A I R 5
RADIO CONSOLE

AUDIOARTS ENGINEERING
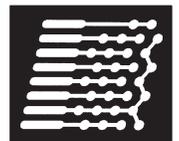
AIR 5 Radio Console Technical Manual

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*a division of Wheatstone Corporation

Attention!

IMPORTANT SAFETY INSTRUCTIONS

THIS PRODUCT IS INTENDED FOR INDOOR USE ONLY

When using an electrical appliance, basic safety precautions should always be followed.

DANGER - To reduce risk of electric shock read all instructions before using this power supply.
A power supply should never be left unattended when plugged in.
Always unplug this power supply from the main socket immediately after using.

WARNING - To reduce risk of burns, fire, electric shock or injury to persons or animals:

1. Use this power supply only for its intended use as described below.

2. Do not use outdoors.

3. Do not allow to be used as a toy. Pay close attention when this power supply is used by, or near to, children.

4. Use only attachments recommended by the manufacturer.

5. Never operate this power supply if it has a damaged cord or plug, if it has been dropped or damaged or if it has fallen into water. In such cases return the power supply to an authorized dealer or service centre for examination or repair.

6. Never drop or insert an object into any openings.

7. Do not operate where aerosol (spray) products are being used or where oxygen is being administered.

8. This power supply should be used near to a convenient and easily accessible mains socket.

AIR 5 Technical Manual

Table of Contents

Chapter 2 - Controls and Functions

Appendix

Installation and Power

Chapter Contents

Installation and Power

Unpacking and Installing the Console

The AIR 5 console with its power supply, AC connecting cable, and "Installation and Connections Quick Reference" is shipped in one packing box. The console can be unpacked by one person by grasping the console at both sides, and lifting it upward out of the box. Remove packing materials and store them in the box for future use. Carefully place the console on your countertop (the AIR 5 audio console is designed for countertop placement). Avoid proximity to any electromagnetic fields, such as large power transformers, motors, and fluorescent lighting fixtures.

NOTE:
This console contains static-sensitive devices. Normal precautions against static discharge should be observed.
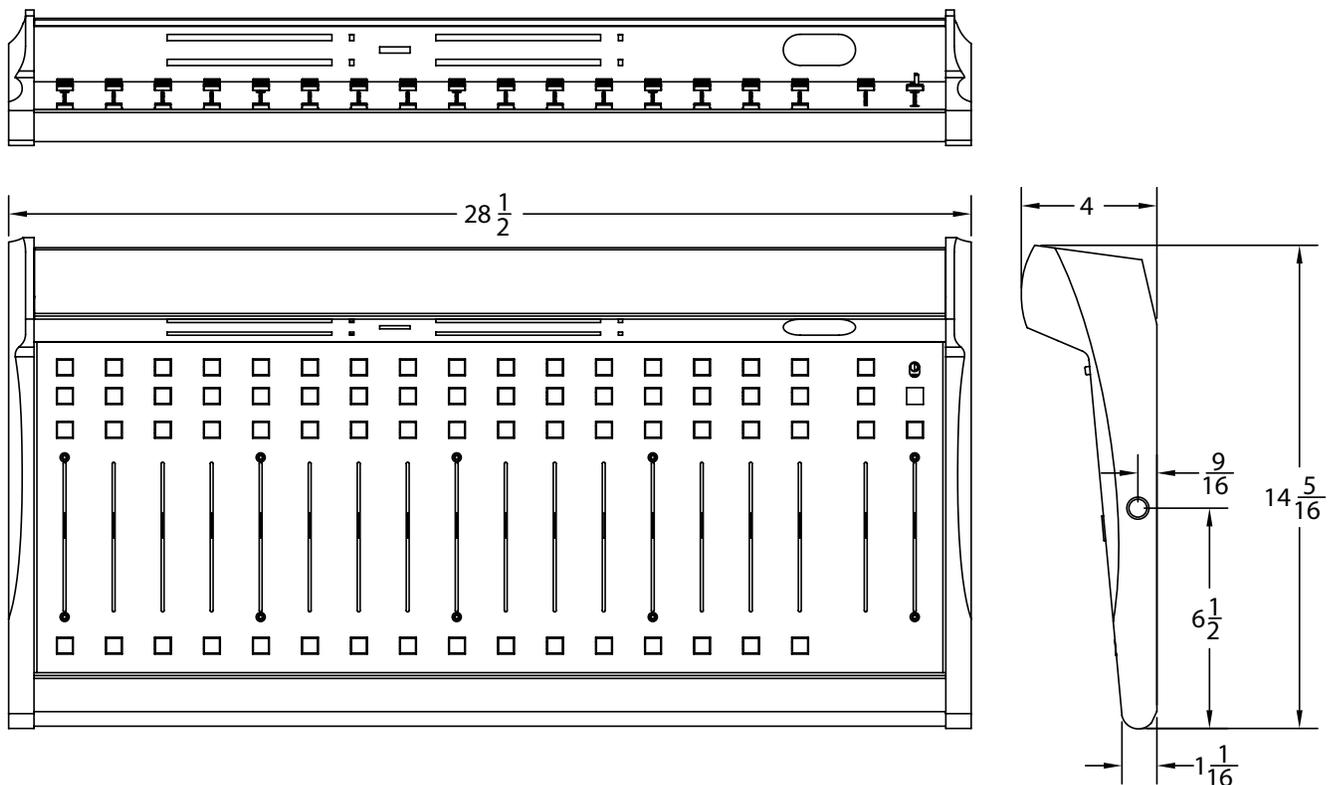
Power Supply

The AIR 5 console is powered by a factory supplied power adapter with 100-240V/50-60Hz input, 50W maximum output power, and a 4 foot long output cable.

DC Power Output Pinout

PIN #	OUTPUT
1	COM
2	COM
3	+5VDC
4	-15V
5	+15V

The power supply adapter is supplied with a 3-wire grounded AC cord that should be plugged into a "clean" AC power source, that is, an AC source that feeds only the control room audio gear. This source should be a separate feed from those powering lighting, air-conditioning, or any other non-audio machinery.

The power feed recommended in the text is often installed and referred to in studios as an "isolated AC ground" outlet. It is usually orange in color.

Energizing

Assuming the AIR 5 console mainframe is properly placed, and its power supply correctly connected to the console, you may now energize the power supply adapter by plugging it into the AC mains. The console's individual module switches will assume factory default settings.

Note: To de-energize the console, unplug the power supply adapter's AC cord from the AC mains. *Never de-energize the console by disconnecting the cable that connects the console and power supply adapter together.*

Once you have verified proper power-up, unplug the power supply adapter to de-energize the console. You may now proceed to wire up audio and control connections.

Audio and Control Wiring

All audio I/O connections are made via RJ-45 and USB B connectors, and 3-position plug terminals on the rear panel of the console.

MIC 1, **MIC 2**, **MIC 3** and **MIC 4** 3-position plug terminals are for mono mic level signals and feed internal adjustable preamps that feed faders 1 – 4.

- Fader 1 is mic level only.
- Faders 2 – 4 are switch selectable between MIC 2 - 4 or stereo line RJ-45 inputs 2 – 4. See chapter 2 for programming options.

RJ-45 **M1/TB** provides pre fader MIC 1 line level out when the fader 1 TB button is pressed.

RJ-45 **2 - 15** are line level stereo inputs that are controlled by faders 2 - 15. Faders 2 - 4 are switch selectable between mic and line level. See Chapter 2 for programming options.

RJ-45 **16 PHONE** is a mono line level input that is controlled by fader 16.

The **USB** type B connector is provided to bring in a USB signal from a computer. The internal USB circuits are enabled by a switch on the rear panel. See Chapter 2 for programming options.

RJ-45 **HYB IN** and **HYB OUT** connectors are to connect to a mono Telephone Hybrid. **HYB IN** is internally connected to fader 16.

RJ-45 **TB IN/CUE** is an unbalanced mono line level input that feeds the cue audio channel.

RJ-45 **EXT IN** is a balanced stereo line level input that feeds the monitor circuits when EXT is selected on the CR.

