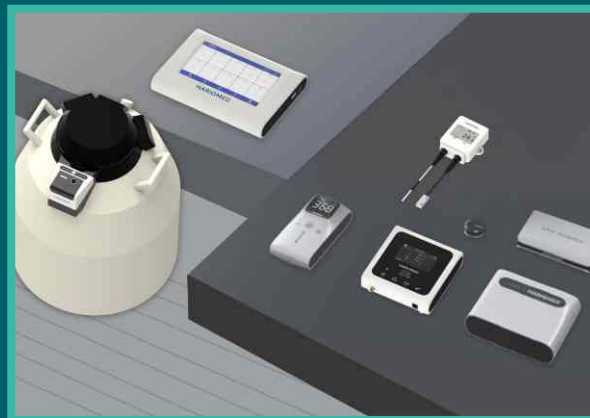


Laboratory Monitoring System

Through sensors and communication devices distributed in the IVF laboratory, the overall operation of the laboratory is comprehensively monitored, and real-time running parameters are supported by remote access. Accidents or unforeseen hazards can be effectively eliminated through monitoring system.



Benefit



Full-process monitoring

24-hours real-time monitoring to ensure the IVF clinic have stable environment in processing



Hardware

Multi-channel detector to ensure the instrument can be operated correctly



Efficient management

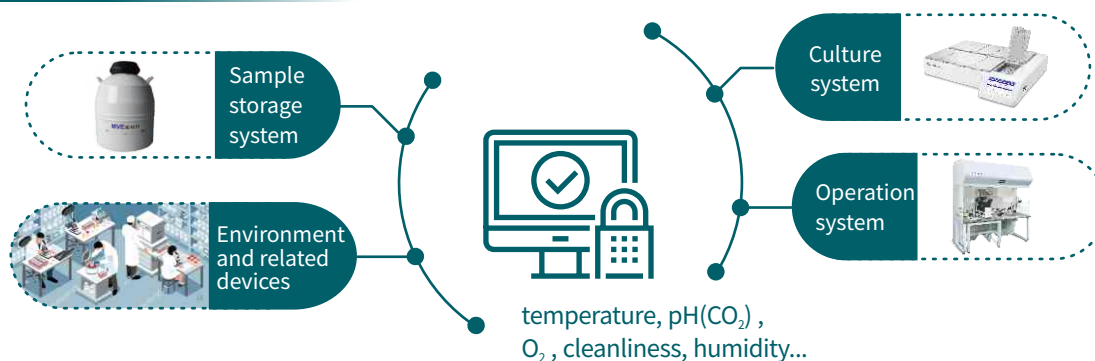
Alarm system
Intelligent management
Traceability of the records



