

TV-300/TV-300T(220V)/TV-300T(110V)/

TV-500/TV-500T(220V)/TV-500T(110V)

Mobile Trolley

Operator's Manual



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- Release time: 2023-5
- Revision: 1.0

2 Product Introduction

2.1 Intended Purpose

This product is used to carry endoscopic surgical devices, including monitor, endoscope camera system, light source, insufflator, hysteroscopy pump, video recorder, ultrasonic surgical & electro-surgical energy platform, light cable, footswitch, and cables. Except TV300, the mobile trolley can turn on or off mounted devices by pressing the power switch on the trolley.

2.2 Differences Among Models

| Model | Applicable Monitor | 110V Isolation Transformer | 220V Isolation Transformer | Power Switch On the Trolley |
|---------------|--------------------|----------------------------|----------------------------|-----------------------------|
| TV-300 | 32-inch | x | x | x |
| TV-300T(200V) | 32-inch | x | √ | √ |
| TV-300T(110V) | 32-inch | √ | x | √ |
| TV-500 | 32-inch/55-inch | x | x | √ |
| TV-500T(200V) | 32-inch/55-inch | x | √ | √ |
| TV-500T(110V) | 32-inch/55-inch | √ | x | √ |

Note: The shelf materials of the TV -300 series are different from that of the TV-500 series.

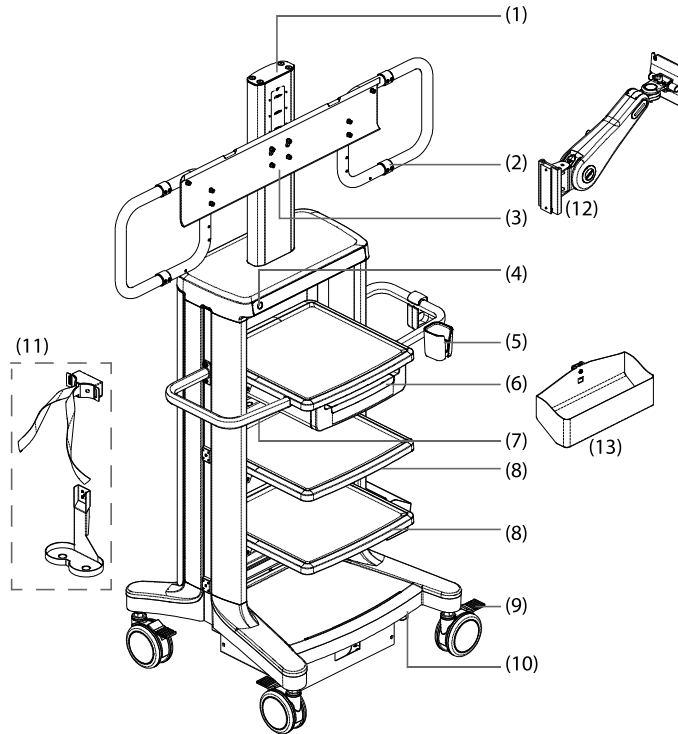
NOTE

- √ indicates "configured" while x indicates "not configured".

2.3 System Components

This product consists of shelves, open storage space, closed storage space, cable management box, handles, columns, castors, base plate, etc. Monitor arm, CO2 holder assembly, keyboard tray, and footswitch holder are also available for this product.

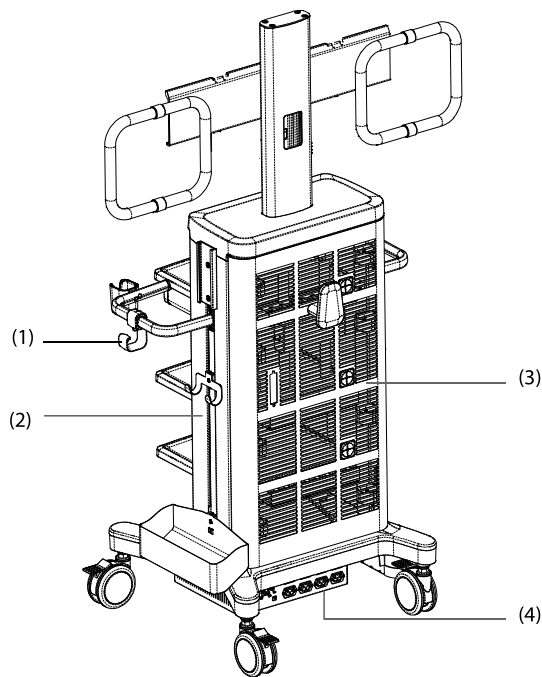
2.3.1 Front View of the Mobile Trolley



- (1) Monitor column: supports a monitor stand. For details about the monitor stands of different sizes for different models, refer to **3.5 Fixing Position of the Monitor Stand**.
- (2) Monitor stand handle: hold to adjust the monitor position, available only for 55-inch monitor stands.
- (3) Monitor stand: secures a monitor screen.
- (4) Power switch: press to turn on/off all powered medical devices on the trolley.
 - Orange: AC power is properly connected to the trolley with isolation transformer, but the power switch is off.
 - Green: AC power is properly connected, and the power switch is on.
- (5) Camera head holder: holds camera head.
- (6) Drawer: stores accessories, including keyboard tray (optional).
- (7) Drawer handle: hold to move the trolley.
- (8) Shelves: used to place main units, such as insufflator and light source.
- (9) Castor brake: apply the castor brake to lock or unlock the castors.

- (10) Base plate: an isolation transformer (if configured) is installed under the base plate.
- (11) CO2 holder assembly (optional): holds CO2 cylinders, and includes a cylinder strap rack and a cylinder holder.
- (12) Monitor arm (optional): secures a side-screen monitor.
- (13) Footswitch holder: stores footswitches.

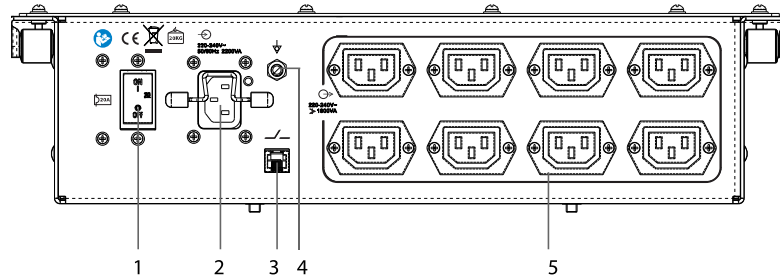
2.3.2 Back View of the Mobile Trolley



- (1) Hook: holds light cables and other cables.
- (2) Trolley column: accessories such as the monitor arm and footswitch holder are secured on the slide rail of the trolley column.
- (3) Rear door: lock it when moving the trolley.
- (4) Isolation transformer: if the trolley is equipped with an isolation transformer, you can connect the power connectors of the mounted devices to the output power sockets of the isolation transformer.

2.3.3 Back View of the Isolation Transformer

Taking TV-300T(220V)/ TV-500T(220V) as an example, the back view of the isolation transformer is as follows:



- (1) Circuit breaker: used to protect the circuit. It is turned on in normal status.
- (2) Input power socket: connects the AC Mains.
- (3) RJ11 connector: used to supply power to the power switch of the trolley.
- (4) Equipotential grounding terminal: when using the isolation transformer together with other devices on the trolley, connect their equipotential grounding terminals together to eliminate potential difference.
- (5) Output power socket: connects the devices on the trolley.

| Model | 32-Inch Monitor Stand (Without Pan/Tilt Functions) | 32-Inch Monitor Stand (With Pan/Tilt Functions*) | 55-Inch Monitor Stand |
|---------------|--|--|--------------------------|
| TV-500T(200V) | × | √ | √ |
| TV-500T(110V) | × | √ | √ |

*: The monitor stand provides up to 20° tilting movement and 75° panning movement.

NOTE

- √ indicates “configured” while × indicates “not configured”.

You can select the position of the monitor stand as needed. A 32-inch monitor stand can be adjusted to the following 3 heights:

- 1600 mm (center of the monitor)
- 1650 mm (center of the monitor)
- 1700 mm (center of the monitor)

A 55-inch monitor stand can be adjusted to the following 2 heights:

- 1650 mm (center of the monitor)
- 1630 mm (center of the monitor)

3.6 Fixing Position of the Shelves

The mobile trolley has 4 layers of space. The distance between shelves (excluding the thickness of the shelves) is as follows:

- Layer 1: 202 ±5 mm
- Layer 2: 200 ±5 mm
- Layer 3: 200 ±5 mm
- Layer 4: 200 ±5 mm

A.3 Isolation Transformer Specifications

| | | |
|---------------------------------|---------------|----------------------------|
| TV-300T(110V)/ TV-500T(110V) | Input voltage | 110-120 VAC ($\pm 10\%$) |
| | Frequency | 50-60 Hz (± 3 Hz) |
| | Input power | 1100 VA |
| | Output power | 1000 VA |
| TV-300T(220V)/ TV-500T(220V) | Input voltage | 220-240 VAC ($\pm 10\%$) |
| | Frequency | 50-60 Hz (± 3 Hz) |
| | Input power | 2000 VA |
| | Output power | 1800 VA |

A.4 Physical Specifications

| | | |
|------------------------------|---------------------|---|
| Dimension | Mobile trolley | Depth: 665 ± 10 mm Width: 1210 ± 10 mm (55-inch monitor stand) Height: 1800 ± 10 mm (including the castors: 148 ± 5 mm) |
| | Shelf | Width: 424.4 ± 2 mm Depth: 424.2 ± 2 mm Note: The dimension of the mounted devices shall not exceed that of the shelves. |
| | Drawer | Depth: 323 ± 5 mm Width: 295 ± 5 mm Height: 75 ± 5 mm |
| | Rear door | Depth: 55.5 ± 5 mm Width: 518 ± 5 mm Height: 930 ± 5 mm |
| Weight of the mobile trolley | | No more than 100 kg (excluding the optional modules) |
| Load capacity | Monitor arm | Dimension: 27-inch monitor (maximum) Weight: less than 8 kg |
| | Shelf | No more than 20 kg |
| | Monitor stand | 55-inch: no more than 50 kg 32-inch: no more than 15 kg |
| | CO2 holder assembly | No more than 18 kg |
| | Total load capacity | No more than 160 kg |

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HyPort Components & Accessories



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HyPort Series

Ceiling supply unit

HyPort P Series

With higher overall healthcare requirements, both patients and hospitals demand that medical technologies improve clinical work flow. Mindray recognized these needs and merged innovative and ergonomic design with leading-edge technology into the new generation of medical supply unit HyPort series.



HyPort P30



HyPort P60



HyPort P90

HyPort Series

Ceiling supply unit



HyPort R80
(II)



HyPort R80
(I)

HyPort R80 Series

The HyPort R80 is the newest generation of bedside device management systems with innovative designs among lighting system, workflow management and infection control. It helps caregivers provide safer and greater medical care by allowing for a more optimized, comfortable and efficient ICU environment.

