



Analytics



COLUMN OVEN PRSO-V2

COLUMN OVEN FOR NANO-ESI APPLICATIONS

Contents

1	Safety	3
1.1	Important safety instructions	3
1.2	Operating conditions and conventional usage	3
2	Scope of delivery	4
2.1	Basic package column oven PRSO-V2	4
2.2	Inlays	4
	PRSO-V2-IES71 or PRSO-V2-IES72	4
	PRSO-V2-IZDV71 bzw. PRSO-V2-IZDV72	4
2.3	Mounting kits	4
	PRSO-V2-KES71	4
	PRSO-V2-KES72	5
2.4	Bundles	5
	PRSO-V2-ES71 or PRSO-V2-ES72	5
	PRSO-V2-ZDV71 or PRSO-V2-ZDV72	5
3	Functional description	6
3.1	Column oven	6
3.2	Regulator	6
4	Installation	7
4.1	Installing the oven and mounting kits	7
	Installation of the PRSO-V2-KES71 mounting kit for the Thermo Fisher Flex Ion Source ES071	7
	Installation of the PRSO-V2-KES72 mounting kit for the Thermo Fisher Flex Ion Source ES072	8
	Mounting the oven to the source	8
	Connecting the regulator	8
	Column loading	9
4.2	Software Installation	9
5	Usage	10
5.1	Using COControl	10
6	Technical Data	10
7	FAQ - Frequently Asked Questions	11
8	Declaration of conformity	12

1 Safety

1.1 Important safety instructions

- Please read these operating instructions carefully before using the product. It contains important information on commissioning and handling.
- The operating instructions are part of the product. Keep the operating instructions in a safe place. If the product is sold, hired out or otherwise passed on, the operating instructions must be included.
- Observe all warning notices. These indicate dangers and provide recommendations for avoiding accidents.
- Do not use this apparatus near water.
- Mains powered apparatus shall not be exposed to dripping or splashing and no objects filled with liquids shall be placed on the apparatus.
- Do not block the ventilation. Install in accordance with the manufacturer's instructions.
- If condensation forms after unpacking, an acclimatization period of at least 2 hours must be waited for.
- This apparatus shall be connected to a mains socket outlet with a protective earthing connection.
- Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet. (for USA and Canada)
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- Refer all maintenance work to an experienced maintenance technician. Maintenance work or repairs are required if there is visible damage, if the mains cable or plug is damaged, if liquids or other objects have penetrated the inside of the appliance, if the appliance has been standing in the rain, is not behaving as expected or if it has fallen
- Only use accessories that are expressly recommended by the manufacturer.
- Only use connection cables or extension cables that are approved for the maximum permissible total current or the maximum permissible total power.
- If the apparatus is used in a manner not specified by the manufacturer the protection provided by the equipment may be impaired.

1.2 Operating conditions and conventional usage

- The oven is exclusively designed for the heating and tempering of separation columns in nano-ESI applications.
- The oven must be installed as described in this manual.
- The fan must be able to turn free and may not be blocked.
- The oven may only be used in clean and dry areas.
- Do not use any adhesive tape or other non-heat-resistant materials inside the oven
- During transport and storage temperature and humidity must be within the following range:
Transport: Temperature: -20 to 60°C (-4 to 140°F), humidity: 5 to 90%
Storage: Temperature: 10 to 40°C (50 to 104°F), humidity: 10 to 80%
- The oven may not be operated above 30°C / 86°F ambient temperature and above 80% humidity.
- The oven must be kept away from easily inflammable and combustible liquids.
- If a liquid should penetrate the electrical part of the oven or regulator it is to be set immediately out of operation and must be checked by a specialist.
- The valid accident guarding regulations according to each country must be considered.
- A repair of the oven may be accomplished only by a specialist.

2 Scope of delivery

The complete ready-to-use system consists of the basic package column heater, an inlay and a mounting kit.

The basic package consists of the actual heating element into which the columns are inserted, the controller, the power supply unit including all cables and accessories as described below.

The different inlays allow the use of different types of columns, e.g. columns with integrated or drawn emitters or columns with separate emitters.