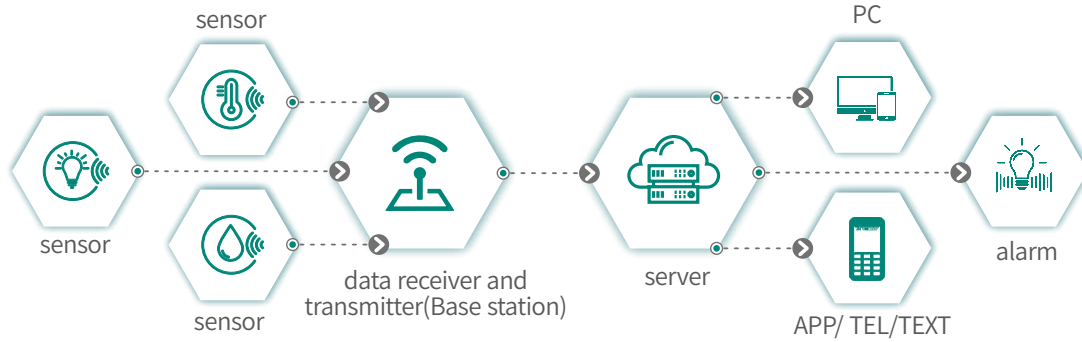
Extensibility

IVF clinic management system
Intelligent IVF verification system

The Scope of laboratory monitoring system

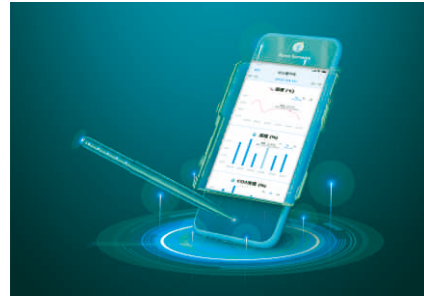


Monitoring items	Monitoring data	Model of hardware
Laboratory environment	CO ₂ \temperature\O ₂ \PM2.5\PM10\formaldehyde	EQ-100A
Incubator	CO ₂ &O ₂ concentration, temperature, humidity	IM-200A\IM-200B\TE-100A\IM-100D
Refrigerator	Refrigerator temperature	TE-200D
Liquid nitrogen tanks	Temperature, nitrogen level, smart lock	LNT-100A\LNTL-100A-XC47
Premixed gas	CO ₂ &O ₂ concentration,gas pressure	IM-200C
Operation tabletop	Temperature	TE-100A
Power supply	Power interruption	EM-100A
Droplet	Temperature	TE-100C



- View the data of monitored device real-time, liquid nitrogen filling records, etc.
- Each operation is logged which provides data for laboratory quality control.

- Mobile phone remotely check device status, alarm information.
- User-defined Settings for each group of contacts who receive alarm notifications from phone call, SMS, or E-mail .



Advanced wireless
transmission
technology: long distance
& low consumption



Real-time monitoring and warning: multi-alarm methods



Various wireless sensor
with high accuracy



Built-in report function:
assisting in laboratory
quality control management

Hardware

◉ Culturing system ◉

Incubator alarm signal receiver



IAO-100A

- Monitoring the alarm port and power of an incubator
- Conduct the alarm message through 4G
- Four LEDs for detecting the power supply, charging, Internet state and device running state

Sensor for pre-mixed gas



IM-200C

- Gas supply pressure measurement is available
- Precision of CO₂ concentration: $\leq \pm 0.1\%$ (5%-6%)
- Precision of O₂ concentration: $\leq \pm 0.1\%$ (5%-6%)

Sensor for surface temperature



TE-100A

- The temperature at the bottom of the benchtop incubator chamber tabletop of IVF workstation can be measured.
- Precision of temperature: $\leq \pm 0.1^\circ\text{C}$ (37°C)

Multi-Channel detector for incubator



IM-200B

- Internal temperature, O₂, CO₂ of each incubator chamber could be measured
- 10 channels are available and each channel is compatible with temperature and gas sensors

temperature precision & range	$\pm 0.1^\circ\text{C}$ (37°C) & 0°C -50°C
CO ₂ precision & range	$\pm 0.1\%$ (5%-6%) & 0%-30%
O ₂ precision & range	$\pm 0.1\%$ (5%-6%) & 0%-25%
display screen	touch screen, 7inch
wireless transmission distance	$\leq 100\text{m}$ (empty space)
data update frequency	real-time transmission when connecting power supply
communication frequency	470Mhz

Cabinet incubator detector



IM-200A

- Monitor the internal environment of the chamber (temperature, CO₂, O₂ and humidity)
- Power supply

temperature precision& range	$\pm 0.1^\circ\text{C}$ (37°C) & 0°C -100°C
CO ₂ precision& range	$\pm 0.1\%$ (5%-6%) & 0%-20%
O ₂ precision& range	$\pm 0.1\%$ (5%-6%) & 0%-100%
incubator type	cabinet incubator
power failure alarm	Remote alarm for power failure
power interruption	Notification through SMS or phone call

Droplet detector



TE-100C

- Portable detector can monitor the real-time temperature of the droplets in a petri dish

temperature precision (range)	$\pm 0.1^{\circ}\text{C}$ (37 $^{\circ}\text{C}$) 0.5 $^{\circ}\text{C}$ (-20-30 $^{\circ}\text{C}$, 50-100 $^{\circ}\text{C}$)
operating temperature	-40 $^{\circ}\text{C}$ -60 $^{\circ}\text{C}$
storage temperature	-40 $^{\circ}\text{C}$ -70 $^{\circ}\text{C}$
display screen	2.42 inch, two-color LED
power supply	DC/3.7V & rechargeable battery
battery life	>15days (monitoring/standby mode) >5hours (detecting/ realtime mode)
wireless transimision distance	$\leq 100\text{m}$ (empty space)
data update frequency	configurable, default every 10 minutes

