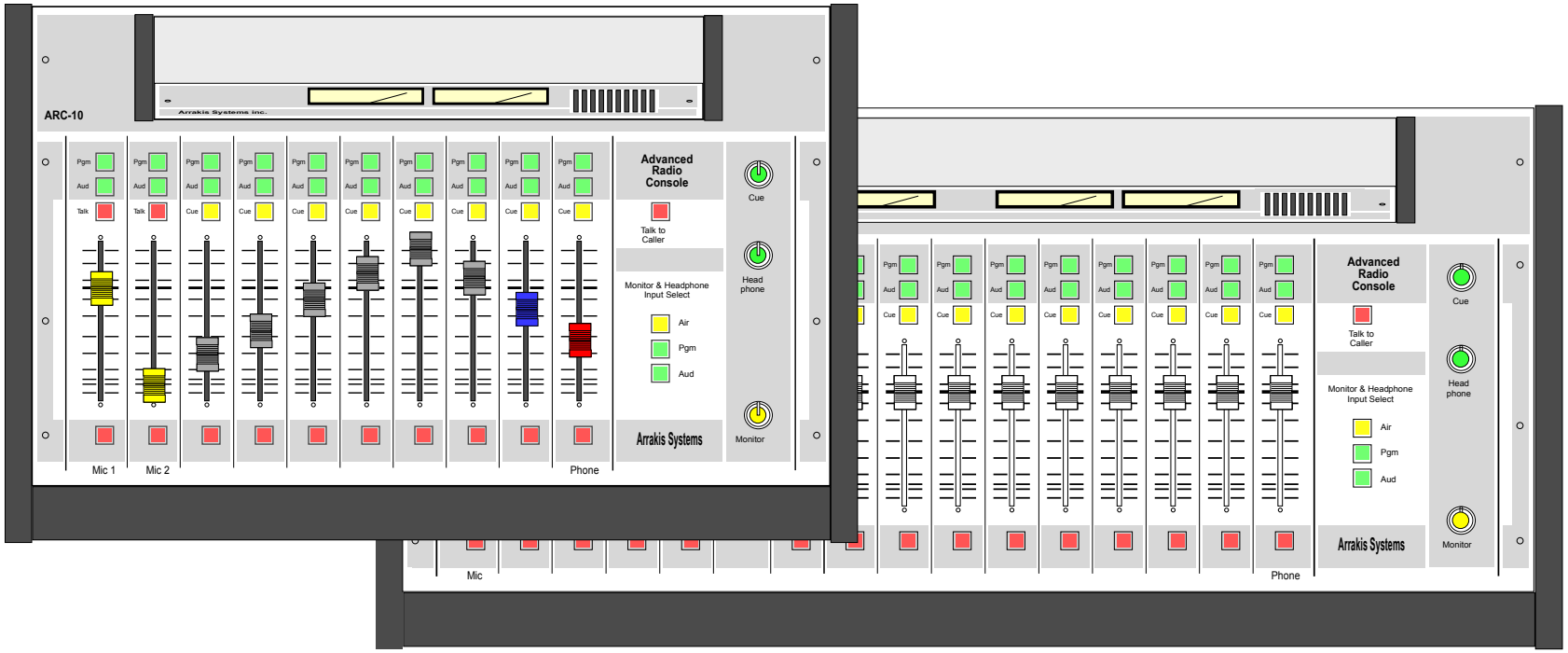
ARC-10 & ARC-15

Service Manual



Rev 1.0.4

ARRAKIS
advancedradio

How to contact Arrakis Systems

Arrakis Systems inc. is located at		Arrakis Systems inc 6604 Powell Street Loveland, Colorado 80538
Business Hours:		8:00am - 4:30pm mountain time
Contact:	Voice:	970-461-0730
	Fax:	970-663-1010
	email:	support@arrakis-systems.com
	web:	arrakis-systems.com

Having difficulty contacting Arrakis?
Refer to the website at... www.arrakis-systems.com
for current contact information

ARRAKIS
advanced radio

Safety Instructions

1. **Read All Instructions**. All safety and operating instructions must be read before operating the product.
2. **Retain All Instructions.** All safety and operating instructions must be retained for future reference.
3. **Heed All Warnings.** All warnings on the product and those listed in the operating instructions must be adhered to.
4. **Follow All Instructions**. All operating and product usage instructions must be followed.
5. **Heat.** This product must be situated away from any heat sources such as radiators, heat registers, stoves, or other products (including power amplifiers) that produce heat.
6. **Ventilation.** Slots and openings in the product are provided for ventilation. They ensure reliable operation of the product, keeping it from overheating. These openings must not be blocked nor covered during operation. This product should not be placed into a rack unless proper ventilation is provided through following the manufacturer's recommended installation procedures.
7. **Water and Moisture.** Do not use this product near water—for example; near a bath tub, wash bowl, kitchen sink or laundry tub; in a wet basement; or near a swimming pool or the like.
8. **Attachments**. Do not use any attachments not recommended by the product manufacturer as they may cause hazards.
9. **Power Sources.** This product must be operated from the type of power source indicated on the marking label and in the installation instructions. If you are not sure of the type of power supplied to your facility, consult your local power company.
10. **Grounding and Polarization**. This product is equipped with a polarized AC plug with integral safety ground pin. Do not defeat the safety ground in any manner.
11. **Power Cord Protection.** Power supply cords must be routed so that they are not likely to be walked on nor pinched by items placed upon or against them. Pay particular attention to the cords at AC wall plugs and convenience receptacles, and at the point where the cord plugs into the product.
12. **Lightning.** For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the AC wall outlet. This will prevent damage to the product due to lightning and power line surges.
13. **Overloading**. Do not overload AC wall outlets, extension cords, or integral convenience outlets as this can result in a fire or electric shock hazard.
14. **Object and Liquid Entry.** Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.
15. **Accessories.** Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious damage to a child or adult, and serious damage to the product. Any mounting of the product needs to follow manufacturer's installation instructions.
16. **A Product and Cart Combination** should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the product and the cart combination to overturn.
17. **Servicing.** Refer all servicing to qualified servicing personnel.
18. **Damage Requiring Service.** Unplug this product from the wall AC outlet and refer servicing to qualified service personnel under the following conditions:
a. When the AC cord or plug is damaged.
b. If liquid has been spilled or objects have fallen into the product.
c. If the product has been exposed to rain or water.
d. If the product does not operate normally (following operating instructions).
e. If the product has been dropped or damaged in any way.
f. When the product exhibits a distinct change in performance. This indicates a need for service.
19. **Replacement Parts.** When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or that have the same characteristics as the original parts. Unauthorized substitutions may result in fire, electric shock, or other hazards.
20. **Safety Check.** Upon completion of any repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.
21. **Cleaning.** Do not use liquid cleaners or aerosol cleaners. Use only a damp cloth for cleaning.

Hazard / Warning Label Identification

CAUTION

RISK OF
ELECTRIC SHOCK
DO NOT OPEN

WARNING: SHOCK HAZARD - DO NOT OPEN
AVIS: RISQUE DE CHOC ELECTRIQUE - NE PAS OUVRIR

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK DO NOT REMOVE ANY COVER OR PANEL. NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THE CONSOLE TO RAIN OR MOISTURE.

The **Exclamation Point symbol,** within an equilateral triangle, alerts the user to the presence of important operating and maintenance (servicing) instructions in product literature and instruction manuals.

The **Lightning Flash With Arrowhead symbol**, within an equilateral triangle, alerts the user to the presence of uninsulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock.

WARNING—This equipment generates, uses and can radiate radio frequency energy. If not installed and used in accordance with the instructions in this manual it may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device (pursuant to Subpart J of Part 15 FCC Rules), which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equip-ment in a residential area is likely to cause interference, in which case the user, at his own expense, will be required to take what-ever measures may be required to correct the interference.

Warranty

This console carries a manufacturer's warranty subject to the following guidelines and limitations:

A) Except as expressly excluded herein, Arrakis Systems inc. ("Seller") warrants equipment of its own manufacture against faulty workmanship or the use of defective materials for a period of one (1) year from date of shipment to Buyer. The liability of the Seller under this Warranty is limited to replacing, repairing or issuing credit (at the Seller's discretion) for any equipment, provided that Seller is promptly notified in writing within five (5) days upon discovery of such defects by Buyer, and Seller's examination of such equipment shall disclose to its satisfaction that such defects existed at the time shipment was originally made by Seller, and Buyer returns the defective equipment to Seller's place of business in Loveland, Colorado, packaging and transportation prepaid, with return packaging and transport guaranteed.

B) Equipment furnished by Seller, but manufactured by another, shall be warranted only to the extent provided by the other manufacturer.

C) Thermal filament devices (such as lamps and fuses) are expressly excluded from this warranty.

D) The warranty period on equipment or parts repaired or replaced under warranty shall expire upon the expiration date of the original warranty.

E) This Warranty is void for equipment which has been subject to abuse, improper installation, improper operation, improper or omitted maintenance, alteration, accident, negligence (in use, storage, transportation or handling), operation not in accordance with Seller's operation and service instructions, or operation outside of the environmental conditions specified by Seller.

F) This Warranty is the only warranty made by Seller, and is in lieu of all other warranties, including merchantability and fitness for a particular purpose, whether expressed or implied, except as to title and to the expressed specifications contained in this manual. Seller's sole liability for any equipment failure or any breach of this Warranty is as set forth in subparagraph A) above; Seller shall not be liable or responsible for any business loss or interruption, or other consequential damages of any nature whatsoever, resulting from any equipment failure or breach of this warranty.

General Repair Considerations

WARNING

The console should be repaired by qualified, professional, & experienced, audio technicians ONLY. Before beginning any type of repair or opening the console CALL Arrakis customer support for recommendations.

DESIGNED FOR MODULAR PART REPLACEMENT

The ARC series console is designed for modular replacement rather than repair. The power supply is external and plug in. The rotary faders are plug in. Most ICs are plug in, and a physical board layout is provided with descriptions of the functions of each IC. ICs can be individually replaced to test for functionality. A small amount of disassembly is required. Diagrams on the following pages explain the required disassembly.

PC BOARD COMPONENT LEVEL REPAIR

If possible, PC board component level repair requiring soldering should be performed at the factory. In particular, replacement of slide faders and switches should be performed at the factory. If the repair must be made in the field, then extreme care must be taken to not damage the PC board or other components. Arrakis can not warranty non-factory service.

POWER SUPPLY

The power supply is a sealed module that must be replaced in whole if there is a problem.

REPEATED EQUIPMENT FAILURES

If a specific part of the console is failing regularly, it is likely that it is being subject to unusual stresses.
Examples are;

(1) Switch or fader failure- rough physical treatment
(2) Mic channel IC failure- static discharge to mic
(3) Input op amp failure- lightning, power surge, or other transient on this cable
(4) Output op amp failure- lightning, power surge, or other transient on this cable
(5) Power Supply failure- lightening, power surge, or other transient on the AC power line

SUGGESTED REPAIR PROCEDURES

(1) NO AUDIO OUT OF ONE INPUT CHANNEL- (Swap Cables) Be certain that the problem is in the console itself. If mic channel two doesn't function but mic channel one functions properly, then plug the cable from the good mic into the channel that you suspect to be bad. If the channel that you suspect to be bad now functions, then the problem is external to the console and is in the source or the wiring. This is a very fast and easy way to test your system.

