Haier Biomedical
Intelligent Protection of Life Science

U-VAULT FLEX80

Automated Modular ULT Sample Storage at -80°C

Intelligent sample protection,
from receipt to storage.



HAB80-60KA | HAB80-60KB

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AUTOMATED ULT STORAGE, DESIGNED AROUND THE SAMPLE

• FLEXIBLE BY DESIGN. BUILT TO GROW WITH YOUR STORAGE NEEDS.

The Haier Biomedical U-Vault Flex80 is a flexible automated storage system designed for biological samples at -80°C, with a temperature-controlled sample processing environment maintained at -25°C.

It combines automated sample handling, secure access control and inventory management to protect and track high-value biological material — while minimising manual handling.

materials while reducing manual intervention.

Modularity is fundamental to the design. Every system starts with the HAB80-60KA base module, which handles both standard SBS boxes and individual samples. As storage demand grows, HAB80-60KB accessory modules can be added — up to four per base module — with further expansion possible later, site conditions permitting.

Up to four accessory modules can be connected to one base module, including expansion at a later stage where site conditions allow.

The result is a system ideally suited to research repositories, biobanks, compound libraries and other sample-intensive laboratories.

Protected ULT storage -80°C

Controlled sample handling -25°C

Modular by design



HAB80-60KA



HAB80-60KB



HAB80-60KA + multi-HAB80-60KB

Standard SBS formats | 0.5 ml · 0.75 ml · 1 ml · 2 ml · 5 ml

Product images are for illustration purposes only. Actual appearance may vary.
Specifications, features and design are subject to change without prior notice.

WORKFLOW

• FROM RECEIPT TO PROTECTED STORAGE

Samples are received at a dedicated access point and handled in a temperature-controlled -25°C zone. Individual samples are identified by 2D barcode and SBS rack by 1D barcode.

From there, automated handling systems move rack between modules through the refrigerated connection corridor before placing them into -80°C storage.

The system can also reorganise samples between racks to improve use of available storage capacity.





1. LOAD

Samples enter through the dedicated access point into the controlled handling zone.

2. IDENTIFY

Individual samples are identified by unique 2D barcode; SBS racks by 1D barcode.

3. HANDLE AT -25°C

Samples are handled in the temperature-controlled zone to limit exposure to heat and humidity.

4. TRANSFER

An integrated refrigerated corridor connects the modules at -25°C, allowing racks to move automatically between them.

5. STORE AT -80°C

Samples are transferred automatically to their assigned storage position.

6. OPTIMISE

Individual samples can be rearranged between SBS racks to fully leverage all available storage positions.

Each SBS box must contain samples of the same volume.

INSIDE THE SYSTEM

• INDEPENDENT MODULES. ONE CONNECTED WORKFLOW.

Each U-Vault Flex80 accessory module operates as an independent unit from both an automation and refrigeration perspective.

Every module contains its own SBS shelving, automated handling mechanism and local control system, allowing racks to be loaded, unloaded and managed independently.

