UNI-T

Operation Manual

UTL8200/8500 Series Electronic Load Communication Protocol (SCPI)-V1.0

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Uni-Trend Technology (China) Co., Ltd.

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SCPI Command Introduction

All the protocol down programming data and up return data are presents by ASCII character string. **A frame data ended by new line separator <LF>（0x0A）or carraige return <CR>（0x0D）.** The protocol supports the data format as following,

1）<NR1>，integer, for example **123.**

2）<NR2>，a number containing a decimal point, for example **1.234.**

3）<NR3>，number express by scientific notation method, for example **1.23E+2.**

4）<Nrf>，extension format，including **<NR1>, <NR2>, <NR3>**, for example **123**, **0.123**, **1.23E2**.

5）<Nrf+>，including **<Nrf>,MIN,MAX**， for example **123**, **0.123**, **1.23E2**, **MIN**, **MAX**. MIN presents the minimum that can be set for load; MAX presents the minimum that can be set for load.

6）<Bool>，for example **0 | 1** or **ON | OFF**.

Data unit should follow data, if the unit is the default unit in the follow table, then the unit can be ignore.

Data Type	Default Unit	Support Unit
Voltage	V	mV
Current	A	mA
Power	W	mW
Resistance	ohm	K
Current rate of change	A/mS	A/uS
Voltage rate of change	V/mS	V/uS
Time	mS	S

There are some mnemonic symbols in SCPI command expression. These mnemonic symbols only express the meaning as the following table, it is not the actual contains in SCPI command.

Mnemonic Symbol	Meaning
< >	Parameter abbreviations are enclosed in angle brackets
|	Vertical line separate the alternative parameters
[ ]	Optional items are enclosed in square brackets

Register Description

The protocol supporys four groups register,

1) Questionable Status Register Group

Questionable status register has three of 16bits register; it divided into status register, event register and enable register. When the corresponding bit of status register is changed, the corresponding bit of the event register will be set; if the corresponding bit of enable register is set, it produces an event (QUES set of status byte register.) After performing a read operation of event register, even register will go to zero. The definition of status register as following,

Bit	Name	Meaning
Bit0	VF	
Bit1	OC	The load is on over-current protection
Bit3	OP	The load is on over-power protection
Bit4	OT	The load is on over-heat protection
Bit8	RRV	Remote terminal input reverse polarity
Bit11	UNR	
Bit12	LRV	Local terminal input reverse polarity
Bit13	OV	The load is in over-voltage protection

2) Standard Event Status Register Group

Standard event status register has two of 16 bits register; it divided into event register and enable register. If the corresponding bit of enable register is set, it produces an event (ESB set of status byte register.) After performing a read operation of event register, even register will go to zero. The definition of event register as following,

Bit	Name	Meaning	Bit Proportion	Answer-back Code
Bit0	OPC	Operation complete	1	"OK! OPC,1"
Bit1	DTE	Data error	2	"Failed! DTE,2"
Bit2	QYE	Query error	4	"Failed! QYE,4"
Bit3	DDE	Device failure	8	"Failed! DDE,8"
Bit4	EXE	Execution error	16	"Failed! EXE,16"
Bit5	CME	Command error	32	"Failed! CME,32"
Bit6	STE	Status error	64	"Failed! STE,64"
Bit7	PON	Load recharge	128	"Failed! PON,128"

3) Operation Status Register Group

Operation status register has three of 16bits register; it divided into status register, event register and enable register. When the corresponding bit of status register is changed, the corresponding bit of the event register will be set; if the corresponding bit of enable register is set, it produces an event (OPER set of status byte register.) After performing a read operation of event register, even register will go to zero. The definition of status register as following,

Bit	Name	Meaning
Bit0	CAL	The load is on calibration status
Bit5	WTG	The load is on wait for trigger status

4) Status Byte Register Group

Status byte register has two of 8bits register, it divided into event reigerster and enable register. When the corresponding bit of event register is changed, it produces an event (RQS set of status byte register.) After performing a read operation of event register, even register will go to zero. The definition of event register as following,

Bit	Name	Meaning
Bit3	QUES	Set, if there is enable query status event
Bit4	MAV	Set, if the output queue has data
Bit5	ESB	Set, if there is enable standard event
Bit6	RQS	
Bit7	OPER	

Common Command

***CLS** command is to delete register as following:

Standard Event Status Register

Questionable Status Register

Operation Status Register

Status Byte Register error code

Command syntax *CLS

***ESE** command is to complie the enable register value in standard event status register group.

Program parameter is decide which bit1 in standard event register will cause ESB bit set bit1 in stauts byte register group.

Command syntax *ESE <NRf>

Parameter 0~255

Example *ESE 128

Query syntax *ESE?

Return parameterss <NR1>

***ESR?** command is to read value from standard event register. Afte the command has been execured, value in standard event register will go to zero. The bit definition of standard event register is the same as enable register in standard event status register group.

Query syntax *ESR?

Return parameterss <NR1>

***IDN?** command is to query the relevant information of device. The Return parametersss are includes four segments, which separate by three comma.

Query syntax *IDN?

Return parameterss <AARD> segment Description

UNI_T Manufaturer

xxxxxxxxx Serial number
1.2 Software version number

Foe example, UNI_T, UTL8511C,xxxxxxxxx,1.2

***OPC** when all previous command have been executed, OPC bit in standard event register is set bit1.

Command syntax *OPC
Query syntax *OPC?
Return parameterss <NR1>

***SRE** command is to complied enable register value in status byte register group.

Program parameter is decide which bit 1 in status byte register will cause RQS bit set bit1 in status byte register. The bit definition of enable register in status byte register group is the same as status byte register.

Command syntax *SRE <NRf>
Parameter 0~255
Example *SRE 128
Query syntax *SRE?
Return parameterss <NR1>

***STB?** command is to read value of status register. After the command has been executed, value in status register will go to zero.

Query syntax *STB?
Return parameterss <NR1>

***TST?** command is to run a self-inspection and repot error.

Query syntax *TST?
Return parameterss <NR1> （0 presents no error）

Essential Command

System command

SYSTem:ERRor? command is to query error message

Query syntax SYSTem:ERRor[:NEXT]?
Return parameterss <NR1>，<SRD>
Example SYST:ERR?

SYSTem:VERSion? command is to query SCPI version number of the load, format is YYYY.V

Query syntax SYSTem:VERSion?
Return parameterss <NR1>，<SRD>

Example SYST:VERS?

SYSTem:SENSe command is to turn on/off remote compensation function.

Command syntax SYSTem:SENSe[:STATe] <bool>

Parameter 0 | 1 | OFF|ON

Rest value OFF

Example SYST:SENS ON

Query syntax SYSTem:SENSe[:STATe]?

Return parameterss 0 | 1

SYSTem:LOCal command is to enter loack mode, operating the entire key of instrument panel.

Command syntax SYSTem:LOCal

Example SYST:LOC

Query syntax SYSTem:LOCal?

Return parameterss 0 | 1 (0: close-control, 1: remote-control)

SYSTem:REMote command is to enter remote mode.

