Preen
AC POWER CORP.

ADG-P Series

Programmable DC Power Supply

User Manual

AC Power Corp. (Preen)

V 1.02.00EN

The information in this document is subject to change without notice.

Legal Notices

The information in this product manual is subject to change without notice.

AC Power Corp. makes no warranty of any kind with regard to this user manual, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. AC Power Corp. shall not be held liable for errors contained herein or direct, indirect, special, incidental or consequential damages in connection with the furnishing, performance, or use of this material.

Warranty

Preen's ADG-P series is warranted against defects in material and workmanship for a period of two year after date of shipment. Preen agrees to repair or replace any assembly or component found to be defective, under normal use during this period. Preen's obligation under this warranty is limited solely to repairing any such product which in sole Preen's opinion proves to be defective within the scope of the warranty when returned to the factory or to an authorized service center. Transportation to the factory or service center is to be prepaid by the purchaser. Shipment should not be made without prior authorization by Preen.

This warranty does not apply to any products repaired or altered by persons not authorized by Preen, or not in accordance with instructions furnished by Preen. If the product is defective as a result of misuse, improper repair, or abnormal conditions or operations, repairs will be billed at cost.

Preen assumes no responsibility for its product being used in a hazardous or dangerous manner either alone or in conjunction with other equipment. High voltage used in some products may be dangerous if misused. Special disclaimers apply to these products. Preen assumes no liability for secondary charges or consequential damages and in any event, Preen's liability for breach of warranty under any contract or otherwise, shall not exceed the purchase price of the specific product shipped and against which a claim is made.

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SAFETY SUMMARY

The following general safety precautions must be observed during all phases of operation, service, and repair of this product. Failure to comply with these precautions or specific WARNINGS given elsewhere in this manual will violate safety standards of design, manufacture, and intended use of the product.
Preen assumes no liability for the customer‘s failure to comply with these requirements.

BEFORE APPLYING POWER
Verify that the product is set to match with the power line input.

PROTECTIVE GROUNDING
Make sure to connect the product to the protective ground to prevent an electric shock before turning on the power.

NECESSITY OF PROTECTIVE GROUNDING
Never cut off the internal or external protective grounding wire, or disconnect the wiring of protective grounding terminal. Doing so will cause a potential shock hazard that may bring injury to a person.

DO NOT OPERATE IN AN EXPLOSIVE ATMOSPHERE
Do not operate the product in the presence of flammable gases or fumes.

DO NOT REMOVE THE COVER OF THE PRODUCT
Personnel who operate the product must not remove the cover of the product. Component replacement and internal adjustment can be done only by qualified service personnel.

WARNING
LETHAL VOLTAGES. DEATH on contact may result if either the output terminals or the output circuits connected to the output are touched when the product output is on.

Table of Contents

1 General Information

1.1 Introduction

Preen's ADG-P series is a programmable DC power supply with high power density and high output power, and it offers great response time, high accuracy and many output voltage and current combinations. Designed for the increasing demand of high power DC power supplies, ADG-P series is ideal for testing EV-type motor/compressor, server power supply, fuse, circuit breaker, contactor and PV inverter, or ADG-P series can be used as a facility power or EMC chamber power.

With output power up to 100kW per unit, ADG-P series can offer output voltage up to 1600V or output current up to 2000A. Users can select standard interface RS-485 or optional interfaces RS-232 and GPIB. With built-in STEP and GRADUAL features, ADG-P series allows easy setup on test sequence. According to CV/CC settings and load conditions, ADG-P series can operate as a current or voltage source. Its remote sense feature can effectively reduce voltage drop caused by cable length and provides more flexibility on installation.

1.2 Specifications

Technical specifications of product are listed below. All specifications have been tested according to Preen's standard test procedures.

30kW		ADG-P-40-750	ADG-P-60-500	ADG-P-100-300	ADG-P-200-150	ADG-P-240-125	ADG-P-320-94
50kW		ADG-P-40-1250	ADG-P-60-834	ADG-P-100-500	ADG-P-200-250	ADG-P-240-208	ADG-P-320-156
AC Input	**Voltage**	3Φ3W + G 380 VAC/400VAC/415VAC/440VAC/480VAC ± 10%					
	Frequency	47-63Hz					
	Power Factor	≧90% at maximum power					
DC Output	**Line Regulation**	≦0.3%			≦0.1%		
	Load Regulation	≦0.3%			≦0.065%	≦0.104%	≦0.14%
	Voltage Ripple (RMS)	≦0.5%			≦0.26%	≦0.19%	≦0.16%

	Voltage Noise (Peak)	≦3.7%	≦2%	≦0.88%
	Voltage Slew Rate*1	≦65ms	≦60ms	≦85ms
	Transient Response*2	≦4-12ms		
Measurement	**Voltage Accuracy**	0.5% F.S.		
	Voltage Resolution	0.1V		
	Current Accuracy	0.5% F.S.		
	Current Resolution	0.1A		
Protection	**Type**	Vin OVP, Vin UVP, OVP, OCP and OTP		
	OVP Range	5% - 115% from front panel		
	OVP Accuracy	1% F.S.		
	OCP Range	5% - 115% from front panel		
	OCP Accuracy	1% F.S.		
General	**Efficiency**	≧87%	≧90%	
	Remote Sense Limits	3% maximum voltage drop from product output to load (for product models with output voltage lower than 1000VDC)		
	Operational Temperature	0°C-40°C		
	Storage Temperature	-20°C-70°C		
	Isolation	Input to product cover: 2000VAC		
	Dimension (H×W×D)	41.5×23.6×31.5 inch3/1050×600×800 mm^3		
	Weight*3	30kW: approx. 496lbs/225kg 50kW: approx. 511lbs/232kg	30kW: approx. 412lbs/187kg 50kW: approx. 423lbs/192kg	

30kW		ADG-P-400-75	ADG-P-500-60	ADG-P-640-47	ADG-P-800-38	ADG-P-1000-30	ADG-P-1600-18
50kW		ADG-P-400-125	ADG-P-500-100	ADG-P-640-78	ADG-P-800-63	ADG-P-1000-50	ADG-P-1600-31
AC Input	**Voltage**	3Φ3W + G 380 VAC/400VAC/415VAC/440VAC/480VAC ± 10%					
	Frequency	47-63Hz					
	Power Factor	≧90% at maximum power					
DC Output	**Line Regulation**	≦0.1%					
	Load Regulation	≦0.032%	≦0.14%	≦0.132%	≦0.034%	≦0.02%	≦0.05%
	Voltage Ripple (RMS)	≦0.13%		≦0.109%	≦0.07%	≦0.05%	≦0.08%
	Voltage Noise (Peak)	≦0.88%	≦1.34%	≦0.77%	≦0.29%	≦0.27%	≦0.4%
	Voltage Slew Rate*1	≦115ms			≦280ms		
	Transient Response*2	≦4-12ms					
Measurement	**Voltage Accuracy**	0.5% F.S.					
	Voltage Resolution	0.1V					
	Current Accuracy	0.5% F.S.					
	Current Resolution	0.1A					
Protection	**Type**	Vin OVP, Vin UVP, OVP, OCP and OTP					
	OVP Range	5% - 115% from front panel					
	OVP Accuracy	1% F.S.					
	OCP Range	5% - 115% from front panel					
	OCP Accuracy	1% F.S.					
General	**Efficiency**	≧90%					
	Remote Sense Limits	3% maximum voltage drop from product output to load (for product models with output voltage lower than 1000VDC)					
	Operational Temperature	0°C-40°C					

