An optional camera platform is available for adjusting the camera angle by remote control. It can be operated from a location away from the main unit to adjust the camera field of view, so that the area of interest is displayed. In combination with the zoom function, ICG can be tracked by remote control.

White LED
Near-infrared LED for excitation
Near-infrared LED for confirmation

※ The LIGHTVISION system does not include a monitor or drapes. If they are desired, contact your Shimadzu representative.

Digital image outputs (DVI-D) × 2
Analog composite image output (BNC) × 1

611×1960×850mm
(stowed dimensions, excluding protrusions)

225kg
Near-infrared light excites the ICG molecules, causing them to emit near-infrared fluorescent light. The LIGHTVISION system displays an image of that near-infrared fluorescent light emission. Therefore, by administering ICG in blood vessels or lymphatic vessel, LIGHTVISION can visualize the blood flow or lymph flow, which is invisible to the naked eye.

ICG Fluorescence using Near-infrared light

The near-infrared fluorescence imaging system irradiates near-infrared excitation light on an ICG (indocyanine green) contrast medium injected into the blood vessels, lymphatic vessel, or other areas. It is a system that allows the observation of blood flow and lymph flow under the tissue surface by imaging the near-infrared fluorescence. This method, called ICG fluorescence imaging, enables the simple and real-time identification of lymphatic vessel and the confirmation of blood flow during surgery. It has been confirmed to be useful for the quick localization of sentinel lymph nodes and tissue and organ perfusion.

* The photo is for illustrative purposes only. To clearly show the exterior, a drape was not attached.
Plastic and Reconstructive Surgery

Assessing blood flow through a surgical flap

The 10x zoom function provides a wide viewing angle, capturing a large field of view, including an entire large abdominal flap displayed on one screen, which is helpful for judging flap perfusion. An enlarged view can be used for high definition visualization of blood vessels to assess patency after anastomosis.

Expanding Clinical Applications

- Sentinel Lymph Node Mapping
- Perfusion Assessment of Organs and Flap
- Patency Assessment of Bypass graft and Revascularization

Assessing vascular anastomosis during coronary artery bypass surgery

Identifying sentinel lymph nodes for breast cancer

Supporting breast reconstructive surgery

Identifying tumors in the liver

Identifying liver segmentation

Assessing blood flow through the gastrointestinal tract

Supporting diagnosis of lymphedema

Supporting treatment of lymphedema

Identifying sentinel lymph nodes for melanoma

Diagnosis and treatment of lymphedema

LIGHTVISION can support the determination of the progression of lymphedema by visualizing the pattern of travel through lymphatic vessels. During lymphovenous anastomosis (LVA) procedures, both near-infrared and visible images can be referenced to easily mark the lymphatic vessels.

Dermatologic Surgery

Application

Identifying sentinel lymph nodes for melanoma

Because LIGHTVISION is able to clearly display a large area on a single monitor screen, it can be used to quickly and easily trace the flow of lymph extending far from the primary cancer lesion.
Expanding Clinical Applications

Breast Surgery
Application: Identifying sentinel lymph nodes
LIGHTVISION helps identify sentinel lymph nodes accurately by clearly visualizing lymph flow over a broad area, extending from the primary lesion to the axilla. After incision, the zoom function can be used to display a magnified view of the incised area, so that lymphatic vessel can be visually identified during excision. Since it does not use any radioactive substance, no radiation exposure is involved.

Cardiovascular Surgery
Application: Assessing the patency of CABG
LIGHTVISION can be used for intraoperative assessment of the coronary artery bypass graft patency and the perfusion of blood through the myocardium during surgery.

Hepato-Pancreato-Biliary Surgery
Application: Identifying tumors in the liver
Indocyanine green (ICG), used to examine liver function before surgery, remains unmetabolized in tumors and other areas with abnormal liver cells. This characteristic can be used to support more reliable and minimally invasive surgery by identifying tumors, determining the margins for excision.

Application: Identifying the liver segmentation
By administering the ICG via a branch of portal vein, the affected region of the liver can be clearly visualized and the demarcation line for excision can be decided accurately.

Upper Gastrointestinal Surgery
Application: Assessing blood flow through the gastric tube
Blood perfusion through tissue can be visualized with clear image quality. By visualizing vascularity during surgery with clear image quality, it visually supports deciding areas for anastomosis.
Accurate Surgical Navigation with High Definition Images

High Definition Image Quality
Equipped with high definition sensors, the system can display detailed high definition images. In addition to clearly confirming blood vessels and lymphatic vessel emitting fluorescent light, the high-resolution images can also be used to confirm the positional relationship between surrounding tissue and surgical tools during surgery. Given the accuracy and speed demands of the surgical environment, this system assists in making more accurate decisions more rapidly.

Display Images Clearly on a Large Monitor
It is possible to display the images on a large remotely located monitor to allow information sharing with all the surgical staff.