HyPort Series Other Accessories



PN : 115-01887-00

DESCRIPTION : Suction regulator, with CE mark, with overflow protection, with Pahlsc probe, DIN.

PN : 115-01888-00

DESCRIPTION : Suction regulator, with CE mark, with overflow protection, with Gentec probe, British.

PN : 115-095806-00

DESCRIPTION : Vac regulator, DIN, Pahlsc, for HyPort P series.



PN : 115-029383-00

DESCRIPTION : Monitor arm, rail-mount version, double arms including the second spring arm, up and down, gross load capacity: 3.2Kg~9.1Kg, L=273+379mm.



PN : 115-029385-00

DESCRIPTION : Monitor arm, pole-mount version, double arms including the second spring arm, up and down, gross load capacity: 3.2Kg~9.1Kg, L=273+379mm.



PN : 115-029389-00

DESCRIPTION : Monitor arm, rail-mount version, double arms including the second spring arm, up and down, gross load capacity: 6.35Kg~13.61Kg, L=225+344mm.

HyPort Series Other Accessories



PN : 115-029391-00

DESCRIPTION : Monitor arm, pole-mount version, double arms including the second spring arm, up and down, gross load capacity: 6.35Kg~13.61Kg, L=225+344mm.



PN : 115-029395-00

DESCRIPTION : GCX-Monitor arm, rail-mount version, double arms including the second spring arm, up and down, gross load capacity: 2.3Kg~10Kg, L=356+425mm.



PN : 115-029397-00

DESCRIPTION : GCX-Monitor arm, pole-mount version, double arms including the second spring arm, up and down, gross load capacity: 2.3Kg~10Kg, L=356+425mm.



PN : 115-029407-00

DESCRIPTION : Double swivel rail for 38 mm tube.

User Manual

S3180P

LCD Monitor

6 Technical specification

| | |
|------------------------------------|--|
| Monitor characteristics: | |
| Panel technology | 32", TFT, color, LCD screen, anti-glare, hard coating |
| Active area | 708.48 (H) x 398.52 (V) mm |
| Pixel pitch | 0.1845(H) x 0.1845(V) mm |
| Resolution | 3840 (RGB) x 2160 |
| Refresh rate | 60 Hz |
| Luminance | 850 cd/m ² (Typ.) |
| Contrast ratio | 1500:1 (Typ.) |
| Viewing angle (CR ≥ 10) | L/R178° (Typ.) |
| | U/D178° (Typ.) |
| Backlight | WLED |
| Lifetime of backlight | 30000 hours (Min.) |
| Response time | T _{Rising} + Falling :20ms (Typ.) |
| Power supply: | |
| DC IN | 24 V, 6.5 A (supplied from AC adaptor) |
| Power consumption | <150 W |
| Standby | < 0.5 W |
| Control and connection: | |
| Front | Power indicator Mechanical keypad |
| Back | DVI IN *1/OUT *1 3G-SDI IN *1/OUT *1 12G-SDI IN *1/OUT *1 HDMI *1 RS232 *1 USB*1 LAN*1 Ground stud*1 DC socket*1 Power switch*1 |
| Mechanical characteristics: | |
| Housing components | Plastic、 glass |
| Ventilation openings | Natural heat dissipation |
| Protection level | IP45 (Front) 、 IP20 (back) |

UX3/UX3-TEC/UX3-NOR/UX3-SIM

Endoscope Camera System

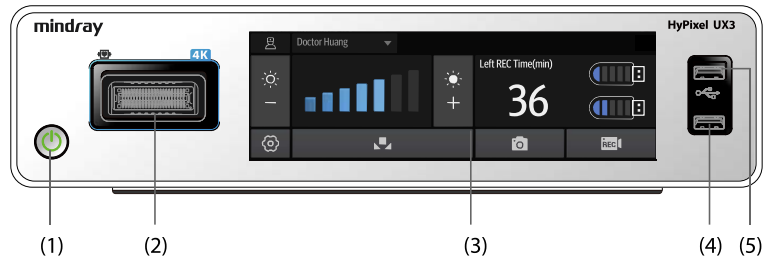
Operator's Manual



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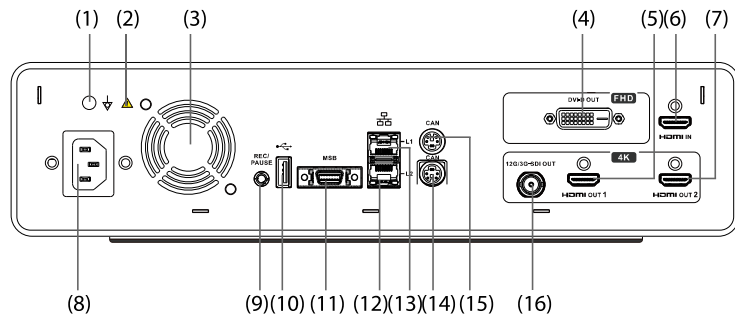
- Release time: 2024-3
- Revision: 3.0





- (1) Power switch: turns on or off the CCU. Color of the power switch indicator indicates the power status of the equipment:
 - Off: AC power is not connected.
 - Orange: AC power is connected, but main unit is off.
 - Green: the main unit is on.
- (2) Camera head connector: connects a camera head.
- (3) Touchscreen: displays equipment status and changes settings.
- (4) USB (Universal Serial Bus) connector 1: connects a USB drive for video storage, supporting USB 3.0 protocol. The supported storage formats include NTFS, FAT32, and exFAT.
- (5) USB connector 2: connects a USB drive for video storage, supporting USB 3.0 protocol. The supported storage formats include NTFS, FAT32, and exFAT.

2.8.2 Back View of the CCU



- (1) Equipotential grounding terminal: when using the equipment together with other devices, connect their equipotential grounding terminals together to eliminate potential difference.
- (2) General warning sign
- (3) Ventilation outlet: used for heat dissipation.

- (4) DVI (Digital Visual Interface) out: connects a high definition video device for high definition video output, such as monitor.
- (5) HDMI (High Definition Multimedia Interface) out 1: connects a 4K video device for 4K video output, such as monitor.
- (6) HDMI in 3: reserved.
- (7) HDMI out 2: connects a 4K video device for 4K video output, such as monitor.
- (8) AC (Alternating Current) power input: connects the AC Mains.
- (9) External control extension connector: connects an external video recorder, and supports starting/stopping recording and taking screenshots.
- (10) USB connector 3: connects a USB drive for system software upgrade, supporting USB 2.0 protocol.
- (11) MSB (Mindray Serial Bus) connector: connects to a light source, controlling the brightness of the light source.
- (12) Network connector 1: reserved.
- (13) Network connector 2: supports software upgrade.
- (14) CAN (Controller Area Network) connector 1: connects external devices other than light source.
- (15) CAN connector 2: connects external devices other than light source.
- (16) 3G/12G SDI (Serial Digital Interface) out: connects a high definition/4K video device for high definition/4K video output, such as monitor.

2.8.3 Endoscope Camera Head

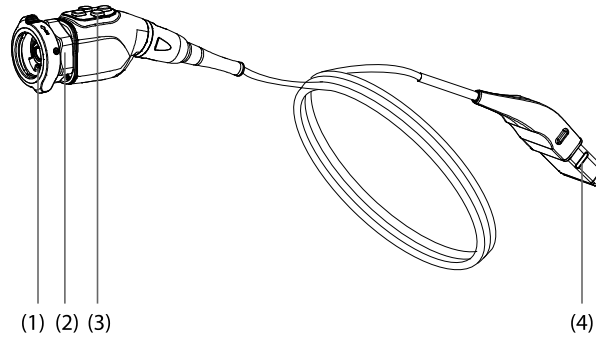
This system is compatible with the following models of camera head:

| Model | Standard Cable Length | Function |
|-----------|-----------------------|-------------------------------|
| CH3-SW100 | 4.5m | Supports white light imaging. |
| CH3-SW110 | 3m | Supports white light imaging. |

2.8.3.1 Working Principle of Endoscope Camera Head

The camera head is used together with the CCU to support visible light imaging. It provides progressive scan CMOS for white light imaging, supporting 4K output display.

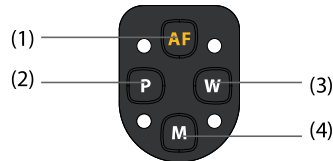
2.8.3.2 Front View of the Camera Head



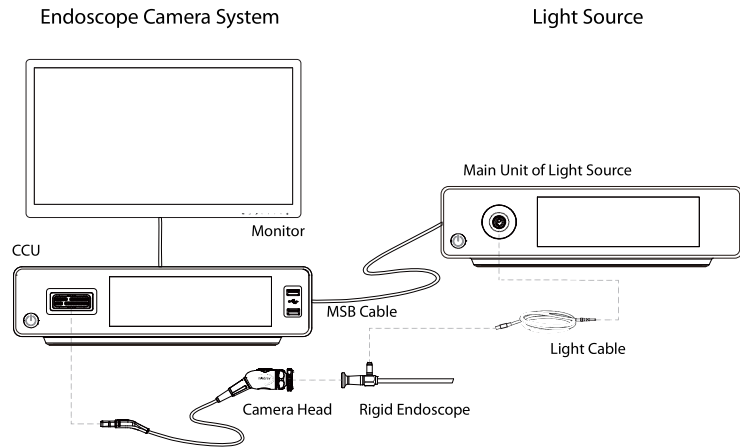
- (1) Endoscope coupler: connects and secures the endoscope.
- (2) Focusing ring: rotate the ring to focus the camera head.
- (3) Camera head buttons: four functional buttons.
- (4) CCU connector: connects the CCU.

2.8.3.3 Camera Head Buttons

There are four buttons on the camera head, and three of them can be set to perform different functions. After the camera head is connected to the CCU, the button functions are displayed on the monitor. After a button is pressed, the function prompt disappears. More descriptions are shown below:

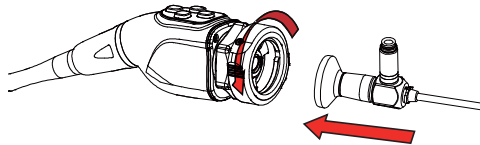


- (1) **AF**: press to perform autofocus.
- (2) **P**: short press to take photos and long press to record videos by default. This button can also be set to other functions. For details, refer to **5.5.2 Setting Button Functions**.
- (3) **W**: long press to perform white balance by default. This button can also be set to other functions. For details, refer to **5.5.2 Setting Button Functions**.
- (4) **M**: short press to zoom the image by default. This button can also be set to other functions. For details, refer to **5.5.2 Setting Button Functions**.



To connect devices in the diagram, follow the procedure below:

1. Connect a monitor to a correct video output connector on the back of the CCU with a video cable. Select a video cable that matches the video output connector. More than one monitors can be connected simultaneously to the CCU.
2. Connect a light source to the MSB connector on the back of the CCU with a MSB cable (System Ctrl Cable-Light Source).
3. Plug the connector of the camera head to the camera head connector on the front panel of the CCU.
4. To connect the camera head and endoscope, follow the procedure below:
 - a Rotate the endoscope coupler as indicated by the arrow on it.
 - b Align the eye piece of the endoscope with the endoscope coupler on the camera head.



