

StudioComm

Model 60A Central Controller and Model 61 Control Console

User Guide

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This User Guide is applicable for serial numbers:
Model 60A 00343 and later
Model 61 00151 and later

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Foreword

I am pleased to present the StudioComm series of products. As both president and owner of Studio Technologies, I take a very personal approach when designing products. Getting older has increased my appreciation of the more subtle things in life—be they a part of nature or the nuances contained in a well-designed piece of electronic equipment. Do the technical and operational aspects of a product work together to “feel” right? A Studio Technologies’ design is ready to go only when I am completely satisfied. My entire focus for the StudioComm series was to make a system that you’d really enjoy using, and one that would perform reliably for years. I hope you share my enthusiasm.

Many fine people worked toward making the StudioComm “happen.” Mitch Budniak (ace consulting engineer) designed many of the circuits. Jim Cunningham contributed to the analog design. Carrie Loving provided engineering support. Al Lux designed the printed circuit boards. Fred Roeck performed the mechanical design. Joe Urbanczyk coordinated the performance testing.

Many thanks to Bob Tjarks, sales manager at Gand Music & Sound, Northfield, Illinois. Bob brought to my attention the need for a product to serve digital audio workstations. His product idea evolved into the StudioComm series. Additional thanks to Timothy Powell of Metro Mobile Recording, Glenview, Illinois, who provided his excellent ears when issues of sonic quality arose. His extensive field and studio experience was extremely helpful in keeping me on the audio “straight and narrow.”

Studio Technologies is receptive to your comments and questions. Please contact me via E-mail—you can find the address at www.studio-tech.com—I’d like to hear from you.

Sincerely,

Gordon K. Kapes
President

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Introduction

The Model 60A Central Controller, along with the companion Model 61 Control Console, are members of the StudioComm family of products. The Models 60A and 61 are specifically designed to work in conjunction with digital audio workstations to provide routing, monitoring, and communications functions. Features include control room monitoring, dub (copy) output, an integrated headphone cue system, and auxiliary switcher. Several of the functions can be configured, allowing the performance to be tailored to a specific installation.

The Model 60A Central Controller is an update of the Studio Technologies' popular Model 60 Central Controller. The Model 60A implemented several changes to allow support of more applications. Specifically, the insert switcher section contained in the Model 60 was removed. While a nice idea at the time of the original design, it proved to be a less-than-stellar feature. It was hard to configure, confusing to use, and generally lame! The Model 60A revised the insert switcher's switches and jacks to create a very nice auxiliary switcher section. This allows a wide range of input and output routing applications to be implemented.

What This User Guide Covers

This User Guide is designed to assist you when installing and using the Model 60A Central Controller and the Model 61 Control Console.

System Overview

The StudioComm system is designed to provide control over monitor and dub sources, supports a passive input or output switcher function, and includes a headphone cue system that allows communications from the control room to the talent. A complete StudioComm system consists of a rack-mounted controller and a desktop control console.

The Model 60A Central Controller and the Model 61 Control Console work together to provide a simple, convenient operator interface, extensive features, and excellent sonic performance. The units interconnect using a standard 5-pin MIDI-style cable. Switches and controls on the Model 60A's front panel allow access to many operating parameters, including selecting control room and dub input sources and setting the level of the headphone cue system. The Model 61 Control Console places the most important controls at the operator's finger tips. These include the control room level potentiometer and monaural button, as well as the cue microphone and enable button.

System Features

Stereo Line Inputs

The Model 60A contains four stereo line-level inputs which are compatible with both balanced and unbalanced signals. Each input is independently configurable for a nominal input level of -10dBV or $+4\text{dBu}$. Analog audio outputs from digital audio workstations, DAT recorders, video editing equipment, CD players, cassette decks, or virtually any analog source can be connected.

Control Room Output

A stereo line-level output is provided for connection to a power amplifier associated with control room monitor loudspeakers. Switches on the Model 60A's front panel allow selection of one or more of the four input signals as the control room source(s). A smooth-feeling rotary control on the Model 61 Control Console allows the control room level to be adjusted. As a production or mixing aid, the Model 61 contains a button that activates the control room monaural (L+R) function.

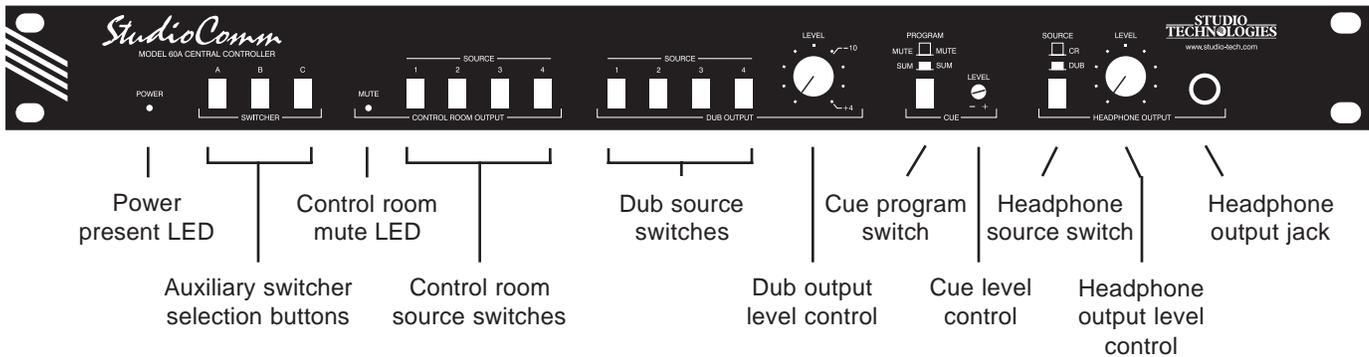
For broadcast or other special application, an external switch or contact closure can be connected to the Model 60A, allowing

the control room output to be fully muted as required. An LED indicator on the Model 60A's front panel lights whenever mute is active. A power up/power fail detection function is associated with the mute circuit. This limits the chance of transients being present in the control room output, protecting the control room power amplifier and associated loud speakers.

