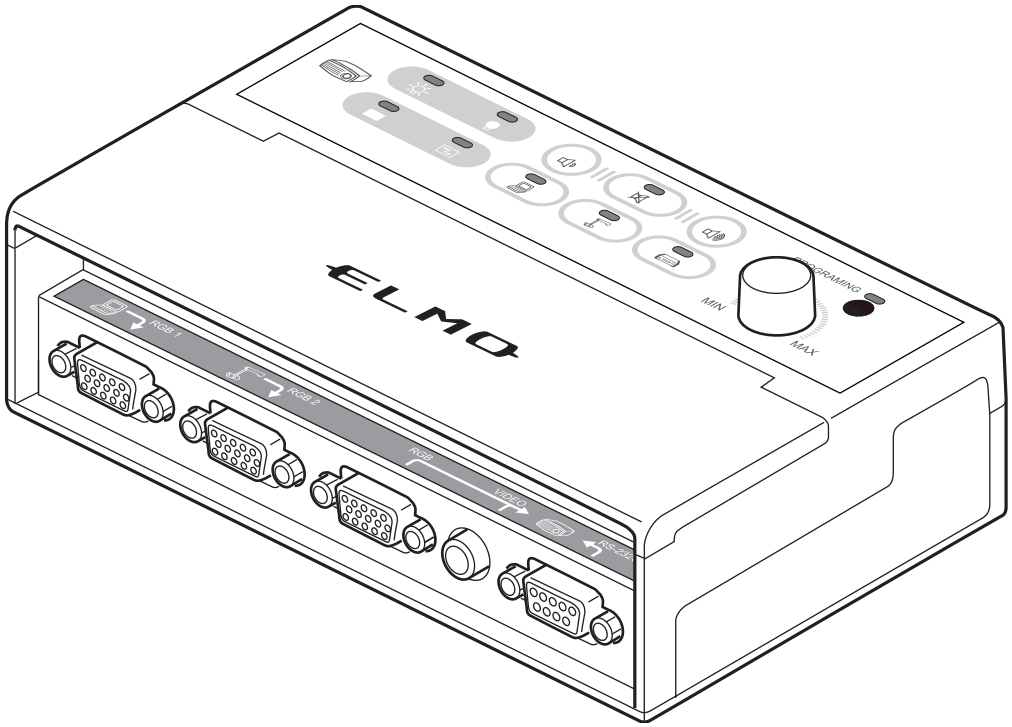
Teacher's Choice

ELMO

CRC-1

Touchboards
205 Westwood Ave, Long Branch, NJ 07740
Phone: 866-94 BOARDS (26273) / (732)-222-1511
Fax: (732)-222-7088 | E-mail: sales@touchboards.com

Instruction Manual



Contents

1. IMPORTANT SAFEGUARDS 3
Usage precautions 6
2. List of Contents 8
3. Part Names and Functions 9
Exterior 9
Operation panel 10
Connectors 11
4. Preparations 12
Connection diagram 12
Installation method 13
Cable connections 14
Controlling with RS-232C 16
Infrared learning function 18
5. Operating the Unit 21
Operation 21
When there are connectors not connected to peripheral devices 23
6. Troubleshooting 24
7. Specifications 26
8. Appendix 28
Selecting a projector to use 28
RS-232C command tables 29
9. Separately Sold Options 31

1. IMPORTANT SAFEGUARDS

■ Read Instructions

All the safety and operating instructions should be read before the appliance is operated.

■ Retain Instructions

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

■ Heed Warnings

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

■ Follow Instructions

All operating and use instructions should be followed.

■ Cleaning

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

■ Attachments

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

■ Water and Moisture

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

■ Placement

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.

■ 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.

■ **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 appliance dealer or local power company. For products intended to operate from battery power, or other sources, refer to the operating instructions.

■ **Grounding or Polarization**

This product may be equipped with either a polarized 2-wire AC line plug (a plug having one blade wider than the other) or a 3-wire grounding type plug, a plug having a third (grounding) pin. The 2-wire polarized 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 still fails to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug. The 3-wire grounding type plug will fit into a grounding type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding type plug.

■ **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.

■ **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.

■ **Overloading**

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

■ **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.**



■ **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.

■ **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.

■ Damage Requiring Service

Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

- When the power-supply cord or plug is damaged.
- If liquid has been spilled, or objects have fallen into the product.
- If the product has been exposed to rain or water.
- 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.
- If the product has been dropped or damaged in any way.
- When the product exhibits a distinct change in performance - this indicates a need for service.

■ Replacement Parts

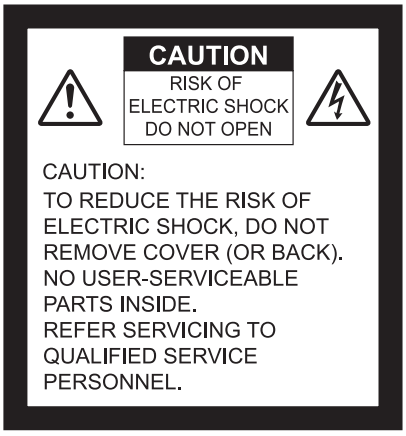
When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock or other hazards.

■ 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.

■ Heat

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





SA 1965

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. This marking is located at the bottom of product.



SA 1966

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.

WARNING:

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

Usage precautions

- Read the Instruction Manual carefully before using this product.
- A power cord is supplied that is suitable for the country of sale.
- The supplied power cord and AC Adapter is for this device only. Do not use them with other devices. Also, do not use other power cords or AC Adapters.
- Do not store in a location exposed to direct sunlight or frequent vibration.
  The operating environment conditions are as follows.
  Temperature: 0°C to 40°C (32°F - 104°F) Humidity: 30% to 85% (no condensation)
- When cleaning the unit, wipe it with a soft, dry cloth.
  Do not use any volatile solvents such as thinner or benzene.
- Observe the following to prevent the unit from falling or overturning.
  - Fix the unit with screws to prevent it from falling or overturning.
  - Install and wire the unit in such a way that the AC Adapter cord and video cable will not be pulled during use.
- If this product is used for a long time beyond the warranty period, its performance or quality may deteriorate as the parts approach the end of their service lives. We can replace parts for a fee, so contact the dealer where you purchased the product, or our nearest branch office or sales office.

■ FCC Notice

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio or television reception.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference radio and television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures.

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.

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.

