

Chapter 3

SOSS Computer & Peripherals

This chapter describes the basic installation and operation of the SOSS computer. It does not cover software operation.

Please read this entire chapter before starting. Improper use or application of this equipment could have serious consequences. All the information that you need for a basic installation is in this chapter, so please read it before you call PRSS Technical Support for help.

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Overview

The SOSS computer is an IBM-compatible PC equipped with the software and peripheral hardware required to run the SOSS at your station. As the control center of the entire SOSS, it performs the processing of, and the user interface for, all SOSS functions.

Functions of the SOSS Computer

The SOSS computer enables automation and remote control by performing the following functions:

- ❑ Continuously receives (and stores) the three kinds of information received over the Downlink Services Channel (DSC): schedule updates, DACS messages, and time synchronization.
- ❑ Controls demodulators and station equipment, either automatically or upon request. Also receives status information from devices.
- ❑ Automatically synchronizes station clocks.

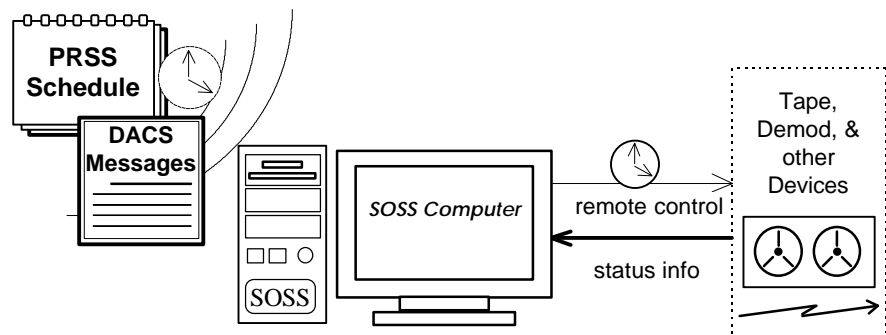


Figure 3-1. Functional Overview of the SOSS Computer

How the SOSS Computer Works

The ARTIC card inside the SOSS computer acts as a computer in its own right; it has its own processor, memory, stored firmware, and eight serial ports. It communicates with devices on the Serial Control Bus (SCB), receives 64 kb/s data from the Downlink Services Channel (DSC) demodulator, and communicates with the ESN Key. Much of the processing and I/O duties of the SOSS are handed off to the ARTIC card so that these important real-time functions have their own dedicated resources.

OS/2 was chosen because of its multitasking features. These features are essential for real-time capture of audio transmissions concurrent with DACS activity, as well as interacting with the ARTIC card.

The ARTIC card inside the SOSS computer supports real-time communications to multiple serial devices using the RS-485 protocol. It has a coprocessor that handles all serial traffic, so that serial I/O does not have to share CPU resources with other internal activities.

When you start the SOSS software, *tasks* are loaded onto the ARTIC card. In the SOSS software, a task is a program running in the background that executes instructions on the ARTIC card without the need of operator intervention. These tasks support the four types of connections made to the ARTIC card.

- ❑ Polling of the Electronic Serial Number (ESN) key (SSNKEY.exe).
- ❑ Reception of the DSC data (DSC_RECV.exe).
- ❑ Command and status I/O over the Serial Control Bus (SCB)A task (CONBUS.exe) is loaded for each defined SCB.
- ❑ Command and status I/O to an optional audio switcher (ARS_D.exe).

For complete information about the ARTIC card, read the IBM publication *Realtime Interface Co-Processor Multiport Adapter, Model 2, Guide to Operations*, supplied with the SOSS computer. See Chapter 8 for information about the Load ARTIC Tasks application.

The ARTIC card interfaces with devices via an eight-port breakout box. Figure 3-2 shows how the ARTIC card inside the SOSS computer connects to devices via the breakout box.

