

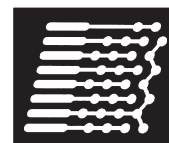
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# AIR 1

## RADIO MIXING CONSOLE

 *AUDIOARTS ENGINEERING*

TECHNICAL MANUAL  
December 2007



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## **AIR 1 Radio Mixing Console Technical Manual - 2nd Edition**

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AUDIOARTS ENGINEERING  
600 Industrial Drive  
New Bern, North Carolina 28562  
252-638-7000

\*a division of Wheatstone Corporation

# AIR 1 Technical Manual

## Table of Contents

### Chapter 1 - Information and Power

<b>Unpacking and Installing the Console .....</b>	<b>1-2</b>
<b>Power Supply.....</b>	<b>1-3</b>
<b>Energizing .....</b>	<b>1-3</b>
<b>Audio and Control Wiring .....</b>	<b>1-4</b>
Unbalanced Connections (analog audio) .....	1-5
<b>Hook-Ups.....</b>	<b>1-5</b>
MIC 1 and MIC 2 Inputs .....	1-5
LINE 3 IN through LINE 8 IN.....	1-5
EXT IN.....	1-6
PGM 1 OUT and PGM 2 OUT .....	1-6
MONITOR OUT .....	1-6
CUE .....	1-6
HDPN .....	1-6
TALLY.....	1-7
SPARE .....	1-7

### Chapter 2 - Console Features

<b>Overview.....</b>	<b>2-2</b>
<b>Inputs.....</b>	<b>2-4</b>
Analog Mono Mic Level Inputs.....	2-4
Analog Stereo Line Level Inputs.....	2-4
<b>Outputs.....</b>	<b>2-5</b>
Program Outputs.....	2-5
Monitor Output.....	2-5
Cue to Monitor .....	2-5
Split Cue, Monitor .....	2-6
Split Cue, Headphone .....	2-6
Monitor Mute.....	2-6
On Air Tally .....	2-7
<b>USB Port.....</b>	<b>2-7</b>
Using the USB Port.....	2-8
... With a MAC .....	2-8
... With a Windows® PC .....	2-8
Other Computers.....	2-8
General Considerations.....	2-9

## Chapter 3 - Controls and Functions

<b>Input Section</b> .....	<b>3-2</b>
Source .....	3-3
Program Assign .....	3-3
Cue Button .....	3-3
Fader .....	3-3
ON Button .....	3-3
<b>Master Section</b> .....	<b>3-4</b>
Monitor .....	3-5
Program Select.....	3-5
EXT Switch .....	3-5
Monitor Fader.....	3-5
Cue Level Control.....	3-6
Headphone Fader.....	3-6
Meters .....	3-6
VU Meter Pair .....	3-6
Meter Select Buttons.....	3-7
On Air LED.....	3-7

## Chapter 4 - Schematic and Load Sheet Drawings

<b>Console Flow Diagram</b> .....	<b>4-2</b>
<b>MBUSBA1-1 Mother Board</b>	
Schematic .....	4-3
Load Sheet .....	4-11
<b>VUA1-2 Meters PCB</b>	
Schematic .....	4-12
Load Sheet .....	4-13

## Appendices

### Appendix 1

<b>AIR 1 Console Performance Specifications</b> .....	<b>A-3</b>
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### Appendix 2

<b>Replacement Parts List</b> .....	<b>A-5</b>
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# Installation and Power

## Chapter Contents

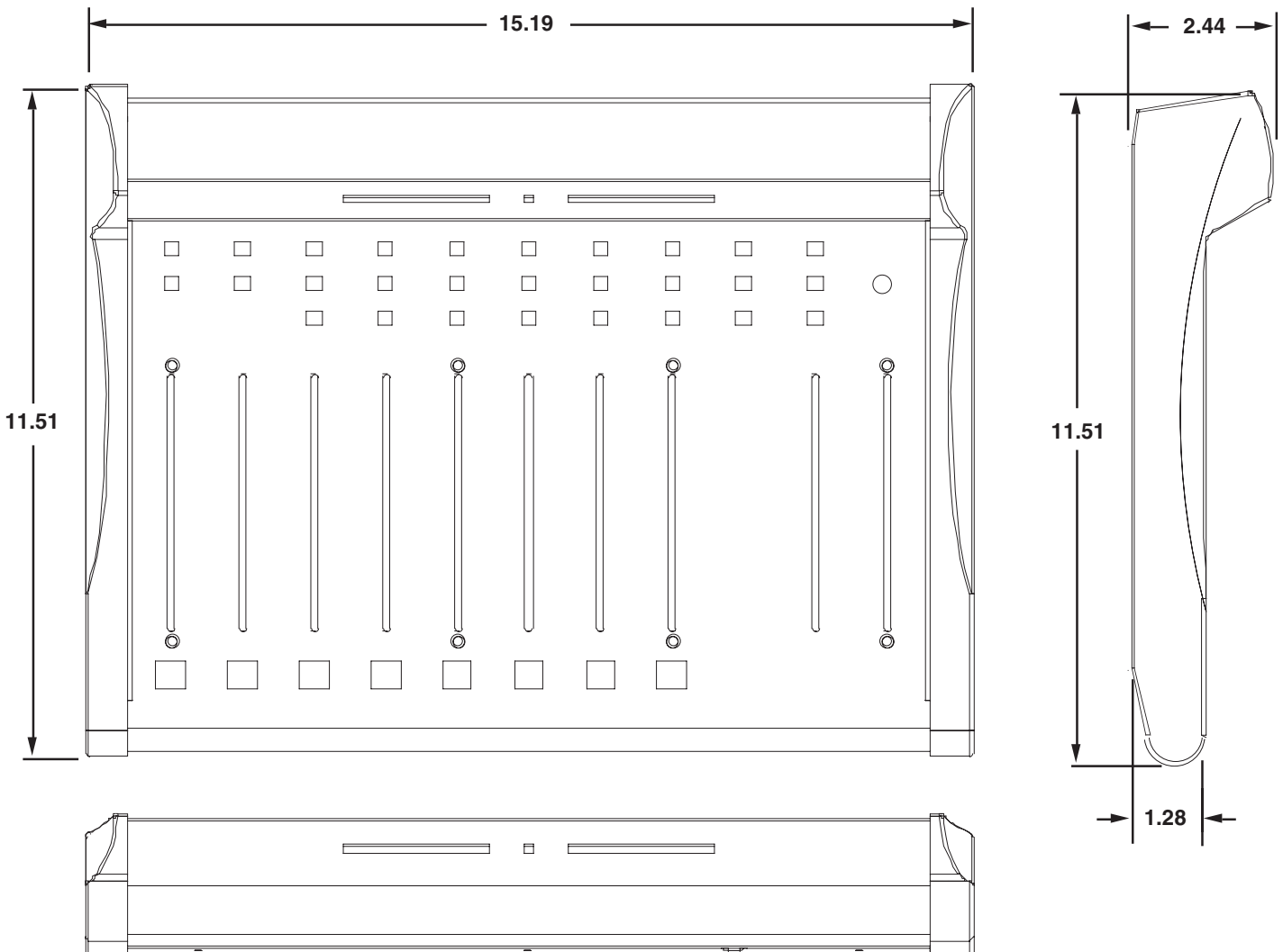
<b>Unpacking and Installing the Console .....</b>	<b>1-2</b>
<b>Power Supply.....</b>	<b>1-3</b>
<b>Energizing .....</b>	<b>1-3</b>
<b>Audio and Control Wiring .....</b>	<b>1-4</b>
Unbalanced Connections (analog audio) .....	1-5
<b>Hook-Ups.....</b>	<b>1-5</b>
MIC 1 and MIC 2 Inputs .....	1-5
LINE 3 IN through LINE 8 IN.....	1-5
EXT IN.....	1-6
PGM 1 OUT and PGM 2 OUT .....	1-6
MONITOR OUT .....	1-6
CUE .....	1-6
HDPN .....	1-6
TALLY.....	1-7
SPARE .....	1-7

# Installation and Power

## Unpacking and Installing the Console

The AIR 1 console with its power supply, connecting cable, and technical manual is shipped in one packing box. The console can be unpacked by one person by grasping the console at the 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 1 audio console is designed for countertop placement). Avoid proximity to any electromagnetic fields, such as large power transformers, motors, and fluorescent lighting fixtures.

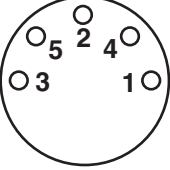
**NOTE:** This console contains static-sensitive devices. Normal precautions against static discharge should be observed.



## Power Supply

The AIR 1 console is powered by a factory supplied power adapter with 100-240V/50-60Hz input, 25W 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 1 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 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 rackmount power supply to de-energize the control surface. You may now proceed to wire up audio and control connections**

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## Audio and Control Wiring

All audio I/O connections to the AIR 1 console are made via TRS and XLR connectors located on the rear panel of the console, except for the USB connection.



Two XLR female connectors are provided to bring balanced mono microphone level signals into the console for control by the first two (microphone) faders. These XLR connectors are wired “pin 2 hot.”

Six pairs of TRS (Tip-Ring-Sleeve) jacks are provided to bring balanced stereo line level signals into the console for control by (line) faders three through eight. The high side of the balanced line is wired to the tip (T), the low side of the balanced line is on the ring (R), and the sleeve (S) is connected to the console ground. The tip and ring are automatically switched to ground when there is no matching plug inserted in the jack.

One pair of TRS jacks is provided to bring an additional stereo line level signal into the console for use by the monitor circuits. These are also wired with the tip high, the ring low, and the sleeve ground, and with automatic grounding when no plug is inserted.

Two pairs of TRS jacks are provided to bring the two stereo program outputs (PGM 1 and PGM 2) out of the console as balanced line level +4dBu signals. The tip is high, the ring is low, and the sleeve is ground.

One pair of TRS jacks is provided to bring the stereo monitor output out of the console as separate (left and right) unbalanced line level signals at a nominal level of -2dBu (equivalent to one side of a balanced +4dBu output). The tip is high and both the ring and the sleeve are connected to ground.

One TRS jack is provided to bring the mono cue out of the console as an unbalanced line level signal (nominal -2dBu). The tip is high and both the ring and the sleeve are connected to ground.

One TRS is provided 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.

One TRS jack 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.*** The relay normally open (N.O.) contact appears on the tip and the common contact appears on the ring. The sleeve is connected to ground.

One remaining TRS jack on the rear panel is not used.

The USB port uses the type B connector in the center of the rear panel for interfacing with a computer (see page 2-7 for details).

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



## 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** – The AIR 1 console's PGM 1 and PGM 2 line level analog outputs are electronically balanced, low impedance, outputs, expecting a minimum load of 600 ohms. The outputs are balanced but are not floating. Therefore, **care must be exercised when connecting them to an unbalanced system.** While temporarily shorting the low side of the output signal to ground will not cause any problems, continued operation under these conditions will result in increased distortion, decreased reliability, and possible oscillation problems. **If you must connect one of these outputs to an unbalanced system, be sure to leave the low side unterminated, and connect the unbalanced system to the high side output and shield connections only.**

## Hook-Ups

The rear of the console has multiple TRS connectors to plug in 6 stereo line inputs and the external input, as well as providing program 1 and 2, monitor, cue, headphone, and tally output connections. There are also two female XLR connectors provided for microphone MIC 1 and MIC 2 inputs.



### MIC 1 and MIC 2 Inputs

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

- PIN 1 XLR 1 SH – MIC 1 IN SH
- PIN 2 XLR 1 HI – MIC 1 IN HI
- PIN 3 XLR 1 LO – MIC 1 IN LO
- PIN 1 XLR 2 SH – MIC 2 IN SH
- PIN 2 XLR 2 HI – MIC 2 IN HI
- PIN 3 XLR 2 LO – MIC 2 IN LO

### LINE 3 IN through LINE 8 IN

The top TRS jack (TRS 1) is LEFT and the bottom TRS jack (TRS 2) is RIGHT for each channel. All signals are analog stereo, +4dBu balanced.

- TRS 1 TIP – LINE X LEFT HI
- TRS 1 RING – LINE X LEFT LO
- TRS 1 SLEEVE – LINE X LEFT SH
- TRS 2 TIP – LINE X RIGHT HI
- TRS 2 RING – LINE X RIGHT LO
- TRS 2 SLEEVE – LINE X RIGHT SH



### EXT IN

The top TRS jack (TRS 1) is LEFT and the bottom TRS jack (TRS 2) is RIGHT for each channel. All signals are analog stereo, +4dBu balanced.

TRS 1 TIP – EXT LEFT HI  
 TRS 1 RING – EXT LEFT LO  
 TRS 1 SLEEVE – EXT LEFT SH  
 TRS 2 TIP – EXT RIGHT HI  
 TRS 2 RING – EXT RIGHT LO  
 TRS 2 SLEEVE – EXT RIGHT SH

### PGM 1 OUT and PGM 2 OUT

The top TRS jack (TRS 1) is LEFT and the bottom TRS jack (TRS 2) is RIGHT for each channel. All signals are analog stereo, +4dBu balanced.

