



PuroSense-C (Integrated)

User Manual

Part Number 647974 Rev. A

This is the original instruction for the PuroSense-C (Integrated).

Brooks Automation

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A	XXXXXX	1/27/2025	Initial completion of the manual.	Ramesh K

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1. Safety

The user / operator of the PuroSense-C (Integrated) is responsible for analyzing and controlling the risks of work not described in the documents such as user manuals.

Important Information

 DANGER Read the Safety Chapter	
Failure to review the <i>Safety</i> chapter and follow the safety warnings can result in death or serious injury. • All personnel involved with the operation or maintenance of this product must read and understand the information in this safety chapter. • Follow all applicable safety codes of the facility as well as national and international safety codes. • Know the facility safety procedures, safety equipment, and contact information. • Read and understand each procedure before performing it.	

NOTICE
It is the responsibility of each person working on this product to know the applicable regulatory safety codes as well as the facility safety procedures, safety equipment, and contact information.

Audience

User

Users are defined as people who are authorized to operate and work with the PuroSense-C (Integrated) based on their training and the appropriate instruction by the staff members designated by the operating company.

Users are fully responsible for ensuring that the system is used safely and as intended.

Operator

The operator is responsible for the appropriate training and instruction of the operating personnel. This also applies to the necessary safety measures and equipment.

Commissioning

- This user manual is valid after a properly performed commissioning.
- The system must be thoroughly cleaned before first use.

Qualified Personnel

A trained/instructed person is one who has been instructed and practiced, as appropriate, on their assigned tasks and the potential hazards associated with improper conduct. They have also been instructed on the necessary safety devices and protective measures. Personnel undergoing training, practice, or in general education, must be supervised at all times by an authorized, skilled and experienced person.

Table 1-1: Required Service Level

Definition (Competence/Task/Skill/Knowledge)		Description
Tier 1 (Safety & Fundamental Certified)	Environmental, Health, and Safety	Fundamental skills and knowledge required to safely operate the equipment.
	Theory of Operations	Tasks that are fixed and routine.
	Basic Operations	Understanding of user interface and software functions.
	Simple Error Recovery	
	Basic Symptom Recognition	

Definition (Competence/Task/Skill/Knowledge)		Description
Tier 2 (Maintenance & Operation Certified)	Environmental, Health, and Safety	General understanding of control system and maintenance software, including error recovery and basic data collection.
	Advanced Operations	Tasks that can include basic parts removal and replacement (e.g., filter replacement).
	Routine Preventive and/or Scheduled Maintenance	
	Minor Corrective Maintenance and Calibration	
	Symptom Recognition	
	Error Recovery	
	Data Collection	
Tier 3 (Service Expert Certified)	Environmental, Health, and Safety	Complex tasks that are not routine and require a high level of background knowledge and independent judgment.
	Major Corrective Maintenance	Infrequent preventive maintenance and complex removal and replacement procedures, to include non-consumables.
	Infrequent Preventive Maintenance	Expertise with control system and maintenance software.
	Major Calibration	
	Problem Diagnosis/Troubleshooting	
	Equipment Performance Optimization	
	Advanced Control System Functions	
	Data Analysis	

Technical Data

Adhere to the technical data and information for the facilities connection that can be obtained from the serial plate on the PuroSense-C (Integrated) or in the documentation. [See "Identification Labels"](#). If permissible values are exceeded, the PuroSense-C (Integrated) may be damaged.

NOTE: Refer to Brooks Automation configuration specific—Mechanical Layout drawings and OEM manuals are delivered along with this manual for technical data.

Intended Use

The PuroSense-C (Integrated) is a FOUP monitoring system that detects volatile organic compounds (VOCs) in the lithography process and is a fully integrated Airborne Molecular Contamination (AMC) monitoring system with hardware and software working seamlessly together, enabling efficient and effective monitoring of AMCs in the fab.

AMCs can affect your final product and equipment. With contaminants coming from inside and outside the fab, it is vital to monitor and understand changes to the ambient environment. PuroSense-C (Integrated) monitors fab conditions using integrated sensors to track AMC trends from organic compounds in key fabrication areas; the system actively and accurately visualizes, analyzes, and stores data continuously, so user can view conditions and evaluate them according to your unique needs.

 WARNING	
The PuroSense-C (Integrated) and integrated analyzers are not intended to process hazardous materials at levels higher than 25% of their TLV (Threshold Limit Value) or LEL (Lower Explosive Limit). The system is only suitable for connection of non-HPM (Hazardous Production Material) calibration and reference gases.	

Intended use also includes:

- Observing and fulfilling all instructions in the user manual and
- Compliance with the inspection and maintenance procedures.

The manufacturer accepts no liability for any other use of the equipment or its individual parts and components. This also applies to service and repair work carried out by unauthorized service personnel. All warranties are declared null and void in the event of non-compliance with these instructions. This also applies to the parts are not directly affected by any unauthorized repair work.

If additional safety related upgrades or newly identified hazards associated with the PuroSense-C (Integrated) are identified, Brooks Technical Support notifies the owner of record with a Technical Support Bulletin (TSB).

Unintended Use

 CAUTION Unintended Use	
Use of the PuroSense-C (Integrated) in a manner or for purposes other than for what it is intended may cause equipment damage or personal injury. The following list makes no claim to completeness. • Only use the PuroSense-C (Integrated) for its intended application. • Do not modify the PuroSense-C (Integrated) beyond its original design. • Operate the system in the wrong operating mode. • Do not start the system without enable the safety devices. • By inserting the wrong FOUPs apart from mentioned in the Selection Guide (SG) agreement. • Operation by staff who have not been specifically trained (system operation is protected with the passwords and key switch).	

Any warranty of the PuroSense-C (Integrated) or its parts will be invalidated if:

- Damaged by misuse, accident, negligence or failure to maintain the same as specified or required by Brooks,
- Damaged by modifications, alterations or attachments there to which are not authorized by Brooks,
- Installed or operated contrary to the instructions of Brooks,
- Used in combination with items, articles or materials not authorized by Brooks,
- Only original spare parts and accessories, defined and approved by Brooks, are used. The use of any other parts can incur unknown hazards and may not be permitted under any circumstances.

Reasonably Foreseeable Miss-use

Brooks accepts no liability for damage caused by or to the device, e.g. by the following examples, which do not claim to be complete:

Example:

- Using the system other than specified carriers – for example, damaged FOUPs; FOUP deviating from SEMI conditions, filled FOUPs.
- Using the system under ambient conditions which conflict with its non-intended use (e.g. in seismic regions which are not approved based on seismic calculations; using the system under non-cleanroom conditions and/or in a clean room of an unauthorized class).
- Using unreliable or unauthorized components.

Warranty

Brooks Automation guarantees the safety and functionality of the system only under the condition:

- The system is used only as intended and operated in accordance with the information in this user manual.
- Only use the spare parts and accessories that defined and approved by CCS Brooks Automation (Germany) GmbH. The use of any other parts can incur unknown hazards and may not be permitted under any circumstances.
- No structural adjustments may be made to the system. For safety reasons, unauthorized adjustments or modifications to the system or software are prohibited and will avoid the warranty.
- Inspection and maintenance work must be performed within the specified intervals. Commissioning procedures have been completed.

Explanation of Hazards and Alerts

This manual and this product use industry standard hazard alerts to notify the user of personal or equipment safety hazards. Hazard alerts contain safety text, safety icons, signal words, and color.

Safety Text

Hazard alert text follows a standard, fixed-order, three-part format.

- Identify the hazard,
- State the consequences if the hazard is not avoided,
- State how to avoid the hazard.

Safety Icons

- Hazard alerts contain safety icons that graphically identify the hazard.
- The safety icons in this manual conform to ISO 3864 and ANSI Z535 standards.

Signal Words and Color

Signal words inform of the level of hazard.

	Danger indicates a hazardous situation which, if not avoided, will result in death or serious injury. Danger signal word is white on a red background with an iconic exclamation point inside a yellow triangle with black border.
	Warning indicates a hazardous situation which, if not avoided, could result in death or serious injury. Warning signal word is black on an orange background with an iconic exclamation point inside a yellow triangle with black border.
	Caution indicates a hazardous situation or unsafe practice which, if not avoided, may result in minor or moderate personal injury. Caution signal word is black on a yellow background with an iconic exclamation point inside a yellow triangle with black border.
	Indicates a situation or unsafe practice which, if not avoided, may result in equipment damage. Notice signal word is white on blue background with no icon.

Alert Example

The following is an example of a *Warning* hazard alert.

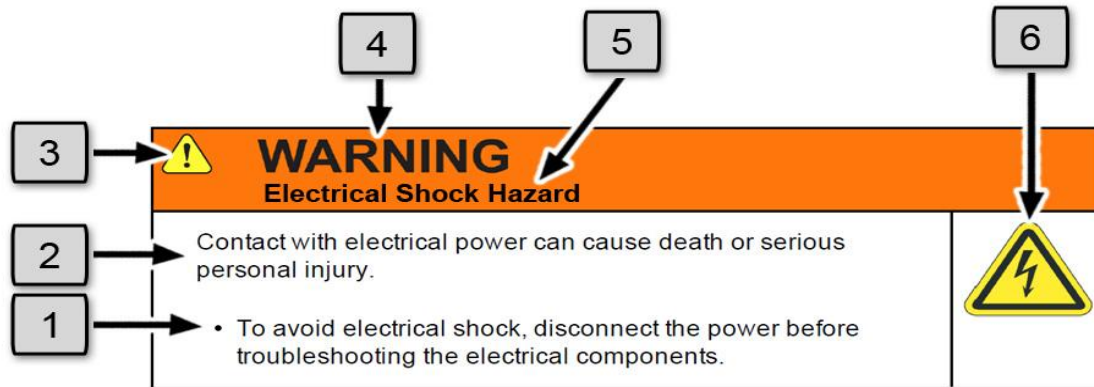


Figure 1-1: Components of a Safety Alert

Number	Description
1.	How to Avoid the Hazard
2.	Source of Hazard and Severity
3.	General Alert Icon
4.	Signal Word
5.	Type of Hazard
6.	Hazard Symbol(s)

General Safety Considerations

 CAUTION Unauthorized Service	
Personal injury or damage to equipment may result if this product is operated or serviced by unauthorized personnel. - Only qualified personnel are allowed to transport, assemble, operate, or maintain the Product. - Properly qualified personnel are those who have received certified training and have the proper qualifications for their jobs.	

 CAUTION Training and Unauthorized Service	
Personal injury or damage to equipment may result if this product is operated or serviced by untrained or unauthorized personnel. Only qualified personnel who have received certified training and have the proper qualifications for their jobs are allowed to transport, assemble, operate, or maintain the product.	

 CAUTION Personal Protective Equipment	
This product contains heavy objects that may cause personal injury. - Use safety shoes and head protection when installing or maintaining the product. - Wear protective eyewear when setting up or testing the system.	

 CAUTION Seismic Restraint	
The use of this product in an earthquake prone environment may cause equipment damage or personal injury. The user is responsible for determining whether the product is used in an earthquake prone environment and installing the appropriate seismic restraints in accordance with local regulations.	

 CAUTION Inappropriate Use	
Use of this product in a manner or for purposes other than for what it is intended may cause equipment damage or personal injury. • Only use the product for its intended application. • Do not modify this product beyond its original design. • Always operate this product with the covers in place.	

 CAUTION Damaged Components	
The use of this product when components or cables appear to be damaged may cause equipment malfunction or personal injury. • Do not use this product if components or cables appear to be damaged. • Place the product in a location where it will not get damaged. • Route cables and tubing so that they do not become damaged and do not present a personal safety hazard.	

NOTICE
It is the responsibility of each person working on this product to know the applicable regulatory safety codes as well as the facility safety procedures, safety equipment, and contact information.

NOTICE
Please follow all facility and local wiring regulations before operating or servicing the product.

NOTICE

This manual illustrates the safety and precautions required to be complied with when operating and maintaining the N₂ purge station. If the advised operation methods are not implemented, causing unexpected problems and dangers due to misuse, the Company will not be responsible for the relevant responsibilities arising therefrom. This should be carefully assessed by users.

Before moving or storing equipment, please confirm that the internal movable parts have been locked by the dowel pins and all connecting lines are removed.

Please use the wires and related hardware accessories exclusively approved by the Company. It is strictly forbidden to operate a machine near flammable gases, flames or high heat and high humidity environments.

When operating, please keep properly all parts such as screw and removal tools, and do not leave them inside the product, to avoid danger.

When using the product, please confirm whether there are obstacles on the platform and keep it clear. Before replacing or removing hardware accessories, please turn off the power and well keep the human body and the ground in a conductive state to avoid danger due to electrical leakage and static electricity.

When replacing or removing hardware accessories, please do not arbitrarily modify or replace non-consumable or non-replaceable parts, to avoid abnormal operation and danger in the product.

The Nozzle, Filter, temperature sensor and humidity sensor, O₂ sensor and other related accessories used on demand are all consumptive components, and they have service life limit and should be replaced regularly. Use of parts beyond the end of their lifetime might cause a low yield or malfunction.

In case of malfunction, do not try to repair it by yourself. Please contact our Company's professional technicians or distributors for repairment.

For any use or technical problems pertaining to this product, please contact our professional technicians or distributors.

The ownership of the manufacturers or trademarks referred to or quoted in this document vests in its company or organization.

All parts/device used in the system, where they can be dismantled directly without decontamination for recycle way purpose/environmental protection acc. to the national regulations of installation site.

Safety Labels

Safety labels are placed on the PuroSense-C (Integrated) to identify hazards. Identification labels provide information about the product.

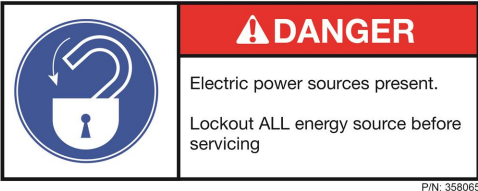
- Safety labels provide instructions on how to avoid the hazard.
- Items that weigh over 4.5 kg (10 lb) and that may be removed for service have a mass label attached.

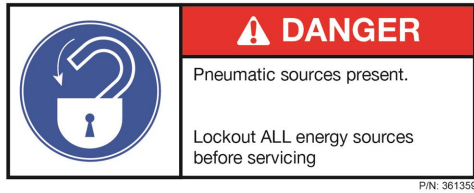
NOTICE

Do not change or remove the safety or equipment identification labels.

To replace a lost or damaged label call Brooks Technical Support.

Table 1-2: Safety Labels placed on Product

	Danger Label - Arc Flash and Shock Hazard P/N: 600-000018039 Qty: 1 Location: See "Illustration of Labels". Possible injuries: Electric shock and electric burn. How to avoid the hazards: Disconnect main power and perform a Lockout/Tagout procedure.
	Danger Label - Electric Power Source Present P/N: 358065 Qty: 1 Location: See "Illustration of Labels". Possible injuries: Electric shock and electric burn. How to avoid the hazards: Lockout all energy source before servicing.



Danger Label - Pneumatic

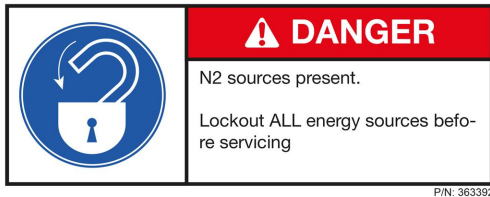
P/N: 361359

Qty: 6

Location: See "[Illustration of Labels](#)".

Possible injuries: Serious injuries.

How to avoid the hazards: Lockout all energy source before servicing.

Danger Label - N₂

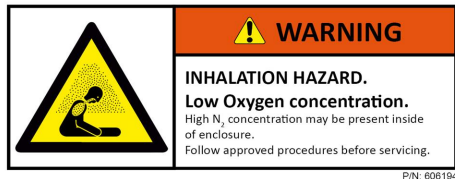
P/N: 363392

Qty: 1

Location: See "[Illustration of Labels](#)".

Possible injuries: Serious injuries.

How to avoid the hazards: Lockout all energy source before servicing.



Warning Label - Inhalation Hazard

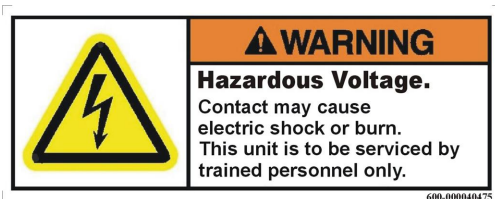
P/N: 606194

Qty: 1

Location: See "[Illustration of Labels](#)".

Possible injuries: Serious respiration problems

How to avoid the hazards: Follow approved procedures before servicing.



Warning Label - Hazardous Voltage

P/N: 600-000040475

Qty: 6

Location: See "[Illustration of Labels](#)".

Possible injuries: Electric shock and electric burn.

How to avoid the hazards: Disconnect main power and perform a Lockout/Tagout procedure.

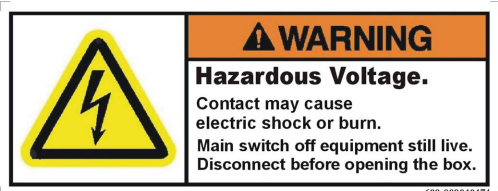
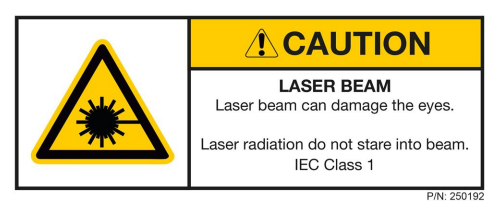
 WARNING Hazardous Voltage. Contact may cause electric shock or burn. Main switch off equipment still live. Disconnect before opening the box. 600-000040474	Warning Label - Hazardous Voltage P/N: 600-000040474 Qty: 1 Location: See "Illustration of Labels". Possible injuries: Electric shock and electric burn. How to avoid the hazards: Disconnect main power and perform a Lockout/Tagout procedure.
 CAUTION Pinch Point. May cause hand injuries. Keep hands and fingers clear. P/N: 265353	Cation Label - Pinch Point Hazard P/N: 265353 Qty: 2 Location: See "Illustration of Labels". Possible injuries: Hand injury such as cuts or pinching. How to avoid the hazards: Keep hands and fingers clear of moving parts.
 CAUTION LASER BEAM Laser beam can damage the eyes. Laser radiation do not stare into beam. IEC Class 1 P/N: 250192	Cation Label - Laser Beam P/N: 250192 Qty: 1 Location: See "Illustration of Labels". Possible injuries: Harmful to eyes. How to avoid the hazards: Wear safety protective glasses and gloves. Avoid direct exposure to laser beam.

Illustration of Labels



Figure 1-2: Danger N₂ and CDA LOTO Labels Location



Figure 1-3: Caution Laser Beam Label Location



Figure 1-4: Warning Label Locations - Behind Left-Rear Panel on Power Input Panel



Figure 1-5: Warning Label Locations - Behind Left Side Panel Below Power Distribution Unit

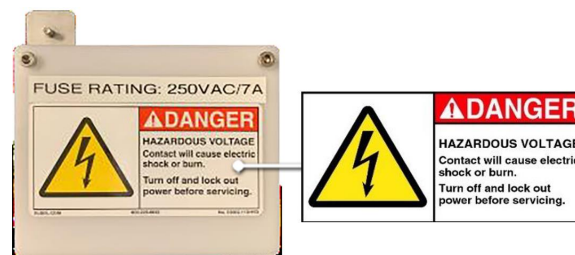


Figure 1-6: Warning Label Locations - Behind Right Side Panel Near Pumps



Figure 1-7: Warning Label Locations - Behind Front Panel: Power Distribution Unit



Figure 1-8: Warning Label Locations - On Left-Rear Panel: Above Power OFF Switch



Figure 1-9: Warning Label Locations - On Right-Rear Panel

Identification Labels

NOTE: The identification labels are added in the below tables may vary based on your configuration.

NOTICE

Do not change or remove the safety or equipment identification labels.
To replace a lost or damaged label call Brooks Technical Support.

 Brooks Automation (Germany) GmbH Daimler-Straße 7 78256 Steislingen GERMANY <table><tr><td>PRODUCT MODEL:</td><td>PuroSense on PuroMaxx LEAP</td></tr><tr><td>ASSEMBLED IN:</td><td>Add where tool is assembled</td></tr><tr><td>DATE OF CONSTRUCTION:</td><td>Add MMM / YYYY</td></tr><tr><td>ARTICLE NUMBER:</td><td>Add tool version / article number</td></tr><tr><td>SERIAL NUMBER:</td><td>Add serial number</td></tr><tr><td>ELECTRICAL DIAGRAM:</td><td>Add electrical diagram number</td></tr></table> ORDER NO.: 638507 Rev.: A	PRODUCT MODEL:	PuroSense on PuroMaxx LEAP	ASSEMBLED IN:	Add where tool is assembled	DATE OF CONSTRUCTION:	Add MMM / YYYY	ARTICLE NUMBER:	Add tool version / article number	SERIAL NUMBER:	Add serial number	ELECTRICAL DIAGRAM:	Add electrical diagram number	Serial plate - PuroSense-C (Integrated) P/N: 638507* Qty: 1 Location:
PRODUCT MODEL:	PuroSense on PuroMaxx LEAP												
ASSEMBLED IN:	Add where tool is assembled												
DATE OF CONSTRUCTION:	Add MMM / YYYY												
ARTICLE NUMBER:	Add tool version / article number												
SERIAL NUMBER:	Add serial number												
ELECTRICAL DIAGRAM:	Add electrical diagram number												
	Seismic Anchor Point Qty: 4 Location: Near to the fixed seismic compensating plates.												

