A-50 Radio Console

AUDIOARTS®

TECHNICAL MANUAL
June 1991

A-50 Radio Console Technical Manual - 3rd Edition

(a division of Wheatstone Corporation)

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ATTENTION!

ADDENDUM TO A-50 CONSOLE OWNER'S MANUAL:

Please note the following changes to your manual documentation:

A-50 PROCESSOR printed circuit board
A-50 EXT 4 INPUT printed circuit board
A-50 EXT 6 INPUT printed circuit board

On the above printed circuit boards, PNP transistor part numbers Q2 and Q3 have been changed from 2N3906s to 2N4402s. This affects schematics, load sheets and parts lists.

On DMP-50 Dual Mic Preamp printed circuit boards, trimpots CR1 and CR2 have been changed from 10K to 50K. This affects the card's load sheet, schematic and parts list documentation. (8-27-92)

A-50 PROCESSOR printed circuit board: Optocouplers type 4N38 are now type 4N32; resistor R155 changes from 1KΩ to 100Ω. These changes affect the card's load sheet, schematic and parts list documentation. (4-12-93)

April 1993

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Console Overview

Section Contents:

SYSTEM DESCRIPTION

For a better understanding of the console, refer to the A-50 console module faceplate drawing (page 1-3) and system signal flow diagram (page 1-4) in conjunction with the following section.

The WHEATSTONE AUDIOARTS A-50 RADIO CONSOLE is designed for radio on-air applications. The console comes supplied with individual stereo PROGRAM and AUDITION outputs, plus mono TELEPHONE and CUE outputs. The mainframe comes supplied with 8, 12, or 18 stereo line input modules (IN-50), a dual mono microphone preamplifier (DMP-50) assignable to any two input modules, a control room module (CR-50), a studio control module (SC-50), and 1 blank position for expansion. The console meterbridge houses 4 VU meters (PGM LT, PGM RT, AUD LT, and AUD RT) for the 12 and 18 input versions or 2 VU meters (PGM LT and PGM RT) for the 8 input version, a digital timer, and an internal CUE speaker. The 18 input version also contains a clock. A rackmount power supply is included.

Standard Modules

(1) IN-50 INPUT module: a dual source stereo line level input module with A/B select switch (w/LED indicator), output assign switches (PGM and/or AUD and/or TEL, all with LED indicators), CUE switch (w/ LED indicator), long-throw conductive plastic fader, lighted channel ON and OFF switches, and internal gain trimmers for left and right. Logic functions, selectable via internal dipswitch, are as follows: talkback to studio; control room mute; studio mute; cue dropout; local/external control of ready (OFF) lamp; cue enable; and timer restart. The module also has the following external control ports: remote on; remote off; on tally; ready; remote start; remote stop; cough; talkback; and B tally. Thus the module combines the logic functions of both line and microphone inputs.

(2) DMP-50 MIC PREAMP module (mounted in console meterbridge; see "Options" drawing, page 2-8): a dual mono microphone preamplifier with transformer input. The module outputs are normally wired to the A inputs of two IN-50 modules. The module contains separate gain trimmers for each preamp.

(3) CR-50 CONTROL ROOM module: selects control room monitor source (EXT, PGM, AUD, and TEL switches, w/ LED indicators), control room level, studio level, headphone level, and cue level. When activated, CUE interrupts the headphone signal; it can also be programmed via internal dipswitch to interrupt left and/or right control room signals. An on-air tally opto is also included.

(4) SC-50 STUDIO CONTROL module: selects control room monitor source (EXT, PGM, AUD, and TEL switches, w/ LED indicators). The module also contains an LED-illuminated TB switch (to implement the talkback to studio function), the timer control switches, and a headphone jack.

Optional Modules

(1) LS-50 LINE PRESELECTOR module (mounted in console meterbridge; see "Options" drawing, page 2-8): a switchbank allowing selection of one of six balanced stereo inputs to one balanced stereo output, which may then be wired to any of the IN-50 inputs, or to the EXT input of the CR-50 or the SC-50.

(2) FF-1/SS-3 TAPE REMOTE MODULES: allows full remote control of one tape or cart machine (FF-1) or Start/Stop control of three machines (SS-3). The switches are provided with LED illumination.

PERFORMANCE SPECIFICATIONS

FREQUENCY RESPONSE
Line, 20Hz -0.25dB
Line, 20KHz -0.10dB
Mic, 20Hz -0.50dB
Mic, 20KHz -0.25dB

DYNAMIC RANGE
Line, unity gain 110dB
Mic, 54dB gain 97dB

S/N RATIO
Line 90dB
Mic 78dB

NOISE
Line -85dBu
Mic -74dBu
Mic EIN -128

THD + N (20Hz-20KHz)
Line, +4dBu .005%
Line, +16dBu .003%
Line, +20dBu .003%
Mic, +24dBu .006%(1KHz)

IMD (SMPTE)
Line, +4dBu .005%
Line, +20dBu .007%
Mic, +20dBu .007%

DIM
Line, +4dBu .006%
Line, +16dBu .003%
Line, +20dBu .003%
Mic .005%

MAXIMUM INPUT
Line +27dBu
Mic (min trim) 0dBu

MAXIMUM OUTPUT
Line +27dBu

HEADROOM
+4dBu 23dB

BUS CROSSTALK
1KHz -80dB

STEREO SEPARATION
1KHz -80dB

OFF ISOLATION
1KHz -95dB

ASSIGN ISOLATION
1KHz -95dB

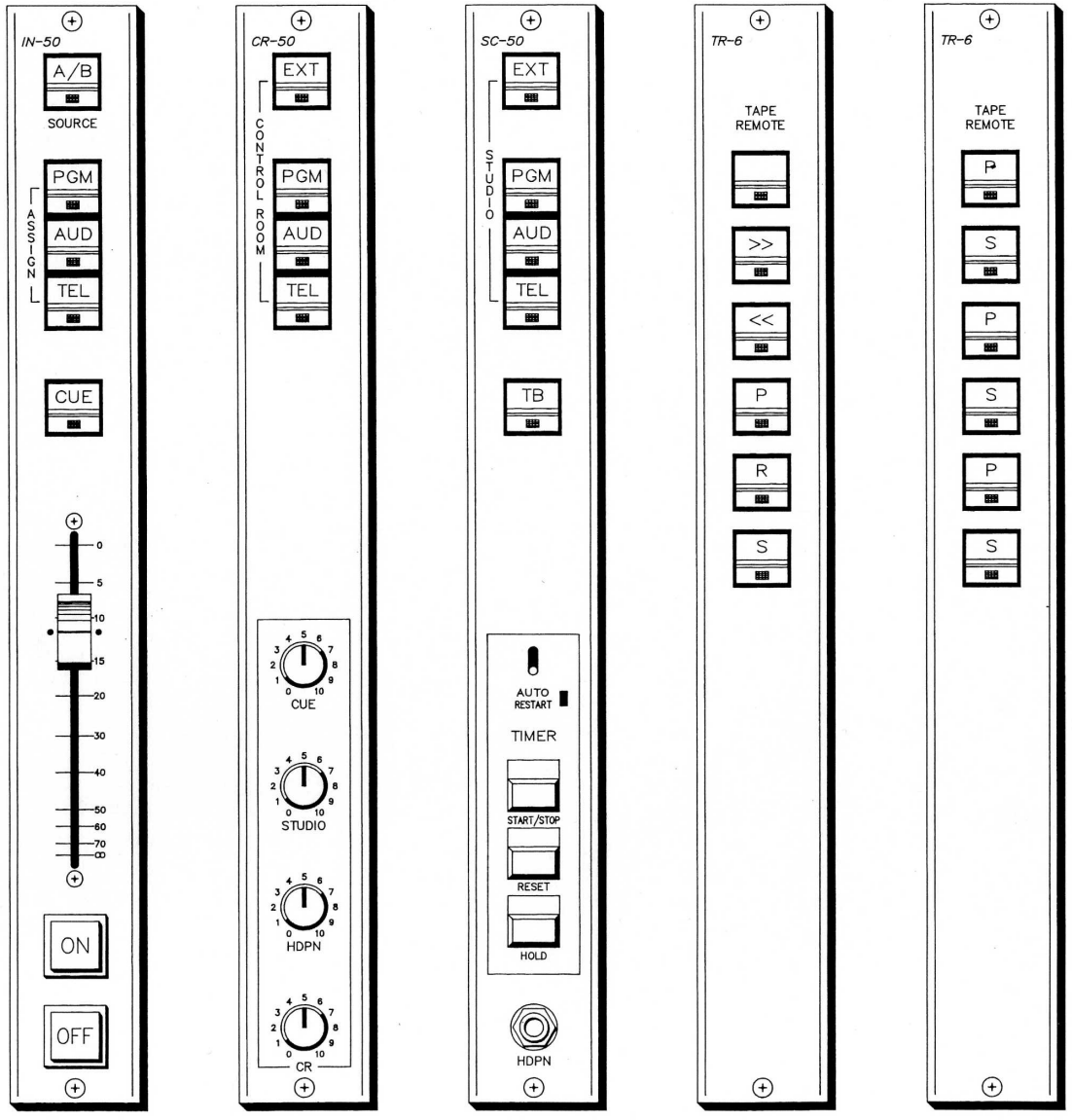
GAIN RANGE
Line 15dB
Mic 40dB

PHASE RESPONSE (20Hz-20KHz)
Line ±10°

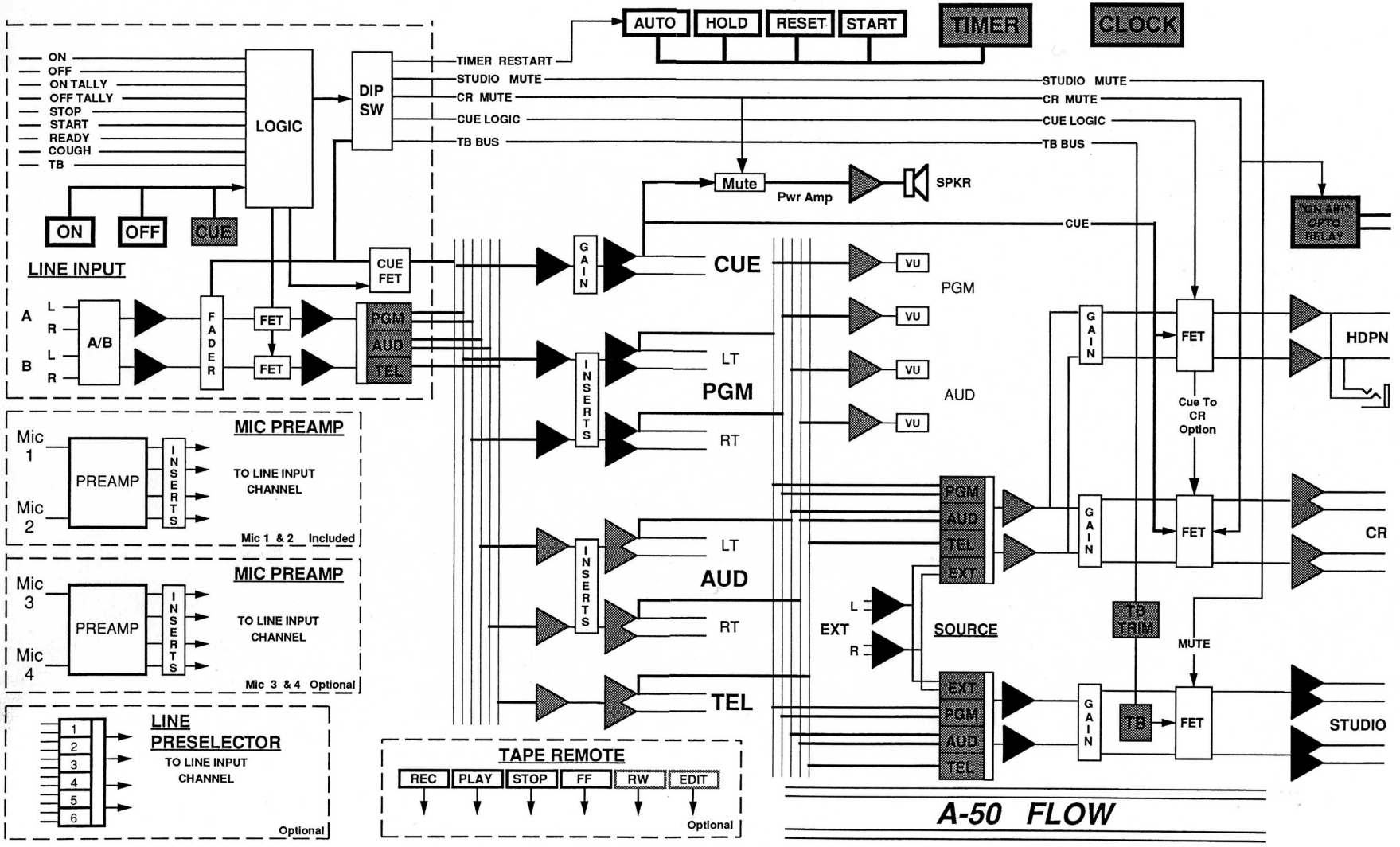
SLEW RATE 15V/µs

SQUARE WAVE RESPONSE
Ringing 0
Overshoot 0

Specifications and features subject to change without notice.



MODULE FACEPLATES	
A-50 RADIO ON-AIR CONSOLE	
6-19-90	Wheatstone Corporation 6720 V.I.P. Parkway Syracuse, NY. 13211
MS	
NO SCALE	FACEPLATE CONTROLS
	#A50/FCE-1



A-50 Console System Signal Flow Diagram - Page 1-4

A-50 Console System Signal Flow Diagram - Page 1-4

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Mainframe Installation

Section Contents

To install the WHEATSTONE A-50 Radio Console, perform the following steps carefully:

UNPACKING THE CONSOLE

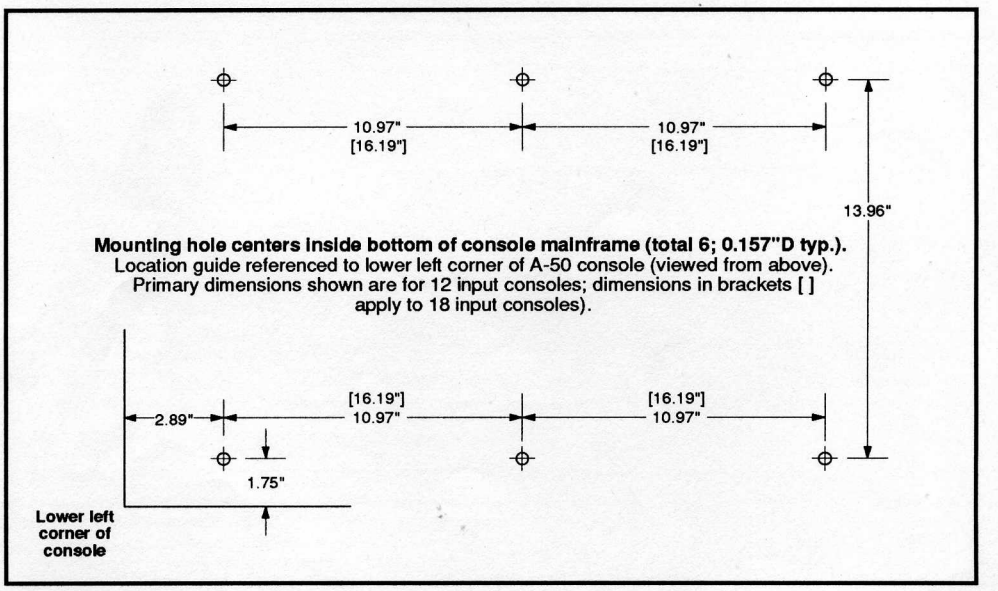
The console is normally shipped as two or more packages. One carton contains the console and documentation, while additional cartons contain the Power Supply and connecting cable, and any options that have been ordered. Begin the installation by unpacking and locating these items.

PREPARING FOR INSTALLATION

DO NOT CONNECT THE A-50 CONSOLE TO ITS POWER SUPPLY, AND DO NOT CONNECT THE POWER SUPPLY TO THE AC POWER LINE, UNTIL INSTRUCTED TO DO SO.

It is not necessary to prepare the counter by making a cutout, since the A-50 is mounted above the counter top. If you will be securing the console to the counter top, you may want to pre-drill the mounting holes. See the sketch below for the correct drilling hole locations.

Pre-drilled mounting holes in typical 12 input A–50 console mainframe bottom. Figures in brackets [ ] are applicable dimensions for 18 input consoles. View shows inside of mainframe bottom with mounting holes (6) referenced to lower lefthand corner of console wood frame.



Set the console in place on the counter and remove the screws that hold the modules in place (two per module), and also the three screws that hold down the meterbridge. This is necessary to provide access to the console's I/O connections.

Carefully lift each IN-50 module slowly from the chassis. Disconnect the two ribbon cables by carefully removing the 8-pin dip plugs where they connect to sockets at the processor or extender circuit board. Disconnect the twisted wire fader cable by carefully removing the 10-pin plug where it connects at the processor or extender circuit board.

Remove the blank module from the last module position at the right.

Carefully lift the SC-50 module slowly from the chassis. Disconnect the two ribbon cables by carefully removing the 8-pin dip plugs where they connect to sockets at the processor board. Disconnect the twisted wire headphone cable by carefully removing the 3-pin plug where it connects at the processor board. An additional ribbon cable connects the timer control card on the SC-50 module to the timer in the meterbridge. This cable need not be disconnected. Simply set the SC-50 module on the counter top next to the console.

Carefully lift the CR-50 module out of the chassis, disconnect the single ribbon cable by carefully removing the 8-pin dip plug where it connects at the processor board, and set the module next to the console. It is not necessary to unplug any of the level control cables attached to this module.

Attach the console to the counter top, using the holes provided in the bottom of the chassis and screws appropriate to the counter material.

INSTALLATION OF OPTIONS

Refer to "Options Installation" drawing (page 2-7) in conjunction with this section's text instructions.

The following options are available for user installation: TR-6 Tape Remote (FF/1 or SS/3 versions); second DMP-50 Dual Microphone Preamplifier; and LS-50 Line Selector. Installation instructions are as follows.

Installing the TR-6 Tape Remote

The TR-6 option consists of the following parts: (1) the TR-6 module with switchboard attached; (2) the T50 Translator board, with mounting hardware; and (3) a ribbon cable to interconnect the two boards. and perform the following steps to install the TR-6:

(1) turn off the power to the console;
(2) remove the blank module at the right end of the console;
(3) remove the three screws that hold down the meterbridge, and open the meterbridge;
(4) insert one end of the ribbon cable assembly through the access slot in the console frame;
(5) determine the location of the meterbridge hinge screws that will hold the top half of the T50 card;
(6) thread two of the nylon standoffs onto the hinge screws and tighten securely;
(7) using two type 4-40 screws, attach the remaining two nylon standoffs to the rear panel through the two holes below the hinge screws;

(8) orient the T50 as shown and attach it to the standoffs, using the remaining 4-40 screws;
(9) connect one end of the ribbon cable assembly to the T50 board, making sure that pin 1 of the plug matches pin 1 of the socket;
(10) connect the other end of the ribbon assembly to the 26 pin connector on the TR-6 switch card, making sure that pin 1 of the plug matches pin 1 of the socket;
(11) connect the required wiring to the 12 pin connectors on the T50 card, referring to the connector pinout chart;
(12) proceed with the installation of any other options, or close and secure the meterbridge and secure the TR-6 module with the screws that held the blank module if no other options are to be installed.

This completes the TR-6 installation procedure.

USER NOTE: The 1K ohm series resistors on the TR-6 switch card have been selected to allow a wide range of operating voltages, from 5 to 24 volts. For this reason, the LEDs may appear dim when operated from 5 volts. If you will be operating the LEDs from 5 volts, and do not plan on running them at 24 volts, you may change the series resistors to 470 ohm, 1/4 watt devices, to increase LED brightness. CAUTION: if 470 ohm, 1/4 watt resistors are installed, and the unit is then hooked up to a 24 volt source, the resistors will attempt to dissipate over 1 watt of power, and will burn up. Do not make this change unless you are sure that you will be using 5 volts to run the LEDs. If you are not sure of the voltage, measure it first.

Installing an Optional DMP-50 Mic Preamp

Refer to "Options Installation" drawing (page 2-7) in conjunction with this section's text instructions.

The DMP-50 option comes complete with mounting hardware and ribbon cable for providing power to the card. Handle the 8 pin plugs on the ribbon cable assembly with care; the pins are sharp and fragile. Refer to "Options Installation" drawing (page 2-8) and perform the following steps to install the DMP-50:

(1) turn off the power to the console;
(2) remove the last module, at the right end of the console;
(3) remove the three screws that hold down the meterbridge, and open the meterbridge;
(4) insert one end of the ribbon cable assembly through the slot in the console frame;
(5) determine the location of the meterbridge hinge screws that will hold the top half of the DMP-50 card;
(6) thread two of the nylon standoffs on to the hinge screws and tighten securely;
(7) using two type 4-40 screws, attach the remaining two nylon standoffs to the rear panel through the two holes below the hinge screws;
(8) orient the DMP-50 as shown and attach it to the standoffs, using the remaining 4-40 screws;
(9) connect one end of the ribbon cable assembly to the 8 pin DIP socket on the DMP-50 board, making sure that pin 1 of the plug matches pin 1 of the socket;

(10) connect the other end of the ribbon assembly to an unused 8 pin Mic Preamp Power DIP socket, located at the right end of the A-50 processor board, making sure that pin 1 of the plug matches pin 1 of the socket;
(11) connect the required wiring to the 12 pin connectors on the DMP-50 card, referring to the connector pinout chart;
(12) proceed with the installation of any other options, or close and secure the meterbridge and reinstall the last module if no other options are to be installed.

This completes the DMP-50 installation procedure.

Installing the LS-50 Line Selector

Refer to "Options Installation" drawing (page 2-7) in conjunction with this section's text instructions.

The LS-50 Line Selector is shipped attached to its mounting bracket. The bracket attaches to the console mainframe with 4 type 6-32 screws, included in the kit. Refer to "Options Installation" drawing and perform the following steps to install the LS-50:

(1) turn off the power to the console;
(2) remove the last three IN-50 modules and the CR-50 module;
(3) remove the three screws that hold down the meterbridge, and open the meterbridge;
(4) using a flat-bladed screwdriver, carefully pry off the line selector cutout cover;
(5) hold the LS-50 in one hand so that the four mounting holes in the bracket line up with the mounting holes in the console frame;
(6) install the mounting screws, but don't tighten them;
(7) close the meterbridge slowly, checking to see that the meterbridge clears the LS-50;
(8) if necessary, open the meterbridge and adjust the LS-50 position for best clearance and centering of the switches within the line selector cutout;
(9) when the correct position has been achieved, tighten the screws securely;
(10) make the signal connections to the 12 pin connectors on the LS-50, referring to the connector pinout chart;
(11) reinstall the modules removed in step 2;
(12) proceed with the installation of any other options, or close and secure the meterbridge if no other options are to be installed.

This completes the LS-50 installation procedure.

Once option installation is complete, check that each item is correctly installed before continuing.

SYSTEM GROUND

Note that the console power supply common, audio common, and the mainframe chassis are connected together at the mainframe, but are not connected to electrical ground and the chassis of the power supply as supplied by the factory. Safety requirements dictate that a positive connection from the mainframe to electrical ground be made in the completed installation; use one of the grounding lugs on the bottom of the mainframe (centered on the outside rear chassis panel, just above countertop level) to establish your system ground.

The system ground serves two important purposes:

(1) Provide a zero signal reference point for the entire audio system;
(2) Assure safety from electrical shock.

There exist two terms that one encounters in a discussion of ground:

(A) EARTH GROUND, which is usually a heavy copper rod driven into the soil adjacent to the building (around 6 feet down) or a connection to the copper water pipes leading into the building. Either is acceptable, unless, of course, the water pipe is of the newer plastic variety.

(B) THE POWER COMPANY EARTH CONDUCTOR that enters the building at the power line breaker box; this conductor should be (and is often by code) tied to the above-mentioned earth ground at one point. This point is the SYSTEM EARTH GROUND.

TIE THE CONSOLE GROUND LUG TERMINAL STRIP TO THE SYSTEM EARTH GROUND. TIE EVERY PIECE OF EQUIPMENT IN THE ENTIRE AUDIO SYSTEM TO THE CONSOLE GROUND LUG TERMINAL STRIP. If the system earth ground point is inaccessible, tie the console ground terminal strip to the power company earth conductor at the main breaker box (see drawing "Typical Grounding Scheme" on next page).

Each piece of equipment should be connected by its own ground wire (usually the round third pin on the AC cord). This means that every AC outlet must have a separate conductor run to the console ground lug terminal strip; the outlets cannot be daisy-chained as is normally encountered in commercial and residential AC systems. Any equipment not supplied with 3-wire AC cables must have individual ground wires (16 gauge or larger) connected to their chassis grounds and then run to the console ground lug terminal strip.

Further Details

Check all equipment to be absolutely certain that each unit is power transformer isolated from the AC mains to prevent safety hazards.

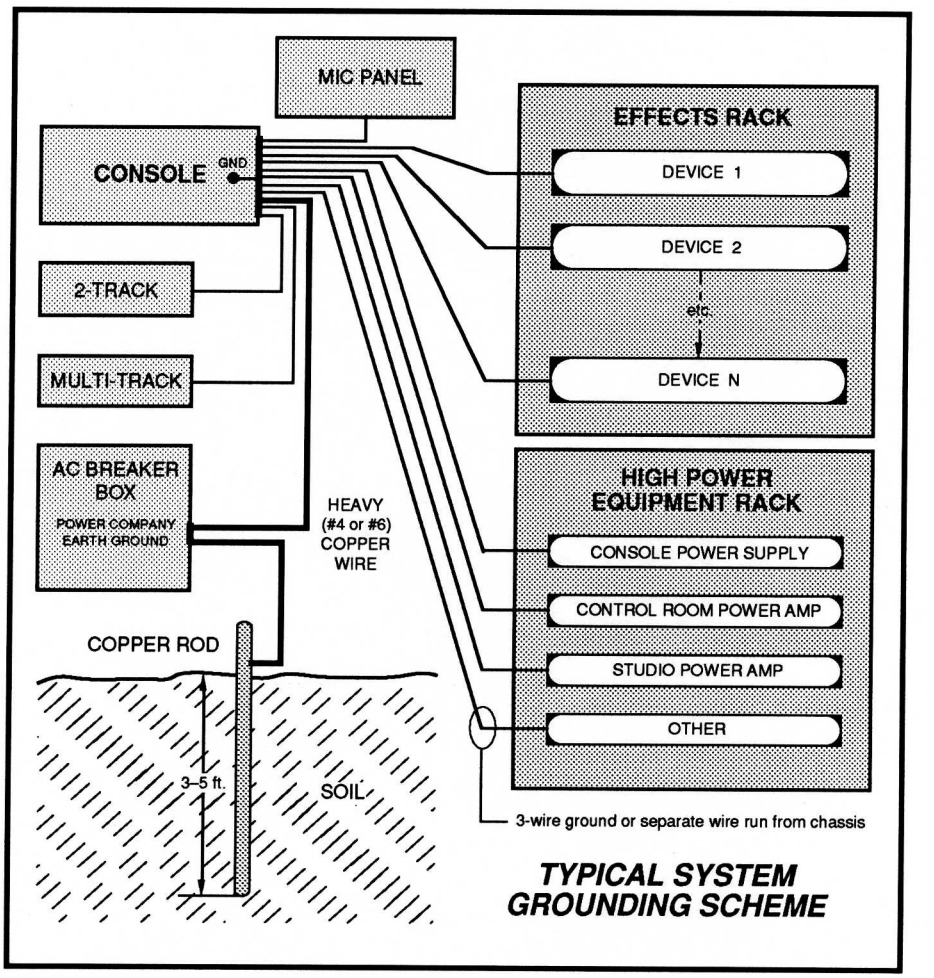
It is assumed that in each piece of audio equipment the audio ground and the chassis are tied together at some point. Any piece of equipment lacking a grounded chassis is likely to be prone to interference problems.

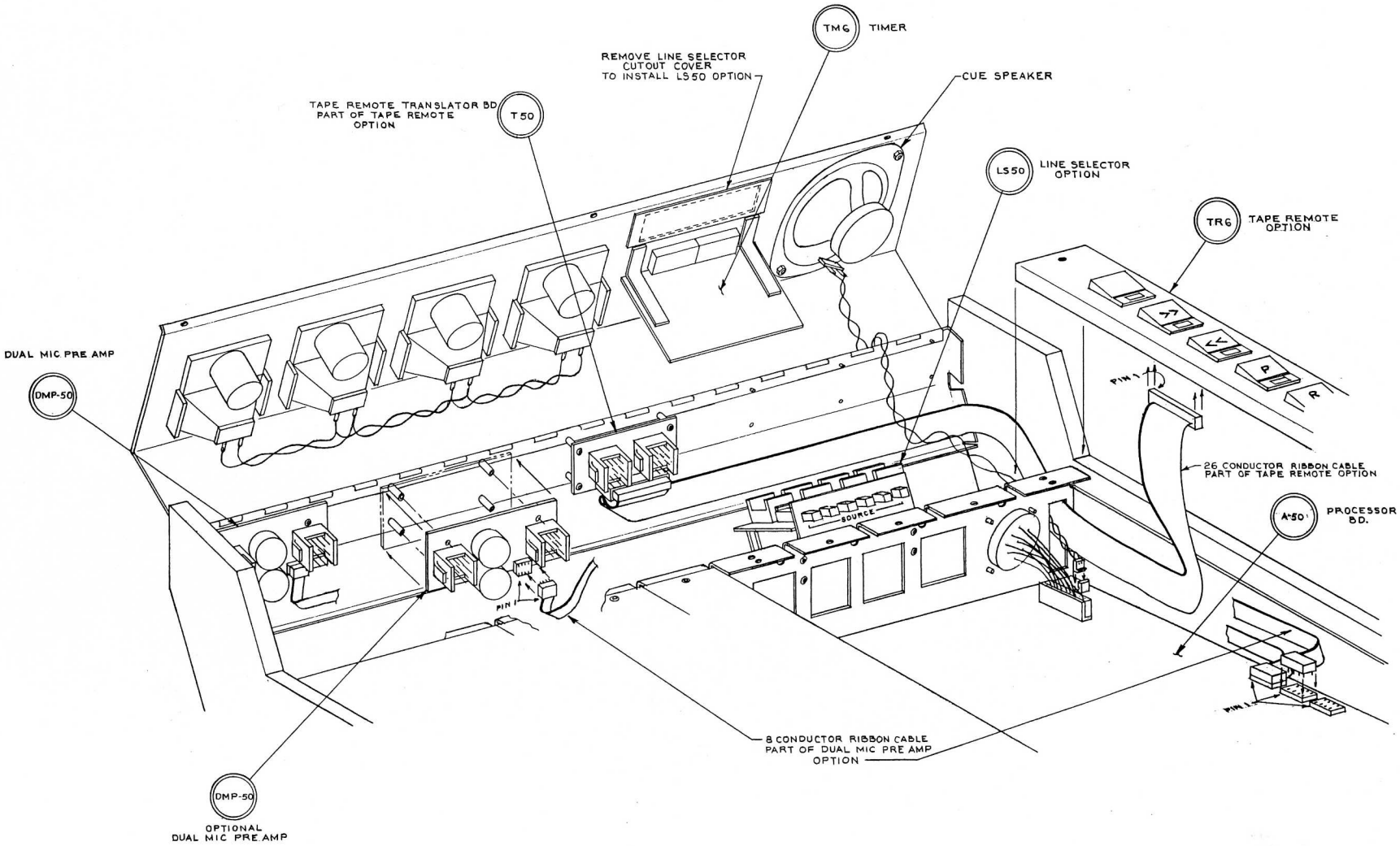
Locate all unbalanced audio equipment in the same rack if possible, to

minimize chassis ground potential differences. It may also be helpful to insulate each piece of unbalanced equipment from it's mounting rails in the rack by means of nylon 10-32 screws and insulating washers between rails and faceplates.

