



# Model 211

## Announcer's Console

The Model 211 Announcer's Console is designed to serve as the audio control center for announcers, commentators, and production talent. The tabletop unit is suited for numerous applications including on-air television sports broadcasting. The Model 211 integrates all on-air, talkback, and cue audio signal routing into one compact system. Ease of use, configuration flexibility, and sonic excellence are some of the unit's highlights.

### Key Features:

- Microphone preamp with selectable gain and P48 phantom power
- Two line-level inputs
- Two pushbutton switches offer programmable "click-free" audio path control
- Transformer-balanced main output
- Transformer-coupled line-level talkback output
- Stereo headphone monitoring
- Auxiliary relay contacts
- Powered by external DC source
- Extensive configuration choices accessible via DIP switches located on bottom of enclosure

### Overview

The Model 211 is compatible with many broadcast and audio system environments. Standard connectors are used to interface microphone, headphone, talkback, and talent cue signals. Whether it's microphone switching, talkback output, or headphone cue feed, superior audio quality is maintained. A microprocessor provides the Model 211's logic power, allowing exacting control of the unit's operation. A range of configuration choices allow the desired operating parameters to be easily selected. While flexible, the user is presented with an easy-to-use set of controls and indicators.

A truly next-generation product, extensive research into the needs and desires of field production personnel was integral to the Model 211's creation. Target applications include on-air television, radio, streaming, and production applications. Specialized features are included to allow the Model 211 to be used in a variety of other audio applications. These include stadium announcement and voice-over/narration booths.



### Microphone Input

A high-performance microphone preamplifier circuit provides low-noise/low-distortion amplification over a 20 to 60 dB gain range. The gain is adjustable in 10 dB steps. The input is compatible with balanced dynamic or condenser-type microphones. The microphone power source meets the worldwide P48 phantom power standard. The preamplifier's gain can also be set for 0 dB, allowing a line-level audio signal to be connected. This could prove useful in special applications such as when an external preamp or mic processor is being used. An LED indicator serves as an aid for optimizing the setting of the preamplifier's gain. The output of the microphone preamplifier is used by the main output as well as being routed to the compressor circuit that supports the talkback function.

### Main and Talkback Outputs

The Model 211 provides one main and one talkback output. The main output is designed to serve as the on-air, stadium announcement, or other primary audio feed. With a nominal level of  $-2$  dBu, it is designed as a fully professional interface with high output capability, low distortion, and low noise. It features a high-quality transformer expressly designed for driving long broadcast cable runs. The talkback output is intended to provide production trucks, control rooms, or support personnel with a talent-originated cue signal. The talkback output is transformer-coupled with a  $+4$  dBu nominal signal level. It contains resistors in series with its output connections, allowing the talkback output from multiple units to be directly summed (combined).

For non-on-air applications, a special Model 211 feature can be enabled, placing the unit in a “production” mode. This allows the main output to be used as a second talkback output. In this configuration the unit can be even more powerful when used in a live-event application, such as serving as a master console for a production director.

### Dynamic Range Control

A studio-quality compressor circuit is provided to control the dynamic range of the signal coming from the microphone preamplifier. Far from a simple “clipper,” the circuit utilizes a sophisticated laser-trimmed voltage-controlled-amplifier (VCA) integrated circuit for quiet, low-distortion level control. The signal from the compressor is always used by the talkback output. In addition, the audio source for the main output can be selected to be either the output of the microphone preamplifier or the output of the compressor. While possibly inappropriate for major on-air situations, having dynamic range control of the main output can offer increased effectiveness for many applications. These could include stadium announcement positions, sports events using non-professional on-air talent, and situations where cable crosstalk is of concern.

### User Controls and Status Indicators

Two pushbutton switches, three LED indicators, and two rotary controls provide the user with a clear, easy-to-use interface. One pushbutton switch controls the status of the main output. This is the audio output intended for on-air, announcement, or other primary uses. Two LEDs display the on/off status of the main output. A second pushbutton switch controls the status of the talkback output. This is the audio output used to communicate with producers, directors, spotters, or other behind-the-scenes production personnel. A status LED is associated with the talkback button. Two rotary controls allow the user to adjust the level of the headphone output.

### Flexibility

A large part of the Model 211’s unique power is the ability to configure the operation of the main output and talkback functions. To meet the needs of the many specific broadcast and production applications, a variety of button operating modes is available. The main output button can be selected to operate from among four modes. In the “push-to-mute” mode the button performs a momentary mute of the main output. In this way a “cough” button function is created, something typically required for television sports broadcasting. In the “push-to-talk” mode the button provides a momentary active function for the main output. This mode would be appropriate for applications such



as stadium announcement. An alternate action “latching” configuration allows the button to enable or disable the main output as desired. This is useful in radio broadcasting, announce-booth, or voice-over applications. The fourth mode provides a hybrid function, supporting both push-to-talk and tap-to-enable/tap-to-disable operation. This operation is similar to that found in many broadcast intercom system user stations.

