ADR-32

Digital Audio Router

Technical Manual

AUDIOARTS® ENGINEERING

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ADR-32 Digital Audio Router Technical Manual - 1st Edition

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(*a division of Wheatstone Corporation)

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Attention!

Federal Communications Commission (FCC) Compliance Notice:
Radio Frequency Notice

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment, generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This is Class A product. In a domestic environment, this product may cause radio interference, in which case, the user may be required to take appropriate measures.

This equipment must be installed and wired properly in order to assure compliance with FCC regulations.

Caution! ***Any modifications not expressly approved in writing by Wheatstone Corporation could void the user's authority to operate this equipment.***

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General Information

Unpacking the Router

The ADR-32 Router is shipped as one package, which contains the router, X-Point CD, and technical manual.

Introduction

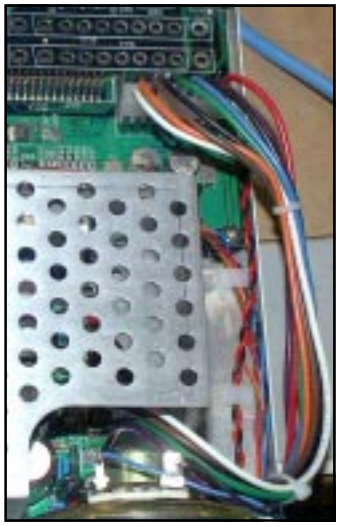
The ADR-32 Digital Audio Router is a rackmount unit occupying two 19" wide rack spaces (total height 3.5") with 16" depth.

The ADR-32 accepts up to 32 discrete analog stereo or digital audio inputs in Audio Engineering Society (AES) format, and switches them to any of 32 stereo analog or digital outputs.

The ADR-32 cage may be fitted with up to 8 input and 8 output cards.

Power Supply

The ADR-32 is powered by a built-in Audioarts Model SPS-32 switching power supply, located under a metal cover. This power supply contains high voltage circuits that are hazardous and potentially harmful. ***Under no circumstances should the metal cover be removed!*** If you have a problem with the power supply, the ADR-32 unit must be returned to Wheatstone Corporation for repair.



The power supply wires to the 9-pin power connector CT18 or CT19 on the PR-32 PCB with wire gauge 16AWG as shown below:

Pin 1 [WHT]: +5V Digital
Pin 2 [ORG]: +5V Digital
Pin 3 [BRN]: Digital Ground
Pin 4 [BLK]: Analog Ground
Pin 5 [GRN]: Digital Ground
Pin 6 [BLU]: -V
Pin 7 [BLK]: Analog Ground
Pin 8 [VIO]: +Phantom
Pin 9 [RED]: +V

Connect the console's power cord to a clean 90V - 240V AC outlet (that is, an AC source that feeds only the control room audio gear).

Note: each power supply is fitted with a 3-wire grounded AC cord that should be plugged into a "clean" AC power source. This source should be a separate feed from those powering lighting, air-conditioning, or any other non-audio machinery. The third pin ground wire of the AC source should be tied to the central system ground point.

The optional external failsafe power supply is also available. Consult factory for further information.

Audio Connections

All audio connections to the ADR-32 are made through multipin DB-25 and DB-9 connectors located on the cage rear.

The factory supplied hand crimping tool is used for all I/O wiring connections to and from the router (see instruction on the page 1-5).

Digital Audio Connections

CABLE - All AES/EBU input and output digital audio connections are balanced and should be made using a high quality digital audio cable. Be sure to select a digital audio cable with an integral drain wire

of the same wire gauge (AWG) as the twisted pair as this facilitates an easier and consistent termination process. Typical AES/EBU digital audio cable has a very low characteristic capacitance per ft (pF/ft), and a nominal impedance of 110Ω. High quality digital audio cable offers better signal transmission performance versus typical analog audio cable, especially over long cable runs. Check the cable manufactures data sheet to be sure the cable you plan to use will work in your application.

CONNECTORS - Typically, all AES/EBU connections are made with the supplied DB-25 male mating connectors. These crimp style connectors will accept wire gauge 22 - 28AWG.

Unbalanced Analog Connections

ANALOG INPUTS — Wire to the switcher input end 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 + output to the HI input wire and connect the source machine GND wire to LO, connect the shield at the balanced end only .

Note: Unbalanced analog sources typically have -10dBv (316mV RMS) signal levels and will not match the ADR-32 nominal operating level of +4dBu (1.23V RMS). We highly recommended that you first externally balance any unbalanced sources you plan on connecting to the ADR-32. Many third party "match boxes" are commercially available for this.

ANALOG OUTPUTS — Use an electronically 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. For unbalanced operation, either the HI *or* LO side of the analog output must be strapped to ground of the unbalanced input, with the output taken from the other side. (Normally you would strap LO to ground, and use HI to feed your unbalanced equipment input.) Leave the SH floating at the balanced end.

Unbalanced Digital Connections (SPDIF)

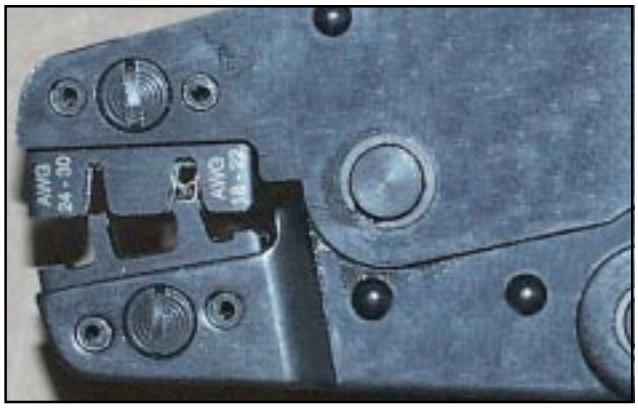
SPDIF INPUTS - The SPDIF (Sony/Philips Digital Interface) or "consumer" digital audio interface is a two wire unbalanced signal typically on a single RCA style connector. We highly recommend using a "balun" or format converter when interfacing "consumer" grade source devices to the ADR-32.

In cases where a consumer grade device must be interfaced and the appropriate matching device is not available, try wiring the SPDIF center conductor (HOT) to the HI input pin and SPDIF shell (ground) to the LO input. Connect SH at the ADR-32 router end only. To correctly match the SPDIF signal level of approximately 500mV and 75 ohm impedance to the ADR-32 AES inputs, be sure to set the appropriate internal 75Ω termination dipswitch on the digital input card.

SPDIF OUTPUTS - The ADR-32 digital outputs are fixed, professional, AES-3 formatted outputs. SPDIF consumer format is not supported. Use an external format converter to connect the digital outputs to consumer gear.

HAND CRIMP TOOL WIRING INSTRUCTIONS

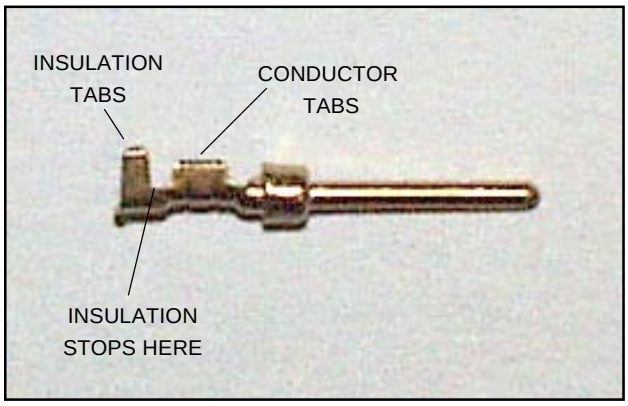
The supplied hand crimping tool (W/S#850067) is used for all I/O wiring connections to and from the console. It is to be used with the supplied pin (figure 1) intended for 22"-28" gauge wire.



(2) The terminal conductor tabs (pointing UP) are placed in anvil 18-22; the terminal's insulation tabs extend in front towards the camera.

(3) The stripped wire is placed into the terminal and crimped. Note the wire's insulation must stop just short of the conductor tabs (detail)

(4) Final step: jaws fully closed; the insulation tabs have been crimped.



(1) Pin crimp terminal

1) Strip wire approximately 3/16" (insert in proper wire stripper, rotate one half turn, and pull insulation off wire).

2) Leaving wire aside for the moment, with crimping tool fully open (engraved side toward you) bring a terminal into position from the unmarked side of the tool. Place the conductor tabs (inner set as shown in figure 1) on the "18-22" or "24-30" (depending on the wire) anvil (slightly curved surface) so that the circular portion of the tabs rests in the curved surface of the anvil and the two tabs face up into the walls of the female jaw. The insulation tabs will be flush with the top of the tool (figure 2).

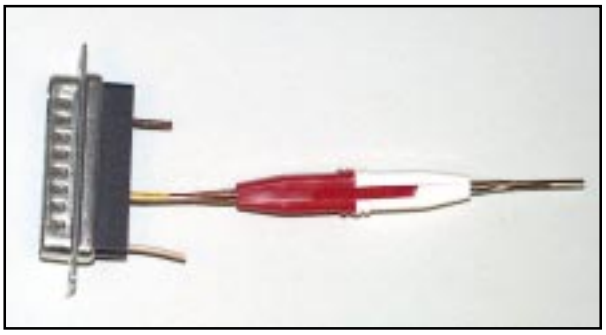
3) Close tool very slightly, only to the point of holding the terminal in position (figure 2).

4) Insert wire into terminal until wire insulation is stopped by conductor tabs (figure 3). CRIMP by squeezing handles until jaws are fully closed (figure 4).

5) If there is an insertion error or if a circuit change is needed, you'll need to use an extractor tool to remove terminals (see next page).

Note that metallized plastic hoods for each connector are also supplied with the router.

EXTRACTOR PIN INSTRUCTIONS



(5) Place extractor tip over pin terminal to be removed.

If you accidentally insert a crimp terminal pin into the wrong socket, you'll need to use the supplied pin extractor tool (W/S#850069) to remove terminal pin, and correct your mistake without having to sacrifice a connector. Place extractor tip (red side) over terminal pin to be removed (figure 5), and press it downwards motion until tip rests upon Housing. Then pull out the terminal pin from Housing. It should never be necessary to discard a connector due to a wiring error.

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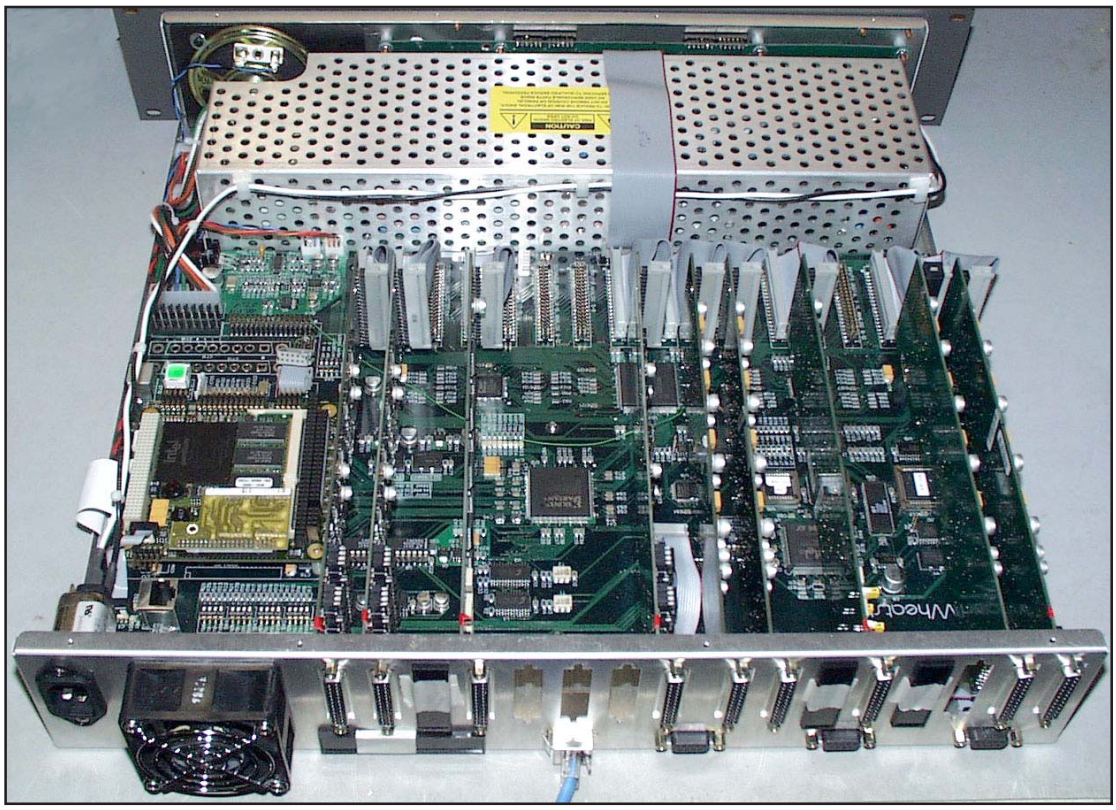


Hardware

Overview

The ADR-32 may be configured for a variety of I/O card complements using various combinations of analog and digital audio input and output cards. All audio input and output signal connections are made via multipin DB-25 connectors located on the cage rear and mounted on the input/output daughter cards. The input/output daughter cards plug into the PR-32 board connectors (CT20-CT35). The AUX DC power supply, monitor, serial control, and ethernet connections are also made on the rear of cage.

Configuration Guidelines

While the ADR-32 router is pre-configured to customer specifications at Wheatstone's factory, future expansion of a system may require some re-configuration of existing hardware to accommodate new resources.

Audio input cards may be mounted in slots 1 through 8 (counting right to left if you are looking from cage rear), and output cards may be mounted in slots 9 through 16. Digital input and output cards each handle eight inputs/outputs, while analog input and output cards each handle four inputs/outputs. The ADR-32 can support up to four digital input cards and four digital output cards, or up to eight analog input cards and eight analog output cards. Digital and analog cards can be freely mixed, subject to correct placement, as described below. However, the card complement can not exceed 32 inputs or 32 outputs.

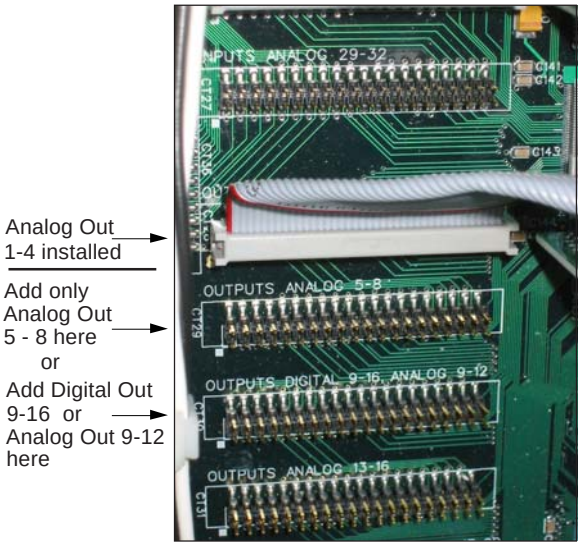
Audio I/O Expansion

The ADR-32 supports a maximum of 32 stereo input channels and 32 stereo output channels.

•Power down by removing AC cord.

• Removing the cover - Remove the 14 - #4/32 1/4" Phillips head screws located along the sides and top of the ADR-32 chassis.

Example



• Locating an available slot - Find the next available input or output slot 40 pin header on the motherboard. Be careful to note the silkscreen labelling along side each connector. Some headers will only work with analog I/O cards, other headers work with both analog and digital I/O cards. In placing cards, it may be helpful to think in terms of slot pairs. That is, the input section contains eight slots, or four slot pairs, and the same is true of the output section. For the first output pair, the following table shows the allowed card combinations for that pair. The same concept applies to the other output slot pairs, and to the input slot pairs.

		ALLOWED CARD COMBINATIONS			
FIRST SLOT OF PAIR DIGITAL 1-8 OR ANALOG 1-4		ANALOG [1-4]	EMPTY	ANALOG [1-4]	DIGITAL [1-8]
SECOND SLOT OF PAIR ANALOG 5-8		EMPTY	ANALOG [5-8]	ANALOG [5-8]	EMPTY
TOTAL SIGNALS HANDLED IN SLOT PAIR	ANALOG	4	4	8	Ø
	DIGITAL	Ø	Ø	Ø	8

Please note these important points:

° each slot pair can have one analog card, two analog cards, or one digital card;

° digital cards can only be used in the first slot of each pair;

° analog and digital cards can **NOT** be mixed within a slot pair.

• Installing the audio card - Care must be taken when plugging in the expansion cards 40 pin ribbon connector. Be sure to match the connector sockets to the motherboard header pins. Failure to do so will damage the expansion card, ribbon cable, and/or motherboard.

• Configuring the software - The ADR-32 software has been pre-configured to automatically recognize a newly installed audio I/O card. You may run the X-Point application to edit the pre-configured I/O names to match your new sources or destinations. Please see the “X-Point Software Setup Guide” for details.

Digital Input Card (SRC-8)

Overview

The SRC-8 digital audio input cards for the ADR-32 accept up to 8 AES-3 formatted stereo sources (i.e. 16 mono *channels*). A *Signal Definitions* form in the supplied X-Point software allows the user to set attributes for the input channels including signal name, type, circuit #, etc. These signal attributes are pre-configured at the factory for stereo operation.

Note: While it is possible to split the 8 stereo AES inputs into 16 mono channels, there are still only 8 physical wires, each containing the 2-channel AES formatted data.

A dedicated sample rate converter for each input re-clocks the incoming audio data and phase locks it to the system's master sample rate clock. Source sample rates from 16 kHz to 96 kHz are supported.

AES Input Interface

The balanced digital audio inputs on the SRC-8 card are transformer coupled. AES receivers strip off the received sample rate clock and audio data for further processing by sample rate converters. The balanced interface operates at a nominal peak-to-peak input voltage of +5V with an input impedance of 110Ω and conforms to the AES-3 1992 electrical specification. Note that Channel Status data is not forwarded.

While unbalanced SPDIF formatted input signals may be connected to the HI and LO inputs of an AES input channel (leave the shield floating), it is recommended that a BALUN or other external matching device be inserted to convert the SPDIF impedance to 110Ω and signal level to at least 1V p-p.

Internal Programming Options

SPDIF 75Ω Termination

SW1 - SW8 - These slide switches activate 75Ω termination for SPDIF sources. Default is OFF (110Ω). Slide the corresponding switch 1-8 ON when connecting an SPDIF source.

Hook-Ups

All user wiring to the SRC-8 card takes place at the female DB-25 I/O connector on the cage rear.

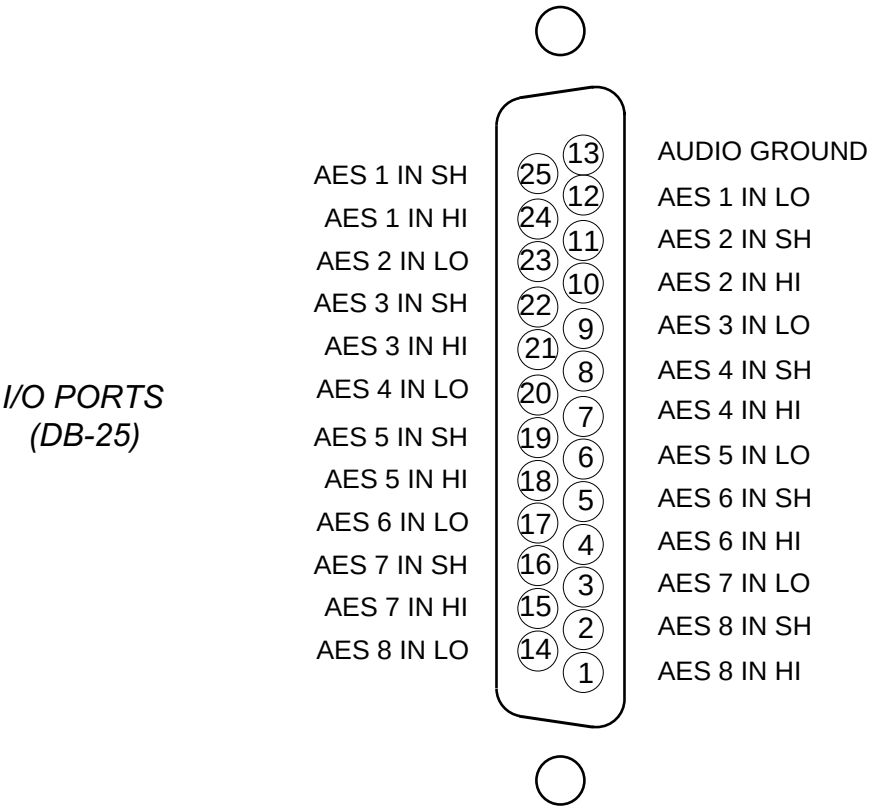
DB-25—Digital Audio Connections

These include eight input sources. Pinout drawing on page 2-8 shows all wiring connections at a glance.

Pin 24 – HI Pin 12 – LO Pin 25 – SH	AES 1 In
Pin 10 – HI Pin 23 – LO Pin 11 – SH	AES 2 In
Pin 21 – HI Pin 9 – LO Pin 22 – SH	AES 3 In
Pin 7 – HI Pin 20 – LO Pin 8 – SH	AES 4 In
Pin 18 – HI Pin 6 – LO Pin 19 – SH	AES 5 In
Pin 4 – HI Pin 17 – LO Pin 5 – SH	AES 6 In
Pin 15 – HI Pin 3 – LO Pin 16 – SH	AES 7 In
Pin 1 – HI Pin 14 – LO Pin 2 – SH	AES 8 In

SRC-8 Card
Digital Input Connections

I/O PORTS
(DB-25)



Analog Input Card (ADC-4)

Overview

The Analog input card accepts up to 4 stereo analog audio sources (i.e. 8 mono *channels*). A *Signal Definitions* form in the supplied X-Point software allows the user to set attributes for the input channel hardware, including signal name, type, circuit #, etc. The 8 input *channels* may be configured as mono *signals* (one channel), stereo *signals* (two channels), or 5.1 surround sound *signals* (six channels) in any combination. Signals may span across input cards (e.g. a surround sound *signal* may have 4 *channel*s on one input card, and 2 channels on a different input card).

The balanced, line level analog input signals are buffered and converted to the digital domain by 24bit A-D converters operating at the system's master sample rate. Embedded logic routes each channel of audio data into an available time slot of the input card's TDM bus. One TDM bus is allocated for each input card.

Analog Input Interface

The balanced analog input stages are direct coupled, unity gain circuits and operate at a nominal input level of +4dBu. The input impedance is 20kΩ. A +4dBu input signal will result in a -20dBFS digital output level at any of the selected AES outputs. The maximum analog input signal level is +24 dBu providing 20 dB of headroom above the nominal input level.

Reference Notes:

0dBu = .7746 V RMS, +4dBu = 1.23V RMS

dBFS = dB Full Scale Digital

-20dBFS = +4dBu

Internal Programming Options

There are no internal programming options on the ADC-4 card.

Hook-Ups

All user wiring to the ADC-4 card takes place at the female DB-25 connector on the cage rear.

DB-25—Analog Audio Connections

These include four (1-4) input sources. Pinout drawing on page 2-11 shows all wiring connections at a glance.

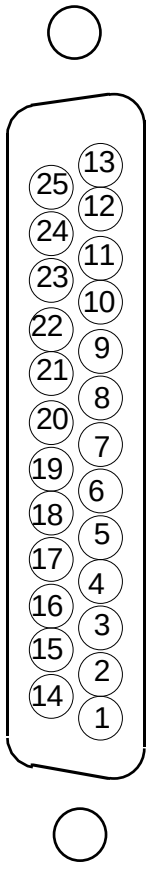
Pin 24 – HI Pin 12 – LO Pin 25 – SH	Channel 1 In	LT	Stereo 1 In
Pin 10 – HI Pin 23 – LO Pin 11 – SH	Channel 2 In	RT	
Pin 21 – HI Pin 9 – LO Pin 22 - SH	Channel 3 In	LT	Stereo 2 In
Pin 7 – HI Pin 20 – LO Pin 8 – SH	Channel 4 In	RT	
Pin 18 – HI Pin 6 – LO Pin 19 – SH	Channel 5 In	LT	Stereo 3 In
Pin 4 – HI Pin 17 – LO Pin 5 – SH	Channel 6 In	RT	
Pin 15 – HI Pin 3 – LO Pin 16 – SH	Channel 7 In	LT	Stereo 4 In
Pin 1 – HI Pin 14 – LO Pin 2 – SH	Channel 8 In	RT	

Mono Inputs

The easiest way to connect mono analog sources is to strap the mono source across both the left and right sides of a stereo input. Optionally, you may reconfigure stereo inputs for 2 channel mono operation in software. Please see "Signal Definition" section in the "X-Point Software Setup Guide".