* The part number for nameplate may vary based on your configuration.

Location of Identification Labels



Figure 1-10: Seismic Anchor Label Locations - On Left-and Right Sides of Frame (four places)

Interlocks

Safety interlocks protect personal safety. Operational interlocks protect the safety of the equipment. Additional interlocks may be added by the user.

Table 1-3: Interlocks on the Product

Interlock	Function
EMO	Disconnection the power to supply to PuroSense-C (Integrated) and analyzer.
Circuit breaker	Disconnection the power to supply to PuroSense-C (Integrated) and analyzer.
O ₂ detector	When the sensor detects that the oxygen level in the gas box is below 19.5%, an alarm will be triggered, and the purge process will stop.
Door Sensor	Disconnection the DC power to supply to Solenoid Valve (SV8 (See "Locations of the interlocks")).

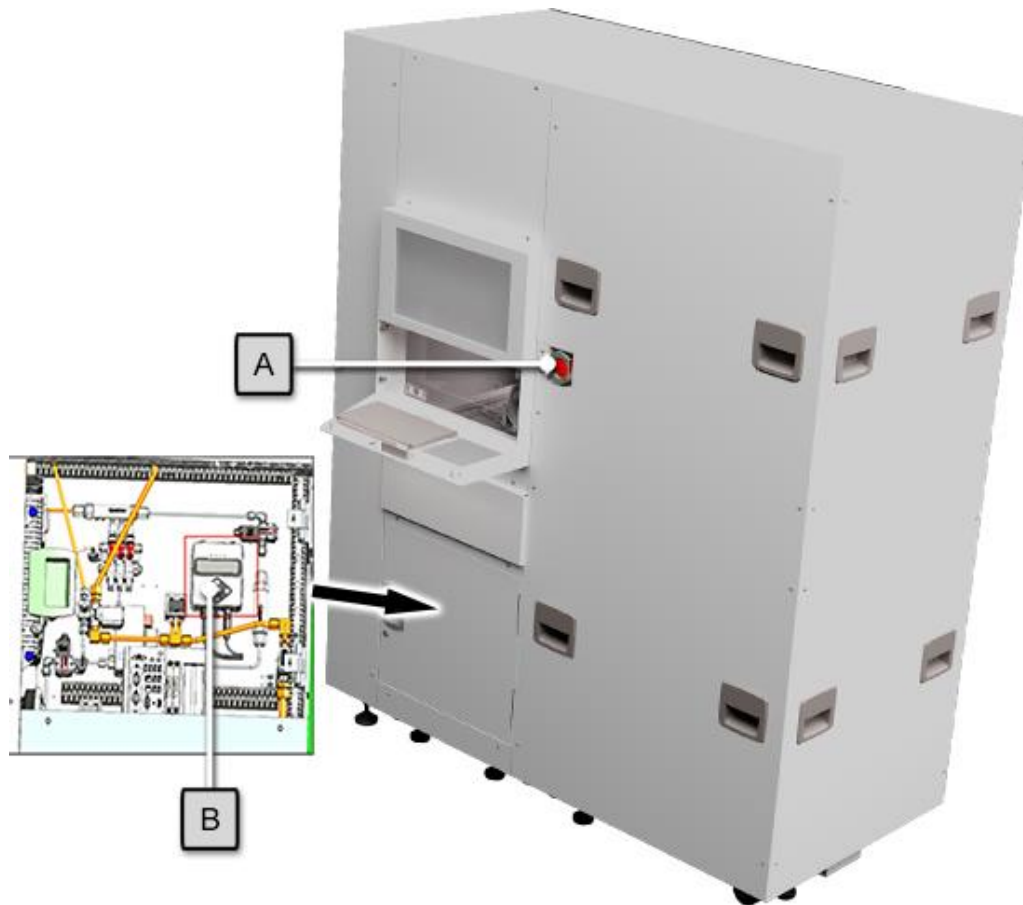


Figure 1-11: Locations of the interlocks

A	EMO	B	O ₂ detector
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Emergency OFF Reset Sequence

Step	Action
1.	To reset the EMERGENCY OFF switch, twist the knob clockwise (in the direction indicated) to release. 
2.	Check that PuroSense-C (Integrated) is properly connected to a suitable VAC outlet (See "Power Up Sequence").

Mechanical Hazards

 CAUTION Pinch Point	
Moving parts of the product may cause squeezing or compression of fingers or hands resulting in personal injury. Do not operate the product without the protective covers in place.	

Electrical Hazards

Refer to the specifications of this PuroSense-C (Integrated) for the electrical power.

 DANGER Electrical Shock	
Working with energized equipment may cause electrical shock and may result in death or serious injury. • All energy must be removed from the equipment per the facility's Lockout/Tagout procedure before servicing. • Follow the Lockout/Tagout procedures specified by the local facility. • If local procedures are not available, follow the procedure for Lockout/Tagout in OSHA Standard 29CFR 1910.147. • Refer the units specifications for the actual system power requirements and use appropriate precautions.	

Grounding

 DANGER Electrical Shock Hazard	
Contact with electrical power can cause death or serious personal injury. • To avoid electrical shock, disconnect the power before troubleshooting the electrical components.	

Hazards while Working at Heights

 WARNING Fall Protection Required	
Working and/or walking on a surface with an unprotected side or edge above a lower level requires fall protection. Falling from the top of the enclosure could result in death or serious injury. • Only trained personnel can work at height and implement all safety controls. • Always wear fall protection when working at heights. • Do not work below people working at height because there is a risk of falling objects and falling people. Set up a barrier or communicate with the people working at height when people working below are in the area. • When working below, all personnel must wear hard hats as a minimum.	 

Fire and Explosion Hazards

The PuroSense-C (Integrated) provides no direct fire or explosion hazard.

NOTE: For information on fire and smoke risk assessment please refer to the local regulations.

 WARNING Fire Hazard	
Flammable cleaning products such as Isopropyl alcohol may cause fire if used on hot parts which may lead to death or personal injury. • Allow the product to completely cool before using flammable cleaning products for maintenance procedures.	

High Pressure Gas Hazards

 CAUTION High Pressure Gas	
Use of high pressure gas or compressed air during cleaning may cause flying debris. • When using high pressure gas for cleaning, wear personal protection equipment such as safety glasses. • Follow safety guidelines for cleaning with high pressure gas as specified by the facility.	

**CAUTION****Asphyxiation Hazard**

The N₂ used in PuroSense-C (Integrated) is non-flammable and non-toxic. However, as with any gas, death or serious injury due to asphyxiation could occur if concentrated gas is inhaled.

- Vent the exhaust from the pressure relief valves according to facility or local environmental regulations.
- Install an alarm to alert personnel of dangerously low levels of oxygen.
- Ensure the O₂ concentration is over 19 % by checking at the service door. It is important to allow all N₂ to dissipate into the system before enter the services of N₂ lines.



Ergonomics Hazards

 CAUTION Two-Person Lift Recommended	
This product weighs 18 kg - 20.4 kg (40 lb - 45 lb). Improper lifting may result in personal injury. Do not attempt to lift this product alone. Always use 2-person lift techniques or a lift aid.	

 CAUTION Lift Aid Required	
This product weighs greater than 36.2 kg (80 lb). Improper lifting may result in personal injury. Do not attempt to move or lift this product without a lift aid such as a forklift or a hoist.	

Tip Hazard

 WARNING Tip Hazard	
Moving this product without a hoist could cause a tip hazard which may cause death or serious injury. - Do not attempt to move the Product without the use of a fork lift or a hoist. - Roll on smooth floors only.	

Trip Hazard

 CAUTION Trip Hazard	
Cables for power and communication and facilities create trip hazards which may cause serious injury. • Always route the cables where they are not in the way of traffic.	

Environmental Information

Indoor Use	Indoor Use Only
Altitude	10,000 Feet Operating
Operating Temperature	10 °C to 30 °C (operating) -10 °C to 50 °C (storage)
Maximum Relative Humidity	<85% R.H. non-condensing
Mains Supply Voltage Fluctuation	Up to ±10 % of the nominal voltage

Decommissioning

Brooks Automation complies with the EU Directive 2002/96/EU Waste Electrical and Electronic Equipment (WEEE).

The obligations for disposal for the product and components passed on to the end-user for responsible disposal. No cost for disposal is included in the initial cost of the equipment.

For further information, please contact the Brooks Automation Service Department.

Recycling and Hazardous Materials

Disposal

- Lead is typically found in solder connections including PCBA terminations.
- Mercury can be found in electronic components such as switches, and relays.
- Lead, mercury, and cadmium may be found in insulation of electrical cables.
- Hexavalent Chromium may be used as a coating on frames, screw, and fasteners.
- All parts with hazardous material shall be separated and disposed of to comply with applicable local laws and regulations including with European WEEE Directive.

2. Overview

PuroSense-C (Integrated) is an Airborne Molecular Contamination (AMC) measurement system with two load ports and purge FOUPs. It must contain all the necessary fab components to operate as an independent metrology tool. It may be operated by both Host Communication (Automatic) or Human (Manual).

Using this Manual

 DANGER Read the Safety Chapter	
Failure to review the <i>Safety</i> chapter and follow the safety warnings can result in death or serious injury. • All personnel involved with the operation or maintenance of this product must read and understand the information in this safety chapter. • Follow all applicable safety codes of the facility as well as national and international safety codes. • Know the facility safety procedures, safety equipment, and contact information. • Read and understand each procedure before performing it.	

The PuroSense-C (Integrated) is intended for use by industrial customers in a laboratory environment by trained industrial laboratory personnel and should be serviced only by Brooks or Brooks trained representatives. The manuals and related materials are intended for use by trained and experienced technical personnel.

The manufacturer accepts no liability for any other use of the equipment or its individual parts and components. This also applies to service and repair work carried out by unauthorized service personnel. All warranties are declared null and void in the event of non-compliance with these instructions. This also applies to parts not directly affected by any unauthorized repair work.

This manual contains information on safety, specifications, and operation as well as troubleshooting and maintenance of the PuroSense-C (Integrated). If there are any questions regarding this manual or use of this system or to order additional copies of this publication, contact Brooks Automation Service. [See the Contact Us Page.](#)

Key Features

PuroSense-C (Integrated) offers the following elements as prime advantages in AMC detection:

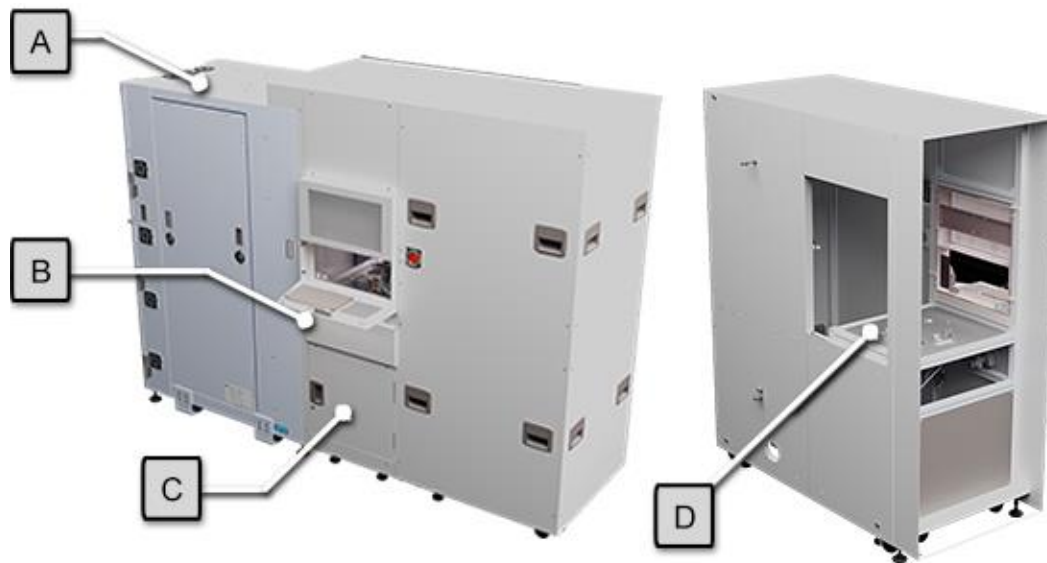
- **FAST SYSTEM RESPONSE:** The gas-handling hardware of the PuroSense-C (Integrated) has been specifically designed to minimize the “time-to-detection” response function of the sampling system. PuroSense-C (Integrated)s flow control hardware enables you to monitor up to 32 unique locations throughout your fab and can rapidly detect concentration changes within the various monitored environments.
- **A USER-FRIENDLY GUI:** While the PuroSense-C (Integrated) hardware system is complex, its GUI is simple, easy-to-use, and configurable. From the PuroSense-C (Integrated) user interface, you can evaluate the concentration of one species or multiple species, and you can assess conditions of specific ports, multiple ports, specific instruments, multiple instruments, a bank or the entire fab. In addition, these conditions can be reproduced in both graph and tabulated forms, so you can see patterns and changes and generate reports for offline analysis and archiving.
- **MOBILE MANAGEMENT:** For network connected installations, PuroSense-C (Integrated) enables you to access all of its software features and have full system control from your desktop; you do not have to gown-up and enter the fab to modify measurement schedules and adjust measurement conditions. PuroSense-C (Integrated) also dynamically detects hardware connections and configures itself; you can easily validate these connections via the System page on the GUI.
- **EASY-TO-USE DATA EVALUATION TOOLS:** The PuroSense-C (Integrated) GUI enables you to track current conditions and to track the history of conditions. PuroSense-C (Integrated) is always monitoring and collecting concentration data on multiple species from each port in your fab. You can view a history of changes and spot trends, by species, by location, and by specified time period. This enables you to respond to AMC conditions in the moment and make improvements based on your analysis of historical trends.
- **SIMPLE RECIPE CREATION and SCHEDULING:** PuroSense-C (Integrated) provides Schedule and Recipe Library interfaces where you can easily schedule existing recipes (and view recipes that are currently running or scheduled), create and store new recipes, and edit existing recipes from the library.
 - **Recipe Creation Interface:** The user can create, run and store new recipes from either the Schedule or Library tabs. From the library tab, the user can also schedule, view, edit, or delete existing recipes. The Recipe Creation interface enables you to create, customize, save, edit, and load recipes that automate monitoring of your fab quickly and easily. From the interface, you can add ports in sequential steps, run a reference gas through the system, and execute clean cycles during recipe runs. Each time a recipe is created, it is saved in the Recipe Library for easy access to edit as needed. It also keeps track of the last active recipe and automatically recovers it in the event of a power-loss, resuming fab monitoring immediately.
 - **Recipe Scheduling Interface:** The user can add recipes to the schedule to run at a future date and time, schedule as recurring, or run a recipe immediately. It is designed so the user does not need to create and run recipes manually every time.
 - **Recipe Editing Interface:** The View/Edit Recipe interface enables you to open existing recipes to review and modify. This interface has the same functionality and look as the Create New Recipe interface but allows you to save the same recipe name as a different version, so the original recipe is preserved in the Recipe Library.

Concepts and Terminology

The concepts and terminology defined in the section are used throughout this document. Users should read this section first before continuing with the manual.

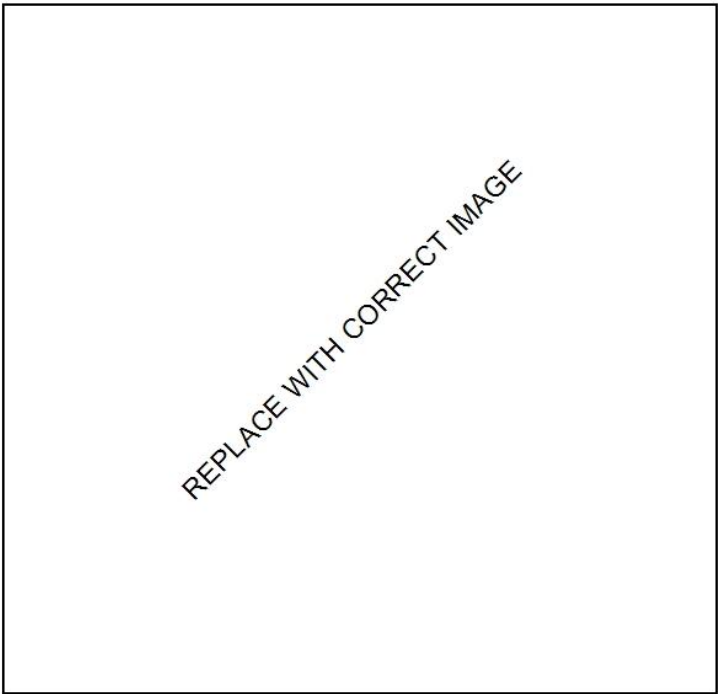
Abbreviation	Description
AMC	Airborne Molecular Contamination
EAP	Equipment Automation Program
EMO	Emergency Machine Off
EMS or E-Stop	Emergency Stop
FOUP	Front Opening Unified Pod
GEM	Generic Equipment Model
HDMI	High-Definition Multimedia Interface
HMI	Human Machine Interface
HSMS	High-Speed SECS Message Services
MFC	Material Flow Controller
PLC	Programmable Logic Controller
LP	Load Port
RFID	Radio Frequency Identification
SECS	Semiconductor Equipment Communication Standard
SEMI	Semiconductor Equipment and Materials International
VOC	Volatile Organic Compounds

Product Illustration



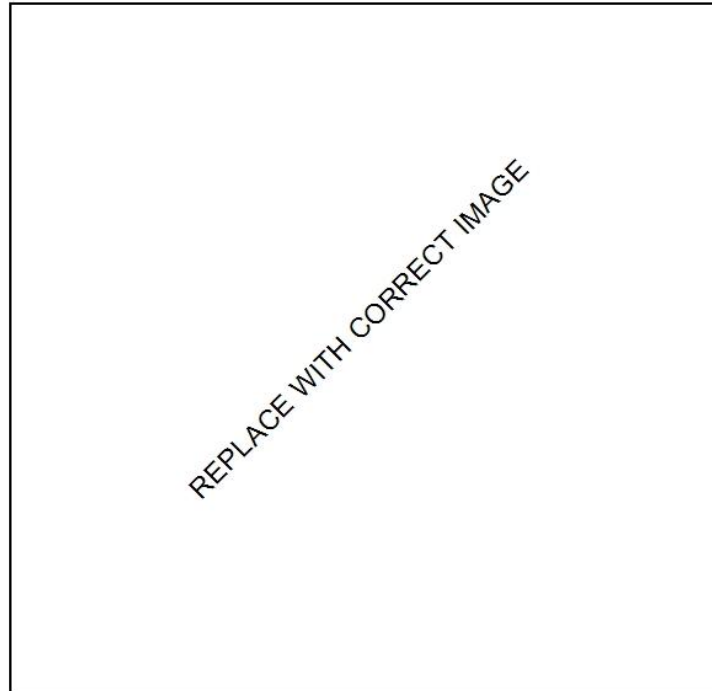
A	Analyzer	B	Control panel
C	Master Control Cabinet	D	Load port base assembly

Load Port Base Assembly



A	Presence Sensor	B	Nozzles
C	Placement Sensor	D	Clamp Device
E	Location Pin	F	Radio Frequency Identification (RFID)

Gas Circuit Components

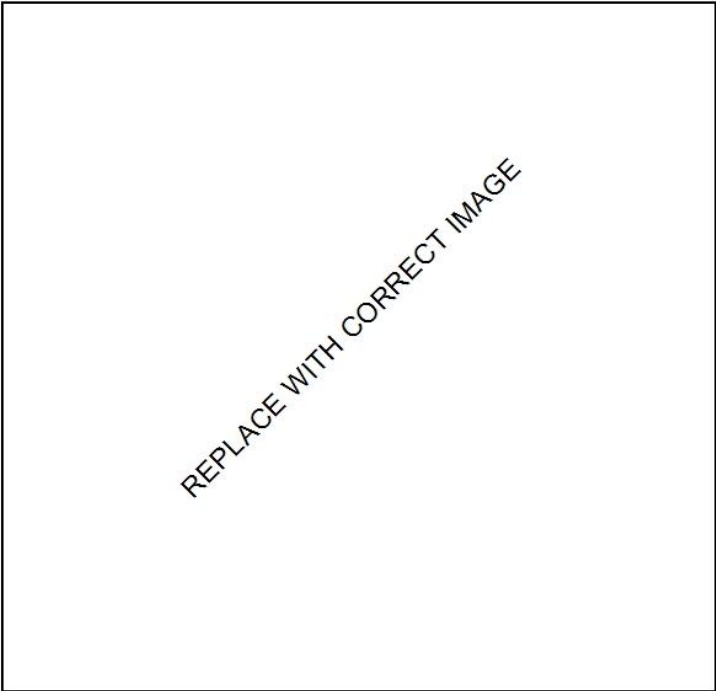


A	Filter	N ₂ gas filter
B	Solenoid Valve	Control FOUP outlet flow to analyzer (SV7)
C	Solenoid Valve	Control of N ₂ to FOUP On/Off (SV3)
D	O ₂ detector	Monitor the O ₂ value
E	MFC	Control of N ₂ On/Off (SV1)
F	Flow meter	Monitor the hood exhaust flow (FM2)
G	Solenoid Valve	Control of Analyzer exhaust (SV6)
H	Pressure meter	Monitor the exhaust pressure value (PG3)
I	Flow meter	Monitor the exhaust flow value (FM1)
J	Solenoid Valve	Control of N ₂ On/Off (SV1)
K	Solenoid Valve	Control of hood exhaust On/Off (SV8)
L	Pressure meter	Monitor the N ₂ pressure value (PG1)
M	Solenoid Valve	Control of N ₂ mode (SV2)
N	Solenoid Valve	Control clamp device (SV4, 5)
O	Pressure meter	Monitor the CDA pressure value (PG2)

Master Control Cabinet

NOTICE

Unauthorized personnel should not open the door of the electric cabinet. Please avoid the risk of electric shock.

