

EYELA

Multipurpose type

4 types of the product are available
(-45°C • -80°C • Analog • Digital)

NEW Unit type **Freeze Dryer**

FDU Type Series

-45°C 4L Trap



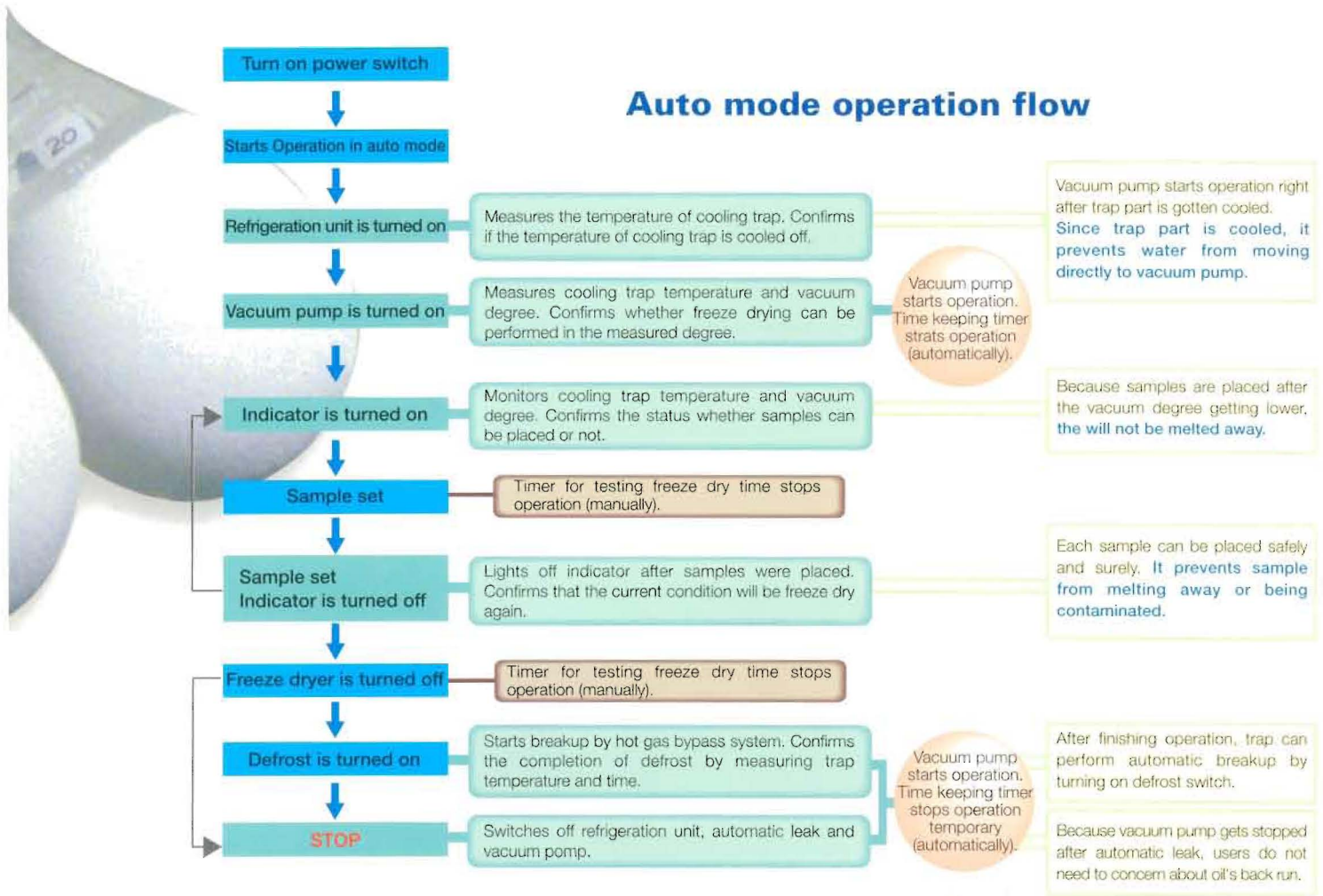
-80°C 3L Trap Full System



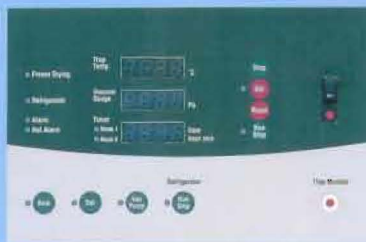
TOKYO RIKAKIKAI CO., LTD.

FDU-1000 (-45°C, 4L)
 FDU-1100 (-45°C, 4L, Digital)
 FDU-2000 (-80°C, 3L)
 FDU-2100 (-80°C, 3L, Digital)

Digital specification enhances the effectiveness of auto mode



Display of FDU-1100 · 2100 and 2100



Digital display allows user to check temperature, vacuum degree and integrating time at a glance.

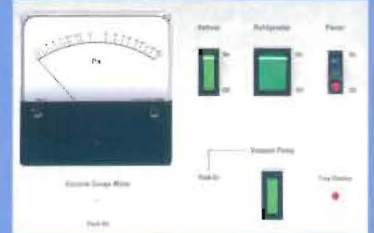
It's easy to check the status of use of temperature, vacuum degree and time. Also, it displays integrating time (maximum: 9999hours) for changing oil of vacuum pump, which prevents miscalculation of oil's changing time such as missing recording of utilization.

Trap temperature and vacuum degree can be recorded at data logger by outputting data logger.

How to use stop watch time display

It's useful to check the freeze-dry time test, and also to check the difference to dry condition in different dry time test.

Display of FDU-1000 and 2000



Analog type. Large size vacuum indicator is capable of detecting vacuum degree.



Using corrosion-resistant vacuum pump GCD-136XNF, enables to reduce bothersome oil changing procedure as much as possible.

Performs continuous operation for 4,600 hours until the unit requires oil changing.

Reduces bothersome oil changing procedure and running cost significantly. A small amount of acidum included in moisture can be removed.

GCD-136XNF with oil filtration cassette attached (see right picture).

Using oil filtration cassette allows users to change oil without soiling their hands. We replace cartridge with new filter and oil. 2 cassettes are attached.