ADC-4
Analog Input Connections

I/O PORTS (DB-25)



CHANNEL 1 (STEREO 1 LT) IN SH	AUDIO GROUND
CHANNEL 1 (STEREO 1 LT) IN HI	CHANNEL 1 (STEREO 1 LT) IN LO
CHANNEL 2 (STEREO 1 RT) IN LO	CHANNEL 2 (STEREO 1 RT) IN SH
CHANNEL 3 (STEREO 2 LT) IN SH	CHANNEL 2 (STEREO 1 RT) IN HI
CHANNEL 3 (STEREO 2 LT) IN HI	CHANNEL 3 (STEREO 2 LT) IN LO
CHANNEL 4 (STEREO 2 RT) IN LO	CHANNEL 4 (STEREO 2 RT) IN SH
CHANNEL 5 (STEREO 3 LT) IN SH	CHANNEL 4 (STEREO 2 RT) IN HI
CHANNEL 5 (STEREO 3 LT) IN HI	CHANNEL 5 (STEREO 3 LT) IN LO
CHANNEL 6 (STEREO 3 RT) IN LO	CHANNEL 6 (STEREO 3 RT) IN SH
CHANNEL 7 (STEREO 4 LT) IN SH	CHANNEL 6 (STEREO 3 RT) IN HI
CHANNEL 7 (STEREO 4 LT) IN HI	CHANNEL 7 (STEREO 4 LT) IN LO
CHANNEL 8 (STEREO 4 RT) IN LO	CHANNEL 8 (STEREO 4 RT) IN SH
	CHANNEL 8 (STEREO 4 RT) IN HI

Digital Output Card (DO-8)

Overview

Each Digital Output card provides 8 physical AES-3 formatted outputs. A *Signal Definitions* form in the supplied X-Point software allows the user to set attributes for the output channels, including signal name, type, circuit #, etc. The 8 AES outputs are configured in software at the factory to be stereo *output signals*.

Each output card listens for connection commands from the CPU, and then uses this information to connect the appropriate sources to their selected output channels. The selected audio data is fed to AES transmitters which format the 24 bit audio data according to the AES-3 standard.

Note: While it is possible to split the 8 stereo AES outputs into 16 mono channels, there are still only 8 physical wires, each containing the 2-channel AES formatted data.

AES Output Interface

The balanced digital audio outputs on the DO-8 card are transformer coupled and exhibit a nominal output impedance of 110Ω. This interface operates at a nominal output voltage of +5V p-p and conforms to the AES-3 1992 electrical specification. The DO-8 output cards operate at unity gain and transmit 24bit audio data word lengths at the system sample rate. Output sample rate is set to 44.1 kHz or 48 kHz by setting the dipswitch located on the PR-32 motherboard. Optionally, the CPU's *External AES Sync* input may be used to slave the system to a user provided 44.1 kHz or 48 kHz reference rate. Please refer to the CPU hardware section for details on external synchronization.

The digital output signal reference level is -20dBFS. A +4dBu analog input signal yields a -20dBFS digital output signal. Channel Status implementation complies with rules for "Standard implementation" as described in the AES-3 1992 specification.

AES Channel Status Implementation

The following embedded channel status information is transmitted at the AES digital outputs along with the audio data.

Note: Channel Status bits are identically set for channels 1 and 2.

CHANNEL STATUS:	PROFESSIONAL
DATA USE:	AUDIO (normal mode)
EMPHASIS:	NO EMPHASIS
SOURCE Fs LOCK:	LOCKED
SAMPLE FREQUENCY:	44.1 kHz or 48 kHz*
CHANNEL MODE:	STEREO
USER BITS MODE:	NONE
AUX BITS USE:	24 BIT - main audio
AUDIO WORD LENGTH:	24 BIT
REFERENCE SIGNAL:	NOT A REFERENCE SIGNAL
ORIGIN:	NOT INDICATED
DESTINATION:	NOT INDICATED
SAMPLE #:	Ø
TIME OF DAY:	ØØ : ØØ : ØØ
BLOCK CRC:	IS VALID

* The Sample Rate frequency reported in the channel status block depends upon a dipswitch setting on the PR-32 circuit board. DipSW6 - pos.3: OFF = 48 kHz, ON = 44.1 kHz.

Internal Programming Options

There are no internal programming options on the DO-8 card.

Hook-Ups

All user wiring from the DO-8 card takes place at the female DB-25 connector on the cage rear.

Digital Audio Connections

These include eight outputs. Pinout drawing on page 2-15 shows all wiring connections at a glance.

Pin 24 – HI
Pin 12 – LO
Pin 25 – SH
] AES 1 Out

Pin 10 – HI
Pin 23 – LO
Pin 11 – SH
] AES 2 Out

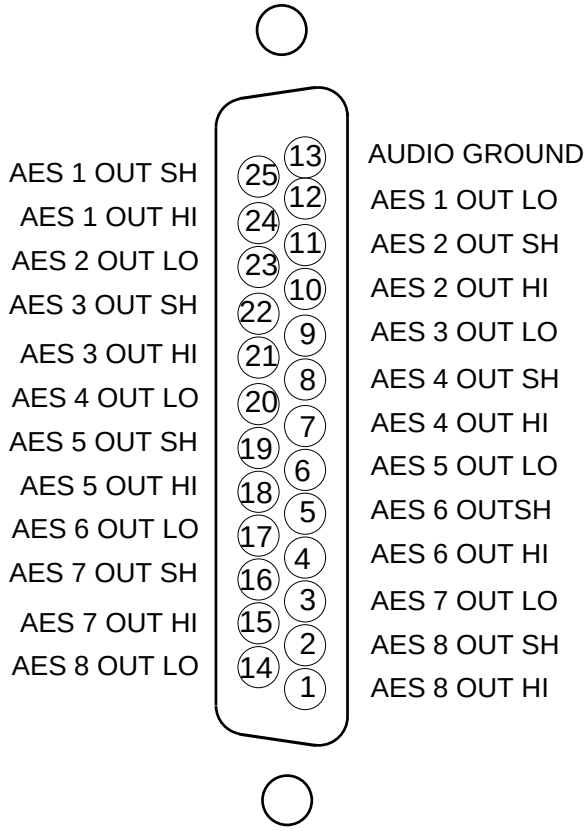
Pin 21 – HI
Pin 9 – LO
Pin 22 – SH
] AES 3 Out

Pin 7 – HI
Pin 20 – LO
Pin 8 – SH
] AES 4 Out

Pin 18 – HI Pin 6 – LO Pin 19 – SH	AES 5 Out
Pin 4 – HI Pin 17 – LO Pin 5 – SH	AES 6 Out
Pin 15 – HI Pin 3 – LO Pin 16 – SH	AES 7 Out
Pin 1 – HI Pin 14 – LO Pin 2 – SH	AES 8 Out

DO-8
Digital Output Connections

I/O PORTS
(DB-25)



Analog Output Card (AO-4)

Overview

Each Analog Output card provides 8 physical monaural *output channels*. These output channels are configured in software to be 4 stereo pairs. A *Signal Definitions* form in the supplied X-Point software allows the user to set attributes for the output channels, including signal name, type, circuit #, etc.

Each output card listens for connection commands from the CPU and then uses this information to connect the appropriate sources to their selected output channels. The selected audio data is fed to 24 bit, two-channel digital-to-analog converters. The D-A converter outputs are buffered by integrated differential output drivers.

Analog Output Interface

Each balanced unity gain output will drive loads up to 600Ω and behaves much like a transformer in that either side of the balanced output may be grounded. The analog outputs are direct coupled with an output impedance of 50Ω and a nominal output signal level of +4dBu for an analog input signal of +4dBu (-20dBFs digital) .

Internal Programming Options

There are no internal programming options on the AO-4 card.

Hook-Ups

All user wiring from the AO-4 card takes place at the female DB-25 connector on the cage rear.

Analog Audio Connections

These include four (1-4) outputs. Pinout drawing on page 2-19 shows all wiring connections at a glance.

Pin 24 – HI Pin 12 – LO Pin 25 – SH	Channel 1 Out	LT	Stereo 1 Out
Pin 10 – HI Pin 23 – LO Pin 11 – SH	Channel 2 Out	RT	
Pin 21 – HI Pin 9 – LO Pin 22 - SH	Channel 3 Out	LT	Stereo 2 Out
Pin 7 – HI Pin 20 – LO Pin 8 – SH	Channel 4 Out	RT	
Pin 18 – HI Pin 6 – LO Pin 19 – SH	Channel 5 Out	LT	Stereo 3 Out
Pin 4 – HI Pin 17 – LO Pin 5 – SH	Channel 6 Out	RT	
Pin 15 – HI Pin 3 – LO Pin 16 – SH	Channel 7 Out	LT	Stereo 4 Out
Pin 1 – HI Pin 14 – LO Pin 2 – SH	Channel 8 Out	RT	

Mono Outputs

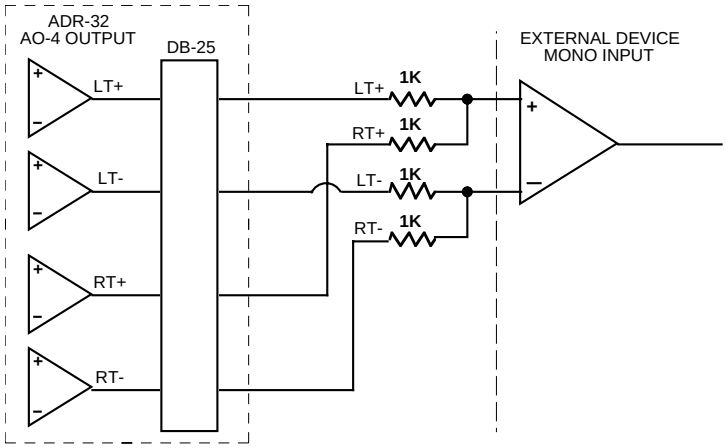
There are two ways to adapt the ADR-32 for mono operation. Externally sum a stereo output using 1kΩ resistors, or reconfigure the output in software for mono operation. Please see the "X-Point Software Setup Guide" for details on configuring mono outputs.

Caution! If you route a stereo input to a software configured mono output, only one output channel will be present.

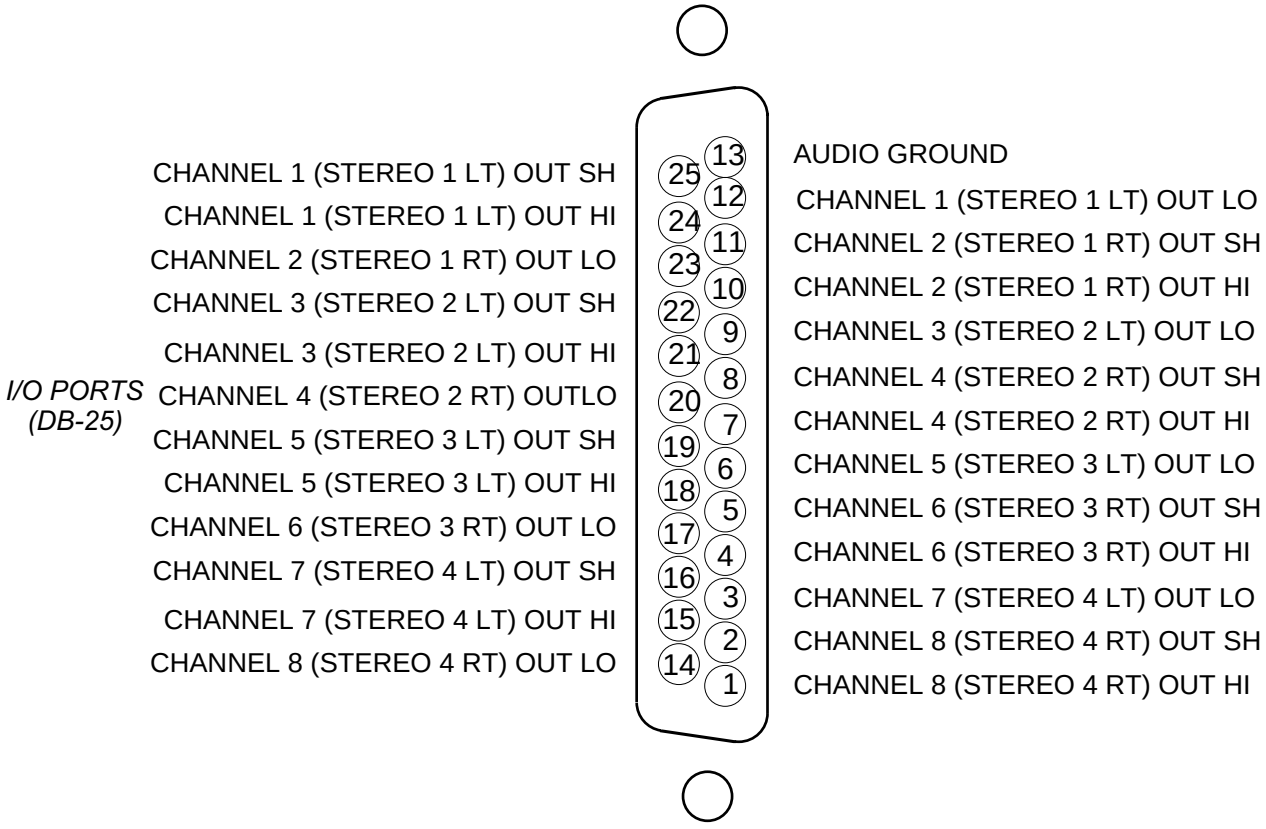
External Mono Summing

To sum an ADR-32 stereo analog output add a 1kΩ resistor in series with each leg of the balanced output. Add resistors as close as possible to the mono input.

Example:



AO-4
Analog Output Connections



Monitor Output & Speaker Mute

Overview

The monitor output port provides a way to remotely monitor any source routed to the ADR-32's internal speaker destination. The mono monitor output is electronically balanced, and operates at line level.

A speaker mute function is included for applications where the ADR-32 is mounted in an ON-AIR or Production control room. A contact closure across pins 1 and 6 will mute the ADR-32's internal speaker.

Hook-Ups

All user monitor wiring takes place at the female DB-9 connector on the cage rear.

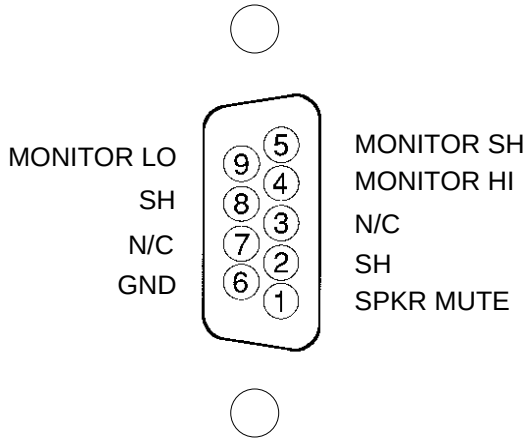
Pin 4 – Monitor Out HI
Pin 9 – Monitor Out LO
Pin 5 – Monitor Out SH

Pin 7 – N/C
Pin 8 – SH
Pin 3 – N/C

Pin 1 – SPKR MUTE
Pin 6 – GND
Pin 2 – SH

Monitor Connections

PORTS (DB-9)



CPU

Overview

The CPU used in the ADR-32 incorporates a PC/104 computer mounted on the PR-32 PCB. The host computer utilizes RAM, a flash disk (which emulates a standard IDE hard drive) and an Ethernet port. There is no hard disk drive. Keyboard, floppy controller and video ports are for factory use only.

The purpose of the CPU is to provide control of the ADR-32 system. The CPU communicates to the X-Point Configuration PC and XY Controller GUI's via TCP/IP over Ethernet, via a backplane command bus to the other cards, and via RS-485 serial links to existing XY Controllers and Wheatstone consoles. The CPU also phase locks the ADR-32 to an onboard crystal oscillator or an external AES "black" reference source.

Hardware and software configuration as well as real time crosspoint information is saved in non-volatile storage on the CPU and is restored at power up or reset. This configuration information provides details to the application running on the CPU such as the specific audio hardware available, serial port allocation, I/O signal names, etc., and may be modified via the Configuration GUI. Switching information is dynamically controlled via both hardware based XY Controllers and PC based XY GUI's. Network IP address configuration of the CPU is handled by the provided DOS utility application. System configuration is discussed in detail in the following sections.

CPU BIOS Settings/Format

BIOS Setup and formatting of the ADR-32's CPU is completed prior to the testing of your ADR-32 Router at the Wheatstone factory. There are no user adjustable settings. Please contact customer support with questions regarding the PC/104 SBC BIOS settings or flash disk formatting.

Ethernet IP Addressing

Wheatstone ADR-32 digital audio routers ship with the CPU IP address set for 192.168.1.160. Peer to peer connections between a PC and the ADR-32 only require you to set the PC IP address to live on the same subnet as the ADR-32.

Before the switch will be recognized on your network, you will most likely need to re-configure the ADR-32's CPU and X-Point PC's IP addresses. To change the ADR-32's CPU IP address, a network utility application, supplied on the X-Point CD-ROM, must be run. See the IP Address Quick Start section of the "X-Point Software Setup Guide" for detailed information.

Ethernet Interface Wiring

Stand-alone systems are defined as the ADR-32 connected to an X-Point configuration PC and not interfaced to a station's existing network. Stand-alone systems are "point to point" configurations and are connected by a CAT-5 crossover cable.

Networked systems are defined as the ADR-32 connected directly to an existing Ethernet network hub. Networked systems are connected to the network hub via a straight (pin to pin) CAT-5 cable. Typical CAT-5 cable pinouts are included in the "Hook-Ups" section near the end of this chapter.

Internal Programming Options

All internal programming options are made via PCB mounted dipswitches and jumpers as shown in the table below:

CPU (PR-32 PCB)

NAME	REF.DES.	DEFAULT
48H_44.1L	SW6 pos1	ON-48 kHz
AUTODETECT	SW6 pos2	ON
485_CONSOLE_TERM	SW1, SW2	BIAS TERMINATION
485_XYC_TERM	SW3, SW4	BIAS TERMINATION
XYC_ADDRESS	J3-J10	DEFAULT ID=32, J5-INSTALLED

Switch Settings

DIPSW1-SW4 RS-485 Termination

These four, 4-position dipswitches configure the 485 port termination as follows:

SW1-SW4

POSITION	FUNCTION	BIASED TERM	PASSIVE TERM	UNTERMINATED
1 - TX10Ω	ON=10Ω BYPASS	OFF*	ON	OFF
2 - TX+	ON=750Ω PULLUP	ON*	OFF	OFF
3 - TX-	ON=750Ω PULLDOWN	ON*	OFF	OFF
4 - 120Ω	ON=120Ω PARALLEL	ON*	ON	OFF

Choices are Unterminated, Normal (Passive) Termination, or BIAS Termination on the transmit and receive lines. SW1 and SW2 are for Port A, and SW3 and SW4 are for Port B. SW1 and SW3 are for the RS-485 transmitter's termination on the CPU; SW2 and SW4 are for receiver terminations.

An RS-485 bus may only be BIAS TERMINATED at one end. All peripheral devices are set for NO TERMINATION by default. Set the TERMINATION to ON for the last controller or console only, in an RS-485 chain.

DIPSW6

Pos.1 - 48/44.1 Select - sets the AES out sample rate, ON = 48 kHz, OFF = 44.1 kHz

Pos.2 - Autodetect - default is "ON"

Autodetect will sense the presence of an external AES input clock and slave the system to this AES reference. If the AES reference fails (wire breaks, etc.) the system will revert to the onboard crystal reference until the external AES input returns. If autodetect is disabled the system ignore the external AES reference and always use the onboard crystal.

Pos.3 - DIP SW 2 - not used

Pos.4 - DIP SW 3 - not used

Jumper Settings

Jumpers J3-J10 - Determine XY Controller ID#

		Bit	Weight
XYC ID	Jumper J10	0	1
	Jumper J9	1	2
	Jumper J8	2	4
	Jumper J7	3	8
	Jumper J6	4	16
	Jumper J5	5	32
	Jumper J4	6	64
	Jumper J3	7	128

Note: Each ADR-32 XY Controller ID# is set using jumpers J3-J10. These jumpers are read as an 8 bit field with Bit Ø mapped to J10 and Bit 7 mapped to J3. This ID# is read by the CPU at boot up and is required by the ADR-32 serial communications software.

Example: Desired ID=17, shunt J6 and J10.

If there is more than one XY Controller connected to the ADR-32 router, each XY Controller **MUST** have a unique ID#. The default XY Controller ID is 32 (Jumper J5-shunted).

J11 - Watchdog timer pushbutton reset - factory use only

J12 - FPGA PGM - factory use only

Serial Interface Ports

Serial ports XYC and CONSOLE are typically used to connect remotely located XY Controllers and Wheatstone Consoles to the switch via 4-wire RS-485. These ports are configured from the X-Point GUI and are setup at the factory as follows:

Port A - CONSOLE PORT - RS-485, 9600 bps, Console port

Port B - XYC PORT - RS-485, 38400 bps, XY controller port

Hook-Ups

All user wiring to and from CPU takes place at two DB-9 female serial interface connectors, and one RJ-45 Ethernet connector on the cage rear. Pinout drawing on page 2-27 shows all wiring connections at a glance.