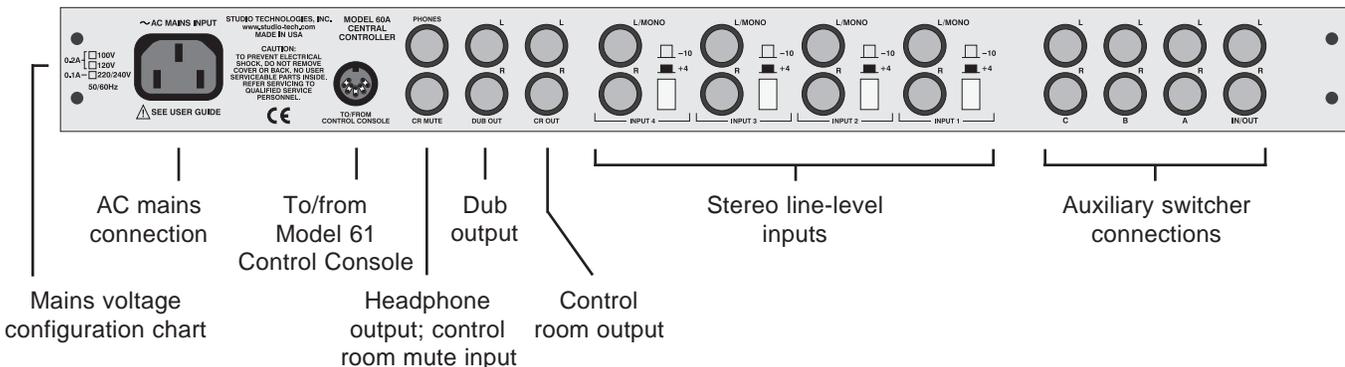
Dub Output

A stereo line-level output is provided for dub (copy) use. It can also serve as a general-purpose output, useful in many applications. Switches on the front panel of the Model 60A Central Controller allow

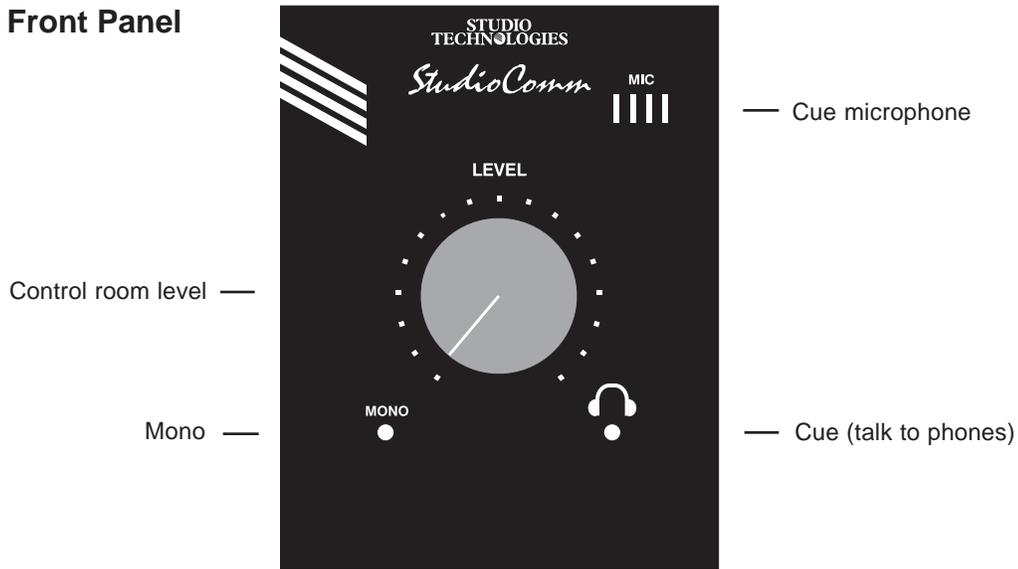
Model 60A Front Panel



Model 60A Back Panel



Model 61 Front Panel



Model 61 Back Panel



|
To/from Model 60A
Central Controller

selection of one or more of the input signals as the dub source(s). For flexibility, a rotary control allows the nominal output level to be adjusted. Turned fully clockwise the output is set for +4dBu, with a calibration mark also shown for a nominal -10dBV output.

Headphone Monitoring

The Model 60A contains a stereo headphone output section that is capable of driving one or two pairs of high-impedance headphones. With acoustically efficient

headphones, such as those from Sony, you can easily reach sonic nirvana! On the Model 60A's front panel is a headphone output level control and a source selection switch. The switch allows either the source(s) selected for the control room or the source(s) selected for the dub output to be sent to the headphones. For flexibility, headphone output jacks are provided on both the front and back panels, with separate output circuits driving each jack.

Cue (Talk to Phones)

The Model 61 Control Console contains an internal microphone and enable button that is used to send voices “cues” to the talent by means of the headphone outputs. To improve voice clarity and prevent acoustic feedback the control room output level automatically attenuates (dims) upon activation of the cue microphone. A control on the Model 60A’s front panel allows adjustment of the voice level. Also on the Model 60A’s front panel is a switch that selects whether the voice cue will replace (interrupt) or add (sum) with the normal headphone program source(s).

Auxiliary Switcher

The auxiliary switcher section allows a wide variety of installer-implemented functions to be created. Compatible with stereo, balanced line-level audio signals, the switcher is entirely passive with no active electronics. Possible applications include a 1-input/3-output speaker selector or a 3-input/1-output source selector.

Installation

In this section you will be installing the Model 60A Central Controller in an equipment rack. Input and output connections will be made using the Model 60A’s multitude of jacks. A location will be selected for the Model 61 Control Console, and it will be connected to the Model 60A. AC mains power will be connected to the Model 60A.