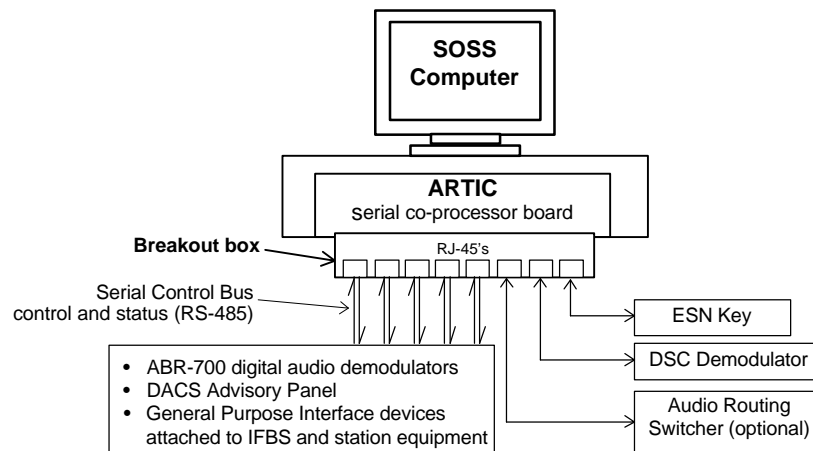


Figure 3-2. Schematic of Serial I/O in the SOSS

Planning and Preparation

This section contains information you need to know about planning the installation at your site. In general, you should minimize any changes to the original configuration of the PC.

Network Connections

You can connect the SOSS computer to a Local Area Network (LAN), but *never* make it the file server for a LAN. For details about running the SOSS computer on a LAN, see Appendix B.

Choosing and Preparing a Site

When deciding where to install the SOSS computer, consider the following issues. See Chapter 2, under the heading "Planning Considerations" for detailed installation considerations.

- ❑ The personnel who use the various functions of the SOSS software might need access to the PC at particular times of the day.
- ❑ The location should enable proper connection to the SOSS equipment, broadcast devices, and any other systems (such as a LAN).
- ❑ Make sure that the location provides a clean and reliable power source, cool temperature, and a clean, dust-free area. Be aware that the PC emits noise from cooling fans and hard disk drives. Also, the site should have adequate space for people to do their work.

Installing a Printer

To install a printer for your SOSS computer, you must create a *printer object* in OS/2. The printer object defines the type of printer and its connection to the computer. Your system can use commonly available printers that connect to the parallel port. For detail instructions about creating printer objects, consult the *OS/2 User's Guide* shipped with the operating system.

Equipment, Supplies, & Tools

Equipment

- ❑ IBM-compatible PC, including:
Pre-loaded OS/2 and SOSS software, internal modem, keyboard, mouse, and manuals
- ❑ ARTIC card (serial coprocessor) installed inside PC, with user manual
- ❑ ARTIC breakout box, either Type 'A' or Type 'B'
- ❑ ESN key (stores unique station address)
- ❑ Surge suppresser and Uninterruptible Power Supply (UPS), supplied by station

Materials & Supplies

- 6" flat telephone cable with RJ-45 plugs (for ESN key)
- If using Type 'B' breakout box, one (of the three) DB25-to-RJ45 adapters

Tools Required for This Installation

- Phillips screwdriver
- Flat blade screwdriver, small

Hardware Installation

This section describes how to install the SOSS computer and connect the PRSS-supplied peripherals. The following table lists the steps for installation:

Table 3-1. Top-level Procedure for Installing the SOSS Computer

Step	Action	See Page
1	Install the PC.	3-5
2	Connect standard peripherals.	3-5
3	Connect to a power supply.	3-5
4	Connect the ARTIC breakout box.	3-6
5	Connect the ESN key.	3-8
6	Optional. Connect to external device or network that stores or displays DACS messages.	3-9

Installing the PC

You install the SOSS computer just as you would any IBM-compatible PC. Unpack the computer and place it in the desired location. Then, connect the keyboard and mouse to the appropriate circular connectors on the rear of the PC. If you can't identify the proper ports, consult the supplied documentation for each device.

