



XD RECEIVER MANUAL

FCC CAUTION

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

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

NOTE

FCC ID can be found on the bottom of the units.

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

COMPLIANCE WITH FCC REQUIREMENT 15.407(C)

Data transmission is always initiated by software, which is passed down through the MAC, through the digital and analog baseband, and finally to the RF chip. Several special packets are initiated by the MAC. These are the only ways the digital baseband portion will turn on the RF transmitter, which it then turns off at the end of the packet. Therefore, the transmitter will be on only while one of the aforementioned packets is being transmitted. In other words, this device automatically discontinues transmission in case of either absence of information to transmit or operational failure.

RADIO FREQUENCY (RF) EXPOSURE WARNING


This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines. This equipment should be installed and operated keeping the radiator at least 20cm or more away from person’s body (excluding extremities: hands, wrists, feet and ankles).

MEDICAL NOTICE


Consult the manufacturer of any personal medical devices, such as pacemakers, to determine if they are adequately shielded from external RF (radio frequency) energy. The unit operates in the frequency range of 1.92 GHz to 1.93 GHz.

Do not use the unit in health care facilities if any regulations posted in the area instruct you not to do so. Hospitals or health care facilities may be using equipment that could be sensitive to external RF (radio frequency) energy.

SAFETY PRECAUTIONS



CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN



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



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 appliance.

WARNING:

- The main plug or an appliance coupler shall remain readily operable.
- To prevent injury, this apparatus must be securely attached to the floor/wall in accordance with the installation instructions.
- The connections should comply with local electrical code.
- The installation shall be carried out in accordance with all applicable installation rules.
- To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.
- The apparatus should not be exposed to dripping or splashing and that no objects filled with liquids, such as vases.
- All work related to the installation of this product should be made by qualified service personnel or system installers.
- This product has no power switch. To disable the power, disconnect the LAN cable.

CAUTION:

Before attempting to connect or operate this product, please read the label on the bottom.

The model number and serial number of this product may be found on the surface of the unit. You should note the model number and serial number of this unit in the space provided and retain this book as a permanent record of your purchase to aid identification in the event of theft.

Model No. _____

Serial No. _____

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OVERVIEW

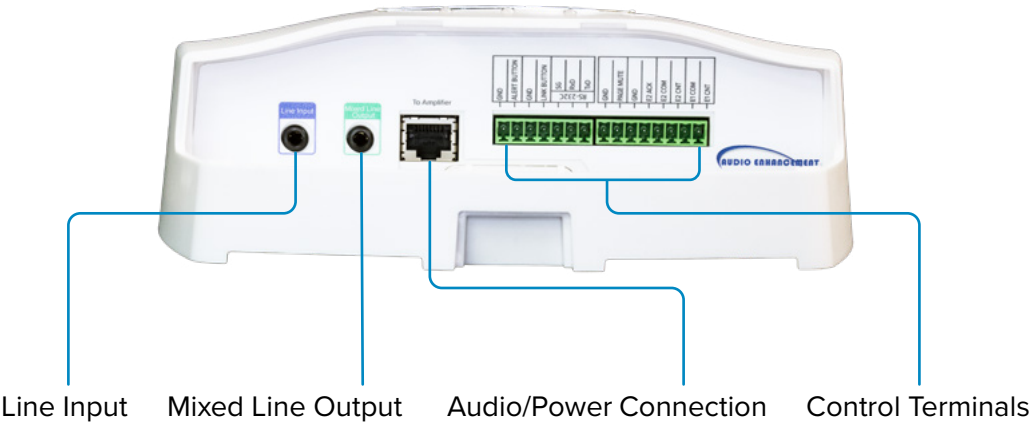
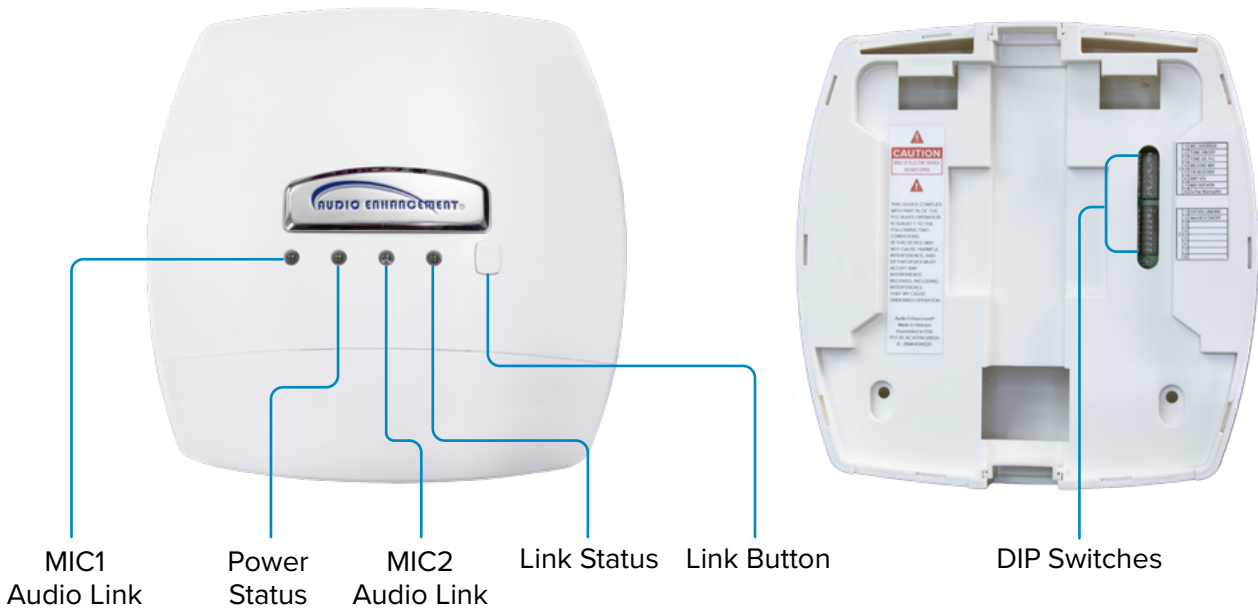
The **XD Receiver** is designed as a physical interface for triggering the Lockdown Notification from EPIC (Education Paging & Intercom Communications) System® remotely. This allows the button to be installed in areas where installing an EPIC Kiosk is not feasible or where a physical push button interface is desired. The button has a protective cover to eliminate accidental activation as well is lighted to enable location in the dark.

SAFETY INSTRUCTIONS

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer’s instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
10. Only use attachments/accessories specified by the manufacturer.

- 11. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
- 12. Unplug this apparatus during lightning storms or when unused for long periods of time.
- 13. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as if a power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
- 14. Make sure that the wall that the shelf will be attached to is strong enough to support the shelf. If not, it is necessary for the wall to be reinforced.
- 15. For safety reasons, do not physically modify the product or any optional equipment.
- 16. To prevent possible fire or electric shock, do not expose this product to rain or moisture.
- 17. Follow all warnings and instructions marked on this product.
- 18. To reduce the risk of electric shock, do not disassemble this product. Only qualified personnel should service this product. Opening or removing covers may expose you to dangerous voltages or other risks. Incorrect reassembly can cause electric shock.
- 19. The product should never be placed near or over a radiator or other heat source.
- 20. Do not use a microwave oven to dry this product.
- 21. The product may only be installed and serviced by qualified service personnel.

