



# CENTURY SERIES

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OWNER'S MANUAL



Congratulations on your purchase of a Century Series console. All of us at Crest Audio in Paramus, New Jersey, USA, support your decision, knowing your console contains the finest combination of design and manufacture in the industry.

While your new Century Series console is one of the most feature-packed available, great effort has been put into making it simple to operate.

This manual explains the functions of your new console, how they operate and how they relate to each other. If properly cared for, your new console will provide you with trouble-free, sonically accurate mixing clear into the next Century and beyond.

Please keep the following contact information on hand:

















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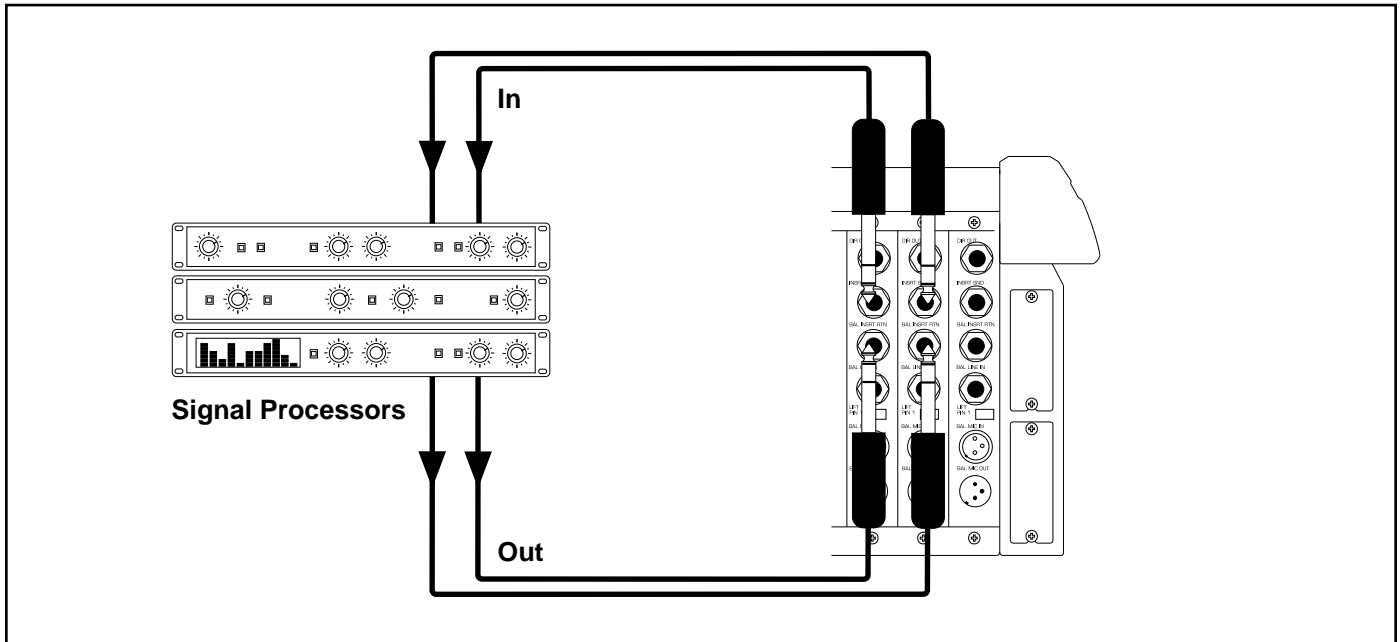
## Feature Overview

The Century Series was designed to have all the features and functions demanded by the modern music professional. The engineers at Crest Audio have delivered the finest combination of function and sonic accuracy in an affordable intuitive console. The features listed below are common to all Century Series LM Consoles.

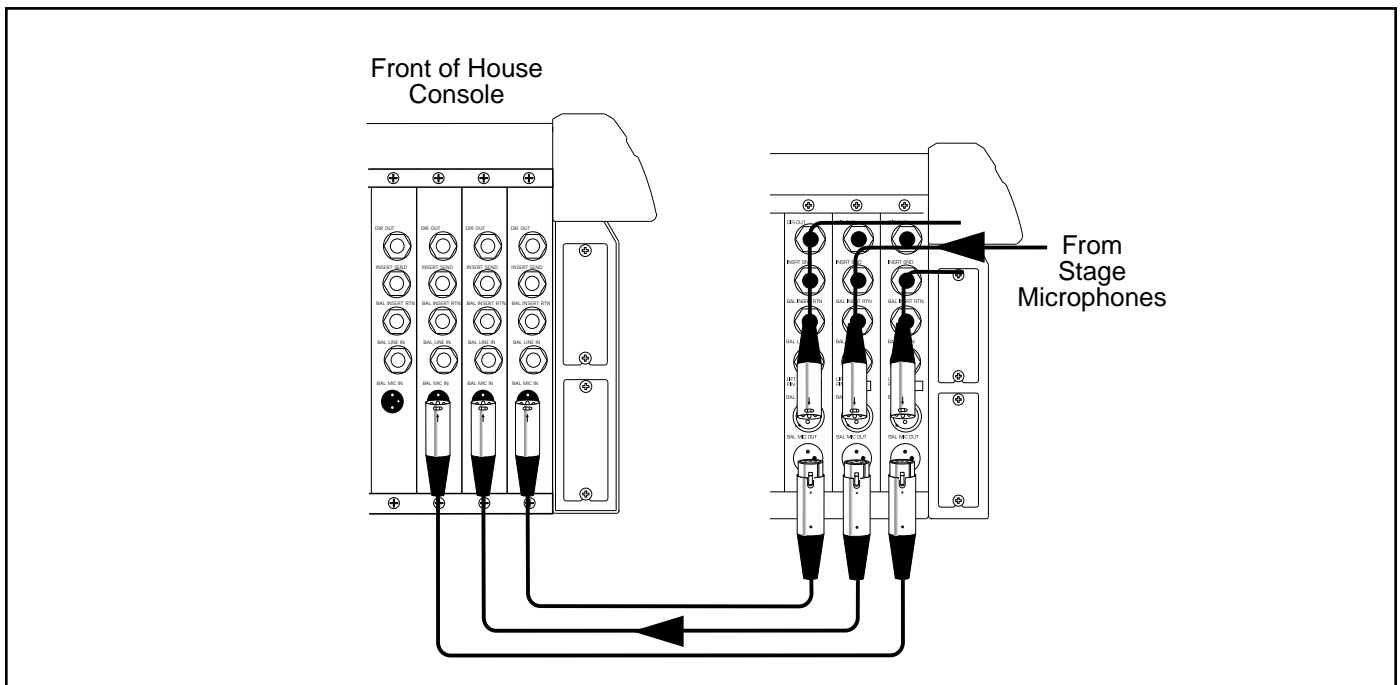
- **SSM/PMI High quality devices on balanced microphone/line inputs and on all outputs** for uncompromised audio quality and reliability. All IC's within the audio path are socket mounted for easy upgrade or service.
- **The signal path is completely free of electrolytic capacitors** and all internal audio connections are gold plated.
- **Passive microphone splitters** on every microphone input.
- **48 Volt switchable phantom power** on all microphone inputs.
- **Optional transformers** available on all microphone inputs and primary outputs.
- **Dynamic Signal Present and multiple-sample- point Peak indicator LED's** are used on all input sections of the console as well as on all primary outputs.
- **Mono/Stereo PFL system.** When a stereo module is used, the signal is monitored in stereo while mono modules are monitored in mono.
- Standard frame sizes include 32, 40, 44, 52 and 64 module positions. Any frame size may be ordered short loaded for later expansion.
- **The three banks of four rotary send controls** each have an associated Pre switch. This switch can be internally selected to operate as pre EQ or pre Fader; this selection applies to all three Pre switches on the module.
- **Each of the twelve send controls can be internally selected to operate in one of three modes:** follow its associated Pre switch, always Pre or always Post.
- **Mute system on input channels** is designed to mute both pre and post fader signals. When muted, PFL circuitry and, Peak and Dynamic Signal Present LED indicators remain fully operational. This is a feature not available on many consoles at any cost.
- **Four scene (A-D) mute system**
- **The EQ section** includes an EQ IN switch with LED and a 100Hz High Pass filter switch. The EQ itself offers four bands (LF-40-800Hz, LMF-100Hz-2kHz, HMF-400Hz-8kHz, HF-1.5k-20kHz) that are sweepable, providing full frequency control with generous overlap. The high and low frequency bands are selectable between Peaking and Shelving via internal jumpers.
- **Each LM output Module** (except those in the master module) has a ten-segment LED array, three-band sweepable EQ, EQ-In switch, variable high-pass filter, polarity reverse, Insert switch, Talkback enable, Dim, Peak & dynamic Signal Present LEDs, local Mute and PFL.
- **Return level controls** provide signal from Returns 1 and 2 found on the Master section. The Sub Input controls deliver signal from outputs 11 and 12 which are selectable pre or post fader. This feature allows mixes 11 and 12 to be cross-mixed to all other outputs.
- **Comprehensive Talkback section** allows access to all primary console outputs. External signals can also be assigned into the talkback system.
- **The basis of every Century console is signal integrity.** From the input preamplifier's impressive EIN of -129 dBu, to completely balanced primary busing, the Century LM delivers one of the cleanest signals available at any cost. This signal purity comes from using only the highest quality components in its innovative design. All inputs and outputs are electronically balanced, the primary inputs and outputs have the option of transformer isolation.
- **UL/CE-approved external power supply** over-designed with ample current reserves. For the ultimate in fail-safe reliability, a back-up power supply can be linked to the primary supply with only an inexpensive jumper cable. External switching is not needed.

### System Connections

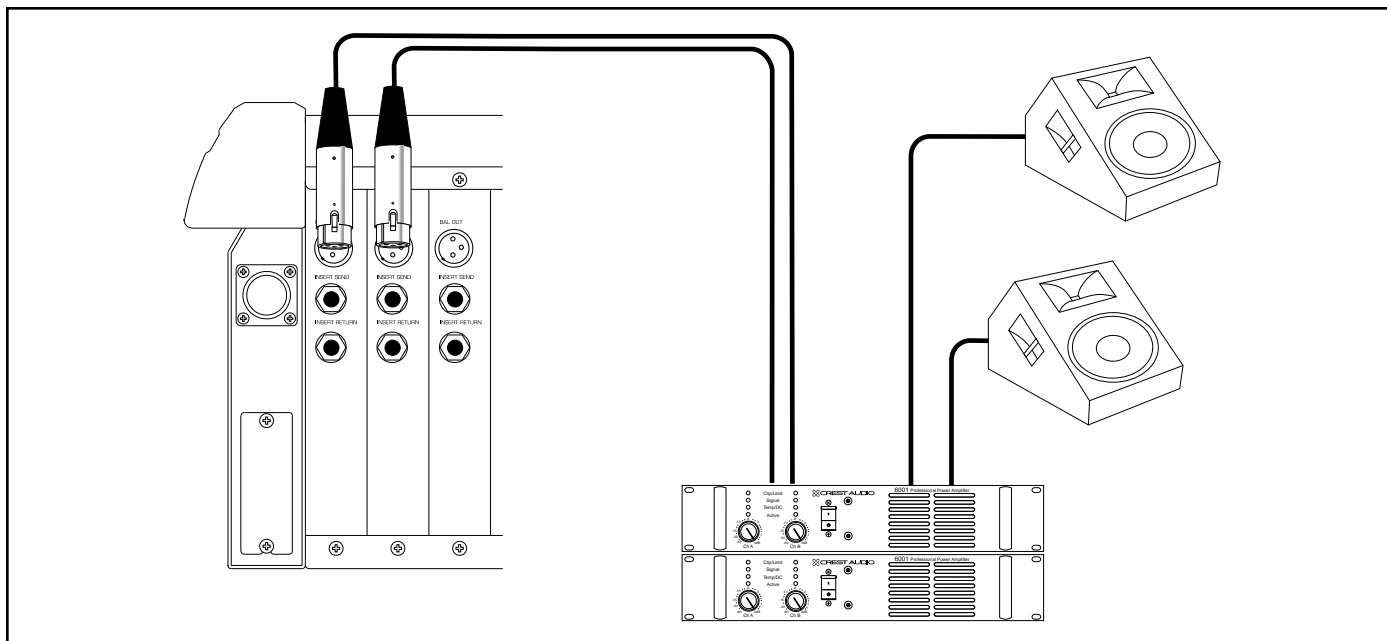
The console is the nerve center of a sound system and controls most of the variables within a system. Proper connection and component relationships are vital to assure accurate operation and results. The following diagrams illustrate conventional system connections.



