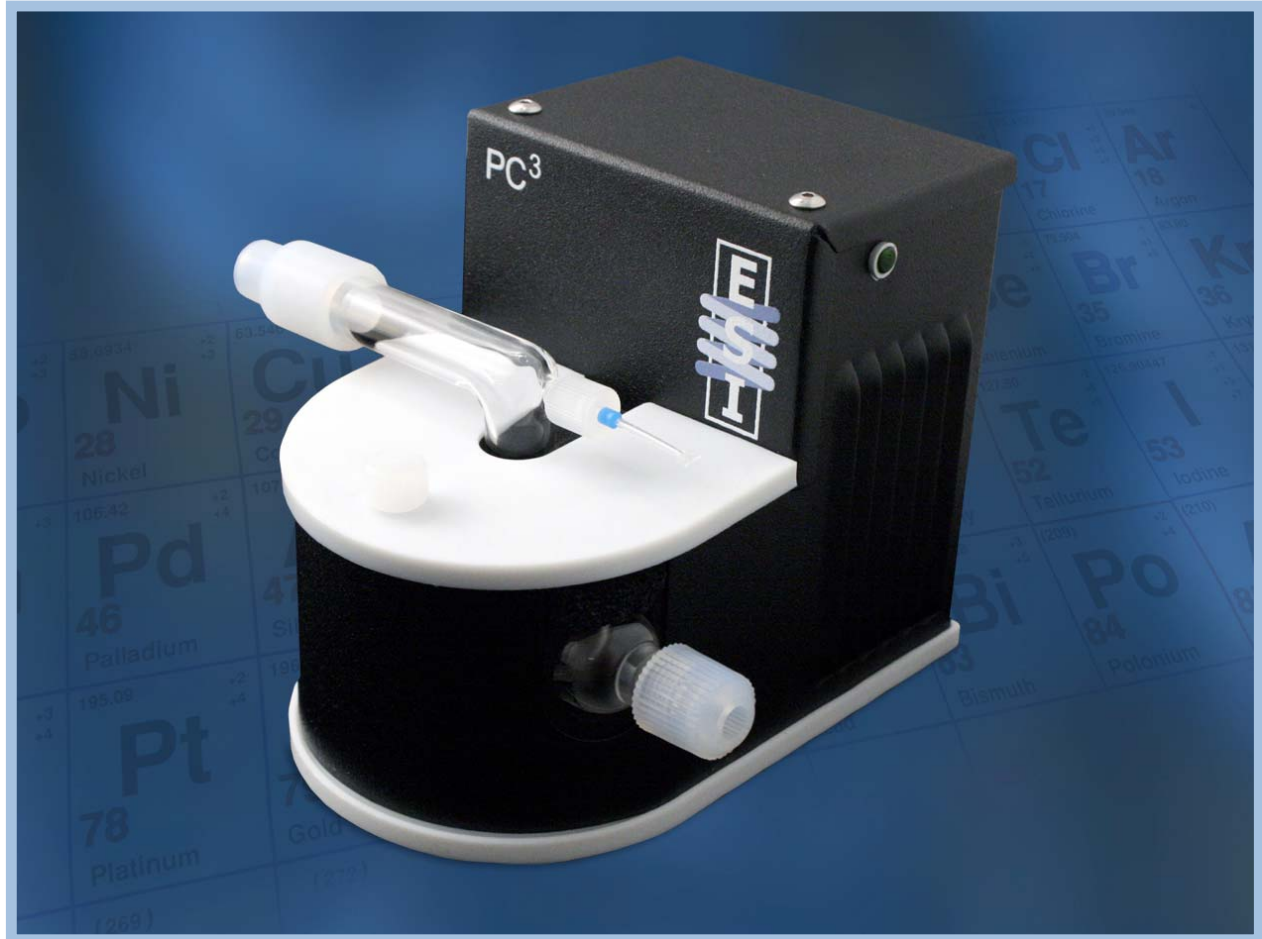


Elemental Scientific Inc.



