Bull ESCALA

ISA Internal Modem
Installation & Configuration Guide

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Installation & Configuration Guide

Hardware

January 2000

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Year 2000

The product documented in this manual is Year 2000 Ready.

About This Book

This document is an overview of the ISA Internal Modem provided with computers such as:

ESCALA T Series, ESCALA E Series, ESCALA EPC400, or ESCALA S100,
equipped with an ISA bus, and running AIX Version 4.2 and subsequent versions.

This modem is used for RSF (Remote Services Facilities) usage, to allow communications with a Customer Service Center for maintenance purposes.

If RSF is used, the modem cannot be shared with another application.

Who Should Use this Book

This book addresses those who intend to install the modem. They should be familiar with the AIX installation procedures. See *AIX Installation Guide* for more information.

Operating Systems

This adapter operates in the AIX environment, AIX Version 4.2 and subsequent versions.

Document Overview

This book contains the following chapters:

Chapter 1	**ISA Internal Modem – Overview**	
	Introduces the Modem.	
Chapter 2	**Hardware Installation**	
	Explains how to check the delivery, install the modem if needed, and connect it.	
Chapter 3	**Software Installation and Configuration**	
	Explains how to check that the software is pre-loaded, check the configuration of the modem, or perform the configuration if needed.	
Chapter 4	**Operational Check and Trouble Shooting**	
	Indicates how to check that your modem is operational and provides a few answers to commonly asked questions.	
Appendix A	**Technical Specifications**	
	Troubleshooting Guide providing answers to many commonly asked questions.	
Glossary	Alphabetical list of terms and abbreviations used in this manual.	
Index	General index.	

Highlighting

The following highlighting conventions are used in this book:

Bold Identifies commands, keywords, files, directories, or other items whose names are predefined by the system. Also identifies graphical objects such as buttons, labels, and icons that the user selects.

Italics Identifies parameters whose actual names or values are to be supplied by the user.

`Monospace` Identifies examples of specific data values, examples of text similar to what you might see displayed, examples of portions of program code similar to what you might write as a programmer, messages from the system, or information you should actually type.

Related Publications

- *RSF (Remote Service Facilities) Field Guide*   86 A7 96AQ
- *AIX 4.2 Installation Guide*   86 A2 05AT
- *AIX 4.3 Installation Guide*   86 A2 43GX
- *Upgrading the System*   86 A1 56PN
- *AIX Version 4.2 Problem Solving Guide and Reference* 86 A2 56AP
- *AIX Version 4.3 Problem Solving Guide and Reference* 86 A2 32JX
- *AIX and Related Products Documentation Overview*   86 A2 71WE

Ordering Publications

You can order publications from your sales representative or from your point of sale.

If you received a printed copy of *Documentation Overview* with your system, use that book for information on related publications and for instructions on ordering them.

To order additional copies of this book, use order number 86 A1 05HX.

Communication Statements

The following statement applies to this product. The statement for other products intended for use with this product appears in their accompanying manuals.

Federal Communications Commission (FCC) Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult an authorized dealer or service representative for help.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Proper cables and connectors are available from authorized dealers. Neither the provider nor the manufacturer are responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

European Union (EU) Statement:

This product is in conformity with the protection requirements of EC Council Directives 89/336/EEC relating to electromagnetic compatibility, and with 73/23/EEC (Low Voltage Directive).

Label:

Neither the provider nor the manufacturer can accept responsibility for any failure to satisfy the protection requirements resulting from a non–recommended modification of the product, including the fitting of option cards not supplied by the manufacturer.

This product has been tested and found to comply with the limits for Class B Information Technology Equipment according to CISPR 22 / European Standard EN 55022. The limits for Class B equipment were derived for typical residential environments to provide reasonable protection against interference with licensed communication devices.

International Electrotechnical Commission (IEC) Statement

This product has been designed and built to comply with IEC Standard 950.

United Kindom Telecommunications Safety Requirements

This equipment is manufactured to the International Safety Standard EN60950 and as such is approved in the UK under the General Approval Number NS/G/1234/J/100003 for indirect connection to the public telecommunication network.