"CONSOLE I/O" DB-9—Serial Interface Port Connections

Pin 5 – AES SYNC Out SH
Pin 4 – AES SYNC Out HI
Pin 9 – AES SYNC Out LO

Pin 3 – RX1 HI (RS-485)
Pin 8 – RX1 LO (RS-485)
Pin 2 – TX (RS-232)

Pin 7 – RX (RS-232)
Pin 1 – TX1 HI (RS-485)
Pin 6 – TX1 LO (RS-485)

"XYC I/O" DB-9—Serial Interface Port Connections

Pin 5 – AES SYNC In SH
Pin 4 – AES SYNC In HI
Pin 9 – AES SYNC In LO

Pin 3 – RX2 HI (RS-485)
Pin 8 – RX2 LO (RS-485)
Pin 2 – N/C

Pin 7 – N/C
Pin 1 – TX2 HI (RS-485)
Pin 6 – TX2 LO (RS-485)

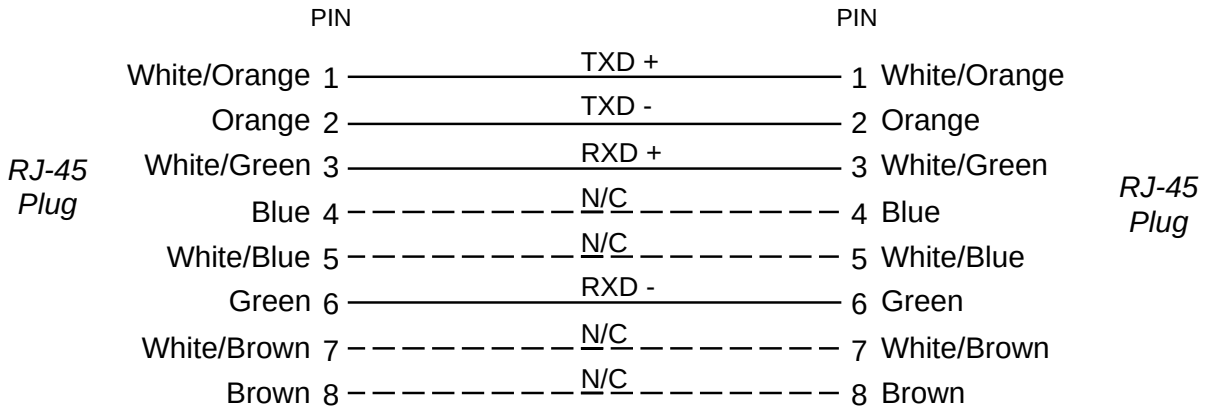
RJ-45—Ethernet Connections

Pin 1 – TXD +
Pin 2 – TXD -
Pin 3 – RXD +

Pin 4 – N/C
Pin 5 – N/C
Pin 6 – RXD -

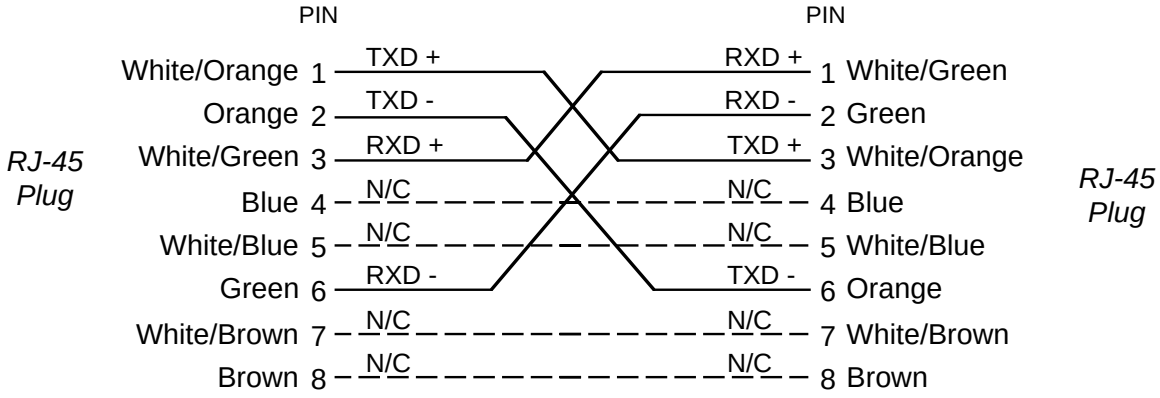
Pin 7 – N/C
Pin 8 – N/C

TYPICAL ETHERNET CABLE



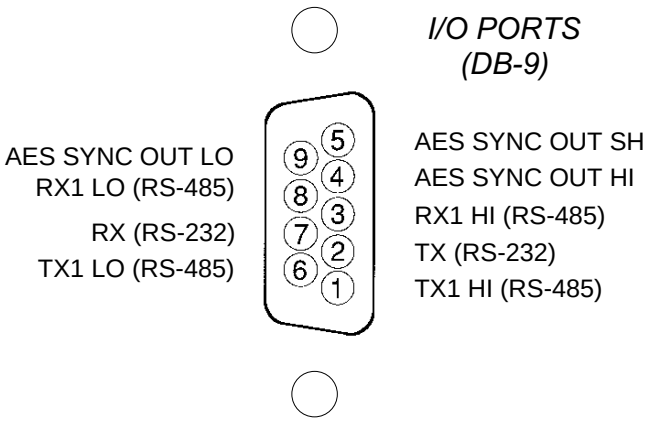
USED FOR CONNECTING THE CPU TO YOUR NETWORK HUB.

TYPICAL CROSSOVER CABLE

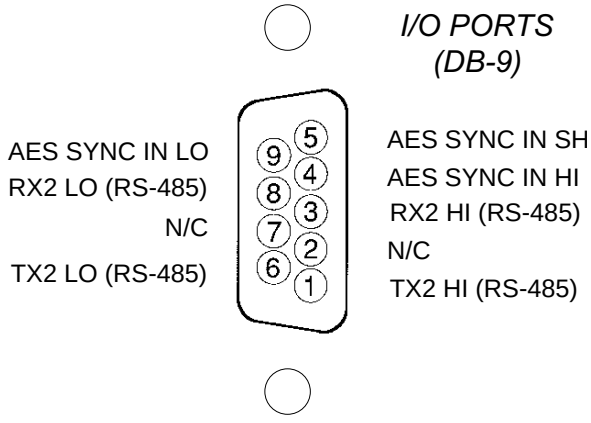


USED FOR SIMPLE "POINT TO POINT" CONNECTIONS BETWEEN THE SUPPLIED XP CONFIGURATION PC'S NIC CARD AND THE CPU.

Console Connections

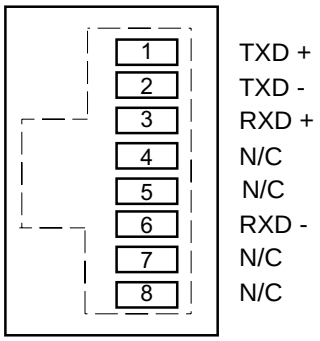


XYC Connections



Ethernet Connections

(RJ-45)



Controller Devices

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Controller Devices

The ADR-32 audio router has provisions for two levels of software control and also two dedicated hardware controllers.

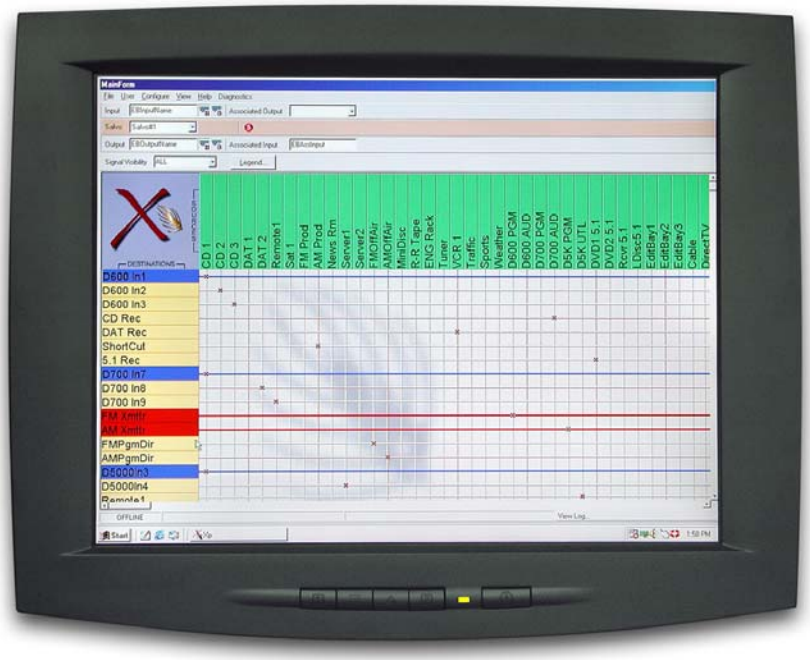
Software configuration and control of the system is handled by the X-Point Configuration GUI described below. The X-Point Configuration GUI may also be installed on multiple networked PC's in a "controller only mode". This XY Controller GUI eliminates the need for new wiring and hardware in certain locations and provides multi-user access to "mapped" system resources.

Two dedicated hardware controllers are also available. The single space XY Rack controller provides a simple user interface and may be rack mounted in a studio, talent location, edit booth, etc. A smaller console mounted version of this controller is designed for installation in Wheatstone consoles.

XP Configuration GUI

The supplied Windows™ application, X-Point, is a password protected graphical user interface (GUI) which allows the user to configure, monitor and control the ADR-32 digital audio router. The XP GUI communicates using TCP/IP over Ethernet to the CPU. Once the system is configured the XP program does not have to be continuously running.

The primary function of the X-Point GUI, running in administration mode, is to provide the engineer or administrator with a means to define the configuration of the hardware installed in the system. Configuration menus allow the engineer access to hardware definitions for audio I/O cards, XY rack controllers, serial port use, I/O signal names, etc. The administrator also



Please see the "X-Point Software Setup Guide" (Chapter 4) for detailed software information.

has control over programmable features such as Salvo creation, crosspoint locking, and mapping signal visibility to XY controllers. Further, certain levels of system diagnostics may be accessed.

The XP GUI also provides a birds eye view of the current connection status of the entire network router via a crosspoint grid display of the available sources (inputs) and destinations (outputs). This GUI is also used to associate human readable names with each of the signal sources and destinations.

XY Controller GUI

The X-Point application running in XY Controller mode is also known as a "Crosspoint GUI". Like the Configuration GUI, this device communicates to the ADR-32 over Ethernet. However, it uses a UDP broadcast interface, which allows multiple XYC GUI's to communicate to the switch simultaneously. The number of XYC GUI's that can run simultaneously is only limited by the LAN configuration (theoretically millions could exist on the same LAN, but 250 is a more practical limit).

Its main purpose is to provide an alternative, software based method of controlling the ADR-32 utilizing a station's existing network infrastructure. Multiple, simultaneous users may connect signal sources to destinations and monitor the status of audio resources throughout a facility. A signal visibility feature allows users to only "see" the resources on the router that pertain to their activities.

XY Rack Controller

The XY Rack Controller is a single rack unit device that can control the connection of two signals. The operator dials in a Source (input signal) and a Destination (output signal), then presses a TAKE button to connect or disconnect (disconnect is accomplished by connecting to the source name that designated a no connect for your system, such as "NO CONN"). Once communications have been established the CPU or OAN card then directs the selected devices to connect or disconnect (if possible), and updates the crosspoint state presented to the Configuration GUI, XYC GUI, and other hardware XY Controllers.

Additionally, the operator may dial in a SALVO, which automatically makes a pre-configured number of connections. A SALVO is somewhat analogous to a "macro" in that several crosspoints are automatically effected from a single user action.

This device communicates serially with the CPU via an RS-485 interface bus. Up to 32 hardware based XY controllers may be daisy chained together within a single cable run. Up to 32 hardware based XY controllers may be installed in a system. On power up, the unit momentarily displays both the firmware revision number and its address.

Console XY Controller

Identical in function to the XY Rack Controller, the console XY controller is packaged to mount in a console meterbridge or, as a module, in the console mainframe. This provides an integrated way of switching router sources to destinations connected to the console. It is important to note that when mounted in a console, the XY controller is really an independent sub-system which receives only power from the console's mainframe. The console mounted "XYC" RS-485 DB-9's (for meterbridge mounted controller and D-70 XY module) or DB-25's (for XY-4/8 and ALM-12d, D-16 XY modules) connect to the XY controller electronics only.

XY Controller Settings

Setting an XY Controller Termination

Termination should be active *only* on the last controller in a chain.

XY Rack - install jumpers J1 and J2 on the XYR-1 pc board.

XY Meterbridge Mounted - install jumpers J2 and J3 on the XYC-600 pc board.

XY-4/8 Module - turn on positions 2, 3, and 4 of dipswitch SW3 (pos1 - not used) located on the XYC-700 pc board.

XYC Panel (D-70, ALM-12d, D-16 consoles) - install jumpers J3 and J4 on the XYC-70 pc board.

Setting an XY Controller Address

All hardware XY controllers have a unique address from 1 to 63 that identifies their presence to the system. This address is set via a pair of four position dipswitches mounted on the controller's printed circuit card. XY controller addresses are binary coded with each dipswitch carrying a specific numerical weight (e.g. 1, 2, 4, 8, 16, 32). To set an address, simply turn ON the address dip switches until the total weights add up to the desired decimal address. You can verify the address setting by powering up the XY controller and watching for the address number in the controller's displays. Addressing is set at the factory and generally will not need to be changed in the field. Below are the tables of switch positions and their weights.

XY RACK/XYC PANEL (D-70, ALM-12d & D-16)

DIPSWITCH #	SW4				SW3			
POSITION	1	2	3	4	1	2	3	4
WEIGHT	1	2	4	8	16	32	N/A	N/A

XYD-600 METERBRIDGE-MOUNTED CONTROLLER

DIPSWITCH #	SW2				SW1			
POSITION	1	2	3	4	1	2	3	4
WEIGHT	1	2	4	8	16	32	N/A	N/A

XY-4/8 MODULE

DIPSWITCH #	SW1				SW2			
POSITION	1	2	3	4	1	2	3	4
WEIGHT	1	2	4	8	16	32	N/A	N/A

XY Controller Signal Visibility

Once addressed, the XY controllers have the ability to "see" any or all of the sources, destinations and Salvos available to the system. This function is called *signal visibility* and is setup through the X-Point Configuration GUI. Please refer to the X-Point software documentation for details on mapping resources to specific XY Controllers.

XY Controller RS-485 Connections

Overview

The XY Rack and console mount controllers communicate with the ADR-32 router via an RS-485 serial interface bus. The cable should be a low capacitance computer communications cable.

Depending on the type of XY Controller, there are two type of cables:

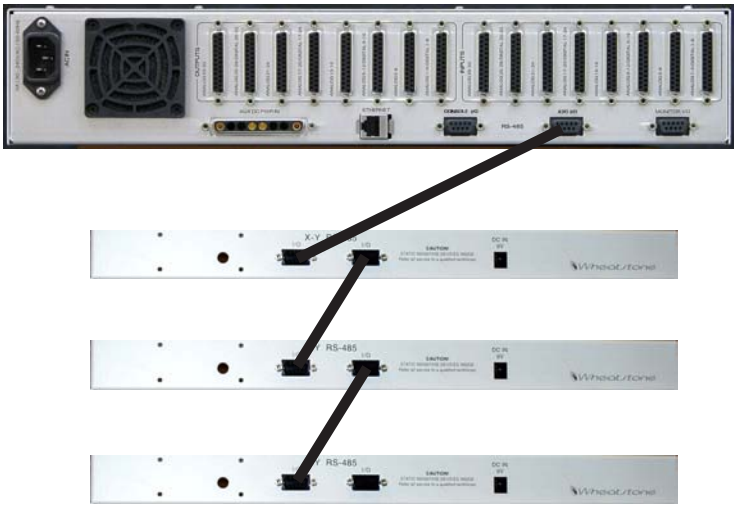
• for XY Rack Controller, meterbridge mounted XY Controller and XYC-70 Panel cables, terminated with DB-9 male connectors on both ends;

• for XY-4/8 console mounted module the ADR-32's end of the cable is terminated with a DB-9 male connector, and the console's end of the cable is terminated with a DB-25 male connector.

Typically, one end of the cable plugs into the XYC Serial Port DB-9 female connector on the cage rear, and the second end connects to either one of the two DB-9 female I/O connectors on the rear of the XY Rack Controller or bottom of the console meterbridge (for console mounted XY controllers), or DB-25 female I/O connectors, mounted directly beneath XY-4/8 module on the console mainframe's bottom pan.

If there is more than one XY Controller, another cable goes between the second I/O DB-9 connector on XY Controller #1 and the first DB-9 I/O connector on the XY Controller #2, and so on (see diagram below). Up to 32 XY Rack or XY Console controllers may be daisy chained in this fashion on a single cable run. Up to 32 XY controllers may be present in a system. Since the ADR-32 contains its own XY Controller, only 31 additional XY Controllers can be connected to it.

ADR-32 REAR



XY CONTROLLER REAR

Connections Diagram

Serial Port Note

All XY controllers **MUST** be connected to the XYC I/O serial port. All Wheatstone consoles **MUST** be connected to the CONSOLE I/O serial port.

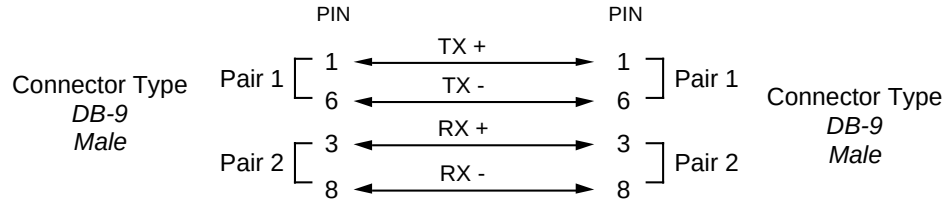
Cable Wiring

It is important to use a high quality dual twisted pair cable suitable for extended distance data transmission for the XY Controller RS-485 ports. A cable with an impedance of 125 ohms and nominal capacitance of 12.8 pF/ft @1 MHz is recommended. See cable specifications and pinouts for details.

Typical RS-485 Cable Specifications

Conductors	4 conductor plus shield (2 twisted pairs)
Conductor Gauge	24 AWG (7 x 32 AWG) TC
Nom. Capacitance	12.8 pF/ft *41.9 pF/m* @ 1 MHz
Impedance	125 ohms, Nominal

XY Controller RS-485 Cable Pinouts



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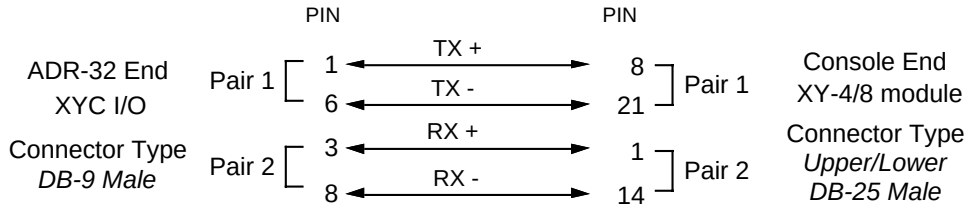


Wheatstone Console Interface

The ADR-32 has a powerful level of integration designed into the system which allows the user to map specific Wheatstone console input channel alpha-numeric displays to router destinations. The X-Point Configuration GUI is used to configure the available console input channels and to map switcher destinations to their input displays. Please refer to the System Configuration section in the "X-Point Software Setup Guide" chapter of this manual for details.

Once the ADR-32 outputs have been "mapped" to console inputs, the console's input channel displays will show the name of the router source currently connected to it. Whenever the channel strip's input source is changed, either locally or remotely, its display will update with the new source name. A/B input source mapping is supported. Further, when a "mapped" input channel on a console is turned ON *and* assigned to the PGM output bus, all XY GUI's and hardware controllers are updated to show that the channel input (i.e. router destination) is LOCKED. This ensures that a "live" source is not accidentally knocked off air or a recording interrupted. Wheatstone consoles also have the unique ability to recall router sources when a console preset is taken.

Wheatstone console CPU modules connect to the ADR-32 software via a dedicated RS-485 serial interface bus. Note that this bus is separate from, and in addition to, the XY controller bus.

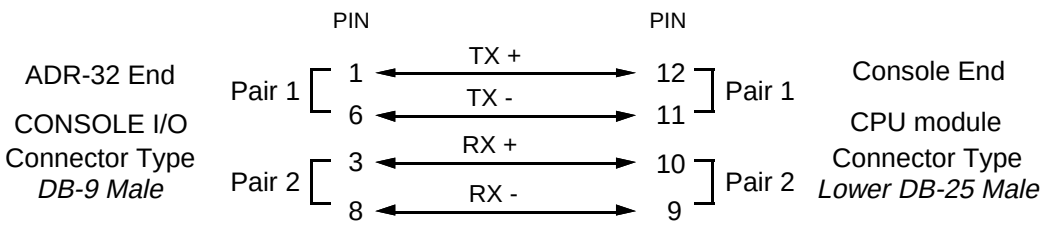
Wheatstone Console RS-485 Connections

Cables that are used for connecting the ADR-32 Router RS-485 serial port to a Wheatstone console serial port are very similar to XY Controller RS-485 cables. The only difference is the connector type and pinout required for the console end of the cable. Use the same type of low capacitance computer communications cable recommended for the XY controllers.

Connect the DB-9 end of the cable to the serial "CONSOLE I/O" Port DB-9 connector on the cage rear. Connect the DB-25 male end to the console's CPU module. Locate the female LDB-25 connector (Lower DB-25) mounted directly beneath the CPU module on the console mainframe's bottom panel. It will be labelled with the physical mainframe slot number. The console's CPU module is usually installed in slot 30 or 31. Note that there is no LDB connector for slot 32 (or 24 in 24 position mainframes).

If there is more than one Wheatstone console, parallel the connections at the first console end of the cable and daisy chain the remaining consoles in a similar fashion. Be sure to terminate *only the last* console in the chain.

Console RS-485 Cable Pinouts



Caution!
Do not confuse this cable with the XY Controller cable.

Console CPU Module Settings

Certain dipswitch settings must be made on the connected Wheatstone consoles in order for them to be recognized by the ADR-32 system software. These settings are the console address, serial port mode, and RS-485 termination.

Console Address

Each Wheatstone console connected to the system must have a unique numerical address (e.g. 1, 2, 3, etc.). The console address is set via a bank of four position dipswitches located on the CPU module. Refer to your console documentation for details, or contact customer support.

RS-485 Select / Termination

The CPU module also has a pair of four-position dipswitches that select the serial port mode and RS-485 termination. Locate the *RS-485/RS-232 Select* dipswitch and set it OFF for RS-485. If this is the ***last console*** in the chain, locate the *RS-485 Termination* dipswitch and switch the COM1 positions ON. Otherwise leave RS-485 Termination for COM1 OFF.

X-Point Software Setup Guide

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ADR-32 Ethernet / IP Address Quick Start

Ethernet Cabling

• Use a CAT 5 *crossover* ethernet cable to connect a PC directly to the ADR-32.

• Use a standard CAT5 ethernet cable to connect the ADR-32 to your network hub.

Default IP Address

The ADR-32 router IP Address is set to 192.168.1.160 at the factory. In order to connect using the X-Point software, the PC must have a matching network prefix (i.e 192.168.1.xxx). If your PC's current IP address does not match you must choose one of the following options:

• change the IP address of the PC running the XPoint software.

or

• change the IP address of the ADR-32 router.

Changing your PC's IP Address

To set your PC's IP address you must access the TCP/IP Properties form for the network adapter. The exact procedure depends on the specific version of Windows™ you are running. Generally speaking:

• Navigate to the *Settings* • *Control Panel* • *Network configuration* form.

• Highlight the TCP/IP line item for your PC's ethernet adapter.

• Click the "Properties" button (the TCP/IP Properties form should open).

• Click "Specify an IP Address" (DHCP not supported).

• Enter an IP address in the range of 192.168.1.2 to 192.168.1.254 (excluding .160).

• Enter a Subnet Mask value of 255.255.255.0

When in doubt, check with your Windows ™ documentation or network administrator for specific details on altering the network adapter's TCP/IP properties.

Changing the ADR-32's IP Address

To change the ADR-32's IP address, refer to the Network Configuration Appendix in this manual. You will need the X-Point CD-ROM and a direct Ethernet connection between a PC and the router using a CAT5 *crossover* cable. Once connected proceed as follows:

• Locate and run the network configuration utility program on X-Point CD-ROM.

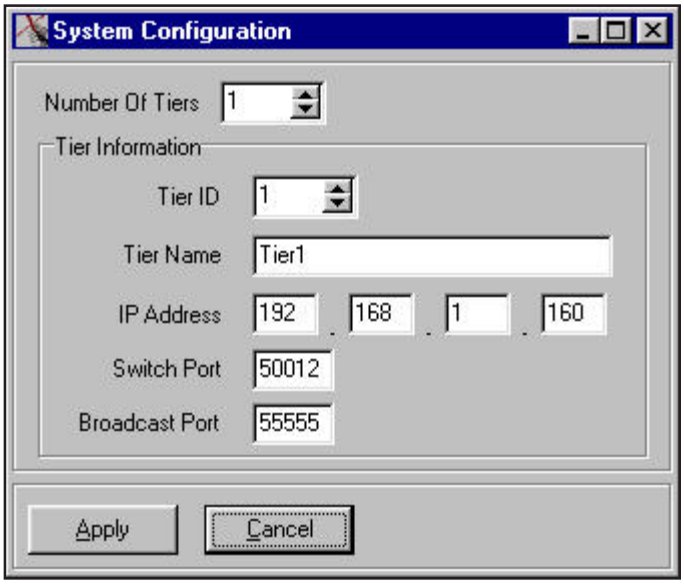
The filename is AdvXP_Network_Config.exe located in the Network 2.0 folder.

• Carefully follow the instructions in the Network Configuration Appendix 1.

• Re-boot the ADR-32 (Power down for 10 seconds, power up).

