

# Automated Liquid Nitrogen Storage System

## MGICLab-LN55K Pro Series



### Single/whole box automated access

Supports reservation, batch operation, fragment sorting, flexible access and other multiple access scenarios.



### Full-process temperature $\leq -150^{\circ}\text{C}$ for access

Automatic pre-cooling in the tube-picking area, liquid nitrogen transfer, ensuring sample quality.



### Smart IoT, real-time sample traceability

Intelligent error prevention, real-time anomaly alert, comprehensive operation log, ensuring sample data real-time tracking.



MGICLab-LN55K Pro automated liquid nitrogen storage system, equipped with aerospace-grade high-vacuum double-layer thermal insulation tank, can effectively ensure the sample temperature balance, and guarantee the sample stability and safety. It also has automatic liquid nitrogen replenishment, monitoring alarm, emergency safety protection and other deep low-temperature cold chain security measures, which can ensure the sample safety for more than 288 hours even in case of liquid nitrogen outage or other force majeure factors. The full-process automated access makes the sample storage easy and convenient.

# Automated Liquid Nitrogen Storage System



## MGICLab-LN55K PRO

MGICLab-LN55K PRO automated liquid nitrogen storage system has the features of single-tube retrieval, temperature stability, large-capacity storage, and consumable multi-specification compatibility, ensuring efficient and stable sample storage, and meeting the deep low-temperature storage requirements of various fields in all aspects.

### Storage performance

#### • Storage temperature:

The top of the tank is  $\leq -180^{\circ}\text{C}$ , and the tube-picking area is  $\leq -150^{\circ}\text{C}$ .

#### • Sample storage capacity:

55,000 tubes (based on SBS 0.5ml standard cryogenic tubes).

#### • Storage specifications:

Can adapt to store SBS standard format 0.5ml, 0.75ml, 1ml, 2ml, 5ml cryogenic tubes in cryogenic box consumables.

### Functionality

#### • Access system:

Can perform SBS cryogenic box whole-plate access tasks or single-tube sample access tasks.

#### • Scanning system:

Equipped with automatic scanning device, automatically check sample information.

#### • Auxiliary system:

Equipped with dehumidification and drying system.

### Safety

- Equipped with face recognition, fingerprint password, ID card hardware modules.
- Equipped with UPS power supply, complete the current automation action and data storage in abnormal situations.
- Automatic liquid level detection, automatic temperature monitoring, over-temperature alarm, etc.
- Sample in-out warehouse audit, authority can be set, data can be traced.

### Intelligence

- Sample library management system can dock with HIS, LIMS system.
- Real-time display of capacity and space, automatic inventory of sample storage status.
- Different input templates can be set according to sample type, custom fields.
- Good user experience of human-computer interaction design, real-time display of storage status.



## Main Performance and Technical Indicators

01

### Stability

Through the hot gas bypass function, only ultra-low temperature liquid nitrogen can be injected into the tank, ensuring the temperature stability inside the tank.

02

### Storage

One-key automated sample access, supporting multiple sampling operation scenarios such as whole-plate/tube-picking.

03

### Safety

Full-process deep low-temperature protection, ensuring the sample quality is not affected by repeated freezing and thawing, guaranteeing the sample safety.

04

### Management

Integrated sample management system, realizing comprehensive management of sample information such as temperature, alarm, etc.

Classification	Item	Performance Indicators
Key Specifications	Storage Consumables	Compatible with SBS standard format 0.5ml, 0.75ml, 1ml, 2ml, 5ml cryogenic tubes in cryogenic box
	Storage Capacity	0.5 mL $\geq$ 55K tubes 2 mL $\geq$ 22K tubes
	Storage Temperature	The top of the tank is $< -180^{\circ}\text{C}$ , and the tube-picking area is $\leq -150^{\circ}\text{C}$ .
Key Components	Liquid Nitrogen Consumption	One-time injection usage time $\geq 12$ Days Static liquid nitrogen consumption 15L/Day
	In-out Warehouse Unit	Can perform whole-box or single-tube sample in-out warehouse tasks.
	Remote Alarm System	Has remote communication function, sends real-time device status via WeChat, SMS
	Fragment Sorting	The system can sort the scattered sample tubes according to the sample information and a certain logic.
	Sample Protection	Has timeout return function, time can be set.
	Monitoring System	The system is equipped with monitoring cameras, can see the internal environment in $360^{\circ}$ .
	Cryogenic Transfer	Equipped with cryogenic transfer barrels, can maintain $-150^{\circ}\text{C}$ for $\geq 4$ hours, sample access are in $-150^{\circ}\text{C}$ environment.
	Voltage/Frequency	220V/50Hz
Equipment Installation	Installation Conditions	Minimum door width $\geq 1.4$ meters
	Device Height	Device height $< 2.7\text{m}$
	Liquid Nitrogen Replenishment	Equipped with standard interface for liquid nitrogen tower pipeline docking





## Full-cycle sample data management

Complete information of storage cycle data, device logs, etc., can be managed at any time.

## One-key in-out warehouse

User-friendly operation interface, in-out warehouse only takes  $\leq 90s$ , access has never been so easy.

## Storage of consumables with multiple

Can adapt to store SBS standard format 0.5ml, 0.75ml, 1ml, 2ml, 5ml cryogenic tubes in cryogenic box consumables.

MGI ZSM Pro biological sample management system, has a reliable sample storage system, ensuring the security, accuracy and convenience of sample data and sample resource utilization, achieving the maximization of sample value. We can develop customized solutions according to the actual needs of users, and provide diversified scenario requirements.



## Cryogenic protection of sample activity

Gas-phase liquid nitrogen tank environment storage, samples are stored safely and stably below  $-180^{\circ}\text{C}$ , one-key automatic in-out warehouse.



## Automated operation process

Automatic grabbing robot arm, operators do not need to contact with liquid nitrogen, ensuring personnel safety while improving efficiency, simple, safe and efficient.



## More reasonable storage structure

High-density cryogenic rack arrangement, compatible with mainstream specifications of SBS cryogenic boxes, can store 55,000 0.5ml cryogenic tubes.



## Intelligent data management system

Self-contained control system, automatically read and record sample information, save manual inventory work, data storage more intelligent.



## Sample information is complete and traceable

Support docking with third-party systems, sample information can be traced throughout the process.

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