B&K PRECISION®

Model: 9833B

PROGRAMMING MANUAL

1 Notations

TEXT – Denotes a softkey.
TEXT – Denotes a front panel button.

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2.1 RS488.2 - GPIB
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2. SCPI Commands

General syntax for SCPI commands or query is a ":" (colon) separated string with either a "?" or an argument following the command string separated by a SPACE character. Commands are terminated by the linefeed character (0x10, "\n"). Arguments are listed using "< ARG | ARG | … >" in the following descriptions. The "ARG" will be from the following:

Symbol	Format
<NR1>	Number with an implicit decimal point at the end. Ex. 100
<NRf>	Number with an explicit decimal point. Ex. 100.5
<Boolean>	Boolean value. Ex. 0 | OFF | 1 | ON
<STR>	Named value. Ex. "phase"

Most commands have a long and short format, the capitalized portion of the name is the short form, and the complete name is the long form. For example, the FETch can be sent as either "fet" or fetch. Short and long forms may be mixed in a command string. An optional portion of a command is shown within "[ ]".

2.5 Example query command – Read the serial number

"XX.XX SYStem

XX.XX.YY SERial?"

This command is in the SYStem section of the SCPI command set. The command is a "query" command and will return a string containing the serial number. As a "query" it must end with a "?" character. The value returned will be terminated by 2 characters "\r" "\n" (0x0D 0x0A).

Command string: "sys:ser?\n" OR "system:serial?\n" OR "sys:serial?\n" etc…

2.6 Example value set command

"XX.XX SYStem

XX.XX.YY SERial?"

2.7 Example value set command

"XX.XX SYStem

XX.XX.YY SERial?"

3 FETCh | MEASure

3.1 Command Summary

The following commands use either FETCH or MEASURE as the root. For example, "FETCH:FREQ?", and "MEASURE:FREQ?" are equivalent. Fetch and Measure function identically, they trigger measurement and return the value measured.

MEASure:VOLTage:AC?
MEASure:VOLTage:DC?
MEASure:CURRent:AC?
MEASure:CURRent:DC?
MEASure:CURRent:CREStfactor?
MEASure:CURRent:INRush?
MEASure:CURRent:PEAK:POSitive?
MEASure:CURRent:PEAK:NEGative?
MEASure:POWer:AC:REAL?
MEASure:POWer:ACAPParent?
MEASure:POWer:AC:REACtive?
MEASure:POWer:AC:PFACtor?

3.2 FETCh:VOLTage:AC? - MEASure:VOLTage:AC?

Description	Query the RMS AC voltage.
Query Syntax	FETCh:VOLTage:AC? - MEASure:VOLTage:AC?
Returned Parameters	<NRf>
	Value: 0-300V or 0-150V depending on the range setting.
Related Commands	[SOURce]:VOLTage:AC

3.3 FETCh:VOLTage:DC? – MEASure:VOLTage:DC?

Description	Query the DC voltage.
Query Syntax	FETCh:VOLTage:DC? – MEASure:VOLTage:DC?
Returned Parameters	<NR1>
	Value: -424 to 424 or -212 to 212 depending on the range setting.
Related Commands	[SOURce]:VOLTage:DC

3.4 FETCh:CURRent:AC? – MEASure:CURRent:AC?

Description	Query the AC current (Amps).
Query Syntax	FETCh:CURRent:AC? – MEASure:CURRent:AC?
Returned Parameters	<NRf>
	Value: Returns a floating point number.
Related Commands	OUTPut:LIMit:CURRent

3.5 FETCh:CURRent:DC? – MEASure:CURRent:DC?

Description	Query the DC current being delivered.
Query Syntax	FETCh:CURRent:DC? – MEASure:CURRent:DC?
Returned Parameters	<NRf>
	Value: A floating point
Related Commands	[SOURce]:VOLTage:DC,
	OUTPut:LIMit:VOLTage:DC:POSitive,
	OUTPut:LIMit:VOLTage:DC:NEGative

3.6 FETCh:CURRent:CREStfactor? – MEASure:CURRent:CREStfactor?

Description	Query the Crest Factor measured by the unit.
Query Syntax	FETCh:CURRent:CREStfactor?
	MEASure:CURRent:CREStfactor?
Returned Parameters	<NRf>

3.7 FETCh:CURRent:INRush? – MEASure:CURRent:INRush?

Description	Query the measured inrush current delivered to the load.
Note	Value valid only when the supply output is on. Disabling output clears the value and returns 0.000000.
Query Syntax	FETCh:CURRent:INRush?
	MEASure:CURRent:INRush?
Returned Parameters	<NRf>
Related Commands	source:current:inrush:start
	source:current:inrush:interval

3.8 FETCh:CURRent:PEAK:POSitive? – MEASure:CURRent:PEAK:POSitive?

Description	Query the positive peak current delivered to the load.
Note	This is the present value at the time the command is issued.
Query Syntax	FETCh:CURRent:PEAK:POSitive?
	MEASure:CURRent:PEAK:POSitive?
Returned Parameters	<NRf>

3.9 FETCh:CURRent:PEAK:NEGative? – MEASure:CURRent:PEAK:NEGative?

Description	Query the negative peak current delivered to the load.
Note	This is the present value at the time the command is issued.
Query Syntax	FETCh:CURRent:PEAK:NEGative?
	MEASure:CURRent:PEAK:NEGative?
Returned Parameters	<NRf>

3.10 FETCh:FREQuency? – MEASure:FREQuency?

Description	Query the frequency at the output.
Query Syntax	FETCh:FREQuency?
	MEASure:FREQuency?
Returned Parameters	<NRf>
Related Commands	[SOURce]:FREQuency

3.11 FETCh:POWer:AC:REAL? – MEASure:POWer:AC:REAL?

Description	Query the real component of the power consumed by the load.
Query Syntax	FETCh:POWer:AC:REAL?
	MEASure:POWer:AC:REAL?
Returned Parameters	<NRf>

3.12 FETCh:POWer:AC:APParent? – MEASure:POWer:AC:APParent?

Description	Query the apparent power consumed by the load.
Query Syntax	FETCh:POWer:AC:APParent?
	MEASure:POWer:AC:APParent?
Returned Parameters	<NRf>

3.13 FETCh:POWer:AC:REACtive? – MEASure:POWer:AC:REACtive?

Description	Query the reactive power consumed by the load.
Query Syntax	FETCh:POWer:AC:REACtive?
	MEASure:POWer:AC:REACtive?
Returned Parameters	<NRf>

3.14 FETCh:POWer:AC:PFACtor? – MEASure:POWer:AC:PFACtor?

Description	Query the power factor of the output.
Query Syntax	FETCh:POWer:AC:PFACtor?
	MEASure:POWer:AC:PFACtor?
Returned Parameters	<NRf>