(2) VU METERS MOVE BUT NO AUDIO OUT OF THE CONSOLE- The VU meters measure the actual output of the console itself. If the meters move but no audio is present, the problem is after the console output and is in the following signal chain. Plug a set of headphones into the output of the console and listen to the Program output to confirm this.

(3) LOUD LOW FREQUENCY HUM IN AUDIO- Many years ago this would mean a power supply failure. In today's electronics, this is an installation problem such as a ground loop. To confirm the problem is not in the console, remove ALL wiring from the console and connect a pair of headphones to the output you are testing. The hum should be absent. All wiring must be removed and headphones only used. A very common problem is for an audio power amp and speakers to create the ground loop with the console.

(4) NO AUDIO OUT OF THE MONITORS- Be certain that the monitor system is not muted due to a mic channel being on or talkback being activated.

Opening the Console

WARNING

The console should be repaired by qualified, professional, & experienced, audio technicians ONLY. Before beginning any type of repair or opening the console CALL Arrakis customer support for recommendations.

ACCESSING THE MOTHERBOARD

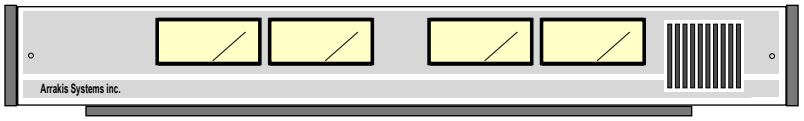
The motherboard is accessed from the bottom of the console. Six screws must be removed from the bottom panel to have access to the console electronics for test and IC replacement. Be careful to not scratch the console when turning the console over.

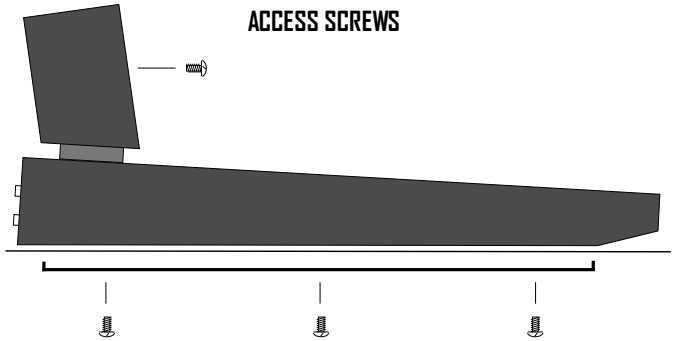
REMOVING THE MOTHERBOARD

The motherboard is attached on the top of the front panel (slide fader screws) and with screws on the bottom of the motherboard, requiring access to the inside of the console. When replacing the motherboard, be certain to replace all of the screws so that switches and faders will operate properly.

ACCESSING THE INTERIOR OF THE VU METER PANEL

The VU meter panel is opened by removing the screw at the left and right front of the panel.





Replacing Slide Faders, Switches, and other parts

Slide faders and switches are soldered onto the PC board and should be replaced at the factory if at all possible. The procedure requires proper tools, and it can be difficult to remove the parts without damaging traces or pads on the PC board. Also, the switches are very sensitive to temperature and duration during the soldering process and can be electronically damaged or destroyed when being soldered. If a slide fader, switch, or other part must be replaced in the field, then extreme care must be taken.

Tools required:

1) Hand held solder sucker (stranded solder wick is not suggested)
2) Temperature controlled soldering iron with pencil tip (soldering guns should not be used)

Procedure:

1) Suck the solder from all holes until the damaged component is entirely free from the PC board. Remove the damaged part.
2) Place the new part onto the PC board. Slide faders and switches (and some other parts) ARE oriented and MUST be replaced in the correct orientation.
3) Carefully solder the new part to the PC board.
    a) Clean the tip of the soldering iron on a wet sponge.
    b) Tin the tip of the soldering iron (cover the tip of the soldering iron with a small amount of solder).
    c) Set the soldering iron to 734 degrees Fahrenheit (390 degrees celsius).
    d) Touch the tip of the 'soldering iron' to the junction of the PC board pad AND the component lead.
    e) Immediately touch the 'solder' to the junction of the soldering iron and the PC board pad.
    f) Flow only enough solder to fill the hole. Immediately remove the soldering iron from the part.
    g) Do not keep the soldering iron on the part for more than 2 seconds.
    h) Clean the solder rosin from the PC board if required. (See Note #1 below)

Note #1: Arrakis uses aqueous core (water soluble) solder that requires the solder joint to be cleaned by water after soldering. Aqueous core solder is acidic and must be cleaned so as to not damage the PC board over time. Rosin core solder is not water soluble and requires a flux remover if it is to be cleaned. The rosin residue however does not have to be removed for rosin core solder.

Warranty: Arrakis can only warranty service performed at the factory. All field service is performed at the customer's risk.

Replacing Rotary Faders

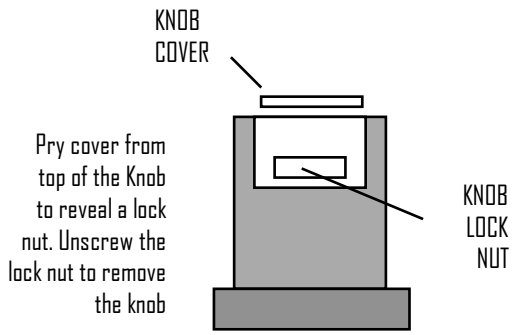
All 3 rotary faders are in a single wiring harness that plugs into the motherboard. The entire harness should be replaced with all three pots. Contact the factory for a replacement harness.

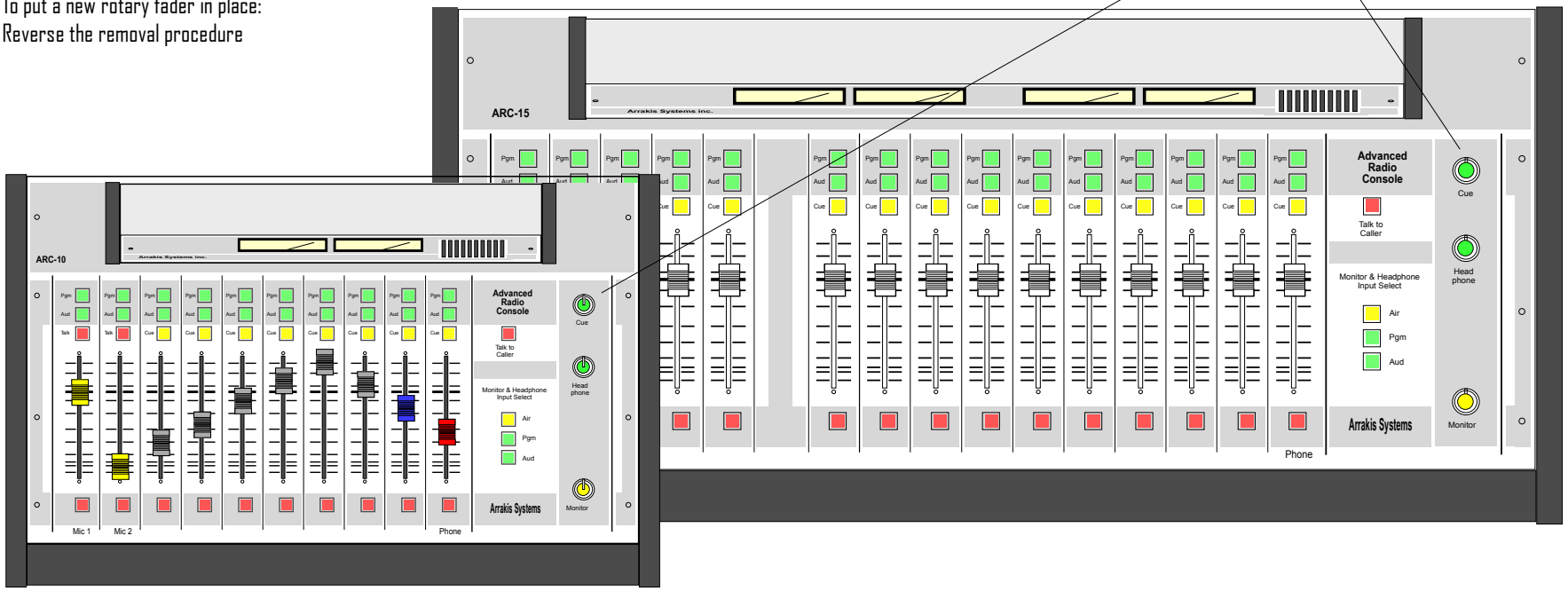
<u>To remove a rotary fader</u>

(1) Remove the knob cover as illustrated
(2) Remove the nut and nut plate.
(3) The pot will now remove from the rear of the front panel.
(4) Unplug the pot from the motherboard.

To put a new rotary fader in place:
Reverse the removal procedure

REMOVING THE KNOB





Replacing ICs

ICs must be replaced with care. Most ICs in the console are socketed so that they can be replaced.

When replacing an IC, be careful to not bend legs under the IC or outside the socket. Be extremely careful to not shock an IC or the PC board with a static discharge. In some cases, you must use a grounded arm or anklet if there is a possibility of a static discharge.

In all cases, retain the old IC because it may be found to not be damaged.

Factory Service

Technical Questions

Arrakis Systems maintains a staff of friendly broadcast engineers, design engineers, and technicians who have many years of in depth field experience in broadcasting. All of our technical resources are available to you to answer installation questions, solve problems, and repair equipment. If you have a question or problem, please feel free to call us. We can not solve every problem, but our people are here to try.

Our customer support department is open from: 8AM - 4:30PM, Monday -Friday (except for Holidays)

Voice:	970-461-0730
Fax:	970-663-1010
email:	support@arrakis-systems.com

IMPORTANT: Collect calls will not be accepted

Warranty Service Procedure for the ARC console hardware

Arrakis Systems assumes that its customers have on staff (or access to) competent technical personnel and adequate test equipment.

If a product fails, Arrakis will first seek to ascertain the problem over the phone and solve it at the modular replacement level where we find the specific part(s) that have failed and repair or replace them. This is the least expensive and time consuming solution for you. Depending on the circumstances and at our discretion, Arrakis will replace the specific PC board suspected to be at fault. If replacing PC boards does not resolve the problem, then the console is to be returned to the factory where it will we repaired and returned to you. Repair time at the factory is normally two week days. If the customer chooses to repair the console in the field, then Arrakis will, at its sole discretion, send replacement parts under warranty. Arrakis can not warranty labor performed in the field.

Shipping- The customer is responsible for payment for shipping to the factory. Parts returned to the factory freight collect will be refused. Return shipping over and above the cost of UPS ground will be born by the customer. In the case of international shipments, all cost of shipping and duties are born by the customer, both to and from the factory.

Under no circumstances will Arrakis replace a defective console with a replacement console.

IMPORTANT- Under no circumstances does Arrakis take any responsibility for non-factory technical expenses.