TRS 1 TIP – PGM X LEFT HI  
 TRS 1 RING – PGM X LEFT LO  
 TRS 1 SLEEVE – PGM X LEFT SH  
 TRS 2 TIP – PGM X RIGHT HI  
 TRS 2 RING – PGM X RIGHT LO  
 TRS 2 SLEEVE – PGM X RIGHT SH

### MONITOR OUT

The top TRS jack (TRS 1) is LEFT and the bottom TRS jack (TRS 2) is RIGHT for each channel. All signals are analog stereo, -2dBu nominal, unbalanced.

TRS 1 TIP – MONITOR LEFT HI  
 TRS 1 RING – GROUND  
 TRS 1 SLEEVE – MONITOR LEFT SH  
 TRS 2 TIP – MONITOR RIGHT HI  
 TRS 2 RING – GROUND  
 TRS 2 SLEEVE – MONITOR RIGHT SH

### CUE

Analog mono, -2dBu nominal, unbalanced.

TRS TIP – CUE HI  
 TRS RING – GROUND  
 TRS SLEEVE – CUE SH

### HDPN

Analog stereo, headphone level, unbalanced.

TRS TIP – HDPN LEFT  
 TRS RING – HDPN RIGHT  
 TRS SLEEVE – HDPN SH



**TALLY**

Relay closure, 30VDC, 2A maximum.

TRS TIP – TALLY N.O.

TRS RING – TALLY COM

TRS SLEEVE – GROUND

**SPARE**

Not used.

TRS TIP – NO CONNECTION

TRS RING – NO CONNECTION

TRS SLEEVE – GROUND

# Console Features

## Chapter Contents

<b>Overview</b> .....	<b>2-2</b>
<b>Inputs</b> .....	<b>2-4</b>
Analog Mono Mic Level Inputs.....	2-4
Analog Stereo Line Level Inputs.....	2-4
<b>Outputs</b> .....	<b>2-5</b>
Program Outputs.....	2-5
Monitor Output.....	2-5
Cue to Monitor.....	2-5
Split Cue, Monitor.....	2-6
Split Cue, Headphone.....	2-6
Monitor Mute.....	2-6
On Air Tally.....	2-7
<b>USB Port</b> .....	<b>2-7</b>
Using the USB Port.....	2-8
... With a MAC.....	2-8
... With a Windows® PC.....	2-8
Other Computers.....	2-8
General Considerations.....	2-9



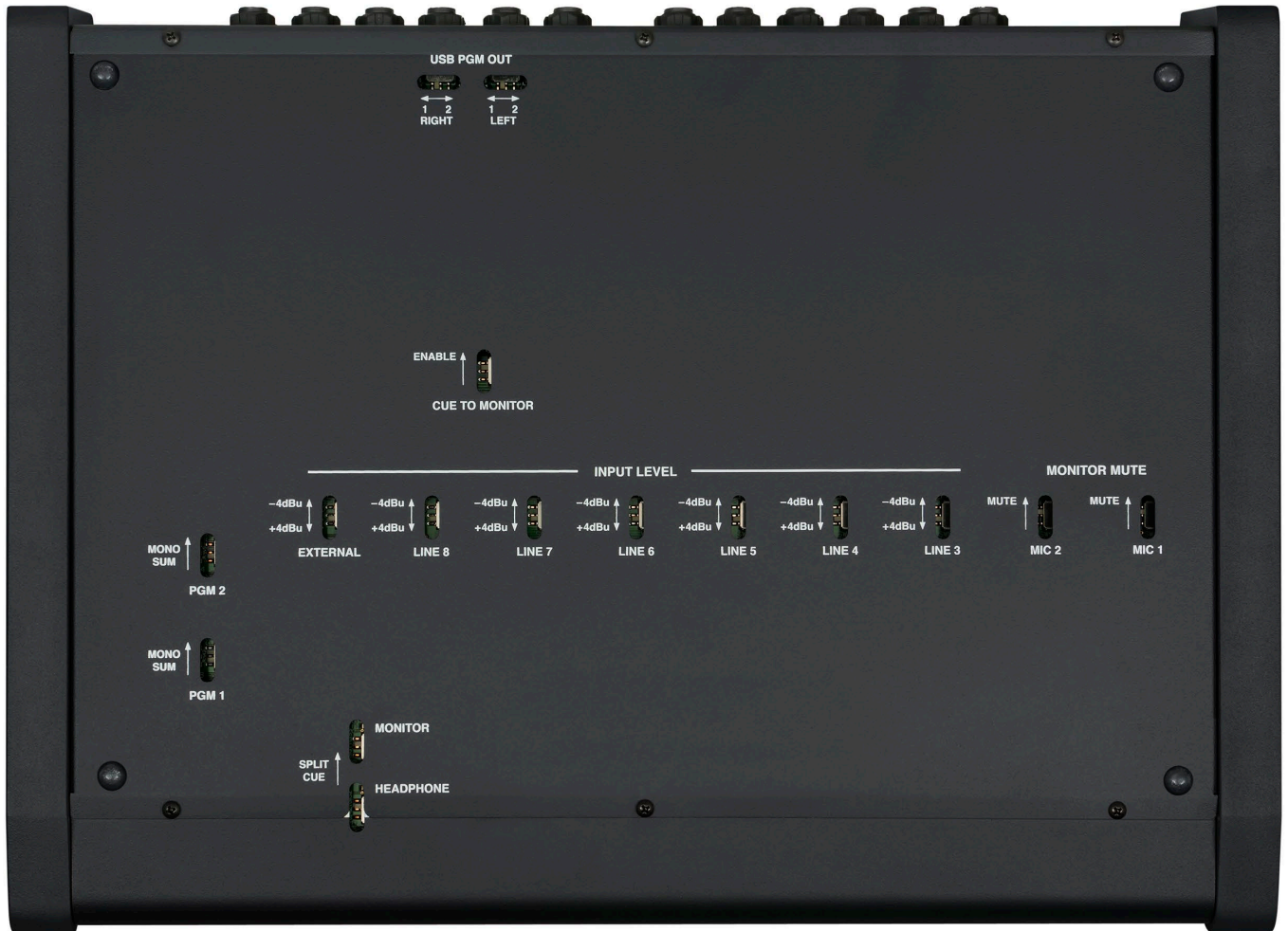
# Console Features

## Overview

The AIR 1 console consists of an input section with eight faders and associated switches, monitor and headphone section with two faders and associated switches.

The basic purpose of the console is to take some of the many audio signals that are wired to the console inputs, and generate several outputs that combine these inputs in various groups and at various degrees of loudness, or signal strength. The typical application is in a radio station where it is desired to develop the signals that the station will broadcast (the on air signal), as well as several additional signals for recording and monitoring.

All programming is made via PCB mounted slide switches accessible through openings in the console's bottom panel.



AIR 1 Bottom Panel

## Inputs



The AIR 1 console is designed to handle 6 analog stereo (+4dBu balanced) inputs, two mono microphone (-50dBu balanced) inputs, and one external stereo line level (+4dBu balanced) input that goes directly to control room or meter.

### 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 wired to female XLR connectors located on the rear of the console. These mic inputs feed the console's first two faders. The mic preamps are set for a gain of 54dBu, but each mic pre has its own recessed GAIN control, located beneath the XLR input connector, to allow field adjustment to compensate for differences in microphone characteristics.

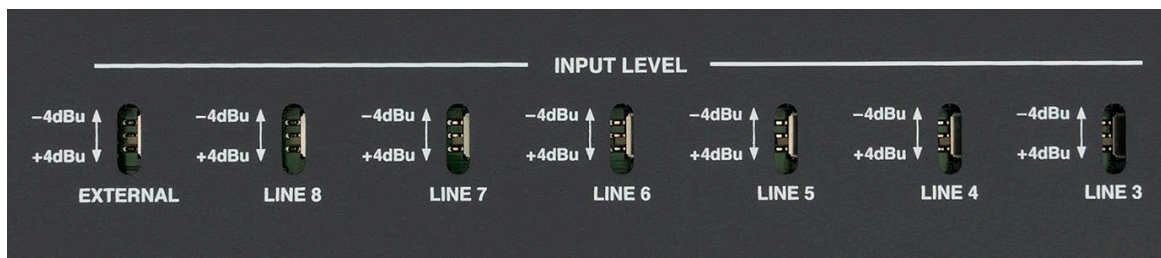
Example: with a microphone input of -60dBm @ 150 ohm at the port, gain trim can set levels from -22dBu to +16dBu (note maximum preamp gain is +76dB) at the PGM 1 or PGM 2 output.

### 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. All six input line level signals and external signal are switchable between -4dBu and +4dBu via slide switches, LINE 3 - LINE 8 (SW 8 - SW 3 on MBUSBA1-1 PCB) and EXTERNAL (SW 2 on MBUSBA1-1 PCB), accessible through openings in the console's bottom panel.

When UP the input level signal is -4dBu;

When DOWN the input level signal is +4dBu.



## Outputs



The console outputs include two program stereo busses (PGM 1 and PGM 2), a stereo monitor output, a mono cue output, and a stereo headphone jack.

The console’s mono cue signal is provided to drive an external powered speaker, or amplifier and speaker combination, and also provides the cue signal used to interrupt monitor and headphones, if such interrupt has been enabled by the installer.

### Program Outputs

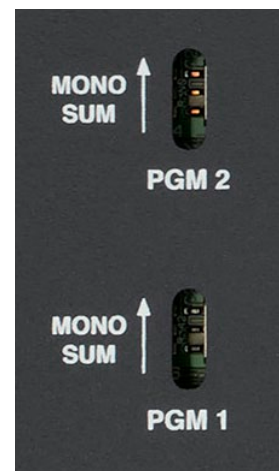
The console’s main analog outputs are the two Program stereo busses (PGM 1 and PGM 2). The Program stereo outputs can be programmed to mono outputs via slide switches, PGM 1 MONO SUM and PGM 2 MONO SUM (SW 11 and SW 12 on MBUSBA1-1 PCB).

When SW 12 is UP the PGM 1 is in mono mode, which sums the left and right PGM 1 channels and sends this mono signal to both left and right channels of the PGM 1 output.

When SW 12 is DOWN the PGM 1 is in stereo mode.

When SW 11 is UP the PGM 2 is in mono mode, which sums the left and right PGM 2 channels and sends this mono signal to both left and right channels of the PGM 2 output.

When SW 11 is DOWN the PGM 2 is in stereo mode.



### Monitor Output

The AIR 1 has a MONITOR output designed to drive a stereo pair of powered speakers, or a stereo amplifier driving separate speakers, to allow the operator to listen to either PGM 1 or PGM 2, or an external signal. The console may be programmed to mute the monitor or to provide monitor and headphone split cue.

#### Cue to Monitor

The CUE TO MONITOR (SW 1 on MBUSBA1-1 PCB) slide switch, when activated (UP), sends cue to the monitor.

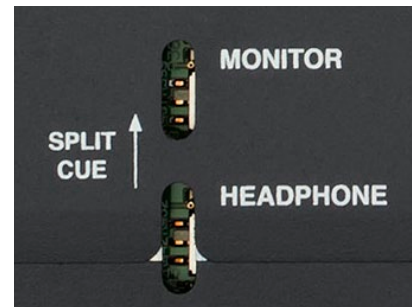






### Split Cue, Monitor

The MONITOR SPLIT CUE (SW 3 on MBUSBA1-1 PCB) slide switch, when activated (UP), allows a summed (L+R) version of the regular program to be sent to the right side of the monitor stereo output, while CUE is sent to the left side.



### Split Cue, Headphone

For headphones, consoles are normally programmed at the factory for CUE to appear on the left channel, while the L+R sum of the monitor output appears on the right. This can be changed with the HEADPHONE SPLIT CUE (SW 4 on MBUSBA1-1 PCB) slide switch. To defeat this split cue option, turn the switch off (DOWN). With this setting cue will interrupt both sides of the headphones.

### Monitor Mute

The console has the ability to mute the monitor output. The console also has an ON AIR tally output that is used to drive user-provided external circuitry that will in turn operate the ON AIR indicator. This tally is automatically activated whenever the monitor mute is activated.



The two microphone channels can be programmed via MIC 1 and MIC 2 (SW 9 and SW 10 on MBUSBA1-1 PCB) slide switches to mute the monitor speakers when the channel is ON.

When MIC 1, SW 10, is UP the console's monitor speakers are automatically muted when the MIC 1 channel is turned ON.

When MIC 2, SW 9, is UP the console's monitor speakers are automatically muted when the MIC 2 channel is turned ON.

This is done to prevent feedback from the monitor speaker to the announcer's mic.

At the same time that muting is enabled (by turning on either of the two MIC channels when set to activate the monitor mute), the ON AIR LED in the center of the meterbridge is also turned on, and a closure is provided at the TALLY output to activate the external circuitry for the ON AIR indicator.