- c Push the endoscope to the camera head and release the endoscope coupler.
- d Pull the endoscope slightly to check if the endoscope is secured.

To remove the endoscope, follow the procedure below:

1. Hold the camera head with one hand, and the endoscope with the other.

2. Rotate the endoscope coupler as indicated by the arrow on it. The endoscope falls off automatically.

WARNING

- **Before disconnecting the endoscope from the camera head, be sure to turn off the light of the light source. Otherwise, the brightness of light might be increased to the maximum level, causing burns or eye injuries.**
-
-

CAUTION

- **Use monitors recommended by Mindray only. Using incompatible monitors may degrade equipment performance.**
 - **Connect a monitor to the output connector of the CCU instead of through an adapter, preventing images from disappearing due to adapter malfunction during observation.**
 - **Connect the light source to the MSB connector of the CCU instead of through other connectors. Otherwise, equipment failure may result.**
 - **Turn off the CCU before connecting or disconnecting the camera head. Otherwise, the image sensor may be damaged, causing the image to disappear.**
 - **Handle the camera head gently to protect its suspended high reliability connector.**
 - **Since image signals are transmitted by laser, do not excessively bend, pull, or press the camera head, or pull the camera cable. Otherwise, the camera head might be damaged or the cable might fall off.**
-

3.6.2 Connecting External Video Recorders

You can connect a video recorder to the external control extension connector of the CCU to record videos and take screenshots. More related functions are listed below:

- Recorded videos can be saved to the external video recorder and USB drives at the same time. To set the storage location, refer to **5.6.1 Setting Recording Function**.
- After setting button functions of the camera head, you can control the recorder to record and take photos via the camera head. For detailed setting method, refer to **5.5 Setting Camera Head Functions**.

For detailed functions of the recorder, refer to the operation's manual of the recorder.

3.6.3 Connecting the Equipotential Line

An equipotential terminal is used to balance the electric potential of the protective grounding between the system and other electrical equipment. When other devices are

3.6.5 Connecting USB Drive

Images and videos can be stored in USB drives connected to the CCU. Before recording, plug USB drives to the USB connector on the front panel. You can connect two USB drives simultaneously. The system detects the status of the USB drives automatically and displays on the touchscreen. Besides, if one USB drive is out of memory, images and videos will be stored to the other USB drive.

Select NTFS, FAT32, or exFAT USB drives from a qualified manufacturer. The CCU supports connecting hard drives with memory greater than or equal to 6 TB. You are advised to choose a USB drive with memory greater than 32 GB. The following are the recommended USB drives:

| Video Quality | Recommended Manufacturer |
|-----------------------------|--|
| 4K quality, HD High Quality | SanDisk Z25 series SSD Samsung T7 series SSD |
| HD Standard Quality | SanDisk CZ600 series U disk SanDisk CZ880 series U disk |

You are advised to format the USB drive before use. For details about formatting USB drives, refer to **5.6.3 Formatting USB Drive**.

You are advised to use the PotPlayer or KMPlayer to play videos stored in the USB drives.

CAUTION

- **Select USB drives from qualified manufacturers. Otherwise file corruption or system failure could result. It is not recommended that you use a card reader instead of an USB drive.**
 - **Formatting a USB drive will clear all data stored in it. Make sure a backup of data you need is made.**
-

3.7 Using the Touchscreen

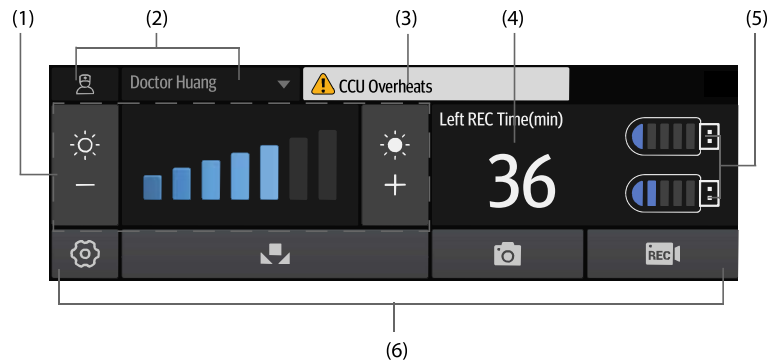
The equipment is configured with a LCD touchscreen on which you can operate and set the equipment, and view operation information.


NOTE

- **Dry the equipment immediately in case of rain or water spray.**
-

3.7.1 Operation Screen Introduction

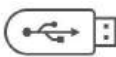

The following figure shows the operating screen of the equipment:













- (1) Brightness setting area: displays the current brightness level. Select a button to set the brightness of the image displayed. There are 7 levels that can be adjusted.
- (2) User configuration area: displays the current user configuration. Select the User configuration button  to customize the configuration.
- (3) Error message area: displays error messages.
- (4) Left REC Time (min): indicates the estimated recording time (in minutes) the current connected USB drive supports.
- (5) USB status area: indicates the current status of the USB drive connected to the USB connector on the front panel.
NOTE: Keep observing the Left REC Time (min) value and replace the USB drive if necessary.
- (6) Button area: displays available buttons. For detailed introduction of the buttons, refer to **3.7.3 Available Buttons**.

3.7.2 On-screen Symbols





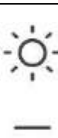


The following table lists the on-screen symbols displayed on the main screen:

| Symbol | Description | Symbol | Description |
|---|----------------------------|---|------------------------------|
|  | No USB drive is connected. |  | About 0% memory is occupied. |

| Symbol | Description | Symbol | Description |
|---|--|---|-----------------------------------|
|  | About 20% memory is occupied. |  | About 40% memory is occupied. |
|  | About 60% memory is occupied. |  | About 80% memory is occupied. |
|  | (Yellow) The USB drive is nearly full. |  | The USB drive is already full. |
|  | Identifying USB drive. |  | Failed to identify the USB drive. |
|  | The touchscreen is unlocked |  | The touchscreen is locked |

3.7.3 Available Buttons

The following table lists the available buttons displayed on the main screen:

| Button | Description | Button | Description |
|---|---|---|---|
|  | Setup button: select to display the setup menu. |  | White balance button: select to adjust the white balance. |
|  | Camera button: select to capture images. |  | Record button: select to start/stop recording. |
|  | (White) Brightness decrease button: select to decrease the brightness of the image displayed. |  | (White) Brightness increase button: select to increase the brightness of the image displayed. |
|  | User configuration button: select to display the user configuration menu. | | |

3.7.4 Using the On-Screen Keyboard

The on-screen keyboard enables information entry:

- Enter the information by selecting one character after another.

4.5 Check Before Operation

It is required to check and ensure that the equipment works properly. After turning on the equipment, check the following items:

- The system does not emit abnormal noise, smell, or excessive heat.
- Put a hand near the ventilation outlet and check that there is air flowing out.
- The touchscreen displays and functions correctly.
- Aim the tip of the endoscope to an object and check that the image quality displayed on the monitor is normal.

CAUTION

- **Do not put the system in use before the system is checked and works normally.**
 - **In case of any failure, stop and remove equipment from use. Otherwise, injury to the patient or operator or damage to the equipment might result.**
-

4.6 Setting Interconnected Light Source

After the CCU is correctly connected to the Mindray light source (HB300/HB300-TEC/ HB100/HB100-TEC), if the light source is in auto mode, the CCU can automatically adjust the light brightness based on the current surgical field of view to ensure a clear surgical field of view and balanced light brightness.

You can turn on or off the light source by pressing the camera head button. For details about how to set the functions of camera head buttons, refer to **5.5 Setting Camera Head Functions**.

4.7 Selecting User Configuration

Through the user configuration function, you can save some customized parameters in the setup menu. For details about the list of customized parameters, refer to **C Default Settings**.

Select the drop-down list in the user configuration area on the main screen to select a saved user configuration.

To update the current user configuration, or delete a saved user configuration, refer to **5.2 Setting User Configuration**.

4.8 Performing White Balance

The white balance function is used to calibrate the color of the image displayed on the monitor.

It has be to performed:

- before starting the surgery;

In addition, if the function of P, W, or M button on the camera head is set to **Image Zoom**, you can press the button to adjust the image magnification. For details about how to set the functions of camera head buttons, refer to **5.5 Setting Camera Head Functions**.

4.12 Taking Photos or Recording Videos

During surgery, you can press the buttons on the touchscreen or press the camera head buttons to take photos or record videos. The images and videos can be stored in the USB drives or an external video recorder. The specification of images and videos are as follows:

| Item | Storage Format | Performance |
|-------|----------------|---|
| Image | jpeg | Highest storage resolution: 4K |
| Video | MP4 | Frame rate: 60 fps, Encoding specifications: H.265/10bit |

After startup, set the storage location and video quality by referring to **5.6 Setting Recording Function**.

After setting, when you take photos or videos for the first time, a new file directory will be generated under the storage location, and images and videos recorded during this surgery will be saved to this file directory.

The name of a file directory shows the time of the corresponding surgery, and the name of a video screenshot indicates the name of the corresponding video. The name formats of file directory, video and image are as follows:

| Item | Example of Name | Format Meaning |
|---------------------------------|-------------------------------|---|
| File directory | 20230510_1202 | year month day_hour minute |
| Video | Section01_0510_12021 2.mp4 | Section No._month day_hour minute second.mp4 |
| Image (not video screenshot) | Section00_120745.jpeg | Section00_hour minute second.jpeg |
| Image (video screenshot) | Section01_000402.jpeg | Section No._hour minute second.jpeg |

When recording is stopped and "Saving Video" is displayed in the lower left corner of the monitor, do not disconnect the USB drives or the external video recorder.

4.13 Error Messages


2. Set **Color Style**. For detailed introduction of the options, refer to **2.6 Differences Among Models**.
3. Select the + or - icon to set **Saturation**, **Red Gain**, or **Blue Gain**. Or select **Reset** to restore the factory defaults.

5.4.3 Setting Image Parameters for Special Departments

To set image parameters for special clinical departments, follow the procedure below:

1. In the setup menu, select **Image** → **Specialty**.
2. Switch on or switch off **De-grid Optimization** and **Anti-laser Optimization** under **Special Function**.
3. Switch on or switch off **Tone Enhancement**. After switching on it:
 - ◆ Set **Tone Enhancement Mode** to **Mode R** or **Mode G** as needed. After setting, the system enhances the image color contrast by color inversion.
 - ◆ Set **Display Mode** to **Full Screen** or **Dual Split** as needed.

5.5 Setting Camera Head Functions

Select the Setup button  on the main screen to access the setup menu. Select the **Camera Head** tab. On this tab, you can set functions of the P, W, and M buttons to performing white balance, taking photos, recording, or controlling the brightness of light.