Once the system is properly grounded, you may proceed with the audio and control input/output connections (next section).

Tie the console ground lug terminal strip to the system earth ground. Tie every piece of equipment in the entire audio system to the console ground lug terminal strip.





OPTIONS INSTALLATION	
A–50 RADIO CONSOLE	
5–21–90	Wheatstone Corporation 6720 V.I.P. Parkway Syracuse, NY. 13211
MS per RA	
	INTERIOR VIEW OF MAINFRAME
NO SCALE	#A50/OPT–1

Console Logic & I/O Connections

Section Contents

GENERAL

All audio and control I/O connections to the A-50 console are made through 12-pin connectors with locking tabs that connect to mating connectors on the console processor and extender boards, mic preamps, line preselector, and tape remote modules. There is one audio connector and one logic connector per input channel, and there are 6 connectors in the output/CR/SC section of the processor board for insert and output connections and on-air opto connections. In the meterbridge, there are two connectors on the DMP-50 dual mic preamp module (and 2 more for each additional optional DMP-50), 4 connectors on the optional line preselector, and 2 logic connectors on the optional tape remote translator board.

As supplied from the factory, the console requires no logic connections to function. Therefore an orderly installation begins with the audio wiring. Once proper audio operation is verified (i.e., no ground loops), proceed with the control wiring.

The supplied 12 pin connectors use crimp type pins. A crimp tool must be used, and an extraction tool is handy to remove pins that have been inserted in the wrong connector block hole, or if rewiring or wiring repair is needed in the future. Always be careful to double check pin numbering on the connector block and the wiring diagram before inserting the pin in the block.

Consoles are normally supplied with the outputs of the mic preamp wired to the "A" inputs of IN-50 modules 1 and 2. Channel 1 is preprogrammed to mute the control room speakers, so you won't hear anything from the control room speakers if channel 1 is turned ON. Channel 2 is preprogrammed to mute the studio speakers, so you won't hear anything from those speakers if channel 2 is turned ON. These mutes can be reprogrammed; see the section on dipswitch controlled functions.

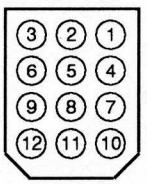
The I/O connections can now be made. Note that a gap is provided at the back of the console, at the bottom, for cable entry.

Refer to the Module I/O Pinout text (page 3-10) to connect the console to your equipment. Note that each IN-50 module is a dual input ("A" and "B") line level module. If a microphone level input is desired, route the signal to one of the DMP-50 inputs. The DMP-50 outputs are normally connected to the "A" inputs of the first IN-50 modules. Recommended setup is to have all

microphones connected to the first channels, with the remaining channels used as line inputs. Group input types together. For example, if you have three cart machines, connect them to the "A" inputs of three successive IN-50 modules.

Connect seldom used sources to the "B" inputs, if necessary. Another use of the "B" inputs is to duplicate the connections to often used sources, giving a level of signal security through redundancy. Note that the "B" inputs should not be used for microphones in the studio or control room, since the studio and control room mute functions are not available at these inputs.

Key diagram showing back of typical 12-pin I/O connector plug, with pin numbers oriented as they would be seen while wiring. Beveled corners correspond to PCB mounted mating sockets.



Refer to the Module I/O Connection Section and note that the audio signal connections follow a logical pattern. Pins are grouped in 4 groups (called pairs for this discussion) of 3 pins each (1-3, 4-6, 7-9, and 10-12). The first pin of each group (1, 4, 7, and 10) is audio common, or ground, for connection of shields. The next pin (2, 5, 8, and 11) is the low side for balanced signals, or ground for unbalanced signals. The third pin (3, 6, 9, and 12) is the high side for balanced signals, or the signal connection for unbalanced ones.

In the case of stereo signals, left is always assigned to the first (pins 1-3) or third (pins 7-9) pair of a connector, and right is always assigned to the second (pins 4-6) or fourth (pins 10-12) pair.

The console is provided with insert connectors on both the PGM and the AUD signals. The insert points (unbalanced) are normally jumpered, so if you do not plan on doing any processing of these signals you can leave the insert connectors unconnected. If you wish to insert some type of processing device in either of these lines, you must wire to the insert connector in question. Note that the insert output is wired to the external device's input, and the external device's output wires back to the console insert input. Note also that the 10 ohm jumper resistors that normally bypass the insert point must be removed if the inserts are to be used. Remove the correct resistor according to the chart below:

For exact location of these resistors, see A-50 Processor Board Load Sheet Drawing, Page 7-2 (upper right).

LT PGM	R104
RT PGM	R103
LT AUD	R102
RT AUD	R101

Although insert points are not included for each channel separately, the mic channels may be processed by considering the connection from the DMP-50 output to the IN-50 input as an insert point. Wire the DMP-50 output to the external device's input, and wire the external device's output to the IN-50 input.

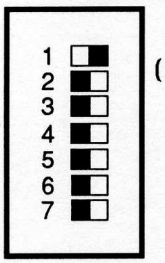
Once the signal wiring is complete, check that each item is correctly wired before continuing.

CONSOLE LOGIC

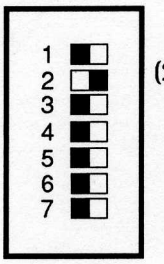
Dipswitch Controlled Functions

The dipswitch positions on each input channel are numbered from one to seven, and control the functions described below.

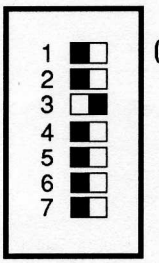
Note dipswitches are ON with the switch lever to the right, or OFF with the lever to the left.



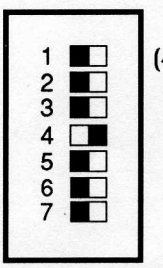
(1) TB TO STUDIO - sends the module's pre-fader left signal to the studio talkback bus. This function is normally used on the announcer mic channel module to permit control room to studio communication.



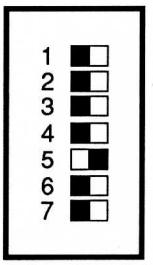
(2) CR MUTE - causes the console's control room output to be muted when a programmed module, with its A input selected, is triggered ON. This prevents control room feedback when the announcer's mic channel is open.



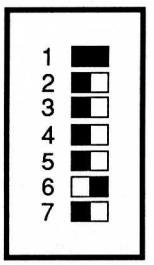
(3) ST MUTE - causes the console's studio output to be muted when a programmed module, with its A input selected, is triggered ON. This function is used to prevent feedback when the studio announcer mic channel is open.



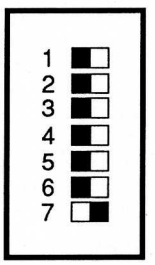
(4) CUE DROPOUT - causes a channel that is in CUE to drop out of CUE when its ON button is pushed.



(5) LOCAL OFF ENABLE - allows the channel's logic circuitry to control the illumination of the channel OFF lamp (as shown). If an external device, such as a cart machine, will control the channel OFF lamp, this dipswitch should be moved to its OFF position.

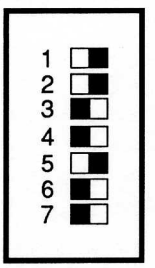


(6) CUE ENABLE - interrupts the headphone signal with the CUE signal when the programmed channel is in CUE. CR can also be programmed for interruption; see the discussion below on the CR/SC dipswitch functions for further information.



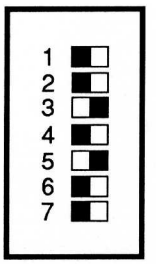
(7) TIMER RESTART - causes the console timer to automatically reset to zero and start counting when the programmed channel's ON button is pushed. (Note timer must already be counting in order to continue count after resetting to zero.)

Typically, the IN-50 dipswitches as set up as described below: this is the factory default setting. Input (IN-50) dipswitches are ON with the switch lever to the right, or OFF with the lever to the left.



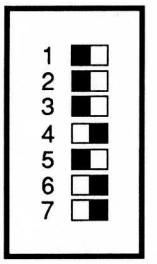
Channel 1 is set up for a control room microphone. Position 1 of the dipswitch is ON to enable the Talkback-to-Studio function for that channel, allowing the console operator to talk to the studio by using the "TB" switch on the SC-50 module. NOTE THAT ONLY ONE IN-50 MODULE CAN BE PROGRAMMED FOR TALKBACK TO STUDIO; PROGRAMMING OF THIS FUNCTION FOR MORE THAN ONE MODULE AT A TIME WILL RESULT IN SEVERE DISTORTION. Position 2 of the switch is ON to enable the control room mute function for that channel, to prevent the control room mic signal from appearing at the control room speakers. Since the control room mic can talk to the studio via talkback, the studio mute function for that channel is disabled by turning position 3 of the switch OFF. Positions 4 and 6 are

OFF since the cue function is not required for this signal. Position 5 is ON to enable local control of the OFF lamp. Position 7 is normally OFF. If it is turned ON, the console timer will be reset whenever the control room mic is turned ON.



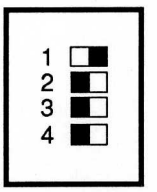
Channel 2 is set up for a studio microphone. Position 1 of the dipswitch is OFF to disable the Talkback-to-Studio function for that channel. Position 2 of the switch is OFF to disable control room mute. Position 3 of the switch is ON to enable the studio mute function, which prevents feedback through the studio monitors when the channel is open. Positions 4 and 6 are OFF since the cue function is not required for this signal. Position 5 is ON to enable local control of the OFF lamp. Position 7 is normally OFF. If it is turned ON, the console timer will be reset whenever the studio mic is turned ON.

If additional studio mics are used (requiring additional DMP-50 modules), they may be set up the same as the channel 2 module.

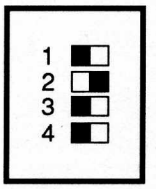


The remaining channels are line inputs, used with cart, CD, tape machines, or any other line level signal. Positions 1-3 of the dipswitch are OFF, disabling Talkback-to-studio and the mutes. Position 4 and 6 are ON to enable CUE with Dropout. With this feature the operator can listen to the source material on an OFF channel in the headphones or control room speakers by pressing the channel's CUE button. Then CUE can be left, and the channel turned ON, by hitting the ON button. Position 7 is ON if the timer should start at zero when the channel is selected. Position 5 is OFF if the machine connected to the module is set up to signal that it is READY by flashing the module OFF lamp; otherwise the switch is ON to enable the OFF lamp to be controlled by the module's logic.

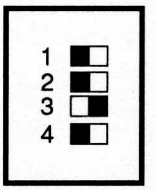
The CR/SC section of the processor board contains a 4 position dip-switch to provide the following additional functions:



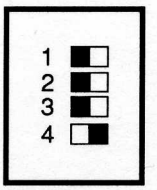
(1) CUE TO CR LEFT - interrupts the left control room speaker with the CUE signal whenever an IN-50 module programmed for CUE ENABLE is placed in CUE.



(2) CUE TO CR RIGHT - interrupts the right control room speaker with the CUE signal whenever an IN-50 module programmed for CUE ENABLE is placed in CUE.



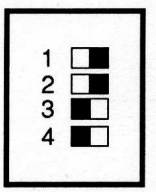
(3) LEFT STUDIO DIM - attenuates the left studio output by approximately 20 dB whenever an IN-50 programmed for ST MUTE is on.



(4) RIGHT STUDIO DIM - attenuates the right studio output by approximately 20 dB whenever an IN-50 programmed for ST MUTE is on.

Note that these dipswitch functions may be used in any combination, according to the needs of the installation.

Typically, the output dipswitches as set up as described below: this is the factory default setting. Output dipswitches are ON when the right side of the lever is pressed down.

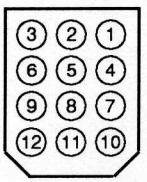


If using a control room mic and control room speakers, set the first two positions of the output dipswitch with the right side of the lever down to keep the control room microphone signal out of the control room speakers. (The CR MIC module, usually channel 1, must be programmed for CR mute.) The remaining two dipswitch positions can be programmed to have the material in the studio speakers reduced by 20 dB, instead of completely muted, when the Talkback function is used.

Once the dipswitch settings have been made, check that each switch is correctly programmed before continuing.

MODULE CONTROL PORTS

Key diagram showing back of typical 12-pin I/O connector plug, with pin numbers oriented as they would be seen while wiring. Beveled corners correspond to PCB mounted mating sockets.



The following logic functions, listed by pin number, are available at the logic port of each IN-50 module:

(1) REMOTE ON - connected momentarily to DIGITAL COMMON to turn channel on from a remote location.

(2) REMOTE OFF - connected momentarily to DIGITAL COMMON to turn channel off from a remote location.

(3) ON TALLY - permits a 5V lamp to be controlled by the module's channel ON circuit.

(4) MACHINE COMMON - is provided so that remote machine START and STOP can function without the need to tie the console common and the remote machine common together.

(5) REMOTE STOP - allows a remote machine to be stopped by pushing the module's channel OFF button.

(6) REMOTE START - allows a remote machine to be started by pushing the module's channel ON button.

(7) READY - allows a remote machine to control the module's channel OFF switch indicator lamp. The LOCAL OFF ENABLE dipswitch must be in the OFF position.)

(8) COUGH - provides a remote momentary OFF function.

(9) TALKBACK - a continuous contact closure from this line to digital common places the module in CUE. If the module's CUE ENABLE dipswitch is activated, the CUE bus signal is sent to the headphones, and to the control room speakers if so programmed at the CR/SC dipswitch.

(10) B TALLY - provides a logic high of 5V when the module's B inputs are selected. The signal is used to light an LED indicator or otherwise used to develop A/B follow logic functions.

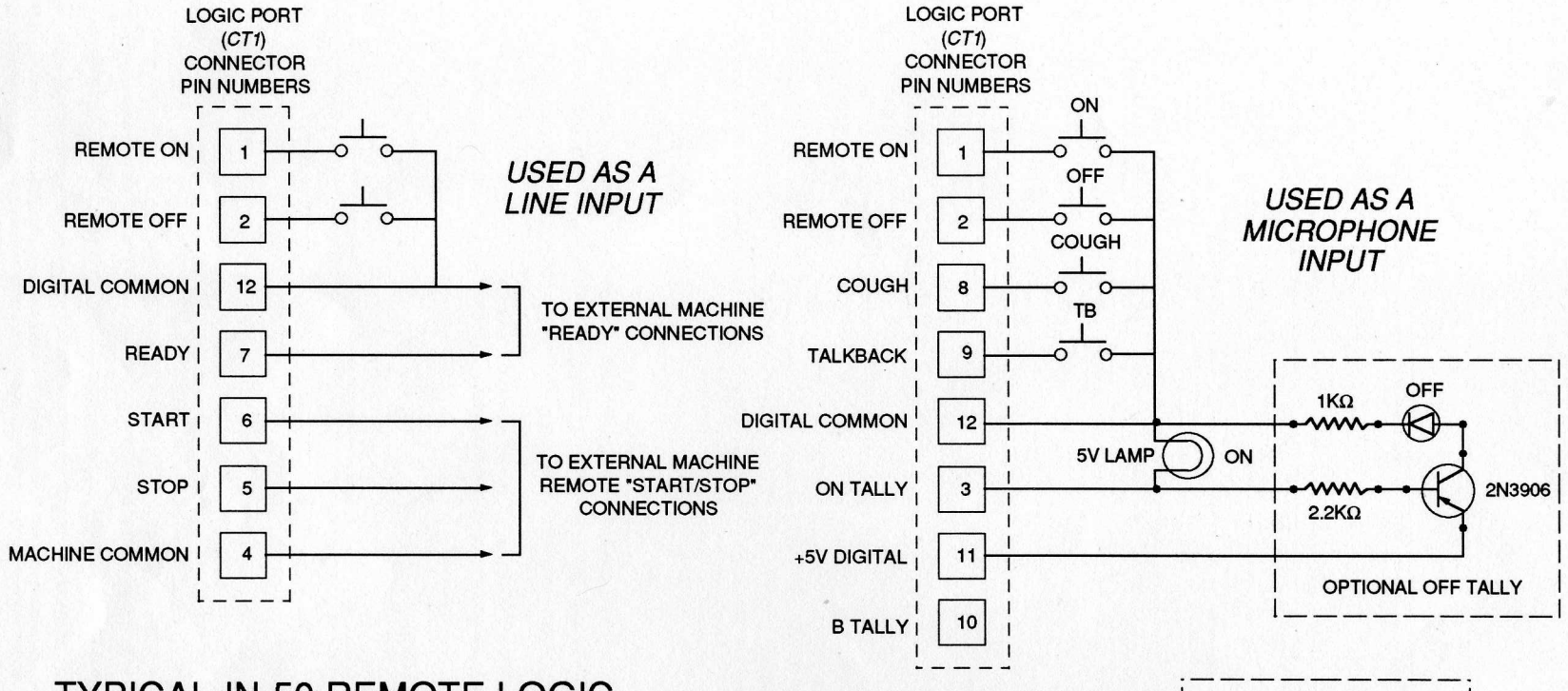
(11) +5 VOLTS - provides power source for external circuitry.

(12) DIGITAL COMMON - provides power return for external circuitry.

See drawing on page 3-9, "Typical Control Room On-Air Tally Circuits" for on-air tally relay wiring details.

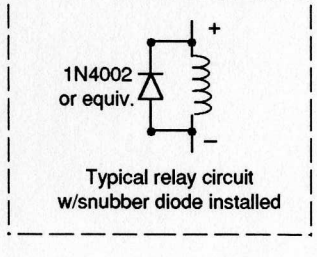
For controlling "on-air" tally functions, an opto isolator is provided. The opto transistor collector and emitter connections are available at a 12 pin connector in the CR/SC section of the processor board.

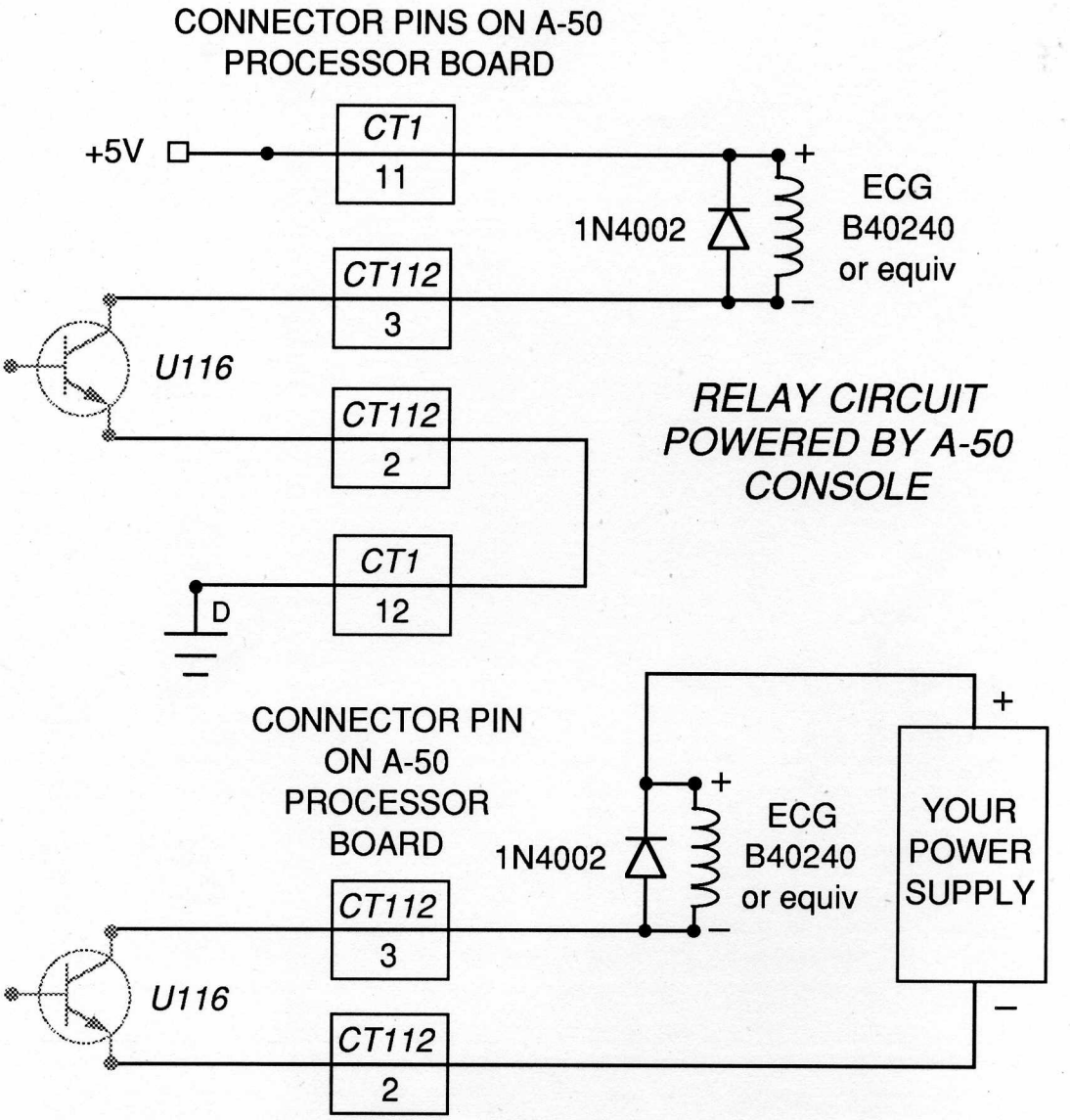
Refer to the Module I/O pinout text and wire the IN-50 logic connectors. Typically, a mic channel will use the REMOTE ON, REMOTE OFF, ON TALLY, COUGH, and TALKBACK signals, along with +5 VOLTS and DIGITAL COMMON. A line input will use REMOTE ON, REMOTE OFF, ON TALLY, REMOTE START, REMOTE STOP, and READY, along with +5 VOLTS, DIGITAL COMMON, and MACHINE COMMON. The schematic diagram ("Typical IN-50 Remote Logic"; next page) shows typical connections for both mic and line inputs.



TYPICAL IN-50 REMOTE LOGIC

1) All switches are momentary contact.
2) Instead of (or in addition to) driving visual tally indicators, ON TALLY may be used to drive external logic.
3) If external logic will include additional lamps or relays, power these from a separate external supply. Make sure external relays use transient suppression ("snubber") diodes (see diagram, right).
4) "B TALLY" can drive an external transistor, logic IC or opto-isolator. If a relay is used (an ECG listing solid state B40240, B75240 or equivalent is recommended), it should draw no more than 200mA at 5V.



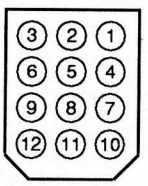


TYPICAL CONTROL ROOM ON-AIR TALLY CIRCUITS

USER-SUPPLIED RELAY TRIGGERED BY CONSOLE CR MUTE CIRCUIT

MODULE I/O CONNECTIONS

Key diagram showing back of typical 12-pin I/O connector plug, with pin numbers oriented as they would be seen while wiring. Beveled corners correspond to PCB mounted mating sockets.



Module input/output signal connections are made via 12–pin AMP type connectors. Refer to the A-50 Processor board load sheet on page 7-2 for the exact location of specific connectors. Key drawing to left shows a typical connector. Note this key drawing applies to all 12–pin I/O connector text pinouts that follow in this section.

Note also that the audio signal connections follow a logical pattern. Pins are grouped in 4 groups (called pairs for this discussion) of 3 pins each (1-3, 4-6, 7-9, and 10-12). The first pin of each group (1, 4, 7, and 10) is audio common, or ground, for connection of shields. The next pin (2, 5, 8, and 11) is the low side for balanced signals, or ground for unbalanced signals. The third pin (3, 6, 9, and 12) is the high side for balanced signals, or the signal connection for unbalanced ones.

In the case of stereo signals, left is always assigned to the first (pins 1-3) or third (pins 7-9) pair of a connector, and right is always assigned to the second (pins 4-6) or fourth (pins 10-12) pair.

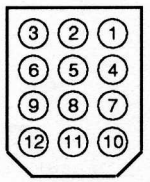
The PROGRAM, AUDITION, TELEPHONE, CONTROL ROOM and STUDIO outputs are electronically balanced, 10 ohms output impedance; minimum load is 600 ohms. **As the outputs are electronically balanced, care must be exercised when connecting them to an unbalanced system.** While temporarily shorting the low side of the output signal to ground will not cause any problems, continued operation will result in increased distortion, decreased reliability, and possible oscillation problems. **If you must connect the output to an unbalanced system, be sure to leave the low side unterminated, and connect the unbalanced system to the high side output and shield connections.**

IN-50 Audio Input

(CT2, A-50 Processor Board load sheet dwg)

Pin 1 - A INPUT LEFT, SHIELD
Pin 2 - A INPUT LEFT, LOW
Pin 3 - A INPUT LEFT, HIGH
Pin 4 - A INPUT RIGHT, SHIELD
Pin 5 - A INPUT RIGHT, LOW
Pin 6 - A INPUT RIGHT, HIGH
Pin 7 - B INPUT LEFT, SHIELD
Pin 8 - B INPUT LEFT, LOW
Pin 9 - B INPUT LEFT, HIGH
Pin 10 - B INPUT RIGHT, SHIELD
Pin 11 - B INPUT RIGHT, LOW
Pin 12 - B INPUT RIGHT, HIGH

Key diagram showing back of typical 12-pin I/O connector plug, with pin numbers oriented as they would be seen while wiring. Beveled corners correspond to PCB mounted mating sockets.



IN-50 Logic

(CT1, A-50 Processor Board load sheet dwg)

Pin 1 - REMOTE ON
Pin 2 - REMOTE OFF
Pin 3 - ON TALLY
Pin 4 - MACHINE COMMON
Pin 5 - REMOTE STOP
Pin 6 - REMOTE START
Pin 7 - READY
Pin 8 - COUGH
Pin 9 - TALKBACK
Pin 10 - B TALLY
Pin 11 - +5V LOGIC SUPPLY (FUSED)
Pin 12 - DIGITAL COMMON

Program Insert

(CT103, A-50 Processor Board load sheet dwg)

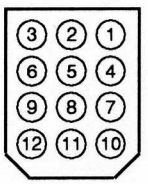
Pin 1 - LEFT PROGRAM INSERT, FEED, SHIELD
Pin 2 - AUDIO COMMON
Pin 3 - LEFT PROGRAM INSERT, FEED, HIGH
Pin 4 - RIGHT PROGRAM INSERT, FEED, SHIELD
Pin 5 - AUDIO COMMON
Pin 6 - RIGHT PROGRAM INSERT, FEED, HIGH
Pin 7 - LEFT PROGRAM INSERT, RETURN, SHIELD
Pin 8 - AUDIO COMMON
Pin 9 - LEFT PROGRAM INSERT, RETURN, HIGH
Pin 10 - RIGHT PROGRAM INSERT, RETURN, SHIELD
Pin 11 - AUDIO COMMON
Pin 12 - RIGHT PROGRAM INSERT, RETURN, HIGH

Audition Insert

(CT102, A-50 Processor Board load sheet dwg)

Pin 1 - LEFT AUDITION INSERT, FEED, SHIELD
Pin 2 - AUDIO COMMON
Pin 3 - LEFT AUDITION INSERT, FEED, HIGH
Pin 4 - RIGHT AUDITION INSERT, FEED, SHIELD
Pin 5 - AUDIO COMMON
Pin 6 - RIGHT AUDITION INSERT, FEED, HIGH
Pin 7 - LEFT AUDITION INSERT, RETURN, SHIELD
Pin 8 - AUDIO COMMON
Pin 9 - LEFT AUDITION INSERT, RETURN, HIGH
Pin 10 - RIGHT AUDITION INSERT, RETURN, SHIELD
Pin 11 - AUDIO COMMON
Pin 12 - RIGHT AUDITION INSERT, RETURN, HIGH

Key diagram showing back of typical 12-pin I/O connector plug, with pin numbers oriented as they would be seen while wiring. Beveled corners correspond to PCB mounted mating sockets.



Program/Audition Out

(CT101, A-50 Processor Board load sheet dwg)

Pin 1 - LEFT PROGRAM OUTPUT, SHIELD
Pin 2 - LEFT PROGRAM OUTPUT, LOW
Pin 3 - LEFT PROGRAM OUTPUT, HIGH
Pin 4 - RIGHT PROGRAM OUTPUT, SHIELD
Pin 5 - RIGHT PROGRAM OUTPUT, LOW
Pin 6 - RIGHT PROGRAM OUTPUT, HIGH
Pin 7 - LEFT AUDITION OUTPUT, SHIELD
Pin 8 - LEFT AUDITION OUTPUT, LOW
Pin 9 - LEFT AUDITION OUTPUT, HIGH
Pin 10 - RIGHT AUDITION OUTPUT, SHIELD
Pin 11 - RIGHT AUDITION OUTPUT, LOW
Pin 12 - RIGHT AUDITION OUTPUT, HIGH

Telephone/Cue Out/Ext In

(CT106, A-50 Processor Board load sheet dwg)

PGM, AUD, TEL, CR and STUDIO outputs are electronically balanced. If feeding an unbalanced load, use HIGH and SHIELD. Do not short LOW to SHIELD permanently (see page 3-10).

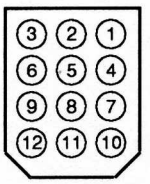
Pin 1 - EXTERNAL INPUT LEFT, SHIELD
Pin 2 - EXTERNAL INPUT LEFT, LOW
Pin 3 - EXTERNAL INPUT LEFT, HIGH
Pin 4 - EXTERNAL INPUT RIGHT, SHIELD
Pin 5 - EXTERNAL INPUT RIGHT, LOW
Pin 6 - EXTERNAL INPUT RIGHT, HIGH
Pin 7 - CUE OUTPUT, SHIELD
Pin 8 - CUE OUTPUT, LOW
Pin 9 - CUE OUTPUT, HIGH
Pin 10 - TELEPHONE OUTPUT, SHIELD
Pin 11 - TELEPHONE OUTPUT, LOW
Pin 12 - TELEPHONE OUTPUT, HIGH

CR/ST Outputs

(CT105, A-50 Processor Board load sheet dwg)

Pin 1 - LEFT STUDIO OUTPUT, SHIELD
Pin 2 - LEFT STUDIO OUTPUT, LOW
Pin 3 - LEFT STUDIO OUTPUT, HIGH
Pin 4 - RIGHT STUDIO OUTPUT, SHIELD
Pin 5 - RIGHT STUDIO OUTPUT, LOW
Pin 6 - RIGHT STUDIO OUTPUT, HIGH
Pin 7 - LEFT CONTROL ROOM OUTPUT, SHIELD
Pin 8 - LEFT CONTROL ROOM OUTPUT, LOW
Pin 9 - LEFT CONTROL ROOM OUTPUT, HIGH
Pin 10 - RIGHT CONTROL ROOM OUTPUT, SHIELD
Pin 11 - RIGHT CONTROL ROOM OUTPUT, LOW
Pin 12 - RIGHT CONTROL ROOM OUTPUT, HIGH

Key diagram showing back of typical 12-pin I/O connector plug, with pin numbers oriented as they would be seen while wiring. Beveled corners correspond to PCB mounted mating sockets.