4 OUTPut

4.1 Command Summary

4.2 OUTPut:[STATe]

Description	Turn the OUTPut on or off, or query the present state.
Command Syntax	OUTPut[:STATe] <Bool>
Parameters	0 | OFF | 1 | ON
Examples	OUTP on
Query Syntax	OUTPut:[STATe]?
Returned Parameters	<STR>
	Returns the string "ON" or "OFF"

4.3 OUTPut:MODe

Description	Set or query the waveform operation to output.
	Use this to switch between normal output mode or to run one of the other programmatic modes.
Command Syntax	OUTPut:MODe <STR>
Parameters	NORMal | STEP | LIST | PULSE
Examples	OUTP:MOD step
Query Syntax	OUTPut:MODe?
Returned Parameters	<STR>
	"NORMal", "STEP", "LIST", "PULSE"

4.4 OUTPut:PROTection:CLEar

Description	Reset the protection state in the event of a protection fault. When a limit is reached, the output will turn off and the alarm will sound. This command clears the alarm.
Command Syntax	OUTPut:PROTection:CLEar
Parameters	None
Examples	output:prot:cle

4.5 OUTPut:LIMit:VOLTage:AC

Description	Set or query the AC voltage limit.
Note	This limit applies to AC and AC+DC modes and limits based on the RMS output voltage.
Command Syntax	OUTPut:LIMit:VOLTage:AC <NR2>
Parameters	Output voltage limit as a floating point number. 310V for example.
Examples	outp:lim:volt:ac 310
Query Syntax	OUTPut:LIMit:VOLTage:AC?
Returned Parameters	<NR2>
	Example: 310.000000

4.6 OUTPut:LIMit:VOLTage:DC:POSitive

Description	Set or query the upper DC voltage limit.
Command Syntax	OUTPut:LIMit:VOLTage:DC:POSitive <NR2>
Parameters	Positive voltage limit
Examples	output:limit:voltage:dc:positive 125
Query Syntax	OUTPut:LIMit:VOLTage:DC:POSitive?
Returned Parameters	<NR2>
	Example: 125.000000

4.7 OUTPut:LIMit:VOLTage:DC:NEGative

Description	Set or query the lower DC voltage limit.

Command Syntax	OUTPut:LIMit:VOLTage:DC:NEGative <NR2>
Parameters	Negative voltage limit
Examples	OUTP:LIM:VOLT:DC:NEG -100
Query Syntax	OUTPut:LIMit:VOLTage:DC:NEGative?
Returned Parameters	<NR2>

4.8 OUTPut:LIMit:CURRent

Description	Set or query the current limit in amps.
Command Syntax	OUTPut:LIMit:CURRent <NR2>
Examples	OUTP:LIM:CURR 12.34
Query Syntax	OUTPut:LIMit:CURRent?
Returned Parameters	<NR2>

4.9 OUTPut:LIMit:CURRent:DELay

Description	Set the delay, in milliseconds, for triggering output protection.
Command Syntax	OUTPut:LIMit:CURRent:DELay <NR2>
Parameters	<NR2>
	0-10000ms
Examples	OUTPut:LIMit:CURRent:DEL 133
Query Syntax	OUTPut:LIMit:CURRent:DELay?
Returned Parameters	<NR1>
Related Commands	OUTPut:LIMit:CURRent

4.10 OUTPut:LIMit:POWer

Description	Set or query the OUTPut power limit in watts.
Command Syntax	OUTPut:LIMit:POWer <NR2>
Parameters	0 to 3300 depending on unit.
Examples	OUTP:LIM:POW 3300
Query Syntax	OUTPut:LIMit:POWer?
Returned Parameters	<NR2>

5 [SOURce]

5.1 Command Summary

[SOURce]:VOLTage:RANGe
[SOURce]:VOLTage:AC
[SOURce]:VOLTage:DC
[SOURce]:CURRent:INRush:STARt
[SOURce]:CURRent:INRush:INTerval
[SOURce]:FREQuency
[SOURce]:SYNChronous
[SOURce]:PHASe
[SOURce]:CONFigure:COUPling
[SOURce]:CONFigure:TIMer[:STATe]
[SOURce]:CONFigure:TIMer:COUNt
[SOURce]:CONFigure:EXTernal
[SOURce]:CONFigure:INHibit
[SOURce]:CONFigure:TRANSient
[SOURce]:STEP:VOLTage:AC
[SOURce]:STEP:VOLTage:DC
[SOURce]:STEP:DVOLtage:AC
[SOURce]:STEP:DVOLtage:DC
[SOURce]:STEP:FREQuency
[SOURce]:STEP:DFREquency
[SOURce]:STEP:TIMe
[SOURce]:STEP:COUNt
[SOURce]:STEP:SYNChronous
[SOURce]:STEP:PHASe
[SOURce]:LIST:NUMber
[SOURce]:LIST:BASE
[SOURce]:LIST:SYNChronous
[SOURce]:LIST:PHASe
[SOURce]:LIST:COUNt
[SOURce]:LIST:STEPno
[SOURce]:LIST:VOLTage:LEVel:AC:STARt
[SOURce]:LIST:VOLTage:LEVel:AC:END
[SOURce]:LIST:VOLTage:LEVel:DC:STARt
[SOURce]:LIST:VOLTage:LEVel:DC:END
[SOURce]:LIST:FREQuency:LEVel:STARt
[SOURce]:LIST:FREQuency:LEVel:END
[SOURce]:LIST:DWEL
[SOURce]:LIST:STEP:COUNt
[SOURce]:LIST:CLEar

5.2 [SOURce]:VOLTage:RANGe

Description	Set the voltage range to HIGH (300V) or LOW (150V).
Command Syntax	[SOURce]:VOLTage:RANGe <STR>
Parameters	<HIGH | LOW>
Examples	sour:volt:rang high
Query Syntax	[SOURce]:VOLTage:RANGe?
Returned Parameters	<STR>
	"HIGH" or "LOW"

5.3 [SOURce]:VOLTage:AC

Description	Set or query the AC voltage OUTPut.
Command Syntax	[SOURce]:VOLTage:AC <NR2>
Parameters	0-150, 0-300
Examples	SOUR:VOLT:AC 110.0
Query Syntax	[SOURce]:VOLTage:AC?
Returned Parameters	<NR2>
Related Commands	OUTPut:LIMit:VOLTage:AC

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5.4 [SOURce]:VOLTage:DC

Description	Set or query the DC OUTPut voltage setting in Volts.
Command Syntax	[SOURce]:VOLTage:DC <NR2>
Parameters	0 to ±212, 0 to ±424
Examples	SOUR:VOLT:DC -100
Query Syntax	SOUR:VOLT:DC?
Returned Parameters	<NR2>
Related Commands	OUTPut:LIMit:VOLTage:DC:NEGative
	OUTPut:LIMit:VOLTage:DC:POSitive

5.5 [SOURce]:CURRent:INRush:STARt

Description	Set or query the start time for measuring the inrush current being supplied. Parameter is the delay in milliseconds.
Command Syntax	[SOURce]:CURRent:INRush:STARt <NR1>
Parameters	0-10000
Examples	SOUR:CURR:INR:STARt 300
Query Syntax	[SOURce]:CURRent:INRush:STARt?
Returned Parameters	<NR1>

5.6 [SOURce]:CURRent:INRush:INTerval

Description	This sets the duration of the inrush current measurement.
Command Syntax	[SOURce]:CURRent:INRush:INTerval <NR1>
Parameters	0-10000
Examples	SOUR:CURR:INR:INT 200
Query Syntax	[SOURce]:CURRent:INRush:INTerval?
Returned Parameters	<NR1>

5.7 [SOURce]:FREQuency

Description	Set or query the AC OUTPut frequency.