The entire key in front panal is forbidden except Shift-Local .Push Shit-Local to exit the mode.

Command syntax SYSTem:REMote

Example SYST:REM

Query syntax SYSTem:REMote?

Return parameterss 0 | 1 (0: close-control，1: remote-control)

SYSTem:RWLock command is to enter remote mode, the entire key infront panel is forbidden.

Command syntax SYSTem:RWLock <bool>

Example SYST:RWL ON

Query syntax SYSTem:RWLock?

Return parameterss 0 | 1

Status Command

STATus:QUEStionable? command is to read event register value in questionable register group.

Query syntax STATus:QUEStionable[:EVENt]?

Example STAT:QUES:EVEN?

Return parameterss <NR1>

STATus:QUEStionable:CONDition? command is to read status register value in questionabl register group.

Query syntax STATus:QUEStionable:CONDition?

Example STAT:QUES:COND?

Return parameterss <NR1>

STATus:QUEStionable:ENABle command is to set/read enable register value in questionable register group.

Command syntax STATus:QUEStionable:ENABle <NRf+>

Parameter 0~32767

Example STAT:QUES:ENAB 32

Query syntax STATus:QUEStionalbe:ENABle?

Return parameterss <NR1>

STATus:OPERation? command is to read event register in operation status register group.

Query syntax STATus:OPERation[:EVENt]?

Example STAT:OPER:EVEN?

Return parameterss <NR1>

STATus: OPERation:CONDition? command is to read status register in operation status register group.

Query syntax STATus:OPERation:CONDition?

Example STAT:OPER:COND?

Return parameterss <NR1>

STATus: OPERation:ENABle command is to set/read enable register value in operation status register group.

Command syntax STATus:OPERation:ENABle <NRf+>

Parameter 0~32767

Example STAT:OPER:ENAB 32

Query syntax STATus:OPERation:ENABle?

Return parameterss <NR1>

Import Configuration Command

Import control

[SOURce:]INPut command is to control the switch setting.

Command syntax [SOURce:]INPut[:STATe] <bool>
Parameter 0 | 1 | OFF | ON
Rest value OFF
Example INP 1
Query syntax INPut[:STATe]?
Return paramters 0 | 1

[SOURce:]INPut:PAUSe command is to input enable or forbidden of pause status. This command is only take effect when the electronic in the four basic modes (CC, CV, CR, CP) and list mode.

Command syntax [SOURce:]INPut:PAUSe <bool>
Parameter 0 | 1 | OFF | ON
Reset value OFF
Example INP:PAUSe 1
Return syntax INPut:PAUSe?
Return parameters 0 | 1

[SOURce:]INPut:SHORt command is to input enable or forbidden of short-circuit status. This command is only take effect when the electronic load on loading in the four basic modes (CC, CV, CR, CP). The continuous time of short-circuit is decide by time parameter.

Command syntax [SOURce:]INPut:SHORt <bool>
Parameter 0 | 1 | OFF | ON
Reset value OFF
Example INP:SHOR 1
Return syntax INPut:SHORt?
Return parameters 0 | 1

[SOURce:]INPut:TRIG:SET command is to input trigger signal. This command is only operating when the load in manual trigger mode and wait for trigger, query returns wait trigger status.

Command syntax [SOURce:]INPut:TRIG:SET <bool>
Parameter 1 | ON （0 or OFF is invalid）
Reset value OFF
Example INP:TRIG:SET 1
Return syntax INPut:TRIG:SET?
Return parameters 0 | 1

[SOURce:]INPut:TRIG:MODE command is to set the trigger mode. This command is only take effect when the electronic load in dynamic mode or list mode.

Command syntax [SOURce:]INPut:TRIG:MODE <bool>
Parameter 0 | 1 （0-manual，1-external）
Reset value 0
Example INP:TRIG:MODE 1
Return syntax INPut:TRIG:MODE?
Return parameters 0 | 1

System Parameter Setup

[SOURce:]CURRent:SLEW:RISE command is to set the rise rate of current.

Command syntax [SOURce:]CURRent:SLEW:RISE <NRf+>
Parameter MIN ~ MAX | MINimum |MAXimum
Unit A/uS
Reset value MAXimum
Example CURR:SLEW:RISE 3
Return syntax [SOURce:]CURRent:SLEW:RISE?
Return parameters <NR2>

[SOURce:]CURRent:SLEW:FALL command is to set the fall rate of current.

Command syntax [SOURce:]CURRent:SLEW:RISE <NRf+>
Parameter MIN ~ MAX | MINimum |MAXimum
Unit A/uS
Reset value MAXimum
Example CURR:SLEW:RISE 3
Return syntax [SOURce:]CURRent:SLEW:RISE?
Return parameters <NR2>

[SOURce:]CURRent:PROTection command is to set the current protection value.

Command syntax [SOURce:]CURRent:PROTection[:LEVel] <NRf+>
Parameter 0 ~ MAX | MINimum |MAXimum
Unit A
Reset value MAXimum
Example CURR:PROT 3
Return syntax [SOURce:]CURRent:PROTection[:LEVel]?
Return parameters <NR2>

[SOURce:]VOLTage:PROTection command is to set the over-voltage protection value.

Command syntax [SOURce:]VOLTage:PROTection[:LEVel] <NRf+>
Parameter 0 ~ MAX | MINimum |MAXimum
Unit A
Reset value MAXimum
Example VOLT:PROT 3
Return syntax [SOURce:] VOLTage:PROTection[:LEVel]?
Return parameters <NR2>

[SOURce:]POWer:PROTection command is to set the power protection value.

Command syntax [SOURce:]POWer:PROTection[:LEVel] <NRf+>
Parameter 0 ~ MAX | MINimum |MAXimum
Unit W
Reset value MAXimum(wide-range)
Example POW:PROT 100
Return syntax [SOURce:]POWer:PROTection[:LEVel]?
Return parameters <NR2>

[SOURce:]VOLTage:[LEVel:] ON command is to set the start on-loading voltage value (Von).

Command syntax [SOURce:]Voltage:[LEVel:]ON <NRf+>
Parameter 0 ~ MAX | MINimum |MAXimum
Unit V
Reset value 1
Example VOLT:ON 3
Return syntax [SOURce:]VOLTage:[LEVel:]ON?
Return parameters <NR2>

[SOURce:]VOLTage:[LEVel:] OFF command is to set the start unloading voltage value.

Command syntax [SOURce:]Voltage:[LEVel:]OFF <NRf+>
Parameter 0 ~ MAX | MINimum |MAXimum
Unit V
Reset value 0.5
Example VOLT:OFF 2
Return syntax [SOURce:]VOLTage:[LEVel:]OFF?
Return parameters <NR2>

Operation Mode Control

[SOURce:]FUNCtion

[SOURce:]MODE this two command are equivalent, it's to select input mode of the electronic load.

