APM TECHNOLOGIES

PROFESSIONAL INNOVATIVE BRANDING SERVICE

www.apmtech.cn

SCPI Communication Protocol for SP-300 Series Single-phase Programmable AC Power Supply

Contents

SCPI Communication Protocol

1 SCPI Command Descriptions

SCPI is a programmable language standard designed especially for programmable instruments. It defines how to communicate with the instruments from an external computer. The APM programmable AC power source uses SCPI programming language with two categories of commands: basic commands (IEEE-488.2 common commands), and APM programmable AC source commands. **Press the [Enter] key before sending each command. We use '-' to stand for a space in the commands**.

IEEE-488.2 Common Commands

These commands include common functions of IEEE-488.2. Common commands starting with *, regardless of hierarchy can be used.

***IDN?**
This command will request a download of information about the AC power source such as manufacturer, model number, series number and software version number.

2 Measurement Commands

Press the Enter (return) key before sending each command.

MEAS:VOLT?
This command queries the measurement of the total output voltage in volts RMS.

MEAS:VDC?
This command queries the measurement of the DC component of the output in volts.

MEAS:VAC?
This command queries the measurement of AC component of the output in volts.

MEAS:I?
This command queries the measurement of the total output current in amperes RMS.

MEAS:IDC?
This command queries the measurement of DC output current in amperes.

MEAS:IAC?
This command queries the measurement of AC output current in amperes.

MEAS:FREQ?
This command queries the measurement of the output frequency in Hertz (Hz).

MEAS:VPK?
This command queries the measurement of the peak output voltage in volts.

MEAS:IPK?
This command queries the measurement of peak current in amperes.

MEAS:CF?
This command queries the Crest Factor (CF).

MEAS:IS?
This command queries the measurement of output peak surge current (Is) in amperes.

MEAS:POWER?
This command queries the measurement of the output power in Watts (W).

MEAS:VAR?
This command queries the reactive power in VAR.

MEAS:VA?
This command queries the measurement of the apparent output power in VA.

MEAS:PF?
This command queries the output power factor (PF).

MEAS:ALL?
This command queries all the parameters in measurement fields.
The 16th parameter is the state of the output and 17th is the alarm code.

ASWRS?
This command queries alarm code.

ASWRC_0
This command clears alarm signals.

Alarm Code	Information	Instruction
0x0100	INNER LVP	Inner Under Voltage Protection
0x0080	INNER OVP	Inner Over Voltage Protection
0x0040	RCP	Reverse Current Protection
0x0020	SHT	Short Circuit Protection
0x0010	FAN	Fan Fault
0x0008	OTP	Over Temperature Protection
0x0004	OPP	Over Power Protection
0x0002	OCP	Over Current Protection
0x0001	OVP	Over Voltage Protection
0x0280	Frequency Over 1.2kHz	Input frequency BNC input > 1.2kHz
0x0210	Over range (mA)	Over Range mA current range
0x0208	Over range (low)	Over Range low current range
0x0204	Primary OCP	Primary Over Current Protection
0x0202	Primary OTP	Primary Over Temperature Protection
0x0201	Primary UVP	Primary Under Voltage Protection
0x0401	Mode Not Match	Modes for Master/Slave don't match
0x0402	Model Not Match	Model numbers are not the same
0x0404	No Phase B	Missing Phase Slave unit B
0x0408	No Phase C	Missing Phase Slave unit C
0x0410	Master Conflict	More than one Mater unit in system
0x0420	CAN No Slave	No salver unit found
0x0440	CAN No Master	No Master unit found
0x0480	Slave Conflict	More than one Slave with same number
0x0500	Slave offline	Slave Unit off line

3 Setting / Query Commands

OUTPUT:VAC:_<NR2>

This command sets AC output voltage in volts. The setting range is 0.0~300.0V.

Return signal is OK or FALSE.

OUTPUT:VAC?

This command queries the AC output voltage in volts.

OUTPUT:VDC:_<NR2>

This command sets DC output voltage in volts. The setting range is -424.2~424.2.
Return signal is OK or FALSE.

OUTPUT:VDC?

This command queries the DC output voltage in volts.

OUTPUT:FREQ:_<NR2>

This command sets output frequency in Hertz (Hz).
The setting range is 15.00~1200.00 (Professional Version) or
15.00~1000.00 (Advanced Version).
Return signal is OK or FALSE.

OUTPUT:FREQ?

This command queries the frequency in Hertz (Hz).

OUTPUT:OUT:<STATE>

This command enables the output to be (ON) or disables the output (OFF), returns OK.

OUTPUT:OUT?

This command queries the output state, returns ON or OFF.

OUTPUT:WAVEFORM:SELECT:_<NR2>

This command sets output waveform generator.
<NR2> A or B. Returns signal OK or FALSE.

OUTPUT:WAVEFORM:SELECT?

This command queries the waveform generator setting, A or B.

OUTPUT:WAVEFORMA:_<NR2>,<NR3>

This command sets the parameters of waveform A. The return signal is OK or FALSE.

<NR2>	0 (SINE)		
	1 (SQUA)		
	2 (CSINE)	**<NR3>**	0~100.0
	3 (FIXED)		0~29
	4 (USER)		0~5

OUTPUT:WAVEFORMA?

This command queries the parameters of waveform A.

0	SINE
1	SQUA
2,60	CSINE, AMP=60%
3,4	FIXED, NO. 4
4,3	USER, NO. 3

OUTPUT:WAVEFORMB:_<NR2>,<NR3>

This command sets the parameters of waveform B. The return signal is OK or FALSE.

<NR2>	0 (SINE)		
	1 (SQUARE)		
	2 (CSINE)	**<NR3>**	0.0~100.0
	3 (FIXED)		0~29
	4 (USER)		0~5

OUTPUT:WAVEFORMB?

This command queries the parameters of waveform B.

0	SINE
1	SQUARE
2,60	CSINE, AMP=60%
3,4	FIXED, NO. 4
4,3	USER, NO. 3

OUTPUT:ONDEGREE:_<NR2>

This command sets the start angle, the setting range is 0~359.9 degrees.
The return signal is OK or FALSE.

OUTPUT:ONDEGREE?

This command queries the start angle setting in degrees.

OUTPUT:OFFDEGREE:_<NR2>

This command sets the end angle, the setting range is 0~359.9 degrees, 360 degrees means DISABLE. The return signal is OK or FALSE.

OUTPUT:OFFDEGREE?

This command queries the end angle setting in degrees.

OUTPUT:SLEW:VOLT:AC:_<NR2>

This command sets the slew rate of the AC output voltage.
The setting range is 0.001V/ms~1200.000V/ms or 0 (Disable). Return signal is OK or FALSE.

OUTPUT:SLEW:VOLT:AC?

This command queries the slew rate of the AC output in V/ms.

OUTPUT:SLEW:VOLT:DC:_<NR2>

This command sets the slew rate of the DC output voltage in V/ms.
The setting range is 0.001~1000.000 or 0 (Disable). Return signal is OK or FALSE.

OUTPUT:SLEW:VOLT:DC?

This command queries the slew rate of the DC output in V/ms.

OUTPUT:SLEW:FREQ:_<NR2>

This command sets the slew rate of the frequency of the output waveform in Hz/ms.
The setting range is 0.001 Hz/ms~1600.000 Hz/ms or 0 (Disable).
The return signal is OK or FALSE.

OUTPUT:SLEW:FREQ?

