

6040 Panel Meter Calibrator

remote control manual



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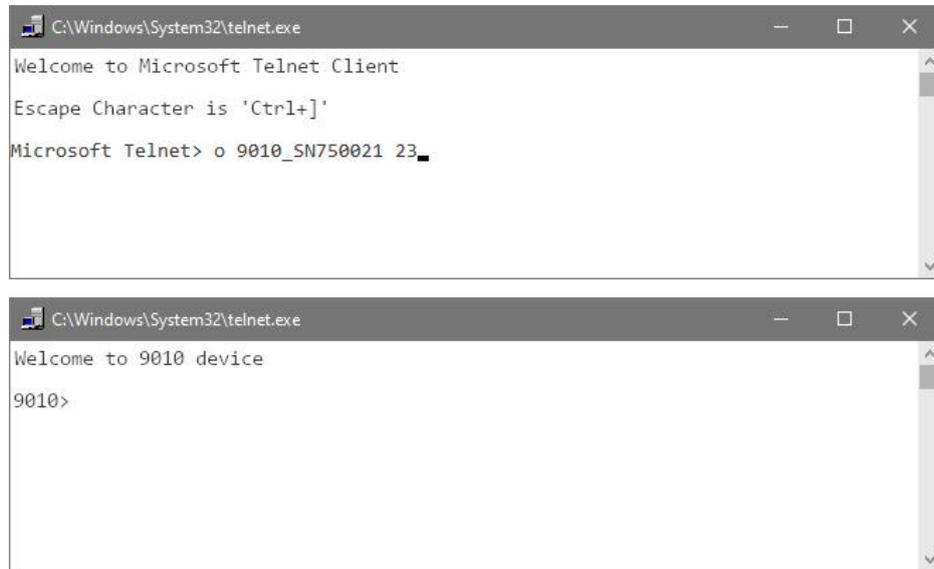
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Once connected, you'll be able to log into the calibrator as Telnet client using Microsoft Telnet Client, Putty or similar. To start MS Telnet Client, open your command line and type in „Telnet“. Then proceed with „o 6040_SNxxxxxx yy“, where “xxxxxx” is serial number and “yy” is communication port. Below is an example of communication with Meatest 9010 calibrator:



2. Executing Commands

Most commands can be executed in Remote mode only. In Remote mode, device blocks manual entry interfaces (keyboard, RCU) to prevent unintended manipulation during remote control session. GPIB interface switches device into and out of Remote mode automatically. Other interfaces (USB and Ethernet) need to use following commands:

- SYSTem:REMOte Puts device into Remote mode and locks keyboard except Local button
- SYSTem:RWLock Puts device into Remote mode and locks entire keyboard
- SYSTem:LOCal Returns device from Remote mode and unlocks keyboard

2.1. Command Syntax

All commands listed in this chapter are made of KEYWORDS and PARAMETERS.

One or more KEYWORDS divided by colons (:) make up name of a command. When typing a command, keywords in square brackets ([]) can be omitted as well as lowercase letters and leading colons. For example “:OUTPut:STATe ON”, “:OUTPut ON” and “OUTP 1” are considered the same.

Different PARAMETER types describe what kind of data is expected. For more details on parameter types, see table below. In command reference parameters are indicated by sharp brackets (< >) and separated by commas (.). Square brackets ([]) indicate non-mandatory parameters, vertical lines (|) indicate parameter alternatives.

Multiple commands can be executed at once if separated by semicolon (;). In any case, command (or set of commands) has to end with line feed (LF) terminator in order to be executed. With exception of GPIB interface, the device will also accept carriage return (CR) and combination of both (CRLF) as terminators. Inversely, device will always terminate its reply with CRLF or just LF in case of GPIB. The communication may look like this:

1. Controller> „VOLT:DC 10;OUTP ON;VOLT:DC?“+LF (ASCII code 10)
2. Device> „1.000000E+01 V“+LF
3. Controller> „OUTP?“+LF
4. Device> „1“+LF

Used parameter types

Type	Description
<DNPd>	Decimal Numeric Program Data, this format is used to express decimal number with or without the exponent.
<CPD>	Character Program Data. Usually, it represents a group of alternative character parameters. E.g. {SERial GPIB USB LAN}.
<SPD>	String Program Data (quoted string). This type of parameter is similar to CPD, but allows transmission of more ISO characters.
<BOOL>	Boolean Program Data. This type of parameter has only two states 0 and 1. Parameter can take form of integer value (0 or 1), or character alias (ON or OFF). Device always returns integer value (0 or 1).
<UNIT>	Unit parameter works in conjunction with DNPd parameter and specifies unit of DNPd (numeric) value. Unit must be selected from predefined ones. If UNIT part is omitted, default one is used. Query always returns actual unit.
<N>	Numeric suffix - unique identifier with NRI format (an integer without a decimal point).
?	A flag indicating a request for the value of the parameter specified by the command. No other parameter than the question mark can be used.
(?)	A flag indicating a request for the parameter specified by the command. This command permits a value to be set as well as requested.

3. Status Reporting

3.1. Status Data Structure-Register Model

Device meets standard protocol according to the standard IEEE488.2. The protocol can be used for checking of error and status behavior of the device. It enables single-wire transmitting of SRQ command. The conditions on which SRQ signal (local control request) is sent can be set with commands *STB?, *SRE?, *SRE, *ESR?, *ESE?, *ESE a *CLS.

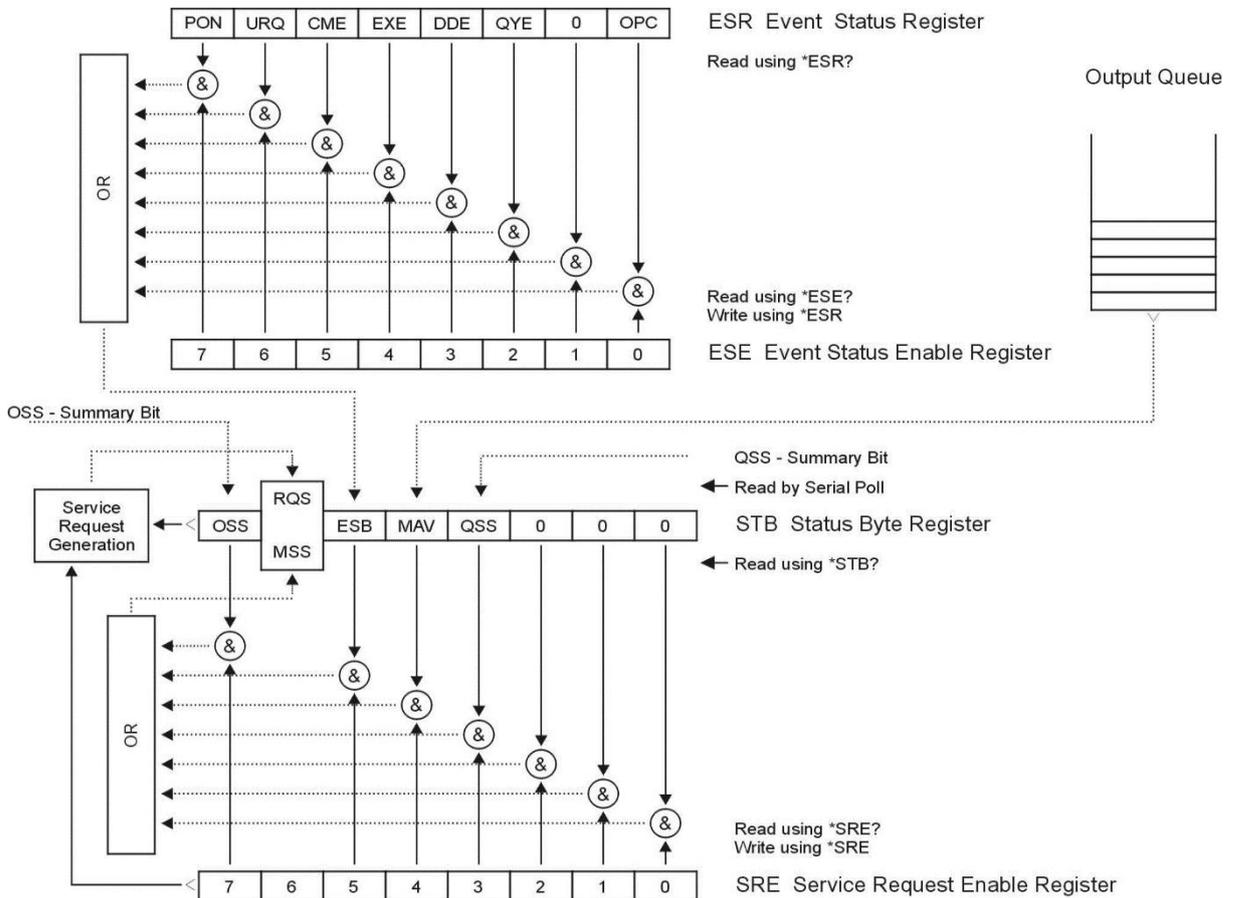


Figure 1 Status register overview

Status data structure contains following registers:

- STB – Status Byte Register
- SRE – Service Request Enable Register
- ESR – Event Status Register
- ESE – Event Status Enable Register
- Output Queue

3.2. Status Data Structure Registers

STB Status Byte Register

STB is main register where information from other status registers and from output queue is collected. Value of STB register is reset after switching on the device or after sending command *CLS. This command reset the STB register except bit MAV, which remains set if the output queue is not empty. STB register value can be read via serial message or through general query *STB?. Bit configuration of Status Byte Register is as follows:

- OSS Operation Summary Status, bit 7. SCPI-defined. The OSS bit is set to 1 when the data in the OSR (Operation Status Register) contains one or more enabled bits which are true.
- RQS Request Service, bit 6. The bit is read as a part of status byte only when serial message is sent.
- MSS Master Summary Status, bit 6. The MSS bit is set to 1 whenever bits ESB or MAV are 1 and enabled (1) in the SRE. This bit can be read using the *STB? command. Its value is derived from STB and SRE status.
- ESB Event Summary Bit, bit 5. His value is derived from STB and SRE status. The ESB bit is set to 1 when one or more enabled ESR bits are set to 1.
- MAV Message Available, bit 4. The MAV bit is set to 1 whenever data is available in the IEEE488 Output Queue (the response on query is ready).
- QSS Questionable Summary Status, bit 3. SCPI-defined. The QSS bit is set to 1 when the data in the QSR (Questionable Status Register) contains one or more enabled bits which are true.

SRE Service Request Enable Register

The Service Request Enable Register suppresses or allows the STB bits. “0” value of a SRE bit means, that the bit does not influence value of MSS bit. Value of any unmasked STB bit results in setting of the MSS bit to the level “1”. SRE bit 6 is not influenced and its value is “0”. The SRE register value can be set via the command *SRE followed by mask register value (0 – 191). The register can be read with the command *SRE?. The register is automatically resets after switching the device on. The register is not reset by the command *CLS.

ESR Event Status Register

Every bit of the EventStatusRegister corresponds to one event. Bit is set when the event is changed and it remains set also when the event passed. The ESR is cleared when the power is turned on (except bit PON which is set), and every time it is read via command *ESR? Or cleared with *CLS. Bit configuration of Event Status Register is as follows:

- PON Power On, bit 7. This event bit indicates that an off-to-on transition has occurred in the device’s power supply.
- URQ User Request, bit 6. Bit is not used and it is always “0”.
- CME Command Error, bit 5. This event bit indicates that an incorrectly formed command or query has been detected by the instrument.
- EXE Execution Error, bit 4. This event bit indicates that the received command cannot be executed, owing to the device state or the command parameter being out of limits.
- DDE Device Dependent Error, bit 3. This event bit indicates that an error has occurred which is neither a Command Error, a Query Error, nor an Execution Error. A Device-specific Error is any executed device operation that did not properly complete due to some condition, such as overload.
- QYE Query Error, bit 2. The bit is set if the device is addressed as talker and output queue is empty or if control unit did not pick up response before sending next query.
- OPC Operation Complete, bit 0. This event bit is generated in response to the *OPC command. It indicates that the device has completed all selected pending operations.

ESE Event Status Enable Register

The Event Status Enable Register allows one or more events in the Event Status Register to be reflected in the ESB summary-message bit. This register is defined for 8 bits, each corresponding to the bits in the Event Status Register. The Event Status Enable Register is read with the common query *ESE?. Data is returned as a binary-weighted value. The Event Status Enable Register is written to by the common command, *ESE. Sending the *ESE common command followed by a zero clears the ESE. The Event Status Enable Register is cleared upon power-on.

It suppresses or allows bits in ESR register. Value „0“ of a bit of ESE register suppresses influence of appropriate bit of ESR register on value of sum bit of ESB status register. Setting of any unmask bit of ESR register results in setting of ESB status register. ESE register value can be modified by command *ESE followed by value of mask register (integer in range 0 –255). Reading of the register can be performed with command *ESE?. The register is automatically reset after switching on. The register is not reset with *CLS command.

Operation Status Register

The device uses bit 11 to indicate the active HAZARDOUS VOLTAGE warning.

Questionable Status Register

The device uses bit 12 to query OUTPUT OVERLOAD state.

Output Queue

The Output Queue stores response messages until they are read from control unit. If there is at minimum one sign in the output queue, MAV register (message available) is set. The Output Queue is cleared upon power-on and after reading all signs from output queue.

Error Queue

The Error Queue stores error messages. They are placed in a “first in, first out” queue.

The queue is read destructively using the query command “SYSTem:ERRor?” to obtain a code number and error message. The query “SYSTem:ERRor?” can be used to read errors in the queue until it is empty, when the message “0, No Error” will be returned.