	Storage Temperature	-20°C-70°C
	Isolation	Input to product cover: 2000VAC
	Dimension (H×W×D)	41.5×23.6×31.5 inch³/1050×600×800 mm³
	Weight*3	30kW: approx. 412lbs/187kg 50kW: approx. 423lbs/192kg

75kW		ADG-P-40-1875	ADG-P-60-1250	ADG-P-100-750	ADG-P-320-234	ADG-P-640-117	ADG-P-1000-75
100kW		ADG-P-40-2500	ADG-P-60-1666	ADG-P-100-1000	ADG-P-320-313	ADG-P-640-156	ADG-P-1000-100
AC Input	**Voltage**	3Φ3W + G 380 VAC/400VAC/415VAC/440VAC/480VAC ± 10%					
	Frequency	47-63Hz					
	Power Factor	≧90% at maximum power					
DC Output	**Line Regulation**	≦0.1%					
	Load Regulation	≦0.1%	≦0.15%	≦0.15%	≦0.08%	≦0.08%	≦0.1%
	Voltage Ripple (RMS)	≦1.3%	≦1.5%		≦0.1%		≦0.2%
	Voltage Noise (Peak)	≦7%	≦5%		≦0.65%	≦0.35%	≦0.8%
	Voltage Slew Rate*1	≦120ms			≦90ms	≦120ms	≦130ms
	Transient Response*2	≦10-20ms					
Measurement	**Voltage Accuracy**	0.5% F.S.					
	Voltage Resolution	0.1V					
	Current Accuracy	0.5% F.S.					
	Current Resolution	0.1A					
Protection	**Type**	Vin OVP, Vin UVP, OVP, OCP and OTP					
	OVP Range	5% - 115% from front panel					
	OVP Accuracy	1% F.S.					

	OCP Range	5% - 115% from front panel
	OCP Accuracy	1% F.S.
General	**Efficiency**	≧90%
	Remote Sense Limits	3% maximum voltage drop from product output to load (for product models with output voltage lower than 1000VDC)
	Operational Temperature	0°C-40°C
	Storage Temperature	-20°C-70°C
	Isolation	Input to product cover: 2000VAC
	Dimension (H×W×D)	59.8×23.6×31.5 $inch^3$/1520×600×800 mm^3
	Weight*3	≦300kg

*1 For output voltage change from 5% to 90% at maximum power after output softstart.

*2 Recover to ±0.1% of regulated output with a 50% to 100% or 100% to 50% step load change.

*3 Weight might be different due to optional features or different input voltage. Please contact us for details.

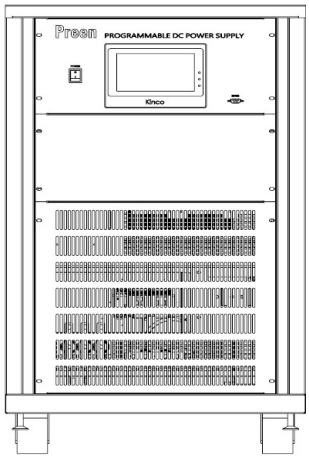
* All specifications are subject to change without notice.

** Above specification is for output voltage over 1%.

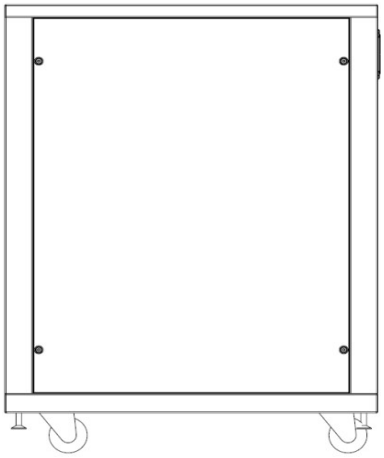
Table 1.1 Technical specifications

1.3 Exterior

Product exterior of the ADG-P series with power level 30kW, 50kW, 75kW and 100kW are given as follows,



(a) Front-side view of the ADG-P series (30kW&50kW)



(b) Right-side view of the ADG-P series (30kW&50kW)

Figure 1.1 Product exterior of the ADG-P series (30kW&50kW)

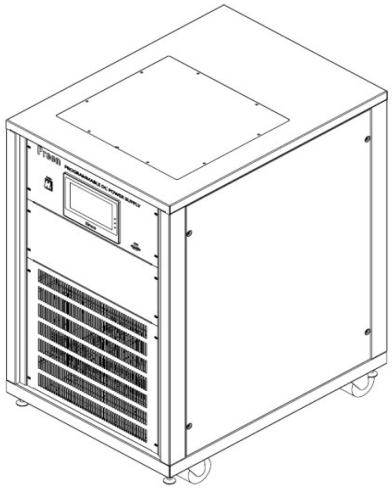
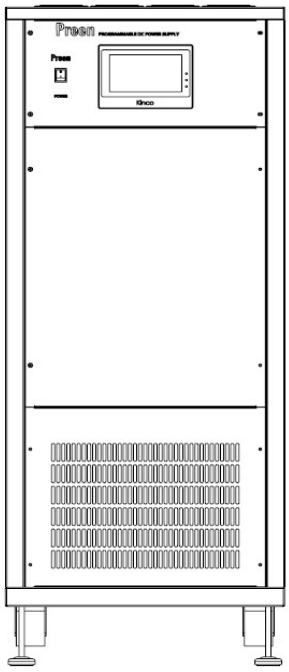
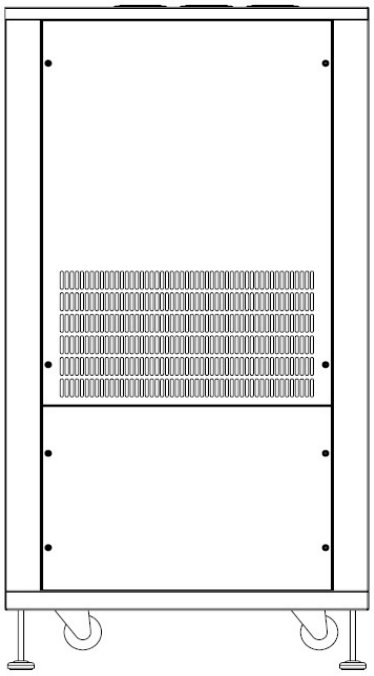