RJ-45 **PGM 1 ST** and **PGM 2 ST** are balanced line level stereo Program 1 and Program 2 outputs.

RJ-45 **PGM 1 MONO** and **PGM 2 MONO** are balanced line level mono Program 1 and Program 2 outputs.

RJ-45 **CR** and **STUDIO** are unbalanced line level stereo Control Room and Studio outputs.

RJ-45 **CUE** is an unbalanced mono line level CUE output.

RJ-45 **BT** is an unbalanced line level stereo Bluetooth output that may be connected to any of the console's line level inputs using a RJ-45 straight cable.

RJ-45 **PHONE** provides ON/OFF logic to the Telephone Hybrid. It is controlled by the ON/OFF switch on fader 16.

RJ-45 **MIC 2**, **MIC 3** and **MIC 4** provide logic inputs and outputs for Remote ON/OFF, Cough, Talkback to Control Room, and Tally ON/OFF. See a more detailed description under Control Connections later in this Chapter.

RJ-45 **13 AUTOMATION**, **14** and **15** provide logic inputs and outputs for Remote ON/OFF and External Start/Stop.

RJ-45 **TALLY** is provided to hook up an interface to an Air Tally light. This output comes from a set of relay contacts and is designed to switch a low DC voltage (30 VDC maximum) at a moderately low current (2 ADC maximum) to activate a DC light, or to activate an external DC relay which can then be used to activate an AC operated light. Never bring AC power into the console on this or any other connector.

RJ-45 **STU 1**, **STU 2** and **STU 3** are provided for guests headphone connections.

A 5-pin DIN connector is provided to accept console power from the external power supply.

There is also a phantom power 2.5mm +48V IN power jack as a way to connect an external source (not provided) for condenser microphones and direct boxes.

One TRS jack is provided on the right side of the console frame for the operator to plug in a set of headphones. This is wired as a standard headphone jack, with the left signal on the tip, the right signal on the ring, and the sleeve connected to ground.

Unbalanced Connections (analog audio)

ANALOG INPUTS – Wire to the console with typical shielded two conductor cable (like Belden 9451), just as if you were connecting a balanced source. At the unbalanced source machine's output, connect the black wire (LO) to the shield.

ANALOG OUTPUTS – AIR 5 consoles use a balanced output circuit which behaves exactly like the secondary of a high-quality transformer, with no center tap – this output is both balanced and floating. Either the HI or LO side of the output should be strapped to ground, with the output taken from the other side. (Normally you'd strap LO to ground, and take HIGH to feed your unbalanced equipment.)

Hook-Ups

The rear of the console has multiple RJ-45 connectors to plug in 15 stereo line inputs, the external input, caller connections to and from hybrid, as well as providing studios, control room, microphones, PGM, and USB analog output connections. There are also the four 3-position plug terminals provided for microphone inputs.

An USB port with type B connector available for interfacing with a computer (see page 2-3 for details).

Pinouts drawings on pages 1-11 through 1-13 show all wiring connection at glance.

Audio Connections
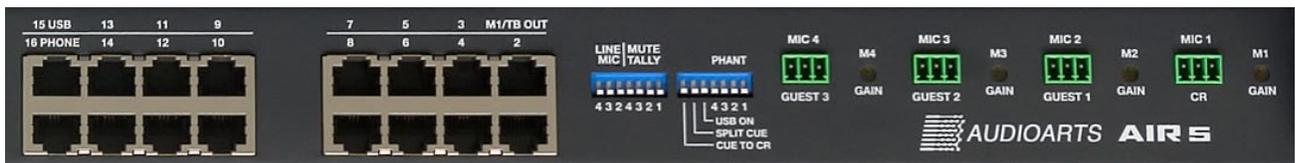
Analog Stereo Inputs – RJ-45 (#2 through #14)

The signals are analog stereo; level is +4dBu balanced.

Pin 1 – HI
Pin 2 – LO   ] LINE INPUT LT
Pin 3 – HI
Pin 6 – LO   ] LINE INPUT RT

MIC 1 - MIC 4 Inputs – 3-position Plug Terminal

All signals are analog mono. The mic input level is normally -50dBu balanced.

Pin 1 – SH
Pin 2 – LO   ] MIC IN
Pin 3 – HI

These connections are to the inputs of four internal mic preamplifiers. The output of the MIC1 preamplifier is connected to fader 1, and the outputs of the MIC2-MIC4 are connected to faders 2-4 by the LINE/MIC switches. See page 2-11 for details.

M1/TB Output – RJ-45 #1

Signal is analog mono, unbalanced.

Pins 1 – HI
Pins 2 – SH   ] MIC 1/TB OUT

Phone Input – RJ-45 #16

Signals is analog mono; level is +4dBu balanced.

Pin 1 – HI
Pin 2 – LO   ] CALLER IN

Input 15/USB – RJ-45 #15

Signal is analog stereo; level is +4dBu balanced.

Pin 1 – HI
Pin 2 – LO   ] LINE 15 INPUT / USB LT IN
Pin 3 – HI
Pin 6 – LO   ] LINE 15 INPUT / USB RT IN

Hybrid In/Out – RJ-45

The signals are analog mono; level is +4dBu balanced.

Pin 1 – HI
Pin 2 – LO   ] HYBRID IN

Pin 1 – HI
Pin 2 – LO   ] HYBRID OUT

TB In / CUE – RJ-45

Signals is analog mono; unbalanced.

Pin 1 – HI
Pin 2 – SH   ] EXT CUE IN

EXT Input – RJ-45

Signals is analog stereo; level is +4dBu balanced.

Pin 1 – HI
Pin 2 – LO   ] EXT LT IN
Pin 3 – HI
Pin 6 – LO   ] EXT RT IN

PGM Outputs – RJ-45

The two analog balanced program outputs are switchable between stereo and mono mode.

Pin 1 – HI
Pin 2 – LO   ] PGM 1 LT OUT
Pin 3 – HI
Pin 6 – LO   ] PGM 1 RT OUT
Pin 1 – HI
Pin 2 – LO   ] PGM 2 LT OUT
Pin 3 – HI
Pin 6 – LO   ] PGM 2 RT OUT

Pin 1 – HI
Pin 2 – LO   ] PGM 1 MONO OUT
Pin 3 – HI
Pin 6 – LO   ] PGM 2 MONO OUT
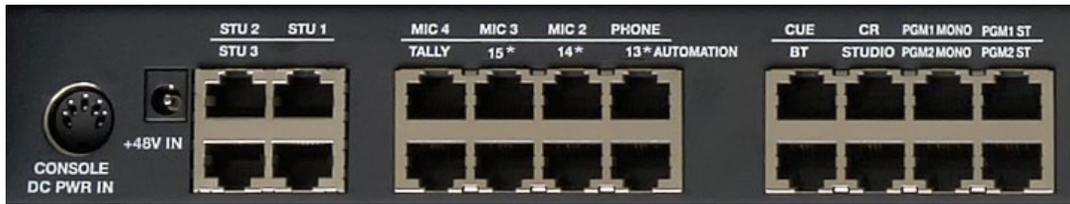
Monitor Outputs – RJ-45

The signals are analog stereo; unbalanced.

Pin 1 – HI
Pin 2 – SH   ] CR LT OUT

Pin 3 – HI
Pin 6 – SH   ] CR RT OUT

Pin 1 – HI
Pin 2 – SH   ] STUDIO LT OUT

Pin 3 – HI
Pin 6 – SH   ] STUDIO RT OUT

CUE Output – RJ-45

Signals is analog mono; unbalanced.

Pin 1 – HI
Pin 2 – SH   ] EXT CUE OUT

Bluetooth Output – RJ-45

The signals are analog stereo; unbalanced.

Pin 1 – HI
Pin 2 – SH   ] BT LT OUT

Pin 3 – HI
Pin 6 – SH   ] BT RT OUT

STU1 - STU3 Outputs – RJ-45

The signals are analog stereo; unbalanced.

