SeeUV®

Coupler Inspection System

Operation & Service Manual EM18194

!

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

1.0 Introduction

Congratulations for your investment in the SeeUV® Coupler Inspection System; InterTest's White and UV visual inspection system for Couplers and other medium size parts.   All SeeUV® systems combine high resolution RVI instrumentation with ultraviolet illumination and precision inspection camera positioning mechanisms.   An operator can conduct white light, magnetic particle and fluorescent penetrant inspections of component internals with minimum fixturing.

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

Illumination Control

To attain a thorough remote visual examination of component internals, the SeeUV® systems have been designed with independent white and UV illumination capability. Intensity is controlled separately and operation can be simultaneous. The white and UV illumination is uniform across the field of view and is superior in spectral content and intensity.

Near-Coincident Viewing and Illumination Vectors

To minimize viewable shadows, InterTest uses high grade optics and micro components to position the field of vision axis within the projected illumination.

Robust Video Camera

All SeeUV video based systems have 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).

Generous Movement Envelope

Manual or optional motor control, the camera boom travel typically 270mm horizontally and 500mm* vertically.

* - specifications subject to change without notice.

REV 3, 04.25.17

2.0 Customer Support

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

Refer to page 4 for 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
Office: 908-496-8008
Toll free in USA - 800-535-3626
Fax: 908-496-8004
service@intertest.com

3.0 Warranty

InterTest, Inc. guarantees 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. All other products not manufactured by InterTest, Inc. will carry the OEM's original 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 liabilities 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, negligence, 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 cannot 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 & Inspection

Before setting up the Coupler Inspection System verify that all components and subassemblies are present and that none has suffered physical damage in transit.

The Shipment Contains:

- SeeUV Coupler Assembly
- Necessary Power Cords and Video Cables
- LSX24 White Light Source
- SUV-DC-E UV Light Source
- Sony LCD Monitor
- Control Unit
- Rotating Part Fixture (includes Part Mount, Indexer, Postioner Motor and Foot switch)

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. VERTICAL POSITIONING KNOB AND MOTOR DRIVE
B. HORIZONTAL POSITIONING HANDLE AND LOCKING THUMB SCREW
C. VERTICAL MOTION UPPER LIMIT SWITCH
D. VERTICAL MOTION LOWER LIMIT SWITCH
E. COLOR MONITOR
F.   SWING ARM
G. INSPECTION CAMERA HOLDER
H. CAMERA BOOM
I.   INSPECTION CAMERA
J.   EMERGENCY STOP
K. CAMERA CONTROL UNIT
L.   COUPLER MOUNT *(two locations noted on figure 1)*
M. ROTATING PART FIXTURE
N. ROTATION CONTROL FOOT SWITCH
O. WHITE LIGHT SOURCE
P.   UV LIGHT SOURCE
Q. MAINS POWER CABLE
R. STORAGE DRAWER
S. CAMERA CABLE *(two locations noted on figure 1)*

Figure 1

4.0 Unpacking & Inspection

Included Coupler Mounts

Mitsubishi Regional Jet	British Aerospace	Airbus New Engine Option

Figure 2

Included Optical Adapters

60 degree DOV Tip	45 degree DOV Tip	90 degree DOV Tip

Figure 3

5.0 Assembly

Equipment Placement

Place all components for the Coupler Inspection System 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 and within sight of the monitor. Avoid potential pinch points at all times.

Coupler Inspection System Setup

Reference the schematic (Figure 10) and the control panel layout (Figures 8 & 9)

1) On the control panel turn the power switch to off
2) Connect light guides White (B) and UV (A) to the respective sources
3) Connect power and control cable (C) to control unit
4) Connect 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 may result.

6.0 Operation

6.1 Start Up and Tip Installation

1) After making the connections noted in section 5 set power switch to on. Allow system boot up, approximately 15 seconds. The focus and elevation controls will now operate the Coupler Inspection System.

2) Select the 60 degree DOV tip (Figure 4) and install as shown in Figures 5, 6 and 7. The 60 degree DOV tip is the largest in length and will be necessary for Operation 6.5.

| 60 degree DOV Tip | 45 degree DOV Tip | 90 degree DOV Tip |
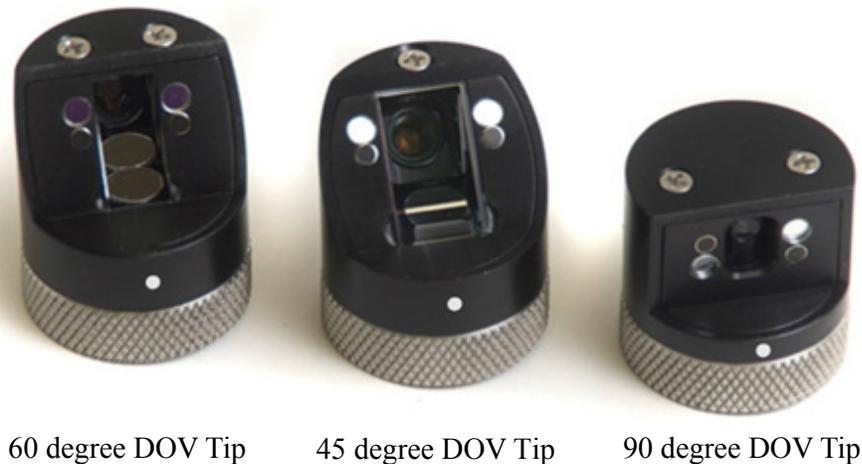
Figure 4

Figure 5

Align interior pins and exterior white marks on the Camera tip with the camera boom.

Figure 6

Insert Optical Adapter pins into Inspection Camera sockets.

Figure 7

Turn the knurled fastening collar clockwise until seated, (finger tight).

9

Operation

6. Controls *(see Figure 8-10)*

CAUTION: Position the monitor on the Swing Arm such that it is clear of the camera boom. Do not allow the Camera Boom to hit the monitor or swing arm. Assure the cables are free to move with the camera boom.

Set the lower limit of insertion travel without the part in place. Position the Vertical Motion Lower Limit Switch and the Inspection Camera in its holder such that the Camera Boom cannot touch the Coupler Mount when in the full down position.

Move the Inspection Camera to the full up position and retract the Camera Boom. Place the component to be inspected in the Coupler Mount. Move the inspection camera into place over the center of the component to be inspected. Verify there is no interference on entry into component. Move the inspection camera down slowly and observe both the image on the monitor and the Inspection Camera to verify no contact between component and camera.

Horizontal Positioning

To align the Inspection Camera over the component use the Horizontal Position Handle and Elevation Control Switch. Caution: Do not contact anything with the Inspection Camera or the Camera Boom.

Elevation

To control the vertical movement and elevation of the camera boom, use the Elevation Control on Control Unit.

Camera Controls

Adjust the camera's focus using the Focus Control switch found on the Control Unit. Switch between the Normal and Mirrored views using the rocker switch on the Camera Control Unit. The mirror control permits proper view orientation (mirrored or non-mirrored) to enable reading text.
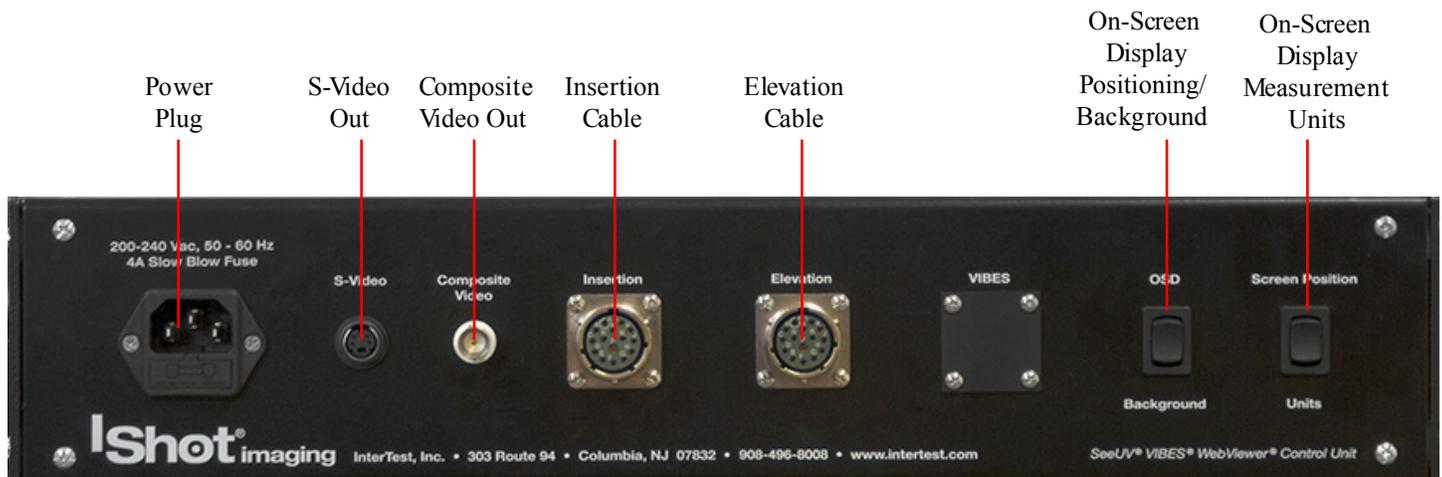
Rotation Control

The rotation speed and direction are controlled on the Rotating Part Fixture Base. Set as desired for inspection. Reference Figures 1 & 11.

Operation

Control Box Front Panel

Remote Control

Cable Connection

Camera Control Unit

Encoder Resets

Focus Control

Radial† Reach+ Control

Insertion Control†

Elevation Control †

Power ON/OFF

Figure 8

Mirror/ Normal Image Control

VIBES/ Web Viewer Control Selection*

Control Box Rear Panel

Power Plug

S-Video Out

Composite Video Out

Insertion Cable

Elevation Cable

On-Screen Display Positioning/ Background

On-Screen Display Measurement Units

Figure 9

Note: Specifications maybe different than pictured above.

* To operate the Coupler 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.

