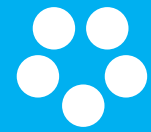


Multi-channel Automatic Gas Monitoring System **New Model Released**

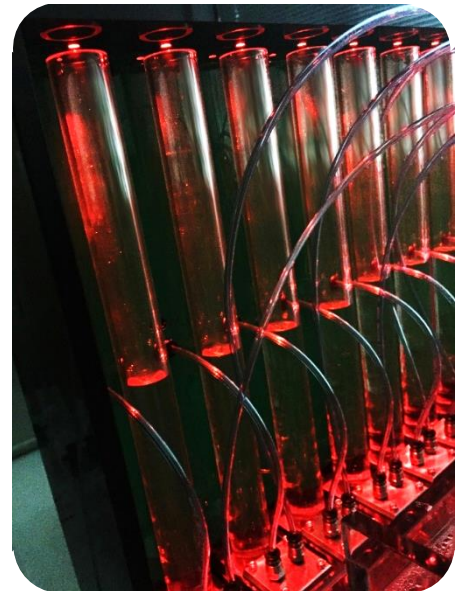
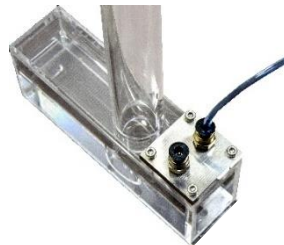
Fermograph Totally Renewed

Significant brush-up of sensors improved accuracy and operability

Fermograph III is coming



- Advanced sensors and design improve accuracy
- Remodeled manometers for easy draining and cleaning
- Easy connection of tubes with one-touch joint
- Easy check of water level in manometer by LED



- Multi-channel Automatic Gas Monitoring System
WSF-2000MH-10W/20W Fermograph III



Advanced sensors improved accuracy and stability



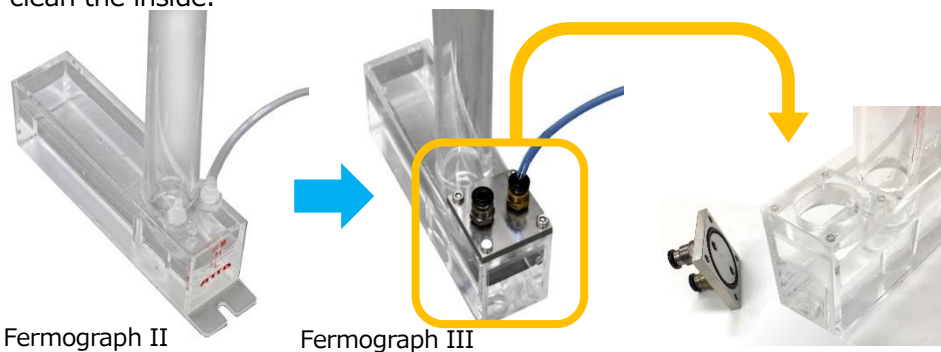
Since Fermograph II was developed over 20 years ago, it is designed using the sensors, components, and software selected at the time. In some cases, some of these parts have already been discontinued, or their accuracy and stability are inadequate at the current state of the art.

Fermograph III has renewed all components and uses the latest parts such as sensors built into medical devices used for COVID-19 patients, so measurement accuracy, stability and reproducibility are improved compared to conventional products.



Manometers remodeled for easier draining and cleaning

With Fermograph II, the only way to get the solution out of the manometer was to let it fall naturally through a small nipple hole. For this reason, it was hard to change the solution, and it was not possible to clean the inside of the manometer chamber. With Fermograph III, the solution inside can be easily discharged by simply removing the front lid, making it easier to clean the inside.



