Section 2 Installation

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CAUTION

The installation and servicing instructions in this manual are for use by qualified personnel only. To avoid electric shock, do not perform any servicing other than that contained in the Operating Instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

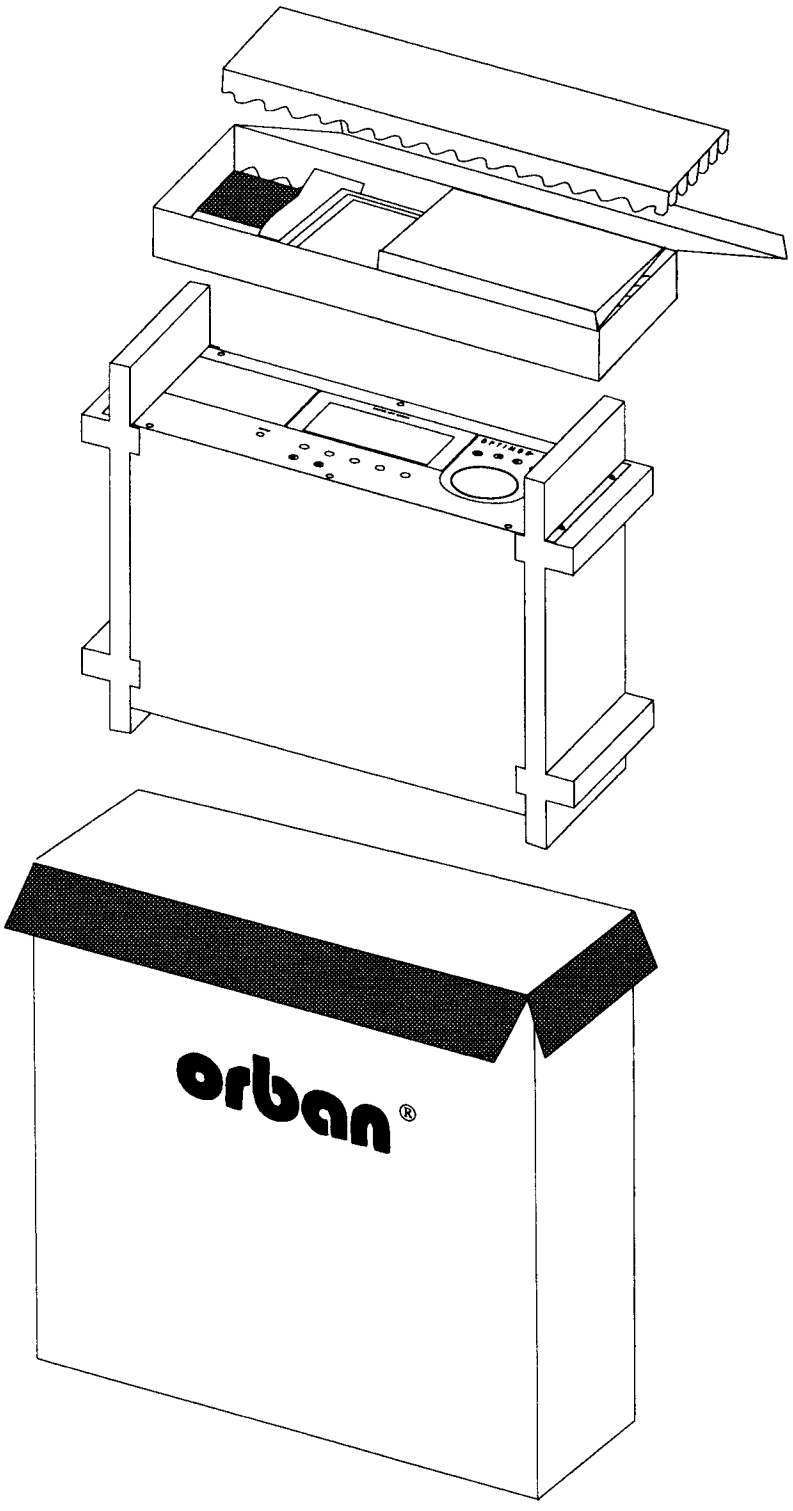


Figure 2-1: 8282 Packaging

Installation of 8282

Allow about 2 hours for installation.

Installation consists of: (1) unpacking and inspecting the 8282, (2) optional resetting of jumpers for 8282 options (input termination, input sensitivity), (3) checking the line voltage setting, fuses and power cord, (4) mounting the 8282 in a rack, (5) connecting inputs, outputs and power, (6) setting the GROUND LIFT switch, (7) optional connecting of remote control leads and (8) optional connecting of computer interface control leads.

When you have finished installing the 8282, proceed to "System Setup," on page 2-33.

1. Unpack and inspect.

If you note obvious physical damage, contact the carrier immediately to make a damage claim. Packed with the 8282 are:

1	Warranty/Registration Card
1	Operating Manual
1	Line Cord
2	Fuses (F1 = ½A or 250mA F2 = 4A or 2A, depending upon specified mains voltage)
1	Extender Card
4	Rack-mounting screws, 10-32 x ½ — with washers, #10
1	Hex wrench — ⅛"

A☐ *Save all packing materials*! If you should ever have to ship the 8282 (e.g., for servicing), it is best to ship it in the original carton with its packing materials because both the carton and packing material have been carefully designed to protect the unit. Re-package the unit according to Fig 2-1.

B☐ **Complete the Registration Card and return it to Orban.** (please)

The Registration Card enables us to inform you of new applications, performance improvements, and service aids that may be developed, and it helps us respond promptly to claims under warranty without our having to request a copy of your bill of sale or other proof of purchase. Please fill in the Registration Card and send it to us today. (If it is lost, photocopy the duplicate on page 1-1).

We do not sell our customer's names to anyone.

2. Open the front panel.

Note: Make sure that power is off (i.e., the power cord is detached from the rear panel power cord socket) before opening the front cover.

A☐ Unfasten the six screws that secure the panel in place with a Phillips screwdriver.

B☐ To open the front panel, slide the panel down and out while guiding it on its supports. Lower the panel until it is horizontal.

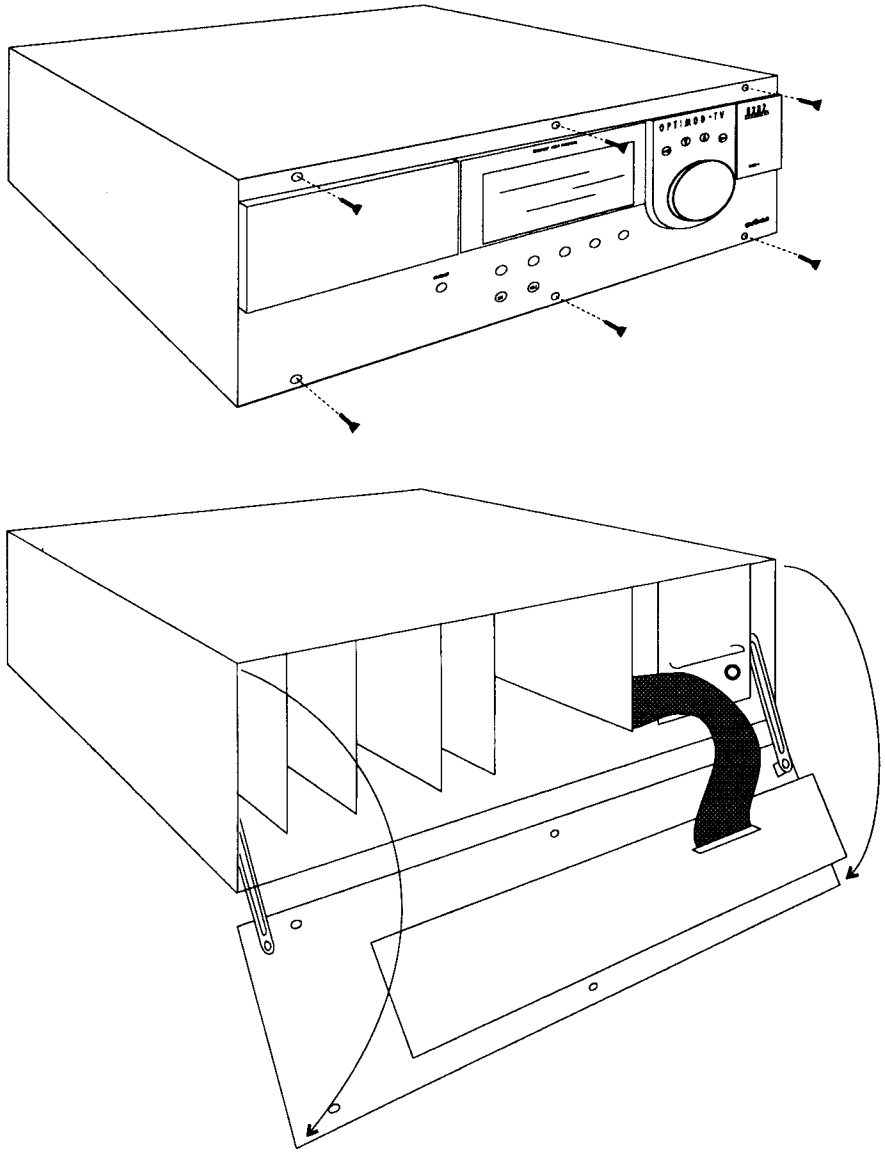


Figure 2-2: Opening the Unit

3. Insert optional AES/EBU Digital I/O Card, if purchased.

[Skip this step if you are not installing an 8200D/32 or 8200D/SRC Digital I/O Card).

A☐ Locate the slot. The Digital I/O Card, slot number A4, is the slot fourth from the left when facing the front of the unit.

B☐ Insert the Digital I/O Card.

C☐ Make certain that the card has fully seated into the sockets on the Motherboard.

4. Change standard factory configuration, if required.

The 8282 is supplied from the factory with its jumpers set to the configuration correct for most installations.

[Skip this step if your installation does not have any special requirements.]

A☐ Set analog left/right input termination.

[Skip this step if your installation does not require 600Ω termination on the analog left/right inputs.]

The analog left/right inputs are shipped from the factory with balanced bridging (10kΩ) input impedance. However, the 8282 analog inputs can be changed to 600Ω input impedance.

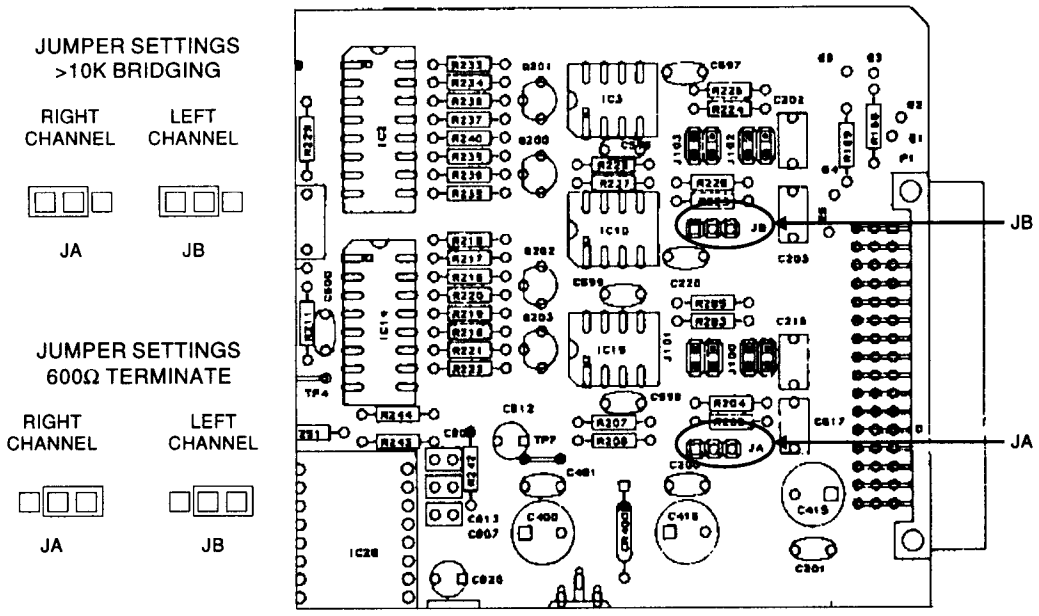


Figure 2-3: Input Termination Jumpers (Card #1)
Jumpers JA and JB

To change the input impedance of the analog left/right inputs:

Make sure that power is off before removing or inserting circuit cards. Remove analog I/O board (the first card from the left) and move jumpers JA and JB according to Figure 2-3. Jumper JA sets the right channel and jumper JB sets the left channel.

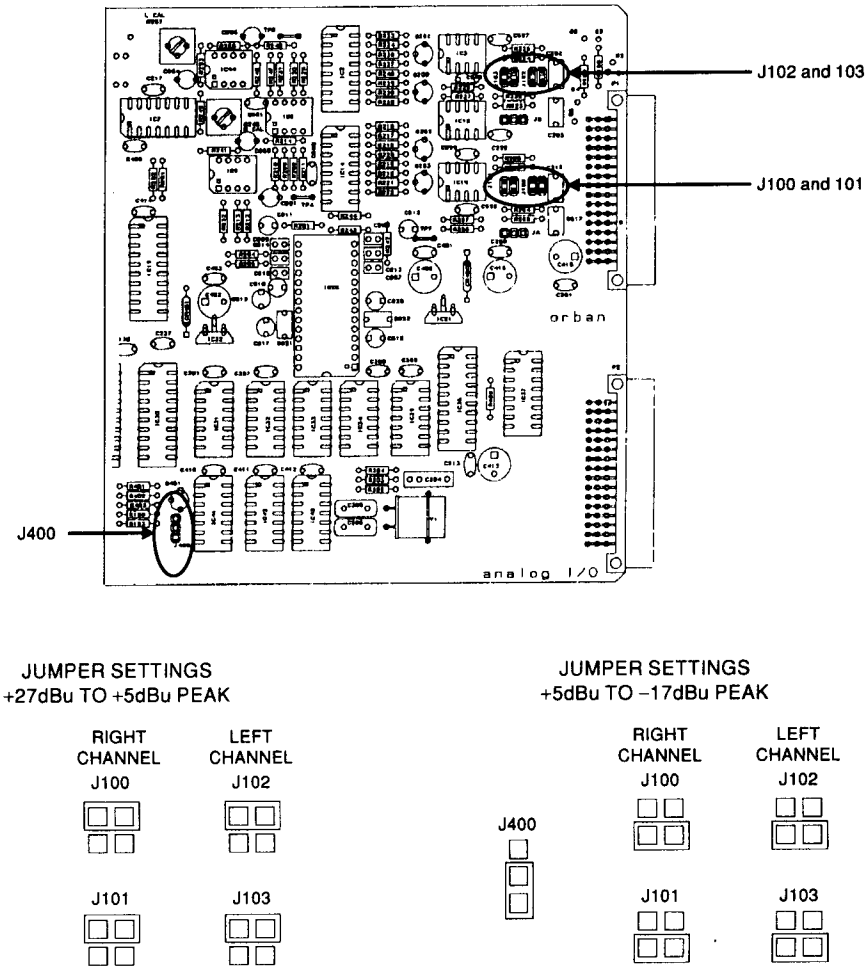


Figure 2-4: Input Sensitivity Jumpers (Card #1) Jumpers J100, J101, J102, J103 and J400

B☐ Set analog left/right input sensitivity.

[Skip this step if your installation will supply the 8282 with nominal input level of –10dBu or greater (+5dBu to +27dBu peak).]

The analog left/right inputs are shipped from the factory with input sensitivity to accommodate inputs whose absolute maximum peak level is between +5dBu and +27dBu.

If VU meters are used, +5dBu to +27dBu absolute peak corresponds to a 0VU level of approximately –9dBu to +13dBu.

If PPMs are used, +5dBu to +27dBu absolute peak corresponds to a PPM level of approximately −2dBu to +20dBu.

However, in unusual circumstances where the input level is very low, the 8282 analog inputs can be changed for greater sensitivity. This usually occurs only when the studio-to-transmitter link is a long telephone or post line with a passive equalizer at the receive end and no amplifier to make up the loss of the line and the equalizer.

To increase the input sensitivity of the analog input to accommodate absolute peak levels of −17dBu to +5dBu (nominal levels down to −30dBu):

Make sure that power is off before removing or inserting circuit cards. Remove analog I/O board (the first card from the left) from its slot, and move jumpers J100, J101, J102, J103 and J400 according to Figure 2-4. Jumpers J100 and J101 set the right channel and jumpers J102 and J103 set the left channel. Jumper J400 sets the control board to recognize the new input sensitivity.

5. Close the front panel

A☐ Verify that the power switch is set to ON (depressed).

The **AC POWER** switch is located on the power supply module to the right of the chassis. See Figure 2-5.

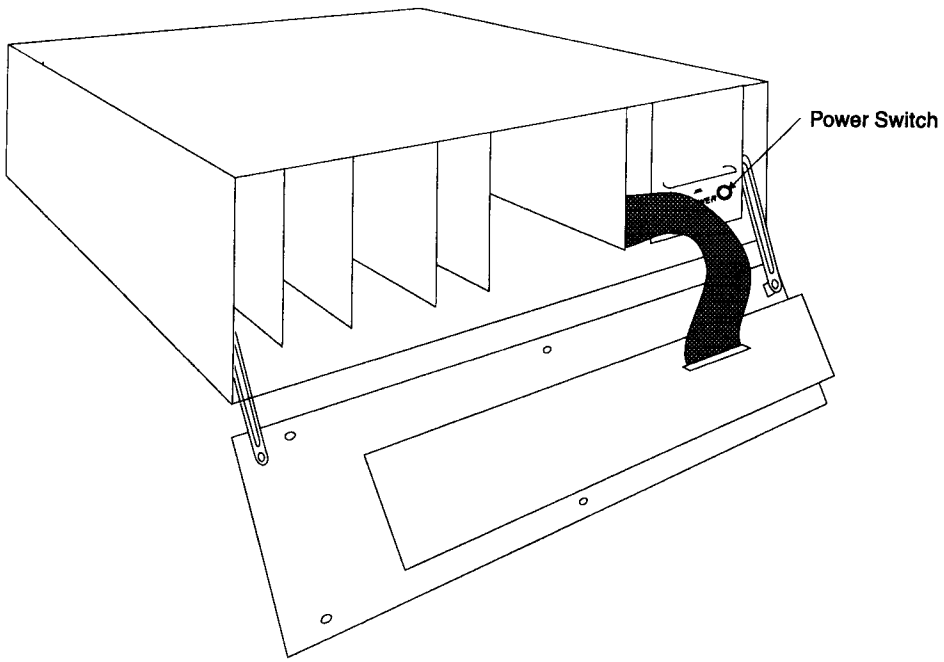


Figure 2-5: 8200 Power Switch

B☐ To close the front panel, rotate the panel until it is vertical. Raise the panel while guiding it in on its supports.

c☐ Fasten the six screws that secure the panel in place with a Phillips screwdriver.