Warranty Replacement of Parts

To have a part replaced under warranty, you must:
1) Provide a valid product serial number that is within the warranty period
2) Contact the Arrakis customer service department and describe what parts need replacement and the circumstances of the failure. (The customer service department may require on site test by your technician to confirm the part replacement is appropriate for your problem.)
3) A Return Merchandise Authorization Number (RMA #) will be issued when a part s to be returned to the factory.
4) Return ALL defective parts to the factory (shipping prepaid) to the attention of the "Customer Service Departent" with a letter including your name, address, call letters, serial number, date, and valid RMA #.
5) Parts replaced under warranty will be shipped at Arrakis expense by UPS ground. Any expense over and above UPS ground will be born by the customer.

IMPORTANT- If the defective parts are not returned to the factory within 30 days, you will be invoiced for them and it will be assumed that they do not fall under warranty. Further customer service will be denied until the defective parts are returned of paid for.

Spare Parts (not provided with the ARC-10 or ARC-15 consoles)

A spare parts kit may be provided with the console. These parts are provided in case of emergency failure and normal infant mortality. These parts, when used to replace failures, are not replaced under warranty.

Purchased Parts

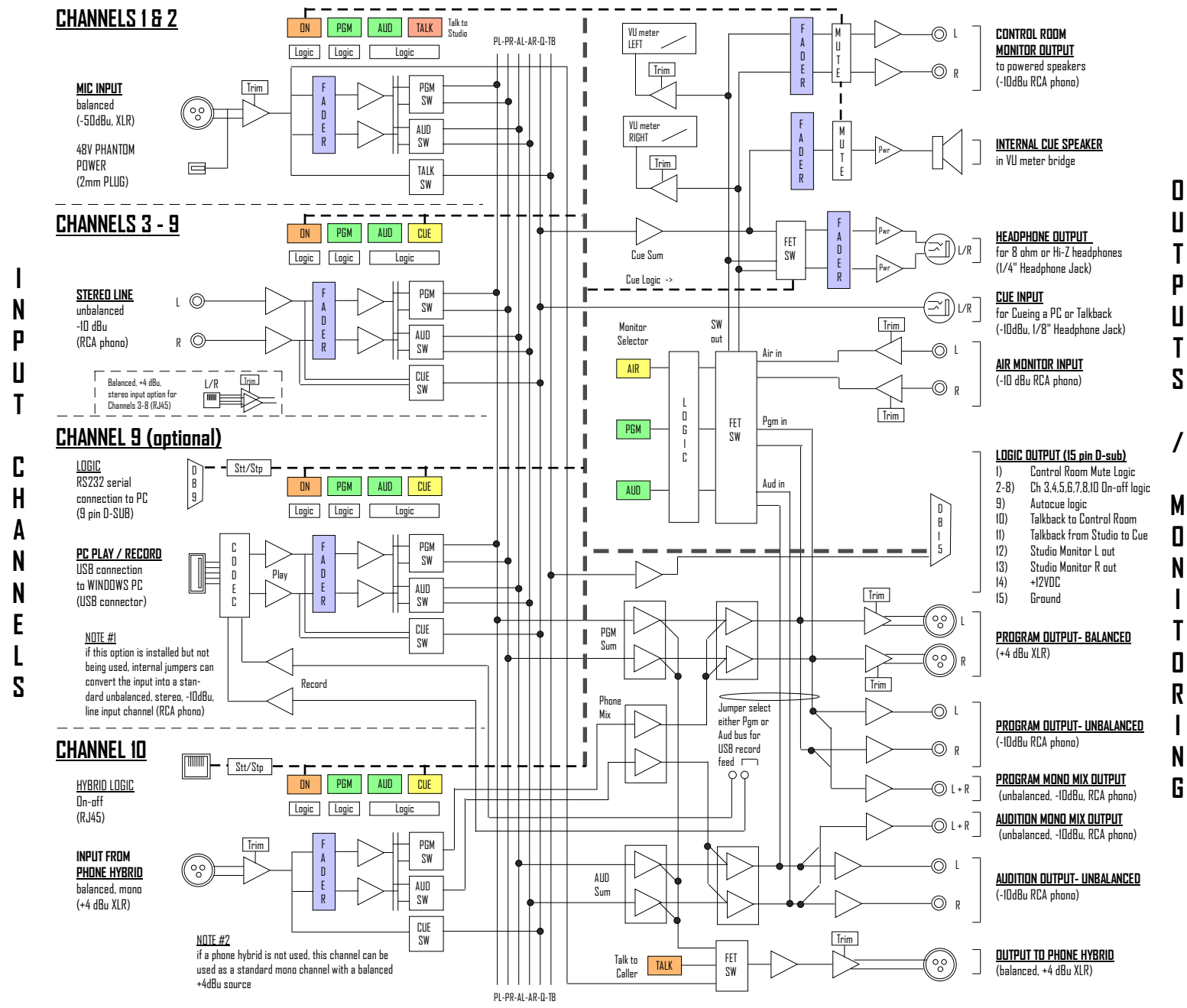
An Arrakis customer may purchase spare or replacement parts from the factory. The cost of the parts will include a service charge, the cost for the parts, and the cost of the shipping.

Parts may be purchased by:
1) C.O.D. shipping
2) Valid and approved Credit Card (below our current credit limit)
3) Prepaid by company check (shipment after check clears the bank)
4) Wire transfer of funds
5) Through an Arrakis authorized dealer

Arrakis does not sell items on open account.

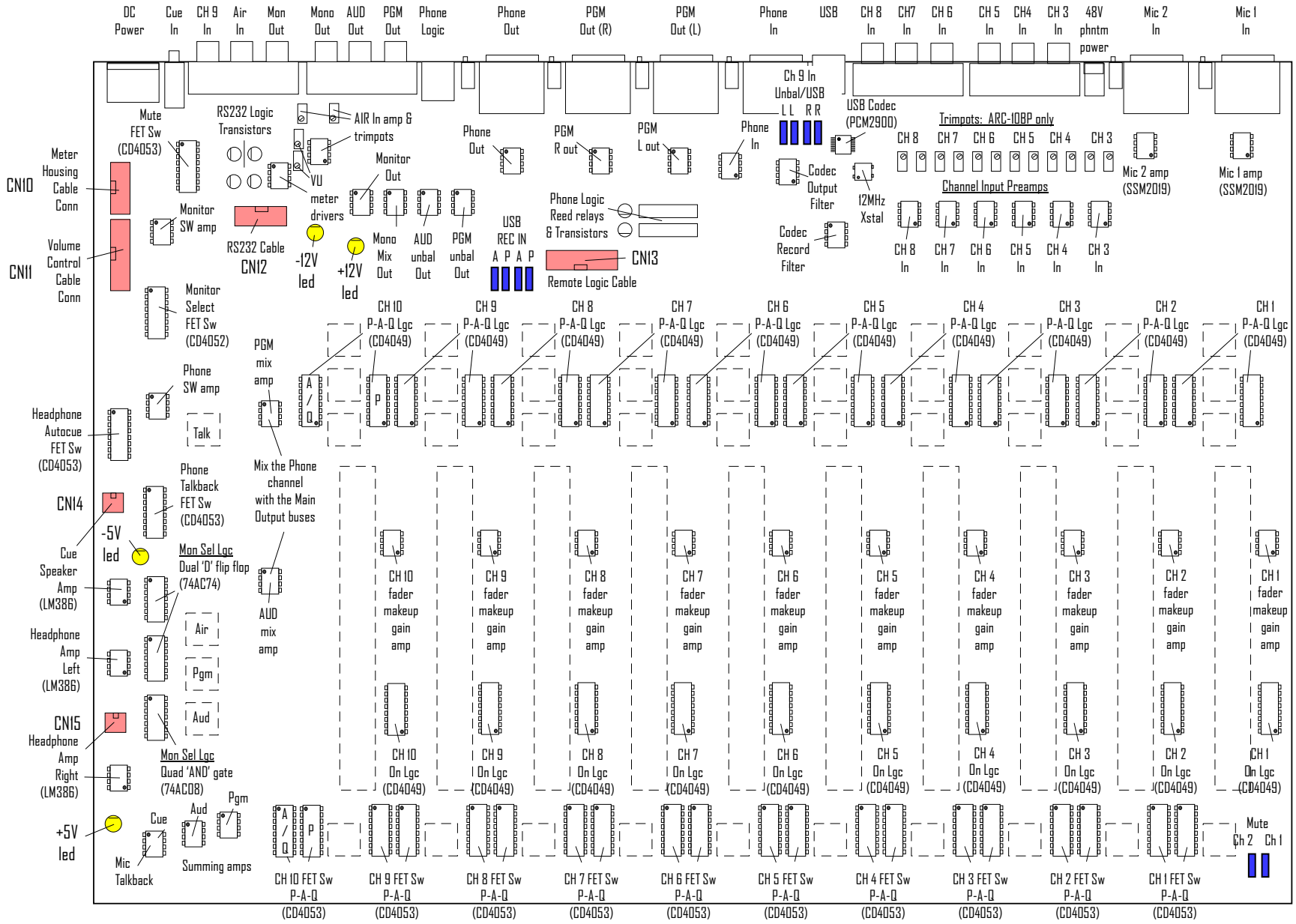
IMPORTANT- Non payment or late payment for parts will result in refusal of further customer service until the problem is resolved.

ARC-10 Electronic Block Diagram



ARC-10 Parts Layout

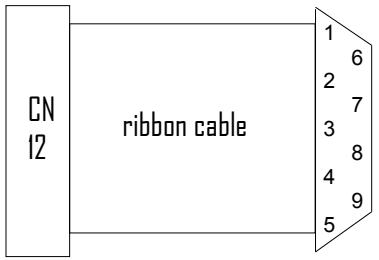
Note
All unmarked ICs are NE5532 op amps



ARC-10 Motherboard IDC Connector Diagrams

CN12- RS232 IDC Conn.

1	Not connected	
2	Data Set Ready (DSR)	In
3	Not connected	
4	Request to Send (RTS)	Out
5	Not connected	
6	Clear to Send (CTS)	In
7	Not connected	
8	Not connected	In
9	Ground	
10	Not connected	



9 Pin D-sub Connector on Back Panel

1	Data Carrier Detect (DCD/CD)	In	Note 1: connects thru ribbon cable to rear
2	Receive Data Line (RD)	Data	panel 9 pin D-sub connector for
3	Transmit Data Line (TD)	Data	RS232 connection to a PC
4	Data Terminal Ready (DTR)	Out	Note 2: Logic 1 = minus 3-15 VDC
5	Ground		Logic 0 = plus 3-15 VDC
6	Data Set Ready (DSR)	In	Max load = 3-7K ohms
7	Request to Send (RTS)	Out	4 inputs to PC = CTS, DSR, DCD(CD), RI
8	Clear to Send (CTS)	In	2 outputs from PC = RTS, DTR
9	Ring Indicator (RI)	In	

CN10- VU Meter IDC Conn.

