

Installation and Power

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Installation and Power

Countertop Mounting

The RD digital audio console is designed for countertop drop-in mounting. Console placement should avoid proximity to any electromagnetic fields, such as large power transformers, motors, and fluorescent lighting fixtures. The required cut-out width is 31 5/8" for RD-12 or 43 5/8" for RD-20, and cut-out front-to-back dimension is 18 3/8". The front of the console will extend approximately one inch forward of the cut-out. The console's wooden sidepieces will extend about 7/8" on either side of the cut-out width.

Clearances

Note the two module extractor tools (black thumbwheel screws) mounted in the front surface of console's lower mainframe pan (just above and to the left of the righthand headphone jack). These must be removed before lowering the console into its cutout!



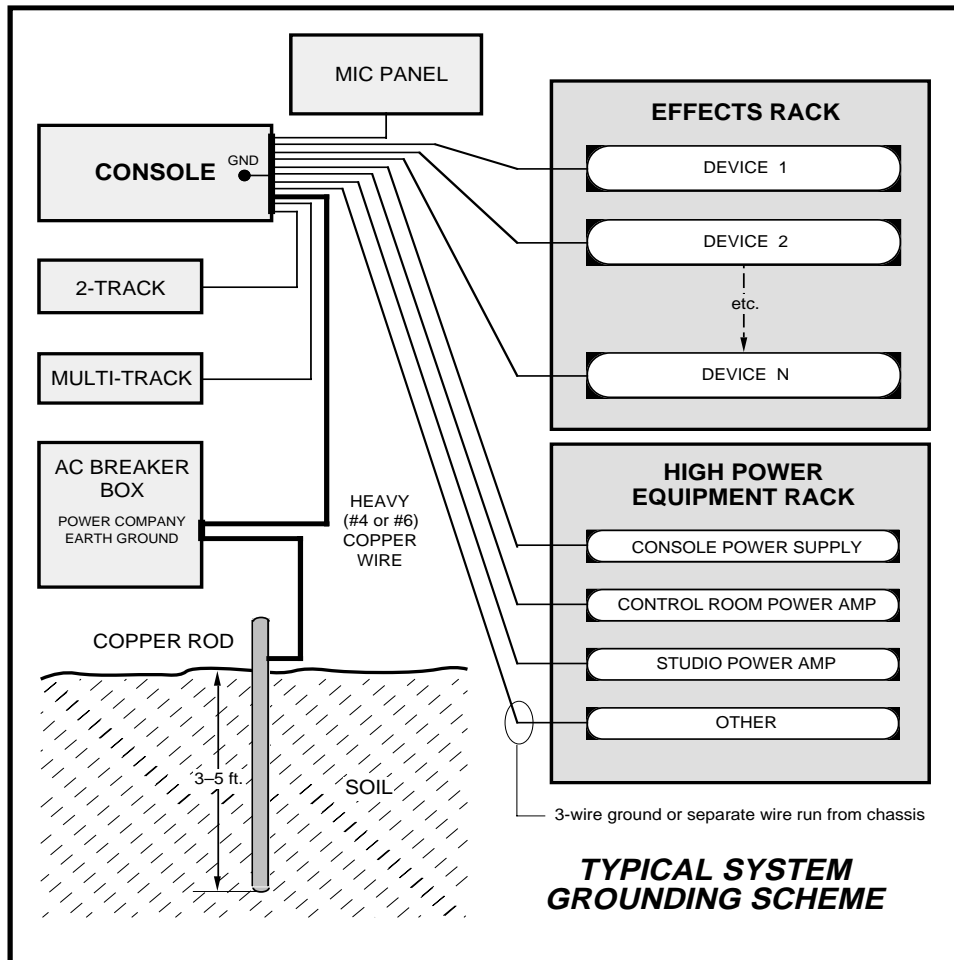
Once in place the console mainframe pan will extend approximately 5 1/2 inches below the countertop surface. Note the hinged meterbridge will require 10 1/2" above the countertop surface to open freely. When fully open the meterbridge will extend 5 1/2" behind the rear line of the cut-out. When closed, the meterbridge will extend 2 1/2" behind this rear cut-out line and 6 1/4" above the countertop surface.

Do not connect the RD console to its power supply (and do not connect the power supply to the AC power line) until instructed to do so.

System Ground

The first step is to ground the console.

