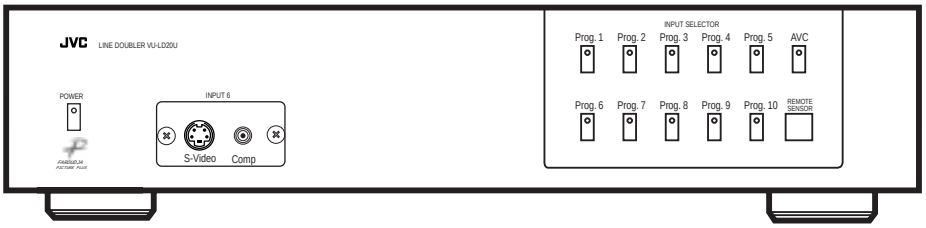
JVC

LINE DOUBLER

VU-LD20U



Thank you for purchasing this product.
Before using your new purchase, please read this instruction manual thoroughly. And, after reading, be sure to store this instruction manual in a safe place for future reference.

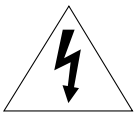
Instruction Manual

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

Model No. VU-LD20U

Serial No.

LPT0410-001A



The lightning flash with arrowhead symbol, within an equilateral triangle, 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.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

IMPORTANT:

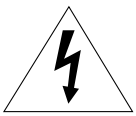
RECORDING OF COPYRIGHTED TELEVISION PROGRAMS MAY VIOLATE COPYRIGHT LAW.

WARNING:

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE.

CAUTION:

TO PREVENT ELECTRIC SHOCK HAZARD, DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.



La flèche symbolisant le tonnerre à l’intérieur d’un triangle équilatéral a pour but de prévenir l’utilisateur de la présence d’une “tension dangereuse” non isolée se trouvant à l’intérieur du dispositif; elle est d’une magnitude suffisante pour constituer un risque de décharge électrique.

Le point d’exclamation à l’intérieur d’un triangle équilatéral a pour but de prévenir l’utilisateur de la présence d’importantes instructions concernant l’entretien et le un fonctionnement indiquées dans les textes accompagnant le dispositif.

MISE EN GARDE :

AFIN DE REDUIRE LES RISQUES D’INCENDIE OU DE DECHARGE ELECTRIQUE, NE PAS EXPOSER CET APPAREIL A LA PLUIE OU A L’HUMIDITE.

ATTENTION :

AFIN DE REDUIRE LES RISQUES DE DECHARGE ELECTRIQUE, NE PAS UTILISER LA FICHE (POLARISEE) DE CET APPAREIL AVEC UN PROLONGATEUR, UNE PRISE OU UNE AUTRE PRISE DE COURANT SAUF SI CES LAMES PEUVENT ETRE INSEREES A FOND.

REMARQUE :

ETANT DONNE QUE CE PROJECTEUR EST UN APPAREIL QUI DOIT ETRE BRANCHE, LA PRISE MURALE DOIT ETRE INSTALLEE PRES DU PROJECTEUR ET DOIT ETRE FACILEMENT ACCESSIBLE.

FEATURES

Stunning image quality through highly accurate signal processing

Our original three-dimension Y/C separation circuit has been employed together with the image processing circuit made by Faroudja in the decoder section, the line doubler section, and the bandwidth expander section. Consistent signal processing with high accuracy from input to output provides stunning image quality.

- **Line doubler section**
  Signals from the decoder section are progressively processed in the line doubler section. Faroudja's unique motion algorithm rids jaggies and flickers from images by converting film images of 30 frames per second into 24 frames per second and applying total still image processing. Reproduction through double the number of scanning lines realizes natural progressive processing with higher accuracy and less missing information.

- **NTSC color decoder section**
  Faroudja's most reliable decoder for 10-bit processing and Analog Device's high performance AD converter jointly offer highly accurate AD conversion. In addition, Faroudja's original chroma band expansion circuit provides film-like images of high definition, greatly enhancing color transition, trangent and resolution.

- **Bandwidth expander section**
  In the bandwidth expander section, signals are refined to obtain higher image quality after the line doubling processing. Bandwidth of Y (luminance) signal is doubled through the non-liner processing. Expanded bandwidth increases image detail, improves trangent and enhances sharpness of images, achieving dramatic development in video image quality and striking beauty and impression.

- **Y/C separation circuit section**
  Our original three-dimension filter correctly separates signals having motion images as well as signals having stationary images, considerably reducing cross-color and dot interference.

Selector function to connect 18 video sources at the maximum

Selectable inputs of three types, VIDEO IN, S-VIDEO IN and COMPONENT IN, allow 18 video sources at the maximum to be connected depending on combination.

Various image quality adjustments

Various image quality adjustments, from basic adjustments of sharpness, contrast, etc. to advanced adjustments such as black level extension adjustment, are available and offer a possible use as an equalizer. These adjustments can be memorized in every program. Images are easily reproduced according to the preprogrammed adjustments just by switching the programs depending on image materials.

The Faroudja name is the registered trademark of Faroudja, Inc. in the United States.

CONTENTS

IMPORTANT SAFEGUARDS 4, 5
OVERVIEW OF THE PRODUCT 6, 7
- Front panel 6
- Rear panel 7

OVERVIEW OF THE REMOTE CONTROL 8, 9
- Battery installation 9

PREPARATION 10
- Preparing for operation 10
- System configuration 10

CONNECTIONS 11-14
- Connection with a D-ILA, LCD projector 11
- Connection with a Projector 12
- Connection with a VCR 13
- Connection with a DVD player 13
- Connection with an AV amplifier 14

INPUT SETTING ..... 15 -18
- Setting program 15, 16
- Program setting items 17
- Program title setting 18

BASIC USE 19
- LINE DOUBLER 19
- KEY LOCK 19

IMAGE QUALITY ADJUSTMENT ..... 20 - 23
- Basic image quality adjustment 20
- Advanced image quality adjustment 21
- Adjustment items 22, 23

Control this line doubler by using a personal computer 24, 25
TROUBLESHOOTING 26
INDEX 27
SPECIFICATIONS 28, 29
- Electric 28
- General 29
- Connectors 29
- What's included in the box 29

IMPORTANT SAFEGUARDS

Please read all these instructions carefully regarding your Line double before you begin operating it. Follow all warnings and instructions marked on the Line doubler. Thank you.

1 Read Instructions
All the safety and operating instructions should be read before the product is operated.

2 Retain Instructions
The safety and operating instructions should be retained for future reference.

3 Heed Warnings
All warnings on the product and in the operating instructions should be adhered to.

4 Follow Instructions
All operating and use instructions should be followed.

5 Cleaning
Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

6 Attachments
Do not use attachments not recommended by the product manufacturer as they may cause hazards.

7 Water and Moisture
Do not use this product near water — for example, near a bath tub, wash bowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, and the like.

8 Accessories
Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to a child or adult, and serious damage to the product. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer, or sold with the product. Any mounting of the product should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.

9 A product and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the product and cart combination to overturn.

10 Ventilation
Slots and openings in the cabinet are provided for ventilation and to ensure reliable operation of the product and to protect it from overheating, and these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.

11 Power Sources
This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your product dealer or local power company. For products intended to operate from battery power, or other sources, refer to the operating instructions.

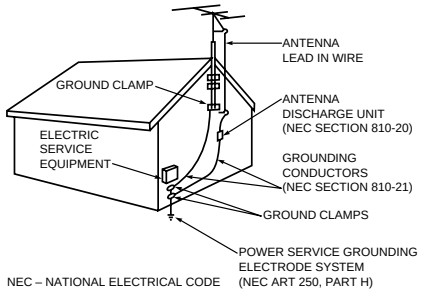
12 Grounding or Polarization
This product is equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.

13 Power-Cord Protection
Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the product.

14 Outdoor Antenna Grounding
If an outside antenna or cable system is connected to the product, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges.

Article 810 of the National Electrical Code, ANSI/NFPA 70, provides information with regard to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.

EXAMPLE OF ANTENNA GROUNDING



15 Lightning
For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the product due to lightning and power-line surges.

16 Power Lines
An outside antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits as contact with them might be fatal.

17 Overloading
Do not overload wall outlets, extension cords, or integral convenience receptacles as this can result in fire risk or electric shock.

18 Object and Liquid Entry
Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.

19 Servicing
Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

20 Damage Requiring Service
Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
(a) When the power-supply cord or plug is damaged.
(b) If liquid has been spilled, or objects have fallen into the product.
(c) If the product has been exposed to rain or water.
(d) If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
(e) If the product has been dropped or damaged in any way.
(f) When the product exhibits a distinct change in performance – this indicates a need for service.

21 Replacement Parts
When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock or other hazards.

22 Safety Check
Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.

23 Heat
The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.

Declaration of Conformity

Model Number	: VU-LD20U
Trade Name	: JVC
Responsible Party	: JVC Americas Corp.
Address	: 1700 Valley Road Wayne. N.J. 07470
Telephone Number	: 973-315-5000

This device complies with Part 15 of 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.