Supplying Power

We strongly recommend that you employ a Uninterruptible Power Supply (UPS) for most station equipment, especially the SOSS computer. In addition, we recommend that you use a surge protecting power strip to make power connections more reliable and easier to manage.

ARTIC Breakout Box

SOSS control and data communications require an interface device that connects the ARTIC card to supported equipment. This device is a connector block called the ARTIC breakout box. The breakout box connects to the 100-pin connector of the ARTIC card. It has eight ports, labeled 0 to 7.

There are two types of ARTIC breakout boxes: Type 'A' (Figure 3-3) and Type 'B' (Figure 3-4). Both types are functionally identical. Here are describes the significant differences:

- ❑ Type 'A' has RJ-45 jacks, which can accept RJ-11 or RJ-45 plugs; Type 'B' has DB-25 male ports.
- ❑ Type 'B' is shipped with three DB-25 to RJ-45 modular adapters that provide convenient connection to the ESN key, DSC data input, and one SCB. (If you want to construct additional adapters, see Appendix C, "Technical Reference".)
- ❑ Type 'A' connects directly to the ARTIC card. Type 'B' connects via an integral 4-foot cable, and requires space on the desktop.

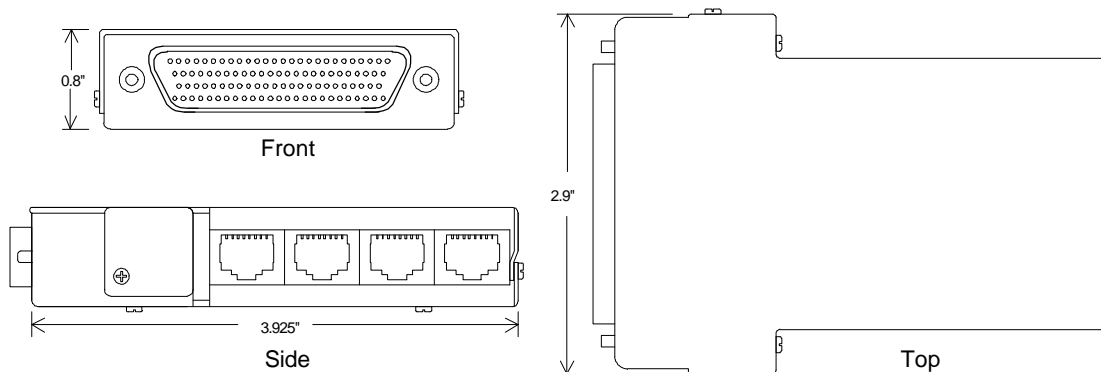


Figure 3-3. ARTIC Breakout Box, Type 'A'

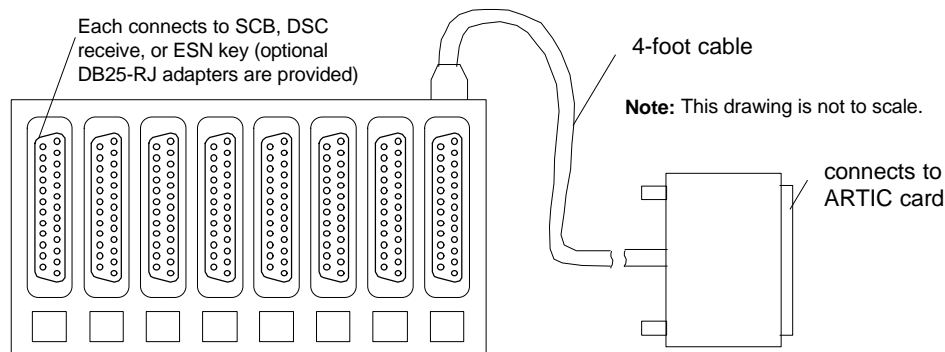


Figure 3-4. ARTIC Breakout Box, Type 'B'

Follow these rules for connecting cables to the breakout box:

- ❑ As shipped, the SOSS is configured for the DSC demod (ComStream ABR700 demodulator designated for receiving the DSC) to connect to port 01. No other device can be connected to the port to which the DSC demod is connected.