Command Syntax	[SOURce]:FREQuency <NR2>
Parameters	43-1200.000000
Examples	Sour:frequency 60
Query Syntax	[SOURce]:FREQuency?
Returned Parameters	<NR2>

5.8 [SOURce]:SYNChronous

Description	Set or query the synchronization [SOURce] for starting waveform OUTPut. Phase mode starts the waveform starts at a specified point in a cycle with the positive going zero cross being 0 degrees.
Command Syntax	[SOURce]:SYNChronous <STR>
Parameters	<IMMediate | PHASe>
Examples	sync phase
Query Syntax	[SOURce]:SYNChronous?
Returned Parameters	<STR>
	"PHASe" or "IMMediate"
Related Commands	[SOURce]:PHASe

5.9 [SOURce]:PHASe

Description	When "[SOURce]:SYNChronous" is set to phase, this command sets or queries the phase angle to use. Value is in degrees.
Command Syntax	[SOURce]:PHASe <NR2>
Parameters	0-359.7
Examples	sour:phase 45.0
Query Syntax	[SOURce]:PHASe?
Returned Parameters	<NR2>
Related Commands	[SOURce]:SYNChronous

5.10 [SOURce]:CONFigure:COUPling

Description	When using the "Digital IO" and the "Level" function, this sets or queries which mode to use. "AC" will vary the

OUTPut AC amplitude according to the "Level" voltage supplied. When in "DC", this varies the DC voltage of the OUTPut via the "Level" voltage supplied. "AC/DC" is not used in "Level" mode.

When not in "Level" mode, this changes the set of values settable by the front panel for user input. AC mode allows setting of the AC amplitude, DC, the DC voltage and AC/DC allows for both.

Command Syntax	[SOURce]:CONFigure:COUPling <STR>
Parameters	<AC | DC | ACDC>
Examples	source:configure:coup AC
Query Syntax	[SOURce]:CONFigure:COUPling?
Returned Parameters	<STR>
	"AC", "DC", "ACDC"

5.11 [SOURce]:CONFigure:TIMer[:STATe]

Description	This enables or disables the OUTPut countdown timer.
Note	When this is active, the display of the timer on the unit's display changes from a count up timer to a countdown timer.
Command Syntax	[SOURce]:CONFigure:TIMer[:STATe] <BOOL>
Parameters	0, "OFF", 1, "ON"
	Parameter may be sent as any of the above forms.
Examples	sour:conf:tim on
Query Syntax	[SOURce]:CONFigure:TIMer[:STATe]?
Returned Parameters	"OFF" or "ON"
Related Commands	[SOURce]:CONFigure:TIMer:COUNt

5.12 [SOURce]:CONFigure:TIMer:COUNt

Description	This sets or queries the value of the countdown timer. The format is in Hours,Minutes,Seconds.
Note	The return value of this command has a bug currently and drops the 1's digit of the seconds field.
Command Syntax	[SOURce]:CONFigure:TIMer:COUNt <NR1,NR1,NR1>

Parameters	The countdown timer time in hours, minutes and seconds.
Examples	sour:conf:tim:count 0,0,30
	This sets the output to turn off 30 seconds after it is turned on.
Query Syntax	[SOURce]:CONFigure:TIMer:COUNt?
Returned Parameters	"hours,mins,seconds"
	example: "00,00,3" for 0 hours, 0 mins and 33 seconds
Related Commands	[SOURce]:CONFigure:TIMer[:STATe]

5.13 [SOURce]:CONFigure:EXTernal

Description	Set or query the use of the external signal inputs. Off will disable external input, and Level or AMP modes use the Digital IO and BNC connectors respectively.
Command Syntax	[SOURce]:CONFigure:EXTernal <NR1/STR>
Parameters	<0	OFF	1	LEVEL	2	AMP>
	0 or Off to disable external control.
	1 or Level to use the level control signal on the Digital IO connector to control the AC or DC level, depending on the output coupling mode.
	2 or AMP to use the Amplifier mode via the BNC connector.
Examples	sour:conf:ext amp
Query Syntax	[SOURce]:CONFigure:EXTernal?
Returned Parameters	<Bool>
	"OFF" or "ON"
Related Commands	[SOURce]:CONFigure:INHibit
	[SOURce]:CONFigure:TRANSient

5.14 [SOURce]:CONFigure:INHibit

Description	Set or query the state of the "inhibit" function. When enabled, the state of the "inhibit" pin of the Digital IO is used. See the user manual for more information as this function is rather complex.

Command Syntax	[SOURce]:CONFigure:INHibit <Bool>
Parameters	<ON | OFF>
Examples	sour:conf:inh off
Query Syntax	[SOURce]:CONFigure:INHibit?
Returned Parameters	<Bool>
	"OFF" or "ON"
Related Commands	[SOURce]:CONFigure:EXTernal

5.15 [SOURce]:CONFigure:TRANSient

Description	Enable or disable the "Trans" pin OUTPut of the Digital IO, or query whether it is enabled.
Command Syntax	[SOURce]:CONFigure:TRANSient <Bool>
Parameters	<ON | OFF>
Examples	[SOURce]:configure:transient on
Query Syntax	[SOURce]:CONFigure:TRANSient?
Returned Parameters	<Bool>
	"ON" or "OFF"
Related Commands	[SOURce]:CONFigure:EXTernal

5.16 [SOURce]:STEP:VOLTage:AC

Description	Set or query the starting AC voltage amplitude in STEP mode.
Command Syntax	[SOURce]:STEP:VOLTage:AC <NR2>
Parameters	0 to 150, 0 to 300
Examples	sour:step:volt:ac 125
Query Syntax	[SOURce]:STEP:VOLTage:AC?
Returned Parameters	<NR2>
Related Commands	[SOURce]:STEP:DVOLtage:AC

5.17 [SOURce]:STEP:VOLTage:DC

Description	Set or query the starting DC voltage value in STEP mode.

