SeeUV®

Free Standing WebViewer® Inspection System

Operation & Service Manual

EM18793

To avoid injury, read and understand documentation for each system component prior to operation. Direct any questions about operation to InterTest at (908) 496-8008 or service@intertest.com

IShot®

INTERTEST®

Table of Contents

** optional accessory*

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1.0 Introduction

Congratulations for your investment in the Free Standing WebViewer, InterTest's portable visual inspection and web examination system. All WebViewer systems combine high resolution RVI instrumentation with precision camera maneuvering mechanisms. An operator can conduct on the spot white light, magnetic particle and fluorescent penetrant inspection of intricate components with minimum fixturing.

Many features enhance the WebViewer systems performance and versatility. These include:

Generous Movement Envelope
Manual or optional motor control, the camera boom travels typically 950mm horizontally and 500mm* vertically.

Illumination Control
In order to attain a more thorough remote visual examination of component internals, the WebViewer systems have been designed with both white and UV light capability. Intensity is controlled independently and operation can be simultaneous.

Robust Video Camera
All WebViewer systems come with remote focus capability helping to ensure crisp, high-resolution video images. They capture color video at a resolution of 460 horizontal TV lines (PAL) or 470 horizontal TV lines (NTSC).

Near-Coincident Viewing and Illumination Vectors
To minimize viewable shadows, InterTest uses high grade optics and micro compo-nents to position the field of vision axis adjacent to the projected illumination.

* - specifications subject to change without notice.

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2.0 Customer Support

Service and support for all InterTest products is available by calling (908) 496-8008. We also welcome comments, suggestions and technical inquiries by fax at (908) 496-8004 or email: service@intertest.com.

Page 4 explains InterTest's one-year limited warranty on parts and materials. Be sure to read all warranty information, register your product on-line at www.intertest.com and save this manual for future reference.

If your system requires service, please contact our Customer Service team at:

InterTest, Inc
303 Route 94
Columbia, NJ 07832

908-496-8008
Toll free in USA - 800-535-3626

3.0 Warranty

InterTest, Inc. guarantees the custom products manufactured by InterTest, Inc. to be free from defects in materials and workmanship for a period of one (1) year, from the date of original purchase. Any and all other products not manufactured by InterTest, Inc. will carry the OEM's limited warranty, which will be passed to the purchaser through and supported by InterTest, Inc. InterTest, Inc.'s obligation under this limited warranty shall be confined to the repair or exchange of any part, or parts thereof, that prove defective under normal use and service for which the product was intended and/or designed for.

This limited warranty covers conditions that upon our examination, at our facility, shall disclose, to our satisfaction, to be defective.

This limited warranty is in lieu of all other warranties, express or implied, including the warranties of merchantability and fitness for use and of all other obligations or liabili-ties on our part, and we neither assume, nor authorize any other person to assume for us, any other liabilities in connection with the sale of InterTest, Inc. equipment. This warranty shall not apply to any equipment that has been subject to accident, negli-gence, alteration, abuse, unauthorized repair, improper storage, or other misuse.

This limited warranty applies only to the original purchaser and cannot be assigned or transferred to any third party without express written consent from InterTest, Inc.

This limited warranty does not apply to consumable items, expendable items or normal wear and tear, nor does it apply to failure due to radiation, overheating and / or below freezing temperatures.

Additionally, InterTest, Inc. assumes no responsibility, either expressed or implied, regarding the improper usage of this equipment or interpretation of test data derived from this product. InterTest, Inc.'s responsibility and obligations, in all cases, are limited strictly to the repair and/or replacement costs outlined above.

The laws of the State of New Jersey shall govern this warranty.

Note: In the event that the equipment can not be returned to InterTest, Inc., for whatever reason, the customer agrees to pay for all travel and living expenses incurred to have an InterTest, Inc. Representative evaluate, assess or affect a warranty repair in the field.

4.0 Unpacking and Inspection

Before setting up the SeeUV® Free Standing WebViewer® Inspection System verify that all components and subassemblies are present and that none has suffered physical damage in transit.

The Shipment Contains:

- Free Standing WebViewer Assembly
- Necessary Power Cords and Video Cables
- LED-35 Watt White Light Source
- Lumatec UV Light Source
- Sony LCD Monitor with Swing Arm
- Control Unit
- Emergency Stop
- Cart

Remove all tape and packing material from the components. Next, carefully inspect each piece for damage and/or missing parts. Inspect all control panel knobs and switches for proper operation. If any portion of the system has suffered damage during shipment, please notify InterTest at once.

Retain all packing material for use in the event that the system or system components need to be shipped in the future.

A. WEBVIEWER CAMERA HEAD
B. CAMERA BOOM
C. VERTICAL MOTION MAST
D. VERTICAL POSITIONING KNOB & MOTOR
E. HORIZONTAL POSITIONING KNOB AND MOTOR DRIVE
F. COLOR MONITOR
G. SWING ARM
H. EMERGENCY STOP
I. CAMERA CONTROL UNIT
J. STORAGE DRAWER
K. WHITE LIGHT SOURCE
L. UV LIGHT SOURCE
M. POWER STRIP
N. CART

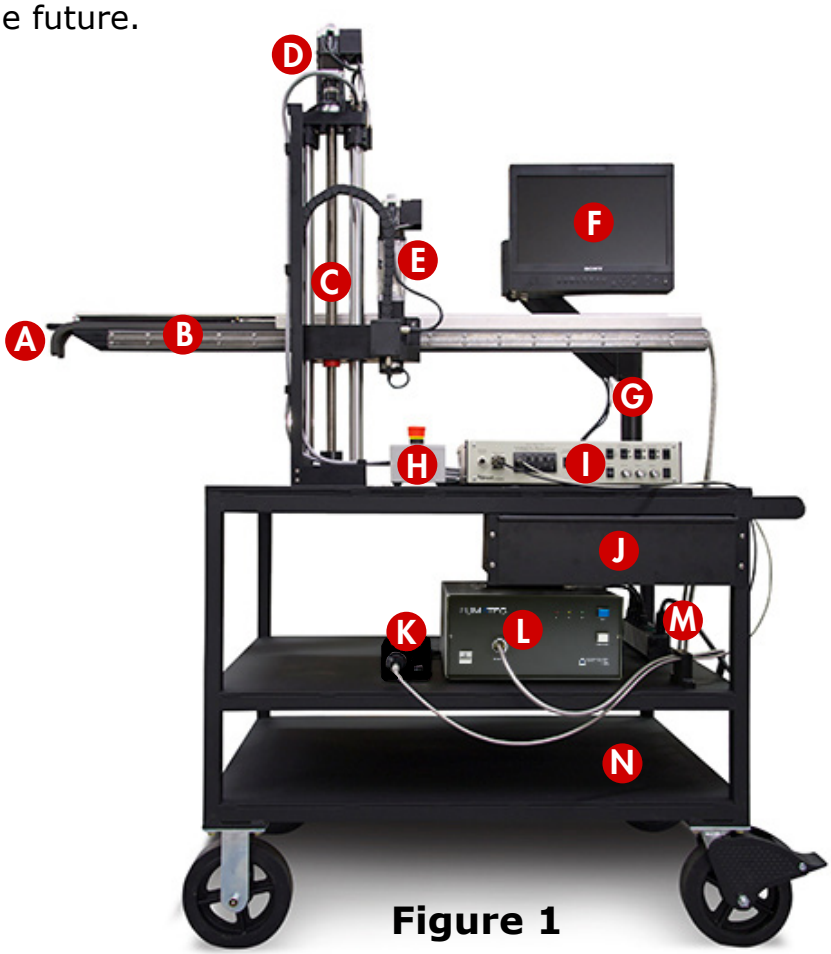

Figure 1

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5.0 Assembly

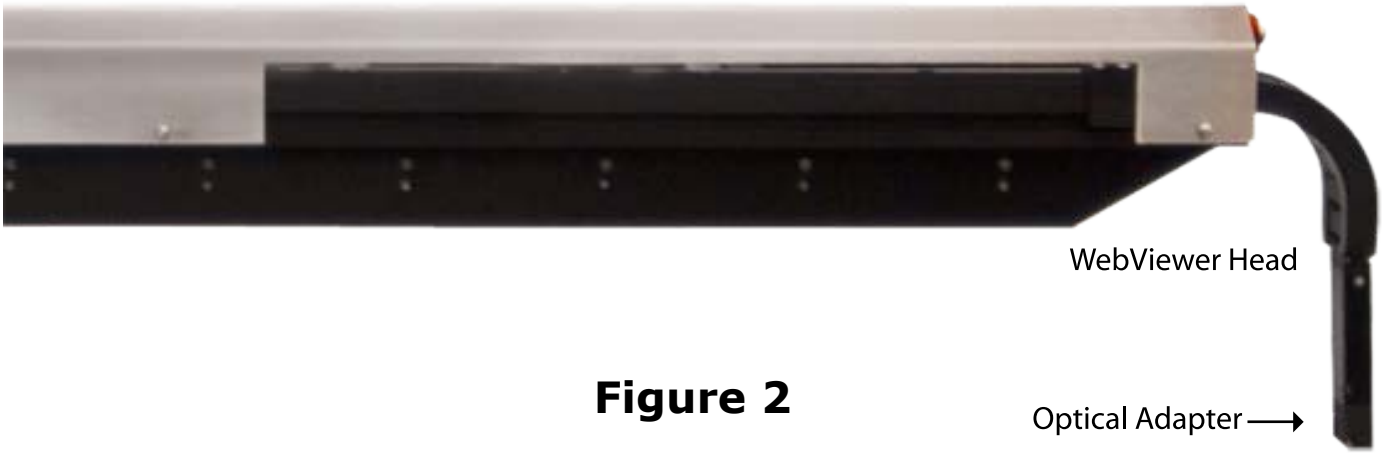

Figure 2

5.1 Assembly Instructions:

1) Bolt the base plate of the Free Standing WebViewer to the inspection cart.

2) Connect light guides and camera connections to their respective sources or controllers (see section 5.2)

5.2 Free Standing WebViewer Setup:

Reference the schematic (figure 11) and the control panel layout (Figure 9 & 10)

1) On the control panel turn the power switch to off
2) Connect WebViewer light guides White (B) and UV (A) to the respective sources
3) Connect WebViewer power and control cable (C) to control unit
4) Connect WebViewer camera cable (D) to control unit
5) Set VIBES/WebViewer switch on the control unit to WebViewer.

Caution: The camera cable (D) has fine pins and must be aligned with the keyway up. The outer threaded ring must be secured finger tight to control unit. Do not force fit this connector pin damage will result.

5.3 Equipment Placement

Place all other components for the WebViewer in a safe, secure location that is free from hazards. The controls for the CCU and light sources should be within easy reach for an operator standing in front of the monitor. Avoid potential pinch points at all times.

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6.0 Operation

6.1 Start Up and Tip Installation

1) After making all connections noted in section 15.3 set power switch to on. The focus and radial reach controls will now operate the WebViewer device.

2) Before changing optical adapters move focus to the NEAR position using the focus control switch on the control unit. Select the appropriate optical adapter and install as shown in Figures 3 - 8.

Figure 3 - Align components

Figure 4 - Align fixed and moveable pins. Note moveable pins align with slots (see pointer)

Figure 5 - Engage Pins

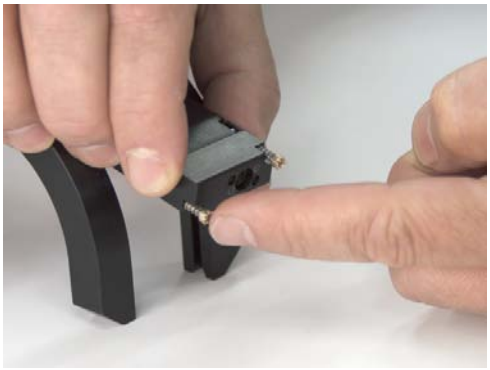

Figure 6 & 7 - Push and rotate pins clockwise 90° to engage counter clockwise 90° to disengage

Figure 7

Figure 8 - Installation complete. Reverse order for removal

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6.0 Operation

6.2 WebViewer Controls (see Figures 9 & 10)

- Position the component to be inspected so that the Free Standing WebViewer boom, when extended, enters the test piece directly.

Insertion:

To control insertion, use the Horizontal Position Handle*

Elevation:

To control elevation, use the Vertical Position Handle*

Radial Reach:

To control the radial reach of the WebViewer, use the rocker switch on the Control Box labeled 'RADIAL REACH'. To insert the WebViewer 'IN', press the switch 'UP'. To retract the WebViewer 'OUT', press the switch 'DOWN'.

Camera Controls:

- Adjust the camera's focus using the focus control found on the Control Box.
- Switch between the Normal and Mirrored views using the rocker switch on the Control Box.
- Adjust Camera's white balance, auto gain control, et. from the camera control unit box

* *Motorize Insertion and Elevation Control is optional*

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6.0 Operation

Control Box Front Panel

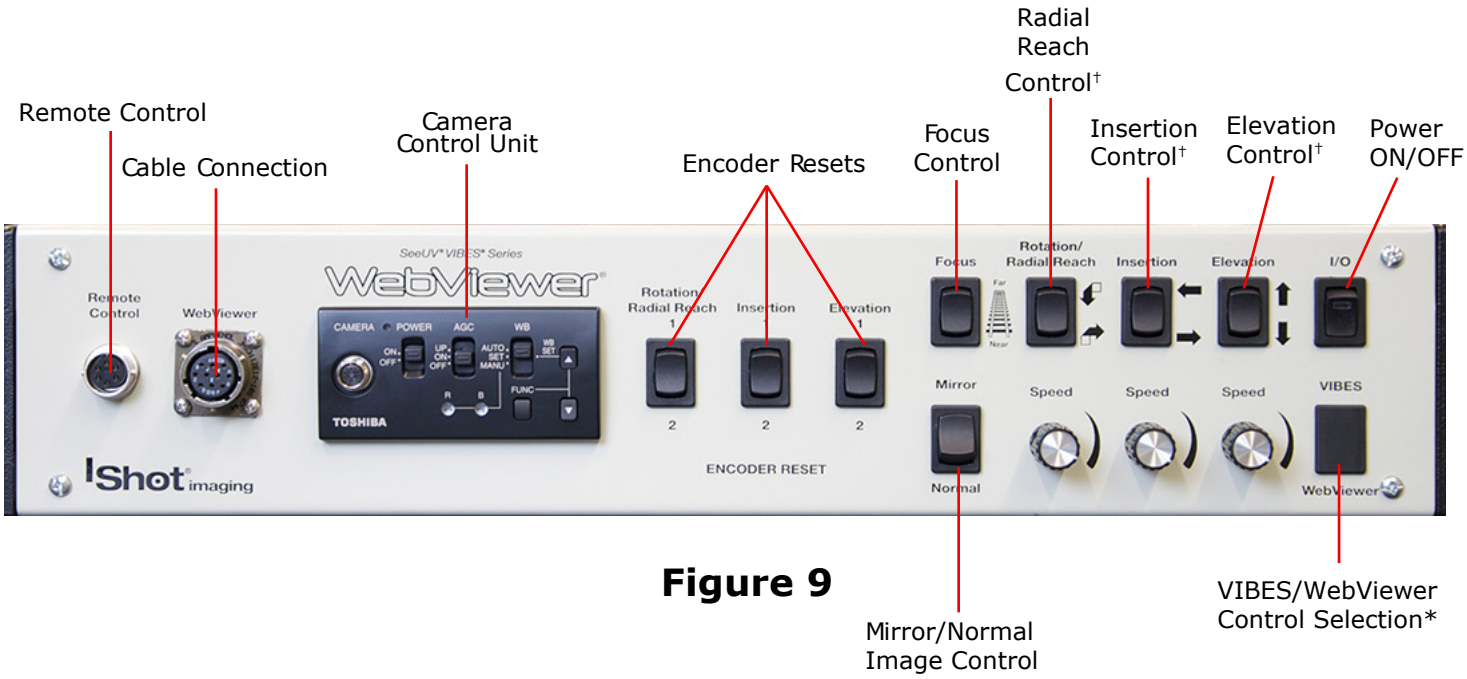

Figure 9

Control Box Rear Panel

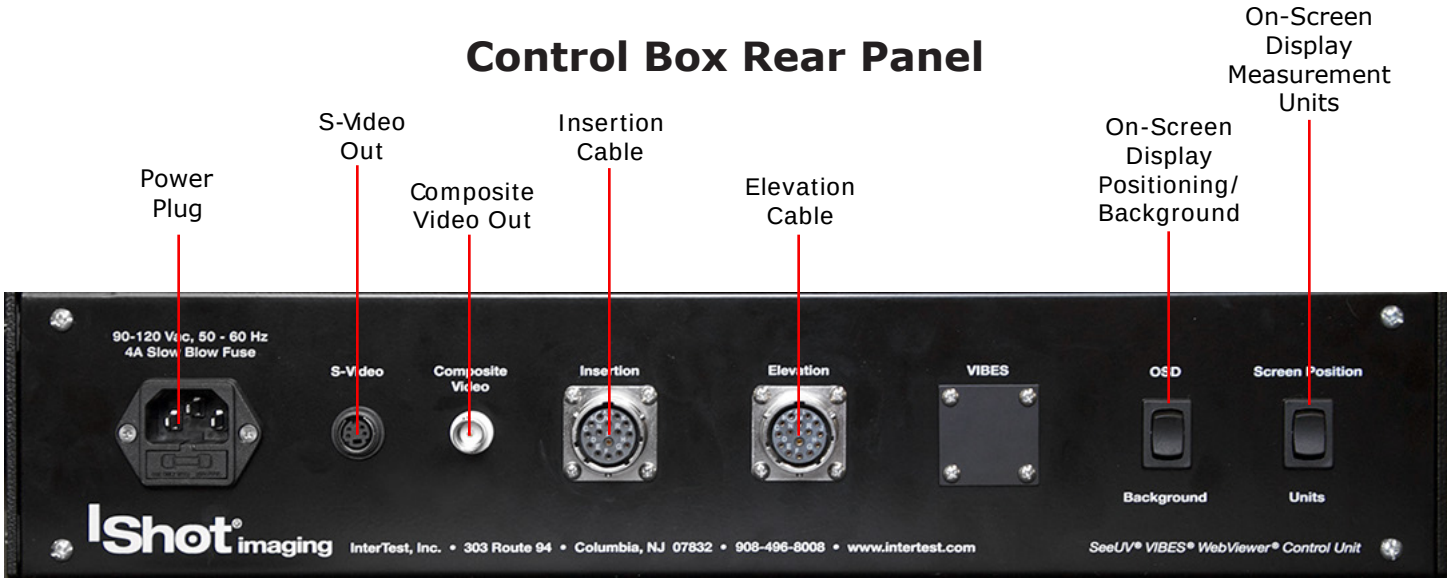

Figure 10

Note: Specifications may be different than pictured above.

** To operate the Free Standing WebViewer® Inspection System, push down on the rocker switch labeled VIBES/ WebViewer on the lower right side of the control box.*

† *Motorized, Insertion, and Elevation controls are added options.*

6.0 Operation

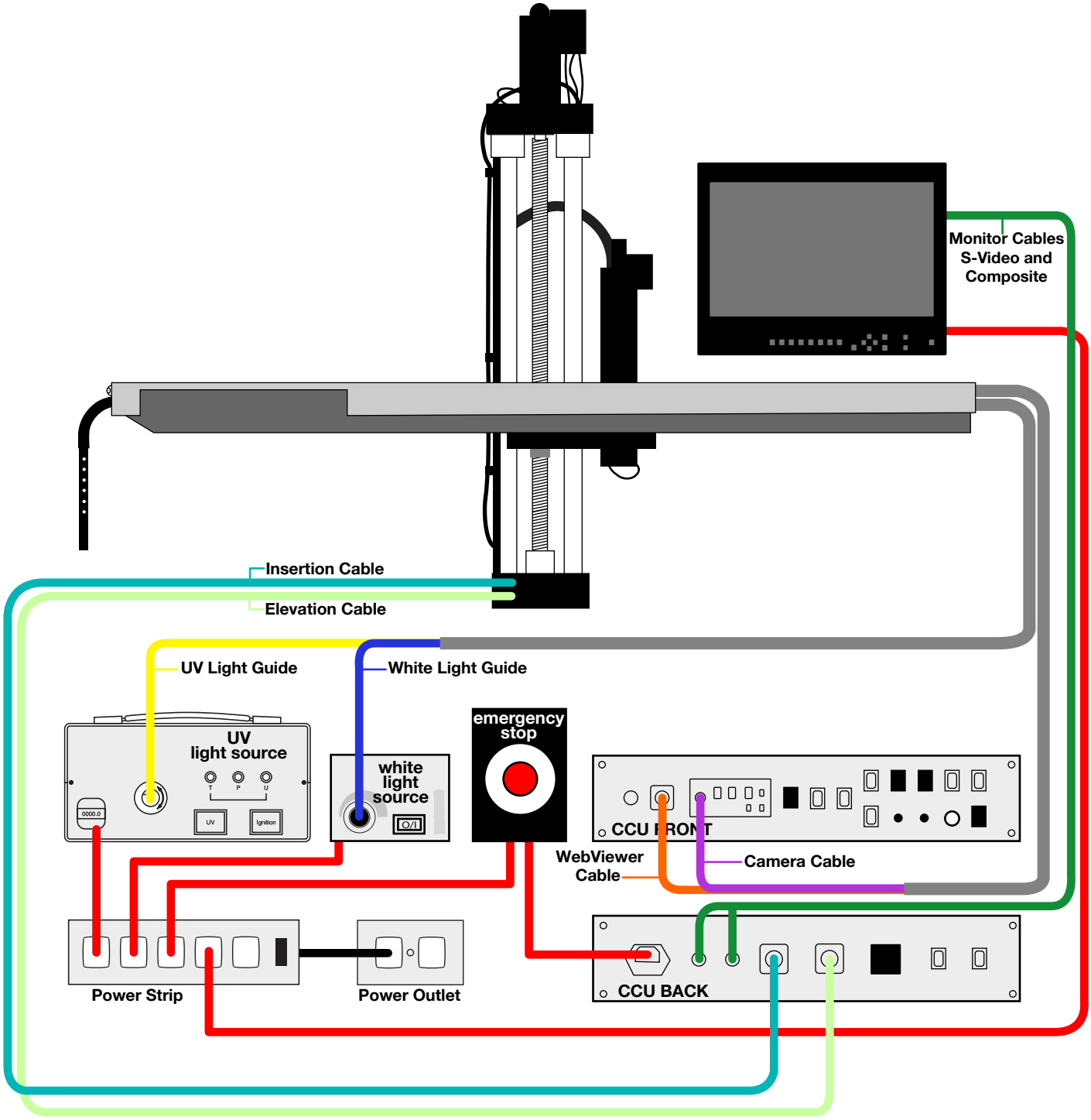

Figure 11

Illustration not to scale. Specfications may be different than pictured above.

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6.0 Operation

6.3 Encoder Controls

The WebViewer is designed to display a total of six (6) encoded values to the monitor. There are two (2) values each for Insertion, Radial Reach and Elevation.

