

Cameo LRC Instruction Manual

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Release notes 05/07/01

The following functions are currently not released. As these functions are made available all Cameo mixers will be updated at no charge. By accepting Cameo at this time you agree that the current level functionality is sufficient for your needs and that the current feature set alone is sufficient to warrant full payment in exchange for the Cameo mixer. You also agree to wait until the following feature set is available.

If you do not agree to these conditions please return the Cameo mixer in new condition to your dealer for a full credit.

Features not released,

Sample rate conversion

96 Khz operation

Warranty:

Zaxcom warrants the Cameo digital audio mixer for a period of one year from time of delivery. This warranty includes defects in workmanship and failure of electrical components under normal operating conditions. Improper use or mishandling of Cameo shall void the warranty. Zaxcom shall not be liable for any damages resulting from the use or misuse of the Cameo mixer. Any repairs of Cameo by unauthorized personnel will also void the warranty. This warranty excludes inter connecting cables and the Cameo plasma display. Warranty of the display is for a period of six months.

Installation:

Cameo may be installed in variety of situations. The monitor screen can be fastened to the rear of Cameo or the monitor brackets may be unscrewed from the rear of Cameo and custom mounted to a sound cart. Remote mounting the display is recommended as microphone pre-amps 7 and 8 can be affected by the operation of the display when un-terminated with the microphone or line input. Connect the monitor cable from the display to the DB 25 connector labeled display of the rear of Cameo. Connect the supplied Microsoft mouse to the mouse connector on the right rear corner of Cameo. If utilizing external power, connect plus 12 volts DC to the 4 pin XLR on the rear of Cameo. This connector utilizes an industry standard pin out. The current capability of the external power supply must be at least four amps. Under normal operation Cameo requires between 2.0 to 2.5 amps. All analog inputs and outputs may be connected to Cameo utilizing industry standard XLR connections.

When the Zaxcom Deva is to be utilized with the Cameo. Connect the supplied cable from the AES MIX OUT/AES TAPE RETURN connector on the Cameo to the AESEBU I/O connector on the Deva. Connect the nine pin Deva connector on the rear of Cameo to the time code/RS422 connector on the Deva.

If a digital audio recorder other than Deva is utilized, a XLR break out cable must connect from the AES MIX OUT/ AES TAPE RETURN to the digital audio recorder. See the connector section for correct pin out.

If a stereo analog recorder is utilized with Cameo, the analog bus outputs may be connected directly to the line inputs of the recorder. Connector recorders line output to the tape 1 and tape 2 XLR inputs. If an analog recorder with more than 2 outputs is utilized, use the analog tape DB25 connector for the extra analog channels.

The Com, boom, and headphone output have all been designed for use with three pin stereo headphones. It is not recommended to utilize two pin headphone connectors in these outputs.

If using an external recorder other than Deva. See the G. P. I. connections as well as the instruction manual for recorder to be connected to wire the remote record switch. Use of a Fostex PD4 may require a special software version and special cable for remote roll. Contact the factory for details.

The internal Cameo battery may be charged by connecting an external charger to four-pin XLR connector of the rear of Cameo. See the XLR connection diagram for details. The Cameo does not include an internal battery charger. The power charge switch is inactive.

Memory reset:

To reset Cameo's internal memory to factory default. As power is switched on hold the more key. This will return the Cameo to the factory Default State. Note, all internal presets and user settings will be lost. This action should only be taken when all other possibilities have been exhausted.

Overview:

Cameo is a 96 KHz 24-bit digital audio mixer. Its uses include recording of television programming and motion picture sound. Cameo has digital and analog inputs. Outputs include six main bus, aux bus outputs, COM, Boom, and 8 AES direct outputs. Each channel contains equalizer, compressor and delay. The monitoring section provides for discrete monitoring of each of the six output buses as well as tape returns from separate analog and digital recorders. Up to four communications channels are possible utilizing Com, Boom and two auxiliary outputs. Levels may be sent to the output buses in one of three configurations; post fader, pre fader, and variable mode. Cameo will support a wide variety of microphones utilizing phantom power, T power as well as dynamic non-power microphones. T power is not recommended, as it inherently is not as clean as phantom power. Cameo is powered from an internal battery that will last approximately three hours under continuous operation. It can also be powered externally from a 12-volt power source. Cameo can be utilized in any application where a traditional analog location mixer has been utilized. Cameo's digital output is perfect for DAT machines as well as any digital disk recorder. Cameo has been designed to seamlessly integrate with the Deva digital audio disk recorder as well as the Zaxcom digital wireless system.

