



DP-H Series User's Manual

By DSC-Electronics Germany • Georgstraße 36 • 53111 Bonn

1. Connection

Our devices are pre-configured to the power grid chosen with order (if not specified otherwise, our devices are manufactured for the EU power grid 230V 50Hz / 400V 50Hz). Subsequent adjustment after delivery is not possible. Connecting the device to an unsuitable power source will void any warranty.

1 Phase / EU Power Grid	
Voltage (Recommended)	230V ± 10% AC
Voltage (Max.)	250V AC
Frequency	50Hz - 60Hz
Circuit breaker minimum requirements	The maximum current of the device shall be determined as follows: $I = (\text{maximum power of the device} / 230) + 2$
1 Phase / American Power Grid	
Voltage (Recommended)	115V ± 10% AC
Voltage (Max.)	130V AC
Frequency	50Hz - 60Hz
Circuit breaker minimum requirements	The maximum current of the device shall be determined as follows: $I = (\text{maximum power of the device} / 115) + 4$

3 Phase / EU Power Grid (TN-S Network)	
Voltage (Recommended)	380V - 410V
Voltage (Max.)	430V
Frequency	50Hz
Circuit breaker Minimum requirements	The maximum phase current of the device shall be determined as follows: $I = ((\text{maximum power of the device} / 400) / 1,73) + 2$

2. General

Please read through and understand this Operation Manual before operating the product. After reading always keep the manual nearby so that you may refer to it as needed. When moving the product to another location, be sure to bring the manual as well.

Calibration

Before shipment, the instrument has been calibrated carefully in our factory. The calibration procedures and standards are compliant to the national regulations and standards for electronic calibration. If you have requested a certificate with your order, this is enclosed with your device. With ordered off-site calibration (DaKKS) the calibration was not performed in-house, please refer to the laboratory calibration protocol for details.

Warranty

We guarantee that the instrument has undergone a strict quality test before shipment and has passed all prescribed functional tests. We provide our customers with a warranty period of three years from receipt of the device. During the warranty period, all repairs, as well as spare parts are always free of charge. The warranty is void in the case of defects which have been caused by user's fault, or in case of unauthorized opening.

2.1 Safety Instructions

This chapter contains important safety instructions that you must follow when operating the instrument and when keeping it in storage. Read the following before any operation to insure your safety and to keep the device in a proper condition.

Safety Symbols

The following safety symbols may appear in this manual or on the instrument:



WARNING

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



CAUTION

Identifies conditions or practices that could result in damage to the instrument or to other properties.



DANGER

High Voltage



ATTENTION

Refer to the Manual



Protective Earth (PE)



Earth (Ground)

2.2 Safety Guidelines

Please follow the safety guidelines when using and putting the device into operation in order to prevent safety risks and to ensure the correct operation of the product.

- **Before connecting the device to the local power supply, make sure that the device is switched off.**
- **Check if the product is compatible with the local power supply before connecting it.**
- **Be careful on the correct earthing of the device (PE connection)**
- **Do not use the product in humid environments**
- **Do not touch the output terminals of the product with unprotected hands while it is switched on.**
- **Do not use the device in extremely dusty rooms**
- **Do not use the device outside the parameters specified in the data sheet**

2.3 Unpacking and Examination

Our products are delivered carefully packed in cardboard boxes or in wooden crates, depending on place of destination and the type of the device (dimensions, weight). We pay attention to the environmental compatibility of the upholstery and packaging materials used and ask you to dispose the filling material correctly if present.

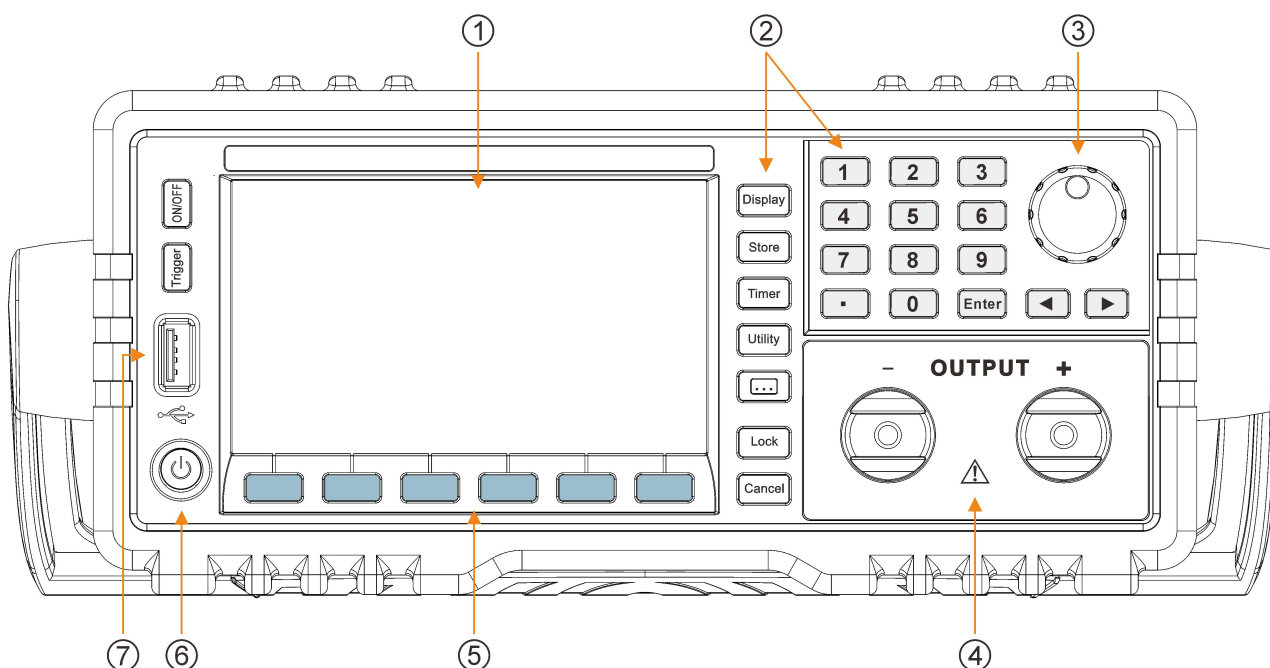
Please unpack the device and check the packaging as well as the product for transport damage. Should you notice any damage to the packaging or the device, we ask you to log it with photos and inform us immediately.

ATTENTION: If the device has been delivered in a wooden box, please do not dispose it as it can be used for eventual return transport for service procedures. Also the packaging material of smaller devices can be stored in order to be used if necessary for a return transport.

3. Product Description

The DSC-Electronics DP-H Series are high accuracy programmable DC power supplies with single output. The power supply features an ARM Microprocessor control, RS232/RS485/USB SCPI protocol compliant interface and many auto test and programming functions. Measuring results can be stored or recalled data via the USB host connection on the front panel. The 4.3-inch TFT LCD color display gives a complete overview over output parameters and Waveforms.

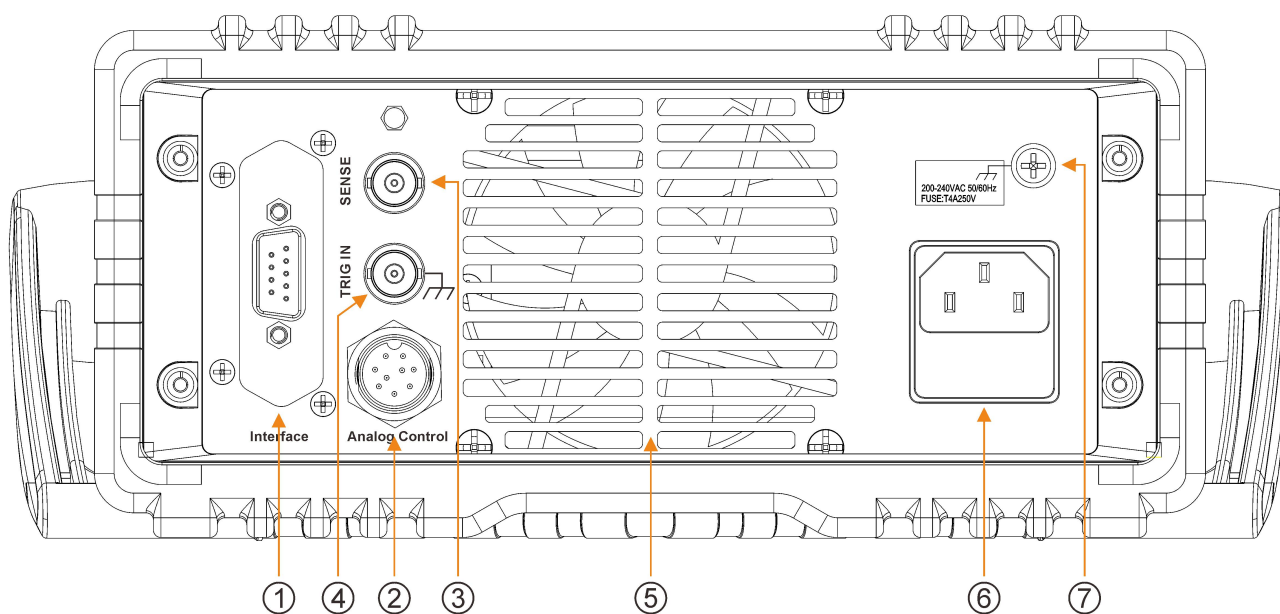
4. Front and Rear Panels



- 1. LCD display
- 4. Output terminals
- 7. USB Host port

- 2. Function keys
- 5. Soft-Keys

- 3. Parameter input
- 6. Power switch



- 1. RS232 interface
- 4. Trigger input
- 7. Ground terminal

- 2. Analog control interface
- 5. Cooling fan

- 3. Remote sensing terminal
- 6. Power cord / fuse socket

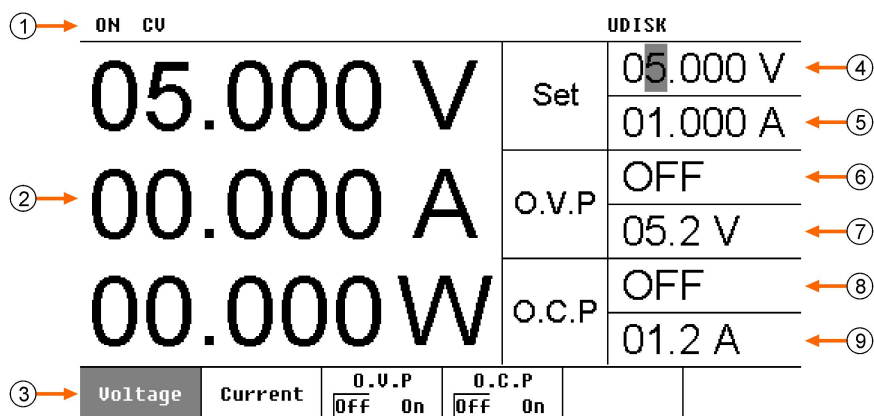
4.1 Key Description

There are 30 buttons on the front panel (not including the POWER button):

Key name	Main function
0	Input digit 0
1	Input digit 1
2	Input digit 2
3	Input digit 3
4	Input digit 4
5	Input digit 5
6	Input digit 6
7	Input digit 7
8	Input digit 8
9	Input digit 9
.	Input decimal point
< >	Move selection to the left/right
Rotary knob	Adjust selected value
Enter	Confirm input
Display	Switch display between parameter and waveform view
Store	Store and recall the settings and presets
Timer	Auto Test Mode
Utility	System configuration
...	Utilities
Lock	Panel lock
Cancel	Cancel
Menu keys	Current function is displayed on the display above
On/Off	Turn on/off output
Trigger	Trigger key
USB Host port	USB flash storage port

4.2 LCD display

This instrument provides two display modes: normal view and waveform view.



1	Status bar	ON/OFF	Output status
		CV/CC	Constant Voltage/Constant Current mode
		O.V.P/O.C.P	Over-voltage protection or over-current protection is enabled. Output will be turned off automatically
		O.T.P	Over-temperature protection is enabled. Output will be turned off automatically
		LOCK	The front panel is locked
		UDISK	A USB storage device is detected
		ERR	Remote operation error
		RMT	The instrument is in remote operation mode
		SENSE	Remote sense function is enabled
		A CTRL	Analog control function is enabled
2	Real time output values		
3	Soft-Key function description		
4	Voltage setting value		
5	Current setting value		
6	O.V.P on/off state		
7	O.V.P setting value		
8	O.C.P on/off state		
9	O.C.P setting value		

5. First Use

5.1 Connect to Power

- 1) Check the input power
Make sure that the AC power to be connected to the instrument fulfills the requirements.
- 2) Check the fuse
When the instrument leaves factory, the specified fuse is installed. Make sure the correct type of fuse is installed before power up.
- 3) Connect the AC power
Connect the instrument to AC power grid using the power cord provided with the product.

5.2 Automatic Power-On Check

Press the power switch at the front panel, the instrument starts and executes the self-test. If the instrument passes the self-test, the welcome message will be displayed. Otherwise, the corresponding self-test failure information will be displayed.

Note:

When powering on the instrument immediately after switching it off, make sure that the time interval between the two operations is longer than 5s.

5.3 Manual Function Check

The manual function check allows the user to check the basic functionality of the power supply, if the problem can not be found by the automatic power on check.

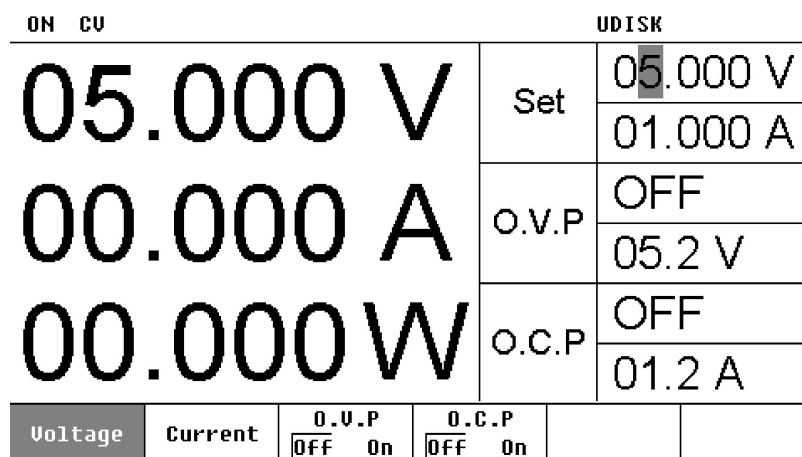
- 1) Enabling the output
Press the **ON/OFF** button to turn on/off the output (turn on the device before). The button's back-light will turn on once the instrument is powered on.
- 2) Output Voltage Control
 - a. While no load connected to the power supply, press the power switch to turn on the device and make sure that the current setting is higher than 0A.
 - b. Press the **ON/OFF** button, the channel will be in constant voltage mode after **ON/OFF** button light turns on.
 - c. Check whether the voltage can be adjusted from 0V to the maximum rated value.
- 3) Output Current Check
 - a. Turn on the device.
 - b. Shorten the output terminal (+) and (-) at the front panel using an insulated wire.
 - c. Set the voltage to the maximum rated value and press the **ON/OFF** button.
 - d. The channel will be working in constant current mode, check whether the current can be adjusted from 0A to the maximum rated value.

