CS-10^2
Professional Control Station
Owner's Manual

JLCOOPER ELECTRONICS

Greetings

Thank you for purchasing the JLCooper CS-10^2 Professional Control Station. This product was engineered to be the definitive control interface for digital audio production. The CS-10^2 provides real, hands on control for mixing and editing on Digital Audio Workstations.

The CS-10^2 is recognized by systems from Digidesign, Spectral, Sonic Solutions, Radio Computing Services, Studio Audio and Video Ltd., Soundscape Digital Technology Ltd., Merging Technologies, and others.

The CS-10^2 is also a powerful tool for controlling sequencing software such as Mark of the Unicorn's Performer , Opcode's Vision, and other software with on-screen faders.

In addition, CS-10^2 may be combined with optional CS-10^x Expanders, to create a larger control console with more faders and buttons.

Please send in your product registration card right away, so that we may notify you in the future of any new accessories, related products, or software updates as they become available.

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Optional Accessories

To add even more power and functionality to your CS-10^2, JLCooper makes the **CS-10^x Expander** .

CS-10^x Expander

Each CS-10^x features 8 additional long throw faders, to expand your CS-10^2 into a larger console. You can add up to seven CS-10^x Expanders, for total control of up to 64 faders.

The CS-10^x is attractively sculpted to match your CS-10^2, and fastens securely to the right side, presenting the appearance of a single large control console.

Contact JLCooper or your dealer for more information about CS-10^x.

(The CS-10X manual is included after this manual for your convenience Also, please note that this manual will work for the older model CS-10 unit as the controls and mappings are identical).

Hardware Setup

The CS-10^2 is a MIDI controller that connects to the Macintosh or PC via a MIDI Interface.

The CS-10^2 is compatible with nearly all MIDI software. On the CS-10^2 itself, there is nothing to set up, nothing to program. In fact, for some applications such as MIDI sequencers, all you will need is a single MIDI cable from the output of the CS-10^2, to the input of the computer's MIDI interface.

Some Applications Require Both MIDI In and Out
The CS-10^2 does not turn on its own LEDs, aside from the brief light show on power up. Some systems (including those made by Digidesign and Spectral) send special commands into the CS-10^2 causing it to light its LEDs.

In these applications, it is important to have *two-way MIDI communication* with the host system, that is, both MIDI In and MIDI out.

To connect the CS-10^2:

➤ First Position the CS-10^2 in a convenient location.

➤ Connect the CS-10^2's MIDI Out to the MIDI In of the computer's MIDI interface.

➤ Connect the CS-10^2's MIDI In to the MIDI Out of the computer's MIDI interface.

➤ Connect the External Power Supply
Power is supplied by an external transformer.
It is rated at 9 VDC, 500 mA. The center conductor is positive.

➤ Connect a Foot Switch (Optional)

An optional, user-supplied foot switch may be plugged into the FOOT SWITCH jack on the back of the CS-10^2, to provide hands-free Play / Stop operation. The switch should be a momentary type, though is does not matter whether it is "normally open" or "normally closed".

The computer inside the CS-10^2 can automatically sense whether the switch is a "normally open" or "normally closed" type. So virtually any momentary contact switch will work. If a switch is to be used, it must be plugged in before power is turned on so that CS-10^2 can "read" the switch to determine what type it is.

Software Setup

Know Your System before Connecting the CS-10^2

From the standpoint of the CS-10^2, it is very simple to connect. But from the standpoint of the host system, it may be difficult to configure. You will need to possess knowledge (or have access to someone with knowledge) of your particular system.

In the early days of MIDI, many software applications had a simple dialogue which would configure MIDI communication with a single mouse click. Today's configurations allow for many variables, because each studio is unique.

Variables in the Macintosh world include OMS, FreeMIDI, MIDI Manager, Standard and High-Speed Interfaces, Interfaces with MIDI Patch Bays, etc. In the PC and Windows world, you must contend with installing and configuring MIDI cards and drivers.

 JLCooper technical support will not likely be able to provide specific information regarding the variables catalogued above. You must become familiar with the owners manuals of your own system in order to know how to configure it to respond to the CS-10^2.

The following general technical notes may be helpful to Macintosh users configuring OMS or FreeMIDI.

For OMS and FreeMIDI Users

Every time you introduce a new piece of equipment into your system, you need to change your OMS or FreeMIDI Setup.

While the procedures for using OMS and FreeMIDI are beyond the scope of this manual, we can give you some basic information about the CS-10^2 to help get you started. You may need this information to know how to create a "new device".

The CS-10^2 is a Controller. It sends MIDI Controller commands on MIDI Channel 16. It receives MIDI System Exclusive commands. The System Exclusive commands have no "ID#."

For a basic studio setup, after creating a new device, connect the input and the output to the interface. Be sure to Save this setup.