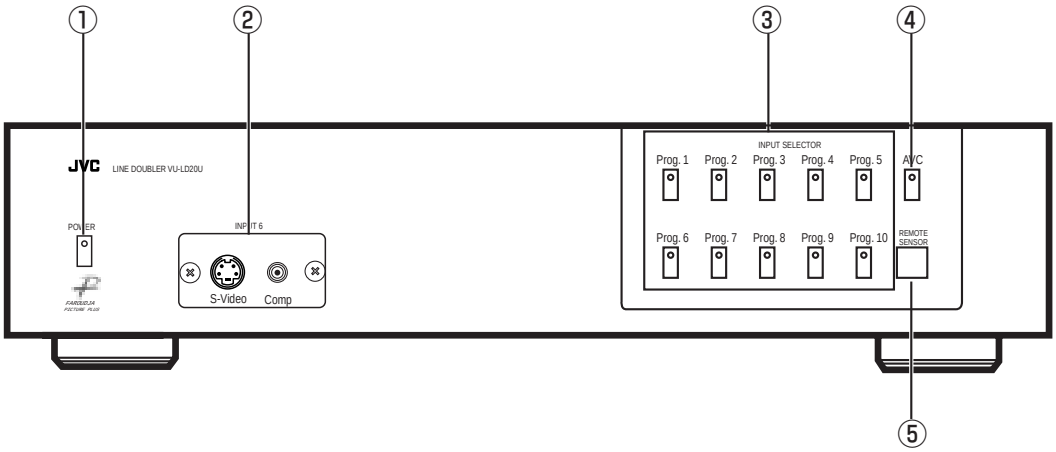
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

COMPLIANCE NOTICE OF INDUSTRY CANADA
This Class B digital apparatus complies with Canadian ICES-003.

NOTICE DE CONFORMITE AU CANADA
Cet appareil numérique de la classe B est comforme à la norme NMB-003 du Canada.

OVERVIEW OF THE PRODUCT

Front panel



① **POWER button**
Press the POWER button to turn on the product while the MAIN SW on the rear panel is ON. Press this button again to turn it off. The power indicator illuminates in red during stand-by when the MAIN SW is ON. The power indicator illuminates in green while the power is supplied.

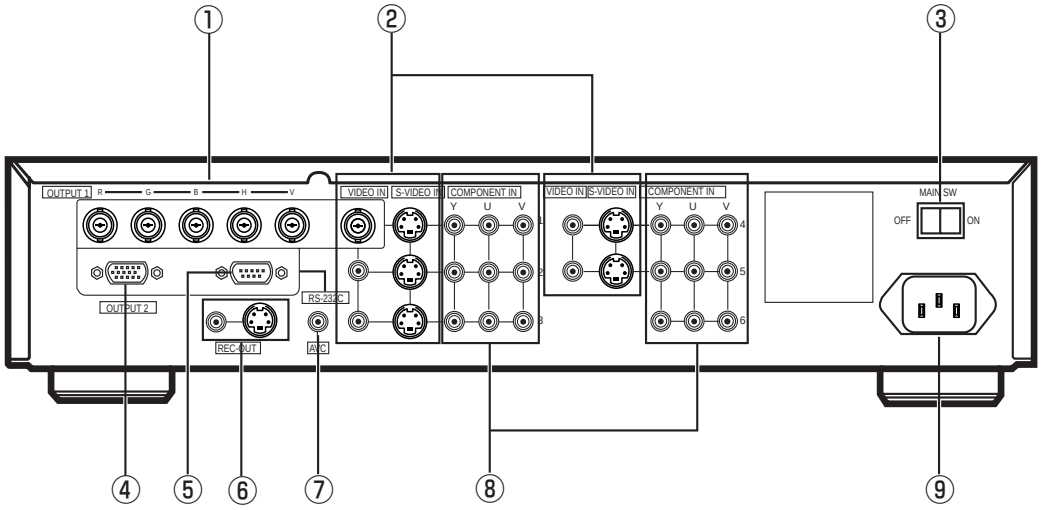
② **S-VIDEO 6 / VIDEO 6 INPUT terminals**
Use to connect with a device having a VIDEO or S-VIDEO terminal such as a video camera or videodisc player. Remove the cover by loosening the two cover-fixing screws using a screwdriver to use these terminals.

③ **Program buttons (Prog. 1 to 10)**
Use to select the programs of the memorized input terminals, etc. The indicator of the selected program illuminates. The recommended settings have been preprogrammed at the time of delivery from the factory. The video mute operates about 2 seconds when the programs are switched.

④ **AVC button**
Use to display functions of an AV amplifier having on-screen function which is connected to the AVC terminal on the rear panel.
One press on this button illuminates the indicator in orange and displays the images supplied to the AVC input. Another press on this button displays the images of the previously selected program. You can't adjust the quality of the images supplied to the AVC terminal.

⑤ **REMOTE SENSOR**
The REMOTE SENSOR receives the commands from the remote control.

Rear panel



① **OUTPUT 1 terminals (BNC)**
Use to connect with a video device having RGB terminals such as a Projector. HD and VD are output at 1.0 Vp-p (75Ω termination).

② **S-VIDEO (S-Y/C-1 to 5) IN / VIDEO IN (VIDEO-1 to 5) terminals**
Use to connect with a device having Video or S-Video terminals as a VCR or videodisc player.

③ **MAIN SW**
Set the MAIN SW to ON to turn on the main power and to OFF to turn it off. Set this switch to OFF before long absence of operation of the product.

④ **OUTPUT 2 terminal (mini D-SUB 15P)**
Use to connect with an LCD projector. HD and VD are output at the TTL level.

⑤ **RS-232C terminal (mini D-SUB 9P)**
Use to connect with an PC.

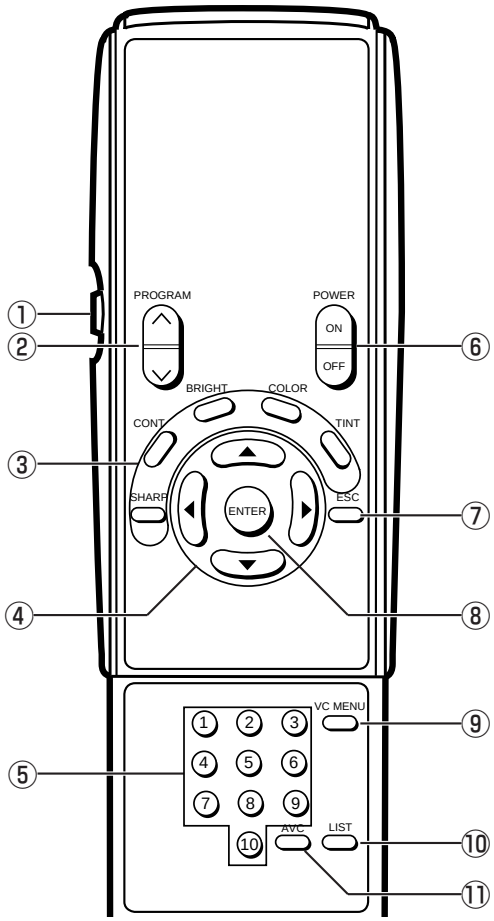
⑥ **REC-OUT terminal**
Use to output supplied signals directly. When composite video signals or S-video signals are supplied, the composite video signals or the S-video signals are output. (Signals from a device connected to the COMPONENT IN terminals are not output.)

⑦ **AVC terminal**
Use to connect with an AV amplifier having on-screen function to display its functions. You can't adjust the quality of images supplied to the AVC terminal.

⑧ **COMPONENT IN (Y/U/V-1 to 6) terminals**
Use to connect with a device which provides video component signals such as a DVD player.

⑨ **Power supplying terminal**
Use to connect with the attached power cable.

OVERVIEW OF THE REMOTE CONTROL



① **Illumination button**
One press on this button illuminates the titles of the buttons about 10 seconds. (▲, ▼, ◀ and ▶ and ENTER buttons are not illuminated. However, they light with stored light after the remote control is put in a bright place for a while.) Another press on this button cancels illumination.

② **PROGRAM button**
Use to select the programs in turn.

③ **PICTURE button**
Use to adjust the image quality together with ◀ and ▶ buttons. See page 20 for details.
SHARPNESS button
Use to adjust sharpness (image quality).
CONT(CONTRAST) button
Use to adjust contrast.
BRIGHT button
Use to adjust brightness.
COLOR button
Use to adjust color intensity.
TINT button
Use to adjust tint.

④ **▲, ▼, ◀ and ▶ buttons**
Press these buttons to select items or change settings while a menu screen or image quality adjustment screen is displayed.

⑤ **PROGRAM buttons, 1 to 10**
Use to select the program numbers directly.

⑥ **POWER button**
Press the ON side to turn on the product while the MAIN SW on the rear panel is set to ON. Press the OFF side to turn it off.

⑦ **ESC button**
Use to display the previous menu screen. One press on this button without a menu screen displayed, the title of the currently selected program, input terminals and video format are displayed about 5 seconds.

⑧ **ENTER button**
Use to fix a selected item on a menu screen.

⑨ **VC MENU button**
Use to display the VIDEO EQUALIZING MENU for image quality adjustment. Press this button again to cancel the VIDEO EQUALIZING MENU. See page 21 for details.

⑩ **LIST button**
Use to confirm and set the contents of the programs. See page 15 for details.

⑪ **AVC button**
Use to display functions of an AV amplifier connected to the AVC terminal.

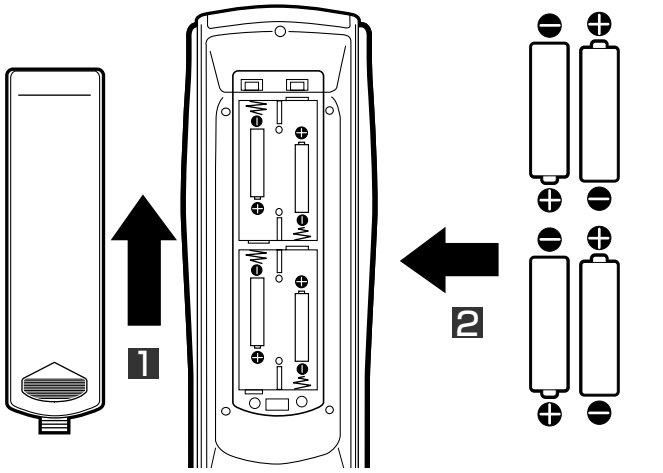
Batteries installation

1 **Push the back cover in the direction of the arrow to remove it.**

2 **Load the batteries making sure that they are positioned correctly (+ to +, and - to -).**

3 **Attach the back cover.**

- Use four AA size dry batteries.