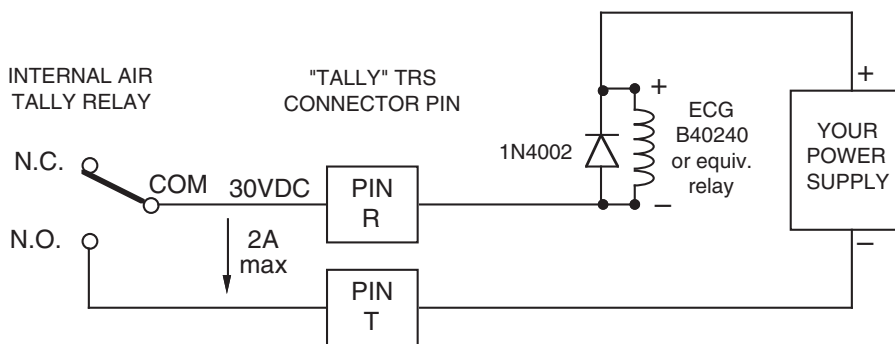
### On Air Tally

For controlling an external “on-air” indicator, a relay is provided. The tally is activated when a mic channel set for monitor mute is turned on.

The relay connections are available at the “TALLY” TRS connector mounted on the rear of the console. Connect the on-air light to the external user-provided relay. Do not bring on-air light AC connections to any pin of any connector on the console.

### ***TYPICAL MONITOR ON-AIR TALLY CIRCUIT***

*USER-SUPPLIED RELAY TRIGGERED BY CONSOLE MONITOR MUTE CIRCUIT*



*RELAY CIRCUIT POWERED BY USER SUPPLIED EXTERNAL SUPPLY*

### USB Port

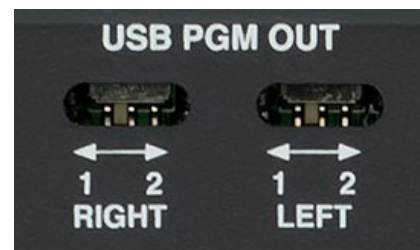
The console contains a USB 2.0 interface, available via the USB Type B connector on the rear panel, to enable audio to pass between the console and a USB port on a computer. USB PGM OUT slide switches (SW 51 and SW 52 on the MBUSBA1-1 PCB) select either PGM 1 or PGM 2 as the audio from the console to the computer.

When **both** switches SW 51 and SW 52 are slid to the LEFT the USB will be fed with PGM 1.

When **both** switches SW 51 and SW 52 are slid to the RIGHT the USB will be fed with PGM 2.

Note that SW 51 activates the PGM RT channel while SW 52 activates the PGM LT channel of the stereo analog signal.

Audio coming back from the computer via USB shows up as a stereo analog signal on the LINE 8 fader as long as there are no connections made to the LINE 8 input jacks.



## 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 1 USB port. Use a cable having a USB Type B connector on the Air 1 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 1 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 1 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 1 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 1 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 1:

- 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 on the LINE 8 fader, unless you have an audio source plugged into the LINE 8 input jacks.

## 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:

- The audio that is output from the Air 1 on the USB port depends on the setting of the rear panel dipswitches that select between PGM 1 and PGM 2 as the source (see page 2-7).
- The audio coming back into the Air 1 on the USB port is available at the LINE 8 fader as long as nothing is plugged into the LINE 8 input jacks.
- 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.

# Controls and Functions

## Chapter Contents

<b>Input Section.....</b>	<b>3-2</b>
Source .....	3-3
Program Assign .....	3-3
Cue Button .....	3-3
Fader .....	3-3
ON Button .....	3-3
<b>Master Section .....</b>	<b>3-4</b>
Monitor .....	3-5
Program Select.....	3-5
EXT Switch .....	3-5
Monitor Fader .....	3-5
Cue Level Control.....	3-6
Headphone Fader.....	3-6
Meters .....	3-6
VU Meter Pair .....	3-6
Meter Select Buttons.....	3-7
On Air LED.....	3-7

# Controls and Functions

## Input Section

The AIR 1 Input section consist of two mono microphone input channels and six stereo analog input channels.

The MIC and LINE input channels have the same controls, except that the MIC channels don't have a CUE switch.



## Source

The AIR 1 console accepts two mono mic input signals via female XLR and six stereo line level input signals via TRS connectors.

MIC 1 and MIC 2 GAIN trimpots at the rear of the console below the MIC input XLR connectors are used to adjust the gain of each microphone input independently. These are normally “set and forget” adjustments, and are set at the factory for a gain of 54dB, thus bringing a -50dBu microphone input level up to +4dBu at the output.

If you have more than two microphones in use, you will need to provide external mic preamps for all but two of them. These additional mics will not be able to activate the muting and on air tally functions.

## 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. NOTE that when the console is powered up all input channels will be off and assigned to PGM 1.

## Cue Button

The CUE switch (not found on the MIC channels) places the channel’s signal on the console’s cue bus, where it may be heard in the external cue speaker, as an interrupt to the console operator’s headphones, and as an interrupt to the 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.

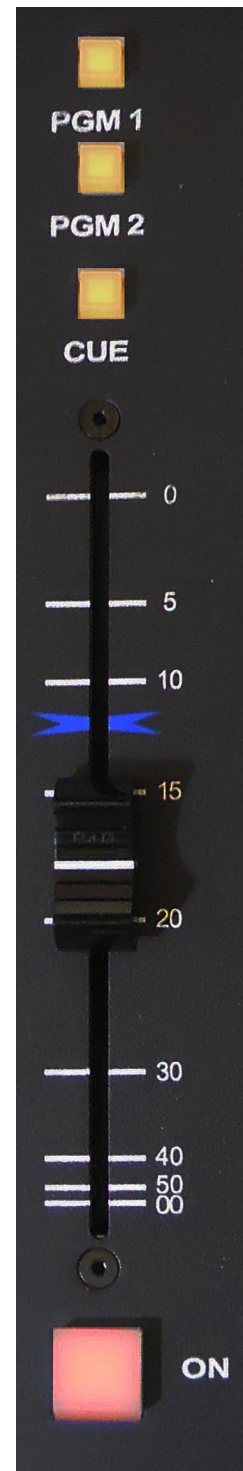
## Fader

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.

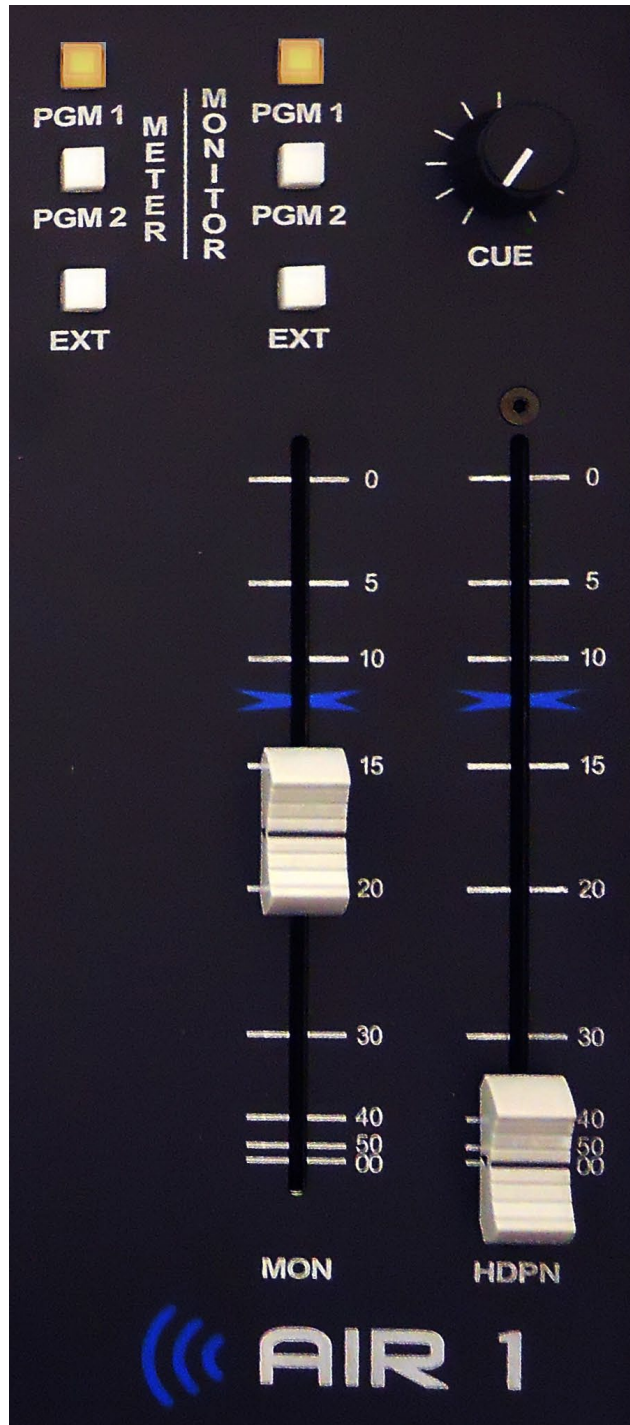
## ON Button

The ON button turns the channel on and off by means of electronic switching. The channel is on when the ON button is lit. The mic channels can also be programmed (as mentioned in the previous chapter) to activate monitor mute and on air tally.



## Master Section

The Master section includes the monitor, headphone, and meters controls.





## Monitor

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 faders for the monitor and headphone, and a cue level control for 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 monitor output. In addition to the monitor output, the operator may also desire to listen to specific isolated faders via the cue system and an external cue speaker, or may want to listen via headphones. Thus, the control room monitor consists of the above 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 preamplified 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 monitor output to prevent the occurrence of feedback.

The master CUE circuit can be programmed to interrupt monitor feed, or provide a split feed (program mono sum to right, cue to left) to the monitor speakers. It also automatically interrupts the headphone feed, either in split mode (by default) or both sides.

### 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.

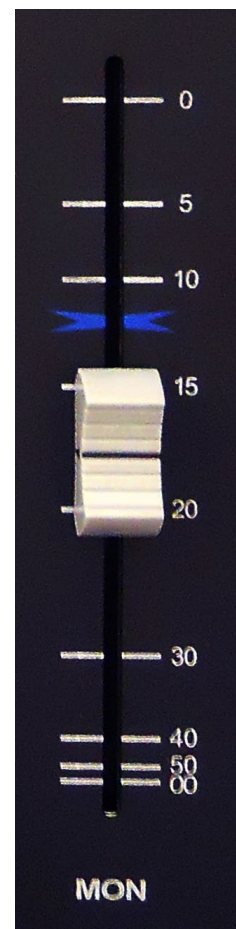
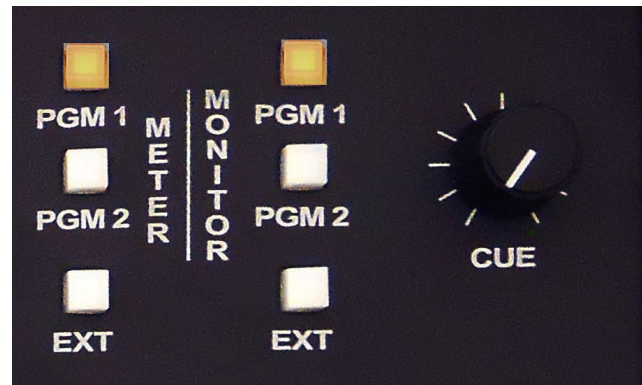
### EXT Switch

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.

### Monitor Fader

The MON fader determines the overall loudness of the signal being monitored as it appears in the Monitor speakers. As the fader slides up, the loudness increases up to a maximum at the top position. To decrease the loudness, slide the fader down.

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



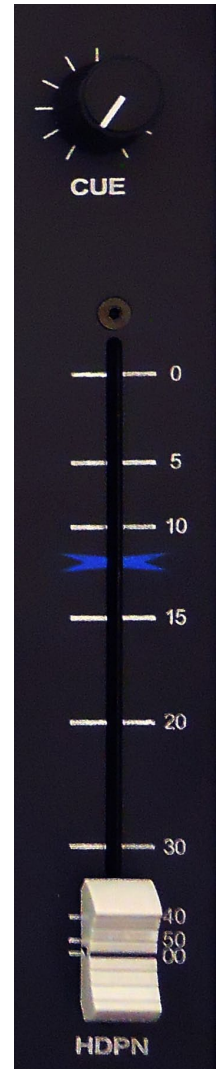
### CUE Level Control

The CUE level control determines the overall loudness of the cue signal.

### Headphone Fader

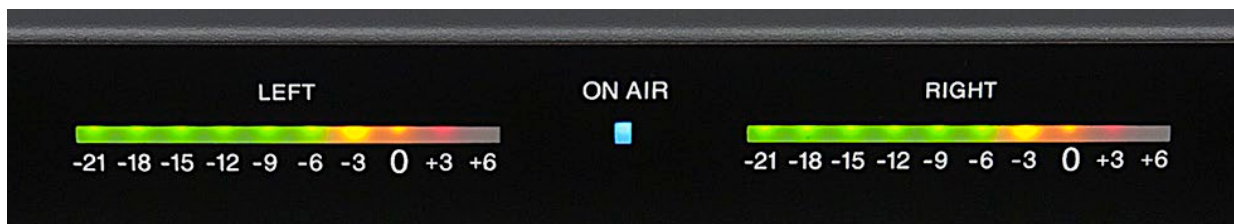
The HDPN fader determines the overall loudness of the headphone output signal, which monitors the same source (PGM 1, PGM 2, or EXT) as the Monitor speakers.