The installation kits contain all the parts required to install and operate the column oven on the respective source.

2.1 Basic package column oven PRSO-V2

- 1 x Column oven (upper and lower part with 4 column pins)
- 1 x Regulator
- 1 x Oven control cable
- 1 x Data cable for RS232 and contact closure
- 1 x USB-to-serial adapter
- 1 x 24V power supply with wide range input and power cable (with EU, CH, UK or US plug)
- 1 x Crossholder with crossholder lid, 2 x screw M4x6 and 2 x nylon screw M4x16
- 1 x Countersunk head screw M5x20 with M5 locking nut for mounting the oven to the source
- 1 x This manual

2.2 Inlays

PRSO-V2-IES71 or PRSO-V2-IES72

Clamp inlay for the use of columns with integrated emitters on the Thermo Fisher Flex™ Ion Source ES071 or ES072.

PRSO-V2-IZDV71 bzw. PRSO-V2-IZDV72

Inlay for the use of columns with separate emitters which are connected to a ZDV-Union for use with the Thermo Fisher Flex™ Ion Source ES071 or ES072.

2.3 Mounting kits

PRSO-V2-KES71

Mounting kit suitable for the Thermo Fisher Flex™ Ion Source ES071 consisting of:

- 1 x Modified acrylic shield with cut-out
- 1 x Modified upper camera holder
- 1 x Distance block for left camera holder
- 1 x Screw M2x10 slit head
- 2 x Screw M5x20 Allen head

PRSO-V2-KES72

This is the mounting kit for the Nanospray Flex™ Ion Source ES072 from Thermo Scientific. It contains the following parts:

- 1 x Modified acrylic shield with cut-out
- 1 x Modified upper camera holder
- 1 x Modified left camera holder
- 2 x Screw M2x10 slit head
- 1 x Oven holder
- 1 x Acrylic shield holder

2.4 Bundles

PRSO-V2-ES71 or PRSO-V2-ES72

These articles contain the basic PRSO-V2 column oven package and the clamp inlay suitable for the Thermo Fisher Flex™ Ion Source ES071 or ES072.

PRSO-V2-ZDV71 or PRSO-V2-ZDV72

These articles contain the basic PRSO-V2 column oven package and the ZDV inlay suitable for the Thermo Fisher Flex™ Ion Source ES071 or ES072.

3 Functional description

3.1 Column oven

The oven itself consists of two main parts. The upper part contains the heating or cooling unit, the heat sink and the fan. This part is connected to the controller using the „Oven - regulator connection cable“.

The lower part is attached to the source and holds the column to be tempered. Depending on the column length, this can be fed in via the side or front column inlet. The cross holder is pushed onto the side or front arm accordingly. The cross holder serves both as a holder and as contact protection for the T or cross piece used.

If longer columns are used, these must be wound up and inserted into the oven. To make insertion easier, the four column pins can be placed anywhere on the existing threaded holes. The column pins are used as guides and downholders for the column.



During operation the surface of the oven can get very hot!



Fig. 1: Upper and lower part with column pins

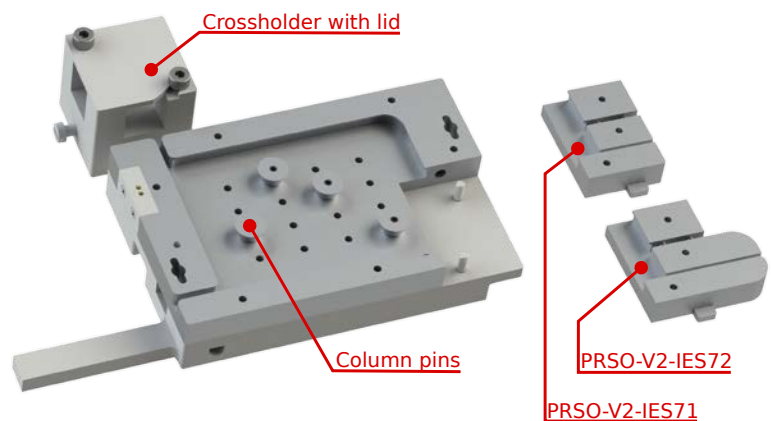


Fig. 2: Lower part with column pins and inlays

3.2 Regulator

The regulator unit contains the temperature regulator, the power level and the data interface for connection to the PC. A switching input can be used to automatically switch between two temperatures. If the PC does not have a serial connection, a USB/RS232 adapter is included in the scope of delivery. The front view shows the connection for the oven - regulator connection cable. The rear view shows the connections for the power supply and the data connection to the PC or the switching input.



