

MVE CryoVerse™ Connect Controller

Next-Generation Cloud-Connected LN₂ Storage Management

The MVE CryoVerse™ Connect Controller represents a new standard in cryogenic storage management. Combining cloud connectivity, real-time diagnostics, and an intuitive touchscreen interface, CryoVerse™ Connect delivers unmatched visibility and control over your critical LN₂ inventory — from a single freezer to an entire facility network.

Key Features

- Cloud-connected dashboard with live remote monitoring
- 10.1" high-resolution color touchscreen with X,Y trend graphing
- Dual redundant LN₂ level sensors with ± 0.35 in. (9mm) accuracy
- Configurable audio/visual/remote alarms
- Multi-freezer network support via One Fill All Fill (OFAF)
- MODBUS, RS-485, Ethernet (RJ45), and Wi-Fi connectivity
- AES-256 encrypted data storage with 10-year event log capacity



CryoVerse™ Connect At a Glance

Display

10.1" Color Capacitive Touchscreen

Level Accuracy

± 9 mm or ± 0.35 in

Temp Accuracy

± 1.0 °C (dual RTD)

Data Storage

> 10 years

Power

100–240 VAC / 24 VDC backup

Alarms

Configurable audio/visual/remote

LN₂ Level Measurement

The CryoVerse™ Connect employs a differential pressure sensing system to determine liquid nitrogen level with an accuracy of ± 0.35 in. (9 mm) and a resolution of 0.05 in. (1.25 mm). Redundant sensors provide fail-safe measurements and instant cross-verification. Single-point calibration supports display in inches, millimeters, or percentage full, across a range of 3.0 in. to 48.0 in. (75 mm to 1220 mm).

Automatic LN₂ Level Control

The fully automated level control system is governed by user-defined parameters electronically adjustable across the entire range: Low Level Alarm, Low Level Fill Point, High Level Fill Point, and High Level Alarm. Redundant Solenoid Valves with overfill protection run on 24 VDC, 1.2 amp (max).

Temperature Measurement

Two independent platinum RTD sensors provide temperature measurements within the payload space with an accuracy of $\pm 1^{\circ}\text{C}$ and resolution of 0.1°C . A third temperature sensor monitors the gas bypass and does not measure the payload space. Temperature is displayed in $^{\circ}\text{C}$ or $^{\circ}\text{F}$, while two-point calibration with altitude compensation supports accurate measurement across installation environments.

Temperature Inlet Settings (Hot Gas Bypass)

The intelligent Hot Gas Bypass feature vents warm nitrogen gas from the supply line prior to initiating a fill cycle. This prevents thermal shock to stored samples, maintains a stable temperature gradient within the freezer, and reduces excess LN_2 evaporation — extending fill intervals and maximizing efficiency.

Liquid Usage Analytics

Advanced consumption tracking provides real-time LN_2 usage rates and historical trend analysis.

Cloud Connectivity

CryoVerse™ Connect features built-in Wi-Fi and Ethernet (RJ45) connectivity for seamless integration with the MVE CryoVerse™ Cloud Platform.

Remote Monitoring, Alarm Notifications & Data Reporting

Monitor live temperature, LN_2 level, fill activity, and alarm status from any browser or via a secure, password-protected website. Configurable push notifications and email alarm alerts ensure critical events are never missed, wherever you are.

User-Defined Alarms

Configurable audio/visual/remote alarms alert users to potential or developing problems. Alarm types include: High/Low Temperature (Zones A, B, and Chamber), High/Low Level, Maximum Fill Time Exceeded, Hot Gas Bypass Failure, Solenoid Stuck Open/Closed, Temperature Sensor Calibration Fault, Low Battery, Power Failure, Lid Open, Communication Loss, and Cloud Connectivity Loss.

Alarm Light Beacon

The Alarm Light Beacon allows a user to quickly identify the state of a freezer from a distance > 20 meters including alarms, filling and idle states.

Password Security & Access Control

User specific password protection and role-based access control allows administrators to grant or restrict personnel access to settings, ensuring user action audit trail, regulatory compliance and sample integrity.

Event Log / Data Storage

All system events are recorded as unalterable, time-stamped entries in AES-256 encrypted nonvolatile memory. The controller stores greater than 10 years of operational data. Data is exportable via USB, e-mail or the cloud platform.

Communication Capabilities

Two independent communication ports support network integration. Options include ASCII, MODBUS and One Fill All Fill (OFAF) for multi-freezer synchronization. One dedicated RJ45 Ethernet port enables direct LAN/WAN connectivity. Wi-Fi 802.11 b/g/n with WPA2 encryption is included as standard.

Intended Use & Indication for Use of Cryogenic Storage and/or Transport

LIFE SCIENCE INTENDED USE STATEMENT

STORAGE ONLY

MVE freezers are intended for the indication of preserving human biological products, samples, and/or specimens (e.g., blood, blood products, cells, tissues, etc.) at cryogenic and ultracold temperatures during storage.

STORAGE AND TRANSPORT

MVE dewars and vapor shippers are intended for the indication of preserving human biological products, samples, or specimens (e.g., blood, blood products, cells, tissues, etc.) at cryogenic and ultracold temperatures during storage and/or transportation.



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