Command syntax [SOURce:]FUNCtion <function>
[SOURce:]MODE <function>

Parameter	Operation Mode
CURRent	Constant current operation mode
VOLTage	Constant voltage operation mode
POWer	Constant power operation mode
RESistance	Constant resistance operation mode
DYNamic	Dynamic current operation mode
DYNV	Dynamic voltage mode
LED	LED mode
OCP	OCP mode
OPP	OPP mode
CCBattery	Battery CC discharge mode
CRBattery	Battery CR discharge mode
CPBattery	Battery CP discharge mode
OVP	OVP mode
LIST	LIST mode
TIMing	Time test

Reset value CURRent

Example MODE RES

Return syntax [SOURce:]FUNCtion? [SOURce:]MODE?

Return parameters < NR2> Return parameters description as following

Query Return parameterss	The corresponding operation mode
0.0	Constant current operation mode
1.0	Constant voltage operation mode
3.0	Constant power operation mode

2.0	Constant resistance operation mode
4.0	Dynamic operation mode
5.0	Dynamic voltage mode
10.0	OCP mode
11.0	OPP mode
12.0	Battery CC discharge mode
13.0	Battery CR discharge mode
14.0	Battery CP discharge mode
18.0	List mode
20.0	LED mode
21.0	Time test
23.0	OVP mode

Basic Mode Command

[SOURce:]CURRent command is to set the current in CC mode.

Command syntax

[SOURce:]CURRent[:LEVel][:IMMediate][:AMPLitude] <NRf+>

Parameter 0 ~ MAX

Unit A

Reset value MINimum

Example CURR 5

Return syntax

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

Return parameters <NR2>

[SOURce:]VOLTage command is to set the voltage in CV mode.

Command syntax

[SOURce:]VOLTage[:LEVel][:IMMediate][:AMPLitude] <NRf+>

Parameter 0 ~ MAX

Unit V

Reset value MAXimum

Example VOLT 5

Return syntax

[SOURce:]VOLTage[:LEVel][:IMMediate][:AMPLitude]?

Return parameters <NR2>

[SOURce:]POWer command is to set power in CP mode.

Command syntax

[SOURce:]POWer[:LEVel][:IMMediate][:AMPLitude] <NRf+>

Parameter 0 ~ MAX

Unit W

Reset value MINimum

Example POW 10

Return syntax

[SOURce:]POWer[:LEVel][:IMMediate][:AMPLitude]?

Return parameters <NR2>

[SOURce:]RESistance command is to set resistance in CR mode.

Command syntax

[SOURce:]RESistance[:LEVel][:IMMediate][:AMPLitude] <NRf+>

Parameter 0 ~ MAX

Unit ohm

Reset value MAXimum

Example RES 5

Return syntax

[SOURce:]RESistance[:LEVel][:IMMediate][:AMPLitude]?

Return parameters <NR2>

DYNamic Command

[SOURce:]DYNamic:HIGH command is to set high-level load current in dynamic mode.

Command syntax [SOURce:]DYNamic:HIGH[:LEVel] <NRf+>

Parameter 0 ~ MAX

Unit A

Reset value 0

Example DYN:HIGH 10

Return syntax [SOURce:]DYNamic:HIGH[:LEVel]?

Return parameters <NR2>

[SOURce:]DYNamic:HIGH:DWELl command is to set the continuous time of high-level load current in dynamic mode.

Command syntax [SOURce:]DYNamic:HIGH:DWELI <NRf+>

Parameter 0.1 ~ 99999

Unit mS

Reset value 0. 1

Example DYN:HIGH:DWELl 0.01

Return syntax [SOURce:]DYNamic:HIGH:DWELI?

Return parameters <NR2>

[SOURce:]DYNamic:LOW command is to set low-level load current in dynamic mode.

Command syntax [SOURce:]DYNamic:LOW[:LEVel] <NRf+>
Parameter 0 ~ MAX| MINimum |MAXimum
Unit A
Reset value 0
Example DYN:LOW 1
Return syntax [SOURce:]DYNamic:LOW[:LEVel]?
Return parameters <NR2>

[SOURce:]DYNamic:LOW:DWELl command is to set the continuous time of low-level load current in dynamic mode.

Command syntax [SOURce:]DYNamic:LOW:DWELI <NRf+>
Parameter 0.1 ~ 99999
Unit mS
Reset value 0.1
Example DYN:LOW:DWELl 10
Return syntax [SOURce:]DYNamic:LOW:DWELl?
Return parameters <NR2>

[SOURce:]DYNamic:SLEW:RISE command is to set the rise rate of dynamic mode.

Command syntax [SOURce:]DYNamic:SLEW:RISE <NRf+>
Parameter MIN ~ MAX | MINimum |MAXimum
Unit A/uS
Reset value MAX
Example DYN:SLEW:RISE 3
Return syntax [SOURce:]DYNamic:SLEW:RISE?
Return parameters <NR2>

[SOURce:]DYNamic:SLEW:FALL command is to set the fall rate of dynamic mode.

Command syntax [SOURce:]DYNamic:SLEW:FALL <NRf+>
Parameter MIN ~ MAX | MINimum |MAXimum
Unit A/uS
Reset value MAX
Example DYN:SLEW:FALL 3
Return syntax [SOURce:]DYNamic:SLEW:FALL?
Return parameters <NR2>

[SOURce:]DYNamic:MODE command is to set operation mode in dynamic mode.

Command syntax [SOURce:]DYNamic:MODE <mode>

Parameter CONTinuous | PULSe |TOGGle
Reset value CONTinuous
Example DYN:MODE PULS
Return syntax [SOURce:]DYNamic:MODE?
Return parameters <NR2>

[SOURce:]DYNamic:REPeat command is to set the running repeat time in dynamic mode.

Command syntax [SOURce:]DYNamic:REPeat <NR1>
Parameter 1~99999
Example DYN:REP 10
Return syntax [SOURce:]DYNamic:REP?
Return parameters <NR2>

DYNV Command

[SOURce:]DYNV:HIGH command is to set high-level load constant voltage value in dynamic voltage mode.

Command syntax [SOURce:]DYNV:HIGH[:LEVel] <NRf+>
Parameter 0 ~ MAX
Unit V
Reset value 0
Example DYNV:HIGH 10
Return syntax [SOURce:] DYNV:HIGH[:LEVel]?
Return parameters <NR2>

[SOURce:] DYNV:HIGH:DWELl command is to set the continuous time of high-level load constant voltage in dynamic voltage mode.

Command syntax [SOURce:] DYNV:HIGH:DWELI <NRf+>
Parameter 0.1 ~ 99999
Unit mS
Reset value 0. 1
Example DYNV:HIGH:DWEL 100
Return syntax [SOURce:] DYNV:HIGH:DWEL?
Return parameters <NR2>

[SOURce:] DYNV:LOW command is to set the low-level load contant voltage in dynamic voltage mode.