Fig. 3: Regulator - Front view



Fig. 4: Regulator - Rear view

4 Installation



Before installing the oven, please make sure your instrument is switched to standby or at least the high voltage has been switched off.

4.1 Installing the oven and mounting kits

To install the oven on the respective source, the corresponding installation kit must first be fitted. Mounting kits are currently available for the following sources:

- Thermo Fisher Flex Ion Source ES071
- Thermo Fisher Flex Ion Source ES072
- Bruker Captive Spray (see separate manual)

The column oven can also be used with other sources. In most cases, only a simple mechanical adaptation is necessary. Please contact us if you would like to use the oven with a different source.

Installation of the PRSO-V2-KES71 mounting kit for the Thermo Fisher Flex Ion Source ES071

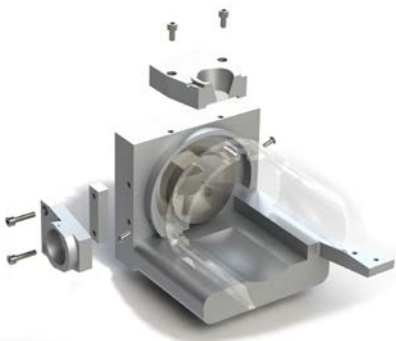


Fig. 5: Thermo Scientific ES071 source with mounting kit (exploded view)

First remove the original acrylic shield from the ES071 source by loosening the two screws and carefully pulling the shield down.

Also remove the two camera holders by removing the corresponding screws.

Now replace the upper camera holder with the modified holder from the mounting kit.

Mount the left camera holder with the supplied M5x20 screws and the spacer block as shown in Fig. 5. As a final step, attach the modified acrylic plate.

Installation of the PRSO-V2-KES72 mounting kit for the Thermo Fisher Flex Ion Source ES072

- Remove the shield clamp, the upper and left camera holder, the acrylic shield, the XYZ-manipulator and the attached mounting bar by loosening the screws marked in Fig. 6.
- Slide the acrylic shield from the conversion kit onto the source. You might have to bend it carefully to make it slip over the flange.
- Install the oven holder onto the XYZ-manipulator.
- Reinstall the XYZ-manipulator onto the source by putting the shield holder between the manipulator and the manipulator holder using the provided M4x10 screws.
- Install the modified left and upper camera holders by reusing the screws removed before.