Headphone/Opto Outputs

(CT112, A-50 Processor Board load sheet dwg)

Pin 1 - AUDIO COMMON
Pin 2 - OPTO EMITTER
Pin 3 - OPTO COLLECTOR
Pin 4 - AUDIO COMMON
Pin 5 - SPARE
Pin 6 - SPARE
Pin 7 - LEFT HEADPHONE OUTPUT, SHIELD
Pin 8 - LEFT HEADPHONE OUTPUT, LOW
Pin 9 - LEFT HEADPHONE OUTPUT, HIGH
Pin 10 - RIGHT HEADPHONE OUTPUT, SHIELD
Pin 11 - RIGHT HEADPHONE OUTPUT, LOW
Pin 12 - RIGHT HEADPHONE OUTPUT, HIGH

DMP-50 Input

(CT1, DMP-50 load sheet dwg)

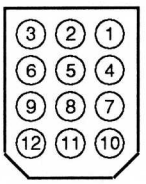
Pin 1 - MICROPHONE 1 INPUT, SHIELD
Pin 2 - MICROPHONE 1 INPUT, LOW
Pin 3 - MICROPHONE 1 INPUT, HIGH
Pin 4 - AUDIO COMMON
Pin 5 - NO CONNECTION
Pin 6 - NO CONNECTION
Pin 7 - MICROPHONE 2 INPUT, SHIELD
Pin 8 - MICROPHONE 2 INPUT, LOW
Pin 9 - MICROPHONE 2 INPUT, HIGH
Pin 10 - AUDIO COMMON
Pin 11 - NO CONNECTION
Pin 12 - NO CONNECTION

DMP-50 Output

(CT2, DMP-50 load sheet dwg)

Pin 1 - MICROPHONE 1 OUTPUT, SHIELD
Pin 2 - AUDIO COMMON
Pin 3 - MICROPHONE 1 OUTPUT, HIGH
Pin 4 - MICROPHONE 1 OUTPUT, SHIELD
Pin 5 - AUDIO COMMON
Pin 6 - MICROPHONE 1 OUTPUT, HIGH
Pin 7 - MICROPHONE 2 OUTPUT, SHIELD
Pin 8 - AUDIO COMMON
Pin 9 - MICROPHONE 2 OUTPUT, HIGH
Pin 10 - MICROPHONE 2 OUTPUT, SHIELD
Pin 11 - AUDIO COMMON
Pin 12 - MICROPHONE 2 OUTPUT, HIGH

Key diagram showing back of typical 12-pin I/O connector plug, with pin numbers oriented as they would be seen while wiring. Beveled corners correspond to PCB mounted mating sockets.



LS-50 Inputs 1 & 2

(CT3, LS-50 load sheet dwg)

Pin 1 - LINE 2 LEFT INPUT, SHIELD
Pin 2 - LINE 2 LEFT INPUT, LOW
Pin 3 - LINE 2 LEFT INPUT, HIGH
Pin 4 - LINE 2 RIGHT INPUT, SHIELD
Pin 5 - LINE 2 RIGHT INPUT, LOW
Pin 6 - LINE 2 RIGHT INPUT, HIGH
Pin 7 - LINE 1 LEFT INPUT, SHIELD
Pin 8 - LINE 1 LEFT INPUT, LOW
Pin 9 - LINE 1 LEFT INPUT, HIGH
Pin 10 - LINE 1 RIGHT INPUT, SHIELD
Pin 11 - LINE 1 RIGHT INPUT, LOW
Pin 12 - LINE 1 RIGHT INPUT, HIGH

LS-50 Inputs 3 & 4

(CT2, LS-50 load sheet dwg)

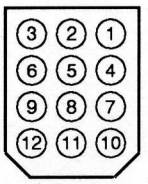
Pin 1 - LINE 4 LEFT INPUT, SHIELD
Pin 2 - LINE 4 LEFT INPUT, LOW
Pin 3 - LINE 4 LEFT INPUT, HIGH
Pin 4 - LINE 4 RIGHT INPUT, SHIELD
Pin 5 - LINE 4 RIGHT INPUT, LOW
Pin 6 - LINE 4 RIGHT INPUT, HIGH
Pin 7 - LINE 3 LEFT INPUT, SHIELD
Pin 8 - LINE 3 LEFT INPUT, LOW
Pin 9 - LINE 3 LEFT INPUT, HIGH
Pin 10 - LINE 3 RIGHT INPUT, SHIELD
Pin 11 - LINE 3 RIGHT INPUT, LOW
Pin 12 - LINE 3 RIGHT INPUT, HIGH

LS-50 Inputs 5 & 6

(CT1, LS-50 load sheet dwg)

Pin 1 - LINE 6 LEFT INPUT, SHIELD
Pin 2 - LINE 6 LEFT INPUT, LOW
Pin 3 - LINE 6 LEFT INPUT, HIGH
Pin 4 - LINE 6 RIGHT INPUT, SHIELD
Pin 5 - LINE 6 RIGHT INPUT, LOW
Pin 6 - LINE 6 RIGHT INPUT, HIGH
Pin 7 - LINE 5 LEFT INPUT, SHIELD
Pin 8 - LINE 5 LEFT INPUT, LOW
Pin 9 - LINE 5 LEFT INPUT, HIGH
Pin 10 - LINE 5 RIGHT INPUT, SHIELD
Pin 11 - LINE 5 RIGHT INPUT, LOW
Pin 12 - LINE 5 RIGHT INPUT, HIGH

Key diagram showing back of typical 12-pin I/O connector plug, with pin numbers oriented as they would be seen while wiring. Beveled corners correspond to PCB mounted mating sockets.



LS-50 Output

(CT4, LS-50 load sheet dwg)

Pin 1 - LEFT OUTPUT, SHIELD
Pin 2 - LEFT OUTPUT, LOW
Pin 3 - LEFT OUTPUT, HIGH
Pin 4 - RIGHT OUTPUT, SHIELD
Pin 5 - RIGHT OUTPUT, LOW
Pin 6 - RIGHT OUTPUT, HIGH
Pin 7 - AUDIO COMMON
Pin 8 - NO CONNECTION
Pin 9 - NO CONNECTION
Pin 10 - AUDIO COMMON
Pin 11 - NO CONNECTION
Pin 12 - NO CONNECTION

Tape Remote Switches 1-3

(CT2, T-50 load sheet dwg)

Pin 1 - SWITCH 1, LED CATHODE
Pin 2 - SWITCH 2, LED CATHODE
Pin 3 - SWITCH 3, LED CATHODE
Pin 4 - SWITCH 1, LED ANODE
Pin 5 - SWITCH 2, LED ANODE
Pin 6 - SWITCH 3, LED ANODE
Pin 7 - SWITCH 1, COMMON
Pin 8 - SWITCH 2, COMMON
Pin 9 - SWITCH 3, COMMON
Pin 10 - SWITCH 1, NORMALLY OPEN
Pin 11 - SWITCH 2, NORMALLY OPEN
Pin 12 - SWITCH 3, NORMALLY OPEN

Tape Remote Switches 4-6

(CT3, T-50 load sheet dwg)

Pin 1 - SWITCH 4, LED CATHODE
Pin 2 - SWITCH 5, LED CATHODE
Pin 3 - SWITCH 6, LED CATHODE
Pin 4 - SWITCH 4, LED ANODE
Pin 5 - SWITCH 5, LED ANODE
Pin 6 - SWITCH 6, LED ANODE
Pin 7 - SWITCH 4, COMMON
Pin 8 - SWITCH 5, COMMON
Pin 9 - SWITCH 6, COMMON
Pin 10 - SWITCH 4, NORMALLY OPEN
Pin 11 - SWITCH 5, NORMALLY OPEN
Pin 12 - SWITCH 6, NORMALLY OPEN

POWER SUPPLY INSTALLATION/CONNECTION

The PS-50 Power Supply, for the A-50 console, is contained in its own rack mount enclosure. Mount the power supply in a standard 19 inch equipment rack, keeping in mind that the supply needs adequate ventilation. The supply contains a cooling fan, with air vents at both ends of the supply. If the equipment rack is fully enclosed, it should have some form of forced air cooling, or else should have air vents at both sides next to the supply. Whether in an enclosed rack or an open frame rack, make sure that an adequate supply of fresh air is provided at the fan (left) side of the supply, and that the right side is not obstructed, to allow free flow of air from the supply.

Once the supply is mounted, connect the power cable at the console end (the power supply connector is located inside the meterbridge area, near the right end of the console). Note that the cable plug has to be rotated until the locating pins match the connector on the console. Do not force the connector on; it attaches easily when properly aligned. Connect the cable to the power supply in the same manner.

Once the power supply installation is complete, check the power supply mounting and cabling before continuing.

VU METER ALIGNMENT

Unless VU meters are noticeably mis-aligned, this procedure (which can be a lengthy process) is normally not required.

With the console in place on the counter top, check the VU meters for static, power-off alignment. If any adjustment is needed, raise the hinged meter bridge and note the meter adjusters located in the rear center of the meters. Alignment is accomplished by using a small flat blade screw driver to turn the adjusting screws until the meter reading is correct. Note that the screw should always be turned clockwise, and that correct adjustment is made when the meter is brought UP to the correct mark from downscale. Also notice that the static zero position changes as the meter bridge is brought down to its normal position. Make small incremental adjustments and return the meterbridge to operating position between adjustments; continue this procedure until the meter static zeroes are correct with the meterbridge in position.

Note that the VU meter lamps are replaceable from the back of the meter.

COMPLETING THE INSTALLATION

Plug the 8-pin dip plug from the CR-50 module into the socket CT110 (see Processor board load sheet for location of connectors), being careful to align pin 1 of the plug with pin 1 of the connector. You should not have removed any other connections from this module. If you have, reconnect them according to the chart below, making sure that all three pins of the plug align with all three pins of the connector on the board:

CONTROL	COLORS	CONN	WIRES FACE
CUE LEVEL	red/org/brn	CT104	left
LEFT STUDIO	blu/grn/yel	CT108	left
RIGHT STUDIO	red/org/brn	CT107	left
LEFT HEADPHONE	blu/grn/yel	CT119	left
RIGHT HEADPHONE	red/org/brn	CT118	left
LEFT CONTROL ROOM	blu/grn/yel	CT121	right
RIGHT CONTROL ROOM	red/org/brn	CT120	right

Once all the CR cables are connected, carefully place the module into its proper location (third slot from right) in the mainframe.

Plug the 8-pin dip plug from the timer control board on the SC-50 module into the socket CT123 (see Processor board load sheet for location of connectors), being careful to align pin 1 of the plug with pin 1 of the connector. Plug the 8-pin dip plug from the assign board on the SC-50 module into the socket CT109 Connect the 3-wire cable from the SC-50 headphone jack to the connector CT117, making sure that all three pins of the plug align with all three pins of the connector on the board, and that the wires from the plug face the front of the console. If the 8-pin cable from the timer to the timer control board has been inadvertently disconnected, connect the 8-pin dip plug into the socket CT123, being careful to align pin 1 of the plug with pin 1 of the connector. Once all the SC cables are connected, carefully place the module into its proper location (second slot from right) in the mainframe.

If you have installed the Tape Remote option, carefully place the TR-6 module into its proper location (last slot on right) in the console; otherwise place the blank faceplate in this slot. **Make sure that none of the cables are being pinched between a faceplate and the mainframe, or between two adjacent faceplates.**

One module at a time, starting from the left end of the console, connect the 9-wire cable from the IN-50 fader to the connector CT4, making sure that all 9 pins of the plug align with all 9 pins of the connector on the board, and that the wires from the plug face to the left. Plug the 8-pin dip plug from the assign board on the IN-50 module into the socket CT3 (see Processor board load sheet for location of connectors), being careful to align pin 1 of the plug with pin 1 of the connector. Plug the 8-pin dip plug from the ON/OFF switch board on the IN-50 module into the socket CT6. As the cables from each module are connected, carefully place the module into its proper location. Again, **make sure that none of the cables are being pinched between a faceplate and the mainframe, or between two adjacent faceplates.**

Once the modules have been reinstalled, check the module connections carefully before continuing.

Once all of the modules are in place, the meterbridge is down, and no cables are being pinched, start replacing the screws that hold the modules in place. Don't tighten the screws until all are installed. With all the module screws started, install the three screws that hold down the meterbridge. When all of these screws are in place, tighten them.

Before connecting the console's AC power, turn all faders and level controls on the console and any monitor equipment connected to it down to minimum. In preparation for testing your installation, assign one channel to PGM and select PGM on the CR module.

The Power Supply AC connector may now be connected; this will turn on the console. At this point the VU meters should be lit, and the LEDs of any assign switches that are down should be lit. Each channel that has the local OFF feature programmed will have either its ON or OFF lamp lit. The CUE LEDs may be lit.

Turn the module you will begin testing with ON by pressing the ON button. The ON lamp should light. Make sure the channel is assigned to PGM and slowly move the fader up. You should see movement on the PGM meters, provided there is source material available for that channel. If you have trouble at this or any other point in the installation test, turn to the section on troubleshooting, at the end of the technical section of the manual.

Press the CUE button for that channel and slowly turn up the CUE level control; if the channel has been programmed for CUE, you should hear the source material in the console's CUE speaker. Note that the channel fader and ON/OFF status have no effect on the volume of the CUE signal.

Assign the channel to AUD and those meters should also move. Check other channels. Turn the console's control room level control to the 2 o'clock position, and slowly turn up the control room monitor amplifier; your source material should become audible. Assign a channel to studio, via PGM or AUD, turn the console's studio level control to 2 o'clock, and turn the studio monitor amplifier up. You should now be able to hear your source material in the studio. (If your power amplifier does not have input level controls, use external pads to allow a comfortable listening level with the console monitor pots set at 2 o'clock; this will assure optimal L—R tracking).

Test the other channels, the headphone jack (BE CAREFUL: LOUD SOUNDS IN THE HEADPHONES CAN DAMAGE YOUR HEARING), the external CUE output, the TEL output, and the output to the external headphone amplifier, if one is used in your installation. Check any external logic functions.

This completes the A-50 console installation.

Console Operation

Section Contents

The following notes are provided as an aid to understanding the console's operation. It is impossible, without writing a fair-sized text book, to cover all possible aspects of console use. The basics are as follows:

FADER AND LEVEL CONTROLS

Normally, the faders will be run at the "in-hand" setting indicated by the dot on the fader scale, corresponding to about 12 dB below maximum fader setting. If you find yourself continually running a channel with the fader all the way to the top, the signal source is probably at too low a level. If the source has its own level control, that control may need to be turned up. Check with someone in charge if you're not sure about changing levels on other equipment.

Except for the headphone level, the console's output level controls will generally be run at a 2 o'clock setting. If this results in the control room speaker amplifier having to be run close to minimum, then turn the console's CR level control down some, or use external pads to attenuate the input signal to the power amplifier (ref: page 3-18).

Run the headphone level at a setting that is comfortable for you, but remember, LOUD SOUNDS CAN DAMAGE YOUR HEARING. Remember that a signal source may be at a higher level than you think it is. Be careful when switching channels ON or into CUE, if they will be heard in the headphones. The CUE level control also affects headphone volume for channels that are in CUE.

INPUT AND OUTPUT ASSIGN SWITCHES

The console is provided with two stereo and two mono buses. The buses are utilized by selecting sources for them, and then assigning the buses to console outputs. For example: IN-50 module 5 is assigned to AUD if the AUD button for that channel is down, and the associated AUD LED is on. Further, the AUD bus is selected by the studio when the AUD button on the SC-50 module is down, and the associated LED is on. Because of these two assigns, the channel 5 signal is heard in the studio speakers. This makes for a very flexible system for mixing and routing signal sources, if used creatively.

The PGM, or Program, bus is generally used for the on-air signal. For example, if the commercial spot recorded on the cart machine connected to channel 7 is supposed to be heard on air, then channel 7 should be assigned to PGM. On the other hand, if you have two studio mics that should both be on-air, those two channels should be assigned to PGM.

Even though, at a particular time, only one or two inputs may be assigned to the PGM bus, the other inputs may still be used. For example, while a channel 2 studio mic is on-air, and with a CD being played on channel 6, and also on-air as background to the studio mic, the operator can assign the tape recorder on channel 9 to the AUD, or Audition, bus, with AUD then being selected at the CR (Control Room), so the operator can locate a certain song on the tape without interfering with the on-air signal.

If you are doing a call-in show, the studio mic(s), and perhaps again some background music, can be assigned to the TEL, or Telephone, bus. The TEL output can be the audio that feeds the phone line back to the caller, so the caller can hear, over the telephone, all of the on-air signal except his or her own voice.

The on-air signal from a modulation monitor or a high-quality tuner can be connected to the EXT, or External, input of the CR (or SC [Studio Control]) module, to allow the operator (or the studio talent) to hear the on-air signal by using the EXT assign for that module.

CUEING

In addition to the assignment features described above, the console has an additional mono CUE bus that can be used by the operator when he or she needs to be sure that, for example, the cart machine on channel 6 is set to play the right jingle. Channel 6 CUE button is pushed, and the associated LED lights. The material on that channel appears in the headphones, and also left and/or right control room speaker, if so programmed. Meanwhile, the on-air signal is uninterrupted. Once the cart selection is verified, the CUE button is pressed again to take the channel out of CUE. At the proper time, the channel is then turned ON. If the external logic to the cart is connected to the module logic port, pushing the ON button can also start the cart machine. In addition, if CUE dropout is programmed for the channel, the CUE button doesn't have to be pressed to take the channel out of CUE; this will be accomplished automatically when the channel's ON button is pushed.

THE CONSOLE CLOCK

GENERAL DESCRIPTION

The A-50 console clock is a six-digit time-of-day clock with LED display intended for mounting in a Wheatstone audio console or control turret. The clock is designed with CMOS LSI circuits and an on board crystal-controlled time base oscillator. Numerous jumpers are provided on the clock circuit board to allow for various operational modes, including 12-hour, 24-hour, remote slave, and 60 Hz power line or 1Hz referenced timebase. There are two basic parts to the clock: a main PCB containing the clock displays and circuits, and remote switch card containing the controls for setting the clock. This control card is mounted in the console meterbridge; its switches may be accessed from the rear of the console.

CONTROLS

The clock is controlled by a trimmer and various switches; the trimmer is mounted on the main clock PCB assembly and the switches are mounted on the control card.

The trimmer serves to slightly alter the frequency of the quartz-controlled oscillator, which in turn caused the clock to run slightly slower or faster. In order to keep accurate time, the oscillator must run at 4.194304 MHz, which is divided down internally to yield 1.000000 Hz at the input (pin 8) of the LSI counter. The oscillator is set to this frequency at the factory. However, due to the nature of quartz/crystal-controlled oscillators, there may be a slight change in the frequency of the oscillator during the first few months of operation as the crystal "ages". A minor readjustment of the trimmer will compensate for this effect.

The control card has two switches: HOLD and FAST. To set the clock:

1) Press and hold the FAST switch. The display will rapidly advance. Release the FAST switch when the display indicates just past the correct time-of-day.

SPECIAL NOTE: If the HOLD switch is engaged, each push on the FAST switch will advance the clock one second.

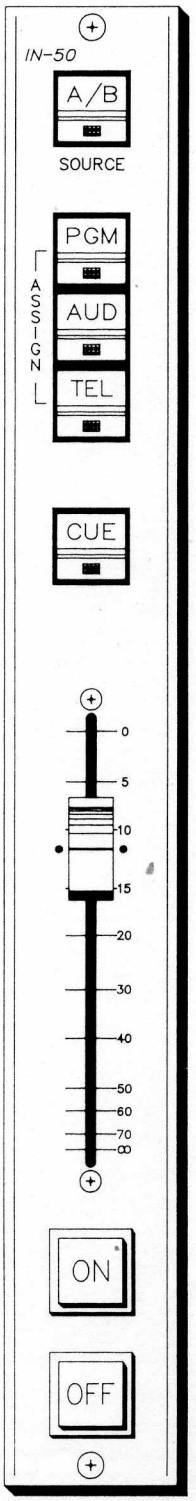
2) Press the HOLD switch. The display will freeze at its current count. Release the switch when the time-of-day catches up to the frozen count in the clock display. The clock is now set and will advance in sync with the correct time.

Note the internal crystal oscillator has been set to the correct frequency (4.194304 MHz) for accurate timekeeping; however, some slight re-adjusting of the internal trimmer capacitor may become necessary during the first few months of operation due to the aging effect of quartz crystals. A buffered output of the oscillator is available at pin #2 of IC #U6 to assist in adjusting the oscillator.

OPERATIONAL MODES

As previously described, the clock will operate either from the internal crystal controlled time base or from a 60 Hz power line signal. It can also be programmed to count in either 12 hour or 24 hour modes, and the internal counters can be slaved from another clock or other sources of 1 Hz timing signals (TTL levels). Implementing these various options consists of installing and/or removing various jumpers and diodes; these are detailed on the clock schematic diagram. The standard clock configuration is crystal controlled, 12 hour mode, stand-alone operation.

Module Controls



Section Contents

IN-50 INPUT MODULE

A/B SOURCE - This switch (w/LED indicator) selects between two electronically balanced stereo line inputs.

ASSIGN - These switches (w/LED indicators) route channel signal to Program, Audition or Telephone buses.

CUE SWITCH - (w/LED indicator) sends the pre-fader signal to the CR module. If the input module is programmed to enable the cue logic function, use of the cue switch will interrupt the headphone circuit. The console may further be programmed to have cue interrupt the left and/or right control room monitor. Depressing the cue switch activates this function. Cue is released when the cue button is pressed again, or can be programmed to automatically release when the channel ON button is activated.

FADER - A long-throw 104mm Penny & Giles precision conductive plastic fader is provided to assure the absolute maximum of reliability. Color-coded knobs are optionally available.

ON/OFF SWITCHES - The ON switch when depressed turns the channel signal on and can also start the cart machine or CD player, and be programmed to mute control room or studio speakers, as well as automatically restart the elapsed time timer. The OFF switch will turn off the module as well as external machines. External machines can also remotely command the module's ON or OFF status. The module also provides either for a local (module-controlled) OFF lamp or a CART READY function where a cart machine provides appropriate flashing and illuminating commands.

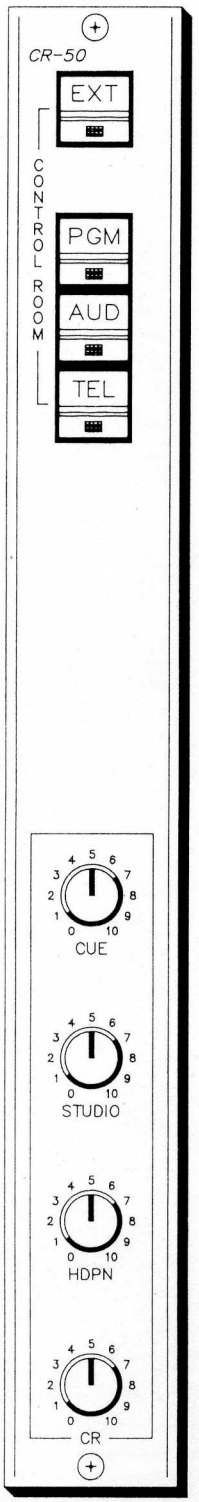
PROGRAMMABLE FUNCTIONS - These are activated from the module's channel ON button and may be preset via a dipswitch to mute control room or studio, restart the console timer, and activate the on-air tally relay.

EXTERNAL CONTROL - On, Off, Cough, Talkback and machine ready module functions may be controlled from a remote device such as a cart machine, CD player or talent mic control panel (when mic preamplifier submodule is utilized).

TALLY signals of ON/OFF and A/B status are provided to the remote locations such as talent mic control panels.

GAIN TRIM - An internal gain trim potentiometer provides a 15dB control range, assuring compatibility with high level machines such as carts, or low level machines such as cassette players.

INSERT POINT - When a mic preamplifier submodule is utilized with the channel, its signal may be routed via the insert patch point to external mic processing equipment, such as EQ and compression.



CR-50 CONTROL ROOM MODULE

SOURCE SELECTION - This bank of illuminated switches is used to determine signal to be monitored in the control room. Choices include the three buses (PGM, AUD, TEL) or EXT (electronically balanced external input; used for signals such as air, or may be wired to the line preselector located in the meterbridge).

CUE - This control determines the volume of the internal cue speaker mounted in the meterbridge, and also of the electronically balanced cue output. The cue signal interrupts the headphone circuit, and may also be routed by means of convenient dipswitch to feed an interrupt to the control room left and/or right speaker. This cue signal is automatically activated when an input CUE switch is depressed on a module programmed for cue enable.

STUDIO level works with the SC-50 module to control studio monitor level. An electronically balanced output is provided to assure a hum and noise free signal is delivered to the studio monitor power amplifier.

HDPN level control drives a built-in headphone amplifier. This powerful headphone amplifier will satisfy all but the most demanding DJs, and eliminates the need for a separate external amplifier. The headphone signal is also available on an I/O port for interface to external power amp if desired. This port can also be used to feed signal to a guest headphone set.

CR - level control determines control room monitor level. CR output is electronically balanced to allow interference-free feed to power amp.

CONTROL ROOM MUTE - CR mic module is dipswitch selected to mute control room when CR mic is ON. This mute function prevents control room feedback when monitor speakers are utilized.

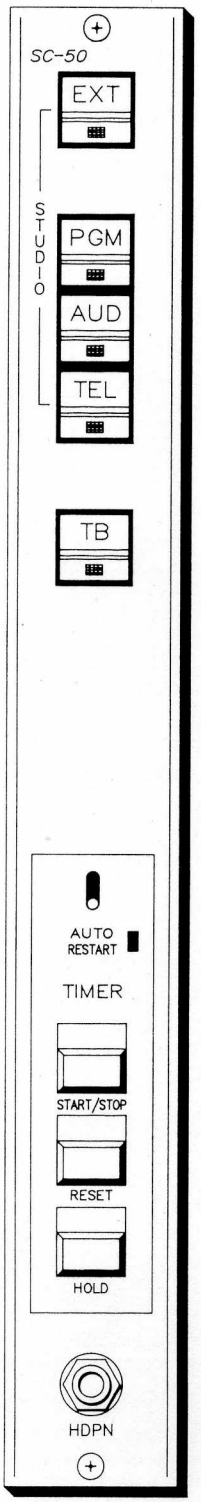
PROGRAMMABLE FUNCTIONS - Cue normally interrupts HDPN monitor; it may also be programmed via dipswitch to interrupt CR left and/or right monitor. Thus a split feed CR interrupt with PGM on left and CUE on right is easily obtained.

ON-AIR TALLY - An on-air tally opto is also provided and is activated whenever any of the control room microphones are open.

SC-50 STUDIO CONTROL MODULE

SOURCE SELECTION - This bank of illuminated switches is used to determine signal to be monitored in the studio. Choices include the three buses (PGM, AUD, TEL) or EXT (electronically balanced external input; used for signals such as air, or may be wired to the line preselector located in the meterbridge).

TALKBACK BUTTON - Momentary button feeds announcer mic to studio output. The talkback signal is also available on a console I/O port for interface to a discrete talkback speaker if so desired. Since the TB signal is internally routed from a pre-fader point on the announcer's mic channel, the TB button operates independently of announcer mic channel ON/OFF status.



OUTPUT - Studio output is electronically balanced and capable of +27dB levels to assure maximum interference rejection, plenty of headroom, and compatibility with power amplifier balanced input ports.

STUDIO MUTE - Studio mic module is dipswitch selected to mute studio when studio mic is ON. This mute function prevents announce booth feedback when monitor speakers are utilized.

TIMER control is provided by three switches, or may be set to restart, which will cause the timer to reset to zero and immediately begin counting upon activation of any pre-programmed input channel, thus greatly simplifying announcer workload and improving performance.

OUTPUT

PROGRAM, AUDITION, and TELEPHONE outputs are electronically balanced. Easily accessible internally mounted trimpots are provided for easy calibration and stereo balance.

TELEPHONE - The telephone output is provided to feed signal to caller hybrid for easy talkshow applications. It can also be used for a remote skimmer feed. Like the PGM and AUD outputs, this signal is also electronically balanced to assure compatibility and noise free performance.

INSERT POINTS are provided in PGM and AUD channels for station processing, such as EQ or compression.

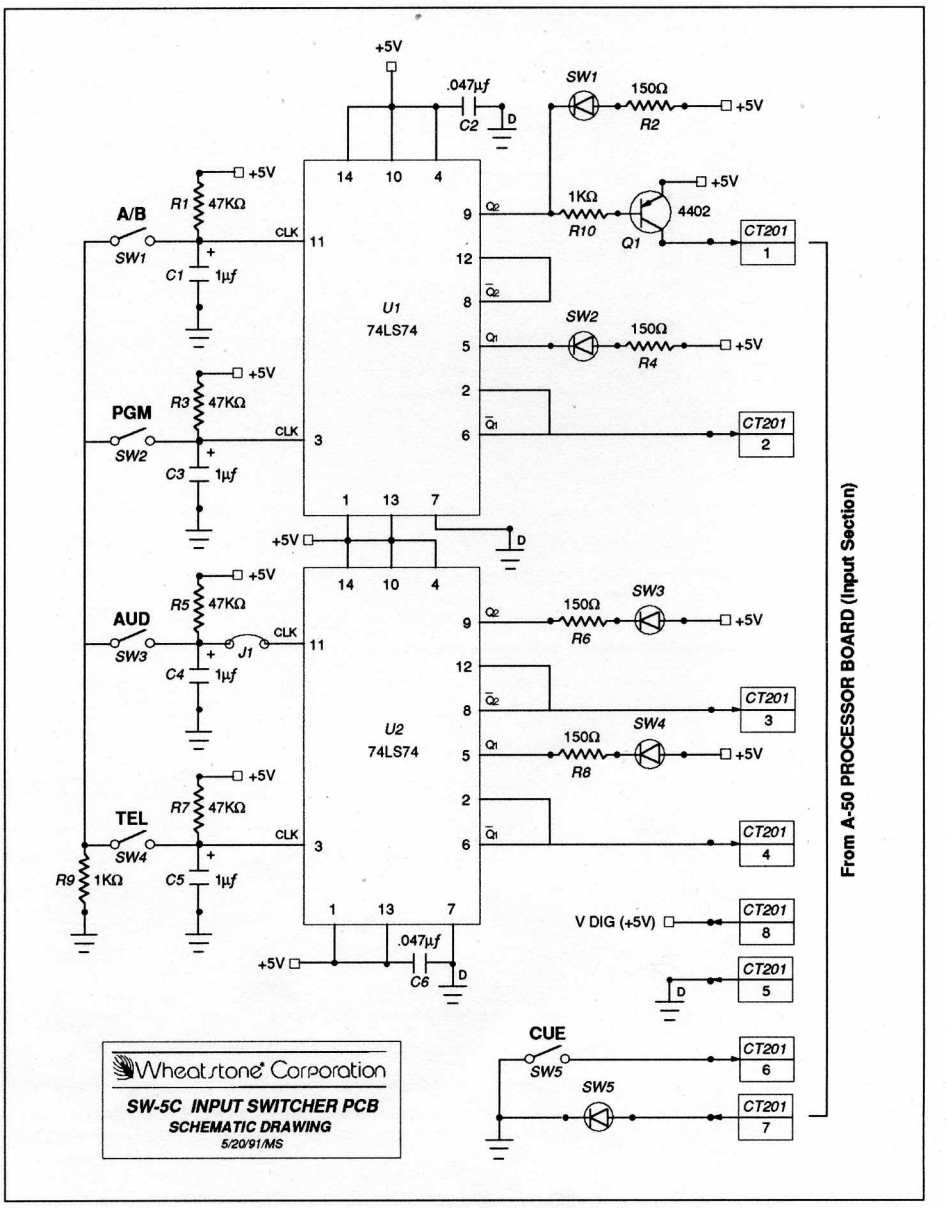
OPTIONAL MODULES

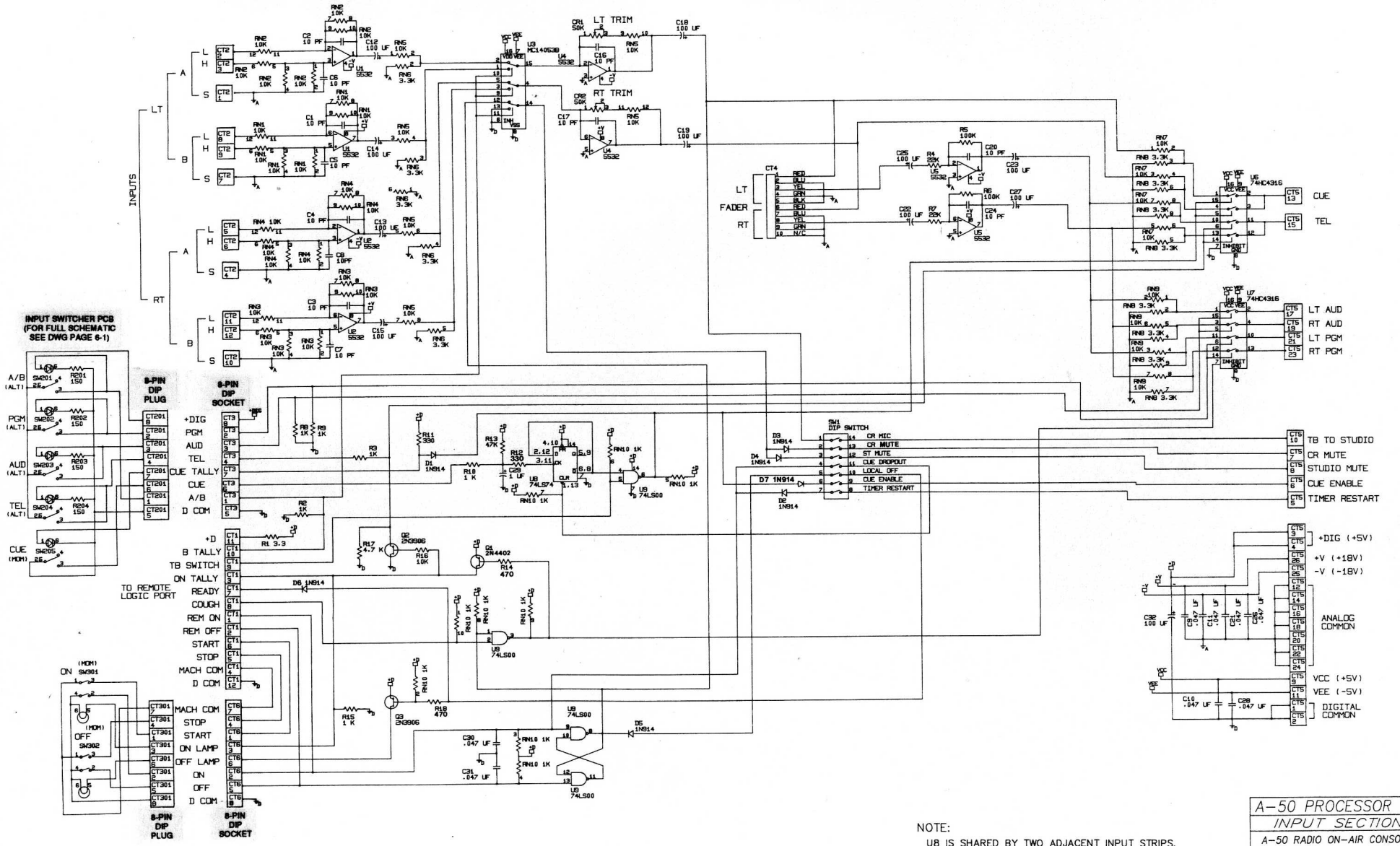
(See **OPTIONAL ACCESSORIES** section at end of manual.)

