User Manual

Document CC08105-01

Shelf Manager for:

- FlexChassis ATCA-2U DC (2-slot)
- FlexChassis ATCA-3U AC (2-slot)
- FlexChassis ATCA-SH20 (3U AC/DC, 2-slot)
- FlexChassis ATCA-5U AC (5-slot)
- FlexChassis ATCA-SH60 (6U AC/DC, 6-slot)

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About this Document

This document provides technical information for the ATCA Shelf Manager Board (ShMC). It is intended for technical staff tasked with installing, setting up and configuring the system, and providing troubleshooting assistance and servicing.

Related Documents

Instructions relating to software installation and documentation for application software development for this platform are available in the Shelf Manager External Interface Reference Manual provided by Pigeon Point Systems - http://www.pigeonpoint.com/.

For Continuous Computing product information and additional resources, please visit the Continuous Computing website at http://www.ccpu.com/.

Downloads (manuals, release notes, software, etc.) are available via the Technical Support Library product links at http://www.ccpu.com/support/downloads/ (for registered customers).

Information about PICMG (PCI Industrial Computer Manufacturers Group) and the ATCA standard may be accessed on the PICMG Web site at www.picmg.com.

1. Safety

This symbol indicates potential safety hazards regarding product operation or maintenance to operator or service personnel.

1.1. General Safety Practices

Before handling the board, read the instructions and safety guidelines on the following pages to prevent damage to the product and to ensure your own personal safety.

- Always use caution when handling/operating the board. Only qualified, experienced, authorized electronics service personnel should access the interior of the equipment.
- Always follow the procedural instructions for component removal and replacement in sequence.

1.2. Working with Lithium Batteries

Your computer board may have a non-rechargeable lithium battery.

- Do not short circuit
- Do not heat or incinerate
- Do not charge
- Do not deform or disassemble
- Do not apply solder directly
- Do not mix different types or partially-used batteries together
- Always observe proper polarities.

2. Introduction

2.1. ATCA Shelf Manager Board

The ATCA FlexChassis shelf is designed to comply with all relevant ATCA specifications, including the IPMI 1.5 (Intelligent Platform Management Interface) specifications.

The ATCA Shelf Manager Board monitors the shelf temperature sensors, collects status information, generates alarms, and controls the indication displays and the fan trays.

It's remote control capable. It supports multiple management interfaces, including: RMCP, RPC, SNMP, CLI and Web Interface.