Pin 1 – HI
Pin 2 – SH   ] STU LT OUT

Pin 3 – HI
Pin 6 – SH   ] STU RT OUT

Control Connections

Functions include remote on and off, tally, and start/stop for remote source machines. The Start, Stop, Tally ON, and Tally OFF ports are opto-isolated.

Fader 13 - 15 (Automation) Logic – RJ-45

RJ-45 Pin 1 – Digital Ground
RJ-45 Pin 2 – Start
RJ-45 Pin 3 – Stop
RJ-45 Pin 6 – Remote OFF
RJ-45 Pin 7 – Remote ON
RJ-45 Pin 8 – +5V Digital

MIC 2 - MIC 4 Logic — RJ-45

RJ-45 Pin 1 – Digital Ground
RJ-45 Pin 2 – Cough
RJ-45 Pin 3 – TB to CR
RJ-45 Pin 4 – OFF Tally
RJ-45 Pin 5 – ON Tally
RJ-45 Pin 6 – Remote OFF
RJ-45 Pin 7 – Remote ON
RJ-45 Pin 8 – +5V Digital
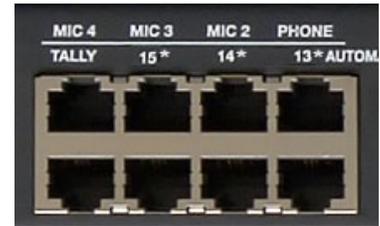
PHONE Logic — RJ-45

RJ-45 Pin 1 – Digital Ground
RJ-45 Pin 2 – Start/Stop
RJ-45 Pin 5 – VCC

On Air TALLY Logic — RJ-45

RJ-45 Pin 1 – On Air Tally N.O.
RJ-45 Pin 2 – On Air Tally Com

Remote ON/OFF

"Remote location" can also refer to a remote source machine that is feeding its audio to the module in question. A contact closure (which may be sourced by the external machine), will activate the module's channel ON and OFF switches.

To turn the module ON and OFF from remote locations make following connections:

REMOTE ON – Momentarily connect Logic RJ-45 Pin 7 (Remote ON) and Digital Ground (Pin1) to latch the module ON. (User-supplied momentary contact switch required.)

REMOTE OFF – Momentarily connect Logic RJ-45 Pin 6 (Remote OFF) and Digital Ground (Pin 1) to latch the module OFF. (User-supplied momentary contact switch required.)

Cough

COUGH – Temporarily Mutes the module. Provide a closure between Mic Logic RJ-45 Pin 2 (Cough) and Pin 1 (Digital Ground). This will turn the module OFF. Note this is a non-latching mode; the module will turn ON again as soon as the closure stops. (User-supplied momentary contact switch required.)

External Start/Stop

To Start and Stop remote source machines using ON/OFF switches make the following connections:

EXTERNAL START – Hook up the remote machine's "start" control pins to the Fader's 13-15 Logic RJ-45 connector Pin 2 (Start) and Pin 1 (Digital Ground).

EXTERNAL STOP – Hook up the remote machine's "stop" control pins to the Fader's 13-15 Logic RJ-45 connector Pin 3 (Stop) and Pin 1 (Digital Ground).

Talkback to Control Room

The talkback to cue logic input is used to connect an external user-supplied button that enables the person activating it to talk to the operator in the control room, via the console's cue speaker. Provide a closure between MIC 2 - MIC 4 Logic RJ-45 Pin 3 (TB to CR) and Pin 1 (Digital Ground). This will cause the module's pre fader signal to be sent to the console's Cue bus, where it may be heard by the console operator. This non-latching condition continues until the closure is released. (Requires user-supplied momentary action TALKBACK switch at the studio microphone location.)

ON and OFF Tally

ON Tally – Let's channel's ON switch control light indicator at a remote location. This control function provides a continuous closure between Pin 5 (ON Tally) and Pin 1 (Digital Ground) whenever the channel's ON is activated.

OFF Tally – Let's channel's OFF switch control light indicator at a remote location. This control function provides a continuous closure between Pin 4 (OFF Tally) and Pin 1 (Digital Ground) whenever the channel's ON is NOT activated.

The ON and OFF Tallies can be used to control externally powered tally lights that require a continuous closure to function, or external tally lights (i.e., LED) can be powered from the input channel by connecting the external LED to Pin 8 (+5V Digital)* and the Pin 4 or 5 (ON or OFF Tally).

*We recommend a series resistor between the LED and Digital Ground when you are powering the external tally from the console; value of 220 ohm (1/4W 5% is suggested).

In either case the current should not exceed 30 milliamps.

On Air Tally

Lets any programmed channel's ON switch control an on-air light or other "microphone on" indicator at a remote location. This control function provides a contact closure between Pin 1 (On Air Tally N.O.) and Pin 2 (On Air Tally Common) of the TALLY RJ-45 whenever the channel is ON.

This signal can be used to control an externally powered tally light that requires a continuous closure to function. *Current should not exceed 2 amps at 30 volts DC.*

Audio Connections

MIC 1 - MIC 4
3-Pos. Plug Terminal
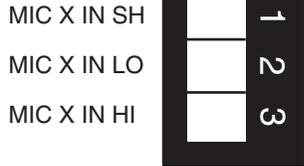
MIC X IN SH		1
MIC X IN LO		2
MIC X IN HI		3
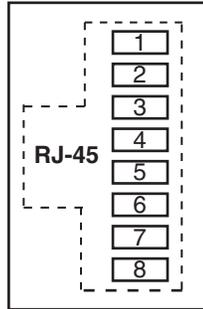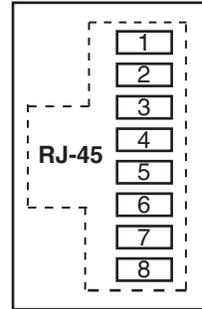
M1/TB OUT

RJ-45	1	MIC 1 / TB OUT HI
	2	MIC 1 / TB OUT SH
	3	
	4	
	5	
	6	
	7	
	8	

15 USB OUT

RJ-45	1	USB LT OUT HI
	2	USB LT OUT LO
	3	USB RT OUT HI
	4	
	5	
	6	USB RT OUT LO
	7	
	8	

LINE 2 - 14

RJ-45	1	LINE LT IN HI
	2	LINE LT IN LO
	3	LINE RT IN HI
	4	
	5	
	6	LINE RT IN LO
	7	
	8	

16 PHONE

RJ-45	1	CALLER IN HI
	2	CALLER IN LO
	3	
	4	
	5	
	6	
	7	
	8	

HYBRID IN

RJ-45	1	HYBRID IN HI
	2	HYBRID IN LO
	3	
	4	
	5	
	6	
	7	
	8	

HYBRID OUT

RJ-45	1	HYBRID OUT HI
	2	HYBRID OUT LO
	3	
	4	
	5	
	6	
	7	
	8	

TB IN/CUE

RJ-45	1	EXT CUE IN HI
	2	EXT CUE IN SH
	3	
	4	
	5	
	6	
	7	
	8	

EXT IN

RJ-45	1	EXT LT IN HI
	2	EXT LT IN LO
	3	EXT RT IN HI
	4	
	5	
	6	EXT RT IN LO
	7	
	8	
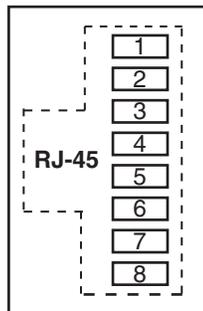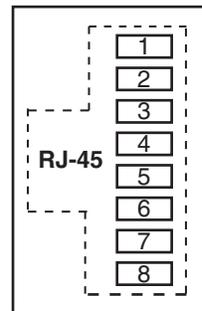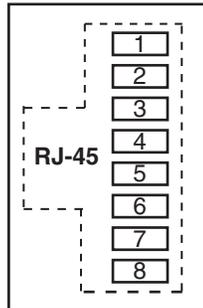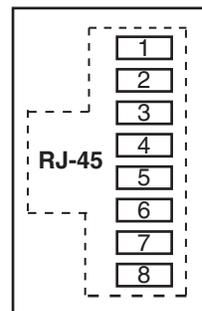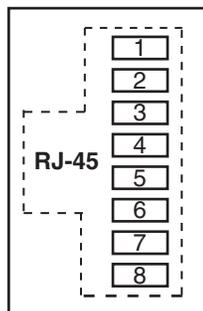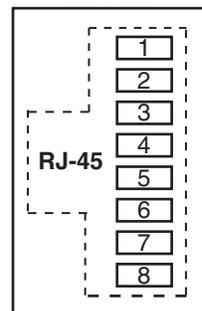
Audio Connections