Equipped with lots of safety functions such as contamination prevention and etc.

Taking contamination prevention into consideration

- Interior part of the instrument is designed with safety construction, which is easy to clean, and pipe can be decomposed and cleaned. Trap part is designed without cooling coil, which is easy to clean up. It is also effective to protect vacuum cleaner from drawn samples into the unit, dry attached solvent component and contamination prevention. Teflon coating is available for trap material (Please let us know when you would like to place an order).
- Vacuum pump is OFF at the moment of recovery from power failure. It prevents molten sample from bumping and contaminating into another container because of the operation of vacuum pump after the recovery of long hours of power failure. FDU-1100 and 2100 can re-start operation after the instantaneous power failure. As it is able to perform continuous drying, sample can be used without any loss (Duration of power failure is set up as 5 minutes at the factory. This value can be changed at the user's option).
- Fresh air comes into the instrument when automatic leak works. When automatic leak works with sample attached because of power failure and wrong operation, fresh air comes in through air filter (0.2 μ m), Fresh air prevents the pipe line of the instrument from sucking dust in the air.

Adfreezing status can be confirmed.

- Adfreezing status on trap can be checked through transparent cover equipped on upper part of the instrument.

Breakup at short times



Since breakup can be performed at short times by hot gas method, users do not need to take long wait even if samples are in large amounts. Can-structured without attaching cooling coil in the trap enables an easy-removal of ice. It is very useful when you would like to change to another operation.

Maximum amount of dehumidification can be confirmed.