PC³

**Peltier Cooled Cyclonic Spray Chamber
Installation/Operator's Manual**

Table of Contents

| | | |
|-----------|--|----------|
| 1. | PC³ Overview | 1 |
| 2. | Power Requirements | 1 |
| 3. | Power Cord Set Requirements | 1 |
| 4. | Installation | 2 |
| 5. | Operation of the PC³ | 3 |
| 6. | Assembly Instructions | 4 |
| 7. | Troubleshooting | 6 |

PC³ Overview

The PC³ controls the temperature of the sample introduction system. This results in improved precision and reduced oxide interferences. Other benefits are detailed below:

- Reduces solvent loading
- Minimizes Polyatomic interferences
- Reduced cost by not having to purchase an external chiller system
- Improved stability
- Reduced sample and skimmer cone cleaning
- Improved rinse out cycle times

This document details the information required for installation, operation, cleaning and troubleshooting for the PC³.

Power Requirements

The PC³ needs to be within 1.5 meters of a power outlet. The voltage input requirements are 100-240VAC +/- 10%, 47-63Hz, 1.9A.

Power Cord Set Requirements

The power cord supplied with the PC³ meets the requirements of the country where you purchased the system. Always use approved power cords to prevent possible injury or electric shock.

Installation

1. Connect the power supply to the PC³ by inserting the 12VDC plug into the receptacle on the back of the unit, and then twist the locking ring clockwise until the locking mechanism engages. Plug the switching power supply in the mains outlet before operation. Remember to use only an approved power cord for your country.





2. Connect the outlet port of the cyclonic spray chamber to the ICP's injector (press fit or ball and socket depending on instrument configuration).
3. Insert nebulizer into the PFA ferrule/nut and then secure by tightening ferrule/nut. Attach uptake and Argon lines to the nebulizer and set to manufacturer's settings.



Operation of the PC³

The three-way power switch operates the cyclonic spray chamber at factory set temperatures. When the temperature for each setting is achieved the green indicator light will illuminate. Power Switch functions are detailed below:

The “” or up position sets the cyclonic spray chamber for aqueous mode ~2° C.

The “” or down position sets the cyclonic chamber for solvent mode ~ -5° C.

The “” or middle position is the off position



The system is ready for operation!

Assembly Installation

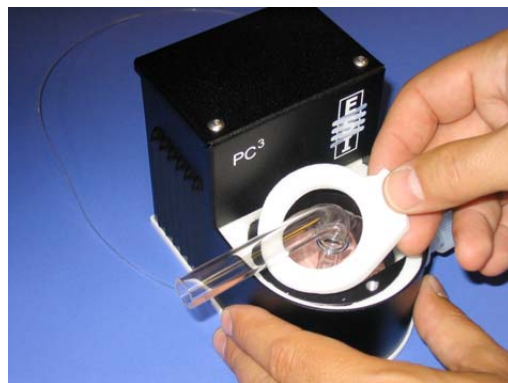
1. Attach the drain line to the bottom drain port on the cyclonic spray chamber by screwing the ¼-28 nut with waste line firmly in place.



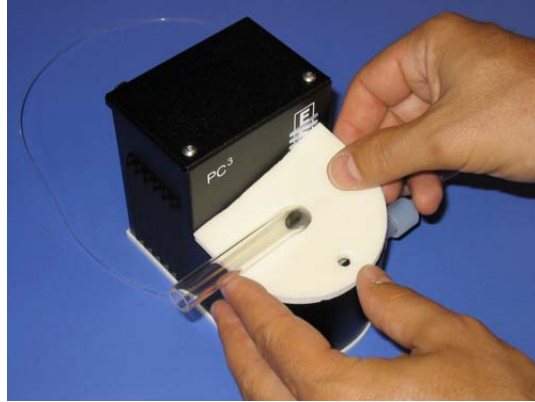
2. Insert the drain line through the opening on the PC³ cyclonic holder. Insert the cyclonic spray chamber into the PC³ holder. Be certain to position nebulizer port into the cutout portion of the holder.