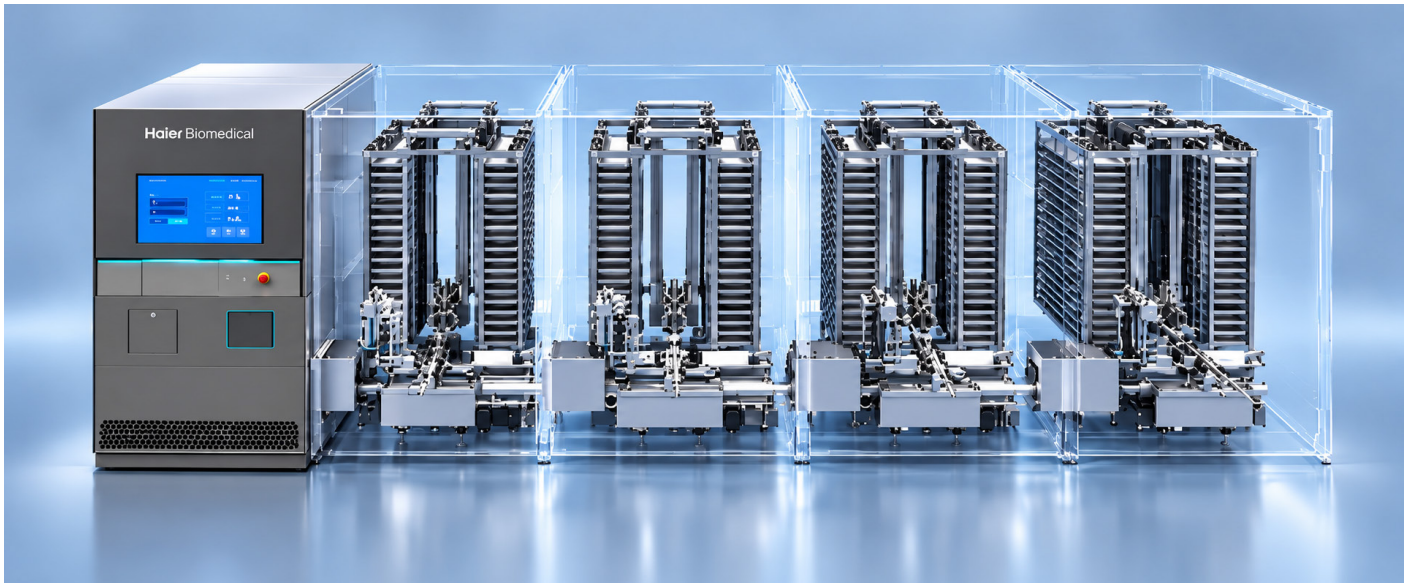
When connected to the HAB80-60KA base module, the individual modules become part of one coordinated storage environment.

Racks move between modules through the refrigerated corridor, while individual sample handling remains centred in the base module.

This architecture combines the resilience of independent storage modules with the efficiency of a connected automated system.

It lets the platform scale with demand — without altering the core workflow or disturbing the controlled sample environment.

Independent automation | Independent refrigeration | SBS storage racks | Automated transfer corridor



*Internal view for illustration only. Actual component layout may vary.

SAMPLE PROTECTION

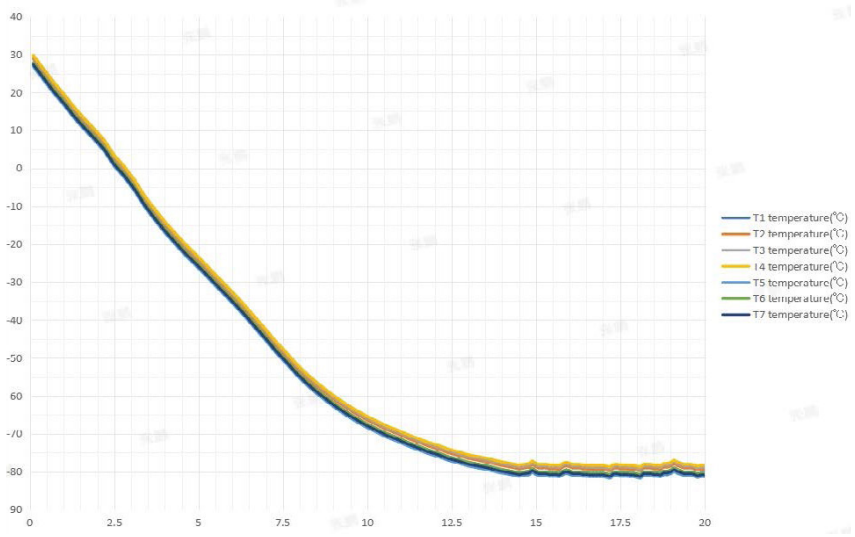
• AFLEXIBLE AUTOMATED PLATFORM DESIGNED TO PROTECT, MANAGE AND SCALE HIGH-VALUE SAMPLE STORAGE.