Starting Value:
It is recommended that you use the encoded value 1 as your starting point value. Reset this value just prior to entry into the component. Use value 2 to mark and measure any detected flaws once inside.

Resetting Values:
All encoder values can be reset quickly and simply by pressing the rocker switch on the Control Box that corresponds to the value desired.

Note: Avoid resetting value 1 once inside the component if you are using this as your start value.

6.4 On-Screen Display Options

- By default, the WebViewer's encoder reading will appear onscreen against a background. This can be changed by using the 'OSD Background' switch found on the back of the Control Box.
- On-screen display positioning can be changed by using the 'Screen Position' rocker switch located on the back of the Control Box.
- Measurement units can be changed from Inches to Centimeters by using the rocker switch labeled 'Units' found on the back of the Control Box.

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7.0 Care & Maintenance

7.1 Overall System:

- Do not expose to moisture or direct sunlight.

- Do not expose positioning mechanism to abrasive particulates or environments with airborne debris.

- Always replace blown fuses with identical fuses, rated correctly.

- Never bypass the grounding circuits of system components.

- Bundle all excess cordage to prevent snagging

- Move cart with care. Abrupt stops, excessive forces, and uneven surfaces may cause the cart to turn over, damaging the system and possibly injuring personnel.

- Do not operate near intense electromagnetic fields.

- With the exception of lamp and fuse replacements, refer all service to InterTest technicians.

7.2 Camera Boom:

- Always retract boom before moving cart.

- Do not subject to loads.

- Do not jar.

7.3 WebViewer Attachment:

- Ensure attachment is properly positioned to prevent damage.

- Do not move cart while WebViewer camera is deployed.

- Contact InterTest immediately if you experience problems with camera head or control box use.

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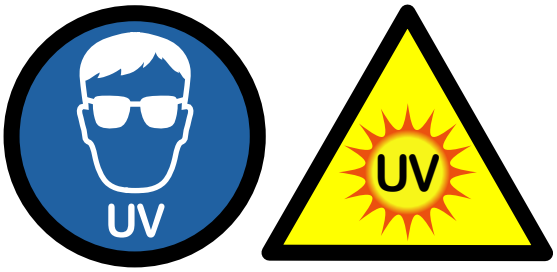
8.0 Safety

Boom Hazard

- Use care when moving the WebViewer. Boom protrudes well past the end of the cart.

Light Sources & Light Guides

- Do not look directly at UV light, damage to your eyes may occur.



- Use care when removing light guides from light sources after use, they will be very hot.

- Never put anything into the light guide connections on the light source but a light guide with the correct adapter.

Moving Components

- The WebViewer contains moving parts. Please keep clear of all moving areas and components to prevent injury.

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9.0 Service Records

Product: Free Standing WebViewer

EM Number: EM18793

Serial Number: _____

Date of Purchase: _____

Date	Service Performed
/ /	
/ /	
/ /	
/ /	
/ /	

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ELMO

Camera Control Unit
Operation Manual

MODEL
CC431E

Thank you for purchasing the ELMO camera control unit CC431E. To use the camera properly, carefully read this operation manual before use. After reading the manual, we suggest you keep it in a convenient place for quick reference.

COMPONENTS

(1) Camera control unit (CCU)
(2) Accessory: Operation manual

NOTE: Camera head, Lens, AC/DC adapter, camera cable and video cable are option.

INFORMATION

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.
Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

USER-INSTALLER CAUTION: Your authority to operate this FCC verified equipment could be voided if you make changes or modifications not expressly approved by the party responsible for compliance to Part 15 of the FCC rules.

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

SAFETY PRECAUTIONS

Read the following safety precautions carefully before using this product. These instructions contain valuable information on safe and proper use that will prevent harm and damage to the operator and other persons. Make sure that you fully understand the following details (indications, graphic symbols) before proceeding to the remaining sections in this manual.

Indication definitions

Indication	Meaning
⚠ Warning	This indicates the existence of a hazard that death or catastrophic bodily injury*1 may result from improper use.
⚠ Caution	This indicates the existence of a hazard that bodily injury*2 or property damage*3 may result from improper use.

*1: Catastrophic bodily injury means loss of eyesight, burns (high and low temperatured), shock, fracture, poisoning, etc. which leaves a sequela and require hospitalization or prolonged treatment.
*2: Bodily injury means injuries, burns and electric shock which does not require hospitalization or prolonged treatment.
*3: Property damage means extended harm to home, household effects, domesticated animals, and pets.

Graphic symbol definitions

Symbol	Meaning
	"⃠"indicates a prohibited action that must not be carried out. The actual prohibited action is indicated in the symbol or nearby graphically or described in text.
	"●"indicates a mandatory action that must be carried out. The actual instruction is indicated in the symbol or nearby graphically or described in text.

⚠ Warning

- **Stop operation immediately when any abnormality or defect occurs.**
  Use during an abnormal condition; such as emitting smoke, burning odors, damage from dropping invasion of foreign objects, etc. may cause fire and/or electric shock. Be always sure to disconnect the power plug from the electrical outlet (socket) at once and contact your dealer.

- **Avoid installing in a shower room or a bathroom.**
  This may cause fire and/or electric shock.

- **Do not operate in places with possibility of becoming wet.**
  This may cause fire and/or electric shock.

- **Do not repair, disassemble and/or modify by yourself.**
  This may cause fire and/or electric shock. Be always sure to contact your dealer for internal repair, check and cleaning of the product.

- **Use the specified power supply.**
  Otherwise, a fire or an electric shock may occur.

- **Don't place things or materials on the unit.**
  Ingress of foreign materials such as metallic things and liquid into the unit may cause a fire or an electric shock.

- **Do not put the product in an unstable, slanting and/or vibrated place.**
  Drop and/or fail of the product may cause injury.

- **Do not touch the power cord or other connection cables during a thunderstorm.**
  This might cause electric shock.

⚠Caution

- **Note the following instructions when installing.**
  - Do not put an inflammable material on the product.
  - Do not put the product on an Inflammable material such as carpet or blanket.
  - Do not block a vent hole.
  - Do not put the product in a narrow space, since the heat generated from the product may be difficult to emanate.

  If you do not follow the above, the heat generated by the product may cause fire.

- **Do not put the product in direct sunshine and/or high temperature.**
  The temperature inside the product may cause fire.

- **Avoid setting in humid, smoky, vaporized or dusty places. A fire or an electric shock may occur in such places.**
  This may cause fire and/or electric shock.

- **Do not point the lens directly at the sun and/or intensive light such as direct sunlight, etc.**
  Focusing of the light may cause injury of eye and/or fire.

- **Do not put the product in your mouth or swallow any parts.**
  This may cause suffocation and/or injury.

- **Ask your dealer to perform a periodical check and internal cleaning (approx. once every five years).**
  Dust inside the product may cause fire and/or trouble. For check and cleaning cost, please consult your dealer.

Disclaimer

We disclaim any responsibility and shall be held harmless for any damages or losses incurred by the user in any of the following cases:

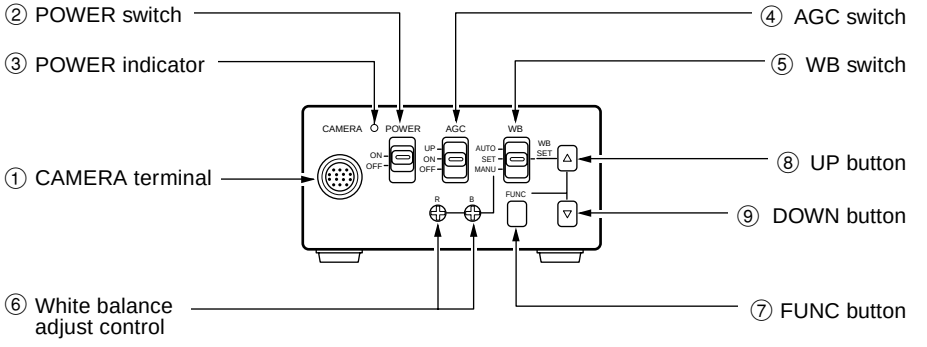
1. Fire, earthquake or any other act of God; acts by third parties; misuse by the user, whether intentional or accidental; use under extreme operating conditions.
2. Malfunction or non-function resulting in indirect, additional or consequential damages, including but not limited to loss of expected income and suspension of business activities.
3. Incorrect use not in compliance with instructions in this instruction manual.
4. Malfunctions resulting from misconnection to other equipment.
5. Repairs or modifications made by the user or caused to be made by the user and carried out by an unauthorized third party.
6. Notwithstanding the foregoing, ELMO's liabilities shall not, in any circumstances, exceed the purchase price of the product.

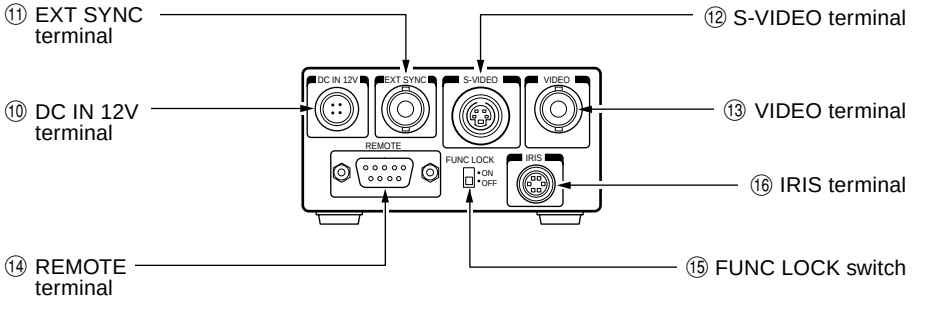
Copyright and Right of Portrait

There may be a conflict with the Copyright Law and other laws when a customer uses, displays, distributes, or exhibits an image picked up by a television camera without permission from the copyright holder. Please also note that transfer of an image or file covered by copyright is restricted to use within the scope permitted by the Copyright Law.

PART NAMES AND FUNCTIONS

Camera Control Unit (CCU)

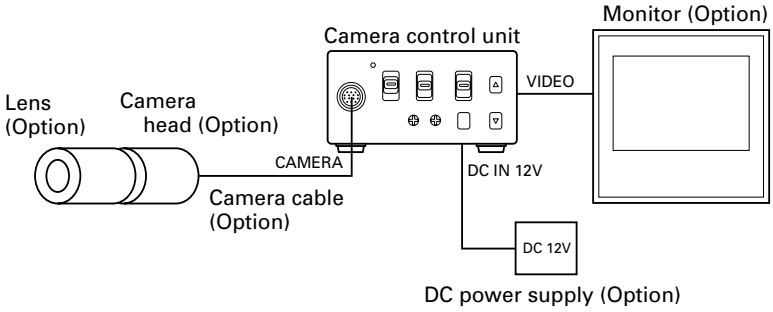




① CAMERA terminal	Connects to the camera head.
② POWER switch	Turns on and off the camera control unit.
③ POWER indicator	Lights up when the power is turned on.
④ AGC switch	Selects the gain mode. (AGC OFF/AGC ON/SENS UP)
⑤ WB switch	Selects the white balance mode. (MANU/SET/AUTO)
⑥ White balance adjust control	Adjusts the R gain and B gain with the white balance mode set to MANU by the WB switch ⑤.
⑦ FUNC button	Determines the setting indication contents when the setting menu is displayed on the screen.
⑧ UP button	Selects the setting item when the setting menu is displayed on the screen. (When the WB switch ⑤ is set to SET, pressing the UP button for more than 2 sec. activates the white balance SET operation.)
⑨ DOWN button	Selects the setting item when the setting menu is displayed on the screen.
⑩ DC IN 12V terminal	Accepts a DC power supply (12V).
⑪ EXT SYNC terminal	Accepts an external sync signal to synchronize the camera output signal with external signal.
⑫ S-VIDEO terminal	Connects terminal to S input terminal of a monitor or a VCR, etc.
⑬ VIDEO terminal	Connects terminal to video input terminal of a monitor or a VCR, etc. Used at the same time with the S-VIDEO terminal.
⑭ REMOTE terminal	Controls the functions with RS232C.
⑮ FUNC LOCK switch	Locks the switches and control on the front panel. When the FUNC LOCK switch is set to ON, all settings except for the POWER switch ② and the file item of the screen setting menu.
⑯ IRIS terminal	Connect when using an automatic iris lens (with CN43H/CN42H camera head).

CONNECTION

Example of Standard Connection



Cautions on Connection

- When connecting or disconnecting the camera cables (for the camera head and camera control unit), always turn off the power switch of the camera control unit first. If not, the camera head may be damaged.
- When connecting the camera, always turn off the power of the camera control unit and any other equipment connected.

① Remove the camera head protection cover and mount a lens (option).

② Connect the camera head and the camera control unit with the camera cable (option).

③ Connect the VIDEO (or S-VIDEO) terminal of the camera control unit to a video input terminal of a monitor, etc.

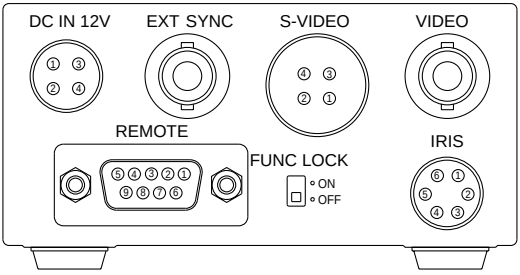
④ Connect a DC power supply (12V) to the DC IN 12V terminal of the camera control unit.

- For DC power supply connecting to DC IN 12V terminal, use UL listed and/or CSA approved ungrounding type AC adaptor with the specifications described below.

Power supply voltage:	DC12V ± 0.5V
Current rating:	More than 800 mA
Ripple voltage:	Less than 50 mV(p-p)
Connector:	HR10A-7P-4S (Hirose)
	Pins 1, 2: e , Pins 3, 4: d

Connection on CCU Back Panel

The figure below shows the back panel connection terminals of the camera control unit.



Connector Pin Assignments

DC IN 12V

1	+12V
2	+12V
3	GND
4	GND

S-VIDEO

1	GND
2	GND
3	Y
4	C

REMOTE

1	NC
2	TXD
3	RXD
4	DSR
5	GND
6	DTR
7	CTS
8	RTS
9	NC

IRIS

1	NC
2	VIDEO
3	GND
4	+12V
5	GND
6	NC

* When using the REMOTE terminal, please consult with your dealer.

- **Using the auto-iris lens**

  The following table shows the IRIS terminal when using the auto-iris (EE) lens.

Table 1

IRIS Connector Terminal No.	Signal	Rated
1	—	
2	Video signal	0.8 ± 0.1Vp-p
3	GND	
4	Power (DC)	+ 12V (less than 50mA)
5	(GND)	
6	—	

The IRIS connector used for the IRIS terminal: HR10A-7P-6P of HIROSE ELECTRIC CO., LTD.

- EE lens

The IRIS extension cable (optional) is usable for the EE lens. Use the connector HR10A-7P-4P of HIROSE when the IRIS extension cable is selected. For connections, follow the instruction below.

When the IRIS extension cable is used under the right condition, the cable automatically converts to connection for the EE lens in Table 1.

EE lens connector HR10A-7P-4P

1. Power (+)
2. GND
3. Video signal
4. Unconnected or ground

Notes:

- **Current consumption must be 50 mA or less.**
- **Avoid an incorrect connection or short-circuit.**

USING CAMERA CONTROL IN FIXED POSITION

The camera control unit can be directly mounted by using M3 screws if the four rubber feet are removed on bottom of the control unit. When mounting directly as described above, do not use longer screws. If the screws enter by more than 5 mm from the control unit mounting surface, they will cause a short-circuit inside the control unit. For details of screw hole locations, refer to “PROFILE” of the camera control unit.

HOW TO USE THE CAMERA

Turn on the POWER switch on the camera control unit and adjust the lens iris and focus while observing a picture on the monitor screen. To obtain the best picture quality, perform various settings.

AGC (Automatic Gain Control)

AGC functions "OFF", "ON" or "UP" can be selected on the screen menu. Generally, the camera is used with the AGC set to OFF, but when increased camera sensitivity is required, it is set to ON. When more sensitivity is required, "UP" is selected. With the AGC ON, the camera sensitivity approximately doubles, and with the UP selected the sensitivity approximately doubles again, but noise will also increase. We recommend you increase intensity of the lighting to obtain good pictures.

The AGC measurement area is the same as that used for "AREA". Refer to "AREA (Measurement Area)".

White Balance

A white balance adjustment is necessary to obtain pictures with correct color tone. This camera allows you to select the white balance adjustment of "AUTO", "SET", and "MANU". With the AUTO mode selected, the camera adjusts the white balance automatically. Most of shooting will be made in the AUTO mode. The color temperature applicable to this camera is about 2500 to 7000K.

	AUTO	**SET**	**MANU**
Outline	Camera automatically measures object color temperature and adjusts the white balance.	Adjust white balance by pressing "UP" button on the camera control unit while shooting a white object.	Adjust R (red) and B (blue) levels on the control unit while shooting a white object.
Features	Automatically traces variations of color temperature and adjusts the white balance.	Measurement accuracy is higher than AUTO mode. This mode is effective when shooting under less variations of color temperature.	Measurement accuracy is higher than SET mode. This mode is effective for users desiring specific color temperature, also effective when shooting under least variations of color temperature.
Notes	Under poor illumination, white balance may not be corrected.		Adjustment will be made by viewing monitor or vector scope.

(1.1) White balance adjustment in SET mode

① Set the WB switch to "SET" position.

② Shoot a white object to fill entire screen and press the UP button (▲) for about 2 sec.

③ When the white balance adjustment completes, the letters "WB SET" blinking at the upper right of the screen changes to "WB OK" and then turns off. If the "WB NG" is displayed, it shows the white balance is out of the adjustment range. This is caused in the white object is not shot or the video level is set too high or too low even if the white object is shot. Shoot the white object or set the video level correctly.

Note:

- **With the screen menu displayed, the UP button is used for moving the cursor or modifying the data. To activate the SET mode by pressing the UP button, turn off the screen menu.**

(1.2) White balance adjustment in MANU mode

① Set the WB switch to "MANU" position.

② Shoot the white object and adjust the white balance by adjusting the white balance adjust controls "R" and "B" with the screwdriver while observing the monitor or vector scope.

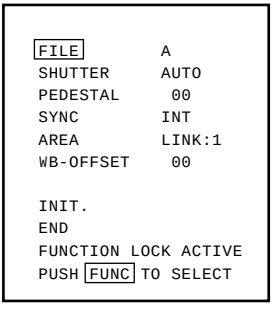
FUNC (Function Lock)

The FUNC LOCK switch protects settings even if a switch is accidentally pressed after setting. When the FUNC LOCK switch is ON, only the following functions are available.

POWER switch (ON/OFF)

FILE (A/B) in menu

Settings will not be changed even if the other switches are operated. In the menu screen, all except FILE and END are displayed in black letters (white when the FUNC LOCK switch is OFF) and "FUNCTION LOCK ACTIVE" blinks to indicate that the FUNC LOCK switch is ON.



OPERATION OF SCREEN MENU

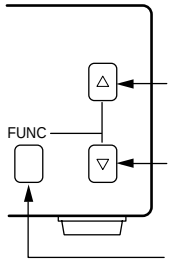
Setting while monitoring the menu on the monitor screen is possible. Following seven items can be set.

① Scene file
② Electronic shutter (AUTO/MANUAL), backlight correction
③ Pedestal level
④ Phase matching in external synchronization (horizontal/subcarrier synchronization)
⑤ White balance, auto electronic shutter, AGC measurement area
⑥ White balance offset
⑦ Scene file factory setting

Press the FUNC button to display the menu. The menu appears as shown on the right. Current setting is displayed. Move the cursor to a desired item by moving the cursor up or down using the UP and DOWN buttons, and set an item by pressing the FUNC button. To quit the menu, move the cursor to END and press the FUNC button.

Main Menu

```
FILE          A
SHUTTER       AUTO
PEDESTAL       00
SYNC          INT
AREA          LINK:1
WB-OFFSET      00

INIT.
END

PUSH FUNC TO SELECT
```



UP button: The cursor position or data value goes up.

DOWN button: The cursor position or data value goes down.

FUNC button: Selects the item or data value.

Notes:

- **When setting is changed in the menu screen, be sure to move the cursor to "END" and press the FUNC button to clear the menu. New setting is stored in the camera.**
- **Don't turn off the POWER switch before clearing the menu. New setting is not stored, and old data remains.**

FILE (Screen File)

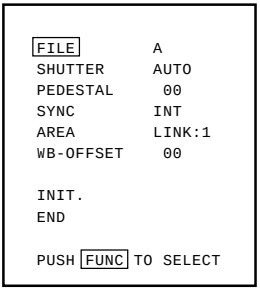
There are two scene files A and B which can be selected according to the shooting state.

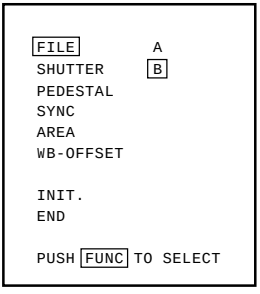
① Move the cursor to "FILE" in the main menu using the UP or DOWN button.

② Press the FUNC button to display the contents to set FILE, A or B. Move the cursor to A or B using the UP or DOWN button. Press the FUNC button to set the contents.

Note:

- **The scene file is for the menu screen. The AGC switch and the WB switch are valid in their set positions.**





SHUTTER (Electronic Shutter, Backlight Control)

The electronic shutter is available in AUTO (auto electronic shutter), 1/60 ~ 1/10000 and SS (synchronized scan).

AUTO: Controls electronic shutter automatically to get the set video level. Can be selected in backlight correction, peak measurement, average measurement and measurement area.

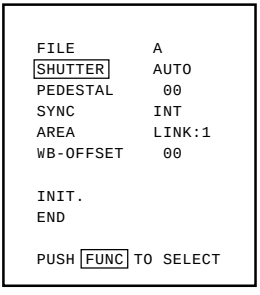
1/60~1/10000: Exposure time can be fixed to any one of 1/60, 1/100, 1/250. 1/500, 1/1000, 1/2000, 1/4000 and 1/10000.

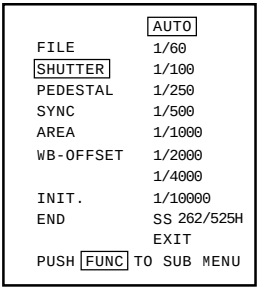
SS: Sets the electronic shutter in horizontal scanning time (1H).

① Move the cursor to "SHUTTER" in the main menu using the UP or DOWN button.

② Press the FUNC button to display AUTO ~ EXIT to set SHUTTER. Move the cursor to a desired item of AUTO ~ SS using the UP or DOWN button. Press the FUNC button to frame a desired item in white.

③ Move the cursor to "EXIT" using the UP or DOWN button. Press the FUNC button. Return to the main menu.





(1) Detail setting in AUTO mode (Auto Electronic Shutter)

When the FUNC button is pressed after AUTO is selected, the submenu for SHUTTER:AUTO appears. Set details in this screen.

