



## Installation and Operation Manual



# ProMix 4 Four Channel Remote/Podcast Audio Mixing Console

Manual update 08/22/2017

If you need a firmware upgrade, contact Broadcast Tools®

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#### INTRODUCTION

Thank you for your purchase of a Broadcast Tools® ProMix 4, Four Channel Remote/Podcast Audio Mixing Console. (referred to as the ProMix 4, throughout this manual). We're confident that this product will give you many years of dependable service. This manual is intended to give you all the information needed to install and operate the ProMix 4.

#### SAFETY INFORMATION

Only qualified technical personnel should install the ProMix 4. Any attempt to install this device by a person who is not technically qualified could result in a hazardous condition to the installer or other personnel or damage to the ProMix 4 or other equipment. Please ensure that proper safety precautions have been taken before installing this device. If you are unfamiliar with this type of equipment, please contact a properly qualified engineer to handle the installation and setup of the ProMix 4. Broadcast Tools, Inc., is unable to support NON-Broadcast Tools software, hardware or NON-Broadcast Tools computer/hardware/software problems. If you experience these problems, please research your hardware/software instruction manuals or contact the manufacturers technical support department.

#### WHO TO CONTACT FOR HELP

If you have any questions regarding your product or you need assistance, please contact your distributor from whom you purchased this equipment. If you would like more information about BROADCAST TOOLS® products, you may reach us at:

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This manual should be read thoroughly before installation and operation.

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#### PRODUCT OVERVIEW

The ProMix 4 is a four-channel monaural remote/podcast audio mixing console ideally suited for the typical remote or podcast mixing applications. It features three combination microphone/line inputs utilizing high performance THAT Corporation microphone pre-amp ICs, a single line only input, a single program output, a "mix-minus" output, and three independent headphone outputs with pan capability between IFB/Cue (Return)audio and program channel audio along with flexible monitoring functions. Additional features include defeatable program limiter, USB codec, full duplex "party-line" type talkback capability when attached to the optional ProMix HUB 6 controller, accurate audio level metering, remote on/off toggle control of all channels, along with channel status outputs.

#### **INSTALLATION**

#### **AUDIO CONNECTIONS**

#### MICROPHONE/LINE INPUTS JACKS

The ProMix 4 is equipped with three combination microphone level/line level inputs. The microphone inputs feature high performance THAT Corporation microphone pre-amps ICs via XLR jacks. Microphones should be low-impedance professional units with balanced outputs, dynamic microphones are suggested. Powered condenser microphones can be used, although the console does not provide phantom power so an external supply is required. Connect microphones to the female XLR jacks (1) on the rear of the console. The XLR mic plug should be wired as follows:

Pin 1: Ground/Shield

Pin 2: Hi (+) Pin 3: Lo (-)

#### LINE INPUT JACKS

The ProMix 4 accommodates up to four mono "line level" input sources, three via the mic/line combination inputs (Inputs 1-3), and one via Input 4. Source equipment can be either balanced or unbalanced, operating at professional (+4dBu) levels. The first three line input connections are made of the ¼" TRS jacks found on the Input 1-3 XLR combo connectors (2). Input 4 is connected via the Input 4 ¼" TRS jack (2.).

Mating ¼" TRS plugs should be wired as followed:

Balanced sources: TIP: Hi (+)

RING: Lo (-)

SLEEVE: Ground/Shield

Unbalanced sources: TIP: Hi (+)

RING: (tie to ground) SLEEVE: Ground/Shield

#### IFB/Cue (Return)LINE INPUT JACK

The ProMix 4 Cue/IFB source equipment can be either a stereo or monaural unbalanced input, operating at consumer (-10dBv) levels. It is connected via a 3.5mm TRS mini jack labeled "IFB/Cue" (3.). Balanced, professional (+4dBu) levels may be used by connecting to pins 3 & 6 on rear panel RJ45 connector and depressing the front panel "HUB" switch (14) The front panel "IFB" level control (13) should be used to adjust the level to match the program audio feeding the headphones pan control and HdPh level control.

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#### **USB CONNECTION**

The ProMix 4 includes a built-in USB professional audio codec (A/D and D/A) which allows digital audio recording and playback on any computer that supports a USB audio device (USB 1.1 or higher). Connect the supplied USB Type A/B cable from the USB jack (4) on the rear panel of the ProMix 4 to the USB connector on the computer. The program output feeds the input to the codec, while the codec output is shared with input channel four. To assign the codec's output to channel four, press the "USB In" push button (11). The LED will be lit when enabled.