The following illustrations show an example of a minimal FreeMIDI configuration with a standard interface. Please refer to your OMS or FreeMIDI manuals for more specific information about how to create a studio setup.
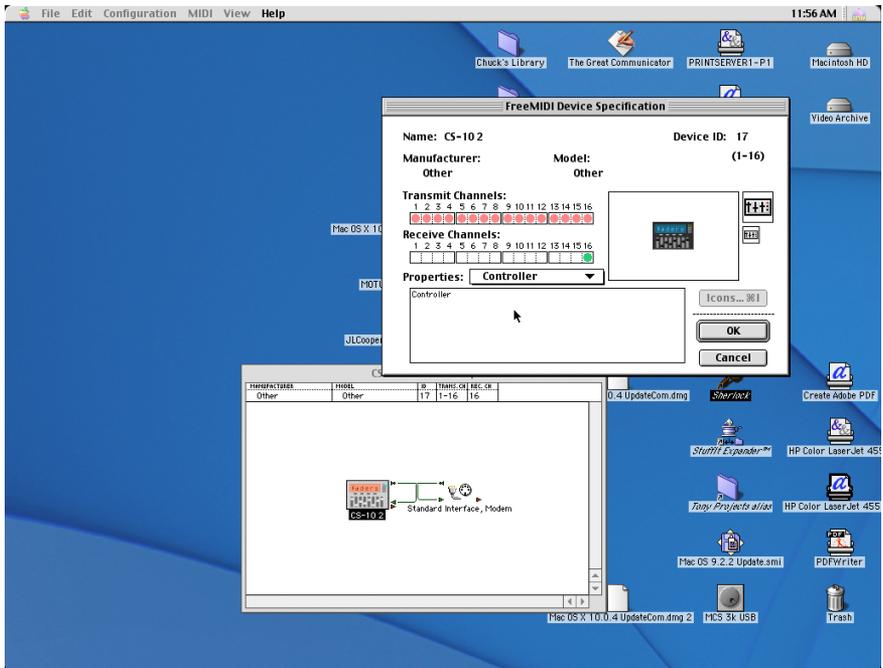
Some Basic Control Station Principles

CS-10² Controls

Pushing a switch, or moving the wheel, sliders, or knobs, causes MIDI Continuous Controller Commands to be sent.

Your Digital Audio Workstation software responds to the MIDI Continuous Controller Commands, by moving on-screen faders, jogging through audio files, activating transport controls, etc.

Some software applications respond to every CS-10² control, others respond to a limited set of controls. It is up to the developer of the software to determine which features may be remotely controlled by MIDI.

The common denominator is that nearly all MIDI-controllable Digital Audio Workstations feature the ability to control transports, that is, Play, Stop, Fast Forward, Rewind, and Record.

Most applications have faders on-screen for mixing, and jog or shuttle audio file playback.

Some applications have on-screen controls that the user can "map". That means that the user can select and personalize how the CS-10² will control the software.

In such systems the eight faders do not necessary always have to be used only to mix eight tracks. The same eight faders may be used to mix more than eight tracks.

CS-10² LEDs

When you first turn on your CS-10², the LEDs light up in a sequence to show that the unit is on.

Pressing the switches will not result in any of the LEDs turning on. This is perfectly normal operation.

The CS-10² does not have the capability of lighting its own LEDs, other than at power-up. The CS-10² lights its LEDs only in response to the reception of certain special MIDI commands from your software.

This is an intentional design feature that allows software developers to determine what actions will cause the LEDs to light. Some software applications send commands to light up the CS-10² LEDs, others do not.

Generally, the documentation or Read Me files that came with your application will show you which features can be controlled, and also if the CS-10² LEDs are supported by the application.

CS-10² and Spectral's Prismatica

The following technical support notes are an edited version of the CS-10 text file included with Spectral's Prisma and Prismatica software, and are re-printed by permission.

Though AudioEngine is named exclusively in these operation notes, they also apply to current software (i.e. Prismatica).

The JLCooper CS-10² provides tactile control over various features of Spectral's AudioEngine software. As bidirectional MIDI is required to run the CS-10², it is important that only one application running under Windows be using the CS-10² at once.

AudioEngine provides an option switch for disabling/enabling CS-10² control.

Hardware Connection
Referring to the hookup instructions, both MIDI in and MIDI out connections are required for proper operation.

Should the CS-10² become disconnected or powered-down during use, re-connection can be made without rebooting the application. However, the LEDs on the CS-10² will not represent the current state until controls are moved on the CS-10² .

General Implementation
With the exception of the function keys and cross-pattern keys above the wheel, the actions of the CS-10² are pre-configured and not adjustable. AudioEngine uses all the controls, except 5 of the 6 rotary knobs (all but the Pan control). These 5 knobs have no application to the current AudioEngine program. Except for the function keys, and cross-pattern keys above the wheel, each control is used in a specific window of the

The faders, pan knob, mute buttons, and mode selector exclusively control the Mixer Window. They function whether the Mixer Window is visible or not. The shift key is used in conjunction with these controls. The two digit LED display and null lights are also used exclusively by the mixer window.

The transport controls, scrub wheel, and wheel buttons are used exclusively by the Tapedeck Window. They function whether the Tapedeck Window is visible or not. The shift key is used in conjunction with these controls.

User-Definable Keys
The function keys and the cross-pattern keys above the wheel are configured using the Assign Hot Key Window in AudioEngine. They can be configured to operate any AudioEngine command. They can also be assigned to one of the Window Independent Commands. These commands such as "Scroll Page Up" and "Delete" are different commands depending on which AudioEngine window is currently active. The shift key is used in conjunction with these controls to double the number of configurable buttons.

Mixer Controls
The CS-10^2 provides 8 faders and multi-function channel buttons as wheel as 6 "floating" rotary controls that operate on a selected channel. They control the mixer whether the Mixer Window is visible or not. Updates to the Mixer Window are animated in the window as they occur. There may be some delay in graphics, however, depending on computer speed, etc. The actual audible changes occurs immediately.

Faders
The faders operate at all times and control the volume faders of the first 8 channels of the mixer. **Holding the shift key down allows the faders to control the second 8 channels of the mixer, channels 9-16**. AudioEngine has internal de-zippering to smooth the fader movements.

As AudioEngine does not have a way to inquire as to the current fader positions of the CS-10^2, movement of the faders can cause a large jump in the volume if the position of the fader does not closely match the Mixer Windows representations of the faders. Because of this a position matching method is provided. See Null Mode operation below.