The mouse:

The mouse is utilized to select different functions in Cameo's menu system. To utilize the mouse connected to the round hole at the rear right corner of the Cameo, move the mouse to a position of the Cameo screen that coincides with the function you would like to select. Pressing the left button on the mouse will select the function. For example, on the home screen click on the icon labeled EQ. This will open the EQ menu. In the EQ menu click on the EQ symbol at the top left of the screen to return to the home screen again.

The mouse is the easiest way to control Cameo. However, we have tried to allow for total control of the Cameo without the mouse being necessary. If you should have a mouse malfunction, a new mouse can be purchased at the local computer store. Currently the model that must be utilized is a Microsoft BASIC mouse.

The screen:

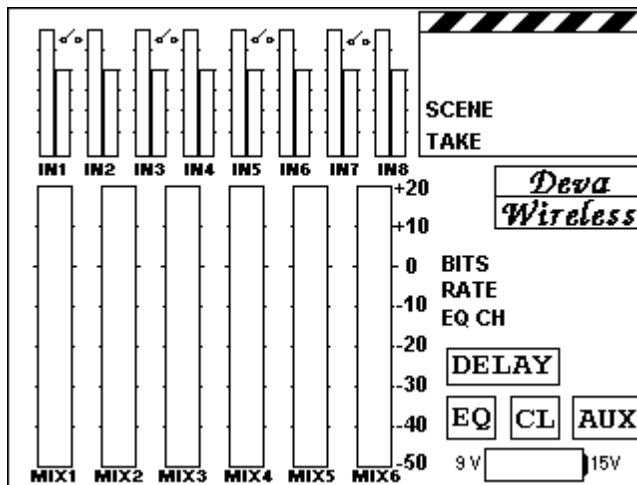
The screen is a sunlight readable plasma the display, it can be remoted from Cameo for a distance of five feet using a shielded cable. Using a non shielded cable may cause interference to wireless microphones and radio systems. Utilizing the mouse and the display will allow you to drive Cameo through its graphical user interface.

The battery:

The Cameo internal battery is a 7 amp hour lead acid battery. It must be charged with an external charger. The battery does not drain when the Cameo is powered externally. This battery may be obtained from local alarm supply distributors as well as Digikey. Be careful when removing the battery to never pull on the battery wires but always to pull all the battery contracts. The battery may be changed while Cameo is running under external power. It is best to charge the Cameo internal battery at a current of .5 amps for ten hours. However, other charge rates are possible.

Control panel:

The control panel has been designed to provide the look and feel of traditional location mixer's. Separate switches to control the EQ, notch filters, compressor, phase inversion and Hi-pass filters have been provided. Selections of the output busses 1 to 6 are provided on three position toggle switches that are located on each fader. 3 knobs have been provided to control the basic EQ functions. By pressing the EQ key on a fader will switch the EQ control to the appropriate channel. The EQ menu need not be up to adjust the EQ values. Each function of the control panel will be covered in its appropriate section.



Home menu:

The home menu provides basic Cameo metering function as well as an interface to other menus in the Cameo control system. At the very top of the screen are the input selection icons. There are eight square wave/sine wave icons located at the top of each input meter. Clicking on this icon will change the Cameo input from analog to digital. In digital, input is indicated by a square wave symbol located above the input meters. Analog inputs are indicated by a sine wave indicating analog level inputs. When input is switched from analog to digital it must be switched in stereo pairs. When an analog is selected, any combination of Mic or line is possible. *Note: that the corresponding switch located between the microphone preamp controls on the control panel must also be in the correct position. This switch is indicated by a square wave on top and a sine wave on the bottom.*

At the top of the home menu are the input meters. The input meters will show the level of each of the 8 Cameo inputs as well as gain reduction metering if the compressors are utilized. Each check mark on the input meters is an indication of 10 dB. Utilize the input meters to assure that the input of each channel does not clip. Each channel should peak between 0 and plus 10 to assure sufficient headroom. When utilizing the compressor, the compressor meter located to the right of the input level meter indicates active compression.