Colors can be Changed to Improve the Visibility of Blood Vessel or Lymphatic Vessel
To improve the visualization of blood vessels or lymphatic vessel, the color for the near-infrared fluorescence image can be changed to a white, green or blue color that is easier to distinguish from the surrounding tissues or light reflection of blood vessels or body fluids. An easy to use button is used to change the color, so that the optimum color can be selected according to the condition of the surgical site.

Simultaneous Three-Image Display Provides Clear Understanding at a Glance
The system can display three images, a optical image, a near-infrared fluorescence image, and a combined optical plus near-infrared fluorescence image, at the same time. This view enables confirmation of the area with ICG illumination by comparing it to the surrounding tissue, which is especially effective for determining the ablation range. This enables a large amount of information to be referenced and confirmed at a glance during surgery, which can help shorten procedure times.

Imaging is Possible in a Bright Room
Images can be acquired with the operating room lighting left ON, which means images can be compared to the affected area.

*The LIGHTVISION system does not include a monitor. Either use an existing monitor or contact your Shimadzu representative.

*Surgical lights must be switched OFF.
Hands-Free Imaging

The self-supported extendable arm allows hands-free operation. In addition to reducing the burden on surgical personnel, it can also display images without blur due to hand movement.

Wide Camera Movement Range

With the arm extendable up to about 180 cm, it is possible to locate the main unit away from clean areas and to create an optimal layout according to the situation of the operating room and peripheral equipment.

Freely Adjustable Camera Positioning

With a fully balanced arm, you can quickly position the camera height and angle as you wish. Images can be acquired via the optimal camera position depending on the type of surgery or condition of the affected area.

Ensures Working Distance Required for Surgical Work

Due to the bright light source and high sensitivity image sensor, a working distance (distance between the surgical field and camera) of about 50 to 70 cm can be maintained during imaging. Consequently, imaging can be performed at the same time as working in the surgical field.

Images can be Confirmed on a Small Monitor on the Main Unit

The operator can check the system operating situation and adjust image quality with a small monitor on the main unit.

Wide Camera Movement Range

With the arm extendable up to about 180 cm, it is possible to locate the main unit away from clean areas and to create an optimal layout according to the situation of the operating room and peripheral equipment.

Images can be Confirmed on a Small Monitor on the Main Unit

The operator can check the system operating situation and adjust image quality with a small monitor on the main unit.

Main Unit is Easy to Move and Reposition

The main unit is designed so that it can be moved easily between operating rooms. Handles are provided on the front and back, so that the unit can be easily repositioned within the operating room.

Camera Adjustments by Remote Control

Camera adjustment by remote control is possible. The remote control includes three automatic adjustment functions: exposure, focus, and white balance, which quickly optimize the image display.

- Automatic white balance
- Automatic exposure
- Field-of-view adjustment *
- Autofocus
- Change color of near-infrared fluorescence image

* Requires optional remote camera platform.
Remote Adjustable Field-of-View Camera Platform (optional)

An optional camera platform is available for adjusting the camera angle by remote control. It can be operated from a location away from the main unit to adjust the camera field of view, so that the area of interest is displayed.

In combination with the zoom function, ICG can be tracked by remote control.

Remote Adjustable Field-of-View Camera Platform (optional)

An optional camera platform is available for adjusting the camera angle by remote control. It can be operated from a location away from the main unit to adjust the camera field of view, so that the area of interest is displayed.

In combination with the zoom function, ICG can be tracked by remote control.

Specs

| Images Displayed | Optical image, near-infrared fluorescence image, Optical plus near-infrared fluorescence image |
| Lighting | White LED, Near-infrared LED for excitation, Near-infrared LED for confirmation |
| Near-infrared Fluorescence Image Display Colors | Green, blue, and white |
| External Output | Digital image outputs (DVI-D) × 2, Analog composite image output (BNC) × 1 |
| Power Supply | 100/110/120/220/230/240 V AC, 50/60 Hz, 500 VA |
| External Dimensions (W×H×D) | 611×1960×850mm (stowed dimensions, excluding protrusions) |
| Weight | 225kg |

Configuration

| Main unit | Remote controller |
| Options | Remote camera platform, Additional remote controller |


Remarks:

- Indocyanine Green (ICG) is necessary to use this product. Indications for use of ICG may vary within the countries. Please kindly refer the package insert.
- Every entry in this catalogue is a standard value, and it may vary a little from the actual at each site.
- The appearances and specifications are subject to change for reasons of improvement without notice.
- Certain configurations may not be available pending regulatory clearance. Contact your Shimadzu representative for information on specific configurations.
- Before operating this system, you should first thoroughly review the Instruction Manual.

Shimadzu Corporation

Headquarters
1, Nishinokyo-Kawabara-cho, Nakagyo-ku, Kyoto 604-8511, Japan
https://www.med.shimadzu.co.jp

Printed in Japan 6295-01803-30AMF