KAWAI

KLCS

(**K**awai **L**ab **C**ommunication **S**ystem)

Music Teaching Lab System

Chapter 1

Introducing the Music Teaching Lab System

The Music Teaching Lab System allows a teacher to instruct and monitor up to 48 student workstations with one student at each station in stereo. Any of the 48 student stations may be assigned to one of four practice groups.

Alternately, the system can operate in "split mode" allowing the teacher to instruct and monitor up to 48 student workstations with two students at each station in mono. Practice groups are not available in the split mode of operation.

A typical Music Teaching Lab System consists of the Remote, a Hub, Headsets and Student interface boxes.

Features

Students can be assigned to work privately, in pairs, in groups or all together. Individual students, paired students or grouped students can be combined to form larger groups. An external audio source such as a CD player or teacher's computer may be connected to the system for playing instructional or reference material. An audio recorder may be connected to the system for recording lab sessions or performances. The lab controller system is self contained and does not require additional computer hardware or software.

Chapter 2

System Components

The KLCS components have been designed to facilitate ease of installation and use.

Teacher Controller

Control Module – Large sliders and buttons enable easy selection of students and adjustment of settings. The small footprint allows the control module to be stationed right on top of the teacher piano.

Classroom Hub

Hub – Input and output jacks expand the function of the KLCS. Use the REC Out to send audio from any student or group to a computer or CD recording device. CD In lets the teacher play external music through the system for listening examples and play-along. The Mon. Out allows the lab to be heard in the room through an amplified external speaker system.
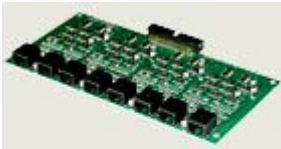
Expansion Board

Expansion Kit (option) – The basic KLCS kit accommodates 8 students. The expansion kit allows the addition of 8 additional students to the KLCS lab, up to a total of 48 students (five expansion kits). The Expansion kit consists of the expansion board and eight individual cables, student boxes and headphones.

Headsets

Headsets – The over-the-ear headsets are durable for long life. The adjustable microphone and earpiece positioning ensure a custom fit for every student.

Student Box

Student Box –Two headphone connections in each student box allows 2 students to learn at each keyboard using the split function. Computer connections in the student box enable audio to be sent to and from a computer at each student instrument.

Cable

Cables –The standard RJ-45 (8-conductor telephone-type) cables are specially designed for optimum audio transmission with minimal noise and signal fade. The cables are 30' in length; longer or shorter custom lengths can be made.

******* **Important Note** *******

Do not connect the Hub power supply until all other cable inter connections are made to prevent damage to the lab system hub, as the end of the cords may come in contact with each other or other ground points during installation and can cause the unit to short if the power supply is connected.

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Chapter 3

QUICK START

The following section outlines the input and output connectors, the front panel controls and the front panel switches. For a more detailed description of how the controller works, refer to Chapter 4 (OPERATION OF THE CONTROLLER).

System Connections

The following is a description of what each input or output connection does and what it should connect to in the lab system. Not all of the connections are necessary to make the system operational. For instance, an audio recorder may not be available to record lab performances or a small monitoring system may not be available for external monitoring. However, a CD player may be useful for reference purposes.

The Classroom HUB

The Hub is the center of your system. All the pieces of your system connect to this unit. Place the Hub in a centralized location with access to an electrical outlet.

- **Remote –** Connection for the Teachers Controller Module use the supplied RJ-45 cables (8 conductor telephone type cables), it is not recommended to extend the cable length over 13 meters as the cable carries digital information and longer cable lengths will increase the resistance and can make the unit function incorrectly.

- **Teacher -** Connect to "Student Box" from the teacher's instrument, use with the supplied RJ-45 cable (8 conductor telephone type cable). Connect the teacher headset into the jacks on the

Interface box. Insert the blue microphone plug into the "Student 1 Mic" jack. Insert the black headphone plug into the "Student 1 Phones" jack.

- **POWER Switch and POWER Jack -** The POWER ON/OFF switch and POWER jack are located on the right side of the Hub on the rear panel. Use the supplied power transformer only. Other power transformers may damage the controller and void your warranty.

- **Mon. Out -** Connect these outputs to an external monitoring system such as a public address or stereo system. These connections allow external monitoring of the CD INPUT, AUX INPUT, Teacher's instrument, Student instruments and Teacher's microphone when selected.

- **Rec. Out -** Connect these outputs to the inputs of a recording device such as an audio tape recorder or digital recorder. These connections allow recording of the lab session to a recording device when connected, routing audio from the teacher's microphone, teacher's instrument and students' instruments when selected.

- **Aux. In -** Connect these inputs to the outputs of an audio playback device such as an tape deck, digital recorder, teacher's computer or auxiliary sound source. These connections allow monitoring of a recording device when connected.