Command syntax [SOURce:] DYNV:LOW[:LEVel] <NRf+>
Parameter 0 ~ MAX| MINimum |MAXimum

Unit V
Reset value 0
Example DYNV:LOW 10
Return syntax [SOURce:] DYNV:LOW[:LEVel]?
Return parameters <NR2>

[SOURce:] DYNV:LOW:DWELl command is to set the continuous time of low-level load constant voltage in dynamic voltage mode

Command syntax [SOURce:] DYNV:LOW:DWELl <NRf+>
Parameter 0.1 ~ 99999
Unit mS
Reset value 0.1
Example DYNV:LOW:DWEL 100
Return syntax [SOURce:] DYNV:LOW:DWEL?
Return parameters <NR2>

[SOURce:] DYNV:SLEW:RISE command is to set voltage rise rate of dynamic voltage mode.

Command syntax [SOURce:] DYNV:SLEW:RISE <NRf+>
Parameter MIN ~ MAX | MINimum |MAXimum
Unit V/uS
Reset value MAX
Example DYNV:SLEW:RISE 3
Return syntax [SOURce:] DYNV:SLEW:RISE?
Return parameters <NR2>

[SOURce:] DYNV:SLEW:FALL command is to set the voltage fall rate of dynamic voltage mode.

Command syntax [SOURce:] DYNV:SLEW:FALL <NRf+>
Parameter MIN ~ MAX | MINimum |MAXimum
Unit V/uS
Reset value MAX
Example DYNV:SLEW:FALL 3
Return syntax [SOURce:] DYNV:SLEW:FALL?
Return parameters <NR2>

[SOURce:] DYNV:MODE command is to set operation mode in dynamic voltage mode.

Command syntax [SOURce:] DYNV:MODE <mode>
Parameter CONTinuous | PULSe |TOGGle
Reset value CONTinuous

Example DYNV:MODE PULS

Return syntax [SOURce:] DYNV:MODE?

Return parameters <NR2>

[SOURce:] DYNV:REPeat command is to set running repeat times in dynamic voltage mode.

Command syntax [SOURce:] DYNV:REPeat <NR1>

Parameter 1~99999

Example DYNV:REP 10

Return syntax [SOURce:] DYNV:REP?

Return parameters <NR2>

LED Command

LED:VOLTage command is to set LED Vo.

Command syntax LED:VOLTage <Nrf+>

Parameter 0.001~MAX

Example LED:VOLT 18

Return syntax LED:VOLT?

Return <NR2>

LED:CURRent command is to set LED Io.

Command syntax LED:CURRent <Nrf+>

Parameter 0~MAX

Example LED:CURR 0.35

Return syntax LED:CURR?

Return <NR2>

LED:RCOeff command is to set LED Rd Coeff.

Command syntax LED:RCOeff <Nrf+>

Parameter 0.001~1

Example LED:RCO 0.2

Return syntax LED:RCO?

Return <NR2>

List Command

[SOURce:]LIST:REPeat command is to set execute list repeat times.

Command syntax [SOURce:]LIST:REPeat <Nrf+>

Parameter 1 ~ 99999

Reset value 0

Example LIST:REPeat 3

Return syntax [SOURce:]LIST:REPeat?

Return parameters <NR2>

[SOURce:]LIST:STEP command is to set execute list repeat steps.

Command syntax [SOURce:]LIST:STEP <Nrf+>

Parameter 1 ~ 16

Example LIST:STEP 3

Return syntax [SOURce:]LIST:STEP?

Return parameters <NR2>

[SOURce:]LIST:MODE command is to set the list continuous running and no exit abnormally.

Command syntax [SOURce:] LIST:MODE <CRD>

Parameter CONT | TRIG | CONTERR | CONTERR

CONT(continuous), TRIG(trigger), CONTERR(continuous stop by error), CONTERR(continuous trigger stop by error)

Example LIST:MODE CONT

Return syntax [SOURce:]LIST:MODE?

Return parameters <NR2>

[SOURce:]LIST:DISCharge command is to set discharge method of fast charge. Paramtere0 means turn off fast discharge, 1 means turn on fast discharge, greater than 128 means turn on fast charge list function.

Command syntax [SOURce:] LIST:DISCharge <NR1>

Parameter 0 | 1 | 128 | 129

Example LIST:DISCharge 1

Return syntax [SOURce:]LIST:DISCharge?

Return parameters <NR2>

[SOURce:]LIST:VSTart command is to set list self-starting voltage.

Command syntax [SOURce:] LIST:VSTart <Nrf2>

Example LIST:VSTart 3

Return syntax [SOURce:]LIST:VSTart?

Return parameters <NR2>

[SOURce:]LIST:SET01:FCP command is to set the list first step of fast charge protocol. The command step is named as SET with the corresponding number; the maximum number of step cannot exceed 16.

Command syntax [SOURce:] LIST:SET01:FCP <Nrf+>

Parameter 0 | 1.0 | 2.0 | 3.0 | 5.0 | 6.0 | 10.0 |

Example LIST:SET01:FCP 2.0

Return syntax [SOURce:]LIST:SET01:FCP?

Return parameters <NR2> Parameter meaning as following table

Parameter	Fast charge protocol of list single step
0.0	Regular(no fast charge)
1.0	QC2.0
2.0	QC3.0
3.0	QC4.0
5.0	UPD2.0
6.0	UPD3.0
10.0	PE2.0

[SOURce:]LIST:SET01:VQC command is to set the list first step of fast voltage charge protocol. The command step is named as SET with the corresponding number; the maximum number of step cannot exceed 16.

Command syntax [SOURce:] LIST:SET01:VQC <Nrf+>

Parameter 3.3~21

Example LIST:SET01:VQC 5.0

Unit V

Return syntax [SOURce:]LIST:SET01:VQC?

Return parameters <NR2>

[SOURce:]LIST:SET01:MODE command is to set the list first step of on-load mode. The command step is named as SET with the corresponding number; the maximum number of step cannot exceed 16.

Command syntax [SOURce:] LIST:SET01:MODE <Nrf+>

Parameter 0.0 | 1.0 | 2.0 | 3.0 | 4.0 | 5.0

Example LIST:SET01:MODE 1.0

Return syntax [SOURce:]LIST:SET01:MODE?

Return parameters <NR2> Parameter meaning as following table

Parameter	List single step with on-load mode
0.0	CC mode
1.0	CV mode
2.0	CR mode
3.0	CP mode
4.0	OPEN circuit mode
5.0	SHORT short-circuit mode

[SOURce:]LIST:SET01:VALue command is to set the the list first step of on-load constant value. The command step is named as SET with the corresponding number; the maximum number of step cannot exceed 16.

Command syntax [SOURce:] LIST:SET01:VALue <Nrf+>
Parameter 0~ MAXimum
Example LIST:SET01:VALue 3
Return syntax [SOURce:]LIST:SET01:VAL?
Return parameters <NR2>

[SOURce:]LIST:SET01:DWELl command is to set the list first step of on-load time. The command step is named as SET with the corresponding number; the maximum number of step cannot exceed 16.

Command syntax [SOURce:] LIST:SET01:DWELl <Nrf+>
Parameter 0~ 99999
Unit mS
Example LIST:SET01:DWELl 1000
Return syntax [SOURce:]LIST:SET01:DWELl?
Return parameters <NR2>

[SOURce:]LIST:SET01:PROTection command is to set the list first step of inspect item. The command step is named as SET with the corresponding number; the maximum number of step cannot exceed 16.