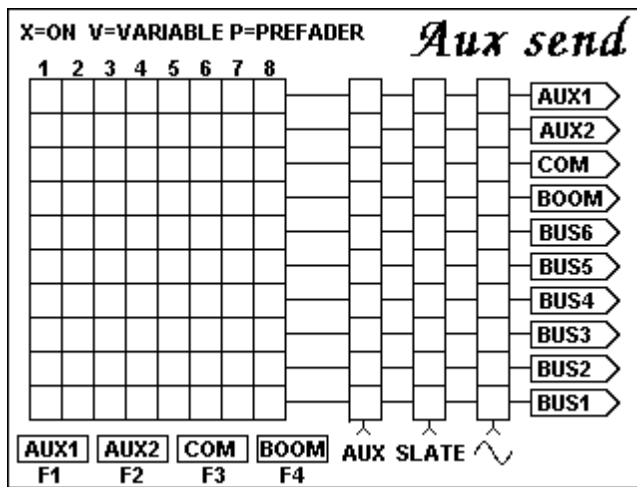
The home menu shows six large bus output meters. Each tick on these meters indicates 10 dB. The meter ballistics is peak type with an average level indicator bar. Pressing the home key while in the home menu will bring up an alternate home screen that will contain 2 extra meters for the AUX menu.

The large time code slate looking icon at the top left corner of the screen is utilized to enter the scene and take menu. It will also show time code when Deva is utilized with Cameo. Click on this icon to enter the menu. Cameo has no time code capabilities if not working with Deva. Utilizing other recorders will not allow time code to be displayed in this icon.

Clicking on the Deva, EQ, compressor, delay, tape and auxiliary icons will open up each menu respectively.

The battery indicator at the bottom left corner of the screen will show the condition of the internal Cameo battery only. If the Cameo is running on external power this indicator will not register.

Clicking on the dot located to the left of the word bits or rate will change each function respectively. The cursor must be directly over the dot as a safety precaution.



Auxiliary menu:

This menu is utilized to control and display bus assignments inside Cameo. The function of each position of the menu varies from position to position depending upon the input channel and output bus positions.

Output buses 1 to 6:

Using the six bus assign switches on the control panel will select which input feeds the six output buses. The position of the switches will be displayed on the auxiliary menu matrix. When a bus switch is in the down position the corresponding assignments will be off. When the switch is in the center position the input channel will be applied to the output bus utilizing the fader level as well as the variable knob level for that channel. When the switch is a number of in the top position the input channel will be applied to the output bus with only the fader level being active. The six output modes are indicated by the symbols "X" for post fader, "V" for variable and "P", for pre fader. If a line appears over the letters X,V+P, it indicates the selection is phase inverted.

All switches, which affect bus assignments, are all cross-faded. This effect can be clearly demonstrated by switching on tone on mixer and switching the headphones bus assignments on and off.

To assign the input channel to an output bus in the pre fader mode or phase invert modes for buses 1 to 6, the bus switch must be in the off position. Use the mouse to click on the corresponding position in the aux send display to put the channel in the pre fader send mode. When a channel assignment is in this mode the corresponding switch on the Cameo control panel will not be active. The mouse must be used to remove the channel from the premium fader mode in order to restore switch activity.

Output buses aux 1 aux 2, and boom:

To assign an input channel to these buses use the mouse to click in the desired assignment location. By repeatedly clicking on the location the input channel can be assigned to the output bus in the post fader variable or six fader modes.