SPECIFICATIONS



XD RECEIVER WITH 3' CAT6	
Receiver Specifications	DECT Technology 1.9 GHz
Line In	Line level 3.5 mm stereo mini jack (monaural mix)
Line out	Line level 3.5 mm output mini jack, RJ45 line level output, line level 3.5 mm stereo output
Power Requirement	24V DC @ 130 mA
S/N	85 dB or more (Receiver to Mix/MIC output), by auto level control function in Microphone
MIC1/MIC2 (Microphone Output)	–5 dBV Balanced, Adaptive impedance 10 kΩ or more, ϕ3.5 mm (1/8 inches) stereo mini jack
Control Port	Line In, REC/E1 Alert/E2, RS-232C, RJ-45, audio/power, MIC1/MIC2 (Microphone Output) • (1) RS-232 communication ports to control another classroom device such as a projector
Material	ABS resin
Color	White
Temperature Range	32 - 104° F (0 - 40° C)
Weight	1.72 lbs (27.52 oz)
Dimensions	6.19 (H) x 7.19 (W) x 1.38 (D) in (157 x 183 x 35 mm)



LINK BUTTON

Pressing the *Link* button will put the receiver into register mode to link with a microphone. This register mode is canceled after 20 seconds. Refer to operating procedures. At the time of E2 state, the button operation is invalid.

POWER STATUS

The *power* LED lights up as follows to indicate various states:

- Green: When the power is on, and this unit can receive signals under normal conditions.
- Red: E2 signal output provided.
- Yellow: Page mute signal received.

MIC1/MIC2 AUDIO LINK

The *MIC1/MIC2* Audio LED lights up as follows to indicate various states:

- Green: Receiving signals from each microphone under normal conditions.
- Red: E1 signal output provided.
- Red: E2 signal output provided.
- Yellow: Page mute signal received.

LINK STATUS

The *Link* LED lights up as follows to indicate various states:

- Green: During audio link with the WAP or when a media microphone is linked with the third channel.
- Blinks yellow: (500 ms) during linking registration.
- Red: When the link connection to the WAP is broken. (DIP switch 2-8 = ON) or system error.

CONTROL TERMINALS

8-pin and 7-pin Euro blocks are used.

The following terminals are equipped.

- E1 CNT: Provides E1 signal* output controlled by K-STD14 (Teacher Microphone).
- E2 CNT: Provides E2 signal* output controlled by K-STD14.

*Those are available when K-STD14 is used. Settings of E1 and E2 are performed with K-STD14.

- E2 ACK: Connects acknowledge signals responding to E2 output.
- PAGE MUTE: Provides “make signal” inputs externally when the paging function is used.
- RS-232C: Used to control this unit via communication from an external device.
- Link button: Provides “make signal” inputs externally when the external link button is used.
- Alert Notification Button: Provides “make signal” inputs externally when the external Alert Notification Button is used.

POWER/AUDIO CONNECTION

This connector is used to connect a standard CAT5, CAT5e, or CAT6 cable to the amplifier.

MIXED LINE OUTPUT

The *Line In* connector provides audio output for other media players. Setting the No. 4 of the DIP switch 1 to *On* allows the audio outputs of the microphone *MIC1* and *MIC2* received by this unit to be provided after mixing with *Line In*. This is an unbalanced output that utilizes a stereo mini plug (ø3.5 mm).

LINE INPUT

This connector is used to provide an audio input from external sources. This is a stereo, line level input, and is internally mixed to a monaural signal that utilizes a stereo mini plug (ø3.5 mm).

DIP SWITCHES

Two DIP switches are used. The settings of this switch are updated when the receiver powers on. Settings changed while powered on are not updated until the receiver is restarted.
(Excluding No.7 of DIP Switch 1)

OPERATION

- Connect a standard CAT5, CAT5e, or CAT6 cable to the amplifier. Then turn on the amplifier and the *Power* LED of the receiver lights *green*.
- Power on the microphone. On the XD Teacher Microphone, press and hold the *PWR/MUTE* button for one second. On the XD Student Microphone, push the *TALK* button or flip up the *TALK* switch. The *MIC1* or *MIC2* LED lights green, depending on a channel to be received.
- Adjust the volume of external devices such as an amplifier. The overall volume is adjusted with an external amplifier or volume knob. Use volume buttons on the Teacher Microphone to adjust the volume. Adjust the volume of the other microphone or *Line In* by pressing the *Select* button.
- The LED of the *Power/MIC1/MIC2* indicates the operating state of the Receiver.

	LED POWER INDICATOR	LED MIC1/MIC2 INDICATOR
E2 signal output provided*	Lights Red	Lights Red (lights green at E2 ACK input provided)
E1 signal output provided*	Lights Green	Lights Red (for 300 ms)
Page mute signal input provided	Lights Yellow	Lights Yellow
Microphone volume operated*	Lights Green	No Light (for 300 ms)
Feedback blocker operated	Lights Green	Lights Yellow (for 5 sec)
During audio link	Light Green	Lights Green

*Only applicable when XD Teacher Microphone is used

- The LED of the *Link* indicates the operating state of this unit.

STATUS	COLOR
During audio link with the WAP	Lights Green
During linking registration	Blinks Yellow at 500ms intervals
System Error	Lights Red

LINKING A MICROPHONE TO A RECIEVER

LINKING TEACHER MICROPHONE

1.

With the microphone off, press the *Link* button on the front of the XD Receiver (Look for the blinking *yellow* LED).
2.

With the microphone off, press and hold *REC* button. Then promptly press and hold *PWR* until microphone is linked.



3.

Successful microphone linking will produce a *beep* through the system, and on the front of the receiver you will see an additional *green* LED.



LINKING STUDENT MICROPHONE

1.

Press and hold the *PWR LINK* button on the back of the XD Student Microphone.
2.

While holding use your thumb to slide the *TALK* button up into to the on position. Successful linking will produce an audible beep as well as an additional *green* LED.



LINKING MEDIA CHANNEL

1.

The microphone cannot be linked to the Media channel unless *MIC1* and *MIC2* channels are on.
2.

Make sure the microphone needing to be linked, either the Teacher or Student, is turned off.
3.

Confirm that both *Channel 1* and *Channel 2* mics are on and connected to the amplifier.
4.

Follow XD Teacher or XD Student Microphone Linking section instructions.
5.

In around 10 seconds you should hear a beep and the amplifier *Link* LED will be solid *yellow*.

CLASSROOM AUDIO

TEACHER MICROPHONE

Pressing the *PWR/MUTE* button for 3+ seconds will power up the microphone. The microphone can be used in a classroom. (When linked, *MIC1* or *MIC2* LED indicator lights green on the receiver)

REMINDER

Also read the operating instructions of the Teacher Microphone.

STUDENT MICROPHONE

Pressing the *TALK* button or pushing up the *TALK* switch will turn on the microphone. The microphone can be used in a classroom. (*MIC2* or *MIC1* LED indicator lights green on the receiver)

REMINDER

Also read the operating instructions of the Student Microphone.

SAFE ALERTS PAIRED VS NOT PAIRED

PAIRED MODE (MICROPHONE CONNECTED TO A RECEIVER)

When a Teacher Microphone is linked to the receiver and the *E2* buttons are pressed simultaneously for 3 seconds or more the Teacher Microphone immediately sends an alert message to the receiver. (*MIC1/Power/MIC2* indicator: lights *red*.) The microphone continues to transmit audio before, during, and after the alert message is sent. (If the microphone is moved to the *Audio Mute Area** or the wireless connection breaks location, the status changes from a linked alert to a non-pair alert.) Audio mute area: Refer to *Command List* [SAA].