Schematics

Schematic Drawings

See also: OPTIONAL ACCESSORIES section at end of manual.

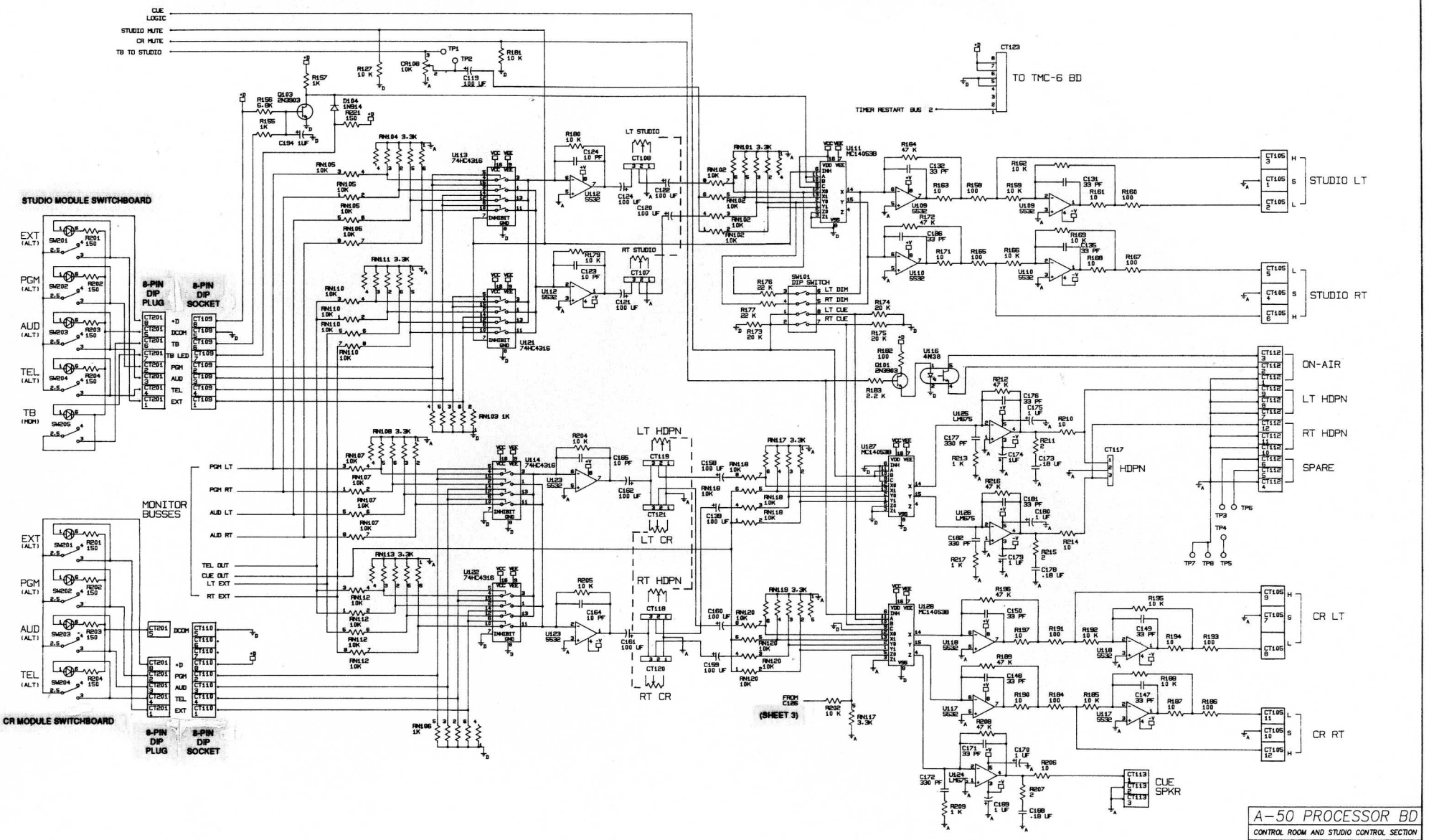




NOTE:
U8 IS SHARED BY TWO ADJACENT INPUT STRIPS.
WHERE 2 PIN NUMBERS ARE SHOWN, THE FIRST APPLIES TO THE ODD NUMBERED CHANNEL, AND THE SECOND APPLIES TO THE EVEN NUMBERED CHANNEL.

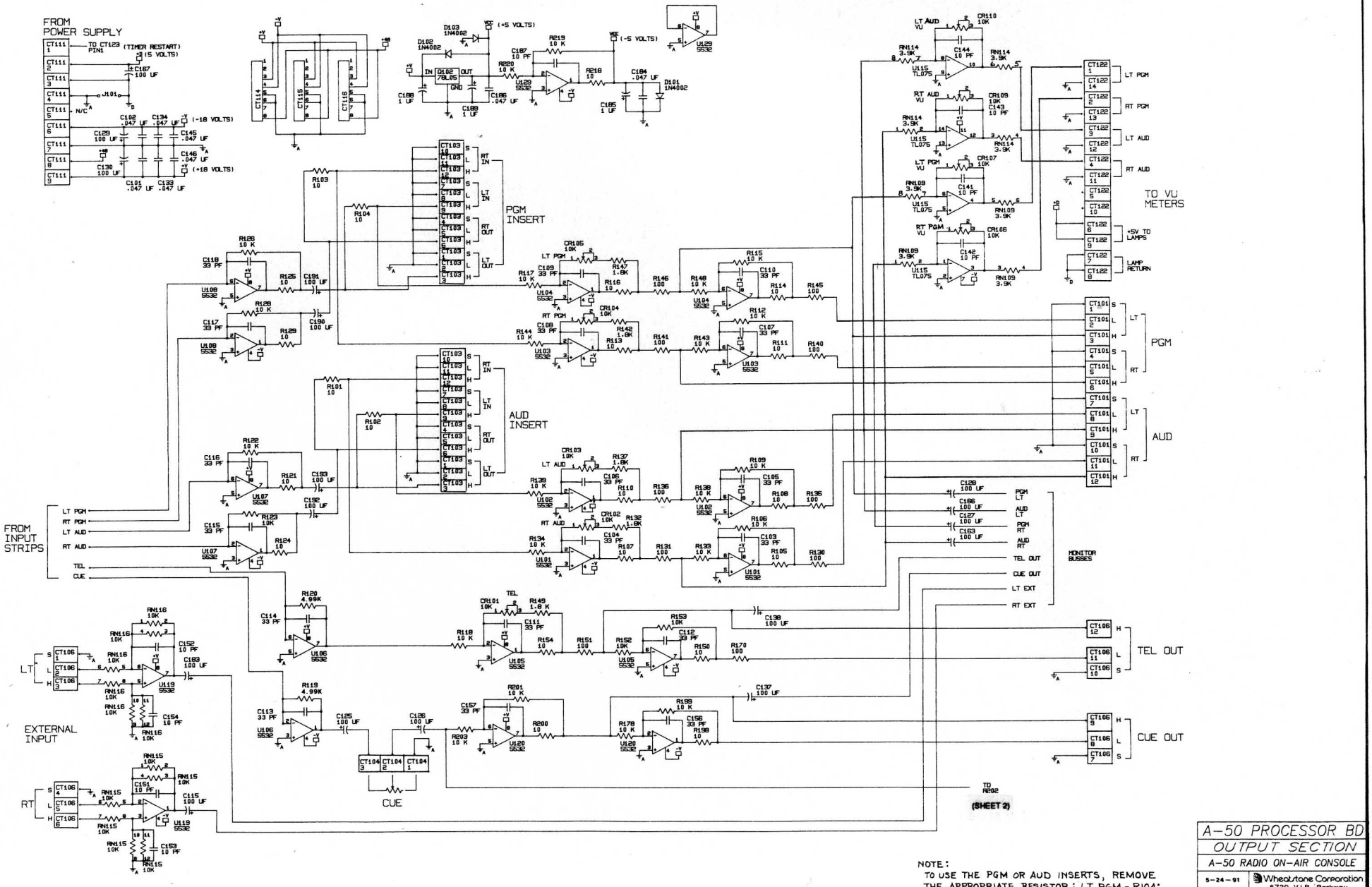
A-50 PROCESSOR BD	
INPUT SECTION	
A-50 RADIO ON-AIR CONSOLE	
5-23-91	Wheatstone Corporation 6720 V.I.P. Parkway Syracuse, NY. 13211
JS	
DO NOT SCALE	SCHEMATIC DRAWING
SHT 1 OF 3	A50-D PCB / #A50/SCH-1

A-50 Processor Board Schematic - Input Section - Page 6-2



A-50 PROCESSOR BD	
CONTROL ROOM AND STUDIO CONTROL SECTION	
A-50 RADIO ON-AIR CONSOLE	
5-23-91	Wheatstone Corporation 6720 V.I.P. Parkway Syracuse, NY. 13211
JS	
DO NOT SCALE	SCHEMATIC DRAWING
SHT 2 OF 3	A50-D PCB #A50/SCH-1

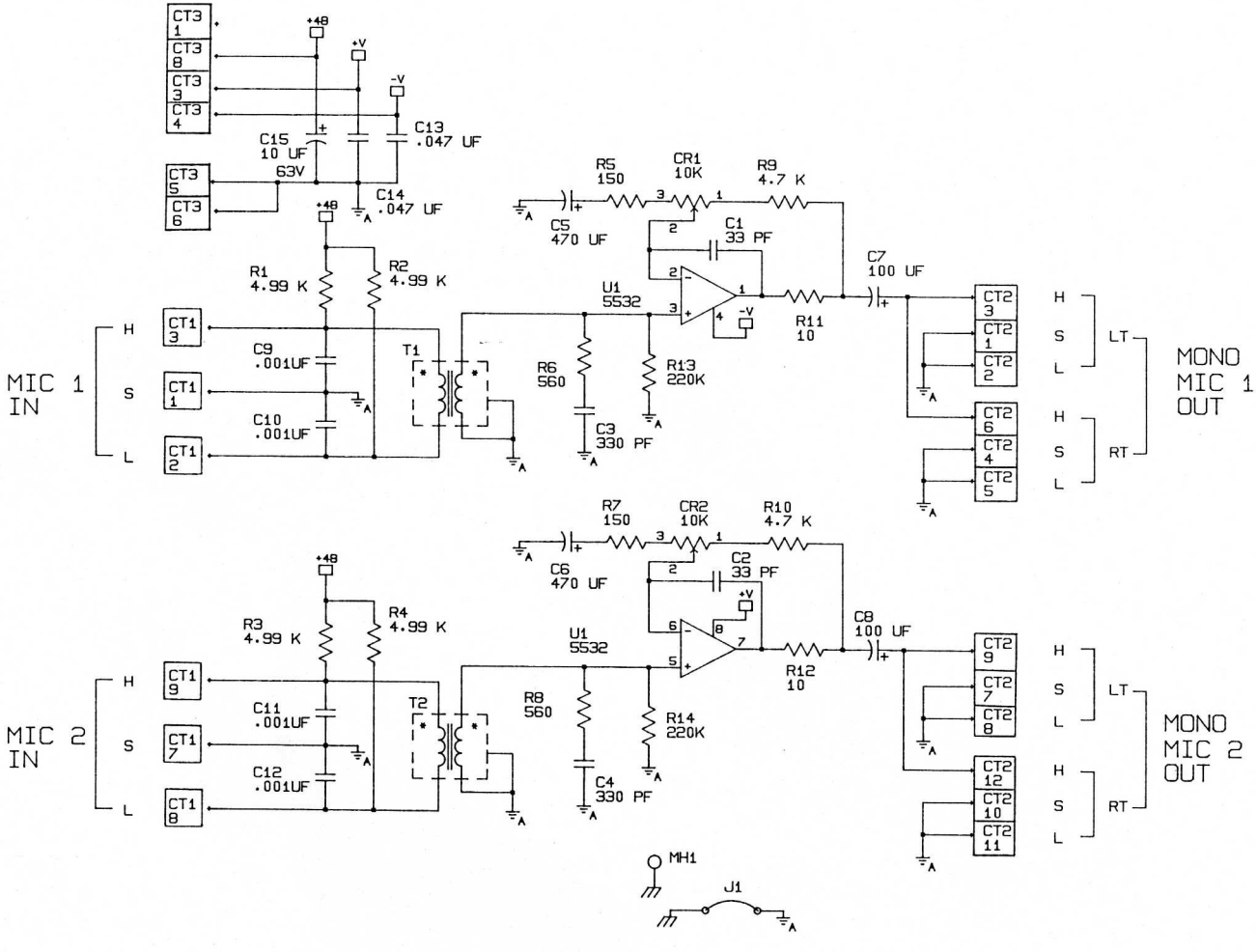
A-50 Processor Board Schematic - CR/Studio Section - Page 6-3



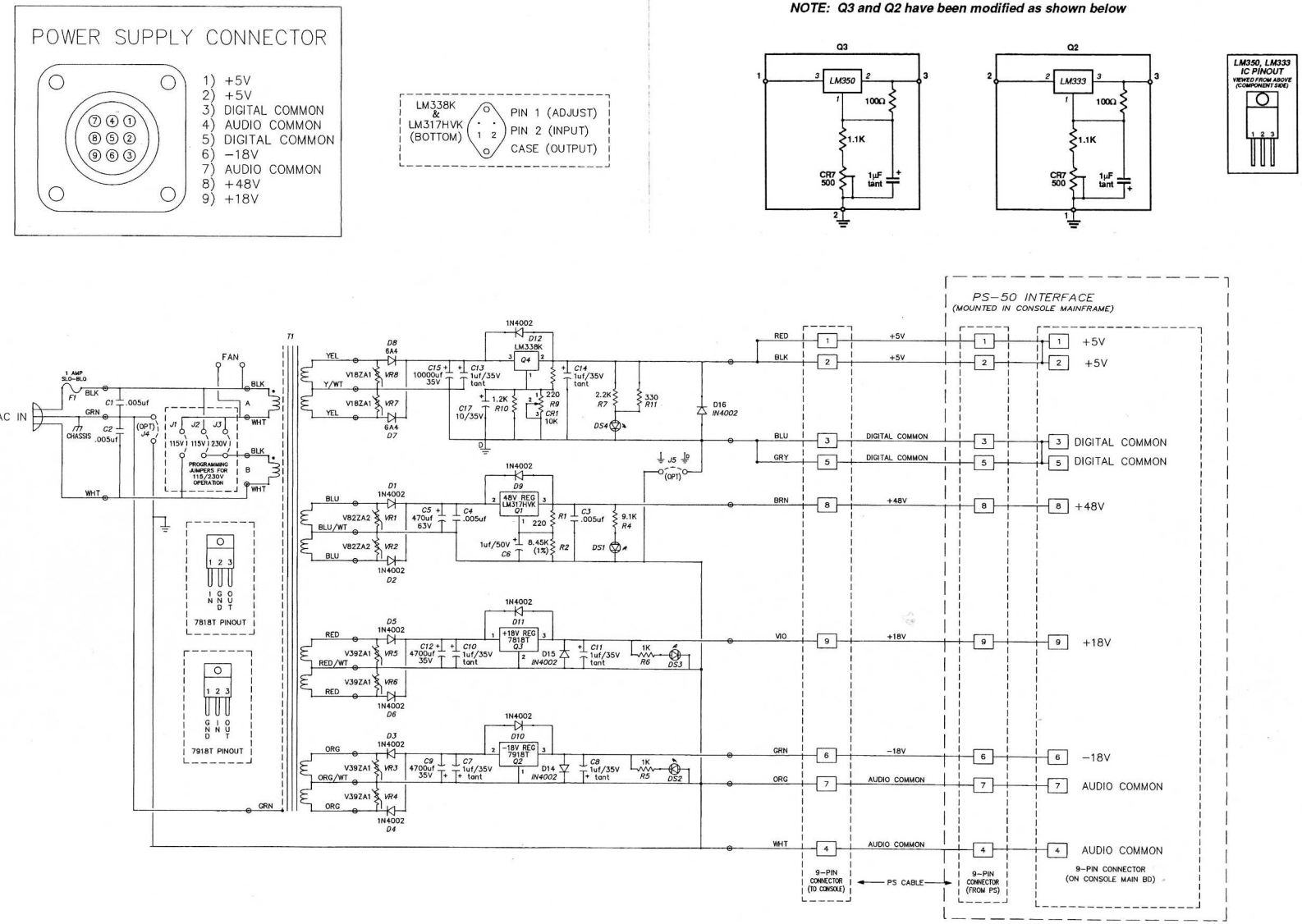
NOTE:
TO USE THE PGM OR AUD INSERTS, REMOVE THE APPROPRIATE RESISTOR: LT PGM - R104; RT PGM - R103; LT AUD - R102; RT AUD - R101

A-50 PROCESSOR BD	
OUTPUT SECTION	
A-50 RADIO ON-AIR CONSOLE	
5-24-91	Wheatstone Corporation 6720 V.I.P. Parkway Syracuse, NY. 13211
JS	
DO NOT SCALE	SCHEMATIC DRAWING
SHT 3 OF 3	A50-D PCB / #A50/SCH-1

A-50 Processor Board Schematic - Output Section - Page 6-4



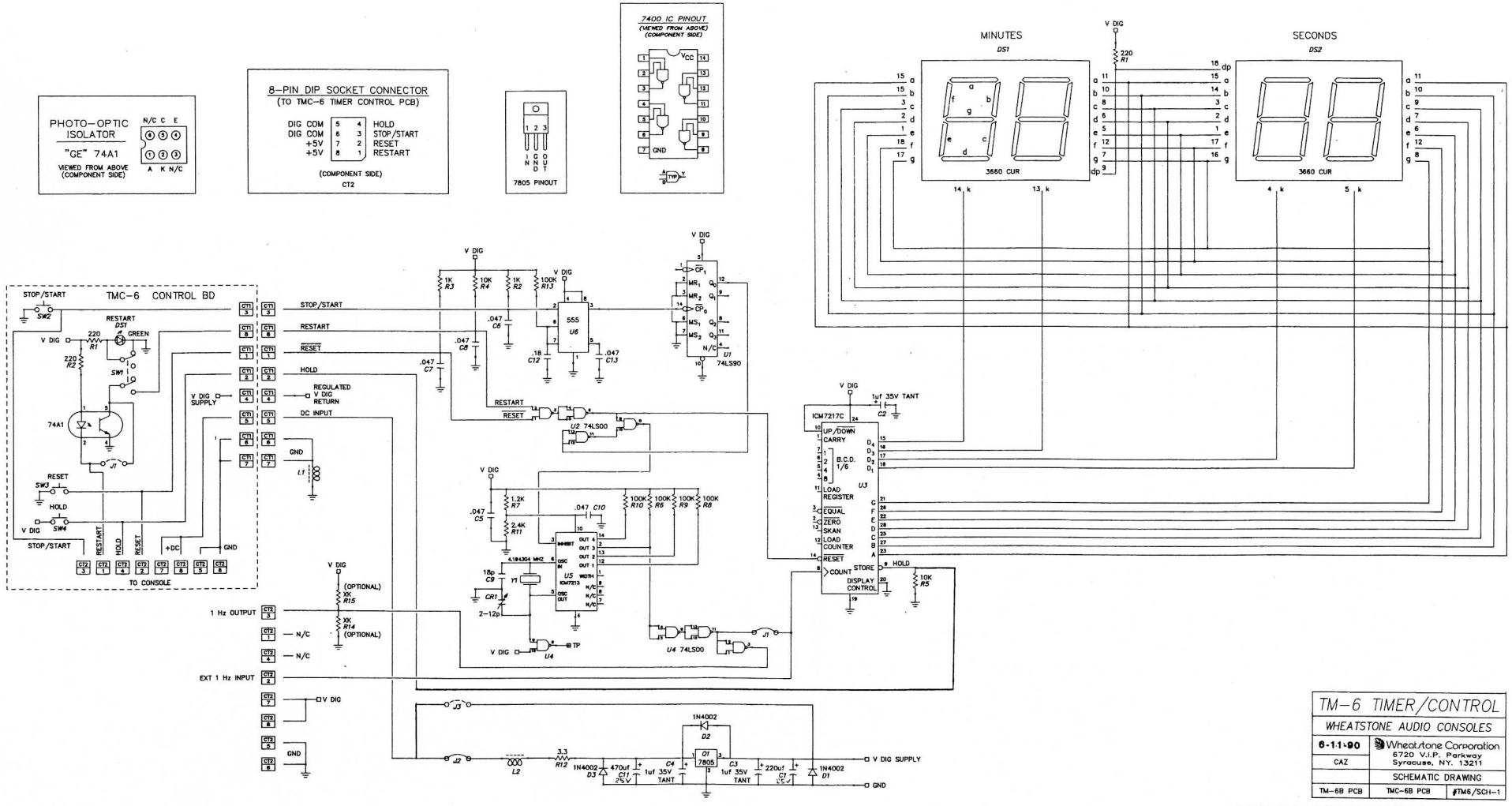
DMP-50 DUAL MIC PRE-AMP		
A-50 RADIO ON-AIR CONSOLE		
5-15-90	Wheatstone Corporation 6720 V.I.P. Parkway Syracuse, NY. 13211	
CAZ		
DO NOT SCALE	SCHEMATIC DRAWING	
	DMP50-A PCB	#A50/SCH-5



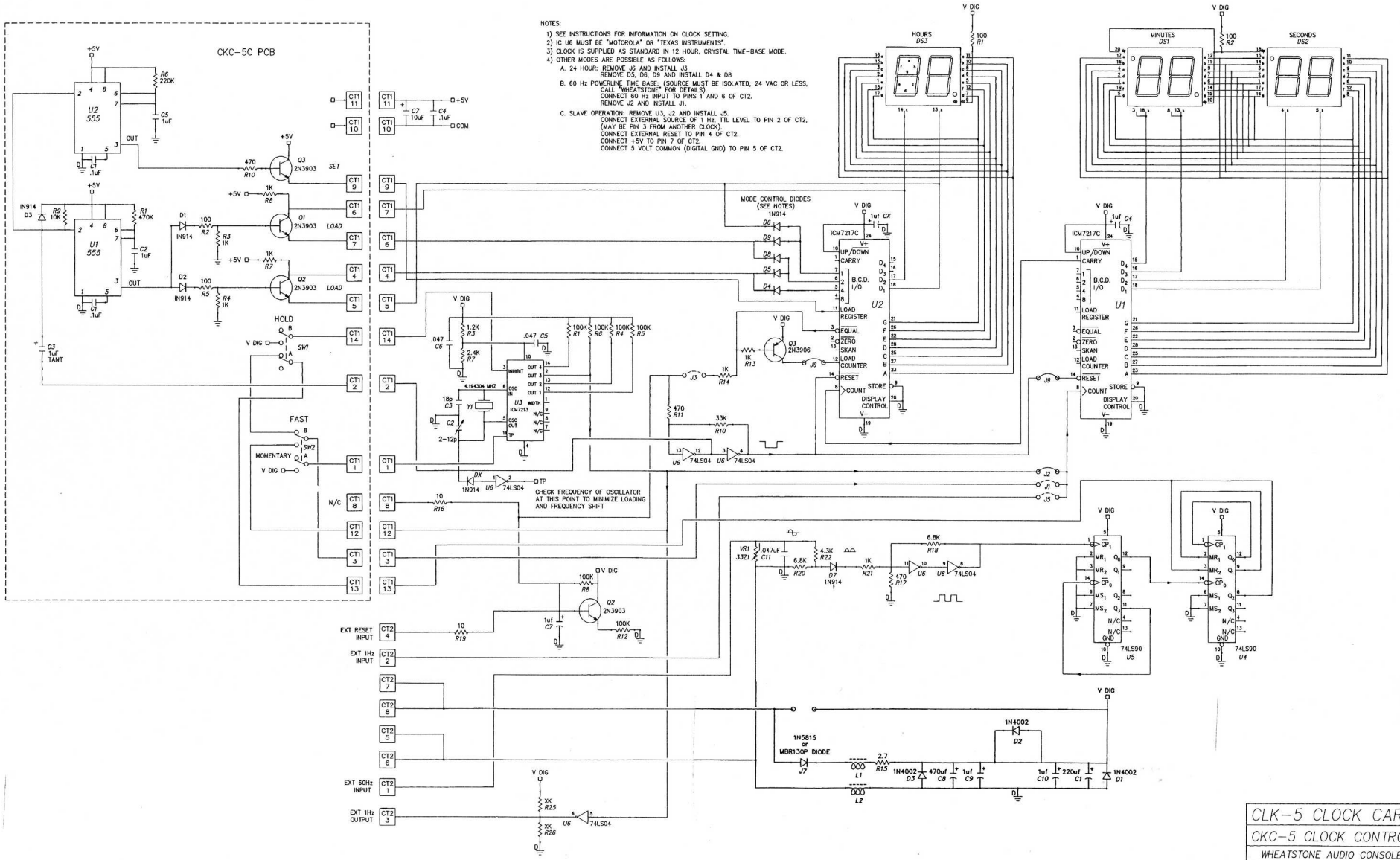
PS−50 Power Supply Schematic − Page 6−6

Page 6−6: PS−50 Power Supply Schematic

PS−50 POWER SUPPLY	
A−50 RADIO ON−AIR CONSOLE	
05−18−91	Wheatstone Corporation 6720 V.I.P. Parkway Syracuse, N.Y. 13211
JS	
REVISED	SCHEMATIC DRAWING
PS−200 & PSI−200 PCBs	#A50/SCH−6



Drawing applies to both "B" and "C" versions of PCB



CLK-5 Schematic - Page 6-8

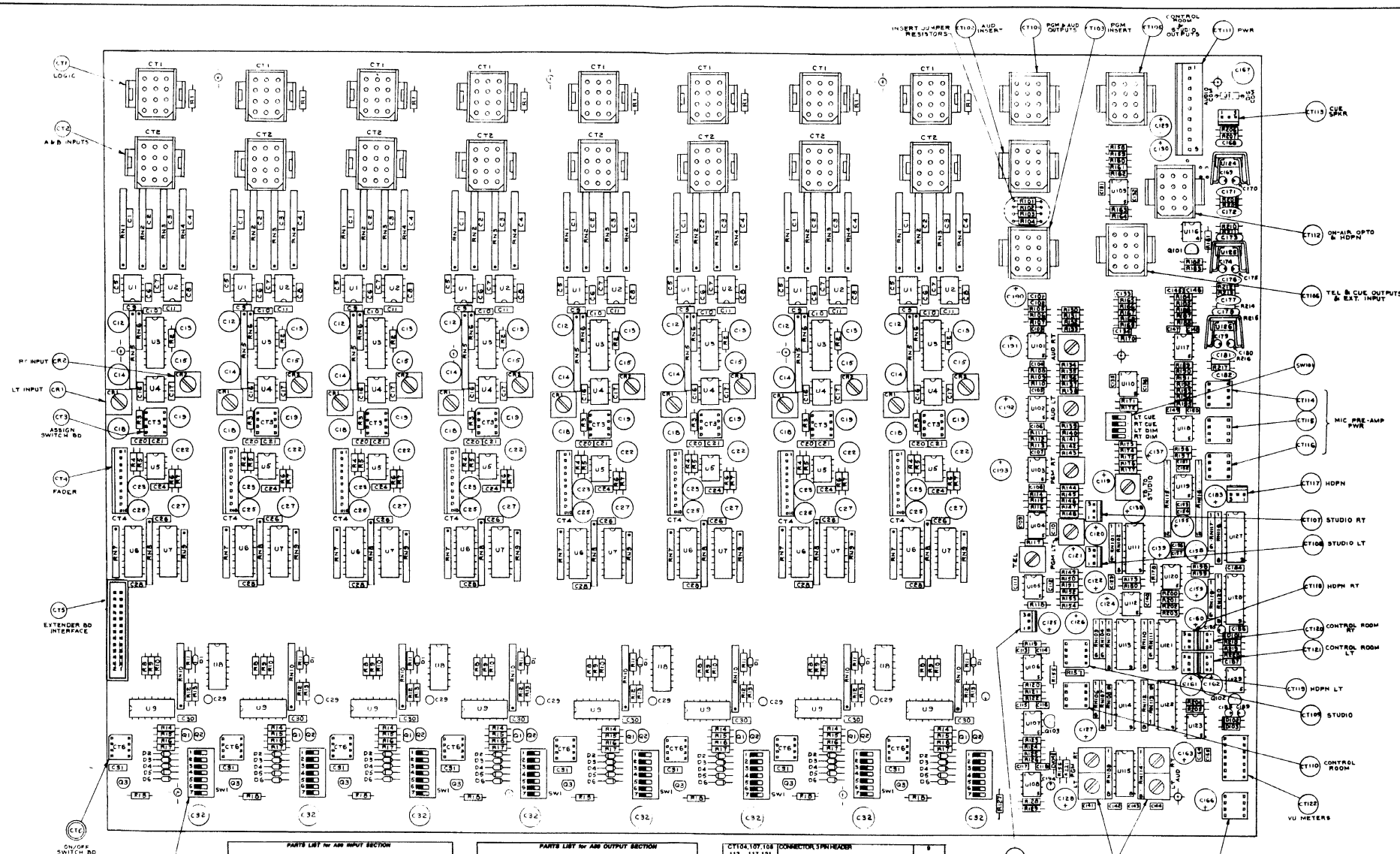
rev NOV 92

A-50 / Sept 1992

Load Sheets/Parts Lists

Load Sheets/Parts Lists

See also: OPTIONAL ACCESSORIES section at end of manual.