+ Radial Reach is not applicable with the Couple Inspection System

11

Operation

Coupler placement
(coupler may vary from illustration).

coupler mount

rotating part fixture

rotation speed control knob

rotating part fixture base

emergency stop

UV light source

UV Ignition

power to CCU

white light source

LS X24B

(A) UV light | **(B) white light**

(C/D) camera, control and connector

S-video

composite video

elevation cable

insertion cable

CCU BACK

CCU FRONT

power

rotation control foot switch

power

power

power

power

power

power strip

power outlet

Figure 10

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

Operation

6.3 Rotation Fixture

The Rotation Fixture (Figure 11) is equipped with a base for use with InterTest BA, NEO and MRJ couplers (see Figure 2).

Use chuck key and ratchet wrench to tighten 3 jaw chuck on the couple mount. Hand tighten only.

The UP/DOWN switch allows for Forward "UP Position", Reverse "DOWN Position" and "OFF" in the center position.

The Rotation speed is controlled by the dial numbered "0" for the Lowest Speed up to "10" for the Highest Speed.

NOTE: The numbers on the dial are for reference purposes only.

Figure 11

6.4 Encoder Controls

The Coupler Inspection System is designed to display a total of four (4) encoded position values to the monitor. There are two (2) values each for Insertion and Elevation.

Starting Value

It is suggested that Encoder 1 be used for setting the part reference datum and Encoder 2 be used to measure indications or features during inspections.

Resetting Values

Encoder values are set to zero by pressing the corresponding rocker switch on the Control Box.

On-Screen Display Options

- By default, the encoder reading will appear on screen 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.

13

Operation

6.5 Camera Boom Height Adjustment

The range of motion in the vertical direction (elevation) is set by two adjustments: 1.) The location of the Vertical Motion upper and lower limit switches (Figure 11 and 17) and 2.) The location of the Camera Boom in the Holder (Figure 14). This section provides instruction for making those adjustments.

Upper Elevation Limit

The upper Vertical Motion Limit Switch stays in a fixed

position at the top of the range(Figure 11)

Figure 11

Vertical Range Adjustment

Raise the Camera Boom to upper limit with the Elevation Control switch (refer to Figure 8). Place the appropriate coupler part in Coupler Mount. Use 7/32" hex key to adjust the Camera Boom height in the Inspection Camera Holder (Figure 12) so there is a finger width space between the 60 degree DOV Optical Adapter and the coupler part (Figure 13).
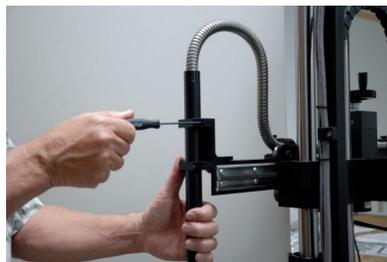
Figure 12   Figure 13

Operation

6.6 Aligning the Camera Boom

Once the height adjustment is complete, loosen the Camera Boom 4 cap screws with the 7/32" hex key (Figure 14) and position the Camera Boom center in the part (Figure 15). Tighten the 4 cap screws.

Figure 14

Figure 15

6.7 Setting the Lower Elevation Limit

Once fixed in place, move the Camera Boom horizontally out of the way and remove the coupler part from the Coupler Part Mount. Reposition the Camera Boom and then **CAREFULLY** lower the elevation with the Elevation Control Switch (refer to Figure 8) until there is a finger width space between the Optical Adapter and the Coupler Part Mount (Figure 16). Adjust the position of the Lower Elevation Limit Switch using the 9/32" hex key(Figure 17) to set the lower elevation limit so the Camera Boom and Optical Adapter do not bottom out on the Coupler Mount.

Figure 16

Figure 17

Operation

6.8 Monitor Inputs for Recording Use with the GVD-H1000

Remove the S-Video Cable from the Line In port on the back of the Sony LMD-1530W Monitor (Figure 18, A). Remove the BNC Composite Video Cable from the RGB Component In port (Figure 18, B).
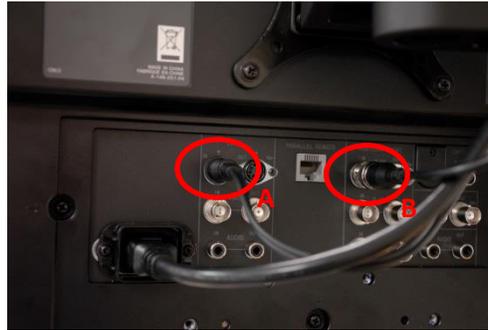
Figure 18

Connect the BNC to Line A input (Figure 19). **CAUTION:** If both S-Video and BNC Composite Video Cables are connected to monitor line A input, the monitor will NOT work (Figure 20). During recording, use BNC to the monitor line A and the S-Video cable to the recorder.

Figure 19

Figure 20

REV 3, 04.25.17

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.
- Use the miniature ball valve to drain catch pan under 3 jaw chuck.
- 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. Before moving clear all wires, foot switch, etc. from interference with wheels. Remove component and retract the inspection camera to a safe position.
- 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 or 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.
- Ensure camera boom is properly positioned to prevent damage.
- Do not move cart while camera is deployed.
- Keep monitor and Swing Arm clear of Camera Boom.
- Contact InterTest if you experience problems with camera head or control box use.

8.0 Safety

Boom Hazard

Use care when moving the Inspection Camera horizontal Boom. The Boom can make contact with the monitor. Keep the Monitor, Swing Arm and related cables clear of Boom motions both horizontal and insertion directions.

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 hot.

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

Moving Components

The Coupling Inspection System contains moving parts. Keep clear of all moving components to prevent injury.

18

9.0 Service Records

Product: <u>SeeUV Coupler Inspection System</u>

EM Number: _____

Serial Number: _____

Date of Purchase: _____

Date	Service Performed
___/___/___	_____ _____ _____
___/___/___	_____ _____ _____
___/___/___	_____ _____ _____
___/___/___	_____ _____ _____
___/___/___	_____ _____ _____
_____	_____

19

A. iShot® LSX-24B (24 watt) High Intensity Fiberoptic Light Source Kit
EM14580

Overview

- Kit Includes the Light Source Unit, Power Transformer and Power Cord
- Focused Spot Size Ideal for Light Guides 2mm and Narrower in Effective Diameter
- Dual Mode Operation Adds Versatility
- Delivers Three Times the Output per Watt Compared to a Halogen Lamp
- Small Size, Weight Enhance Portability, 1.4 pounds

Click on image to zoom

Accessories

Power Supplies

Replacement Power Transformer for 24-Watt Light Sources
EM10457

The Replacement Power Supply is a 120V to 12V AC power supply. This power supply couples with the replacement power cord and powers the LSX-24B, LSX24-VCI and LSX24-VBI light sources.

Replacement Lamps & Misc.

Ballast for the iShot 24-watt Xenon Light Source
EM13434

This regulated Ballast for the iShot 24-watt Xenon Light Source contains an internal regulator to maintain consistant power to the arc lamp.

24-watt Replacement Lamp for LSX24B
EM10456

This metal-halide arc solarc lamp deliveres bright light, with minimal power. It has a life of approximately 750 hours. 24-watt Replacement Lamp for the LSX-24B and the LS light source.

LUMATEC
UV-TECHNOLOGY

OPERATING MANUAL

FOR

SUPERLITE I05-DC-E

Retain this manual
near operating site
for future reference

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.

131024

FRONT PANEL

Symbol	Label
	T P U
	UV
	IGNITION
00000	OPERATING HRS
	INTENSITY

Hours counter   Lightguide Socket   Intensity Control   Lamp Ignition   UV / Visible

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

REAR PANEL

CE XXXXXXXXXXXXX
XXXXXXXXXXXX
XXXXXXXXXXXXXXX
XXXXXXXXXXXXX

Mains Switch   Mains Socket   Mains Fuses   Remote Control   Foot Switch   Cooling Air Intake with Dust Filter

CHANGING THE LAMP MODULE

Remove: 1...2...3
Install: 3...2...1
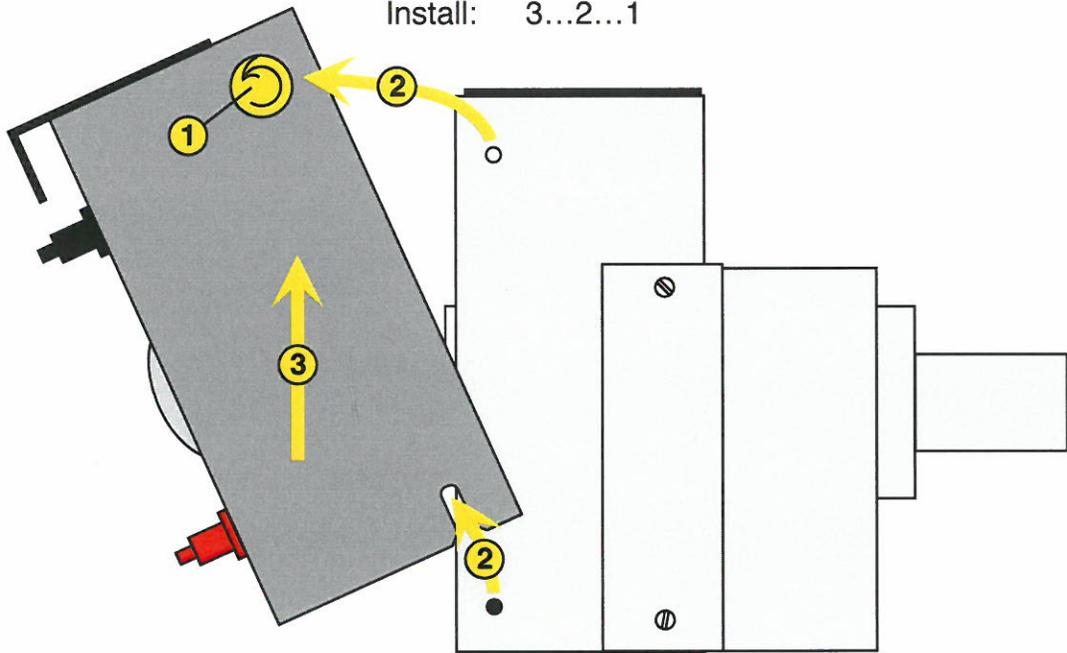
CHANGING THE DUST FILTER

