OHB N2 Purge System

Operation Manual Ver 1.1

Version OHB N2_STB & OHB N2_AD100

Manufacturer and publisher
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Brillian Network & Automation Integrated System Co., Ltd.

Contents

1 Introduction

Brillian N2 Purge Solution is a series of nitrogen gas products designed specifically to remove moisture and oxygen content and extend Q-Time, including OHB N2, UTS (Under Track Storage)

It can be used with semiconductor AMHS automation equipment, and it is small size and does not occupy space. In addition, it can be configured beside the process equipment far away from the storage system to shorten the OHT delivery time.

Item	OHB N2	UTS
Installation location	under the Fab automation track	SIDE the Fab automation track
Flow SLM	≤ 50	≤ 50
Process	Front of the process Back-end of the process	Front of the process Back-end of the process
FOUP Type	Barrier & ASYST Entegris / ShinETsu	Barrier & ASYST Entegris / ShinETsu

2 Description of safety rule of OHB N2 Purge System

2.1 Instruction for use。

2.1.1 This manual is only written for Purge System Module。

2.1.2 Non-qualified or non-professional personnel are not allowed to operate or maintain the machine。

2.1.3 “Operator” should read carefully the software operation in advance。

2.1.4 “Maintainer”, in addition to getting familiar with software operation, should read carefully the maintenance manual and circuit diagram。

2.1.5 Before careful reading of operation manual or before thorough understanding of machine function, it is not allowed to operate the machine singly, and it needs an experienced guy standing beside for instruction。

2.2 Instruction for transport

When transporting or moving a machine, it is suggested to use a cart for the transport, please also wear steel shoes for personal safety. The cart should be able to carry a load of more than 100Kg

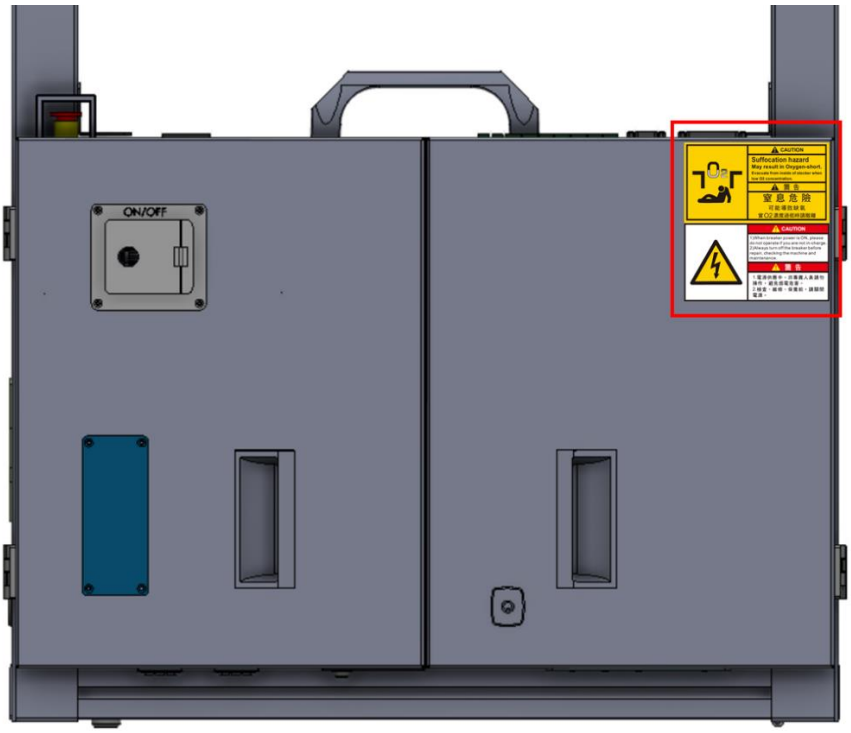
2.3 For scarping of equipment or disposal of waste, please follow the local regulations

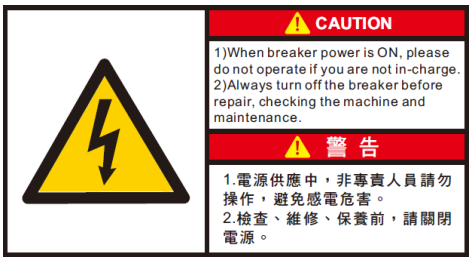
2.4 Instruction for illuminance in the work area: Please follow the lighting environment provided by the plant of the client send.

2.5 The machine is not suitable to work in explosive circumstances

2.6 Before ex-factory, the level of noise should be less than 80dB (A).

2.7 About “Warnings and Cautions”



	1. May result in Oxygen-Short. 2. Evacuate from inside of stocker when low O2 Concentration
	1. When power is supplied, non-professional personnel should not operate it to avoid electric shock hazard. 2. Before checking, maintenance and repair, please turn off the power.

3 Description of starting steps

3.1 Turn on breaker power.

3.2 Facility department is suggested to be AC 110~230V

3.3 Turn on MOXA。

3.4 Turn on IPC power at the rear side of the machine.

3.5 Pressure gauge setting

3.5.1 After turning on the power, please zero the inlet pressure gauge first

3.5.2 Facility Pressure adjustment and setup：Process& Vac Control Gas 100PSI(0.7 Mpa)

3.5.3 Machine Pressure adjustment and setup：Process 70PSI(0.5 Mpa)，Vac Control 100PSI(0.7 Mpa)

3.6 All the reported FDC values should be based on program GUI screen, therefore, when adjusting all kinds of values, please have them based on GUI screen.

4 Description of stopping steps

4.1 Please use externally connected screen or remote control program to confirm all the ports Purge program are all in idle states.

4.2 After log in into the program, please select Quit to end the program.

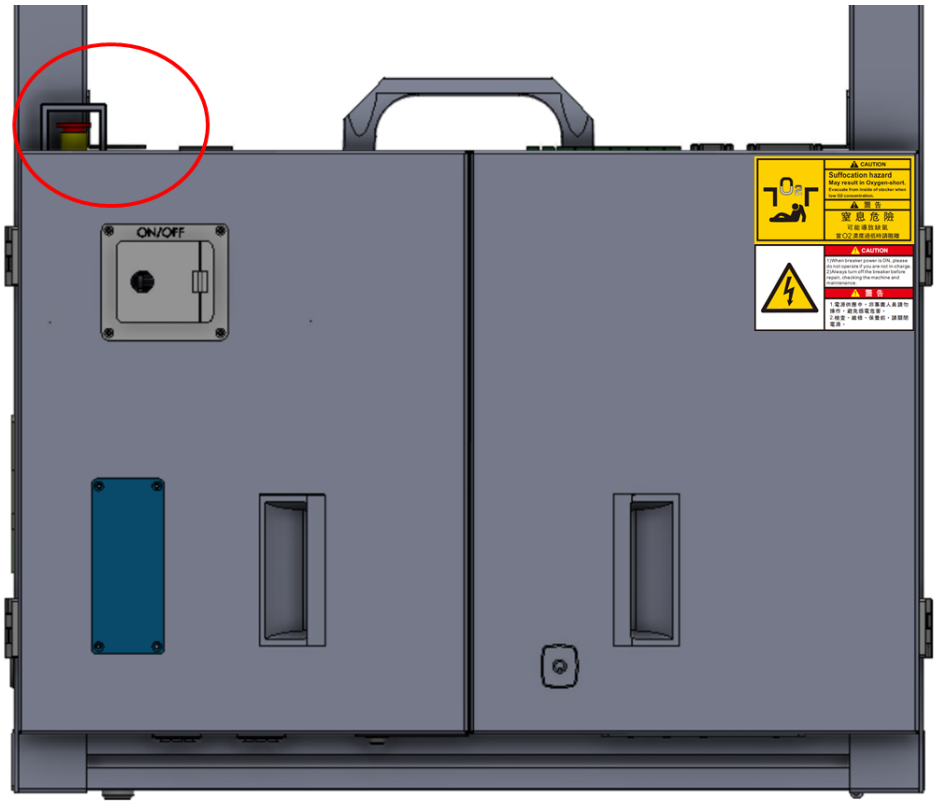
4.3 Turn off IPC.

4.4 Turn off breaker power.

4.5 Install lock for breaker and lock it.

4.6 Close the gas source switch at the facility end.

5 Emergency Stop and Recovery



EMO Location description

5.1 Once this button is pressed the following operations will be required when restart the Machine

5.1.1 Gas Valve turn off。

5.1.2 Alarm message

5.2 Recovery Steps

5.2.1 The machine ready state and idle

5.2.2 Rotating EMO release state

5.2.3 Rest Alarm，Check the Alarm message

6 Facility Requirement

1. Power: AC 110V, (1 Socket, Max. current:3A)(Each port)
   AC 110V, (2 Socket, Max. current:3A)(IPC、MOXA)
2. Gas: PN2 tube: PFA 1/4 “ tube , 5 Kg/cm2 (Max. 50 L/min)(Each port)
3. Gas: CDA tube: PFA 1/4 “ tube , 5 Kg/cm2 (Max. 50 L/min)(Each port)
4. Exhaust: GEX, (PE 1/2” tube, Vacuum) (Max Ex. Flow 25LPM) (Each port)
5. Communication: 1 Network Cable ,1 IP address

7 FCC

Un-license band: This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user authority to operate the equipment.

