TESTEQUITY

Testing F4T SCPI Commands using PuTTY

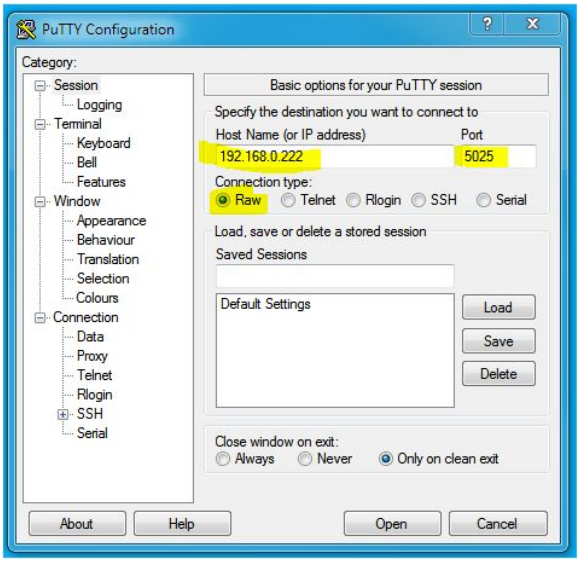
PuTTY is an SSH and telnet client for the Windows platform. PuTTY is open source software that is developed and supported by a group of volunteers. Download links for the PuTTY client are available at http://www.putty.org/. TestEquity does not support this software beyond providing guidance for the applicable SCPI commands.

The SCPI protocol on the F4T is only available over Ethernet port 5025. It is not available on the Serial interface. The commands in this document are valid for F4T Firmware Revision 03:06:0011, released May 5, 2017 and higher.

These examples are only for standard Temperature or Temperature/Humidity controllers. It is NOT for versions with Cascade Control (Part Temperature Control). See SCPI Command List at the end of this document for the applicable commands.

Configuration:

- Enter the IP address of the F4T in the **Host Name (or IP address)** window. This is configured in the F4T **Settings\Network\Ethernet** screen.
- Type **5025** in the **Port** window.
- Select **Raw** for the **Connection type**.
- Press **Open** to open the command window.

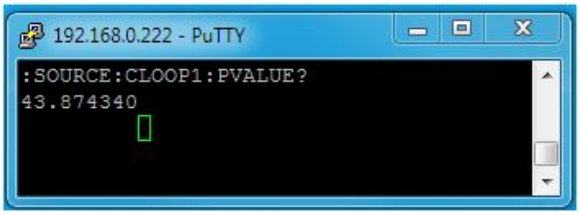


F4T Identification

Type ***IDN?** and then **Enter**. You will see the Manufacturer, Model Number, Serial Number, and Firmware Level of the F4T Controller in the command window. This is NOT the chamber model or serial number.

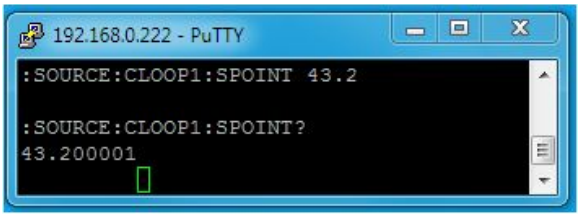
Read the chamber temperature example:

- Type **:SOURCE:CLOOP1:PVALUE?** and then **Enter**. In the example below the F4T displayed a Process Value (chamber temperature) of 43.9° and the readback value was displayed in the command window to 6 decimal places.
- For Humidity Chambers, substitute CLOOP1 with CLOOP2 for the Humidity channel.



