power cable supplied with the product.

Steps 1. Connect the AC power cord to the rear panel socket.



Note

Before connecting the power plug to an AC line outlet, make sure the voltage selector switches of the bottom panel in the correct position. Disconnect power cord and test leads before replacing fuse. **Refer to page 144 for more details.**



2. Press the POWER switch on .If used for the first time, the default settings will appear on the display, otherwise the GPP-1000 recovers the state right before the power was last turned OFF.



Caution

Do not turn the power on and off quickly. Please wait for the display to fully turn off.

Wire Gauge Considerations

Background	Before connecting the output terminals to a load, the wire gauge of the cables should be considered. It is essential that the current capacity of the load cables is adequate. The rating of the cables must equal or exceed the maximum current rated output of the instrument.		
Recommended wire gauge	Wire Gauge	Nominal Cross Section	Maximum Current
	28	0.1	3
	26	0.15	4
	24	0.25	5
	22	0.35	7
	20	0.55	9
	18	1	12
The maximum temperature rise can only be 60 degrees above the ambient temperature. The ambient temperature must be less than 30 degrees.			

Output Terminals

Background	Before connecting the output terminals to the load, first consider whether voltage sense will be used, the gauge of the cable wiring and the withstand voltage of the cables and load.		
 Warning	Dangerous voltages. Ensure that the power to the instrument is disabled before handling the power supply output terminals. Failing to do so may lead to electric shock.		

Connection with the front panel output terminal

Steps

1. Turn the power switch off.



2. Connect the test lead includes in the accessory parts to front panel output terminal.

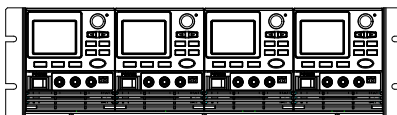
3. Fix the load cables firmly to eliminate loose connections from the front output terminals and load cables.

Using the Rack Mount Kit

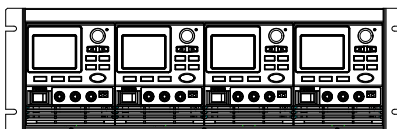
Background

The GPP-1000 series has an optional Rack Mount Kit (GW Instek part number: GRA-441-J [JIS], GRA-441-E [EIA]) that can be used to hold up to 4 GPP-1000 units into rack.

GRA-441-E
[EIA] Rack
mount diagram



GRA-441-J [JIS]
Rack mount
diagram



How to Use the Instrument

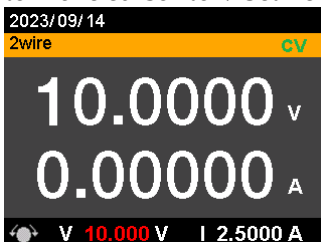
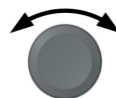
Background

The GPP-1000 power supplies generally use the knob key and arrow keys to enter each page and setting, to return to previous page, to edit numerical values or to confirm settings.

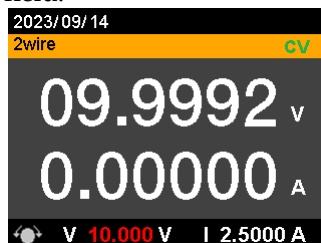
The following section will explain some of these concepts in detail.

Example1 Use the knob key and arrow keys to set a voltage of 10.100 volts.

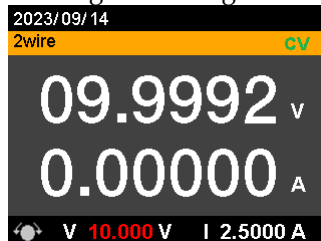
1. From the main display, scroll knob key to move cursor to V Set field.



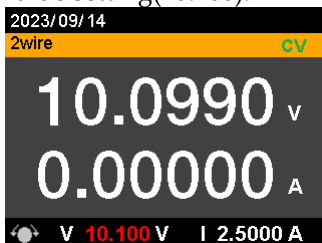
2. Click the knob key to enter the V Set field.



3. Use arrow keys to move the cursor to desired digits followed scrolling knob key to edit values. Repeat the step for each digit until target value.



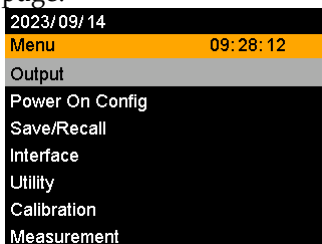
- Click the knob key to confirm the input value setting(10.100).



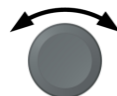
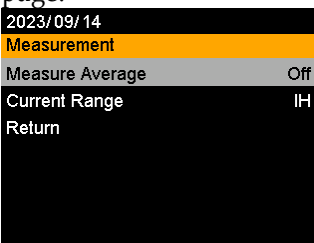
Example2

Use the knob key to enter Measurement Average field and setting Middle option. Also, use the left arrow key to return to the previous page.

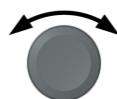
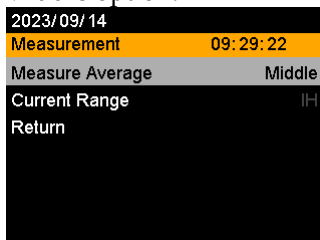
- Press the Menu key to enter the Menu page.



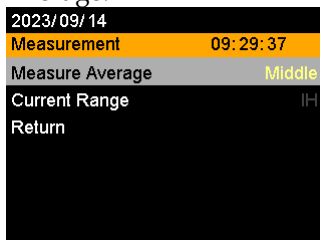
- Scroll the knob key to move to the Measurement field followed by clicking the knob key to enter the Measurement page.



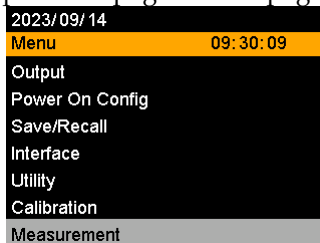
3. Click the knob key to enter the Measurement Average field followed by scrolling the knob key to select Middle option.



4. Click the knob key to confirm the Middle option for Measurement Average.



5. Click the left arrow key to return to the previous page -Menu page.



Reset to Factory Default Settings

Background There's a group of Default value, the non-modifiable factory default setting. User is able to restore Default or proceed to Preset operation from Power On under System. [See page 148 for the default factory settings.](#)

Steps

1. Press the Menu key to enter the Menu page.



2. Scroll the knob key to move to the Power On Config field followed by clicking the knob key to enter the Power On Config page.

2023/09/14

Menu09:25:31

Output

Power On Config

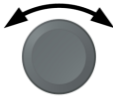
Save/Recall

Interface

Utility

Calibration

Measurement



3. Scroll knob key to move to the Power On Status Set field. Click knob key to enter the field followed by scrolling knob key to select Default option. Click knob key again to confirm setting.

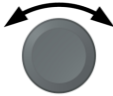
2023/09/14

Power On Config09:25:52

Power On StatusDefault

Return







View System Version

Background The System Information allows you to view the GPP-1000 model name, serial number as well as firmware version.

Steps

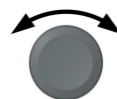
1. Press the Menu key to enter the Menu page.



34

2. Scroll the knob key to move to the Utility field followed by clicking the knob key to enter the Utility page.

2025/04/23	
Utility 16:13:01	
System Information	
Date&Time	
Keyboard	
Buzzer	
Language	English
Bleeder	On
Update	



3. Click the knob key to enter the System Information page where GPP-1000 model name, serial number, as well as firmware version are displayed.

2023/09/14	
System Information 09:32:16	
Model Name PPP	
Serial Number	123
Version	V1.1
Return	

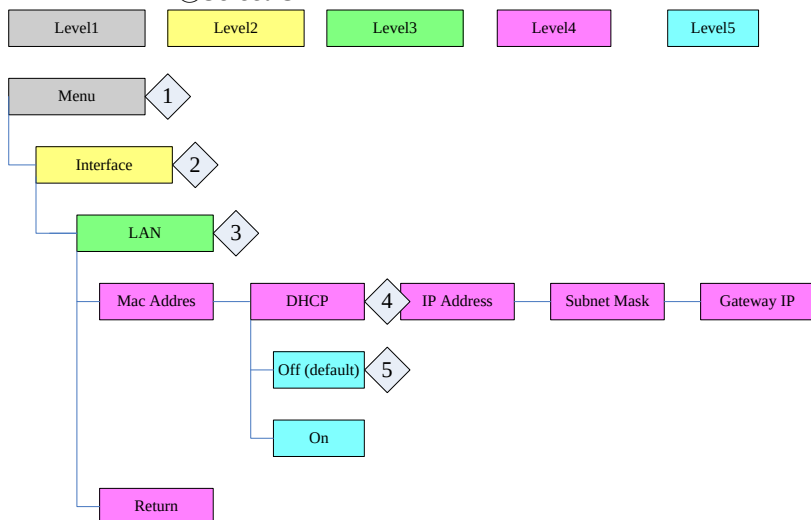


Menu Tree

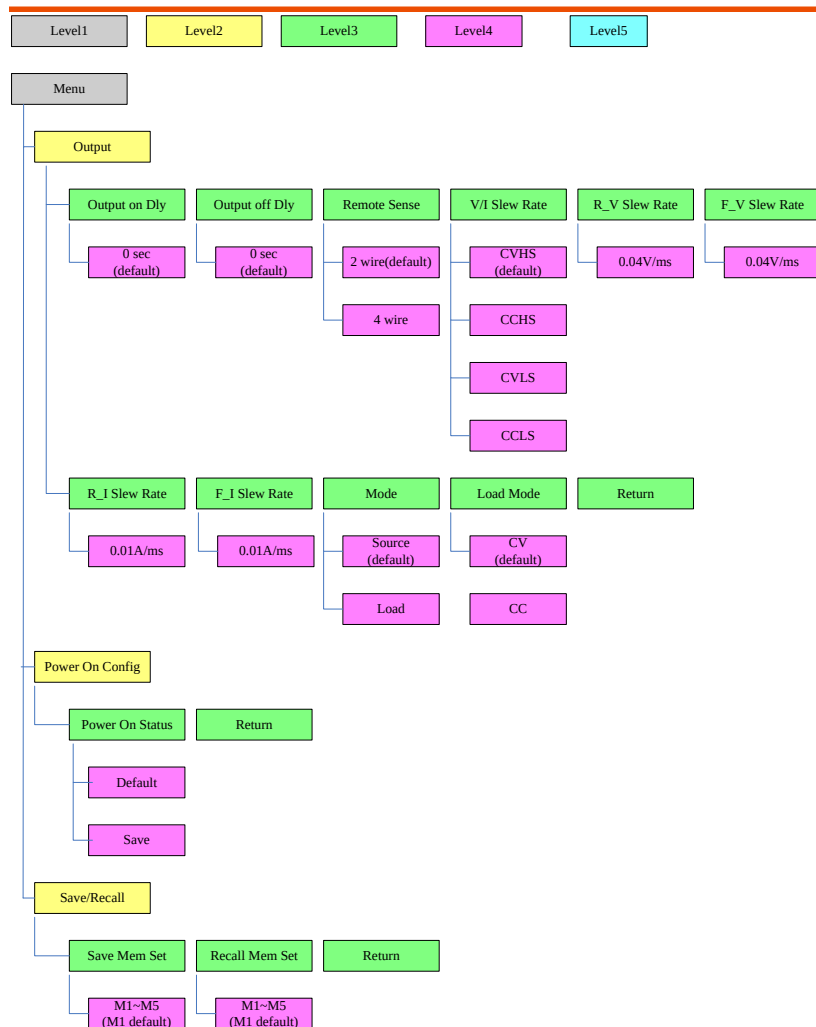
Convention Use the menu trees as a handy reference for the power supply functions and properties. The GPP-1323/GPP-1205 menu system is arranged in a hierarchical tree. Each hierarchical level, which is coated in varied colors, can be navigated through the orders within the diagrams below.

For example: To set the measurement average high:

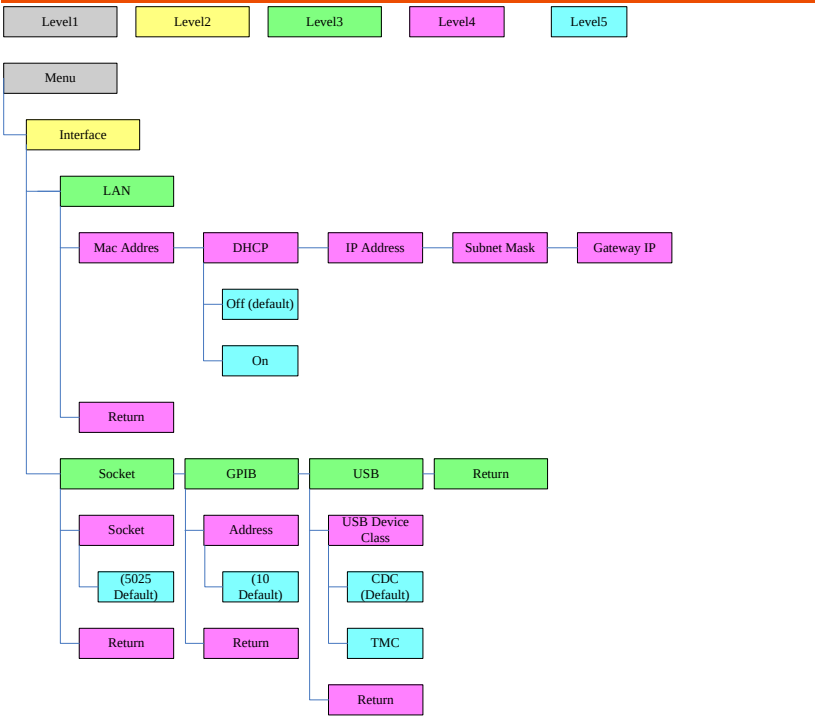
- ① Press the Menu key.
- ② Navigate to the Interface option.
- ③ Enter the LAN option.
- ④ Enter the DHCP option.
- ⑤ Select Off



