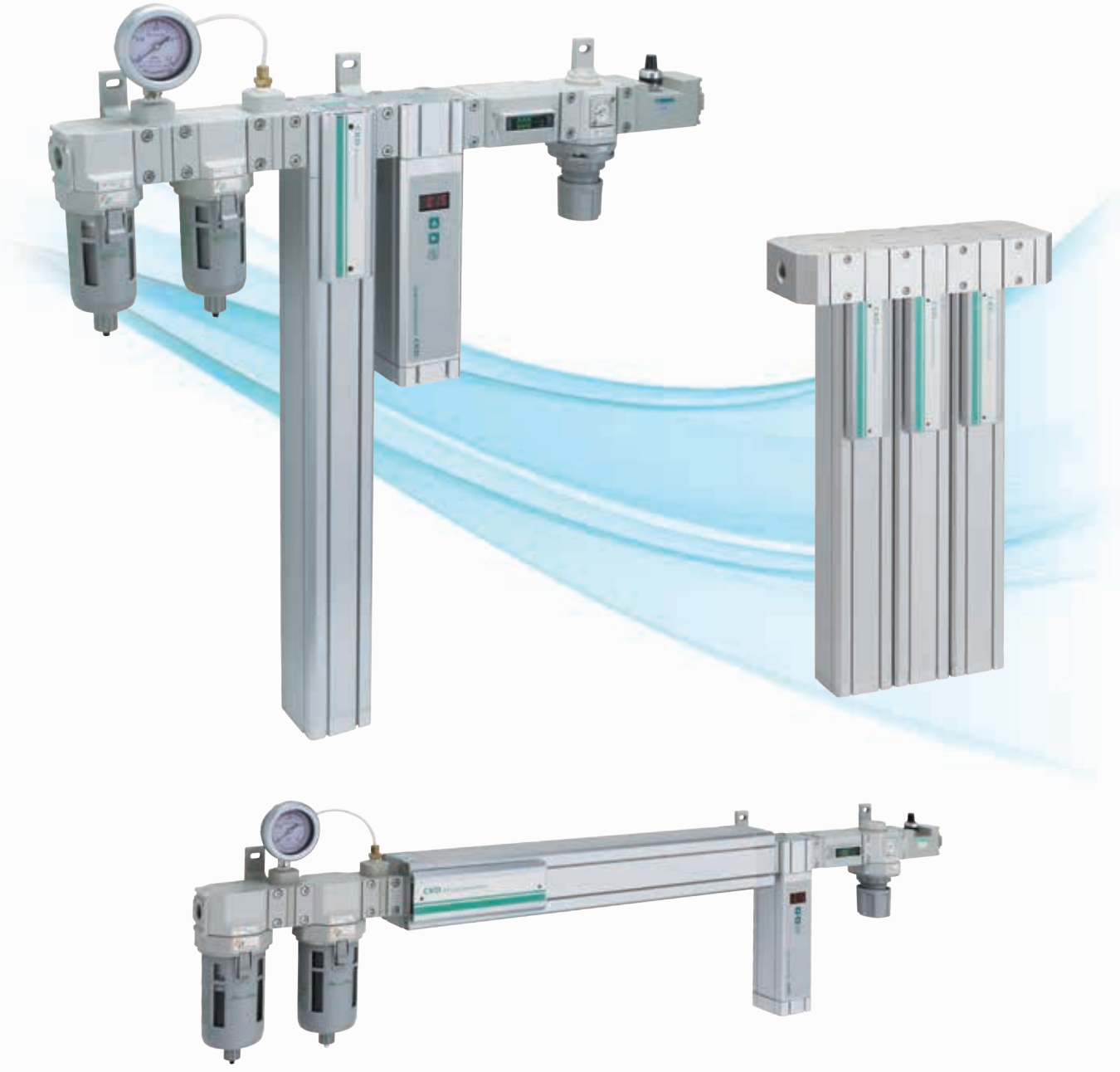
CKD

Nitrogen gas can be easily extracted from compressed air.

Nitrogen Extraction Unit
NS Series

Nitrogen from Air

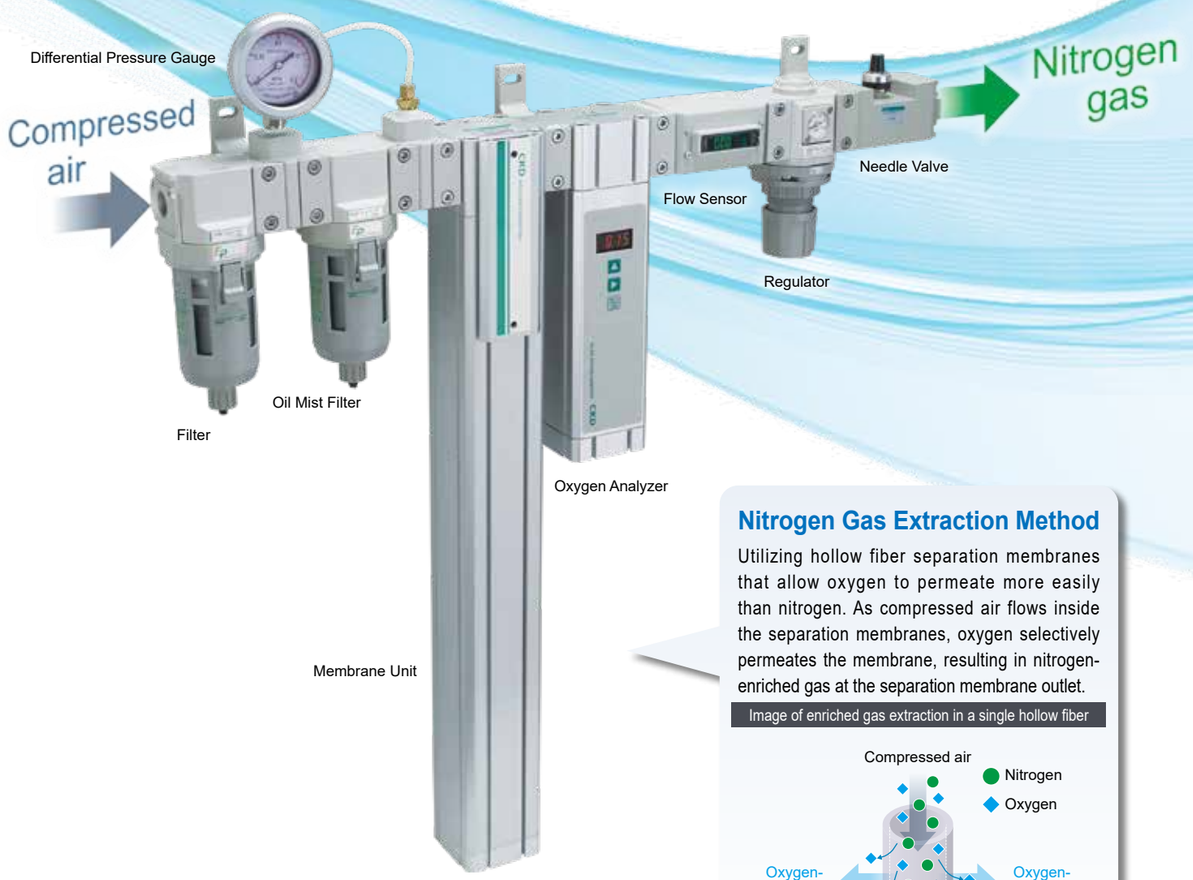


CKD Corporation

CC-1355AA 5

Nitrogen Gas Extraction Unit **NS Series**

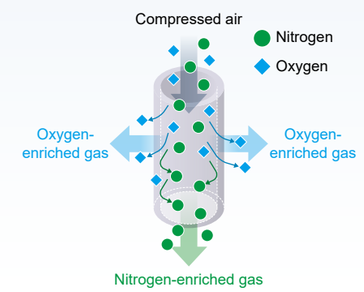
Nitrogen gas can be easily extracted from compressed air.



Nitrogen Gas Extraction Method

Utilizing hollow fiber separation membranes that allow oxygen to permeate more easily than nitrogen. As compressed air flows inside the separation membranes, oxygen selectively permeates the membrane, resulting in nitrogen-enriched gas at the separation membrane outlet.

Image of enriched gas extraction in a single hollow fiber



FP Series for Safe Food Manufacturing Processes (Option)

Can be used with peace of mind in food manufacturing processes.

Uses **NSF H1** grease for food applications

Food Sanitation Act Compliant Materials
Wetted Parts: Resin and rubber

FP Food Process™

This logo expresses CKD's commitment to supporting food manufacturing processes with safe components.

*For details, please see catalog No. CC-1271AA.

New Proposal for Nitrogen Supply

Freedom of Design

Now available in a horizontal type

Installation in dead space. Built-in installation in equipment.

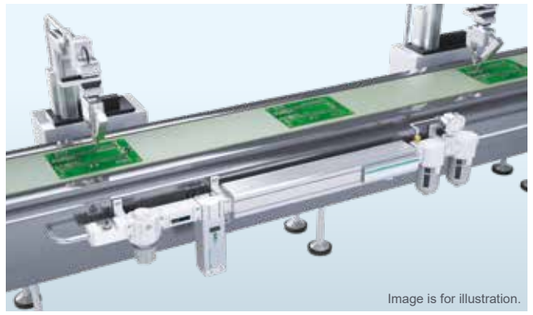


Image is for illustration.

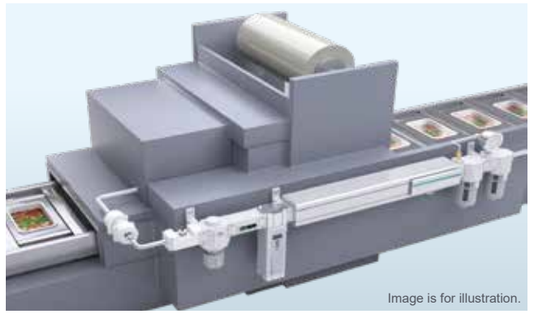
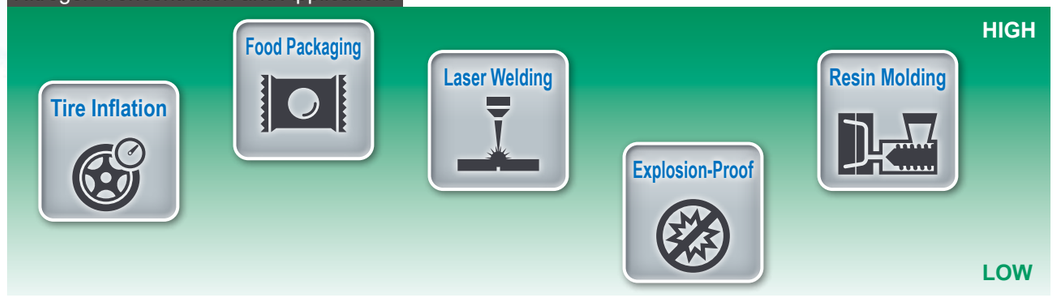


Image is for illustration.

Freedom of Concentration

Nitrogen concentration is now available from 90%. Nitrogen supply for explosion-proof and other low-oxygen concentration environments.

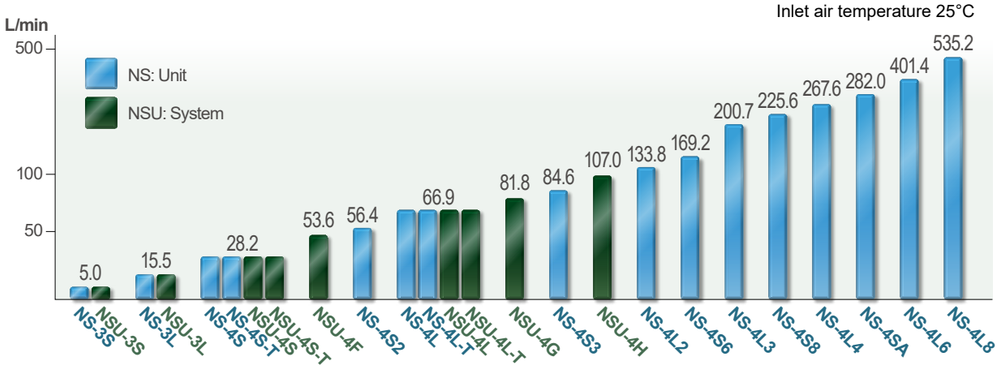
Nitrogen Concentration and Applications



Freedom of Choice

The optimal model can be selected from a lineup of 17 flows and 25 models.

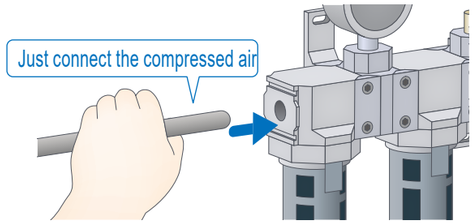
*Nitrogen concentration 99%
Inlet air pressure 0.7 MPa
Inlet air temperature 25°C

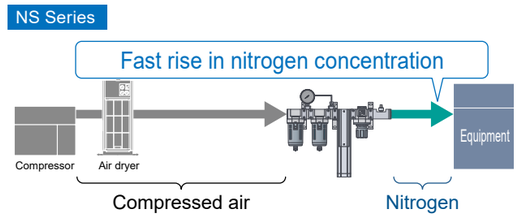


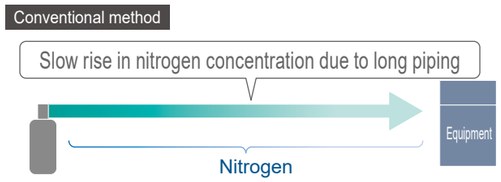
Install Anywhere

Saves work-hours, piping, and space

Nitrogen-enriched gas can be obtained simply by supplying compressed air. Design and piping are easy with the provision of system equipment. Compact and lightweight, it can be installed near equipment. No long piping work is required specifically for nitrogen.

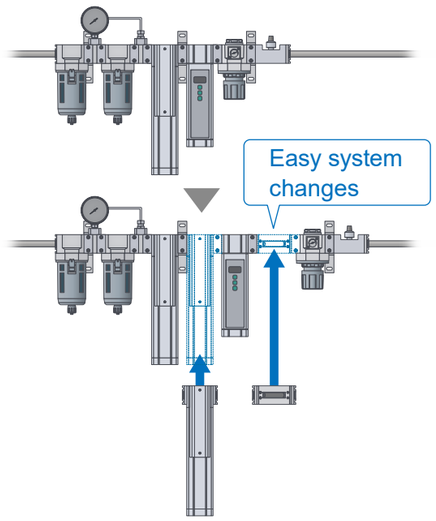






Free Choice

The optimal system can be selected according to the required flow rate and concentration. Modular connection allows for easy system changes such as adding units after installation.



No Power Supply Required

UCan be used in explosive atmospheres and areas with different voltages. Does not cause malfunctions due to electrical noise. No drive part, quiet operation, and no heat generation.

*A power supply is required when the oxygen concentration meter/flow sensor (option) is selected.

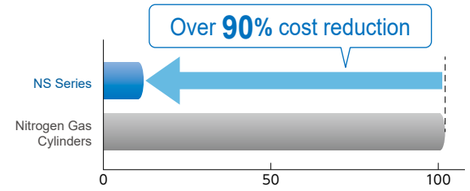
Low Cost and Work-hour Savings

Reduced Running Costs

Maintenance cost is only the electricity bill for the air compressor. No recurring costs such as cylinder replacement fees.

*A power supply is required when the oxygen concentration meter/flow sensor (option) is selected.

Comparison of Gas Unit Price with Nitrogen Gas Cylinders



*Comparison assuming a gas unit price of 100 for a nitrogen gas cylinder at 99% nitrogen concentration.

Reduced Management Work-hours

Management of nitrogen volume is no longer necessary. The oxygen concentration meter and flow sensor can be installed inline for constant management.

●Oxygen Concentration Management (via N2 conc.)

Oxygen Analyzer

●Nitrogen Flow Rate Management

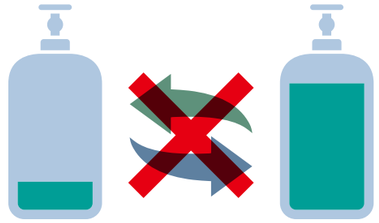
Flow Sensor

●Management of Supplied Compressed Air Quality

Differential Pressure Gauge

No Replacement Needed

Troublesome cylinder level management and replacement work are not required.



*Necessary equipment can be easily connected with modular connections. For details, please contact our sales office..

Easy Maintenance

Sustained Reliability

Stable performance can be maintained as there are no moving parts. Parts can be replaced while still piped.

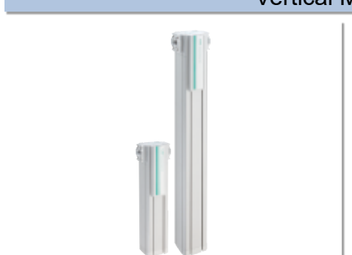
Not Subject to the High Pressure Gas Safety Act

No notification or placement of qualified personnel is required.

NS Series Configuration

System	
1-unit Type	2-unit Type
NSU	
Horizontal Mounting	Vertical Mounting

Unit	
Single Cylinder	Multiple Cylinders
NS	
Horizontal Mounting	Vertical Mounting



Application Examples

Packaging Gas-filled Packaging

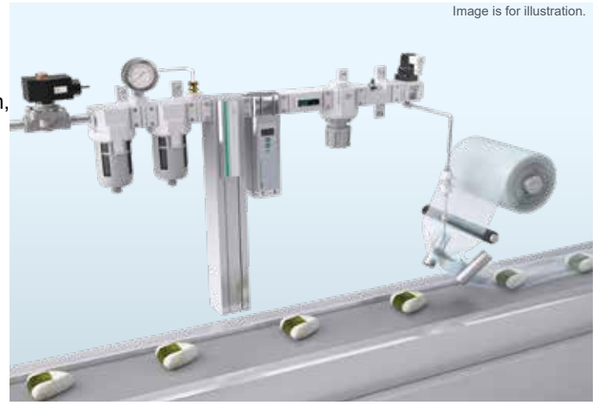
During pillow packaging, the container is filled with nitrogen gas to prevent oxidative degradation, color fading, and preserve aroma, while also preventing the packaging from losing its shape.

2-Port Solenoid Valve for Dry Air

Bacteria Removing Filter

Air Nozzle Point Type

Image is for illustration.



Manufacturing Laser Welding

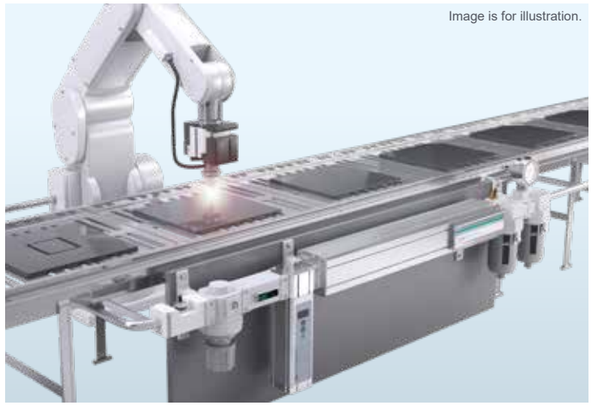
During laser welding, nitrogen gas is used for shielding to prevent a decrease in welding strength due to oxidation of the molten area.

Drain Separator

Polymer Membrane Air Dryer

Direct Acting 2-Port Valve

Image is for illustration.



Food & Chemicals Dissolved Oxygen Removal

By passing nitrogen gas through a liquid, the dissolved oxygen gas in the liquid is removed.

Oil-Free Main Line Filter

Flow Sensor for Compressed Air

2-Port Solenoid Valve

Image is for illustration.

Processing & Assembly Explosion-proof Atmosphere

Fills the container with nitrogen gas, purges the air, and creates internal positive pressure, preventing intrusion of explosive or corrosive gases.

Refrigerated Air Dryer

Main Line Filter

2-Port Solenoid Valve

Image is for illustration.

Inspection Electron Microscope

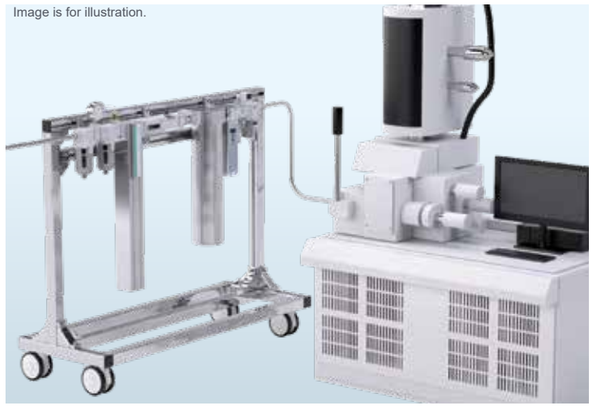
Nitrogen is used as a gas for venting, actuators, and dampers.