Aux input:

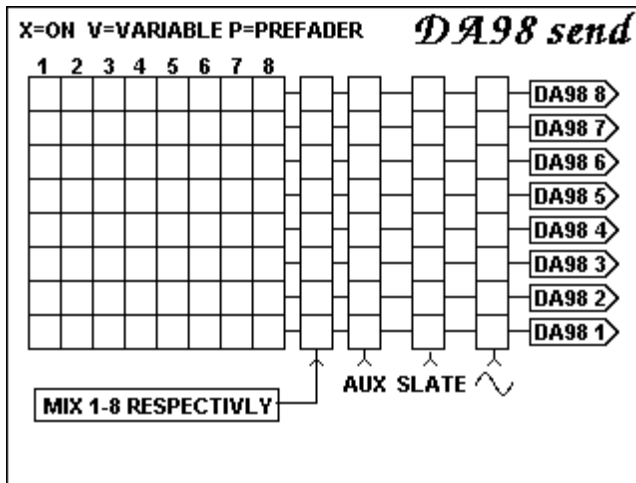
The auxiliary input can be assigned to any of the Cameo's outputs. The only selection type possible is pre fader. This is due to the fact that there is no physical fader for this input. It is important to note that the auxiliary input is a line level analog input only. The aux input level in the setup menu is used to trim these inputs.

Slate Mic input:

The assignment of the slate input is always pre fader as there is no physical fader for this input. Click on the output bus positions in the slate column to select which outputs the slate Mike will feed when the slate switch is activated. The slate mic can be internal or external depending on the position of the slate mic switch.

Switches F1 F2 F3 and F4:

In the auxiliary send menu, these buttons can be used in the event of a failure of the external mouse. F1 selects the auxiliary one output. F2 selects the auxiliary 2 outputs. F3 selects the com output. F4 selects the boom output. Use the "aux" key on each fader to select which of the input channels the function keys will select.

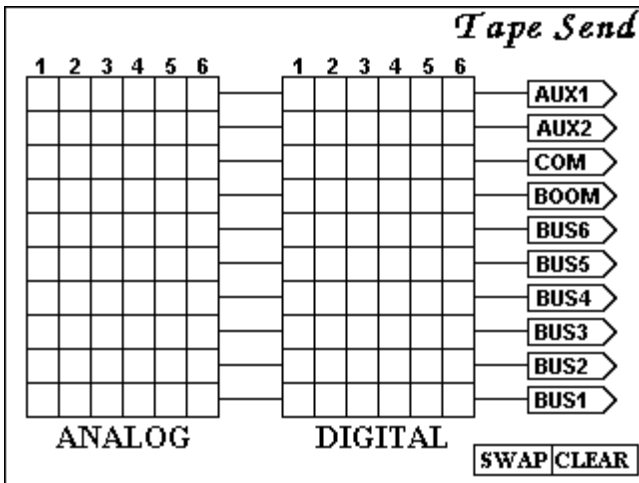


DA 98 send:

The DA 98 send menu is used to select which inputs and bus outputs are to be routed to the AES direct output connector. When inputs are routed to the output, they can only be routed one at a time. For example, if input No. 1 is routed to output 1, it is the only input that can be routed to this output. It can be routed either post fader, pre fader or variable.

If a mix bus output is routed to the DA 98 outputs, they must be routed in a one to one fashion. For example, mix bus output 1 can only be routed to DA 98 output No. 1. Auxiliary input, slate input and tone could also be mixed in DA98 output.

Utilize the mouse to click on the selected Cross-points to route inputs to the bus output.



Tape send:

The tape send menu used to send tape return channels to the mix busses. Click on the "TAPE" icon in the home menu to open the menu. This function is useful when dubbing from one record deck to another or to utilize extra tape return inputs as mixer input channels. If not in use be sure that all selections are deselected as this menu can cause feedback and unwanted mixing which can cause a problem during production. A single selection clear all, and a swap function have been provided in the menu located at the right bottom of the screen.

Utilize the mouse to click on the selected Cross-points to route inputs to the bus output.