LEVEL: Adjust the auto electronic shutter video level. Larger values indicates brighter level, and vice versa. Data can be set in a range of –30 to +30.

BLC: Correction for backlight. This can be set when the measurement area is set to one of "1/2", "1/8" and "SLIT" for AREA in the main menu. Backlight is corrected at ON, but not at OFF. When the measurement area is "1", BLC is displayed in black letters and setting is impossible.

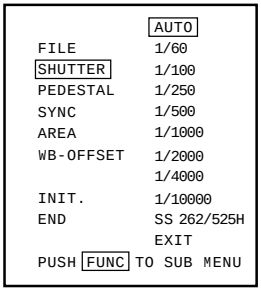
PEAK:AVE: Selects peak or average for measurement of auto electronic shutter video level. The peak to average ratio can be changed in a range of 00:10 to 10:00.

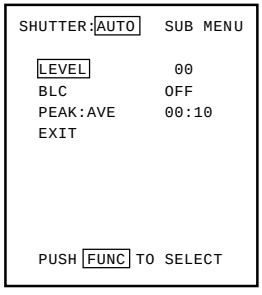
Note:

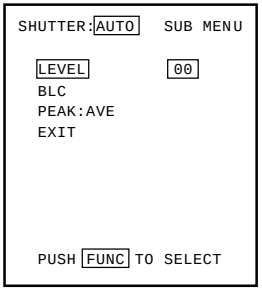
- **While BLC is ON, PEAK:AVE is displayed in black letters and setting is impossible.**

① Move the cursor to a desired item (LEVEL, BLC, PEAK:AVE) using the UP or DOWN button. Press the FUNC button. The cursor moves to the data of the selected item. Set the data by pressing the UP or DOWN button.

② After setting the data, press the FUNC button. The cursor moves to the item. To finish setting of submenu, move the cursor to "EXIT" and press the FUNC button to return to "SHUTTER" in the main menu.







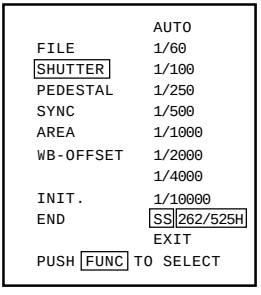
Example of display for LEVEL

(2) SS (Synchronized Scan)

① Move the cursor to "SS" using the UP or DOWN button. Press the FUNC button. (SS is set.)

② Press the FUNC button. The cursor moves to the data and blinks. The data varies in 1/525H to 262/525H when the UP or DOWN button is pressed. Set a desired data, and press the FUNC button.

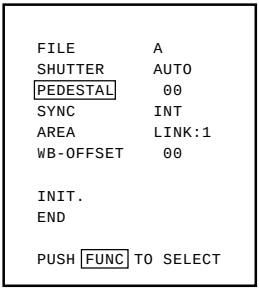
③ Return to "SS" of SHUTTER.

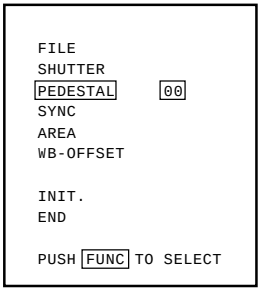


PEDESTAL (Pedestal Level)

① Move the cursor to PEDESTAL using the UP or DOWN button.

② Press the FUNC button. The cursor moves to the data. Set the data using the UP or DOWN button. The data can be set in a range of –50 to +50. After setting the data, press the FUNC button to return to the main menu.





SYNC (Setting for External Sync)

This adjusts horizontal phase and subcarrier phase while externally synchronized. INT is displayed for internal synchronization and changed automatically to EXT when the external synchronizing signal is entered.

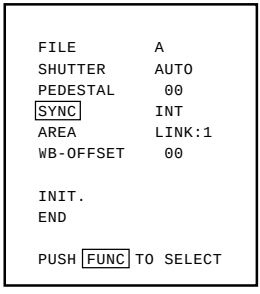
① Move the cursor to "SYNC" using the UP or DOWN button.

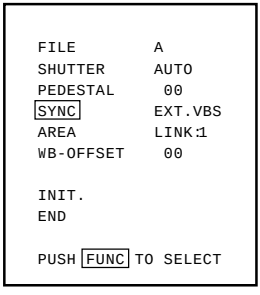
② Press the FUNC button to display the available items (H-PHS, SC-PHS, SC-FINE).

H-PHS: H (horizontal) phase matching 0 ~ 99

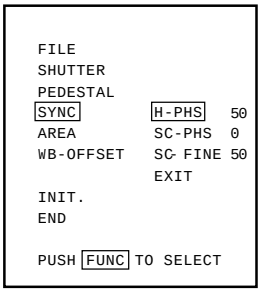
SC-PHS: SC (subcarrier) rough adjustment 0, 90, 180, 270

SC-FINE: SC (subcarrier) fine adjustment 0 ~ 99





③ Move the cursor to a desired item (H-PHS, SC-PHS, SC-FINE) using the UP or DOWN button. Press the FUNC button and the data is displayed. Set the data using the UP or DOWN button and press the FUNC button to select the data. To return to the main menu, move the cursor to EXIT and press the FUNC button.

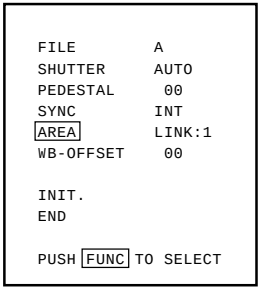


Note:

- **If the internal synchronization is set while the SYNC item (H-PHS, SC-PHS, SC-FINE) is being displayed, the display automatically turns to INT disabling setting.**

AREA (Measurement Area)

AREA is a measurement AREA item for AGC, auto electronic shutter and white balance. The AREA setting for AGC and auto electronic shutter are the same, so each setting can not be made separately. However, the AREA setting for white balance can be made separately independing on the AREA setting for AGC and auto electronic shutter.



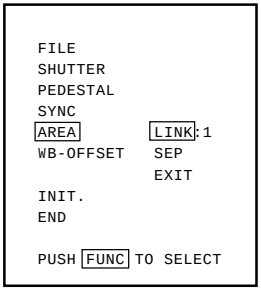
① Move the cursor to AREA using the UP or DOWN button.

② Press the FUNC button to display the available items (LINK, SEP).

③ Move the cursor to a desired item (LINK, SEP) using the UP or DOWN button.

(1) Setting AREA the same for AGC, auto electronic shutter and white balance

① Move the cursor to LINK using the UP or DOWN button.



② Press the FUNC button to display data 1 ~ SLIT for LINK. Move the cursor to a desired item of AREA data (1, 1/2, 1/8, SLIT) using the UP or DOWN button.

③ Press the FUNC button to set the data.

```
FILE
SHUTTER
PEDESTAL
SYNC
[AREA]          [LINK] [1]
WB-OFFSET       SEP  1/2
                EXIT 1/8
INIT.                SLIT
END

PUSH [FUNC] TO SELECT
```

(2) Setting AREA for white balance separately from the AREA setting for AGC and auto electronic shutter

① Move the cursor to SEP using the UP or DOWN button, and press the FUNC button. SEP is selected and framed in white.

② Press the FUNC button to display the submenu.

③ Move the cursor to a desired item using UP or DOWN button.

WB: Measurement AREA for white balance
1, 1/2, 1/8, SLIT
Valid when the WB switch is AUTO and/or SET.

SHUTTER: Measurement AREA for auto electronic shutter and AGC
1, 1/2, 1/8, SLIT

④ Press the FUNC button to select a desired item. The setting data (1, 1/2, 1/8, SLIT) is displayed. Move the cursor to a desired item using UP or DOWN button, then press the FUNC button to select the data.

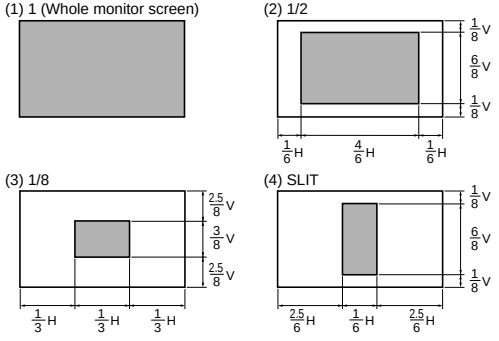
⑤ The submenu for AREA appears. Move the cursor to EXIT, and press the FUNC button to return to the main menu.

```
FILE
SHUTTER
PEDESTAL
SYNC
[AREA]          LINK:1
WB-OFFSET       [SEP]
                EXIT
INIT.
END

PUSH [FUNC] TO SELECT
```

```
AREA:[SEP]      SUB MENU

[WB]            1
SHUTTER         1
EXIT

PUSH [FUNC] TO SELECT
```

```
AREA:[SEP]      SUB MENU

[WB]            [1]
SHUTTER         1/2
EXIT            1/8
                SLIT

PUSH [FUNC] TO SELECT
```

The size of AREA is approximately as shown below.



WB-OFFSET (White Balance Offset)

This offsets the focusing point of white balance in the direction of orange or cyan when the WB switch is set to “SET”.

① Move the cursor to WB-OFFSET using the UP or DOWN button.

② Press the FUNC button. The cursor moves to the data item.

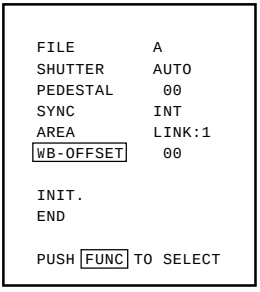
③ Change the data using the UP or DOWN button.

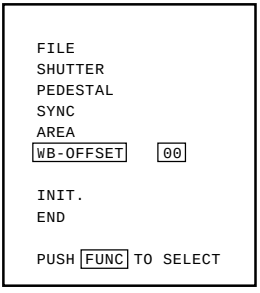
+20 ~ –20

+ Orange direction

– Cyan direction

Press the FUNC button at a desired data value to set the data.





INIT. (Scene File Initialization)

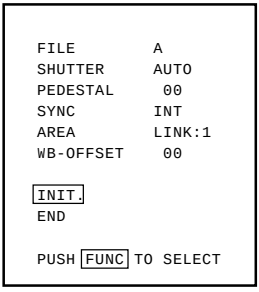
This reset settings of the scene file to the factory setting.

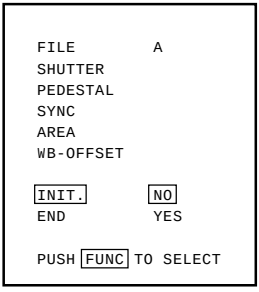
① Select a scene file (A or B) to initialize the setting in FILE.

② Move the cursor to INIT. using the UP or DOWN button.

③ Press the FUNC button. The selected scene file (A or B) is displayed. NO/YES is displayed.

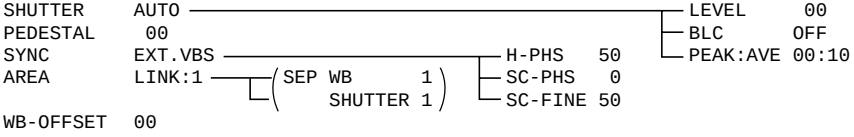
④ Select NO when not initializing. Select YES and press the FUNC button when initializing.





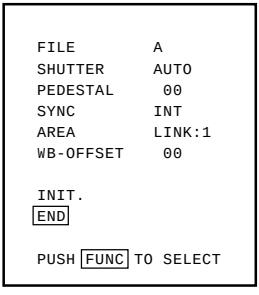
Factory setting (the following setting if INIT. is executed)

The setting is common to scene files A and B.



END (End of Screen Display)

To finish the menu, move the cursor to END using the UP or DOWN button and press the FUNC button. To store the setting in the camera, be sure to clear the display by END item. When the display is cleared, the setting is stored in the camera. If the POWER switch is turned off while the menu is being displayed, the setting is not stored and the old data remains.



EXTERNAL SYNC

When using the camera with an external sync, connect a composite video signal (C-VIDEO) to the EXT SYNC terminal on back of the camera control unit. When the camera accepts external sync, it is automatically switched from the internal sync to the external sync.

(1) External sync signal input conditions

C-VIDEO	:	SYNC section	0.3 ± 0.1V
(75Ω unbalanced)		BURST section	0.3 ± 0.1V

(2) External sync frequency range

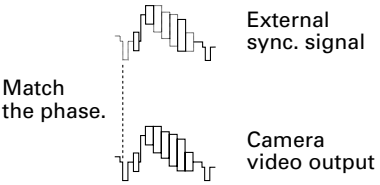
Within ±50 ppm referred to NTSC standard frequency
(H frequency 15733.5 Hz to 15735.0 Hz)

(3) Using the camera with external sync signal

When using more than two cameras in external synchronization, this adjustment allows matching of picture tone between two cameras. Adjust H (horizontal) phase and SC (sub carrier) phase if necessary.

(3.1) H (horizontal) phase adjustment

Observe the external sync signal and video output signal on the camera with a dual trace oscilloscope, and adjust "H-PHS" of "SYNC" on the screen menu so that the H phase matches.



(3.2) SC (sub carrier) phase adjustment

Perform a coarse adjustment for 0, 90, 180, or 270 degrees in "SC-PHS" on the screen menu and then perform a fine adjustment with "SC-FINE". Using a vector scope for the phase adjustment will provide more accuracy.

CAUTIONS ON USE AND INSTALLATION

- **Carefully handle the units.**
  Do not drop, or give a strong shock or vibration to the camera. This may cause problems. Treat the camera cables carefully to prevent cable problems, such as cable breakdown and loosened connections.
- **Do not shoot intense light.**
  If there is an intense light at a location on the screen such as a spot light, a blooming and smearing may occur. When intense light enters, vertical stripes may appear on the screen. This is not a malfunction. Ghosts may occur when there is an intense light near the object. In this case, change the shooting angle.
- **Install the camera in a location free from noise.**
  If the camera or the cables are located near power utility lines or a TV, etc. undesirable noise may appear on the screen. In such a case, try to change the location of the camera or the cable wiring.
- **Moire**
  When thin stripe patterns are shot, stripe patterns that are not actually there (moire) may appears as interference stripes. This is not a malfunction.
- **Operating ambient temperature and humidity.**
  Do not use the camera in places where temperature and humidity exceed the specifications. Picture quality will lower and internal parts may be damaged.

  Be particularly careful when using in places exposed to direct sunlight. When shooting in hot places, depending on the conditions of the object and the camera (for example when the gain is increased), noise in the form of vertical strips or white dots may occur. This is not a malfunction.
- **Handling of the protection cap.**
  Keep the protection cap away from children. Children may put them into mouth or swallow them accidentally. The protection cap protects the image sensing plane when the lens is removed from the camera, do not throw away.
- **When not using the camera for a long-time.**
  Stop supplying power.
- **When cleaning the camera**
  Always turn off the power and clean with a piece of soft dry cloth. Do not use benzine, alcohol, thinner, household detergents, chemically treated cloths, etc. If used, coating and printed letters may be discolored. When cleaning the lens, use a lens cleaning paper, etc.
- **Avoid using or storing the camera in the following places:**
  Places filled with highly flammable gas.

  Places near gasoline, benzene, or paint thinner.

  Places subject to strong vibration.

  Places contacting chemicals (such as pesticides), rubber or vinyl products for a long period of time.

TROUBLESHOOTING CHART

Symptom	Items to be checked
No picture	• Is the power supplied correctly? • Is the lens iris adjusted correctly? • Are the cables connected correctly?
Poor color	• Is the monitor (TV) adjusted correctly? • Is the white balance of the camera adjusted correctly? (in modes other than automatic trace) • Is the illumination dark? • Is the SC phase adjusted correctly? (External sync)
"HEAD UNCONNECTED"or "CABLE DETECT ERR" is displayed on the screen	• Turn the power of the camera off, make proper connection for the camera head, camera cable, and camera control unit, and then turn the power on again. (Improper connection may cause the trouble.)

OPTIONAL PARTS

Camera head

Type	Code #	
MN43H	9742-9	ϕ 17mm Micro camera head
QN42H	9657	ϕ 7 mm Super-micro camera head
QN42HL	9657-9	ϕ 7 mm Super-micro camera head
CN43H	9743-9	C-mount camera head
UN43H	9744-9	ϕ 12 mm Micro camera head

Camera cable (for MN43H, CN43H, UN43H, MN42H and CN42H)

Type	Code #	Nominal length	Diameter
EMC-02H	9833	2 m	5.0 mm
EMC-03H	9833-1	3 m	5.0 mm
EMC-05H	9833-2	5 m	5.0 mm
EMC-12H	9833-3	12 m	5.0 mm
EMC-20H	9833-4	20 m	5.0 mm
EMC-30H	9833-5	30 m	5.0 mm
EMC-54H	9833-6	54 m	5.0 mm

* QN42H camera head is equipped with 3.5 m camera cable.
* QN42HL camera head is equipped with 15 m camera cable.
* EMC-54H cable can be used with MN43H/MN42H/CN43H/CN42H cameras (except UN43H)

Lenses

A wide variety of optional micro and super-micro lenses are available for MN43H and QN43H camera heads. Consult with Elmo dealers for details.

SPECIFICATIONS

Specification with micro camera head (MN43H) connected.

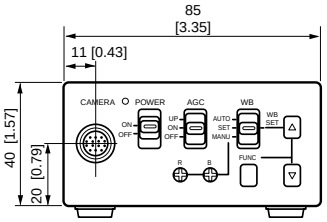
Power supply		DC12V ± 0.5V
Power consumption		310 mA
Image sensor		1/2 inch IT-CCD
Effective pixels		Horizontal: 768 pixels, Vertical: 494 pixels
Effective image area		Horizontal: 6.54 mm, Vertical: 4.89 mm (1/2 inch type)
Scanning system		2:1 interlace
Scan frequency		Horizontal: 15.734 kHz, Vertical: 59.94 Hz
Sync system		Internal/External (automatic switching)
Resolution		Horizontal: More than 470 lines, Vertical: More than 350 lines
Standard intensity of illumination for objects		30 lx (F1.6, 3000K)
Minimum intensity of illumination for objects		2.5 lx (F1.6, 3000K)
S/N ratio		46 dB or more
Video output		VBS 1.0 V(p-p), (BNC terminal) NTSC system Y/C separation output (S terminal)
Output impedance		75Ω unbalanced
External sync	Input	VBS 1.0 V(p-p) (BNC terminal) NTSC 75Ω unbalanced
	Adjustment function	Subcarrier phase, H phase
White balance		Automatic/set/manual
Gain switch (AGC)		SENS UP (+6 dB)/ON/OFF
Electronic shutter		Automatic, 1/60s, 1/100s, 1/250s, 1/500s, 1/1000s, 1/2000s, 1/4000s, 1/10000s, synchronized scan
Operating temperature/ humidity		14°F to 104°F (–10°C to +40°C)/Less than 90%
Anti-vibration/ shock characteristics		70 m/s^2 (10 to 200 Hz)/700 m/s^2
Weight		Control unit: 0.86 lbs (390g)
Dimensions (Without protrusion)		Control unit: W: 3.35”, H: 1.57”, D: 6.14” (W: 85 mm, H: 40 mm, D: 156 mm)

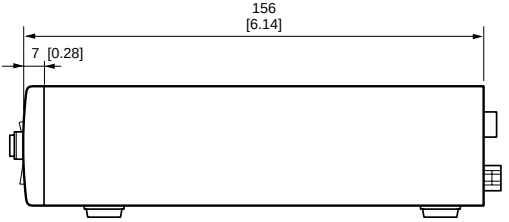
Design and specifications are subject to change without notice.

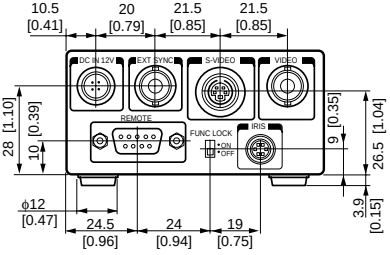
PROFILE

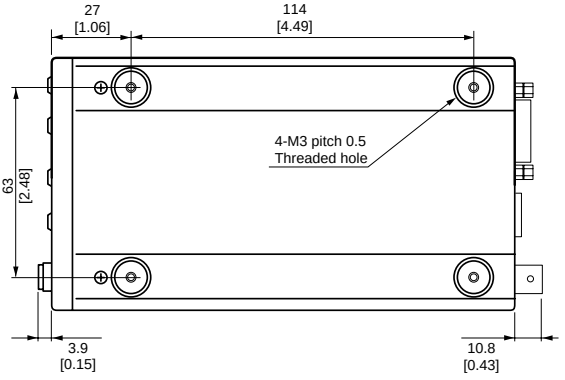
Unit : mm [inch]
ø : diameter

Camera Control Unit









Servicing Instructions for Service Personnel

Connection to Camera Head (MN42H/CN42H)

When connecting to the camera head (MN42H/CN42H), select the internal switch inside the camera controller following to the procedures below.

① After turning off the power, remove all the cables connected to the camera controller.

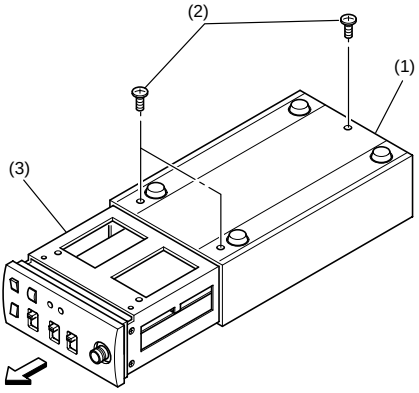
② Remove three screws on the bottom chassis of the camera control unit to remove the internal unit.

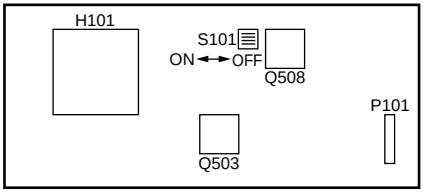
③ Turn off No. 3 of S101 switch located on the component side of the internal circuit unit PC board.

No3 of S101 switch	Applicable camera head to connect
OFF	MN42H CN42H
ON	MN43H CN43H UN43H QN42H QN42HL

Note: Do not change the switch settings other than S101. If you change the settings, the normal image may not be obtained.

④ Perform the reverse procedures to assemble.





MIDORI™

ULB-35 SERIES
LED LIGHT SOURCE

OPERATING MANUAL

Preface

Thank you for purchasing the Midori™ fiber optic illuminator which utilizes state-of-the-art solid-state illumination technology. The light source is a high output, efficient, compact and lightweight fiber optic light source for industrial applications where space is a premium. The ULB-35 series fiber illuminators utilize eco-friendly solid state LED lighting technology, exhibits instant-on and electronic intensity dimming capability with long operating lifetime. The Midori™ ULB-35 LED fiber illuminator is equipped with an ACMI fiber receptacle with separate Storz and Olympus style screw-in adapters available to accommodate these other common fiber cable types. The ULB-35 accepts 12V DC input voltage for portable battery operation as well. Please read this operating manual in its entirety before using this product.