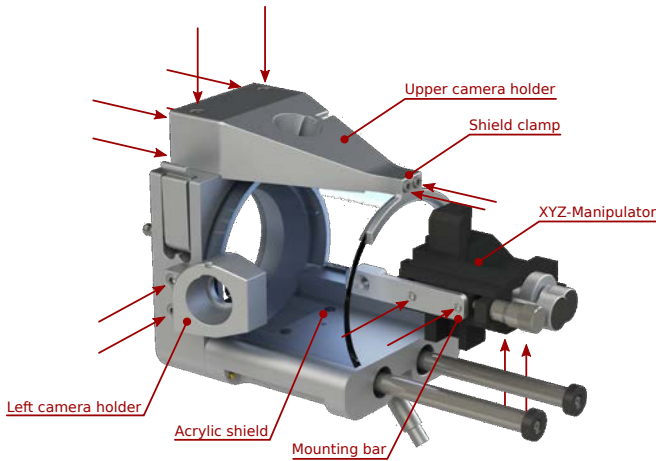


Fig. 6: Thermo Scientific ES072 source

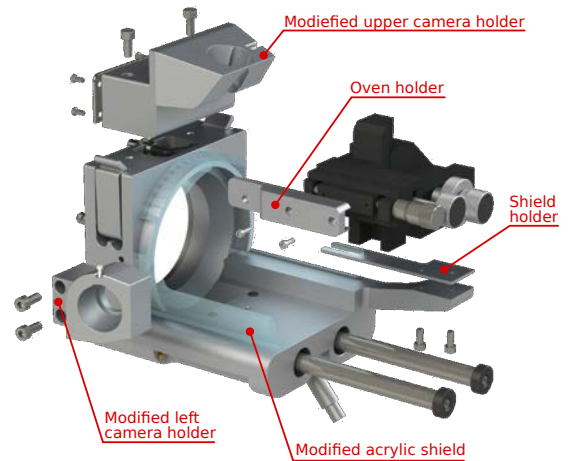


Fig. 7: Thermo Scientific ES072 source with conversion kit (exploded view)

Mounting the oven to the source

The installation of the oven is identical for both sources and is limited to attaching it to the holding arm of the XYZ manipulator with the enclosed screw and nut as shown in Fig. 8. If the XYZ manipulator moves due to the weight of the furnace, the friction of the manipulator can be adjusted using a screw.

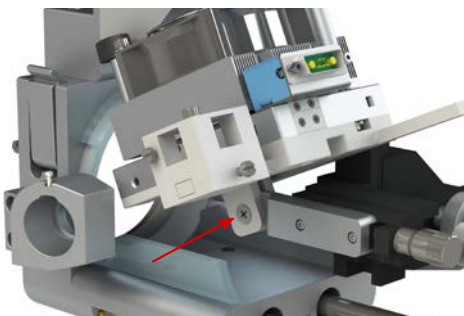


Fig. 8: Mounting the oven to the source

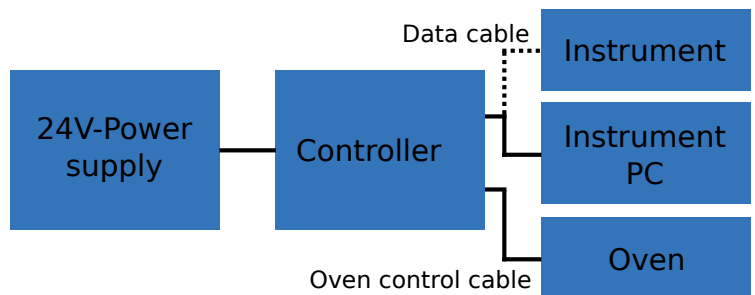


Fig. 9: PRSO-V2 - Wiring scheme

Connecting the regulator

- Connect the 24-Volt power supply to the power connector. The power supply will be connected to a wall outlet later.



The wide side of the plug faces the top of the control module, do not force it in twisted.

- Connect the controller with the provided RS232 cable to an available com-port on your instrument PC. If there is no com-port available, please use the provided USB-to-COM adapter.
- The two open ends of the cable serve as the control input. Depending on whether they are open or connected, it is possible to switch between two predefined temperatures. For this purpose, they can also be connected to the „contact closure out“ of the mass spectrometer.
- Connect the oven to the regulator unit using the appropriate connection cable.