This Transmitter must not be co-located or operating in conjunction with any other antenna or transmitter

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- ◆ Reorient or relocate the receiving antenna.
- ◆ Increase the separation between the equipment and receiver.
- ◆ Connect the equipment into an outlet on a circuit different from that to which the receiver is needed.
- ◆ Consult the dealer or an experienced radio/TV technician for help.

8 OHB N2 AD100 Module

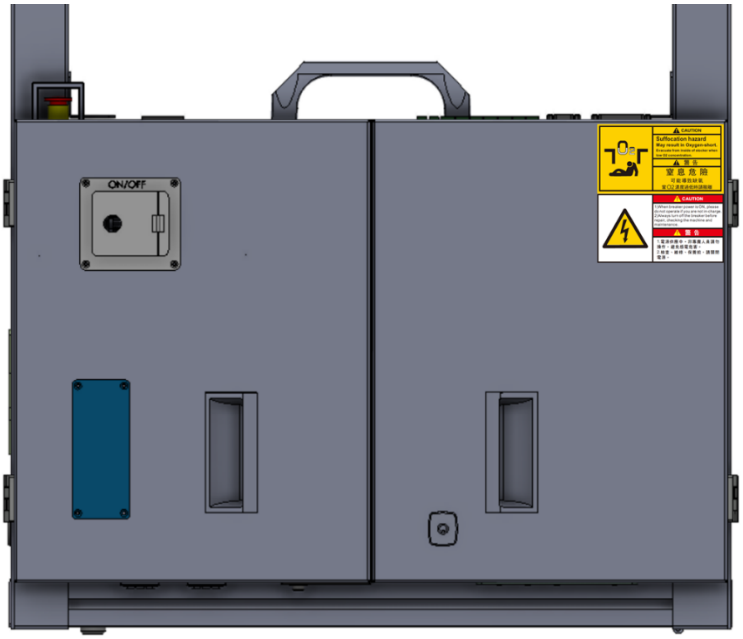
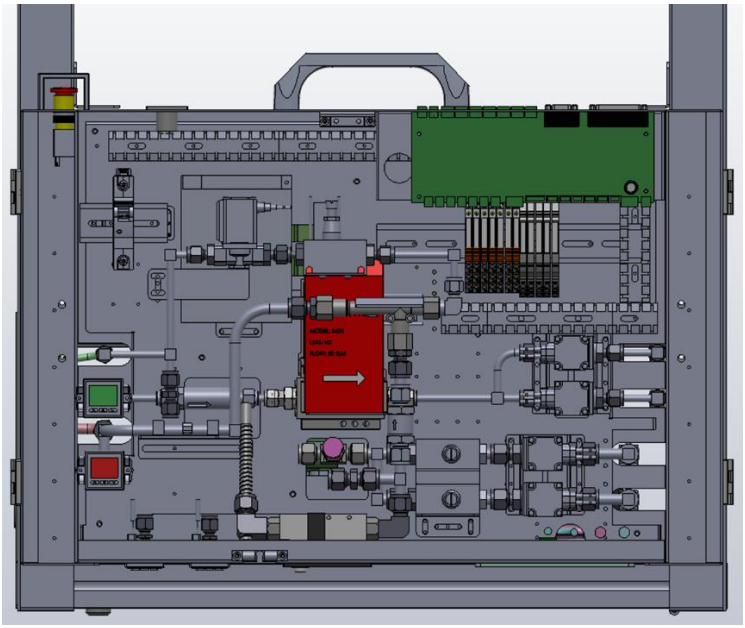
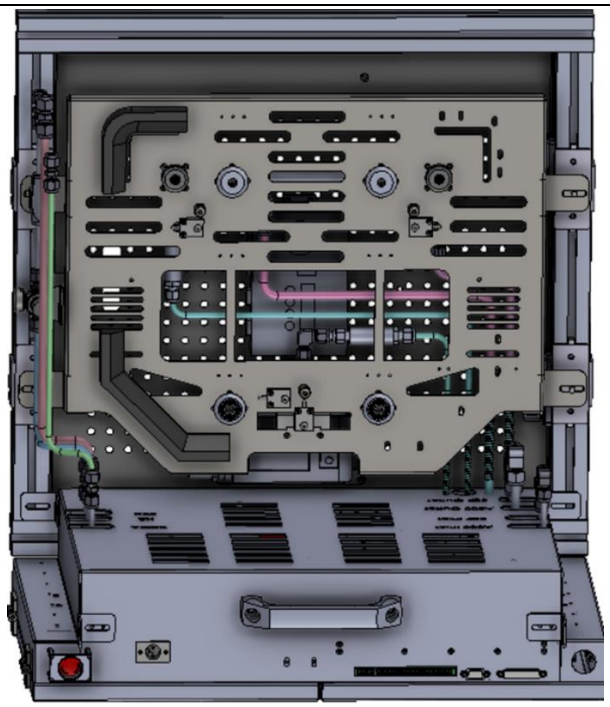
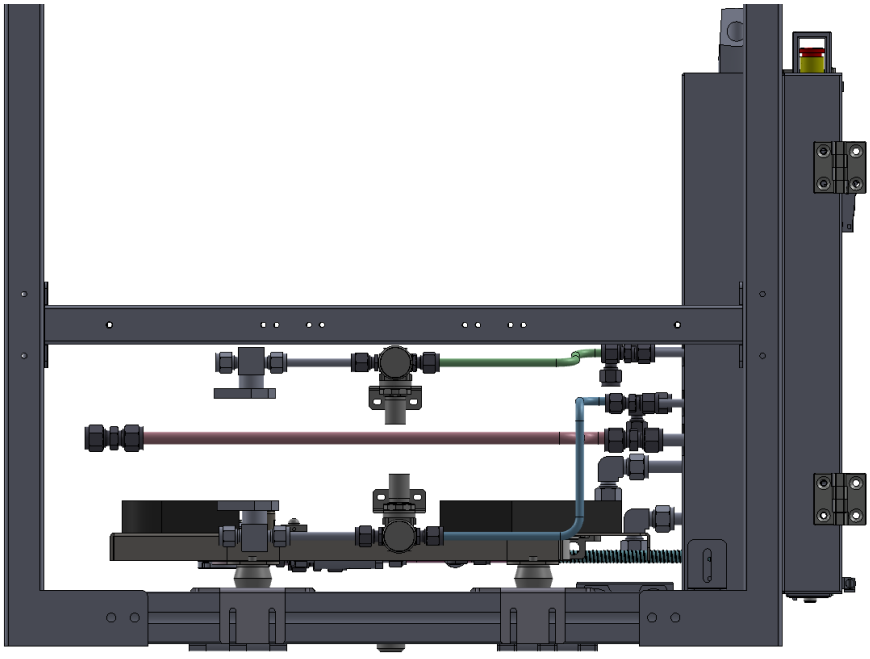
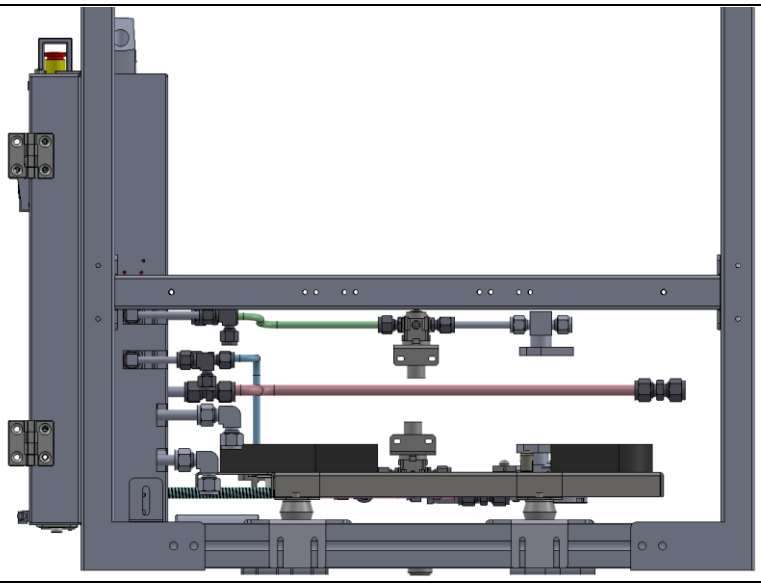
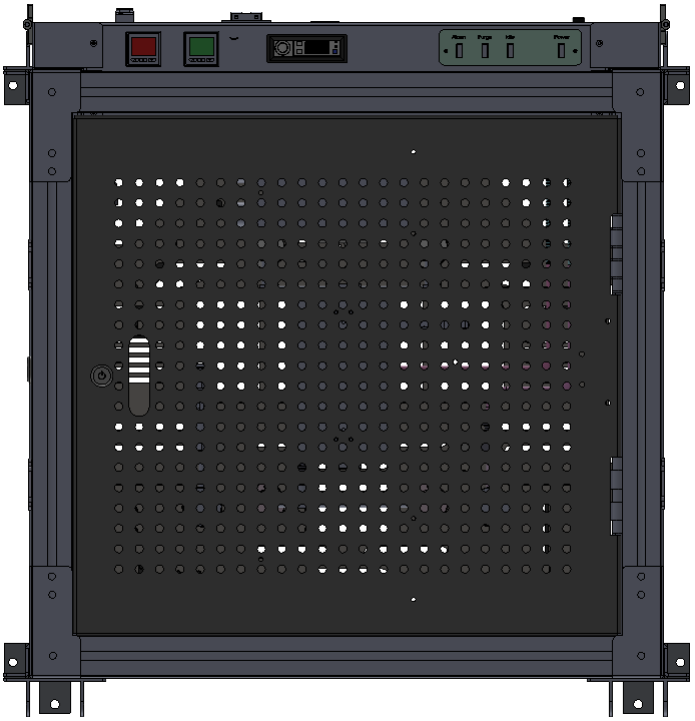
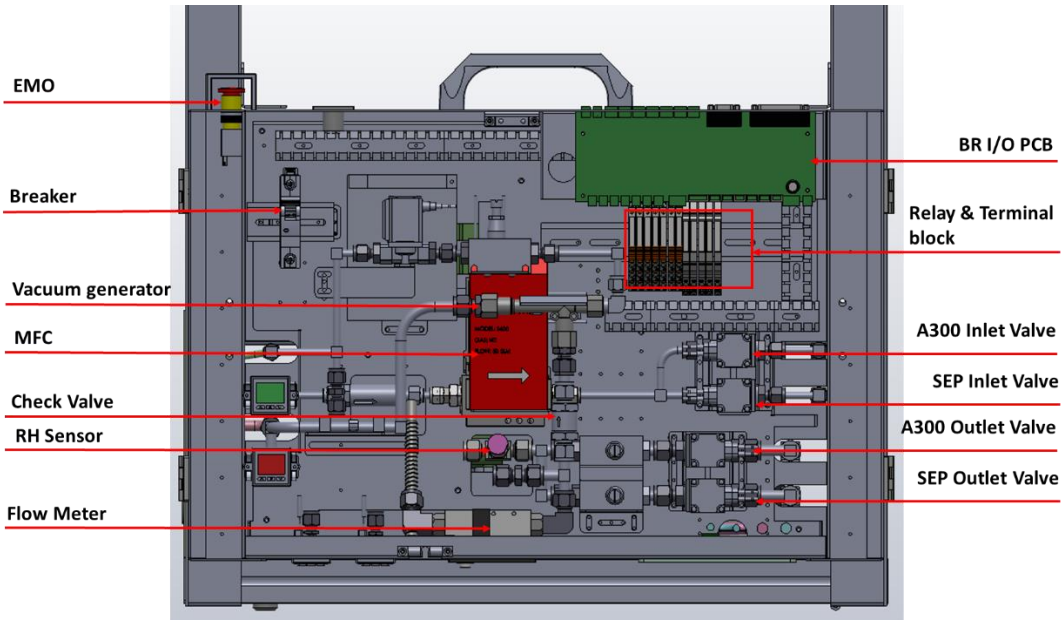
Module	Illustration
Front-1	
Front-2	

