

LiQuilaz® II

Liquid Particle Counter



QUICK GUIDE

DOWNLOAD



MANUAL




AT A GLANCE

The following items are provided with shipment:



- a. LiQuilaz II Sensor
- b. Power Cord
- c. Ethernet Crossover Cable
- d. Capillary Cleaning Kit
- e. Quick Guide
- f. RS232 to RJ12 Cable
- g. USB to RS232 Converter
- h. Fitting Wrench (S-models only)
- i. Dental Floss (S-models only)

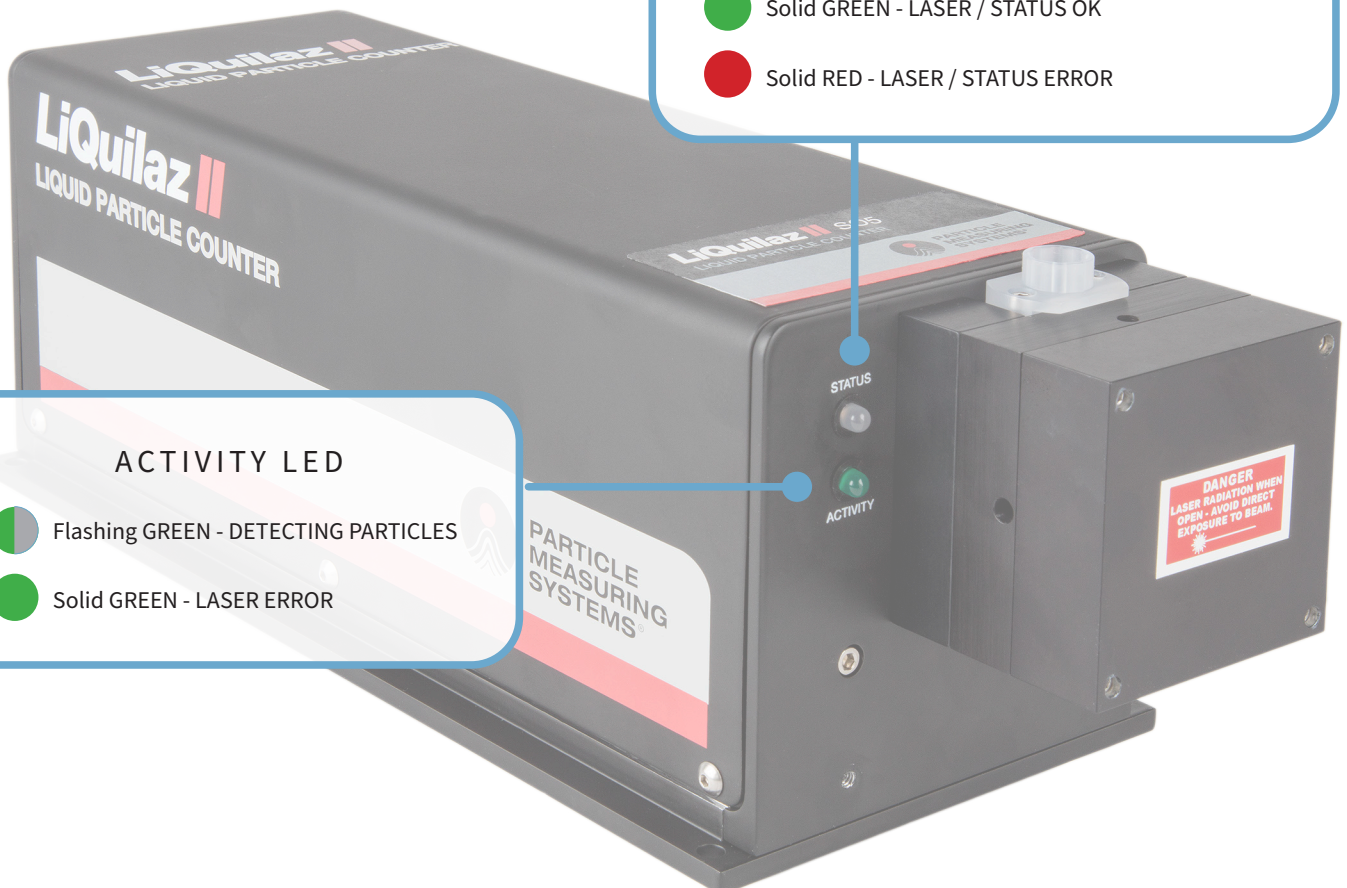


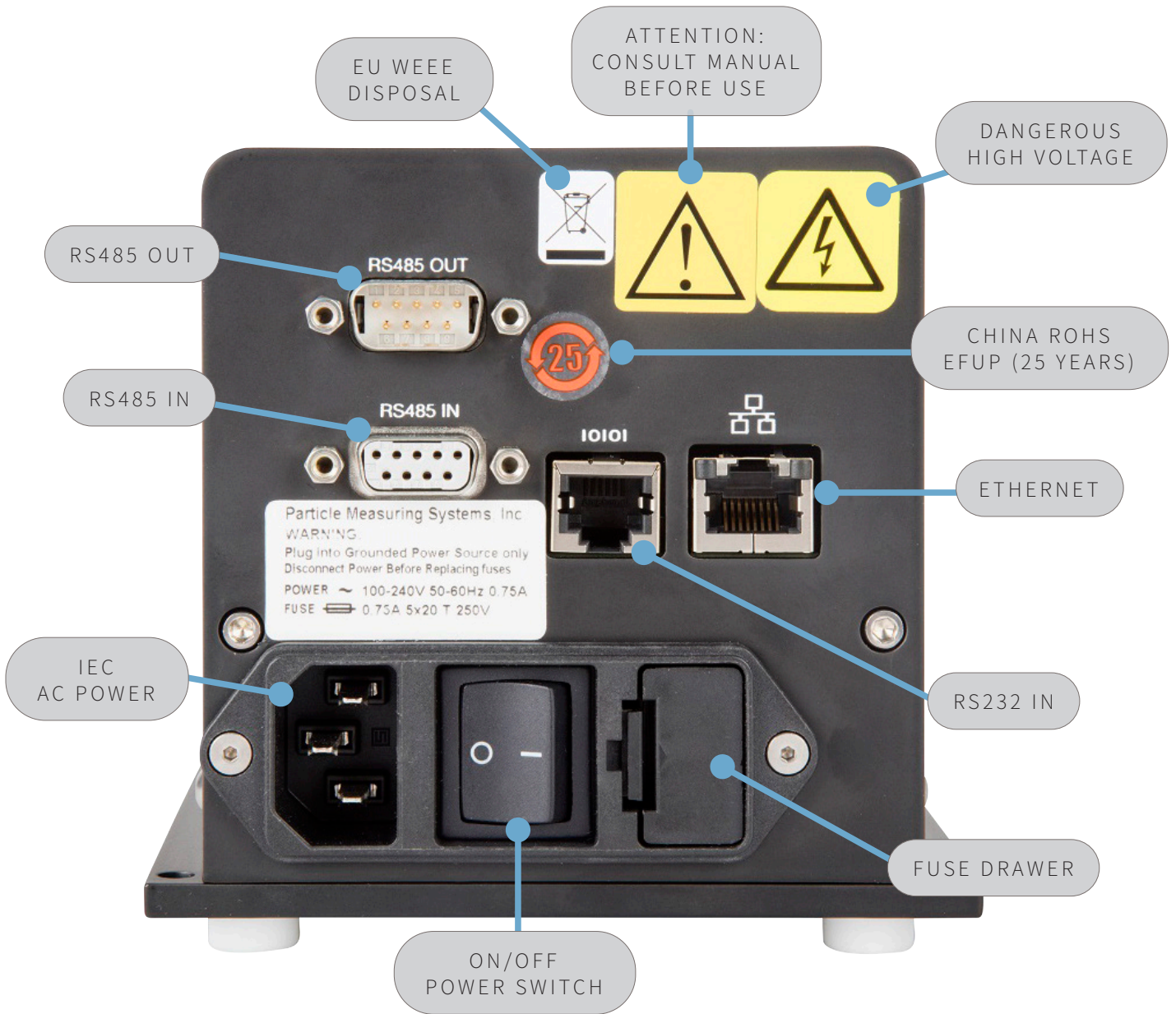
STATUS LED

-  Flashing GREEN - NO ETHERNET COMMUNICATIONS
-  Solid GREEN - LASER / STATUS OK
-  Solid RED - LASER / STATUS ERROR

ACTIVITY LED

-  Flashing GREEN - DETECTING PARTICLES
-  Solid GREEN - LASER ERROR





ACCESSORIES AND PART NUMBERS

RS232 TO USB CONVERTER CABLE	PN 1000023262
RS232 TO RJ12 SETUP CABLE	PN PMS-CD1995
OPTO-ISOLATED RS485 (9-PIN) TO USB CONVERTER CABLE	PN 1000021389
NETWORK OUT TO NETWORK IN CABLE	PN PMS-CD1050-00

SETUP

- ▶ **Syringe Sampler version:** LiQuilaz II is connected to the PC through the SLS sampler.
- ▶ **Online version:** LiQuilaz II is connected to the PC directly with a communications cable.