- Attaching optional trap monitor allows users to recognize the maximum amount of dehumidification by monitor lamp. Also, it prevents moisture suction into pump.

Catalogue No. 197480



Monitor lamp

Container is selectable depending on purpose

Following containers are available; Pear flask, freeze dry container, test tube, ampoule container, micro tube + micro tube holder, vial container, Petri dish

Spare freeze dry unit is selectable depending on purpose



Performs pre-freeze dry up to 2L pear flask. -45°C type. The wide pre-freeze bath pre-freezes sample inside flask in film state and increases sublimation area (picture on the left).

-80°C type freezer is capable of performing pre-freeze at small-sized container such as micro tube, vial container and etc (picture on the right).

Manifold and dry chamber are selectable depending on container and purpose



PMH-4•8•1000 is the port exclusive to pear flask and freeze dry container. Also, test tube, ampoule container, micro tube can be placed into freeze dry container. Clearing inside the port of PMH-1000's is easy.



PMH-12•24 is the port exclusive to test tube, ampoule container and vial container. With adding adopter, small amount pear flask and freeze dry container can be attached.



Vial container and Petri dish are available. On Model DRC-IN, temperature of heating board can be controlled. As for DRC-2L•3L, heating temperature is fixed as 30°C.



With using vial container, Model BSC can be sealed hermetically after drying.

Various optional accessories are available depending on sample



Manifold for flask Port for round-shaped flasks

Manifold for flask

Model	PMH-4	PMH-8
Catalogue No.	119820	119830
Target model	FDU-1000 · 1100 · 2000 · 2100	FDU-1000 · 1100 · 2000 · 2100
Diameter of attaching part	240mm	230mm
Maximum diameter of flask	230mm	
Attaching stopcock	¥29/38 磨口	
Pitch of attaching stopcock	150mm	
Number of port	4	8
External diameter(mm)	250W × 300D × 317H	550W × 300D × 317H

※When using flask except the type of ¥29/38, appropriate adaptor is required.

Port for round shaped flask

Model	PMH-1000
Catalogue No.	197446
Target model	FDU-1000 · 1100 · 2000 · 2100型
Diameter of attaching part	240mm
Number of port	9

※When using flask except the type of ¥29/38, appropriate adaptor is required.



Test tube and manifold for ampoule container

Test tube and manifold for ampoule container

Model	PMH-12	PMH-24
Catalogue No.	119840	119850
Target model	Model FDU-810, 1000, 2000, 2100	
Diameter of attaching part	275mm	270mm
Maximum diameter of flask	270mm	
Attaching stopcock	15mm (Internal diameter) (for vial container)	
Pitch of attaching stopcock	50mm	
Number of port	12	24
External diameter(mm)	300W × 214D × 234H	600W × 214D × 234H

※When using test tube and ampoule container, appropriate adaptor is required.



Dry chamber

Model	DRC-1N	DRC-2L	DRC-3L
Catalogue No.	119730	119750	119770
Target model	All types of Model FDU		
Max. diameter of attaching part	※270mm	※270mm	※270mm
Number and measurement of the shelf	2sections, 200W × 230D(mm)	1section × 220mm (diameter)	3section × 220mm (diameter)
Number of Petri dishes (number of section)	72pcs × 2	58pcs × 1	58pcs × 3
Number of Petri dish (number of section)	7 Petri dishes (external diameter: 66mm) × 2	5 Petri dishes (external diameter: 66mm) × 1	7 Petri dishes (external diameter: 66mm) × 3
Range of temperature control temperature	5-35°C OTM (digital)	Fixed temperature: 30°C	Temperature susceptibility lead switch: 30±2°C
Control heater	20W × 2sections	50W × 1section	50W × 3section
External diameter (mm)	300W × 322D × 425H, 300(diameter) × 250H	300(diameter) × 250H	300(diameter) × 435H