System Components

The StudioComm shipping carton contains a Model 60A Central Controller, Model 61 Control Console, 5-conductor MIDI-style

cable, User Guide, and warranty card. Units destined for North America and Japan are shipped with an AC mains cord. Your dealer or distributor will provide an AC mains cord for non-North American destinations.

Mounting the Model 60A

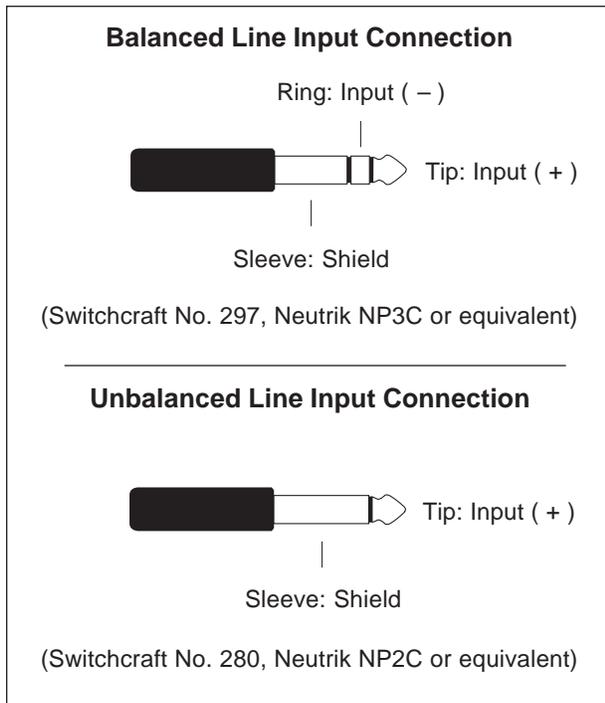
The Model 60A requires one space in a standard 19-inch (48.3cm) equipment rack. Select a location near where the Model 61 Control Console will be located. A 10-foot (3.1m) cable is provided to connect the Model 60A to the Model 61. You can supply a longer cable, however 50 feet (15.4m) is the recommended maximum length. It is desirable to locate the Model 60A to allow easy access to both the front and the back panels. The back panel contains the input connections, most of the output connections, and the input sensitivity switches. The front panel contains many switches, controls, and indicator lights. In addition, the front panel also contains one of the headphone output connectors. The Model 60A is secured to the equipment rack using two mounting screws per side.

Audio Inputs and Outputs

The Model 60A’s line-level audio input and output connections are made using ¼-inch phone jacks. For reliable audio interconnection, the plugs you use must comply with industry standard RS-453. Switchcraft No. 297, Neutrik NP3C, or equivalent will work correctly.

Stereo Line Inputs

The Model 60A provides four stereo line-level inputs. Each input is electronically balanced and can be individually configured for compatibility with +4dBu or –10dBV signal levels. Switches on the



Model 60A's back panel allow the input sensitivity to be changed at any time.

Prepare the mating connectors (plugs) so that tip is signal high (+ or hot), ring is low (- or cold), and sleeve is shield. With an unbalanced source connect the tip to high (+ or hot), and both the ring and sleeve to shield. If connecting to an unbalanced source in this manner results in hum or noise, connect tip to high (+ or hot) and ring to shield; leave the sleeve unterminated.

As an installation aid, a connection made only to an input's L/Mono jack routes the signal to both the left and right input circuitry. This allows a monaural signal to be utilized in a 2-channel mono format. If you wish to have a mono input connected only to the left input, simply insert an unterminated plug into the associated right input. This will break the "normal" connection that links the left and right input circuits.

Control Room Output

The Model 60A contains a stereo line-level output for connection to an audio power amplifier. This audio amplifier serves a pair of loudspeakers that are located in the control room. Of course the control room output can also be connected to loudspeakers that contain integral power amplifiers. The output is electronically balanced and capable of driving loads of 600 ohms or greater. In most situations the best performance will be obtained if the audio amplifier's or amplified speaker's input sensitivity is set to near maximum. Refer to the Technical Notes section for details on setting amplifier sensitivity.

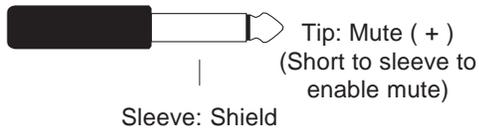
Prepare the mating connectors (plugs) so that tip is signal high (+ or hot), ring is low (- or cold), and sleeve is shield. To connect to an unbalanced load connect the tip to high (+ or hot), and both the ring and sleeve to shield.

Control Room Mute

In special applications, specifically on-air broadcast, it may be desirable to allow the control room output to be manually or automatically muted. This can serve two purposes: eliminating the need to remember to "turn down" the level control on the Model 61 Control Console, and providing a full mute of the control room output signal. The Model 61's rotary control gives a 70dB attenuation range, perfect for normal operation but not the full mute that may be required when a "live" microphone is located adjacent to the control room speakers.

Access to the control room mute function is via a ¼-inch jack located on the Model 60A's back panel. Mute is enabled whenever the tip lead is shorted (connected)

Control Room Mute Connection



(Switchcraft No. 280, Neutrik NP2C or equivalent)

to the sleeve lead. Using a 1/4-inch phone plug, connect a normally open contact to the tip and sleeve. The contact must be capable of handling a current of 7 milliamperes at 15 volts DC.

Dub Output

The Model 60A contains a stereo line-level output which is intended for connection to a variety of analog audio devices. The dub output is electronically balanced and is capable of driving loads of 600 ohm or greater. With the input impedance of most audio devices being 10k ohms or greater, the dub output can easily drive 10 or more devices simultaneously.

