PM2042 User Manual

Version: 1.0

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1、 Serial port configuration & Usage precautions

1. Serial port configuration

Baud Rate：115200

Stop Bits：1.0

Parity Bit：None

Date Bit：8

2. Usage precautions

Because the automatic gear needs to automatically match the measuring range, it is faster to switch the measuring range and stabilize it than to manually switch it. Therefore, it is recommended to use the manual gear in the mass production environment to improve the test stability and efficiency

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2、 Voltage command

1. Channel control

Channel	Order	Send	FeedBack
CH0	Open channel	>SET_CHARGER_ON	/
	Close channel	>SET_CHARGER_OFF	/
CH1	Open channel	>SET_BATTERY_ON	/
	Close channel	>SET_BATTERY_OFF	/

2. Channel state Settings & Queries

2.1. Set output voltage

Output range of the channel is 0-12V. When the setting exceeds 12V, the output will be set to 0V, and the voltage to be set will be spliced behind the command. The unit is V. No extra unit is required for sending, and up to 3 decimal places can be achieved. If more than 3 decimal places, the fourth decimal place will be rounded off

For example, if the output voltage of CH0 is set to 2.3456V, the actual voltage is 2.346V

*Send >SET CHARGER VOL=2, set CH0 2V output

* Maximum output 12V;

Channel	Order	Send	FeedBack
CH0	Set output voltage	>SET_CHARGER_VOL=X	/
CH1		>SET_BATTERY_VOL=X	/

2.2. Read the channel voltage measurement

*Send >GET_CHARGER_VOL Feedback>CHARGER VOL:3.894870.CH0 current voltage: 3.894870V

Channel	Order	Send	FeedBack
CH0	Read voltage	>GET_CHARGER_VOL	>CHARGER VOL:X
CH1		>GET_BATTERY_VOL	>BATTERY VOL:X

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2.3. Read channel status and alarm

*Send >GET_CHARGER_STATUS Feedback >CHARGER STATUS:ABCD

Determine the state according to the return value ABCD

The status of ABCD is 0 or 1. The following table describes the status of ABCD

ABCD	meaning
A	1: Current output state of the channel is ON 0: Current output state of the channel is off (including active shutdown and shutdown caused by protection)
B	Overcurrent protection indicator Overcurrent protection is triggered when the current reaches the set current limit. By default, the overcurrent will cut off the output of the channel and continue to indicate until the channel is closed and reopened You can change the over-stream protection behavior by changing the BatOvrCur_BehavKeep setting to automatically recover when the over-stream load is removed
C	Overvoltage protection indication When the actual port voltage is 2.5V higher than the preset channel voltage, the overvoltage protection is triggered.
D	Over temperature protection indicator Trigger overtemperature protection when the board temperature is higher than 125 degrees Celsius Overtemperature protection will cut off channel output and continue to indicate until the channel is closed and reopened

Channel	Order	Send	FeedBack
CH0	Read channel status	>GET_CHARGER_STATUS	>CHARGER STATUS:ABCD
CH1		>GET_BATTERY_ STATUS	>BATTERY STATUS:ABCD

2.4. Set the current limit

Setting range of current limit is 0-4A, unit is A

For example, set the current limit to 100mA:

*Send >SET_CHARGER_LIM=0.1 Set CH0 output current limiting to 0.1A

If you need to keep the power on when triggering an overcurrent, send the following command

*Send >SET_CHARGER_ENABLE=0 Set CH0 to trigger overcurrent and not power off

*0 means not to turn off (default), 1 means to disconnect the power automatically when over-current is triggered

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Channel	Order	Send	FeedBack
CH0	Set the channel traffic limit	>SET_CHARGER_LIM=X	/
	Set trigger overcurrent and not power off	>SET_CHARGER_ENABLE=X	/
CH1	Set the channel traffic limit	>SET_BATTERY_LIM=X	/
	Set trigger overcurrent and not power off	>SET_BATTERY_ ENABLE=X	/

2.5. Read channel power value

PM2042 can calculate the current power by collecting voltage and current in real time. It only needs to send instructions to obtain the current real-time power value (unit: W)

The power displayed on the LCD is the value read back

*Send >GET_CHARGER_POWER Feedback >CHARGER POWER:0.110032

The current real-time power is 0.110032W

Channel	Order	Send	FeedBack
CH0	Read power value	>GET_CHARGER_POWER	>CHARGER POWER:X
CH1		>GET_BATTERY_ POWER	>BATTERY POWER:X

2.6. Set the channel DVM status

DVM is a voltmeter integrated within PM2042, which is used to read back the current output voltage. It can also be opened to measure other measured objects, and send the following instructions to switch:

*Send >SET_CHARGER_DVM=1

*0 represents voltmeter inside (default) and 1 represents voltmeter outside

Channel	Order	Send	FeedBack
CH0	Set the channel DVM status	>SET_CHARGER_DVM=X	/
CH1		>SET_BATTERY_DVM=X	/

3、 Current instruction

1. Automatic gear change

Channel	Order	Send	FeedBack
CH0	Set automatic channel change	>SET_CHARGER_CURAUTO	/
CH1		>SET_BATTERY_ CURAUTO	/

2. Manual gear setting

In PM2042, it is not necessary to switch the gears to the manual gears before selecting the gears, you can directly set the gears