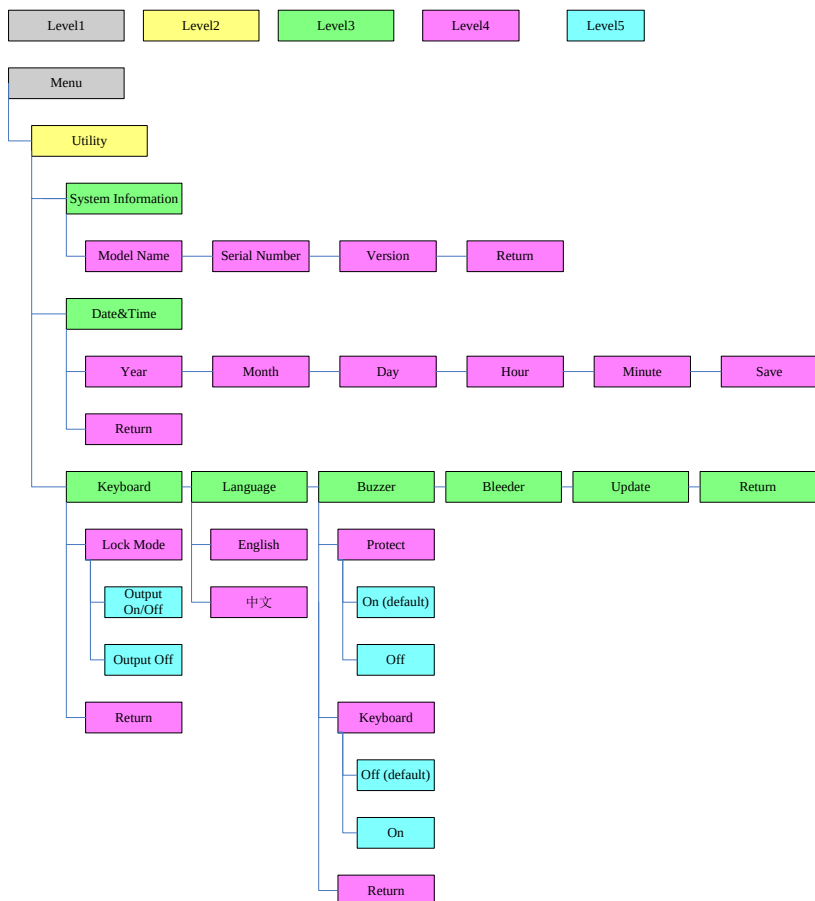
Menu Page - 1



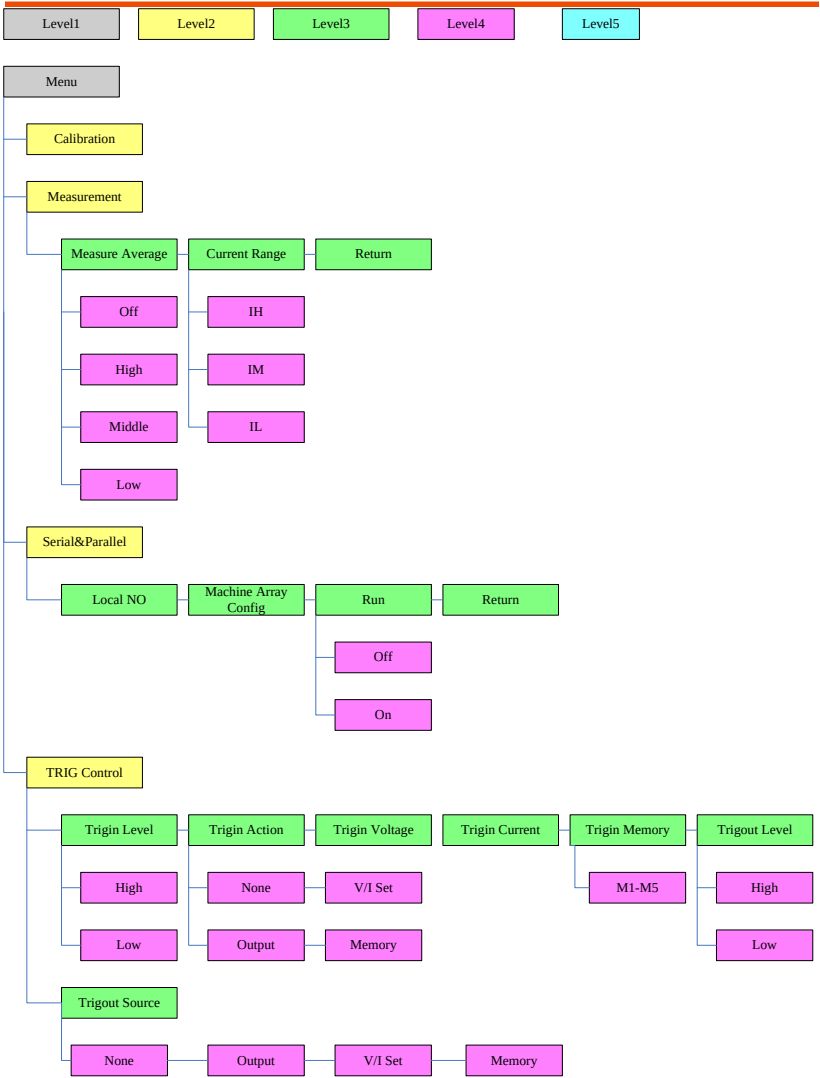
Menu Page - 2



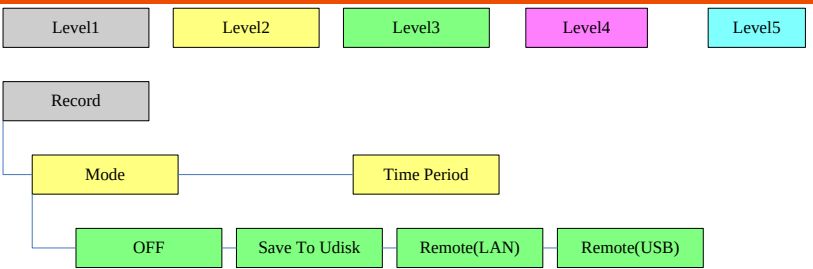
Menu Page - 3



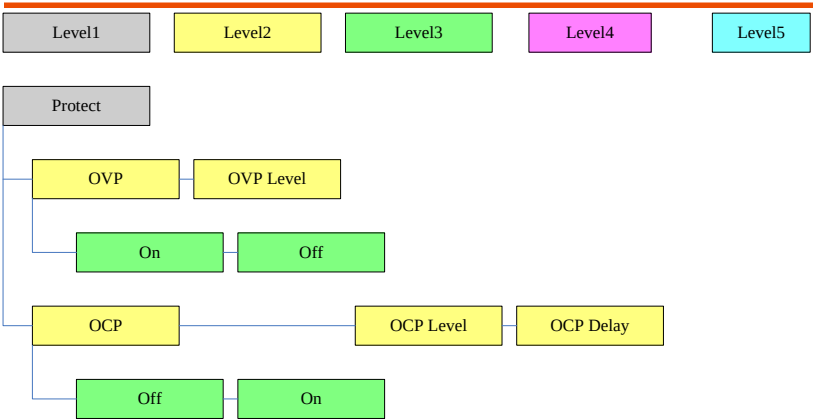
Menu Page - 4



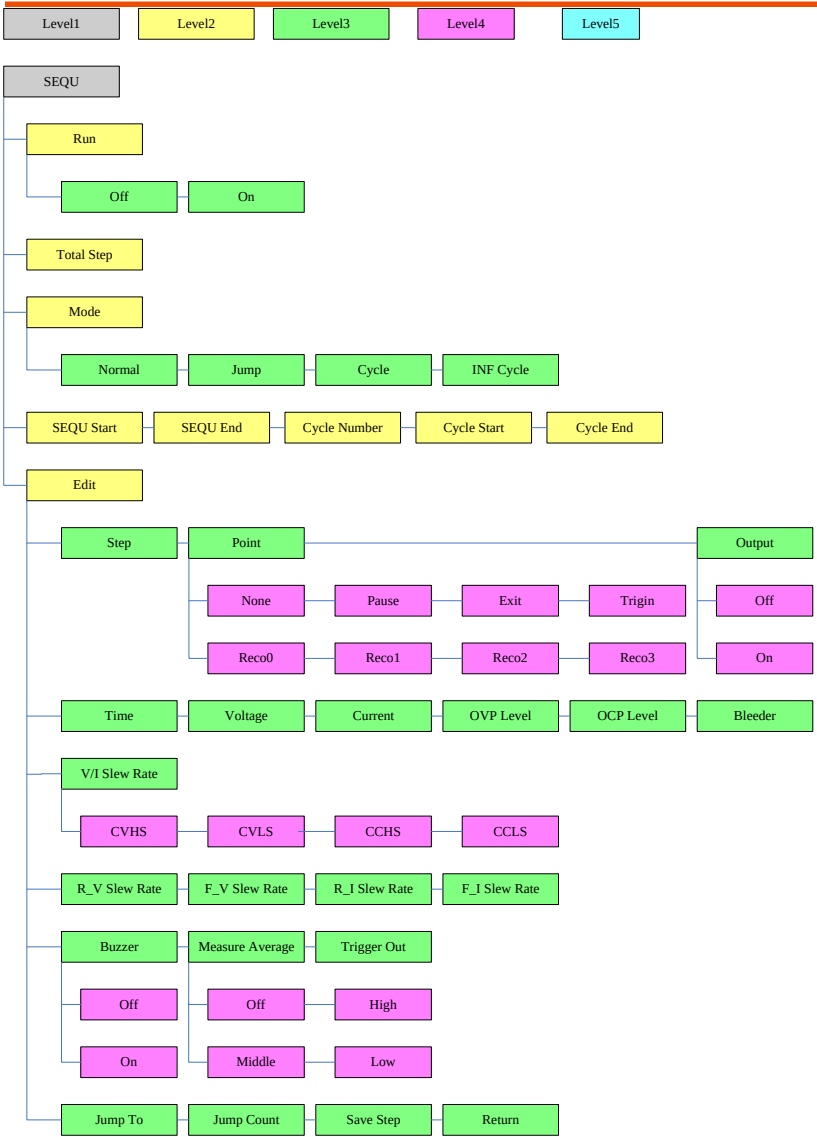
Record



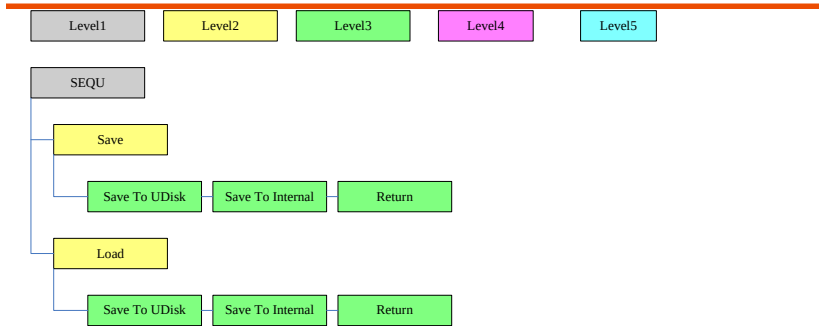
Protect



Sequence-1



Sequence-2



Basic Operation

This section describes the basic operations required to operate the power supply.

Setting OVP/OCP Levels	45
Set to C.V. Priority Mode	47
Set to C.C. Priority Mode	50
Display Modes	54
Panel Lock	55
Save Setup.....	55
Recall Setup.....	56
Remote Sense	57
Record	59
Sequence Test.....	61
Sequence Script File Format.....	61
Sequence Script Settings	61
Sequence Step Edit Settings	63
Setting Sequence Script Configurations	66
Run Sequence Script.....	77
Load Sequence Script.....	80
Save Sequence Script.....	83

Setting OVP/OCP Levels

Background The OVP level and OCP level has a selectable range that is based on the output voltage and output current, respectively. The OVP and OCP level is set to the highest level by default. The actual selectable OVP and OCP range depends on the GPP-1000 model.

When one of the protection measures are on, the type of alarm message will be shown on display. Press Shift + PROT key to clear any protection alarm messages that have been tripped. By default, the output will turn off when the OVP or OCP protection levels are tripped.

Before setting the protection settings:

- Ensure the load is not connected.
- Ensure the output is turned off.

Steps

1. Press the PROT key to enter the Protect page.



2025/04/23	16:15:03
Protect	16:15:03
OVP	On
OVP Level	22.00 V
OCP	On
OCP Level	5.500 A
OCP Delay	0.20 s

2. Scroll the knob key to move between OVP and OCP OVP/OCP fields. Click the knob key to enter each field, respectively. Scroll the knob key to turn ON/OFF the function. Further click the knob key again to confirm your setting.

Option On, Off



Setting the
Protection
Level

3. Scroll the knob key to move among OVP/OCP Level fields. Click the knob key to enter each field, respectively. Scroll the knob key to adjust value, along with the arrow keys to change among digits followed by clicking the knob key to confirm set value.

Model	OCP	OVP
GPP-1205	0.25 A to 5.5 A	1 V to 22 V
GPP-1323	0.15 A to 3.3 A	1.8 V to 35.2 V

2025/04/23	
Protect	16:15:03
OVP	On
OVP Level	22.00 V
OCP	On
OCP Level	5.500 A
OCP Delay	0.20 s

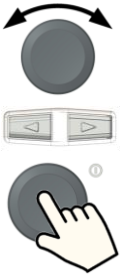


Note

- The OVP setting range is from 5 % to 110 % of the rated output voltage.
- The OCP setting range is from 5 % to 110 % of the rated output current.

Setting the
Delay Time

4. Scroll the knob key to move between OCP Delay fields. Click the knob key to enter each field, respectively. Scroll the knob key to adjust value, along with the arrow keys to change among digits followed by clicking the knob key to confirm set value.



Setting Range
OCP Delay
0.20 s to 2.50 s

2025/04/23		
Protect	16:16:51	
OVP		On
OVP Level	22.00	V
OCP		On
OCP Level	5.500	A
OCP Delay	0.20	s

Clear OVP/OCP protection

The OVP and OCP protection can be cleared after it has been tripped by clicking Shift key + ALM CLR key.



Set to C.V. Priority Mode

When setting the power supply to constant voltage mode, a current limit must also be set to determine the crossover point. When the current exceeds the crossover point, the mode switches to C.C. mode. For details about C.V. operation, [see page 20](#).

C.C. and C.V. mode have two selectable slew rates: High Speed Priority and Slew Rate Priority. High Speed Priority will use the fastest slew rate for the instrument while Slew Rate Priority will use a user-configured slew rate.

Background Before setting the power supply to C.V. mode, ensure:
The output is off.
The load is connected.

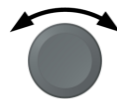
Steps 1. Press the Menu key followed by clicking on Output to enter the Output page.



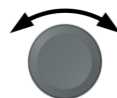
2023/09/14	
Menu	09:24:58
Output	
Power On Config	
Save/Recall	
Interface	
Utility	
Calibration	
Measurement	

2. Scroll the knob key to move to the V/I Slew Rate field followed by clicking the knob key to enter the field.

2023/09/14	
Output	09:34:48
Remote Sense	2 Wire
V/I Slew Rate	CVHS
R_V Slew Rate	0.0400V/ms
F_V Slew Rate	0.0400V/ms
R_I Slew Rate	0.01000A/ms
F_I Slew Rate	0.01000A/ms
Mode	Source



3. Scroll the knob key to select between CVHS(CV High Speed Priority) and CVLS (CV Slew Rate Priority) options.

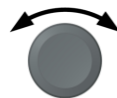


Options CVHS = CV High Speed
Priority
CVLS = CV Slew Rate
Priority

4. Press the knob key to save the selected option.



5. When CV Slew Rate Priority was chosen as the operating mode, scroll knob key to R_V Slew Rate and F_V Slew Rate fields followed by clicking knob key to enter the fields, respectively.



2023/09/14	
Output	09:35:32
Remote Sense	2 Wire
V/I Slew Rate	CVLS
R_V Slew Rate	0.0001V/ms
F_V Slew Rate	0.0400V/ms
R_I Slew Rate	0.01000A/ms
F_I Slew Rate	0.01000A/ms
Mode	Source



6. Scroll the knob key to adjust value, along with the arrow keys to change among digits followed by clicking the knob key to confirm set value, respectively.

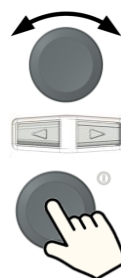


R_V Slew Rate / F_V Slew Rate Setting Range		
Model	Max. Value	Min. Value
GPP-1323	0.0001 V/ms	0.04 V/ms
GPP-1205	0.0001 V/ms	0.04 V/ms

7. Press the Menu key again to return to the main screen.



8. Scroll the knob key to move to V Set. Click knob key followed by scrolling knob key, along with the arrow keys to change among digits, to set the voltage. Click knob key to confirm the set value.



9. Scroll the knob key to move to I (A) Set. Click knob key followed by scrolling knob key, along with the arrow keys to change among digits, to set the current limit (crossover point). Click knob key to confirm the set value.



10. Press the Output key. The Output key becomes illuminated.



Set to C.C. Priority Mode

When setting the power supply to constant current mode, a voltage limit must also be set to determine the crossover point. When the voltage exceeds the crossover point, the mode switches to C.V. mode. For details about C.C. operation, see [page 20](#).

C.C. and C.V. mode have two selectable slew rates: High Speed Priority and Slew Rate Priority. High Speed Priority will use the fastest slew rate for the instrument while Slew Rate Priority will use a user-configured slew rate.

Background Before setting the power supply to C.C. mode, ensure:
 The output is off.
 The load is connected.

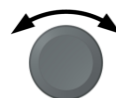
Steps

1. Press the Menu key followed by clicking on Output to enter the Output page.



2023/09/14	
Menu	09:38:32
Output	
Power On Config	
Save/Recall	
Interface	
Utility	
Calibration	
Measurement	

2. Scroll the knob key to move to the V/I Slew Rate field followed by clicking the knob key to enter the field.



2023/09/14	
Output	09:40:42
Remote Sense	2 Wire
V/I Slew Rate	CCHS
R_V Slew Rate	0.0001V/ms
F_V Slew Rate	0.0400V/ms
R_I Slew Rate	0.01000A/ms
F_I Slew Rate	0.01000A/ms
Mode	Source

3. Scroll the knob key to select between CCHS (CC High Speed Priority) and CCLS (CC Slew Rate Priority) options.



Options

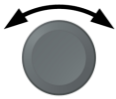
CCHS= CC High Speed Priority

CCLS= CC Slew Rate Priority

4. Press the knob key to save the selected option.



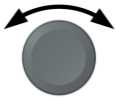
5. When CC Slew Rate Priority was chosen as the operating mode, scroll knob key to R_C Slew Rate and F_C Slew Rate fields followed by clicking knob key to enter the fields, respectively.



2023/09/14	
Output	09:41:17
Remote Sense	2 Wire
V/I Slew Rate	CCLS
R_V Slew Rate	0.0001V/ms
F_V Slew Rate	0.0400V/ms
R_I Slew Rate	0.00001A/ms
F_I Slew Rate	0.01000A/ms
Mode	Source



6. Scroll the knob key to adjust value, along with the arrow keys to change among digits followed by clicking the knob key to confirm set value, respectively.

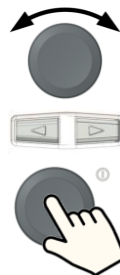


R_C Slew Rate / F_C Slew Rate Setting Range		
Model	Max. Value	Min. Value
GPP-1323	0.00001 A/ms	0.01 A/ms
GPP-1205	0.00001 A/ms	0.01 A/ms

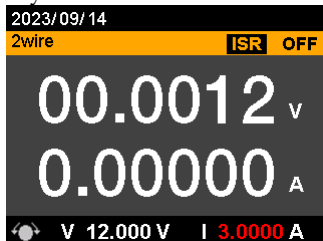
7. Press the Menu key again to return to the main screen.



8. Scroll the knob key to move to V Set. Click knob key followed by scrolling knob key, along with the arrow keys to change among digits, to set the voltage limit (crossover point). Click knob key to confirm the set value.



9. Scroll the knob key to move to I (A) Set. Click knob key followed by scrolling knob key, along with the arrow keys to change among digits, to set the current. Click knob key to confirm the set value.



10. Press the Output key. The Output key becomes illuminated.



Display Modes

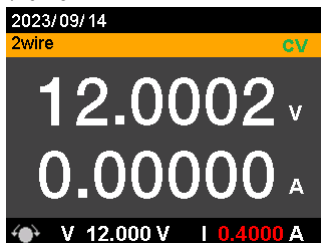
The GPP-1000 series power supplies allow you to view the output in 3 different modes: General (V/A), Power (V/A/W), Sequence(V/A/Sequence).

Steps

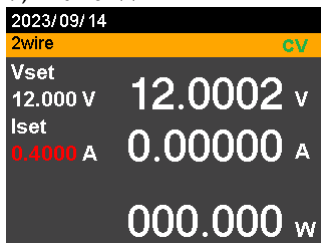
1. Press the Display key on main screen to toggle among each mode.



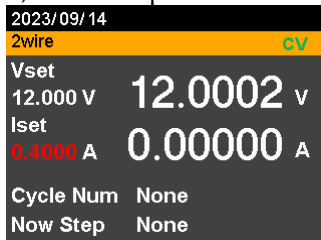
V and A



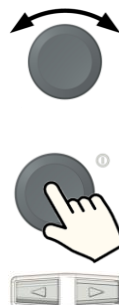
V, A and W



V, A and Sequence



2. Scroll the knob key to change between V and I (A) Set fields. Click the Knob key followed by scrolling it to adjust value, along with the arrow keys to change among digits followed by click knob key again to confirm value.



Note

When sequence mode is selected, V and I set can Not be modified here.

Refer to [page 79](#) for details of V, A and Sequence display.

Panel Lock

The panel lock feature prevents settings from being changed accidentally. When activated, all keys including the knob key except the Shift key, Lock(Unlock/Local)key and Output key (if active) will be disabled.

If the instrument is remotely controlled via the USB/LAN/GPIB interface, the panel lock is automatically enabled.

Activate the panel lock Press the Lock (Unlock/Local)key to activate the panel lock. The lock icon will be shown on display.



Disable the panel lock Press the Shift key followed by the Lock (Unlock/Local)key to disable the panel lock. The lock icon will thus be cleared from display.



Note

By default, the output key is disabled when lock function is activated. However, if Output On/Off function is selected under Utility section, the output key can be tuned On/Off even though the lock mode is activated. **Refer to page 108 for detail.**

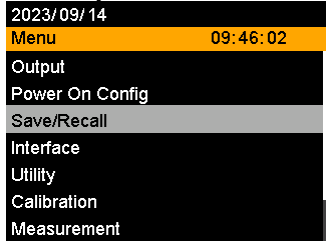
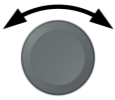
Save Setup

The GPP-1000 has up to 5 memory storage (M1 to M5) to save the set current, set voltage, OVP and OCP settings.

Steps 1. Press the Menu key to enter the Menu page.



2. Scroll the knob key to move to the Save/Recall field followed by clicking the knob key to enter the Save/Recall page.

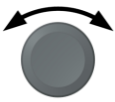
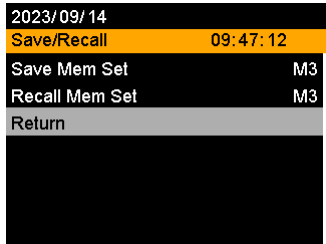


3. Click knob key to enter the Save Mem Set field followed by scrolling knob key to select one of the options for saving setting. Click knob key again to confirm the saving.



Options

M1 ~ M5



Recall Setup

The GPP-1000 has up to 5 memory storage (M1 to M5) to recall the set current, set voltage, OVP and OCP settings.

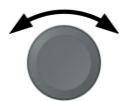
Recall
Memory
from
Save/Recal
1

1. Press the Menu key to enter the Menu page.



2. Scroll the knob key to move to the Save/Recall field followed by clicking the knob key to enter the Save/Recall page.

2023/09/14	
Menu	09:46:02
Output	
Power On Config	
Save/Recall	
Interface	
Utility	
Calibration	
Measurement	

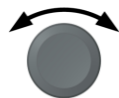


3. Scroll knob key to move to the Recall Mem Set field. Click knob key to enter the field followed by scrolling knob key to select one of the options to recall setting. Click knob key again to confirm.