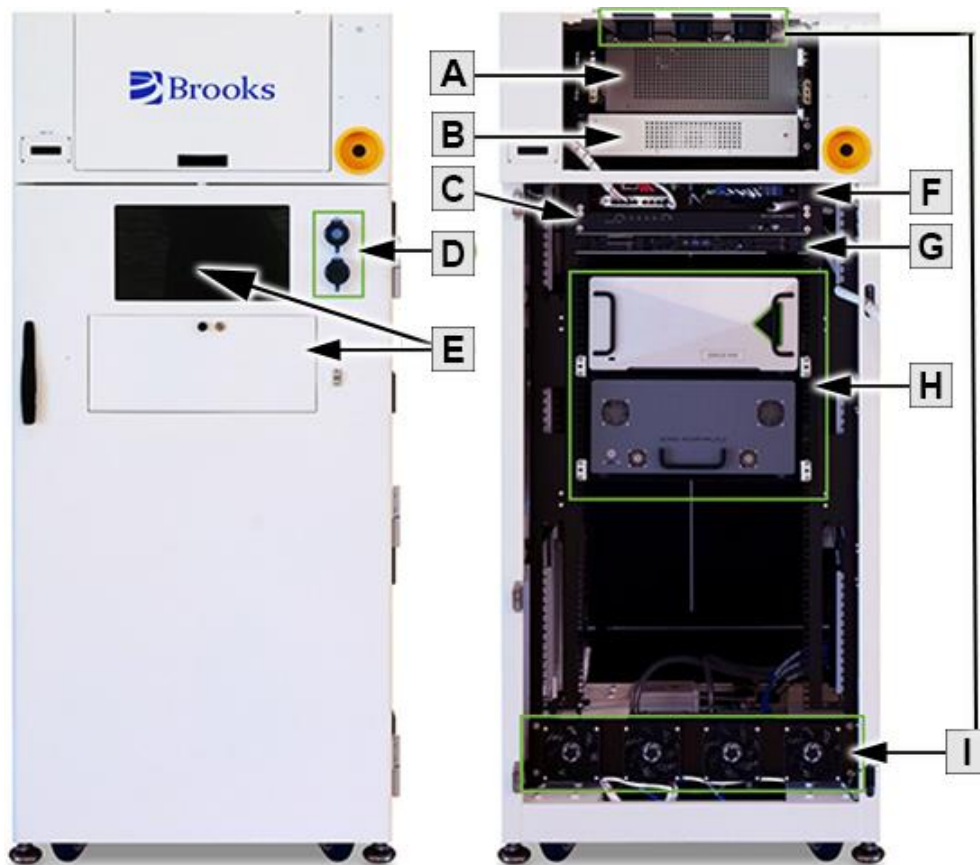


A	VS-32XYR	IO module
B	VS-6A	Analog signal transfer to digital signal
C	VS3-32MR-D	PLC host
D	DC Terminal Block	For DC 24V only
E	RFID reader	Read carrier ID
F	DC Terminal Block	For DC safety circuit only
G	Safety relay	For light curtain signal control
H	Safety relay	For signal only
I	Fuse	4A fuse for DC power
J	Power supply	DC24V power supply for all control components
K	Earth Terminal	Grounding connections

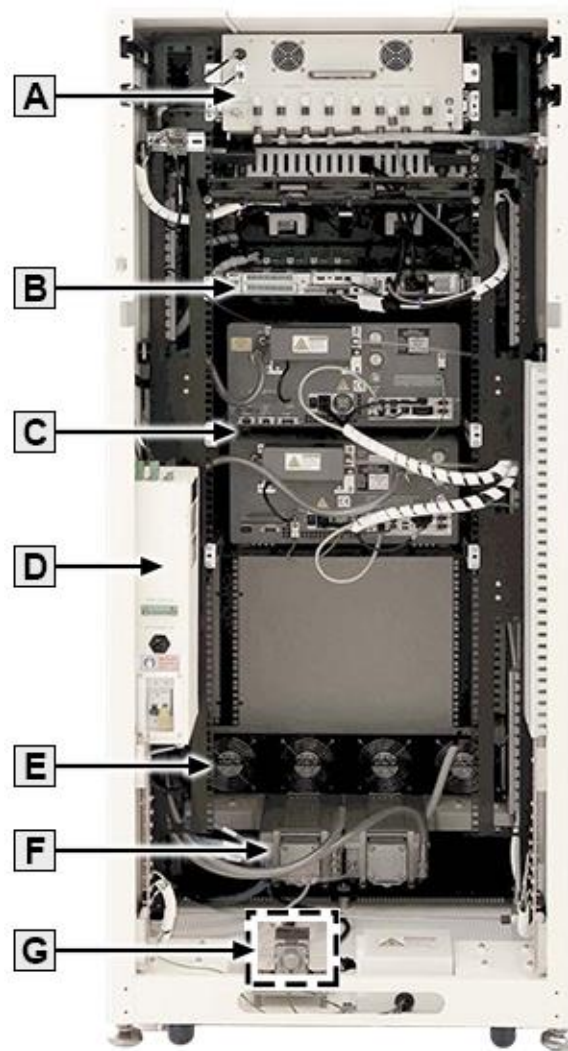
Analyzer

The analyzer is a FOUP monitoring system that detects inorganic and volatile organic compounds (VOCs) in both FOUP and ambient environments. Hardware and software work seamlessly together to enable efficient and effective monitoring of contaminants in the fab.

The analyzer monitors two FOUPs using integrated sensors to track contamination trends from organic and inorganic compounds. The system actively and accurately visualizes, analyzes, and stores data continuously so the user can view conditions and evaluate them according to their needs.



A	Sampling port unit	B	Power distribution box
C	KVM switch (Keyboard, Video (monitor), Mouse)	D	On/Off switches
E	Screen and Keyboard and mouse	F	Network and USB hubs
G	SAT server and SLiM computer	H	Analyzers
I	Fans		



A	Sampling ports	B	SLiM computer
C	Analyzers	D	AC mains box
E	Fans	F	Analyzer pumps
G	Bypass pump (with exhaust port)		

How Analyzer Works

The Analyzer system software provides a FOUP measurement tool in an easy to use layout to view gas species concentration values measured in the last 24 hours. User can also perform required actions—including FOUP measurement, background correction, inline validation, ambient air measurement and cleaning—and download the data for offline analysis and retention.

Analyzer leverages the excellent responsiveness of VOC and other gas analyzers. Analyzers effectively and rapidly respond to any change in gas concentration, up or down.

With Analyzer's specialized design, user can measure up to two sample lines with high throughput and use pressurized reference gases to run periodic checks on analyzer baseline and calibrations. This enables you to respond immediately to changes in your environment.

In addition, Analyzer's software supports the monitoring system with a simple and easy-to-use GUI. User can manually initiate the sampling hardware whenever a FOUP is loaded. The software collects and indexes all pertinent data and enables you to analyze it in any number of configurations. It collects and stores data by location, time frame, and species. User can also adjust recipes at any time from any place, with its portable and remote application option.

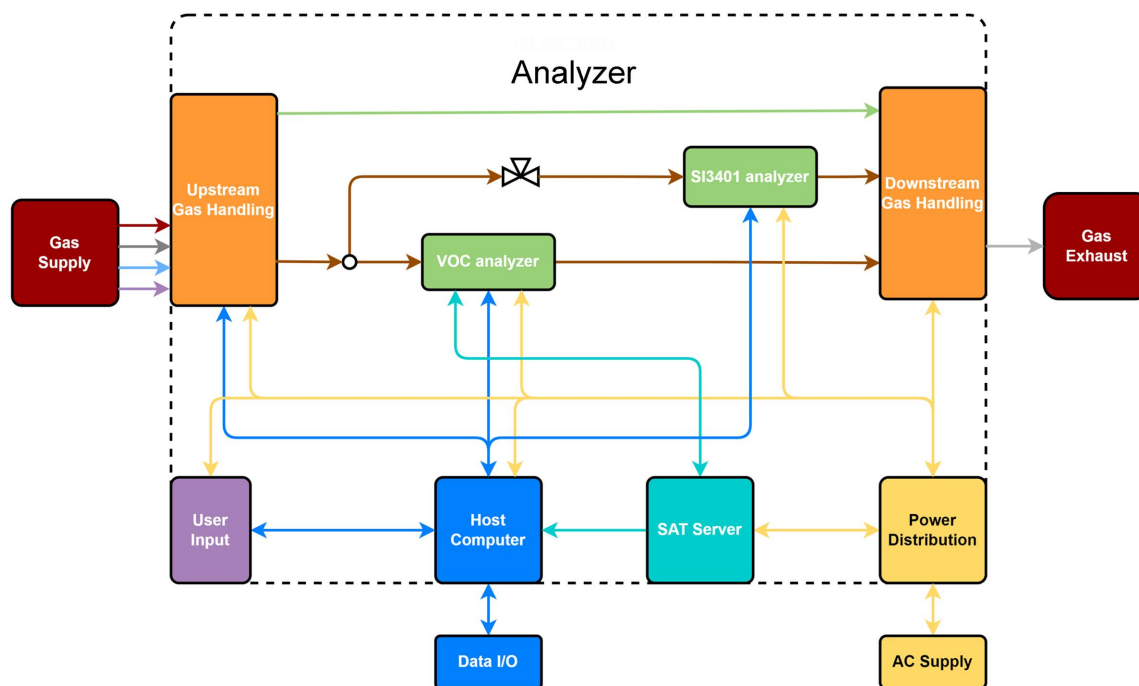


Figure 2-1: Analyzer works

3. Specifications and Site Requirements

Site Requirements

The system needs to have at least 1 m space on the right side of the chassis for servicing. If this is not practicable, servicing will require the system to be switched off, un-anchored, and rolled to a more open location. The space requirements are 1404 mm width, 1663 mm depth (with doors open), and 2263 mm height.

Electrical Requirements

The system must only operate with the power supply and frequency specified on the system identification stickers mounted on the side of the device. Operating the system with any other power supply or frequency can result in damage to the equipment.

Table 3-1: Electrical Requirements

Parameter	Specification
N ₂ tool inlet power	1Ø 220V , 6A
AMC analyzer	1Ø 220V , 20A
Analyzer	Power Ratings - 220-240 VAC, 50/60Hz, 3.1 kW max. Degrees of Ingress Protection - IPx0

Load Port Accessory Connections



Table 3-2: Accessory Connections

Parameter	Specification
N ₂	Port N ₂ inlet (40~50psi), Ø1/4"Swagelok (The purity of N ₂ is at least 5N or above)
CDA	Port CDA inlet (40~50psi), Ø1/4"Swagelok
CH	Connect to Analyzer

Analyzer Accessory Connections

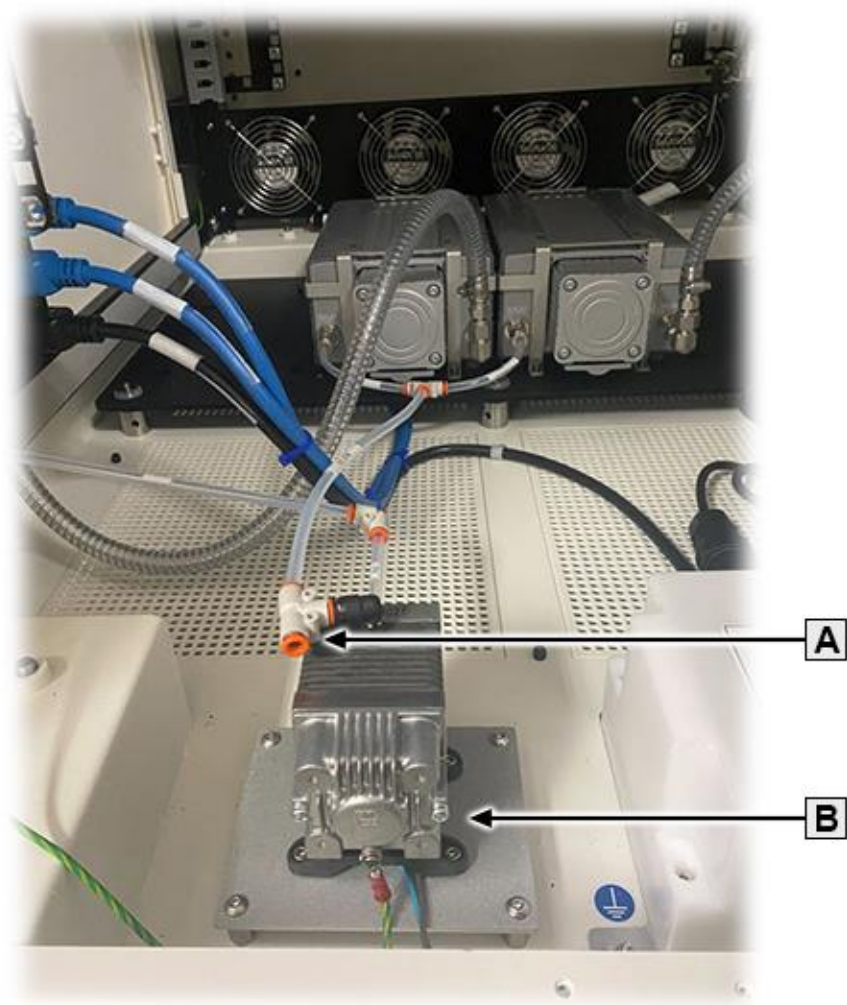
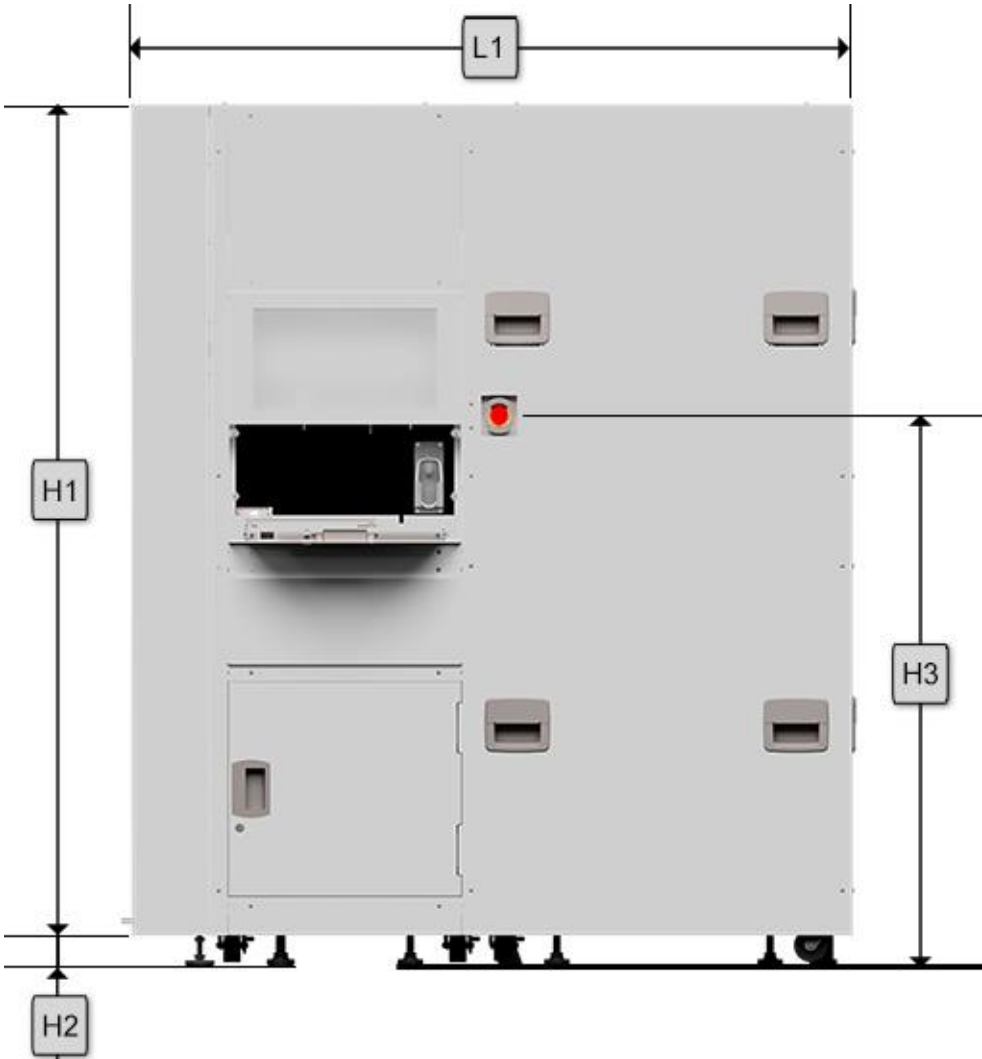


Figure 3-1: Exhaust port on the bypass pump

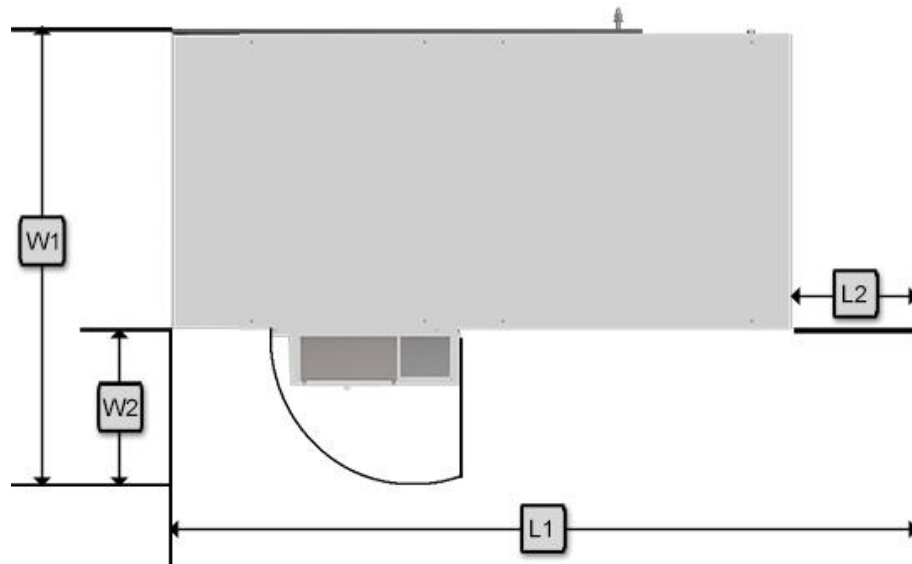
A	Exhaust port	B	Bypass pump
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Parameter	Specification
Background Correction (port 3)	High purity nitrogen or High purity CDA (clean dry air). Regulated to 5-10 psig (no higher than 12 psig). 1/4-inch OD ultra pure PFA tubing.
Inline Validation (port 5-8)	Regulated to 5-10 psig (no higher than 12 psig). 1/4-inch OD ultra pure PFA tubing.

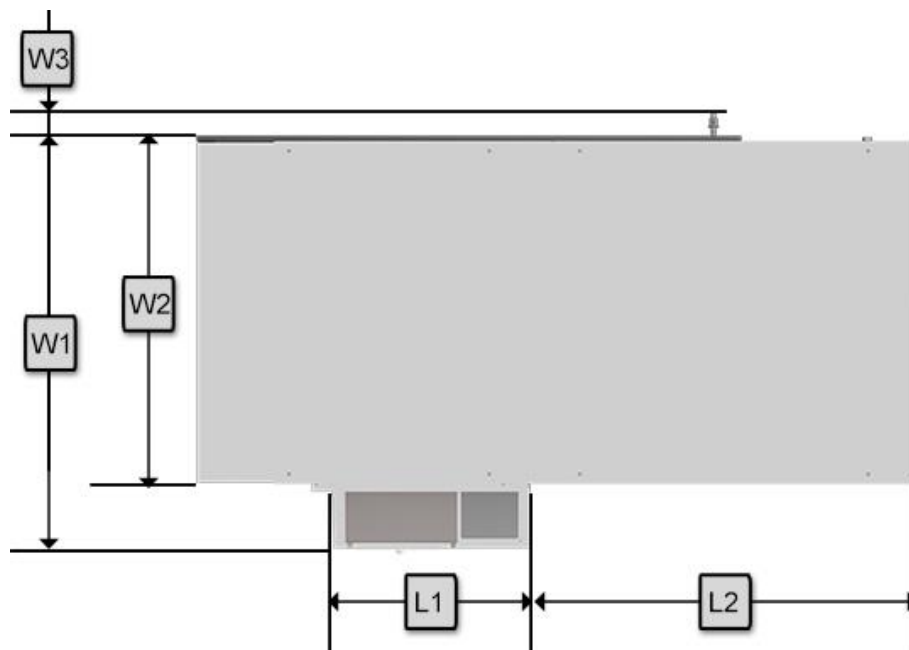
Specifications



L1	1891 mm	H1	1663 mm
H2	114 mm	H3	1222 mm



W1	1404 mm	W2	600 mm
L1	2263 mm	L2	600 mm



W3	78.6 mm	W1	1044 mm
W2	804 mm	L1	510.5 mm
L2	869.5 mm		



Figure 3-2: Analyzer specifications

Keyboard Up (H x W x D)	70.8 in x 30 in x 46 in 1798 mm x 761 mm x 1168 mm
Keyboard Down (H x W x D)	70.8 in x 30 in x 54 in 1798 mm x 761 mm x 1370 mm
Maximum Weight 8 Ports + 4 analyzers:	620 lbs (281.2 kg)
Sampling Line	¼-inch OD x 1/8-inch ID UHP PFA tubing

Seismic Protection

NOTE: The information given about the seismic protection is generic and may not fully represent all builds of the PuroSense-C (Integrated). For correct information on the seismic protection of the PuroSense-C (Integrated) and its sub-assemblies, refer to the Mechanical Layout Drawing.