Command syntax [SOURce:] LIST:SET01:PROTection <Nrf+>
Parameter 0~ 99999
Unit mS
Example LIST:SET01:PROTection 0.0
Return syntax [SOURce:]LIST:SET01:PROT?
Return parameters <NR2> Parameter meaning as following table

Parameter	Inspection function of list single step
0.0	No inspection
1.0	Inspect current
2.0	Inspect voltage
3.0	Inspect power
4.0	Inspect Vpp
5.0	Inspect Ipp

[SOURce:]LIST:SET01:UPPer command is to set the list first step of the high limit protection. The command step is named as SET with the corresponding number; the maximum number of step cannot exceed 16.

Command syntax [SOURce:] LIST:SET01:UPPer <Nrf+>
Parameter 0~ MAXimum
Example LIST:SET01:UPPer 3.0
Return syntax [SOURce:]LIST:SET01:UPP?
Return parameters <NR2>

[SOURce:]LIST:SET01:LOWer command is to set the list first step of the low limit. The command step is named as SET with the corresponding number; the maximum number of step cannot exceed 16.

Command syntax [SOURce:] LIST:SET01:LOWer <Nrf+>
Parameter 0~ MAXimum
Example LIST:SET01:LOWer 3.0
Return syntax [SOURce:]LIST:SET01:LOW?
Return parameters <NR2>

[SOURce:]LIST:CALLing command is to recall the specified group of list file store in device.

Command syntax [SOURce:] LIST:CALLing <NR1>
Parameter 1~ 60（corfirm by stored group numbers in device）
Example LIST:CALLing 3
Return syntax [SOURce:]LIST:CALLing?
Return parameters 255（255 means recall finised）

[SOURce:]LIST:RESult? command is to query running result of list mode.

Command syntax [SOURce:] LIST:RESult?
Example LIST:RES?
Return parameters <NR1> (0~65535)

Return parameters decription：returns integer value, change it into binary number, from top to high, each bit presents single execute result, 1 presents execute successful, 0 presents execute failed.

MEASure Command

MEASure:VOLTage? command is to read the average value of voltage.

Command syntax MEASure[:SCALar]:VOLTage[:DC]?
Example MEAS:VOLT?
Return parameters <NR2>

MEASure:VOLTage:MAXimum? command is to read the peak value Vp+ of voltage.

Command syntax MEASure[:SCALar]:VOLTage:MAXimum?

Example MEAS:VOLT:MAX?

Return parameters <NR2>

MEASure:VOLTage:MINimum? command is to read the minimum value Vp- of voltage.

Command syntax MEASure[:SCALar]:VOLTage:MINimum?

Example MEAS:VOLT:MIN?

Return parameters <NR2>

MEASure:VOLTage:PTPeak? command is to read peak-to-peak value Vpp of voltage.

Command syntax MEASure[:SCALar]:VOLTage:PTPeak?

Example MEAS:VOLT:PTP?

Return parameters <NR2>

MEASure:CURRent? command is to read the average of current.

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

Example MEAS:CURR?

Return parameters <NR2>

MEASure:CURRent:MAXimum? command is to read the peak value Ip+ of current.

Command syntax MEASure[:SCALar]:CURRent:MAXimum?

Example MEAS:CURR:MAX?

Return parameters <NR2>

MEASure:CURRent:MINimum? command is to read the minimum value Ip- of current.

Command syntax MEASure[:SCALar]:CURRent:MINimum?

Example MEAS:CURR:MIN?

Return parameters <NR2>

MEASure:CURRent:PTPeak? command is to read the peak-to-peak value Ipp of current.

Command syntax MEASure[:SCALar]:CURRent:PTPeak?

Example MEAS:CURR:PTP?

Return parameters <NR2>

MEASure:POWer? command is to read the average value of power.

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

Example MEAS:POWer?

Return parameters <NR2>

MEASure:RESistance? command is to read equivalent impedance.

Command syntax MEAS[:SCALar]:RESistance[:DC]?

Example MEAS:RESistance?

Return parameters <NR2>

MEASure:CAPacity? command is to read the battery capacity.

Command syntax MEAS[:SCALar]:CAPacity[:DC]?

Example MEAS: CAPacity?

Return parameters <NR2>

OCP Test Command

OCP[:STATe] command is to start or stop OCP test

Command syntax OCP[:STATe] <bool>

Parameter 0 | 1 | OFF |ON

Example OCP ON

Return syntax OCP[:STATe]?

Return 0 | 1

OCP:ISTart command is to set the initial current of OCP.

Command syntax OCP:ISTart <NRf+>

Parameter 0 ~MAX

Unit A

Example OCP:IST 3

Return syntax OCP:ISTart?

Return <NR2>

OCP:IEND command is to set the cut-off current of OCP.

Command syntax OCP:IEND <NRf+>

Parameter 0 ~MAX

Unit A

Example OCP:IEND 6

Return syntax OCP:IEND?

Return <NR2>

OCP:CSTep command is to set the step-current value of OCP.

Command syntax OCP:CSTep <NR2>

Example OCP:CSTep 0.1

Return syntax OCP:CSTep?

Return <NR2>

OCP:DWELl command is to set the dewell time of OCP single step.

Command syntax OCP:DWELl <NRf+>

Parameter 0.1 ~99999

Unit mS

Example OCP:DWEL 0.1S or OCP:DWEL 10mS
Return syntax OCP:DWEL?
Return <NR2>

OCP:VTRig command is to set OCP trigger level.

Command syntax OCP:VTRig <NRf+>
Parameter 0.1 ~MAX
Unit V
Example OCP:VTR 11.8
Return syntax OCP:VTRig?
Return <NR2>

OCP:RESult[:OCP] command is to query the current value of OCP point.

Command syntax OCP:RESult[:OCP]?
Unit A
Example OCP:RES?
Return parameters <NRf+>

OCP:RESult:PMAX command is to query PMAX point.

Command syntax OCP:RESult:PMAX?
Return parameters < NR2>
Unit W
Example OCP:RES:PMAX?
Return <NRf+>

It presents the maximum output power of PMAX point.

OPP Test Command

OPP[:STATe] command is to start or stop the OPP test.

Command syntax OPP[:STATe] <bool>
Parameter 0 | 1 | OFF |ON
Example OPP ON
Return syntax OPP[:STATe]?
Return 0 | 1

OPP:PSTart command is to set the initial power of OPP.

Command syntax OPP:PSTart <NRf+>
Parameter 0 ~MAX
Unit W
Example OPP:PST 10
Return syntax OPP:PSTart?
Return <NR2>

OPP:PEND command is to set the cut-off power of OPP.

Command syntax OPP:PEND <NRf+>
Parameter 0 ~MAX
Unit W
Example OPP:PEND 100
Return syntax OPP:PEND?
Return <NR2>

OPP:CSTep command is to set the step-power of OPP.

Command syntax OPP:CSTep <NR2>
Example OPP:CSTep 1.0
Return syntax OPP:CSTep?
Return <NR2>

OPP:DWELl command is to set the dewell time of OPP single step.