NOTE: Both the codec input and output are summed to monaural.

The computer should recognize the ProMix 4 codec as "USB Audio Codec". No additional software or drivers are needed. Sample rates of 32.0, 44.1, or 48.0 kHz can be used. Any software that supports a USB sound device will work with the ProMix 4. Set audio recording/editing software settings to select USB Audio Codec as its default.

**IMPORTANT! WINDOWS\* VOLUME SETTING**: Be sure to check the Windows "SPEAKER VOLUME" setting. The Speaker Volume can be accessed via the Windows Control Panel under "Sound and audio devices" or "Adjust the system volume". Select "Volume" or "Set system volume", then adjust the slider. The Speaker Volume should be set to MAXIMUM.

#### MONITOR OUTPUT JACK

The console's Studio Monitor output (6) is via a TRS jack. This output is Pseudobalanced, and will drive 600-ohm loads. (Termination is not necessary.) The nominal level is +/- 0dBu. Connect the mating TRS plug as follows:

TIP: (+) Monitor output

RING: (-) Connected to ground through a 47-ohm resistor.

SLEEVE Ground

#### PROGRAM OUTPUT

The ProMix 4's Program output appears on the male XLR connector (5) and on pins 1 and 2 of the rear panel "HUB" RJ45 connector (4.) The output is electronically balanced and will drive a 600-ohm load. The nominal level is +4dBu.

#### PROGRAM OUTPUT XLR JACK PINOUT

Connect a female XLR plug as follows:

Pin 1: Ground Pin 2: Hi (+) Pin 3: Lo (-)

NOTE: To feed an unbalanced load, connect to Pins 1 & 2 only. DO NOT SHORT PIN 3 TO GROUND! It is not necessary to terminate any console output.

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#### **HUB RJ45 JACK**

The "Hub" RJ45 jack (7) can be used to connect the ProMix 4 to a ProMix Hub 6 system, or to connect the ProMix to additional AHR-1 Plus headphone amplifiers using the switch labelled "Hub" (14) The nominal output level is 0dBu.

Balanced program output audio is always fed to pin 1 (+) and pin 2 (-) (StudioHub Left). In AHR mode either program or IFB audio may be fed to pin 3 (+) and pin 6 (-) (StudioHub Right). In Hub mode pin 3 (+) and pin 6 (-) (StudioHub Right) are used to receive IFB/talkback audio from the ProMix Hub.

#### **RJ45 Pinout in HUB Mode (Hub switch engaged):**

StudioHub+	·: ProMix:	Wire Pair:	RJ45 Pins:
Left+	PGM (Local)OUT+	White/Orange	1
Left-	PGM (Local)OUT-	Orange/White	2
Right+	IFB/TB IN +	White/Green	3
Right -	IFB/TB IN -	Green/White	6
n/c	TB LOGIC	White/Blue	5
GND	GND	Blue/White	4
15V-	n/c*	White/Brown	7
15V+	12V+ IN	Brown/White	8
GND	GND	Shield	Shield

<sup>\*</sup>Not used.

#### **RJ45** Pinout in AHR Mode (Hub switch dis-engaged):

	•		0 0 /
StudioHub+	·: ProMix:	Wire Pair:	RJ45 Pins:
Left+	PGM (Local)OUT+	White/Orange	1
Left-	PGM (Local)OUT-	Orange/White	2
Right+	IFB/PGM OUT +*	White/Green	3
Right -	IFB/PGM OUT -*	Green/White	6
n/c	TB LOGIC	White/Blue	5
GND	GND	Blue/White	4
15V-	n/c*	White/Brown	7
15V+	12V+ IN	Brown/White	8
GND	GND	Shield	Shield

<sup>\*</sup> Feeds Program audio to right headphone channel, with the IFB/Cue (Return)switch (15) engaged it feeds IFB audio.

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<sup>\*\*</sup>Not used.

#### REMOTE CONTROL AND INTERFACE CONNECTORS

#### MICROPHONE/LINE CHANNEL REMOTE CONTROL

The MICROPHONE MUTE/WARNING LIGHT TALLY output is provided on a 3.5mm TRS jack labelled "Mic Tally" (8.) It can be used to operate a user supplied "ON AIR" warning light controller, etc. The pin out is as follows:

TIP: Relay common contact.

RING: Normally open relay contact.

Sleeve: Ground (Not used).