Pry off protective grid

Replace dust filter

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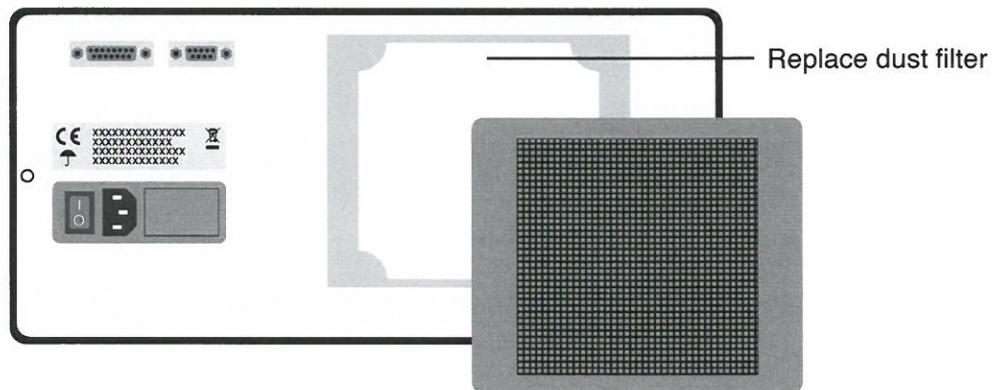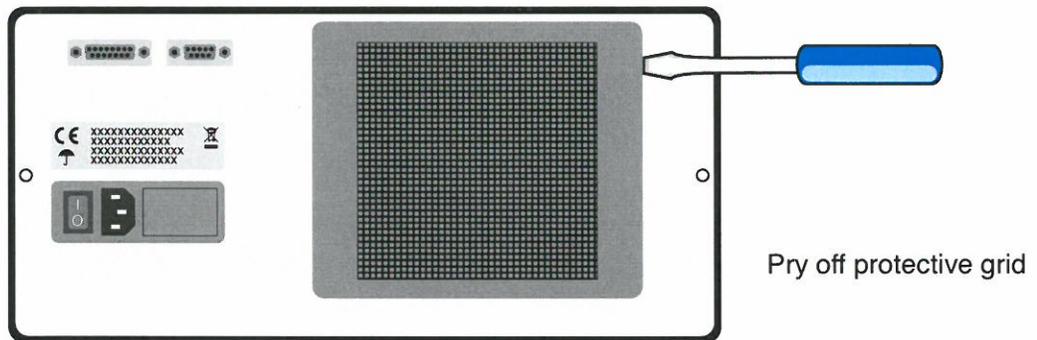
Mains Supply
The intelligent electronic power supply of the unit will adapt automatically to all AC currents from 110 to 240 Volts and 50 to 60 Hz. Connect power cord to a properly grounded AC outlet.

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.

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.

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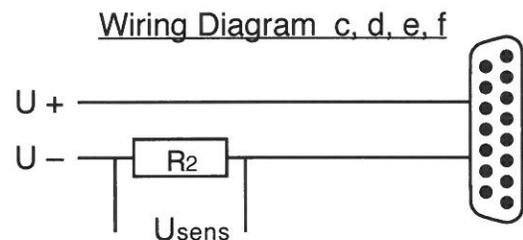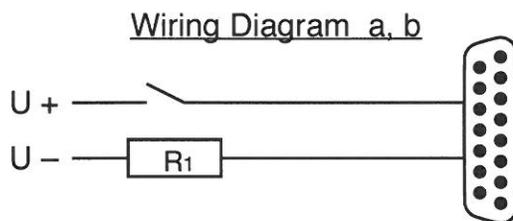
Adaptation to computer system voltages		
U	R_1	R_2
5 V_{DC}	not needed	270 Ω / 0.5 W
12 V_{DC}	330 Ω / 0.5 W	620 Ω / 0.5 W
24 V_{DC}	1 KΩ / 0.5 W	1.2 KΩ / 0.5 W

[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
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WWW.LUMATEC.EU • WEEE-REG-NR: DE67508364

TOSHIBA

CAMERA CONTROL UNIT

IK-CU44A

For Customer Use
Enter below the Serial No. which is located on the bottom of the cabinet. Retain this information for future reference.

Model No.: IK-CU44A

Serial No.:
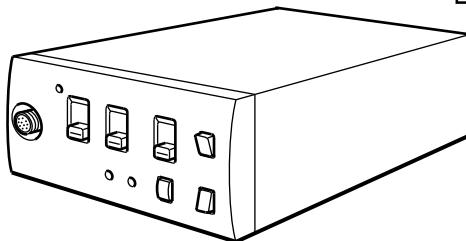
INFORMATION
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment 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 meets all requirements of the Canadian Interference Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur 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, Toshiba'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.

TABLE OF CONTENTS

1. COMPONENTS

2. SPECIFICATIONS

Specification with camera head (IK-M44H) 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.

3. NAMES AND FUNCTIONS

Camera Control Unit

② POWER switch

③ POWER indicator

④ AGC switch

⑤ WB switch

① CAMERA terminal

⑧ UP button

⑨ DOWN button

⑥ White balance adjust control

⑦ FUNC button

⑪ EXT SYNC terminal

⑫ S-VIDEO terminal

⑩ DC IN 12V terminal

⑬ VIDEO terminal

⑯ IRIS terminal

⑭ REMOTE terminal

⑮ FUNC LOCK switch
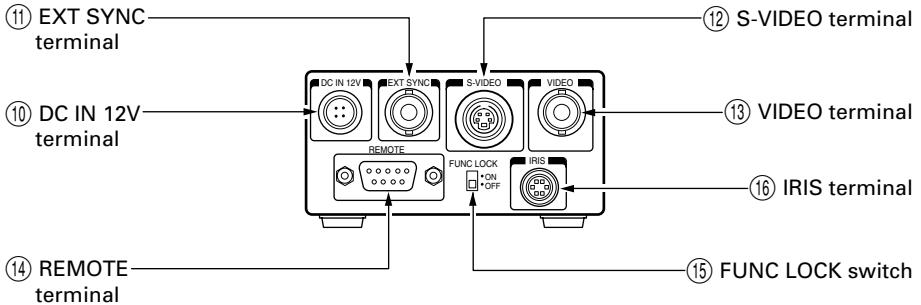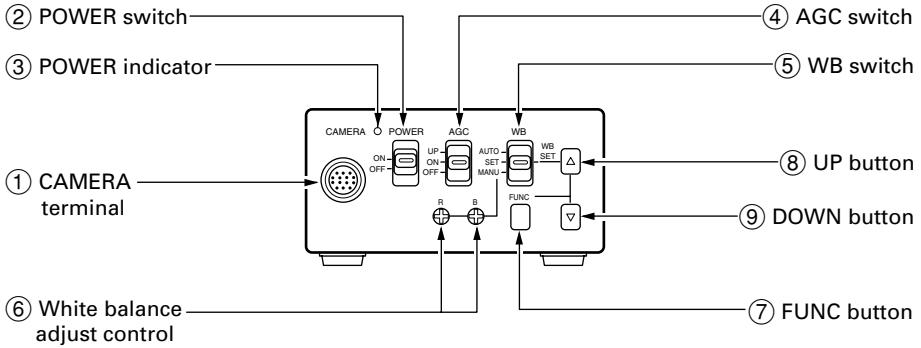
① CAMERA terminal	Connects to the camera head.	
② POWER switch	Turns on and off the camera control unit.	
③ POWER indicator	Lights up when the power is turned on.	
④ AGC switch	Selects the gain mode. (AGC OFF/AGC ON/SENS UP)	
⑤ WB switch	Selects the white balance mode. (MANU/SET/AUTO)	
⑥ White balance 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.	
	Can be used at the same time as video terminal.	
⑬ VIDEO terminal	Connects terminal to video input terminal of a monitor or a VCR, etc.	
	Can be used at the same time with the S-VIDEO terminal.	
⑭ REMOTE terminal	Controls the functions via 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 are locked out.	
⑯ IRIS terminal	Connect when using an automatic iris lens.	

4. CONNECTION

4.1 An Example of Standard Connection
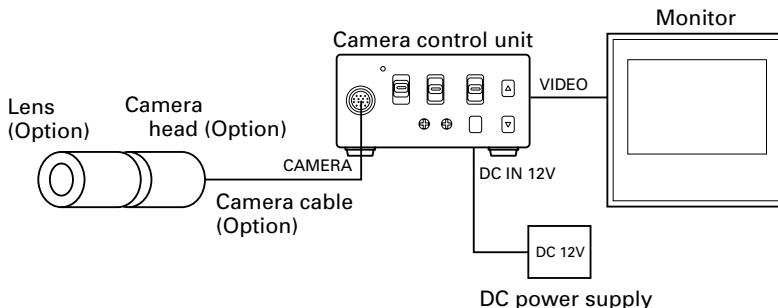
4.2 Cautions on Connection

- 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: $\oplus$, Pins 3, 4: $\ominus$

4.3 Connection on Back Panel

The figure below shows the back panel connection terminals of the camera control unit.
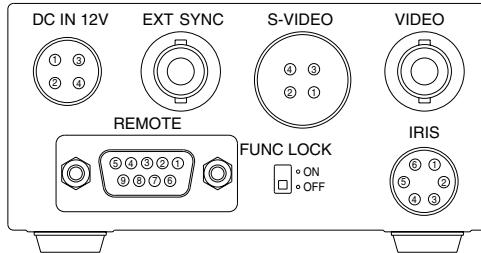
4.4 Connector Pin Assignments

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. See the Chapter OPTIONS for the IRIS extension cable.

```
┌─── 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.**

5. WHEN USING THE CAMERA WITH THE CAMERA UNIT FIXED

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 the exterior dimensions of the camera control unit.

6. OPERATION

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.

6.1 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 item 7.5)

6.2 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 shooting will be made in the AUTO mode. The color temperature applicable to this camera is approximately 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 the least variations of color temperature.
Notes	Under poor illumination, white balance may not be correct.		Adjustment will be made by viewing monitor or vector scope.

(1) White balance adjustment in modes other than AUTO

(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 by the object not being white enough, 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.

6.3 FUNC LOCK Switch

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.

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

INIT.
END
FUNCTION LOCK ACTIVE
PUSH FUNC TO SELECT
```

7. MODE SETTING BY ON SCREEN DISPLAY

Setting while monitoring the menu on the monitor screen is possible. The 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.
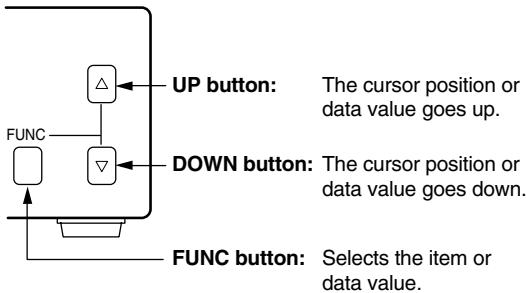
Main Menu

```
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 turn off the menu. New setting is stored in the camera.**

• **Don't turn off the POWER switch before turning off the menu. New setting is not stored, and old data remains.**

7.1 FILE (Scene 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 only valid in their set positions.**
- **The new settings are memorized when the POWER is turned off.**

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

INIT.
END

PUSH FUNC TO SELECT
```

```
FILE       A
SHUTTER    B
PEDESTAL
SYNC
AREA
WB-OFFSET

INIT.
END

PUSH FUNC TO SELECT
```

7.2 SHUTTER (Electronic Shutter, Backlight Correction)

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

AUTO: Controls electronic shutter automatically to output 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 intervals of 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 buttons. 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.

