

**TECHNICAL MANUAL  
SENTRY CD SOFTWARE  
994 9267 012**

**888-2460-001**

**TECHNICAL MANUAL**

**SENTRY CD Windows Software**

**994 9267 012**



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## **Returns And Exchanges**

Damaged or undamaged equipment should not be returned unless written approval and a Return Authorization is received from HARRIS CORPORATION, Broadcast Systems Division. Special shipping instructions and coding will be provided to assure proper handling. Complete details regarding circumstances and reasons for return are to be included in the request for return. Custom equipment or special order equipment, that is not defective, is not returnable. In those instances where return or exchange of equipment is at the request of the customer, or convenience of the customer, a restocking fee will be charged. All returns will be sent freight prepaid and properly insured by the customer. When communicating with HARRIS CORPORATION, Broadcast Systems Division, specify the HARRIS Order Number or Invoice Number.

## **Unpacking**

Carefully unpack the equipment and perform a visual inspection to determine that no apparent damage was incurred during shipment. Retain the shipping materials until it has been determined that all received equipment is not damaged. Locate and retain all PACKING CHECK LISTS. Use the PACKING CHECK LIST to help locate and identify any components or assemblies which are removed for shipping and must be reinstalled. Also remove any shipping supports, straps, and packing materials prior to initial turn on.

## **Technical Assistance**

HARRIS Technical and Troubleshooting assistance is available from HARRIS Field Service during normal business hours (8:00 AM - 5:00 PM Central Time). Emergency service is available 24 hours a day. Telephone 217/222-8200 to contact the Field Service Department or address correspondence to Field Service Department, HARRIS CORPORATION, Broadcast Systems Division, P.O. Box 4290, Quincy, Illinois 62305-4290, USA. The HARRIS factory may also be contacted through a FAX facility (217/221-7096).

## **Replaceable Parts Service**

Replacement parts are available 24 hours a day, seven days a week from the HARRIS Service Parts Department. Telephone 217/222-8200 to contact the service parts department or address correspondence to Service Parts Department, HARRIS CORPORATION, Broadcast Systems Division, P.O. Box 4290, Quincy, Illinois 62305-4290, USA. The HARRIS factory may also be contacted through a FAX facility (217/221-7096) or e-mail at [TSUPPORT@HARRIS.COM](mailto:TSUPPORT@HARRIS.COM).

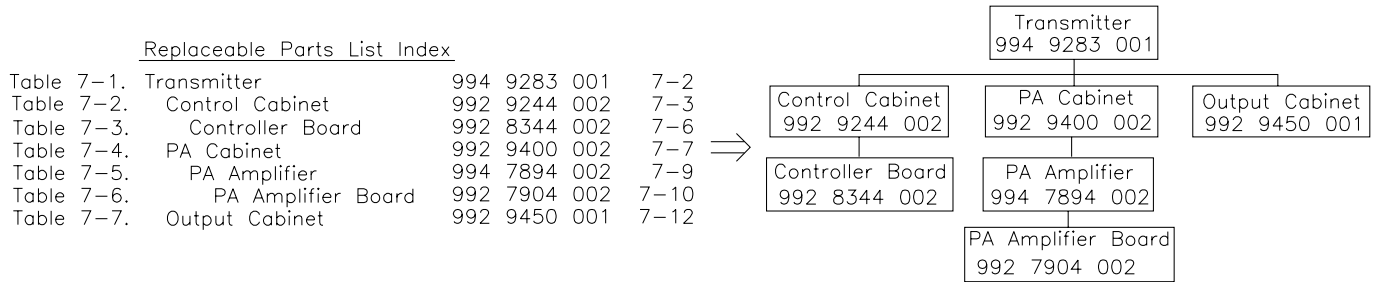
### **NOTE**

The # symbol used in the parts list means used with (e.g. #C001 = used with C001).

## Guide to Using Harris Parts List Information

The Harris Replaceable Parts List Index portrays a tree structure with the major items being leftmost in the index. The example below shows the Transmitter as the highest item in the tree structure. If you were to look at the bill of materials table for the Transmitter you would find the Control Cabinet, the PA Cabinet, and the Output Cabinet. In the Replaceable Parts List Index the Control Cabinet, PA Cabinet, and Output Cabinet show up one indentation level below the Transmitter and implies that they are used in the Transmitter. The Controller Board is indented one level below the Control Cabinet so it will show up in the bill of material for the Control Cabinet. The tree structure of this same index is shown to the right of the table and shows indentation level versus tree structure level.

Example of Replaceable Parts List Index and equivalent tree structure:



The part number of the item is shown to the right of the description as is the page in the manual where the bill for that part number starts.

Inside the actual tables, four main headings are used:

**Table #.#. ITEM NAME - HARRIS PART NUMBER** - this line gives the information that corresponds to the Replaceable Parts List Index entry;

**HARRIS P/N** column gives the ten digit Harris part number (usually in ascending order);

**DESCRIPTION** column gives a 25 character or less description of the part number;

**REF. SYMBOLS/EXPLANATIONS** column 1) gives the reference designators for the item (i.e., C001, R102, etc.) that corresponds to the number found in the schematics (C001 in a bill of material is equivalent to C1 on the schematic) or 2) gives added information or further explanation (i.e., “Used for 208V operation only,” or “Used for HT 10LS only,” etc.).

Inside the individual tables some standard conventions are used:

A # symbol in front of a component such as #C001 under the REF. SYMBOLS/EXPLANATIONS column means that this item is used on or with C001 and is not the actual part number for C001.

In the ten digit part numbers, if the last three numbers are 000, the item is a part that Harris has purchased and has not manufactured or modified. If the last three numbers are other than 000, the item is either manufactured by Harris or is purchased from a vendor and modified for use in the Harris product.

The first three digits of the ten digit part number tell which family the part number belongs to - for example, all electrolytic (can) capacitors will be in the same family (524 xxxx 000). If an electrolytic (can) capacitor is found to have a 9xx xxxx xxx part number (a number outside of the normal family of numbers), it has probably been modified in some manner at the Harris factory and will therefore show up farther down into the individual parts list (because each table is normally sorted in ascending order). Most Harris made or modified assemblies will have 9xx xxxx xxx numbers associated with them.

The term “SEE HIGHER LEVEL BILL” in the description column implies that the reference designated part number will show up in a bill that is higher in the tree structure. This is often the case for components that may be frequency determinant or voltage determinant and are called out in a higher level bill structure that is more customer dependent than the bill at a lower level.



## **WARNING**

**THE CURRENTS AND VOLTAGES IN THIS EQUIPMENT ARE DANGEROUS. PERSONNEL MUST AT ALL TIMES OBSERVE SAFETY WARNINGS, INSTRUCTIONS AND REGULATIONS.**

This manual is intended as a general guide for trained and qualified personnel who are aware of the dangers inherent in handling potentially hazardous electrical/electronic circuits. It is not intended to contain a complete statement of all safety precautions which should be observed by personnel in using this or other electronic equipment.

The installation, operation, maintenance and service of this equipment involves risks both to personnel and equipment, and must be performed only by qualified personnel exercising due care. HARRIS CORPORATION shall not be responsible for injury or damage resulting from improper procedures or from the use of improperly trained or inexperienced personnel performing such tasks.

During installation and operation of this equipment, local building codes and fire protection standards must be observed. The following National Fire Protection Association (NFPA) standards are recommended as reference:

- Automatic Fire Detectors, No. 72E
- Installation, Maintenance, and Use of Portable Fire Extinguishers, No. 10
- Halogenated Fire Extinguishing Agent Systems, No. 12A

## **WARNING**

**ALWAYS DISCONNECT POWER BEFORE OPENING COVERS, DOORS, ENCLOSURES, GATES, PANELS OR SHIELDS. ALWAYS USE GROUNDING STICKS AND SHORT OUT HIGH VOLTAGE POINTS BEFORE SERVICING. NEVER MAKE INTERNAL ADJUSTMENTS, PERFORM MAINTENANCE OR SERVICE WHEN ALONE OR WHEN FATIGUED.**

Do not remove, short-circuit or tamper with interlock switches on access covers, doors, enclosures, gates, panels or shields. Keep away from live circuits, know your equipment and don't take chances.