LIQUILAZ II MODELS

NOTE: All S models are available in a 20 mL per minute flowrate version when used with SLS 1200, SLS 1300 or SLS 1500 samplers.

SYRINGE

LiQuilaz II E20P

20 mL per minute version for use with the SLS-2000 sampler.

LiQuilaz II E15P

20 mL per minute version for use with the SLS-2000 sampler or online installation.

ONLINE

LiQuilaz II E20

70 mL per minute version for online installation.

LiQuilaz II S05

80 mL per minute version with 0.5 µm sensitivity.

LiQuilaz II S03

80 mL per minute version with 0.3 µm sensitivity.

LiQuilaz II S02

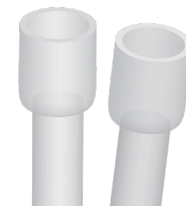
50 mL per minute version with 0.2 µm sensitivity.

INSTALLATION

Required Items (not provided):

- 1/4-inch Teflon tubing
- Tube-flaring tools
- Communications cable: Ethernet cable OR RS485 to USB converter cable OR RS485 cable

1. Place the LiQuilaz II where it will have sturdy support and be free of drips, and spray.
2. Position the PC where the LiQuilaz II will be controlled and monitored.
3. Connect a standard IEC AC power cord to the rear panel power module.
4. Connect a communications cable between the LiQuilaz II and PC. See Communication options.
5. Connect the liquid supply line to the appropriate connector on the front of the sensor.
 - a. Cut length of tubing required to connect from the process line to the LiQuilaz II.
 - b. Flare the tubing end that will connect to the LiQuilaz II.
 - c. Connect the flared input tube end to the right Flaretek fitting.
 - d. Connect the flared output tube end to the left Flaretek fitting.
 - e. Connect the input tube to the process line.
 - f. Connect the output tube to an appropriate flow control device capable of controlling the sample flowrate to the specified sensor flowrate required.
 - g. Ensure the power switch is in the OFF position.
 - h. Connect the power cable from the LiQuilaz II to an appropriate power source.
 - i. Switch power to the ON position.
6. Installation complete.



FLARED TUBING



COMMUNICATION

OPTIONS

Ethernet

- For Modbus TCP and FacilityNet (4.0+)

Before wiring the LiQuilaz II to the network, configure via RS232 setup commands.

Modbus TCP:

Use RS232 setup command "set mode 1". The LiQuilaz II will automatically reboot after the command.

RS485

- For SamplerSight, SamplerSight Pharma, FacilityNet (only online applications)

Note: If more than one LiQuilaz II must be connected via RS485, the units may be daisy-chained by using an additional RS485 (9-pin) cable (PN PMS-CD1050-00).

RS232

- For setup configuration only. Use the provided RS232 to USB setup cable or RS232 to RJ12 setup cable
- On the PC, use a terminal emulation program to communicate with the LiQuilaz (i.e., HyperTerminal, PuTTY, Tera Term).

SERIAL (RS232) SETUP COMMANDS FOR ETHERNET OPERATION

set ip aaa.bbb.ccc.ddd

Used when communicating across networks. Each three-digit series is a value of 0 - 255. Example: 010.255.000.060

set mas(k) aaa.bbb.ccc.ddd

The mask separates the network address from the host address. Example: 255.255.255.000

set mul(ticast) aaa.bbb.ccc.ddd

Needed for FacilityNet and unique to the hardware. Example: 224.100.100.001

set gat(eway) aaa.bbb.ccc.ddd

Used when communicating across networks. Use gateway 000.000.000.000 if no gateway device is available.

set que(ue) x

Buffers data while LiQuilaz II is disconnected from FacilityNet. The value of x can be 1 to 1440. The value should be large enough to minimize data loss, but not delay reception of real-time data when reconnected.

set mode x

0 = PMS Operational Mode
1 = Modbus Mode

write

Saves parameter changes. Always use after a set command.

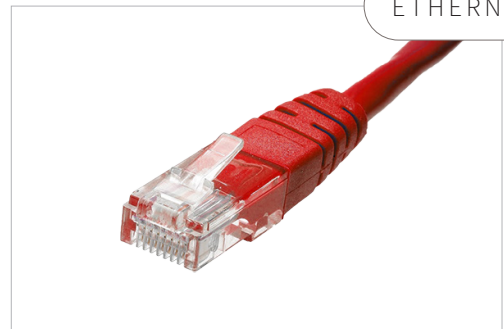
sta(tus)

Displays current setting values described above.