Plate	
side -1 Facility Connect	

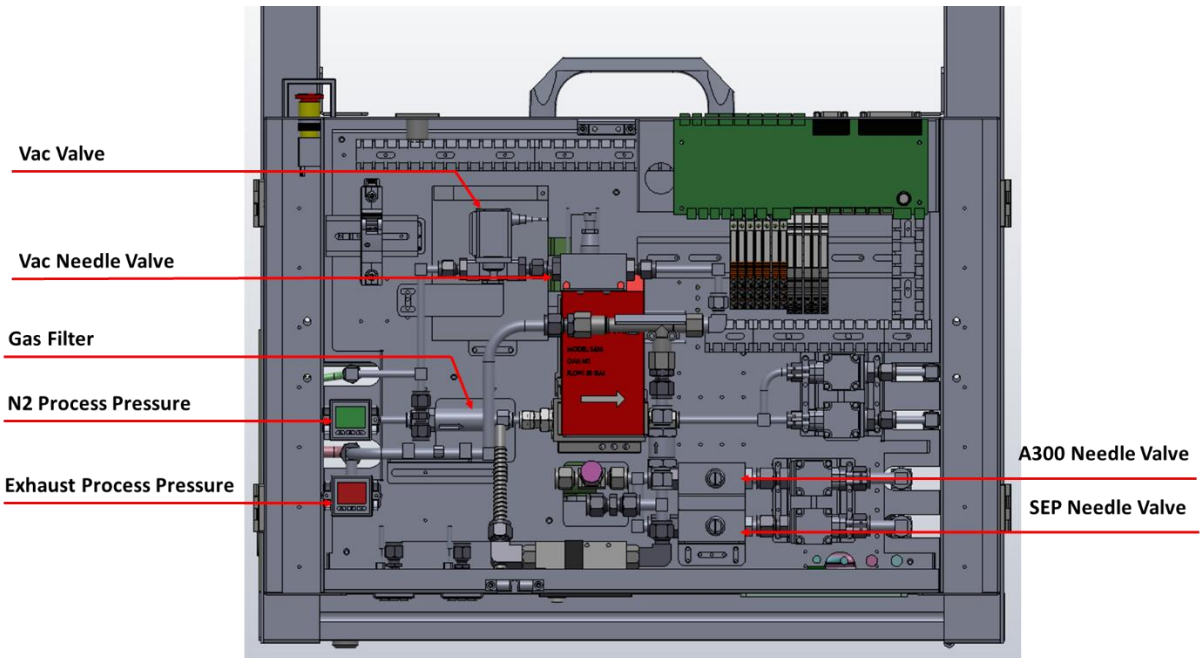
Side-2	
Under	

9 OHB N2 AD100 Module

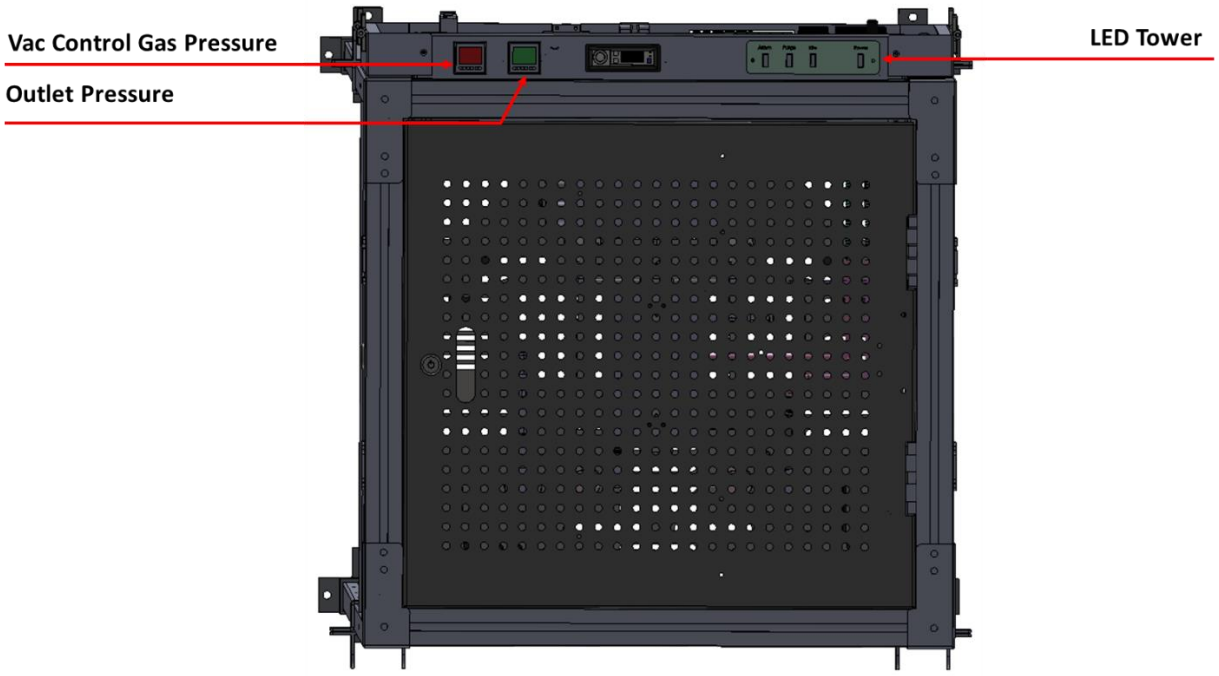
9.1 Front Illustration -1



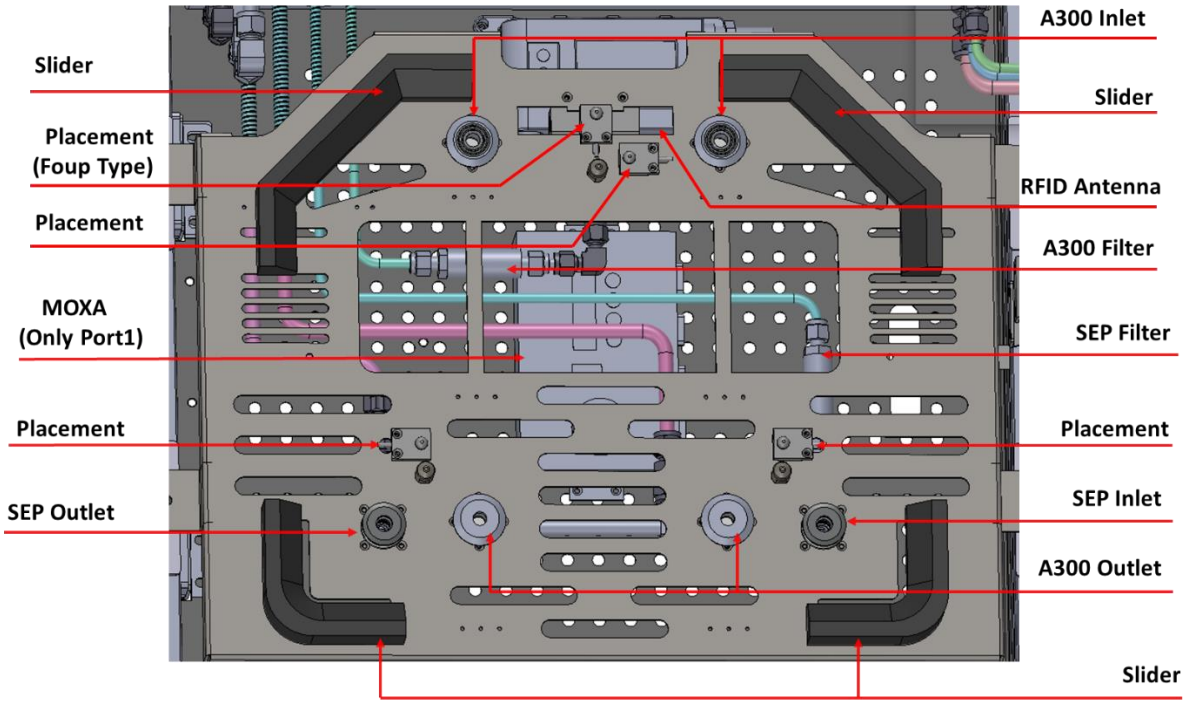
9.2 Front Illustration -2



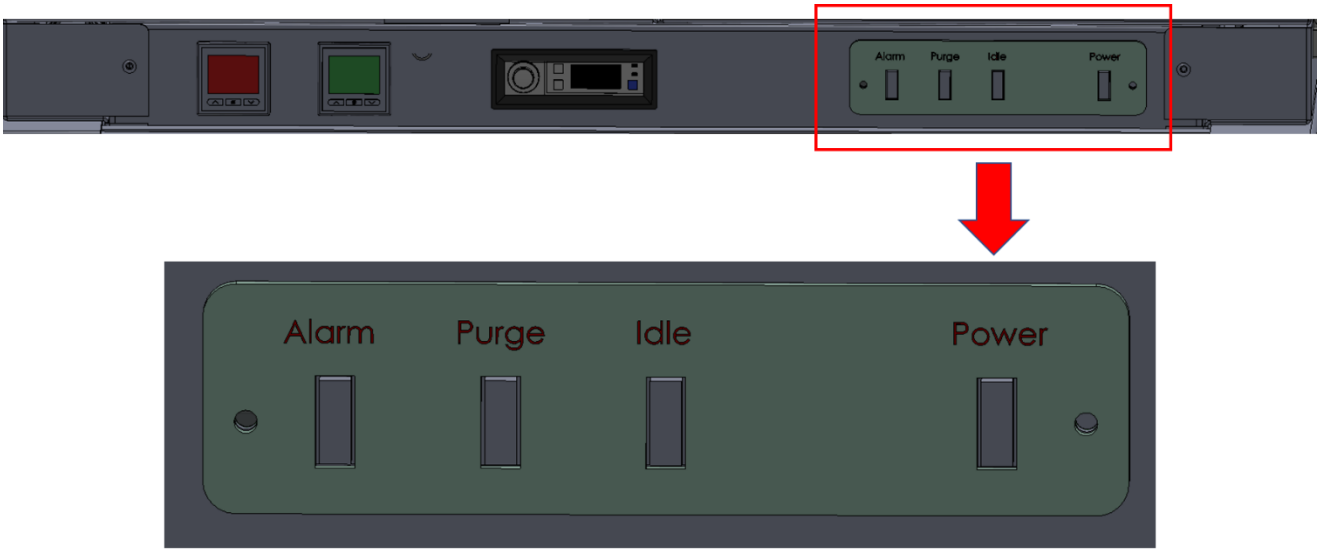
9.3 Under Illustration



9.4 Plate Illustration



9.5 Light tower

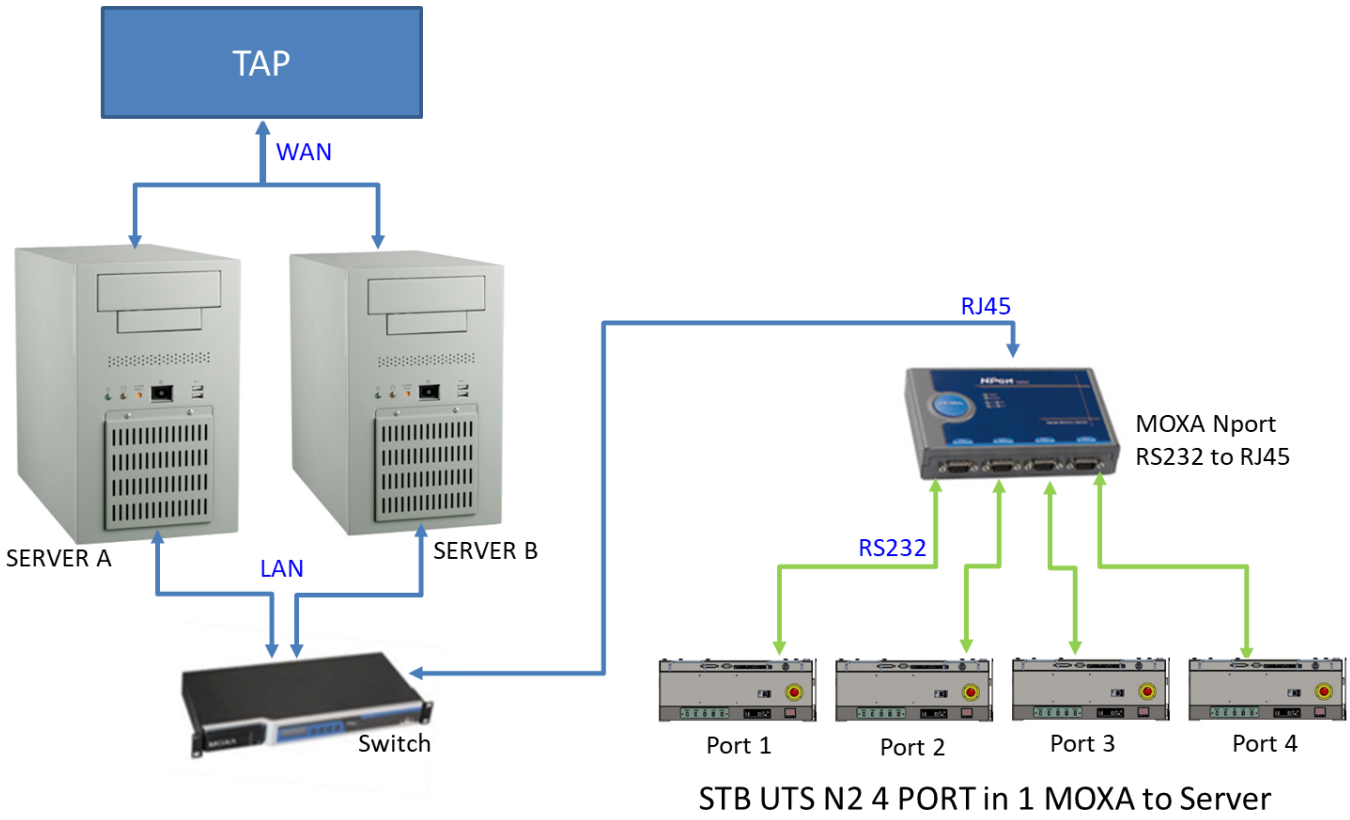


1. White：Machine Power
2. Green：IDLE Status
3. Orange：Purge Status
4. RED：Alarm Status

10 Signal I/O List

BR PCB Digit & Analogy					
AI	Ai 1	Ai 2	Ai 3	Ai 4	Ai 5
	Process Inlet Pressure	Flow Meter	Outlet Pressure	Vac Control Pressure	Exhaust
DO	Do 1	Do 2	Do 3	Do 4	Do 5
	A300 Inlet Valve	SEP Inlet Valve	A300 Outlet Valve	Vac Control Valve	SEP Outlet Valve
DI	Di 1	Di 2	Di 3	Di 4	Di 5
	Placement	Placement	Placement	Placement (Foup Type)	NA