This command queries the slew rate of the frequency of the output in Hz/ms.

OUTPUT:IMPED:FLAG:_<NR2>

This command enables (ON) or disables (OFF) the output impedance function, the return signal is OK.

OUTPUT:IMPED:FLAG?

This command queries the state of output impedance, the return signal is ON or OFF.

OUTPUT:IMPED:RES:_<NR2>

This command sets output resistance 'Zo_R'. The setting range is 0.01 ohm~1.00 ohm.
The return signal is OK or FALSE.

OUTPUT:IMPED:RES?

This command queries the 'Zo_R' setting.

OUTPUT:IMPED:INDU:_<NR2>

This command sets 'Zo_L'. The setting range is 0.01 mH~1.00 mH.
The return signal is OK or FALSE.

OUTPUT:IMPED:INDU?

This command queries the Zo_L setting in mH.

OUTPUT:RANGE:_<NR2>

This command sets the output range, 0(150V), 1(300V), 2(AUTO).
The return signal is OK or FALSE.

OUTPUT:RANGE?

This command queries the output range setting, 0(150V), 1(300V), 2(AUTO).

OUTPUT:COUPLE:_<NR2>

This command sets output coupling setting, 0(AC), 1(DC), 2(AC+DC).
The return signal is OK or FALSE.

OUTPUT:COUPLE?

This command queries the output coupling setting. Return 0(AC), 1(DC), 2(AC+DC).

OUTPUT:IRANGE:_<NR2>

This command sets the range of current measurement.

0 (High Range)
1 (Middle Range)
2 (Low Range)
3 (mA Range)
4 (Auto Range)

OUTPUT:IRANGE?

This command queries the range of current measurement.

0 (High Range)
1 (Middle Range)
2 (Low Range)
3 (mA Range)
4 (Auto Range)

OUTPUT:ISSTART:_<NR2>

This command sets the delay time of testing for surge current Is.
The setting range is 0.0~999.9ms. Return signal is OK or FALSE.

OUTPUT:ISSTART?

This command queries the delay time of testing for surge current Is in ms.

OUTPUT:ISINTERVAL:_<NR2>

This command sets the duration of testing for surge current Is.
The setting range is 0.0~999.9ms. Return signal is OK or FALSE.

OUTPUT:ISINTERVAL?

This command queries the setting of the duration of testing for Is in ms.

OUTPUT:RELAY:_<NR2>

This command sets the ON(1)/OFF(0) setting of the output relay.
Return signal is OK or FALSE.

OUTPUT:RELAY?

This command queries the setting of the output relay.
Return signal is 0 or 1.

4 Limit Commands

LIMIT:VAC:_<NR2>

This command sets the limit of AC output voltage. The setting range is 0~300.0 V.
Return signal is OK or FALSE.

LIMIT:VAC?

This command queries the limit setting of the AC output voltage.

LIMIT:VDC+:_<NR2>

This command sets the upper limit of the DC component of the output.
The setting range is 0~424.2V. Return signal is OK or FALSE.

LIMIT:VDC+?

This command queries the upper limit of the DC component of the output.

LIMIT:VDC-:_<NR2>

This command sets the lower limit of the DC component of the output.
The setting range is 0~-424.2V. The return signal is OK or FALSE.

LIMIT:VDC-?

This command queries the lower limit of the DC component of the output.

LIMIT:FREQ:_<NR2>

This command sets the upper limit of output frequency in Hz.
The setting range is 15.00~1200.00 (Professional Version) or
15.00~1000.00 (Advanced Version).
Return signal is OK or FALSE.

LIMIT:FREQ?

This command queries the upper limit of output frequency in Hz.

LIMIT:OPP:_<NR2>

This command sets the limit of output power protection (OPP) in Watts.
The setting range is 30 ~ 1.02*Rated Power.
The return signal is OK or FALSE.

LIMIT:OPP?

This command queries the limit of OPP in Watts.

LIMIT:OCPLIMIT:_<NR2>

This command sets the level of over current protection (OCP).
The setting range is 0.2 ~ 1.02*Rated Current.
The return signal is OK or FALSE.

LIMIT:OCPLIMIT?

This command queries the level of the over current protection OCP in amperes.

LIMIT:OCPDELAY:_<NR2>

This command sets the delay time of OCP. The setting range is 0.0~5.0s.
The return signal is OK or FALSE.

LIMIT:OCPDELAY?

This command queries the delay time of OCP in second.

CCMODE:_<NR2>

This command enables (1) or disables (0) constant current CC mode.
The return signal is OK or FALSE.

CCMODE?

This command queries the state of CC mode. Return 1 or 0.

5 List Commands

LIST:BASE:_<NR2>

This command sets the base of current step. 0 (Cycle), 1 (Time).
The return signal is OK or FALSE.

LIST:COUNT:_<NR2>

This command sets the repeat times of the current step.
The setting range is 0~9999, 0 means infinite loop. The return signal is OK or FALSE.

LIST:CYCLE?

This command queries the repeat time of the current step at the moment.

LIST:DEGREE:_<NR2>

This command sets the start angle of the current step in degrees.
The setting range is 0.0~359.9 degrees. The return signal is OK or FALSE.

LIST:FREQEND:_<NR2>

This command sets the end frequency of the current step in Hz.
The setting range is 15.00~1200.00 (Professional Version) or
15.00~1000.00 (Advanced Version). The return signal is OK or FALSE.

LIST:FREQSTART:_<NR2>

This command sets the start frequency of the current step in Hz.
The setting range is 15.00~1200.00 (Professional Version) or
15.00~1000.00 (Advanced Version). The return signal is OK or FALSE.

LIST:LOAD

This command loads the file settings to the unit. The return signal is OK.

LIST:SAVE

This command saves the file settings to the unit. The return signal is OK.

LIST:MODE:_<NR2>

This command sets the running mode of the list file, 0 (Cont), 1 (Step).
The return signal is OK or FALSE.

LIST:RUN

This command runs the list file. The return signal is OK or FALSE.

LIST:STATUS?
This command queries the state of the list file, 0(Running), 1(Finished).

LIST:STEP?
This command queries the number of current step. Return 0~49.

LIST:STEPID:_<NR2>
This command sets the number of the current step. The setting range is 1~9.
Return signal is OK or FALSE.

LIST:STEPMODE:_<NR2>
This command sets the running mode of the current step, 0 (Cont), 1 (Step).
The return signal is OK or FALSE.

LIST:STEPNUM:_<NR2>
This command sets the total steps of this list file, the setting range is 1~9.
The return signal is OK or FALSE.

LIST:STOP
This command stops the running of the list file. The return signal is OK.

LIST:TIME:_<NR2>
This command sets the Time of the current step. The setting range is 0.0~9999999.9.
The return signal is OK or FALSE.

LIST:VACEND:_<NR2>
This command sets the end AC voltage of the current step in volts.
The setting range is 0.0~300.0V. The return signal is OK or FALSE.

LIST:VACSTART:_<NR2>
This command sets the start AC voltage of the current step in volts.
The setting range is 0.0~300.0V. The return signal is OK or FALSE.

LIST:VDCEND:_<NR2>
This command sets the end DC voltage of the current step in volts.
The setting range is -424.2~424.2V. The return signal is OK or FALSE.

LIST:VDCSTART:_<NR2>

This command sets the start DC voltage of the current step in volts.
The setting range is -424.2~424.2V. The return signal is OK or FALSE.