The headphone output signal appears at the HEADPHONE JACK, located on the back of the console as indicated in Chapter 1. The jack is provided as a place to plug in user-supplied **stereo** headphones. High impedance headphones work best; as the headphone impedance is reduced below about 200 ohms the available level decreases.



### Meters

The METERS section consists of one 10-segment VU meter pair on the console's meterbridge and a METERS select buttons (PGM 1, PGM 2, and EXT), located on the Master section.



### VU Meter Pair

The VU meter pair is a stereo LED bargraph type meter.

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 two LEDs in each bargraph are red to indicate when the signal level is approaching a clipping (distorted) level. The next two LEDs

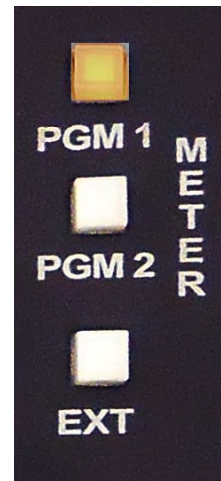
are yellow, indicating a normal level range, and the remaining LEDs are green. The left member of the pair indicates the level of the selected signal's left channel, while the right member of the pair indicates the level of the selected signal's right channel.

### METER Select Buttons

The METER buttons (PGM 1, PGM 2, or EXT) select the source for the meter pair, as indicated above.

### On Air LED

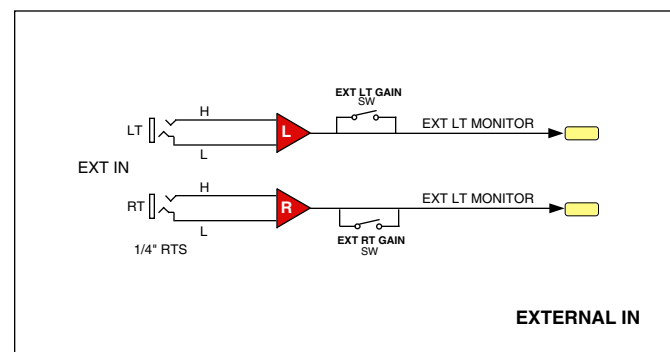
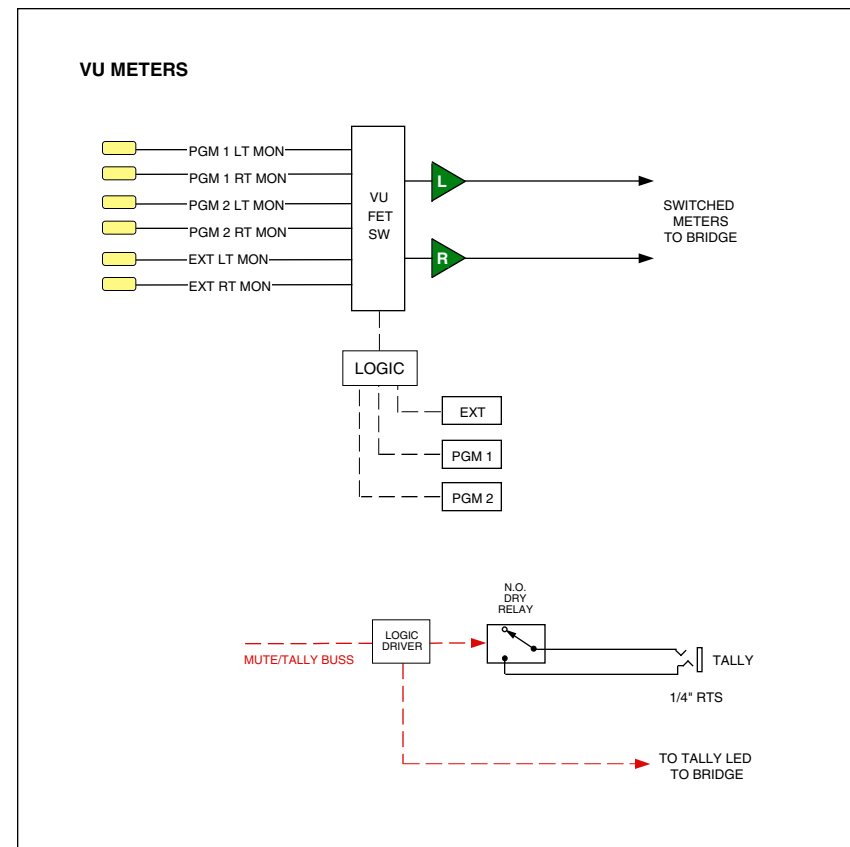
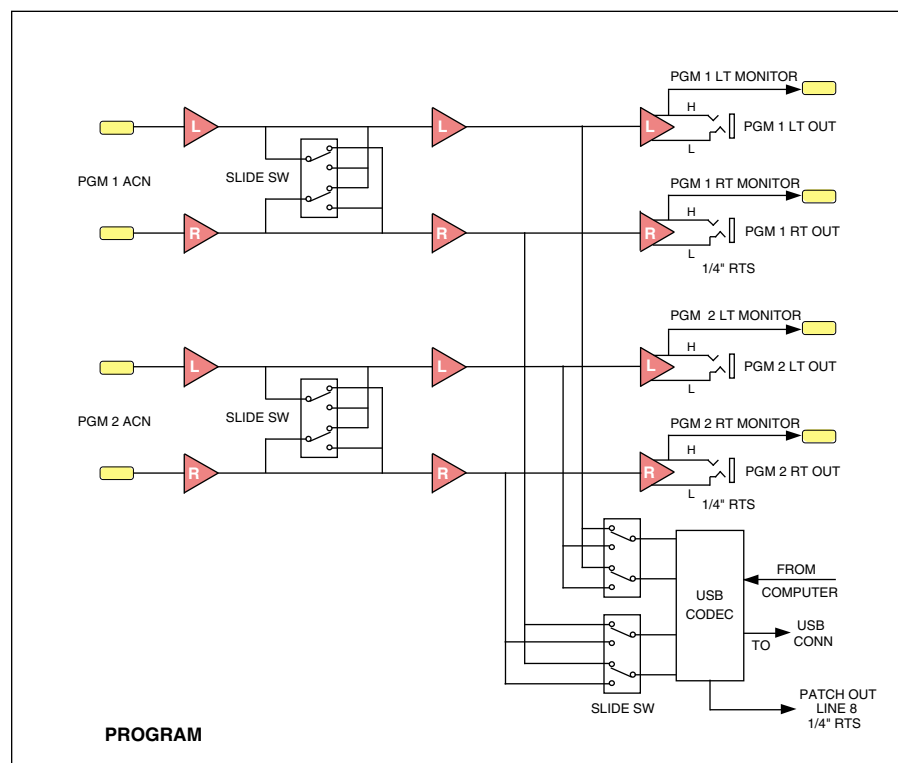
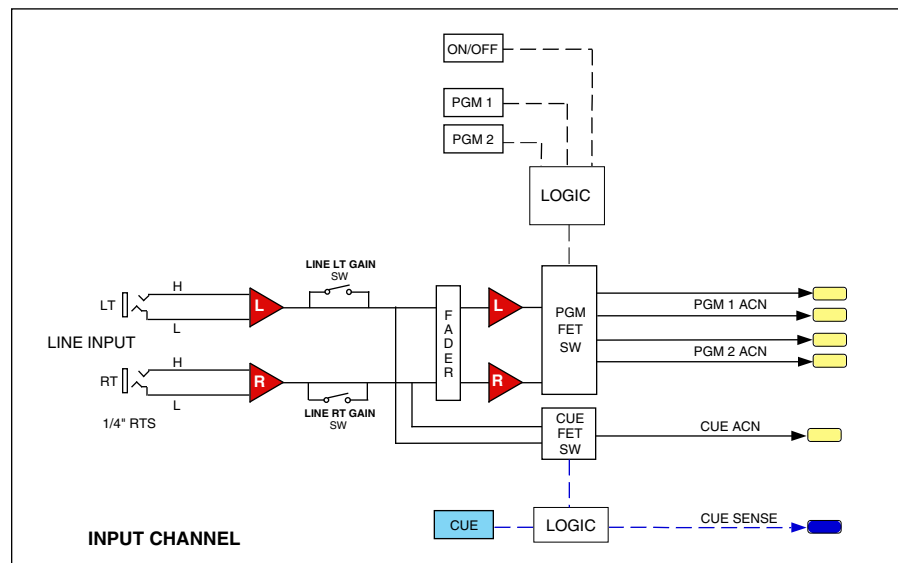
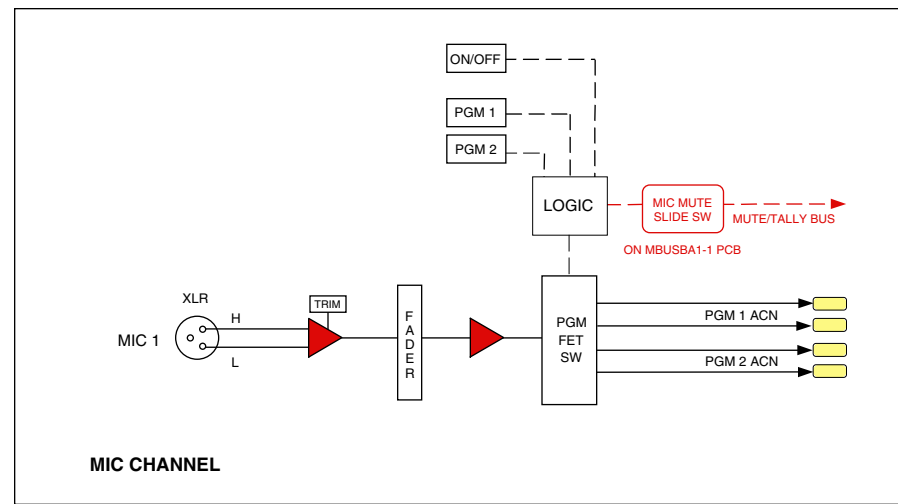
The ON AIR LED, located in the middle of the meterbridge, lights up when either of the two MIC channels is programmed by slide switch to have the MONITOR MUTE activated, and is also ON.



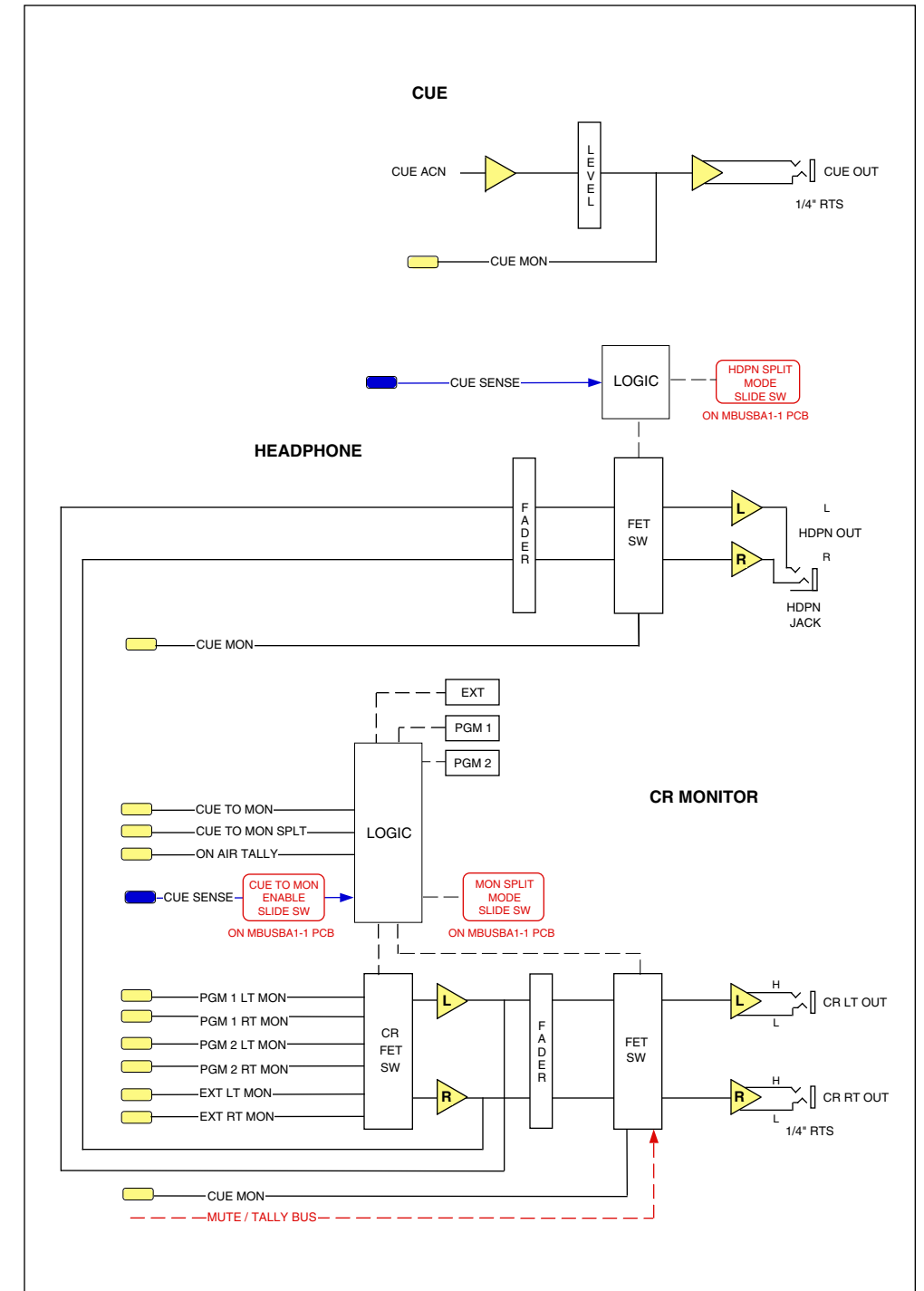
# Schematic and Load Sheet Drawings

## Chapter Contents

<b>Console Flow Diagram</b> .....	4-2
<b>MBUSBA1-1 Mother Board</b>	
Schematic .....	4-3
Load Sheet .....	4-11
<b>VUA1-2 Meters PCB</b>	
Schematic .....	4-12
Load Sheet .....	4-13