The connection of a non-shielded equipment interface cable to this equipment will invalidate the FCC Certification or Declaration of this device and may cause interference levels which exceed the limits established by the FCC for this equipment. It is the responsibility of the user to obtain and use a shielded equipment interface cable with this device. If this equipment has more than one interface connector, do not leave cables connected to unused interfaces. Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

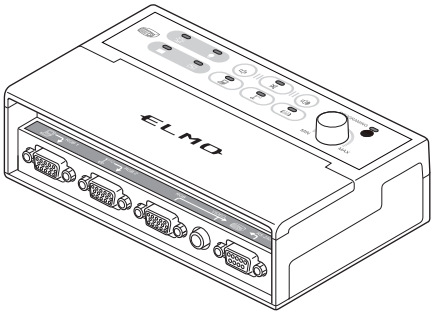
WARNING:

Handling the cord on this product or cords associated with accessories sold with this product, will expose you to lead, a chemical known to the State of California to cause birth defects or other reproductive harm.

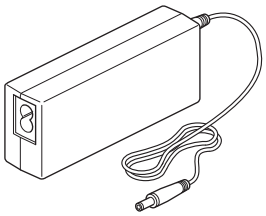
Wash hands after handling.

2. List of Contents

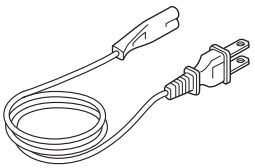
The contents of this package are shown in the list below.



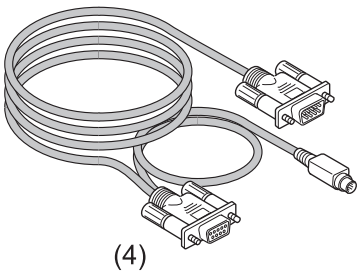
(1)



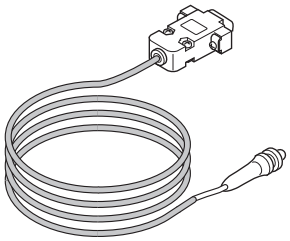
(2)



(3)



(4)



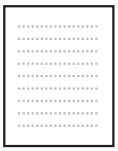
(5)



(6)



(7)

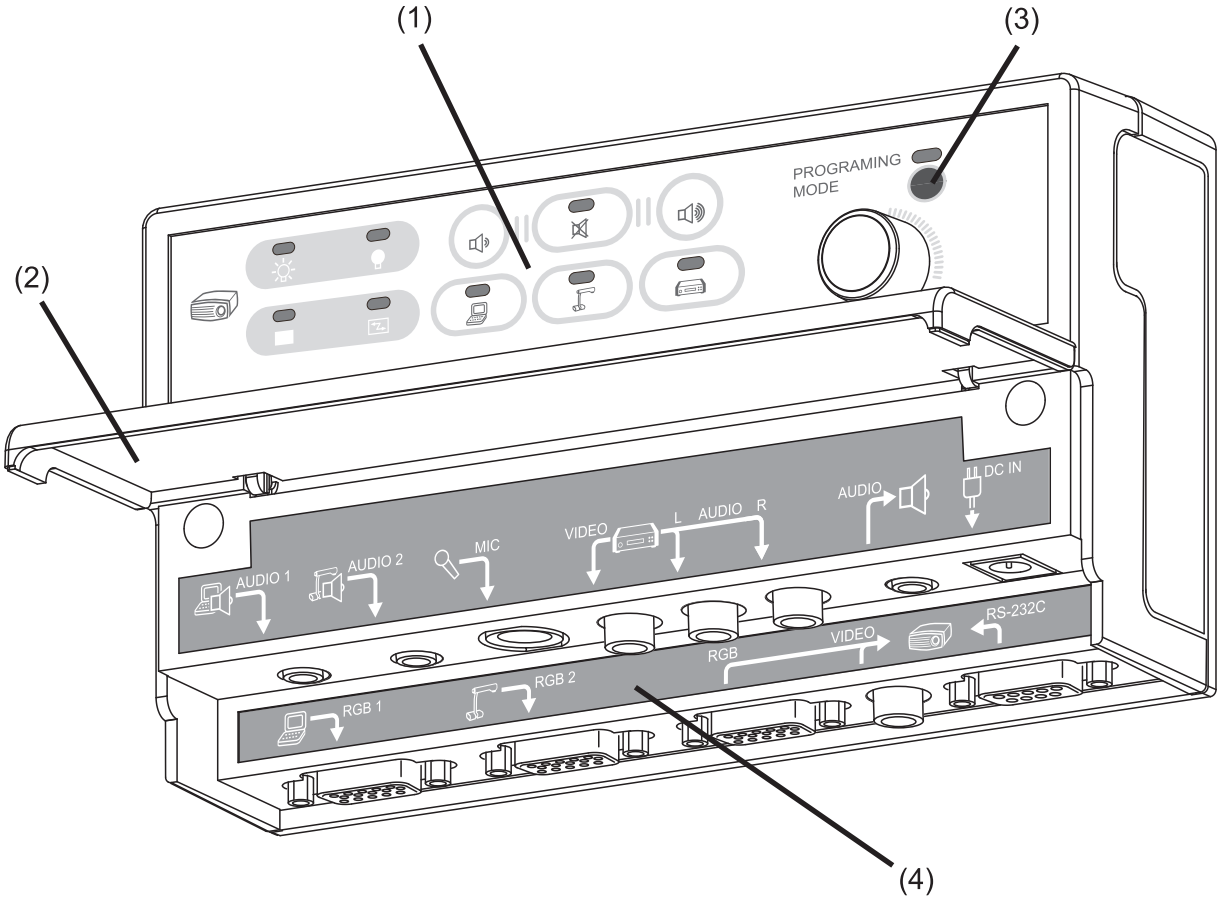


(8)

No.	Name	Quantity
(1)	Main unit	1
(2)	AC Adapter	1
(3)	Power cable	1
(4)	RS cable	1
(5)	IR cable	1
(6)	Bracket	1
(7)	CD-ROM (Instruction Manual)	1
(8)	Warranty Card (US only)	1

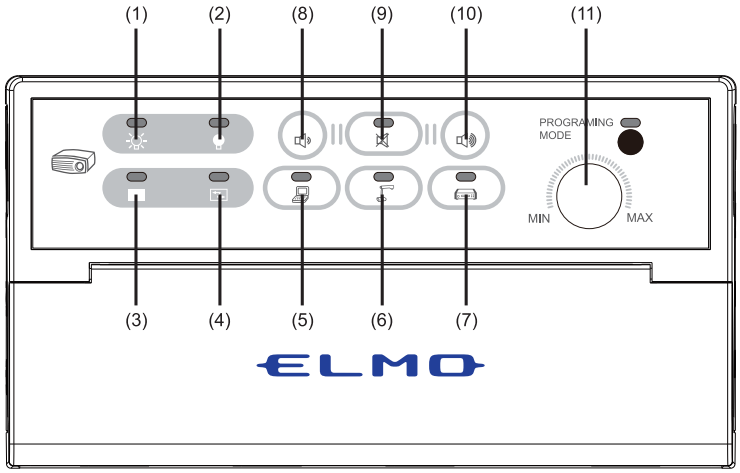
3. Part Names and Functions

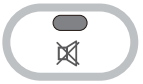
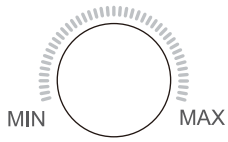
Exterior