LIST:WAVEFORM:_<NR2>

This command sets the waveform generator, A or B. The return signal is OK or FALSE.

SEQ:CYCLE:_<NR2>

This command sets the repeat time of the sequence. The setting range is 1~9999.
The return signal is OK or FALSE.

SEQ:CYCLE?

This command queries the repeat time of the current list in the sequence at the moment.
Return 1~9999.

SEQ:LISTCYCLE?

This command queries the repeat time of the current step in the list file at the moment.
Return 0~9999.

SEQ:LISTID:_<NR2>

This command chooses the number of the list file. The setting range is 1~50.
The return signal is OK or FALSE.

SEQ:LOAD

This command loads the sequence settings to the unit. Return OK.

SEQ:RUN

This command runs the sequence file. Return OK.

SEQ:STATUS?

This command queries the state of the sequence file, 0 (Running), 1 (Finished).

SEQ:STEP?

This command queries the number of the current step of the sequence.

SEQ:STEPCOUNT:_<NR2>

This command sets the number of loop cycle of the current step.
The setting range is 0~9999, 0 means infinite loop. The return signal is OK or FALSE.

SEQ:STEPNUM:_<NR2>
This command sets the total steps of the sequence. The setting range is 1~50.
The return signal is OK or FALSE.

6 Pulse Commands

PULSE:CYCLE:_<NR2>
This command sets the repeat times of the pulse.
The setting range is 0~65535, 0 means infinite loop.
The return signal is OK or FALSE.

PULSE:DEGREE:_<NR2>
This command sets the start angle of the pulse in degrees. The setting range is 0.0~359.9.
The return signal is OK or FALSE.

PULSE:DUTYCYCLE:_<NR2>
This command sets the duty cycle of the pulse. The setting range is 0.0~100.0 (%).
The return signal is OK or FALSE.

PULSE:FREQ:_<NR2>
This command sets the frequency of the pulse.
The setting range is 15.00~1200.00Hz (Professional Version) or
15.00~1000.00Hz (Advanced Version).
The return signal is OK or FALSE.

PULSE:PERIOD:_<NR2>
This command sets the cycle time of the pulse in ms. The setting range is 0~9999999.9 ms.
The return signal is OK or FALSE.

PULSE:REMAINTIME?
This command queries the remaining time of the pulse mode in seconds. The setting range is 0.0~6553434465.

PULSE:START:_<NR2>
This command sets when to run pulse waveform in ms. The setting range is 0.0~25.0.
The return signal is OK or FALSE.

PULSE:TRIGER
This command runs the pulse waveform. Return OK.

PULSE:STOP
This command stops the running of pulse waveform. Return OK.

PULSE:VAC:_<NR2>
This command sets AC voltage in volts. The setting range is 0.0~300.0.
The return signal is OK or FALSE.

PULSE:VDC:_<NR2>
This command sets DC voltage in volts. The setting range is -424.2~424.2.
The return signal is OK or FALSE.

PULSE:WAVEFORM:_<NR2>
This command chooses the waveform generator, A or B. The return signal is OK or FALSE.

7 Step Commands

STEP:COUNT:_<NR2>
This command sets the step times.
The setting range is 0~9999, 0 means infinite loop. The return signal is OK or FALSE.

STEP:DEGREE:_<NR2>
This command sets the start angle of the pulse in degrees. The setting range is 0.0~359.9.
The return signal is OK or FALSE.

STEP:DFREQ:_<NR2>
This command sets the step value of frequency in Hz.
The setting range is 15.00~1200.00 (Professional Version) or
15.00~1000.00 (Advanced Version).
The return signal is OK or FALSE.

STEP:DVAC:_<NR2>
This command sets the step value of AC output voltage in volts.
The setting range is -300.0~300.0. The return signal is OK or FALSE.

STEP:DVDC:_<NR2>
This command sets the step value of DC output voltage in volts.
The setting range is -424.2~424.2. The return signal is OK or FALSE.

STEP:DWELL:_<NR2>
This command sets the duration of each step in ms.
The setting range is 0~9999999.9ms. The return signal is OK or FALSE.

STEP:FREQ:_<NR2>
This command sets the start frequency.
The setting range is 15.00~1200.00 (Professional Version) or
15.00~1000.00 (Advanced Version). The return signal is OK or FALSE.

STEP:MAXPOWER:FREQ?
This command queries the frequency of the maximum power point in Hz.

STEP:MAXPOWER:I?
This command queries the current of the maximum power point in amperes.

STEP:MAXPOWER:P?
This command queries the power of the maximum power point in watts.

STEP:MAXPOWER:PF?
This command queries the PF of the maximum power point.

STEP:MAXPOWER:V?
This command queries the voltage of the maximum power point in volts.

STEP:PAUSE
This command pauses or re-run the file. Return OK.

STEP:POWERSWEEP:_<NR2>
This command enables (1) or disables (0) the sweep function.

STEP:REMAINTIME?
This command queries the remaining time of the Step file in seconds.

STEP:TRIGER
This command runs the Step file. Return OK.

STEP:STOP
This command stops the Step file. Return OK.

STEP:VAC:_<NR2>
This command sets the start AC voltage in volts. The setting range is 0~300.0V.

STEP:VDC:_<NR2>
This command sets the start DC voltage in volts. The setting range is -424.2~424.2V.

STEP:WAVEFORM:_<NR2>
This command sets the waveform generator, A or B. The return signal is OK or FALSE.

8 Synthesis Commands

SYNTHESIS:COMPOSE:_<NR2>
This command sets compose as 0 (Value) or 1 (Percent). The return signal is OK or FALSE.

SYNTHESIS:DEGREE:_<NR2>
This command sets the start angle of the pulse in degrees. The setting range is 0.0~359.9.
The return signal is OK or FALSE.

SYNTHESIS:F:_<NR2>
This command sets frequency as 0 (50Hz) or 1 (60Hz). The return signal is OK or FALSE.

SYNTHESIS:PHASE:_<NR2>,<NR3>
This command sets the phase angle for each harmonic.
<NR2>: 2~40
<NR 2>: 0.0~359.9
The return signal is OK or FALSE.

SYNTHESIS:TRIGER
This command runs the Synthesis file.
Return OK.

SYNTHESIS:STOP
This command stops the running of the Synthesis file.
Return OK.

SYNTHESIS:V:_<NR2>,<NR3>

This command sets the amplitude for each harmonic.

<NR2>: 2~40

<NR 3>: see the form below.

N	2~10	11~20	21~30	31~40
Value	0.0~150.0V	0.0~120.0V	0.0~80.0V	0.0~45.0V
Percent	(0.0~100.0%)*Vac	(0.0~50.0%)*Vac	(0.0~30.0%)*Vac	(0.0~15.0%)*Vac

Note: Vac is the fundamental voltage. Percent actually is the value multiplied by fundamental voltage.

The return signal is OK or FALSE.

SYNTHESIS:VAC:_<NR2>

This command sets fundamental AC voltage in volts.

0.0~150.0 (150V Range) or 0.0~300.0 (300V Range).

The return signal is OK or FALSE.

SYNTHESIS:VDC:_<NR2>

This command sets fundamental DC voltage in volts.

-212.1~212.1 (150V Range) or -424.2~424.2 (300V Range).

The return signal is OK or FALSE.

SYNTHESIS:PHASE:ALL:_<NR2>

This command sets the phase angle for all harmonics.