Note that as supplied from the factory, console rackmount power supply common, audio ground, and the RD mainframe are connected together at the console, but are NOT connected to electrical ground and the chassis of the power supply. Safety requirements dictate that a positive connection from the console mainframe to electrical ground be



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.

made in the completed installation. Use one of the grounding lugs on the bottom of the mainframe to establish your system ground. The grounding lug terminal strip may be found at the rear of the console, along the bottom edge of the mainframe pan directly under the rightmost mainframe slots (to the lower left if you are looking at the rear of the console).

The system ground serves two important purposes:

- (1) It provides a zero signal reference point for the entire audio system;
- (2) It assures 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 made of plastic).

(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 previous 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 Grounding 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 its 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, proceed with the console power supply installation and connection (next section).

Power Supplies

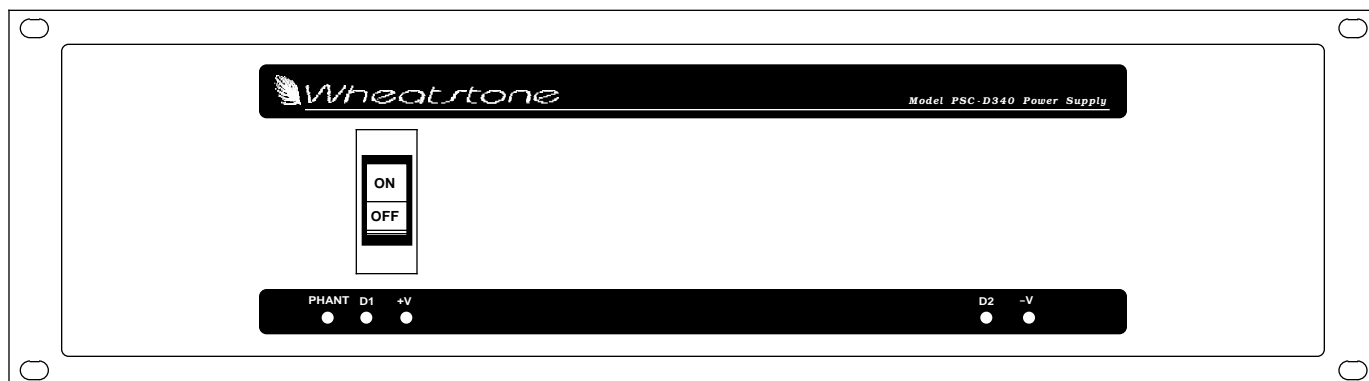
The RD console is powered by a Wheatstone Model PSC-D340 rackmount power supply. This heavy duty unit occupies three 19" wide rack spaces (total height 5-1/4"). Convection cooled, it requires ample ventilation space above and below it. The PSC-D340 generates a lot of heat in the course of normal operation — do *not* mount heat sensitive devices in the same rack cabinet.

Note the power supply (supplies) should be mounted in an equipment rack within fifteen feet of the console (but no closer than 3 feet). Avoid locating any high gain equipment (such as phono preamps, tape recorders, etc.) too near the rackmount supplies, to avoid magnetic interference into that equipment.

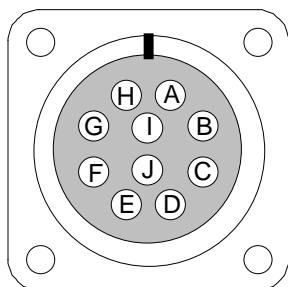
Once the supply is rackmounted, it should be connected to the console using the factory supplied cable. The console's power supply connector is located at the rear of the console, at the right end of the meterbridge bottom pan. Note that the power supply cable's 10-pin female connector has to be rotated until its locating pins match the male connectors on the console. Do not force a connector on; it attaches easily when properly aligned. Connect the cable first to the console, then to the rear of the rackmount power supply.

Note each power supply is fitted with a 3-wire grounded AC cord that should be plugged into a "clean" AC power source. That is, an AC source that feeds only the control room audio gear. This source should be a separate feed from those powering lighting, air-conditioning, or any other non-audio machinery. The third pin ground wire of the AC source should be tied to the central system ground point. *Note that while the AC power cord ground wire terminates at the power supply chassis, it does NOT connect to the RD console common; the console itself must be grounded separately. (See previous section, "System Ground".)*