Column loading

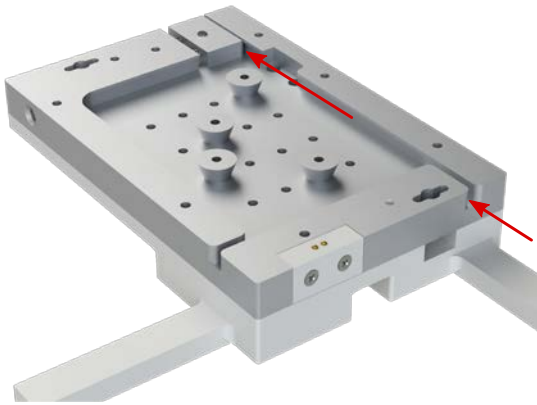


Fig. 10: Short column loading

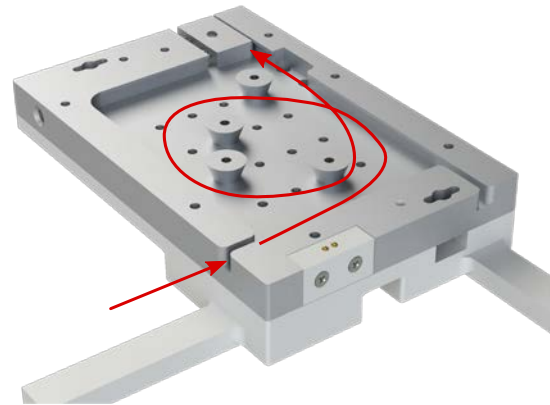


Fig. 11: Long column loading

Open the oven by turning the two spring-loaded handles by about 90°. The upper part of the oven can now be removed. Columns can be fed into the oven either through the side or the front opening. Depending on the column length, one or the other inlet is more suitable. The column pins serve to guide the pillar in the oven and at the same time prevent it from jumping out. The column pins can be placed anywhere on the threaded holes. Insert the T or cross piece used with the connected separating column into the cross holder, close the cover of the cross holder and slide it onto the rail of the desired column inlet. Now lay the column in the oven as described above and guide it to the column outlet. If you are using an inlay with clamp, allow the emitter to protrude about 15-20 mm from the oven.



Do not use any adhesive tape or other temperature sensitive materials inside the oven.

Now replace the upper part of the column oven and lock it in place by pushing in the locking rods and turning them through 90°. Make sure that the upper part lies directly and flat on the lower part and that nothing is trapped in between. For example, it is possible that a part of the column may become trapped between the upper and lower sections, which may result in the control no longer working properly.

Now plug in the power cord from the power supply to a wall outlet.

4.2 Software Installation

First of all, you need our software: COControl. You can obtain this under the heading **Analytics - Column oven** on our website at: <https://sonation.com/en/downloads.php>

To install the furnace control software, run the file "setup.exe" and follow the steps of the installation wizard.

Microsoft .NET must be installed for the software. If COControl does not start and displays a corresponding error message, install .NET accordingly.

5 Usage

5.1 Using COControl

After starting COControl, the „Main“ tab is displayed. If you are starting COControl for the first time, you must first select the port to which the oven is connected in the COM Ports tab. After clicking on „Connect“, the current temperature of the oven should be displayed in the „Main“ tab. If -999°C is displayed, there is no contact to the temperature sensor. The reason for this is usually that the oven is either open or not properly closed. In this case, check whether the upper part of the oven is resting properly on the lower part and is locked in place.

Two temperatures can be specified in the „Main“ tab: „Temp normal“ and „Temp high“. Depending on whether the control input is open or closed, one or the other temperature is regulated. After clicking on „Switch Regulator ON“, the regulation starts. To visualize the temperature curve, a corresponding graph can be displayed via the „Options->Show Graph“ menu (Fig. 14). Under „Options->Settings“, the graph can also be displayed automatically when the software is started.

It is possible to activate an extended temperature range. If your application requires higher or lower temperatures, please ask Sonation for an option code. However, please also note that a higher temperature range places a load on the Peltier modules and can lead to a shorter service life.

