Gwave+

Microwave Digestion System

As the leading company providing the best quality laboratory instruments for sample preparation, Goojung EnT introduces a new microwave acid digestion system, G Wave Plus.

G Wave Plus has been tested for maximum safety. All samples can be digested at the same time and under the same conditions with G Wave Plus by its advanced turntable which can rotate 360 ° in one-way, instead of back and forth way.

With its precise sensors, G Wave Plus can measure and control the temperature and pressure of each vessel accurately, and ensure safety for the sample preparation using high temperature and pressure.

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Your Absolute Lab Solution

Key features

- Safe and robust design to prevent any risk of explosion and leakage of microwaves.
- Highly durable vessels for high temperature, high pressure, and corrosion.
- Turntable rotating 360 ° in one-way can apply the same amount of microwaves to each vessel.
- High sample throughput with 40 sample vessels.
- Automatic pressure release out of sample vessels and re-sealing technology.
- Accurate measurement of temperature from the inside of the vessel with Multicore fiber-optic sensors and dual IR.
- Precise semiconductor pressure sensor to detect the exact pressure.
- Convenient and easy user interface using a 7-inch touch screen and Android-based software.

Basic Platform

Design for durability and safety

Using a 316 L stainless steel cavity that is acid-resistant and corrosion-proof and coated with multiple layers of Teflon, G Wave Plus ensures its durability for a long time. The basic platform of G Wave Plus is safely designed based on lots of experiments on a three-dimensional explosion mechanism. G Wave Plus automatically shuts off for the safety of lab researchers in case its door suddenly opens. Cooling systems with high-efficiency turbine fans allow for quick cooling of the instrument to make it more efficient.

Dual Magnetrons

Dual magnetrons and efficient inverter technology make real-time adjustment of microwave output power according to the temperature and pressure feedback of a sample vessel. The inverter prevents G Wave Plus from possible-frequent stop and re-operation so that protects the magnetrons effectively and saves unnecessary energy loss. Microwaves of dual magnetrons deliver energy even and efficiently to a chamber ensuring consistency and reproducibility of the sample acid digestion.

Temperature and Pressure Sensor

Multicore fiber optic temperature sensor and Dual IR

Equipped with multicore fiber optic temperature sensor and dual IR, G Wave Plus precisely detects temperature for all sample vessels. Coated with Teflon, fiber optic temperature sensor in 2mm diameter is resistant to acidic corrosion. The curvature design of the temperature sensor prevents damage caused by unexpected folding. The lifespan of multicore fiber optic sensor is 5 times longer than single-core optical fiber. With its enhanced temperature sensor, G Wave Plus can measure temperature in every vessel more accurately. If abnormal temperature is detected during the digestion, G Wave Plus shut off the microwaves immediately with a warning message displayed on the LCD screen.

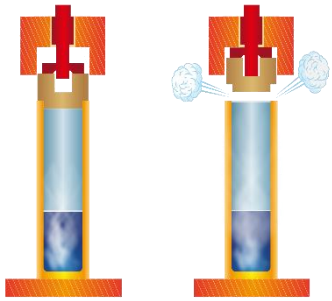
High-precision semiconductor pressure sensor

The advanced high-precision semiconductor pressure sensor detects pressure with pressure precision of ±0.01MPa. Teflon tubing which delivers vessel pressure to the pressure sensor is anti-corrosive. Vibration sensor detects vibration occurred by abnormal pressure of the inner vessel or external shock. If abnormal vibration is detected, G Wave automatically shuts down to protect a lab researcher safely.

40 Sample Vessels

Automatic pressure release and re-sealing technology

Automatic pressure release of out vessel and re-sealing vessel technology can maintain an appropriate level of internal pressure in sample vessels so that could remove the risk of explosion caused by building up pressure beyond a safe level. When inner pressure rises higher than an appropriate level, fumes like CO2 and NOx causing pressure rise are released out of the vessel through tiny holes of the vessel cap. When the pressure level recovers back, the sample vessel cap is re-sealed to maintain inner pressure at a proper level.



Sample vessel materials

TFM materials of the inner vessels enhance durability and make the vessels endure high temperature. Outer vessel is made of Xtra Fiber, which is a composite fiber material used in the aerospace industry, and coated with multiple layers of Teflon. Sample vessels are can withstand up to 70MPa pressure and 600°C and eliminate the risk of over-pressurization. Due to its durability, a lab researcher can prepare acid-digestion samples safely and maintain G Wave Plus at a low cost.