Configuring IP Address in X-Point Software

Next, start the X-Point application, log on as administrator (password=Admin), and navigate to the *Configure•System* menu item. The following form will appear.



Important Note!
This form tells the X-Point software where the ADR-32's CPU is located on the network.Run the Network_Config utility to modify the actual network settings of the ADR-32's CPU.

Important:

• If you changed your PC's IP Address, enter the parameters exactly as displayed above.

• If you changed the ADR-32's IP Address, enter the parameters you entered using the Network Configuration Utility program.

If you are connected to the router, you should see a "Connecting to..." message in the status bar at the bottom of the screen.

Saving the ADR-32 Configuration

Once you connect for the first time be sure to save the configuration. Choose the *File• Save* main menu option from the toolbar. When you make subsequent changes (e.g. rename Sources or Destinations, add controllers, etc.) be sure to save them.

X-Point Software Setup Guide

Getting Started

All ADR-32 Digital Audio Router hardware is pre-configured at the factory. This approach greatly speeds the installation process getting you "online" faster. You may not need to make any software configuration changes.

After installation and cabling of all required hardware, the system administrator may use the X-Point software to customize the remainder of the configuration. To install X-Point software be sure that the PC you wish to use is Windows compliant, has a CD-ROM drive, has at least 50 MB of hard disk storage available, and has an available ethernet connection. Install the software on the PC by loading the X-Point CD into the drive tray and then running the install wizard on the CD by double-clicking on "Setup.exe".

The following sections will guide the user through all phases of the software configuration. The main items that may require attention are: any signal definition changes, source and destination signal naming, XY controller mapping, and optional Wheatstone console input channel mapping.

Ethernet - The default IP Address of the ADR-32 is 192.168.1.160. Please see the Ethernet Quick Start preceding this section for details on changing the ADR-32's IP Address.

GUI Log-In

Once the X-Point software has been installed and started, a "Log In" dialog box will be displayed on the screen. There are three possible password protected log in identities that a user may log in as:

Guest - Allows the user to view screenshot of X-Point only. No switching of I/O signals.

XYC GUI - Allows the logged in user to select crosspoints only. Signal visibility must be setup by Administrator prior to logging in as an XYC GUI.

See the "*XY Controller GUI Configuration*" later in this section for details.

Administrator - allows logged in user complete access to hardware configuration, signal naming, I/O crosspoint switching, and destination locking.

Passwords

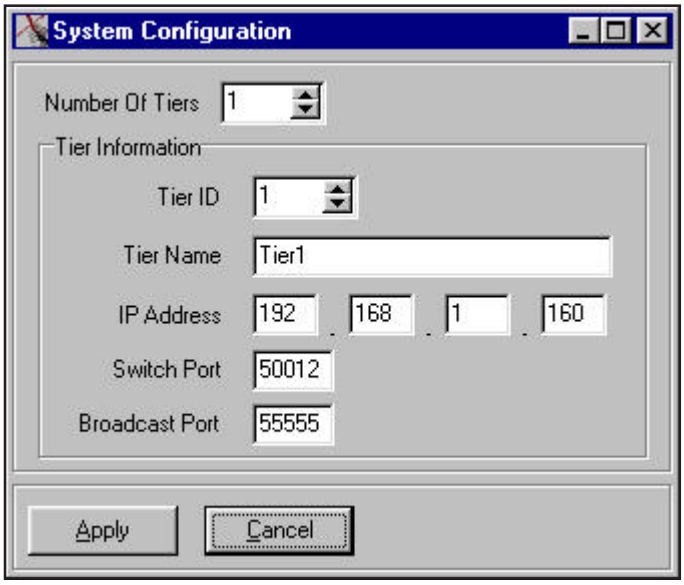
The default passwords are "Xyc" for XYC GUI and "Admin" for Administrator.

Once logged in as Administrator the GUI attempts to connect to the switch and uploads the current configuration and crosspoint status onto the PC. This may take 30 seconds or more. Check the lower left hand corner of the screen for connection status.

Tier Configuration

See Quick Start on page 4-2 for details on the System Configuration form below.

Prior to connecting, the X-Point GUI must be setup with some information regarding the ADR-32's network parameters. A user logged in as "Administrator" has access to these configuration menus.



Important Note!
This form tells the X-Point software where the ADR-32's CPU is located on the network.Run the Network_Config utility to modify the actual network settings of the ADR-32's CPU - see Quick Start (p.4-2).

Select 1 for the Number of Tiers in the system. Provide a Tier Name, the ADR-32's IP Address, Switch Port, and Broadcast Port used. The Number of Tiers, IP Address, Switch Port, and Broadcast Port values *must* match the current settings of the ADR-32's CPU in order to connect.

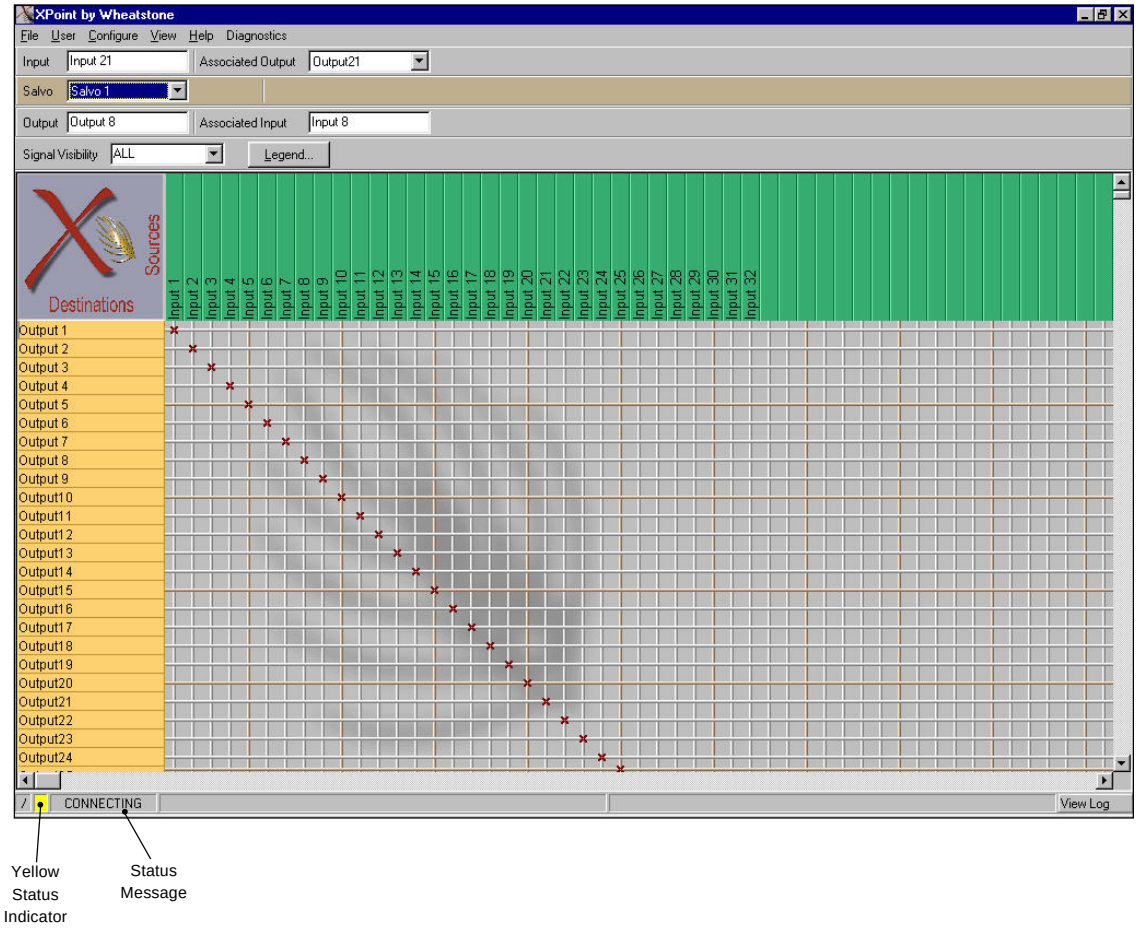
Note:
Number of Tiers is always 1 for an ADR-32.

The Switch Port will normally be related to the tier using the formula 50NN2, where NN is the two digit tier ID (i.e. 01 for tier 1...15 for tier 15). After clicking the Apply button the GUI software will be in the "CONNECTING" state, as discussed in the next section. This completes the Tier Configuration process.

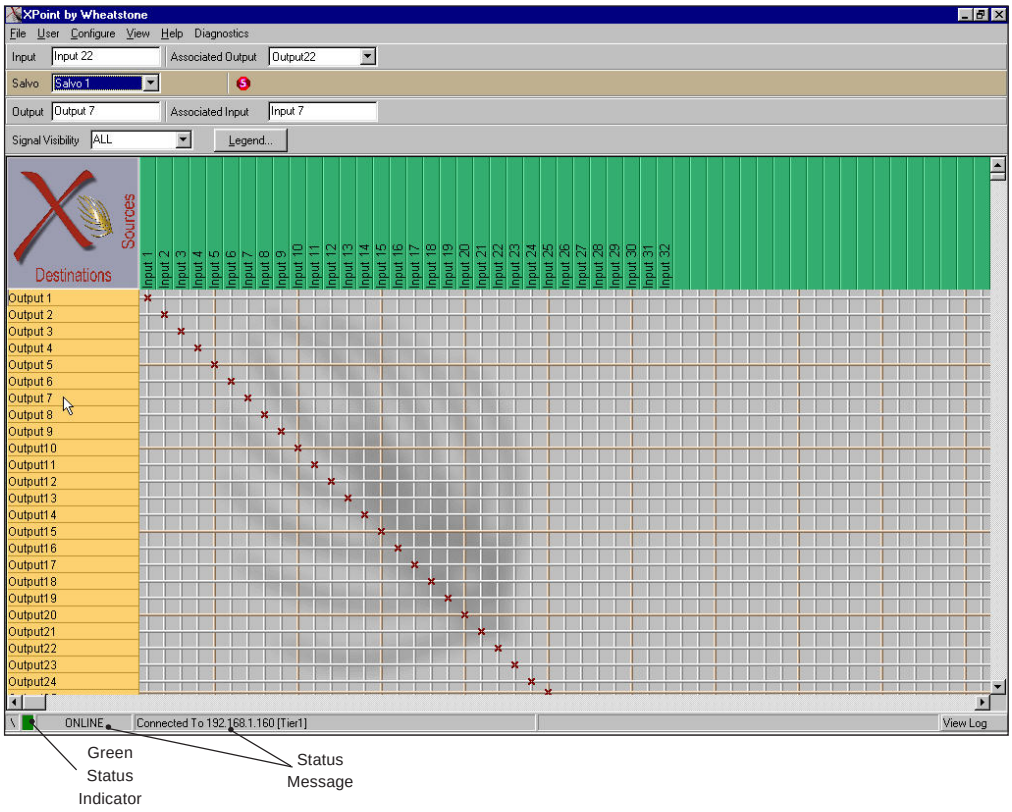
Connection Between the Configuration GUI and ADR-32

Depending on the state of the system when the current default configuration files were saved, the Configuration GUI may start in the OFFLINE or ONLINE mode. While off-line, the GUI does not communicate to the ADR-32's CPU. This is useful to work through initial hardware and signal definitions, which may be downloaded later.

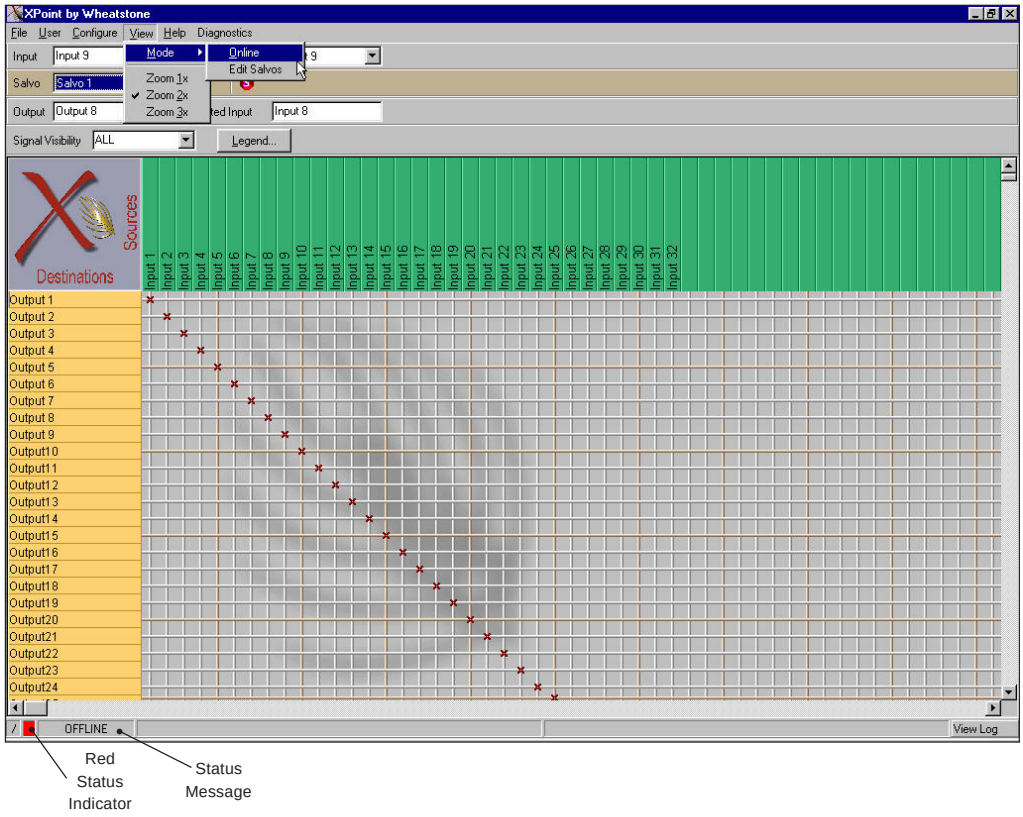
Assuming the default configuration files start the Configuration GUI in ONLINE mode, a TCP connection to the ADR-32's CPU will be attempted, as indicated via the status message and yellow status indicator shown below.



When the GUI successfully communicates with the ADR-32's CPU software it will start receiving the configuration that the ADR-32's CPU has stored in its nonvolatile memory. While uploading this configuration information the yellow status indicator turns green and the status message changes from CONNECTING to something similar to the following (varies with tier name and IP/address): "Uploading Config From 192.168.1.160 [Tier 1]".



Once the configuration has been uploaded the GUI enters the ONLINE state as shown to the left:



To disconnect from the ADR-32's CPU and go to OFF-LINE mode, select the *View / Mode / Offline* menu option. The status indicator on the screen will then change as shown to the left:

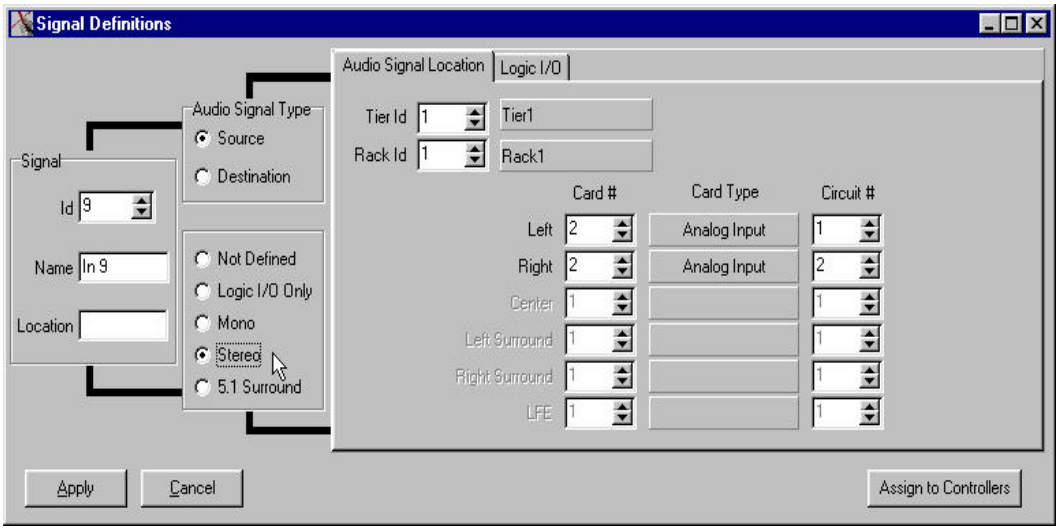
To connect to the ADR-32's CPU while in OFFLINE mode, select the *View / Mode / Online* menu option. The status indicator on the screen will then change to CONNECTING as discussed above.

If the user made changes to a few crosspoints in OFFLINE mode and then goes to ONLINE mode, this message box pops-up:

Choose YES to save OFFLINE changes. The ADR-32 software checks the request for validity (input to output, output not already assigned, lock flag not set, etc.). If the request is valid, it is implemented, and the Configuration GUI is updated. If not valid, the request is rejected with an appropriate reason message displayed.

Signal Definition

Up to 64 separate source and destination signals may be defined via the Configuration GUI. To add or edit a signal from the GUI's main grid, *right* click on one of the Source or Destination signals and select "Modify Signal Definition". The following form will appear:



Note:
Logic I/O not available on an ADR-32.

! Card# Value
See example below before entering Card# value.

Each signal is automatically assigned a unique Signal ID number. For each Signal ID number the following parameters can be configured:

- *Signal Name:* Enter the 8 character name to be displayed on XY controllers and the X-Point GUI.
- *Location:* Enter an optional 8 character description of the signal's location.
- *Audio Signal Type:* Choose Source or Destination.
- *Format:* Choose Mono, Stereo, or 5.1 Surround.

*Note that the ADR-32 does NOT sum stereo input signals to mono outputs.

- *Audio Signal Location Tab:* Defines the signal's physical location.
  - Tier ID & Rack ID will always be 1 for ADR-32 systems
  - Card # - valid input slots are 1,2,3 or 4, valid output slots are 5,6,7,8*
  - Circuit # - valid choices are 1 -16, odd#'s are left, even#'s are right*

*see example below in the *Important Signal Definition Notes* section

When defining the *Audio Signal Location*, remember that X-Point *circuits* are equivalent to a single audio channel. Every *analog* audio card has four stereo channels (4x2 channels = 8 circuits). Digital cards have 8 stereo channels, or 16 circuits.

Important Signal Definition Notes

Audio Format: The ADR-32 ships pre-configured as a 32x32 stereo router. If you plan on configuring MONO signals please note the following. A MONO input will route to any MONO output or to both channels of a stereo output. A STEREO input will route only the left or right channel to a mono output. The exact channel depends on which circuit # was used for the MONO output, odd circuits = left, even circuits = right. The alternative to this method is to leave the ADR-32 configured as stereo and bridge mono sources across both the left/right inputs. Mono outputs may be derived using external summing resistors, see note in the analog output hardware section.

Card Type : All slots will report "Analog Input" or Analog Output" for the *Card Type*, even if you have digital i/o cards installed. This is normal.

Card # : The Card # value is based on 4 virtual input slots and 4 virtual output slots. This provides a maximum of 32 stereo inputs (4 virtual slots X 8 stereo channels) and 32 stereo outputs. When entering the Card# note that 2 physical analog input or output cards are considered to be a single Card #. This is because there are only 4 stereo inputs or outputs on an analog card versus 8 stereo inputs or outputs on a digital card.

Card # and Circuits Example:

You have installed *analog input cards* in physical slots #1, 2 and 3 and a *digital input card* in physical slot #5.

Analog stereo inputs 1-4 are in physical slot#1; Card# = 1, Circuits =1-8

Analog stereo inputs 5-8 are in physical slot #2; Card # = 1, Circuits = 9-16

Analog stereo inputs 9-12 are in physical slot #3; Card # = 2, Circuits = 1-8

Digital stereo inputs 17-24 are in physical slot #5; Card# = 3, Circuits =1-16

Note that in the example above, there is a gap in between the analog input card installed in physical slot #3 and the digital input card installed in physical slot #5. The gap is physical slot #4 which may be loaded **only** with an analog input card in the future. Values for this future card would be:

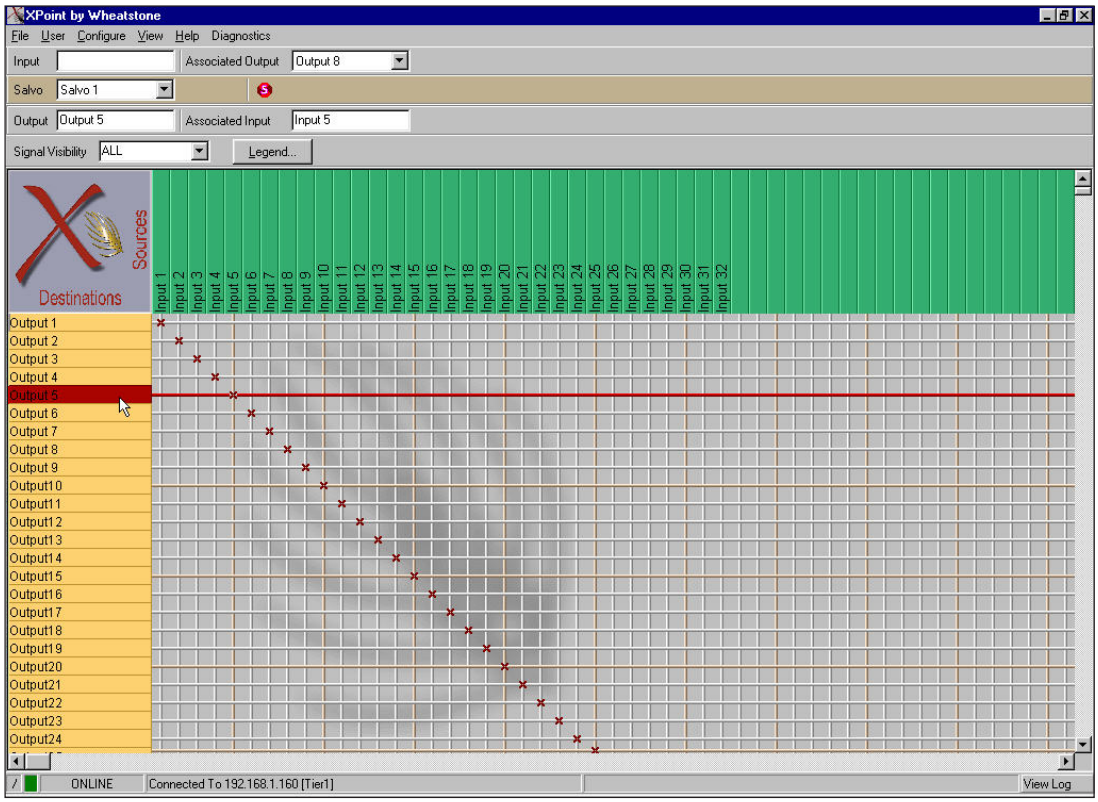
Analog stereo inputs 13-16 are in physical slot #4; Card # = 2, Circuits = 9-16

The rear panel of the ADR-32 clearly labels which card types may be installed in a particular slot. When configuring the ADR-32 it is important to remember that the ADR-32 is limited to a maximum of 4 virtual input cards and 4 virtual output cards. A fully loaded all ***digital*** box would have 4 physical input cards and 4 physical output cards. A fully loaded all ***analog*** box would have 8 physical input cards and 8 physical output cards.

Signal Locking

To lock a signal, *right* click on one of available output channels on the crosspoint grid and select “Lock Connection”:

That crosspoint output signal becomes locked as indicated by red line through the signal on the GUI display and shown on form below:



To Unlock a connection, right click on the destination and select “Unlock Connection”.

