

# StudioComm for Surround

Model 68A Central Controller / Model 69A Control Console

## StudioComm for Surround

As the production of multi-channel “surround sound” audio material becomes more prevalent, the need to monitor these sources becomes imperative for more and more facilities. Studio Technologies has addressed the needs of smaller facilities with the StudioComm Model 68A Central Controller and Model 69A Control Console. Together they provide a means to select input sources, control the level of monitor loudspeakers, check format compatibility, provide mute and solo functions, as well as many other features.

A StudioComm for Surround system starts with a Model 68A Central Controller. The single-rack space Model 68A supports two 6-channel surround inputs, two stereo inputs, a 6-channel surround monitor output, and a stereo monitor output. Using a single 9-conductor cable, it connects to a Model 69A Control Console, a compact but comfortable “command center” that is designed to reside at the operator’s location.

The Models 68A and 69A were developed in conjunction with experts in the post-production and music audio fields. The overall goal turned out to be very straightforward: provide the necessary technical performance and features while keeping it simple to operate, and be certain that operators won’t have to go through a long “learning curve” before they become efficient. The end result achieves these goals, providing the required resources in a simple-to-operate format.

## Model 68A Central Controller

The Model 68A Central Controller is a single rack-space unit containing analog audio and digital control circuitry. Audio input and output connections are made using three 25-pin D-subminiature (“D-sub”) connectors. The connectors follow the industry-standard multi-channel wiring scheme. A 9-pin D-sub connector is used to connect the Model 68A to a Model 69A Control Console. A second 9-pin D-sub connector provides access to the remote control inputs.

The Model 68A provides two 6-channel surround and two stereo inputs. Each input circuit uses a 15-turn trim potentiometer to allow operation with nominal signal levels of –12 dBV to +6 dBu. The 6-channel surround and 2-channel stereo monitor outputs use electronically balanced circuitry. Electromechanical relays provide power-up and power-down loudspeaker protection.

An 8-bit micro-controller provides the logic “horsepower” for the Model 68A. AC mains power is connected directly to the Model 68A, which is factory selected for 100, 120, 220/240 V operation. The internal power supply utilizes a toroidal mains transformer for quiet audio operation.



## Key Features:

- Two 5.1 and two stereo inputs
- One 5.1 and one stereo monitor output
- Downmix
- –12 dBV to +6 dBu input levels
- Channel mute/solo
- Excellent audio quality
- Numerous status LEDs



## Model 69A Control Console

The Model 69A Control Console is a compact, self-contained unit designed to be located at the operator's position. It allows fingertip control of all monitoring parameters. Numerous LEDs provide complete status information.

The Model 69A provides four buttons and associated LEDs for selection of the input source to be monitored. While in most cases only one input source will be monitored at a time, multiple inputs can be selected for simultaneous monitoring. This allows two, three, or all four of the inputs to be combined ("summed"). While there is no independent control of the input levels, this feature can be useful for creating rough mixes from the source signals. It is also a fast, effective means of making a "seat-of-the-pants" check on the phase relationship between synchronized signals.

The monitor output level is controlled either through the use of a large, easy-to-use rotary control, or by enabling the preset reference level. For operator convenience, the dim function allows the monitor output level to be reduced by a fixed dB amount. The mute all function disables all monitor outputs by activating the mute relays on the Model 68A Central Controller. A pushbutton switch allows selection of either the 6-channel surround or the 2-channel stereo monitor output.

Control of the individual monitor output channels is provided by the mute/solo section. One pushbutton switch sets the operating mode for either mute or solo. The flexibility of having both mute and solo available allows an operator to quickly select the most comfortable and productive operating mode. In the mute mode, individual channels can be muted or unmuted as required. In the solo mode, one channel can be monitored while the others are automatically muted. If desired, multiple channels can be simultaneously selected for "soloing."

Two functions allow the format of the monitored signals to be checked for level or phase inconsistencies. The downmix function is used to create a 2-channel stereo signal from a surround source. The mono function allows a stereo signal to be added (summed) and monitored by either the left channel and right channel monitor outputs, or the center channel monitor output. The downmix and mono functions can be enabled at the same time, allowing a surround signal to be checked for mono compatibility.

A bandpass filter can be inserted into the path of the mono signal when it is being routed to the center channel. This allows the simulation of the response of a loudspeaker associated with an inexpensive monaural television or portable radio.