Contents

System Symbol Descriptions

Caution: Consult accompanying documentation

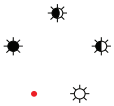
Caution: Hot Surface

Caution

Hazard Warning

Lamp On

Lamp Off



Light; Lighting; Illumination Intensity

Bright Light

Storage Humidity

Transport Temperature

Alternating Current

Direct Current

Manufacturer

Do Not Immerse in Any Liquid

Do not dispose of this product as unsorted municipal waste. Prepare this product for reuse or separate collection as specified by Directive 2002/96/EC of the European Parliament and the Council of the European Union on Waste Electronic and Electrical Equipment (WEEE). If this product is contaminated, this directive does not apply.

Warning and Precautions / Mises en garde et précautions

WARNING / MISE EN GARDE

There are no user serviceable or replacement parts. Do not attempt to dismantle box or remove top cover. / Aucune pièce ne peut être réparée ou remplacée par l'utilisateur. Ne pas essayer de démonter la boîte ou de retirer le couvercle du dessus.

WARNING / MISE EN GARDE

Only qualified personnel should make electrical inspections and repair of the LED Light Source. / Seul le personnel qualifié doit effectuer les vérifications électriques et les réparations de cette source de lumière à DEL.

WARNING / MISE EN GARDE

The high intensity light at the front of the LED Light Source and at the tip of the fiber-optic bundle will create high temperatures and bright light. To minimize the risk of injury, avoid direct viewing or contact. / La lampe à haute intensité, située sur le devant de la source de lumière à DEL et sur le bout du faisceau de fibres optiques, générera beaucoup de chaleur et une lumière vive. Afin de réduire les risques de blessures, éviter de toucher l'appareil ou d'exposer directement l'œil à la lumière de la lampe.

WARNING / MISE EN GARDE

To prevent temporary blinding and contact with heated parts, always plug the fiber optic bundle into the LED Light Source before turning the power on. / Pour éviter tout aveuglement temporaire ou contact avec les pièces chauffées, toujours brancher le faisceau de fibres optiques dans la source de lumière à DEL avant la mise en marche.

WARNING / MISE EN GARDE

Do not use the LED Light Source directly in medical applications. / Ne pas utiliser une source de lumière à DEL directe à des fins médicales.

WARNING / MISE EN GARDE

Unit MAY BE HOT. Allow to cool before handling. / L'appareil PEUT ÊTRE CHAUD. Il est important de le laisser refroidir avant d'y toucher.

CAUTION / AVERTISSEMENT

Preferred operation is in the horizontal position. Other operating orientations are permitted. / L'appareil fonctionne de façon optimale à l'horizontale. Les autres orientations sont permises.

CAUTION / AVERTISSEMENT

Any changes or modifications made to this device that are not expressly approved by manufacturer may void the user's authority to operate the equipment. / Toute modification apportée à cet appareil et non expressément approuvée par le fabricant peut priver l'utilisateur de son droit d'usage.

CAUTION / AVERTISSEMENT

PROVIDE ADEQUATE VENTILATION TO PREVENT OVER HEATING. Do not drape this light source. Provide a 1.5 inch (3.8 cm) distance between LED Light Source and any solid objects. / ASSURER UNE VENTILATION ADÉQUATE AFIN D'ÉVITER LA SURCHAUFFE DE L'APPAREIL. Ne pas couvrir la source de lumière. Laisser au moins 3,8 cm (1,5 po) de distance entre la source de lumière à DEL et tout objet.

CAUTION / AVERTISSEMENT

DO NOT IMMERSE or store liquids above or on the LED Light Source. / NE PAS IMMERGER la source de lumière à DEL dans des liquides ou placer des liquides au-dessus de celle-ci.

CAUTION / AVERTISSEMENT

Do not operate device without the cover in place. / Ne pas faire fonctionner l'appareil sans son couvercle.

CAUTION / AVERTISSEMENT

DO NOT obstruct the airway paths for sufficient cooling is required. / NE PAS obstruer les voies d'aération afin de permettre le refroidissement adéquat de l'appareil.

CAUTION / AVERTISSEMENT

Please read this entire manual prior to operation. / Lire le présent guide en entier avant d'utiliser l'appareil.

CAUTION / AVERTISSEMENT

Protection provided by the equipment maybe impaired if not used in accordance with the manufacture recommendations. / La protection assurée par l'équipement risque d'être altérée si l'appareil n'est pas utilisé conformément aux recommandations du fabricant.

System Description and Operation

1. The light source power switch should be in the OFF position. Plug the external 12vdc power supply into the 12vdc connector. **Figure 1.**
2. Plug the external power supply cord into AC receptacle main power.
3. Plug the fiber-optic bundle into the light port and connect the opposite end to the equipment being used. **Figure 2.**
4. Turn the power switch to the ON position. LED indicator light will turn on when light source is powered. **Figure 3.**
5. Adjust the intensity control to set the light intensity to the desired light output level. **Figure 3.**
6. Turn unit OFF when not in use. **Figure 3.**

Figure 1. Back View

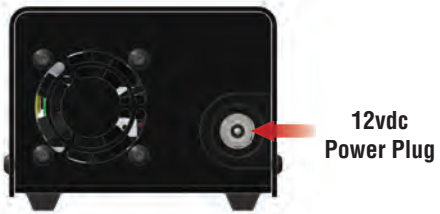
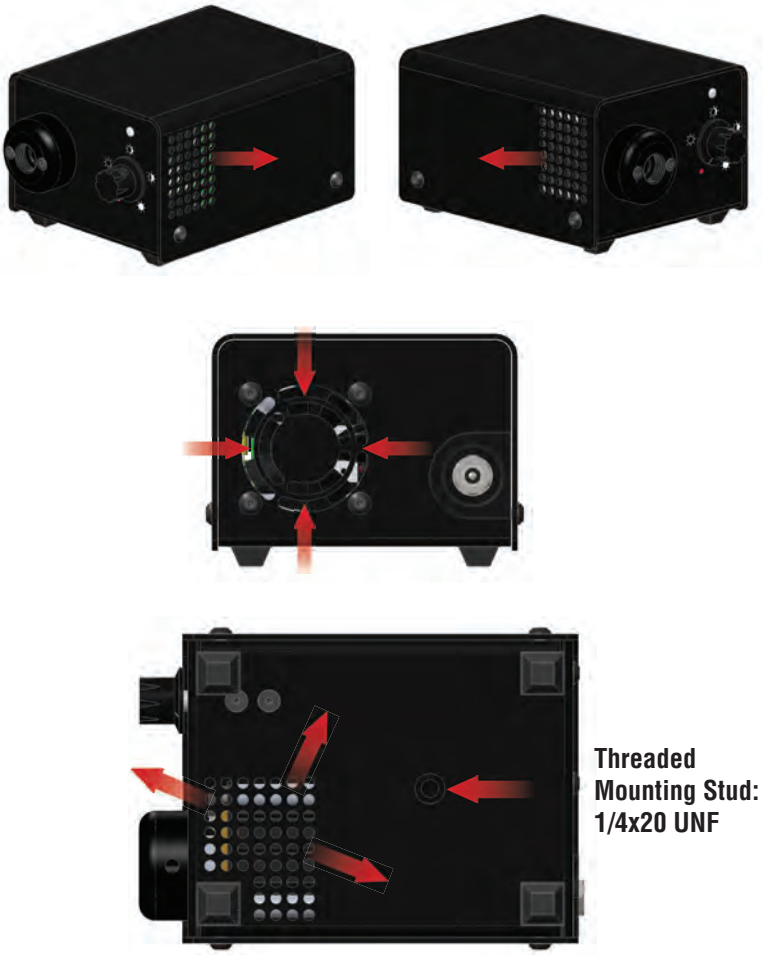


Figure 2. Fiber-Optic Bundle

Figure 3. Front View

Figure 4. Cooling and Air Flow Paths

1. Do not obstruct air flow paths. This device is designed to have proper forced air cooling paths to maintain thermal stable operation.
2. Place in an area that provides adequate ventilation to prevent unit from overheating. Do not drape the LED Light Source with cloth or objects restricting airflow.
3. Airflow outlets are shown in below red arrow graphics.
4. 1/4-20 UNF mounting stud located in the middle of box bottom side.



Maintenance and Cleaning

1. Turn the LED Light Source off and unplug the power cord from both the wall outlet and the rear of the unit.
2. Wipe the external surfaces clean with a cloth dampened with mild soap and water. **DO NOT IMMERSE.**
3. Wipe the power cords clean with a cloth dampened with mild soap and water. **DO NOT IMMERSE. DO NOT RECONNECT WET.**
4. DO NOT plug the power source into a wall outlet until it is thoroughly dry.
5. It is recommended to periodically clean the reflective optical surface near the LED. Please use a soft cotton Q-tip dipped in Isopropyl Alcohol and wipe the reflective optic surfaces and allow to thoroughly dry prior to use.

Troubleshooting Suggestions

In the event the unit stops functioning, try the following steps to operate light source. The power supply exhibits internal protection circuitry for user safety precautions and will shutdown during certain instances. This equipment has been tested to ESD conditions according IEC 61326-1 and performs to performance criterion C. This means, that under certain conditions the overvoltage protection of the power supply may turn the power supply output and the unit off to prevent damage to the unit. In such case the power supply must be disconnected from main power to reset this fault condition. In the event the unit suddenly turns off, turn the unit off. Unplug the power supply from mains voltage (120V/ 230V). Wait ~5 seconds and plug the power supply back into mains voltage. Turn the unit on.

1. Turn OFF light source by rotating intensity control knob counterclockwise until the switch clicks off.
2. Completely disconnect power supply from both light source and mains (power plug into ac outlet).
3. Wait for ~5 seconds until power supply discharges as observed on the power supply LED indicator will turn off.
4. Reconnect power supply to both ac to main voltage and dc connector to light source.
5. Turn ON light source by rotating knob clockwise until clicks on and LED indicator light is on.
6. Rotate knob to increase light output intensity to desired output.

Repair

For repair information, please contact Customer Service at:

Telephone: (714) 236-8600
Email: customerservice@ushio.com

Manufacture Contact Information

Supplier Name:	Ushio America, Inc.
Address:	5440 Cerritos Ave. Cypress, CA 90630
Telephone:	714-236-8600
Email	customerservice@ushio.com
Website:	www.ushio.com
Model or Type:	ULB-35

Environment Ratings

Operating Temperature:	41° F to 104° F (5° C to 40° C)
Humidity:	0 to 95% rh (non-condensing)
Storage Temperature:	-10° F to 140° F (-20° C to 60° C)
Humidity:	30 to 75% rh
Atmospheric Pressure:	700 hpa to 1060 hpa
Mode of Operation:	Continuous
Safety System Classification:	Class II
System Pollution Degree:	2
Installation Category:	II

Electrical Ratings

External Power Supply Ratings:

Input:	100 - 240 V~, 50/60 Hz, 1.4 A max
Output:	+12 V ⎓, 5.0 A
Recommended PS:	UAI Part: UPS-00

ULB-35 Power Ratings:

Voltage:	+12V DC; 14V DC maximum
Current:	3.4 amp

Battery:	Ushio America, Inc. recommends using a UR (or other recognized testing laboratory) recognized battery rated at 12V/9Ah or equivalent with a minimum 3.5 amp current limit rating.

Dimensions

Length:	127MM (5.0”)
Width:	90MM (3.5”)
Height:	68MM (2.7”)
Weight:	0.45 kg (1.0 lbs)

Illumination Source

Type:	LED Custom Module
Color Temperature:	5700 K - 6500 K Nominal
Power:	35 Watts
Average LED Life*:	50,000+ Hours

* Based on LED manufacturer rated wattage and thermal operation.

Product Ordering Information

Product ID	Description	Order Code
ULB-35p	35W LED Light Source; OEM Black	1003883
UPS-00	Universal Input Power Supply	1003879
UPC-US	US power cord; EN60320-C7	1003881
UPC-EU	EU Power cord EN60320-C7	1003880
UPC-UK	UK Power cord EN60320-C7	1003882
UPC-AU	AU Power Cord; EN60320-C7	1004095
50159	Storz Fiber Adapter; screw-in	50159
50160	Olympus Fiber Adapter; screw-in	50160
LB-CLP	12vdc Car Power Plug Adapter	LB-CLP
UAC-01	Portable Light Case	5002496
UPS-03	12vdc LiP Battery Pack	5002493

Approvals

CE

The CE mark on this product indicates that it has been tested to and conforms to the provisions noted within the following directives:

Low Voltage: 2014/35/EU
EMC: 2014/30/EU
RoHS 2: 2011/65/EU

In accordance with the following standards:
EN61010-1
IEC 61326-1
EN 61326-1
IEC 62471
IEC/EN 61000 3-2
IEC/EN 61000 3-3
EN 50581

C ETL LISTED US
Intertek
4009043

Conforms to UL Std 61010-1
Certified to CSA Std C22.2 No. 61010-1

WEEE
(www.lamprecycle.org)

Limited Warranty

USHIO America warrants the LED Light Source, when new, to be free of defects in material and workmanship and to perform in accordance with the manufacturer's specifications when subject to normal use and service for a period of two years from the date of purchase from USHIO America or an authorized agent. USHIO America will either repair or replace any components found to be defective or at variance from the manufacturer's specifications within this time at no cost to the customer. It shall be the purchaser's responsibility to return the instrument to the authorized distributor, agent, or service representative.

This limited warranty does not cover the breakage or failure due to tampering, misuse, neglect, accidents, improper installation, modification, shipping, or to improper maintenance, service, and cleaning procedures. This limited warranty is also void if the instrument is not used in accordance with the manufacturer's recommendations or if required service is performed by anyone other than USHIO America or an authorized agent. The purchase date determines limited warranty requirements. No other express or implied limited warranty is given.

Agency Compliance Statements

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Class A Compliance Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

CAUTION — Any changes or modifications made to this device that are not expressly approved may void the user's authority to operate the equipment.

NOTE — To maintain compliance with FCC Rules and Regulations, cables connected to this device must be shielded cables, in which the cable shield wire(s) have been grounded (tied) to the connector shell.

Canadian Notice

This equipment does not exceed the Class A limits for radio noise emissions as described in the Radio Interference Regulations of the Canadian Department of Communications.

Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la classe A prescrites dans le Reglement sur le brouillage radioelectrique edicte par le ministere des Communications du Canada.

LUMATEC

UV-TECHNOLOGY

OPERATING MANUAL

FOR

SUPERLITE I05-DC-E

Retain this manual
near operating site
for future reference

InterTest, Inc. • 303 Route 94 • Columbia, NJ 07832 • 908-496-8008 • service@intertest.com • www.intertest.com • REV 4 - 09/10/2014

Contents

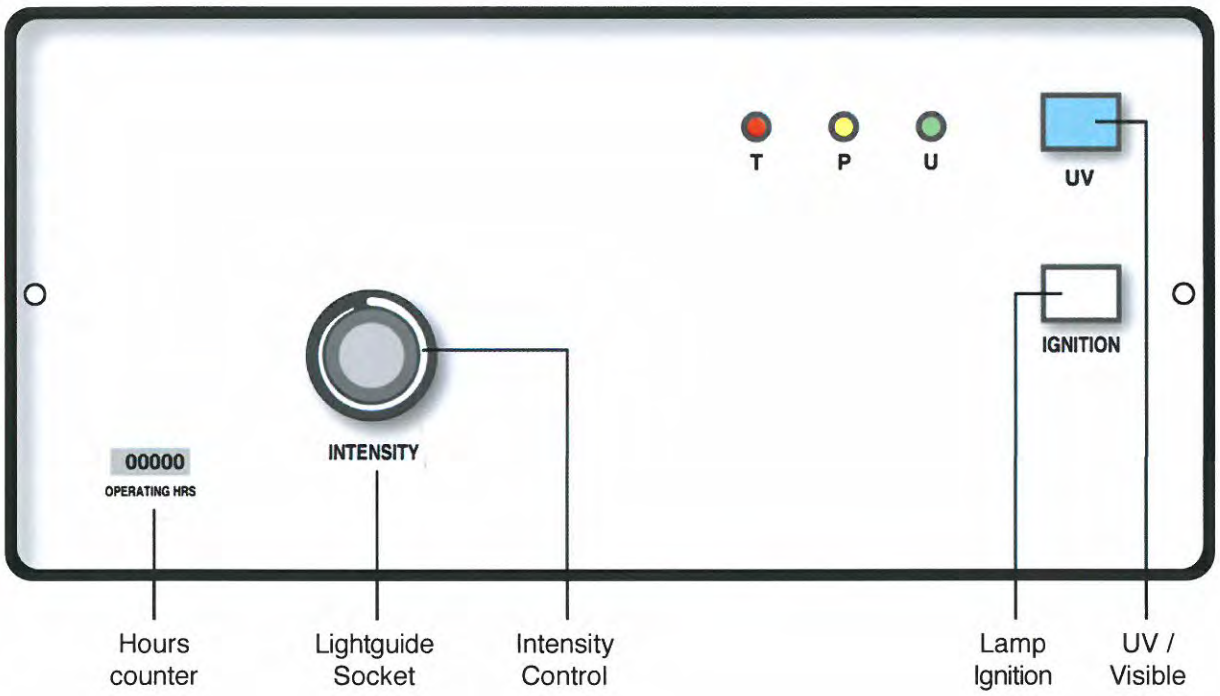
Before operating your SUPERLITE I05-DC-E
read and understand this manual in full.

Explanation of Safety Symbols

Warning! Danger for life and health.

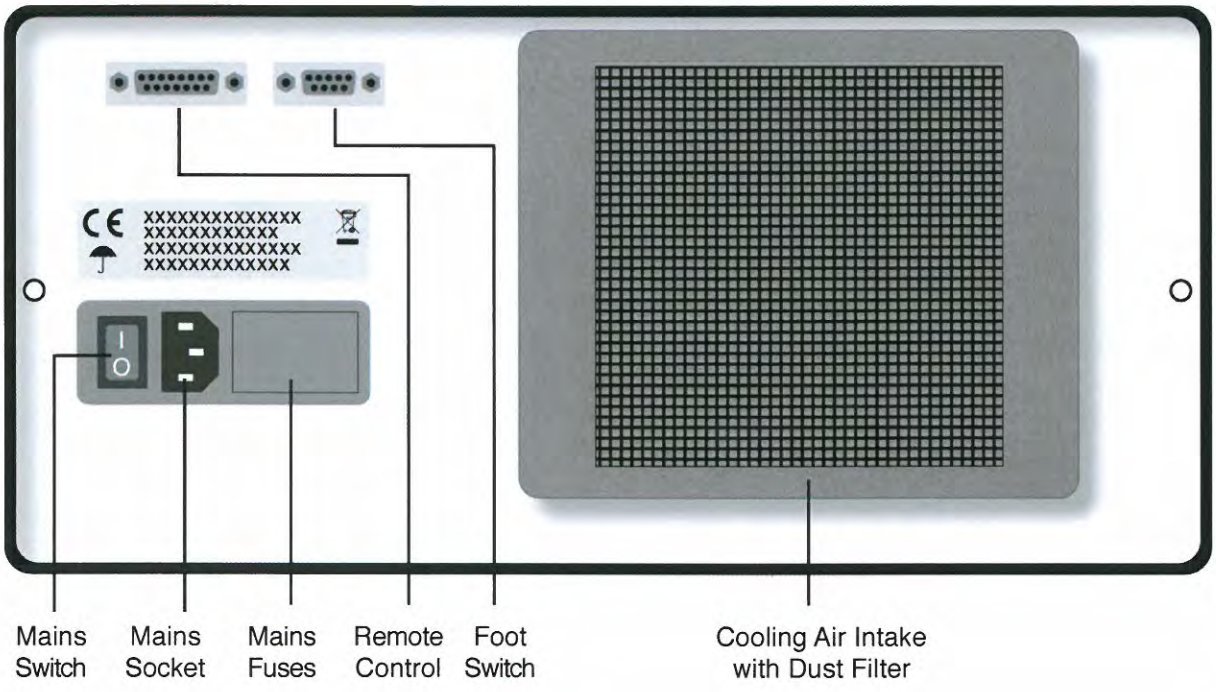
Important safeguards to prevent material damage.

FRONT PANEL



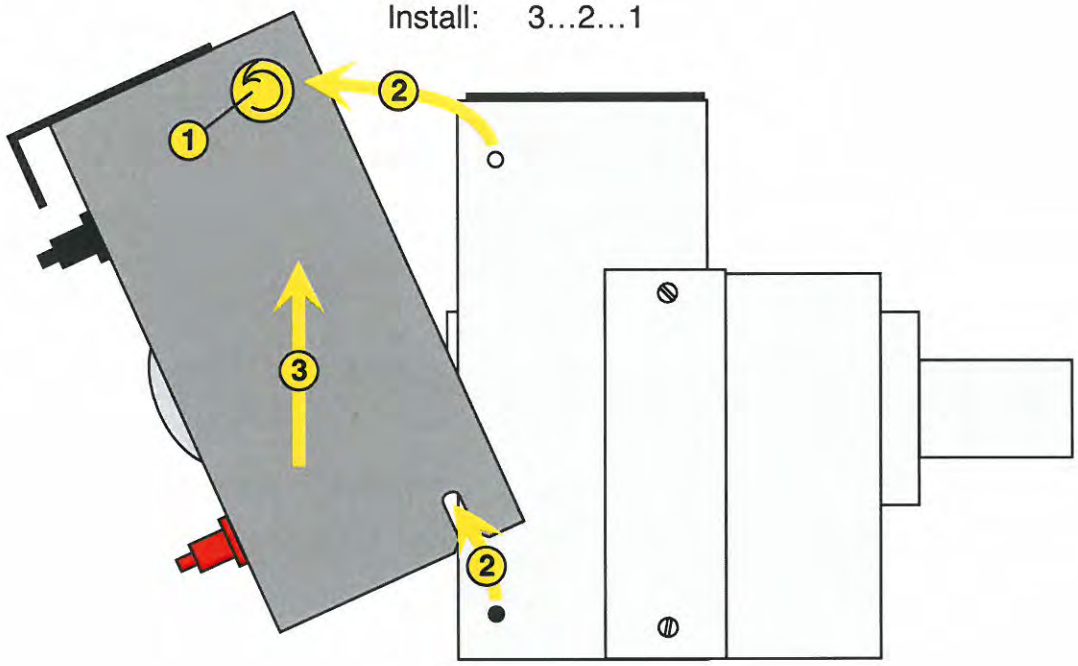
T = Overheated **P** = Lamp reached full power **U** = Mains on

REAR PANEL

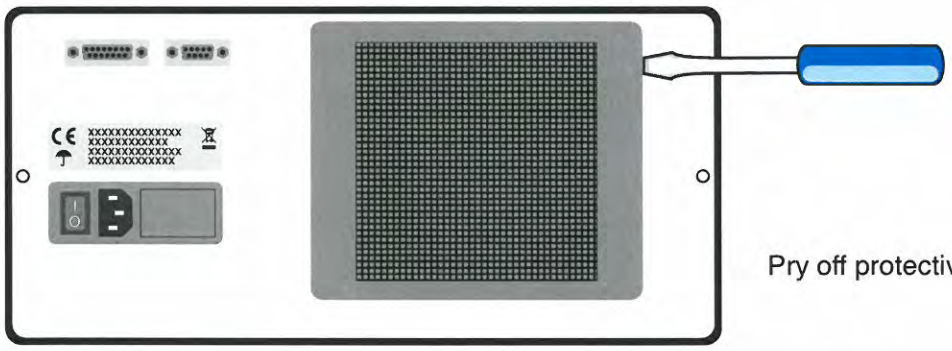


CHANGING THE LAMP MODULE

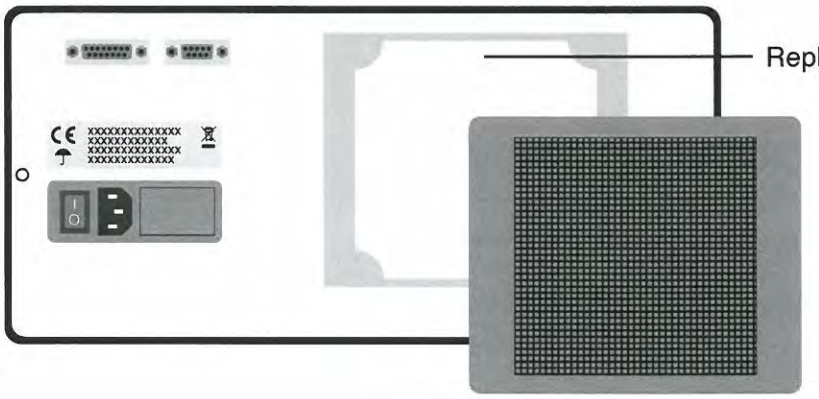
Remove: 1...2...3
Install: 3...2...1



CHANGING THE DUST FILTER



Pry off protective grid



Replace dust filter

1 Safety Warnings

Mains Supply
The intelligent electronic power supply of the unit will adapt automatically to all AC currents from 110 to 240 Volts and 50 to 60 Hz. Connect power cord to a properly grounded AC outlet.