3.3. Error Messages

SCPI Remote control errors

Code	Name	Description
-440	Query UNTERMINATED after indefinite response	Indicates that a query was received in the same program message after an query requesting an indefinite response was executed
-430	Query DEADLOCKED	Indicates that a condition causing a DEADLOCKED Query error occurred; for example, both input buffer and output buffer are full and the device cannot continue.
-420	Query UNTERMINATED	Indicates that a condition causing an UNTERMINATED Query error occurred; for example, the device was addressed to talk and an incomplete program message was received.
-410	Query INTERRUPTED	Indicates that a condition causing an INTERRUPTED Query error occurred; for example, a query followed by DAB or GET before a response was completely sent.
-400	Query error	This is the generic query error.
-350	Queue overflow	A specific code entered into the queue in lieu of the code that caused the error. This code indicates that there is no room in the queue and an error occurred but was not recorded.
-283	Illegal variable name	An attempt was made to reference a nonexistent variable in a program.
-241	Option is not present	Indicates that a legal program command or query could not be executed because of missing device hardware; for example, an

		option was not installed.
-230	Data corrupt or stale	Possibly invalid data; new reading started but not completed since last access.
-224	Illegal parameter value	Used where exact value, from a list of possible, was expected.
-222	Data out of range	Indicates that a legal program data element was parsed but could not be executed because the interpreted value was outside the legal range as defined by the device.
-221	Setting conflict	Indicates that a legal program data element was parsed but could not be executed due to the current device state.
-220	Parameter error	Indicates that a program data element related error occurred.
-213	Init ignored	Indicates that a request for a measurement initiation was ignored as another measurement was already in progress.
-211	Trigger ignored	Indicates that a GET, *TRC, or triggering signal was received and recognized by the device but was ignored because of device timing considerations; for example, the device was not ready to respond.
-203	Command protected	Indicates that a legal password-protected program command or query could not be executed because the command was disabled.
-161	Invalid block data	A block data element was expected, but was invalid for some reason; for example, an END message was received before the length was satisfied.
-151	Invalid string data	A string data element was expected, but was invalid for some reason; for example, an END message was received before the terminal quote character.
-144	Character data too long	The character data element contains more than twelve characters.
-141	Invalid character data	Either the character data element contains an invalid character or the particular element received is not valid for the header.
-131	Invalid suffix	The suffix does not follow the syntax, or the suffix is inappropriate for this device.
-130	Suffix error	This error is generated when parsing a suffix.
-121	Invalid character in number	An invalid character for the data type being parsed was encountered; for example, an alpha in a decimal numeric.
-120	Numeric data error	This error is generated when parsing a data element which appears to be numeric, including the nondecimal numeric types.
-114	Header suffix out of range	The value of a numeric suffix attached to a program mnemonic makes the header invalid.
-113	Undefined header	The header is syntactically correct, but it is undefined for this specific device; for example, *XYZ is not defined for any device.
-112	Program mnemonic too long	The header contains more that twelve characters.
-109	Missing parameter	Fewer parameters were received than required for the header; for example, the *EMC common command requires one parameter, so receiving *EMC is not allowed.
-108	Parameter not allowed	More parameters were received than expected for the header; for example, the *EMC common command only accepts one parameter, so receiving *EMC 0,1 is not allowed.
-105	GET not allowed	A Group Execute Trigger was received within a program message.
-104	Data type error	The parser recognized a data element different than one allowed; for example, numeric or string data was expected but block data was encountered.
-103	Invalid separator	The parser was expecting a separator and encountered an illegal character.
-102	Syntax error	An unrecognized command or data type was encountered; for example, a string was received when the device does not accept strings.
-101	Invalid character	A syntactic element contains a character which is invalid for that type; for example, a header containing an ampersand, OUTPUT&.
-100	Command error	This is the generic syntax error.
263	Not able to execute while instrument is measuring	The command cannot be executed because the measurement is in progress.
311	Not able to specify resolution with autorange	The resolution parameter was ignored because automatic range selection is used.

514	Command not allowed with GPIB	The command is not supported for GPIB.
515	The command is only supported for the USB bus	This command can only be used with the USB bus.
532	Not able to achieve requested resolution	The desired resolution cannot be set.
535	Value exceeded user global limit	The user-defined Master Limit has been exceeded.

Slave processor errors

1001	Internal communication with <module_name> failed.	The Slave processor received the command when it did not complete the previous commands. Please restart the device.
1002	Internal communication with <module_name> failed.	The Slave processor received a command with a wrong checksum. The command was not executed.
1003	Internal communication with <module_name> failed.	The Slave processor received an unknown command. Please update the device's FW.
1004	Internal communication with <module_name> failed.	The slave processor received the data, but its length is incorrect. Please update the device's FW.
1005	Internal communication with <module_name> failed.	The received parameter value is out of range. Please update the device's FW.
1006	Internal communication with <module_name> failed.	The command cannot be executed because the FW loading mode is active. Please restart the device.
1007	Internal communication with <module_name> failed.	The requested internal function does not exist. Please update the device's FW.
1008	Internal meter in <module_name> module does not measure	Internal meter returns invalid result.
1009	Internal meter in <module_name> module is overloaded	Internal meter is overloaded.
1010	Flash memory error in <module_name> module	Internal Flash operation error on slave processor.
1011	Flash memory error in <module_name> module	Writing or reading from the cell was not performed because the cell is out of range.
1012	Flash memory error in <module_name> module	Cannot write cell because it does not fit in Flash memory.
1013	Flash memory error in <module_name> module	Internal flash memory not found.

Master processor errors

2001 ... 2009	Internal communication with <module_name> failed.	General communication error between Master and Slave processor.
2010	<module_name> module disconnected!	The internal module has stopped communicating. Restart the device.
2011	<module_name> module is missing!	One of the basic modules of the device does not communicate.
2012	The <module_name> module has not completed the required function.	The device was not able to set the function even after a given timeout.

Execution errors

3001 ... 3011	Internal communication with <module_name> failed.	Obsolete function data. Please upload the latest FW.
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Flash memory errors

4001 ... 4015	Flash memory error
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Data transmitting errors

5001 ... 5005	Data transmitting module error
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User interface errors

6001	Unknown command
6002	Invalid parameter
6003	Not setable
6004	Not questionable
6005	Unknown variable
6006	Value too low
6007	Value too high
6008	Not number
6009	Access denied
6011	Unknown format for displaying a variable
6012	Not initialized
6019	Empty string not allowed
6022	This name already exists
6032	Device is in remote mode. Activate the "Go to Local" key to go to Local mode.
6033	The code is invalid.
6034	Serial number is invalid.
6035	Invalid calibration index.
6036	The code is invalid.
6037	Unlock data failed to write.
6038 ... 6042	Invalid parameter
6043	Value exceeded user global limit
6044	RCU control is enforced. Disconnect the RCU to enable main unit keyboard.
6045	RCU control is disabled. Enable RCU control in Device menu.

MODBUS errors

6050	MODBUS: Wrong control sum
6051	MODBUS: Not ASCII
6052	MODBUS: Outland message
6053	MODBUS: Invalid function
6054	MODBUS: Invalid location
6055	MODBUS: Invalid register count

Device errors

7001 ... 7005	A device error has occurred in the <module_name> module.
7006	Internal fan stopped!
7018	A device error has occurred in the <module_name> module.
7021	This function is unavailable!
7023	Calibration is unavailable!
7026	MR25 non-volatile memory has been erased

7027	MR25 non-volatile memory not found
7040	Voltage cable not connected
7041	Current cable not connected
7042	Synchroscope cable not connected
7043	IFC module not found
7044	VLT module not found
7045	CUR module not found
7046	RCU not connected
7050	Voltage cable has been disconnected
7051	Current cable has been disconnected
7052	Synchroscope cable has been disconnected
7053	IFC module has been disconnected
7054	VLT module has been disconnected
7055	CUR module has been disconnected
7056	RCU has been disconnected

Hard overload protection

7100	VLT: 40 V range overload!	Burden current limit exceeded. Decrease voltage/synchroscope load to specified limits.
7101	VLT: 200 V range overload!	
7102	Voltage terminals are shorted!	
7103	Current amplifier overload!	Compliance voltage limit exceed. Decrease current output load to specified limits.
7104	External current overload!	
7105	Resistance between current terminals is too high!	
7106	CUR: Ground voltage fast limit exceeded!	Disconnect external source of excessive voltage from current output terminals.
7107	CUR: Ground current fast limit exceeded!	
7108	VLT: Ground voltage fast limit exceeded!	Disconnect external source of excessive voltage from voltage and/or synchroscope output terminals.
7109	VLT: Ground current fast limit exceeded!	

Calibration data errors

8001	Invalid calibration index
8002	Invalid calibration mode
8003	Value too low
8004	Value too high
8005	Output is switched off
8006	Invalid measure
8007	Measurement is overloaded
8008	Measurement out of limit
8009	The device is in the warm state. <time> minutes left.
8010	Could not clear the preset!
8011	Required preset does not exist!
8012	Preset size exceeded!
8013	Could not write the preset!
8014	Could not read the preset!
8015	Preset is damaged!
8016	The preset is empty!
8017	The memory is full. You cannot create a new record. First remove older one.
8018	Access denied
8019	Input is switched off
8022	Current shunt temperature is high for calibration

Device presets errors

9003	Required preset does not exist!
9004	Could not clear the preset!
9005	Could not write the preset!
9006	Could not read the preset!
9007	Preset is damaged!
9002	The preset is empty!
9008	Preset size exceeded!

Internal meter errors

11000	CPU: Ambient light sensor defective!
11001	CPU: Panel temperature outside specified limit!
11002	CPU: Supply voltage 12VCPU is out of range!
11003	CPU: Supply voltage 12VRMT is out of range!
11004	CPU: Supply voltage 3V3 is out of range!
11005	CPU: Supply voltage 12VFAN is out of range!
11006	CPU: Supply voltage 30VBCK is out of range!
11007	CPU: The ambient temperature is out of range.
11008	CPU: Relative humidity is out of range.
11009	VLT: HI terminal voltage limit exceeded!
11010	VLT: Ground current limit exceeded!
11011	VLT: Ground voltage limit exceeded!
11012	VLT: Feedback voltage limit exceeded!
11013	VLT: +VA terminal voltage limit exceeded!
11014	VLT: -VA terminal voltage limit exceeded!
11015	VLT: The ambient temperature is out of range.
11016	VLT: Relative humidity is out of range.
11017	VLT: Temperature of reference chamber is out of range!
11018	VLT: Heatsink temperature limit exceeded!
11019	VLT: Transformer temperature limit exceeded!
11020	VLT: Supply voltage +12VD is out of range!
11021	VLT: Supply voltage +12VR is out of range!
11022	VLT: Supply voltage +15V is out of range!
11023	VLT: Supply voltage -15V is out of range!
11024	VLT: Supply voltage +HV is out of range!
11025	VLT: Supply voltage -HV is out of range!
11026	VLT: Output current limit exceeded!
11027	CUR: Output voltage limit exceeded!
11028	CUR: Ground current limit exceeded!
11029	CUR: GND voltage limit exceeded!
11030	CUR: +I terminal voltage limit exceeded!
11031	CUR: Output current error!
11032	CUR: Feedback voltage limit exceeded!
11033	CUR: The ambient temperature is out of range.
11034	CUR: Relative humidity is out of range.
11035	CUR: Temperature of reference chamber is out of range!
11036	CUR: Heatsink temperature limit exceeded!
11037	CUR: Transformer temperature limit exceeded!
11038	CUR: Supply voltage +12VD is out of range!
11040	CUR: Supply voltage +17V is out of range!

11041	CUR: Supply voltage -17V is out of range!
11042	CUR: Supply voltage +VC is out of range!
11043	CUR: Supply voltage -VC is out of range!
11044	RCU: Supply voltage 12V is out of range!
11045	RCU: Supply voltage 12VSPK is out of range!
11046	RCU: Supply voltage 3V3 is out of range!
11051	IFC: Supply voltage 12V is out of range!
11052	IFC: Supply voltage 5V is out of range!
11053	IFC: Supply voltage 3V3 is out of range!

External option errors

12001 ... 12020	Communication with external option failed.
12021	External option error. <error>
12022	The external <device name> unit is HW obsolete.
12023	The external <device name> unit is SW obsolete. Please upload the new FW to the external unit.
12024	The external <device name> unit does not have the required features.
12025	The external unit <device name> is not available.
12026	The external unit <device_name> has not completed the required function.
12027	The external <device_name> unit is SW obsolete. Please upload the new FW to the external unit.
12028	Internal firmware is obsolete. Update firmware to latest version.
12029	This feature is not supported.
12030 ... 12034	Communication with external option failed.
12035	External <device_name> unit has wrong ID.

4. 6040 SCPI Command Reference

:CALibration:DATE

Syntax:

:CALibration:DATE <DNPD>,<DNPD>,<DNPD>
:CALibration:DATE?

Description:

Sets the date of last calibration.

Parameters:

<DNPD> - year, range 2000...2063.
<DNPD> - month, range 1...12.
<DNPD> - day, range 1...31.

Remarks:

This command requires "Calibration" access to write date.
Overlapped command.

Example:

CAL:DATE 2020,3,28
CAL:DATE? Response: 2020,3,28

:CALibration:INTerval

Syntax:

:CALibration:INTerval <DNPD>
:CALibration:INTerval?

Description:

Sets the calibration interval. If the current instrument date is greater than the calibration date extended by the calibration interval, the instrument will announce the outdated calibration.

Parameters:

<DNPD>- calibration interval [months], range 0 ... 240 (default 12).

Remarks:

This command requires "Calibration" access to write interval.
Overlapped command.

Example:

CAL:INT 12
CAL:INT? Response: 12

:CALibration:POINt:ACCuracy?

Syntax:

:CALibration:POINt:ACCuracy?

Description:

The command is used to read the required absolute accuracy at the selected calibration point. The calibration point must first be selected using the CAL:POIN:MODE and CAL:POIN:SEL commands.

Parameters:

<DNPD> - requested accuracy

Remarks:

The accuracy is fixed for each calibration point.
Overlapped command.

Example:

CAL:POIN:ACC? Response: 8.000000E-07

:CALibration:POINt:AMPLitude

Syntax:

:CALibration:POINt:AMPLitude <DNPD>
:CALibration:POINt:AMPLitude?

Description:

Sets the actual calibration amplitude during calibration. The calibration mode and point must be selected beforehand.

Parameters:

<DNPD> - calibration point amplitude.

Remarks:

This command requires "Calibration" access.
Overlapped command.

Example:

CAL:POIN:AMPL 65.3257
CAL:POIN:AMPL? Response: 6.532570E+01

:CALibration:POINt:CONVerter?

Syntax:

:CALibration:POINt:CONVerter?

Description:

Returns actual converter value during calibration meter.

Parameters:

<DNPD> - converter value.

Remarks:

Overlapped command.