No.	Name
(1)	Operation panel
(2)	Front cover
(3)	Remote control receiver
(4)	Connectors

Operation panel

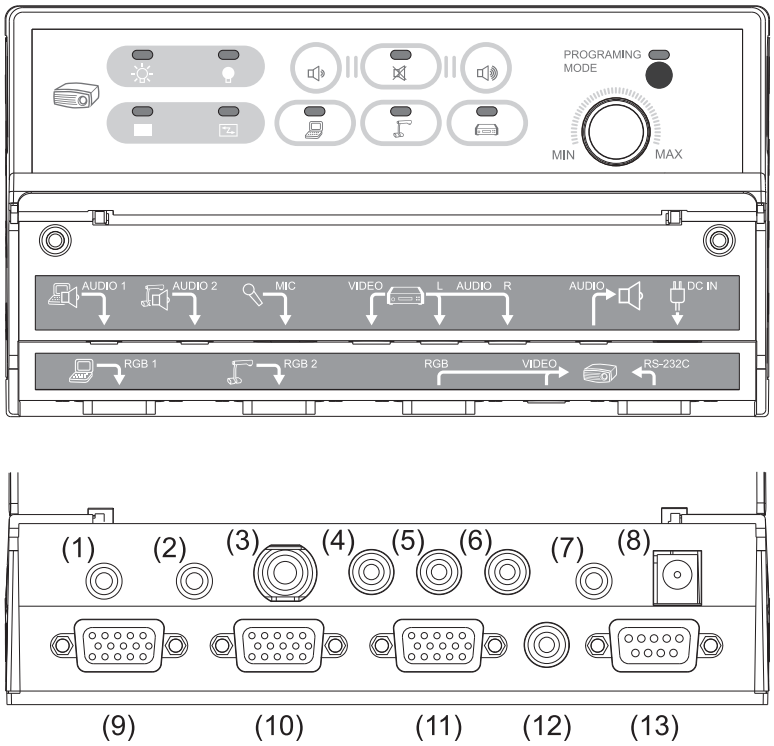


No.	Button	Button name	Description
(1)		ON	Turns on the power of the projector.
(2)		OFF	Turns off the power of the projector.
(3)		BLANK	Blanks the projector output image, or cancels the blanking.
(4)		SYNC	Adjusts the screen.
(5)		Computer	Enables RGB1 and AUDIO1.
(6)		Document Camera	Enables RGB2 and AUDIO2.
(7)		VIDEO	Enables VIDEO and AUDIO (L/R).
(8)*1		Volume Down	Lowers the AUDIO volume.
(9)*1		MUTE	Mutes AUDIO, or cancels the mute.
(10)*1		Volume Up	Raises the AUDIO volume.
(11)*1		MIC Volume	Adjusts the MIC volume.

Caution

*1 The volumes of the AUDIO and MIC are adjusted separately.

Connectors



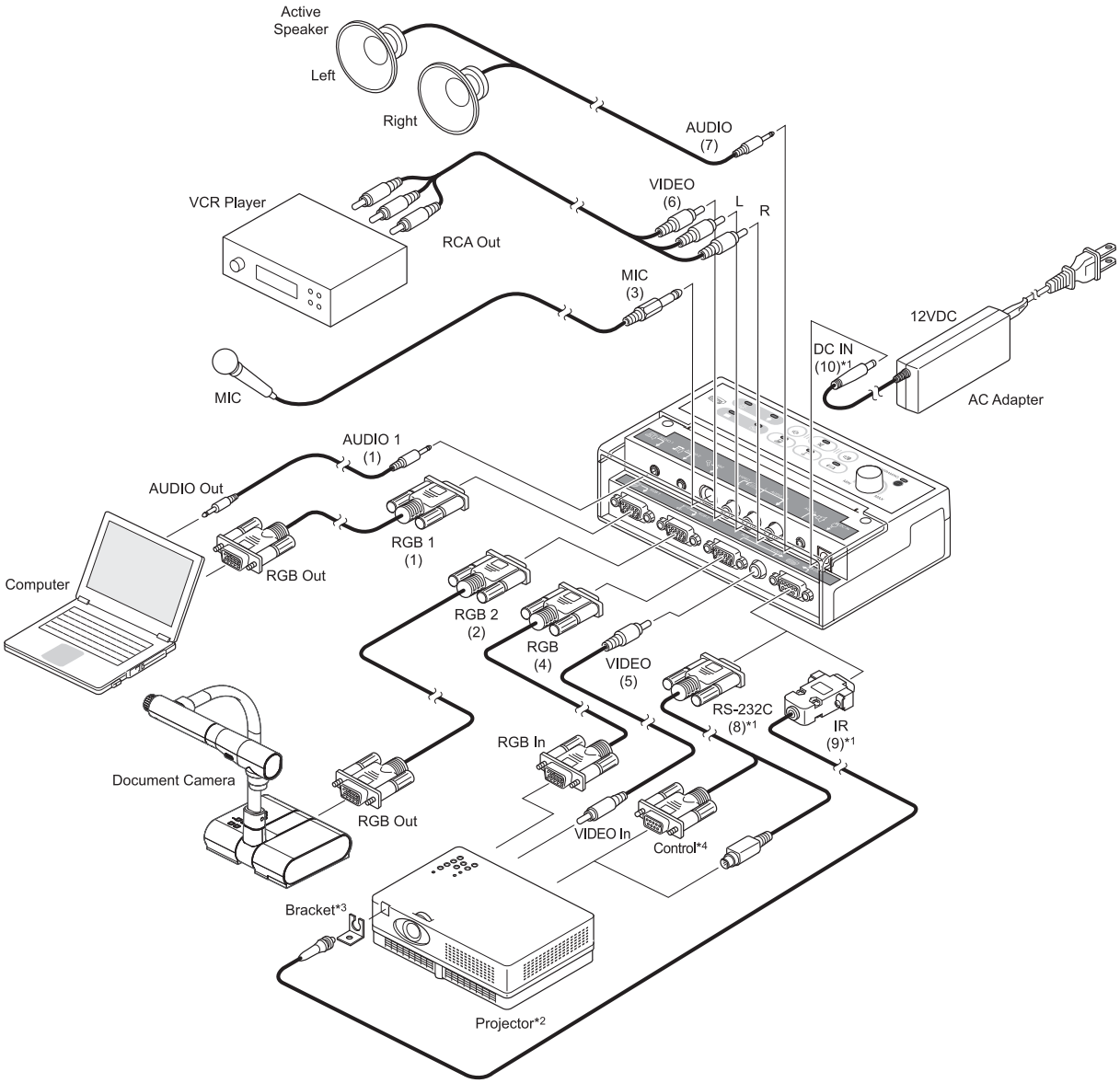
No.	Symbol	Connector name	Description
(1)*1	AUDIO 1	AUDIO1	Audio input from “Computer”
(2)*1	AUDIO 2	AUDIO2	Audio input from “Document Camera”
(3)*1	MIC	MIC	Audio input from “MIC”
(4)	VIDEO	VIDEO	Image input from “VIDEO”
(5)*1	L AUDIO	AUDIO L	Audio input(left) from “VIDEO”
(6)*1	AUDIO R	AUDIO R	Audio input(right) from “VIDEO”
(7)*1	AUDIO	AUDIO	Audio output
(8)	DC IN	DC IN	DC 12 V power supply
(9)	RGB 1	RGB1	Image input from “Computer”
(10)	RGB 2	RGB2	Image input from “Document Camera”
(11)	RGB	RGB	Image output from “RGB”
(12)	VIDEO	VIDEO	Image output from “VIDEO”
(13)	RS-232C	RS-232C	Projector control output