Command Syntax	[SOURce]:STEP:VOLTage:DC <NR2>
Parameters	0 to ±212, 0 to ±424
Examples	[SOURce]:step:volt:dc 35
Query Syntax	[SOURce]:STEP:VOLTage:DC?
Returned Parameters	<NR2>
Related Commands	[SOURce]:STEP:DVOLtage:DC

5.18[SOURce]:STEP:DVOLtage:AC

Description	Set or query the change in AC voltage magnitude per individual step in a step sequence.
Command Syntax	[SOURce]:STEP:DVOLtage:AC <NR2>
Parameters	0 to 150, 0 to 300
Examples	step:dvol:ac 20
Query Syntax	[SOURce]:STEP:DVOLtage:AC?
Returned Parameters	<NR2>
Related Commands	[SOURce]:STEP:VOLTage:AC

5.19[SOURce]:STEP:DVOLtage:DC

Description	Set or query the change in DC voltage per individual step in a step sequence.
Command Syntax	[SOURce]:STEP:DVOLtage:DC <NR2>
Parameters	0 to ±212, 0 to ±424
Examples	step:dvol:dc 20
Query Syntax	[SOURce]:STEP:DVOLtage:DC?
Returned Parameters	<NR2>
Related Commands	[SOURce]:STEP:VOLTage:DC

5.20[SOURce]:STEP:FREQuency

Description	Set or query the starting AC voltage frequency for the step sequence.
Command Syntax	[SOURce]:STEP:FREQuency <NR2>

Parameters	43-1200
Examples	sour:step:freq 50
Query Syntax	[SOURce]:STEP:FREQuency?
Returned Parameters	<NR2>
Related Commands	[SOURce]:STEP:DFREQuency

5.21 [SOURce]:STEP:DFREQuency

Description	Set or query the change in AC frequency per individual step in a step sequence.
Command Syntax	[SOURce]:STEP:DFREQuency <NR2>
Parameters	43-1200
Examples	step:drfeq 10
Query Syntax	[SOURce]:STEP:DFREQuency?
Returned Parameters	<NR2>
Related Commands	[SOURce]:STEP:FREQuency

5.22 [SOURce]:STEP:TIMe

Description	Set or query the total time for the step sequence. The individual step duration is a division of the step time and step number (time/number=(time per individual change)).
Command Syntax	[SOURce]:STEP:TIMe <NR2>
Parameters	0-100000
Examples	sour:step:tim 2000
Query Syntax	[SOURce]:STEP:TIMe?
Returned Parameters	<NR1>

5.23 [SOURce]:STEP:COUNt

Description	Set or query the total number or steps to run in a step sequence.
Note	Using many steps can help to simulate a sweep.
Command Syntax	[SOURce]:STEP:COUNt <NR1>

Parameters	1-99
Examples	step:count 45
Query Syntax	[SOURce]:STEP:COUNt?
Returned Parameters	<NR1>
Related Commands	[SOURce]:STEP:TIMe

5.24 [SOURce]:STEP:SYNChronous

Description	Set or query the phase synchronization mode of the individual steps within the step sequence.
Command Syntax	[SOURce]:STEP:SYNChronous <Bool/Str>
Parameters	<0 | IMMediate | 1 | PHASe>
Examples	sour:step:sync phase
Query Syntax	[SOURce]:STEP:SYNChronous?
Returned Parameters	<STR>
	"IMMediate" or "PHASe"
Related Commands	[SOURce]:STEP:PHASe

5.25 [SOURce]:STEP:PHASe

Description	Set or query the phase of the individual steps within the step sequence when using phase synchronization mode.
Note	When a step occurs, the angle of the waveform relative to the positive going zero cross is the start point.
Command Syntax	[SOURce]:STEP:PHASe <NR2>
Parameters	0-359.7
Examples	source:step:phase 60
Query Syntax	[SOURce]:STEP:PHASe?
Returned Parameters	<NR2>
Related Commands	[SOURce]:STEP:SYNChronous

5.26 List mode programming

Programming and reading list programs entails a sequence of steps to first pick the list, then write or read values to the list.

Writing list programs to the machine:

1. Write - [SOURce]:LIST:NUMber 0

2. Write – the list configuration fields on the main List screen.

   a. [SOURce]:LIST:BASE

   b. [SOURce]:LIST:SYNChronous

   c. [SOURce]:LIST:PHASe

   d. [SOURce]:LIST:COUNt

   e. Alternatively, the command [SOURce]:LIST:CONF:WRITE 0,5,0,0,0,0,0 sets all fields at once.

3. To write a step in the list, the command sequence must start with a [SOURce]:LIST:STEPno command, enter the desired parameters, and end with a [SOURce]:LIST:SAVE command. Only then will the data be entered. This is much like the "ADD STEP" button that must be used when entering list steps manually via the front panel.

   i. [SOURce]:LIST:STEPno

   ii. [SOURce]:LIST:VOLTage:LEVel:AC:STARt

   iii. [SOURce]:LIST:VOLTage:LEVel:AC:END

   iv. [SOURce]:LIST:VOLTage:LEVel:DC:STARt

   v. [SOURce]:LIST:VOLTage:LEVel:DC:END

   vi. [SOURce]:LIST:FREQuency:LEVel:STARt

   vii. [SOURce]:LIST:FREQuency:LEVel:END

   viii. [SOURce]:LIST:DWEL

   ix. [SOURce]:LIST:SAVE

   b. Alternatively, a [SOURce]:LIST:WRITE command can be used to set all the fields at once. This procedure will clear all lists and requires all lists to be initialized.

      i. Issue a LIST:CLE 255 to clear all the list entries

      ii. Set the list number, starting with 0, [SOURce]:LIST:NUM 0

      iii. Configure the list [SOURce]:LIST:CONF:WRITE

      iv. Write the individual steps in order LIST:WRITE

      v. Repeat for lists 0-9

Reading list programs from the machine:

1. Write LIST:NUM

2. Query LIST:CONF:STEP?

3. Query LIST:CONF:READ?

4. Write LIST:START:QUERY

5. Query LIST:READ? for each element in the list. Once the list is completely read, further LIST:READ? commands will start at the beginning and repeat the sequence.

5.27[SOURce]:LIST:NUMber

Description	Of the 0-9 lists available, this sets or queries which list is being edited.
Command Syntax	[SOURce]:LIST:NUMber <NR1>
Parameters	0 through 9
Examples	list:number 2
Query Syntax	[SOURce]:LIST:NUMber?
Returned Parameters	<NR1>

5.28LIST:CONF:WRITE

Description	Write the configuration values of a list program. This sets the values shown on the main List screen. The following values are set: "Infinite", "Repeat", "Base", "Sync Source", and "Phase".
Note	SOURce is not used for this command!
	The list number should be set before issuing this command.
Command Syntax	LIST:CONF:WRITE <NR1, NR1, NR1, 0, NR1, NR2, 0>
Parameters	Parameter number:
	1 – Infinite – "0" for off and "1" for on.
	2 – Repeat – 0 through 99 times.
	3 – Base – "0" for time and "1" for cycle
	4 – Not used, set to 0
	5 – Sync Source – 0 for "Immediate" and 1 for "Phase"
	6 – Phase(deg) floating point number.
	7 – Not used, set to 0.