## **WARNING**

**IN CASE OF EMERGENCY ENSURE THAT POWER HAS BEEN DISCONNECTED.**

## **WARNING**

**IF OIL FILLED OR ELECTROLYTIC CAPACITORS ARE UTILIZED IN YOUR EQUIPMENT, AND IF A LEAK OR BULGE IS APPARENT ON THE CAPACITOR CASE WHEN THE UNIT IS OPENED FOR SERVICE OR MAINTENANCE, ALLOW THE UNIT TO COOL DOWN BEFORE ATTEMPTING TO REMOVE THE DEFECTIVE CAPACITOR. DO NOT ATTEMPT TO SERVICE A DEFECTIVE CAPACITOR WHILE IT IS HOT DUE TO THE POSSIBILITY OF A CASE RUPTURE AND SUBSEQUENT INJURY.**

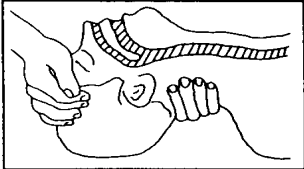
## TREATMENT OF ELECTRICAL SHOCK

1. IF VICTIM IS NOT RESPONSIVE FOLLOW THE A-B-C'S OF BASIC LIFE SUPPORT.

PLACE VICTIM FLAT ON HIS BACK ON A HARD SURFACE

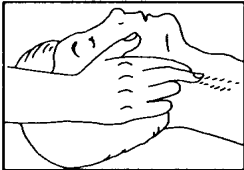
### **(A) AIRWAY**

IF UNCONSCIOUS,  
OPEN AIRWAY



LIFT UP NECK  
PUSH FOREHEAD BACK  
CLEAR OUT MOUTH IF NECESSARY  
OBSERVE FOR BREATHING

CHECK  
CAROTID PULSE



IF PULSE ABSENT,  
BEGIN ARTIFICIAL  
CIRCULATION

### **(B) BREATHING**

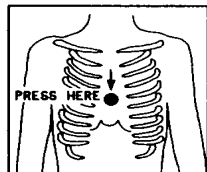
IF NOT BREATHING,  
BEGIN ARTIFICIAL BREATHING



TILT HEAD  
PINCH NOSTRILS  
MAKE AIRTIGHT SEAL  
4 QUICK FULL BREATHS  
REMEMBER MOUTH TO MOUTH  
RESUSCITATION MUST BE  
COMMENCED AS SOON AS POSSIBLE

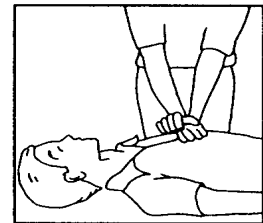
### **(C) CIRCULATION**

DEPRESS STERNUM 1 1/2 TO 2 INCHES



APPROX. RATE  
OF COMPRESSIONS { ONE RESCUER  
--80 PER MINUTE { 15 COMPRESSIONS  
2 QUICK BREATHS

APPROX. RATE  
OF COMPRESSIONS { TWO RESCUERS  
--60 PER MINUTE { 5 COMPRESSIONS  
1 BREATH



NOTE: DO NOT INTERRUPT RHYTHM OF COMPRESSIONS  
WHEN SECOND PERSON IS GIVING BREATH

CALL FOR MEDICAL ASSISTANCE AS SOON AS POSSIBLE.

2. IF VICTIM IS RESPONSIVE.

- A. KEEP THEM WARM
- B. KEEP THEM AS QUIET AS POSSIBLE
- C. LOOSEN THEIR CLOTHING
- D. A RECLINING POSITION IS RECOMMENDED

## **FIRST-AID**

Personnel engaged in the installation, operation, maintenance or servicing of this equipment are urged to become familiar with first-aid theory and practices. The following information is not intended to be complete first-aid procedures, it is a brief and is only to be used as a reference. It is the duty of all personnel using the equipment to be prepared to give adequate Emergency First Aid and thereby prevent avoidable loss of life.

### Treatment of Electrical Burns

1. Extensive burned and broken skin
  - a. Cover area with clean sheet or cloth. (Cleanest available cloth article.)
  - b. Do not break blisters, remove tissue, remove adhered particles of clothing, or apply any salve or ointment.
  - c. Treat victim for shock as required.
  - d. Arrange transportation to a hospital as quickly as possible.
  - e. If arms or legs are affected keep them elevated.

#### **NOTE**

If medical help will not be available within an hour and the victim is conscious and not vomiting, give him a weak solution of salt and soda: 1 level teaspoonful of salt and 1/2 level teaspoonful of baking soda to each quart of water (neither hot or cold). Allow victim to sip slowly about 4 ounces (a half of glass) over a period of 15 minutes. Discontinue fluid if vomiting occurs. (Do not give alcohol.)

2. Less severe burns - (1st & 2nd degree)
  - a. Apply cool (not ice cold) compresses using the cleanest available cloth article.
  - b. Do not break blisters, remove tissue, remove adhered particles of clothing, or apply salve or ointment.
  - c. Apply clean dry dressing if necessary.
  - d. Treat victim for shock as required.
  - e. Arrange transportation to a hospital as quickly as possible.
  - f. If arms or legs are affected keep them elevated.

#### REFERENCE:

ILLINOIS HEART ASSOCIATION

AMERICAN RED CROSS STANDARD FIRST AID AND PERSONAL SAFETY MANUAL (SECOND EDITION)

# TABLE OF CONTENTS

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<b>Section I</b>	Establishing the Connection . . . . .	2-4
<b>Introduction</b>		
Product Description . . . . .		1-1
SENTRY CD Software . . . . .		1-1
Dial-Up Access . . . . .		1-1
Connecting Two or More PC's . . . . .		1-1
Operating Environment . . . . .		1-1
<b>Section II</b>		
<b>Installation</b>		
Introduction . . . . .		2-1
Tools . . . . .		2-1
Required Installation Time . . . . .		2-1
Installing SENTRYCD Firmware . . . . .		2-1
Transmitter SENTRY CD Setup . . . . .		2-2
SENTRY CD Setup Options . . . . .		2-3
SENTRY CD Passwords . . . . .		2-3
Control Activation Jumpers . . . . .		2-3
Serial Port Connections . . . . .		2-4
RS232 Cables . . . . .		2-4
RS232 Connecting Cables . . . . .		2-4
The PC Terminal Software . . . . .		2-4
Starting SENTRY CD Terminal . . . . .		2-4
<b>Section III</b>		
<b>Operation and Logging</b>		
Introduction . . . . .		3-1
Start-Up . . . . .		3-1
<b>Main</b> Screen . . . . .		3-2
Control Screen . . . . .		3-3
Exciter Screen . . . . .		3-4
PA Cabinet Screen . . . . .		3-5
System Alarm Screen . . . . .		3-6
Logging . . . . .		3-7
<b>Section IV</b>		
<b>Modem Setup</b>		
Introduction . . . . .		4-1
Description . . . . .		4-1
Using the Setup Utility . . . . .		4-1
Customized Modem Setup . . . . .		4-1
<b>SECTION V</b>		
<b>PARTS LIST</b>		
Introduction . . . . .		5-1



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## 1.1 Product Description

The SENTRY CD Windows software makes possible the connection of an IBM-compatible personal computer to the Harris PlatinumCD™ Series Digital Solid State VHF TV transmitters. This technical manual provides guidance for installation and operation of the product. The sections of this manual are:

- Section I - Introduction
- Section II - Installation
- Section III - Operation and Logging
- Section IV - Modem Setup
- Section V - Parts List

SENTRY CD Windows software is an optional feature which may be purchased and installed in any Harris Platinum CD™ Series transmitter. The option uses a PC computer to give the user an on-screen view of the Platinum CD™ transmitting system. The program displays the transmitter cabinet, showing the condition of all amplifier and power supply modules. Other screens display all the information available on the Platinum CD™ transmitter display panel.

A mouse, trackball or other mouse substitute is used to select operating screens on the PC and to send control signals to the transmitter.

User-selectable jumpers on the Platinum™ monitor board can disable SENTRY CD control of the transmitter if desired.

The transmitter SENTRY CD connection is an RS232 port. The SENTRY CD PC may be located near the transmitter, connected directly by null modem cable, or it may be located at a remote point connected via Hayes-compatible modems.

Direct null modem cable connections may be up to 300 feet without RS-232C line boosters. High levels of common mode noise may require shorter lengths in some locations.

For longer cable lengths or for cable runs suffering from common-mode noise interference, line boosters will be needed at each end. Distances of up to 10,000 ft. at 9600 baud are possible if line boosters are installed.

---

## 1.2 SENTRY CD Software

The software package includes SENTRY CD software on floppy disk and SENTRY CD™ firmware on a chipset for installation in the Platinum™ monitor board at the transmitter.

Connecting cables are not provided. The needed cables may be prepared as described in Section II of this technical manual, or purchased ready-made from local suppliers.

The PC equipment provided by the user should meet the following requirements:

- IBM-Compatible PC with Windows 98 or Windows NT
- 5.2 Mb or larger hard drive
- 3.5" floppy disk drive
- Color monitor display set to 640x480 high color or better
- RS-232C serial interface COM port
- Hayes compatible modems, if a remote system is desired

---

## 1.3 Dial-Up Access

The SENTRY CD - equipped Platinum CD™ TV transmitter and the PC may be configured to use telephone circuits. If Dial-Up access is chosen, an engineer can observe and control the transmitter from any convenient location using any suitable desktop or portable PC with SENTRY CD software installed.