5.4 Display Modes

This instrument provides two display modes: normal display mode and waveform display mode. Users can select the appropriate display mode as needed.

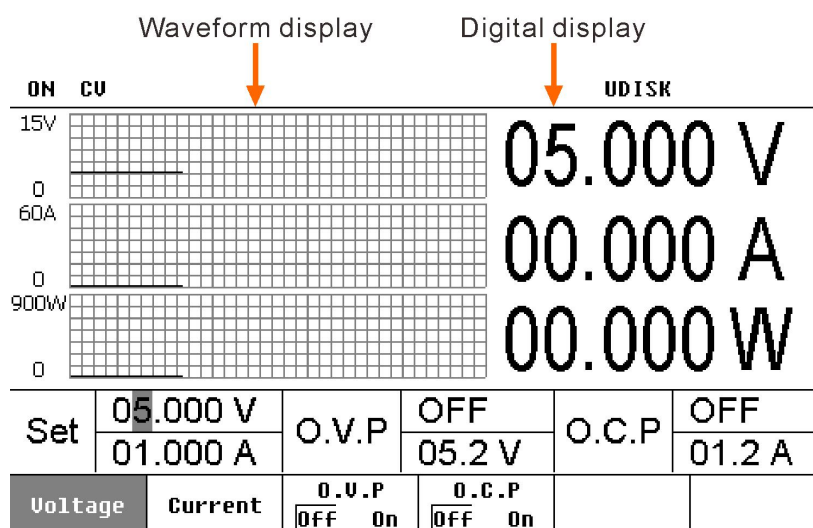
5.4.1 Normal display mode

After powered on the instrument enters normal display mode as shown in the figure below. If currently the waveform display mode is enabled, it can be switched to normal display mode by pressing the **Display** button. The normal display mode displays the settings of voltage, current and power as decimal values. The O.V.P and O.C.P settings also can be accessed directly.



5.4.2 Waveform display mode

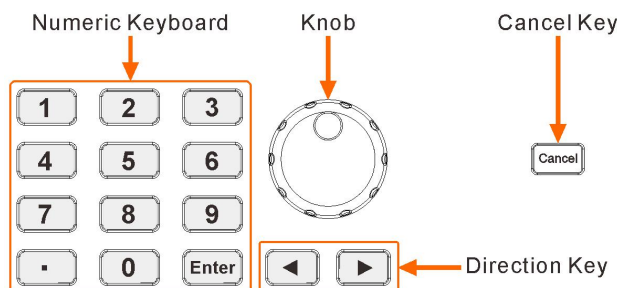
Press the **Display** button to enter the waveform display mode if you are in the normal display mode. To exit, press the button again. In this mode the settings of voltage, current and power are displayed as decimal values and as a waveform. The O.V.P and O.C.P settings can be accessed directly as well.



6. Operation

6.1 Parameter Value Setting

The instrument has two methods of setting the parameters: **direct data input** and **tuning**. Parameters can be set by the numeric keyboard, cancel key, direction key and knob.



1) **Direct data input:** This method applies to the following parameters and uses the numeric keyboard, cancel key and direction key to set the values.

a. Voltage and Current settings

- Press the **Voltage** or **Current** soft-key on the front panel to select the corresponding menu.
- Use the numeral key to set the numerical value, and press the **Enter** button to confirm. The default Voltage/Current Unit is Volt (V) and Ampere (A).

Note:

During the input process, users can delete the value with the left direction key < or cancel the process by pressing the **Cancel** button.

b. O.V.P and O.C.P settings

Select the **O.V.P** or **O.C.P** menu, follow the steps described in the Voltage and Current setup guide above (a).

c. Timing setting

Select **Timer Setup** menu, follow the steps described in the Voltage and Current setup guide above (a).

2) **Tuning:** This method uses the knob and direction key to modify the parameter values on the fly.

a. This method can be applied to the same parameters as the “direct data input” method.

- Press the **Voltage** or **Current** soft-key at the front panel to select the corresponding menu.
- Rotate the knob to increase or decrease the cursor-highlighted digit directly, press the left/right direction key to move the cursor left or right.

b. Store / Recall

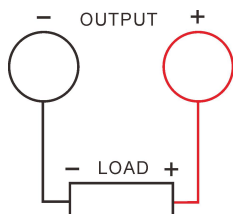
- Press the **Store** button at the front panel to enter the memory interface.
- Rotate the knob to select the desired store / recall location.

6.2 Constant Voltage Output (CV)

This instrument provides two output modes including Constant Voltage Output (CV) and Constant Current Output (CC) and switches between these modes automatically as a response on load changes. The instrument will not rise the voltage or current beyond the setting value neither in CV, nor in CC mode. In CV mode, the output voltage equals to the Voltage value set and is not changing while the output current is adjusted according to the load resistance in the range 0,00 A to the Current limit value set.

For example: Set the voltage to 16V, the current limit to 3A and assume the load to have a resistance of 8Ω. Because $(U=R \times I) 8\Omega \times 3A = 24V > 16V$ and $16V / 8\Omega = 2A < 3A$ the current flowing through the load will be less than the Current limit set, thus the device will remain in CV mode and the output parameters will be 16V, 2A.

Connection:



- 1) Connect the load to the output terminal of the device.

Please refer to the following table to select proper output wires.

Cross sect. mm ²	5.26	3.30	2.08	1.31	0.83	0.52	0.33	0.21	0.13	0.09
AWG*	10	12	14	16	18	20	22	24	26	28
Maximum current (A)	40	25	20	13	10	7	5	3.5	2.5	1.7
Milliohm/meter	3.3	5.2	8.3	13.2	21.0	33.5	52.8	84.3	133.9	212.9

Note*: AWG American Wire Gauge



CAUTION

Wrong connection may lead to damage of the instrument or the equipment connected to it.

- 2) Turn on the power switch: Press the power switch to start the instrument.
- 3) Set the voltage: Press the **Voltage** softkey to set the voltage to 16V.
- 4) Set the current: Press the **Current** softkey to set the current to 3A.
- 5) Turn on the output: Press the **ON/OFF** button, the button light turns on, the instrument will operate in CV mode.

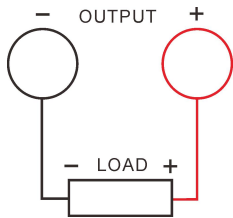
Note:

The power supply changes from CV to CC mode if the output current reaches the Current limit, due to changes in load resistance. In CC mode it will reduce the output Voltage to prevent the output Current from rising over the Current limit.

6.3 Constant Current Output (CC)

For example: Set the voltage to 16V, the current limit to 5A and assume the load to have a resistance of 2Ω. Because $(U=R \times I) 2\Omega \times 5A = 10V < 16V$ and $16V / 2\Omega = 8A > 5A$ the current flowing through the load will be greater than the Current limit set if operating at the output Voltage set, thus the device will work in CC mode and adjust the output Voltage to keep the output current equal to the value set. The output parameters will be 10V, 5A.

Connection:



- 1) Connect the load to the output terminal of the device.



CAUTION

Wrong connection may lead to damage of the instrument or the equipment connected to it.

- 2) Turn on the power switch: Press the power switch to start the instrument.
- 3) Set the voltage: Press the **Voltage** softkey to set the voltage to 16V.
- 4) Set the current: Press the **Current** softkey to set the current to 5A.
- 5) Turn on the output: Press the **ON/OFF** button, the button light turns on, the instrument will operate in CC mode.

Note:

If during the operation in CC mode the output Voltage reaches the Voltage value set, the device switches to CV mode to prevent the output Voltage from rising over the limit set.

6.4 Over Voltage/Over Current Protection

This instrument provides Over Voltage Protection (O.V.P) and Over Current Protection (O.C.P) systems to protect the load from damage by wrong user input. Users can set the O.V.P and O.C.P parameters and enable/disable these limitations as needed. If the O.V.P / O.C.P is enabled, the instrument will turn off the output to protect the load when the output values exceed the O.V.P/ O.C.P values.

6.4.1 O.V.P

- 1) Setting the parameters
 - Select the **O.V.P** menu
 - Use the numeral keys to set the numerical value, and press the **Enter** button to confirm. Different operation modes may have different parameter ranges.
 - After the setting the parameter, check the values in O.V.P input box before closing.
- 2) To enable/disable O.V.P
 - Press the **ON/OFF** button to enable the output
 - Select the **O.V.P** menu
 - Toggle the O.V.P status between "ON" and "OFF" by repeatedly pressing **O.V.P**

Note:

While the output of the device is OFF the O.V.P status is always off. Still the O.V.P parameters are accessible and can be set. The O.V.P is OFF by default and the default value is 5.2V, please set the O.V.P value as required.

6.4.2 O.C.P

- 1) Setting the parameters
 - Select the **O.C.P** menu
 - Use the numeral key to input the numerical value, and press **Enter** button to confirm.
 - After the setting the parameter, check the values in O.C.P input box before closing.
- 2) To enable/disable O.C.P
 - Press the **ON/OFF** button to enable the output
 - Select the **O.C.P** menu
 - Toggle the O.C.P status between "ON" and "OFF" by repeatedly pressing **O.C.P**

Note:

While the output of the device is OFF the O.C.P status is always off. Still the O.C.P parameters are accessible and can be set. The O.C.P is OFF by default and the default value is 1.2A, please set the O.C.P value as required.

6.5 Auto Test Mode (Timed Output)

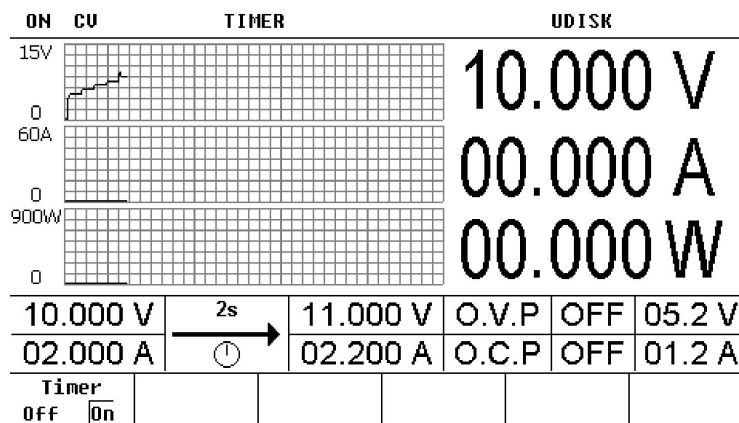
This instrument provides the ability to create Auto Test presets with up to 100 groups of Voltage, Current and Time settings which can be switched automatically by time or by an external trigger. The DP-H can store 10 presets in the internal memory (each consisting of up to 100 Voltage, Current and Time groups) or a nearly unlimited amount of presets on an external memory drive. This function allows the user to design complex Voltage and Current waveforms or set up Voltage and Current changes in reaction on an external trigger. The Auto Test mode can run a predefined number of cycles (max. 99999) or endless.

Configuration:

- 1) Press the **Timer** button on the front panel and press **Timer On/Off** soft-key to select "On" and enable the Auto Test mode.
- 2) Turn on the output, the instrument starts the execution of the loaded/configured preset.
As shown below in normal display mode, in the category "Set" you will see the present output voltage and current settings group while the category "Next" denotes the next output voltage and current settings group.

ON CU		TIMER		UDISK	
05.000 V		00.000 A		Set	05.000 V
					01.000 A
				⏰	3s
				Next	06.000 V
00.000 W				O.V.P	OFF 05.2 V
				O.C.P	OFF 01.2 A
Timer					
off		On			

Below the view of the Auto Test mode in waveform display mode.

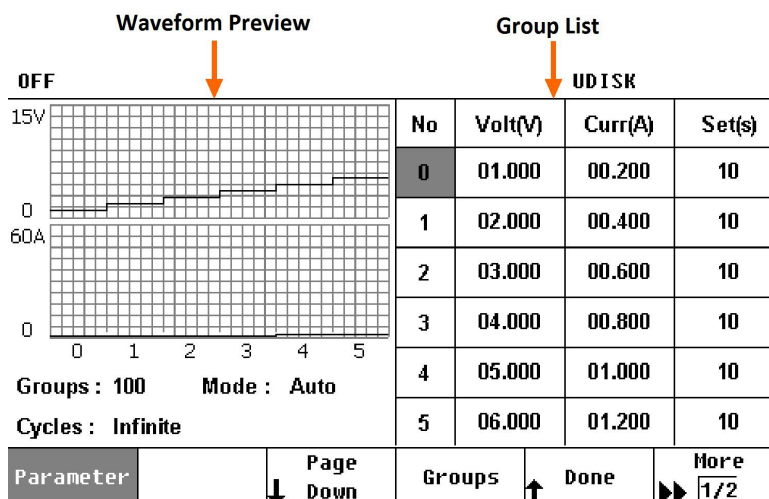


Note:

- Enabling the Auto Test timer will change the output value of the channel; Make sure that the change in the output value will not affect or damage the device connected to the power supply before enabling the Auto Test execution.
- The execution of the Auto Test preset starts only after both, the timer and the output are turned on.
- Output Values and parameters can not be edited while the Auto Test is being executed.

Editing and Creating Auto Test presets

Press **Timer** → **Timer Setup** to enter the Auto Test preset editing interface as shown in the figure below. The main page provides a list with Voltage and Current setting groups on the right and an output waveform preview graph on the left. The horizontal axis of the graph shows the parameter group number and the vertical axis denotes the output Voltage or Current setting of the group.