PGM 1 ST OUT
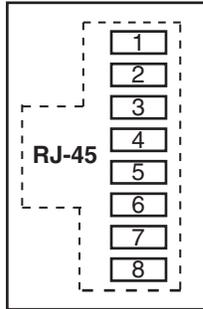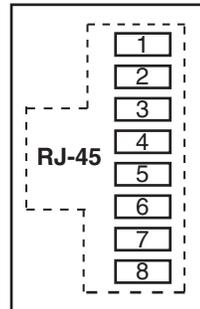
RJ-45	1 — PGM 1 LT OUT HI
	2 — PGM 1 LT OUT LO
	3 — PGM 1 RT OUT HI
	4
	5
	6 — PGM 1 RT OUT LO
	7
	8

PGM 2 ST OUT

RJ-45	1 — PGM 2 LT OUT HI
	2 — PGM 2 LT OUT LO
	3 — PGM 2 RT OUT HI
	4
	5
	6 — PGM 2 RT OUT LO
	7
	8

PGM 1 MONO OUT

RJ-45	1 — PGM 1 MONO OUT HI
	2 — PGM 1 MONO OUT LO
	3
	4
	5
	6
	7
	8

PGM 2 MONO OUT

RJ-45	1 — PGM 2 MONO OUT HI
	2 — PGM 2 MONO OUT LO
	3
	4
	5
	6
	7
	8

CR OUT

RJ-45	1 — CR LT OUT HI
	2 — CR LT OUT SH
	3 — CR RT OUT HI
	4
	5
	6 — CR RT OUT SH
	7
	8

STUDIO OUT

RJ-45	1 — STU LT OUT HI
	2 — STU LT OUT SH
	3 — STU RT OUT HI
	4
	5
	6 — STU RT OUT SH
	7
	8

CUE OUT

RJ-45	1 — CUE OUT HI
	2 — CUE OUT SH
	3
	4
	5
	6
	7
	8

BT OUT

RJ-45	1 — BT LT OUT HI
	2 — BT LT OUT SH
	3 — BTRT OUT HI
	4
	5
	6 — BTRT OUT SH
	7
	8
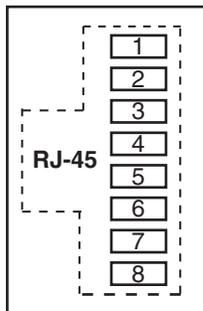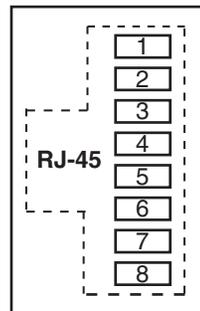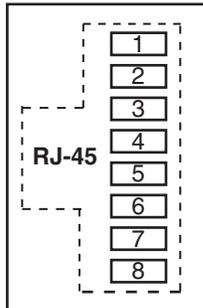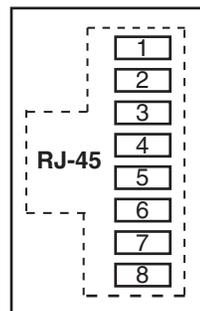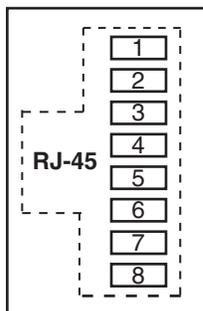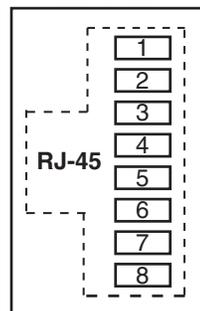
Audio Connections

STU 1 (GUEST HDPN 1) OUT
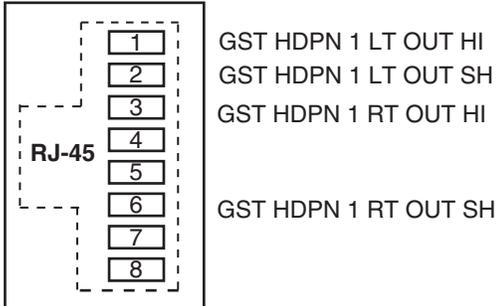
RJ-45

1	GST HDPN 1 LT OUT HI
2	GST HDPN 1 LT OUT SH
3	GST HDPN 1 RT OUT HI
4	
5	
6	GST HDPN 1 RT OUT SH
7	
8	

STU 2 (GUEST HDPN 2) OUT

RJ-45

1	GST HDPN 2 LT OUT HI
2	GST HDPN 2 LT OUT SH
3	GST HDPN 2 RT OUT HI
4	
5	
6	GST HDPN 2 RT OUT SH
7	
8	

STU 3 (GUEST HDPN 3) OUT

RJ-45

1	GST HDPN 3 LT OUT HI
2	GST HDPN 3 LT OUT SH
3	GST HDPN 3 RT OUT HI
4	
5	
6	GST HDPN 3 RT OUT SH
7	
8	

Control Connections

PHONE

RJ-45

1	HYBRID GROUND
2	HYBRID START/STOP
3	
4	
5	HYBRID VCC
6	
7	
8	

MIC 2 - MIC 4

RJ-45

1	DIGITAL GROUND
2	COUGH
3	TB TO CR
4	TALLY OFF
5	TALLY ON
6	REMOTE OFF
7	REMOTE ON
8	+5V DIGITAL
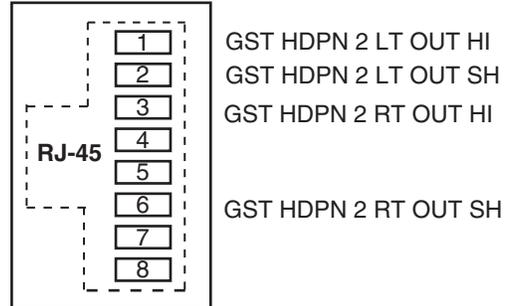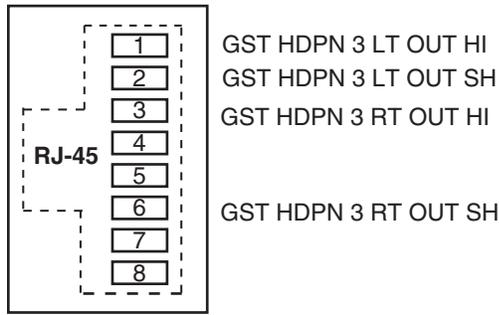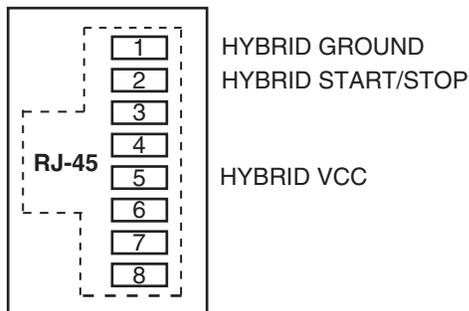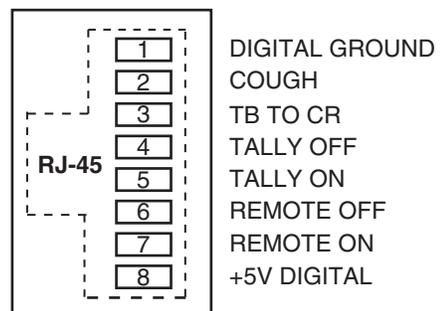
AUTOMATION (FADER 13 - FADER 15