Salvo Definition

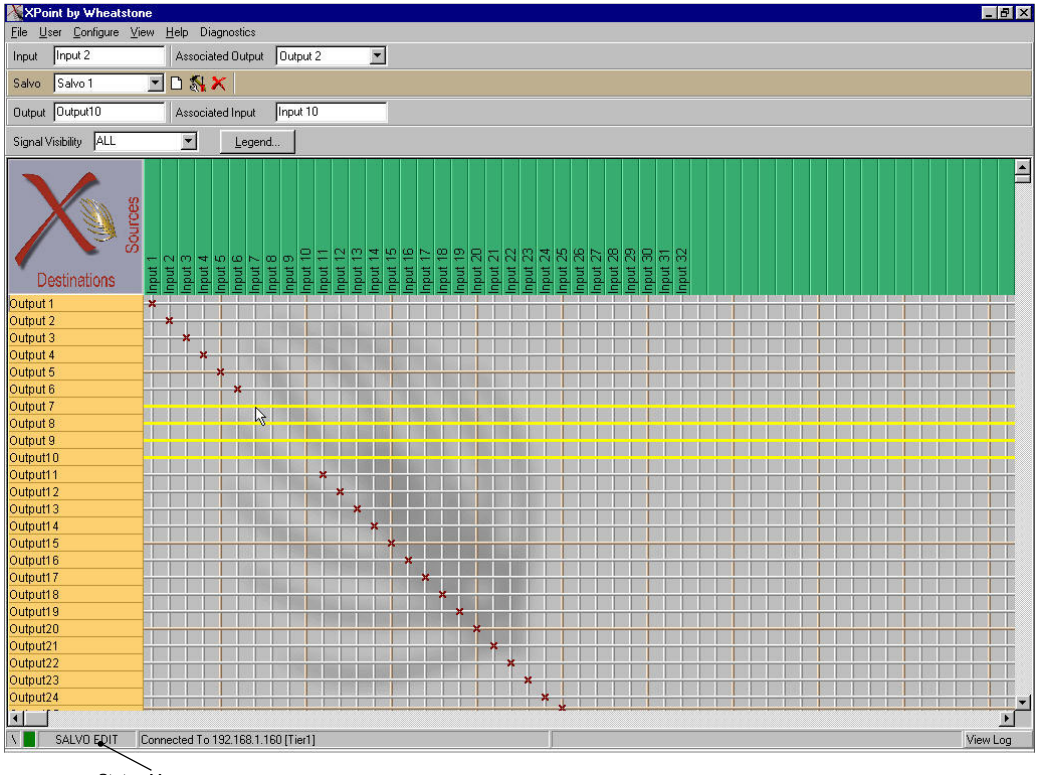
Macro control of the ADR-32 router is accomplished by creating and firing Salvos. A Salvo is simply a group of cross connects, disconnects and "do nothings" that occur when the selected Salvo is fired. Each Salvo has a unique name and can be programmed to be visible to any hardware XY controller or XYC GUI.

To define a Salvo, use the Configuration GUI and enter *Salvo Edit Mode* by selecting the *View / Mode / Edit Salvos Edit* menu. The operator may then choose to modify the grid connections in an existing Salvo, or use the Salvo toolbar icons to rename an existing Salvo or to create a new one. By making and breaking connections on the crosspoint grid, the operator builds up a Salvo definition. ***The order in which Salvo actions are created determines the "playback" order.***

When completed, the operator leaves *Salvo Edit Mode*, at which point the newly defined Salvos are available for use. If the application is connected to a switch (ON-LINE mode) the new Salvo definitions are automatically sent to the switch. It is a good idea to save the newly created Salvos on the PC by choosing *File / Save...* from the main menu.

Note that clicking on the Delete Salvo icon in the Salvo Toolbar will initially delete all the connections defined in a Salvo; a subsequent click on this button will delete the Salvo from the Salvo list. This is a useful way to clear out an existing Salvo and then redefine the connections within that Salvo. To cancel changes made to a Salvo select *View / Mode / Cancel Salvo Edits* from the main menu.

An example of Salvo Edit mode is shown below:

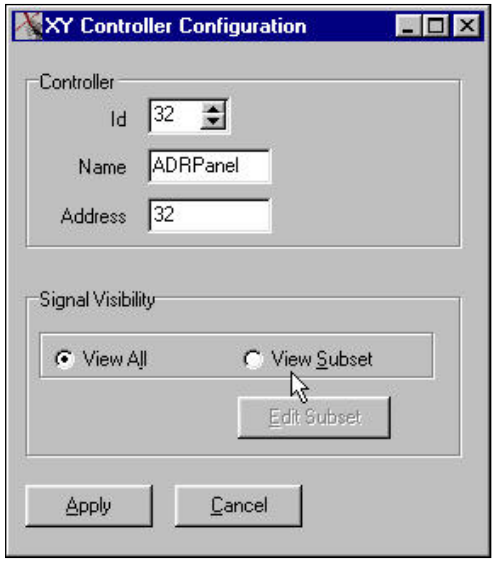


Status Message

<-Salvo Tool Bar
• Rename Salvo
• New Salvo
• Clear/Delete Salvo

Caution!
A yellow line through a connection means the connection will be switched OFF when the Salvo is fired.

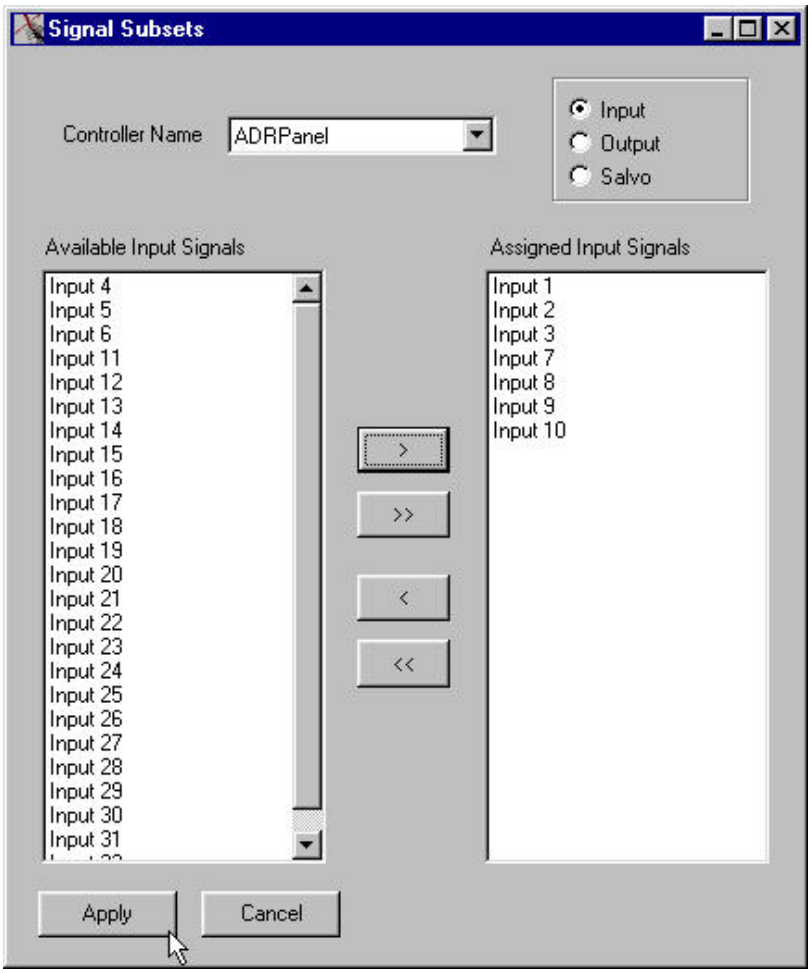
XY Rack or Console XY Controller Configuration



To configure a hardware based XY Controller, the operator must first log-in to the GUI as an Administrator. Next, select the *Configure / Controller Configuration* menu option, which will display the form at the right.

For each XY Controller in the system, provide a name and an unique RS-485 address between 1 and 63. *Note that the XY controller addresses were pre-configured in hardware at the factory and their unique address is momentarily displayed on power up. See the "Hardware" chapter for addressing details if necessary.*

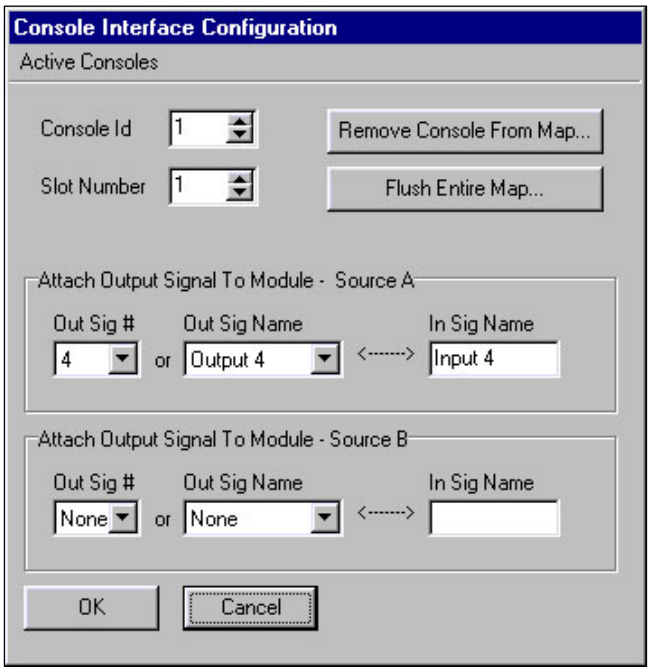
Also decide whether each controller will have access to the entire I/O signal space, *View All*, or just a subset, *View Subset*. If a subset is selected, the following form will be displayed.



The next step is to set the Input, Output, and Salvo visibility options by choosing Input, Output, or Salvo. Next highlight the desired signal(s) or salvo(s) in the left column, then click on the single right arrow box (>) found between the columns. In order to make all signals or salvos visible click the double right arrow (>>) box found between the columns. The left arrow buttons are to remove signal(s) or salvo(s) from the visible list found in the right column.

Console Configuration

To map crosspoint output signals to console input channels the operator must first log in to the GUI as an Administrator. Then select the *Configure / Console* Interface menu option, which will display the following form.



Each module in a console is identified via the "Console Id" and "Slot Number" spin edit boxes. The user can select from any of the available router output signals and assign a signal to Source A and another signal to Source B of a console's input module. The input signal (if any) that is currently connected to the selected output signal is displayed in the "In Sig Name" text box. This is the name that will appear on the module's LED display once the map has been sent to the switch software. As the module's Source button is toggled between source A and source B, the LED names displayed on the module will toggle with it.

The *Active Consoles* menu item brings up a dialog box to set the range of console addresses the router will communicate with. Choices are First, Last and Default console ID's. The active console range should be set to the smallest number of consoles to avoid unnecessary system communication latency.

Special Functions - Console Locks

If a crosspoint output signal is mapped to a console module and that module is "ON AIR", that crosspoint output signal becomes console-locked, as indicated by a blue line through the signal on the GUI display. When a signal is console-locked its connection to a crosspoint input cannot be changed. To change this connection, take the module "OFF AIR" then choose a different source.

Whenever a signal is removed from the console map, any "ON-AIR" locks are automatically removed. This prevents a console-lock from being "stuck on" with no way to remove it.

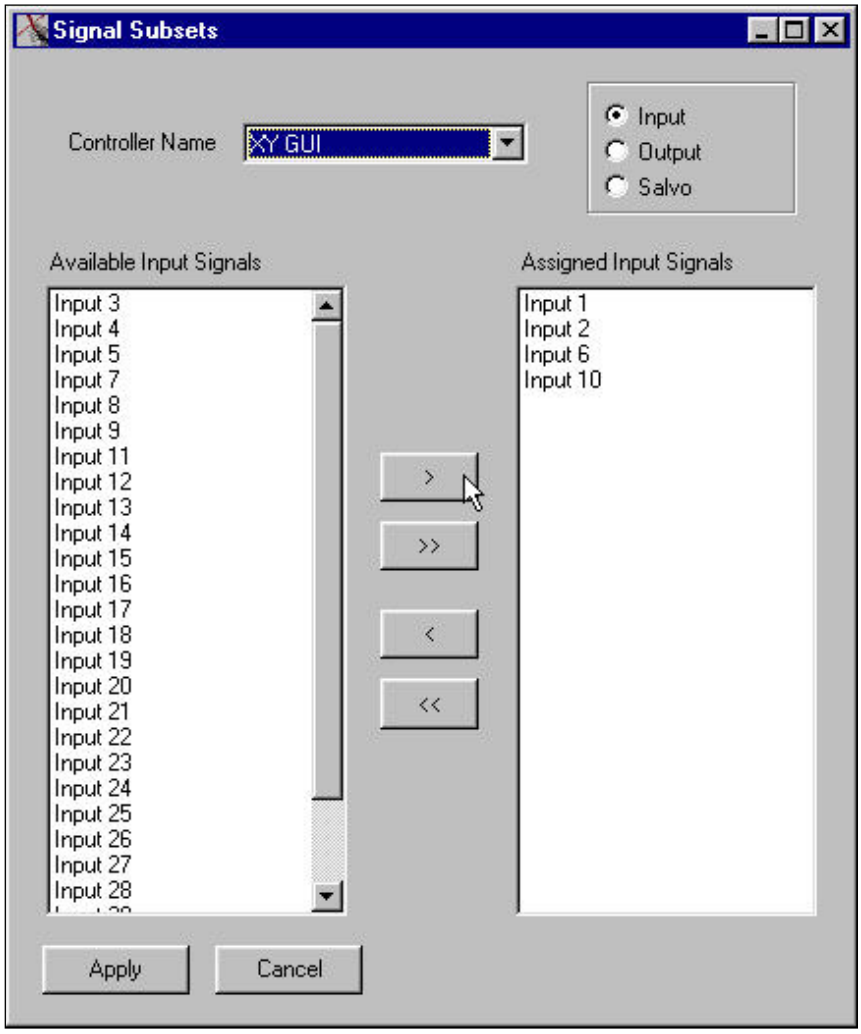
Console Presets

If a console has the ability to save a Preset, the switch software will save the current connection information for all output signals that are currently mapped to that console. The next time that console activates that preset the connections that existed at the time the preset was saved are restored. However, if a module is ON-AIR when the Preset is taken, that connection will not be made. This ensures that activating a preset will not disturb any ON-AIR signals.

If the user changes the crosspoint-output-signal-to-console mapping, the Presets for that console may be invalidated. The user should go through and re-save the presets on that console after changing the console map!

XY GUI Controller Configuration

In order to configure an XY GUI the operator must first log-in to the GUI as an administrator. Then select the *User / XY GUI Setup* menu option, which will display the following form.



XY GUI - mode allows multiple PC's to make connections across an ethernet network.

The next step is to set the input, output, and salvo visibility options by choosing Input, Output, or Salvo. Next highlight the desired signal(s) or salvo(s) in the left column, then click on the single right arrow box (>) found between the columns. In order to make all signals or salvos visible click the double right arrow (>>) box found between the columns. The left arrow buttons are to remove signal(s) or salvo(s) from the visible list found in the right column. Clicking the *Apply* button will save the visibility options.

Saving and Loading Configurations

The ADR-32 stores its current configuration on an internal solid state hard drive. Use the *File* menu choices to save the current configuration on your PC or to upload an existing configuration from your PC to the ADR-32.

Saving a configuration is fairly straight forward. Select *File• Save* from the menu bar and select a folder to save the configuration in.

Off-line Editing

To Load a previously saved configuration while in *OFFLINE* mode (not connected to the ADR-32), select *File•Open* from the menu bar and select the appropriate folder. Click on the Apply button and the configuration is now loaded in to the X-Point software for review or editing.

Sending a Configuration to the ADR-32

To Load a previously saved configuration and upload it to the ADR-32, while in ONLINE mode (connected to the ADR-32), select *File•Open* from the menu bar and select the appropriate folder. Be sure to **uncheck** the *Tier Name/ Address* check box and then click the *Apply* button. Next, select *File• Send Config to Switch* from the menu bar. The configuration is now loaded into the ADR-32. Any signal definition, XY controller visibility settings, etc. are updated and stored in the ADR-32 memory.

Caution! Because you must be *ONLINE* to send a configuration to the ADR-32, be sure to disable or temporarily halt the use of external XY controllers. If an XY controller is switched while sending a configuration, the ADR-32 memory may be partially loaded or corrupted, thus requiring a complete re-configuration. You may disable external XY controllers by simply removing the RS-485 DB-9 connector on the rear of the ADR-32.

Main Menu Summary

The following is a summary of all the available menu choices when logged into X-Point as the Administrator.

File Menu

Open : Opens the *Load Configuration* form. Loads previously saved configuration elements for off-line viewing/editing or download to ADR-32's CPU.

Save : Opens the *Save Configuration* form. Saves any or all changes.

Send Cfg To Switch : Initiates download of currently loaded configuration to the ADR-32's CPU module. Use this to update the system hardware with config changes.

Exit : Exits the X-Point program.

User Menu

LogIn/LogOut : Opens the *X-Point Log-in* form if currently logged out, else logs out if logged in.

Change Password : Allows the Administrator to change the XYC or Admin access level Log-in passwords.

XY GUI Setup : Used to configure source/destination signal visibility of *this* machine when logged in at the XYC access level.

Configure Menu

System : Configure TCP/IP network and Host port parameters.

XY Controller Configuration : Used to define and configure hardware based XY controllers present in the system. Access XYC *Signal Visibility* editing here.

Console Interface : Used to define and configure optional Wheatstone console input channel display mapping.

View Menu

Mode-OffLine : Select OFFLINE to edit configuration. Be sure to Save configuration prior to returning ONLINE. This menu option is only available if you are currently ONLINE.

Mode-Online : Initiates network connection to ADR-32's CPU, uploads Host configuration once connected. View real time status of all crosspoints. This menu option is only available if you are currently OFFLINE.

Mode-Salvo Edit : Create, define and edit Salvos in this mode. This menu option is only available if you are not in Salvo edit mode.

Mode-Leave Salvo Edit : Exit Salvo Edit mode. This menu option is only available if you are in Salvo Edit mode.

Mode-Cancel Salvo Edits : Cancels any edits made in Salvo Edit mode and exits Salvo Edit mode. This menu option is only available if you are in Salvo Edit mode.

Zoom 1x-2x-3x : Zoom in and out of X-Point grid.

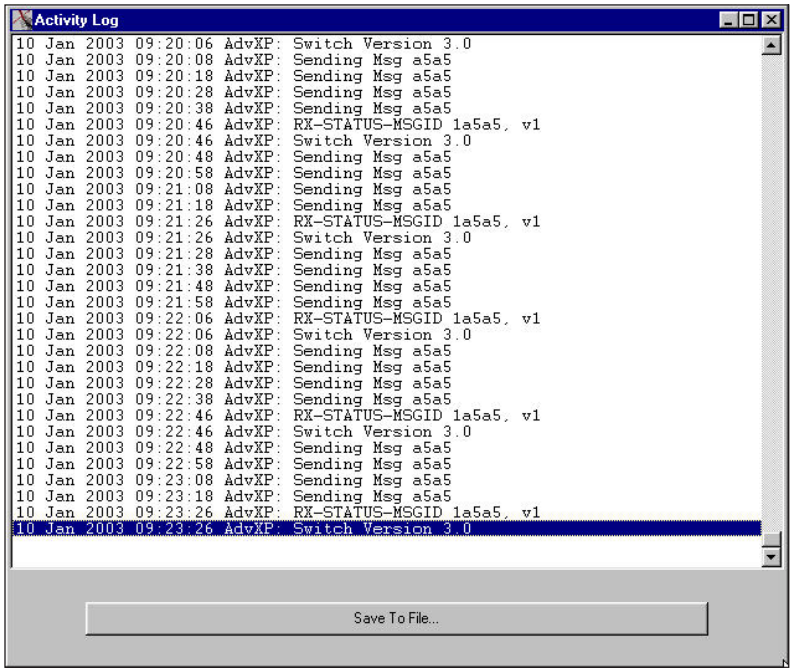
Help Menu

How To... : Opens help hints text file.

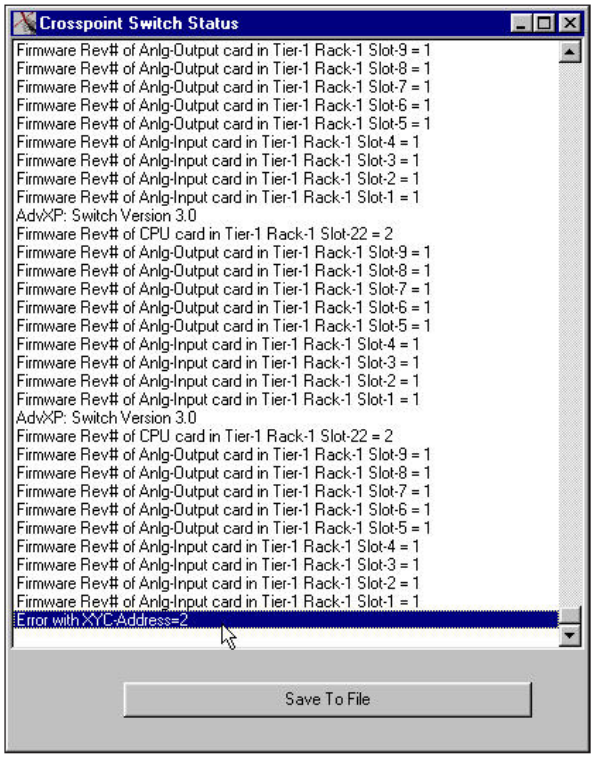
About : Shows X-Point software revision.

Diagnostics Menu

View App Log : Opens network communications activity log. Can save log to a file for technical support purposes.



View Switch Status : Lists all active installed hardware, card firmware revisions.



Reset Switch : Initiates an ADR-32's CPU reboot. Use this function with caution!

