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|  |  |
| --- | --- |
| :DISPlay:ENABle OFF  :DISPlay:ENABle ON | Disable the display Enable the display |

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|  |  |
| --- | --- |
| **Command** | **Description** |
| :SENSe:CURRent:RANGe <n> :SENSe:CURRent:RANGe:AUTO <state> :SENSe:VOLTage:RANGe <n> :SENSe:VOLTage:RANGe:AUTO <state> :SENSe:RESistance:RANGe <n> :SENSe:RESistance:RANGe:AUTO <state> :DISPlay:DIGits <n> | Select manual amps range (n = range). Enable/disable auto amps range (state = ON or OFF). Select manual volts measure range (n = range). Enable/disable auto volts range (state = ON or OFF). Select manual ohms range (n = range). Enable/disable auto ohms range (state = ON or OFF). Set display digits (n = 4, 5, 6, or 7). |

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|  |  |
| --- | --- |
| **Command** | **Description** |
| \*RST :SOUR:FUNC VOLT :SOUR:VOLT 10 :SENS:FUNC “CURR” :SENS:CURR:RANG 10E-6 :DISP:DIG 5 :OUTP ON :READ? :OUTP OFF | Restore GPIB defaults. Volts source function. Output 10V. Amps measure function. 10μA range. 5Hdisplay digits. Turn on output. Trigger and acquire reading. Turn off output. |

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Press SPEED or CONFIG SPEED to display the menu.  
• FAST — Sets speed to 0.01 PLC and sets display resolution to 3Hdigits.  
• MED — Sets speed to 0.10 PLC and sets display resolution to 4Hdigits.  
• NORMAL — Sets speed to 1.00 PLC and sets display resolution to 5Hdigits.  
• HI ACCURACY — Sets speed to 10.00 PLC and sets display resolution to  
6Hdigits.  
• OTHER — Use to set speed to any PLC value from 0.01 to 10. Display resolution is not changed when speed is set with this option.

|  |  |
| --- | --- |
| **Command** | **Description** |
| :SENSe:CURRent:NPLCycles <n> :SENSe:VOLTage:NPLCycles <n> :SENSe:RESistance:NPLCycles <n> | Set amps speed (n = PLC, 0.01 to 10)\*. Set volts speed (n = PLC, 0.01 to 10)\*. Set ohms speed (n =PLC, 0.01 to 10)\* |

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|  |  |
| --- | --- |
| SENSe:AVERage:TCONtrol <type> :SENSe:AVERage:COUNt <n> :SENSe:AVERage <state> | Select filter type (type = REPeat or MOVing). Set filter count (n = count, 1 to 100). Enable/disable filter (state = ON or OFF)\*. |

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|  |  |
| --- | --- |
| **Command** | **Description** |
| :SENSe:AVERage:TCONtrol <type> :SENSe:AVERage:COUNt <n> :SENSe:AVERage <state> | Select filter type (type = REPeat or MOVing). Set filter count (n = count, 1 to 100). Enable/disable filter (state = ON or OFF)\*. |

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Gráfico, Diagrama

Descrição gerada automaticamente com confiança média

**Current range holdoff**Current range holdoff adds the ability to speed up low-current measurements  
when sourcing voltage and measuring current. This feature is only available when  
doing source memory sweeps. It will momentarily set the measure range to the  
compliance range to overcome the effects of capacitance by quickly charging the  
capacitance on the higher range, but return to the lower measurement range to  
obtain a good low-current measurement. This avoids being limited by range compliance, which would require either a longer delay time, or having to take the measurement on a higher current range. This feature is available only by remote, but  
both parameters are saved for each memory location.