1) Parameter Group Editing

You can edit the parameters of each group manually by pressing the **Parameter** key and using the knob to select the group number (No) in the list. Push the knob to select the first parameter of the group, use the < and > arrows to move the cursor and turn the knob to change the value of the selection. Push the knob again to select the next parameter. You can set the output Voltage, Current and the Time interval this group shall remain active before switching to the next group.

Note:

Only 6 groups can be displayed on each page in the list, press **Page Up** or **Page Down** to view other groups.

2) Number of Groups executed in the preset

The number of executed groups during each cycle of the test run is shown under the graph on the left side of the screen. Press the **Groups** soft-key and use knob and the numeric keyboard to set the desired value. The range is from 1 to 100.

3) Execution Mode

Press the **Mode** soft-key to select "Auto" or "Step" execution modes.

- Auto: Automatic switching depending on the time intervals set in the parameter groups.
- Step: Switch from parameter group to the next group on trigger event.

4) Cycles

The number cycles the preset is executed can be changed by pressing the **Cycles** soft-key to set the number of cycles or pressing it twice to set it to "Infinite".

Note:

The final state of the power supply output (after executing all cycles) depends on the setting in "End State".

5) End state

The end state defines the state of the power supply output after it finishes the execution of all cycles. Press the **End State** soft-key to select "Off" or "Last".

- Off: The instrument turns off the output automatically after finishing the Auto Test.
- Last: The instrument remains at the output state of the last group after finishing the Auto Test.

Note:

If the number of cycles is set to "Infinite" the End State value is not active.

6) Save / read

You can store the edited timer parameters in the internal memory and recall them when required.

- Save
After editing the timer parameters, press **Save** to enter the store and recall interface. Please save the timer file according to the introduction in "Save/Recall".
- Read
Press **Recall** to enter the store and recall interface. Please read the desired file according to the introduction in "Save/Read". Users can edit the timer file read.

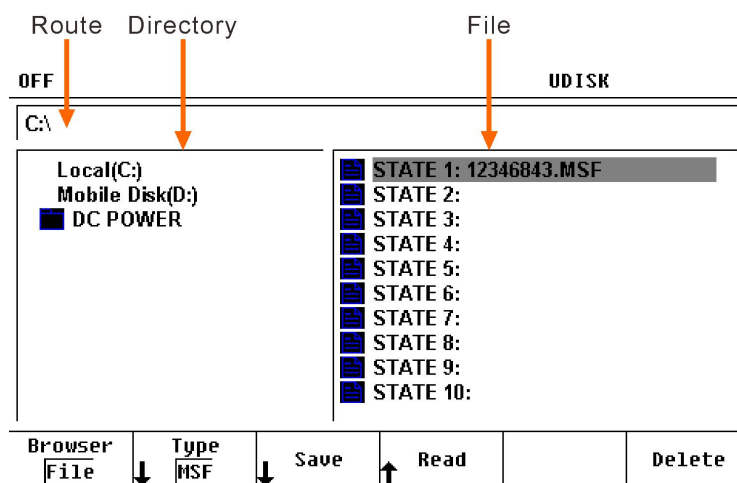
6.6 Save/Recall

This power supply supports two types of document storage: UDisk and local storage. It can store, recall and delete system settings such as Voltage, Current, O.V.P or O.C.P settings, etc. and/or Auto Test presets. The device has internal memory slots for the storage of 10 configuration save files (STATE1-10), 10 Auto Test presets (TIMER1-10) and 10 battery presets (BATTERY1-10).

Press the **Store** button to enter the "Save/Recall" interface as shown in the figure below, to exit press the button again. If a USB storage device is plugged "UDISK" is displayed in the status bar and indicates that a USB storage device is detected and configured. Meanwhile Mobile Disk (D:) and the folder "DC POWER" will be displayed in the directory list. The USB storage relevant operations including save, recall and delete only can be performed in the folder "DC POWER" which is created automatically on the first use of the drive.

To select the parameters to store press the **Type** soft-key and select the appropriate file type:

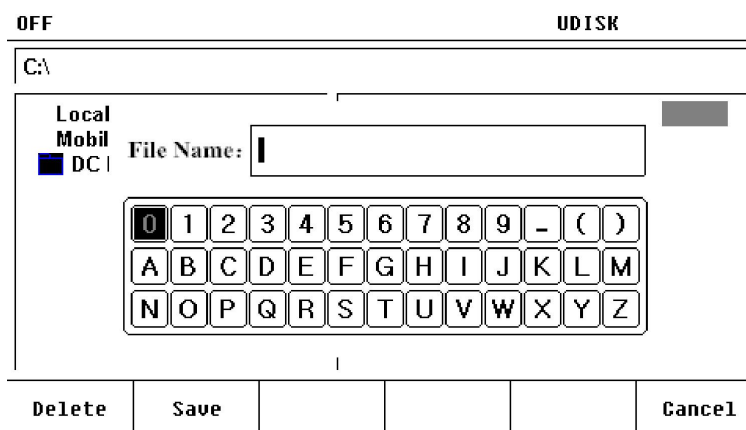
To save the device configuration select MSF, for Battery preset configuration MBF, to store the current Auto Test preset configuration MTF.



Explanations of the save and recall menus

Browser	Selection of the directory or file list
Type	Select save file type
Save	Store the parameters in the selected storage location
Read	Read the parameters from the selected storage location
Delete	Delete the parameters in the selected storage location

Once you've highlighted the storage folder and selected the file type, press the **Browser** screen key to go to the file list. Select a file or a storage slot from the file list if you want to overwrite existing files and press the **Save** button to open the keyboard. Turn the Rotary encoder to select the characters and letters.



Explanations of virtual keyboard operation

Delete	Delete the character in front of the cursor
Save	Save the file under the present file name
Cancel	Cancel saving and return to the previous window

The operation steps of each action:

- 1) Save
 - Press **Type** to select the desired file type (settings, battery preset and auto test preset).
 - Press **Browser** to switch to the file list and use the knob to select the desired memory location.
 - Press **Save** and set the file name by virtual keyboard, then press **Save** again to save the parameters.

- 2) Recall
 - Press **Type** to select the desired file type (settings, battery preset and auto test preset).
 - Press **Browser** to switch to the file list and use the knob to select the desired memory location. If the file is invalid, the **Read** soft-key is hidden automatically.
 - Press **Read** to finish.
- 3) Delete
 - Press **Type** to select the desired file type (settings, battery preset and auto test preset).
 - Press **Browser** to switch to the file list and use the knob to select the desired memory location.
 - Press **Delete** and press **Ok** to confirm the delete.

6.7 Utility

Press the **Utility** button to enter the system settings interface as shown below.

ON CV		UDISK	
I/O Config		System	
>>RS232		Power On : Default	
Baud Rate : 9600		Beeper : On	
Stop Bit : 1 bit		Version : 02 14 01 16_04	
Parity Bit : None		Address : 88	
>>Trigger		Sense : Off	
Trig Source : External		Analog Ctrl : Off	
Trig Function : Output		BackLight : 80	
		disp W R : disp W	
		VSelfTest : OFF	
I/O	System	Error	Set to
↓ Config	↓	↓ View	↑ Default

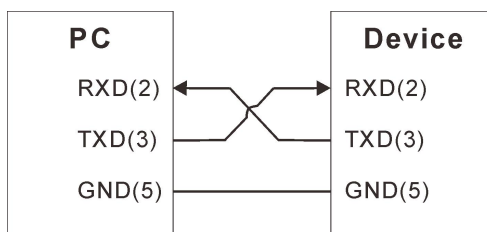
Explanation of the System settings

- I/O Config : Set I/O configuration and trigger options
- System : Set the system parameters
- Error View : View error messages
- Set to Default : Restore the instrument to factory settings

6.7.1 I/O Setting

Set the RS232 Parameters

Connect the RS232 interface to the PC or data terminal equipment (DTE) using a RS232 cable and set the interface parameters (baud rate, parity bit, etc.) that match the PC or terminal equipment specifications.



Press **Utility** → **I/O Config** → **RS232** to open the RS232 parameter setting interface.

- 1) Baud rate
 - Press **Baud Rate** to configure the desired baud rate (2400, 9600, 14400, 19200, 38400, 56000, 57600 or 115200).
- 2) Stop bit
 - Press **Stop Bits** to configure the stop bits (1 or 2).
- 3) Parity
 - Press **Parity** to configure the parity mode (None, Even or Odd).

6.7.2 Trigger Settings

Press **Utility** → **I/O Config** → **Trigger** to open the trigger settings interface.

1) Trigger source (Press **Trigger Source** to select)

- EXT: Use the TRIG IN rear panel connector as source (push the **Trigger** button to trigger manually)
Pulse: Use the TRIG IN rear panel connector as TTL signal source.
- Bus: Use RS232 port as trigger command source.
- IMM:

2) Trigger function (Press **Trigger function** to select)

- Output: Enable / Desable Output
- Timer: Switch Auto Test value group to next

6.7.3 System Settings

Press **Utility** → **System** to access the system settings as shown below.

ON CU			UDISK		
I/O Config			System		
>>RS232			Power On : Default		
Baud Rate : 9600			Beeper : On		
Stop Bit : 1 bit			Version : 02 14 01 16_04		
Parity Bit : None			Address : 88		
>>Trigger			Sense : Off		
Trig Source : External			Analog Ctrl: Off		
Trig Function : Output			BackLight : 80		
			disp W R : disp W		
			VSelfTest : OFF		
Analog Control	BackLight	Disp W R	USeIfTest		More 2/2
OFF			UDISK		
I/O Config			System		
>>RS232			Power On : Default		
Baud Rate : 9600			Beeper : On		
Stop Bit : 1 bit			Version : 02 14 01 16_04		
Parity Bit : None			Address : 88		
>>Trigger			Sense : Off		
Trig Source : External			Analog Ctrl: Off		
Trig Function : Output			BackLight : 80		
			disp W R : disp W		
			VSelfTest : OFF		
Power On	Beeper	Address	Sense	Done	More 1/2

Power-on setting

Press **Utility** → **System** → **Power On** to select the instrument configuration ("Default" or "Last") the instrument uses at power-on.

- Last: Preserve the system configuration after power off.
- Default: Use the factory settings (except those parameters that are not affected by factory reset).

Beeper

Press **Utility** → **System** → **Beeper** to enable or disable the beeper. If the beeper is enabled, the instrument generates prompt sound if an error occurs during front panel operation or remote operation.

Address

Press **Utility** → **System** → **Address** and use the knob or numeric key to modify the ID of instrument.

Sense

Press **Utility**→**System**→**Sense** to enable or disable the remote sensing function. For the details, refer to section 2.9 "Remote Sensing Function".

Analog control

Press **Utility**→**System**→**Analog Control** to enable or disable the analog control function. For the details, refer to section 2.10 "Analog Control Function".

Backlight

Press **Utility**→**System**→**BackLight** and use the knob or numeric key to adjust the backlight.

Parameter display selection

Press **Utility**→**System**→**Disp W R** to select the third parameter to be displayed, power or resistance.

Output Voltage auto tuning (VSelfTest)

Press **Utility**→**System**→**VSelfTest** to enable or disable output voltage auto tuning. If output voltage auto tuning is enabled, the device will monitor the output voltage at output terminals and correct automatically to minimize the error between real output value and set value.

6.7.4 Restore to Factory setting

Press **Utility**→**Set to Default** to restore the instrument to factory settings.

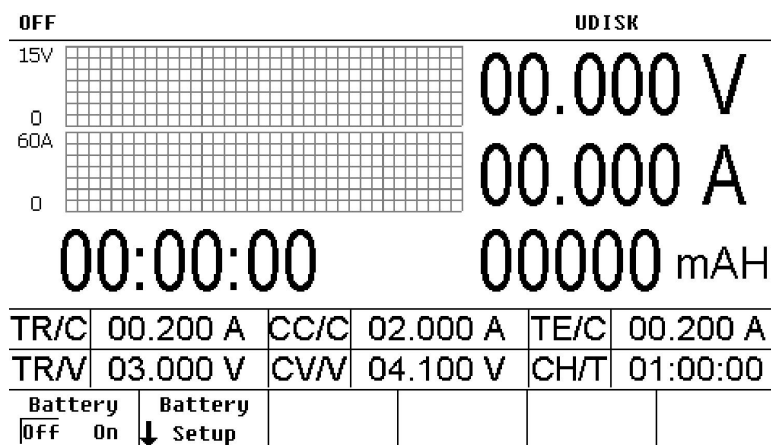
Factory settings:

Parameters	
Voltage setting value	05.000V
Current setting value	01.000A
Voltage limit	05.2A
Current limit	01.2A
O.V.P On/Off	Off
O.C.P On/Off	Off
Output On/Off	Off
Timer	
Auto Test On/Off	Off
Groups	100
Auto Test parameter	Voltage, current, Time (different DP-H models may have different values)
Running mode	Auto
Cycles	Infinite
End state	Off
I/O configuration	
RS232*	
Baud rate	9600
Stop bit	1bit
Parity bit	None
Trigger	
Trigger source	EXT
Trigger mode	Output
System settings	
Power-on setting*	Default
Beeper	On
Address	88
Sense	Off
Analog control	Off
Backlight	80
Parameter display	Disp W
VSelfTest	Off

Note*: These parameters are not affected by factory reset.

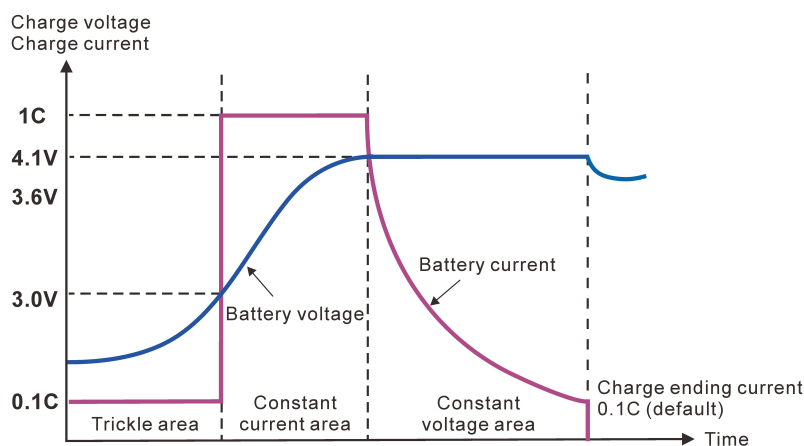
6.8 Utilities

The Utilities section contains additional functions (Apps). Currently this section contains only battery charge functions, but more apps are in development and will be available via firmware update later. Press **...** to enter the utilities section.