2.2. Shelf Manager Board Components

Figure 1: Block Diagram of Shelf Manager Board

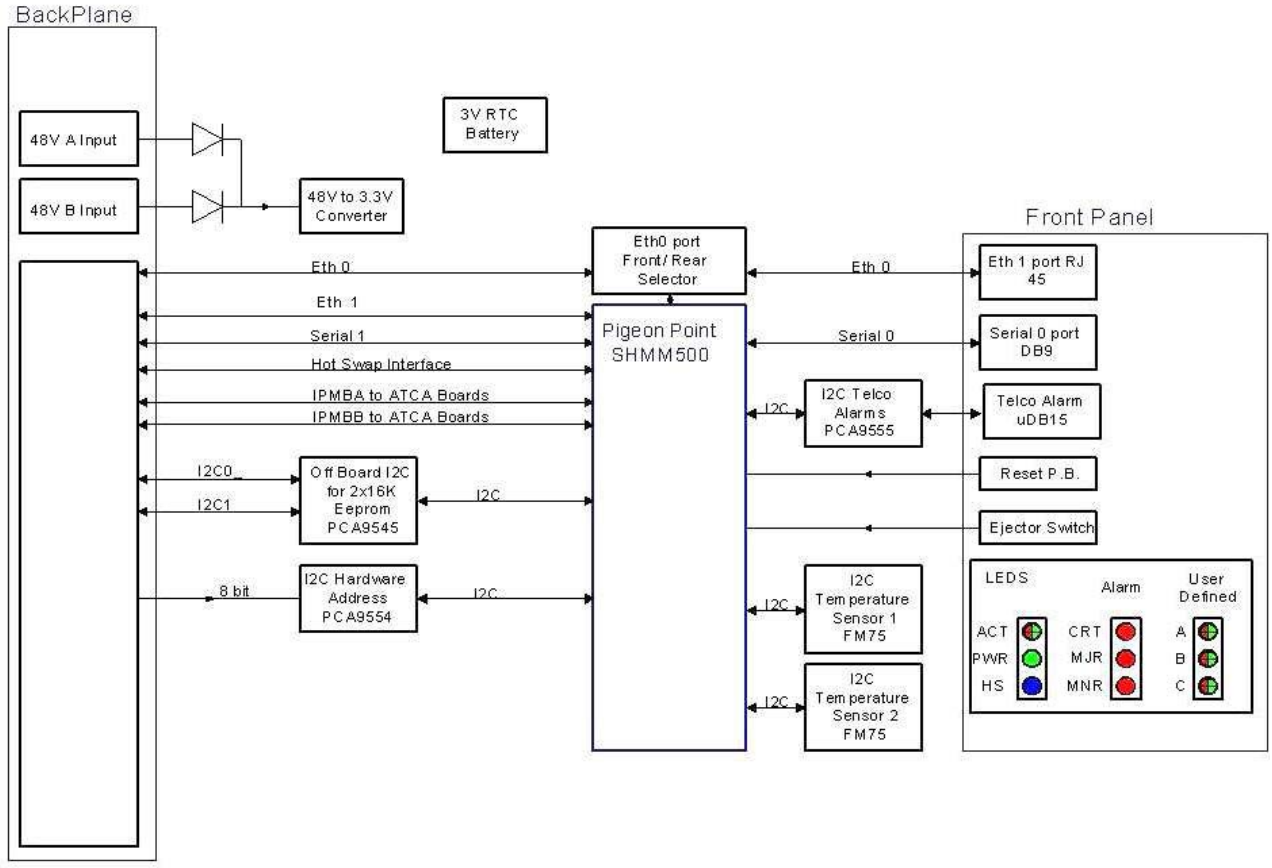
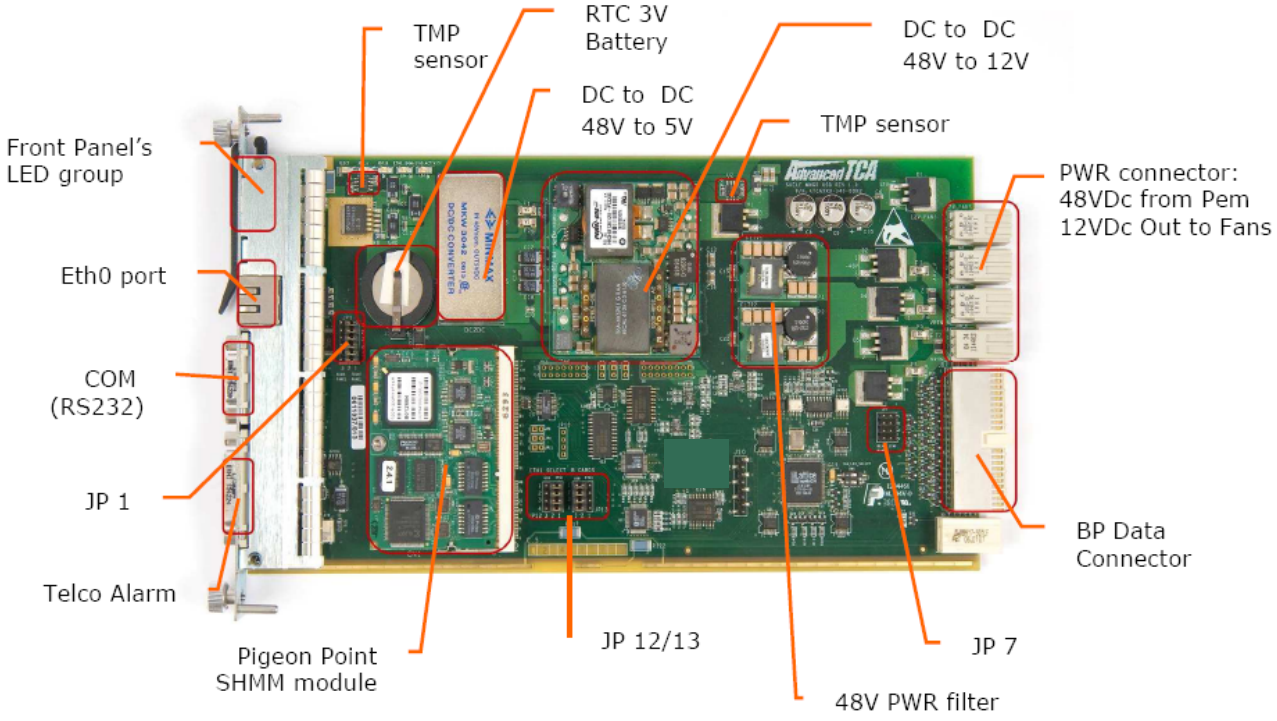