SENTRY CD firmware provides for the entry of user-chosen passwords allowing the user to restrict dial-in access to the transmitter to authorized personnel.

---

## 1.4 Connecting Two or More PC's

The Platinum CD television transmitter monitor board provides one RS232 port for use as a SENTRY CD connection. Only one PC may be connected to it at any time.

If connection to added PC's is desired, a suitable RS232 switch may be used to permit one PC to monitor at a time.

A "fallback switch" from Black Box or another supplier may also be used with a dial-up modem to permit the modem to seize the input port when connected, and to release the port for another local terminal when the modem disconnects.

---

## 1.5 Operating Environment

The SENTRY CD option in the Platinum CD transmitter can be operated under any conditions which meet the environmental needs of the transmitter.

The display terminal is a PC computer. The operating environment at the display terminal will be governed by the needs of the computer. Power line conditioning should be considered and may be mandatory in some locations due to high levels of power line transient and/or brownouts.



## 2.1 Introduction

The SENTRY CD Windows option may be installed on a Platinum CD television transmitter as either an Extended system, connected to the transmitter by an RS232 cable, or as a Remote system, connected by means of modems. If modems are used, they may be connected by a dedicated fulltime line, or they may be dial-up modems operating over the telephone network.

Installation is in two parts:

- Installation of SENTRY CD firmware and control jumpers in the Platinum transmitter monitor board.
- Connection of the SENTRY CD PC and the communication link to the transmitter monitor board.

Installation of the SENTRY CD option is not a difficult process. It will, however, require that you have the transmitter shut down and that you replace the transmitter's monitor board firmware, losing any stored alarms and setups and resetting the clock. Careful planning will ensure that you lose no airtime and that the process goes smoothly.

If you intend to have a remote system using modems, it would be a good idea to have on hand a null modem cable or null modem adaptor to allow the PC to be connected directly to the transmitter at first. Once you are satisfied the SENTRY CD option is working properly, an easy next step is to place the system in operation remotely through the modems.

If your transmitter was not fitted with SENTRY CD firmware by our factory, you will need to install new firmware PROM's in the transmitter. Make sure you have these PROMs. They should be labelled:

917-2235-020 A  
©HARRIS CORP 1999  
PTCD SC U17

917-2235-020 A  
©HARRIS CORP 1999  
PTCD SC U18

## 2.2 Tools

Upgrading the transmitter monitor board to SENTRY CD firmware will require that you remove two PROMs, U17 and U18, from the monitor PC board and replace them with new SENTRY CD PROMs. You should have suitable tools on hand to use in extracting the existing IC's. To avoid possible damage due to static electricity, you should have and use a properly grounded wrist strap when handling these PROMs.

## 2.3 Required Installation Time

The actual installation time can be quite short, but you will be working in an area of the transmitter which may be unfamiliar,

so it is advisable to allow a few hours' unencumbered off-air time to complete the installation.

## 2.4 Installing SENTRYCD Firmware

Make certain you clearly understand the proper way to set the transmitter clock and calendar. The monitor board is reset during the installation. You will need to enter the current time and date when you are done. All user setup data and alarms are stored in the monitor board and will also be lost during the upgrade:

### *Procedure*

- a. Check the alarm list and note down any alarm information you wish to keep.
- b. Check and make note of any other special setups or entries you have programmed into the transmitter.
- c. When the transmitter is off-air and available for the upgrade, open the control cabinet front panel and turn OFF the control cabinet main circuit breaker to the left of the controller board. This removes all power from the control cabinet.
- d. Make sure you are using a properly-grounded wrist strap before proceeding. The memory PROM's you will be installing are static-sensitive and can be destroyed by even a very small electrostatic charge.
- e. Disconnect the battery from the monitor board (upper large board behind the control cabinet front panel).
- f. On the monitor board, locate the existing firmware PROMs (U17 and U18) and remove them carefully. Take care to avoid damage to the PROMs, the board, or nearby components.
- g. Check each of the new PROMs to be sure all pins are straight and properly oriented; then, carefully install each in its' numbered socket, with the locator notch oriented to the left.
- h. When you are satisfied the two new IC's are properly installed, turn ON the control cabinet circuit breaker and observe the front panel display. After a short delay the usual output power bargraph User Display should appear.
  1. If the monitor board does not appear to be starting up properly, press the small blue RESET button at the top left edge of the board to ensure all memory is cleared.
  2. If the monitor board still will not start properly, turn off the circuit breaker and recheck the newly installed IC's for a possible misaligned pin. Check to be certain all jumpers are set as shown in Figure 2-1.
- i. Locate J65 near the lower left corner of the Monitor Board (Figure 2-1). If the transmitter has not previously been operated with Sentry software, only one jumper will be in place. Install the remaining jumpers as shown.

**NOTE**

Refer to 2.7 - Control Activation Jumpers for a more detailed discussion of these jumpers.

- j. Connect the battery to the monitor board terminals.
- k. Using the SETUP screens, set the clock/calendar day and date.
- l. Enter any other special data or entries needed for your transmitter operation and check all screens for normal displays and data.
- m. If you are installing SENTRY CD firmware for the first time, you should find a new SENTRY CD setup screen by selecting [Setup], [Sentry]:

**SERIAL PORT & PASSWORD SETUP**

Port Baud Rate: 2400  
 Connection Type: DIRECT  
 System Password:  
 Control Password:

→     ↓     SAVE     EXIT

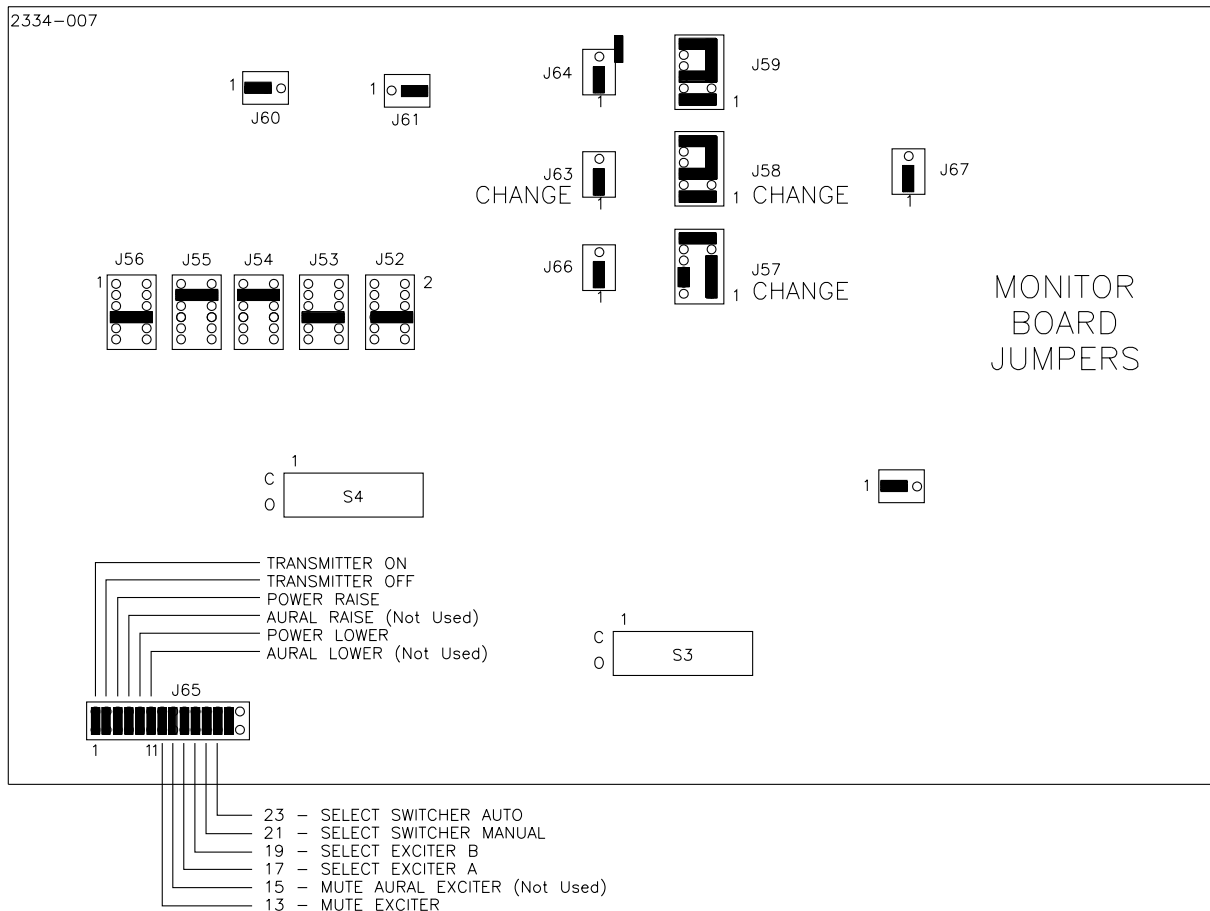
This screen will be used to set up the Platinum CD transmitter to communicate with the SENTRY CD PC terminal. As with other screens, the legends at the bottom of the display label the function keys.