Example:

CAL:POIN:CONV? Response: 1.000000E+00

:CALibration:POINt:DATE

Syntax:

:CALibration:POINt:DATE?

Description:

Returns calibration date for selected calibration point. The calibration date is updated automatically after saving calibration point by CAL:POIN:SAVE command.

Parameters:

<DNPD> - year, range 2020...2063

<DNPD> - month, range 1...12

<DNPD> - day, range 1...31

Remarks:

Overlapped command.

Example:

CAL:POIN:DATE? Response: 2020,1,14

:CALibration:POINt:MEASure?

Syntax:

:CALibration:POINt:MEASure?

Description:

Returns the actual measured value during meter calibration.

Parameters:

<DNPD> - measured value.

Remarks:

Overlapped command.

Example:

CAL:POIN:MEAS? Response: 1.000000E+00

:CALibration:POINt:MODE

Syntax:

:CALibration:POINt:MODE <DNPD>

:CALibration:POINt:MODE?

Description:

Selects the calibration mode.

Parameters:

<DNPD> - calibration mode, see table below for more details

Remarks:

This command requires "Calibration" access.

Overlapped command.

Example:

CAL:POIN:MODE 10

CAL:POIN:MODE? Response: 10

Cal. mode	Calibration function	Cal. mode	Calibration function
1	Voltage DC > Range 105 mV	41	Current DC > Range 100 mA
2	Voltage DC > Range 1.5 V	42	Current DC > Range 500 mA
3	Voltage DC > Range 5 V	43	Current DC > Range 1.5 A
4	Voltage DC > Range 40 V	44	Current DC > Range 5 A
5	Voltage DC > Range 200 V	45	Current DC > Range 10 A
6	Voltage DC > Range 800 V	46	Current AC > Range 700 uA
7	Voltage AC > Range 75 mV	47	Current AC > Range 7 mA
8	Voltage AC > Range 1.5 V	48	Current AC > Range 70 mA
9	Voltage AC > Range 3.5 V	49	Current AC > Range 320 mA
10	Voltage AC > Range 25 V	50	Current AC > Range 1 A
11	Voltage AC > Range 162 V	51	Current AC > Range 3.2 A
12	Voltage AC > Range 750 V	52	Current AC > Range 7 A
13	Voltage Amplifier > Range 75 mV	56	Current Amplifier > Range 700 uA
14	Voltage Amplifier > Range 1.5 V	57	Current Amplifier > Range 7 mA
15	Voltage Amplifier > Range 3.5 V	58	Current Amplifier > Range 70 mA
16	Voltage Amplifier > Range 25 V	59	Current Amplifier > Range 320 mA
17	Voltage Amplifier > Range 162 V	60	Current Amplifier > Range 1 A
18	Voltage Amplifier > Range 750 V	61	Current Amplifier > Range 3.2 A
39	Current DC > Range 1 mA	62	Current Amplifier > Range 7 A
40	Current DC > Range 10 mA		

:CALibration:POINT:NOMinal?

Syntax:

:CALibration:POINT:NOMinal?

Description:

The command is used to read the nominal value at the selected calibration point. The calibration point must first be selected using the CAL:POIN:MODE and CAL:POIN:SEL commands.

Parameters:

<DNPD> - nominal value of the calibration point.

Remarks:

The nominal value is fixed for each calibration point.

Overlapped command.

Example:

CAL:POIN:NOM? Response: 1.900000E+01

:CALibration:POINT:SElect

Syntax:

:CALibration:POINT:SElect <DNPD>

:CALibration:POINT:SElect?

Description:

Selects a calibration point within one calibration mode.

Parameters:

<DNPD> - calibration point, range 1 ... calibration point count for actual calibration mode.

Remarks:

This command requires "Calibration" access.
Overlapped command.

Example:

CAL:POIN:SEL 1
CAL:POIN:SEL? Response: 1

:CALibration:POINT:SAVE

Syntax:

:CALibration:POINT:SAVE

Description:

Saves the actual calibration point.

Parameters:

None

Remarks:

This command requires "Calibration" access.
Overlapped command.

Example:

CAL:POIN:SAVE

:CALibration:SECure:EXIT

Syntax:

:CALibration:SECure:EXIT

Description:

Exits calibration mode and makes calibration backup.

Parameters:

None

Remarks:

Overlapped command.

Example:

CAL:SEC:EXIT

:CALibration:SECure:PASSword

Syntax:

:CALibration:SECure:PASSword <DNPD>

Description:

Enters calibration mode. Valid calibration password is required.

Parameters:

<DNPD> - calibration password, range 0 ... 4294967295 (default 6040).

Remarks:

Overlapped command.

Example:

CAL:SEC:PASS 6040

:CALibration:STATus<N>?

Syntax:

:CALibration:STATus<N>?

Description:

Returns required calibration status.

Parameters:

<N> - index, Range 1 ... 6 (1 - if omitted)

- 1 – warm up (1 - warm up is active)
- 2 – try mode (1 - currently, data from the calibration backup is being used. This status remains valid until the device is turned off.)
- 3 – outdated (1 - calibration date expired)
- 4 – uncalibrated (1 - some user calibration points are not calibrated)
- 6 – damaged (1 - damaged hardware. Some CPUs are not active.)

<DNPD> - measured value

Remarks:

Overlapped command.

Example:

CAL:STAT1? Response: 0

:DISPlay:ACCuracy:ACTive?

Syntax:

:DISPlay:ACCuracy:ACTive?

Description:

Returns the current absolute specification value for the selected control on the instrument display. The control is selected using the DISP:ACT command.

Parameters:

<DNPD> - accuracy

Remarks:

The value is calculated according to the currently set function parameters.
Overlapped command.

Example:

DISP:ACC:ACT? Response: 3.500000E-06

:DISPlay:ACCuracy[:STATe]?

Syntax:

:DISPlay:ACCuracy[:STATe] <BOOL>

:DISPlay:ACCuracy[:STATe]?

Description:

Enables or disables the display of accuracy in the title bar.

Parameters:

<BOOL> - accuracy state {ON|OFF|1|0} (default 0).

- ON enables accuracy.
- OFF disables accuracy.
- 1 enables accuracy.
- 0 disables accuracy.

Remarks:

Overlapped command.

Example:

DISP:ACC ON
DISP:ACC? Response: 1

:DISPlay:ACCuracy:FORM

Syntax:

:DISPlay:ACCuracy:FORM <CPD>

:DISPlay:ACCuracy:FORM?

Description:

Sets the format for displaying accuracy.

Parameters:

<CPD> - accuracy format {AUTO|ABSolute|PERcentage|PPM} (default AUTO)

- AUTO Automatic selection of the optimal format.
- ABSolute

PERcentage
PPM

Remarks:

Overlapped command

Example:

DISP:ACC:FORM AUTO

DISP:ACC:FORM? Response: AUTO

:DISPlay:ACCuracy:SOURce?

Syntax:

:DISPlay:ACCuracy:SOURce?

Description:

Returns absolute accuracy for actual selected source function, range and amplitude.

Parameters:

<DNPD> - accuracy.

Remarks:

Overlapped command.

Example:

DISP:ACC:SOUR? Response: 3.900000E-04

:DISPlay:ACTivate

Syntax:

:DISPlay:ACTivate <DNPD>

:DISPlay:ACTivate?

Description:

Activates control on the display.

Parameters:

<DNPD> - control to activate. Order is from top-left, 0-deselects control.

Remarks:

The value is set to default after power on.

The value is set to default on *RST command.

Overlapped command.

Example:

DISP:ACT 1

DISP:ACT? Response: 1

:DISPlay:ANNotation:CLOCK:DATE:FORMat

Syntax:

:DISPlay:ANNotation:CLOCK:DATE:FORMat <CPD>

:DISPlay:ANNotation:CLOCK:DATE:FORMat?

Description:

Sets the date format used on the device's display.

Parameters:

<CPD> - date format {MDYS|MDYA|DMYS|DMYO|DMYA|YMDS|YMDO}
(default MDYS).

·MDYS	MM/DD/YYYY
·MDYA	MM-DD-YYYY
·DMYS	DD/MM/YYYY
·DMYO	DD.MM.YYYY
·DMYA	DD-MM-YYYY
·YMDS	YYYY/MM/DD
·YMDO	YYYY.MM.DD

Remarks:

Overlapped command.

Example:

DISP:ANN:CLOC:DATE:FORM MDYS
DISP:ANN:CLOC:DATE:FORM? Response: MDYS

:DISPlay:ANNotation:CLOCk[:STATe]

Syntax:

:DISPlay:ANNotation:CLOCk[:STATe] <BOOL>
:DISPlay:ANNotation:CLOCk[:STATe]?

Description:

Enables or disables clock in the title bar.

Parameters:

<BOOL> - clock state {ON|OFF|1|0} (default 0).
·ON enables clock.
·OFF disables clock.
·1 enables clock.
·0 disables clock.

Remarks:

The value is stored in each preset.
The value is set to default after power on.
The value is set to default on *RST command.
Overlapped command.

Example:

DISP:ANN:CLOC ON
DISP:ANN:CLOC? Response: 1

:DISPlay:BRIGhtness

Syntax:

:DISPlay:BRIGhtness <DNPD>
:DISPlay:BRIGhtness?

Description:

Sets display backlight intensity.

Parameters:

<DNPD> - brightness, range 0.0 ... 1.0 (default 1.0).

Remarks:

Overlapped command.

Example:

DISP:BRIG 1.0
DISP:BRIG? Response: 1.000000E+00

:DISPlay:KEYBoard:BRIGhtness

Syntax:

:DISPlay:KEYBoard:BRIGhtness <DNPD>
:DISPlay:KEYBoard:BRIGhtness?

Description:

Sets keyboard LED lights intensity.

Parameters:

<DNPD> - brightness, range 0.0 ... 1.0 (default 1.0).

Remarks:

Overlapped command.

Example:

DISP:KEYB:BRIG 1.0
DISP:KEYB:BRIG? Response: 1.000000E+00

:DISPlay:LANGuage

Syntax:

:DISPlay:LANGUage <CPD>
:DISPlay:LANGUage?

Description:

Language selection for display.

Parameters:

<CPD> - language {ENGLish} (default ENGL).
·ENGLish English language.

Remarks:

Overlapped command.

Example:

DISP:LANG ENGL
DISP:LANG? Response: ENGL

:DISPlay:METer<N>[:VALue]?

Syntax:

:DISPlay:METer<N>[:VALue]?

Description:

Returns the measured value of the selected auxiliary device meter. This meter is not the main function of the meter and cannot be configured in any way.

Parameters:

<N> - meter channel, Range 1 ... 4 (1 - if omitted)
1 - measured output current on the voltage channel [A]
2 - measured output voltage on the current channel [V]
3 - measured temperature inside the unit [°C]
4 - measured humidity inside the unit [%]
<DNPd> - measured value

Remarks:

Overlapped command.

The device returns a value of -1.000000E+20 if the meter is inactive.

The device returns a value of +1.000000E+20 if the meter is overloaded.

Example:

DISP:MET1? Response: 1.024751E-03

:OUTPut:CURRent:AC:LIMit[:LEVel]

Syntax:

:OUTPut:CURRent:AC:LIMit[:LEVel] <DNPd>[<UNIT>]
:OUTPut:CURRent:AC:LIMit[:LEVel]?

Description:

Sets the global AC current limit on all functions. This value limits both the amplitude setting and the range setting. This protects the connected devices from setting the calibrator to a value greater than the allowed one.

Parameters:

<DNPd> - AC current limit level [A], see calibrator specification for range
<UNIT> - limit unit {A}
·A limit will be set in Amperes.

Remarks:

Setting the limit turns on the limit state.

The limit can be turned off with the command OUTP:CURR:AC:LIM:STAT.

The value is not affected by the * RST command or the stored preset.

This command requires "Calibration" access.
Overlapped command.

Example:

OUTP:CURR:AC:LIM 1.0
OUTP:CURR:AC:LIM? Response: 1.000000E+00 A

:OUTPut:CURRent:AC:LIMit:STATe

Syntax:

:OUTPut:CURRent:AC:LIMit:STATe <BOOL>
:OUTPut:CURRent:AC:LIMit:STATe?

Description:

Turns the global AC current limit state on or off. If the state is off, then the maximum current value generated by the device is given by the capability of the device. If the status is on, then the maximum value is limited by the AC current limit level setting.

Parameters:

<BOOL> - AC current limit state {ON|OFF|1|0} (default OFF)
·ON Current limit is active.
·OFF The current limit is not active.
·1 Current limit is active.
·0 The current limit is not active.

Remarks:

The limit level is set with the OUTP:CURR:AC:LIM:LEV command.
The value is not affected by the * RST command or the stored preset.
This command requires "Calibration" access.
Overlapped command.

Example:

OUTP:CURR:AC:LIM:STAT ON
OUTP:CURR:AC:LIM:STAT? Response: 1

:OUTPut:CURRent:DC:LIMit[:LEVel]

Syntax:

:OUTPut:CURRent:DC:LIMit[:LEVel] <DNPd>[<UNIT>]
:OUTPut:CURRent:DC:LIMit[:LEVel]?

Description:

Sets the global DC current limit on all functions. This value limits both the amplitude setting and the range setting. This protects the connected devices from setting the calibrator to a value greater than the allowed one.

Parameters:

<DNPd> - DC current limit level [A], see calibrator specification for range
<UNIT> - limit unit {A}
·A limit will be set in Amperes.

Remarks:

Setting the limit turns on the limit state.
The limit can be turned off with the command OUTP:CURR:DC:LIM:STAT.
The value is not affected by the * RST command or the stored preset.
This command requires "Calibration" access.
Overlapped command.

Example:

OUTP:CURR:DC:LIM 1.0
OUTP:CURR:DC:LIM? Response: 1.000000E+00 A

:OUTPut:CURRent:DC:LIMit:STATe

Syntax:

:OUTPut:CURRent:DC:LIMit:STATe <BOOL>
:OUTPut:CURRent:DC:LIMit:STATe?

Description:

Turns the global DC current limit state on or off. If the state is off, then the maximum current value generated by the device is given by the capability of the device. If the status is on, then the maximum value is limited by the DC current limit level setting.