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

INIT.
END

PUSH FUNC TO SELECT
```

```
           AUTO
FILE       1/60
SHUTTER    1/100
PEDESTAL   1/250
SYNC       1/500
AREA       1/1000
WB-OFFSET  1/2000
           1/4000
INIT.      1/10000
END        SS 262/525H
           EXIT
PUSH FUNC TO SUB 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.

(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.

```
              AUTO
FILE          1/60
SHUTTER       1/100
PEDESTAL      1/250
SYNC          1/500
AREA          1/1000
WB-OFFSET     1/2000
              1/4000
INIT.         1/10000
END           SS 262/525H
              EXIT
PUSH FUNC TO SUB MENU
```

```
SHUTTER:AUTO   SUB MENU

LEVEL          00
BLC            OFF
PEAK:AVE       00:10
EXIT




PUSH FUNC TO SELECT
```

```
SHUTTER:AUTO   SUB MENU

LEVEL          00
BLC
PEAK:AVE
EXIT




PUSH FUNC TO SELECT
```

Example of display for LEVEL

```
              AUTO
FILE          1/60
SHUTTER       1/100
PEDESTAL      1/250
SYNC          1/500
AREA          1/1000
WB-OFFSET     1/2000
              1/4000
INIT.         1/10000
END           SS 262/525H
              EXIT
PUSH FUNC TO SELECT
```

7.3 Pedestal

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.

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

INIT.
END

PUSH FUNC TO SELECT
```

```
FILE
SHUTTER
PEDESTAL       00
SYNC
AREA
WB-OFFSET

INIT.
END

PUSH FUNC TO SELECT
```

7.4 SYNC (Setting for External Synchronization)

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

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

INIT.
END

PUSH FUNC TO SELECT
```

```
FILE       A
SHUTTER    AUTO
PEDESTAL    00
SYNC       EXT.VBS
AREA       LINK:1
WB-OFFSET   00

INIT.
END

PUSH FUNC TO SELECT
```

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.**

```
FILE
SHUTTER
PEDESTAL
SYNC        H-PHS    50
AREA        SC-PHS    0
WB-OFFSET   SC-FINE  50
            EXIT
INIT.
END

PUSH FUNC TO SELECT
```

7.5 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 independently from the AREA setting for AGC and auto electronic shutter.

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

INIT.
END

PUSH FUNC TO SELECT
```

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.

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

PUSH FUNC TO SELECT
```

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.

The size of AREA is approximately as shown below.

```
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
```

(1) 1 (Whole monitor screen)

(2) 1/2

$\frac{1}{8}$V, $\frac{6}{8}$V, $\frac{1}{8}$V

$\frac{1}{6}$H, $\frac{4}{6}$H, $\frac{1}{6}$H

(3) 1/8

$\frac{2.5}{8}$V, $\frac{3}{8}$V, $\frac{2.5}{8}$V

$\frac{1}{3}$H, $\frac{1}{3}$H, $\frac{1}{3}$H

(4) SLIT

$\frac{1}{8}$V, $\frac{6}{8}$V, $\frac{1}{8}$V

$\frac{2.5}{6}$H, $\frac{1}{6}$H, $\frac{2.5}{6}$H

7.6 WB-OFFSET (White Balance Offset)

This offsets the 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.

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

INIT.
END

PUSH FUNC TO SELECT
```

```
FILE
SHUTTER
PEDESTAL
SYNC
AREA
WB-OFFSET    00

INIT.
END

PUSH FUNC TO SELECT
```

7.7 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.

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

INIT.
END

PUSH FUNC TO SELECT
```

```
FILE        A
SHUTTER
PEDESTAL
SYNC
AREA
WB-OFFSET

INIT.       NO
END         YES

PUSH FUNC TO SELECT
```

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

The setting is common to scene files A and B.

```
SHUTTER     AUTO ───────────────────────────────────── LEVEL    00
PEDESTAL    00                                        ─ BLC      OFF
SYNC        EXT.VBS ──────────────── H-PHS   50       └ PEAK:AVE 00:10
AREA        LINK:1 ──┐ ⎛ SEP WB    1 ⎞  ─ SC-PHS   0
                     └─⎝ SHUTTER 1 ⎠  └─ SC-FINE 50
WB-OFFSET   00
```

7.8 END (Ending ON SCREEN DISPLAY)

To turn off 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 turn off the display by pressing END. When the display is turned off, 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.