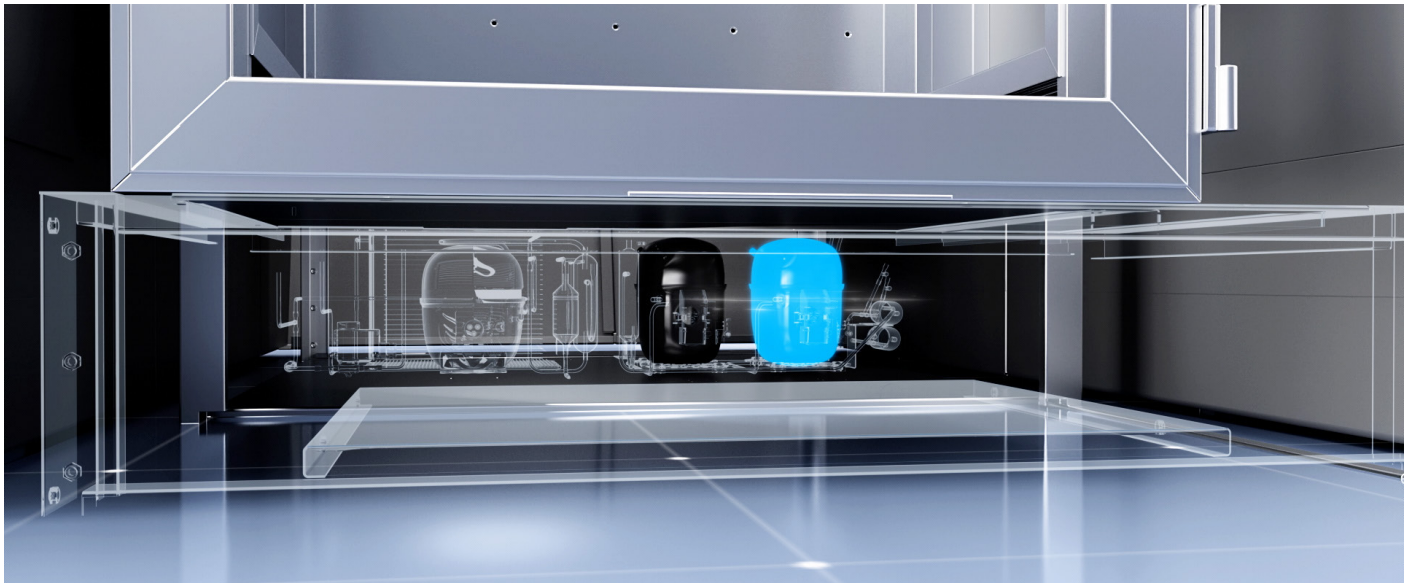
Sample protection is built into the refrigeration architecture of every module.

Two independent fixed-speed refrigeration systems maintain reliable -80°C ULT storage and deliver consistent, steady cooling performance.

If a refrigeration fault occurs in one module, stored boxes are automatically relocated to an adjacent module through the temperature-controlled corridor, preserving sample integrity throughout the transfer.

The compressors, evaporators and cooling fans of the two systems run independently.





2x Independent refrigeration systems

-80°C ±5°C

Automatic relocation between modules

-25°C picking area & transfer corridor

CONTROL, TRACEABILITY & SYSTEM PROTECTION

• VISIBILITY AND CONTROL FOR EVERY SAMPLE

Every module features a touchscreen interface for monitoring operating status, inventory and system activity.