The network adapter interfaces housed within this equipment are approved separately, each one having its own independent approval number. These interface adapters, supplied by the manufacturer, do not use or contain excessive voltages. An excessive voltage is one which exceeds 70.7 V peak ac or 120 V dc. They interface with this equipment using Safe Extra Low Voltages only. In order to maintain the separate (independent) approval of the manufacturer's adapters, it is essential that other optional cards, not supplied by the manufacturer, do not use main voltages or any other excessive voltages. Seek advice from a competent engineer before installing other adapters not supplied by the manufacturer.

Avis de conformité aux normes du ministère des Commmunications du Canada

Cet appareil numérique de la classe B respecte toutes les exigences du Réglement sur le matériel brouilleur du Canada.

Canadian Department of Communications Compliance Statement

This Class B digital apparatus meets the requirements of the Canadian Interference–Causing Equipment Regulations.

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VCCI Statement

The following is a summary of the VCCI Japanese statement in the box above.

This equipment is in the Class 2 category (information equipment to be used in a residential area or an adjacent area thereto) and conforms to the standards set by the Voluntary Control Council For Interference by Data Processing Equipment and Electronic Office Machines aimed at preventing radio interference in such residential area.

When used near a radio or TV receiver, it may become the cause of radio interference.

Read the instructions for correct handling.

Radio Protection for Germany

Dieses Gerät ist berechtigt in Übereinstimmung mit dem deutschen EMVG vom 9.Nov.92 das EG–Konformitätszeichen zu führen.

Der Aussteller der Konformitätserklärung ist die Bull Germany.

Dieses Gerät erfüllt die Bedingungen der EN 55022 Klasse B.

Communication Approval List

The following table lists the Communication Approvals applicable to the ISA Internal Modem for Belgium, France, Italy, Netherlands, United Kingdom, Germany and USA.

Country	Model	Approval
Belgium	MT2834ZPXI–BELGIUM	BE96MA0112
France	MT2834ZPXI–FRANCE	98167F
Germany	MT2834ZPXI–GE	BZT/A120630F
Italy	MT2834ZPXI–ITALY	1998MDSM455
Netherlands	MT2834ZPXI–HOLLAND	NL95081501
United Kingdom	MT2834ZPXI–UK	AA/605551
USA	MT2834ZPX	AU7USA–20673–MM–E
Pan European	MT2834ZPXIe–33	0197 (TUV Rheinland)

Table of Contents

Chapter 1. ISA Internal Modem – Overview

The ISA Internal Modem is a 'modem adapter'. It allows asynchronous communications with your Customer Service Center in a reliable way and at various speeds, via a connection to the Public Switched Telephone Network (PSTN).

This modem is intended to be used for RSF (Remote Services Facilities) purposes. RSF not only uses it, but also manages it. If RSF is used, the modem cannot be shared with another application.

It can be delivered:

- either with your system: in that case the software is pre-loaded and the modem is pre-installed and pre-configured

- or as an "add-on": in that case, the software is pre-loaded but the modem must be physically installed and configured. This is described in 'Hardware Installation', on page 2-1.

Modem Features

The ISA Internal Modem has the following features:

- It may automatically adapt to the line conditions and capacities of the remote modem. The communication is thus established with the optimum speed, error control and data compression.

- It is compliant with UIT–T V.34 standards and allows you to transfer data at 28.8–14.4 kbits/s through the public switched network. The connection to the phone line is done via a RJ-11 cable provided with the modem.

Its technical specifications (data transmission rates, compatibility, error control...) are described in Appendix A.

Modem Packaging

Software Components

The software part of the ISA Internal Modem has been **pre-loaded in your machine**. It consists of one LPP composed of two OPPs:

1. `devices.isa.bullmodem2834I.diag`

2. `devices.isa.bullmodem2834I.rte`

These OPPs are installable and removable by using the AIX standard installation procedure. Details about Software Packaging and Installation mechanism can be found in the *AIX Installation Guide*. See Related Publications in 'About This Book' of this document.

