QUICK START

Look around to make sure no one catches you reading this. You're aware this is the manual aren't you? Wow! Most people only get about this far in a manual, but there are a few important things you should know about the AVA 22. So please keep reading. These few points are summarized in this Cliff Note version of the manual.

The first time you power the AVA 22 it is in **BYPASS**, and functions like an expensive wire. This is useful for initial troubleshooting and allows for convenient verification of signal flow. Punching the **BYPASS** buttons and extinguishing their LEDs will activate the Delays.

ADJUSTING SENSITIVITY—First apply a signal with nominal input level and adjust the **SENSITIVITY** controls so the red **CLIP LED**s just light, then back off so the LEDs do not turn on, even with high signal peaks.

SETTING DELAY—Now that the input signal is calibrated, select **LINK** mode (**LINK LED** *on*) for stereo operation, or turn off **LINK** mode for dual mono operation. Adjust the up/down buttons until the LED display shows the desired Delay.

STORING DELAY—Press the **STORE** button (the **STORE LED** turns *off*). This stores the current Delay values into each Channel's current Memory (A or B). The current Memory is indicated by the lit **MEMORY LED** for each Channel. Both Channel's current Delay values are stored with each press of the **STORE** button. The broadcast Mode (NTSC or PAL/SECAM) is also stored with the Delay value.

RECALLING DELAY—To recall a stored Memory, press **RECALL**. Each press of this button alternately recalls stored Memories (A then B then A…).

Never connect anything except an approved Rane power supply to the thing that looks like a telephone jack on the rear of the AVA 22. This is an AC input and requires special attention if you do not have a power supply exactly like the one originally packed with your unit. See the full explanation of the power supply requirements elsewhere in this manual.

*Note:* To avoid audible anomalies, the AVA 22 bypasses the audio signal any time the Delay value is changed.

600 ohm users see page Manual-4.

FRONT PANEL DESCRIPTION
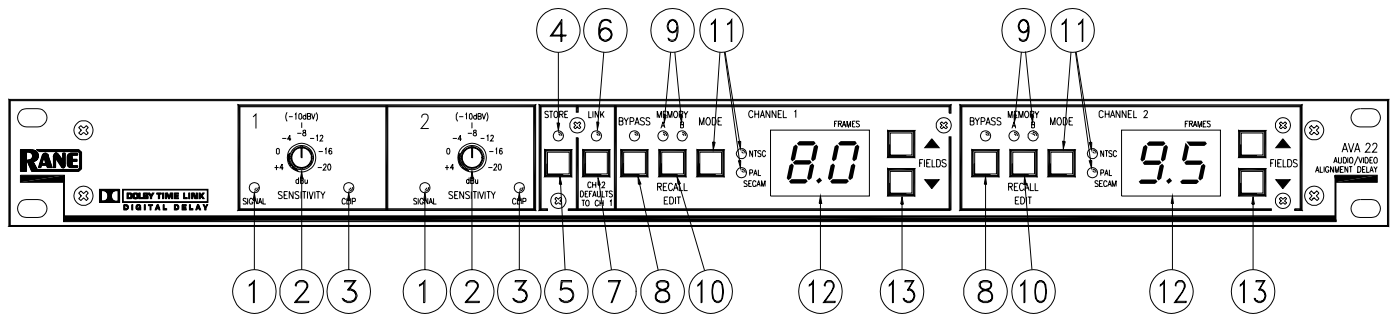
① **SIGNAL indicators:** These green LEDs illuminate approximately 42 dB before actual clipping.

② **SENSITIVITY controls:** These rotary controls vary incoming signal levels to the A to D converter. The output signal is also adjusted so the AVA 22 always passes signal with unity gain into 600 ohm loads. (See operating instructions.)

③ **CLIP indicators:** These red LED indicators illuminate 5 dB before clipping at the A to D converter input.

④ **STORE indicator:** This flashing LED indicator alerts the user that the current configuration of the AVA 22 is different from the stored configuration. The STORE LED is off when the current configuration matches the stored configuration.