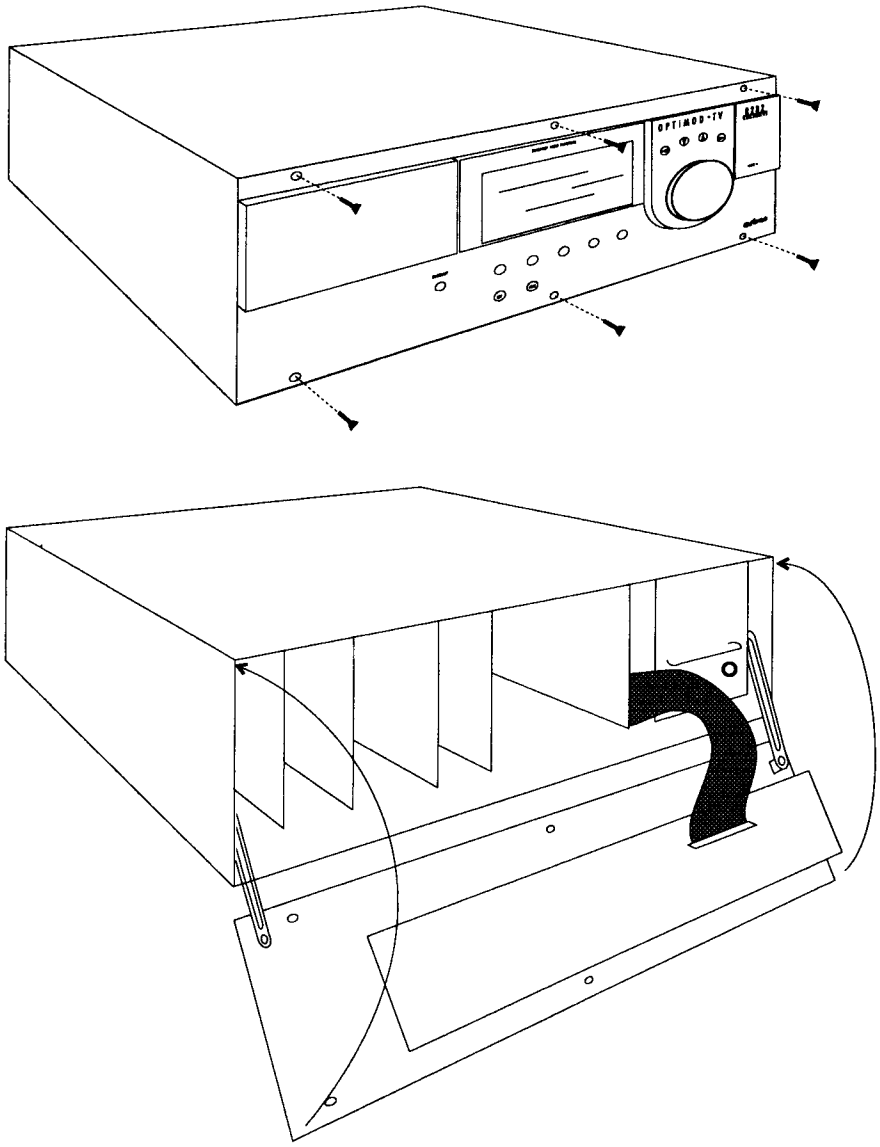
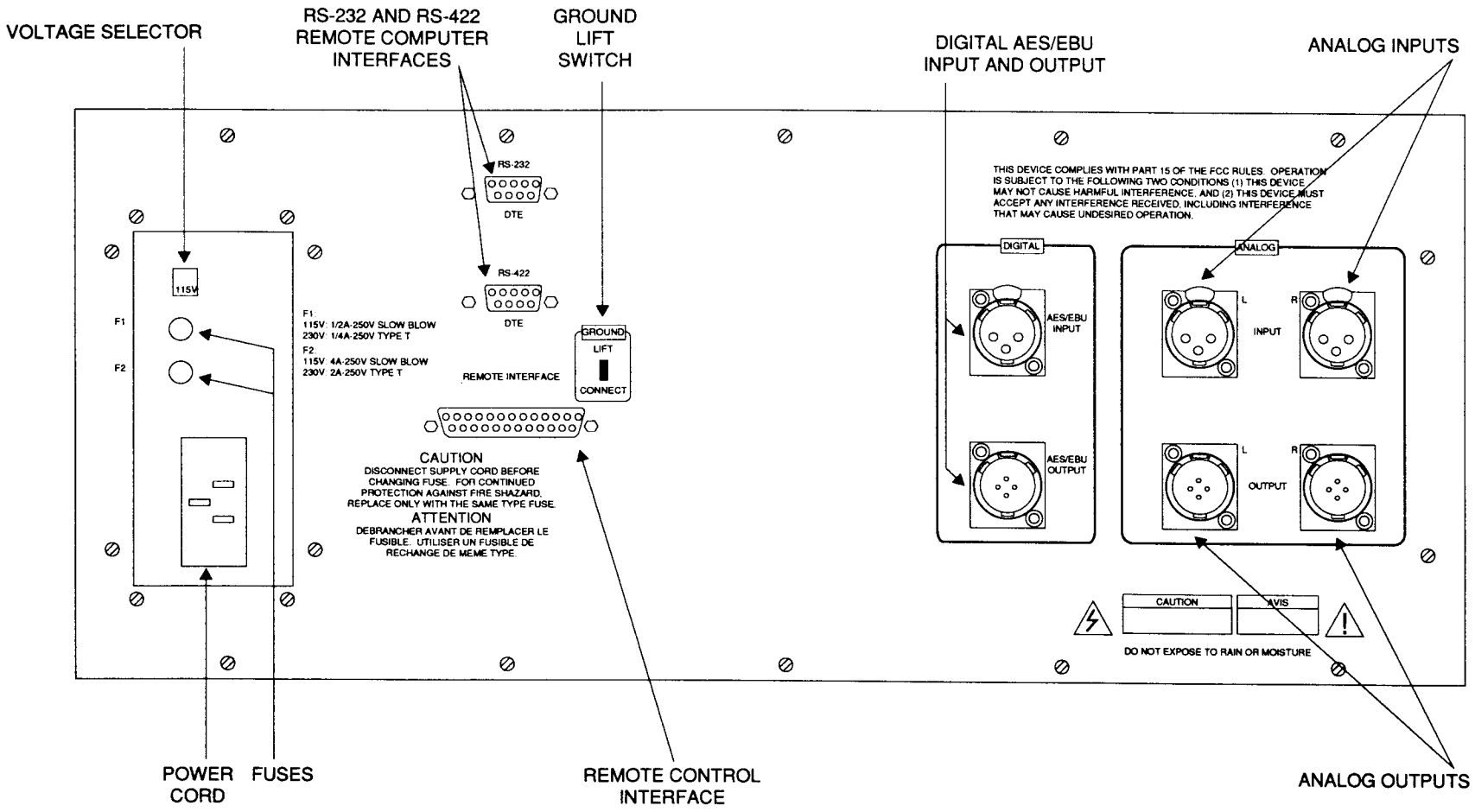


Figure 2-6: Closing the Unit


VOLTAGE SELECTOR
RS-232 AND RS-422 REMOTE COMPUTER INTERFACES
GROUND LIFT SWITCH
DIGITAL AES/EBU INPUT AND OUTPUT
ANALOG INPUTS
RS-232
DTE
RS-422
DTE
115V
F1
F2
F1.
115V: 1/2A-250V SLOW BLOW
230V: 1/4A-250V TYPE T
F2.
115V: 4A-250V SLOW BLOW
230V: 2A-250V TYPE T
REMOTE INTERFACE
GROUND
LIFT
CONNECT
CAUTION
DISCONNECT SUPPLY CORD BEFORE CHANGING FUSE. FOR CONTINUED PROTECTION AGAINST FIRE SHAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE.
ATTENTION
DEBRANCHER AVANT DE REMPLACER LE FUSIBLE. UTILISER UN FUSIBLE DE RECHANGE DE MEME TYPE.
THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.
DIGITAL
AES/EBU INPUT
AES/EBU OUTPUT
ANALOG
L
R
INPUT
OUTPUT
CAUTION
AVIS
DO NOT EXPOSE TO RAIN OR MOISTURE
POWER CORD
FUSES
REMOTE CONTROL INTERFACE
ANALOG OUTPUTS

8282 Rear Panel

Voltage Selector can be set to 115V (for 90-130V operation) or 230V (for 180-260V operation).

Fuse values can be changed to support 115V or 230V operation. Fuse F1 must be 3AG Slow-Blow, ½-amp for 115V, or ¼-amp (250mA) "T" type for 230V. Fuse F2 must be 3AG Slow-Blow, 4-amp for 115V, or 2-amp "T" type for 230V.

Power Cord is detachable and is terminated in a "U-ground" plug (USA standard), or CEE7/7 plug (Continental Europe), as appropriate to your 8282's Model Number.

Ground Lift Switch can be set to CONNECT (to connect the 8282's circuit ground to its chassis), or to LIFT (This switch should normally be set to CONNECT).

RS-232 and RS-422 Remote Computer Interfaces are provided to connect the 8282 to IBM PC-compatible computers, directly or via modem, for remote control and metering. Both remote computer interfaces use DB-9 connectors.

Remote Control Interface is provided to connect the 8282 to your existing transmitter remote control. The 8282 remote control supports user-programmable selection of up to eight inputs for any one of the following parameters: user presets, factory presets, test presets, stereo, dual-channel, SC1 modulation compensation, SC2 modulation compensation, TX1 overshoot modulation compensation, TX2 overshoot modulation compensation, analog input, digital input, clock reset. The 8282 remote control accepts a DB-25 connector.

Digital AES/EBU Input and Output are provided to support two-channel AES/EBU-standard digital audio signals through XLR-type connectors.

Analog Inputs and Outputs are provided to support left and right audio signals through XLR-type connectors.

6. Check the line voltage, fuse and power cord.



A☐ *DO NOT connect power to the unit yet!*

B☐ Check the VOLTAGE SELECTOR. This is on the rear panel.

The 8282 is shipped configured for either 90-130V or 200-250V, 50Hz or 60Hz operation, as indicated on the rear panel. Refer to the unit's rear panel for your Model Number and the inside of the front cover of this manual for your Model Number's line voltage setting. To change the operating voltage, set the VOLTAGE SELECTOR to 115V (for 90-130V) or 230V (for 200-250V) as appropriate.

C☐ Check the value of the fuses and change the fuse if the value is incorrect.

For safety, fuse F1 must be Slow-Blow, ½-amp for 115V, or ¼-amp (250mA) "T" type for 230V. Fuse F2 must be Slow-Blow, 4-amp for 115V, or 2-amp "T" type for 230V.

D☐ Check power cord.

AC power passes through an IEC-standard mains connector and an RF filter designed to meet the standards of all international safety authorities.

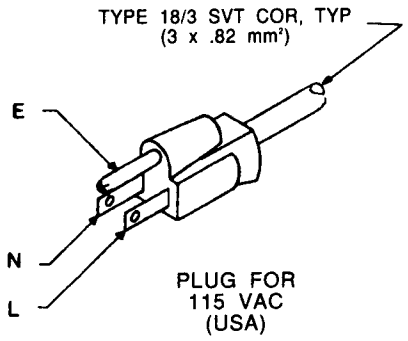
The power cord is terminated in a "U-ground" plug (USA standard), or CEE7/7 plug (Continental Europe), as appropriate to your 8282's Model #. The green/yellow wire is connected directly to the 8282 chassis.

If you need to change the plug to meet your country's standard and you are qualified to do so, see Figure 2-7. Otherwise, purchase a new mains cord with the correct line plug attached.

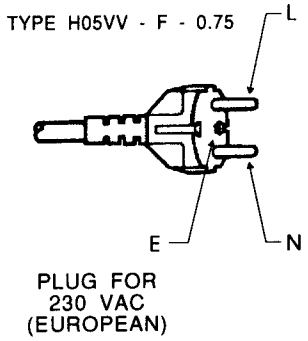
7. Set GROUND LIFT switch.

The GROUND LIFT switch is located on the rear panel.

The GROUND LIFT switch is shipped from the factory set to CONNECT (to connect the 8282's circuit ground to its chassis ground). Because the 8282's audio inputs and outputs are all balanced and floating, you probably will never have to change the setting of this switch.



CONDUCTOR		WIRE COLOR	
		NORMAL	ALT
L	LINE	BROWN	BLACK
N	NEUTRAL	BLUE	WHITE
E	EARTH GND	GREEN-YELLOW	GREEN



CONDUCTOR		WIRE COLOR
L	LINE	BROWN
N	NEUTRAL	BLUE
E	EARTH GND	GREEN-YELLOW

Figure 2-7: AC Line Cord Wire Standard

8. Mount the 8282 in a rack.

The 8282 requires four standard rack units (7 inches/17.6 cm).

Because the OPTIMOD-TV front panel opens down and out, do not mount your OPTIMOD-TV at the bottom of a rack or above equipment that projects out.

There should be a good ground connection between the rack and the 8282 chassis — check this with an ohmmeter to verify that the resistance is less than 0.5Ω.

Mounting the unit over large heat-producing devices (such as a vacuum-tube power amplifier) may shorten component life and is not recommended. Ambient temperature should not exceed 113°F/45°C when equipment is powered.

Equipment life will be extended if the unit is mounted away from sources of vibration, such as large blowers.

9. Connect remote control. (Optional)

The 8282 has extensive remote control provisions, which are described on page 1-9.

Optically-isolated remote control connections are terminated in a type DB-25 female connector located on the rear panel. It is wired according to Fig. 2-8. To select the desired function, apply a 6-24V AC or DC pulse between the appropriate REMOTE terminals. The (–) terminals can be connected together and then connected to ground at pin 17 to create a REMOTE COMMON. If you use 48V, connect a 1K ±10%, 2-watt carbon composition resistor in series with the REMOTE COMMON or the (+) terminal to provide current limiting. A current-limited +12VDC source is available on pin 25.

> In a high-RF environment, these wires should be short and should be run through foil-shielded cable, with the shield connected to CHASSIS GROUND at both ends.

PIN ASSIGNMENT

1. REMOTE 1+
2. REMOTE 1–
3. REMOTE 2+
4. REMOTE 2–
5. REMOTE 3+
6. REMOTE 3–
7. REMOTE 4+
8. REMOTE 4–
9. REMOTE 5+
10. REMOTE 5–
11. REMOTE 6+
12. REMOTE 6–
13. REMOTE 7+
14. REMOTE 7–
15. REMOTE 8+
16. REMOTE 8–
17. GROUND (⏚)

18-23. N/C

24. CHASSIS GROUND (⏚)
25. +12VDC

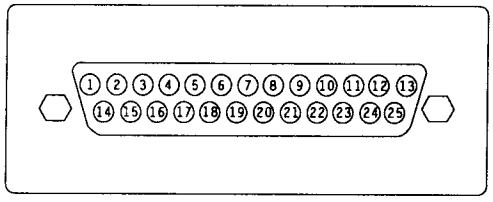


Figure 2-8: Wiring the 25-pin Optically-Isolated Remote Control Connector

10. Connect computer interface. (Optional)

The RS-232 and RS-422 serial connectors can be simultaneously active. They are wired according to Fig. 2-9.

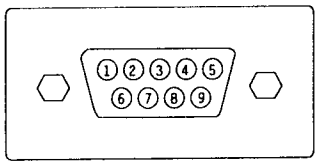
In a high-RF environment, these wires should be short and should be run through foil-shielded cable, with the shield connected to CHASSIS GROUND at both ends.

(Most competently-designed serial cables are already well-shielded to prevent the cable from radiating EMI to the environment.)

PIN ASSIGNMENT

1. N/C
2. RECEIVE DATA
3. TRANSMIT DATA
4. DATA TERMINAL READY
5. SIGNAL GROUND (⏚)
6. DATA SET READY
7. REQUEST TO SEND
8. CLEAR TO SEND
9. N/C

RS-232



PIN ASSIGNMENT

1, 2. DATA SET READY
3. CHASSIS GROUND (⏚)
4, 5. RECEIVE DATA
6, 7. DATA TERMINAL READY
8, 9. TRANSMIT DATA

RS-422

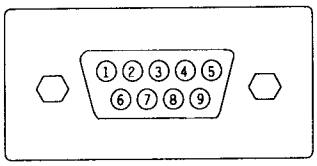


Figure 2-9: Wiring the RS-232 and RS-422 Connectors

11. Connect inputs and outputs.

See the hook-up and grounding information on the following pages.

Audio Input and Audio Output Connections Page 2-15
AES/EBU Digital Input and Output Page 2-16
Grounding Page 2-17

Audio Input and Output Connections

Cable

We recommend using **two-conductor foil-shielded cable** (such as Belden 8451 or equivalent), because signal current flows through the two conductors only. The shield does not carry signal, and is used only for shielding.

Connectors

- **Input and output connectors** are XLR-type connectors.

  In the XLR-type connectors, pin 1 is CHASSIS GROUND, while pin 2 and pin 3 are a balanced, floating pair. This wiring scheme is compatible with *any* studio wiring standard: If one pin is considered LOW, the other pin is automatically HIGH.

Analog Audio Input

- **Nominal input level** between –30dBu and +8dBu will result in normal operation of the 8282. (See step 1-B on page 2-6 for a full discussion).

  (0dBu = 0.775Vrms. For this application, the dBm @600Ω scale on voltmeters can be read as if it were calibrated in dBu.)

- The **peak input level that causes overload** is dependent on the setting of the A-I CLIP LEVEL control. It is adjustable from –17dBu and +27dBu in two ranges.

- The **electronically-balanced input** uses an ultra low noise and distortion differential amplifier for best common mode rejection, and is compatible with most professional and semi-professional audio equipment, balanced or unbalanced, having a source impedance of 600Ω or less. The input is EMI suppressed.

- Input connections are the same whether the driving source is balanced or unbalanced.