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|  |  |
| --- | --- |
| :SOURce:CURRent:MODE SWEep :SOURce:CURRent:STARt <n> :SOURce:CURRent:STOP <n> :SOURce:CURRent:STEP <n> :SOURce:CURRent:CENTer <n> :SOURce:CURRent:SPAN <n> :SOURce:VOLTage:MODE SWEep :SOURce:VOLTage:STARt <n> :SOURce:VOLTage:STOP <n> :SOURce:VOLTage:STEP <n> :SOURce:VOLTage:CENTer <n> :SOURce:VOLTage:SPAN <n> :SOURce:SWEep:RANGing <name> :SOURce:SWEep:SPACing <name> :SOURce:SWEep:POINts <n> :SOURce:SWEep:DIREction <name> :SOURce:SWEep:CABort <name> | Select current source sweep mode. Specify sweep start current (n = current). Specify sweep stop current (n = current). Specify sweep step current (n = current). Specify sweep center current (n = current). Specify sweep span current (n = current). Select voltage source sweep mode. Specify sweep start voltage (n = voltage). Specify sweep stop voltage (n = voltage). Specify sweep step voltage (n = voltage). Specify sweep center voltage (n = voltage). Specify sweep span voltage (n = voltage). Select source ranging (name = BEST, AUTO, or FIXed). Select sweep scale (name = LINear or LOGarithmic). Set number of sweep points (n = points). Set sweep direction. Name = UP (sweep start to stop) or DOWn (sweep stop to start). Abort on compliance. Name = NEVer (disable), EARLy (start of SDM cycle), or LATE (end of SDM cycle). |

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***Staircase sweep programming example (diode test)***

|  |  |
| --- | --- |
| \*RST :SENS:FUNC:CONC OFF :SOUR:FUNC CURR :SENS:FUNC ‘VOLT:DC’ :SENS:VOLT:PROT 1 :SOUR:CURR:START 1E-3 :SOUR:CURR:STOP 10E-3 :SOUR:CURR:STEP 1E-3 :SOUR:CURR:MODE SWE :SOUR:SWE:RANG AUTO :SOUR:SWE:SPAC LIN :TRIG:COUN 10 :SOUR:DEL 0.1 :OUTP ON :READ? | Restore GPIB default conditions. Turn off concurrent functions. Current source function. Volts sense function. 1V voltage compliance. 1mA start current. 10mA stop current. 1mA step current. Select current sweep mode.1 Auto source ranging. Select linear staircase sweep. Trigger count = # sweep points.2 100ms source delay. Turn on source output. Trigger sweep, request data. |

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***Custom sweep commands***

|  |  |
| --- | --- |
| **Command** | **Description** |
| :SOURce:CURRent:MODE LIST :SOURce:VOLTage:MODE LIST :SOURce:LIST:CURRent <list> :SOURce:LIST:CURRent:APPend <list> :SOURce:LIST:CURRent:POINts? :SOURce:LIST:VOLTage < list> :SOURce:LIST:VOLTage:APPend <list> :SOURce:LIST:VOLTage:POINts? :SOURce:SWEep:RANGing <name> | Select current list (custom) sweep mode. Select voltage list (custom) sweep mode. Define I-source (list = I1, I2,… In). Add I-source list value(s) (list =I1, I2,…In). Query length of I-source list. Define V-source list (list = V1, V2,… Vn). Add V-source list value(s) (list =V1, V2,…Vn). Query length of V-source list. Select source ranging (name = BEST, AUTO, or FIXed) |

***Custom sweep programming example***

|  |  |
| --- | --- |
| **Command** | **Description** |
| \*RST :SENS:FUNC:CONC OFF :SOUR:FUNC VOLT :SENS:FUNC ‘CURR:DC’ :SENS:CURR:PROT 0.1 :SOUR:VOLT:MODE LIST :SOUR:LIST:VOLT 7,1,3,8,2 :TRIG:COUN 5 :SOUR:DEL 0.1 :OUTP ON :READ? | Restore GPIB default conditions. Turn off concurrent functions. Volts source function. Current sense function. 100mA current compliance. List volts sweep mode. 7V, 1V, 3V, 8V, 2V sweep points. Trigger count = # sweep points. 100ms source delay. Turn on source output. Trigger sweep, request data. |