Handling the remote control

Do not drop it or give it a shock.
Do not spill liquid on it or put it on a wet object.
Do not wipe it with volatile liquid such as benzine or thinner.

NOTE

Handling batteries

Wrong usage of batteries may cause a leak of inside solution or an explosion. Please follow the instructions below.

- Load the batteries in the correct positions.
- Do not use new and old batteries together, or batteries of different type together.
- Take the batteries out before long absence of operation of the remote control. In case of a leak of inside solution, wipe up the solution off the remote control and load new batteries.
- Do not take the batteries apart or throw them into flames.
- Do not use alkaline dry batteries. Wrong usage may lead to generating heat, an explosion and a leak of inside solution causing an injury or burn.
- Do not try to recharge the batteries.

PREPARATION

Preparing for operation

Load dry batteries in the remote control. (See page 9.)

↓

Connect with a projector. (See page 11 and 12.)
- Connection with a D-ILA, LCD projector
- Connection with a Projector

↓

Connect with a video source. (See page 13 and 14.)
- Connection with a VCR
- Connection with a DVD player
- Connection with an AV amplifier

↓

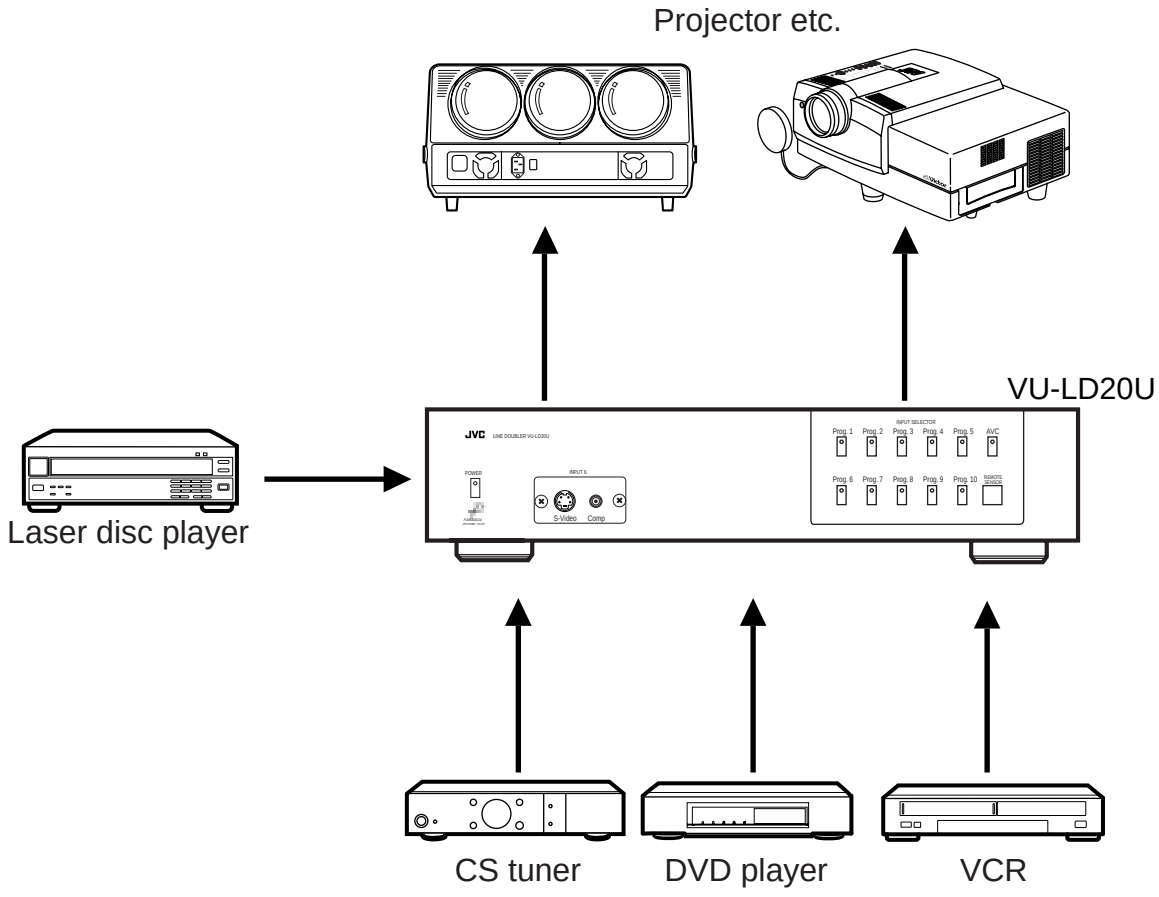
Insert the power plug into a socket.

↓

Set the programs. (See page 15 to 18.)
- Selection of input terminals
- Setting of IN/OUT signals

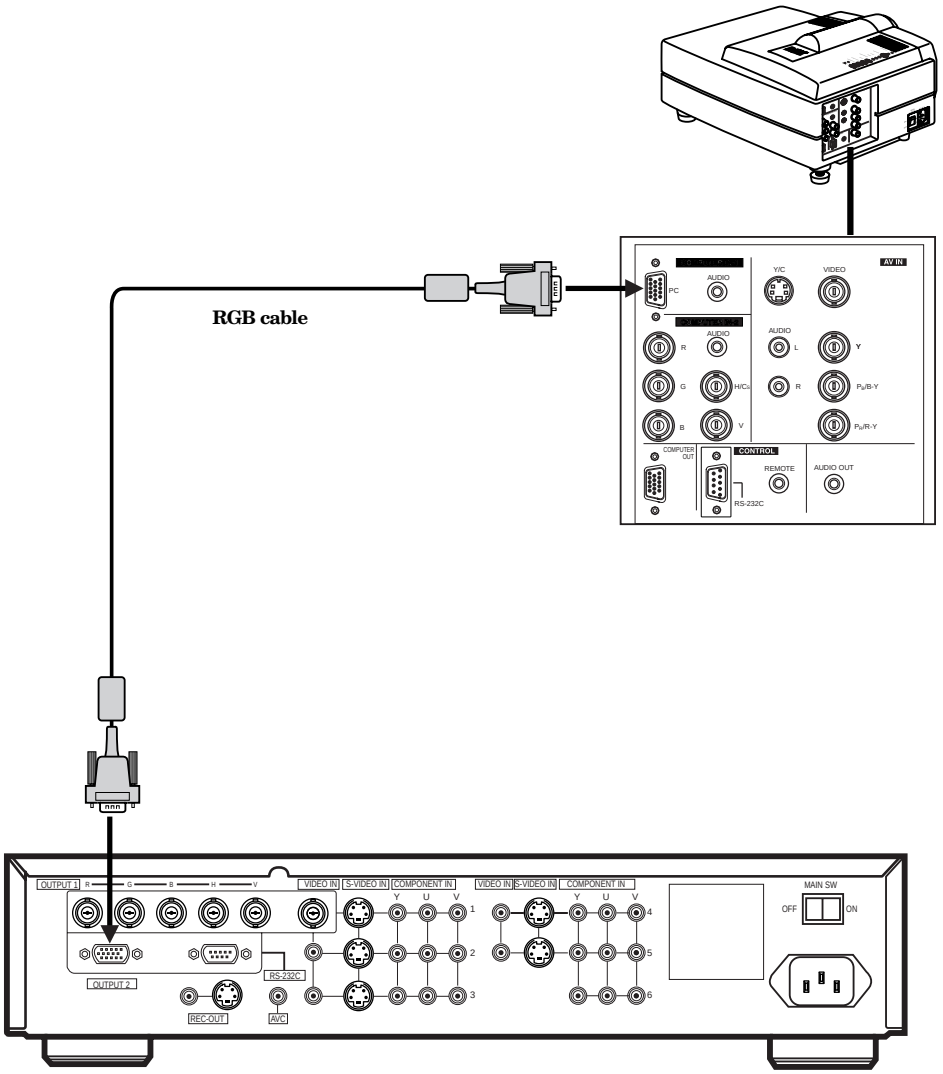
System configuration

This product can be connected with 2 projectors and 18 video sources at the maximum.



CONNECTIONS

Connection with a D-ILA, LCD projector



Example of the advanced image quality adjustment screen

```
VIDEO EQUALIZING MENU 2
  COLOR-COMP     :1
  GAMMA-COR      :OFF
  DC-TRN-COR     :OFF
  PRE/OVER       :1
  Y-EDGE         :OFF
  C-EDGE         :OFF
  ↓ MENU 3
```

```
VIDEO EQUALIZING MENU 3
  PICTURE-EX     :OFF
  COLOR-EX       :OFF




  ↓ MENU 1
```

- HD and VD from the OUTPUT2 (mini D-SUB 15P) are output at the TTL level.

Important!