Command syntax OPP:DWELl <NRf+>
Parameter 0.1 ~99999
Unit mS
Example OPP:DWEL 100
Return syntax OPP:DWEL?
Return <NR2>

OPP:VTRig command is to set OPP trigger level.

Command syntax OPP:VTRig <NRf+>
Parameter 0.1 ~MAX
Unit V
Example OPP:VTR 11.8
Return syntax OPP:VTRig?
Return <NR2>

OPP:RESult command is to query the power value of OPP point.

Command syntax OPP:RESult?
Unit W
Example OPP:RES?
Return parameters <NRf+>

BATTery Test Command

BATTery:CURRent command is to set the discharge current value of battery constant current.

Command syntax BATTery:CURRent < NRf+>
Parameter 0 ~MAX

Unit A
Example BATT:CURR 3
Return syntax BATTery:CURR?
Return <NR2>

BATTery:CCVoltage command is to set the cut-off voltage of discharge battery constant current.

Command syntax BATTery:CCVoltage <NRf+>
Parameter 0 ~MAX
Unit V
Example BATT:CCV 5.0
Return syntax BATT:CCV?
Return <NR2>

BATTery:RESistance command is to set discharge resistance of battery constant resistance.

Command syntax BATTery:RESistance <NRf+>
Parameter 0 ~7.5K
Unit Ω
Example BATT:RES 100
Return syntax BATT:RES?
Return <NR2>

BATTery:CRVoltage command is to set discharge cut-off voltage value of battery constant resistance.

Command syntax BATTery:CRVoltage <NR2>
Parameter 0 ~MAX
Unit V
Example BATT:CRV 5.0
Return syntax BATT:CRV?
Return <NR2>

BATTery:POWer command is to set discharge power value of battery constant power.

Command syntax BATTery:POWer <NRf+>
Parameter 0.1 ~MAX
Unit W
Example BATT:POW 10.0
Return syntax BATT:POW?
Return <NR2>

BATTery:CPVoltage command is to set discharge cut-off voltage of battery constant power.

Command syntax	BATTery:CPVoltage <NRf+>
Parameter	0 ~MAX
Unit	V
Example	BATT:CPV 10.0
Return syntax	BATT:CPV?
Return	<NR2>

OVP Test Command

OVP[:STATe] command is to start or stop OVP test.

Command syntax	OVP[:STATe] <bool>
Parameter	0 | 1 | OFF |ON
Example	OVP ON
Return syntax	OVP[:STATe]?
Return	0 | 1

OVP:VTRig command is to set OVP trigger level.

Command syntax	OVP:VTRig <NRf+>
Parameter	1.0 ~MAX
Unit	V
Example	OVP:VTR 4
Return syntax	OVP:VTRig?
Return	<NR2>

OVP:RESult[:OVP] command is to query the voltage value of OVP point.

Command syntax	OVP:RESult[:OVP]?
Return parameters	<NRf+>
Unit	V
Example	OVP:RES?
Return	<NR2>

OVP:RESult:TIME command is to query tovp.

Command syntax	OVP:RESult:TIME?
Unit	mS
Example	OVP:RES:TIME?
Return parameters	<NR2>

TIMing Test Command

TIMing[:STATe] command is to start or stop Timing test.

Command syntax TIMing[:STATe] <bool>
Parameter 0 | 1 | OFF |ON
Example TIM ON
Return syntax TIMing[:STATe]?
Return 0 | 1

TIMing:LOAD:MODE command is to set on-load mode in Timing test.

Command syntax TIMing:LOAD:MODE <mode>
Parameter CURR | VOLT | RES | POW | OFF
Example TIM:LOAD:MODE CURR
Return syntax TIMing:LOAD:MODE?
Return < NR2>
Relevant instructions If TIM:LOAD:SETT OFF， then ignore the setting of this instruction.

TIMing:LOAD:VALue command is to set on-load parameter in Timing test.

Command syntax TIMing:LOAD:VALue <Nrf+>
Parameter A/V/W/ohm, depend on TIMing:LOAD:MODE
Example TIM:LOAD:VAL 1
Return syntax TIMing:LOAD:VALue?
Return <NR2>
Relevant instructions If TIM:LOAD:SETT OFF，then ignore the setting of this instruction.

TIMing:TSTart:SOURce command is to set the start trigger source

Command syntax TIMing:TSTart:SOURce <source>
Parameter CURR | VOLT | EXT
Example TIM:TST:SOUR VOLT
Return syntax TIMing:TSTart:SOURce?
Return < NR2>

TIMing:TSTart:EDGE command is to set the trigger edge of start test.

Command syntax TIMing:TSTart:EDGE <edge>
Parameter RISE |FALL
Example TIM:TST:EDGE RISE
Return syntax TIMing:TSTart:EDGE?
Return < NR2>

TIMing:TSTart:LEVel command is to set the trigger level of start test

Command syntax TIMing:TSTart:LEVel <Nrf+>

Parameter depend on start trigger source, that is Timing:TSTart:SOURce
Example TIM:TST:LEV 1
Return syntax TIMing:TSTart:LEVel?
Return <NR2>

TIMing:TEND:SOURce command is to set the trigger source of the end of test.

Command syntax TIMing:TEND:SOURce <source>
Parameter CURR | VOLT | EXT
Example TIM:TEND:SOUR VOLT
Return syntax TIMing:TEND:SOURce?
Return < NR2>

TIMing:TEND:EDGE command is to set the trigger edge of end of test.

Command syntax TIMing:TEND:EDGE <edge>
Parameter RISE | FALL
Example TIM:TEND:EDGE RISE
Return syntax TIMing:TEND:EDGE?
Return <NR2>

TIMing:TEND:LEVel command is to set the trigger level of the end of test

Command syntax TIMing:TEND:LEVel <Nrf+>
Parameter depend on start trigger source, that is Timing:TEND:SOURce
Example TIM:TEND:LEV 5
Return syntax TIMing:TEND:LEVel?
Return <NR2>

TIMing:RESult command is to query Timing test result.

Command syntax TIMing:RESult?
Unit mS
Example TIM:RES?
Return <NR2>

LEFF Test Command (Load Effect Test）

LEFF [:STATe] command is to start or stop LEFF test.

Command syntax LEFF[:STATe] <bool>
Parameter 0 | 1 | OFF | ON
Example LEFF ON
Return syntax LEFF [:STATe]?
Return 0 | 1

LEFF:VOLTage command is to set the rated voltage in LEFF test.

Command syntax LEFF:VOLTage <NRf+>
Parameter 1.0 ~MAX
Unit V
Example LEFF:VOLT 5
Return syntax LEFF: VOLT?
Return < NRf+>

LEFF:CURRent comman is set rated current in LEFF test.

Command syntax LEFF:CURRent <NRf+>
Parameter 0 ~MAX
Unit A
Example LEFF:CURR 3
Return syntax LEFF: CURR?
Return < NRf+>

LEFF:RESult command is to query LEFF test result.