Channel Buttons
Channel buttons exist on the CS-10^2, one for each fader. These buttons provide different functionality dependent on the mode selected. There are 4 modes, Solo, Mute, Locate, and Select. The mode is chosen by the mode select button and is indicated by a CS-10^2 LED. There is an LED for each channel button which displays the state of that channel button and changes with the mode.

Solo Mode
When the Solo Mode is selected, hitting the channel button toggles the solo state for that channel. The solo state is indicated for each channel with the LED's as long as the Solo Mode is selected. Normally, the channel buttons and LED's operate the solo state for the first 8 channels of the mixer. If the shift key is held down, there is control over the second 8 channels, channel 9-16.

Mute Mode
When the Mute Mode is selected, hitting the channel button toggles the state for that channel. The mute state is indicated for each channel with the LEDs as long as the Mute Mode is selected. Normally, the channel buttons and LED's operate the mute state for the first 8 channels of the mixer. If the shift key is held down, there is control over the second 8 channels, channel 9-16.

Locate

Currently locate is not implemented as AudioEngine provides 256 lettered locate markers and this does not directly cross to CS-10^2 functionality.

Select

When Select Mode is enabled, the user can choose which channel (1-16) the floating rotary knobs will control. With Select Mode, hitting a channel button chooses that channel as the selected one. If the shift key is held down during this operation, channels 9-16 can be selected. The selected channel is indicated by both the channel's LED and the 2 digit LED display.

There is a faster way to change the selected channel and that is by moving the fader for that channel. As a fader is moved, note that the 2 digit LED display immediately changes. Because of MIDI clogging concerns, moving a fader while in Select Mode immediately changes the channel button's mode to the unused Locate Mode. This reduces the amount of communication required to update CS-10^2 LEDs when doing heavy fader movement.

Null Mode

Because it is possible for fader and rotary knob positions on the CS-10^2 and in the AudioEngine software to become different, it is necessary to provide a mechanism for matching the CS-10^2 control positions to the software's actual levels. Null Mode provides this.

To use Null Mode, choose Select Mode on the CS-10^2 and hold the channel button down for the fader or rotary knob to match. Use the shift key if necessary in order to access channels 9-16. While holding down the select button, adjust the fader or rotary knob in question. This operation will probably require two hands.

Note that while doing this, the fader does not update the Mixer Window or the audio. However, the two null LEDs on the CS-10^2 are enabled and indicate the direction of movement of the fader required to match it to the position currently being used by the software. When the position matches, both null LEDs will come on. When the channel button is released, the normal fader and rotary knob control then resumes. The mode will then switch to the unused locate mode in order to keep MIDI from being clogged.

Rotary Knobs
Of the 6 rotary knobs provided on the CS-10^2, only the Pan control is currently used. It may be adjusted at any time and controls the pan control in the Mixer Window for the currently selected channel. See the description of the Select Mode operation of the Channel Buttons below.

As AudioEngine does not have a way to inquire as to the current rotary knob positions of the CS-10^2, movement of the knobs can cause a large jump in the audio if the position of the knob does not closely match the Mixer Window's representation of the knob. Because of this a position matching method is provided. See the Channel Button's Null Mode operation above.

Tapedeck Controls
The CS-10 provides 5 transport buttons, a scrub wheel, and 2 wheel buttons. They control the Tapedeck Window whether the Tapedeck Window is visible or not. Updates to the Tapedeck Window are animated in the window as they occur. There may be some delay in graphics, however, depending on computer speed, etc. The shift key is used with these controls for added functionality.

Transport Buttons

Rewind, fast forward, stop, play, and record buttons are provided to remotely control the Tapedeck Window. These buttons correspond directly to the tapedeck's buttons. To access the Return to Zero and Skip to Next Marker buttons, use the shift key with the rewind and fast forward buttons respectively. The scrub mode can be entered by using the shift button in conjunction with the play button. The CS-10^2 provides a record LED which is lit whenever the record button is activated.

Scrub Wheel

The scrub wheel is active only when the system is in scrub mode or when stopped. In Scrub Mode it is used to scrub the current position. When stopped it moves the current position but does not scrub the audio. Scrubbing can be done in any AudioEngine window.

Shuttle Buttons

The 2 buttons to the left and right of the scrub wheel on the CS-10^2 are enabled when in Scrub Mode. They are used to shuttle forward or in reverse at the speed configured in the software. Used in combination with the scrub wheel they can be very useful in quickly locating a position in the audio material.

Function and Cursor Keys

The function keys and the cross-pattern cursor keys above the wheel are configured using the Assign Hot Key Window in AudioEngine. They can be configured to operate any AudioEngine command. They can also be assigned to one of the Window Independent Commands.

These commands such as "Scroll Page Up" and "Delete" are different commands depending on which AudioEngine window is currently active. The shift key is used in conjunction with these controls to double the number of configurable buttons.

By default, the function keys duplicate the keyboard function key defaults. The cross-pattern keys emulate the keyboard cursor keys by default.

If a configured command brings up a dialog box, then it will not be possible to use another key to bring up a different or another copy of the same dialog box to the same window.
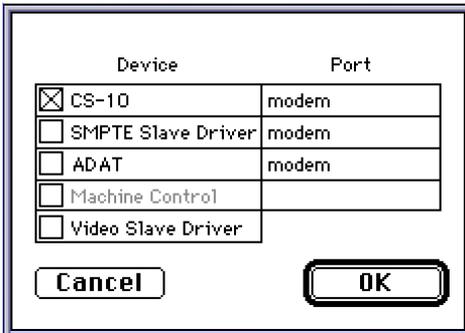
CS-10² and Digidesign's Pro Tools 3 and 4

To configure *Pro Tools 3.0* to respond to the CS-10², configure serial ports by selecting Serial Ports from the Setup menu.
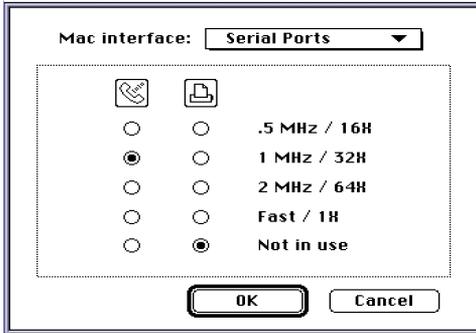
The settings illustrated are for example only. Your settings may vary depending on your interface.