RS232 TO RJ12



ETHERNET

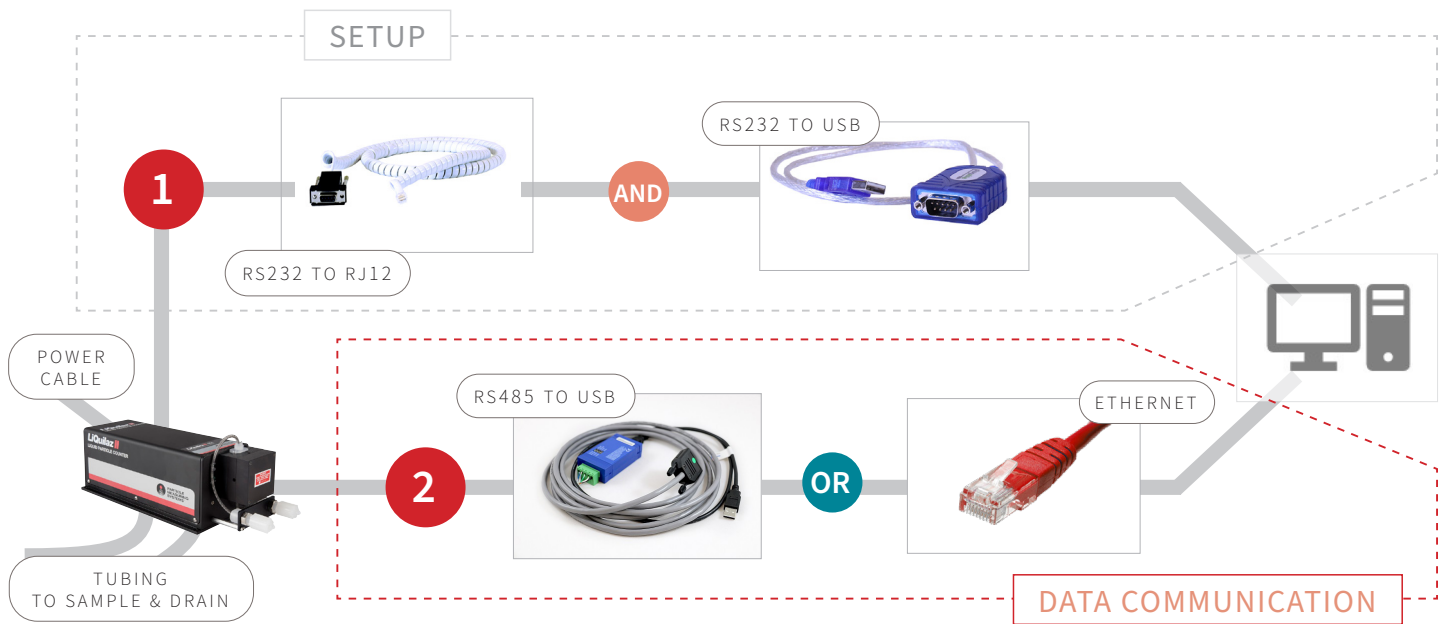


RS232 TO USB



RS485 TO USB





MAINTENANCE

- ▶ Clean the capillary when the DC Light reading goes outside of specifications.
- ▶ For best care, continuously run water through the system when not in use.
- ▶ Contact Particle Measuring Systems if the DC Light level does not improve after performing capillary maintenance.

DC LIGHT SPECIFICATIONS

LIQUILAZ II S02	< 0.5 VOLTS
LIQUILAZ II S03/S05	< 0.05 VOLTS
LIQUILAZ II E (ALL MODELS)	> 7 VOLTS

CAPILLARY CLEANING (ONLINE, E AND S MODELS)

Required materials:

- Capillary Cleaning Kit
- Cleaning solution

1. Turn off and unplug the particle counter and isolate it from its fluid source. If necessary, flush with the appropriate fluids to return the pH to neutral.
2. Disconnect the sample inlet and outlet fittings from the LiQuilaz II counter.
3. Fill each 10 ml syringe from the capillary cleaning kit with 5 ml of cleaning solution.
4. Attach the syringes to the sample inlet and outlet.
5. Press one syringe plunger all the way into the syringe cylinder.
6. Force the cleaning solution back and forth between the two syringes for 30 – 60 seconds.
7. Disconnect the inlet syringe first, then the outlet syringe.
8. Connect the inlet to DI water and the outlet to a suitable drain. Flush for 3 - 5 minutes.
9. Check the DC Light level with the software provided. If the DC Light level is still outside specs, repeat the cleaning process.