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

INIT.
END

PUSH FUNC TO SELECT
```

8. EXTERNAL SYNC

When using the camera with 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 in reference 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 color 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.

External sync. signal

Match the phase.

Camera video output
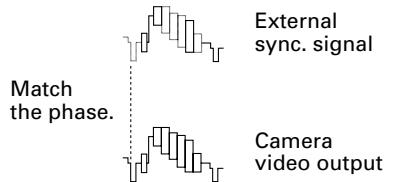
(3.2) SC (sub carrier) phase adjustment

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.

9. 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.

10. BEFORE MAKING A SERVICE CALL

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.)

11. OPTIONAL PARTS

For further details, call the dealers.

Camera head

Type name	
IK-SM43H	7mm Camera head
IK-C44H	C mount head
IK-M44H	17mm Camera head
IK-UM44H	12mm Camera head

Unit : mm [inch]

Camera Control Unit

85 [3.35]

11 [0.43]

CAMERA ○ POWER   AGC   WB

ON   UP   AUTO   WB SET
OFF   ON   SET   △
      OFF   MANU.

R B   FUNC   ▽

40 [1.57]
20 [0.79]

156 [6.14]

7 [0.28]

10.5 [0.41]   20 [0.79]   21.5 [0.85]   21.5 [0.85]

DC IN 12V   EXT SYNC   S-VIDEO   VIDEO

REMOTE

FUNC LOCK   IRIS
ON
OFF

28 [1.10]
10 [0.39]

9 [0.35]
26.5 [1.04]
3.9 [0.15]

φ12 [0.47]

24.5 [0.96]   24 [0.94]   19 [0.75]

27 [1.06]   114 [4.49]

4-M3 pitch 0.5
Threaded hole

63 [2.48]

3.9 [0.15]

10.8 [0.43]
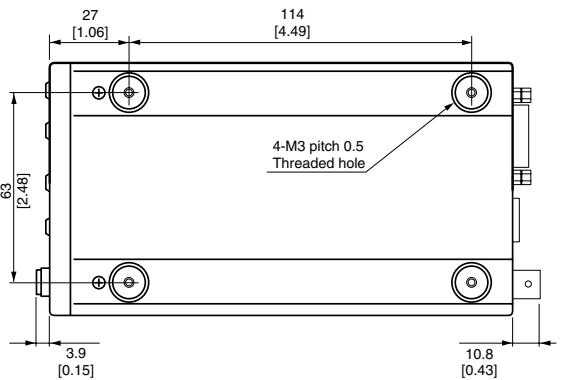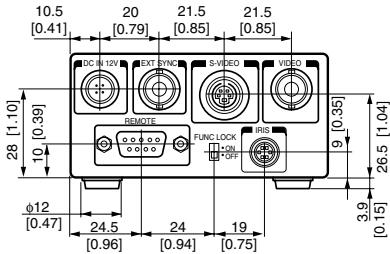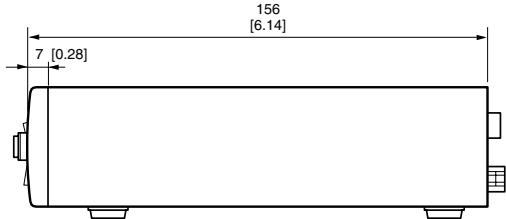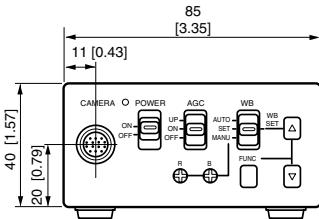
13. Connection to Camera Head (IK-M43H/IK-C43H)

When connecting to the camera head (IK-M43H/IK-C43H), 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	IK-M43H IK-CN43H
ON	IK-M44H IK-C44H IK-UM44H IK-SM44H IK-SM45H
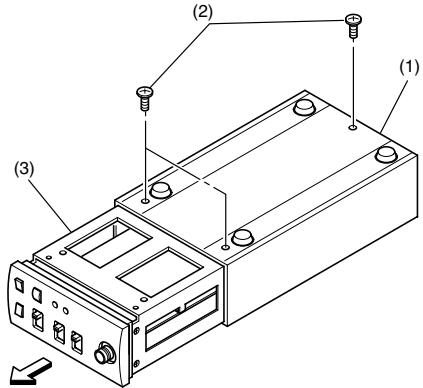
Note: Do not change the switch settings other than S101. If you change the settings, the normal image may not be obtained.

④ Perform the reverse procedures to assemble.
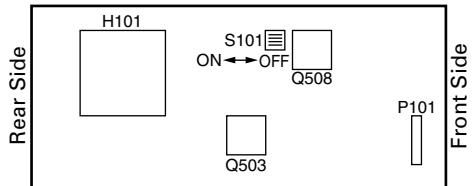
LIMITED WARRANTY

Promptly register your product with Toshiba on-line at www.toshiba.com/taisisd. By registering your product you will be eligible for periodic updates, announcements, and special offers. You will have access to extended warranty options, upgrades (as applicable), useful tips, on-line troubleshooting, and the ability to schedule service on-line if necessary. The Imaging Systems Division of Toshiba America Information Systems, Inc. ("ISD") makes the following limited warranties. These limited warranties extend to the Original End-User ("Your[r]").

Limited One (1) Year Warranty of Labor and Parts
ISD warrants this product and parts against defects in material or workmanship for a period of one year from the date of original retail purchase by the end-user. During this period, ISD will repair or replace a defective product or part with a new or refurbished item. The user must deliver the entire product to an ISD authorized service center. The user is responsible for all transportation and insurance charges for the product to the Service Center. ISD reserves the right to substitute Factory Refurbished Parts and / or Factory Refurbished Product in place of those in need of repair.

Step-by-step Procedures - How to Obtain Warranty Service
[1] Verify operation of the unit by checking the instruction manual
[2] If there is a defect in material or workmanship, contact an Authorized Service Provider within 30 days after the product fails to comply with specifications.
[3] Arrange for delivery of the product to the ISD authorized service center. Products must be insured and securely packed, preferably in the original shipping carton. A letter explaining the defect and a copy of the bill of sale or other proof of purchase must be enclosed with a complete return street address and daytime telephone number. Charges for transportation and insurance must be prepaid by the end-user.

> **Questions?** If you have any questions, please check the Toshiba Imaging Systems Division Web site as follows:

> **Website: http://www.toshiba.com/taisisd/indmed**

Your Responsibility, warranties are subject to the following conditions:
[1] You must retain the bill of sale or provide other proof of purchase.
[2] You must schedule service within thirty days after you discover a defective product or part.
[3] All warranty servicing of this product must be made by a Toshiba ISD Authorized Service Provider.
[4] The warranty extends to defects in material or workmanship as limited above, and not to any products or parts that have been lost or discarded by user. The warranty does not cover damage caused by misuse, accident, improper installation, improper maintenance, or use in violation of instructions furnished by ISD. The warranty does not extend to units which have been altered or modified without authorization of ISD, or to damage to products or parts thereof which have had the serial number removed, altered defaced or rendered illegible.

ALL WARRANTIES IMPLIED BY STATE LAW, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE EXPRESSLY LIMITED TO THE DURATION OF THE LIMITED WARRANTIES SET FORTH ABOVE. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply. WITH THE EXCEPTION OF ANY WARRANTIES IMPLIED BY STATE LAW AS HEREBY LIMITED, THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WITH RESPECT TO THE REPAIR OR REPLACEMENT OF ANY PRODUCTS OR PARTS. IN NO EVENT SHALL ISD BE LIABLE FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES. Some states do not allow the exclusion or limitation of incidental or consequential damages so the above limitation may not apply.

No person, agent, distributor, dealer, service station or company is authorized to change, modify or extend the terms of these warranties in any manner whatsoever. The time within which an action must be commenced to enforce any obligation of ISD arising under this warranty or under any statute, or law of the United States or any state thereof, is hereby limited to one year from the date you discover or should have discovered, the defect. This limitation does not apply to implied warranties arising under state law. Some states do not permit limitation of the time within which you may bring an action beyond the limits provided by state law so the above provision may not apply to user. This warranty gives the user specific legal rights, and user may also have other rights, which may vary from state to state.

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TOSHIBA

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

18" of vertical range

Folds into 3" of space

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

VESA MOUNTING COMPLIANT
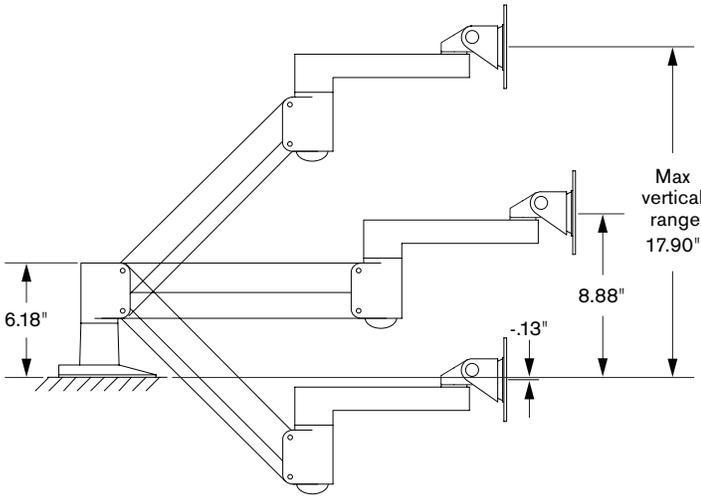
SIDE VIEW
Vertical Range

6.18"
Max vertical range 17.90"
8.88"
-.13"
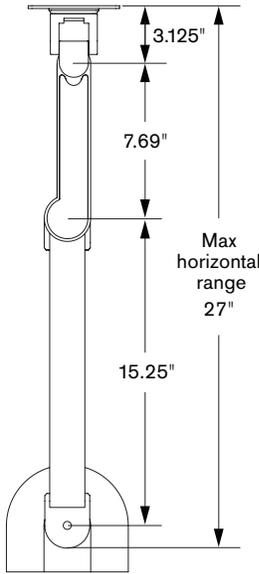
TOP VIEW
Horizontal Range

3.125"
7.69"
Max horizontal range 27"
15.25"
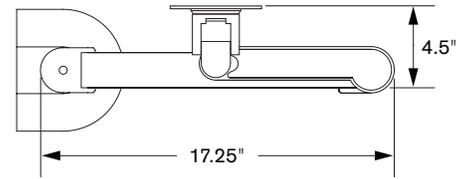
TOP VIEW
Arm Folded

4.5"
17.25"

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
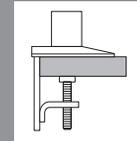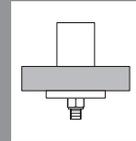
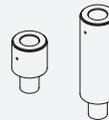| Desk Clamp	Thru-Desk	Wall
Grommet Hole	Side Bolt	Reverse Wall
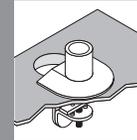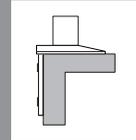
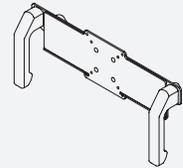## OPTIONAL ACCESSORIES

QUICK RELEASE ADAPTERS
Allows for quick attach and release of monitor *(8336-QR)*.
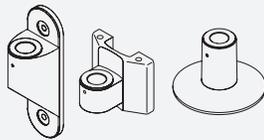
MOUNTS
Wall *(8325)*, slatwall *(8246)* and thru-desk *(8312)*.

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)*.

LIT-1016

LCD Monitor

Operating Instructions

HDMI™
HIGH-DEFINITION MULTIMEDIA INTERFACE

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.
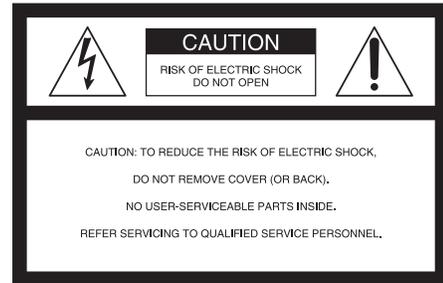
WARNING

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         │   /!\
  /⚡\   │  RISK OF ELECTRIC    │
        │     SHOCK            │
        │     DO NOT OPEN      │
        └──────────────────────┘

   CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
        DO NOT REMOVE COVER (OR BACK).
       NO USER-SERVICEABLE PARTS INSIDE.
   REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.
```

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.

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.

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.

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 both the EMC Directive and the Low Voltage Directive issued by the Commission of the European Community. Compliance with these directives implies conformity to the following European standards:
• EN60065 : Product Safety
• 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 Electronic Industries Alliance (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

- 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 monitor's screen. Do not place a heavy object on the LCD monitor's 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.
- If a fixed picture such as a frame of a divided picture or time code, or a still picture is displayed for a long time, an image may remain on the screen and be superimposed as a ghosting image.
- The screen and the cabinet become warm during operation. This is not a malfunction.

Note on Faulty Pixels on the LCD Panel

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.

About the Fluorescent Tube

A specially designed fluorescent tube is installed as the lighting apparatus for this unit. If the LCD screen becomes dark, unstable or does not turn on, consult your Sony dealer.

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 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 Replacing the Parts

Note that if service personnel changes some parts during repair, these parts may be retained.

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-inch) 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.
SDI signals can be available when input adaptor BKM-320D (optional) is used.
Both NTSC and PAL color systems are supported, and the appropriate color system is selected automatically.

For more information, see "Video signal formats" (page 23).

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 -W- 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).

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 VCR noise.

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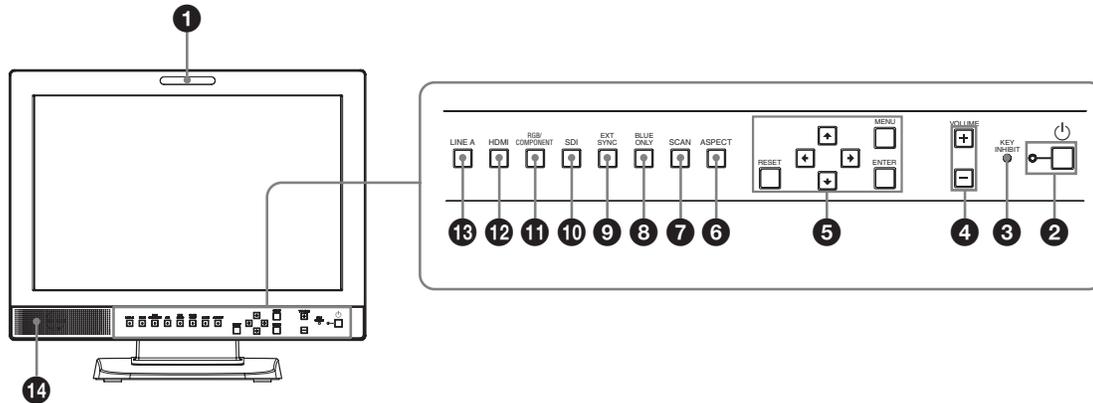
Select language display
You can select from seven display languages, English, French, German, Spanish, Italian, Japanese and Chinese.