<i>EQ</i>	MEM1	MEM2	MEM3	<i>3 Band</i>		Lvl	<i>Lo</i>
	MEM4	MEM5	UNITY	STORE	Fq		
+12 +	+	+	+	+	+	Q	
+6 +	+	+	+	+	+	Ty	
0 +	-	+	-	+	-	Lvl	<i>Mid</i>
-6 +	+	+	+	+	+	Fq	
-12 +	+	+	+	+	+	Q	
						Ty	
30	100	350	1K	5K	20K	Lvl	<i>High</i>
<i>Notch 1</i>	<i>Notch 2</i>		<i>Hp</i>			Fq	
Freq	Freq		Freq			Q	
Q	Q		Q			Ty	

EQ:

To enter the EQ menu press the EQ key on one of the eight faders. If the EQ key pressed is the current EQ channel the EQ menu will then appear. Alternately, the EQ icon may be clicked on the home menu to enter the EQ menu.

The EQ menu is utilized to control and view the EQ for a specific channel. Its number indicates the channel under control, which is located directly to the right of the EQ symbol. 3 band parametric, high pass, notch1 and notch2 filters are controlled and displayed in this menu. The enable switches for each filter in this menu are located on each of the 8 faders.

To select the parameter to control, use the mouse to click on that parameter. A "<" symbol will then indicate the parameter is ready to be adjusted. Using the soft knob on the control panel located next to the function keys adjust the parameter, which is selected. If the mouse is not available for parameter selection, the "more" key may be utilized to step through each of the available parameters. If the filter to be adjusted is enabled, the EQ graph should change when the soft knob is adjusted. The status of each of the filters is indicated directly to the right of the filter name in the menu.

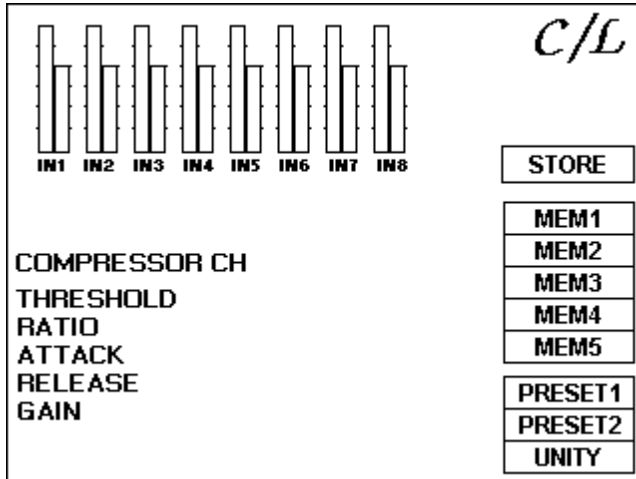
All the filters available to a channel may be engaged at the same time.

The three parametric EQ filters can be adjusted utilizing the three dedicated knobs on the Cameo control panel labeled low mid and high. The EQ menu need never be activated for this adjustment to be utilized. Simply press the EQ button on the channel to be controlled. If the EQ menu is active, utilizing these controls will reflect in the EQ menu with numeric representation as well as change to the EQ graph, provided the filter is enabled.

Utilizing any EQ filter does not change the delay of the audio through Cameo. This allows the audio to maintain constant phase through the system.

At the top of the EQ menu are five EQ memories. These memories can be utilized to store the EQ for a favorite microphone or setting. Each of the five memories is available to each of the channels in Cameo. To store to a memory, click on the store icon. An asterisk will then appear to the left of the word Store. Then click on memory position for the EQ to be stored. The EQ is now available to all mixer channels. Clicking on the unity icon will set the channel back to the unity settings.

Clicking on the EQ icon will return the Cameo to the home menu.



Compressor limiter:

Cameo has a full function compressor limiter on each of the eight channels. Gain reduction meters are located directly to the right of the eight input meters. To utilize the compressor, enable the compressor switch on the appropriate fader. The compressor switch is currently a three-position switch. However, position one and two are equivalent. Use the mouse or the More key to select parameters to adjust. As in the EQ menu, 5 compressor memories are available.