Caution

*1 MIC and the AUDIO1, AUDIO2 or AUDIO (L/R) output that is selected are mixed before output.

4. Preparations

Connection diagram



*1 Use the items that are supplied with this product. (For (8) and (9), use either one or the other.)

*2 For details on selecting the projector, see "Selecting a projector to use" on p.28.

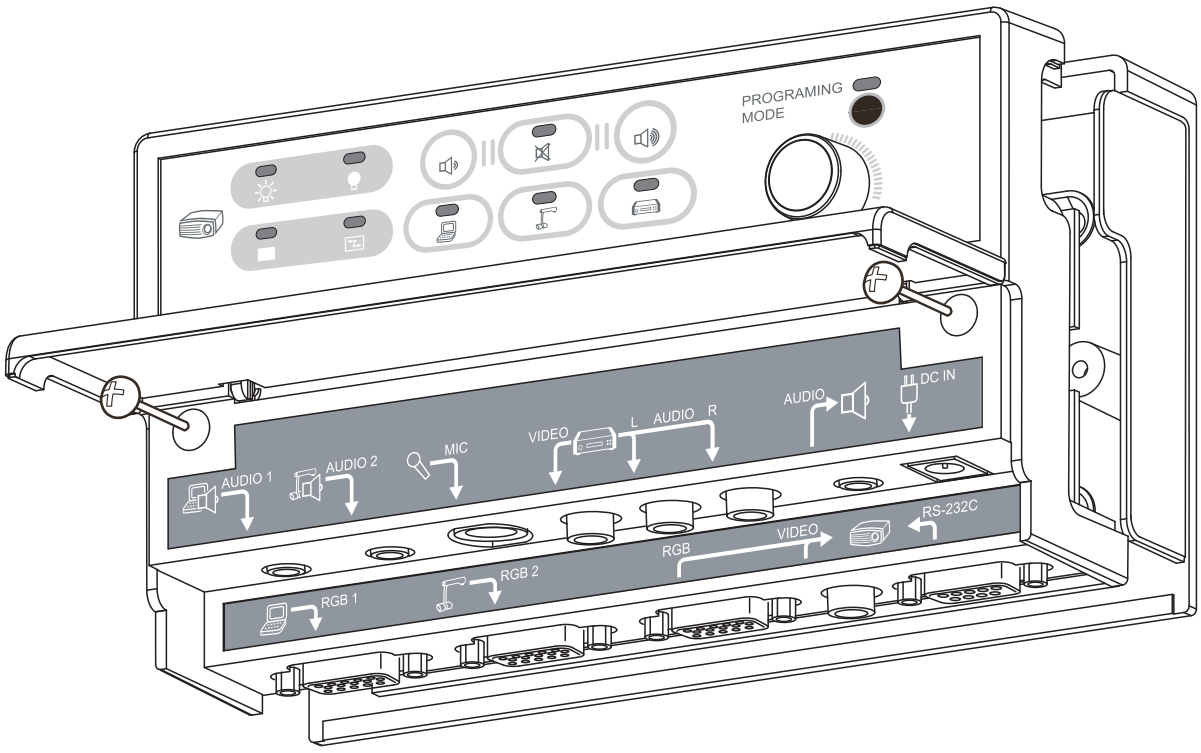
*3 The bracket can be used for fixing the IR emitter. Fix it within the receiving range of the projector with double-sided tape or screws.

*4 Use items that match the projector side terminal.

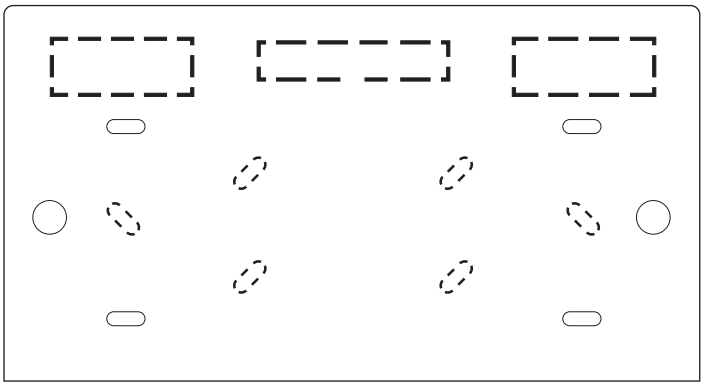
Installation method

The procedure for fixing the unit in the fixing location with screws is described below.

❶ **Remove the two screws under the front cover, and remove the rear cover.**



❷ **Cut out the oval perforated areas, and fix the unit in the fixing location with screws.**
The rectangle perforations are the holes for the expansion board. Do not cut them out.



❸ **After fixing the unit with screws, reinstall the rear cover.**

Cable connections

The methods for connecting peripheral devices to the unit are described below. When connecting the cables, fully and securely insert them into the connectors. If a connector has fixing screws, tighten them securely.