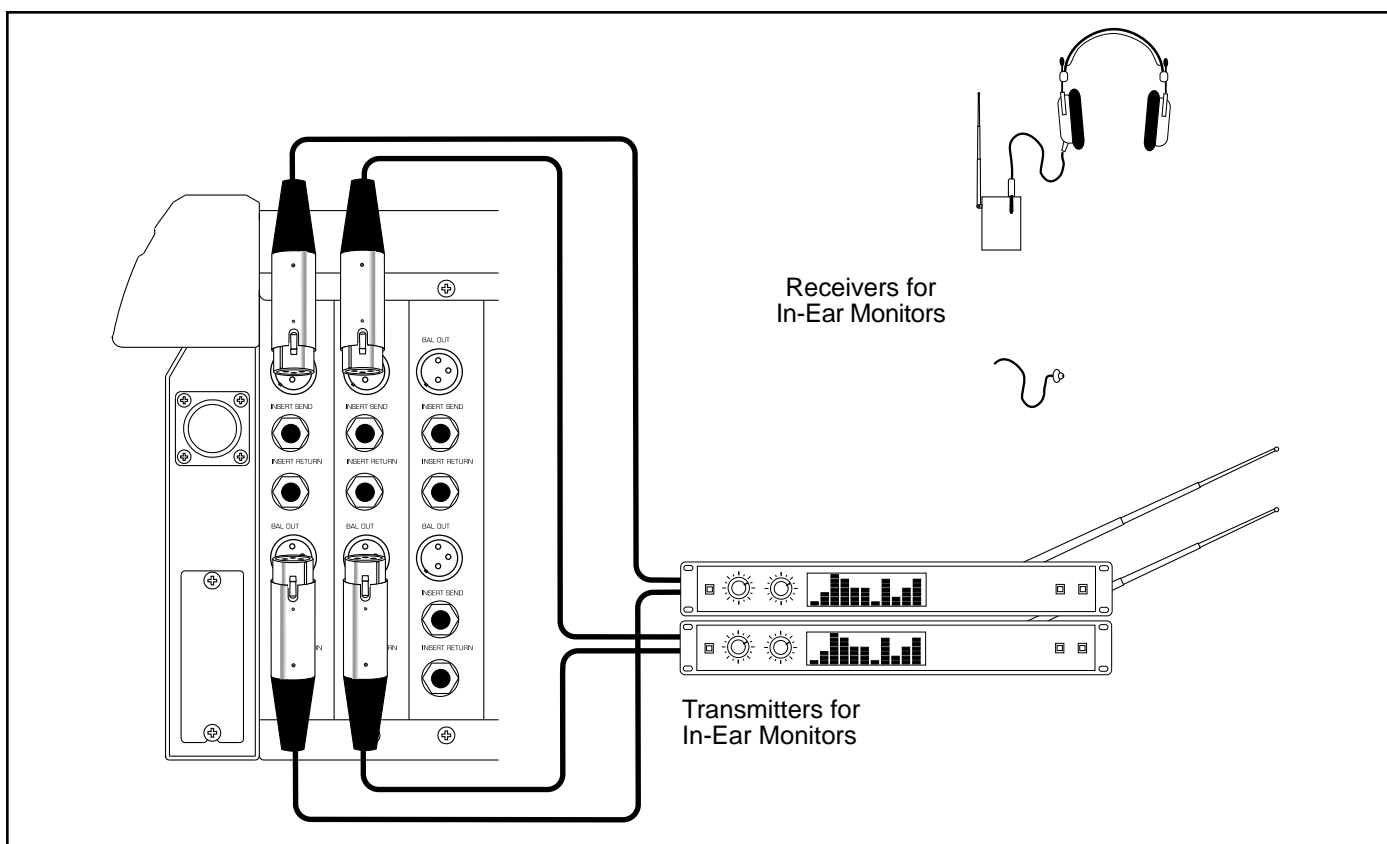
Insert Send/Return Connection



Microphone Splitting



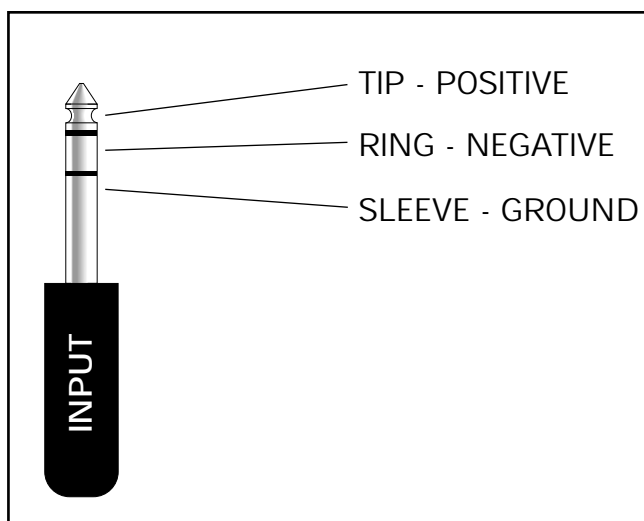
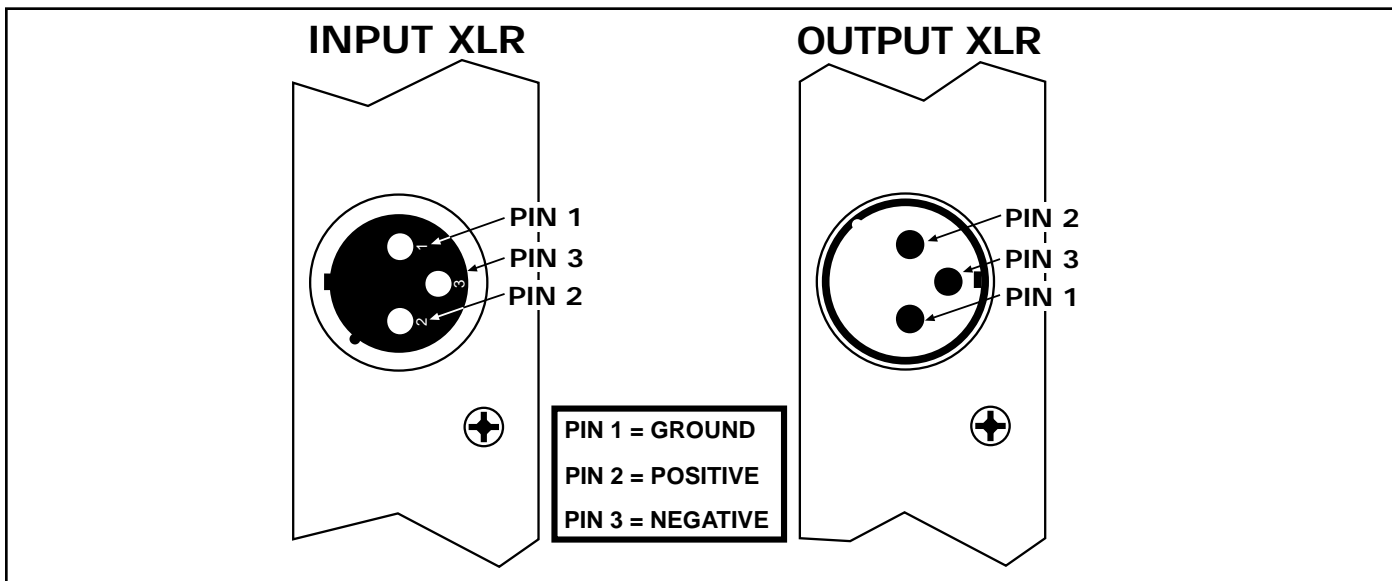
**Floor Wedge Connection**



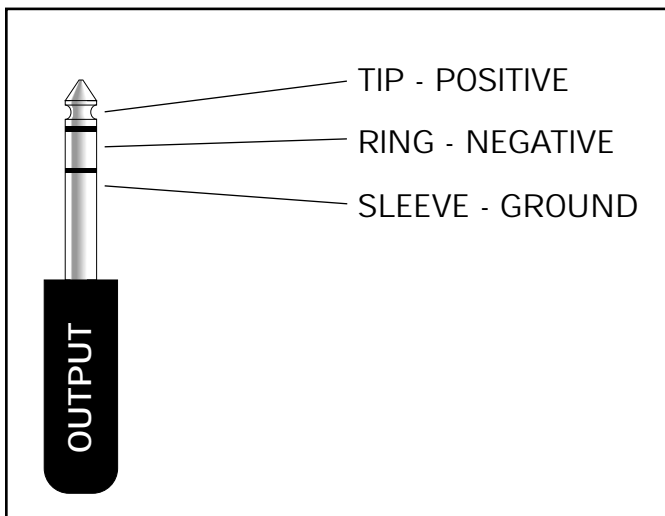
**Stereo In-Ear Monitor Connection**

### Wiring Conventions

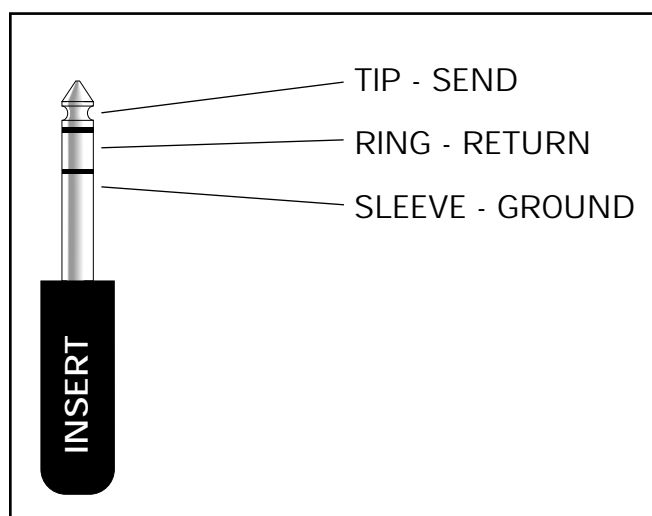
Since the same connectors are used throughout the professional audio industry, it is important to know how the connectors for Crest's Century Series are wired. The wiring is as follows.



Input Plug Polarities



Output Plug Polarities

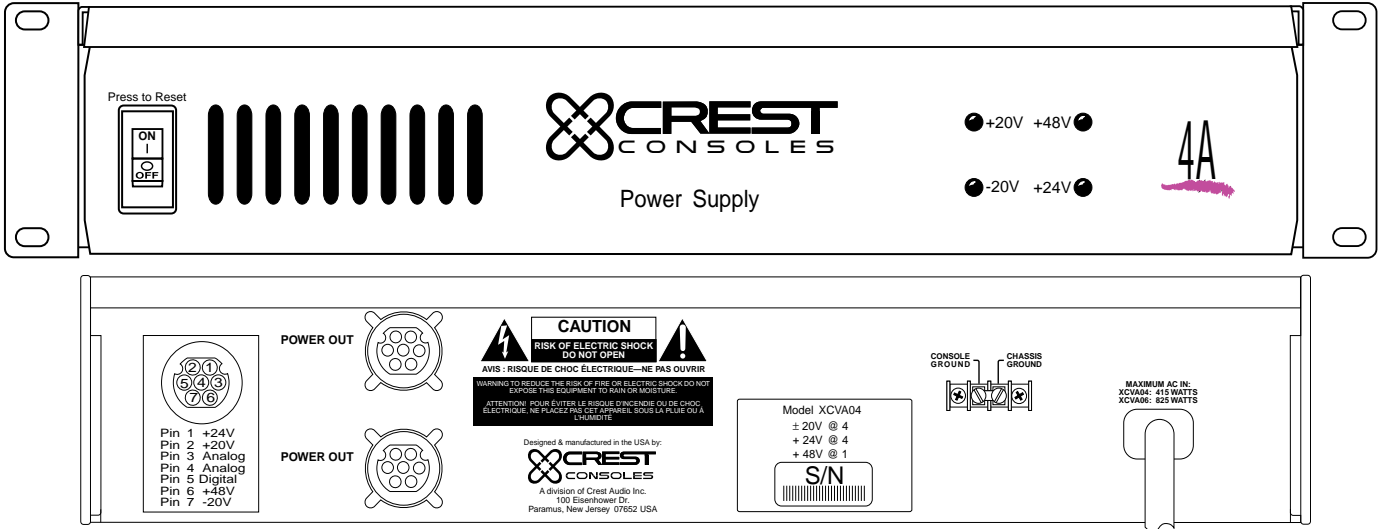


Insert send & Insert return Polarities

## Power Supply

Century Series Consoles use a separate rack-mountable power supply which provides the specific voltages used by each console. Century Consoles make use of two different power supplies. The model and frame size of your particular console determines which of the two supplies should be used.

Model	Supply Model XCVA04	Supply Model XCVA06
LM	Frame Size 24,32	Frame Size 40,44,52,64



### Supply Identification

The type of power supply can be identified by the model number shown on the back of the chassis and panel label.

### Power Requirements

The Century Series power supplies have certain electrical requirements to operate properly. If possible the power supply should be connected to a dedicated circuit. Should any other appliance on the same circuit draw enough current to overload the circuit, the breaker or fuse will trip causing loss of power to the console. Note the maximum current draw specifications at right. Be sure that the circuit to which you connect the supply can handle the draw.

The power switch on the supply front panel is also a circuit breaker, there is no power fuse. Should the supply ever shut down, or trip at start up, simply push the switch to the off position and then on again.