Adopter for flask (¥24)	Flask for sample (pear-shaped flask) (¥24)	Freeze dry container
1 ¥24 144500	50mL, ¥24 1 116220 100mL, ¥24 1 116230 200mL, ¥24 1 116240 300mL, ¥24 1 116250 500mL, ¥24 1 116260 1000mL, ¥24 1 116270	4mL, 5mL, 10mL, 20mL, 30mL, 50mL, 100mL, 200mL, 300mL, 500mL, 1000mL
Adopter for flask (¥29)	Flask for sample (pear-shaped flask) (¥29)	Filter (100 pcs/box)
1 ¥29 120470	50mL, ¥29 1 116140 100mL, ¥29 1 116150 200mL, ¥29 1 116160 300mL, ¥29 1 116170 500mL, ¥29 1 116180 1000mL, ¥29 1 116190	1 120110
Multiple connecting adaptor	Freeze dry container (set)	Filter holder
1 120490	40mL, ¥29 1 119940 80mL, ¥29 1 119950 120mL, ¥29 1 119960 150mL, ¥29 1 119970 300mL, ¥29 1 119980 500mL, ¥29 1 119990 900mL, ¥29 1 120000 1200mL, ¥29 1 120010	1 120100
Adopter for freeze dry container	Cap (for freeze dry container)	
1 120450	40mL, ¥29 1 120020 80mL, ¥29 1 120030 120mL, ¥29 1 120040	
Adopter for tube	Sewage	
1 120500	1 145610	
Adopter for tube	Test tube with rim attached	
1 120510	10 (external diameter) × 75(length) (mm) 3mL, 100 143970 12 (external diameter) × 75(length) (mm) 4mL, 100 143980 12 (external diameter) × 90(length) (mm) 5mL, 100 143990 12 (external diameter) × 105(length) (mm) 6mL, 100 144000 12 (external diameter) × 120(length) (mm) 7mL, 100 144010 13 (external diameter) × 75(length) (mm) 5mL, 100 144020 13 (external diameter) × 90(length) (mm) 6mL, 100 144030 13 (external diameter) × 100(length) (mm) 7mL, 100 144040 15 (external diameter) × 85(length) (mm) 8mL, 100 144050 15 (external diameter) × 100(length) (mm) 10mL, 100 144060 15 (external diameter) × 155(length) (mm) 15mL, 50 144070 16.5 (external diameter) × 105(length) (mm) 12mL, 100 144080 16.5 (external diameter) × 165(length) (mm) 20mL, 50 144090 16 (external diameter) × 165(length) (mm) 24mL, 50 144110 16 (external diameter) × 180(length) (mm) 27mL, 50 144110 21 (external diameter) × 200(length) (mm) 42mL, 50 144120	

Product name	Amount	Catalogue No.
Ampoule container (8mm External diameter)		
Pear-shape ampoule (1mL)	20	120210
Pencil-shape flat bottom ampoule (1mL)	20	120221
Pencil-shape round bottom ampoule (1mL)	20	120220
Flat bottom ampoule (2mL)	20	120230
Flat bottom ampoule (5mL)	20	120240
Flat bottom ampoule (10mL)	10	120250
Round bottom ampoule (2mL)	20	120260
Round bottom ampoule (5mL)	20	120270
Round bottom ampoule (10mL)	10	120280
C-type adaptor for freezing		
Freeze dry container (set)		
150mL	119970	
300mL	119980	
C-shape adaptor for flask		
Flask for sample (Pear-shape) (¥29)		
50mL, ¥29	116140	
100mL, ¥29	116150	
Vial container		
Vial container (5mL)	132	120290
Vial container (10mL)	125	120300
Vial container (20mL)	138	120310
Vial container (30mL)	110	120320
Vial container (50mL)	75	120330
Aluminum cap/Rubber stopper		
Arrow aluminum cap	100	120402
OFF aluminum cap	100	120403
Arrow aluminum cap	100	120400
OFF aluminum cap	100	120401
Rubber stop	100	120390
Petri dish		
Petri dish ø66 × 19	60	120420
Petri dish ø66 × 22	60	120430
Petri dish ø100 × 33	30	120440