Prepare the mating connectors (plugs) so that tip is signal high (+ or hot), ring is low (- or cold), and sleeve is shield. To connect to an unbalanced load connect the tip to high (+ or hot), and both the ring and sleeve to shield.

Headphone Output

The Model 60A contains headphone output jacks on both the front and back panels. For flexibility separate amplifier circuits support each jack; connecting to the jack on the front panel doesn't affect the jack on the back and vice-versa. The simplest way of using the headphone

output is simply to plug a pair of headphones into the front panel jack. In other applications it may be convenient to wire connector panels located in a control room, studio, or voice-over booth to the back-panel headphone jack.

Using a 1/4-inch phone plug, the headphone output should be wired with tip as left channel, ring as right channel, and sleeve as common/shield.

The sonic quality of the headphone outputs are such that they are suitable for use as additional unbalanced line-level outputs. If it is anticipated that the installation may benefit from this ability it may be helpful if the back-panel headphone jack is wired into jacks on a patch bay. In this way the headphone output can be rapidly connected to other pieces of equipment.

Auxiliary Switcher

The hardest part about connecting to the auxiliary switcher section is deciding how it is going to be used. It's really just a set of 1/4-inch 3-conductor jacks and three push-button switches. No active electronics are associated with the switcher section. It is configured to handle stereo, balanced audio signals so that a wide range of professional and semiprofessional audio sources can be routed. It's also perfectly acceptable to run low-voltage control and data signals through the auxiliary switcher. Just ensure that no crosstalk is generated into the Model 60A's other audio signals. Interested parties are encouraged to review the auxiliary switcher portion of the Model 60A's block diagram, included at the end of this user guide. A quick glance will be worth many, many words. (Possibly 1000 but we haven't counted!)

The best way to understand how to use the auxiliary switcher sections is to describe several possible applications. One excellent application would be to allow the Model 60A to support up to three sets of control room monitor loudspeakers. The auxiliary switcher would be used to select, at line level, which amplifier(s) or amplified speaker(s) are receiving the Model 60A's control room signal. This is almost trivial to accomplish. Start by preparing two ¼-inch 3-conductor patch cables, each containing about 24 inches of cable. Plug one end of each cable into the control room output jacks. The other ends will plug into the auxiliary switcher's in/out jacks. Ensure that left out is plugged into left in/out; right out to right in/out. Now connect the inputs of the amplifiers, or amplified speakers, to the auxiliary switcher's jacks labeled A, B, and C.

Another possible application would be to use the auxiliary switcher as a 3-input/1-output source selector. In this case the sources would be connected to the jacks labeled A, B, and C. The output would be connected to the auxiliary switcher's in/out jacks. That's all there is! This implementation could be used to support external equipment having nothing to do with other Model 60A functions. Or, it could be used to increase the number of line level inputs connected to the Model 60A from four to six. This may be useful if extra sources are required for use by the control room, headphone, and dub out functions. In this case the auxiliary switcher would serve as a pre-selector for one of the four line inputs. The in/out jacks would be connected to the selected line input, most likely input 4. The additional sources would then be connected to the jacks labeled A, B, and C. Obviously this implementation

is not without compromises. For example, all input sources connected to the auxiliary switcher section must have the same nominal level. Also, only one of the sources connected to the auxiliary switcher should be selected at any time. But in certain cases the trade-offs will be well worth having the additional inputs. Life is all about compromises!

A few technical details about the auxiliary switcher section may be helpful. As previously discussed, the eight jacks and associated switches are designed to handle stereo, balanced audio signals. Both the audio + and audio – signals for both the left and right channels are independently switched. Being passive, there is no specified nominal signal level. As with all the other jacks associated with the Model 60A, standard ¼-inch plugs are used to interface with the auxiliary switcher. Connections should be made so that tip connects to audio high (+ or hot), ring to audio low (– or cold), and sleeve to shield. It's important to note that the sleeve connections on all eight jacks connect to the chassis ground of the Model 60A. This is consistent with all the other jacks on the Model 60A.

To minimize the chance of noise pickup, the auxiliary switcher contains internal termination resistors. In most cases the factory-selected implementation will be perfectly acceptable. However, in special cases a change may be warranted. Please refer to the Technical Notes section of this guide for additional information.

Connecting the Model 60A to the Model 61

A standard 5-conductor MIDI-style cable is used to connect the Model 60A to the Model 61; a cable is included with each

system. Just connect the cable between the female 5-pin DIN-type connectors on the back panels of both the Model 60A and 61, and viola, you're done.

Note: If you require a longer cable, be certain to buy a MIDI-type cable that has all 5 pins wired. If they aren't all connected, the Model 61 will not operate. For best performance, the cable that connects the Model 60A with the Model 61 should be limited to 50 feet (15.4m).

AC Mains Power

The Model 60A is internally configured to operate from either 100, 120, or 220/240V, 50/60Hz. In most cases, units shipped to North America are factory selected for 120V operation. Units bound for Japan are selected for 100V, while our friends "down under" and in Europe receive units set for 220/240V. Before connecting the Model 60A to mains power, check that it is configured to match the local mains voltage. Look on the back panel, adjacent to the power entry connector, for the configured voltage(s). Note that an incorrect configuration could seriously damage the unit. Should it be necessary to change the unit's operating voltage it must be performed only at the factory or by an authorized service technician.

The Model 60A uses an IEC standard connector to mate with the AC mains cord. The wire colors in the AC mains cord should conform to the internationally recognized CEE color code and must be wired accordingly:

<u>Connection</u>	<u>Wire Color</u>
Neutral (N)	Light Blue
Line (L)	Brown
Protective Earth (E)	Green/Yellow

Safety Warning: The Model 60A does not contain an AC mains disconnect switch. As such the mains cord plug serves as the disconnection device. Safety consideration requires that the plug and associated outlet be easily accessible to allow rapid disconnection of mains power should it prove necessary.