RJ-45

1	DIGITAL GROUND
2	START
3	STOP
4	
5	
6	REMOTE OFF
7	REMOTE ON
8	+5V DIGITAL

TALLY

RJ-45

1	TALLY N.O.
2	TALLY COM
3	
4	
5	
6	
7	
8	
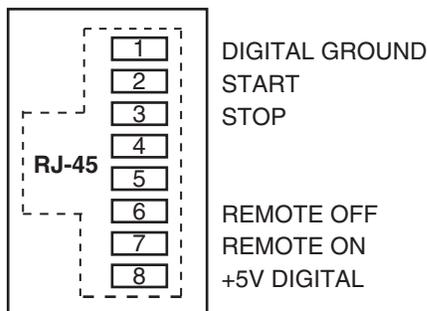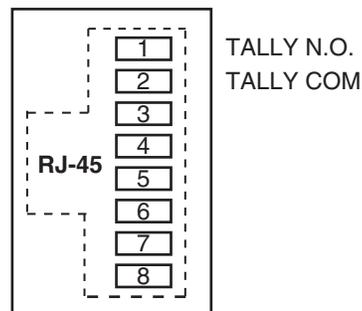
Controls and Functions

Chapter Contents

Controls and Functions

Overview

The AIR 5 builds on the AIR-series by Audioarts with USB input/output connectivity and Bluetooth compatibility.

Play audio directly from the PC or output audio to PC recording software as well as receive and record calls from Bluetooth enabled cellphones or play cuts from Bluetooth enabled MP3 players.

The AIR 5 has four microphone preamps built in, which allows the use of a host microphone and three guest microphones without the use of any external mic preamps. It gives you 16 input faders, plus auto mix-minus for call-ins, two program busses, built-in CUE speaker and CR, and headphone and studio monitoring control.

With basic features like cue, talkback, and mix-minus included, it's perfect for smaller stations looking to upgrade as well as for larger facilities in need of an auxiliary studio or newsroom console. Add Bluetooth compatibility and USB connectivity for PC news, production workstations or streaming audio, and the AIR 5 is perfect for news and internet broadcasts.

Input Section

The AIR 5 console is designed to handle 15 analog stereo line (+4dBu balanced) inputs, one analog (+4dBu balanced) phone input, four mono microphone (-50dBu nominal) inputs, and one external stereo line level (+4dBu balanced) input that goes directly to control room or studio.

Analog Mono Mic Level Inputs

These inputs are used to connect to microphones, which typically put out signals at relatively low signal strength, and therefore require more amplification (increase in signal strength) to be properly audible in the output. Mic level sources are pluged into the four

3-pin headers located on the rear of the console. On the rear of the console also are the M1 - M4 GAIN trimpots for adjusting the level of each microphone input independently.

> Example: With a microphone input of –60dBm @150ohm at the port, gain trim can set levels from -22dBu to +16dBu (note maximum preamp gain is +76dB) at the PGM 1 or PGM 2 output.

Looking at the rear of the console, there are four RJ-45 connectors labeled M1/TB OUT, M2 - M4. The MI/TB OUT is the output of the M1 preamp. The M2 - M4 microphone preamplifiers internally wired to the line inputs that feed the 2 - 4 faders where you will control the microphone levels.

Faders 2 - 4 can be programmed to accept a line level signal via SW42 on the MBL-AIR5 PCB (described in the "Console Internal Programming" section).

Analog Stereo Line Level Inputs

These inputs are typically used to connect to machines, such as tape decks, cart machines, CD players, etc., that provide analog outputs. As mentioned above, you can also feed these inputs from the outputs of the internal mic preamps.

USB Port

The AIR 5's Slot 15 can be programmed to accept USB signal. The console contains a USB 2.0 interface, available via the USB Type B connector on the rear panel, to enable audio to pass between the console and a USB port on a computer. Internally, Program 1 is the audio from the console to the computer. Audio coming back from the computer via USB shows up as a stereo analog signal on the 15 USB fader. USB can be switched ON and OFF via dipswitch SW43 (described in the "Console Internal Programming" section).

Using the USB Port . . .

Any computer having a USB port and installed drivers capable of passing and utilizing digital audio data should work with the AIR 5 USB port. Use a cable having a USB Type B connector on the AIR 5 end and a connector on the other end that will mate with the computer's USB port; this will typically be a USB Type A connector.

. . . With a MAC

In general, this will be a plug-and-play process. The main concern is to choose the USB Audio Codec under *System Preferences>Sound* as desired for audio input and/or output. Then simply start the application.

. . . With a Windows® PC

When you first connect the AIR 5 USB port to a PC running Windows you will see the famous "found new hardware" sequence of messages. At some point this sequence should end with a message that the new hardware is installed and ready to use.

Setting up any given application to use the AIR 5 USB port will depend on the application itself. Generally, you will need to select the appropriate device from a list of devices in a Preferences dialog.

As an example, let's look at WinAmp, a free software application used by millions to play back audio streams from a network (or the Internet), or to play audio streams into a network.

To play audio from the AIR 5 on the computer:

• Install the free LineIn plugin for WinAmp.

• Under *Preferences - Input* select the LineIn plugin from the Input list and click *Configure*, then find the USB Audio Codec in the list of available devices and note its corresponding device number, which you will need below.

• In WinAmp, choose *Play URL...*

• Enter "line://dev=n" where 'n' is the device value that you discovered above.

• Now when you click Play, WinAmp will play the AIR 5 audio on the output device selected in WinAmp. This could be speakers, a sound card, or even an output stream.

To play audio from the computer on the AIR 5:

• Under WinAmp *Preferences - Output* select an output plugin and click *Configure*, then select the USB Audio Codec as the device.

• Play the desired computer audio with WinAmp and the audio will appear at the 15 USB connector on the back of the AIR 5.

Other Computers

If your computer does not use one of the above operating systems, or otherwise behaves differently than described above, consult the documentation for that computer, operating system, and/or application.

General Considerations

If any problems are encountered, please consider the following points:

• PGM 1 is the source of the audio that is output from the AIR 5 on the USB port.

• The audio coming back into the AIR 5 on the USB port is available at the 15 USB fader.

• If you are not able to get the audio into or out of the USB port, check the USB cable, its connections at both ends, and the port selection settings in the application you are using.

• If you have the audio flowing where you want and it suddenly becomes intermittent or disappears, check the USB cable and the connections at both ends.

• Once you have the USB audio under control it is a good idea to make a record of the application being used, including its version number, the audio direction (into or out of the computer), and all the settings that were required to make it work. This information will be invaluable if you later have to troubleshoot the USB audio, or set it up on another computer.

Program Assign

Output switches assign the selected source signal to any combination of the console's two stereo Program outputs – PGM 1 and PGM 2. The button will be lit when the source is assigned to its respective bus. To remove a source from the bus, press the button again; the light will go off to indicate that the source is no longer assigned to that bus.

Recessed rear panel trimpots adjust the left and right levels of PGM 1 and PGM 2 outputs.

CUE Button

A CUE switch places the channel's signal on the console's cue bus, where it may be heard on the meterbridge mounted cue speaker, as an interrupt to the console operator's headphones, and as an interrupt to the control room monitor speakers, if so programmed.

Press the CUE button. The channel's input signal will be included in the console's CUE output at a level that is independent of the FADER setting, and the button will light. The fader does not need to be turned ON. To remove a fader from cue, press the CUE BUTTON again; the light will go off to indicate the channel is no longer assigned to cue.

MIC1 TB Button

When the MIC 1 TB switch on the console's Slot 1 is pressed (it is momentary action), the pre-on pre-faders microphone (MIC 1) will interrupt the studio (STU 1 , STU 2, and STU 3) signal, thus allowing the DJ to talk to the talent and guests.

Fader

Level is set by a long-throw fader. The fader is the sliding mechanism that determines how strong is the presence of the input in some of the various console outputs.