- Connect the red (or white) wire to the pin on the XLR-type connector (#2 or #3) that is considered HIGH by the standards of your organization. Connect the black wire to the pin on the XLR-type connector (#3 or #2) that is considered LOW by the standards of your organization.

Audio Input and Output Connections (continued)

- In **low RF fields** (like a studio site), do not connect the cable shield at the 8282 input — it should be connected at the source end only. In **high RF fields** (like a transmitter site), also connect the shield to pin 1 of the male XLR-type connector at the 8282 input.
- If the output of the driving unit is unbalanced and does not have separate CHASSIS GROUND and (–) (or LO) output terminals, connect both the shield and the black wire to the common (–) or ground terminal of the driving unit.

Analog Audio Output

- **Electronically-balanced and floating outputs** simulate a true transformer output. The *source* impedance is 30Ω. The output is capable of driving loads of 600Ω or higher; maximum output level is >+23dBu into a balanced load and >+20dBu into an unbalanced load. The outputs are EMI suppressed.
- If an **unbalanced output** is required (to drive unbalanced inputs of other equipment), it should be taken between pin 2 and pin 3 of the XLR-type connector. Connect the LOW pin of the XLR-type connector (#3 or #2, depending on your organization's standards) to circuit ground, and take the HIGH output from the remaining pin. No special precautions are required even though one side of the output is grounded.
- Use two-conductor foil-shielded cable (Belden 8451, or equivalent).
- At the 8282's output (and at the output of other equipment in the system), connect the cable's shield to the CHASSIS GROUND terminal (pin 1) on the XLR-type connector. Connect the red (or white) wire to the pin on the XLR-type connector (#2 or #3) that is considered HIGH by the standards of your organization. Connect the black wire to the pin on the XLR-type connector (#3 or #2) that is considered LOW by the standards of your organization.

AES/EBU Digital Input and Output

If the optional AES/EBU Digital I/O Card is fitted, the AES/EBU digital input and output are active. These follow the AES/EBU standard.

Per the AES/EBU standard, each digital input or output line carries both the left and right stereo channels.

The digital input clip level is fixed at 0dB relative to the maximum digital word. If the 8282 input meters are set to monitor clip levels, the maximum digital input will make the meters display 0dB. The reference level is adjustable using the D-I REF LEVEL control. If the 8282 input meters are set to monitor reference levels, a digital input at the reference level will make the meters display 0dB.

If the standard (8200D/32) digital I/O card is fitted, 100% modulation is fixed 2.76dB below the full-scale digital word. (The full-scale digital word represents 137% modulation to allow headroom for system testing.) If the advanced (8200D/SRC) digital I/O card is fitted, you can adjust the digital output level with the D-O REF LEVEL control.

Grounding

Very often, grounding is approached in a "hit or miss" manner. But with care it is possible to wire an audio studio so that it provides maximum protection from power faults and is free from ground loops (which induce hum and can cause oscillation).

In an ideal system:

- All units in the system should have *balanced inputs*. In a modern system with low output impedances and high input impedances, a balanced input will provide common-mode rejection and prevent ground loops — regardless of whether it is driven from a balanced or unbalanced source.

  The 8282 has balanced inputs.

- All equipment *circuit grounds* must be connected to each other; all equipment *chassis grounds* must be connected together.

- In a low RF field, *cable shields* should be connected at one end only — preferably the source (output) end.

- In a high RF field, *audio cable shields* should be connected to a solid earth ground at both ends to achieve best shielding against RFI.

Grounding (continued)

Power Ground



- Ground the 8282 chassis through the third wire in the power cord. Proper grounding techniques *never* leave equipment chassis unconnected to power/earth ground. *A proper power ground is essential to safe operation.* Lifting a chassis from power ground creates a potential safety hazard.

Circuit Ground

To maintain the same potential in all equipment, the circuit (audio) grounds must be connected together:

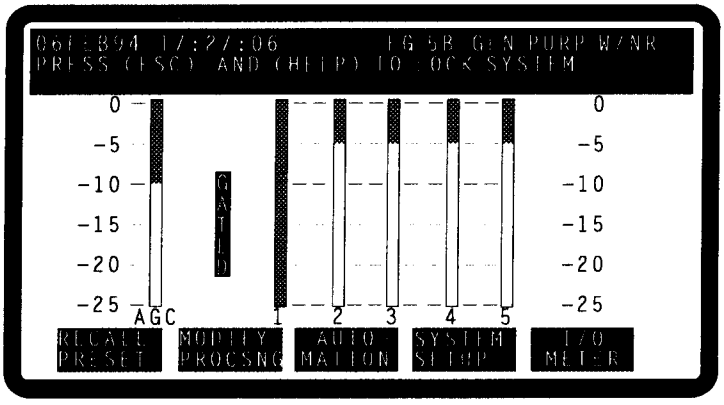
- Circuit and chassis ground should always be connected by setting the 8282's GROUND LIFT switch to CONNECT.
- *In high RF fields*, the system is usually grounded through the equipment rack in which the 8282 is mounted. The rack should be connected to a solid earth ground by a wide copper strap — wire is completely ineffective at VHF because of the wire's self-inductance.

12. Power up the 8282.

A☐ Plug in the 8282's power cord.

The green power light on the lower right of the panel should light.

The IDLE screen appears in the front window display.

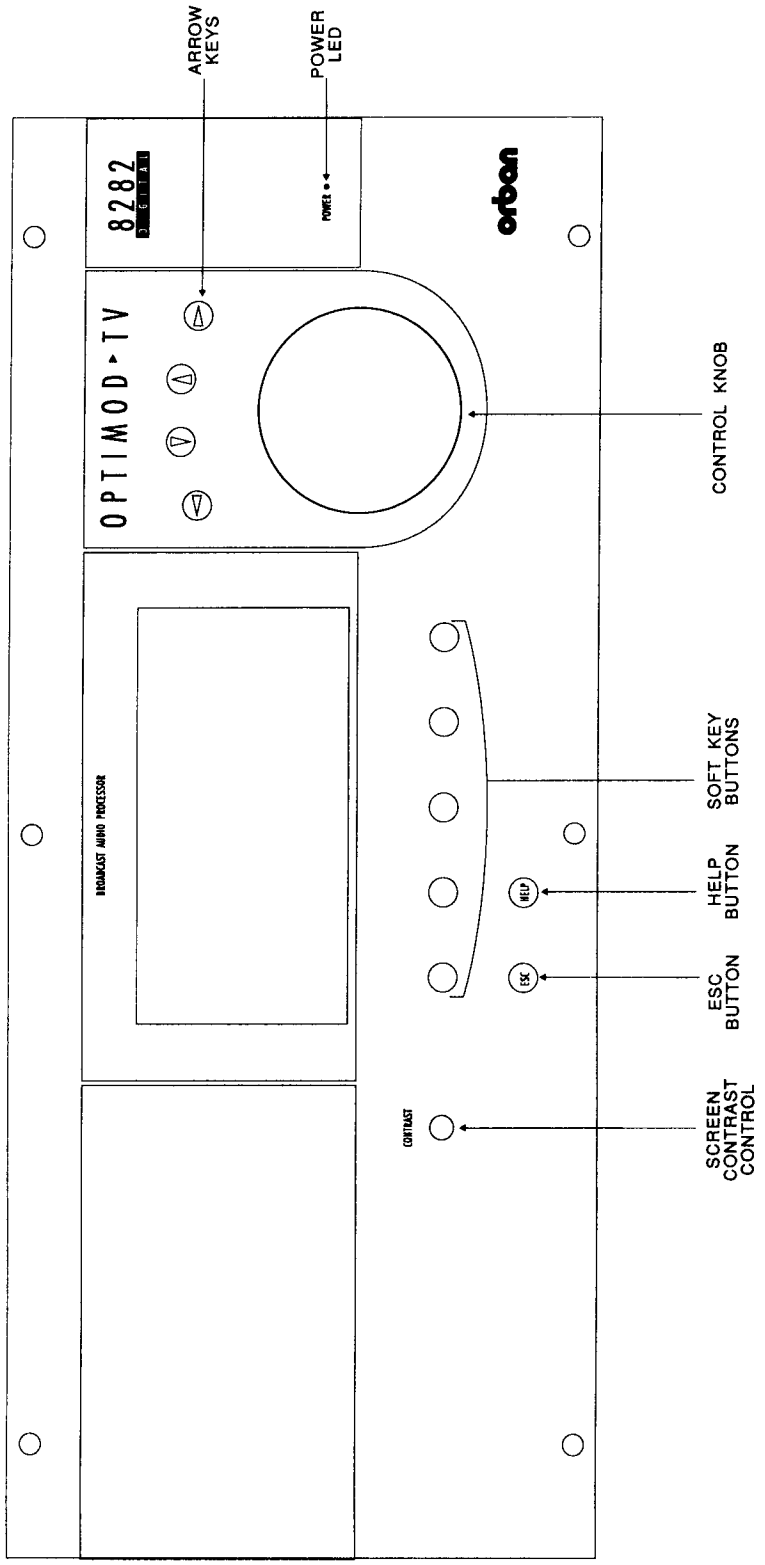


The IDLE screen is the "home" screen. It shows the gain reduction of the processing. The buttons located below the screen, as labeled on the bottom of the screen, provide access to all of the 8282's functions.

If the IDLE screen does not appear, repeatedly press the ESC button until it does appear.

13. Physical installation is complete.

A☐ Continue with the explanation of the 8282 Controls and Meters, and then SYSTEM SETUP (initialization) on page 2-33.


ARROW KEYS
POWER LED
8282
DIGITAL
POWER
orban
OPTIMOD-TV
CONTROL KNOB
BROADCAST AUDIO PROCESSOR
SOFT KEY BUTTONS
HELP
HELP BUTTON
ESC
ESC BUTTON
CONTRAST
SCREEN CONTRAST CONTROL

8282 Front Panel

Arrow Keys (↑, ↓, ←, →) are used for moving around the screen.

Control Knob is used for changing the setting that is selected by the arrow keys.

Screen Display provides all metering information, labels the five soft key buttons, and provides control setting information.

Screen CONTRAST control adjusts the contrast of the screen display.

Five Soft Key Buttons provide access to all 8282 functions and controls. The functions of the buttons changes with each screen, according to the label at the bottom of each screen

ESC Button provides an escape from current screen, returns user to the next highest screen, and eventually to the IDLE screen.

HELP Button provides HELP information for the current screen and provides detailed help for all of the buttons on that screen. It also provides access to the HELP index of all HELP pages.

POWER LED lights when the unit is powered. (It monitors the +12VDC bus.)

Installation of Studio Peak Controller

The following provides instructions for installing the Orban 4000 Transmission Limiter before the STL to protect it from overload. To determine when this is appropriate, refer to " Level Control Before the STL," page 1-14.

> If the STL uses pre-emphasis, its input pre-emphasis network will probably introduce overshoots that will increase peak modulation without any increase in average modulation. We therefore strongly recommend that the STL transmitter's pre-emphasis be defeated (freeing the STL from such potential overshoot), and that the 4000 be used to provide the necessary pre-emphasis.
>
> If the STL transmitter's pre-emphasis cannot be defeated, then configure the 4000 for flat output. In this case average modulation levels of the STL may have to be reduced to accommodate the overshoots.

1. Configure the 4000's internal jumpers.

A☐ Remove the top and bottom covers to access the main circuit boards. **Note that the 4000 is a two-channel unit and has two boards with identical jumpers for resetting.**

B☐ Refer to Figure 2-14 for jumper locations.

C☐ Activate the high frequency limiter.

Place jumpers JJ and JI in the HF LIMITER ACTIVE position.

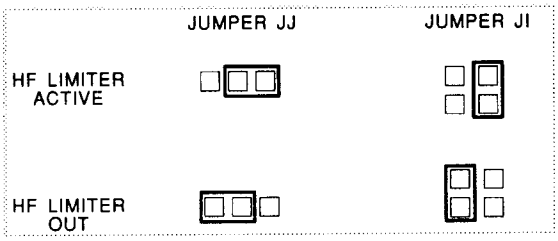


Figure 2-10: HF Limiter Jumpers

D☐ Set pre-emphasis of the high frequency limiter.

Place jumpers JA, JB, JE and JF in the position for the pre-emphasis of your STL (25µs, 50µs, 75µs, 150µs, or J.17).

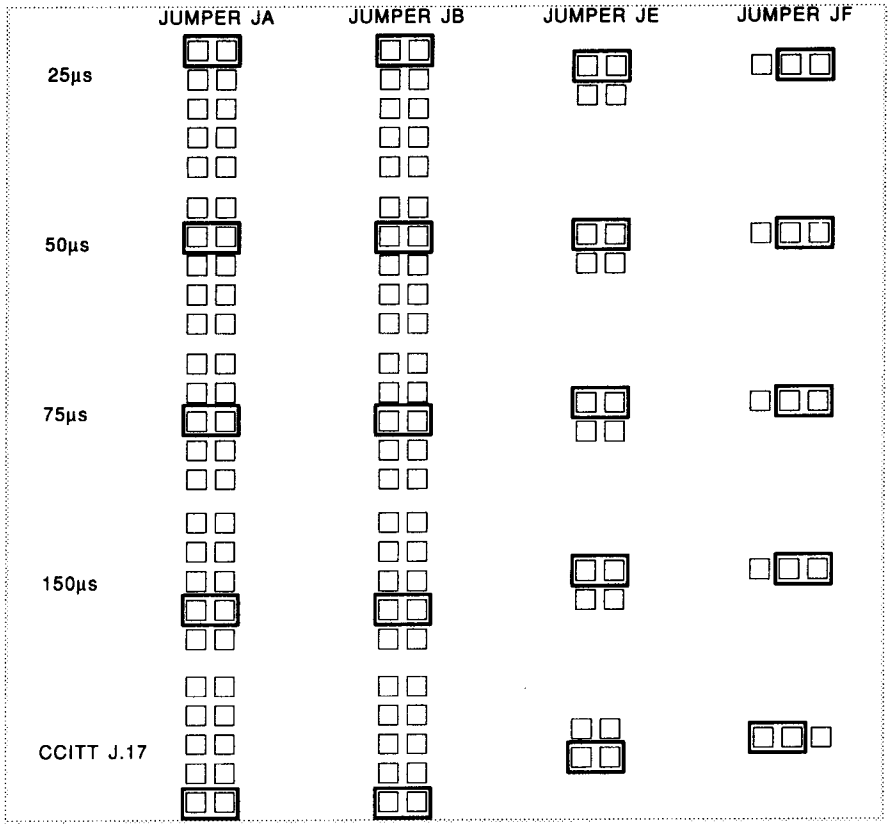


Figure 2-11: Pre-Emphasis EQ Jumpers

E☐ Set the output for pre-emphasized or flat response, as appropriate.

If you have defeated the STL transmitter's pre-emphasis, place jumper JD in the PRE-EMPHASIZED position.

If you cannot defeat the STL transmitter's pre-emphasis, place jumper JD in the FLAT position.

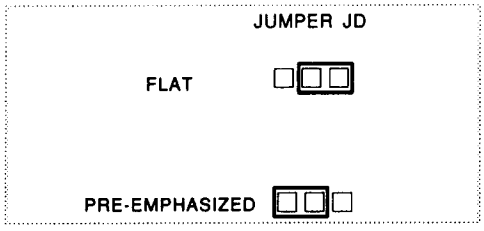


Figure 2-12: Pre-Emphasis Jumper

F ☐ Set the two channels for stereo coupling.

Place jumpers JG1, JG2, and JG3 in the COUPLED position.

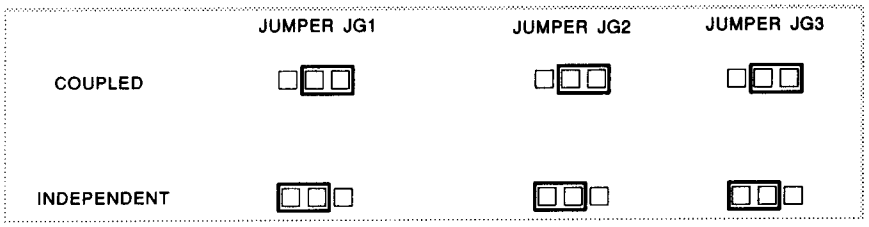


Figure 2-13: Stereo Coupling Jumpers

G ☐ Replace the top and bottom covers.

2. Install the 4000 in the rack. Connect the 4000's audio input and output.

Refer to the 4000 Operating Manual if you require information about installation, audio input and output connections to the 4000.

3. Calibrate the 4000's OUTput level to the STL.

A ☐ Press both TONE buttons on the 4000's front panel.

B ☐ Adjust the 4000's L and R OUTPUT LEVELs for 100% peak modulation of the STL.

4. Calibrate the 4000's INput level for normal operation using tone.

[Skip this step if you wish to calibrate the 4000's INput level using program material. (Refer to step 5.)]

Some facilities have specific standards for transmission line-up. For example, a transmission standard may state that +4dBu at 400Hz produces 50% modulation of a microwave link. Or PPM6 might allow 8dB of headroom so it would modulate the link to 40%.

Determine the input level to the studio-to-transmitter link that produces 100% modulation of the link.

In step 4-D, we calibrate the gain of the 4000 below the threshold of limiting.

For facilities using VU meters, we suggest:

100% peak level (dBu) – 0VU level (dBu) – 14db = Gain of the 4000

For example, with an STL where 100% modulation = +18dBu, and with a studio where 0VU = +4dBu:

+18 – (+4) – 14 = Set gain of the 4000 to 0dB

For facilities using PPM meters, we suggest:

100% peak level (dBu) – PPM reference level (dBu) – 9db = Gain of the 4000

For example, with an STL where 100% modulation = +15dBu, and with a studio where PPM reference level = +6dBu:

+15 – (+6) – 9 = Set gain of the 4000 to 0dB

A☐ Turn the INput control fully counterclockwise.

B☐ Press the OPERATE button, then the TEST button.

C☐ Apply a line-up tone to the 4000 input, at your organization's standard reference line-up level.

D☐ Calibrate the 4000 for the pre-determined gain or loss.

Measure the output level of the 4000 with an audio meter. Adjust the 4000's INput control to achieve the desired gain or loss.

E☐ Press the OPERATE button. Observe the LIMITING meter.

If no gain reduction is indicated, the standard line-up level is below threshold.

If gain reduction is indicated, the standard line-up level is above threshold (less than 7dB below 100% modulation). System calibration will require that the TEST button be pressed, either on the front panel or by remote control, when system line-up calibration is performed. You may consider calibrating the 4000 for less than unity gain by reducing the INput control setting.