The button associated with the talkback function can be configured to operate from either of two modes. One of the modes supports a “push-to-talk” function. This is typically used for on-air broadcast applications. The other mode provides a hybrid function, the operation of which is discussed in the previous paragraph. The hybrid mode is especially useful when the Model 211 is used in a production-support application.

### Cue Sources

Two line-level audio sources can also be connected to the Model 211. Possible signal sources include audio consoles, matrix intercom systems, and off-air receivers. The connected signals can be from two independent sources or could be a stereo audio feed such as would be associated with a broadcast music event. Two trim potentiometers, located on the bottom of the unit, allow signals with wide nominal audio levels to be cleanly interfaced. Each source can be individually assigned to the left channel, right channel, or both left and right channels of the headphone output. This allows a wide variety of stereo and mono headphone mixes to be created.

Using the optional IFB Input Card Kit broadcast-standard 2-channel powered (“wet”) IFB circuits can also be connected to the Model 211. In this way an IFB (“interruptable foldback”) audio signal can be used as a source of headphone cue audio signals. (But note that the connected IFB circuit will not be able to power the Model 211; only the audio signals will be interfaced!) The two audio signals associated with the IFB input can be assigned to either or both of the headphone output channels. Originating in production trailers, control rooms, or remote locations, an IFB source typically provides DC power

and program-with-interrupt audio on one channel and program-only audio on the other.

The IFB Input Card Kit also allows direct connection to single- and dual-channel party-line (PL) intercom circuits. This can be useful when applications will benefit from intercom audio channels being used for headphone cue signals. But be aware that no talkback into the PL circuits is possible, nor is it possible to power the Model 211 from the party-line circuit.

## Headphone Output

Two rotary controls are provided for user adjustment of the headphone output levels. For application flexibility the actual function of the two “pots” is configurable. For traditional on-air sports applications they can be selected to the dual-channel (“level/level”) mode which provides independent control of the left- and right-channel volume. For use with dual-channel cue signals, or to support user preference, the stereo (“level/balance”) mode can be selected. In this mode one control adjusts the overall level of both the left and right channels, while the other allows adjustment of the left/right level balance. To help minimize the chance of broadcast cues being missed, both level control modes can be configured so that a minimum headphone output level is maintained. Alternately, the headphone output can be set to fully mute when the controls are at their minimum position.

Provision has been made to support applications where a monaural cue feed is desired. A configuration switch allows the summing (combining) of the selected left and right headphone sources. In addition to creating a dual-channel mono output it also allows the level controls to be configured as a simple 2-channel mixer.

The headphone output was designed to meet the needs of contemporary headphones and headsets. Specifically, the output circuits act as voltage, rather than power, drivers. In this configuration they can provide high output levels with very low distortion and noise, along with minimal current consumption. The output circuits are configured to safely drive stereo or mono loads. This ensures that all types of headphones, headsets, and earpieces can be directly connected.

## Audio Quality and Protection

The Model 211’s circuitry is carefully tailored to provide excellent audio performance. Professional-quality components are featured throughout. For reliability all audio routing is performed using solid-state devices. In all critical audio paths, “clickless” electronic switches provide noise-free control. All audio inputs and outputs make extensive use of protection components. This

limits the chance of damage from ESD and other undesirable, yet real-world, hazards.

## Power Source

The Model 211 derives its operating power from an external nominal 24 volt DC source. Internal switch-mode power supply circuitry uses the incoming 24 volt source to generate the various voltages required by the Model 211’s circuitry, including P48 phantom. A universal input/24 volt DC external power supply is included with each Model 211 unit.

## Relay Contacts

The Model 211’s circuitry includes two general-purpose relay contacts to allow specialized configurations to be created. Under software control, the form-A (normally open) solid-state relay contacts follow the state of the main and talkback output functions. Taking advantage of the locations provided for additional XLR connectors, a technician may easily implement a variety of functions such as a mic active indication, audio muting during talkback, or audio insertion control.

## Configuration

Model 211 configurations are made using a number of DIP switches. One 8-position switch assembly is used to set the gain of the microphone preamplifier, the on/off status of phantom power, and the headphone stereo/mono mode. A second 8-position switch assembly configures which of the line-input and optional auxiliary input audio sources are routed to the headphone output. A third 8-position switch assembly communicates the desired operating modes to the microprocessor. All switches are accessible via the bottom of the Model 211’s enclosure; the unit does not have to be disassembled. Changes made to any of the configuration parameters become active immediately. To prevent unwanted access to the configuration switches a security plate, included with each unit, is attached to the bottom of the enclosure.