As soon as mains power is applied, the Model 60A's power present LED will light.

Configuration

Once the Model 60A and Model 61 have been installed, the only configuration issue you need to address is input sensitivity.

Input Sensitivity

Input sensitivity configuration switches are associated with each of the four stereo line-level inputs. For correct Model 60A operation the switches, located on the back panel directly adjacent to the input jacks, must be correctly set. For an input signal with a nominal operating level of -10dBV set to switch to the out position, for a $+4\text{dBu}$ input signal set the switch to the in position.

Operation

Now that you've installed and configured the system, you're ready to go. You should find operation very easy.

Status LEDs

There are two LEDs on the Model 60A Central Controller's front panel. The power

LED is lit whenever AC mains power is applied to the unit. The control room mute LED is lit whenever the mute function is active. For normal control room speaker operation the mute LED must not be lit.

There are two LEDs on the Model 61 Control Console. One indicates the status of the control room mono function, the other the status of the cue (talk to headphones) function.

Auxiliary Switcher

On the left side of the front panel are three switches labeled A, B, and C. These are part of the Model 60A's auxiliary switcher section. What action is associated with the switches depends on the specific installation. As a general-purpose set of connectors and switches, many different functions can be implemented by the installer. They might be serving as a speaker selector, input source selector, or performing some other interesting function.

Some general comments about using the switches may be helpful. Like the control room and dub select switches, one, two, or all three of the switches can be simultaneously selected. It's also possible to have no switch selected; simply "tap" a button that is currently selected to release all the buttons.

Control Room Monitoring

Using the four push-button switches located on the Model 60A's front panel, one or more of the input sources can be selected for monitoring. The switches are such that you can simultaneously depress and "lock-in" two, three, or all four. Some practice may be required to get the "feel" of selecting multiple inputs. Circuitry in the Model 60A electrically sums (adds) the sources you select.

The control room output level is set using the rotary control ("pot") on the Model 61 Control Console. When the pot is fully counterclockwise the output is attenuated by approximately 70dB, not a full mute.

Whenever the cue (talk to phones) function is active the control room output level attenuates (dims) by approximately 18dB. This can prevent acoustic feedback and allows voice signals to be heard clearly.

The Model 61 Control Console contains a push-button switch to activate the monaural function. The switch is electrically set for latching operation; press once to active mono, press again to go back to stereo. An LED, located directly above the mono switch, displays mono status. The mono function sums (adds) the left and right source(s), drops the level 6dB (voltage), and sends the resulting signal to both the left and right control room outputs.

The Model 60A Central Controller allows the connection of a switch or relay contact to enable a control room output mute function. Whenever mute is active the control room output is effectively disabled, and the mute status LED, located on the Model 60A's front panel, lights. Note that when mute is active the control room level pot on the Model 61 is disabled.

Dub Output

Four push-button switches, located on the Model 60A's front panel, are used to select one or more of the input sources to be routed to the dub output. Circuitry in the Model 60A electrically sums (adds) the sources you select.

A rotary level control ("pot") on the Model 60A's front panel is used to set the dub nominal output level. This allows the dub output level to be quickly set to match

the input sensitivity of the connected equipment. In the fully clockwise position the circuitry is unity gain. In the fully counterclockwise position the dub output is fully attenuated, allowing the pot to be used as an output “fader” for special applications. Markings on the Model 60A’s front panel identify where the rotary control should be set for nominal output levels of +4dBu and –10dBV.

Headphone Outputs

Warning: Protect your ears! The headphone outputs are capable of driving headphones to extremely high sound pressure levels. Hearing experts (along with common sense and your mother) advise against continuous extended play, especially at high levels.

A rotary level control on the Model 60A’s front panel is used to set the headphone output level. The “pot” sets the output level for the both headphone output jacks, front and back.

A push-button switch, located adjacent to the headphone level control, is used to select the headphone source. When the switch is set to the CR (control room) position the audio source(s) selected for control room monitoring are also sent to the headphones. The control room output level pot, mono button, and output mute function do not effect the headphone output. When the headphone source switch is set to the dub position the audio source(s) selected for dub are also sent to the headphones. The dub output level control does not effect the headphone output.

Cue (Talk to Phones)

The cue function allows voice cues from the control room to be sent to the headphone outputs. Using cue is quite simple; press the push-button switch on the Model 61 Control Console and start talking! Above the cue switch is a status LED and a graphic outline of a pair of headphones. The cue switch is set for momentary operation so you’ll need to press and hold the switch while you are talking to the headphone user(s).

A rotary level control (“trim pot”) on the Model 60A’s front panel is used to set the voice cue level relative to the normal audio level. Set the trim pot so as to give a comfortable level to the headphone user(s). Adjacent to the trim pot is a push-button switch that sets the cue operating mode. With the switch set to the interrupt position the normal audio signal going to the headphones is muted (interrupted) whenever cue is active. When the switch is set to the sum position the voice audio is summed (added or mixed) with the normal audio. In an on-air setting or an application such as foley, you’d want to use the sum position. In this way voice cues won’t inhibit the talent’s ability to hear themselves or other important program material. The interrupt mode is useful when you are not recording or broadcasting in a “real-time” setting and “loud” program material can make voice cues hard to hear.

Troubleshooting

Clicks in the Audio

As covered in the Configuration section of this guide, the four stereo line inputs can be configured for +4dBu or –10dBV operation. Setting an input for –10dBV, while

connecting an audio source with a +4dBu nominal level can lead to distortion (“clipping”) of the signal. In this fault condition the user might hear a harsh “clicking” sound in the audio, especially when peak levels occur in the program material. To remedy this problem simply use the appropriate switch on the Model 60A’s back panel to configure the input for +4dBu operation. The distortion will go away and the gain structure of the StudioComm system will be correctly established.