**2.5 Transmitter SENTRY CD Setup**

When you are ready to establish communication from the SENTRY CD PC to the transmitter, use [Setup], [Sentry] to enter the SENTRY CD setup screen on the transmitter. You will need to make certain the Port Baud Rate and the Connection Type are as intended.

The function keys below the screen are used to change the entries on the screen.

- The → key moves the cursor through the available fields.
- The ↓ and keys allow you to select through the available choices. For example, pressing either of these keys repeatedly changes the Port Baud Rate through the available Baud rate choices: 1200, 2400, 4800, 9600.
- When all the intended changes have been entered, pressing [SAVE] causes the choices to be saved.
- Pressing [EXIT] exits the screen.



**Figure 2-1**  
**Monitor Board Jumpers After Sentry is Installed**

## 2.5.1 SENTRY CD Setup Options

### Port Baud Rate

Set this field to the Baud rate to be used to communicate with the PC. 9600 Baud is recommended. The choices are 1200, 2400, 4800 or 9600.

- If communicating through modems and a communication link, the setting must be no higher than the maximum rate for the modems and the link.
- If communicating locally with a direct null-modem cable, any choice will work.
- The SENTRY CD PC and the transmitter must be set to the same Baud rate.
- Slower baud rates will result in slower response times, but may improve reliability of transmission if the communications link is noisy or unreliable.

### Connection Type

The connection may either be DIRECT or DIALUP.

- DIRECT is used if the connection is to a local computer, or if the communication link through modems uses a dedicated line.
- DIALUP is used if modems are used and they communicate over the switched telephone network. DIALUP allows the modem at the transmitter to answer a call on the incoming line and establish the connection.

#### NOTE

For initial check-out and familiarization with the SENTRY CD system, it is advisable to select DIRECT and to use a computer near the transmitter.

---

## 2.6 SENTRY CD Passwords

Two optional passwords may be used to control access to the SENTRY CD system.

#### NOTE

*The passwords can be left blank (all spaces) until you need to assign them. A blank password turns off the password feature.*

### System Password

A password may be entered to restrict all access to the transmitter from the SENTRY CD Windows PC. Once the password has been entered here, anyone attempting to gain access will be asked for the password and must enter it correctly before access is allowed.

The password can be any combination of 8 printable ASCII characters. If all characters in a password are spaces, no password will be requested.

#### NOTE

*Passwords are case-sensitive. That is, an upper case "R" is NOT the same as a lower-case "r". When entering a password, make sure you note down your password exactly as you have entered it, or your password may be rejected.*

The system password might be used to prevent any unauthorized access to the SENTRY CD system.

### Control Password

A control password is similar to the System Password, but is requested only when a SENTRY CD Windows computer has accessed the transmitter and then attempts to send a control command.

The control password might be used to permit some personnel to access the system, while denying access to transmitter control commands.

#### NOTE

*Control can also be blocked by removing jumpers on the Monitor board -See 2.7 - Control Activation Jumpers.*

When you have verified the setups in this screen are appropriate for your use, Save and return to the transmitter main screen.

---

## 2.7 Control Activation Jumpers

SENTRY CD software allows the remote PC user to control the transmitter. Included in the shipment with the firmware and software are 12 small jumpers to be used to connect the control signals from the monitor board to the transmitter controller. If all SENTRY CD control commands are to be allowed, all of these jumpers must be installed. Removing any jumper disables one control signal.

### Jumper Installation

Open the control cabinet front panel and locate J65, a 28-pin DIP header near the lower left corner of the Monitor board (Figure 2-1). A transmitter which is not equipped with SENTRY CD Windows firmware will have only one jumper in place, in the 13th position from the left side. This jumper is used for an internal monitor function and should always be in place.

Install jumpers in the 12 positions to the left of the existing permanent jumper to enable all SENTRY CD Windows controls.

If one or more of the SENTRY CD controls is to be blocked, the jumpers controlling these commands should be omitted. Refer to Figure 2-1 to locate the jumpers you need to omit.

#### NOTE

*If the DIP header jumpers cannot be located they may be obtained from Harris under Part Number 612 1184 000.*

## 2.8 Serial Port Connections

The connection between the PC and the transmitter is a serial RS232 line between the transmitter monitor board and the serial port on the PC. In the Platinum CD transmitter series, the monitor board SENTRY CD connection is located in the rear of the control cabinet on the Termination Panel. The connector, J27, is labelled as "SENTRY RS232".

The connection may be either through modems, using standard RS232 cables, or with a direct cable between the PC and J27. If the direct connection is used, a Null Modem cable or a standard RS232 cable with a Null Modem adaptor must be used.

Connect an RS232 cable to J27 and route the connection to the PC serial port. Use a null modem cable or null modem adaptor if the PC is at the transmitter location.

### NOTE

*During initial checkout of the SENTRY CD installation, the direct cable connection is recommended to allow you to confirm proper operation while the equipment is all at one location.*

### 2.8.1 RS232 Cables

Off-the shelf RS232 cables from local stores will work in most cases, if the following rules are followed:

- A cable from transmitter J9 to a modem should be standard RS232.
- A cable from the SENTRY CD™ PC to a modem should be standard RS232. If the SENTRY CD PC has a 9-pin RS232 connection, a standard RS232 25 pin to 9 pin cable may be used, or a standard RS232 25 pin cable with a 25 pin to 9 pin adaptor may be used.
- A direct cable from transmitter J9 to a SENTRY CD PC must be a Null Modem cable. If the SENTRY CD PC has a 9-pin RS232 connection, a null modem RS232 25 pin to 9 pin cable may be used, or a null modem RS232 25 pin cable with a 25 pin to 9 pin adaptor may be used.

### 2.8.2 RS232 Connecting Cables

Most of the connections provided for by the RS232 standard are not used by SENTRY CD systems. Figure 2-2 shows the connections needed for:

- a 25 pin RS232 cable
- a 25 pin to 9 pin RS232 cable
- a 25 pin null modem cable
- a 25 pin to 9 pin null modem cable

### NOTE

SENTRY CD equipment does not use hardware handshaking. Your modems must be set with DTR and RTS forced to the ON condition.

#### 9-Pin RS232 Connections

The difference between the 25 pin RS232 connections and the 9 pin RS232 connections has caused some to be confused about the proper null modem connections.

An RS232 25 pin null modem cable is constructed with pin 2 of each 25 pin connector connected to pin 3 of the other 25 pin connector. This causes the transmit pin of each end to connect to the receive pin of the other end.

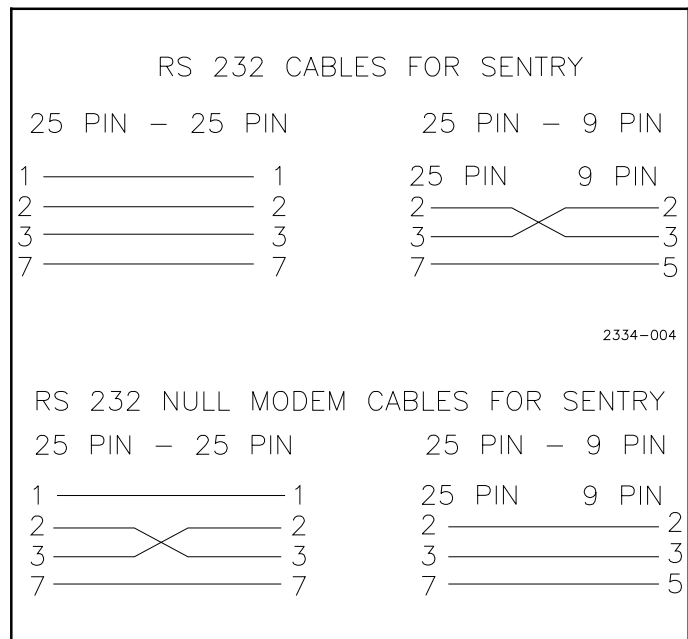


Figure 2-2  
RS 232 Cables

A standard RS232 25 pin to 9 pin cable connects pin 2 of the 25 pin connector to pin 3 of the 9 pin connector, and connects pin 3 of the 25 pin connector to pin 2 of the 9 pin connector. This is NOT a null modem connection!

The 25-pin RS232 standard uses pin 2 as the transmit line, and pin 3 as the receive line.

The 9-pin standard uses pin 2 as receive and pin 3 as transmit.

## 2.9 The PC Terminal Software

The PC software is supplied on a 3 1/2 inch floppy diskette. To install the program in your PC, simply run the **setup.exe** program on the diskette.

### 2.9.1 Starting SENTRY CD Terminal

#### NOTE

For initial check-out and familiarization, it is advisable to use DIRECT and to use a null modem connection to a computer near the transmitter.