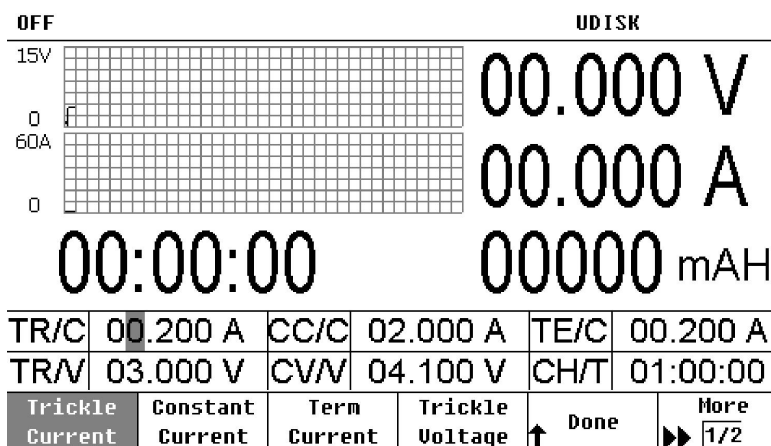
2.8.1 Battery Curved Charge Function

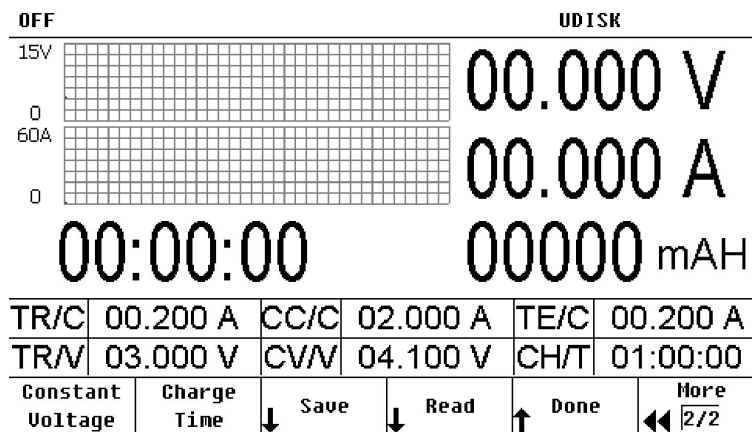
This instrument provides battery charge functionality as shown in the figure below.



Configuration:

1) Press **...** → **Battery Setup** to change the settings.





Explanations:

Parameters

Trickle charge current
Standard charge current
Terminated current threshold
Trickle charge voltage threshold
Floating charge voltage
Charge time

Menu

Trickle Current
Constant Charge
Term Current
Trickle Voltage
Constant Voltage
Charge Time

Display

TR/C
CC/C
TE/C
TR/V
CV/V
CH/T

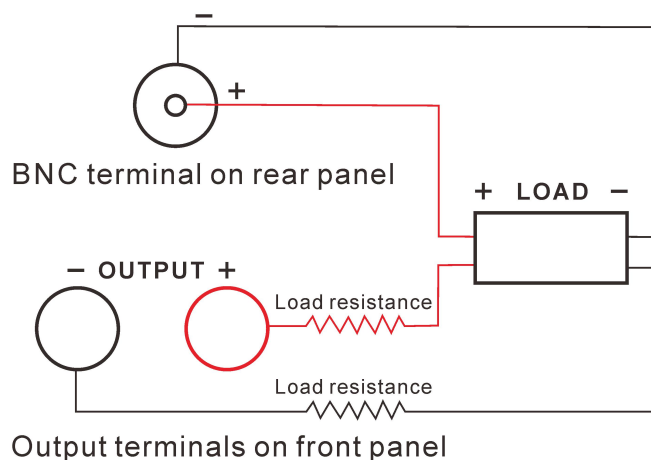
- Press **Battery On/Off** and select "On" to enable the battery charging functionality. Connect the battery to the instrument, the voltage of battery is displayed on the screen. Start charging by pressing the "ON/OFF" button.

6.9 Remote Sensing Function

This power supply provides high output current, so the voltage drop over the primary connection wires cannot always be ignored. If remote sensing is enabled, the instrument can automatically check the Voltage at the load and compensate the voltage drop caused by the primary wiring resistance to ensure that the power supply output value set by the user is equal with the voltage acquired by the load.

Before using the remote sensing function, make sure that the power supply is in remote sensing mode. Before activating the remote sensing option, the output must be turned OFF. Please keep the remote sensing cable as far as possible from the primary connection cable.

Connection illustration for remote sensing:

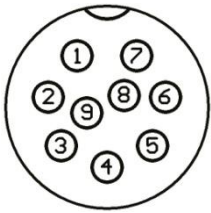


Configuration:

- Connect the output terminals of the power supply and the remote sensing input as shown in the figure above. Pay attention to the polarity when making connections.
- Press **Utility** → **System** → **Sense** to enable or disable the remote sensing function.

6.10 Analog Control Function

Press **Utility** → **System** → **Analog Control** to enable or disable the analog control function. A 9pin aviation plug is used as the analog control interface on the rear panel. It allows you to control the output voltage and current by an external analog signal and to connect many identical power supplies of the DP-H Series parallel or serial.



The definitions for the pins are shown as below:

1. +5VDC, provides 5V reference voltage.
2. To adjust the output voltage: Externally connect 0-5V voltage or 0-5KΩ resistance to adjust 0-100% of the output voltage.
3. To adjust the output current: Externally connect 0-5V voltage or 0-5KΩ resistance to adjust 0-100% of the output current.
4. GND: Common ground
5. If "Analog Ctrl" is set to ON this pin allows you to enable or disable the output. To do so, short Pin5 and GND to turn the output ON. If "Analog Ctrl" is set to OFF this pin has a level of 5V when the device output is off and a level of 0V while the output is on.
6. Power supply OK, to indicate the output status: If the power supply is working without any problems, the output level is 5V; If an ERROR detected, the output level is 0V.
7. To Indicate CV/CC mode: In CV mode the voltage level is 5V while the voltage level is 0V in CC mode.
8. To monitor the current output Voltage: 0-5V Signal to read-back the output Voltage value.
9. To monitor the current output Current: 0-5V Signal to read-back the output current.

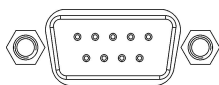
7. RS232 or RS485 / USB Connection

All functions of the DP-H Series power supply can be controlled through the RS232/RS485 interface.

7.1 Interface Settings

7.1.1 Interface

The RS232 interface is installed on the rear panel of instrument.



RS232 interface

7.1.2 COM Port Settings

Please use the following Settings on your Computer or digital controller to connect:

- 1) Baud rate: 9600
- 2) Parity bit: None
- 3) Data bit: 8
- 4) Stop bit: 1
- 5) Data flow control: None

Note 1: If the connection can not be established for some reason, please check:

- Check the connection cable for defects and a proper connection
- Check if the connection cable is a crossover cable
- Check the communication settings on both sides
- Check whether the end character of the command is a line break (hexadecimal 0X0A)

Note 2: While a remote connection is established and the device is being controlled remotely, the front panel is locked down.

7.2 SCPI Commands

For detailed SCPI command list, please refer to the DP-H Series Communication Protocol Sheet.

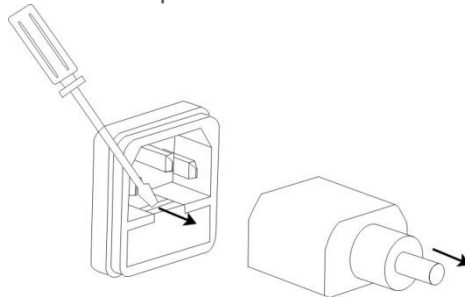
8. MAINTENANCE

8.1 Inspection

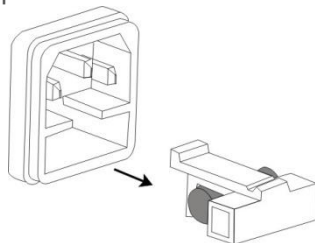
- Inspect the instrument at regular intervals so that it maintains its initial performance for a long time.
- Check the input power cord for damage regularly.
- Check the terminal screws and binding posts for loosening.

8.2 Fuse Replacement

Steps (1) Take off the power cord and remove the fuse socket using a screw driver.



(2) Replace the fuse in the holder.



Fuse rating

230V Power Grid

For models 20V/30A, 30V/10A, 30V/20A, 60V/10A, 80V/7.5A:
T4AL/250V
For models 15V/60A, 20V/45A, 30V/30A, 60V/15A, 80V/11A:
T8AL/250V



DP-H Series Communication Protocol

DSC-Electronics Germany • Georgstraße 36 • 53111 Bonn

Content

Command System.....	3
*CLS	5
*ESE	5
*ESR.....	6
*IDN.....	6
*OPC.....	6
*PSC.....	7
*RCL.....	7
*RST.....	7
*SAV.....	8
*SRE.....	8
*STB.....	9
*TRG.....	9
APPLy Commands.....	10
[:]APPLy.....	10
BATTery Commands.....	10
[:]BATTery:VOLTage:UNDerv.....	11
[:]BATTery:VOLTage:CHARge.....	11
[:]BATTery:CURREnt:TRICKle.....	12
[:]BATTery:CURREnt:CHARge.....	12
[:]BATTery:CURREnt:TERMinated.....	12
[:]BATTery:STATe.....	13
HOTKey Commands.....	13
[:]HOTKey.....	13
MEASure Commands.....	14
[:]MEASure[:SCALar]:CURREnt[:DC]?.....	14
[:]MEASure[:SCALar]:POWEr[:DC]?.....	14
[:]MEASure[:SCALar][:VOLTage][:DC]?.....	14
OUTPut Commands.....	15
[:]OUTPut.....	15
SOURce Commands.....	15
[:]SOURce:]CURREnt.....	15
[:]SOURce:]CURREnt:PROTection:CLEar.....	15
[:]SOURce:]CURREnt:PROTection:STATe.....	16
[:]SOURce:]CURREnt:PROTection:TRIPped?.....	16
[:]SOURce:]CURREnt:PROTection[:LEVel].....	16
[:]SOURce:]CURREnt[:LEVel][:IMMediate]:STEP[:INCRement].....	17
[:]SOURce:]CURREnt[:LEVel][:IMMediate][:AMPLitude].....	17
[:]SOURce:]VOLTage.....	18
[:]SOURce:]VOLTage:PROTection:CLEar.....	18
[:]SOURce:]VOLTage:PROTection:STATe.....	18
[:]SOURce:]VOLTage:PROTection:TRIPped?.....	19
[:]SOURce:]VOLTage:PROTection[:LEVel].....	19
[:]SOURce:]VOLTage:RANGE.....	19
[:]SOURce:]VOLTage[:LEVel][:IMMediate]:STEP[:INCRement].....	20
[:]SOURce:]VOLTage[:LEVel][:IMMediate][:AMPLitude].....	20

STATus Commands.....	21
[:]STATus:OPERation:CONDition?.....	21
[:]STATus:OPERation:ENABle.....	21
[:]STATus:OPERation[:EVENT]?.....	22
[:]STATus:PRESet.....	22
[:]STATus:QUEStionable:CONDition?.....	22
[:]STATus:QUEStionable:ENABle.....	23
[:]STATus:QUEStionable[:EVENT]?.....	23
SYSTem Commands.....	23
[:]SYSTem:AUTO:CYCLe.....	24
[:]SYSTem:AUTO:DELay.....	24
[:]SYSTem:AUTO:STARt.....	25
[:]SYSTem:AUTO:[STATe].....	25
[:]SYSTem:AUTO:STOP.....	26
[:]SYSTem:BEEPPer:STATe.....	26
[:]SYSTem:BEEPPer[:IMMediate].....	27
[:]SYSTem:COMMunicate:SERial[:RECeive]:BAUD.....	27
[:]SYSTem:ERRor:COUNT?.....	28
[:]SYSTem:ERRor[:NEXT]?.....	28
[:]SYSTem:LOCal.....	29
[:]SYSTem:MEMory?.....	30
[:]SYSTem:REMote.....	30
[:]SYSTem:RWLock.....	31
[:]SYSTem:VERSion?.....	31
TRIGger Commands.....	32
[:]TRIGger:FUNCTion.....	32
[:]TRIGger[:IMMediate].....	32
[:]TRIGger:SOURce.....	32
Command Quick Reference A-Z.....	33

Command System

Commands supported by this product are mainly categorized into the following types:

IEEE 488.2 Common Commands

APPLy Commands

CALibration Commands

HOTKey Commands

MEASure Commands

OUTPut Commands

SOURce Commands **STATus**

Commands

SYSTem Commands

Parameter	Supported Unit	Omitted Unit
Voltage	V	V
Current	A	A
Cycle numbers	CYC	CYC
Time	s	s

IEEE 488.2 Common Commands

IEEE 488.2 standard defines a common command set for querying or executing basic operations. These commands usually start with a "*" and hold a keyword that is 3 characters long.