I/O Schematic Drawings

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4 Analog Inputs Card Load Sheet (ADC-4) 5-4
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8 Digital Outputs Card Schematic (DO-8) 5-11
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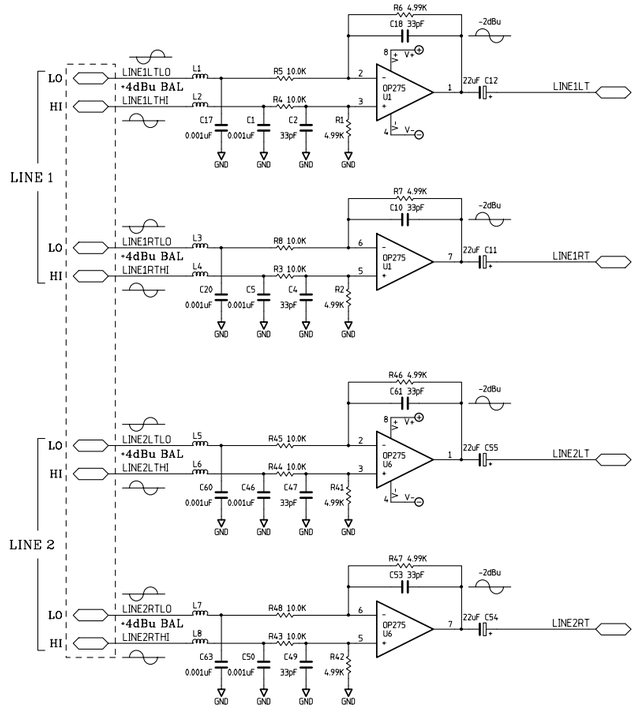
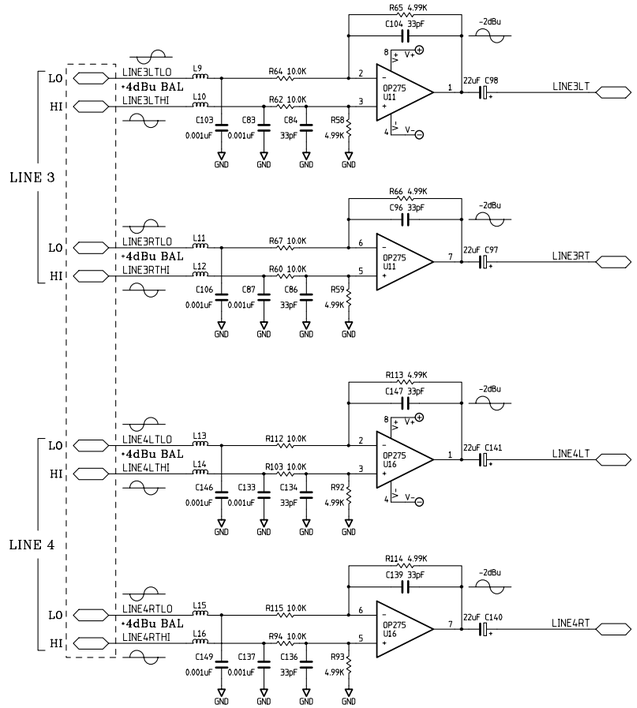
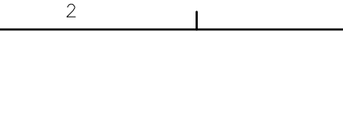
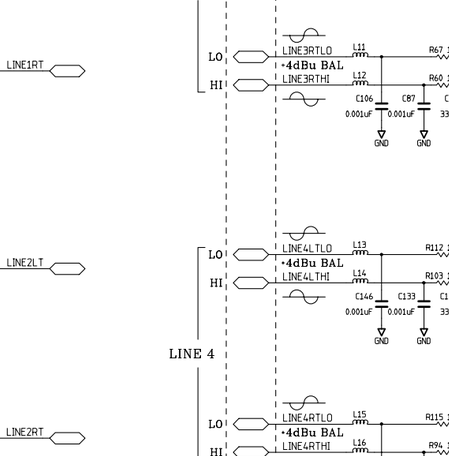


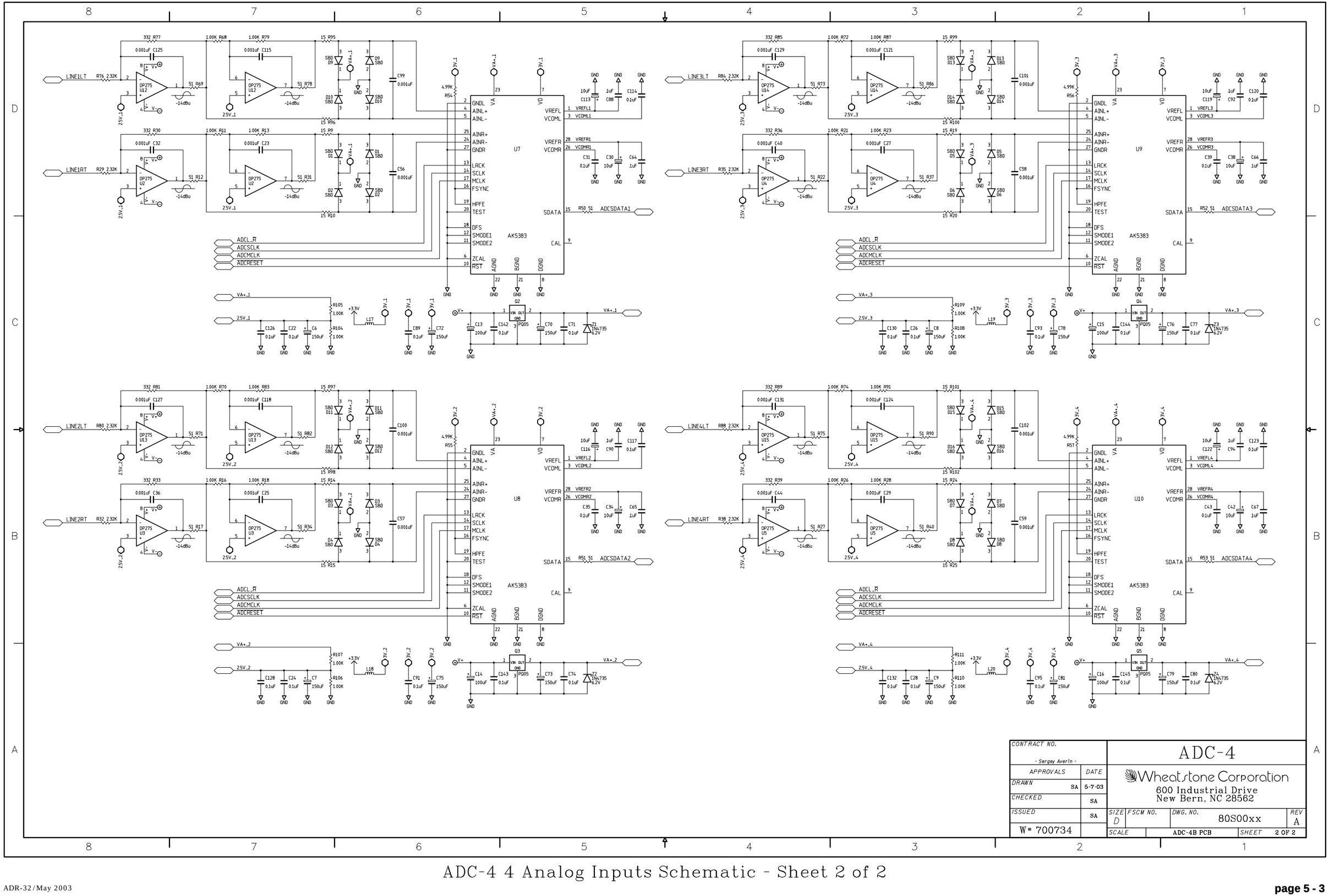






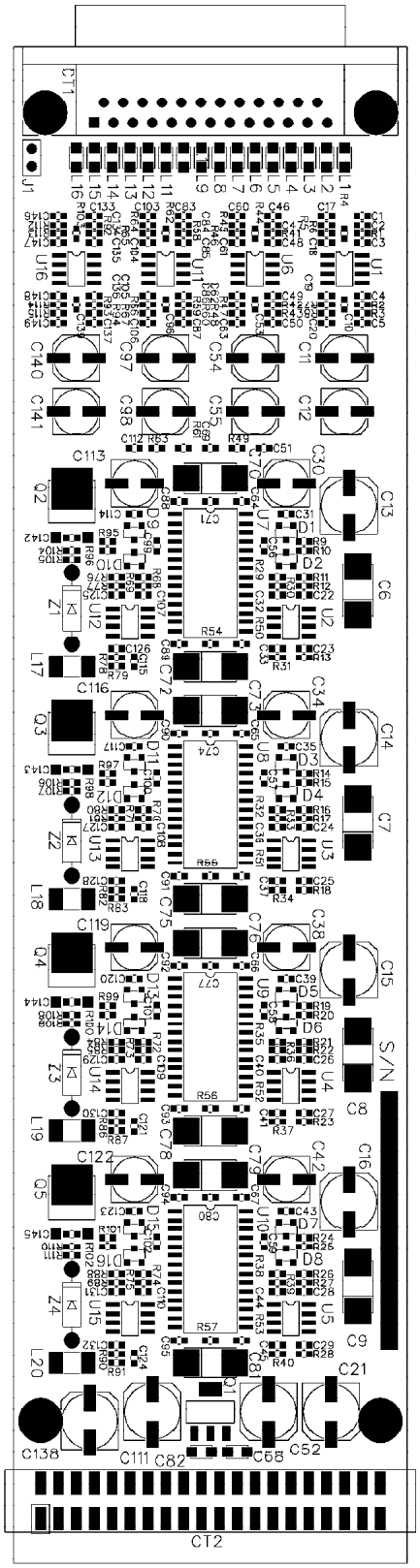
CONTRACT NO.		ADC-4	
- Sergey Averin -		Wheatstone Corporation	
APPROVALS	DATE	600 Industrial Drive	
DRAWN SA	5-7-03	New Bern, NC 28562	
CHECKED	SA		
ISSUED	SA	SIZE D / FSCM NO. / DWG. NO. 80S00xx / REV A	
W# 700734		SCALE / ADC-4B PCB / SHEET 1 OF 1	

ADC-4 4 Analog Inputs Schematic - Sheet 1 of 2

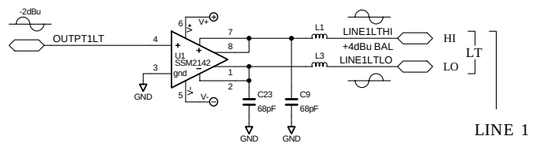


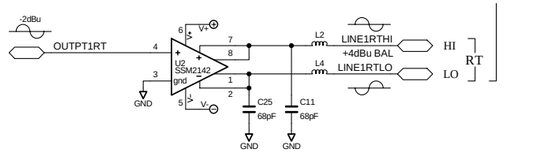
CONTRACT NO.		ADC-4
- Sergey Averin -		
APPROVALS	DATE	Wheatstone Corporation
DRAWN SA	5-7-03	600 Industrial Drive
CHECKED SA		New Bern, NC 28562
ISSUED SA		SIZE D · FSCM NO. · DWG. NO. 80S00xx · REV A
W# 700734		SCALE · ADC-4B PCB · SHEET 2 OF 2

ADC-4 4 Analog Inputs Schematic - Sheet 2 of 2

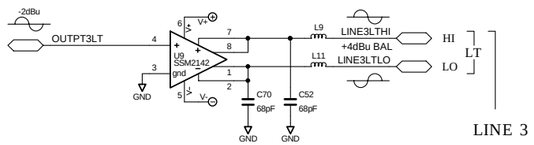


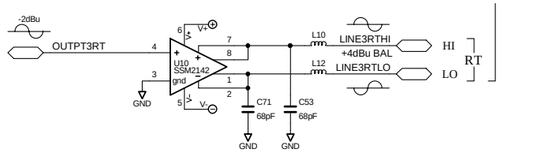
4 Analog Inputs Card (ADC-4) - Load Sheet





LINE 1





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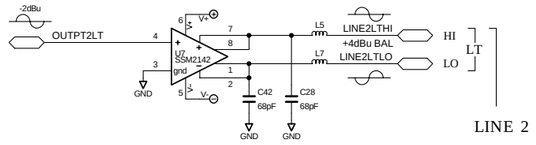

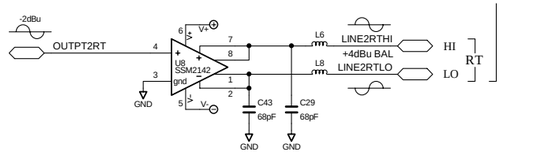

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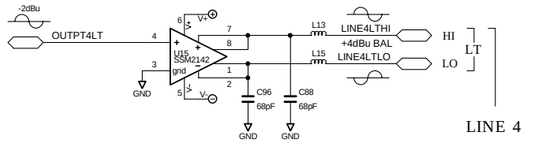
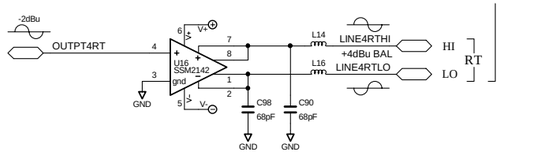
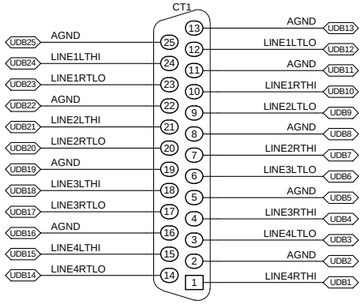
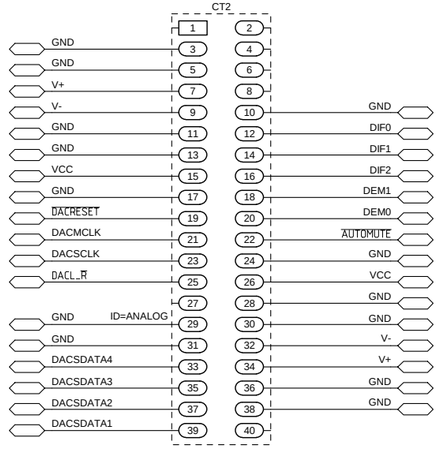


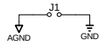


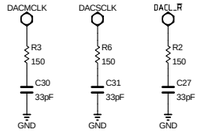
LINE 4

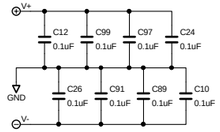
DB-25 CONNECTOR





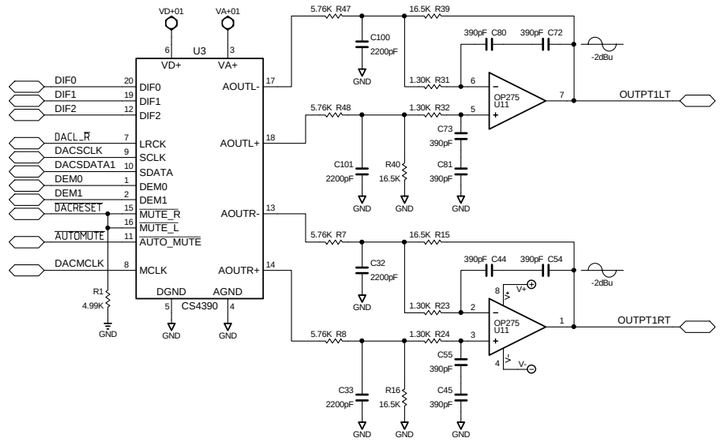


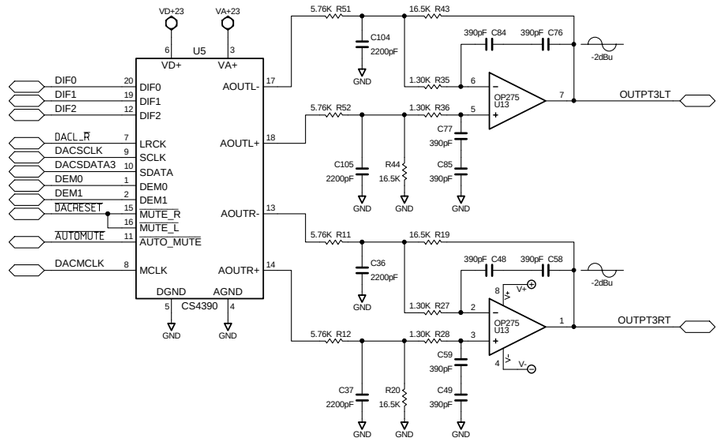


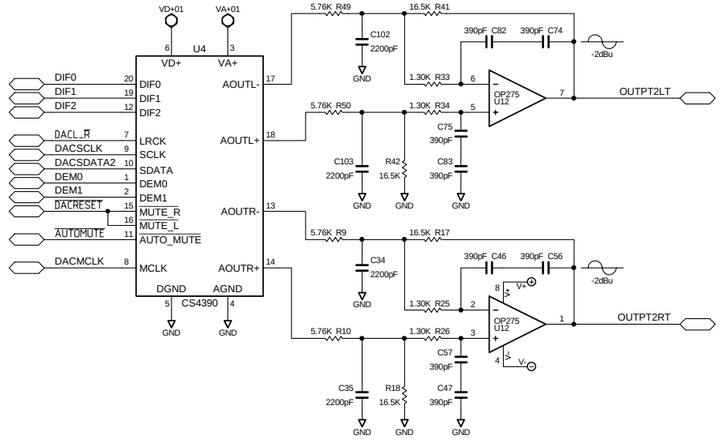


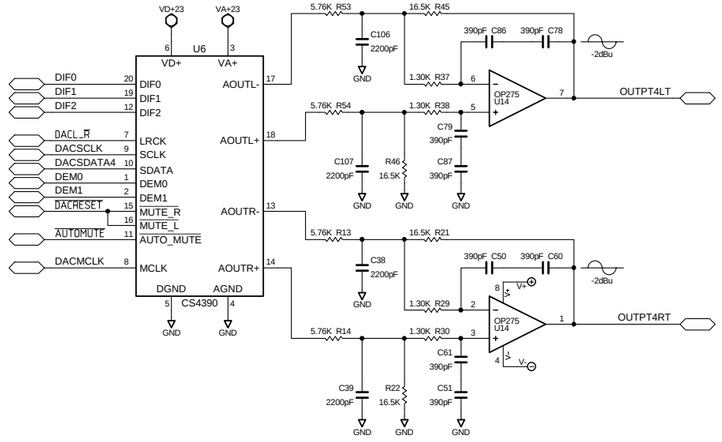
CONTRACT NO. - Sergey Averin -		AO-4
APPROVALS	DATE	Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562
DRAWN SA	5-30-03	
CHECKED SA		
ISSUED SA		SIZE D / FSCM NO. / DWG. NO. 80S00xx / REV A
W# 700736		SCALE AO-4A PCB / SHEET 1 OF 1

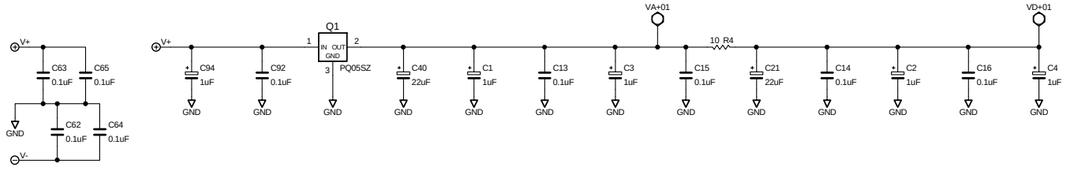
AO-4 4 Analog Outputs Schematic - Sheet 1 of 2

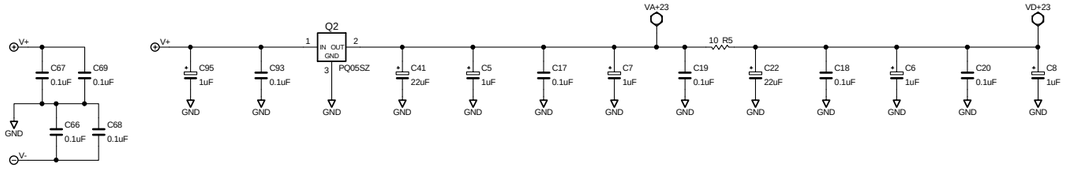




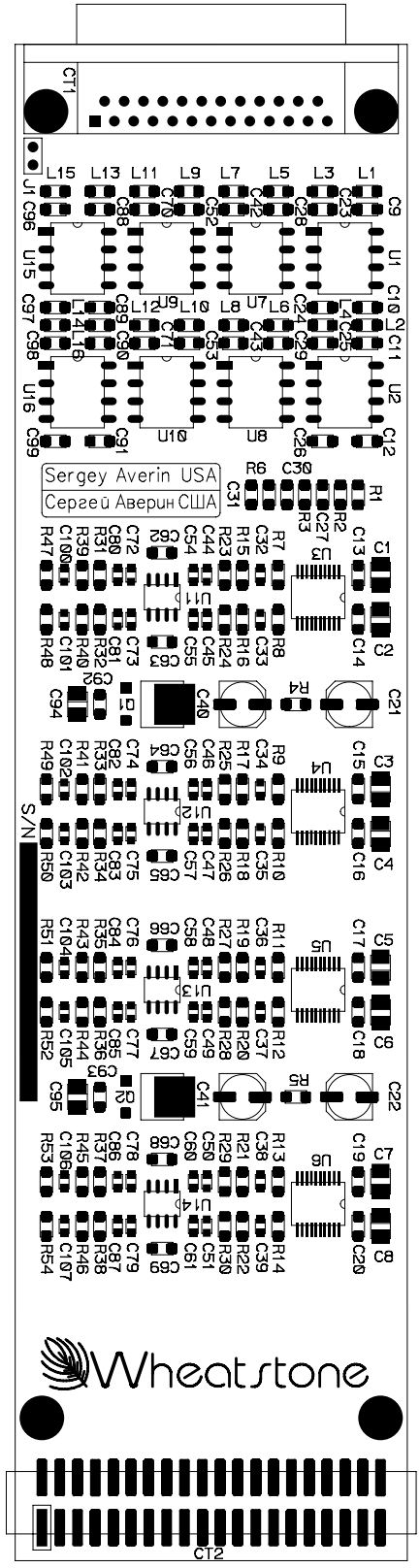




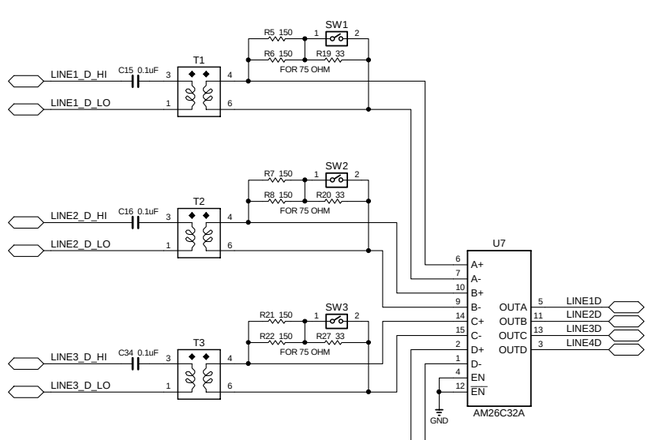


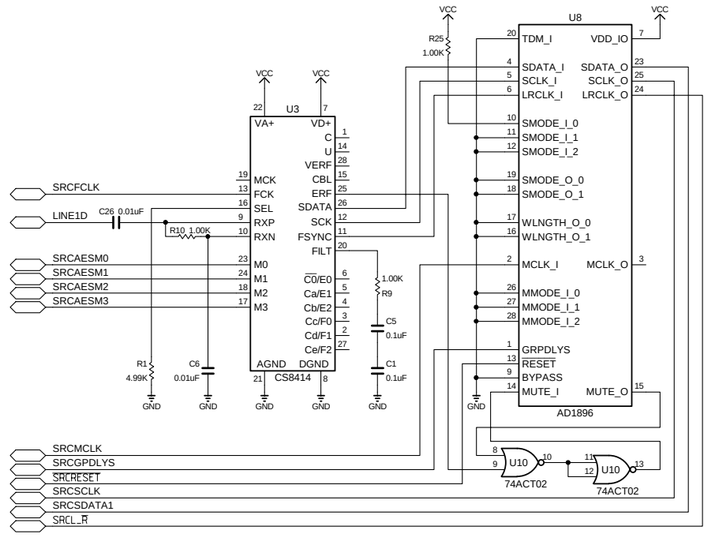


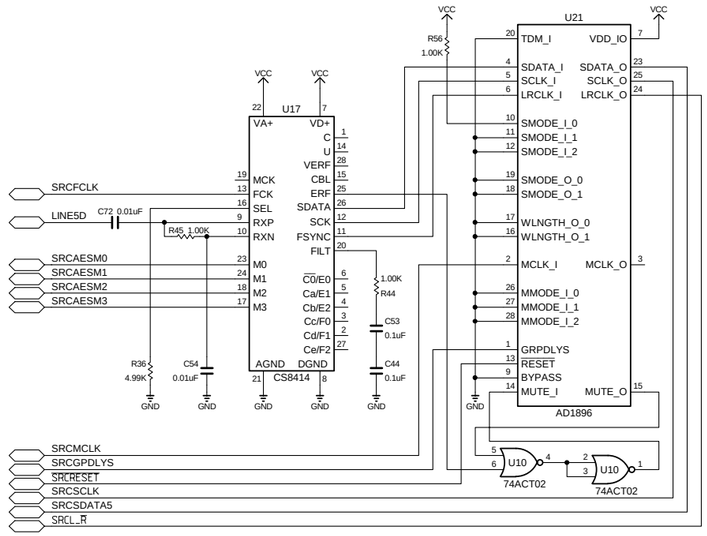
CONTRACT NO. - Sergey Averin -		AO-4
APPROVALS	DATE	Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562
DRAWN SA	5-30-03	
CHECKED	SA	
ISSUED	SA	SIZE D / FSCM NO. / DWG. NO. 80S00xx / REV A
W# 700736		SCALE / AO-4A PCB / SHEET 2 OF 2