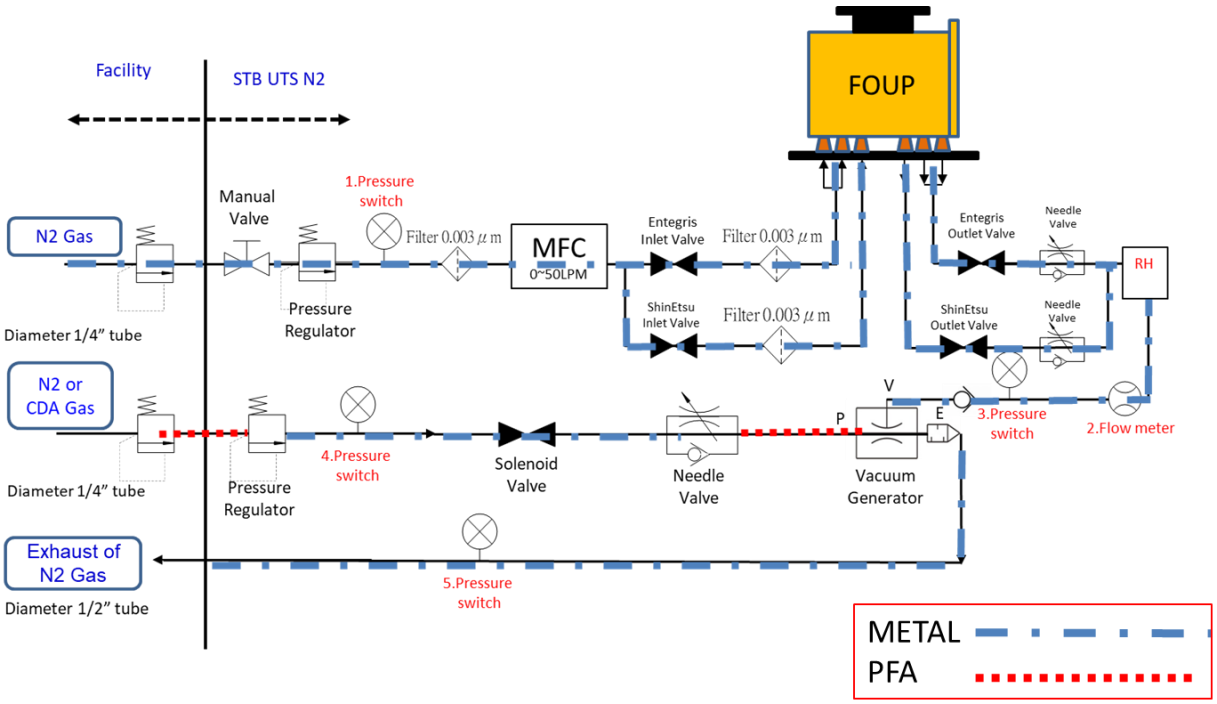
11 Communication Layout



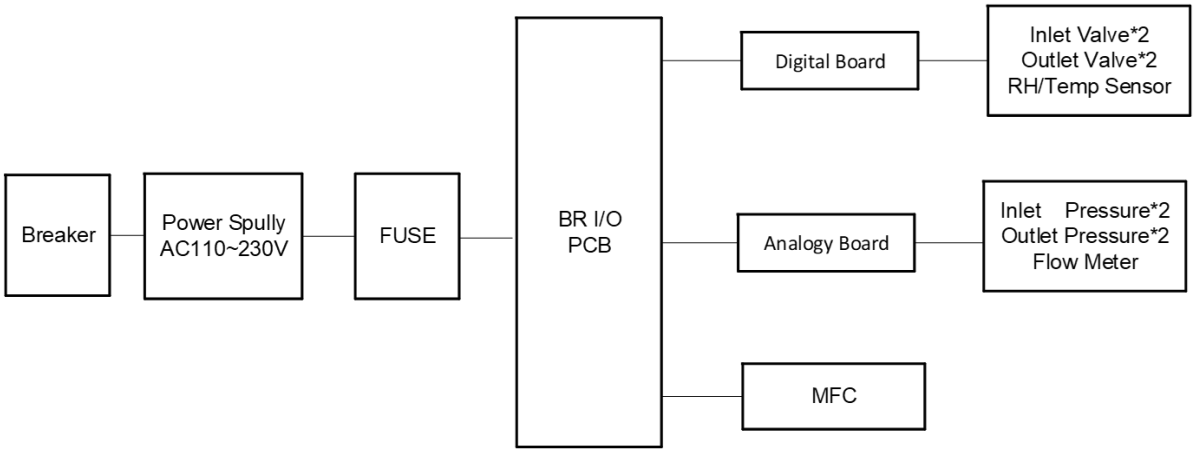
STB UTS N2 4 PORT in 1 MOXA to Server

12 OHB N2 AD100 Hardware

12.1 Piping

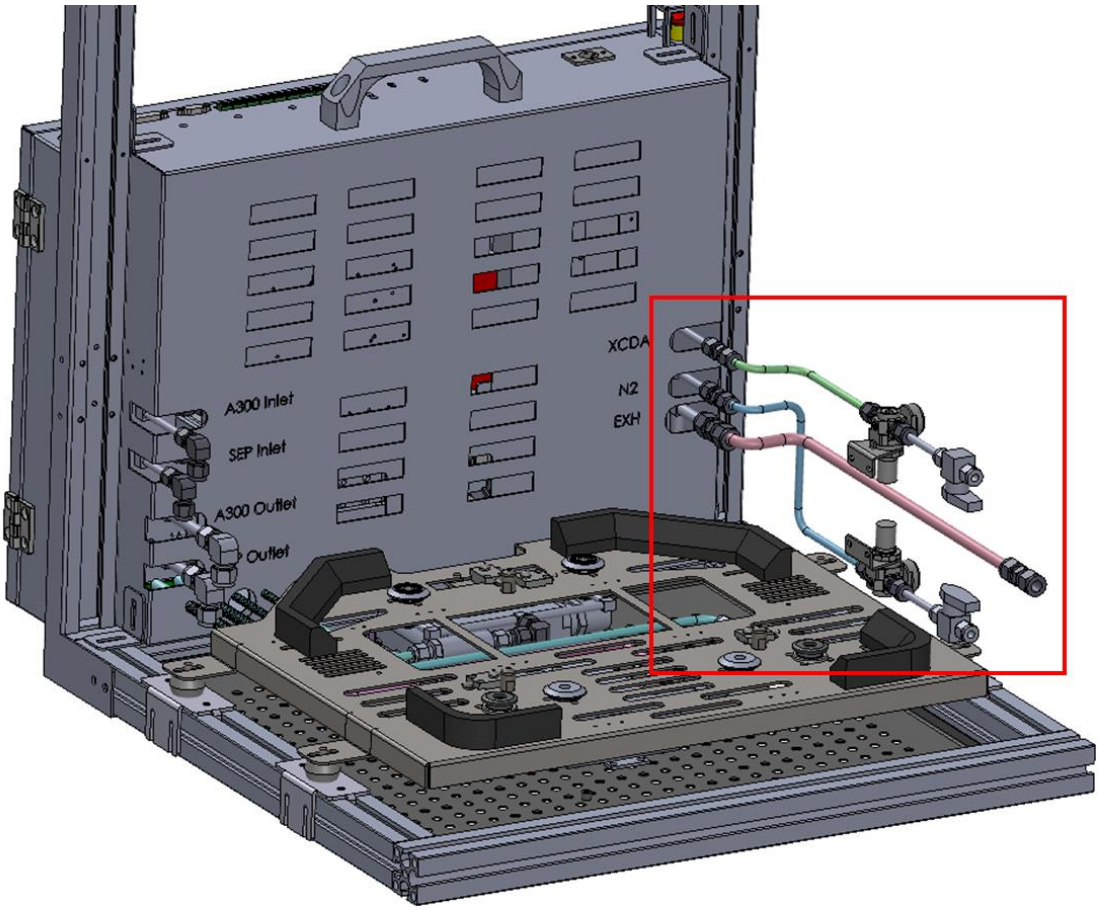


12.2 Hardware Method



12.3 Piping Connect

12.3.1 Facility Connect



Machine connect		
XCDA	N2	Exhaust
1/4” OD Swagelok	1/4” OD Swagelok	1/2” OD Swagelok