- **CD In -** Connect these inputs to the outputs of a CD player. Allows monitoring of a CD player when connected.

- **USB – Reserved for future use.**

The Teacher Controller Module

Volume Controls on Teachers Control Module

- **TEACHERS MIC.**
  Controls the level of the teacher's microphone.

- **TEACHERS HEADPHONE**
  Controls the level of the teacher's headphones.

- **MONITOR VOLUME**
  Controls the audio level sent to an external MONITOR system.

- **CD/AUX INPUT**
  Controls the audio level received from a tape recorder or CD player, teacher's computer or auxiliary input source, whichever is selected.

Switches and LEDs on Teacher Control Remote

- **Student Selector (labeled 1-8)**
  Allows any combination of individual students, paired students or grouped students to be selected together. Any students selected to the selector row can hear or communicate with the instructor. Any selected students, whether individual students, paired students or grouped students can hear each others instruments and talk to each other.

- **Bank**
  Selects the bank of students that can be controlled.

- **CD INPUT**
  Selects the CD In.

- **AUX INPUT**
  Selects the Aux. In.

- **PAIRS**
  When selected, assigns all students to groups of 2
  (1 & 2, 3 & 4, 5 & 6 etc.). One or more pairs of
  students can be selected. Only selected pairs can
  hear or communicate with the instructor. PAIRS
  overrides GROUPS mode**.**

- **GROUPS**
  Students can be assigned to only one of four
  GROUPS: A, B, C, or D. Students assigned to a
  group can hear only members of their group unless
  more than one group is selected. To assign a
  student to a group, press and hold the desired
  GROUPS button. While holding the GROUPS
  button, press the buttons of the students you wish
  to assign. An LED will illuminate for each
  assignment. To unassign a student to a group,
  while holding the desired GROUPS button, press
  the buttons of the students you wish to unassign.
  The associated LED will turn off.

  To change a group assignment, press and hold the
  new group's Assign GROUPS button, then change
  the student's assignment by pressing the student's
  button. The illuminated LED will follow the new
  assignment. To clear all settings including
  GROUPS assignments, press the ALL and MUTE
  buttons simultaneously.

- **BROADCAST**
  Routes the audio from any selected students, and the teacher's microphone if selected, to all students.

- **MIC**
  Press to activate the teacher's microphone.

- **All**
  All students can hear only the teacher's instrument, their own instrument, and teacher's microphone when selected. (*The teacher will not hear student instruments in this mode.*) All overrides PAIRS and GROUPS mode.

- **MUTE**
  This mutes all the student microphones on the headsets.

Student Boxes

The Student Boxes connect the instruments to the Hub.

- **Stereo Keyboard** (cable with ¼" plug) connects to the instrument's headphone output jack.

- **To Hub** connects the student box to the hub with the supplied RJ-45 cables (8 conductor telephone type cables).

- **From Computer Audio Out** 1/8" jack used to send line level audio from a computer or playback device to the students headset.

- **To Computer Mic IN** 1/8" jack used to send the students performance to a computer or other line level input recording device.

- **Inst. Level** (**L** & **R**) sets the volume level of the headsets, preset at factory and normally does not need adjustment.

- **Phones & Mic** connectors for headsets

Headsets

Connect the headsets to the student boxes by inserting the green colored 1/8" connector into the "Phones" jack and the pink colored 1/8" connector into the "Mic" jack on the student box.

Please note: make sure the plugs are fully inserted into the hole on the student box, if not fully inserted the sound may be heard from one channel only or not heard at all from headset.

Testing the Basic System

Once all the connections are made and the keyboards are labelled for the teacher to identify the student number, it is a good idea to check that the lab controller is receiving audio from all the student keyboards and the students can hear the teacher's microphone and instrument. It will be easier to have an assistant help you. Start at keyboard #1 then work through each student instrument connected to the Lab system and check to verify the the LED will illuminate corresponding to the correct student number, then have the assistant wear the student headset, speak into the student microphone then play the student keyboard. Adjust the student volumes as necessary.

Activate the teacher's microphone and speak. Play the teacher's keyboard. Verify that your assistant can hear you speak and can hear you play. Adjust the teacher's volume controls as necessary.

Deselect the first student, and then select the next student number to be checked and have your assistant move to the corresponding unit, repeat the same procedures.

Connect a line level playback device to the "CD In" and Aux. In, such as a CD player, computer or an MP3 playback device to test the input jacks. Select the lab controller switch labeled CD/AUX INPUT. Play the CD or sound source and adjust the control labeled TAPE/CD IN for a comfortable listening level. Most CD players do not have a volume control, but MP3 player or computers usually can be adjusted on the source units.
Please note: the volume control labeled "CD/AUX INPUT" affects the level of the CD INPUT and AUX INPUT.