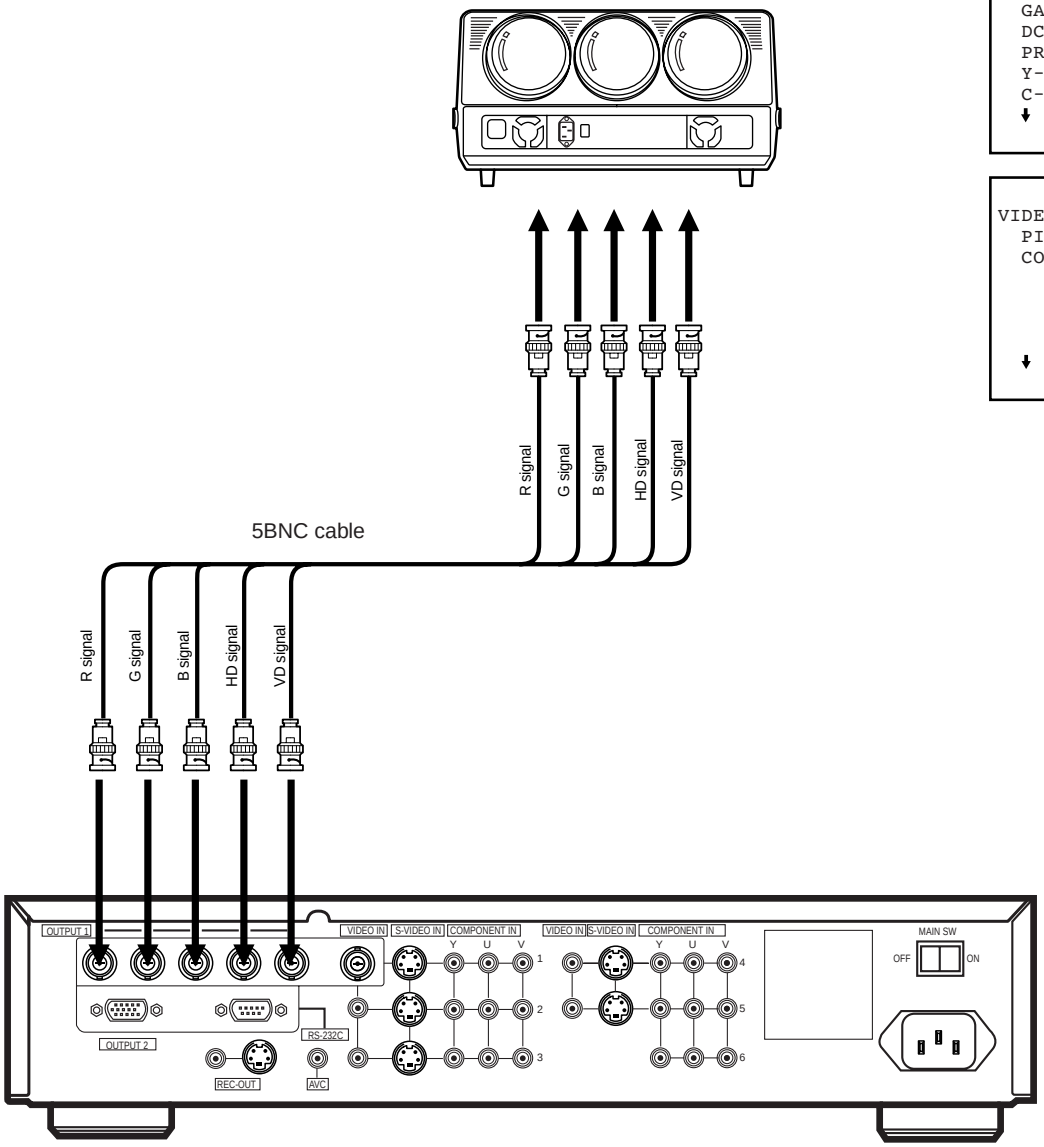
- Turn off the power before connection.
- Insert the plug completely.
- Unplug by holding the plug, not by pulling the cable out.
- Also refer to the users' guide of the D-ILA, LCD projector.

Connection with a Projector

Example of the advanced image quality adjustment screen

```
VIDEO EQUALIZING MENU 2
  COLOR-COMP     :1
  GAMMA-COR      :OFF
  DC-TRN-COR     :OFF
  PRE/OVER       :4
  Y-EDGE         :OFF
  C-EDGE         :OFF
  ↓ MENU 3
```

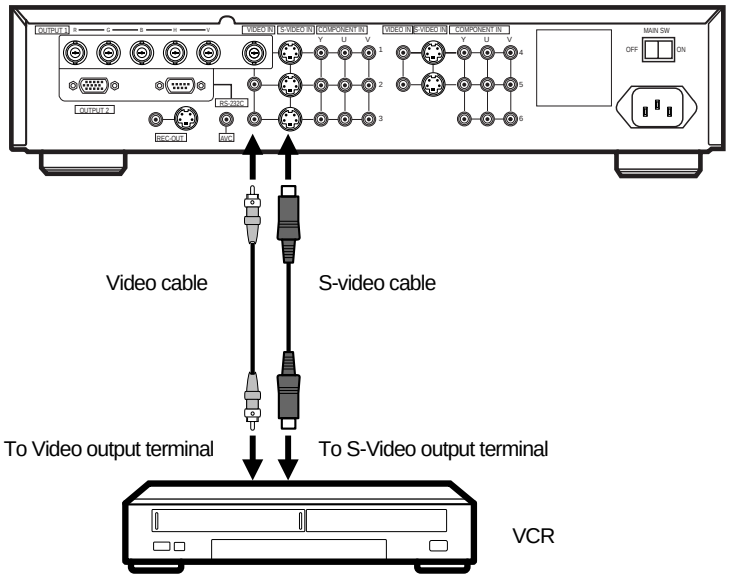
```
VIDEO EQUALIZING MENU 3
  PICTURE-EX     :OFF
  COLOR-EX       :OFF




  ↓ MENU 1
```



Important!

- Turn off the power before connection.
- Insert the plug completely.
- Unplug by holding the plug, not by pulling the cable out.
- Also refer to the users' guide of the projector.

Connection with a VCR



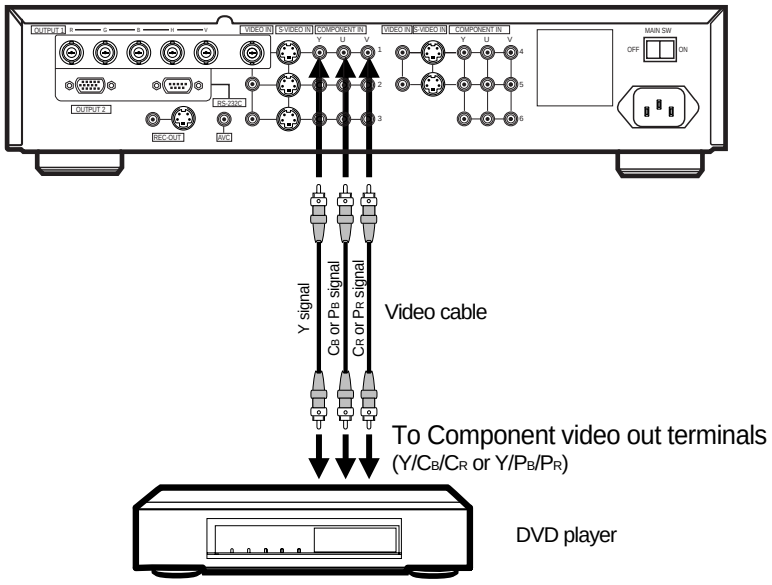
Example of the program setting screen

```
PROGRAM 1:
 INPUT TERMINAL :S-Y/C-3
 VIDEO FORMAT   :
 COLOR MATRIX   :
 LINE DOUBLER   :ON
 VIDEO BAND     :WIDE
 PROG-TITLE  :VTR
```

See page 15 to 18 for setting and the setting items.

- Noises may appear on images when a videotape with unstable sync signals is played back. In such a case, it is recommend to use a VCR with a built-in TBC (Time Base Corrector) circuit.
- Noises may appear on images when a videotape with poor recording quality is played back, it is forwarded being played back, or the product receives television signals in poor signal area. This is due to unstable sync signals, not a product's failure.

Connection with a DVD player



Example of the program setting screen

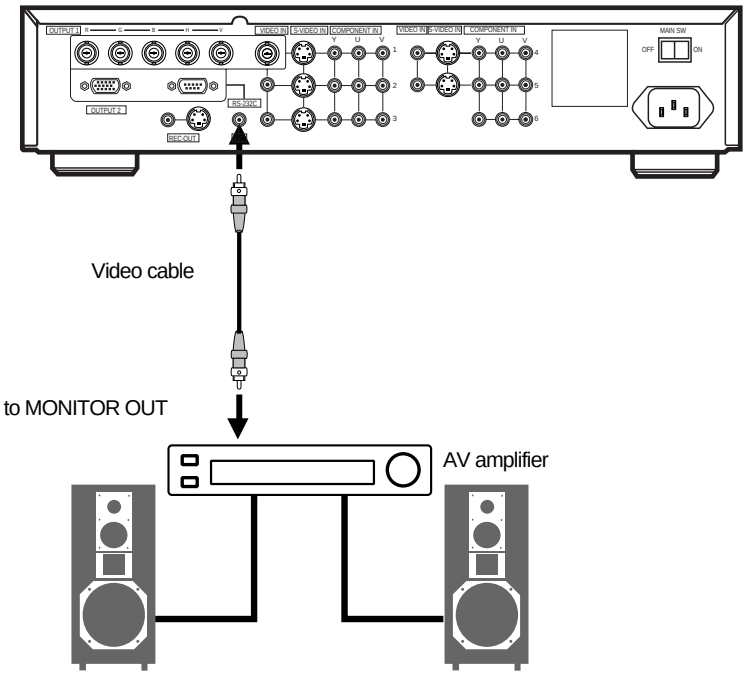
```
PROGRAM 1:
 INPUT TERMINAL :Y/U/V-1
 VIDEO FORMAT   :15.7k
 COLOR MATRIX   :YCbCr
 LINE DOUBLER   :ON
 VIDEO BAND     :WIDE
 PROG-TITLE  :DVD
```

See page 15 to 18 for setting and the setting items.

Important!

- Turn off the power before connection.
- Use the correct connecting cables which fit to the terminals.
- Insert the plug completely.
- Unplug by holding the plug, not by pulling the cable out.
- Also refer to the users' guide of the connected device because some devices have terminals of different names or need different connection.