A major strength of the Model 69A is the ability to configure, under software control, many operating parameters. This allows operation to be tailored to meet the characteristics of an installation. In addition, the specific operating preferences desired by a facility or individual user are selected. To meet future needs, all configurations can be changed at any time. All configuration parameters are stored in non-volatile memory.

A Model 69A Control Console connects to the Model 68A Central Controller using a standard 9-pin D-sub cable. Power for the Model 69A is provided by the Model 68A. The Model 69A generates MIDI system-exclusive messages to control the Model 68A. Remote control signals, while physically connected to the Model 68A, route to the Model 69A via conductors in the 9-pin D-sub interconnecting cable.

## Remote Control Capability

Three remote control functions are available: mute all, dim, and input select. Remote mute all and remote dim are provided so that communications systems, machine control systems, or communication functions associated with audio consoles can easily be interfaced. Remote input select allows a machine control system or audio storage device to control which input source is selected for monitoring. Audio-post professionals will know this as PEC-Direct switching.

## Limitations on Signal Routing

While the StudioComm Model 68A/Model 69A will do many wonderful things, it is not designed to selectively route input signals to the different monitor output channels. A fixed input-channel-to-output-channel relationship is maintained. A signal on the LFE channel of Surround B will, when selected, output only on the LFE channel of the monitor output. Any rerouting of the input signals must be done prior to connection to the StudioComm system. This should not be an impairment in most facilities, but it's important to highlight this fact.



## Audio Channel Assignment

The designers of the StudioComm Models 68A and 69A made the decision to assign the audio channels in the order of left, center, right, left surround, right surround, and LFE. It was felt that this was a convenient, rational arrangement, common to many “5.1” installations and one that would fit the needs of most operators. However, not all formats follow this convention. Major audio companies such as Dolby Laboratories and DTS may use different channel assignment schemes in their release formats. It is hoped that careful interconnection of audio signals during installation, or incorporating routing flexibility using a patch bay, will mitigate any significant inconveniences.

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## Specifications

### Model 68A Central Controller

#### General Audio:

**Frequency Response:** 20 Hz-20 kHz  $\pm 0.1$  dB (down 0.5 dB @ 60 kHz), monitor outputs

**Distortion (THD+N):** 0.03%, measured at 1 kHz, +4 dBu, monitor outputs

**S/N Ratio:** 92 dB, ref +4 dBu out

**Crosstalk:** 78 dB, ref +4 dBu in

**Audio Line Inputs:** 16, organized as two 6-channel inputs and two 2-channel inputs

**Type:** electronically balanced, direct coupled

**Impedance:** 24 k ohms

**Nominal Level:** -12 dBV to +6 dBu

**Input Level Control:** 15-turn trim potentiometers allow calibration over -12 dBV to +6 dBu input range

**Maximum Input Level:** +27 dBu

**Common Mode Rejection:** 90 dB @ DC and 60 Hz, 85 dB @ 20 kHz, 60 dB @ 400 kHz (typical)

**Monitor Outputs:** 6-channel surround, 2-channel stereo

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

**Nominal Level:** unity gain, audio inputs to monitor outputs

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

**Maximum Output Level—Unbalanced:** +21 dBu into 10 k ohms, +20 dBu into 600 ohms

**Output Impedance—Balanced:** 50 ohms

**Level Control Method:** laser-trimmed voltage-controlled-amplifier integrated circuits manufactured by THAT Corporation

**Attenuation Range:** 72 dB, nominal, using rotary level control

#### Bandpass Filter:

**Type:** created by cascading (connecting in series) a high-pass and low-pass filter; each filter 2<sup>nd</sup>-order (12 dB-per-octave) Sallen-Key

**Response:** -3 dB @ 100 Hz and 5 kHz, nominal

#### Connectors:

**Audio:** 3, 25-pin D-subminiature female

**Control:** 2, 9-pin D-subminiature female

**AC Mains:** 3-blade IEC-type

**Remote Control Inputs:** 4, HCMOS-type logic, “pulled up” to +5 Vdc using 10 k ohm resistors, activates on closure to system common

#### AC Mains Requirement:

100, 120, or 220/240 V,  $\pm 10\%$ , factory configured, 50/60 Hz, 100-120 V 0.4 A maximum, 220/240 V 0.2 A maximum

#### Dimensions (Overall):

19.00 inches wide (48.3 cm)

1.72 inches high (4.4 cm)

8.75 inches deep (22.2 cm)

**Mounting:** one space in a standard 19-inch rack

**Weight:** 8.2 pounds (3.7 kg)

### Model 69A Control Console

**Application:** operates in conjunction with Model 68A Central Controller

**Power:** provided by Model 68A Central Controller

**Output Data:** generates MIDI system-exclusive messages

**Connector:** 1, 9-pin D-subminiature female

#### Dimensions (Overall):

7.20 inches wide (18.3 cm)

2.20 inches high (5.6 cm)

5.40 inches deep (13.7 cm)

**Weight:** 1.9 pounds (0.9 kg)

Specifications subject to change without notice.