 CAUTION	
The use of this PuroSense-C (Integrated) in an earthquake prone environment may cause equipment damage or personal injury. The user is responsible for determining whether the PuroSense-C (Integrated) is used in an earthquake prone environment and installing the appropriate seismic restraint in accordance with local regulations.	

Analyzer Seismic Protection

To prevent the PuroSense-C (Integrated) from tipping over during a seismic event, each PuroSense-C (Integrated) is equipped with four anti-tipping feet. Each foot is constructed of welded 12- gauge cold rolled steel and bolted to the side of the unit with four 10 mm long stainless steel M6 hex head bolts. Each foot is anchored to the ground with two flanged stainless steel M12 hex head bolts.

The following illustrations and table define the measures that were taken to prevent the PuroSense-C (Integrated) from tipping over during a seismic event.

Based on the calculations of the overturning and lateral forces, each anchor bolt is subjected to a worst-case tensile force of 116.85 lbf and a lateral force of 59.1 lbf.

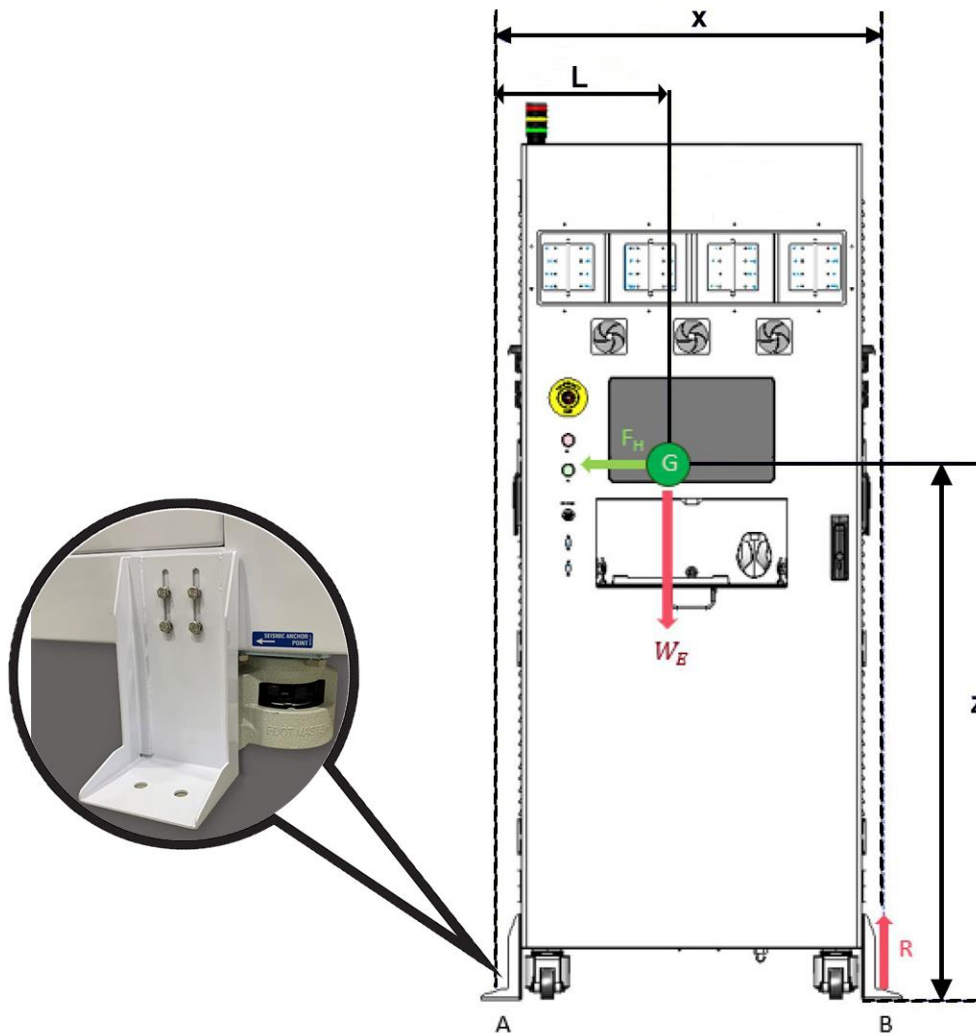


Table 3-3: Anti-tipping Foot and Illustration of Overturning and Lateral Forces

Table 3-4: Seismic Protection Calculations

Variable	Notes	Value
W	Maximum normal operating weight of PuroSense-C (Integrated)	750 lbf
F_H	Maximum anticipated seismic horizontal force acting on PuroSense-C (Integrated)	0.63W
W_E	Effective weight of PuroSense-C (Integrated) accounting for vertical seismic force	0.74W
G	The center of gravity of PuroSense-C (Integrated)	As indicated
Z	Height of center of gravity	55 in
R	Tensile force on an anchor bolt	116.85 lbf
N	Total number of anchor bolts	8
n	Number of anchor bolts on one side of the PuroSense-C (Integrated)	4
X	Distance between two opposing sets of anchor bolts	35.83 in
L	Shortest distance from a set of anchor bolts to G	16.65 in

4. Installation

Unpack the PuroSense-C (Integrated) Components

The PuroSense-C (Integrated) is shipped in separate packages which are individually sealed to maintain clean room conformance.

NOTICE

Packing Material Disposal



If the packing material is being removed or replaced, it must be handled following all Federal, State, Local, and Facility procedures for the disposal of hazardous material.

Follow all facility and government regulations regarding recycling and disposal when discarding packing materials that have been removed.

Tools and Materials

- Metric hex wrenches
- Open end wrenches or adjustable wrenches
- Utility knife
- Pedestal
- Fork lift or appropriate lift

Preparation

Step	Action
1.	On receiving the crate, inspect the indicators on the crate and make sure the PuroSense-C (Integrated) was handled properly during shipping. NOTE: Make sure to follow the signs added on the crate.
2.	Visually inspect the tip and ensure that tell label is present and has not been violated.

Step	Action
3.	Carefully inspect the shipping container for any obvious damage. Check for any exterior dents or cuts on the shipping container (be sure and check at the bottom). If any damage, report to the shipper and Brooks Automation immediately.
4.	Unpack each crate carefully.
5.	Inspect and verify each crate contents against the shipping documents. If any damage, report to the shipper and Brooks Automation immediately.

Procedure

Step	Action
1.	Move the crate to a large enough space to accommodate unpacking and out of foul weather.
2.	Ensure to accumulate required tools and wear PPE.
3.	Remove the crate walls of the PuroSense-C (Integrated) to inspect and verify contents.
4.	Carefully remove the layer of shrink wrap from the PuroSense-C (Integrated) and discard.
5.	Inspect the base clearance between the PuroSense-C (Integrated) and the frame supports of the crate base for the lifting devices.
6.	Locate and identify the pick up points for lifting device. NOTE: When the equipment enters the clean room, use the forklift for long-distance transportation. NOTE: For short-distance, the equipment is equipped with wheels and can be moved directly.
7.	Carefully insert the lifting device (fork lift or suitable lifting device) to the pick up points of the PuroSense-C (Integrated).
8.	Using the lifting device, raise the PuroSense-C (Integrated) vertically up until it clears the floating base.
9.	Slide out the shipping skid and jack casters to the PuroSense-C (Integrated) to lower. Turn the threaded rods of the casters in CW direction to gradually transfer weight of the system from channels of the lifting device to the casters.
10.	Remove the lifting device.
11.	Cut and remove the foil bag in which the PuroSense-C (Integrated) is shipped and roll the system into the unpacking area.
12.	Wet wipe down the bags for all items from unpacking area.
13.	Remove all outer bags.
14.	Wet wipe down all inner bags and wrappings.

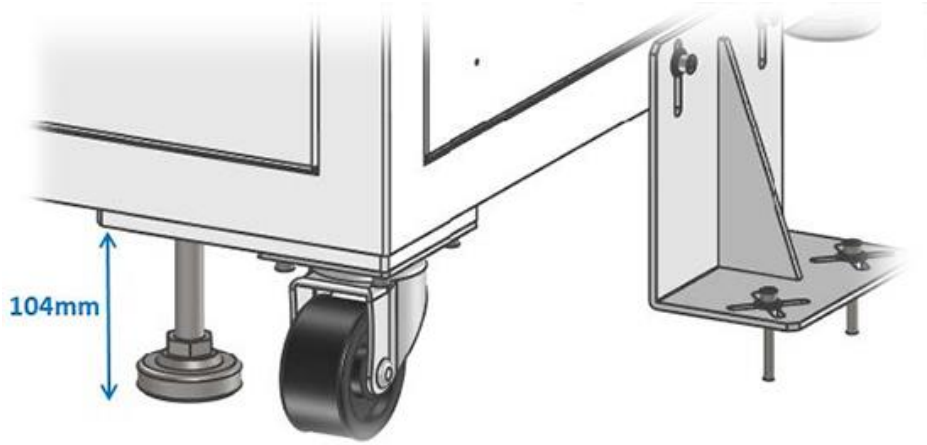
Step	Action
15.	Carefully inspect the PuroSense-C (Integrated) for signs of damage that may have occurred during shipping. If any damage, report to the shipper and Brooks Automation immediately.

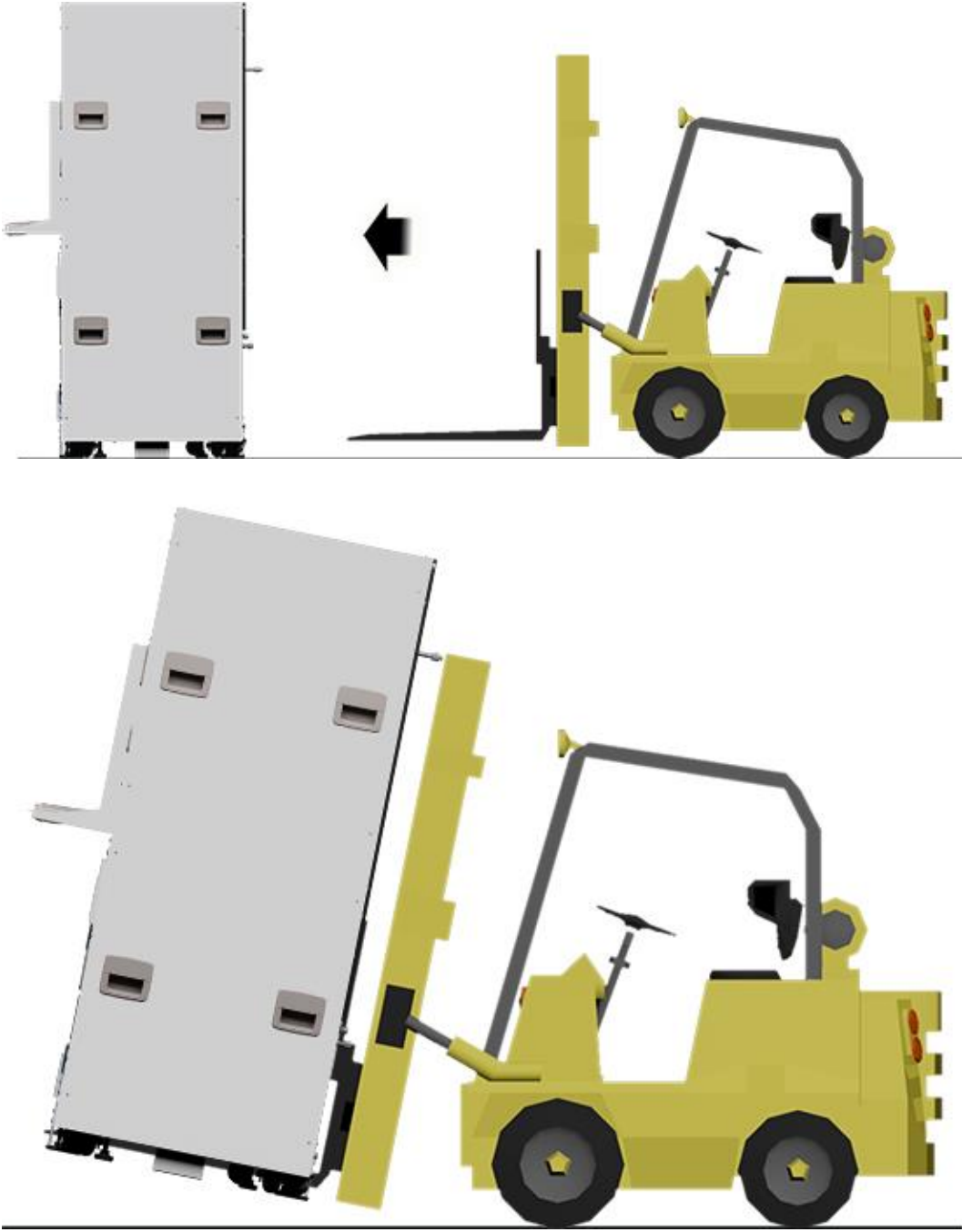
Installation Sub-Assemblies

The following installation sequence of sub-assemblies of the PuroMaxx LEAP is recommended:

- Standalone two load ports
- Computer cabinet
- Analyzer

NOTE: The order of assembly may vary depending on the facility layout.

Step	Action
1.	The bottom of the feet with an M16 nut can be twisted to adjust height. The height from the bottom of the frame to the floor is 104 mm. 

Step	Action
2.	Move and align the load ports center with the PuroMaxx LEAP. 

Step	Action
3.	Align the load port to the PuroMaxx LEAP tool and secure using the hardware. NOTE: Ensure to pass the cables and CDA tube through the bottom hole. 

Step	Action
4.	Install the analyzer. 
5.	Install the (2) fixed seismic compensating plates on the left and right sides of the standalone load ports.
6.	Make the following connections to the analyzer.

Step	Action
7.	Connect the power cord to each analyzer and ensure that the power switch is in ON position. NOTE: The Power plug locks when inserted. To remove, slide the red release tab back and pull. 
8.	Connect the sample line to the sample port. 
9.	Connect the external pump line to the exhaust port. 

Step	Action
10.	Connect the HDMI cable plus DVI adapter (along with USB) to the DVI port. 
11.	Do NOT connect the USB cable to USB-3 ports on the analyzer.
12.	Connect the RJ45 ethernet cable in the network port (labeled) into one of the network sharing ports on the back side of the analyzer. Either port will work. 

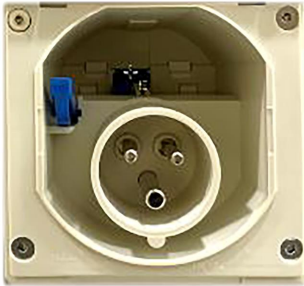
Power Up Sequence

 DANGER Read the Safety Chapter	
Failure to review the <i>Safety</i> chapter and follow the safety warnings can result in death or serious injury. • All personnel involved with the operation or maintenance of this product must read and understand the information in this safety chapter. • Follow all applicable safety codes of the facility as well as national and international safety codes. • Know the facility safety procedures, safety equipment, and contact information. • Read and understand each procedure before performing it.	

 CAUTION Unauthorized Service	
Personal injury or damage to equipment may result if this product is operated or serviced by unauthorized personnel. • Only qualified personnel are allowed to transport, assemble, operate, or maintain the Product. • Properly qualified personnel are those who have received certified training and have the proper qualifications for their jobs.	

Step	Action
1.	Ensure that all the power cables are seated properly. Check the sampling controller back panel, all analyzer back panels, and the external power distribution unit for the power cord connection. 

Step	Action
2.	Ensure that the EMERGENCY OFF button is in the release position. 
3.	Double-check that each analyzer pump voltage is set to 240- VAC. All the Analyzer pumps are shipped with the 240-VAC setting as default. 
4.	Uncoil the AC power supply cord and connect to an appropriate 220-240 VAC power source (or step up transformer in areas with 110-120 VAC supply).

Step	Action
5.	Connect the sampling system (220-240 VAC EU type connector) to the 220-240 VAC power supply outlet (rated 20A). If connecting with a step-up transformer, connect the transformer to a 110-120 VAC power supply (rated 35A) and connect the sampling system electrical connection to the step-up transformer 220-240 VAC outlet. NOTE: The Inlet plug is supplied with PuroSense-C (Integrated) but the connector on the user end is not.  CAUTION Ensure that the step-up transformer provides a ground connection to the PuroSense-C (Integrated). Analyzer recommends consulting an electrician if there is any doubt on how to connect the transformer for safe operation.   

5. Operation

This chapter provides complete operation directions for the Brooks Automation PuroSense-C (Integrated). The operation of the PuroSense-C (Integrated) is covered for both normal operating conditions and emergency conditions.

 DANGER Read the Safety Chapter	
Failure to review the <i>Safety</i> chapter and follow the safety warnings can result in death or serious injury. • All personnel involved with the operation or maintenance of this product must read and understand the information in this safety chapter. • Follow all applicable safety codes of the facility as well as national and international safety codes. • Know the facility safety procedures, safety equipment, and contact information. • Read and understand each procedure before performing it.	

Theory of Operation

PuroSense-C (Integrated) detects up to 10 volatile organic compounds (VOCs) in the lithography process, which maximizes the overall effectiveness of its AMC monitoring.

First and foremost, PuroSense-C (Integrated) leverages the excellent responsiveness of Brooks Automation VOC and other gas analyzers. Analyzers effectively and rapidly respond to any change in gas concentration, up or down. Most multiport sampling systems – placed upstream of gas analyzers – decrease the overall system responsiveness. This problem is compounded with each additional meter of upstream sample tubing. If these inherent issues are unaddressed by the sampling system design, events in the fab will go unnoticed and, potentially, you may respond to conditions that may be hours, if not days, in the past.

With PuroSense-C (Integrated)'s specialized design, Brooks Automation has made great strides in reducing, and in some cases eliminating these effects entirely. It enables you to monitor up to 32 sample lines with high throughput and use pressurized clean and reference gases to run periodic checks on analyzer baseline and calibrations. This enables you to respond immediately to changes in your fab's environment.

In addition, PuroSense-C (Integrated)'s software supports the monitoring system with a simple and easy-to-use GUI. You can manually control the sampling hardware and make long-term test recipes that can be looped indefinitely. The software continuously collects and indexes all pertinent data and enables you to analyze it in any number of configurations. It collects and stores data by location, time frame, and species. You can also adjust recipes at any time from any place, with its portable and remote application option.

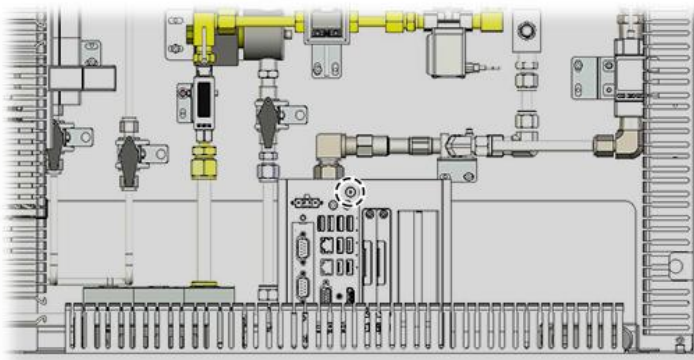
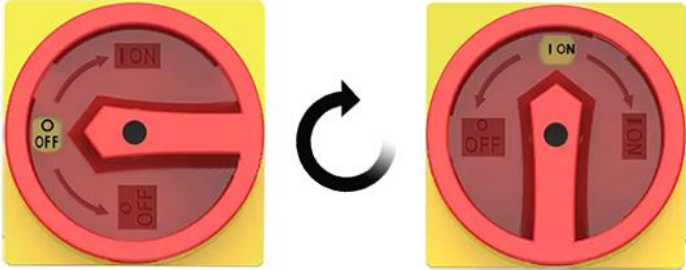
Starting the PuroSense-C (Integrated)

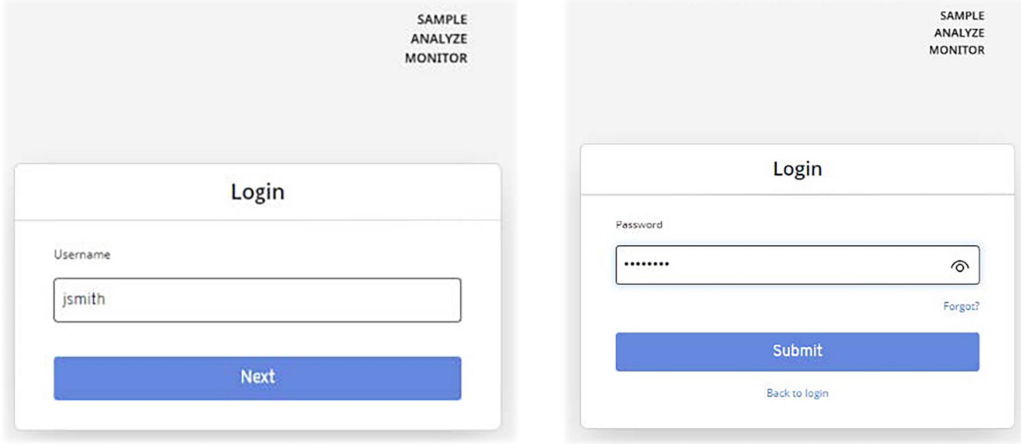
DANGER

Read the Safety Chapter

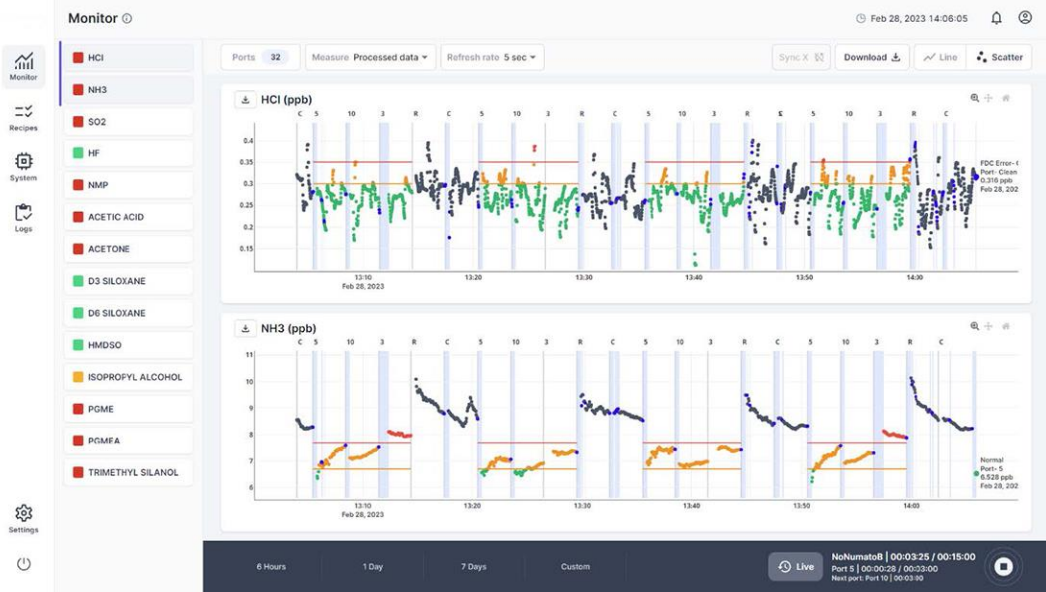
Failure to review the *Safety* chapter and follow the safety warnings can result in death or serious injury.