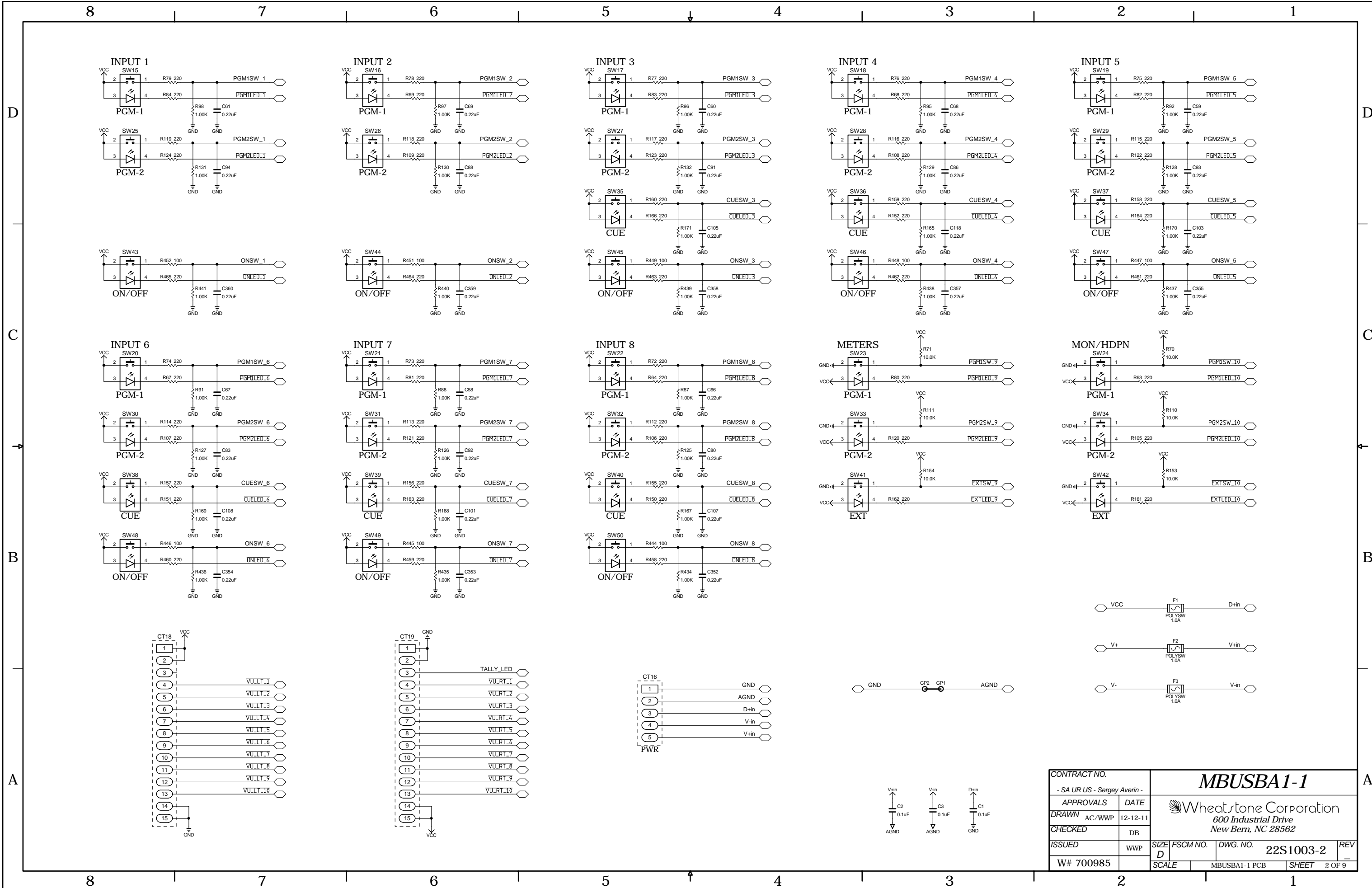


**AIR 1  
System Flow Diagram**



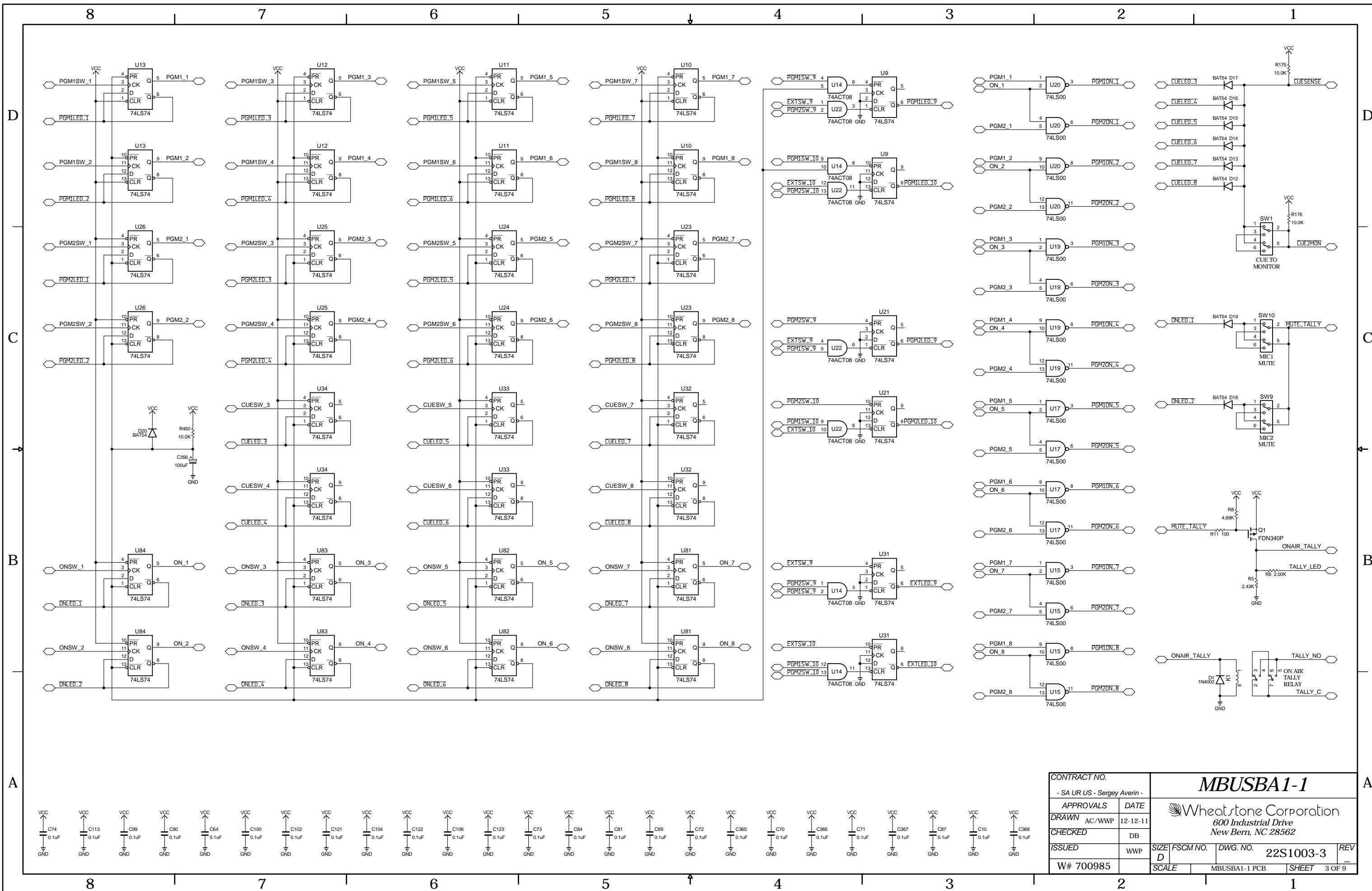


CONTRACT NO.		- SA UR US - Sergey Averin -		<b>MBUSBA1-1</b>	
APPROVALS	DATE	12-12-11			
DRAWN	AC/WWP	DB		Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562	
CHECKED	WWP	SIZE	FSCM NO.		
ISSUED	WWP	SCALE	MBUSBA1-1 PCB	SHEET	1 OF 9
W# 700985					



CONTRACT NO.		- SA UR US - Sergey Averin -		<b>MBUSBA1-1</b>	
APPROVALS	DATE	Wheatstone Corporation			
DRAWN	AC/WWP	12-12-11	600 Industrial Drive		REV
CHECKED	DB	New Bern, NC 28562			
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W# 700985		D			
SCALE		MBUSBA1-1 PCB		SHEET 2 OF 9	