Explosive Surroundings
This unit is not meant for operation in explosive surroundings.

Humid Surroundings
This unit is only intended for use in dry environments.

Protection against UV-Radiation
To avoid tissue damage do not expose the unprotected eye or skin to the ultraviolet light. When work under unshielded UV radiation is necessary wear UV protection goggles and gloves.

Explosion of the Mercury Vapour Lamp
In very rare occasions the lamp may burst and set free mercury to the environment. Remove all personnel from the room and ventilate thoroughly for 30 minutes. Any remains of mercury in the unit must be removed with mercury absorbent agent.

Danger of Fire
Do not deposit the lightguide or endoscope on inflammable objects like for instance cloth or paper. The intensive radiation, especially in the "visible" mode, may be sufficient to set these objects on fire.

2 Prior to Operation

Intended Use
The light source SUPERLITE I05-DC-E is solely intended for **N**on **D**estructive **T**esting and fluorescence excitation in industrial applications.

Ventilation
Cooling air is sucked through an opening at the rear of the unit, hot air is expelled at the bottom. Both openings may not be obstructed in order to allow free ventilation. Obstruction of these openings or failure of the fan will cause unit to overheat. In this case the lamp is switched off and indicator lamp "**T**" will light up (see chapter 4).

UV-Light Guide

Fully insert the flexible LIQUID LIGHTGUIDE with the Ø16mm fitting into the light-guide socket in the front panel of the light source. Treat the lightguide with care, it is an optical instrument. Do not kink or crush it and do not bend it too sharply to avoid light losses.

When using a **dual branch LIQUID LIGHTGUIDE** the two branches must be positioned vertically above each other in the lightguide socket in the front panel. Only this position ensures maximum radiation output. Insert the lightguide *all the way* into the socket and rotate it until it snaps into vertical position. For technical reasons the radiated power of the two branches may differ up to a ratio of 40:60 percent

3 Operation

Switching on

Turn on the mains supply through the switch on the rear panel next to the power cord. The green indicator lamp "**U**" will light up on the front panel and the fan will begin to operate.

Lamp Ignition

Press and hold the white ignition button for a few seconds. As soon as the lamp has ignited and stabilised the ignition button will light up, and you may then release it. After ignition this button is without function. After approximately 3 minutes the lamp reaches its rated power of 200W, and the yellow indicator lamp "**P**" will light up. If the unit is switched off, wait at least 3 minutes prior to re-ignition.

Wavelength Selection

This unit has two sets of filters allowing you to select either visible or ultraviolet radiation. By pressing the blue "**UV**" button these filters are changed over electromagnetically. In the UV mode the blue button will light up. The foot switch which can be connected to the rear panel has the same function as the blue "**UV**" button.

Intensity Control

By rotating the black collar around the lightguide socket the light intensity can be adjusted continuously, without changing the colour temperature.

Switching off

The mains switch will power off the lamp and separate the unit from the mains. After switching off the unit you should wait 3 minutes before re-igniting the lamp.

4 Special Instructions

Lamp Life

Assuming an average duty cycle of 8 hours the lamp has a minimum lifetime of 1500 hours. The lamp should not be ignited more often than necessary as each ignition shortens lamp life. We recommend not to turn off the lamp if it is needed again within the next three hours. As the lamp has a high internal pressure it is possible that the envelope bursts in very rare occasions, especially if the lamp is very old. In this case mercury is emitted (see "Safety Warnings", chapter 1).

Overheating

If the maximum operating temperature is exceeded the lamp is automatically switched off and the red indicator lamp "**T**" lights up, the fan, however, continues to run. After the unit has cooled off sufficiently the indicator lamp "**T**" will go out and the lamp can be ignited again. Reasons for overheating can be obstruction of ventilation openings or high ambient temperatures.

Vapours of Solvents

Vapours of fluorinated or chlorinated hydrocarbon solvents will corrode the lamp and the quartz lenses – even in small concentrations. Avoid these solvents in the vicinity of the unit. If you cannot avoid them, place the unit as high as possible, as vapours are heavier than air.

Repairs and Service

Caution, high voltages are present inside unit. Always disconnect power cord before opening up the unit. Do not attempt any repairs other than exchanging the lamp module and dust filter (see chapter 5). Refer all other repairs to an authorised service facility.

5 Exchanging the Lamp Module and Dust Filter

Exchanging of the **lamp module** should be done only after the lamp has completely cooled off. Please proceed as follows (see diagram page 4):

- Disconnect the power cord.
- Unscrew the two upper screws on the left and right hand side of the unit respectively, carefully lift cover and disconnect ground wire. Loosen the knurled screw on the side of the lamp module.
- Unplug the lamp module connectors and remove the module carefully by a simultaneous backwards and upwards movement.
- Insert new lamp module by vice-versa procedure.
- Connect the red wire at the bottom and the black wire at the top of the lamp module. *Never* leave the red wire disconnected as the power supply will be destroyed when the ignition button is pressed.
- When replacing the top cover, make sure the activating arm for the circuit breakers is on the *right hand side*, otherwise the unit will not operate.
- Used lamps contain mercury and must be disposed of as hazardous waste or be recycled.

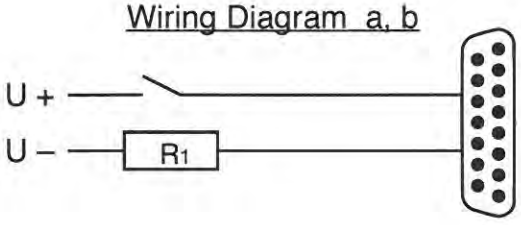
In order to exchange the **dust filter** pry off the protective grid from the rear panel with a screw driver (see diagram page 4). Exchange the filter pad and snap the protective grid back on. We recommend to exchange the filter pad with every new lamp. However, a different cycle may be appropriate based on local conditions.

6 Remote Control

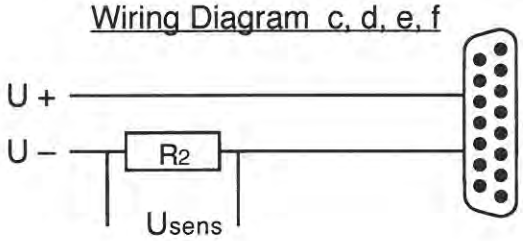
This unit is equipped with a PLC (Programmable Logic Control) interface. This interface permits you to control and monitor six important system parameters via programmable remote control units. The interface is galvanically isolated from the mains by photo-couplers, and is read out by means of the external voltage supplied by the controlling computer. The following functions are available:

		Function	+ Pin	– Pin
Action (Input)	a	Lamp ignition (= white ignition button) [1]	9	10
	b	White / UV light (= blue UV button) [2]	11	10
Signal (Output)	c	System overheated (= red LED)	2	1
	d	Lamp ready / full power (= yellow LED)	3	4
	e	UV active (UV signal on)	6	5
	f	Ignition successful (= white button lamp)	7	15

Wiring Diagram a, b



Wiring Diagram c, d, e, f



Adaptation to computer system voltages		
U	R_1	R_2
5 V_{DC}	not needed	270 Ω / 0.5 W
12 V_{DC}	330 Ω / 0.5 W	620 Ω / 0.5 W
24 V_{DC}	1 KΩ / 0.5 W	1.2 KΩ / 0.5 W

1) On special request the unit can be converted to "automatic lamp ignition when main switch is turned on" by means of a jumper on the printed circuit board. However, this jumper must always be removed prior to repairs (by authorised service personnel only) on the open unit.

2) Remote control of the UV filter is also possible by means of the foot switch terminal. Use a shielded cable and a galvanically isolated closing contact. The cable should be fitted with a ferrite clip to prevent electromagnetic interference.

7 Accessories and Spare Parts

Accessories: Power cord
Foot switch with cable and connector
15-pin Sub-D connector for remote control (PLC)
Liquid Lightguide (type optional)

Spare Parts: Pre-aligned snap-in lamp module new 3611
Pre-aligned snap-in lamp module exchange 3612
Dust filter 3607

8 Technical Data

Model: **SUPERLITE I05-DC-E** Serial no.: _____

Mains Voltage: 110 - 240V (±10%) , 50 - 60 Hz
Current: max. 3.3 A
Power input: max. 380VA
Fuses: 3.15 A slow blow (2 required)
Lamp type: 200W DC superpressure mercury arc lamp
Lamp power stabilisation: better than 1%
Lamp life: approx. 1500 – 2000 hours
Foot switch terminal: galvanically separated from mains; max. current 1mA
PLC terminal: galvanically separated from mains
Dimensions: width 340mm, height 160mm, depth 310mm
Weight: 7,5 kg
Spectral range: 380nm – 700nm = visible range
320nm – 400nm = UVA range

CE

Declaration of conformity: This unit conforms to all applicable EC Directives and corresponding harmonised standards. A written declaration of conformity can be supplied on request.

LUMATEC GMBH • LINIENSTRASSE 9-13 • 82041 DEISENHOFEN • GERMANY
TEL +49-89-7428220 • FAX +49-89-742822-64 • SALES@LUMATEC.DE
WWW.LUMATEC.EU • WEEE-REG-NR: DE67508364

RADIAL ARM

Model 7500

Floating Flat Panel Arm

LIBERATE YOUR DESKTOP

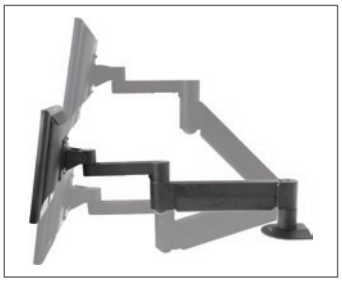
2002
Design Award Winner

The award-winning 7500 Radial Arm is a remarkable work tool. Effortlessly position your monitor exactly where you want it, and add flexibility to your work style. Suspend your flat panel above the desk surface and reclaim your valuable space. Innovative cable management routes cables inside the arm, in order to keep your desk organized. You'll never work the old and cluttered way again!

FEATURES

- Reposition the monitor with one hand – no knobs to turn
- Extends up to 27", folds to just 3", vertical range of 18"
- Tilt monitor up to 200 degrees
- Includes FLEXmount™ – six different mounting options in one kit
- Compatible with all VESA® monitors – includes 75mm and 100mm VESA® mounting plates
- Includes cable management system – cables concealed in arm

Folds into 3" of space



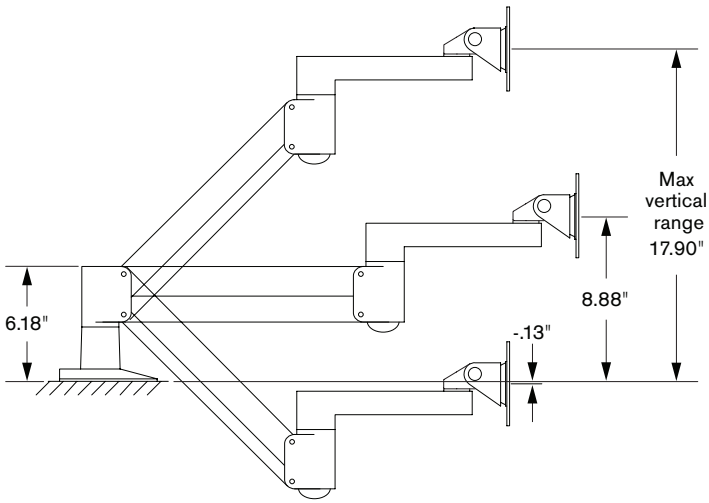
18" of vertical range

Over 200 degrees of monitor tilt

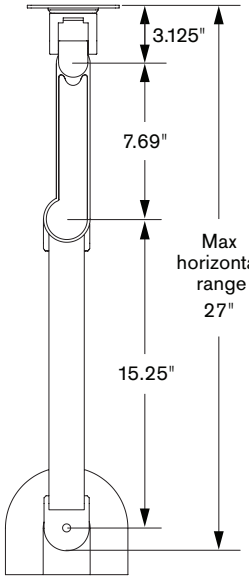
Phone: 800.888.6024 | **Fax:** 541.779.0829 | **E-mail:** info@ergoindemand.com | **Web:** www.ergoindemand.com

Model 7500

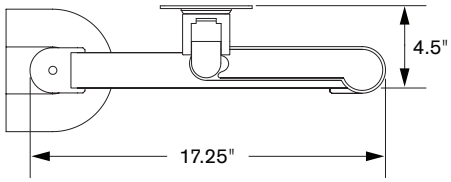
Specifications



SIDE VIEW
Vertical Range



TOP VIEW
Horizontal Range

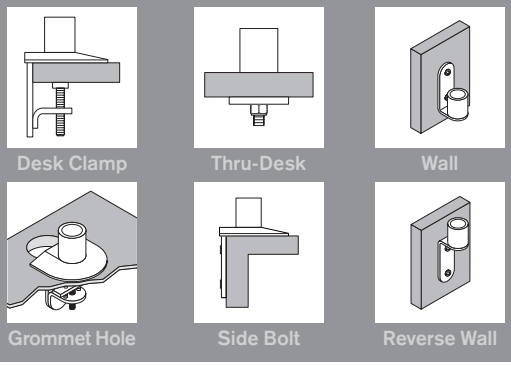


TOP VIEW
Arm Folded

CAPABILITIES

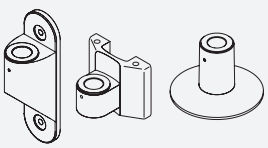
Vertical range	18" (+/- 9" from horizontal)
Horizontal range	27"
Rotation	360 degrees at three joints
Monitor tilt	200 degrees
Monitor pivot	Landscape to portrait
Monitor compatibility	VESA® 75mm and 100mm
Cable management	Cables are concealed in arm
Mounting options	FLEXmount™, Slatwall, Wall, Thru-Desk
Monitor weight/model number	2 - 13 lbs / 7500-500 6 - 21 lbs / 7500-800 8 - 27 lbs / 7500-1000 13.5 - 44 lbs / 7500-1500

FLEXMOUNT™ CONFIGURATIONS

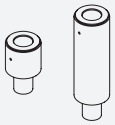


OPTIONAL ACCESSORIES

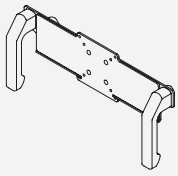
QUICK RELEASE ADAPTERS
Allows for quick attach and release of monitor *(8336-QR)*.



MOUNTS
Wall *(8325)*, slatwall *(8246)* and thru-desk *(8312)*.



EXTENDER TUBES
Raise the height of your arm. 2" *(8171-75-2)* and 6" *(8171-75-6)* extensions available.



HANDLE SET
Provides convenient handles to reposition monitor *(8291)*.

Phone: 800.888.6024 | Fax: 541.779.0829 | E-mail: info@ergoindemand.com | Web: www.ergoindemand.com

SONY

4-136-993-**14**(1)

LCD Monitor

Operating Instructions

Before operating the unit, please read this manual thoroughly and retain it for future reference.

LMD-1530W

Owner's Record

The model and serial numbers are located at the rear. Record these numbers in the spaces provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. _____
Serial No._____

Important Safety Instructions

- Read these instructions.
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- Do not use this apparatus near water.
- Clean only with dry cloth.
- Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- Only use attachments/accessories specified by the manufacturer.
- Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

- Unplug this apparatus during lightning storms or when unused for long periods of time.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

WARNING

To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

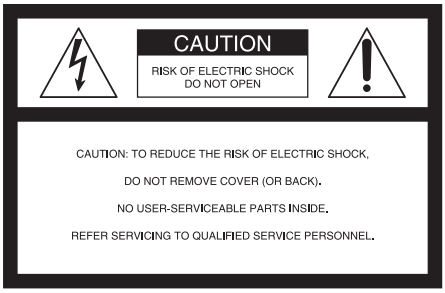
To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

WARNING
THIS APPARATUS MUST BE EARTHED.

WARNING
When installing the unit, incorporate a readily accessible disconnect device in the fixed wiring, or connect the power plug to an easily accessible socket-outlet near the unit. If a fault should occur during operation of the unit, operate the disconnect device to switch the power supply off, or disconnect the power plug.

CAUTION
The apparatus shall not be exposed to dripping or splashing. No objects filled with liquids, such as vases, shall be placed on the apparatus.

WARNING
Make sure the surface is wide enough so that this apparatus's width and depth don't exceed the surface's edges.
If not, this apparatus may lean or fall over and cause an injury.



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Attention-when the product is installed in Rack:

1. Prevention against overloading of branch circuit
When this product is installed in a rack and is supplied power from an outlet on the rack, please

make sure that the rack does not overload the supply circuit.

2. Providing protective earth
When this product is installed in a rack and is supplied power from an outlet on the rack, please confirm that the outlet is provided with a suitable protective earth connection.

3. Internal air ambient temperature of the rack
When this product is installed in a rack, please make sure that the internal air ambient temperature of the rack is within the specified limit of this product.

4. Prevention against achieving hazardous condition due to uneven mechanical loading
When this product is installed in a rack, please make sure that the rack does not achieve hazardous condition due to uneven mechanical loading.

5. Install the equipment while taking the operating temperature of the equipment into consideration
For the operating temperature of the equipment, refer to the specifications of the Operation Manual.

6. When performing the installation, keep the following space away from walls in order to obtain proper exhaust and radiation of heat.

Lower, Upper: 4.4 cm (1 3/4 inches) or more

For kundene i Norge
Dette utstyret kan kobles til et IT-strømfordelingssystem.

Apparatet må tilkoples jordet stikkontakt

Suomessa asuville asiakkaille
Laite on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan

För kunderna i Sverige
Apparaten skall anslutas till jordat uttag

For the customers in the U.S.A.
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

All interface cables used to connect peripherals must be shielded in order to comply with the limits for a digital device pursuant to Subpart B of Part 15 of FCC Rules.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

WARNING
Using this unit at a voltage other than 120 V may require the use of a different line cord or attachment plug, or both. To reduce the risk of fire or electric shock, refer servicing to qualified service personnel.

For the customers in Canada
This Class A digital apparatus complies with Canadian ICES-003.

For the customers in Europe
This product with the CE marking complies with the EMC Directive issued by the Commission of the European Community.
Compliance with this directive implies conformity to the following European standards:
- EN55103-1 : Electromagnetic Interference (Emission)
- EN55103-2 : Electromagnetic Susceptibility (Immunity)

This product is intended for use in the following Electromagnetic Environments: E1 (residential), E2 (commercial and light industrial), E3 (urban outdoors), E4 (controlled EMC environment, ex. TV studio).

For the customers in Europe
The manufacturer of this product is Sony Corporation, 1-7-1 Konan, Minato-ku, Tokyo, Japan.
The Authorized Representative for EMC and product safety is Sony Deutschland GmbH, Hedelfinger Strasse 61, 70327 Stuttgart, Germany. For any service or guarantee matters please refer to the addresses given in separate service or guarantee documents.

For the customers in the USA
Lamp in this product contains mercury. Disposal of these materials may be regulated due to environmental considerations. For disposal or recycling information, please contact your local authorities or the Telecommunications Industry Association (www.eiae.org).

Table of Contents

Precaution

On Safety

- Operate the unit only with a power source as specified in the “Specifications” section.
- A nameplate indicating operating voltage, etc., is located on the rear panel.
- Should any solid object or liquid fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Do not drop or place heavy objects on the power cord. If the power cord is damaged, turn off the power immediately. It is dangerous to use the unit with a damaged power cord.
- Unplug the unit from the wall outlet if it is not to be used for several days or more.
- Disconnect the power cord from the AC outlet by grasping the plug, not by pulling the cord.
- The socket-outlet shall be installed near the equipment and shall be easily accessible.

On Installation

- Allow adequate air circulation to prevent internal heat build-up.
  Do not place the unit on surfaces (rugs, blankets, etc.) or near materials (curtains, draperies) that may block the ventilation holes.
- Do not install the unit in a location near heat sources such as radiators or air ducts, or in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.

Handling the LCD Screen

- The LCD panel fitted to this unit is manufactured with high precision technology, giving a functioning pixel ratio of at least 99.99%. Thus a very small proportion of pixels may be “stuck”, either always off (black), always on (red, green, or blue), or flashing. In addition, over a long period of use, because of the physical characteristics of the liquid crystal display, such “stuck” pixels may appear spontaneously. These problems are not a malfunction.
- Do not leave the LCD screen facing the sun as it can damage the LCD screen. Take care when you place the unit by a window.
- Do not push or scratch the LCD screen. Do not place a heavy object on the LCD screen. This may cause the screen to lose uniformity.
- If the unit is used in a cold place, horizontal lines or a residual image may appear on the screen. This is not a malfunction. When the monitor becomes warm, the screen returns to normal.
- The screen and the cabinet become warm during operation. This is not a malfunction.

On Burn-in

For LCD panel, permanent burn-in may occur if still images are displayed in the same position on the screen continuously, or repeatedly over extended periods.