<NR 2>: 0.0~359.9

The return signal is OK or FALSE.

SYNTHESIS:V:ALL_<NR2>

This command sets the amplitude for all harmonics.

<NR 2>: see the form below.

N	2~10	11~20	21~30	31~40
Value	0.0~150.0V	0.0~120.0V	0.0~80.0V	0.0~45.0V
Percent	(0.0~100.0%)*Vac	(0.0~50.0%)*Vac	(0.0~30.0%)*Vac	(0.0~15.0%)*Vac

Note: Vac is the fundamental voltage. Percent actually is the value multiplied by fundamental voltage.

The return signal is OK or FALSE.

9 Inter-harmonics Commands

INTER:NORMAL:VAC:_<NR2>
This command sets the fundamental voltage. The setting range is 0.0~300.0V.
The return signal is OK or FALSE.

INTER:NORMAL:FREQ:_<NR2>
This command sets the fundamental frequency.
The return signal is OK or FALSE.

INTER:START:FREQ:_<NR2>
This command sets the start frequency. The setting range is 1.00~2400Hz.
The return signal is OK or FALSE.

INTER:END:FREQ:_<NR2>
This command sets the end frequency. The setting range is 1.00~2400Hz.
The return signal is OK or FALSE.

INTER:LEVEL:_<NR2>
This command sets the inter-harmonics value the percentage of fundamental voltage.
The setting range is 0.0~100.0. The return signal is OK or FALSE.

INTER:DWELL:TIME:_<NR2>
This command sets the running time of inter-harmonics file.
The setting range is 1~9999.99s. The return signal is OK or FALSE.

INTER:ALL:_<NR2>
This command sets all the 6 parameters in this mode at the same time, separated by commas.
The return signal is OK or FALSE.

10 Harmonics Measurement Commands

HARMONICS:MEASURE:FLAG?
This command queries the state of the measurement.
The return signal is 0 (unfinished) or 1 (finished).

HARMONICS:MEASURE:RUN
This command runs the measurement of the harmonics.
The return signal is OK.

HARMONICS:MEASURE:STOP
This command stops the measurement of the harmonics.
The return signal is OK.

HARMONICS:MEASURE:FREQ:_<NR2>
This command sets the measurement frequency of the harmonics, 0 (50Hz) and 1 (60Hz).
The return signal is OK or FALSE.

HARMONICS:MEASURE:TIMES:_<NR2>
This command sets the measurement times of the harmonics, 0 (Single) and 1 (Continue).
The return signal is OK or FALSE.

HARMONICS:MEASURE:SOURCE:_<NR2>
This command sets the measurement source of the harmonics, 0 (Voltage) and 1 (Current).
The return signal is OK or FALSE.

HARMONICS:MEASURE:ALL?
This command queries all the 41 harmonics parameters, separated by commas.

11 Master-slave Mode Commands

PARA:SLAVEA:VOLT?
This command queries the RMS voltage of slave 1 in volts.

PARA:SLAVEA:CURR?
This command queries the RMS current of slave 1 in amperes.

PARA:SLAVEA:POWER?
This command queries the output power of slave 1 in watts.

PARA:SLAVEA:VDC?

This command queries the DC output voltage of slave 1 in volts.

PARA:SLAVEB:VOLT?

This command queries the RMS voltage of slave 2 in volts.

PARA:SLAVEB:CURR?

This command queries the RMS current of slave 2 in amperes.

PARA:SLAVEB:POWER?

This command queries the output power of slave 2 in watts.

PARA:SLAVEB:VDC?

This command queries the DC output voltage of slave 2 in volts.

PARA:SLAVEC:VOLT?

This command queries the RMS voltage of slave 3 in volts.

PARA:SLAVEC:CURR?

This command queries the RMS current of slave 3 in amperes.

PARA:SLAVEC:POWER?

This command queries the output power of slave 3 in watts.

PARA:SLAVEC:VDC?

This command queries the DC output voltage of slave 3 in volts.

PARA:SUM:VOLT?

This command queries the RMS voltage of this system in volts.

PARA:SUM:CURR?

This command queries the RMS current of this system in amperes.

PARA:SUM:POWER?

This command queries the output power of this system in watts.

PARA:NUM?

This command queries the number of slaves.

The return signal is 0~3.

PARA:MODE?

This command queries the connection modes.

Return values are:

0 (Single Mode)
1 (Parallel Mode)
2 (Series Mode)
3 (Link output for 3-Phase)

PARA:FREQ?

This command queries the frequency in Hertz (Hz).

PARA:SLAVEA:ALL?

This command queries the measurement parameters of slave 1.

PARA:SLAVEB:ALL?

This command queries the measurement parameters of slave 2.

PARA:SLAVEC:ALL?

This command queries the measurement parameters of slave 3.

PARA:MASTER:ALL?

This command queries the measurement parameters of the Master unit.

PARA:PHASEB:VAC:_<NR2>?

This command sets the AC output voltage of phase B in volts. Return OK or FALSE.

PARA:PHASEB:VDC:_<NR2>?

This command sets the DC output voltage of phase B in volts. Return OK or FALSE.

PARA:PHASEC:VAC:_<NR2>?

This command sets the AC output voltage of phase C in volts. Return OK or FALSE.

PARA:PHASEC:VDC:_<NR2>?

This command sets the DC output voltage of phase C in volts. Return OK or FALSE.

PARA:THREEPHASE:MODE:_<NR2>

This command sets the 3-phase output voltage mode.

The setting range is 0~1. Returns OK or FALSE.

0	3-phase voltage follows the master
1	Each phase voltage can be set individually

12 Dimmer Function Commands

SYS:DIM:EDGE:_<NR2>

This command sets the edge of the dimmer.

The setting range is 0~1. Return OK or FALSE.

0	Leading edge
1	Trailing dege

SYS:DIM:DEGREE:_<NR2>

This command sets the phase angle of the blanking period.

The setting range is 0.0~180.0. Return OK or FALSE.

SYS:IEC:TRIGER:_6

This command runs the Dimmer function. Return OK or FALSE.

13 System Commands

SYS:RECALLDEFAULT

This command recalls factory default setting. Returns OK.

SYS:LOC

This command enables the local operation. Returns OK.

SYS:RECALLIP

This command resets the IP address setting of the unit. Returns OK.

14 External Control Mode Commands

EXTERN:CONTROLMETHOD:_<NR2>

This command sets the external control mode. Returns OK or FALSE.

0	Amplifier Mode
1	Level Mode
2	Voltage Set Mode

EXTERN:CONTROLMETHOD?

This command queries the external control mode.

0	Amplifier Mode
1	Level Mode
2	Voltage Set Mode

EXTERN:VOLTAGE:_<NR2>

This command sets the voltage set of external control. The setting range is 3V, 5V or 10V.

EXTERN:VOLTAGE?

This command queries the voltage set of external control. Returns value is 3V, 5V or 10V.

目 录

1 SCPI通信指令描述

SCPI是一种用于可程序设计仪表的标准指令，用于定义一套通讯时的指令规则。本系列交流电源支持SCPI通讯协议，采用两大类指令：基本指令(IEEE-488.2公用指令集)和全天科技可编程交流电源的指令集。**指令以回车键结尾，如下命令中用“-”表示实际发送指令时的一个空格**。

IEEE-488.2公用指令集

该指令包括了在IEEE488.2标准中定义的通用功能，该组指令以星号(*)开始，没有层次结构。

***IDN?**

该指令可以读取电源的相关信息，如生产商，产品型号，产品版本，产品序号，软件版本号。

2 量测回读系统指令

MEAS:VOLT?