Options

M1 to M5

2023/09/14	
Save/Recall	09:47:12
Save Mem Set	M3
Recall Mem Set	M3
Return	



Remote Sense

Remote sense is used to compensate for the voltage drop seen across load cables due to the resistance inherent in the load cables. The remote sense terminals are connected to the load terminals to determine the voltage drop across the load cables.

Remote sense can compensate up to 1 volt for GPP-1000. Load cables should be chosen with a voltage drop less than the compensation voltage.

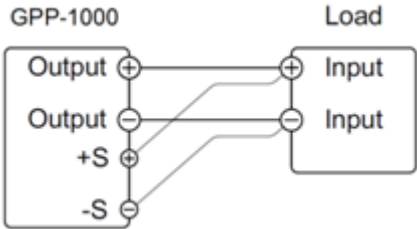


Warning

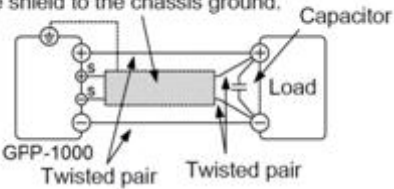
Ensure the output is off before handling the remote sense connector.

Use sense cables with a voltage rating exceeding the isolation voltage of the power supply.

Never connect sensing cables when the output is

	on. Electric shock or damage to the power supply could result.				
Output terminal Connector Overview	When using the remote sensing, make sure the wires that are used follow the following guidelines: <table><tr><td>Wire gauge:</td><td>AWG 20 to AWG 14</td></tr><tr><td>Strip length:</td><td>6.5 mm // 0.26 in</td></tr></table>  +S -S ⚠ +S: + Sense terminal -S: - Sense terminal	Wire gauge:	AWG 20 to AWG 14	Strip length:	6.5 mm // 0.26 in
Wire gauge:	AWG 20 to AWG 14				
Strip length:	6.5 mm // 0.26 in				
 Note	Be sure to remove the Sense joining cables so the units are not using local sensing.				
Single Load	1. Connect the +S terminal to the positive potential of the load. Connect the -S terminal to the negative potential of the load.  2. Operate the instrument as normal. See the Basic Operation chapter for details.				
Wire Shielding and Load line impedance	To help to minimize the oscillation due to the inductance and capacitance of the load cables, use an electrolytic capacitor in parallel with the load terminals. To minimize the effect of load line impedance use twisted wire pairing.				

Shield the sense wires and connect the shield to the chassis ground.



Record

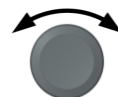
The GPP-1000 series can save measured voltage, current and time data into either USB flash disk or send the data to program via remote control.

Steps

1. Press the RECO key to enter the Recorder page.

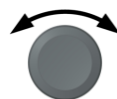


2. Scroll the knob key to move to the Sample Period field, which determines the interval of data log saving. Click knob key followed by scrolling it to adjust value, along with the arrow keys to change among digits. Click knob key again to confirm set period.
Range
1s to 999s



2024/01/17	
Record	10:10:19
Mode	OFF
Time Period	1 s

3. Scroll the knob key to move to the Type field. Click knob key followed by scrolling it to select a type for data log saving. Click knob key to confirm setting.



Type

None

No action will be executed.

Save to Udisk

Save data log into USB disk. It is required to insert USB disk first.

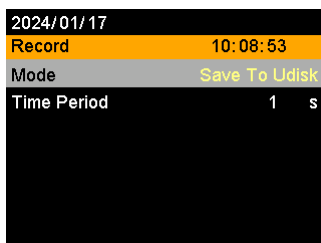


Remote(LAN)

Send data log to remote side via LAN in real time.

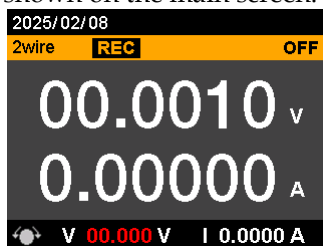
Remote(USB)

Send data log to remote side via USB in real time.



Recorder icon in main display

When Recorder is activated, the RECO icon will be shown on the main screen.



Note

When the Save USB is selected, make sure that return to Data Logger page to select None for Type so that the latest data file can be saved properly.

Owing to the fact that data log is being transmitted in real time via remote control, when the Remote is selected, there is no need to return to Data Logger page to select None for Type.

Sequence Test

This section describes how to use the Sequence function to edit, run, load and save sequence scripts for automated testing. The sequence function is useful if you want to perform a number of tests automatically. The GPP-1000 sequence function can store up to 5 test scripts in internal memory and also into the connected USB disk. Each test script can also be programmed in a scripting language. For more information on how to create sequence scripts via programs, please contact GW Instek.

Sequence Script File Format

Background d	The sequence script files are saved in the *.csv file format. When saving script file into internal memory, each file is saved as file X.csv where X is the file number from 1 to 5. When saving script file into the USB disk, each file is saved as SEQU_X.csv where X is the file serial number from 1 to 255.
-----------------	---

Sequence Script Settings

Background d	This section mainly introduces the settings within the Sequence page.
-----------------	---

Run	It runs sequence script automatically. A script can be saved in or loaded from the internal memory or USB disk. Once the Run field is turned On, return to the main display followed by pressing Output key to initiate the set sequence script. Run On, Off
Total Step	It determines the total steps for a sequence script. Each step can be edited from the Edit field. Total Step 1 to 999

Mode	Normal It sets Normal Mode.
	Jump It sets Jump Mode.
	Cycle It sets cycle Mode.
	INF Cycle It indicates infinite cycles.
SEQU Start	It sets which step is the starting step of an entire sequence script. Be aware that this Start step can only be set equal to or earlier than the "Cycle Start".
SEQU End	It sets which step is the end step of an entire sequence script. Be aware that this End step can only be set equal to or later than the "Cycle End".
Cycle Number	It sets how many cycles will be repeated. For example, when a script consists of 6 steps and cycle number is set 3, the sequence runs the script, which contains step 1 to 6, for 3 times in a row. Cycle Number 1 to 999 It sets cycle(s) from 1 to 999 times.
Cycle Start	It sets which step is the starting step of cycle. The available steps options vary per total steps. Cycle Start 1 to 999 It sets which step is the starting point of cycle.
Cycle End	It sets which step is the end step of cycle. The available steps options vary per total steps. Cycle End 1 to 999 It sets which step is the end point of cycle.

Save	It saves a select sequence script into either internal memory or the connected USB disk.	
	Save From	
	Edit	To select currently edited script as a source of script to be saved.
	SEQU_	If connected USB disk contains saved
	X.csv	scripts, the files are available to select.
	Save To Internal	
	File	To save the selected source script into a
	X.csv	select internal memory from no. 1 to 5.
	Save To USB	
	SEQU_	To save the selected source script into the
	X.csv	USB disk from no. 001 to 255.
Load	It loads a select sequence script from either connected USB disk or internal memory. Note that when USB disk is plugged in, memory from USB disk will prioritize over internal memory.	
	File X.csv /	To load script from USB disk
	SEQU_X.csv	(SEQU_X.csv) or internal memory (File X.csv).



Note

When there is any issue occurred from settings, GPP-1000 series will not be able to run sequence script. The error code along with warning message will be shown within the prompt message box when Run filed is enabled.

Sequence Step Edit Settings

Background	This section mainly introduces the settings within the Sequence Edit page, which is used to edit several parameters for each step.	
Step	To select which step to be edited. The available option(s) depends on the total step setting.	
	Step	1 to 999

Point	It sets a core action for select step. The available options are described as follows.
Point	
None	
Pause	It sets which step will be paused during a sequence script. When a sequence is paused, press Test key to continue running the sequence.
Exit	It sets which step is the exit step of an entire sequence script. Generally, a sequence script can be executed again after finishing by pressing Output key. However, when Exit step is set, the sequence function won't be executed again after finishing by Output key directly.
RECO 0	It sets which step will be executed in stop action for the data log function. This relates to the RECO 1 ,RECO 2 and RECO 3 actions as the following sections.
RECO 1	It sets which step will be executed in the action of saving data log into USB disk. Once a sequence script runs to this step, data log will be kept saving into USB disk instantly until next RECO 0 action is met. Refer to page 60 for details.
RECO 2/RECO 3	It sets which step will be executed in the action of sending data log to remote control side. Once a sequence script runs to this step, data log will be kept sending to remote control side until next RECO 0 action is met. Refer to page 60 for details.
Trigin	RECO 2---USB CDC,RECO 3--LAN It sets which step will be executed by trig-in signal. The Trig in step will be held until trig-in signal is received by GPP-1000 series unit.

Output	It sets if power output will be activated for the select step. Output ON, OFF
Time	It sets time duration of execution for the select step. Time 0.1 s to 999.99 s
Voltage	It sets output voltage of CV mode for the select step. Voltage 0 V to 105 % rated voltage
Current	It sets output limit current of CC mode for the select step. Current 0 V to 105 % rated current
OVP Level	It sets over voltage protection setting for the select step. OVP 5 % to 110 % rated voltage Level
OCP Level	It sets over current protection setting for the select step. OCP 5 % to 110 % rated current Level
Bleeder	It enables or disables discharge loop control for the select step. Bleeder None, ON, OFF
V/I Slew Rate	It sets High Speed Priority and Slew Rate Priority of CV and CC modes for the select step. V/I Slew Rate CVHS It utilizes the fastest slew rate of CV mode. Refer to page 48 for more details. CCHS It utilizes the fastest slew rate of CC mode. Refer to page 51 for more details. CVLS It utilizes the user-configured slew rate of CV mode. When this option is selected, go to configure the R_V slew Rate (rising) and F_V slew rate (falling) settings, respectively. Refer to page 48 for more details. CCLS It utilizes the user-configured slew rate of CC mode. When this option is selected, go to configure the R_C slew Rate (rising) and F_C slew rate (falling) settings, respectively. Refer to page 51 for more details.
Buzzer	It enables or disables buzzer sound for the select step. Buzzer ON, OFF

Measure Average	It sets the speed level of display sampling for the measure average setting for the select step. More the average numbers (High), slower the display update. Refer to page 93 for details. Measure Off, Low, Middle, High Average
Jump To	It sets the target step to jump to. For example, when step 5 is set for Jump To under the step 2 Edit page, it means that when sequence runs to step 2, it will directly jump to step 5 at the end of step 2. The available step option(s) depends on the total step setting. Jump To 1 to 999
Jump Count	It sets the number of times to loop the Jump To step action. Jump Count 1 to 999
Trigger Out	It sets if trigger out signal will be transmitted when the sequence runs to the step. Trigger Out ON, OFF
Save Step	To select which step to be saved.



Note

When there is any issue occurred from settings, GPP-1000 series will not be able to run sequence script. The error code along with warning message will be shown within the prompt message box when Run filed is enabled.

Setting Sequence Script Configurations

Steps

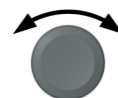
1. Press SEQU key followed by clicking on Sequence field via knob key to enter the Sequence page.



2023/09/14	
Sequence	09:47:44
Run	Off
Total Step	4
Mode	Cycle
SEQU Start	1
SEQU End	4
Cycle Number	1
Cycle Start	1



2. Scroll knob key to move to the Total Step field followed by clicking knob key to enter the field. Scroll knob key to adjust value along with arrow keys to change among digits followed by clicking knob key to confirm total steps.



Total 1 to 999

Step

2023/09/14	
Sequence	09:47:53
Run	Off
Total Step	4
Mode	Cycle
SEQU Start	1
SEQU End	4
Cycle Number	1
Cycle Start	1



3. Mode

2023/09/14	
Sequence	09:48:48
Run	Off
Total Step	4
Mode	Normal
SEQU Start	1
SEQU End	4
Cycle Number	1
Cycle Start	1

4. SEQU Start

2023/09/14	
Sequence	09:49:13
Run	Off
Total Step	4
Mode	Normal
SEQU Start	1
SEQU End	4
Cycle Number	1
Cycle Start	1

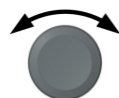
5. SEQU End

2023/09/14	
Sequence	09:49:19
Run	Off
Total Step	4
Mode	Normal
SEQU Start	1
SEQU End	4
Cycle Number	1
Cycle Start	1

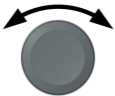
6. Scroll knob key to move to the Cycle Number field followed by clicking knob key to enter the field. Scroll knob key to adjust value along with arrow keys to change among digits followed by clicking knob key to confirm cycle number.

Cycle 1 to 999
Number

2023/09/14	
Sequence	09:50:19
Total Step	4
Mode	Cycle
SEQU Start	1
SEQU End	4
Cycle Number	1
Cycle Start	1
Cycle End	4



7. Scroll knob key to move to the Cycle Start field followed by clicking knob key to enter the field. Scroll knob key to adjust value along with arrow keys to change among digits followed by clicking knob key to confirm cycle start.



Cycle 1 to 999
Start

2023/09/14	
Sequence	09:50:32
Total Step	4
Mode	Cycle
SEQU Start	1
SEQU End	4
Cycle Number	1
Cycle Start	1
Cycle End	4

8. Scroll knob key to move to the Cycle End field followed by clicking knob key to enter the field. Scroll knob key to adjust value along with arrow keys to change among digits followed by clicking knob key to confirm cycle end.

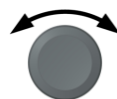


Cycle 1 to 999
End

2023/09/14	
Sequence	09:50:50
Total Step	4
Mode	Cycle
SEQU Start	1
SEQU End	4
Cycle Number	1
Cycle Start	1
Cycle End	4

9. Scroll knob key to move to the Edit field followed by clicking knob key to enter the Sequence Edit page.

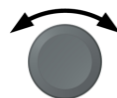
2023/09/14	
Edit	09:52:03
Step	1
Point	None
Output	On
Time	0.90 S
Voltage	2.000 V
Current	1.0000 A
OVP Level	21.0 V



10. Scroll knob key to move to the Step field followed by clicking knob key to enter the field. Scroll knob key to select a step along with arrow keys to change among digits followed by clicking knob key to confirm the step to edit.

Step 1 to 999

2023/09/14	
Edit	09:52:20
Step	1
Point	None
Output	On
Time	0.90 S
Voltage	2.000 V
Current	1.0000 A
OVP Level	21.0 V



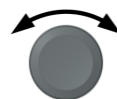
11. Scroll knob key to move to the Point field followed by clicking knob key to enter the field. Scroll knob key to select an action followed by clicking knob key to confirm the action for the step to edit.

Point None, Exit, Pause, Trigin,
RECO 0, RECO 1, RECO
2, RECO 3

2023/09/14	
Edit	09:53:22
Step	1
Point	None
Output	On
Time	0.90 S
Voltage	2.000 V
Current	1.0000 A
OVP Level	21.0 V



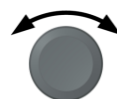
12. Scroll knob key to move to the Output field followed by clicking knob key to enter the field. Scroll knob key to turn on/off output followed by clicking knob key to confirm output action.



Output ON,OFF

2023/09/14		
Edit	09:53:54	
Step	1	
Point	None	
Output	On	
Time	0.90	S
Voltage	2.000	V
Current	1.0000	A
OVP Level	21.0	V

13. Scroll knob key to move to the Time field followed by clicking knob key to enter the field. Scroll knob key to adjust value along with arrow keys to change among digits followed by clicking knob key to confirm time setting.



Time 0.1 s to 999.99 s

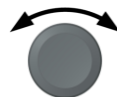
2023/09/14		
Edit	09:54:08	
Step	1	
Point	None	
Output	On	
Time	0.90	S
Voltage	2.000	V
Current	1.0000	A
OVP Level	21.0	V



14. Scroll knob key to move to the Voltage field followed by clicking knob key to enter the field. Scroll knob key to adjust value along with arrow keys to change among digits followed by clicking knob key to confirm voltage setting.

Voltage 0 V to 105 % rated voltage

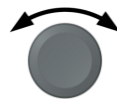
2023/09/14	
Edit	09:54:20
Step	1
Point	None
Output	On
Time	0.90 S
Voltage	2.000 V
Current	1.0000 A
OVP Level	21.0 V



15. Scroll knob key to move to the Current field followed by clicking knob key to enter the field. Scroll knob key to adjust value along with arrow keys to change among digits followed by clicking knob key to confirm current setting.

Current 0 A to 105 % rated current

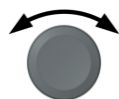
2023/09/14	
Edit	09:54:31
Step	1
Point	None
Output	On
Time	0.90 S
Voltage	2.000 V
Current	1.0000 A
OVP Level	21.0 V



16. Scroll knob key to move to the OVP Level field followed by clicking knob key to enter the field. Scroll knob key to adjust value along with arrow keys to change among digits followed by clicking knob key to confirm OVP setting.

OVP 5 % to 110 % rated voltage
Level

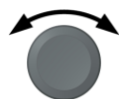
2023/09/14	
Edit	09:54:44
Step	1
Point	None
Output	On
Time	0.90 S
Voltage	2.000 V
Current	1.0000 A
OVP Level	21.0 V



17. Scroll knob key to move to the OCP Level field followed by clicking knob key to enter the field. Scroll knob key to adjust value along with arrow keys to change among digits followed by clicking knob key to confirm OCP setting.

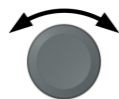
OCP 5 % to 110 % rated current
Level

2023/09/14	
Edit	09:54:57
Point	None
Output	On
Time	0.90 S
Voltage	2.000 V
Current	1.0000 A
OVP Level	21.0 V
OCP Level	5.25 A

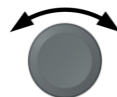


18. Scroll knob key to move to the Bleeder field followed by clicking knob key to enter the field. Scroll knob key to turn on/off bleeder followed by clicking knob key to confirm bleeder action.

Bleeder ON,OFF



19. Scroll knob key to move to the V/I Slew Rate field followed by clicking knob key to enter the field. Scroll knob key to select an option followed by clicking knob key to confirm V/I slew rate setting.

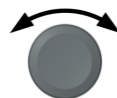


2023/09/14		
Edit 09:55:39		
OVP Level	21.0	V
OCP Level	5.25	A
V/I Slew Rate	CVLS	
R_V Slew Rate	0.210V/ms	
F_V Slew Rate	0.210V/ms	
R_I Slew Rate	0.0525A/ms	
F_I Slew Rate	0.0525A/ms	



V/I Slew Rate CVHS, CCHS, CVLS, CCLS

When CVLS is selected in previous step, scroll knob key to R_V Slew Rate and F_V Slew Rate fields respectively followed by clicking knob key to enter each field.



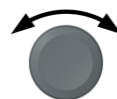
Scroll the knob key to adjust value, along with the arrow keys to change among digits followed by clicking knob key to confirm set value, respectively.



