

Allegro DOS™

OWNER'S MANUAL

Manual Part # 14649-00
Release Date: August 2004
Editor: R. Timothy

Table of Contents

Chapter 1

Introduction..... 7

Welcome.....9

Allegro Overview10

Quick Start Guide12

Chapter 2

Hardware Components 13

Introduction.....15

Case Design.....16

Keyboard18

Display.....24

LED Indicators.....28

Batteries29

Communication Ports44

PC Card Slot45

Sound Generator47

Expansion Pods48

Chapter 3

Memory Configuration and Data Storage

Options..... 49

Internal Memory51

Program and Data Storage Options52

Chapter 4

MS-DOS Operating System 55

MS-DOS Operating System Overview	57
Setting Up Communication.....	58
Lynx Windows File Management Utility.....	61
FileScout DOS File Manager.....	67
Text Editor	74
Terminal Emulation Program	78
System Setup Program	80
Startup Files	89
DOS Utility Programs and Device Drivers	94
Make Space Utility Program.....	98
Serial Printing Utility Program	99

Chapter 5

Technical Reference..... 101

Specifications	103
Glossary of DOS Terms.....	106
ASCII Character Sets	118
BIOS Messages	110
Files Located on the Solid State Disk.....	111
Solid State Disk Utilities	113
PC Card Utilities and Drivers.....	114
Communication Cable Schematic	116

Chapter 6

Software Developer's Guide for DOS 117

Introduction to DOS Programmers	119
Power Management	120
Keyboard and Video	124
Extended BIOS Functions	125
Hardware Interrupt Listing	133
I/O Port Mapping	134
AT Keyboard Scan Codes	135
Keyboard Key-Code Tables.....	136

Chapter 7

Warranty and

Software License Agreement 143

Warranties and Repair Information.....	145
Software License Agreement	147

Chapter 8

Expansion Pod..... 151

GPS Expansion Pod.....	153
------------------------	-----

Index..... 157

Chapter 1



Introduction

Welcome
Allegro DOS Overview
Quick Start Guide

Welcome

Juniper Systems, Inc. continues to provide cutting edge field computing solutions for agriculture, natural resources, and other rugged field applications. We are pleased to welcome you as a customer.

The Allegro Field PC™ is specifically designed for use in extreme field environments. It is rugged, waterproof, and can withstand temperature extremes. The ergonomic, lightweight, balanced design makes it easy to carry and use in the field for extended periods.

The Allegro features solid state disk storage so that your data are secure, even without power backup. Data are hand-keyed on the keyboard or entered directly via instruments such as GPS receivers, lasers, and bar code scanners. A user-accessible PC card slot provides additional storage and I/O capability.

If you have any questions or comments about the Allegro after reviewing this manual, please feel free to contact our Sales Department.

Allegro Overview

▲ Allegro Features

The standard features of the Allegro Field PC are listed below. These features are described in detail throughout this manual. A complete list of specifications is in the *Chapter 5 Technical Reference*.

- ❑ Operating Systems: MS-DOS
- ❑ Processor: 100 MHz 486 provides superior performance
- ❑ Memory: 16 M RAM for program execution
- ❑ Data and Program Storage: 32 M non-volatile solid state disk
- ❑ PC Card Slot: User-accessible for flexibility and versatility
- ❑ Case: Rugged, waterproof, easy to hold, and lightweight
- ❑ Display: Large, anti-reflective, equipped with a backlight (brightness adjustable) and heater
- ❑ Keyboard: Includes all printable ASCII characters, 12 function keys, centrally located number keys, and special coatings to prevent the characters from rubbing off
- ❑ Keyboard Bezel: Protects keys from tearing; removable for cleaning keyboard
- ❑ Power: NiMH battery pack lasts an average of 10 to 16 hours, depending on the application
- ❑ Communication Ports: Two 9 pin D RS-232 ports, and one 5 V power for external devices on COM1
- ❑ Software: DOS Utilities
- ❑ LED Indicators: Monitor battery status, charging status, PC card activity, and hard disk activity

▲ **Standard Accessories**

The Allegro comes with the following accessories:

- Allegro Distribution CD-ROM with the Desktop PC Setup Programs, DOS Utility Programs, and Device Drivers
- NiMH Battery Pack
- Universal AC Adapter
- Communication Cable
- Mini and Full Size Stylus
- Carrying Straps

▲ **Optional Accessories**

The accessories listed below are optional. Contact your sales representative if you are interested in any of these items.

- Alkaline Battery Holder
- Vehicle Power Adapter
- External Battery Charger
- Bar Code Wands and Accessories
- Digital Calipers
- ATA Flash Cards and RAM PC Cards
- IrDA, USB and Printer Adapters
- Application Development Software
- LandMark GPS Package
- Replacement Accessories
- Printed Owner's Manual

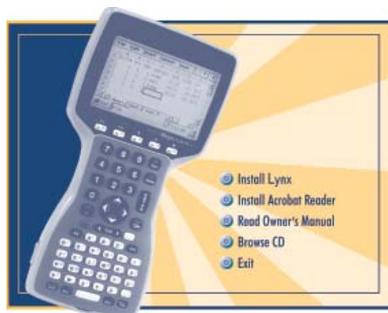
Quick Start Guide

A Quick Start Guide is included with the Allegro DOS. It offers the initial basic steps needed to get the Allegro charged and ready to take out into the field. The instructions on the guide should be done first, before you begin using the Allegro.

If the Quick Start Guide is discarded or misplaced after setting up the Allegro and you discover you need the guide again, you can access a copy of it from the Allegro CD.

To access the Quick Start Guide from the Allegro CD complete the following steps:

- 1) Place the Allegro into the desktop PC's CD-ROM drive. The following splash page appears:



- 2) Click on the *Browse CD* option. The CD opens up in a Windows Explorer program displaying the contents of the CD.
- 3) Double-click on the Quick Start Guide file to open in Acrobat Reader.
- 4) Read and/or print the Quick Start Guide.

Chapter 2



Hardware Components

- Introduction
- Case Design
- Keyboard
- Display
- LED Indicators
- Batteries
- Communication Ports
- PC Cards Slot
- Sound Generator
- Expansion Pod

Introduction

The Allegro DOS is designed to meet the needs of a user collecting data with a hand-held computer in a rugged field environment using a MS-DOS operating system. This chapter of the manual describes the unique hardware components of the Allegro, including the case, keyboard, display, communication ports, batteries, PC card slot, and expansion pod.

Case Design

▲ Case Features

The case has the following features:

- ❑ The polycarbonate ABS material is rugged, shock resistant, and formulated to resist damage from chemicals.
- ❑ The ergonomic shape and smooth edges make it easy to hold, maximizing comfort and usability in the field.
- ❑ The weight distribution is balanced.
- ❑ There are three gaskets used to seal the case from water and dust:
 - between the top and bottom case halves
 - around the battery compartment
 - around the PC card slot compartment

In most circumstances, these gaskets are not field replaceable. Contact our Service Department if a gasket needs to be replaced.

- ❑ There are two doors: one for the battery compartment and one for the PC card slot. These doors are user-replaceable. Contact our Sales Department for ordering information.



PC Card Slot



Battery Compartment

▲ Hand Strap and Shoulder Strap

There are four metal cleats, one on each corner of the Allegro case. Each cleat has two metal rings that are used to attach the hand strap and shoulder strap onto the Allegro.

The straps can be attached in numerous configurations, depending on your preference and whether you are right-handed or left-handed. The shoulder strap can be used as a neck strap for hands-free operation. The tension on the hand strap is adjustable.



Keyboard

▲ Keyboard Features

The keyboard on the Allegro is designed to maximize data entry efficiency and to withstand rugged, wet conditions.

- ❑ Careful planning went into the placement, size, and space between keys to increase efficiency and ease of use.
- ❑ The number keys are large and placed in the center of the Allegro for easy access from either side.
- ❑ Some keys have standard functions as well as special functions accessed with the GOLD and BLUE shift keys.
- ❑ Five function keys are located below the display. With the use of the GOLD and BLUE shift keys, twelve function keys are available.
- ❑ Two special coatings prevent the key labels from rubbing off after extended use.
- ❑ The keyboard bezel helps protect the keys from tearing. It is removable for cleaning purposes.



▲ Special Keys and Key Sequences

The standard keyboard letters, numbers, and functions are printed in dark brown on the off-white keys and in off-white on the dark brown keys. These standard options are operational unless a GOLD or BLUE shift key is pressed.



Blue Shift Key Usage

To access the keyboard characters printed in blue, press and release the BLUE shift key followed by the key with the desired blue-lettered character. To activate several blue-lettered keys before returning to standard mode, continue to hold the BLUE shift key down while you press the desired keys. Once the BLUE shift key is released, the keyboard reverts back to the standard mode.

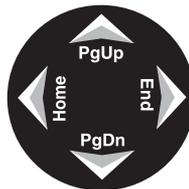
Gold Shift Key Usage

To access the gold shift key options, press and release the GOLD shift key followed by the key with the desired gold symbol. To activate several gold-lettered options before returning to standard mode, continue to hold the GOLD shift key down while you press the desired keys. Once the GOLD shift key is released, the keyboard reverts back to the standard mode.

Circular Key Usage

The circular key located in the center of the keyboard has three functions:

- 1) Standard (no shift keys): Up, Down, Right, and Left arrow keys
- 2) BLUE shifted functions: Page Up, Page Down, Home, and End
- 3) GOLD shifted functions in DOS: Pan the display Up, Down, Right, or Left



Shifted Options

The shifted options and the associated key sequences are listed below.

Option	Key Sequence
Function keys F6, F7, F8, F9 and F10	BLUE key + desired function key
Function keys F11 and F12	GOLD key + desired function key
Control Break	BLUE key + <i>Brk</i>
Page up	BLUE key + <i>PgUp</i>
Page down	BLUE key + <i>PgDn</i>
End	BLUE key + <i>End</i>
Home	BLUE key + <i>Home</i>
Toggle caps lock on and off	BLUE key + <i>CapLk</i>
Toggle display backlight gold on and off	GOLD key + <i>F3</i> (see symbol above function key)
Lighten LCD gold symbol above	GOLD key + <i>F4</i> (see function key)
Darken LCD gold symbol above	GOLD key + <i>F5</i> (see function key)
View BIOS Setup Menu	GOLD key + <i>S</i>
Pan display window in the direction of the arrow	GOLD key + right, left, up, or down arrow (round key)
Toggle auto-panning on or off	GOLD key + <i>Ins</i>
Zoom font	GOLD key + <i>Z</i> or GOLD key + <i>Start</i>
Perform a hard reset (reboot)	<i>On/Off</i> (hold down for 8 seconds)
Enter Allegro Setup Program	<i>On/Off</i> + <i>Del</i>

Keyboard Options

The following keys and key sequences are functional in DOS.

On/Off (Reset) 

This key is used to turn the Allegro on and off. The ridge around the key helps prevent the Allegro from being accidentally turned on without your knowledge (while it is in a backpack, for example). A hard reset is performed by holding down the *On/Off* key for about 8 seconds. Release the key when the reboot process begins.

❖ *Note: When you turn the Allegro on or off, there is no “beep.” Also, it is normal for a horizontal line to appear briefly on the screen.*

Contrast Keys  + 

To make the display darker, press the GOLD key and the *F5* key. To make the display lighter, press the GOLD key and the *F4* key.

Backlight On/Off  + 

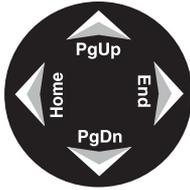
The backlight is toggled on and off by pressing the GOLD key and the *F3* key.

Tab, Forward and Backward 

In a DOS program, the right arrow is a forward tab and the left arrow is a back tab.

Break (Brk)  + 

The break function allows you to exit out of batch files and programs. Press the BLUE shift key and the *Brk* key.



Panning  +

To pan the display in the direction of the arrow, press the GOLD key plus the right, left, up, or down arrow key.

Auto-Panning  + 

Toggle auto-panning on or off by pressing the GOLD key then the *Ins* key. (Auto Panning is described later in this chapter under *Display, Full Screen, Auto Panning*.)

Zoom Fonts  + 

You can toggle between four font sizes by pressing the GOLD key then the Z key.

Viewing the System Setup Program  + 

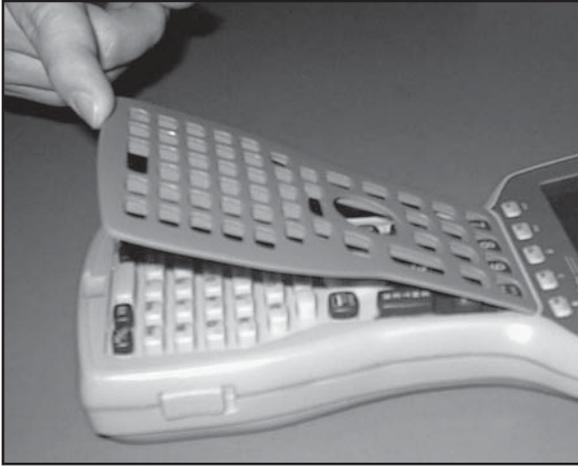
The System Setup Program main menu screen can be invoked at any time by pressing the GOLD key then the S key. Refer to *Chapter 4, MS DOS, System Setup Program* for details on how to use this utility.

Typing Extended Characters

You can access characters that are not available on the keyboard by pressing and holding the *Alt* key and typing the associated three digit ASCII character code on the keyboard. The character is displayed when the *Alt* key is released. For example, press *Alt 2 4 8* to access a degree symbol °. A list of extended characters is located in *Chapter 5, Technical Reference*.

▲ Cleaning the Keyboard

Dirt and debris can get underneath the keyboard bezel. To clean it, use a coin to pull the bezel up at the recess located at the bottom of the keyboard and remove it. We recommend that you use warm water, mild detergent, and a toothbrush to clean the keyboard or simply brush it out. The Allegro remains sealed during this process. (Do not direct a high pressure stream of water at the keyboard to clean it. This action could break the seal, causing water to get inside the Allegro.)

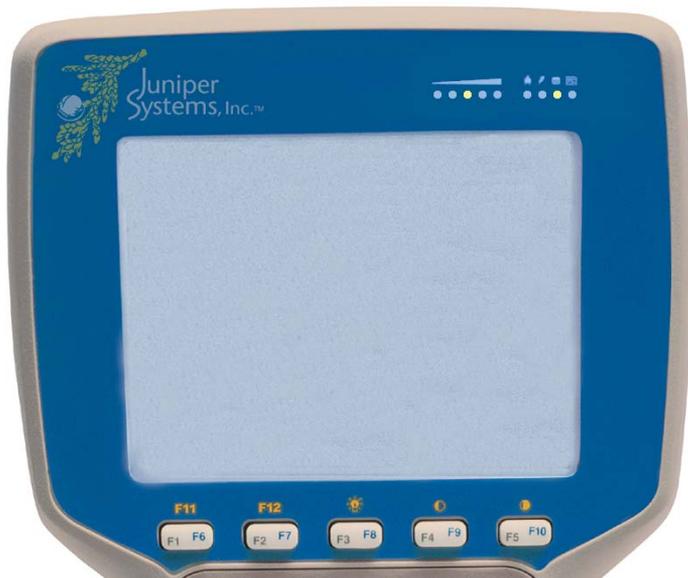


Reattach the bezel by carefully inserting the top ridge under the function keys and lowering the bezel down flat onto the case. Press down along the sides while aligning the keys through the holes.

❖ *Important Note: After you reattach the bezel, check each key to make sure it is completely free from the bezel. If any part of a key is caught underneath the bezel, you may not be able to turn the Allegro on or you may hear a continuous string of beeps.*

Display

The Allegro DOS has a high-contrast liquid crystal display. The active viewing area is 3.3" wide x 2.5" high. The display resolution is 320 x 240 pixels. The display is shock-mounted and sealed.



▲ Display Features

- Contrast: The display contrast can be lightened or darkened.
- Heater: The display heater allows you to use the Allegro in temperatures below freezing.
- Backlight: The backlight enhances visibility in low-light conditions. The brightness of the backlight is adjustable.
- Position: The display is slightly tilted up to reduce glare and enhance visibility.
- Auto-Panning: The display window can be set up to automatically pan with the cursor.
- Gray Scale: you can use up to 16 shades of gray in text mode and four shades in graphics mode.
- Shade Mapping: converts colors and gray shades into black and white to achieve the best contrast.

▲ Adjusting Display Features

The display features can be enabled, disabled, or adjusted through the System Setup Program in DOS (see *Chapter 4*). Some display features can be adjusted using the special key sequences shown below:

Display Feature	Key Sequence
Increase Contrast	GOLD + F5
Decrease Contrast	GOLD + F4
Backlight Toggle On and Off	GOLD + F3
Auto-Panning Toggle On and Off	GOLD + Ins

Backlight

The display backlight is used to enhance visibility in low-light conditions in the field. The backlight can enhance visibility indoors as well when you are viewing the display under fluorescent lighting.

The brightness of the display backlight is adjustable from dim to bright (the default). This adjustment is made from the *System Setup Program, Keyboard | Display Screen*.

Contrast and Automatic Temperature Compensation

Once you have set the contrast, you seldom need to readjust it. If you turn the Allegro on and the display contrast appears too light or too dark, it may be because the display contrast is automatically adjusting for changing temperatures. If you have moved the Allegro from a cold environment to a warmer one or visa versa, it can take up to seven seconds for the temperature compensation to take place and for the display to update. If you wait seven seconds and the display does not become visible, adjust it to the desired contrast setting using the key sequences outlined above.

▲ Adjusting Font Size

There are four font sizes available in DOS:

Font Size	Pixels (character width x height)
40 characters x 25 lines (used for FileScout DOS Utility Programs)	8 x 8
40 characters x 16 lines (default)	8 x 12
32 characters x 16 lines	10 x 12
20 characters x 12 lines	16 x 16



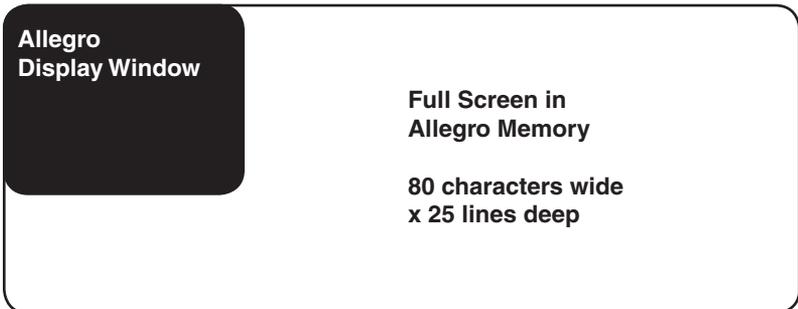
To toggle between the font sizes, press the GOLD shift key and the Z key (for *Zoom*).

If you are using a program that was written for another hand-held computer with a different screen size, select the font size that best fills the Allegro screen. You can usually avoid making modification to the original program this way.

When you develop a new DOS program to run on the Allegro, select a default font that best displays the data on the screen for your application. If you would like large characters to appear for ease of reading, use the largest font. If you need to show more data on the screen at one time, use one of the smaller fonts. Refer to *Chapter 6, Software Developer's Guide for DOS, Extended BIOS Functions* for details about the extended BIOS functions.

▲ Full Screen

When you are in DOS, the Allegro has a full screen stored in memory that is 80 characters wide by 25 lines deep. Because of the size of the display window, you can only view a portion of the full screen at a time. You can view any part of the full screen by panning vertically and horizontally. Panning can be done automatically using the auto-panning function or manually using GOLD key + arrow key combinations.



Auto-Panning

When auto-panning is enabled (the default), the screen automatically shifts (pans) as the cursor moves beyond the visible window.