Examples	list:conf:write 0,5,0,0,0,0,0
Related Commands	[SOURce]:LIST:NUMber

5.29 [SOURce]:LIST:BASE

Description	Set or query the units to use for timing each list entry, either time or cycles.
Command Syntax	[SOURce]:LIST:BASE <STR>
Parameters	<TIME | CYCLE>
Examples	list:base cycle
Query Syntax	[SOURce]:LIST:BASE?
Returned Parameters	<STR>
	"TIME" or "CYCle"

5.30 [SOURce]:LIST:SYNChronous

Description	Set or query the synchronization to use for the start point of the waveform
Command Syntax	[SOURce]:LIST:SYNChronous <STR>
Parameters	<IMMediate | PHASe>
Examples	sour:list:sync phase
Query Syntax	[SOURce]:LIST:SYNChronous?
Returned Parameters	<STR>
	"IMMediate" or "PHASe"

5.31 [SOURce]:LIST:PHASe

Description	When the "SYNChronous" mode is set to phase, this setting determines where in the cycle the step within the list is started. For example, 90 degrees will be at the positive maximum of the AC waveform.
Command Syntax	[SOURce]:LIST:PHASe <NR2>
Parameters	0-359.7
Examples	list:phase 90
Query Syntax	[SOURce]:LIST:PHASe?

Returned Parameters   \<NR2\>

5.32 [SOURce]:LIST:COUNt

Description   Set or query the number of times to repeat the current list. This sets the "Infinity" field and the "Repeat" field.

Note   Setting "INFinity" sets the "Infinite" field to "ON". Setting a number greater than zero will set "Infinite" to "OFF" and will load the number into the "Repeat" field. Writing a 0 does not change the "Infinite" field.

Command Syntax   [SOURce]:LIST:COUNt \<NR1\> or "INFinity"

Parameters   0-99 or "INFinity"

Examples   list:count 11 - Repeat the list 11 times only.

list:count 0 – Set the repeat field to 0

list:count inf – Set the "Infinite" field to "ON"

Query Syntax   [SOURce]:LIST:COUNt?

Returned Parameters   \<NR1\>

5.33 LIST:WRITE

Description   This command writes all fields for an individual step in a list program.

Note   SOURce is not used for this command!

Command Syntax   LIST:WRITE \<NR2,NR2,NR1,NR1,NR1,NR1,NR1,NR1,NR1,\>

Parameters
1. Volts(rms) Start – 0 to 300
2. Volts(rms) End – 0 to 300
3. Volts (DC) Start – 0 to ±212 or 0 to ±424
4. Volts (DC) End - 0 to ±212 or 0 to ±424
5. Freq. (Hz) Start – 43 to 1200
6. Freq. (Hz) End – 43 to 1200
7. Time (ms) or Cycle – 0 to 999999
8. Steps – 0 to 200
9. Not Used

Examples   LIST:WRITE 1,111,0,0,43,53,1,2,0

Related Commands   [SOURce]:LIST:VOLTage:LEVel:AC:STARt

[SOURce]:LIST:VOLTage:LEVel:AC:END

[SOURce]:LIST:VOLTage:LEVel:DC:STARt

[SOURce]:LIST:VOLTage:LEVel:DC:END

[SOURce]:LIST:FREQuency:LEVel:STARt

[SOURce]:LIST:FREQuency:LEVel:END

[SOURce]:LIST:STEPno

5.34 LIST:CONF:STEP?

Description   Read the number of steps in the current list.

Note   Issue a [SOURce]:LIST:NUM first, to set the list ID to be read.

Query Syntax   LIST:CONF:STEP?

Returned Parameters   <NR1> The number of steps in the list.

5.35 LIST:CONF:READ?

Description   Read the list configuration for a given list ID. This is the information on the "LIST" menu page set before entering data for individual list program steps.

Query Syntax   LIST:CONF:READ?

Returned Parameters   <NR1, NR1, NR1, 1, NR1, NR2>

1 – Infinite – "0" for off and "1" for on.

2 – Repeat – 0 through 99 times.

3 – Base – "0" for time and "1" for cycle

4 – No data, always "1"

5 – Sync Source – 0 for "Immediate" and 1 for "Phase"

6 – Phase(deg) floating point number.

Related Commands

5.36 LIST:READ?

Description   Read the individual program steps in the list. Successive issuance of this command returns then next list program

entry. When the end of the list program is reached, the returned list program steps restart at the beginning.

Query Syntax	LIST:READ?
Returned Parameters	<NR2, NR2, NR2, NR2, NR2, NR2, NR2, NR2, 0>

1	Volts(rms) Start – 0 to 300
2.	Volts(rms) End – 0 to 300
3.	Volts (DC) Start – 0 to ±212 or 0 to ±424
4.	Volts (DC) End - 0 to ±212 or 0 to ±424
5.	Freq. (Hz) Start – 43 to 1200
6.	Freq. (Hz) End – 43 to 1200
7.	Time (ms) or Cycle – 0 to 999999
8.	Steps – 0 to 200
9.	Not Used

Related Commands	[SOURce]:LIST:VOLTage:LEVel:AC:STARt
	[SOURce]:LIST:VOLTage:LEVel:AC:END
	[SOURce]:LIST:VOLTage:LEVel:DC:STARt
	[SOURce]:LIST:VOLTage:LEVel:DC:END
	[SOURce]:LIST:FREQuency:LEVel:STARt
	[SOURce]:LIST:FREQuency:LEVel:END
	[SOURce]:LIST:STEPno

5.37 LIST:START:QUERY

Description	Enable read-back of the list program steps and set pointer to the head of the list program.
Note	This command resets the location in the list to read back to the head of the list program. Without this command, the return values are invalid and all zero's.
	[SOURce] cannot be added to this command.
Command Syntax	LIST:START:QUERY
Parameters	None
Examples	LIST:START:QUERY
Related Commands	LIST:READ?

5.38[SOURce]:LIST:STEPno

Description	Set or query the current step within the current list being edited. Remember that the total number of steps defined in all lists is limited.
Command Syntax	[SOURce]:LIST:STEPno <NR1>
Parameters	0-99
Examples	list:stepno 3
Query Syntax	[SOURce]:LIST:STEPno?
Returned Parameters	<NR1>

5.39 [SOURce]:LIST:VOLTage:LEVel:AC:STARt

Description	Set or query the starting AC voltage of the current step within the current list. Value is limited by the range setting of the machine.
Command Syntax	[SOURce]:LIST:VOLTage:LEVel:AC:STARt <NR2>
Parameters	0-300
Examples	sour:list:volt:lev:ac:start 140
Query Syntax	[SOURce]:LIST:VOLTage:LEVel:AC:STARt?
Returned Parameters	<NR2>

5.40[SOURce]:LIST:VOLTage:LEVel:AC:END

Description	Set or query the ending AC voltage of the current step within the current list. Value is limited by the range setting of the machine.
Command Syntax	[SOURce]:LIST:VOLTage:LEVel:AC:END <NR2>
Parameters	0-300
Examples	sour:list:volt:lev:ac:end 110
Query Syntax	[SOURce]:LIST:VOLTage:LEVel:AC:END?
Returned Parameters	<NR2>

5.41[SOURce]:LIST:VOLTage:LEVel:DC:STARt

Description	Set or query the starting DC voltage of the current step

within the current list. Value is limited by the range setting of the machine.