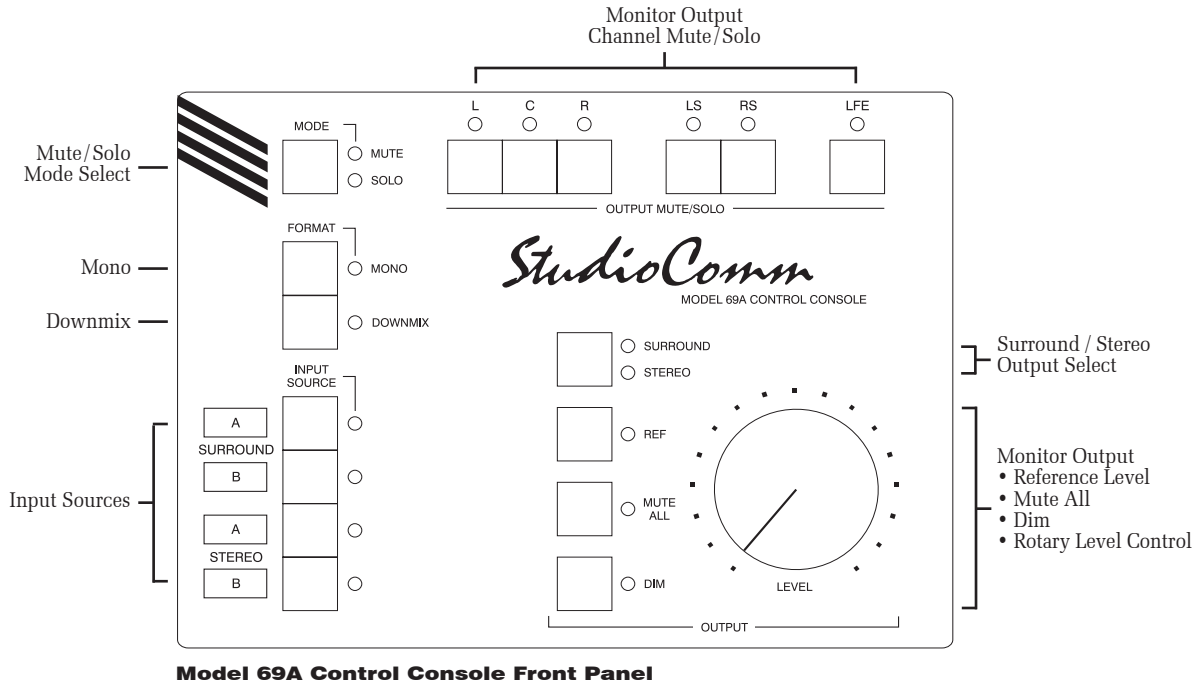
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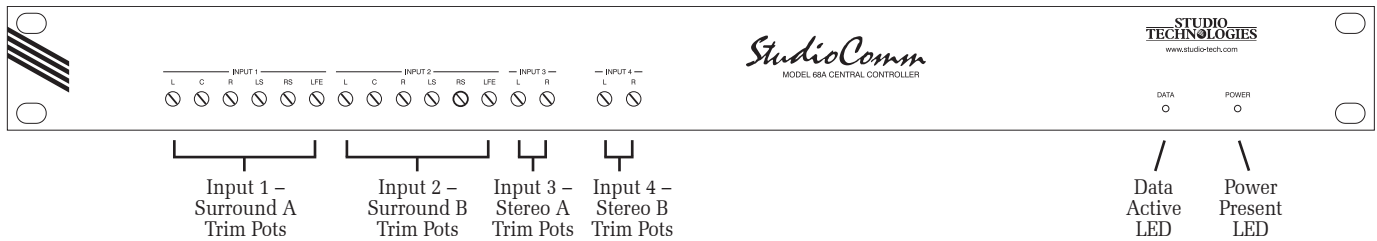
Skokie, Illinois USA

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**Model 68A Central Controller Front Panel**



**Model 68A Central Controller Back Panel**

