



ZWYC-240B ULTRA ELITE

Benchtop Cell Culture Shaking Incubator

Technical Compliance & Data Integrity Guide



This guide summarises the ZWYC-240B's documented capabilities for user access control, electronic data integrity and audit trail, thermal performance, and hygienic/contamination-resistant design.



1 User Access Management

PASSWORDS AND MULTI-TIER CONTROLS

Three-level user access management with configurable user privileges, allowing role-based separation of operator, maintainer and administrator functions.

Password protection for critical system parameters and configuration settings, preventing unauthorized or unintended parameter changes.

Physical door lock to prevent unauthorized access to the chamber and samples.

All operations are recorded under the logged-in user's identity; no operation is permitted without logging in first.



Touchscreen Multi-Level User Login
Role-based authentication & operator ID assignment



Chamber Physical Key Lock & Safety Access
Dual mechanical-electronic protection against unauthorized opening

2 Data Integrity & Automatic Audit Trail



Fig. 1: Continuous multi-parameter display, run/set times, and non-volatile operational status

NON-VOLATILE LOGGING

Non-volatile memory retains all settings and automatically resumes operation after a power failure, with a power interruption notification for traceability.

Real-time recording of operation logs, history curves, live curves, and alarm events throughout each run.

ELECTRONIC RECORDS & TRIAL AUDITING

Secure generation and storage of electronic records; data is stored in a non-editable format to preserve authenticity and integrity.

Automatic, time-stamped audit trail of operations, including door closures, alarm events, and parameter changes, supporting full traceability of system activity (aligned with 21 CFR Part 11 principles).

USB export of electronic records in selectable file formats (.csv or .pdf, non-editable), preventing post-hoc alteration of trial data.

Long-term data storage capability of up to 10 years, supporting retrospective audit and compliance review.

OPTIONAL DATA OUTPUT & MONITORING ENHANCEMENTS

TCP/IP Modbus & Wi-Fi connectivity (optional upgradable) for remote monitoring, extending audit-trail visibility beyond the unit itself.

Built-in printer (optional upgradable) for instant, on-demand data output alongside standard USB export.

REGULATORY NOTE The built-in multi-level authorization structure and continuous time-stamped non-volatile audit log directly support rigorous GMP, GLP, and 21 CFR Part 11 regulatory compliance frameworks.



3 Thermal Performance

The ZWYC-240B uses a Peltier-based, compressor-free temperature control system for precise, vibration-free thermal regulation:

PARAMETER	SPECIFICATION
Temperature range	Ambient - 15°C - 60°C (Min. 4°C)
Resolution	0.1°C
Fluctuation	±0.1°C
Uniformity (per product flyer)	±0.3°C @ 37°C (No Load)
Heating/cooling method	Peltier module (solid-state, no compressor/refrigerant)
Air circulation	Forced convection

SUPPORTING DESIGN FEATURES

High-precision Peltier control eliminates compressor vibration and reduces heat transfer into the chamber, supporting stable, reproducible conditions.

Fast thermal response with rapid switching between heating and cooling.

Audible and visual alarms for high/low parameter deviations, plus sensor fault alarms, to flag out-of-tolerance conditions in real time.



ERGONOMIC HANDLING

Vibration-Free Incubation Chamber

Smooth pull-out platform with flask clamps maintains sample equilibrium during loading without disturbing Peltier thermal stability.

4 Hygiene & Contamination Resistance

CHAMBER CONSTRUCTION

Chamber constructed from high-grade #304 stainless steel with a fully rounded-corner design, eliminating dead zones and easing cleaning.

Waterproof isolation structure allows stable operation in high-temperature, high-humidity environments.

Chamber supports direct water rinsing and disinfection, with a bottom drain port for efficient cleaning.

SEALING & STERILISATION

Double-layer insulated glass viewing window improves thermal insulation and prevents condensation.

Single-piece inner door glass structure (no screws or rivets) enhances sealing and removes contamination-prone crevices.

Built-in high-efficiency UV lamp with programmable timing for chamber sterilisation, interlocked with the door switch for safe operation.



HYGIENIC ISOLATION

#304 Mirror Chamber & UV Decontamination

Seamless coved corners, integrated UV sterilisation lamp, and rivetless inner glass door prevent contamination accumulation and facilitate rapid washdown.

Specifications are subject to change without notice and do not constitute a binding product specification; contact Labwit for current, validated figures.

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