When auto-panning is disabled, the screen does not shift as the cursor moves beyond the visible window. The display screen can be shifted by panning manually or through program control. Auto-panning can be turned off in the System Setup Program (see *Chapter 4, MS-DOS Operating System, System Setup Program*). You can also toggle auto-panning on and off by pressing the GOLD key + *Ins*.

Panning Manually

You can manually move the display window around the full screen by pressing the GOLD key followed by the desired arrow key. The visible display pans in the direction of the arrow. The cursor remains in its original position; it does not follow the window.

A program can be written to control panning through the extended BIOS functions. Refer to *Chapter 6, Software Developer's Guide for DOS, Extended BIOS Functions* for details.

LED Indicators

The following LED indicators are located above the display:



These indicators are active while the Allegro is running, providing you with the following information:

LED	Description
	Battery Charge Status: shows the percent of charge remaining in the batteries
	External Power: indicates that you are connected to an external power source and not drawing power from the internal batteries
	Charging Indicator: lights up while the rechargeable batteries are charging
	Solid State Disk Access: flashes when data are being read from or written to the solid state disk
	PC Card Access: indicates that your application program is accessing the PC card (do not remove it when this light is flashing)

A special circuit is implemented in the Allegro to reduce the amount of power required to light these indicators.

Brightness Adjustment

The brightness of the LED indicators can be set to dim, medium, or bright. This adjustment is made from the *System Setup Program, Keyboard/Display Screen* in DOS. Type *Setup* at the DOS prompt (C:\>) and press *ENTER*, or press the GOLD key + S key.

For additional information, refer to of Chapter 4, MS-DOS Operating System under the BIOS Setup or the System Setup Program section.

Batteries

The power consumption of the Allegro is very efficient. The Auto Suspend and Power Management features help to conserve power. Maintaining the battery pack and backup supply is simple.

There are three types of batteries and a backup capacitor associated with the Allegro:

- ❑ NiMH battery pack
- ❑ Battery holder for three alkaline cells (optional accessory)
- ❑ Internal lithium backup battery (powers the real time clock and CMOS RAM and keeps the BIOS settings set in the System Setup)
- ❑ Super capacitor that serves as the RAM backup (maintains the RAM for 5 - 7 minutes, while you change the battery pack)

▲ Main Power Source

The Allegro is powered by a rechargeable nickel metal hydride (NiMH) battery pack. The battery compartment is accessed through a door on the lower part on back of the Allegro case. The NiMH battery pack is shipped along with the Allegro but is not installed at the factory.

Installing the Battery Pack for the First Time

Upon receiving the Allegro, you must install and then charge the battery pack. To do this, complete the following:

- 1) Push up the sliding latches on the sides of the Allegro to open the battery compartment door.
- 2) Place the NiMH battery pack in the left side of the battery compartment, push down, and slide it all the way to the right.



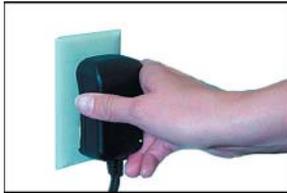
- 3) Push the battery door closed until each latch clicks into place.

- Slide the latches downward until they cannot slide any further to securely latch the battery door closed.



Do not turn on the Allegro yet.

- Plug the AC wall charger that came with the Allegro into the wall socket.



The small green light on the wall adapter turns on when it is plugged into the wall.

- Remove the rubber protector from the Allegro's external power input jack.
- Plug the power connector end of the wall charger into the Allegro.



- Charge the battery pack at room temperature until the LED charge light (lightning bolt) on the Allegro turns off. This can take three to five hours the first time you charge the battery.

By initially charging the batteries this way, you become familiar with the Allegro's battery gauging feature and how the battery status LEDs work. This recommendation is made even if you eventually plan to use an external battery charger to charge the battery pack or if you are going to use the optional alkaline battery holder.

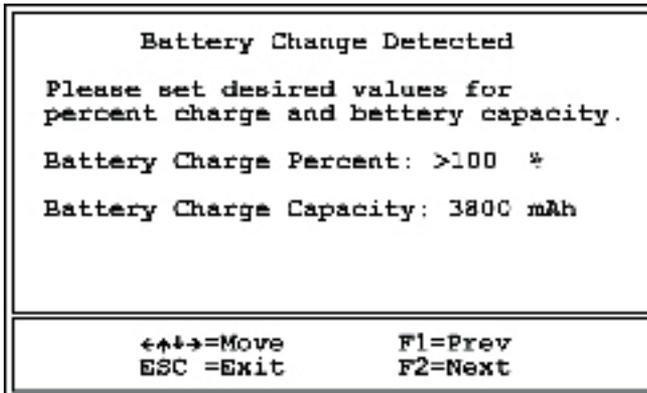
Setting the Battery Charge

After installing the battery pack into the Allegro, the battery charge percent must be set. This allows the Allegro to know the pack's charge status. When you insert the battery pack into the Allegro for the first time, the charge status is unknown to the Allegro.

To set the charge status of the battery pack after you install the battery pack for the first time, complete the following:

- 1) Turn on the Allegro by pushing the *On/Off* button.

As MS DOS loads, no action is required until it gets to the *Battery Change Detected* screen.



The Arrows key move your selection between the *Battery Charge Percent* and the *Battery Charge Capacity*.

F1 moves the highlighted selection up.

F2 moves the highlighted selection down.

ESC exits the *Battery Change Detected* screen and saves your settings. Pressing the *ENTER* key does this also.

- 2) Set the charge percent to 10 by pressing on F1 or F2 to move the percent.

The capacity of the NiMH battery we have provided with the Allegro is 3800 mAh. The capacity default is set at 3800.

If you are using a different brand of NiMH battery pack and are unsure of your batteries capacity, check the label on the battery to discover the charge capacity. If it is not 3800 mAh set the charge capacity to the correct mAh.

- 3) Press *ESC* or *ENTER* to save your settings and exit the *Battery Charge Detected* screen.

The *Battery Charge Detected* screen closes and the charge status is set. Once the battery pack is fully charged, the gauging automatically sets to 100%.

Setting the Battery Charge Percent

Based on the status of the battery pack, the following recommendations are designed to help you set the battery charge percent in the *Battery Charge Detected* screen.

Battery Pack	Recommended Setting
Fully charged	100% (default)
Removed and replaced without charging	Last
Uncertain, can estimate	Select charge from 10 to 100%
Uncertain, can't estimate	See suggestions that follow

If you insert a battery pack and do not have a good idea what the status of it is, we recommend that you do the following:

- Plug the Allegro into the AC wall charger and set the battery charge to 10% as previously instructed. Fully charge the pack, this can take up to three to five hours.
- Once the battery pack is fully charged, the gauging is automatically set to 100% and the battery LED indicators accurately reflect the battery charge.

Setting the Battery Capacity

The charge capacity field should be set to the charge capacity of the newly installed battery pack in milliamp-hours (mAh). The charge capacity of the NiMH batteries we have provided for the Allegro are as follows:

Gold Peak™ (GP) VR151	3800 mAh
Empire™	3500 mAh
Duracell™ DR9	3000 mAh

If you purchase a battery pack from another vendor, note what the capacity is. For optimum performance, it is best to use battery packs with a 3000 to 4000 mAh capacity. The higher the capacity of the battery pack, the longer it holds a charge. However, battery packs with a capacity over 4000 mAh may not charge fully in the Allegro.

As a battery pack ages, it does not operate as long on a charge as it did when it was new. The capacity could be reduced by as much as 50% at the end of its useful life. Over time, the capacity setting for an individual battery pack may be adjusted downward to account for age.

Details about battery life, recharging the battery pack, the battery status LED indicators, power management features, and removing and inserting battery packs are located in this chapter of the manual.

Battery Life

Depending on the application you are running on the Allegro, the batteries can last from 5 to 30 hours between charges (NiMH) or replacement (alkaline cells), as shown below:

Battery Pack	Capacity	Typical Operating Time
NiMH	3,800 mA hours	12 to 20 hours
Alkaline	1,600 mA hours	5 to 8 hours

The operating times stated above are based on the use of a typical application where:

Allegro performance level is set to medium

Power Manager is on

Data are being entered manually on the keyboard

No external devices are powered by the Allegro

Backlight is used 10% of the time

Processing time is 20%

Recharging the NiMH Battery Pack

For applications where the Allegro is used for several hours each day, the NiMH batteries can be charged daily. The Allegro's built-in intelligent charging circuit manages the charging of the batteries and prevents them from being overcharged. For less frequent use, the batteries should be discharged below 80% before they are recharged for maximum battery life.

You should always be aware of the status of the main batteries before you go out into the field to collect data. The batteries may need to be recharged before you go. You need to take into account how much battery life is left and the amount of time required to charge the pack.

Temperature Ranges for Charging the NiMH Battery Pack

The Allegro's NiMH batteries are charged most efficiently at temperatures ranging between 10° to 20° C (50° to 68° F) when the AC power adapter is used. When charging the battery pack keep the temperature of Allegro between 0° to 40° C (32° to 104° degrees F) due to the nature of NiMH batteries. The chart below describes the Allegro battery charging behavior at different temperatures.

	Temp. Range Degrees C	Temp. Range Degrees F	Charging Behavior
Recommended Charge Range	10° to 20°	50° to 68°	Most efficient; batteries charge within 3 hours
Acceptable Charge Range	0° to 30°	32° to 86°	Batteries are charged within 4 hours.
Too Cold Range	< 0°	< 32°	The batteries must reach 0° C (14° F) before they begin to charge.
Too Hot Range	> 30°	> 86°	Battery charge cycle is complete in 4-5 hours. If the batteries have become too warm, they may only reach a 90 to 95% charge capacity.

Try to charge the batteries within the recommended temperature range. If you need to charge the batteries in temperatures exceeding this range, you should purchase an extra battery for the most efficient operation of the Allegro.

Power Connector

A dedicated standard external DC power input connector is located on the top of the Allegro. The connector is 5.5 x 2.1 mm, 10 to 20 V DC. The AC power adapter and optional cigarette lighter power adapter are inserted into this connector.



< Power Connector

Charging Accessories for NiMH Battery Packs

AC Power Adapter

Using the AC power adapter, the battery pack is recharged without removing it from the Allegro.

Please note that you must use the adapter included with the Allegro or one that is capable of supplying adequate current (12 V at 1 Amp). Otherwise, the battery pack could be damaged.

You can run the Allegro from the adapter while the batteries are being charged. To charge the battery complete the following steps:

- 1) Plug the AC charging adapter into an AC outlet.
- 2) Insert the connector into the external power input jack located on the top of the Allegro case. It can take up to five hours to fully charge a battery pack.
- 3) When the batteries are fully charged, the charging circuit switches into trickle charge mode. You can leave the Allegro connected to the adapter continuously without overcharging or damaging the batteries.

Vehicle Power Adapter

With this adapter, you can charge battery packs via an automobile accessory power outlet (the cigarette lighter for example). To charge the battery, complete the following steps:

- 1) Plug the adapter into the accessory power outlet.
- 2) Insert the connector into the external power input jack located on the top of the Allegro case. It can take up to five hours to fully charge a pack. You can operate the Allegro with this adapter as well as charge the batteries.

External Battery Charger

The battery pack is removed from the Allegro to be charged using the external battery charger. To charge the battery complete the following steps:

- 1) Place the NiMH battery adapter on the charger.
- 2) Slide the battery onto the charger and leave until fully charged, which can take up to five hours. Refer to the instructions that came with the charger for more details. (Details on how to remove the battery pack are located later in this chapter.)

Using Vehicle Power

It is important to have the Allegro in Vehicle Mode when it is connected to vehicle power, either directly or via the cigarette lighter power adapter. Vehicle Mode prevents excessive charging of the NiMH battery pack.

Using Vehicle Mode is necessary because every time the key is turned off the Allegro begins a new battery charge cycle. The Allegro circuitry detects when a battery pack is fully charged, however, it takes approximately twenty minutes for this to occur. Repeatedly attempting to charge a fully charged battery pack causes premature degradation in battery performance. In Vehicle Mode, charging is inhibited if the gauging circuitry indicates that battery pack is above 90% charged.

To put the Allegro in Vehicle Mode, follow these steps (the default is for Vehicle Mode to be off):

- Go to the *System Setup Program | Power Management* screen and select *Yes* for the Vehicle Mode option (refer to *Chapter 4, MS-DOS, System Setup Program* for details).

Resume Versus Reboot

Each time you replace the batteries, the Allegro *resumes* to the screen that was last displayed before the batteries were removed.

Note: Refer to Chapter 4, MS-DOS, System Setup Program section for information on how to set the On/Off key to resume or reboot.

If the batteries are removed from the Allegro for longer than five minutes, the Allegro *reboots* the operating system, but it does not resume to the screen that was last displayed before the batteries were removed. The DOS prompt appears.

Battery Gauging

The Allegro's intelligent battery gauging circuit helps you efficiently maintain the batteries for your applications. The percentage of remaining charge in the batteries is indicated through the battery status LED indicators. The gauging works for both NiMH rechargeable batteries and alkaline batteries, although the mechanism is different, as outlined in this chapter.

❖ *Important Note: Battery gauging is provided as a tool to help you manage your batteries. It does not affect the performance of the Allegro or the batteries in any way. If the gauging circuitry is not properly synchronized with a NiMH battery, it may show erroneous readings. Please read this chapter on battery gauging so you understand the proper setup, functionality, and limitations of battery gauging.*

How Battery Gauging Works for the NiMH Rechargeable Battery
The Allegro employs a circuit that watches how much charge is added to or removed from the rechargeable battery.

For the battery gauging to work correctly on the Allegro, the following values must be known about the NiMH battery pack:

- Charge percent
- Capacity

The battery gauging is set in the following ways:

- 1) The charge percent and capacity values are set at the factory for the battery pack. Once you fully charge the battery pack using the AC charging adapter (the pack is shipped in a discharged state), the gauging is automatically set correctly. You do not need to set it manually.
- 2) When you remove and insert a battery pack, a popup window appears asking you to select the charge percent and capacity. The popup window is described later in this chapter under *Setting Battery Gauging From the Battery Popup Window*. Please note that if either of these values are incorrect, the gauging is not accurate.

The battery gauging is an estimate. It works well in applications where the Allegro is used and charged every day. When it is not used much and goes several days between charges, the gauging may not be as accurate in reflecting the true charge of the battery pack. The accumulated error can be up to 5% per day. To avoid errors, keep the Allegro attached to the AC charging adapter when you are not going to use it for a few days. This practice prevents the battery pack from self-discharging. The battery stays fully charged and the battery gauging reflects the correct status of the battery pack.

How Battery Gauging Works When Using Alkaline Batteries

Alkaline batteries have a better slope to the voltage discharge curve than NiMH batteries. Because of this, the voltage can be read directly to gauge the battery charge percent.

The gauging may vary depending on the grade and brand of the batteries being used. For best results, we recommend you use the new types of alkaline batteries such as the Duracell Ultra™ and Energizer Titanium™. Also, temperature and loading affect alkaline battery voltage and may cause the gauging to behave differently in different environmental conditions.

When moving from a cold environment to a warm one the battery charge LED indicators may move up instead of down. This happens because in cold temperatures alkaline batteries have less charge capacity than in warm temperatures and this is reflected in the voltage output.

Battery Status LED Indicators

There are five LEDs. Depending on which LED is lit, starting left and moving right, the battery charge remaining is as follows:



LED	Status	Indicator	Battery Charge Remaining
1	Blinking	Low Voltage	0 to 10%
1	Steady Light	Charge Flow	10% to 20%
2	"	"	20 to 40%
3	"	"	40 to 60%
4	"	"	60% to 80%
5	"	"	80% to 100%

❖ *Important Note: The LED indicators are meant to give only an approximate indication of battery charge remaining, not an exact reading.*

When the battery charge drops to 10%, the voltage begins to drop off rapidly. When the Allegro detects this low battery condition, the battery status LED indicator farthest to the left begins to blink to let you know it is time to recharge or replace the batteries. You have from ten minutes to one hour (depending upon power consumption rate) to save your data and exit your program.

When the battery pack voltage drops sufficiently, the Allegro automatically goes into suspend mode. Charge or replace the batteries as soon as possible. The battery pack has enough charge left to retain the system RAM for a short period of time, at which point the Allegro completely powers down to prevent damage to the batteries. If this happens, the Allegro reboots after you charge or replace the batteries. Any data that were not saved to disk are lost.

Charging Indicator

When the rechargeable batteries are being charged via the AC power adapter or the vehicle cigarette lighter power adapter, the LED underneath the charging indicator is lit. When the batteries are fully charged, the LED turns off. Note that when the LED turns off, the batteries continue to receive a trickle charge.

If the charging indicator LED does not light up when you plug the Allegro into a charger, the battery has a 90% or higher charge and does not need to be charged. Batteries should be discharged below 80% before they are recharged for maximum battery life.

Power Management Features

To conserve power, the Allegro has the following built-in power management features: Auto Suspend and Power Manager. These features are controlled through the *System Setup Program | Power Management* screen.

Auto Suspend

When the Auto Suspend feature is on, the Allegro turns itself off if there is no activity after a specified period of time. The time ranges are from 5 to 75 minutes in 5 minute increments. Auto Suspend monitors both keystrokes and processor activity.

Power Manager

The BIOS Power Manager is a sophisticated mechanism which automatically speeds up and slows down the system CPU based on the level of activity. Activities monitored include key presses, serial port activity, changes to video memory, file system activity, and PC card activity. When there is a high degree of activity, the system runs at a faster rate. When there is a lesser degree of activity, the system runs at a slower rate, consuming less power. If the Power Manager is enabled, the CPU Performance setting affects the range of speeds at which the CPU runs. When the Power Manager is turned off, the CPU Performance setting causes the CPU to run at a fixed clock speed.

You can leave it on (default) or turn it off. Because the Power Manager can greatly extend the life of the batteries, we recommend that you run the Allegro with the Power Manager on and the CPU speed set to medium.

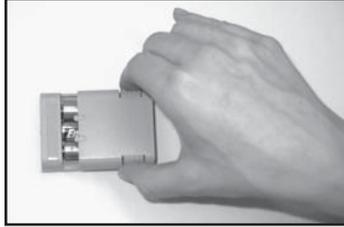
Alkaline Battery Holder: Inserting Batteries and Usage Information

The alkaline battery holder enables you to power the Allegro Field PC with alkaline batteries. Always install the alkaline batteries into the holder first before you remove the battery pack in the Allegro. The Allegro only has five minutes of battery life to change battery, if it takes longer than five minutes the data saved in RAM can be lost. Follow the steps outlined below for proper usage.

- 1) Exit from any open programs and turn the Allegro off before changing the batteries.

- 2) Insert three fresh AA alkaline batteries, taking care to orient them correctly (only use alkaline batteries). Always replace all three batteries at once.

Note: For best results, we recommend that you use the new types of alkaline batteries such as the Duracell Ultra™ and Energizer Titanium™.



Note: Do not use re-chargeable AA battery adapters. The battery life of three re-chargeable batteries is not cumulative. This means that if a battery equals 1700 milliamp hours (mAh) then three batteries still equals 1700 mAh and not 5100 mAh.

- 3) Slide the door to the alkaline holder back into place, making sure it snaps securely shut.
- 4) The Allegro battery compartment is accessed through a door in the back of the case. To open the compartment door, push up on the release latches on the sides of the case. The door pops open. Remove the NiMH pack or alkaline holder by sliding it to the left and pulling it out.
- 5) Open the door to the alkaline battery holder by pressing in on both tabs with your index finger and thumb as shown.
- 6) Place the alkaline battery holder in the left side of the Allegro battery compartment. Put gentle pressure on the holder while sliding it all the way to the right.
- 7) Press down on the Allegro battery compartment door to close it. The latches should automatically lock the door into place and seal the compartment. Make sure that the slide latches are completely closed.
- 8) While you are using the Allegro Field PC, occasionally check the battery LED indicators above the Allegro display. When the battery power gets low, replace the alkaline batteries or insert a NiMH pack.