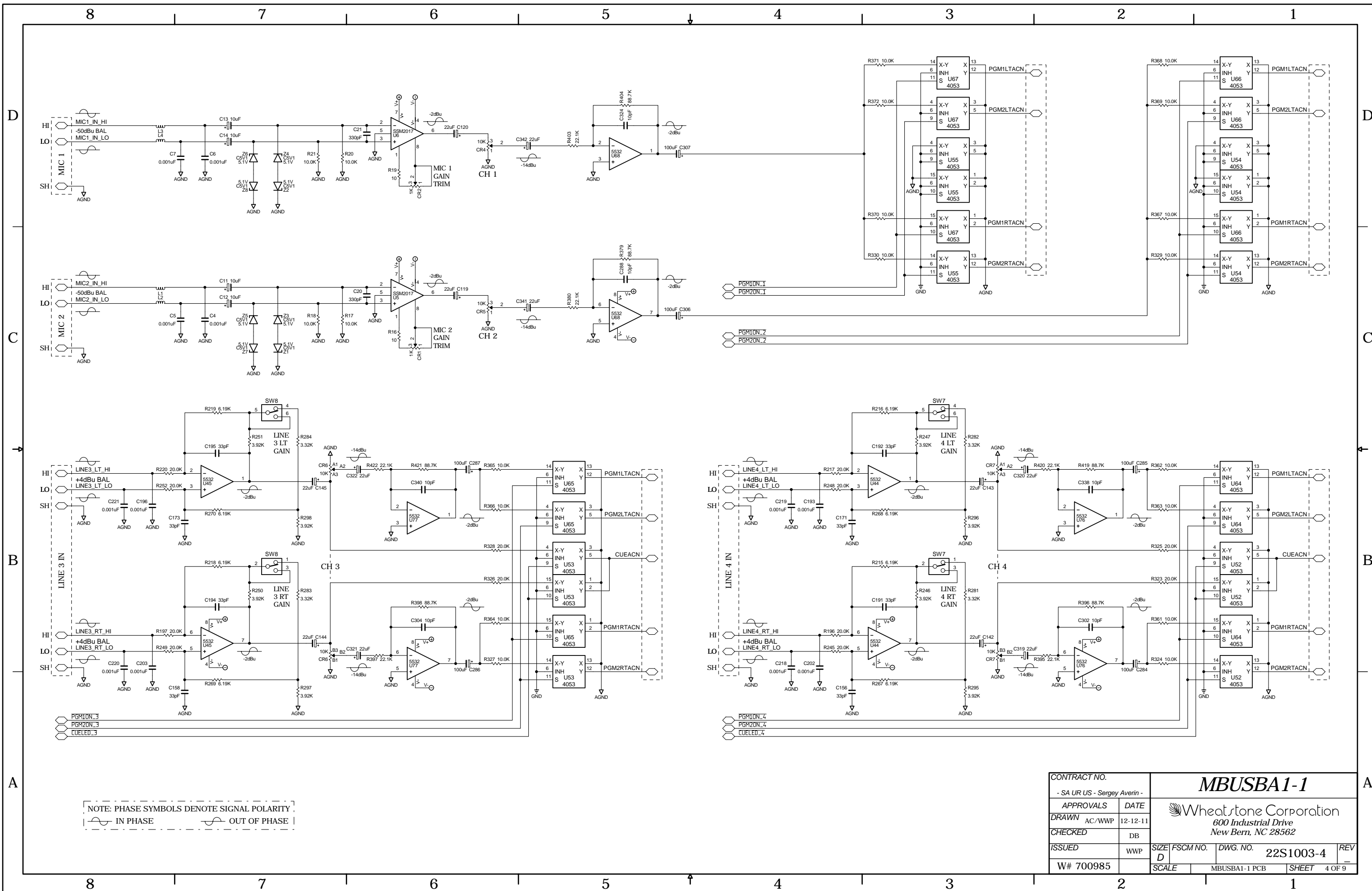
Mother Board Schematic - Sheet 2 of 9



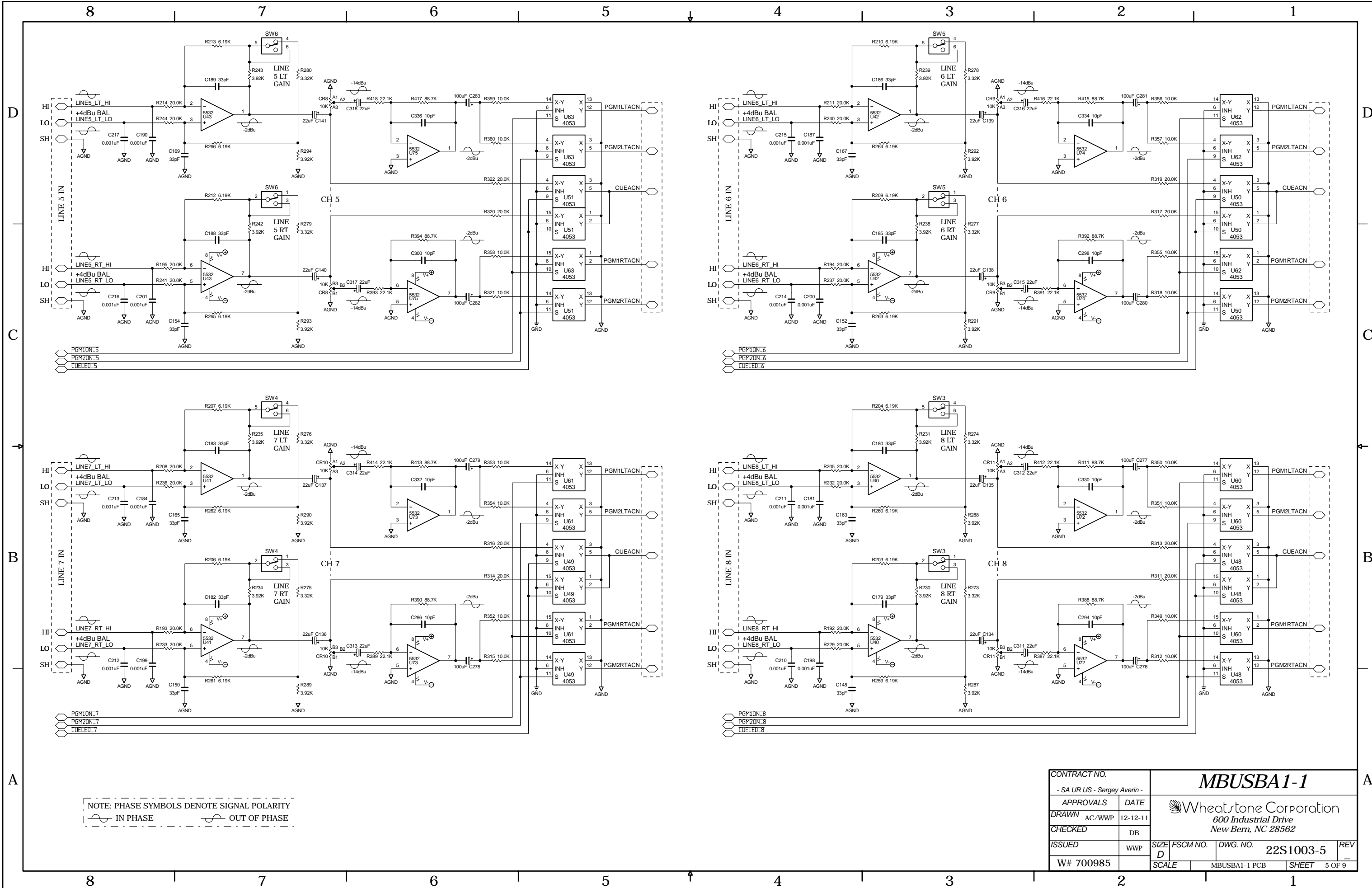
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- SA UR US - Sergey Averin -		Wheatstone Corporation	
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CHECKED	DB	ISSUED	WVP
W# 700985	SCALE	SIZE D	FSCM NO. MBUSBA1-1 PCB
		DWG. NO.	22S1003-3
		SHEET	3 OF 9

Mother Board Schematic - Sheet 3 of 9

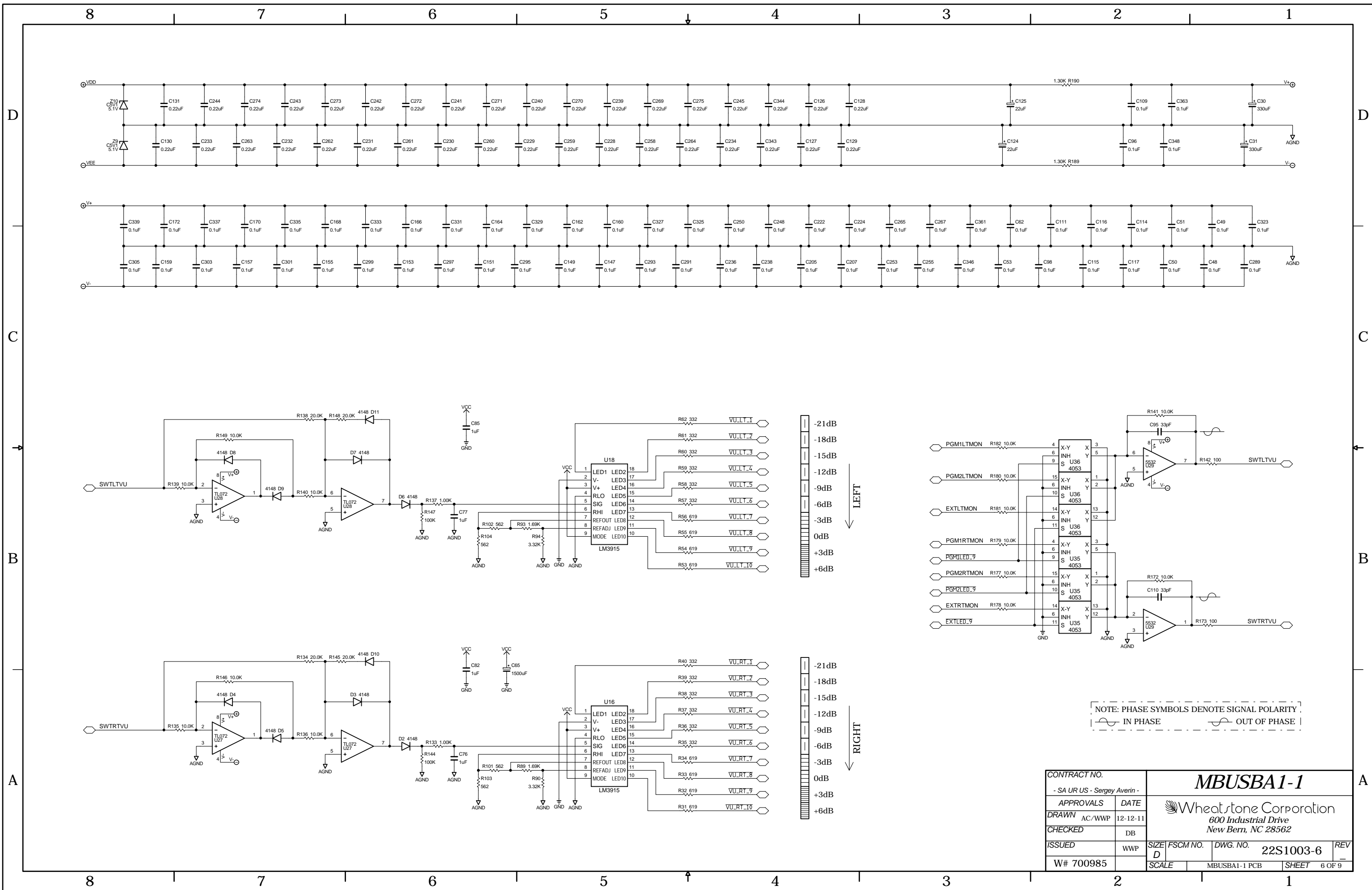




CONTRACT NO.		- SA UR US - Sergey Averin -		<b>MBUSBA1-1</b>	
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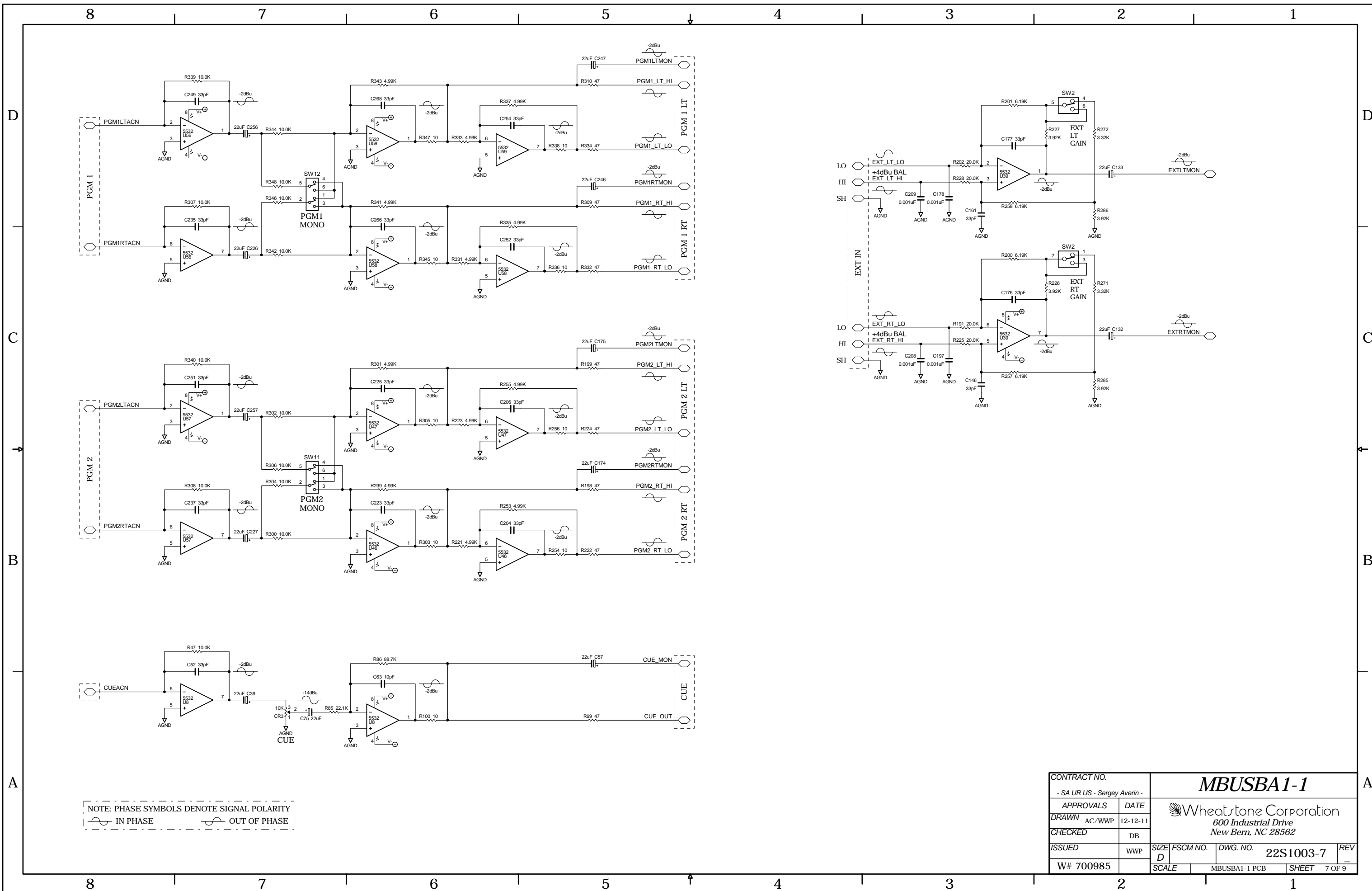