If the fader is all the way down (that is, pulled toward the console operator), the signal will not be present in either of the two program main buses to which it is assigned. As the fader is moved up (that is, pushed away from the console operator) the signal will appear more strongly in each of the main buses to which it is assigned.

ON Button

The ON button turns the channel on and off by means of electronic switching and can simultaneously start external source machines. The channel is ON when the ON button is lit. These can also be programmed (as mentioned in the previous chapter) to activate control room mute and on air tally.
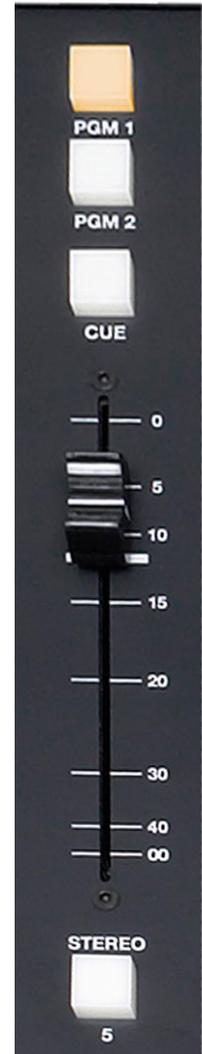
Simple Phone

The caller section is used for the telephone call-in talk segments, and controls the audio for the caller. The caller signal enters the console from your station hybrid.

The caller feed can be either or both of the two Program buses. The caller feed will never contain the caller's own voice.

A recessed rear panel trimpot (HYBRID IN/OUT) adjusts the caller input/output level.

Program Assign

Output switches assign the caller to any combination of the console's two Program outputs (PGM 1 and PGM 2), and permit live talk-ins.

Pressing either of the two program switches causes the caller's audio to be included in the output mix for that bus, at a level dependent on the FADER setting, as long as the caller section is ON. The button will be lit when the caller is assigned to its respective bus. To remove the caller from a bus to which it is currently assigned, press the button again; the light will go off to indicate that the caller is no longer assigned to that bus.

CUE Button

The CUE button allows interviewing the caller prior to airing by including the caller's voice in the console's cue bus, where it may be heard on the meterbridge mounted cue speaker.

Fader

The long-throw fader sets the caller's signal level.

If a fader is all the way down the caller's voice will not be present in either of the two Program buses (PGM 1 and PGM 2) to which the phone is assigned. As the fader is moved up the signal will appear more strongly in each of the main buses to which the phone is assigned.

The fader position will also affect the strength of the caller in the cue output.

ON Button

The ON button determines if the phone channel is ON or OFF. The channel is ON when the ON button is lit. The button can also be used to provide external start logic for the hybrid.

If the phone channel is OFF, caller signal will not be present in any main bus output, regardless of the status of the Program buttons or the position of the fader. If the phone channel is OFF its signal will still be present in the cue output if it has been assigned to cue.
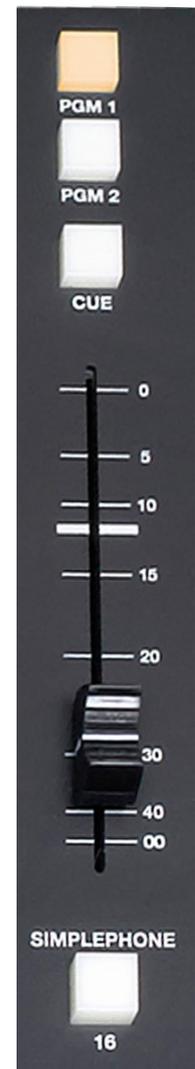
Caller Set-Ups

Pre-air segment communication between the console operator (DJ) and callers is aided by the CUE button, which places the caller's voice on the console's cue speaker and headphones, and (if so programmed) CR speakers. Additionally, pressing the MIC 1 TB switch sends the MIC 1 signal to the caller output.

A typical call-in segment might proceed as follows:

Caller phones in, DJ picks up off-air during a track play to set up the call. He places the caller in CUE, and talks to the caller by pressing the TB button. Neither the DJ mic nor the phone channel need to be ON for two-way communication.

When he is ready to take the call on-air, the DJ makes sure his mic and phone are assigned to PGM 1 or PGM 2 and turns them ON. He then deactivates caller CUE to hear the normal feed.
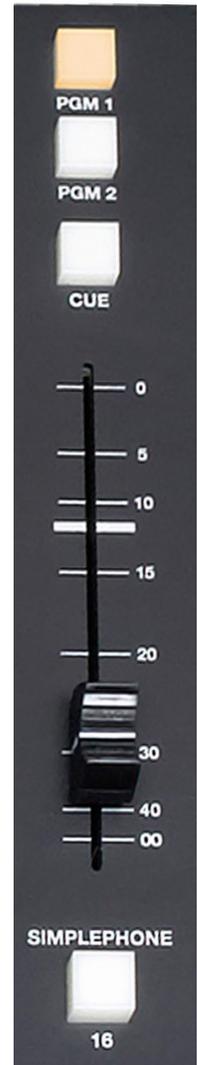
Control Room

This is the console operator's monitor that allows the operator to listen to the console's two stereo Program outputs and an external stereo line level input. This section of the console includes the monitor level controls for the control room, headphone, and cue circuits.

In a typical radio application the console is located in the Control Room. Speakers in the Control Room allow the console operator to listen to the console bus outputs to be assured that the console is performing as desired. These speakers are fed by a stereo signal from the console's Control Room output. In addition to the Control Room output, the operator may also desire to listen to specific isolated faders via the cue system and the console's internal cue speaker, or may want to listen via headphones. Thus, the control room monitor consists of the above mentioned level controls, along with two program assign (PGM 1 and PGM 2) buttons, and an external input (EXT) button.

In some instances the console operator may also be performing talent whose voice will be heard over the radio. The operator's microphone may thus provide a part of the signal that is going out over the air. If that signal is the one being monitored with the Control Room speakers, there is the potential for feedback. The amplified signal from the Control Room speakers is picked up by the microphone and amplified to a new, higher, level, which then is once again picked up by the microphone. The signal quickly rises to an ear-splitting screech. To prevent this, the operator's microphone is normally set to MUTE the Control Room output to prevent the occurrence of feedback.

The master CUE circuit drives a meterbridge-mounted speaker through a built-in power amp, and can be programmed to interrupt control room feed to the control monitor speakers. It also automatically interrupts the headphone feed.
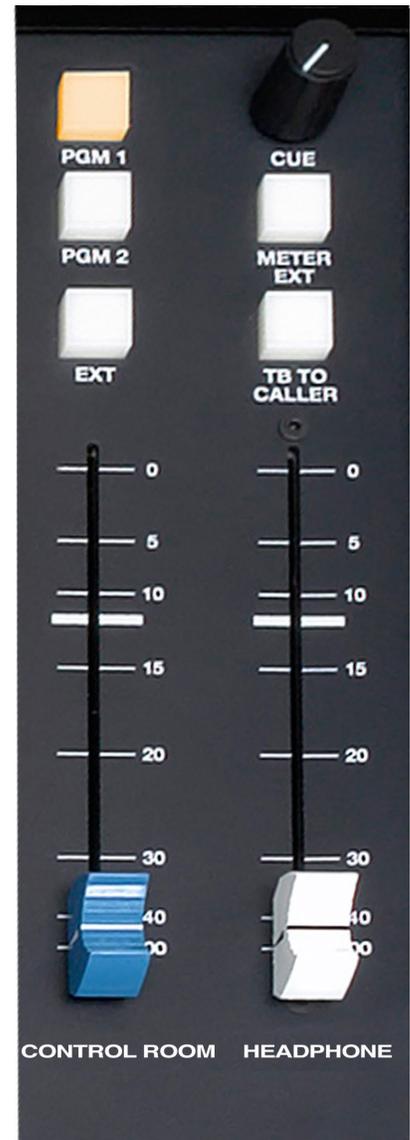
Program Select

Pressing either of the two program (PGM 1 or PGM 2) switches allows the operator to listen to the selected output bus. The button will be lit when the monitor is assigned to its respective bus.