1	Not connected
2	Not connected
3	Pgm Left VU
4	Pgm Right VU
5	+5VDC
6	+5VDC
7	Ground
8	Ground
9	Not connected
10	Control Room Mute Logic

Note: connects thru ribbon cable to top VU meter panel

CN 11- Volume Control Connector

1	Mon L in
2	Mon L out
3	Gnd
4	Mon R in
5	Mon R out
6	Gnd
7	HP L in
8	HP L out
9	Gnd
10	HP R in
11	HP R out
12	Gnd
13	Cue in
14	Cue out
15	Gnd
16	not used

Note: connects to monitor, headphone and cue pots on front panel of console

CN 13- Remote Logic Cable

1	Control Room Mute Logic
2	Channel 10 Logic
3	Autocue Logic (Rev D board)
4	Studio Monitor Left output
5	Channel 8 Logic
6	Studio Monitor Right outut
7	Channel 7 Logic
8	CR Mic audio for talkback to Studio
9	Channel 6 Logic
10	Ground
11	Channel 5 Logic
12	+12 VDC
13	Channel 4 Logic
14	Audio Input to Cue for Talkback
15	Channel 3 Logic
16	Channel 2 Logic (not used in 15 pin D-sub)

Note: connects thru ribbon cable to rear panel 15 pin D-sub connector

ARC-15 Electronic Block Diagram

INPUT CHANNELS

MIC CHANNELS

MIC INPUT
balanced
(-50dBu, XLR)

48V PHANTOM
POWER
(2mm PLUG)

LINE CHANNELS

STEREO LINE
Balanced, +4 dBu,
stereo inputs
(RJ45)

CHANNEL 14

LOGIC
RS232 serial
connection to PC
(9 pin D-SUB)

PC PLAY / RECORD
USB connection
to WINDOWS PC
(USB connector)

NOTE #1
if this option is installed but not being used, internal jumpers can convert the input into a standard unbalanced, stereo, -10dBu, line input channel (RCA phono)

CHANNEL 15

HYBRID LOGIC
On-off
(RJ45)

INPUT FROM PHONE HYBRID
balanced, mono
(+4 dBu XLR)

NOTE #2
if a phone hybrid is not used, this channel can be used as a standard mono channel with a balanced +4dBu source

OUTPUTS / MONITORING

CONTROL ROOM MONITOR OUTPUT
to powered speakers
(-10dBu RCA phono)

INTERNAL CUE SPEAKER
in VU meter bridge

HEADPHONE OUTPUT
for 8 ohm or Hi-Z headphones
(1/4" Headphone Jack)

CUE INPUT
for Cueing a PC or Talkback
(-10dBu, 1/8" Headphone Jack)

AIR MONITOR INPUT
(-10 dBu RCA phono)

LOGIC OUTPUT (15 pin D-sub)
1) Control Room Mute Logic (for On Air light)
2-7) Ch 2,3,4,5,13,15 On-off logic
8) Talkback audio to Studio
9) Talkback audio from Studio (into Cue bus)
10) Autocue logic (for TB)
11) Ch 2 Cue logic for TB
12) Studio Monitor L out
13) Studio Monitor R out
14) +12VDC
15) Ground

PROGRAM OUTPUT- BALANCED
(+4 dBu XLR)

PROGRAM OUTPUT- UNBALANCED
(-10dBu RCA phono)

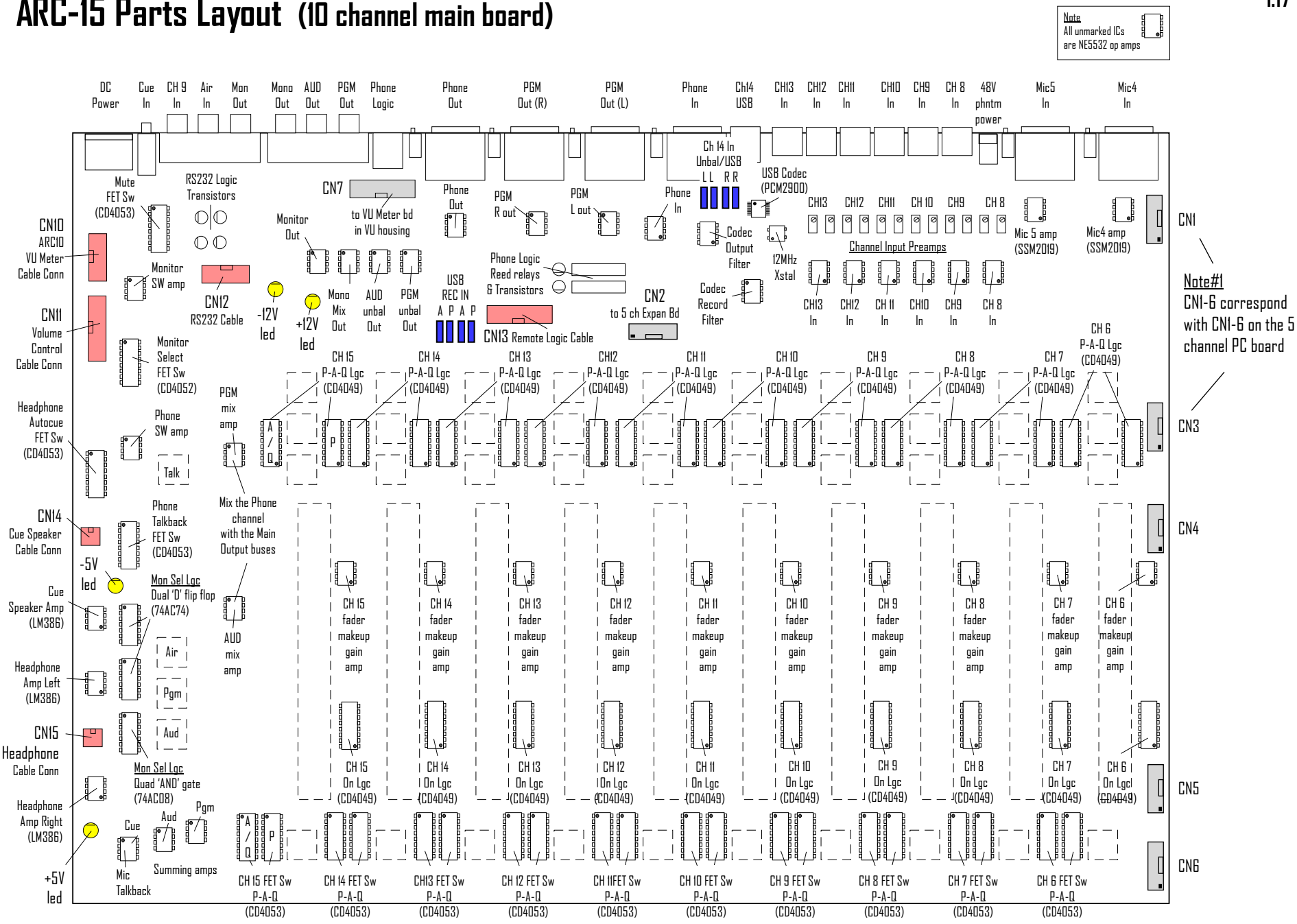
PROGRAM MONO MIX OUTPUT
(unbalanced, -10dBu, RCA phono)

AUDITION MONO MIX OUTPUT
(unbalanced, -10dBu, RCA phono)

AUDITION OUTPUT- UNBALANCED
(-10dBu RCA phono)

OUTPUT TO PHONE HYBRID
(balanced, +4 dBu XLR)

ARC-15 Parts Layout (10 channel main board)



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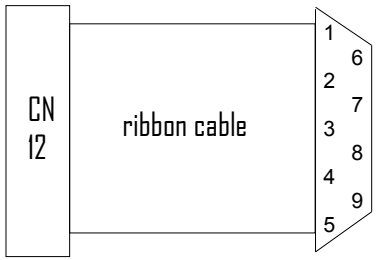
10	Not connected	



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5	Ground		Logic 0 = plus 3-15 VDC
6	Data Set Ready (DSR)	In	Max load = 3-7K ohms
7	Request to Send (RTS)	Out	4 inputs to PC = CTS, DSR, DCD(CD), RI
8	Clear to Send (CTS)	In	2 outputs from PC = RTS, DTR
9	Ring Indicator (RI)	In	

CN 7- VU Meter IDC Conn.

1	Program Left
2	Program Right
3	Audition Left
4	Audition Right
5	-12VDC
6	-12VDC
7	+12VDC
8	+12VDC
9	Ground
10	Ground

Note: connects thru ribbon cable to top VU meter panel

CN 11- Volume Control Connector

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2	Mon L out
3	Gnd
4	Mon R in
5	Mon R out
6	Gnd
7	HP L in
8	HP L out
9	Gnd
10	HP R in
11	HP R out
12	Gnd
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Note: connects to monitor, headphone and cue pots on front panel of console

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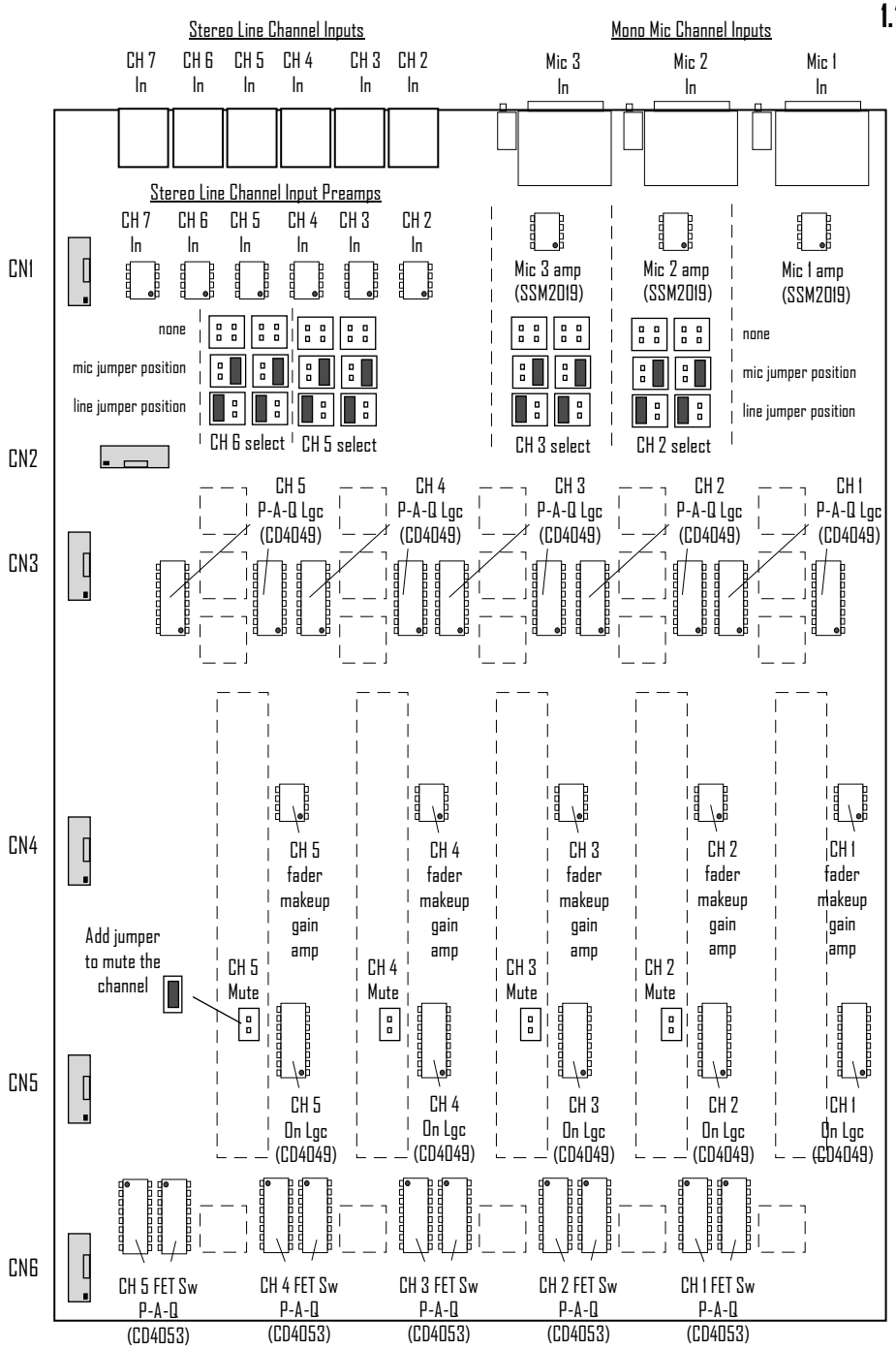
4	Studio Monitor Left output
5	Channel 8 Logic
6	Studio Monitor Right outut
7	Channel 7 Logic
8	CR Mic audio for talkback to Studio
9	Channel 6 Logic
10	Ground
11	Channel 5 Logic
12	+12 VDC
13	Channel 4 Logic
14	Audio Input to Cue for Talkback
15	Channel 3 Logic
16	Channel 2 Logic (not used in 15 pin D-sub)