2023/09/14		
Edit 09:56:11		
OVP Level	21.0	V
OCP Level	5.25	A
V/I Slew Rate	CVLS	
R_V Slew Rate	0.001V/ms	
F_V Slew Rate	0.001V/ms	
R_I Slew Rate	0.0525A/ms	
F_I Slew Rate	0.0525A/ms	



When CCLS is selected in previous step, scroll knob key to R_C Slew Rate and F_C Slew Rate fields respectively followed by clicking knob key to enter each field.

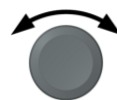


Scroll the knob key to adjust value, along with the arrow keys to change among digits followed by clicking knob key to confirm set value, respectively.



2023/09/14		
Edit	09:56:54	
OVP Level	21.0	V
OCF Level	5.25	A
V/I Slew Rate	CCLS	
R_V Slew Rate	0.001V/ms	
F_V Slew Rate	0.001V/ms	
R_I Slew Rate	0.0001A/ms	
F_I Slew Rate	0.0125A/ms	

20. Scroll knob key to move to the Buzzer field followed by clicking knob key to enter the field. Scroll knob key to turn on/off buzzer followed by clicking knob key to confirm buzzer setting.



2023/09/14		
Edit	09:57:12	
V/I Slew Rate	CVHS	
R_V Slew Rate	0.001V/ms	
F_V Slew Rate	0.001V/ms	
R_I Slew Rate	0.0001A/ms	
F_I Slew Rate	0.0125A/ms	
Buzzer	On	
Measure Average	Off	

Buzzer ON,OFF



21. Scroll knob key to move to the Measure Average field followed by clicking knob key to enter the field. Scroll knob key to select an option followed by clicking knob key to confirm the setting.

2023/09/14	
Edit 09:57:30	
V/I Slew Rate	CVHS
R_V Slew Rate	0.001V/ms
F_V Slew Rate	0.001V/ms
R_I Slew Rate	0.0001A/ms
F_I Slew Rate	0.0125A/ms
Buzzer	On
Measure Average	Off

Measure Off, Low, Middle, High Average



22. Scroll knob key to move to the Trigger Out field followed by clicking knob key to enter the field. Scroll knob key to turn on/off the function followed by clicking knob key to confirm the selection.

Trigger ON, OFF
Out



23. Scroll knob key to move to Jump To field followed by clicking knob key to enter the field. Scroll knob key to select a step number along with arrow keys to change among digits followed by clicking knob key to confirm step to jump to.

2023/09/14	
Edit 09:58:33	
F_I Slew Rate	0.0525A/ms
Buzzer	Off
Measure Average	Off
Jump To	2
Jump Count	1
Save Step	
Return	

Jump To 1 to 999



24. Scroll knob key to move to Jump Count field followed by clicking knob key to enter the field. Scroll knob key to select a count number along with arrow keys to change among digits followed by clicking knob key to confirm jump count.



2023/09/14	
Edit	09:58:56
F_ Slew Rate	0.0525A/ms
Buzzer	Off
Measure Average	Off
Jump To	3
Jump Count	8
Save Step	
Return	

Jump 1 to 999
Count

25. Repeat the previous step 9 to step 24 for each step individually within a sequence script.

Run Sequence Script

Overview After well setting the relevant configurations from Sequence and Sequence Edit pages, it is ready to launch a sequence script test. Also, it is available to load script from internal memory or the connected USB disk. See page 81 for how to load sequence script.

Steps 1. Press SEQU key followed by clicking on Sequence field via knob key to enter the Sequence page.



2023/09/14	
Sequence	09:59:39
Run	Off
Total Step	4
Mode	Jump
SEQU Start	1
SEQU End	4
Cycle Number	1
Cycle Start	1



2. Scroll knob key to move to the Run field followed by clicking knob key to enter the field. Scroll knob key to turn On followed by clicking knob key to confirm setting.



2025/02/10	
Sequence	13:13:11
Run	On
Total Step	21
Mode	Cycle
SEQU Start	1
SEQU End	21
Cycle Number	1
Cycle Start	1

Run ON, OFF

3. The SEQ icon is displayed on the top banner accordingly.

2023/09/14	
2wire	SEQ OFF
00.0012 V	
0.00000 A	
V 08.000 V I 1.0000 A	

4. Press the SEQU key to switch to display mode in which press Display key repeatedly until the V, A and Sequence mode is shown. The SEQ icon is displayed on the top banner accordingly.



2025/02/10	
2wire	SEQ CC
Vset	00.0010 V
Iset	0.00027 A
Cycle Num	None
Now Step	0001

SEQ icon

Sequence info section

5. Press the Output key to execute the sequence script test. See the figures below for descriptions on varied conditions.
SEQ stop in normal mode



2025/02/10
 2wire **SEQ**  **OFF**
 Vset
 07.000 V 00.0011 V
 Iset
 5.2500 A 0.00000 A
 Cycle Num None
 Now Step None

SEQ run in normal mode

2025/02/10
 2wire **SEQ**  **CC**
 Vset
 05.000 V 00.0010 V
 Iset
 3.2500 A 0.00027 A
 Cycle Num None
 Now Step 0001

SEQ pause in normal mode

2025/02/10
 2wire **SEQ**  **CV**
 Vset
 05.000 V 04.9985 V
 Iset
 3.2500 A 0.00040 A
 Cycle Num None
 Now Step 0001

SEQ trigin in normal mode

2025/02/10
 2wire **SEQ**  **CV**
 Vset
 08.000 V 05.9992 V
 Iset
 5.0000 A 0.00036 A
 Cycle Num None
 Now Step None

SEQ run in cycle mode

```

2025/02/10
2wire  SEQ  CV
Vset
10.000 V 09.9985 V
Iset
2.0000 A 0.00038 A
Cycle Num 0001
Now Step 0003

```

SEQ run in jump mode

```

2025/02/10
2wire  SEQ  CV
Vset
05.000 V 04.9982 V
Iset
3.2500 A 0.00034 A
Cycle Num Jump Mode
Now Step 0001

```

SEQ run in inf mode

```

2025/02/10
2wire  SEQ  CV
Vset
05.000 V 04.9985 V
Iset
3.2500 A 0.00031 A
Cycle Num INF
Now Step 0001

```



Note

When a script is running, pressing the Output key will abort the execution of the script immediately. The Output key illumination will turn off.

Load Sequence Script

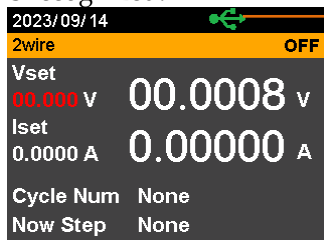
Overview A sequence script can be loaded from either USB disk or internal memory. When USB disk is connected with GPP-1000 series, the script file in USB disk has higher priority over internal memory; that is, user can only load script file in USB disk when USB disk is plugged in. Prior to loading script from USB disk, ensure the script file is placed in root directory.

Load script
from USB
disk

1. Insert a USB disk into the front panel USB-A port. Ensure the USB disk contains a test script in root directory.

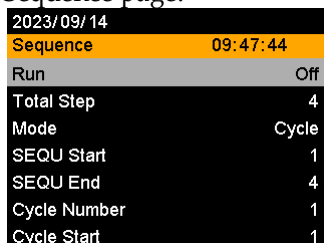


2. The icon of USB disk detection will be displayed on the upper status bar after a few seconds if the USB disk is recognized.

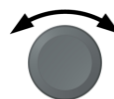
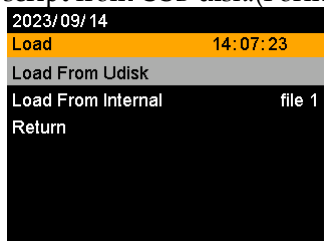


USB indicator

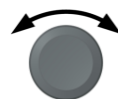
3. Press SEQU key followed by clicking on Sequence field via knob key to enter the Sequence page.



4. Scroll knob key to move to the Load field followed by clicking knob key to enter the field. Scroll knob key to select an available script from USB disk.(Format: SEQU_X.csv).



5. The prompt window appears as follows.
Click knob key to confirm loading the select script file.



Load script from internal memory

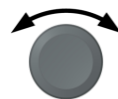
1. Press SEQU key followed by clicking on Sequence field via knob key to enter the Sequence page.



2023/09/14	
Sequence	09:47:44
Run	Off
Total Step	4
Mode	Cycle
SEQU Start	1
SEQU End	4
Cycle Number	1
Cycle Start	1



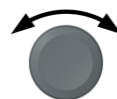
2. Scroll knob key to move to the Load field followed by clicking knob key to enter the field. Scroll knob key to select an available script from internal memory (Format: File X.csv).



2023/09/14	
Load	14:07:34
Load From Udisk	
Load From Internal	file 1
Return	



3. The prompt window appears as follows.
Click knob key to confirm loading the select script file.



Save Sequence Script

Overview A sequence script can be saved from either an edited one or USB disk to either internal memory or USB disk. Prior to saving script from USB disk, ensure the script file is placed in root directory. When saving script to USB disk, ensure USB disk is plugged into GPP-1000 series.

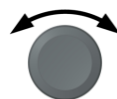
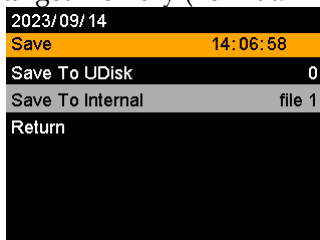
Save script from edited one to internal memory 1. Press SEQU key followed by clicking on Sequence field via knob key to enter the Sequence page.



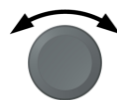
2023/09/14	
Sequence	09:47:44
Run	Off
Total Step	4
Mode	Cycle
SEQU Start	1
SEQU End	4
Cycle Number	1
Cycle Start	1



2. Scroll knob key to move to the Save To Internal field followed by clicking knob key to enter the field. Scroll knob key to select a target memory (Format: File X.csv).



3. Click knob key and the prompt window shows as follows. Click knob key again to confirm saving Edit to target File X.csv.



Save script from USB disk to internal memory

1. Insert a USB disk into the front panel USB-A port. Ensure the USB disk contains a test script in root directory.



2. The icon of USB disk detection will be displayed on the upper status bar after a few seconds if the USB disk is recognized.

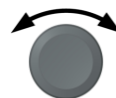
3. Press Test key followed by clicking on Sequence field via knob key to enter the Sequence page.

2023/09/14	
Sequence	09:47:44
Run	Off
Total Step	4
Mode	Cycle
SEQU Start	1
SEQU End	4
Cycle Number	1
Cycle Start	1

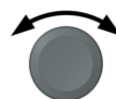
SEQU



4. Scroll knob key to move to the Load field followed by clicking knob key to enter the Sequence Load page.



5. Click knob key to enter the Load From Udisk field followed by scrolling knob key to select a script file from USB disk (Format: SEQU_X.csv). Click knob key to confirm selection.

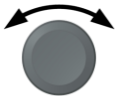


2023/09/14	
Load	14:07:23
Load From Udisk	
Load From Internal	file 1
Return	

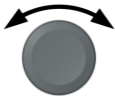


6. Scroll knob key to move to the Save To Internal field followed by clicking knob key to enter the field. Scroll knob key to select a target memory (Format: File X.csv).

2023/09/14	
Save	14:06:58
Save To UDisk	0
Save To Internal	file 1
Return	



7. Click knob key and the prompt window shows as follows. Click knob key again to confirm saving SEQU_X.csv to target File X.csv.



Save script 1. Insert a USB disk into the front panel USB-
from edited A port.
one to USB
disk



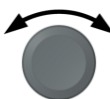
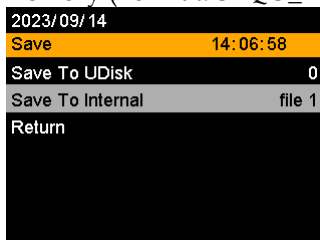
2. The icon of USB disk detection will be displayed on the upper status bar after a few seconds if the USB disk is recognized.

3. Press Test key followed by clicking on Sequence field via knob key to enter the Sequence page.

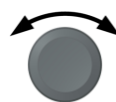
2023/09/14	
Sequence	09:47:44
Run	Off
Total Step	4
Mode	Cycle
SEQU Start	1
SEQU End	4
Cycle Number	1
Cycle Start	1



4. Scroll knob key to move to the Save To USB field followed by clicking knob key to enter the field. Scroll knob key to select a target memory (Format: SEQU_X.csv).



5. Click knob key and the prompt window shows as follows. Click knob key again to confirm saving Edit to target SEQU_X.csv.



MENU CONFIGURATION

- Configuration Overview 89
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Configuration Overview

The MENU configuration of GPP-1000 series consists of Output setting, Measurement setting, TRIG Control setting, PWR On Config setting, Save/Recall setting, Interface setting, Utility setting and Calibration setting. The last Calibration setting, which also includes System firmware update, is generally not recommended for end-user use.

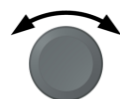
Output

Output
On/Off
Delay

It delays turning the output on/off for a designated amount of time. Note that this function has a maximum deviation (error) of 20ms and is disabled when the output is set to external control.

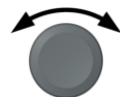
1. Press the Menu key followed by scrolling knob key to move to Output field.

2023/09/14	
Menu	09:24:58
Output	
Power On Config	
Save/Recall	
Interface	
Utility	
Calibration	
Measurement	



2. Click knob key to enter the Output page. Scroll knob key to move to Output On/Off Dly fields, respectively, followed by clicking knob key to enter each field.

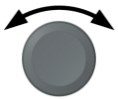
2023/09/14	
Output	09:25:29
Output On Dly	00h:00m:00.00s
Output Off Dly	00h:00m:00.00s
Remote Sense	2 Wire
V/I Slew Rate	CVHS
R_V Slew Rate	0.0001V/ms
F_V Slew Rate	0.0400V/ms
R_I Slew Rate	0.00001A/ms



3. Click arrow keys to move among each unit (h:m:s). Scroll knob key to change value followed by clicking the knob key to confirm the set value.



Output 00h:00m:00.00s to
On/Off 99h:59m:59.99s
Delay

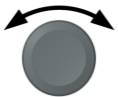


Remote Sense To determine 2 Wire or 4 Wire connection.

4. Scroll knob key to move to Remote Sense field followed by clicking knob key to enter the field.



5. Scroll the knob key to select option followed by clicking the knob key to confirm the selection.



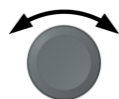
2023/09/14	
Output	15:17:37
Output On Dly	00h:00m:00.00s
Output Off Dly	00h:00m:00.00s
Remote Sense	2 Wire
V/I Slew Rate	CVHS
R_V Slew Rate	0.0400V/ms
F_V Slew Rate	0.0400V/ms
R_I Slew Rate	0.01000A/ms

Remote Sense 2 Wire, 4 Wire

V/I Slew Rate The C.V. and C.C. mode have two selectable slew rates: High Speed Priority(CVHS, CCHS)and Slew Rate Priority(CVLS, CCLS). High Speed Priority will use the fastest slew rate for the instrument while Slew Rate Priority will use a user-configured slew rate.

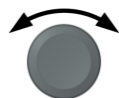
6. Scroll knob key to move to V/I Slew Rate field followed by clicking knob key to enter the field.

2023/09/14	
Output	09:34:48
Remote Sense	2 Wire
V/I Slew Rate	CVHS
R_V Slew Rate	0.0400V/ms
F_V Slew Rate	0.0400V/ms
R_I Slew Rate	0.01000A/ms
F_I Slew Rate	0.01000A/ms
Mode	Source



7. Scroll the knob key to select option followed by clicking the knob key to confirm the selection.

V/I Slew Rate CVHS, CVLS, CCHS,
CCLS

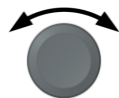


8. When CVLS or CCLS is selected, scroll knob key to R_V Slew Rate or F_V Slew Rate fields followed by clicking knob key to enter the fields, respectively.

2023/09/14	
Output	09:35:32
Remote Sense	2 Wire
V/I Slew Rate	CVLS
R_V Slew Rate	0.0001V/ms
F_V Slew Rate	0.0400V/ms
R_I Slew Rate	0.01000A/ms
F_I Slew Rate	0.01000A/ms
Mode	Source



9. Scroll the knob key to adjust value, along with the arrow keys to change among digits followed by clicking the knob key to confirm set value, respectively.

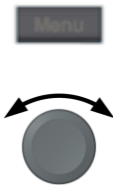
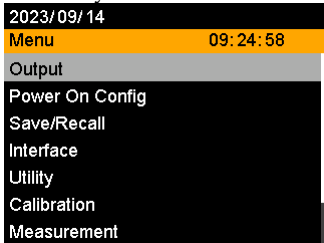


	R_V Slew Rate / F_V Slew Rate Setting Range	
Model	Max. Value	Min. Value
GPP-1323	0.0001 V/ms	0.04 V/ms
GPP-1205	0.0001 V/ms	0.04 V/ms
Mode	It sets basic power function or Load mode function.	
Load Mode	The GPP-1000 series models have additional Load function with 2 modes: CV (Constant Voltage) and CC (Constant Current), all of which can be selected through the function keys on the front panel.	

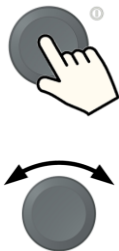
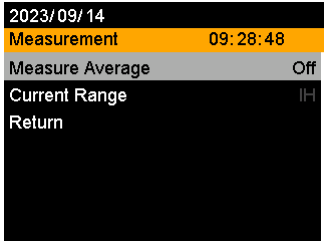
Measurement

Measure Average It sets the speed level of display sampling for the measure average setting. More the average numbers (High), slower the display update. By contrast, the Off option indicates max sampling average and thus with the lowest speed in display update.

1. Press the Menu key followed by scrolling knob key to move to Measurement field.

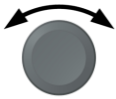


2. Click knob key to enter the Measurement page. Scroll knob key to move to Measure Average field followed by clicking knob key to enter the field.



3. Scroll knob key to change option followed by clicking the knob key to confirm the selection.

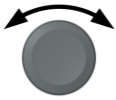
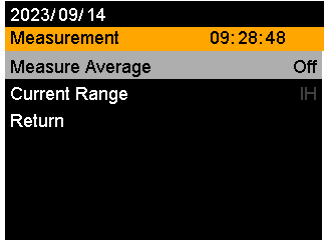
Measure High, Middle, Low, Off
Average



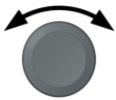
Current
Range

It sets display range for current.

4. Scroll knob key to move to Current Range field followed by clicking knob key to enter the field.



5. Scroll the knob key to select option followed by clicking the knob key to confirm the selection.



Current Range
IH 0 to rated current
IM 0 to 0.1 * rated current
IL 0 to 0.01 * rated current

TRIG Control

Trigin
Level

It determines what signal (High or Low) will trigger the trigger-in action.

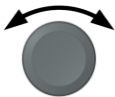
Before setting the TRIG Control, ensure that:

The output is off.

The load is not connected.

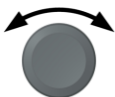
1. Press the Menu key followed by scrolling knob key to move to TRIG Control field.