### 2.9.2 Establishing the Connection

The Windows computer used as a terminal should display the Windows desktop whenever the computer is turned on. If the Sentry CD program has been correctly loaded, one icon on the screen will be the **DTV** Sentry Digital icon.

- a. Double-click on the **DTV** icon to start the program. The screen shown in Figure 2-3 should appear after a few seconds.
- b. Three activation buttons are displayed at the bottom of the screen:

1. **NEXT** will be used to proceed to the program.
  2. **DEMO** proceeds to the program, but does not require connection to a transmitter. This feature is useful if you want to learn to use the program, but do not wish to be connected to the transmitter while doing so.
  3. **EXIT** ends the SentryCD program and returns to the Windows desktop.
- c. Use the mouse button to click on **NEXT**.
  - d. The MAIN screen (Figure 2-4) should appear. This screen displays the transmitter output power, reflected power and the VSWR computed from these two readings. Below, a drawing of the transmitter shows the condition of fault lights for all modules, the power supplies and the exciter.
  - e. If the PC RS232 line is not connected to the transmitter or if the PC cannot for any reason identify the transmitter, a requestor window (Figure 2-5) should appear. Click on Setup and verify you are connected to the proper PC port and your Baud rate is the same as in the transmitter setup screen.
    1. If you are connected direct to the transmitter, make sure you are using a null modem cable.
    2. If you are connecting through modems, you may need to configure the modem connected to the transmitter. Refer to Section IV.
    3. If you are connecting through dial-up modems, enter the phone number at the transmitter location the Sentry CD™ PC must dial to make the connection.
  - f. Select Configure to complete the setup sequence. On the Communication Port Setup Screen, make certain the port selected is the one you will use. Change the port setting if necessary. Then, Click on Configure.
  - g. The Com Port Settings window should now appear. The standard settings should be correct, but if your system requires a different setting here make the appropriate changes.
  - h. When finished, click OK on each window to return to the Configure window with the password setting.
  - i. Make certain your RS232 link is in place and connected at both ends.
  - j. Click on Connect to connect to the transmitter.
  - k. The screen should begin to indicate current power levels and the indicator lights on the front of the transmitter cabinet figures on the screen will begin to display the current status of the equipment.

Refer to Section III for operating instructions.



Figure 2-3 Entry Screen

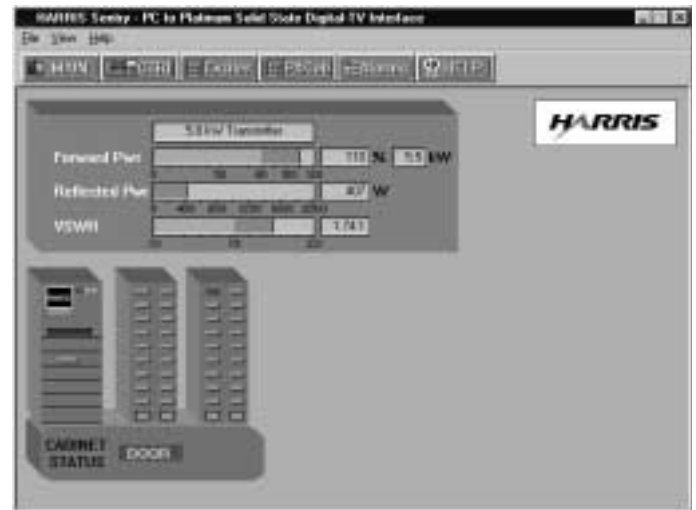


Figure 2-4 Main Screen

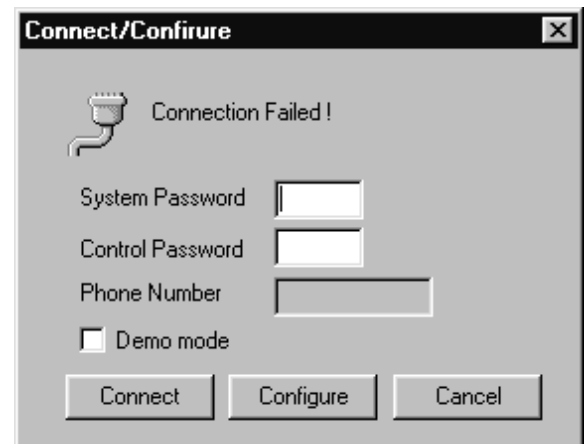


Figure 2-5 Connect/Configure





## 3.1 Introduction

This section describes operation and monitoring of the transmitter using the SENTRY CD Windows system. Once the program is started and connection is established with the transmitter, a series of screen displays allow all available transmitter conditions and readings to be observed.

The mouse (or a suitable mouse substitute) is used for display selection and for control of the transmitter.

## 3.2 Start-Up

When power is applied, the Windows PC should initialize and display the Windows desktop after a short delay. Once the desktop appears, locate the **DTV** icon for Sentry.

- a. Double-click on the **DTV** icon. The program should start and the Entry screen (Figure 3-1) should appear. The Entry screen contains three “buttons” on the lower edge of the screen:
  1. **NEXT** will be used to connect to the transmitter
  2. **DEMO** may be used to run the program without a transmitter attached.
  3. **EXIT** may be used to exit the program.
- b. Click on **NEXT**. The MAIN screen (Figure 3-2) should replace the Entry screen and the program should begin to connect to the transmitter.
- c. If connection is successful, the transmitter output power and other readings should appear and begin to update, and the status lights on the front of the transmitter figure should begin to show actual status.

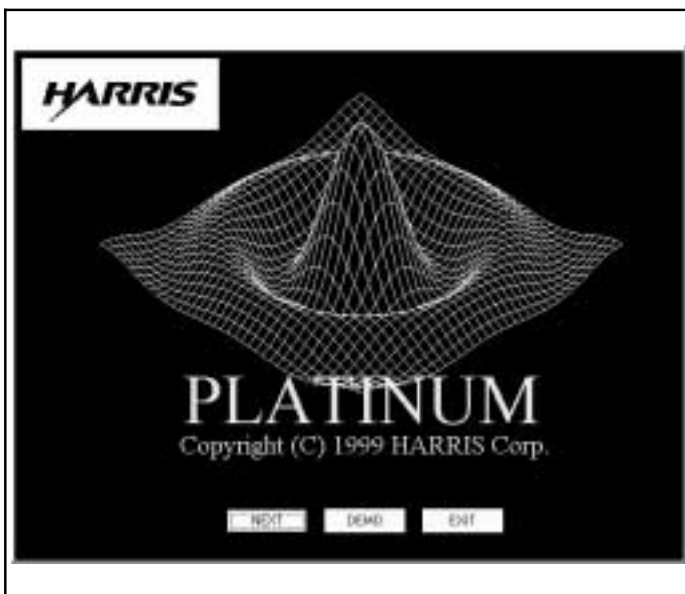


Figure 3-1 Entry Screen

- d. If the connection does not succeed, a requestor appears with the words “Connection Failed!” Either the circuit connection is not complete, or there may be a setup problem.
  1. Check to be certain the RS232 cable is properly connected to the PC and to the transmitter.
  2. Check the setup procedure in Section II to be certain your setup has been done correctly.
- e. When connecting to a transmitter which is password protected, a field will display asking the user to enter the password. The entered password is then verified against the password set on the Platinum™ SERIAL PORT PASSWORD SETUP screen.
  1. If the password matches, the system connect will occur.
  2. If the password does not match, the screen will display a descriptive message and request the password again.
  3. The operator has 3 chances to enter the correct password. After the third unsuccessful entry, the SENTRY CD™ program will terminate.

Once connection to the transmitter has been completed, the six “buttons” at the top of the MAIN screen allow you to select several other screens. The same buttons appear on each screen.

- **MAIN** - returns to this MAIN screen
- **CTRL** - Is the primary Sentry control screen. Using buttons on this screen you can turn the transmitter on and off, raise or lower power output and control the exciter switch.
- **Exciter** - displays the power, status and other conditions in the exciter cabinet.
- **PA Cab** - Displays the module status and the monitored data from a PA cabinet. Buttons at the bottom of this screen allow selection of each PA cabinet, one at a time.
- **Alarms** - is a screen which displays the current alarm list stored in the transmitter. You may scroll through the list, select one alarm at a time for more detailed display, or you may delete one or all of the alarms.
- **HELP** - is a Help menu selection which displays useful information about the Sentry monitoring system.

Each of the Sentry CD® Windows operating screens provides information about a portion of the transmitter. Familiarity with all the screens will help the operator to better understand the transmitter and to know if it is working correctly.

### 3.3 Main Screen

Click the **MAIN** button on the toolbar (if another screen is displayed) to choose this screen.

A block near the top of the Main Screen contains power output meter readings and a box showing the rated output power of the transmitter. The meter readings are:

- **Forward Power**
- **Reflected Power**
- **VSWR**

Below the power output readings is a simple block-style drawing of the transmitter showing the control cabinet and each PA cabinet.