Note: connects thru ribbon cable to rear panel 15 pin D-sub connector

ARC-15 Parts Layout (5 channel expansion board)

Note
All unmarked ICs
are NE5532 op amps



CN1

1	Mic 1
2	+12VDC
3	Mic 2
4	-12VDC
5	Ground (audio)
6	Ground (audio)
7	+48VDC
8	+48VDC
9	Ground (shield)
10	Ground (shield

CN2

1	Ch 5 Start logic
2	nc
3	Ch 4 Start Logic
4	nc
5	Ch 3 Start logic
6	nc
7	Ch 2 Start logic
8	nc
9	Ch 2 Cue Logic for TB to CR
10	nc

CN3

1	+12VDC
2	Gorund (audio)
3	Ground (audio)
4	Ground (audio)
5	CH1 L
6	nc
7	Ch 2 L
8	Ch 1R
9	Autocue
10	Ch 2R

CN4

1	nc
2	nc
3	nc
4	nc
5	+5VDC
6	+5VDC
7	Ground
8	Gorund
9	-5VDC
10	-5VDC

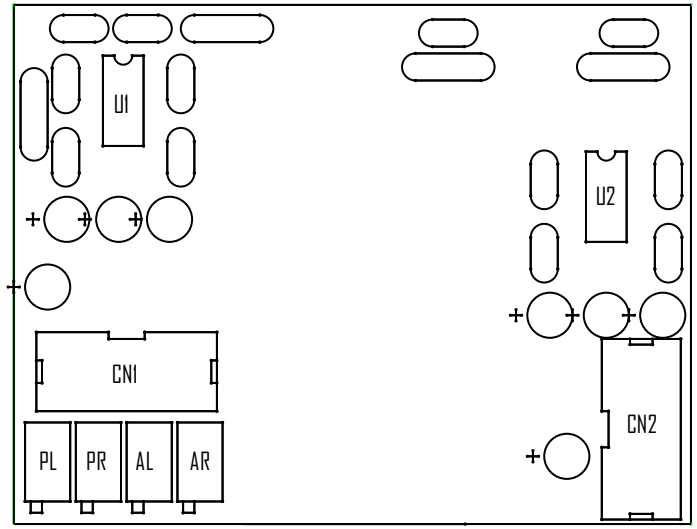
CN5

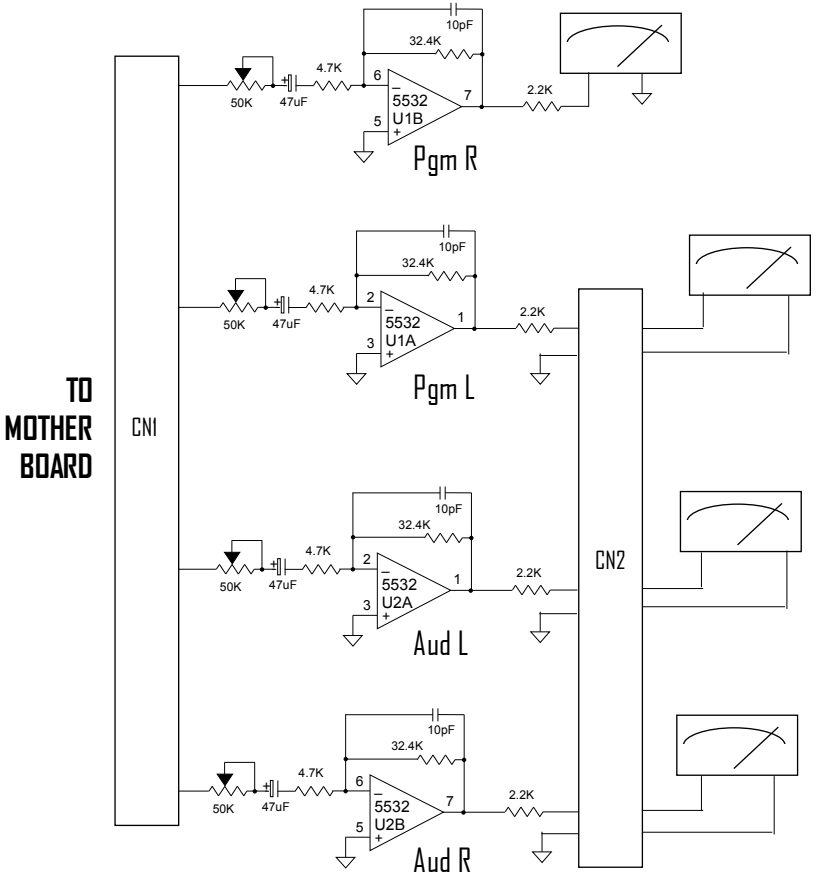
1	nc
2	nc
3	nc
4	nc
5	+5VDC
6	+5VDC
7	+14VDC
8	+12VDC
9	Gorund
10	Ground

CN6

1	nc
2	Mute logic
3	CR Mic to Hybrid talkback
4	Ground
5	CR MicTakback to Studio
6	Cue
7	Aud L bus
8	Aud R bus
9	Pgm L bus
10	Pgm R bus

ARC-15 VU Meter Driver PC Board





TO MOTHERBOARD

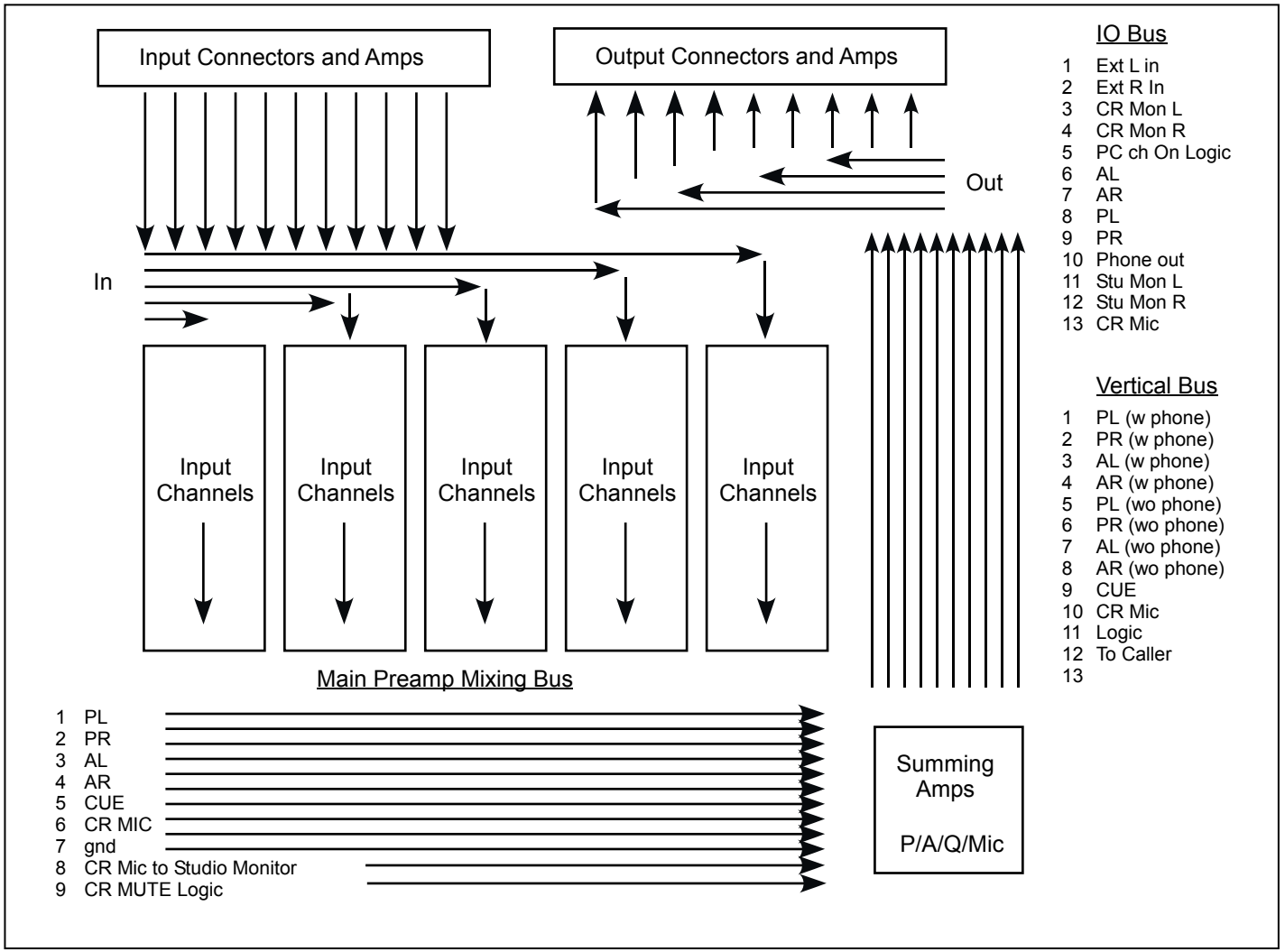
CN1	
1	Pgm L
2	Pgm R
3	Aud L
4	Aud R
5	-12VDC
6	-12VDC
7	+12VDC
8	+12VDC
9	ground
10	ground