Even when the Teacher Microphone is off, an alert can be sent by pressing the *E2* buttons on the microphone. If the microphone is able to connect to its linked receiver, it will be in a linked alert state. (If the microphone can not connect to its linked receiver, it will be in a non-pair state.)

NON-PAIRED MODE (MICROPHONE ISN'T CONNECTED TO A RECEIVER)

If the Microphone is not linked to the receiver and the *E2* buttons are pressed for 2 seconds or more:

1. The microphone uses the ALL command to search for nearby receivers.
2. The five closest receivers will return a signal to the microphone, helping software plot the *E2* alert's location on.
3. The Microphone will repeat #2 every 30 seconds until the microphone is turned off. (*MIC1/Power/MIC2* indicator: there is no change.)

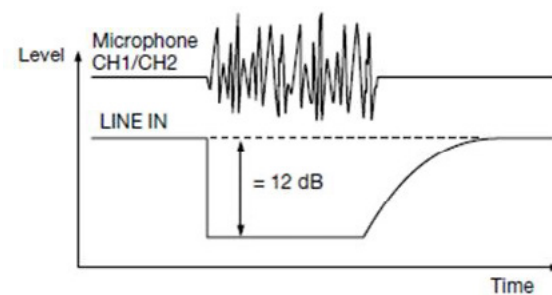
*The microphone in non-linked mode never transmits audio.
*Alerts from the *Alert Notification* button will only be sent alert information.

FUNCTIONS

MICROPHONE OVERRIDE FUNCTION

This is a function where the audio level of *Line In* automatically lowers when the audio input of the microphone *MIC1* or microphone *MIC2* is provided. The attenuation of the audio level is -12 dB.

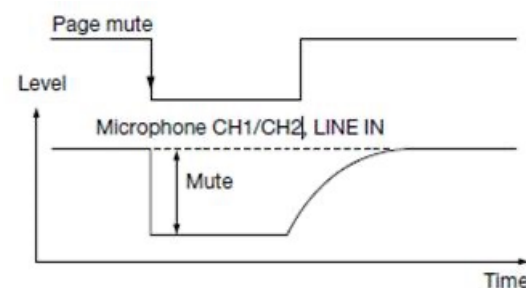
When the audio input of the *MIC1* or *MIC2* is no longer provided, the volume of *Line In* automatically returns to the previous level.



PAGING MUTE FUNCTION

This is a function where the audio outputs of the *MIC1*, *MIC2*, and *Mixing Output* of this unit are muted by closing the *Page Mute* terminal.

This function is specified with the *Control Terminal* or *RS-232C*. This function is set to off at default settings.



TONE FUNCTION

This is a function where the operation sound output is provided from the *Mix Out* connector when the *volume* button is operated with the optional microphone, K-STD14. The operation sound is generated twice at the maximum and minimum volumes.

The level of the operation sound can be set to *High* or *Low* with the *DIP switch*. The level is set to *Low* at default settings.

This function is specified with the *DIP switch*. This function is set to off at default settings.

MICROPHONE/LINE MIXING FUNCTION

This function is designed to assign the microphones, *MIC1* and *MIC2*, to the mixing out, and two signals will be mixed with the mixing out.

REMOTE VOLUME FUNCTION

This is a function where the volume of this unit cannot be adjusted with the volume button of the optional microphone, K-STD14.

This function is used when external devices are controlled with the volume button through the use of the communication control function of this unit.

This function is specified with the *DIP switch*. The volume can be controlled with the microphone at default settings.

MIXING OUTPUT ATTENUATOR FUNCTION

Setting the mixing output attenuator to *ON* provides attenuation in the mixing output by 10dB. This function is useful when a device with high input sensitivity is connected. This function is specified with the *DIP switch*. The output is set to -10 dB at default settings.

ABOUT THE FEEDBACK BLOCKER

This is a function where the feedback loop generated when the microphone and speaker approach each other is reduced. An integrated filter is automatically selected according to the generated audio frequency and reduces the uncomfortable feedback loop. This function is specified with the *DIP switch*. This function is set to *off* at default settings.

REMINDER

This function is simplified and cannot fully remove the feedback loop. When the feedback loop is extremely large, this function will work to mute all the audio outputs of this unit.

E1 CNT, E2 CNT FUNCTION

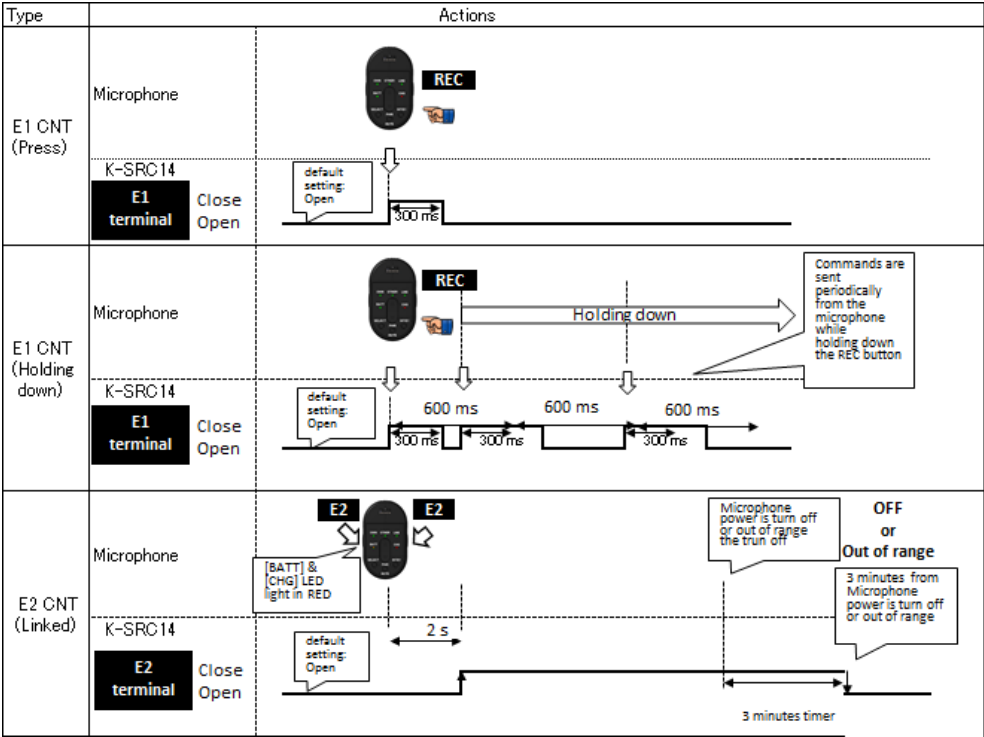
These functions are available when the K-STD14 microphone is used. When *E1* or *E2* is controlled with the microphone, control signals are provided from the *E1 CNT* or *E2 CNT* terminal of this unit. Selection between E1 and E2 is made at the microphone side.

E1: DEFAULT SETTING IS OPEN

Press the button *REC* on the Teacher microphone to select the closed state of 300 ms.

E2: DEFAULT SETTING IS OPEN

Press both side *E2* buttons simultaneously on the Teacher Microphone for 2 seconds or more or press the *Alert* button to select the close state.