Model	BSC-2L	BSC-3L
Catalogue No.	119796	119816
Target model	All types of Model FDU	
Max. diameter of attaching part	※270mm	
Number and measurement of the shelf	1 section × 220(mm) (diameter)	2 section × 220(mm) (diameter)
Number of Petri dishes (number of section)	58pcs	58pcs × 2
Number of Petri dish (number of section)	7 Petri dishes (external diameter: 66mm) × 1	7 Petri dishes (external diameter: 66mm) × 2
Range of temperature control temperature	Fixed temperature: 30°C Temperature susceptibility lead switch: 30±2°C	
Control heater	50W × 1 section	50W × 2 section
External diameter (mm)	300(diameter) × 470H	300(diameter) × 585H

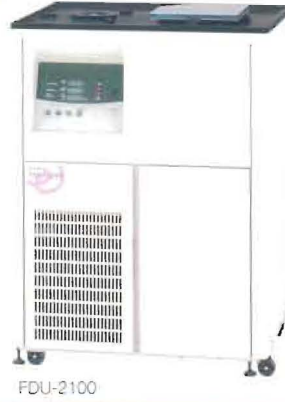
Direct vent system chamber

※Airtight stopper.

Specification



FDU-1000



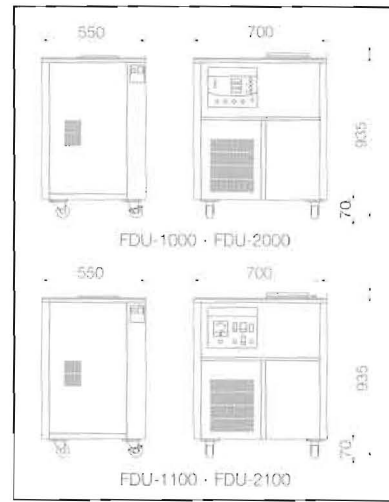
FDU-2100



Product name				
Dry freezer				
Model	FDU-1000	FDU-2000	FDU-1100	FDU-2100
Catalogue No.	197390	197370	197460	197380
Trap cooling temp.	-45°C	-80°C	-45°C	-80°C
Dehumidification amount	4L/time	3L/time	4L/time	3L/time
Display, Setup Function			Digital display, Sheet key method	
Safety Function	Electric leak, excess current breaker, cooling machine protection circuit, fuse for service outlet		Electric leak, excess current breaker, cooling machine protection circuit, fuse for service outlet, Control substrate self-analysis function	
Deactivate vacuum condition	Vacuum automatic leak valve			
Trap breakup	breakup method by hot gas			
Others	Monitor function for trap amount (option)		Vacuum pump automatic operation function, vacuum degree monitoring function, trap temperature monitoring function, stop watch function, trap amount monitoring function (option)	
Cooling machine, refrigerant	600W (output), R404a	500W × 2 (output), R404a/R23	600W (output), R404a	500W × 2 (output), R404a/R23
Vacuum pump required throughput	Option: 135/162/min(50/60Hz)			
Vacuum indicator	Pirani vacuum indicator (analog display) 0.4~533Pa		Pirani vacuum indicator (Digital display) 0.4~533Pa	
Measurement (mm) and material of trap	ø200 × 395H • SUS304			
Trap cover	Glass ware + transparent acrylic 238 × 238(mm)			
Outputting recorder				1°C/mv, 1Pa/mv
Service outlet	Max. 3A for dry chamber			
Range of available ambient temperature	5~35°C			
External diameter(mm)	700W × 550D × 935H			
Mass	Approx. 100kg	Approx. 139kg	Approx. 100kg	Approx. 139kg
Power output	20A, 2kVA	12A, 2.4kVA	20A, 2kVA	12A, 2.4kVA
Rated supply	AC100V 50/60Hz	AC200V 50/60Hz	AC100V 50/60Hz	AC200V 50/60Hz