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

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 20).

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), under (-3% under scan) and full screen set on the SCAN menu (page 18).

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 VCR 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 A button

Press to monitor the signal through the LINE A 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 A 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	D1	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	✕	✕	○	○	○	○	✕	✕	✕	✕

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

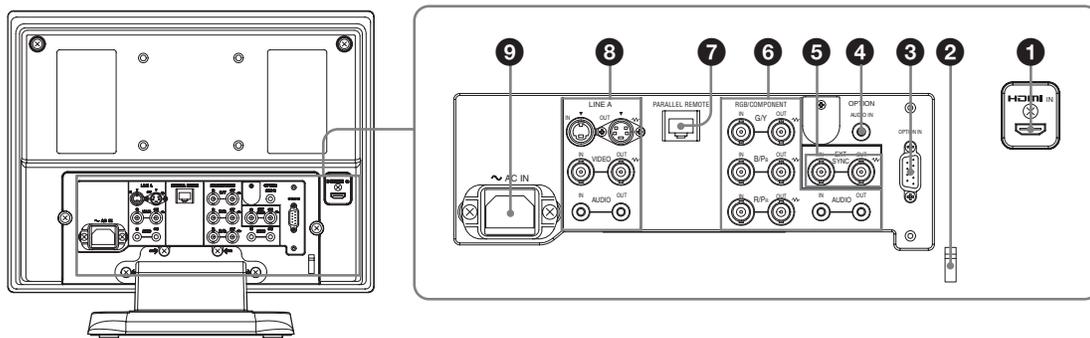*1 When a component signal (480/60I) is input, this can be switchable.
*2 When a 480/60P or 576/50P signal is input, this can be switchable.
*3 When an interlace signal is input, this can be switchable.
*4 When BKM-320D is used, SDI signals can be input.
*5 When a PC signal is input to the HDMI IN connector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

Rear Panel

1 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.

Note

Use HDMI compliant cable (optional) with HDMI logo.

2 HDMI cable holder

Secures the HDMI cable (Ø7 mm or less).
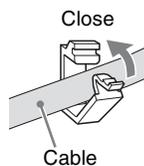
3 OPTION IN connector (D-sub 9-pin, female)

Inputs SDI signals when optional Sony input adaptor BKM-320D is connected.
Press the SDI button to select the signal.

Note

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

4 OPTION AUDIO IN connector (phono jack)

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

5 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.

6 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 22.

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 A connectors**
Line input connectors for Y/C separate, composite video and audio signals and their loop-through output connectors.
Press the LINE A 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.
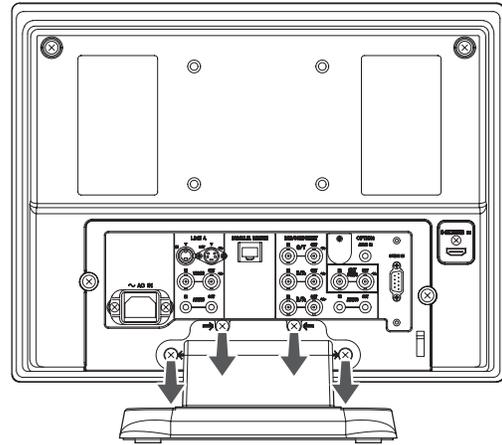
 AUDIO IN/OUT (phono jack)
 These are the input/output jacks for an audio signal. Connect them to the audio input/output jacks on equipment such as a VCR.
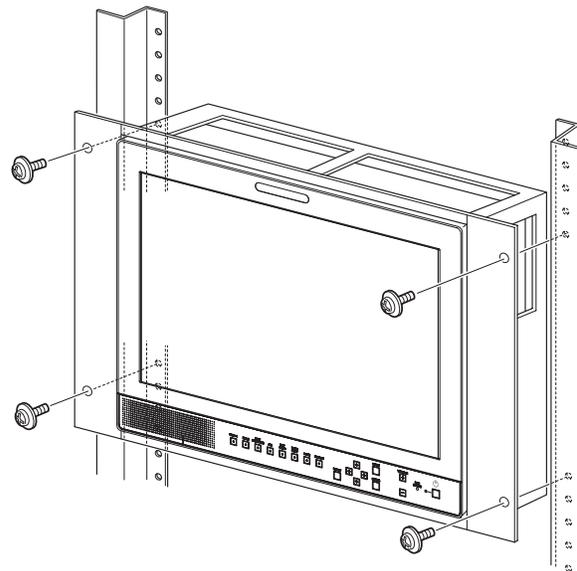
❾ **AC IN socket**
Connect the supplied AC power cord.

Installing to the Rack

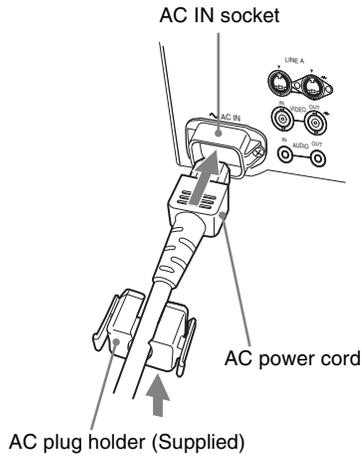**1** Remove the screws (4) to remove the stand.

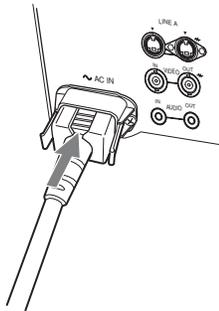**2** Attach the mounting bracket, then attach the unit to the rack.

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.

AC IN socket

AC power cord

AC plug holder (Supplied)

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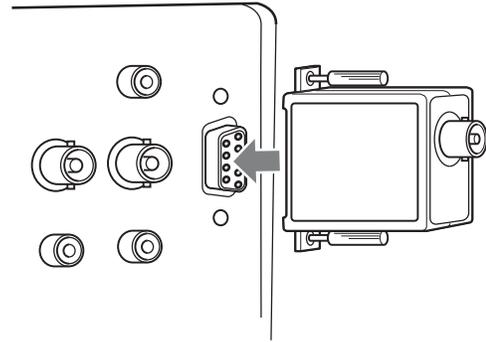

To disconnect the AC power cord

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

Attaching the Input Adaptor

Before attaching the input adaptor, disconnect the power cord.

Note

Do not connect the equipment other than BKM-320D. It causes damage to the unit or the equipment.
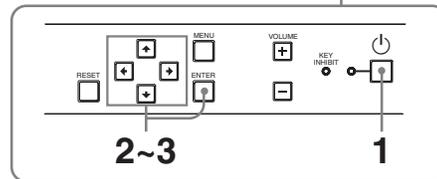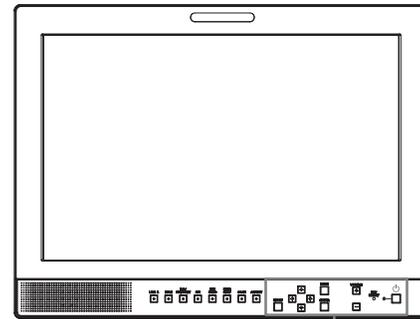
Selecting the Default Settings

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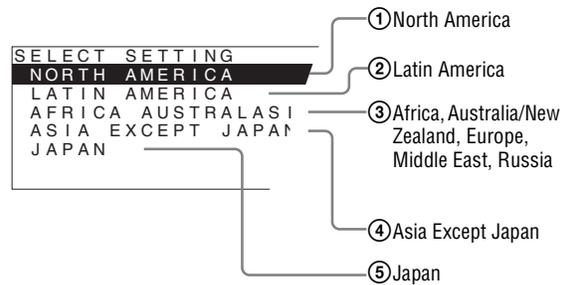
The default setting values for each area
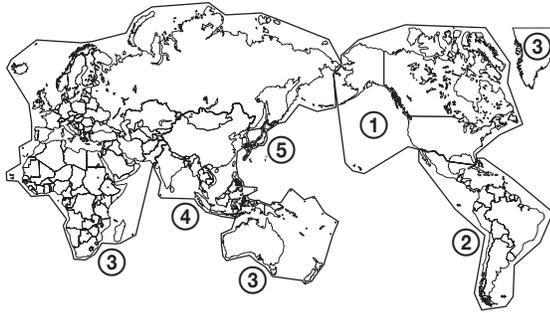
		COLOR TEMP	COMPONENT LEVEL	NTSC SETUP
①**NORTH AMERICA**		LOW	BETA7.5	7.5
②**LATIN AMERICA** PAL&PAL-N AREA	ARGENTINA	LOW	SMPTE	0
	PARAGUAY	LOW	SMPTE	0
	URUGUAY	LOW	SMPTE	0
NTSC&PAL-M AREA	OTHER AREA	LOW	BETA7.5	7.5
③**AFRICA AUSTRALASIA EUROPE MIDDLE-EAST**		LOW	SMPTE	0
④**ASIA EXCEPT JAPAN**	NTSC AREA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

1 Press the ⏻ (standby) switch.

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

①North America
②Latin America
③Africa, Australia/New Zealand, Europe, Middle East, Russia
④Asia Except Japan
⑤Japan

```
SELECT  SETTING
NORTH  AMERICA
LATIN  AMERICA
AFRICA  AUSTRALASI
ASIA  EXCEPT  JAPAN
JAPAN
```

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.

```
SELECT  THIS  AREA?
NORTH  AMERICA
    [ENTER]YES
    [MENU]NO
```
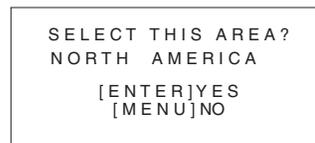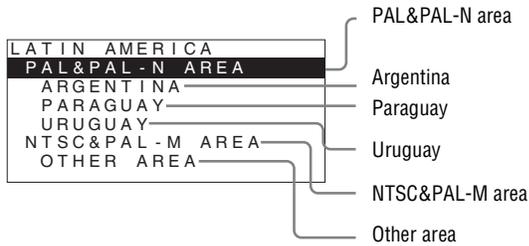
If you select either ② or ④
One of the following screens appears. Press the ↑ or ↓ button to narrow the area further and then press the ➡ or ENTER button.
The confirmation screen is displayed. Confirm the selected area. When the setting is wrong, press the ⬅ button to return to the previous screen.