Command Syntax [SOURce]:LIST:VOLTage:LEVel:DC:STARt <NR2>

Parameters 0 to ±212, 0 to ±424

Examples [SOURce]:LIST:VOLTage:LEVel:DC:STARt?

Query Syntax [SOURce]:LIST:VOLTage:LEVel:DC:STARt?

Returned Parameters <NR2>

5.42[SOURce]:LIST:VOLTage:LEVel:DC:END

Description Set or query the ending DC voltage of the current step within the current list. Value is limited by the range setting of the machine.

Command Syntax [SOURce]:LIST:VOLTage:LEVel:DC:END <NR2>

Parameters 0 to ±212, 0 to ±424

Examples sour:list:volt:lev:dc:end 60

Query Syntax [SOURce]:LIST:VOLTage:LEVel:DC:END?

Returned Parameters <NR2>

5.43[SOURce]:LIST:FREQuency:LEVel:STARt

Description Set or query the starting AC frequency of the current step within the current list. Value is limited by the range setting of the machine.

Command Syntax [SOURce]:LIST:FREQuency:LEVel:STARt <NR2>

Parameters 43-1200

Examples sour:list:freq:lev:start 50

Query Syntax [SOURce]:LIST:FREQuency:LEVel:STARt?

Returned Parameters <NR2>

5.44[SOURce]:LIST:FREQuency:LEVel:END

Description Set or query the ending AC frequency of the current step within the current list. Value is limited by the range setting of the machine.

Command Syntax [SOURce]:LIST:FREQuency:LEVel:END <NR2>

Parameters	43-1200
Examples	sour:list:freq:lev:end 60
Query Syntax	[SOURce]:LIST:FREQuency:LEVel:END?
Returned Parameters	<NR2>

5.45 [SOURce]:LIST:DWEL

Description	Set or query the number of cycles or time for the current step.
Note	The field "Count" or "Time" is written depending the list configuration specified.
Command Syntax	[SOURce]:LIST:DWEL <NR1>
Parameters	The time (ms) or count (cycles).
	range - 0-999999.
Examples	list:dwel 100
Query Syntax	[SOURce]:LIST:DWEL?
Returned Parameters	<NR1>

5.46 [SOURce]:LIST:CLEar

Description	Clear the current list. This deletes the contents of the current list.
Command Syntax	[SOURce]:LIST:CLEar <NR1>
Parameters	0 through 9
Examples	list:clear 0
Related Commands	[SOURce]:LIST:NUMber

5.47 [SOURce]:PULSe:VOLTage:AC

Description	Set or query the AC voltage magnitude or the pulse.
Command Syntax	[SOURce]:PULSe:VOLTage:AC <NR2>
Parameters	0 to 150 or 0 to 300
Examples	source:pulse:voltage:ac 140
Query Syntax	[SOURce]:PULSe:VOLTage:AC?

Returned Parameters   <NR2>

Related Commands

5.48[SOURce]:PULSe:VOLTage:DC

Description	Set or query the DC voltage level of the pulse.
Command Syntax	[SOURce]:PULSe:VOLTage:DC <NR2>
Parameters	0 to ±212, 0 to ±424
Examples	sour:puls:volt:dc -50
Query Syntax	[SOURce]:PULSe:VOLTage:DC?
Returned Parameters	<NR2>
Related Commands	

5.49[SOURce]:PULSe:FREQuency

Description	Set or query the frequency of the AC portion of the pulse.
Command Syntax	[SOURce]:PULSe:FREQuency <NR2>
Parameters	43 to 1200
Examples	pulse:freq 300
Query Syntax	[SOURce]:PULSe:FREQuency?
Returned Parameters	<NR2>

5.50[SOURce]:PULSe:SYNChronous

Description	Set or query the phase of the pulse start as either "immediate" (random phase), or at a specific "phase" angle of the steady state waveform.
Command Syntax	[SOURce]:PULSe:SYNChronous <Bool/STR>
Parameters	<0 | IMMediate | 1 | PHASe>
Examples	sour:pulse:sync phas
Query Syntax	[SOURce]:PULSe:SYNChronous?
Returned Parameters	"IMMediate" or "PHASe"

5.51[SOURce]:PULSe:PHASe

Description	Set or query the phase angle to start the pulse from.
Command Syntax	[SOURce]:PULSe:PHASe <NR2>
Parameters	Phase angle to start pulse at, relative to positive going zero cross of steady state waveform.
Examples	pulse:phase 60
Query Syntax	[SOURce]:PULSe:PHASe?
Returned Parameters	<NR2>

5.52[SOURce]:PULSe:DUTY

Description	Set or query the duty cycle of the pulse. This is the percentage of the pulse period to OUTPut the pulse. The minimum pulse duration is limited and will not go below 1.5ms typically.
Note	
Command Syntax	[SOURce]:PULSe:DUTY <NR2>
Parameters	0-100.0
Examples	source:pulse:duty 15
Query Syntax	[SOURce]:PULSe:DUTY?
Returned Parameters	<NR2>

5.53[SOURce]:PULSe:PERIOd

Description	Set or query the length, or time between pulses, in milliseconds.
Command Syntax	[SOURce]:PULSe:PERIOd <NR2>
Parameters	0-100000
Examples	source:pulse:period 5000
Query Syntax	[SOURce]:PULSe:PERIOd?
Returned Parameters	<NR1>

5.54[SOURce]:PULSe:COUNt

Description	Set or query how many pulse intervals to perform.
Command Syntax	[SOURce]:PULSe:COUNt <NR1>
Parameters	0-99
Examples	pulse:count 10
Query Syntax	[SOURce]:PULSe:COUNt?
Returned Parameters	<NR1>

5.55[SOURce]:FUNCtion:SHAPe

Description	Set or query which waveform configuration to OUTPut.
Command Syntax	[SOURce]:FUNCtion:SHAPe <Bool/STR>
Parameters	<0 | A | 1 | B>
Examples	function:shape A
Query Syntax	[SOURce]:FUNCtion:SHAPe?
Returned Parameters	"A" or "B"
Related Commands	[SOURce]:FUNCtion:SHAPe:A
	[SOURce]:FUNCtion:SHAPe:B

5.56[SOURce]:FUNCtion:SHAPe:A

Description	Set or query the waveform defined for setting A.
Command Syntax	[SOURce]:FUNCtion:SHAPe:A <STR>
Parameters	<SINE | CSIN,NR2 | SQUA | THD,<NR1> | USR,<NR1>>
	When setting the shape, the "SINE" and "SQUA" functions
Examples	func:shap:a sine
	sour:func:shap:a csin,40.5
	source:function:shape:a squa
	sour:function:shap:a thd,1
	func:shap:a user,4
Query Syntax	[SOURce]:FUNCtion:SHAPe:A?