EXT Switch

Pressing the EXT switch allows the operator to pick up the external input (useful for such items as tape recorders or air returns) to listen.

CONTROL ROOM Fader

The CONTROL ROOM fader determines the overall loudness of the signal being monitored as it appears in the Control Room speakers.

If the fader is all the way down (that is, pulled toward the console operator), the signal will not be present in either of the two program main buses to which it is assigned. As the fader is moved up (that is, pushed away from the console operator) the signal will appear more strongly in each of the main buses to which it is assigned.

NOTE: If the Control Room is muted and you move the fader all the way up, then remove the condition that has the Control Room muted, the sound in the Control Room speakers will suddenly be VERY LOUD!

HEADPHONE Fader

The HEADPHONE fader determines the overall loudness of the headphone output signal, which monitors the same source (PGM 1, PGM 2, or EXT) as the Control Room speakers.

The headphone output signal appears at the HEADPHONE JACK, located beneath the armrest near the right side of the console. The jack is provided as a place to plug in user-supplied **stereo** headphones having an impedance of **60 Ohms or higher**.

CUE Level Control

The CUE level control determines the overall loudness of the cue signal as it appears in the console's cue speaker (located behind the grill in the METERBRIDGE).

Like the Control Room speakers, the cue speaker also has the potential for feedback. To avoid this situation, operator mics that mute the Control Room will also mute the cue speaker.

NOTE: If cue is muted and you turn the level control all the way up, then remove the condition that has the cue muted, the sound in the cue speaker will suddenly be VERY LOUD!

TB TO CALLER Button

The TB button lets the operator's pre-on pre-fader microphone signal interrupt the normal feed to the hybrid out, allowing the operator to talk to the caller.

A connection is provided on the console's MIC 2 - MIC 4 RJ-45 connectors to wire up a MIC 2 - MIC4 TB to CUE switch provided by the user. This switch enables a guest using MIC 2 - MIC 4 to talk back to the Control Room over the console's cue system.
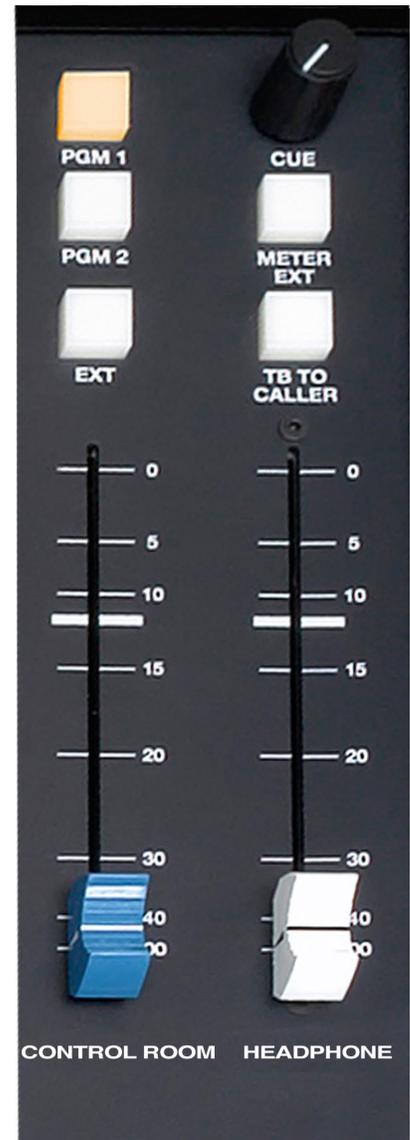
Meters

The METERS section consists of two VU meter pairs on the console's meterbridge and a METERS select button, located on the Control Room section.

VU Meter Pairs

VU meter pairs (PROGRAM 1 VU and SWITCHED VU) are stereo LED bargraph type meters.

The level of the signal being metered is indicated by the number of display elements that are lighted. The more elements lighted, the stronger is the signal being displayed. The right four LEDs in each bargraph are red to indicate when the signal level is approaching a clipping (distorted) level. The next four LEDs are yellow, indicating a normal level range, and the remaining LEDs are green. The top member of the pair indicates the level of the signal's left channel, while the bottom member of the pair indicates the level of the signal's right channel. Peak (CLIP) indication is also provided.

The left VU meter pair shows the level of the PGM 1 output, while the right VU meter pair (the SWITCHED VU) shows the level of the PGM 2 output when the METER EXT button is OFF, or the EXT signal when the METER EXT button is ON.

METER Select Button

The METER button selects the source for the switched meter pair, as indicated above.

On Air LED

The ON AIR LED, located in the middle of the meterbridge, lights up when any of the 1 through 4 input channel is programmed by dipswitch to have the MUTE/TALLY dipswitch activated, and is also ON.

Console Programming Options
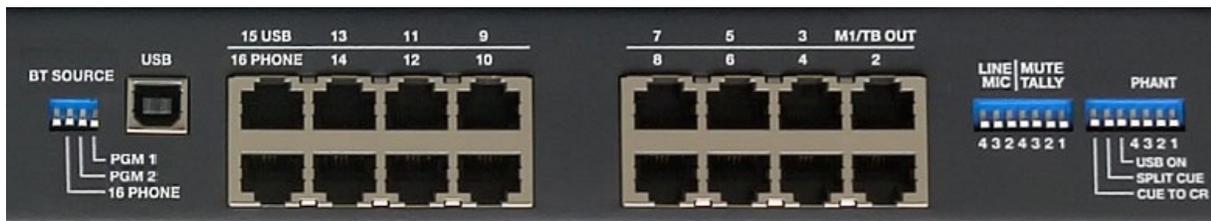
All programming is made via three MBL-AIR5 PCB-mounted dipswitches located on the console's rear panel.

- SW 41 selects Bluetooth source.
- SW 42 selects the mic or line level input signals for M2 - M4, and enables CR mute and AIR TALLY.
- SW 43 selects the phantom power source, programs the control room cue, and swtches the USB ON and OFF.

When a dipswitch position is <u>up</u> it is ON.

Bluetooth Source Selection

Dipswitch SW41 selects the source for Bluetooth:

SW41 pos.1 selects PGM 1 Mono.

SW41 pos.2 selects PGM 2 Mono.

SW41 pos.3 selects 16 PHONE.

CR Mutes

Input channels 1 - 4 can be programmed to mute the control room speakers when the channel is ON. Positions 1 through 4 of the SW 42 dipswitch, when activated, automatically mute the console's control room and cue speakers when the corresponding channels 1 through 4 are turned ON. This is done to prevent feedback from the CR announcer's mic. At the same time the ON AIR LED in the center of the meterbridge will light up.

Mic or Line Selection

Dipswitch SW 42 pos.5 - 7 when ON will select the mic level source for the input channels 2 - 4, respectively. Note that channel 1 is always microphone input and that line level sources are connected to RJ-45's 2 - 4.

Phantom Power

Dipswitch SW 43 positions 1 through 4, turns phantom power ON for the microphone input ports M1 through M4, respectively.

USB ON

Dipswitch SW 43 pos.5 when ON will turn the USB ON to have the audio coming from the computer to be a stereo analog signal on fader 15 USB.

Split Cue, Headphone

Consoles are normally programmed at the factory for CUE to appear on the left channel, while L+R sum of the control room output appears on the right. To defeat this split cue option, move the dipswitch SW 43 pos.6 down (OFF). Then cue will interrupt both sides of the headphones.

Cue Interrupt

The dipswitch SW 43 pos.7, when activated, sends cue to the control room. Note, there is no CUE on the input channel 1.

On Air Tally

For controlling the "on-air" tally function, a relay is provided. The tally is activated when any channel set for CR mute is turned on or put into cue.

The relay connections are available at the TALLY RJ-45 connector mounted on the left of the console's rear. Connect the on-air light to the <u>external</u> user-provided relay. Do <u>not</u> bring on-air light AC connections to <u>any</u> pin of <u>any</u> connector on the console.