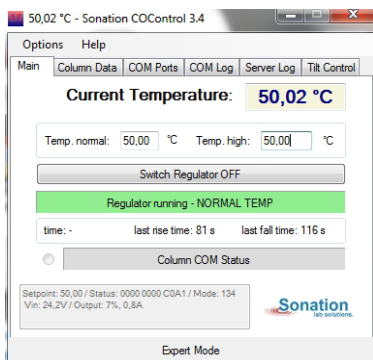


Fig. 12: COControl - Main view

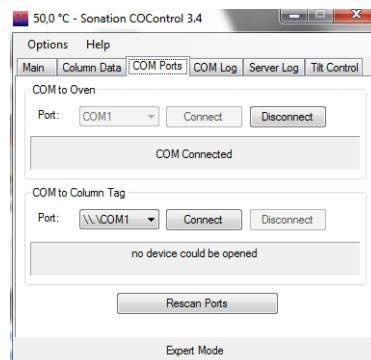


Fig. 13: COControl - COM Settings

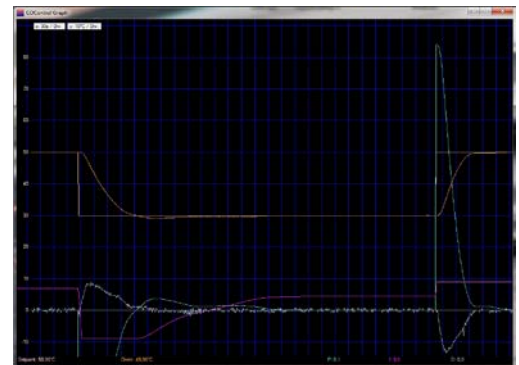


Fig. 14: COControl - Graph view

6 Technical Data

Dimensions		
Oven	127x115x180mm (WxHxD)	
Regulator	110x55x166mm (WxHxD)	
Oven weight	800g	
Ambient conditions		
Transport	Temperature: -20 - 60°C (-4 to 140°F)	Humidity: 5 to 90%
Storage	Temperature: 10 - 40°C (50 to 104°F)	Humidity: 10 to 80%
Operation	Temperature: 10 - 30°C (50 to 86°F)	Humidity: 10 to 80%
Temperature control range	Standard range: 15°C - 60°C (59°F - 140°F) Extendet range: 15°C - 80°C (59°F - 176°F)	
Temperature control rate		
Heating	30°C to 50°C: Less than 90s	
Cooling	50°C to 30°C: Less than 180s	
Control accuracy	±0,1°C	
Usable column lengths	From 130mm	
Usable column diameter	Up to 2mm	
Power supply		
Primary	100-240 V AC / 3A max	
Secondary	24V / 9,16A max	
Protection class	II	

7 FAQ - Frequently Asked Questions

Question: My PC does not have any COM-ports / no available COM-ports. Can I run the oven anyhow?

Answer: Yes. Please use the provided USB to serial converter to install a virtual com-port.

Question: I have successfully connected the oven, but no temperature (or -999°C) is displayed. What is the problem?

Answer: Make sure that the column oven is closed and locked and that no objects are trapped between the upper and lower sections. Otherwise, the temperature sensor cannot be read.

Question: Is it possible to set up higher temperatures than 50°C or lower temperatures than 15°C?

Answer: Yes, it is possible. Please ask Sonation for an option code, but remember that the lifetime of the Peltier-elements will be lowered because of the additional thermal stress.

Question: The temperature of the oven fluctuates / oscillates some degrees around the setpoint. What's wrong?

Answer: The most common cause is that the upper part of the oven sits not properly on the lower part, so the thermal connection is bad. Please check if the column or other things are trapped between the upper and lower part.

**CE-Konformitätserklärung
CE Declaration of Conformity
CE Déclaration de Conformité
CE Dichiarazione di Conformità**



Der Hersteller / The manufacturer / Le fabricant / Il fabbricante

**Sonation GmbH
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erklärt hiermit, dass die Produkte
herewith declares that the products
déclare par la présente que le produits
dichiara che il prodotti

PRSO-V2-ES71, PRSO-V2-ES72, PRSO-V2-BCS, PRSO-V2-SH

den Anforderungen der folgenden EG-Richtlinien entspricht.

meets the provisions of following EC-Directives.

remplit les exigences des Directives CE suivantes.

soddisfa tutte le disposizioni dalle Direttive CE.

Richtlinie Directive Directive Direttiva	gültig bis valid until valable jusqu'à con validità fino al	gültig ab valid after valable à partir de applicabile dal
2006/95/EG, EC, CE	19.04.2016	
2014/35/EU		20.04.2016
2004/108/EG, EC, CE	19.04.2016	
2014/30/EU		20.04.2016
2011/65/EU		03.01.2013

Angewandte Normen: Applied standards: Normes appliquées: Norme applicate :	EN 61326-1:2013 - Basic requirements EN 61010-1 :2010 + Cor. :2011
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Diese Erklärung gilt für die oben genannten Produkte ab dem Unterzeichnungsdatum.

This declaration is valid for the above mentioned products after the signature date below.

La présente déclaration est valable à partir de la date de signature.

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