PARTS LIST for A50 INPUT SECTION

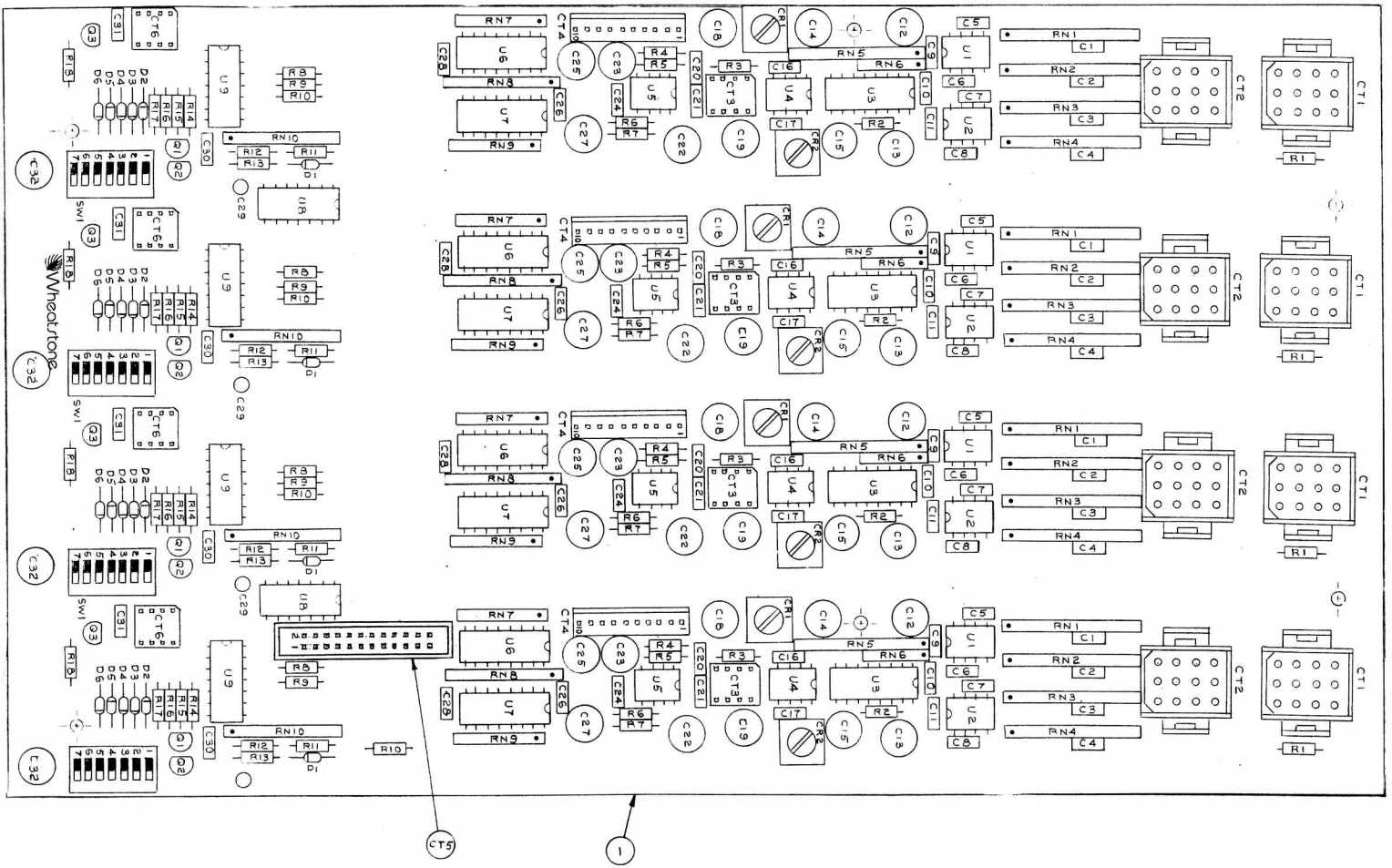
ITEM NO.	DESCRIPTION	QTY PER CHANNEL	TOTAL QTY
	PCB, A50	1	
C1-8,16,17, 20 & 24	CAPACITOR, 10pf, CERAMIC	12	96
C9-11,21,26 28,30 & 31	CAPACITOR, .047uf, CERAMIC	8	64
C12-15,18,19, 22,23,29,27&32	CAPACITOR, 100uf/25V, ELECTROLYTIC	11	88
C25	CAPACITOR, 1uf/25V, TANTALUM	1	8
CR1 & 2	TRIM-POT, SINGLE TURN, 10K	2	16
CT1 & 2	CONNECTOR, 12 PIN MR HEADER	2	16
CT3 & 4	CONNECTOR, 8 PIN DIL SOCKET	2	16
CT5	CONNECTOR, 10 PIN DIL HEADER	1	8
CT6	CONNECTOR, 26 PIN DIL HEADER	1	1
D1 - 5	DIODE, 1N914	5	40
Q2 - 3	TRANSISTOR, 2N3906, PNP	2	16
R1	RESISTOR, 3.3Ω ±5%, 1/4 WATT	1	8
R2,3,6,9, 10, & 15	RESISTOR, 1K ±5%, 1/4 WATT	6	48
R4 & 7	RESISTOR, 22K ±5%, 1/4 WATT	2	16
R5 & 8	RESISTOR, 100K ±1%, 1/4 WATT	2	16
R11,&12	RESISTOR, 330Ω ±5%, 1/4 WATT	2	16
R13	RESISTOR, 47K ±5%, 1/4 WATT	1	8
R14 & 16	RESISTOR, 470Ω ±5%, 1/4 WATT	2	16
R16	RESISTOR, 10K, ±5%, 1/4 WATT	1	8
R17	RESISTOR, 4.7K ±5%, 1/4 WATT	1	8
RN1-5	RESISTOR NETWORK, 10K X 8, ISOLATED	5	40
RN6	RESISTOR NETWORK, 3.3K X 8, BUSSED	1	8
RN7,8,9	RESISTOR NETWORK, 10K X 8, ISOLATED	2	16
RN9	RESISTOR NETWORK, 3.3K X 8, BUSSED	1	8
RN10	RESISTOR NETWORK, 1K X 8, BUSSED	1	8
SW1	SWITCH, SLIDE, 7-SPST, DIP PKG	1	8
U1,2,4 & 5	I.C. 5532, DUAL OP AMP	4	32
U3	I.C. MC14053B, TRIPLE SPDT ANALOG SWITCH	1	8
U6 & 7	I.C. 74HC4316, QUAD SPST ANALOG SWITCH	1	8
U8	I.C. 74LS74, DUAL "D" FLIPFLOP	1 2	1
U9	I.C. 74LS00, QUAD NAND GATES	1	8

PARTS LIST for A50 OUTPUT SECTION

ITEM NO.	DESCRIPTION	QTY
2	HEAT SINK, TO-220	3
3	CONNECTOR, 8 PIN DIP, SOCKET	1
4	CONNECTOR, 8 PIN DIP, SOCKET	17
5	CONNECTOR, 14 PIN DIP, SOCKET	1
6	CONNECTOR, 16 PIN DIP, SOCKET	7
C101,102,133 134, 145, 146 184 & 186	CAPACITOR, .047uf, CERAMIC	8
C103 - 114 115 - 118,131 132, 135, 136 147 - 150, 156 157, 171, 178 & 181	CAPACITOR, 33pf, CERAMIC	29
C1123 140-144 151 - 154,184 185 & 187	CAPACITOR, 10pf, CERAMIC	13
C119 - 122 124 - 130,137 138,139, 155 158-163, 166 187, 183, & 190 - 192	CAPACITOR, 100uf/25V, ELECTROLYTIC	28
C168,173 &178	CAPACITOR, .1uf, MYLAR	3
C169,170,174 175,179, 180 185, 188,189 & 194	CAPACITOR, 1uf/25V, TANTALUM	10
C172,177 &182	CAPACITOR, 330pf, CERAMIC	3
CR101 - 110	TRIM POT, SINGLE TURN, 10K	10
CT101-103 105,106 & 112	CONNECTOR, 12 PIN MR HEADER	6
CT104,107,108 113, 117,121	CONNECTOR, 3 PIN HEADER	6
CT109,110,114 115,116 & 123	CONNECTOR, 6 PIN DIP, SOCKET	6
CT111	CONNECTOR, 9 PIN DIL HEADER	1
CT118	CONNECTOR, 14 PIN DIP, SOCKET	1
D101 - 103	DIODE, 1N4002	3
D104	DIODE, 1N914	1
Q101 & 103	TRANSISTOR, 2N3953, NPN (TO-92)	2
Q102	REGULATOR, 78L05, +5V (TO-92)	1
R101-105,107 106, 110,111,113 114, 116,121,124 125 129, 150 154, 161, 163 198, 171 187, 190, 194 197,198, 200 206, 210, 214 & 218	RESISTOR, 10Ω ±5%, 1/4 WATT	32
R106,109,112 115,117, 118 122,123, 126 128, 133 134,138, 139 143,144, 148 152,153, 159 162,165, 169 179-180,185 186, 192, 195 199,201-205 219 & 220	RESISTOR, 10K ±1%, 1/4 WATT	38
R127 & 181	RESISTOR, 10K ±5%, 1/4 WATT	2
Q1	TRANSISTOR, 2N4402	1
D7	DIODE, 1N914	1
R119 &R120	RESISTOR, 4.99K ± 1%, 1/4 WATT	2
R130,131,135 136, 140, 141 145, 146, 151 156, 160, 165 170, 184 186, 191 ,193	RESISTOR, 100Ω ±5%, 1/4 WATT	18
R132,137,142 147 & 148	RESISTOR, 1.8K ±5%, 1/4 WATT	5
R155,157,209 213 & 217	RESISTOR, 1K ±5%, 1/4 WATT	5
R158	RESISTOR, 6.8K ±5%, 1/4 WATT	1
R164,172,188 199, 208, 212 &218	RESISTOR, 47K ±5%, 1/4 WATT	7
R173 - 176	RESISTOR, 20K ±5%, 1/4 WATT	3
R178 & 177	RESISTOR, 25K ±5%, 1/4 WATT	2
R183	RESISTOR, 2.2K ±5%, 1/4 WATT	1
R207,211 &215	RESISTOR, 2Ω ±5%, 1/4 WATT	3
R221	RESISTOR, 180Ω ±5%, 1/4 WATT	1
RN101,104,108 111,113,117&118	RESISTOR NETWORK, 3.3K X 8, BUSSED	7
RN102,106,107 110, 112, 116 & 120	RESISTOR NETWORK, 10K X 4, ISOLATED	7
RN103 & 105	RESISTOR NETWORK, 1K X 8, BUSSED	2
RN109 & 114	RESISTOR NETWORK, 4.8K X 4, ISOLATED	2
RN115 & 119	RESISTOR NETWORK, 10K X 8, ISOLATED	2
SW101	SWITCH, SLIDE, 4-SPST, DIP PKG	1
R182	RESISTOR, 100 , ± 5%, 1/4 WATT	1

U101-110,112 117-120,123 & 129	I.C.,5532, DUAL OP-AMP	17
U111,127&128	I.C. MC14053B, TRIPLE SPDT ANALOG SWITCH	3
U113,114,121 & 122	I.C. 74HC4316, QUAD SPST ANALOG SWITCH	4
U115	I.C. TL074, QUAD OP-AMP	1
U116	I.C. 4N38, OPTO-COUPLER	1
U124,126&126	I.C. LM675, PWR OP-AMP (8-LEAD TO-8SB)	3

A50 PROCESSOR BD	
A-50 RADIO ON-AIR CONSOLE	
8-28-91	Wheatstone Corporation 8720 V.I.P. Parkway Syracuse, NY 13211
JB	
SCALE: 2X	PCB LOAD SHEET
DO NOT SCALE	A50-B PCB 8688/LP-1

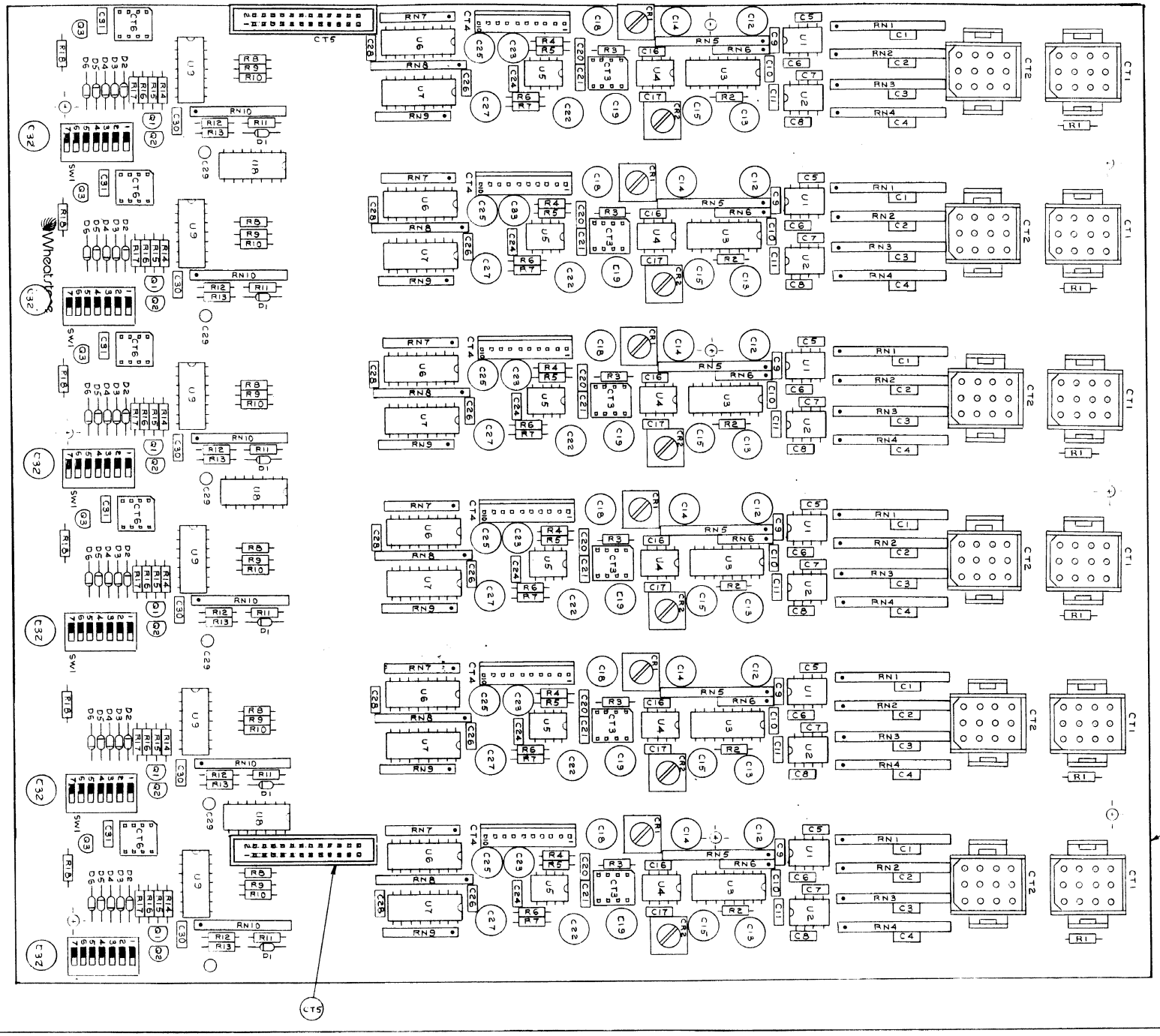


PARTS LIST for A50-EXT4A PCB

ITEM NO.	DESCRIPTION	QTY PER CHANNEL	TOTAL QTY
1	PCB, A50-EXT 4	-	1
C1-8,16,17, 20 & 24	CAPACITOR, 10pf, CERAMIC	12	48
C9-11,21,26 28,30 & 31	CAPACITOR, .047uf, CERAMIC	8	32
C12-15,18,19, 22,23,25,27 &32	CAPACITOR, 100uf/25V, ELECTROLYTIC	11	44
C29	CAPACITOR, 1uf/25V, TANTALUM	1	4
CR1 & 2	TRIM-POT, SINGLE TURN, 50K	2	8
CT1 & 2	CONNECTOR, 12 PIN MR HEADER	2	8
CT3 & 6	CONNECTOR, 8 PIN DIP, SOCKET	2	8
CT4	CONNECTOR, 10 PIN SIL HEADER	1	4
CT5	CONNECTOR, 26 PIN DIL HEADER	-	1
D1 - D7	DIODE, 1N914	7	28
Q2 & Q3	TRANSISTOR, 2N3906, PNP	2	8
R1	RESISTOR, 3.3Ω ±5%, 1/4 WATT	1	4
R2,3,8,9, 10 & 15	RESISTOR, 1K ±5%, 1/4 WATT	6	24
R4 & 7	RESISTOR, 22K ±5%, 1/4 WATT	2	8
R5 & 6	RESISTOR, 100K ±1%, 1/4 WATT	2	8
R11 & R12	RESISTOR, 330Ω ±5%, 1/4 WATT	2	8
R13	RESISTOR, 47K ±5%, 1/4 WATT	1	4
R14 & 18	RESISTOR,47.0Ω ±5%, 1/4 WATT	2	8
R16	RESISTOR, 10K ±5%, 1/4 WATT	1	4
R17	RESISTOR, 4.7K ±5%, 1/4 WATT	1	4
RN1-5	RESISTOR NETWORK, 10K X 6, ISOLATED	5	20
RN6	RESISTOR NETWORK, 3.3K X 5, BUSSED	1	4
RN7 & 9	RESISTOR NETWORK, 10K X 4, ISOLATED	2	8
RN8	RESISTOR NETWORK, 3.3K X 9, BUSSED	1	4
RN10	RESISTOR NETWORK, 1K X 9, BUSSED	1	4
SW1	SWITCH, SLIDE, 7-SPST, DIP PKG	1	4
U1,2,4 & 5	I.C. 5532, DUAL OP-AMP	4	16
U3	I.C., MC14053B, TRIPLE SPDT ANALOG SWITCH	1	4
U6 & 7	I.C., 74HC4316, QUAD SPST ANALOG SWITCH	1	4
U8	I.C., 74LS74, DUAL "D" FLIP/FLOP	1/2	2
U9	I.C., 74LS00, QUAD NAND GATES	1	4
Q1	TRANSISTOR, 2N4402		4

A50-EXT 4 INPUT BD	
A-50 RADIO ON-AIR CONSOLE	
5-28-91	Wheatstone Corporation 6720 V.I.P. Parkway Syracuse, NY. 13211
JS	
SCALE:	PCB SHEET
DO NOT SCALE	A50-EXT4 D PCB #A50/LD-2

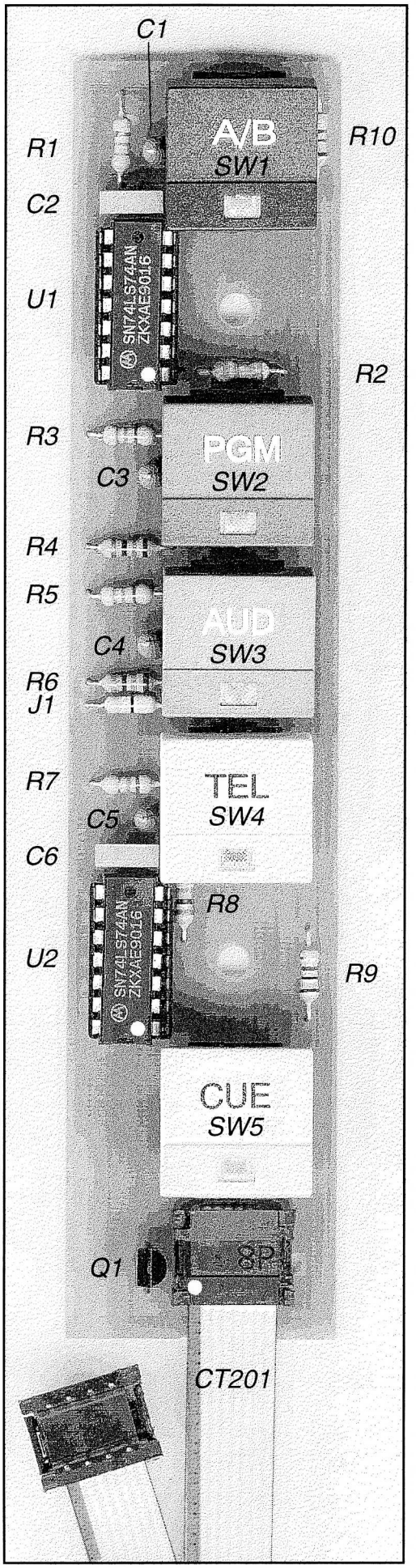
A-50 EXT-4 Input Board Load Sheet & Parts List - Page 7-3



PARTS LIST for A50-EXT6A PCB

ITEM NO.	DESCRIPTION	QTY PER CHANNEL	TOTAL QTY
1	PCB, A50-EXT 6	-	1
C1-8,16,17, 20 & 24	CAPACITOR, 10pf, CERAMIC	12	72
C9-11,21,26 28,30 & 31	CAPACITOR, .047uf, CERAMIC	8	48
C12-15,18,19, 22,23,25,27 &32	CAPACITOR, 100uf/25V, ELECTROLYTIC	11	66
C29	CAPACITOR, 1uf/25V, TANTALUM	1	6
CR1 & 2	TRIM-POT, SINGLE TURN, 50K	2	12
CT1 & 2	CONNECTOR, 12 PIN MR HEADER	2	12
CT3 & 6	CONNECTOR, 8 PIN DIP, SOCKET	2	12
CT4	CONNECTOR, 10 PIN SIL HEADER	1	6
CT5	CONNECTOR, 26 PIN DIL HEADER	-	2
D1 - D7	DIODE, 1N914	7	42
Q2 & Q3	TRANSISTOR, 2N3906, PNP	2	12
R1	RESISTOR, 3.3Ω ±5%, 1/4 WATT	1	6
R2,3,8,9, 10 & 15	RESISTOR, 1K ±5%, 1/4 WATT	6	36
R4 & 7	RESISTOR, 22K ±5%, 1/4 WATT	2	12
R5 & 6	RESISTOR, 100K ±1%, 1/4 WATT	2	12
R11 & R12	RESISTOR, 330Ω ±5%, 1/4 WATT	2	12
R13	RESISTOR, 47K ±5%, 1/4 WATT	1	6
R14 & 18	RESISTOR,470Ω ±5%, 1/4 WATT	2	12
R16	RESISTOR, 10K ±5%, 1/4 WATT	1	6
R17	RESISTOR, 4.7K ±5%, 1/4 WATT	1	6
RN1-5	RESISTOR NETWORK, 10K X 6, ISOLATED	5	30
RN6	RESISTOR NETWORK, 3.3K X 5, BUSSED	1	6
RN7 & 9	RESISTOR NETWORK, 10K X 4, ISOLATED	2	12
RN8	RESISTOR NETWORK, 3.3K X 9, BUSSED	1	6
RN10	RESISTOR NETWORK, 1K X 9, BUSSED	1	6
SW1	SWITCH, SLIDE, 7-SPST, DIP PKG	1	6
U1,2,4 & 5	I.C.,5532, DUAL OP-AMP	4	24
U3	I.C., MC14053B, TRIPLE SPDT ANALOG SWITCH	1	6
U6 & 7	I.C., 74HC4316, QUAD SPST ANALOG SWITCH	1	6
U8	I.C., 74LS74, DUAL "D" FLIP/FLOP	1/2	3
U9	I.C.,74LS00, QUAD NAND GATES	1	6
Q1	TRANSISTOR, 2N4402	1	6

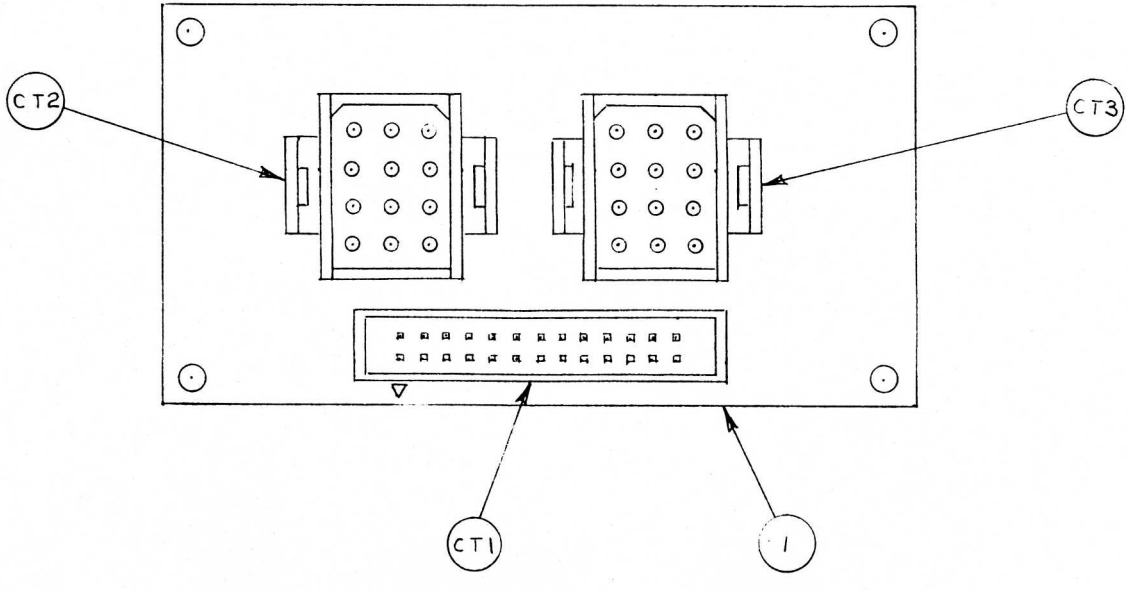
A50-EXT 6 INPUT BD	
A-50 RADIO ON-AIR CONSOLE	
5-28-91	Wheatstone Corporation 6720 V.I.P. Parkway Syracuse, NY. 13211
JS	
SCALE:	PCB SHEET
DO NOT SCALE	A50-EXT6 D PCB #A50/LD-3



PARTS LIST		
SW-5C INPUT SWITCHER PCB		
R1,3,5,7 *R2,4,6,8* *R9,10*	RESISTOR, 47KΩ ±5%, 1/4W RESISTOR, 150Ω ±5%, 1/4W RESISTOR, 1KΩ ±5%, 1/4W	4 4 2
J1	JUMPER, 0Ω	1
C1,3,4,5 *C2,6*	CAPACITOR, 1μf, tantalum* 4 CAPACITOR, .047μf, ceramic	 2
U1,2	IC, D FLIP-FLOP, 74LS74	2
Q1	TRANSISTOR, 4402 PNP	1
SW1–5	SWITCH, MOMENTARY, w/LED	5
CT201	8 PIN RIBBON CONNECTOR**	1

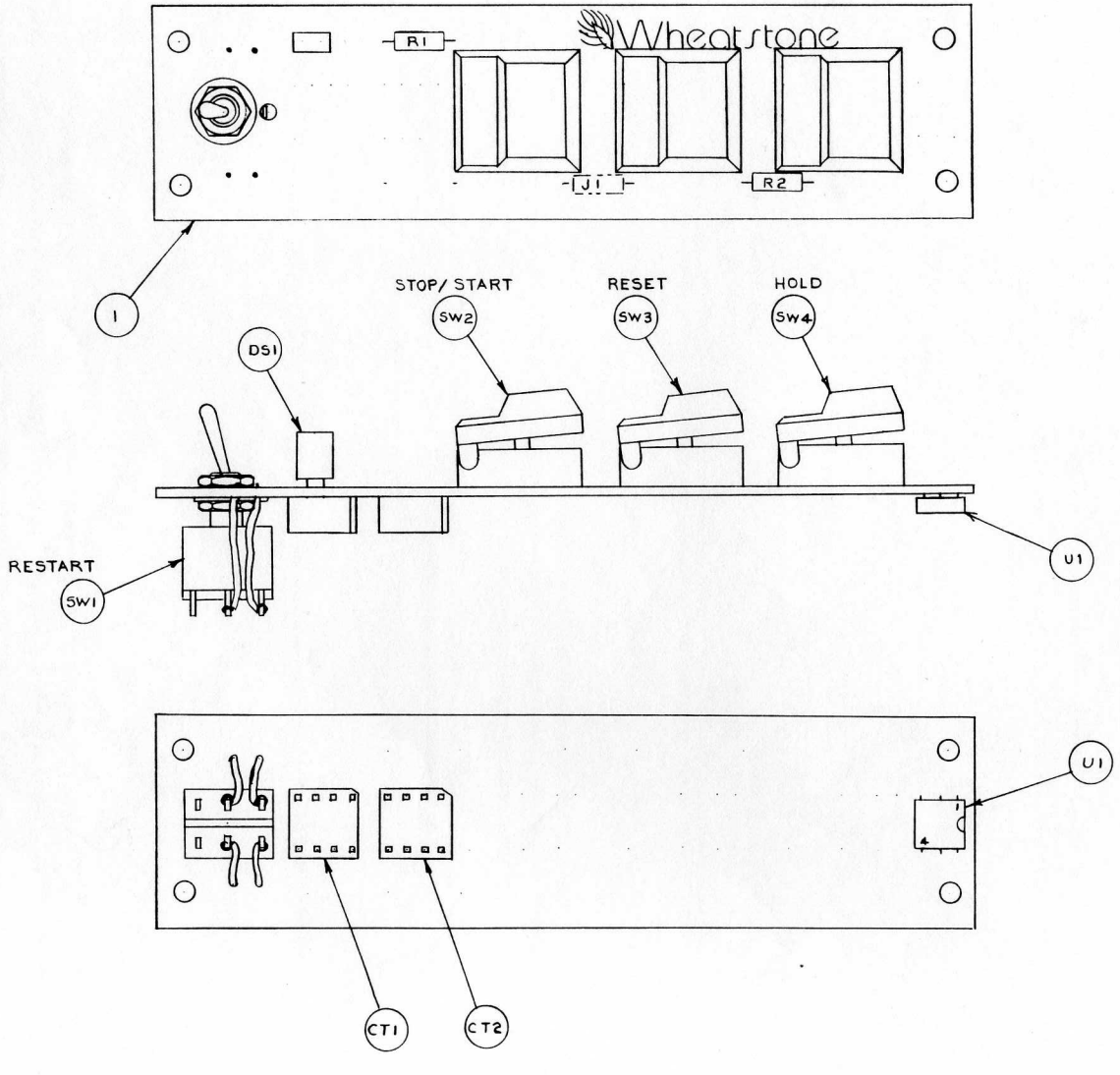
**Plus (+) side of tantalum caps oriented towards top of board*
***From A-50 Processor PCB (input section)*

SW-5C INPUT SWITCHER PCB
PARTS LIST & COMPONENT LAYOUT
5/17/91/MS



	PARTS LIST for T50A PCB	
ITEM NO.	**DESCRIPTION**	**QTY**
1	PCB, T50	1
CT1	CONNECTOR, 26 PIN DIL HEADER	1
CT2 & 3	CONNECTOR, 12 PIN MR HEADER	2