Images that may cause burn-in
- Masked images with aspect ratios other than 15:9
- Color bars or images that remain static for a long time
- Character or message displays that indicate settings or the operating state

To reduce the risk of burn-in

- Turn off the character displays
  Press the MENU button to turn off the character displays. To turn off the character displays of the connected equipment, operate the connected equipment accordingly. For details, refer to the operation manual of the connected equipment.
- Turn off the power when not in use
  Turn off the power if the viewfinder is not to be used for a prolonged period of time.

On a Long Period of Use

Due to the characteristics of LCD panel, displaying static images for extended periods, or using the unit repeatedly in a high temperature/high humidity environments may cause image smearing, burn-in, areas of which brightness is permanently changed, lines, or a decrease in overall brightness.

In particular, continued display of an image smaller than the monitor screen, such as in a different aspect ratio, may shorten the life of the unit.
Avoid displaying a still image for an extended period, or using the unit repeatedly in a high temperature/high humidity environment such an airtight room, or around the outlet of an air conditioner.

To prevent any of the above issues, we recommend reducing brightness slightly, and to turn off the power whenever the unit is not in use.

On Cleaning

Before cleaning

Be sure to disconnect the AC power cord from the AC outlet.

On cleaning the monitor screen

The monitor screen surface is especially treated to reduce reflection of light.
As incorrect maintenance may impair the performance of the monitor, take care with respect to the following:

- Wipe the screen gently with a soft cloth such as a cleaning cloth or glass cleaning cloth.
- Stubborn stains may be removed with a soft cloth such as a cleaning cloth or glass cleaning cloth lightly dampened with water.
- Never use solvent such as alcohol, benzene or thinner, or acid, alkaline or abrasive detergent, or chemical cleaning cloth, as they will damage the screen surface.

On cleaning the cabinet

- Clean the cabinet gently with a soft dry cloth. Stubborn stains may be removed with a cloth lightly dampened with mild detergent solution, followed by wiping with a soft dry cloth.
- Use of alcohol, benzene, thinner or insecticide may damage the finish of the cabinet or remove the indications on the cabinet. Do not use these chemicals.
- If you rub on the cabinet with a stained cloth, the cabinet may be scratched.
- If the cabinet is in contact with a rubber or vinyl resin product for a long period of time, the finish of the cabinet may deteriorate or the coating may come off.

On Moisture Condensation

If the unit is brought directly from a cold place to a warm place, or the unit is warm and the ambient temperature cools suddenly (by air-conditioning, for example), moisture may condense on the surface or inside of the unit, or create a mist residue inside the protection plate if it is installed to the unit.
This is called moisture condensation, and is not a malfunction of the product itself, although it may cause damage to the unit.
Leave the unit in a condensation free area.
If moisture condensation has occurred, turn off the unit and do not use it until moisture condensation has evaporated.

On Repacking

Do not throw away the carton and packing materials. They make an ideal container which to transport the unit.

On Mounting on a Rack

Leave 1U space empty above and below the monitor to ensure adequate air circulation or install a fan to maintain the monitor’s performance.

If you have any questions about this unit, contact your authorized Sony dealer.

On Fan Error

The fan for cooling the unit is built in. When the fan stops and the KEY INHIBIT indicator on the front panel blinks for fan error indication, turn off the power and contact an authorized Sony dealer.

Features

The LMD-1530W (15.3-type) is a multiple format LCD monitor for broadcast/professional use featuring a precise image and high performance. Supporting digital/analog main broadcast signals, and HDMI[1)] input, it can be used under various lighting conditions.

[1)] HDMI, the HDMI logo and High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI Licensing LLC.

High brightness LCD panel
Because of precise image, wide viewing angle technology and high speed response, real color image can be reproduced.

Multi-format
The monitor supports the video, Y/C, RGB, component and HDMI input signals.
Both NTSC and PAL color systems are supported, and the appropriate color system is selected automatically.
SDI signals can be available when input adaptor BKM-320D (optional) is used.
HD/SD-SDI signals can be available when input adaptor BKM-341HS (optional) is used.

For more information, see "Video signal formats" (page 24).

External sync input
When the EXT SYNC button is in the on position, the unit can be operated on the sync signal supplied from an external sync generator.

Automatic termination (connector with ⩘ mark only)
The input connector is terminated internally at 75 ohms when nothing has been connected to the output connector. If a cable is connected to the output connector, the internal terminal is automatically released and the signals input to the input connector are output to the output connector (loop-through).

External remote control function
You can directly select the input signal, aspect, etc., by operating the equipment connected to the PARALLEL REMOTE connector.

Monitor stand with tilt function
A monitor stand with tilt function is equipped for desk top use. It shall be removed when mounted on the rack.

Rack mount
The monitor supports the VESA (100 × 100 mm) standard.
It can be mounted on an EIA standard 19-inch rack (using an optional mounting bracket).

For more information, see "Installing to the Rack" (page 11).

Consult with Sony qualified personnel for wall mount installation.

3-color tally lamp
The tally lamp lights in red, green or amber to monitor each input picture and check the on-air mode.

Blue only mode
In the blue only mode, a monochrome display is obtained with all three of the R/G/B picture elements driven with a blue signal. This mode is convenient for chroma and phase adjustments and monitoring of signal noise.

Marker function
SAFETY AREA marker, CENTER MARKER, 16:9 MARKER for the 4:3 aspect ratio or 4:3 MARKER for the 16:9 aspect ratio can be displayed.

Scan setting
You can set the display size to normal scan, over scan or full screen mode.

Select color temperature and gamma mode
You can select the color temperature from among two (HIGH and LOW) settings.
You can select the gamma mode from among five settings.

Aspect setting
You can set the monitor to 4:3 or 16:9 display mode according to the input video signal.

On-screen menus
You can set the appropriate settings according to the connected system by using the on-screen menus.

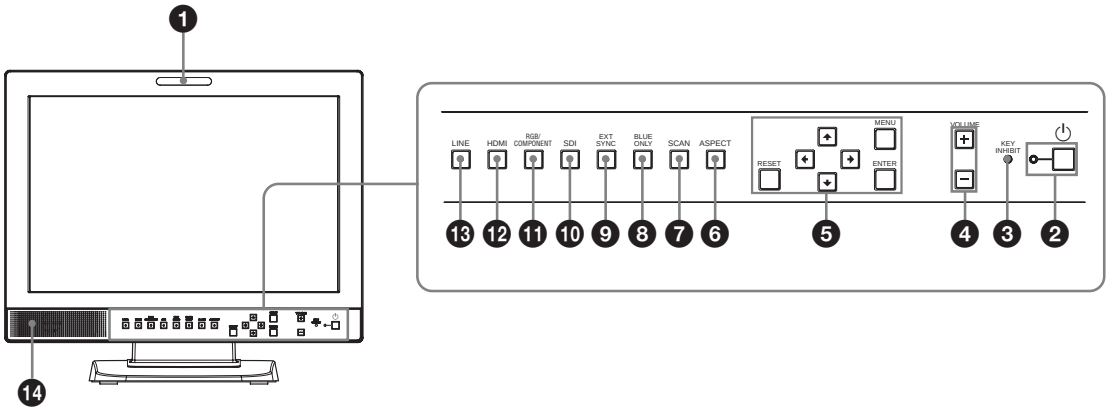
Select language display
You can select from seven display languages, English, French, German, Spanish, Italian, Japanese and Chinese.

Key inhibit function
You can inhibit a key function to prevent missing an operation.

I/P mode setting
This unit is equipped with an I/P mode setting function that is used to minimize picture delay due to the signal conversion process.

Location and Function of Parts and Controls

Front Panel



❶ Tally lamp
You can check the status of the monitor by the color of the tally lamp.
The tally lamp lights in red, green or amber according to the setting of the REMOTE menu.

❷ ⏻ (standby) switch and indicator
Press to turn on the power when this unit is in standby mode. The indicator turns on. Press again to set the monitor in standby mode. The indicator goes out.

❸ KEY INHIBIT indicator
Lights when the key inhibit function works.
The indicator blinks when fan error occurs.

For details on the key inhibit, see "KEY INHIBIT menu" (page 21).

❹ VOLUME buttons
Press the + button to increase the volume or the – button to decrease it.

❺ Menu operation buttons
Displays or sets the on-screen menu.

↑/↓/←/→ (arrow) buttons
Select the menu or make various adjustments.

MENU button
Press to display the on-screen menu.
Press again to clear the menu.

RESET button
Resets the value of an item back to the previous value.
This button functions when the menu item is adjusted (displayed) on the screen.

ENTER button
Press to confirm a selected item on the menu.

❻ ASPECT select button
Sets the aspect ratio of the picture, 4:3 or 16:9.

❼ SCAN select button
You can change the scan size of the picture.
Press to change the scan size among over (5% over scan), normal (0% scan) and full screen set on the SCAN menu (page 19).

❽ BLUE ONLY button
Press to eliminate the red and green signals. Only blue signal is displayed as a monochrome picture on the screen. This mode is convenient for chroma and phase adjustments and monitoring of signal noise.

❾ EXT SYNC (external sync) button
Press to operate the unit on an external sync signal through the EXT SYNC IN connector.
The EXT SYNC button works when the component/ RGB signals are input.

❿ SDI button
Press to monitor the signal through the OPTION IN connector.

⓫ RGB/COMPONENT button
Press to monitor the signal through the RGB/ COMPONENT input connector.

⓬ HDMI button
Press to monitor the signal through the HDMI IN connector.

⓭ LINE button
Press to monitor the signal through the LINE input connector.

⓮ Speaker
The audio signal selected by the input select button (⓾ SDI button, ⓫ RGB/COMPONENT button, ⓬ HDMI button or ⓭ LINE button) on the front panel is output.

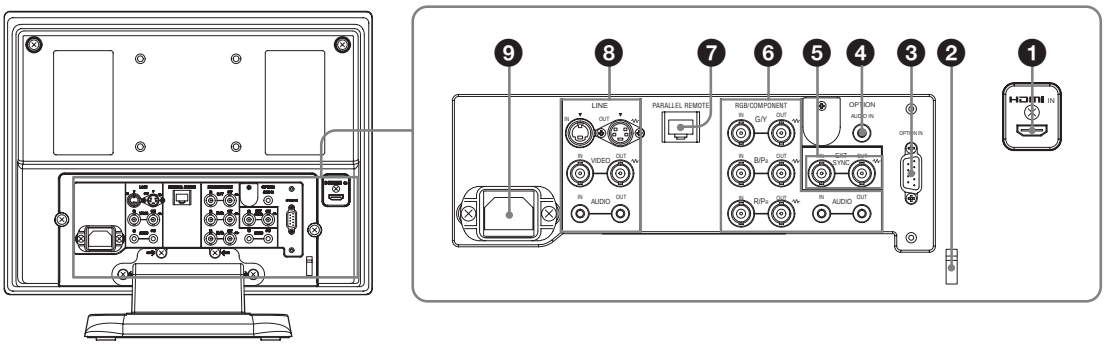
Input Signals and Adjustable/Setting Items

Item	Input signal									
	Video, Y/C	B & W	Component		RGB		SDI*4	HDMI		
			SD	HD	SD	HD	SD/HD	SD	HD	DVI*5
CONTRAST	○	○	○	○	○	○	○	○	○	○
BRIGHT	○	○	○	○	○	○	○	○	○	○
CHROMA	○	×	○	○	×	×	○	○	○	×
PHASE	○ (NTSC)	×	×	×	×	×	×	×	×	×
APERTURE	○	○	○	○	○	○	○	○	○	×
COLOR TEMP	○	○	○	○	○	○	○	○	○	○
COMPONENT LEVEL*1	×	×	○ (480/60I)	×	×	×	×	×	×	×
NTSC SETUP	○ (NTSC)	○ (480/60I)	×	×	×	×	×	×	×	×
GAMMA	○	○	○	○	○	○	○	○	○	○
SCAN	○	○	○	○	○	○	○	○	○	×
ASPECT	○	○	○	○*2	○	○*2	○	○	○*2	×
MARKER	○	○	○	○	○	○	○	○	○	×
BLUE ONLY	○	×	○	○	○	○	○	○	○	×
I/P MODE*3	○	○	○	○	○	○	○	○	○	×
EXT SYNC	×	×	○	○	○	○	×	×	×	×
SD PIXEL MAPPING COMPOSITE&Y/C	○	○	×	×	×	×	×	×	×	×
SD PIXEL MAPPING RGB/COMPONENT	×	×	○	×	○	×	×	×	×	×

○ : Adjustable/can be set
× : Not adjustable/cannot be set

*1 When a component signal (480/60I) is input, this can be switchable.
*2 When a 480/60P or 576/50P signal is input, this can be switchable.
*3 When an interlace signal is input, this can be switchable.
*4 When BKM-320D or BKM-341HS is used, SDI signals can be input.
*5 When a PC signal is input to the HDMI IN connector using a DVI conversion cable, this can be adjusted.

Rear Panel



❶ HDMI IN connector

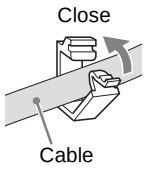
HDMI (High-Definition Multimedia Interface) is an interface that supports both video and audio on a single digital connection, allowing you to enjoy high quality digital picture and sound. The HDMI specification supports HDCP (High-bandwidth Digital Content Protection), a copy protection technology that incorporates coding technology for digital video signals.

Notes

- Use HDMI compliant cable (optional) with HDMI logo.
- Color noise may appear on the edge of the screen depending on the connected device. This is not a malfunction.

❷ HDMI cable holder

Secures the HDMI cable (Ø7 mm or less).



❸ OPTION IN connector (D-sub 9-pin, female)

Inputs SD-SDI signals when optional Sony BKM-320D is connected. Inputs HD/SD-SDI signals when optional Sony BKM-341HS is connected.
Press the SDI button to select the signal.

Note

Do not connect the equipment other than BKM-320D or BKM-341HS. It causes damage to the unit or the equipment.

❹ OPTION AUDIO IN connector (phono jack)

Inputs an audio signal if the BKM-320D or BKM-341HS is connected to the OPTION IN connector.
Press the SDI button to monitor the audio signal.

❺ EXT SYNC IN/OUT (external sync) connectors (BNC)

Press the EXT SYNC button to use the sync signal through this connector.

IN connector

When this unit operates on an external sync signal, connect the reference signal from a sync generator to this connector.

Note

When inputting a video signal with the jitters, etc. the picture may be disturbed. We recommend using the TBC (time base corrector).

OUT connector

Loop-through output of the IN connector. Connect to the external sync input of video equipment to be synchronized with this unit.
When the cable is connected to this connector, the 75-ohms termination of the input is automatically released, and the signal input to the IN connector is output from this connector.

❻ RGB/COMPONENT connectors

Analog RGB signal or component (Y/P_B/P_R) signal input connectors and their loop-through output connectors.
Press the RGB/COMPONENT button to monitor the signal input through these connectors.

G/Y, B/P_B, R/P_R IN/OUT (BNC)

These are the input/output connectors for an analog RGB and a component (Y/P_B/P_R) signal. Unless an external sync signal is input, the monitor is synchronized with the sync signal contained in the G/Y signal.

AUDIO IN/OUT (phono jack)

When using an analog RGB or a component signal as a video signal, use these jacks for the input/

output of an audio signal. Connect them to the audio input/output jacks on equipment such as a VCR.

❼ PARALLEL REMOTE connector (modular connector, 8-pin)

Forms a parallel switch and controls the monitor externally.

For details on the pin assignment and factory setting function assigned to each pin, see page 23.

CAUTION

For safety, do not connect the connector for peripheral device wiring that might have excessive voltage to this port. Follow the instructions for this port.

❽ LINE connectors

Line input connectors for Y/C separate, composite video and audio signals and their loop-through output connectors.

Press the LINE button to monitor the signal input through these connectors.

If you input signals to both Y/C IN and VIDEO IN, the signal input to the Y/C IN is selected.

Y/C IN/OUT (4-pin mini-DIN)

These are the input/output connectors for a Y/C separate signal. Connect them to the Y/C separate input/output connectors on equipment such as a VCR, video camera, or another monitor.

VIDEO IN/OUT (BNC)

These are the input/output connectors for a composite video signal. Connect them to the composite video input/output connectors on equipment such as a VCR, video camera, or another monitor.

AUDIO IN/OUT (phono jack)

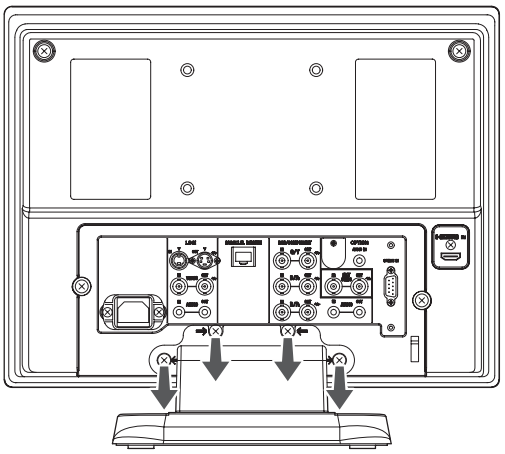
These are the input/output jacks for an audio signal. Connect them to the audio input/output jacks on equipment such as a VCR.

❾ AC IN socket

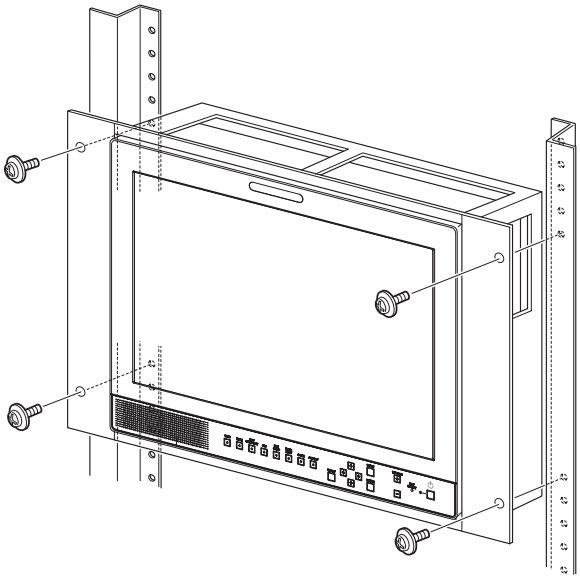
Connect the supplied AC power cord.

Installing to the Rack

1 Remove the screws (4) to remove the stand.

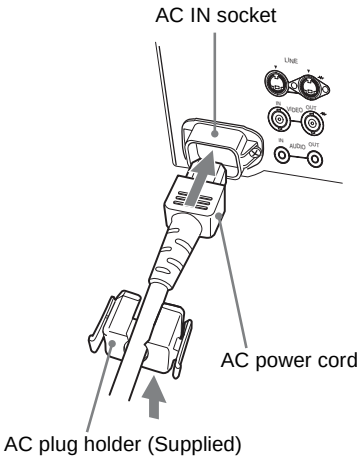


2 Attach the unit to the rack using the mounting bracket.

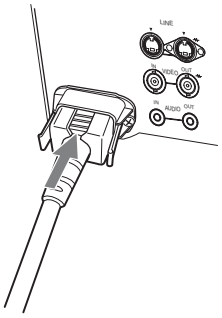


Connecting the AC Power Cord

1 Plug the AC power cord into the AC IN socket on the rear panel. Then, attach the AC plug holder (supplied) to the AC power cord.



2 Slide the AC plug holder over the cord until it locks.



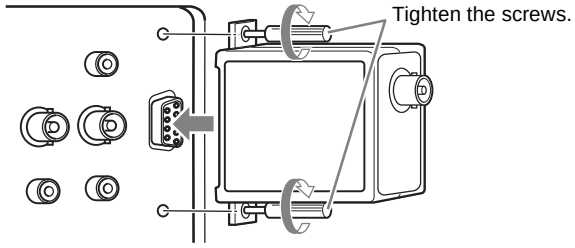
To disconnect the AC power cord

Pull out the AC plug holder while pressing the lock levers.

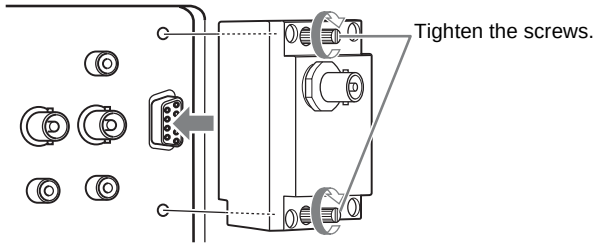
Attaching the Input Adaptor

Before attaching the input adaptor, disconnect the power cord.

BKM-320D



BKM-341HS



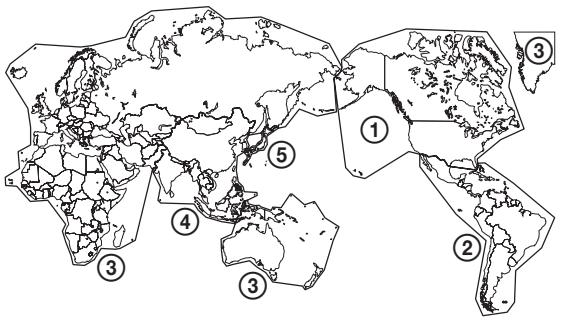
Note

Do not connect the equipment other than BKM-320D or BKM-341HS. It causes damage to the unit or the equipment.

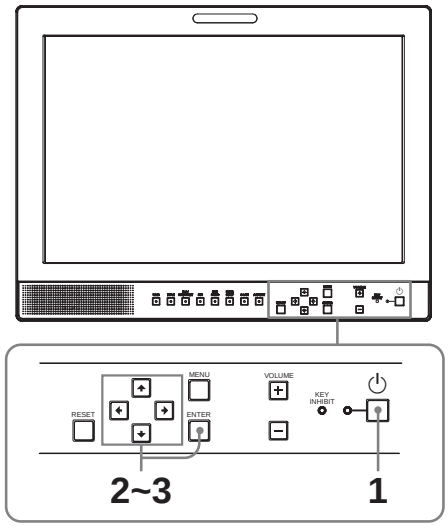
Selecting the Default Settings

When you turn on the unit for the first time after purchasing it, select the area where you intend to use this unit from among the options.

The default setting values for each area

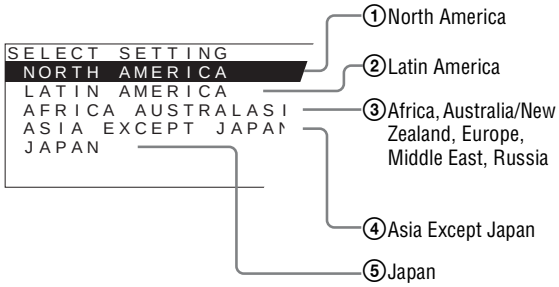


		COLOR TEMP	COMPONENT LEVEL	NTSC SETUP
①NORTH AMERICA		LOW	BETA7.5	7.5
②LATIN AMERICA	ARGENTINA	LOW	SMPTE	0
PAL&PAL-N AREA	PARAGUAY	LOW	SMPTE	0
	URUGUAY	LOW	SMPTE	0
NTSC&PAL-M AREA	OTHER AREA	LOW	BETA7.5	7.5
③AFRICA AUSTRALASIA EUROPE MIDDLE-EAST		LOW	SMPTE	0
④ASIA EXCEPT JAPAN	NTSC AREA	LOW	BETA7.5	7.5
	PAL AREA	LOW	SMPTE	0
⑤JAPAN		HIGH	SMPTE	0



1 Press the ⏻ (standby) switch.

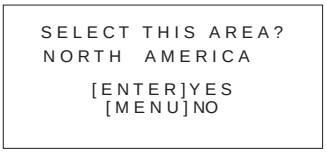
The power is turned on and the SELECT SETTING screen appears.