Writing and Reading the temperature set point example:

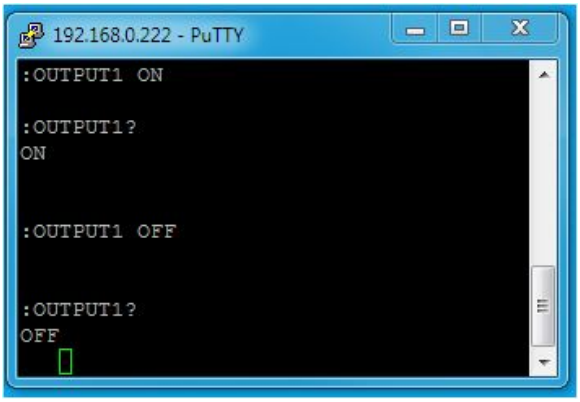
- To enter a temperature set point of 43.2° type **:SOURCE:CLOOP1:SPOINT 43.2** and then **Enter**.
- To read the temperature set point type **:SOURCE:CLOOP1:SPOINT?** and then **Enter**. The readback value is displayed in the command window to 6 decimal places.
- For Humidity Chambers, substitute CLOOP1 with CLOOP2 for the Humidity channel.



Turning the Chamber (Event Output 1) ON/OFF example:

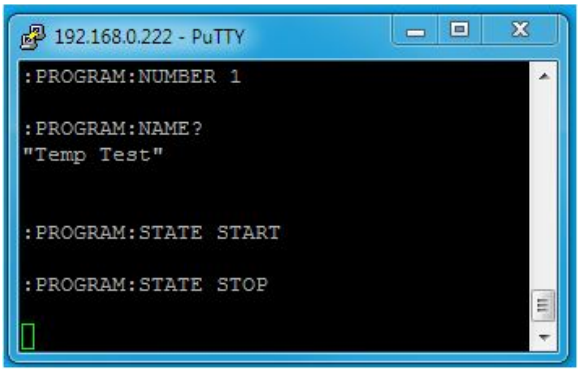
For chambers with a 3-position TEMP or CONDITIONING switch, this must be in the EVENT 1 position to control the chamber power via the F4T. For Models 101H and 155, chamber power is always controlled by the F4T Power button (Event 1).

- To turn the chamber ON type **:OUTPUT1 ON** and then **Enter**. This turns Event 1 ON.
- To read the condition of Event 1 type **:OUTPUT1?** and then **Enter**. In this example, ON is returned.
- To turn the chamber OFF type **:OUTPUT1 OFF** and then **Enter**. This turns Event 1 OFF.
- To read the condition of Event 1 type **:OUTPUT1?** and then **Enter**. In this example, OFF is returned.
- To control other event outputs, substitute their respective output numbers for OUTPUT1. For example, in a humidity chamber OUTPUT2 turns the humidity system ON/OFF.



Start/Stop a Profile example:

- Select which profile you want to control. In this example to select the first stored profile (1) type **:PROGRAM:NUMBER 1** and then **Enter**.
- To read the name of the selected profile type **:PROGRAM:NAME?** and then **Enter**. In this example the profile was named **Temp Test**.
- To start the selected profile type **:PROGRAM:STATE START** and then **Enter**.
- To stop the selected profile type **:PROGRAM:STATE STOP** and then **Enter**.



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SCPI Command List

SCPI commands are ASCII text strings with a wide array of defined SCPI commands, all of which are not included in this implementation. The SCPI protocol is only available over Ethernet port 5025. The only available SCPI commands for the F4T are shown below. This complete list is only valid for Firmware Revision 03:06:0011, released May 5, 2017 and higher.

For :CLOOP# – CLOOP1 is Temperature, CLOOP2 is Humidity.
Example :SOURCE:CLOOP1:PVALUE? (read the value for chamber temperature)
Example :SOURCE:CLOOP2:PVALUE? (read the value for chamber humidity)