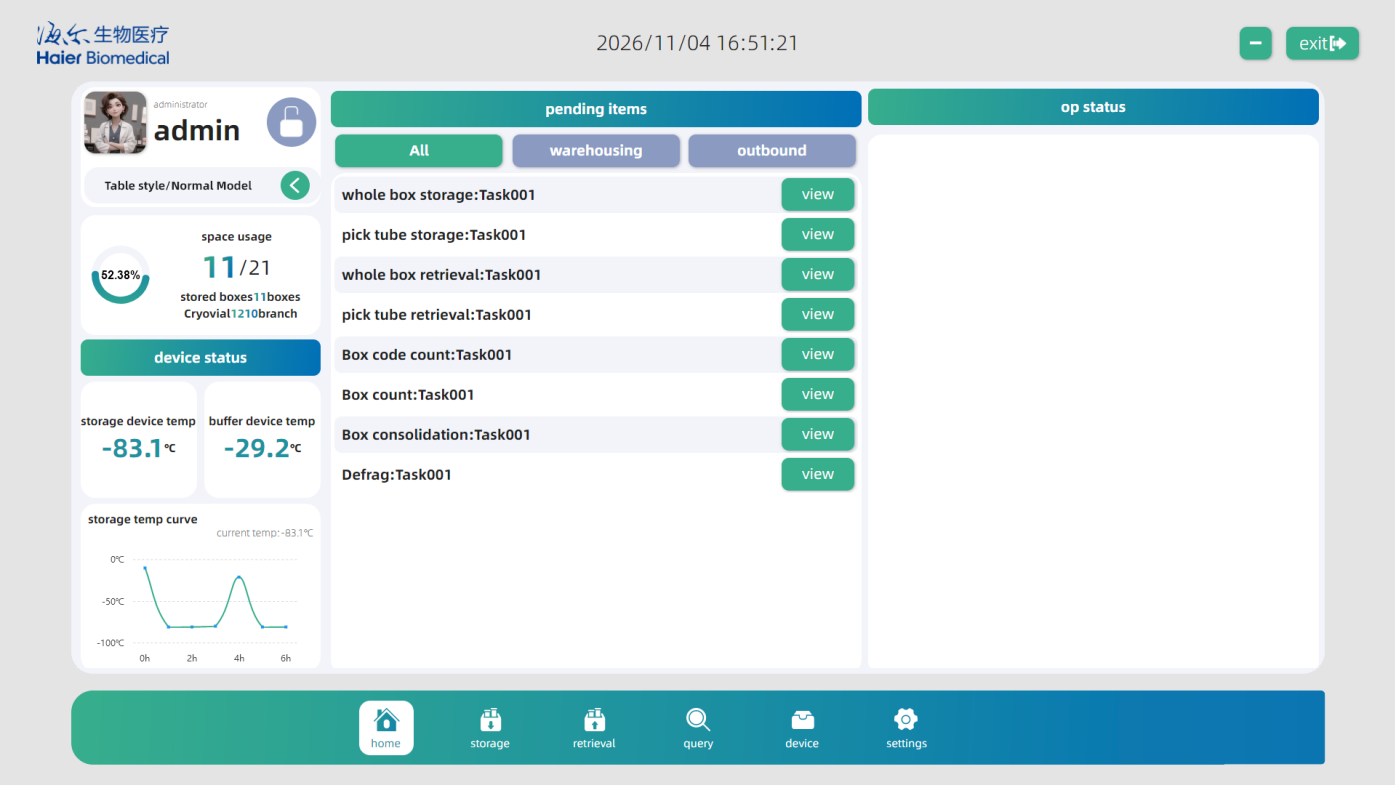
Access is restricted to authorised users via username and password, with configurable permission levels that let administrators control each user's access.

All user actions are logged to support audit and regulatory requirements, while sample and rack locations stay visible through the system inventory.

An onboard controller supervises automation and temperature status and shares system data in real time with connected management systems.

U-Vault Flex80 can interface with biobank management software through standard HTTPS protocols, enabling sample-position information and system status to be accessed from connected workstations.

Together these functions deliver a controlled digital workflow, from receipt and inventory through to storage and retrieval.