2025/02/10	
Menu	15:25:53
Interface	
Utility	
Calibration	
Measurement	
Serial&Parallel	
Screen Shot	
TRIG Control	



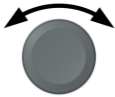
2. Click knob key to enter the TRIG Control page. Scroll knob key to move to Trigin Level field followed by clicking knob key to enter the field.

2025/02/10	
TRIG Control	15:15:35
Trigin Level	High
Trigin Action	None
Trigin Voltage	0.000 V
Trigin Current	0.0000 A
Trigin Memory	M1
Trigout Level	High
Trigout Source	None



3. Scroll knob key to select option followed by clicking the knob key to confirm the selection.

Trigin High, Low
Level

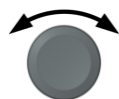


Trigin
Action

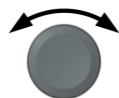
To determine the ensuing action when trigger-in signal is received.

4. Scroll knob key to move to Trigin Action field followed by clicking knob key to enter the field.

2025/02/10	
TRIG Control 15:16:44	
Trigin Level	High
Trigin Action	Output
Trigin Voltage	0.000 V
Trigin Current	0.0000 A
Trigin Memory	M1
Trigout Level	High
Trigout Source	None



5. Scroll the knob key to select option followed by clicking the knob key to confirm the selection.



Trigin Action

- None None of actions will be executed.
- Output GPP-1000 will turn On/Off power output when trigger-in signal is received.
- V/I Set GPP-1000 will change to the predefined V/I settings when trigger-in signal is received. It is required to set Trigin Voltage and Trigin Current, individually before enabling V/I Set.
- Memory GPP-1000 will change to the predefined Trigin Memory when trigger-in signal is received. It is required to set Trigin Memory before enabling Memory.

Trigin
Voltage &
Trigin
Current

6. Scroll knob key to move between Trigin Voltage and Trigin Current fields. Click the knob key to enter each field, respectively. Scroll the knob key to adjust value, along with the arrow keys to change among digits followed by clicking the knob key to confirm set value.



2025/02/10	
TRIG Control	15:23:07
Trigin Level	High
Trigin Action	V/I Set
Trigin Voltage	1.000 V
Trigin Current	1.0000 A
Trigin Memory	M1
Trigout Level	High
Trigout Source	None

Setting Range

Model	Trigin Voltage	Trigin Current
GPP-1323	0 V to 33.600 V	0 A to 3.1500 A
GPP-1205	0 V to 21.000 V	0 A to 5.2500 A

Trigin
Memory

7. Scroll knob key to move to Trigin Memory field. Click the knob key to enter the field. Scroll the knob key to selection option followed by clicking knob key to confirm the memory selection.



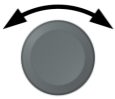
2025/02/10	
TRIG Control	15:23:57
Trigin Level	High
Trigin Action	Memory
Trigin Voltage	1.000 V
Trigin Current	1.0000 A
Trigin Memory	M1
Trigout Level	High
Trigout Source	None

Trigin Memory
M1 to M5

Trigout
Level

It determines what trigger-out signal (High or Low) will be transmitted after execution of predefined Trigout Source from GPP-1000 series.

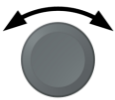
8. Scroll knob key to move to Trigout Level field followed by clicking knob key to enter the field.



2025/02/10	
TRIG Control 15:24:17	
Trigin Level	High
Trigin Action	Memory
Trigin Voltage	1.000 V
Trigin Current	1.0000 A
Trigin Memory	M1
Trigout Level	Low
Trigout Source	None



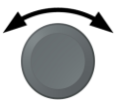
9. Scroll knob key to select option followed by clicking the knob key to confirm the selection.
Trigout High, Low
Level



Trigout
Source

To determine what source of action to launch the trigger-out signal.

10. Scroll knob key to move to Trigout Source field followed by clicking knob key to enter the field.



2025/02/10	
TRIG Control 15:24:47	
Trigin Level	High
Trigin Action	Memory
Trigin Voltage	1.000 V
Trigin Current	1.0000 A
Trigin Memory	M1
Trigout Level	High
Trigout Source	Output



11. Scroll the knob key to select option followed by clicking the knob key to confirm the selection.

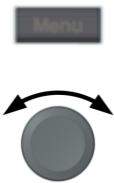
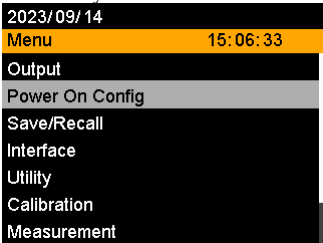


Trigout Source	
None	No trigger-out signal will be sent out.
Output	When power output is turned On/Off, a trigger-out signal will be sent out.
V/I Set	When V/I set is adjusted from GPP-1000, a trigger-out signal will be sent out.
Memory	When one of memories is recalled on GPP-1000, a trigger-out signal will be sent out.

PWR On Config

Power On Status It determines power output Default value when GPP-1000 unit is starting up.
Default: non-modifiable factory default setting.
Save: the last shut down status.

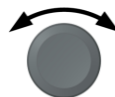
1. Press the Menu key followed by scrolling knob key to move to PWR On Config field.



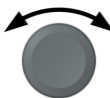
2. Click knob key to enter the PWR On Config page. Scroll knob key to move to Power On Status field followed by clicking knob key to enter the field.



2023/09/14	
Power On Config	15:06:46
Power On Status	Default
Return	



3. Scroll knob key to select option followed by clicking the knob key to confirm the selection.



Power Save, Default
On
Status



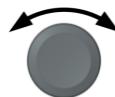
Save/Recall

Save Mem Set Up to 5 memory setups (M1 to M5) can be saved to the internal storage.

1. Press the Menu key followed by scrolling knob key to move to Save/Recall field.

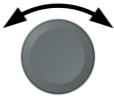


2023/09/14	
Menu	15:07:02
Output	
Power On Config	
Save/Recall	
Interface	
Utility	
Calibration	
Measurement	



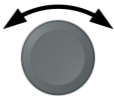
2. Click knob key to enter the Save/Recall page. Scroll knob key to move to Save Mem Set field followed by clicking knob key to enter the field.

2025/02/10	
Save/Recall	15:37:36
Save Mem Set	M1
Recall Mem Set	M1
Return	



3. Scroll knob key to select an option followed by clicking the knob key to confirm the selection .Scroll knob key to move to OK followed by clicking knob key again to confirm save.

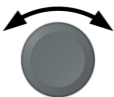
Save M1 to M5
Mem Set



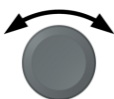
Recall Mem Up to 10 memory setups (M1 to M5) can be recalled
Set from the internal storage

4. Scroll knob key to move to Recall Mem Set field followed by clicking knob key to enter the field.

2025/02/10	
Save/Recall	15:37:57
Save Mem Set	M1
Recall Mem Set	M1
Return	



5. Scroll knob key to select an option followed by clicking the knob key to confirm the selection. Scroll knob key to move to OK followed by clicking knob key again to confirm recall.



Recall M1 to M5 From the internal memory M1 to M5.



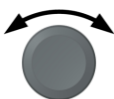
Interface

LAN

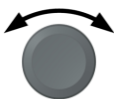
The GPP-1000 series use the Ethernet LAN (Local Area Network) port for a number of different applications. Ethernet can be configured for basic remote control or monitoring using a **web server** or it can be configured as a socket server.

1. Scroll knob key to move to LAN field followed by click knob key to enter the LAN page.

2025/02/10	
LAN	15:46:08
MAC Address	00:22:24:6A:B1:B9
DHCP	Off
IP Address	192.168.000.123
Subnet Mask	255.255.255.000
Gateway IP	192.168.000.001
Return	

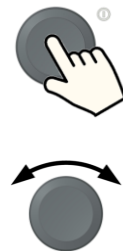
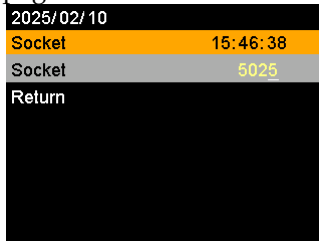


2. There are several relevant settings for LAN interface as following details. Use knob key to scroll and click to configure each setting.



MAC Address	Displays the MAC address in 6 parts. This setting is not configurable. 0x00 to 0xFF
DHCP	Turns DHCP on or off .When DHCP is Off, the following IP Address, Subnet Mask, Gateway IP and DNS Address are configurable. Off, On
IP Address	Sets the default IP address. IP address 1 to 4 splits the IP address into four sections. 0 to 255, 0 to 255, 0 to 255, 0 to 255
Subnet Mask	Sets the subnet mask. The subnet mask is split into four parts. 0~255, 0~255, 0~255, 0~255
Gateway IP	Sets the gateway address. The gateway address is split into 4 parts. 0 to 255, 0 to 255, 0 to 255, 0 to 255
Socket	The Socket port is fixed in 5025 (Not configurable) and is specifically for when Ethernet LAN is configured as a socket server.

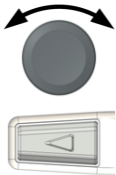
3. Scroll knob key to move to Socket field followed by click knob key to enter the Socket page.



4. The Socket info is as follows

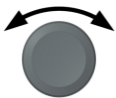
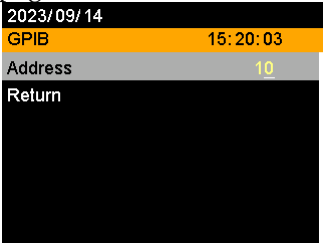
Select Port The Socket port is fixed in 5025.

5. Scroll knob key to move to Return field followed by clicking knob key to return back to the previous page. Also, it is available to return by clicking the left arrow key.

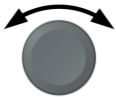


GPIB The GPP-1000 series use the GPIB connector for basic remote control.

6. Scroll knob key to move to GPIB field followed by click knob key to enter the GPIB page.

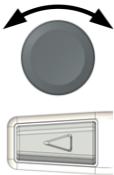


7. There is only an Address field for GPIB interface as the following detail. Use knob key to scroll and click to configure Address setting.



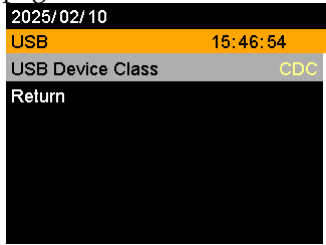
Address Displays the GPIB address.
1 to 30

8. Scroll knob key to move to Return field followed by clicking knob key to return back to the previous page. Also, it is available to return by clicking the left arrow key.

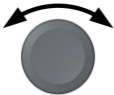


USB The GPP-1000 series use the USB B-type port for basic remote control.

9. Scroll knob key to move to USB field followed by click knob key to enter the USB page.



10. There is only an USB field for USB interface as the following detail. Use knob key to scroll and click to configure USB setting.



USB Device Sets the USB Device Class.
Class CDC,TMC

11. Scroll knob key to move to Return field followed by clicking knob key to return back to the previous page. Also, it is available to return by clicking the left arrow key.

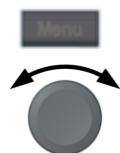


Utility

System Information The system information including Model Name, Serial Number as well as Version of GPP-1000 series are shown in this section.

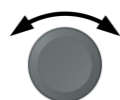
1. Press the Menu key followed by scrolling knob key to move to Utility field.

2023/09/14	
Menu	15:36:44
Save/Recall	
Interface	
Utility	
Calibration	
Measurement	
Serial&Parallel	
Screen Shot	



2. Click knob key to enter the Utility page. Scroll knob key to move to System Information field followed by clicking knob key to enter the System Information page.

2023/09/14	
System Information	15:37:06
Model Name	GPP_1323
Serial Number	GEY123456
Version	V1.1
Return	

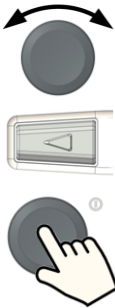


3. There is several information as the following details, which are displayed only and not configurable.



- Model Name The specific model's name of GPP-1000 series.
- Serial Number The serial number of GPP-1000 series.
- Version The firmware version of GPP-1000 series.

4. Scroll knob key to move to Return field followed by clicking knob key to return back to the previous page. Also, it is available to return by clicking the left arrow key.



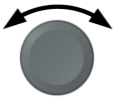
- Date & Time The system time of GPP-1000 series can be configured within this section.

5. Scroll knob key to move to Date & Time field followed by click knob key to enter the Date & Time page.

2023/09/14	
Date&Time	15:37:22
Year	2023
Month	9
Day	14
Hour	15
Minute	37
Save	
Return	

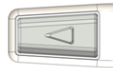
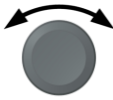


6. There are several relevant settings for Date & Time setting as following details. Use knob key to scroll and click to configure each setting.



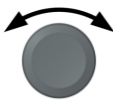
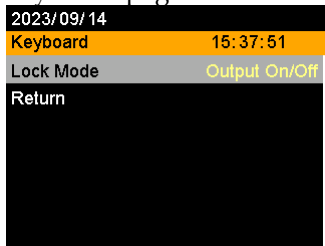
- Year To configure year field.
- Month To configure month field.
- Day To configure day field.
- Hour To configure hour field.
- Minute To configure minute field.
- Save To save the configured system time.

7. Scroll knob key to move to Return field followed by clicking knob key to return back to the previous page. Also, it is available to return by clicking the left arrow key.



Keyboard Basically this section relates to Lock mode .It determines if power output is available when lock mode is activated.

8. Scroll knob key to move to Keyboard field followed by click knob key to enter the Keyboard page.



9. There is only a Lock Mode field for Keyboard setting as the following detail. Use knob key to scroll and click to configure Lock Mode setting.



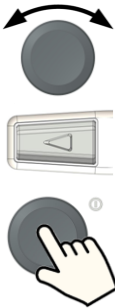
Lock Mode Output On/Off

Power output can be turned On/Off when lock mode is activated.

Output Off

Power output can only be turned Off when lock mode is activated.

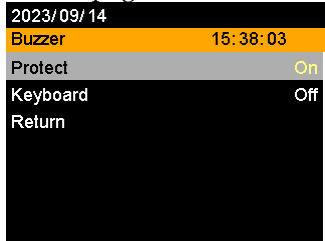
10. Scroll knob key to move to Return field followed by clicking knob key to return back to the previous page. Also, it is available to return by clicking the left arrow key.



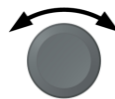
Buzzer

It turns the buzzer sound On or Off when either protection alarm function is tripped or keyboard entry is engaged.

11. Scroll knob key to move to Buzzer field followed by click knob key to enter the Buzzer page.



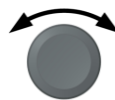
12. There are two relevant settings for Buzzer setting as following details. Use knob key to scroll and click to configure each setting.



Protect To turn On or Off the buzzer sound for protection alarm.
On, Off

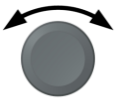
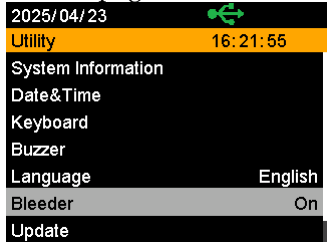
Keyboard To turn On or Off the buzzer sound for keyboard entry.
On, Off

13. Scroll knob key to move to Return field followed by clicking knob key to return back to the previous page. Also, it is available to return by clicking the left arrow key.

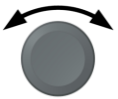


Bleeder It turns the bleeder control On or Off for the bleeder resistor, which is critical for discharge. For more details, [refer to page 22](#).

14. Scroll knob key to move to Bleeder field followed by click knob key to enter the Bleeder page.

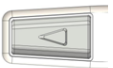


15. There is only a Bleeder field for Bleeder setting as following detail. Use knob key to scroll and click to configure the setting.



Bleeder To turn On or Off the bleeder control for the bleeder resistor.
On, Off

16. Scroll knob key to move to Return field followed by clicking knob key to return back to the previous page. Also, it is available to return by clicking the left arrow key.



Calibration

System Update	The Calibration section is used to access to the calibration function, which requires a password to enter the menu. Please see your distributor or dealer for details when necessary.
------------------	---

DIGITAL CONTROL

The Digital Control chapter describes how to control the voltage or current output using an external trigger signal, monitor the voltage or current output as well as remotely turning off the output or shutting down the power supply.

External Trigger In / Out.....	113
External Operation and Status Monitoring	113

External Trigger In / Out

Background The trigger input can be configured to perform an action such as toggling the output on/off, load a memory setting or apply a voltage/current setting when a trigger is received.

The trigger output can be configured to be active when the output is turned on/off, a voltage/current setting is changed or when a memory setting has been recalled. The trigger output pulse width can also be configured.

See page 94 for details on the trigger input and trigger output configuration settings.

Pinout	Name and Pin	Description
	TRIG OUT	Trigger output: approx. 3.3 V Pulse width: approx. 4 ms, Output impedance: approx. 50 Ω It outputs a pulse when power output, V/I set operation or memory recall is executed.
	TRIG IN	A high or low level TTL signal is applied for 100 us or longer. It receives a pulse to perform actions like power output, V/I set operation or memory recall.

External Operation and Status Monitoring

Overview The Control I/O Connector is a 10-pin connector that can be used with the plug for wiring connection. The pins used determine what remote control mode is used.

Pin
Assignment

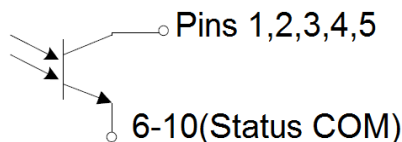
Control I/O



Pinout	Name and Pin	Description
	OUT ON Status	1 On when the output is on (open-collector photocoupler output).
	CV Status	2 This line is On when the GPP-1000 is in CV mode (open-collector photocoupler output).
	PWR OFF Status	3 Outputs a low level signal when power is turned off. (open-collector photocoupler output).
	CC Status	4 This line is On when the GPP-1000 is in CC mode (open-collector photocoupler output).
	Alarm Status	5 On when a protection function (OVP, OCP,OTP or Sense Alarm) has been activated or when an output shutdown signal is being applied (open-collector photocoupler output).
	Status COM	6 This is the common line for to the status signal pins 6 to 10. 10

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.

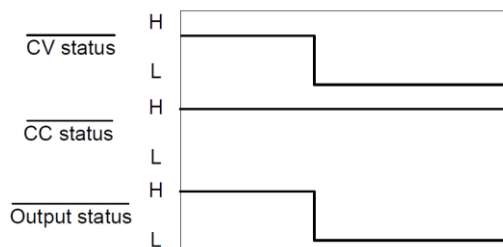
Schematic



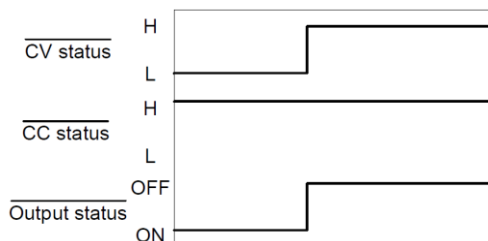
Timing diagrams

Below are 4 example timing diagrams covering a number of scenarios.