- All personnel involved with the operation or maintenance of this product must read and understand the information in this safety chapter.
- Follow all applicable safety codes of the facility as well as national and international safety codes.
- Know the facility safety procedures, safety equipment, and contact information.
- Read and understand each procedure before performing it.

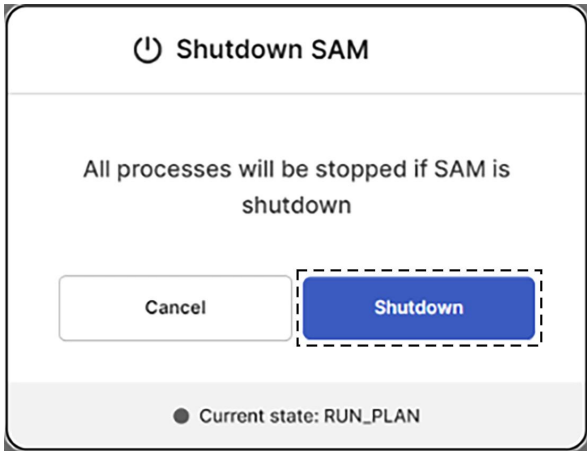
Step	Action
1.	Turn on IPC Power Switch. After assembly is complete, please have the facilities department supply power and turn on the IPC. Refer to the diagram below for the location of the IPC power switch. 
2.	Turn on Power Switch. Once the IPC power indicator turns green, close the maintenance door and turn on the power switch. 

Step	Action
3.	Press the ON switch on the front face of the PuroSense-C (Integrated) chassis. The power up sequence is automatic once the ON switch is pressed. 
4.	After system power up, the system login screen appears. NOTE: When a PuroSense-C (Integrated) is delivered and set up, Analyzer provides an admin login and password so an owner-designated admin can then set up user profiles. See User Management Tab in section 9 for instructions on adding users.
5.	Enter your username, click Next, enter password, then click Submit. If a full system startup is not needed, you will be taken directly to the User Interface Landing Page – Monitor. If full system startup is needed, the sequence explained below (System Startup) will take place before taking you to the Login page.  Figure 5-1: System Login Page

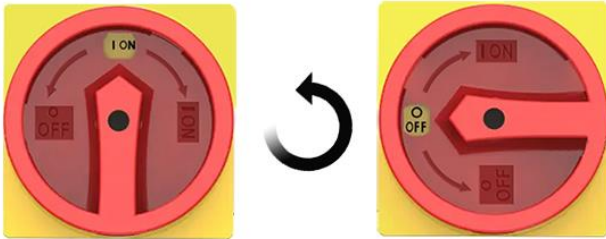
Step	Action
6.	When system services are restarted, a System Start-up Status pop-up screen will appear, showing the progression of the start-up (Figure 5-2 and Figure 5-3).  Figure 5-2: System Start-up Status Screen – Starting  Figure 5-3: System Start-up Status Screen – Completed
7.	If any one of the services or drivers fails during start-up, the sequence will pause. If this occurs, contact Analyzer Support for assistance.
8.	If you wish to close the Start-up Status pop-up while start-up is still running, click the X in the upper right corner.

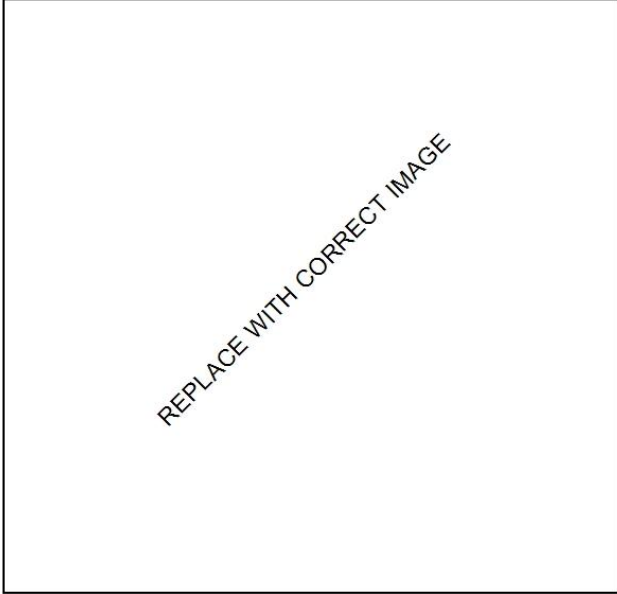
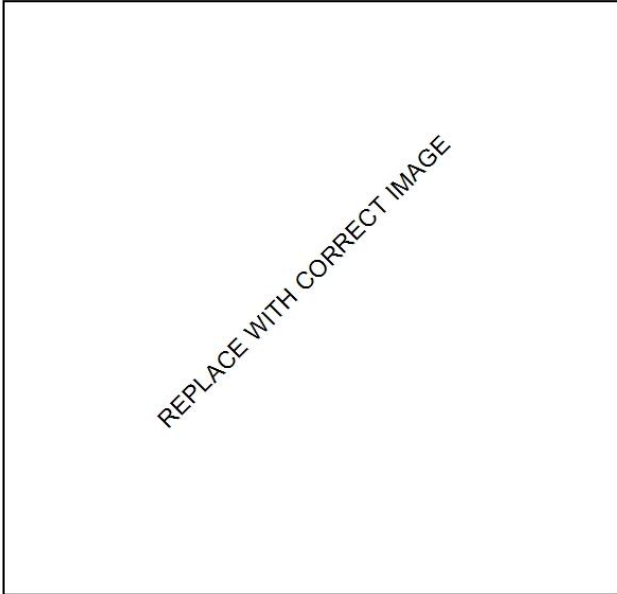
Step	Action
9.	Once the start-up sequence has completed, the Monitor page shown in Figure 5-4 is displayed. This is the default landing page upon start-up. It shows the current graphs of concentration values for each species being monitored by the system.  Figure 5-4: User Interface Landing Page – Monitor

Shut Down the PuroSense-C (Integrated)

Step	Action
1.	All material should be removed.
2.	Power Down sequence requires shutting down items in the following order: Analyzer 1, Analyzer 2, Analyzer 3, Analyzer 4 (as applicable)
3.	At the bottom of the user interface Navigation Panel, click the Power button. 
4.	A pop-up window displays. Click the Shutdown button. 
5.	Once the analyzers, SAT server, and the analyzer computer have been shut down, press the black OFF button on the front of analyzer. This turns off AC power to the rest of the system.
6.	Once the PuroSense-C (Integrated) computer is shut down, press the red OFF button on the front of PuroSense-C (Integrated). This turns off AC power to the rest of the system. 

Lockout / Tagout Procedure

Step	Action
1.	Stop the purge process.
2.	Turn off the power. 
3.	Insert and secure a lock and tag indicating that the tool is out of operation. 
4.	Use the key to open maintenance door.

Step	Action
5.	Turn the CDA hand valve to close and lock it. Insert and secure a lock and tag indicating the air source is off.  REPLACE WITH CORRECT IMAGE
6.	Turn the N₂ hand valve to close and lock it. Insert and secure a lock and tag indicating the air source is off.  REPLACE WITH CORRECT IMAGE

6. Software

NOTICE

PuroSense-C (Integrated) is seamlessly integrated with the PuroMaxx LEAP, utilizing a unified GUI. This chapter provides detailed instructions on using the PuroSense-C (Integrated) recipe editor and managing the process flow.

Access Rights Level

The software is set up to support two access rights levels by default. Administrator can define custom access rights in *Setup* area.

NOTE: Each user with **Administrator** access rights level should make sure to log off from the cleaner software before leaving the cleaner.

Table 6-1: Software Default Access Levels

User Type	Access Rights Level
Operator	• Machine operation • Start/Stop function • View screen process information
Administrator	• Machine operation • Start/Stop function • Update setup and testing information • Update database, services, and automation • Software configuration • Password setup • Maintenance functions

Software Overview

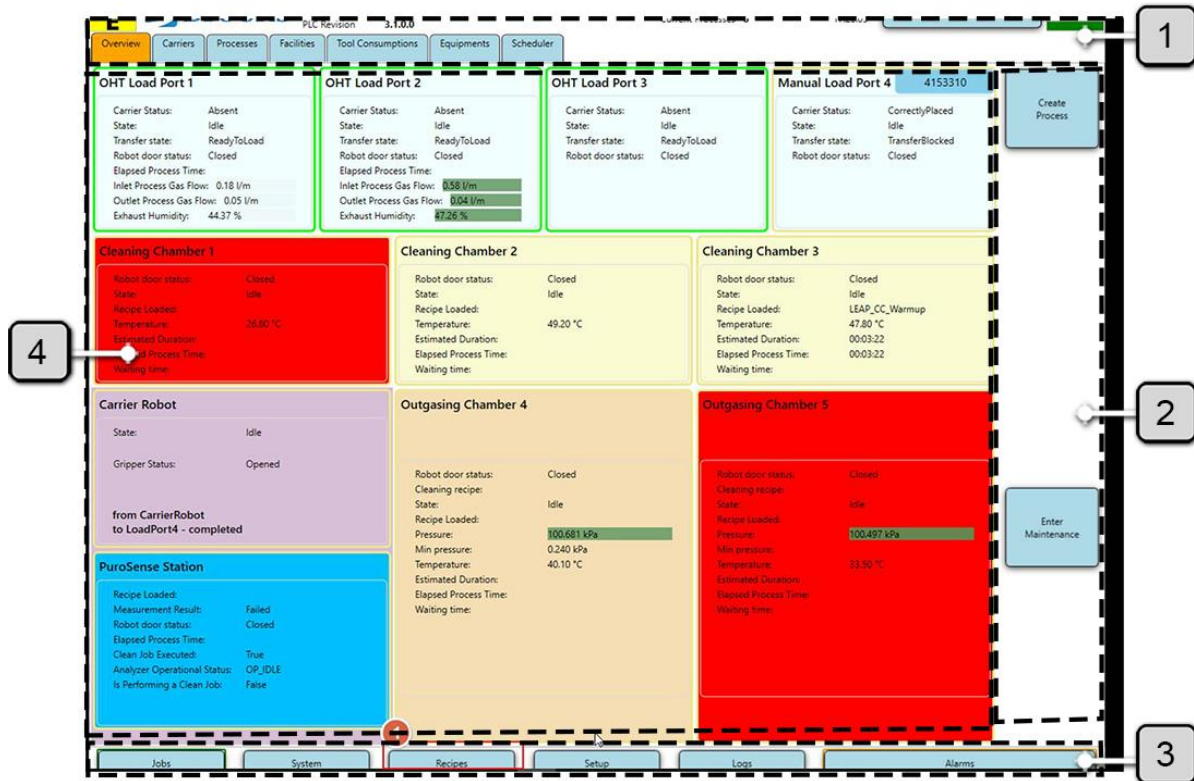


Figure 6-1: Software GUI Overview

Number	Description
1	Title panel
2	Command panel
3	Navigation panel
4	Information panel

Title Panel

The *Title* panel is always visible regardless of the selected function area. It contains the following information:

- Host communication status display
- Current state of the software
- Software version number, tool's serial number, and name
- Process counter
- Date and time display
- Log in/log out button
- Light tower.

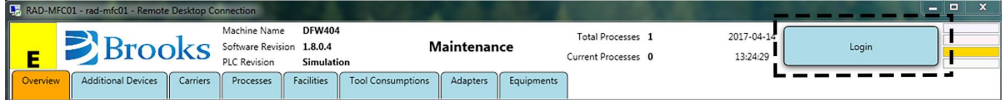
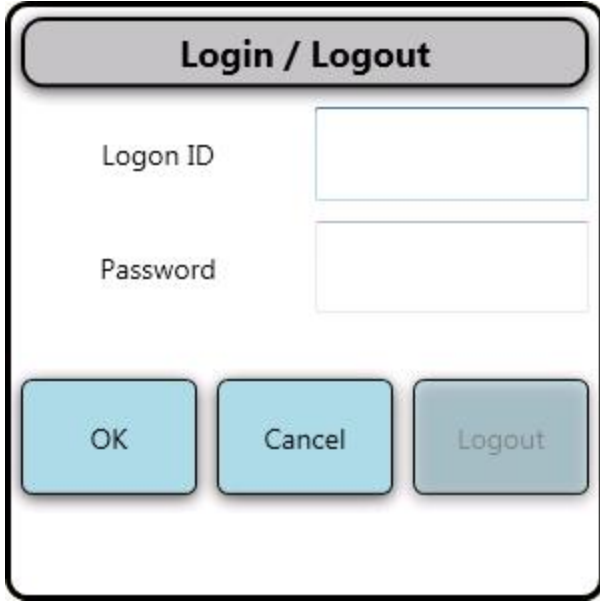
Navigation Panel

The navigation panel contains the buttons used to switch between different areas.

The functional panel are as follows:

- Jobs - The jobs area opens as the default area. This area shows the status of the tool's equipment and is used to initialize the tool from service mode to auto mode.
- System - The status and commands menu for each of the system's connected components.
- Recipes - Allows users to create and view custom recipes for tool processes.
- Setup - Allows users to enable or disable tool components and component functions. Can also be used to set login details, user access levels, and to back-up/restore system parameters.
- Logs - Allows users to view, export, and archive system GEM/SECS communication logs.
- Alarms - Shows active alarms & tool alarm history.

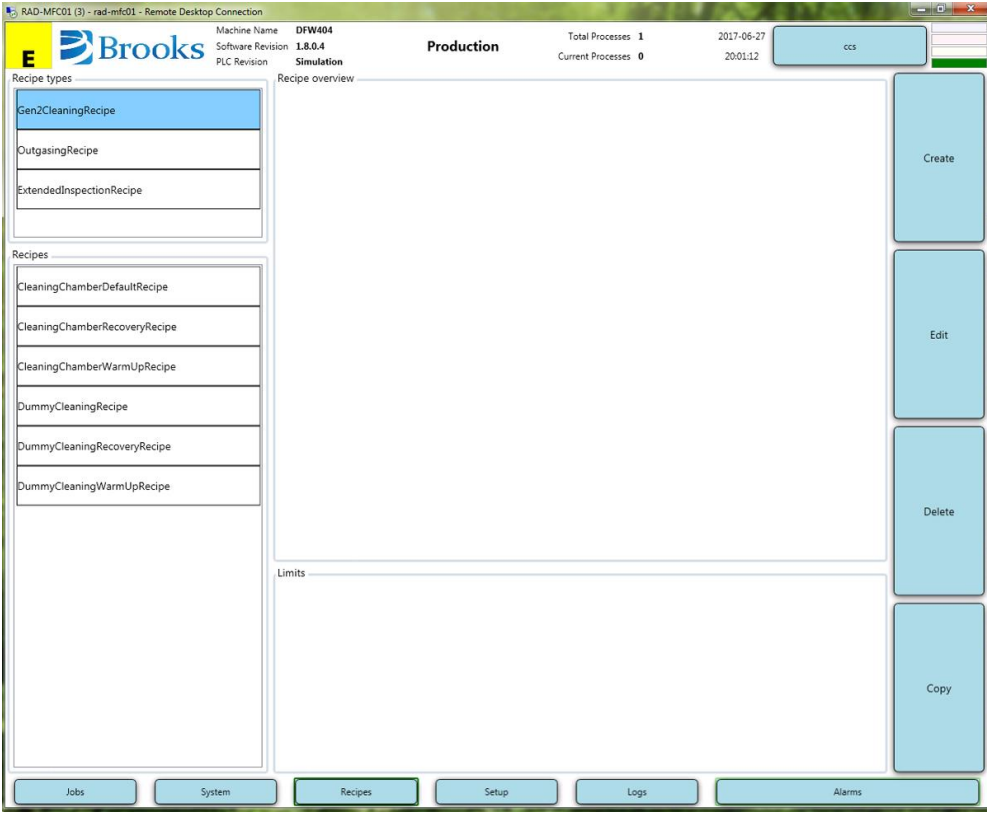
Log In

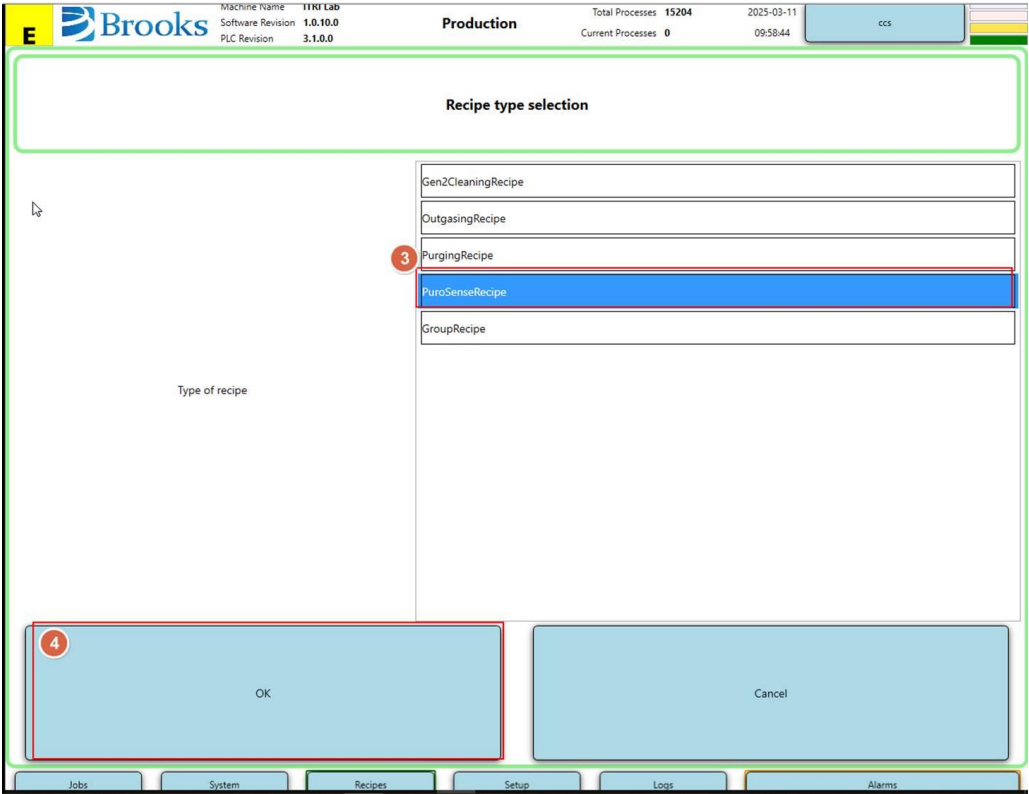
Step	Action
1.	Click on the Login button in the <i>title</i> panel. 
2.	A pop-up window <i>Smart FRU requires login</i> appears. Enter <i>Login ID</i>. Enter <i>Password</i>. Click on OK. 
3.	As soon as a user logs in, the <i>Login</i> button on the title panel changes from <i>Login here</i> to the <i>user's name</i>. The GUI opens to the <i>Jobs</i> tab.