Next, select Peripherals from the Setup menu. Check CS-10.
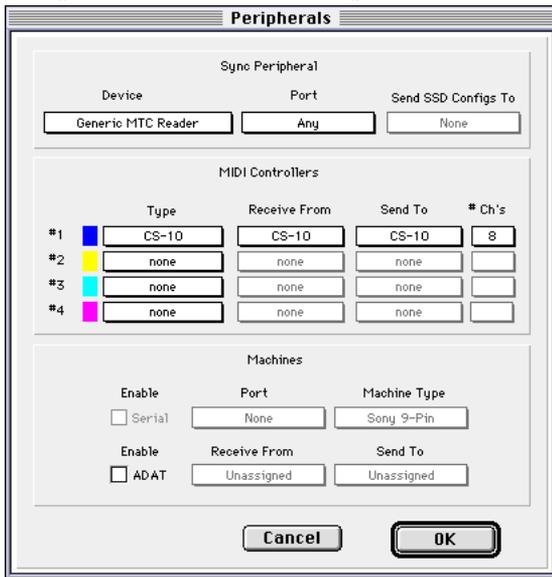

lick OK, and Pro Tools sends a command to the CS-10², causing the CS-10² to display, "*Kl*" . The SOLO LED turns on.

This indicates that the CS-10² is receiving MIDI data from the computer.

For *Pro Tools 4*, go to the next page.

To configure *Pro Tools 4* to respond to the CS-10^2, select
Peripherals from the Setups menu.

(The settings illustrated are for example only. Your settings
may vary depending upon your system.)

In the MIDI Controllers section, set the **Type** menu to **CS-10**.
The items in this menu are the so-called "Personality Files" that
reside in the Controllers folder inside the DAE folder.
If CS-10 does not appear in this menu, contact Digidesign.

Set **Receive From CS-10** and **Send To CS-10**. The items in
this menu get their names from OMS. If CS-10 does not appear
here, check your OMS setup and interface settings.

If you have one CS-10^2 (or CS-10), set **# Ch's** to 8.
If you have CS-10^X Expanders, set **# Ch's** to the total number
of faders on the CS-10^2 and CS-10^X Expanders

Click OK, and Pro Tools sends a command to the CS-10^2,
causing the CS-10^2 to display, "PA" . This indicates that the
CS-10^2 is receiving MIDI data from the computer.

Pro Tools 4 features full support of the JLCooper CS-10^2.
Refer to their detailed Read Me file for operating instructions.

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Important Note

The CS-10^2 by itself cannot turn any of its own LEDs on. (Other than the display on power up.) The switches won't appear to do anything unless there is *two-way communication* with the software.

When using Pro Tools 4, the CS-10^2 should display "PA".
When using Pro Tools 3, the CS-10^2 should display "KI".
If these do not appear, re-check your connections, and re-read the chapters on Hardware and Software Setup.

Every switch, knob, and fader on the CS-10^2 can and does send a message into the computer. Pro Tools 3 responds to most controls, but not every control. Pro Tools 4, however, has a very thorough implementation.

The remainder of this chapter relates to Pro Tools 3, with a few notes about Pro Tools 2. For Pro Tools 4 operation, refer to the detailed "Read Me" file from Digidesign about the CS-10.

Pro Tools 2 and 3 Operation Notes

Function keys F1 through F9 all have a function (though Shifted keys do not.) Pro Tools 2 responds to all six rotary pots (Send, Pan, and E.Q.). Pro Tools 3 responds to the PAN pot. It does not respond to the Send and E.Q. pots.

This is because Pro Tools 3 lacks the ability to allow the sliders within the TDM modules to be "mapped" to MIDI controllers. Pro Tools does not drive the CS-10^2 null or wheel LEDs.

We suggest that you always read the most current "Read Me" files from Digidesign to learn about any changes they have made to their CS-10 implementation.

Faders

Faders 1 through 8 correspond to the first 8 tracks.
For tracks above track 8, you may consider adding CS-10^x.
Expanders on to your CS-10^2, to form a larger control console.

When you check "CS-10" in the Peripherals dialogue, Pro Tools automatically defined a controller "map" that corresponds to the first 8 tracks. Pro Tools CS-10 map cannot be "unmapped", CS-10^2 faders 1 through 8 always control the first 8 Pro Tools tracks. To control tracks above track eight, drag the desired tracks screen position to allow the CS-10 to access them. (Note, according to Digidesign, this can affect the prioritization of voice playback.)

Track Select Buttons

The numbered track select buttons, the buttons above each fader, are multifunctional. The CS-10^2 MODE button and LEDs determine what parameter the buttons will control.

MODE

Pressing this button cycles through the SOLO, MUTE, LOC, and SEL modes.

SOLO

Track select buttons function as Solo Buttons

MUTE

Track select buttons function as channel mutes.

LOC

Track select buttons are used to set and recall Autolocator points.

SEL

Track select buttons are used to select *one* track so that its Pan can be edited. In Pro Tools 2, Send and E.Q. controls can also be edited.