5.5.1 Introduction to Short-press/Long-press Functions

The following table lists the short-press functions that you can set for the buttons:

| Short-Press Function | Description |
|----------------------|--|
| Capture | Short press the button to capture the image displayed on the monitor. |
| Image Zoom | Short press the button to zoom in or out of the image displayed on the monitor. |
| WL Brightness | Short press the button to increase or decrease the image brightness. |
| Tone Enhancement | Short press the button to cycle through the tone enhancement modes. |
| Smoke Evacuation | Short press the button to turn on or off the smoke exhaust function of the interconnected insufflator. |
| Image Flip | Short press the button to switch the image flip mode. |
| No Function | Short-press of the button will not activate any function. |

The following table lists the long-press functions that you can set for the buttons:


| Long-Press Function | Description |
|---------------------|---|
| Capture | Long press the button to capture the image displayed on the monitor. |
| REC | Long press the button to start/stop recording video displayed on the monitor. |
| White Balance | Long press the button to start white balance. |
| Tone Enhancement | Long press the button to cycle through the tone enhancement modes. |
| Insufflator Switch | Long press the button to turn on or off the inflation function of the interconnected insufflator. |
| Smoke Evacuation | Long press the button to turn on or off the smoke exhaust function of the interconnected insufflator. |
| Light Switch | Long press the button to stop the interconnected light source from emitting light or turn on the brightness automatic adjustment. |
| Image Flip | Long press the button to switch the image flip mode. |
| No Function | Long-press of the button will not activate any function. |

5.5.2 Setting Button Functions

To set the functions of the camera head buttons, follow the procedure below:

1. In the setup menu, select **Camera Head**.
2. On the **P Key** page, set the short-press function and long-press function of the P button.
3. On the **W Key** page, set the short-press function and long-press function of the W button.
4. On the **M Key** page, set the short-press function and long-press function of the M button.
5. If the short-press function is set to **Image Zoom**, set **Image Zoom Selection** as needed.
6. If the short-press or long-press function is set to **Tone Enhancement**, set **Tone Enhancement Mode Selection** as needed.

5.6 Setting Recording Function

Select the Setup button  on the main screen to access the setup menu. Select the **REC** tab. On this tab, you can set recording or screenshot function, or format USB drives.

3. Under the running water, rotate the focusing ring and endoscope coupler of the camera head 3 times by referring to the figures in **7.4.3.1 Washing**.
4. Flush the equipment parts with complex structures, such as screw threads and gaps, with a syringe with a volume of at least 10 ml. Repeat this step 3 times.

NOTE

- **For rinsing, use purified water.**
 - **Do not use water for rinsing repeatedly.**
-

7.4.3.3 Drying

Dry the outer surfaces of the camera head with a disinfected lint-free cloth, and dry the equipment parts with complex structures by using an air gun.

7.4.4 Disinfecting the Camera Head

Disinfect the camera head as required in the local or your hospital's servicing schedule. Use the disinfectants in accordance with the instructions of use provided by their manufacturers. Use only the disinfectants recommended in this chapter for disinfection.

The following table lists the recommended disinfectants for the camera head:

| Product Name | Disinfection Method |
|---------------------------|---------------------|
| Ethanol, 75% | Wiping |
| Glutaraldehyde, 2% - 2.5% | Immersing |

NOTE

- **In case the high-level disinfection required by your hospital or local regulations needs to be achieved, select the glutaraldehyde immersion disinfection method.**
 - **Do not disinfect the camera head with ultraviolet light, long time exposure to which may cause damage to the imaging element of the camera head.**
-

7.4.4.1 Rinsing After Disinfection

After immersing the camera head in glutaraldehyde for disinfection, follow the procedure below to rinse the camera head:

1. After disinfection, immerse the camera head in a sterile container filled with rinsing water.
2. In the container, wipe the outer surfaces of the camera head with a sterile lint-free cloth.
3. Under the running water, rotate the focusing ring and endoscope coupler of the camera head 3 times by referring to the figures in **7.4.3.1 Washing**.

4. Repeat step 1 to step 3 three times. Change the rinsing water each time.
5. Take out the camera head and place it in another sterile container.
6. Dry the outer surfaces of the camera head with a disinfected lint-free cloth, and dry the equipment parts with complex structures by using an air gun.

NOTE

- **After cleaning and disinfection, check the equipment surface for stains. Repeat the cleaning and disinfection procedure if necessary.**
-

7.4.5 Sterilizing the Camera Head

Sterilize the camera head as required in the local or your hospital's servicing schedule. The camera head can withstand ethylene oxide (EO) sterilization and low temperature plasma sterilization.

WARNING

- **Use one of the recommended methods consistently on the same equipment. Using different sterilization methods may change equipment appearance.**
-
-

7.4.5.1 Packaging

Place the camera head in a proper container and double wrap the container with sterile sheet, preventing equipment contamination during storage and transportation.

Recommended specifications of the sterile sheet are as follows:

| Dimension | Gram Weight | Materials |
|-------------|-------------|---|
| 1.2m x 1.2m | 45g | 100% polypropylene, 5-layer SMMMS laminates |

7.4.5.2 EO Sterilization

To sterilize the camera head, follow this procedure:

1. Clean and disinfect the camera head and its cable as instructed in the previous sections.
2. Place the packaged container into the sterilizer.
3. Sterilize the equipment following the instructions for use of the sterilizer. You are advised to apply the following EO sterilization parameters that have been tested:

| EO Concentration | Temperature | Relative Humidity | Sterilization Time |
|------------------|-------------|-------------------|--------------------|
| About 760 mg/L | 55°C | 40% - 85% | 60min |

4. To ensure the EO residues remain at a level that does no harm to the human body, the sterilized equipment should go through a 12-hour resolution or longer in a well-ventilated room at 55°C before reuse.

7.4.6 Low Temperature Plasma Sterilization

Validate the sterilization procedure of the low temperature hydrogen-peroxide plasma sterilizer in accordance with the operating instructions of the sterilizer.

To perform low temperature plasma sterilization, follow the procedure below:

1. Clean and disinfect the camera head and its cable as instructed in the previous sections.
2. Place the container into the sterilizer, and ensure:
 - ◆ The container is adequately exposed in the hydrogen peroxide plasma.
 - ◆ Do not allow any object to contact the inner sides of the sterilizer.
3. Sterilize the equipment following the instructions for use of the sterilizer. You are advised to use the following low temperature hydrogen peroxide plasma sterilizer that has been tested:

| Manufacturer | Product | Cycle Mode |
|---------------------------------------|---|------------------------------------|
| Advanced Sterilization Products (ASP) | STERRAD™ 100NX Sterilizer with ALLClear™ Technology | Standard circulation (Full period) |

After sterilization, cool the equipment down to room temperature before use. If not, the lens might fog or the camera head be damaged.

CAUTION

- **Without compromising the efficacy of sterilization, select a method that would least corrode the camera head.**
- **Make sure the camera head works normally before use. In case of any damage, remove it from use immediately, or patient or operator injury might result.**

NOTE

- **After long time of sterilization, the color of part of the camera head might fade. It is natural and will not affect the sealability or performance of the camera head.**
-

A.8 Product Performance

| | |
|------------------------------|--|
| Image transfer pixels | 3840*2160 or 4096*2160 ultra high definition |
| Equipment noise | ≤ 55 dBA |
| Defibrillation recovery time | 1s |

A.9 Operating Environment

| | |
|------------------------|--|
| Hardware configuration | CPU: 500 MHz RAM: 2 Gb Flash: 4 GB |
| Software environment | LINUX |

NOTE: The above is the minimum requirements of operating environment.

UX3 Series

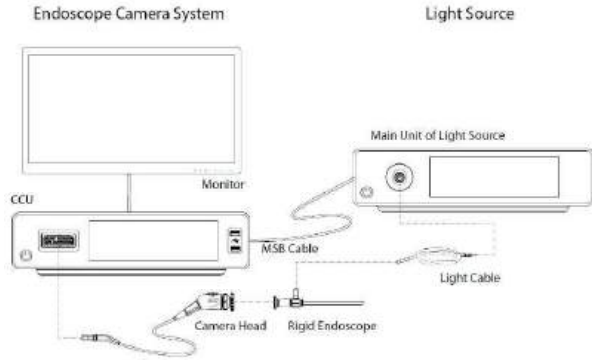
Endoscope Camera System

Vision Beyond Imagination



The equipment adopts modular design, can be connected with endoscopes, light sources and monitors to provide real-time white images for intraoperative. The connection is shown as below:

Endoscope Camera System—UX3 Series



- Dimension 380mm x 350mm x 80mm
- Weight(CCU) ≤ 10 kg
- Weight(White light Camera head) ≤ 190 g (excluding the cable)
- Resolution 3840*2160 or 4096*2160 pixels
- Image Sensor 1-chip 4K CMOS
- Scan Mode Progressive
- Refresh Frame Rate 50/60 fps
- Signal Output 12G-SDI x1, HDMI x 2, DVI x 1, 3G-SDI x 1
- Data Management Full HD Recording with Built-in USB Storage Flash Disk(up to 6TB)
- Protection Against Moisture Camera head IPX7
- Protection Against Electric shock Class I
- DEFIBRILLATION-PROOF Type CF

Differences Among Models

| Model | Color Style | | | |
|---------|-------------|--------|--------|-------|
| | Standard | Bright | Gentle | Vivid |
| UX3 | √ | √ | √ | √ |
| UX3-TEC | √ | √ | √ | × |
| UX3-SIM | √ | √ | × | × |
| UX3-NOR | √ | × | × | × |

Standard: The saturation level and red-blue hues are set to the default values.
Bright: The saturation level is higher than the default value of Standard, and the red-blue hues remain unchanged.
Gentle: The saturation level is lower than the default value of Standard, and the red-blue hues remain unchanged.
Vivid: The saturation level and blue hue remain unchanged, and the red hue is higher than the default value of Standard.