Connection with an AV amplifier

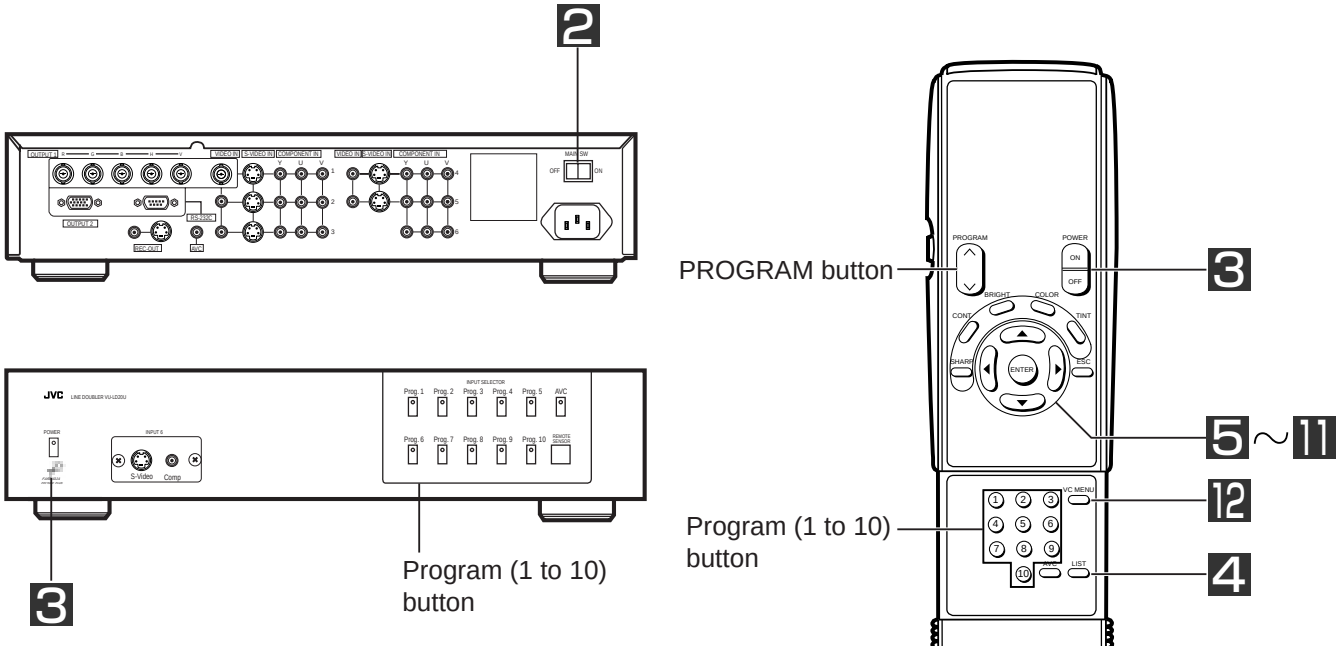


Important!

- Turn off the power before connection.
- Use the correct connecting cables which fit to the terminals.
- Insert the plug completely.
- Unplug by holding the plug, not by pulling the cable out.
- Also refer to the users' guide of the connected device because some devices have terminals of different names or need different connection.

INPUT SETTING

You can set programs for every input signal and select them by the program buttons. Ten program buttons on the front panel specify not the input terminals but the programs. So, it is necessary to connect your video sources to optional terminals and set programs in advance.



Setting program

1 **Turn on the connected devices.**	
2 **Turn on the MAIN SW on the rear panel.** The main power indicator illuminates in red.	
3 **Press the POWER button.** The power indicator illuminates in green.	
4 **Press the LIST button on the remote control.** • The SOURCE PROGRAM LIST is displayed. • The SOURCE PROGRAM LIST-1 is displayed when any of the program numbers 1 to 5 is selected. • The SOURCE PROGRAM LIST-2 is displayed when any of the program numbers 6 to 10 is selected. • Press the LIST button again to cancel the SOURCE PROGRAM LIST. • The SOURCE PROGRAM LIST is automatically canceled when there is no press on the buttons for 15 seconds.	SOURCE PROGRAM LIST-1 PROGRAM 1:LD PROGRAM 2:DVD PROGRAM 3:HD PROGRAM 4:VTR1 PROGRAM 5:VTR2 ENTER:PROGRAMING MENU SOURCE PROGRAM LIST-2 PROGRAM 6: PROGRAM 7: PROGRAM 8: PROGRAM 9: PROGRAM10: ENTER:PROGRAMING MENU

5 **Press the ▲ or ▼ button on the remote control to select a program number to be set.**

The selected program is displayed in yellow.

6 **Press the ENTER button.**

The program setting screen of the selected program number is displayed.

```
PROGRAM 1:
 INPUT TERMINAL :S-Y/C-1
 VIDEO FORMAT   :
 COLOR MATRIX   :
 LINE DOUBLER   :ON
 VIDEO BAND     :WIDE
 PROG-TITLE  :LD
```

7 **Press the ◀ or ▶ button on the remote control to select the INPUT TERMINAL.**

- Select the INPUT TERMINAL corresponding to the connected input terminal. Refer to the table on the right.

Type of input terminal	Display
Video terminal	VIDEO-1to 6
S-Video terminal	S-Y/C-1 to 6
Component(Y/U/V)terminal	Y/U/V-1 to 6

8 **Press the ENTER button.**

- Images supplied to the selected input terminal are displayed.

9 **Press the ▲ or ▼ button on the remote control to select an item to be changed.**

- The selected item is displayed in yellow.
- Some items can not be changed due to the INPUT TERMINAL setting, etc. You can not select such items.
- See page 17 for detailed description of each item.

```
PROGRAM 1:
 INPUT TERMINAL :S-Y/C-1
 VIDEO FORMAT   :
 COLOR MATRIX   :
 LINE DOUBLER   :ON
 VIDEO BAND     :WIDE
 PROG-TITLE  :LD
```

10 **Press the ◀ or ▶ button on the remote control to change the setting of the selected item.**

11 **Press the ENTER button.**

- The changed setting is fixed.
- The input terminal is also changed at the same time when you change the INPUT TERMINAL setting.

```
PROGRAM 1:
 INPUT TERMINAL :S-Y/C-1
 VIDEO FORMAT   :
 COLOR MATRIX   :
 LINE DOUBLER   :OFF
 VIDEO BAND     :WIDE
 PROG-TITLE  :LD
```

12 **Press the VC MENU button.**

The program setting screen is canceled.

- The program setting screen is automatically canceled when there is no press on the buttons for 15 seconds. Even when the program setting screen disappears before pressing the ENTER button, the changed settings are effective.

Program setting items

```
PROGRAM 1:
 INPUT TERMINAL :S-Y/C-1
 VIDEO FORMAT   :
 COLOR MATRIX   :
 LINE DOUBLER   :ON
 VIDEO BAND     :WIDE
 PROG-TITLE  :LD
```

1 INPUT TERMINAL setting

Use this item to select the INPUT TERMINAL.

Type of input terminal	Display
Video terminal	VIDEO-1to 6
S-Video terminal	S-Y/C-1 to 6
Component(Y/U/V)terminal	Y/U/V-1 to 6

The settings of VIDEO FORMAT, COLOR MATRIX and LINE DOUBLER may be fixed and not be changed due to the INPUT TERMINAL setting. Refer to the following table for setting. (Yes : Changeable, No: Not changeable)

INPUT TERMINAL setting	VIDEO	S-Y/C	Y/U/V	
VIDEO FORMAT	No (Not selectable)	No (Not selectable)	Yes	
COLOR MATRIX	No (Not selectable)	No (Not selectable)	Yes	
LINE DOUBLER	Yes	Yes	VIDEO FORMAT setting	
			15.7k	31.5k or HDTV
			Yes	No (Fixed to OFF)

2 VIDEO FORMAT setting

Use this item to set the VIDEO FORMAT only when Y/U/V is selected.

15.7k ..... For general setting.

31.5k ..... Select when progressive signals from a DVD player for high-definition, etc. are supplied to the input terminal.

HDTV .... Select when HDTV signals from an LD player, an NTSC/HD converter, etc. are supplied to the input terminal.

- FORMAT ERROR sign is displayed about 30 seconds when the VIDEO FORMAT not corresponding to the input signals is selected.

3 COLOR MATRIX setting

Use this item to set the COLOR MATRIX only when Y/U/V is selected.

YCbCr ... Select when a DVD player having the component video output terminals (Y, Cb, Cr) is connected to the input terminal.

YPbPr .... Select when an LD player, an NTSC/HD converter having the HDTV component video output terminals (Y, Pb, Pr) is connected to the input terminal.

4 LINE DOUBLER setting

Use this item to carry out conversion of interlace signals into progressive signals.

ON ..... Conversion is carried out. (For general setting.)

OFF ..... Conversion is not carried out.

5 VIDEO BAND setting

Use this item to set the VIDEO BAND.

NORMAL .... For general video band. Select for an input video source with poor S/N.

WIDE ..... For wide video band. More detailed images are displayed. Noises increase when the input video source has poor S/N. (For general setting.)

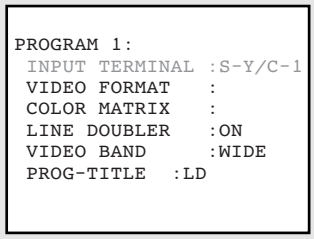
6 PROG-TITLE setting

Use to set the PROG-TITLE. See the next page for setting.

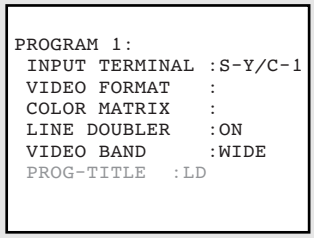
Program title setting

1 **Carry out steps 1 to 6 on page 16.**

The program setting screen of the selected program number is displayed.