SAMPLING

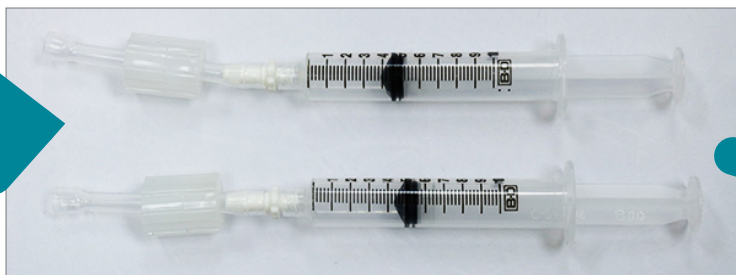
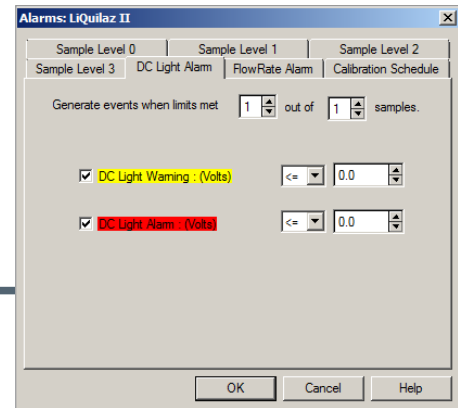
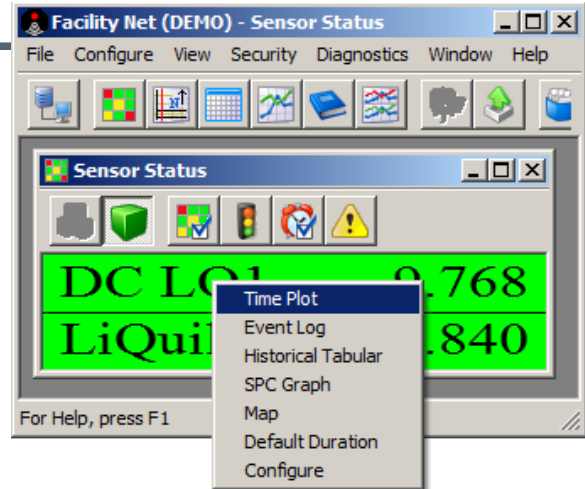
- ▶ Sampling time and frequency is based on settings made in control software (i.e., FacilityNet, SamplerSight) and commands specific to the communication option selected.

INSTALLING CONTROL SOFTWARE

1. Refer to your control software's user guide for installation instructions.
2. If using Facility Net, go to <https://www.pmeasuring.com/service-and-support/> and search LiQuilaz II.
3. Download *Connecting a LiQuilaz to FacilityNet* and *Adding a Virtual Point for DC Light*.

DC LIGHT

1. Once you have a virtual point set for DC Light, create a time plot of laser reference voltages over several days of continuous operation to determine a baseline value for your process.
 - a. Click on the created virtual point.
 - b. Click **Time Plot**.
2. After completing the analysis, go to **Configure > Alarm Settings > Set Limits**.
3. Select **LiQuilaz II** and then **Value Limits**.
4. Click on the DC Light Alarm tab and set your desired warning and alarm limits.



ADDITIONAL SERIAL COMMANDS

? or help

Briefly describes setup command list

data

Toggles data dump on/off. Use for diagnostic purposes. Will always be off after the instrument is rebooted.

default

Sets IP parameters back to default.

reset or reboot

Resets/reboots the hardware

set led n

Sets LED mode.

1 = (external/host-run mode), Status LED will flash green if not connected. Always in this mode if in Modbus mode.

0 = (internal-run mode) Status LED run internally if not connected.

set ntp ddd.ddd.ddd.ddd

Sets Ethernet Network Time Protocol (NTP) address.

set sample n

Sets sample interval 'n'. Interval needs to be a positive integer ≥ 1 and ≤ 28800 . Units are in seconds.

LiQuilaz II will stop sampling if this parameter is changed during its run-time.

set telnet n

Telnet enabled, if $n = 1$, disabled if $n = 0$. For security purposes, enabled by default.

set inst float n

Sets the Modbus float register representation setting. If $n = 1$, float representation is enabled. If $n = 0$, integer representation is enabled.

set inst ntp n

Sets the NTP setting. If $n = 1$, the NTP client is enabled, and disabled if $n = 0$.

set inst retro n

Sets retro mode. If $n = 1$, retro mode is enabled, and disabled if $n = 0$. This setting allows the "HSLIS" family name for use by Facility Net versions prior to 4.0.

Visit us online at pmeasuring.com or call us at +1 800 557 6363