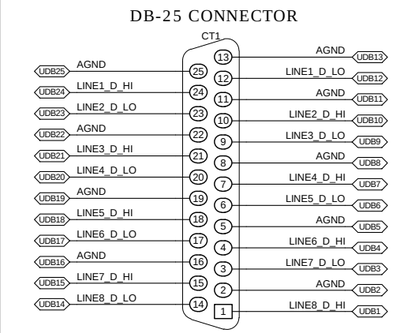


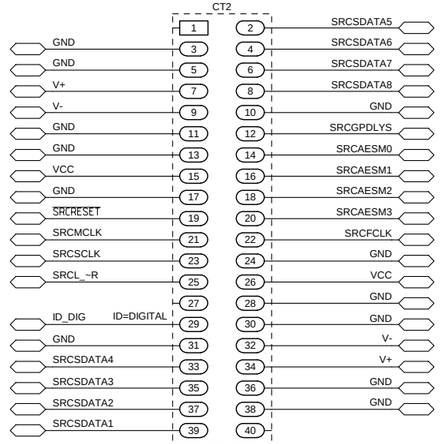
4 Analog Outputs Card (AO-4) - Load Sheet

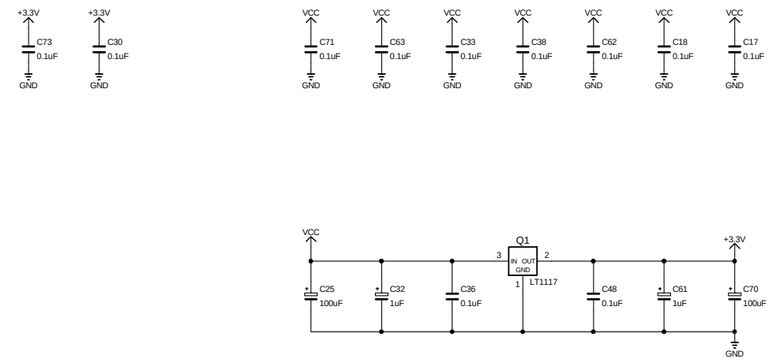






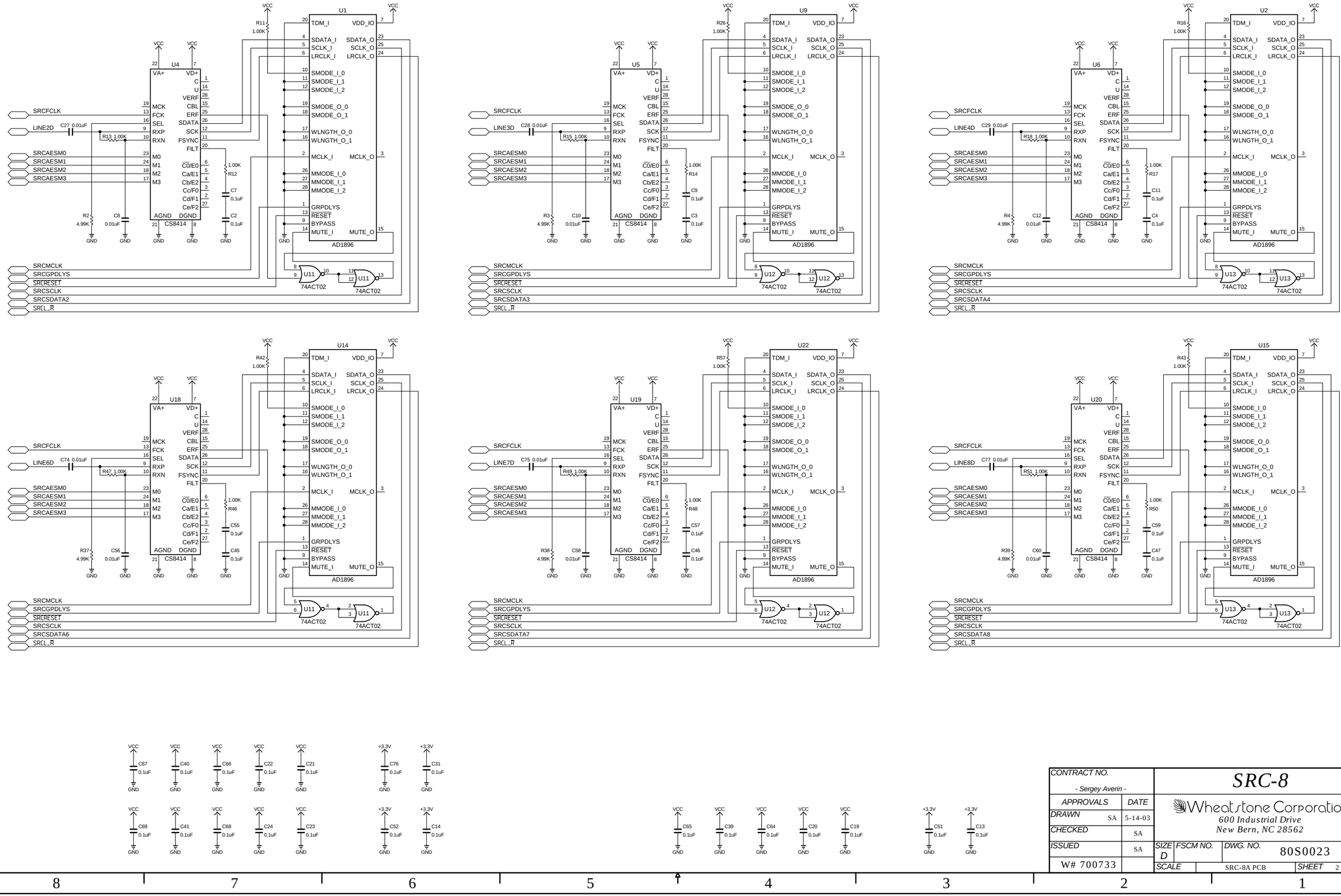






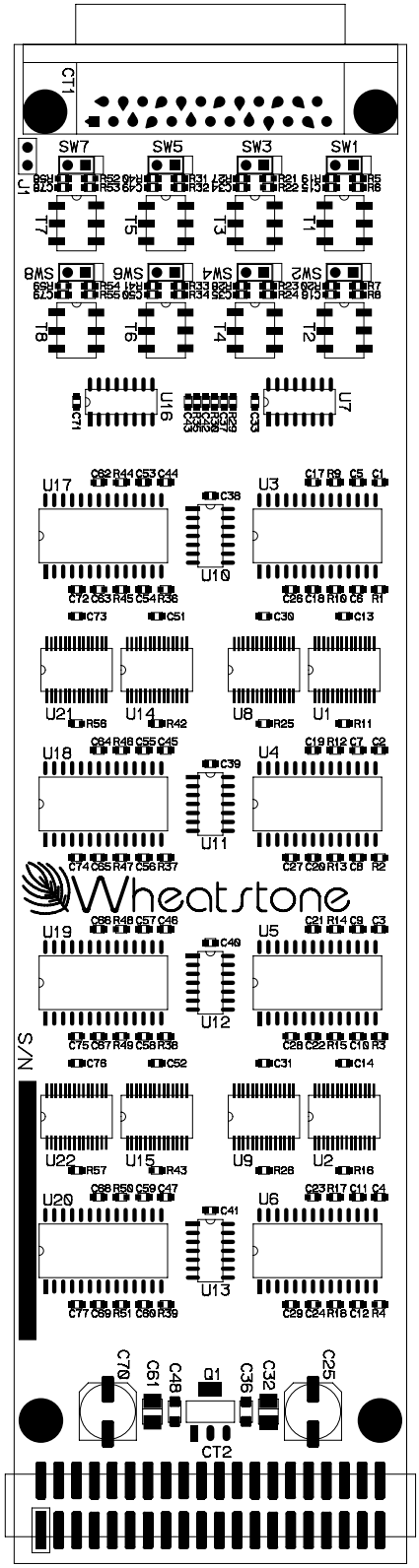
CONTRACT NO.		*SRC-8*	
- Sergey Averin -			
APPROVALS	DATE	Wheatstone Corporation	
DRAWN SA	5-14-03	600 Industrial Drive	
CHECKED	SA	New Bern, NC 28562	
ISSUED	SA	SIZE D / FSCM NO. / DWG. NO. 80S0022 / REV A	
W# 700733		SCALE / SRC-8A PCB / SHEET 1 OF 2	

SRC-8 8 Digital Inputs Schematic - Sheet 1 of 2

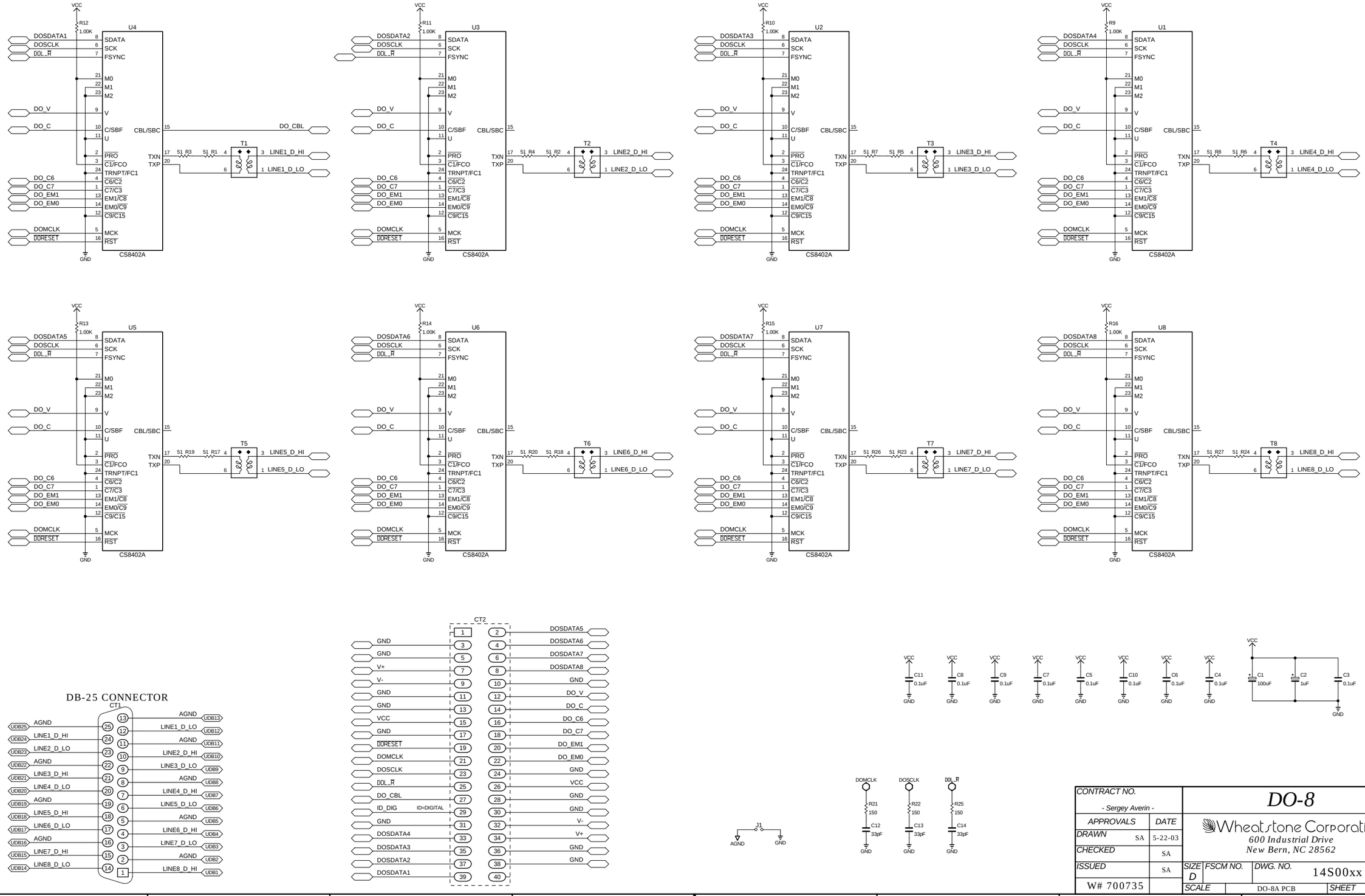


CONTRACT NO.		*SRC-8*	
- Sergey Averin -		Wheatstone Corporation	
APPROVALS	DATE	600 Industrial Drive	
DRAWN SA	5-14-03	New Bern, NC 28562	
CHECKED	SA		
ISSUED	SA	SIZE D / FSCM NO. / DWG. NO. 80S0023 / REV A	
W# 700733		SCALE SRC-8A PCB / SHEET 2 OF 2	

SRC-8 8 Digital Inputs Schematic - Sheet 2 of 2

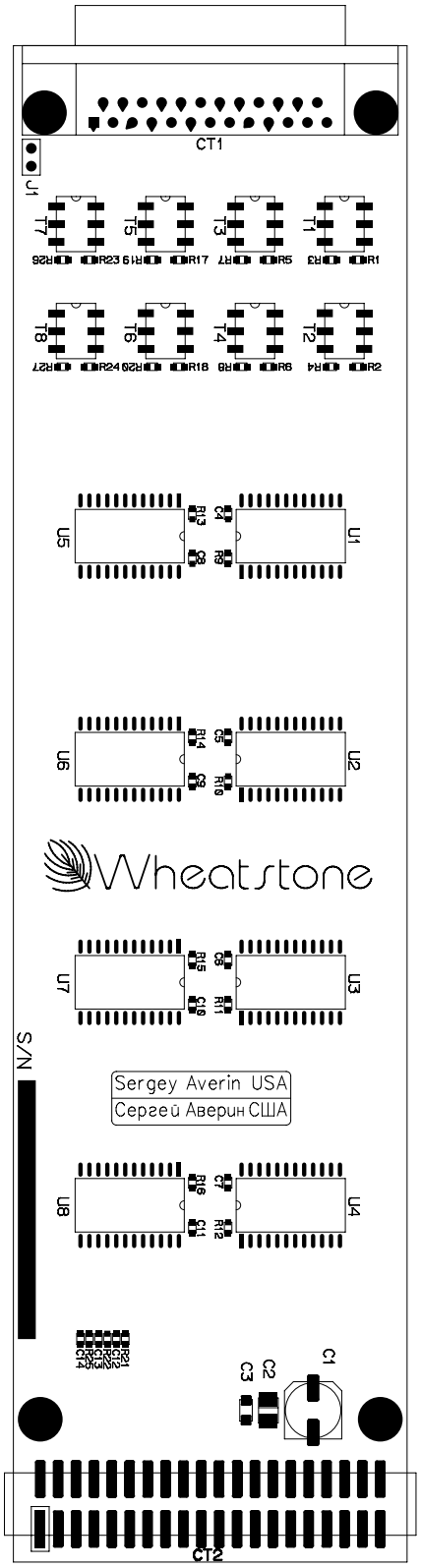


8 Digital Inputs Card (SRC-8) - Load Sheet



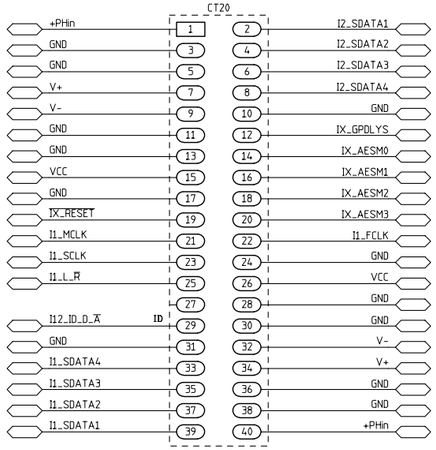
CONTRACT NO.		DO-8	
- Sergey Averin -			
APPROVALS	DATE	Wheatstone Corporation	
DRAWN SA	5-22-03	600 Industrial Drive	
CHECKED	SA	New Bern, NC 28562	
ISSUED	SA	SIZE D / FSCM NO. / DWG. NO. 14S00xx / REV A	
W# 700735		SCALE / DO-8A PCB / SHEET 1 OF 1	

DO-8 8 Digital Outputs Schematic - Sheet 1 of 1

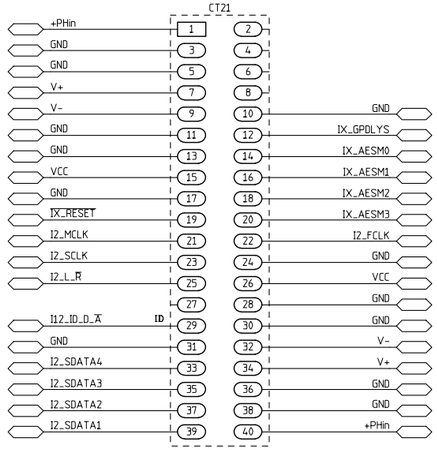


8 Digital Outputs Card (DO-8) - Load Sheet

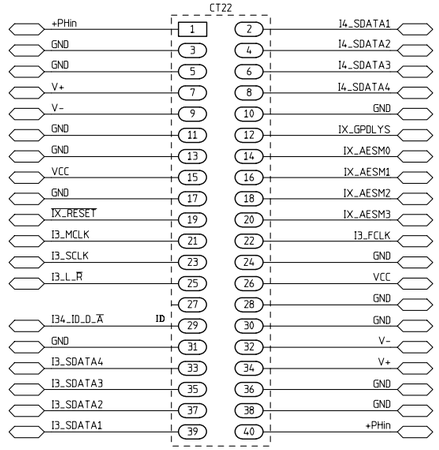
INPUTS 1-4 ANALOG/ 1-8 DIGITAL



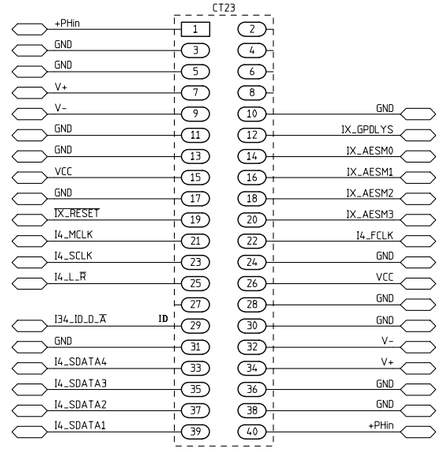
INPUTS 5-8 ANALOG



INPUTS 9-12 ANALOG/ 9-16 DIGITAL



INPUTS 13-16 ANALOG



INPUTS 17-20 ANALOG/ 17-24 DIGITAL

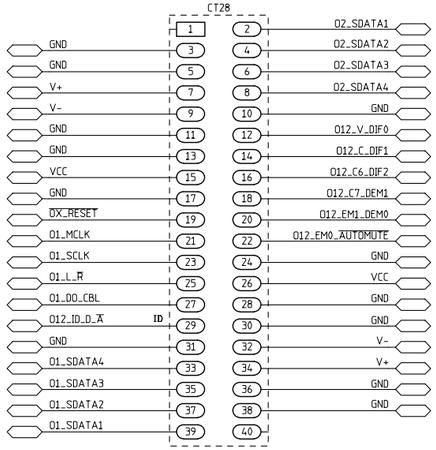
INPUTS 21-24 ANALOG

INPUTS 25-28 ANALOG/ 25-32 DIGITAL

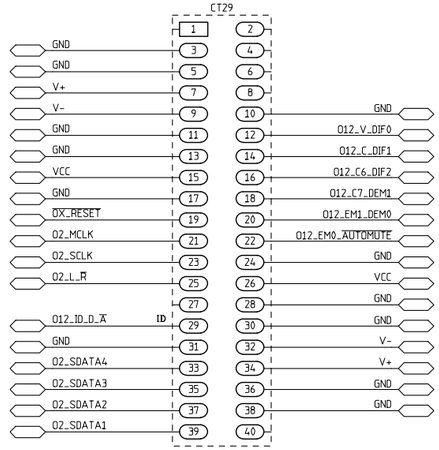
INPUTS 29-32 ANALOG

CONTRACT NO. - Sergey Averin -		PR-32	
APPROVALS	DATE	Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562	
DRAWN SA	6-17-03		
CHECKED	SA		
ISSUED	SA	SIZE D / FSCM NO. / DWG. NO. 84S00xx / REV B	
W# 700731		SCALE / PR-32B PCB / SHEET 1 OF 7	