Endoscope Light Source—HB300 Series

- Dimension 380mm x 350mm x 80mm
- Weight ≤ 10Kg
- Lamp High Brightness White LED
- Power consumption 260VA
- Lamp Life Over 60,000h
- Color Temperature 3000-7000K
- Protection Against Electric Shock Class I, Type CF
- Intensity ≥3000000Lux (max center)
- Noise ≤55dB
- Color rendering index ≥90, in the white light mode
- Output Luminous 2000 lm

55"/32" 2D Monitor (S5580P/S3180P)

- LCD Size 55/32 inch
- Weight 11.8±0.5Kg(32 inch)
38.5±2.0Kg(55 inch)
- Resolution 3840 * 2160 pixels
- Contrast Ratio 1500 : 1 (32 inch)
1200 : 1 (55 inch)
- Refresh Rate 50/60 Hz
- Backlight Brightness 850 cd/m²(32" Monitor)
700 cd/m²(55" Monitor)
- Input Signal HDMI,12G-SDI,DVI, 3G-SDI
- Max Viewing Angel 178°
- Loop Out Yes
- Picture in Picture Yes

Insufflator

| Model | HS-50F | HS-50H | HS-50V | HS-50S | HS-30S |
|------------------|-------------|-------------|-------------|-------------|-------------|
| Flow Rate | 0.1-50L/min | 0.1-50L/min | 0.1-50L/min | 0.1-50L/min | 0.1-30L/min |
| Heating | √ | √ | × | × | × |
| Smoke Evacuation | √ | × | √ | × | × |
| Modes | 5 | 5 | 5 | 5 | 5 |
| Touch Screen | √ | √ | √ | √ | √ |

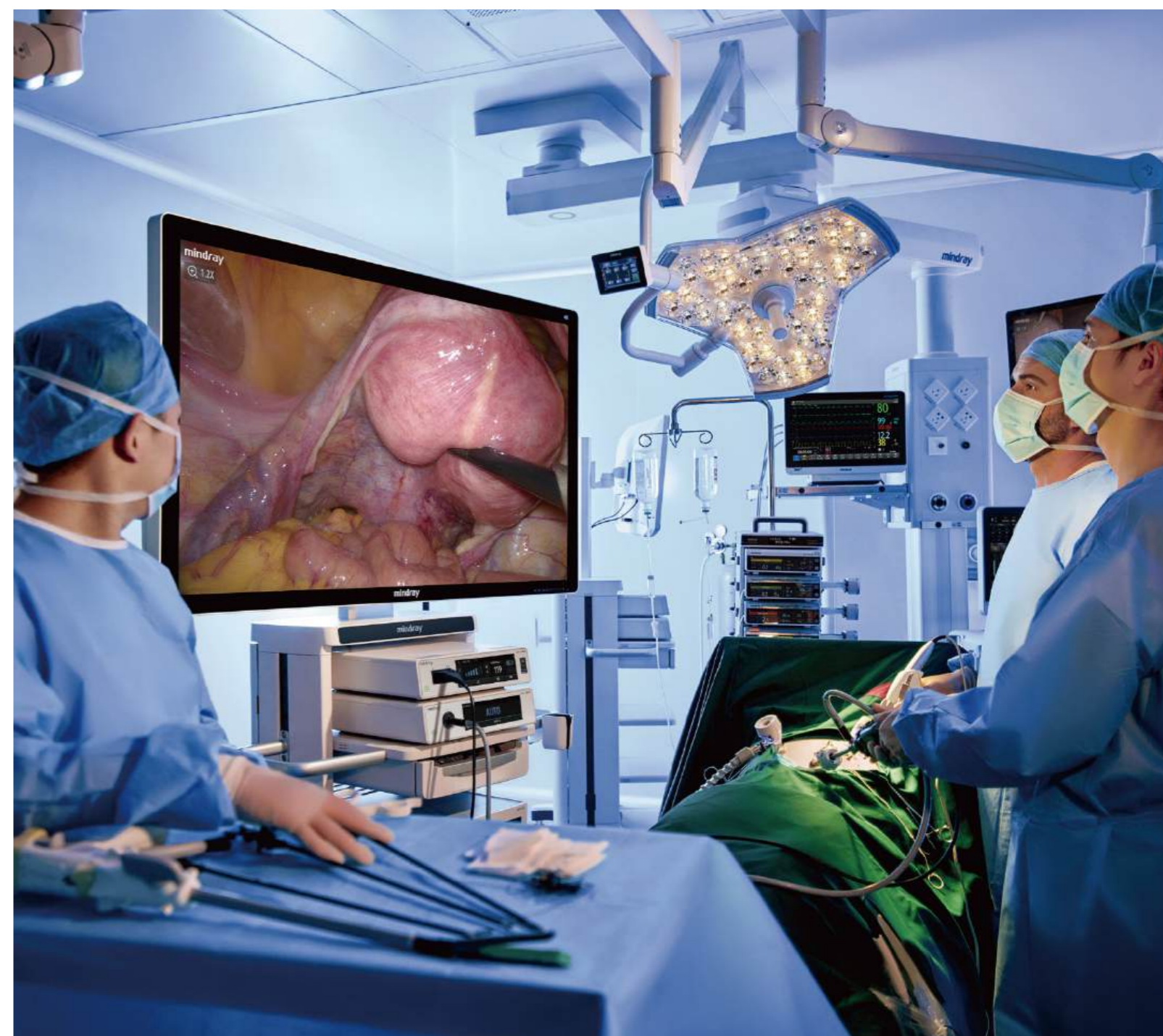
- Dimension 380mm x 350mm x 141mm
- Weight 10.0Kg
- Pressure Range 1 - 30mmHg
- Modes Bariatric, Adult, Pediatric, Retroperitoneum, Customize
- Heating function(HS-50F/HS-50H) Yes, Temperature ≤41°C
- Display 7 inch color touch screen
- Protection against harmful ingress of water or particulate matter Foot pedal IPX8
The insufflator is an ordinary-type device (sealed device that does not protect from liquid inlet)
- Protection against electric shock Type CF
- Method of sterilization By other methods validated and described by the manufacturer

Laparoscope

| Model | Field of View | Direction of View | Working Length | Max. Width of Insertion Portion |
|------------------------|---------------|-------------------|----------------|---------------------------------|
| M 01000A M 01000PA | 80° ± 15% | 0° ± 10° | 321mm ± 3% | Φ10mm |
| M 01030A/ M 01030PA | 80° ± 15% | 30° ± 10° | 321mm ± 3% | Φ10mm |
| M 00530A M 00530PA | 85° ± 15% | 30° ± 10° | 300mm ± 3% | Φ5.45mm |
| M 00500A M 00500PA | 85° ± 15% | 0° ± 10° | 300mm ± 3% | Φ5.45mm |
| M 10530A M 10530PA | 85° ± 15% | 30° ± 10° | 450mm ± 3% | Φ5.45mm |
| M 10500A M 10500PA | 85° ± 15% | 0° ± 10° | 450mm ± 3% | Φ5.45mm |

UX3 Series-4K
Endoscope Camera System

Vision Beyond Imagination



Full-chain Independent R&D

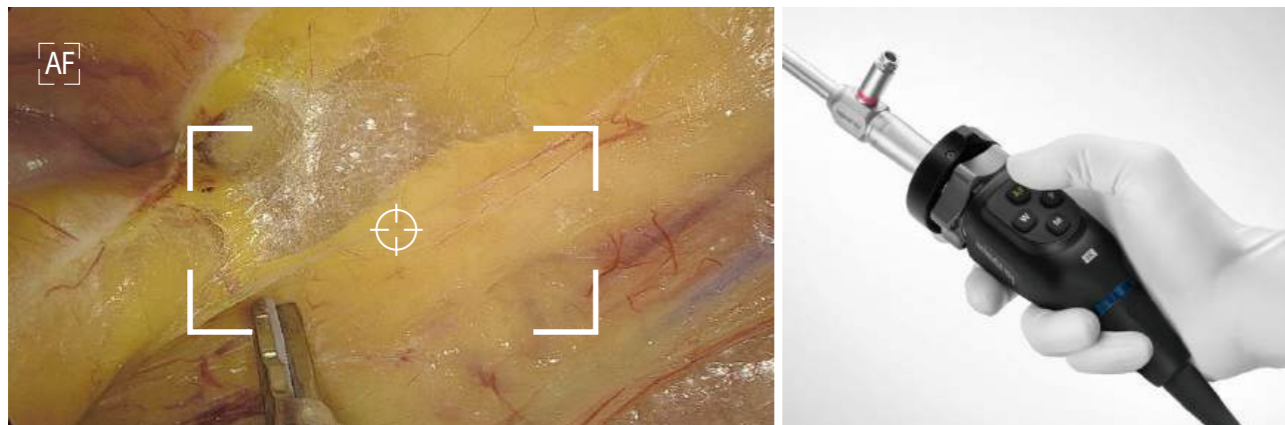
The integration of the new generation hardware platform with novel software algorithms greatly elevates image performance. AutoFocus, Automatic Scene Recognition and the Intelligent Image Algorithm work together to present high quality images.



Smart View Exceptional Image Quality

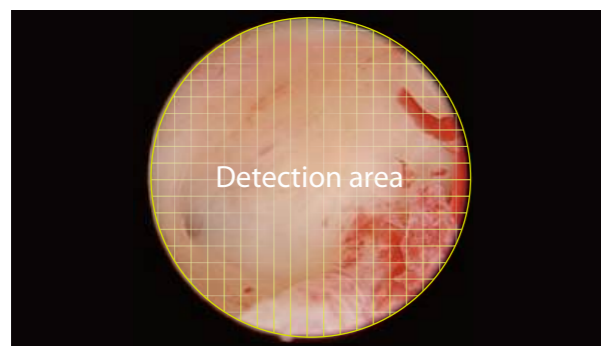
AutoFocus, and high quality image achieved with one touch

The perfect combination of mechanical structure, optical design, and the powerful computing power of the new imaging chip brings effective precision focusing and reduces manual operations, allowing the surgeon to focus on the surgery with a perfect image.

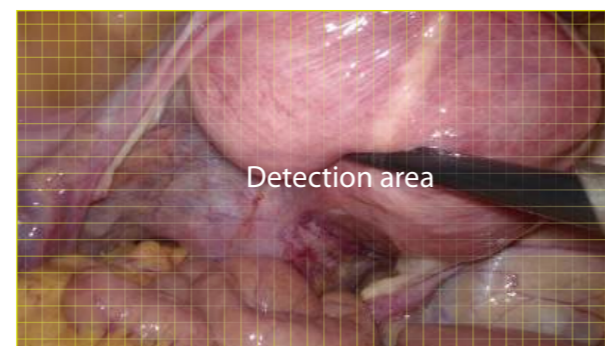


Automatic scene recognition, intelligent brightness adjustment

Smart exposure: Determine different detection areas according to different scene and accurately match the exposure parameters without the need to manually switch department modes.



Small diameter scope scene (e.g. hysteroscope)



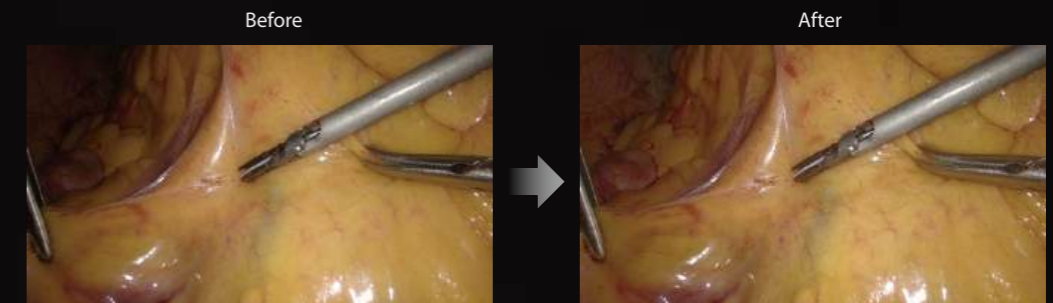
Laparoscope scene

Automatic dimming: The camera system can automatically adjust the intensity of the light source in real time according to the exposure requirements of the current image, and ensure appropriate brightness.

eImage Intelligent Image Algorithm, Even in Extreme Circumstances

A variety of image post-processing algorithms make up for uneven lighting, local overexposure, thick fog etc., delivering clear, structured and layered images even in extreme scenarios.