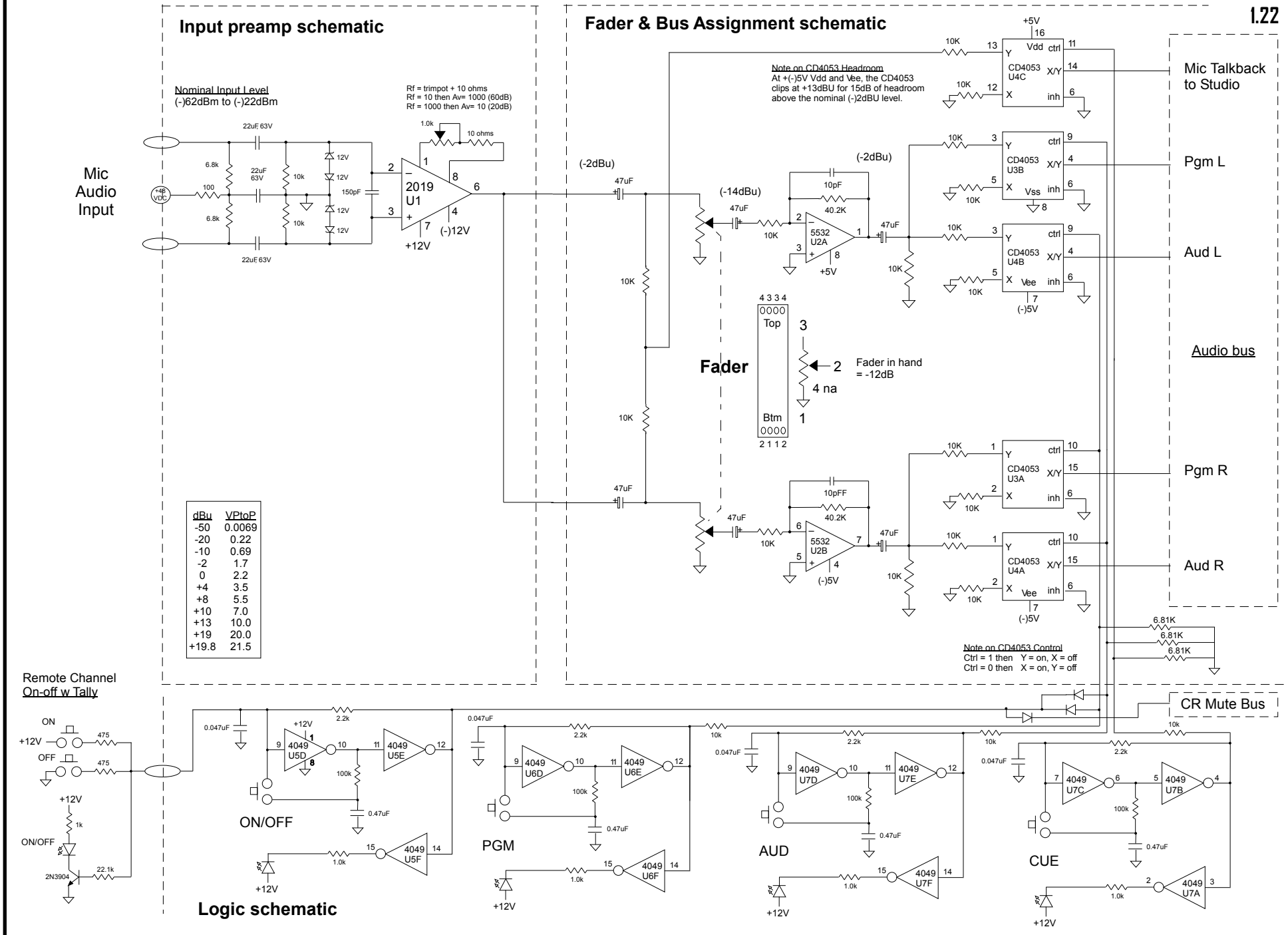
TO VU METERS

CN2	
1	NC
2	ground
3	NC
4	ground
5	Pgm L VU meter
6	ground
7	Aud L VU meter
8	ground
9	Aud R VU meter
10	ground

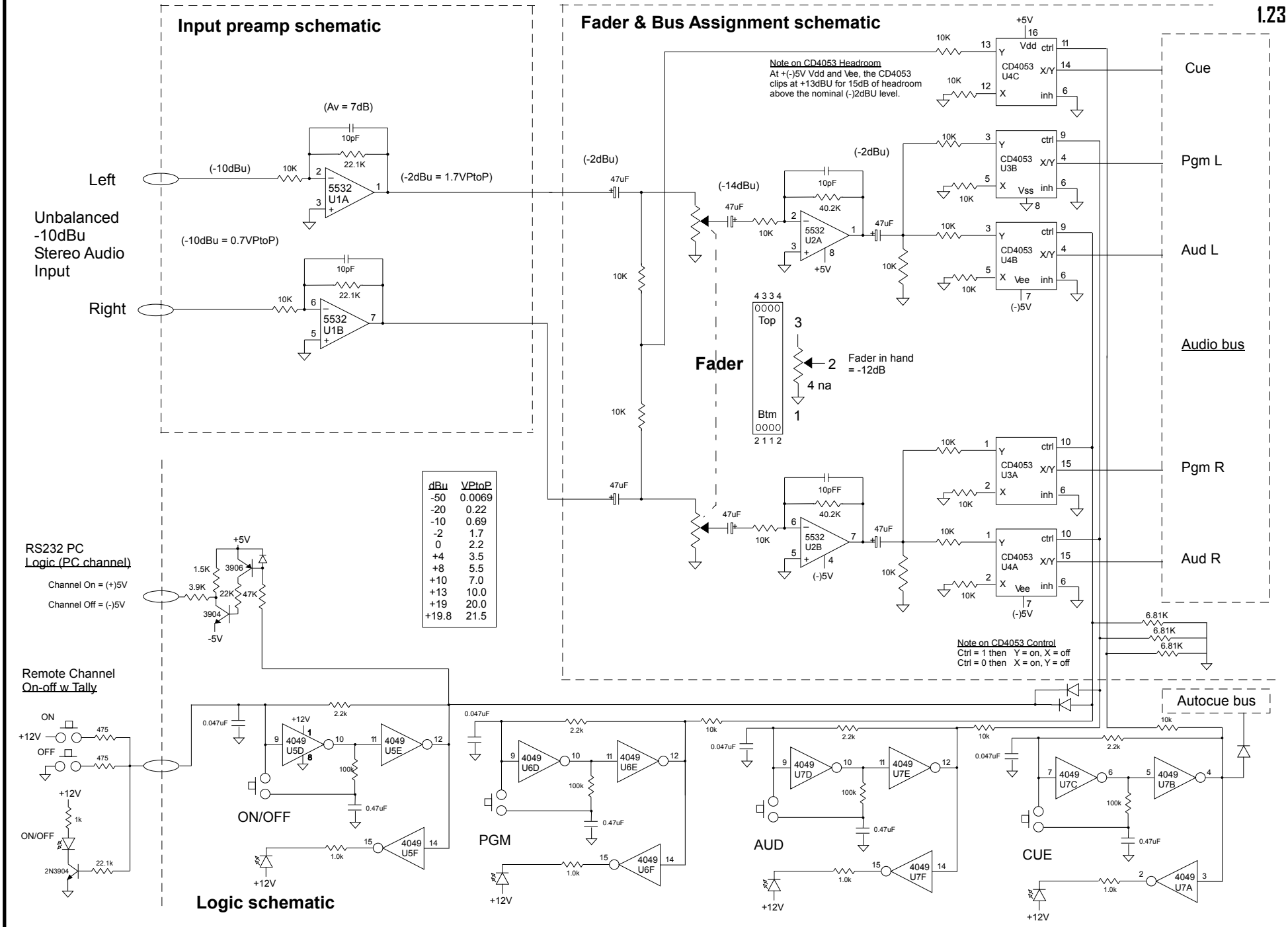
10 Ch Motherboard Bus Block Diagram

This diagram documents the basic bus tracing on the motherboard.