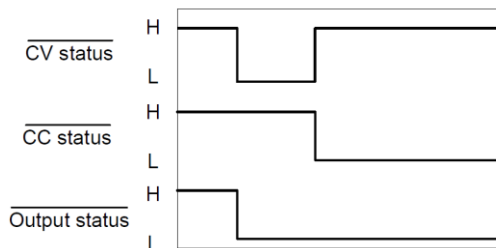
CV MODE: The diagram below shows the timing diagram when the output is turned on when the GPP-1000 is set to CV mode.



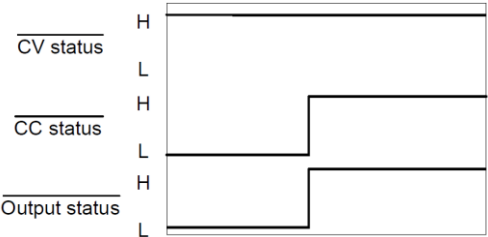
CV MODE: The diagram below shows the output status lines when the output is turned off in CV mode.



CC MODE: The diagram below shows the timing diagram when the output is turned on when the GPP-1000 is set to CC mode.



CCMODE: The diagram below shows the output status lines when the output is turned off in CC mode.



P arallel/Series Operation

This section describes the basic operations required to operate the power supply in series or parallel. Operating the GPP-1000 in parallel increases the total current output of the power supply units. When used in series, the total output voltage of the power supplies can be increased.

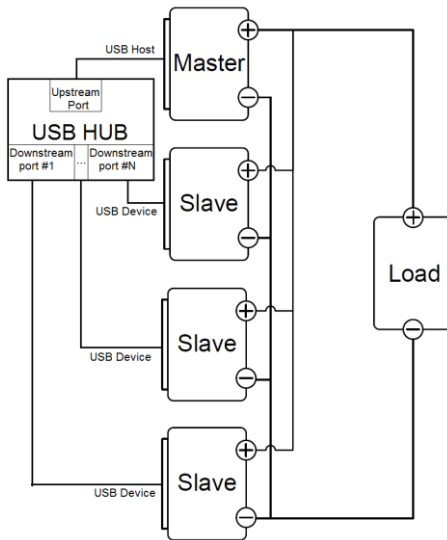
When the units are used in parallel or in series, a number of precautions and limitations apply. Please read the following sections before operating the power supplies in parallel or series.

Master-Slave Parallel Overview	118
Parallel Connection	119
Parallel Operation	121
Master-Slave Series Overview	122
Series Connection	124
Series Operation	126

Master-Slave Parallel Overview

Background When connecting the GPP-1000 power supplies in parallel, up to 4 units can be used in parallel and all units must be of the same model with similar output settings.

To use the power supplies in parallel, units must be used in a “master-slave” configuration. In the master-slave configuration a “master” power supply controls any other connected “slave” power supplies. In order for the master unit to control the slave units, the master unit must use the USB cable via USB HUB to connector on the rear panel to control the slave units.



Limitations Display

Only the master unit will display the voltage and current. The total current is the sum of the units .

OVP/ OCP

The master unit can shut down the slave unit when OVP/OCP is tripped on the master unit.

OVP and OCP level is determined by the master OVP and OCP level. The OVP and OCP level on the slave unit is ignored.

Bleeder Control

The Master unit is used to control the bleeder settings. The bleeder resistor is always turned off for the slave unit in parallel mode.

**Output
Voltage/
Output
Current**

Model	Number of parallel units:			
	1 unit	2 units	3 units	4 units
GPP-1205	20 V / 5 A	20 V / 10 A	20 V / 15 A	20 V / 20 A
GPP-1323	32 V / 3 A	32 V / 6 A	32 V / 9 A	32 V / 12 A

Parallel Connection

Remote Interface Connection 1.Master unit connect the USB cable to the rear panel USB A port. The other end is connected to the USB HUB B port.

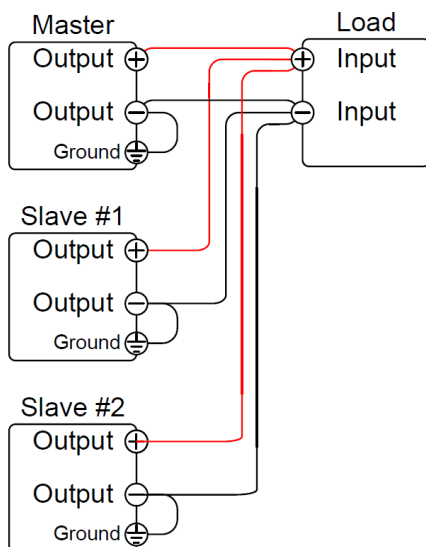
2. Slave unit connect the USB cable to the rear panel USB B port. The other end is connected to the USB HUB A port.

3. Set the USB Device Class setting as CDC.

4. The indicator will be shown when a remote connection has been established.

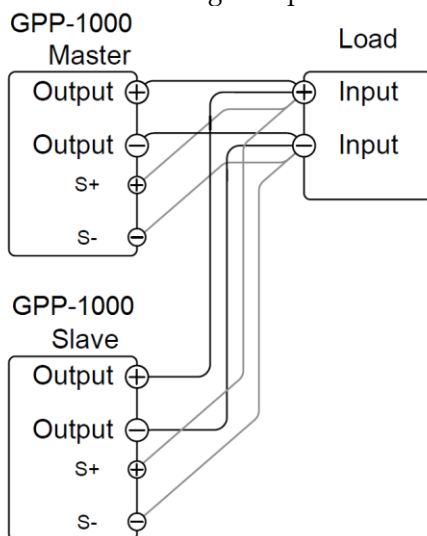
Parallel Output Connection If grounding the positive or negative terminals to the reference ground, be sure to ground the appropriate terminal on each unit (either positive or negative).

Example
with
negative
terminal
connected
to ground



Parallel
Sense
Connection
s

For remote sense connections, connect the S+ terminals to the positive potential of the load. Connect the S- terminals to the negative potential of the load.



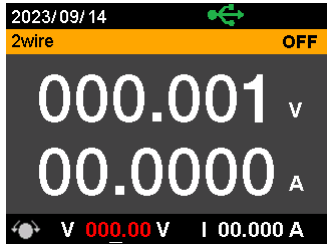
Steps	1. Ensure the power is off on all power supplies. 2. Choose the master and the slave unit(s). 3. Connect the USB cables for the master and slave units as shown above. 4. Connect the master and slave unit in parallel as shown above. 5. If using remote sense, connect the master and slave sense cables as shown above.
Note	Ensure the load cables have sufficient current capacity. The load wires and remote sense wires should use twisted-paired wiring of the shortest possible length.

Parallel Operation

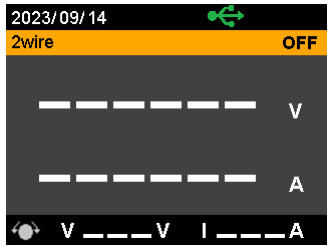
Master-Slave Configuration	Before using the power supplies in parallel, the master and slave units need to be configured.
Steps	1. Configure the OVP and OCP settings for the master unit. 2. Enter the Power ON Configuration settings and set the Tracking configuration for the master and each connected slave. 3. If using voltage sense, disable local sense in the Power ON Configuration settings. 4. Cycle the power on the units (reset the power).
Note	Set Tracking to Local to return the units to local (independent) operation. Only the Master OVP and OCP settings are used for protection. Slave protection levels are disregarded. OTP works independently for each unit.
Master-Slave Operation	Only operate the power supplies in parallel if the units are configured correctly.

- Steps 1. Turn on the master and slave units. The slave unit(s) will show a blank display.

Master unit



Slave units



2. Operation of all units is controlled via the master unit. Operation of the master unit is the same as for a single unit. See the Basic Operation chapter.
3. Press the Output key to begin. The output key will

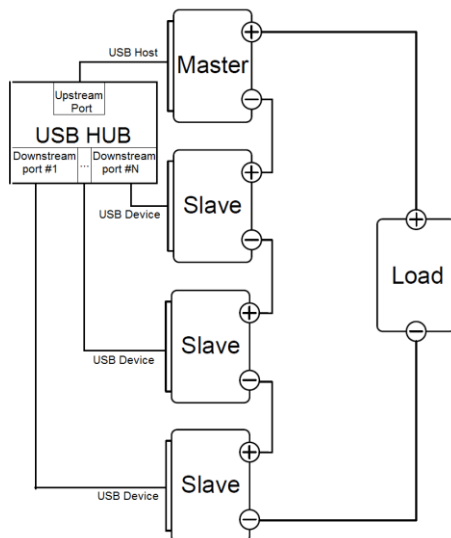


turn green.

- Caution Only operate the power supplies in parallel if using units of the same model number.
- Note The panel controls are disabled on slave units, including the output key.
- Caution Ensure that the insulation capacity of the wiring is sufficient when connected in parallel. See page 30 for insulation capacity and grounding details.

Master-Slave Series Overview

Background When connecting GPP-1000 power supplies in series, up to 4 units can be used in series and all units must be of the same model. When operated in series, the power supplies can be used to increase the voltage output or setup the power supplies to output both positive and negative polarities. Series operation only requires configuration of the slave, the master unit remains in local mode.



Limitations Display

Only the master unit will display the voltage and current. The total current is the sum of the units .
OVP/OCP

The master unit can shut down the slave unit when OVP/OCP is tripped on the master unit .

OVP and OCP level is determined by the master OVP and OCP level. The OVP and OCP level on the slave unit is ignored.

Bleeder Control

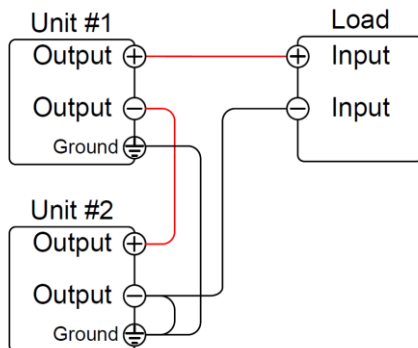
The Master unit is used to control the bleeder settings. The bleeder resistor is always turned on for the slave unit in series mode.

Output Voltage/ Output Current	Model	Number of Series units:			
		1 unit	2 units	3 units	4 units
Output Current	GPP-1205	20 V / 5 A	40 V / 5 A	60 V / 5 A	80 V / 5 A
	GPP-1323	32 V / 3 A	64 V / 3 A	96 V / 3 A	128 V / 3 A

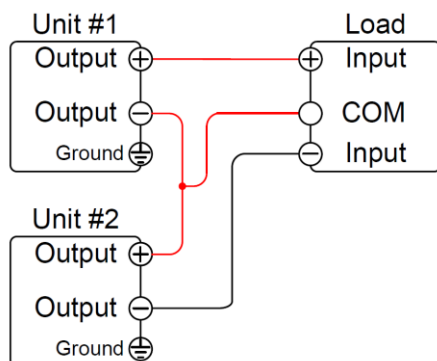
Series Connection

- Remote Interface Connection
1. Master unit connect the USB cable to the rear panel USB A port. The other end is connected to the USB HUB B port.
 2. Slave unit connect the USB cable to the rear panel USB B port. The other end is connected to the USB HUB A port.
 3. Set the USB Device Class setting as CDC.
 4. The indicator will be shown when a remote connection has been established.

Series
Connection
to increase
Voltage
Output



Series
Connection
to Output
Positive
and
Negative
Polarity

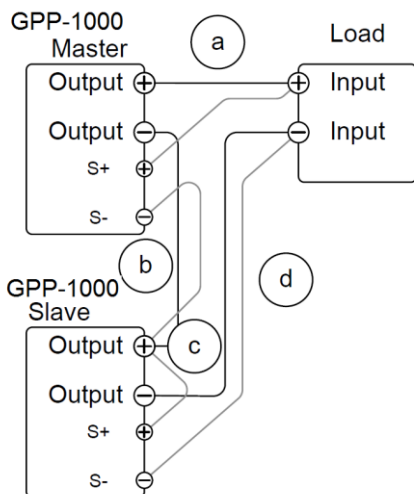


Note: The output reference ground (COMMON) can be grounded at the power supply side instead of the load, depending on the requirements. Local sensing should be used in this configuration.

Caution

When connecting the units in series, diodes should be connected across each output to prevent reverse voltage.

Series	For remote sense connections, connect the sense
Sense	terminals as shown below:
Connection	a. Connect the Master S+ terminal to the positive potential of the load. b. Connect the Master S- terminal to the positive output terminal of the slave unit. c. Connect the slave S+ terminal to the positive terminal of the slave unit. d. Connect the slave S- terminal to negative terminal of the load.



Steps	1. Ensure the power is off on both power supplies. 2. Connect the master and slave unit in series as shown above to either increase the voltage output or to create a positive and negative output. Remember that how the units are grounded depends on the configuration of the series connection.
-------	---

Note	Ensure load cables have sufficient current capacity.
------	--

Series Operation

Series Configurati on	Before using the power supplies in series, the master and slave units need to be configured.
-----------------------------	--

1. Configure the OVP and OCP settings for the master unit.
 2. Enter the Power ON Configuration settings and set the Tracking configuration for the master and each connected slave.
 3. If using voltage sense, disable local sense in the Power ON Configuration settings.
 4. Cycle the power on the units (reset the power).
-

Note	Set Tracking to Local to return the slave units to local (independent) operation.
------	---

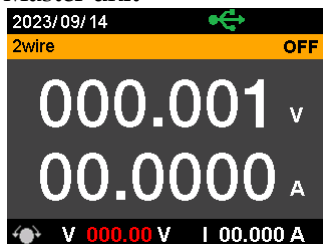
Master-Slave Operation	Only operate the power supplies in series if the units are configured correctly.
---------------------------	--

Steps

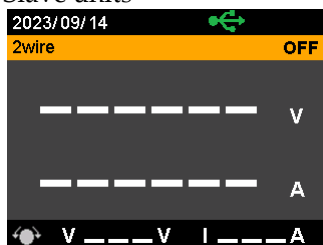
5. Turn on the master and slave units. Turn on both units. When connected in series, each unit will show the voltage of their own unit.

The V Set, A Set, OVP and OCP settings will only be shown on the master unit.

Master unit



Slave units



6. Operation of both units is controlled by the master unit. Operation of the master unit is the same as for a single unit. Please see the basic operation chapter for details.

7. Press the Output key to begin. The output key will turn green.



Caution Only operate the power supplies in series if using units of the same model number.

Only a maximum of 4 units can be used in series.

Caution Ensure that the insulation capacity of the wiring is sufficient when connected in series. See page 30 for insulation capacity and grounding details.

COMMUNICATION **INTERFACE**

This chapter describes basic configuration of IEEE488.2 based remote control. For a command list, refer to the programming manual, downloadable from GW Instek website, www.gwinstek.com

Interface Configuration	130
USB CDC Function Check	130
USB TMC Function Check	134
GPIB Remote Interface	137
Configure Ethernet Connection	142

Interface Configuration

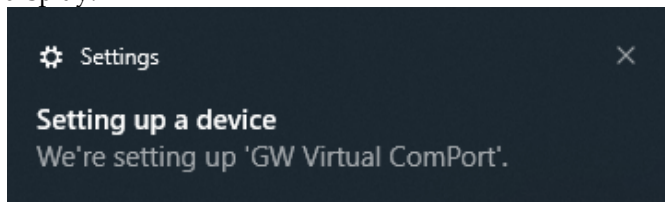
USB Remote Interface Configuration

USB Configuration	PC side connector	Type A, host
	GPP-1000 side connector	Rear panel Type B, slave
	Speed	2.0 (full speed)
	USB Class	CDC (communications device class)/TMC
Steps	1. Connect the USB cable to the rear panel USB B port. 2. Set the USB Device Class setting as CDC Page 105 3. The indicator will be shown when a remote connection has been established.	

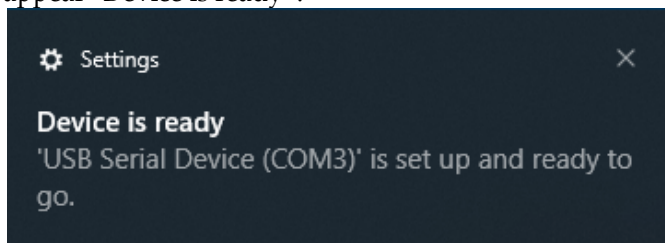
USB CDC Function Check

Background	To test the USB CDC functionality, National Instruments Measurement and Automation Explorer can be used. This program is available on the NI website, www.ni.com , via a search for the VISA Runtime Engine page, or “downloads” at the following URL, http://www.ni.com/visa/
Requirements	Operating System: Windows 10,11

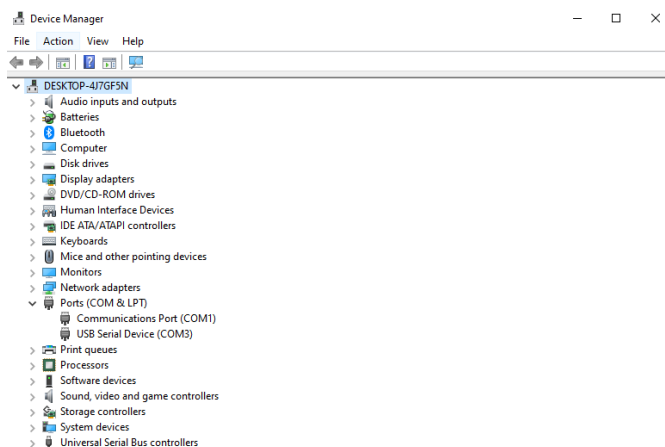
Functionality check 1. In case of Window 10 64 bits, once the USB Cable was connected to PC correctly for a while (around 1 min). It may show below message at the lower right area of display.



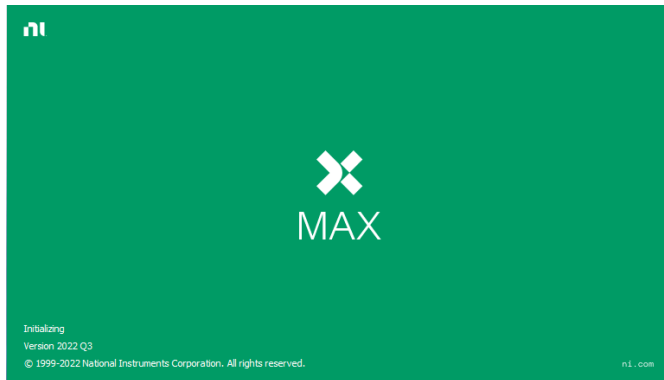
2. Then it will automatically grab the device driver and appear "Device is ready".



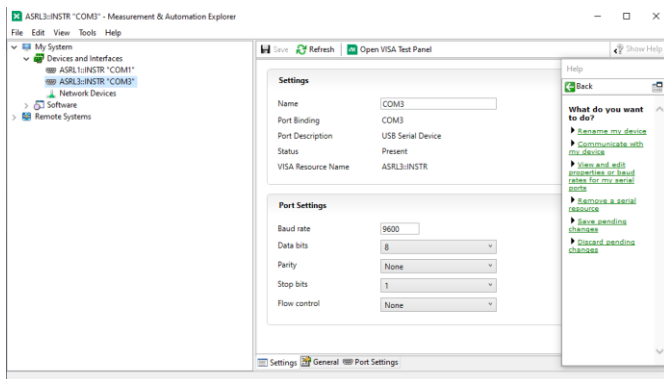
3. Double check the "Device Manager". The port should like below.