### Ground Linking



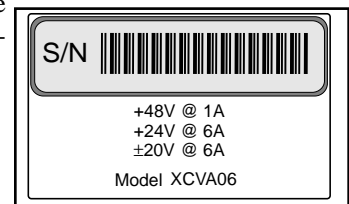
Safety Considerations - Each new power supply is shipped with the AC third wire ground connected to the console chassis ground. The connection is made at the rear of the power supply unit. This is necessary for safety reasons so that exposed metal parts are grounded. In the event of a live conductor making contact with the console chassis or the power supply chassis then the current will flow to ground without a safety hazard arising. Note that when the console is disconnected from the power supply the chassis ground connection to AC third wire ground is broken and safety protection is lost. For uninterrupted grounding, in a fixed installation for example, make a connection directly to the console chassis from the safety ground. Disconnect the ground link on the rear of the power supply. This disconnects console ground from power supply AC third wire ground which would otherwise create a hum-loop.

### Twin Supply Operation

When twin supplies are in use for automatic back-up, then the ground links on both supplies should be fitted. In a situation where the safety ground to the console chassis has been connected and the ground path via the power supply is causing a hum-loop, then disconnect the ground links on BOTH power supplies.

### Console and Power Supply Grounding

Console chassis ground is electrically connected to audio ground, pin 1 of XLR connectors and 1/4" sockets and to the terminal 'CONSOLE GROUND' at the rear of the power supply. The AC third wire connection in the power supply cable connects the metal chassis of the power supply to safety ground. This connection should never be disturbed. Hazardous voltages exist inside the power supply which require the case to be grounded. When rack-mounted, the power supply ground may transfer to the rack case thru the front fixing screws, though this connection is not reliable. When a console is configured within a complete sound system the grounding requirements may call for the ground link to be disconnected. This is permissible only when an alternative ground path has been provided. If in doubt seek the advice of an experienced electrical engineer.



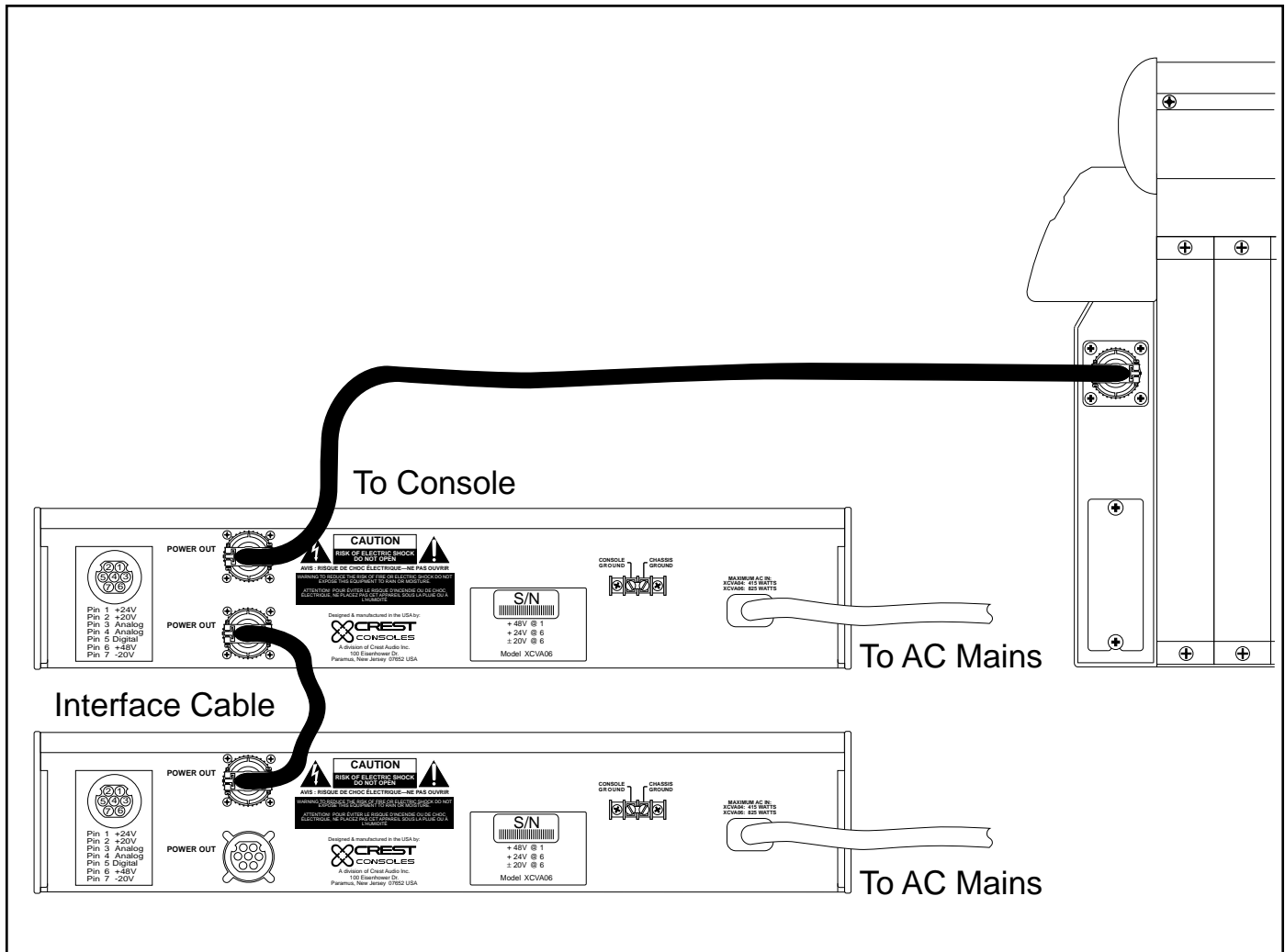
Power Supply Model	Max Current Draw 120V/230V
XCVA04	7A/4A
XCVA06	9A/5A



## Power Connections

The connections to and from the power supply vary depending on your specific configuration. Multiple power supplies can be daisy-chained to provide fail-safe protection in the event of a supply failure. When two or more supplies are used, they may be connected to the same mains voltage since only one of the supplies will actually be feeding the console at any given time.

The connectors on the power supply are “smart” so that either one can be used as the console or interface connection.

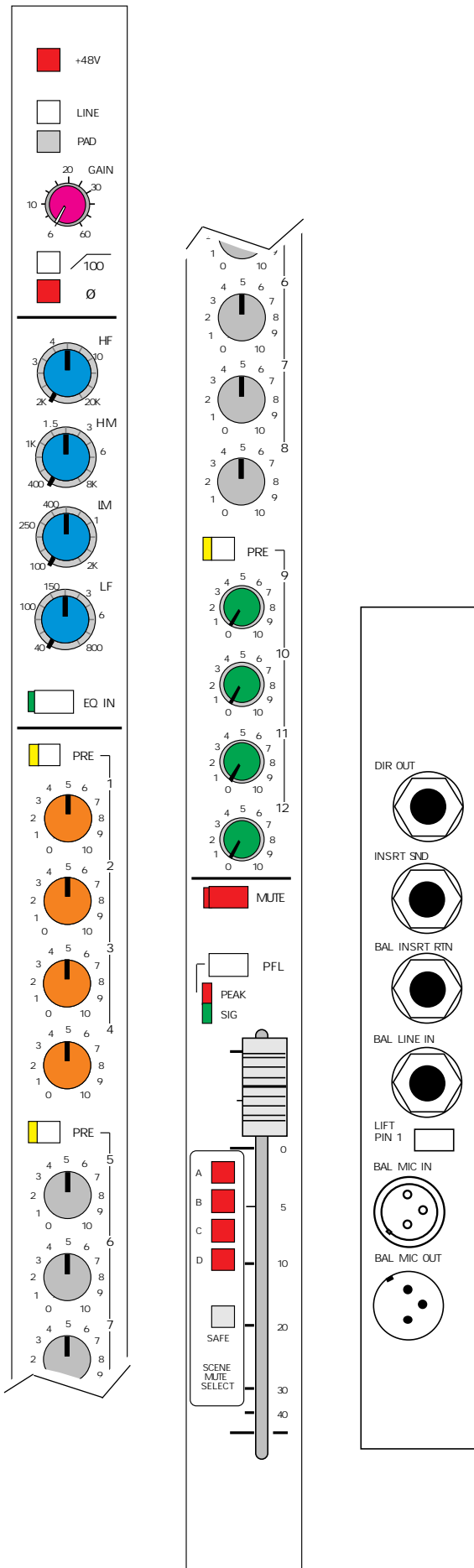


## Console Cooling

A cooling fan configuration is included in all LM consoles except the LM-12 and the 32-chassis space LM Dual/Stereo models. Two fans (one at each end of the console) draw air in through the sides of the chassis (under the sidebars). Air is distributed through the chassis via a “vortex pan”, then proceeds up through the console modules, where the heated air exits the console chassis.

Once the console is powered up, cooling fans remain on. A rear panel switch permits the fans to be set at low, medium or high speeds.

There are no filters to change or clean. As with any console, use in dusty/unclean environments should be avoided.



## LM-12 INPUT MODULE

The LM-12 input module is the primary input control for the LM-12 monitor console. It differs from the LM-20 input module only in the mix send section.

### 48V Phantom Power Switch

Turns on 48V Phantom Power as required by certain microphones for proper operation.

### LINE Switch

Selects between the Balanced XLR Microphone Input connector and the Balanced Line Input 1/4" TRS connector.

### PAD Switch

Introduces a -15 dB cut to the mic input signal.

### GAIN Control

Adjusts input gain for proper signal level.

### 100Hz High Pass Switch

Reduces all low frequency content at a 12db per octave rate referenced to 100Hz (-3db point).

### Polarity Reverse Switch

Inverts the polarity of both the microphone and line inputs.

### Four-Band Sweep Equalizer Controls

There are two knobs for each of the four bands. The inner knob controls the boost or cut; while the outer knob controls the center frequency. These center frequencies are printed on the chassis around the outer knob.

### EQ IN Switch

Inserts the EQ section into the input channel signal. An associated LED illuminates when the switch is down.

### PRE Switch 1-4

Toggles mix sends 1-4 between Post and the internally selected Pre state.

### Mix Sends 1-4

Adjusts signal level sent to output mixes 1-4

### PRE Switch 5-8

Toggles mix sends 5-8 between Post and the internally selected Pre state.

### Mix Sends 5-8

Adjusts signal level sent to output mixes 5-8

### PRE Switch 9-12

Toggles mix sends 9-12 between Post and the internally selected Pre state.

### Mix Sends 9-12

Adjusts signal level sent to output mixes 9-12

### MUTE Switch with LED

Mutes the channel and all sends except the insert send. This switch does not affect the PFL switch or the Peak and Signal Present LED indicators, The LED illuminates when the channel is muted either from the local mute switch or the scene mute system.

## PFL Switch

Samples the channel's signal pre-fader and allows for monitoring within the master section of the console. This signal is not affected by the Mute Switch. When depressed, the signal level can be seen on the output 12 meter, and heard via the mixer's headphone or local monitor output. When this PFL Switch is depressed, the channel PEAK LED indicator illuminates at a lower intensity. When used as a status indicator of switch position, the Peak LED indicating circuit remains fully operational by illuminating at a much higher intensity than when indicating PFL status.

## PEAK LED Indicator

Illuminates RED when any of the points monitored come within 3db of the clipping point. Signal is sampled after the input preamplifier stage, after the EQ section, and after the fader.

This LED also serves as a PFL ON indicator, but at a much lower intensity than when it is used to indicate clipping.

## SIGNAL PRESENT LED

This green LED constantly displays level activity of the input channel by varying in intensity.

## 100mm Fader

Used for control of all outputs of the channel except those sends selected pre fader. (The Insert Output level is not affected by the fader position.)

## Scene Mute Assignments

Assign the input channel to any of the four scene mute groups. Scene mute combines with the module's local mute button, and actuates the local mute LED.

## Scene Mute Safe Switch

Disables any selected scene mute assignments. An associated green LED indicates that the channel is in a safe state.

## Rear Panel Connections

### Direct Out

This 1/4-inch TRS jack carries the direct output signal (post fader & post mute) from the associated input channel.

### Insert Send

This 1/4-inch TRS jack carries the send signal of the insert loop to the external effect or signal processor.

### Balanced Insert Return

This 1/4-inch TRS jack accepts the return signal of the insert loop from the external effect or signal processor back into the console.

### Balanced Line In

This 1/4-inch TRS jack accepts balanced and unbalanced line level inputs and delivers it into the associated input channel.

### Lift Pin 1

This ground lift switch may be used to isolate pin 1 of the mic XLR from console ground.