On the control cabinet are indicators showing the operating status of the whole transmitter:

- GREEN button - Indicates that transmitter in ON mode.
- RED button - Indicates that transmitter in OFF mode.
- YELLOW button - Indicates that transmitter in LOCAL mode.

The display will show one or more PA Cabinets. The number of PA Cabinets depends on transmitter size.

2.5 kW transmitters contain 1 PA Cabinet.

5 kW transmitters contain 2 PA Cabinets.

7.5 kW transmitters contain 3 PA Cabinets.

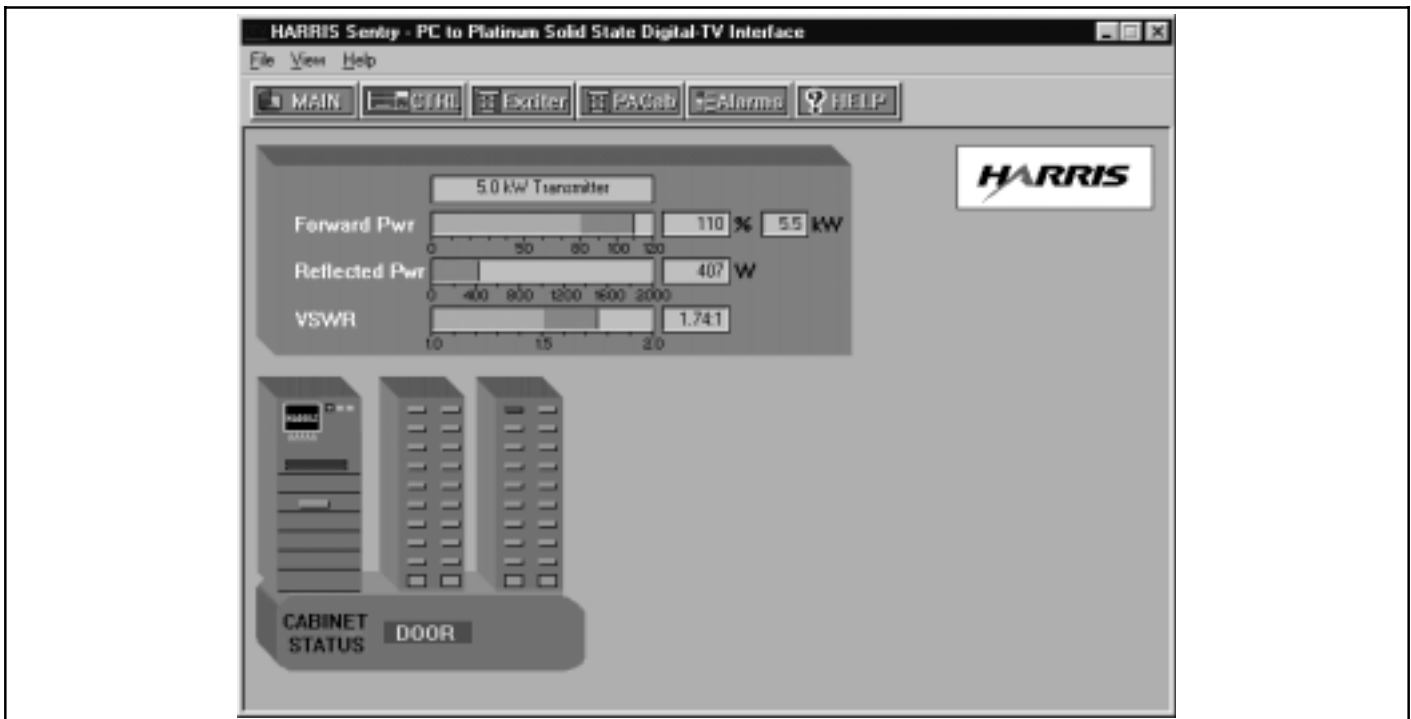
10 kW transmitters contain 4 PA Cabinets.

Each PA Cabinet has indicators for each of the modules and power supplies, and for the PA cabinet controller. The indicators are green for normal condition and red when there is a fault. The indicators are:

- Status of the PA cabinet controller (Left top box).
- Status of modules. There are 17 modules. First module – second box from the bottom on the right side, second module – second box from the bottom on the left side, etc.
- Status of power supplies. Two bottom boxes. First power supply – on the right side, second power supply – on the left side.

Clicking with the left mouse button on the control cabinet brings up the **Exciter** screen.

Clicking on any PA cabinet on the Main Screen brings up the **PACab** screen showing that PA cabinet.



*Figure 3-2  
Transmitter Display Screen*

### 3.4 Control Screen

Click the **CTRL** button on the toolbar to choose this screen. The Control screen is a different drawing of the transmitter which shows more detail of the control cabinet.

At the bottom of this screen are the TRANSMITTER control buttons. The buttons have indicators above them which light to show current status:

**On** (Green indicator) - Turn on the transmitter.

**Off** (Red indicator)- Turn off the transmitter.

**Local** (Yellow indicator) - This button is an indicator only. When the indicator is illuminated, remote control is blocked. When the indicator is dark, remote control is enabled.

**NOTE**

*Local may only be selected at the transmitter front panel.*

**Raise** button is clicked to increase total power.

**Lower** button is clicked to decrease total power.

**NOTE**

*When power is adjusted or any other command is sent, there will be a short delay before the result is seen on the screen.*

On the upper part of the control cabinet area of this screen, the transmitter control panel is shown.

Drive (exciter) switch controls and indicators are shown in this part of the screen.

- **Auto** Set Automatic drive control.
- **Manual** Set manual drive control.
- **Exciter A** Choose exciter A.

- **Exciter B** Choose exciter B.

The currently selected exciter and Auto/Manual mode is shown as yellow text on a blue background.

Each

Each PA cabinet on the Control screen displays its output power in KW and as a slide rule scale, and also its output reflected power.

TOTAL transmitter output power information is displayed on the right side of the screen.

- **Fwd** Power Indicates in top of cabinet in kW and graphically in percents.
- **Refld** Power Indicates in bottom of cabinet in W.

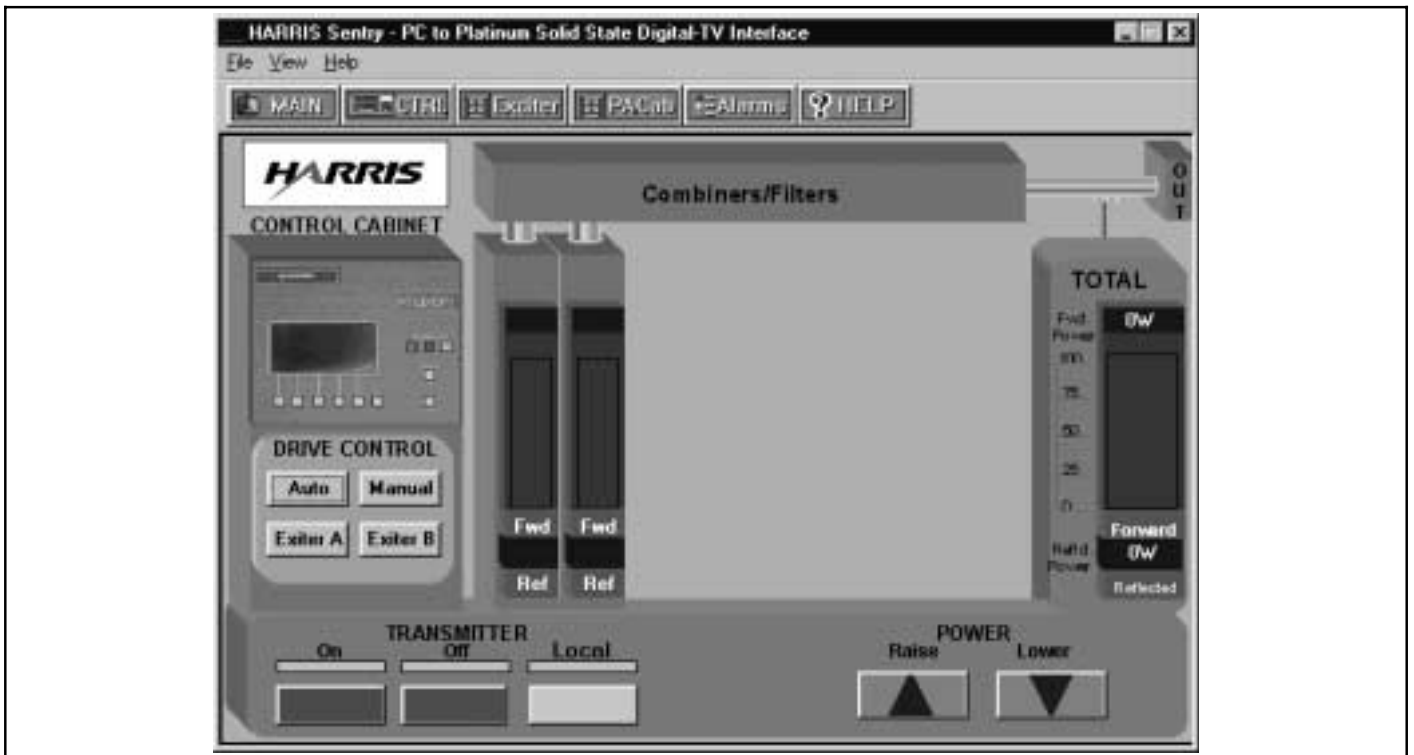


Figure 3-3 CTRL Screen

### 3.5 Exciter Screen

Click the **Exciter** button on the toolbar to choose this screen, which displays the metered values and the status originating in the exciter/control cabinet.