5. Calibrate the 4000's INput level for normal operation using program material.

[Skip this step if you wish to calibrate the 4000's INput level using tone. (Refer to step 4)]

A☐ Turn the INPUT control fully counterclockwise.

B☐ Press the OPERATE button, then the TEST button.

C☐ Play program material from your studio at normal levels.

D☐ Adjust the INput level controls so that the 4000 goes into gain reduction only on the highest program peaks.

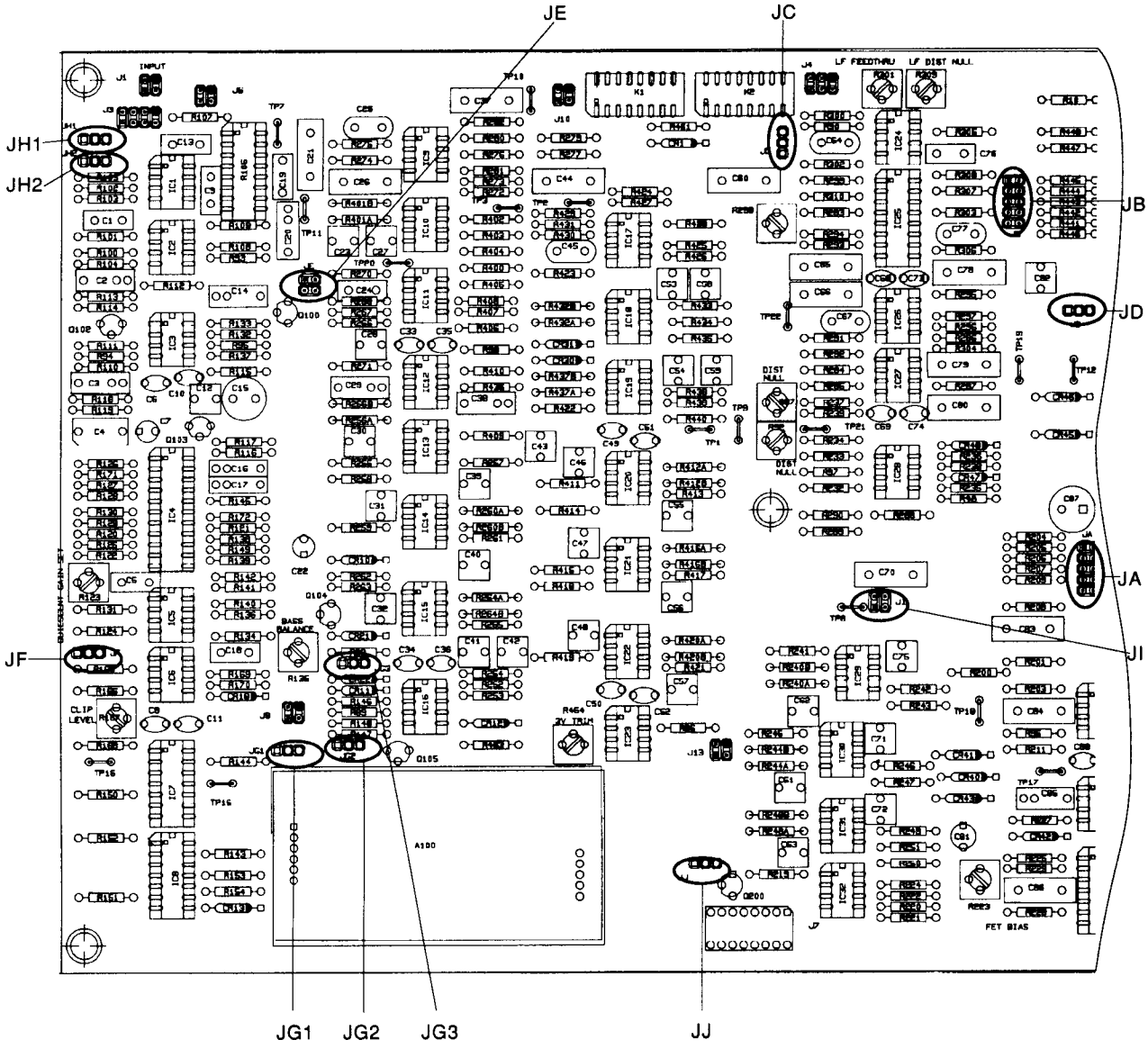


Figure 2-14: 4000 Jumpers

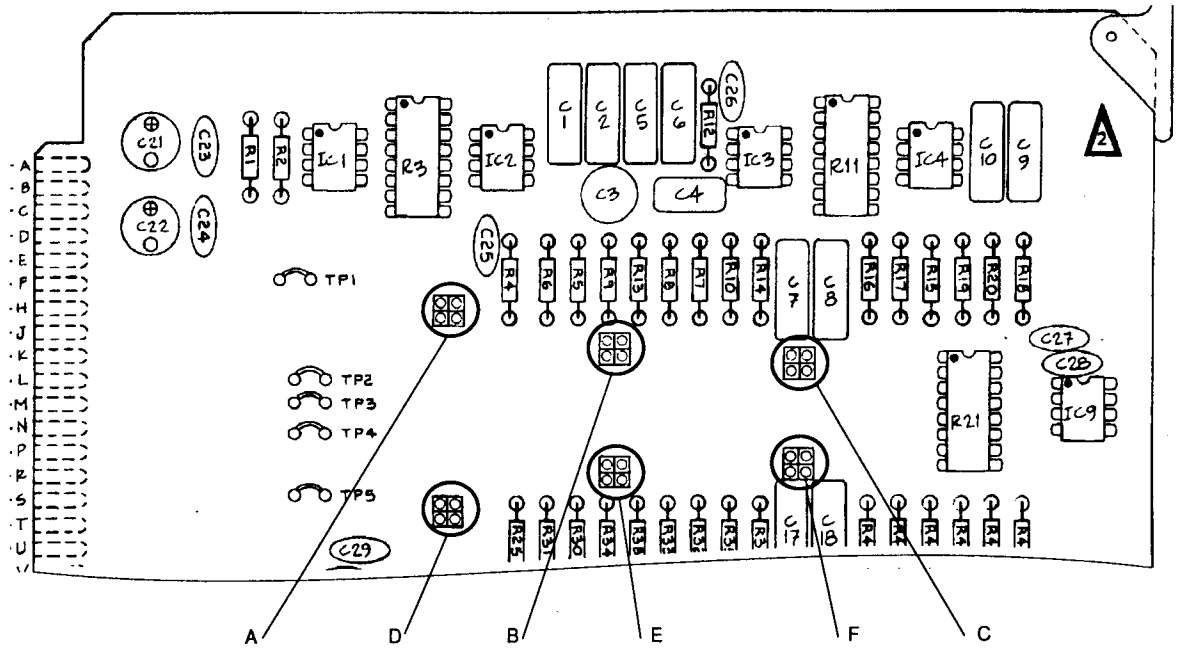


Figure 2-15: 8185A Jumpers

Installation of Stereo Generator

Refer to "Stereo and Dual-Channel Operation," page 1-7.

If you are using the Orban 8185A OPTIMOD-TV BTSC Stereo Generator:

6. Configure the 8185A's internal jumpers to receive pre-emphasized signal from an external processor.

A☐ Open the 8185A's front panel, then remove the subpanel.

B☐ Refer to Figure 2-15 for jumper locations.

C☐ Set the input for pre-emphasized signal.

Place jumpers B and E on Card #2 in the PRE-EMPHASIS OUT position.

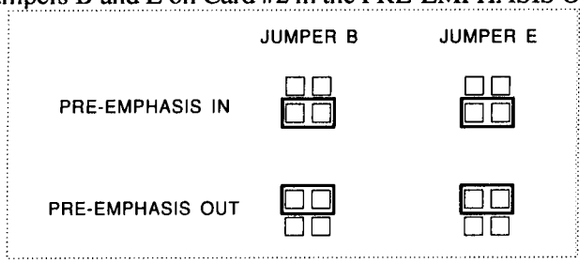


Figure 2-16: Pre-Emphasis Jumpers

D☐ Configure the 8185A to operate with an external processor (i.e., the 8282).

Place jumpers A, C, D and F on the 8185A Stereo Generator's Card #2 in the EXTERNAL position.

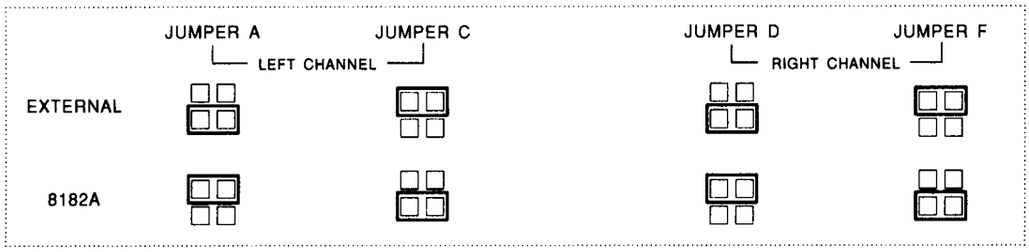


Figure 2-17: External Processor Jumpers

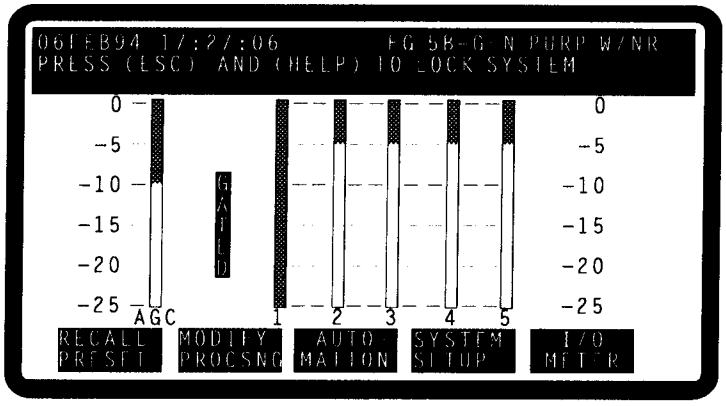
7. Install the 8185A in the rack. Connect the 8185A's audio input and output.

Refer to the 8185A Operating Manual if you require information about installation, audio input and output connections to the 8185A.

8. Set 8282 for pre-emphasized output.

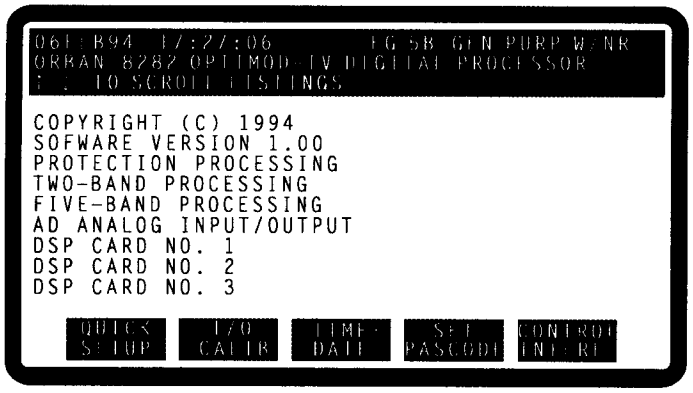
A☐ Access I/O CALIB screen.

If the IDLE G/R screen (shown below) does not appear, press ESC repeatedly until you see it.



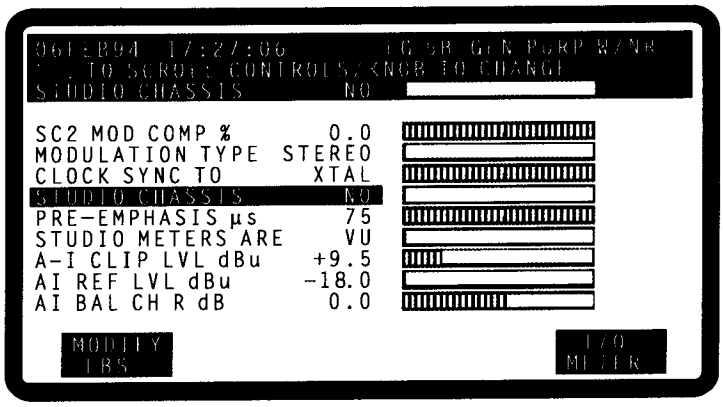
Use the CONTRAST knob to adjust the display for best clarity.

Press SYSTEM SETUP button to access SYSTEM SETUP screen. (Press the soft key directly below the words "SYSTEM SETUP.")



Press I/O CALIB button to access I/O CALIB screen. (The screen is shown on the following page.)

B☐ Locate A-O (Analog Output) in the menu; use ↑ and ↓ arrow keys to scroll through and select (highlight) the A-O parameter. Then use the front panel control knob to adjust it to PRE-E (so that the left/right outputs produce a Pre-Emphasized signal).



9. Match 8282 and 8185A levels (with tone).

A☐ Set the 8185A's controls as shown in the 8185A Operating Manual, on page 2-13)

B☐ Recall Preset TO USER TONE.

Press ESC on the 8282 front panel repeatedly, until you return to the IDLE G/R screen. Next, press the Recall Preset soft key to access the RECALL PRESET screen. Use the ↑ and ↓ arrow keys (or the control knob) to highlight and select TO USER TONE. Then, press the RECALL&MODIFY soft key to access the TO USER TONE user-configurable parameters.

C☐ Adjust the TO USER TONE parameters, as follows.

(Use the ↑ and ↓ arrow keys to highlight a parameter and the control knob to adjust the parameter.)

FREQUENCY Hz	100
MODULATION LVL %	100
MODULATION TYPE	L+R

D☐ Set the 8185A's VU meter selector to L INPUT FILTER.

E☐ Adjust the output level of the 8282 until the 8185A's VU meter reads exactly 0VU (100%).

Press ESC on the 8282 front panel repeatedly, until you return to the IDLE G/R screen. Next, press the System Setup soft key, followed by the I/O CALIB soft key to access the I/O CALIB screen. Then adjust the A-O LVL until the 8185A's VU meter reads exactly 0VU (100%).

F☐ Recall the preset you ordinarily use on-air.

10. Match 8185A to exciter.

Connect an RF spectrum analyzer to a sample of the aural exciter's output. Set the 8185A's BESSEL NULL CAL control to TONE. Turn the 8185A's TOTAL BASEBAND OUTPUT LEVEL control fully counterclockwise (up to 18 turns), then slowly turn the control clockwise until the carrier nulls for the first time. Return the BESSEL NULL CAL switch to OPERATE.

System Setup Using QUICK SETUP

Allow about 1 hour for system setup.

You can set up all of the 8282's required settings through QUICK SETUP. It is a guided screen-by-screen procedure for adjusting all of the setup adjustments needed to get you on the air, including time and date, and adjustment of input and output levels.

The same settings are also available on one screen (`I/O CALIB`), for those already familiar with the 8282's adjustments. That screen also contains a few special-feature input/output parameters that are not part of QUICK SETUP.

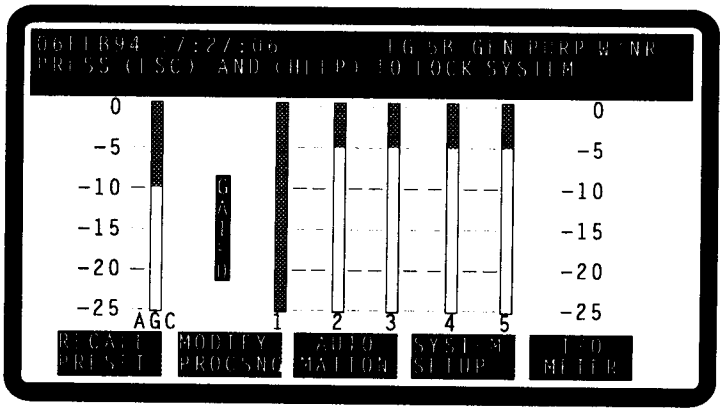
After quick setup, you may adjust these special-feature parameters, program the remote control interface, and restrict access to the controls using PASCODES.

NOTE: If you do not want to use QUICK SETUP to initialize your system, you can skip to "System Setup Using Individual Calibration Controls," on page 2-47, at this time.

11. Begin System Setup.

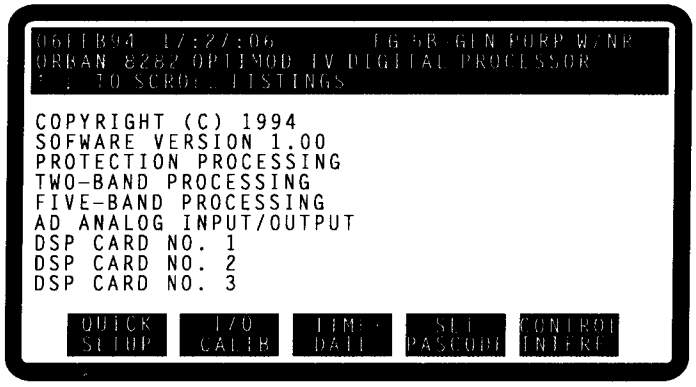
A☐ If you have not done so already, plug in the 8282's power cord. The `IDLE` screen (shown below) appears in the window display.

B☐ If the `IDLE` screen does not appear, repeatedly press the ESC button until it does appear.



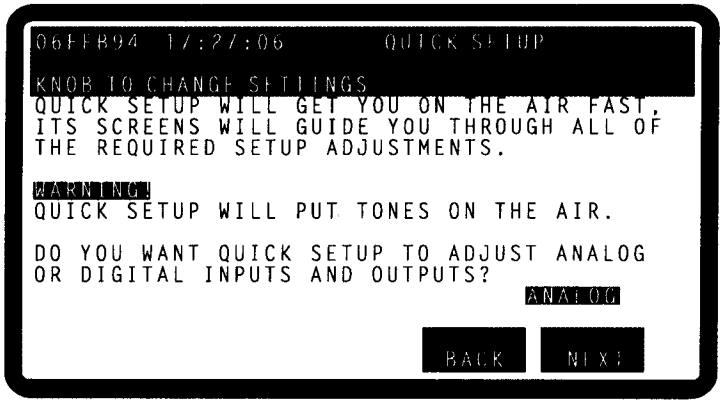
Use the CONTRAST knob to adjust the display for best clarity.

C☐ Press SYSTEM SETUP button to access SYSTEM SETUP screen. (Press the soft key directly below the words "SYSTEM SETUP.")