⑤ **STORE button:** This pushbutton stores both Channels' current Delay configurations into the given Channels' current Memory (A or B). The current Memory for each Channel is indicated by the lit MEMORY LED for that Channel.

⑥ **LINK indicator:** This green LED lights when the unit is in LINK mode. LINK mode allows stereo operation.

⑦ **LINK button:** This pushbutton toggles between LINK mode (stereo operation) and DUAL MONO operation. (See Operating Instructions.)

⑧ **BYPASS buttons and indicator:** These momentary push buttons toggle each Channel's hard-wired Bypass. If an LED is *on*, the given Channel is Bypassed and functions like a wire. If it is *off* the given Channel is active.

⑨ **MEMORY indicator:** These LEDs indicate the most recently recalled Memory, A or B, for the given Channel. They also indicate the Memory that is written to when the STORE button is pressed. The MEMORY LED flashes when the current Delay value for that Channel is different than the stored value for that Channel.

⑩ **RECALL buttons:** Pressing one of these pushbuttons alternately Recalls stored Memories A and B for the given Channel.

⑪ **MODE buttons and indicator:** These buttons toggle the broadcast mode for the given Channel, NTSC or PAL/SECAM. Each Channel contains LEDs indicating the current broadcast Mode.

⑫ **FRAMES displays:** These 2-digit displays indicate the current Delay value for the given Channel. On power up this display also shows the currently installed software revision level.

⑬ **UP/DOWN buttons:** Pressing these buttons increases/decreases the amount of Delay in the given Channel.
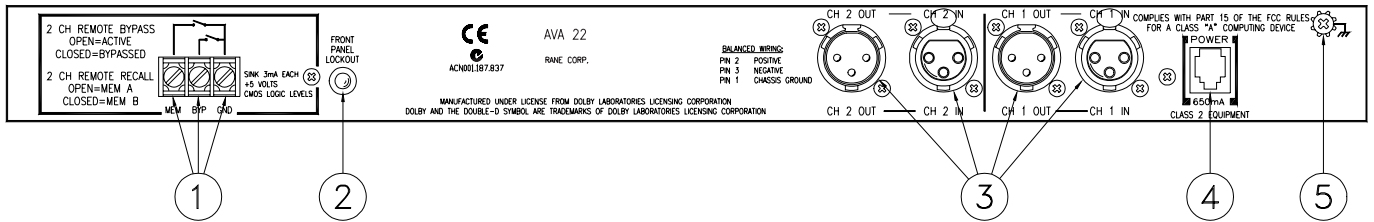
① **REMOTE BYPASS/RECALL terminals:** Wiring external configuration switches to these terminals allows remote stereo bypassing or stereo memory recalling of the two nonvolatile memories. These terminals use CMOS (+5 volt) logic levels and sink only 3mA (max) each.

② **FRONT PANEL LOCKOUT switch:** Enables the Front Panel Lockout mode. In this mode all front panel controls, with the exception of the RECALL buttons, are disabled. Press a RECALL button while in LOCKOUT to temporarily display, but *not* Recall, the value of the other stored Memory for the given Channel. (See Operating Instructions for optional Bypass Lockout mode.)

③ **XLR INPUT/OUTPUTS:.** Nothing new here, balanced Ins and Outs. If you desire unbalanced characteristics (like hum), you can also wire the AVA 22 in an unbalanced configuration. See RaneNote 110, "Sound System Interconnection" located elsewhere in this manual.

④ **POWER connector:** No, this is not where commissioner Gordon plugs in his Bat-phone, in fact *it is not a telephone jack* at all. The AVA 22 uses an 18 volt AC center-tapped transformer only. *Use only a model RS 1, RAP 10 or other remote AC power supply approved by Rane.* The AVA 22 is supplied with a remote power supply suitable for connection to this jack. Consult the factory for replacement or substitution.

⑤ **Chassis ground point:** A #6-32 screw and toothed washer is provided for chassis ground. Since the AVA 22 does not get chassis ground through the AC cord, this point is provided if your system does not have another earth ground such as the rack rails.