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

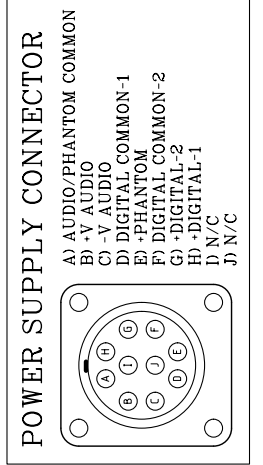
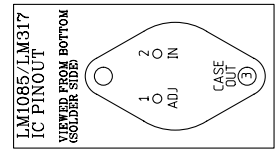
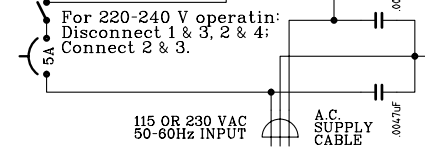
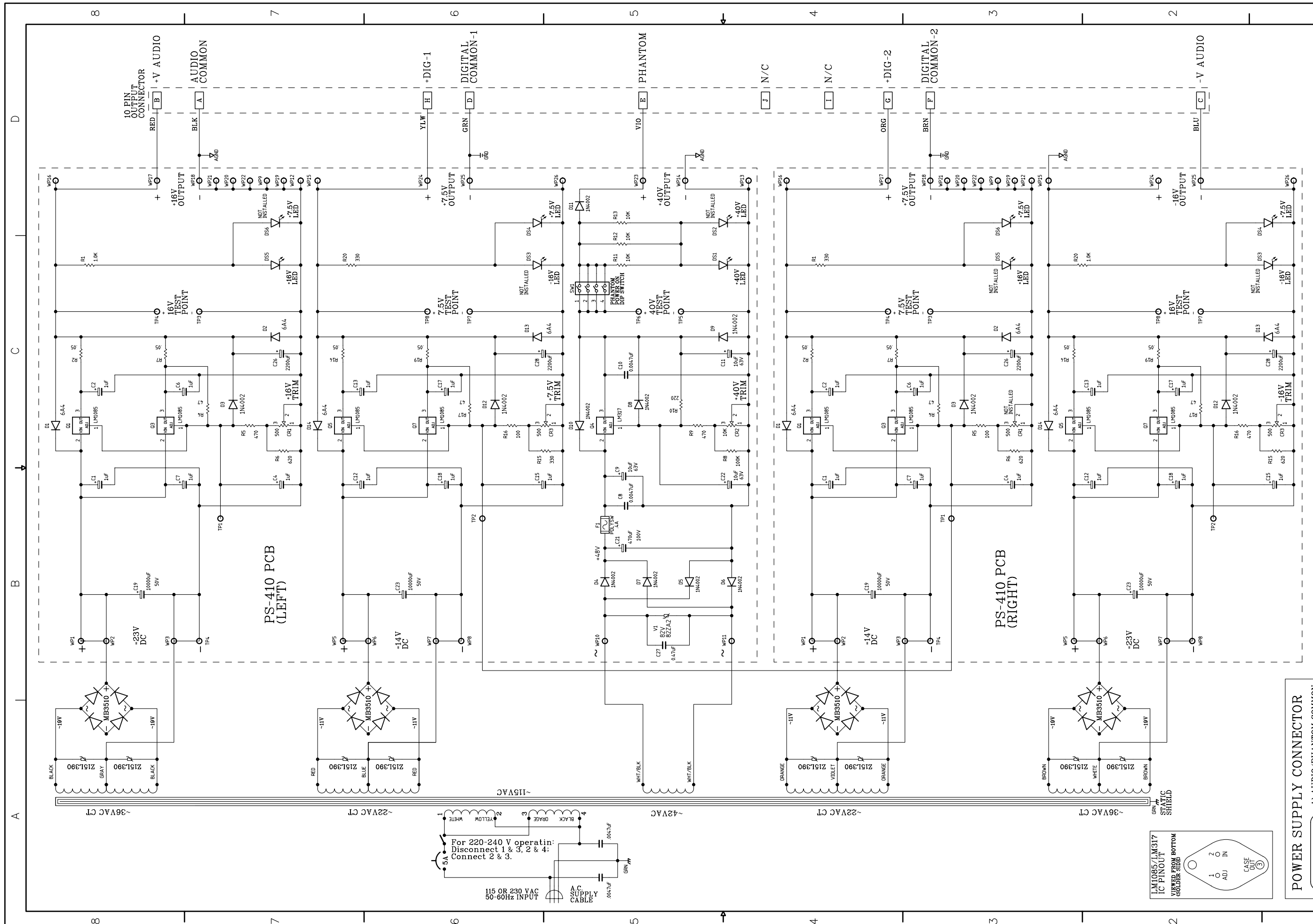