12. Begin QUICK SETUP.

A☐ Press QUICK SETUP button to access the first QUICK SETUP screen.



This screen provides a brief explanation and overview of QUICK SETUP. If an optional digital I/O card is installed, this screen also sets QUICK SETUP for analog or digital inputs and outputs (see step 13).

B☐ Press BACK from any QUICK SETUP screen if you need to return to the previous screen.

C☐ Press HELP from QUICK SETUP screen for more information about the screen's adjustments.

13. Set QUICK SETUP to adjust ANALOG or DIGITAL inputs and outputs.

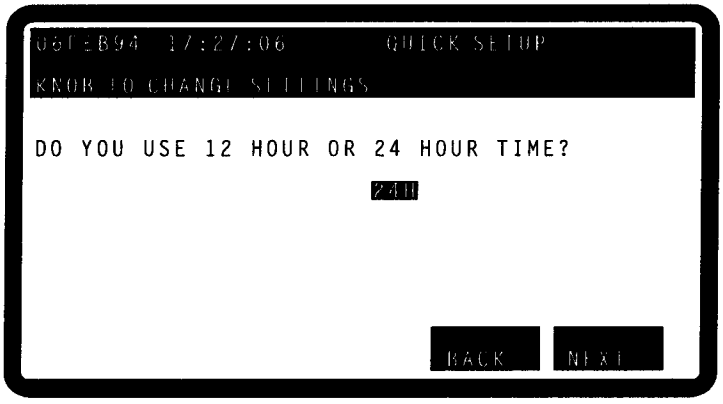
[This step will only appear in the first QUICK SETUP screen if one of the optional digital I/O cards is installed.]

A☐ Use the front panel control knob to set the 8282's QUICK SETUP to adjust analog or digital parameters.

If you want to calibrate the 8282 so it can be used with both analog and digital inputs, do two complete passes through the QUICK SETUP steps, once for analog, once for digital.

B☐ Press NEXT, to continue.

14. Set the clock in OPTIMOD-TV.



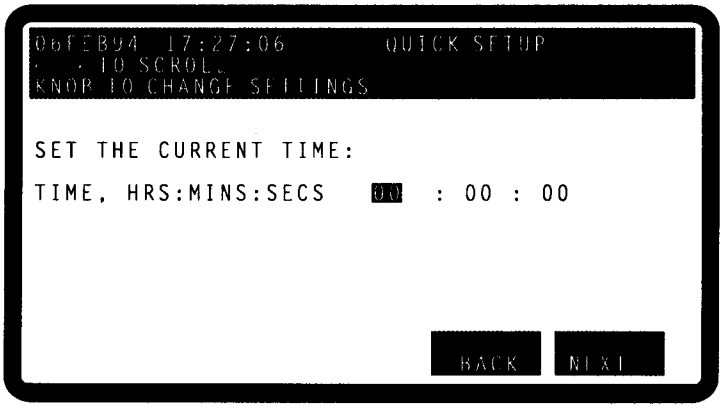
A☐ Set OPTIMOD-TV for 12-hour or 24-hour time.

The 8282's internal clock is displayed on the top line of the screen, and is used for programmed preset switching using the 8282's built-in AUTOMATION. It can be set to display 12 hour (AM and PM) or 24 hour time.

Use the control knob to set the 8282 screen display for 12 hour or 24 hour time.

B☐ Press NEXT to continue.

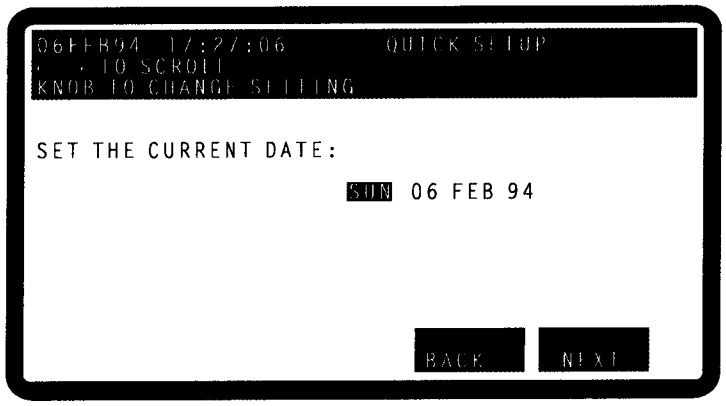
C☐ Set the current time.



Use the ← and → arrow keys to scroll through hours, minutes, seconds. Change the settings with the control knob. When the NEXT button is pressed, the time that you entered is set.

D☐ Press NEXT to set the time entered, and to continue.

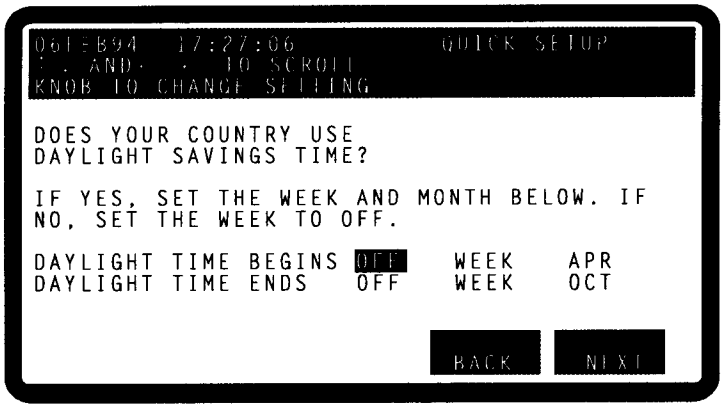
E☐ Set the current date.



Use the ← and → arrow keys to scroll through the date parameters. Change the settings with the control knob. When the NEXT button is pressed, the date that you entered is set.

F☐ Press NEXT to set the date entered, and to continue.

G☐ Set OPTIMOD-TV for daylight savings time.



If your country uses Daylight Savings Time (Summer Time), the 8282's clock will advance the time one hour at 2:00A Sunday on the "BEGINS" week that you enter, and turn back the time one hour at 2:00A Sunday on the "ENDS" week that you enter.

Use the ↑, ↓, ← and → arrow keys to scroll through and select (highlight) the parameters. Use the control knob to change values. If your country uses Daylight Savings Time, set the date parameters, then press NEXT to continue.

If your country does not use Daylight Savings Time, set the week parameters to OFF.

Press NEXT, to continue.

At the time this manual was written (April 1994), we determined the rules for daylight savings times for selected countries. However, as with anything politically determined, these rules are subject to change without notice.

Europe

All countries except as noted below: begins LAST SUN MAR, ends LAST SUN SEP

Ireland, United Kingdom: begins LAST SUN MAR, ends LAST SUN OCT

Middle East

Israel: begins LAST SUN MAR, ends 1ST SUN SEP

North America

Bahamas, Bermuda, Canada, Cuba, Haiti, Mexico-Tijuana, United States (except Arizona, Hawaiian Islands, Indiana-East): begins 1ST SUN APR, ends LAST SUN OCT

Pacifica

Australia (Lord Howe Island, NSW, Victoria, ACT, SA, Broken Hill): begins LAST SUN OCT, ends 1ST SUN MAR

Australia (Tasmania): begins 1ST SUN OCT, ends LAST SUN MAR

New Zealand: begins 1ST SUN OCT, ends 3rd SUN MAR

South America

Brazil: begins 3RD SUN OCT, ends LAST SUN JAN

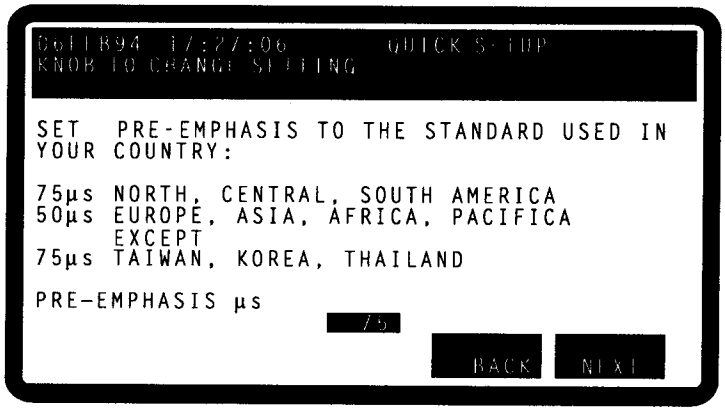
Argentina: begins 3RD SUN OCT, ends 1ST SUN MAR

Chile: begins 2ND SUN OCT, ends 2ND SUN MAR

Falkland Islands: begins 2ND SUN SEP, ends 3RD SUN APR

Uruguay: begins LAST SUN OCT, ends LAST SUN FEB

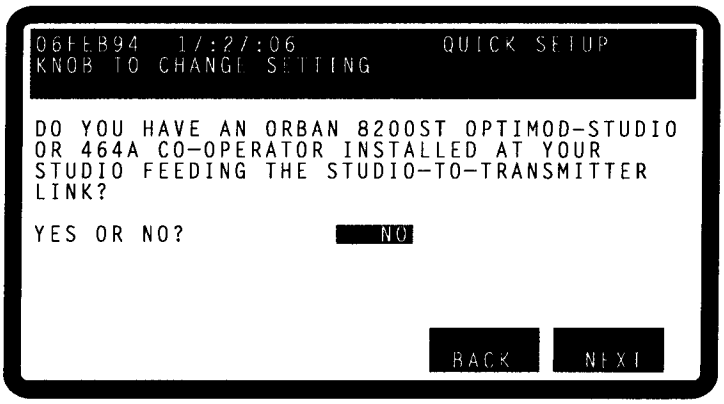
15. Set pre-emphasis to the standard used in your country.



A☐ Use the front panel control knob to set the 8282 pre-emphasis to the standard used in your country.

B☐ Press NEXT, to continue.

16. Set studio chassis status.



A☐ Use the front panel control knob to tell the 8282 if you have an Orban 8200ST OPTIMOD-Studio, or similar AGC installed at your studio feeding the studio-to-transmitter link.

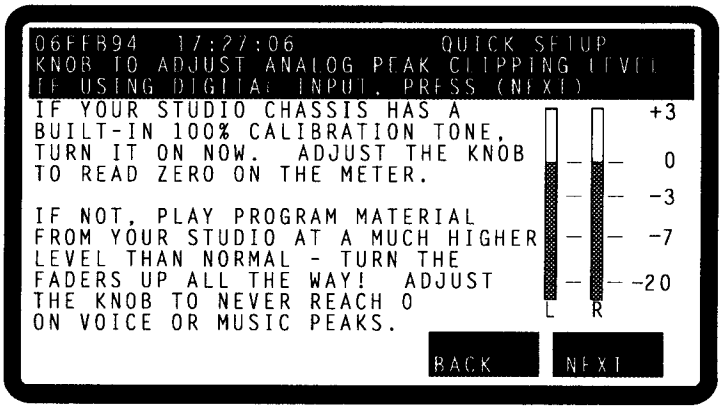
The Five-Band processing structure in the 8282 controls level with a preliminary AGC (Automatic Gain Control). If you are using an Automatic Gain Control at the studio (such as an Orban OPTIMOD-Studio), the AGC in the 8282 should be defeated. This is so that the two AGCs do not "fight" each other, and so they do not simultaneously increase gain resulting in increased noise.

If you are using an Orban 4000 Transmission Limiter, answer **NO** to the question (so that the AGC function in the 8282 continues to work). The Orban 4000 is a transmission system overload protection device; it is not designed to perform an AGC or gain-riding function, and it cannot substitute for the AGC function in the 8282.

Note: Because the studio AGC is not programmable, you will get best results if you use the Orban 4000 as a protection device, allowing you to use the 8282's built-in AGC.

B☐ Press NEXT, to continue.

17. Adjust analog left/right input peak clipping level.



[If you have set the 8282's active input to DIGITAL in step 13, this step won't appear.]

This step calibrates the level at which the 8282's A-D (Analog-to-Digital) converter clips to the absolute maximum peak level that your installation supplies to the 8282's analog input.

This setup maximizes the 8282's signal-to-noise ratio. If the clip level is set too low, the 8282's analog-to-digital converters will overload and distort on program peaks. If the clip level is set too high, the signal-to-noise ratio will suffer. Use care and attention in setting this adjustment.

If you are adjusting the 8282 during normal programming, and cannot interrupt or distort the program to play program material from your studio at a much higher level than normal, follow the directions for:

calibration while on air with normal programming.

If you are able to interrupt or distort normal programming, more precise calibration can be achieved. Follow the directions, as appropriate, for:

calibration with unprocessed audio

or

calibration with a Studio Level Control System that has a built-in 100% CALIBRATION TONE.

Note that in this step, you are calibrating to the maximum absolute peak level; this is quite different from the maximum peak indication of the studio meters.

calibration while on air with normal programming

A☐ Adjust the 8282's control knob so that the program peaks just reach to about –10dB on the meter on the screen.

Observe the meters on the 8282 screen for a long period of time; be sure to observe live announcer voice. If this setting is mis-adjusted, distortion will result.

0dB indicates input clipping on the 8282. These meters should never peak as high as 0dB with program material.

B☐ Press NEXT, to continue.

calibration with unprocessed audio

A☐ Play program material from your studio at a much higher level than normal — turn the faders up all the way! This will produce the highest peak level output that your system can produce.

B☐ Adjust the 8282's control knob so that the program peaks just reach to about –2dB on the meter on the screen.

0dB indicates input clipping on the 8282. These meters should never peak as high as 0dB with program material.

C☐ Press NEXT, to continue.

calibration with a Studio Level Control System that has a built-in 100% CALIBRATION TONE, such as the Orban 4000 Transmission Limiter or 8200ST OPTIMOD-Studio Chassis

A☐ Turn on the Studio Level Control System's 100% CALIBRATION TONE.

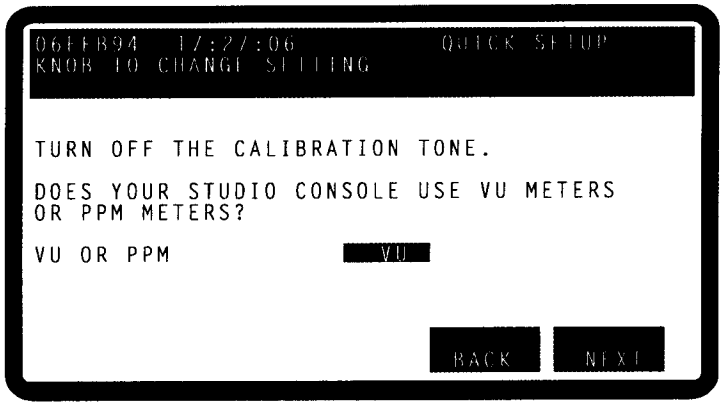
On the Orban 4000 Transmission Limiter, press both of the 4000's front panel TONE buttons. On the Orban 8200ST press the 8200ST's single front panel TONE button.

B☐ Adjust the output level of the Studio Level Control System for 100% modulation of the STL.

C☐ Adjust the 8282's control knob to indicate –2dB on the meters on the screen.

D☐ Press NEXT, to continue.

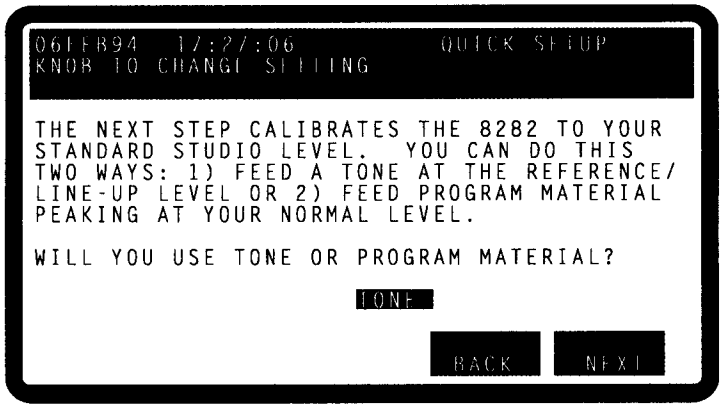
18. Calibrate the 8282 to your standard studio level.



A☐ Use the control knob to tell the 8282 if your studio console uses VU meters or PPMs.

The relationship of average program level as seen on your console's meter to the average level sensing used in the 8282's gain reduction circuits differs between VU meters and PPMs. This setting compensates for this difference.

B☐ Press NEXT, to continue.



C☐ Use the control knob to tell the 8282 if you are using tone or program material to calibrate the 8282 to your standard studio level.

This step calibrates the 8282 to the level to which your studio operators peak program material on the studio meters. This assures that the 8282's processing presets will operate in their preferred range.

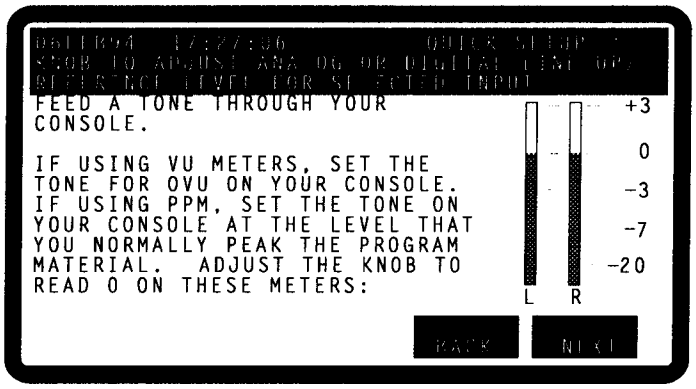
You may adjust this level with a standard reference/line-up level tone from your studio or with program material.

Note that in this step, we are calibrating to the normal indication of the studio meters; this is quite different from the actual peak level.

D☐ Press NEXT, to continue.

E☐ Calibrate using TONE — feed a tone at your reference level to the 8282.

[Skip this step if you are using PROGRAM material to calibrate the 8282 to your standard studio level. Skip to step 18-H.]



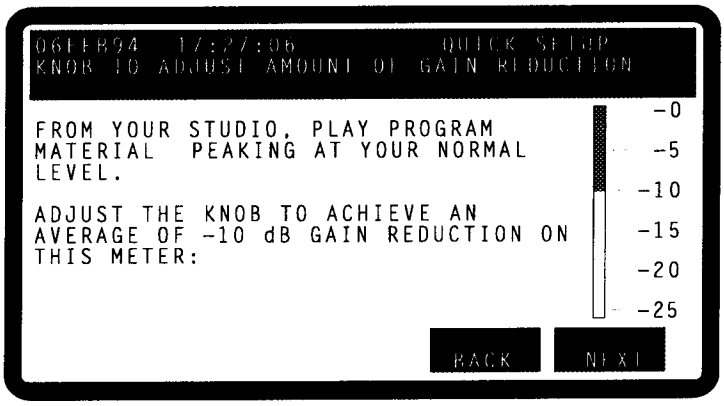
If you are not using a studio level controller, feed a tone through your console at the level to which you normally peak program material (typically 0VU if your console uses VU meters).