Figure 2: Board Layout



Note: For fan tray supplied with 48VDC, the Shelf Manager does not have the power module of "DC-to-DC 48V to 12V."

2.3. Features

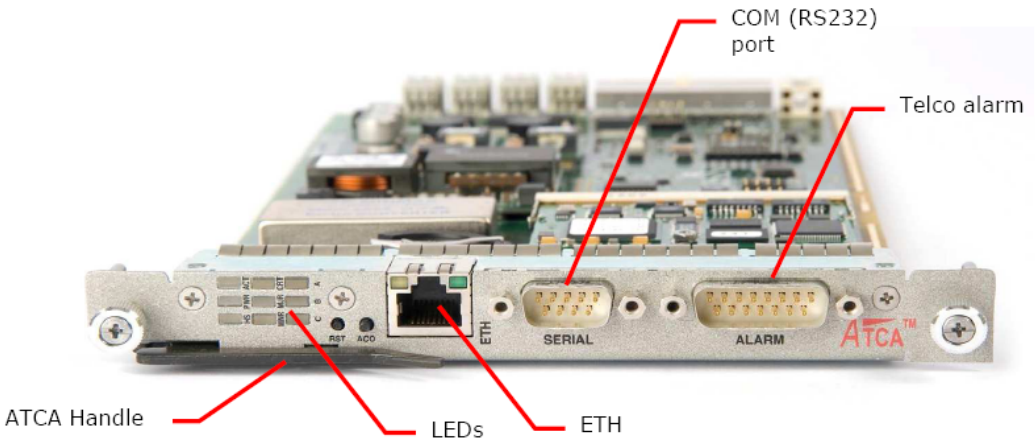
The Shelf manager Board is a FRU with the following features and functionality:

- Fan tray powering and control – DC to DC converter, providing 12V to the fan tray
- Providing 3.3V and 5V to other parts of the board
- Intake air temperature monitoring
- D-Type 9 pin serial port
- LED Alarms display
- Telco Alarms control and display
- Hosting of the Pigeon point ShMM500 management module
- Front Ethernet connection.
- Rear Ethernet connection.

2.4. Front Panel

The Shelf Manager board's front panel contains the display as shown in figure 3:

Figure 3: Front Panel



3. Understanding the Board Components

This chapter summarizes the functional features and components of the board.

The board was designed to withstand extreme conditions (to meet rigid Telco requirements). It is a Field-Replaceable Unit (FRU), and is fully field-serviceable.

3.1. Visual Indicators

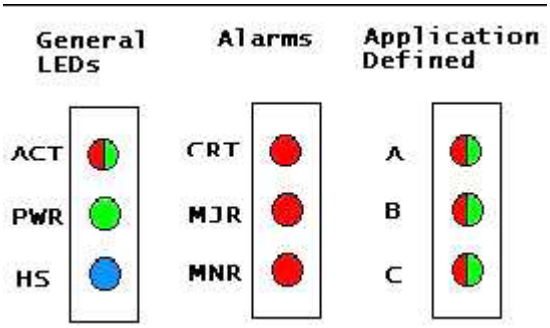
The front panel of the shelf manager board features nine LEDs arranged in three groups:

- General LEDs
- Alarm LEDs
- Application-defined LEDs.