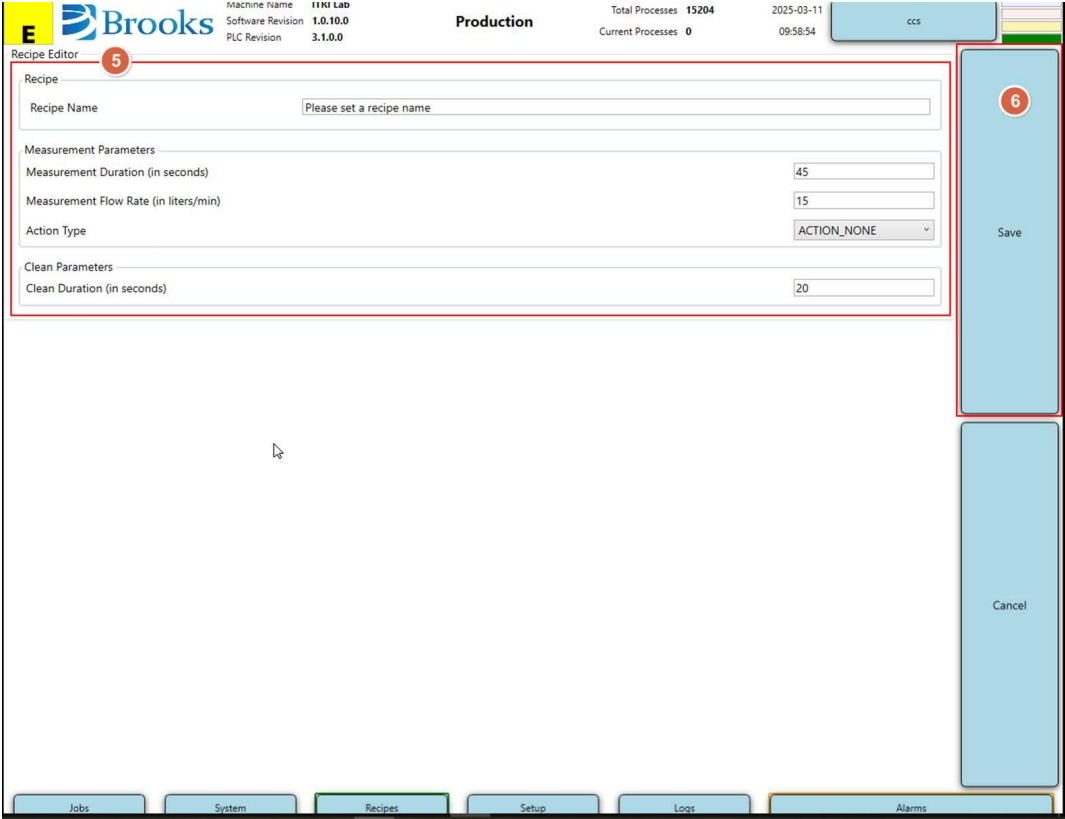
PuroSense Recipe Page

Create Recipe

Step	Action
1.	Go to Navigation panel ► Recipes page. 

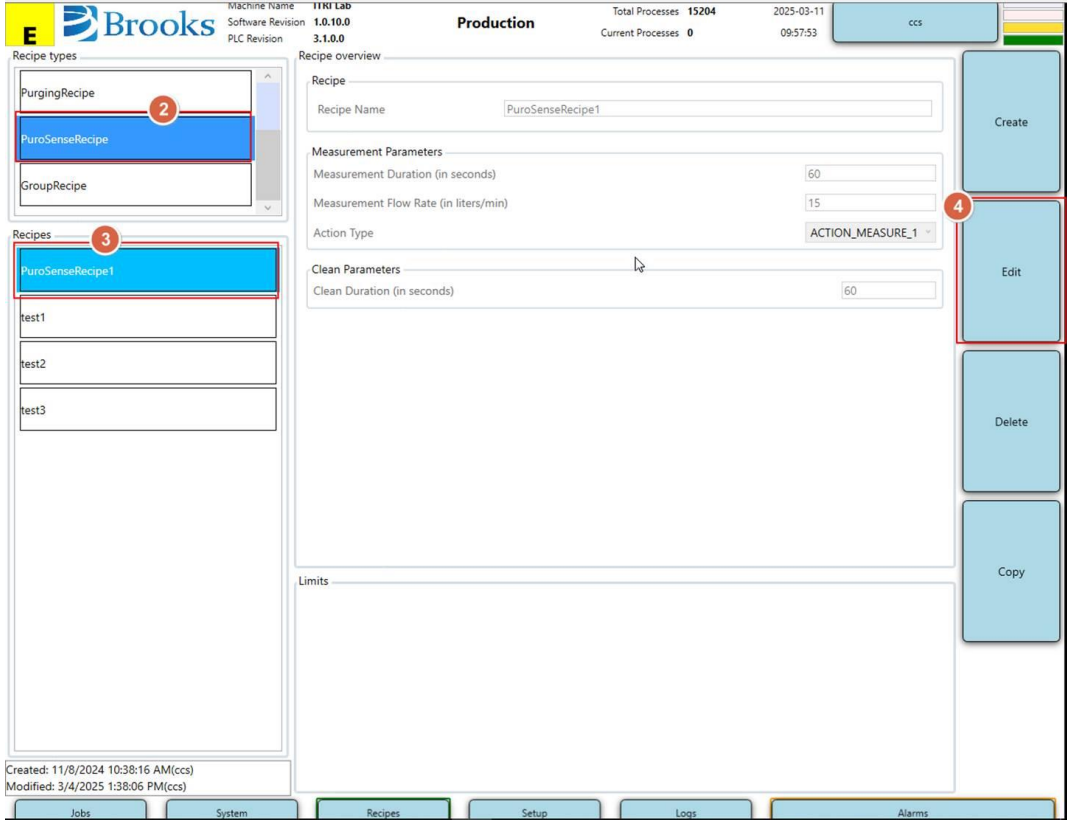
Step	Action
2.	Click the Create button on the right side. 

Step	Action
3.	Select the <i>PuroSenseRecipe</i>, and then click the OK button.  The screenshot displays the 'Recipe type selection' dialog box. The list of recipe types includes: Gen2CleaningRecipe, OutgasingRecipe, PurgingRecipe, PuroSenseRecipe (highlighted in blue), and GroupRecipe. A red circle with the number 3 points to the PuroSenseRecipe. Below the list are two buttons: OK (highlighted with a red circle and number 4) and Cancel. The background shows the Brooks Automation interface with various status indicators and a navigation bar at the bottom.

Step	Action
4.	Modify the <i>Recipe Editor</i> information, then click the Save button.  The screenshot displays the PuroSense Recipe Editor interface. At the top, the Brooks logo is visible alongside machine details: '11 Ki Lab', 'Software Revision 1.0.10.0', and 'PLC Revision 3.1.0.0'. The 'Production' status is shown, along with 'Total Processes 15204' and 'Current Processes 0'. The date and time are '2025-03-11 09:58:54', and a 'ccs' button is present. The main area is titled 'Recipe Editor' and contains a 'Recipe' section (highlighted with a red box and a red circle with the number 5) with a 'Recipe Name' field (placeholder: 'Please set a recipe name'). Below this are 'Measurement Parameters' with 'Measurement Duration (in seconds)' set to 45 and 'Measurement Flow Rate (in liters/min)' set to 15. The 'Action Type' is set to 'ACTION_NONE'. Under 'Clean Parameters', 'Clean Duration (in seconds)' is set to 20. To the right of the form is a vertical bar with a 'Save' button (highlighted with a red box and a red circle with the number 6) and a 'Cancel' button. At the bottom, a navigation bar includes tabs for 'Jobs', 'System', 'Recipes', 'Setup', 'Logs', and 'Alarms'.

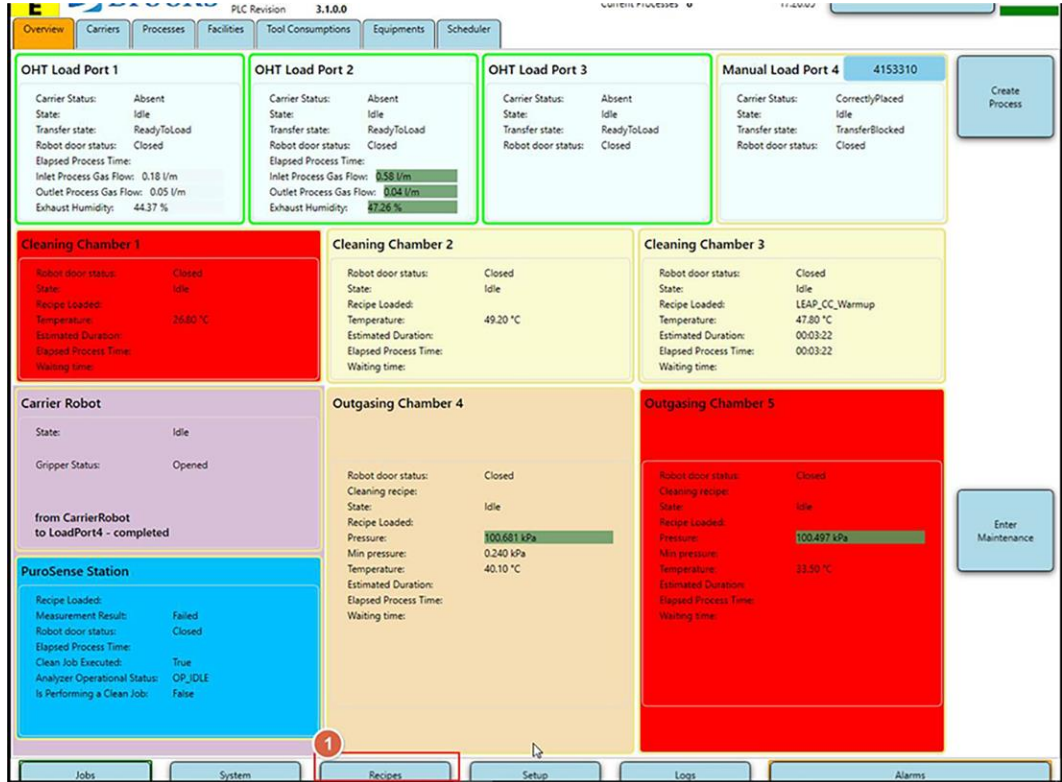
Modify Recipe

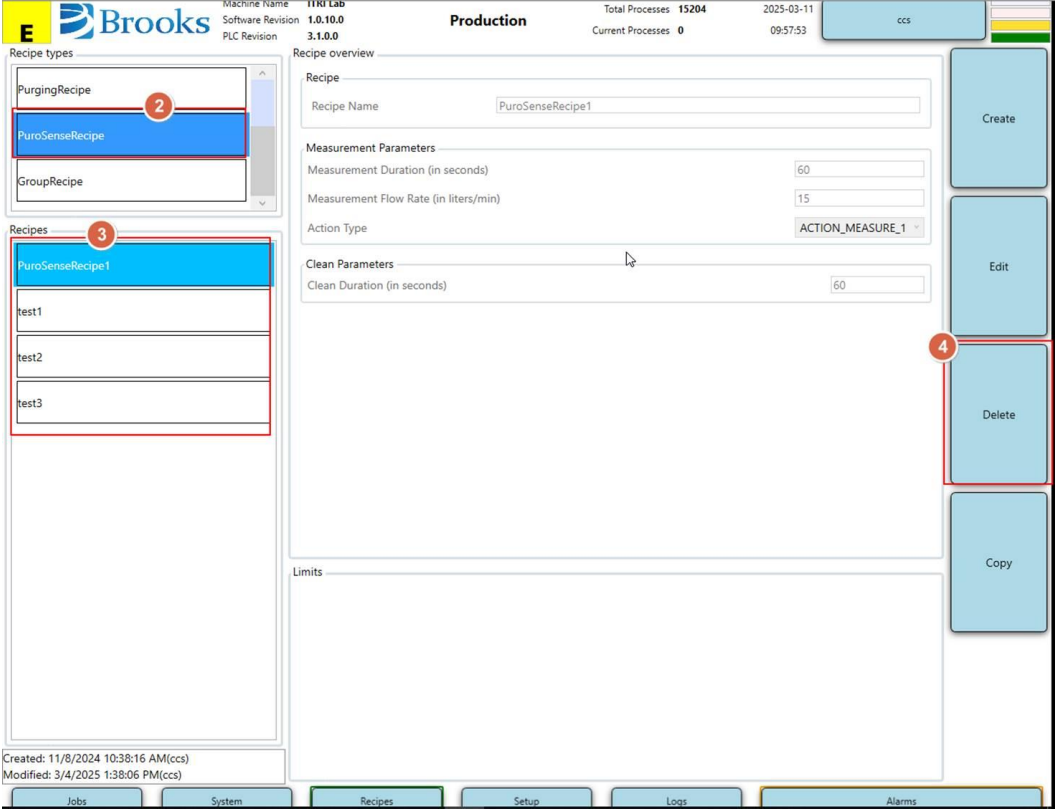
Step	Action
1.	Go to <i>Navigation panel</i> ► <i>Recipes</i> page.  The screenshot displays the PuroSense Recipe Page interface. At the top, there's a navigation bar with tabs: Overview, Carriers, Processes, Facilities, Tool Consumptions, Equipments, and Scheduler. Below this, the main area is divided into several sections: OHT Load Port 1, OHT Load Port 2, OHT Load Port 3, Manual Load Port 4, Cleaning Chamber 1, Cleaning Chamber 2, Cleaning Chamber 3, Carrier Robot, Outgassing Chamber 4, Outgassing Chamber 5, and PuroSense Station. Each section contains various status indicators and data points. A red circle with the number '1' is placed over the 'Recipes' tab in the bottom navigation bar, indicating the step to click on the Recipes page.

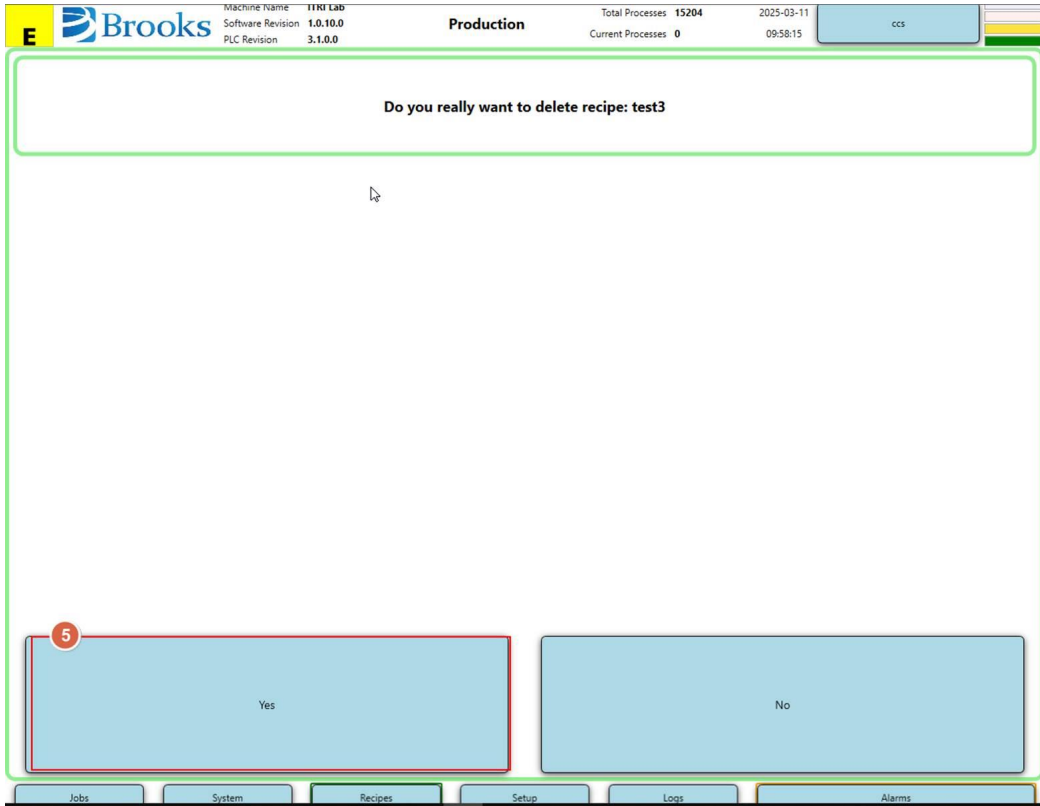
Step	Action
2.	Select the <i>PuroSenseRecipe</i> from the <i>Recipe section</i> types and choose a recipe that requires modification.  Machine Name: T1R1 Lab Software Revision: 1.0.10.0 PLC Revision: 3.1.0.0 Production Total Processes: 15204 Current Processes: 0 2025-03-11 09:57:53 ccs Recipe types - PurgingRecipe PuroSenseRecipe (2) - GroupRecipe Recipes PuroSenseRecipe1 (3) - test1 - test2 - test3 Recipe overview Recipe Name: PuroSenseRecipe1 Measurement Parameters Measurement Duration (in seconds): 60 Measurement Flow Rate (in liters/min): 15 Action Type: ACTION_MEASURE_1 (4) Clean Parameters Clean Duration (in seconds): 60 Limits Created: 11/8/2024 10:38:16 AM(ccs) Modified: 3/4/2025 1:38:06 PM(ccs) Jobs System Recipes Setup Logs Alarms

Step	Action
3.	Modify the <i>Recipe Editor</i> information, then click the Save button.  Machine Name Software Revision PLC Revision IIKI LAB 1.0.10.0 3.1.0.0 Production Total Processes 15204 Current Processes 0 2025-03-11 09:58:54 ccs Recipe Editor 5 Recipe Recipe Name Please set a recipe name Measurement Parameters Measurement Duration (in seconds) 45 Measurement Flow Rate (in liters/min) 15 Action Type ACTION_NONE Clean Parameters Clean Duration (in seconds) 20 6 Save Cancel Jobs System Recipes Setup Logs Alarms

Delete Recipe

Step	Action
1.	Go to <i>Navigation panel</i> ► <i>Recipes</i> page.  The screenshot shows the PuroSense Recipe Page interface. At the top, there's a navigation bar with tabs: Overview, Carriers, Processes, Facilities, Tool Consumptions, Equipments, and Scheduler. Below this, the main content area is divided into several sections: OHT Load Port 1, OHT Load Port 2, OHT Load Port 3, Manual Load Port 4, Cleaning Chamber 1, Cleaning Chamber 2, Cleaning Chamber 3, Carrier Robot, Outgassing Chamber 4, Outgassing Chamber 5, and PuroSense Station. Each section displays various status and process parameters. At the bottom, there's a navigation bar with tabs: Jobs, System, Recipes, Setup, Logs, and Alarms. A red circle with the number 1 highlights the 'Recipes' tab in this bottom navigation bar.

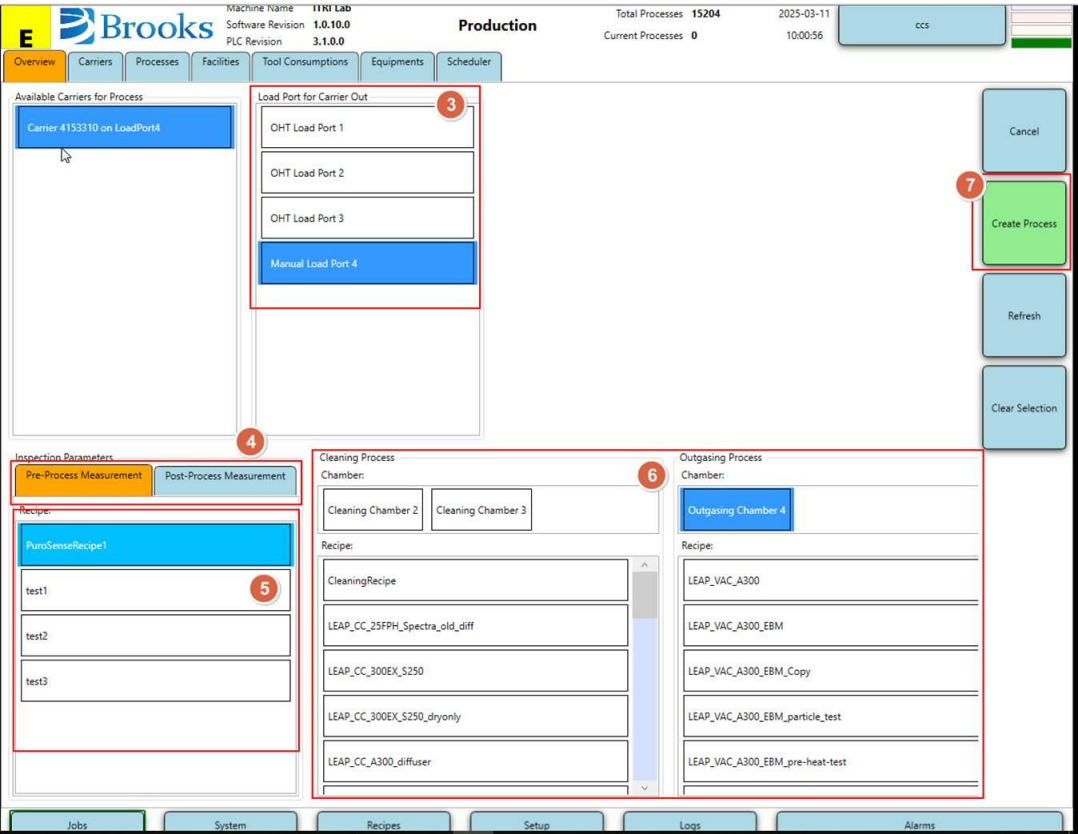
Step	Action
2.	Select the <i>PuroSenseRecipe</i> from the <i>Recipe section</i> types and choose a recipe that requires modification. Click the Delete button.  The screenshot displays the Brooks PuroSense Recipe Page. At the top, the header shows 'Machine Name: TTKI Lab', 'Software Revision: 1.0.10.0', 'PLC Revision: 3.1.0.0', 'Production' status, 'Total Processes: 15204', 'Current Processes: 0', and the date '2025-03-11 09:57:53'. The 'Recipe types' list on the left includes 'PurgingRecipe', 'PuroSenseRecipe' (highlighted with a red circle and number 2), and 'GroupRecipe'. The 'Recipes' list below it includes 'PuroSenseRecipe1' (highlighted with a red circle and number 3), 'test1', 'test2', and 'test3'. The 'Recipe overview' section on the right shows the 'Recipe Name' as 'PuroSenseRecipe1', 'Measurement Parameters' with 'Measurement Duration (in seconds)' set to 60 and 'Measurement Flow Rate (in liters/min)' set to 15, and 'Action Type' set to 'ACTION_MEASURE_1'. The 'Clean Parameters' section shows 'Clean Duration (in seconds)' set to 60. On the far right, a vertical toolbar contains 'Create', 'Edit', 'Delete' (highlighted with a red circle and number 4), and 'Copy' buttons. At the bottom, a status bar shows 'Created: 11/8/2024 10:38:16 AM(ccs)' and 'Modified: 3/4/2025 1:38:06 PM(ccs)'. The bottom navigation bar includes 'Jobs', 'System', 'Recipes', 'Setup', 'Logs', and 'Alarms'.