Modular Connection 2-Port Solenoid Valve

High-Performance Oil Mist Filter

Digital Pressure Sensor

Image is for illustration.



Substrates Improved Solder Wettability

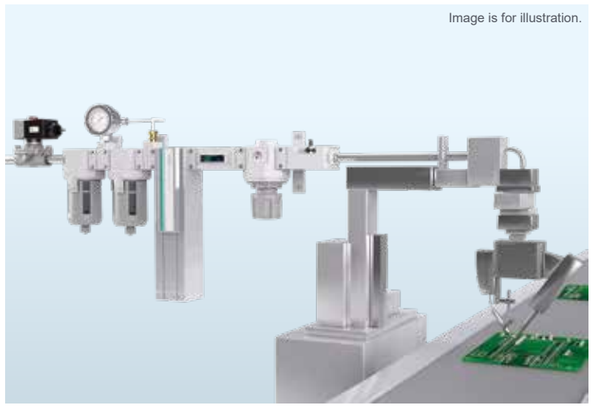
Nitrogen gas blocks oxygen and prevents oxidation of the soldering iron tip and solder surface, thereby improving the wettability of lead-free solder.

Drain Separator

Cylinder Valve

Electric Actuator

Image is for illustration.



System Chart

Nitrogen Extraction Unit System
NSU Series

■No. of Units: 1

Model No.	Qty.	Appearance	Flow Rate (L/min ANR) and Nitrogen Concentration (%)	Page
			10 / 20 / 40 / 60 / 80 / 120 / 160 / 200 / 260 / 320	
NSU-3S	1		99.9 99.5 99 98 97 96 95 94 93 92 91 90	1
NSU-3L	1		99.9 99.5 99 98 97 96 95 94 93 92 91 90	
NSU-4S	1		99.9 99.5 99 98 97 96 95 94 93 92 91 90	
NSU-4L	1		99.9 99.5 99 98 97 96 95 94 93 92 91 90	

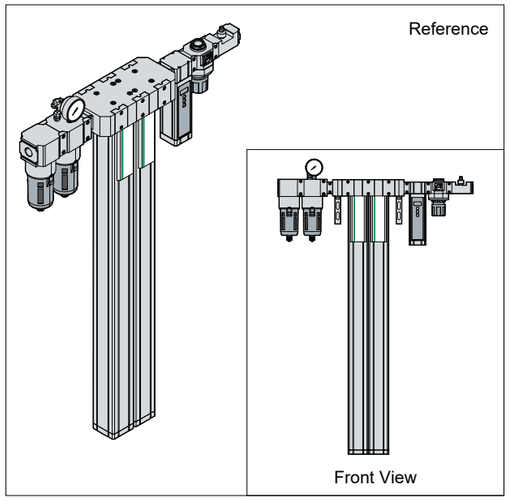
■No. of Units: 2

Model No.	Qty.	Appearance	Flow Rate (L/min ANR) and Nitrogen Concentration (%)	Page
			50 / 100 / 150 / 300 / 450 / 600	
NSU-4F	2		99.9 99.5 99 98 97 96 95 94 93 92 91 90	1
NSU-4G	2		99.9 99.5 99 98 97 96 95 94 93 92 91 90	
NSU-4H	2		99.9 99.5 99 98 97 96 95 94 93 92 91 90	

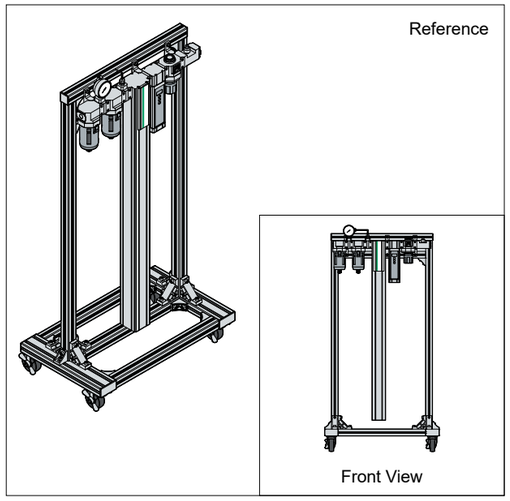
Note: The above values indicate the outlet nitrogen gas flow rate when the inlet air pressure is 0.7 MPa and the inlet air temperature is 25°C.

System Examples

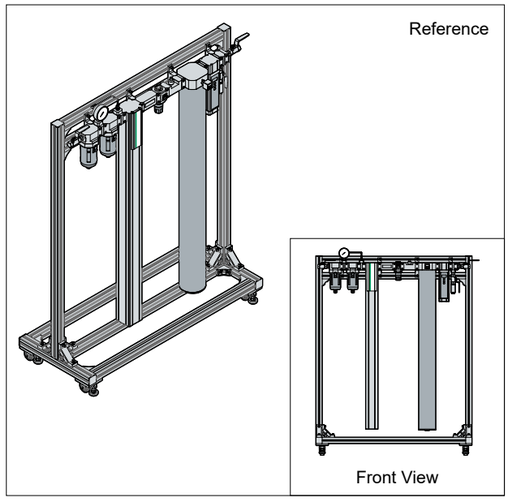
●Compatible with NS Multiple Cylinder Type System



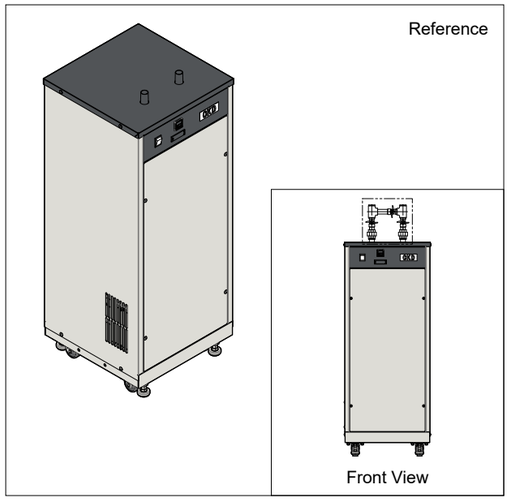
●Mounting Stand



●System with Intermittent Operation Tank



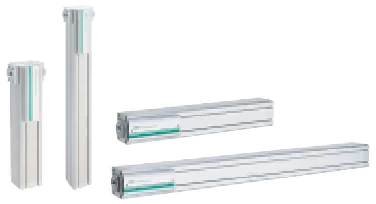
●Enclosure-mounted System



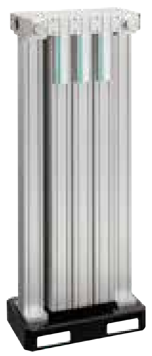
Note: For details, please contact our sales office.

Supplement:
The displayed nitrogen concentration of the gas from the Nitrogen Gas Extraction Unit indicates the total concentration of components other than oxygen (O2). The source air contains argon, carbon dioxide, and water vapor in addition to oxygen. Therefore, argon, which is difficult to permeate through the membrane like nitrogen, is included in the product nitrogen gas at a concentration of approximately 1%. The concentrations of carbon dioxide, which easily permeates the membrane, and water vapor are reduced to approx. 10 to 50 ppm and a level equivalent to an atmospheric pressure dew point of approx. -40°C, respectively.

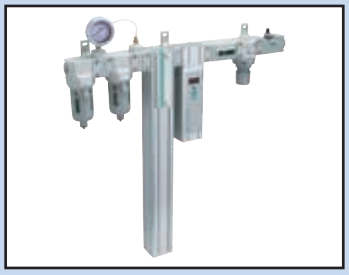
■Single Cylinder

Model No.	Appearance	Flow Rate (L/min ANR) and Nitrogen Concentration (%) (scale: 10 / 20, 40, 60, 80, 120, 160, 200, 260, 320)	Page
NS-3S1		99.9, 99.5, 99, 98, 97, 96, 95, 94, 93, 92, 91, 90	23
NS-3L1		99.9, 99.5, 99, 98, 97, 96, 95, 94, 93, 92, 91, 90	
NS-4S1		99.9, 99.5, 99, 98, 97, 96, 95, 94, 93, 92, 91, 90	
NS-4L1		99.9, 99.5, 99, 98, 97, 96, 95, 94, 93, 92, 91, 90	

■Multiple Cylinders

Model No.	Qty.	Appearance	Flow Rate (L/min ANR) and Nitrogen Concentration (%) (scale: 50, 100, 150 / 300, 450, 600, 750, 900, 1050, 1300, 2000, 2700)	Page
NS-4S2	2	 	99.9, 99.5, 99, 98, 97, 96, 95, 94, 93, 92, 91, 90	23
NS-4S3	3		99.9, 99.5, 99, 98, 97, 96, 95, 94, 93, 92, 91, 90	
NS-4L2	2		99.9, 99.5, 99, 98, 97, 96, 95, 94, 93, 92, 91, 90	
NS-4L3	3		99.9, 99.5, 99, 98, 97, 96, 95, 94, 93, 92, 91, 90	
NS-4L4	4		99.9, 99.5, 99, 98, 97, 96, 95, 94, 93, 92, 91, 90	
NS-4S6	6		99.9, 99.5, 99, 98, 97, 96, 95, 94, 93, 92, 91, 90	
NS-4S8	8		99.9, 99.5, 99, 98, 97, 96, 95, 94, 93, 92, 91, 90	
NS-4SA	10		99.9, 99.5, 99, 98, 97, 96, 95, 94, 93, 92, 91, 90	
NS-4L6	6		99.9, 99.5, 99, 98, 97, 96, 95, 94, 93, 92, 91, 90	
NS-4L8	8		99.9, 99.5, 99, 98, 97, 96, 95, 94, 93, 92, 91, 90	

Note: The above values indicate the outlet nitrogen gas flow rate when the inlet air pressure is 0.7 MPa and the inlet air temperature is 25°C.



Nitrogen Extraction Unit System Type

NSU Series

Easily Provides Stable Supply of Nitrogen Gas.

- Nitrogen gas can be obtained simply by piping to an air pressure source.
- All-in-one design provides excellent installability.

CE UKCA RoHS

For detailed applicable model numbers, refer to our website.

Model No. Indication Method

NSU - 4 S A 10A NN - N T

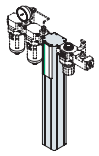
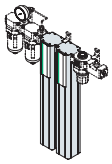
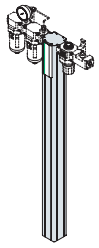
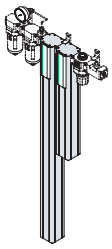
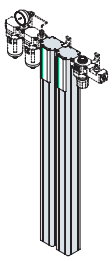
- NSU: Model No.
- 4: ❶ Body Size
- S: ❷ Membrane Unit Size
- A: ❸ Needle Valve
- 10A: ❹ Port Size
- NN: ❺ Oxygen Analyzer / Flow Sensor
- N: ❻ Option
- T: ❼ Installation Orientation

✳: For other combinations, please consult our sales office.

❶ Body Size

Code	Content
3	Main Unit Width 63
4	Main Unit Width 79

❷ Membrane Unit Size

	Code	Content	
	S	Short	
✳1	F	Short + Short	
	L	Long	
✳1	G	Long + Short	
✳1	H	Long + Long	

✳1: Only the body size "4" is available for the membrane unit sizes "F", "G" and "H".

❸ Needle Valve

Code	Content			Body size, membrane unit size (❶❷Combination) 3S	3L	4S/4F	4L/4G/4H
A	Max. Flow Rate	20 L/min		●	●	●	●
B		80 L/min		●	●	●	●
C		160 L/min			●	●	●
D		240 L/min				●	●
E		400 L/min					●

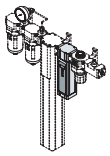
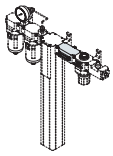
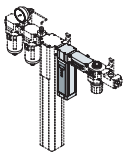
Note: Select a range suitable for the needle valve for the flow sensor.

❹ Port Size

	Code	Content
	10A	Rc3/8
✳1	10B	G3/8
✳2	10C	NPT3/8

✳1: When selecting G3/8, the regulator pressure gauge units will be shown as bar.
✳2: When selecting NPT3/8, the regulator pressure gauge units will be shown as psi.

❺ Oxygen Analyzer / Flow Sensor

Content			Code
None			NN
With Oxygen Analyzer (✳1)			AK
With Oxygen Analyzer, Traceability Certificate, System Diagram, Inspection Report (✳1)			AM
With Flow Sensor (✳2)	(20 L/min Specification)		BA
	(50 L/min Specification)		BB
	(100 L/min Specification)		BC
	(200 L/min Specification)		BD
	(500 L/min Specification)		BE
With Oxygen Analyzer / Flow Sensor (✳1, ✳2)	(20 L/min Specification)		CA
	(50 L/min Specification)		CB
	(100 L/min Specification)		CC
	(200 L/min Specification)		CD
	(500 L/min Specification)		CE
Oxygen Analyzer (With Traceability) / Flow Sensor (✳1, ✳2)	(20 L/min Specification)		CF
	(50 L/min Specification)		CG
	(100 L/min Specification)		CH
	(200 L/min Specification)		CJ
	(500 L/min Specification)		CK

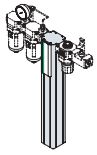
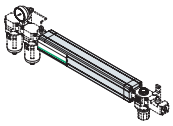
✳1: An external power supply is required for the oxygen concentration monitor. However, the connector cable is not included. Please order the connector cable using its standalone model number.
✳2: Switch output for the flow rate sensor is NPN. ❻If you specify option "P", PNP will be output.

❻ Option

	Code	Content	
	N	No Option	
✳1	E	With Exhaust Port	
	K	Flow Sensor with Unit Switching Function (Overseas models only)	
	P	Flow Sensor Switch output: PNP output	
✳2	X	Reverse Flow	

✳1: Exhaust air (oxygen-enriched gas) from Standard Products is released into the atmosphere. If "E" is selected, connection for exhaust (oxygen-enriched gas) piping is possible. The exhaust port size is Rc1/2.
✳2: Viewed from the front, standard products have an air inlet on the left port and a nitrogen gas outlet on the right port.

❼ Installation Orientation

Code	Content	
No Code	Vertical Installation	
T	Horizontal Installation (Selectable models are NSU-4S, 4L)	

Connector Cable Standalone Model No.

●DC Cable

PNA-1D
❶
Cable Length

❶ Cable Length

Code	Content
1D	1000 mm
3D	3000 mm
5D	5000 mm

●AC Adapter Standalone

PNA-A

●AC Adapter+ Convert Plug Set

PNA-AG

For exterior dimension drawings, refer to P. 16.

Food Process Specifications

(Catalog No. CC-1271AA)

●Uses food-grade lubricating oil usable in food manufacturing processes, and resin/rubber materials compliant with the Food Sanitation Act.

NSU-·····-FP✳

Specifications

Item				NSU-3S	NSU-3L	NSU-4S	NSU-4F	NSU-4L	NSU-4G	NSU-4H
Operating Condition Range	Operating Fluid			Compressed Air						
	Inlet Air Pressure		MPa	0.4 to 1.0 (✳1)						
	Proof pressure		MPa	1.5						
	Inlet Air Temperature		°C	5 to 50						
	Inlet Air Relative Humidity		RH	50%						
	Ambient temperature		°C	5 to 50						
Rating	Inlet air pressure dew point		°C	10						
	Inlet Air Pressure		MPa	0.7						
	Inlet Air Temperature		°C	25						
	Ambient temperature		°C	25						
Rated Flow Rate	Outlet Nitrogen Gas Flow Rate L/min (ANR) (✳2)	Nitrogen Concentration (%)or higher	99.9	1.9	5.6	11.0	20.9	30.6	31.9	49.0
			99	5.0	15.5	28.2	53.6	66.9	81.8	107.0
			97	8.9	28.7	49.9	94.8	118.1	159.7	189.0
			95	14.0	39.8	65.3	124.1	169.2	222.0	270.7
			90	27.0	78.1	137.3	260.9	313.5 (✳4)	-(✳5)	
	Inlet Air Flow Rate L/min (ANR)		99.9	17.3	50.9	100.0	190.0	278.2	290.0	445.5
			99	20.9	64.6	117.5	223.3	278.8	340.8	445.8
			97	24.1	77.6	134.9	256.2	319.2	431.6	510.8
			95	31.2	88.5	145.2	275.8	376.0	493.3	601.6
			90	60.0	173.6	305.1	579.7	696.7 (✳4)	-(✳5)	
Air Filter		Filtration	μm	5						
Oil Mist Filter		Oil Removal	mg/m^3	0.01 or less (after oil saturation 0.1 or less) ✳ Value at primary side oil concentration 30 mg/m^3, 21°C.						
Regulator		Set Pressure Range	MPa	0.05 to 0.85						
Oxygen Analyzer				For specifications, refer to P. 31.						
Flow Sensor				For specifications, refer to P. 18.						
Needle Valve		Flow Characteristics		Refer to P. 5.						
Standard Equipment				Pressure Gauge / Differential Pressure Gauge / Bracket						

✳1: Inlet air pressure when NS-QFS-E is assembled is 0.4 to 0.75 MPa.
✳2: When membrane unit size "H" is selected, if inlet temperature is 50°C, use with outlet flow rate of 39 L/min or less for 99.9% nitrogen gas concentration. If exceeding the operating range, please inquire.
✳3: Verify the outlet nitrogen gas flow rate against the needle valve flow characteristics and confirm it is within the operating range. If outside the operating range, please inquire.
✳4: When membrane unit size "L" is selected, if using 90% concentration nitrogen gas, use with inlet air temperature of 40°C or less. If using above 40°C, please inquire.
✳5: When membrane unit size "G" or "H" is selected, if using 90% concentration nitrogen gas, please inquire.

Model Selection Method

Since temperature and inlet air pressure affect the outlet nitrogen gas flow rate, correction is necessary if conditions differ from the rated specifications.

STEP 1 Checking Operating Conditions
Outlet Nitrogen Gas Flow Rate [L/min(ANR)]
Outlet Nitrogen Gas Pressure [MPa]
Inlet Air Pressure [MPa]
Inlet Air Temperature [°C]

STEP 2 Check the correction factor for outlet nitrogen gas flow rate due to the influence of inlet air temperature.

① Temperature - Gas Flow Rate Correction Factor

Temperature (°C)	Outlet Nitrogen Concentration				
	99.9%	99%	97%	95%	90%
5	0.64	0.79	0.79	0.75	0.78
10	0.73	0.84	0.84	0.81	0.84
25	1	1	1	1	1
35	0.97	1.05	1.04	1.07	1.07
40	0.95	1.08	1.06	1.11	1.11
50	0.9	1.09	1.11	1.15	1.2

STEP 3 Check the correction factor for outlet nitrogen gas flow rate due to the influence of inlet air pressure.

② Pressure - Gas Flow Rate Correction Factor

Pressure (MPa)						
0.4	0.5	0.6	0.7	0.8	0.9	1.0
0.4	0.65	0.75	1	1.07	1.2	1.3

STEP 4 An appropriate body size and a membrane unit size are determined from the rated outlet nitrogen gas flow rate of each model. **Rated Outlet Nitrogen Gas Flow Rate × ① Temperature Gas Flow Rate Correction Factor × ② Pressure Gas Flow Rate Correction Factor = Corrected Refined Nitrogen Gas Flow Rate**
Select a body size / membrane unit size where the above corrected refined nitrogen gas flow rate meets the required gas flow rate.

STEP 5 Select the required needle valve according to the outlet nitrogen gas flow rate. Using the outlet nitrogen gas flow rate and the outlet nitrogen gas pressure confirmed in STEP1, select a needle valve based on the needle valve flow rate characteristics (P. 5)

STEP 6 Select the model based on STEP 4 and STEP 5.

STEP 7 Check the correction factor for inlet air flow rate due to the influence of inlet air temperature.

③ Temperature - Air Flow Rate Correction Factor

Temperature (°C)	Outlet Nitrogen Concentration				
	99.9%	99%	97%	95%	90%
5	0.73	0.68	0.75	0.69	0.76
10	0.8	0.76	0.81	0.77	0.82
25	1	1	1	1	1
35	1.21	1.17	1.11	1.13	1.11
40	1.32	1.25	1.17	1.2	1.16
50	2.05	1.38	1.31	1.31	1.3

STEP 8 Check the correction factor for inlet air flow rate due to the influence of inlet air pressure.