Fermograph II

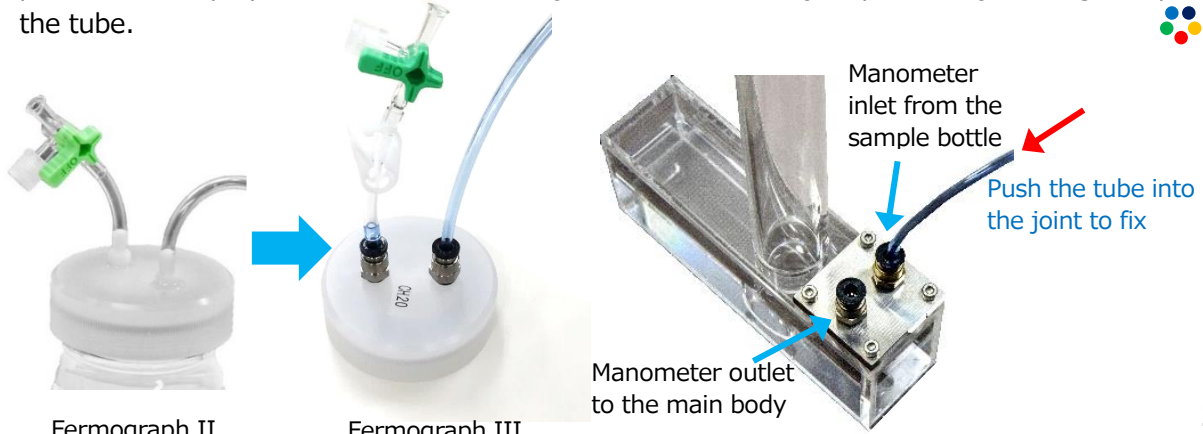
Fermograph III

The Fermograph III manometer lid can be easily attached and detached with the standard hex wrench.



Easy connection of tubes with one-touch joint Improved operability

In Fermograph II, the tube was connected by fitting the Tygon tube into the nipple. This required power and tips, and the operation was a little complicated. With Fermograph III, just push in a hard polyurethane tube into the joint. To remove it, just push the joint ring and pull the tube.



Fermograph II

Fermograph III

Tube connection at sample bottle cap

Tube connection at manometer inlet and outlet



Easy check of water level in manometer by LED



Fermograph II



Fermograph III

In Fermograph III, a red LED is placed at the top of each manometer cylinder to improve the visibility of the liquid level. This makes it relatively easy to check the status of the liquid level during long-term measurement over night and the status of the power supply (LED lights when ON).



Still more specifications and tools that make measurements better and more enjoyable are coming

Fermograph III not only replaces sensors with the latest parts, but also improves measurement accuracy by adding atmospheric pressure sensors, adding temperature sensors for each channel, and arranging temperature sensors that make it easier and more accurate to monitor gas temperature. We also made minor design improvements.

At this moment, software compatible with the new hardware is still under development, so the software Ver. 5 for Fermograph II that can be used now for Fermograph III does not take full advantage of these changes. The new software (after the summer of 2021) will enable more accurate measurements using this latest (improved) hardware.

In addition, we plan to prepare tablets for saturate the manometer solution with carbon dioxide before measurement and options for more detailed control of measurement conditions.

Fermograph will continue to evolve for more accurate, more enjoyable, and cutting into a new world.



Multi-channel Automatic Gas Monitoring System WSF-2000MH-10W/20W Fermograph III

Code No.	Model / Product Name	Unit	price
4101170	WSF-2000MH-10W Fermograph III (10 channels)	1 set	Please contact
4101180	WSF-2000MH-20W Fermograph III (20 channels)	1 set	Please contact



- ※ Computer and Thermostatic bath are not included
- ※ Fares and installation adjustment costs will be quoted separately
- ※ WSF-2000MH-20W includes two units of Fermograph III shown on the left photo. Two thermostatic baths are also required.



Specifications ※ Appearance and specifications are subject to change without notice. The measurement-related specifications in this table are based on Software Ver. 5. Measurement-related specifications are scheduled to change significantly with the new software (after the summer of 2021).