Hardware Components

The hardware part of the ISA Internal Modem is composed of:

- the internal modem itself, equipped with a line jack,

- a RJ-11 cable, to connect the modem to the PSTN,

As an option depending on the country:

- a wall jack adapter.

The hardware components are shown on Figure 3, on page 2-4.

Operating System

This adapter operates in the AIX environment, AIX Version 4.2 and subsequent versions.

Prerequisite Software

There is no specific prerequisite software for this package.

User Interface for Modem Management

The user interface used for managing the ISA Internal Modem is **SMIT** (System Management Interface Tool).

Once your modem is physically present and connected, you must:

- If the modem is installed in your system as an "add-on", it is configured by running 'smit ttyadapters'

- If the modem is used by RSF, check the TTY configuration by using the RSF menus

- If the modem is not used by RSF, perform the TTY configuration by running 'smit ttyadapters' menus

Chapter 2. Hardware Installation

Hardware installation of the ISA Internal Modem varies according to the type of delivery, i.e whether the modem is integrated or not in your system:

- If the modem is integrated in your system, you just have to connect the cable.

- If the modem is not integrated in your system, you must:

  - Check Your Delivery,

  - Set the Jumpers and Plug the Modem in the machine,

  - Connect the Modem.

Check Your Delivery

Internal Modem Delivery

The ISA Internal Modem delivery is split into two components:

  - one for the modem itself (with the RJ–11 cable),

  - and one for the wall-jack, with a specific MI (Marketing Identifier) for each of the countries listed in Table 1.

Component	Designation	MI Identification
ISA Internal Modem	Modem Board with cable	DCCG086–0000
Modem Localization Options	Belgium	DCUG001–000U
	Holland	DCUG001–000D
	France	DCUG001–000F
	Germany	DCUG001–000G
	Italy	DCUG001–000T
	UK	DCUG001–000H
	USA	DCUG001–000E

Table 1.   Hardware MI Breakdown.

Modem Type Labels

Modems are identified with type labels according to the country of use. Type numbers are tabled below.

ISA Internal Modem Country of Destination	Type Label Number
France	B5–A or B5–S
United Kingdom	B5–B or B5–S
Belgium	B5–C or B5–S
Holland	B5–D or B5–S
Italy	B5–E or B5–S
Germany	B5–L or B5–S
USA	B5–K

Set the Jumpers and Plug the Modem

Warning:

1. It is advised (mandatory for RSF) to plug the ISA Internal Modem into a slot which remains powered-up in 'stand by': For instance, use the ISA3 slot on ESCALA T Series.