Command syntax LEFF:RESult?
Unit none
Return parameters < NRf+>
Return parameters range 0.0 - 1.0

QCM Test Command (Fast Charge Test）

QCModule:PROTocol command is to set the protocol of fast charge.

Command syntax QCModule: PROTocol <mode>
Parameter NULL | QC2 | QC3 | QC4 | PD2 | PD3 | PE2 | BC12
Example QCM:PROT PD3
Return syntax QCM:PROT?
Return < NRf+>
Parameter description

Parameter string	Return parameters	Description of fast charge protocol
NULL	0.0	Exit fast charge mode
QC2	1.0	QC2.0
QC3	2.0	QC3.0
QC4	3.0	QC4.0
PD2	5.0	PD2.0
PD3	6.0	DP3.0
PE2	9.0	PE2.0
BC12	14.0	BC1.2

QCModule:D+:VOLTage command is to query the actual voltage value on DP line.

Command syntax QCModule:D+:VOLTage?
Parameter 0~3.3
Unit V
Example QCM:D+:VOLT?
Return < NRf+>

QCModule:D+:SHORt command is to add 3.3V voltage to D+ (short-circuit test) in BC1.2 protocol.

Command syntax QCModule:D+:SHORt < bool>
Parameter 0 | 1 | OFF | ON
Example QCM:D+:SHORt ON
Return syntax QCM:D+:SHOR?
Return parameters < bool >

QCModule:D-:VOLTage command is to query the actual voltage value on DN line.

Command syntax QCModule:D-:VOLTage?
Parameter 0~3.3
Unit V
Example QCM:D-:VOLT?
Return < NRf+>

QCModule:D-:SHORt command is to add 3.3V voltage to D- (short-circuit test) in BC1.2 protocol.

Command syntax QCModule:D-:SHORt < bool>
Parameter 0 | 1 | OFF | ON
Example QCM:D-:SHORt ON
Return syntax QCM:D-:SHOR?
Return parameters < bool >

QCModule:PDO:COUNt command is to query the quantity of PD power/voltage object.

Command syntax QCModule:PDO:COUNt?
Unit none
Example QCM:PDO:COUN?
Return parameters < NRf+>
Return parameters range 0 - 7

QCModule:PDO:LIST command is to query the list of PD power/voltage.

Command syntax QCModule:PDO:LIST?
Unit none

Example QCM:PDO:LIST?

Return parameters PDO parameter list，each line presents one of voltage object.

Returns data example	Description
FPS:5.0V/3.0A	Fixed power，5V/3A
BPS:12.0V-5.0V/18.0W	Battery supply, maximum voltage 12V, minimum voltage 5V, maximum power18W
VPS:12.0V-5.0V/2.0A	Variable power, maximum voltage 12V, minimum voltage 5V, maximum current power
PPS: 11.0V-5.9V/3.0A	program-controlled power supply, maximum voltage 11V, minimum voltage 5.9V, maximum current 3A

QCModule:CONNect command is to query the connect status of fast charge protocol.

Command syntax QCModule:CONNect?

Unit none

Example QCM:CONN?

Return parameters < NR2>

Return parameters range 0(disconnected） | 1（connected）

QCModule:RUN command is to query the running status of fast charge command.

Command syntax QCModule:RUN?

Unit none

Example QCM:RUN?

Return parameters < NR2>

Return parameters range 0(not running or end of running） | 1（running）

QCModule:RESult command is to query the running result of fast charge.

Command syntax QCModule:RESult?

Unit none

Example QCM:RES?

Return parameters < NR2>

Return parameters range 0（failed） | 1（successful）

QCModule:FUNCtion command is to set the running mode of fast charge and trigger the power/voltage output.

Command syntax QCModule:FUNCtion < mode>

Parameter QCFIX | QCSTEP | PEFIX | PDFIX | DPDN

Example QCM:FUNC PDFIX

Return syntax QCM:FUNC?

Return parameters < NRf+>

Parameter decrpition

Parameter strings	Return parameters	Parameter descrpition
QCFIX	0.0	QC constant voltage mode
QCSTEP	1.0	QC stepped mode
PEFIX	2.0	PE constant voltage mode
PDFIX	4.0	PD constant voltage mode
DPDN	5.0	DPDNtest mode (in QC protocol）
/	6.0	List mode, it cannot set independently

Notes：DPDN test mode only can use in QC protocol.

QCModule:MODE command is to set the running mode of fast charge (the same as QCM: FUNC)

Command syntax QCModule:MODE < mode>

Parameter QCFIX | QCSTEP | PEFIX | PDFIX | DPDN

Example QCM:MODE PDFIX

Return syntax QCM:MODE?

Return parameters < NRf+>

Notes：DPDN test mode only can use in QC protocol.

QCModule:INPut command is to set the running switch of fast charge.

Command syntax QCModule: INPut < bool>

Parameter 0 （invalid） | 1 | OFF（invalid） | ON

Example QCM:INP ON

Return syntax QCM:INP?

Return parameters < bool >

QCModule:QC:VOLTage command is to set the voltage value in QC constant voltage mode.

Command syntax QCModule:QC:VOLTage < NRf+>

ParameterUnit V

Parameter range 3.3-20

Example QCM:QC:VOLT 9

Return syntax QCM:QC:VOLT?
Return parameters < NRf+>

QCModule:QC:STARt command is to set the initial voltage value in QC stepped mode.

Command syntax QCModule:QC:STARt < NRf+>
ParameterUnit V
Example QCM:QC: STAR 9
Return syntax QCM:QC:STAR?
Return parameters < NRf+>

QCModule:QC:STEP command is to set step voltage value in QC stepped mode.

Command syntax QCModule:QC:STEP < NRf+>
ParameterUnit V
Example QCM:QC:STEP 0.2
Return syntax QCM:QC:STEP?
Return parameters < NRf+>

QCModule:QC:END command is to set the end voltage value in QC stepped mode.

Command syntax QCModule:QC:END < NRf+>
ParameterUnit V
Example QCM:QC:END 12
Return syntax QCM:QC:END?
Return parameters < NRf+>

QCModule:QC:DWELl command is to set dewell time of single step in QC stepped mode.

Command syntax QCModule:QC:DWELl < NRf+>
ParameterUnit S
Example QCM:QC:DWELl 1000
Return syntax QCM:QC:DWELl?
Return parameters < NRf+>
Parameter range 100-99999

QCModule:QC:TRIGger command is to set trigger mode in QC stepped mode.

Command syntax QCModule:QC:TRIGger < NRf+>
Parameter 0 （manual） | 1（auto）
ParameterUnit none
Example QCM:QC:TRIGger 1

Return syntax QCM:QC:TRIGger?
Return parameters < NRf+>

QCModule:QC:MANual command is to send manual trigger in QC stepped mode, this command is only take effect in QC stepped mode and trigger mode must be manual.

Command syntax QCModule:QC:MANual < bool>
Parameter 0 (invalid） | 1 | OFF(invalid）| ON
ParameterUnit none
Example QCM:QC:MANual ON

QCModule:DPDN:PVOLtage command is to set DP voltage value in DPDN test mode.