**Unpressed** = pin 1 grounded

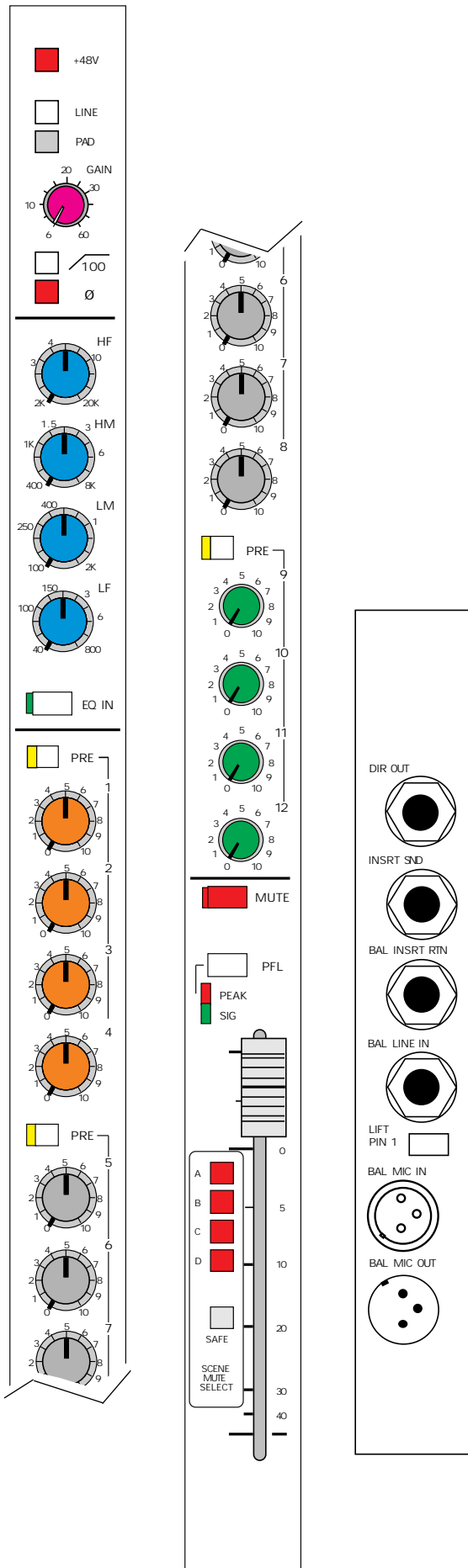
**Pressed** = pin 1 lifted

### Balanced Mic In

This XLR connector accepts balanced microphone inputs for the associated input channel.

### Balanced Mic Out

This XLR connector is in parallel with the Balanced Mic In connector and allows easy connection of the monitor board to the FOH console.



## LM-20 (LM-8+4) INPUT MODULE

This module serves as the input module for LM-20 and the now-discontinued LM-8+4. The only difference between the two is the factory default settings on the dual concentric sends. For the LM-20 the sends are set for level/level operation. For an LM-8+4 the sends are set for level/pan operation.

### 48V Phantom Power Switch

Turns on 48V Phantom Power as required by certain microphones for proper operation.

### LINE Switch

Selects between the Balanced XLR Microphone Input connector and the Balanced Line Input 1/4" TRS connector.

### PAD Switch

Introduces a -15 dB cut to the mic input signal.

### GAIN Control

Adjusts input gain for proper signal level.

### 100Hz High Pass Switch

Reduces all low frequency content at a 12db per octave rate referenced to 100Hz (-3db point).

### Polarity Reverse Switch

Inverts the polarity of both the microphone and line inputs.

### Four-Band Sweep Equalizer Controls

There are two knobs for each of the four bands. The inner knob controls the boost or cut; while the outer knob controls the center frequency. These center frequencies are printed on the chassis around the outer knob.

### EQ IN Switch

Inserts the EQ section into the input channel signal. An associated LED illuminates when the switch is down.

### PRE Switch 1-4

Toggles mix sends 1-4 between Post and the internally selected Pre state.

### Mix Sends 1-4

Adjusts signal level sent to stereo output mixes 1-4 or mono mixes 1a through 4b.

### PRE Switch 5-8

Toggles mix sends 5-8 between Post and the internally selected Pre state.

### Mix Sends 5-8

Adjusts signal level sent to stereo output mixes 5-8 or mono mixes 5a through 8b.

### PRE Switch 9-12

Toggles mix sends 9-12 between Post and the internally selected Pre state.

### Mix Sends 9-12

Adjusts signal level sent to stereo output mixes 9-12 or mono mixes 9a through 12b.

## MUTE Switch with LED

Mutes the channel and all sends. This switch does not affect the PFL switch or the Peak and Signal Present LED indicators. The LED illuminates when the channel is muted either from the local mute switch or the scene mute system.

## PFL Switch

Samples the channel's signal pre-fader and allows for monitoring within the master section of the console. This signal is not affected by the Mute Switch. When depressed, the signal level can be seen on the output 12 meter, and heard via the mixer's headphone or local monitor output. When this PFL Switch is depressed, the channel PEAK LED indicator illuminates at a lower intensity. When used as a status indicator of switch position, the Peak LED indicating circuit remains fully operation by illuminating at a much higher intensity than its use as a PFL status indicator.

## PEAK LED Indicator

Illuminates RED when any of the points monitored come within 3db of the clipping point. Signal is sampled after the input preamplifier stage, after the EQ section, and after the fader.

This LED also serves as a PFL ON indicator, but at a much lower intensity than when it is used to indicate clipping.

## SIGNAL PRESENT LED

Constantly displays level activity of the input channel by varying in intensity.

## 100mm Fader

Used for control of all outputs of the channel except those Aux output sections selected by switch to a pre fader position. (The Insert Output level is not affected by the fader position.)

## Scene Mute Assignments

Assign the input channel to any of the four scene mute groups. Scene mute combines with the module's local mute button, and actuates the local mute LED.

## Scene Mute Safe Switch

Disables any selected scene mute assignments. An associated green LED indicates the channel is in a safe state.

## Rear Panel Connections

### Direct Out

This 1/4-inch TRS jack carries the direct output signal (post fader & post mute) from the associated input channel.

### Insert Send

This 1/4-inch TRS jack carries the send signal of the insert loop to the external effect or signal processor.

### Balanced Insert Return

This 1/4-inch TRS jack accepts the return signal of the insert loop from the external effect or signal processor back into the console.

### Balanced Line In

This 1/4-inch TRS jack accepts balanced and unbalanced line level inputs and delivers it into the associated input channel.

### Lift Pin 1

This ground lift switch may be used to isolate pin 1 of the mic XLR from console ground.

**Unpressed** = pin 1 grounded

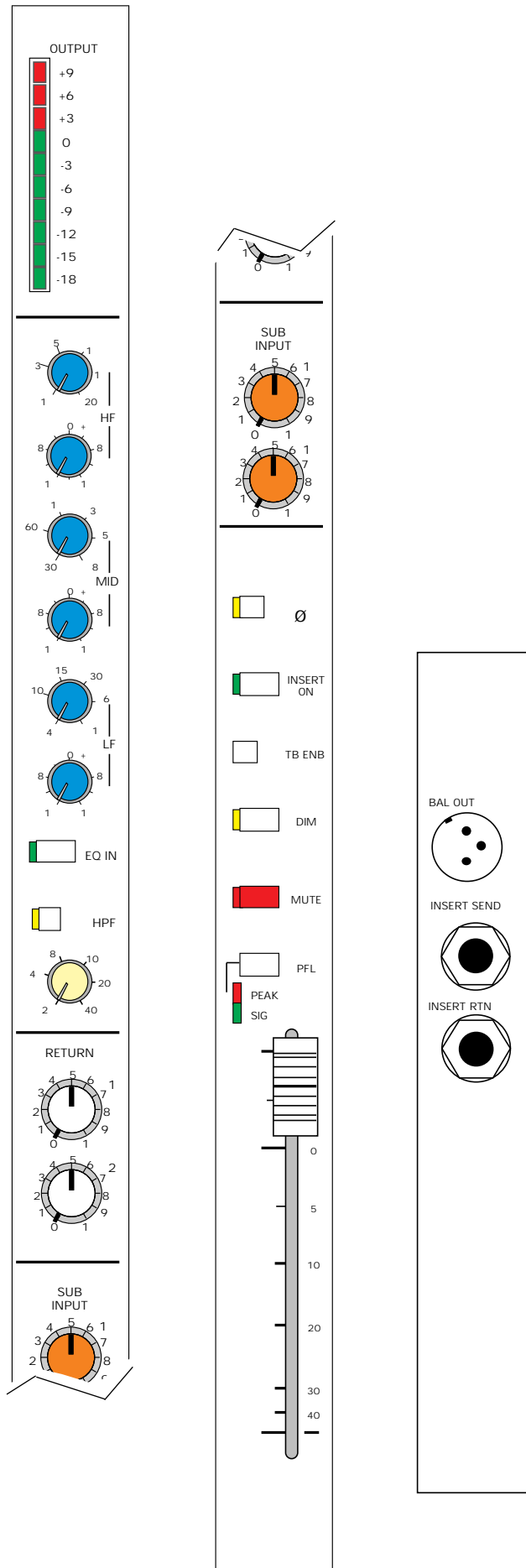
**Pressed** = pin 1 lifted

### Balanced Mic In

This XLR connector accepts balanced microphone inputs for the associated input channel.

### Balanced Mic Out

This XLR connector is in parallel with the Balanced Mic In connector and allows easy connection of the monitor board to the FOH console.



## LM-12 Output Module

The LM-Mono Group output module is the primary output module on the LM-12 and the secondary output module on the LM-8+4 and the LM-20

### Output Meter

Monitors the post-fader output signal via a ten-segment LED array.

### Output EQ

Controls the the equalization of the output mix signal through three bands, via six controls. The upper knob of each band determines the center frequency (high-1kHz-20kHz, mid-300Hz-8kHz, low-40Hz, 1kHz), while the lower knob adjusts the amount of boost or cut.

### EQ IN Switch

Inserts the EQ section into the output channel signal. An associated LED illuminates when the switch is down.

### High Pass Filter Switch

Inserts the High Pass Filter into the output signal.

### HPF Frequency Control

This knob adjusts the high pass filter frequency from 20Hz to 400Hz. The filter operates at a -12 dB per octave rate.

### Return Level Controls

Adjusts the level of return signals 1 and 2 in the output. These signals come from the Master Section. See *Returns 1 & 2* on the Master Section description for more information.

### Sub Input Controls

Adjusts the level of cross-mix in the output from mono outputs 11 and 12.

### Polarity Reverse Switch

Inverts the polarity of the output.

### Insert On Switch

Turns on the insert loop for the output signal. If a complete insert loop is not present depressing this switch will mute the output.

### TB Enable Switch

Injects the talkback signal from the master section into the group output.

### DIM Switch

Introduces a -6dB drop to the output signal. This is a push on/push off switch, not momentary.

### MUTE Switch with LED

Mutes the output. This switch does not affect the PFL switch or the Peak and Signal Present LED indicators.

### Output PFL

Enables Pre Fader Listening of the output signal. (this signal can be internally selected post fader)

### Output PEAK & Signal LEDs

The red LED indicates that the output is within 3dB of the clipping point.

The green LED constantly displays the level of signal activity by varying in intensity.

### Output Fader

Controls the final output signal level.

## Rear Panel Connections

### Balanced Out

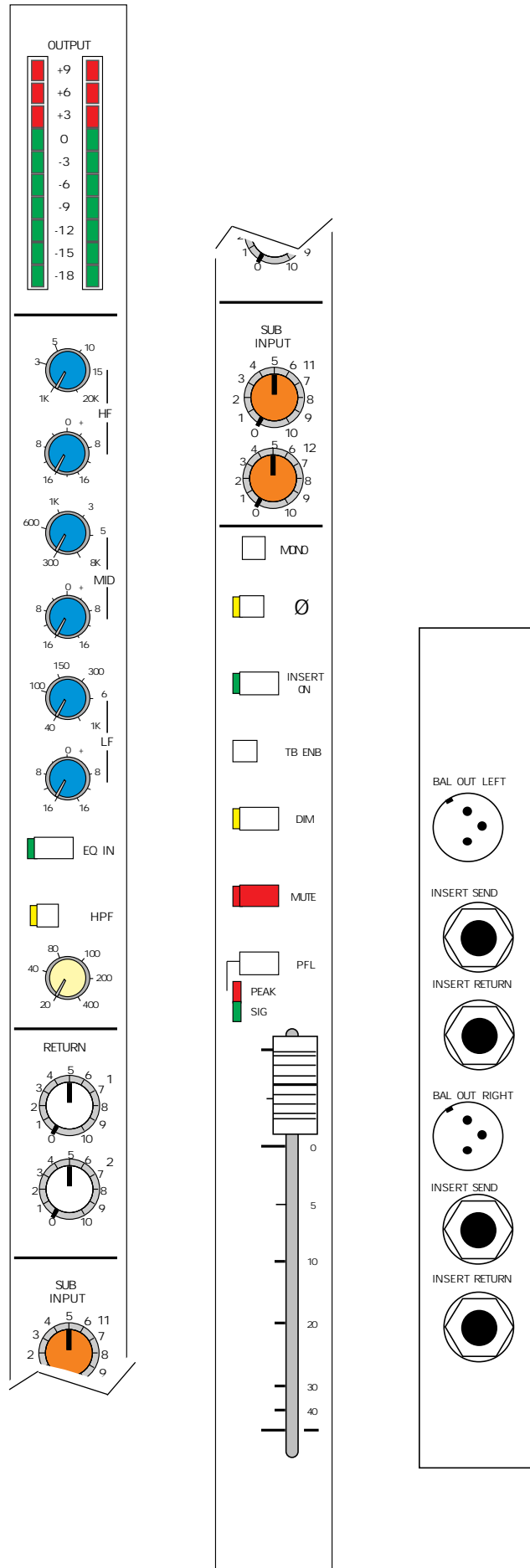
This XLR connector carries the post-fader output signal from the associated output module.