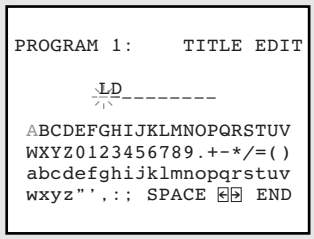
2 **Press the ▲ or ▼ button on the remote control to select PROG-TITLE.**



3 **Press the ENTER button.**

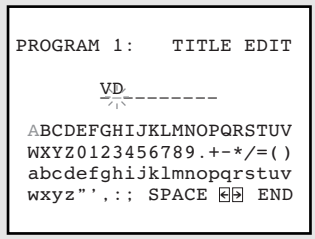
The TITLE EDIT screen is displayed and you can select the first letter of the title.

- You can enter ten letters at the maximum.



4 **Press the ◀, ▶, ▲ or ▼ button on the remote control to select a letter and press the ENTER button.**

- The selected letter is fixed and the setting screen for the next letter is displayed.
- Select ← or → and press the ENTER button to change the next letter on the left or right.
- Select SPACE and press the ENTER button to enter a space.



5 **Repeat the above operation to enter the title.**

6 **Press the ◀, ▶, ▲ or ▼ button on the remote control to select END and press the ENTER button (or the VC MENU button).**

The menu screen disappears.

- Press the ESC button to display the program setting screen again.
- The menu screen disappears when the tenth letter is entered.

BASIC USE (To see the images from the connected devices)

1 **Turn on the power of the connected devices.**

2 **Turn on the MAIN SW on the rear panel.**

The main power indicator illuminates in red.

3 **Press the POWER button.**

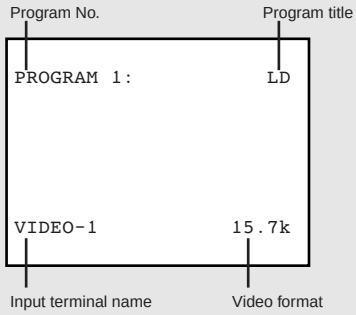
The power indicator illuminates in green.

4 **Select a program.**

Press the Program button (1 to 10), the PROGRAM ∧ or ∨ button on the remote control.

The images of the selected program are displayed. The settings of the selected program are displayed about 5 seconds at this time.

- Press the ESC button to cancel the images.
- No images are displayed when you select a program in which no signals are supplied to the preprogram input terminal. HD and VD outputs are stopped after NO SIGNAL sign is displayed about 30 seconds. They are output again when you carry out any kind of operation.
- Press the PROGRAM buttons on the remote control to select the programs in turn. Each press on the ∧ button changes the programs as 1→2→3→... Each press on the ∨ button changes the program as 1→10→9→...



- New images are displayed in 2 seconds after changing the programs.
- Images may not appear on the screen at the moment of changing the video channel when a VCR is connected.
- Images which are reproduced by special playback (Still image, Speed search, Slow play, etc.) may have noises or not be displayed when a VCR is connected. Noises may also appear on images when an old tape is played back.
- FORMAT ERROR is displayed about 30 seconds when a signal not corresponding to the setting of VIDEO FORMAT on the program setting screen is supplied. In such a case, change the VIDEO FORMAT setting on the program setting screen or change the input signals.

LINE DOUBLER

The LINE DOUBLER function converts the images by interlace scanning into those by progressive scanning to output. Set the LINE DOUBLER to ON on the program setting screen to use this function.

- The 3-2 PULL DOWN function operates for film images. If the images are not processed by the 3-2 PULL DOWN function, the edges of moving images may become scratchy.
- It may take about 2 seconds until the 3-2 PULL DOWN function operates when the images are switched by the chapter search etc.
- Images may appear blurred or shake vertically when the LINE DOUBLER is set to ON with a game player, etc. connected. In such a case, set the LINE DOUBLER to OFF.
- The edges of moving images may become scratchy when using a picture element display device such as an LCD or monitor.

KEY LOCK

The KEY LOCK function is provided to prevent wrong button operation.

1. Press the Program 1 button on the product and the POWER button at the same time.
   When pressing these keys for the KEY LOCK function during standby, the power is turned on and the KEY LOCK mode is activated automatically.
2. To cancel the KEY LOCK mode,
   Press the Program 10 button on the product and the POWER button at the same time.

IMAGE QUALITY ADJUSTMENT

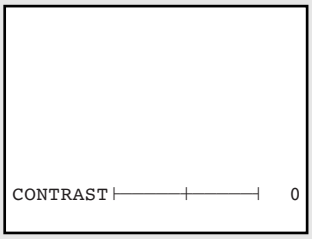
Basic image quality adjustment

1 Select a program to adjust the image quality

Press the PROGRAM (1 to 10) button, the PROGRAM ∧ or ∨ button on the remote control.

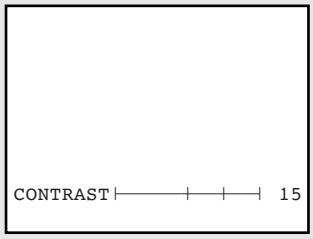
2 Press the PICTURE button on the remote control (SHARPNESS, CONT, BRIGHT, COLOR, or TINT) to adjust the desired item.

The adjustment screen of the selected item is displayed.



3 Press the ◀ or ▶ button on the remote control to change the setting.

- Press the ◀ button to decrease the setting, and press the ▶ button to increase the setting. The setting can be changed from -31 to 31 (Except SHARPNESS).
- Press the ▲ or ▼ button to select the adjustment item and change the setting only for SHARPNESS. (See below.)
- The adjustment screen disappear in about 15 seconds without pressing the ◀ or ▶ button.
- Press the ESC button to cancel the adjustment screen.



- The settings of the image quality adjustment are memorized in each program. The memorized settings will be kept even when the power is turned off.

Adjustment items

1. SHARPNESS adjustment

Use this item to adjust the sharpness of images in every frequency. Press the SHARP button to display the image quality setting screen.

1. Press the ▲ or ▼ button to display SHARPNESS FREQUENCY in yellow.
2. Press the ◀ or ▶ button to set SHARPNESS FREQUENCY.
   - Each press on the ▶ button change the setting as 1(LOW)→2(STD)→3(MID)→4(HIGH). Each press on the ◀ button changes it in reverse.
3. Press the ▲ or ▼ button to display GAIN in yellow.
4. Press the ◀ or ▶ button to adjust GAIN.
   - Each press on the ▶ button sharpens the images. Each press on the ◀ button softens the images.

2. CONTRAST adjustment

Use this item to adjust the ratio of black and white contrast of images. Press the CONT button to display the contrast setting screen. Each press on the ▶ button strengthens the contrast. Each press on the ◀ button weakens the contrast.

3. BRIGHT adjustment

Use this item to adjust the luminance of the whole image. Press the BRIGHT button to display the bright setting screen. Each press on the ▶ button brightens the images. Each press on the ◀ button darkens the images.

4. COLOR adjustment

Use this item to adjust the color intensity of images. Press the COLOR button to display the color setting screen. Each press on the ▶ button increase the color intensity. Each press on the ◀ button decrease the color intensity.

5. TINT adjustment

Use this item to adjust the color tone of images. Press the TINT button to display the tint setting screen. Each press on the ▶ button shifts green on skin color. Each press on the ◀ button shifts purple on skin color.

- When the settings of the image quality adjustment (e.g. contrast and luminance) are increased too much, the images may not be displayed clearly. It happens due to a large signal supplied to the product, not to a product's failure.

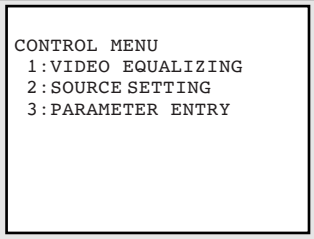
Advanced image quality adjustment

1 Select a program to adjust the image quality

Press the PROGRAM (1 to 10) button, the PROGRAM ∧ or ∨ button on the remote control.

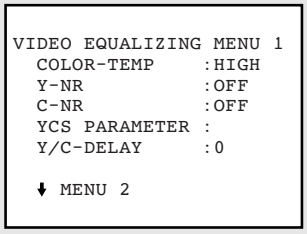
2 Press the VC MENU button on the remote control.

The CONTROL MENU is displayed.



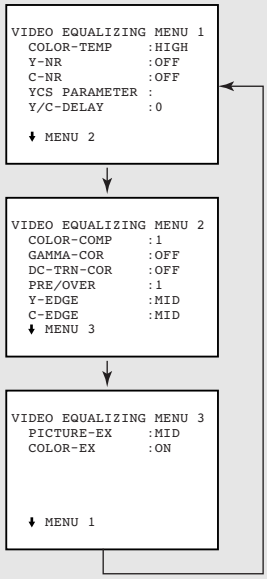
3 Press the ▲ or ▼ button on the remote control to select VIDEO EQUALIZING, and press the ENTER button.

The VIDEO EQUALIZING MENU is displayed.



4 Press the ▲ or ▼ button on the remote control to select the item to be changed.

- The selected item is displayed in yellow.
- Some items can not be changed due to the INPUT TERMINAL setting, etc. You can not select such items.
- Keep pressing the ▼ button to switch the screens as MENU1→MENU2→MENU3.
- See page 22 for details of each item.



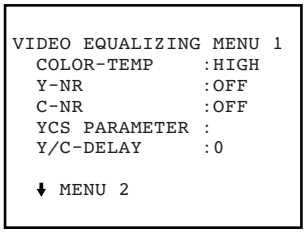
5 Press the ◀ or ▶ button on the remote control to change the setting items.

6 Press the VC MENU button.

The menu screen disappears.

- The settings of the image quality adjustment are memorized in each program. The memorized settings will be kept even when the power is turned off.

Adjustment items



VIDEO EQUALIZING MENU 1

1. COLOR-TEMP setting

Use this item to set the color temperature. Each press on the ▶ button changes the selection as HIGH (luminance of TV monitor/ Japanese standard)→USER→REF (Reference)→LOW (luminance of sunlight)→MID (luminance of TV monitor/Europe and America). Each press on the ◀ button to changes it in reverse.
Select USER to change the relative balance of each color (detail setting).