IMPORTANT NOTES

FCC & VDE NOTICE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules, and similar requirements found in European specifications EMCD 89/336/EEC. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

CHASSIS GROUNDING

If your system exhibits excessive hum or buzzing, there is an incompatibility in the grounding configuration between units. Here are some things to try:

1. Try combinations of lifting grounds on units supplied with ground lift switches (or links).

2. Verify all chassis are tied to a good earth ground.

3. Units with outboard power supplies do NOT ground the chassis through the line cord. Make sure these units are solidly grounded by tying the Chassis Ground Point to known earth ground. Use a star washer to guarantee proper contact. (See the RaneNote "Sound System Interconnection" for more.)

AVA 22 CONNECTION

When connecting the AVA 22 to other components in your system for the first time, *leave the power supply for last*. This gives you a chance to make mistakes and correct them before any damage is done to your fragile speakers, head-phones, ears, or brains. The AVA 22 passes audio while it is unpowered by virtue of its fail safe bypass relays (when the AVA 22 functions as a wire). Turn the system volume down before plugging in the AVA 22's power.

INPUTS

The AVA 22's Inputs are electronically balanced. Use only balanced wiring. Pin 2 is "hot" per AES standards.

OUTPUTS

The AVA 22's Outputs are balanced line drivers. Pin 2 is "hot" per AES standards.

REMOTE RECALL TERMINALS

Each Channel of the AVA 22 has two nonvolatile Memories, "A" and "B". Connecting a switch between the GND and MEM terminals permits remote stereo recalling of the Memories. Only a change in the switch position is sensed. When the switch closes, both Channels' Memory B's are recalled. When the switch opens, both Memory A's are recalled. See Operating Instructions for more details or an option.

Ω

600 OHM USER INFORMATION

The AVA 22's Inputs are specified for a nominal +4 dB**u** input, which is a voltage referenced level of 1.228 Volts RMS. (0 dB**u** = 0.7746 Volts). At this *voltage* level, the AVA 22 provides 16 dB of headroom below 8 kHz. Users who wish to operate the AVA 22 in 600 ohm systems must provide their own 600 ohm input resistor across the input terminals. This enables the AVA 22 to accept a +4 dB**m** input and allows delivery of +4 dB**m** to a 600 ohm load. Confusion among 600 ohm users of the AVA 22 may occur if one assumes the input and output impedances of the AVA 22 are 600 ohms – they are not. Therefore, when evaluating the AVA 22 do not assume that +4 dB**m** equals +4 dB**u** unless you have ensured that all input and output impedances in your test setup are 600 ohms.

Advantages of Hi-Z in/Lo-Z out systems:

(from *Audio System Design and Installation,* by Phillip Giddings, Howard W. Sams, 1990, pp. 129-130.)

1. Less distortion in output due to smaller output current needs.

2. About 14 dB lower noise pickup by interconnecting lines due to lower source impedance.

3. Greater lengths of cable may be driven for a given high frequency roll-off.

4. Many pieces of equipment can be driven from one output without the use of distribution amplifiers and with no concern for matching or level changes.

5. Better reliability resulting from less heat generation due to less power drawn from the output stage.

6. In the event that a 600 ohm load termination is used the delivered voltage will only drop by about 1 dB (20 log[R1/(R1+RS)]).

7. Greater signal voltage swing as 6 dB of signal is not lost in the (600 ohm) source impedance.

8. Smaller currents reduce inductive coupling and crosstalk between cables.

Frame-to-Millisecond Table

AVA 22 Displayed Frame Value	NTSC Delay Time in Milliseconds	PAL/SECAM Delay Time in Milliseconds
0.0	0.00	0.00
0.5	16.68	20.00
1.0	33.37	40.00
1.5	50.05	60.00
2.0	66.73	80.00
2.5	83.42	100.00
3.0.	100.10	120.00
3.5	116.78	140.00
4.0	133.47	160.00
4.5	150.15	180.00
5.0	166.83	200.00
5.5	183.52	220.00
6.0	200.20	240.00
6.5	216.88	260.00
7.0	233.57	280.00
7.5	250.25	300.00
8.0	266.93	320.00
8.5	283.62	-
9	300.3	-
9.5	316.98	-

Field/Frame Conversion Table

FORMAT	Number of Fields per second	1 Field Equals	Number of Frames per second	1 Frame Equals
NTSC	59.94	16.68 msec	30	33.33 msec
PAL/SECAM	50	20 msec	25	40 msec

Note: There are 2 fields in a frame.
The AVA 22's maximum delay time is 327.68 msec.
This provides up to 9.5 NTSC Frames -or- 8.0 PAL/SECAM Frames.