2 Press the ↑ or ↓ button to select the area where you intend to use the unit and press the → or ENTER button.

If you select either ①, ③ or ⑤

The confirmation screen is displayed. Confirm the selected area. When the setting is wrong, press the ← button to return to the previous screen.

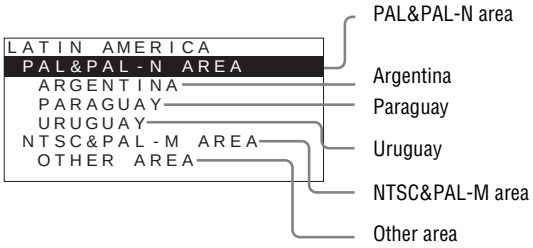


If you select either ② or ④

One of the following screens appears. Press the ↑ or ↓ button to narrow the area further and then press the → or ENTER button.

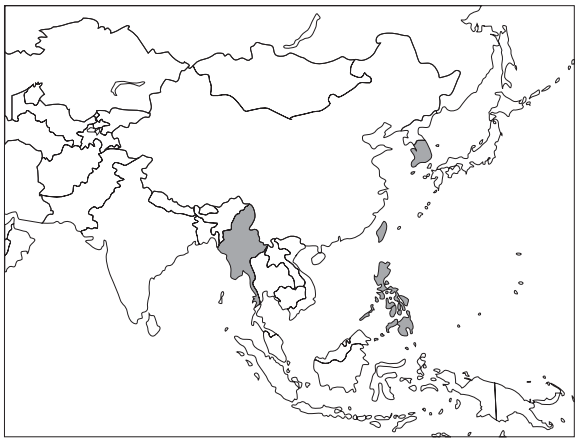
The confirmation screen is displayed. Confirm the selected area. When the setting is wrong, press the ← button to return to the previous screen.

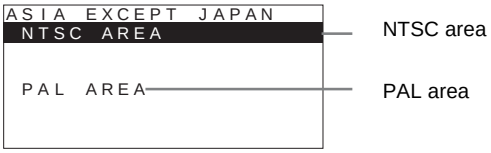
② If LATIN AMERICA is selected:



④ If ASIA EXCEPT JAPAN is selected:

Customers who will use this unit in the shaded areas shown in the map below should select NTSC AREA.
Other customers should select PAL AREA.





3 Press the ↑ or ↓ button to narrow the area further and then press the → or ENTER button.

The SELECT SETTING screen disappears and the menu item settings suitable for the selected area are applied.

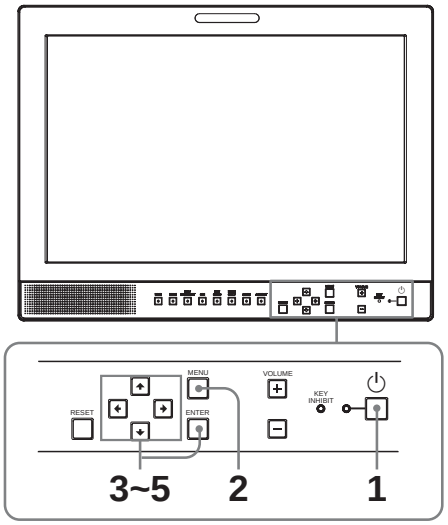
Note

When you have selected the wrong area, set the following items using the menu.
- COLOR TEMP (on page 17)
- COMPONENT LEVEL (on page 18)
- NTSC SETUP (on page 18)

See "The default setting values for each area" (page 13) on the setting value.

Selecting the Menu Language

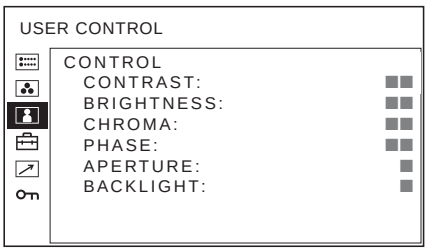
You can select one of seven languages (English, French, German, Spanish, Italian, Japanese, Chinese) for displaying the menu and other on-screen displays. "ENGLISH (English)" is selected in the default setting. The current settings are displayed in place of the ■ marks on the illustrations of the menu screen.



1 Press the ⏻ (standby) switch to turn on the unit.

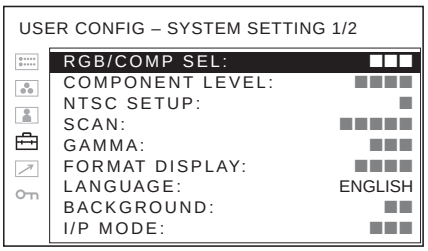
2 Press the MENU button.

The menu appears.
The menu presently selected is shown in yellow.



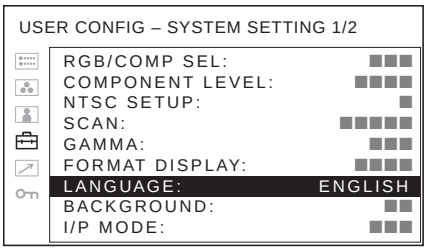
3 Press the ↑ or ↓ button to select SYSTEM SETTING of the USER CONFIG (User Configuration) menu, then press the → or ENTER button.

The setting items (icons) in the selected menu are displayed in yellow.



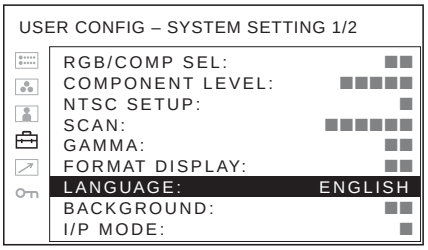
4 Press the ↑ or ↓ button to select "LANGUAGE," then press the → or ENTER button.

The selected item is displayed in yellow.



5 Press the ↑ or ↓ button to select a language, then press the → or ENTER button.

The menu changes to the selected language.



To clear the menu

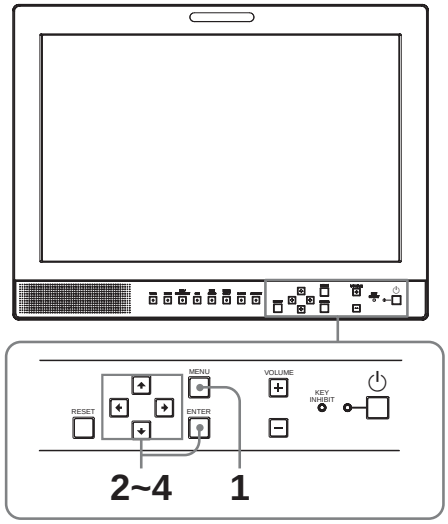
Press the MENU button.
The menu disappears automatically if a button is not pressed for one minute.

Using the Menu

The unit is equipped with an on-screen menu for making various adjustments and settings such as picture control, input setting, set setting change, etc. You can also change the menu language displayed in the on-screen menu.

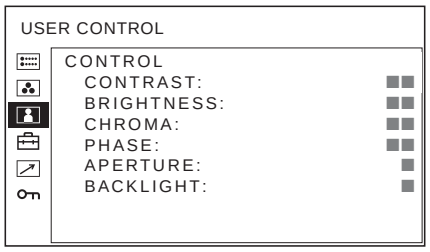
To change the menu language, see "Selecting the Menu Language" on page 14.

The current settings are displayed in place of the ■ marks on the illustrations of the menu screen.



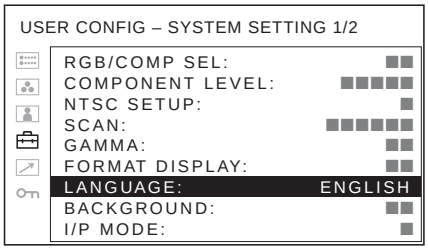
1 Press the MENU button.

The menu appears.
The menu presently selected is shown in yellow.



2 Press the ↑ or ↓ button to select a menu, then press the → or ENTER button.

The menu icon presently selected is shown in yellow and setting items are displayed.



3 Select an item.

Press the ↑ or ↓ button to select the item, then press the → or ENTER button.
The item to be changed is displayed in yellow.

Note

If the menu consists of multiple pages, press ↑ or ↓ button to go to the desired menu page.

4 Make the setting or adjustment on an item.

When changing the adjustment level:
To increase the number, press the ↑ button.
To decrease the number, press the ↓ button.
Press the ENTER button to confirm the number, then restore the original screen.
When changing the setting:
Press the ↑ or ↓ button to change the setting.
Press the ENTER button to confirm the setting.

Notes

- An item displayed in black cannot be accessed. You can access the item if it is displayed in white.
- If the key inhibit has been turned on, all items are displayed in black. To change any of the items, turn the key inhibit to OFF first.

For details on the key inhibit, see "KEY INHIBIT menu" (page 21).

To clear the menu

Press the MENU button.
The menu disappears automatically if a button is not pressed for one minute.

About the memory of the settings

The settings are automatically stored in the monitor memory.

To reset items that have been adjusted

Pressing the RESET button while you are adjusting any of the menu items resets the menu item to the previous setting.

Adjustment Using the Menus

Items

The screen menu of this monitor consists of the following items.

STATUS (the items indicate the current settings.)

For the video input
- FORMAT
- COLOR TEMP
- GAMMA
- COMPONENT LEVEL
- NTSC SETUP
- RGB/COMP SEL
- SCAN MODE
- Model name and serial number
- OPTION

For the DVI input
- FORMAT
- fH
- fV
- COLOR TEMP
- Model name and serial number
- OPTION

COLOR TEMP/BAL

- COLOR TEMP
- MANUAL ADJUSTMENT

USER CONTROL

- CONTROL

USER CONFIG

- SYSTEM SETTING
  - RGB/COMP SEL
  - COMPONENT LEVEL
  - NTSC SETUP
  - SCAN
  - GAMMA
  - FORMAT DISPLAY
  - LANGUAGE
  - BACKGROUND
  - I/P MODE
  - SD PIXEL MAPPING
- MARKER SETTING
  - MARKER ENABLE

MARKER SELECT
CENTER MARKER
SAFETY AREA
MARKER LEVEL

REMOTE

PARALLEL REMOTE
1PIN
2PIN
3PIN
4PIN
6PIN
7PIN
8PIN

KEY INHIBIT

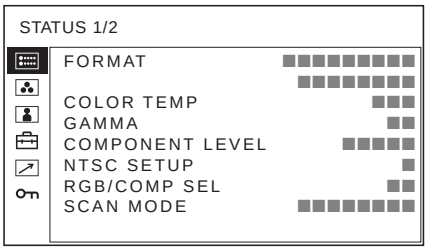
KEY INHIBIT

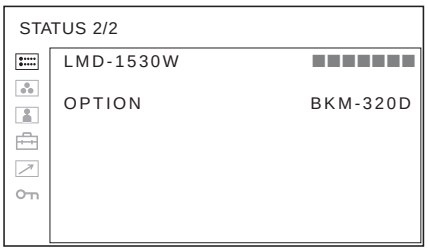
Adjusting and Changing the Settings

STATUS menu

The STATUS menu is used to display the current status of the unit. The following items are displayed:

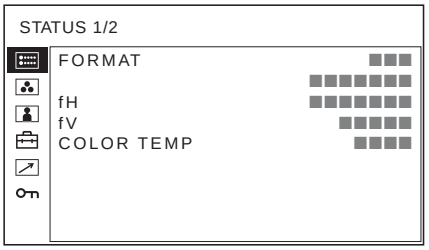
For the video input

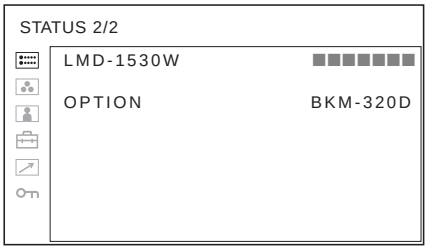




- Signal format
- Color temperature
- Gamma
- Component level
- NTSC setup
- RGB/Component select
- Scan mode
- Model name and serial number
- Option

For the DVI input

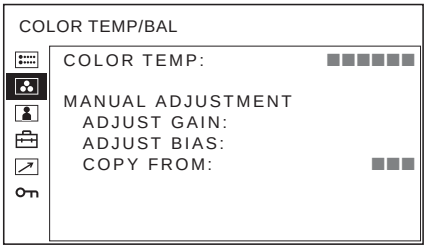




- Signal format
- fH
- fV
- Color temperature
- Model name and serial number
- Option

COLOR TEMP/BAL menu

The COLOR TEMP/BAL menu is used for adjusting the picture white balance.
You need to use the measurement instrument to adjust the white balance.
Recommended: Konica Minolta color analyzer CA-210



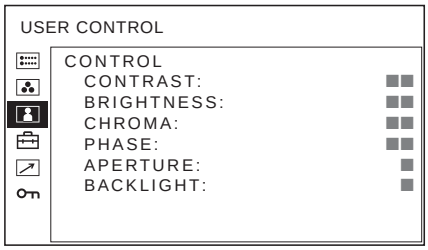
Submenu	Setting
COLOR TEMP	Selects the color temperature from among HIGH, LOW and USER setting.

Submenu	Setting
MANUAL ADJUSTMENT	If you set the COLOR TEMP to USER setting, the item displayed is changed from black to white, which means you can adjust the color temperature. • **ADJUST GAIN**: Adjusts the color balance (GAIN). • **ADJUST BIAS**: Adjusts the color balance (BIAS). • **COPY FROM**: If you select HIGH or LOW, the white balance data for the selected color temperature will be copied in the USER setting.

USER CONTROL menu

The USER CONTROL menu is used for adjusting the picture.
Items that cannot be adjusted depending on the input signal are displayed in black.

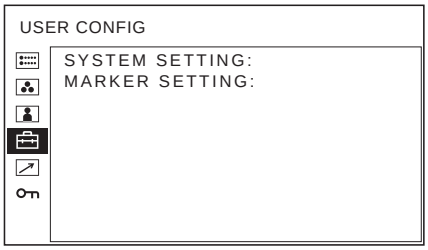
For details of input signal and adjustable / setting items, see page 9.



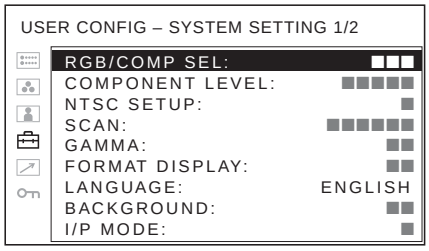
Submenu	Setting
CONTROL	You can adjust the picture. • **CONTRAST**: Adjusts the picture contrast. • **BRIGHTNESS**: Adjusts the picture brightness. • **CHROMA**: Adjusts color intensity. The higher the setting, the greater the intensity. The lower the setting, the lower the intensity. • **PHASE**: Adjusts color tones. The higher the setting, the more greenish the picture. The lower the setting, the more purplish the picture. • **APERTURE**: Adjusts the picture sharpness. The higher the setting, the sharper the picture. The lower the setting, the softer the picture. • **BACKLIGHT**: Adjusts the backlight. When the setting is changed, the brightness of the backlight is changed.

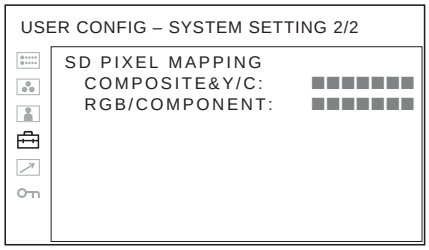
USER CONFIG menu

The USER CONFIG menu is used for setting the system and marker. You can set the display language and so on. Items that cannot be adjusted depending on the input signal are displayed in black.



SYSTEM SETTING



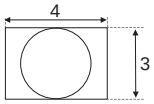
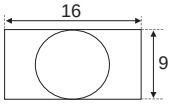
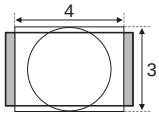
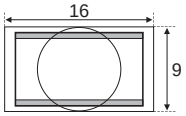
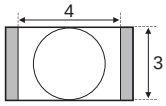
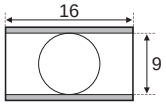
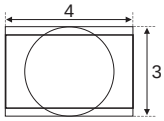
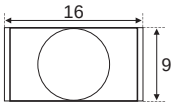


Submenu	Setting
RGB/COMP SEL	When a signal input via the RGB/COMPONENT connector is being monitored, based on the signal being input, select RGB or COMP (component).
COMPONENT LEVEL	Selects the component level from among three modes. • **SMPTE**: for 100/0/100/0 signal • **BETA0**: for 100/0/75/0 signal • **BETA7.5**: for 100/7.5/75/7.5 signal
NTSC SETUP	Selects the NTSC setup level from two modes. The 7.5 setup level is used mainly in North America. The 0 setup level is used mainly in Japan.

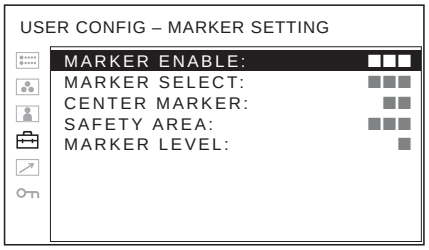
Submenu	Setting
SCAN	Sets the scan size of the picture. Select from OFF and FULL. The display format changes depending on the mode selected. (See “Scan mode image” on page 20) • **OFF**: Changes between over scan and normal scan. • **FULL**: Changes to over scan, normal scan or full screen.
GAMMA	Select the appropriate gamma mode. You can select from among five settings. When "3" is selected, the setting is roughly same as the gamma mode of the CRT (2.2).
FORMAT DISPLAY	Selects the display mode of the signal format. • **ON**: The format is always displayed. • **OFF**: The display is hidden. • **AUTO**: The format is displayed for about five seconds when the input of the signal starts.
LANGUAGE	Selects the menu or message language from among seven languages. • **ENGLISH**: English • **FRANÇAIS**: French • **DEUTSCH**: German • **ESPAÑOL**: Spanish • **ITALIANO**: Italian • 日本語 : Japanese • 中文 : Chinese
BACKGROUND	Sets the brightness of the black bars appearing in the upper and lower positions of the screen, or on the sides of the screen. • **OFF**: Displays a darker bar (black). • **ON**: Displays a brighter bar (gray).
I/P MODE (picture delay minimum)	Select to set the delay by the picture processing to the minimum level when the signal is input. • **INTER-FIELD**: Performs interpolation depending on the movement of the images between the fields. It takes longer than “LINE DOUBLER” for processing the picture. “INTER-FIELD” is the factory setting. • **LINE DOUBLER**: The processing time is shorter. Performs interpolation by repeating each line in the data receiving sequence regardless of the field. As the line flicker is displayed in this mode, it is available for checking the line flicker of the telop work and so on.

Submenu	Setting
SD PIXEL MAPPING	Selects SD picture size (pixels) according to input signal format. • **COMPOSITE&Y/C**: Set to monitor the signal input through the LINE connector (VIDEO IN or Y/C IN connector). • **RGB/COMPONENT**: Set to monitor the signal input through the RGB/ COMPONENT connector. **When picture signals in the size of 720 × 576 (50i) (or 720 × 487 (60i)) are input** Select 720 × 576 (or 720 × 487). This is the default setting. When 702 × 576 (or 712 × 483) is selected, all sides of the input picture are cut off by several pixels. **When picture signals in the size of 702 × 576 (50i) (or 712 × 483 (60i)) or equivalent are input** Select 702 × 576 (or 712 × 483). When 720 × 576 (or 720 × 487) is selected, a black border (of several pixels wide) appears around the input picture.

Scan mode image

		Input	
			
Output	OVER SCAN (5% OVER SCAN)		
	NORMAL SCAN (0% SCAN)		
	FULL		

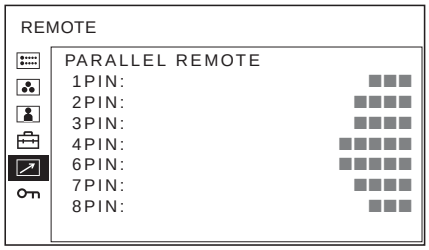
MARKER SETTING



Submenu	Setting
MARKER ENABLE	Selects ON to display the marker and OFF not to display.
MARKER SELECT	When the frame of the film is displayed on the screen, select the aspect ratio according to the film. **When 16:9 aspect ratio is selected with the ASPECT select button** You can select either 4:3 or OFF. **When 4:3 aspect ratio is selected with the ASPECT select button** You can select either 16:9 or OFF.
CENTER MARKER	Select ON to display the center mark of the picture and OFF not to display.
SAFETY AREA	Selects the safe area size for the aspect ratio determined by the button which the aspect function is assigned. You can select from among OFF, 80%, 85%, 88%, 90% and 93%. When the marker is displayed, the safe area for the marker is displayed.
MARKER LEVEL	Sets the luminance to display the MARKER SELECT, CENTER MARKER and SAFETY AREA. When the setting is low, the marker is displayed dark.

REMOTE menu

Select the PARALLEL REMOTE connector pins for which you want to change the function.



You can assign various functions to 1 to 4 pins and 6 to 8 pins. The following lists the functions you can assign to the pins.

REMOTE

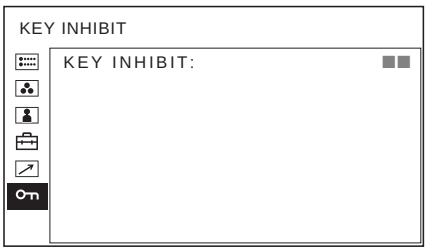
- – – – ("– – –": No function is assigned.)
- LINE
- HDMI
- RGB/COMP
- 16:9
- 4:3
- NORMAL
- OVER
- FULL
- TALLY R
- TALLY G
- EXT SYNC
- BLUE ONLY
- 16:9 MARKER
- 4:3 MARKER
- CENTER MARKER
- SAFE AREA 80%
- SAFE AREA 85%
- SAFE AREA 88%
- SAFE AREA 90%
- SAFE AREA 93%

• SDI

If you use the PARALLEL REMOTE function, you need to connect cables.

For more details, see page 23.

KEY INHIBIT menu



You can lock the setting so that they cannot be changed by an unauthorized user.
Select OFF or ON.
If you set to ON, all items are displayed in black, indicating the items are locked.

Troubleshooting

This section may help you isolate the cause of a problem and as a result, eliminate the need to contact technical support.

- **The display is colored in green or purple** → Select the correct input from the RGB/COMP SEL setting in the USER CONFIG menu (page 18).
- **The unit cannot be operated** → The key protection function works. Set the KEY INHIBIT setting to OFF in the KEY INHIBIT menu.