2. Only one ISA Internal Modem can be present in the system at the same time.

The ISA Internal Modem must be set COM4/IRQ5 (or COM4/IRQ7 for ESCALA S100). This is done by setting jumpers, i.e. the communication port selected is COM4 and the interrupt level is 5 (or 7). This is illustrated in Figure 1.
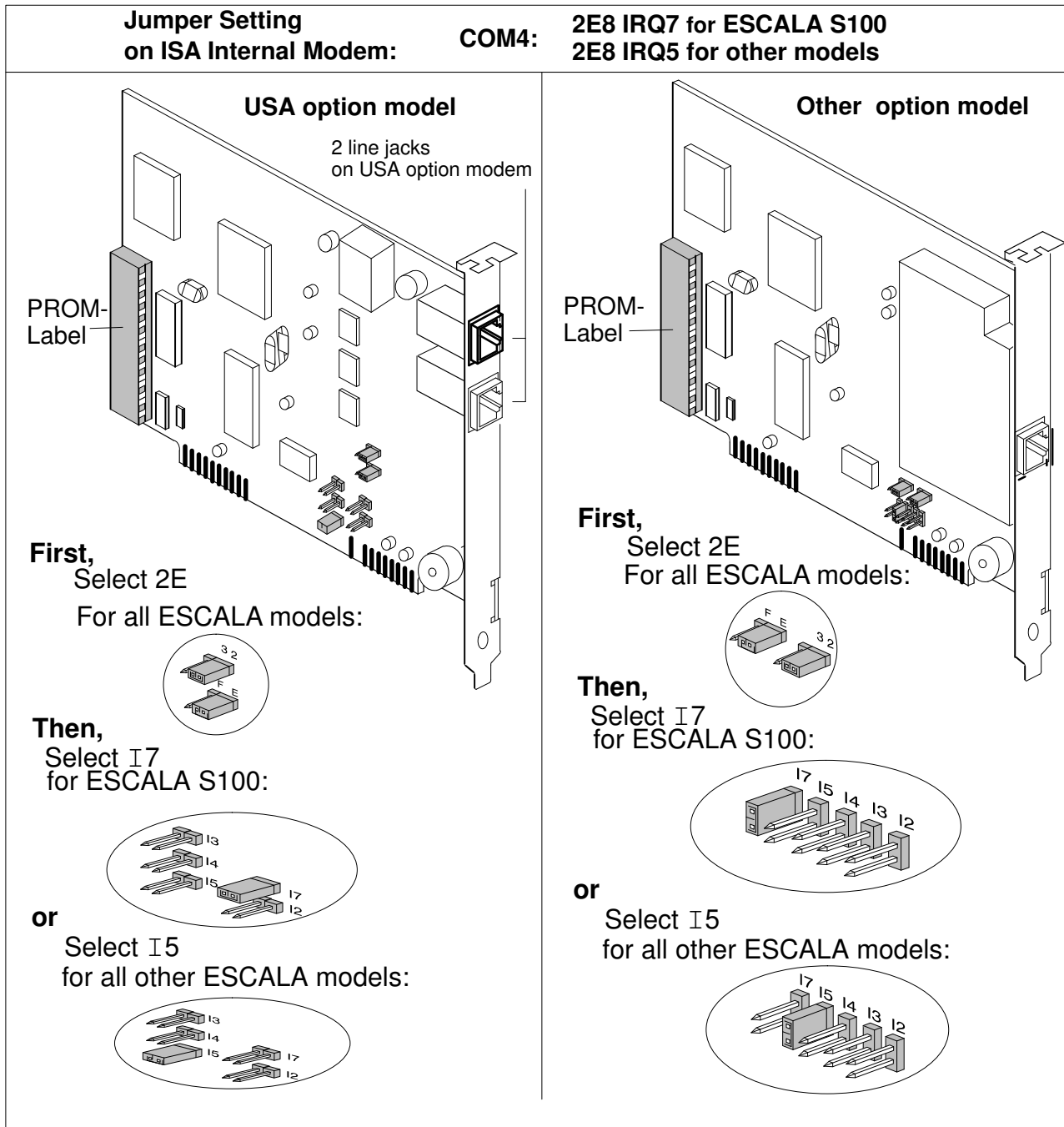
Figure 1.   Jumper Setting on the ISA Internal Modem.

To set the jumpers and plug the modem, you must:

- Switch off your machine

- Remove the front cover, side cover or rear cover, according to your system to access the slot.
  If necessary, refer to the corresponding Installation Guide

- Remove the rear cover in order to remove the cache, if any, in front of the slot where the modem must be installed

- Check on the modem that the PROM label, country-dependent, mentions the country you want

- Set the jumpers as shown in Figure 1 and plug the modem into the machine

- Put the cover back in its place

- Switch on your machine.

Connect the Modem

The way you connect the modem depends on the destination country: USA option modem is equipped with two line jacks, instead of one for other countries.

USA Option Modem

To connect the modem:

- Plug either end of the RJ–11 cable provided with your delivery into the upper jack on the modem, labelled LINE. Then plug the other end of the modem cable into the telephone wall jack