1. AUDIO1 and RGB1

The input from the Computer. Connect RGB1 to the Computer output with a VGA cable, and connect AUDIO1 to the Computer output with an audio cable (Φ3.5 mm stereo mini plug).

2. AUDIO2 and RGB2

The input from the Document Camera. When the Document Camera is used, AUDIO2 is not used.

Connect RGB2 to the Document Camera output with a VGA cable.

Caution	When using audio, connect the output terminal of the unit to AUDIO2 with an audio cable (Φ3.5 mm stereo mini plug).

3. MIC

The microphone input. Connect with a Φ6.5 mm microphone plug.

4. RGB

The image output from “RGB”. Connect to the projector with a VGA cable.

5. VIDEO

The image output from “VIDEO”. Connect to the projector with a video cable.

6. VIDEO and AUDIO (L/R)

The composite video input. Connect the output of a VCR player or similar device to the VIDEO and AUDIO (L/R) connectors with an RCA cable, matching the yellow (VIDEO), white (L) and red (R) connector colors.

7. AUDIO

The audio output connector. Connect to an external speaker with an audio cable (Φ3.5 mm stereo mini plug).

8. RS-232C

Connect the RS-232C connector of the unit to the projector control connector with the supplied RS cable. For details on the projector to use, see "Selecting a projector to use" on p.28.

A command table that is suitable for the projector must be selected. For details on selecting the command table, see "Controlling with RS-232C" on p.16.

Projector settings must also be performed.

Caution	If you want to change the control command of the projector or there is no table for the manufacturer of your projector, the contents of the command table must be edited with the programming tool (sold separately). Contact your local dealer. If the projector does not have a control connector, operate it with IR control. When performing IR control, see "Infrared learning function" on p.18.

9. IR

Connect the supplied IR cable to the RS-232C connector of the unit. Fix the LED area of the IR cable in a position where the infrared receiver of the projector responds to it.

Perform learning for the unit to learn the remote control signals of your projector. For details on the learning function, see "Infrared learning function" on p.18.

Not used when RS-232C control is performed.

10. DC IN

Connect the supplied AC Adapter to the power cable.

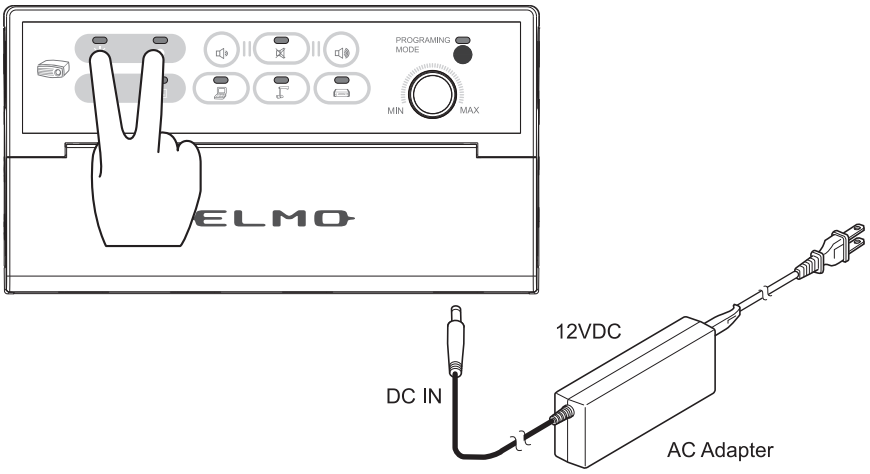
Controlling with RS-232C

RS-232C protocol is used in control communication with the projector. Eight preset command tables for projectors are available in the unit. Select the correct command table that is suitable for your projector. The factory setting for the command table of the unit is SANYO.

Caution	Command control for RGB applies when the unit is connected to the RGB1 connector of a projector. If a projector has multiple RGB connectors, connect the cable to RGB1.

■ Procedure for selecting a preset table

❶ **While pressing and holding the unit's (ON) button and (OFF) button (3 seconds), insert the AC Adapter.**

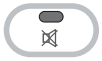


❷ **When the buttons are released, all the LEDs other than PROGRAMMING MODE flash and turn off.**

❸ **Press the button below that is suitable for your projector. (Default: Table 1)**


ON button - Table 1 (SANYO)


OFF button - Table 2 (HITACHI)


MUTE button - Table 3 (NEC)


BLANK button - Table 4 (EPSON)


SYNC button - Table 5 (SHARP)


Computer button - Table 6 (Canon)


Document Camera button - Table 7 (EIKI)


VIDEO button - Table 8 (InFocus)

❹ **The LED of the selected button turns on for 2 seconds, and after the command table changes, the LED turns off and normal operation returns.**

❺ **Connect the supplied RS cable to the unit and the projector.**

❻ **Check that the projector you connected operates correctly when you press the different buttons of the unit.**

Caution	If you want to set a different table, perform this procedure again.

Infrared learning function

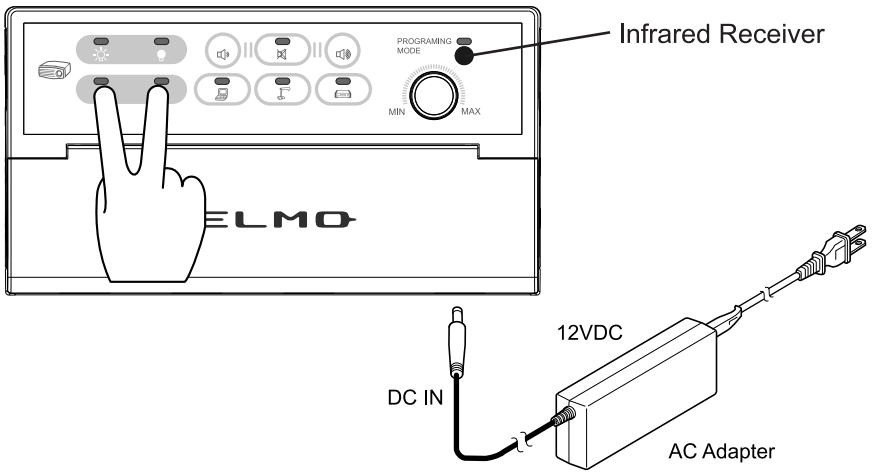
■ Learning method

The unit is equipped with a learning function for infrared signals. This is for learning the signals of the remote control that is supplied with a projector, to enable the remote control operation of the projector from the unit.

Perform the learning by following the procedure below.

■ Learning procedure

❶ **While pressing and holding the unit's (BLANK) button and (SYNC) button (3 seconds), insert the AC Adapter.**



❷ **When the buttons are released, all the LEDs flash for 3 seconds, and then all the LEDs except MUTE turn on.**

Caution	In infrared learning mode, the LED of PROGRAMMING MODE is lit.