Parameters:

<BOOL> - DC current limit state {ON|OFF|1|0} (default OFF)

- ON Current limit is active.
- OFF The current limit is not active.
- 1 Current limit is active.
- 0 The current limit is not active.

Remarks:

The limit level is set with the OUTP:CURR:DC:LIM:LEV command.
The value is not affected by the *RST command or the stored preset.
This command requires "Calibration" access.
Overlapped command.

Example:

OUTP:CURR:DC:LIM:STAT ON
OUTP:CURR:DC:LIM:STAT? Response: 1

:OUTPut:CURRent:PHASe

Syntax:

:OUTPut:CURRent:PHASe <DNPD>[<UNIT>]
:OUTPut:CURRent:PHASe?

Description:

Sets the phase shift between the reference signal and the current output. The setting is valid for the IAC function.

Parameters:

<DNPD> - phase shift, range 0.0 ... 360.0 ° (default 0.0).
<UNIT> - phase unit {DEG}
·DEG the phase shift will be set in degrees.

Remarks:

The value is stored in each preset.
The value is set according to "Start-up" preset after power on.
The value is set to default on *RST command.
Overlapped command.

Example:

OUTP:CURR:PHAS 0.0
OUTP:CURR:PHAS? Response: 0.000000E+00 DEG

:OUTPut:DELay:OFF

Syntax:

:OUTPut:DELay:OFF <DNPD>[<UNIT>]
:OUTPut:DELay:OFF?

Description:

Sets the voltage-to-current delay when the terminals are switched off.

Parameters:

<DNPD> - voltage-to-current delay [s], range 0 ... 60 (default 0).
<UNIT> - delay unit {S}
·S the delay will be set in seconds.

Remarks:

The value is stored in each preset.
The value is set according to "Start-up" preset after power on.
The value is set to default on *RST command.
Overlapped command.

Example:

OUTP:DEL:OFF 1
OUTP:DEL:OFF? Response: 1 S

:OUTPut:DELay:ON

Syntax:

:OUTPut:DELay:ON <DNPD>[<UNIT>]
:OUTPut:DELay:ON?

Description:

Sets the current-to-voltage delay when the terminals are switched on.

Parameters:

<DNPD> - current-to-voltage [s], range 0 ... 60 (default 0).
<UNIT> - delay unit {S}
·S the delay will be set in seconds.

Remarks:

The value is stored in each preset.
The value is set according to "Start-up" preset after power on.
The value is set to default on *RST command.
Overlapped command.

Example:

OUTP:DEL:ON 1
OUTP:DEL:ON? Response: 1 S

:OUTPut:LOW<N>

Syntax:

:OUTPut:LOW<N> <CPD>
:OUTPut:LOW<N>?

Description:

Sets the ground for the source Lo or I- output terminal.

Parameters:

<N> - function to which the grounding will be applied:
1 - Voltage
2 - Current
3 - Power voltage
4 - Power current
5 - Synchroscope
6 - Duty
<CPD> - grounding {FLOat|GROund} (default GRO).
·FLOat terminal is floating.
·GROund terminal is grounded.

Remarks:

The value is stored in each preset.
The value is set according to "Start-up" preset after power on.
The value is set to default on *RST command.
Overlapped command.

Example:

OUTP:LOW1 FLO
OUTP:LOW1? Response: FLO

:OUTPut[:STATe]

Syntax:
:OUTPut[:STATe] <BOOL>
:OUTPut[:STATe]?

Description:
Turns the output terminals on or off.

Parameters:
<BOOL> - output state, {ON|OFF|1|0} (default 0).
·ON turns on the output terminals.
·OFF turns off the output terminals.
·1 turns on the output terminals.
·0 turns off the output terminals.

Remarks:
It may take a few seconds for the terminals to turn on. The * OPC? command can be used to determine the completion of the operation.
The value is set to default after power on.
The value is set to default on *RST command.
Overlapped command.

Example:
OUTP ON
*OPC? Response: 1
OUTP? Response: 1

:OUTPut:ROSCilator:MODE

Syntax:
:OUTPut:ROSCilator:MODE <CPD>
:OUTPut:ROSCilator:MODE?

Description:
Selects function of front panel SYNC OUT BNC. Output generates squarewave signal with rising edge phase-locked to internal AC voltage reference.
“Sample output” is meant to trigger an external voltmeter to synchronize sampling measurements with main voltage output, useful for calibration of 6040. Sample output must be enabled using OUTP:ROSC:STAT command. Frequency multiplier can be selected using OUTP:ROSC:MULT command.

Parameters:
<CPD> {OFF|SAMPlE} (default OFF)
OFF Ext Sync Output BNC is switched to Hi-Z state.
SAMPlE Sample signal is active at SYNC OUT BNC (if switched ON).

Remarks:
The value is stored in each preset.
The value is set according to "Startup" preset after power on.
The value is set to default on *RST command.
Overlapped command.

Example:
OUTP:ROSC:MODE OFF
OUTP:ROSC:MODE? Response: OFF

:OUTPut:ROSCilator:MULTiplier

Syntax:
:OUTPut:ROSCilator:MULTiplier <CPD>
:OUTPut:ROSCilator:MULTiplier?

Description:

Sets ratio between frequency of the internal Sync signal and output frequency at SYNC OUT BNC connector when OUTP:ROSC:MODE is set to SAMP.

“Sample multiplier” set to “Auto” multiplies main signal frequency up to 850 Hz by factors 2048 – 64, keeping the sample output at around 30 – 65 kHz. Main signal frequency above 850 Hz gets multiplied by factor 32.

Parameters:

<CPD> {AUTO|32|64|128|256|512|1024} (default AUTO)

AUTO Multiplies main signal frequency (instead of Sync signal) up to 850 Hz by ratios 2048 – 64, keeping the sample output at around 30 – 65 kHz. Main signal frequency above 850 Hz gets multiplied by factor 32:

1024:1	45 – 66 Hz
512:1	66 – 128 Hz
256:1	128 – 266 Hz
128:1	266 – 512 Hz
64:1	512 – 850 Hz
32:1	850 – 1000 Hz

32 A frequency 32 times higher than the Sync signal will be generated
64 A frequency 64 times higher than the Sync signal will be generated
128 A frequency 128 times higher than the Sync signal will be generated
256 A frequency 256 times higher than the Sync signal will be generated
512 A frequency 512 times higher than the Sync signal will be generated
1024 A frequency 1024 times higher than the Sync signal will be generated

Remarks:

The value is stored in each preset.
The value is set according to "Startup" preset after power on.
The value is set to default on *RST command.
Overlapped command.

Example:

OUTP:ROSC:MULT AUTO
OUTP:ROSC:MULT? Response: AUTO

:OUTPut:ROSCilator[:STATe]

Syntax:

:OUTPut:ROSCilator[:STATe] <BOOL>
:OUTPut:ROSCilator[:STATe]?

Description:

Activates or deactivates the sampling signal, which is synchronous with the voltage or current output signal.

Parameters:

<BOOL> - sampling state {ON|OFF|1|0} (default 0).

- ON The sampling signal is run when the reference signal passes zero.
- OFF The sampling signal is stopped immediately.
- 1 The sampling signal is run when the reference signal passes zero.
- 0 The sampling signal is stopped immediately.

Remarks:

The value is stored in each preset.
The value is set according to "Start-up" preset after power on.
The value is set to default on *RST command.
Overlapped command.

Example:

OUTP:ROSC ON
OUTP:ROSC? Response: 1

:OUTPut:VOLTage:AC:LIMit[:LEVel]

Syntax:

:OUTPut:VOLTage:AC:LIMit[:LEVel] <DNPD>[<UNIT>]
:OUTPut:VOLTage:AC:LIMit[:LEVel]?

Description:

Sets the global AC voltage limit on all functions. This value limits both the amplitude setting and the range setting. This protects the connected devices from setting the calibrator to a value greater than the allowed one.

Parameters:

<DNPD> - AC voltage limit level [V], see calibrator specification for range
<UNIT> - limit unit {V}
·V limit will be set in Volts.

Remarks:

Setting the limit turns on the limit state.
The limit can be turned off with the command OUTP:VOLT:AC:LIM:STAT.
The value is not affected by the * RST command or the stored preset.
This command requires "Calibration" access.
Overlapped command.

Example:

OUTP:VOLT:AC:LIM 50.0
OUTP:VOLT:AC:LIM? Response: 5.000000E+01 V

:OUTPut:VOLTage:AC:LIMit:STATe

Syntax:

:OUTPut:VOLTage:AC:LIMit:STATe <BOOL>
:OUTPut:VOLTage:AC:LIMit:STATe?

Description:

Turns the global AC voltage limit state on or off. If the state is off, then the maximum voltage value generated by the device is given by the capability of the device. If the status is on, then the maximum value is limited by the AC voltage limit level setting.

Parameters:

<BOOL> - AC voltage limit state {ON|OFF|1|0} (default OFF)
·ON Voltage limit is active.
·OFF The voltage limit is not active.
·1 Voltage limit is active.
·0 The voltage limit is not active.

Remarks:

The limit level is set with the OUTP:VOLT:AC:LIM:LEV command.
The value is not affected by the * RST command or the stored preset.
This command requires "Calibration" access.
Overlapped command.

Example:

OUTP:VOLT:AC:LIM:STAT ON
OUTP:VOLT:AC:LIM:STAT? Response: 1

:OUTPut:VOLTage:AC:PROTection[:LEVel]

Syntax:

:OUTPut:VOLTage:AC:PROTection[:LEVel] <DNPD>[<UNIT>]
:OUTPut:VOLTage:AC:PROTection[:LEVel]?

Description:

This is a warning of dangerous contact voltage. If the user sets the voltage value on the calibrator higher than this limit, the ⚡ symbol will light up on the screen. The warning is further highlighted by an intermittent beep. It is possible to select the setting for switching off the terminals when this voltage is exceeded.

Parameters:

<DNPd> - AC voltage threshold, range 20 ... 100 (default 50)

<UNIT> - threshold unit {V}

·V threshold will be set in Volts.

Remarks:

Terminal switching can be set with the command `OUTP:VOLT:PROT:STAT`.

The volume of the beep can be set with the command `SYST:BEEP:PROT:VOL`.

The value is not affected by the * RST command or the stored preset.

This command requires "Calibration" access.

Overlapped command.

Example:

`OUTP:VOLT:AC:PROT 50`

`OUTP:VOLT:AC:PROT?` Response: 50 V

:OUTPut:VOLTage:DC:LIMit[:LEVel]

Syntax:

`:OUTPut:VOLTage:DC:LIMit[:LEVel] <DNPd>[<UNIT>]`

`:OUTPut:VOLTage:DC:LIMit[:LEVel]?`

Description:

Sets the global DC voltage limit on all functions. This value limits both the amplitude setting and the range setting. This protects the connected devices from setting the calibrator to a value greater than the allowed one.

Parameters:

<DNPd> - AC voltage limit limit [V], see calibrator specification for range

<UNIT> - limit unit {V}

·V limit will be set in Volts.

Remarks:

Setting the limit turns on the limit state.

The limit can be turned off with the command `OUTP:VOLT:DC:LIM:STAT`.

The value is not affected by the * RST command or the stored preset.

This command requires "Calibration" access.

Overlapped command.

Example:

`OUTP:VOLT:DC:LIM 50.0`

`OUTP:VOLT:DC:LIM?` Response: 5.000000E+01 V

:OUTPut:VOLTage:DC:LIMit:STATe

Syntax:

`:OUTPut:VOLTage:DC:LIMit:STATe <BOOL>`

`:OUTPut:VOLTage:DC:LIMit:STATe?`

Description:

Turns the global DC voltage limit state on or off. If the state is off, then the maximum voltage value generated by the device is given by the capability of the device. If the status is on, then the maximum value is limited by the DC voltage limit level setting.

Parameters:

- <BOOL> - DC voltage limit state {ON|OFF|1|0} (default OFF)
 - ON Voltage limit is active.
 - OFF The voltage limit is not active.
 - 1 Voltage limit is active.
 - 0 The voltage limit is not active.

Remarks:

The limit level is set with the OUTPUT:VOLT:DC:LIM:LEV command.
The value is not affected by the * RST command or the stored preset.
This command requires "Calibration" access.
Overlapped command.

Example:

```
OUTPUT:VOLT:DC:LIM:STAT ON
OUTPUT:VOLT:DC:LIM:STAT? Response: 1
```

:OUTPUT:VOLTage:DC:PROTection[:LEVel]

Syntax:

```
:OUTPUT:VOLTage:DC:PROTection[:LEVel] <DNPD>[<UNIT>]
:OUTPUT:VOLTage:DC:PROTection[:LEVel]?
```

Description:

This is a warning of dangerous contact voltage. If the user sets the voltage value on the calibrator higher than this limit, the ⚡ symbol will light up on the screen. The warning is further highlighted by an intermittent beep. It is possible to select the setting for switching off the terminals when this voltage is exceeded.

Parameters:

- <DNPD> - DC voltage threshold, range 20 ... 100 (default 50)
- <UNIT> - threshold unit {V}
 - V threshold will be set in Volts.

Remarks:

Terminal switching can be set with the command OUTPUT:VOLT:PROT:STAT.
The volume of the beep can be set with the command SYST:BEEP:PROT:VOL.
The value is not affected by the * RST command or the stored preset.
This command requires "Calibration" access.
Overlapped command.

Example:

```
OUTPUT:VOLT:DC:PROT 50
OUTPUT:VOLT:DC:PROT? Response: 50 V
```

:OUTPUT:VOLTage:PHASe

Syntax:

```
:OUTPUT:VOLTage:PHASe <DNPD>[<UNIT>]
:OUTPUT:VOLTage:PHASe?
```

Description:

Sets the phase shift between the reference signal and the voltage output. The setting is valid for the VAC and PAC function.

Parameters:

<DNPD> - phase shift, range 0.0 ... 360.0 ° (default 0.0).
<UNIT> - phase unit {DEG}
·DEG the phase shift will be set in degrees.

Remarks:

The value is stored in each preset.
The value is set according to "Start-up" preset after power on.
The value is set to default on *RST command.
Overlapped command.

Example:

OUTP:VOLT:PHAS 0.0
OUTP:VOLT:PHAS? Response: 0.000000E+00 DEG

:OUTPut:VOLTage:PROTection[:STATe]

Syntax:

:OUTPut:VOLTage:PROTection[:STATe] <BOOL>
:OUTPut:VOLTage:PROTection[:STATe]?