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CHECKED	DB			New Bern, NC 28562	
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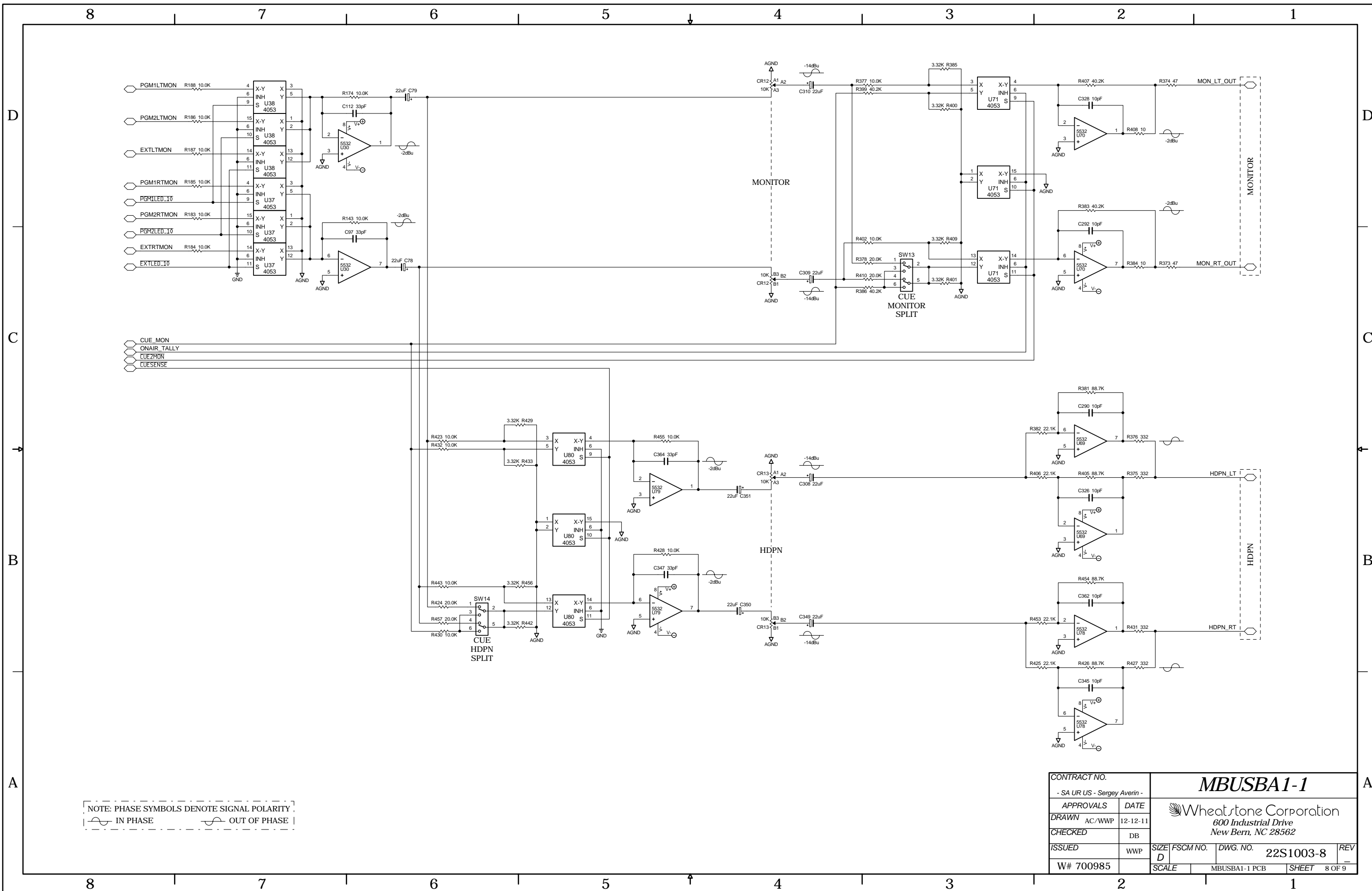
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CHECKED	DB				
ISSUED	WWP	SIZE	FSCM NO.	DWG. NO.	22S1003-6
W# 700985		SCALE	MBUSBA1-1 PCB	SHEET	6 OF 9

Mother Board Schematic - Sheet 6 of 9



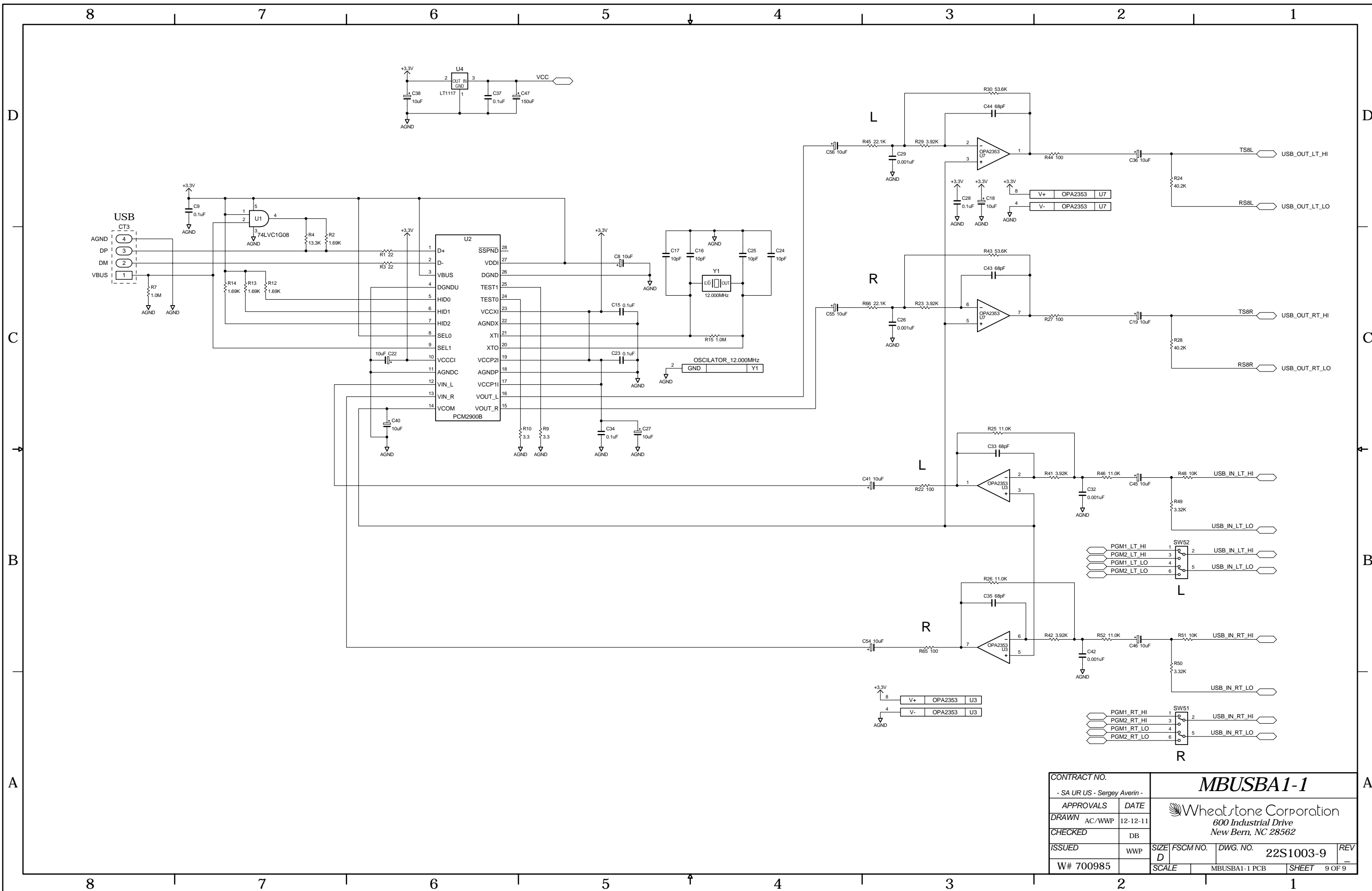
NOTE: PHASE SYMBOLS DENOTE SIGNAL POLARITY  
 IN PHASE      OUT OF PHASE

CONTRACT NO. - SA UR US - Sergey Averin -		<b>MBUSBA1-1</b>	
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DRAWN AC/WWP	12-12-11		
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W# 700985	SCALE	MBUSBA1-1 PCB	SHEET 7 OF 9