④ Pressure - Air Flow Rate Correction Factor

Pressure (MPa)						
0.4	0.5	0.6	0.7	0.8	0.9	1.0
0.61	0.79	0.91	1	1.07	1.2	1.3

STEP 9 The inlet air flow rate is determined from the rated outlet nitrogen gas flow rate of each model. **Inlet Air Flow Rate of Model Selected in STEP 4 × ③ Temperature Air Flow Rate Correction Factor × ④ Pressure Air Flow Rate Correction Factor = Corrected Inlet Air Flow Rate**
Check if usable with the compressor capability based on the above corrected inlet air flow rate.

Calculation Example

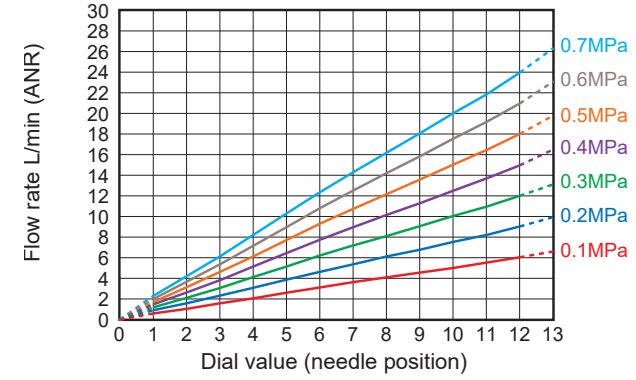
Condition Item	Operating Conditions	Selection Conditions	Correction Factor for Outlet Nitrogen Flow Rate	Correction Factor for Inlet Air Flow Rate
Outlet Nitrogen Concentration	99 [%]	99 [%]	-	-
Outlet Nitrogen Pressure	0.2 [MPa]	0.2 [MPa]	-	-
Inlet Air Temperature	35 [°C]	35 [°C]	①1.05	③1.17
Inlet Air Pressure	0.6 to 0.7 [MPa]	0.6 [MPa]	②0.75	④0.91

Substitute the above conditions into the above formula to determine the outlet nitrogen gas flow rate when using NSU-4L□ at 99% nitrogen concentration.
66.9 (Rated Outlet Nitrogen Gas Flow Rate) × 1.05 × 0.75 = 52.7 L/min (ANR).
Select the model if the required product nitrogen gas flow rate is below this value.
The inlet air flow rate at that time is 278.8 × 1.17 × 0.91 = 296.8 L/min (ANR).
For the needle size, select NS-QDVL-160, adjustable to 53 L/min (ANR) at 0.2 MPa.

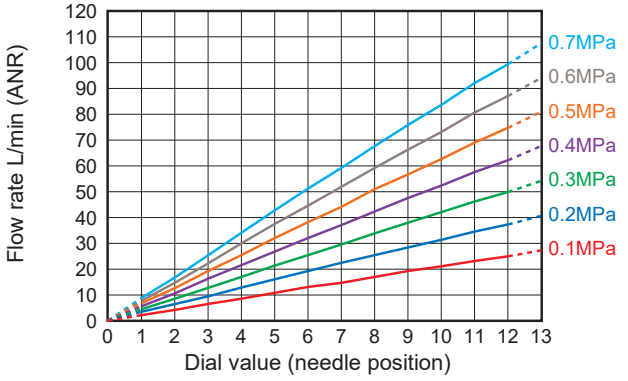
Needle Valve Flow Characteristics

Note: The flow characteristic graph is for reference only and does not guarantee values.

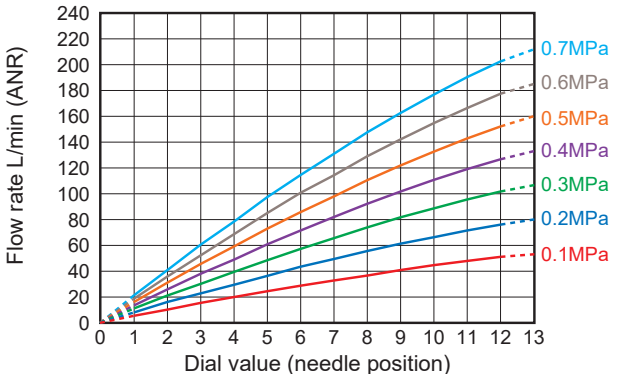
● NS-QDVL-020



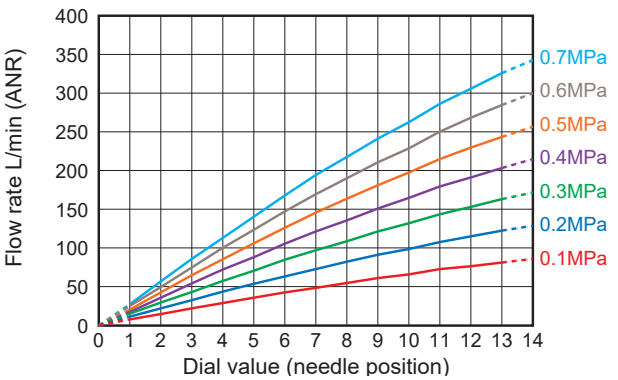
● NS-QDVL-080



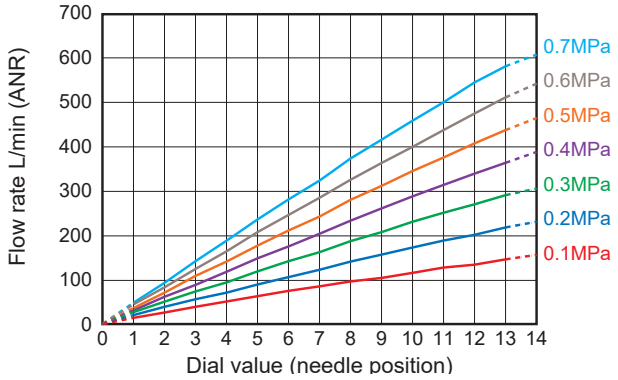
● NS-QDVL-160



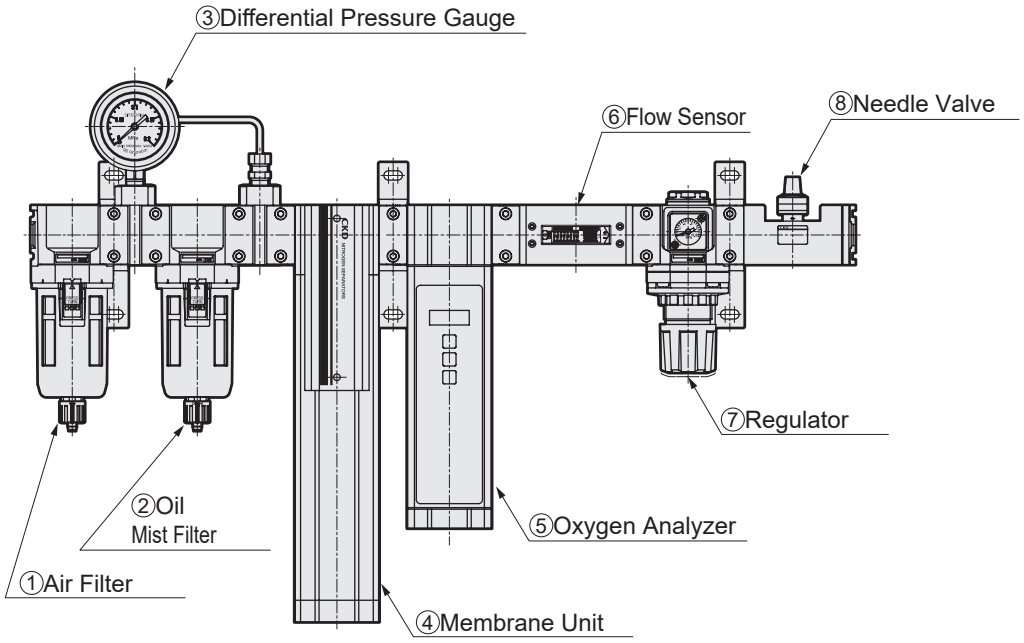
● NS-QDVL-240



● NS-QDVL-400



Configuration Component (Vertical Installation)

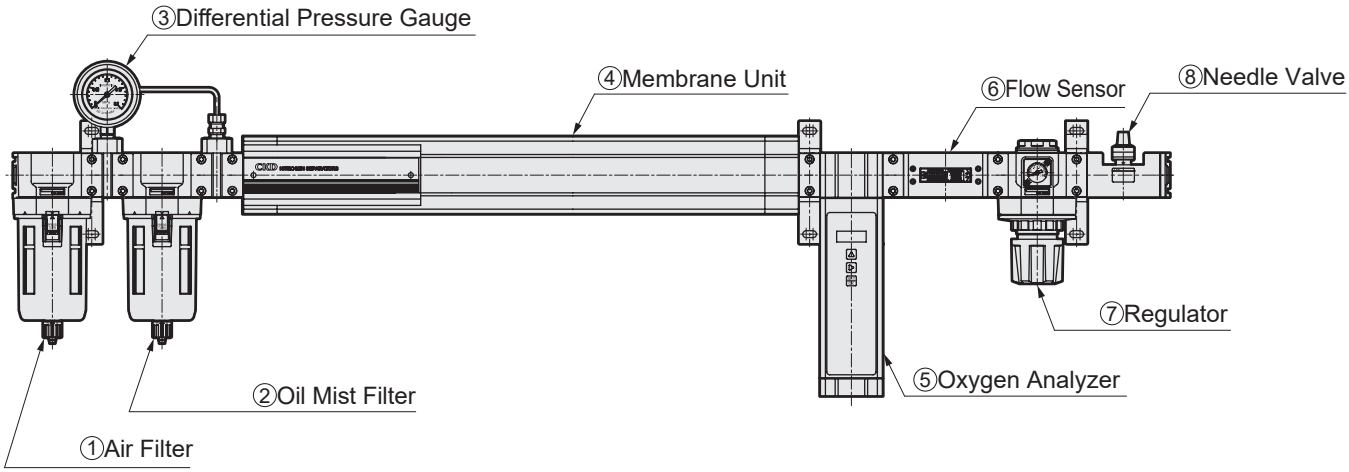


■ Standard (for Connection Aperture Rc 3/8)

Unit Model No.	NSU-3S□	NSU-3L□	NSU-4S□	NSU-4F□	NSU-4L□	NSU-4G□	NSU-4H□
① Air Filter	F3000-10-W-F		F4000-10-W-F				
② Oil Mist Filter	M3000-10-W-F1		M4000-10-W-F1				
③ Differential Pressure Gauge	GA400-8-P02						
④ Membrane Unit	NS-3S110A-□	NS-3L110A-□	NS-4S110A-□	NS-4S110A-□ NS-4S110A-□	NS-4L110A-□	NS-4L110A-□ NS-4S110A-□	NS-4L110A-□ NS-4L110A-□
⑤ Oxygen Analyzer	PNA-10A-□-FP 2						
⑥ Flow Sensor	NS-QFS-□						
⑦ Regulator	NS-QR3-FP1		NS-QR4-FP1				
⑧ Needle Valve	NS-QDVL-020 NS-QDVL-080	NS-QDVL-020 NS-QDVL-080 NS-QDVL-160	NS-QDVL-020 NS-QDVL-080 NS-QDVL-160 NS-QDVL-240		NS-QDVL-020 NS-QDVL-080 NS-QDVL-160 NS-QDVL-240 NS-QDVL-400		

✳: If the port sizes are G3/8 or NPT3/8, contact CKD Sales.

Configuration Component (Horizontal Installation)



■ Standard (for Connection Aperture Rc 3/8)

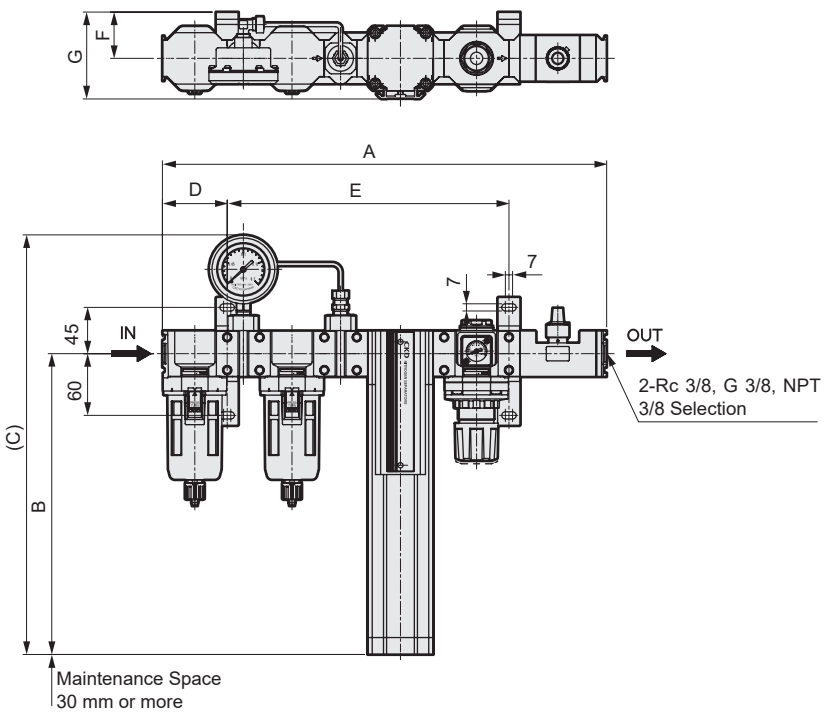
Unit Model No.	NSU-4S□-□T	NSU-4L□-□T
① Air Filter	F4000-10-W-F	
② Oil Mist Filter	M4000-10-W-F1	
③ Differential Pressure Gauge	GA400-8-P02	
④ Membrane Unit	NS-4S110A-□T	NS-4L110A-□T
⑤ Oxygen Analyzer	PNA-10A-□-FP2	
⑥ Flow Sensor	NS-QFS-□	
⑦ Regulator	NS-QR4-FP1	
⑧ Needle Valve	NS-QDVL-020 NS-QDVL-080 NS-QDVL-160 NS-QDVL-240	NS-QDVL-020 NS-QDVL-080 NS-QDVL-160 NS-QDVL-240 NS-QDVL-400

✳: If the port sizes are G3/8 or NPT3/8, contact CKD Sales.

For maintenance parts, refer to the CKD component product site
Refer to (https://www.ckd.co.jp/kiki/en/)→ "Model No." → Maintenance Parts.

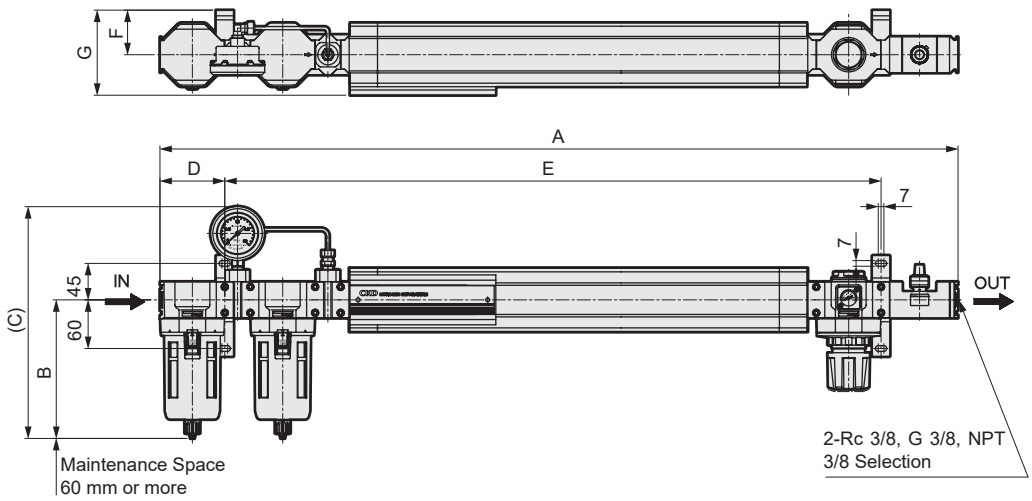
External Dimension Drawing (Single Type)

●No Oxygen Analyzer / No Flow Sensor (NSU-$^{3S}_{4L}$ ✳10✳NN)



Model No.	A	B	C	D	E	F	G	Weight (kg)
NSU-3S✳10✳NN	432	293	408	63	274	45	85	4.0
NSU-3L✳10✳NN	432	543	658	63	274	45	85	4.9
NSU-4S✳10✳NN	498	543	658	80	323	55	106	6.9
NSU-4L✳10✳NN	498	1043	1158	80	323	55	106	9.7

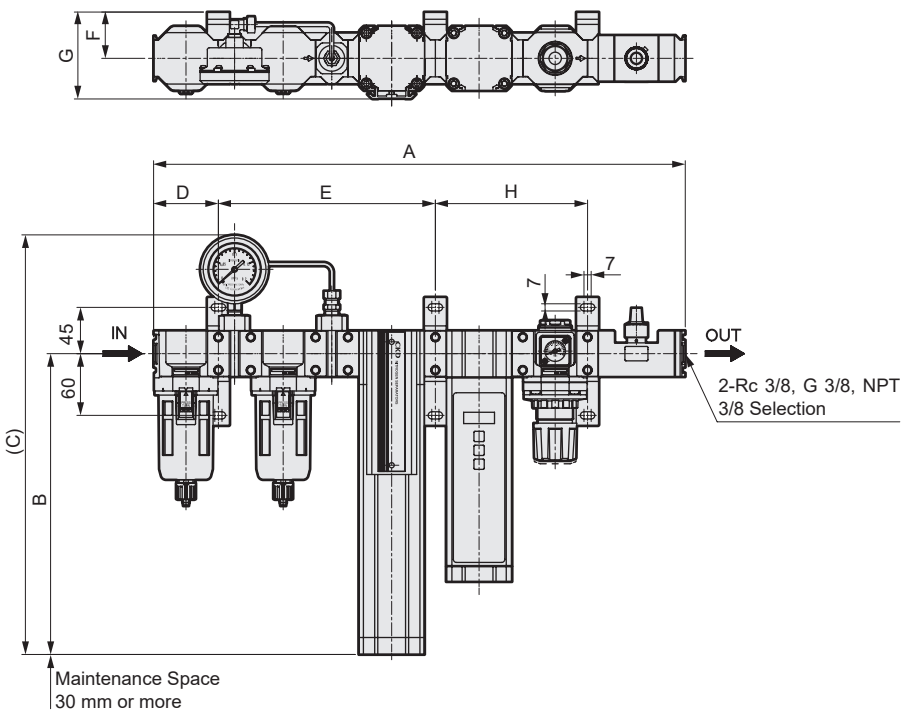
●Without oxygen monitor/without flow rate sensor (NSU-4$^{S}_{L}$ ✳10✳NN-✳T)



Model No.	A	B	C	D	E	F	G	Weight (kg)
NSU-4S✳10✳NN-✳T	985	171	286	80	810	55	106	7.1
NSU-4L✳10✳NN-✳T	1485	171	286	80	1310	55	106	9.9

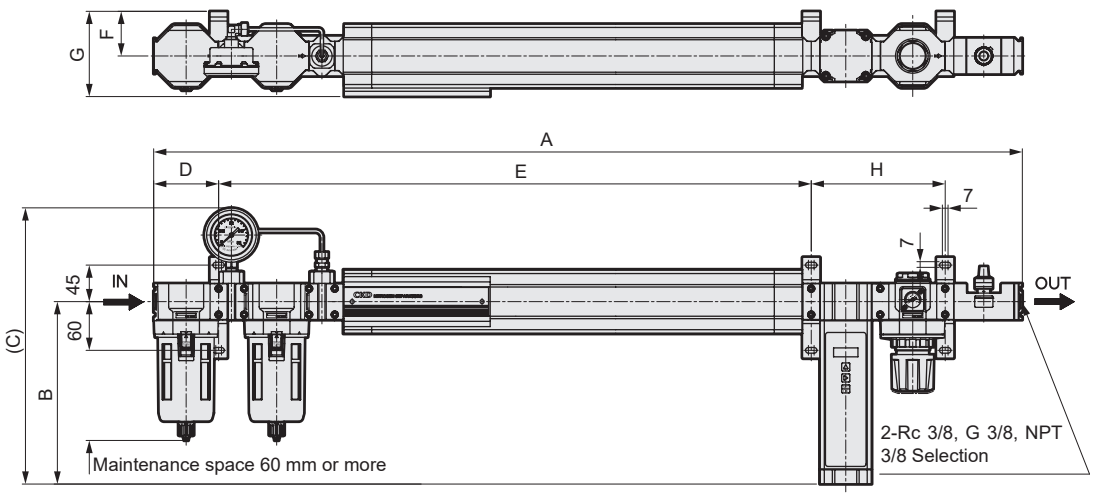
External Dimension Drawing

●With oxygen monitor without flow rate sensor (NSU-$^{3S}_{4L}$✳10✳A✳)



Model No.	A	B	C	D	E	F	G	H	Weight (kg)
NSU-3S✳10✳A✳	517	293	408	63	211	45	85	148	5.6
NSU-3L✳10✳A✳	517	543	658	63	211	45	85	148	6.5
NSU-4S✳10✳A✳	583	543	658	80	243	55	106	165	8.5
NSU-4L✳10✳A✳	583	1043	1158	80	243	55	106	165	11.3

●With oxygen monitor without flow rate sensor (NSU-4$^{S}_{L}$ ✳10✳A✳-✳T)

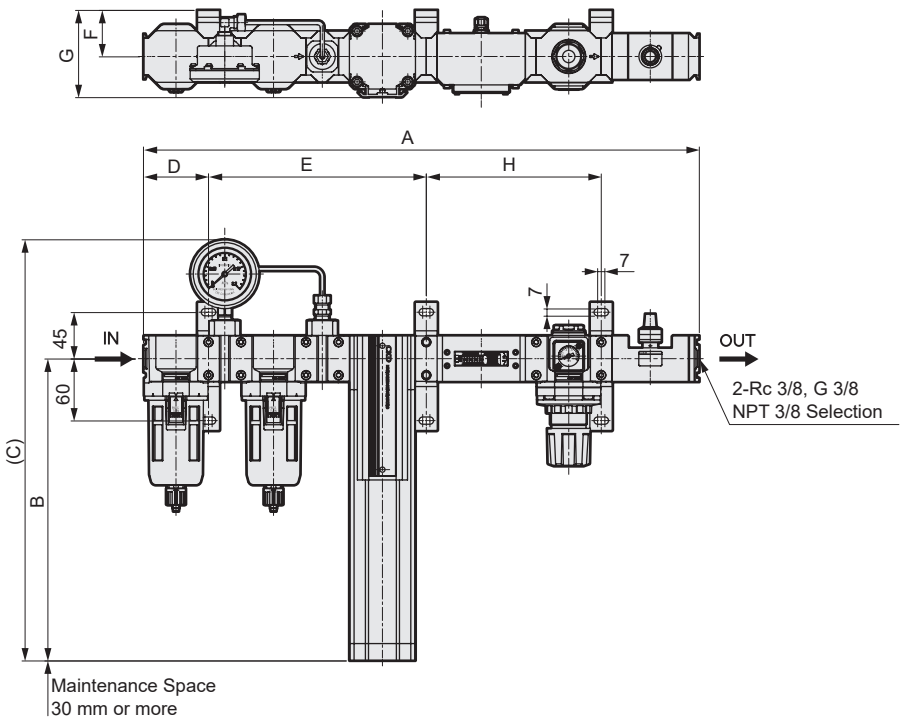


Note: A wiring space of 60 mm or more is required below the oxygen analyzer.