❸ Select the button that you want the unit to learn.
The selected button LED turns on.



ON button - Remote 1 (power button)

OFF button - Remote 2 (power button)

BLANK button - Remote 3 (image blank)

SYNC button - Remote 4 (image adjustment)

Computer button - Remote 5 (RGB input selection)

Document Camera button - Remote 6 (RGB input selection)

VIDEO button - Remote 7 (VIDEO input selection)

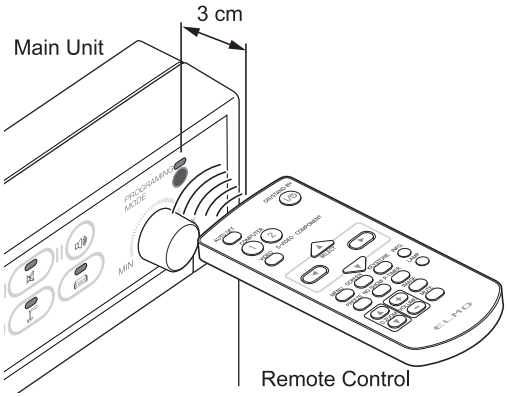
Caution

1) Make the unit learn the same signals for ON and OFF, and Computer and Document Camera.
2) To cancel the learning, press the MUTE button.

❹ Make the unit learn the remote control signal that corresponds to the button.

Point the remote control of the projector toward the infrared receiver of the unit and press the button you want the unit to learn for 1 to 2 seconds.

When pointing the remote control toward the infrared receiver of the unit, keep it perpendicular to the receiver and within 3 cm.



Caution

Perform learning within 35 seconds of selecting the button on the unit.

❺ When learning is successful, the LED flashes, and then all the LEDs except MUTE turn on again.

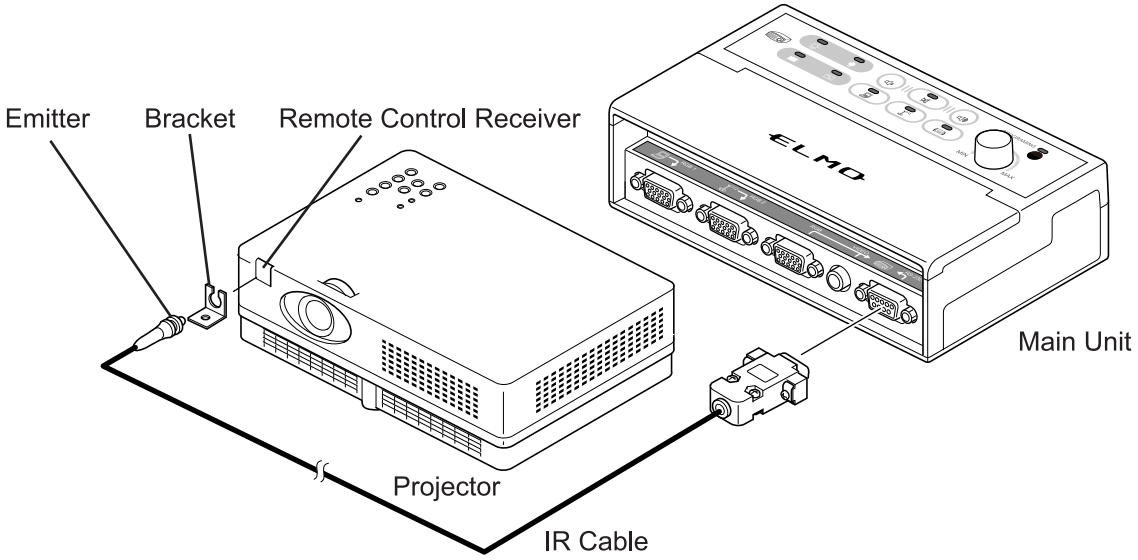
Repeat the procedure from step ❸ until all the buttons have learned remote control signals.

Caution

If learning fails, the MUTE LED turns on. Press the MUTE button and perform learning again from step ❸. Also repeat in this way if you make a mistake in the learning operation.

❻ To finish learning, press the (MUTE) button.
Normal operation returns.

❼ Connect the supplied IR cable to the unit, and fix the IR emitter in a position where the remote control receiver of the projector responds to it.



❽ Check that the projector you connected operates correctly when you press the different buttons of the unit.

Caution

1) Learning may not be possible with some remote control signals.
2) If you make the unit learn two or more functions for a single button, you must be very careful when operating it.
   (1) ON/OFF button of the remote control
   If you performed learning for a remote control signal that controls power on and off, and you press the ON button of the unit while the projector is running, a message such as "Press again to turn off the projector power" will be displayed. If you press the button again, the projector will turn off. Do not touch the unit's ON button while the projector is running. Also, if you press the OFF button while the projector is in standby, the projector will start up. Do not touch the unit's OFF button while the projector is not running.
   (2) Video image selection button of the remote control
   Projectors that have multiple video image inputs may have a single remote control button that changes the inputs in sequence.
   With such projectors, if you continuously input this selection remote control signal, the projector input may change and the video image that you want to display may not be shown. Press down the video image selection button in short intervals until the video image that you want to display is shown.

5. Operating the Unit

Operation

Select either the Computer, Document Camera or VIDEO input to determine the image and audio to output from the unit.
Below is a simple description of how to operate the unit.

❶ **Complete all the peripheral device connections and unit settings, and then connect the power cord to the outlet.**

❷ **To turn on the projector power, press the (ON) button.**

The projector power turns on, the green LED of the ON button flashes. When the LED of the ON button stops flashing and stays on, the red LED of Computer turns on and the RGB1 image and AUDIO1 audio are output.

❸ **To turn off the projector power, press the (OFF) button.**

The audio output and projector power turn off. The red LED of the OFF button flashes. When the LED of the OFF button stops flashing, the OFF LED stays on.

Caution	After pressing the OFF button, leave some cooling time before using the projector again. Do not press the ON button while the projector is cooling.

❹ **To adjust the AUDIO volume, press / (Volume Up/Down).**
To mute, press the (MUTE) button.

When the mute is operating, the red LED on the button is lit.
To cancel the mute, press the button again.

Caution	The MIC volume does not change with Volume Up/Down.

❺ **Adjust the volume of a connected microphone with MIC Volume.**
To mute, turn MIC Volume until it stops on the MIN side.

Caution	The AUDIO volume does not change with MIC Volume.

❻ **To blank the image, press the (BLANK) button.**

When the image is blanked, the red LED is lit. To cancel, press the BLANK button again. The LED turns off.