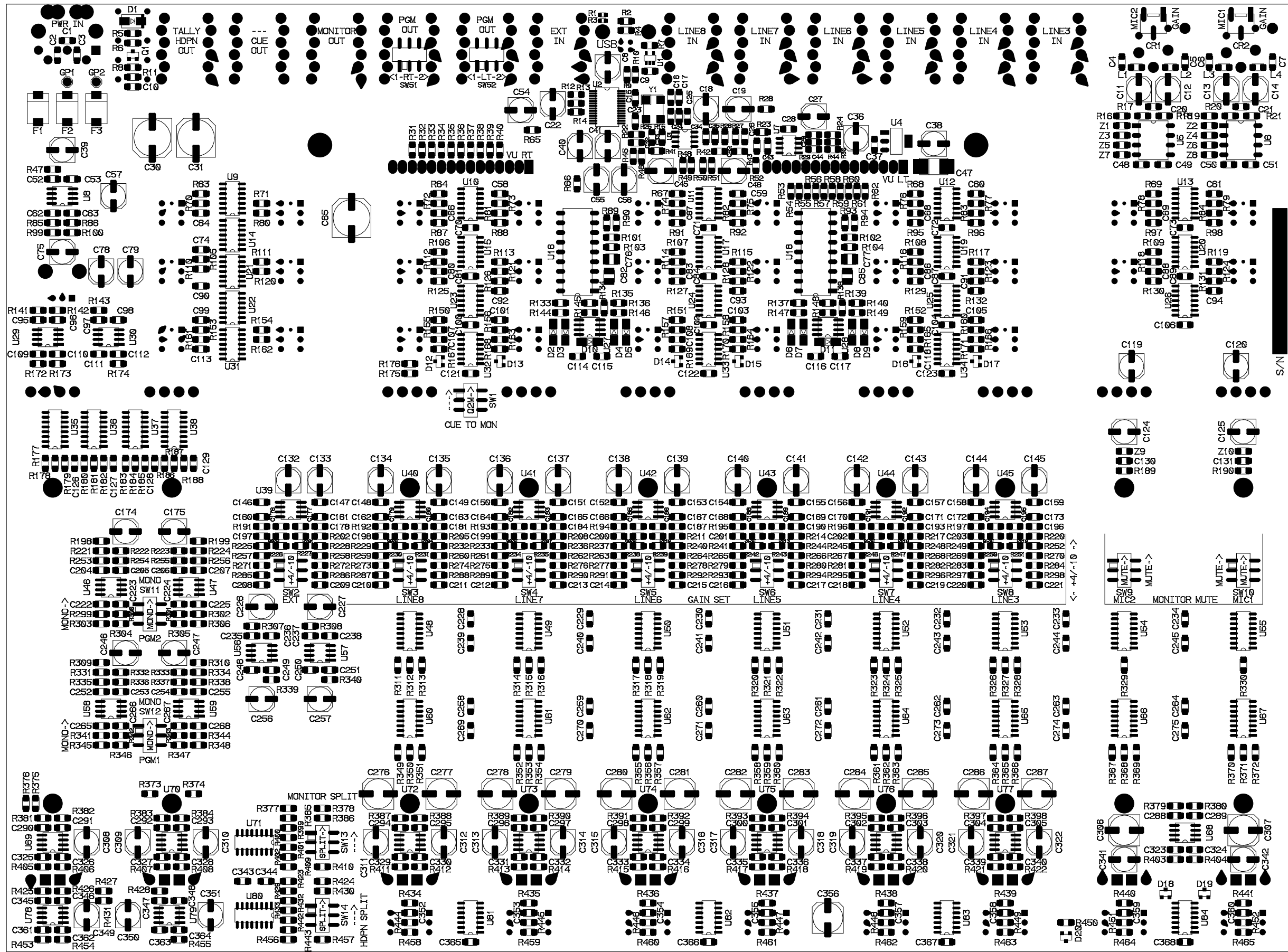
NOTE: PHASE SYMBOLS DENOTE SIGNAL POLARITY  
 ~ IN PHASE      - OUT OF PHASE

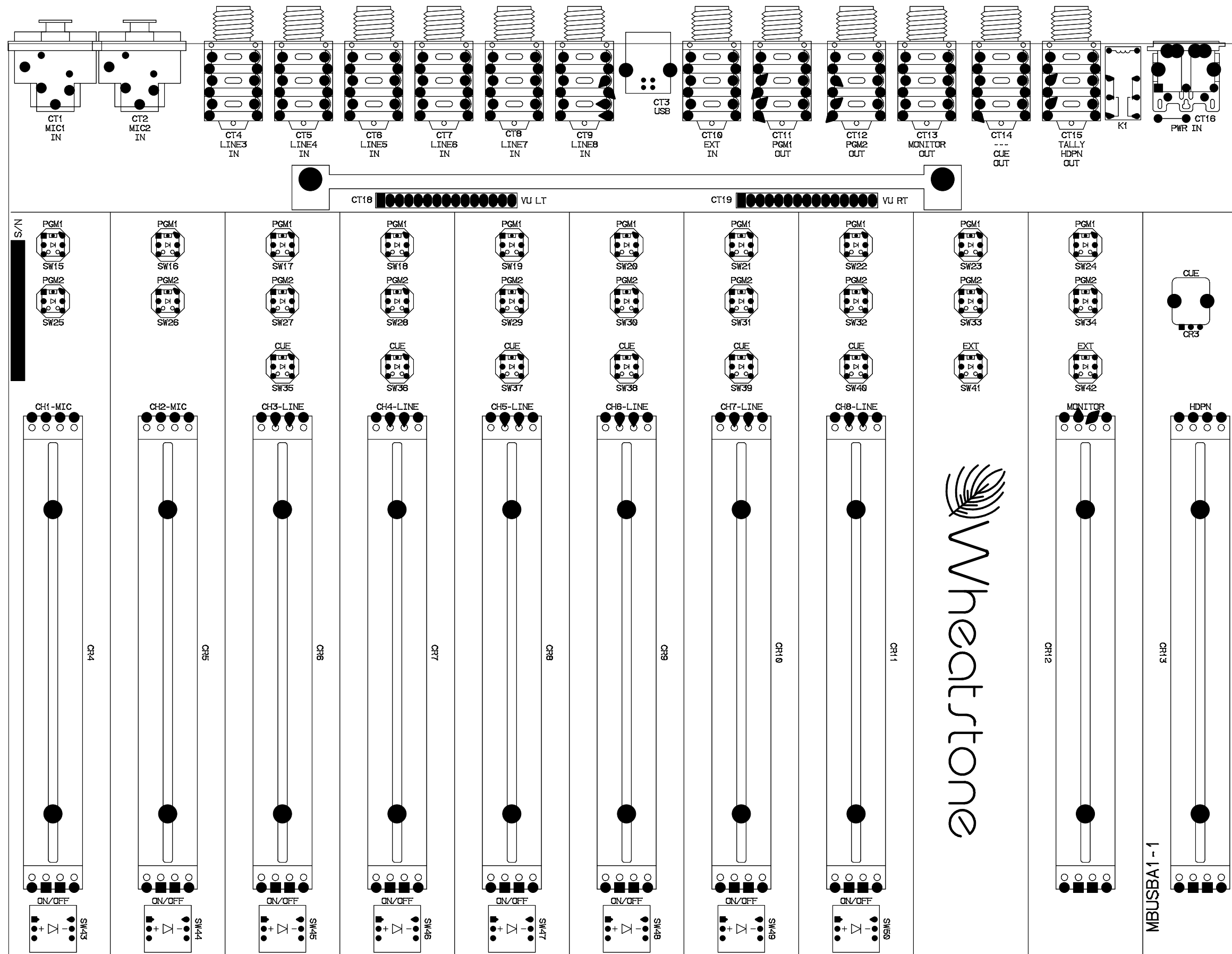
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CHECKED	DB				
ISSUED	WWP	SIZE	FSCM NO.	DWG. NO.	22S1003-8
W# 700985		D		REV	
SCALE		MBUSBA1-1 PCB		SHEET	8 OF 9



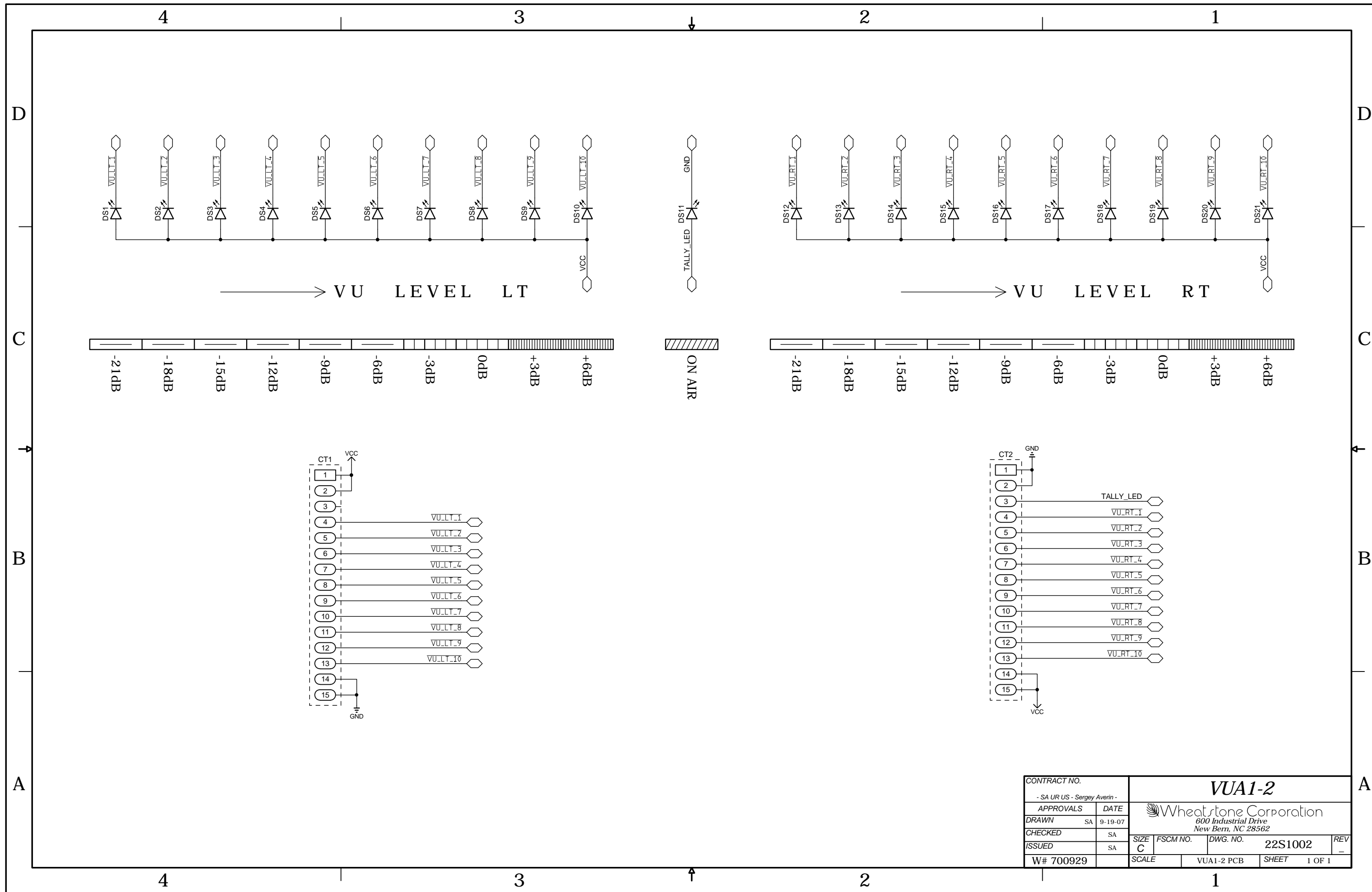
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CHECKED	DB				
ISSUED	WWP	SIZE	FSCM NO.	DWG. NO.	22S1003-9
W# 700985		SCALE	MBUSBA1-1 PCB	SHEET	9 OF 9

Mother Board Schematic - Sheet 9 of 9

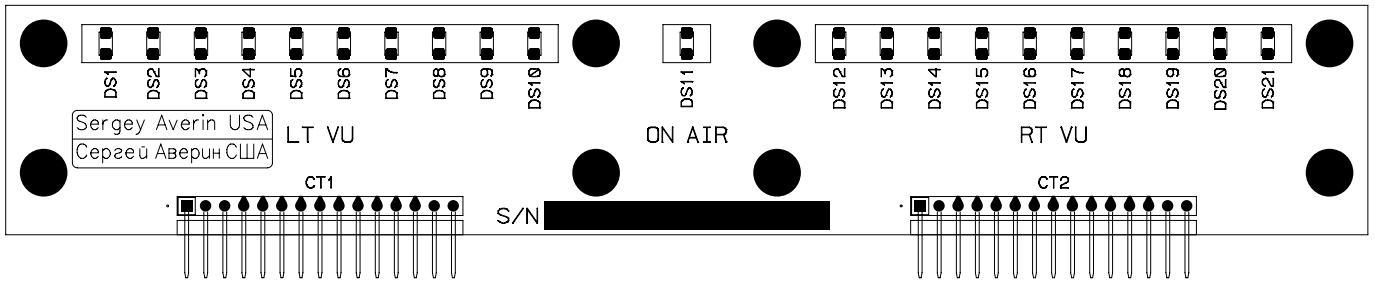








CONTRACT NO.		<b>VUA1-2</b>			
- SA UR US - Sergey Averin -		Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562			
APPROVALS	DATE	SIZE	FSCM NO.	DWG. NO.	REV
DRAWN SA	9-19-07	C		22S1002	-
CHECKED	SA	SCALE	VUA1-2 PCB	SHEET	1 OF 1
ISSUED	SA				
W# 700929					



### Meters PCB Load Sheet

# Appendices

## Appendix 1

AIR 1 Console Performance Specifications ..... A-3

## Appendix 2

Replacement Parts List ..... A-5

# Appendix 1

## Contents

AIR 1 Performance Specifications .....	A-3
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## AIR 1 Performance Specifications

### FREQUENCY RESPONSE

Line, 20Hz	-0.05dB
Line, 20kHz	-0.05dB
Mic, 20Hz	-0.10dB
Mic, 20kHz	-0.10dB

### DYNAMIC RANGE

Line, unity gain	116dB
Mic, 54dB gain	99dB

### S/N RATIO (ref +8dBu)

Line	93dB
Mic	82dB

### NOISE

Mic EIN	-128
---------	------

### THD+N (20Hz-20kHz)

Line, +12dBu	<0.003%
Mic (1kHz), +24dBu	<0.02%

### IMD (SMPTE)

Line, +4dBu	<0.006%
Mic, +24dBu	<0.006%

### DIM

Line, +24dBu	<0.002%
Mic	<0.006%

### MAXIMUM INPUT

Line	+28dBu
Mic, minimum trim	-4dBu

### MAXIMUM OUTPUT

Line	+28dBu
------	--------

### HEADROOM

+4dBu	24dB
-------	------

### SLEW RATE

12V/ $\mu$ s

### BUS CROSSTALK

1kHz	-100dB
20kHz	-96dB

### STEREO SEPARATION

1kHz	-95dB
------	-------

### OFF ISOLATION

1kHz	-116dB
20kHz	-100dB

### MAXIMUM GAIN

Line	+20dB
Mic	+77dB

### PHASE RESPONSE

Line, 20Hz-20kHz	$\pm 12^\circ$
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### DIMENSIONS

Width	15.195"
Depth	11.511"
Height (rear)	2.442"
Height (front)	1.283"

Specifications and features subject to change without notice.

## Appendix 2

### Contents

Replacement Parts List .....	A-5
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For the most part there are no user-replaceable parts in the AIR 1 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 1 CONSOLE

COMPONENT	DESCRIPTION	WS P/N
MBUSB-A1 LOADED CARD ASSY	MOTHERBOARD LOADED CARD ASSEMBLY	"009789"
VU-A1 LOADED CARD ASSY	VU METERS LOADED CARD ASSEMBLY	"009715"
FADER	100MM LOW PROFILE MASTER TYPE N FADER ROHS COMPLIANT	"540061"
FADER KNOB	BLACK FADER KNOB, 11mm FOR 3000 SERIES FADER FOR LINE INPUT	"520001"
FADER KNOB	GREY FADER KNOB, 11mm FOR 3000 SERIES FADER FOR MONITOR AND HEADPHONE OUTPUT	"520004"
FADER KNOB	RED FADER KNOB, 11mm FOR 3000 SERIES FADER FOR MICROPHONE INPUT	"520006"
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/WHITE LINE FOR "CUE" POT	"530037"
NKK SWITCH	JB15 SWITCH W/BRIGHTER RED LED AND SILICON GASKET	"510290"
SWITCH	SINGLE POLE MOMENTARY SWITCH W/YELLOW LED	"510296"
SWITCH CAP	WHITE SWITCH CAP	"530004"
SWITCH CAP	CUSTOM MILKY WHITE STYRENE WITH UV INHIBITOR LIGHT PIPE BUTTON	"530274"
RCA CONNECTORS	STACKED DUAL THREADED JACK WITH METAL RING FOR ANALOG I/O CONNECTIONS	"260081"
XLR CONNECTORS	XLR JACK FOR MICROPHONE CONNECTIONS	"260082"
USB CONNECTOR	USB-B RT ANGLE CONNECTOR	"260090"
HEADER	HEADER R/A_20 PIN SNAP	"250081A"
POWER SUPPLY	25W TRIPLE OUTPUT DESKTOP POWER SUPPLY	"980038"
POWER CONNECTOR	RIGHT ANGLE DIN RECEPTACLE ROHS COMPLIANT	"260083"
MANUAL	TECHNICAL MANUAL FOR AIR 1 CONSOLE	"009797"