Specifications

Picture performance

LCD panel a-Si TFT Active Matrix
Picture size 15.3 type
334 × 200, 390 mm
(W/H, Diagonal)
(13 1/4 × 7 7/8, 15 3/8 inches)
Resolution 1280 × 768 dots (WXGA)
Viewing angle (LCD panel specifications)
(up/down/left/right, contrast > 10:1)
89°/89°/89°/89° (typical)
Scan Normal 0%
Over 5%
Aspect 15:9
Display color 16,770,000

Input/output connectors

Input

LINE input connectors
Y/C input 4-pin mini-DIN (1)
VIDEO input
BNC type (1), 1 Vp-p ±3 dB, negative synchronization
AUDIO input
Phono jack (1), –5 dBu 47 kΩ or higher
RGB/COMPONENT input connectors
BNC type (3)
RGB input 0.7 Vp-p ±3 dB, (Sync On Green, 0.3 Vp-p negative sync.)
Component input
0.7 Vp-p ±3 dB, (75% chrominance standard color bar signal)
AUDIO input
Phono jack (1), –5 dBu 47 kΩ or higher
OPTION IN connector
D-sub 9-pin (1), female
OPTION AUDIO IN connector
Phono jack (1), –5 dBu 47 kΩ or higher
External synchronized input connector
BNC type (1), 0.3 to 4 Vp-p ± bipolarity ternary or negative polarity binary
HDMI IN connector
HDMI (1)
PARALLEL REMOTE input connector
Parallel remote
Modular connector 8-pin (1)

Output

LINE output connectors
Y/C output 4-pin mini-DIN (1), Loop-through, with 75 Ω automatic terminal function
VIDEO output
BNC type (1), Loop-through, with 75 Ω automatic terminal function
AUDIO output
Phono jack (1), Loop-through
RGB/COMPONENT output connectors
RGB/Component output
BNC type (3), Loop-through, with 75 Ω automatic terminal function
AUDIO output
Phono jack (1), Loop-through
External synchronized output connector
BNC type (1), Loop-through, with 75 Ω automatic terminal function
Built-in speaker output
0.5 W (mono)

General

Power AC 100 to 240 V, 50/60 Hz
Power consumption
Maximum: approx. 50 W, 1.0 A to 0.5 A
Inrush current (1) Maximum possible inrush current at initial switch-on (Voltage changes caused by manual switching):
63A peak, 0.4A r.m.s. (240V AC)
(2) Inrush current after a mains interruption of five seconds (Voltage changes caused at zero-crossing):
51A peak, 0.3A r.m.s. (240V AC)
Operating conditions
Temperature
0 °C to 35 °C (32 °F to 95 °F)
Recommended temperature
20 °C to 30 °C (68 °F to 86 °F)
Humidity 30% to 85% (no condensation)
Pressure 700 hPa to 1060 hPa
Storage and transport conditions
Temperature
–20 °C to +60 °C (–4 °F to +140 °F)
Humidity 0% to 90%
Pressure 700 hPa to 1060 hPa
Accessories supplied
AC power cord (1)
AC plug holder (1)
Operating Instructions (1)
CD-ROM (1)
Using the CD-ROM Manual (1)
Optional accessories
Mounting bracket MB-533
SDI input adaptor BKM-320D

HD/SD-SDI input adaptor BKM-341HS

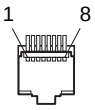
Design and specifications are subject to change without notice.

Note
Always verify that the unit is operating properly before use. SONY WILL NOT BE LIABLE FOR DAMAGES OF ANY KIND INCLUDING, BUT NOT LIMITED TO, COMPENSATION OR REIMBURSEMENT ON ACCOUNT OF THE LOSS OF PRESENT OR PROSPECTIVE PROFITS DUE TO FAILURE OF THIS UNIT, EITHER DURING THE WARRANTY PERIOD OR AFTER EXPIRATION OF THE WARRANTY, OR FOR ANY OTHER REASON WHATSOEVER.

Pin assignment

PARALLEL REMOTE connector

Modular connector
(8-pin)



Pin number	Functions
1	Designating LINE input signal
2	Designating HDMI input signal
3	Designating RGB/COMPONENT input signal
4	16:9
5	GND
6	4:3
7	Selecting NORMAL
8	Selecting OVER

For details on function allocations, see REMOTE menu (page 20).

Wiring required to use the Remote Control

Connect the function you want to use with a Remote Control to the Ground (Pin 5).

Video signal formats

The unit is applicable to the following signal formats.

System	Total lines	Active lines	Frame rate	Scanning format	Aspect ratio	Signal standard
575/50I (PAL)	625	575	25	2:1 interlace	16:9/4:3	EBU N10 (PAL: ITU-R BT.624)
480/60I (NTSC) *1	525	483	30	2:1 interlace	16:9/4:3	SMPTE 253M (NTSC: SMPTE 170M)
576/50P	625	576	50	Progressive	16:9/4:3	ITU-R BT.1358
480/60P	525	483	60	Progressive	16:9/4:3	SMPTE 293M
1080/24P *1	1125	1080	24	Progressive	16:9	SMPTE 274M
1080/25P	1125	1080	25	Progressive	16:9	SMPTE 274M
1080/30P *1	1125	1080	30	Progressive	16:9	SMPTE 274M
1080/50I	1125	1080	25	2:1 interlace	16:9	SMPTE 274M
1080/60I *1	1125	1080	30	2:1 interlace	16:9	SMPTE 274M/BTA S-001B
720/50P	750	720	50	Progressive	16:9	SMPTE 296M
720/60P *1	750	720	60	Progressive	16:9	SMPTE 296M

*1 Also supports frame rate 1/1.001.

Applicable DVI input signals

When a PC signal is input to the HDMI IN connector using a DVI conversion cable

Resolution	Dot clock (MHz)	fH (kHz)	fV (Hz)
720 × 400 70Hz	28.322	31.469	70.087
800 × 600 56Hz	36.000	35.156	56.250
800 × 600 60Hz	40.000	37.879	60.317
1024 × 768 60Hz	65.000	48.363	60.004
1280 × 768 60Hz	79.500	47.776	59.870

Note

The sides of the displayed picture may be invisible depending on the input signal.

When an optional input adaptor is conneted, the unit is applicable to the following signal formats.

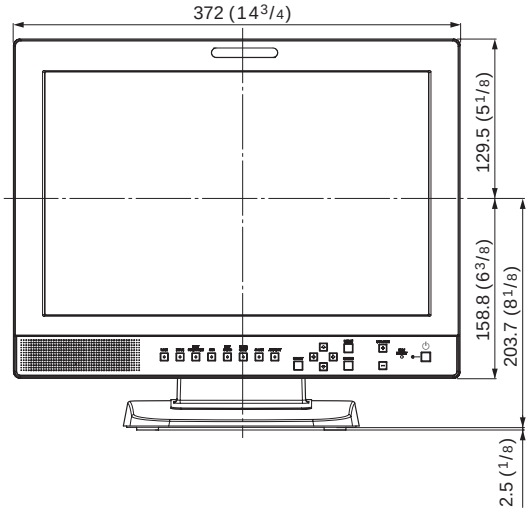
When BKM-320D/BKM-341HS is connected

	Input		
System	BKM-320D	BKM-341HS	Signal standard
575/50I	○	○	SMPTE 259M
480/60I*1	○	○	SMPTE 259M
1080/24PsF*1	–	○	SMPTE 292M
1080/25PsF	–	○	SMPTE 292M
1080/24P*1	–	○	SMPTE 292M
1080/25P	–	○	SMPTE 292M
1080/30P*1	–	○	SMPTE 292M
1080/50I	–	○	SMPTE 292M
1080/60I*1	–	○	SMPTE 292M
720/50P	–	○	SMPTE 292M
720/60P*1	–	○	SMPTE 292M

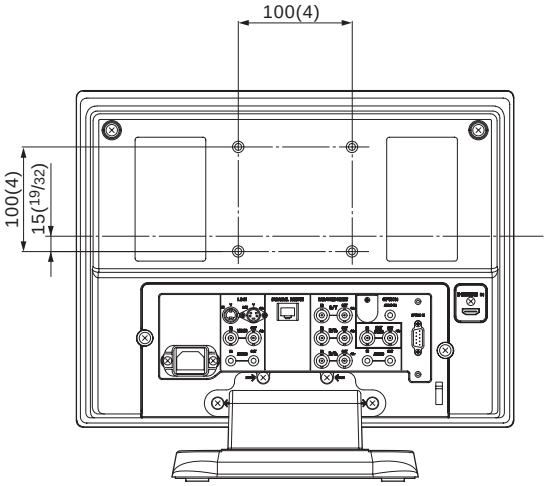
○ : Can be input
– : Cannot be input
*1 The frame rate is also compatible with 1/1.001.

Dimensions

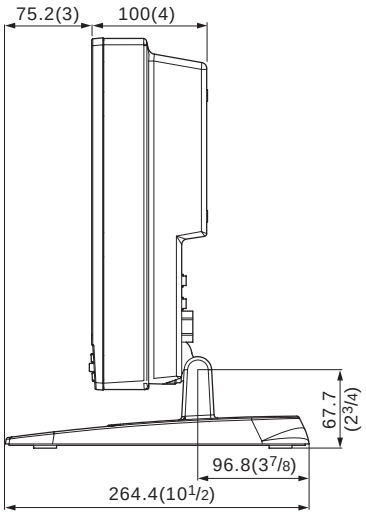
Front



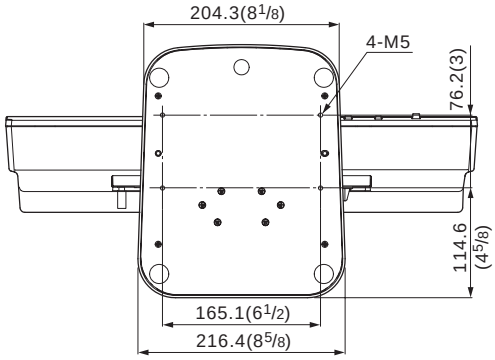
Rear



Side



Bottom



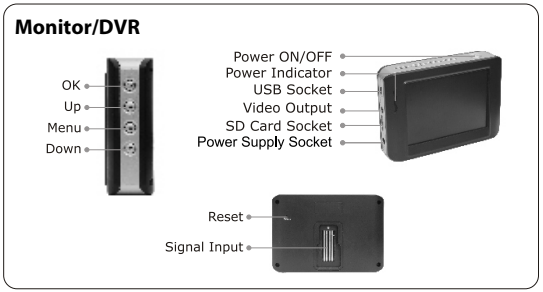
Unit: mm (inches)

Mass:
Approx. 5.9 kg (13 lb)

3.6 inch Monitor and DVR User Manual*

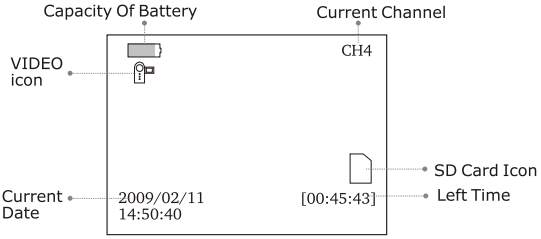
*manual applies to the following part numbers:

EM16797 - iShot® Sidewinder™ 3.6 inch Monitor and DVR Wedge Mount Kit
EM16627 - iShot® Sidewinder™ 3.6 inch Monitor and DVR Wrist Mount Kit
EM15651 - iShot® Sidewinder™ 3.6 inch Monitor and DVR



Record Video

1. During operation, press ▲ button to enter VIDEO mode:



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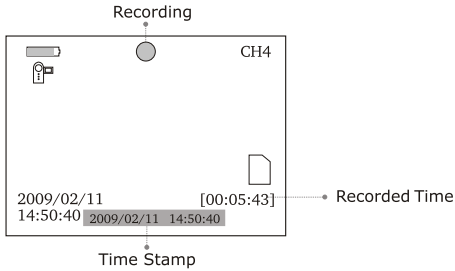
REV 1, 1.9.17

2. Press OK button to record:

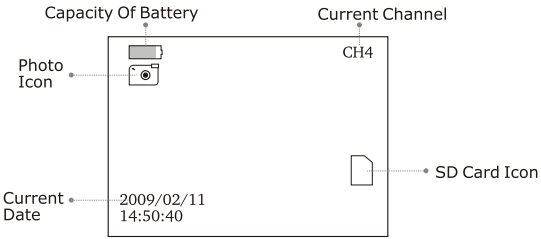


3. Press OK button again to stop recording.

Notice! * The Video will be automatically saved as a file every 30 minutes.
* SD card is full when the SD card icon changes to "F".

Take Photo

1. During operation, press ▲ button to switch to photo mode:



2. Press OK button to take photo.

Notice! when the SD card icon changes to "F" the SD card is full

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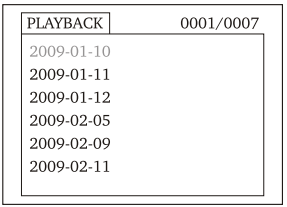
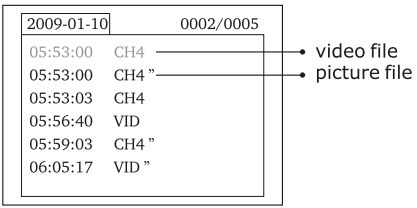
Play Video/Picture

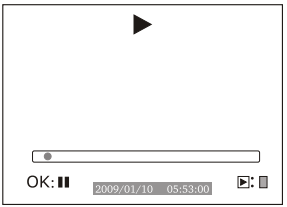
1. During operation, press ☰ button to display:



2. Press ▲ or ▼ button to select folder, then press OK button:



3. *For Video:*
   Press ▲ or ▼ button to select video, then press OK button to play



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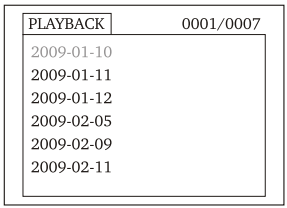
Pause: press OK button in playing status to pause;
press again to resume;
Fast Forward: press ▲ button in playing status;
Fast Backward: press ▼ button in playing status;
Stop/Exit: press ≡ button.

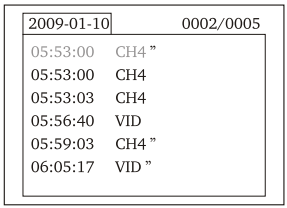
For Picture:
Press ▲ or ▼ button to select picture, then press OK button to display, press OK button again to exit.

Delete Video/Picture

1. During operation, press ≡ button to display:



2. Press ▲ or ▼ button to select folder, then press OK button:



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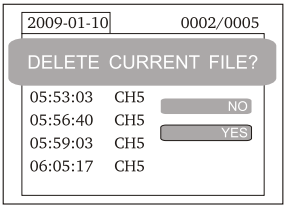
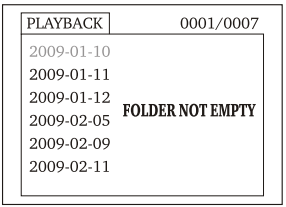
3. Press ▲ or ▼ button to select file, press and hold ≡ button for 2 seconds:



4. Press ▲ or ▼ button to select “YES” , then press OK button to delete selected file; press "NO" to exit.

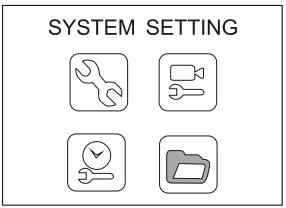
Delete Folder

To delete a folder, follow the same procedures as deleting a file. Make sure the folder is empty, otherwise it will not delete and a warning will appear.



How To Enter The Setting Mode

During operation, press and hold ≡ button for about 1-2 seconds to enter into the setting interface:



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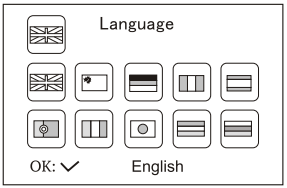
Language Setting

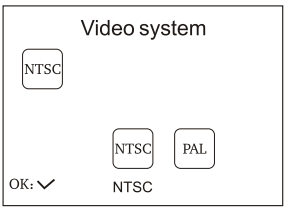
1. In the setting mode，press ▲ or ▼ button to select “SYSTEM SETTING”，press OK button to enter；
2. Press ▲ or ▼ button to select “Language”，press the OK button：



3. Press ▲ or ▼ button to select a suitable language；
4. Press OK button to confirm and exit.

Video System Setting

1. In the setting mode，press ▲ or ▼ button to select “SYSTEM SETTING”，press OK button to enter；
2. Press ▲ or ▼ button to select “Video System”，press OK button：



3. Press ▲ or ▼ button to select right type，press OK button to confirm and exit.

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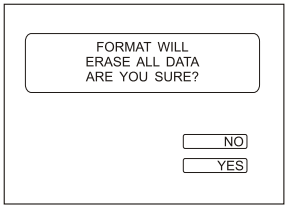
Format

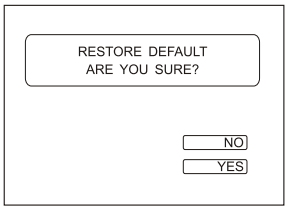
1. In the setting mode，press ▲ or ▼ button to select “SYSTEM SETTING”，press OK button to enter；
2. Press ▲ or ▼ button to select “Format”，press OK button：



3. Press ▲ or ▼ button to select “YES”，then press OK button to erase all data. Press "NO" to exit.

Default Setup

1. In the setting mode，press ▲ or ▼ button to select “SYSTEM SETTING”，press OK button to enter；
2. Press ▲ or ▼ button to select “Default Setup”，press OK button：



3. Press ▲ or ▼ button to select “YES”，then press OK button to restore default; Press "NO" to exit.

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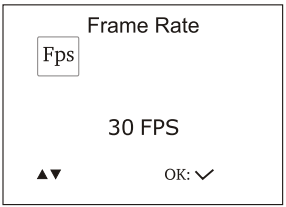
View Version Information

1. In the setting mode ,press ▲ or ▼ button to select “SYSTEM SETTING”, then press OK button to enter;
2. Press ▲ or ▼ button to select “Version”, press OK button to enter and view the version of product.

Frame Rate Setting

1. In the setting mode，press ▲ or ▼ button to select “RECORDER SETTING”，press OK button to enter；
2. Press ▲ or ▼ button to select “Frame Rate”，press OK button：



3. Press ▲ or ▼ button to select suitable frame rate;
4. Press OK button to confirm and exit.

Time Stamp Setting

1. In the setting mode，press ▲ or ▼ button to select “RECORDER SETTING”，press OK button to enter；
2. Press ▲ or ▼ button to select “Time Stamp”，press OK button：

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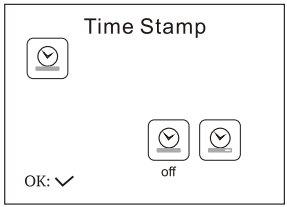
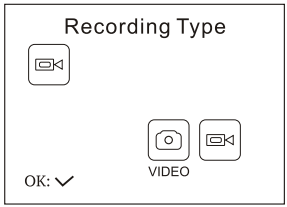


3. Press ▲ or ▼ button to select “Off”，“On”，press OK button to confirm and exit.

Recording Type

1. In the setting mode，press ▲ or ▼ button to select “RECORDER SETTING”，press OK button to enter；
2. Press ▲ or ▼ button to select “Recording Type”，press OK button：

Select “VIDEO” or “STILL”



3. Press ▲ or ▼ button to select “STILL”，“VIDEO”， press OK button to confirm and exit.

Notice! when in “STILL” mode, you cannot record video

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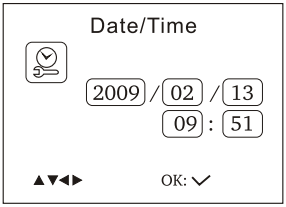
Date/Time Setting

1. In the setting mode, press ▲ or ▼ button to select "Date/Time", press OK :



2. Press OK button to select Date or Time;
   press ▲ or ▼ button to modify;
   press ≡ button to confirm and exit.

EVENT PLAYBACK

1. In the setting mode, press ▲ or ▼ button to select "EVENT PLAYBACK", press OK button to enter;
2. Other operation see "Play Video/Picture", "Delete Video/Picture","Delete Folder" section.

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SPECIFICATIONS

Monitor/ Recorder

screen	type	3.6" TFT LCD w/ anti-reflective coating
	pixels	640 × 480
	viewing angle	50 degrees
recording	media	micro SD card (up to 32 GB)
	video	AVI at 640 × 480 and up to 30 fps
	images	JPG at 640 × 480
outputs	phono	(analog video)
	mini USB	(digital video files)
wireless	range	up to 32'
	format	2.4 GHz at FM
	charge/operating time	3 hr. / 1.5–3 hr.
features		time/date stamp, 10 languages, selectable PAL/NTSC

* Actual transmission range may vary according to the weather, location, interference and building construction.
* All the specifications are subject to minor change without prior notice.

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WARRANTY INFORMATION

Consumer Warranty
This Sidewinder™ inspection camera is warranted to the original purchaser for a period of one year from the date of original purchase against all defects in materials and workmanship. This limited warranty is void if the unit is abused, modified, installed improperly, or if the housing and/or serial numbers have been removed. There are no express warranties covering this product other than those set forth in this warranty. All express or implied warranties for this product are limited to the above time. Peerless Creations LLC is not liable for damages arising from the use, misuse, or operation of this product. During the warranty period, defective units will be repaired without charge to the purchaser when returned with a dated receipt to the address below. Units returned without a dated receipt will be handled as described in section "Service Out of Warranty".

Note: Damage caused by incorrect battery placement or battery leakage is not covered under this warranty.

When returning a unit for service, please follow these instructions:

1. Ship the unit in the original carton or in a suitable sturdy equivalent, fully insured, with return receipt request to: Sidewinder™ Repair Dept.
1705 US Highway 46
Ledgewood, NJ 07852

Please allow 3 weeks turnaround time.

Important: Peerless Creations will not assume responsibility for loss or damage incurred in shipping. Therefore, please ship your unit insured with return receipt requested. CODs will not be accepted!

2. Include with your unit the following information, clearly printed:
• Your name and street address (for shipping via UPS, FedEx or DHL), a daytime telephone number and an email address.
• A detailed description of the problem (e.g., "Cannot adjust brightness").
• A copy of your dated receipt or bill of sale.
3. Be certain your unit is returned with its serial number. For reference, please write your unit's serial numbers in the following spaces: Monitor S/N: Reel S/N:
Units without serial numbers are not covered under warranty. Important: To validate that your unit is within the warranty period, make sure you keep a copy of your dated receipt. You may register your warranty by sending an email to warranty@sidewindercam.com

Service Out of Warranty
Units will be repaired at "out of warranty" service rates when:
• The unit's original warranty has expired.
• A dated receipt is not supplied.
• The unit has been returned without its serial number.
• The unit has been abused, modified, installed improperly, or had its housing removed.

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FCC INFORMATION

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) this device may not cause harmful interference,
(2) this device must accept any interference received, including interference that may cause undesired operation.
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: Changes or modifications not expressly approved could void the user's authority to operate the equipment.

EU Environmental Protection

Waste electrical products should not be disposed of with household waste. Please recycle where facilities exist. Check with your Local Authority or retailer for recycling advice.

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