※Data on functions are measure under the following condition: Room temperature 20°C, rate supply voltage 50Hz
 ※Chamber, manifold, preparatory freezing bath and vacuum pump are sold separately
 ※Capacity of service outlet is not included in power output
 ※Spec. 100V (50A) for Model FDU-2000•2100 are available. Please let us know when you place an order

External measurement



Related products

Preparatory freezing bath



PFR-1000

PF-2000

Model	PFR-1000	PF-2000
Catalogue No.	197416	187236
Preparatory freezing temperature	-45°C	-40°C
Available container	Flask for sample Max2L Freeze dry container Max1.2L	Petri dish, ample container, val container, test tube, micro tube

Use this instrument as preparatory freezing bath with air

Vacuum pump with oil filtration cassette attached



GCD-136XN

GCD-136XNF

Model	GLD-136CN	GCD-136XN	GCD-136XNF
Catalogue No.	200546	189166	191096
Throughput	135/min		
Attainable vacuum degree	6.7 × 10 ⁻³ Pa		
Available oil	SMR	SO-M	
Power input (50/60Hz)	7.5A	7.7A	
Rated supply	AC100V 50/60Hz		

※Oil filtration cassette is attached with model GCD-136XNF.

Pre-freezer



Freeze dry container is not attached.

Model	PFM-1000
Catalogue No.	197426
Target model	PFR-1000
Rotation speed	92/110rpm (Fixed)
Target container	Flask for sample (ø29/38), Freeze dry container
Rated supply	AC100V 50/60Hz 0.1A

Example of use of Freeze dryer

- Preservation of virus, bacteria, microbe and yeast
- Preservation of cell and biomedical tissue
- Preservation of blood, serum, plasma and vaccine
- Purification and preservation of antibiotic, organ preparation and synthetic preparation
- Creating assay sample of metabolite
- Creating assay sample of urine and blood
- Studying metabolism on experimental animal
- Drying preparation bulk
- Designing preparation particle diameter
- Purification and drying of reaction compound
- Drying powder of food
- Legal food evaluation
- Studying food ingredients
- Studying tissue of fishery product
- Purification and preservation of powder of fishery product extract
- Creating sample for analyzing mass
- Basic study of functional sample
- Studying superconducting sample
- Studying functional macromolecule material
- Studying soil microbe

EYELA's Freeze dryer series



▶ Model FDU-1200

Desktop type for a small amount of sample
(Cooling temperature is -45°C)

Model	FDU-1200	Manifold PMH-4A
Catalogue No.	188808	209568
Trap cooling temperature	-45°C	N/A
Ice holding capacity	1L/batch	N/A
Overall dimensions (mm)	450W × 420D × 440H	



FD-1000

▶ Model FD-1000

Desktop type for a small amount of sample
(Cooling temperature is -45°C)

Model	FD-1000	FD-1000REC
Catalogue No.	188800	191160
Trap cooling temperature	-45°C	
Dehumidification amount	500ml/time	
External diameter (mm)	195(263)W × 440(475)D × 790H	
Output of recorder	1 C/mV, 1Pa/V	

▶ FD-550 Series

Shelf-style drying system that has 10L of
dehumidification capacity

Model	FD-550	FD-550R	FD-550P
Catalogue No.	120540	144130	181580
Trap cooling temperature	-45°C		
Dehumidification amount	10L/time		
Temperature program			Maximum 10 programs, 10 segments/program
External diameter (mm)	1102W × 797D × 1504H		



FD-550R



FD-550P

EYELA



CAUTION

Please read "Instruction Manual" carefully before using the product for your continued safety.

※ Exterior and specification of the products are subject to change without notice due to continual improvements.

※ Please note that actual products may differ slightly in coloration from the pictures shown on this catalogue.

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