The compressor is digital and is located in the mixer. It will have no effect on audio that is clipping the input of the A to D converter. The compressor is typically used to obtain a more uniform output level and to stop clipping internally to the digital mixer. If the input signal is clipping, reducing the input gain on the channel is the only way to end the distortion. Do not use the compressor to accomplish this function. Unlike an analog mixer, Cameo's dynamic range will allow the lower mix of input audio. When using the compressor it is a good idea to have the fader higher than the zero mark on the console. This will allow for compression of the channel output while the console input is not in the range of input clipping.

Monitoring:

Cameo contains an extensive monitoring section. There are six three position bus switches located in the monitoring section on the right side of the control panel. When the mono stereo switch is in the mono position, selecting a bus to monitor either left or right will apply the audio to the headphones in a mono configuration for the selected bus. When in the stereo mode, the bus switches will select headphone audio left or right respectively.

The mix bus/recorder switch is utilized to quickly monitor the output of Cameo or the tape return from a digital or analog audio recorder. When in the mix bus position, the switch will route the output of Cameo mix buses to the headphones. When in recorder position, the digital or analog tape return inputs will be routed to the headphones. Monitor switches aux 1 and aux 2 will add the aux outputs to the monitor mix in a mono configuration only. MS decode will invert the even busses to the headphone mix for proper decode.

The headphone volume pot will adjust the output level to both of the headphone outputs simultaneously. **Warning: Only set the headphone volume pot as high as necessary to monitor the audio correctly. Misuse of the headphone volume pot can result in excessive headphone output level if multiple buses are monitored at the same time.**

Boom and COM output:

These two outputs operate in an identical manner. When the com or boom switches are operated, the slate mic will be routed to the appropriate output. Note: The slate mic must be selected in the auxiliary send menu, to be routed to the com and boom outputs. The com and boom switches are located in the communications section of the console located in the lower right corner.

The boom out and com out knobs will adjust the output level for their respective buses.

In the auxiliary send menu, a mix of the 8 inputs can be configured for the com and boom outputs. When the com and boom outputs are utilized there are two modes in which they can operate. Entering this setup menu configures these modes. The two modes are mix and mute. In mix mode, the slate audio is added to the mix that is output. In the mute mode, the slate Mic will interrupt the mix being output.

Auxiliary output:

Cameo contains two auxiliary outputs. These outputs can be utilized in a variety of ways. If Cameo has an eight-bus requirement, the two auxiliary buses will serve as mix buses 7 and 8. If two extra com channels are needed, there are two auxiliary talk switches located in the communications section that will allow the aux buses to function in this way. The aux bus output level is controlled by the aux out level pots on the Cameo control panel.

Tone oscillator:

The three-position switch in the communications section activates the tone oscillator. The down position is a spring loaded momentary type action. The up position is a continuous output action. The tone frequency is set utilizing the tone frequency switch in the communications section. There are three frequencies available to be output. One Khz is available of the center position of the frequency switch. The other two positions may be varied utilizing the Setup menu frequency control parameters. The tone level has been set to a reference level of -20 dB digital.

Recorder remote control:

The record stop switch is located on the right lower corner of Cameo. This switch will output a serial command to Deva to initiate record or stop functionality. It also controls four contact closure outputs. Two are normally open and two are normally closed. These outputs can be connected to external recording devices. When in the record position, the blinking red LED will signal the active state of the switch. It is not a confirmation of actual record functionality in the recording device.

Power switch:

The power switch is a three-position type. The down position will power Cameo from its internal 12-volt lead acid battery. The up position will power Cameo from an external twelve-volt power supply.