Figure 1.2 Product exterior of the ADG-P series in axis-side view (30kW&50kW)



(a) Front-side view of the ADG-P series (75kW&100kW)



(b) Right-side view of the ADG-P series (75kW&100kW)

Figure 1.3 Product exterior of the ADG-P series (75kW&100kW)

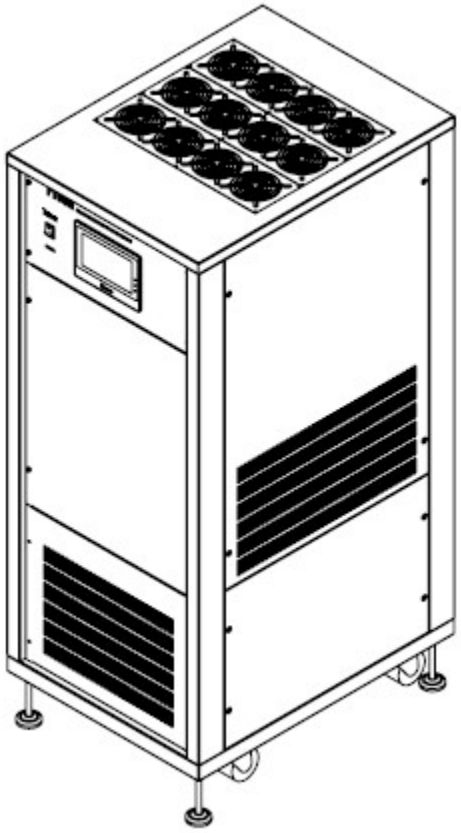


Figure 1.4 Product exterior of the ADG-P series in axis-side view (75kW&100kW)

2 Installation

2.1 Inspection

Each ADG-P series DC power supply has been carefully tested by Preen before shipping, but some damage might occur on the product during shipping, so please inspect the product carefully before installation. If there is any damage, please contact the shipping company or directly contact Preen, and provide photos according to the damage. A technical staff will contact users immediately.

2.2 User Preparation

ADG-P series should be installed in indoor and in dry environment with little dust.

Location for installing ADG-P series must be stable and secure due to its heavy weight, and users should notice that ADG-P series is better to be placed on the ground.

The front space for the product should be space with at least 105 cm length in order to fully remove the front door. For easy maintenance and well ventilated, the back space for the product should be space with at least 80 cm length, and its top space should be space with at least 60 cm length.

Make sure that the ambient temperature around the product should be lower than 40℃.

2.3 Remove the Front Door from the Product Enclosure

For input/output connection, please remove the front door from the product enclosure since the front door is fixed to the product via screws, and there are terminals of AC input and DC output inside the front door.

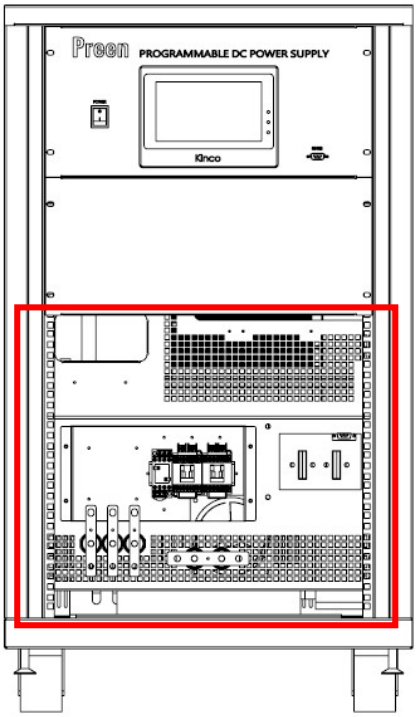


Figure 2.1 Remove the front door from the product enclosure

2.4 Input Connection

The AC input terminals are located inside the front door of the product (see Figure 2.2). AC wires must be rated at least for 85°C. The AC wires must have rated current which complies with Spec. limit of the product.

To perform input connection for the product, please see Figure 2.2 and do the following procedures step by step:

1. Use a multi-meter to confirm that power line input complies with the Spec. limit of the product.
2. Stop the power line input, and use the multi-meter to confirm that input voltage (L-L) from the power line input should be 0.
3. Connect the AC input terminals of L1, L2 and L3 with the power line input of L1, L2 and L3 via AC wires sequentially.

4. Confirm that the AC wires between the power line input and the AC input terminals are secured.

Installation of the AC wires to the product must be done by a professional and according to local electrical codes.

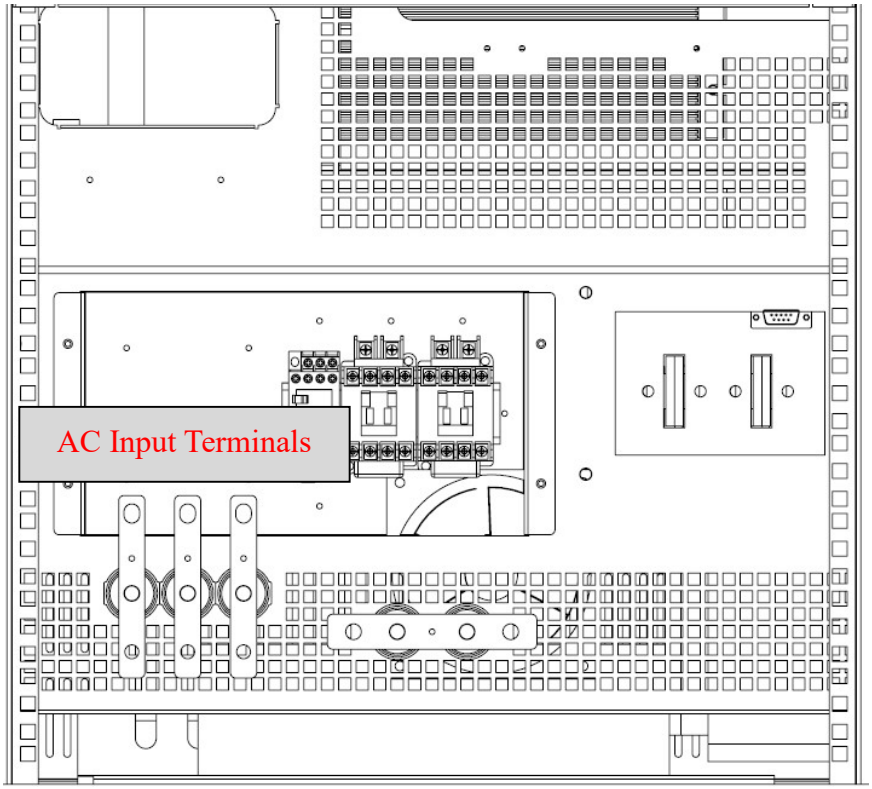


Figure 2.2 AC Input terminals

2.5 Output Connection

To perform output connection for the product, please see Figure 2.3 and do the following procedures step by step:

1. Stop the product output, and use the multi-meter to confirm that output voltage should be 0.
2. Connect the DC output terminals “+” and “-” with positive and negative terminals from the load via metal wires sequentially.
3. Confirm that metal wires between the DC output terminals and the load are secured.