In SEL mode

To adjust the pan, first select a track using the corresponding track select button, then the adjust the pan knob.

In Pro Tools 2 only:

To adjust the send levels, first select a track using the corresponding track select button, then adjust the Send 1 or Send 2 knob.

To adjust the E.Q., first select a track using the corresponding track select button, then adjust the Boost / Cut, Frequency, and Bandwidth knobs where appropriate. *Note: only the top E.Q. module can be controlled by the* CS-10^2.

To adjust pan of more than one track at a time, you can map a pan slider to a CS-10^2 Fader. This allows you to simultaneously control the level and pan of more than one track at a time.

Scrub Wheel

The CS-10^2 scrub wheel gives you precision control over audio playback. This enables you to, for example, locate the exact start and end of a sound and capture it as a region.

Turning the wheel clockwise results in forward scrubbing, counter-clockwise causes backwards scrubbing.

To enable scrubbing, select the Scrubber in the Edit Window. The Scrubber may be selected on the CS-10^2 by pressing F7 until The Scrubber is highlighted.

Next, select a track.
A track may be selected on the CS-10^2 in SEL mode. Press the "mode" button below the SEL LED until SEL is lit. Then, select the track by pressing one of the eight track buttons located above the faders.

To scrub tracks above track eight, drag the desired tracks screen position to allow the CS-10 to access them. (Note, according to Digidesign, this can affect the prioritization of voice playback.)

The audio effect of scrubbing, that is, how much audio plays back for a given rotation of the wheel, is determined by the display scale. The cross-pattern buttons above the wheel are used to set the Display Scale. Scrubbing works best at medium levels of magnification.

The scrub wheel begins scrubbing from the beginning of the file. When a region has been selected, scrubbing begins at the start of the region.

Transport Keys
The five transport keys control the following:

◀◀	Rewind
▶▶	Fast Forward
●	Stop
▶	Play
■	Record

Additionally, holding the Shift button and pressing Rewind goes to the start of session.

Autolocation Points
To set autolocation points, put the CS-10^2 into LOC mode, hold down the F5 key, and push one of the numbered track buttons.

To recall autolocation points, put the CS-10^2 into LOC mode and use the numbered track buttons 1 through 8. The CS-10^2 has access to the first 8 locate points.

The cross-patterned buttons above the wheel control the viewing magnification, and are equivalent to the Display Scale Arrows in the Edit Window.

CS-10² Pro Tools Function Key Assignments

F1: Sets the Selection Start

F2: Sets the Selection End

F3: Capture Region

F4: Separate Region

F5: Set Autolocation Points

F6: Alternately Selects:
Shuffle / Slip / Stop / Grid

F7: Alternately Selects:
Zoomer / Scrubber / Trimmer / Selector / Grabber

F8: Alternately Selects: Display Modes:
Bars:Beats / Min:Sec / Time Code / Feet .Frame

F9: Toggles between Online and Offline

CS-10² and Mark of the Unicorn's Performer

To use with Performer, first create a CS-10² controller in your FreeMIDI setup, and routed it to the appropriate ports on your MIDI interface. For help in creating the device definition for the CS-10², refer to the Software Setup on page 7 of this manual.

Map the CS-10²'s function keys by opening the Remote Controls Window. To assign MIDI commands into the Remote Controls window, click to highlight the default Event assignment, then press a key on the CS-10². Press Enter on the Mac keyboard to validate the assignment.

Assigning Events in this manner will cause the Event to occur as the key is released. That is to say, press Stop, and the Stop occurs when you *release* the Stop key.

Important Note
The Remote feature captures the last MIDI command received. Pressing and releasing a CS-10² switch actually sends two commands, one for key down and another for key up.
(A Controller with a value of 127 as the key is pressed down, followed by another controller message with a value of 0 as the key is released.)

You can choose whether you want Performer to respond instantly as the key is pressed down, or as the key is released.

For example, to assign the Record switch to respond to key down, on the CS-10², hold down the Record switch. While still holding down RECORD on the CS-10², *then* click on the event assignment for Record in the Remote Controls Window. Release the RECORD switch on the CS-10². (You have now mapped only the *release* of the switch.)

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On versions of Performer Prior to 5.01, if you capture the release of the Record switch, you may get inconsistent results.

Be sure to turn the Remote Master ON and Transport Controls ON.

Fader and Knob Setup on Performer
Prior to Version 5.01, to setup faders on Performer, select Sliders from the Windows menu. From the Sliders menu, Add eight sliders.

Click and drag down the Slider names to select the Sliders, and Create a Console. Large, Vertical Sliders seem to best suggest a mixing console. Click on Data type to set the Controller number for each Slider. Set the Source and Target for each slider. (Corresponding to controller numbers 64 through 71.)

For Versions 5.01 and higher, to create a new console, click on the Custom Console icon in the Consolidated Controls window.

Once a new console window has been opened, create sliders or knobs by clicking on the "I" (Item) icon in the Console Windows menu bar.

Selecting Sliders, for example, allows you to "draw" the number of sliders desired. (Alternately, you can draw one slider, click on the window's Edit icon, select the slider and copy and paste it.)

Refer to Performer's Help dialogues for more information on how to customize your console.

When a control is created, a dialogue opens that allows you to map the slider. Set the Source and Target for each slider. (Corresponding to controller numbers 64 through 71.)

CS-10² and Opcode's Vision

Transport and Function Keys

To assign CS-10² transport and functions keys, open MIDIKeys from the Setups menu.

Add a line, for as many functions as you want to map.

Click to highlight the left field and press a CS-10² switch, click to highlight the right field and enter the key command that you want to map to the CS-10².

Fader Setup on Vision

Open the Faders window from the Setups menu.