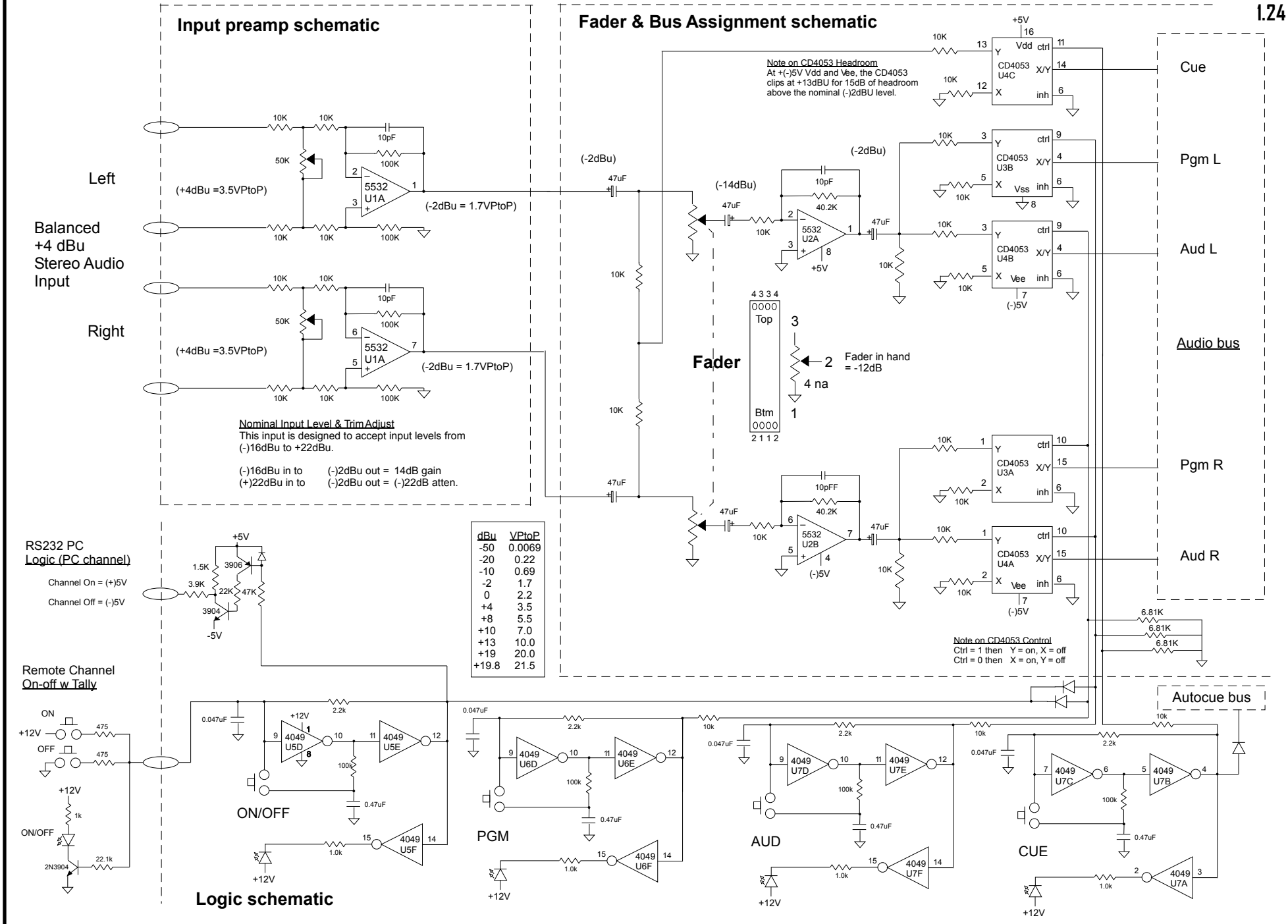




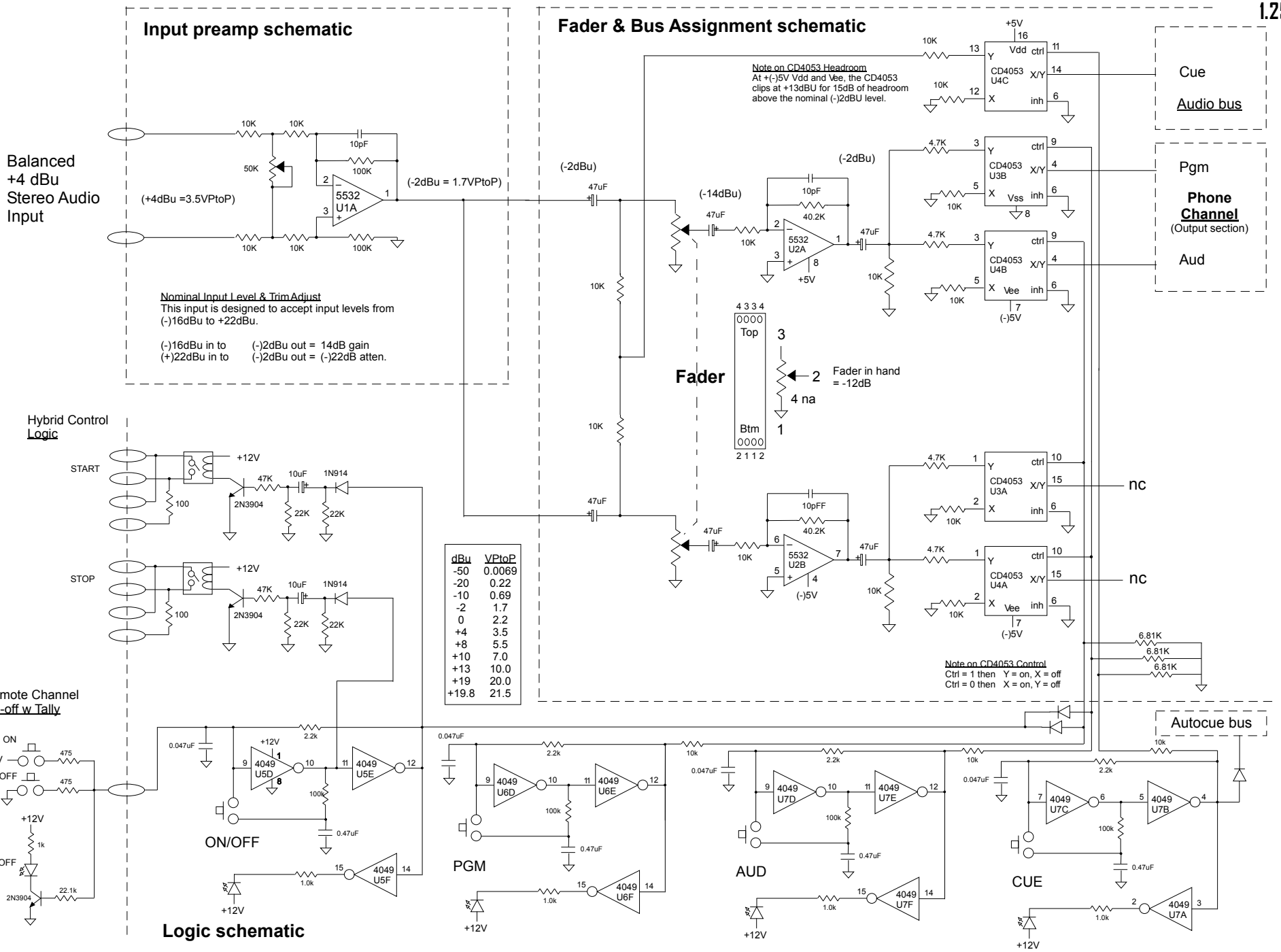
	ARC Console	Mic Channels Schematic	Arrakis Systems	Rev A	8/21/2007



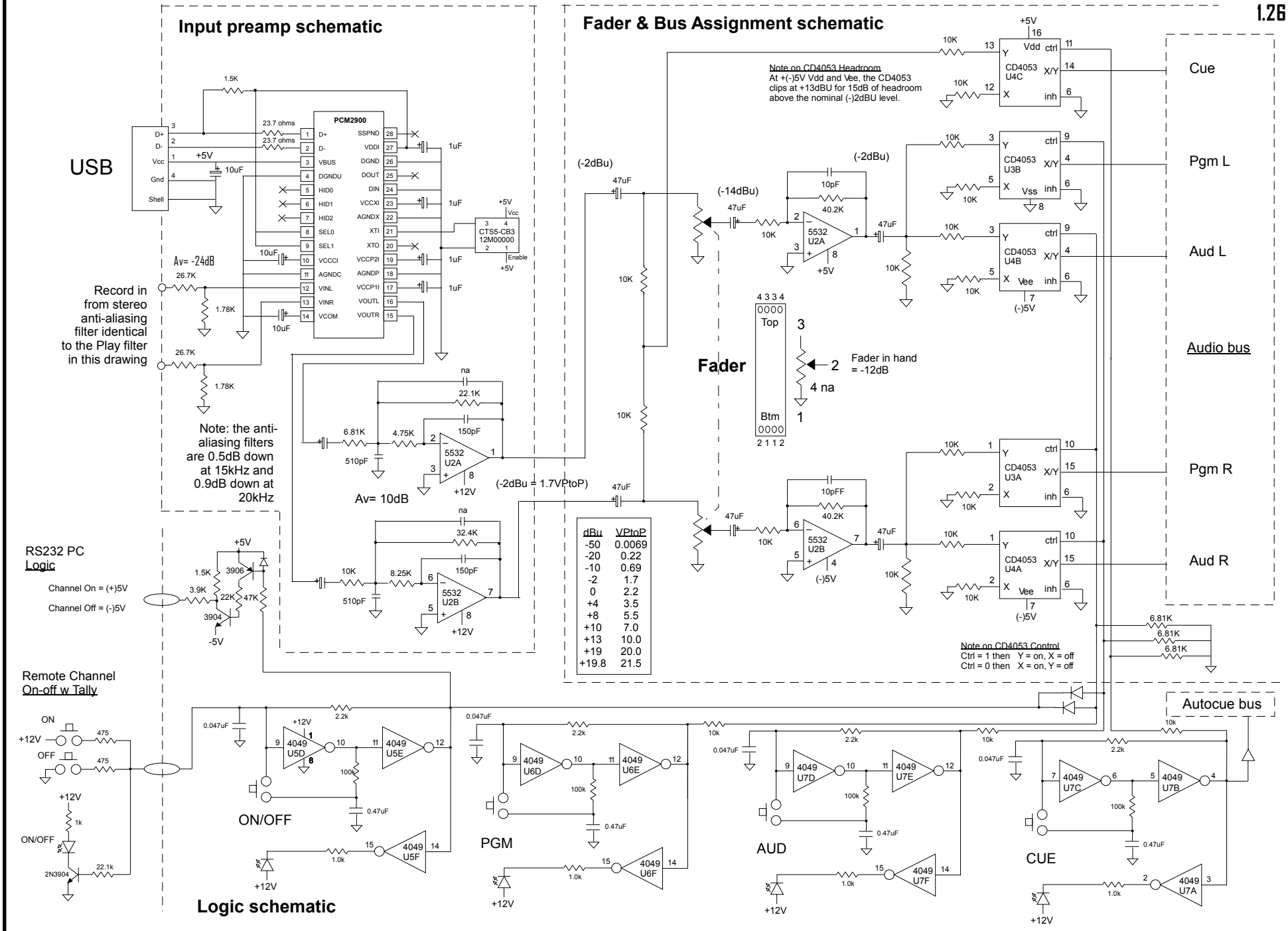
	ARC Console	-10dBu Unbalanced Stereo Input Channel Schematic	Arrakis Systems	Rev A	8/21/2007



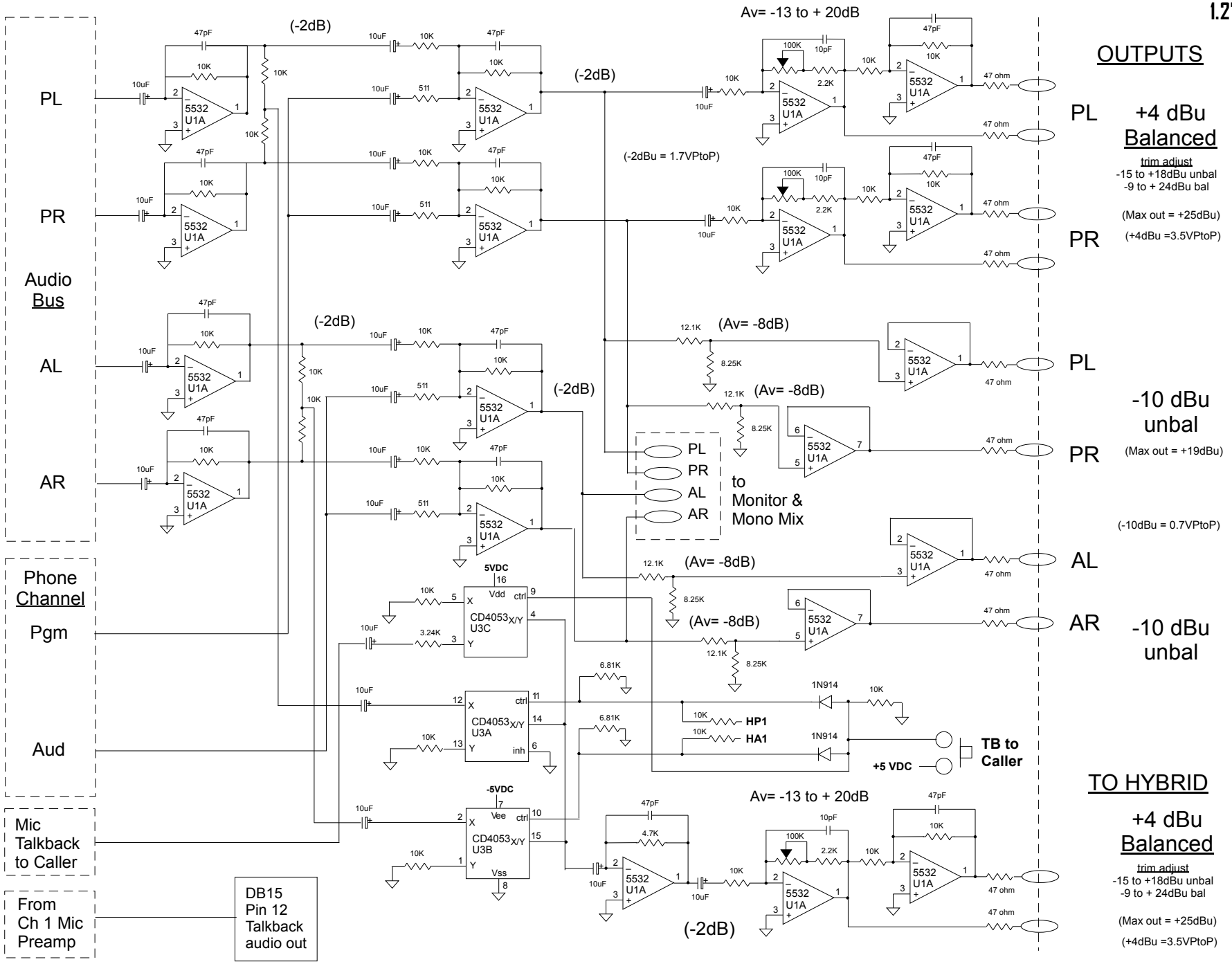
	ARC Console	+4dBu Balanced Stereo Input Channel Schematic	Arrakis Systems	Rev A	8/21/2007