PAL&PAL-N area

```
LATIN AMERICA
 PAL&PAL-N AREA
  ARGENTINA
  PARAGUAY
  URUGUAY
 NTSC&PAL-M AREA
  OTHER AREA
```

Argentina

Paraguay

Uruguay

NTSC&PAL-M area

Other area

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.


```
ASIA EXCEPT JAPAN
 NTSC AREA

 PAL AREA
```

NTSC area

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.
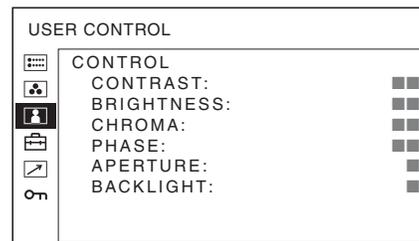
Selecting the Menu Language

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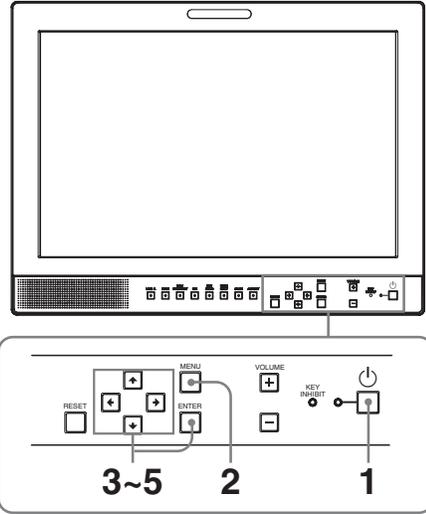
1 Press the ⏻ (standby) switch to turn on the unit.

2 Press the MENU button.

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

```
USER CONTROL

      CONTROL
        CONTRAST:        ■■
        BRIGHTNESS:      ■■
        CHROMA:          ■■
        PHASE:           ■■
        APERTURE:        ■
        BACKLIGHT:       ■
```

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.

```
USER CONFIG – SYSTEM SETTING
     RGB/COMP SEL:               □□□
     COMPONENT LEVEL:            ■■■■
     NTSC SETUP:                    ■
     SCAN:                       ■■■■■
     GAMMA:
     FORMAT DISPLAY:             ■■■■
     LANGUAGE:             ENGLISH
     BACKGROUND:                  ■■
     I/P MODE:                   ■■■
```
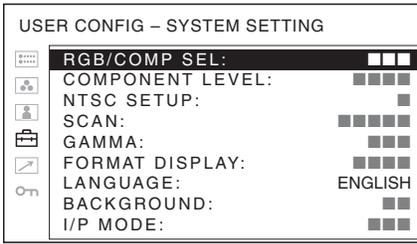
4 Press the ↑ or ↓ button to select "LANGUAGE," then press the ➡ or ENTER button.

The selected item is displayed in yellow.

```
USER CONFIG – SYSTEM SETTING
     RGB/COMP SEL:               ■■■
     COMPONENT LEVEL:            ■■■■
     NTSC SETUP:                    ■
     SCAN:                       ■■■■■
     GAMMA:                       ■■■
     FORMAT DISPLAY:             ■■■■
     LANGUAGE:             ENGLISH
     BACKGROUND:                  ■■
     I/P MODE:                   ■■■
```

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

The menu changes to the selected language.

```
USER CONFIG – SYSTEM SETTING
     RGB/COMP SEL:                ■■
     COMPONENT LEVEL:            ■■■■■
     NTSC SETUP:                    ■
     SCAN:                       ■■■■■■
     GAMMA:                       ■■
     FORMAT DISPLAY:              ■■
     LANGUAGE:             ENGLISH
     BACKGROUND:                  ■■
     I/P MODE:                     ■
```

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.
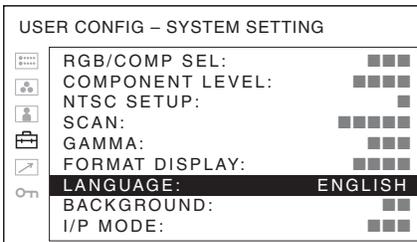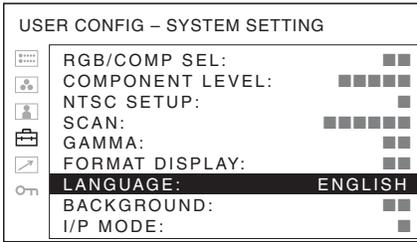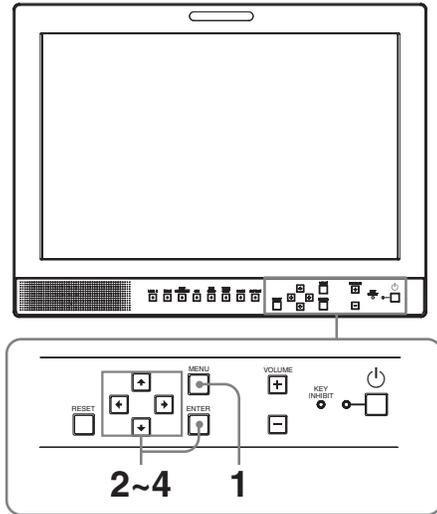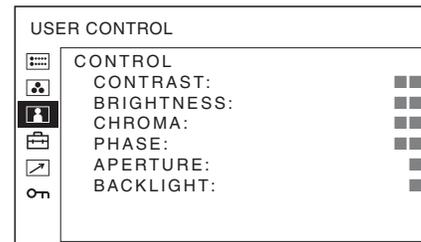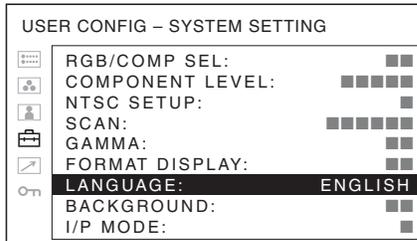
```
USER CONTROL
     CONTROL
        CONTRAST:                ■■
        BRIGHTNESS:              ■■
        CHROMA:                  ■■
        PHASE:                   ■■
        APERTURE:                 ■
        BACKLIGHT:                ■
```

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.

```
┌─────────────────────────────────────┐
│ USER CONFIG – SYSTEM SETTING        │
│                                     │
│ ▦  RGB/COMP SEL:              ▪▪    │
│ ⬙  COMPONENT LEVEL:    ▪▪▪▪▪▪▫▫     │
│     NTSC SETUP:                ▪    │
│ ⬢  SCAN:               ▪▪▪▪▪▪▫      │
│ 🗁  GAMMA:                     ▪▪    │
│ ↗  FORMAT DISPLAY:            ▪▪    │
│ ○┐ LANGUAGE:            ENGLISH     │
│     BACKGROUND:               ▪▪    │
│     I/P MODE:                  ▪    │
└─────────────────────────────────────┘
```

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 20).

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
MARKER SETTING
  MARKER ENABLE
  MARKER SELECT

CENTER MARKER
MARKER LEVEL

↗ REMOTE

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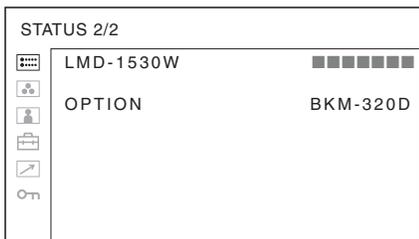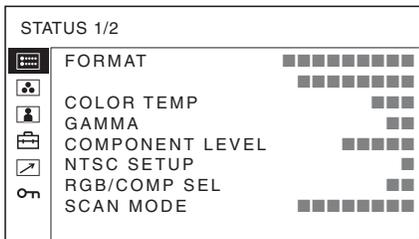 7PIN
  8PIN

⊶ KEY INHIBIT

KEY INHIBIT

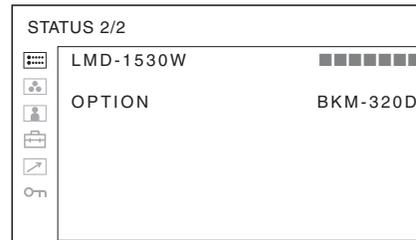
Adjusting and Changing the Settings

▦ STATUS menu

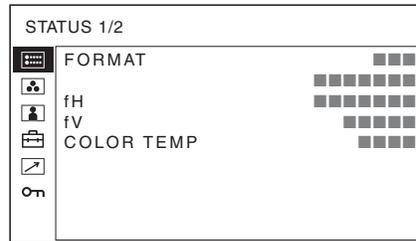The STATUS menu is used to display the current status of the unit. The following items are displayed:

For the video input

```
STATUS 1/2
▦   FORMAT          ■■■■■■■■
⚙                   ■■■■■■■■
⚙   COLOR TEMP         ■■■
⚙   GAMMA              ■■
⚕   COMPONENT LEVEL  ■■■■■
↗   NTSC SETUP           ■
⊶   RGB/COMP SEL        ■■
    SCAN MODE       ■■■■■■■■
```

```
STATUS 2/2
▦   LMD-1530W        ■■■■■■■
⚙
⚙   OPTION          BKM-320D
⚕
↗
⊶
```

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

For the DVI input

```
STATUS 1/2
▦   FORMAT            ■■■
⚙                   ■■■■■■■
⚙   fH              ■■■■■■■
⚕   fV                ■■■■■
⚕   COLOR TEMP         ■■■■
↗
⊶
```

```
STATUS 2/2
▦   LMD-1530W        ■■■■■■■
⚙
⚙   OPTION          BKM-320D
⚕
↗
⊶
```
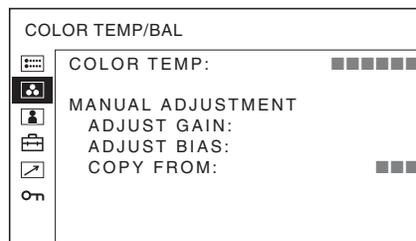
• Signal format
• fH
• fV
• Color temperature
• Model name and serial number
• Option

⚙ 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

```
COLOR TEMP/BAL
▦   COLOR TEMP:      ■■■■■■
⚙
⚙   MANUAL ADJUSTMENT
⚕    ADJUST GAIN:
⚕    ADJUST BIAS:
↗    COPY FROM:        ■■■
⊶
```

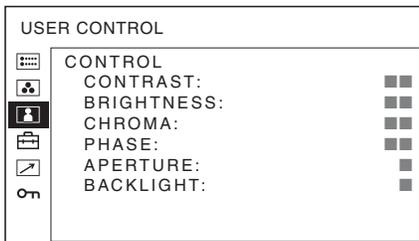| Submenu	Setting
COLOR TEMP	Selects the color temperature from among HIGH, LOW and USER setting.