IMPORTANT: If you want to use a different port for the DSC demod, you must make other, corresponding changes:

- The port you choose must match the one specified as the DSC Receive ARTIC Port, under General Setup Parameters, of the Setup program (Chapter 9). Use Worksheet 1 (Chapter 2) when configuring Setup and making the SCB connections.
- If you have Type 'A' of the breakout box, you must change internal jumper settings of that device. See Appendix C for details.

- ❑ Reserve a port exclusively for the ESN key. Port 0 is the default.
- ❑ A port is reserved for an optional audio routing switcher, whether you actually use one or not. Port 2 is the default. The switcher must be the only addressable device connected to that port.
- ❑ You can use any open port to connect the cables of the SCB, which enables control and monitoring of station equipment. Your SCB can consist of up to five individual buses that connect to multiport bridging adapters or directly to devices. Refer to Chapter 4 for details about the SCB.

To install the ARTIC breakout box:

1. *Unplug the power cable from the SOSS computer.*
2. Locate the 100-pin ARTIC card connector on the rear of the PC, and connect the breakout box to the ARTIC connector.

3. Fasten the two screws of the breakout box connector into the screw holes on either side of the ARTIC card connector. Tighten firmly; do not overtighten.

Be careful when you reposition the SOSS computer after plugging in the breakout box. For a Type 'A' breakout box, provide a comfortable clearance so that the breakout box (which protrudes 4 inches from the computer) does not touch the wall. For a Type 'B' breakout box, leave 6 to 8 inches between the back of the computer and the wall, to provide room for the connector and thick cable. Do not dangle the breakout box by its connector; this will damage the ARTIC card.

ESN Key Cable

In order for the SOSS computer to receive DSC data addressed to your station – DACS messages and the PRSS schedule – it must know your station's unique PRSS address. Your PRSS address is stored as an Electronic Serial Number (ESN) in a device called the ESN key.

The ESN key is a modular telephone wall jack with special circuitry inside. It connects to the ARTIC breakout box on the rear of the SOSS computer. The ESN key must be attached to the breakout box for the SOSS software to operate.

To install the ESN key:

1. On the rear of the SOSS computer, locate the breakout box attached to the ARTIC card.
2. Plug the supplied 6-inch cable into the RJ-45 port of the ESN key.
3. If you have a Type 'B' breakout box, connect the other end of the 6-inch cable to the supplied RJ45-to-DB25 adapter. (It is recommended that you use this adapter; otherwise, you will need to construct a custom DB-25 cable. See Appendix C.)
4. Connect to a port of the ARTIC breakout box. Port 0 is the default.
 - For a Type 'A' box, plug the other end of the cable into a port of the breakout box.
 - For a Type 'B' box, plug the other end of the DB25-to-RJ45 adapter onto a port of the breakout box.

IMPORTANT: For the SOSS to work at all, this port must match the ARTIC port assigned to the ESN key in the Setup program (Chapter 9). Refer to Worksheet 1 in Chapter 2 when you configure Setup and install the ESN key.

Passing DACS Messages to Another Device

As DACS messages are received, the SOSS computer stores them in the designated directory. In addition, you can configure the SOSS to direct a copy of each message to a serial port that connects to a printer, another computer, or some other device (see Figure 3-5). If you are integrating the SOSS computer within a LAN, the file distribution capability of the LAN is a better solution. See Appendix B for a discussion of incorporating the SOSS computer within a LAN.