### Output Insert Send

This 1/4-inch TRS balanced jack carries the send signal of the output insert loop to the external effect or signal processor.

### Output Insert Return

This 1/4-inch TRS balanced jack accepts the return signal of the output insert loop from the external effect or signal processor.





## LM-8+4 Output Module

The LM-Stereo group output module is the primary output module on the discontinued LM-8+4.

### Output Meters

Monitors the post-fader output signal via two ten-segment LED arrays.

### Output EQ

Controls the the equalization of the output mix signal through three bands, via six controls. The upper knob of each band determines the center frequency (high-1kHz-20kHz, mid-300Hz-8kHz, low-40Hz, 1kHz), while the lower knob adjusts the amount of boost or cut.

### EQ IN Switch

Inserts the EQ section into the output channel signal. An associated LED illuminates when the switch is down.

### High Pass Filter Switch

Inserts the High Pass Filter into the output signal.

### HPF Frequency Control

This knob adjusts the high pass filter frequency from 20Hz to 400Hz. The filter operates at a -12 dB per octave rate.

### Return Level Controls

Adjusts the level of return signals 1 and 2 in the output. These signals come from the Master Section. The center knob adjusts level while the outer knob adjusts panning within the stereo image. See Returns 1 & 2 on the Master Section description for more information.

### Sub Input Controls

Adjusts the level of cross-mix in the output from mono outputs 11 and 12. The center knob adjusts while the outer knob adjusts panning within the stereo image.

### Mono Switch

Depressing this switch mixes the left and right pre-insert signals together onto the Left Insert Send jack. The Left Insert Return is switched to both Left and Right Returns. This allows for a mono processor to be used, but affect both channels.

### Polarity Reverse Switch

Inverts the polarity of the output.

### Insert On Switch

Turns on the insert loop for the output signal. If a complete insert loop is not present depressing this switch will mute the output.

### TB Enable Switch

Injects the talkback signal from the master section into the group output.

### DIM Switch

Introduces a -6dB drop to the output signal. This is a push on/push off switch, not momentary.

### MUTE Switch with LED

Mutes the output. This switch does not affect the PFL switch or the Peak and Signal Present LED indicators.

### Output PFL

Enables Pre Fader Listening of the output signal. (this send can be internally selected post fader)

### Output PEAK & Signal LEDs

The red LED indicates that the output is within 3dB of the clipping point.

The green LED constantly displays the level of signal activity by varying in intensity.

### Output Fader

Controls the final output signal level

## Rear Panel Connections (L & R)

### Balanced Out

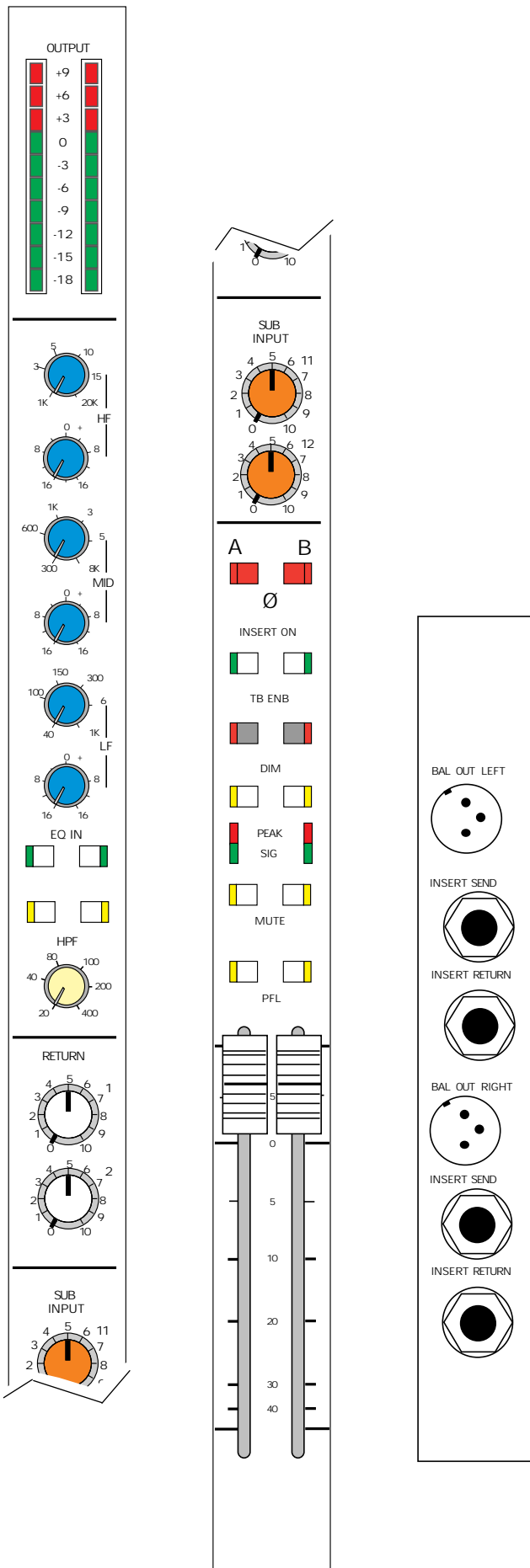
This XLR connector carries the post-fader output signal from the associated output module.

### Output Insert Send

This 1/4-inch TRS balanced jack carries the send signal of the output insert loop to the external effect or signal processor.

### Output Insert Return

This 1/4-inch TRS balanced jack accepts the return signal of the output insert loop from the external effect or signal processor.



## LM-20 Output Module

The LM-Dual group output module is the primary output module on the LM-20.

### Output Meter

Monitors the post-fader output signal via two ten-segment LED arrays.

### Output EQ

Controls the the equalization of the output mix signal through three bands, via six controls. The upper knob of each band determines the center frequency (high-1kHz-20kHz, mid-300Hz-8kHz, low-40Hz, 1kHz), while the lower knob adjusts the amount of gain or cut. This single set of knobs controls both channels A & B.

### EQ IN Switch

Inserts the EQ section into the output channel signal. An associated LED illuminates when the switch is down.

### High Pass Filter Switch

Inserts the High Pass Filter into the output signal.

### HPF Frequency Control

This knob adjusts the high pass filter frequency from 20Hz to 400Hz. The filter operates at a -12 dB per octave rate. This single knob controls both channels A & B.

### Return Level Controls

Adjusts the level of return signals 1 and 2 in the output. These signals come from the Master Section. The center knob adjusts “level A” while the outer knob adjusts “level B.” See Returns 1 & 2 on the Master Section description for more information.

### Sub Input Controls

Adjusts the level of cross-mix in the output from mono outputs 11 and 12. The center knob adjusts “level a” while the outer knob adjusts “level b.”

### Polarity Reverse Switch

Inverts the polarity of the output.

### Insert On Switch

Turns on the insert loop for the output signal. If a complete insert loop is not present depressing this switch will mute the output.

### TB Enable Switch

Injects the talkback signal from the master section into the group output.

### DIM Switch

Introduces a -6dB drop to the output signal. This is a push on/push off switch, not momentary.

### MUTE Switch with LED

Mutes the output. This switch does not affect the PFL switch or the Peak and Signal Present LED indicators.

### Output PFL

Enables Pre Fader Listening of the output signal. (This send can be internally selected post fader)

### Output PEAK & Signal LEDs

The red LED indicates that the output is within 3dB of the clipping point.

The green LED constantly displays the level of signal activity by varying in intensity.

### Output Faders

Controls the final output level of each signal (a & b).

## Rear Panel Connections (L & R)

### Balanced Out

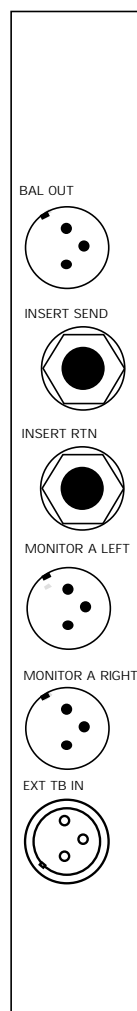
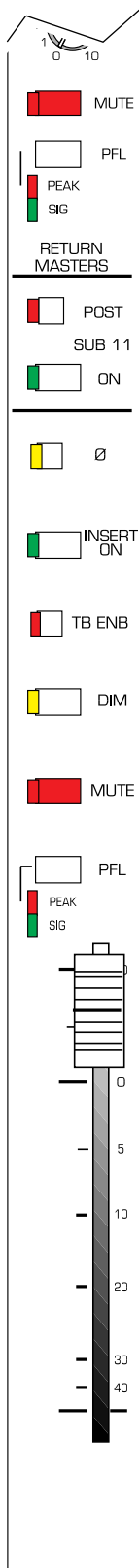
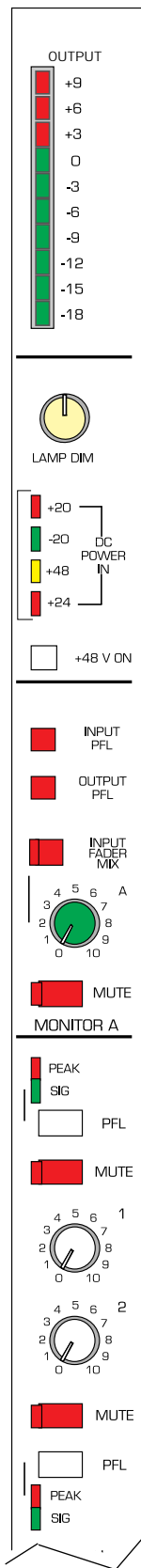
This XLR connector carries the post-fader output signal from the associated output module.

### Output Insert Send

This 1/4-inch TRS balanced jack carries the send signal of the output insert loop to the external effect or signal processor.

### Output Insert Return

This 1/4-inch TRS balanced jack accepts the return signal of the output insert loop from the external effect or signal processor.



## LM Master Module A

This is the first of two modules that include master controls for all LM consoles in addition to mono output eleven.

### Output Meter

Monitors the post-fader output signal of group 11 via a ten-segment LED array.

### Monitor Level A

Adjusts the output level of local monitors A.

### Monitor Mute A

Mutes local monitor A.

### Sub 11 Post Switch

Switches the subgroup send between pre and post fader.

### Sub 11 On Switch

Switches the subgroup send on and off.

### Lamp Dim Control

Controls the brightness of any 12 volt lighting devices attached to the XLR connectors on the light bar.

### Power Indicators

Shows the status of the four voltages used by the console.

### Phantom Master Switch w/LED

Switches +48V phantom power on and off for the entire console.

### Input/Output PFL Indicators

These LEDs indicate what type of signal (input or output) is PFL'd at any given time. Input PFL always gets priority over output PFL.

### Input Fader Mix Switch

Sums all input mixes and assigns the summed signal to the Monitor A output. This output is stereo when stereo signals are present. This signal is post fader.

### Return Master Peak & Signal LEDs

The red LED indicates that the output is within 3dB of the clipping point. The green LED constantly displays the level of signal activity by varying in intensity.

### Return Master PFL Switch

PFLs the return signal.

### Return Master Mute

Mutes the return signal

### Return Master Level Controls

Controls the final return signal level.

### Output 11 Polarity Reverse

Inverts the polarity of outputs 11.

### Output 11 Insert On Switch

Turns on the insert loop for the output signal. If a complete insert loop is not present depressing this switch will mute the output.

### Output 11 Talkback Enable

Injects the talkback signal from the master section into the group output.

### Output 11 Dim Switch

Introduces a -6dB drop to the output signal. This is a push on/push off switch, not momentary.

### Output 11 Mute Switch

Mutes the output. This switch does not affect the PFL switch or the Peak and Signal Present LED indicators.

### Output 11 PFL Switch

Enables Pre Fader Listening of the output signal. (This can be internally selected to post fader)

### Output 11 Peak & Signal LEDs

The red LED indicates that the output is within 3dB of the clipping point. The green LED constantly displays the level of signal activity by varying in intensity.

### Output 11 100mm Faders

Controls the final signal level of outputs 11.

## Rear Panel Connections

### Output 11 Bal Out

This XLR connector carries the post-fader output signal from the output group 11

### Insert Send

This 1/4-inch TRS balanced jack carries the send signal of the output insert loop to the external effect or signal processor.