Factory connect		
XCDA	N2	Exhaust
1/4” Stainless Tube	1/4” Stainless Tube	1/2” PFA Tube

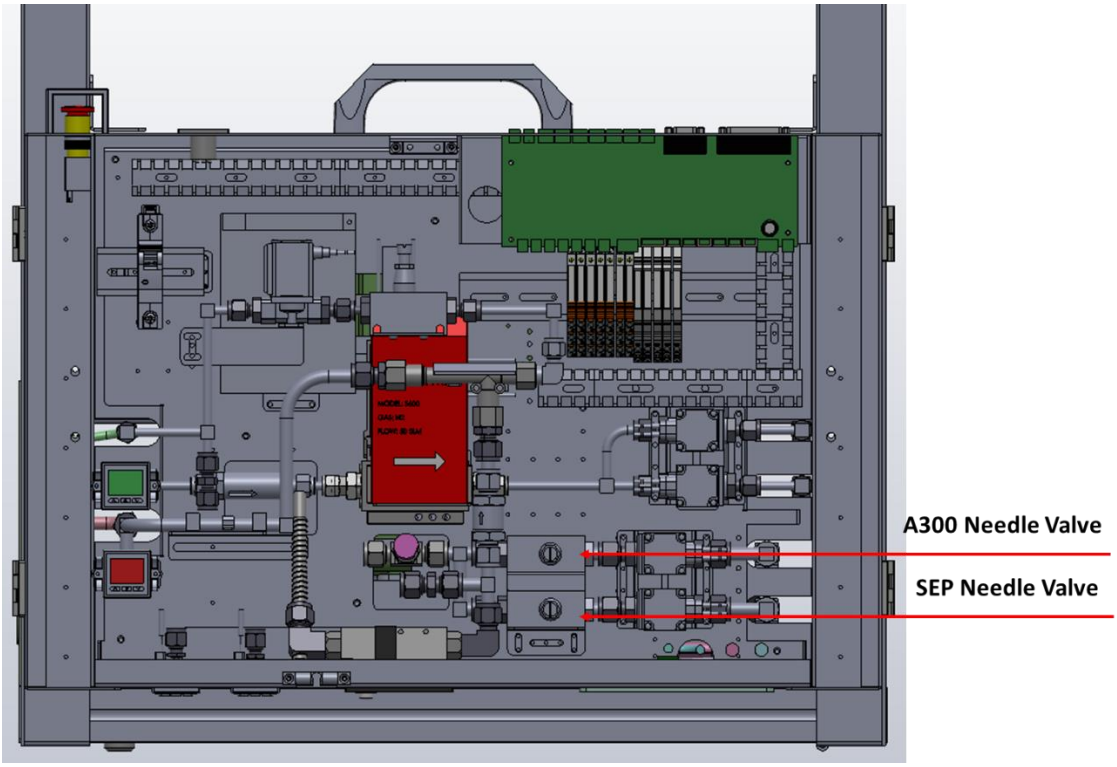
13 OHB N2 AD100 Vacuum generator adjust

13.1 Place the FOUP on the OHB Plate

13.2 Manual Mode

13.3 Setting page->Open Inlet& Outlet &Vac Valve

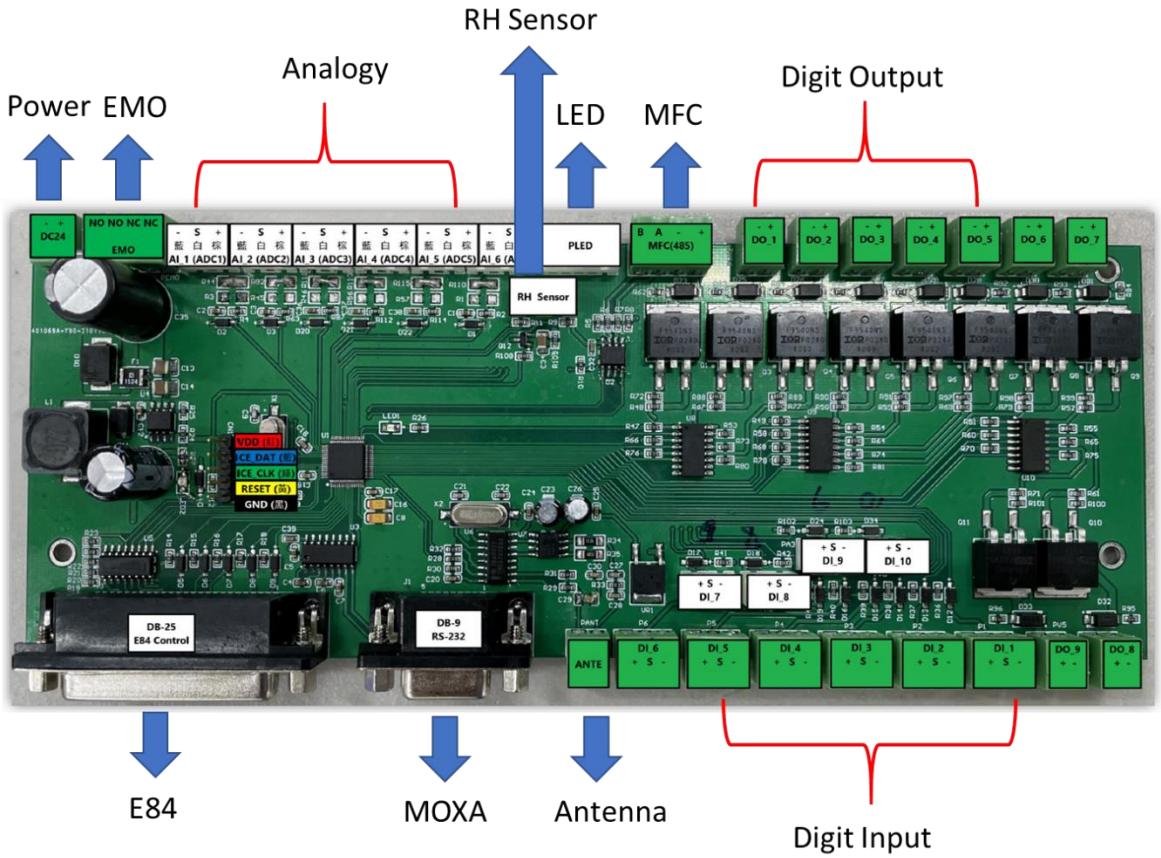
13.4 Turn needle Valve，Observe the Flow Meter value in the GUI screen and adjust to the required flow rate.



13.5 Setting page Close Valve

13.6 Auto Mode

14 BR PCB description



※：I/O List Please Check Number 7 Signal I/O List

15 Alarm code & Alarm Analysis

Code	Alarm	Action
100001	FOUP Remove During Purging.	a. Confirm if the upper layer of SECS end does not make Purge End command,
100002	FOUP Detect Error.	a. Confirm Plate is abnormal or not. b. Confirm Block is abnormal or not.
100003	Humidity is not low enough	a. Confirm if SPEC setting is normal. b. Confirm if Intlet end pipeline is abnormal or not. c. Confirm if Outtlet end pipeline is abnormal or not. d. Confirm if seal tightness between FOUP and Nozzle is normal. e. Confirm if RH Sensor is normal. f. Confirm if BR PCB Board is normal.
100006	Board TimeOut Count:{0} , Can't Control Flow.	a. Check if BR PCB Board power & signal wire connectors are dropped or in bad contact. b. Confirm if BR PCB Board is normal. c. Confirm if MOXA is normal.
100007	Out Flow Meter Out of Specified.	a. BR PCB board AI board is abnormal. b. Confirm if BR PCB Board is normal. c. Confirm if Outlet end pipeline is abnormal or not.
100021 100022 100023 100024 100025	E84 TP1 Time Out. E84 TP2 Time Out. E84 TP3 Time Out. E84 TP4 Time Out. E84 TP5 Time Out.	a. Confirm if E84 Sensor is normal b. Confirm if BR PCB Board is normal.