- If you wish to have a telephone for voice communications connected to the same telephone line, plug either end of a standard phone cable into the lower jack on the modem, labelled PHONE, then plug the other end of the cable into telephone.
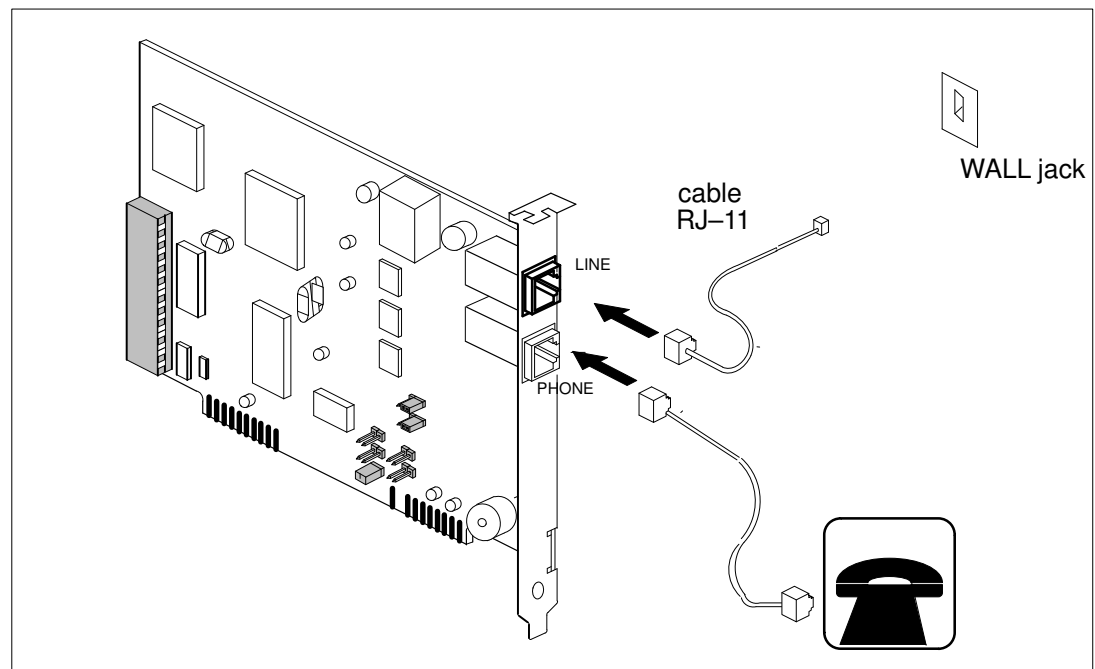
Figure 2. Connecting the telephone line to the modem (USA option modem).

Other Countries Option Modem

To connect the telephone line to the modem:

Plug either end of the RJ–11 cable provided with your internal modem into the LINE jack on the modem. Then, plug the other end of the modem cable into the telephone wall jack, using a wall jack adapter if needed. This is shown in Figure 3.
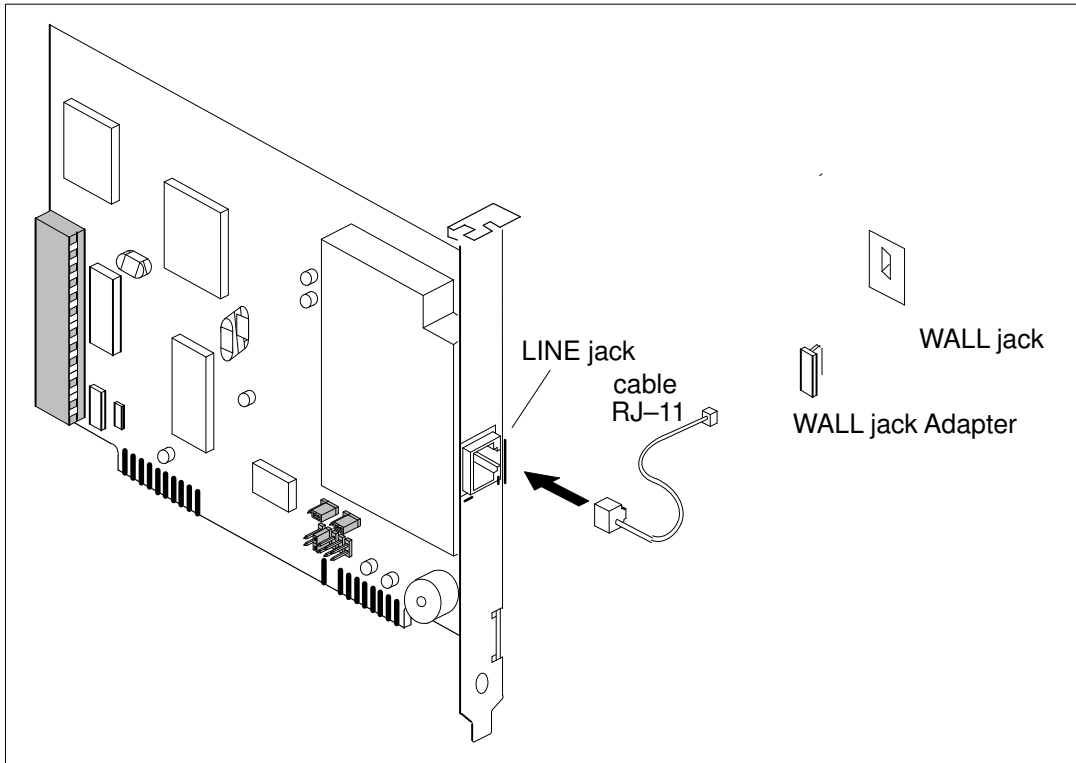
Figure 3.   Connecting the telephone line to the modem.