Handheld wireless detector for incubator



IM-100D

- Monitor the internal environment of the chamber including temperature, CO₂ and O₂ concentration;
- The gas concentration is detected in a bypass loop.

temperature precision& range	$\pm 0.1^{\circ}\text{C}$ (37 $^{\circ}\text{C}$) & 0 $^{\circ}\text{C}$ -100 $^{\circ}\text{C}$
CO ₂ precision& range	$\pm 0.1\%$ (5%-6%) & 0%-20%
O ₂ precision& range	$\pm 0.1\%$ (5%-6%) & 0%-100%
temperature sensor	Flat, surface , cylinder
communication frequency	470Mhz

Indoor Environment

Environment quality monitor



EQ-100A



EM-100B

- Multiple parameters of the laboratory environment are monitored at the same time, including temperature/ humidity /TVOC/pm2.5/pm10/ formaldehyde/CO₂&O₂

O₂ detector

temperature precision (range)	$\pm 0.3^{\circ}\text{C}$ (0-70 $^{\circ}\text{C}$) $\pm 0.6^{\circ}\text{C}$ (-30-0 $^{\circ}\text{C}$)
humidity precision(range)	$\pm 3\%$ (0-90%RH) $\pm 5\%$ (0-10%, 90-100%)
operating temperature	-30 $^{\circ}\text{C}$ -70 $^{\circ}\text{C}$
storage temperature	-35 $^{\circ}\text{C}$ -80 $^{\circ}\text{C}$
power supply	lithium batteries
battery life	>5 years (every 10 minutes)
wireless transimision distance	$\leq 100\text{m}$ (empty space)
data update frequency	configurable, default every 10 minutes

Storage system

Refrigerator detector



TE-200D

- Monitor the temperature and humidity in the refrigerator to ensure the safety of samples

temperature precision& range	$\pm 0.5^{\circ}\text{C}(-40^{\circ}\text{C}-40^{\circ}\text{C})$ & $-40^{\circ}\text{C}-125^{\circ}\text{C}$
door sensor working distance	20-30mm
operating temperature	$-30^{\circ}\text{C}-70^{\circ}\text{C}$
Battery life	More than 5 years (depending on the sensor)
Wireless transmission distance	$\leq 100\text{m}$ (empty space)

Liquid nitrogen temperature detector

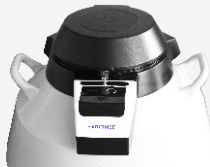


LNT-100A

- Suitable for long-term temperature and a fixed liquid level monitoring of a liquid nitrogen tank
- Offer flexible customization of the best probe length

temperature precision (range)	$\pm 0.5^{\circ}\text{C}(-200-50^{\circ}\text{C})$
resolution	0.1°C
operating temperature	$-20^{\circ}\text{C}-60^{\circ}\text{C}$
storage temperature	$-30^{\circ}\text{C}-70^{\circ}\text{C}$
power supply	lithium batteries
battery life	> 5 years (every 10 minutes)
wireless transimission distance	$\leq 100\text{m}$ (empty space)
data update frequency	configurable, default every 10 minutes

Smart lock for nitrogen tank



LNTL-100A-XC47

- The lock controls the lid of a nitrogen tank and monitors working state of the tank completely,which can keep the safety of the storage sample

liquid nitrogen dewar type	MVE XC47/11-10/11-6/11-6SQ
monitoring index	1.tank lid 2.liquid nitrogen level 3.internal canisters 4.battery level
power supply	14.4V lithium battery
battery life	6 months (depending on data uploading frequency)
wireless transmission distance	$\leq 100\text{m}$ (empty space)
communication frequency	470Mhz

unlocking method	fingerprint/ mechanical key/software
unlocking mode	local/remote
unlocking configuration	single/double



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