M-IoT

Device Management System

Operator's Manual

- Release time: 2024-01
- Revision: 2.0

Warning

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- The product is used in accordance with the instructions for use.

WARNING

- **This equipment must be operated by skilled/trained clinical professionals.**
- **It is important for the hospital or organization that employs this equipment to carry out a reasonable service/maintenance plan. Neglect of this may result in machine breakdown or personal injury.**

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Preface

Manual Purpose

This manual contains the instructions necessary to operate the product safely and in accordance with its function and intended use. Observance of this manual is a prerequisite for proper product performance and correct operation and ensures patient and operator safety.

This manual is based on the maximum configuration and therefore some contents may not apply to your product. If you have any question, please contact us.

This manual is an integral part of the product. It should always be kept close to the equipment so that it can be obtained conveniently when needed.

Intended Audience

This manual is geared for clinical professionals who are expected to have a working knowledge of medical procedures, practices and terminology as required for monitoring of critically ill patients.

Illustrations

All illustrations in this manual serve as examples only. They may not necessarily reflect the setup or data displayed on your patient monitor.

Conventions

- ***Italic text*** is used in this manual to quote the referenced chapters or sections.
- [ ] is used to enclose screen texts.
- → is used to indicate operational procedures.

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Chapter 1 Product Introduction

1.1 Overview

M-IoT Device Management System (hereinafter referred to as "M-IoT") is used to manage devices connected to Mindray network. M-IoT enables users to acquire the basic information and usage of connected devices and manage them.

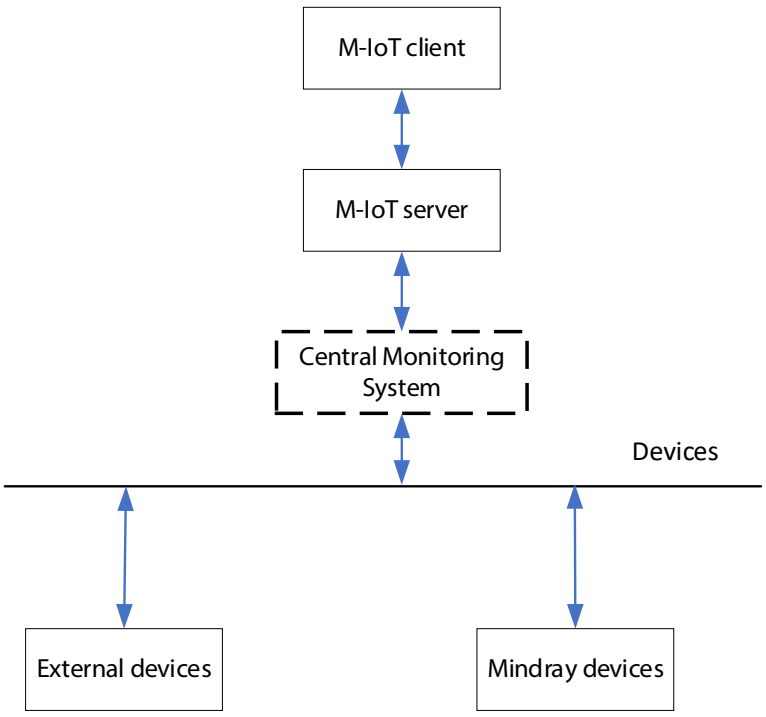
You need to deploy the M-IoT server before accessing M-IoT. M-IoT server provides access data.

M-IoT should be used by or under the guidance of facility's device management engineers or Mindray user service engineers. Users should be adequately trained. Anyone unauthorized or untrained must not perform any operation.

1.2 Network Composition

1.2.1 M-IoT Network

M-IoT network is mainly composed of M-IoT client, M-IoT server, Central Monitoring System and devices connected to Mindray network. The following is an example of network composition:



Among them, the Central Monitoring System is optional and deployed according to the specific environment of the user. External devices connect to the Mindray network through BeneLink. For details about external devices, see the BeneLink operator's manual.

1.2.2 Supported Devices

Devices that can be managed by M-IoT include Mindray devices and external devices connected to Mindray network through BeneLink.

Note

- **Some devices may not be available in your region.**

1.2.2.1 Mindray Devices

The following table shows the Mindray devices that can be managed by M-IoT:

Main Category	Subcategory	Model/Series
Monitoring Device	Monitor	Benevision N series (excluding N1)
		ePM series
		Passport 12M/17M
		Passport series
	Transport Monitor	Benevision N1
		Beneview T1
	Vital Signs Monitor	VS series
		Accutorr 7
	Telemetry	TMS-6016/TMS60/TM80/TM70/ Panorama Telepack
Anesthesia Machine	/	A8/A9
Ultrasound System	/	M9 series
		M10 series
		M11 series
		TE X series, TEX20 series, TEX10 series
		TE7 series, TE7 MAX series
		Resona I8 series, Nuewa I8 series, Resonal9 series, Nuewa I9 series
IT Device	Central Monitoring System	CentralStation, ViewStation, WorkStation
	eGateway	eGateway
	Mobile Server	Mobile Server

1.2.2.2 External devices

M-IoT supports the management of external devices connected to Mindray network through BeneLink, including ventilator, anesthesia machine, infusion pump. For specific models of the devices, see the BeneLink operator's manual.

Note

- **Information about the hemodialysis machine is only available in Asset Manage - All Devices.**

1.3 Accessing the M-IoT

Before accessing M-IoT, you need to deploy the M-IoT server. See the M-IoT server operator's manual for details.

1.3.1 Accessing via a Browser

Contact the administrator to obtain the URL, login name and password. Then enter the URL in your browser to access M-IoT.
Recommended browser and operating platform:

- Browser: Chrome (V79)
- Operating System: Windows
- Platform: PC

For details, please refer to the following steps to access:

1. Open your browser and enter the URL obtained from your administrator in the address bar.
2. Enter User Name and Password.
3. Select **Login**.