Click on the dot to the right of the Fader to assign Command type and channel.

The CS-10²'s faders send MIDI controllers number 64 through 71 on MIDI channel 16.

CS-10^x Expanders are on MIDI Channel 15.

Turn Fader Receive Enable On (Checked).

Technical Information

Self-test

First turn off the power and disconnect the CS-10^2 from the computer. Then, hold in the Record button while turning the unit on. You will see the number 23 in the display.

Each button will cause a different number to appear in the display, starting with Shift = 9. Turning any knob will light the NULL ARROW LEDs, depending on the direction that the knob is turned. Turning the wheel will cause the Left / Right wheel LEDs to light, depending on the direction that the wheel is turned.

The faders do not do anything in this self test. The buttons above each fader will turn on their corresponding LED, but will not turn them off. They may all be turned off at once by pressing any of the function buttons. This concludes the self test.

CS-10^2 Communication

This section details the protocol used for communications to and from the CS-10^2. All information contained here is proprietary to JLCooper Electronics, and is intended for use by those who are developing a custom application for the CS-10^2.

It is assumed that the reader has a familiarity with MIDI protocol, including usage of MIDI system exclusive (Sysex) messages.

The CS-10^2 uses standard MIDI protocol.

All messages from the CS-10^2 are Controller commands on MIDI channel 16. These messages are all of the form:
0BFh   cc   vv
where cc = switch or wheel number and vv = value.

The following table gives values (vv) for each switch.

cc	Name	vv
00h	Mute button 1	00 = release, 7Fh = depressed
01h - 06h	Mute button 2 - 7	00 = release, 7Fh = depressed
07h	Mute button 8	00 = release, 7Fh = depressed
08h	Mode button	00 = release, 7Fh = depressed
09h	Shift button	00 = release, 7Fh = depressed
0Ah	F1 button	00 = release, 7Fh = depressed
0Bh	F2 button	00 = release, 7Fh = depressed
0Ch	F3 button	00 = release, 7Fh = depressed
0Dh	F4 button	00 = release, 7Fh = depressed
0Eh	F5 button	00 = release, 7Fh = depressed
0Fh	F6 button	00 = release, 7Fh = depressed
10h	F7 button	00 = release, 7Fh = depressed
11h	F8 button	00 = release, 7Fh = depressed
12h	F9 button	00 = release, 7Fh = depressed
13h	Rew button	00 = release, 7Fh = depressed
14h	FF button	00 = release, 7Fh = depressed
15h	Stop button	00 = release, 7Fh = depressed
16h	Play button	00 = release, 7Fh = depressed
17h	Record button	00 = release, 7Fh = depressed
18h	Left Wheel button	00 = release, 7Fh = depressed
19h	Right Wheel button	00 = release, 7Fh = depressed
1Ah	Up cursor button	00 = release, 7Fh = depressed
1Bh	Down cursor button	00 = release, 7Fh = depressed
1Ch	Left cursor button	00 = release, 7Fh = depressed
1Dh	Right cursor button	00 = release, 7Fh = depressed
1Eh	Footswitch	00 = release, 7Fh = depressed
40h	Fader 1	Range 0 to 7Fh
41h - 46h	Fader 2 - 7	Range 0 to 7Fh
47h	Fader 8	Range 0 to 7Fh
48h	Boost/Cut	Range 0 to 7Fh
49h	Frequency	Range 0 to 7Fh
4Ah	Bandwidth	Range 0 to 7Fh
4Bh	Send 1	Range 0 to 7Fh
4Ch	Send 2	Range 0 to 7Fh
4Dh	Pan	Range 0 to 7Fh
60h	Wheel	2s compliment using 7 bits of data

Wheel Data

This is in the form of "2's complement", with bit 6 as the sign bit. Positive numbers are sent for clockwise rotation. The number sent represents the number of wheel counts accumulated since last transmission (relative position count) much like what a mouse transmits. The resolution is approximately 180 counts per revolution, and transmissions are sent at about 10 millisecond intervals, while the wheel is being turned.   30

Computer to CS-10² Communications

All messages from the computer to the CS-10² are transmitted using Sysex commands as follows:

0F0h   15h   15h   00h   cc   vv   0F7h

where cc = LED number and vv = value.

The following table gives values for vv for the various LEDs:

cc	Name	vv
00h	Mute LED 1	00=off, 7Fh=on
01h - 06h	Mute LED 2 - 7	00=off, 7Fh=on
07h	Mute LED 8	00=off, 7Fh=on
08h	Select Mode LED	00=off, 7Fh=on
09h	Locate Mode LED	00=off, 7Fh=on
0Ah	Mute Mode LED	00=off, 7Fh=on
0Bh	Solo Mode LED	00=off, 7Fh=on
0Ch	Down Null LED	00=off, 7Fh=on
0Dh	Up Null LED	00=off, 7Fh=on
0Eh	Left Wheel LED	00=off, 7Fh=on
0Fh	Right Wheel LED	00=off, 7Fh=on
10h	1s 7-Segment Digit	(see below)
11h	10s 7-Segment Digit	(see below)
12h	Record LED	00=off, 7Fh=on
13h	Decimal point to right of 10s digit	00=off, 7Fh=on
14h	Decimal point to right of 1s digit	00=off, 7Fh=on

For the 7-Segment LEDs, Bit 0 = Segment a, Bit 1 = Segment b, etc. In each case, a set bit turns the segment on. The segments are identified as shown below:
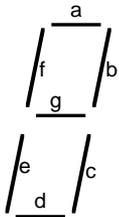
Communications Testing

A simple sysex inquiry message can be sent to the CS-10² to test communication. The inquiry message is:

F0h   15h   15h   01h   F7h

This message will be echoed back from the CS-10².