3.1.1. Boot-up LED Status

All LED's light up for about 40 seconds during Shelf manager board boot-up.

Figure 4: LEDs on the shelf manager Board Front Panel



3.1.2. LED Functions: General LEDs

Table 1: General LEDs

LED	Status	Meaning
ACT	Green	Shelf Manager Board active
	Red	Shelf Manager Board failure
	Blink	Shelf Manager Board inactive
PWR	Green	Local voltage supply on Shelf Manager board
	Off	Local voltage failure
HS (Hot Swap)	Steady Blue	Shelf Manager Board powering up or ready for extraction
	Blinking Blue	Shelf Manager Board hot swap process
	Off	Shelf Manager Board operating

Table 2: Telco Alarm LEDs

LED	Status	Meaning
CRT (Critical)	Off	Normal operation
	Red	System alarm event
MJR (Major)	Off	Normal operation
	Red	System alarm event
MNR (Minor)	Off	Normal operation
	Red	System alarm event

Table 3: Application-Defined LEDs

LED	Status	Meaning
A	Green/ red/ bi-color	As defined by application
B	Green/ red/ bi-color	As defined by application
C	Green/ red/ bi-color	As defined by application

Upon completion of boot-up, LEDs will display as follows:

General LEDs		Telco Alarm LEDs	Application Defined LEDs
ACT	Reverts to normal role	OFF	OFF
PWR	Remains ON		
HS	Lights steady blue for a few seconds, then begins blinking, then goes off after a few blinks		

 When a user-defined dual color LED is on and colored green and red (as during boot-up), the visible color is **orange**.

3.2. External Connections

The Shelf Manager Board features three connectors on its front side. A pin-out description of each connector is provided in this section.

3.2.1. Telco Alarm Connector

The Telco Alarm Connector is a standard DB-15 connector with the following pin definition:

Table 4: Telco Alarm Connector

Pin	Signal Name
1	Minor Reset Plus
2	Minor Reset Minus
3	Major Reset Plus
4	Major Reset Minus
5	Critical Alarm –NO
6	Critical Alarm –NC
7	Critical Alarm –COM
8	Minor Alarm – NO
9	Minor Alarm – NC
10	Minor Alarm – COM
11	Major Alarm – NO
12	Major Alarm – NC
13	Major Alarm – COM
14	Power Alarm – NO

15	Power Alarm -COM

3.2.2. Serial RS232 (Console) Connector

The Serial RS232 (Console) connector is a DB-9M, DTE serial port with the following pin-out definition:

Table 5: Serial RS232 (Console) Connector

Pin	Signal Name	Description
1	CD	In Shelf Manager Detect
2	RxD	In Receive Data
3	TxD	Out Transmit Data
4	DTR	Out Data Terminal Ready
5	SG	Signal Ground
6	DSR	In Data Set Ready
7	RTS	Out Request To Send
8	CTS	In Clear To Send
9	RI	In Ring Indicator

3.2.3. Ethernet Connector

The Ethernet connector is a standard RJ45-8 jack with the following pin-out definition:

Table 6: Ethernet Connector

Pin	Signal Name	Description
1	TxD+	Out Transmit Data Plus
2	TxD-	Out Transmit Data Minus
3	RxD+	In Receive Data Plus
4	RxD-	In Receive Data Minus

The following is indicated by the Ethernet connector LED's:

- Green – Line activity;
- Yellow – 100Mbs.

3.3. Jumpers

Four jumpers are used to select the connection of the Ethernet and Console ports either to the shelf manager board's front panel, or to the rear connector board's panel.

 The rear connector board's panel is NOT applicable to the FlexChassis 2-slot shelves (2U DC, 3U AC, & -SH20 (3U AC/DC).

The jumpers, located on the Shelf manager card, are marked: **JP1, JP7, JP12** and **JP13**.