Description:

Protection terminal switch off settings. If the protection is enabled, the terminals switch off when the terminals are switched on and the voltage amplitude changes from safe to dangerous. The terminals can then be switched on again with a dangerous voltage value.

Parameters:

<BOOL> - automatic switch off {ON|OFF|1|0} (default 1)
·ON the terminals will be switched off when the voltage is exceeded.
·OFF the state of the terminals remains unchanged.
·1 the terminals will be switched off when the voltage is exceeded.
·0 the state of the terminals remains unchanged.

Remarks:

The terminal switch-off voltage threshold can be set with command
OUTP:VOLT:DC:PROT or OUTP:VOLT:AC:PROT.
The value is not affected by the * RST command or the stored preset.
This command requires "Calibration" access.
Overlapped command.

Example:

OUTP:VOLT:PROT ON
OUTP:VOLT:PROT? Response: 1

[[:SOURce]:CURRent:AC[:AMPLitude]

Syntax:

[[:SOURce]:CURRent:AC[:AMPLitude] <DNPD>[<UNIT>]
[:SOURce]:CURRent:AC[:AMPLitude]?

Description:

Sets the current amplitude for Current AC source function.

Parameters:

<DNPD> - current amplitude, see calibrator specification for range (default is 1.0 A).
<UNIT> - unit used for current amplitude {ARMS|APK|APP|AAVG} (default ARMS).
·ARMS Ampere RMS
·APK Ampere Peak

- APP Ampere Peak to Peak
- AAVG Ampere Average

Remarks:

The value is stored in each preset.
 The value is set according to "Start-up" preset after power on.
 The value is set to default on *RST command.
 Overlapped command.

Example:

CURR:AC 1.0
 CURR:AC? Response: 1.000000E+00 ARMS

[[:SOURce]:CURRent:AC:FREQuency

Syntax:

[[:SOURce]:CURRent:AC:FREQuency <DNPD>[<UNIT>]
 [[:SOURce]:CURRent:AC:FREQuency?

Description:

Sets the frequency for Current AC source function.

Parameters:

<DNPD> - frequency [Hz], range 45.0 ... 1000.0 depending on the current amplitude (default 50.0).
 <UNIT> - frequency unit {HZ}.
 ·HZ Hertz unit is used.

Remarks:

The value is stored in each preset.
 The value is set according to "Start-up" preset after power on.
 The value is set to default on *RST command.
 Overlapped command.

Example:

CURR:AC:FREQ 50.0
 CURR:AC:FREQ? Response: 5.000000E+01 HZ

[[:SOURce]:CURRent:AC:RANGe

Syntax:

[[:SOURce]:CURRent:AC:RANGe <DNPD>
 [[:SOURce]:CURRent:AC:RANGe?

Description:

Sets the current range for Current AC source function manually.

Parameters:

<DNPD> - current range [A], see calibrator specification for range (default is 1 A).

Remarks:

The closest upper range to the entered value will be selected.
 Setting the range turns off the automatic range selection.
 The value is stored in each preset.
 The value is set according to "Start-up" preset after power on.
 The value is set to default on *RST command.
 Overlapped command.

Example:

CURR:AC:RANG 1.0
 CURR:AC:RANG? Response: 1.000000E+00

[[:SOURce]:CURRent:AC:RANGe:AUTO

Syntax:

[[:SOURce]:CURRent:AC:RANGe:AUTO <BOOL>
 [[:SOURce]:CURRent:AC:RANGe:AUTO?

Description:

Sets the automatic range selection for Current AC source function.

Parameters:

<BOOL> - automatic range selection {ON|OFF|1|0} (default 1).
·ON turns on automatic range selection.
·OFF turns off automatic range selection.
·1 turns on automatic range selection.
·0 turns off automatic range selection.

Remarks:

The value is stored in each preset.
The value is set according to "Start-up" preset after power on.
The value is set to default on *RST command.
Overlapped command.

Example:

```
CURR:AC:RANG:AUTO ON
CURR:AC:RANG:AUTO? Response: 1
```

[[:SOURce]:CURRent[:DC]][:AMPLitude]

Syntax:

```
[[:SOURce]:CURRent[:DC]][:AMPLitude] <DNPD>[<UNIT>]
[:SOURce]:CURRent[:DC]][:AMPLitude]?
```

Description:

Sets amplitude for Current DC source function.

Parameters:

<DNPD> - current amplitude, see calibrator specification for range, (default is 1.0).
<UNIT> - unit used for current amplitude {A} (default A).
A Ampere unit is used.

Remarks:

The value is stored in each preset.
The value is set according to "Start-up" preset after power on.
The value is set to default on *RST command.
Overlapped command.

Example:

```
CURR 1.0
CURR? Response: 1.000000E+00 A
```

[[:SOURce]:CURRent[:DC]:RANGe]

Syntax:

```
[[:SOURce]:CURRent[:DC]:RANGe <DNPD>
[:SOURce]:CURRent[:DC]:RANGe?
```

Description:

Sets the current range for Current DC source function.

Parameters:

<DNPD> - current range [A], see calibrator specification for range (default is 1.5 A).

Remarks:

The closest upper range to the entered value will be selected.
Setting the range turns off the automatic range selection.
The value is stored in each preset.
The value is set according to "Start-up" preset after power on.
The value is set to default on *RST command.
Overlapped command.

Example:

```
CURR:RANG 1.5
CURR:RANG? Response: 1.500000E+00
```

[[:SOURce]:CURRent[:DC]:RANGe:AUTO

Syntax:

[[:SOURce]:CURRent[:DC]:RANGe:AUTO <BOOL>
[:SOURce]:CURRent[:DC]:RANGe:AUTO?

Description:

Sets the automatic current range selection for Current DC source function.

Parameters:

<BOOL> - automatic range selection {ON|OFF|1|0} (default 1).
·ON turns on automatic range selection.
·OFF turns off automatic range selection.
·1 turns on automatic range selection.
·0 turns off automatic range selection.

Remarks:

The value is stored in each preset.
The value is set according to "Start-up" preset after power on.
The value is set to default on *RST command.
Overlapped command.

Example:

CURR:RANG:AUTO ON
CURR:RANG:AUTO? Response: 1

[[:SOURce]:FUNCTion[:ON]

Syntax:

[[:SOURce]:FUNCTion[:ON] <SPD>
[:SOURce]:FUNCTion[:ON]?

Description:

Sets the desired source function or returns the set function.

Parameters:

<SPD> - source function
"VOLT" Voltage DC
"VOLT:AC" Voltage AC
"CURR" Current DC
"CURR:AC" Current AC
"POW" Power DC
"POW:AC" Power AC
"SYNC" Synchroscope
"DUTY " Duty

Remarks:

The value is stored in each preset.
The value is set according to "Start-up" preset after power on.
The value is set to default on *RST command.
Overlapped command.

Example:

FUNC "CURR:AC"
FUNC? Response: "CURR:AC"

[[:SOURce]:POWer:AC[:AMPLitude]

Syntax:

[[:SOURce]:POWer:AC[:AMPLitude] <DNPD>[<UNIT>]
[:SOURce]:POWer:AC[:AMPLitude]?

Description:

Sets the power AC amplitude.

Parameters:

<DNPD> - power AC amplitude, the range depends on voltage, current, power factor and current mode (default 10.0).

<UNIT> - power AC unit {W|VA|VAr}.

- W real power.
- VA apparent power.
- VAr reactive power.

Remarks:

Changing the power amplitude has the effect of changing the current amplitude.
The value is set to default after power on.
The value is set to default on *RST command.
Overlapped command.

Example:

```
POW:AC 10.0
POW:AC? Response: 1.000000E+01 W
```

[[:SOURce]:POWer:AC:CURRent[:AMPLitude]

Syntax:

```
[[:SOURce]:POWer:AC:CURRent[:AMPLitude] <DNPD>[<UNIT>]
[:SOURce]:POWer:AC:CURRent[:AMPLitude]?
```

Description:

Sets the current amplitude in Power AC mode

Parameters:

<DNPD> - current amplitude, see calibrator specification for range (default 1.0).
<UNIT> - current unit {A}.

- A Ampere RMS unit is used.

Remarks:

The value is stored in each preset.
The value is set according to "Start-up" preset after power on.
The value is set to default on *RST command.
Overlapped command.

Example:

```
POW:AC:CURR 1.0
POW:AC:CURR? Response: 1.000000E+00 A
```

[[:SOURce]:POWer:AC:CURRent:PHASe

Syntax:

```
[[:SOURce]:POWer:AC:CURRent:PHASe <DNPD>[<UNIT>]
[:SOURce]:POWer:AC:CURRent:PHASe?
```

Description:

Sets the phase shift between current and voltage channel for Power AC source function.

Parameters:

<DNPD> - phase shift, range 0.0 ... 360.0 ° (default 0.0).
<UNIT> - phase unit {DEG|LEAD|LAG}.

- DEG degree.
- LEAD leading power factor.
- LAG lagging power factor.

Remarks:

The value is stored in each preset.
The value is set according to "Start-up" preset after power on.
The value is set to default on *RST command.
Overlapped command.

Example:

```
POW:AC:CURR:PHAS 0.0
POW:AC:CURR:PHAS? Response: 0.000000E+00 DEG
```

[[:SOURce]:POWER:AC:CURRENT:PHASe:POLarity

Syntax:

[[:SOURce]:POWER:AC:CURRENT:PHASe:POLarity <CPD>
[[:SOURce]:POWER:AC:CURRENT:PHASe:POLarity?

Description:

Sets the phase polarity of the current channel for Power AC source function. Changes the phase polarity of the output signal to accommodate some types of devices. For most devices, negative polarity is valid.

Parameters:

<CPD> - phase polarity {POSitive|NEGative} (default NEG).
· POSitive positive phase polarity.
· NEGative negative phase polarity.

Remarks:

The value is stored in non volatile memory.
Overlapped command.

Example:

POW:AC:CURR:PHAS:POL POS
POW:AC:CURR:PHAS:POL? Response: POS

[[:SOURce]:POWER:AC:CURRENT:RANGE

Syntax:

[[:SOURce]:POWER:AC:CURRENT:RANGe <DNPD>
[[:SOURce]:POWER:AC:CURRENT:RANGe?

Description:

Sets the current range for Power AC source function manually.

Parameters:

<DNPD> - current range [A], see calibrator specification for range (default 1.0 A).

Remarks:

The closest upper range to the entered value will be selected.
Setting the range turns off the automatic range selection.
The value is stored in each preset.
The value is set according to "Start-up" preset after power on.
The value is set to default on *RST command.
Overlapped command.

Example:

POW:AC:CURR:RANG 1
POW:AC:CURR:RANG? Response: 1.000000E+00

[[:SOURce]:POWER:AC:CURRENT:RANGe:AUTO

Syntax:

[[:SOURce]:POWER:AC:CURRENT:RANGe:AUTO <BOOL>
[[:SOURce]:POWER:AC:CURRENT:RANGe:AUTO?

Description:

Sets the automatic current range selection for Power AC source function.

Parameters:

<BOOL> - automatic range selection {ON|OFF|1|0} (default 1).
· ON turns on automatic range selection.
· OFF turns off automatic range selection.
· 1 turns on automatic range selection.
· 0 turns off automatic range selection.

Remarks:

The value is stored in each preset.
The value is set according to "Start-up" preset after power on.
The value is set to default on *RST command.
Overlapped command.

Example:

```
POW:AC:CURR:RANG:AUTO ON
POW:AC:CURR:RANG:AUTO? Response: 1
```

[[:SOURce]:POWer:AC:FREQuency

Syntax:

```
[[:SOURce]:POWer:AC:FREQuency <DNPd>[<UNIT>]
[:SOURce]:POWer:AC:FREQuency?
```

Description:

Sets the frequency for Power AC source function.

Parameters:

<DNPd> - frequency, range 45.0 ... 1000.0 Hz depending on the current mode (default 50.0).

<UNIT> - frequency unit {HZ}.
·HZ Hertz unit is used.

Remarks:

The value is stored in each preset.
The value is set according to "Start-up" preset after power on.
The value is set to default on *RST command.
Overlapped command.

Example:

```
POW:AC:FREQ 50.0
POW:AC:FREQ? Response: 5.000000E+01 HZ
```

[[:SOURce]:POWer:AC:VOLTage[:AMPLitude]

Syntax:

```
[[:SOURce]:POWer:AC:VOLTage[:AMPLitude] <DNPd>[<UNIT>]
[:SOURce]:POWer:AC:VOLTage[:AMPLitude]?
```

Description:

Sets the voltage amplitude for Power AC function.

Parameters:

<DNPd> - voltage amplitude, see calibrator specification for range (default is 10.0).

<UNIT> - voltage unit {V}.
·V Volt RMS unit is used.

Remarks:

The value is stored in each preset.
The value is set according to "Start-up" preset after power on.
The value is set to default on *RST command.
Overlapped command.

Example:

```
POW:AC:VOLT 10.0
POW:AC:VOLT? Response: 1.000000E+01 V
```

[[:SOURce]:POWer:AC:VOLTage:RANGe

Syntax:

```
[[:SOURce]:POWer:AC:VOLTage:RANGe <DNPd>
[:SOURce]:POWer:AC:VOLTage:RANGe?
```

Description:

Sets the voltage range for Power AC source function manually.

Parameters:

<DNPd> - voltage range [V], see calibrator specification for range (default is 10 V).

Remarks:

The closest upper range to the entered value will be selected.
Setting the range turns off the automatic range selection.
The value is stored in each preset.

The value is set according to "Start-up" preset after power on.
The value is set to default on *RST command.
Overlapped command.

Example:

```
POW:AC:VOLT:RANG 25
POW:AC:VOLT:RANG? Response: 2.500000E+01
```

[[:SOURce]:POWER:AC:VOLTage:RANGe:AUTO

Syntax:

```
[[:SOURce]:POWER:AC:VOLTage:RANGe:AUTO <BOOL>
[:SOURce]:POWER:AC:VOLTage:RANGe:AUTO?
```

Description:

Sets the automatic voltage range selection for Power AC source function.

Parameters:

<BOOL> - automatic range selection {ON|OFF|1|0} (default 1).
·ON turns on automatic range selection.
·OFF turns off automatic range selection.
·1 turns on automatic range selection.
·0 turns off automatic range selection.