The PSC-D340 Power Supply



TYPICAL POWER CONNECTOR
(10-pin)

- A : audio/phantom common
- B : +V audio
- C : -V audio
- D : digital common
- E : phantom power
- F : digital common
- G : +digital
- H : +digital
- I : n/c
- J : n/c



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PSC-D340
 Wheatstone Corporation
 600 Industrial Drive
 New Bern, NC 28562
 SIZE/FSCM NO. DWG. NO. 00S0023E REV
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The VU/Timer Cable

Connections from the MOD-5 Meter Output Module to the Meterbridge for VU meter and timer signals are made through a special cable that ships with the console. This cable has a DB-25 at the both ends. Connect the one DB-25 connector to the matching DB-25 connector on the underside of the Meterbridge at the back of the console. Connect the second DB-25 to the upper DB-25 connector on the bottom of the frame at the slot that contains the MOD-5 module.

Energizing

Assuming the RD console mainframe is properly placed and grounded, and its PSC-D340 power supply correctly rackmounted and connected to the console, you may now energize the PSC-D340 rackmount power supply by plugging it into the AC mains and turning it on, using its front panel circuit breaker/switch. The five LEDs on the power supply front panel should light up to indicate the presence of their respective voltages. The console's individual module switches will assume factory default settings.

Once you have verified proper power-up, turn off the rackmount power supplies to de-energize the console. You may now proceed to wire up audio and control connections.

Audio and Control Wiring

All audio and control I/O connections to the RD console are made through multipin DB-25 connectors located on the bottom of the console.

Connection Procedures

As supplied from the factory, the console requires no logic connections to function. Therefore an orderly installation begins with the audio wiring. Note that this manual is organized by module type (inputs, outputs, monitor modules, etc.); each chapter contains detailed wiring instructions for its module type. Proceed through the manual, chapter by chapter, until all modules have been wired to suit your particular installation requirements. Once proper audio operation is verified, go back to each individual chapter and proceed with control wiring.

Digital Audio Connections

CABLE - All AES/EBU input and output digital audio connections are balanced and should be made using a high quality digital audio cable. Be sure to select a digital audio cable with an integral drain wire of the same wire gauge (AWG) as the twisted pair. Typical AES/EBU digital audio cable has a very low characteristic capacitance per ft (pF/ft), and a nominal impedance of 110Ω. High quality digital audio cable offers better signal transmission performance versus typical analog audio cable, especially over long cable runs. Check the cable manufactures data sheet to be sure the cable you plan to use will work in your application.

CONNECTORS - All AES/EBU connections are made with the supplied DB-25 male mating connectors. These crimp style connectors are the insulation displacement type and will accept wire gauge 24 - 22AWG.

SPDIF INPUTS - The SPDIF (Sony/Philips Digital Interface) or “consumer” digital audio interface is a two wire unbalanced signal typically on a single RCA style connector. To connect SPDIF devices to the RD console simply wire the SPDIF center conductor (HOT) to the SLD-5 “HI” input pin and SPDIF shell (ground) to the SLD-5 “LO” input. Connect the SLD-5 “SHIELD” to the DB connector SHELL at the console end only.

Analog Insert Points

Certain module signals have insert patch points in their signal chains to allow outboard audio processing. These include MONO MIC INPUTS (MMD-5) and OUTPUT MODULES (OMD-5).

Normally these points are internally bridged at the factory (via PCB-mounted programming switches) prior to shipment. If you intend to use outboard signal loops at these points, you must reprogram these switches. See pages 2-3 (mic inputs) and 4-3 (output modules) for details.

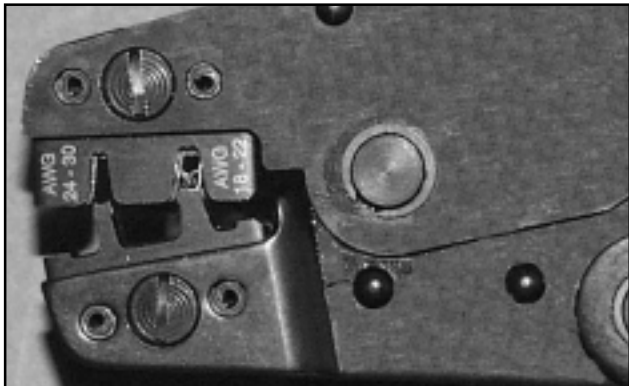
Unbalanced Connections (analog audio)

INPUTS — Wire to the console with typical shielded two conductor cable (like Belden 9451), just as if you were connecting a balanced source. At the unbalanced source machine's output, connect the black wire (LOW) to the shield. If the machine has a -10 dBu output, don't hesitate to turn module input gain as high as is needed.