JP1 selects the connectivity between the Front panel and backplane access.

All six jumpers must be connected to the same position (pins 1-2 or 2-3) and they function as follows:

- Jumpers connected between pins 1-2: the front connection is active
- Jumpers connected between pins 2-3: the rear connection is active.

JP7 selects connectivity between Rear access and backplane HUB slot access.

All four jumpers must be connected to the same position (pins 1-2 or 2-3) and they function as follows:

- Jumpers connected between pins 1-2: the HUB slot connection is active

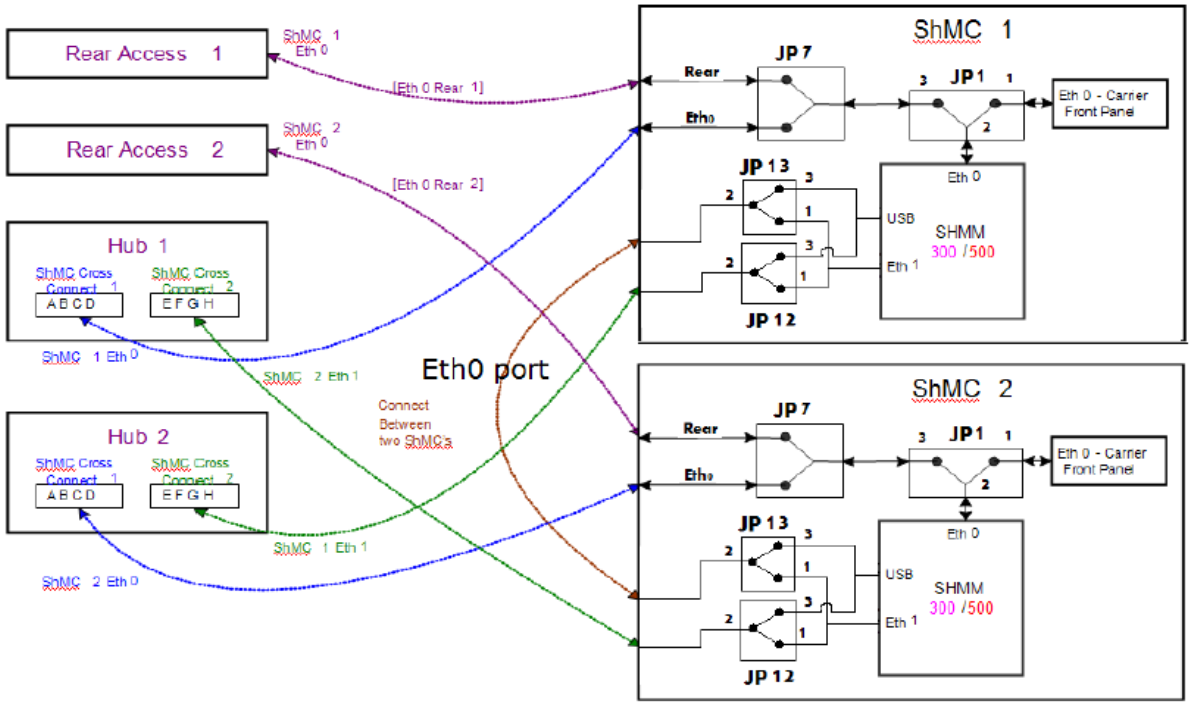
- Jumpers connected between pins 2-3: the rear access connection is active

JP13 selects ports between the two Shelf manager cards and JP12 selects Ethernet port to the second Ethernet port on the HUB slot. All four jumpers must be connected to the same position (pins 1-2 or pins 2-3).