***Source memory sweep commands***

|  |  |
| --- | --- |
| **Command** | **Description** |
| :SOURce:FUNCtion MEM :SOURce:MEMory:POINts <n> :SOURce:MEMory:STARt <n> :SOURce:MEMory:RECall <n> :SOURce:SAVE <n> :SENSe:CURRent:RANGe:HOLDoff <b> :SENSe:CURRent:RANGe:HOLDoff:DELay <NRf> | Select memory sweep mode. Specify number of sweep points (n = points). Select source memory start location (n = location). Return to specified setup (n = memory location). Save setup in memory (n = memory location). Enable (ON), disable (OFF) current range holdoff. Set holdoff delay in seconds. |

***Source memory sweep programming example***

|  |  |
| --- | --- |
| **Command** | **Description** |
| \*RST :SENS:FUNC:CONC OFF :SOUR:FUNC MEM :SOUR:MEM:POIN 3 :SOUR:MEM:STAR 1 :SOUR:FUNC VOLT :SENS:FUNC ‘CURR:DC’ :SOUR:VOLT 10 :SOUR:MEM:SAVE 1 :SOUR:FUNC CURR :SENS:FUNC ‘VOLT:DC’ :SOUR:CURR 100E-3 :SOUR:MEM:SAVE 2 :SENS:FUNC ‘CURR:DC’ :SOUR:MEM:SAVE 3 :TRIG:COUN 3 :OUTP ON :READ? | Restore GPIB default conditions. Turn off concurrent functions. Source memory sweep mode. Number memory points = 3. Start at memory location 1. Volts source function. Current sense function. 10V source voltage. Save in source memory location 1. Current source function. Volts sense function. 100mA source current. Save in source memory location 2. Current sense function. Save in source memory location 3. Trigger count = # sweep points. Turn on source output. Trigger sweep, request data. |

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The factory interface selection is the GPIB bus. At the factory, the address is set to 24.

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**Command words**Program messages are made up of one or more command words.

*NOTE At least one space between the command word and the parameter is required.*Brackets [ ] — Some command words are enclosed in brackets ([ ]). These brackets are used to denote an optional command word that does not need to be included in the program message. For example:

:INITiate[:IMMediate]

**Parameter types** — The following are some of the more common parameter  
types:  
<b> Boolean

<name> Name parameter

<NRf> Numeric representation format

<n> Numeric value

<numlist> Numlist

<NDN> Non-decimal numeric

Angle brackets < >

**Query commands**This type of command requests (queries) the presently programmed status. It is  
identified by the question mark (?) at the end of the fundamental form of the command.

**Case sensitivity**

• SCPI 1996.0 (Standard Commands for Programmable Instruments)Common commands and SCPI commands are not case sensitive. You can use  
upper or lower case and any case combination.

**Long-form and short-form versions**A SCPI command word can be sent in its long-form or short-form version.

**Short-form rules**Use the following rules to determine the short-form version of any SCPI command

**Multiple command messages**You can send multiple command messages in the same program message as  
long as they are separated by semicolons (;).

**Using common and SCPI commands in the same message**

Both common commands and SCPI commands can be used in the same message as long as they are separated by semicolons (;).

**Program message terminator (PMT)**Each program message must be terminated with an LF (line feed), EOI (end or  
identify), or an LF+EOI.

**RS-232 interface operation***NOTE The programmable aspects of RS-232 operation (baud rate, data bits,  
parity, and terminator are configured from the COMMUNICATION option  
of the Main Menu. (See Section 1, “Main menu.”)***Sending and receiving data**The RS-232 interface transfers data using 8 data bits, 1 stop bit, and no parity.

**Flow control (signal handshaking)**Signal handshaking between the controller and the instrument lets the two  
devices communicate with each other about readiness to receive data. The  
SourceMeter does not support hardware handshaking (flow control).