Important Information Regarding the Use of Alkaline Batteries

The Allegro Field PC is designed to be used with the rechargeable NiMH battery pack that came with the unit. The alkaline battery option should be considered as a backup to the NiMH battery pack, not as the main source of power for an extended period of time. Alkaline batteries have a lower capacity and a higher resistance than NiMH batteries. Thus the battery life and performance of the Allegro are reduced when alkaline batteries are used. The Allegro runs as described below:

- The clock speed automatically switches down to a maximum speed of 33 MHz
- The display heater cannot be used
- As the batteries are drained, the Allegro automatically switches to a slower clock speed and limits the backlight intensity to further reduce power consumption and prevent the unit from turning itself off because of power demands
- Battery life ranges between 2 and 8 hours (this is highly dependent on the temperature)

If you have been using alkaline batteries in the Allegro and switch to a NiMH battery pack, the clock speed and backlight brightness settings automatically return to the levels they were previously set at.

Storing the Allegro During Inactive Periods

To protect the Allegro and your files during long or short-term storage periods, please take the following precautions:

- Save all data and programs you want to keep to disk.
- Store the Allegro in a cool location (<20°C, 68°F).

Your data and programs are secure as long as they have been saved to disk, even if the batteries become discharged. The data storage disk is non-volatile. It does not depend on the battery to store the data for extended periods.

Storing the Allegro for Less Than Two Months

If you store the Allegro for less than two months, we recommend that you leave the NiMH battery pack in the Allegro and attach the AC power adapter to keep the batteries charged. Once the battery pack is fully charged, the Allegro switches to trickle charge mode. You can leave the Allegro in trickle charge mode continuously without damaging the batteries. The battery pack is fully charged when you are ready to use the Allegro.

Storing the Allegro for More Than Two Months

If you store the Allegro for more than two months, remove the battery pack and attach the AC power adapter to prevent the internal lithium backup battery from draining. When you are ready to use the Allegro, insert a battery pack and fully charge it if necessary.

NiMH Battery Pack's Useful Life

Battery packs can be recharged approximately 600 times before they need to be replaced. This is dependent on the temperatures they have been exposed to, operating conditions, and charging and discharging practices.

Recycling the NiMH Batteries

The NiMH batteries inside the Allegro battery packs are recyclable. We are voluntarily participating in an industry program to collect and recycle these batteries when they are taken out of service in the United States and Canada.

The recycling program provides a convenient alternative to placing used NiMH batteries into the trash or the municipal waste system. Our involvement in this program is part of our commitment to preserving our environment and conserving our natural resources. Contact our technical service to return spent batteries for recycling.

Spare NiMH Battery Packs

Fully charge spare battery packs before storing and store them in a cool location. Avoid placing battery packs "contact side" down on a metal surface. Also, do not stack packs so that their contacts touch one another. These practices cause the batteries to drain. The shelf-life of a battery pack is about two months. Before using a spare pack, you should charge it.

▲ Short-Term Backup Supply

The Allegro has a super capacitor that behaves like a backup battery. When the main batteries are removed, the capacitor maintains the RAM for up to five minutes, allowing you plenty of time to change the batteries. The capacitor cannot operate the Allegro. The capacitor is charged by the batteries. It holds a charge as long as the batteries or external power are supplied. When a battery pack is replaced, the capacitor charges up to full capacity in about two minutes.

If power is not supplied to the Allegro for more than five minutes, the Allegro reboots when the battery pack is replaced or charged. All the programs, data, and applications saved to the disk are safe. Information that was not saved to the disk is lost.

The super capacitor should not need replacement through the life of the Allegro.

▲ Backup Battery, Real Time Clock

A 3.6 V lithium backup battery supplies current to the Allegro to maintain the real time clock when power is not supplied to the Allegro. This battery should last for at least five years.

Replacing the Lithium Backup Battery

If the Allegro does not hold the date and time or you get a CMOS error message, the lithium battery needs to be replaced. You can check and see whether or not the lithium battery is good or bad. Go to *System Setup Program* | *System Information Screen* to view the status of the lithium battery.

You must return your Allegro to the factory for lithium backup battery replacement.

Communication Ports

The Allegro DOS has two 9 pin serial ports (located on the top of the case).



These ports are recessed to protect them in case of a drop. They are also completely sealed.

▲ 9 Pin Serial Communication Ports

The standard 9 pin serial communication ports (COM1 and COM2) allow for the simultaneous operation of two serial devices such as printers, modems, and bar code wands. Additional power is provided on COM1 to power bar code wands and other sensors. The data transfer rate on these ports ranges from 300 baud to 115 Kbaud. Rubber connector protectors keep dirt and moisture out of the ports. The ports are sealed without the protectors.

Be sure to use the serial communication cable (9 pin to 9 pin) included with the Allegro to connect the Allegro to a desktop PC. A wiring diagram of the cable is shown in *Chapter 5, Technical Reference*. Note that a standard 'straight through' serial cable does not work.

9 Pin D Connector Pinouts

Pin

- | | |
|---|----------------------------------|
| 1 | Data Carrier Detect (DCD) Input |
| 2 | Receive Data (RCD) Input |
| 3 | Transmit Data (TXD) Output |
| 4 | Data Terminal Ready (DTR) Output |
| 5 | Ground (GND) |
| 6 | Data Set Ready (DSR) Input |
| 7 | Request To Send (RTS) Output |
| 8 | Clear To Send (CTS) Input |
| 9 | Ring Indicator (RI) Input |

Connecting Sensors to COM1

Pin 4 (DTR) on COM1 supplies up to 200 mA at +5 volts to power bar code scanners and other sensors. This signal (DTR) must be set high by the application to take advantage of this feature. When the DTR signal goes low, the output is -5 volts. Insure that the device connected to the DTR line can accept negative voltages or is protected against them (standard RS-232 signal levels).

PC Card Slot

The Allegro has a user-accessible PC Card Slot (PCMCIA 2.0 Type II) that allows you to add mass data storage and I/O capabilities to your Allegro. The PC card drivers and utilities are factory-installed on the Allegro. These programs provide the card and socket services necessary to operate the card. In DOS, the PC card is the D: drive.

▲ Types of PC Cards Accepted

The PC card slot accepts Type I or Type II cards. These cards include ATA Flash cards, SRAM (Static Random Access Memory), Compact Flash cards, or Input/Output cards. All types have a 68 pin connector for attachment to the Allegro. The cards must be 5 V or 5 V/3 V (PC cards that are 3 V only are not supported). The PC card slot is a 16 bit card slot. It is not a “card bus” slot.

Memory Cards

A memory card is a solid state, self-contained memory board housed in a credit card-sized package. There are several types and brands of cards on the market. These cards behave like hard disks. Refer to *Chapter 3, Program and Data Storage Options*, for more details.

Input/Output Device Cards

Input/Output Device cards can provide additional communication capabilities to your Allegro. Common I/O cards include fax/modem and network cards. Refer to the manufacturer’s instructions for information on how to use these cards and for information about hardware or software accessories that may be required. Contact our sales department for information on compatible cards and technical information about the installation and operation of the cards.

▲ Inserting and Changing Cards

- 1) ATA cards should be ready to use. If you are using an SRAM card, make sure the battery is installed (if required) and that the card has been formatted.
- 2) Turn the Allegro off and place it face-down on a clean surface.
- 3) The card slot is located in the top part of the Allegro behind the display. It is accessed from behind through the PC card slot door. There are two screws holding the door in place. Turn each screw counter-clockwise 1/4 of a turn to release the door.

- 4) PC cards have a 68 pin socket on one end. Insert the card socket-first. The front of the card should be facing the door.



❖ *Important Note: Be careful when inserting and removing cards. Excess force could damage the card and the card drive. If the LED indicator for the PC card slot (farthest right) is blinking, the computer is writing to the card. Do not turn off the Allegro and remove the card until the LED stops blinking. Incomplete files can corrupt the data already stored on the card.*

- 5) To remove a card, push the eject button, grasp the card firmly, and pull it out.
- 6) Close the door to the PC card slot. Turn both screws clockwise 1/4 of a turn to seal the compartment.

▲ **Displaying Information About the PC Card**

You can display information about the installed PC card such as the card type and the name of the manufacturer. Use the CARDINFO utility. From the DOS prompt type: `CARDINFO` and press `ENTER`.

The following information is displayed:

Slot 1:

[Card Information]

Card Type = *ATA Disk (Drive D:)*

Manufacturer = *Vendor Name*

Product Name = *Vendor Product Name*

Sound Generator

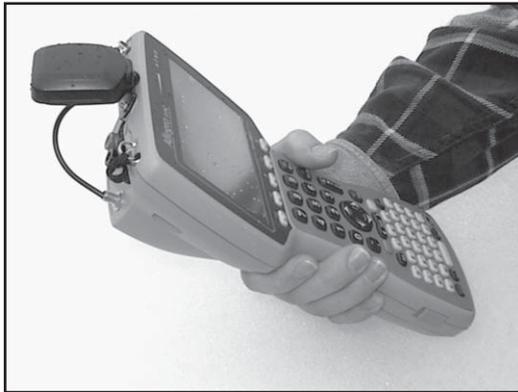
The Allegro has the ability to produce basic computer sounds such as beeps and clicks. The key press and screen tap sounds are generated by a secondary processor to reduce power consumption.

The sound properties for key presses and screen taps can be adjusted in the *System Setup Program* | *Keyboard* | *Display Screen*. Note that the tone of key presses and screen taps can be adjusted, but the volume cannot.

Expansion Pods

Custom expansion pods allow you to integrate additional components as they become available. Options include an RF network, animal ID reader, bar code scanner, GPS receiver (shown below), parallel port, and analog sensor input. Call our Sales Department for information about the availability of these expansion pods.

Expansion pods replace the PC card door. The Allegro remains sealed when an expansion pod is installed.



Chapter 3



Memory Configuration and Data Storage Options

Internal Memory
Program and Data Storage Options

Internal Memory

The Allegro's internal memory is configured much like the memory in laptop computers. It consists of ROM (Read Only Memory) and RAM (Random Access Memory).

▲ Read Only Memory (ROM)

ROM is used to store the Operating Systems, BIOS, and Utility programs. The files on the A: drive of the Allegro are located in the ROM. Information in the ROM is electronically "burned" into a chip before the chip is installed at the factory. Information stored in ROM can be read or copied. It can only be altered with a special utility program provided by the factory. The information stored in ROM remains intact whether the system power is on or off.

▲ Random Access Memory (RAM)

The Allegro has 16 M (megabytes) of internal RAM. Often referred to as the computer's workspace, RAM is where programs are executed or run. RAM can be written to, read from, erased, etc. Its storage ability is temporary in nature, only holding information while the system has power (although the Allegro does not have to be turned on).

If the battery pack is drained or power is interrupted for any reason, everything stored in RAM is lost. The backup capacitor saves the contents of RAM for a limited time while you change the battery pack (see *Chapter 2, Batteries*, for details).

All but a small portion of the 16 M of RAM is available.

Program and Data Storage Options

The Allegro has two options for storing programs and data: a solid state hard disk and a PC card slot for memory cards.

▲ Storage Designations

The solid state disk and PC memory cards are accessed by typing in their drive assignment letters at the DOS prompt as follows:

Drive	Type of Storage
C:	Solid State Hard Disk
D:	PC Card

▲ Solid State Hard Disk

The Allegro has a 24 M solid state hard disk used to store programs and data. It can be read from and written to just like the hard disk on a PC. The hard disk is non-volatile so information stored on it is retained even when no power is supplied to the Allegro.

Some utility files and drivers are factory installed on the C: drive including: AUTOEXEC.BAT, CONFIG.SYS, Text Editor, PC Card Drivers, and MS-DOS Commands. To see a complete list of these files, refer to *Chapter 5, Technical Reference*.

▲ PC Cards

The Allegro has a user-accessible PC card slot (PCMCIA 2.0 Type II) that allows you to add mass data storage to your Allegro with PC cards.

PCMCIA stands for the *Personal Computer Memory Card International Association*. This association has developed standards for PC cards. PC cards are about the size of a credit card and come in three thicknesses or types.



The PC card slot accepts Type I or Type II cards. These cards include ATA Flash cards, SRAM (Static Random Access Memory), and Compact Flash cards. All types of cards have a 68 pin connector for attachment to the Allegro. The cards must be 5 V or 5 V/3 V (PC cards that are 3 V only are not supported). This is a 16 bit card slot. It is not a *card bus* slot.

A PC memory card is a solid state, self-contained memory board housed in a credit card-sized package. These cards behave like hard disks. You can read from them, write to them, and erase single files from them. There are several types and brands of cards available.

ATA Flash Cards

ATA Flash cards provide solid state data storage. Power is not required to maintain the data. Because of this feature, we recommend them over other types of memory cards. The Allegro accepts cards ranging in size from 1 M to 100 M.

Formatting ATA Flash Cards

ATA Flash cards come pre-formatted. If you need to format a card, enter the following command into the Allegro from the DOS prompt:
Format D: /u

❖ *Warning: Formatting the ATA Flash card deletes everything previously stored on the card. For more information on using FORMAT, refer to the MS-DOS Help.*

SRAM Cards

Power

SRAM cards are powered by the Allegro while installed in the PC card slot. An on-board battery retains data when the card is not being powered by the Allegro. Some brands have a replaceable lithium battery (coin type). If you have this type, make sure that the battery is installed before attempting to use the card. Other brands have a rechargeable battery that is automatically recharged while it is inside the Allegro. The rechargeable batteries are not replaceable.

The life of these batteries varies greatly depending on usage and the memory size of the card. If the lithium battery is drained, the information stored on the card is lost. When a new battery is installed, the card needs to be formatted. The manufacturer's instructions that came with the card should include information on battery life and recommended changing intervals.

Replacing SRAM Card Batteries

SRAM card batteries are readily available at most stores. Unless the manufacturer's instructions state otherwise, we recommend that you change the battery every six months.

Formatting SRAM Cards

SRAM cards come pre-formatted. Files and directories can be copied onto it just like a standard disk drive. If you need to format a card, enter the following command into the Allegro from the DOS prompt:

Format D:

❖ *Warning: Formatting the SRAM card deletes everything previously stored on the card. For more information on using FORMAT, refer to the MS-DOS Help.*

Inserting and Removing Cards

For details on how to access the PC card slot and insert and remove cards, refer to *Chapter 2, Hardware Components, PC Card Slot*.

Chapter 4



MS-DOS Operating System

- MS-DOS Operating System Overview
- Setting Up Communication
- Lynx Windows File Management Utility
- FileScout DOS File Manager
- Text Editor
- Terminal Emulation Program
- System Setup Program
- Startup Files
- DOS Utility Programs and Device Drivers
- Make Space Utility Program
- Serial Printing Utility Program

MS-DOS Operating System Overview

This Chapter describes the operation of the Allegro using the MS-DOS™ 6.22 operating system.

▲ Running DOS

You can operate the Allegro by issuing standard DOS commands from the DOS prompt or through a file management program called FileScout (described in detail later in this chapter).

▲ Programs for the Desktop PC and the Allegro Desktop PC Program

The Allegro Distribution CD-ROM includes the Lynx™ Windows File Manager for installation onto your desktop PC. To run Lynx, the desktop PC must be running Windows 95 or higher and must have at least one serial port. To install Lynx on your desktop PC, insert the Allegro Distribution CD-ROM into your computer and select *Install Lynx* option. Follow the instructions given to you. The Lynx icon appears in the Start menu when installation is complete.

❖ *Note: If you have previously installed Lynx on your desktop PC we recommend that you uninstall it and install the updated version included on the Allegro DOS Distribution CD-ROM.*

Allegro Programs

The following DOS programs are factory-installed on the Allegro:

- FileScout DOS File Management Utility
- Text Editor
- Terminal Program
- Commonly Used DOS Commands

The Lynx program, all of the Allegro programs, and the full set of the DOS commands are included on the Allegro Distribution CD-ROM.

Setting Up Communication

Communication functions are handled by the following programs:

- ❑ On the desktop PC: Lynx™ File Management Utility
- ❑ On the Allegro: FileScout™ DOS File Management Utility

▲ Establishing Communication Between Computers

Follow the steps listed below to set up communication between the desktop PC and the Allegro:

- 1) Connect one end of the serial communication cable to the serial port on the desktop PC and the other end to either one of the serial communication ports on the Allegro (COM1 or COM2).
- 2) Turn on both the desktop PC and the Allegro.
- 3) On the desktop PC, start Lynx from the Windows Start Menu. On the Allegro, run FileScout by typing "FS" at the DOS prompt and press *ENTER*.

Note: If you are using Windows XP operating system, start Lynx by double-clicking on the Lynx.bat file Icon located on your computers desktop. If the icon does not exist, you can download the file from our website at www.junipersys.com.

- 4) On the desktop PC, set up the communication port from Lynx by selecting the *Transfer | Select COM Port* menu option. Select the port that the communication cable is connected to (COM1, COM2, etc.). Beneath the Remote screen a status box indicates which communication port has been set up on the PC.
- 5) On the Allegro, if you are using COM1 (the default) as the communication port, no additional set up is required. If you are using COM2, press *F5 Xfer* from the FileScout menu to view the Transfer menu. Press *F1*, COM Port and select COM2.
- 6) To establish communication between the desktop PC and the Allegro, click on the Lynx *Connect* shortcut button or select the *Transfer/Connect to Remote* menu option. As communication is being established, the Connect button rotates and the Status box at the bottom of the Remote screen displays: *trying...trying... trying... Comm established...Connected.*

If communication is not made, an error message appears on the screen telling you that communication was not established. If this happens, make sure you have properly prepared the Allegro and the PC to communicate and try connecting again.

Once communication is established, the drives, folders, and files located on the Allegro are shown on the Lynx remote screen on the desktop computer. On the Allegro FileScout status line, the word *Connected* blinks every second to indicate that a connection is made with the computer. Refer to the information about Lynx later in this chapter for details.

▲ Adjusting the Allegro Communication Parameters

In most cases, you can use the default communication parameters on the Allegro; no adjustments are required. If you need to make adjustments or are having trouble establishing communication between the Allegro and the desktop PC and need to check the settings, refer to the description of the parameters below.

From FileScout press *F5 Xfer* to view the Transfer screen. The following functions are listed at the bottom of the screen:

Function	Default	Description
F1 = COM Port	COM1	Set Up Communication Port
F2 = Baud	115.2K	Select Baud Rate
F3 = Cmd		Access the Commands
F4 = Recv		Receive Files From PC
F5 = Send		Send Files to PC
F6 = Lynx	On	Communication Mode

To change a setting, press the number associated with it or highlight the desired setting using the up and down arrow keys and press *ENTER*).

F1 - COM Port

Press *F1* to select COM1 or COM2. The active port is listed in the upper right corner of the FileScout screen.

F2 - Baud

We recommend that you leave the Allegro in “auto baud rate detection mode.” In this mode, the Allegro establishes communication between the PC and the Allegro at 115.2 K baud (required to use Lynx). To change the baud rate, press *F2* and make a selection.

F3, F4, F5

When the Allegro is communicating with Lynx on the desktop computer, the FileScout Transfer functions *F3*, *F4*, and *F5* are not used.

F6 - Lynx

To communicate with Lynx, the Allegro needs to be in the Lynx communication mode. When Lynx mode is on, the word *Lynx* is displayed at the top of the FileScout menu along with the active port as shown below:

FileScout v1.0 Lynx – COM1

When the Allegro is in Lynx mode, it checks at regular intervals to see if it is linked to a computer. When it detects a connection, the Allegro is treated as a remote computer by the desktop computer. To turn Lynx mode on or off, Press *F6* and make a selection.