Microphone pre-amps:

Cameo's microphone pre-amps will support a wide variety of microphones. 12 volt and 48-volt phantom power as well as 12 volt T power is provided. When utilizing the microphone with Cameo, it is always best to try to keep the gain pot in the fully clockwise position. Also, do not utilize the plus 10/plus 20 gain switch unless absolutely necessary. Following this procedure will ensure as great a dynamic range as possible. When using unpowered microphones be sure that the phantom/T power switch is in the center position. The 12-volt/48 volt switch on the microphone pre-amps only apply to phantom microphone powering. **Note: When a phantom power mic is 12 to 48 volt capable , always use the 12v position on the Cameo. The microphone pre-amp for a channel is only active when a channel is in analog mode and the sine wave symbol is selected at the top of the input meter.**

Line input:

The line input will accept any level from + 8dB to - 4dB. To set up the line input, output tone from the device feeding the line input, use the gain knob to set the input level two 0 dB. Note: To accept a line input the input symbol at the top of the input meters must be set to a sine wave. Also, the analog/ digital switch located between each stereo input on the control panel must be set to the sine wave position. This switch will only effect the odd channels.

Digital inputs:

Each of the eight inputs may be switched from analog to digital in stereo pairs. There are two places this must be done for each of the stereo channels. To switch a channel use the mouse to click on the square wave/sine wave symbol located at the top of the input meters on the Cameo display. A square wave will appear to indicate a digital input. A sine wave will appear to indicate an analog input. Also, the input switch located between each stereo pair on the control panel must be thrown. The switch on the control panel actually routes the audio connections to the appropriate circuitry. This is done to minimize any cross talk between analog and digital circuitry.

Slate microphone:

The slate microphone can be internal or external. The switch is located next to the internal microphone at the top right of the control panel. If an external slate microphone is utilized, it must be a balanced dynamic type. The mic gain pot associated with the slate microphone will control the gain for the internal as well as external slate microphone. The external slate microphone is connected at the rear of Cameo through a dedicated XLR connector.

Faders:

Cameo's eight faders will adjust the level of the eight input channels. Each fader has a range of infinity to plus 12 dB. It is best when setting up an input channel to keep the fader at the 0dB position. This will allow for gain and attenuation to be added during the mixing process. All audio transitions are de-zipper. As the fader operates in the digital domain, fader distortion is not possible.

Variable Knob:

This knob located on each of Cameo's 8 faders is used for 2 different functions, Variable and Pan. The function is selected in the Setup menu under the headings "CH1-8 trim". In variable mode, the variable pot will act as an additional fader on that channel if the bus is being fed with a variable level selected. If set to the pan mode the variable pot will pan the channel between even and odd busses. The pan mode range is +/-12 dB. Use the bus select switches to fully disconnect a channel from a bus.

Cameo mixing 101:

Mixing with Cameo is different than mixing on the traditional analog mixing console. With Cameo the critical factor is keeping the input level in an acceptable range. The input meters are essential in this task. When mixing audio that essentially has a limited dynamic range, the input level meters should be kept peaking between 0dB and +10dB. If the dynamic range of the input audio were greater than normal, peaking at a level of -10 to 0dB would be appropriate. Due to the wide dynamic range of Cameo, peaking at this level will not cause a significant increase in the noise floor of the recorded audio.

Each of Cameo's outputs is available as an analog and digital signal simultaneously. If a problem is encountered with either output, the other can be utilized as a substitute.

When Cameo is used with an external digital recorder, that recorder must use Cameo's digital output as a reference to record the audio. When listening to tone through the digital tape return of Cameo, the tone should be completely free of distortion. If it is not, check the reference mode of the recorder.

Sample rates:

Cameo is designed to operate from multiple reference frequencies. Currently the internally generated reference frequencies available are 44100, 48000 and 48048. If Cameo is externally referenced any sample rate frequency from 32 Khz to 48 Khz can be accommodated.

Sample rate conversion:

Sample rate conversion is utilized when inputs to Cameo cannot be locked to Cameo's internal sample rate frequency. Sample Rate conversion is enabled for each input stereo pair in the setup menu. Note: Sample rate conversion is not available at this time.