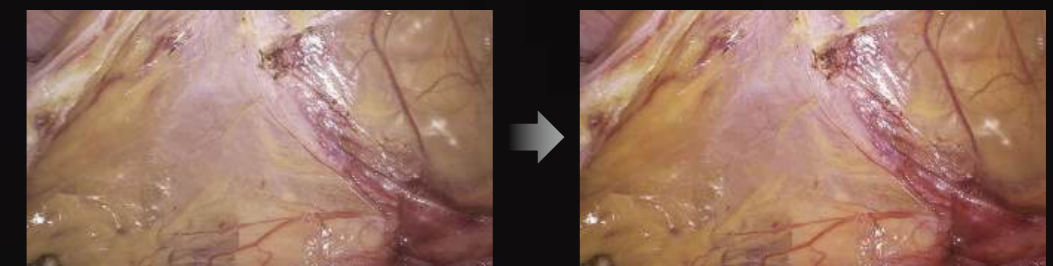
B[↑]_{RT.}
Homogenous
Brightness



D[↑]_{TL.}
Detail
Enhancement



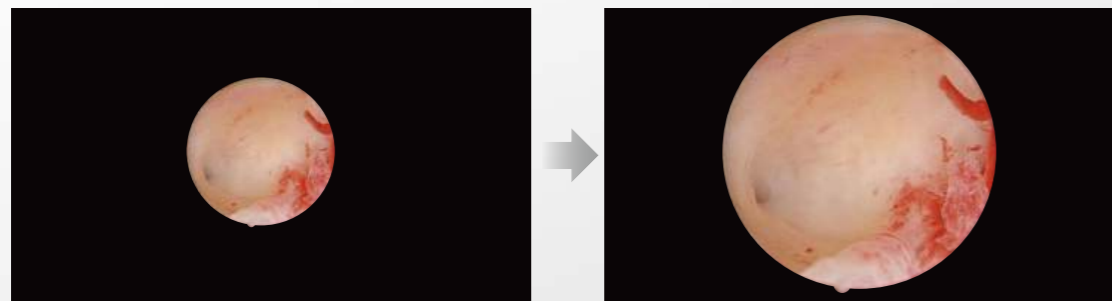
C[↑]_{LR.}
Color
Enhancement



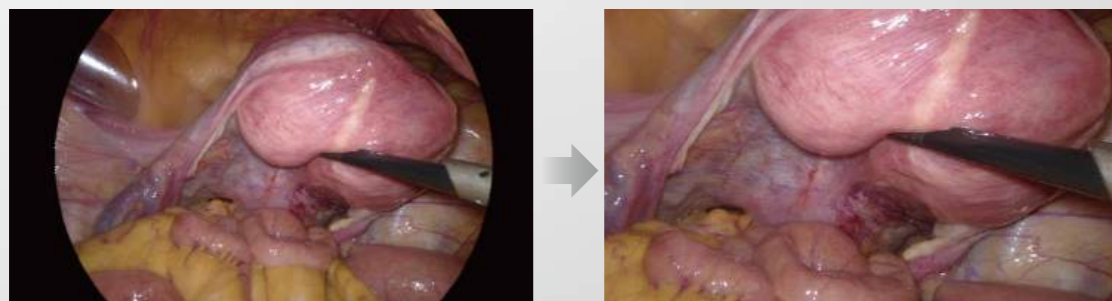
Intelligent Control Flexible Mastery

Automatic Adaptive Zoom achieved with one touch

Intelligent recognition of endoscope type and automatic adjustment with adaptive zoom reduces the need for repeated manual adjustment, and ensures ideal visibility for different surgeries.



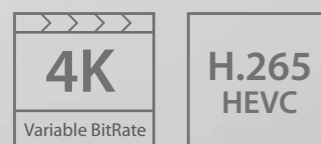
Small diameter scope - One Touch to adaptive Zoom



Laparoscope - One Touch to Full Screen

Built-in 4K recording with Variable BitRate + H.265 encoding

4K high-quality video recording vividly reproduces the whole process of surgery, bringing quality academic sharing. Meanwhile, Variable BitRate and H.265 encoding reduce the file size of the same quality by 50%, meaning less worry about storage.



- 32/55 inch 4K Monitor**
- 4K Endoscope Camera System**
- LED Light Source**
Automatic dimming of the whole series
- White Light Camera Head**
Weight: 190 g
Focal Length: 22mm / 29mm
- Insufflator**
50L/mm
- 10/5 mm Rigid Endoscope**
Multi-specification rigid endoscopes available
- Digital Video Recorder**
Access to hospital PACS system
Simultaneous recording of two signal sources available

M 01000A/M 01030A/M 01000/M 01030

Rigid Endoscope

Operator's Manual



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■ Release time: 2022-5

■ Revision: 5.0



2.6 Contraindications

Contraindications relating directly to these products are not currently known. The use of telescopes is contraindicated if, in the opinion of the responsible physician, the health of the patient is endangered through their use, e.g. due to the general condition of the patient, or if the endoscopic method itself is contraindicated.

Unauthorized conversions or modifications to the instrument are not permitted for safety reasons.

2.7 Applied Part

The applied part of the equipment is the endoscope itself.

2.8 Product Description

The product is composed of the following parts:



- (1) Main body
- (2) Eyepiece
- (3) Light cable connector (available for ACMI/Olympus Pro light sources)
- (4) Light cable adapter (available for Richard Wolf/Mindray light sources)
- (5) Light cable adapter (available for STORZ light sources)
- (6) Objective lens

WARNING

- Using this product with any sharp edges or broken surfaces will put patients at risk. So before each use, please check to ensure there are no unintended rough surfaces, sharp edges or protrusions which may cause harm.
-
-

NOTE

- Do not use the fiber optics if the glass surface has been damaged or if there are stains on it that cannot be removed with cleaning. Return damaged products to the manufacturer or authorized repair center. Information about authorized repair centers may be obtained from the manufacturer.
-
-



3.3 Disassembly of Component

Remove all adapters.

3.4 Guide on Use with Other Medical Products

This product can meet the requirements of type CF applications. If the medical appliances or accessories being used with this product meet CF requirements, then the whole endoscopic system can meet the protection requirements for CF application.

Medical appliances or accessories used with this product should at least meet the requirements for BF applications.

| Symbol | Description |
|---|----------------------|
|  | TYPE CF APPLIED PART |
|  | TYPE BF APPLIED PART |

- **The product is very sensitive to impacts at high temperature, so avoid impacting and vibrating the product at high temperatures.**

Before sterilization, please place the endoscope in the sterilization tray, and then wrap with two polypropylene sterilization wrap.

Recommended sterilization methods that have been verified:

| Sterilization Type | Applicable Model |
|------------------------------|--------------------------------------|
| Autoclave sterilization | M 01030A, M 01000A |
| Ethylene oxide sterilization | M 01030A, M 01000A, M 01030, M 01000 |

4.4.1 Autoclave sterilization

For the loading method of autoclave sterilization, please refer to the operating instructions of the corresponding sterilizer. As the sterilizer and its operating conditions may affect sterilization, it is suggested that the sterilization process be reconfirmed and monitored before sterilization in accordance with the international standards (such as ISO 17665), national standards, or hospital sterilization management rules related to autoclave sterilization.

The sterilizer must be certified in accordance with DIN EN 285 and tested in accordance with DIN EN ISO 17665.

Autoclave sterilization parameters are as follows:

| Sterilization process | Temperature | Exposure time |
|-----------------------|-------------|---------------|
| Gravity displacement | 121°C | 30 min |
| Pre-vacuum | 134 °C | 5 min |

Sterilization tolerance cycle: 500 times.

A Product Specifications

A.1 Basic Parameters

| Model | Field angle (°) | Aspect angle (°) | Working length (mm) | Maximum width of insertion (mm) |
|----------------------|-----------------|------------------|---------------------|---------------------------------|
| M 01000A/ M 01000 | 80±15% | 0±3° | 321±3% | Φ10 |
| M 01030A/ M 01030 | 80±15% | 30±3° | 321±3% | Φ10 |

A.2 Operating Environment

1. Temperature: 10°C – +40°C
2. Humidity: 5% – 95%, non-condensing
3. Atmospheric pressure: 70 kPa – 106 kPa

A.3 Storage and Transportation Environment

1. Temperature: -40°C – +70°C
2. Humidity: 5% – 95%, non-condensing
3. Atmospheric pressure: 70 kPa – 106 kPa

Put clean and disinfected products in packages capable of isolating the products from bacteria and store them in a dark, cool, and suitable room.

HB300/HB300-TEC

Endoscope Light Source

Operator's Manual



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- Release time: 2024-2
- Revision: 3.0



| Model | Levels of Light Intensity |
|-----------|---------------------------|
| HB300 | 10 |
| HB300-TEC | 8 |

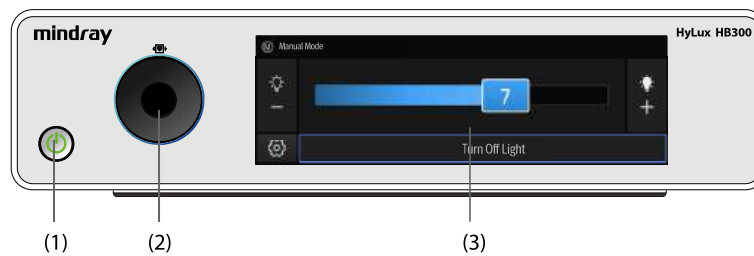
2.7 Applied Part

Light cable is considered as type CF applied part except the proximal end connected to the main unit of light source.

2.8 System Components

The light source consists of a main unit and cables.

2.8.1 Front View of the Main Unit



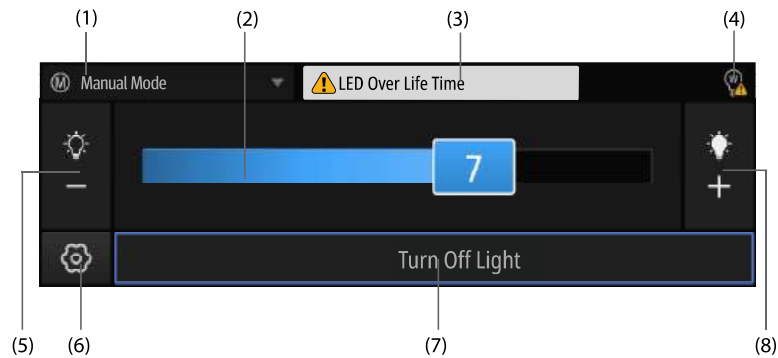
- (1) Power switch: turns on or off the main unit. The switch also has an embedded light that indicates the power status of the main unit:
 - Off: AC (Alternating Current) power is not connected.
 - Orange: AC power is connected, but main unit is off.
 - Green: the main unit is on.
- (2) Light outlet and light cable connector: the light outlet, used to connect a light cable.
- (3) Touchscreen: displays equipment status and changes settings.