4. Start the NI MAX, Start > NI MAX

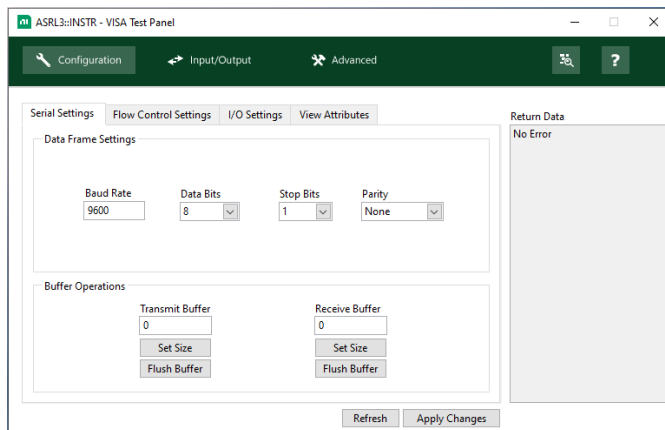


5. From the Configuration panel access; My System > Devices and Interfaces > ASRL3::INSTR “COM3” (for this example)



6. Click Open VISA Test Panel

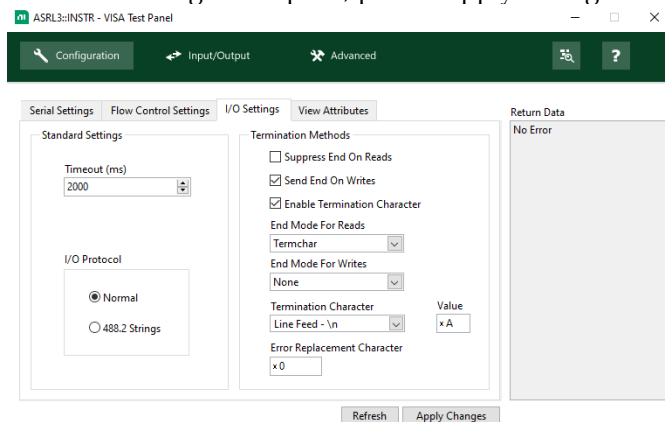
7. Click Configuration, set the “Serial Settings”, when the setting is complete, customer needs to press “Apply Changes”.



8. Click Configuration > I/O Settings

9. Make sure the Enable Termination Character check box is checked, and the terminal character is \n (Value: xA).

When the setting is complete, press “Apply Changes”.



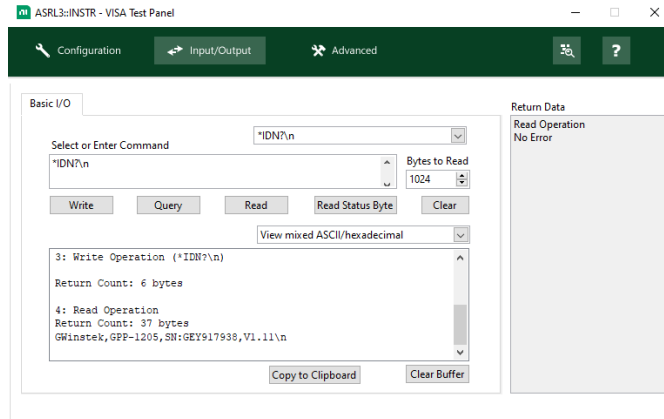
10. Click the Input/Output icon.

11. Enter *IDN? in the Select or Enter Command dialog box if it is not already.

12. Click the Query button.

13. The *IDN? query will return the Manufacturer, model name, serial number and firmware version in the dialog box.

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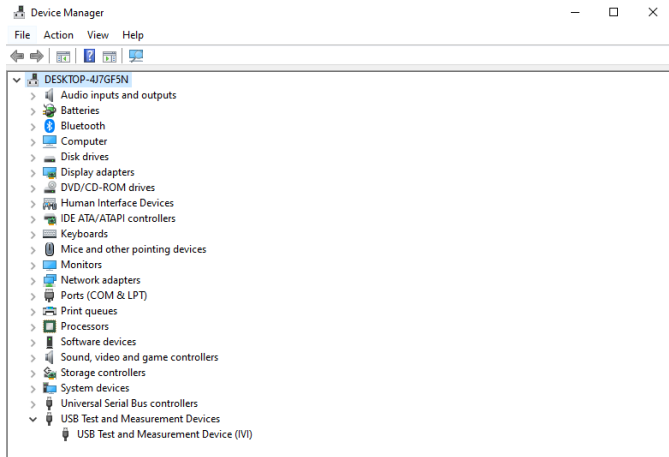


USB TMC Function Check

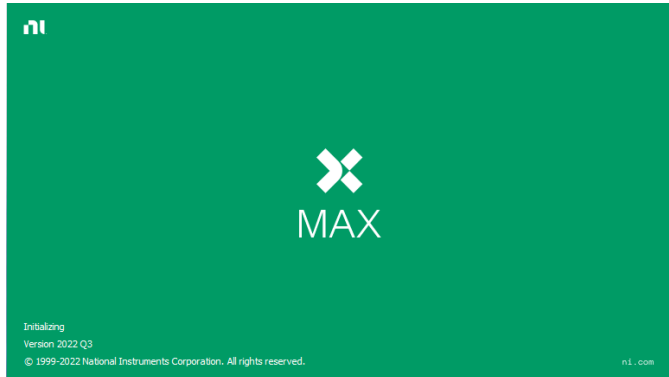
Background To test the USB TMC functionality, National Instruments Measurement and Automation Explorer can be used. This program is available on the NI website, www.ni.com., via a search for the VISA Runtime Engine page, or “downloads” at the following URL, <http://www.ni.com/visa/>

Requirements Operating System: Windows XP, 7, 8,10

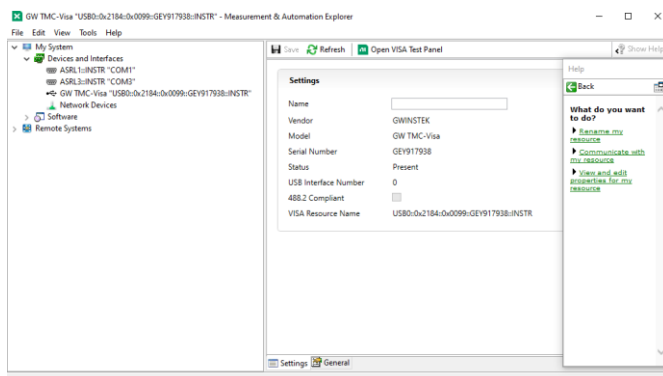
Functionality check 1. If it has already been installed NI VISA, Then the driver program will automatically appear.



2. Start the NI MAX, Start > NI MAX

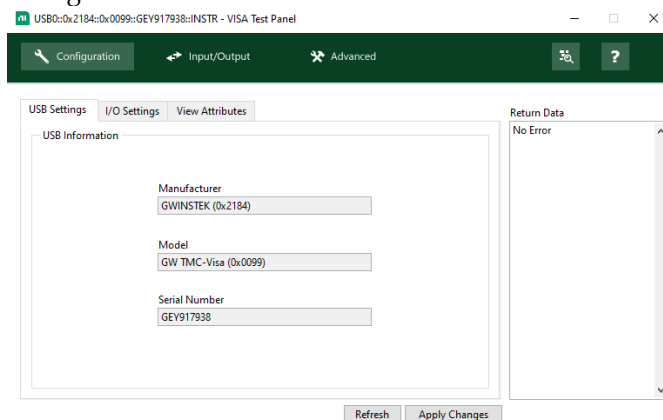


3. From the Configuration panel access; My System > Devices and Interfaces > GW TMC-Visa
 USB0:0x2184::0x0099::GEY917938::INSTR (for this example)



4. Click Open VISA Test Panel

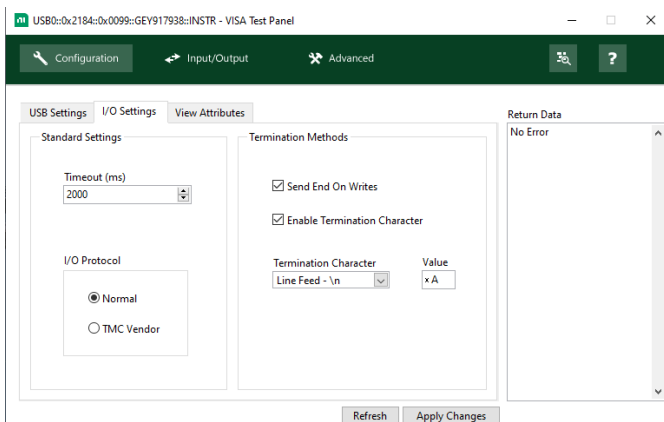
5. Click Configuration, set the “USB Settings”, when the setting is complete, customer needs to press “Apply Changes”.



6. Click Configuration > I/O Settings

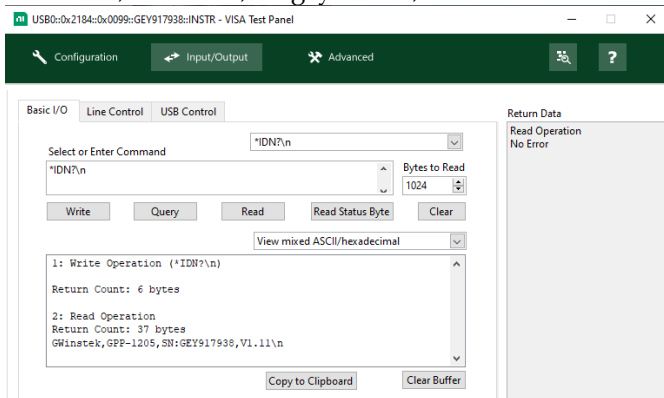
7. Make sure the Enable Termination Character check box is checked, and the terminal character is \n (Value: xA).

When the setting is complete, press “Apply Changes”.



8. Click the Input/Output icon.
9. Enter *IDN? in the Select or Enter Command dialog box if it is not already.
10. Click the Query button.
11. The *IDN? query will return the Manufacturer, model name, serial number and firmware version in the dialog box.

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GPIB Remote Interface **Configuration**

To use GPIB, the optional GPIB option (GW Instek part number: Option 1) must be installed. This is a factory installed option and cannot be installed by the end-user. Only one GPIB address can be used at a time.

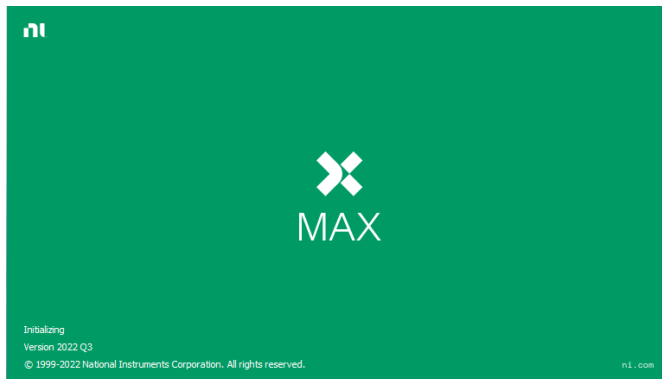
Configure GPIB	1. Ensure the GPP-1000 is off before proceeding. 2. Connect the GPIB cable (GW Instek part number: GTL-258) from a GPIB controller to the GPIB port on the GPP-1000. 3. Turn the GPP-1000 on. 4. Set the GPIB Address setting per application.	Page 104
	5. The indicator will be shown when a remote connection has been established.	
GPIB constraints	●Maximum 15 devices altogether, 20m cable length, 2m between each device ●Unique address assigned to each device ●At least 2/3 of the devices turned On ●No loop or parallel connection	

GPIB Function Check

Background	To test the GPIB functionality, National Instruments Measurement and Automation Explorer can be used. This program is available on the NI website, www.ni.com ., via a search for the VISA Run-time Engine page, or “downloads” at the following URL, http://www.ni.com/visa/
Requirements	Operating System: Windows XP, 7, 8, 10

- Functionality check
1. Start the NI Measurement and Automation Explorer (MAX) program. Using Windows, press:

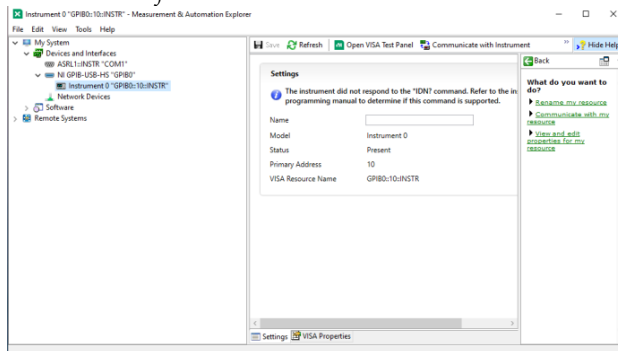
Start>All Programs>National Instruments>Measurement & Automation



2. From the Configuration panel access;

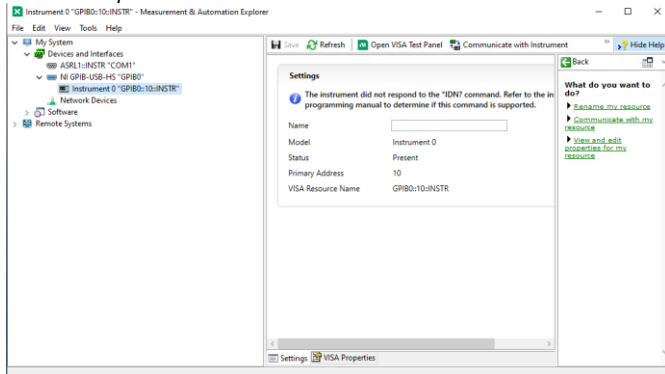
My System>Devices and Interfaces>GPIB

3. Press *Scan for Instruments*.



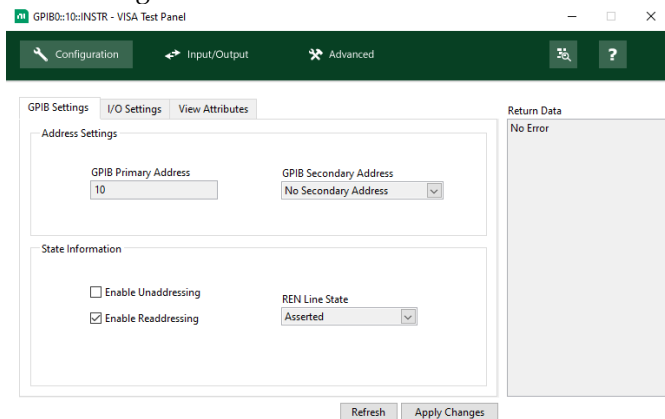
4. Select the device (GPIB address of GPP-1000) that now appears in the *System>Devices and Interfaces > GPIB-USB-HS "GPIBX"* node.
5. Click on the *VISA Properties* tab on the bottom.

6. Click *Open Visa Test Panel*.



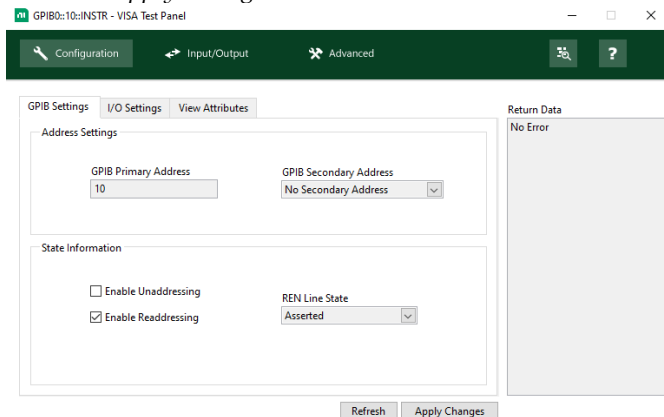
7. Click on *Configuration*.

8. Click on the *GPIB Settingstab* and confirm that the GPIB settings are correct.



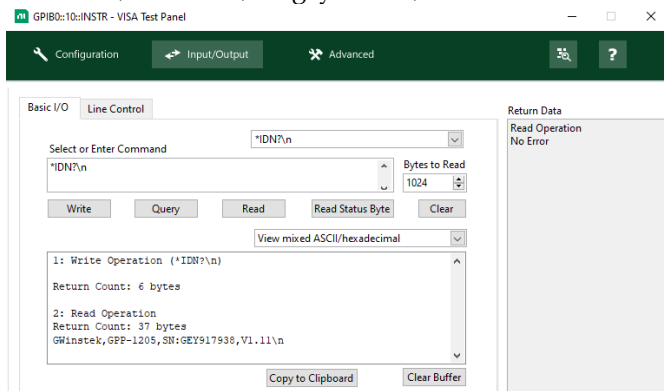
9. Click on the *I/O Settingstab*.

10. Make sure the *Enable Termination Character* check box is checked, and the terminal character is \n (Value: xA).

11. Click *Apply Changes*.12. Click on *Input/Output*.13. Click on the *Basic/Otab*.14. Enter **IDN?* in the *Select or Enter Command* drop down box.15. Click *Query*.

16. The **IDN?* query will return the Manufacturer, model name, serial number and firmware version in the dialog box.

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Note

For further details, please see the programming manual, available on the GW Instek web site @ www.gwinstek.com.

Configure Ethernet Connection

The GPP-1000 series supports both DHCP connections so the instrument can be automatically connected to an existing network or alternatively, network settings can be manually configured.

Ethernet configuration on For details on how to configure the Ethernet settings, please see the configuration chapter on [page 102](#).

Parameters	MAC Address		
	(display only)		
	DHCP On/Off	IP Address	
	Subnet Mask	Gateway IP	

Sockets Server Configuration

Configuration on This configuration example will configure the GPP-1000 socket server.

The following configuration settings will manually assign the GPP-1000 an IP address and enable the socket server. The socket server port number is fixed at 5025.

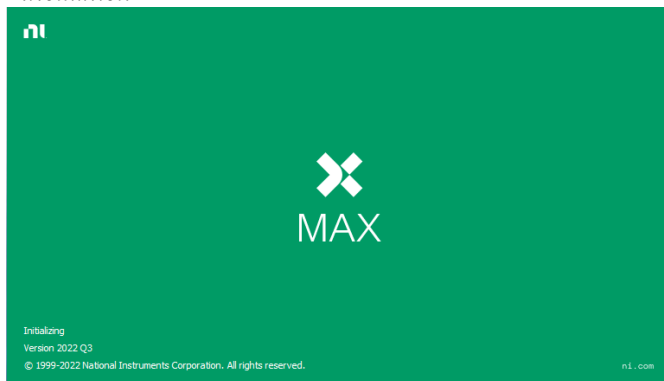
1. Connect an Ethernet cable from the network to the rear panel Ethernet port.
2. Turn Off DHCP setting followed by setting the relevant settings including IP Address, Subnet Mask, Gateway IP.
3. The indicator will be shown when a remote connection has been established.