Connections

GPI I/O Connector DB25 Female

<u>PIN</u>	<u>FUNCTION</u>
13	GPI 4 IN
25	GND
12	GPI 3 IN
24	GND
11	GPI 2 IN
23	GND
10	GPI 1 IN
22	GND
9	MIDI THRU A
21	MIDI THRU B
8	+5 VOLTS
20	MIDI TXA
7	MIDI TXB
19	MIDI RXA
6	MIDI RXB
18	GND
5	GND
17	GPI 4 NC
4	GPI 4 NC
16	GPI 3 NO
3	GPI 3 NO
15	GPI 2 NC
2	GPI 2 NC
14	GPI 1 NO
1	GPI 1 NO

AES MIX OUT / AES TAPE RETURN 1-6 DB25 FEMALE

<u>PIN</u>	<u>FUNCTION</u>
13	TAPE RET 1,2 +
25	TAPE RET 1,2-
12	GND
24	TAPE RET 3,4 +
11	TAPE RET 3,4 -
23	GND
10	TAPE RET 5,6 +
22	TAPE RET 5,6 -
9	GND
21	N/C
8	N/C
20	GND
7	MIX OUT 1,2 +
19	MIX OUT 1,2 -
6	GND
18	MIX OUT 3,4 +
5	MIX OUT 3,4 -
17	GND
4	MIX OUT 5,6 +
16	MIX OUT 5,6 -
3	GND
15	AUX OUT 1,2 +
2	AUX OUT 1,2 -
14	GND
1	N/C

4 PIN POWER XLR

<u>PIN</u>	<u>FUNCTION</u>
1	CAMEO GND
2	BATTERY GND
3	CHARGE INPUT
4	CAMEO +12 IN

3 PIN AUDIO XLR

<u>PIN</u>	<u>FUNCTION</u>
<u>1</u>	<u>GND</u>
<u>2</u>	<u>AUDIO +</u>
<u>3</u>	<u>AUDIO -</u>

RS422 I/O CONNECTORS

DEVA 9 PIN FEMALE

<u>5</u>	<u>N/C</u>
9	N/C
4	GND
8	RX-
3	RX+
7	TX+
2	TX-
6	N/C
<u>1</u>	<u>N/C</u>

COM 9 PIN FEMALE

<u>5</u>	<u>N/C</u>
9	N/C
4	GND
8	RX-
3	RX+
7	TX+
2	TX-
6	N/C
<u>1</u>	<u>N/C</u>

ANALOG TAPE RETURN

NOTE: CHANNELS 1 AND 2 ARE IDENTICAL TO THE 2 XLR TAPE RETURN INPUTS

<u>PIN</u>	<u>FUNCTION</u>
13	TAPE RET 1,2 +
25	N/C
12	N/C
24	N/C
11	N/C
23	N/C
10	GND
22	TAPE IN 6-
9	TAPE IN 6+
21	GND
8	TAPE IN 5-
20	TAPE IN 5+
7	GND
19	TAPE IN 4-
6	TAPE IN 4+
18	GND
5	TAPE IN 3-
17	TAPE IN 3+
4	GND
16	TAPE IN 2-
3	TAPE IN 2+
15	GND
2	TAPE IN 1-
14	TAPE IN 1+
1	GND

AES DIRECT OUTS

13	OUT 1-2+
25	OUT 1-2-
12	OUT 3-4+
24	OUT 3-4-
11	OUT 5-6+
23	OUT 5-6-
10	OUT 7-8+
22	OUT 7-8-
9	CLK
21	GND
8	GND
20	GND
7	GND
19	N/C
6	N/C
18	N/C
5	N/C
17	GND
4	N/C
16	GND
3	N/C
15	GND
2	N/C
14	GND
1	N/C

INSTRUCTIONS TO REPLACE SOFTWARE

1. Turn off power.
2. Remove the (8) Philips black screws from the top cover.
3. Pull out the (9) black knobs; the ones that are used for input gain control.
4. Remove the (9) nuts holding the pots. (Size of driver is HS 14 7/16).
5. Lift the top cover of the Cameo and on the bottom board replace the two chips that are labeled Cameo O & Cameo 1. Follow the notch on the socket as your reference (U8 is Cameo O & U7 location Cameo 1).
6. Put the cover back on to Cameo. Put back all the nuts and new knobs.
7. Hold down the more key (on the soft control) while powering the Cameo with the new software.
8. Please return all old knobs and old software.
9. If you have any questions or problems please contact us at 201-652-7878.