❖ *Note: Auto Suspend does not work while you are connected to Lynx on your desktop PC. See System Setup Program, Power Management Screen, Auto Suspend later in this chapter of the manual for details.*

Communicating with Other Desktop PC Programs

Some programs have integrated PC communication modules you will use instead of Lynx. DataLink and LandMark PC are two examples.

The FileScout Transfer screen has three functions that you may use with these programs:

F3: Command

F4: Receive

F5: Send

Refer to the User's Manual for the program you are using for information on how to proceed.

Lynx Windows File Management Utility

Lynx is a Windows file management utility that runs on a desktop PC, allowing you to easily transfer files between your desktop PC and the Allegro Field Computer. Additional file management functions that can be performed remotely on the Allegro from your PC include:

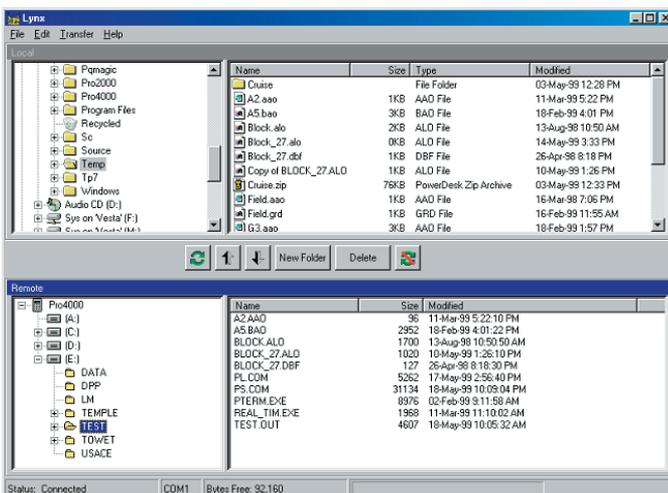
- ❑ Creating and deleting files or folders
- ❑ Moving or copying files within the remote or local computer
- ❑ Viewing the contents of folders, the C: drive, or PC cards

▲ Lynx Screens

When you start Lynx from your Windows Start Menu or desktop icon, two Windows Explorer™-type screens are displayed. The top screen (Local) displays the contents of your PC. The bottom screen (Remote) displays the contents of the Allegro after a connection is established. A sample screen is shown below:

The Lynx display has the following features:

- 1) File, Edit, Transfer, and Help functions.
- 2) A tool bar with shortcut buttons is located between the local and remote screens.
- 3) Beneath the remote screen are four boxes that provide you with the following information: status, active communication port, bytes free on the Allegro, and file transfer progress.



▲ Lynx Menu Options

Once communication has been established between the Allegro and the PC, you can use the Lynx menu options. Shortcut buttons are available for some of these options. The shortcuts are described later in this chapter.

File Menu Options

The following are available on the File Menu:

New Folder

Delete

Filters

Exit

New Folder

Creates a new folder or sub-folder on the local or remote computer. A dialog box is shown where you type in the new folder name.

Delete

Deletes a file or a folder. To do this complete the following steps:

- 1) Highlight the file or folder to be deleted.
- 2) Select the delete menu option or the delete shortcut key.
- 3) Press the desired key to confirm that the file you selected should or should not be deleted, as outlined in the delete dialog box.

Filters

Allows you to view selected file types. You can set a filter for both the local and the remote computer separately. You can use a wildcard (*) in the filter specification.

For example, if you want to use Lynx to transfer files from the Allegro with the file extension .dat, you would set the filter for the remote to *.dat in the remote filter dialog box. The file list for the remote display would list files with the extension .dat. All other files would not be shown on the display.

Exit

Exits Lynx on the PC. Prior to exiting Lynx disconnect the communication link between the PC and the Allegro using *Transfer/Disconnect* or by pressing the *Disconnect* button.

Edit Menu Options

The edit options follow standard Windows protocol. Highlight the file or folder you want to perform the editing function on. You can select multiple files with Select All or by holding down the *Shift* or *Ctrl* key as you highlight each file. Choose the editing option you want to perform in one of the following ways:

- 1) Select the option from the Edit Menu (Edit/Cut for example).
- 2) Press the appropriate control key shortcut (Ctrl X for example).

The following are options available on the Edit Menu:

Cut
Copy
Paste
Select All

Cut (Ctrl X)

Cuts a file or folder. When a file or folder is cut from the remote display, the file disappears from the file list on the active display. When the file is pasted (moved) to the new location, the file list is updated. If you cut the file but you neglect to paste it, the file is still on the drive from which it was cut.

Copy (Ctrl C)

Copies a file or folder.

Paste (Ctrl V)

Pastes a file or folder from the clipboard.

Select All (Ctrl A)

Selects all the files or folders on the local or remote screen.

❖ *Note: The edit menu options can be used to cut, copy, and paste files or folders within either the local or remote screen, but not between them. Use the transfer menu options, or arrow shortcut buttons for moving files between computers.*

Transfer Menu Options

The following options are available on the Transfer Menu:

Connect to Remote
Send to Remote
Receive from Remote
Cancel Transfer
Disconnect
Select COM Port

Connect to Remote

Establishes a connection between the PC and the Allegro.

Send to Remote

Sends a file from the PC (Local) to the Allegro (Remote). To do this, complete the following steps:

- 1) Highlight the file or files to transfer. You need to rename files that are more than eight characters long before you transfer them to the Allegro.
- 2) Select the *Send to Remote* menu option or press the shortcut button to send the file(s).

On the Lynx screen the *Status* box indicates the transfer status and the *Progress* bar displays the file transfer progress. The file list on the Allegro is updated after file transfer is complete.

Receive from Remote

Sends a file from the Allegro (Remote) to the PC (Local). To do this, complete the following steps:

- 1) Highlight the file or files to transfer.
- 2) Select the *Receive from Remote* menu option or press the shortcut button to send the file(s).

On the Lynx display the *Status* box indicates the transfer status and the *Progress* bar displays the file transfer progress. The file list on the PC is updated after file transfer.

Cancel Transfer

This function is used to cancel a file transfer after it has been initiated.

Disconnect

Disconnects the communication link between the PC and Allegro. This action tells the Allegro to stop waiting for additional commands from the PC.

Pressing the *Esc* key on the Allegro returns to normal function. If you need to communicate with more than one Allegro, you must click the *Disconnect* button before switching the serial cable to the next Allegro.

When the communication link between the Allegro and the PC is disconnected, the *Lynx Remote* screen is cleared. On the Allegro, the *Status* line on the *FileScout* screen no longer displays *Connected* every second.

Select COM Port

Select the COM port that the communication cable is connected to on your PC.

Help Menu Option

The following options are available on the Help Menu:

Contents

Index

Using Help

MS-DOS Help

About

Contents

A Table of Contents for Lynx Help.

Index

An Index for Lynx Help.

Using Help

Describes how to use Help.

MS-DOS Help

The MS-DOS 6.22 commands are listed and described. To read about a specific command in detail, select it from the menu. You can view or print this information.

About

Information about the Lynx program is given.

▲ Shortcut Buttons

In addition to the pull-down menu options, there are shortcut buttons. The Shortcut Tool Bar is located in the center of the Lynx display. You can use these buttons to quickly access commonly used functions.



Connect

Up Arrow

Down Arrow

New Folder

Delete

Disconnect

Connect

The *Connect* button is used to establish a connection between the PC and the Allegro (the same as the *Transfer/Connect to Remote* function).

Up Arrow

The *Up Arrow* button is used to send a file from the Allegro to the PC (the same as the *Transfer/Receive from Remote* function).

Down Arrow

The *Down Arrow* button is used to send a file from the PC to the Allegro (the same as the *Transfer/Send to Remote* function).

New Folder

The *New Folder* button is used to create a new folder or sub-folder (the same as the *File/New Folder* function).

Delete

The *Delete* button is used to delete a file or folder (the same as the *File/Delete* function).

Disconnect

The *Disconnect* button is used to disconnect the communication link between the computer and the Allegro (the same as the *Transfer/Disconnect* function).

FileScout DOS File Manager

FileScout is a DOS File Management Utility that runs on the Allegro. Instead of issuing commands at the DOS prompt, you select options displayed on menus to perform file management activities. Fewer keystrokes are required than with the standard DOS command line environment. FileScout provides the following functions:

- File management
- File transfer between computers
- Access to the following utilities: DOS System Setup, Text Editor, Terminal Emulator

To run FileScout, type `FS` at the DOS prompt and press `ENTER`.

❖ *Note: When the system is initially booted, the path is set as follows: Path = C:\;C:\UTIL;C:\DOS;A:\. If the path is overwritten by the user and A:\; is not included in the path statement, the Allegro is not be able to access files on drive A: and is unable to locate the fs.com to run FileScout. The drive must be specified as part of the path command.*

▲ FileScout Main Screen

When you execute FileScout a screen similar to the following appears:

```
FileScout v1.0      Lynx - COM1
C:\                 Ins=Mark
Files: 22  Used: 7.726M  Free: 12.75M
-----
[DATA]
[DOS]
[NETWORK]
[UTIL]
AUTOEXEC.BAT      435      04-03-00  09:07
CKCOM   .EXE    81.39K   03-12-96  10:26
CKMEM   .EXE   101.3K   03-12-96  10:26
CKPRO   .CER    177      08-02-92  15:34
CKPRO   .RPT   6263     08-02-92  15:34
-----
Move      Rename  MarkAll  UnmkAll  Util
Drives   Edit   Copy     Mkdir    Xfer
```

Title

The name and version of the program, communication mode, and active COM port are indicated on the first line of the display. On the sample screen shown on the previous page, the program name and version number is FileScout v1.0c. The word Lynx is shown, indicating that the Lynx communication mode is turned on. The active communication port is COM1.

First Status Line

On this line the current drive, directory and subdirectory (if applicable) are listed. If a function is being performed (make directory, etc.) information about the function is also shown. On the sample screen above, the current drive is C:\.

Second Status Line

This line displays the number of files stored in the current directory, the number of bytes used by these files, and the number of bytes free on the current drive. If a function is being performed, this line displays information concerning the function.

Folders and Files

A list of folders and files within the current active folder are displayed in the box underneath the second status line. Folder names have square brackets around them. On the above sample screen, [DOS] and [DATA] folders, and AUTOEXEC.BAT and CKCOM.EXE are files stored on the C: drive.

Function Keys

The ten function key options are listed at the bottom of the screen.

▲ Selecting Folders or Files in FileScout

Press the keys described below to move the highlight bar to the folder or file you want to select (to copy, view, execute etc.).

Up or Down Arrow Keys

Use the arrows to move the highlight bar up or down one position.

PgUp and PgDn Keys (Page Up or Page Down)

These keys move the highlight bar up or down one screen.

ENTER Key

The *ENTER* key is used to execute an implied command. The command that takes effect when *ENTER* is pressed depends on which file or folder is highlighted. There are three implied commands:

- 1) Change drive: To change drives, press *F1*. A list of available drives is shown. Highlight the drive you want to select and press *ENTER*. The letter of the current drive is displayed on the first status line.
- 2) Change folder: To change folders, highlight the desired name and press *ENTER*. The path (drive and folder) of the current folder is shown on the first status line.
- 3) Run a program or batch file: To run a program or batch file, highlight the desired filename and press *ENTER*.

FileScout prompts you to enter any parameters that the program may need on the second status line.

If the program does not require any parameters, press *ENTER* again.

If you need to enter program parameters, type the parameters as you would at the DOS prompt then press *ENTER*.

You can enter up to 10 parameters or a maximum of 80 characters.

Press *Esc* if you want to abort the execution of the program or batch file.

▲ FileScout Functions

The file management functions and utilities provided by FileScout are accessed with the function keys. If you are going to work with a directory or file, select it first then press the function key associated with the desired function.

The FileScout functions are described on the following pages. To select a function, press the function key associated with it. To abort a function, press *Esc*.

F1 Drives

Press *F1* and a list of available drives is shown. Highlight the drive you want to select and press *ENTER*. The letter of the selected drive is displayed on the first status line on the FileScout main screen.

F2 Edit

The edit function is used to edit existing text files. Highlight the file you want to edit and press *F2*. The file is opened in the Text Editor. To create a new text file, see the description for *F10 Utilities*, option 2, Editor.

F3 Copy

This command copies a file or a group of files. Highlight a file or mark a group of files to be copied using *Ins* and press *F3*.

You are asked to enter the destination for the files to be copied to on the second status line. Enter the destination path (drive and directory). If you wish to rename a file, include the name within the destination path. Press *ENTER* to copy the files.

F4 Mkdir

This command is used to create a new subdirectory in the current directory path. When *F4* is pressed, you are asked to enter the name of the new subdirectory on the second status line. Enter the name and press *ENTER*.

F5 Xfer

Use this function to set up communication parameters and establish communication between the Allegro and another computer. When you press *F5* the following communication functions are shown:

Function	Description
F1 = COM Port	Set Up Communication Port
F2 = Baud	Select Baud Rate
F3 = Cmd	Access the Commands
F4 = Recv	Receive Files From PC
F5 = Send	Send Files to PC
F6 = Lynx	Toggle Lynx On and Off

Refer to *Establishing Communication Between Computers* and *Communicating with Other PC Programs* earlier in this chapter for details about these functions.

F6 Move

This command moves a file or a group of files to other drives or directories. Highlight a file or mark a group of files to be copied using *Ins* and press F6.

You are asked to enter the destination for the files to be moved to on the second status line. Enter the destination path (drive and directory). Press *ENTER* to move the file(s).

❖ *Note: You cannot move files to the ROM drive (A:)*

F7 Rename

To rename a file, highlight the desired file and press F7. Enter the new filename and press *ENTER*. If you do not want a filename to have an extension, type the filename ending with a period. For example, *MYFILE.* would be listed in the directory without an extension.

F8 Mark All

Marks all the files on the current directory.

F9 Unmark All

Unmarks all the files on the current directory.

F10 Util

Eight additional utility functions are accessed by pressing F10. A list of the functions is shown in a pop-up box.

To select a utility, type the number associated with it or highlight the desired utility and press *ENTER*.

1. Terminal Causes the Allegro to act as a dumb terminal. This is useful if you have a serial device such as a bar code wand or GPS receiver attached to the Allegro and want to verify whether or not the Allegro is receiving serial data from the device.
2. Editor Executes the Text Editor. Use this function when you are creating a new text file (must be 64 K or less). After selecting this function, you must enter a name for the file to be edited on the second status line and then press *ENTER*. This text editor function differs from the F6 edit function which is used to edit existing files only. (See *Text Editor* later in this chapter for details.)

- 3. SetUp Executes the DOS SetUp program. (See *DOS Setup Program* later in this chapter for details.)

- 4. File Filter Displays all or a subset of files on the current directory. You can set a mask on the types of files you want to display. For example, if you only want to display files with the extension .DAT, you would use the File Filter utility to set the mask *DAT. The default setting for the File Filter is *.* which shows all files. When you select the File Filter utility, the current setting is displayed on the second status line. If you want to change this setting, press the *BkSp* (backspace) key to delete the existing setting and type in the new setting. The File Filter represents a file specification (1-8 character name). You can use the characters ? (for only one character) and * (for any number of characters) in the filename. An extension can be used to specify a group of files.

- 5. Sort by Sorts your files by name or by extension. You can Extension toggle between the two options.

- 6. Program When you exit from a program, you can choose to Return Switch have the Allegro return immediately to FileScout or return to the DOS prompt. If you set it up to return to the DOS prompt, you must type *Exit* and press *ENTER* to return to FileScout.

- 7. Shell to DOS Lets you temporarily access the DOS prompt without exiting from FileScout. To get back into FileScout, type *Exit* and press *ENTER*.

Ins Mark

The insert key *Ins* is used to mark and unmark a file. To mark a file, move the highlight bar to the desired filename and press *Ins*. A mark character (>) is placed to the left of the filename. To unmark a file, move the highlight bar to the desired marked file and press *Ins*. The mark sign is removed from the left of the filename.

Del Delete

The delete key *Del* deletes (erases) a file, a group of files, or a subfolder. To delete a file(s), complete the following steps:

- 1) Highlight the file(s).
- 2) Press *Del* key.

Before you can delete a subfolder, you must delete all of the files in it, then complete the following steps:

- 1) Highlight the subfolder.
- 2) Press *Del* key.

When the *Del* key is pressed, you are asked to confirm the deletion of the file(s) or subfolder. You must type in *Y* followed by *ENTER* if you want to proceed with the deletion. Any other keystroke aborts the file deletion.

❖ *Note: You cannot delete files from the ROM drive (A). If you try, it first appears as if the files were deleted, but after the next DOS operation the files reappear in the directory.*

Esc Escape

The escape key *Esc* is used to abort functions if the program is at a prompt awaiting your input. Escape also exits the FileScout program. If you are exiting the program, you are asked to confirm that you want to exit. You must press *Y* at this prompt followed by *ENTER*.

Text Editor

There is a full screen text editor available that runs on the Allegro. The text editor allows you to create and edit text files up to 64 K in size. It is useful for editing the AUTOEXEC.BAT and the CONFIG.SYS files.

▲ Starting a New Text File

Press *F10* Util from FileScout to bring up the *Utilities* menu. Select *2 Editor* to execute the Text Editor program.

Enter a name for the new file on the second status line after the word *File:* and press *ENTER*.

A blank page appears on the screen. You can now create a new file using the editing rules described later in this chapter.



Blank Screen

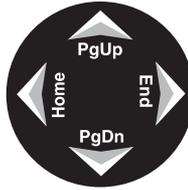
▲ Accessing an Existing File

To access an existing file, select the desired file from the FileScout directory then press *F2*. This keystroke executes the Text Editor and opens the file that is highlighted.

▲ Editing a Document

Cursor Movement

The circular key is used along with the BLUE and GOLD shift keys to move the cursor around the document.



To move the cursor one character at a time, the arrow keys are used:

To the right	Right Arrow
To the left	Left Arrow
Up one line	Up Arrow
Down one line	Down Arrow

To move the cursor to the start or end of a line:

To the beginning of a line	BLUE key + <i>Home</i>
To the end of a line	BLUE key + <i>End</i>

To move the cursor one screen

To previous screen	BLUE key + <i>PgUp</i>
To next screen	BLUE key + <i>PgDn</i>

To move the cursor to:

The beginning of the file	<i>Ctrl</i> + BLUE key + <i>PgUp</i>
The end of the file	<i>Ctrl</i> + BLUE key + <i>PgDn</i>

To pan the display:

Right	GOLD key + Right Arrow
Left	GOLD key + Left Arrow
Up	GOLD key + Up Arrow
Down	GOLD key + Down Arrow

Function Keys

The function keys are used for editing files as follows:

F1Paste F2Mark F3UDeleLn F4UDe1 F5Print F6Cut F7DeleEOL F8DELELN F10Dsp EscExit Ins

Function	Description
F1	Paste
F2	Mark
F3	Undelete Line
F4	Undelete Character
F5	Print Block
F6	Cut
F7	Delete to End of Line
F8	Delete Line
F10	External Display
Esc	Exit
Ins	Insert

Inserting and Overwriting Text

You can enter text in insert mode or overwrite mode. Insert mode is the default. The word *Ins* is displayed at the bottom right corner of the display.

To insert text, position the cursor at the point where the new text is to start and begin typing. The existing text moves to the right as new text is inserted.

To switch to overwrite mode, press the *Ins* key. The word *Ins* changes to *Ovr* and the cursor changes to a block cursor. In overwrite mode, all the text to the right of the cursor is overwritten with new text.

To switch back to insert mode, press the *Ins* key again.

Deleting Text

Text can be deleted one character at a time or one line at a time. To delete the character at the cursor, press the *Del* key. The character is removed from the screen, and the text from the right is shifted left one character. To delete to the left of the cursor, press the *BkSp* (backspace) key.