If you are using an Orban 4000 Transmission Limiter, press its two TEST buttons. Feed a tone through your console at the level to which you normally peak program material (typically 0VU if your console uses VU meters).

F☐ Use the 8282's front panel control knob to adjust for 0dB on the 8282's meter.

G☐ Press NEXT, to continue. Skip to step 19.

H☐ Calibrate using PROGRAM — feed normal PROGRAM MATERIAL to the 8282.



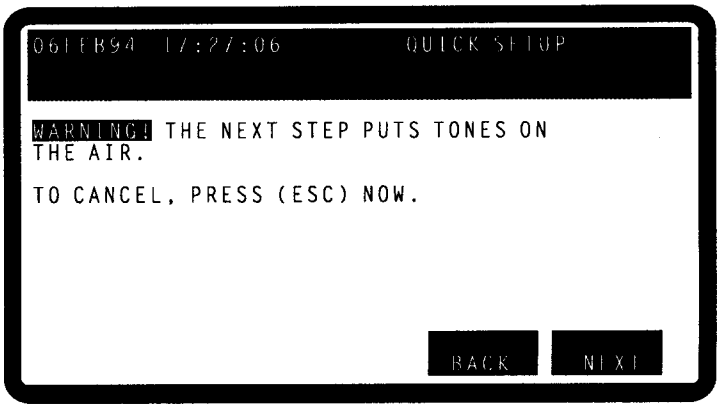
[Skip this step if you are using TONE to calibrate the 8282 to your standard studio level (see steps 18-E to 18-G).]

Play program material from your studio, peaking at the level to which you normally peak program material (typically 0VU if your console uses VU meters).

I ☐ Use the 8282's front panel control knob for an average of −10dB on the 8282's meter.

J ☐ Press NEXT, to continue.

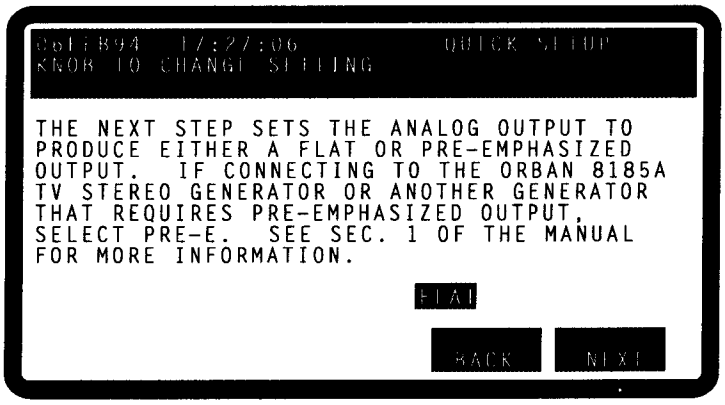
19. Adjust modulation using tone.



A ☐ Press NEXT, to continue.

B☐ Adjust Analog-Output, [FLAT] or [PRE-E]

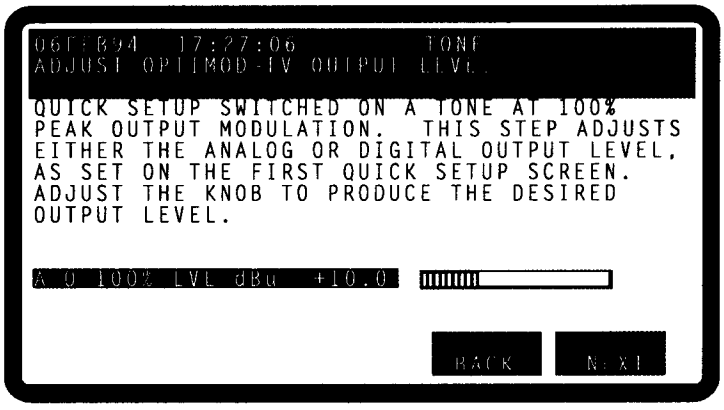
[If you have set the 8282's active input to DIGITAL in step 13, this step will not appear.]



a) Use the front panel control knob to set the 8282's analog output to be FLAT or PRE-Emphasized.

This setting controls whether the analog left/right outputs produce a FLAT signal, or a PRE-Emphasized signal, following the pre-emphasis set with PRE-EMPHASIS µ-SEC (see step 2-G, page 3-51. If the device receiving the 8282's output signal supplies its own pre-emphasis, set this control to [FLAT]. Otherwise, set the control to [PRE-E].

C☐ Press NEXT, to continue.



D☐ The 8282 is now producing a 400Hz tone at 100% modulation that appears at equal levels at its left and right outputs.

If you are using the analog outputs, adjust the 8282's A-O 100% LVL dBu control for 100% modulation of the device receiving the 8282's output, which might be your aural exciter, STL, or stereo encoder.

If you are using the digital output (with an advanced digital I/O card — 8200D/SRC), adjust the 8282's D-O 100% A/R control for 100% modulation of the device receiving the 8282's output.

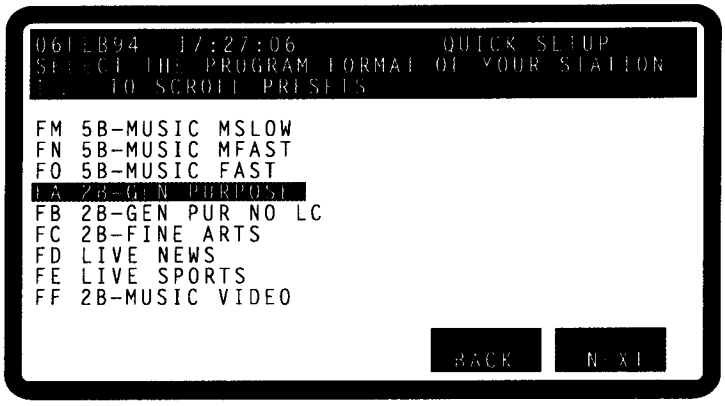
Note: If you have the standard digital I/O card (8200D/32) you cannot adjust this; it is fixed so that 100% modulation is 2.76dB below full scale. You must set modulation on the device receiving the 8282's digital output.

E☐ Press NEXT, to continue.

20. Select a processing preset that complements the normal programming of your station.

Almost all stations should initially select either "2-Band General Purpose" (2B GEN PURPOSE) or "5-Band General Purpose" (5B GEN PURPOSE).

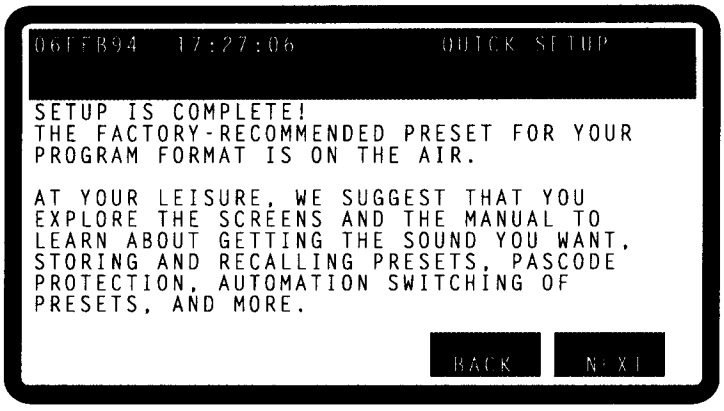
After this step, you can always select a different processing preset, program the 8282 to automatically change presets on a time/date schedule, modify presets to customize your sound, and store these presets as user presets.



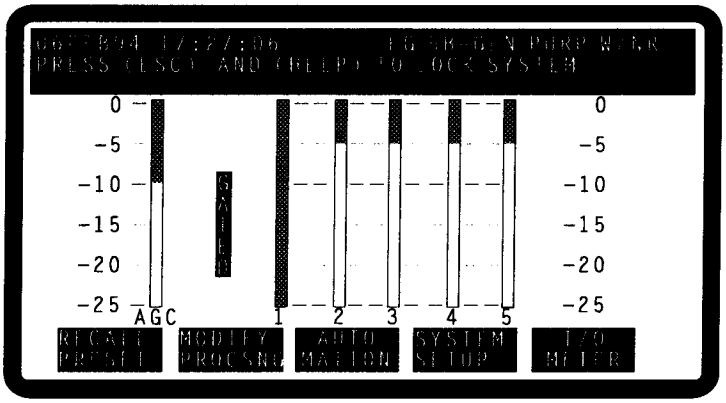
A☐ Use the ↑ and ↓ arrow keys to scroll through and select (highlight) a format.

B☐ Press NEXT, to continue.

21. Complete QUICK SETUP.



A☐ Press NEXT, to exit QUICK SETUP and return to IDLE screen.



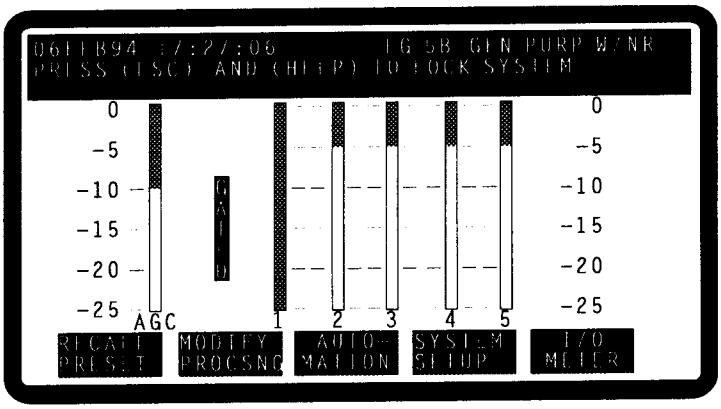
If you want to set up additional input/output parameters, program a pascode to limit access to front panel controls, or reset any setup adjustments, continue to "System Setup Using Individual Calibration Controls," on page 2-47. If you are ready to use the 8282, proceed to Section 3 for important 8282 operation information.

System Setup Using Individual Calibration Controls

[Skip this step if you set input/output levels in QUICK SETUP and you do not want to make further adjustments. A few special-feature input/output parameters are not part of QUICK SETUP. They are indicated on the list in step 2.]

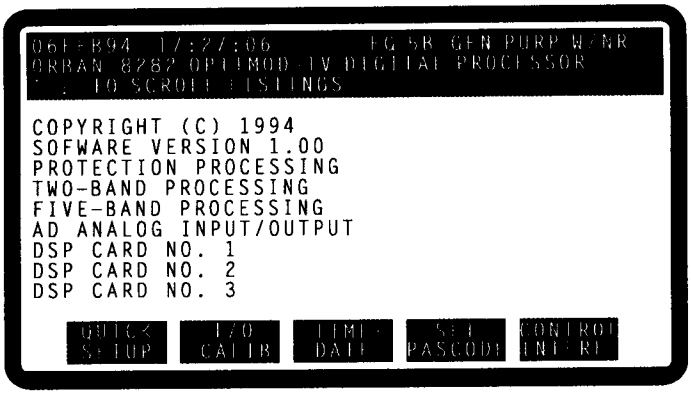
1. Access I/O CALIB screen.

A☐ If the IDLE G/R screen (shown below) does not appear, press ESC repeatedly until you see it.

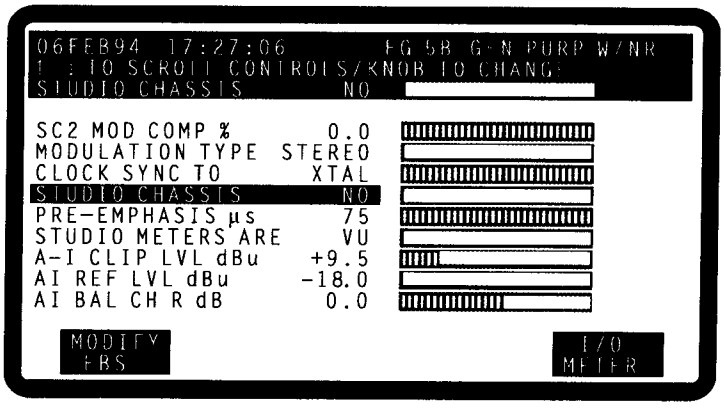


Use the CONTRAST knob to adjust the display for best clarity.

B☐ Press SYSTEM SETUP button to access SYSTEM SETUP screen. (Press the soft key directly below the words "SYSTEM SETUP.")



c☐ Press I/O CALIB button to access `I/O CALIB` screen.



2. Adjust Input/Output Levels and System Calibrations.

For the following I/O CALIB parameters, use ↑ and ↓ arrow keys to scroll through and select (highlight) input/output parameters. Then use the front panel control knob to adjust the parameter settings, as desired.

The screen as shown above lists all of the controls available for adjustment. Observe that the control selected (highlighted) is also shown on line 3 of the screen. You can press the last soft key (I/O METER) to see the input and output meters instead of the control list. The selected control can be seen on line 3. You can still use the ↑ and ↓ arrows to scroll through the control list. To return to display the control list, press the last soft key (CONTROL LIST).

NOTE: If a Digital I/O card is installed in your 8282, additional I/O CALIB parameters are listed. Refer to your Digital I/O Installation Instructions.

A☐ STUDIO CHASSIS (included on QUICK SETUP)

[YES] or [NO]

This control tells the 8282 if you have a studio chassis (e.g., an Orban 8200ST OPTIMOD-Studio, or similar AGC) installed at your studio feeding the studio-to-transmitter link.

The Five-Band processing structure in the 8282 controls level with a preliminary AGC (Automatic Gain Control). If you are using an Automatic Gain Control at the studio (such as an Orban 8200ST OPTIMOD-Studio), the AGC in the 8282 should be defeated. This is so that the two AGCs do not "fight" each other, and so they do not simultaneously increase gain resulting in increased noise.

If you are using an Orban 4000 Transmission Limiter, set this control to **NO** (so that the AGC function in the 8282 continues to work). The Orban 4000 is a transmission system overload protection device; it is not designed to perform an AGC or gain-riding function, and it cannot substitute for the AGC function in the 8282.

B□ PRE-EMPHASIS μ-SEC (included on QUICK SETUP)

[50μs] or [75μs]

This controls the pre-emphasis of the internal processing's high-frequency limiters. It does not control whether analog left/right outputs are flat or pre-emphasized; they are controlled by A-O FLAT/PRE-E (see step 2-G).

Set this control to the pre-emphasis standard in your country:

75μs	NORTH, CENTRAL, SOUTH AMERICA
50μs	EUROPE, ASIA, AFRICA, PACIFICA EXCEPT
75μs	TAIWAN, KOREA, THAILAND

C□ STUDIO METERS ARE (included on QUICK SETUP)

[VU] or [PPM]

The relationship of program level as indicated on your console's meter to the average level sensing used in the 8282's gain reduction circuits differs between VU meters and PPM meters. This setting compensates for this difference.

D□ A-I CLIP LVL dBu (included on QUICK SETUP)

Analog-Input CLIPping LeVeL, in two ranges [+5dBu to +27dBu] or [−17dBu to +5dBu], (set by jumpers, see page 2-6, step 5-B), 0.5dB steps.

This setting calibrates the level at which the 8282's A-D (Analog-to-Digital) converter clips to the absolute maximum peak level that your installation supplies to the 8282's analog input.

This setting maximizes the 8282's signal-to-noise ratio. If the A-I CLIP LVL is set too low, the 8282's analog-to-digital converters will overload and distort on program peaks. If the A-I CLIP LVL is set too high, the signal-to-noise ratio will suffer. Use care and attention in setting this adjustment.

The complete procedure for calibrating A-I CLIP LVL is given in **System Setup using QUICK SETUP**, step **17, Adjust analog left/right input peak clipping level.** See page 2-38.

If you know the maximum peak level that will be presented to the 8282, set the A-I CLIP LVL to about 2dB higher than this level (for safety).

To verify the correct setting of A-I CLIP LVL with program material:

Scroll until the METERS INDICATE control appears on line 3 of the screen. Set it to CLIP.

Scroll until the A-I CLIP LVL control appears on line 3 of the screen.

From the `I/O CALIB` screen, press I/O METER to view I/O meters.

Observe the L and R INPUT meters (the two meters on the left) on a wide range of program material, including live studio voice. The meters should never reach as high as 0dB, which is the level at which the input A-D converter clips. But on the highest peaks, the meters should indicate no higher than −10dB.

Be sure to observe the meters on voice, which tends to have higher level peaks than music when levels are set so that both indicate the same level on a VU meter.

If necessary, re-adjust the A-I CLIP LVL.

This control has no effect on the AES/EBU digital input.

E☐ A-I REF LVL dBu (included on QUICK SETUP)

Analog-Input REFerence LeVeL, [−18dBu to +20.5dBu] or [−40dBu to −1.5dBu], jumper-selectable, in 0.5dB steps.

This step sets the center of the 8282's gain reduction range to the level to which your studio operators peak their program material on the studio meters. This assures that the 8282's processing presets will operate in their preferred range.

This control affects the two audio channels identically, regardless of whether the 8282 is operating in [DUAL CHANNEL] or [STEREO] modes.

You may adjust this level with a standard reference/line-up level tone from your studio or with program material.

Note that in this step, we are calibrating to the normal indication of the studio meters; this is quite different from the actual peak level or actual average or RMS level.

A-I REF LVL also calibrates the indication of the L and R INPUT METERS when the METERS INDICATE control is set to REF.

If you know the reference VU or PPM level that will be presented to the 8282, set the A-I REF LVL to this level, but do verify it with the steps shown directly below.

The complete procedure for calibrating A-I REF LVL is given in **System Setup using QUICK SETUP**, step **18, Calibrate the 8282 to your standard studio level.** See page 2-40. Use QUICK SETUP for this setting.

To verify the correct setting of A-I REF LVL with program material:

Press ESC repeatedly until you reach the `IDLE G/R` screen (the screen with the gain reduction meters).

Observe the AGC gain reduction meter (the left meter) on a wide range of program material, voice and music. It should average between −10dB and −15dB.

Also observe the GATE indicator. It should flicker on and off when program is present.

If the AGC GAIN REDUCTION meter averages less gain reduction (higher on the meter), or if the GATE indicator always stays on when program material is present, go back to the `I/O CALIB` screen, and re-adjust the A-I REF LVL to a lower level.