Model No.	A	B	C	D	E	F	G	H	Weight (kg)
NSU-4S✳10✳A✳-✳T	1070	225	340	80	730	55	106	165	8.7
NSU-4L✳10✳A✳-✳T	1570	225	340	80	1230	55	106	165	11.5

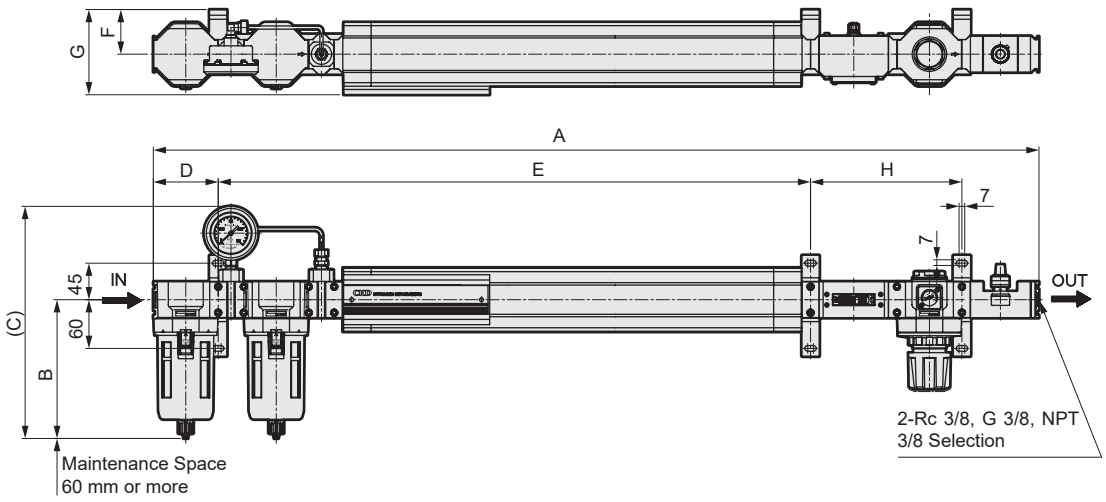
External Dimension Drawing (Single Type)

●Without oxygen monitor/with flow rate sensor (NSU-$^{3S}_{4L}$✳10✳B✳)



Model No.	A	B	C	D	E	F	G	H	Weight (kg)
NSU-3S✳10✳B✳	538.5	293	408	63	211	45	85	169.5	4.8
NSU-3L✳10✳B✳	538.5	543	658	63	211	45	85	169.5	5.7
NSU-4S✳10✳B✳	604.5	543	658	80	243	55	106	186.5	7.7
NSU-4L✳10✳B✳	604.5	1043	1158	80	243	55	106	186.5	10.5

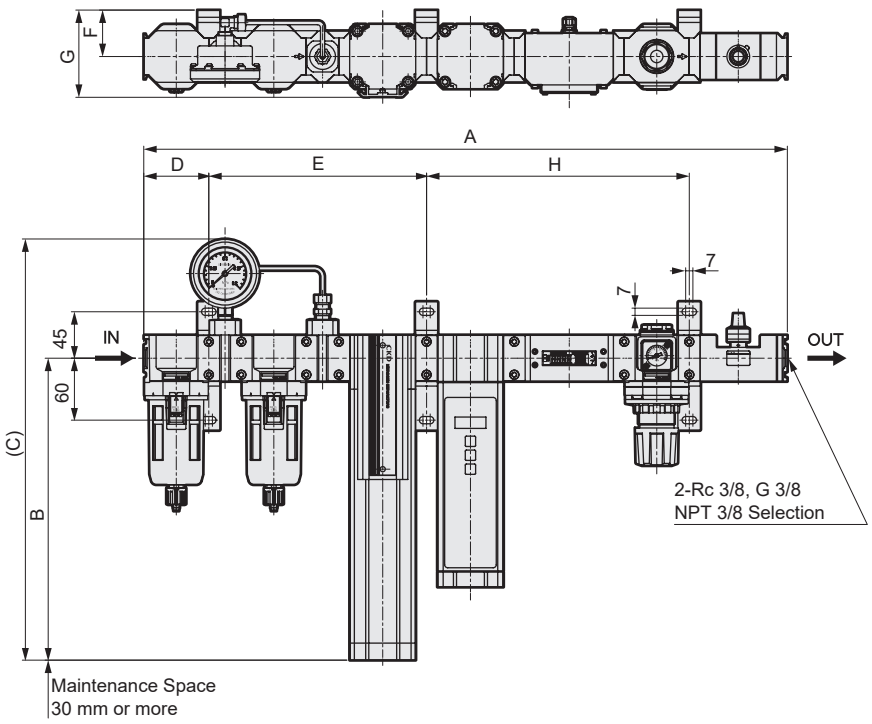
●Without oxygen monitor/with flow rate sensor (NSU-4$^{S}_{L}$ ✳10✳B✳-✳T)



Model No.	A	B	C	D	E	F	G	H	Weight (kg)
NSU-4S✳10✳B✳-✳T	1091.5	171	286	80	730	55	106	186.5	7.9
NSU-4L✳10✳B✳-✳T	1591.5	171	286	80	1230	55	106	186.5	10.7

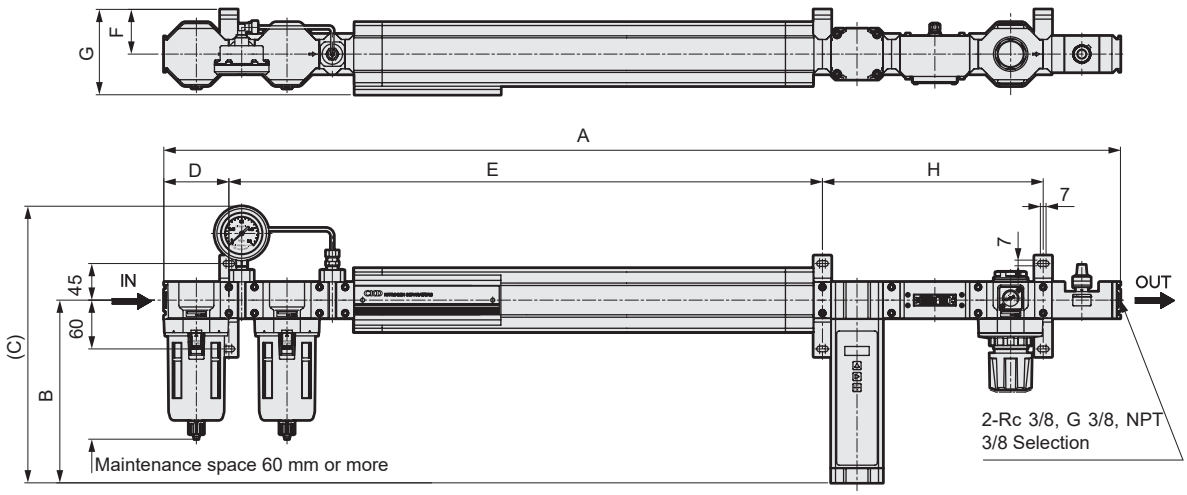
External Dimension Drawing (Single Type)

●With oxygen monitor with flow rate sensor (NSU-$^{3S}_{4L}$✳10✳C✳)



Model No.	A	B	C	D	E	F	G	H	Weight (kg)
NSU-3S✳10✳C✳	623.5	293	408	63	211	45	85	254.5	6.4
NSU-3L✳10✳C✳	623.5	543	658	63	211	45	85	254.5	7.3
NSU-4S✳10✳C✳	689.5	543	658	80	243	55	106	271.5	9.3
NSU-4L✳10✳C✳	689.5	1043	1158	80	243	55	106	271.5	12.1

●With oxygen monitor/with flow rate sensor (NSU-4$^{S}_{L}$✳10✳C✳-✳T)

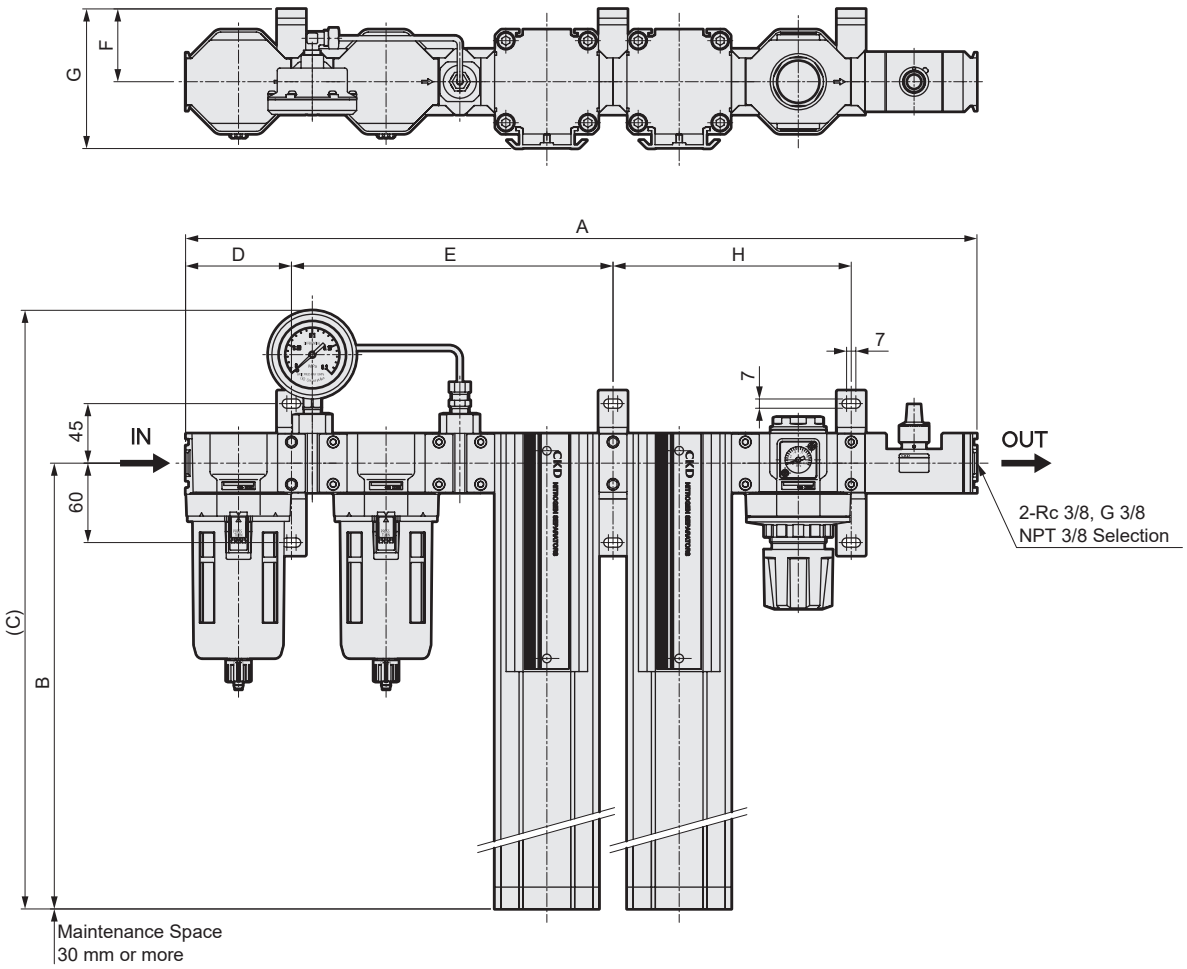


Note: A wiring space of 60 mm or more is required below the oxygen analyzer.

Model No.	A	B	C	D	E	F	G	H	Weight (kg)
NSU-4S✳10✳C✳-✳T	1176.5	225	340	80	730	55	106	271.5	9.5
NSU-4L✳10✳C✳-✳T	1676.5	225	340	80	1230	55	106	271.5	12.3

External Dimension Drawing (Double Type)

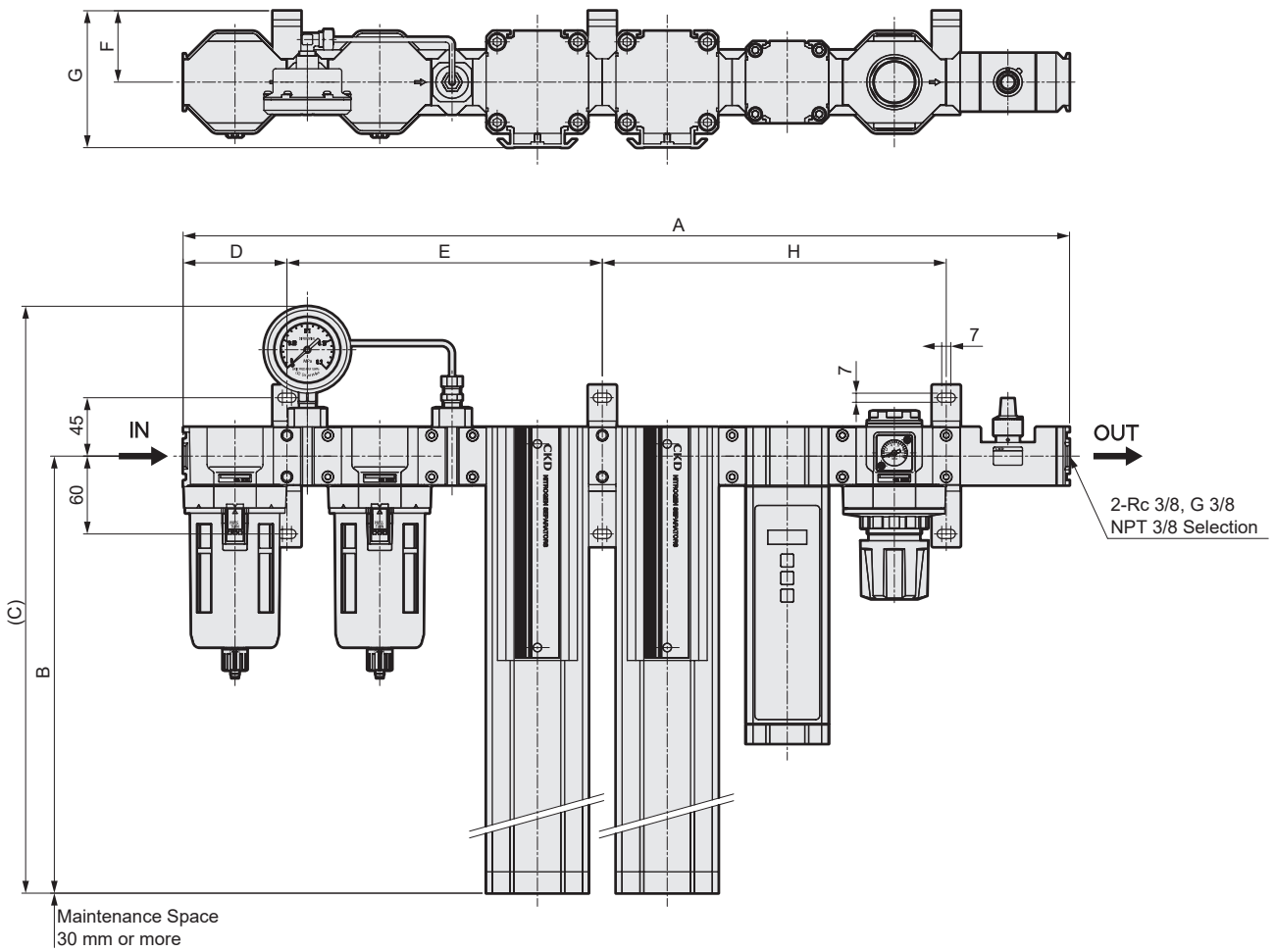
●No oxygen monitor or flow rate sensor (NSU-4 F G H ✳10✳NN)



Model No.	A	B	C	D	E	F	G	H	Weight (kg)
NSU-4F✳10✳NN	598	543	658	80	243	55	106	180	10.9
NSU-4G✳10✳NN	598	1043	1158	80	243	55	106	180	13.7
NSU-4H✳10✳NN	598	1043	1158	80	243	55	106	180	16.5

External Dimension Drawing (Double Type)