Use the "Rec. Out" jacks (line level) to connect with inputs on a recording device. Have the assistant play an instrument and record the output of the Rec. Out to verify that the outputs are working.

If the lab will be used with an external monitor, connect the "Mon. Out" outputs of the Hub to an amplified sound system and have your assistant play a unit and verify the sound coming from the output is functioning normally.

Please note: if the teacher's microphone is too close to the monitoring system or if the teacher's microphone volume level is set too high, the system may produce feedback; if this occurs, try to adjust speaker direction slightly away from the teacher to help avoid this problem.

Chapter 4

OPERATION OF THE CONTROLLER

The following section outlines the operational use of the controller. The topics discussed are:

- System Initialization
- Important Controls And Switches
- Practice Mode
- Monitoring A Single Student
- Monitoring Multiple Students
- Demonstrations And Performances
- Recording A Class Performance
- External Monitoring

System Initialization

To return the lab controller to its factory default settings press the ALL and MUTE buttons

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Volume Controls

- **TEACHERS HEADPHONE**
  Use the volume control labeled TEACHERS HEADPHONE to adjust the volume of the teacher's headphones.

- **TEACHER'S MIC**
  Use the volume control labeled TEACHERS MIC to adjust the volume of the teacher's microphone.

- **CD\AUX INPUT**
  Use the volume control labeled CD/AUX. INPUT to

adjust the volume of the device connected to CD In or AUX In.

- **MIC**
  To allow the teacher to communicate with one or more students, press the desired student selector button(s), then press the teacher's MIC button.

Switches and LEDs

- **All**
  To communicate with all students without hearing their instruments, press the ALL button; activate the teacher's MIC button and begin speaking. Students will hear only the teacher's instrument, their own instrument, and the teacher's microphone when ALL is selected. All overrides PAIRS and GROUPS mode.

- **Student Selector (labeled 1-8)**
  Allows any combination of individual students, paired students or grouped students to be selected together. Any students selected to the selector row can hear and communicate with the instructor. Any selected students, whether individual students, paired students or grouped students can hear each others' instruments and talk to each other.

- **Bank**
  Selects the bank of students that can be controlled.

- **CD INPUT**
  Selects the CD In.

- **AUX INPUT**
  Selects the Aux. In.

- **PAIRS**
  When selected, assigns all students to groups of 2
  (1 & 2, 3 & 4, 5 & 6 etc.). One or more pairs of
  students can be selected. Only selected pairs can
  hear or communicate with the instructor. PAIRS
  overrides GROUPS mode**.**

- **GROUPS**
  Students can be assigned to only one of four
  GROUPS: A, B, C, or D. Students assigned to a
  group can hear only members of their group unless
  more than one group is selected. To assign a
  student to a group, press and hold the desired
  GROUPS button. While holding the GROUPS
  button, press the buttons of the students you wish
  to assign. An LED will illuminate for each
  assignment. To unassign a student to a group,
  press and hold the desired GROUPS button. While
  holding the GROUPS button, press the buttons of
  the students you wish to unassign. The
  corresponding LED will turn off.

  To change a group assignment, press and hold the
  new group's Assign GROUPS button, then change
  the student's assignment by pressing the student's
  button. The illuminated LED will follow the new
  assignment. To clear all settings including
  GROUPS assignments, press the ALL and MUTE
  buttons simultaneously.

- **BROADCAST**
  Routes the audio from any selected students, and
  the teacher's microphone if selected, to all
  students.

- **MIC**
  Press to activate the teacher's microphone.

- **MUTE**
  Temporarily disables all student instruments. Students' microphones will remain active, but at a reduced volume.

Practice Mode

The controller is initially set for Individual Student Practice mode. Practice mode allows students to practice in private. Students can only hear their own instrument and cannot talk to each other. No LED's on the student selector are illuminated; PAIRS mode or GROUPS mode is not active when the controller is in Individual Student Practice mode.

To return the lab controller to its factory default settings press the ALL and MUTE buttons. Any group assignments will be erased.

It is also possible to have students practice in PAIRS or GROUPS. These topics will be discussed later.

Monitoring a Single Student

To monitor a single student, press the button for that student on the row of switches labeled 1 through 8. The LED for that student will illuminate to indicate the selection. To access the other banks of students, press the BANK button.

The teacher can hear only the selected student's instrument and microphone. To communicate with the student press the teacher's MIC button and talk. Student microphones are always active so they can respond immediately. Other students can continue to practice in private and cannot hear the conversation between the teacher and selected student.

To monitor a different student, deselect the previous student then select the new student to be monitored. The appropriate LED's will turn off or illuminate.

Monitoring Multiple Students

There are several ways to monitor and communicate with more than one student.

Individual Selections
The simplest way to monitor more than one student is to press the buttons for the students you wish to monitor using the student selector buttons.