***CLS**

***ESE**

***ESR?**

***IDN?**

***OPC**

***PSC**

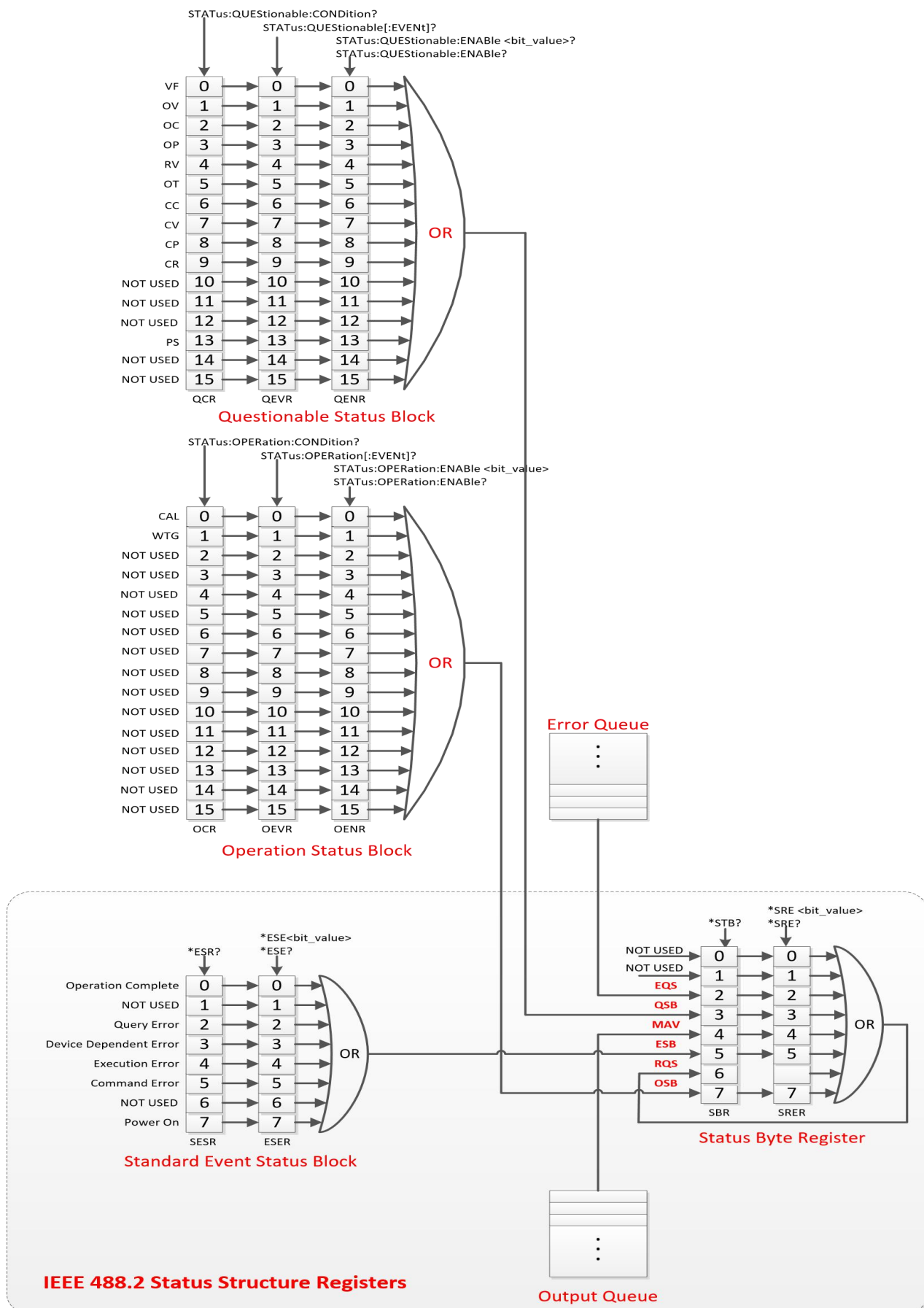
***RCL**

***RST**

***SAV *SRE**

***STB?**

The following chart shows the Status register Structure of the power supply:



*CLS

Syntax:

*CLS

Function:

This command clears the event registers in all register groups. It also clears the Error queue.

Example:

*CLS

*ESE

Syntax:

*ESE <value>

*ESE?

Function:

Set the bits in the Event Status Enable Register (ESER).

Query the bits in the Event Status Enable Register (ESER).

Parameters:

Name	Type	Range	Default
<value>	Integer	0 to 255	0

Remarks:

Bits of the Event Status Enable Register (ESER) are defined as per the following table. Bit 1 and Bit 6 are unused and are always defined as 0. The parameter <value> is a number from 0 (00000000, in decimal value as 0) to 255 (11111111, in decimal value as 255) of the binary bits of the ESER.

Bit	Weights	Name	Enable
7	128	PON	Power On
6	Not Used	--	Not Used
5	32	CME	Command Error
4	16	EXE	Execution Error
3	8	DOE	Device-Specific Error
2	4	QYE	Query Error
1	Not Used	--	Not Used
0	1	OPC	Operation Complete

Examples:

*ESE 128

Response: Enable bit 7 (decimal value 128) of the ESER.

*ESE?

Response: "128"

*ESR

Syntax:

*ESR?

Function:

Return the contents of the Standard Event Status Register (SESR).

Remarks:

Bits of the Standard Event Status Register (SESR) are defined as per the following table. Bit 1 and Bit 6 are unused and are always defined as 0. The parameter <value> is a number from 0 (00000000, in decimal value as 0) to 255 (11111111, in decimal value as 255) of the binary bits of the SESR.

Bit	Weights	Name	Enable
7	128	PON	Power On
6	Not Used	--	Not Used
5	32	CME	Command Error
4	16	EXE	Execution Error
3	8	DOE	Device-Specific Error
2	4	QYE	Query Error
1	Not Used	--	Not Used
0	1	OPC	Operation Complete

Examples:

*ESR?

Response: "128" (Bit 7 is already set)

*IDN

Syntax:

*IDN?

Function:

Query the instrument ID and return a string (unique identification code of the instrument).

Examples:

*IDN?

Response: 00000002030400

Remarks:

-

*OPC

Syntax:

*OPC

*OPC?

Function:

The command (*OPC) sets the Operation Complete bit (bit 0) in the Standard Event Status Register (SESR) to 1 when all pending operations are finished. The query (*OPC?) returns if pending operation is finished or not.

Examples:

*OPC

*OPC?

Response: If pending operations are finished, returns "1" / If pending operations are not finished, returns "0".

*PSC

Syntax:

*PSC <value>

*PSC?

Function:

Set the Power-on-Status-Clean-Flag.

Query the Power-on-Status-Clean-Flag.

Parameters:

Parameter value	Power-on-Status-Clean-Flag
0	Registers will not be cleared during power-on.
1	Registers will be cleared during power-on.

Examples:

*PSC 0

*PSC?

Response: 0

*RCL

Syntax:

*RCL {0|1|2...|99}

Function:

Recall the saved instrument status.

Examples:

*RCL 3

Recall the data saved in memory location 3.

*RST

Syntax:

*RST

Function:

Restore the instrument default settings.

Examples:

*RST

*SAV

Syntax:

*SAV {0|1|2...|99}

Function:

Save the current system status into the non-volatile memory with a specified location.

Examples:

*SAV3

Save the current system status into memory location 3.

*SRE

Syntax:

*SRE <value>

*SRE?

Function:

Set the bits in the Service Request Enable Register (SRER).

Query the bits in the Service Request Enable Register (SRER).

Parameters:

Name	Type	Range	Default value
<value>	Integer	0 to 255	0

Remarks:

Bits of the SRER are defined as per the below table. Bit 0 and bit 1 are not used and are always regarded as 0, while bit 6 shall not be changed by the user. Parameter <value> is a number from 0 (00000000, in decimal value as 0) to 255 (11111111, in decimal value as 255) of the binary bits of the SRER.

Bit	Weights	Name	Enable
7	128	OPE	Standard Operation Summary
6	64	RQS	Request Service
5	32	ESB	Standard Event Summary
4	16	MAV	Message Available Summary
3	8	QUES	Questionable Data Summary
2	4	EQ	Error Queue
1	Not Used	--	Not Used
0	Not Used	--	Not Used

Examples:

*SRE 16

Enable bit 4 (decimal number 16) of the SRER.

*SRE?

Response: 16

*STB

Syntax:

*STB?

Function:

The query returns the contents of the Status Byte Register (SBR).

Remarks:

Different bits of the SBR are defined as per the below table.

Bit 0 and bit 1 are not used and are always regarded as 0.

Bit	Weights	Name	Enable
7	128	OPE	Standard Operation Summary
6	64	RQS	Request Service
5	32	ESB	Standard Event Summary
4	16	MAV	Message Available Summary
3	8	QUES	Questionable Data Summary
2	4	EQ	Error Queue
1	Not Used	--	Not Used
0	Not Used	--	Not Used

Examples:

*STB?

Returns: 4 (bit 2 is set)

*TRG

Syntax:

*TRG

Function:

Send trigger event once..

Examples:

*TRG

APPLy Commands

The APPLy Commands are used to quickly set or query voltage and current values of the power supply.

[:]APPLy

Syntax:

[:]APPLy {<voltage>|DEFault|MINimum|MAXimum}[,<current>|DEFault|MINimum|MAXimum]}

[:]APPLy?

Function:

Set the output voltage and current value.

Query the output voltage and current value.

Examples:

:APPL 5,1

Set the output voltage at 5V and output current at 1A.

:APPL MAX,MAX

Set the output voltage and current at MAX value.

:APPL?

Return the present output voltage and current.

Related commands:

-

BATTery Commands

The BATTery Commands are used for settings of trickle charging threshold voltage, charging voltage, trickle charging current, charging current, terminated threshold current and turning on or off the battery charging functionality.

[:]BATTery:VOLTage:UNDErv

[:]BATTery:VOLTage:CHARge

[:]BATTery:CURRent:TRICKle

[:]BATTery:CURRent:CHARge

[:]BATTery:CURRent:TERMinated

[:]BATTery:STATe

BATTery:TRICKle:CURRent

BATTery:CHARge:CURRent

BATTery:TERMination:CURRent

BATTery:BROWN:VOLTage

BATTery:SATuration:VOLTage BATTery:CHARge:TIME

BATTery[:STATe]

Function:

No.	Commands	Desceiption
1	scpi_batt_tric_curr_arg_parse	Set trickle charging current value. (BATTery:TRICKle:CURRent ...)
2	scpi_batt_tric_curr_ret_arg_parse	Query trickle charging current value. (BATTery:TRICKle:CURRent?)
3	scpi_batt_char_curr_arg_parse	Set charging current value. (BATTery:CHARge:CURRent ...)
4	scpi_batt_char_curr_ret_arg_parse	Query charging current value. (BATTery:CHARge:CURRent?)
5	scpi_batt_term_curr_arg_parse	Set termination current value. (BATTery:TERMination:CURRent ...)
6	scpi_batt_term_curr_ret_arg_parse	Query termination current value. (BATTery:TERMination:CURRent?)

7	Scampi_batt_brow_volt_arg_parse	Set brown voltage value (undervoltage value). (BATTery:BROWn:VOLTage ...)
8	scpi_batt_brow_volt_ret_arg_parse	Query brown voltage value (undervoltage value). (BATTery:BROWn:VOLTage?)
9	scpi_batt_sat_volt_arg_parse	Set saturation voltage value. (BATTery:SATuration:VOLTage ...)
10	scpi_batt_sat_volt_ret_arg_parse	Query saturation voltage value. (BATTery:SATuration:VOLTage?)
11	scpi_batt_char_time_arg_parse	Set charging time value. (BATTery:CHARge:TIME ...)
12	scpi_batt_char_time_ret_arg_parse	Query charging time value. (BATTery:CHARge:TIME?)
13	scpi_batt_stat_arg_parse	Set battery status. (BATTery[:STATe] ...)
14	scpi_batt_stat_ret_arg_parse	Query battery status. (BATTery[:STATe]?)

[:]BATTery:VOLTage:UNDERv

Syntax:

[:]BATTery:VOLTage:UNDERv <value>

Function:

Set the trickle charging threshold voltage.

Examples:

:BATTery:VOLTage:UNDERv 3.0

Set the trickle charging threshold voltage to 3.0V.

:BATTery:VOLTage:UNDERv?

Query the trickle charging threshold voltage.

Related commands:

[:]BATTery:VOLTage:CHARge

[:]BATTery:CURREnt:TRICKle

[:]BATTery:CURREnt:CHARge

[:]BATTery:CURREnt:TERMinated

[:]BATTery:STATe

[:]BATTery:VOLTage:CHARge

Syntax:

[:]BATTery:VOLTage: CHARge <value>

Function:

Set the constant charge voltage.

Examples:

:BATTery:VOLTage: CHARge 4.2

Set the constant charge voltage to 4.2V.

:BATTery:VOLTage: CHARge?

Query the constant charge voltage.

Related commands:

[:]BATTery:VOLTage:UNDERv [:]BATTery:CURRent:TRICKle
[:]BATTery:CURRent:CHARGe
[:]BATTery:CURRent:TERMinated
[:]BATTery:STATe

[:]BATTery:CURRent:TRICKle

Syntax:

[:]BATTery: CURRent:TRICKle <value>

Function:

Set the trickle charging current.

Examples:

:BATTery:CURRent:TRICKle 0.1
Set the trickle charging current to 0.1A.

:BATTery:CURRent:TRICKle?

Query the trickle charging current.

Related commands:

[:]BATTery:VOLTage:UNDERv
[:]BATTery:VOLTage:CHARGe
[:]BATTery:CURRent:CHARGe
[:]BATTery:CURRent:TERMinated
[:]BATTery:STATe

[:]BATTery:CURRent:CHARGe

Syntax:

[:]BATTery: CURRent: CHARGe <value>

Function:

Set the constant charge current.

Examples:

BATTery:CURRent:CHARGe 1
Set the constant charge current to 1A.

:BATTery:CURRent:CHARGe?

Query the constant charge current.

Related commands:

[:]BATTery:VOLTage:UNDERv
[:]BATTery:VOLTage:CHARGe
[:]BATTery:CURRent:TRICKle
[:]BATTery:CURRent:TERMinated
[:]BATTery:STATe

[:]BATTery:CURRent:TERMinated

Syntax:

[:]BATTery: CURRent:TRICKle <value>

Function:

Set the termination threshold current.

Examples:

:BATTery:CURRent:TERMinated 0.05

Set the termination threshold current to 0.05A.

:BATTery:CURRent:TERMinated?

Query the termination threshold current.

Related commands:

[:]BATTery:VOLTage:UNDErv

[:]BATTery:VOLTage:CHARge

[:]BATTery:CURRent:TRICKle

[:]BATTery:CURRent:CHARge

[:]BATTery:STATe

[:]BATTery:STATe

Syntax:

[:]BATTery :STATe {ON | OFF} [:]BATTery :STATe?

Function:

Turn on or off battery charging functionality.

Query battery charging functionality status.

Examples:

:BATTery:STATe ON

Turn on battery charging functionality.

:BATTery:STATe?

The query returns battery charging functionality status.

Return: "ON" or "OFF".