### Insert Return

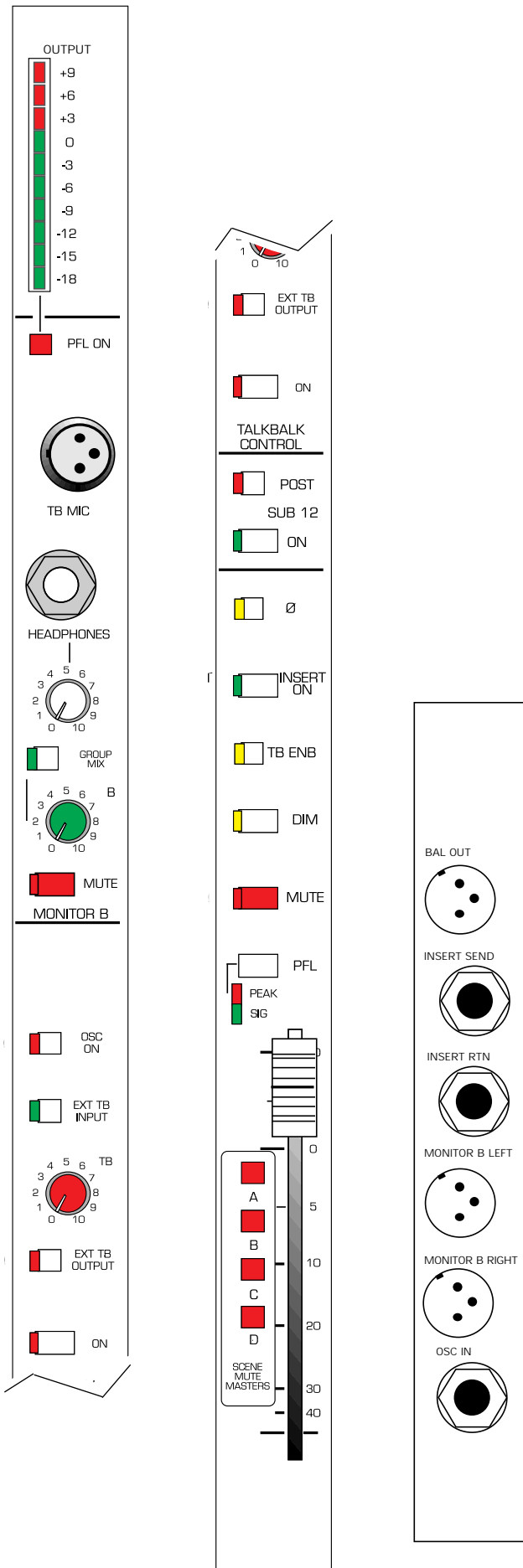
This 1/4-inch TRS balanced jack accepts the return signal of the output insert loop from the external effect or signal processor.

### Monitor A Out (L&R)

These two connectors deliver local monitor A 's balanced output signal.

### Oscillator / Pink Noise In

This 1/4-inch connector accepts a balanced or unbalanced signal from an oscillator or pink noise generator. This signal is assignable via the talkback assignment switches.



## LM Master Module B

This is the second of two modules that include master controls for all LM consoles in addition to mono output twelve.

### Output Meter

Monitors the post-fader output signal of group 12 via a ten-segment LED array. This meter also indicates PFL level.

### PFL Indicator

This LED illuminates when the signal on meter 12 is a PFL or AFL signal.

### Talkback Mic Input

Allows for connection of a gooseneck or other XLR type microphone to the talkback system. Phantom power is available here for condenser mics.

### Headphone Jack

Allows for connection of headphones via a 1/4" TRS plug.

### Headphone Level Control

Controls the output level of both headphone jacks.

### Group Mix Switch

Sums all output mixes and assigns the summed signal to the Monitor B output. This output is stereo when stereo signals are present. This signal is post fader.

### Monitor Level B

Adjusts the output level of local monitor B.

### Monitor Mute B

Mutes local monitor B.

### Oscillator On

Switches on the internal 1kHz oscillator. The internal oscillator only operates when the Talkback system is engaged.

### External TB Input Switch

Adds an external signal to the internal talkback signal. This signal is patched in via the external talkback connector on the back of the master module.

### Talkback Level Control

Adjusts the final level of all talkback signals.

### External TB Output Switch

Feeds signal to the external talkback output connection. Only the internal talkback signal is present at this connector.

### Talkback Master On/Off

Switches the internal talkback system on and off.

### Sub 12 Post Switch

Switches the subgroup send between pre and post fader.

### Sub 12 On Switch

Switches the subgroup send on and off.

### Output 12 Polarity Reverse

Inverts the polarity of output 12.

### Output 12 Insert On Switch

Turns on the insert loop for the output signal. If an incomplete insert loop is present, depressing this switch will mute the output.

### Output 12 Talkback Enable

Injects the talkback signal from the master section into the group output.

### Output 12 Dim Switch

Introduces a -6dB drop to the output signal. This is a push on/push off switch, not momentary.

### Output 12 Mute Switch

Mutes the output. This switch does not affect the PFL switch or the Peak and Signal Present LED indicators.

### Output 12 PFL Switch

Enables Pre Fader Listening of the output signal. (This can be internally selected to post fader)

### Output 12 Peak & Signal LEDs

The red LED indicates that the output is within 3dB of the clipping point. The green LED constantly displays the level of signal activity by varying in intensity.

### Output 12 100mm Fader

Controls the final signal level of outputs 12.

### Scene Mute Masters

These four switches turn the four scene mutes on and off for the entire console.

## Rear Panel Connections

### Output 12 Bal Out

This XLR connector carries the post-fader output signal from the output group 12.

### Insert Send

This 1/4-inch TRS balanced jack carries the send signal of the output insert loop to the external effect or signal processor.

### Insert Return

This 1/4-inch TRS balanced jack accepts the return signal of the output insert loop from the external effect or signal processor.

### Monitor B Out (L&R)

These two connectors deliver local monitor B's balanced output signal.

### Ext. Talkback In

This connector accepts a balanced signal which is assignable to any of the locations in the talkback system.







# Appendix A

## Technical Information

## Specifications

The following are the technical specifications for the Century LM console.

### Frequency Response

+0.0, -0.5dB, 20Hz to 20 kHz (referenced to 1kHz)

### Total Harmonic Distortion

Mic input to Group output  
20Hz to 20 kHz at +15dBu <0.01%

### Noise (22Hz to 22kHz)

Mic EIN -129 dBu  
Group Output Noise (20 ch routed)- 80 dBu

### Crosstalk (Measured at 1kHz)

Channel Mute >102 dB  
Channel Fader Attenuation > 96 dB  
Channel Routing > 85 dB

### Input/Output Impedances

Mic Input 4k $\Omega$  balanced  
Line Input >10k $\Omega$  balanced  
Outputs 140 $\Omega$  balanced

### Input/Output Levels (0VU = +4 dBu, 1.23V RMS)

Mic Input Sensitivity + 4 to -62 dBu  
Line Input Sensitivity + 12 to -38 dBu  
Input Insertion Point Level + 4 dBu  
Output Insertion Point Level - 2 dBu  
Nominal Output Level + 4 dBu  
Maximum Balanced Output Level +28 dBu

## Configurations

Century LM Consoles are available in the following configurations:

### LM-12 (12 mono outputs)

12, 20, 28, 32, 40, or 52 inputs

### LM-20 (20 mono outputs)

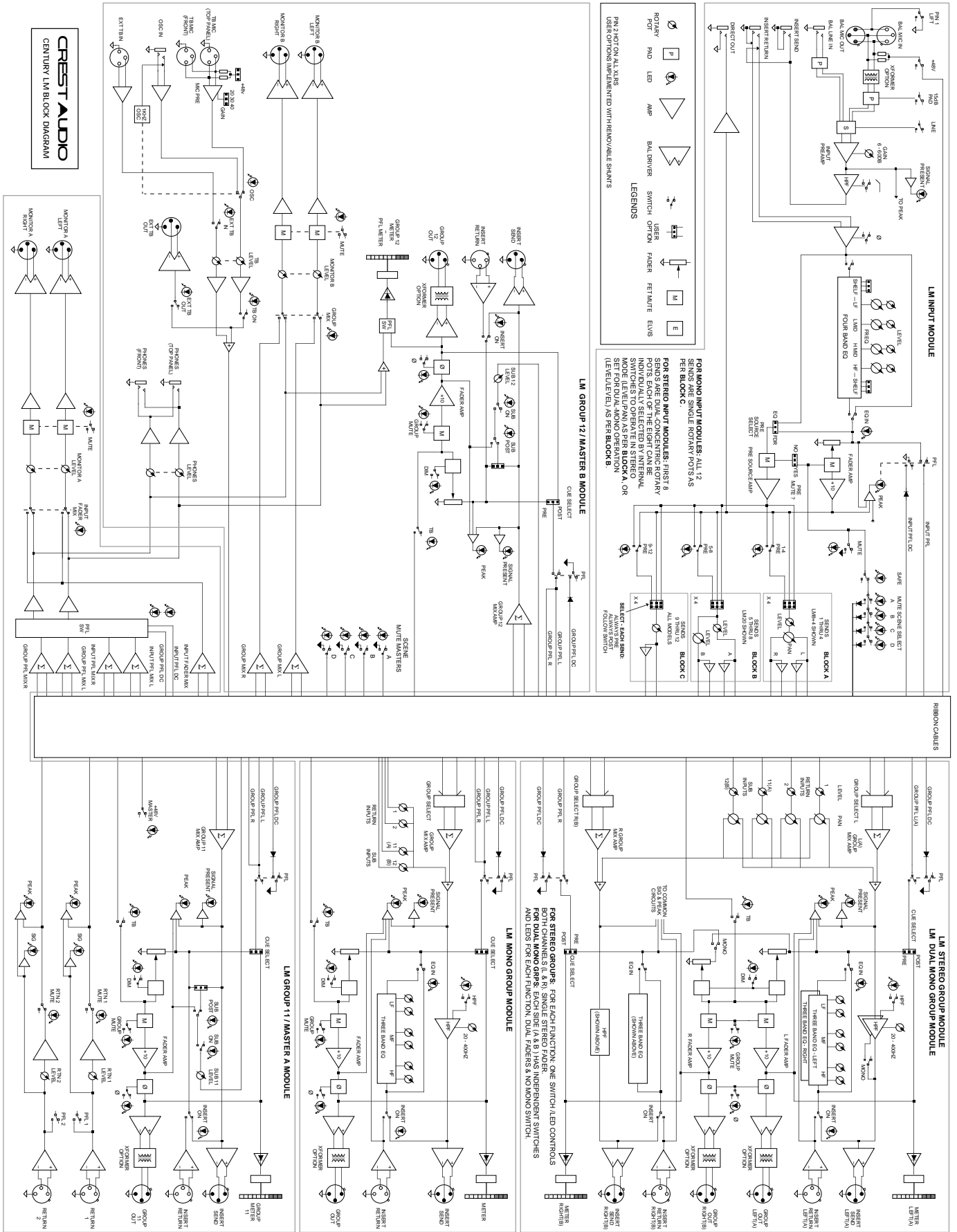
12, 20, 28, 32, 40, or 52 inputs

## Architect's & Engineer's Specifications

The following text should be used when specifying a Century LM in a bid or proposal.