Remarks:

The value is stored in each preset.
The value is set according to "Start-up" preset after power on.
The value is set to default on *RST command.
Overlapped command.

Example:

```
POW:AC:VOLT:RANG:AUTO ON
POW:AC:VOLT:RANG:AUTO? Response: 1
```

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[[:SOURce]:POWER[:DC]][:AMPLitude]

Syntax:

```
[[:SOURce]:POWER[:DC]][:AMPLitude] <DNPD>[<UNIT>]
[:SOURce]:POWER[:DC]][:AMPLitude]?
```

Description:

Sets the power amplitude in Power DC mode.

Parameters:

<DNPD> - power amplitude, see calibrator specification for range (default is 10.0).
<UNIT> - power unit {W}.
·W Watt unit is used.

Remarks:

Changing the power amplitude has the effect of changing the current amplitude.
The value is set to default after power on.
The value is set to default on *RST command.
Overlapped command.

Example:

```
POW 10.0
POW? Response: 1.000000E+01 W
```

[[:SOURce]:POWER[:DC]:CURRent][:AMPLitude]

Syntax:

```
[[:SOURce]:POWER[:DC]:CURRent][:AMPLitude] <DNPD>[<UNIT>]
[:SOURce]:POWER[:DC]:CURRent][:AMPLitude]?
```

Description:

Sets the current amplitude for Power DC function.

Parameters:

<DNPD> - current amplitude, see calibrator specification for range (default is 1.0).

<UNIT> - current unit {A}.

·A Ampere unit is used.

Remarks:

The value is stored in each preset.

The value is set according to "Start-up" preset after power on.

The value is set to default on *RST command.

Overlapped command.

Example:

POW:CURR 1.0

POW:CURR? Response: 1.000000E+00 A

[[:SOURce]:POWer[:DC]:CURRent:RANGe

Syntax:

[[:SOURce]:POWer[:DC]:CURRent:RANGe <DNPD>

[[:SOURce]:POWer[:DC]:CURRent:RANGe?

Description:

Sets the current range for Power DC source function manually.

Parameters:

<DNPD> - current range [A], see calibrator specification for range (default is 1.0).

Remarks:

The closest upper range to the entered value will be selected.

Setting the range turns off the automatic range selection.

The value is stored in each preset.

The value is set according to "Start-up" preset after power on.

The value is set to default on *RST command.

Overlapped command.

Example:

POW:CURR:RANG 1.5

POW:CURR:RANG? Response: 1.500000E+00

[[:SOURce]:POWer[:DC]:CURRent:RANGe:AUTO

Syntax:

[[:SOURce]:POWer[:DC]:CURRent:RANGe:AUTO <BOOL>

[[:SOURce]:POWer[:DC]:CURRent:RANGe:AUTO?

Description:

Sets the automatic current range selection for Power DC source function.

Parameters:

<BOOL> - automatic range selection {ON|OFF|1|0} (default 1).

·ON turns on automatic range selection.

·OFF turns off automatic range selection.

·1 turns on automatic range selection.

·0 turns off automatic range selection.

Remarks:

The value is stored in each preset.

The value is set according to "Start-up" preset after power on.

The value is set to default on *RST command.

Overlapped command.

Example:

POW:CURR:RANG:AUTO ON

POW:CURR:RANG:AUTO? Response: 1

[[:SOURce]:POWer[:DC]:VOLTagE[:AMPLitude]

Syntax:

[[:SOURce]:POWer[:DC]:VOLTagE[:AMPLitude] <DNPD>[<UNIT>]
[[:SOURce]:POWer[:DC]:VOLTagE[:AMPLitude]?

Description:

Sets the voltage amplitude in Power DC function.

Parameters:

<DNPD> - voltage amplitude, see calibrator specification for range (default is 10.0).
<UNIT> - voltage unit {V}.
·V Volt unit is used.

Remarks:

The value is stored in each preset.
The value is set according to "Start-up" preset after power on.
The value is set to default on *RST command.
Overlapped command.

Example:

POW:VOLT 10.0
POW:VOLT? Response: 1.000000E+01 V

[[:SOURce]:POWer[:DC]:VOLTagE:RANGe]

Syntax:

[[:SOURce]:POWer[:DC]:VOLTagE:RANGe <DNPD>
[[:SOURce]:POWer[:DC]:VOLTagE:RANGe?

Description:

Sets the voltage range in Power DC source function manually.

Parameters:

<DNPD> - voltage range [V], see calibrator specification for range (default is 40 V).

Remarks:

The closest upper range to the entered value will be selected.
Setting the range turns off the automatic range selection.
The value is stored in each preset.
The value is set according to "Start-up" preset after power on.
The value is set to default on *RST command.
Overlapped command.

Example:

POW:VOLT:RANG 40
POW:VOLT:RANG? Response: 4.000000E+01

[[:SOURce]:POWer[:DC]:VOLTagE:RANGe:AUTO]

Syntax:

[[:SOURce]:POWer[:DC]:VOLTagE:RANGe:AUTO <BOOL>
[[:SOURce]:POWer[:DC]:VOLTagE:RANGe:AUTO?

Description:

Sets the automatic voltage range selection in Power DC source function.

Parameters:

<BOOL> - automatic range selection {ON|OFF|1|0} (default 1).
·ON turns on automatic range selection.
·OFF turns off automatic range selection.
·1 turns on automatic range selection.
·0 turns off automatic range selection.

Remarks:

The value is stored in each preset.
The value is set according to "Start-up" preset after power on.
The value is set to default on *RST command.
Overlapped command.

Example:

```
POW:VOLT:RANG:AUTO ON
POW:VOLT:RANG:AUTO? Response: 1
```

[[:SOURce]:SYNChroscope:FREQuency

Syntax:

```
[[:SOURce]:SYNChroscope:FREQuency <DNPD>[<UNIT>]
[:SOURce]:SYNChroscope:FREQuency?
```

Description:

Sets the frequency for Synchroscope source function.

Parameters:

```
<DNPD> - frequency, range 45 ... 1000.0 Hz (default 50.0).
<UNIT> - frequency unit {HZ}.
·HZ    Hertz unit is used.
```

Remarks:

The value is stored in each preset.
The value is set according to "Start-up" preset after power on.
The value is set to default on *RST command.
Overlapped command.

Example:

```
SYNC:FREQ 50.0
SYNC:FREQ? Response: 5.000000E+01 HZ
```

[[:SOURce]:SYNChroscope:PHASe

Syntax:

```
[[:SOURce]:SYNChroscope:PHASe <CPD>
[:SOURce]:SYNChroscope:PHASe?
```

Description:

Sets the phase shift between Voltage and Synchroscope output. The setting is valid for the Synchroscope function.

Parameters:

```
<CPD> - synchroscope phase shift, {NORMal|INVerted} (default NORM).
```

Remarks:

```
NORM = 0°
INV=180°
The value is stored in each preset.
The value is set according to "Start-up" preset after power on.
The value is set to default on *RST command.
Overlapped command.
```

Example:

```
SYNC:PHAS NORM
SYNC:PHAS? Response: NORM
```

[[:SOURce]:SYNChroscope[:VOLTage]:RANGe

Syntax:

```
[[:SOURce]:SYNChroscope[:VOLTage]:RANGe <DNPD>
[:SOURce]:SYNChroscope[:VOLTage]:RANGe?
```

Description:

Sets the voltage range for Synchroscope source function manually.

Parameters:

```
<DNPD> - voltage range [V], see calibrator specification for range (default is 25 V).
```

Remarks:

The value is stored in each preset
The value is set according to "Startup" preset after power on
The value is set to default on *RST command
Overlapped command

Example:

```
SYNC:RANG 25
SYNC:RANG? Response: 2.500000E+01
```

[[:SOURce]:SYNChroscope[:VOLTage]:RANGe:AUTO

Syntax:

```
[[:SOURce]:SYNChroscope[:VOLTage]:RANGe:AUTO <BOOL>
[:SOURce]:SYNChroscope[:VOLTage]:RANGe:AUTO?
```

Description:

Sets the automatic voltage range selection for Synchronoscope source function.

Parameters:

<BOOL> - automatic range selection {ON|OFF|1|0} (default 1).

- ON turns on automatic range selection.
- OFF turns off automatic range selection.
- 1 turns on automatic range selection.
- 0 turns off automatic range selection.

Remarks:

The value is stored in each preset.
The value is set according to "Start-up" preset after power on.
The value is set to default on *RST command.
Overlapped command.

Example:

```
SYNC:RANG:AUTO ON
SYNC:RANG:AUTO? Response: 1
```

[[:SOURce]:SYNChroscope[:VOLTage][:AMPLitude]]

Syntax:

```
[[:SOURce]:SYNChroscope[:VOLTage][:AMPLitude] <DNPd>[<UNIT>]
[:SOURce]:SYNChroscope[:VOLTage][:AMPLitude]?
```

Description:

Sets voltage amplitude for Synchronoscope source function.

Parameters:

<DNPd> - voltage amplitude, see calibrator specification for range (default is 10 V).
<UNIT> - voltage unit {VRMS|VPK|VPP|VAVG}.

- VRMS Volt RMS.
- VPK Volt Peak.
- VPP Volt Peak to Peak.
- VAVG Volt Average.

Remarks:

The value is stored in each preset.
The value is set according to "Start-up" preset after power on.
The value is set to default on *RST command.
Overlapped command.

Example:

```
SYNC 10.0
SYNC? Response: 1.000000E+01 VRMS
```

[[:SOURce]:VOLTage:AC[:AMPLitude]

Syntax:

```
[[:SOURce]:VOLTage:AC[:AMPLitude] <DNPd>[<UNIT>]
[:SOURce]:VOLTage:AC[:AMPLitude]?
```

Description:

Sets voltage amplitude for Voltage AC source function.

Parameters:

<DNPd> - voltage amplitude, see calibrator specification for range (default is 10 V).

<UNIT> - voltage unit {VRMS|VPK|VPP|VAVG}.

- VRMS Volt RMS.
- VPK Volt Peak.
- VPP Volt Peak to Peak.
- VAVG Volt Average.

Remarks:

The value is stored in each preset.
The value is set according to "Start-up" preset after power on.
The value is set to default on *RST command.
Overlapped command.

Example:

VOLT:AC 10.0
VOLT:AC? Response: 1.000000E+01 VRMS

[[:SOURce]:VOLTage:AC:FREQuency

Syntax:

[[:SOURce]:VOLTage:AC:FREQuency <DNPD>[<UNIT>]
[:SOURce]:VOLTage:AC:FREQuency?

Description:

Sets the frequency for Voltage AC source function.

Parameters:

<DNPD> - frequency, range 45.0 ... 1000.0 Hz (default 50.0 Hz).
<UNIT> - frequency unit {HZ}.
·HZ Hertz unit is used.

Remarks:

The value is stored in each preset.
The value is set according to "Start-up" preset after power on.
The value is set to default on *RST command.
Overlapped command.

Example:

VOLT:AC:FREQ 50.0
VOLT:AC:FREQ? Response: 5.000000E+01 HZ

[[:SOURce]:VOLTage:AC:RANGe

Syntax:

[[:SOURce]:VOLTage:AC:RANGe <DNPD>
[:SOURce]:VOLTage:AC:RANGe?

Description:

Sets the voltage range for Voltage AC source function manually.

Parameters:

<DNPD> - voltage range [V], see calibrator specification for range (default is 25 V).

Remarks:

The closest upper range to the entered value will be selected.
Setting the range turns off the automatic range selection.
The value is stored in each preset.
The value is set according to "Start-up" preset after power on.
The value is set to default on *RST command.
Overlapped command.

Example:

VOLT:AC:RANG 25
VOLT:AC:RANG? Response: 2.500000E+01

[[:SOURce]:VOLTage:AC:RANGe:AUTO

Syntax:

[[:SOURce]:VOLTage:AC:RANGe:AUTO <BOOL>

[[:SOURce]:VOLTage:AC:RANGe:AUTO?

Description:

Sets the automatic voltage range selection for Voltage AC source function.

Parameters:

<BOOL> - automatic range selection {ON|OFF|1|0} (default 1).
·ON turns on automatic range selection.
·OFF turns off automatic range selection.
·1 turns on automatic range selection.
·0 turns off automatic range selection.

Remarks:

The value is stored in each preset.
The value is set according to "Start-up" preset after power on.
The value is set to default on *RST command.
Overlapped command.

Example:

VOLT:AC:RANG:AUTO ON
VOLT:AC:RANG:AUTO? Response: 1

[[:SOURce]:VOLTage[:DC][:AMPLitude]

Syntax:

[[:SOURce]:VOLTage[:DC][:AMPLitude] <DNPD>[<UNIT>]
[:SOURce]:VOLTage[:DC][:AMPLitude]?

Description:

Sets the voltage amplitude for Voltage DC source function.

Parameters:

<DNPD> - voltage amplitude, see calibrator specification for range (default is 10 V).
<UNIT> - voltage unit {V}.
·V volt used as unit.

Remarks:

The value is stored in each preset.
The value is set according to "Start-up" preset after power on.
The value is set to default on *RST command.
Overlapped command.

Example:

VOLT 10.0
VOLT? Response: 1.000000E+01 V

[[:SOURce]:VOLTage[:DC]:RANGe

Syntax:

[[:SOURce]:VOLTage[:DC]:RANGe <DNPD>
[:SOURce]:VOLTage[:DC]:RANGe?

Description:

Sets the voltage range for Voltage DC source function manually.

Parameters:

<DNPD> - voltage range [V], see calibrator specification for range (default is 40 V).

Remarks:

The closest upper range to the entered value will be selected.
Setting the range turns off the automatic range selection.
The value is stored in each preset.
The value is set according to "Start-up" preset after power on.
The value is set to default on *RST command.
Overlapped command.

Example:

VOLT:RANG 40
VOLT:RANG? Response: 4.000000E+01

[[:SOURce]:VOLTage[:DC]:RANGe:AUTO

Syntax:

[[:SOURce]:VOLTage[:DC]:RANGe:AUTO <BOOL>
[:SOURce]:VOLTage[:DC]:RANGe:AUTO?

Description:

Sets the automatic voltage range selection for Voltage DC source function.