Note

- **If code verification is enabled, you need to enter verification code to access M-IoT. For details, see *8.7 Setting System Information*.**
- **Default URL to access the M-IoT is *http:// IP address or domain name of the PC where the M-IoT server is located: 443*. For example, the IP address of the PC where the M-IoT server is located is 192.168.0.145, then the default URL to access the M-IoT is *http://192.168.0.145:443*.**

1.3.2 Accessing via CentralStation/WorkStation/ViewStation

If CentralStation, WorkStation, or ViewStation is present in the M-IoT network, you can access M-IoT at CentralStation, WorkStation, or ViewStation. See the Central Monitoring System operator's manual for details.

1.3.3 Description of Different Permissions

Different clients can have different permissions to access the M-IoT. For details, contact the administrator.

1.3.3.1 Read and Write Permissions

When accessing M-IoT, different clients have different read and write permissions to the M-IoT screen, as shown below:

Client Permissions	Description
Read	Have read-only permission.
Write	Have read and write permissions to screens other than **System Setup**.
Manage	Have read and write permissions to all tabs of **System Setup**, and can modify the configurations related to statistics.

1.3.3.2 Device Accessing Permission

Whether a client can access a certain type of device in the M-IoT screen is decided by the M-IoT server. If a user needs to access a certain type of device, confirm with the administrator that the relevant permission has been granted on the M-IoT server for the user.

1.3.4 Personal Center

After you log in to the M-IoT, you will see your personal account information and icon  in the upper right corner of the screen.

Click  , then select **Homepage** to return to the All Devices screen of **Asset Manage**, or select **Logout** to return to the login screen.

Chapter 2 Asset Management

You can view and manage the basic information of all devices connected to Mindray network on the Asset Manage screen.

2.1 Screen Introduction

As soon as you successfully log in to the M-IoT , you enter the Asset Manage screen. The Asset Manage screen provides basic information about all devices connected to Mindray network and specific types of devices. The following is an example of the Asset Manage screen of the monitoring device. The screen is similar for all devices and other types of devices.

(1)	Device number statistics area: the total number of devices connected to the M-IoT network, excluding the scrapped devices.
(2)	Device status area: the number and proportion of devices in different status. Note: unconnected devices are classified as shutdown devices.
(3)	Screen switch area: select a tab to switch to the Asset Manage screen of the corresponding device.
(4)	Device distribution statistics area: provides distribution statistics about devices in different status of each department.
(5)	Device list area: provides basic information about the devices. See *2.3 Device List* for details.

2.2 Filtering Devices

2.2.1 Selecting Facility

Select the facility you need in **All Facilities** to only display the information about the devices of the facility in the screen.

2.2.2 Selecting Department

Select the department you need in **All Departments** to only display the information about the devices of the department in the screen.

2.2.3 Searching Device

Enter keywords in the search bar and select **Search** to search for the device you need. Select **Clear** to return to the screen before searching.

2.3 Device List

Device List provides basic information about the devices. You can set which fields are displayed in the device list. See 8.1 Setting List Display for details.

2.3.1 Selecting a Device Category

1. Select a specific type of device in the screen switch area to enter the Asset Manage screen of this type of device.
2. In the **Device Category** of the device list area, select the device category you want to view:

- To view all types, select **All** → **Filter** or simply select **Reset**.
- To view a certain type of device, select a specific type → select **Filter**.

Note

- **The icon in the device category column indicates a device failure. Select the icon to view the details of the device failure.**

2.3.2 Sorting Devices

Select the icon next to the field in the first row to sort the device list by that field.

2.3.3 Adding a Device

Select **Add Device** → fill in device information → select **OK**.

After the device is successfully added, you need to view the device in the All Devices screen of **Asset Manage**.

2.3.4 Editing a Device

In the **Edit/Detail** column, select the icon edit device information → select **OK**.

2.3.5 Deleting a Device

Select the device to be deleted → select **Delete Device** → select **OK**.

2.3.6 Importing Device Lists

You can update existing device information entries or add new device information entries by importing device lists.

Please follow the steps below:

1. Select Import Lists.
2. In the pop-up window, select **Download** → fill in the template → select **Upload File** → select the completed template → **OK**. If you have filled out the device list before operation, skip the steps of **Download** and filling in the template.

The new entries can only be viewed in the All Devices screen of **Asset Manage**.

Note

- **The imported file format must be CSV, and encoding format of the imported file must be UTF-8.**
- **The system verifies the existing devices according to the priority of Device ID and Device Serial Number for data update. If these two key fields cannot be found, the entry is a new entry.**
- **You can export the list of existing devices, modify it, and then import it. See *2.3.7 Exporting* Device Lists for details.**

2.3.7 Exporting Device Lists

Follow these steps to export device lists:

1. Select Export Lists.

2. In the pop-up window, select:

- **Export Edit Lists**: to export some information of the existing device list, which can be used to **Import Device Lists** after being edited.
- **Export Lists**: to export all information of the existing device list.

Note

- **The exported list is in CSV format and can be edited in the Notepad.**

2.3.8 Handling Error Information

Select the icon in the **Error Information** column to manually delete the error information.