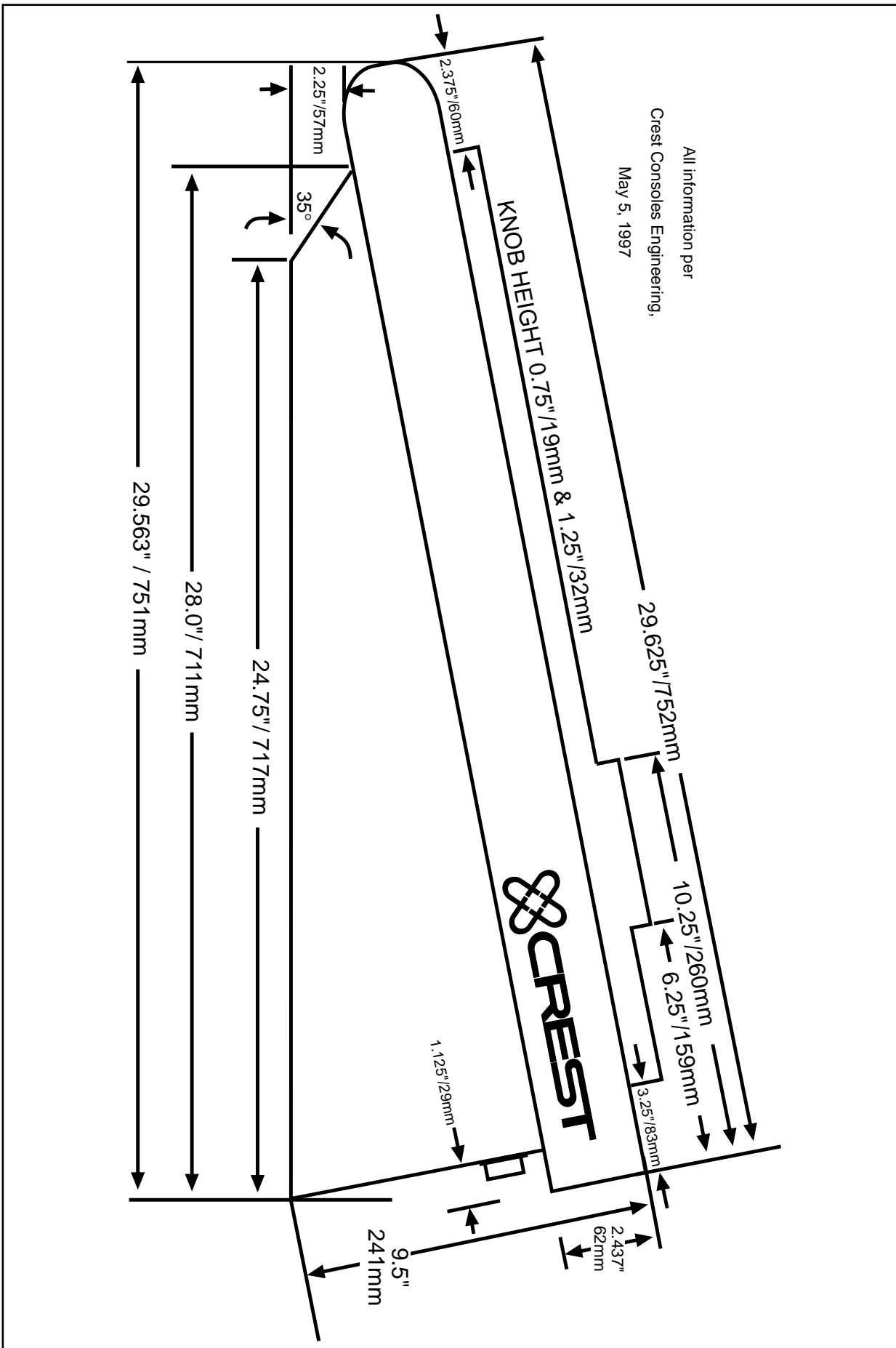
The monitor console shall be constructed in a modular fashion and be housed in a steel frame with molded plastic side panel/carrying handles. The console shall be black with white labeling and utilize XLR lighting device connectors. All microphone inputs shall be electronically balanced and accessed via 3-pin XLR connectors and have an EIN of -129 dBm. All line inputs shall be electronically balanced and accessed via 1/4" TRS jacks. The insert points shall have discrete send and return connectors. Each input channel shall have: a +48 volt phantom power switch, a -15 dB mic pad switch, a 100Hz high pass filter switch, a polarity reverse switch and 4-band (LF-40-800Hz, LMF-100Hz-2kHz, HMF-400Hz-8kHz, HF-1.5k-20kHz) sweepable EQ with selectable peak/shelve settings on the high and low controls and an EQ In switch. Each input channel shall also have: a FET controlled (10 millisecond ramp) mute switch with LED, dynamic signal present LED and peak LED, 4 scene mute switches (A-D) each with LED, scene mute safe switch with LED and a 100mm long throw fader. Each input channel shall have output send controls appropriate to the specified model. Each bank of four rotary controls shall have an associated pre switch which shall be internally elected to operate as pre EQ or pre Fader; this selection shall apply to all three pre switches on the input. Each of the send controls shall be internally selectable to operate in one of three modes: follow its associated pre switch, always pre or always post. The console shall be available in two output configurations: 12 mono or 20 mono. Each output shall have a ten-segment LED array, three-band sweepable EQ, EQ-In switch, variable high-pass filter, polarity reverse, insert switch, talkback enable, dim, peak & dynamic signal present LEDs, local mute and PFL. The mono outputs shall have mono EQ, the stereo outputs shall have stereo EQ; while the dual mono outputs shall have stereo EQ but with separate A/B EQ In switches. The master section shall be contained within mono outputs 11 and 12 and shall contain: a talkback system, scene mute master controls, return master controls and two stereo local monitor controls, connections for headphones, talkback mics, external oscillators as well as indicators for power, input and output PFL. The power supply shall be housed in a 14 ga. steel chassis that shall occupy two 19" rack spaces. The power supply shall have the ability to be daisy-chained to additional power supplies to provide a fail-safe operating environment. Connection of two or more power supplies shall not require additional interface hardware other than the provided cable. The live monitor console shall be: the Crest Audio Century LM.

# LM Block Diagram



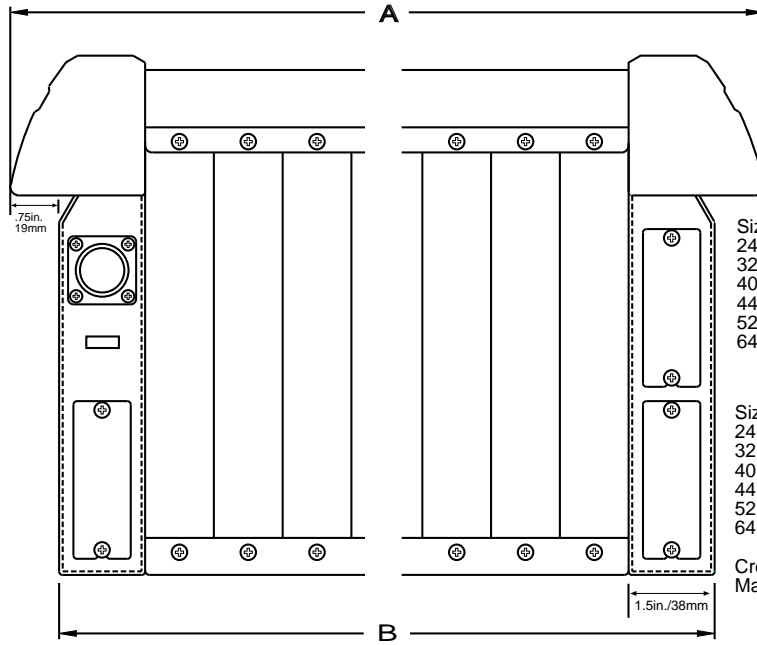
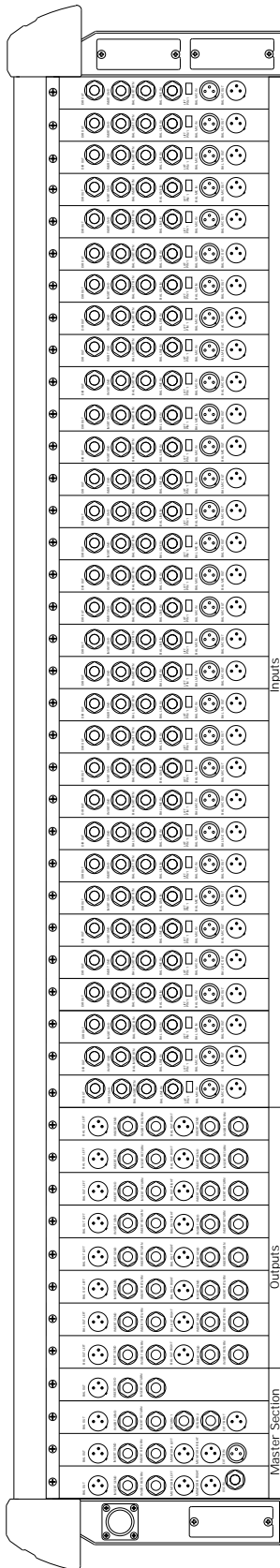
### Console Side Dimensions

The following diagram illustrates the depth and height dimensions (from the side) for all Century LM consoles.



All information per  
Crest Consoles Engineering,  
May 5, 1997

# Console Rear Views and Dimensions



Size	A	B
24	33.55"	31.80"
32	43.15"	41.40"
40	52.75"	51.00"
44	57.55"	55.80"
52	67.15"	65.40"
64	81.55"	79.80"

Size	A	B
24	852mm	808mm
32	1096mm	1052mm
40	1340mm	1295mm
44	1462mm	1417mm
52	1706mm	1661mm
64	2071mm	2027mm

Crest Consoles Engineering,  
May 5, 1997

## LM USER-OPTIONS

LM Consoles are shipped having standard configuration unless specified at time of order. There are ways that the console configuration may be varied after manufacture. The items listed are internal options selected by gold jumper links.

Default is marked with a line on the board and is usually pins 1&2 of the three pin header.

In addition there are links for module function assignment. Take care to not disturb these when using USER OPTION links.

<u>MODULE</u>	<u>LOCATION</u>	<u>OPTION TITLE</u>	<u>FUNCTION</u>
	M = Main C = Connector		Shipped with the option underlined
<b>All models</b>			
LM Inputs	M	Pre Source (SRC)Mute	Aux sends <u>with</u> or without Mute
	M	Pre Source Select	Pre & <u>Post</u> EQ
LM In EQ	M	HF PK-SH & LF PK-SH	HF & LF <u>Peak</u> or Shelf EQ
LM Input	C	Mic Split Ground	<u>Connect</u> or isolate Input pin 1 to Out pin 1
<b>All models</b>			
LM Output 11(master A)	M	Monitor A Out PFL Source	<u>Stereo</u> or Mono
LM Output 11	M	Sub Send A	Pre or <u>Post</u> group 11 Insert
LM Output 12 (master B)	M	Sub Send B	Pre or <u>Post</u> group 12 Insert
LM Output 12	C	Talkback Gain	Low, <u>Normal</u> or High
LM Output 12	C	Talkback Phantom Power	<u>On</u> or Off
<b>LM Stereo (8+4) models</b>			
LM8+4 In, send pots	M	Stereo or Dual Mono switch	Level+Pan or Level+Level
LM8+4 In, send pots	M	Group Source Selects 1-12	Pre/Post fader or Switched
LM Stereo Groups	M	OPT 1 & 2	PFL or AFL Left & Right
<b>LM Dual Mono (LM20) models</b>			
Inputs, send pots	M	Stereo or Dual Mono switch	<u>Level+Pan</u> or Level+Level
Inputs, send pots	M	Group Source Selects 1-12	Pre/Post fader or <u>Switched</u>
LM Dual Mono Groups	M	Cue SEL opt 1 & 2	<u>PFL</u> or AFL A & B outputs
	M	CUE MODE opt 3 & 4	<u>STR</u> (stereo) or MONO
	M	SUB A & B (switch 16, 17)	Level+Pan or <u>Level+Level</u>
	M	RET A & B (switch 18, 19)	Level+Pan or <u>Level+Level</u>
<b>LM12 models</b>			
LM 12 Outputs 1-10	M	Cue, OPT 1	<u>PFL</u> or AFL



### IMPORTANT



Output modules are pre-assigned at the Crest factory

These modules must always be installed in the correct positions. They are NOT interchangeable without being properly re-assigned. Please contact the Crest Audio Service Department for more information.

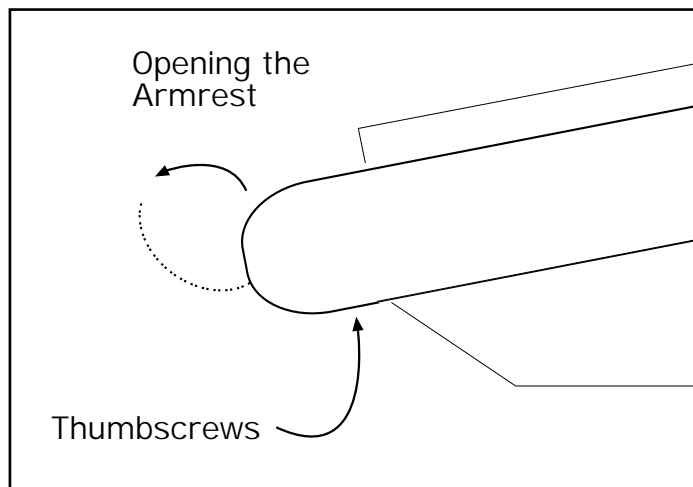
## Console Disassembly

Though you shouldn't have to disassemble the console, it is necessary to remove modules to change the jumper and switch settings associated with the internally selectable options.

**ALWAYS DISCONNECT THE POWER SUPPLY BEFORE OPENING THE CONSOLE!**

### ONE • Releasing the armrest.

To properly remove one or more modules, the black painted armrest must first be released. To do this, the two thumbscrews (see diagram at right) must be loosened from below. Once these screws are loose, slide both of them a few inches to the side (they will only move in one direction). Once the screws have been moved the armrest will easily roll back exposing the module screws beneath.