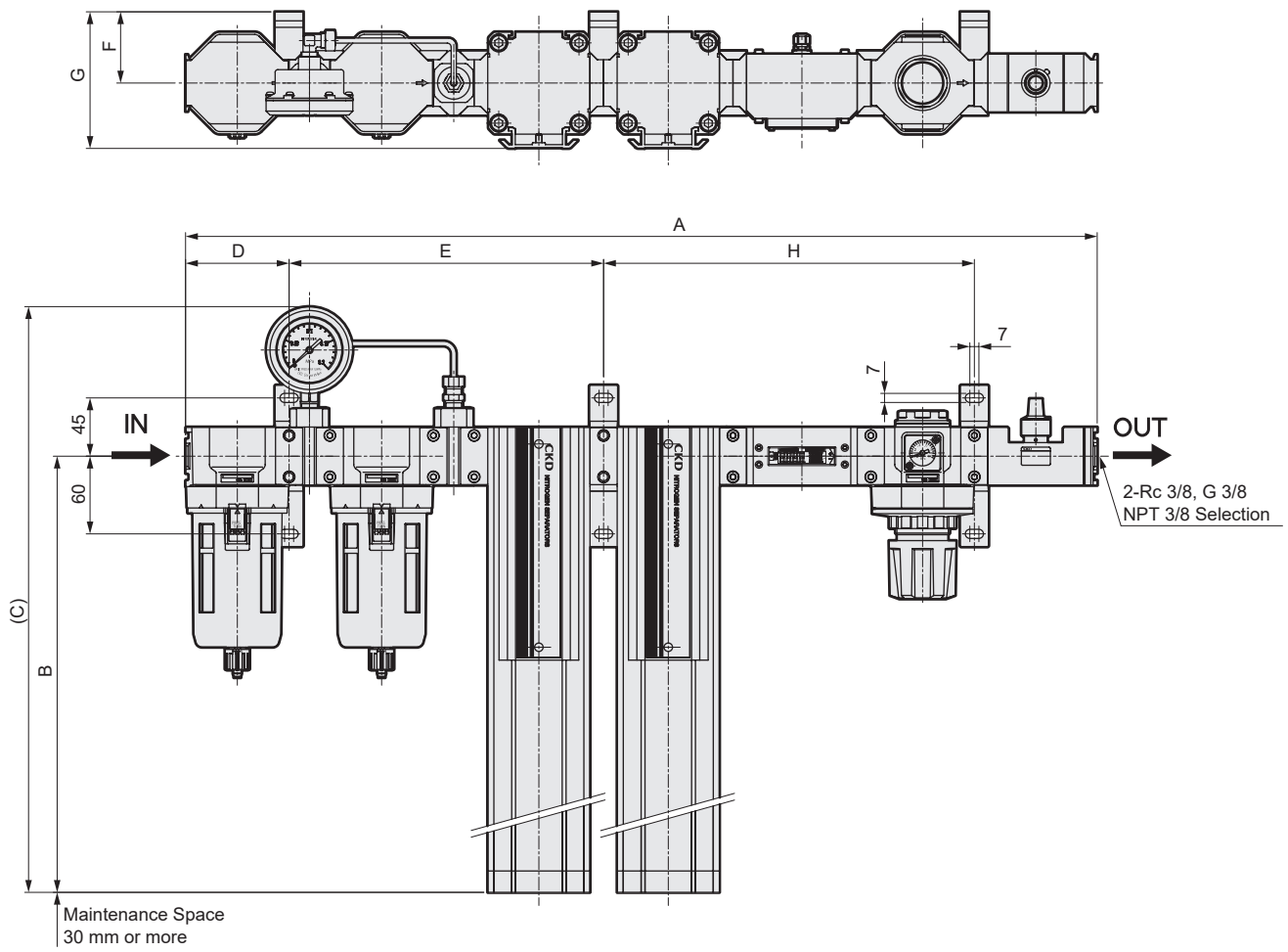
●With oxygen monitor, no flow rate sensor (NSU-4F/G/H✳10✳A✳)



Model No.	A	B	C	D	E	F	G	H	Weight (kg)
NSU-4F✳10✳A✳	683	543	658	80	243	55	106	265	12.5
NSU-4G✳10✳A✳	683	1043	1158	80	243	55	106	265	15.3
NSU-4H✳10✳A✳	683	1043	1158	80	243	55	106	265	18.1

External Dimension Drawing (Double Type)

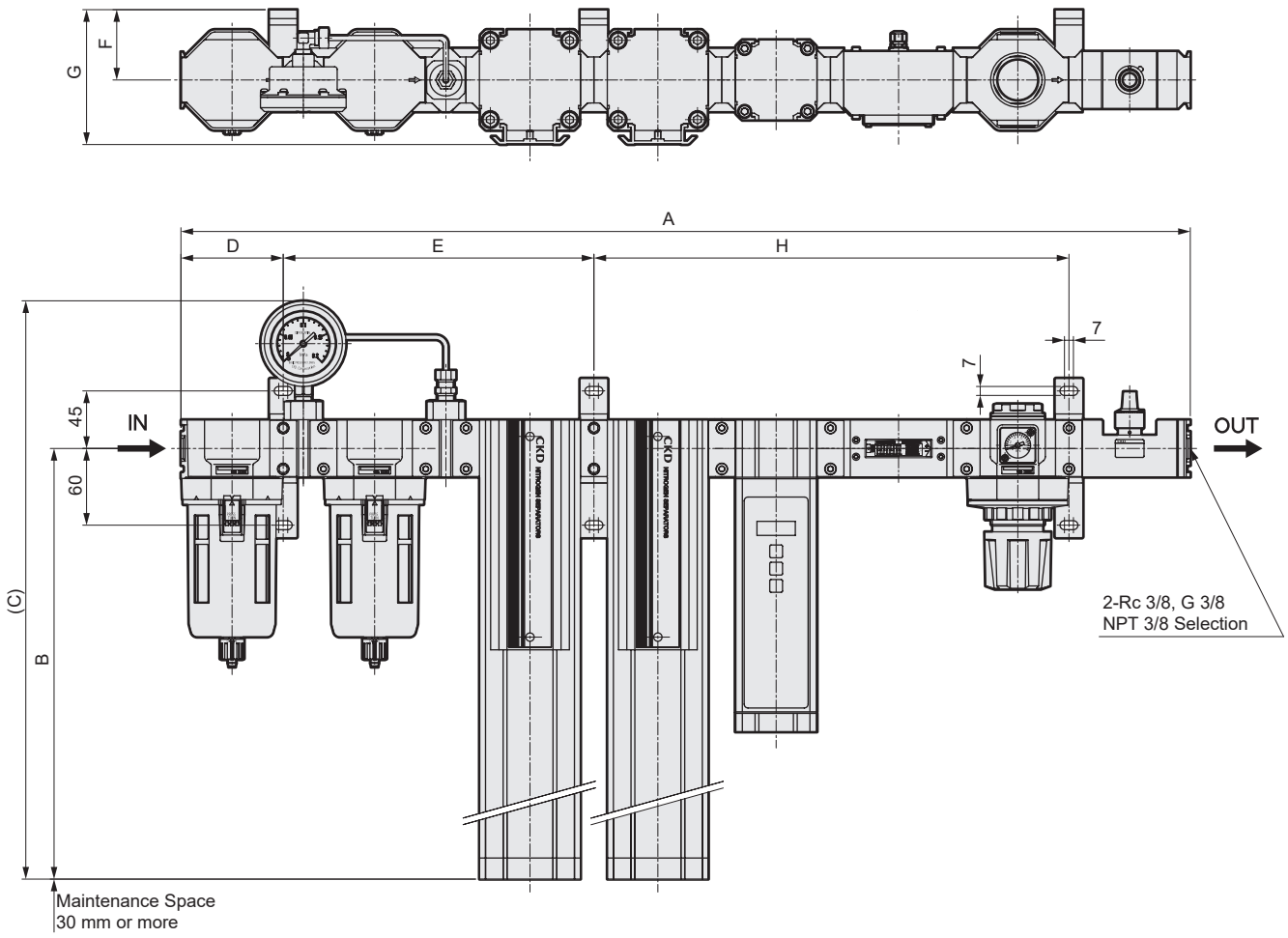
●Without oxygen monitor with flow rate sensor (NSU-4 F G H ✳10✳B✳)



Model No.	A	B	C	D	E	F	G	H	Weight (kg)
NSU-4F✳10✳B✳	704.5	543	658	80	243	55	106	286.5	11.7
NSU-4G✳10✳B✳	704.5	1043	1158	80	243	55	106	286.5	14.5
NSU-4H✳10✳B✳	704.5	1043	1158	80	243	55	106	286.5	17.3

External Dimension Drawing (Double Type)

●With oxygen monitor/with flow rate sensor (NSU-4 F G H ✳10✳C✳)



Model No.	A	B	C	D	E	F	G	H	Weight (kg)
NSU-4F✳10✳C✳	789.5	543	658	80	243	55	106	371.5	13.3
NSU-4G✳10✳C✳	789.5	1043	1158	80	243	55	106	371.5	16.1
NSU-4H✳10✳C✳	789.5	1043	1158	80	243	55	106	371.5	18.9

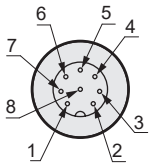
Connector Cable Model No. Indication Method for Oxygen Analyzer and External Dimension Drawing

✳: The connector cable is sold separately from the main unit.

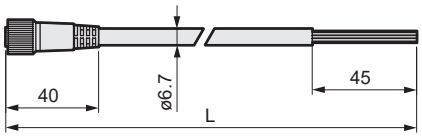
●DC Cable

Use when driving with DC power and when using analog output or switch output.

Model No.	L Dimension
PNA-1D	1000
PNA-3D	3000
PNA-5D	5000



No.	Cable Color	Content
1	White	Power +
2	Brown	Power -
3	Green	Analog Output +
4	Yellow	Analog Output -
5	Gray	Contact Output (Relay Output)
6	Pink	
7	Blue	-
8	-	-

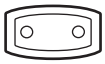
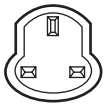


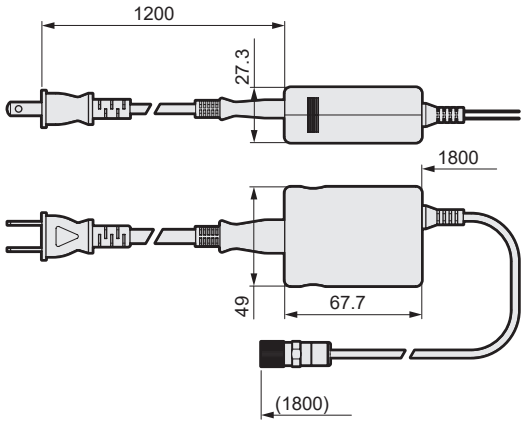
●AC adapter

Use when driving with AC power.

Model No.	Content
PNA-A	AC Adapter Standalone Type A
PNA-AG	AC Adapter + Conversion Plug Set ✳ Global power conversion plugs B, C, O, BF type included

・Plug Shape

B-type	C-type	O-type	BF-type
			



Flow Sensor for Nitrogen Extraction Unit

NS-QFS Series

Modular structure connectable to Nitrogen Extraction Unit NS Series

●Flow rate range: 20 L/min to 500 L/min

For detailed applicable model numbers, refer to our website.

Model No. Indication Method

NS-QFS - A N 1

- NS-QFS: Model No.
- A: ❶ Flow range (Full Scale Flow Rate)
- N: ❷ Switch Output
- 1: ❸ Unit Specification

✳1: When using the reverse flow option of the NSU series, invert the display for use. For display inversion setting, refer to P. 22

✳2: Joiner set (joiner, bolt, O-ring) and 1 gasket are attached.

❶ Flow Rate Range (Full Scale Flow Rate)

Code	Content
A	Flow Rate Range 20 L/min
B	Flow Rate Range 50 L/min
C	Flow Rate Range 100 L/min
D	Flow Rate Range 200 L/min
E	Flow Rate Range 500 L/min

❷ Switch Output

Code	Content
N	NPN Open Collector Output 1 point
P	PNP Open Collector Output 1 point

❸ Unit Specification

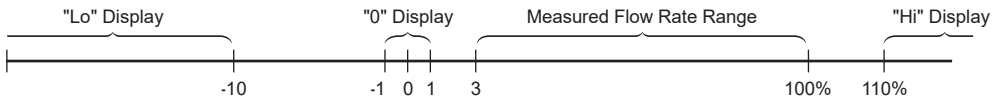
Code	Content
1	SI unit system only
✳ 2	With Unit Switching Function (Overseas models only)

✳:Models with unit switching cannot be sold in Japan.

NS-QFS Specifications

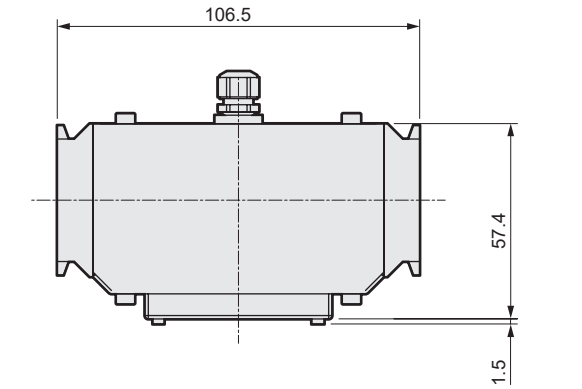
Item			NS-QFS-A	NS-QFS-B	NS-QFS-C	NS-QFS-D	NS-QFS-E
Flow Direction			One Way				
Measurement flow rate range ✳1		(L/min)	0.6 to 20	1.5 to 50	3 to 100	6 to 200	15 to 500
Display Type			4 digits + 4 digits 2-color LCD				
Flow rate display range ✳2		(L/min)	-1.9 to 21.9	-4.9 to 54.9	-9.9 to 109.9	-19 to 219	-49 to 549
Cumulative Display ✳3	Display Range	L	0.0 to ±999999.9 L			0 to ±9999999 L	
	Pulse Output Rate	L	0.2	0.5	1	2	5
Operating Conditions	Applicable Fluid		Nitrogen Gas				
	Temperature range	°C	5 to 50 (No condensation)				
	Pressure range	MPa	0 to 1.0				0 to 0.75
	Proof pressure	MPa	1.5				
Operating Ambient Temperature / Humidity			5 to 50°C, 90% RH or less				
Storage temperature		°C	-10 to 60				
Accuracy ✳4 (fluid:in dry air)	Accuracy	✳5	Within ±3% FS (Secondary side open to atmosphere) (Guaranteed range depends on "Measured Flow Rate Range")				
	Repeatability	✳6	Within ±1% FS (Secondary side open to atmosphere)				
	Temperature Characteristics		Within ±0.2% FS/°C (15 to 35°C, 25°C reference)				
	Pressure Characteristics		Within ±5% FS (0.35 MPa reference)				
Response Time		✳7	50 msec or less (When response time setting is OFF)				
Switch Output	[❷]	N	NPN open collector 1 point output (50 mA or less, voltage drop 2.4 V or less)				
		P	PNP open collector 1 point output (50 mA or less, voltage drop 2.4 V or less)				
Analog output			4-20 mA Current Output (Connection load impedance 0 to 300 Ω)				
Power Supply Voltage			24 VDC (21.6 to 26.4 V) Ripple rate 1% or less				
Current consumption		✳8	45 mA or less				
Lead Wire			ø3.7 AWG26 equivalent × 5 cores, Insulator outer diameter ø1.0, Length 2.5 m				
Included Functions			① Setting copy function, ② Flow integration, ③ Peak hold, etc.				
Protection Structure			IP40 equivalent (IEC standard)				
Protection Circuit		✳9	Power supply reverse connection protection, Switch output reverse connection protection, Switch output load short-circuit protection				
EMC Directive			EN55011, EN61000-6-2, EN61000-4-2/3/4/6/8				
Weight		kg	0.8				

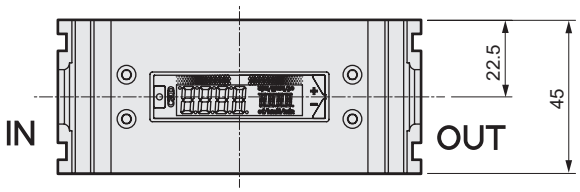
✳1: Converted to volume flow rate at Standard Condition (20°C, 1 atm (101 kPa), relative humidity 65% Rh).
✳2: The display for each flow rate is as follows.

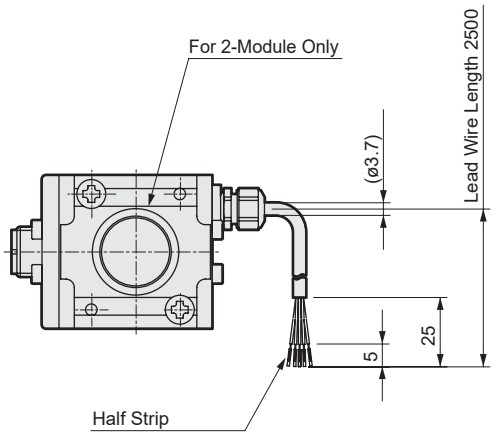


✳3: Integrated flow rate is a calculated (reference) value. When using the integration save function, be careful not to exceed the memory element access count (limit is 1 million times) for the save count. (Changes to the settings are counted in number of accesses.)
No. of saves = usage time/5 min < 1 million cycles
When the instantaneous flow rate is 1% or less, it is not counted as integrated flow rate.
✳4: Compressed air is used for the adjustment and inspection of this product.
✳5: Accuracy is based on our standard flow meter and does not indicate absolute accuracy. Note that accuracy ±3% FS does not include repeatability, temperature characteristics, or pressure characteristics.
✳6: Repeatability in a short time. Does not include changes over time.
✳7: Actual response time varies depending on piping conditions. Response time setting can be selected from 50 msec to 1.5 sec as a guideline.
✳8: Current when load is not connected. Be careful as current consumption changes depending on the load connection status.
✳9: The protection function of this product is effective only against specific incorrect connections and load short circuits, and does not protect against all incorrect connections.

External Dimension Drawing

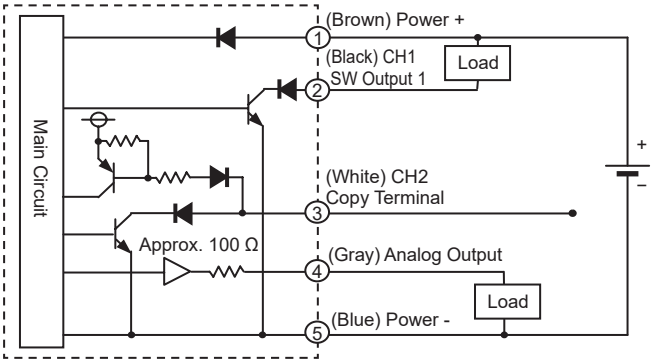




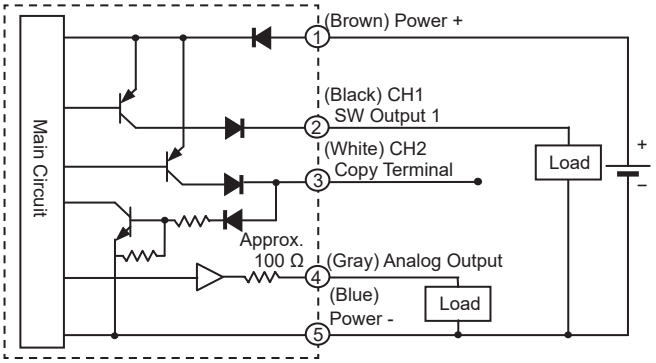


Internal Circuit and Load Connection Example

●NPN output

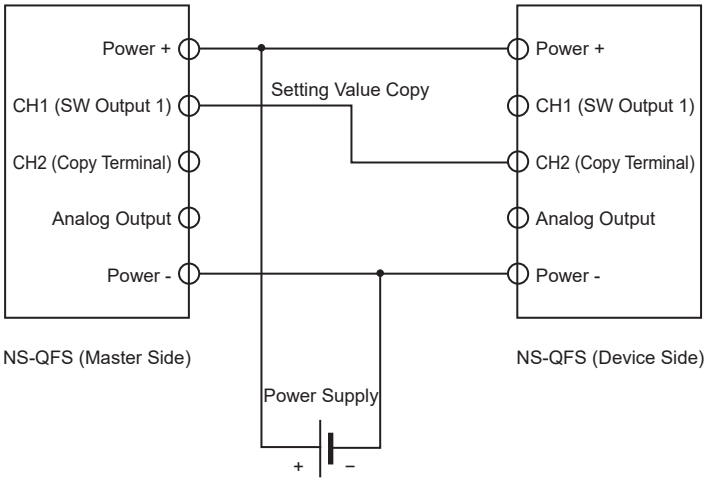


●PNP Output



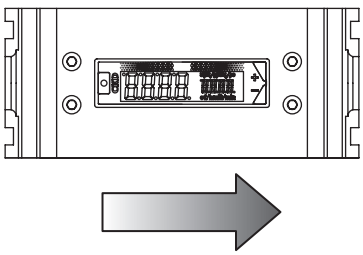
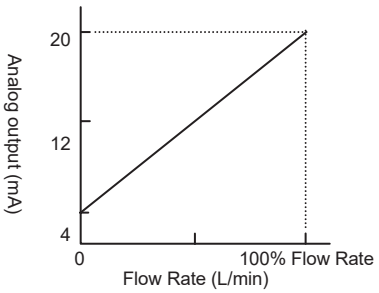
Terminal No.	Option Lead Color	Name
①	Brown	Power + (24 V)
②	Black	CH1 (Switch Output 1: max 50 mA)
③	White	CH2 (Copy Terminal)
④	Gray	Analog Output Current Output: 4-20 mA Load impedance 300 Ω or less
⑤	Blue	Power - (GND)

[When Using Setting Copy Function]



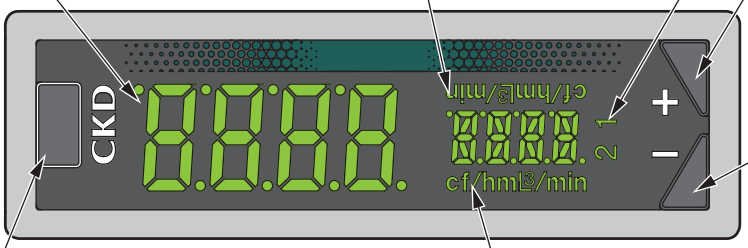
Connect CH1 (SW Output 1) on the master side and CH2 (Copy Terminal) on the slave side, turn on the sensor power, and use the setting copy function (F93). Note that this connection should only be used when using the setting copy function. As shown in the load connection example above, performing copying with the load connected to CH1, or operating the switch with CH1 and CH2 connected, may cause unexpected operation of the equipment side, or damage to the equipment and NS-QFS. Never use with the copy terminal still connected.