E2 ACK FUNCTION

When make signal inputs are provided to E2 ACK of the control terminals during E2 operation, the LED indicator of this unit turn from *red* to *green* to indicate that the E2 ACK signal is received.

When the *E2* control input has not been provided from the microphone for 3 minutes after turning off the power of the microphone, the E2 state ends, the MIC1 or MIC2 LED indicator indicates the receiving state, and the operation LED turns from *red* to *green* to indicate the operating state.

LED LIGHTING INDICATION

LED LIGHTING INDICATION 1: POWER/MIC1/MIC2

The three LEDs of this unit act as a status indicator, indicating signal reception. Those LEDs indicate the operating states as shown in the table. Furthermore, the priority order of the indications is dependent on operating states.



INDICATION PRIORITY	OPERATING STATE	LED INDICATOR		
		MIC1	POWER	MIC2
1 (Highest)	E2 signal output provided*	Red (Lighting green at E2 ACK input provided)	Red** (Lighting green at Power OFF)	Red (Lighting green at E2 ACK input provided)
2	Paging mute signal input	Yellow	Yellow	Yellow
3	E1 signal output provided*1	Red (Lighting for 300 ms)	Green	Red (Lighting for 300ms)
4	Microphone volume button operated*1	No lighting (No lighting for 300 ms at operating volume button)	Green	No lighting (No lighting for 300ms at operating volume button)
5	Feedback blocker operated	Yellow (Lighting for 5 sec)	Green	Yellow (Lighting for 5 sec)
6	During Audio link	Green	Green	Green
7 (Lowest)	Power ON	No lighting	Green	No lighting

*E1 signal outputs and operating the volume button are only available with the K-STD14 microphone. E2 outputs from the Teacher Microphone or alert button.

** The indicator lights *green* again three minutes after the E2 signal is turned off with the microphone, K-STD14. After three minutes elapsed since the *Alert* button is pressed, the receiver will turn off the *red* LED lights.

REMINDER

When a microphone moves to the *audio mute* area*, the *MIC1* or *MIC2* LED turns off.
 *Audio mute area: Refer to *Command List* [SAA]

With WAP (VPS*) System:
 If the *REC* button is pressed, the LED display will change at the direction of the computer.
 *VPS: View Pass Server

LED INDICATION 2: LINK LED

When a *Link* key is pressed, the *Link* LED blinks *yellow* for 20 sec (linking registration mode).

- LED color will change according to priority. Shown below:

STATUS	LED INDICATOR LINK
It has been unable to register with the WAP or System error	Red
In linking registration	Blink yellow at 500 ms period (for 20 seconds)
During Audio link with the WAP	Green
When linked with a third microphone	Green
Power ON	No light

Without WAP system: *Link* LED is normally off.

* If there is no special mention, when a function is completed or time passed, the LED state is restored to its original status.

DIP SWITCH SETTING



SWITCH 1

#	NAME	FUNCTION	OFF	ON
1	MIC Override	Selection of microphone override function	Deactivated	Activated*
2	Tone ON/OFF	Selection of tone signal from this unit at operating volume button of K-STD14	Tone OFF	Tone ON*
3	Tone Level H-L	Selection of tone signal (2 levels) at operating volume button	Low Level*	High Level
4	MIC/Line Mix	Selection of whether to mix the microphones MIC1 and MIC2 to the mixing output (Line Out)	Deactivated	Activated*
5	F/B Blocker	Selection of feedback blocker function	Deactivated	Activated*
6	RMT VOL	By selecting the remote volume function, normal mic buttons will be reassigned. When this switch is set to ON, the volume control of this unit using the volume button of K-STD14 will be deactivated. This setting is intended to control an external device using the volume button of K-STD14 through the serial communication command.	Mic buttons normal* (as labeled)	Mic buttons reassigned
7	MIX OUT-ATN	Attenuation of audio output of the mixing output (−10 dB)	Deactivated	Activated*
8	Tx Pwr Normal/Hi	Selection of transmission output control	Normal*	High

SWITCH 2

#	NAME	FUNCTION	OFF	ON
1	CH3 Vol Line/MIC	Allows the teacher microphone to control volume for the media channel	Deactivated	Activated*
2	Alert RCV ON/OFF			

*default setting

REMINDER

The settings of these switches are updated when the receiver boots up. Settings changed while powered on are not updated until the receiver is restarted. (Excluding No.7 of DIP Switch 1)

DIP switch2-8 On:
If the RCV disconnects from the WAP, the RCV will reboot automatically and try to reconnect with the WAP.

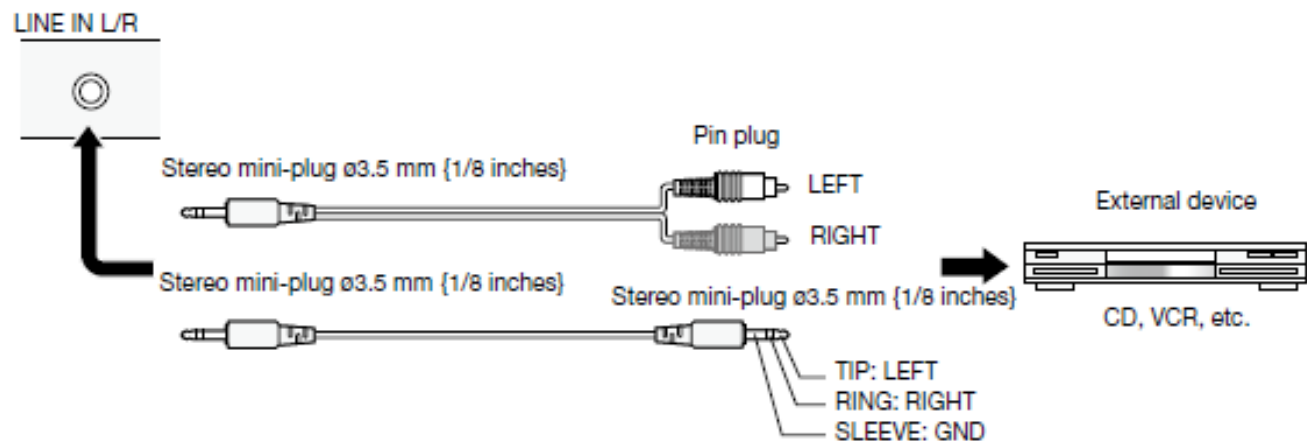
No. 1 to 7 of DIP switch 2 are used for selection of group ID.
(It is used at the time of installation of WAP and a receiver.)