#### CHANNEL REMOTE CONTROL/STATUS

The ProMix 4 is equipped with four remote on/off control inputs, to turn on and off each input. Simple momentary contact closures to ground will perform this function. Four status open collectors are furnished to monitor each input channel. Each open collector is rated at 6-volts DC@100ma. To access the terminal block connectors, J15 for status, and J16 for remote control, the ProMix-4 case must be disassembled. Remove all connectors and power. Loosen and remove the four screws on the bottom of the chassis. Carefully separate the top and bottom of the enclosure and locate J15 & J16. Feed the user supplied remote control cable through the 3/16" rear panel grommet. Dress the cable and attach each conductor to the appropriate connector/terminal (connector description below). Reassemble the chassis and reinstall any cable that was removed. Connect the other end of the remote-control cable to the user supplied remote switches and status devices.

## DO NOT EXCEED THIS RATING. NEVER CONNECT THESE CIRCUITS TO A 110 VOLT AC LINE!

#### Channel Status Open Collector Outputs, J15

Channel Channel Channel Ground

Status 1 Status 2 Status 3 Status 4

#### Channel remote-control Inputs, J16

Channel 1 Channel 2 Channel 3 Channel 4 Ground

Toggle Toggle Toggle Toggle

#### DC POWER INPUT JACK

Connect the center-positive 2.1mm coaxial barrel type power connector into the power jack (9.) and the 12 VDC universal switching power supply with domestic connector into a 120 Vac 50-60 Hz power source. Never use any type of power supply other than the specified/supplied power supply.

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#### **ADJUSTMENTS AND SETUP**

#### MICROPHONE INPUT GAIN ADJUSTMENT

Each of the 3 microphone input channels has a GAIN adjustment (1) to optimize the microphone preamp gain for the microphones being used. The gain can be varied from +28 dB to +60 dB range. Use a small screwdriver to adjust the gain trimmers as needed. Set the microphone channel's rotary control to three o'clock and adjust the gain trimmer to peaks of zero on the VU. To quickly set mic gain, follow these steps:

- 1. Turn on the microphone channel.
- 2. Set both the microphone and program channels rotary pots to twelve o'clock.
- 3. Speak into the microphone; set gain so that voice peaks read about 0VU on the ProMix 4 VU meters.

#### MICROPHONE CHANNEL MONITOR MUTE PROGRAMMING

The ProMix 4 Monitor output can be programmed so that when Microphone 1, 2, 3 and/or line input 4 are ON, the audio output from the Monitor output is muted. If any of the microphones are in the same studio as the Monitor speakers, the Monitor output should be set to mute to prevent acoustic feedback when any of the microphones are on. Locate the four position "MUTE" DIP switch (2) to the right above the PGM (Local)Out pot. To mute the Monitor output for each microphone channel, turn on the DIP switch representing that microphone and line channel. Example: To mute the monitor when microphone 1 is ON, set DIP switch 1 to the ON position. The same holds true for microphone 2, 3 or line channel 4.

#### TALKBACK USAGE

The ProMix 4 includes talkback capability that permits the ProMix 1 and/or ProMix 4 users to speak to an announcer who is wearing headphones connected to either a ProMix 1 or ProMix 4 via the optional ProMix HUB 6. When the TALKBACK button (3) is pressed, the "normal" audio being fed to the Program output is interrupted and is overridden by audio from the Talkback circuit. All assigned channels are fed to the "Talkback" buss attached to the ProMix HUB 6. When the talkback push button is pressed, a short burst tone is injected into each headphone, notifying the connected users that one of the attached ProMix's would like to talk. To use the talkback system, simply press and hold the "Talkback" push button for as long as you want to communicate. All partiers wanting to talk, simply presses and holds the talkback button.

The short tone burst is generated each time the talkback button is pressed. The tone level can be adjusted on the Hub.

#### LINE INPUT CHANNEL ADJUSTMENT

Each of the ProMix 4-line inputs are set for +4dBu, which is the professional level standard. If consumer level equipment is use, a level interface device must be used.

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#### **OPERATION**

Operation of the ProMix 4 is simple and straightforward. Audio sources are mixed to the Program output. The ProMix 4 output can be monitored via the monitor system and VU meter. The console operator can also use headphones, plugged into any of the three ¼" headphone jacks.

#### MICROPHONE INPUT CHANNELS

Microphone/line channels are turned on and off using the Microphone/line ON/OFF buttons (4). When a microphone is ON, the "ON" LED (6) will be illuminated. The relative mix level is determined by the rotary control (5). The "normal" position is at three o'clock position, which yields 5dB of "in hand" gain when the rotary PGM (Local)pot is turn fully clockwise. All microphone channels are programmed to mute the monitor system via configuration dipswitch. Refer to the section 3.2 for microphone muting configuration.