100092	EMO Error.	a. Confirm operator touched by mistake b. Check if BR PCB Board power & signal wire connectors are dropped or in bad contact.
2001	RFID Read Error.	a. Check if Antenna & signal wire connectors are dropped or in bad contact. b. Confirm if BR PCB Board is normal
2007	PortX Open Valve Fail.	a. BR PCB board AI board is abnormal. b. Confirm if the supply amount in gas source end is normal.
1094	PortX Flow Low Error.	a. Confirm if SPEC setting is normal. b. Confirm if the supply amount in gas source end is normal. c. Check if MFC wire connectors are dropped or in bad contact. d. Confirm if MFC is normal e. Confirm if BR PCB Board is normal
1096	N2 Inlet Pressure Switch Out of Specified.	a. Confirm if SPEC setting is normal. b. Confirm if the supply amount in gas source end is normal. c. Check if AI wire connectors are dropped or in bad contact. d. Confirm if Pressure is normal e. Confirm if BR PCB Board is normal
1097	MFC Flow Out of Specified limit.(High).	a. Confirm if the supply amount in gas source end is normal.
1098	MFC Flow Out of Specified limit.(Low).	a. Confirm if the supply amount in gas source end is normal. b. Confirm if Inlet end pipeline is abnormal or not.
1099	MFC Timeout Count=20 , Can't Control Flow.	a. Check if MFC wire connectors are dropped or in bad contact. b. Confirm if BR PCB Board is normal c. Confirm if MFC is normal
1101	Outlet Pressure Switch Out of Specified.	a. Confirm if the supply amount in gas source end is normal. b. Check if AI wire connectors are dropped or in bad contact. c. Confirm if Outlet end pipeline is abnormal or not.

1102	CDA Inlet Pressure Switch Out of Specified.	a. Confirm if the supply amount in gas source end is normal. b. Check if AI wire connectors are dropped or in bad contact
1103	EXH. Pressure Swtitch Out of Specified.	a. Confirm if Vacuum generator is normal b. Check if DO wire connectors are dropped or in bad contact
1104	Temperature Out of Specified.	a. Confirm if SPEC setting is normal. b. Confirm if RH Sensor is normal. c. Confirm if BR PCB Sensor is normal.
3003	FOUP [MID]is Idle for 600 seconds.	a. Confirm if the upper layer of SECS does not make Unload command, b. Software or PC Restart

16 Periodical Maintenance

16.1 OHB AD100 Maintenance Table

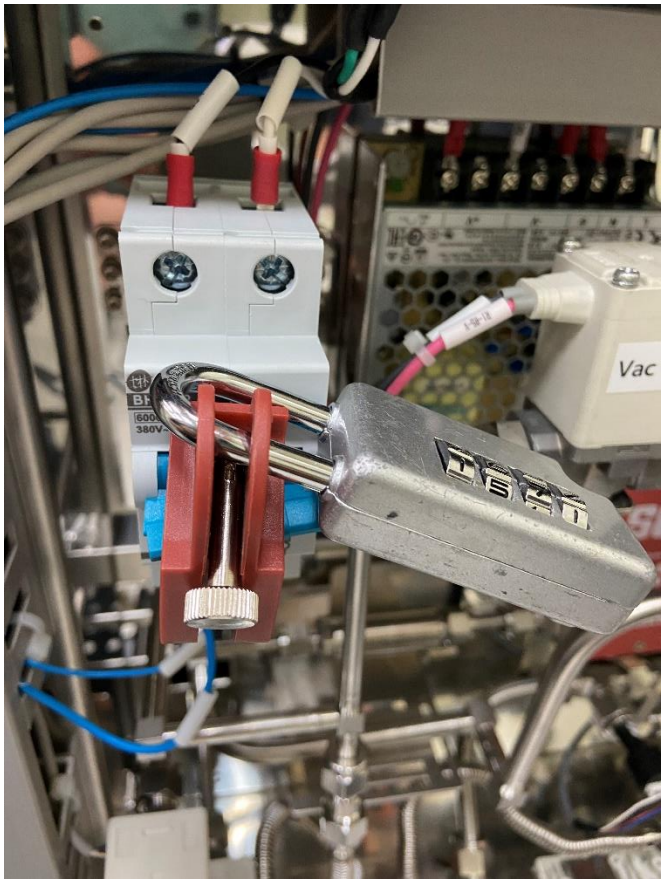
OHB AD100 Maintenance Table									
Machine Tool：		☐ Three months ☐One Year			Date：		Operator：		
Item	Maintenance Content	Cycle	Action				Result		Remark
Nozzle&Hold Check									
1	Confirm that all nozzles HOLD are firm	Three months	Use a cross head to lock the screws				☐OK	☐NG	
2	Confirmation and cleaning of the nozzle	Three months	Nozzle cleaning				☐OK	☐NG	
		One Year	Nozzle chang				☐OK	☐NG	
3	Confirm the smoothness of the up and down movement of the nozzle shaft	Three months	Confirm that the nozzle axis moves up and down smoothly				☐OK	☐NG	
Plate cleaning&Sensor Check									
4	Plate Placement function verification	Three months	Manual control press the Sensor to confirm whether the red light is on, the GUI is Normal display				☐OK	☐NG	
5	Plate cleaning	Three months	盤面清潔				☐OK	☐NG	
Check MFC & Valve									
6	Confirm MFC	Three months		5LPM	10LPM	20LPM	30LPM		
			Port 1					☐OK	☐NG
			Port 2					☐OK	☐NG
			Port 3					☐OK	☐NG
			Port 4					☐OK	☐NG
7	Confirm Inlet&Outlet Valve	Three months	Manual Mode control Valve is abnormal or not					☐OK	☐NG
8	Confirm Flow Meter	Three months	Manual Mode control Valve is abnormal or not					☐OK	☐NG
9	Confirm Vacuum generator	Three months	Manual Mode control Valve is abnormal or not					☐OK	☐NG
Chang Filter and Check function									
10	Confirm EMO	Three months	Manual control press EMO to confirm whether the GUI displays a signal, All valve closed					☐OK	☐NG
11	Chang Inlet Filter	One Year	Chang Filter，Need to confirm the flow direction					☐OK	☐NG
12	Confirm Inlet&Outlet Pressure	Three months	Confirm if value is normal					☐OK	☐NG
Remark：	One Year Content with Three months								
	If you change Parts, please record it in the remarks								

16.2 Periodical maintenance Attention

Perform the following periodical maintenance of this load port annually:

A. Handle the equipment carefully so as not to damage the product by tools.

B. Shut off the power supply so as not to damage the control board and Lock Breaker



16.3 Cleaning method

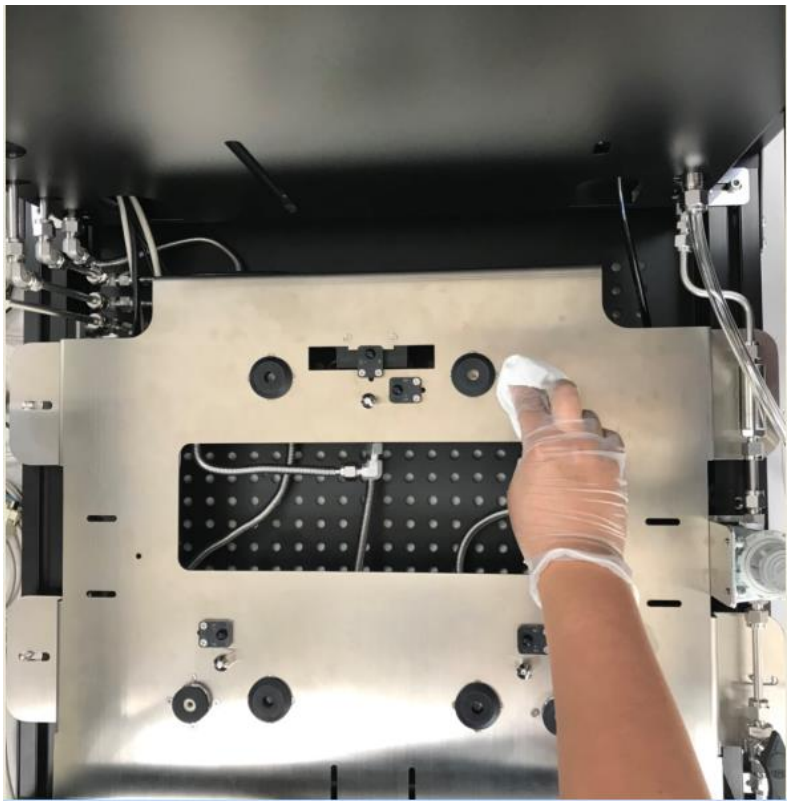
16.3.1 Purpose：Cleaning Plate Particle

Material：NA

Manual tool：Cleanroom wiper、DI Water

Notice：Before action, please confirm whether the machine is down

PM Step：Cleanroom wiper cloth into the DI Water from inside to outside and from top to clean the Plate surface.