NOTE

- Dry the equipment immediately in case of rain or water spray.

3.7.1 Operation Screen Introduction

The following figure shows the operating screen of the equipment:



- (1) Mode area: indicates the current mode. Select this area to switch between the manual mode and auto mode.
- (2) Brightness indication area: indicates the current brightness of light. Move the slider to adjust the brightness of light. If the equipment is in the auto mode, "AUTO" is displayed in this area.
- (3) Error message area: displays error messages.
- (4) Bulb status symbol: indicates the service life status of the bulb. For detailed introduction of the symbols, refer to **3.7.2 On-screen Symbols**.

(5) 
Brightness decrease button  : select to decrease the brightness of light.

(6) Setup button  : select to display the setup menu.

(7) Light control button: select to turn on/off the light output.

(8) 
Brightness increase button  : select to increase the brightness of light.

CAUTION

- Do not put the system in use before the system is checked and works normally.
 - Do not use an optical observer (such as an amplifier) to or directly look at the light outlet of the light source.
 - If you need to connect or disconnect a light cable when the light source is on, make sure that the light source is not emitting light. Otherwise, eye injury may result.
 - When no light cable is connected, the equipment generates a prompt and does not emit light by default. However, do not look directly at the light outlet in case the light cable detection fails.
 - In case of any failure, stop and remove equipment from use. Otherwise, injury to the patient or operator or damage to the equipment might result.
-

4.6 Switching Between Manual and Auto Modes

Select the Mode area on the main screen to switch between manual and auto modes.

- In manual mode, you can adjust the brightness of light on the main screen. For detailed operations, refer to **4.8 Adjusting the Brightness of Light**.
- After the light source is connected to a Mindray UX3 series CCU, you can switch to the auto mode. In Auto mode, the CCU can automatically adjust the brightness of light.


4.7 Turning On the Light

The light source does not emit light after startup. You can select the Light control button on the main screen to turn on the light.

When a Mindray UX3 series CCU is interconnected, you can turn on the light by using a camera head button. For detailed setting method, refer to the operator manual of the CCU.

4.8 Adjusting the Brightness of Light

In manual mode, you can press the Brightness decrease button  or Brightness increase

button  on the main screen to decrease or increase the brightness of light, meeting the brightness requirements of different clinical operations. You can also move the slider in the Brightness indication area to the left or right to adjust the brightness.

CAUTION

- Use the equipment only in environment that meets the specific requirements. Otherwise, the equipment may not meet the performance specifications or unexpected consequences, e.g. damage to the equipment, could result. If the performance of the equipment is degraded due to aging or environmental conditions, contact the service personnel.
-

A.3 Power Supply Specifications

| | |
|----------------------|---|
| Working power supply | 100-240VAC ($\pm 10\%$), 50/60 Hz (± 3 Hz) |
| Input power | 260VA |

A.4 Physical Specifications

| | |
|-----------|---|
| Dimension | Depth: 380 ± 5 mm Width: 350 ± 5 mm Height: 80 ± 5 mm (excluding the rubber feet) |
| Weight | ≤ 10 kg |

A.5 Hardware Specifications

| | |
|----------------------|---|
| Display type (CCU) | Touchscreen |
| Display size (CCU) | 7.8 inches |
| Device interfaces | Power socket: 1, connecting the AC Mains MSB connector: 1, supporting serial communication protocol USB connector: 1, supporting USB 2.0 protocol. Fixed time synchronization pulse specified by the USB protocol Network connector: 1, RJ45 interface, supporting 100BASE-TX protocol. Calibration protocol of TCP/IP Light cable connector: 1, connecting the light cable |
| Bulb type | LED, which outputs white light |
| Service life of bulb | LED: over 60000 hours |

LETTER OF DECLARATION

To: Center for Centralized Public Procurement in Health

For tender nr: 21584038

Date of tender 20 apr 2026

We, Shenzhen Mindray Bio-Medical Electronics Co., Ltd., with office at Floor1-4, Mindray Building, Keji 12th Rd. South, Hi-tech Park, Nanshan, Shenzhen, P. R. China, manufacturer of **Light cable (LC0005S and LC0003S) and Light Source (HB500, HB500R, HB300, HB100)**,
We hereby declare that

the light source socket and fiber-optic cable connector of our product have been tested and verified to be compatible with Karl Storz fiber-optic cables.



Sun Jing
General Manager of PMLS Sales and Marketing Department (ROW & EU)
Shenzhen Mindray Bio-Medical Electronics Co., Ltd.



SHENZHEN MINDRAY BIO-MEDICAL ELECTRONICS CO.,LTD
Mindray Building, Keji 12th Road South, High-tech Industrial Park, Nanshan,
Shenzhen 518057, P.R. China
Tel: +86 755 26582888
Fax: +86 755 26582680
Website: www.mindray.com

LC0005S/LC0003S Light Cable

Instructions for Use

Statement

SHENZHEN MINDRAY BIO-MEDICAL ELECTRONICS CO., LTD. (hereinafter called Mindray) owns the intellectual property rights to this product and this manual. Disclosure of the information in this manual in any manner whatsoever without the written permission of Mindray is strictly forbidden.

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

Mindray is responsible for the effects on safety, reliability and performance of this product, only if:

- (1) this product is used in accordance with the instructions for use.
- (2) this product is not damaged by human factors. Human factors refer to unintentional falling, intentional damaging, etc.

In the event that it becomes necessary to return a unit to Mindray, please contact the Mindray Service Department and obtain a Mindray Customer Service Authorization Number. The Mindray Customer Service Authorization Number must appear on the outside of the shipping container. Return shipments will not be accepted if the Mindray Customer Service Authorization Number is not clearly visible. Please provide the model number, serial number, and a brief description of the reason for return. The customer is responsible for freight charges when this product is shipped to Mindray for service (including any relevant customs fees or other freight related charges).

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The issue date of this manual is 2021-5.

Notification of Adverse Events

As a health care provider, you may report the occurrence of certain events to SHENZHEN MINDRAY BIO-MEDICAL ELECTRONICS CO., LTD., and possibly to the competent authority of the Member state in which the user and/or patient is established.

These events, include device-related death and serious injury or illness. In addition, as part of our Quality Assurance Program, SHENZHEN MINDRAY BIO-MEDICAL ELECTRONICS CO., LTD. requests to be notified of device failures or malfunctions. This information is required to ensure that SHENZHEN MINDRAY BIO-MEDICAL ELECTRONICS CO., LTD. provides only the highest quality products.

Important Information

1. It is the customer's responsibility to maintain and manage the product after delivery.
2. The warranty does not cover the following items, even during the warranty period:
 - (1) Damage or loss due to misuse or abuse.
 - (2) Damage or loss caused by force majeure such as fires, earthquakes, floods, and lightning.
 - (3) Damage or loss involving the product purchased from a channel other than Mindray or its authorized agency.
3. This product shall not be modified without permission.
4. In no event shall Mindray be liable for the damage caused by alteration, modification, or repair performed by personnel other than those designated by Mindray.
5. At the end of the service life of the product, please contact Mindray or its agency. Mindray shall not be liable for the result if you do not consult Mindray or its agency about disposal of the product.
6. This manual contains warnings regarding foreseeable potential dangers, but you shall always be alert to dangers other than those indicated as well.
7. Mindray shall not be liable for damage or loss that results from negligence or from ignoring the precautions and operating instructions described in this manual.
8. This manual shall always be kept properly so that it can be obtained conveniently as needed.

I. Intended Use

The light cable is used to transmit light during the endoscopic diagnosis and treatment. In the medical field, it is used with the cold light source of endoscopes.

| NOTE |
|---|
| <ul style="list-style-type: none"> According to the conclusion of clinical evaluation and residual risk evaluation, for the intended patients, there is no known side effects that can occur during or after the use of the medical device. And there is no need for the operator to make extra preparations. Thus, no residual risk associated with using the medical device should be disclosed due to the risk management report. |

II. Specifications

| Model | LC0005S | LC0003S |
|--------------------------------|-----------------|-----------------|
| Length of light cable | 3000 mm ± 10% | |
| Diameter of exit optical fiber | Φ4.8 mm ± 0.1mm | Φ3.5 mm ± 0.1mm |
| Minimum bending radius | 50mm | |

III. Introduction



1. Connector (to light source)
2. Light source adapter
3. Connector sleeve
4. Anti-bending device
5. Connector (to endoscope)

IV. Safety Precautions

| |
|---|
| <p>⚠ WARNING</p> <p>Risk of patient injury</p> <ul style="list-style-type: none"> Ensure that all endoscopic equipment is properly connected and functioning before inserting the endoscope into a patient. Use this product only along with the endoscopic device specified by Mindray. |
| <p>⚠ CAUTION</p> <p>Risk of patient injury</p> <p>Light source produces a lot of heat, causing a high temperature at the connector and front end of the endoscope. It may result in the following risk:</p> <ul style="list-style-type: none"> Scalding the patient (for example, when the small cavity of the lumen is exposed to excessive lighting, or the front end of the endoscope is close to the tissue). Burn of the patient or user's skin. Combustion or burning-out of surgical instruments (such as surgical drapes, and plastic materials). <ul style="list-style-type: none"> It is forbidden to place the endoscopic equipment on the patient's skin, flammable materials, or temperature-sensitive materials. Adjust the output power of the light source to make the minimum brightness required to illuminate the target area. Avoid excessive exposure to strong light. |
| <p>⚠ CAUTION</p> <p>Risk of user injury</p> <p>When the light source is on, do not look straight at the endoscopic connector of the light cable because that may cause eye injury.</p> |

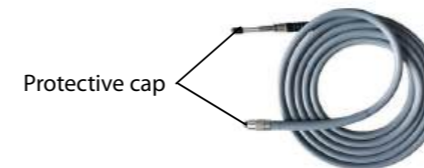
V. Removal After Use

| |
|---|
| <p>⚠ CAUTION</p> <p>Risk of user injury</p> <p>Touching the light cable connector when its temperature is high may cause scalding.</p> <ul style="list-style-type: none"> Cool the light cable after use. |
|---|

| INSTRUCTION |
|--|
| <p>Risk of product damage</p> <p>Sudden change in temperature may cause damage to the product.</p> <ul style="list-style-type: none"> Cool the light cable after use. It is forbidden to use liquid to cool the light cable. |
| INSTRUCTION |
| <p>Risk of product damage</p> <p>Pulling the cable may damage the product.</p> <ul style="list-style-type: none"> To unplug the light cable from the light source, grasp the plastic shell of the connector. |

VI. Cleaning, Disinfection, and Sterilization

Clean, disinfect and sterilize this product regularly based on the local or hospital's regulations related to cleaning, disinfection, and sterilization. A protective cap is provided together with the product before delivery, as shown in the following figure. Remove the protector before cleaning, disinfection, and sterilization.