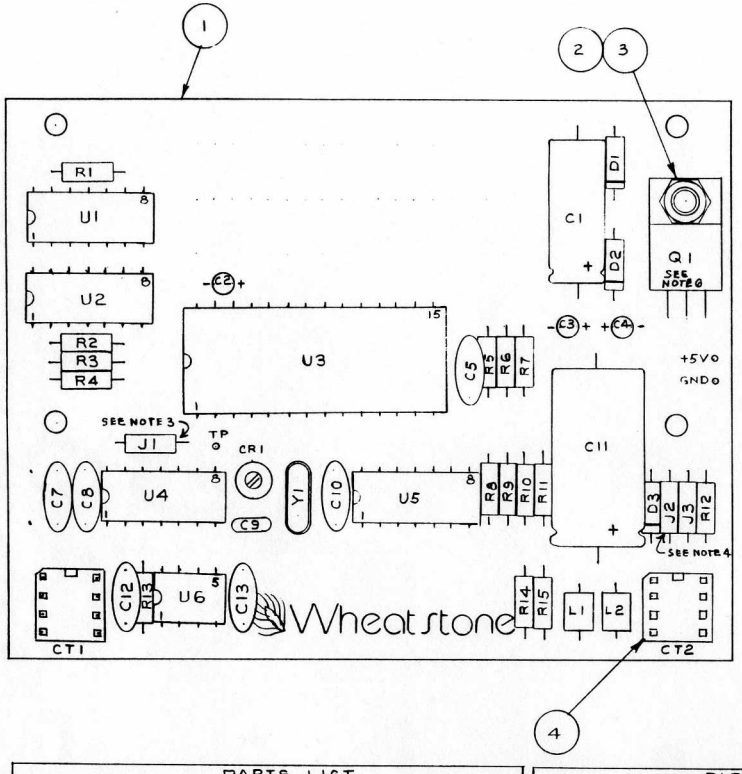
T50 TRANSITION BD		
A-50 RADIO ON-AIR CONSOLE		
5-7-90	Wheatstone Corporation 6720 V.I.P. Parkway Syracuse, NY. 13211	
CAZ/RA		
SCALE: 2X	PCB LOAD SHEET	
DO NOT SCALE	T50A PCB	#A50/LD-12

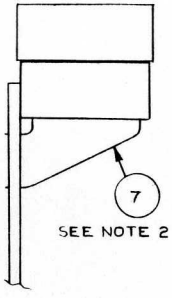


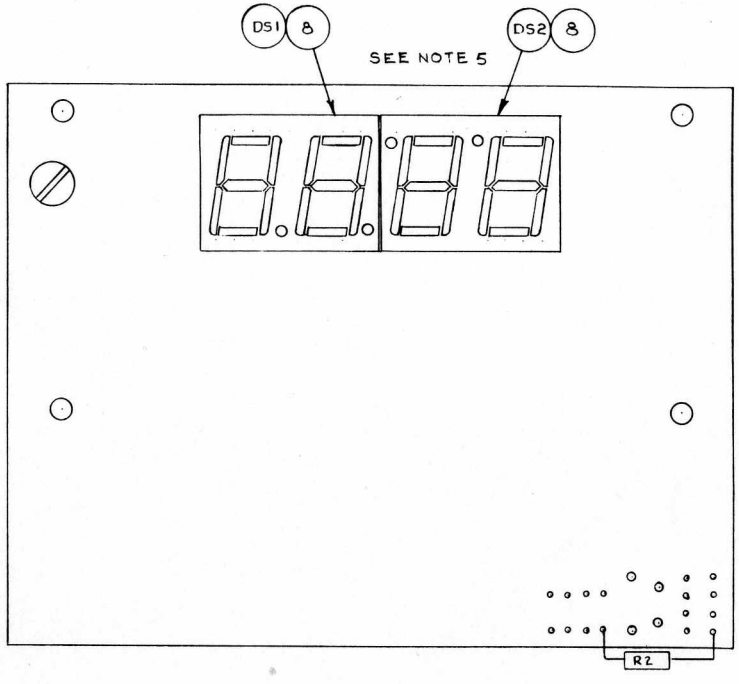
PARTS LIST		
ITEM NO.	DESCRIPTION	QTY.
1	PRINTED CIRCUIT BD., TMC-6	1
CT1 & 2	CONNECTOR, 8 PIN DIP	2
DS1	DISPLAY, LED, GRN (.10" x .20")	1
J1	JUMPER (OPTIONAL)	1
R1 & 2	RESISTOR, 220 ± 5%, 1/4 W	2
SW1	SWITCH, TOGGLE, DPDT	1
SW2	SWITCH, PUSHBUTTON, SPST, N/O (WHT)	1
SW3	SWITCH, PUSHBUTTON, SPST, N/O (RED)	1
SW4	SWITCH, PUSHBUTTON, SPST, N/O (BLU)	1
U1	I.C., OPTO-ISOLATOR, GE# H74A1	1

TMC-6 TIMER CONTROL		
WHEATSTONE AUDIO CONSOLES		
3-14-88	Wheatstone Corporation 6720 V.I.P. Parkway Syracuse, NY. 13211	
RA		
	PCB LOAD SHEET	
	SCALE: 2X	#TMC\LOAD-1

- Drawing applies to both "B" and "C" versions of PCB -







PARTS LIST		
ITEM NO.	DESCRIPTION	QTY.
1	PCB, TM-6	1
2	SCREW, PAN HD, SLOTTED, #4-40 X 3/8	1
3	HEX NUT, #4-40	1
4	DIP SOCKET, 8-PINS	3
5	DIP SOCKET, 14-PINS	4
6	DIP SOCKET, 28-PINS	1
SEE NOTE 2 — 7	DIP SOCKET, 18-PINS, RT. ANGLE	2
SEE NOTE 2 — 8	SIP SOCKET, 9-PINS	4
C12	CAPACITOR, 0.18µf/100V, MYLAR	1
C1	CAPACITOR, 220µf/25V, ELECTROLYTIC	1
C2,3 & 4	CAPACITOR, 1µf/25V, TANTALUM	3
C5,7,8,10-13	CAPACITOR, .047µf, CERAMIC	5
C9	CAPACITOR, 18pf, CERAMIC	1
C11	CAPACITOR, 470µf/25V, ELECTROLYTIC	1
CR1	CAPACITOR, VARIABLE, 2-12pf	1
D1,2 & 3	DIODE, IN4002	3
DS1 & 2	DISPLAY, 2-DIGIT 7-SEGMENT, LED	2
SEE NOTES 3&4 — J1,2 &3	JUMPER, 0Ω	3
L1 & 2	RF CHOKE, FERRITE BEAD	2
Q1	REGULATOR, +5V, 7805	1
R1	RESISTOR, 220 ±5%, 1/4W	1
R2+3	RESISTOR, 1K ±5%, 1/4W	2
R4+5	RESISTOR, 10K ±5%, 1/4W	2
R6,8,9,10,13	RESISTOR, 100K ±5%, 1/4W	5

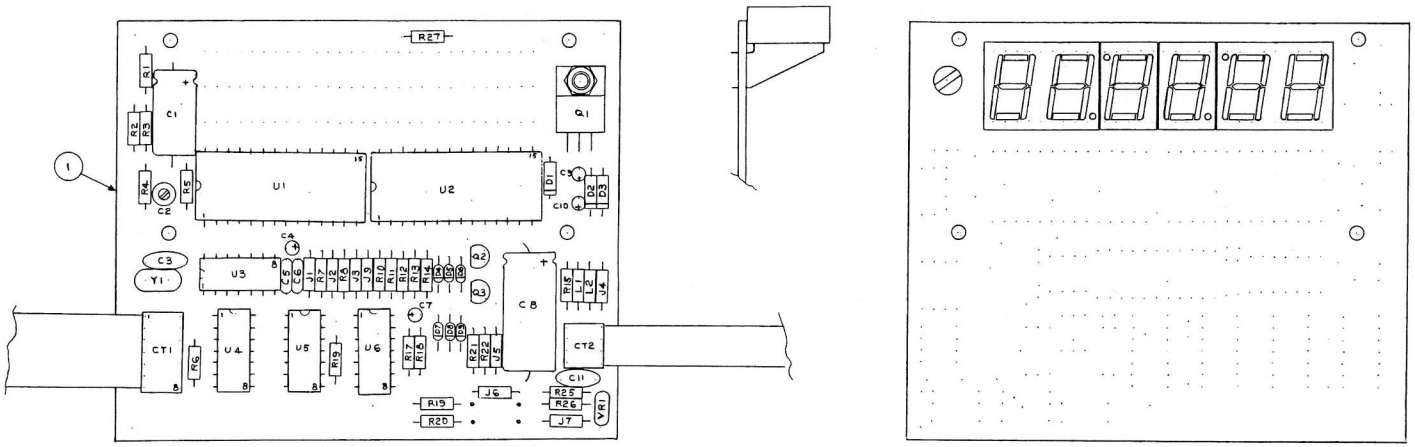
PARTS LIST		
ITEM NO.	DESCRIPTION	QTY.
R7	RESISTOR, 1.2K ±5%, 1/4W	1
R11	RESISTOR, 2.4K ±5%, 1/4W	1
R12	RESISTOR, 3.3Ω ±5%, 1/4W	1
U1	I.C., 7490, 4-BIT DECADE COUNTER	1
U2 & 4	I.C., 74LS00, QUAD NAND GATES	2
U3	I.C., ICM7217C,	1
U5	I.C., ICM7213	1
U6	I.C., 555, TIMER	1

NOTES:

1. ALL ITEMS SHOWN MAY NOT BE NECESSARY FOR THIS PRODUCT; SEE NOTES 2,3&4.
2. ITEM NO. 7 IS REQ'D ONLY FOR RIGHT ANGLE MOUNTING OF THE DISPLAYS, OTHERWISE ITEM NO. 8 SHOULD BE USED.
3. JUMPER J1 IS NOT REQ'D IF THIS TIMER WILL BE TREATED AS A SLAVE UNIT.
4. BOTH JUMPERS, J2 & J3, SHOULD NOT BE INSTALLED AT THE SAME TIME. INSTALL JUMPER J2 IF +12V WILL POWER THIS BD. OR, J3 IF POWERED BY +5V.
5. MOUNT DISPLAYS DS1&2 WITH DECIMAL POINTS POSITIONED AS SHOWN
6. Q1 CIRCUIT IS USED WHEN EXTERNAL POWER SOURCE IS GREATER THAN 5 VOLTS.

TM-6 TIMER CARD		
WHEATSTONE AUDIO CONSOLES		
3-14-88	Wheatstone Corporation 6720 V.I.P. Parkway Syracuse, NY. 13211	
RA		
	PCB LOAD SHEET	
	SCALE: 2X	#TM6\LOAD-1

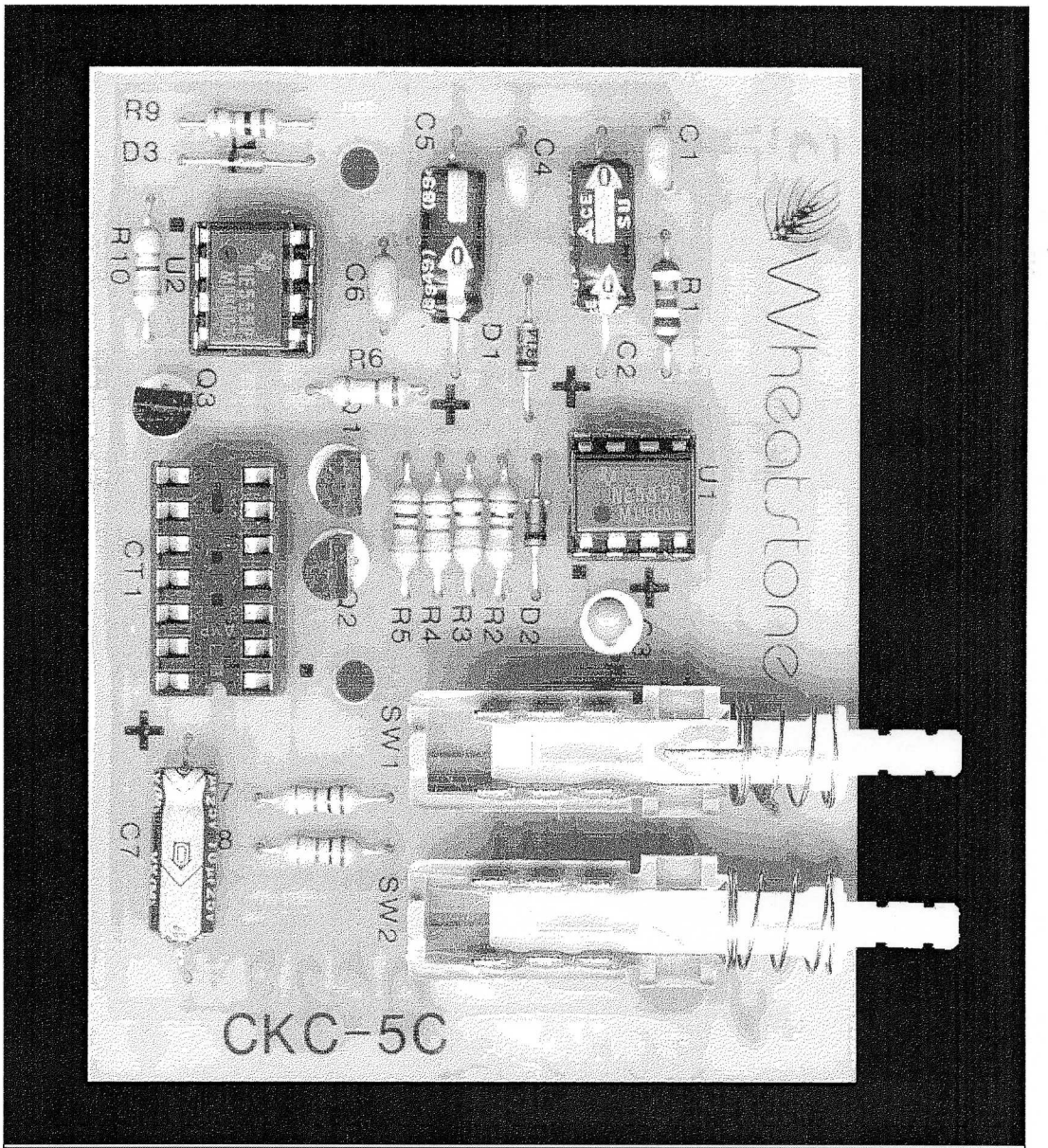
- Drawing applies to both "B" and "C" versions of PCB -



PARTS LIST			PARTS LIST		
ITEM NO.	DESCRIPTION	QTY.	ITEM NO.	DESCRIPTION	QTY
1	PCB, CLK-5	1	Q1	REGULATOR, LM7805-T +5V	1
2	DIP SOCKET, 8 PIN	1	SW1-5	SWITCH, DPDT, PUSH BUTTON	5
3	DIP SOCKET, 14 PIN	5	U1&2	I.C., COUNTER, ICM7217C	2
4	DIP SOCKET, 28 PIN	2	U3	I.C., CLOCK REF., ICM7213	1
5	DIP SOCKET, 18 PIN, RT. ANGLE	2	U4&5	I.C., 4-BIT COUNTER, 7490	2
6	DIP SOCKET, 20 PIN, RT. ANGLE	1	U6	I.C., HEX OR-GATES, 74LS04	1
7	SIP SOCKET, 9 PIN	4	Q2	TRANSISTOR, 2N9903 (NPN)	1
8	SIP SOCKET, 10 PIN	2	Q3	TRANSISTOR, 2N3906 (PNP)	1
9	PCB, CKC-5B	1	VR1	VARISTOR, 33Z1	1
			Y1	CRYSTAL, 4.194304 MHz	1
C1	CAPACITOR, 220µf/25V, ELECT.	1			
C2	CAPACITOR, VARIABLE, 2.5-12.5pf	1			
C3	CAPACITOR, 15pf, CERAMIC	1			
C4,7,9&10	CAPACITOR, 1µf/25V, TANT	4			
C5,6&11	CAPACITOR, .047µf CERAMIC	3			
C8	CAPACITOR, 470µf/25V, ELECT.	1			
D1,2&3	DIODE, IN4002	3			
D4-9	DIODE, IN914	6			
R10	RESISTOR, 33K ±5%, 1/4W	1			
R1,4,5,6,8,12	RESISTOR, 100K ±5%, 1/4W	6			
R2&27	RESISTOR, 100 ±5%, 1/4W	2			
R3	RESISTOR, 1.2K ±5%, 1/4W	1			
R7	RESISTOR, 2.4K ±5%, 1/4W	1			
R11&17	RESISTOR, 470±5%, 1/4W	2			
R13,14&21	RESISTOR, 1K±5%, 1/4W	3			
R15	RESISTOR, 2.7 ±5%, 1/4W	1			
R16&19	RESISTOR, 10±5%, 1/4W	2			
R18	RESISTOR, 6.8K±5%, 1/4W	1			
R22	RESISTOR, 4.3K±5%, 1/4W	1			
J1-7&9	JUMPER	8			
L1&2	FERRITE BEAD	2			

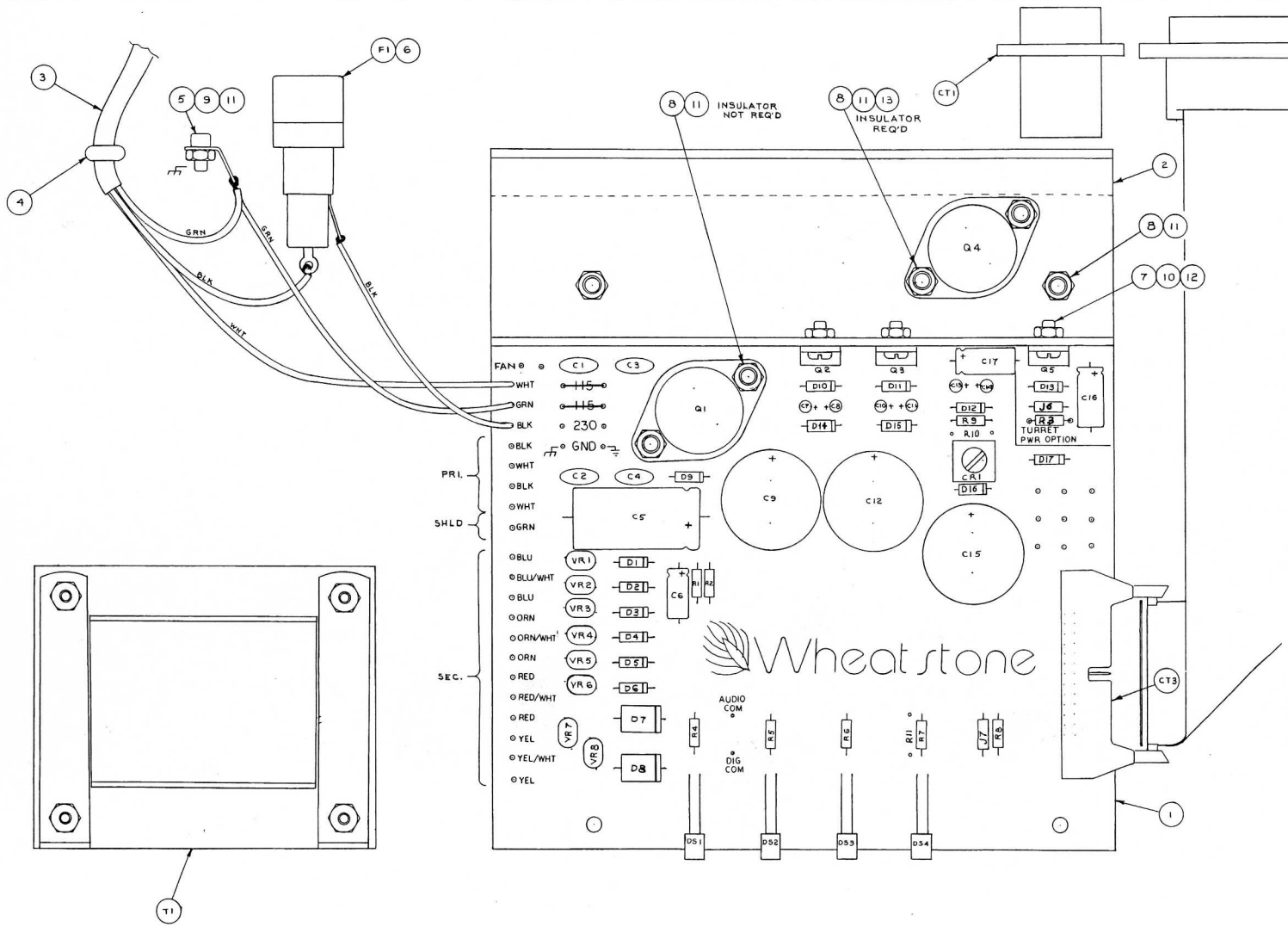
CLK/CKC-5B CLOCK CARDS	
WHEATSTONE AUDIO CONSOLES	
10-11-88	Wheatstone Corporation 6720 V.I.P. Parkway Syracuse, NY. 13211
RA	
REV 6-1-91	PCB LOAD SHEET
CLK/DISPLAY-CKC/CONTROL	#CLK/LOAD-1

CLK-5 Clock Card Load Sheet & Parts List - Page 7-13



PARTS LIST — CLOCK CONTROL CARD		
PART NUMBEr	DESCRIPTION	QTY
	PRINTED CIRCUIT BOARD, CKC–5C	1
CT1	CONNECTOR, 14-PIN DIP SOCKET	1
C1, C4, C6	CAPACITOR, .1uF, CERAMIC	3
C2, C5	CAPACITOR, .1uF, ELECTROLYTIC	2
C3	CAPACITOR, .1uF, TANTALUM	1
C7	CAPACITOR, 10uF, ELECTROLYTIC	1
D1-D3	DIODE, 1N914	3
Q1-Q3	TRANSISTOR, 2N3903, NPN	3
R1, R10	RESISTOR, 470K ±5%, 1/4W	2
R2, R5	RESISTOR, 1OO ±5%, 1/4W	2
R3, R4, R7, R8	RESISTOR, 1K ±5%, 1/4W	4
R6	RESISTOR, 220K ±5%, 1/4W	1
R9	RESISTOR, 10K ±5%, 1/4W	1
SW1	SWITCH, PUSHBUTTON, DPDT, LATCHING	1
SW2	SWITCH, PUSHBUTTON, DPDT, MOMENTARY	1
U1, U2	IC, 555	2

Clock Control Card & Parts List



ITEM NO.	DESCRIPTION	QTY.
1	PRINTED CIRCUIT BD, PS-20	1
2	HEAT SINK / REAR BRACKET	1
3	A.C. POWER CORD	1
4	GROMMET	1
5	GROUND LUG (CHASSIS)	1
6	FUSE HOLDER	1
7	SCREW, PLASTIC, #4-40 X 5/8 LG	4
8	SCREW, PAN HD, SLOTTED, #6-32 X 3/8LG	6
9	SCREW, SOCKET HD, CAP, #6-32 X 3/8LG	1
10	HEX NUT, #4-40	4
11	HEX NUT, #6-32	7
C1-4	CAPACITOR, .005μf/1KV, CERAMIC	4
C5	CAPACITOR, 470μf/63V, ELECTROLYTIC	1
C6	CAPACITOR, 1μf/50V, ELECTROLYTIC	1
C7,8,10,11,13 &14	CAPACITOR, 1μf/35V, TANTALUM	6
C9,12	CAPACITOR, 4700μf/35V, ELECTROLYTIC	2
C16 & 17	CAPACITOR, 10μf/35V, ELECTROLYTIC	2
C15	CAPACITOR, 10,000μf/35V, ELECTROLYTIC	1
D1-6 & 9-17	DIODE, IN4002	15
DS1	DISPLAY, LED, YEL (.20" SQ)	1
DS2	DISPLAY, LED, GRN (.20" SQ)	1
DS3 & 4	DISPLAY, LED, RED (.20" SQ)	2
D7 & 8	DIODE, 6A4	2
CT1	CONNECTOR, 9 PIN FLANGE MT. BULK HD	1
CT2	CONNECTOR & CABLE ASSY, DB25S TO 25PIN DIL	1
CT3	CONNECTOR, 26 PIN DIL RT. ANGLE HEADER	1
CR1	TRIM-POT, 10K	1
Q1	REGULATOR, +48V, LM317HVK (TO-3)	1
Q2	REGULATOR, -18V, 7918T (TO-220)	1
Q3	REGULATOR, +18V, 7818T (TO-220)	1
Q4	REGULATOR, ADJUSTABLE, LM338K (TO-3)	1
Q5	REGULATOR, +12V, 7812T (TO-220)	1
R1	RESISTOR, 220 ±5%, 1/4 W	1
R2	RESISTOR, 8.45K ±1%, 1/4 W	1
R3	RESISTOR, 3.3 ±5%, 1/4 W	1
R4	RESISTOR, 3.1K ±5%, 1/4 W	1
R5 & 6	RESISTOR, 1K ±5%, 1/4 W	2
R7 & 8	RESISTOR, 2.2K ±5%, 1/4 W	2
R9	RESISTOR, 220 ±5%, 1/4 W	1
T1	TRANSFORMER	1
VR1 & 2	VARISTOR, V82ZA2	2
VR3-6	VARISTOR, V33ZA1	4
VR7&8	VARISTOR, V47ZA1	2
F1	FUSE, 1 AMP SLO-BLO	1
JG, 7	JUMPER	2
12	INSULATOR, MICA, TO-220	3
13	INSULATOR, MICA, TO-3	1

4-24-84 - REV-D, ADDED D14, D15, D16, D17, J7. OUTPUT DIODE PROTECTION
REV'C' - MODIFIED FOR HIGH CURRENT PWR SUPPLY JKG - 3/21/90
5-25-89 ADDED R9&10 & Q4 WAS 7824T
8-23-88 CHANGE F1 TO 1 AMP SLO-BLO DWP

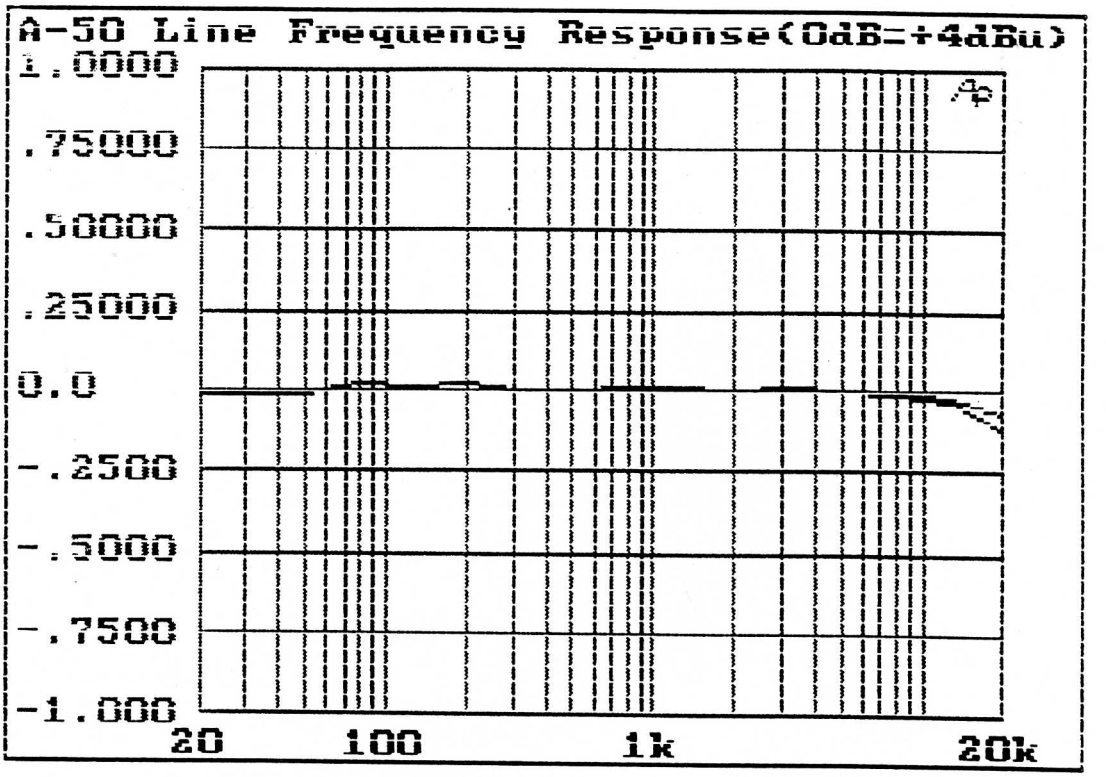
POWER SUPPLY

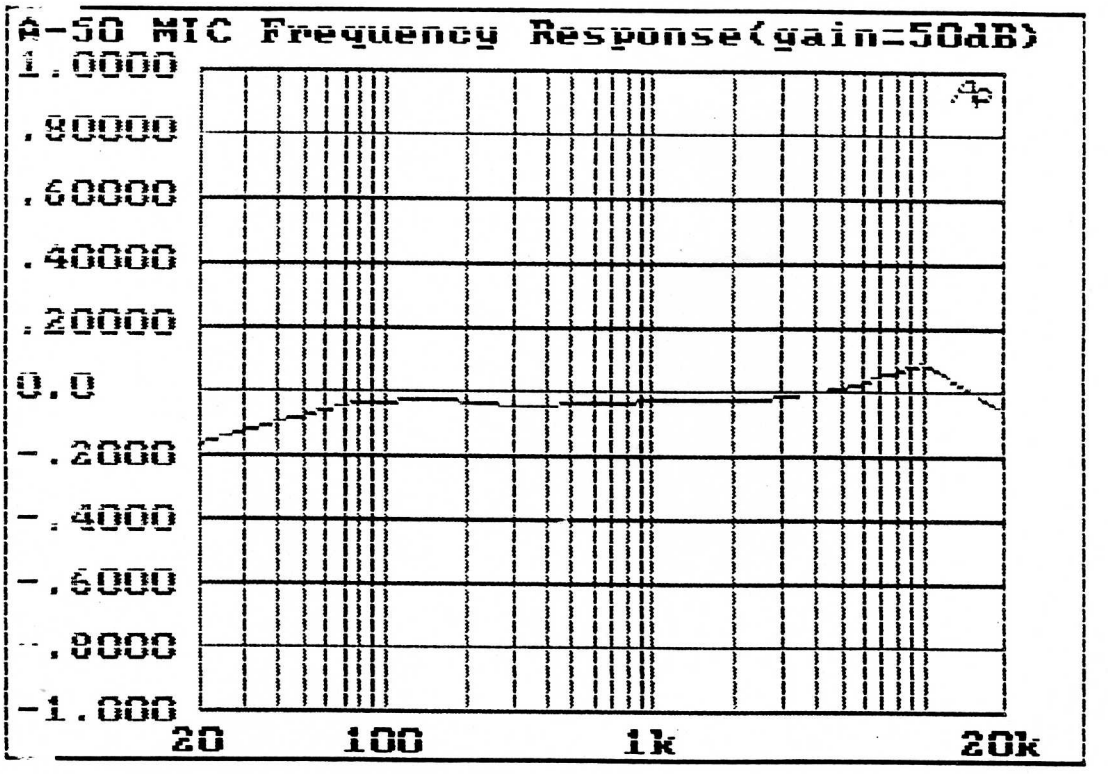
A-20	RADIO ON-AIR CONSOLE
3-21-90	Wheatstone Corporation, 8720 V.I.P. Parkway, Syracuse, NY. 13211
RA	
SIZE: 2X	PCB LOAD SHEET
DO NOT SCALE	PCB PS-20D #A20/LOAD-5