Related commands:

[:]BATTery:VOLTage:UNDErv

[:]BATTery:VOLTage:CHARge

[:]BATTery:CURRent:TRICKle

[:]BATTery:CURRent:CHARge

[:]BATTery:CURRent:TERMinated

HOTKey Commands

The HOTKey Commands are used for setting and querying the hotkey status of the power supply.

[:]HOTKey

Syntax:

[:]HOTKey {ON | OFF}

[:]HOTKey?

Function:

Turn on or off hotkeys.

Query hotkey status.

Examples:

:HOTK ON

Turn on the hotkey.

:HOTK?

The query returns hotkey functionality status.

Response: "ON" or "OFF".

Related commands:

None

MEASure Commands

The MEASure Commands are used for querying the actual values of output voltage, current and power on the power supply's output terminals. The MEASure Commands include the following:

```
[:]MEASure[:SCALar]:CURRent[:DC]?  
[:]MEASure[:SCALar]:POWer[:DC]?  
[:]MEASure[:SCALar][:VOLTage][:DC]?
```

[:]MEASure[:SCALar]:CURRent[:DC]?

Syntax:

```
[:]MEASure[:SCALar]:CURRent[:DC]?
```

Function:

Query the value of the output current on output terminals.

Examples:

```
:MEAS:CURR?
```

Return the value of the output current on output terminals.

Related commands:

```
[:]MEASure[:SCALar]:POWer[:DC]?  
[:]MEASure[:SCALar][:VOLTage][:DC]?
```

[:]MEASure[:SCALar]:POWer[:DC]?

Syntax:

```
[:]MEASure[:SCALar]:POWer[:DC]?
```

Function:

The query returns the value of the output power on output terminals.

Examples:

```
:MEAS:POW?
```

Return the value of the output power on output terminals.

Related commands:

```
[:]MEASure[:SCALar]:CURRent[:DC]?  
[:]MEASure[:SCALar][:VOLTage][:DC]?
```

[:]MEASure[:SCALar][:VOLTage][:DC]?

Syntax:

```
[:]MEASure[:SCALar][:VOLTage][:DC]?
```

Function:

Query the value of the output voltage on output terminals.

Examples:

```
:MEAS?
```

Return the value of the output voltage on output terminals.

Related commands:

```
[:]MEASure[:SCALar]:CURRent[:DC]?  
[:]MEASure[:SCALar]:POWer[:DC]?
```

OUTPut Commands

The OUTPut Commands are used to configure and query the output settings of the power supply.

[:]OUTPut

Syntax:

[:]OUTPut[:STATe] {ON | OFF} [:]OUTPut[:STATe]?

Function:

Turn on or off the output.

Query output status.

Examples:

:OUTP ON

Turn on the output.

:OUTP?

Response: "ON" or "OFF".

Related commands:

None

SOURce Commands

The SOURce Commands are used to directly set the values of output voltage, output current, output voltage step, output current step, and protection threshold, set the status of OCP and OVP switch and to query related status.

The SOURce Commands include the following:

[:]SOURce:]CURRent:PROTection:CLEar [:]SOURce:]CURRent:PROTection:STATe
[:]SOURce:]CURRent:PROTection:TRIPped?
[:]SOURce:]CURRent:PROTection[:LEVel]
[:]SOURce:]CURRent[:LEVel][:IMMEDIATE]:STEP[:INCRement]
[:]SOURce:]CURRent[:LEVel][:IMMEDIATE][:AMPLitude]
[:]SOURce:]VOLTage:PROTection:CLEar [:]SOURce:]VOLTage:PROTection:STATe
[:]SOURce:]VOLTage:PROTection:TRIPped?
[:]SOURce:]VOLTage:PROTection[:LEVel]
[:]SOURce:]VOLTage:RANGe
[:]SOURce:]VOLTage[:LEVel][:IMMEDIATE]:STEP[:INCRement]
[:]SOURce:]VOLTage[:LEVel][:IMMEDIATE][:AMPLitude]

[:]SOURce:]CURRent

The [:]SOURce:]CURRent commands are used to set the values of output current, output current step, output current step, OCP threshold, set the status of OCP switch and to query related status.

The [:]SOURce:]CURRent commands include the following:

[:]SOURce:]CURRent:PROTection:CLEar [:]SOURce:]CURRent:PROTection:STATe
[:]SOURce:]CURRent:PROTection:TRIPped?
[:]SOURce:]CURRent:PROTection[:LEVel]
[:]SOURce:]CURRent[:LEVel][:IMMEDIATE]:STEP[:INCRement]
[:]SOURce:]CURRent[:LEVel][:IMMEDIATE][:AMPLitude]

[:]SOURce:]CURRent:PROTection:CLEar

Syntax:

[:]SOURce:]CURRent:PROTection:CLEar

Function:

Clear the present OCP.

Examples:

:CURR:PROT:CLe

Clear the present OCP.

Related commands:

[[:SOURce:]]CURRent:PROTection:STATe

[[:SOURce:]]CURRent:PROTection:TRIPped?

[[:SOURce:]]CURRent:PROTection[:LEVel]

[[:SOURce:]]CURRent[:LEVel][:IMMediate]:STEP[:INCRement]

[[:SOURce:]]CURRent[:LEVel][:IMMediate][:AMPLitude]

[[:SOURce:]]CURRent:PROTection:STATe

Syntax:

[[:SOURce:]]CURRent:PROTection:STATe {OFF|ON} [[:SOURce:]]CURRent:PROTection:STATe?

Function:

Disable or enable the present OCP.

Query the present OCP status.

Examples:

:CURR:PROT:STAT OFF

Disable the present OCP.

:CURR:PROT:STAT?

Query the present OCP, return "ON" (enabled) or "OFF" (disabled).

Related commands:

[[:SOURce:]]CURRent:PROTection:CLear

[[:SOURce:]]CURRent:PROTection:TRIPped?

[[:SOURce:]]CURRent:PROTection[:LEVel]

[[:SOURce:]]CURRent[:LEVel][:IMMediate]:STEP[:INCRement]

[[:SOURce:]]CURRent[:LEVel][:IMMediate][:AMPLitude]

[[:SOURce:]]CURRent:PROTection:TRIPped?

Syntax:

[[:SOURce:]]CURRent:PROTection:TRIPped?

Function:

Query if the current protection circuit is currently active.

Examples:

:CURR:PROT:TRIP?

Return "ON" (in operation) or "OFF" (not in operation).

Related commands:

[[:SOURce:]]CURRent:PROTection:CLear

[[:SOURce:]]CURRent:PROTection:STATe

[[:SOURce:]]CURRent:PROTection[:LEVel]

[[:SOURce:]]CURRent[:LEVel][:IMMediate]:STEP[:INCRement]

[[:SOURce:]]CURRent[:LEVel][:IMMediate][:AMPLitude]

[[:SOURce:]]CURRent:PROTection[:LEVel]

Syntax:

[[:SOURce:]]CURRent:PROTection[:LEVel] {<current>|DEFault|MINimum|MAXimum}

[[:SOURce:]]CURRent:PROTection[:LEVel]? {DEFault|MINimum|MAXimum}

Function:

Set the OCP threshold.

Query the OCP threshold value.

Examples:

:CURR:PROT 6

Set the OCP threshold to 6A.

:CURR:PROT MAX

Set the OCP threshold to maximum value.

:CURR:PROT?

Return the OCP threshold.

:CURR:PROT? MAX

Return the OCP maximum value.

Related commands:

[[:SOURce:]:CURRent:PROTection:CLEar [:SOURce:]:CURRent:PROTection:STATe

[[:SOURce:]:CURRent:PROTection:TRIPped?

[[:SOURce:]:CURRent[:LEVel][:IMMediate]:STEP[:INCRement]

[[:SOURce:]:CURRent[:LEVel][:IMMediate][:AMPLitude]

[[:SOURce:]:CURRent[:LEVel][:IMMediate]:STEP[:INCRement]

Syntax:

[[:SOURce:]:CURRent[:LEVel][:IMMediate]:STEP[:INCRement] {<numeric value>|DEFault|MINimum|MAXimum}

[[:SOURce:]:CURRent[:LEVel][:IMMediate]:STEP[:INCRement]? {DEFault|MINimum|MAXimum}

Function:

Set the current step increment.

Query the current step increment value.

Examples:

:CURR:STEP 1

Set the current step increment at 1A.

:CURR:STEP DEF

Set the current step increment at default value.

:CURR:STEP?

Return the present current step increment value.

:CURR:STEP? DEF

Return the default current step increment value.

Related commands:

[[:SOURce:]:CURRent:PROTection:CLEar [:SOURce:]:CURRent:PROTection:STATe

[[:SOURce:]:CURRent:PROTection:TRIPped?

[[:SOURce:]:CURRent:PROTection[:LEVel]

[[:SOURce:]:CURRent[:LEVel][:IMMediate][:AMPLitude]

[[:SOURce:]:CURRent[:LEVel][:IMMediate][:AMPLitude]

Syntax:

[[:SOURce:]:CURRent[:LEVel][:IMMediate][:AMPLitude] {<current>|DEFault|MINimum|MAXimum}

[[:SOURce:]:CURRent[:LEVel][:IMMediate][:AMPLitude]? {DEFault|MINimum|MAXimum}

Function:

Set the output current.

Query the present output current value.

Examples: :CURR 1

Set the output current to 1A.

:CURR MAX

Set the output current to maximum value.

:CURR?

Return the present output current value.

:CURR? MAX

Return the maximum value of the present output current.

Related commands:

```
[[:SOURce:]CURRent:PROTection:CLEar [[:SOURce:]CURRent:PROTection:STATe  
[:SOURce:]CURRent:PROTection:TRIPped?  
[:SOURce:]CURRent:PROTection[:LEVel]  
[:SOURce:]CURRent[:LEVel][:IMMEdiate]:STEP[:INCRement]
```

[[:SOURce:]VOLTage

The [[:SOURce:]VOLTage commands are used to set the values of output voltage, output voltage step, output voltage step, OVP threshold, set the status of OVP switch and to query related status.

The [[:SOURce:]VOLTage commands include the following:

```
[[:SOURce:]VOLTage:PROTection:CLEar [[:SOURce:]VOLTage:PROTection:STATe  
[:SOURce:]VOLTage:PROTection:TRIPped?  
[:SOURce:]VOLTage:PROTection[:LEVel]  
[:SOURce:]VOLTage:RANGe  
[:SOURce:]VOLTage[:LEVel][:IMMEdiate]:STEP[:INCRement]  
[:SOURce:]VOLTage[:LEVel][:IMMEdiate][:AMPLitude]
```

[[:SOURce:]VOLTage:PROTection:CLEar

Syntax:

```
[[:SOURce:]VOLTage:PROTection:CLEar
```

Function:

Clear the OVP mode.

Examples:

```
:VOLT:PROT:CLE
```

Clear the OVP mode.

Related commands:

```
[[:SOURce:]VOLTage:PROTection:STATe  
[:SOURce:]VOLTage:PROTection:TRIPped?  
[:SOURce:]VOLTage:PROTection[:LEVel]  
[:SOURce:]VOLTage:RANGe  
[:SOURce:]VOLTage[:LEVel][:IMMEdiate]:STEP[:INCRement]  
[:SOURce:]VOLTage[:LEVel][:IMMEdiate][:AMPLitude]
```

[[:SOURce:]VOLTage:PROTection:STATe

Syntax:

```
[[:SOURce:]VOLTage:PROTection:STATe {OFF|ON} [[:SOURce:]VOLTage:PROTection:STATe?
```

Function:

Enable or disable the present OVP, query if the OVP is enabled or disabled.

Examples:

```
:VOLT:PROT:STAT OFF
```

Disable the OVP.

```
:VOLT:PROT:STAT?
```

Query the status of the OVP setting.

Related commands:

```
[[:SOURce:]VOLTage:PROTection:STATe  
[:SOURce:]VOLTage:PROTection:TRIPped?  
[:SOURce:]VOLTage:PROTection[:LEVel]  
[:SOURce:]VOLTage:RANGe  
[:SOURce:]VOLTage[:LEVel][:IMMEdiate]:STEP[:INCRement]  
[:SOURce:]VOLTage[:LEVel][:IMMEdiate][:AMPLitude]
```

[[:SOURce:]]VOLTage:PROTection:TRIPped?

Syntax:

[[:SOURce:]]VOLTage:PROTection:TRIPped?

Function:

Query if the OVP is currently in operation.

Examples:

:VOLT:PROT:TRIP?

Returns "ON" (in operation) or "OFF" (not in operation).

Related commands:

[[:SOURce:]]VOLTage:PROTection:CLEar

[[:SOURce:]]VOLTage:PROTection:STATe

[[:SOURce:]]VOLTage:PROTection[:LEVel]

[[:SOURce:]]VOLTage:RANGe

[[:SOURce:]]VOLTage[:LEVel][:IMMEdiate]:STEP[:INCRement]

[[:SOURce:]]VOLTage[:LEVel][:IMMEdiate][:AMPLitude]

[[:SOURce:]]VOLTage:PROTection[:LEVel]

Syntax:

[[:SOURce:]]VOLTage:PROTection[:LEVel] {<voltage>|DEFault|MINimum|MAXimum}

[[:SOURce:]]VOLTage:PROTection[:LEVel]? {DEFault|MINimum|MAXimum}

Function:

Set the OVP threshold.

Query the present OVP threshold value.

Examples:

:VOLT:PROT 31

Set the OVP threshold to 31V.

:VOLT:PROT MAX

Set the OVP threshold to maximum value.

:VOLT:PROT?

Return the present OVP threshold.

:VOLT:PROT? MAX

Return the OVP maximum threshold.

Related commands:

[[:SOURce:]]VOLTage:PROTection:CLEar

[[:SOURce:]]VOLTage:PROTection:STATe

[[:SOURce:]]VOLTage:PROTection:TRIPped?

[[:SOURce:]]VOLTage:RANGe

[[:SOURce:]]VOLTage[:LEVel][:IMMEdiate]:STEP[:INCRement]

[[:SOURce:]]VOLTage[:LEVel][:IMMEdiate][:AMPLitude]

[[:SOURce:]]VOLTage:RANGe

Syntax:

[[:SOURce:]]VOLTage:RANGe {LOW | HIGH} [[:SOURce:]]VOLTage:RANGe?

Function:

Set the output voltage range.

Query the present output voltage range.

Remarks:

This command is used to choose an output voltage range (only applies to dual-range models).

