

PowerMax-Pro Guide: Energy Readings Using Host SCPI/Commands

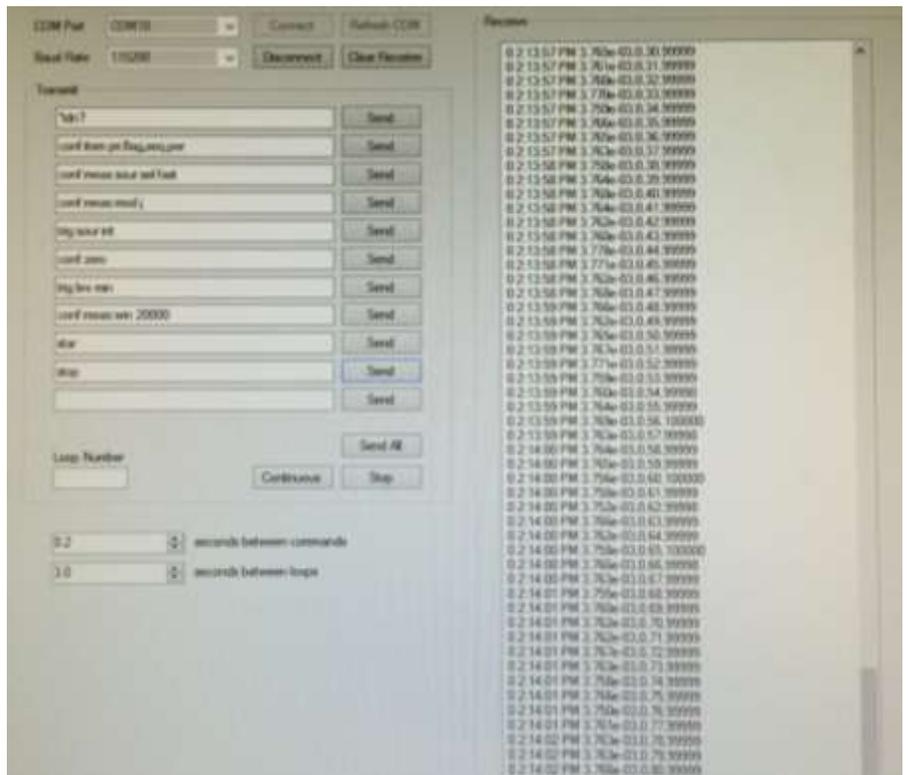
How can my PowerMax-Pro sensor and LabMax-Pro SSIM meter run energy samples using SCPI/Host Commands?

Refer to the sample sequence below. An eleven line com port utility is used. The lines that are bold are the required command sets and sequence to collect an energy measurement.

```

CMD>SYST:*IDN?
REPLY> OK SYSTEM
INFORMATION
CMD>CONF:PRI,FLAG,SEQ,PER
REPLY> OK
CMD>CONF:MEAS:SOUR:SEL
FAST
REPLY> OK
CMD>CONF:MEAS:MOD J
REPLY>OK
CMD>TRIG:SOUR:INT
REPLY>OK
CMD>CONF:ZERO
REPLY>OK
CMD>TRIG:LEV MIN
REPLY>OK
CMD>CONF:MEAS:WIN 20000
REPLY>OK
CMD>STAR
REPLY>OK
CMD>STOP

```



Additional information provided below in regards to the SCPI commands used in the exercise. Please use the Host interface section of the LabMax-Pro SSIM user manual for a complete listing of user commands.

Commands

SCMD>SYST:*IDN?

The first command was to validate connection settings. A simple *idn? Queries the sensor for its identity. If the sensor does not return with a response then you do not have a valid connection.

CMD>CONF:PRI,FLAG,SEQ,PER

In this example the user may sample the incoming period (rep rate) of the incoming pulses. This allows you to clearly read the energy level, sequence number and rep rate in the sample. More information can be found in the user manual host section under Data Item Select.

CMD>CONF:MEAS:SOUR:SEL FAST

This command puts the PowerMax-Pro into a fast measurement (20kHz). This must be done first prior to setting the meter to Joules mode and prior to setting up the trigger. The PowerMax Pro defaults to SLOW unless told to run in FAST mode.

CMD>CONF:MEAS:MOD J

This command prepares the sensor for an energy measurement. The Joules mode is set and default ranges based on the sensor are automatically applied.

CMD>TRIG:SOUR:INT

The Trigger source is now set to internal. The Sensor will attempt to capture pulses based on a trigger level. Default trigger levels are applied. Externally triggering is also possible in this mode. Refer to the trigger parameters in the host command section in the user manual for setup details.

CMD>CONF:ZERO

It is important to zero the sensor prior to taking measurements. When you configure Zero you must make sure that this is done with the laser gated off. Having any laser power will induce a bias, and more importantly this bias will also determine the range of the energies allowed in the software. Low and high ranges are determined based on the sensor first and then on the bias applied during the zero operation.

CMD>TRIG:LEV MIN

This command selects the value of the trigger level to be used in the measurement based on the range determined in an earlier step. The minimum range in this mode is essentially an autoselected trigger level. The meter will analyze the baseline noise and set a minimum trigger above the noise. When using Joules mode we recommend trying the MIN internal trigger setting before attempting to enter absolute trigger percentages. The MIN internal trigger will also make the most efficient use of the pre-trigger (buffer). The trigger level can be set at minimum maximum in addition to percentage values. You can query the values of any given setting. Please reference the host commands again for variations of the SCPI commands.

CMD>CONF:MEAS:WIN 20000

The configure measurement window sets the range in which the PowerMax Pro will look for and integrate a pulse. It is important to set a window that is just slightly longer than the laser pulse length, but not too long that the next pulse arrives before the window closes. If the window is set shorter than the laser pulse length not all of the pulse will get captured and integrated. The algorithm will integrate baseline noise if the window is set longer than the laser pulse length. This is likely the result in a low amount of error, so caution on the side of a slightly longer pulse length window than one that is too short. The value is in microseconds. In this example, to set a measurement window of 20 milliseconds enter CONF:MEAS:WIN 20000. You can increase and decrease this value based on the application.

CMD>STAR

The Start command tells the system when to start collecting measurements. There are variations of commands for how many lines to collect and different times to use. Please consult the SCPI section of the user manual.

CMD>STOP

The Stop command discontinues the measurements.