The cleanroom wiper that has been wiped cannot be reused to avoid accumulation of particles

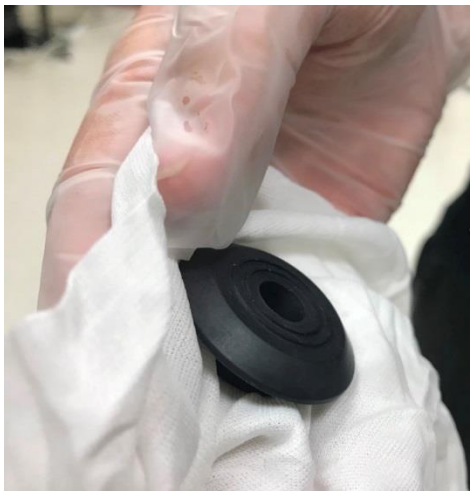
16.3.2 Purpose：Check Nozzle Whether there is damage, scratches, accumulation of particles, etc.

Material：Nozzle

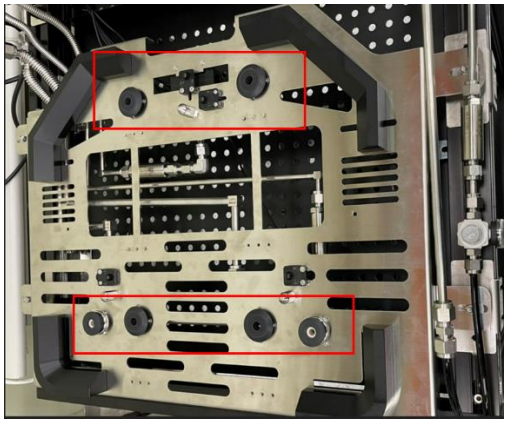
Manual tool：Cleanroom wiper、AIR GUN

Notice：Do not use DI Water to wipe Nozzle

PM Step：Use a Cleanroom wiper to the Nozzle or use CDA (Air Gun) to clean the Nozzle, and install it after cleaning.

	
Please use Cleanroom wiper and gloves when taking Nozzle	When AIR Gun Purge Nozzle, the gas can be cleaned with XCDA or N2
	
A300 Nozzle	SEP Nozzle

PM Step：Visually confirm whether the Nozzle is damaged and after cleaning, put the Nozzle back into the Holder，And after reinstalling, rotate to test whether it is installed。

	
Insert HOLD on one side and complete the installation on the other side	After the installation is completed, the test needs to be continuously rotated for 5 cycles to confirm that the Nozzle function is normal
	
Clean both A300 and SEP Nozzle	Check whether the A300 4PCS and SEP 2PCS are on the Plate

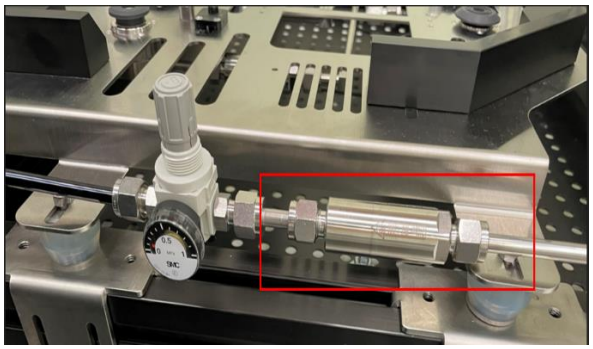
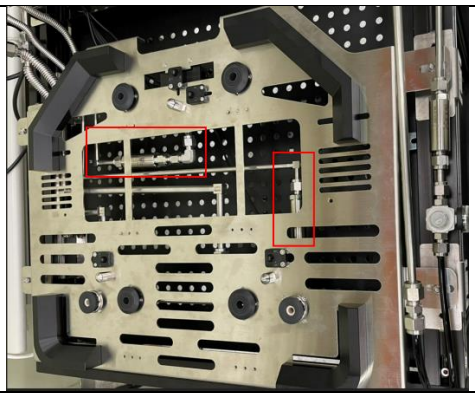
16.3.3 Purpose：Maintain gas cleanliness

Material：Filter

Manual tool：Wrench

Notice：The direction is marked on the appearance, please install according to the flow direction

PM Step：Turn off power，assemble components and snug fingertight，Then use a movable wrench to loosen the SWG connectors on the left and right sides of the Filter and replace it with a new Filter.。

	
N2 Filter description	Under Plate Filter description，Two groups SEP&A300

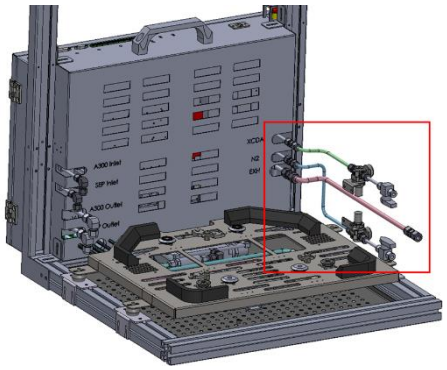
16.3.4 Purpose：Check Pressure

Material：NA

Manual tool：Wrench

Notice：NA

PM Step：Zero value confirmation， Remove the XCDA, N2, and Exhaust pipes, and observe whether the meter head value is zero，If the value is not zero, please reset to zero。

	
XCDA, N2, Exhaust pipeline position, please use a wrench to remove	At the same time the pressure will be reset to zero by pressing the left and right buttons for 3 seconds

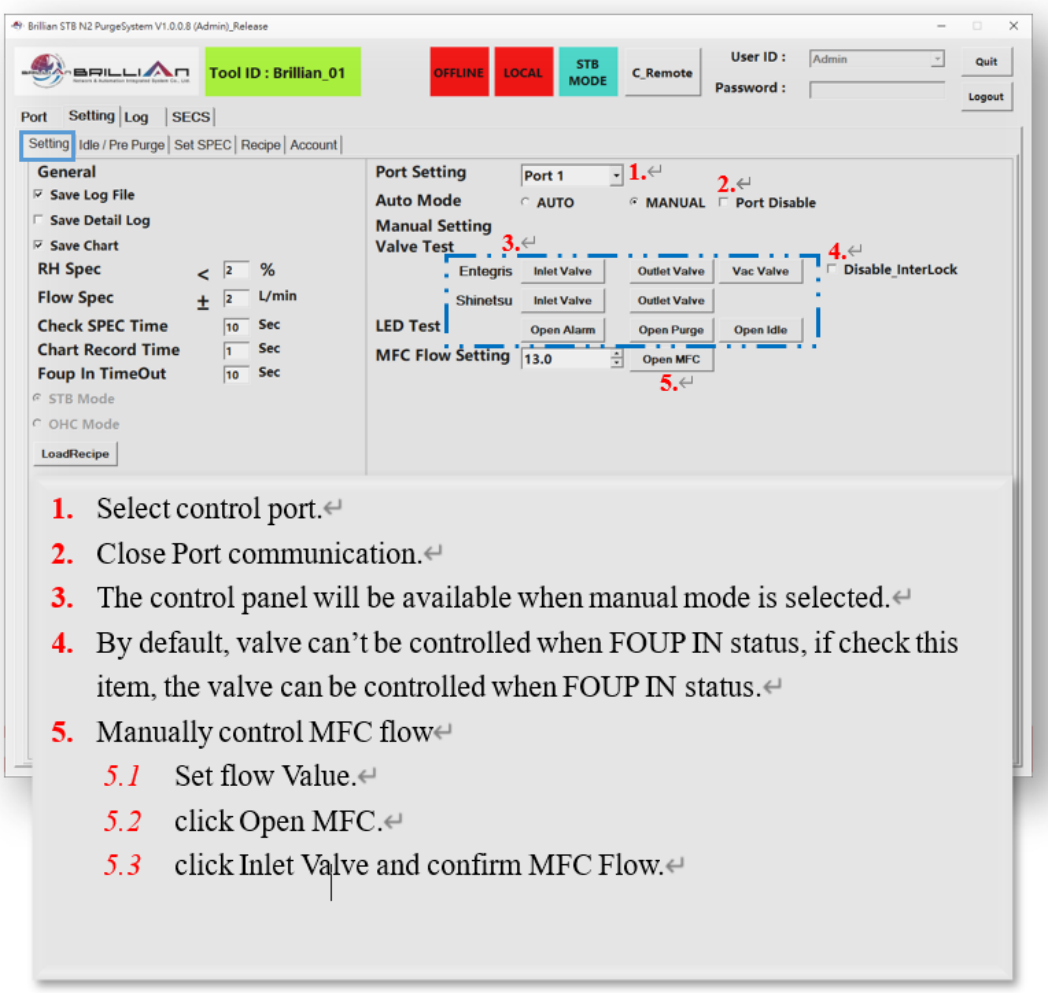
16.3.5 Purpose：Confirm the MFC、Valve、Flow Meter、Vacuum generator

Material：無

Manual tool：NA

Notice：software Test

PM 步驟：Software Step



17 Revision History

#	Date	Rev.	Description	Name
1	May 28, 2021	1.0	Standard Version	Roxas Li
2	July 06, 2021	1.1	Page1 1 Introduction Page 21 Periodical maintenance Attention	Roxas Li