Detail setting

1. Select USER for COLOR-TEMP setting.
2. Press the ENTER button.
3. Select the color to be adjusted.
   Press the ▲ or ▼ button to select R (Red) or B (Blue).
4. Adjust the color.

Selecting R ..... Each press on the ▶ button strengthens red, making the images reddish. Each press on the ◀ button weakens red, adding more cyan to the image.
Selecting B ..... Each press on the ▶ button strengthens blue, making the image bluish. Each press on the ◀ button weakens blue, adding more yellow to the image.

5. Press the ESC button.
   The VIDEO-EQUALIZING MENU 1 appears.

2. Y-NR setting

Use this item to carry out noise reduction of luminance signals. Y-NR is available only when the INPUT TERMINAL on the program setting screen is set to S-Y/C.
ON ..... Noise reduction of luminance signals is carried out.
OFF ..... Noise reduction of luminance signals is not carried out.

3. C-NR setting

Use this item to carry out noise reduction of color signals. C-NR is available only when the INPUT TERMINAL on the program setting screen is set to S-Y/C and Y-NR is set to ON.
ON ..... Noise reduction of color signals is carried out.
OFF ..... Noise reduction of color signals is not carried out.

4. YCS PARAMETER setting

Use this item to set the mode for Y/C separation. YCS PARAMETER is available only when the INPUT TERMINAL on the program setting screen is set to VIDEO. Each press on the ▶ button changes the mode as 2D→3D-STD→3D-MID→3D-HR→2D... Each press on the ◀ button changes it in reverse.

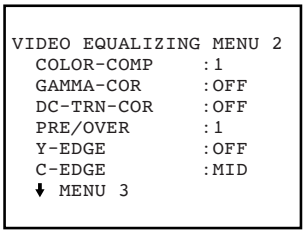
2D ..... For two-dimensional Y/C separation by Faroudja IC circuit. This is the best mode for the images containing neutral colors because cross color is reduced.
3D-STD ..... For three-dimensional Y/C separation.
3D-MID ..... For three-dimensional Y/C separation. This mode provides high detailed images because it emphasizes only the high frequency areas of the luminance signals and the color signals. However, cross colors may often occur.
3D-HR ..... For three-dimensional Y/C separation. This mode provides the highest resolution images because TVH is set with a filter. However, the dot interference may occur. This is the best mode for monochrome movies.

5. Y/C-DELAY adjustment

Use this item to adjust the dislocation between outline (the luminance signals) and color (the color signals). Y/C-DELAY is adjustable only when the LINE DOUBLER on the program setting screen is set to ON. Each press on the ▶ button changes the setting as 0→+1→+2. Each press on the ◀ button changes it as 0→-1→-2.

-1, -2 ..... Select when the color is slightly moved to the right.
0 ..... For general setting.
+1,+2 ..... Select when the color is slightly moved to the left.

VIDEO EQUALIZING MENU 2



1. COLOR-COMP adjustment

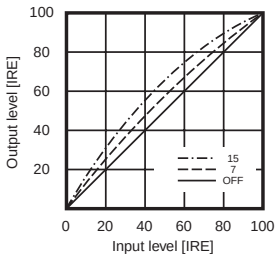
Use this item to adjust the color detection axis. Depending on the selected modes, the color balance (especially skin color) is changed. Each press on the ▶ button changes the setting as 1→2→3. Each pressing on the ◀ button changes it in reverse.

1 ..... JAPAN mode. For general setting.
2 ..... USA mode.
3 ..... EUROPE mode.

2. GAMMA-COR setting

Use this item to set the gamma correction (output signals correction for input signals' luminance). Each pressing on the ▶ button changes the setting as OFF→1→2→3→...15. Each pressing on the ◀ button changes it in reverse.

OFF ..... Gamma correction is not carried out.
1 to 15 ... Gamma correction is carried out. The compensation of gamma correction becomes larger and the image becomes lighter as the setting value increases. (See the right graph for the compensation.)



3. DC-TRAN-COR adjustment

Use this item to adjust the DC transfer rate for luminance signals. Each press on the ▶ button changes the setting as OFF→90(%)→85(%)→80(%). Each pressing on the ◀ button changes it in reverse.

OFF ..... For general adjustment.
90/85/80 ..... The DC transfer rate is changed. Select when the black and white contrast is too strong. The contrast becomes weaker as the setting value decreases.

4. PRE/OVER setting

Use this item to set the ratio of Pre-shoot against Overshoot of images.
Each press on the ▶ button changes the setting as 1→2→3→4. Each pressing on the ◀ button changes it in reverse.

1 ..... Corrects the ratio of Pre-shoot against Overshoot to 1:1.
2/3/4 ..... The ratio of Pre-shoot becomes higher as the setting value increases. Set at 1 for general setting.

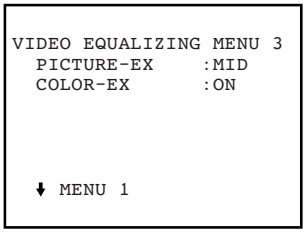
5. Y-EDGE setting

Use this item to carry out edge reform of luminance signals. Each Press on the ▶ button changes the setting as OFF→LOW→MID→HIGH. Each press on the ◀ button changes it in reverse. Set to OFF for general setting. The edges may become scratchy when any other setting than OFF is selected.

6. C-EDGE setting

Use this item to carry out edge reform of color difference signals. Each press on the ▶ button changes the setting as OFF→LOW→MID→HIGH. Each press on the ◀ button changes it in reverse. Set to OFF for general setting.

VIDEO EQUALIZING MENU 3



1. PICTURE-EX setting

Use this item to carry out black extension. PICTURE-EX enhances the contrast without changing the white level. Each press on the ▶ button changes the setting as OFF→LOW→MID→HIGH. Each press on the ◀ button changes it in reverse.

OFF ..... Black extension is not carried out. Select when connecting with a Graphics CRT projector.
LOW ..... Extends when the black level of the signal is under IRE30%. (Low)
MID ..... Extends when the black level of the signal is under IRE35%. (Middle)
HIGH ..... Extends when the black level of the signal is under IRE40%. (High)

2. COLOR-EX setting

Use this item to carry out color signal extension.

OFF ..... Color signal extension is not carried out. For general setting.
ON ..... Color signal extension is carried out.

Control this line doubler by using a personal computer

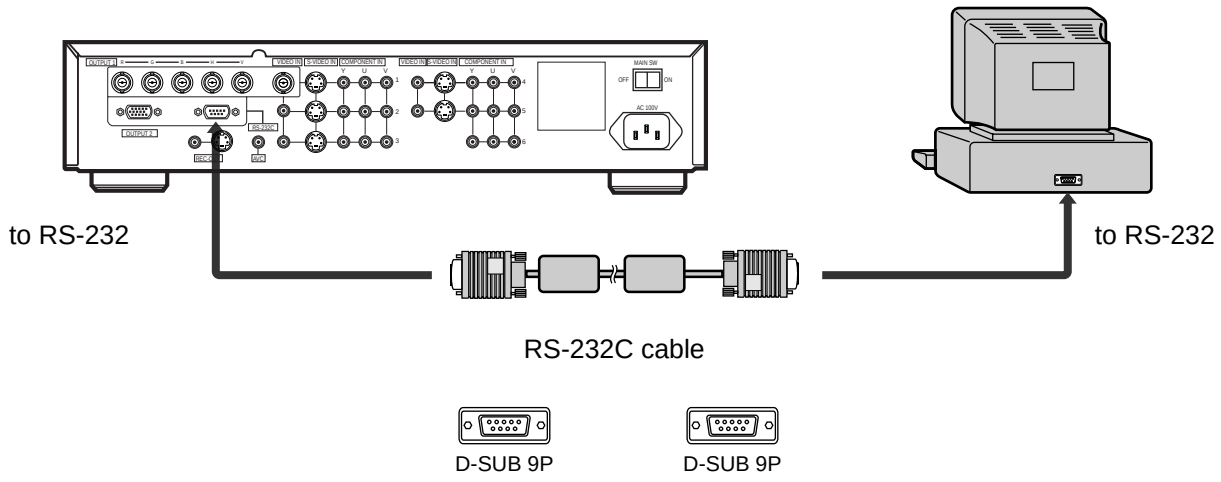
You can control this product using a personal computer (PC) having an RS-232C terminal by connecting them together.

Functions controlled by a PC

- Power on/off
- Image quality adjustment (CONTRAST, COLOR, TINT, SHARPNESS)
- Program switching
- Line doubler setting

Connection

Turn off your PC and the product before connecting them together.



Important!

- A serial adopter for 25-pin is required when you connect a PC made by IBM having a serial port for 25-pin only or a compatible PC with it. Ask your dealer about details on such connection.

PC system requirements for control

- Compatible device with IBM-PC/AT having an RS-232C terminal
- Windows 95

Trademark

Microsoft, Windows is a registered trademark of Microsoft Corporation in the United States and other countries.
IBM-PC/AT is a registered trademark of IBM Corp.

FAROUDJA PICTURE PLUS™ and FAROUDJA Laboratories® is a registered trademark of Faroudja, Inc. in the United States.
Other company names and brand names described in this manual are the trademark or registered trademark of each company.
The marks of ® and ™ are omitted in this manual.

Product representation

Microsoft® windows® 95 operating system is represented as Windows 95 in this manual.

Use the attached application software designed only for control to control the product using a PC.

To install the application software

1 Insert the attached floppy disk into the floppy disc drive.

2. Double-click My Computer on your desk top and then double-click 3 1/2 Floppy in the My Computer window.

3. Select the VULD20.EXE file in the 3 1/2 Floppy disc drive window and then drag the VULD20.EXE file to the Hard disc drive folder in the My Computer window.