OPERATING INSTRUCTIONS

Once you've properly connected the AVA 22 to the system, turn on the power. When the AVA 22 is first powered, the revision level of the software is displayed.

THE BASICS

The AVA 22 is a two Channel device. Each Channel has a current Delay value that is always active/heard. You can only edit the current Delay values. Additionally each Channel has two nonvolatile Memories, A and B. The current Delay values can be stored in one of these two Memories.

SENSITIVITY SETUP

The first step is to apply signal and adjust the SENSITIV-ITY controls. If you know the nominal level, adjust the control indicator to that level. Otherwise, set the SENSITIV-ITY control so high signal peaks just illuminate the CLIP LED, then back off a little.

ADJUSTING CURRENT DELAY VALUE

One Channel at a time: With the LINK LED *off*, press the up/down buttons for the Channel you want to adjust until the desired Delay value is reached. That's it! To avoid audible anomalies, the AVA 22 bypasses the audio signal any time the Delay value is changed.

Both Channels simultaneously: With the LINK LED *on*, changing either Delay value changes the other Channel's Delay value by the same relative amount. (The Delay values are linked.) BYPASS, RECALL and broadcast MODE are also linked together in LINK mode.

When entering LINK mode, Channel 2's current Bypass and Memory settings are stored and replaced with Channel 1's current Bypass and Memory settings. This may cause a Memory Recall to occur in Channel 2. This Recall may also include a change in broadcast Mode if the Recalled Memory's Mode is different. Channel 2's stored Delay value is not changed to match Channel 1's Delay value. (Channel 2's stored delays remain unchanged.) When leaving LINK mode, Channel 2's Bypass and Memory settings are restored to their *dual mono* settings. Again a Memory Recall may occur, thus restoring the stored Channel 2 value.

STORING DELAYS

Press the STORE button. The STORE LED turns *off*. This Stores the current Delay values into each Channel's current Memory (A or B). The current Memory for each Channel is indicated by the lit MEMORY LED for that Channel. Both Channels' current Delay values and broadcast Modes are stored with each press of the STORE button.

RECALLING DELAYS

Press the RECALL button. Each press of this button alternately Recalls stored Memories (A then B then A…) for the given Channel. Pressing RECALL while editing Delay values writes over the changes you've made if you have not stored them.

REMOTE RECALLS

The rear REMOTE RECALL terminals are functionally equivalent to the front panel RECALL and BYPASS buttons while in LINK mode. When the switch closes, both Channels are Bypassed, or, for the other switch, both Memory B's are recalled. Both Channels are activated (or both Memory A's are recalled) by opening the switch. These terminals can not be locked out.

An internal jumper is provided to redefine the REMOTE RECALL function. (See J11 in the board layout diagram.) Moving this jumper from its default position redefines the Stereo Bypass Remote terminal as a Channel 2 Memory Recall terminal. The other terminal (defaulted as Stereo Memory Recall) becomes a Channel 1 Memory Recall terminal. This is convenient for mono video houses, allowing one equipment room to use Channel 1 and another room to use Channel 2 independently.

INTERNAL BYPASS JUMPER SETTING

Internal jumpers enable or disable the BYPASS buttons while in Front Panel Lockout mode. The default setting of these jumpers disables the BYPASS buttons in Front Panel Lockout mode. (See J102 and J302 in the board layout diagram.)

HOLE PLUGS

Once your system is properly configured, the SENSITIV-ITY knobs can be removed and the unit secured by replacing the knobs with the provided hole plugs. The third hole plug is for use with the rear-mounted LOCKOUT switch.