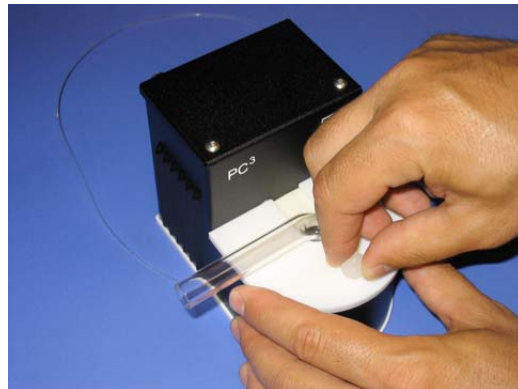
3. Slide the inner ring of insulation over the outlet of the cyclonic spray chamber, then position in the recessed area on the PC³.



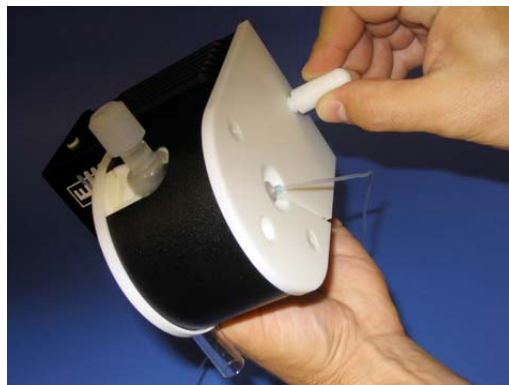
- Slide the outer ring of insulation material over the outlet of the cyclonic spray chamber and position in the recessed area. If there is a factory installed Teflon connector on the end of the outlet the insulation will have to be stretched over the connector.



- Place plastic enclosure cover over insulation and fasten with the thumbscrew. Do not over tighten the thumbscrew.



- Attach support/supports depending on the instrument configuration to the bottom plate of the PC³.



Troubleshooting:

| Symptom | Possible Cause | Solution |
|--------------------------------|---|--|
| Ice formation | Check Three-way power switch for correct position | Position Three-way Power switch in the Aqueous position |
| Plasma ignition problems | Air Leaks in sample introduction system. | Inspect all fittings and connections i.e. injector connection and nebulizer fittings. |
| | Drain line is not attached or is clogged. | Replace or re-attach drain line. |
| Green Light is not Illuminated | Power system is not on. | Inspect power supply is connected properly. |
| | The cyclonic spray chamber is not to set point temperature. | Wait until the temperature stabilizes and green light is illuminated |
| | If introducing elevated temperature samples the spray chamber temperature will fluctuate. | Reduce flow rates by utilizing a low flow nebulizer. |
| High Oxides | Inspect for air leaks | Inspect all fittings and connections i.e. injector connection and nebulizer fittings |
| | Droplets are too large in the spray chamber resulting in high oxides | Reduction in droplet size can be achieved with the shielded cyclonic spray chamber or with a low flow nebulizer. |
| High RSD's | Ice formation | Selection switch is in the solvent/organic mode. |
| | Spray chamber temperature is not to specified set point | Wait until green indicator light is illuminated |
| | Air Leaks in system | Ensure that all fittings are connected properly |

| | | |
|--|--|--|
| High Backgrounds | <p>System is not draining properly</p> <p>System is contaminated from a previously processed sample</p> | <p>Replace drain line</p> <p>Increase washout time or if system still does not achieve acceptable background levels clean quartz ware with 5% HNO₃ overnight.</p> |
| High condensation on the outside of the Cyclonic Spray chamber | Insulation parts are not inserted properly causing high levels of environmental moisture to react with the spray chamber | Re-assemble the insulation inserts and cover. |