TYPICAL CONTROL ROOM ON-AIR TALLY CIRCUIT

USER-SUPPLIED RELAY TRIGGERED BY CONSOLE CR MUTE CIRCUIT

INTERNAL AIR TALLY RELAY

TALLY RJ-45 CONNECTOR PIN

N.C.

COM 30VDC   PIN 2

1N4002   ECG B40240 or equiv. relay

YOUR POWER SUPPLY

N.O.   2A max   PIN 1

RELAY CIRCUIT POWERED BY USER SUPPLIED EXTERNAL SUPPLY

INPUT CHANNEL

RJ-45 — START — PGM 1 — PGM 2 — LOGIC — MUTE/TALLY DIP SW — MUTE/TALLY

RJ-45 UNBALANCED
MIC 1 H L — TB FET — TB MON

MIC/LINE DIP SW

LT H L — L / M FET — FADER — PGM FET — PGM 1 ACN
LINE/MIC 2 - 4
RT H R — PGM 2 ACN

RJ-45 BALANCED
LT H L — CUE — CUE FET — CUE ACN

LINE 5 - 15
RT H R — CUE — LOGIC — CUE SENSE

MIC 1 - MIC 4

MIC 1 PREAMP H L — TRIM — MIC 1 / RJ-45 M1/TB OUT
MIC 2 PREAMP H L — TRIM — MIC 2
MIC 3 PREAMP H L — TRIM — MIC 3
MIC 4 PREAMP H L — TRIM — MIC 4

TB IN/CUE

TB IN/CUE RJ-45 — EXT CUE IN — CUE ACN — LEVEL — CUE FET — TO EXT CUE AMP — RJ-45 — CUE MB SPKR — CUE MON
MUTE TALLY

EXTERNAL IN

H L — EXT LT MON — L
EXT IN
H L — EXT RT MON — R
BALANCED RJ-45

PHONE

ON — START/STOP — PHONE RJ-45
PGM 1
PGM 2
CUE — LOGIC — DIP SW — MUTE/TALLY

PGM 1 LT
PGM 1 RT
PGM 2 LT — PGM/TB FET — TRIM — L R SUM — HYB OUT RJ-45 BALANCED — H L CALLER TO HYBRID
PGM 2 RT
MIC 1 TB

PGM 1 ACN — TRIM — PGM 1 LT MON — RJ-45 BALANCED
— TRIM — PGM 1 RT MON — H L PGM 1 OUT
PGM FET
— TRIM — PGM 2 LT MON — H
PGM 2 ACN — TRIM — PGM 2 RT MON — H L PGM 2 OUT

USB CODEC — FROM COMPUTER — USB CONN — TO — FADER 15 USB

CALLER FROM 16 PHONE H L — SUM
FADER
CALLER FROM HYBRID RJ-45 BALANCED H L — CALL MON

CUE FET — CUE ACN
CUE — LOGIC — CUE SENSE

PGM 1 MON — PGM 1 MONO — DIP SW — BLUETOOTH TX — CT7 PINS 7 & 11
— H L PGM 1 MONO RJ-45

PGM 2 MON — PGM 2 MONO
— H L PGM 2 MONO RJ-45

CALL MON — H L

BLUETOOTH RX
BT SLT PIN 8 — L BT OUT RJ-45
CT7
BT SRT PIN 12 — R

CONTROL ROOM

EXT IN
PGM 1
PGM 2
MUTE/TALLY INPUT 1
MUTE/TALLY INPUT 4 — LOGIC
CUE SENSE — CUE TO CR ENABLE DIP SW — ON AIR TALLY
CR MUTE

PGM 1 LT MON
PGM 1 RT MON
PGM 2 LT MON — CR FET — L R — LEVEL — FET — RJ-45 L — CR OUT — R
PGM 2 RT MON
EXT LT MON — CUE MON
EXT RT MON — LEVEL — FET — L HDPN OUT — R — HDPN JACK

HEADPHONE
CUE SENSE — LOGIC — SPLIT CUE DIP SW

MIC 1 OUT — FET — L SC OUT — R
MIC 1 TB — L STU 1 OUT — R
— L STU 2 OUT — R
STUDIO
— L STU 3 OUT — R

VU METERS

PGM 1 MON — L R — PGM 1 METERS TO BRIDGE
PGM 2 LT MON
PGM 2 RT MON — VU FET — TRIM
EXT LT MON — TRIM — PGM 2/SWITCHED METERS TO BRIDGE
EXT RT MON
LOGIC — EXT — PGM 2

ON AIR TALLY — LOGIC DRIVER — N.O. DRY RELAY — TALLY RJ-45
— TO TALLY LED TO BRIDGE

AIR 5
System Flow Diagram

Appendix

Contents

For the most part there are no user-replaceable parts in the AIR 5 console. Exceptions are those controls and components that in the course of normal use may need maintenance (i.e., faders, pots, ON switches, etc.). A complete list of available components is shown on the next page. Contact Audioarts Engineering technical support for further information.

Audioarts Engineering (600 Industrial Drive, New Bern, North Carolina, USA 28562) may be reached by phone at 252-638-7000, fax 252-637-1285, electronic mail "techsupport@wheatstone.com".

REPLACEMENT PARTS - AIR 5 CONSOLE

COMPONENT	DESCRIPTION	WS P/N
MBL-AIR5 LOADED CARD	LEFT MOTHERBOARD LOADED CARD ASSEMBLY	011444
MBR-AIR5 LOADED CARD	RIGHT MOTHERBOARD LOADED CARD ASSEMBLY	011446
VU-AIR2 LOADED CARD	LEFT MOTHERBOARD LOADED CARD ASSEMBLY	009728
FADER	LOW PROFILE TYPE N AUDIO FADER	540061
FADER KNOB	BLACK FADER KNOB, 11mm FOR 3000 SERIES FADER	520001
FADER KNOB	BLUE FADER KNOB, 11mm FOR 3000 SERIES FADER	520002
FADER KNOB	RED FADER KNOB, 11mm FOR 3000 SERIES FADER	520006
FADER KNOB	WHITE FADER KNOB, 11mm FOR 3000 SERIES FADER	520007
POT	"CUE" 10K SINGLE LINEAR VERTICAL POT	500126
POT KNOB	15MM BLACK PUSH-ON KNOB FOR 6MM SHAFT FOR "CUE" POT	520125
POT CAP	11MM BLACK CAP W/LINE FOR 15MM "CUE" KNOB	530037
NKK SWITCH	JB15 SWITCH W/BRIGHTER RED LED AND SILICON GASKET	510290
NKK SWITCH	JB15 SWITCH W/BRIGHTER YELLOW LED AND SILICON GASKET	510291
SWITCH CAP	WHITE SWITCH CAP	530004
CONNECTOR	4x2 STACKED R/A SHIELDED RJ-45	260086
CONNECTOR	2x2 STACKED R/A SHIELDED RJ-45	260089
CONNECTOR	USB-B R/A SHIELDED RJ-45	260090
RTS JACK	HEADPHONE JACK	260005
HEADER	3 PIN HEADER	250062
HEADER	14 PIN BOXED STRAIGHT HEADER	250073
HEADER	3 POSITION R/A BOXED HEADER	260096
HEADER	26 PIN PC MT HEADER	250044
PLUG	3 PIN .098" PLUG FOR #26 AWG	230028
PLUG	14 PIN RIBBON PLUG	250034
PLUG	26 PIN RIBBON PLUG	250043
PLUG	40 PIN RIBBON PLUG	250053
PLUG TERMINAL	3 POSITION TERMINAL BLOCK EURO 3.5MM MARKED	260097
POWER CONNECTOR	POWER JACK DC R/A	260110
POWER SUPPLY	25W TRIPLE OUTPUT DESKTOP POWER SUPPLY	980043
POWER CONNECTOR	R/A DIN RECEPTACLE	260071
POWER CORD	7 1/2" BLACK POWER CORD	150017
SPEAKER	CONSOLE METERBRIDGE SPEAKER	960016
MANUAL	TECHNICAL MANUAL FOR AIR 5 CONSOLE	011496