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This warranty is non-transferable and the benefits apply to the original owner. Proof of purchase in the form of an itemized sales receipt is required for warranty coverage.

To receive service under this warranty, customers in the United States should contact the JLCooper factory at (310) 322-9990 and talk to a service technician.
If necessary, a Return Authorization number may be issued.

For our customers outside the United States, it is recommended that you first contact your Dealer or Distributor, since they may offer their own service or support policy.

If local support is not obtainable, please send a FAX to JLCooper's Service Department at (310) 335-0110, with a detailed description of the service required.

Upon issuance of return authorization, the product should be properly packed and shipped to Service Department, JLCooper Electronics, 142 Arena St., El Segundo, CA 90245.

Please include the following: copy of the sales receipt, your name and address (no P.O. Boxes, please), a brief description of the problem, and any other related items discussed with the service department and considered necessary to evaluate the product or effect a repair. The return authorization number must be clearly written on the outside of the package.

JLCooper will, without charge for parts or labor, either repair or replace the defective part(s). Shipping costs are not covered by this warranty.

JLCooper's normal repair turn around time at the factory is approximately 15 business days, from receipt of product to shipping. Your actual turn around time will include return shipping.

Actual turn around time will vary depending upon many factors including the repeatability of the customer's reported complaint, the availability of parts required for repair, the availability of related products needed to evaluate the product if necessary.

Priority services are available. These should be discussed with the service technician at the time the return authorization is issued.

This warranty provides only the benefits specified and does not cover defects or repairs needed as result of acts beyond the control of JLCooper including but not limited to: abuse, damage by accident/negligence, modification, alteration, improper use, unauthorized servicing, tampering, or failure to operate in accordance with the procedures outlined in the owner's manual; nor for acts of God such as flooding, lightning, tornadoes, etc.

THE DURATION OF ANY OTHER WARRANTIES, WHETHER IMPLIED OR EXPRESS, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTY OF MERCHANTABILITY, IS LIMITED TO THE DURATION OF THE EXPRESS WARRANTY HEREIN. JLCOOPER HEREBY EXCLUDES INCIDENTAL AND CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO: LOSS OF TIME, INCONVENIENCE, DELAY IN PERFORMANCE OF THIS WARRANTY, THE LOSS OF USE OF THE PRODUCT OR COMMERCIAL LOSS, AND FOR BREACH OF ANY EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY, APPLICABLE TO THIS PRODUCT. JLCOOPER SHALL NOT BE LIABLE FOR DAMAGES OR LOSS RESULTING FROM THE NEGLIGENT OR INTENTIONAL ACTS OF THE SHIPPER OR HIS CONTRACT AFFILIATES. THE CUSTOMER SHOULD CONTACT THE SHIPPER FOR PROPER CLAIMS PROCEDURES IN THE EVENT OF DAMAGE OR LOSS RESULTING FROM SHIPMENT.

CS-10$^\text{x}$
Control Station Expander
Owners Manual
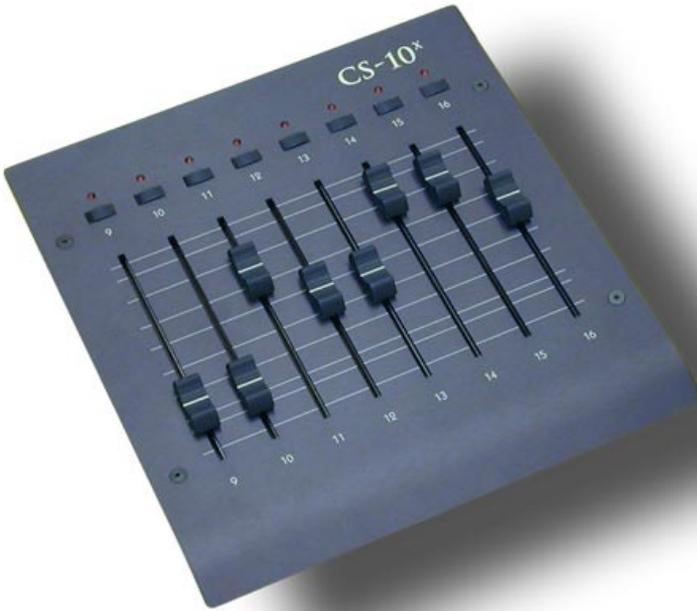
JLCOOPER ELECTRONICS

Greetings

Thank you for purchasing JLCooper's CS-10^x Expander, for JLCooper's CS-10 and CS-10^2 Professional Control Stations.

CS-10^x Expanders allow you to create a larger control console, with more faders and buttons. This provides more hands-on control for mixing and editing on Digital Audio Workstations and Sequencers.

Each CS-10^x features 8 additional long throw faders. You can add up to seven CS-10^x Expanders, for total control of up to 64 faders.

The CS-10^x is designed to fasten securely to the right side of the CS-10^2, presenting the appearance of a single large control console.

The CS-10^x will work in conjunction with the original CS-10 and also the CS-10^2. The original JLCooper CS-10, however, requires a firmware update (that is, an EPROM chip) for compatibility with the CS-10^x. Contact JLCooper Technical Support to obtain this EPROM.

Please send in your registration card right away, so we can notify you of any updates or related products as they become available.

Hardware Installation

The CS-10^x is designed to mount to the right side of the CS-10^2.

For systems with multiple CS-10^x units, each CS-10^x mounts on the right side of the previously mounted CS-10^x.

The mounting kit provided includes two mounting plates, an allen key, and four screws. You will need to provide a phillips screwdriver.