该指令可以读取电源输出端均方根电压值，单位 V。

MEAS:VDC?

该指令可以读取电源输出端直流电压值，单位 V。

MEAS:VAC?

该指令可以读取电源输出端交流电压值，单位 V。

MEAS:I?

该指令可以读取电源输出端均方根电流值，单位 V。

MEAS:IDC?

该指令可以读取电源输出端直流电流值，单位 V。

MEAS:IAC?

该指令可以读取电源输出端交流电流值，单位 V。

MEAS:FREQ?

该指令用来读取电源输出端频率，单位 Hz。

MEAS:VPK?

该指令用来读取电源输出端峰值电压，单位 V。

MEAS:IPK?

该指令用来读取电源输出端峰值电流，单位 A。

MEAS:CF?

该指令用来读取电源输出端峰值因数。

MEAS:IS?

该指令用来读取电源输出端浪涌电流值，单位 A。

MEAS:POWER?

该指令用来读取电源输出端有功功率值，单位 W。

MEAS:VAR?

该指令用来读取电源输出端无功功率值，单位 VAR。

MEAS:VA?

该指令用来读取电源输出端视在功率值，单位 VA。

MEAS:PF?

该指令用来读取电源输出端功率因数。

MEAS:ALL?

该指令用来读取电源主界面全部回读参数。该指令仅支持单机模式。

第16个参数是开关机状态，第17个参数是告警代码。

ASWRS?

该指令用来查询电源告警信息。

返回参数:见下表

ASWRC_0

该指令用来清除电源告警。

返回参数	代码名称	描述
0x0100	INNER LVP	内部输出欠压
0x0080	INNER OVP	内部输出过压
0x0040	RCP	反灌电流保护
0x0020	SHT	输出短路故障
0x0010	FAN	风扇故障
0x0008	OTP	过温保护
0x0004	OPP	输出过功率保护
0x0002	OCP	输出过流保护
0x0001	OVP	输出过压保护
0x0280	Frequency Over 1.2kHz	BNC外部输入频率超过1.2kHz
0x0210	Over range (mA)	电流档的毫安档位超量程
0x0208	Over range (low)	电流档的低档位超量程
0x0204	Primary OCP	原边过流保护
0x0202	Primary OTP	原边过温保护
0x0201	Primary UVP	原边欠压保护
0x0401	Mode Not Match	并机模式不匹配
0x0402	Model Not Match	并机型号不匹配
0x0404	No Phase B	三相并机缺少B相
0x0408	No Phase C	三相并机缺少C相
0x0410	Master Conflict	主机冲突(有多台主机)
0x0420	CAN No Slave	并机时CAN找不到从机
0x0440	CAN No Master	并机时CAN找不到主机
0x0480	Slave Conflict	从机冲突(有多台从机编号一样)
0x0500	Slave offline	从机掉线

3 系统输出设定与查询指令

OUTPUT:VAC:_<NR2>

该指令用来设置均方根输出电压值，单位 V。

参数:0.0~300.0

返回参数:OK/FALSE

OUTPUT:VAC?

该指令用来查询均方根输出电压设定值，单位 V。

返回参数:0.0~300.0

OUTPUT:VDC:_<NR2>

该指令用来设置直流输出电压值，单位 V。

参数:-424.2~424.2

返回参数:OK/FALSE

OUTPUT:VDC?

该指令用来查询直流输出电压设定值，单位 V。

返回参数:-424.2~424.2

OUTPUT:FREQ:_<NR2>

该指令用来设置输出频率，单位 Hz。

参数:15.00~1200.00

返回参数:OK/FALSE

OUTPUT:FREQ?

该指令用来查询输出频率设定值，单位 Hz。

返回参数:15.00~1200.00

OUTPUT:OUT:<STATE>

该指令用来控制电源的输出。

参数:ON/OFF

返回参数:OK

OUTPUT:OUT?

该指令用来查询电源的输出状态。

返回参数:ON/OFF

OUTPUT:WAVEFORM:SELECT:_<NR2>

该指令用来设置波形缓存。

参数:A/B

返回参数:OK/FALSE

OUTPUT:WAVEFORM:SELECT?

该指令用来查询波形缓存。

返回参数:OK/FALSE

OUTPUT:WAVEFORMA:_<NR2>,<NR3>

该指令用来设置波形缓存A波形，参数范围如下，返回参数为OK/FALSE。

<NR2>	0 (SINE)		
	1 (SQUA)		
	2 (CSINE)	**<NR3>**	0~100.0
	3 (FIXED)		0~29
	4 (USER)		0~5

OUTPUT:WAVEFORMA?

该指令用来查询波形缓存A的波形。

0	SINE
1	SQUA
2,60	CSINE, AMP=60%
3,3	FIXED, 波形为3
4,2	USER, 波形为2

OUTPUT:WAVEFORMB:_<NR2>,<NR3>

该指令用来设置波形缓存B波形，参数范围如下，返回参数为OK/FALSE。

<NR2>	0 (SINE)		
	1 (SQUA)		
	2 (CSINE)	**<NR3>**	0~100.0
	3 (FIXED)		0~29
	4 (USER)		0~5

OUTPUT:WAVEFORMB?

该指令用来查询波形缓存B的波形。

0	SINE
1	SQUA
2,60	CSINE, AMP=60%
3,4	FIXED, 波形为4
4,3	USER, 波形为3

OUTPUT:ONDEGREE:_<NR2>

该指令用来设置输出起始角度，单位°。

参数:0~359.9

返回参数:OK/FALSE

OUTPUT:ONDEGREE?

该指令用来查询输出起始角度，单位°。

返回参数:0~359.9

OUTPUT:OFFDEGREE:_<NR2>

该指令用来设置输出结束角度，单位°。

参数:0~359.9 / 360 (代表DISABLE)

返回参数:OK/FALSE

OUTPUT:OFFDEGREE?

该指令用来查询输出结束角度，单位°。

返回参数:0~359.9 / 360 (代表DISABLE)

OUTPUT:SLEW:VOLT:AC:_<NR2>

该指令用来设定电源输出交流电压的转换率，单位 V/ms。

参数:0.001~1200.000 / 0(代表DISABLE)

返回参数:OK/FALSE

OUTPUT:SLEW:VOLT:AC?

该指令用来查询交流输出电压的转换率，单位 V/ms。

返回参数:0.001~1200.000 / 0(代表DISABLE)

OUTPUT:SLEW:VOLT:DC:_<NR2>

该指令用来设定直流输出电压的转换率，单位 V/ms。

参数:0.001~1000.000 / 0 (代表DISABLE)

返回参数:OK/FALSE

OUTPUT:SLEW:VOLT:DC?

该指令用来查询直流输出电压的转换率，单位 V/ms。

返回参数:0.001~1000.000 / 0 (代表DISABLE)

OUTPUT:SLEW:FREQ:_<NR2>

该指令用来设定交流输出频率的转换率，单位 Hz/ms。

参数:0.001~1600.000 / 0 (代表DISABLE)

返回参数:OK/FALSE

OUTPUT:SLEW:FREQ?