Parameters:

<BOOL> - automatic range selection {ON|OFF|1|0} (default 1).
·ON turns on automatic range selection.
·OFF turns off automatic range selection.
·1 turns on automatic range selection.
·0 turns off automatic range selection.

Remarks:

The value is stored in each preset.
The value is set according to "Start-up" preset after power on.
The value is set to default on *RST command.
Overlapped command.

Example:

VOLT:RANG:AUTO ON
VOLT:RANG:AUTO? Response: 1

----- SEM OTESTOVÁNO NA 6040 -----

:STATus:OPERation:CONDition

Syntax:

:STATus:OPERation:CONDition?

Description:

Returns the content of Operational Condition register. It is a decimal value which corresponds to the binary-weighted sum of all bits in the register. The response to the query therefore represents an instantaneous 'Snapshot' of the register state, at the time that the query was accepted.

Parameters:

<DNPD> Operational Condition register.
Bit 11 contains HAZARDOUS VOLTAGE active status

Remarks:

Register is not cleared after this query.
Overlapped command.

Example:

STAT:OPER:COND? Response: 2048

:STATus:OPERation:ENABLE

Syntax:

:STATus:OPERation:ENABLE <DNPD>
:STATus:OPERation:ENABLE?

Description:

Enables bits in the Operational Data Enable register. Selected bits are summarized at bit 7 (OSS) of the IEEE488.2 Status Byte register.

Parameters:

<DNPD> Operational Data Enable register.

Remarks:

Overlapped command.

Example:

STAT:OPER:ENAB 2048
STAT:OPER:ENAB? Response: 2048

:STATus:OPERation[:EVENT]?

Syntax:

:STATus:OPERation[:EVENT]?

Description:

Returns the content of Operational Data Event register. It is a decimal value which corresponds to the binary-weighted sum of all bits set in the register.

Parameters:

<DNPD> Operational Data Event register.

Remarks:

Register is cleared after this query.
Overlapped command

Example:

STAT:OPER? Response: 0

:STATus:OPERation:NTRansition

Syntax:

:STATus:OPERation:NTRansition <DNPD>

:STATus:OPERation:NTRansition?

Description:

Sets the Operation Negative Transition Register. It is a decimal value which corresponds to the binary-weighted sum of all bits set in the register. Setting a bit in the negative transition filter shall cause a 1 to 0 transition in the corresponding bit of the associated condition register to cause a 1 to be written in the associated bit of the corresponding event register.

Parameters:

<DNPD> Operation Negative Transition Register, range 0 ... 32767

Remarks:

Overlapped command

Example:

STAT:OPER:NTR 2048

STAT:OPER:NTR? Response: 2048

:STATus:OPERation:PTRansition

Syntax:

:STATus:OPERation:PTRansition <DNPD>

:STATus:OPERation:PTRansition?

Description:

Sets Operation Positive Transition Register. It is a decimal value which corresponds to the binary-weighted sum of all bits set in the register. Setting a bit in the positive transition filter shall cause a 0 to 1 transition in the corresponding bit of the associated condition register to cause a 1 to be written in the associated bit of the corresponding event register.

Parameters:

<DNPD> Operation Positive Transition Register, range 0 ... 32767

Remarks:

Overlapped command

Example:

STAT:OPER:PTR 0

STAT:OPER:PTR? Response: 0

:STATus:QUEStionable:CONDition

Syntax:

:STATus:QUEStionable:CONDition?

Description:

Returns the content of Questionable Condition register. It is a decimal value which corresponds to the binary-weighted sum of all bits in the register. The response to the query therefore represents an instantaneous 'Snapshot' of the register state, at the time that the query was accepted.

Parameters:

<DNPD> Questionable Condition register.
Bit 12 contains OUTPUT OVERLOAD status

Remarks:

Register is not cleared after this query.
Overlapped command.

Example:

STAT:QUES:COND? Response: 4096

:STATus:QUEStionable:ENABle

Syntax:

:STATus:QUEStionable:ENABle <DNPD>
:STATus:QUEStionable:ENABle?

Description:

Enables bits in the Questionable Data Enable register. Selected bits are summarized at bit 3 (QSS) of the IEEE488.2 Status Byte register.

Parameters:

<DNPD> Questionable Data Enable register.

Remarks:

Overlapped command.

Example:

STAT:QUES:ENAB 4096
STAT:QUES:ENAB? Response: 4096

:STATus:QUEStionable[:EVENT]?

Syntax:

:STATus:QUEStionable[:EVENT]?

Description:

Returns the content of Questionable Data Event register. It is a decimal value which corresponds to the binary-weighted sum of all bits set in the register.

Parameters:

<DNPD> Questionable Data Event register.

Remarks:

Register is cleared after this query.
Overlapped command.

Example:

STAT:QUES? Response: 0

:STATus:QUEStionable:NTRansition

Syntax:

:STATus:QUEStionable:NTRansition <DNPD>
:STATus:QUEStionable:NTRansition?

Description:

Sets Questionable Negative Transition Register. It is a decimal value which corresponds to the binary-weighted sum of all bits set in the register. Setting a bit in the negative transition filter shall cause a 1 to 0 transition in the corresponding bit of the associated condition register to cause a 1 to be written in the associated bit of the corresponding event register.

Parameters:

<DNPD> Questionable Negative Transition Register, range 0 ... 32767

Remarks:

Overlapped command.

Example:

```
STAT:QUES:NTR 4096
STAT:QUES:NTR? Response: 4096
```

:STATus:QUEStionable:PTRansition

Syntax:

```
:STATus:QUEStionable:PTRansition <DNPD>
:STATus:QUEStionable:PTRansition?
```

Description:

Sets Questionable Positive Transition Register. It is a decimal value which corresponds to the binary-weighted sum of all bits set in the register. Setting a bit in the positive transition filter shall cause a 0 to 1 transition in the corresponding bit of the associated condition register to cause a 1 to be written in the associated bit of the corresponding event register.

Parameters:

<DNPD> Questionable Positive Transition Register, range 0 ... 32767

Remarks:

Overlapped command.

Example:

```
STAT:QUES:PTR 4096
STAT:QUES:PTR? Response: 4096
```

:SYSTem:BEEPer:PROTection:VOLume

Syntax:

```
:SYSTem:BEEPer:PROTection:VOLume <DNPD>
:SYSTem:BEEPer:PROTection:VOLume?
```

Description:

Sets the beeper volume when the dangerous voltage at the output terminals is reached.

Parameters:

<DNPD> - beeper volume, range 0.0 ... 1.0 (default 0.3)

Remarks:

The dangerous voltage threshold can be set with command OUTP:VOLT:DC:PROT or OUTP:VOLT:AC:PROT.

The value is not affected by the * RST command or the stored preset.

This command requires "Calibration" access.

Overlapped command.

Example:

```
SYST:BEEP:PROT:VOL 0.01
SYST:BEEP:PROT:VOL? Response: 1.000000E-02
```

:SYSTem:BEEPer:STATe

Syntax:

```
:SYSTem:BEEPer:STATe <BOOL>
:SYSTem:BEEPer:STATe?
```

Description:

Sets the device beeper state.

Parameters:

<BOOL> beeper state {ON|OFF|1|0} (default 1)

- ON device system beeper is enabled.
- OFF device system beeper is disabled.
- 1 device system beeper is enabled.
- 0 device system beeper is disabled.

Remarks:

Overlapped command.

Example:

```
SYST:BEEP:STAT ON
SYST:BEEP:STAT? Response: 1
```

:SYSTem:BEEPer:VOLume

Syntax:

```
:SYSTem:BEEPer:VOLume <DNPD>
:SYSTem:BEEPer:VOLume?
```

Description:

Sets the device beeper volume.

Parameters:

<DNPD> - beeper volume, range 0.0 ... 1.0 (default 0.03)

Remarks:

Overlapped command.

Example:

```
SYST:BEEP:VOL 0.01
SYST:BEEP:VOL? Response: 1.000000E-02
```

:SYSTem:COMMunicate:BUS

Syntax:

```
:SYSTem:COMMunicate:BUS <CPD>
:SYSTem:COMMunicate:BUS?
```

Description:

Selects the device remote interface.

Parameters:

<CPD> - remote interface {USB| GPIB|LAN} (default SER).
·USB USB interface.
·GPIB GPIB interface.
·LAN LAN interface.

Remarks:

If a LAN interface is set, it is possible to communicate via the TELNET, TCP or UDP protocol.
Sequential command.

Example:

```
SYST:COMM:BUS SER
SYST:COMM:BUS? Response: SER
```

:SYSTem:COMMunicate:GPIB:ADDRess

Syntax:

```
:SYSTem:COMMunicate:GPIB:ADDRess <DNPD>
:SYSTem:COMMunicate:GPIB:ADDRess?
```

Description:

Sets the GPIB address.

Parameters:

<DNPD> - GPIB address, range 1 ... 31 (default 2).

Remarks:

Overlapped command.

Example:

```
SYST:COMM:GPIB:ADDR 2
SYST:COMM:GPIB:ADDR? Response: 2
```

:SYSTem:COMMunicate:LAN:AADDRess

Syntax:

```
:SYSTem:COMMunicate:LAN:AADDRess?
```

Description:

The current IP address assigned to the device.

Parameters:

<CPD> - LAN address, Range 000.000.000.000 ... 255.255.255.255 (default 192.168.001.100).

Remarks:

If DHCP is enabled, the address can only be read when it is set by the DHCP server.

Example:

SYST:COMM:LAN:AADD? Response: 192.168.001.100

:SYSTem:COMMunicate:LAN:ADDRess

Syntax:

:SYSTem:COMMunicate:LAN:ADDRess <CPD>
:SYSTem:COMMunicate:LAN:ADDRess?

Description:

Sets the IP address.

Parameters:

<CPD> - LAN address, Range 000.000.000.000 ... 255.255.255.255 (default 192.168.001.100).

Remarks:

DHCP must be set to off to take effect.

Interface must be restarted to take effect (see SYST:COMM:REST command).

Overlapped command.

Example:

SYST:COMM:LAN:ADDR 192.168.001.100
SYST:COMM:LAN:ADDR? Response: 192.168.001.100

:SYSTem:COMMunicate:LAN:DHCP

Syntax:

:SYSTem:COMMunicate:LAN:DHCP <BOOL>
:SYSTem:COMMunicate:LAN:DHCP?

Description:

Enables or disables the DHCP.

Parameters:

<BOOL> - DHCP {ON|OFF|1|0} (default 1)
·ON DHCP is enabled.
·OFF DHCP is disabled.
·1 DHCP is enabled.
·0 DHCP is disabled.

Remarks:

Overlapped command.

Example:

SYST:COMM:LAN:DHCP ON
SYST:COMM:LAN:DHCP? Response: 1

:SYSTem:COMMunicate:LAN:GATE

Syntax:

:SYSTem:COMMunicate:LAN:GATE <CPD>
:SYSTem:COMMunicate:LAN:GATE?

Description:

Sets the default gateway.

Parameters:

<CPD> - default gateway, range 000.000.000.000 ... 255.255.255.255 (default 255.255.255.255).

Remarks:

DHCP must be set to off to take effect.

Interface must be restarted to take effect (see SYST:COMM:REST command).
Overlapped command.

Example:

```
SYST:COMM:LAN:GATE 255.255.255.255
SYST:COMM:LAN:GATE? Response: 255.255.255.255
```

:SYSTem:COMMunicate:LAN:HOST

Syntax:

```
:SYSTem:COMMunicate:LAN:HOST <CPD>
:SYSTem:COMMunicate:LAN:HOST?
```

Description:

Sets the host name.

Parameters:

<CPD> - host name. Upper alpha, lower alpha, digits, underscores and spaces are allowable. Maximum string size is 14 characters.

Remarks:

DHCP must be set to on to take effect.
Interface must be restarted to take effect (see SYST:COMM:REST command).
Overlapped command.

Example:

```
SYST:COMM:LAN:HOST 6040_SN860011
SYST:COMM:LAN:HOST? Response: 6040_SN860011
```

:SYSTem:COMMunicate:LAN:MAC

Syntax:

```
:SYSTem:COMMunicate:LAN:MAC?
```

Description:

The current MAC address assigned to the device.

Parameters:

<CPD> - MAC address, format XX-XX-XX-XX-XX-XX (no default value).

Remarks:

The MAC address is fixed and cannot be changed.
Each device contains a different MAC address.

Example:

```
SYST:COMM:LAN:MAC? Response: 34-D0-B8-A0-00-C9
```

:SYSTem:COMMunicate:LAN:MASK

Syntax:

```
:SYSTem:COMMunicate:LAN:MASK <CPD>
:SYSTem:COMMunicate:LAN:MASK?
```

Description:

Sets the subnet mask.

Parameters:

<CPD> - subnet mask, range 000.000.000.000 ... 255.255.255.255 (default 255.255.255.000).

Remarks:

DHCP must be set to off to take effect.
Interface must be restarted to take effect (see SYST:COMM:REST command).
Overlapped command.

Example:

```
SYST:COMM:LAN:MASK 255.255.255.000
SYST:COMM:LAN:MASK? Response: 255.255.255.000
```

:SYSTem:COMMunicate:LAN[:TELNet]:PORT

Syntax:

:SYSTem:COMMunicate:LAN[:TELNet]:PORT <DNPD>
:SYSTem:COMMunicate:LAN[:TELNet]:PORT?

Description:

Sets the port number for the TELNET protocol.

Parameters:

<DNPD> - port number, range 0 ... 9999 (default 23)

Remarks:

Interface must be restarted to take effect (see SYST:COMM:REST command).
Overlapped command.

Example:

SYST:COMM:LAN:PORT 23
SYST:COMM:LAN:PORT? Response: 23

:SYSTem:COMMunicate:LAN:TCP:PORT

Syntax:

:SYSTem:COMMunicate:LAN:TCP:PORT <DNPD>
:SYSTem:COMMunicate:LAN:TCP:PORT?

Description:

Sets the port number for the TCP protocol.

Parameters:

<DNPD> - port number, range 0 ... 9999 (default 22)

Remarks:

Interface must be restarted to take effect (see SYST:COMM:REST command).
Overlapped command.