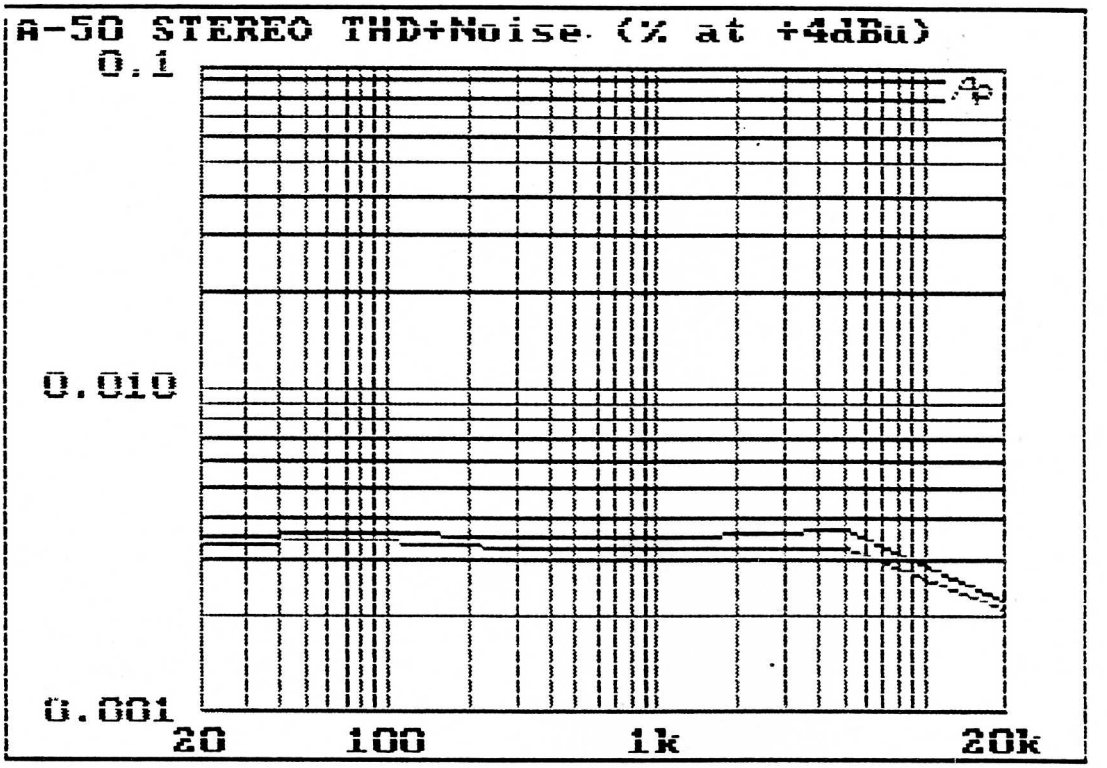
PS-50 Power Supply Load Sheet & Parts List - Page 7-15

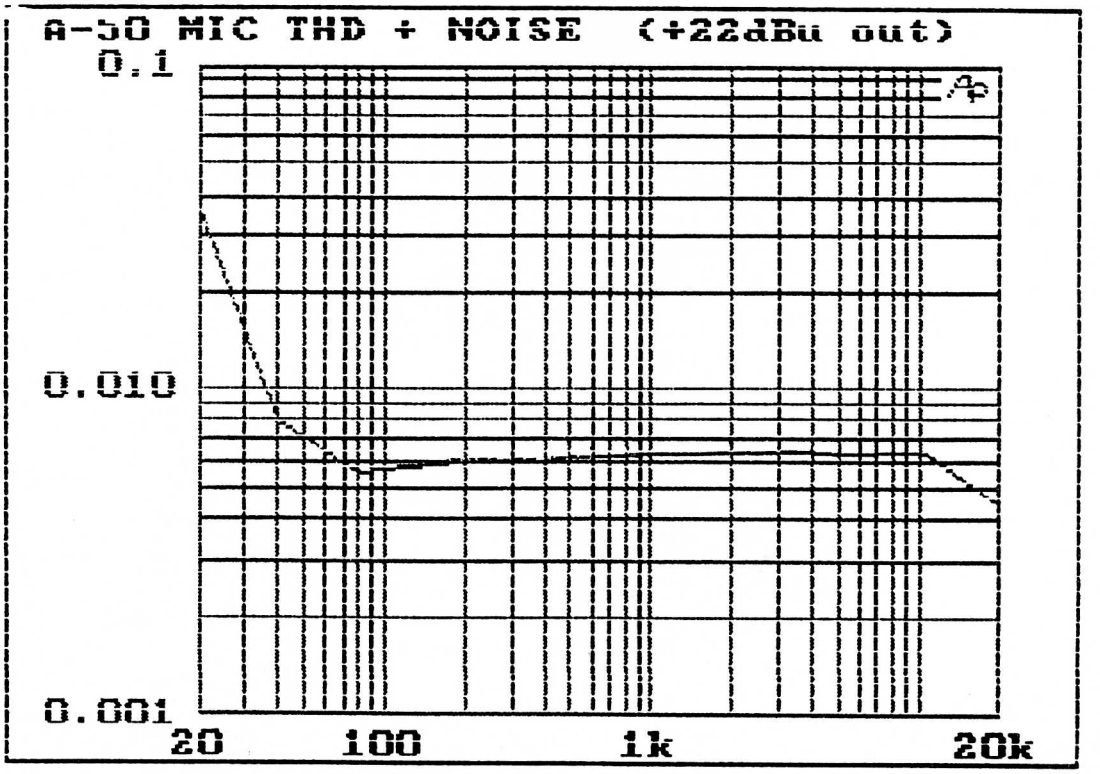
Performance Graphs

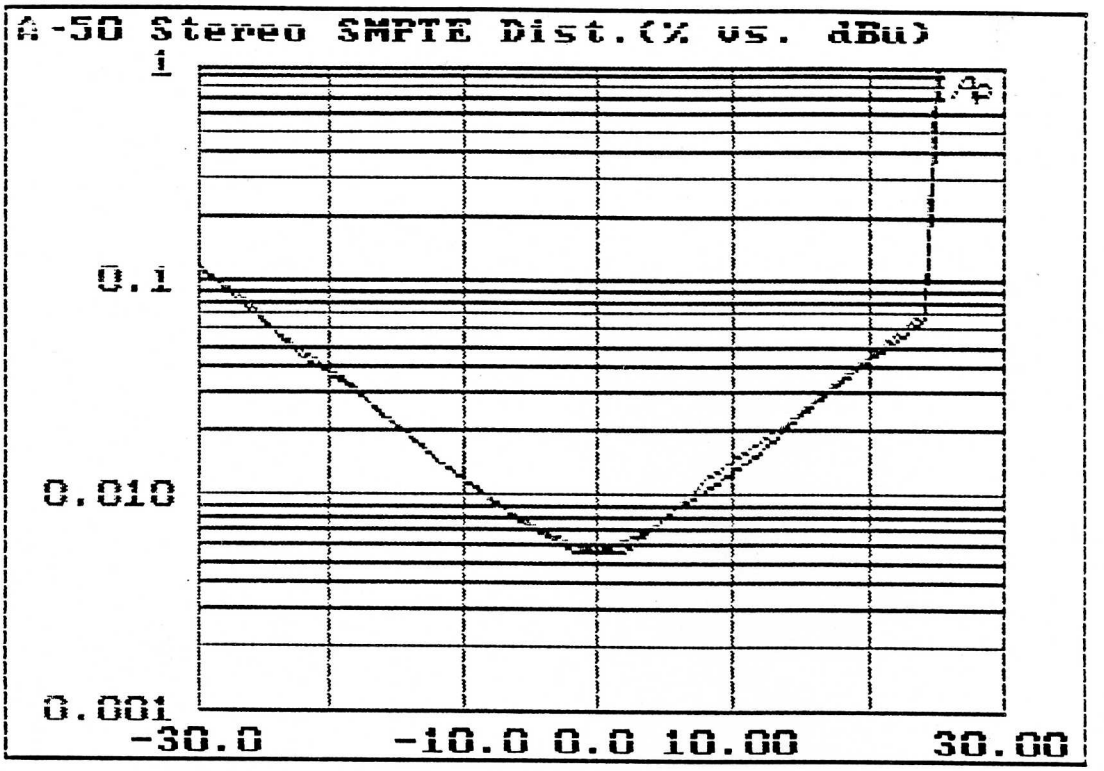
Performance Graphs

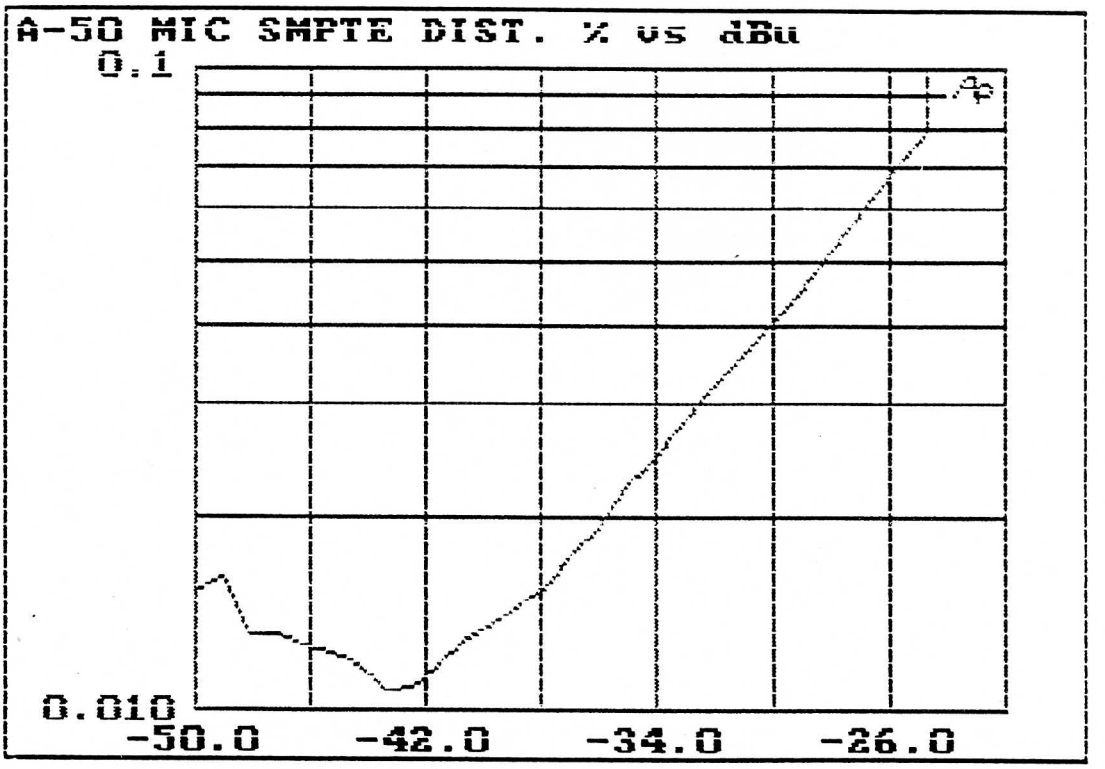

A-50 Line Frequency Response(0dB=+4dBu)
1.0000
.75000
.50000
.25000
0.0
-.2500
-.5000
-.7500
-1.000
20
100
1k
20k

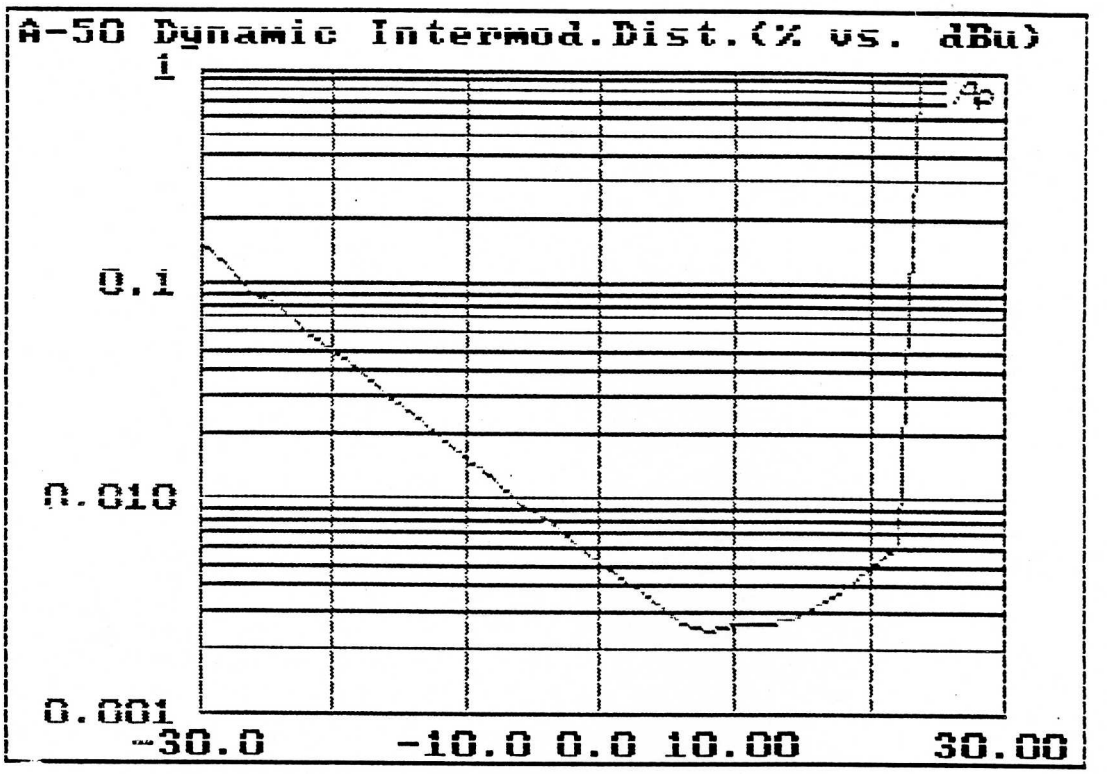

A-50 MIC Frequency Response(gain=50dB)
1.0000
.80000
.60000
.40000
.20000
0.0
-.2000
-.4000
-.6000
-.8000
-1.000
20
100
1k
20k

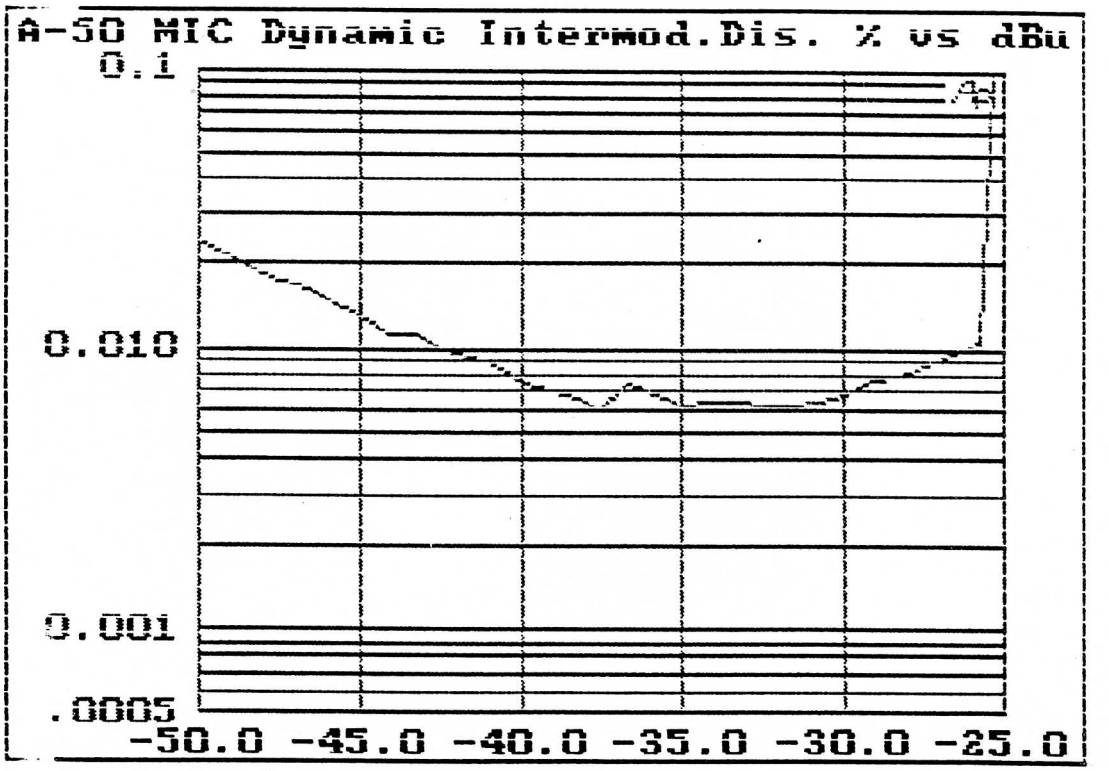

A-50 STEREO THD+Noise (% at +4dBu)
0.1
0.010
0.001
20
100
1k
20k

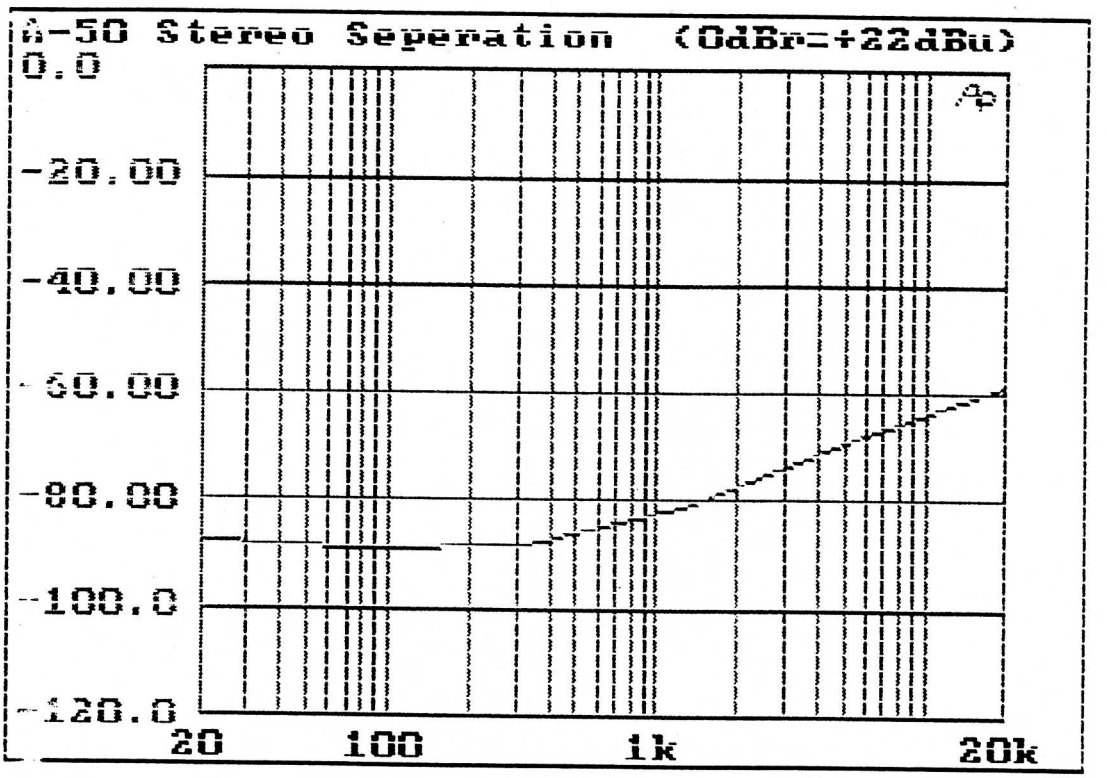

A-50 MIC THD + NOISE (+22dBu out)
0.1
0.010
0.001
20
100
1k
20k

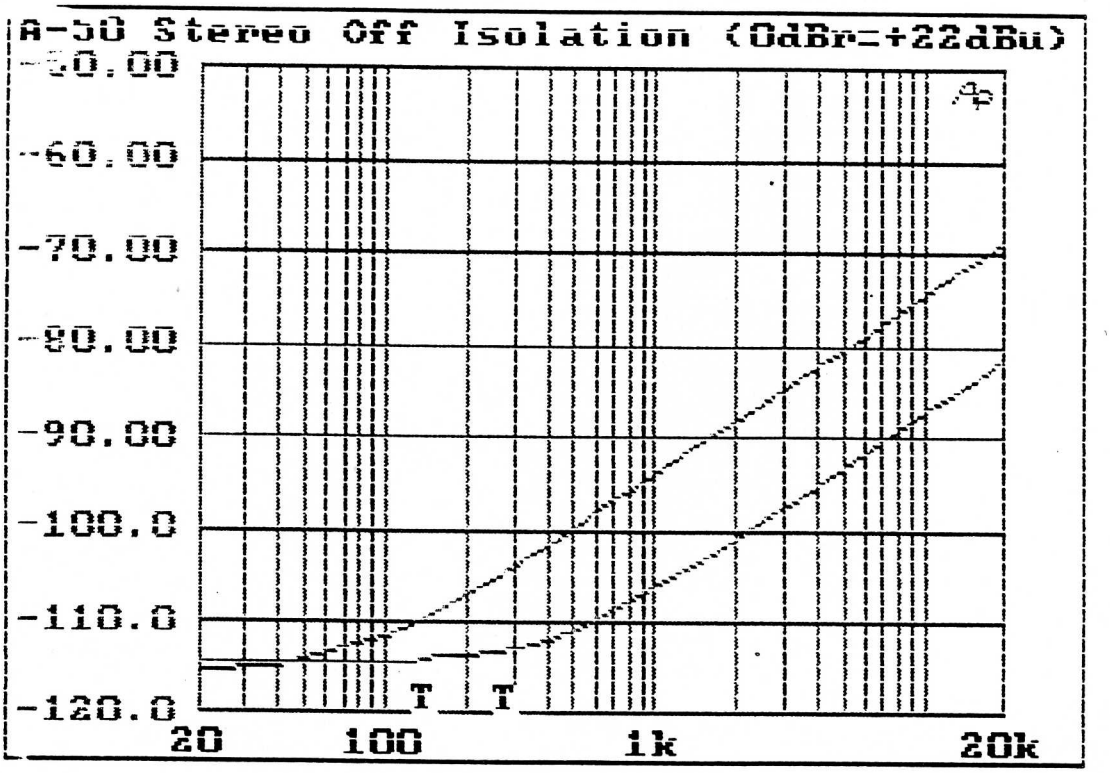

A-50 Stereo SMPTE Dist.(% vs. dBu)
1
0.1
0.010
0.001
-30.0
-10.0 0.0 10.00
30.00

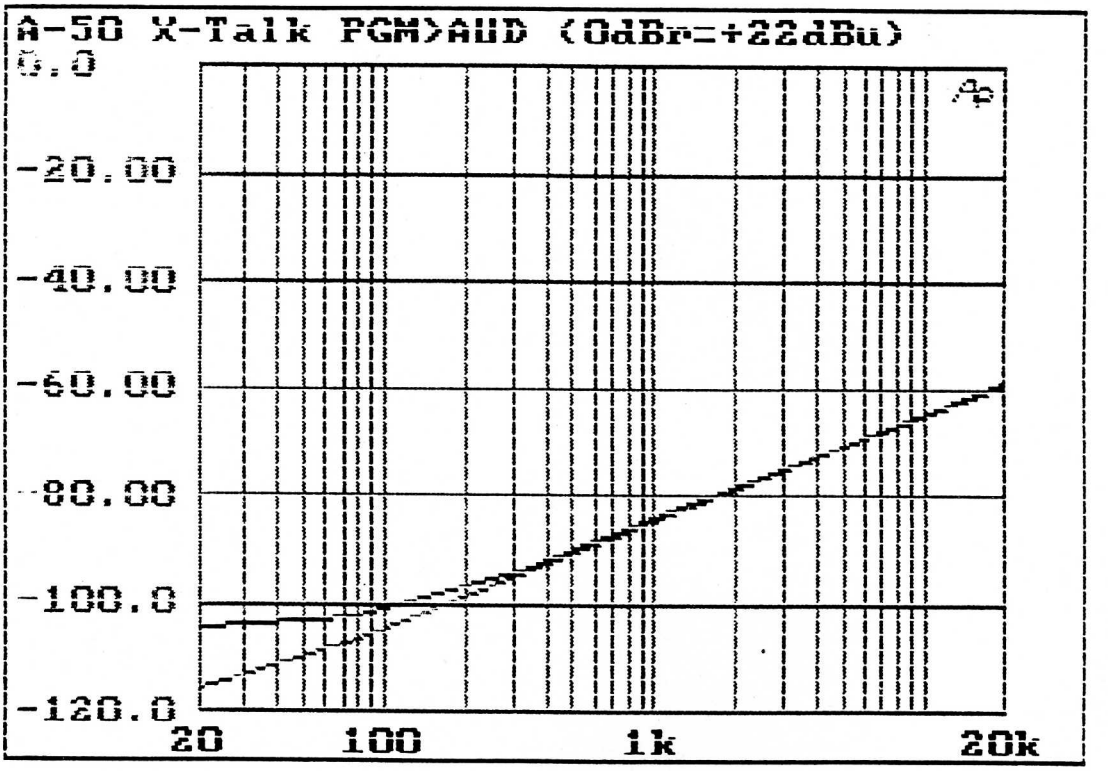

A-50 MIC SMPTE DIST. % vs dBu
0.1
0.010
-50.0
-42.0
-34.0
-26.0

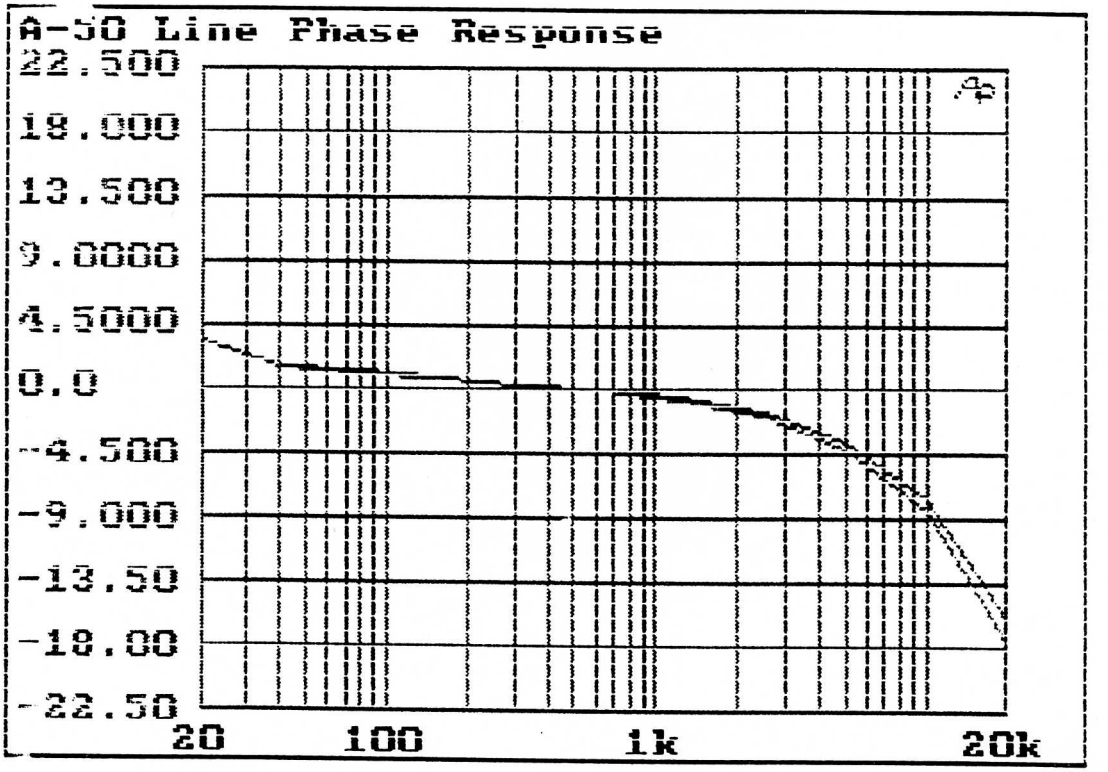

A-50 Dynamic Intermod.Dist.(% vs. dBu)
1
0.1
0.010
0.001
-30.0
-10.0 0.0 10.00
30.00


A-50 MIC Dynamic Intermod.Dis. % vs dBu
0.1
0.010
0.001
.0005
-50.0 -45.0 -40.0 -35.0 -30.0 -25.0


A-50 Stereo Seperation (0dBr=+22dBu)
0.0
-20.00
-40.00
-60.00
-80.00
-100.0
-120.0
20
100
1k
20k


A-50 Stereo Off Isolation (0dBr=+22dBu)
-50.00
-60.00
-70.00
-80.00
-90.00
-100.0
-110.0
-120.0
20
100
1k
20k


A-50 X-Talk PGM>AUD (0dBr=+22dBu)
0.0
-20.00
-40.00
-60.00
-80.00
-100.0
-120.0
dB
20
100
1k
20k


A-50 Line Phase Response
22.500
18.000
13.500
9.0000
4.5000
0.0
-4.500
-9.000
-13.50
-18.00
-22.50
dB
20
100
1k
20k

Testpoints/Level Diagram

TESTPOINTS/SIGNAL LEVELS

The following test point signal/level information was measured with a standard WHEATSTONE A-50 console under normalized settings, and represent the average of several different measurements. The levels will therefore be different with modified consoles or settings. This information is provided for troubleshooting where gross deviations from the published levels can help locate a problem; minor deviations are considered insignificant in the troubleshooting process.

The normalized settings are as follows: input signal is a 1KHz sine wave at +4dBu level for line inputs and -50dBu level for mic inputs. The signal is applied to one channel only; all other channels are turned off and their assign switch buttons are up, an important point when looking at noise levels. The input fader is adjusted for a -12dB in hand setting, and the console output level is +4dBu. Noise levels are measured RMS with a 30KHz low pass filter, and are provided to help isolate a noisy IC stage. The noise figures listed for the output modules are all for line level signals. The testpoints labeled "control" are specified for when the control function is "ON" or active. The control circuitry is LSTTL, with CMOS analog switches performing the signal switching. PLEASE NOTE THAT CARE MUST BE TAKEN TO AVOID STATIC DAMAGE TO THE CMOS CIRCUITS.

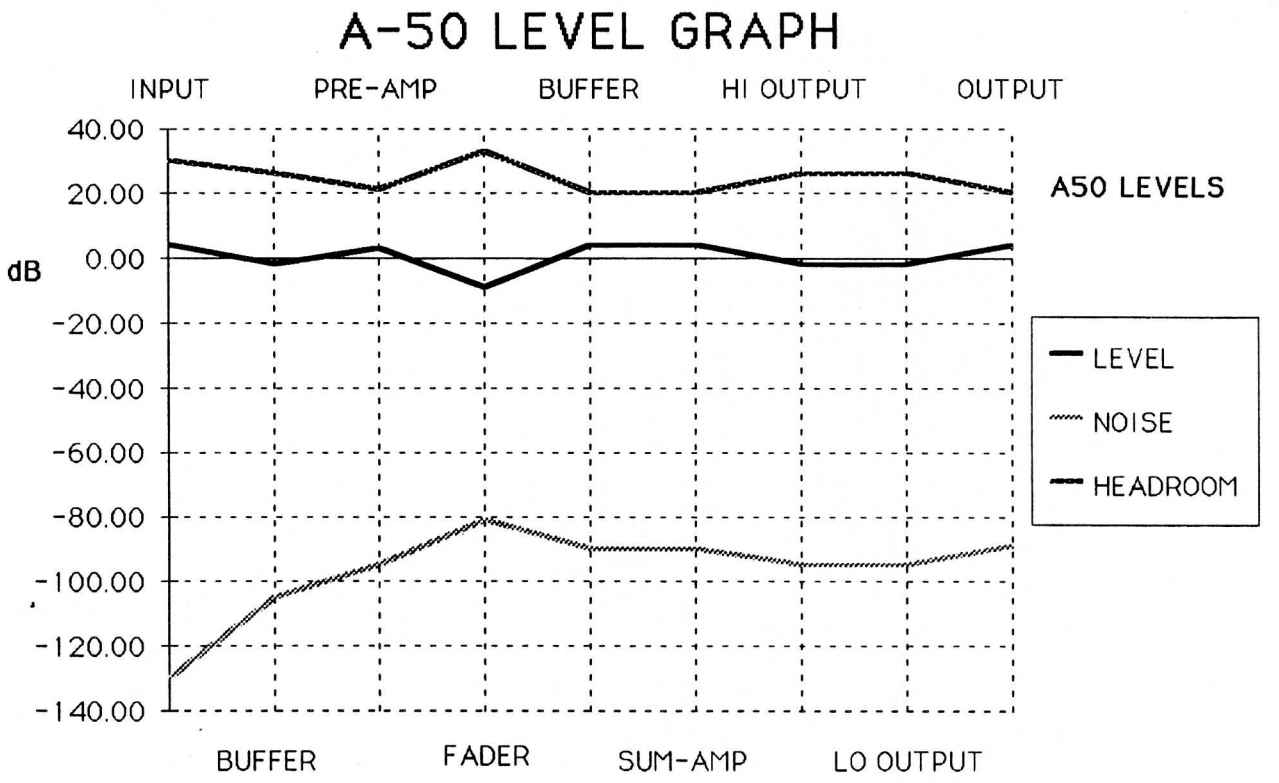
Use extreme care when using meter or oscilloscope test probes to avoid shorting a test point to an adjacent connection. This is especially important when probing a pin 7 op-amp output, since the adjacent pin 8 is at 18 volts.