该指令用来查询交流输出频率的转换率，单位 Hz/ms。

返回参数:0.001~1600.000 / 0 (代表DISABLE)

OUTPUT:IMPED:FLAG:<NR2>

该指令用来启用或关闭可编程阻抗输出功能。

参数:ON/OFF

返回参数:OK

OUTPUT:IMPED:FLAG?

该指令用来查询可编程输出阻抗的状态。

返回参数:ON/OFF

OUTPUT:IMPED:RES:_<NR2>

该指令用来设置可编程输出阻抗的电阻值，单位Ω。

参数:0.00~1.00

返回参数为OK/FALSE

OUTPUT:IMPED:RES?

该指令用来查询可编程输出阻抗的电阻值，单位Ω。

返回参数:0.00~1.00

OUTPUT:IMPED:INDU:_<NR2>

该指令用来设置可编程输出阻抗的电感值，单位mH。

参数:0.00~1.00

返回参数为OK/FALSE

OUTPUT:IMPED:INDU?

该指令用来查询可编程输出阻抗的电感值，单位mH。

返回参数:0.00~1.00

OUTPUT:RANGE:_<NR2>

该指令用来设置输出电压档位。

参数:0(150V), 1(300V), 2(AUTO)

返回参数:OK/FALSE

OUTPUT:RANGE?

该指令用来查询输出电压档位。

返回参数:0(150V), 1(300V), 2(AUTO)

OUTPUT:COUPLE:_<NR2>

该指令用来设置输出信号的耦合方式。

参数:0(AC), 1(DC), 2(AC+DC)

返回参数:OK/FALSE

OUTPUT:COUPLE?

该指令用来查询输出信号的耦合方式。

返回参数:0(AC), 1(DC), 2(AC+DC)

OUTPUT:IRANGE:_<NR2>

该指令用来设定电流档位。

0 (High Range)
1 (Middle Range)
2 (Low Range)
3 (mA Range)
4 (Auto Range)

OUTPUT:IRANGE?

该指令用来查询电流设定档位。

0 (High Range)
1 (Middle Range)
2 (Low Range)
3 (mA Range)
4 (Auto Range)

OUTPUT:ISSTART:_<NR2>

该指令用来设置突波电流测量的起始时间，单位 ms。

参数:0~999.9

返回参数:OK/FALSE

OUTPUT:ISSTART?

该指令用来查询突波电流测试的起始时间，单位 ms。

返回参数:0~999.9

OUTPUT:ISINTERVAL:_<NR2>

该指令用来设置突波电流测量的起始时间，单位 ms。

参数:0~999.9

返回参数:OK/FALSE

OUTPUT:ISINTERVAL?

该指令用来查询突波电流测量的起始时间，单位 ms。

返回参数:0~999.9

OUTPUT:RELAY:_<NR2>

该指令用来设置输出继电器的闭合/断开。

参数:0/1 (0, OFF; 1, ON)

返回参数:OK/FALSE

OUTPUT:RELAY?

该指令用来设置输出继电器的闭合/断开。

返回参数:0/1

4 Limit 指令

LIMIT:VAC:_<NR2>

该指令用来设置交流电压上限，单位 V。

参数:0~300.0

返回参数:OK/FALSE

LIMIT:VAC?

该指令用来查询交流电压上限，单位 V。

返回参数:0~300.0

LIMIT:VDC+:_<NR2>

该指令用来设置直流电压上限，单位 V。

参数:0~424.2

返回参数:OK/FALSE

LIMIT:VDC+?

该指令用来查询直流电压上限，单位 V。

返回参数:0~424.2

LIMIT:VDC-:_<NR2>

该指令用来设置直流电压下限，单位 V。

参数:0~-424.2

返回参数:OK/FALSE

LIMIT:VDC-?

该指令用来查询直流电压下限，单位 V。

返回参数:0~-424.2

LIMIT:FREQ:_<NR2>

该指令用来设置输出频率上限，单位 Hz。

参数:15.00~1200.00 (Professional 版本)

参数:15.00~1000.00 (Advanced 版本)

LIMIT:FREQ?

该指令用来查询输出频率上限，单位 Hz。

返回参数:15.00~1200.00 (Professional 版本)

返回参数:15.00~1000.00 (Advanced 版本)

LIMIT:OPP:_<NR2>

该指令用来设置OPP的保护值，单位 W。

参数:30~1.02*额定功率

返回参数:OK/FALSE

LIMIT:OPP?

该指令用来查询OPP的保护值，单位 W。

返回参数:30~1.02*额定功率

LIMIT:OCPLIMIT:_<NR2>

该指令用来设置电流均方根软件保护点，单位 A。

参数:0.2~1.02*额定电流

返回参数:OK/FALSE

LIMIT:OCPLIMIT?

该指令用来查询电流均方根软件保护点，单位 A。

返回参数:0.2~1.02*额定电流

LIMIT:OCPDELAY:_<NR2>

该指令用来设置过流保护的延迟时间，单位 s。

参数:0~5.0

返回参数:OK/FALSE

LIMIT:OCPDELAY?

该指令用来查询过流保护的延迟时间，单位 s。

返回参数:0~5.0

CCMODE:_<NR2>

该指令用来设置CC模式的开关。

参数:1/0 (1开/0关)

返回参数:OK/FALSE

CCMODE?

该指令用来查询CC模式的开关状态。

返回参数:1/0 (1开/0关)

5 List 模式相关指令

LIST:BASE:_<NR2>

指定List当前步骤的基准。

参数:0 (Cycle), 1 (Time)

返回参数:OK/FALSE

LIST:COUNT:_<NR2>

指定List当前步骤的循环次数。

参数:1~9999

返回参数:OK/FALSE

LIST:CYCLE?

查询List当前步骤的循环次数，数据反映实时状态。

返回参数:0~9999

LIST:DEGREE:_<NR2>

设置List当前步骤的起始角，单位°。

参数:0.0~359.9

返回参数:OK/FALSE

LIST:FREQEND:_<NR2>

设置List当前步骤的结束频率，单位 Hz。

参数:15.00~1200.00 (Professional 版本)/15.00~1000.00 (Advanced 版本)

返回参数:OK/FALSE

LIST:FREQSTART:_<NR2>

设置List当前步骤的起始频率，单位 Hz。

参数:15.00~1200.00 (Professional 版本)/15.00~1000.00 (Advanced 版本)

返回参数:OK/FALSE

LIST:LOAD

加载List文件。运行前发送此指令，将之前的设置加载。

返回参数:OK

LIST:SAVE

保存List文件到电源。

返回参数:OK

LIST:MODE:_<NR2>

设置List文件模式。

参数:0(Cont)，1(Step)

返回参数:OK/FALSE

LIST:RUN

运行List文件，也适用于List暂停之后的继续运行。

返回参数:OK

LIST:STATUS?

查询List文件运行状态。

返回参数:0(未完成)，1(已完成)

LIST:STEP?