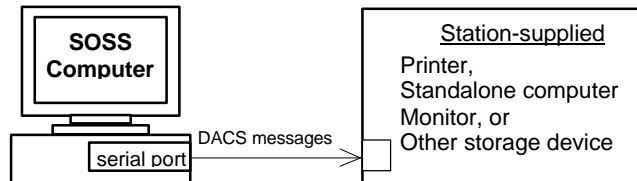


Figure 3-5. Sending DACS Messages to Other Devices

To send messages out a serial port, you need to complete these tasks:

- ❑ Using the Setup program, Communications settings (Edit menu), configure the SOSS to Copy Messages to Port. See Chapter 9 for details.
- ❑ Select a COM port on the back of the SOSS computer to use for sending DACS messages to other devices. The SOSS software supports using either COM1 or COM2 serial ports. Figure 3-6 below shows a schematic of the ports on the back of an original-issue DataExpert SOSS computer. On a DataExpert, you *must* use COM1, which has a DB-9 male connector. On other computers, the COM1 or COM2 ports can be assigned to either DB-9 or DB-25 connectors.
- ❑ Construct a cable that runs from the COM port that you have selected on your SOSS computer to a COM port on the destination computer. See Appendix C, "Technical Reference", for details.
- ❑ As described in Chapter 13, set up the DACS Capture software with the proper serial port parameters. In the Serial Port Setup group in the DACS Capture window, make sure that the settings match the parameters in the destination computer's software.

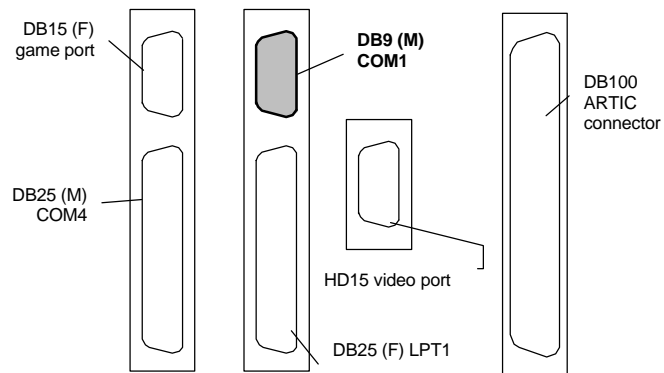


Figure 3-6. DB-style Ports of a Typical SOSS Computer

SOSS Software

On the OS/2 desktop is an SOSS icon for the folder that contains icons for all the SOSS applications.

Making Backups

After you install and configure your SOSS computer, make a full system backup. At minimum, make backup copies of C:\CONFIG.SYS, C:\STARTUP.COM, C:\OS2\DLL\QCFSUP.DLL, and *all* the contents of the C:\QCF and C:\SOSS directories.

Each time you make changes to the program schedules and to the system configuration in the Setup application, the changes are stored in one (or more) of the files (*.DAT) in the C:\SOSS directory. It is a good habit to make backup copies of all the .DAT files in the C:\SOSS directory. Keep your backups in a safe place; you will probably need them someday.

File List

Table 3-2 and Table 3-3 list the SOSS files that reside on your system. Some files are created as you work. File names that do not have a definite name, such as a report, are noted in italics. For example, <report>.RPT

Table 3-2. SOSS System Files

File name	Description
Program Files	
INSTALLD.COM	Installation program
DACSCAP.EXE	DACS Capture program
DACSEND.EXE	DACS Send program
DACSVIEW.EXE	DACS View program
DCP_D.EXE	Direct Control Program

LOADTASK.EXE	Load ARTIC Tasks program
OAD_D.EXE	Operator Action Display program
RTP_D.EXE	Audio Recording Automation program
SCHED_D.EXE	Schedule Editor program
SETUP_D.EXE	Setup program
ARTIC Task Files	
ARS_D.EXE	Audio routing switcher (ARS) driver
CONBUS.EXE	Serial Control Bus (SCB) driver
DSC_RECV.EXE	Downlink Services Channel (DSC) driver. Receives incoming DSC packets and filters out those not addressed to the station.
SSNKEY.EXE	Electronic Serial Number (ESN) driver. Checks for the presence of the ESN key and disables ARA software if the proper ESN key is not found.