The **DIGITAL POWER** information is a display of the transmitter's output power and DC input power:

- **Forward Power** - Indicates in percent of nominal output power and also the output power in kW.
- **Reflected Power** - Indicates reflected power at the transmitter output in Watts.
- **VSWR** - is the Voltage Standing Wave Ratio calculated from Forward and Reflected Power.
- **DC Input Power** - is the computed total input power to all the PA modules, calculated from the PA power supply voltages and currents.
- **Reject Loads** - In transmitters with more than one PA cabinet, the power(s) flowing to the output combiner reject load(s).

The **POWER SUPPLY** information refers to the low-voltage power supplies in the control cabinet:

- **+5, +12, -12, (UNREG), MAIN BATT and MON BATT** voltage

The **LINE VOLTAGE** group are the AC supply voltage to the transmitter as follows:

- **Phase A-B, Phase B-C, Phase A-C** voltages
- **Phase Loss** indicator - RED indicates a phase error is detected, interlocking the transmitter OFF.

The **EXCITER STATUS** group indicate the operating status of the exciters and the exciter switch.

- **Exc Muted**
- **Exc UnLocked**
- **Exc A Selected**
- **Exc B Selected**
- **Exc Sw Man**
  - BLACK – if auto switch mode is selected.
  - GREEN – if manual mode is selected.
- **Exc A Fault**
- **Exc B Fault**

**SYSTEM STATUS** displays critical transmitter interlock and control conditions:

- **Ext. Interlock**
- **Failsafe**
- **Ref. Overload**
- **FB Active**
- **FB Enable**
- **AGC Enable**
- **Power Fault**
- **Watch Dog**
- **AD status**

Click the **Picture** button to see a front and rear view of the control cabinet.



Figure 3-4 Exciter Screen

### 3.6 PA Cabinet Screen

Click the **PA Cab** button on the toolbar to choose this screen. One PA is displayed. Right and left arrow Cabinet Selector buttons at the lower left corner of this screen allow selection of each PA. The window at the bottom center identifies the PA currently displayed.

The PA Cabinet screen contains a small drawing of a PA cabinet showing a fault indicator for each PA module and each power supply. Each indicator lights red to reveal a fault condition in its module or power supply.

To the right is a PA Cabinet block with slave controller status, digital output power levels and power supply voltages and currents.

SLAVE DATA reveals the current RF and DC metered readings for the PA and current status of slave controller faults.

- Air Fault - The PA cooling blower is not delivering sufficient air pressure.
- Door Fault - The cabinet rear door is open.
- Cab Interlock - The cabinet external interlock circuit is open (not used in all PA cabinets).
- TXD
- Module Faults -A number (hex) identifying all faulted modules.
- ID -The PA cabinet's slave controller bus ID number.
- RF Power 1-6 - the uncalibrated A/D input from each slave controller RF detector.

- Power Supply - the uncalibrated A/D power supply voltage and current inputs. (See POWER SUPPLY, to the right, for the calibrated readings.)

DIGITAL POWER shows the PA cabinet's input and output power readings:

- Forward Power
- Reflected Power
- Drive Power

POWER SUPPLY provides the PA 15KW power supply output voltages and currents.

The PICTURE button, when clicked, displays pictures of the PA cabinet and an amplifier module.

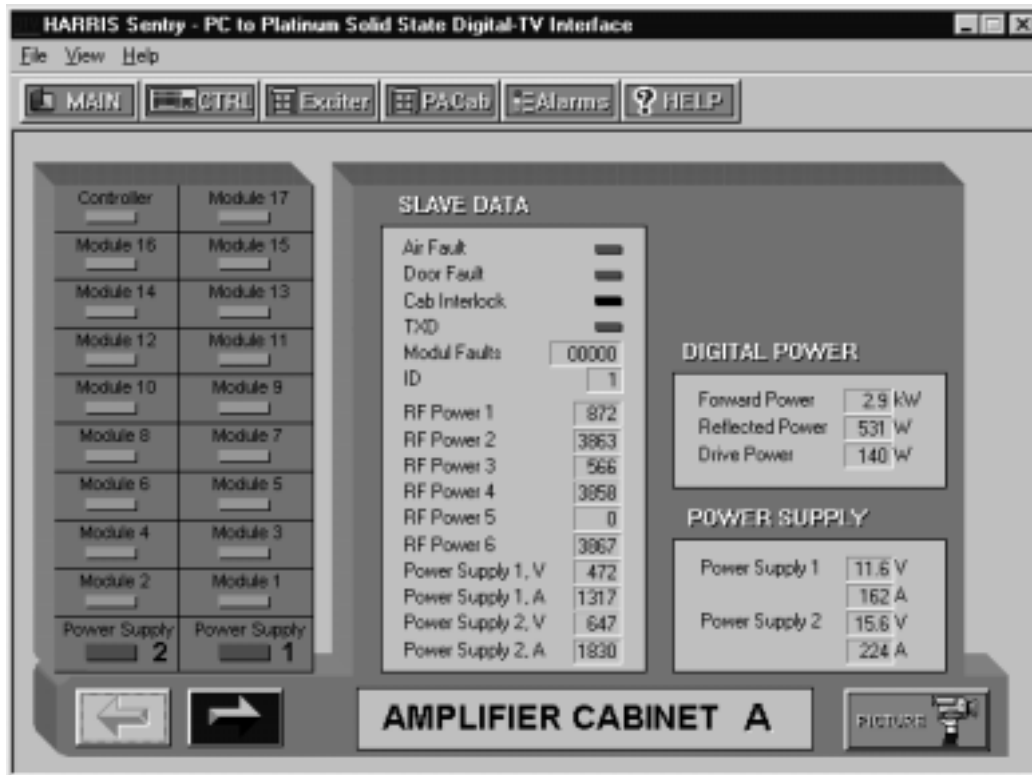


Figure 3-5 PA Cabinet Screen

### 3.7 System Alarm Screen

Click the **Alarms** button on the toolbar to choose this screen. The System Alarm screen contains:

**SYSTEM ALARMS** - a sequential list of transmitter alarms, with the following information:

- **#** - Each alarm has a unique ID number. If an alarm has been deleted from the list, its' ID number will be missing in the list.
- **Alarm** -Description of the alarm.
- **Date** - Date when alarm occurred
- **Time** - Time when alarm occurred

**NOTE**

*If an alarm is active (the alarm condition still exists) it has a small red circle in the ID column.*

**ALARM DESCRIPTION** is a more complete description of the currently selected alarm. Select an alarm from the list by clicking on it. Alarm Description then displays:

- **ID**
- **Alarm**
- **Start Date, Time** - the date and time when the alarm occurred.
- **End Date, Time** -the date and time when the alarm condition ceased.

- **Status** - the status of each alarm may either be:
  - ACTIVE** - the condition causing the alarm still exists.
  - INACTIVE** - the condition causing the alarm has ceased.

**NOTE**

*While viewing the System Alarms screen, **INACTIVE** alarms may be deleted.*

- Clicking the **DELETE** button deletes the currently selected alarm (if it is inactive).
- Clicking the **DELETE ALL** button deletes ALL inactive alarms in the list.

The SENTRY CD™ system stores transmitter alarms in the PC memory hard drive and updates its' list:

- Whenever a new alarm occurs, if the SENTRY CD™ PC is in communication with the transmitter.
- Whenever the SENTRY CD™ terminal establishes communication with the transmitter.

**DELETE** or **DELETE ALL** remove alarms from the Sentry CD display but do not erase the alarms from the memory in the transmitter. Alarms stored in the transmitter memory can only be removed at the transmitter.