## Connectors

The Model 211 uses standard connectors throughout. The microphone and line-level inputs use 3-pin female XLR connectors. The main and talkback outputs use 3-pin male XLRs. A ¼-inch 3-conductor jack is used for the headphone output. The external source of 24 volt DC power is connected by way of a 2.1 x 5.5 mm “locking” coaxial power jack.

In the world of broadcast and production audio it’s fair to say that applications vary widely. To this end, one or two additional XLR connectors can easily be mounted into the Model 211’s back panel. Multiple 3-position headers located on the Model

211's circuit board provide technician access to all input and output connections. Using a factory-available interface cable kit allows a Model 211 to be optimized to meet the exact needs of specific applications. For example, some applications may prefer to use a multi-pin XLR connector to interface with a headset. This can easily be accomplished by adding the appropriate 5-, 6-, or 7-pin XLR connector and making a few simple connections. Other applications may benefit from having "mult" or "loop-through" connections, something easily incorporated into a Model 211. An optional IFB input card, as previously discussed, can also be mounted in one of the spare XLR connector positions.

## Model 211 Specifications

### General Audio:

Frequency Response: 10 Hz-20 kHz,  $\pm 0.2$  dB, mic in/main out  
 Distortion (THD+N): 0.008%, measured at 1 kHz, mic in/main out  
 S/N Ratio: 86 dB, referenced to -42 dBu mic in/-2 dBu main out  
 Dynamic Range (A-weighted): 108 dB

### Connectors:

Mic In, Line In 1 & 2: 3-pin female XLR  
 Main Out, Talkback Out: 3-pin male XLR  
 Headphone Out: 1/4-inch 3-conductor phone jack  
 24 Vdc Power In: coaxial power jack, 2.1 x 5.5 mm, locking bushing, compatible with Switchcraft S760K plug

### Spare Connector Locations: 2

Allows one or two Neutrik NC\*D-L-1 connectors to be installed (\*=3F, 3M, 5F, 5M, 6F, 6FS, etc.)

### Microphone Input/Preamplifier:

Type: electronically balanced  
 Input Impedance: 2 k ohms, nominal  
 CMRR: >80 dB, 20 Hz-20 kHz, 40 dB gain  
 Gain Range: 20 to 60 dB, nominal, adjustable in 10 dB steps; 0 dB (no gain) also available  
 Compatibility: dynamic or phantom-powered mics  
 Phantom Power: 45 volts DC nominal, meets IEC 61938 P48 standard

### Line Inputs: 2

Type: balanced, transformer-coupled  
 Impedance: 10 k ohms  
 Nominal Level: -12 dBV to +6 dBu, adjustable

### 2-Channel Auxiliary Input:

Implementation: optional IFB Input Card Kit (Studio Technologies order code 31212) can be installed into back panel  
 Type: 2-channel, unbalanced, transformer-coupled  
 Impedance: 10 k ohms, nominal  
 Nominal Level: -10 dBu

### Compressor:

Threshold: 2 dB above nominal level  
 Attack/Release Time: 2 mSec/100 mSec, nominal  
 Slope: 5:1, nominal  
 Status LED: compressor active

### Main Output:

Type: balanced, transformer-coupled  
 Nominal Level: -2 dBu  
 Maximum Level: +20 dBu into 2 k ohms  
 Impedance: 100 ohms, nominal  
 Source: output of microphone preamplifier or output of compressor, selectable



### Talkback Output:

Type: transformer-coupled with series capacitors and isolation resistors  
 Impedance: 600 ohms, nominal  
 Nominal Level: +4 dBu  
 Maximum Level: +11 dBu (compressor restricts maximum)

### Headphone Output: 1, stereo

Compatibility: intended for connection to mono or stereo headphones or headsets with nominal impedance of 100 ohms or greater  
 Type: voltage driver  
 Maximum Output Voltage: 12 Vpp, 150 ohm load

### Relay Contacts: 2

Functions: follows status of main and talkback outputs  
 Type: form-A (normally open, not-shorted) solid-state relay contact  
 Rating: 100 mA, 60 volts AC/DC, maximum  
 Contact Resistance: 16 ohms, maximum  
 Access: requires user-implemented connection method

**Power Source:** 24 volts DC nominal, 70 mA @ 24 volts DC; acceptable range 20-30 volts DC. Each unit shipped with a universal input/24 volt DC output power supply.

### Dimensions (Overall):

5.6 inches wide (14.2 cm)  
 3.3 inches high (8.4 cm)  
 8.5 inches deep (22.4 cm)

**Weight:** 3.4 pounds (1.6 kg)

Specifications subject to change without notice.

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