		TEST POINT DATA			
SECTION					
INPUT	TEST POINT	TYPE	LEVEL	NOISE	NOTES
		note (1)	*note (2)*		
	U1/P1	AUDIO	-2dBu	-105dBu	A-LT Input buffer
	U1/P7	AUDIO	-2dBu	-105dBu	A-RT Input buffer
	U2/P1	AUDIO	-2dBu	-105dBu	B-LT Input buffer
	U2/P7	AUDIO	-2dBu	-105dBu	B-RT Input buffer
	U4/P1	AUDIO	+3dBu	-95dBu	LT Preamp
	U4/P7	AUDIO	+3dBu	-95dBu	RT Preamp
	C25 minus	AUDIO	-9dBu	-81dBu (3)	LT Fader buffer input
	C22 minus	AUDIO	-9dBu	-81dBu (3)	RT Fader buffer input
	U5/P1	AUDIO	+4dBu	-90dBu	LT Fader buffer output
	U5/P7	AUDIO	+4dBu	-90dBu	RT Fader buffer output
	U3/P9,10,11	CONTROL	LOGIC LO	---	A Source selected
	U3/P9,10,11	CONTROL	LOGIC HI	---	B Source selected
	U6/P5,15	CONTROL	LOGIC HI	---	Cue or external TB switch ON
	U6/P6,14	CONTROL	LOGIC HI	---	TEL selected, channel ON
	U7/P5,15	CONTROL	LOGIC HI	---	AUD selected
	U7/P6,14	CONTROL	LOGIC HI	---	PGM selected
	U7/P7	CONTROL	LOGIC LO	---	Channel ON
	U7/P7	CONTROL	LOGIC HI	---	Channel OFF
	U9/P4	CONTROL	LOGIC LO	---	Cue ON
	U9/P6	CONTROL	LOGIC HI	---	Cue or external TB switch ON
	U9/P3	CONTROL	LOGIC LO	---	Channel ON
	U9/P8	CONTROL	LOGIC HI	---	Mute driver, channel ON
	U1/P8	DC	+18V	---	+ audio supply
	U1/P4	DC	-18V	---	- audio supply
	U9/P14	DC	+5v	---	+V dlg, TTL and lamps
	U6/P16	DC	+5v	---	Vcc, analog switches
	U6/P9	DC	-5v	---	Vee, analog switches
	U4/P5	DC	0V (GND)	---	Analog common
	U9/P7	DC	0V (GND)	---	Digital common
	Note (1)	*Audio signals and supplies referenced to analog common,*			
		control (logic) signals and supplies referenced to digital common			
	Note (2)	*Input = +4dBu, frequency = 1KHz*			
	Note (3)	*Use 400Hz low pass filter*			

		TEST POINT DATA			
MODULE					
MIC PRE	TEST POINT	TYPE	LEVEL	NOISE	NOTES
			note (1)		
	U1/P3	AUDIO	-33dBu	-69dBu	T1 secondary
	U1/P1	AUDIO	0dBu	-73dBu	Mic Pre 1 output
	U1/P5	AUDIO	-33dBu	-69dBu	T2 secondary
	U1/P7	AUDIO	0dBu	-73dBu	Mic Pre 2 output
	U1/P8	DC	+18V	---	+ audio supply
	U1/P4	DC	-18V	---	- audio supply
	R1 - R4	DC	+48V	---	Phantom power
	Note (1)	*Input = -50dBu, 150 ohms balanced*			
		Frequency = 1KHz			

		TEST POINT DATA			
SECTION					
OUTPUT	TEST POINT	TYPE	LEVEL	NOISE	NOTES
		note (1)	*note (2)*		
	U108/P7	AUDIO	+4dBu	-90dBu	LT PGM summing amp, insert out
	U108/P1	AUDIO	+4dBu	-90dBu	RT PGM summing amp, insert out
	U107/P7	AUDIO	+4dBu	-90dBu	LT AUD summing amp, insert out
	U107/P1	AUDIO	+4dBu	-90dBu	RT AUD summing amp, insert out
	U104/P1	AUDIO	-2dBu	-95dBu	LT PGM master out (hi)
	U104/P7	AUDIO	-2dBu	-95dBu	LT PGM master out (lo)
	U103/P1	AUDIO	-2dBu	-95dBu	RT PGM master out (hi)
	U103/P7	AUDIO	-2dBu	-95dBu	RT PGM master out (lo)
	U102/P1	AUDIO	-2dBu	-95dBu	LT AUD master out (hi)
	U102/P7	AUDIO	-2dBu	-95dBu	LT AUD master out (lo)
	U101/P1	AUDIO	-2dBu	-95dBu	RT AUD master out (hi)
	U101/P7	AUDIO	-2dBu	-95dBu	RT AUD master out (lo)
	U106/P7	AUDIO	+4dBu	-92dBu	TEL summing amp
	U105/P1	AUDIO	-2dBu	-102dBu	TEL master out (hi)
	U105/P7	AUDIO	-2dBu	-102dBu	TEL master out (lo)
	U106/P1	AUDIO	+3dBu	-92dBu	CUE summing amp
	U120/P7	AUDIO	-2dBu	-102dBu	CUE master out (hi)
	U120/P1	AUDIO	-2dBu	-102dBu	CUE master out (lo)
	U119/P7	AUDIO	-2dBu	-106dBu	LT EXT IN buffer
	U119/P1	AUDIO	-2dBu	-106dBu	RT EXT IN buffer
	Note (1)	*Audio signals and supplies referenced to analog common,*			
		control (logic) signals and supplies referenced to digital common			
	Note (2)	*Input = +4dBu, frequency = 1KHz*			

		TEST POINT DATA			
SECTION					
CR/SC	TEST POINT	TYPE	LEVEL	NOISE	NOTES
		note (1)	*note (2)*		
	U123/P7	AUDIO	-2dBu	-99dBu	LT CR summing amp
	U123/P1	AUDIO	-2dBu	-99dBu	RT CR summing amp
	U118/P7	AUDIO	-2dBu	-87dBu	LT CR master out (hi)
	U118/P1	AUDIO	-2dBu	-87dBu	LT CR master out (lo)
	U117/P7	AUDIO	-2dBu	-87dBu	RT CR master out (hi)
	U117/P1	AUDIO	-2dBu	-87dBu	RT CR master out (lo)
	U112/P7	AUDIO	-2dBu	-99dBu	LT SC summing amp
	U112/P1	AUDIO	-2dBu	-99dBu	RT SC summing amp
	U109/P7	AUDIO	-2dBu	-87dBu	LT SC master out (hi)
	U1209/P1	AUDIO	-2dBu	-87dBu	LT SC master out (lo)
	U110/P7	AUDIO	-2dBu	-87dBu	RT SC master out (hi)
	U110/P1	AUDIO	-2dBu	-87dBu	RT SC master out (lo)
	U121/P6,14	CONTROL	LOGIC HI	---	EXT source selected, SC
	U122/P6,14	CONTROL	LOGIC HI	---	EXT source selected, CR
	U121/P5,15	CONTROL	LOGIC HI	---	TEL source selected, SC
	U122/P5,15	CONTROL	LOGIC HI	---	TEL source selected, CR
	U113/P5,15	CONTROL	LOGIC HI	---	PGM source selected, SC
	U114/P5,15	CONTROL	LOGIC HI	---	PGM source selected, CR
	U113/P6,14	CONTROL	LOGIC HI	---	AUD source selected, SC
	U114/P6,14	CONTROL	LOGIC HI	---	AUD source selected, CR
	U128,P6	CONTROL	LOGIC HI	---	CR mute enabled
U113/P7, U121/P7,U111/P6		CONTROL	LOGIC HI	---	SC mute enabled
	U127/P10,11	CONTROL	LOGIC HI	---	CUE to HDPN enable
	U128/P11	CONTROL	LOGIC HI	---	CUE to LT CR enable
	U128/P10	CONTROL	LOGIC HI	---	CUE to RT CR enable
	U116/P1	CONTROL	+1.2V	---	ON-AIR tally enable
	U111/P10,11	CONTROL	LOGIC HI	---	TB to Studio enabled
	Note (1)	*Audio signals and supplies referenced to analog common,*			
		control (logic) signals and supplies referenced to digital common			
	Note (2)	*Input = +4dBu, frequency = 1KHz*			


A-50 LEVEL GRAPH
INPUT
PRE-AMP
BUFFER
HI OUTPUT
OUTPUT
40.00
20.00
dB
0.00
-20.00
-40.00
-60.00
-80.00
-100.00
-120.00
-140.00
BUFFER
FADER
SUM-AMP
LO OUTPUT
A50 LEVELS
LEVEL
NOISE
HEADROOM

Troubleshooting

Section Contents

BASIC PROCEDURES

If you have encountered difficulty in testing your installation, check the items listed below before opening the console. Note that some items may seem very obvious; it is often the most obvious things that we overlook.

1. Check that the AC power source for the console is live, and that the power supply is connected to the AC source and to the console.

2. Make sure that the sources you are using to test the console installation are producing normal, line level signals. For example, if a cart machine is the source, is the cart playing? Is the output of it connected to the console?

3. When checking for sound from control room and studio speakers, are the amplifiers on? Are the amplifier volumes turned up to a normal level? Are the speakers connected to the amplifier outputs?

4. If you have checked external devices and connections, and feel that the problem is within the console, double check all wiring before attempting to troubleshoot the console itself.

NOTE: THE FOLLOWING PRECAUTIONS SHOULD BE TAKEN WHILE TROUBLESHOOTING OR TESTING A "LIVE" (I.E., POWERED-UP) CONSOLE.

(1) Use extreme care when removing or replacing module faceplates, to prevent shorting switchboard traces against an exposed metal surface. If a module faceplate must be removed, but remain connected while troubleshooting, place a piece of cardboard or other non-conducting material across the console where the faceplate will be placed. This will prevent shorting, and also avoid scratching or marring the faceplates.

(2) Use extreme care when using meter or oscilloscope test probes to avoid shorting a test point to an adjacent connection. This is especially important when probing a pin 7 op-amp output, since the adjacent pin 8 is at 18 volts.

(3) NEVER remove or insert a logic IC (LSTTL or CMOS analog switch) while the console is powered. The same applies to the audio op-amps.

INTEGRATED CIRCUITS

The audio circuits of the console consist almost entirely of plug-in IC op-amps. The types called out in the schematic drawings and parts lists are chosen for optimum performance; in an emergency situation other types of known matching pin-out and capability can be temporarily substituted. Some useful troubleshooting hints for these circuits follow.

(1) Due to the large open-loop gain of the typical op-amp, the inverting input of an amplifier, configured as an inverter with its non-inverting input grounded, acts as a "virtual ground," and signal levels at this point can be expected to be extremely low. However, a circuit fault could result in a large signal level at the inverting input, so it may be worth checking.

(2) When one of these ICs fail, it commonly swings its output to one of the power supply rails. This should be a first check when a bad IC is suspected. Measure the output pin of the IC directly (as opposed to measuring after a coupling capacitor) under a no-signal condition and look for a large DC offset at the output.

(3) The capacitive loading effect of a test probe may occasionally cause oscillations in a high gain amplifier circuit. For this reason it is advisable, when using meter probes to measure DC voltage in an amplifier circuit, to isolate the "hot" lead from the circuit under test with a 10K resistor. This introduces a slight measurement error, depending on the meter input impedance, but this error is slight compared to the error that occurs if the amplifier is oscillating. If signal tracing with an oscilloscope, use a low capacity probe.

(4) Because of the feedback loop in the op-amp circuit, sometimes a signal can be measured or heard even when the IC is defective or even removed. Generally this signal will become more and more distorted as the level increases; also the gain of the affected path will be incorrect. Don't assume that because you can observe an output signal the IC must be working properly.

(5) This console has electronically balanced output circuits on its main output channels. Care should be taken when installing or testing these circuits to avoid connecting the "low" side of these outputs to ground or to an input circuit that has a low impedance to ground. While such a connection will not cause immediate damage to the console, levels will be incorrect and distortion figures will rise. If an unbalanced connection must be made to these outputs, let the "low" side float unconnected, or else build it out with a 620 ohm or higher resistor.

(6) The +5 volt logic power available at the individual channel logic ports is connected to the console logic supply through small value (typically 3.3-ohm) resistors. These resistors are provided to limit the current drawn by the user-provided external circuitry. If this voltage appears to be missing at the logic port, but is available elsewhere in the console, the resistor for that port has probably become open. Replacement resistors should stand off the circuit card to prevent burning of the board under fault conditions. Do not defeat the protection offered by these resistors by replacing them with jumper wires. In a pinch any low value 1/4 watt resistor can be used.

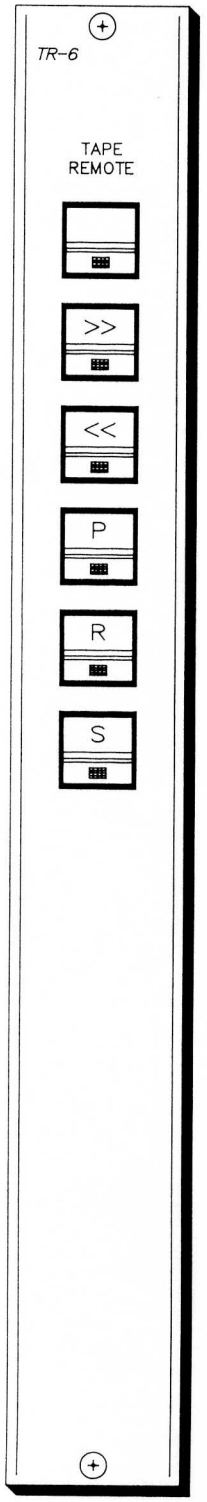
(7) In addition to the +/- 18 volts for the op-amps, and the +5 volts for the LSTTL ICs, the CMOS analog ICs require a +/- 5 volt supply, derived from +/- 18 volts via Q102 and U129. If this supply is not functional, the LSTTL outputs experience abnormal loading, which causes some rather weird logic problems. If there appears to be a logic malfunction in one or more channels, check these voltages.

Technical information for the console is contained on the schematic drawings. Installation and hook up information are also summarized in the text of this manual, and test point data are also provided.

In general, the A-50 console is rugged and user friendly. I/O connections can be unplugged or plugged in while powered up with no damage, provided the precautions described above concerning removal and replacement of module faceplates are carefully followed. Occasionally, this will cause a transient in the logic system that may be sufficient to affect a channel's ON/OFF or CUE status, but this is rare. If the power cable is being unplugged from the mainframe or the power supply, be sure to first turn the power off to avoid arcing the connector pins. Fader knobs should be removed or installed only when the fader is at the end of its travel to avoid "bowing" the internal fader structure.

WHEATSTONE CORPORATION maintains an active program of user support and technical assistance. You are encouraged to call the factory with any questions, problems, ideas, or suggestions regarding your A-50 console.

Optional Accessories



Optional Accessories

FF-1 Full Function Tape Remote (shown)

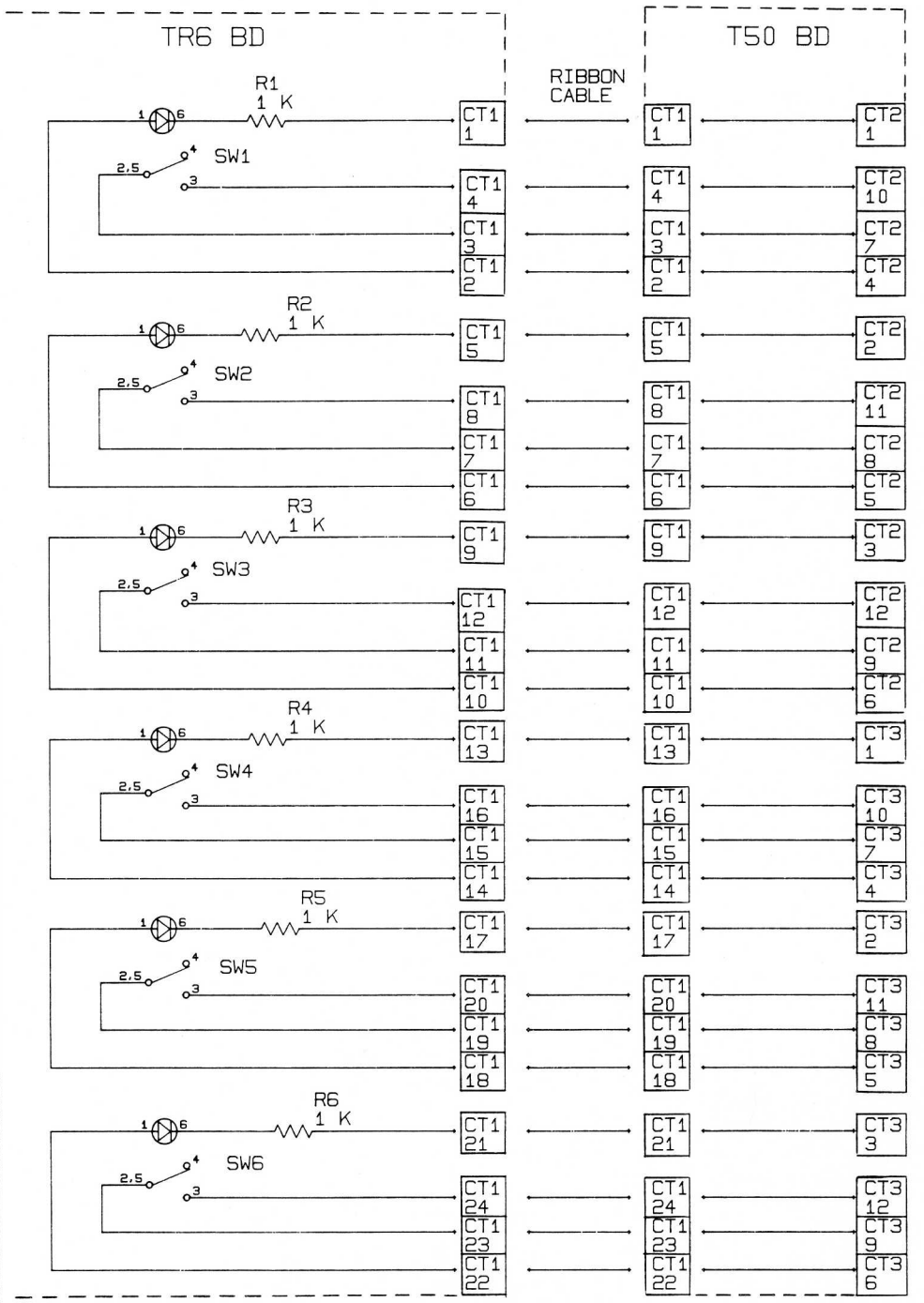
One full-function set of pushbutton controls (w/LED indicators) to control remote reel-to-reel, cart recorder, or cassette tape machines (FAST FORWARD, REWIND, RECORD, PLAY, STOP, SPARE).

SS-3 Start/Stop Tape Remote

Three pairs of START/STOP pushbutton controls (w/LED indicators) to control remote devices (such as cart machines, etc.). Panel layout is identical to FF-1 above; switch labels differ as noted.

LS-50 Line Preselector

SOURCE SELECT - A source select switchbank (located in the console meterbridge) with 6 stereo balanced inputs and one stereo balanced output. The output may be fed, via the console's 12-pin connector system, to any IN-50 input, or to the EXT input of the CR-50 or SC-50 module to, increase its input source capacity.

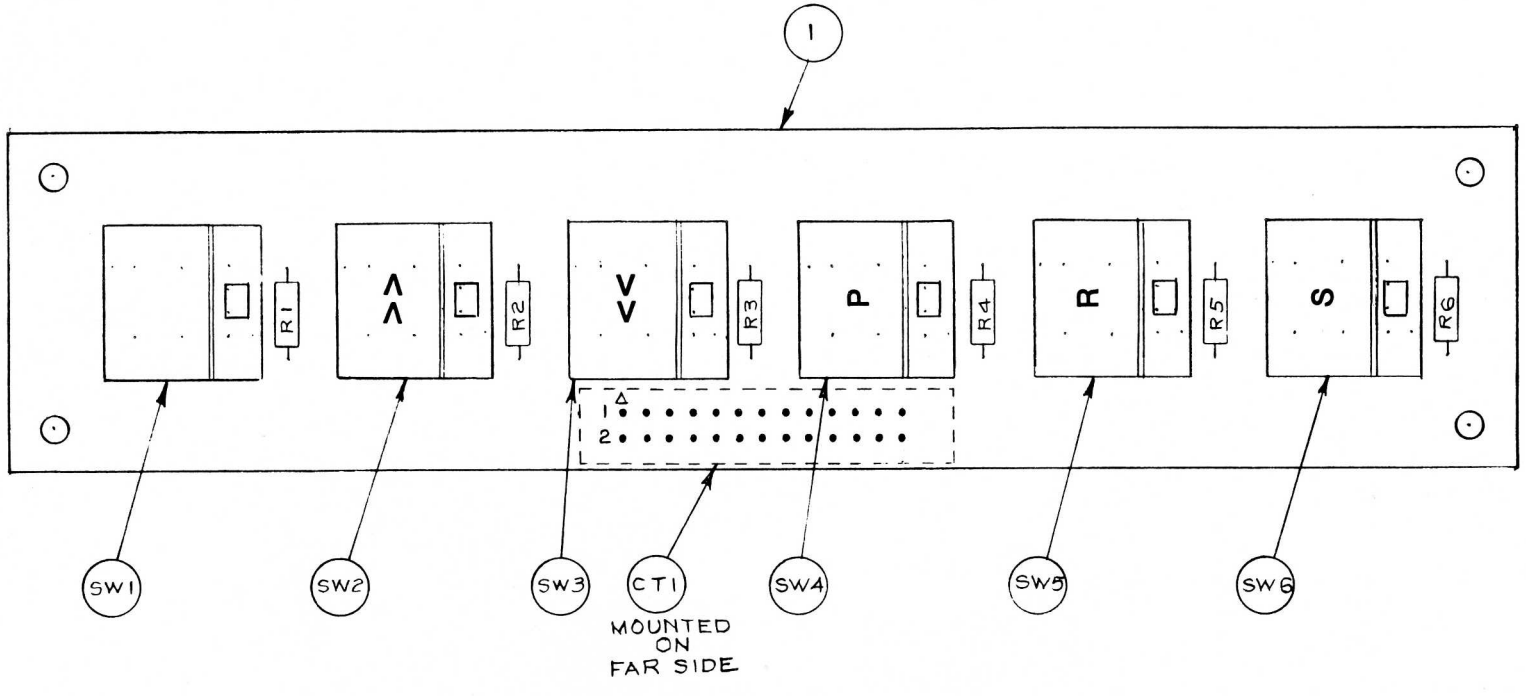


TR6 TAPE REMOTE

A-50 RADIO ON-AIR CONSOLE

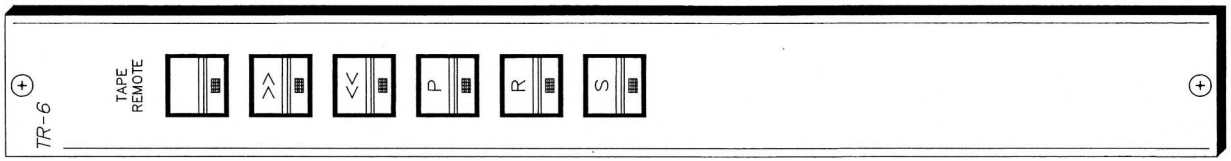
Wheatstone Corporation
6720 V.I.P. Parkway
Syracuse, NY. 13211

5-15-90	SCHEMATIC DRAWING
CAZ	
DO NOT SCALE	TR6-A PCB
T50-A PCB	#A50/SCH-9

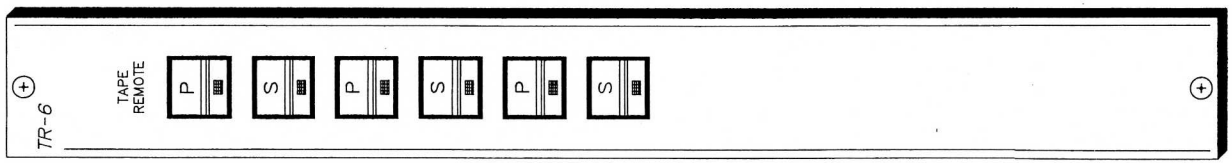


	PARTS LIST for TR6A PCB	
ITEM NO.	**DESCRIPTION**	**QTY**
1	PCB, TR6	1
CT1	CONNECTOR, 26 PIN DIL HEADER	1
R1-6	RESISTOR, 1K ±5%, 1/4 WATT	6
SW1	SWITCH, GRY W/RED LED, SPDT, MOMENTARY	1
SW2 & 3	SWITCH, WHT W/RED LED, SPDT, MOMENTARY ACTION	2
SW4	SWITCH, GRN W/RED LED, SPDT, MOMENTARY ACTION	1
SW5	SWITCH, RED W/RED LED, SPDT, MOMENTARY ACTION	1
SW6	SWITCH, YEL W/RED LED, SPDT, MOMENTARY ACTION	1

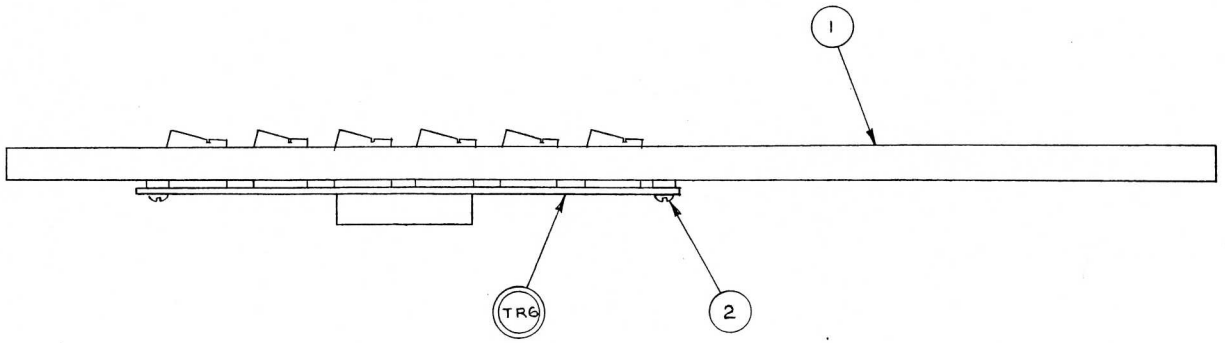
TR6 TAPE SWITCH BD		
A-50 RADIO ON-AIR CONSOLE		
5-7-90	Wheatstone Corporation 6720 V.I.P. Parkway Syracuse, NY. 13211	
CAZ/RA		
SCALE: 2X	PCB LOAD SHEET	
DO NOT SCALE	TR6A PCB	#A50/LD-13



FF/1

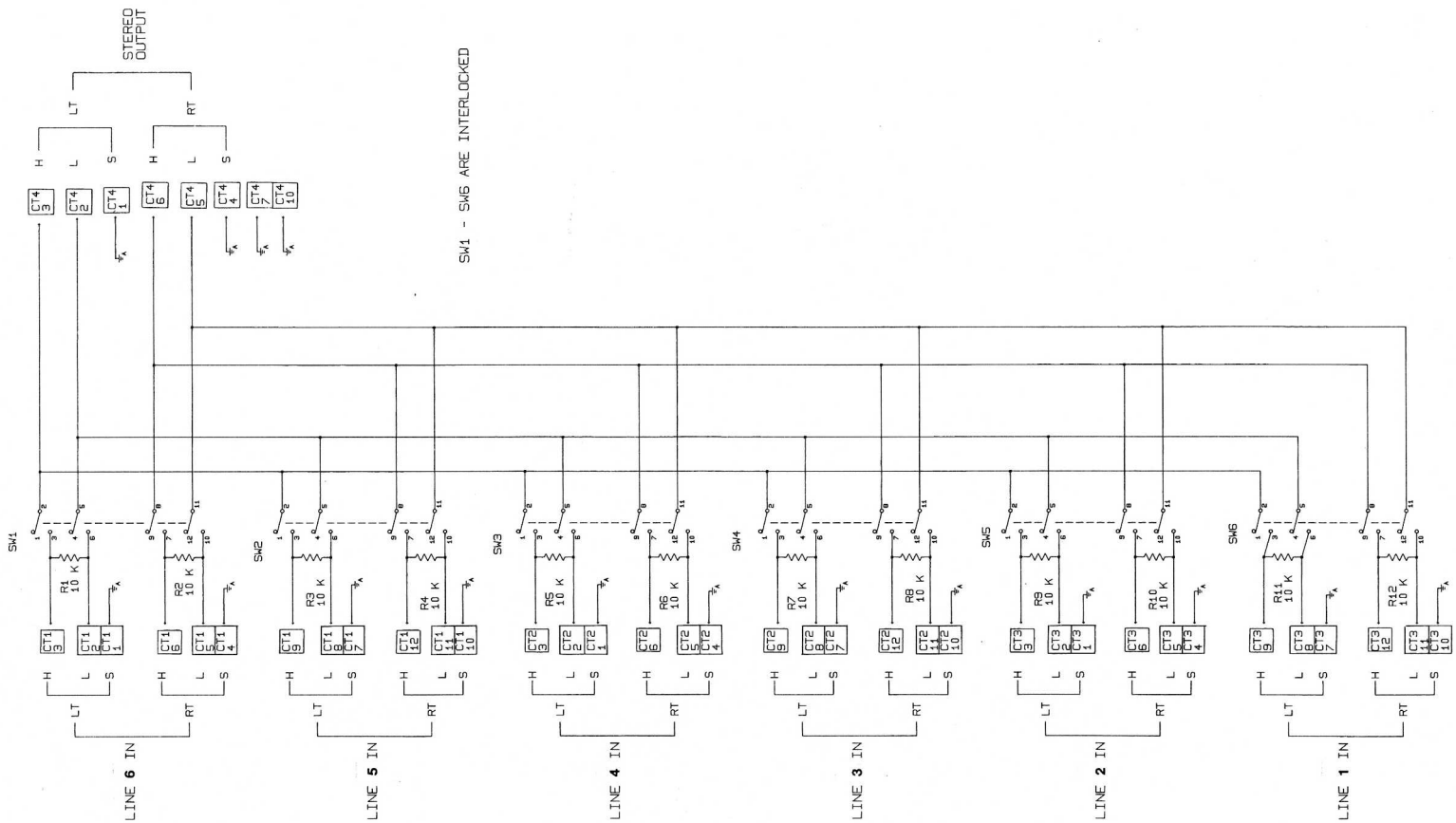


SS/3



PARTS LIST		
ITEM NO.	DESCRIPTION	QTY
1	MODULE FACEPLATE, TR6	1
2	SCREW, OVAL HD, PHILLIPS, #4-40 X 1/4 LG	4
TR6	TAPE REMOTE BD ASSY, TR6	1

TR-6 TAPE REMOTE MODULE	
A-50 RADIO ON-AIR CONSOLE	
5-16-90	Wheatstone Corporation 6720 V.I.P. Parkway Syracuse, NY. 13211
MS per RA	
ACTUAL SIZE	MODULE LOAD SHEET
	#A50/LOD-8



A50 LINE SELECTOR	
A-50 RADIO ON-AIR CONSOLE	
5-15-90	Wheatstone Corporation 6720 V.I.P. Parkway Syracuse, NY. 13211
CAZ	
DO NOT SCALE	SCHEMATIC DRAWING
	LS50-A PCB | #A50/SCH-2