If the AGC GAIN REDUCTION meter averages more gain reduction (lower on the meter), go back to the `I/O CALIB` screen, and re-adjust the A-I REF LVL to a higher level.

This control has no effect on the AES/EBU digital input.

F☐ A-I BAL CH R dB (not included on QUICK SETUP)

Analog-Input BALance Right CHannel, [−3dB to +3dB] on right channel only, 0.1dB steps.

This is not a balance control like those found in consumer audio products. This control changes gain of the right channel only. Use this control if the right analog input to the 8282 is not at exactly the same level as the left input. Be certain that the imbalance is not from a certain program source, but only is between the console output and 8282 input.

If the meters aren't on the screen, press the I/O METER button to view the left and right input meters while making this adjustment.

G☐ A-O (included on QUICK SETUP)

Analog-Output, [FLAT] or [PRE-E]

Controls whether the analog left/right outputs produce a FLAT signal, or a PRE-Emphasized signal, following the pre-emphasis set with PRE-EMPHASIS μ-SEC (in step 2-B above).

H☐ A-O 100% LVL dBu (included on QUICK SETUP)

Analog-Output 100% LeVeL, [−6dBu to +24dBu], with [−6dBu to −1dBu] in 1dBu steps, and [−1dBu to +24dBu] in 0.5dBu steps.

Adjusts the analog left/right output level. The level indication on the screen is the maximum peak output level that the processing will produce to modulate the transmitter to 100% peak modulation.

I ☐ METERS INDICATE (not included on QUICK SETUP)

[REF] or [CLIP]

Controls whether the left/right input level meters indicate CLIP level or REFerence level.

When set to CLIP, 0VU on the 8282's left/right input meters is the clip level of the 8282's input. Use the A-I CLIP LVL control to adjust level so that the program peaks do not exceed 0VU on the meter. See step 2-D, above.

Setting this control to CLIP is generally preferred in most installations, since it provides a clear warning of overload.

When set to REF, 0VU on the 8282's left/right input meters is the level set with the A-I REF LVL or D-I REF LVL control, depending on whether the 8282 is selected for analog or digital input (see step 2-E , above). Setting this control to REF is convenient for broadcasting organizations that calibrate levels with line-up tone on a regular basis. **Note that the meters are peak-indicating; you cannot use them to adjust A-I REF LVL on program, only on tone. On program, they will usually read full-scale.**

J ☐ OSHOOT TX1 COMP % (not included on QUICK SETUP)

OverSHOOT TranXmitter 1 COMPensation, [−20% to 0%], 0.5% steps.

Many composite STLs and television aural exciters exhibit overshoot due to inadequate low frequency response in the transmitter's AFC circuit (See Section 1, page 1-10 and 1-12). Overshoot will be evident if, after adjusting the modulation using the 8282's 100% calibration tone, program material modulates the transmitter more than 100%.

OSHOOT TX1 COMP reduces *program* modulation on both the analog and (optional) digital output by the percentage programmed when the REMOTE INTERFACE is activated (see page 2-63). This control does not reduce the on-air modulation of the 8282's 100% calibration tone. This way, you can still use the 8282's line-up tone to adjust the steady-state deviation to 100% modulation. Yet the reduced peak level of the audio emitted from the 8282 ensures that the carrier deviates no further than 100% modulation, including overshoot.

K□ OSHOOT TX2 COMP % (not included on QUICK SETUP)

OverSHOOT TranXmitter 2 COMPensation, [–20% to 0%], 0.5% steps.

This control reduces *program* modulation on both the analog and (optional) digital output by the indicated percentage, without reducing the on-air modulation of the 8282's 100% calibration tone. See step 2-J, above.

L□ SC1 MOD COMP % (not included on QUICK SETUP)

SubCarrier 1 MODulation COMPensation, [–20% to 0%], 0.5% steps

In many countries, when additional subcarriers are used, modulation of the main program channel (including stereo subchannel, if used) must be reduced to limit *total modulation* of the entire composite baseband to a required amount.

SC1 MOD COMP reduces *program* modulation on both the analog and (optional) digital output by the percentage programmed when the REMOTE INTERFACE is activated (see page 2-63). This control does not reduce the on-air modulation of the subcarrier or the 8282's 100% calibration tone. This way, you can still use the 8282's line-up tone to adjust the steady-state deviation to 100% modulation. Yet the reduced peak level of the audio emitted from the 8282 ensures that the carrier deviates no further than 100% modulation, including any subcarriers.

[Note that if both SC1 and SC2 are selected in the REMOTE INTERFACE, the 8282 will reduce level by the sum of the two settings.]

M□ SC2 MOD COMP % (not included on QUICK SETUP)

SubCarrier 2 MODulation COMPensation, [–20% to 0%], 0.5% steps.

See step 2-L, above.

N□ MODULATION TYPE (not included on QUICK SETUP)

[DUALCH] or [STEREO]

This controls sets the 8282 for dual channel or stereo operation.

DUALCHannel switches the 8282's audio processing so that the two channels are processed independently, with no inter-channel coupling. This is used to process independent monophonic sources, such as dual-language programming.

STEREO switches the 8282's audio processing so that the various gain reductions in the two channels are coupled to preserve stereo imaging. This is used to process stereo sources.

O□ CLOCK SYNC TO (not included on QUICK SETUP)

[LINE] or [XTAL]

LINE synchronizes the 8282's real-time clock to the AC line frequency.

XTAL synchronizes the 8282's real-time clock to the internal crystal oscillator.

NOTE: During power outages the battery maintains the clock update cycles in both modes of synchronization.

P☐ INPUT-A or D (included on QUICK SETUP)

[ANALOG] or [DIGITL]

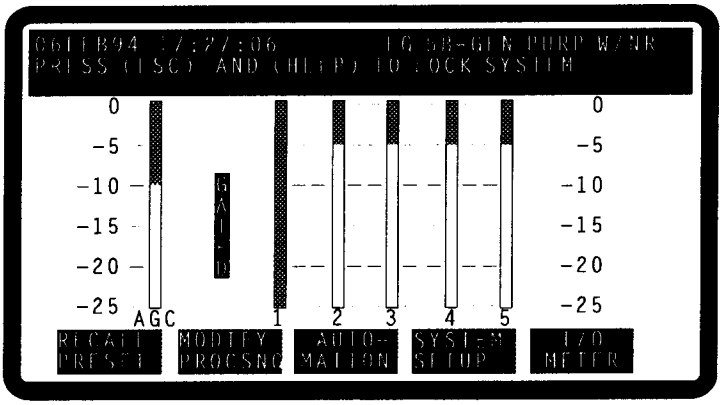
This sets the analog inputs or the AES/EBU digital input as the audio source. If the Digital I/O Card is not fitted, or if no digital source is present, the 8282 will automatically use the analog input as its source and this selection will not appear.

Digital I/O Card Additional Parameters

If a Digital I/O card is installed in your 8282, additional I/O CALIB parameters are listed. Refer to your Digital I/O Installation Instructions.

3. End I/O CALIB programming.

A☐ When you are finished adjusting input/output parameters, press the ESC button to return to the SYSTEM SETUP screen. Press the ESC button again to return to the IDLE G/R screen.

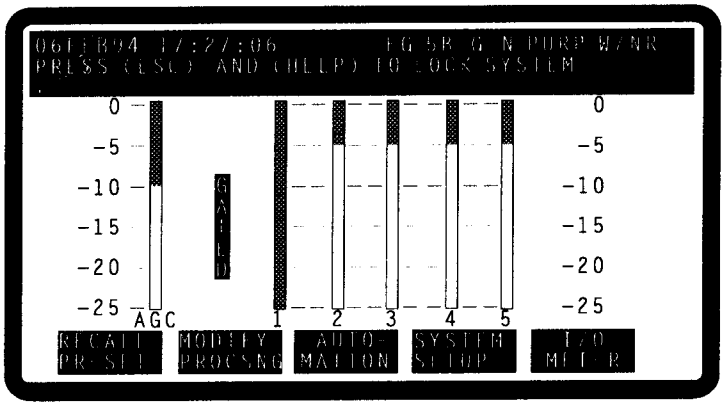


Time and Date

Skip this step if you set the time and date in QUICK SETUP and you do not want to change the current settings (as shown on the top line of every screen).

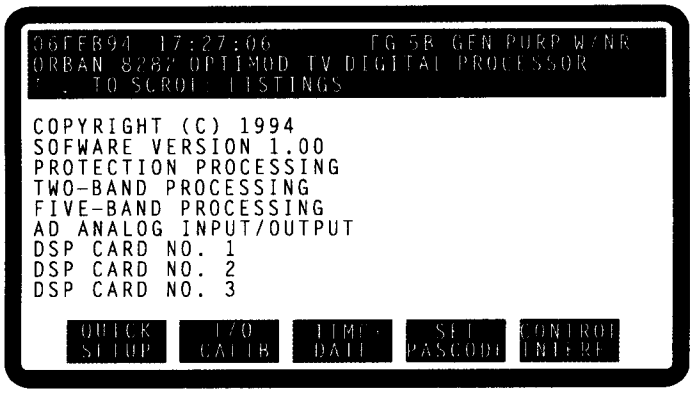
1. Access TIME+ DATE screen.

A☐ If the IDLE G/R screen (shown below) does not appear, press ESC repeatedly until you see it.



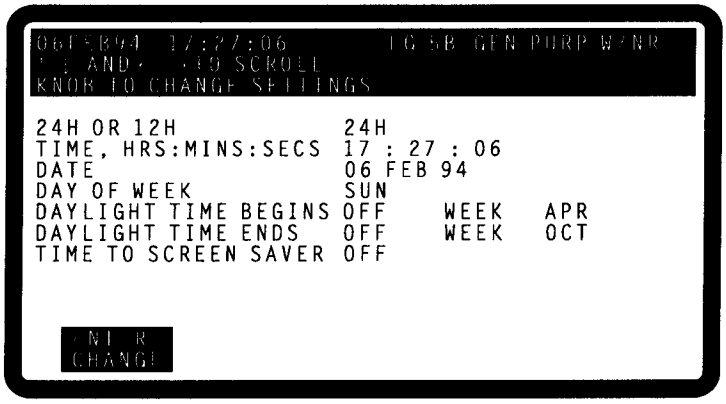
Use the CONTRAST knob to adjust the display for best clarity.

B☐ Press SYSTEM SETUP button to access SYSTEM SETUP screen. (Press the soft key directly below the words "SYSTEM SETUP.")



C☐ Press TIME+ DATE button to access TIME+ DATE screen.

See next page.



2. Set time and date.

Use the ↑, ↓, ← and → arrow keys to scroll through and select (highlight) the time and date settings. Use the front panel control knob to change values.

A□ 24-Hour or 12-Hour Clock

[24H] or [12H]

The 8282's internal clock is displayed on the top line of the screen, and is used for programmed preset switching using the 8282's built-in AUTOMATION. It can be set for 12 hour (AM and PM) or 24 hour time.

Use the control knob to set the 8282 screen display for 12 hour or 24 hour time.

B□ TIME

[HRS]:[MINS]:[SECS]

The internal clock is reset to the values entered on the screen when the ENTER CHANGE button is pressed.

C□ DATE

DAY: [01] to [31]

MONTH: [JAN], [FEB], [MAR], [APR], [MAY], [JUN], [JUL], [AUG], [SEP], [OCT], [NOV] or [DEC]

YEAR: [00] to [99]

D□ DAY OF THE WEEK

[SUN], [MON], [TUE], [WED], [THU], [FRI] or [SAT]

E□ DAYLIGHT TIME BEGINS

[OFF], [1ST], [2ND], [3RD], [4TH] or [LAST] WEEK
MONTH: [JAN], [FEB] . . . or [DEC]

If your country uses Daylight Savings Time (Summer Time), the 8282's clock will advance the time one hour on the beginning date that you enter, and turn back the time one hour on the end date that you enter.

Use the ↑, ↓, ← and → arrow keys to scroll through and select (highlight) the parameters. Use the control knob to change values. If your country does not use Daylight Savings Time, set the WEEK field to OFF.

Page 2-36 lists current rules for daylight savings time for selected countries.

NOTE: Both Daylight Begin and End times must be entered to initiate the daylight time program.

F☐ DAYLIGHT TIME ENDS

[OFF], [1ST], [2ND], [3RD], [4TH] or [LAST] WEEK
MONTH: [JAN], [FEB] . . . or [DEC]

NOTE: Both Daylight Begin and End times must be entered to initiate the daylight time program.

G☐ TIME TO SCREEN SAVER

[1] to [8] HRS, or [OFF]

The screen saver automatically turns off the screen backlight after the 8282 front panel controls have not been operated during the period of time set by this control. We strongly recommend that you use the screen saver, as the lifetime of the screen backlighting is about five years. With screen saver, it will last far longer.

The screen backlighting turns on when any button is activated.

3. End time and date programming.

A☐ When you are finished adjusting time and date parameters, press the ENTER CHANGE button to save changes or press the ESC button to ignore changes. Either action will return you to the SYSTEM SETUP screen.

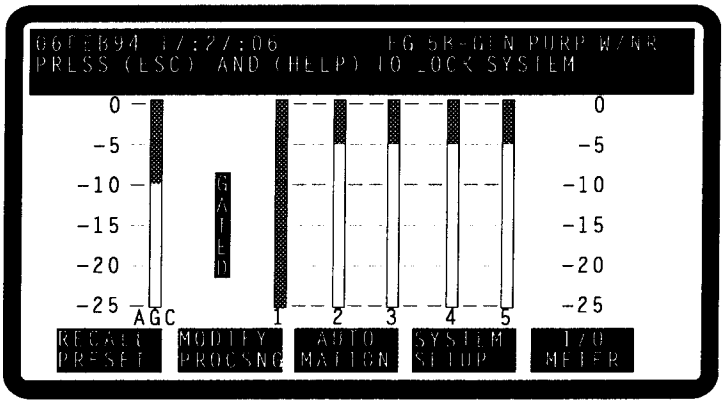
B☐ Press the ESC button again to return to the IDLE G/R screen.

Security and Pascode Programming

[Skip this step if you do not wish to change the security level or program pascodes at this time.]

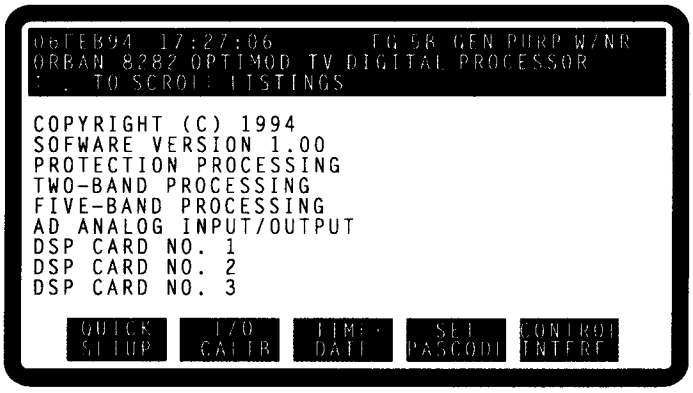
1. Access SET PASCODE screen.

A☐ If the IDLE G/R screen (shown below) does not appear, press ESC repeatedly until you see it.

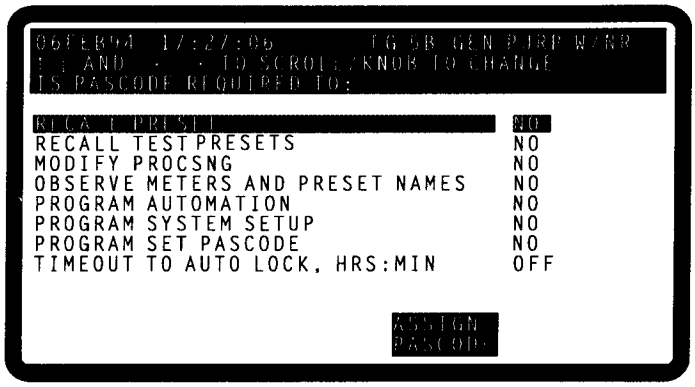


Use the CONTRAST knob to adjust the display for best clarity.

B☐ Press SYSTEM SETUP button to access SYSTEM SETUP screen. (Press the soft key directly below the words "SYSTEM SETUP.")



C☐ Press SET PASCODE button to access SET PASCODE screen.



2. Set the security status of the 8282.

All of the settings on this screen determine whether pascodes are required to access the various functions listed. If a function is listed as NO, the function can be accessed and changed from the front panel without the user having to enter a pascode. If a function is listed as YES, the user must first enter a pascode, and that pascode must be previously programmed to permit access to that function.

When a pascode is entered, only those functions that are permitted by that pascode are displayed on the screen.

Use the ↑ and ↓ arrow keys to scroll through and select (highlight) the settings. Use the front panel control knob to change the setting.

A☐ RECALL PRESET

[NO] or [YES]

Selects whether a pascode (authorized to RECALL PRESET) is required to recall processing presets.

B☐ RECALL TEST PRESETS

[NO] or [YES]

Selects whether a pascode (authorized to RECALL TEST PRESETS) is required to recall test presets, such as TO TONE and BY BYPASS.

EBS (Emergency Broadcasting System) can be accessed at all times, with or without a pascode.

NOTE: If the security status is set so that a pascode is required to recall test presets, and if a test preset has been stored as a user preset, it will be locked out to users not authorized to recall test presets.

C☐ MODIFY PROCSNG

[NO] or [YES]

Selects whether a pascode (authorized to MODIFY PROCSNG) is required to modify the processing (change the sound of the station) and save those changes to a user preset.

D☐ OBSERVE METERS AND PRESET NAMES

[NO] or [YES]

Selects whether a pascode (authorized to OBSERVE METERS AND PRESET NAME) is required to display the metering on the screen. Some stations may wish to restrict meter display from the screen so that their "setup" cannot be copied by another station with a co-located transmitter.

E☐ PROGRAM AUTOMATION

[NO] or [YES]

Selects whether a pascode (authorized to PROGRAM AUTOMATION) is required to change the automation event schedule.

F☐ PROGRAM SYSTEM SETUP

[NO] or [YES]

Selects whether a pascode (authorized to change SYSTEM SETUP) is required to access QUICK SETUP, I/O CALIB, TIME+ DATE and CONTROL INTERF.