To delete a line, position the cursor anywhere on the line to be removed and press the *F8* key. The line is deleted and the lines below it move up. The line just deleted is placed in a buffer until another line is deleted and takes its place. The last line deleted can be pasted back into the document using the undelete line command, *F3*.

Undeleting Text

Text deleted with the *Del* or *BkSp* key can be restored at the cursor location as long as the cursor has not moved to another line. (Once the cursor is moved using the arrow keys the text is lost and cannot be recovered.) To undelete the removed text, press the *F4* key. Text removed using *F7* (clear to end of line) cannot be recovered.

Lines deleted using the *F8* key can be pasted back anywhere in the document by pressing the *F3* key.

Working With Blocks of Text

To mark a section of text as a block, press *F2*, the mark command, and use the arrow keys to block the text. Blocked text is displayed in reverse video.

Blocks of text can be cut (saved in a scratch buffer), pasted (copied from the scratch buffer to the current cursor location), or sent to a line printer.

To cut a block of text once it has been marked, press *F6*, the cut command key. The text is saved in a buffer and removed from the screen. The text to the right of the block is shifted to the left.

To paste a block of text from the scratch buffer, position the cursor where the text should be inserted and press *F1*, the paste key.

To print a block of text press *F5*, the print key, while the block is marked. The marked text is sent to the printer.

To copy a block of text, first mark it, then cut it, then paste it back in the original position. Now you can move the cursor to where you want the block copied and paste it again.

Saving and Exiting

To exit the Text Editor, press *Esc*. The program asks you if the current text should be saved:

Save Changes [Y/N]?

At this point, if an *N* is pressed, the program exits without saving the text. If a *Y* is pressed, you are asked to enter a filename. If the file already has a name, the name is shown on the screen. Use the backspace key to delete or modify the name. Pressing *ENTER* instructs the program to save the text in a file with the name specified and exit. The *Esc* key can be used at any time to abort the exit command.

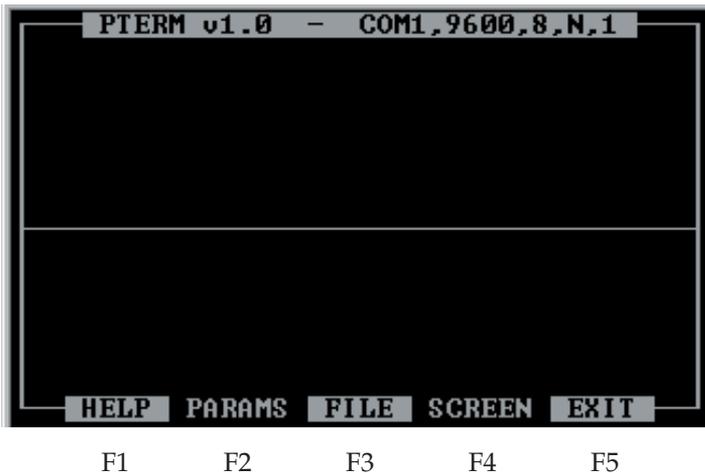
❖ *Note: You cannot edit files on the A: drive.*

Terminal Emulation Program

The Terminal Emulation program is used to test communication protocol settings and hardware connections between the Allegro and another device such as a bar code wand, GPS receiver or another computer.

Connect the device to the Allegro and set up the communication parameters.

Press *F10* Util from FileScout to bring up the *Utilities* menu. Select *1 Terminal* to execute the *Terminal Emulation* program. The following screen appears:



▲ Communication Parameters

In the heading at the top of the screen the default settings for the communication port, baud rate, data bits, parity, and stop bit are shown. The communication port, baud rate, and parity can be adjusted if necessary through the *F2* Params function. The data bits (8) and stop bit (1) cannot be adjusted.

▲ Screen Viewing Options

You have three screen viewing options accessed through the *F4* Screen function. Keep pressing *F4* until the screen option you want is listed. The screen you select automatically comes up after a delay of a few seconds.

Split Screen

Binary/ASCII (default) shows binary data coming in on the top section of the screen and ASCII data on the bottom section of the screen.

Split Screen

Remote/Local shows the data coming in from the remote device on the top section of the screen and the data going out from the Allegro to the remote device on the bottom section of the screen.

For example, if you are connected to another computer, characters you type on the Allegro keyboard appear on the local section of the screen as well as on the remote computer screen (assuming a terminal program is being run on the remote computer). Conversely, if you type characters on the remote computer keyboard, they appear on the remote section of the Allegro screen.

Single Screen

Remote/Local shows the data coming in from the remote device and the data going out from the Allegro to the remote device together on the same screen. The data from the local device is in inverse type.

▲ Saving the Data to a File

If you want to save the data output to the Allegro from another device to a file, press *F3* File, and enter a path and filename.

▲ Troubleshooting

If you are not seeing what you expect on the screen, make sure the communication parameters on both devices are set up correctly and that the device is securely connected to correct port on the Allegro.

System Setup Program

The Setup program is used to configure your Allegro DOS Field PC. The parameters you edit with Setup include:

- System Date and Time
- Processing Speed
- Keyboard Configuration
- Display Configuration
- Auto-Panning (On or Off)
- Power Management

▲ Executing Setup

The easiest way to invoke the Setup program is by pressing the GOLD key plus the S from any screen in DOS. The main menu screen pops up.

Setup is resident on the system ROM (A:) and can be executed from FileScout or directly from DOS. You can also execute Setup during the POST (Power On Self Test) by pressing the *Del* key before DOS boots up.

Executing Setup from FileScout

From the FileScout main menu, press the *F10*. The Utility menu appears. Press 3 to select Setup. The Setup main menu screen is displayed.

Executing Setup from DOS

To run the Setup program from DOS, type:

```
Setup  ENTER
```

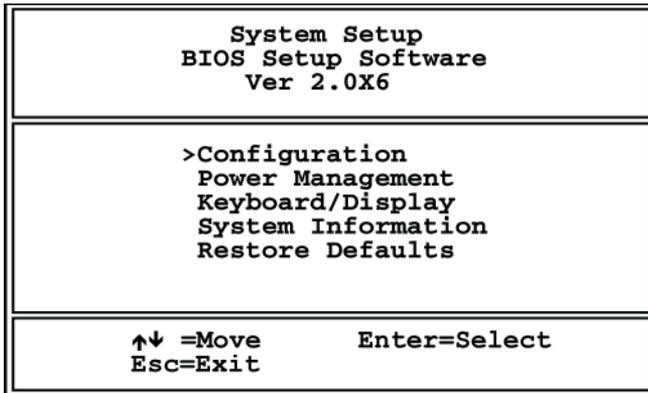
The Setup main menu screen is displayed.

If you receive an error message after issuing this command, check to ensure that drive A: is referenced in your path statement in the AUTOEXEC.BAT file. If it is not referenced, type *A:Setup* at the DOS prompt.

▲ Setup Program Screens

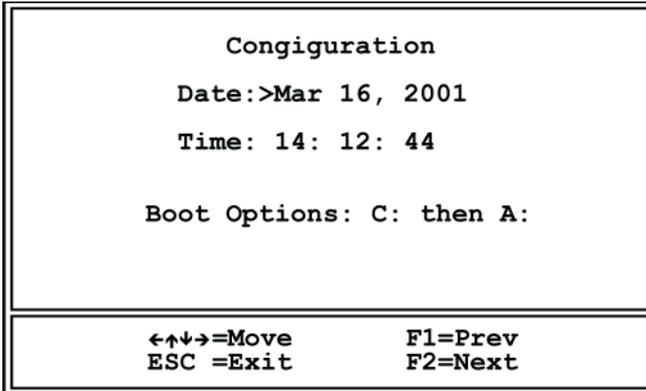
Main Menu Screen

When you execute Setup, the main menu screen is displayed. Five System Setup screen options are listed. Use the up or down arrow keys to highlight the screen you want to view and press *ENTER*.



The parameters and options found on the Setup screens are described on the following pages. The default values are underlined. You can select and edit the parameters using the keystrokes listed below.

Key	Function
Arrow Keys ←↑↓→	Move between parameters.
F1	Scroll through options starting with the previous value.
F2	Scroll through options starting with the next value.
ENTER	Select highlighted option.
ESC	Exit current Setup screen and return to the main menu.



Configuration Screen

Date

Month=Jan-Dec, Day=1-31, Year=1980-2099

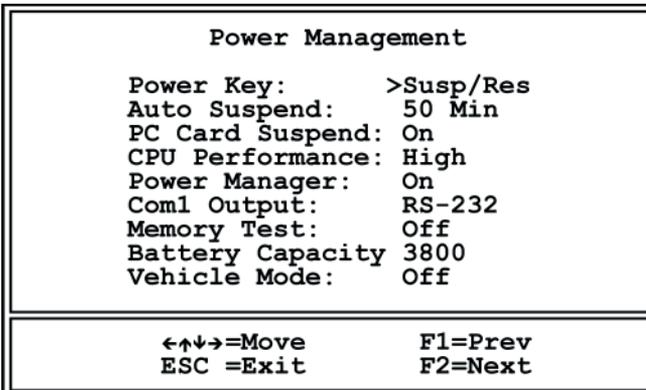
Time

Seconds=0-59, Minutes=0-59, Hours=0-23

Time is expressed in the standard 24 hour format (military time).

Boot Options

C then A, A then C



Power Management Screen

Power Key (On/Off Key): Suspend/Resume or On/Off

In Suspend/Resume mode, the system becomes suspended when the *On/Off* key is pressed or when the preset Auto Suspend time interval is reached (5 to 75 minutes, see below). The screen turns off and the processor stops running, but the system does not reboot. When you press the *On/Off* key again, the Allegro resumes where it left off.

In On/Off mode, the system clears and reboots when the *On/Off* key is pressed. If external power is connected to the Allegro, the Allegro goes into a semi-low power state where it appears to be off, but it is actually on. Any event that normally causes the Allegro to turn on (pressing the *On/Off* key, com port ring in, etc.) causes the Allegro to reboot. When the external power is removed, the Allegro powers off.

Auto Suspend: Disable or 5 to 75 Minutes

If Auto Suspend is turned off, the Allegro stays on until you turn it off or the batteries are drained. If Auto Suspend is assigned a time limit, the Allegro turns off when the time limit passes with no activity.

❖ *Note: Lynx mode must be turned off to use Auto Suspend. Refer to Setting up Communication, Adjusting the Allegro Communication Parameters earlier in this chapter of the manual for details.*

PC Card Suspend: On or Off

This setting determines whether the PC card remains powered on when the system is suspended, allowing ATA Flash cards and other I/O cards to operate in Suspend/Resume mode. If you are using one of these cards and want to use Suspend/Resume mode, Select *On* for this setting. For SRAM cards, this can be set to *Off*.

CPU Performance: Hyper, High, Medium, Low, Miser

This function sets the 486 processor clock speed for varying levels of power/performance. When the processor runs faster, it requires more power and drains the battery more quickly. For maximum time between battery charges, set this function to the lowest level that still gives adequate performance for your application. If battery charge is not a concern, set Performance to *High* or *Hyper*.

Power Manager: On or Off

The Power Manager can help extend battery life by automatically speeding up and slowing down the 486 processor based on system activity. Activities include key presses, serial port transfers, and video updates. The Power Manager should work fine for most applications, but in some cases it may need to be turned *Off*. For example, for applications that control their own power management, we recommend that you set the Power Manager to *Off*.

When the Power Manager is *Off*, the processor runs at the same speed all the time regardless of activity. The following table gives clock speeds in MHz for the five performance levels with the Power Manager *On* or *Off*.

Performance Setting	Power Manager On	Power Manager Off Processing/Idle
Hyper	100/4	66
High	66/4	33
Medium	33/2	16
Low	16/1	8
Miser	8/1	2

❖ *Note: When alkaline batteries are used, the processor speed is limited to 33 MHz for all settings. When the alkaline batteries are low, the maximum speed drops to 16 MHz.*

COM1 Output: RS-232 (not user editable)

This setting is reserved for future use.

Memory Test: Off

The Memory Test validates that the memory is working okay. It takes longer to boot up the Allegro when it is on, so it is best to only turn it on occasionally and leave it off most of the time.

Battery Capacity: 2500 - 4500 mAh (not user editable from Setup)

This field displays the current setting for battery capacity in milliamp-hours. This setting effects the gauging circuitry and should be set to accurately reflect the capacity rating of the NiMH rechargeable battery pack in use. It can only be set in the popup window that is invoked when the battery is replaced. Refer to *Chapter 2, Hardware Features, Batteries* for details.

Vehicle Mode: On or Off

Vehicle Mode should be turned on when the Allegro is connected to a vehicle's power supply. The battery charge management is adapted for continuous external power, preventing the NiMH battery pack from being overcharged. Refer to *Chapter 2, Hardware Features, Batteries* for details.

Keyboard			
Key Tone:	>Medium		
Key Click:	On		
Display			
Auto Pan:	Enabled	Backlight:	Off
Heater:	Auto	BL Brit:	14
Video:	B/W 1	LED Brit:	Dim
Contrast:	35	Font Size:	8x12
←↑↓→=Move		F1=Prev	
ESC =Exit		F2=Next	

Keyboard/Display Screen

Key Tone: Low, Medium, High

Sets the frequency of the speaker for key clicks.

Key Click: On or Off

When *On* is selected, an audible beep is sounded when a key is pressed. When *Off* is selected, there is no sound.

Auto-Pan: Enabled or Disabled

When auto-panning is *On*, the screen pans as the cursor moves beyond the visible window. When it is *Off*, the screen does not pan when the cursor leaves the visible window. You can move around the screen manually using the GOLD key + arrow key combinations on the keyboard. (Refer to the *Display* section in *Chapter 2*, for more details.) You can toggle auto-panning on and off from the keyboard by pressing the GOLD key + *Ins*.

Heater: Auto or Off

The heater setting should be set to *Automatic* when temperatures are at or below freezing and the display begins to get sluggish. When the heater setting is *Auto*, the Allegro monitors the display temperature every five minutes. If the temperature is less than -3°C then the heater is turned on. When the temperature is above -3°C , the heater is turned off. The Allegro does this automatically. When the heater is on it uses 250 mA of current. When the heater setting is *Off*, the heater is always off.

Video Map (Text Mode Only): B/W1, B/W2, Gray Scale

This feature controls how CGA colors are mapped to the LCD: black and white (B/W1 or B/W2) or 16 shades of gray (Gray Scale).

Both B/W settings map the attribute byte for each character on the screen to either black on white (normal) or white on black (inverted). Values for the foreground and background attributes are computed based on RGBI content. The attribute with the highest value is assigned black, the other is assigned white. In general, lighter colors map to black, darker colors map to white. These settings apply to text mode only. Graphics mode is always mapped to shades of gray.

B/W1 is more power efficient but it requires that the video stream used by an application program goes through the BIOS instead of being written directly to memory. Some programs do this and some do not. *B/W2* requires more processing overhead, but should work with all application programs because it does not require the video stream to go through the BIOS. If the application program does not display accurately with the video set to *B/W1*, try switching to *B/W2*.

Contrast: 0 to 34 to 63 ratio

This field adjusts the LCD character/screen contrast from 0 to 63. The contrast can be adjusted in the field without getting into the Setup program. To decrease the contrast, press the GOLD key + *F4*. To increase the contrast, press the GOLD key + *F5*. Automatic temperature compensation for the display is set at 34.

Backlight: On or Off

The display backlight can be turned on and off from this field or directly from the keyboard by pressing the GOLD key + *F3*. The brightness can also be adjusted (see instructions below).

Backlight Brightness: 1 to 14 ratio

This field adjusts the backlight brightness from 1 to 14. Because the backlight uses power, set it to the lowest setting that allows you to adequately view the display.

❖ *Note: In some cases, the use of alkaline batteries may reduce the maximum brightness of the backlight.*

LED Brightness: Medium, Dim, Bright

This field lets you adjust the brightness of the LED indicators to suit the lighting conditions you are working in. In some conditions, they can interfere with the visibility of the display if they are too bright.

Font Size: 8x8, 8x12, 10x12, 16x16

This field lets you select the font size for text mode. The units are character width x height in pixels.

System Information	
Base Memory:	640K
Extended Mem:	15360K
Bios Version:	2.00
PIC Version:	21.00
CPU Version:	0.3
Heater Status:	OFF
Cmos Battery:	Good

ESC=Exit

System Information Screen

Base Memory

Total amount of Base Memory in the system

Extended Memory

Total amount of Extended Memory in the system

BIOS Version

BIOS version installed in the Allegro

PIC Version

PIC version installed in the Allegro

CPU Version

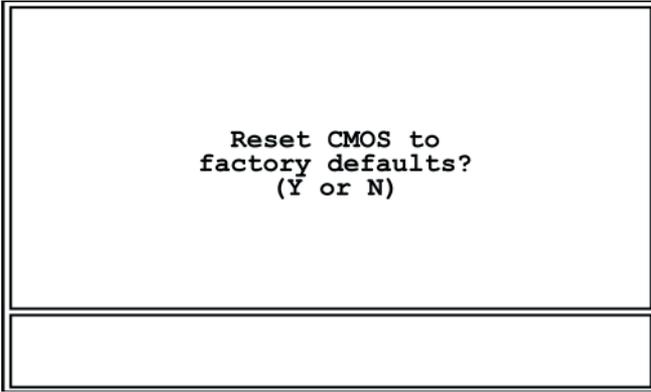
SC400 processor version installed in the Allegro

Heater Status

Reflects the physical status of the heating element in the display

CMOS Battery

Charge status of the lithium CMOS battery



Restore Defaults Screen

This screen allows you to return all the System Setup Parameters to the factory defaults. If you wish to do this, press *Y*. If you do not want to reset the defaults, press *N*.

Startup Files

AUTOEXEC.BAT and CONFIG.SYS startup files containing default configuration information are factory installed on the C: drive of the Allegro. Each time you turn on or reboot into DOS on the Allegro, DOS searches for these files and carries out their commands.

(Note: If the Allegro is booted from the A: drive, the CONFIG.SYS and AUTOEXEC.BAT files on C: are not executed.)

❖ *Important Note: It is important that the existing CONFIG.SYS and AUTOEXEC.BAT files located on the Allegro's C: drive are not replaced. If you need to change these files for your application, carefully follow the directions given in the Startup File section.*

▲ CONFIG.SYS File

The CONFIG.SYS file is a text file that contains special commands that configure the Allegro's hardware components. DOS starts, it carries out the commands in the CONFIG.SYS file. The CONFIG.SYS file is located in the root directory of drive C:.

The following commands can be used only in the CONFIG.SYS file:

Buffers	Files
Country	Install
Device	Lastdrive
Devicehigh	Numlock
Dos	Shell
Drivparm	Stacks
Fcbs	Switches

The following commands are commonly used in the CONFIG.SYS file and can also be typed at the command prompt:

Break
Rem
Set

The following special CONFIG.SYS commands are used only to define multiple configurations within the CONFIG.SYS file. For more information about defining multiple configurations, refer to the DOS help in the Lynx Help menu.