CONNECTIONS

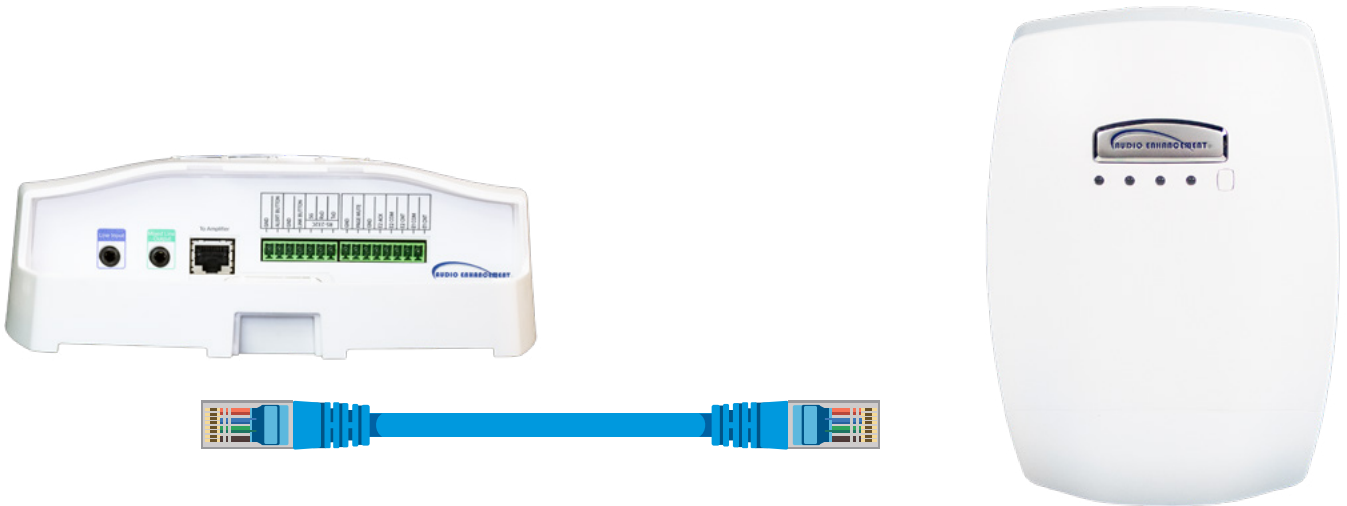
CONNECTION OF RECEIVER

LINE IN CONNECTION

Connect the *audio output* of a projector, CD player or DVD/VCR or similar line level output to the *Line In* connector of this unit. The line input of this terminal is a stereo input. Audio signals are mixed to monaural signals internally. Cables should be selected depending on the connector type of the media device. Follow the description below to connect external devices.



INTERFACE CONNECTOR CONNECTION



REMINDER

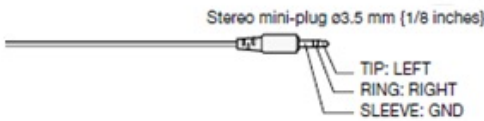
A RJ-45 type connector of this unit is based on our original system and electrical specifications. Never connect this terminal or connector to a LAN connector that is compatible with Ethernet and PoE (Power over Ethernet).

Be sure to make a connection when the power of this unit is set to *off* (No AC adaptor is allowed to be connected to the amplifier).

If making an unbalanced connection for an audio output of this unit, use a STP (Shield Twisted Pair) LAN cable to prevent exogenous noise.

AUDIO OUT CONNECTION

Connect the audio input of a network camera or similar level input to the *Audio Out* connector of this unit. The line output of this terminal is a mono output. Cables should be selected depending on the connector types of devices to be connected and follow the description below to connect external devices.



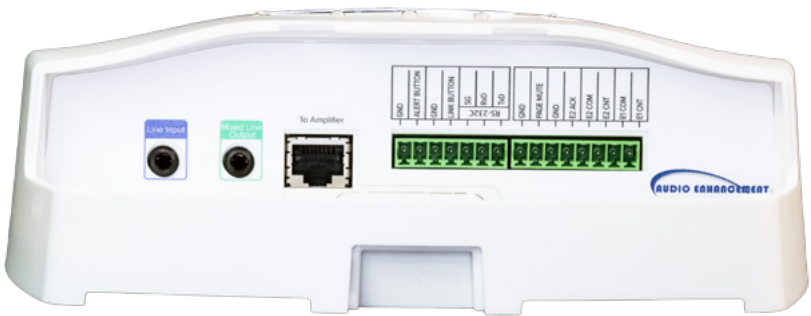
WIRING THE EUROBLOCK CONNECTOR

1. A detachable Euroblock connector is provided for this unit's connectors. As shown in the figure below, insert a slot-head screwdriver into the gap, and remove the Euroblock connector from this unit.



2. Connect the wires to the Euroblock connector. Using a slot-head screwdriver, loosen the Euroblock connector screws, peel off the insulating material around each of the wires, twist the conductors firmly, insert the ends of the conductors into the Euroblock connector, and tighten the Euroblock connector screws.

3. Fix cables using the supplied tying band.

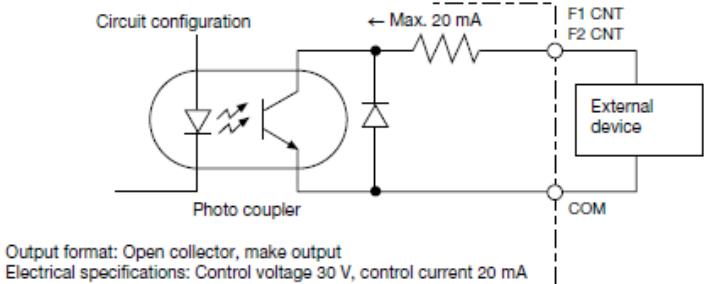


REMINDER

Stranded wire is highly recommended. Wire insulation must be removed. Do not use solder to tin the wire. The recommended maximum cable length is 15 m {49 feet}.

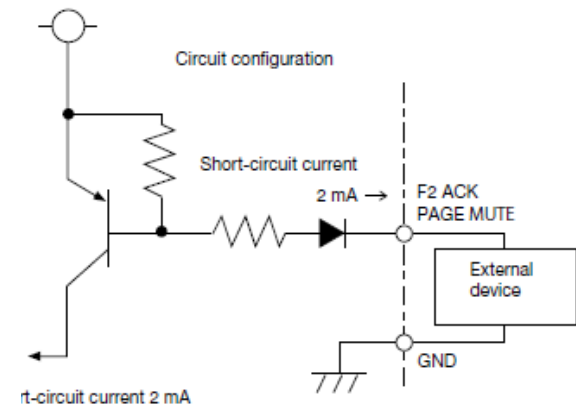
CONNECTION OF E1 CNT AND E2 CNT TERMINALS

An external device is connected between CNT and COM. These terminals are isolated from the internal circuit by a photo coupler.



CONNECTION OF E2 ACK, PAGE MUTE, LINK BUTTON AND ALERT BUTTON TERMINALS

An external device is connected between each terminal and GND. These terminals operate by closing their circuits. The GND terminal is connected to GND in this unit. A set of “dry relay” contacts are recommended to activate these features.

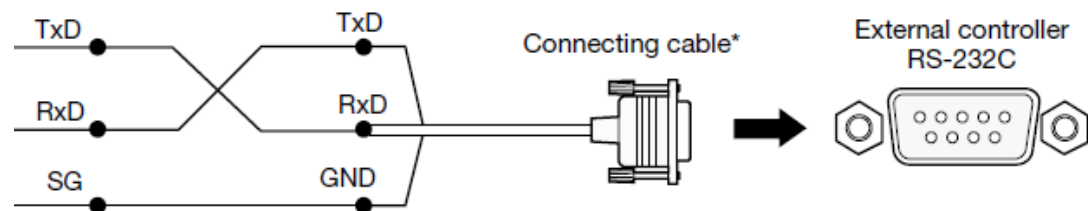


Input format: transistor input

Electrical specifications: Open voltage 5 VDC, short-circuit current 2 mA

CONNECTION OF RS-232C

The K-SRC14 receiver can send and receive commands and status information via RS-232C to external devices. The external device is connected with a 3-wire cable. The cable should be cross-connected, in other words, the transmitting signal (TxD) of this unit is connected to the receiving signal (RxD) of the external device, and the receiving signal (RxD) of this unit is connected to the transmitting signal (TxD) of the external device. The ground signal of each device should connect to one another.