"HIGH", high voltage range is selected.

"LOW", low voltage range is selected.

Examples:

:VOLT:RANG LOW

Set the output voltage range to low range.

Related commands:

[[:SOURce:]]VOLTage:PROTection:CLEar

[[:SOURce:]]VOLTage:PROTection:STATE

[[:SOURce:]]VOLTage:PROTection:TRIPped?

[[:SOURce:]]VOLTage:PROTection[:LEVel]

[[:SOURce:]]VOLTage[:LEVel][:IMMEdiate]:STEP[:INCRement]

[[:SOURce:]]VOLTage[:LEVel][:IMMEdiate][:AMPLitude]

[[:SOURce:]]VOLTage[:LEVel][:IMMEdiate]:STEP[:INCRement]

Syntax:

[[:SOURce:]]VOLTage[:LEVel][:IMMEdiate]:STEP[:INCRement] {<numeric value>|DEFault}

[[:SOURce:]]VOLTage[:LEVel][:IMMEdiate]:STEP[:INCRement]? {DEFault}

Function:

Set the output voltage step increment.

Query the output voltage step increment value.

Examples:

:VOLT:STEP 1

Set the output voltage increment to 1V.

:VOLT:STEP DEF

Set the output voltage step increment to default value.

:VOLT:STEP?

Return the present output voltage step increment.

:VOLT:STEP? DEF

Return the default output voltage increment value.

Related commands:

[[:SOURce:]]VOLTage:PROTection:CLEar

[[:SOURce:]]VOLTage:PROTection:STATE

[[:SOURce:]]VOLTage:PROTection:TRIPped?

[[:SOURce:]]VOLTage:PROTection[:LEVel]

[[:SOURce:]]VOLTage:RANGe

[[:SOURce:]]VOLTage[:LEVel][:IMMEdiate][:AMPLitude]

[[:SOURce:]]VOLTage[:LEVel][:IMMEdiate][:AMPLitude]

Syntax:

[[:SOURce:]]VOLTage[:LEVel][:IMMEdiate][:AMPLitude] {<voltage>|DEFault|MINimum|MAXimum}

[[:SOURce:]]VOLTage[:LEVel][:IMMEdiate][:AMPLitude]? {DEFault|MINimum|MAXimum}

Function:

Set the output voltage.

Query the present output voltage value.

Examples:

:VOLT 5

Set the output voltage to 5V.

:VOLT MAX

Set the output voltage to maximum value.

:VOLT?

Return the present output voltage value.

:VOLT? MAX

Return the present maximum output voltage value.

Related commands:

```
[:]SOURce:]VOLTage:PROTection:CLEar  
[:]SOURce:]VOLTage:PROTection:STATe  
[:]SOURce:]VOLTage:PROTection:TRIPped?  
[:]SOURce:]VOLTage:PROTection[:LEVel]  
[:]SOURce:]VOLTage:RANGe  
[:]SOURce:]VOLTage[:LEVel][:IMMediate]:STEP[:INCRement]
```

STATus Commands

The STATus Commands are used to set and query the contents of the Questionable Status Register group and Operation Status Register group.

The STATus Commands include the following:

```
[:]STATus:OPERation:CONDition?  
[:]STATus:OPERation:ENABle  
[:]STATus:OPERation[:EVENT]?  
[:]STATus:PRESet  
[:]STATus:QUESTionable:CONDition?  
[:]STATus:QUESTionable:ENABle  
[:]STATus:QUESTionable[:EVENT]?
```

[:]STATus:OPERation:CONDition?

Syntax:

```
[:]STATus:OPERation:CONDition?
```

Function:

Query the contents of the Operation Condition Register (OCR).

Examples:

```
:STAT:OPER:COND?
```

Return the status of the Operation Condition Register (OCR).

Related commands:

```
[:]STATus:OPERation:ENABle  
[:]STATus:OPERation[:EVENT]?  
[:]STATus:PRESet  
[:]STATus:QUESTionable:CONDition?  
[:]STATus:QUESTionable:ENABle  
[:]STATus:QUESTionable[:EVENT]?
```

[:]STATus:OPERation:ENABle

Syntax:

```
[:]STATus:OPERation:ENABle <enable_value> [:]STATus:OPERation:ENABle?
```

Function:

Set the contents of the Operation Enable Register (OENR), query the Operation Enable Register (OENR).

Examples:

```
:STAT:OPER:ENAB?
```

Return the status of the Operation Enable Register (OENR).

Related commands:

```
[:]STATus:OPERation:CONDition?  
[:]STATus:OPERation[:EVENT]?  
[:]STATus:PRESet  
[:]STATus:QUESTionable:CONDition?  
[:]STATus:QUESTionable:ENABle  
[:]STATus:QUESTionable[:EVENT]?
```

[:]STATus:OPERation[:EVENT]?

Syntax:

[:]STATus:OPERation[:EVENT]?

Function:

Query the status of the Operation Event Register (OEVR).

Examples:

:STAT:OPER?

Return the status of the Operation Event Register (OEVR).

Related commands:

[:]STATus:OPERation:CONDition?

[:]STATus:OPERation:ENABle

[:]STATus:PRESet

[:]STATus:QUEStionable:CONDition?

[:]STATus:QUEStionable:ENABle

[:]STATus:QUEStionable[:EVENT]?

[:]STATus:PRESet

Syntax:

[:]STATus:PRESet

Function:

Clear the Operation Enable Register (OENR) and the Questionable Enable Register (QENR).

Examples:

:STAT:PRES

Related commands:

[:]STATus:OPERation:CONDition?

[:]STATus:OPERation:ENABle

[:]STATus:OPERation[:EVENT]?

[:]STATus:QUEStionable:CONDition?

[:]STATus:QUEStionable:ENABle

[:]STATus:QUEStionable[:EVENT]?

[:]STATus:QUEStionable:CONDition?

Syntax:

[:]STATus:QUEStionable:CONDition?

Function:

Query the status of the Questionable Condition Register (QCR).

Examples:

:STAT:QUES:COND?

Return the status of the Questionable Condition Register (QCR).

Related commands:

[:]STATus:OPERation:CONDition?

[:]STATus:OPERation:ENABle

[:]STATus:OPERation[:EVENT]?

[:]STATus:PRESet

[:]STATus:QUEStionable:ENABle

[:]STATus:QUEStionable[:EVENT]?

[:]STATus:QUEStionable:ENABle

Syntax:

[:]STATus:QUEStionable:ENABle <enable value> [:]STATus:QUEStionable:ENABle?

Function:

Set the status of the Questionable Enable Register (QENR), query the Questionable Enable Register (QENR).

Examples:

:STAT:QUES:ENAB?

Return the status of the Questionable Enable Register (QENR).

Related commands:

[:]STATus:OPERation:CONDition?

[:]STATus:OPERation:ENABle

[:]STATus:OPERation[:EVENT]?

[:]STATus:PRESet

[:]STATus:QUEStionable:CONDition?

[:]STATus:QUEStionable[:EVENT]?

[:]STATus:QUEStionable[:EVENT]?

Syntax:

[:]STATus:QUEStionable[:EVENT]?

Function:

Query the status of the Questionable Event Register (QEVr).

Examples:

:STAT:QUES?

Return the status of the Questionable Event Register (QEVr).

Related commands:

[:]STATus:OPERation:CONDition?

[:]STATus:OPERation:ENABle

[:]STATus:OPERation[:EVENT]?

[:]STATus:PRESet

[:]STATus:QUEStionable:CONDition?

[:]STATus:QUEStionable:ENABle

SYSTem Commands

The SYSTem Commands are used for controlling beeper, interface setup, error query, remote control and functions related to timing output.

The SYSTem Commands include:

[:]SYSTem:AUTO:CYCLe

[:]SYSTem:AUTO:DELay

[:]SYSTem:AUTO:STARt

[:]SYSTem:AUTO[:STATe]

[:]SYSTem:AUTO:STOP

[:]SYSTem:BEEPer:STATe

[:]SYSTem:BEEPer[:IMMediate]

[:]SYSTem:COMMunicate:SERial[:RECeive]:BAUD

[:]SYSTem:ERRor:COUNt?

[:]SYSTem:ERRor[:NEXT]?

[:]SYSTem:LOCal

[:]SYSTem:MEMory?

[:]SYSTem:REMote

[:]SYSTem:RWLock

[:]SYSTem:VERsion?

[:]SYSTem:AUTO:CYCLe

Syntax:

[:]SYSTem:AUTO:CYCLe {0|1|...|99999} [:]SYSTem:AUTO:CYCLe?

Function:

In preset mode, this command is used to set the number of times of execution.
The value 0 means infinite cycling.

Examples:

:SYST:AUTO:CYCL 1

1 sets auto cycle to repeat the setting 1 time and stop.

:SYST:AUTO:CYCL?

Return an integer number within 0 to 99999.

Related commands:

[:]SYSTem:AUTO:DELay

[:]SYSTem:AUTO:STARt

[:]SYSTem:AUTO[:STATe]

[:]SYSTem:AUTO:STOP

[:]SYSTem:BEEPer:STATe

[:]SYSTem:BEEPer[:IMMediate]

[:]SYSTem:COMMunicate:SERial[:RECeive]:BAUD

[:]SYSTem:ERRor:COUNt?

[:]SYSTem:ERRor[:NEXT]?

[:]SYSTem:LOCal

[:]SYSTem:MEMory?

[:]SYSTem:REMote

[:]SYSTem:RWLock

[:]SYSTem:VERSion?

[:]SYSTem:AUTO:DELay

Syntax:

[:]SYSTem:AUTO:DELay {1|...|99999} [:]SYSTem:AUTO:DELay?

Function:

In preset mode, set the execution time for each preset. (The time unit is "s", minimum resolution is 1s).

Examples:

:SYST:AUTO:DEL 1

The next preset will be set after 1 second.

:SYST:AUTO:DEL?

Return an integer number within 1 to 99999.

Related commands:

[:]SYSTem:AUTO:CYCLe

[:]SYSTem:AUTO:STARt

[:]SYSTem:AUTO[:STATe]

[:]SYSTem:AUTO:STOP

[:]SYSTem:BEEPer:STATe

[:]SYSTem:BEEPer[:IMMediate]

[:]SYSTem:COMMunicate:SERial[:RECeive]:BAUD

[:]SYSTem:ERRor:COUNt?

[:]SYSTem:ERRor[:NEXT]?

[:]SYSTem:LOCal

[:]SYSTem:MEMory?

[:]SYSTem:REMote

[:]SYSTem:RWLock

[:]SYSTem:VERSion?

[:]SYSTem:AUTO:STARt

Syntax:

[:]SYSTem:AUTO:STARt {0|1|...|99} [:]SYSTem:AUTO:STARt?

Function:

In preset mode, set the start memory section for auto execution.

Examples:

:SYST:AUTO:STAR 0

Set the start memory section 1 as the start point for auto execution.

:SYST:AUTO:STAR?

Return an integer number within 0 to 99.

Related commands:

[:]SYSTem:AUTO:CYCLe

[:]SYSTem:AUTO:DELay

[:]SYSTem:AUTO[:STATe]

[:]SYSTem:AUTO:STOP

[:]SYSTem:BEEPer:STATe

[:]SYSTem:BEEPer[:IMMEDIATE]

[:]SYSTem:COMMunicate:SERial[:RECeive]:BAUD

[:]SYSTem:ERRor:COUNt?

[:]SYSTem:ERRor[:NEXT]?

[:]SYSTem:LOCal

[:]SYSTem:MEMory?

[:]SYSTem:REMote

[:]SYSTem:RWLock

[:]SYSTem:VERSion?

[:]SYSTem:AUTO[:STATe]

Syntax:

[:]SYSTem:AUTO[:STATe] {ON | OFF}

[:]SYSTem:AUTO[:STATe]?

Function:

Turn on or off the preset output functionality, query the preset output functionality status.

Examples:

:SYST:AUTO ON

Turn on the preset output functionality.

:SYST:AUTO?

Return the preset output functionality status: "ON" or "OFF".

Related commands:

[:]SYSTem:AUTO:CYCLe

[:]SYSTem:AUTO:DELay

[:]SYSTem:AUTO:STARt

[:]SYSTem:AUTO:STOP

[:]SYSTem:BEEPer:STATe

[:]SYSTem:BEEPer[:IMMEDIATE]

[:]SYSTem:COMMunicate:SERial[:RECeive]:BAUD

[:]SYSTem:ERRor:COUNt?

[:]SYSTem:ERRor[:NEXT]?

[:]SYSTem:LOCal

[:]SYSTem:MEMory?

[:]SYSTem:REMote

[:]SYSTem:RWLock

[:]SYSTem:VERSion?

[:]SYSTem:AUTO:STOP

Syntax:

[:]SYSTem:AUTO:STOP {0|1|...|99}
[:]SYSTem:AUTO:STOP?

Function:

In preset mode, set the stop preset section for the auto execution or query the stop preset section.

Examples:

:SYST:AUTO:STOP 10

Set the stop memory section to preset 10. The auto execution stops with the execution of preset 10.

:SYST:AUTO:STOP?

Return an integer number within 0 to 99.

Related commands:

[:]SYSTem:AUTO:CYCLe
[:]SYSTem:AUTO:DELay
[:]SYSTem:AUTO:STARt
[:]SYSTem:AUTO[:]STATe]
[:]SYSTem:BEEPer:STATe
[:]SYSTem:BEEPer[:]IMMediate]
[:]SYSTem:COMMunicate:SERial[:]RECeive]:BAUD
[:]SYSTem:ERRor:COUNt?
[:]SYSTem:ERRor[:]NEXT]?
[:]SYSTem:LOCal
[:]SYSTem:MEMory?
[:]SYSTem:REMote [:]SYSTem:RWLock
[:]SYSTem:VERSion?

[:]SYSTem:BEEPer:STATe

Syntax:

[:]SYSTem:BEEPer:STATe {ON | OFF}
[:]SYSTem:BEEPer:STATe?

Function:

Set the present beeper state, query the present beeper state.

Examples:

:SYST:BEEP:STAT ON

Turn on the beeper.

:SYST:BEEP:STAT?

Return "ON" (beeper is on) or "OFF (beeper is off)".