1. Cleaning and Disinfection

- (1) Disconnect the light cable from the devices, including light source and endoscope.
- (2) Use a soft cloth dipped in an appropriate amount of water to remove leftover on the surface of the light cable.
- (3) Use a clean soft cloth dipped in an appropriate amount of ethanol (75%) to wipe the surface of the light cable.
- (4) Use a dry soft cloth to wipe off detergent on the surface of the light cable, and place the light cable in a ventilated and cool environment to air dry it.

2. Sterilization

The recommended sterilization method is pressure steam sterilization. For loading method of pressure steam sterilization, please refer to the corresponding sterilizer operation instructions.

The procedure is as follows:

- (1) Remove the light source adapter from the light cable.
- (2) Put the product in a sterilization box, and wrap two layers of sterile sheets to prevent contamination during storage and transportation after sterilization.
- (3) Perform pressure steam sterilization as instructed in the manual for using the sterilizer.

The pressure steam sterilization parameters are as follows:

| Sterilization process | Temperature | Minimum required time |
|-----------------------|---------------|-----------------------|
| Pulsation vacuum | 132°C - 134°C | 4min |

| |
|--|
| <p>⚠ WARNING</p> <p>Risk of patient/medical staff injury</p> <p>Improper or inadequate cleaning, disinfection, and sterilization may result in infection of the patient or medical staff or product damage.</p> <ul style="list-style-type: none"> Clean, disinfect, and sterilize the product for the first use and before each use. Clean, disinfect and sterilize the product properly according to this manual. |
|--|

VII. Warranty

If a user or unauthorized person repairs or modifies the product privately, the warranty of the Mindray becomes invalid. The product damage caused by improper use is not covered by the warranty.

VIII. Operating Environment

1. Temperature: 0°C - +35°C
2. Humidity: 30% - 85% RH, non-condensing
3. Atmospheric pressure: 70 kPa - 106 kPa

IX. Storage and Transportation Environment

1. Temperature: -20°C - +60°C
2. Humidity: 30% - 95% RH, non-condensing
3. Atmospheric pressure: 70 kPa - 106 kPa

Put clean and disinfected products in packages capable of isolating the products from bacteria, and store them in a dark, cool, and well-ventilated room.

X. Equipment Symbols

| Symbol | Description |
|--------|--|
| | Medical Device |
| | Manufacturer |
| | Date of manufacture |
| | TYPE CF APPLIED PART |
| | Batch code |
| | Temperature limit |
| | Humidity limitation |
| | Atmospheric pressure limitation |
| | The product bears CE mark indicating its conformity with the provisions of the Council Directive 93/42/EEC concerning medical devices and fulfils the essential requirements of Annex I of this directive. Note: The product complies with the Council Directive 2011/65/EU. |
| | Refer to instruction manual/booklet |
| | Authorized representative in the European community |
| | Comply with the requirements of Directive 2012/19/EU Waste Electrical & Electronic Equipment |

Company Contact

| | |
|--------------------|--|
| Manufacturer: | Shenzhen Mindray Bio-Medical Electronics Co., Ltd. |
| Address: | Mindray Building, Keji 12th Road South, High-tech Industrial Park, Nanshan, Shenzhen 518057, P.R.China |
| Website: | www.mindray.com |
| E-mail Address: | service@mindray.com |
| Tel: | +86 755 81888998 |
| Fax: | +86 755 26582680 |
| EC-Representative: | Shanghai International Holding Corp. GmbH (Europe) |
| Address: | Eiffestraße 80, 20537 Hamburg, Germany |
| Tel: | 0049-40-2513175 |
| Fax: | 0049-40-255726 |

LC0005S/LC0003S

导光束 使用说明书

Light Cable Instructions for Use



声明

本产品及其使用说明书的知识产权属于深圳迈瑞生物医疗电子股份有限公司（以下简称迈瑞公司）。

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本说明书详细地介绍了产品的用途、功能和操作使用。使用本产品之前，请认真阅读并理解本说明书中的内容，以保证能够正确地使用本产品，并确保病人和操作者安全。在下列条件都满足的情况下，迈瑞公司将对产品的安全性、可靠性和性能负责：

- (1) 按照《使用说明书》使用本产品。
- (2) 非人为因素造成的产品损坏。人为因素是指不小心摔落、蓄意破坏等。

确实需要向迈瑞公司退货时，请联系迈瑞公司售后服务部，告知产品型号和系列号，并简述原因。若产品的系列号模糊不可辨认，退货请求将不予接受。

说明书编制日期：2021年5月

mindray和**迈瑞**是迈瑞公司的注册商标或者商标。

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重要信息

1. 购买本产品后，客户对产品的维护和管理负全部责任。
2. 即使在保修期内，对下列情况迈瑞将不负责保修：
 - (1) 由于操作不当或故意损坏造成的损坏。
 - (2) 由于不可抗力如火灾、地震、洪水、闪电等造成的损坏。
 - (3) 不是从迈瑞公司或指定的分销商手中购买的迈瑞产品，如果发生损坏，将不予保修。
3. 禁止擅自对本产品做任何改动。
4. 非迈瑞公司指定人员对设备进行的重新改装、改动或维修造成的损坏，迈瑞将不负任何责任。
5. 产品报废处理前请联系迈瑞公司或其代理机构。未向迈瑞公司或其代理机构咨询而对产品进行处理，迈瑞公司不对其所产生的后果负责。
6. 本说明书对可以预见的危险做出了警告。但请在任何时间保持警惕以防出现其他危险。
7. 由于疏忽没有按照说明书中的指引而产生的问题，迈瑞公司将不对此负责。

8. 请妥善保管本说明书，以确保管理和操作人员可以随时查阅。

一、预期用途

导光束用于在内窥镜诊断和治疗中传输光线。医学领域中，它与医用内窥镜冷光源配套使用。

二、主要技术参数

| 型号 | LC0005S | LC0003S |
|---------|-------------------|-------------------|
| 导光束长度 | 3000 mm ± 10% | |
| 出射端光纤直径 | Φ4.8 mm，允差 ±0.1mm | Φ3.5 mm，允差 ±0.1mm |
| 最小可弯曲半径 | 50mm | |

三、导光束结构



1. 导光束接头（光源侧）
2. 导光束光源适配器
3. 接头套管
4. 防折弯装置
5. 导光束接头（内窥镜侧）

四、安全注意事项

| 警告 |
|--|
| 患者受伤的风险 <ul style="list-style-type: none"> • 将内窥镜插入患者体内之前，应始终正确连接内窥镜设备。 • 本产品仅可与迈瑞指定的内窥镜设备配合使用。 |
| 小心 |
| 患者受伤的风险 光源会产生大量热量，导致内窥镜接头与先端部温度升高。可能会存在以下风险： <ul style="list-style-type: none"> ➢ 患者组织烫伤（例如，管腔较小的腔隙暴露在过强的照明下，或内镜先端部与组织距离过近）。 ➢ 患者或用户皮肤烧伤。 ➢ 手术器械燃烧或烧毁（例如，手术铺巾，塑料材料等）。 <ul style="list-style-type: none"> • 禁止将内窥镜设备放置在患者皮肤、可燃性材料或对温度敏感的材料上。 • 调节光源的输出功率，达到照亮目标区域所需的最低亮度。避免强光的过度暴露。 |
| 小心 |
| 用户受伤的风险 在光源打开的情况下，直视导光束的内镜接头可能导致眼睛损伤。因此，光源打开的情况下，禁止直视导光束的内镜接口。 |

五、使用后拆卸

| 小心 |
|---|
| 用户受伤的风险 导光束上的接头温度过高时，触摸接头可能会导致烫伤。 <ul style="list-style-type: none"> • 使用后应使导光束冷却。 |
| 说明 |
| 产品损坏的风险 高温导光束的温度急剧变化会损伤产品。 <ul style="list-style-type: none"> • 使用后应使导光束冷却。 • 禁止使用液体冷却导光束。 |
| 说明 |
| 产品损坏的风险 拉拽缆线会损坏产品。 <ul style="list-style-type: none"> • 从光源上拔下导光束时，应拉动接头的塑料外壳。 |

六、清洗、消毒和灭菌

请根据当地或医院关于医疗设备清洁消毒的规定定期对本产品进行清洁、消毒和灭菌。

本产品出厂时配送光纤保护套，如下图所示，清洁消毒及灭菌前请先取下保护套。



1. 清洁和消毒

- (1) 断开导光束与光源、内窥镜等设备的连接。
- (2) 使用一块软布蘸取适量的水除去导光束表面的残留物。
- (3) 使用干净的软布蘸取适量乙醇（75%）擦拭导光束表面。
- (4) 用干的软布擦去导光束表面的清洁剂，并将导光束置于通风阴凉的环境下风干。

2. 灭菌

推荐使用经验证过的灭菌方法：压力蒸汽灭菌。

压力蒸汽灭菌的装载方法，请参照相应灭菌器的操作说明。

步骤如下：

- (1) 卸下导光束光源适配器。
- (2) 将产品放置在灭菌盒中，并包裹两层无菌单，以防止灭菌后在存放、运输过程中染菌。
- (3) 参照灭菌器的使用说明执行压力蒸汽灭菌。

压力蒸汽灭菌器灭菌参数如下：

| 设备类别 | 温度 | 所需最短时间 |
|------|---------------|--------|
| 预真空式 | 132°C ~ 134°C | 4min |

| 警告 |
|---|
| 患者 / 医务人员受伤的风险 清洗、消毒和灭菌不当或不充分可能导致患者或医务人员感染和产品损坏。 <ul style="list-style-type: none"> • 首次及此后每次使用产品之前，应该进行清洗、消毒和灭菌。 • 按照本说明书，正确进行产品清洗、消毒和灭菌。 |

七、保修

如果用户或未经授权的人员私自维修或改造产品，则迈瑞公司的保修将失效。因使用不当导致的产品损坏不在保修范围之内。

八、工作环境

1. 温度：0°C ~ +35°C
2. 湿度：30% ~ 85% RH（无凝露）
3. 大气压：70 kPa ~ 106 kPa

九、存储和运输环境

1. 温度：-20°C ~ +60°C
2. 湿度：30% ~ 95% RH（无凝露）
3. 大气压：70 kPa ~ 106 kPa

将清洗和消毒处理后的产品置于能隔离细菌的包装中，存放在避光、阴冷、通风良好的室内。

十、符号

| 符号 | 说明 |
|----|-----------|
| | 注意！查阅随机文件 |
| | 生产日期 |
| | CF 型应用部分 |
| | 批次代码 |
| | 温度极限 |

| 符号 | 说明 |
|----|-----------------|
| | 湿度极限 |
| | 大气压力极限 |
| | 电子产品环保使用年限（20年） |

售后服务单位

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