Step	Action
3.	Click the Yes button.  The screenshot displays the Brooks Automation PuroSense interface. At the top, a status bar includes the Brooks logo, machine name 'TINI LAB', software version '1.0.10.0', PLC revision '3.1.0.0', and production status. A confirmation dialog box is centered, asking 'Do you really want to delete recipe: test3'. At the bottom of the dialog are 'Yes' and 'No' buttons. A red circle with the number '5' highlights the 'Yes' button. The bottom navigation bar contains links for Jobs, System, Recipes, Setup, Logs, and Alarms.

Create Process

Create Pre-Measurement Process (Measurement Only)

Step	Action
1.	Go to <i>Navigation panel</i> ► <i>Recipes</i> page, create a new one if necessary. Click the Create Process button. 

Step	Action
2.	Select the load port for the carrier out. - Switch to the <i>Pre-Process Measurement</i> tab in the <i>Inspection Parameters</i>. - Select the <i>PuroSense recipe</i>. - Disable the recipes for the cleaning process and outgassing process. - Click the Create Process button. 
3.	The FOUP moves to PuroSense-C (Integrated).
4.	After the measurement, the FOUP exits, and the PuroSense-C (Integrated) performs a tube-cleaning job.

Create Post-Measurement Process

Step	Action
1.	Go to <i>Navigation panel</i> ► <i>Recipes</i> page, create a new one if necessary. Click the Create Process button. 

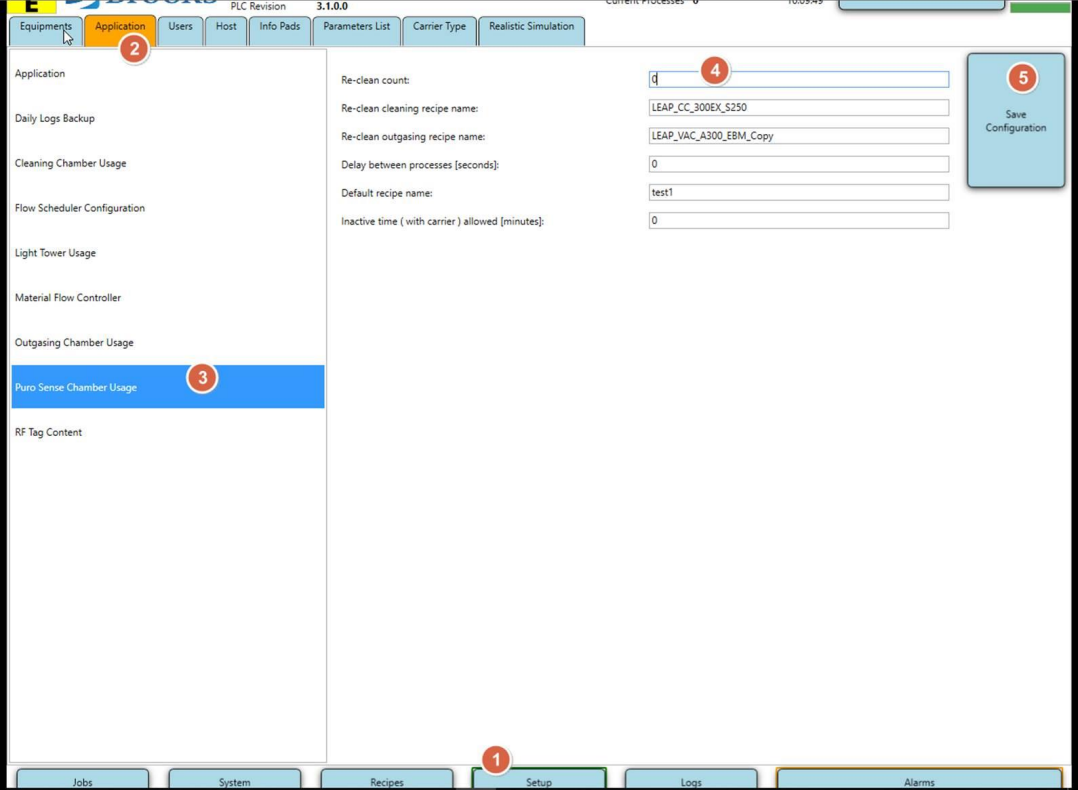
Step	Action
2.	Select the load port for the carrier out operation. NOTE: Select the purge recipe if the load port is an OHT type. - Switch to the <i>Post-Process Measurement</i> tab in the <i>Inspection Parameters</i>. - Select the <i>PuroSense</i> recipe. - Select the desired cleaning process recipe and outgassing process recipe you want to use. - Click the Create Process button.

The screenshot displays the Brooks Automation software interface. At the top, the 'Production' tab is selected, showing 'Total Processes: 15204' and 'Current Processes: 0'. The 'Processes' sub-tab is active. The interface is divided into several sections:

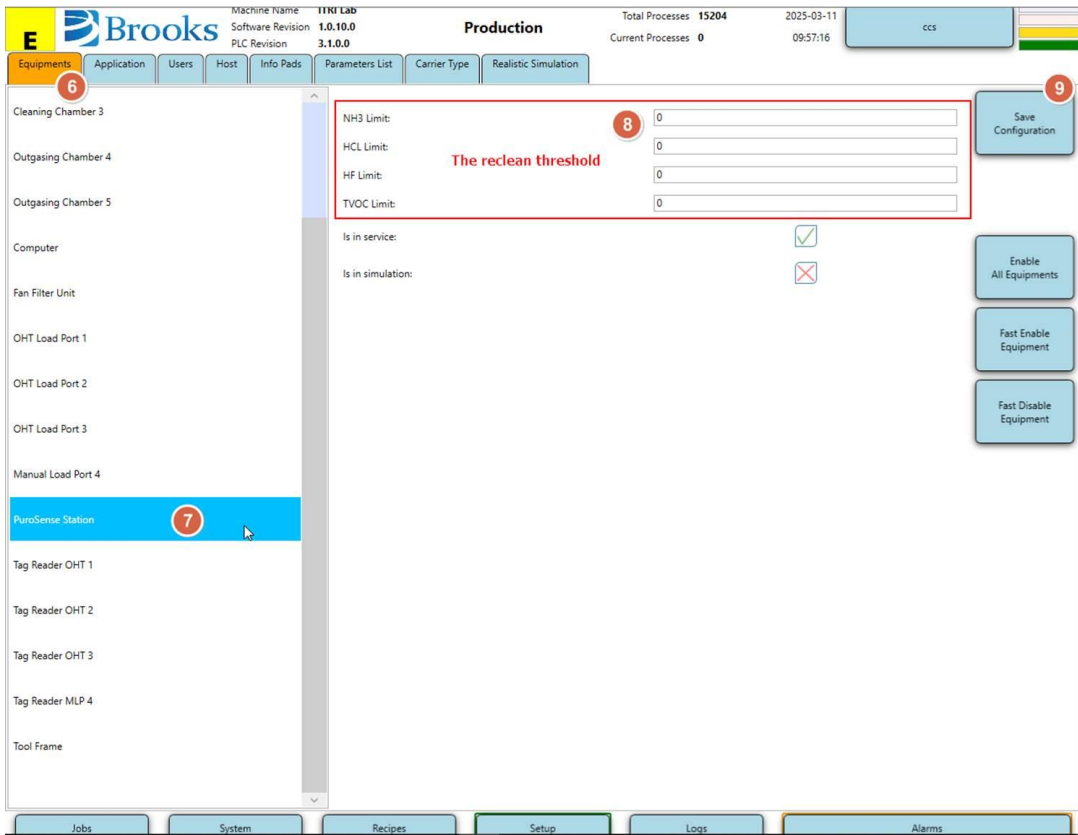
- Available Carriers for Process:** Shows 'Carrier 4153310 on LoadPort4'.
- Load Port for Carrier Out:** A red box highlights this section with a red circle '3'. It contains 'OHT Load Port 1', 'OHT Load Port 2' (selected), 'OHT Load Port 3', and 'Manual Load Port 4'.
- Purge Recipes:** A red box highlights this section with a red circle '4'. It contains 'LEAP_OHT_25FPH_Spectra', 'LEAP_OHT_A300', 'LEAP_OHT_G300', 'PurgingRecipe', 'PurgingRecipe_160sec' (selected), 'PurgingRecipe_5min', and 'PurgingRecipe_7min'.
- Inspection Parameters:** A red box highlights this section with a red circle '5'. It has two tabs: 'Pre-Process Measurement' and 'Post-Process Measurement' (selected). The 'Recipe' section has a red box around it with a red circle '6', showing 'PuroSenseRecipe1' (selected), 'test1', 'test2', and 'test3'.
- Cleaning Process:** A red box highlights this section with a red circle '7'. It has two tabs: 'Cleaning Chamber 2' (selected) and 'Cleaning Chamber 3'. The 'Recipe' section shows 'CleaningRecipe', 'LEAP_CC_25FPH_Spectra_old_diff', 'LEAP_CC_300EX_S250' (selected), 'LEAP_CC_300EX_S250_dryonly', and 'LEAP_CC_A300_diffuser'.
- Outgassing Process:** A red box highlights this section with a red circle '8'. It has one tab: 'Outgassing Chamber 4'. The 'Recipe' section shows 'LEAP_VAC_A300', 'LEAP_VAC_A300_EBM', 'LEAP_VAC_A300_EBM_Copy' (selected), 'LEAP_VAC_A300_EBM_particle_test', and 'LEAP_VAC_A300_EBM_pre-heat-test'.

On the right side, there are buttons: 'Cancel', 'Create Process' (highlighted with a red box and red circle '8'), 'Refresh', and 'Clear Selection'.

Re-cleaning (if AMC Measurement Results are out of spec)

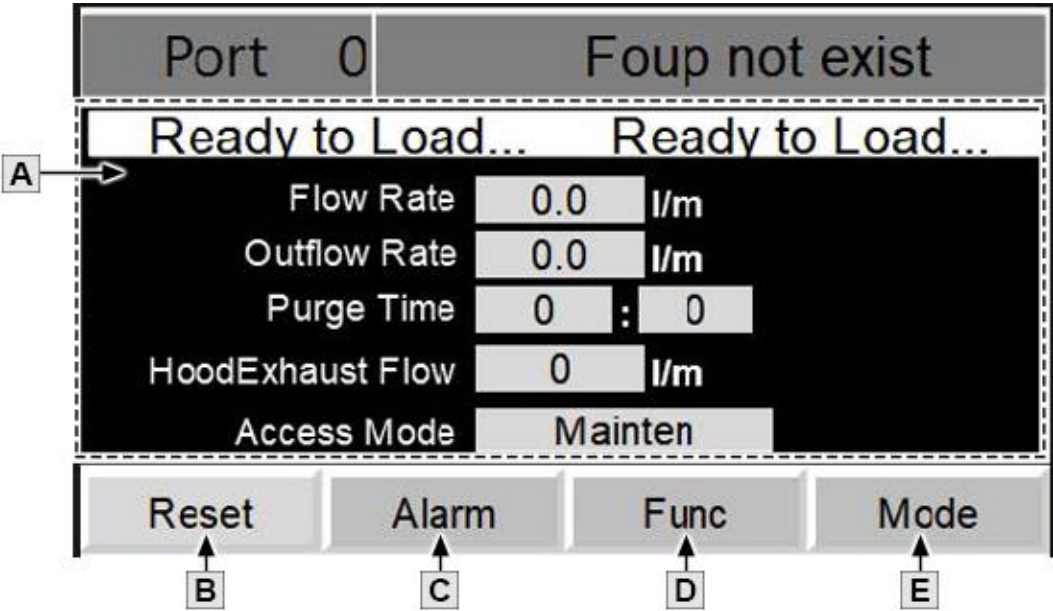
Step	Action
1.	Disable the re-clean function. - Go to <i>Navigation panel</i> ► <i>Setup</i> ► <i>Application</i> page. - Select the <i>Puro Sense Chamber Usage</i>. - Enter 0 into the <i>Re-clean count</i>. - Click the Save Configuration button. 

Step	Action
2.	Enable the re-clean function. - Go to <i>Navigation panel</i> ► <i>Setup</i> ► <i>Application</i> page. - Select the <i>Puro Sense Chamber Usage</i>. - Enter the value (the maximum limit is 3) into the <i>Re-clean count</i> and the cleaning and outgassing recipes. - Click the Save Configuration button.

Step	Action
	- Go to <i>Navigation panel</i> ► <i>Setup</i> ► <i>Equipments</i> page. - Select the <i>PuroSense Station</i>. - Define the conditions for the Re-clean trigger. - Click the Save Configuration button. 

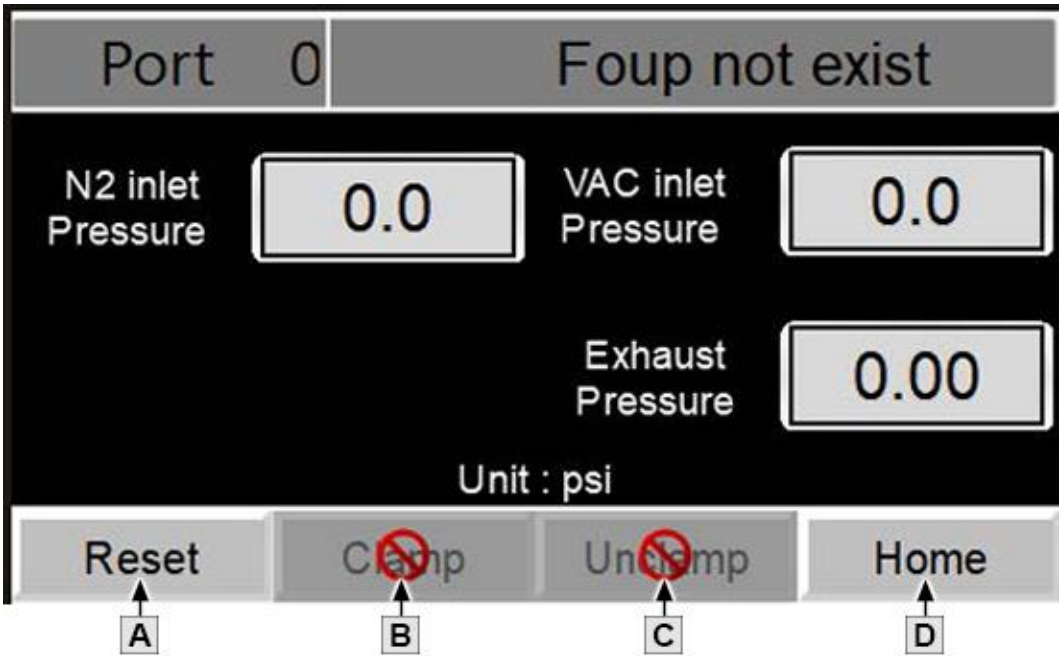
Human Machine Interface (HMI) Operation

Home Page



No.	Name	No.	Name
A	Real-time Data	B	Reset: Alarm Cancel Button
C	Alarm: AlarmHistoricalRecords	D	Func: Switch to Other Function Pages
E	Mode		

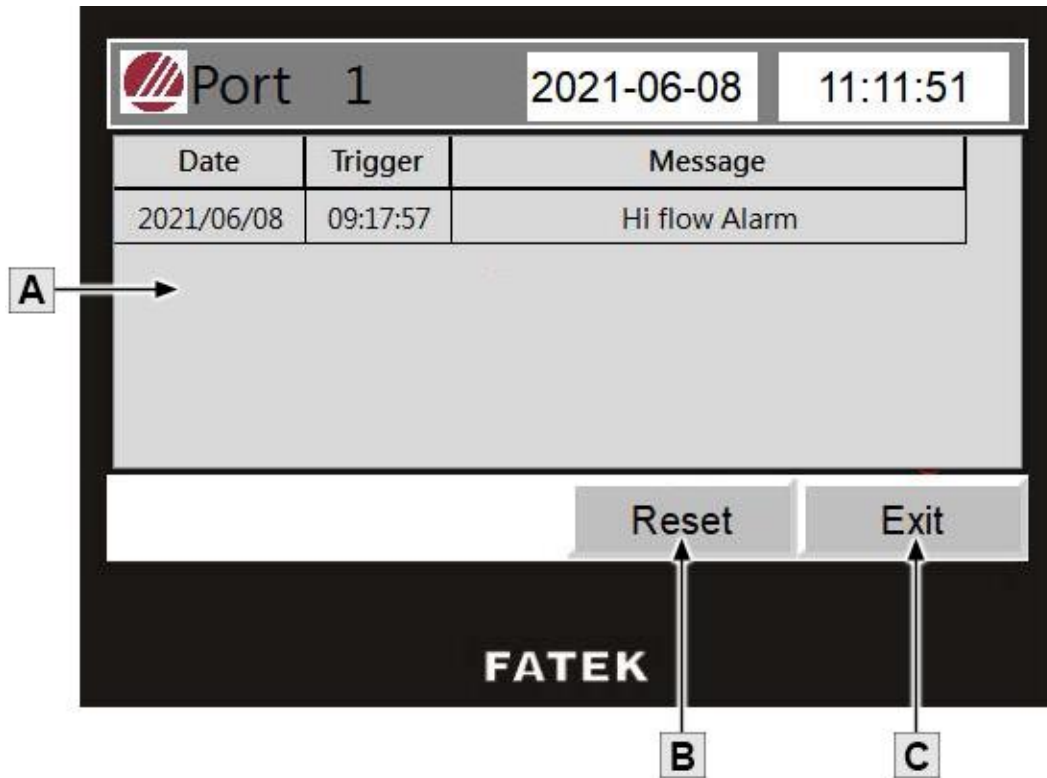
Mode Page



No.	Name	No.	Name
A	Reset Button	B	Clamp Button
C	Unclamp Button	D	Back to Main Page

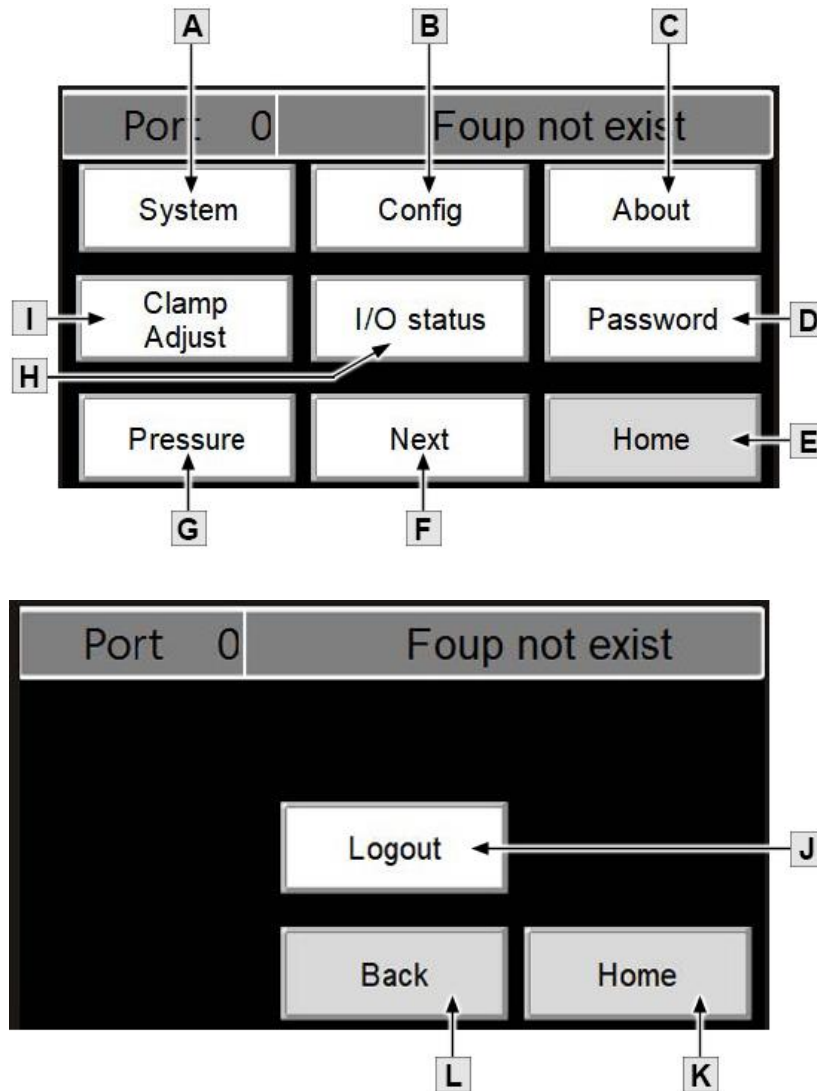
HMI Alarm Page

The alarm screen shows records of alarm occurrence, time, reset time, etc., which can be effectively used by maintenance personnel for reference.