Cables to be connected should be selected depending on the external devices to be connected. The above illustrates that the external device has a D-sub 9-pin connector.

INTERFACE	RS-232C
Communication system	Asynchronous
Baud rate	9600 bps
Data length	8 bits
Parity	None
Stop bit	1 bit
Flow control	None
Communication code	ASCII character code

PRECAUTIONS FOR INSTALLATION

The installation should be carried out following local standards for electrical products.

WARNING

Be sure to contact your dealer for installation. Before installing, turn off the power of the connecting product. In addition, be sure to read these “Precautions” and safety precautions on page 3 carefully and follow the instructions. Moreover, be sure to read operating instructions of the connecting product as well.

POWER

Connect the power plug of the AC adaptor by using a circuit breaker in any of the following ways:

- Install this product near the power outlet.
- Connect this product with the breaker of a distribution board which has a contact point of not less than 3.0 mm {3/32 inches}.
- Use a breaker that can block all the poles except for protective earth conductors.
- Connect this product via the outlets of devices that can block power such as a power control unit.

STATIC ELECTRICITY

Discharge any static electricity charged in your body by touching a metallic area before installing in order to prevent damage caused by static electricity.

- Install the receiver within a range that the mic can reach and in a location that can be seen in moving range.
- Avoid installing near a warm air flow path. In addition, if the product is installed in locations with a lot of moisture, dust or vibration, there is a risk of damage.

DO NOT INSTALL OR USE IN FOLLOWING LOCATIONS:

- Locations directly affected by rain or water (including spaces under the eaves).
- Locations such as pool where medical agents are used.
- Locations such as kitchens or factory workshops where there is a lot of vapor or oil, and special environments such as in flammable atmospheres.
- Locations where radiation or X-rays and strong electric fields or magnetism arise.
- At sea or along the coast, and locations such as hot springs where corrosive gases arise.
- Locations with a lot of vibrations caused by vehicle or ships (this is not a product for vehicles).
- Locations where water drops made by condensation will splash.

If there are any devices releasing strong noises, product may sometimes be impossible to use. In that case, install the product farther away until it can be used.

For tightening bolts and screws, pay attention to following points:

- Torque control is necessary for tightening the bolts and screws.
- Torque wrench and torque driver are necessary for controlling the torque.
- Never use any impact driver or electric drill because torque control is difficult even if they have a clutch. Their use may result in damage to the mounting part.

After mounting, confirm visually that the product is firmly and stably fixed. If the product is properly installed, it will not wobble or make noise.

When installing this receiver, be aware of the following:

- Be sure that the installation is carried out by a qualified personnel when installing at high locations.
- Before installation, confirm that there is nobody around.
- In order to carry out the installation safely and surely, pay close attention to the safety control.

Do not apply strong impact on this unit. Failure to observe this may damage this unit.

WALL INSTALLATION GUIDE

- 1.** Ensure the mounting bracket is leveled and centered on the wall. Mark and drill four 1/4" mounting screw holes that align with the bracket (*Figure 1*), and insert one plastic anchor into each hole. Drill out central routing hole if necessary.



Figure 1

- 2.** Align the mounting bracket to the wall anchors and use the four #12 x 1-1/2" Phillips Coarse Thread Screws provided to secure the bracket. (*Figure 2*)



Figure 2

REMINDER

Hand tighten screws with Phillips head screwdriver only. DO NOT use an electric drill to secure the bracket to the wall.

CEILING TILE INSTALLATION GUIDE

1. Remove the tile from the ceiling, and ensure the mounting bracket is placed centered on the tile. Mark and drill four 1/4" mounting screw holes (Figure 3), and a center hole for cable routing. Insert one plastic anchor into each 1/4" mounting hole.

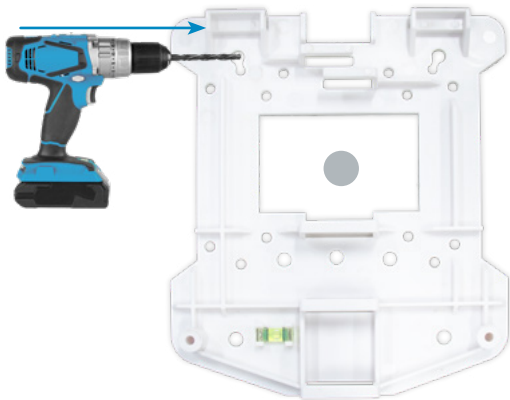


Figure 3

2. Place the tile bridge on the backside of the ceiling tile, aligned to the mounting holes drilled in the previous step. Use the four #12 x 1-1/2" Phillips Coarse Thread Screws provided to secure the bracket into the wall anchors. (Figure 4)



Figure 4

CABLE ROUTING AND MOUNTING

1. Route cables using the designated pathway provided by the mounting bracket. (Figure 5)

Wires can be routed from behind the mounting surface, through the center access hole of the mounting bracket, shown in red, or through the wire molds located on the top or bottom of the bracket, shown in green.

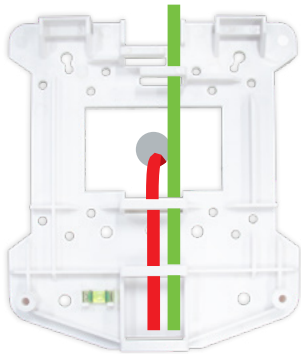


Figure 5

2. Place the enclosure onto the bracket and slide downwards to hold the enclosure in place (Figure 6). Route cables to the integrated enclosure through the back opening. Secure the enclosure onto the mounting bracket with the two 10-32 3/8" Phillips Head Machine Screws (Figure 7).



Figure 6

3. After final connections and system testing, re-install the front access panel on the bottom of the enclosure.

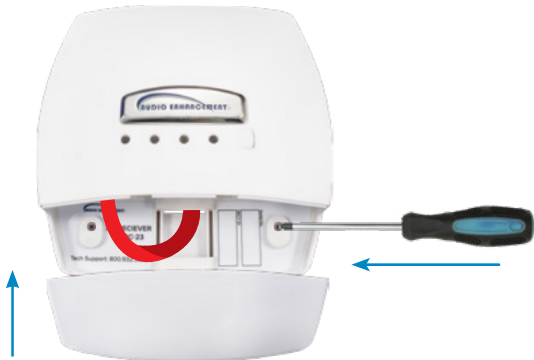


Figure 7

SERIAL COMMUNICATION COMMAND

PREFACE

Use of the serial command allows the volume of this unit and settings of functions (page 13) with the DIP switch to be an external device remotely controlled.