Technical Notes

Definition of Level—dBu and dBV

Whenever possible, Studio Technologies has opted to use the dBu designation as it seems to be quite rational. Using dBm was fine when all audio line outputs were terminated with 600 ohm loads. In this way it was easy to say that 0dBm is 1 milliwatt dissipated in the known load (i.e., 0dBm across 600 ohms will measure 0.775V). In contemporary situations an output is rarely terminated with 600 ohms; generally 10k ohms or higher. The dBu designation is better because it refers to dB referenced to 0.775V, with no reference to load impedance. This takes into account today’s audio scene where signals have a low source impedance, and a high input impedance. The dBu designation is becoming the standard for the professional audio industry.

The Model 60A Central Controller is designed to interface with audio signals that have nominal signal levels of +4dBu or –10dBV. You might wonder why dBV came into the picture. Most people don’t realize that equipment that utilizes “–10”

levels usually mean –10dBV, which is substantially different from –10dBu (–10dBV = –7.78dBu). The dBV designation is simply a different way of measuring signal level and is often used when dealing with portable or consumer audio equipment. The dBV designation refers to dB referenced to 1.0V, rather than dBu which refers to 0.775V.

“Hot” Disconnection of the Model 61 Control Console

Should you need to relocate the Model 61 while your StudioComm system is operating, there is no reason why you can’t disconnect the 5-conductor cable, move the unit, and then connect it again. No clicks, pops, or other noises will occur when the Model 61 is disconnected and then again connected.

Cue (Talk to Phones) Noise

During field trials of the Model 60A and 61 one item came up for discussion: “thumps” in the cue function. A brief discussion may be useful. The circuitry in the Models 60A and 61 that support the cue function is reasonably quiet, not adding appreciable “clicks, pops, or thumps.” However, mechanical noise being picked up by the Model 61’s microphone can be an issue.

If the cue button is pushed using a relatively light “touch” no objectionable noise will be generated; pressing the button with “gusto” will cause mechanical noise to be transferred into the microphone. While the Model 61’s microphone is of good quality, shock mounting it was not possible using a cost-effective method. The fact that the Model 61 is physically small and the button is relatively close to the microphone adds to the difficulty. (Note that most all recording consoles, both small and large, share

this condition.) So in conclusion, use a light touch on the button and everyone should stay reasonably happy!

Power Amplifier Input Sensitivity

Optimum StudioComm performance is obtained when the input sensitivity of the control room power amplifier, or amplified speakers, is adjusted to match the Model 60A's control room output level. With normal, but loud, listening levels you should find the level potentiometers on the Model 61 to be set to about 2 o'clock. If you find that you don't have to turn up the Model 61's control that high, reduce the input sensitivity of the power amplifier so you can operate at the 2-o'clock position. Most power amplifiers and amplified speakers have controls on their inputs to allow easy adjustment of their input sensitivity.

Slating Issues/Cue Audio to Dub Output

From the factory, voice cues are sent only to the headphone output. It was anticipated that this would be the most common use, specifically allowing personnel in the control room to talk to talent in a studio or voice-over booth. In some cases it may be desirable to have a "slate" function—sending a voice cue to an audio workstation or other recording medium. There is a means of achieving this by modifying the Model 60A to route the cue audio to the dub output. From the factory this is not implemented, but is as simple as having a qualified technician install two resistors into the Model 60A's printed circuit board.

After the modification, whenever the cue button is pressed on the Model 61 Control Console the voice audio will go out both the headphone and the dub outputs. The

limitation here is that you have to be careful of what is being routed through the dub output when you are voice cueing to the headphones, and vice versa; a voice cue to the phones is a voice cue to the dub! For details on implementing this modification you'll need a copy of the Model 60A schematic diagrams, available by contacting the factory.

Modifying the Back-Panel Headphone Output

Each headphone output, front panel and back panel, is driven by an independent output circuit. From the factory the same audio signal(s) connect to each output circuit. Provision has been made to allow the audio source for the back-panel headphone output circuit to be changed. The revised output will give flexibility for those rare applications that seem to so often arise! Once modified, the back-panel headphone output will act more like that of a line-level output. The modification choices are pre-level-control headphone audio or cue audio. The pre-level-control audio signal is the same source as the standard headphone audio signal, but is not effected by the front-panel level control. This implementation would be useful where an audio facility has an existing headphone amplifier system with level controls. The other choice, having cue audio as the source, would prove useful for specialized talkback or cueing applications, such as remote ISDN configurations. In this configuration, when the cue button on the Model 61 is active the microphone audio will be present on the back-panel headphone output. When the cue button is not pressed, no audio will be present on the back-panel headphone output jack.

For details on implementing these alternate routing scheme you'll need a copy of the Model 60A schematic diagrams, available by contacting the factory.

Auxiliary Switcher

The auxiliary switcher section allows a wide range of functions to be easily implemented. By designing the circuitry to be very universal, both input and output switchers can be configured. For added flexibility, termination connection points were added to the three switcher sections as well as to the in/out pair of ¼-inch connectors. These termination points are in the form of SIP sockets located on the Model 60A's printed circuit board. From the factory a general-purpose set of termination resistors are installed. Specifically, 10k SIP resistor packs are inserted into the SIP sockets. This is intended to minimize noise pickup in some implementations by preventing inputs from being presented with unterminated signals.

In detail, the terminations are configured such that the ¼-inch connector pairs A, B, and C are terminated with 10k ohms whenever their respective selector switch is not pressed. In effect, whenever a button is in the off (out) position, a load resistor is connected across each of its respective tip and ring connections. Interested parties should contact the factory, via E-mail, and obtain a copy of the Model 60A schematic. This will allow the exact implementation to be observed, as well as providing insight on how changes might be made to optimize the installation.