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.
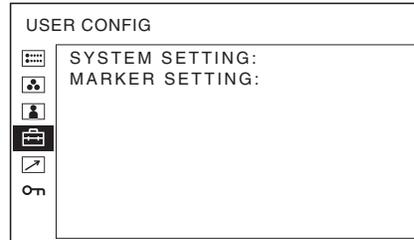Items that cannot be adjusted depending on the input signal are displayed in black.

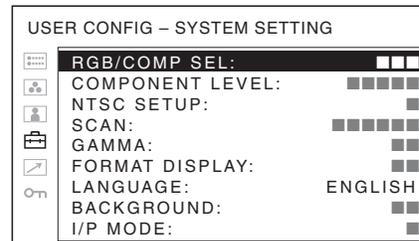*For details of input signal and adjustable / setting items, see page 9.*

```
USER CONTROL

  CONTROL
    CONTRAST:          ■■
    BRIGHTNESS:        ■■
    CHROMA:            ■■
    PHASE:             ■■
    APERTURE:          ■
    BACKLIGHT:         ■
```

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.
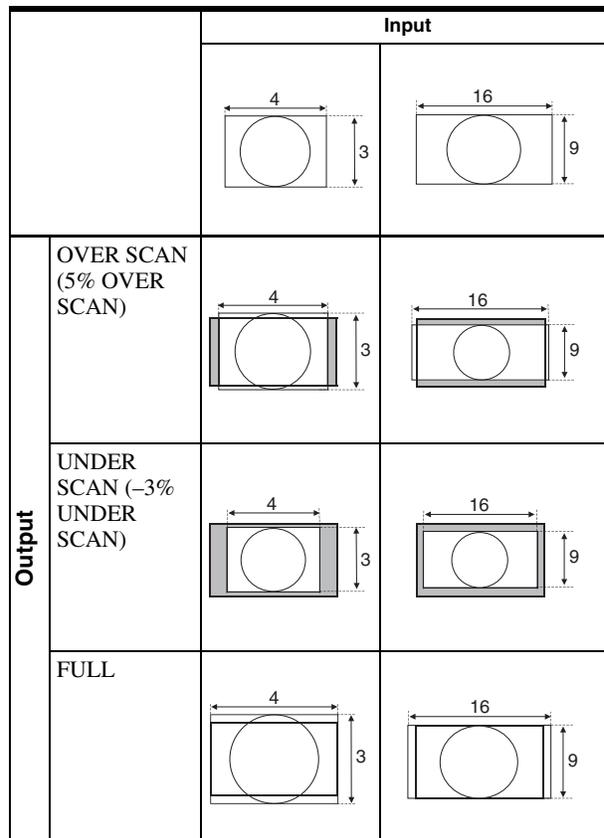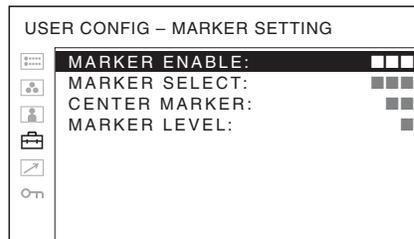
```
USER CONFIG

  SYSTEM SETTING:
  MARKER SETTING:
```

SYSTEM SETTING

```
USER CONFIG – SYSTEM SETTING

  RGB/COMP SEL:           ■■■
  COMPONENT LEVEL:        ■■■■■
  NTSC SETUP:             ■
  SCAN:                   ■■■■■■
  GAMMA:                  ■■
  FORMAT DISPLAY:         ■■
  LANGUAGE:          ENGLISH
  BACKGROUND:             ■■
  I/P MODE:               ■
```

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.
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 19) • **OFF**: Changes between over scan and under scan. • **FULL**: Changes to over scan, under 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).

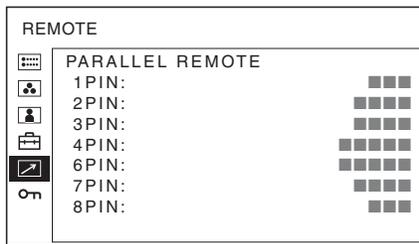| Submenu	Setting
FORMAT DISPLAY	Selects the display mode of the signal format. • **ON**: The format is always displayed. • **OFF**: The display is hidden. • **AUTO**: The format is displayed for about 10 seconds when the input of the signal starts.
LANGUAGE	Selects the menu or message language from 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. • **OFF**: Mode for giving precedence to the picture quality (recommended mode). It takes longer than ON for processing the picture. • **ON**: The processing time is short. As the line flicker is displayed in this mode, it is available for checking the line flicker of the telop work and so on.

Scan mode image

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.

Submenu	Setting
CENTER MARKER	Select ON to display the center mark of the picture and OFF not to display.
MARKER LEVEL	Sets the luminance to display the MARKER and CENTER MARKER. 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.

```
REMOTE
▦     PARALLEL REMOTE
▲       1PIN:                    ■■■
▲       2PIN:                   ■■■■
▮       3PIN:                   ■■■■
▣       4PIN:                  ■■■■■
↗       6PIN:                  ■■■■■
⊶       7PIN:                   ■■■■
        8PIN:                    ■■■
```

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
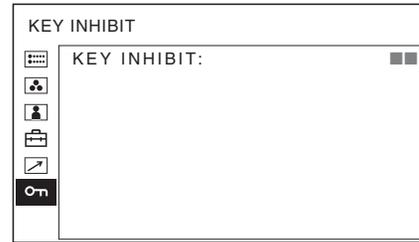- – – – ("– – –": No function is assigned.)
- LINE A
- HDMI
- RGB/COMP
- 16:9
- 4:3
- UNDER
- OVER
- TALLY R
- TALLY G
- EXT SYNC
- BLUE ONLY
- 16:9 MARKER
- 4:3 MARKER
- CENTER MARKER
- FULL
- SDI

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

For more details, see page 22.

⊶ KEY INHIBIT menu

```
KEY INHIBIT
▦     KEY INHIBIT:              ■■
▲
▲
▣
↗
⊶
```

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	88° / 88° / 88° / 88° (typical)
Scan	Under –3%
	Over 5%
Aspect	16:10
Display color	16,770,000

Input/output connectors

Input
LINE A 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 negative polarity binary
HDMI IN connector
        HDMI (1)
PARALLEL REMOTE input connector
    Parallel remote
        Modular connector 8-pin (1)

Output
LINE A 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. 40 W, 0.6 A to
0.4 A
Peak inrush current
(1) Power ON, current probe method:
34 A (100 V), 64 A (240 V)
(2) Hot switching inrush current,
measured in accordance with
European standard EN55103-1:
58 A (230 V)
Dimensions   Approx. 372 × 336 × 264 mm
(not including the projection parts)
($14 \frac{3}{4} \times 13 \frac{1}{4} \times 10 \frac{1}{2}$ inches)
(w/h/d)
Mass   Approx. 5.9 kg (13 lb)
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)
Warranty book (1)
Optional accessories
Mounting bracket MB-533
SDI input adaptor BKM-320D

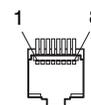Design and specifications are subject to change without notice.

Pin assignment

PARALLEL REMOTE connector
Modular connector
(8-pin)

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

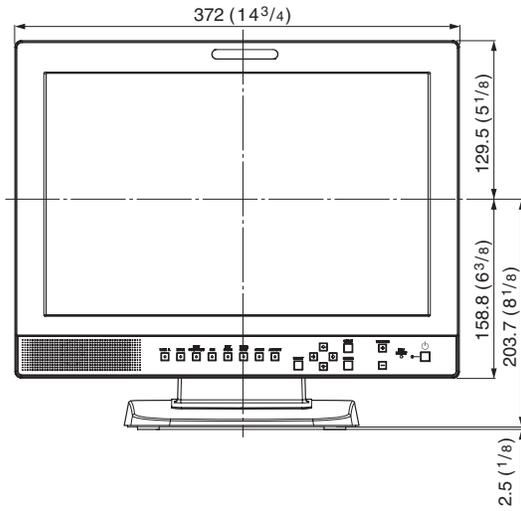The sides of the displayed picture may be invisible depending on the input signal.

When an optional input adaptor is conneted, the unit is applicable to the following signal formats.
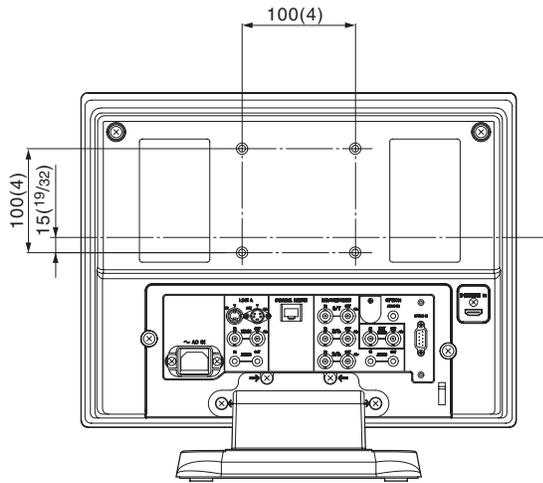
When BKM-320D is connected

	Input	
System	Signal standard	BKM-320D
575/50I	ITU-R BT.656	○
480/60I	SMPTE-259M	○

Dimensions

Front

372 (14³/₄)

129.5 (5¹/₈)

158.8 (6³/₈)

203.7 (8¹/₈)

2.5 (1/₈)

Rear

100(4)

100(4)

15(19/32)

Side

75.2(3)   100(4)

67.7
(2³/₄)

96.8(3⁷/₈)

264.4(10¹/₂)

Bottom

204.3(8¹/₈)

4-M5

76.2(3)

114.6
(4⁵/₈)

165.1(6¹/₂)

216.3(8⁶/₈)

Unit: mm (inches)