No.	Name	No.	Name
A	Alarm List	B	Reset Button
C	Back to Main Page		

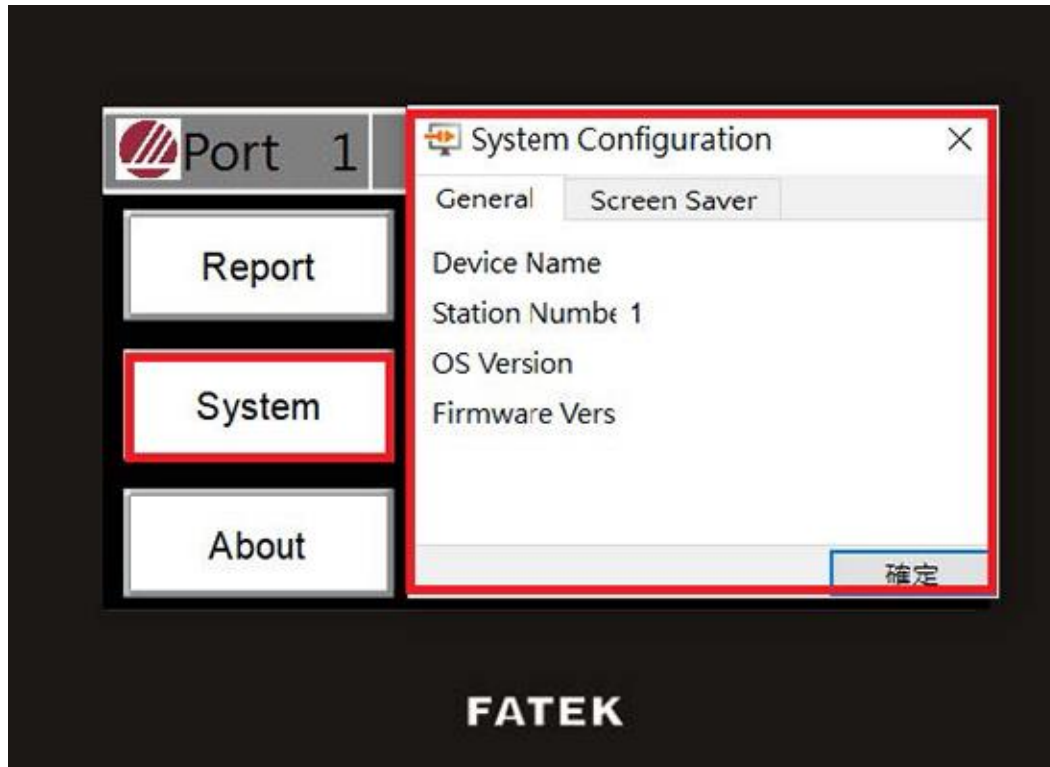
Page Settings



No.	Name	No.	Name
A	System Settings (for Customer Service Personnel)	B	PLC Internal Parameter Setting Page Button
C	PLC&HMI Version Information Button	D	Password Setting (Password for Origin: 00000000)
E	Back to Main Page	F	Next Page
G	Pressure meter limit parameter	H	I/O status
I	Clamp Adjustment (Password: 00000000)	J	Logout
K	Back to Main Page	L	Back to the last page

System Page

The screen will provide all parameter settings of the HMI device.



Config. Setting Page

Totaling 4 pages for related settings, please do not change the parameter settings unless necessary.

Port 0

E84 Time Out Value
TP1
TP2
TP3
TP4
TP5

Page4 Page3 Page2 Home

Port 0

Equipment Parameter 1

Port id Next
Detect Alarm Time S
Remove Alarm Time S
Pre.Purge Flow l/m
Hi Flow Alarm l/m
Lo Flow Alarm l/m

Page4 Page3 Page1 Home

Port 0

Equipment Parameter 2

Back
Flow Alarm time S
HoodExhaustFlow USL l/m
HoodExhaustFlow LSL l/m
HoodExhaustFlow alarm time S

Port 0

Enforce Button

SV1-N2 inlet OFF N2 pressure bypass OFF
SV2-N2 main OFF VAC pressure bypass OFF
SV3-A300 OFF HoodExhaust Flow alarm bypass OFF
SV6-Exhaust OFF Signal-tower(R) OFF
SV7-Outlet OFF Signal-tower(Y) OFF
Door Unlock OFF Signal-tower(G) OFF
Signal-tower(BL) OFF

Page3 Page2 Page1 Home

Port 0

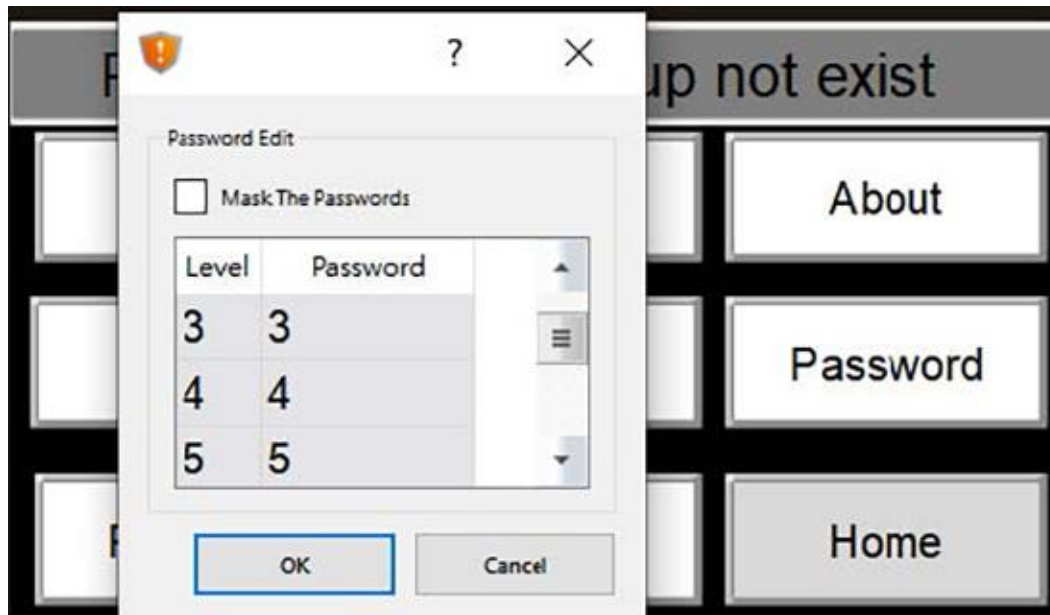
Normal Push Button

Flow value l/m Auto ☒
Execute mode ☒ Purge Clean ☐
Purge Stop ☒ Maintenance ☒
Reset ☒

Page4 Page2 Page1 Home

Password Management Page

This screen provides user permission and password management. Password Authority Ranking 1 is required when logging in.



Product Information Page

Providing product version information [Refer to HMI display for real version].



Adjust Page (Clamp Adjustment)



Step	Action
1.	Click OFF  to change to ON  , and the parameters on the right side will be automatically brought into the preset values.
2.	Adjust the action separately, and the Result will display the status of the action too fast, too slow, standard, and too long according to the real moving time. All four sectors shall be adjusted to be within the standard. Red light  means reed signal “OFF”, green light  means reed signal “ON”.
3.	Turn off  after adjustment, the Clamp automatically returns to the original position.

7. Preventative Maintenance

This section provides the schedule and procedures for routine preventative maintenance (PM) of the PuroSense-C (Integrated) to reduce unscheduled downtime. The PuroSense-C (Integrated) is designed to require very little routine maintenance. However, it is recommended that the preventative maintenance procedures and schedule provided in this section be followed to extend the operating life of the PuroSense-C (Integrated). If additional procedures are required, they will be supplied along with their maintenance schedules by Brooks Automation.

All preventative maintenance procedures and schedules provided here assume that the PuroSense-C (Integrated) is operating in a clean, dry, inert environment. Any deviation from this basic environment will affect the scheduling of PM and may also require additional PM procedures be performed. The user should adjust the preventative maintenance schedule as appropriate to account for any deviations from this environment.

 DANGER Read the Safety Chapter	
Failure to review the <i>Safety</i> chapter and follow the safety warnings can result in death or serious injury. • All personnel involved with the operation or maintenance of this product must read and understand the information in this safety chapter. • Follow all applicable safety codes of the facility as well as national and international safety codes. • Know the facility safety procedures, safety equipment, and contact information. • Read and understand each procedure before performing it.	

 CAUTION Unauthorized Service	
Personal injury or damage to equipment may result if this product is operated or serviced by unauthorized personnel. - Only qualified personnel are allowed to transport, assemble, operate, or maintain the Product. - Properly qualified personnel are those who have received certified training and have the proper qualifications for their jobs.	

Parts

Brooks Automation can provide all parts required for preventive maintenance. For a list of these parts, contact Brooks Automation Technical Support. To obtain additional information about parts for preventative maintenance, contact your local Brooks Sales Representative, or call Brooks Automation Technical Support. See ["Technical Support" on page 122](#).

Maintenance Schedule

When performing routine maintenance or replacing electrical, pneumatic, or other components, please follow the guidelines in ["Lockout / Tagout Procedure"](#).

NOTE: During maintenance, must wear personal protective equipment and sufficient lighting equipment.

No.	Check Item	Frequency				Note
		Daily	Weekly	Monthly	Yearly	
1	Analyzer recommends to replace the VOC Zeroing PAIAC canister			every 6 months		
2	Gas filter renewal				every year	
3	MFC flow check				every year	

No.	Check Item	Frequency				Note
		Daily	Weekly	Monthly	Yearly	
4	Placement sensor test				every year	
5	O ₂ detector oxygen calibration				every year	Authorized personnel from the manufacturer or contact customer service.
6	Door sensor interlock check				every year	Maintenance door needs to be opened.
7	EMO function check				every year	Maintenance door needs to be opened.
8	Analyzer recommends to replace the cooling fan assemblies				every 2 years	
9	Analyzer recommends to replace the pump to avoid system downtime.				every 2 years	

Field Replaceable Units (FRU)

The PuroSense-C (Integrated) system consists of subcomponents that may be replaced as Field Replaceable Units or FRUs. Please contact [Brooks Technical Support](#) to determine the available FRUs for your system.

8. Troubleshooting

 CAUTION Unauthorized Service	
Personal injury or damage to equipment may result if this product is operated or serviced by unauthorized personnel. • Only qualified personnel are allowed to transport, assemble, operate, or maintain the Product. • Properly qualified personnel are those who have received certified training and have the proper qualifications for their jobs.	

 WARNING	
Pressurized clean and reference gases may leak. Any isolation valves at the supply must be shut off, and doors and panels need to be opened for ventilation prior to entering. After the EMO switch is engaged and the system power is cut, the following components remain LIVE: circuit breaker, surge protector, line filter, 24VDC, 2.2A power supply. The system must be shut off or individual modules switched off and unplugged prior to opening any panels for service.	

Repair Philosophy

Refer to this *Troubleshooting* chapter for diagnostic procedures. If these procedures are not adequate to determine the source of the problem, refer to the PuroSense-C (Integrated) operational procedures for in-depth descriptions of how the product should operate.

Once the failed unit has been identified, a Field Replaceable Unit (FRU) can be ordered. The FRU is shipped with directions for removing the failed unit from the PuroSense-C (Integrated) and installing the new unit.

A series of FRUs, may have been identified for the PuroSense-C (Integrated) to simplify repair

procedures in the field. Some of these FRUs may comprise a complete assembly. A number of alternatives are available for obtaining replacement FRUs and other parts to repair the PuroSense-C (Integrated). The following service options are available:

- Facilitated on-site repair via a Service Sales Order utilizing Brooks' Field Service personnel and factory authorized repair parts
- Advanced Exchange Units can be established for all major systems
- Brooks' Factory Repair Services
- Brooks spare parts can be ordered from Brooks Technical Support on both a priority and non priority basis

[See "Technical Support"](#) for more information or quotes.

Error Messages

Alarm ID	Alarm list
2pp0001	FOUP remove during purging
2pp0002	FOUP detect error
2pp0010	E84 CS_0 Off Error
2pp0011	E84 Valid Off Error
2pp0012	E84 TR_REQ Off Error
2pp0013	E84 BUSY Off Error
2pp0014	E84 COMPT Off Error
2pp0015	E84 TR_REQ On Error
2pp0016	E84 BUSY On Error
2pp0017	E84 COMPT On Error
2pp0021	E84 TP1 Timeout
2pp0022	E84 TP2 Timeout
2pp0023	E84 TP3 Timeout
2pp0024	E84 TP4 Timeout
2pp0025	E84 TP5 Timeout
2pp0029	E84 Unknown Error
2pp0062	N2 inlet hi pressure alarm
2pp0063	N2 inlet low pressure alarm
2pp0064	CDA inlet hi pressure alarm
2pp0065	CDA inlet low pressure alarm

Alarm ID	Alarm list
2pp0070	Clamp up failed
2pp0071	Clamp forward failed
2pp0072	Clamp down failed
2pp0073	Unclamp up failed
2pp0074	Unclamp step back failed
2pp0075	Unclamp down failed
2pp0091	O2 detect alarm
2pp0093	Low Flow Alarm
2pp0094	Hi Flow Alarm
2pp0119	HoodExhaust Flow USL
2pp0120	HoodExhaust Flow LSL
2pp0409	Maintenance Door Alarm
2pp0439	Safety Light Grating alarm
2pp1001	Error Clear Fail
2pp1005	Change Auto Fail
2pp1006	Change Manual Fail
2pp2001	Port pp Read Carrier ID Error
2pp2002	Port pp Lost Connection with PLC
1001000	BCM Controller lost connection
2pp1010	Start measure process fail
2pp1011	Start clean process fail

*pp=port no 01~02

Troubleshooting Support

Successful troubleshooting involves gathering enough information and asking enough questions to define the problem using a single statement of how the system is supposed to operate and how the system is operating improperly.

Create a simple problem statement using the steps below:

- Observe and list the symptoms of the problem.
- Determine what is happening that is different from what should happen.
- Determine the items that have the problem and those that do not.
- Determine when the problem first occurred and how often it occurs.
- Determine the state of the system when the problem occurred or occurs.
- Investigate the symptoms and reduce the list to the single primary symptom..
- List the possible causes of the symptom.
- Reduce the list of causes based on what is happening and what is supposed to happen.
- Troubleshoot the probable causes.

Troubleshooting Table Format

Troubleshooting tables use a 3-column format to divide and resolve the problem.

Problem column shows the fault.

- If the system recognizes a fault, the host may be sent an error code.
- If the system does not recognize a fault, the system still may have errors in its error files.

Possible Cause column lists the probable causes of the problem.

Corrective Action column lists recommended actions to correct the problem.

Table 8-1: Troubleshooting for load port

Problem	Possible Cause	Corrective Action
FOUP Remove During Purging	FOUP is removed during incomplete Purge state.	Check whether the load port placement and presence sensor are abnormal after removing the FOUP.
FOUP Detect Error	FOUP is not correctly placed while purge is not carried out.	Check whether load port placement and presence sensor are abnormal.
Clamp Up Failed ~ 8. Unclamp Down Failed	The rising in place was not detected when executing clamp.	Use HMI for single action confirmation and adjust reed switch.

Problem	Possible Cause	Corrective Action
O ₂ Detect Alarm	O ₂ (OX2) Value in the electrical box is too high.	- Check whether the gas circuit connector in the electrical box is loose causing N₂ leakage. - Check whether the values displayed on O₂ and probe are normal.
Hi Flow Alarm~11. Low Flow Alarm	Flow rate is higher/lower than the HMI setting detection range when purging.	- Confirm whether the stress source is stable. - Confirm whether the control solenoid valve MV1 is normally open.
Maintenance Door Alarm	Front door of the electric control box is opened.	Close the door of electric control box and check whether the reed switch signal is abnormal.
Safety Light Grating alarm	During OHT loading/unloading or purging, the light barrier detected an object entering the restricted area.	Using the GUI 'clear alarm' button clear alarm.
HoodExhaust Flow USL	High flow rate detected during purging.	Verify if the source pressure is between 75 and 85 psi ,and Use the GUI 'clear alarm' button clear alarm.
HoodExhaust Flow LSL	Low flow rate detected during purging.	Verify if the source pressure is between 75 and 85 psi ,and Use the GUI 'clear alarm' button clear alarm.
N ₂ inlet hi pressure alarm	High pressure rate detected during purging.	Verify if the source pressure is between 40 and 50 psi ,and Use the GUI 'clear alarm' button clear alarm.
N ₂ inlet low pressure alarm	Low pressure rate detected during purging.	Verify if the source pressure is between 40 and 50 psi ,and Use the GUI 'clear alarm' button clear alarm.
CDA inlet hi pressure alarm	High pressure rate detected during purging.	Verify if the source pressure is between 40 and 50 psi ,and Use the GUI clear alarm button clear alarm.
CDA inlet low pressure alarm	Low pressure rate detected during purging.	Verify if the source pressure is between 40 and 50 psi ,and Use the GUI 'clear alarm' button clear alarm.
Error Clear Fail	Reason: Click the Clear button, but the alert is not cleared.	- Check the signal line (RS232) connecting the industrial IPC to the PLC. - Check if the FOUP has been removed. - Check if the hardware error has been resolved.
Change Auto Fail	Access mode change to Auto fail.	- Check the signal line (RS232) connecting the industrial IPC to the PLC. - Check E84

Problem	Possible Cause	Corrective Action
Change Manual Fail	Access mode change to Auto fail.	- Check the signal line (RS232) connecting the industrial IPC to the PLC. - Check E84
Lost connection with PLC alarm	GUI and PLC communication is abnormal.	Check the signal line (RS232) connecting the industrial IPC to the PLC. If the connection is restored, the background color of "Port Status" will change from gray to blue or orange. In the event of a PLC disconnection, after the machine resets, it is recommended to close the GUI and then restart the operation to prevent scheduling abnormalities.
Read Carrier ID Error alarm	Read Carrier ID fail.	- Check the signal line (RS232) connecting the industrial IPC to the RFID. - Check the RFID reading position is correct.
Start measure process fail alarm	Triggering the PLC to execute the "Measure" command failed.	It may be due to packet loss or an issue with the signal line (RS232).
Start clean process fail alarm	Triggering the PLC to execute the "Clean" command failed.	It may be due to packet loss or an issue with the signal line (RS232).
BCM Controller lost connection alarm	The GUI cannot establish a connection with the BCM Controller (TCP/IP).	- Check if the configuration files for the GUI and BCM are as follows: "net.tcp://127.0.0.1:6666/BcmControllerWcfService" - Check whether "BCM Controller" in Windows "Services" is executing.

Figure 8-1: Troubleshooting for analyzer

Valve not switching between lines	Valve	Check the power connection and USB connection.
	Indicator light	
	Gas Leak	
	Tube blockage	
Slow response	Pump operation degraded	Check to see if the sample pump is functioning by feeling for exhaust.
	Operation sequence	Check that the operation sequence has been defined adequately and is running.
No power	Electrical cable connection	Check the breaker at the back of the SAM. The circuit breaker can be probed through the cover with 1.5 mm diameter test probe tips. Check that the EMERGENCY OFF switch is not engaged. Check the integrity of the power connection on all sampling boxes.

Keyboard not functioning	Keyboard USB connection	Ensure that only the keyboard USB is connected to the KVM unit and that all other USBs are connected to the rack integrated PC.
Mouse not functioning	Mouse USB connection	Ensure that only the mouse USB is connected to the KVM unit and that all other USBs are connected to the rack integrated PC.

Technical Support

NOTE: The operator must contact their specific Value Added Reseller for technical support.

Before contacting Brooks Automation, Inc, please perform the following items:

- Check for solutions in "[Troubleshooting](#)" on page 1.
- Determine conditions and steps to recreate the problem.
- Consider if it is appropriate to involve the local laboratory, database, and network administrators.
- Determine the system type, model number, and serial number of the Brooks PuroSense-C (Integrated).
- Determine the software versions.
- Record any error messages.

9. Appendices

This chapter contains the appendices for the manual.

Contact Brooks Automation Technical Support

Have the following information available when contacting Brooks Automation Technical Support.

- a. Part number and serial number from the product.
- b. Installed location of the product.
- c. Name, e-mail address, and telephone number of the person to contact.
- d. List of error codes received during the failure.
- e. Prepare a detailed description of the events relating to the error.
 - Time that the equipment has been in operation
 - Work that was done on the equipment prior to the error
 - Functions that the equipment was performing when the error occurred
 - Actions taken after the error and the results of those actions
 - Other information that may assist the Specialist
- f. Contact Brooks Automation Technical Support at these numbers:

Location	Contact Number	Website
North America	+1-800-447-5007 (Toll Free) +1-978-262-2900 (Local)	http://www.brooks.com/
Europe	+49 800 000 9347 (Toll Free Germany) +49 364 176 9999 6 (Has Toll)	
Japan	+81 120-255-390 (Toll Free) +81 45-330-9005 (Local)	
China	+86 21-5131-7066	
Taiwan	+886 080-003-5556 (Toll Free) +886 3-5525258 (Local)	
Korea	1800-5116 (Toll Free)	
Singapore	+65 1-800-4-276657 (Toll Free) +65 6309 0701 (Local)	

Technical Support Customer Care: <https://www.brooks.com/services/pathway-connect>