Analog Output Characteristics

Flow Direction	Current Output Type
[One Way Type] 	

Names and Functions of Display/Operation Section

●Display Section Name



Main Display Section (Green/Red)
- Displays flow rate display, setting values.
- Display color can be switched.

Flow Rate Unit Display
- Displays the flow rate unit.

Output (OUT1) Display
- Lights up when CH1 output is ON.
- During overcurrent detection, background and it both flash.

Key
- Start capturing peak hold and integrated flow rate.
- Sequentially transitions through function selection screens.
- When setting each data, it is used for counting up numerical values, etc.

Key
- Stop capturing peak hold and integrated flow rate.
- Sequentially transitions through function selection screens.
- When setting each data, it is used to count down numerical values.

MODE Key
- Set when entering various settings modes.
- Used when returning to flow rate display.

Sub Display Section (Green/Red)
- Displays flow direction / operating state.
- Display color can be switched.

Names and Functions of Display/Operation Section

Functions and various settings may be performed during normal flow rate display or after entering each mode.
Each mode is also divided into Maintenance Mode, SET Mode, and Setting Monitor Mode according to frequency of use.

●Normal operation (RUN mode)

Item	Description	Factory Default Setting
Instantaneous Flow Rate Display	Displays instantaneous flow rate.	Display (Measurement)
Peak Hold Function	The maximum and minimum values indicated by the flow rate value within a certain period can be known.	Hidden (Stop)
Integrated Flow Rate Display	It is possible to switch to integrated flow rate display. The switch output function can turn the switch ON/OFF at or above a specified integrated value, or output pulses for each fixed integrated value with the integrated pulse function.	Hidden (Measurement)

●SET mode

No.	Item	Description	Factory Default Setting
F.01	CH1 Operation Selection	Selects the function of CH1. Switch output operation settings and integrated pulse settings can be made.	No Switch Output
F.03	Integration Function Setting	You can select whether to continuously acquire the integrated flow rate value or set a time. You can also choose whether to retain that data or not.	Continuous Acquisition: Data Hold OFF
F.04	Sub Screen Display Setting	Sets the display method for the sub display section. Can switch between "Flow Direction", "Reference State", "Numbering Display".	Flow Direction
F.05	Display Color Setting	Sets the display color. (Red, Green) Display color during normal display and when switch output is ON can be set.	Normal: Green Switch ON: Red
F.07	Display Inversion Function	The LCD display can be inverted vertically.	Standard Display
F.08	Reference State Setting	Standard state or reference state can be selected. Standard State (ANR): Flow rate converted to volume at 20°C, 1 atm, 65% RH Reference State (NOR): Flow rate converted to volume at 0°C, 1 atm, 0% RH	ANR
F.09	Unit Setting (Overseas models only)	Unit can be set. Selectable from L/min / cf/h.	Domestic: L/min Overseas: L/min
F.10	Display Cycle Setting	Digital display update cycle can be changed in 3 steps from 0.25 sec to 1 sec. If the display flickers, it can be improved by lengthening the display update cycle.	0.5 sec
F.11	Analog Output Response Time Setting	Sets the response time. Can be changed in 7 steps from 0.05 sec to 1.50 sec. Prevents chattering and malfunction due to sudden flow rate changes, noise, etc.	0.05 sec
F.12	Numbering Setting	Numbering can be set.	0000
F.14	ECO Mode Setting	ECO mode can be selected. If no button operation occurs for about 1 minute, it transitions to ECO mode and the display backlight turns off. Power consumption can be reduced.	OFF
F.16	Lock Setting	Key lock method and password method can be set. Use differently depending on the operating environment.	OFF
F.17	Peak Hold Setting	You can select whether to continuously acquire peak/bottom values or set a time. You can also choose whether to retain that data or not.	Continuous Acquisition: Data Hold OFF

●Maintenance Mode

No.	Item	Description	Factory Default Setting
F.91	Forced Output Function	Forcibly turns ON switch output for use in checking wiring connections and initial operation of input devices.	-
F.92	Zero Adjust Function	Corrects zero point deviation.	Adjust Value: 0
F.93	Setting Copy Function	Setting values can be copied between two NS-QFS units if the model numbers are compatible for copying. (Copying is possible only between products with the same model number.)	-
F.99	Reset Function	Returns to the factory default setting state.	-

●Setting Monitor Mode

Item	Description	Factory Default Setting
Setting Monitor Function	SETYou can check the settings in MODE. (You cannot edit the settings.)	-

Nitrogen Extraction Unit

NS Series

Modular design facilitates system integration with peripheral components

■ Nitrogen gas can be obtained simply by supplying compressed air.

RoHS

Model No. Indication Method

NS - 4 S 1 10A - B T

- NS: Model No.
- 4: ❶ Body Size
- S: ❷ Membrane Unit Size
- 1: ❸ Quantity
- 10A: ❹ Port Size
- B: ❺ Option
- T: ❻ Installation Orientation

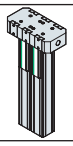
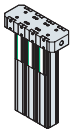
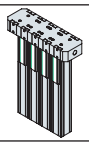
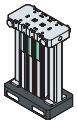
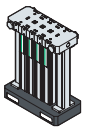
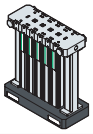
❶ Body Size

Code	Content
3	Main Unit Width 63
4	Main Unit Width 79

❷ Membrane Unit Size

Code	Content	
S	Short	
L	Long	

❸ Quantity

Code	Content		Body size, membrane unit size (❶❷ Combination)			
			3S	3L	4S	4L
1	1 pc		●	●	●	●
2	2 pcs				●	●
3	3 pcs				●	●
4	4 pcs					●
6	6 pcs				●	●
8	8 pcs				●	●
A	10 pcs				●	

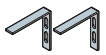
Note: For 6 pcs or more, it is a floor-standing type, so there is no bracket.

❹ Port Size

Code	Content	❸Quantity 1	2	3	4	6	8	A
10A	Rc 3/8	●						
10B	G 3/8	●						
10C	NPT 3/8	●						
20A	Rc 3/4		●	●	●			
20B	G 3/4		●	●	●			
20C	NPT 3/4		●	●	●			
25A	Rc 1					●	●	●
25B	G 1					●	●	●
25C	NPT 1					●	●	●

❺ Option

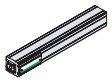
✳1, ✳2

	Code	Content	
	N	No Option	
	B	Bracket	
✳2	C	Bracket + Reverse Flow	
✳1	D	Bracket + With Exhaust Port	
✳1, ✳2	F	Bracket + Reverse Flow + With Exhaust Port	
✳2	X	Reverse Flow	
✳1	E	With Exhaust Port	
✳1, ✳2	H	Reverse Flow + With Exhaust Port	

✳1: Exhaust (oxygen-enriched gas) from standard products is released to the atmosphere. If “D”, “F”, “E”, "H" is selected, connection for exhaust (oxygen-enriched gas) piping is possible. The exhaust port size is Rc1/2.

✳2: Viewed from the front, the Standard Product has an air inlet on the left port, while an air outlet on the right port. If “C”, “F”, “X”, “H” is selected, the right port becomes the air inlet and the left port becomes the air outlet.

❻ Installation Orientation

Code	Content	
Blank	Vertical Installation	
T	Horizontal Installation (Selectable models are NS-4S1, 4L1)	

Food Process Specifications (Catalog No. CC-1271AA)

●Uses food-grade lubricating oil usable in food manufacturing processes, and resin/rubber materials compliant with the Food Sanitation Act.

NS ‒ · · · · ‒ FP✳

Specifications

■Single Cylinder

Item				NS-3S1	NS-3L1	NS-4S1	NS-4L1
Operating Condition Range	Operating Fluid			Compressed Air			
	Inlet Air Pressure	MPa		0.4 to 1.0			
	Proof pressure	MPa		1.5			
	Inlet Air Temperature	°C		5 to 50			
	Relative humidity of inlet air	RH		50% or less			
	Ambient temperature	°C		5 to 50			
Rating	Inlet Air Cleanliness Class			1:6:1 (ISO 8573-1:2010)			
	Inlet Air Pressure	MPa		0.7			
	Inlet Air Temperature	°C		25			
	Ambient temperature	°C		25			
Rated Flow Rate	Outlet Nitrogen Gas Flow Rate L/min (ANR)	Nitrogen Concentration (%)or higher	99.9	1.9	5.6	11.0	30.6
			99	5.0	15.5	28.2	66.9
			97	8.9	28.7	49.9	118.1
			95	14.0	39.8	65.3	169.2
			90	27.0	78.1	137.3	313.5
	Inlet Air Flow Rate L/min (ANR)		99.9	17.3	50.9	100.0	278.2
			99	20.9	64.6	117.5	278.8
			97	24.1	77.6	134.9	319.2
			95	31.2	88.5	145.2	376.0
			90	60.0	173.6	305.1	696.7

■Double Cylinder

Item				NS-4S2	NS-4S3	NS-4L2	NS-4L3	NS-4L4	NS-4S6	NS-4S8	NS-4SA	NS-4L6	NS-4L8
Operating Condition Range	Operating Fluid			Compressed Air									
	Inlet Air Pressure	MPa		0.4 to 1.0									
	Proof pressure	MPa		1.5									
	Inlet Air Temperature	°C		5 to 50									
	Relative humidity of inlet air	RH		50% or less									
	Ambient temperature	°C		5 to 50									
Rating	Inlet Air Cleanliness Class			1:6:1 (ISO 8573-1:2010)									
	Inlet Air Pressure	MPa		0.7									
	Inlet Air Temperature	°C		25									
	Ambient temperature	°C		25									
Rated Flow Rate	Outlet Nitrogen Gas Flow Rate L/min (ANR)	Nitrogen Concentration (%)or higher	99.9	22.0	33.0	61.2	91.8	122.4	66.0	88.0	110.0	183.6	244.8
			99	56.4	84.6	133.8	200.7	267.6	169.2	225.6	282.0	401.4	535.2
			97	99.8	149.7	236.2	354.3	472.4	299.4	399.2	499.0	708.6	944.8
			95	130.6	195.9	338.4	507.6	676.8	391.8	522.4	653.0	1015.2	1353.6
			90	274.6	411.9	627.0	940.5	1254.0	823.8	1098.4	1373.0	1881.0	2508.0
	Inlet Air Flow Rate L/min (ANR)		99.9	200.0	300.0	556.4	834.6	1112.8	600.0	800.0	1000.0	1669.2	2225.6
			99	235.0	352.5	557.6	836.4	1115.2	705.0	940.0	1175.0	1672.8	2230.4
			97	269.8	404.7	638.4	957.6	1276.8	809.4	1079.2	1349.0	1915.2	2553.6
			95	290.4	435.6	752.0	1128.0	1504.0	871.2	1161.6	1452.0	2256.0	3008.0
			90	610.2	915.3	1393.4	2090.1	2786.8	1830.6	2440.8	3051.0	4180.2	5573.6

Note: For 6 pcs or more, it is a floor-standing type.

Model Selection Method

Since temperature and inlet air pressure affect the outlet nitrogen gas flow rate, correction is necessary if conditions differ from the rated specifications.

STEP 1 Check operating conditions and rated specifications.
Operating conditions: Inlet air pressure, Inlet air temperature, Required nitrogen gas flow rate

STEP 2 Check the correction factor for outlet nitrogen gas flow rate due to the influence of inlet air temperature.

① Temperature - Gas Flow Rate Correction Factor

Temperature (°C)	Outlet Nitrogen Concentration				
	99.9%	99%	97%	95%	90%
5	0.64	0.79	0.79	0.75	0.78
10	0.73	0.84	0.84	0.81	0.84
25	1	1	1	1	1
35	0.97	1.05	1.04	1.07	1.07
40	0.95	1.08	1.06	1.11	1.11
50	0.9	1.09	1.11	1.15	1.2

STEP 3 Check the correction factor for outlet nitrogen gas flow rate due to the influence of inlet air pressure.

② Pressure - Gas Flow Rate Correction Factor

Pressure (MPa)						
0.4	0.5	0.6	0.7	0.8	0.9	1.0
0.4	0.65	0.75	1	1.07	1.2	1.3

STEP 4 Determine the appropriate model from the rated outlet nitrogen gas flow rate of each model.
Rated Outlet Nitrogen Gas Flow Rate × ① Temperature Gas Flow Rate Correction Factor × ② Pressure Gas Flow Rate Correction Factor = Corrected Outlet Nitrogen Gas Flow Rate
Select one where the above corrected outlet nitrogen gas flow rate meets the required gas flow rate.

STEP 5 Check the correction factor for inlet air flow rate due to the influence of inlet air temperature.

③ Temperature - Air Flow Rate Correction Factor

Temperature (°C)	Outlet Nitrogen Concentration				
	99.9%	99%	97%	95%	90%
5	0.73	0.68	0.75	0.69	0.76
10	0.8	0.76	0.81	0.77	0.82
25	1	1	1	1	1
35	1.21	1.17	1.11	1.13	1.11
40	1.32	1.25	1.17	1.2	1.16
50	2.05	1.38	1.31	1.31	1.3

STEP 6 Check the correction factor for inlet air flow rate due to the influence of inlet air pressure.

④ Pressure - Air Flow Rate Correction Factor

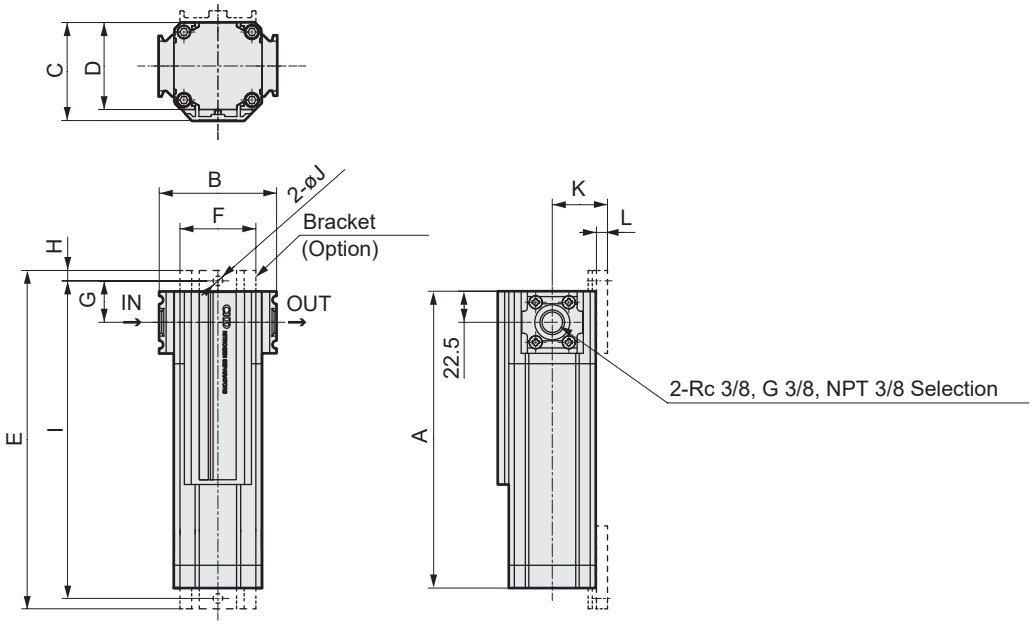
Pressure (MPa)						
0.4	0.5	0.6	0.7	0.8	0.9	1.0
0.61	0.79	0.91	1	1.07	1.2	1.3

STEP 7 Determine the inlet air flow rate from the rated outlet nitrogen gas flow rate of each model.
Inlet Air Flow Rate of Model Selected in STEP 4 × ③ Temperature Air Flow Rate Correction Factor × ④ Pressure Air Flow Rate Correction Factor = Corrected Inlet Air Flow Rate L/min L/min (ANR)
Check if usable with the compressor capability based on the above corrected inlet air flow rate.
Calculation Example

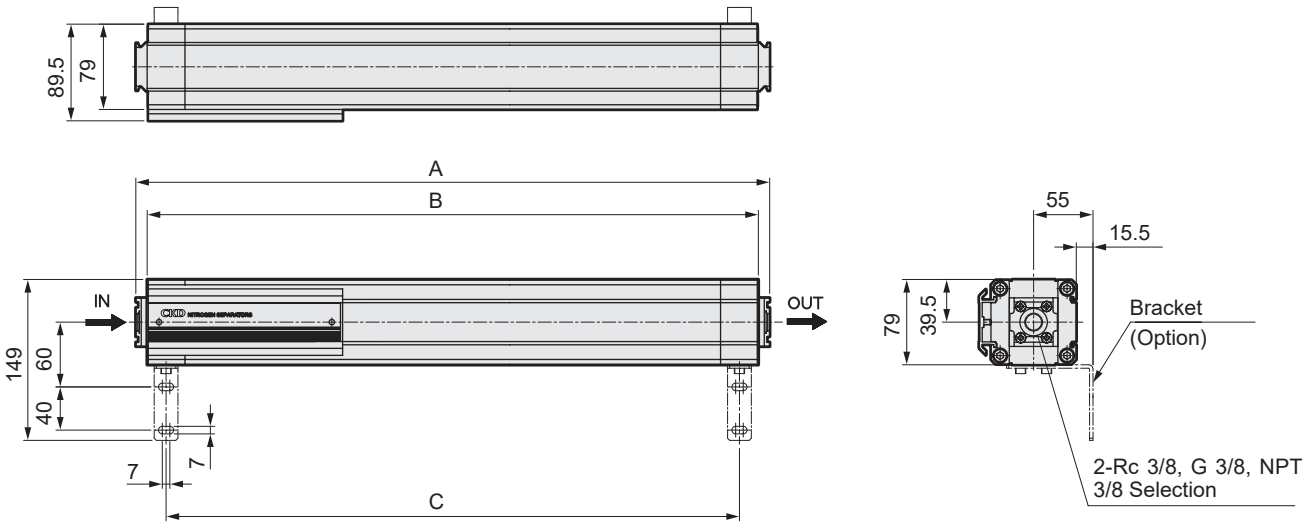
Condition Item	Operating Conditions	Selection Conditions	Correction Factor for Outlet Nitrogen Flow Rate	Correction Factor for Inlet Air Flow Rate
Inlet Air Temperature	35 to 39 °C	35°C	① 1.05	③ 1.17
Inlet Air Pressure	0.5 to 0.55 MPa	0.5 MPa	② 0.65	④ 0.79

Substitute the above conditions into the above formula to determine the outlet nitrogen gas flow rate when using NS-4L1 at 99% nitrogen concentration.
66.9 (Rated Outlet Nitrogen Gas Flow Rate) × 1.05 × 0.65 = 45.7 L/min (ANR).
Select the model if the required product nitrogen gas flow rate is below this value.
The inlet air flow rate at that time is 278.8 × 1.17 × 0.79 = 257.7 L/min (ANR).