Example:

SYST:COMM:LAN:TCP:PORT 22
SYST:COMM:LAN:TCP:PORT? Response: 22

:SYSTem:COMMunicate:LAN:UDP:PORT

Syntax:

:SYSTem:COMMunicate:LAN:UDP:PORT <DNPD>
:SYSTem:COMMunicate:LAN:UDP:PORT?

Description:

Sets the port number for the UDP protocol.

Parameters:

<DNPD> - port number, range 0 ... 9999 (default 22)

Remarks:

Interface must be restarted to take effect (see SYST:COMM:REST command).
Overlapped command.

Example:

SYST:COMM:LAN:UDP:PORT 22
SYST:COMM:LAN:UDP:PORT? Response: 22

:SYSTem:COMMunicate:REStart

Syntax:

:SYSTem:COMMunicate:REStart

Description:

Restarts communication interface. It will take several seconds. During this period device will not respond to any commands. Restart is needed for all LAN setting changes.

Parameters:

None

Remarks:

Overlapped command.

Example:
SYST:COMM:REST

:SYSTem:COMMunicate:USB:BAUD

Syntax:
:SYSTem:COMMunicate:USB:BAUD <CPD>
:SYSTem:COMMunicate:USB:BAUD?

Description:
Sets the baudrate for USB interface.

Parameters:
<CPD> - baudrate {1200|2400|4800|9600|19200|38400|57600|115200} (default 9600).
·1200 1200 Bd
·2400 2400 Bd
·4800 4800 Bd
·9600 9600 Bd
·19200 19200 Bd
·38400 38400 Bd
·57600 57600 Bd
·115200 115200 Bd

Remarks:
Overlapped command.

Example:
SYST:COMM:USB:BAUD 1200
SYST:COMM:USB:BAUD? Response: 1200

:SYSTem:DATE

Syntax:
:SYSTem:DATE <DNPD>,<DNPD>,<DNPD>
:SYSTem:DATE?

Description:
Sets the device system date.

Parameters:
<DNPD> - year, range 2000 ... 2063
<DNPD> - month, range 1 ... 12
<DNPD> - day, range 1 ... 31

Remarks:
This command requires "Calibration" access.
Overlapped command.

Example:
SYST:DATE 2020,7,16
SYST:DATE? Response: 2020,7,16

:SYSTem:ERRor[:NEXT]?

Syntax:
:SYSTem:ERRor[:NEXT]?

Description:
Queries the error queue for the next item and removes it from the queue.

Parameters:
<DNPD> - error code
<SPD> - quoted error message

Remarks:
Error queue is cleared by reading all errors or by issuing *CLS command.
Overlapped command.

Example:
SYST:ERR? Response:

:SYSTem:KEY

Syntax:

:SYSTem:KEY <DNPD>

:SYSTem:KEY?

Description:

Activates key action through remote interface or returns last activated key.

Parameters:

<DNPD> - key

8	KEY_F1
9	KEY_F2
10	KEY_F3
11	KEY_F4
1	KEY_SETUP
2	KEY_PROGRAM
3	KEY_PRESET
4	KEY_MENU
18	KEY_0
17	KEY_1
24	KEY_2
31	KEY_3
16	KEY_4
23	KEY_5
30	KEY_6
15	KEY_7
22	KEY_8
29	KEY_9
25	KEY_POINT
32	KEY_SIGN
36	KEY_EXP
37	KEY_BKSP
38	KEY_CANCEL
39	KEY_ENTER
244	KEY_WHEEL_LEFT
245	KEY_WHEEL_RIGHT
246	KEY_WHEEL_PRESS
5	KEY_OUTPUT_ON
12	KEY_OUTPUT_OFF
33	KEY_UP
19	KEY_DOWN
26	KEY_LEFT
40	KEY_RIGHT
6	KEY_VOLTAGE_DC
13	KEY_VOLTAGE_AC
20	KEY_CURRENT_DC
27	KEY_CURRENT_AC
34	KEY_POWER_DC
41	KEY_POWER_AC
7	KEY_SYNCHROSCOPE
14	KEY_OTHER

Remarks:

This command does not require LOCAL mode.

Overlapped command.

Example:

SYST:KEY 1

SYST:KEY? Response: 1

:SYSTem:LOCAl

Syntax:

:SYSTem:LOCAl

Description:

Places device in the LOCAL mode and unlocks all keys on front panel of the device. The device will not respond to commands in LOCAL mode except for written exceptions.

Parameters:

None

Remarks:

This command is valid only for LAN and USB interfaces.
Overlapped command.

Example:

SYST:LOC

:SYSTem:PRESet

Syntax:

:SYSTem:PRESet

Description:

Set all device parameters to default. Effect is the same as *RST command do.

Parameters:

None

Remarks:

Overlapped command.

Example:

SYST:PRES

:SYSTem:REMOte

Syntax:

:SYSTem:REMOte

Description:

Places device in the REMOTE mode and locks all keys except LOCAL key. The device will not respond to any other command until is in REMOTE mode.

Parameters:

<action> REMOTE

Remarks:

The Command is valid only for LAN and USB interfaces.
Overlapped command.

Example:

SYST:REM

:SYSTem:REStArt

Syntax:

:SYSTem:REStArt

Description:

Restarts the device. The same initialization procedure is performed as after turning device on with the power ON / OFF button.

Parameters:

None

Remarks:

Overlapped command.

Example:

SYST:REST

:SYSTem:RWLock

Syntax:

:SYSTem:RWLock

Description:

Places device in the REMOTE mode and locks all keys including LOCAL key. The device will not respond to any other command until is in REMOTE mode.

Parameters:

None

Remarks:

The Command is valid only for LAN, USB interfaces.
Overlapped command.

Example:

SYST:RWL

:SYSTem:SETup:CLEar

Syntax:

:SYSTem:SETup:CLEar

Description:

Clears preset selected by SYST:SET:SEL command.

Parameters:

None

Remarks:

Overlapped command.

Example:

SYST:SET:CLE

:SYSTem:SETup:LOAD

Syntax:

:SYSTem:SETup:LOAD

Description:

Loads preset selected by SYST:SET:SEL command. All volatile device parameters will be set according to this preset.

Parameters:

None

Remarks:

Overlapped command.

Example:

SYST:SET:LOAD

:SYSTem:SETup:NAME

Syntax:

:SYSTem:SETup:NAME <SPD>

:SYSTem:SETup:NAME?

Description:

Sets preset name. The name is not saved until the entire preset is saved with the SYST:SET:SAVE command. Therefore, the preset name must be set first and then the preset must be saved.

Parameters:

<SPD> - preset name. Upper alpha, lower alpha, digits, underscores and spaces are allowable. Maximum string size is 18 characters.

Remarks:

Overlapped command.

Example:

SYST:SET:NAME "Scope voltage"

SYST:SET:NAME? Response: "Scope voltage"

:SYSTem:SETup:SAVE

Syntax:

:SYSTem:SETup:SAVE

Description:

Saves actual device parameter's set as preset.

Parameters:

None

Remarks:

Overlapped command.

Example:

SYST:SET:SAVE

:SYSTem:SETup:SElect

Syntax:

:SYSTem:SETup:SElect <DNPD>

:SYSTem:SETup:SElect?

Description:

Selects the system preset index. All other SYST:SET commands will use this preset number.

Parameters:

<DNPD> - preset index, range 0 ... 99 (default 0). Preset index corresponds to display preset number labelled "Location". Preset number 0 is "Start-up" preset.

Remarks:

The value is set to default after power on.

The value is set to default on *RST command.

Overlapped command.

Example:

SYST:SET:SEL 0

SYST:SET:SEL? Response: 0

:SYSTem:TIME

Syntax:

:SYSTem:TIME <DNPD>,<DNPD>,<DNPD>

:SYSTem:TIME?

Description:

Sets the device real time.

Parameters:

<DNPD> - hours, range 0 ... 23

<DNPD> - minutes, range 0 ... 59

<DNPD> - seconds, range 0 ... 59

Remarks:

This command requires "Calibration" access.

The value is set to default after power on.

The value is set to default on *RST command.

Overlapped command.

Example:

SYST:TIME 10,43,0

SYST:TIME? Response: 10,43,0

:SYSTem:VERSion?

Syntax:

:SYSTem:VERSion?

Description:

Returns version of implemented SCPI language.

Parameters:

<CPD> SCPI language version.

Remarks:

Overlapped command.

Example:

SYST:VERS? Response: 1999.0

:UNIT:CURRent

Syntax:

:UNIT:CURRent <CPD>

:UNIT:CURRent?

Description:

Sets Current AC amplitude unit. The unit is reflected on the display, and also affects the parameter settings via the remote control.

Parameters:

<CPD> - current unit {ARMS|APK|APP|AAVG} (default ARMS)

·ARMS Ampere RMS

·APK Ampere Peak

·APP Ampere Peak to Peak

·AAVG Ampere Average

Remarks:

The value is stored in each preset.

The value is set according to "Start-up" preset after power on.

The value is set to default on *RST command.

Overlapped command.

Example:

UNIT:CURR ARMS

UNIT:CURR? Response: ARMS

:UNIT:PHASe

Syntax:

:UNIT:PHASe <CPD>

:UNIT:PHASe?

Description:

Sets Power AC phase unit. The unit is reflected on the display, and also affects the parameter settings via the remote control.

Parameters:

<CPD> - power phase unit {DEG|COS} (default DEG)

·DEG degree

·COS power factor

Remarks:

The value is stored in each preset.

The value is set according to "Start-up" preset after power on.

The value is set to default on *RST command.

Overlapped command.

Example:

UNIT:PHAS DEG

UNIT:PHAS? Response: DEG

:UNIT:POWer

Syntax:

:UNIT:POWer <CPD>

:UNIT:POWer?

Description:

Sets the Power AC unit. The unit is reflected on the display, and also affects the parameter settings via the remote control.

Parameters:

<CPD> - Power AC unit {W|VA|VAR} (default W)

- W real power
- VA apparent power
- VAr reactive power

Remarks:

The value is stored in each preset.
The value is set according to "Start-up" preset after power on.
The value is set to default on *RST command.
Overlapped command.

Example:

UNIT:POW W
UNIT:POW? Response: W

:UNIT:VOLTage

Syntax:

:UNIT:VOLTage <CPD>
:UNIT:VOLTage?

Description:

Sets the Voltage AC amplitude unit. The unit is reflected on the display, and also affects the parameter settings via the remote control.

Parameters:

<CPD> - voltage unit {VRMS|VPK|VPP|VAVG} (default VRMS)

- VRMS Volt RMS
- VPK Volt Peak
- VPP Volt Peak to Peak
- VAVG Volt Average

Remarks:

The value is stored in each preset.
The value is set according to "Start-up" preset after power on.
The value is set to default on *RST command.
Overlapped command.

Example:

UNIT:VOLT VRMS
UNIT:VOLT? Response: VRMS

IEEE 488.2 Mandatory Commands

***CLS**

Syntax:

*CLS

Description:

This command clears all status data structures in the device i.e. Event Status Register, Status Byte Register except the MAV bit, Operation Status Register, Questionable Status Register. Also, error queue is cleared. Output queue is unaffected.

Parameters:

None

Remarks:

Overlapped command.

Example:

*CLS

***ESE**

Syntax:

*ESE
*ESE?

Description:

This command programs the Event Status Enable register bits.

Parameters:

<DNPD> - Event Status Enable register, range 0 ... 255

Remarks:

Overlapped command.

Example:

*ESE 2

*ESE? Response: 2

***ESR?**

Syntax:

*ESR?

Description:

This query returns the contents of the Event Status Register and clears the register.

Parameters:

<DNPD> - Event Status Register

Remarks:

Overlapped command.

Example:

*ESR? Response: 0

***IDN?**

Syntax:

*IDN?

Description:

This command returns the identification of the manufacturer, model, serial number and firmware revision.

Parameters:

<CPD> - manufacturer

<CPD> - model

<DNPD> - serial number

<DNPD> - firmware version

Remarks:

Overlapped command.

Example:

*IDN? Response: MEATEST,6040,860011,1.000

***OPC**

Syntax:

*OPC

Description:

This command sets the OPC bit in the ESR (Event Status Register) when all pending operations are complete.

Parameters:

None

Remarks:

Overlapped command.

Example:

*OPC

***OPC?**

Syntax:

*OPC?

Description:

This command returns “1” to the output queue after all pending operations inside decade box are complete.

Parameters:

<DNPD> - always returns 1

Remarks:

Sequential command

Example:

*OPC? Response: 1

***OPT?**

Syntax:

*OPT?

Description:

This command returns the instrument's hardware fitment. The answer consists of individual numbers, where 0 means the hardware is missing (or disconnected) and 1 means the hardware is installed (or connected).

Parameters:

<DNPD> - GPIB and Ethernet interface extension (comes as standard)

<DNPD> - RCU Remote Control Unit

<DNPD> - VOLTAGE CABLE

<DNPD> - CURRENT CABLE

<DNPD> - SYNCHROSCOPE CABLE

Remarks:

Overlapped command.

Example:

*OPT? Response: 1,1,1,1,0

***RST**

Syntax:

*RST

Description:

This command resets the device to its initial factory-set state. This state may be different from the "Start-up" preset.

Parameters:

None

Remarks:

Sequential command.

Example:

*RST

***SRE**

Syntax:

*SRE

*SRE?

Description:

This command allows set condition of the Service Request Enable register. Since bit 6 is not used, the maximum value is 191.

Parameters:

<DNPD> - Service Request Enable register

Remarks:

Overlapped command.

Example:

*SRE 2

*SRE? Response: 2

***STB?**

Syntax:

*STB?

Description:

This query returns content of STB register, which carries the MSS bit status.

Parameters:

<DNPD> - Status byte register, range 0 ... 255

Remarks:

Overlapped command.

Example:

*STB? Response: 0

***TST?**

Syntax:

*TST?

Description:

This command launches internal self-test and returns result.

Parameters:

<DNPD> - test result, 0 –passed, 1 – failed

Remarks:

Sequential command.

Example:

*TST? Response: 0

***WAI**

Syntax:

*WAI

Description:

Prevents the instrument from executing any further commands or queries until all previous remote commands have been executed.

Parameters:

None

Remarks:

Sequential command.

Example:

*WAI

5. Revisions

5.1. Change 1 (12. 01. 2026)

- Added or changed SCPI command references:
 - [:SOURce]:POWer:AC:CURRent:PHASe:POLarity