Product Name : Fermograph III		
Model	WSF-2000MH-10W 4101170	WSF-2000MH-20W 4101180
1. Main Unit		
Method	Liquid-gas displacement, pressure sensing using manometers / sensors are temperature compensation type	
I/O	USB-Serial	
Measurement time	1min~30days ※1	
Measurement interval	1sec~60min ※1	
Total channels	1~10 (1~5 in gas retention measurement) ※2	1~20 (1~10 in gas retention measurement) ※2
最低検出ガス量	0.2mL per measurement interval	
Resolution	Approx. 0.2mL (0.4mg as CO ₂ mass)	
Accuracy	±2% (フルスケール90mLに対して)	
Sample weight	20g (Flour basis/about 30~40g of dough) ※3	
Sample bottle Vol.	225mL (20g flour basis)	
Power supply	AC 100V±10V, 50/60Hz, 36VA (AC Adaptor)	AC 100V±10V, 50/60Hz, 72VA (AC Adaptor × 2)
Dimension	503mm (W) ×152mm (D) ×396mm (H)	503mm (W) ×152mm (D) ×396mm (H) ×2 units
Mass	10kg	20kg
2. Thermostatic bath for Fermograph (option) ※4		
Temperature range	Room temperature +5℃~50℃ (Maximum operating temperature of the bath is 50℃) ※5	
Accuracy of temp.	±0.1~0.5℃	
Power supply	AC100V ±10V 50/60Hz 900VA	
Dimension	270mm (W) ×360mm (D) ×150mm (H) (exclude Temperature controller)	
Mass	6.0kg	
Equipment configuration		
Standard accessories	①Application software [Disk or USB memory] (for Windows)1set ※4 ②225mL (20g basis) sample bottle 50pcs ②225mL (20g basis) sample bottles 100pcs ③225mL (20g basis) sample bottle cap.....10pcs ③225mL (20g basis) sample bottle cap..... 20pcs ④CO ₂ absorption bottle cap.....5pcs ※6 ④CO ₂ absorption bottle cap10pcs ※6 ⑤CO ₂ absorption bottle10pcs ※6 ⑤CO ₂ absorption bottle10pcs ※6 ⑥Polyurethane tube(pin 2.5mm/out 4mm) 20m x2 ⑥ Polyurethane tube(pin 2.5mm/out 4mm) 20m x4 ⑦USB cable.....1 ⑦USB cable.....2, USB hub 1pcs ⑧Operation manual x1, Hex wrench x1, Tube cutter x1	
Price (without tax)	Please contact	

- ※1 : Maximum measurement time depends on the unit of the measurement interval. NOTE: Measurement time, interval, resolution, and/or accuracy can be changed without notice when the application is updated.
 ※2 : When measuring gas retention, pairs of odd-numbered channel (normal measurement) and even-numbered channel (with CO₂ absorption bottle) are used simultaneously.
 ※3 : Sample dough mass (weight) depends on the formula or water content. For 20g flour basis, 30~40g dough is used.
 ※4 : Thermostatic bath and personal computer are optional. See below.
 ※5 : For measurement in lower temperature than the room temp., a cooling circulator and water bath with nozzles are provided.
 ※6 : For CO₂ absorption bottle, 30% KOH solution is used. Please handle with care for safety.

Options

◇Thermostatic bath for Fermograph (When using in higher temperature than room temperature)

For bread dough leavening or yeast culture etc. fermented in higher temperature than room temp., the thermostatic bath below is required.

※However, due to the heat resistance of the thermostatic bath material (acrylic), the maximum usable temperature is up to 50 °C

Code No.	Product Name	Unit	Price excluding tax
4108235	Constant temperature bath (without nozzles, with temperature controller)	1 set	Please contact

◇Thermostatic bath for Fermograph (When using in lower temperature than room temperature)

For alcoholic beverages etc. fermented in lower temperature than room temp. (around 10℃), the bath and the cooling circulator listed below are required. The cooling circulator can control the temperature between -15℃~65℃, though when using water, the temperature range is limited to 10℃~50℃ due to the heat resistance of the bath material and water freezing.

Code No.	Product Name	Unit	Price excluding tax
4108238	Constant temperature bath (with nozzles, without temperature controller)	1 set	Please contact
4108240	Cooling circulator (CH-302i)	1 set	Please contact

◇Personal Computer

A personal Computer running Windows 10 or later OS is required to use Fermograph

CPU : Core i5 or later recommended / RAM : at least 4GB · more than 8GB (16GB for long term test) recommended / GPU is required (Built-in GPU can be used. NVIDIA or AMD recommended)

Code No.	Product Name	Unit	Price excluding tax
4101165	PC system for Fermograph	1 set	Please contact



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