查询List文件当前运行步骤。

返回参数:0~49

LIST:STEPID:_<NR2>

指定要设置的List步骤。

参数:1~9

返回参数:OK/FALSE

LIST:STEPMODE:_<NR2>

设置List当前步骤的模式。

参数:0(Cont)，1(Step)

返回参数:OK/FALSE

LIST:STEPNUM:_<NR2>

设置List文件的总步数。

参数:1~9

返回参数:OK/FALSE

LIST:STOP

停止List文件的运行。

返回参数:OK

LIST:TIME:_<NR2>

设置List当前步骤的时间，单位 ms。

参数:0~9999999.9

返回参数:OK/FALSE

LIST:VACEND:_<NR2>

设置List当前步骤的AC结束电压，单位 V。

参数:0~300.0

返回参数:OK/FALSE

LIST:VACSTART:_<NR2>

设置List当前步骤的AC起始电压，单位 V。

参数:0~300.0

返回参数:OK/FALSE

LIST:VDCEND:_<NR2>

设置List当前步骤的DC结束电压，单位 V。

参数:-424.2~424.2

返回参数:OK/FALSE

LIST:VDCSTART:_<NR2>

设置List当前步骤的DC起始电压，单位 V。

参数:-424.2~424.2

返回参数:OK/FALSE

LIST:WAVEFORM:_<NR2>

设置List当前步骤的波形缓存。

参数:A/B

返回参数:OK/FALSE

SEQ:CYCLE:_<NR2>

设置Sequence循环次数。

参数:1~9999

返回参数:OK/FALSE

SEQ:CYCLE?

查询Sequence循环次数，数据反映实时状态。

返回参数:1~9999

SEQ:LISTCYCLE?

查询当前List的循环次数，数据反映实时状态。

返回参数:0~9999

SEQ:LISTID:_<NR2>

指定要设置的List的编号。

参数:1~50

返回参数:OK/FALSE

SEQ:LOAD

加载Sequence文件。运行前发送此指令，将之前的设置加载。

返回参数:OK

SEQ:RUN

运行Sequence，也适用于Sequence暂停后继续运行。

返回参数:OK

SEQ:STATUS?

查询Sequence的运行状态。

返回参数:0(未完成), 1(已完成)

SEQ:STEP?

查询当前步骤编号。

SEQ:STEPCOUNT:_<NR2>

设置当前步骤的循环次数。

参数:1~9999

返回参数:OK/FALSE

SEQ:STEPNUM:_<NR2>

设置Sequence的总步数。

参数:1~50

返回参数:OK/FALSE

6 Pulse模式相关指令

PULSE:CYCLE:_<NR2>

设置Pulse的运行循环次数。

参数:0~65535 (0代表无限循环)

返回参数:OK/FALSE

PULSE:DEGREE:_<NR2>

设置Pulse的起始角，单位°。

参数:0~359.9

返回参数:OK/FALSE

PULSE:DUTYCYCLE:_<NR2>

设置Pulse的占空比。

参数:0.0~100.0 (%)

返回参数:OK/FALSE

PULSE:FREQ:_<NR2>

设置Pulse的频率，单位 Hz。

参数:15.00~1200.00 (Professional 版本)

参数:15.00~1000.00 (Advanced 版本)

返回参数:OK/FALSE

PULSE:PERIOD:_<NR2>

设置Pulse的时间，单位 ms。

参数:0.0~9999999.9

返回参数:OK/FALSE

PULSE:REMAINTIME?

查询Pulse的剩余时间，数据反映实时状态，单位 s。

返回参数:0.0~6553434465

PULSE:START:_<NR2>

查询Pulse的启动时间，单位ms。

参数:0.0~25.0

返回参数:OK/FALSE

PULSE:TRIGER

运行Pulse模式。

返回参数:OK

PULSE:STOP

停止Pulse模式。

返回参数:OK

PULSE:VAC:_<NR2>

运行Pulse模式的交流电压，单位 V。

参数:0.0~300.0

返回参数:OK/FALSE

PULSE:VDC:_<NR2>

运行Pulse模式的直流电压，单位 V。

参数:-424.2~424.2

返回参数:OK/FALSE

PULSE:WAVEFORM:_<NR2>

设置Pulse模式的波形缓存。

参数:A/B

返回参数:OK/FALSE

7 Step模式相关指令

STEP:COUNT:_<NR2>

设置Step的步进次数

参数:0~9999 (0代表无限循环)

返回参数:OK/FALSE

STEP:DEGREE:_<NR2>

设置Step的起始角度，单位°。

参数:0~359.9

返回参数:OK/FALSE

STEP:DFREQ:_<NR2>

设置频率步进值，单位 Hz。

参数:15.00~1200.00 (Professional 版本)

参数:15.00~1000.00 (Advanced 版本)

返回参数:OK/FALSE

STEP:DVAC:_<NR2>

设置交流电压步进值，单位 V。

参数:-300.0~300.0

返回参数:OK/FALSE

STEP:DVDC:_<NR2>

设置直流电压步进值，单位 V。

参数:-424.2~424.2

返回参数:OK/FALSE

STEP:DWELL:_<NR2>

设置每个步骤的持续时间，单位 ms。

参数:0~9999999.9

返回参数:OK/FALSE

STEP:FREQ:_<NR2>

设置起始频率，单位 Hz。

参数:15.00~1200.00 (Professional 版本)

参数:15.00~1000.00 (Advanced 版本)

返回参数:OK/FALSE

STEP:MAXPOWER:FREQ?

查询最大功率点频率，单位 Hz。

返回参数:15.00~1200.00

STEP:MAXPOWER:I?

查询最大功率点电流，单位 A。

STEP:MAXPOWER:P?

查询最大功率点功率，单位 W。

STEP:MAXPOWER:PF?

查询最大功率点 PF。

STEP:MAXPOWER:V?

查询最大功率点电压，单位 V。

STEP:PAUSE

暂停运行，或是暂停后再触发。

返回参数:OK

STEP:POWERSWEEP:_<NR2>

设置最大功率点扫描功能。

参数:0 (Disable)/1 (Enable)

STEP:REMAINTIME?

查询Step模式运行剩余时间，数据反映实时状态，单位 s。

返回参数:0.0~6553434465

STEP:TRIGER

运行Step。

返回参数:OK

STEP:STOP

停止Step。

返回参数:OK

STEP:VAC:_<NR2>

设置起始交流电压，单位 V。

参数:0.0~300.0

STEP:VDC:_<NR2>

设置起始直流电压，单位 V。

参数:-424.2~424.2

STEP:WAVEFORM:_<NR2>

设置波形缓存。

参数:A/B

返回参数:OK/FALSE

8 Synthesis 模式相关指令

SYNTHESIS:COMPOSE:_<NR2>

谐波合成配置。

参数:0 (Value)/1 (Percent)

返回参数:OK/FALSE

SYNTHESIS:DEGREE:_<NR2>

谐波合成波形初始相位角，单位°。

参数:0.0~359.9

返回参数:OK/FALSE

SYNTHESIS:F:_<NR2>

谐波合成的基频。

参数:0 (50Hz)/1 (60Hz)

返回参数:OK/FALSE

SYNTHESIS:PHASE:_<NR2>,<NR3>

谐波合成的各阶[N]相位角，单位°。

<NR2>:2~40

<NR3>:0.0~359.9

返回参数:OK/FALSE

SYNTHESIS:TRIGER

SYNTHESIS模式触发输出。

返回参数:OK

SYNTHESIS:STOP

SYNTHESIS模式停止输出。

返回参数:OK

SYNTHESIS:V:_<NR2>,<NR3>

SYNTHESIS模式各阶[N]谐波振幅。

<NR2>:2~40

<NR3>:见下表

N	2~10	11~20	21~30	31~40
Value	0.0~150.0V	0.0~120.0V	0.0~80.0V	0.0~45.0V
Percent	(0.0~100.0%)*Vac	(0.0~50.0%)*Vac	(0.0~30.0%)*Vac	(0.0~15.0%)*Vac