Hardware installation is now completed.

Chapter 3. Software Installation and Configuration

Once the modem is physically present in your machine and connected, you must:

- **–** Check the Software Pre-load
- **–** Check, or perform, the configuration of your modem, depending on whether or not it was integrated in your system delivery.

You will find information in:

- • How to Check Software Pre-load
- • How to Configure the Modem
- • How to Check the Modem Configuration
- • De-installation of the Internal Modem

How to Check Software Pre-load

Use the SMIT interface to check that the ISA Internal Modem LPP has been pre-loaded on your system:

- • Logged as 'root' user, type:

      # smit lslpp_installed

  and select from the list the two OPPs of the ISA Internal Modem:

  - **–** `devices.isa.bullmodem2834I.diag`
  - **–** `devices.isa.bullmodem2834I.rte`

  You can also check the software installation with the **lslpp** command (`lslpp -l |grep bullmodem`).

  If you are not familiar with the AIX installation procedure, refer to the *AIX Installation Guide* for more information.

Note: If it were not preloaded, you would have to use the Bull-Enhancement CD-ROM, run:'`smit install_latest`', select the OPPs mentioned above and finally run 'smit ttyadapters' so that the system takes into account this new device.

How to Configure the Modem

Modem Adapter Configuration

When delivered as an "add-on", the modem must be configured as follows.

- Run 'smit ttyadapters' and select: –>'Bull ISA Internal Modem'
  –>'Add a Bull ISA Internal Modem'

- Validate the values automatically displayed for the entry fields 'Bus I/O Address' and 'Bus Interrupt Level'. They correspond to COM4/IRQ5 (or COM4/IRQ7 for ESCALA S100):

Bus I/O Address	0x2e8
Bus Interrupt Level	5 or 7 for ESCALA S100
Define device only, do not configure	no

```
                    Bull ISA Internal Modem

Move cursor to desired item and press Enter.


Add a Bull ISA Internal Modem
Change/Show Characteristics of a Bull ISA Internal Modem
Remove a Bull ISA Internal Modem
List All Defined Bull ISA Internal Modems
Configure a Defined Bull ISA Internal Modem
 ┌─────────────────────────────────────────────────────────────┐
 │                    Add an ISA Adapter                        │
 │  Move cursor to desired item and press Enter.               │
 │                                                             │
 │     s4a     isa Bull ISA Internal Modem                     │
 │                                                             │
 │  F1=Help               F2=Refresh       F3=Cancel          │
 │  F8=Image              F10=Exit         Enter=Do           │
 │  /=Find                n=Find Next                         │
 └─────────────────────────────────────────────────────────────┘
```

```
                    Bull ISA Internal Modem

Move cursor to desired item and press Enter.


Add a Bull ISA Internal Modem
Change/Show Characteristics of a Bull ISA Internal Modem
Remove a Bull ISA Internal Modem
List All Defined Bull ISA Internal Modems
Configure a Defined Bull ISA Internal Modem
 ┌─────────────────────────────────────────────────────────────┐
 │                    Add an ISA Adapter                        │
 │  Move cursor to desired item and press Enter.               │
 │ ┌───────────────────────────────────────────────────────┐  │
 │ │                    Parent Device                       │  │
 │ │  Move cursor to desired item and press Enter.         │  │
 │ │                                                       │  │
 │ │       bus2     Available 04-E0 ISA Bus                │  │
 │ │                                                       │  │
 │ │  F1=Help               F2=Refresh       F3=Cancel    │  │
 │ │  F8=Image              F10=Exit         Enter=Do     │  │
 │ │  /=Find                n=Find Next                    │  │
 │ └───────────────────────────────────────────────────────┘  │
 └─────────────────────────────────────────────────────────────┘
```

```
                     Add a Bull ISA Internal Modem

Command:OK                  stdout: yes                stderr: no


Type or select values in entry fields.
Press Enter AFTER making all desired changes.
                                              [Entry Fields]


Device Type                              s4a
Device Class                             adapter
Device Subclass                          isa_sio
Parent Device                            bus2
Bus I/O Address                          0x2e8  +
Bus Interrupt Level                      5  (or 7 for ESCALA S100) +
Define device only, do not configure     no      +


F1=Help        F2=Refresh      F3=Cancel F4=List
F5=Reset       F6=Command      F7=Edit    F8=Image
F9=Shell       F10=Exit        Enter=Do
```