Note

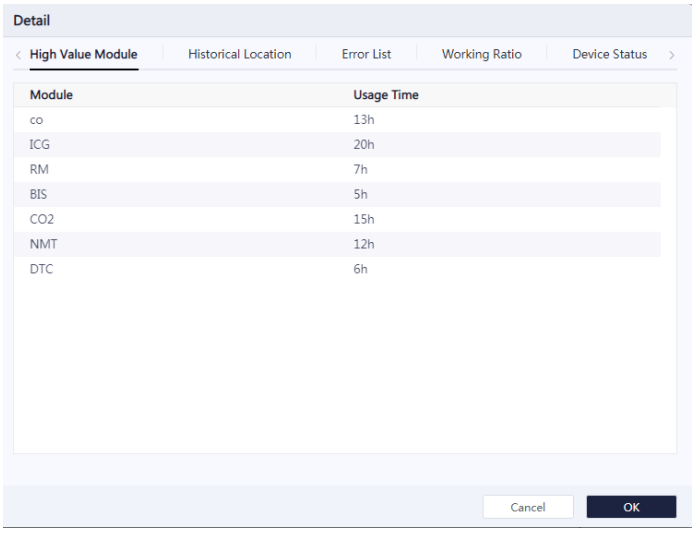
- **When a device has multiple error information, only the highest prioritized or the latest error information is displayed.**

2.3.9 Locating Telemetry Devices

For an online telemetry device, select the icon in the **Edit/Detail** column to locate the telemetry device.

2.4 Device Details

Select the icon in the **Edit/Detail** column of the device list to view the device details, as shown in the following example:



Only the parameters that need to be explained are described here:

- High Value Module

For monitoring devices, ventilators and anesthesia machines, M-IoT supports statistics of the usage time of specific modules of the devices, and these modules are defined as **High Value Modules**.

Device Category	High Value Module Name	Definition of Usage Time
Monitoring Device	ICG, RM, BIS, CO2, AG, NMT, EEG, C.O., CCO, SCVO2, RSO2	The length of time a module is inserted into a monitoring device
Anesthesia machine	AG, HFNC, Aux O2/AIR, EVAP	■ AG: the length of time the module exists on the host screen ■ HFNC, Aux O2/AIR: The length of time when traffic is detected ■ EVAP: The length of time when the anesthetic is output

- Working Ratio

Provide trends of usage in last 30 days and 12 months of the device. See *3.3 Usage Statistics Area* for more information about usage rate.

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Chapter 3 Usage Analysis

You can view the usage of all devices connected to Mindray network in the Usage Analysis screen.

3.1 Screen Introduction

The following is an example of the Usage Analysis screen of a monitoring device. The screen is similar for other devices.

(1)	Device number statistics area: the total number of devices connected to the M-IoT network, excluding the scrapped devices.
(2)	Device status area: the number and proportion of devices in different status.. Note: unconnected devices are classified as shutdown devices.
(3)	Device list area: provides basic information and usage information about the devices. See *2.3 Device List* for details.
(4)	Usage statistics area: provides statistical information on device usage. See *3.3 Usage Statistics Area* for details.
(5)	Screen switch area: select a tab to switch to the Asset Manage screen of the corresponding device.

3.2 Filtering Devices

You can find the devices you need by filtering by facilities, departments, or keywords. See *2.2 Filtering Devices* for details.

3.3 Usage Statistics Area

The items, applicable devices and descriptions of the usage statistics area are as follows:

Statistical Item	Applicable Device	Description
Department Usage in the Past XX Days (%)	Monitoring device, ventilator, anesthesia machine, infusion device, ultrasound system	This item is available only when **All Departments** is selected, and is used to calculate the usage rate of a certain type of device in different departments within XX days. Here, we take "**usage rate of monitoring devices in ICU department in the past 2 days**" as an example to explain this statistical item, and the usage rate of other devices in other departments during other statistical periods is calculated similarly. Among them, monitoring devices are subdivided into 5 subcategories: monitors, transport monitors, telemetry monitors, vital signs monitors, and wearable devices **Usage rate of monitoring devices in ICU department in the past 2 days = [D1+D2]/2** **D1** represents the average usage rate of all monitoring devices on the first day. **D2** represents the average usage rate of all monitoring devices on the second day. The calculation rules for **D1** and **D2** are the same. Take D1 as an example: **D1=A1xB1+A2xB2+A3xB3+A4xB4+A5xB5** ■ A1, A2, A3, A4 and A5 represent the average usage rate of monitors, transport monitors, telemetry monitors, vital sign monitors and wearable devices on the day, respectively. Their calculation rules are the same. Take A1 as an example: **A1 = the sum of the usage time of all monitors on the day/rated usage time/number of devices** ■ B1, B2, B3, B4 and B5 represent the proportion of the number of monitors, transport monitors, telemetry monitors, vital signs monitors, and wearable devices to the total number of monitoring devices, respectively. Their calculation rules are the same. Take B1 as an example: **B1 = the number of monitors on the day/the total number of monitoring devices**. Note: transport monitors are not counted in when used as modules.

Trends of Usage in Past 30 Days (%)/Trends of Usage in Past 12 Months (%)	Monitoring device, ventilator, anesthesia machine, infusion device, ultrasound system	This item is only available when you select a department: ■ **Trends of Usage in Past 30 Days (%)**: It is used to calculate the daily usage trends of a certain type of device (such as monitoring device) in the department in the past 30 days. The calculation method of the daily usage rate of a certain type of device is the same as the calculation method of D1 or D2 in the **Department Usage Rate in the Past XX Days (%)** statistical item mentioned above. ■ **Trends of Usage in Past 12 Months (%)**: It is used to calculate the monthly usage trends of a certain type of device (such as monitoring device) in the department in the past 12 months. Here, we take "**usage rate of monitoring devices in June**" as an example to explain the monthly usage rate of the devices, and the usage rate of other devices in other departments in other months are calculated similarly. **Usage rate of monitoring devices in June = [D1+D2+…+D30]/30** D1 represents the average usage rate of all monitoring devices on the first day in June, D2 represents the average usage rate of all monitoring devices on the second day in June...and D30 represents the average usage rate of all monitoring devices on the thirtieth day in June. The calculation rules for the D1...D30 are the same as the calculation method of D1 in the **Department Usage Rate in the Past XX Days (%)** statistical item mentioned above.
Peak Usage in Past XX Days (pcs)/ Peak Usage in Past 12 Months(pcs)	Monitoring device, ventilator, anesthesia machine, infusion device	■ When you select **All Departments**, the statistics of **Peak Usage in the Past XX Days** will be provided, including two statistical items: ◆ **Peak Usage**: The number of devices in the hour in which the most devices are used during the statistical period * (the statistical unit is one hour). The statistical period can be set. See *8.2 Setting Usage Analysis* for details. ◆ **Total**: The total number of devices belonging to the department. The department to which the devices belong is subject to the **Asset Attribution** in the **Asset Manage**.