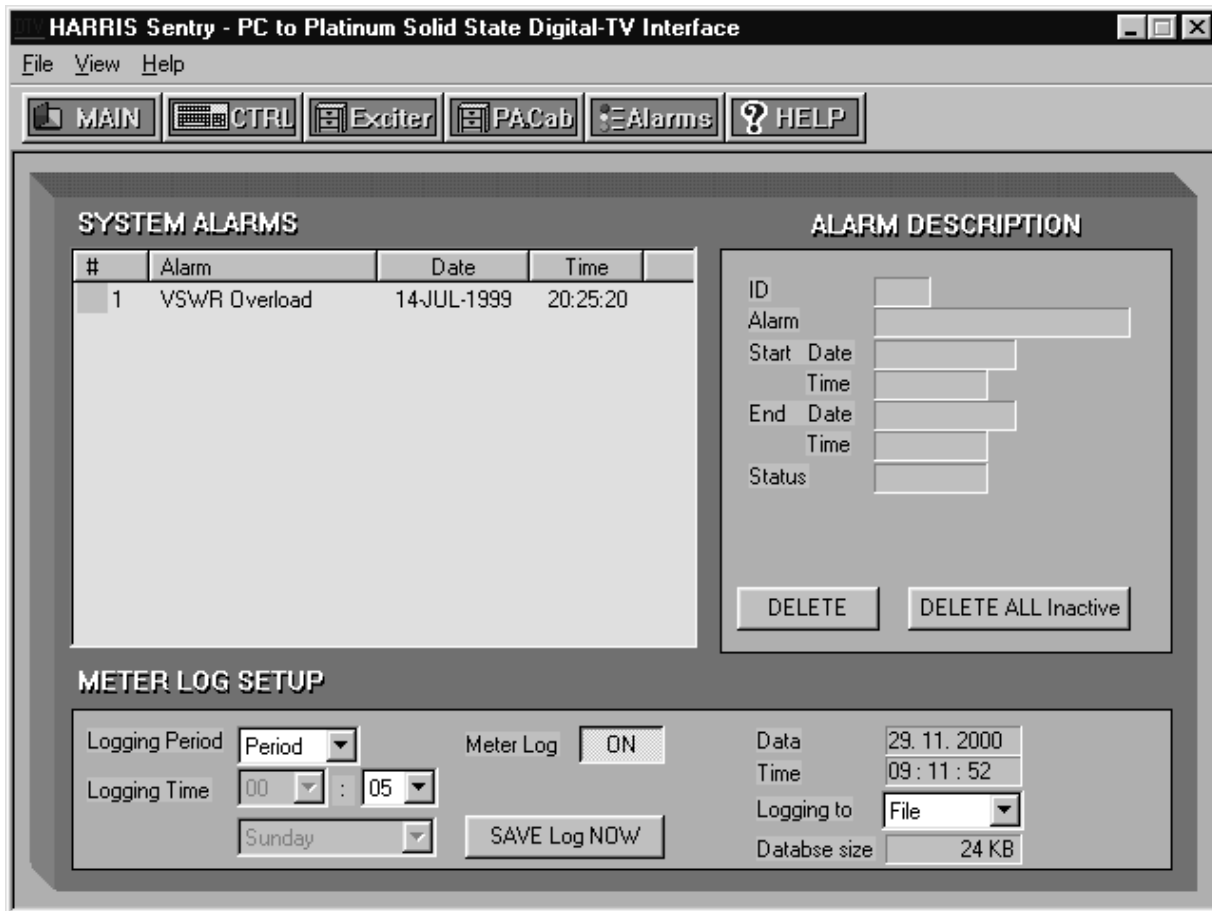


Figure 3-6 Alarms Screen

### 3.7.1 Logging

The SENTRY CD program can be used to save logs of transmitter data for future reference. The logged data is saved in a file or files in the same directory on the hard drive which contains the Sentry program and files.

The **METER LOG SETUP** section of the System Alarm screen allows the operator to control logging and direct it to an appropriate file location. Logs can be in the form of a simple text file, or they can be stored as a Microsoft Access database file. (Microsoft Access must be installed in the PC in order to use Access files.)

The current date and time for logging purposes are displayed in the lower right corner of the screen. Also included there is a **Logging To** selection, which may be set to:

**File** - the logs are saved in simple text files.

- The alarms are stored in a file named **dB1.alm**.
- Logged data is saved in a file named **dB1.log**.

**Database** - the files are saved in Microsoft Access format. The filename for the Access file is **dB1.mdb**. Both the alarms and the logged data are stored in this file.

Meter readings can be included in the log (**Meter Log ON**) or excluded (**Meter Log OFF**).

Logging can be commanded by the operator (**SAVE Log NOW**).

Logging can also be scheduled to occur automatically, daily or weekly at a specified time.

- **Logging Period** is used to specify **Daily** or **Weekly** logging. If the choice is weekly, the day of the week is selected using the window below.
- **Logging Time** is used to specify the time (in hours and minutes, using a 24 hour clock) when the log is to be saved.

#### NOTE

*Each type of log file is a single file which accumulates logged entries over time. Over time, the files can become large enough to be cumbersome to load and run. To avoid this problem, the files should be purged from time to time. The **Database size** window indicates the size of the **Logging to** file and can be used as a guide to when or how often you should clear the file..*





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### 4.1 Introduction

Modern modems are complex devices which must be configured, or “set up”, for the intended use. Selecting the proper combination of parameter settings for a modem for a particular use can be a daunting task.

Early modems were configured by setting switches or jumpers inside the modem. Today, most modems are set up by inputting commands to the modem, although some models still do have certain jumpers inside which must be set during setup.

This section describes a simple modem setup program which is provided users with certain HARRIS products.

---

### 4.2 Description

The modem setup utility consists of two files:

- modemset.exe is the actual setup program. When run, it sends the required setup data to the modem.
- modem.cfg is the configuration data for the modem. Data from this file, along with the entries by the user, determine the commands sent to the modem to set it up. Modem.cfg can be edited by a user to customize the modem setup. Modem.cfg contains notes, where appropriate, giving the proper setting of any modem jumpers.

---

### 4.3 Using the Setup Utility

Each modem in a system must be connected to the PC serial port using an RS232 cable. The setup procedure will save the setup information in the modem. Following setup the modem may be removed and taken to another location. The installed setup will be retained.

To use modemset.exe to set up a modem:

- a. Both modem.cfg and modemset.exe should be in the same subdirectory of the computer hard drive or of a floppy disk.

- b. Connect the modem to the computer serial port and identify the serial port number.
- c. Run modemset.exe.
  1. The program should start and ask you to choose the serial port connected to the modem.
  2. When you have entered the serial port number, you are asked for the baud rate to be used.
  3. When you have entered the baud rate, you are given a list of modems, and asked to choose the modem you are setting up. The choices in the list may include the intended use — for instance, leased line or dial-up.
  4. After choosing, you are asked to “Press SPACE to configure Modem.” If you do so, the program will send the appropriate series of commands to the modem to set it up and store the setup in the modem.
- d. If other modems are to be set up, connect each to the serial port and repeat the process.

---

### 4.4 Customized Modem Setup

The modems whose setup information is included in modem.cfg are the modems normally supplied with HARRIS systems. HARRIS does not provide configuration entries for all available modems. If your modems are not on the list but you wish to use this setup utility, you have two options:

- Use the “Hayes Compatible” choice from the list of possible modems. This will set up Hayes compatible modems and in most cases will cause them to work satisfactorily.
- Modify modem.cfg to the parameters needed by your modem. This will require careful study of your modem technical manual to identify the setup commands required.

**NOTE**

*This product does not use hardware handshaking. Your modems must be set with DTR and RTS forced to the ON condition.*



# SECTION V PARTS LIST

## Introduction

This section contains a list of replaceable parts for SENTRY CD systems.

**Table 5-1. SOFTWARE PACKAGE, DTV, SENTRY - 994 9267 012**

<i>HARRIS P/N</i>	<i>DESCRIPTION</i>	<i>QTY/UM</i>	<i>REF. SYMBOLS/EXPLANATIONS (a)</i>
612 1184 000	SHUNT JUMPER 0.1" CENTERS	12.0 EA	
917 2235 020	SOFTWARE, CONTROL SENTRY	0.0 EA	ORDER QTY 1 FOR FIELD UPGRADES.
917 2237 020	SOFTWARE, SENTRY PC DIGITAL	1.0 EA	
988 2439 001	DP, SENTRY CD	1.0 EA	

**Table 5-2. SOFTWARE, CONTROL SENTRY - 917 2235 020**

<i>HARRIS P/N</i>	<i>DESCRIPTION</i>	<i>QTY/UM</i>	<i>REF. SYMBOLS/EXPLANATIONS (a)</i>
382 1273 000	IC 27C010-200 ESD	2.0 EA	
817 2235 020	PROG INSTR, CONTROL SENTRY	0.0 EA	

**Table 5-3. SOFTWARE, SENTRY PC DIGITAL - 917 2237 020**

<i>HARRIS P/N</i>	<i>DESCRIPTION</i>	<i>QTY/UM</i>	<i>REF. SYMBOLS/EXPLANATIONS (a)</i>
749 0223 000	DISKETTE, 3.5" 1.44MB PC	2.0 EA	
817 2237 020	PROG INSTR, PC BASED CTRL	0.0 EA	