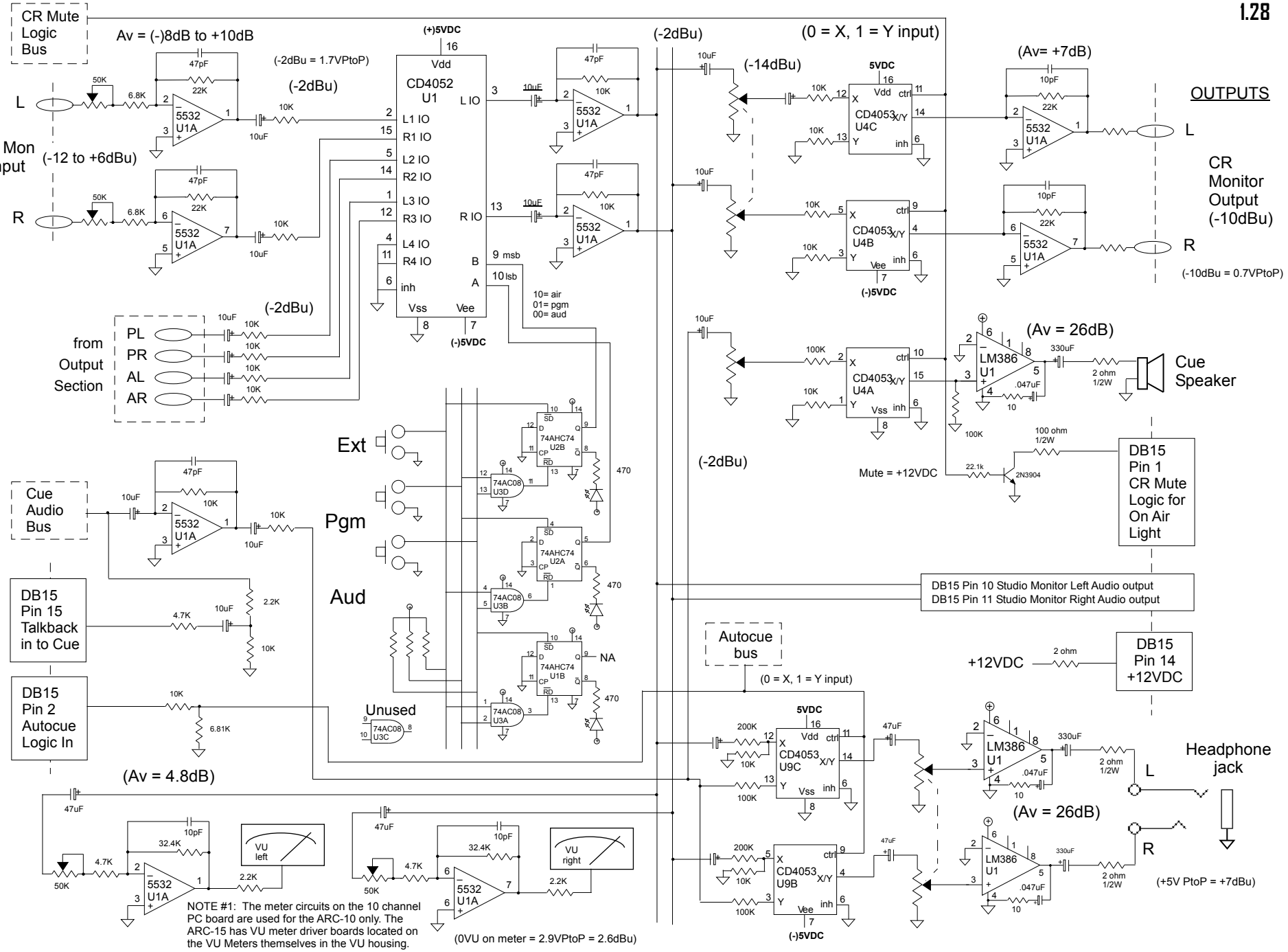
	ARC Console	Telephone Hybrid Input Channel Schematic	Arrakis Systems	Rev A	8/21/2007



dBu	VPtoP
-50	0.0069
-20	0.22
-10	0.69
-2	1.7
0	2.2
+4	3.5
+8	5.5
+10	7.0
+13	10.0
+19	20.0
+19.8	21.5

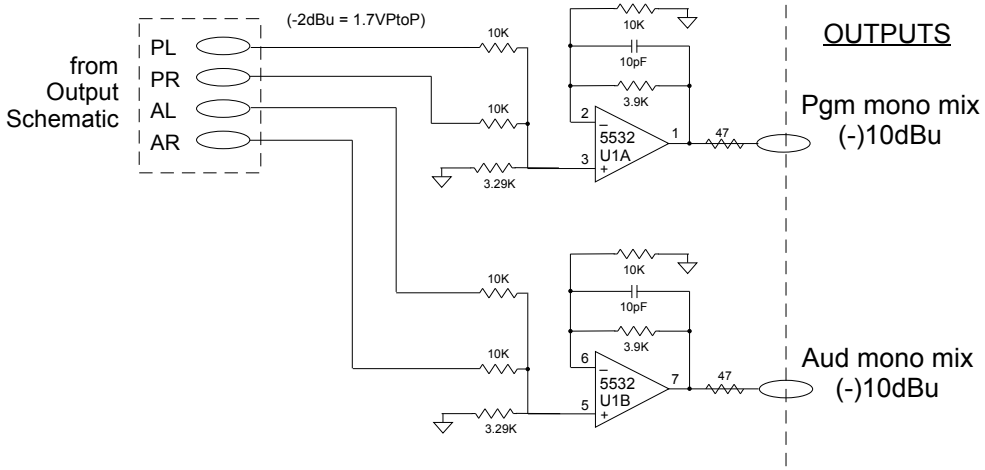


	ARC Console	Output Schematic	Arrakis Systems	Rev A	5/21/2007



	ARC Console	Monitor Schematic	Arrakis Systems	Rev A	5/21/2007

dBu	VPtoP
-50	0.0069
-20	0.22
-10	0.69
-2	1.7
0	2.2
+4	3.5
+8	5.5
+10	7.0
+13	10.0
+19	20.0
+19.8	21.5



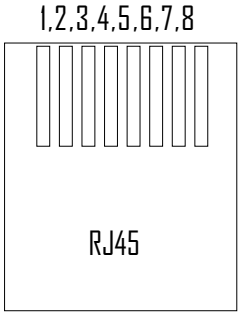
Balanced Inputs

Input channels with balanced audio using RJ45 connectors as illustrated below. Pins 5,7,8 are not connected.

The balanced inputs are > 10,000 ohm input impedance and levels are set for +4dBu signals.

EIA/TIA 568B WIRING STANDARD COLORS

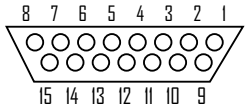
PIN	Wire Color	Audio
1	White w/Orange Stripe	Left (+)
2	Orange	Left (-)
3	White w/Green Stripe	Right (+)
4	Blue	Ground
5	White w/Blue Stripe	
6	Green	Right (-)
7	White w/Brown Stripe	
8	Brown	



Console Logic

The DB-15 connector on the rear panel of the console has the logic & audio signals required for supporting a talk studio and controlling the starting & stopping of sources.

DB15 CONNECTOR PINOUT (Solder Cup)



CONSOLE BACK PANEL VIEW

PIN	DESCRIPTION
1	Control Room Mute Logic (will switch to Pin 13 ground)
2	Autocue Logic In (switch to ground to turn on)
3	Channel Eight Logic (+12VDC channel on, 0VDC channel off)
4	Channel Seven Logic (+12VDC channel on, 0VDC channel off)
5	Channel Six Logic (+12VDC channel on, 0VDC channel off)
6	Channel Five Logic (+12VDC channel on, 0VDC channel off)
7	Channel Four Logic (+12VDC channel on, 0VDC channel off)
8	Channel 3 Logic (+12VDC channel on, 0VDC channel off)
9	Channel 10 Logic (+12VDC channel on, 0VDC channel off)
10	Studio Monitor Left Audio Output
11	Studio Monitor Right Audio Output
12	Talkback audio from Mic 1 and Mic 2
13	Ground
14	+ 12 VDC
15	Talkback Audio Input to Cue

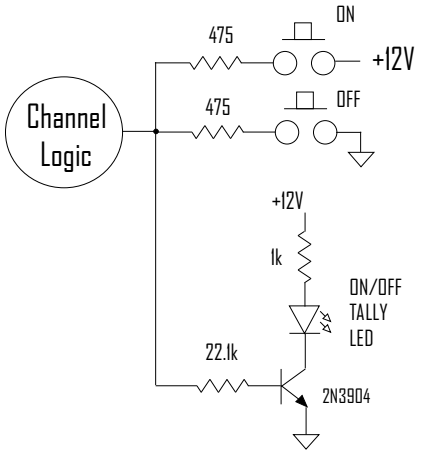
IMPORTANT- improper connection to console logic can damage the console.

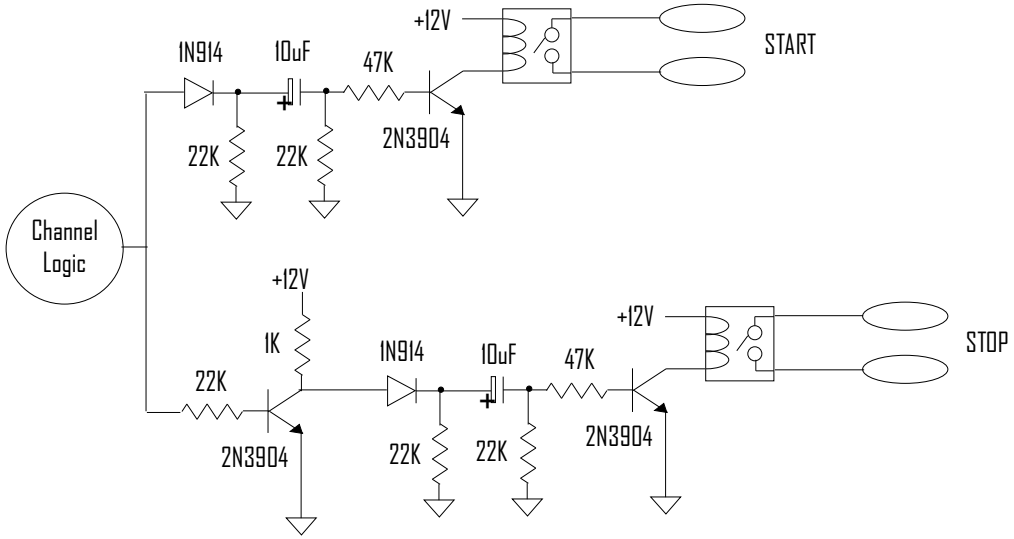
Channel Logic

Channel 3,4,5,6,7,8, & 10 feature channel logic for use in talk studios or starting and stopping source devices. The logic requires an interface circuit to be built by a qualified broadcast technician.

a) Remote Channel On-off w Tally

The circuit shown at the right will remotely turn a console channel on and off and drive a tally lamp to display the On-off satus.



b) Source Start-stop Circuit

The circuit shown at the right will close the relay for ~ 0.5 seconds to start & stop an audio source device such as a CD player.