		■ When you select a department, the following statistical items will be provided: ◆ **Peak Usage in Past 7 Days**[***]: The maximum number of devices operating simultaneously in the morning, noon and evening time periods of each day in past 7 days. The morning, noon and evening time periods can be set. See *8.2 Setting Usage Analysis* for details. ◆ **Peak Usage in Past 30 Days**: The maximum number of devices operating simultaneously per day in past 30 days. ◆ **Peak Usage in Past 12 Months**: The maximum number of devices operating simultaneously in each month in past 12 months.
Statistics of Ex-Factory Duration (Pcs)	Monitoring device, ventilator, anesthesia machine, infusion device, ultrasound system	Count the number of devices in different leaving factory duration.
Statistics of Total Working Hours (Pcs)	Monitoring device, infusion device	Count the number of devices with different total working hours. Total Working Hours: the total working hours of the device starting from the first connection to the M-IoT network.
Vent Mode Usage in Past XX Days (%)	Anesthesia machine	Different vent mode usage rate during the statistical period[*]. Usage rate = working hours of this vent mode/total working hours of all vent modes.
Total duration of examination type in the past XX days (hours)	Ultrasound system	The total examination time of different examination types (parts) during the statistical period[*].
Exam Type Total Duration in XX Days (hours)	Ultrasound system	Usage time of a certain type of probe/usage time of all probes during the statistical period[*]. Calculate usage rate by probe type.

Note

- **[*]: The statistical period is configurable. See *8.2 Setting Usage Analysis* for details.**
- **[**]: The rated usage time is configurable. See *8.2 Setting Usage Analysis* for details.**
- **[***]: Ventilator, anesthesia machine and infusion device do not support the statistics of Peak Usage in Past 7 Days.**

3.4 Device List

Device list provides basic information about the devices as well as usage statistics.
This section only describes the information that needs to be explained. Please see *2.3 Device List* for other information.

- **Running Ratio**: During the statistical period, the average daily running ratio of the device is calculated as: **total operating hours/[rated usage time x statistical period]**. See *8.2 Setting Usage Analysis* for details about the rated usage time.
- **Working Ratio**: During the statistical period, the average daily working ratio of the device is calculated as: **total working hours/[rated usage time x statistical period]**. See *8.2 Setting Usage Analysis* for details about the rated usage time.
- **Operating Hours**: refers to the length of the operating time - the length of time when the device is operating during the statistical period.
- **Working Hours**: The working hours of the device during the statistical period. The specific definition is as follows, with non-working hours as the reference.

Device category	Working Hours	Non-working Hours
Monitoring Device	Duration of monitoring	Standby, shutdown, disconnected from network, discharge patient
Anesthesia machine	Duration of ventilation	Standby, shutdown, disconnected from network
Devices of other brands	Operating hours	Shutdown, disconnected from network
Ultrasound system	Operating hours	Shutdown, disconnected from network

Note

- **The statistical period is configurable. See *8.2 Setting Usage Analysis* for details.**
- **When a VS series monitor is in spot check mode, the usage rate = the total number of NIBP measurements/[rated measurement times x statistical period]. The rated measurement times can be set. See *8.2 Setting Usage Analysis* for details.**

- **Total Working Hours**: The total working hours are calculated as the total working hours of the device starting from the first connection to the M-IoT network.

3.5 Device Details

Select the icon  in the **Detail** column of the device list to view the device details. Please see *2.4 Device Details*.

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Chapter 4 Gas Analysis

You can view analysis data of gases used by the anesthesia machines in the Gas Analysis screen, including anesthesia gases and fresh gases. Anesthesia gases include Sev, Des, Iso, Enf and Hal; fresh gases include Air, O2 and N2O.

Note

- **Gas analysis function applies to A8/A9 anesthesia machines.**

4.1 Screen Introduction

The following is an example of the Gas Analysis screen:

(1)	Total statistics area: ● Provide total cost, usage and surgical volume of all anesthesia gases. ● Provide cost, usage and surgical volume of single anesthesia gas.

(2)	Fresh gas total statistics area: provides single fresh gas usage.
(3)	This area provides statistics of surgical volume, anesthetic agent cost and fresh gas consumption in every day/week/month/quarter during statistical period.
(4)	Efficiency analysis: provides statistics of the following items: ratio of anesthetic uptake/consumption, anesthetic agent cost/min and fresh gas consumption distribution.
(5)	Optimization suggestion: provides optimization suggestion according to current gas usage.
(6)	Device list area: provides basic information about the anesthesia machines, statistics of surgery involved and gases used.

4.2 Set the Statistical Interval

In the top of the Gas Analysis screen, you can select the time period in which gas analysis data is counted: For **Recent1Year** or a certain **Date Range**, you can proceed to select **Day**, **Week**, **Month**, **Quarter** to determine the time dimension to present the statistics.

4.3 Statistical Item Description

This chapter provides brief description of the gas analysis statistical items.