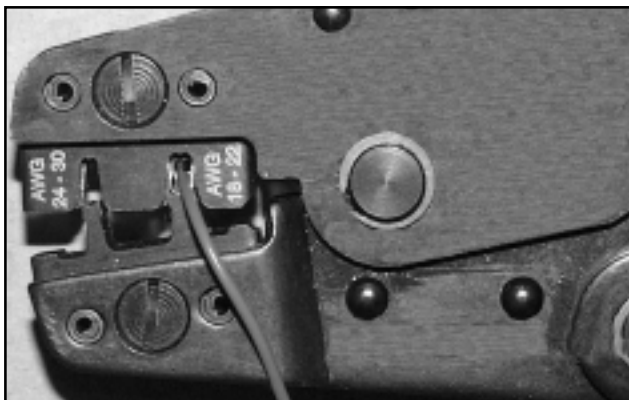
OUTPUTS — RD consoles use a balanced output circuit which behaves exactly like the secondary of a high-quality transformer, with no center tap—this output is both balanced and floating. Either the HIGH or LOW side of the output should be strapped to ground, with the output taken from the other side.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

HAND CRIMP TOOL WIRING INSTRUCTIONS

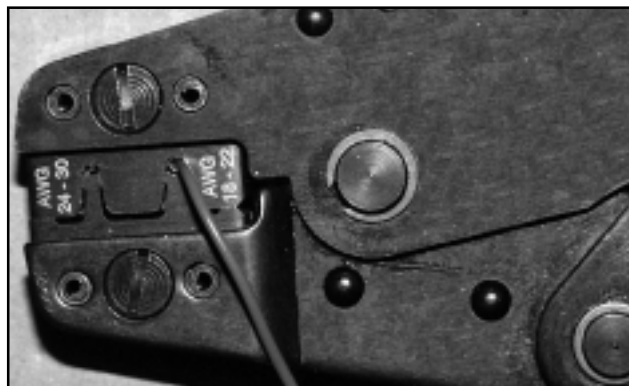
The supplied hand crimping tool (W/S#850067) is used for all I/O wiring connections to and from the console. It is to be used with the supplied pin (figure 1) intended for 22"-28" gauge wire.



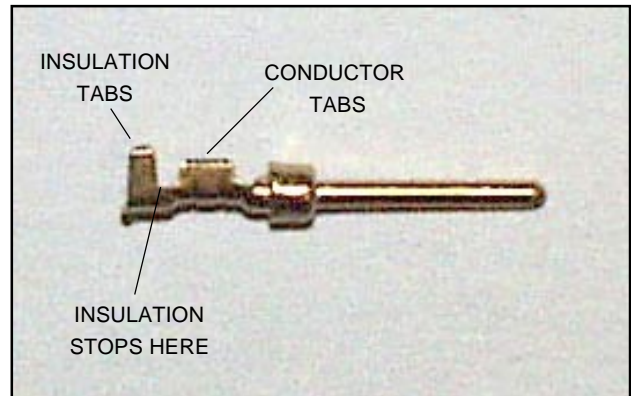
(2) The terminal conductor tabs (pointing UP) are placed in anvil 18-22; the terminal's insulation tabs extend in front towards the camera.



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



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



(1) Pin crimp terminal

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

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

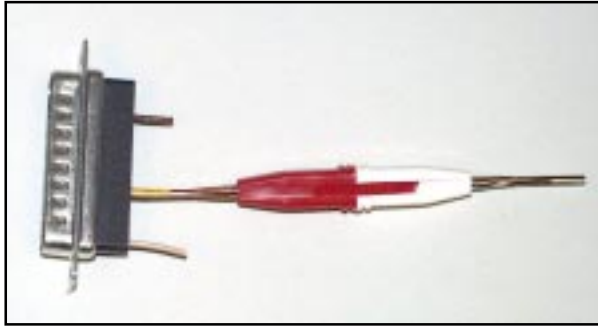
3) Close tool very slightly, only to the point of holding the terminal in position (figure 2).

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

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

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

EXTRACTOR PIN INSTRUCTIONS



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

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