TTY Configuration

When the modem is not used by RSF, the TTY device that is connected to the modem may be configured as follows:

Run 'smit tty' and select:

'Add a TTY'

'tty rs232 Asychronous Terminal'

'The available Bull ISA Internal Modem adapter'

```
                                    TTY

Move cursor to desired item and press Enter.


List All Defined TTYs
Add a TTY
Change/Show Characteristics of a TTY
Remove a TTY
Configure a Defined TTY
Generate Error Report
```

```
                       Parent Adapter

Move cursor to desired item and press Enter.

sa0 Available 01-E0 Standard I/O Serial Port 1
sa1 Available 01-D0 Standard I/O Serial Port 2
sa2 Available 01-01 Bull ISA Internal Modem


F1=Help                 F2=Refresh        F3=Cancel
F8=Image                F10=Exit          Enter=Do
/=Find                  n=Find Next
```

How to Check the Modem Configuration

You may check the configuration by running:

```
# lsdev -C -t s4a -S a
```

If the device is not displayed, refer to 'Trouble Shooting' on page 4-1.

De-installation of the Internal Modem Software

If you no longer need your ISA Internal Modem, you can de-install the corresponding software by using the SMIT interface. This must be done after stopping RSF.

Logged as 'root' user:

* Ensure RSF is stopped:

  ```
  # rsf_stat
  ```
  to see whether RSF is running

  ```
  # smit rsf_run
  ```
  to stop RSF if needed

  Refer to *RSF (Remote Service Facilities) Field Guide* for more information.

* Run:

  ```
  # smit install_remove
  ```

  and select:

  ```
  devices.isa.bullmodem2834I.diag
  ```

  ```
  devices.isa.bullmodem2834I.rte
  ```

If you are not familiar with the AIX installation and de-installation procedures, refer to *AIX Installation Guide*.

Chapter 4. Operational Check and Trouble Shooting

This chapter indicates how to check that your modem is operational. It provides also a few answers to commonly asked questions.

Operational Check

If the modem is used with RSF, to check that your modem is operational, you must contact the Service Organization responsible for installing and configuring RSF at the customer's site.

Operational check should be performed by the Service Organization as follows:

* Installing, Setting up, Starting RSF,

* Using RSF 'Test & Reset Modem' menu

   This is described in *RSF (Remote Service Facilities) Field Guide,* Section 'Test & Reset Modem'.

Trouble Shooting

If the operational check fails, you, or a person from the Customer Service Center, should:

* Check the cable is properly connected between the modem and your telephone wall jack as described on page 2-3.

* Check the existence of the 'modem tty line'

   ```
   # lsdev –C –ctty –S a | grep 'lsdev –C –ts4a –S a –r
   location'
   ```

   Run `smit tty`

   Select the 'Change/Show Characteristics of a TTY' menu function

   If it does not exist, check that the ISA Internal Modem LPP has been installed on your system as described on page 3-1, then check the modem configuration as described on page 3-3.