Statistical Item	Description
Total	Statistics of all anesthesia gases: ● Cost: cost of all anesthesia gases consumption ● Usage: amount of all anesthesia gases consumption ● Surgical Volume: number of surgical cases all the anesthesia gases participate in
	Statistics of single anesthesia gas: ● Cost: calculated as: **anesthetic agent price/ml x gas volume** (unit is ml). A**nesthetic agent price/ml** can be configured; see *9.6 Setting Anesthetic Agent Setup* for details. ● Usage: volume and bottle can be transferred manually; see *9.6 Setting Anesthetic Agent Setup* for details. ● Surgical volume: number of surgical cases the anesthesia gas participates in
Fresh gas	Statistics of single fresh gas usage.

<table>
<tr><td>Carbon emission</td><td>Carbon emission equivalent of all anesthesia gases consumption.
Carbon emission for single anesthesia gas is calculated as: $CO2_e = \frac{Density*Volume*GWP_{100}}{1000}$
Details of the calculation:
$CO2_e$： CO2 emission (kg). When the volume exceeds 1000kg, it is presented in ton.
Density： anesthesia gas density ($g.cm^{-3}$).
Volume： volume of a bottle of anesthesia gas.
GWP_{100}: global warming potential of the anesthesia gas compared to the CO2 in 100 years.
Density and GWP_{100} vary for different gases as below.
<table>
<tr><td>Gas</td><td>GWP_{100}</td><td>Density ($g.cm^{-3}$)</td></tr>
<tr><td>Des</td><td>2540</td><td>1.465</td></tr>
<tr><td>Sev</td><td>130</td><td>1.52</td></tr>
<tr><td>Iso</td><td>620</td><td>1.465</td></tr>
<tr><td>Hal</td><td>50</td><td>1.872</td></tr>
<tr><td>Enf</td><td>680</td><td>1.52</td></tr>
</table>
Car travel equivalent:
Calculated as: (Carbon emission/ 2.254/6.46) X100
Carbon emission should be calculated in kg here.</td></tr>
<tr><td>Surgical Volume (Case)</td><td>Surgical volume in every day/week/month/quarter.</td></tr>
<tr><td>The proportion of surgery duration</td><td>Proportion of surgeries of different durations.</td></tr>
<tr><td>Anesthetic agent cost</td><td>Total cost of all anesthesia gases consumption in every day/week/month/quarter. Cost unit can be configured; see 9.6 Setting Anesthetic Agent Setup for details.</td></tr>
<tr><td>Average Cost/Case</td><td>Average cost of all anesthesia gases of surgeries of different durations in last day/week/month/quarter.
For example: suppose statistical interval is week, volume of surgeries over 4 h is 10 cases. For these 10 cases, Sev consumption is 100ml, Des 200ml, Enf and Hal both 0 ml; Sev price is 50 ¥/ml, Des price is 60 ¥/ml.
Then, average cost refers to average cost in last week, for average cost of surgery duration over 4h, it is calculated as: (100 x 50+200 x 60)/10 ¥.</td></tr>
<tr><td>Fresh gas consumption</td><td>Total consumption of fresh gases in every day/week/month/quarter.</td></tr>
<tr><td>Average fresh gas flow</td><td>Average fresh gases flow in last day/week/month/quarter.
For example: suppose statistical interval is week, surgery volume is 2 cases in last week. For case1, fresh gases consumption is 100ml, ventilation duration is 20 min; for case2, fresh gases consumption is 200ml, ventilation duration is 40 min.
Then, average fresh gas flow refers to average fresh gases flow in last week and is calculated as: (100ml/20min) x {20/(20+40)}+ (200ml/40min) x {40/(20+40)}.</td></tr>
</table>

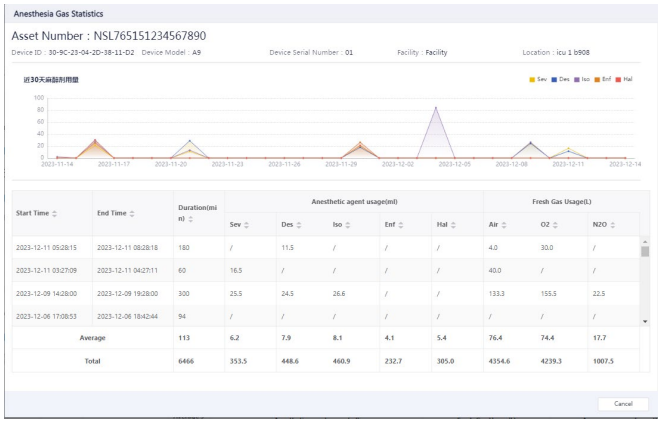
Ratio of Anesthetic Uptake/Consumption	Ratio of anesthetic uptake/consumption in last day/week/month/quarter.
Anesthetic agent cost/min	Anesthetic agent cost per minute in last day/week/month/quarter. For example: suppose statistical interval is week, surgery volume is 2 cases in last week. For case1, Sev consumption is 10ml, Des consumption 20ml, Enf and Hal both 0 ml, ventilation duration is A min; for case2, Sev consumption is 15ml, Des consumption 25ml, Enf and Hal both 0 ml, ventilation duration is B min. Sev price is 50 ¥/ml, Des price is 60 ¥/ml. Then, anesthetic agent cost/min refers to anesthetic agent cost per minute in last week and is calculated as: {(10+15)/(A+B)} x 50 ¥ + {(20+25)/(A+B)} x 60 ¥
Fresh Gas Consumption Distribution (%)	Distribution of fresh gases of different flows. For example, for all the surgeries conducted during the statistical period, total ventilation durations for all the fresh gases which flow respectively less than 0.5L/min, 0.5-1L/min, 1-6L/min, 6-20L/min are respectively 5 min, 10 min, 20 min and 30 min. Then, fresh gas consumption distribution (%) will be as below: Minimal (< 0.5L/min): 5/ (5+10+20+30) =7.7% Low (0.5-1L/min): 10/ (5+10+20+30) =15.4% Medium(1-6L/min): 20/ (5+10+20+30) =30.8% High (6-20L/min): 30/ (5+10+20+30) =46.2%

4.4 Device List

Device list provides basic information about the anesthesia machines, statistics of surgery involved and gases used. Select **Export All Lists** to export all information of current device list.