❼ To adjust the image, press the  (SYNC) button.

The image that is output from the input signal is adjusted. When the button is pressed, the red LED flashes 3 times, the adjustment is performed, and then the LED turns off.

❽ To output the image and audio from "Computer", press the  (Computer) button.

The red LED turns on and the RGB1 image and AUDIO1 audio are output.

❾ To output the image from "Document Camera", press the  (Document Camera) button.

The red LED turns on and the RGB2 image is output.

Caution	If there is an input to AUDIO2, audio is also output.

❿ To output the image and audio from "VIDEO", press the  (VIDEO) button.

The red LED turns on and the VIDEO image and AUDIO (L/R) audio are output.

When there are connectors not connected to peripheral devices

After connecting the peripheral devices, if there are connectors that are not connected to anything, be careful of the following.

1. RGB1 and AUDIO1 are not connected

Do not use Computer on the operation panel.
Select a selection button that has image input.

2. RGB2 and AUDIO2 are not connected

Do not use Document Camera on the operation panel.

3. VIDEO (input) and AUDIO (L/R) are not connected

Do not use VIDEO on the operation panel.

4. AUDIO (input) or MIC are not connected

Audio is not input.

5. RGB (output) is not connected

The image from an RGB input device is not displayed. If there is an RGB image input, be sure to connect it to the projector.

6. VIDEO (output) is not connected

The image from VIDEO input is not output. If there is a VIDEO image input, be sure to connect it to the projector.

7. AUDIO (output) is not connected

The audio from AUDIO input and MIC input is not output.

8. RS-232C is not connected

If the RS-232C connector is not connected, projector control is not possible. Connect with the supplied RS cable or IR cable so that the projector can be controlled.

6. Troubleshooting

If there is still an abnormality after checking the items below, contact the dealer where you purchased the unit, or our nearest branch office or sales office. We will perform repairs in accordance with our policy.

Item	Checks
Unit does not function	Is the AC Adapter connected? Check the connection between the unit and the outlet.
	Has the power cable disconnected? Check the connection between the AC Adapter and the power cable.
Projector does not operate	Is the projector's power turned on?
	Are the projector and the unit connected correctly?
	Is the pin of the MiniDIN8 connector short-circuiting for some reason? Remove the cause of the problem.
	Is the command table of the projector set correctly? See "Controlling with RS-232C" on p.16.
	Have the suitable remote control signals been learned? See "Infrared learning function" on p.18.
	Is the installation location of the IR emitter suitable? If installed in a location exposed to strong light, the IR signal may not reach the receiver.
Image is not output	Are the video cables fully inserted?
	Is a cable broken? Do not use old cables.
	Is the LED of the BLANK button lit? If the LED is lit, press the BLANK button again.
Cannot change the image	Is the button you selected correct? Select a button that has image input.
	Is the projector control cable connected and positioned correctly? If the projector input cannot be selected, output may not be possible.
	Is there an input from a video device?
Image is distorted	Are the connectors fully and securely inserted?
	Is the input signal capable of being displayed by the projector?
	Is the cable securely fixed to the connector?
	Is a cable broken? Do not use old cables.

Item	Checks
No sound	Has a cable disconnected?
	Are the cables connected correctly? Check that the insertion location is correct.
	Is there an input from an audio device?
	Is the AUDIO volume set to the minimum?
	Is the MUTE LED lit? If the LED is lit, press the MUTE button to cancel the mute.
	Is the speaker's power turned on?
	Is the speaker volume set to the minimum?
Cannot hear the microphone sound	Has a cable disconnected?
	Is the MIC Volume set to MIN?
	Is the speaker's power turned on?
	Is the speaker volume set to the minimum?
Cannot perform infrared learning	Are you performing the operations correctly? See "Infrared learning function" on p.18.
	Is learning possible for the remote control that you want to use? If the LED of the MUTE button turns on no matter how many times you perform the operation, learning is not possible.
	Is there enough power remaining in the remote control's batteries?

Caution

If proper operation is still not possible after checking the items above, there may be a malfunction in the unit.
Contact your local dealer for repair.

7. Specifications

These are the specifications of the unit. Check these before using the unit.

Item	Connector	Check item	Specification
Analog RGB	RGB1	Connector type	Dsub15 (female)
		Video signal	0.7 Vp-p/75 Ω
		Synchronizing signal level	TLL level
		Video frequency characteristics	400 MHz, 3 dB or higher
		Resolution	VGA to SXGA, 1080p
	RGB2	Connector type	Dsub15 (female)
		Video signal	0.7 Vp-p/75 Ω
		Synchronizing signal level	TLL level
		Video frequency characteristics	400 MHz, 3 dB or higher
		Resolution	VGA to SXGA, 1080p
	RGB	Connector type	Dsub15 (female)
		Video signal	0.7 Vp-p/75 Ω
		Synchronizing signal level	TLL level
		Video frequency characteristics	400 MHz, 3 dB or higher
		Resolution	VGA to SXGA, 1080p
Video	VIDEO	Connector type	RCA pin jack
		VBS signal	0.7 Vp-p/75 Ω
	VIDEO (Output)	Connector type	RCA pin jack
		VBS signal	No output distortion or attenuation.
Audio	AUDIO1	Connector type	Φ3.5 mm stereo mini jack
		Input impedance	8000 Ω (right/left)
		Maximum input level	Maximum volume at 1.0 V: Gain=1.89
	AUDIO2	Connector type	Φ3.5 mm stereo mini jack
		Input impedance	8000 Ω (right/left)
		Maximum input level	Maximum volume at 1.0 V: Gain=1.89
	VIDEO (L/R)	Connector type	RCA pin jack
		Input impedance	8000 Ω (right/left)
		Maximum input level	Maximum volume at 1.0 V: Gain=1.89
	AUDIO	Connector type	Φ3.5 mm stereo mini jack
		Audio frequency band	280 Hz to 20 KHz
		Output impedance	500 Ω (right/left)
		Output level variable range	2.0 V
Microphone	MIC	Connector type	Φ6.5 mm microphone jack
		Microphone type	Condenser microphone, moving-coil microphone
		Input impedance	21400 Ω