Description	SCPI Command	SCPI Values	R/W	Comments
Query Temperature units	:UNIT:TEMPERATURE?	C|F	R	Ethernet display units
Set Temperature units to F	:UNIT:TEMPERATURE F		W	Ethernet display units to Fahrenheit
Set Temperature units to C	:UNIT:TEMPERATURE C		W	Ethernet display units to Celsius
This list is NOT for versions with Cascade Control (Part Temperature Control). It is only for standard Temperature or Temperature/Humidity controllers.				
Read Temperature PV (Control loop)	:SOURCE:CLOOP#:PVALUE?	*<floating point value>*	R	Source Value A
Query input error	:SOURCE:CLOOP#:ERROR?	ERROR|NONE	R	Input error status
Read SP	:SOURCE:CLOOP#:SPOINT?	*<floating point value>*	R	Set Point Active Closed
Write SP	:SOURCE:CLOOP#:SPOINT *<value>*		W	User Set Point
Read Idle SP	:SOURCE:CLOOP#:IDLE?	*<floating point value>*	R	Idle Set Point
Write Idle SP	:SOURCE:CLOOP#:IDLE *<value>*		W	Idle Set Point
This list is ONLY for versions WITH Cascade Control (Part Temperature Control)				
Read Set Point (Cascade)	:SOURCE:CASCADE1:SPOINT?	*<floating point value>*	R	User set point
Write Set Point (Cascade)	:SOURCE:CASCADE1:SPOINT *<value>*		W	User set point
Read Outer Loop PV (Cascade)	:SOURCE:CASCADE1:OUTER:PVALUE?	*<floating point value>*	R	Source Value A
Query Outer Loop Input Error (Cascade)	:SOURCE:CASCADE1:OUTER:ERROR?	ERROR|NONE	R	Input error status
Read Inner Loop PV (Cascade)	:SOURCE:CASCADE1:INNER:PVALUE?	*<floating point value>*	R	Source Value B
Query Outer Loop Input Error (Cascade)	:SOURCE:CASCADE1:INNER:ERROR?	ERROR|NONE	R	Input error status
Read Outer Loop Set Point (Cascade)	:SOURCE:CASCADE1:OUTER:SPOINT?	*<floating point value>*	R	
Read Inner Loop Set Point (Cascade)	:SOURCE:CASCADE1:INNER:SPOINT?	*<floating point value>*	R	
Set ramping off	:SOURCE:CLOOP#:RACTION OFF		W	controls instantly to set point
Set ramping on startup	:SOURCE:CLOOP#:RACTION STARTUP		W	ramps to set point on controller power on
Set ramping on set point change	:SOURCE:CLOOP#:RACTION SETPOINT		W	ramps to set point on change of set point
Set ramping on both events	:SOURCE:CLOOP#:RACTION BOTH		W	ramps to set point on controller power on OR change of set point
Write ramp scale to minutes	:SOURCE:CLOOP#:RSCALE MINUTES		W	ramp rate is per minute
Write ramp scale to hours	:SOURCE:CLOOP#:RSCALE HOURS		W	ramp rate is per hour
Read ramp rate	:SOURCE:CLOOP#:RRATE?	*<floating point value>*	R	rate that controller ramps to set point
(as above - for backward compatibility)	:SOURCE:CLOOP#:RTIME?	*<floating point value>*	R	
Write ramp rate	:SOURCE:CLOOP#:RRATE *<value>*		W	rate which controller ramps to set point
(as above - for backward compatibility)	:SOURCE:CLOOP#:RTIME *<value>*		W	
Set event output on	:OUTPUT# ON		W	# = outputs 1-7
Set event output off	:OUTPUT# OFF		W	# = outputs 1-7
Query event output state	:OUTPUT#?	OFF|ON	R	# = outputs 1-7
Select a profile	:PROGRAM:NUMBER *<value>*	1-40	W	selects the desired profile to control
Read selected profile name	:PROGRAM:NAME?	*<string value>*	R	the selected profile
Select a step	:PROGRAM:STEP *<value>*	1-50	W	the selected profile
start profile	:PROGRAM:STATE START		W	the selected profile
stop profile	:PROGRAM:STATE STOP		W	the selected profile
pause profile	:PROGRAM:STATE PAUSE		W	the selected profile
resume profile	:PROGRAM:STATE RESUME		W	the selected profile
Identification	*IDN?	"Watlow Electric",*<string value>*,*<integer value>*,*<string value>*		
	(manufacturer)		R	
	(model number)			
	(serial number)			
	(firmware level)			