4.5 Device Details

Select the icon in the **Detail** column of the device list to view details of the anesthesia gas statistics, as shown in the following example:

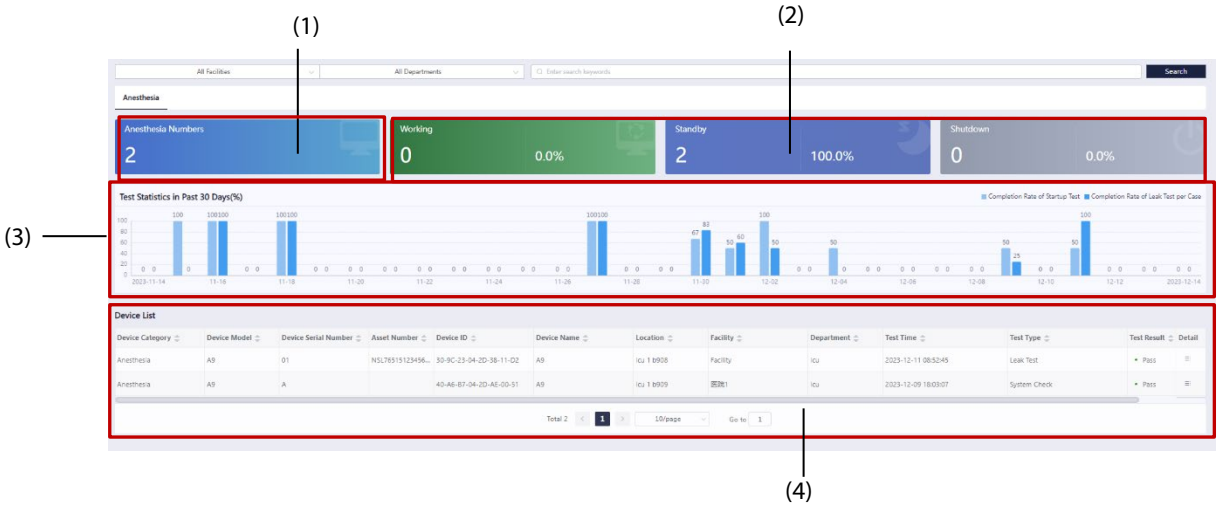


Chapter 5 Device Selftest

You can view the information about the anesthesia machine selftest on the Device Selftest screen.

5.1 Screen Introduction

Take defibrillation device as an example, the Device Selftest screen is shown as below:



(1)	Device number statistics area: the total number of devices connected to the M-IoT network, excluding the scrapped devices.
(2)	Device status area: the number and proportion of devices in different status.
(3)	This area provides statistics of anesthesia selftest in past 30 days.
(4)	Device list area: provides basic information about the devices. See 2.3 Device List for details.

5.2 Filtering Devices

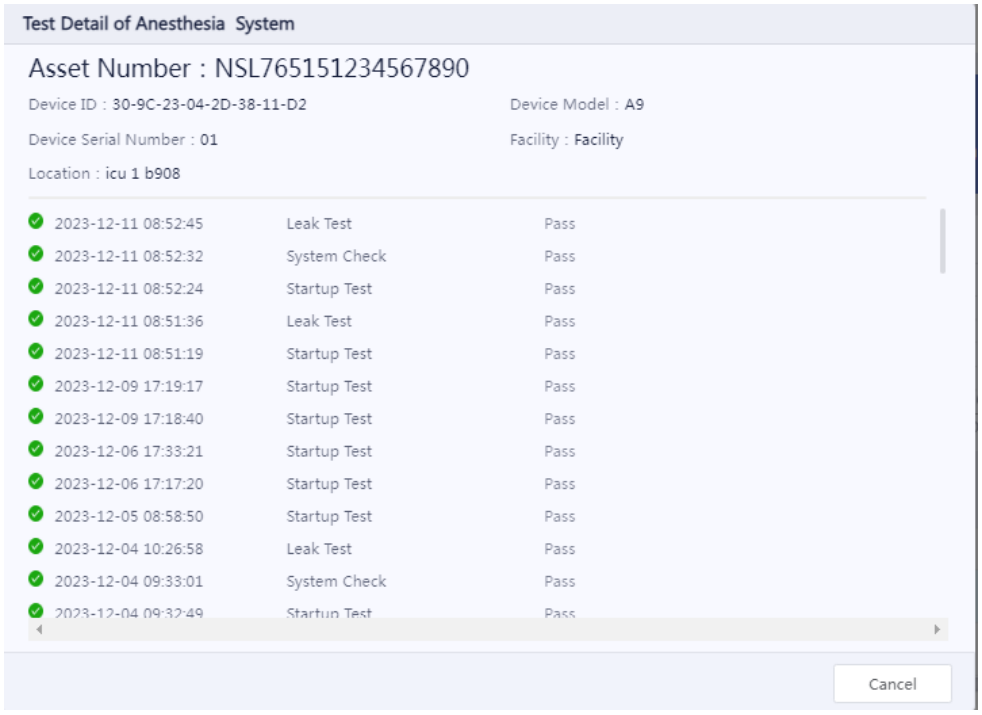
You can find the devices you need by filtering by facilities, departments, or keywords. See 2.2 Filtering Devices for details.

5.3 Device List

Device List provides basic information and selftest information about the devices, similar to the **Device List** in **Asset Manage**. See *2.3 Device List* for details.