Include
Menu color
Menudefault
Menuitem
Submenu

The CONFIG.SYS file can also contain the following special characters:

- ; Specifies that the current line is a descriptive comment and should not be carried out. Insert this character at the beginning of the line. (You can also insert a comment by using the REM command.)
- ? Specifies that DOS is to ask for confirmation before carrying out the current command. Insert this character immediately after the command you want to prompt for, without any intervening spaces, but before the equal sign (=). For example, to have MS-DOS ask for confirmation before carrying out the DOS=HIGH command, you would change the command to read: DOS?=HIGH. To have MS-DOS ask for confirmation before carrying out the DEVICEHIGH /L:1,7280=MYFILE.SYS command, you would change the command to read as follows:
DEVICEHIGH? /L:1,7280=MYFILE.SYS

▲ Default CONFIG.SYS File on the Allegro

The CONFIG.SYS file is stored in the root directory of the C: drive. A backup copy is also stored in the C:\UTIL directory. The file is configured as follows:

```
device = C:\DOS\HIMEM.SYS/testmem:off
device = C:\DOS\EMM386.EXE on x=a000-c1ff x=e000-efff
noems ram=c200-dfff
dos = high,umb
devicehigh=c:\dos\power.exe off
buffers = 20
files = 20
break = on
lastdrive = g

REM CardSoft(TM) 3.1 PCMCIA DRIVERS
devicehigh=C:\util\CARDSOFT\SS365SL.EXE
devicehigh=C:\util\CARDSOFT\CS.EXE
devicehigh=C:\util\CARDSOFT\CSALLOC.EXE
devicehigh=C:\util\CARDSOFT\ATADRV.EXE /S:1
devicehigh=C:\util\CARDSOFT\MTSRAM.EXE
devicehigh=C:\util\CARDSOFT\MTDDRV.EXE
devicehigh=C:\util\CARDSOFT\CARDID.EXE
REM End of card drivers
```

▲ Changing the CONFIG.SYS File

You can modify the CONFIG.SYS file using a text editor. If you need to make changes or additions to the CONFIG.SYS file, we recommend that you modify the existing CONFIG.SYS file found in the root directory on the C: drive.

You can add command lines to your CONFIG.SYS file that tell the system to automatically load a specified program. If you need to add additional device drivers or commands, add them at the end of the existing CONFIG.SYS file. Nothing should be placed before the first three lines in the file. The lines that set up the PC Card drivers should be left in place and unaltered in order for the PC Card to operate properly. For more information on the CONFIG.SYS file, refer to the MS-DOS Help on the Allegro or in Lynx on your PC.

▲ AUTOEXEC.BAT Batch Files

An AUTOEXEC.BAT batch file or batch program is a text file that contains one or more MS-DOS commands that are automatically executed when the computer is rebooted. When you reboot the computer, the commands are carried out as a group.

Any MS-DOS command you use at the command prompt can also be put in a batch program. In addition, the following MS-DOS commands are specially designed for batch programs:

Call	If
Choice	Pause
Echo	Rem
For	Shift
Goto	

You can use the COMMAND /Y command to step through a batch program line by line, and can selectively bypass or carry out individual commands. This functionality is useful for tracking down problems in batch files. For more information, see COMMAND in the MS-DOS Help on the Allegro or in Lynx on your PC.

Default AUTOEXEC.BAT File on the Allegro

The AUTOEXEC.BAT file is stored in the root directory of the C: drive. A backup copy is also stored in the C:\UTIL directory. The file is configured as follows:

```
Path = c:\;c:\util;c:\dos; a:\:  
prompt $p$g  
loadhigh doskey  
loadfont
```

Changing the AUTOEXEC.BAT File

You can modify the AUTOEXEC.BAT file using a text editor. If you need to make changes or additions, we recommend that you modify the existing AUTOEXEC.BAT file found in the root directory on the C: drive. Place additions at the end of the existing AUTOEXEC.BAT file. Please note that the loadfont program must be included in the AUTOEXEC.BAT file to enable you to use the four fonts in DOS. Do not remove it. For more information on the AUTOEXEC.BAT file, refer to the MS-DOS Help on the Allegro or in Lynx on your PC.

▲ Bypassing Startup Files F5

If you have problems that you suspect are related to commands in your CONFIG.SYS or AUTOEXEC.BAT files, you can temporarily bypass both files or bypass individual commands within the files.

Bypassing All Commands

To bypass all the commands in both files, follow these steps:

- 1) Reboot the Allegro by pressing the *On/Off* key for 8 to 10 seconds (just until the screen clears). After the system starts, DOS displays the following message:

```
Starting MS-DOS...
```

- 2) While this message is on your screen, quickly press and release the *F5* key. DOS displays the following text:

```
MS-DOS is bypassing your CONFIG.SYS and  
AUTOEXEC.BAT files.
```

The Allegro starts with a basic configuration instead of your usual configuration. For example, device drivers for PC cards are not loaded and environment variables are set to their default values.

Bypassing Individual Commands

If you suspect your problems are related to a specific command, you can view each command individually and bypass only the command you think may be causing the problems. To review individual commands, follow these steps:

- 1) Reboot the Allegro by pressing the *On/Off* key for 8 to 10 seconds (just until the screen clears). After the system starts, DOS displays the following message:

Starting MS-DOS...

- 2) While the text is on your screen, quickly press and release the *F8* key. One by one DOS displays each command in your CONFIG.SYS file followed by a prompt. To accept a command, press *Y* for yes. To bypass a command, press *N* for No.
- 3) When DOS finishes processing the CONFIG.SYS file, the following prompt appears:

Process AUTOEXEC.BAT [Y, N]?

If you also want to view the commands in your AUTOEXEC.BAT file, press *Y* for yes.

DOS Utility Programs and Device Drivers

A subset of the most commonly used DOS commands is stored on the C: drive of the Allegro. A full set of the DOS commands is located on the Allegro Distribution CD-ROM.

You can access information about the DOS commands using one of the following methods:

- ❑ On your PC, the Lynx File Management Utility has a MS-DOS Help function. Select Help/MS-DOS Help to run this function. The Help is a DOS program that runs in a DOS window. Use your mouse to click on a topic of interest. A description of the command or function is shown as well as the correct syntax and an example of how to use it.
- ❑ MS-DOS Help is also located on the Allegro. From FileScout, select DOS/Help to run the program. Use the arrow keys to select a topic of interest and press *ENTER*. A description of the command or function is shown as well as the correct syntax and an example of how to use it.
- ❑ On the Allegro there is also the *fasthelp* command. If you want to know the syntax of a particular command, at the DOS prompt type in the name of the command, a space, and then */?*. The syntax of the command is displayed on the screen. Use the screen panning function to view the information.

▲ DOS Commands and Functions

A list of the DOS command and functions that are available to you follows. These commands may be transferred to the C: drive on the Allegro using Lynx (refer to *Chapter 4 MS-DOS*, in the *Utility Programs* section for details).

Key

- * The function is factory installed on the C:\DOS directory. All of the files in the DOS directory have been marked as “read only” to prevent accidental erasure.
 - + The function is an internal DOS function contained in the command processor program (command.com).
 - # The function is located on the Utility Disks only.
-
- * ANSI.SYS A device driver that allows a common set of commands to control the keyboard and screen.
 - # APPEND Allows programs to open data files in specified directories as if they were in the current directory.

* ATTRIB	Displays or changes file attributes.
+ BREAK	Sets or clears extended CTRL+C checking.
+ CHDIR	Changes the current directory.
+ CD	Short name for CHDIR command.
* CHKDSK	Checks a disk and displays a status report.
+ CLS	Clears the screen.
* COMMAND	Starts a new instance of the MS-DOS command interpreter.
+ COMP	Compares the contents of two files or sets of files.
+ COPY	Copies one or more files to another location.
+ CTTY	Changes the terminal device used to control your system.
+ DATE	Displays or sets the date.
* DEBUG	Starts Debug, a program testing and editing tool.
DEFRAG	Reorganizes the files on a disk to optimize the disk.
+ DEL	Deletes one or more files.
* DELTREE	Deletes a directory and all the files and sub-directories in it.
+ DIR	Displays a list of files and sub-directories in a directory.
* DOSKEY	Edits command lines, recalls MS-DOS commands, and creates macros.
# DRVSPACE	Creates and manages drives compressed by using DriveSpace.
* EDIT	Starts MS-DOS text Editor, which creates and changes ASCII files.
* EMM386	Enables or disables EMM386 expanded memory support.
+ ERASE	Deletes one or more files.
+ EXIT	Quits the COMMAND.COM program (command interpreter).
* FASTHELP	Provides summary Help information for MS-DOS commands.
* FASTOPEN	Decreases the amount of time needed to open frequently used files and directories.
* FC	Compares two files or sets of files, and displays the differences between them.

* FDISK	Configures a hard disk for use with MS-DOS.
* FIND	Searches for a text string in a file or files.
* FORMAT	Formats a disk for use with MS-DOS.
GRAPHICS	Loads a program that can print graphics.
* HELP	Provides complete, interactive Help information for MS-DOS commands.
* HIMEM.SYS	A device driver that controls programs and data in extended memory.
# INTERLNK	Connects two computers via parallel or serial ports.
# INTERSVR	Starts the Interlnk server.
* LABEL	Creates, changes, or deletes the volume label of a disk.
+ LOADHIGH	Loads a program into the upper memory area.
+ LH	Short name for LOADHIGH command.
+ MKDIR	Creates a directory.
+ MD	Short name for MKDIR command.
* MEM	Displays the amount of used and free memory in your system.
* MODE	Configures a system device.
* MORE	Displays output one screen at a time.
* MOVE	Moves one or more files. Also renames files and directories.
# MSD	Provides detailed technical information about your computer.
+ PATH	Displays or sets a search path for executable files.
* POWER	Turns power management on and off.
* PRINT	Prints a text file while you are using other MS-DOS commands.
+ PROMPT	Changes the MS-DOS command prompt.
* QBASIC	Starts the MS-DOS QBasic programming environment.
+ RMDIR	Removes a directory.
+ RD	Short name for RMDIR command.
+ REN	Renames a file or files.
+ RENAME	Renames a file or files.
+ REPLACE	Replaces files.

- * SCANDISK Checks a drive for errors and repairs any problems it finds.
- + SET Displays, sets, or removes MS-DOS environment variables.
- * SETVER Sets the version number that MS-DOS reports to a program.
- # SHARE Installs file-sharing and locking capabilities on your hard disk.
- * SORT Sorts input.
- * SUBST Associates a path with a drive letter.
- * SYS Copies MS-DOS system files and command interpreter to a disk you specify.
- + TIME Displays or sets the system time.
- * TREE Graphically displays the directory structure of a drive or path.
- + TYPE Displays the contents of a text file.
- * UNDELETE Restores files previously deleted with the DEL command.
- # UNFORMAT Restores a disk erased by the FORMAT command.
- + VER Displays the MS-DOS version.
- + VERIFY Directs MS-DOS to verify that your files are written correctly to a disk.
- + VOL Displays a disk volume label and serial number.
- * XCOPY Copies files (except hidden and system files) and directory trees.

Make Space Utility Program

MKSPACE.BAT is a batch program that removes DOS utility programs that are not commonly used from the DOS directory on the C: drive of the Allegro. This utility frees up approximately 1 M of space on the C: drive. MKSPACE.BAT is located on the Allegro in C:\DOS. Below is a list of the utility programs that are removed when the MKSPACE.BAT program is run.

debug.exe	qbasic.hlp
deltree.exe	qbasic.ini
edit.com	qbasic.exe
edit.hlp	scandisk.exe
fc.exe	scandisk.ini
find.exe	setver.exe
help.com	sort.exe
help.hlp	subst.exe
label.exe	tree.com
more.com	
move.exe	

When you run the MKSPACE program, the following messages are shown on the Allegro screen:

```
This program will delete
DOS commands (910K) from
Drive C:\ that are not
commonly used!
```

```
DOS commands can be
added to the drive
from the Allegro Utilities
CD-ROM when or if desired.
Remove DOS Commands?
```

If your response is yes, the following message is shown:

```
DOS Commands Removed.
```

If your response is no or you do not respond within 10 seconds, the following message is shown:

```
Either No was selected
or 10 sec without action.
```

```
No DOS Commands
were removed!
```

Serial Printing Utility Program

SERPRN.EXE is a DOS utility program that allows you to set up an Allegro serial communication port to send output to a printer. If a program is designed to use a parallel printer port, SERPRN redirects the parallel port settings to a serial port. It also sets the communication parameters and software and hardware handshaking.

This program can be used in place of the Mode command. Like the Mode command, you can call SERPRN from the AUTOEXEC.BAT file so printing is automatically set up.

The parameters you can specify when executing this program are listed below.

COM1	COM port to be used (COM1 or COM2)
9600	Baud rate (1200, 2400, 4800, 9600, 19200, 38400, 56800, 115200)
n	Parity (n - none, e - even, o - odd, m - mark, s - space)
8	Number of data bits (7 or 8)
1	Number of stops bits (1 or 2)
x	Enables XON/XOFF handshaking
c	Enables CTS hardware handshaking
d	Enables DSR hardware handshaking
q	Enables quiet mode
z	Disables the redirection of the COM port
?	Displays help
t	Sets time out (number between 1 - 15)

To execute this program, type the command followed by your parameter choices. The syntax and the default settings (no handshaking) are shown below:

```
Serprn com1 9600 n 8 1 x
```

A space must separate each parameter. The first parameter is always the COM port followed by the communication parameters (these can be entered in any order). The hardware and software handshaking can be used separately or together. Normally, only one handshaking method is used at a time.

Generally, an output list is shown after SERPRN is invoked informing you how the utility has set the communication port. You can disable the output listing with the quiet mode parameter (q).

Example uses of SERPRN are shown below.

Syntax

```
Serprn com1 9600 n 8 1 x t10
```

Output

```
HM/JS Parallel to Serial Redirector  
COM1 9600 n 8 1  
LPT1 redirected to COM1  
Handshaking XON
```

If the program is called with only the COM port specified, the program default settings are used.

Syntax

```
Serprn com1
```

Output

```
HM/JS Parallel to Serial Redirector  
COM1 9600 n 8 1  
LPT1 redirected to COM1  
No Handshaking
```

If the program is called without any command line parameters, a status report is shown listing the settings that are currently in use for the serial port.

Syntax

```
Serprn
```

Output

```
HM/JS Parallel to Serial Redirector  
COM1 9600 n 8 1  
LPT1 redirected to COM1  
Handshaking XON CTS DSR
```

If the program is called with the ? parameter in the command line, it returns a list of the available command line parameters.

Chapter 5



Technical Reference

Specifications
Glossary of DOS Terms
BIOS Messages
Files Located on the Solid State Disk
Solid State Disk Utilities
PC Card Utilities and Drivers
Communication Cable Schematic

Specifications

▲ Processor

- ❑ AMD SC 400, 486 AMD processor, 100 MHz

▲ Operating Systems

- ❑ MS-DOS® 6.22

▲ Programs (for Allegro and PC)

- ❑ DOS Utilities
 - Desktop PC: Lynx™ File Transfer Utility
 - Allegro Utilities: FileScout™ DOS File Manager, Text Editor, Terminal Program

▲ Physical Specifications

- ❑ Size: 10" high x 5.25" wide at display x 3.1" wide at narrowest point x 1.5" deep (256 mm x 133 mm x 79 mm x 38 mm)
- ❑ Weight: 1.78 lbs or 28 oz (807 grams)
- ❑ Operating Temperature: -22 to 130° F (-30 to 54° C)
- ❑ Storage Temperature: -30 to 140° F (-35 to 60° C)
- ❑ Waterproof: Passes MIL-810E-512.3 and IP67 leak (immersion) tests. To pass these tests, the Allegro is submerged under 2 meters of water for 2 hours.
- ❑ Shockproof: Passes MIL-810E-512.4 shock (drop) test. To pass this test, the Allegro is dropped on each face and corner from 5 feet onto 2 inches of plywood backed by concrete.

▲ Communication Ports

- ❑ Two 9 pin D RS-232 ports (up to 115 Kbaud transfer rate)
- ❑ 5 V power at 250 mA for external devices on COM1 (DTR pin #4)

▲ Display

- ❑ Robust, scratch-resistant display screen
- ❑ LCD has an EL backlight with adjustable brightness capability for visibility in low lighting or changing light conditions
- ❑ Padding around the display protects against impact
- ❑ Display heater for operation in cold environments
- ❑ CGA graphics

- Active viewing area: 3.3" wide x 2.5" high (4.1" diagonal), 18% larger than comparable units
- 1/4 VGA, resolution is 320 x 240 pixels
- Four font sizes are user selectable with a hot key: 25 lines by 40 characters, 16 x 40, 16 x 32, or 12 x 20
- Full screen in memory: 25 lines x 80 characters

▲ **Keyboard**

- Large keys for use with gloved hands
- 12 Function keys located directly under the display; convenient for use in applications as soft keys
- Special keys: DOS Break, Reset, large round rocking arrow button
- Forward and backward tab keys, unshifted
- Numeric keys are large and centrally located
- All printable ASCII characters are on the keyboard; extended characters are accessible through ALT# # # key sequences
- Key labels are coated with special finishes that prevent them from rubbing off
- Keys have a snappy tactile feel

▲ **Case Design**

- Field-ergonomic shape with balanced weight distribution
- Rugged, 100% sealed against water and dust
- Designed for one-handed operation (right or left)
- Rings at all 4 corners of the case for straps
- Adjustable handstrap and shoulder strap with multiple strap orientations possible

▲ **Memory/Storage**

- 16 M low power RAM
- 32 M non-volatile solid state disk storage; data are secure without battery backup

▲ **PC Card Slot**

- User accessible without special tools
- Accepts Type I or II 3V/5V PC cards (does not accept 3V only cards)

- Compatible with ATA Flash, SRAM, or I/O cards
- Compact Flash card adapter is available

▲ Power

- Rechargeable NiMH quick change battery pack (replacements are readily available)
- NiMH batteries last 10 to 16 hours between charges during typical use; actual battery life can be longer or shorter, depending on the application, backlight and heater usage, and power management
- Alkaline battery holder uses 3 AA alkaline cells (optional)
- Battery charge status LED indicators, low battery warning
- Resume mode allows you to resume where you left off when you turn the Allegro on
- Adjustable performance/power management
- Power manager automatically switches unit into low power mode for optimum efficiency
- Separate power input connector for charging and direct power
- Rapid internal smart-charging in 3 hours

▲ Sound

- Produces basic computer sounds

▲ Clock

- Internal battery-backed real time clock
- +/- 3 minutes per month accuracy

▲ Certifications

- CE Mark approval
- FCC Class A

▲ Expandability

- Custom expansion pod allows you to integrate a GPS receiver with the Allegro DOS; this pod replaces the PC card door and are sealed

Specifications are subject to change without notice.

Glossary of DOS Terms

Following is a glossary of some basic terms relating to the operating systems, memory, and data storage options.

▲ **AUTOEXEC.BAT File**

An AUTOEXEC.BAT startup file contains default configuration information. There is an AUTOEXEC.BAT file on both the Allegro's C: and A: drive. The Allegro usually boots from the C: drive. Therefore, the AUTOEXEC.BAT on the C: drive is activated first. It does not chain to A:. You can modify this file as needed for your application.

▲ **Byte**

A byte is the amount of space it takes to store one character.

▲ **CONFIG.SYS File**

A CONFIG.SYS startup file contains default information that configures the hardware components on a computer. There is a CONFIG.SYS file on both the Allegro's C: and A: drive. Because the Allegro boots from the C: drive on default, the commands in the CONFIG.SYS located on the C: drive are activated. You cannot chain to other CONFIG.SYS files using MS-DOS. You can modify the CONFIG.SYS file on drive C: if required.

▲ **Disks and Disk Drives**

Computer disks can be classified into two basic groups: Diskettes and hard drives (also called fixed drives). The Allegro uses a solid state hard disk and PC card for program and data storage. The solid state disk is non-volatile.

▲ **DOS**

DOS is an acronym for Disk Operating System. DOS consists of a set of commands or code which tells the computer how to process information. DOS runs programs, manages files, controls information processing, directs input and output, and performs many other related functions.

▲ **File**

A file is a defined set of related information electronically stored on your Allegro or PC. Examples: a letter, a database, or a program. Computer files are stored either in the computer's internal memory (RAM and ROM) or on storage media, typically disks (diskettes and hard drives).