Returned Parameters	"SINE", "CSIN,<NR2>","SQUA", "USER,<NR1>"
	The return values for CSIN, THD and USER waveforms also return the amount of clipping, the THD waveform number or the user waveform number respectively.
Related Commands	[SOURce]:FUNCtion:SHAPe

5.57[SOURce]:FUNCtion:SHAPe:B

Description	Set or query the waveform defined for setting A.
Command Syntax	[SOURce]:FUNCtion:SHAPe:B <STR>
Parameters	<SINE | CSIN,NR2 | SQUA | THD,<NR1> | USR,<NR1>>
	When setting the shape, the "SINE" and "SQUA" functions
Examples	func:shap:b sine
	sour:func:shap:b csin,40.5
	source:function:shape:b squa
	sour:function:shap:b thd,1
	func:shap:b user,4
Query Syntax	[SOURce]:FUNCtion:SHAPe:A?
Returned Parameters	"SINE", "CSIN,<NR2>","SQUA", "USER,<NR1>"
	The return values for CSIN, THD and USER waveforms also return the amount of clipping, the THD waveform number or the user waveform number respectively.
Related Commands	[SOURce]:FUNCtion:SHAPe

5.58[SOURce]:FUNC:SHAP:USER:TABLe:READ

Description	The ID number of the USER defined waveform to read.
Note	Use this function to set the user defined waveform to retrieve with the
Command Syntax	FUNC:SHAP:USER:READ <NR1>
Parameters	<NR1>
Examples	func:shap:user:read 1
Related Commands	[SOURce]:FUNCtion:SHAPe:USER:TABLe:DATA? <NR1>

5.59 [SOURce]:FUNCtion:SHAPe:USER:TABLe:NUMber

Description	Define which user defined waveform table to be written.
Command Syntax	[SOURce]:FUNCtion:SHAPe:USER:TABLe:NUMber <NR1>
Parameters	The user defined waveform to select from 0 through 4.
Examples	func:shape:user:table:num 0
Related Commands	[SOURce]:FUNCtion:SHAPe:USER:TABLe:DATA

5.60 [SOURce]:FUNCtion:SHAPe:USER:TABLe:DATA

Description	Write the individual harmonic elements that compose the user defined waveform. The waveform is the sum of the harmonics. For example:
	100% 60Hz fundamental and 50% of the 3rd harmonic.
	out(t) =1*sin(2*pi*60*t)+0.5*sin(2*pi*180*t)
Note	The complete set (0 through 39) should be sent at one time.
	Only integer multiples of the fundamental are to be specified. The set of which are the first 39 multiples.
	60Hz fundamental:
	Field 0 = 60Hz
	Field 1 = 120Hz
	Field 2 = 180Hz
	…
	Field 39 = 2400Hz
	Magnitude of harmonic: This is the "%" field in the PC software.
	Phase – This is the phase shift from the fundamental waveform of the specified harmonic.
Command Syntax	[SOURce]:FUNCtion:SHAPe:USER:TABLe:DATA <NR1, NR2, NR1, NR2>
Parameters	Parameter 1 – element number (0 through 39)
	Parameter 2 – Magnitude (M) (0 to 1) (1 represents 100%) The user may define the value to 6 decimal places.
	Parameter 3 – Frequency

Parameter 4 - Phase

Examples func:shap:user:table:data 0,1,50,0

func:shap:user:table:data 1, 0.02, 100, 0

…

func:shap:user:table:data 39,0,2000,0

5.61[SOURce]:FUNCtion:SHAPe:USER:TABLe:DATA? <NR1>

Description Query the data table for the previously specified waveform table.

This returns a portion of the user defined waveform parameters. The argument of this function defines which set of values to return. This command returns 5 sets at a time.

0 – fields 0 through 4

1 – fields 5 through 9

…

7 – fields 35 through 39

Query Syntax func:shap:user:tabl:data? <NR1>

Returned Parameters ID,magnitude,frequence,phase;(next entry)

Example (50Hz fundamental):

Query command: "source:function:user:table:data? 0"

"0,1.000000,50.000000,0.000000;1,0.020000,100.000000,0.000000;2,0.030000,150.000000,0.000000;3,0.040000,200.000000,0.000000;4,0.050000,250.000000,0.000000\n\r"

6 SYStem

6.1 Command Summary

6.2 SYSTem:BEEP

Description	Set or query the system beep setting.
Command Syntax	SYSTem:BEEP <Bool>
Parameters	<0 | OFF 1 | ON>
Examples	syst:beep off
Query Syntax	SYSTem:BEEP?
Returned Parameters	"OFF" or "ON"

6.3 SYSTem:BRIGhtness

Description	Set or query the LCD brightness. 0 – min, 9 – max
Command Syntax	SYStem:BRIGhtness <NR1>
Parameters	0 through 9
Examples	syst:brig 9
Query Syntax	SYStem:BRIGhtness?
Returned Parameters	<NR1>

6.4 SYSTem:KEY:LOCK

Description	Set or query the keyboard lock state.
Command Syntax	SYSTem:KEY:LOCK <Bool>
Parameters	<0 | OFF 1 | ON>
Examples	syst:key:lock on
Query Syntax	SYSTem:KEY:LOCK?
Returned Parameters	"OFF" or "ON"

6.5 SYSTem:TIME

Description	Set or query the time setting on the machine. The format is in Hours, Minutes and Seconds, in that order.
Command Syntax	SYSTem:TIME <NR1, NR1, NR1>
Parameters	0-24, 0-59, 0-59 Hours, Minutes, Seconds
Examples	syst:time 16,10,00
Query Syntax	SYSTem:TIME?
Returned Parameters	<NR1,NR1,NR1>

6.6 SYSTem:DATE

Description	Set or query the date setting on the machine. The format is Year, Month, Day.
Command Syntax	SYSTem:DATE <NR1, NR1, NR1>
Parameters	0 to 99, 0 to 12, 0 to 31

	Year, Month, Day
Examples	syst:date 85,11,5
Query Syntax	SYSTem:DATE?
Returned Parameters	<NR1,NR1,NR1>

6.7 SYSTem:RECall:DEFault

Description	Recall the default settings for the machine.
Command Syntax	SYSTem:RECall:DEFault
Examples	syst:rec:def