Model 61 Momentary/Latching Button Operation

From the factory the Model 61 is set to have the mono function change state

(latch) each time the button is pressed. The cue button is set for push to activate (momentary) operation. In most cases these operating modes will be appropriate. However, if you don't agree with our choices don't despair. In the Model 61's circuitry both functions can support momentary and latching operation. A qualified technician can remove a strap to make the mono function be momentary and/or add a strap to make the cue function latching. For details on implementing these changes you'll need a copy of the Model 61 schematic diagram, available by contacting the factory.

Control Room Mono Function

Many arguments were had while designing the control room monaural function. Was the function supposed to be a true mono function, sending the sum of left and right to a separate mono control room output? Was mono to be the sum of left and right sent to both left and right channels? What about level build up with phase coherent signals that are in both the left and right channels? After much head scratching it was realized that the mono function that most people are accustomed to is really a means of observing the character of a stereo mix, and not a "true" mono function. To observe the stereo image of a mix you need to sum the left and right signals, drop the level of the sum by 3dB, and send the result out the left and right outputs. This is what virtually all recording consoles implement, and is what the Model 60A does, too! We understand that specialized applications such as mastering and film mixing may require a more exotic mono function. Sorry, our hardware simply can't support it!

Specifications

Model 60A Central Controller

Audio Inputs: 4, stereo

Type: electronically balanced, direct coupled, compatible with balanced or unbalanced signals

Impedance: 24k ohms

Nominal Input Level: -10dBv or +4dBu, each input individually configurable

Common Mode Rejection: 100dB @ DC and 60Hz, 70dB @ 20kHz, 62dB @ 40kHz (typical)

Control Room Output: 1, stereo

Type: electronically balanced, intended to drive loads of 600 ohms or greater, balanced or unbalanced

Output Level (input source at nominal level): -68dBu at 0% rotation (fully counterclockwise), -50dBu at 25% rotation, -32dBu at 50% rotation, -14dBu at 75% rotation, +4dBu at 100% rotation (fully clockwise)

Maximum Output Level: +27dBu into 10k ohms, +26dBu into 600 ohms

Frequency Response: 10Hz-40kHz +0/-0.5dB

Distortion (THD+N): 0.02% (measured at 1kHz)

S/N Ratio: 87dB (20Hz-20kHz, ref. +4dBu output)

Mono: (L+R) -6dB (voltage) to both left and right outputs

Mute: output level drops to 90dBu upon application of contact closure. Contact closure must be capable of handling 7mA at 15 volts DC.

Dim: output level drops approximately 18dB when cue (talk to phones) active

Dub Output: 1, stereo

Type: electronically balanced, intended to drive balanced or unbalanced loads of 600 ohms or greater

Nominal Output Level: +4dBu, adjustable +0/-∞dB

Maximum Output Level: +27dBu into 10k ohms, +26dBu into 600 ohms

Frequency Response: 10Hz-40kHz +0/-0.25dB

Distortion (THD+N): 0.005% (measured at 1kHz)

S/N Ratio: 90dB (20Hz-20kHz, ref. +4dBu)

Headphone Output: 2, each jack (front and back) has separate output circuit

Compatibility: each output intended for connection to headphones with impedance of 100 ohms or greater

Maximum Voltage: 8Vpp, 100 ohm load

Auxiliary Switcher:

Applications: allows a 1-in/3-out or 3-in/1-out switcher function to be implemented

Switching: passive (no electronics in signal path)

Nominal Operating Level: not specified

Contact Material: silver

Contact Rating: 0.1A, 30V, maximum

Life: 10,000 operations per switch position

Connectors:

Audio and Control: ¼-inch, 3-conductor phone jacks

AC Mains: standard 3-blade plug, meets IEC 320 specifications

Fusing: 1

Type: 5 x 20mm time lag (Littelfuse 218-series or equivalent)

Rating: 0.200A for 100 and 120V mains power, 0.100A for 220/240V mains power

LED Indicators: 2, power present and control room mute

AC Mains Requirement:

100, 120, or 220/240V, ±10%, factory configured, 50/60Hz, 100-120V 0.2A maximum, 220/240V 0.1A maximum

Dimensions (Overall):

19.00 inches wide (48.3cm)

1.72 inches high (4.4cm)

6.65 inches deep (16.9cm)

Mounting: one space in a standard 19-inch (48.3cm) rack

Weight: 6.5 pounds (3.0kg)

Model 61 Control Console

Power Requirements: provided by Model 60A
Central Controller

Interconnection: 5-conductor MIDI-style cable,
10-foot (3.1m) cable supplied, maximum length 50
feet (15.3m)

Internal Microphone:

Type: electret condenser

Frequency Response: 3dB roll off at 200Hz

LED Indicators: 2, mono active and cue (talk to
phones) active

Dimensions (Overall):

3.2 inches wide (8.1cm)

2.2 inches high (5.6cm)