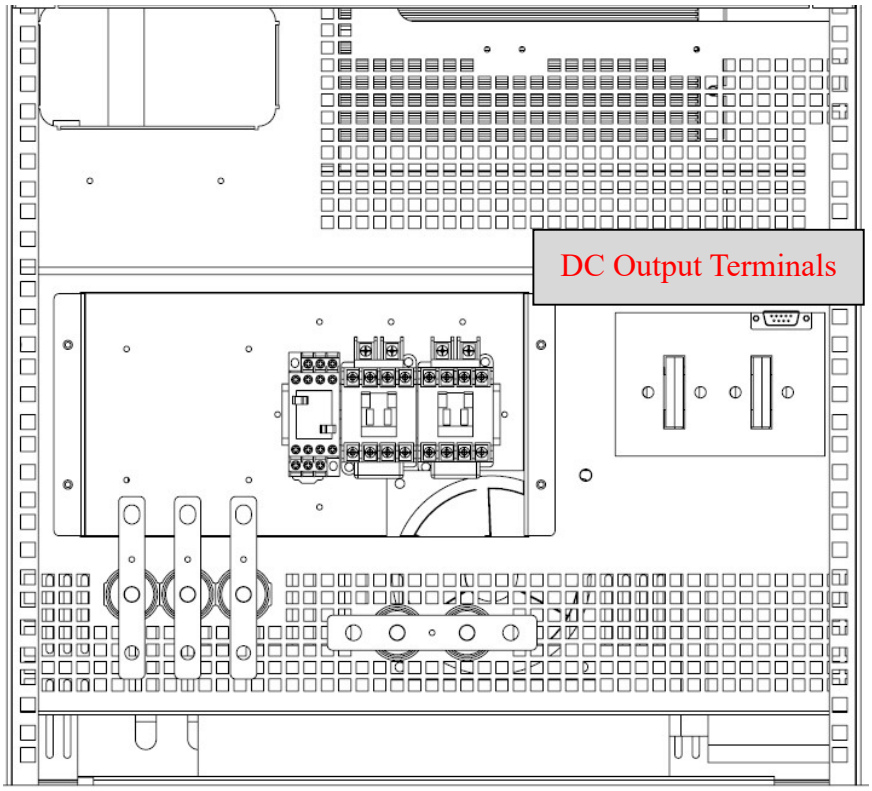


Figure 2.3 DC output terminals

3 Local Operation

3.1 Power-on Procedures

WARNING
Before turning on the product, all protective grounding terminals, extension cords, and devices connected to the product must be connected to a protective ground. Any interruption of the protective ground will cause a potential shock hazard that could result in personal injury.

After applying power and turning on the product, the touch screen located on the front panel will light up and display the start-up page shown as below, and then it will enter into General page in few seconds.

Figure 3.1 Start-up page

3.2 General Page

The description for the items and the icons at the General page are given according to the figure below. Users can press the display area, and then the digital scope will be shown at the General page to provide product output waveform.

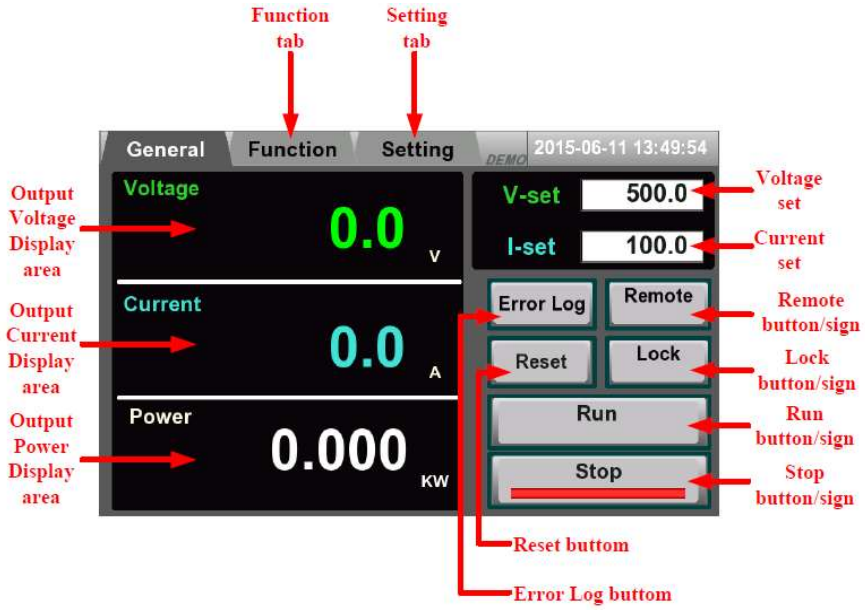


Figure 3.2 General page

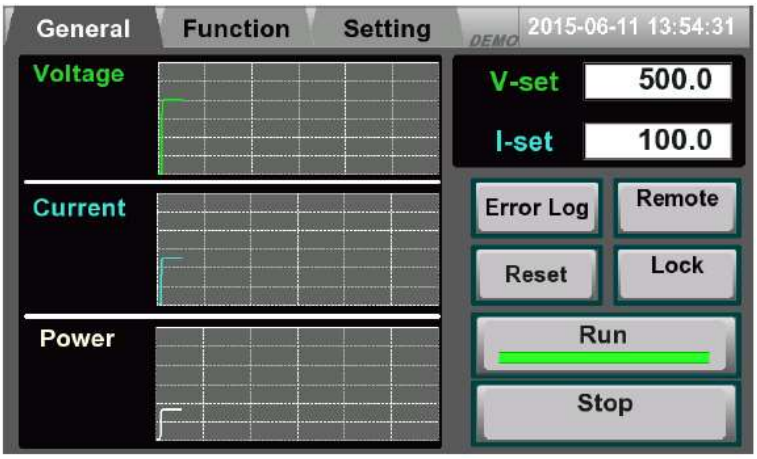


Figure 3.3 Digital scope at the General page

NOTICE
Before pressing the icon “RUN” at the General page to start the product output, make sure that output terminals are correctly connected to the load.

3.2.1 Output Measurement

At the General page, the item “Voltage” indicates measurement of the present DC output voltage; the item “Current” indicates measurement of the present DC output current; the item “Power” indicates measurement of the DC output power.