Command syntax QCModule:DPDN:PVOLtage < NRf+>
Parameter unit V
Example QCM:DPDN:PVOLtage 0.6
Parameter range 0-3.3
Return syntax QCM:DPDN:PVOL?
Return parameters < NRf+>

QCModule:DPDN:NVOLtage command is to set DN voltage value in DPDN test mode.

Command syntax QCModule:DPDN:NVOLtage < NRf+>
Parameter unit V
Example QCM:DPDN:NVOLtage 0.6
Parameter range 0-3.3
Return syntax QCM:DPDN:NVOL?
Return parameters < NRf+>

QCModule:DPDN:VERRor command is to set the allowance error voltage value in DPDN test mode.

Command syntax QCModule:DPDN:VERRor < NRf+>
Parameter unit V
Example QCM:DPDN:VERRor 0.2
Parameter range 0-3.3
Return syntax QCM:DPDN:VERR?
Return parameters < NRf+>

QCModule:DPDN:DWELl command is to set the continuous time value in DPDN test mode.

Command syntax QCModule:DPDN:DWELl < NRf+>
Parameter unit ms

Example QCM:DPDN:DWELl 500
Parameter range 100-99999
Return syntax QCM:DPDN:DWELl?
Return parameters < NRf+>

QCModule:PE:VOLTage command is to set the voltage value in PE constant voltage mode.

Command syntax QCModule:PE:VOLTage < NRf+>
Parameter unit V
Example QCM:PE:VOLTage 5
Parameter range 3.3-20
Return syntax QCM:PE:VOLT?
Return parameters < NRf+>

QCModule:PD:VOLTage command is set the voltage value in UPD constant voltage mode.

Command syntax QCModule:PD:VOLTage < NRf+>
Parameter unit V
Example QCM:PD:VOLTage 5
Parameter range 3.3-21
Return syntax QCM:PD:VOLT?
Return parameters < NRf+>

QCModule:PD:CURRent command is to set the current value in UPD constant voltage mode.

Command syntax QCModule:PD:CURRent < NRf+>
Parameter unit A
Example QCM:PD:CURRent 3
Parameter range 0-5
Return syntax QCM:PD:CURR?
Return parameters < NRf+>

QCModule:PD:PDONumber command is to the voltage object serial number in UPD constant voltage mode.

Command syntax QCModule:PD:PDONumber < NR2>
Parameter unit none
Example QCM:PD:PDON 3
Parameter range 1-7，depend on the actual voltage object quantity to select, it must greater than 0
Return syntax QCM:PD:PDON?

Return parameters < NRf+>

The operation sequence description of remote fast charge:

① Select fast charge protocol（PROTocol）

② Wait for connecting（the process may takes 1-3 seconds）

③ Set pattern parameter（ It has five run mode and each pattern parameter should be set.）

④ Select run mode（FUNCtion/MODE）

⑤ Start to run（INPut，constant voltage mode can skip this step）

⑥ wait to the end of run（the process may takes 1-10seconds, don't need send the end of run command.）

⑦ Query the run result (RESult?)

Programmable example：

QC2.0/QC3.0 Fixed Point Test	
QCM:PROT QC2	Set the fast charge protocol
QCM:CONN?	Inspect handshake status, send instruction continuously when returns value 1
QCM:QC:VOLT 9	Set the output voltage
QCM:FUNC QCFIX	Select fixed point and trigger output
MODE CURR	Select constant current mode
CURR 1A	Constant current value 1A
INPUT ON	Turn on on-load
INPUT OFF	Turn off on-load
QCM:PROT NULL	Exit fast charge protocol

QC3.0/QC4.0 Stepped Test	
QCM:PROT QC3	Set the fast charge protocol
QCM:CONN?	Inspect handshake status, send instruction continuously when returns value 1
QCM:QC:STAR 5	Initial voltage： 5V
QCM:QC:STEP 0.2	Stepped voltage： 0.2V
QCM:QC:END 12	The end of run voltage： 12V
QCM:QC:DWEL 0.1	Stepped time： 0.1s Stepped time = stepped voltage÷0.2×0.1 s
QCM:QC:TRIG 1	Trigger mode： Auto trigger

QCM:MODE QCSTEP	Fast charge mode：stepped mode UNI-T
QCM:INP ON	Turn on stepped test
MODE CURR	Select constant current mode
CURR 1A	Constant current value 1A
INPUT ON	Turn on on-load
INPUT OFF	Turn off on-load
QCM:PROT NULL	Exit fast charge protocol

PD2.0/PD3.0 Fixed Point Test	
QCM:PROT PD3	Set the fast charge protocol
QCM:CONN?	Inspect handshake status, send instruction continuously when returns value 1
QCM:PDO:COUN?	Query the quantity of power/voltage object PD (this command is not necessary)
QCM:PDO:LIST?	Query the list of PD power/voltage (this command is not necessary)
QCM:PD:PDON 2	Serial number of voltage object：1
QCM:PD:VOLT 9	Output voltage：9V
QCM:PD:CURR 2	Output current：2A
QCM:MODE PDFIX	Select fixed point and trigger output
MODE CURR	Select constant current mode
CURR 1A	Constant current value 1A
INPUT ON	Turn on on-load
INPUT OFF	Turn off on-load
QCM:PROT NULL	Exit fast charge protocol

PEAK TEST Command

PEAK command os to read maximum/minimum value after starting the test.

PEAK:VOLTage:MAXimum? command is to read the maximum value of voltage.

Command syntax PEAK:VOLTage:MAXimum?

Example PEAK:VOLT:MAX?

Return parameters <NR2>

PEAK:VOLTage:MINimum? command is to read the minimum value of voltage.

Command syntax PEAK:VOLTage:MINimum?

Example PEAK:VOLT:MIN?

Return parameters <NR2>

PEAK:CURRen:MAXimum? command is to read the maximum value of current.

Command syntax PEAK:CURRent:MAXimum?

Example PEAK:CURR:MAX?

Return parameters <NR2>

PEAK:CURRent:MINimum? command is to read minimum value of current.

Command syntax PEAK:CURRent:MINimum?

Example PEAK:CURR:MIN?

Return parameters <NR2>

Notes：

1） UTL8200/ UTL8500 series electronic load is communicated by serial port RS232 if no other specific description, serial port parameters:

Baud rate：4800bps/9600bps（Default）/19.2Kbps/38.4Kbps/57.6Kbps/115.2Kbps

Data bit：8bits；

Stop bit：1bit；

Check bit：none；

Flow control：none

2）If electronic load has no data to respond when the upper computer send SCPI command, the shift message in standard event status register as the answer message to response, the detailed content see the register description.

3）The short time interval can not less than 30ms between in two SCPI command when upper computer continuous to send.

4）This protocol differs from the standard SCPI, UTL8200/ UTL8500 series electronic load support each command only operating one single data.

5）This protocol includes the part of remote control operation, user can contact us to get other remoter operation. Our company can compile SCPI protocol as custom made. In addition, we can implement real-time updates.