Table 3-2. SOSS System Files (continued)

File name	Description
Icon Files	
BOARD.ICO	Icon for Load ARTIC Tasks
SATLITE.ICO	Icon for the SOSS program group box
Online Help Files	
DACSEND.HLP	Help file for DACS Send
DACSVIEW.HLP	Help file for DACS View
DCP_D.HLP	Help file for the Direct Control Program
OAD_D.HLP	Help file for the Operator Action Display
SCHED_D.HLP	Help file for the Schedule Editor
SETUP_D.HLP	Help file for the Setup program

Table 3-3. SOSS Data Files

File name	Description
Database Files	
COMMENT.CMT	Contains comments that are attached to transmissions in the Schedule Editor and OAD.
TEMPLATE.CMT	Contains comments that are attached to transmission templates.
ADVISORY.DAT	Contains the eight advisory text strings that trigger the DACS advisory alarms.
DACSCOM.DAT	Contains the operational parameters, defined in Setup, for DACS software.
GLOBAL.DAT	Contains the General Setup Parameters defined in Setup.
LOCSCHED.DAT	Contains the local transmission schedule defined in the Schedule Editor.
NOTIFIC.DAT	Contains all user-defined notification messages defined in the Setup program.
REASON.DAT	Contains descriptive text about how PRSS schedule updates have changed PRSS transmissions that have been moved to the local schedule.
RESOURCE.DAT	Contains the definitions of all the resources defined in Setup.
SERIAL.DAT	Contains the communications parameters for the DACS output function.
SWITCHER.DAT	Contains the definition of an audio switcher, as defined in Setup.
SYSSCHED.DAT	Contains the system transmissions downloaded from the STC.

Table 3-3. SOSS Data Files (continued)

File name	Description
Log Files	
ALARM.LOG	Contains a list of current alarms.
LOCSCHED.LOG	Contains a list of previously executed transmission events.
Reports	
USAGE_##.RPT	Usage report generated by the Schedule Editor, where ## is a system-assigned sequential number that identifies each usage report on the disk.
DACs Message Files (typically in C:\DACs, rather than C:\SOSS)	
YYMMDDNN.NNx	General format of DACs message files, where: YYMMDD is the year (last two digits), month, and date when sent by the STC NN.NN is a system-assigned sequential number that uniquely identifies the message from all others sent by the STC on that date. X describes the type of file: H is for the message header file, M is for the message body, and A is for the message attach file

Loading Other Software

To the extent possible, do not load any other software applications on the SOSS computer (except for network software, if used). Further demands will slow down the system and destroy its real-time nature.

To the extent possible, do not load any other data on the SOSS computer. The entire disk space should be devoted to storing the SOSS applications, the Setup database, schedule database, and DACs messages.

Operating on a LAN

The recommended distribution of files on a Local Area Network (LAN) is as follows. For detailed information, see Appendix B.

- All the SOSS applications, help file and data files should reside on the file server. This keeps the installation at the workstation level as simple as possible, and sidesteps problems with keeping the various applications and versions of SOSS software synchronized.

When you set up the icons on the OS/2 desktop at the workstations, make sure that you set the Working Directory field to the to the SOSS directory on the file server. The SOSS applications use the working directory parameter to find their data and help files. (See the OS/2 User's Guide for more details on setting up objects on the desktop.)

- You can load DACs View on any OS/2 workstation, or let the workstations access the copy on the file server.
- Store DACs messages on the file server.

Troubleshooting

If the ARA software or DACS Capture cannot verify the presence of the ESN key for a duration of 10 minutes, they will stop working. In such a case, follow these steps:

1. Make sure that the ESN key is plugged into the correct port of the ARTIC breakout box (defined in Setup).
2. Ensure that the 6-inch ESN key cable is in good condition and that both of its connectors are not damaged.
3. Restart the SOSS core applications.
 - Make certain that both the Audio Recording Automation and DACS Capture applications are *closed*.
 - Double-click on the “Load ARTIC Tasks” icon.
 - When the ARTIC tasks are done loading, double-click on the Audio Recording Automation and DACS Capture icons.

If the problem persists, the ESN key, ARTIC card, or breakout box might be damaged. Contact PRSS Technical Support.