External Dimension Drawing



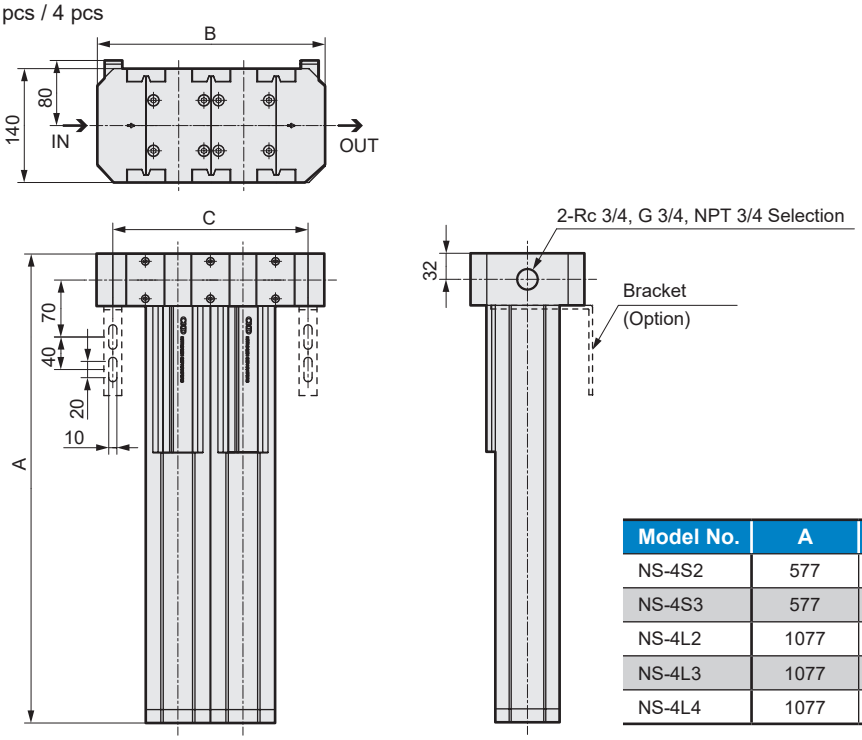
Model No.	A	B	C	D	Weight (kg)	Bracket Related Dimensions							
						E	F	G	H	I	J	K	L
NS-3S1	315	85	71	63	1.8	345	55	30	7.5	330	7	40	8
NS-3L1	565	85	71	63	2.7	595	55	30	7.5	580	7	40	8
NS-4S1	565	100	90	79	4.0	605	70	32.5	10	585	9	50	10
NS-4L1	1065	100	90	79	6.8	1105	70	32.5	10	1085	9	50	10



Model No.	A	B	C	Weight (kg)
NS-4S1✱-✱T	587	566	531	4.2
NS-4L1✱-✱T	1087	1066	1031	7.0

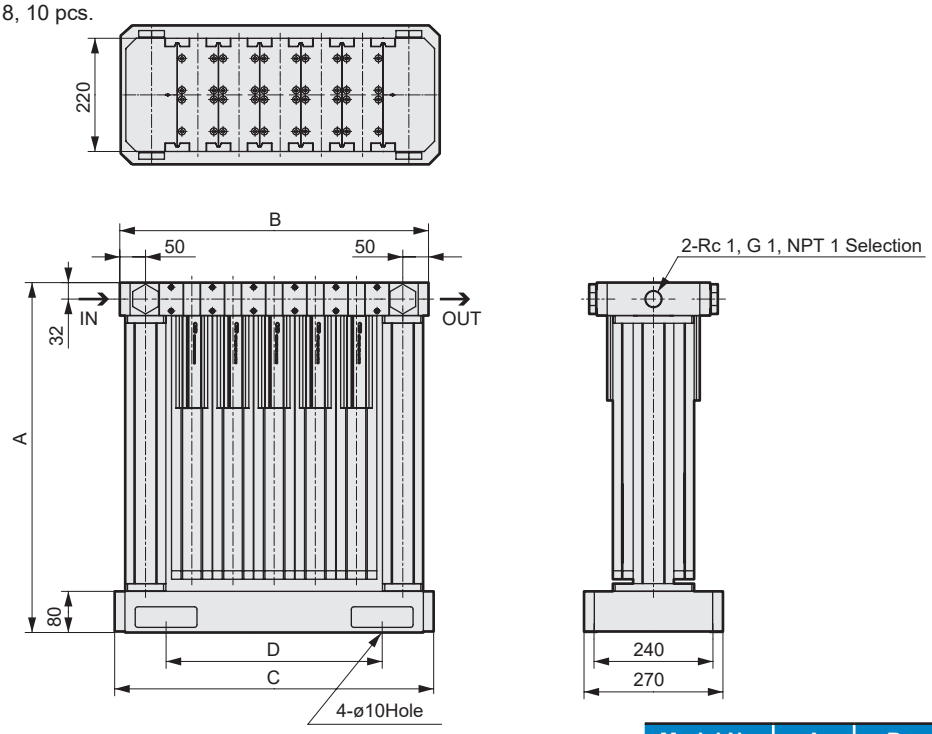
External Dimension Drawing

● Quantity 2 / 3 pcs / 4 pcs



Model No.	A	B	C	Weight (kg)
NS-4S2	577	280	240	12
NS-4S3	577	360	320	17
NS-4L2	1077	280	240	18
NS-4L3	1077	360	320	25
NS-4L4	1077	440	400	32

● Quantity 6, 8, 10 pcs.



Model No.	A	B	C	D	Weight (kg)
NS-4S6	680	440	460	260	41
NS-4S8	680	520	540	340	50
NS-4SA	680	600	620	420	59
NS-4L6	1180	440	460	260	63
NS-4L8	1180	520	540	340	78

For maintenance parts, refer to CKD Components Product Site (https://www.ckd.co.jp/kiki/en/)→Model No.→Maintenance Parts.

Inline Oxygen Monitor

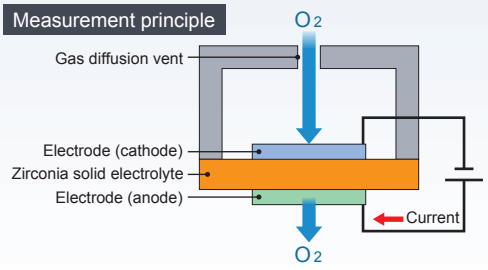
PNA Series

Oxygen concentration under pressure is now visible

Limiting Current Method

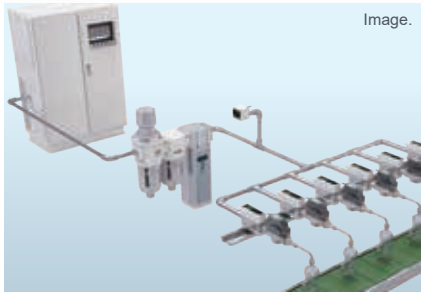
PNA series uses the limiting current method. Applying voltage to the zirconia element causes an ion current with oxygen ions as carriers. Since the current characteristics change proportionally with oxygen concentration, oxygen concentration can be detected. This method is durable and long life can be expected.

Measurement principle



Application Examples

End Point Concentration Check



- Concentration check at start of work
- Constant check of concentration
- Grasping Maintenance Timing

Gas Concentration Check in Explosion-Proof Area

- Concentration check at start of work
- Constant check of concentration
- Hazardous Concentration Alarm

Filled Nitrogen Concentration Check

- Concentration check during Nitrogen filling
- Concentration Setting

Check of Gas for Dissolved Oxygen Removal

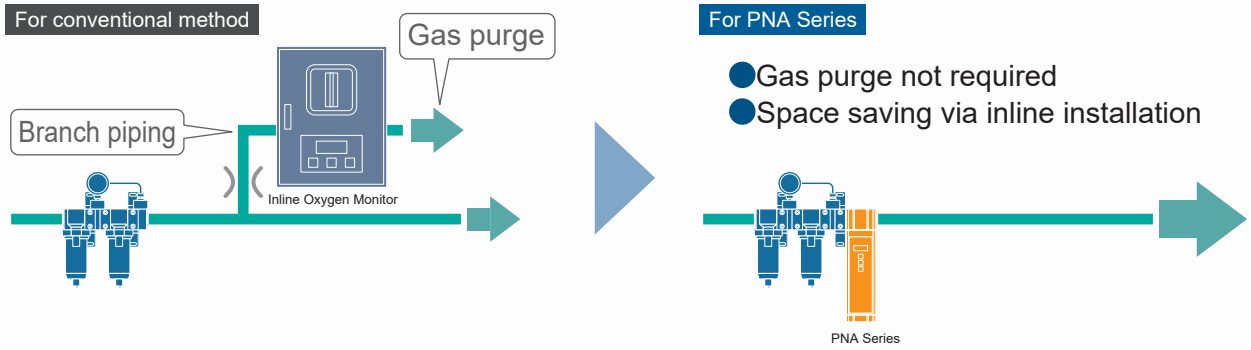
- Oxygen concentration check of removal gas
- Condition Monitoring

Energy, Piping, and Space Savings

Achieves pressure-resistant structure usable inline

Space-saving piping with modular structure

Gas purge conventionally required is unnecessary



Easy to Use

Oxygen / Inert gas concentration display switchable

100 - Oxygen concentration allows you to see the inert gas concentration at a glance.

Upper/lower limit switch output setting / Analog output possible

Generate alarms and monitor the status of concentration changes.

With Self-Diagnosis Function

Notifies of detection element abnormalities.

Protection Structure IP65 Equivalent

Safe even if wet.

Pressure Resistant Structure

Usable under pressure from atmospheric pressure to 1.0 MPa.

Oxygen Concentration Display

Inert Gas Concentration Display

Safe Food Manufacturing Process FP Series Compatible

Can be used safely and securely even in food manufacturing processes.

Material compliant with Food Sanitation Act
Fluid passage section
Resin / Rubber

FP Food Process™

This logo mark represents CKD's commitment to supporting food manufacturing processes with safe components.

✱ For details, refer to Catalog No. CC-1271AA.

CKD After-Sales Service

Issuance of calibration certificate (with traceability system diagram) is possible.

Depending on usage conditions, the sensor of the oxygen analyzer may deteriorate. Therefore, periodic inspection and adjustment are necessary to maintain stable performance. To maintain performance longer, we recommend the annual inspection and adjustment service (with calibration certificate).

Inspection / Calibration / Repair Please feel free to inquire.

Inline Oxygen Analyzer

PNA Series

Inline pressure-resistant structure, purge unnecessary
Modular structure connectable to Nitrogen Extraction Unit
NS Series, F.R. Unit

For detailed applicable model numbers, refer to our website.

Model No. Indication Method

PNA - 10A - N - FP2

- PNA: Model No.
- 10A: ① Port Size
- N: ② Traceability

✳: Connector cable is not included.

① Port Size

Code	Content
10A	Rc3/8
10B	G3/8
10C	NPT3/8

② Traceability

Code	Content
N	None
M	With Traceability Certificate, System Diagram, Inspection Report

Connector Cable Standalone Model No.

●DC Cable

PNA-1D

① Cable Length

① Cable Length

Code	Content
1D	1000 mm
3D	3000 mm
5D	5000 mm

●AC Adapter Standalone

PNA-A

●AC Adapter + Conversion Plug Set

PNA-AG

For Dimensions diagrams, refer to P. 32.

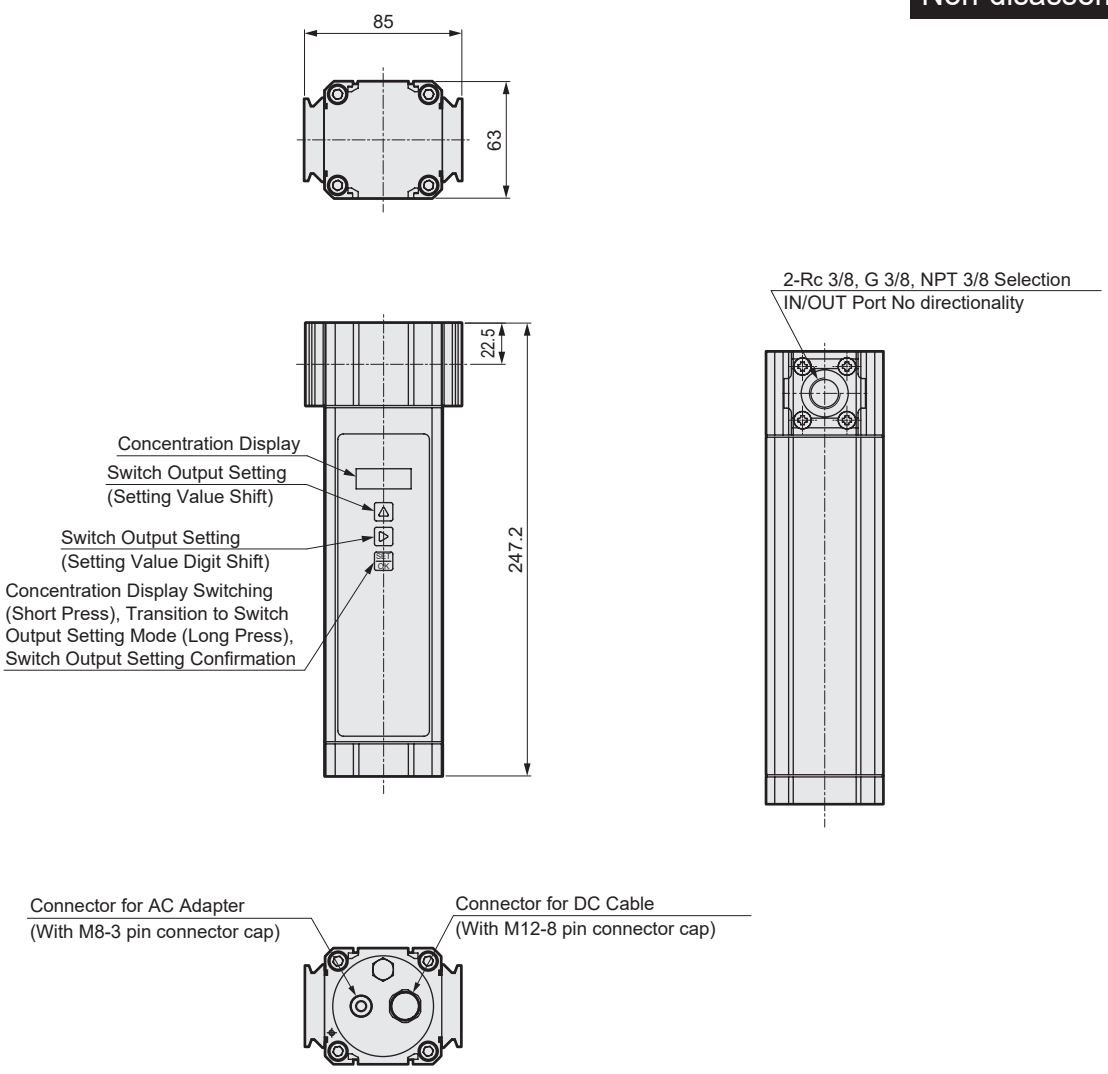
Specifications

Item	PNA
Measurement Method	Zirconia Solid Electrolyte Method
Sampling Method	Natural Diffusion Type
Display	Oxygen concentration display, nitrogen concentration display (100 - oxygen concentration) switchable
Operating Fluid	Nitrogen-Enriched Compressed Air
Working pressure MPa	0 to 1.0
Proof pressure MPa	1.5
Ambient Temperature, Humidity	0 to 50°C, 80% RH or less (No condensation)
Fluid Temperature	0 to 50°C (No condensation)
Storage Ambient Temperature, Humidity	-10 to 60°C, 80% RH or less (No condensation)
Max. Flow Rate L/min (ANR)	500 (✳1)
Measured range $\%O_2$	0.00 to 25.00
Accuracy ✳2	±0.05 $\%O_2$±1digit (for 0.00 to 1.00%O_2) ±0.10%O_2±1digit (for 1.01 to 2.50%O_2) ±0.5%O_2±1digit (for 2.51 to 10.00% O_2.) ±1.0%O_2±1digit (for 10.01 to 25.00% O_2)
Response Time	90% response within 20 seconds (✳3)
Analog Output	4 to 20 mA current output (for 0.00 to 25.00% O_2)
Analog Output Load Resistance	0 to 400 Ω
Analog Output Accuracy	0.064 mA/0.1% O_2
Switch Output	Setting value and detection element abnormality: 1 pc (Relay output)
Switch Output Capacity	24 VDC, 1A (✳4)
Power Supply Voltage	24 VDC ±15% (When using AC adapter: 100 VAC to 240 VAC)
Power Consumption	10 W or less
Protection Structure	IP65 Equivalent
EMC Directive	EN61326-1
Weight kg	1.6
Warm-up Time	Approx. 5 minutes after power ON (✳5)

✳1) If exceeding 500 L/min (ANR), please inquire.
✳2) Value in dry gas consisting of oxygen and nitrogen.
✳3) Response time is the value at a flow rate of 5 L/min (ANR) or more.
✳4) Switch output capacity is DC only. Cannot be used with AC.
✳5) During warm-up, analog output and switch output are not output.

External Dimension Drawing

Non-disassemblable



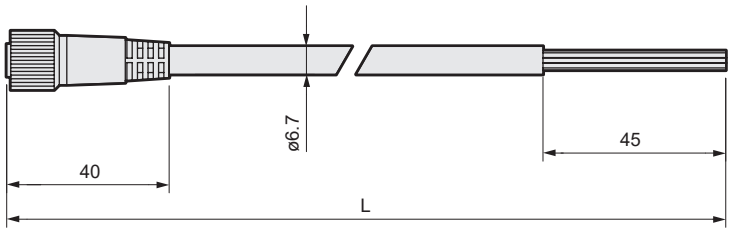
Connector Cable Model No. Indication Method and External Dimension Drawing

Note: Connector cable is sold separately from the main unit.

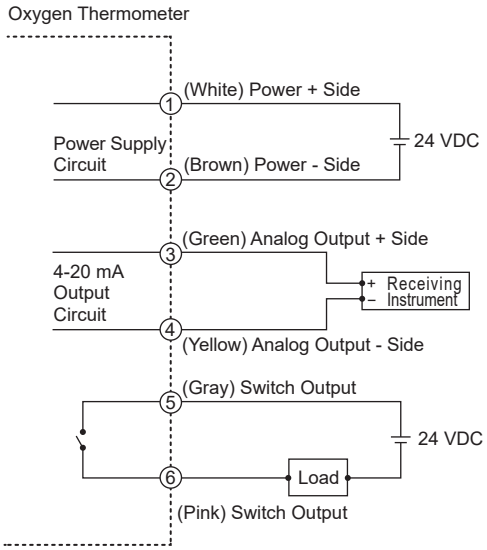
● DC Cable

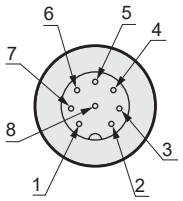
Use when driving with DC power and when using analog output or switch output.

Model No.	L Dimension
PNA-1D	1000
PNA-3D	3000
PNA-5D	5000



Wiring Example



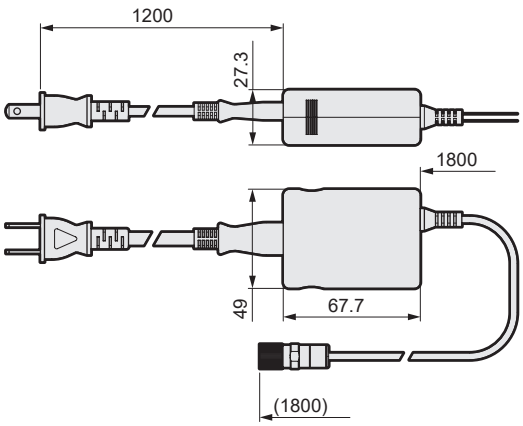


No.	Cable Color	Content
1	White	Power +
2	Brown	Power -
3	Green	Analog Output +
4	Yellow	Analog Output -
5	Gray	Contact Output
6	Pink	(Relay Output)
7	Blue	-
8	-	-

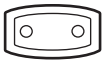
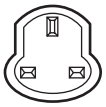
● AC Adapter

Use when driving with AC power.

Model No.	Content
PNA-A	AC Adapter Standalone Type A
PNA-AG	AC Adapter + Conversion Plug Set ✳ Global power conversion plugs B, C, O, BF type included



・Plug Shape

B-type	C-type	O-type	BF-type
			

Safety Precautions

Be sure to read this section before use.

When designing and manufacturing a device using CKD products, the manufacturer is obligated to check that device safety mechanism, pneumatic control circuit, or water control circuit and the system operated by electrical control that controls the devices is secured.
It is important to select, use, handle and maintain the product appropriately to ensure that the CKD product is used safely.
Observe warnings and precautions to ensure device safety.
Check that device safety is ensured, and manufacture a safe device.

WARNING

1 This product is designed and manufactured as a general industrial machine part.
It must be handled by an operator having sufficient knowledge and experience.

2 Use this product in accordance with specifications.

This product must be used within its stated specifications. In addition, never modify or additionally machine this product.
This product is intended for use in general industrial machinery equipment or parts. It is not intended for use outdoors (except for products with outdoor specifications) or for use under the following conditions or environments.
(Note that this product can be used when CKD is consulted prior to its usage and the customer consents to CKD product specifications. The customer should provide safety measures to avoid danger in the event of problems.)

❶ Use for applications requiring safety, including nuclear energy, railways, aircraft, marine vessels, vehicles, medical devices, devices or applications in contact with beverages or foodstuffs, amusement devices, emergency cutoff circuits, press machines, brake circuits, or safety devices or applications.
❷ Use for applications where life or assets could be significantly affected, and special safety measures are required.