REMINDER

The settings of the functions that can be set with the DIP switch can be overwritten by sending a serial command. The serial command has the higher priority and will override the DIP switch settings. The unit will default back to the DIP switch settings when the power is cycled. (Excluding No. 7 of DIP switch 1)

BASIC FORMAT

The serial command employs a common format to the commands of both from a control device to this unit and from this unit to a control device, and the format is categorized into three patterns as follows:

WHEN THERE IS NO PARAMETER:

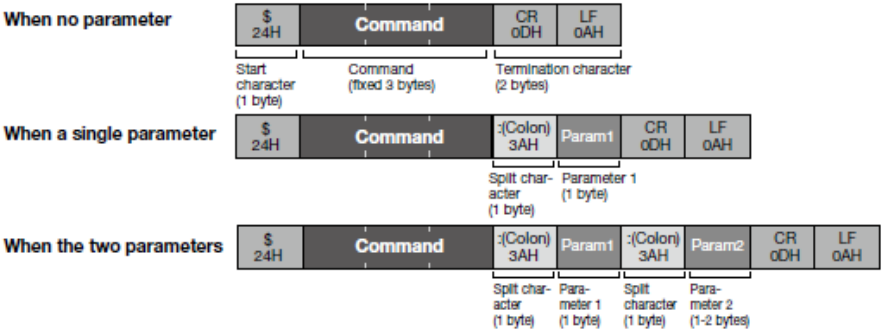
“\$” as a starting character, command, the control code, “CR” and “LF”, as the termination character.

WHEN THERE IS A SINGLE PARAMETER:

“\$” as a starting character, command, colon, 1st parameter, the control code, “CR” and “LF”, as the termination character.

WHEN THERE ARE TWO PARAMETERS:

“\$” as a starting character, command, colon, 1st parameter, colon, 2nd param.



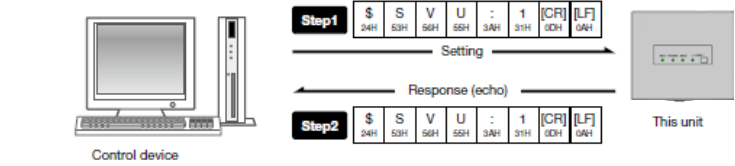
- All of \$, CR, LF: (colon) are fixed single byte, and the command part is fixed 3 bytes.
- The length of the parameter part is basically single byte. As an exception, only the 2nd parameter is 2 bytes for the volume setting command.
- If a command containing a failure in the command part or format is transmitted to this unit, \$ER1[CR][LF] is returned from this unit.
- If a command containing a failure in the parameter part is transmitted to this unit, \$ER2[CR][LF] is returned from this unit.
- When a timeout error occurs on the receiving timer (30 seconds) between each byte, \$ER3[CR][LF] is returned.

REMINDER

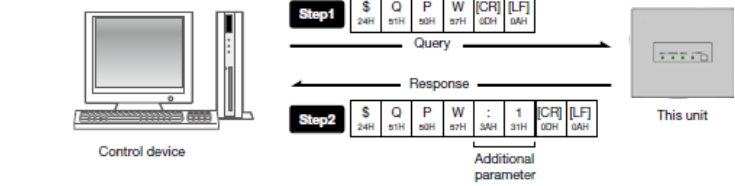
When commands are successively transmitted, keep 300ms or more between successive commands that are transmitted to this unit.

Examples of sequence

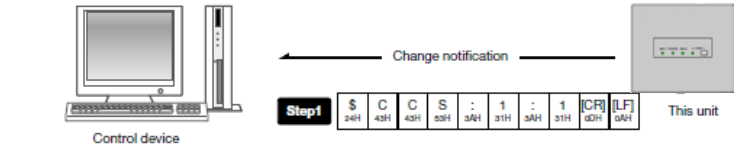
- Examples are shown below. Refer to the next page or later for further information on command.
- For a setting command (a command starting with S): an echo is returned.



- For a query command (a command starting with Q): the command with a parameter added is returned.



- For a change notification command (a command starting with C): If a change targeting this unit is detected, a command is issued.



COMMAND LIST

COMMAND	CONTENT	TYPE	1ST PARAMETER	2ND PARAMETER	COMMAND EXAMPLE
QPW	Query about this unit power state	Query	None	None	\$QPW[CR][LF]
		Response	1: POWER ON	None	\$QPW:1[CR][LF]
CCS	Notification of microphone power state	Change notification	1: MIC1 input 2: MIC2 input	0: MIC OFF 1: MIC ON	\$CCS:1:1[CR][LF]
QCS	Query about microphone power state	Query	1: MIC1 input 2: MIC2 input	None	\$QCS:1[CR][LF]
		Response	Same as above	0: MIC OFF 1: MIC ON	\$QCS:1:0[CR][LF]
SVL	Volume setting	Setting	1: MIC1 input 2: MIC2 input L: LINE input	* Refer to “Volume list” (page 32).	\$SVL:L:00[CR][LF]
		Response	Same as above	Same as above	\$SVL:L:00[CR][LF]
SVU	Volume 1-step up	Setting	1: MIC1 input 2: MIC2 input L: LINE input	None	\$SVU:1[CR][LF]
		Response	Same as above	None	\$SVU:1[CR][LF]
SVD	Volume 1-step down	Setting	1: MIC1 input 2: MIC2 input L: LINE input	None	\$SVD:2[CR][LF]
		Response	Same as above	None	\$SVD:2[CR][LF]
QVL	Volume query	Query	1: MIC1 input 2: MIC2 input L: LINE input	None	\$QVL:1[CR][LF]
		Response	Same as above	* Refer to “Volume list” (page 32).	\$QVL:1:01[CR][LF]
SMT	Mute individual setting	Setting	1: MIC1 output 2: MIC2 output M: MIX output	0: MUTE OFF 1: MUTE ON	\$SMT:1:0[CR][LF]
		Response	Same as above	Same as above	\$SMT:1:0[CR][LF]
QMT	Mute state query	Query	1: MIC1 output 2: MIC2 output M: MIX output	Same as above	\$QMT:M[CR][LF]
		Response	Same as above	0: MUTE OFF 1: MUTE ON	\$QMT:M:0[CR][LF]
SAM	Mute collective setting	Setting	0: MUTE OFF 1: MUTE ON	None	\$SAM:1[CR][LF]
		Response	Same as above	None	\$SAM:1[CR][LF]
CPM	Notification of page mute state	Change notification	0:PAGE MUTE OFF 1:PAGE MUTE ON	None	\$CPM:1[CR][LF]
QPM	Query about page mute state	Query	None	None	\$QPM[CR][LF]
		Response	0:PAGE MUTE OFF 1:PAGE MUTE ON		\$QPM:0[CR][LF]
CF1	Notification of E1 state	Change notification	None	None	\$CF1[CR][LF]