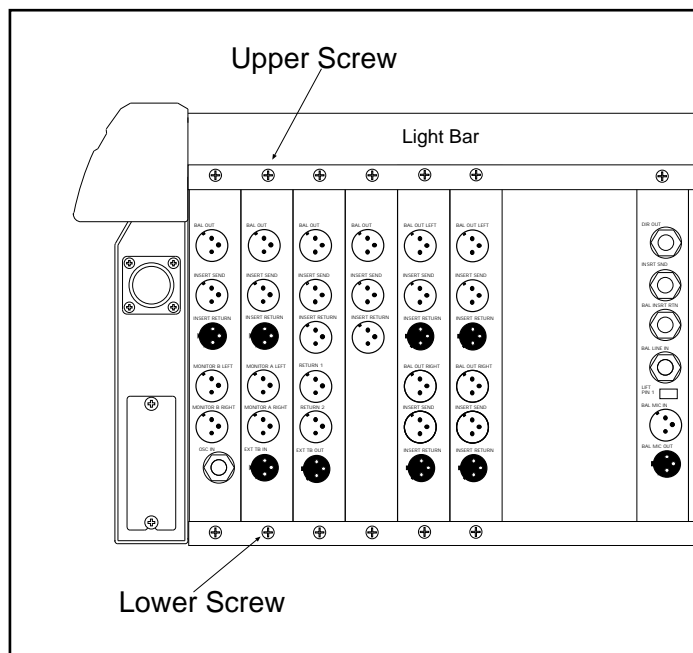


### TWO • Remove top module screw

Once the armrest has been rolled back, a single screw holding each module in place will be exposed. Remove the screws from the module(s) you want to remove.

### THREE • Remove rear screws

On the back panel of the console there are two screws holding each module in place (see diagram at right) Remove both screws from each module you wish to remove.



### FOUR • Lift the module(s) out

As you lift the module out of the chassis three wires must be detached before the module can be completely removed: 2 ribbon cables and one ground wire.

The ribbon cables are removed by flipping the latches on the ends of the connectors. Once the latches have been flipped the connector should pull off easily.

The ground wire (green) is a spade lug which will pull off with a tug.

### FIVE • Putting it all back together

Re-assembling a Century LM is as easy as taking it apart, but only if you know where everything goes. If you are going to be removing a number of modules, consider replacing the first before removing the second. Reversing the above steps will result in the console being as well put together as it was when it left the factory.



#### IMPORTANT



Output modules are pre-assigned at the Crest factory

These modules must always be installed in the correct positions. They are NOT interchangeable without being properly re-assigned. Please contact the Crest Audio Service Department for more information.







Appendix B

Glossary

## Glossary

### Balanced Insert Return

See Insert Return

### Balanced Line In

See Line Input

### Balanced Mic In

See Microphone Input

### Balanced Mic Out

See Microphone Output

### Balanced Out

See Outputs

### DIM Switch

Introduces a -6dB drop to the output signal. This is a push on/push off switch allows the operator to temporarily drop the level of a monitor without actually changing any settings.

### Direct Out

This jack carries the direct output signal (post fader & post mute) from each input channel. This signal can be used for connection to recording devices or routing of the post fader signal.

### EQ IN Switch

Inserts the EQ section into the input/output channel signal. An associated LED illuminates when the switch is down.

### Equalizer Controls (Input)

There are two knobs for each of the four bands. The inner knob controls the boost or cut; while the outer knob controls the center frequency adjusted by the inner knob. These center frequencies are printed on the chassis around the outer knob. This EQ is active only when the EQ In switch is depressed.

### Equalizer Controls (Output)

Controls the equalization of the output mix signal through three bands, via six controls. The upper knob of each band determines the center frequency (high-1kHz-20kHz, mid-300Hz-8kHz, low-40Hz, 1kHz), while the lower knob adjusts the amount of boost or cut.

### External Talkback Input

In addition to the mic connections on the console surface, an additional Talkback input connection is provided on the rear of the master section. Signal connected to this jack appears on the Talkback bus whenever the External TB Input switch is depressed.

### External Talkback Output

This allows the internal TB signals present on the Talkback bus to be routed to an external destination such as a link to the FOH console. Signal appears on this jack when both the External TB Output switch and talkback master switches are depressed.

### Fader

Used for final output control of an input/output channel except those sends selected pre fader. (Insert Output levels are not affected by the fader position.)

### Gain Control

Adjusts input gain for proper signal level on the input. To set the gain to the best position, make sure there is signal present at the input. Depress the PFL switch on that input channel and make sure that no other PFL switches are depressed. Adjust the gain control until the PFL meter (on output module 12) is peaking around the +3 level.

### Group Mix Switch

This switch activates circuitry that sums all output mixes and assigns the summed signal to the Monitor B output. This output is stereo when stereo signals are present. This signal is post fader.

### Headphone Jack

Allows for connection of headphones via a 1/4" TRS plug. There are two headphone jacks: one on master module B, and one underneath the armrest on the right front corner of the console.

### Headphone Level Control

Controls the output level of both headphone jacks.

### High Pass Filter Switch

This switch inserts the High Pass Filter into the output signal. Unlike the 100Hz HPF on the inputs, the output HPF is adjustable via the HPF frequency control.

### HPF Frequency Control

This knob adjusts the high pass filter frequency from 20Hz to 400Hz. The filter operates at a -12 dB per octave rate.

### 100 Hz High Pass Filter (Input)

Reduces all Input signal low frequency content at a 12db per octave rate referenced to 100Hz (-3db point).

### Insert

All LM inputs and outputs have insert loops which facilitate the patching of external processing equipment into the input or output signal. All LM inserts are pre EQ.

On the inputs, signal is always present at the Insert Send connection and the loop is complete when the proper connector is plugged into the Insert Return. The Insert Return can also be used as a line input when by-passing the preamp is desired.

On the outputs, the loop is controlled by the Insert On switch. Depressing this switch inserts the loop into the output signal. Since this a true insert, if an incomplete loop exists, depressing the switch will mute the output.

### Input/Output PFL Indicators

These LEDs indicate what type of signal (input or output) is PFL'd at any given time.

## Input Fader Mix Switch

This switch activates circuitry that sums all input signals and assigns the summed signal to the Monitor A output. This signal is post fader.

## Lamp Dim Control

Controls the brightness of any 12 volt lighting devices attached to the XLR connectors on the light bar.

## LINE Switch

Selects the input signal source between the Balanced XLR Microphone Input connector and the Balanced Line Input 1/4" TRS connector.

## Line Input

This jack accepts balanced and unbalanced line level inputs and delivers it into the associated input channel.

## Microphone Input

This connector accepts balanced microphone inputs for the associated input channel.

## Microphone Output

This connector is in parallel with the Balanced Mic In connector and allows easy connection of the monitor board to the FOH console.

## Mix Sends

Every LM console has twelve (12) send controls. Each LM model deals with these twelve controls differently:

LM-12 • Each of the twelve knobs determine the amount of signal sent to each of the twelve outputs.

LM-8+4 • The first eight controls are dual concentric and they determine the amount of signal sent to the first eight stereo outputs. The center knob controls level while the outer knob is a PAN control. The last four knobs adjust the level of signal sent to outputs 9-12.

LM-20 • The first eight controls are dual concentric and they determine the amount of signal sent to the first sixteen outputs (1a/1b . . . 8a/8b). The last four knobs adjust the level of signal sent to outputs 9-12.

## Monitor A/B

These are stereo local monitor outputs. Level is controlled via the Monitor Level control and the signal is found on balanced output connectors (two per monitor) on the rear of the master section. Each Monitor can be muted with the Monitor Mute switch. See - Input Fader Mix and Group Mix for more information.

## MUTE Switch with LED

On all inputs and outputs where this switch is present, depressing it will mute all sends. This switch does not affect the PFL switch or the Peak and Signal Present LED indicators. The LED illuminates when the channel is muted either from the switch or via the scene mute system.

## Oscillator On

Switches on the internal (or external if connected) oscillator which is fixed at 1kHz . The oscillator only operates when the Talkback system is engaged.

## Oscillator / Pink Noise In

This connector accepts a balanced or unbalanced signal from an oscillator or pink noise generator. This signal is assignable via the Talkback assignment switches. The external source is switched in via the Oscillator On switch. The internal 1kHz oscillator is defeated when a plug inserted.

## Output Insert - See Insert

Output EQ - See Equalizer Controls (Output)

## PAD Switch

Introduces a -15 dB drop to the mic input signal.

## PEAK LED Indicator

Illuminates RED when any of the points monitored come within 3db of the clipping point. Signal is sampled after the input preamplifier stage, after the EQ section, and after the fader.

This LED also serves as a PFL ON indicator, but at a much lower intensity than when it is used to indicate clipping.

## PFL Indicator

This LED illuminates when the signal on meter 12 is a PFL or AFL signal

## Phantom Power Switch

Turns on 48V Phantom Power as required by certain microphones for proper operation. This switch delivers +48V only when the Phantom Power Master Switch is engaged.

## Phantom Master Switch w/LED

Switches +48V phantom power on and off for the entire console.

## Power Indicators

Shows the status of the four voltages used by the console.

## Polarity Reverse Switch

Electrically inverts the polarity of associated signal.

## PRE Switch

Toggles mix sends (in groups of four) between Post and the internally selected Pre state. See the Internal Settings section of the Technical Appendix.

## PFL Switch

Samples the channel's signal pre-fader and allows for monitoring within the master section of the console. This signal is not affected by the Mute Switch. When depressed, the signal level can be seen on the output 12 meter, and heard via the mixer's headphone or local monitor output. When this PFL Switch is depressed, the channel PEAK LED indicator illuminates at a lower intensity. When used as a status indicator of switch position, the Peak LED indicating circuit remains fully operation by illuminating at a much higher intensity than its use as a PFL status indicator. Input PFL always takes priority over output PFL.

## Return 1 / 2

These connectors accept a balanced signal which is delivered to the return master controls on the master section

## Return Level Controls

Adjusts the level of return signals 1 and 2 in the output. These signals come from the Master Section. The center knob adjusts level while the outer knob adjusts panning within the stereo image. See Returns 1 & 2 on the Master Section description for more information.

## Return Master Level Controls

Controls the final return signal level available to the outputs.

## Scene Mute Assignments

Assign the input channel to any of the four scene mute groups. Scene mute combines with the module's local mute button, and actuates the local mute LED.

## Scene Mute Masters

These four switches turn the four scene mutes on and off for the entire console.

## Scene Mute Safe Switch

Disables any selected scene mute assignments. An associated green LED indicates the channel is in a safe state.

## Signal Present LED

This green LED constantly displays level activity of the input/output channel by varying in intensity.

## Sub Input Controls

Adjusts the level of cross-mix in the output from mono outputs 11 and 12. The center knob adjusts level while the outer knob adjusts panning within the stereo image.

## Sub 11 / 12 Post Switch

Switches the subgroup between pre and post fader.

## Sub 11 / 12 On Switch

Switches the subgroup send on and off.

## Talkback Master On/Off

Switches the internal Talkback system on and off

## TB Enable Switch

Injects the talkback signal from the master section into the the associated output.

## Talkback Level Control

Adjusts the final level of all Talkback signals.

## Talkback Mic Input

Allows for connection of a gooseneck or other XLR type microphone to the Talkback system.



# Appendix C

## Schematics

LOCATION	DESCRIPTION	SCHEMATIC #	DWG #	REV #
LM 12 (MONO) INPUT MODULE	LM 12 INPUT CONNECTOR	1	76D1753	03
	LM 12 INPUT MAIN	2	76D1812	01
LM 20 / 8+4 INPUT MODULE	LM 20 / 8+4 INPUT CONNECTOR	3	76D1753	03
	LM 20 / 8+4 INPUT MAIN	4	76D1830	01
MONO OUTPUT GROUP MODULE	LM MONO OUTPUT GROUP CONNECTOR	5	76D1824	02
"(LM 12 Groups 1-10, LM 8+4 & LM 20 Groups 9&10)"	LM MONO GROUP MAIN	6	76D1823	02
STEREO / DUAL MONO OUTPUT GROUP MODULE	LM DUAL MONO / STEREO GROUP CONNECTOR (1 OF 2)	7	76D1832	02
(LM 20 & LM 8+4 Groups 1-8)	LM DUAL MONO / STEREO GROUP CONNECTOR (2 OF 2)	8	76D1832	02
	LM 8+4 STEREO GROUP MAIN (1 OF 2)	9	76D1831	02
	LM 8+4 STEREO GROUP MAIN (2 OF 2)	10	76D1831	02
	LM 20 DUAL MONO GROUP MAIN (1 OF 2)	11	76D1955	01
	LM 20 DUAL MONO GROUP MAIN (2 OF 2)	12	76D1955	01
	MASTER A OUTPUT MODULE	MASTER A CONNECTOR PCB	13	76D1826
MASTER A MAIN PCB		14	76D1825	01
MASTER B OUTPUT MODULE	MASTER B CONNECTOR PCB	15	76D1829	01
	MASTER B MAIN PCB	16	76D1828	01
RIBBON CABLE PIN OUT DIAGRAMS	RIBBON PIN OUTS	17	n/a	n/a



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