There are two possible options for **JP12/JP13** connectivity:

- **JP12** jumpers are connected between pins 1 and 2 – The ShMM Eth 1 to HUB slot connection is active. In this case, jumpers on **JP13** could be connected between pins 2 and 3 (ShMM USB port is connected between the two ShMM's). *Never connect JP12 between pins 2 and 3.*
- **JP13** jumpers are connected between pins 1 and 2 – The ShMM Eth 1 port is connected between the two ShMM's. In this case, jumpers on **JP12** must not be connected (i.e., **JP12** is not used)

Figure 5: Replacing the Card and Components

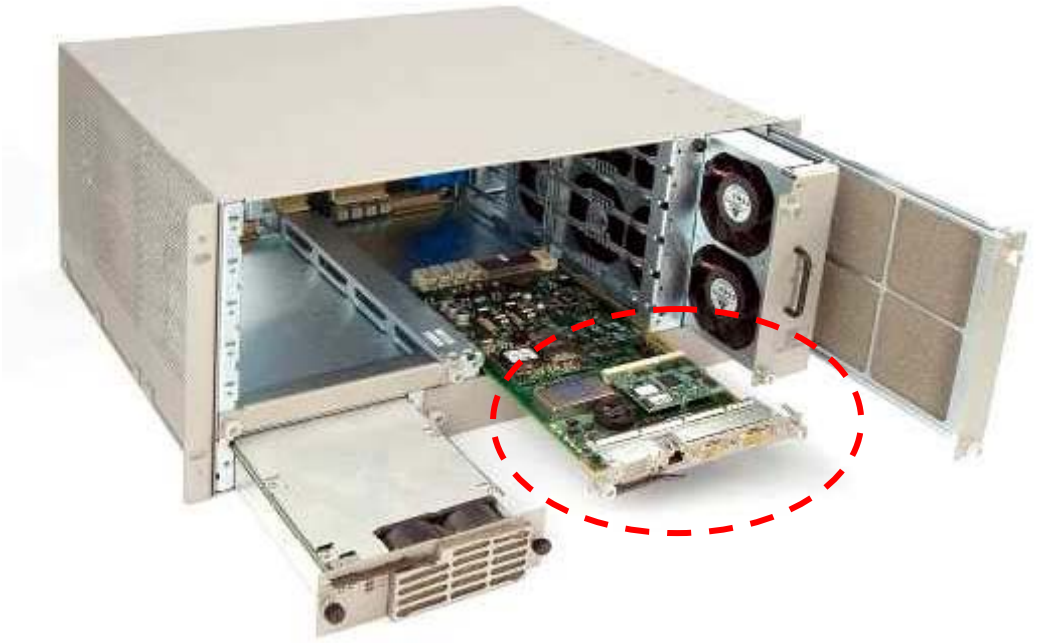


3.4 Inserting the Shelf Manager board

→ **To insert the shelf manager board:**

1. Insert the first Shelf manager card on the right-side slot, making sure that it plugs firmly into the backplane connector, and that the locking clip is properly closed.
2. Fasten the locking screws on both sides of the board's front panel.

Figure 6: Shelf Manager Board Insertion



3.5. Shelf manager Board Battery Replacement

The Shelf Manager Board contains a lithium battery. There is a danger of explosion if the battery is incorrectly replaced or handled.

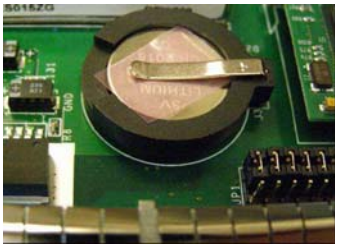
Do not disassemble or recharge the battery. Do not dispose of the battery in fire. When the battery is replaced, the same type or an equivalent type recommended by the manufacturer must be used. Used batteries must be disposed of according to the manufacturer's instructions.

→ **Removal of the battery isolation film:**

The isolation film protects the battery and saves its energy prior to using it. Before using a brand new Shelf Manager, remove the isolation film. See figure 7.

1. Lift the battery clamp and remove the isolator.
2. Release the clamp.

Figure 7: Battery Isolation Film



→ **To replace battery:**

1. Lift the battery clamp and remove the old battery.
2. Insert a new CR2016 lithium battery.
3. Release the clamp.

The battery exchange must be completed within less than **one minute**.

Battery Backup Characteristics

Battery Voltage: 3V
Battery Capacity: 48mAh
Power applied for 24 hours per day
Electrochemical Construction:
Long-life lithium with solid-state cathode.