5.4 Device Details

Select the icon in the **Detail** column of the device list to view details of the anesthesia machine selftest. The following is an example of the details screen:

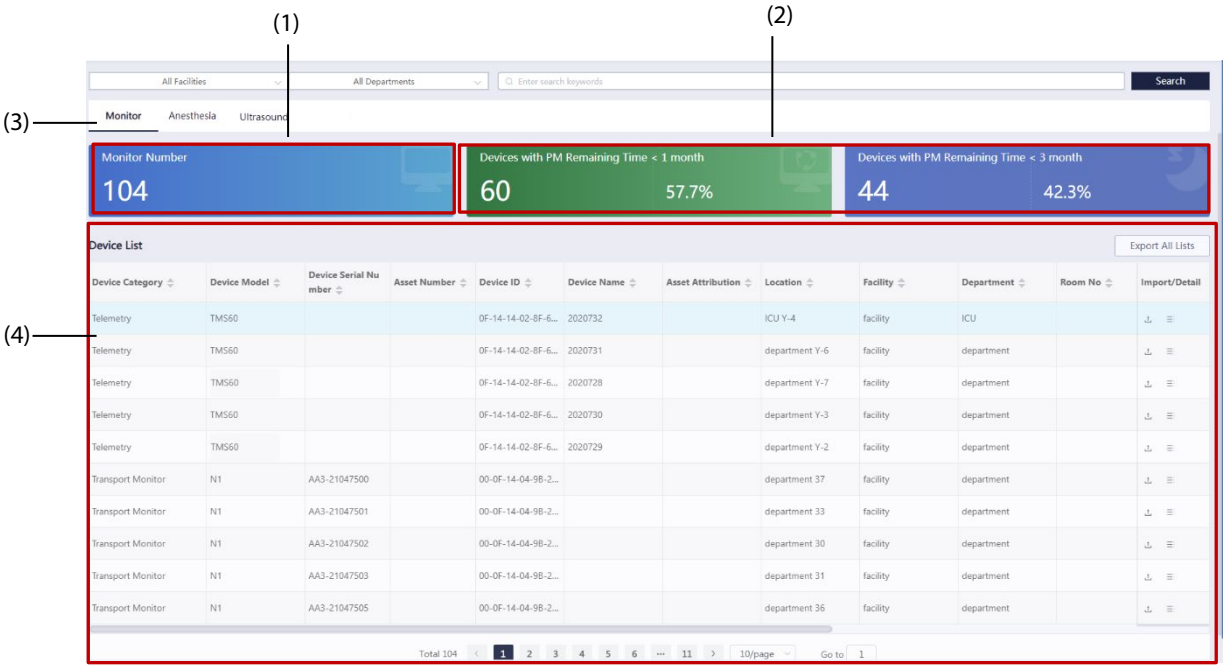


Chapter 6 PM Management

You can view the preventive maintenance (hereinafter referred to as "PM") information about monitoring device, ventilator, anesthesia machine, infusion device, and ultrasound system on the PM Management screen.

6.1 Screen Introduction

The following is an example of the PM Management screen of the monitoring device. The screen is similar for other devices.



(1)	Device number statistics area: the total number of devices connected to the M-IoT network, excluding the scrapped devices.
(2)	PM remaining time statistics area: statistics on the number and proportion of devices with PM remaining time less than 1 month or 3 months. PM remaining time refers to the time starting from last importing PM information toward the expiration time of the PM period.
(3)	Screen switch area: select a tab to switch to the Asset Manage screen of the corresponding device.
(4)	Device list area: provide basic information and PM information about the devices. See *5.3 Device List* for details.

6.2 Filtering Devices

You can find the devices you need by filtering by facilities, departments, or keywords. See *2.2 Filtering Devices* for details.

6.3 Device List

6.3.1 Importing PM Information

Importing PM information means importing photos containing PM records. The time point when the PM information is successfully imported is the PM time.

Note

- **Photos larger than 10MB are not allowed.**

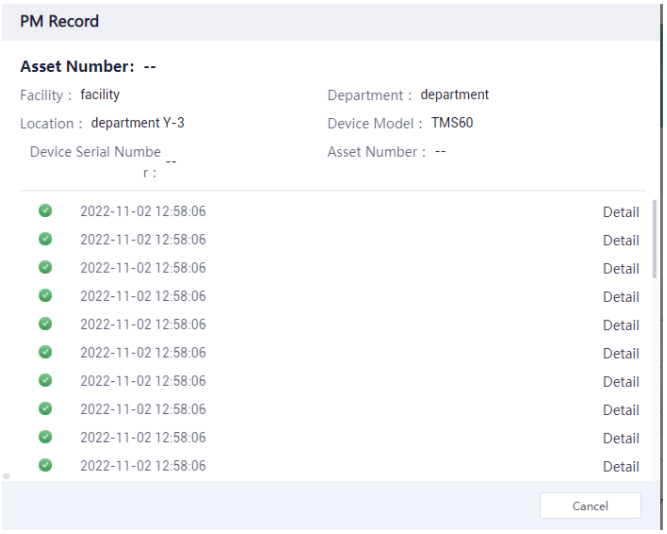
Select the icon  in the **Import/Detail** column of the device list → select desired photo → select **Open**.

6.3.2 Exporting PM Lists

Select **Export All Lists** to export the existing device list information, excluding PM photos.

6.3.3 Viewing PM Details

Select the icon  in the **Import/Detail** column of the device list to view the PM records of the device, including the basic information about the device and the time point at which the PM photos are imported.



Select **Detail** in the PM Record to view the PM photos imported at the corresponding time.

Chapter 7 Device Dashboard

The Device Dashboard screen provides graphical information about the distribution and usage of devices connected to Mindray network.