*UI shown for illustration purposes. Actual interface and screen layout may vary depending on software version and system configuration.

• OPTIONAL LN_2 BACKUP

Additional temperature backup for each module

• OPTIONAL UPS

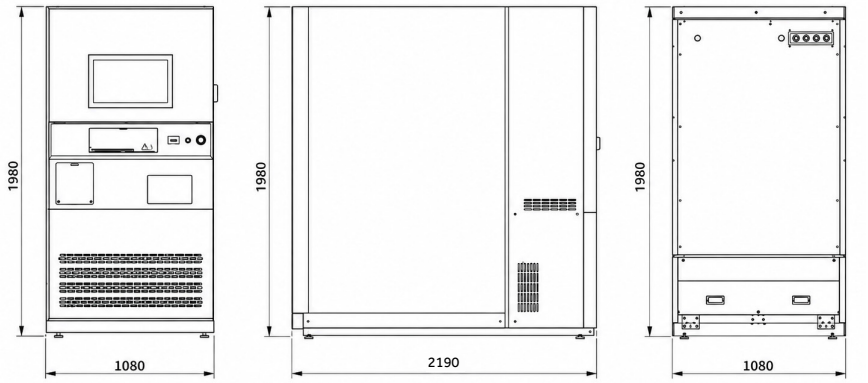
Maintains automation for at least 0.5 h; does not power the refrigeration compressors. For prolonged power interruptions, connection to an external emergency power source is recommended.

• REMOTE ALARM / GSM

Sends alarms to surveillance systems or designated mobile phones

TECHNICAL DATA & SYSTEM DIMENSIONS

- **KEY SPECIFICATIONS FOR SYSTEM SELECTION, CAPACITY PLANNING AND INSTALLATION.**





*Dimension drawings are for reference only. Minor deviations may occur. Please refer to the latest technical specifications for final dimensions.

Specification	HAB80-60KA	HAB80-60KB
Automation type	SBS boxes and individual samples	SBS boxes
5 ml SBS tube capacity	25,344 tubes / 1,056 boxes	25,344 tubes / 1,056 boxes
2 ml SBS tube capacity	52,992 tubes / 1,104 boxes	52,992 tubes / 1,104 boxes
1 ml SBS tube capacity	92,160 tubes / 960 boxes	92,160 tubes / 960 boxes
0.75 ml SBS tube capacity	115,200 tubes / 1,200 boxes	115,200 tubes / 1,200 boxes
0.5 ml SBS tube capacity	133,632 tubes / 1,392 boxes	133,632 tubes / 1,392 boxes
Storage temperature	-80°C ±5°C	-80°C ±5°C
Handling / corridor temperature	-25°C ±3°C	-25°C ±3°C
External dimensions (W × D × H)	1080 × 2190 × 1980 mm	1080 × 2190 × 1980 mm
Weight	1500 kg	1500 kg
Power supply	220/230 VAC – 50 Hz	220/230 VAC – 50 Hz
Maximum power required	5 kW / module	5 kW / module
Thermal dissipation*	119,424.15 BTU/day	119,424.15 BTU/day
Cooling type	Direct	Direct
Refrigerant	HC	HC
Cooling system	Dual Cooling, double system at -80°C in self-cascade	Dual Cooling, double system at -80°C in self-cascade

*Average energy consumption is calculated based on equipment operating at -80°C, 22°C ambient temperature and 50% equipment usage over 24 hours.

- **INSTALLATION ACCESS**

  Passage width ≥1.3 m / height ≥2.2 m

- **MINIMUM ROOM SPACE**

  ≥2.3 m W × ≥4.0 m D × ≥2.3 m H

- **FLOOR REQUIREMENTS**

  Flatness ≤4 mm/m / inclination ≤2 mm/m
  Load per wheel / levelling foot: 3,675 N

- **SITE & UTILITIES**

  17–28°C / ≤60% RH · Ethernet / RJ45 · Earthed power connection

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