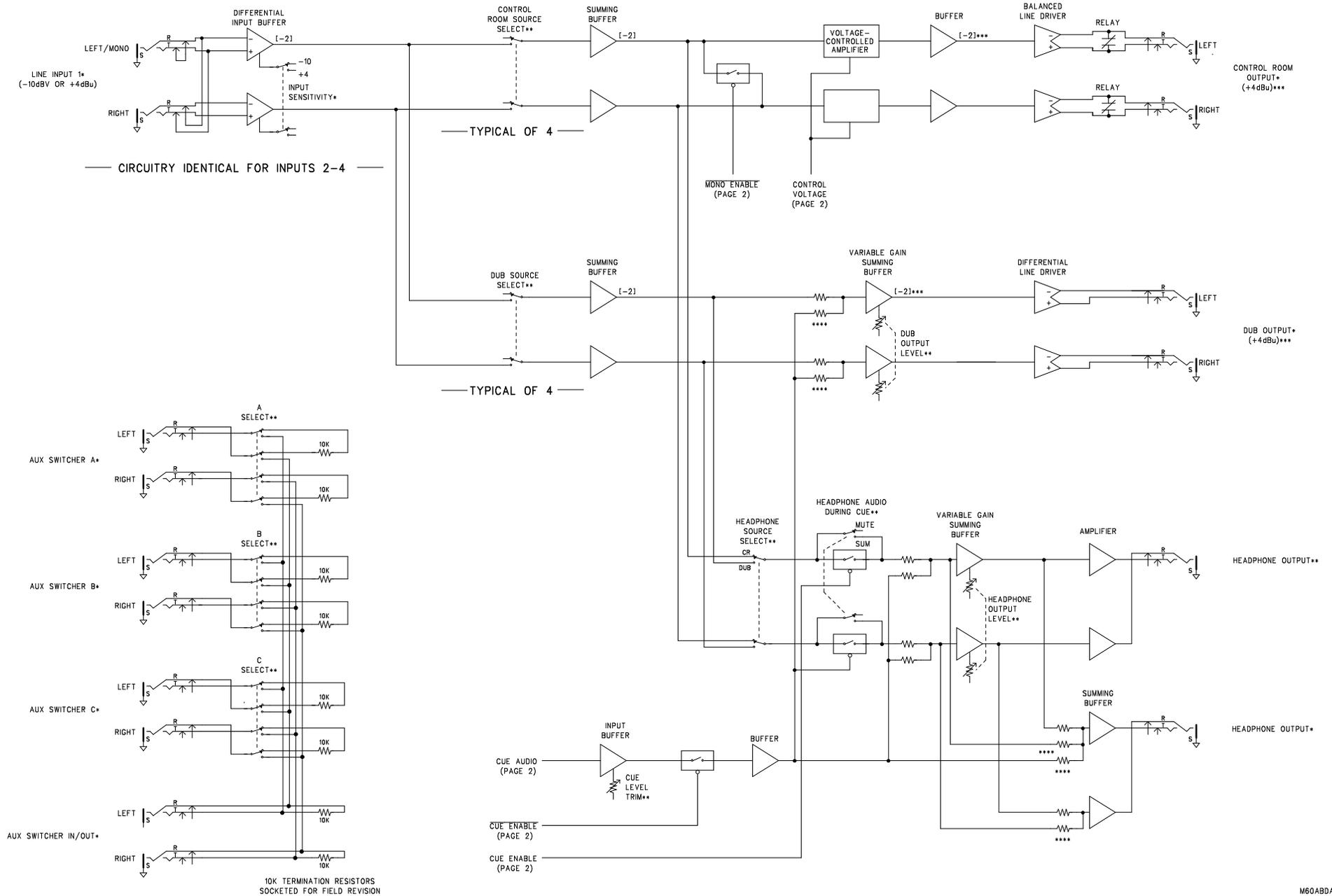
4.1 inches deep (10.4cm)

Mounting: desktop

Weight: 0.8 pounds (0.4kg)

Specifications and information contained in this
User Guide subject to change without notice.

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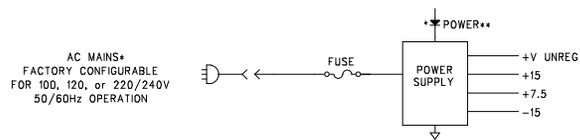
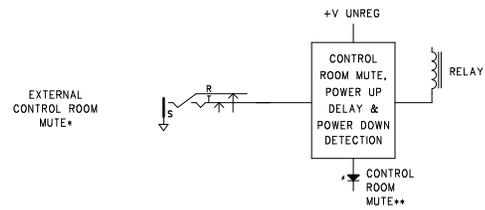
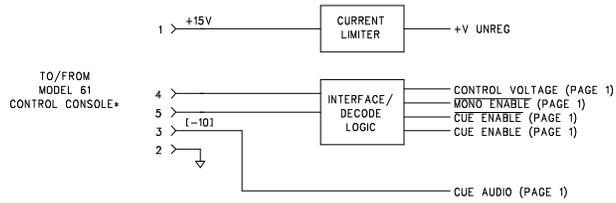


M60ABDA

- * LOCATED ON BACK PANEL
- ** LOCATED ON FRONT PANEL
- *** W/LEVEL CONTROL AT MAXIMUM
- **** OPTIONAL ROUTING (NOT FACTORY CONFIGURED)

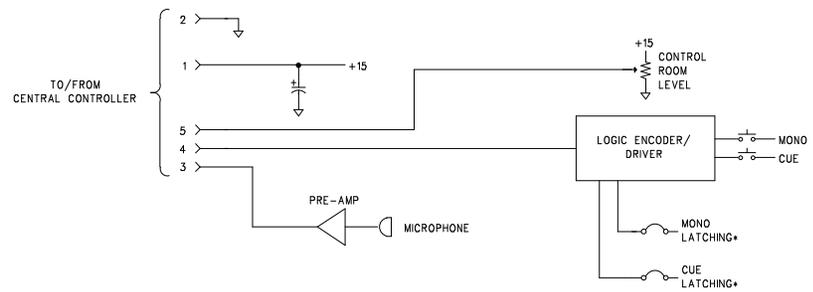
[NOMINAL LEVEL IN dBu]

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MODEL 60A CENTRAL CONTROLLER BLOCK DIAGRAM FOR SN 00343 AND LATER		
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* LOCATED ON BACK PANEL
 ** LOCATED ON FRONT PANEL
 *** W/LEVEL CONTROL AT MAXIMUM
 [NOMINAL LEVEL IN dBu]

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MODEL 60A CENTRAL CONTROLLER BLOCK DIAGRAM FOR SN 00343 AND LATER		
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M61BD_B

STUDIO TECHNOLOGIES, INC.
 MODEL 61
 CONTROL CONSOLE
 BLOCK DIAGRAM

• CONFIGURATION STRAPS. FROM FACTORY
 MONO LATCHES, CUE MOMENTARY

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