3 Observe organization standards and regulations, etc., related to the safety of device design and control, etc.

ISO4414, JIS B 8370 (Pneumatics fluid power - General rules and safety requirements for systems and their components)
JFPS2008 (Principles for pneumatic cylinder selection and use)
Including the High Pressure Gas Safety Act, Industrial Safety and Health Act, other safety rules, organization standards and regulations, etc.

4 Do not handle, pipe, or remove devices before confirming safety.

❶ Inspect and service the machine and devices after confirming safety of all systems related to this product.
❷ Note that there may be hot or charged sections even after operation is stopped.
❸ When inspecting or servicing the device, turn OFF the energy source (air supply or water supply), and turn OFF power to the facility.Discharge any compressed air from the system, and pay attention to possible water leakage and leakage of electricity.
❹ When starting or restarting a machine or device that incorporates pneumatic components, make sure that the system safety, such as pop-out prevention measures, is secured.

5 Observe warnings and cautions in the following pages to prevent accidents.

■ The precautions are ranked as "DANGER", "WARNING" and "CAUTION" in this section.

DANGER: When a dangerous situation may occur if handling is mistaken leading to fatal or serious injuries, and when there is a high degree of emergency to a warning.

WARNING: If handled incorrectly, a dangerous situation may occur, resulting in death or serious injury.

CAUTION: When a dangerous situation may occur if handling is mistaken leading to minor injuries or physical damage.

Note that some items described as "CAUTION" may lead to serious results depending on the situation.
Every item provides important information and must be observed.

Warranty

1 Warranty period

The product specified herein is warranted for one (1) year from the date of delivery to the location specified by the customer.

2 Warranty coverage

If the product specified herein fails for reasons attributable to CKD within the warranty period specified above, CKD will promptly provide a replacement for the faulty product or a part thereof or repair the faulty product at one of CKD's facilities free of charge.
However, following failures are excluded from this warranty:

1) Failure caused by handling or use of the product under conditions and in environments not conforming to those stated in the catalog, the Specifications, or the Instruction Manual.
2) Failure caused by use of the product exceeding its durability (cycles, distance, time, etc.) or caused by consumable parts.
3) Failure not caused by the product.
4) Failure caused by use not intended for the product.
5) Failure caused by modifications/alterations or repairs not carried out by CKD.
6) Failure caused by reasons unforeseen at the level of technology available at the time of delivery.
7) Failure caused by acts of nature and disasters beyond control of CKD.

The warranty stated herein covers only the delivered product itself. Any loss or damage induced by failure of the delivered product is excluded from this warranty.
Note: For details on the durability and consumable parts, contact your nearest CKD sales office.

3 Compatibility check

The customer is responsible for confirming the compatibility of CKD products with the customer's systems, machines and equipment.

Pneumatic Component (Nitrogen Extraction Unit)

To Use This Product Safely

Be sure to read this before use.

Individual Precautions: Nitrogen Extraction Unit NS, NSU Series

✳For precautions regarding PNA, NS-QFS series, refer to the individual precautions for each model (P. 36-37).

During Design / Selection

⚠Warning

■ **Nitrogen gas may run the risk of acid deficiency.**

- Use in a well-ventilated location.
- Ventilate while using nitrogen gas.
- Regularly inspect the leakage of nitrogen gas piping.

■ **Oxygen-rich gas is discharged from the exhaust port of the membrane unit.**

- Install away from fire and combustibles.
- Ventilate during equipment operation.

■ **Do not use for purposes directly involving human life.**

⚠Caution

■ About Operating Environment

- Do not use in direct sunlight or rain.
- The bowl is made of polycarbonate and should not be used in the following chemicals or in an atmosphere. [NSU Series]
- Avoid use in ozone-generating environments.
- Avoid use in locations with vibration and shock.
- Avoid use in humid air with relative humidity of 50% or higher. (If the separation membrane is wetted by droplets (such as water), the performance will deteriorate significantly.)
- Do not allow air containing corrosive gases (strongly acidic gases such as hydrogen sulfide, sulfur dioxide, hydrogen chloride, and fluorine) or strongly alkaline gases (amine, ammonia, sodium hydroxide, etc.) to flow.

■ The needle valve cannot be used as a stop valve requiring zero leakage.

A certain amount of leakage is allowed due to product specifications.

■ Dust in the flow channel is not zero.

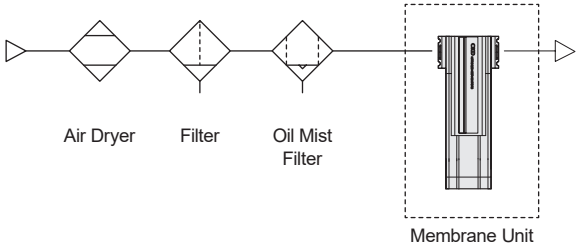
In circuits where particle generation is a problem, use together with a final clean filter. (In food processes, use antibacterial/sterilizing filters.)

■ Use after sufficiently confirming the suitability of the constituent materials and valve structure of each component, operating fluid, and operating atmosphere at the customer's discretion.

■ The operation of the needle valve may cause internal parts to wear out. If affected, implement necessary measures such as installing a filter on the secondary side.

■ Check the operating circuit and operating fluid.

To prevent membrane unit performance degradation, install a dryer, air filter, and oil mist filter on the primary side to remove moisture and oil. If the operating fluid may contain hydrocarbons, install an activated carbon filter.



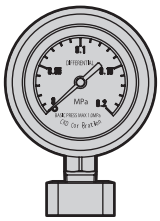
■ For water droplet and oil removal, be sure to install an oil removal filter (M type) immediately upstream of the membrane unit. Nitrogen concentration may decrease if oil adheres to the separation membrane.

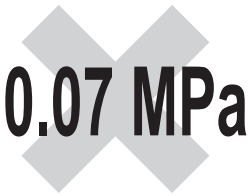
■ The regulator should be installed on the exit side of the membrane unit.

■ When installing NS (2·3·4 pcs), fix the inlet and outlet piping or fix the main unit with a bracket.

■ When installing NS (6 pcs or more), select a sturdy, level surface free from vibration, and fix the base with anchor bolts.

■ The lifespan of the oil mist filter is when the pressure drop reaches 0.07 MPa, or 1 year, whichever comes first. When the lifespan is reached, replace the mantle with a new one. (Check pressure drop with a differential pressure gauge.) (Do not touch the urethane rubber foam layer when replacing the mantel)
[NSU Series]





■ The lifespan of the membrane unit varies depending on operating conditions, but replace it with a guideline of 3 to 5 years.

■ Be careful as time is required after supplying compressed air until the necessary nitrogen concentration is obtained.

Chemicals	Classification of Chemicals	Main Chemical Products	General Usage Examples	Polycarbonate
Inorganic Compounds	Acids	Hydrochloric acid, Sulfuric acid, Hydrofluoric acid, Phosphoric acid, Chromic acid, etc.	Metal pickling solutions / Acidic degreasing solutions Coating treatment solutions	×
	Alkalis	Caustic soda, Caustic potash, Slaked lime, Ammonia water, Sodium carbonate, etc.	Metal alkaline degreasing solutions	×
	Inorganic Salts	Sodium sulfide, Potassium nitrate, Potassium dichromate, Sodium sulfate, etc.		×
Organic Compounds	Aromatic Hydrocarbons	Benzene, Toluene, Xylene, Ethylbenzene, Styrene, etc.	Contained in paint thinners (Benzene, Toluene, Xylene)	×
	Chlorinated Aliphatic Group Hydrocarbons	Methyl chloride, Ethylene chloride, Methylene chloride, Acetylene chloride, Chloroform, Trichlene, Perchlorethylene, Carbon tetrachloride	Metal organic solvent based cleaning solutions (Trichlene, Perchlorethylene, Carbon tetrachloride, etc.)	×
	Chlorinated Aromatic Group Hydrocarbons	Chlorobenzene, Dichlorobenzene, Hexachlorobenzene (BHC), etc.	Pesticides	×
	Petroleum Components	Solvent Naphtha / Gasoline		×
	Alcohols	Methyl alcohol, Ethyl alcohol, Cyclohexanol, Benzyl alcohol	Used as antifreeze	×
	Phenols	Carbolic acid, Cresol, Naphthol, etc.	Disinfectants	×
	Ethers	Methyl ether, Methyl ethyl ether, Ethyl ether	Brake fluid additives	×
	Ketones	Acetone, Methyl ethyl ketone, Cyclohexanone, Acetophenone, etc.		×
	Carboxylic Acids	Formic acid, Acetic acid, Butyric acid, Acrylic acid, Oxalic acid, Phthalic acid, etc.	Dyes / Oxalic acid is aluminum treatment agent Phthalic acid used as paint base	×
	Phosphate Esters	Dimethyl phthalate (DMP), Diethyl phthalate (DEP), Dibutyl phthalate (DBP), Dioctyl phthalate (DOP)	Additives for lubricating oil, synthetic hydraulic fluid, rust preventive oil Used as plasticizer for synthetic resin	×
	Oxy Acids	Glycolic acid, Lactic acid, Malic acid, Citric acid, Tartaric acid		×
	Nitro Compounds	Nitromethane, Nitroethane, Nitroethylene, Nitrobenzene, etc.		×
	Amines	Methylamine, Dimethylamine, Ethylamine, Aniline, Acetanilide, etc.	Brake fluid additives	×
	Nitriles	Acetonitrile, Acrylonitrile, Benzonitrile, Acetoisocyanide, etc.	Raw material for nitrile rubber	×

For precautions during mounting, installation, adjustment, use, and maintenance, refer to the CKD Component Product Site (https://www.ckd.co.jp/kiki/en/)→"Model No." →Instruction Manual.

Pneumatic Component (Flow Sensor)

To Use This Product Safely

Be sure to read this before use.

Individual Precautions: Flow Sensor NS-QFS Series

During Design / Selection

About Operating Fluid

Danger

■ Never use with flammable fluids.

Warning

■ Cannot be used as a meter for transactions. Does not comply with the Measurement Act, so do not use for commercial transactions. Use as an industrial sensor.

■ Do not use fluids other than the applicable fluid.

■ Use clean dry gas that does not contain corrosive components such as chlorine, sulfur, acids, etc., and does not contain dust or oil mist.

■ Depending on the quality of the fluid, leaving the fluid stagnant for a long time may adversely affect performance. Do not seal the fluid inside the piping for a long time.

■ Operating Pressure Range / Operating Flow Rate Range
Use above the maximum operating pressure or below the minimum operating pressure, or outside the operating flow rate range, will cause malfunction, so use within the specification range.

■ When using a valve on the primary side of the sensor, use an oil-free specification valve. Scattering of grease, oil, etc., may cause the sensor to malfunction or be destroyed. Additionally, depending on the valve, wear particles may be generated. To prevent these particles from flowing into the sensor, install a filter before use.

About Operating Environment

Danger

■ Explosion-proof environments: Never use this product in an explosive gas atmosphere. It does not have an explosion-proof structure, so it may cause an explosion or fire.

Warning

■ Corrosive environments: Do not use this product in an atmosphere containing corrosive gases such as sulfur dioxide.

■ Ambient/fluid temperatures: Use ambient/fluid temperatures from 5 to 50°C within the specified range. Note that even within the temperature range, do not use in locations where ambient temperature/fluid temperature changes rapidly causing condensation.

■ Drip-proof environments: The degree of protection of this product is equivalent to IP40. Do not install in locations with moisture, salt, dust, cutting chips, or under pressurized/depressurized environments. Cannot be used in locations with rapid temperature changes or high humidity environments as condensation inside the main unit may cause problems.

About Flow Rate Unit

Caution

■ This product's flow rate is measured at a mass flow rate unaffected by temperature or pressure. The unit is L/min, but this is the display when mass flow rate is converted to volume flow rate at 20°C, 1 atm (101 kPa), relative humidity 65% RH.

About Excess Flow Rate

Caution

■ The sensor can withstand excess flow up to approximately twice the measurement range without issue. However, applying dynamic pressure near the maximum operating pressure (specifically, when the pressure difference between the primary and secondary sides exceeds the maximum operating pressure) may cause sensor damage. When dynamic pressure is applied, such as during workpiece filling for leak inspection, be sure to provide a bypass circuit or restriction to prevent dynamic pressure from being applied to the sensor.

Other

Caution

■ Since particle generation within the flow path is not zero, if particle generation is a problem, use together with a final clean filter.

About Piping

Caution

■ Do not install pressure reducing valves (regulators), solenoid valves, etc., immediately before this product. Unbalanced flow may occur, causing errors.

■ This product is dedicated to the Nitrogen Extraction Unit System Type NSU. When piping, use modular connection with our products.

For precautions during mounting, installation, adjustment, use, and maintenance, refer to the CKD Component Product Site (https://www.ckd.co.jp/kiki/en/)→"Model No." →Instruction Manual.

Pneumatic Components (Oxygen Concentration Monitor)

To Use This Product Safely

Be sure to read this before use.

Product-specific cautions: Oxygen Concentration Monitor PNA Series

During Design / Selection

⚠ Caution

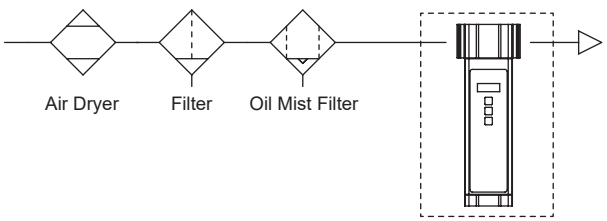
■ About Operating Environment

- Avoid use in places exposed to direct sunlight or rain.
- The oxygen analyzer may produce measurement errors or its performance/oxygen detector may be impaired in the following atmospheres.
- Avoid use outside the temperature range of 0 to 50°C, or if components differ from air, as measurement errors will increase.
- Air containing corrosive gases such as Freon gas, silicon-based gases, SOx (sulfur oxides), H_2S (hydrogen sulfide), halogen gases such as Cl_2(chlorine), F_2(fluorine), Br_2(bromine), or air where the above gases separate at high temperatures of about 500°C cannot be used.
- Using in air containing combustible gas will cause the combustible gas to burn, lowering the indication.
- Using air containing large amounts of dust or oil mist will cause element deterioration.
- If liquid such as water droplets or solutions touches the sensor, the element will be destroyed.
- Using in locations with strong impact or vibration will destroy the element.
- Avoid use in locations with strong magnetic fields or strong electrical noise.
- Indication is unstable in environments where pressure pulsates (changes continuously) over a short period. Static pressure is required for stable measurement.

■ Use after sufficiently confirming the suitability of the constituent materials and valve structure of each component, operating fluid, and operating atmosphere at the customer's discretion.

■ Check the operating circuit and operating fluid.

To prevent oxygen analyzer performance degradation, install a dryer, air filter, and oil mist filter on the primary side to remove moisture and oil.



■ This product does not have an explosion-proof specification. The detection element is heated by a heater, so using it in an explosive atmosphere may cause induced explosion.

■ This product is not an oxygen deficiency meter. Do not use as an oxygen analyzer under the Industrial Safety and Health Act.

■ When using this product as a CE compliant prepare a dedicated power supply for this product.

■ Conditions for Use for CE Compliance

This product is a CE compliant product adapted to the EMC Directive. The harmonized standard regarding immunity applied to this product is EN61326-1, but the following stability applies under the EMC Directive required test environment.

Stability ±0.5%O_2±1digit (for 0.00 to 10.00%O_2)
±1.0%O_2±1digit (for 10.01 to 25.00%O_2)

■ Do not disassemble or modify as it will cause malfunction.

■ The sensor may deteriorate depending on the operating conditions. To maintain performance longer, calibration every 1 year is recommended.

For precautions during mounting, installation, adjustment, use, and maintenance, refer to the CKD Component Product Site (https://www.ckd.co.jp/kiki/en/)→"Model No."→Instruction Manual.

Related Products

Products for Food Manufacturing Processes FP Series

Catalog No. CC-1271A

- Wide lineup from air filters to actuators that can be used safely and securely in food manufacturing processes.
- FP1 series uses food grade (NSF H1) lubricant to eliminate concerns about contamination by lubricant.
- FP2 series, in addition to FP1, uses Food Sanitation Act compliant resin/rubber materials.

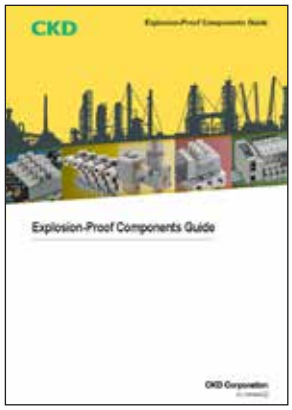
Rechargeable Battery Compatible Component P4✳ Series

Catalog No. CC-1226AA

- Material Restrictions　Constituent part materials restricted
- Dust Countermeasure　Long life even in dusty environments
- Particle Generation Countermeasure　Suppresses particle generation from metal wear powder
- Dry Environment　Long life even in ultra-dry environments

Explosion-Proof Compatible Component Guide

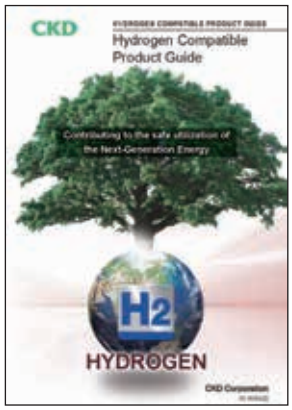
Catalog No. CC-1494AA



- Proposes optimal explosion-proof systems matching various applications such as intrinsic safety explosion-proof, pressure-resistant explosion-proof, master valves, etc., as system configurations usable in explosive atmospheres.

Hydrogen Compatible Product Guide

Catalog No. CC-1572AA



- High Reliability
  Verification against hydrogen gas performed, design changes implemented.
  Different parts management implemented from other products.
  Compliant with various gas combustion standards (some models).
- Abundant lineup to match your applications.
- Contributes to safe use
  Total proposal including auxiliary components contributing to safe use.

Related Products

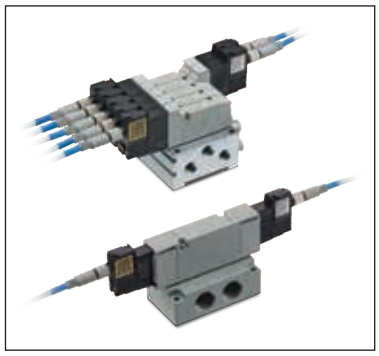
Antibacterial / Bacteria Removing Filter

- Antibacterial activity value 4 or more
- Bacteria capture performance LRV10 or more
- Resin/rubber materials in fluid passage parts use Food Sanitation Act compliant materials
- Uses food grade NSF H1 grease
- Exterior parts use anti-bacterial materials
- Maintenance seal standardly equipped to easily understand maintenance timing
- New lineup of deodorizing filters

Air Blow Nozzle BN✳ Series

- Wide Variations
  Lineup of various shapes matching industry/application
- Energy Saving — Adopts special structure that amplifies air by entraining surrounding air, powerfully ejects air even with low air consumption
- Uniformity — Adopts special structure that ejects air more uniformly to the target, achieving stable workpiece quality.
- Low Noise — Suppresses turbulent flow, quiet design friendly to the work environment, flat type and round type available according to application

Intrinsic Safety Explosion-Proof Pilot Type 3, 5-Port Valve 4GD/E✳✳OE✳ Series



Explosion-Proof Performance: Ex ib IIC T4 Gb

- Usable in Class I (Zone 1), Class II (Zone 2) hazardous locations
- Compatible with abundant flow variations in 4 sizes including the smallest class valve width of 10 mm for explosion-proof solenoid valves
- Usable even in hydrogen, acetylene, city gas atmospheres

Model No.	4GD/E✳✳0EJ	4GD/E✳✳0EX	4GD/E✳✳0EA
Certification	DEK19.0049 IECEx IBE 19.0008	(CCC) 2020322307000310 (NEPSI) GY JI 9.131 IX 20-KA4B0-0766 TD040272	IBExU 19ATEX1035 IECEx IBE 19.0008
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Super Dryer SD/SU Series

- Non-Freon dryer that does not destroy the environment
- Since there are no moving parts, it is possible to supply clean dry air over long periods
- Compact/lightweight design facilitates integration into equipment
- Since no electricity is used, there is no noise generation/influence
- Supports ultra-low dew point down to -60°C
- Supports large flow rates of compressor 75 kW class

For details, refer to CKD Components Products website (https://www.ckd.co.jp/kiki/en/) → "Model No."

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Revision details Design renewal, clerical correction

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