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User Interface

Android-based software and Cloud storage service

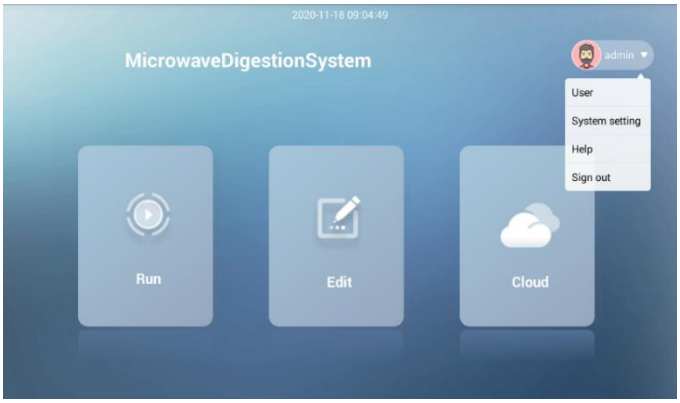
G Wave Plus provides user-friendly software for lab researchers with a 7-inch LCD touch screen and Android-based software. It allows users to control steps and parameters of sample digestion easily and eliminates the hassle of manually updating data from users as it automatically detects the vessels and counts them. Using Cloud storage service, it's convenient to save sample methods and share the data.

Real-time temperature & pressure graph

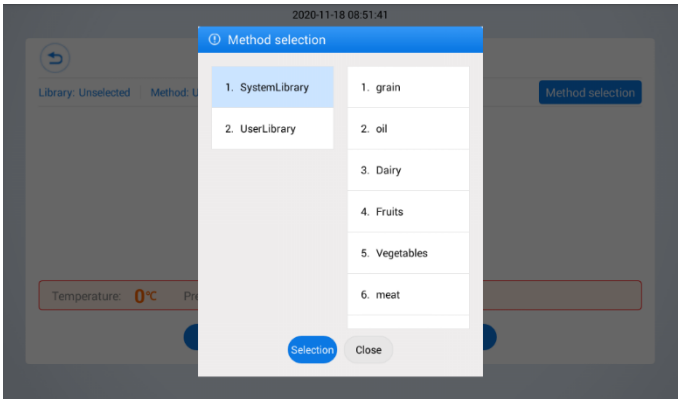
With a function presenting curves of temperature and pressure per stage on the graph, G Wave Plus helps users to monitor the operation and understand the data. If abnormal temperature and pressure are detected in the sample vessel, a warning message will appear on the screen via the COT(Control system Of real-Time) and the system will be shut down at the same time.

Method library

Preprogrammed methods including US EPA methods as well as other types of methods, Method Library is capable to save a new method and edit your methods and it's 21 CFR Part 11 compliant for electronic records and signatures.

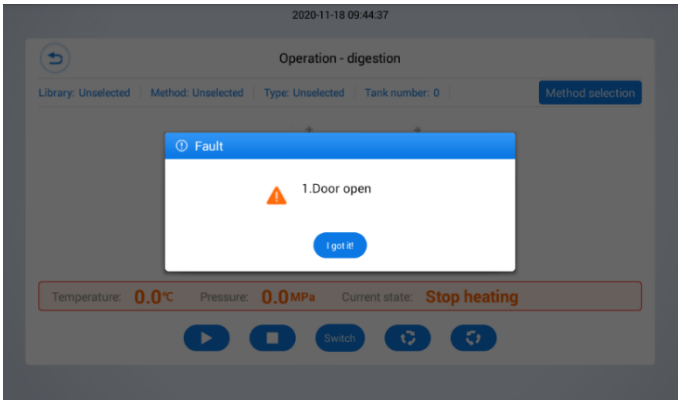


Main screen



Method Library

Real time temperature and pressure graph



Warning message

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G Wave Plus Specification

Model name	G Wave Plus
Power Output	Dual Magnetrons, Max output: 2000 W
Microwave Frequency	2450 MHz
Chamber volume	66 L
Chamber material	316 L stainless steel coated with multiple layers of Teflon
Temperature sensor	Multicore fiber optic sensor and dual IR
Temp measurement range	Measurement range: -40°C~305°C, error range: ±0.1°C
Pressure sensor	Precise semiconductor pressure sensor
Pressure measurement range	Measurement range: 0~15 MPa (1,450 psi), error range: ±0.01 MPa
User interface	7-inch LCD touch screen, Android-based software, Cloud storage service
Video display	5 inch color display, Camera is installed inside
Dimensions (mm)	660 (H) X 600 (W) X 685 (D)
Weight (Kg)	62
Electrical requirements	220~240[V], 50/60 [Hz], 20 [A]

Type of vessel

Vessel	UHPV(Default)	NHPV
No. / Volume of sample vessels	40 / 70 mL	12 / 100 mL
Weight (Kg)	12	16
Vessel temperature Maximum Controllable Temp Recommended Maximum Temp	 300 °C 250 °C (Recommended Temp: 230 °C)	 300 °C 250 °C (Recommended Temp: 230 °C)
Vessel pressure Maximum Controllable Pressure Recommended Maximum Pressure	 15 Mpa (1450 psi) 4 Mpa (580 psi)	 15 Mpa (1450 psi) 3 Mpa (435 psi)
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