tri-gas glove box incubator with forced convection cycle

The tri-gas glove box incubator is equipped with an operating glove interface for aseptic operation in a sealed environment, which is suitable for demanding culture tasks of cells, microorganisms, tissue samples and so on.

Tri-gas Glove Box Incubator

Compared to traditional incubators, the tri-gas glove box incubator allows for the entire process of adding, handling, and sampling without opening the door for exposure. This greatly reduces contamination risk, making it one of the core devices for modern life science research and precision culture.

Features

1. **Three-gas control system:** Independently and precisely adjusts CO_2, O_2, and N_2 concentrations; enables control from normoxia (21% O_2) to hypoxia (as low as 0.1% O_2).
2. **Constant temperature and humidity:** Uses air duct circulation with high-sensitivity sensors for uniform and stable temperature and humidity.

3. **High-efficiency glove interface:** Front panel equipped with air-tight glove ports for operation without opening the main compartment, preventing external gas interference.
4. **HEPA filtration:** Built-in HEPA filter removes bacteria and particles from incoming air, ensuring a sterile environment.
5. **Natural humidification:** Water tray evaporation maintains humidity required for cell growth.
6. **Intelligent alarm system:** Includes high temperature, gas out-of-control, power interruption, and other safety alarms to ensure experimental safety.

Core Advantages

1. **Ultra-low oxygen control:** Stable control to 0.1% O_2—triple-gas incubators typically cannot reach below 1%.
2. **Continuous operation:** All processes occur in a sealed glove box, enabling uninterrupted, long-cycle experiments.
3. **Low contamination risk:** Fully enclosed operation and HEPA filtration minimize external microorganism contamination.
4. **Intuitive operation:** Color LCD touch panel with real-time gas ratio, temperature, and humidity display for easy parameter adjustment.

Working Conditions

- Power: 220V, 50/60Hz, 4A
- Environment: Ambient temperature 25°C, humidity <90%

Working Principle

1. **Gas ratio regulation:** Mass flow controllers precisely proportion O_2, CO_2, and N_2 for the required mixture, injected into the culture chamber.
2. **Temperature & humidity regulation:** PID precision temperature control with natural evaporation humidification for a stable environment.
3. **Sealed operation:** Glove interface ensures sample handling without disturbing the internal atmosphere; micro-positive pressure prevents external air backflow.
4. **Circulation & purification:** Fan-driven convection circulation with continuous HEPA filtration keeps the culture environment clean.