Item	Connector	Check item		Specification
RS-232C	RS-232C	Connector type		Dsub9 (female)
		No. of tables		8
		No. of commands		6
		Baud rate		4800/9600/19200/38400/115200 bps
		Data bits		7 bits, 8 bits
		Stop bits		1 bits, 1.5 bits, 2 bits
		Parity bit		non/odd/even
		Cable length		15 m (standard value)
		Cable type		When using a specified projector, use the supplied cable In other cases, an option and cable are required
		Supported projectors		SANYO, HITACHI, NEC, EPSON, SHARP, Canon, EIKI, InFocus
Infrared output	RS-232C	Connector type		Dsub9 (female)
		Learning	Operating distance	Max 3 cm
			No. of learning items	7 buttons
			Frequency	30 KHz - 42 KHz
		Output	No. of operations	7 ON, OFF, BLANK, SYNC, Computer, Document Camera, VIDEO
			Cable type	Use the supplied cable

Main unit	Item	Specification
Unit specifications	Power voltage	12 VDC (AC Adapter AC100 – 240 V)
	Power consumption	No device connected - 2.1 W All connected - 3.3 W
	External dimensions	L-168 mm/H-90 mm/W-43 mm (including volume knob: 58 mm)
	Weight	306 g
	Operating temperature range	0 - 40°C
	Supplied items	AC Adapter Power cable RS cable IR cable Bracket CD-ROM (Instruction Manual) Warranty certificate

8. Appendix

Selecting a projector to use

■ Recommended models (as of February 2010)

1. Use the RS cable's Dsub9 connector

SANYO : LP-XW200 / LP-XW250 / LP-XW300
HITACHI : CP-X308J / CP-X417J / CP-X3010J / CP-X2510J
NEC : NP600SJ / NP500WSJ / NP215J / NP210J / NP115J / NP110J
EPSON : EB-410W / EB-826W / EB-825 / EB-85
SHARP : PG-F255W / PG-F312X / PG-F212X
Canon : LV-7375 / LV-7370 / LV-7275 / LV-8300
EIKI : LC-XS25D / LC-XS30D
InFocus : IN2100 / IN2104EP

2. Use the RS cable's MiniDIN8 connector

SANYO : LP-XW60 / LP-XW65 / LP-WXL46
EIKI : LC-XB42D

The command table can be changed using the supplied programming tool.
To use the programming tool, a programming cable (sold separately) is required to connect the Computer on which the programming tool is installed to the unit.
To purchase, contact your local dealer.

Caution	If your projector is not in the recommended list or it does not have a control connector, control it using IR. If you cannot make it operate properly, contact your local dealer.

RS-232C command tables

This section shows the RS-232C commands that are registered in the unit.
The commands in the tables are HEX codes.
Computer and Document Camera use the same commands.

SANYO(table1)

BUTTON	COMMAND
Baud rate	19200
ON	4330300D
OFF	4330310D
SYNC ON	4338390D
SYNC OFF	4338390D
BLANK ON	4330440D
BLANK OFF	4330450D
Computer	4330350D
Document Camera	
VIDEO	4330370D

HITACHI(table2)

BUTTON	COMMAND
Baud rate	19200
ON	BEEF030600BAD2010000600100
OFF	BEEF0306002AD3010000600000
SYNC ON	BEEF03060091D006000A200000
SYNC OFF	BEEF03060091D006000A200000
BLANK ON	BEEF0306006BD9010020300100
BLANK OFF	BEEF030600FBD8010020300000
Computer	BEEF030600FED2010000200000
Document Camera	
VIDEO	BEEF0306006ED3010000200100

NEC(table3)

BUTTON	COMMAND
Baud rate	19200
ON	020000000002
OFF	020100000003
SYNC ON	020F000002050018
SYNC OFF	020F000002050018
BLANK ON	021000000012
BLANK OFF	021100000013
Computer	0203000002010109
Document Camera	
VIDEO	020300000201060E

EPSON(table4)

BUTTON	COMMAND
Baud rate	9600
ON	505752204F4E0D
OFF	505752204F46460D
SYNC ON	4B45592034410D
SYNC OFF	4B45592034410D
BLANK ON	4D555445204F4E0D
BLANK OFF	4D555445204F46460D
Computer	534F555243452031310D
Document Camera	
VIDEO	534F555243452034310D

SHARP(table5)

BUTTON	COMMAND
Baud rate	9600
ON	504F5752202020310D
OFF	504F5752202020300D
SYNC ON	41444A53202020310D
SYNC OFF	41444A53202020310D
BLANK ON	494D424B202020310D
BLANK OFF	494D424B202020300D
Computer	4952474202020310D
Document Camera	
VIDEO	4956454420202032 0D

Canon(table6)

BUTTON	COMMAND
Baud rate	19200
ON	020000000002
OFF	020100000003
SYNC ON	020F000002050018
SYNC OFF	020F000002050018
BLANK ON	021000000012
BLANK OFF	021100000013
Computer	0203000002010109
Document Camera	
VIDEO	020300000201060E

EIKI(table7)

BUTTON	COMMAND
Baud rate	19200
ON	4330300D
OFF	4330310D
SYNC ON	4338390D
SYNC OFF	4338390D
BLANK ON	4330440D
BLANK OFF	4330450D
Computer	4330350D
Document Camera	
VIDEO	4330370D

InFocus(table8)

BUTTON	COMMAND
Baud rate	115200
ON	50575231
OFF	50575230
SYNC ON	41494D
SYNC OFF	41494D
BLANK ON	424C4B31
BLANK OFF	424C4B30
Computer	44534330
Document Camera	
VIDEO	44534332

9. Separately Sold Options

These options expand the functions of the product.

Description	Item	Specification
Expansion board	Connector	DC IN, AUDIO, RGB, VIDEO (Output), RS-232C
	External dimensions	L-112 mm/H-20 mm/W-84 mm
	Weight	105 g
Programming cable	-	A cable for connecting the unit to the Computer on which the programming tool is installed

ELMO is a registered trademark of ELMO Co., Ltd.
Company/product names described in this manual are trademarks or registered trademarks of their respective companies.

ELMO CO., LTD.

6-14, Meizen-cho, Mizuho-ku
Nagoya, 467-8567, Japan

OVERSEAS SUBSIDIARY COMPANIES

ELMO USA CORP.
Headquarters
1478 Old Country Road
Plainview, NY 11803-5034, U.S.A.
Tel. (516) 501-1400 Fax. (516) 501-0429
E-mail:elmo@elmousa.com
Web:http://www.elmousa.com

West Coast Branch
Cypress Pointe Business Park
5676 Corporate Avenue
Cypress, CA 90630, U.S.A.
Tel. (714) 828-8457 Fax. (714) 828-8429

ELMO (Europe) G.m.b.H.
Neanderstr. 18,
40233 Düsseldorf, Germany
Tel. (0211) 386470 Fax. (0211) 376620
E-mail:info@elmoeurope.com
Web:http://www.elmoeurope.com

6X1CRCA02 R1-Xb