G☐ PROGRAM SET PASCODE

[NO] or [YES]

Selects whether a pascode (authorized to PROGRAM SET PASCODE) is required to access SET PASCODE. Note that open access to SET PASCODE gives any user the ability to re-program the security level of the system, and program pascodes.

H☐ TIMEOUT TO AUTO LOCK, HRS:MINS

[00:10] to [08:50] or [OFF]

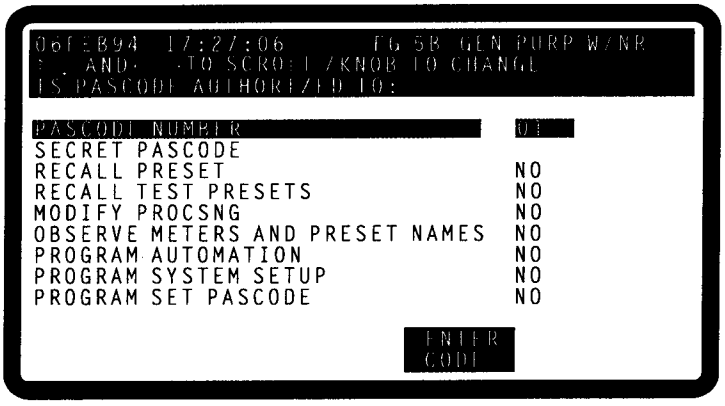
Timeout automatically locks the system after the period of time set by this control. We strongly recommend that you set timeout to a reasonable time, so that if the 8282 if left unattended, it will lock itself.

Use the < and > keys to move between HRS and MINS.

3. Assign pascodes.

If you do not wish to program pascodes at this time, press the ESC button to return to the SYSTEM SETUP *screen. Press the ESC button again to return to the* IDLE G/R *screen.*

A☐ From the SET PASCODE screen, press the ASSIGN PASCODE button.



The 8282 allows you to program up to 10 pascodes. Each pascode can be programmed to allow or deny access to the various functions listed.

This screen is used to program each pascode.

PASCODE NUMBER is used to select which of the 10 pascodes you will program.

The rest of the lines show the functions that the pascode is or is not allowed to access. Note that if in the previous step (step 2), you programmed that a pascode is not required for a given function, the user will be allowed access to that function, even if the pascode is programmed NO for that function in this step.

Use the ↑ and ↓ arrow keys to scroll through and select (highlight) the settings. Use the front panel control knob to change the setting.

B☐ PASCODE NUMBER

[0] to [10]

Selects which pascode to program. As this number is changed, the other fields will change to reflect the authorization of that code.

C☐ SECRET PASCODE

[1] to [99999999]

If the pascode number was previously assigned a secret pascode, a one to eight digit number will be shown here. Otherwise, this parameter will be blank.

To change an old secret pascode, or to assign a new secret pascode, finish assigning the "authorization" status for the entire pascode list (steps 3-B thru 3-J), then press the ENTER CODE softkey to program a secret pascode, using one to eight digits (refer to steps 3-K and 3-L on the following pages).

D☐ RECALL PRESET

[NO] or [YES]

Selects whether this pascode (PASCODE NUMBER displayed on the screen) is authorized to recall processing presets.

E☐ RECALL TEST PRESETS

[NO] or [YES]

Selects whether this pascode (PASCODE NUMBER displayed on the screen) is authorized to recall test presets. EBS (Emergency Broadcasting System) Tones can be accessed at all times, with or without a pascode.

F☐ MODIFY PROCSNG

[NO] or [YES]

Selects whether this pascode (PASCODE NUMBER displayed on the screen) is authorized to modify the processing (change the sound of the station) and save those changes to a user preset.

G☐ OBSERVE METERS AND PRESET NAMES

[NO] or [YES]

Selects whether this pascode (PASCODE NUMBER displayed on the screen) is authorized to observe meters and preset name.

H☐ PROGRAM AUTOMATION

[NO] or [YES]

Selects whether this pascode (PASCODE NUMBER displayed on the screen) is authorized to change the automation event schedule.

I ☐ PROGRAM SYSTEM SETUP

[NO] or [YES]

Selects whether this pascode (PASCODE NUMBER displayed on the screen) is authorized to access QUICK SETUP, I/O CALIB, TIME+ DATE and CONTROL INTERF. Note that a pascode authorized for system setup will automatically be given access to all other functions (except PROGRAM SET PASCODE), even if that pascode is not programmed for those other functions.

J ☐ PROGRAM SET PASCODE

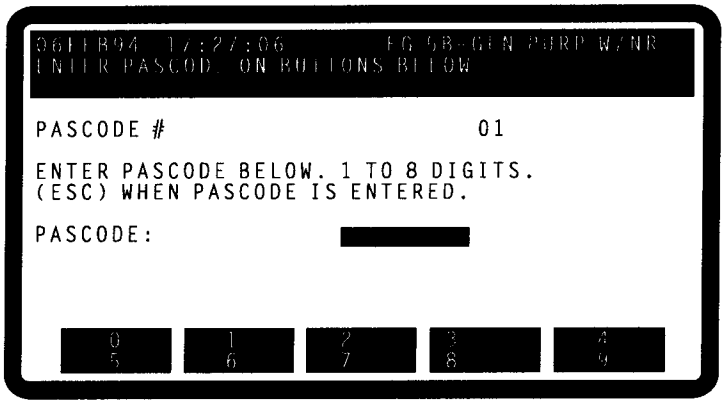
[NO] or [YES]

Selects whether a pascode (authorized to PROGRAM SET PASCODE) is required to access SET PASCODE. Note that open access to SET PASCODE gives any user the ability to re-program the security level of the system, and program pascodes.

NOTE: At least one of the ten pascodes must be authorized to program set pascode. This user has ultimate control of the 8282's security, and the unit will not lock until this requirement is fulfilled.

NOTE: A pascode authorized for Set Pascode will automatically be given access to all other functions, as seen on the screen.

K☐ Push the ENTER CODE button. This screen is used to enter the secret pascode.



L☐ Enter the desired pascode, up to eight digits. If the pascode is less than 8 digits, you must press ESC to store the entered pascode and return to the previous screen.

If you enter an undesired code, press the ENTER CODE button from the SET PASCODE screen to access the ENTER PASCODE screen. Then enter the desired code and press ESC to save.

Note that if a pascode has been previously entered, and you do not push any of the number buttons below the screen, the previously entered pascode will remain valid.

4. Program additional pascodes.

Repeat step 3 above for additional codes.

5. End pascode programming.

A☐ When you are finished programming pascodes, press the ESC button to return to the SYSTEM SETUP screen.

B☐ Press the ESC button again to return to the IDLE G/R screen.

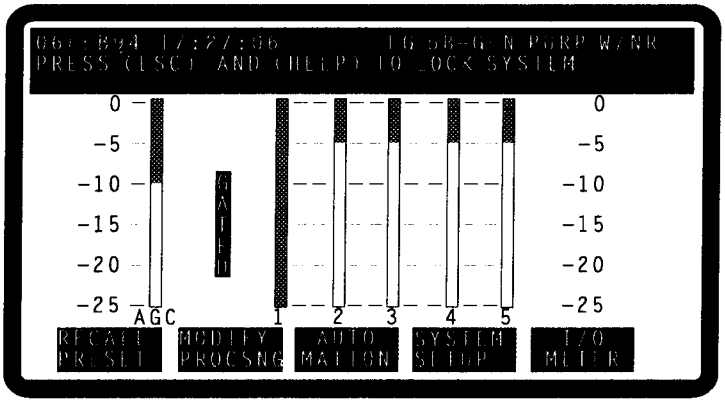
C☐ To initiate lockout, hold down ESC button while pressing HELP button.

Remote Control Interface Programming

[Skip this step if you do not wish to program the remote control interface at this time.]

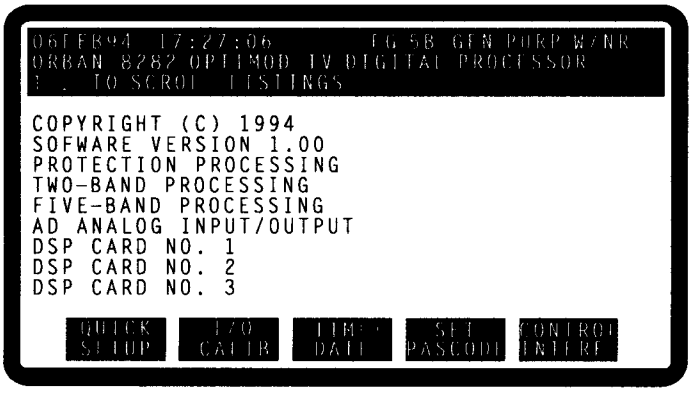
1. Access CONTROL INTERF screen.

A☐ If the IDLE G/R screen does not appear, press ESC repeatedly until you see it.

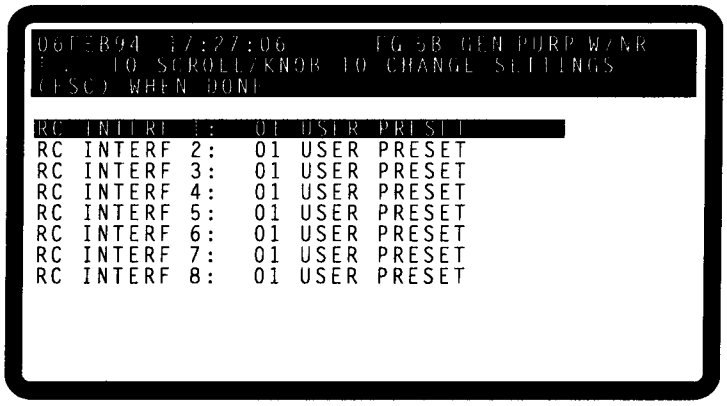


Use the CONTRAST knob to adjust the display for best clarity.

B☐ Press SYSTEM SETUP button to access SYSTEM SETUP screen. (Press the soft key directly below the words "SYSTEM SETUP".)



C☐ Press CONTROL INTERF button to access CONTROL INTERFACE screen.



2. Program the remote control interface.

The control interface is eight opto-isolated inputs that allow you to direct the 8282 to perform certain functions when a voltage (6-24V) is presented to the input.

This screen is used to program the function of each of the eight control interfaces.

Use the ↑ and ↓ arrow keys to scroll through and select (highlight) each interface. Use the front panel control knob to change the function of that interface. As you turn the control knob, the following functions will appear in the selected (highlighted) field:

PRESET NUMBER AND NAME: Switches that preset on the air. Any test preset, factory or user programming preset may be recalled by the control interface. A momentary pulse of voltage will switch this function.

ST STEREO: Switches the 8282's audio processing so that the gain reduction in the two audio channels is coupled. A momentary pulse of voltage will switch this function.

DU DUALCH: Switches the 8282's audio processing so that the gain reduction in the two audio channels is independent. A momentary pulse of voltage will switch this function.

ET EXIT TEST: If a test preset is switched on the air, EXIT TEST reverts to the previous processing preset.

01 OSHOOT TX1 COMP: Reduces the program modulation by the percentage programmed in I/O CALIB. When voltage is removed, this function will be deactivated.

02 OSHOOT TX2 COMP: Reduces the program modulation by the percentage programmed in I/O CALIB. When voltage is removed, this function will be deactivated.

S1 SC1 MOD COMP: Reduces the program modulation by the percentage programmed in I/O CALIB. When voltage is removed, this function will be deactivated.

S2 SC2 MOD COMP: Reduces the program modulation by the percentage programmed in I/O CALIB. When voltage is removed, this function will be deactivated.

IA INPUT ANALOG: Selects the analog inputs as the audio source. A momentary pulse of voltage will switch this function.

ID INPUT DIGITAL: Selects the AES/EBU digital input as the audio source. A momentary pulse of voltage will switch this function.

RH RESET CLOCK TO HOUR: Resets the internal clock to the nearest hour. For example, 3:03:10 would be reset to 3:00:00, while 3:53:10 would be reset to 4:00:00. (NOTE: Times of 20 minutes after the hour thru 20 minutes to the hour are not affected by this function.) A momentary pulse of voltage will switch this function on the leading edge of the pulse.

RM RESET CLOCK TO MIDNIGHT: Resets the internal clock to midnight. In 12 hour time, this is shown as 12:00:00A; in 24 hour time, this is shown as 00:00:00. A momentary pulse of voltage will switch this function on the leading edge of the pulse.

3. End remote control interface programming.

A☐ When you are finished programming the remote control interface, press the ESC button to return to the SYSTEM SETUP screen.

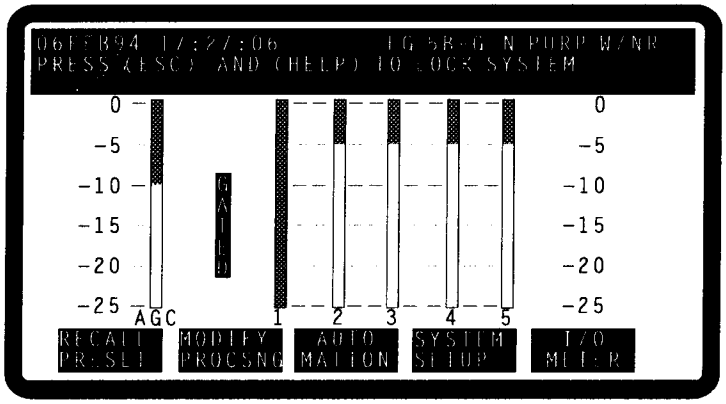
B☐ Press the ESC button again to return to the IDLE G/R screen.

EBS Test Settings

[If your country does not use the EBS test, press the DISABLE EBS button located in the MODIFY EBS screen — refer to step 2, below.]

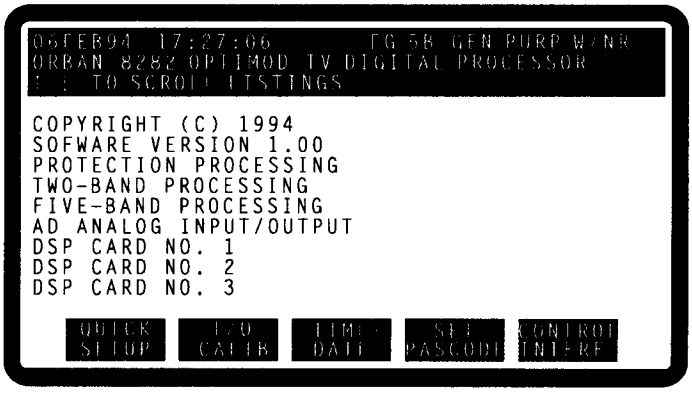
1. Access MODIFY EBS screen.

A☐ If the IDLE G/R screen (shown below) does not appear, press ESC repeatedly until you see it.

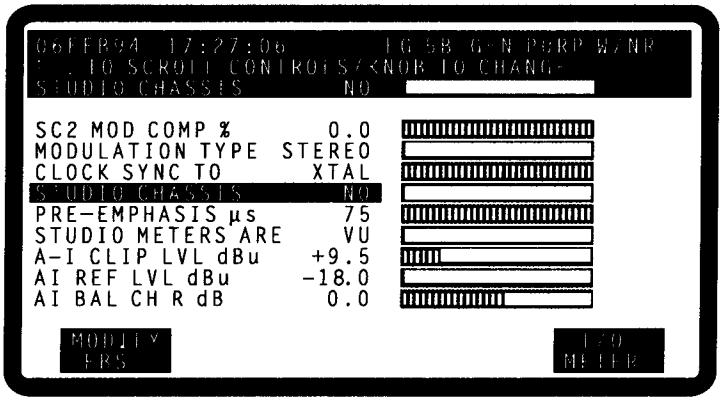


Use the CONTRAST knob to adjust the display for best clarity.

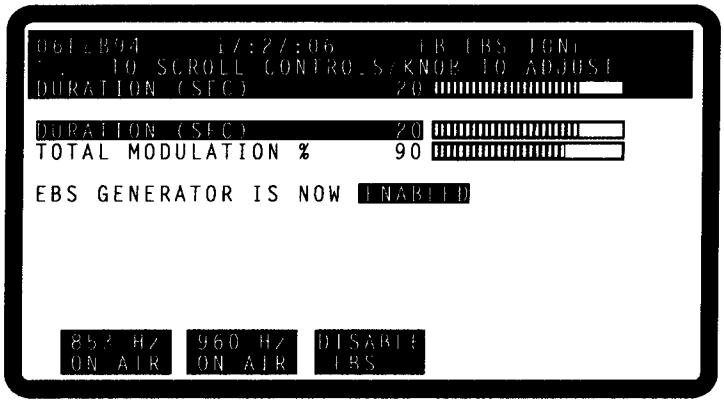
B☐ Press SYSTEM SETUP button to access SYSTEM SETUP screen. (Press the soft key directly below the words "SYSTEM SETUP.")



C☐ Press I/O CALIB button to access I/O CALIB screen.



D☐ Press MODIFY EBS button to access MODIFY EBS screen.



2. Adjust EBS TEST settings.

A☐ DURATION (SEC)

The setting of DURATION will not put the EBS TONES on the air.

Set the duration that the EBS tones will be on the air when the EBS TEST is initiated from the RECALL PRESET screen. Consult the latest issue of the applicable rules and regulations for the minimum duration required by law. At the date of publication of this manual (April, 1994), the FCC required a minimum duration of 20 seconds and a maximum duration of 25 seconds.

B☐ TOTAL MODULATION %

The setting of TOTAL MODULATION % will not put the EBS TONES on the air.

Set the total modulation that the two tones will produce.

C☐ 853Hz ON AIR
960Hz ON AIR

***WARNING:** Pressing either of these buttons will put a tone on the air.*

The FCC requires that you be able to put each of the two tones on the air independently to assure that each is modulating to the proper level. Consult the latest issue of the applicable rules and regulations for the minimum modulation level required by law. At the date of publication of this manual (April, 1994), the FCC required a minimum modulation of 40% on each tone.

Press the button again to turn the tone off.

D☐ ENABLE EBS
DISABLE EBS

Press ENABLE EBS button to provide access to the EBS tone from the RECALL PRESET screen.

Press DISABLE to deny access. The EBS TEST button will no longer appear in the RECALL PRESET screen. Note, however, that the EBS tone can still be accessed via remote control interface.

3. End MODIFY EBS settings.

A☐ When you are finished adjusting the EBS MODIFY settings, press the ESC button to return to the I/O CALIB screen.

B☐ Press the ESC button again to return to the SYSTEM SETUP screen.

C☐ Press the ESC button again to return to the IDLE G/R screen.