注:Vac 是基准电压，百分比参数实际上是百分比与基准电压的乘积。

返回参数:OK/FALSE

SYNTHESIS:VAC:_<NR2>

SYNTHESIS模式基频交流电压，单位 V。

参数:0.0~150.0 (150V档位)

参数:0.0~300.0 (300V档位)

返回参数:OK/FALSE

SYNTHESIS:VDC:_<NR2>

SYNTHESIS模式基频直流电压，单位 V。

参数:-212.1~212.1 (150V档位)

参数:-424.2~424.2 (350V档位)

返回参数:OK/FALSE

SYNTHESIS:PHASE:ALL_<NR2>

SYNTHESIS模式所有阶次谐波相位角设置，单位 °。

参数:0.0~359.9

返回参数:OK/FALSE

SYNTHESIS:V:ALL_<NR2>

SYNTHESIS模式所有阶次[N]谐波振幅。

<NR2>:见下表

N	2~10	11~20	21~30	31~40
Value	0.0~150.0V	0.0~120.0V	0.0~80.0V	0.0~45.0V
Percent	(0.0~100.0%)*Vac	(0.0~50.0%)*Vac	(0.0~30.0%)*Vac	(0.0~15.0%)*Vac

注:Vac 是基准电压，百分比参数实际上是百分比与基准电压的乘积。

返回参数:OK/FALSE

9 Inter-harmonics 模式相关指令

INTER:NORMAL:VAC:_<NR2>

设置基准电压。

参数:0~300.0V

返回参数:OK/FALSE

INTER:NORMAL:FREQ:_<NR2>

设置基准频率。

返回参数:OK/FALSE

INTER:START:FREQ:_<NR2>

设置开始频率。

参数:1.00~2400Hz

返回参数:OK/FALSE

INTER:END:FREQ:_<NR2>

设置结束频率。

参数:1.00~2400Hz

返回参数:OK/FALSE

INTER:LEVEL:_<NR2>

设置间谐波幅值(占基准电压的百分比)。

参数:0.0~100.0

返回参数:OK/FALSE

INTER:DWELL:TIME:_<NR2>

设置间谐波文件运行时间。

参数:1~9999.99s

返回参数:OK/FALSE

INTER:ALL:_<NR2>

设置间谐波所有参数，中间用逗号隔开。

返回参数:OK/FALSE

10 Harmonics Measurement 模式相关指令

HARMONICS:MEASURE:FLAG?

请求谐波测量状态。

返回参数:0(未完成) / 1(已完成)

HARMONICS:MEASURE:RUN

执行谐波测量。

返回参数:OK

HARMONICS:MEASURE:STOP

停止谐波测量。

返回参数:OK

HARMONICS:MEASURE:FREQ:_<NR2>

设置谐波基频，0(50Hz)，1(60Hz)。

返回参数:OK/FALSE

HARMONICS:MEASURE:TIMES:_<NR2>

设置谐波测量显示方式。

参数:0(Single)，1(Continue)

返回参数:OK/FALSE

HARMONICS:MEASURE:SOURCE:_<NR2>

设置谐波测量源。

参数:0(Voltage)，1(Current)

返回参数:OK/FALSE

HARMONICS:MEASURE:ALL?

查询谐波测量的全部回读参数。

返回参数:所有41个参数，每个参数用逗号隔开

11 Master-slave 模式相关指令

PARA:SLAVEA:VOLT?

请求从机1的电压有效值。

PARA:SLAVEA:CURR?

请求从机1的电流有效值。

PARA:SLAVEA:POWER?

请求从机1的功率有效值。

PARA:SLAVEA:VDC?

请求从机1的直流输出电压。

PARA:SLAVEB:VOLT?

请求从机2的电压有效值。

PARA:SLAVEB:CURR?

请求从机2的电流有效值。

PARA:SLAVEB:POWER?

请求从机2的输出功率。

PARA:SLAVEB:VDC?

请求从机2的直流输出电压。

PARA:SLAVEC:VOLT?

请求从机3的电压有效值。

PARA:SLAVEC:CURR?

请求从机3的电流有效值。

PARA:SLAVEC:POWER?

请求从机3的输出功率。

PARA:SLAVEC:VDC?

请求从机3的直流输出电压。

PARA:SUM:VOLT?

请求系统的电压有效值。

PARA:SUM:CURR?

请求系统的电流有效值。

PARA:SUM:POWER?

请求系统的输出功率。

PARA:NUM?

请求系统的从机数量。

PARA:MODE?

请求系统的连接模式。

返回参数:0 (单机模式), 1 (并联模式), 2 (串联模式), 3 (三相模式)

PARA:FREQ?

请求系统的输出频率。

PARA:SLVEA:ALL?

请求从机1的回读参数，每个参数用逗号隔开。

PARA:SLVEB:ALL?

请求从机2的回读参数，每个参数用逗号隔开。

PARA:SLVEC:ALL?

请求从机3的回读参数，每个参数用逗号隔开。

PARA:MASTER:ALL?

请求主机的回读参数，每个参数用逗号隔开。

PARA:PHASEB:VAC:_<NR2>

设定B相的AC电压。

返回参数:OK/FALSE

PARA:PHASEB:VDC:_<NR2>

设定B相的DC电压。

返回参数:OK/FALSE

PARA:PHASEC:VAC:_<NR2>

设定C相的AC电压。

返回参数:OK/FALSE

PARA:PHASEC:VDC:_<NR2>

设定C相的DC电压。

返回参数:OK/FALSE

PARA:THREEPHASE:MODE:_<NR2>

设定三相系统输出的电压模式。

参数:0 (三相电压跟随主机)，1 (三相电压可任意设置)

返回参数:OK/FALSE

12 Dimmer 模式相关指令

SYS:DIM:EDGE:_<NR2>

设置Dimmer功能相位角隐没位置。

参数:0 (相位角前沿波形隐没)，1 (相位角后沿波形隐没)

返回参数:OK/FALSE

SYS:DIM:DEGREE:_<NR2>

设置Dimmer功能波形隐没开始角度。

参数:0.0~180.0

返回参数:OK/FALSE

SYS:IEC:TRIGER:_6

运行Dimmer功能指令。

参数:6 TRIAC Dimmer模式

返回参数:OK/FALSE

13 System 相关指令

SYS:RECALLDEFAULT

恢复出厂设置。

返回参数:OK

SYS:LOC

使能面板操作。

返回参数:OK

SYS:RECALLIP

初始化IP地址设置。

返回参数:OK

14 External Control Mode 相关指令

EXTERN:CONTROLMETHOD:_<NR2>

设置外部控制BNC模式。

参数:0 (Amplifer Mode)，1 (Level Mode)，2 (Voltage Set Mode)

返回参数:OK

EXTERN:CONTROLMETHOD?

请求外部控制BNC模式。

返回参数:0 (Amplifer Mode)，1 (Level Mode)，2 (Voltage Set Mode)

EXTERN:VOLTAGE:_<NR2>

设置外部控制BNC模式中Voltage Set模式下的电压值。

参数:3V,5V,10V

EXTERN:VOLTAGE?

请求外部控制BNC模式中Voltage Set模式下的电压值。

返回参数:3V,5V,10V

Address: #7, Link Innovation and Research Center, Kechuang Road,
Nancheng, Dongguan, Guangdong, China
Tel : +86-769 2202 8588 Fax : +86-769 2202 6771
E-mail : overseas@apmtech.cn Web : en.apmtech.cn