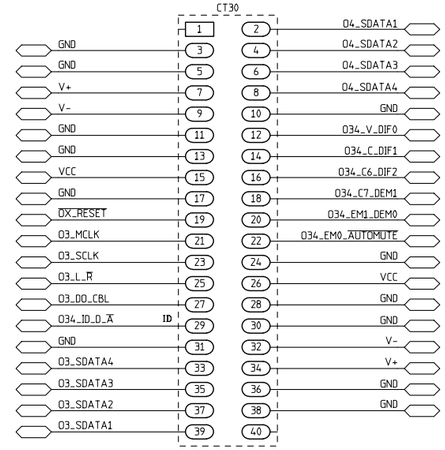
OUTPUTS 1-4 ANALOG/ 1-8 DIGITAL



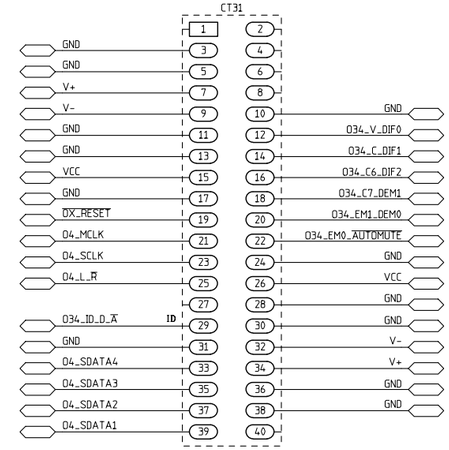
OUTPUTS 5-8 ANALOG



OUTPUTS 9-12 ANALOG/ 9-16 DIGITAL



OUTPUTS 13-16 ANALOG



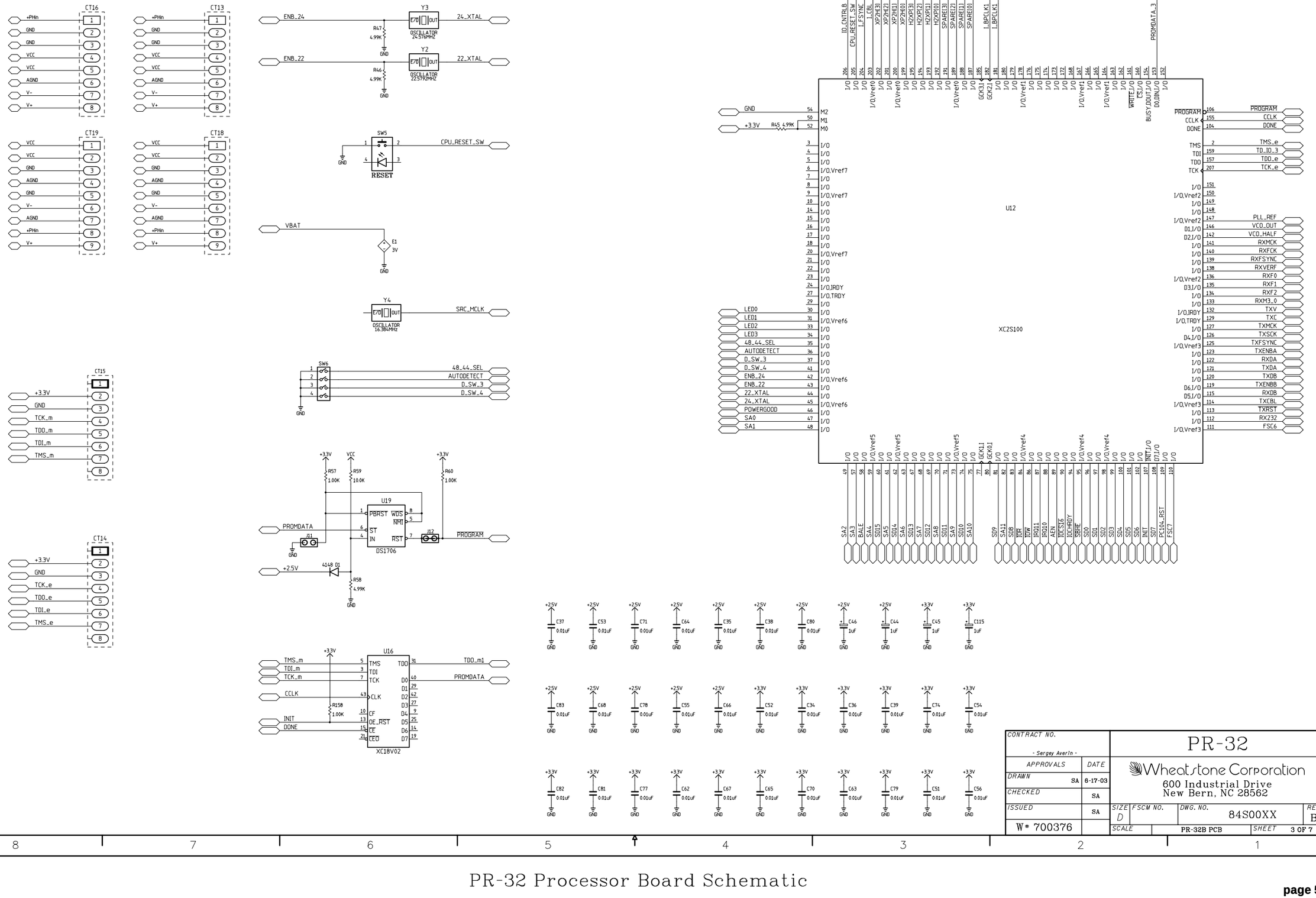
OUTPUTS 17-20 ANALOG/ 17-24 DIGITAL

OUTPUTS 21-24 ANALOG

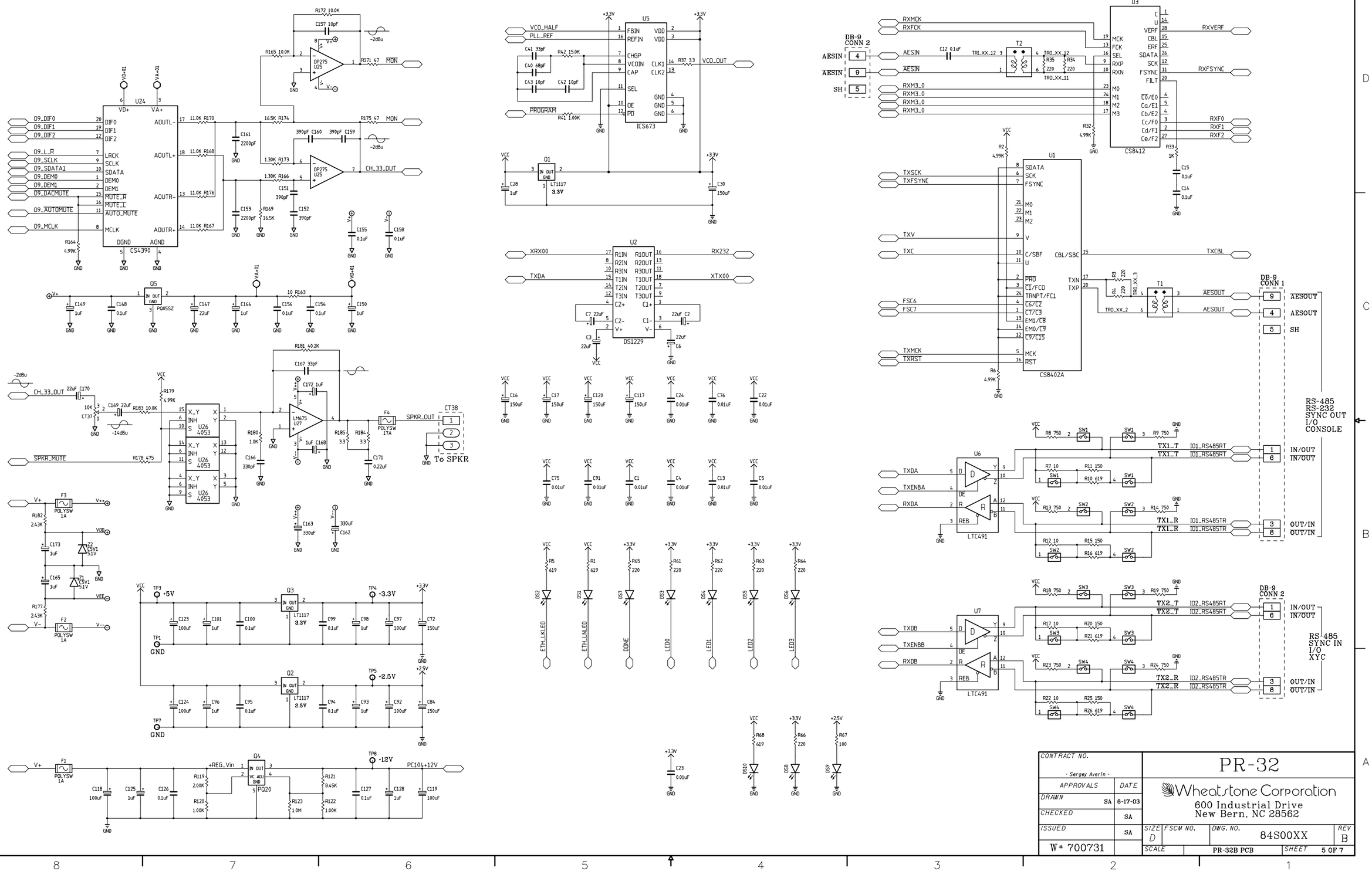
OUTPUTS 25-28 ANALOG/ 25-32 DIGITAL

OUTPUTS 29-32 ANALOG

CONTRACT NO. - Sergey Averin -		PR-32	
APPROVALS	DATE	Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562	
DRAWN SA	6-17-03		
CHECKED	SA		
ISSUED	SA	SIZE D / FSCM NO. / DWG. NO. 84S00XX / REV B	
W# 700731		SCALE / PR-32B PCB / SHEET 2 OF 7	

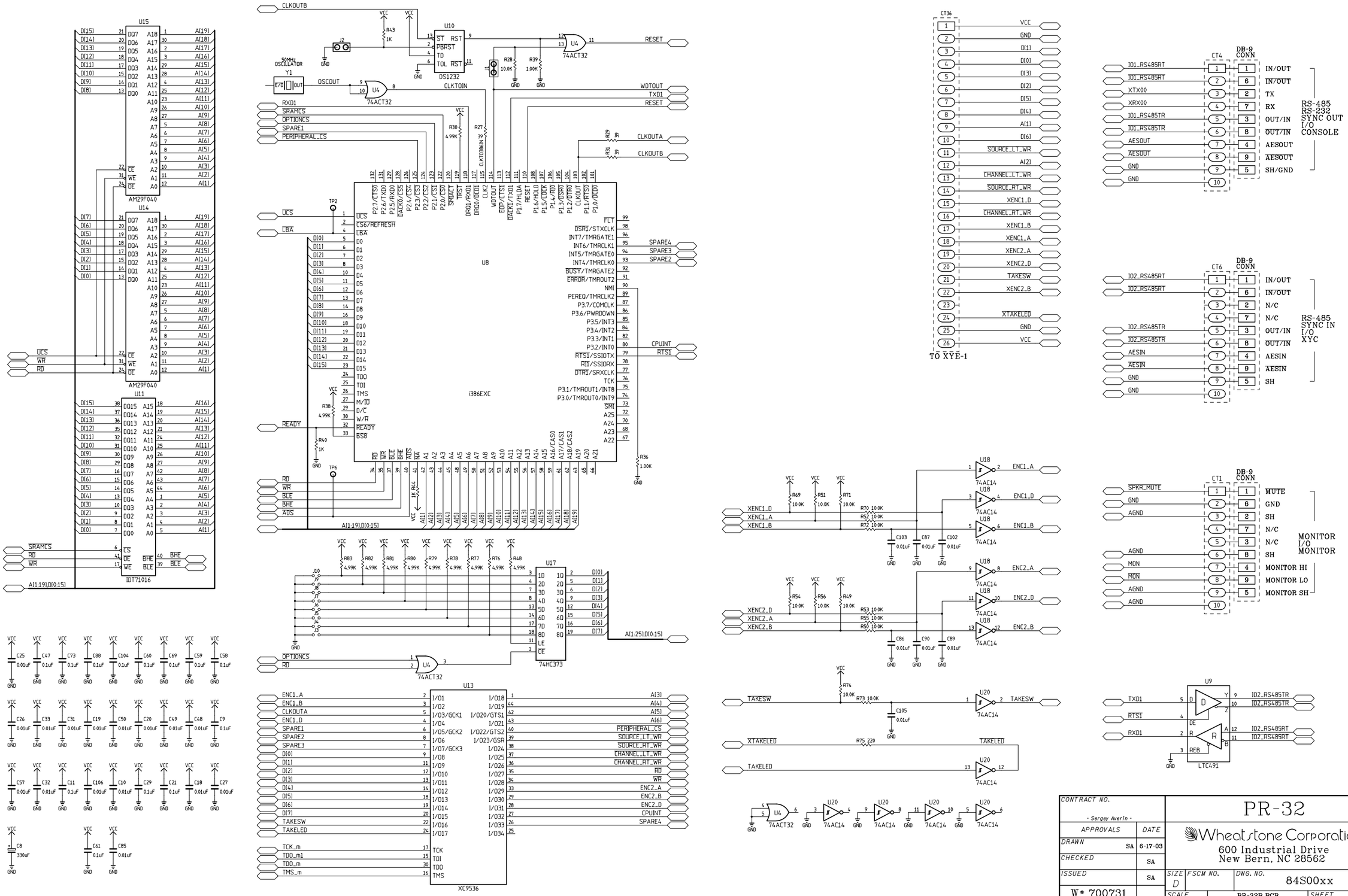


PR-32 Processor Board Schematic

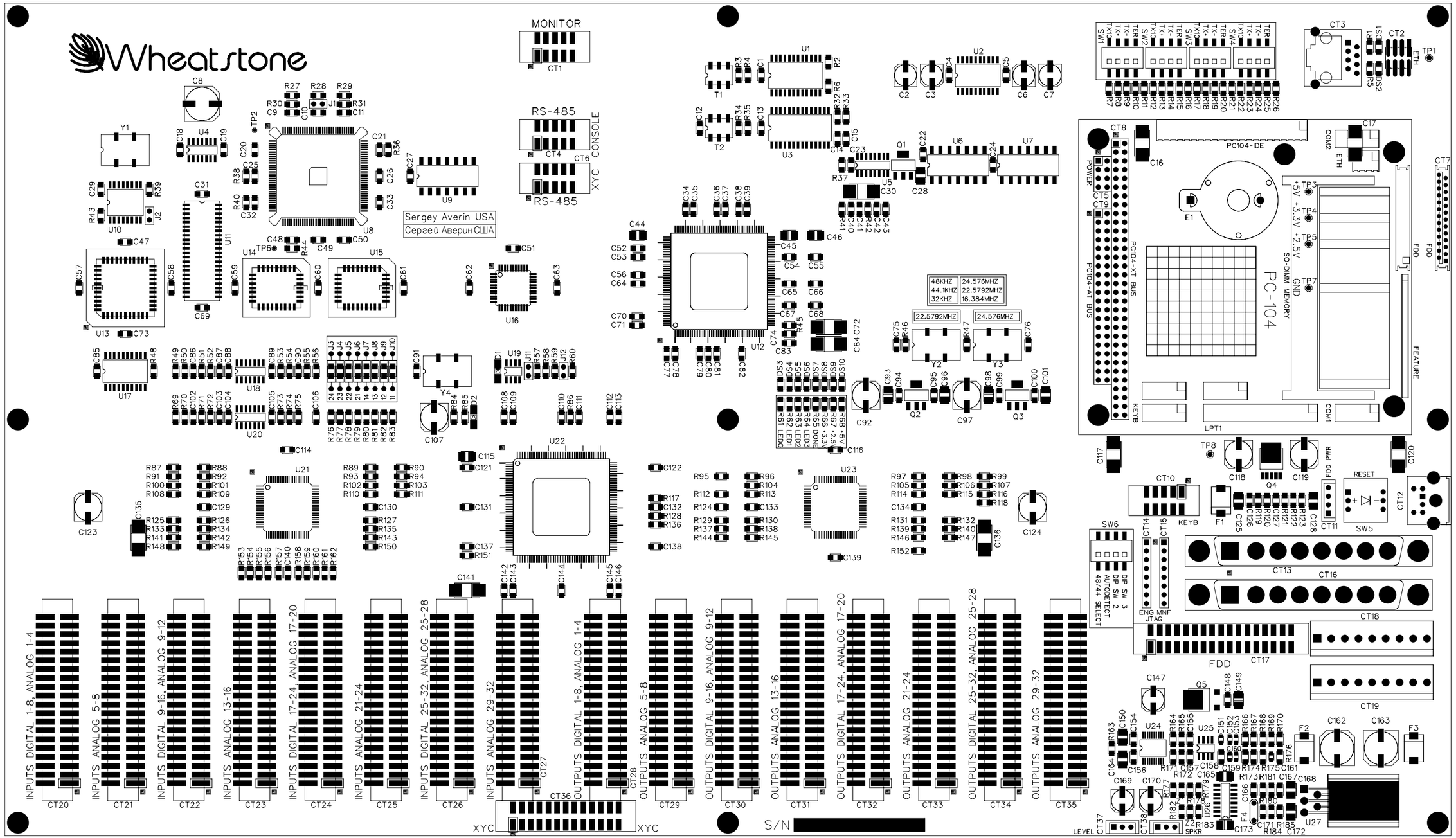


CONTRACT NO.		PR-32
- Sergey Averin -		
APPROVALS	DATE	Wheatstone Corporation
DRAWN SA	6-17-03	600 Industrial Drive New Bern, NC 28562
CHECKED	SA	
ISSUED	SA	SIZE D · FSCM NO. · DWG. NO. 84S00XX · REV B
W# 700731		SCALE · PR-32B PCB · SHEET 5 OF 7

PR-32 Processor Board Schematic



CONTRACT NO.		PR-32	
- Sergey Averin -			
APPROVALS	DATE	Wheatstone Corporation	
DRAWN SA	6-17-03	600 Industrial Drive New Bern, NC 28562	
CHECKED	SA		
ISSUED	SA	SIZE D / FSCM NO. / DWG. NO. 84S00xx / REV B	
W# 700731		SCALE / PR-32B PCB / SHEET 7 OF 7	


Wheatstone
MONITOR
CT1
RS-485
CT4
CT6
XYC CONSOLE
RS-485
Sergey Averin USA
Сергей Аверин США
PC-104
PC104-IDE
PC104-XT BUS
PC104-AT BUS
SO-DIMM MEMORY
FDD
FEATURE
KEYB
LPT1
COM1
COM2
ETH
POWER
+5V
+3.3V
+2.5V
GND
48KHZ
44.1KHZ
32KHZ
24.576MHZ
22.5792MHZ
16.384MHZ
22.5792MHZ
24.576MHZ
INPUTS DIGITAL 1-8, ANALOG 1-4
INPUTS ANALOG 5-8
INPUTS DIGITAL 9-16, ANALOG 9-12
INPUTS ANALOG 13-16
INPUTS DIGITAL 17-24, ANALOG 17-20
INPUTS ANALOG 21-24
INPUTS DIGITAL 25-32, ANALOG 25-28
INPUTS ANALOG 29-32
OUTPUTS DIGITAL 1-8, ANALOG 1-4
OUTPUTS ANALOG 5-8
OUTPUTS DIGITAL 9-16, ANALOG 9-12
OUTPUTS ANALOG 13-16
OUTPUTS DIGITAL 17-24, ANALOG 17-20
OUTPUTS ANALOG 21-24
OUTPUTS DIGITAL 25-32, ANALOG 25-28
OUTPUTS ANALOG 29-32
XYC
XYC
S/N
FDD PWR
RESET
KEYB
FDD
ENG MNF
JTAG
48/44 SELECT
AUTODETECT
DIP SW 3
DIP SW 2
DIP SW 1
SPKR
LEVEL

Glossary

The terminology used in this manual is defined as follows:

- ***Channel*** - A single, monaural audio stream. The ADR-32 can switch up to 64 discrete inputs to 64 discrete outputs (32 x 32 stereo) per tier.
- ***Signal*** - Information from a single audio source. A signal may take up one (mono), two (stereo), or six (5.1 surround sound) channels.
- ***Chassis or Rack*** - A single ADR-32 backplane.
- ***GUI*** *(pronounced "goo-eee")* - refers to the Windows X-Point program Graphical User Interface.
- ***XYC GUI*** - refers to the X-Point program running in XY controller mode.
- ***Slot*** - A position within a rack where a single card is located.
- ***Tier*** - The ADR-32 is based on advanced X-Point software that supports multiple hardware levels called Tiers. While the software supports multiple tiers, the ADR-32 hardware only supports one tier.
- ***Salvo*** - A logical grouping of connections that may be made by the operator via a single action (on the Configuration GUI, XYC GUI, or XY Controller).

The following terms apply to router configuration:

- ***Switch ID*** - A unique identifier assigned to each ADR-32 router.
- ***Rack ID*** - The physical chassis ID number.
- ***Slot ID*** - The physical slot number (numbered from 1-16).
- ***Channel ID*** - Channel IDs run from 0-64. Input Channel IDs are assigned directly to the input devices. Output Channel IDs are assigned directly to the output devices.
- ***Signal Type*** - Each input and output in the ADR-32 is associated with a type of signal. These include mono, stereo, or surround sound. The importance of this information at configuration time is the number of channels each signal consumes. Mono signals use 1 channel; stereo signals use 2; and surround sound signal use 6.

Appendices

Appendix 1

Configuring the ADR-32 Network Parameters A-3

Appendix 2

Replacement Parts List A-6

Appendix 1

Contents

Configuring the ADR-32 Router Network Parameters A-3

Configuring the ADR-32 Router Network Parameters

Caution! Your system has been preconfigured at the factory for a default IP address of192.168.1.160. Incorrect use of this utility program can cause system malfunction. Check the IP address label on the top cover of the ADR-32 before making changes. Please consult Wheatstone support if you are having trouble connecting your system to a network or PC.

In order to communicate to the ADR-32 Router, appropriate network parameters must be loaded. Since the GUI cannot communicate with the router until these parameters are set, a special method for configuring the router is necessary.

There are several constraints on the router configuration that were made to simplify the installation, while still providing the flexibility to connect the router to existing customer networks. Here are the list of constraints:

1. The router and any attached GUIs must exist on the same subnet. The router has no ability to route across subnets.

2. If dynamic address allocation is used on the network (e.g. DHCP), the router must be given a "permanent" address allocation. In order to allow the router to run on simple networks or at sites with little system admin support, dynamic address allocation schemes (such as DHCP or BOOTP) were not used to provide an IP address to the router.

The following steps are required to provide the necessary configuration info to the router (this only has to be done one time):

1. From any DOS or Windows PC on the same subnet that the router will be on (in other words, with no routers between the PC and ADR-32), run the **AdvXP_Network_Config.exe program.**

2. The first prompt is: ***Default Values**

Enter Number of Tiers [1].....: 1

Enter "1" for the total number of tiers in the system (ADR-32 is always 1 Tier).

3. **Enter Tier #1 address [192.168.0.160].....: 192.168.1.160**

Enter the IP address reserved for the router on your network. This address must be unique within the network.

4. **Enter Tier #1 TCP Port [50012].....: 50012**

This is the TCP port number to use for the command connection. It can be changed in the rare circumstance that it conflicts with another port in use on the GUI PC. The default can almost always be used.

5. **Enter Network Mask [0xFFFFFF00].....: FFFFFF00**
0xFFFFFF00 = hexadecimal FFFFFF00 = 255.255.255.0 dotted decimal

Note: Do *NOT* enter the 0x base identifier.

Enter the network mask for your subnet in hexadecimal format. See your system administrator if you're unsure of the proper value. The default will work for most simple, localized networks.

6. **Enter GUI IP address [192.168.0.212].....: 192.168.1.212**
Enter the IP address of the GUI PC used to communicate to the router. This address must be on the same subnet as the router. Once configured, it is not necessary to change this value if you run the GUI on a different machine.

7. **Enter XYC GUI UDP Port [55555].....: 55555**
This is the UDP port number used to broadcast configuration and receive connections from XYC GUIs. It can be changed in the rare circumstance that it conflicts with another port in use on the GUI PC. The default can almost always be used.

8. The program then displays the following prompt:

About to configure Tier #1...
1. Make sure this is the only tier currently connected to the local network!
2. Press <RETURN> when ready to proceed...

The configuration parameters for the ADR-32 are now UDP broadcast, and should be received by the router (make sure only the appropriate tier is connected to the network; turn off the power or disconnect the Ethernet cable on any other routers). If a debug terminal is attached to the router, a confirmation message is printed.

9. Reboot the ADR-32 - power it down and then power it back up. The new network parameters now should be in effect.

Appendix 2

Contents

Replacement Parts List A-6

For the most part there are no user-replaceable parts in the ADR-32 Router. A complete list of available components is shown on the next page. Contact Wheatstone technical support for further information.

Wheatstone Corporation (600 Industrial Drive, New Bern, North Carolina, USA 28562) may be reached by phone at 252-638-7000, fax 252-637-1285, electronic mail “email@wheatstone.com”.

REPLACEMENT PARTS — ADR-32 ROUTER

COMPONENT	DESCRIPTION	*WS P/N*
SRC-8	DIGITAL INPUT CARD	***"008454"***
ADC-4	ANALOG INPUT CARD	***"008455"***
DO-8	DIGITAL OUTPUT CARD	***"008456"***
AO-4	ANALOG OUTPUT CARD	***"008457"***
PR-32 CARD	MAIN PROCESSOR LOADED CARD	***"008453"***
XYE-1	XY CONTROLLER LOADED CARD	***"008452"***
CONNECTOR KIT	CONNECTOR KIT FOR ADR-32	***"008478"***
POWER CORD	7 1/2' BLACK POWER CORD	***"150017"***
CABLE	CAT-5 SOLID CONDUCTOR CABLE	***"150189"***
DB9 I/O CONNECTOR	9 PIN DB CONNECTOR	***"200031"***
PLUG FOR DB25 I/O CONNECTOR	PLUG FOR DB25 CONNECTOR	***"200100"***
PIN FOR I/O CONNECTOR	MALE PIN FOR DB25 PLUG	***"200101"***
HOOD FOR DB25 PLUG	METALIZED PLASTIC STRAIGHT HOOD FOR DB25 PLUG	***"200102"***
PLUG FOR DB9 I/O CONNECTOR	PLUG FOR DB9 CONNECTOR	***"200109"***
HOOD FOR DB9 PLUG	METALIZED PLASTIC STRAIGHT HOOD FOR DB9 PLUG	***"200124"***
RIBBON PLUG	10 PIN RIBBON PLUG	***"230020"***
PLUG	3 PIN PLUG	***"230028"***
RIBBON PLUG	26 PIN RIBBON PLUG	***"250043"***
HEADER	3 PIN HEADER	***"250062"***
CONNECTOR	MALE RJ-45 CONNECTOR	***"260052"***
COUPLER	RJ-45 COUPLER	***"260055"***
SPEAKER POT	10KΩ SINGLE AUDIO CONDUCTIVE POT	***"500058"***
SOURCE/DESTINATION KNOB	29MM GREY KNOB	***"520059"***
SPEAKER KNOB	21MM GRAY SIFAM COLLET KNOB	***"520108"***
SPEAKER CAP	GRAY CAP W/BLACK LINE	***"530035"***
SOURCE/DESTINATION CAP	BLACK CAP	***"530318"***
CONNECTOR CUTOUT COVERS	DB25 CONNECTOR CUTOUT COVERS	***"824012"***
CONNECTOR CUTOUT COVERS	DB37 CONNECTOR CUTOUT COVERS	***"824037"***
FAN GUARD	FAN GUARD	***"840018"***
FAN	60MM SQUARE 5V DC FAN	***"840020"***
CRIMP TOOL	CRIMP TOOL FOR DB CONNECTOR	***"850068"***
TOOL EXTRACTOR	PIN EXTRACTOR TOOL FOR DB CONNECTOR	***"850069"***
REPLACEMENTSPEAKER	CUE SPEAKER	***"960012"***
MANUAL	OWNER'S MANUAL	***"008479"***
X-POINT SOFTWARE	X-POINT SOFTWARE CD FOR ADR-32	***"071794"***