7.1 Dashboard for All Devices

The following is an example of the Dashboard screen for All Devices:

(1)	Select the facility you want to view in this area.
(2)	Total device number statistics area: Provides statistical data on the total number of devices in the facility (except devices in the scrapped status), the number and proportion of devices in different status, and the number of different types of devices.
(3)	System time area.
(4)	Select **Exit from Dashboard** to return to the Asset Manage homepage.
(5) (6) (8) (9) (10) (11) (12)	This area can be used to display important usage information about all devices connected to Mindray network. The information displayed can be changed. See *8.4 Setting Dashboard* for details.
(7)	Device prompt area: scrolls through the fault information of all devices in the order in which the faults occur.
(13)	Screen switch area: select a tab to switch to the Dashboard screen of the corresponding device. By default, the system automatically switches the screen once

	every minute in sequence. To disable automatic switching or change the switching time, see *8.4 Setting Dashboard*.

7.2 Dashboard for a Certain Type of Device

The Device Dashboard screen for a certain type of device provides graphical statistics on the distribution and usage of such device. Only the information that needs to be explained is described here, see *3.3 Usage Statistics Area* for other information.

- Total device number statistics area: provides the total number of devices in the facility (except devices in the scrapped status), the number and proportion of devices in different status.
- Device prompt area: scrolls through the fault information of all devices in the order in which the faults occur.

7.3 Exiting Full Screen

The Device Dashboard is displayed in full screen by default, and you can press the Esc key to exit full screen or select **Exit from Dashboard** to go back to **Asset Manage** screen.

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Chapter 8 System Setup

The client needs to have administrative permission to view and operate all tabs of **System Setup**.
The changes in the **List Display** and **Dashboard** tabs only apply to current client. The changes to the **Usage Analysis**, **Data Entry**, **Device Display**, **Anesthetic Agent Setup** and **System** tabs apply to all clients accessing M-IoT.

8.1 Setting List Display

The **List Display** tab is used to set which fields are displayed in the device list area of the **Asset Manage**, **Usage Analysis**, **Gas Analysis**, **PM Management**, and **Device Selftest** screens. Please follow the steps below:

1. Check the fields you need.
2. Select the sort icon for a field and drag it to the desired location.
3. Select **Save** for the settings to take effect.

8.2 Setting Usage Analysis

The **Usage Analysis** tab is used to set information related to device usage and device number statistics. Please follow the steps below:

1. Select **Period** to set the time period in which data is counted.
2. Select **N1/T1 Statistics**:
   - **Module**: if this option is selected, the N1 and T1 monitors do not participate in the statistics. Only the basic information about N1 and T1 is displayed in the device list.
   - **Monitor**: if this option is selected, the N1 and T1 monitors participate in the statistics.
3. Set the **Morning, Noon and Evening Range of Peak Statistics in Past 7 Days**, corresponding to the morning, noon and evening statistical period of each day for the **Peak Usage in Past 7 Days** statistical item.
4. Set **Rated Usage Time**: set the rated usage time or rated measurements times of a certain type of device based on the department and device category to calculate the running ratio and working ratio of the device. See *3.3 Usage Statistics Area* and *3.4 Device List* for details.
   - The default rated usage time of ultrasound system and anesthesia machine is 8 hours. The rated measurement times of vital signs monitor is 40. The rated usage time of other devices is 24 hours.
   - To increase the rated usage time separately for a certain type of device in a department, select the icon to increase.

5. Select **Save** for the settings to take effect.

8.3 Setting Data Entry

The **Data Entry** tab is used to set the machine lifetime and PM period.
Please follow the steps below:

1. Set **Machine Lifetime**: the machine lifetime of all devices is 10 years by default, and the machine lifetime is displayed in the device list of **Asset Manage** and **Usage Analysis** by default.
   - If you do not need to display the machine lifetime of the device in the device list, turn off the Auto Entry switch.
   - If you need to change the machine lifetime, change to the number of years you need.
   - To set the machine lifetime for a certain type of device separately, select the icon + to increase.
2. Set **PM Period**: the default PM period for all devices is 1 year, and this information is used in the relevant statistics in the **PM Management** screen.
   - If you need to change the period, change to the period you need.
   - To set the PM period for a certain type of device separately, select the icon + to increase.
3. Select **Save** for the settings to take effect.

8.4 Setting Dashboard

You can set the Device Dashboard screen in the **Dashboard** tab. Please follow the steps below:

1. **Auto Play**: set the time interval for automatically switching the Device Dashboard screen. Select **Off** to not play automatically.
2. **All Devices Card Settings**: set the information displayed in different areas of the **All Devices** screen.
3. Select **Save** for the settings to take effect.

8.5 Setting Device Display

In the **Device Display** tab, you can select information of what kind of devices to be displayed in the M-IoT screen. After making a change, you need to select **Save** and log in the M-IoT again.

8.6 Setting Anesthetic Agent Setup

You can set the following information in the **Anesthetic Agent Setup** tab:

- **Anesthetic Agent Volume/Bottle**: this option is to set a bottle equals to how many milliliters for anesthesia gas. For example, fill in 100, then a bottle equals to 100 milliliters.
- **Anesthetic Agent Price/ml**: for example, set **Agent Cost Unit** as **$** and fill in **50** for **Sev**, then Sev price is 50 $ per ml.

8.7 Setting System Information

You can set system information in the **System** tab. Please follow the steps below:

1. Set **Logo** and **Facility Name**: change the facility logo and name displayed at the top of the screen.
2. Set **Auto Logout**: if the system is not operated after the set time, the system will be automatically logged out. The default is 1 hour.
3. Set **Language**: set the language of the system.
4. Set **Date Format** and **24-hour System**: Set the time format of the system.
5. Set **Enable Code Verification**: code verification is required when logging in M-IoT if this option is enabled.
6. Select **Save** for the settings to take effect.

8.8 Viewing Version Information

You can view the version information of the system in the **Version Information** tab.

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