3.2.2 Output Settings

At the General page, the item “V-set” indicates the DC output voltage set; the item “I-set” indicates the DC output current set; the item “Setting” indicates function of time setting; the icon “Reset” indicates function of product reset after protection.

3.2.3 Run & Stop

The product will start the DC output after pressing the icon “Run” at the General page. Similarly, the product will stop the DC output after pressing the icon “Stop” at the General page.

3.2.4 Constant Voltage Mode

When the output current from the load is lower than or equal to the DC output current set, the product will perform at the constant voltage mode. Once the product performs at the constant voltage mode, the sign CV will be shown next to the item “Voltage” at the General page.

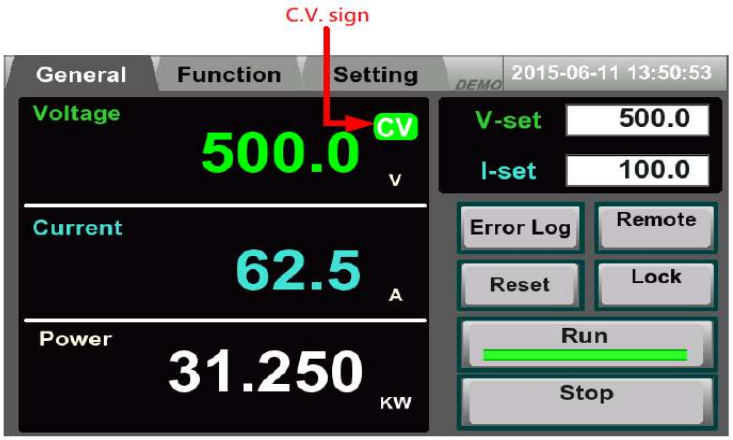


Figure 3.4 General page when the product performs at the constant Voltage mode

3.2.5 Constant Current Mode

When the output current from the load is higher than the DC output current set, the product will perform at the constant current mode. Once the product performs at the constant current mode, the sign CC will be shown next to the item "Current" at the General page.

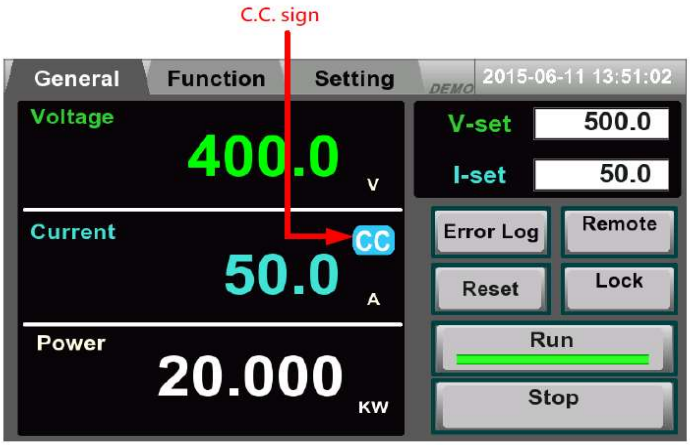


Figure 3.5 General page when the product performs at the constant Voltage mode

NOTICE
When ADG-P series performs at the constant current mode, the DC output voltage will be automatically adjusted to match load conditions.

3.3 Function Page

Press the icon “Function” to enter into the function page.

Figure 3.6 Function page

3.3.1 Step Setting

Press the icon “Step” to enter into the step page, and the step page is shown below. After entering into the step page, press the icon “Voltage step” or “Current step” to operate at voltage/current step mode. Then, set output voltage/current and dwell time for each set (up to 24 sets) in the step setting area, and set start number, end number and cycle times for performing the step feature (repeatedly performing the step feature when setting the cycle times as 0). After finishing the setting above, press the icon “Next” to enter into the next page.

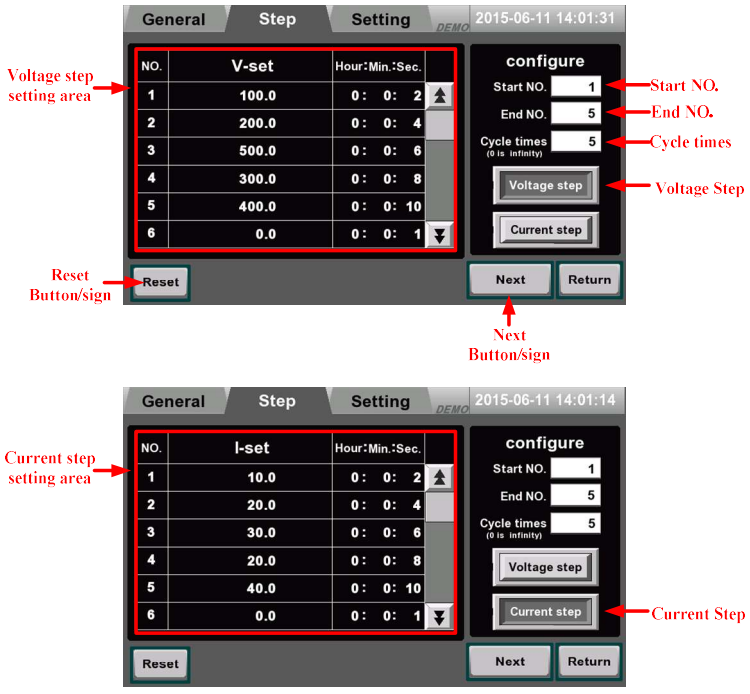


Figure 3.7 Step setting

3.3.2 Step Performing

Press the icon “Run” to perform the step feature, and output status is shown on the output display area. Similarly, the output display area can show the output status by waveform display or digit display. “Run status” includes performing number, output voltage, elapsed time and total cycle times. Press the icon “Lock” to lock the function of other icons. Press the icon “Stop” to stop the step feature. Once an abnormal condition occurs, press the icon “Reset” to eliminate the abnormal condition, and press the icon “Return” to return to the step page.