Socket Server Function Check

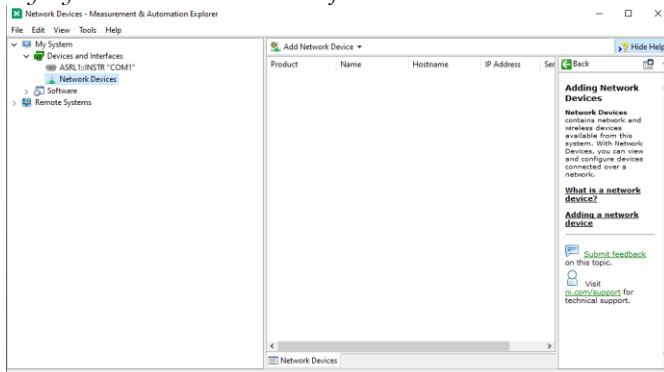
Background To test the socket server functionality, National Instruments Measurement and Automation Explorer can be used. This program is available on the NI website, www.ni.com, via a search for the VISA Runtime Engine page, or “downloads” at the following URL, <http://www.ni.com/visa/>

Requirements Operating System: Windows 10, 11

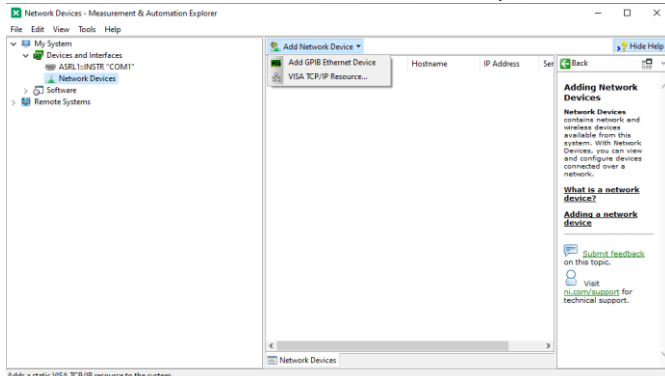
Functionality check 1. Start the NI Measurement and Automation Explorer (MAX) program. Using Windows, press. *Start>All Programs>National Instruments>Measurement & Automation*



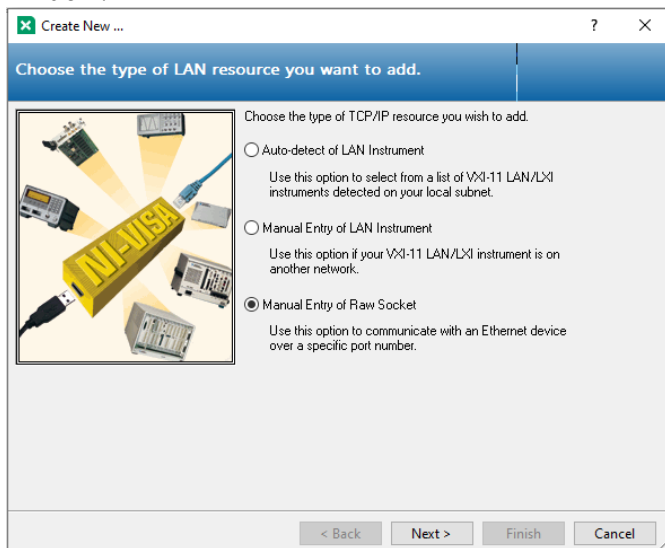
2. From the Configuration panel access; *My System>Devices and Interfaces>Network Devices*



3. Press *Add New Network Device>Visa TCP/IP Resource...*



4. Select *Manual Entry of Raw Socket* from the popup window.

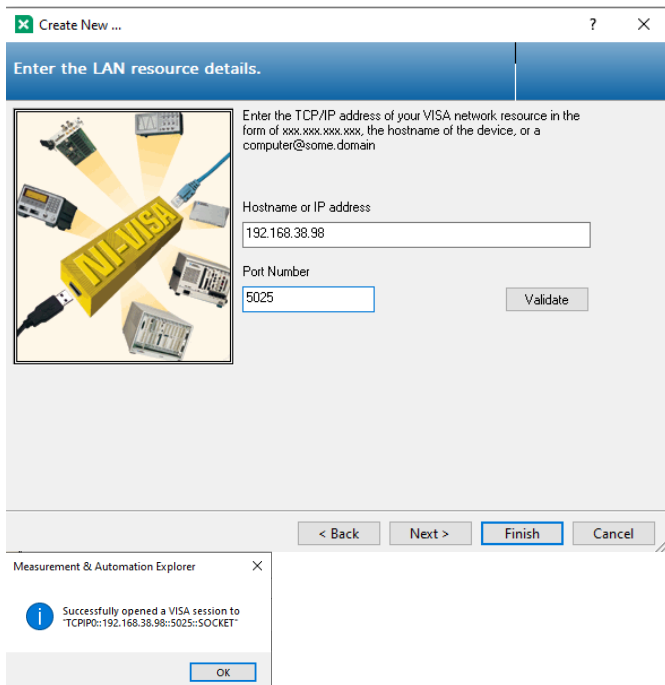


5. Enter the IP address and the port number of the GPP-1000. The port number is default at 5025.

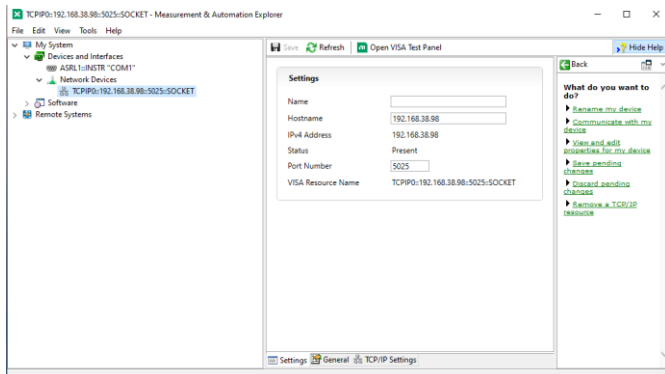
6. Click the Validate button.

7. A popup will appear if a connection is successfully established.

8. Click Next.

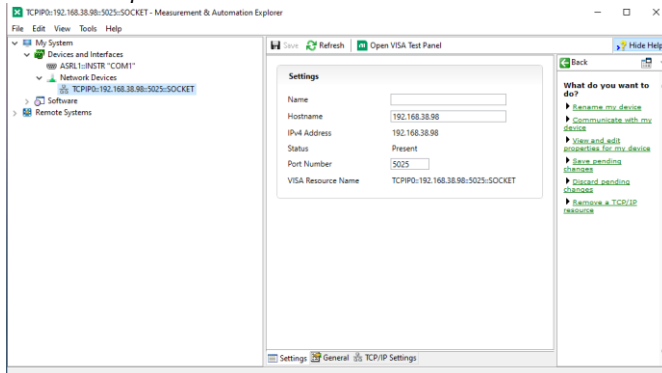


9. Next configure the Alias (name) of the GPP-1000 connection. In this example the Alias is: GPP_DC1
10. Click finish.



11. The IP address of the GPP-1000 will now appear under Network Devices in the configuration panel. Select this icon now.

12. Click *Open VISA Test Panel*.

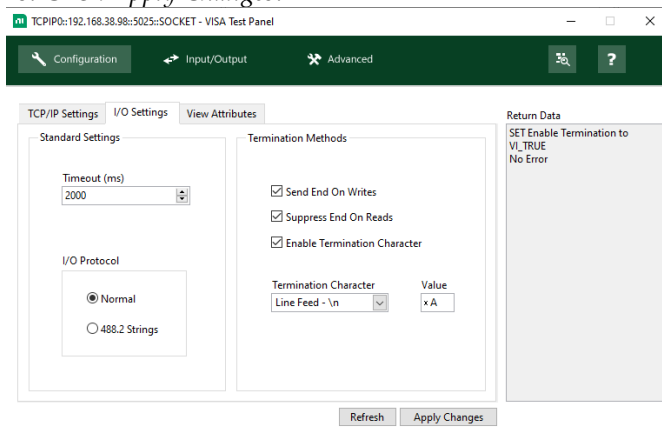


13. Click the *Configuration* icon,

14. Click on *I/O Settings*.

15. Make sure the *Enable Termination Character* check box is checked, and the terminal character is \n (Value: xA).

16. Click *Apply Changes*.



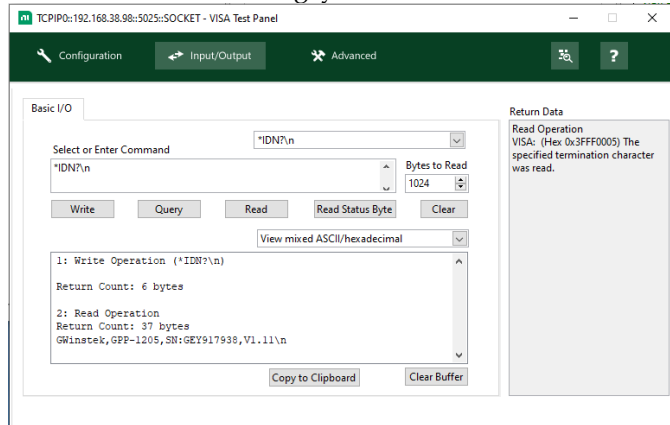
17. Click the *Input/Output* icon.

18. Enter **IDN?* in the *Select or Enter Command* dialog box if it is not already.

19. Click the *Query* button.

20. The *IDN? query will return the Manufacturer, model name, serial number and firmware version in the dialog box.

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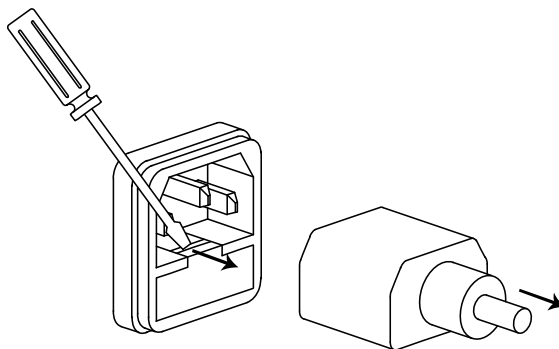


APPENDIX

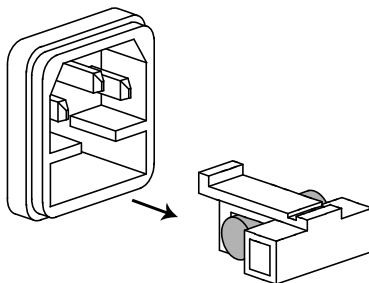
Fuse Replacement

Steps

1. Take off the power cord and remove the fuse socket using a minus driver.



2. Replace the fuse in the holder.



Rating

- 100 V / 120 V : T3.15 A / 250 V
- 220 V / 240 V : T1.6 A / 250 V

GPP-1000 Factory Default Settings

The following default settings are the factory configuration settings for the power supply.

For details on how to return to factory default settings, [see page 34](#).

Initial	Default Setting
Output	Off
LOCK	Disabled
Voltage Set	0.000 V
Current Set	0.0000 A
Output	Default Setting
Output On Dly(Delay)	00(hour):00(minute):00.00(sec)
Output Off Dly(Delay)	00(hour):00(minute):00.00(sec)
Remote Sense	2 Wire
V/I Slew Rate	CVHS = CV high speed priority
R_V(Rising Voltage) Slew Rate	0.04 V/ms
F_V(Falling Voltage) Slew Rate	0.04 V/ms
R_C(Rising Current) Slew Rate	0.01 A/ms
F_C(Falling Current) Slew Rate	0.01 A/ms
Measurement	Default Setting
Measure Average	Off
Current Range	IH
Mode Control	Default Setting
Mode	Source
TRIG(Trigger Control)	Default Setting
Trigin Level	High
Trigin Action	None
Trigin Voltage	0.000 V
Trigin Current	0.0000 A

Trigin Memory	M1
Trigout Level	Low
Trigout Source	None
PWR(Power) On Config	Default Setting
Power On Status	Default
Save/Recall	Default Setting
Save Mem(Memory) Set	M1
Recall Mem(Memory) Set	M1
Utility -Buzzer	Default Setting
Protect	On
Keyboard	Off
Utility -Bleeder	Default Setting
Bleeder	On
Protect	Default Setting
Voltage Limit	On
OVP Level	1.1 X Vrate
Current Limit	On
OCP Level	1.1 X Irate
OCP Delay	0.20 s

Specifications

The specifications apply when the GPP-1000 are powered on for at least 30 minutes under +20 °C to +30 °C.

Output Rating	Output voltage	32.000 V(GPP-1323) 20.000 V(GPP-1205)
	Output current	3.0000 A(GPP-1323) 5.0000 A(GPP-1205)
Load	Output power	96 W(GPP-1323) 100 W(GPP-1205)
	Power	96 W(GPP-1323) 100 W(GPP-1205)
	Current	3.0000 A(GPP-1323) 5.0000 A(GPP-1205)
	Setting range(CV)	3.000 V to 32.000 V(GPP-1323) 3.000 V to 20.000 V(GPP-1205)
	Setting/Rea dback accuracy(CV)	$\leq 0.1 \% + 30 \text{ mV}$
	Resolution(CV)	1 mV
	Setting range(CC)	0 A to 3.0000 A(GPP-1323) 0 A to 5.0000 A(GPP-1205)
	Setting/Rea dback accuracy(CC)	$\leq \pm 0.3 \% + 10 \text{ mA}$
	Resolution(CC)	0.1 mA
	Line regulation	$\pm (0.01 \% \text{ of setting} + 3 \text{ mV})$
Voltage	Load regulation	$\leq 0.01 \% + 3 \text{ mV}$ (rating current $\leq 3 \text{ A}$) $\leq 0.02 \% + 5 \text{ mV}$ (rating current $> 3 \text{ A}$)
	Transient response	$< 100 \text{ us}$
	Ripple noise	0.8 mVrms

	Setting range	33.6 V(GPP-1323) 21 V(GPP-1205)
	Rise time	≤ 100 ms
	Fall time	≤ 100 ms
	Maximum remote sensing compensation voltage (single line)	0.5 V
	Temperature Coefficient (TYP.)	300 ppm/°C
Current	Line regulation	$\leq 0.1\% + 3$ mA
	Load regulation	$\leq 0.1\% + 3$ mA
	Setting range	3.15 A(GPP-1323) 5.25 A(GPP-1205)
	Ripple noise (Arms)	≤ 2 mArms
	Temperature Coefficient (TYP.)	300 ppm/°C
Resolution	Voltage	programming 1 mV, readback 0.1 mV
	Current	programming 0.1 mA, readback 0.01 mA (H) programming 10 μ A, readback 1 μ A (M) programming 1 μ A, readback 0.1 μ A (L)
Accuracy	Setting accuracy	Voltage: $\pm (0.03\% \text{ of reading} + 10 \text{ mV})$ Current: $\pm (0.3\% \text{ of reading} + 10 \text{ mA})$ (H) Current: $\pm (0.3\% \text{ of reading} + 1 \text{ mA})$ (M) Current: $\pm (0.3\% \text{ of reading} + 0.1 \text{ mA})$ (L)
	Readback accuracy	Voltage: $\pm (0.03\% \text{ of reading} + 10 \text{ mV})$ Current: $\pm (0.3\% \text{ of reading} + 10 \text{ mA})$ (H) Current: $\pm (0.3\% \text{ of reading} + 1 \text{ mA})$ (M) Current: $\pm (0.3\% \text{ of reading} + 0.1 \text{ mA})$ (L)
OVP	Setting range	1.8 V - 35.2 V(GPP-1323) 1.0 V - 22.0 V(GPP-1205)

	Setting Accuracy	± 100 mV
	Operation	Turns the output off, displays OVP
OCP	Setting range	0.15 A - 3.3 A(GPP-1323) 0.25 A - 5.5 A(GPP-1205)
	Setting Accuracy	± 20 mA
OTP	Operation	Turns the output off, displays OCP
	Operation	Turns the output off, displays OTP
Trigger Signal*1	Trigger Input	A high or low level CMOS signal is applied for 100 μ s 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
Interface Capabilities	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
Series and Parallel Capability	Parallel number	4 units
	Series number	4 units

Input Characteristics	Nominal input voltage	100 Vac / 120 Vac / 220 Vac / 240 Vac($\pm 10\%$)
	Input frequency range	50 Hz / 60 Hz
	Max. Inrush current	30 A max or less
	Max. power consumption	300 VA
General Specifications	Operating environment	Indoor use, Overvoltage Category II
	Altitude	Maximum 2000 m
	Operating temperature	0 °C - 40 °C
	Storage temperature	-20 °C to 70 °C
	Operating humidity	20 % to 80 % RH;No condensation
	Storage humidity	20 % to 85 % RH;No condensation
	Dimensions	107 mm x 124 mm x 313 mm (W x H x D) (not including protrusions)
Insulation resistance	Weight	Approx.5.5 kg
	Between chassis and terminal	20 M Ω or above (DC 500 V)
	Between chassis and AC power cord	30 M Ω or above (DC 500 V)

*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.

Declaration of Conformity

We

GOOD WILL INSTRUMENT CO., LTD.

declare that the CE marking mentioned product satisfies all the technical relations application to the product within the scope of council:

Directive: EMC; LVD; WEEE; RoHS

The product is in conformity with the following standards or other normative documents:

© EMC

EN 61326-1 :	Electrical equipment for measurement, control and laboratory use — EMC requirements	
Conducted & Radiated Emission EN 55011 / EN 55032	Electrical Fast Transients EN 61000-4-4	
Current Harmonics EN 61000-3-2 / EN 61000-3-12	Surge Immunity EN 61000-4-5	
Voltage Fluctuations EN 61000-3-3 / EN 61000-3-11	Conducted Susceptibility EN 61000-4-6	
Electrostatic Discharge EN 61000-4-2	Power Frequency Magnetic Field EN 61000-4-8	
Radiated Immunity EN 61000-4-3	Voltage Dip/ Interruption EN 61000-4-11 / EN 61000-4-34	

© Safety

EN 61010-1 :	Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements
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GOOD WILL INSTRUMENT CO., LTD.

No. 7-1, Jhongsing Road, Tucheng Dist., New Taipei City 236, Taiwan

Tel: +886-2-2268-0389

Fax: +866-2-2268-0639

Web: www.gwinstek.com

Email: marketing@goodwill.com.tw

GOOD WILL INSTRUMENT (SUZHOU) CO., LTD.

No. 521, Zhujiang Road, Snd, Suzhou Jiangsu 215011, China

Tel: +86-512-6661-7177

Fax: +86-512-6661-7277

Web: www.instek.com.cn

Email: marketing@instek.com.cn

GOOD WILL INSTRUMENT EURO B.V.

De Run 5427A, 5504DG Veldhoven, The Netherlands

Tel: +31(0)40-2557790

Fax: +31(0)40-2541194

Email: sales@gw-instek.eu

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