▲ **Disk-On-Chip (Hard Disk)**

A disk-on-chip is a solid state disk drive. The C: drive on the Allegro is a disk-on-chip. It can be read from and written to just like the hard drive on a PC but has no moving parts and does not require power to maintain contents.

▲ **Kilobyte**

One kilobyte (K or KB) is thought of as one thousand bytes (the actual figure is 1,024 bytes).

▲ **Megabyte**

One megabyte (M or MB) is thought of as one million bytes (the actual figure is 1,048,576 bytes). The Allegro comes with 16 M of RAM and 24 M of disk storage.

▲ **PCMCIA Card (PC Card)**

PCMCIA is an acronym for Personal Computer Memory Card Interface Association. When the proper software (device drivers) is installed on the Allegro, an SRAM card or ATA FLASH card may be inserted in the slot provided. A PC card may also be a modem, RF transceiver, GPIB interface or several other possible devices. The Allegro device drivers automatically detect these devices when they are installed in the PC card slot.

▲ **RAM (Random Access Memory)**

RAM is often referred to as the computer's workspace. This is where programs are executed or run. RAM can be written to, read from, erased, etc. Its storage ability is temporary in nature, only holding information while the system has power.

▲ **ROM Disk (Read Only Memory)**

ROM disks are different from RAM disks in that they are written to only once; upon original creation. Thereafter, they can only be read from much like a write-protected floppy disk. If you attempt to write to a ROM disk the Allegro displays an error message. The ROM drive in the Allegro is the A: drive.

▲ **MS DOS**

MS DOS™ 6.22 is Microsoft Corporation's version of DOS. It is embedded in the Allegro's ROM (Read Only Memory) and can run entirely from within ROM.

ASCII Character Sets

When in DOS, any character code from the IBM standard (0-127) or extended(128-255) character set may be entered by pressing and holding the *Alt* key while keying in the character code on the number keys. The ALT-*nnn* function can be enabled (default) or disabled through the extended BIOS function 2E11h.

▲ Standard ASCII Character Set

Dec	Hex	Sym.	Dec	Hex	Sym.	Dec	Hex	Sym.	Dec	Hex	Sym.
0	00		32	20		64	40	@	96	60	`
1	01	^A	33	21	!	65	41	A	97	61	a
2	02	^B	34	22	"	66	42	B	98	62	b
3	03	^C	35	23	#	67	43	C	99	63	c
4	04	^D	36	24	\$	68	44	D	100	64	d
5	05	^E	37	25	%	69	45	E	101	65	e
6	06	^F	38	26	&	70	46	F	102	66	f
7	07	^G	39	27	'	71	47	G	103	67	g
8	08	^H	40	28	(	72	48	H	104	68	h
9	09	^I	41	29	)	73	49	I	105	69	i
10	0A	^J	42	2A	*	74	4A	J	106	6A	j
11	0B	^K	43	2B	+	75	4B	K	107	6B	k
12	0C	^L	44	2C	,	76	4C	L	108	6C	l
13	0D	^M	45	2D	-	77	4D	M	109	6D	m
14	0E	^N	46	2E	.	78	4E	N	110	6E	n
15	0F	^O	47	2F	/	79	4F	O	111	6F	o
16	10	^P	48	30	0	80	50	P	112	70	p
17	11	^Q	49	31	1	81	51	Q	113	71	q
18	12	^R	50	32	2	82	52	R	114	72	r
19	13	^S	51	33	3	83	53	S	115	73	s
20	14	^T	52	34	4	84	54	T	116	74	t
21	15	^U	53	35	5	85	55	U	117	75	u
22	16	^V	54	36	6	86	56	V	118	76	v
23	17	^W	55	37	7	87	57	W	119	77	w
24	18	^X	56	38	8	88	58	X	120	78	x
25	19	^Y	57	39	9	89	59	Y	121	79	y
26	1A	^Z	58	3A	:	90	5A	Z	122	7A	z
27	1B	^	59	3B	;	91	5B	[	123	7B	{
28	1C	^	60	3C	<	92	5C	\	124	7C	|
29	1D	^	61	3D	=	93	5D	]	125	7D	}
30	1E	^	62	3E	>	94	5E	^	126	7E	~
31	1F	^	63	3F	?	95	5F	_	127	7F	←

▲ Extended ASCII Character Set

Dec	Hex	Sym.	Dec	Hex	Sym.	Dec	Hex	Sym.	Dec	Hex	Sym.
128	80	Ç	160	A0	á	192	C0	Ł	224	E0	α
129	81	ù	161	A1	í	193	C1	±	225	E1	β
130	82	é	162	A2	ó	194	C2	⊥	226	E2	Γ
131	83	â	163	A3	ú	195	C3	⊥	227	E3	π
132	84	ä	164	A4	ñ	196	C4	—	228	E4	Σ
133	85	å	165	A5	Ñ	197	C5	+	229	E5	σ
134	86	â	166	A6	ª	198	C6	⊥	230	E6	μ
135	87	ç	167	A7	º	199	C7	⊥	231	E7	τ
136	88	ê	168	A8	¿	200	C8	⊥	232	E8	φ
137	89	ë	169	A9	⌈	201	C9	⊥	233	E9	θ
138	8A	è	170	AA	⌋	202	CA	⊥	234	EA	Ω
139	8B	ï	171	AB	½	203	CB	⊥	235	EB	δ
140	8C	î	172	AC	¼	204	CC	⊥	236	EC	ω
141	8D	ì	173	AD	¡	205	CD	=	237	ED	∞
142	8E	Ï	174	AE	«	206	CE	⊥	238	EE	ε
143	8F	À	175	AF	»	207	CF	⊥	239	EF	∩
144	90	É	176	B0	⌘	208	D0	⊥	240	F0	≡
145	91	æ	177	B1	⌘	209	D1	⊥	241	F1	±
146	92	Æ	178	B2	|	210	D2	⊥	242	F2	≥
147	93	ó	179	B3	|	211	D3	⊥	243	F3	≤
148	94	ö	180	B4	|	212	D4	⊥	244	F4	[
149	95	ò	181	B5	|	213	D5	⊥	245	F5]
150	96	û	182	B6	|	214	D6	⊥	246	F6	+
151	97	ù	183	B7	|	215	D7	⊥	247	F7	*
152	98	ÿ	184	B8	|	216	D8	⊥	248	F8	.
153	99	Û	185	B9	|	217	D9	⊥	249	F9	.
154	9A	Ü	186	BA	|	218	DA	⊥	250	FA	.
155	9B	ø	187	BB	|	219	DB	⊥	251	FB	√
156	9C	ƒ	188	BC	|	220	DC	■	252	FC	η
157	9D	¥	189	BD	|	221	DD	■	253	FD	z
158	9E	£	190	BE	|	222	DE	■	254	FE	□
159	9F	f	191	BF	|	223	DF	■	255	FF	

BIOS Messages

▲ Power On Self Test

When the Allegro powers up, it goes through a series of internal tests and diagnostics. This is called the Power On Self Test (POST). During these tests, messages are displayed on the screen or a series of beeps are heard. If you see an error message during this process, try resetting the Allegro by holding the *On/Off* key down for 8 seconds. If the error persists, contact our Customer Service Department.

Files Located on the Solid State Disk

The main data and program storage used in the Allegro is a solid state disk-on-chip manufactured by M-Systems™. It operates much the same as a desktop PC hard drive, but with no moving parts.

The following files are factory installed on the solid state disk. Copies of these files are also located on the Allegro Distribution CD-ROM. The drive designations are C: for DOS.

▲ C:\

AUTOEXEC.BAT
CONFIG.SYS
COMMAND.COM
NK.BIN (hidden)

▲ C:\UTIL

AINFO.EXE
AINFO.TXT
ATAINIT.EXE
AUTOEXEC.BAT
CARDINFO.EXE
CONFIG.SYS
DDEFRAG.EXE
DINFO.EXE
PE.COM
PTERM.EXE
SERPRN.EXE
SERPRN.TXT
WCE.EXE

▲ C:\UTIL\CARDSOFT

ATADRV.EXE	IBMTOK.CLB
CARDID.EXE	INTELLAN.CLB
CARDID.INI	LINKSYS.CLB
CBDAS.CLB	LINKSYS2.CLB
CS.EXE	MTDDRIV.EXE
XIRCOM.CLB	MTSRAM.EXE
CSALLOC.EXE	PROXIM.CLB
CSALLOC.INI	SOCKETEA.CLB
DLINK.CLB	SS365SL.EXE
GENATA.CLB	SUNDISK5.CLB
GENMODEM.CLB	TDKLAN2.CLB
IBM3270.CLB	WD.CLB
IBMLAN.CLB	

▲ C:\DOS

ANSI.SYS	FC.EXE	PRINT.EXE
ATTRIB.EXE	FIND.EXE	QBASIC.EXE
CHKDSK.EXE	HELP.COM	QBASIC.HLP
CHOICE.COM	HELP.HLP	QBASIC.INI
DEBUG.EXE	HIMEM.SYS	SCANDISK.EXE
DEFRAG.EXE	LABEL.EXE	SCANDISK.INI
DELTREE.EXE	MEM.EXE	SETVER.EXE
DOSHELP.HLP	MKSPACE.BAT	SORT.EXE
DOSKEY.COM	MODE.COM	SUBST.EXE
EMM386.EXE	MORE.COM	TREE.COM
EDIT.COM	MOVE.EXE	UNDELETE.EXE
EDIT.HLP	POWER.EXE	XCOPY.EXE

▲ C_Program Files

PTAB.EXE
CALC.EXE

Solid State Disk Utilities

Some disk-on-chip utility programs are factory installed on the solid state disk. They are also included on the Allegro Distribution CD-ROM. When in DOS, these files allow you to view the status of the disk and to reprogram it if necessary.

Name	Type	Description
DDEFRAG	EXE	Used to defragment the contents of the C: drive. Run this on a monthly basis to keep the solid state disk running at optimum performance.
DFORMAT	EXE	Used to format the Disk on Chip. May be needed if the C: drive is corrupted.
DINFO	EXE	Gives the user information about the disk including: <ul style="list-style-type: none">* Drive Letter* Disk Size* Software Version* True FFS Compatibility* Firmware Size
DOCxxx	EXB	The Flash File System (FFS) binary code. The small xxx in the file name is the version number of this file. The file extension is always be .EXB. This file is needed if the disk is corrupted and needs to be completely reprogrammed at the lowest level.
DUPDATE	EXE	This is the program used to reprogram the disk's binary flash file system. This file is needed if the disk is corrupted and needs to be completely reprogrammed at the lowest level.

PC Card Utilities and Drivers

▲ Factory Installed Programs and Drivers

In DOS, the PC card slot is operated by CardSoft™ PC card utility programs and device drivers from System Soft™. They are factory installed on the C: drive of the Allegro and are also located on the Allegro Distribution CD-ROM.

These programs and drivers are listed below (for the proper loading order, see the sample CONFIG.SYS file in *Chapter 4*).

❖ *Note: All of the “.CLB” are descriptor files that gives the PC Card device drivers the information they need to correctly use the associated card type and brand.*

Name	Type	Description
ATADRV	EXE	Device driver for ATA Flash cards and hard drives.
CARDID	EXE	Device driver to determine the type/brand of card in the system.
CARDID	INI	Information file that contains a list of all of the card types and brands that the cardid program can identify.
CARDINFO	EXE	Utility program that can tell you about the card that is currently plugged into the Allegro. CARDINFO /V gives additional information.
CS	EXE	The card services device driver.
CSALLOC	EXE	Device driver to allocate the needed memory.
CSALLOC	INI	Information files for the CSALLOC program.
MTDDR	EXE	Memory Technology device driver.
MTRAM	EXE	Device driver for SRAM type cards.
SS365SL	EXE	Socket service device driver.
CBDAS	CLB	
DLINK	CLB	DLINK brand network cards
GENATA	CLB	Generic ATA Flash and hard drive cards
GENMODEM	CLB	Generic modem card

Name	Type	Description
IBM3270	CLB	IBM 3270 network cards
IBMLAN	CLB	IBM network cards
IBMTOK	CLB	IBM token ring network cards
INTELLAN	CLB	Intellan denwork cards
LINKSYS	CLB	Link Systems network cards
LINKSYS2	CLB	Link systems network cards
PROXIM	CLB	Proxim network cards
SOCKETEA	CLB	
SUNDISK5	CLB	Sundisk (Sandisk) cards
TDKLAN2	CLB	TDK network cards
WD	CLB	Western Digital cards
XIRCOM	CLB	Xircom network cards

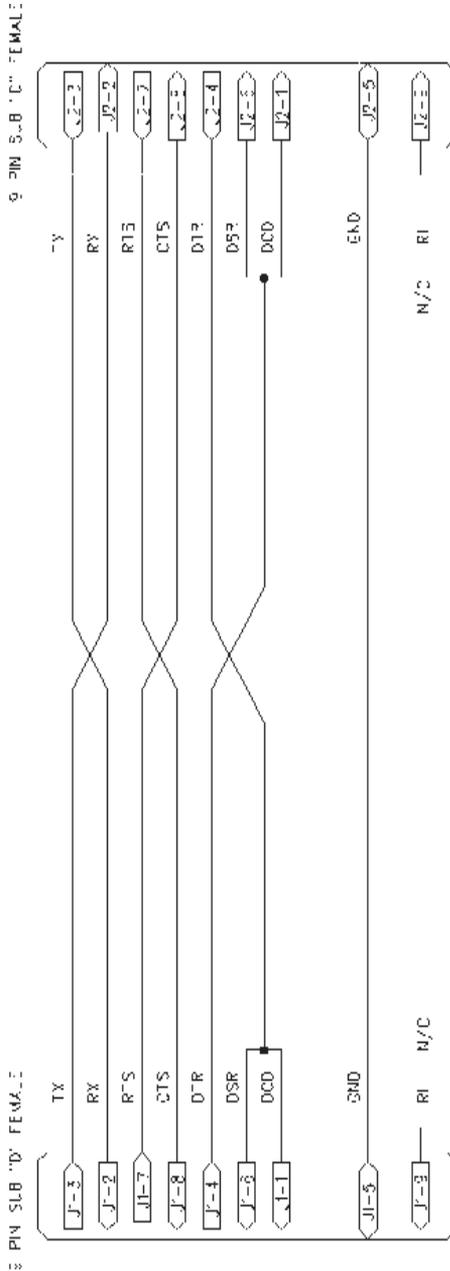
▲ **Programs for Other PC Card Types and Brands**

The following files are on the Allegro Distribution CD-ROM only. These programs are used to create a configuration file for PC cards that cannot use any of the .CLB files listed above. If you feel that you need to use these, contact our Customer Service Department for details.

Name	Type	Description
ATAINIT	EXE	Used to reconfigure an ATA card.
CONFIG	EXE	
CS_APM	EXE	
CSD_VER	TXT	
CV_VER	TXT	
VCB	EXE	

Communication Cable Schematic

A wiring diagram for the serial communication cable is shown below.



Chapter 6



Software Developer's Guide for MS-DOS

Introduction
Power Management
Keyboard and Video
Extended BIOS Functions
Hardware Interrupt Listing
I/O Port Mapping
AT Keyboard Scan Codes
Keyboard Key-Code Tables

Introduction to DOS Programmers

This chapter of the manual includes technical information for DOS programmers. The power management information enables programmers to run the Allegro Field PC as efficiently as possible in terms of speed and power consumption. The keyboard and video interrupt functions can be used to control the keyboard and video screens. The extended BIOS functions, a hardware interrupt listing chart, I/O port mapping, AT scan codes, and keyboard key-code tables are also shown in this chapter.

Power Management

The Allegro has several power management functions integrated within the BIOS. Applications can use these functions to greatly enhance performance and operating time between battery charges. There is an internal automatic Power Manager, which can be set off or on, and five levels of performance, from 0 (miser) to 4 (hyper).

There is a trade-off between battery operating time and performance. As the processor speed is increased the Allegro uses more power, causing the batteries to drain more quickly. For optimal power management, the processor should be run at high speed only when there is actual processing to be done, and run at low speed or stopped (sleep mode) the rest of the time. It is analogous to driving a car. Think of the processor as the car engine and the battery as the car fuel tank. When you press the gas pedal, the engine runs faster and in turn uses fuel more quickly.

On most computers that run DOS, the processor is running at full throttle all of the time, even when there is no work to be done. While the processor is waiting for input, it is running at full speed in circles (programmers call this a spin loop). This is a tremendous waste of power, yet when DOS was designed desktop computers did not run on batteries and so power saving was not a concern. It is a serious problem in a battery operated system. Properly controlling CPU power during idle times has a dramatic effect on battery operating time. It can be handled at either the BIOS/operating system level, or at the application level.

Starting and stopping the processor as needed is a simple concept, but can be difficult to implement effectively. The problem is determining when the processor is not doing any real work and can be safely shut down. When writing an application, the programmer usually knows when the processor is idly waiting for input, and by using Allegro's power management API can design a very power efficient program. If the program has not been designed to use power management, the Allegro BIOS attempts to manage power automatically. However, the BIOS does not know for sure what the processor is doing. It can only guess, based on the level of activity it can see. For this reason, it is better to design power management into the program itself.

For applications that do not take advantage of the Allegro power API, the BIOS Automatic Power Manager can greatly extend operating time and should be used when possible. In our experience, it works quite well with most applications. However, because the BIOS can only guess what the processor is doing, in some cases it may shut activities down when it should not and vice versa. If the program is misbehaving with Power Manager enabled, try disabling it. If the problem disappears, then there may be a conflict with your program and the Power Manager. If you encounter a situation where you cannot use the Power Manager, the next best thing for power savings is to set the performance level to the lowest possible setting in which the program still functions properly.

If you are writing an application for Allegro, we strongly encourage designing power management into your program. Any time the processor is waiting for input, you may want to put it to sleep. The most common case where this technique is used is while waiting for a keystroke. See the Allegro Getch() example for a means to shut the processor down while waiting for a keystroke. A rule of thumb is whenever the processor may be waiting for 50 milliseconds or more for input it should be put to sleep.

Another case where power management can be used is when an application temporarily needs to perform some high speed processing of data. The Allegro_CpuBusy() function can be used to override the Power Manager and put the processor into high speed mode while the processing is taking place. The Allegro_CpuDone() function is used to restore settings when processing is completed.

Power management for DOS operation can be controlled by the user from the System Setup program (refer to *Chapter 4, MS-DOS Operating System, System Setup Program* for more details). It can be controlled programmatically through the Extended BIOS Functions (later in this chapter) as illustrated by the examples on the following pages written in C and Assembly language. Note that these examples are for DOS operation only.

▲ Allegro Get Keystroke Function (**Allegro_Getch()**)

The following function can be used to put the Allegro to sleep while waiting for a keystroke.

```
char Allegro_Getch(void)
{
    while(!kbhit())        // do sleep function until key is pressed
    {
        _asm
        {
            push    ax
            push    bx
            mov     ax, 2F19h
            mov     bl, 10000000b    //load regs for sleep call
            int     10h            //call sleep function
            pop     bx
            pop     ax
        }
    }
    return(getch());
}
```

▲ Allegro CPU Busy Function (**Allegro_CpuBusy**)

This function overrides the Power Manager and causes the CPU to enter a high power state. It remains in this state until the Allegro_CpuDone function is called. It is used to temporarily speed up the CPU when data needs to be processed rapidly.

```
void Allegro_CpuBusy (void)
{
    _asm
    {
        push     ax
        push     bx
        mov     ax, 2E0Bh
        mov     bl, 0            // setup regs for function call
        int     10h            // call cpu busy function
        pop     bx
        pop     ax
    }
}
```

▲ Allegro CPU Done Function (Allegro_CpuDone)

This function is called to restore the Power Manager to the normal state after a CPU busy call.

```
void Allegro_CpuDone (void)
{
    _asm
    {
        push    ax
        push    bx
        mov     ax, 2E0Bh
        mov     bl, 1           // setup regs for function call
        int    10h           // call cpu done function
        pop     bx
        pop     ax
    }
}
```

Keyboard and Video

A programmer can use the keyboard and video interrupt functions to control the keyboard and video screens. These functions are described below.