To start the program

1. Double-click My Computer on your desk top and then double-click Hard disc in the My Computer window.
2. Select and double-click the VULD20.EXE file in the Hard disc drive window.

The following window is displayed.

POWER
Use to turn on or off the power while the main power switch is set to ON.

CONTRAST
Use to adjust contrast (brightness ratio of black and white).

COLOR
Use to adjust color (color intensity).

DOUBLER
Use to select the operation of the line doubler.

COM Port
Use to select the port number of the connected PC.

INPUT
Use to select the programs in turn.

TINT
Use to adjust tint.

SHARPNESS
Use to adjust sharpness.

Status
Indicates the status of communication.

Ready.....	Waiting to receive commands.
Sending.....	Sending commands.
COM Port Error..	An error has occurred.
Timed Out....	Time out

- Change the port of the connected PC shown in the COM Port selection box at the lower- left of the window when clicking the buttons doesn't work.

To quit the program

Click the Close button in the upper-right corner of the window.

TROUBLESHOOTING

Check the following before asking your dealer for service.
Signal problems may be regarded as a product's failure.

Images are not displayed on the screen, or NO SIGNAL is displayed.
- Is the power cord of the video projector or the product connected?
- Is the connecting cable of the video projector or the product connected?
- Are the correct connection terminals of the external device selected for the input signals?
- Is the INPUT TERMINAL of the program setting screen set correctly?
- Is the connecting terminal of the external device connected?
- Is the external device turned on?
- Is the video mute operated for the external device?
- Are the signal connections with the external device or projector correct?

The color tone is not right.
- Are the signal connections with the external device or projector correct?
- Are the signals (RGB, YCbCr or YPbPr) of the external device or projector, and the input signals of the product set correctly?

The buttons are not effective.
- Is the KEY LOCK function effective?
- Press the Program 10 button and the POWER button at the same time to cancel the KEY LOCK.

FORMAT ERROR is displayed.
- Is VIDEO FORMAT of the program setting screen set correctly?
- This product does not recognize the input video signals as a standard NTSC signal when they contain unnecessary signals such as noise (under shoot below pedestal). In such a case, ask your dealer about the connected device.

Noises appear on the images.
- Is the videotape played back by special playback such as Still, Fast forward, Slow, etc.?
- Are you playing an old videotape?
- Noises may appear when a videotape with unstable sync signals is played back. In such a case, it is recommend to use a VCR with a built-in TBC (Time Base Corrector) circuit.
- Are you using a video source which provides weak image signals, especially weak synchronizing signals (not-standard sync. or with noises etc.)?
- Are the images supplied from a poor-receiving tuner?

The edges are scratchy even when the LINE DOUBLER is set to ON.
- The edges of moving images other than film images may become scratchy. Some software may record images as both video and film images.
- The 3-2 PULL DOWN function may not be effective when the images are switched by the chapter search.
- The edges of moving images may become scratchy when using a picture element display device such as an LCD or monitor.

The product does not operate correctly when connected with an external device.
- This product is not applicable to any other projectors than JVC LCD projector.
  (If connecting with other manufacturer's product, set the sync. signal of the connected external device to H/V separate manually. The product may operate.)
- This product outputs 525p signals (DVD progressive). When it is connected with a VGA signal device, images may be displayed by under-scanning, or not be displayed at all due to bad sync.

Setting of CONTRAST, SHARPNESS, BRIGHT, COLOR or TINT are not memorized.
- Settings are not memorized when the power is turned off while the adjustment screen of CONTRAST, SHARPNESS, BRIGHT, COLOR or TINT is displayed. Press the ESC button on the remote control or turn off the power after the adjustment screen disappears to keep the settings.

INDEX

A

Advanced image quality adjustment 21
AVC button 6, 9
AVC terminal 7

B

Basic image quality adjustment 20
BASIC USE 19
Batteries installation 9
BRIGHT adjustment 20
BRIGHT button 8

C

C-EDGE setting 23
C-NR setting 22
COLOR button 8
COLOR MATRIX setting 17
COLOR-COMP adjustment 23
COLOR-EX setting 23
COLOR-TEMP setting 22
COMPONENT IN (Y/U/V-1 to 6) terminals 7
Connection
- AV amplifier 14
- D-ILA, LCD projector 11
- DVD player 13
- Projector 12
- RS-232C 24
- VCR 13

CONNECTIONS 11
Connectors 29
CONT button 8
CONTRAST adjustment 20
Control this line doubler by using a personal comp 24

D

DC-TRAN-COR adjustment 23
Detail setting 22

E

ENTER button 8
ESC button 8

F

Front panel 6
Functions controlled by a PC 24

G

GAMMA-COR setting 23

H

Handling the remote control 9

I

Illumination button 8
IMPORTANT SAFEGUARDS 4
INPUT SETTING 15
INPUT TERMINAL setting 17

K

KEY LOCK 19

L

LINE DOUBLER 19
LINE DOUBLER setting 17
LIST button 9

M

MAIN SW 7

O

OUTPUT 1 terminals 7
OUTPUT 2 terminal 7
OVERVIEW OF THE PRODUCT 6
OVERVIEW OF THE REMOTE CONTROL 8

P

PC system requirements for control 24
PICTURE button 8
PICTURE-EX setting 23
POWER button 6, 8
Power supplying terminal 7
PRE/OVER setting 23
PREPARATION 10
Preparing for operation 10
PROG-TITLE setting 17
PROGRAM button 8
Program buttons (Prog. 1 to 10) 6
Program setting items 17
Program title setting 18

R

Rear panel 7
REC-OUT terminal 7
REMOTE SENSOR 6
RS-232C terminal 7, 24

S

S-VIDEO (S-Y/C-1 to 5) IN / VIDEO IN (VIDEO-1 to 5 7
S-Video 6 / Comp 6 INPUT terminals 6
Setting program 15
SHARPNESS adjustment 20
SHARPNESS button 8
SPECIFICATIONS 28
System configuration 10

T

TINT adjustment 20
TINT button 8
To install the application software 25
To quit the program 25
To start the program 25
Trademark 24
TROUBLESHOOTING 26

V

VC MENU button 9
VIDEO BAND setting 17
VIDEO EQUALIZING MENU 1 22
VIDEO EQUALIZING MENU 2 23
VIDEO EQUALIZING MENU 3 23
VIDEO FORMAT setting 17

W

What's included in the box 29

Y

Y/C-DELAY adjustment 22
Y-EDGE setting 23
Y-NR setting 22
YCS PARAMETER setting 22

SPECIFICATIONS

Electric

Color system NTSC

Input

Video input

VIDEO IN

VIDEO:BNC connector
1.0Vp-p ±20% negative sync.
75Ω termination

VIDEO:RCA connector
1.0Vp-p ±20% negative sync.
75Ω termination

S-VIDEO IN

Y/C: 4P DIN connector
Y input: 1.0Vp-p ±20% negative sync.
75Ω termination
C input : Burst 0.286Vp-p ±20%
75Ω termination

CONPONENT IN

Y: RCA connector
include sync. signal 1.0Vp-p ±20%
(HDTV input only ±10%)
75Ω termination, positive

U: RCA connector
0.7Vp-p ±20%
(HDTV input only ±10%)
75Ω termination, positive

V: RCA connector
0.7Vp-p ±20%
(HDTV input only ±10%)
75Ω termination, positive

AVC input

AVC IN: RCA connector
1.0Vp-p ±20% negative sync.
75Ω termination

RGB output

OUTPUT 1

R: BNC connector
0.7Vp-p ±20%
(HDTV input only ±10%)
75Ω termination, positive

G: BNC connector
0.7Vp-p ±20%
(HDTV input only ±10%)
75Ω termination, positive

B: BNC connector
0.7Vp-p ±20%
(HDTV input only ±10%)
75Ω termination, positive

HD: BNC connector
Horizontal sync. output, 1.0Vp-p
75Ω termination, positive

VD: BNC connector
Vertical sync. output, 1.0Vp-p
75Ω termination, positive

OUTPUT 2 D-SUB 15P connector
(See Connectors)

HD: TTL level output

VD: TTL level output

MONITOR output

REC-OUT

RCA connector
1.0Vp-p ±20% negative sync
75Ω termination

4P DIN connctor
Y output: 1.0Vp-p ±20% negative sync
75Ω termination
C output: Burst 0.286Vp-p ±20%
75Ω termination

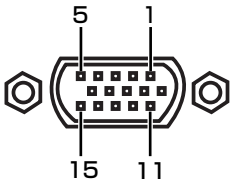
General

Rated power supply	AC120 V, 60 Hz	
Rated input	41 W	
Operating conditions	Temperature: +5 °C to +35 ° C	humidity: 30% to 80%
Installation conditions	Temperature: -20 °C to +35 °C	humidity: 30% to 90%
Outside dimensions	42.6 cm X 10.0 cm X 33.9 cm	
Weight	Approx. 8.5 kg	

Connectors

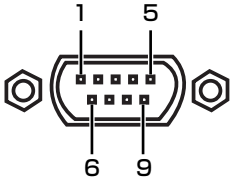
OUTPUT 2 (D-SUB-15PIN)

PIN NO.	SPEC	PIN NO.	SPEC
1	R(RED)	9	-
2	G(GREEN)	10	GND
3	B(BLUE)	11	GND
4	GND	12	-
5	GND	13	HD
6	GND	14	VD
7	GND	15	-
8	GND		



RS-232C (D-SUB-9PIN)

PIN NO.	NAME	I/O
1	N.C.	
2	RXD	IN
3	TXD	OUT
4	N.C.	
5	GND	
6	N.C.	
7	N.C.	
8	N.C.	
9	N.C.	



What's included in the box

Remote control (1)
AA batteries (4)
AC power cord 2.9m (1)
Instruction manual (1)
Warranty card (1)
Toll free card (1)

VU-LD20U

JVC

VICTOR COMPANY OF JAPAN, LIMITED

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