Related commands:

[:]SYSTem:AUTO:CYCLe
[:]SYSTem:AUTO:DELay
[:]SYSTem:AUTO:STARt
[:]SYSTem:AUTO[:]STATe]
[:]SYSTem:AUTO:STOP
[:]SYSTem:BEEPer[:]IMMediate]
[:]SYSTem:COMMunicate:SERial[:]RECeive]:BAUD
[:]SYSTem:ERRor:COUNt?
[:]SYSTem:ERRor[:]NEXT]?
[:]SYSTem:LOCal
[:]SYSTem:MEMory?
[:]SYSTem:REMote
[:]SYSTem:RWLock
[:]SYSTem:VERSion?

[:]SYSTem:BEEPer[:IMMediate]

Syntax:

[:]SYSTem:BEEPer[:IMMediate]

Function:

Activate a single beep immediately.

Examples:

:SYST:BEEP

The beeper beeps for a single time.

Related commands:

[:]SYSTem:AUTO:CYCLe

[:]SYSTem:AUTO:DELay

[:]SYSTem:AUTO:STARt

[:]SYSTem:AUTO[:STATe]

[:]SYSTem:AUTO:STOP

[:]SYSTem:BEEPer:STATe

[:]SYSTem:COMMunicate:SERial[:RECeive]:BAUD

[:]SYSTem:ERRor:COUNt?

[:]SYSTem:ERRor[:NEXT]?

[:]SYSTem:LOCal

[:]SYSTem:MEMory?

[:]SYSTem:REMote [:]SYSTem:RWLock

[:]SYSTem:VERSion?

[:]SYSTem:COMMunicate:SERial[:RECeive]:BAUD

Syntax:

[:]SYSTem:COMMunicate:SERial[:RECeive]:BAUD

Function:

Set baud rate of the power supply's interface.

Remarks:

A baud rate code is corresponding to a baud rate as shown in below table:

Code	0	1	2	3	4	5	6	7	8	9
Baud rate	1200	2400	4800	9600	14400	19200	28800	38400	57600	115200

Examples:

:SYST:COMM:SER:BAUD 3

Set baud rate to 9600.

Related commands:

[:]SYSTem:AUTO:CYCLe

[:]SYSTem:AUTO:DELay

[:]SYSTem:AUTO:STARt

[:]SYSTem:AUTO[:STATe]

[:]SYSTem:AUTO:STOP

[:]SYSTem:BEEPer:STATe

[:]SYSTem:BEEPer[:IMMediate]

[:]SYSTem:ERRor:COUNt?

[:]SYSTem:ERRor[:NEXT]?

[:]SYSTem:LOCal

[:]SYSTem:MEMory?

[:]SYSTem:REMote

[:]SYSTem:RWLock

[:]SYSTem:VERSion?

[:]SYSTem:ERRor:COUNT?

Syntax:

[:]SYSTem:ERRor:COUNT?

Function:

Query the number of error records to be read from the power supply.

Remarks:

The maximum number of recorded error records is 20 sets.

Examples:

:SYST:ERR:COUN?

A response of 3 means that there are 3 error records to read from the power supply.

Related commands:

[:]SYSTem:AUTO:CYCLe

[:]SYSTem:AUTO:DELay

[:]SYSTem:AUTO:STARt

[:]SYSTem:AUTO[:STATe]

[:]SYSTem:AUTO:STOP

[:]SYSTem:BEEPer:STATe

[:]SYSTem:BEEPer[:IMMediate]

[:]SYSTem:COMMunicate:SERial[:RECeive]:BAUD

[:]SYSTem:ERRor[:NEXT]?

[:]SYSTem:LOCal

[:]SYSTem:MEMory?

[:]SYSTem:REMote

[:]SYSTem:RWLock

[:]SYSTem:VERSion?

[:]SYSTem:ERRor[:NEXT]?

Syntax:

[:]SYSTem:ERRor[:NEXT]?

Function:

Read the next error message from the power supply.

Remarks:

Error message	Decription
0,"No error"	There is no error message.
-100,"Command error"	Parameter is not allowed to follow the command.
-109,"Missing parameter"	There is missing parameter to follow the command.
-112,"Program mnemonic too long"	The mnemonic characters are too long.
-123,"Exponent too large"	The parameter value is too high.
-200,"Execution error"	There is execution error.
-220,"Parameter error"	The parameter value is wrong.
-221,"Settings conflict"	There is conflict in the setting commands.
-222,"Data out of range"	The data is out of permitted range.

-224,"Illegal parameter value"	The parameter value is illegal.
-350,"Queue overflow"	The error queue is over flow (more than 20 sets).
-702,"Cal secured"	The operation is illegal, because a password is required to start calibration.
-703,"Invalid secure code"	The calibration password is wrong.
-704,"Secured code too long"	The calibration password is too long.

Examples:

:SYST:ERR?

A response with the value "0" means a missing error message or no error.

Related command:

[:]SYSTem:AUTO:CYCLe

[:]SYSTem:AUTO:DELay

[:]SYSTem:AUTO:STARt

[:]SYSTem:AUTO[:STATe]

[:]SYSTem:AUTO:STOP

[:]SYSTem:BEEPer:STATe

[:]SYSTem:BEEPer[:IMMediate]

[:]SYSTem:COMMunicate:SERial[:RECeive]:BAUD

[:]SYSTem:ERRor:COUNt?

[:]SYSTem:LOCal

[:]SYSTem:MEMory?

[:]SYSTem:REMote

[:]SYSTem:RWLock

[:]SYSTem:VERSion?

[:]SYSTem:LOCal

Syntax:

[:]SYSTem:LOCal

Function:

Set the power supply to the local operation mode.

Examples:

:SYST:LOC

Set the power supply to the local operation mode.

All control knobs on the front panel are enabled in local mode.

Related commands:

[:]SYSTem:AUTO:CYCLe

[:]SYSTem:AUTO:DELay

[:]SYSTem:AUTO:STARt

[:]SYSTem:AUTO[:STATe]

[:]SYSTem:AUTO:STOP

[:]SYSTem:BEEPer:STATe

[:]SYSTem:BEEPer[:IMMediate]

[:]SYSTem:COMMunicate:SERial[:RECeive]:BAUD

[:]SYSTem:ERRor:COUNt?

[:]SYSTem:ERRor[:NEXT]?

[:]SYSTem:MEMory?

[:]SYSTem:REMote

[:]SYSTem:RWLock

[:]SYSTem:VERSion?

[:]SYSTem:MEMory?

Syntax:

[:]SYSTem:MEMory?

Function:

Query the memory section that is currently recalled.

Examples:

:SYST:MEM?

Return an integer number between 0 to 99.

Related commands:

[:]SYSTem:AUTO:CYCLe

[:]SYSTem:AUTO:DELay

[:]SYSTem:AUTO:STARt

[:]SYSTem:AUTO[:STATe]

[:]SYSTem:AUTO:STOP

[:]SYSTem:BEEPer:STATe

[:]SYSTem:BEEPer[:IMMEDIATE]

[:]SYSTem:COMMunicate:SERial[:RECeive]:BAUD

[:]SYSTem:ERRor:COUNt?

[:]SYSTem:ERRor[:NEXT]?

[:]SYSTem:LOCal

[:]SYSTem:REMote

[:]SYSTem:RWLock

[:]SYSTem:VERSion?

[:]SYSTem:REMote

Syntax:

[:]SYSTem:REMote

Function:

Set the power supply to remote control mode. In remote control mode, all knobs on the front panel are disabled, except "Local" and "Output" keys. During remote control, press "Local" key to return the power supply to local mode.

Examples:

:SYST:REM

Set the power supply to remote control mode.

Related commands:

[:]SYSTem:AUTO:CYCLe

[:]SYSTem:AUTO:DELay

[:]SYSTem:AUTO:STARt

[:]SYSTem:AUTO[:STATe]

[:]SYSTem:AUTO:STOP

[:]SYSTem:BEEPer:STATe

[:]SYSTem:BEEPer[:IMMEDIATE]

[:]SYSTem:COMMunicate:SERial[:RECeive]:BAUD

[:]SYSTem:ERRor:COUNt?

[:]SYSTem:ERRor[:NEXT]?

[:]SYSTem:LOCal

[:]SYSTem:MEMory?

[:]SYSTem:RWLock

[:]SYSTem:VERSion?

[:]SYSTem:RWLock

Syntax:

[:]SYSTem:RWLock

Function:

Set the power supply to remote control mode. In remote control mode, all knobs on the front panel are disabled, except "Output" key.

Examples:

:SYST:RWL

Set the power supply to remote control mode.

Related commands:

[:]SYSTem:AUTO:CYCLe

[:]SYSTem:AUTO:DELay

[:]SYSTem:AUTO:STARt

[:]SYSTem:AUTO[:STATe]

[:]SYSTem:AUTO:STOP

[:]SYSTem:BEEPer:STATe

[:]SYSTem:BEEPer[:IMMediate]

[:]SYSTem:COMMunicate:SERial[:RECeive]:BAUD

[:]SYSTem:ERRor:COUNt?

[:]SYSTem:ERRor[:NEXT]?

[:]SYSTem:LOCal

[:]SYSTem:MEMory?

[:]SYSTem:REMote

[:]SYSTem:VERSion?

[:]SYSTem:VERSion?

Syntax:

[:]SYSTem:VERSion?

Function:

Query the SCPI version of the power supply.

Examples:

:SYST:VERS?

Return 1999.0

Related commands:

[:]SYSTem:AUTO:CYCLe

[:]SYSTem:AUTO:DELay

[:]SYSTem:AUTO:STARt

[:]SYSTem:AUTO[:STATe] [:]SYSTem:AUTO:STOP

[:]SYSTem:BEEPer:STATe

[:]SYSTem:BEEPer[:IMMediate] [:]SYSTem:COMMunicate:SERial[:RECeive]:BAUD [:]SYSTem:ERRor:COUNt?

[:]SYSTem:ERRor[:NEXT]?

[:]SYSTem:LOCal

[:]SYSTem:MEMory?

[:]SYSTem:REMote

[:]SYSTem:RWLock

TRIGger Commands

The TRIGger Commands are used to set the trigger function, trigger source and trigger mode.

Related commands:

[:]TRIGger:FUNCtion
[:]TRIGger[:IMMEDIATE]
[:]TRIGger:SOURce

[:]TRIGger:FUNCtion

Syntax:

[:]TRIGger:FUNCtion {OUTPUT|TIME}
[:]TRIGger:FUNCtion?

Function:

Set and query trigger function.

Examples:

:TRIG:FUNC OUTPUT
Set trigger function as: output ON/OFF.
:TRIG:FUNC?
Query trigger function.

Related commands:

[:]TRIGger[:IMMEDIATE]
[:]TRIGger:SOURce

[:]TRIGger[:IMMEDIATE]

Syntax:

[:]TRIGger[:IMMEDIATE]

Function:

Activate trigger once.

Examples:

:TRIG
Activate trigger once.

Related commands:

[:]TRIGger:FUNCtion
[:]TRIGger:SOURce

[:]TRIGger:SOURce

Syntax:

[:]TRIGger:SOURce{HOLD|EXTernal|BUS|PULSe}
[:]TRIGger:SOURce?

Function:

Set trigger mode.

EXTernal: trigger by external key.

PULSe: trigger by TTL signal from rear panel.

HOLD: trigger by the command "TRIGger:IMMEDIATE". Other trigger modes are off.

BUS: trigger by communication interface.

Query trigger mode.

Examples:

:TRIG:SOUR EXtErnal

Set trigger mode to external trigger.

:TRIG:SOUR?

Return trigger mode.

Related commands:

[:]TRIGger:FUNCTion

[:]TRIGger[:IMMEdiate]

Command Quick Reference A-Z

*CLS

*ESE

*ESR?

*IDN?

*OPC

*PSC

*RCL

*RST

*SAV

*SRE

*STB?

A

[:]APPLy

C

[:]CALibration:COUNT?

[:]CALibration:CURRent[:DATA]

[:]CALibration:CURRent:LEVel

[:]CALibration:SECure:CODE

[:]CALibration:SECure:STATe

[:]CALibration:VOLTage[:DATA]

[:]CALibration:VOLTage:LEVel

H

[:]HOTKey

M

[:]MEASure[:SCALar]:CURRent[:DC]?

[:]MEASure[:SCALar]:POWER[:DC]?

[:]MEASure[:SCALar][:VOLTage][:DC]?

O

[:]OUTPut[:STATe]

S

[:]SOURce:]CURRent:PROTection:CLEar [:SOURce:]CURRent:PROTection:STATe

[:]SOURce:]CURRent:PROTection:TRIPped?

[:]SOURce:]CURRent:PROTection[:LEVel]

[:]SOURce:]CURRent[:LEVel][:IMMEdiate]:STEP[:INCRement]

[:]SOURce:]CURRent[:LEVel][:IMMEdiate][:AMPLitude] [:SOURce:]VOLTage:PROTection:CLEar

[:]SOURce:]VOLTage:PROTection:STATe

[:]SOURce:]VOLTage:PROTection:TRIPped?

[:]SOURce:]VOLTage:PROTection[:LEVel]

[:]SOURce:]VOLTage:RANGe

[:]SOURce:]VOLTage[:LEVel][:IMMEdiate]:STEP[:INCRement]

[:]SOURce:]VOLTage[:LEVel][:IMMEdiate][:AMPLitude]

[:]STATus:OPERation:CONDition?

[.]STATus:OPERation:ENABle
[.]STATus:OPERation[:EVENT]?
[.]STATus:PRESet
[.]STATus:QUEStionable:CONDition?
[.]STATus:QUEStionable:ENABle
[.]STATus:QUEStionable[:EVENT]?

[.]SYSTem:AUTO:CYCLe
[.]SYSTem:AUTO:DELay
[.]SYSTem:AUTO:STARt
[.]SYSTem:AUTO[:STATe]
[.]SYSTem:AUTO:STOP
[.]SYSTem:BEEPer:STATe
[.]SYSTem:BEEPer[:IMMEDIATE]
[.]SYSTem:COMMunicate:SERial[:RECeive]:BAUD
[.]SYSTem:ERRor:COUNt?
[.]SYSTem:ERRor[:NEXT]?
[.]SYSTem:LOCal
[.]SYSTem:MEMory?
[.]SYSTem:REMote
[.]SYSTem:RWLock
[.]SYSTem:VERSion?

T
[.]TRIGger:FUNCTion
[.]TRIGger[:IMMEDIATE]
[.]TRIGger:SOURce