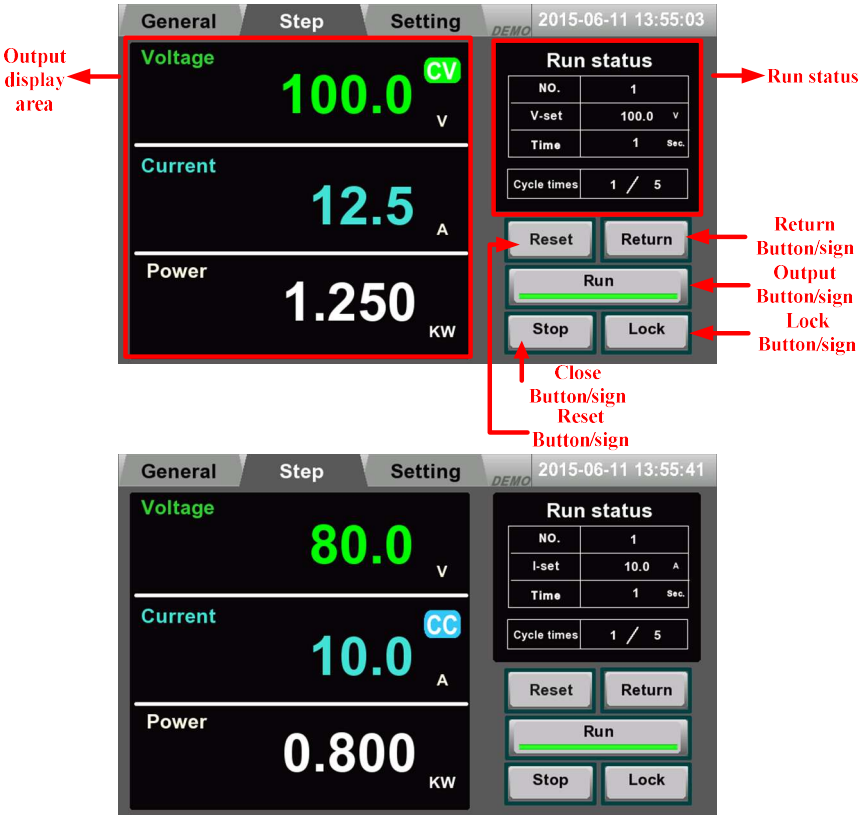


Figure 3.8 Step performing

3.3.3 Gradual Setting

Press the icon “Gradual” to enter into the gradual page, and the gradual page is shown below. After entering into the gradual page, press the icon “Voltage grad” or “Current grad” to operate at voltage/current gradual mode. Then, set start output voltage/current, end output voltage/current and dwell time for each set (up to 12 sets) in the gradual setting area, and set start number, end number and cycle times for performing the step feature (repeatedly performing the gradual feature when setting the cycle times as 0). After finishing the setting above, press the icon “Next” to enter into the next page.

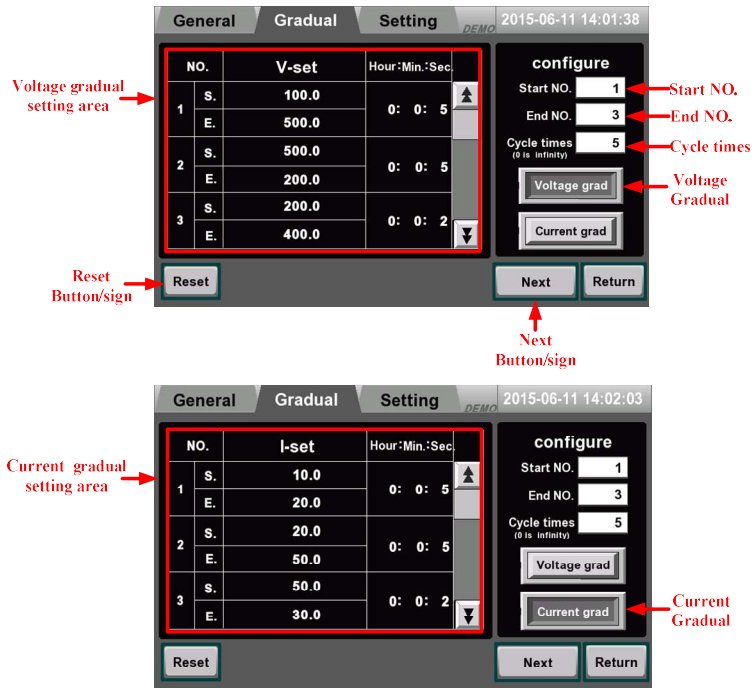


Figure 3.9 Gradual setting

3.3.4 Gradual Performing

Press the icon “Run” to perform the gradual feature, and output status is shown on the output display area. Similarly, the output display area can show the output status by waveform display or digit display. “Run status” includes performing number, output voltage, elapsed time and total cycle times. Press the icon “Lock” to lock the function of other icons. Press the icon “Stop” to stop the gradual feature. Once an abnormal condition occurs, press the icon “Reset” to eliminate the abnormal condition, and press the icon “Return” to return to the gradual page.

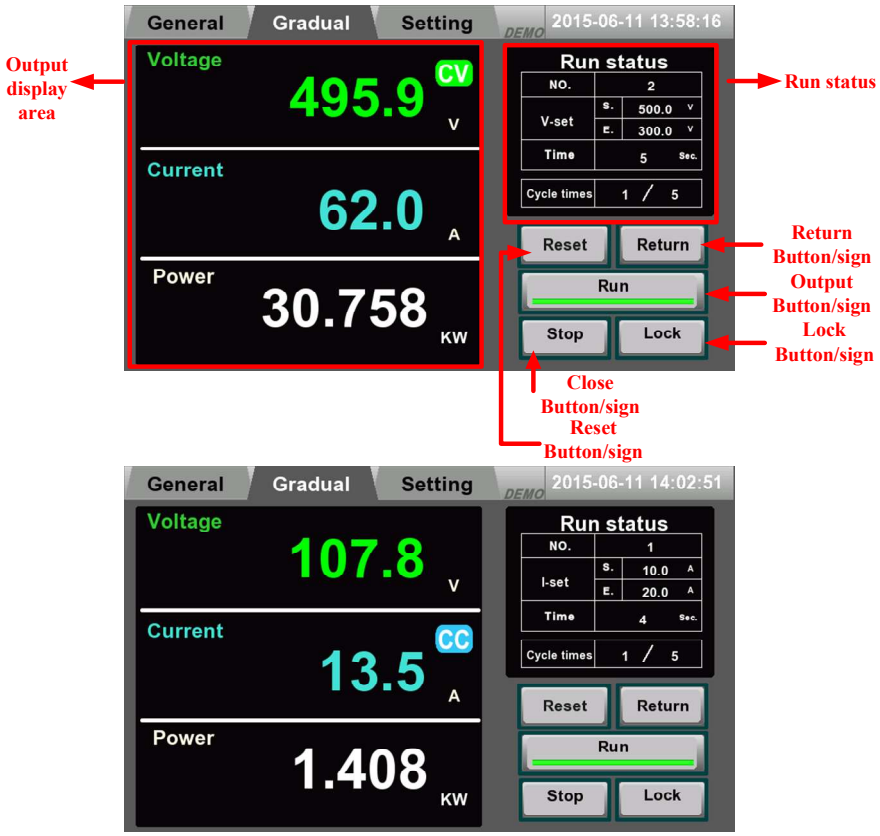
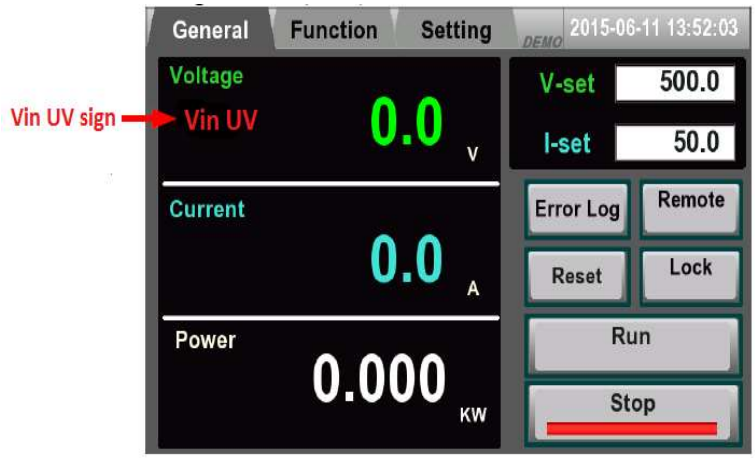