Installation is easy. It is best to work on a soft, well lit surface, such as a towel laid on a desk.

First, notice that the two mounting plates are of different thicknesses. One is thin spring steel, the other is thicker and black.

Using the allen key provided, remove the two screws on the top, right side of the CS-10^2. Exercise care so as not to slip with the tool or scratch the metal.

Lift the top panel up a little on the right side.
Insert the thin plate into the gap between the top cover and the chassis. Slide the plate around until the holes line up.
Then put the allen screws back.
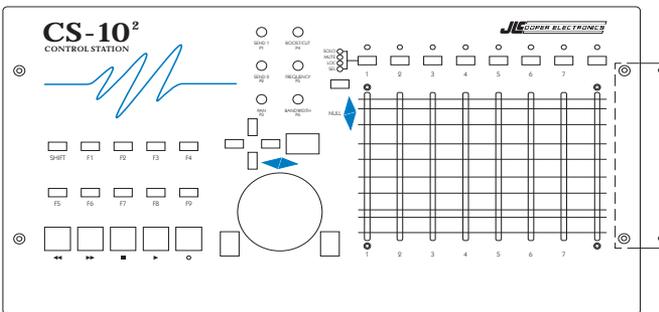
Note that the thin plate slips into the gap between the top cover and the chassis, and cannot be seen.
It is *not* mounted on top of the control station.

Remove the two screws on the top left of the CS-10^x.
Lift the top panel up a little on the left side.
Slide in the other half of the thin plate into the gap.
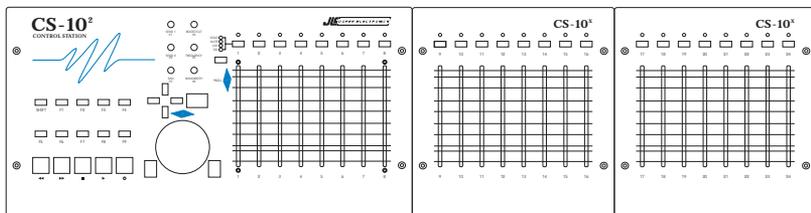Then put the allen screws back.
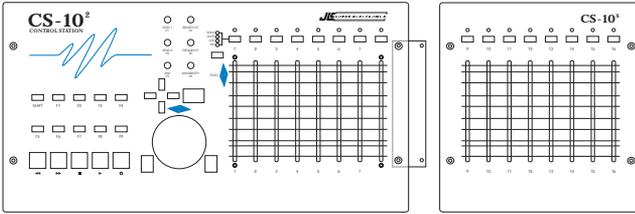
Now, carefully turn the CS-10^2 and CS-10^x over, as a unit.
Place the thicker plate on the bottom, overlapping both the CS-10^2 and the CS-10^x. Using the four screws provided, mount the plate securely to the bottom.

Then turn the CS-10^2 and the CS-10^x over again as a unit.
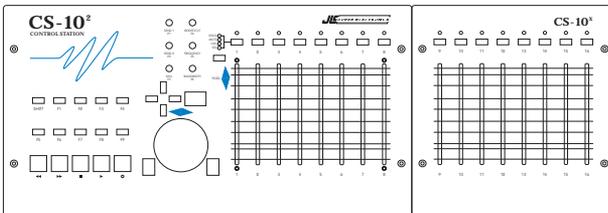
Fasten additional CS-10^x units to the right side in the same manner.

MIDI connections

Important

The CS-10^x derives its power from the CS-10^2.
When connecting the CS-10^x to the CS-10^2, or another
CS-10^x, use the MIDI cable supplied.

This is a MIDI cable which has all 5 conductors at-
tached. Many commercially available MIDI cables only
have 3 of the 5 conductors attached. You may use
JLCooper's supplied cable, or Roland's "MIDI / DIN
Sync cables".

➤ Connect the MIDI In of the CS-10^2 to the MIDI Out
of the computer's MIDI interface.

➤ Connect the MIDI Out of the CS-10^2 to the MIDI In
of the CS-10^x.

➤ If there is only one CS-10^x, connect the MIDI Out of
the CS-10^x to the MIDI In of the computer's interface.

➤ If there are more CS-10^x units, connect the MIDI
Out of the CS-10^x to the MIDI In of the next CS-10^x.

➤ Continue to chain the CS-10^x units in this manner,
and connect the MIDI Out of the last CS-10^x to the
MIDI In of the computer's interface.

When you turn on the CS-10^2, the power-up LED
sequence will extend into the CS-10^x Expanders. This
is as indication that the CS-10^x is operating and is
correctly connected to the CS-10^2.

Software Setup

FreeMIDI / OMS definition

Within FreeMIDI or OMS, it is not necessary to define the
CS-10^x as a new device. Simply make one change to your current CS-10^2 definition.

The CS-10^x sends on MIDI channel 15. Edit your CS-10^2 to be a controller that sends on MIDI channels 15 and 16.

Mapping Controls

The CS-10^x faders should be mapped to control your on-screen sliders in your application. Since this procedure is different for each application, refer to the application's documentation.

In Pro Tools, for example, you Control-Click on a slider knob. The knob turns green, and then you move the CS-10^x fader that you want to control the slider.

Be aware that when CS-10 is checked in the Peripherals dialogue, the first eight tracks are pre-mapped and cannot be changed.

Since the CS-10^x is a new product, software packages that have traditionally supported the CS-10 may not yet respond to the CS-10^x switches and LEDs.

At time of printing, Spectral and Soundscape are working on CS-10^x support.

Currently the CS-10^x LEDs and buttons are not supported by Pro Tools III. You will still need to mouse-click to select a track above track 8, unless there is a future Pro Tools update designed to support the CS-10^x buttons and LEDs.

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