* Check the jumper setting, as described on page 2-2.

If the checks cited above are successful and the modem is still not operational, you may:

* See in the system errlog report if an error concerning the modem has been reported.

* Use the AIX system trace mechanism to trace your tty line. The Hook-Id to be used with the **trace** command (or the SMIT Problem Determination/Trace submenu) is HKWD_STTY_RS (0x406). Refer to *AIX Version 4.3 Problem Solving Guide and Reference* for more information.

* Run Diagnostics Tools by typing **smit diag** then selecting the following:

   ```
   Current Shell Diagnostics
         Diagnostic Routines
               System Verification
   ```

   Choose the 'Serial port on Bull ISA internal modem' in the Diagnostic Selection menu.

   The modem adapter is OK if the COMMAND STATUS report is OK. Otherwise, diagnostic information is displayed indicating the appropriate action to be taken.

Appendix A. Modem – Technical Specifications

This section provides technical information about the ISA Internal Modem.

Technical Specifications

The ISA Internal Modem has the following technical specifications:

- Data Transmission Rates (in bits/s):
  28800, 26400, 21600, 19200, 16800, 14400, 12000, 9600, 4800, 2400, 1200, 0–300.

- Compatibility:
  ITU–T V.42*bis*, V.42, V.34, AT&T V.32 Terbo, ITU–T V.32bis, V.32, V.21*, V.22*bis*, V.22, V.23*, V.17, V.29, V.27*ter*, Groupe3 T.4, T.30 and EIA TR29 class 2.

- Error Control:
  ITU–T V.42 (LAP–M or MNP3 and 4).

- Data Compression:
  ITU–T V.42*bis* (rate 4:1).

- Throughput Conversion:
  binary throughput on the serial port: 300, 1200, 2400, 4800, 9600 bit/s,
  19.2, 38.4, 57.6 et 115.2 kbits/s.

- Flow Control:
  Xon/Xoff, 105/106,ENQ/ACK (HP), simulation UUCP (Unix-to-Unix Copy Protocol)

- Operating Mode:
  Full-Duplex or half-duplex on the switched telephone network, automatic or manual dialing, automatic or manual answer.

- Operating Temperature Requirements:
  0 to 50ºC

- Power Consumption:
  1.2 W

Glossary

This glossary contains abbreviations, key-words and phrases that can be found in this document.

Data compression.
A technique that examines transmitted data for redundancy and replaces strings (groups) of characters with special codes which the receiving modem interprets and restores ot its original form characters with special codes which the receiving modem interprets and restores ot its original form. Transmission of compressed data results in shorter connection times.

Flow control
Compensates for the difference between the rate at which data reaches a device and the rate at which the device processes and transmits. This is controlled by the extended AT commands & K. The two common types of flow control are RTS/CTS signaling (hardware base method) and XON/XOFF (software-based method using standard ASCII control characters to pause and resume transmission).

Full-duplex
Two-way simultaneous transmission between modems, which may occur via a four-wire circuit on a leased-line, or with a two-wire connection when the frequency bandwidth is divided into two distinct channels, or when echo cancellation is employed.

Half-duplex
Signal flow in both directions, but only one way at a time with each modem alternating between send and receive.

ISA
Industry Standard Architecture (Bus).

ITU
International Telecommunications Union.

ITU-T
International Telecommunication Union Telecommunication Standardization Sector (formerly CCITT).

LPP
Licensed Program Product.

OPP
Optional Program Product.

PSTN
Public Switched Telephone Network.

Synchronous communications
A method of transmission in which data bits are sent continuously at the same rate under the control of a fixed frequency clock signal.

RSF
Remote Services Facilities. Bull package dedicated to system monitoring and remote maintenance operations.

SMIT
System Management Interface Tool. Menu-driven, resident command-building system management facility (IBM).

XON/XOFF
XON and XOFF are the names of two different control characters. See also Flow Control.

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ERREURS DETECTEES / ERRORS IN PUBLICATION

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