COMMAND	CONTENT	TYPE	1ST PARAMETER	2ND PARAMETER	COMMAND EXAMPLE
CF2	Notification of E2 state * 3-time transmission at 1 sec. interval	Change notification	0: Non E2 status 1: E2 status & E2 ACK signal not received 2: E2 status & E2 ACK signal received	None	\$CF2:1[CR][LF]
QF2	Query about E2 state	Query	None	None	\$QF2[CR][LF]
		Response	0: Non E2 status 1: E2 status & E2 ACK signal not received 2: E2 status & E2 ACK signal received	None	\$QF2:2[CR][LF]
SDS	Microphone override setting	Setting	1: Microphone Override	0: Disable, 1: Enable	\$SDS:1:0[CR][LF]
		Response	Same as above	Same as above	\$SDS:1:0[CR][LF]
SDS	Tone setting	Setting	2: Tone	0: Disable, 1: Enable	\$SDS:2:1[CR][LF]
		Response	Same as above	Same as above	\$SDS:2:1[CR][LF]
	Tone Level setting	Setting	3: Tone	0: Low, 1: High	\$SDS:3:0[CR][LF]
		Response	Same as above	Same as above	\$SDS:3:0[CR][LF]
	Microphone/Line Mixing Setting	Setting	4: Microphone/ Line Mixing	0: Disable, 1: Enable	\$SDS:4:1[CR][LF]
		Response	Same as above	Same as above	\$SDS:4:1[CR][LF]
	Feedback Blocker Setting	Setting	5: Feedback Blocker	0: Disable, 1: Enable	\$SDS:5:0[CR][LF]
		Response	Same as above	Same as above	\$SDS:5:0[CR][LF]
	Remote Volume Setting	Setting	6: Remote Volume	0: Disable, 1: Enable	\$SDS:6:1[CR][LF]
		Response	Same as above	Same as above	\$SDS:6:1[CR][LF]
QDS*	State query of Microphone Override Setting	Query	1: Microphone Override	None	\$QDS:1[CR][LF]
		Response	Same as above	0: Disable, 1: Enable	\$QDS:1:0[CR][LF]
	State query of Tone Setting	Query	2: Tone	None	\$QDS:2[CR][LF]
		Response	Same as above	0: Disable, 1: Enable	\$QDS:2:1[CR][LF]
	State query of Tone Level Setting	Query	3: Tone Level	None	\$QDS:3[CR][LF]
		Response	Same as above	0: Low, 1: High	\$QDS:3:0[CR][LF]
	State query of Microphone/ Line Mixing Setting	Query	4: Microphone/ Line Mixing	None	\$QDS:4[CR][LF]
		Response	Same as above	0: Disable, 1: Enable	\$QDS:4:1[CR][LF]
	State query of Feedback Blocker Setting	Query	5: Feedback Blocker	None	\$QDS:5[CR][LF]
		Response	Same as above	0: Disable, 1: Enable	\$QDS:5:0[CR][LF]
CVU	Notification of volume up operation from microphone	Change Notification	1: MIC1 input volume up 2: MIC2 input volume up L:LINE input volume up	None	\$CVU:1[CR][LF]

COMMAND	CONTENT	TYPE	1ST PARAMETER	2ND PARAMETER	COMMAND EXAMPLE
CVU	Notification of volume up operation from microphone	Change Notification	1: MIC1 input volume up 2: MIC2 input volume up L:LINE input volume up	None	\$CVU:1[CR][LF]
CVD	Notification of volume down operation from microphone	Change Notification	1: MIC1 input volume down 2: MIC2 input volume down L: LINE input volume down	None	\$CVD:L[CR][LF]
SRS	Reset volume and E1/E2 states	Setting	None	None	\$SRS[CR][LF]
		Response	None	None	\$SRS[CR][LF]
CMI	Change notification of microphone ID registration	Change Notification	Microphone (XD ID) XD ID (20 bits) is specified by the character string (5 bytes) of a hexadecimal form.	Receiver (XD ID) XD ID (20 bits) is specified by the character string (5 bytes) of a hexadecimal form.	\$CMI:12345:23456[CR][LF]
ALM	Alert	Change Notification	Refer to (*1)	Refer to (*1)	\$ALM: 11H,22H, 33H,44H, 55H: 12H, 23H,34H, 56H, 78H:1:63[CR][LF]
ALB	Alert message from alert Button	Change Notification	Receiver (XD ID) XD ID (20 bits) is specified by the character string (5 bytes) of a hexadecimal form.	None	\$ALB:23456[CR][LF]
RAL	Release Alert	Setting	None	None	\$RAL[CR][LF]
		Response	None	None	\$RAL[CR][LF]
ALL	Alert message Location	Change Notification	The number of alert messages N (N=1-5)	(Parameter 2 -6) RF signal strength: 0-63 is specified by the character string (2 bytes) of a hexadecimal form.	\$ALL:2:12345:2345 6:1:34:12345:78910: 0:20[CR][LF]
SAA(*2)	SAA (Set Audio Area)	Setting	The threshold level of the signal strength of RCV for making a microphone mute (and For Alert status is changed to non-pair alert) 0:Default, 1: Area1, 2: Area2, 3: Area3		\$SAA:1[CR][LF] *An area of default setting is same as an area of “RF Tx power setting” of DIP SWITCHES. Default > Area1 > Area2 > Area3
		Response	The threshold level of the signal strength of RCV for making a microphone mute 0:Default, 1: Area1, 2: Area2, 3: Area3		\$SAA:1[CR][LF]

PARAMETER	CONTENT		COMMENT
1	Alert information	Microphone (XD ID) DET ID (20 bits) is specified by the character string (5 bytes) of a hexadecimal form.	
2		Receiver /WAP (XD ID) XD ID (20 bits) is specified by the character string (5 bytes) of a hexadecimal form.	
3		Paring status bit: 0 = not paired, 1 = paired	The connection state of Microphone and Receiver before activating an Alert.
4		RF signal strength: 0-63 is specified by the character string (2 bytes) of a hexadecimal form.	It is a linear value showing signal strength.

PARAMETER	VOLUME	PARAMETER	VOLUME	PARAMETER	VOLUME
00	0bB	08	-16dB	16	-32dB
01	-2dB	09	-18dB	17	-36dB
02	-4dB	10	-20dB	18	-40dB
03	-6dB	11	-22dB	19	-44dB
04	-8dB	12	-24dB	20	-48dB
05	-10dB	13	-26dB	21	-60dB
06	-12dB	14	-28dB	22	-70dB
07	-14dB	15	-30dB		

Each QDS response command returns not the physical ON/OFF status of the DIP switch but the current setting status.

(*1) Parameter of ALM command.

(*2) When want to MUTE automatically as soon as possible in the place where a teacher left the classroom, do MUTE automatically in voice call areas; can set it. [about: 5M/10M/15M/20M]

Please consult your dealer it will be set by serial communication command.

During SAA muting: microphone LED on the receiver will be off.

TROUBLESHOOTING

SYMPTOM	CAUSE/SOLUTION
No reception	Does the Power LED light? Check the connection between the receiver and the amplifier. Check the power of the amplifier is turned <i>on</i> .
	Is the power of the microphone turned on (Is a battery loaded)? Turn on the power of the microphone (load a battery) to put it into the transmissible state.
No sound generated	Does the reception LED indicator for MIC1 or MIC2 light? If the microphone is not normally receivable, the reception LED indicator does not light.
	The audio output of LINE IN is not provided. Is audio output of the device connected to LINE IN ready to be provided?
	No audio output of the microphone or LINE IN is provided. Isn't the page mute signal input provided to this unit? If the page mute signal input is provided, the audio output from this unit is muted. The 3 LEDs of this unit light yellow while the page mute function is activated.
	Is the volume setting equipped in this unit set to the lowest level? The volume of the microphones MIC1 and MIC2 and LINE IN equipped in this unit can be adjusted by K-STD14 and through external communication control.
	The volume of the mixing output fluctuates. When the microphone override function is active, an audio input to the microphone (MIC1 or MIC2) attenuates the audio level provided to LINE IN.
Audio interrupted	Is the feedback blocker activated? Adjust the speaker output to the lower level so as to avoid the feedback.
LINK indicator (red)	It has been unable to register with the WAP. Please ask an administrator.
LINK indicator (red)	System Error: Please ask an administrator.
LINK indicator (yellow)	Receiver Trouble: Please ask an administrator.
RCV repeats the reboot	RCV and WAP connection might be off: Please contact your administrator.