6.8 SYSTem:SERial?

Description	Query the machine's serial number.
Query Syntax	SYSTem:SERial?
Returned Parameters	<STR>

6.9 SYSTem:MODel?

Description	Query the machine's model number.
Query Syntax	SYSTem:MODel?
Returned Parameters	<NR1>
	"9833B"

6.10 SYSTem:MANUFacture?

Description	Query the machine manufacturer's name.
Query Syntax	SYSTem:MANUFacture?
Returned Parameters	"B&K PRECISION"

6.11 SYSTem:INTERFACE

Description	Set or query the remote interface to use.
Note	Currently only returning "TMC" and "VCP" correctly.
Command Syntax	SYSTem:INTERFACE <NR1/STR>

Parameters	<0 | VCP | 1 | TMC | 2 | GPIB | 3 | LAN | 4 | RS232>
Examples	syst:interface gpib
Query Syntax	syst:interface?
Returned Parameters	"VCP", "TMC", "GPIB", "LAN", "RS232C"

6.12 SYSTem:ERRor?

Description	Query the current error code, if any. See the user manual for a listing of the error codes returned.
Query Syntax	SYSTem:ERRor?
Returned Parameters	<NR1>, <STR>

6.13 SYSTem:VERSion?

Description	Query the firmware version of the machine.
Query Syntax	SYSTem:VERSion?
Returned Parameters	<STR>

6.14 SYSTem:GPIB:ADDRess

Description	Set or query the GPIB address of the machine.
Command Syntax	SYSTem:GPIB:ADDRess <NR1>
Parameters	GPIB address
Examples	syst:gpib:addr 5
Query Syntax	SYSTem:GPIB:ADDRess?
Returned Parameters	<NR1>

6.15 SYSTem:IP:CONFig

Description	Set or query the network configuration mode, static or dynamic.
Command Syntax	SYSTem:IP:CONFig <NR1/STR>
Parameters	<0 | DHCP | 1 | STATic>
Examples	SYST:IP:CONF DHCP
Query Syntax	SYSTem:IP:CONFig?

Returned Parameters   "DHCP" or "STATic"

6.16 SYSTem:IP:ADDRess

Description   Set or query the IP address of the machine.

Command Syntax   SYSTem:IP:ADDRess <NR1, NR1, NR1, NR1>

Parameters   0 to 255 for each entry.

Examples   syst:ip:addr 192,168,2,96

Query Syntax   SYSTem:IP:ADDRess?

Returned Parameters   <STR>

6.17 SYSTem:IP:GATEway

Description   Set or query the network gateway.

Command Syntax   SYSTem:IP:GATEway <NR1, NR1, NR1, NR1>

Parameters   0 through 255 for each entry.

Examples   SYSTem:IP:GATEway 255,255,255,0

Query Syntax   SYSTem:IP:GATEway?

Returned Parameters   <STR>

6.18 SYSTem:IP:MASK

Description   Set or query the network mask.

Command Syntax   SYSTem:IP:MASK <NR1, NR1, NR1, NR1>

Parameters   0 through 255 for each entry.

Examples   SYSTem:IP:MASK 1,2,3,4

Query Syntax   SYSTem:IP:MASK?

Returned Parameters   <STR>

7   3 Phase Procedure

To configure 3-Phase output follow the procedure below. Commands will return a fail status if the command is sent wrong time. If the command is sent properly it will respond with a success status. The SYSTem:PhaseCtrl:Role <mode> has a restriction. Before sending this command the output must be in the off state.

7.1   Command Summary

SYST:ERR?
OUTPut:PROTection:CLEAr
SYSTem:PhaseCtrl:role Disable
SYSTem:PhaseCtrl:role Master
SYSTem:PhaseCtrl:role Slave
System:PhaseCtrl:Role?
SYSTem:PhaseCtrl:Fault?
SYSTem:PhaseCtrl:Fault clear

7.2   SYST:ERR?

Check for any global error status that may prevent the configuration of the 3 phase parameters.

Description	Query the current error code, if any. See the user manual for a listing of the error codes returned.
Query Syntax	SYSTem:ERRor?
Returned Parameters	<NR1>, <STR>

7.3   OUTPut:PROTection:CLEar

Reset any protection states that may have been triggered.

Description	Reset the protection state in the event of a protection fault. When a limit is reached, the output will turn off and the alarm will sound. This command clears the alarm.
Command Syntax	OUTPut:PROTection:CLEar

Parameters	None
Examples	output:prot:cle
Description	Reset the protection state in the event of a protection fault. When a limit is reached, the output will turn off and the alarm will sound. This command clears the alarm.
Command Syntax	OUTPut:PROTection:CLEar

7.4 SYSTem:PhaseCtrl:Role

Description	Set or query the role of the device. Role settings are constrained to be used only when the output is in the off state.
Command Syntax	SYSTem:PhaseCtrl:Role<mode>
Parameters	"Diabel" "Master" "Slave"
Examples	SYSTem:PhaseCtrl:Role Master
Query Syntax	SYSTem:PhaseCtrl:Role?
Returned Parameters	<mode>

7.5 SYSTem:Phase

Description	Set or query the phase setting for phase control.
Command Syntax	SYSTem:Phase <value>
Parameters	0 to 360
Examples	SYSTem:Phase 120
Query Syntax	SYSTem:Phase?
Returned Parameters	<mode>

7.6 SYSTem:PhaseCtrl:Fault clear

Description	Query or clear the status of phase control.
Command Syntax	SYSTem:PhaseCtrl:Fault clear
Parameters	None
Examples	SYSTem:PhaseCtrl:Fault clear
Query Syntax	SYSTem:PhaseCtrl:Fault?
Returned Parameters	<status>

8 USBFlash

8.1 Command Summary

USBFlash:SAVE:CONFiguration
USBFlash:RECall:CONFiguration
USBFlash:SAVE:SCReen
USBFlash:SAVE:COMPlete?

8.2 USBFlash:SAVE:CONFiguration

Description	Store the current settings to internal memory or a USB storage device.
Command Syntax	USBFlash:SAVE:CONFiguration <NR1>
Parameters	1 through 9, internal
	10 through 99, external
Examples	usbf:save:conf 10

8.3 USBFlash:RECall:CONFiguration

Description	Recall a configuration setup from either internal storage or a USB device.
Command Syntax	USBFlash:RECall:CONFiguration
Parameters	0 through 9, internal
	10 through 99, external
Examples	usbf:rec:conf 0

8.4 USBFlash:SAVE:SCReen

Description	Save an image of the LCD screen.
Command Syntax	USBFlash:SAVE:SCReen <NR1>
Parameters	0 through 999
Examples	usbf:save:scr 0

8.5 USBFlash:SAVE:COMPlete?

Description	Query whether the save action has completed.

Query Syntax   USBFlash:SAVE:COMPlete?

Returned Parameters   1 for complete and 0 for all other conditions including busy and no previous save issued.

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