#### LINE INPUT CHANNEL

Line channel four is turned on and off using the channel four ON/OFF buttons (4). When the channel is ON, the "ON" LED (6) will be illuminated.

#### MONITOR SPEAKER LINE OUTPUT CONTROL

The ProMix 4 program output can be monitored via the Monitor Output. The Monitor output volume is adjusted using the Monitor Out rotary control (16.) The (external) user supplied monitor amplifier should be adjusted so that the Monitor Output produces adequate volume with the Monitor Out rotary control is set to the twelve o'clock position.

#### HEADPHONE (HdPh) OUTPUTS CONTROLS

The console operator can monitor the console's IFB/Cue (Return)and PROGRAM output via the THREE HEADPHONE jacks on the rear panel (10). Headphones with impedances of 32 ohms or higher can be used. Do not use 8-ohm headphones. Each of the headphones channels are equipped with a CUE/IFB and Program pan pots, (8) which determines what is heard through the headphones. The PGM (Local)pan pots adjust if the program audio is fed to either the left, right or both ears. The same holds true for the PGM (Local)pan pot, which adjusts if the Cue/IFB audio is fed to either the left, right or both ears. The headphone volume is adjusted with the HdPh # controls (9).

#### **PROGRAM LIMITER**

The ProMix 4 is equipped with a soft program limiter, which may be defeated by disengaging the "Limiter" push-button (10.) The "Limiter" LED will extinguish. The "CLIP" LED next to the display will flash when the program audio is in a clipped condition.

#### PROGRAM OUTPUT CONTROL

The Program output level is adjusted using the Program Out rotary control (7.)

#### **VU LED DISPLAY**

The ProMix 4 features an accurate VU LED display (17) to monitor the main program output level. Mix levels should be adjusted so most peaks read about 0 VU. The "CLIP" LED next to the display will flash when the program audio is in a clipped condition. The LED display is calibrated so that 0 VU equals +4dBu on the main program output. The VU LED display may be calibrated using the trimmer accessible through the recessed front panel hole just below the clip LED.

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#### **MIX-MINUS OUTPUT**

The console's Mix-Minus output (11) is a monaural mix of all sources assigned to the Program bus, except for Line channel # 3. This input should be used for the "Receive" (caller) audio from a telephone hybrid. The Mix-Minus output is therefore the same as the Program mix, minus the caller. This Mix-Minus signal is normally fed back into the hybrid's "Send" input.

#### USING A TELEPHONE HYBRID

If the console will be interfaced to a telephone hybrid (for broadcasting telephone calls), the Receive ("caller") output of the hybrid should be fed into Channel 3's line input. The Mix Minus output of the console contains ALL line sources mixed to the Program buss, except for Channel 3. The "program-minus-caller" Mix Minus output is normally fed back to the hybrid's send input. The caller will therefore be able to hear all program sources mixed on the Program bus, minus him (caller). Be sure to depress the front panel "Mix Minus" push button (12) to enable this feature.

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#### **SPECIFICATIONS\*\***

Input Level +4dBu nominal. +18dBu max.

Line Input Impedance 1K ohms balanced.

Stereo/Mix-Minus Output level: +4dBu nominal, +18dBu max, @ 600 ohms.

Stereo and Mix-Minus Impedance: 100 ohms balanced, 47 ohms unbalanced.

Microphone Gain: +28 to +60dB.

System Gain: Up to +7 dB.

Frequency Response: 35 to 20 kHz, +/- 0.5 dB.

Noise: 70 dB below nominal, output.

THD+N: <0.004%, at nominal level, any frequency.

<0.008%, at maximum level, any frequency.

IMD: <0.004%, at nominal level, any frequency.

(250/7 kHz)

<0.008%, at maximum level, any frequency.

(250/7 kHz)

Connectors: Female XLR Microphone connection, ¼" TRS

audio inputs, XLR output, RJ45 output. Removable screw terminal block remote con-

trol.

Power: 12 VDC Universal.

Size: 11.0" W x 7.9" D x 3" H

Weight: 4.0 lb.

Options: ProMix Hub-6

All audio measurements per Audio Precision Portable One Plus test set referenced to +4 dBu operating level with standard IEC-A weighting. Accurate noise and crosstalk measurements require inputs to be terminated with a suitable source impedance. \*\*Specifications subject to change without notice.

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