Channel	命令	Send	FeedBack
CH0	Set the gear of channel 20uA	>SET_CHARGER_CUR20uA	/
	Set the gear of channel 200uA	>SET_CHARGER_ CUR200uA	/
	Set the gear of channel 2mA	>SET_CHARGER_ CUR2mA	/
	Set the gear of channel 20mA	>SET_CHARGER_ CUR20mA	/
	Set the gear of channel 200mA	>SET_CHARGER_ CUR200mA	/
	Set the gear of channel 2A	>SET_CHARGER_ CUR2A	/
	Set the gear of channel 10A	>SET_CHARGER_ CUR10A	/
CH1	Set the gear of channel 20uA	>SET_BATTERY_CUR20uA	/
	Set the gear of channel 200uA	>SET_BATTERY_ CUR200uA	/
	Set the gear of channel 2mA	>SET_BATTERY_ CUR2mA	/
	Set the gear of channel 20mA	>SET_BATTERY_ CUR20mA	/
	Set the gear of channel 200mA	>SET_BATTERY_ CUR200mA	/
	Set the gear of channel 2A	>SET_BATTERY_ CUR2A	/
	Set the gear of channel 10A	>SET_BATTERY_ CUR10A	/

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3. Read channel current

3.1. Read channel current

The returned string has six decimal places, in units that vary with the tap setting

*Send >GET_CHARGER_CUR Feedback >CHARGER CUR: 0.026030uA

CH0 current：0.026030uA

Channel	Order	Send	FeedBack
CH0	Read channel current	>GET_CHARGER_CUR	>CHARGER CUR:X
CH1		>GET_BATTERY_CUR	>BATTERY CUR:X

3.2. Read the maximum and minimum channel current values

From the start of PM2042, the maximum and minimum current of the channel will be recorded, which can be read back through the following commands, and also displayed on the LCD. The returned string has six decimal places, and the unit is mA

*Send >GET_CHARGER_MAXCUR Feedback >CHARGER MAXCUR: 33.90840

CH0 current：33.90840mA

Channel	Order	Send	FeedBack
CH0	Read channel current maximum	>GET_CHARGER_MAXCUR	>CHARGER MAXCUR:X
	Read channel current minimum	>GET_CHARGER_MINCUR	>CHARGER MINCUR:X
CH1	Read channel current maximum	>GET_BATTERY_MAXCUR	>BATTERY MAXCUR:X
	Read channel current minimum	>GET_BATTERY_MINCUR	>BATTERY MINCUR:X

3.3. 设Set channel DIM status

DIM is an ammeter integrated within PM2042, which is used to read back the current output current. At the same time, DIM can also be opened to measure other measured objects and send the following instructions to switch:

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*Send >SET_CHARGER_DIM=1

*0 represents ammeter inside (default) and 1 represents ammeter outside

Channel	Order	Send	FeedBack
CH0	Set channel DIM status	>SET_CHARGER_DIM=X	/
CH1		>SET_BATTERY_DIM=X	/

4、 Other instructions

1. Update firmware

Update the firmware using the serial port, do as follows:

1、 Open the serial port tool, set the serial port, and select file (new firmware).

2、 Send >Updata FW

3、 Wait for the serial port to return to wait updata...

4、 Send file

5、 Wait for sending and return The system begin Update complete

*Power on again after updating

Channel	Order	Send	FeedBack
ALL	Update firmware	>Updata FW	/

2. GPIB

2.1. Set GPIB address

PM2042 supports the use of GPIB for control. Set the GPIB address as follows

*Send >SET_GPIB_ADDRESS=1 SET GPIB address to 1
*The GPIB address can be an integer ranging from 1 to 30

Channel	Order	Send	FeedBack
ALL	Set GPIB address	>SET_GPIB_ADDRESS=X	/

2.2. Read device version number(GPIB standard instruction)

*Send *IDN?\n Feedback MegaSig PM2042,V1.2 Current version 1.2

Channel	Order	Send	FeedBack
ALL	Read version	*IDN?\n	MegaSig PM2042,X

3. Screen control

3.1. Set the lock screen

PM2042 LCD screen with anti-mistouch function, in the automated test can be programmed to lock the screen of PM2042, so as to prevent the mistouch of the screen during the test, setting instructions are as follows:

Channel	Order	Send	FeedBack
ALL	Set lock screen	>SET_LOCK_SCREEN	/

3.2. Unlock screen

The unlock screen command is as follows::

Channel	Order	Send	FeedBack
ALL	Unlock screen	>SET_UNLOCK_SCREEN	/

4. Set data continuous output

The original communication mode is passive feedback data. If high-speed active data return is required, the following commands can be used for switching. After the active data return is turned on, the serial port will simultaneously return four pieces of data corresponding to CH0 current, voltage, CH1 current and voltage

*Send >SET_COMConPut=1, 1 represents continuous output, 0 represents stop (default)

>CHARGER CUR:-0.024244uA

>CHARGER VOL:3.894746V

>BATTERY CUR:23.721001uA

>BATTERY VOL:0.000000V

Channel	Order	Send	FeedBack
ALL	Set data continuous output	>SET_COMConPut=X	/

5. Set device sampling speed

PM2042 can set the device sampling speed. The slower the sampling speed is, the smaller the jitter will be. The speed range is 1-5

Channel	Order	Send	FeedBack
ALL	Set device sampling speed	>SET_SAMPRATE=X	/

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