Figure 3.10 Gradual performing

3.4 Protection

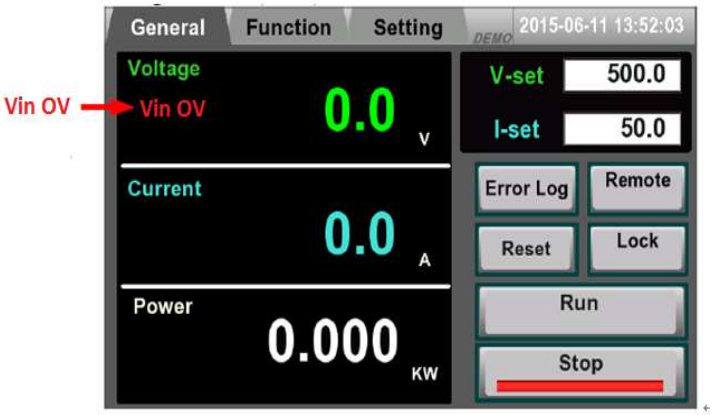
3.4.1 Protection: Vin UVP

When the input voltage for the product is lower than a default value, Vin UVP will be triggered and the product will immediately stop the output. Then, the sign “Vin UV” will be shown below the item “Voltage” at the General page. To reset the product from Vin UVP, please press the icon “Reset”.



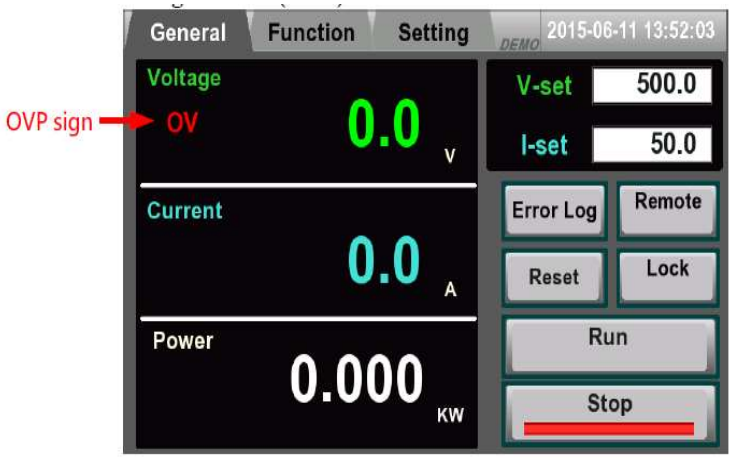
3.4.2 Protection: Vin OVP

When the input voltage for the product is higher than a default value, Vin OVP will be triggered and the product will immediately stop the output. Then, the sign “Vin OV” will be shown below the item “Voltage” at the General page. To reset the product from Vin OVP, please press the icon “Reset”.



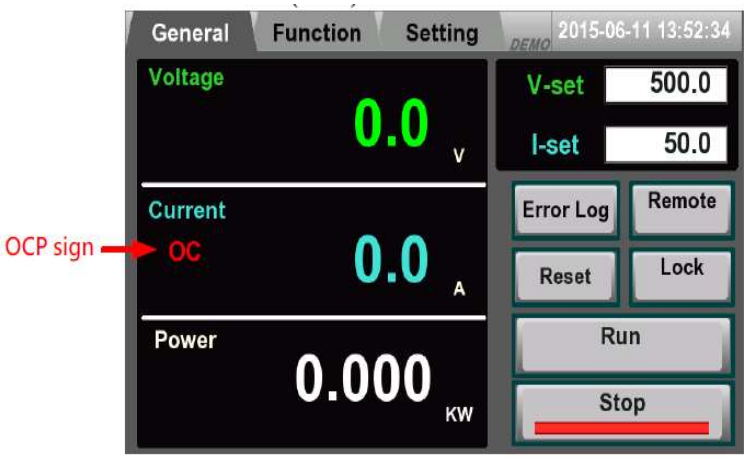
3.4.3 Protection: OVP

When the output voltage of the product is higher than a default value, OVP will be triggered and the product will immediately stop the output. Then, the sign “OV” will be shown below the item “Voltage” at the General page. To reset the product from OVP, please press the icon “Reset”.



3.4.4 Protection: OCP

When the output current of the product is higher than the DC output current set, OCP will be triggered and the product will immediately stop the output. Then, the sign “OC” will be shown below the item “Current” at the General page. To reset the product from OCP, please press the icon “Reset”.



4 Repair and Maintenance

4.1 Emergency Troubleshooting

If ADG-P series has any abnormal conditions or triggers any product protection, users must immediately stop the product output and turn off the product.

4.2 Dust Check

ADG-P series must be installed in dry and clean room, and please clean the dust for the product every six months once.

4.3 Product Maintenance

Extreme temperature, high humidity, heavy dust, chemical pollution and physical vibration all could impose negative impacts on the life and reliability of the product. However, the natural aging of all the electrical and mechanical components would further cause it to be more vulnerable to all kinds of faults. Therefore, daily and monthly maintenance are necessary, and they are important to the reliability of the product in the long run.

NOTICE
Only authorized and trained technical staffs are allowed to carry out the maintenance on the product.

4.3.1 Daily Maintenance

First, this product must operate in the environment stated in this user manual. Daily inspection on the environment and this product should be carried out regularly. It is recommended to record product data of operational environment, operational condition, output settings and etc. For product maintenance and its reference, it is also recommended to build detailed “product usage log file”.