The LED's will illuminate to indicate the selection. Students who are selected can hear each other's' instruments and they can talk to each other.

To communicate with the selected students press the teacher's MIC button and talk. Students who are not selected can continue to practice in private and cannot hear the conversation between the teacher and selected students.

PAIRS

It is possible to assign adjacent students to PAIRS for practicing and monitoring.

To group the students into pairs, press the PAIRS button. The PAIRS LED will illuminate to indicate selection. Students are paired numerically starting at 1 & 2.

When PAIRS mode is activated, any previously selected individual students are temporarily deselected clearing the student selector row for a new choice. Students can now practice in private pairs without any selection.

To return to the previous mode deselect PAIRS. Any previous individual selections will be restored. Any previous GROUPS selections will need to be reselected.

GROUPS
It is possible to assign students to GROUPS for performing duets, trios, quartets or larger ensembles.

Students can be assigned to only one of four GROUPS: A, B, C, or D. Students assigned to a group can only hear each others instruments and talk to members of their own group (practice mode) unless multiple GROUPS are active.

To assign a student to a group, press and hold the desired GROUPS button. While holding the GROUPS button press the buttons of the students you wish to assign. An LED will illuminate for each assignment.

To unassign a student from a group, press and hold the desired GROUPS button. While holding the GROUPS button, press the buttons of the students you wish to unassign. The associated LED will turn off.

To change a group assignment, press and hold the new group's GROUPS button, then change the student's assignment by pressing the student's button. The illuminated LED will follow the new assignment.

To clear all group assignments, press the ALL and MUTE buttons.

Group Communication
Once students have been assigned to a group, they can be monitored and the instructor can talk to all members of the group by activating group communication for that group.

To activate group communication for a particular group, press the GROUPS button for that group. The LED for the selected group will illuminate and the individual students assigned to the group will automatically be selected on the student selector row.

Multiple GROUPS can be selected at one time to make a larger group. Any GROUPS not selected using GROUPS will be able to continue practicing in private.

To deselect any activated group, press the Group button for that group. The LED will turn off and the individual students will no longer be selected on the student selector row.

STUDENT BROADCAST
Student BROADCAST allows an individual student, paired students or group of students to perform for the rest of the class. The instructor's instrument may also be heard and the instructor can talk to the students if the teacher's MIC button is activated.

Press the BROADCAST button. The BROADCAST LED will illuminate. Any students selected to the student selector row will be able to play for the rest of the class.

To stop the student BROADCAST and return to the previous mode of operation, depress the BROADCAST button. The LED will turn off and the previous settings will be restored.

Performances from Tape or CD

Music from tape, CD, a computer or another external audio source can be routed to the student's headphones. It is presumed that the playback equipment has already been setup.

To play a piece of music from CD, first select the CD INPUT button, then adjust the volume of the recording using volume control labeled CD/AUX INPUT.

To play a piece of music from audio tape, the teacher's computer or another external audio source, first select the AUX INPUT button, then adjust the volume of the recording using volume control labeled CD/AUX INPUT.

The volume control labeled CD/AUX INPUT affects the level of both the CD INPUT and AUX INPUT, whichever one is selected.

Recording a Class Performance

To record a class or student performance, first select the students to record by selecting them using the student selector row. There is no adjustment on the Remote for the audio going to a tape recorder or digital recorder. Have the class rehearse the piece then adjust the record level at the recorder. Start the recorder then have the class members play their performance. Stop the recorder when the performance is finished.

To listen to the recording, select the AUX. INPUT button, rewind or cue the recording to the start of the performance, start the recorded performance then adjust the volume of the recording using the volume control labeled CD/AUX INPUT.

External Monitoring

An external monitoring system may be connected for students or others who wish to monitor the class but do not have headsets connected to the system. Adjust the audio level going to the external monitoring system using the volume control labeled MONITOR.

Appendix A

SPECIFICATIONS

Input, Output and Interface Connections:

MON OUT	(2) RCA unbalanced Mono
REC OUT	(2) RCA unbalanced Mono
AUX IN	(2) RCA unbalanced Mono
TAPE IN	(2) RCA unbalanced Mono
Remote	RJ-45 (8 conductor telephone type)
	Note: Do not use Cat 5 cable.
Teacher Interface Box	RJ-45 (8 conductor telephone type)
	Note: Do not use Cat 5 cable.
Student Interface Box	RJ-45 (8 conductor telephone type)
	Note: Do not use Cat 5 cable.
Instrument	Single Stereo 1/4" phone or Single Mono 1/4" phone or Dual 1/4" phone
Microphone	1/8" mini phone, condenser type
Headphone	Stereo 1/8" mini phone
Power Requirements	9 Volts AC, 4 Amps
	Use Supplied AC Adapter only

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