4. Software Commands

4.1. General

The Shelf manager Board contains software necessary to manage the shelf and communicate with the intelligent management control software from an external console.

The external interfaces supported include:

- A command-line interface (CLI).
- A WEB interface.
- A Simple Network Management Protocol (SNMP) interface.
- A Remote Management Control Protocol (RMCP) interface.

Administrators can access the shelf to retrieve information on the current status of the shelf, including:

- Current FRU population.
- Current sensor values.
- Threshold settings.
- Recent events.
- Overall shelf health.

Please refer to *Pigeon Point's Shelf Management External Interface Reference Manual* for further details on programmatic interface with the shelf.

4.2. Console Connection

A dumb terminal or a PC with terminal-emulation software should be connected to the RS232 **Console** port on the active Shelf manager board.

A "female to female" RS232 communications cable is required.

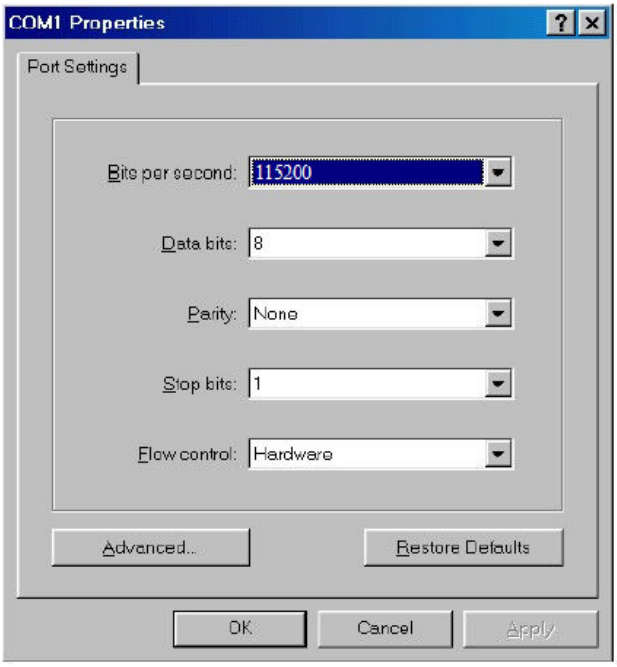
Figure 9 – shows the Serial Port Configuration Screen

When a PC terminal emulator is used, the communication cable should be connected to a free communications port (COM1 or COM2), and the connection should be defined in the HyperTerminal program (see Figure 6).

Figure 8: The HyperTerminal screen

The following parameters should be defined in the **Port Settings** tab of the **COM Properties** dialog, see Figure 9:

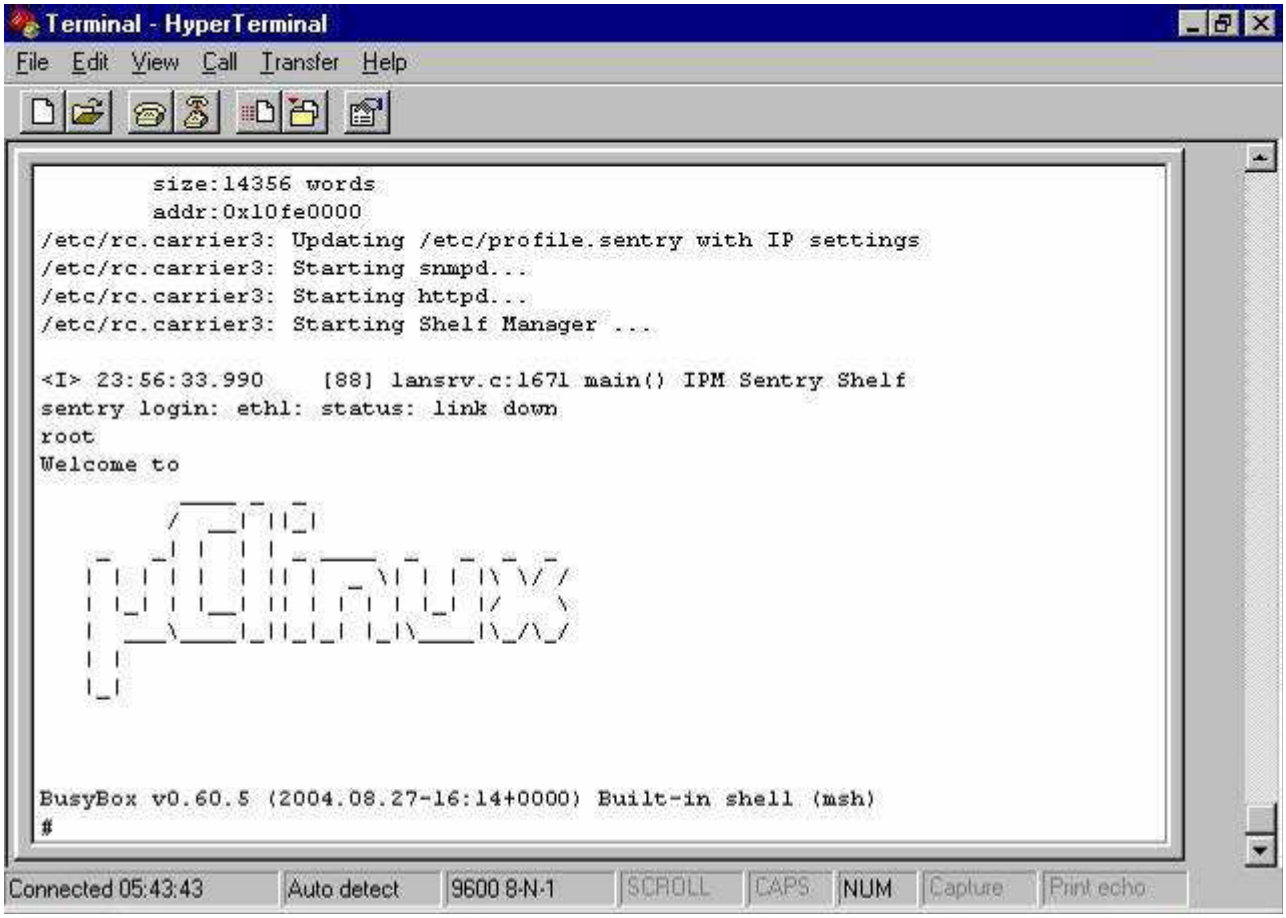
Figure 9: Serial Port Configuration Screen



4.3. Management Commands

At start-up, the Shelf Management program requires user identification. The default login name is: root.

After login, the following screen will be displayed in the console (**Terminal**) window:



CLI (Command-line interface) Entry to the Management System

Commands can be typed after the "#" prompt. Commands to the Shelf Manager begin with keyword "clia".

For example:

# clia help	**help on line commands**
# ifconfig	get shelf IP address
# clia sensordata 86 48	get temperature data from board in slot 3 (on-board sensor 48)
# clia fans	Get data on fan health and speed
# clia sensor 86	Displays all sensors in board
# clia alarm 0	Clear all alarms

There is a variety of commands for the shelf manager, which allow to control & monitor number of parameters, including: temperature, fans tacho-meters, PEM sensors, etc'.

All of the commands can be found in Pigeon Point's Shelf manager EIR - External Interface Reference user manual, in order to retrieve this user manual please contact CCPU technical support department at http://www.ccpu.com/support/.

5. Acronyms

Acronym	Meaning
ATCA	Advanced Telecom Computing Architecture
FRU	Field-Replaceable Unit
HS	Hot Swap
PEM	Power Entry Module
IPMB	Intelligent Platform-Management Bus
IPMI	Intelligent Platform-Management Interface
RTM	Rear Transmission Module
NEBS	Network Equipment-Building Systems
ETSI	European Telecommunications Standards Institute
ANSI	American National Standards Institute
CE	"Conformité Européene" ("European Conformity")
FCC	Federal Communications Commission
UL	Underwriters Laboratories - safety standards
CFM	Cubic Feet per Minute – Airflow measurement unit