Abnormal conditions on the product can be detected by the daily inspection and maintenance. Once an abnormal condition is detected, users should identify its root cause, and eliminate the abnormal condition accordingly. If users are unable to identify the root cause or eliminate the abnormal condition, please call our customer service for technical support immediately. The earlier the abnormal condition can be removed, the longer the life of the product. Please check the daily maintenance list given below,

Object	Details			Criteria
	Items	Period	Methods	
Environment	1. Temperature and humidity 2. Dust, moisture and water leakage 3. Abnormal chemical vapor	Anytime	1. Thermometer and hygrometer 2. Visual inspection 3. Visual inspection and smell	1.1. Ambient temperature must be lower than 40˚C or full load output should be de-rated 1.2 Humidity should be complied with the Spec. limit 2. Little dust is allowed; no condensing; no water drop on the product 3. No abnormal smell; no abnormal color in the air
Product	1. Abnormal physical vibration 2. Heat dissipation 3. Acoustic noise	Anytime	1. Visual inspection 2. Thermometer 3. Sense of hearing	1. No abnormal physical vibration 2.1. Fan speed and air flow should be complied with product operation 2.2 Temperature on the surface of the product enclosure must be lower than 30˚C 3. No abnormal acoustic noise
In/Out Conditions	1. Input voltage 2. Output Voltage 3. Output Current 4. Temperature inside the product	Anytime	1. Voltmeter 2. Voltmeter 3. Ammeter 4. Thermometer	1. Within the Spec. limit 2. Within the Spec. limit 3. Within the Spec. limit 4. Inside temperature must be lower than 40˚C

Table 4.1 Daily Maintenance List

4.3.2 Monthly Maintenance

For monthly maintenance, screen filter for the air inlet should be detached and clean for well ventilated. According to the usage of this product and the environment where it operates, monthly maintenance can be carried out every 3-6 months once.

NOTICE
Remover the front door of the product enclosure to detach and re-install the screen filter. There is a cover in front of the screen filter, and this cover should be removed before detaching the screen filter.

5 Remote Control

Preen provides specialized control software for ADG series programmable high power DC power supply, and this control software eases remote operation for users to quickly set product output. Additionally, Preen provides MODBUS protocol for users, and users can use such protocol to program product control according to their practical requirements.

5.1 Remote Read

- **Read packet format**

ID	Function Code 03H	Length	Start Address	CRC16
1 Byte	1 Byte	1 Byte	2 Bytes	2 Bytes

- **Read feedback packet format (correct)**

ID	Function Code 03H	Status Code	Length	Data (High to Low)	CRC16
1 Byte	1 Byte	1 Byte	1 Byte	N Bytes	2 Bytes

- **Read feedback packet format (error)**

ID	Function Code 03H	Status Code	Length	CRC16
1 Byte	1 Byte	1 Byte	1 Byte	2 Bytes

5.2 Remote Write

- **Write packet format**

ID	Function Code 10H	Length	Start Address	Data (High to Low)	CRC16
1 Byte	1 Byte	1 Byte	2 Bytes	N Byte	2 Bytes

- **Write feedback packet format (correct)**

ID	Function Code 10H	Status Code	Length	CRC16
1 Byte	1 Byte	1 Byte	1 Byte	2 Bytes

- **Write feedback packet format (error)**

ID	Function Code 10H	Status Code	Length	CRC16
1 Byte	1 Byte	1 Byte	1 Byte	2 Bytes

The following descriptions are for the packet format mentioned above:

1. ID: Product MODBUS ID, which has default setting 01H.

2. Function Code: MODBUS identification code, which is used for remote read or remote write.

3. Status Code: Status code will be 00H while transmitting correctly; otherwise, status code will be error code while transmitting incorrectly.

Status Code	Description
00H	Correct
02H	CRC error
03H	Data length error
04H	Function code error
05H	Address error
06H	Output voltage exceeding the rated value
07H	Output current exceeding the rated value
08H	Product output writing prohibited

5.3 Transmission Example

- **Remotely read the product (correct)**

Remotely read the setting value Vout_set. Start address will be 0000H, and data length will be 4 bytes.

ID	Function Code 03H	Length	Start Address	CRC16
01H	03H	04H	00 00H	58 45H

- **Feedbacks status code 00H from the product to indicate correct reading**

The setting value will be 42C80000H（Format of IEEE754）, which indicates

100V.

ID	Function Code 03H	Status Code	Length	Data (High to Low)	CRC16
01H	03H	00H	04H	42 C8 00 00H	D6 81H

- **Remotely read the product (error)**

Remotely read the setting value Vout_set. Start address will be 0000H, data length will be 4 bytes, and CRC16 is incorrect.

ID	Function Code 03H	Length	Start Address	CRC16
01H	03H	04H	00 00H	58 40H

- **Feedbacks status code 02H from the product to indicate incorrect reading**

It is known that 02H indicates CRC error by looking up the table.

ID	Function Code 03H	Status Code	Length	CRC16
01H	03H	02H	00H	F0 B8H

- **Remotely write into the product (correct)**

Remotely write the setting value Vout_set 100V. Start address will be 0000H, and data length will be 4 bytes. 100V can be transformed into 42C80000H.

ID	Function Code 10H	Length	Start Address	Data (High to Low)	CRC16

01H	10H	04H	00 00H	42 C8 00 00H	D6 2AH

- **Feedbacks status code 00H from the product to indicate correct writing**

ID	Function Code 10H	Status Code	Length	CRC16
01H	10H	00H	00H	00 DH

- **Remotely write into the product (error)**

Remotely write the setting value Vout_set 800V. Start address will be 0000H, and data length will be 4 bytes. 800V can be transformed into 44480000H.

ID	Function Code 10H	Length	Start Address	Data (High to Low)	CRC16
01H	10H	04H	00 00H	44 48 00 00H	D7 4AH

- **Feedbacks status code 06H from the product to indicate incorrect writing.**

It is known that 06H indicate incorrect setting value Vout_set by looking up the table.

ID	Function Code 10H	Status Code	Length	CRC16
01H	10H	06H	00H	03 BDH

5.4 MODBUS Address Table

Parameter Name	Start Address	Function	Length	Format
Output Voltage Setting	0000H	03H/10H	4 bytes	IEEE754
Output Voltage Setting	0004H	03H/10H	4 bytes	IEEE754
Product Output	0008H	03H/10H	1 byte	00H: Stop 01H: Output
Remote Control	0009H	03H/10H	1 byte	00H: Local Operation 01H: Remote Operation
Error Reset	000BH	10H	1 byte	01H: Reset the product after eliminating the an error condition
Input Voltage	04C0H	03H	4 bytes	IEEE754
Output Voltage	04C4H	03H	4 bytes	IEEE754
Output Current	04C8H	03H	4 bytes	IEEE754
Product Status	04CCH	03H	1 byte	Each bit indicates different status flag. Bit 0: Reserved Bit 1: CV Mode Bit 2: CC Mode

				Bit 3: Vin OVP Bit 4: Vin UVP Bit 5: OVP Bit 6: UVP Bit 7: OTP