▲ Keyboard Intercept Functions

BIOS interrupt 15h function 4Fh can be hooked to intercept raw (not yet translated) scan codes from the keyboard, which are contained in the AL register. The scan codes at this level are unique to the Allegro. Refer to the system scan codes in the Scan Code Tables found at the end of this chapter.

BIOS interrupt 15h function 4Eh can be hooked to intercept translated scan codes from the keyboard, which are contained in the AX register. The scan codes at this level are standard 2 byte scan/ASCII character codes. The keys on the keyboard can be remapped to output alternate characters through this interrupt.

▲ Video

The Allegro display is a CGA compatible 320 x 200 pixel monochrome LCD. Text mode (BIOS video mode 3) supports four fonts which displays 40 columns x 25 lines, 40 x 16, 32 x 16, or 20 x 12 for the small, medium, large, or extra large fonts respectively. Font may be toggled with a hot key or set programmatically through the BIOS int 10h function 2E14h. A virtual 80 x 25 display with panning capability is supported for all fonts. Text attributes can be set to black/white, where CGA colors are mapped to either full on or full off, and gray shades, where CGA colors map to various shades of gray. This setting can be changed either in the System Setup program or through BIOS int 10h function 2F23h.

Graphics modes supported are CGA mode 4 (320x200 pixel) with four shades of gray, and CGA mode 6 (640x200 pixel) where pixels are either on or off. Standard BIOS interrupt 10h functions are used to set the video mode. Only modes 3, 4, and 6 are supported.

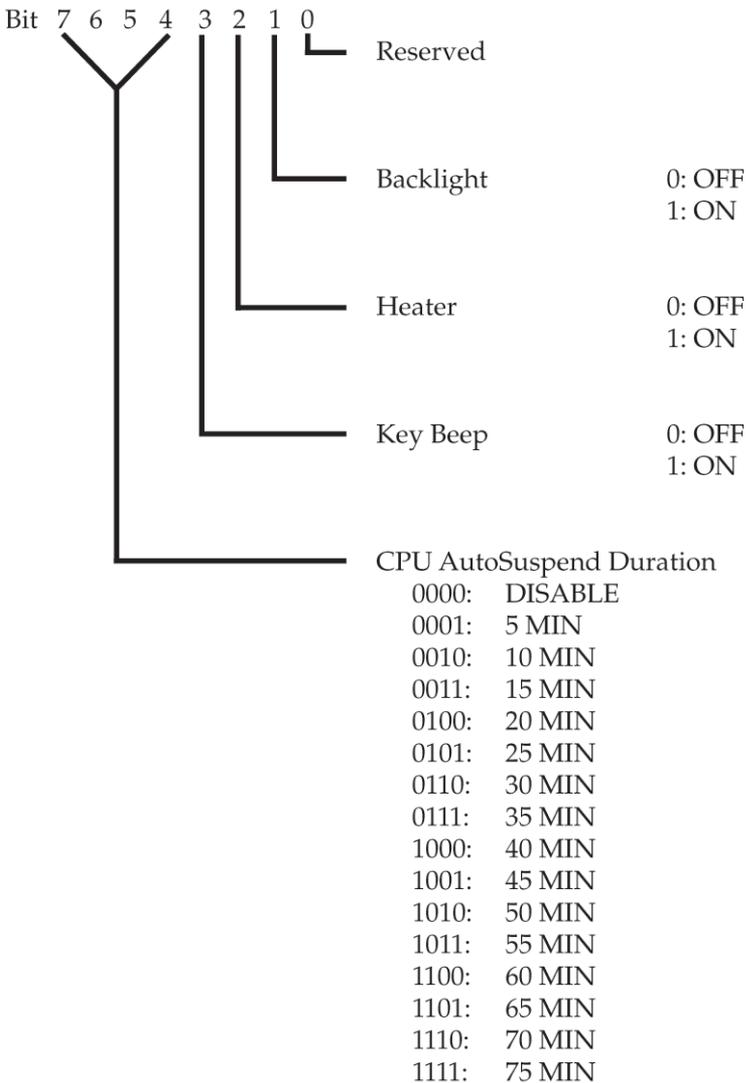
An autopan function can be enabled or disabled to cause the display to pan with the cursor around the 80 x 25 virtual window. Extended BIOS functions can be used to locate the display anywhere on the virtual window. In this way multiple "pages" can be set up on the single 80 x 25 window.

Extended BIOS Functions

Extended BIOS services are available through the use of an extended interrupt function BIOS call. The functions are placed in register AH. The subfunctions are placed in register AL. You then invoke INT 10h. When the subfunction requires data input (for example, to set the contrast), the data byte or word is generally passed in register BL or BX. The output byte is returned in register AL. An unsuccessful operation exits the function with the carry bit set.

Function	Sub-Function	Meaning
AH = 2Eh	AL = 00h	Pan left
	AL = 01h	Pan right
	AL = 02h	Pan up
	AL = 03h	Pan down
	AL = 04h	Pan XY - text mode
	AL = 06h	PC card power while in suspend
	AL = 07h	Suspend system
	AL = 0Ah	Get Allegro status byte
	AL = 0Bh	CPU busy/done
	AL = 0Ch	Disable BIOS power manager
	AL = 0Dh	Enable BIOS power manager
	AL = 0Fh	Get CPU version
	AL = 10h	Get keypad shift flag settings
	AL = 11h	Set keypad shift flag settings
	AL = 12h	Get Allegro ID
	AL = 14h	Select font size (text mode only)
	AL = 15h	Perform system hard reset
	AL = 19h	Set LED brightness
	AL = 1Ah	Get battery % charge
	AL = 20h	Get BIOS version
AL = 24h	BIOS Setup pop-up window	
AL = 26h	Get/set vehicle mode	
AH = 2Fh	AL = 00h	Read status byte
	AL = 01h	Read video contrast
	AL = 0Ch	Set backlight off
	AL = 0Dh	Set backlight on
	AL = 0Eh	Set heater off
	AL = 0Fh	Set heater auto
	AL = 10h	Set key beep off
	AL = 11h	Set key beep on
	AL = 12h	Power down system
	AL = 13h	Put system in reboot mode
	AL = 14h	Put system in resume mode
	AL = 15h	Set auto sleep duration
	AL = 16h	Set video contrast
	AL = 18h	Get performance level
	AL = 19h	Set performance level
	AL = 1Ah	Set auto-panning off
	AL = 1Bh	Set auto-panning on
AL = 1Eh	Read miscellaneous BIOS setup bytes	
AL = 23h	Video attributes	

▲ Function AH=2Eh



Note: The behavior of the panning sub-functions 00 - 03 depends on the current font size and video mode.

Subfunction: AL = 00h (pan left)

Pans screen left. If screen is at leftmost limit, no action is taken.
Returns nothing.

Subfunction: AL = 01h (pan right)

Pans screen right. If screen is at rightmost limit, no action is taken. Returns nothing.

Subfunction: AL = 02h (pan up)

Pans screen up. If screen is at top of 25 row virtual display, no action is taken. Returns nothing.

Subfunction: AL = 03h (pan down)

Pans screen down. If screen is at bottom of 25 row virtual display, no action is taken. Returns nothing.

Subfunction: AL = 04h (pan xy - text mode only)

Locates the upper left corner of display window to row/column specified on the virtual 80x25 display. Call with BH=row, BL=column. Range of row/column values depends on font size. The display window must be contained within 80 x 25 virtual display. (0,0) is top left corner. Returns nothing.

Subfunction: AL = 06h (pc card power while in suspend)

Determines whether to leave PC Card powered when the system is suspended or to turn power off. Some cards may draw substantial current even when suspended and may need to be powered down during suspend so the Allegro's batteries are not drained.

Call with: BL=00h return current setting in AL
 BL=01h power off during suspend
 BL=02h power on during suspend (default)

Subfunction: AL = 07h (suspend Allegro)

Suspends the Allegro to low power suspend state and remains there until a valid wakeup event occurs. Calling this function is identical to pressing the On/Off key when the system is in suspend/resume mode. Returns nothing.

Subfunction: AL = 0Ah (get Allegro status byte)

Returns status byte in AL where:

 b7-b1 = reserved
 b0 = power manager setting 1=on, 0=off

Subfunction: AL = 0Bh (set cpu busy/done)

Applications should set CPU busy when a block of processing needs to be performed. CPU busy overrides power manager and keeps the CPU running fast for as long as it is set. CPU done should be called after CPU busy to tell the CPU that processing is complete and the Allegro can return to a lower power state.

WARNING: CPU busy drains the batteries rapidly and should only be enabled when needed. Returns nothing.

Call with: BL=00h CPU busy
 BL=01h CPU done

Subfunction: AL = 0Ch (disable BIOS power manager)

Disables automatic power management functions in the BIOS. The Allegro generally uses less power with power manager enabled. Returns nothing.

Subfunction: AL = 0Dh (enable BIOS power manager)

Enables automatic power management functions in the BIOS. The system generally uses less power with power manager enabled. Returns nothing.

Subfunction: AL = 0Fh (get CPU version)

Returns CPU version as follows: AL=version major (b7-b4)+version minor (b3-b0).

Subfunction: AL = 10h (get keypad shift flag settings)

Returns current shift flag settings in AL. See Subfunction AL=11h.

Subfunction: AL = 11h (set keypad shift flag settings)

The keyboard shift flags (*Ctrl*, *Alt*, *Shift*) can be individually controlled such that when the key is pressed it registers as either left, right, or both scan codes. The *Alt*-nnn function can be enabled/disabled with this function.

Call with: BL=b7-b0 where:

b1,b0	=	01	right <i>Shift</i> only
		10	left <i>Shift</i> only
		11	both (Default)
b3,b2	=	01	right <i>Alt</i> only
		10	left <i>Alt</i> only
		11	both (Default)
b5,b4	=	01	right <i>Ctrl</i> only
		10	left <i>Ctrl</i> only
		11	both (Default)
b6	=	0	disable <i>Alt</i> -nnn
		1	enable <i>Alt</i> -nnn (default)
b7	=		reserved

Subfunction: AL = 12h (get Allegro ID)

Returns offset of Allegro ID string in AX. Segment is F000.

▲ Function AH=2Fh

Subfunction: AL = 00h (read status byte)

Output: AL = Status Byte, where:

Subfunction: AL = 01h (read video contrast)

Output: AL = Video Contrast

The range of video contrast is from 0 to 63.

Subfunction: AL = 0Ch/AL = 0Dh (turn backlight off/on)

AL = 0Ch turns the display backlight off. AL = 0Dh turns the display backlight on. Returns nothing.

Subfunction: AL = 0Eh/AL = 0Fh (set heater off/auto)

AL = 0Eh turns the display heater off. AL = 0Fh sets the display heater to automatic. Returns nothing.

❖ *Note: In automatic mode, the heater is active when the display temperature is below -3° C.*

Subfunction: AL = 10h/AL = 11h (set key beep off/on)

AL = 10h turns the key beep off. AL = 11h turns the key beep on. Returns nothing.

Subfunction: AL = 12h (power down system)

This function causes the Allegro to immediately power off just like it does when the *On/Off* key is pressed and the Allegro is in *On/Off* mode. If external power is connected to the Allegro, this function causes the Allegro to go into a semi-low power state where it appears to be off, but it is actually on. Any event that normally causes the Allegro to turn on (pressing the *On/Off* key, com port ring in, etc.) causes the Allegro to reboot. When the external power is removed, the Allegro powers off.

Subfunction: AL = 13h (put system in reboot mode)

When it is executed, the Allegro is set to reboot mode. In this mode the on/off key causes power to be turned off. Returns nothing.

Subfunction: AL = 14h (put system in suspend/resume mode)

When it is executed, the Allegro is set to suspend/resume mode. In this mode, the power is not completely shut off. The Allegro is still running but at very low power, so it appears to be off. When the key is pressed, the Allegro resumes where it left off.

Subfunction: AL = 15h (set auto suspend duration)

This subfunction requires an input value to set the auto suspend duration. The input value is passed in the BL register. There is no output.

If BL = 00h	auto suspend is disabled	08h	duration = 40 min
01h	duration = 5 min	09h	duration = 45 min
02h	duration = 10 min	0Ah	duration = 50 min
03h	duration = 15 min	0Bh	duration = 55 min
04h	duration = 20 min	0Ch	duration = 60 min
05h	duration = 25 min	0Dh	duration = 65 min
06h	duration = 30 min	0Eh	duration = 70 min
07h	duration = 35 min	0Fh	duration = 75 min

Subfunction: AL = 16h (set video contrast)

This subfunction requires an input value to set the video contrast ratio. The input value is passed in the BL register and has a range of 00h to 63h. Returns nothing.

Subfunction: AL = 18h (get performance level)

The purpose of this function is to read the current performance level.

Output: AL = 00h	miser
01h	low
02h	medium
03h	high
04h	hyper

Subfunction: AL = 19h (set performance level)

This subfunction requires an input value to set the performance level. The input value is passed in the BL register. Valid register values are shown below.

BL = 00h	miser
01h	low
02h	medium
03h	high
04h	hyper

No value is returned to the AL register.

❖ *Note: If the eighth bit is set (e.g., 1XXXXXXXX, X = 0 or 1), the system is put into a low power mode (i.e., "sleep") until a system timer tick occurs which restores the system to normal power. Timer ticks occur once every 55 milliseconds. The performance level is not changed when the sleep function is called. It is commonly used in applications to save power while waiting for a keystroke.*

Subfunction: AL = 1Ah/AL = 1Bh (set auto-panning off/on)

There is no output for these subfunctions. AL = 1Ah turns auto-panning off. AL = 1Bh turns auto-panning on.

Subfunction: AL = 1Eh (read miscellaneous BIOS setup bytes)

Input: None

Output: AL = Miscellaneous System Setup Flags

Miscellaneous System Setup Flags Bit information:

bit 0	0 = reboot mode, 1 = suspend/resume mode
bit 1	reserved
bit 2	reserved
bit 3	reserved
bit 4	reserved
bit 5	0 = auto-panning active, 1 = auto-panning inactive
bit 6	reserved
bit 7	0 = black and white, 1 = gray scale (video)

Subfunction: AL = 23h (video)

This routine sets the display to black and white or to 64 gray shades.

BL =	00h	black and white 1
	01h	gray scale (16 shades)
	02h	black and white 2
	03h	return current setting in AL

This function controls how the BIOS maps CGA colors to LCD gray scale. B/W 1 and B/W 2 map all colors to either black on white or white on black to increase viewability for some programs. B/W 1 is faster than B/W 2 but only works on programs which go through the BIOS for video text output. B/W 2 should work on all programs but is less efficient than B/W 1.

❖ *Note: This function is applicable only to text mode.*

Hardware Interrupt Listing

The following chart shows the interrupt-level assignments in decreasing priority.

Level	Function
Microprocessor NMI	Parity or I/O Channel Check
Interrupt Controllers CTRL 1 CTRL 2	
IRQ 0	Timer Output 0
IRQ 1	Keyboard (Output Buffer Full)
IRQ 2	Interrupt from CTRL 2
<div style="border: 1px solid black; padding: 5px; display: inline-block; margin-left: 100px;"> IRQ 8 IRQ 9 IRQ 10 IRQ 11 IRQ 12 IRQ 13 IRQ 14 IRQ 15 </div>	Real Time Clock Interrupt Not Used* Not Used* Expansion Port UART Touchscreen Not Used Not Used* Not Used*
IRQ 3	Serial Port 2
IRQ 4	Serial Port 1
IRQ 5	Sound Chip
IRQ 6	Not Used
IRQ 7	Not Used*

*PC Card IRQ assigned by Card and Socket Services.

I/O Port Mapping

Address	Function
080	Diagnostics Port
2F0 - 2F3	System Control Registers
2F8 - 2FF	COM2:
300 - 31F	Internal - Do Not Use
3D0 - 3DF	CGA Display
3E0 - 3E7	PC Card Controller
3F8 - 3FF	COM1:

AT Keyboard Scan Codes

The scan codes on the Allegro keyboard have been configured as shown in the following chart:

Shft, Ctrl, Alt left, or both sides (default) of AT keyboard (see extended BIOS function 2E11h)	Can be configured to use scan codes for either right,
---	--

Home, PgUp PgDn, End, Ins, Del	Uses scan codes from dedicated (gray) keys on AT keyboard
--------------------------------------	---

Arrow Keys dedicated (gray) keys on AT keyboard	Uses scan codes from
---	----------------------

Number Keys keyboard (not the 10-key keypad)	Uses scan codes from top row keys of AT
---	--

Keyboard Key-Code Tables

Keyboard Legend			System Scan Codes (hex)	Character Codes		AH/AL	(hex)
Normal	Blue	Gold		Normal	Shift		
F1			3B	3B/00	54/00	5E/00	Alt
	F6		40	40/00	59/00	63/00	6D/00
		F11	57	85/00	87/00	89/00	86/00
F2			3C	3C/00	55/00	5F/00	69/00
	F7		41	41/00	5A/00	64/00	6E/00
		F12	58	86/00	88/00	8A/00	8C/00
F3			3D	3D/00	56/00	60/00	6A/00
	F8		42	42/00	5B/00	65/00	6F/00
		Backlight	75				
F4			3E	3E/00	57/00	61/00	6B/00
	F9		43	43/00	5C/00	66/00	70/00
		Contrast +	77				
F5			3F	3F/00	58/00	62/00	6C/00
	F10		44	44/00	5D/00	67/00	71/00
		Contrast -	76				
Tab			0F	0F/09	0F/00	94/00	A5/00
	Back Tab		5B	0F/00	0F/00		
Ctrl			1D				
Alt			38				

Keyboard Legend			System Scan Codes (hex)	Character Codes		AH/AL		(hex)
Normal	Blue	Gold		Normal	Shift	Ctrl	Alt	
Esc			01	01/1B	01/1B		01/00	
	Brk		70					
BkSp			0E	0E/08	0E/08	0E/7F	0E/00	
	TS		7C					
7			08	08/37	08/37		7E/00	
	7		08	08/37	08/37		7E/00	
8			09	09/38	09/38		7F/00	
	8		09	09/38	09/38		7F/00	
9			0A	0A/39	0A/39		80/00	
	9		0A	0A/39	0A/39		80/00	
Ins			52	52/E0	52/E0	92/E0	A2/00	
	?		61	35/3F	35/3F		35/00	
↑			48	48/E0	48/E0	4D/E0	98/00	
	PgUp		49	49/E0	49/E0	84/E0	99/00	
		Pan Up	72					
4			05	05/34	05/34		7B/00	
	4		05	05/34	05/34		7B/00	
5			06	06/35	06/35		7C/00	
	5		06	06/35	06/35		7C/00	

Keyboard Legend			System Scan Codes (hex)	Character Codes		AH/AL		(hex)	
Normal	Blue	Gold		Normal	Shift	Ctrl	Alt		
6			07	07/36	07/36	07/1E			7D/00
←	6		07	07/36	07/36	07/1E			7D/00
	Home		4B	4B/E0	4B/E0	73/E0			9B/00
		Pan Left	47	47/E0	47/E0	77/E0			97/00
→			71						
			4D	4D/E0	4D/E0	74/E0			9D/00
	End		4F	4F/E0	4F/E0	75/E0			9F/00
		Pan Right	73						
1			02	02/31	02/31				78/00
	1		02	03/31	03/31				78/00
2			03	03/32	03/32	03/00			79/00
	2		03	03/32	03/32	03/00			79/00
3			04	04/33	04/33				7A/00
	3		04	04/33	04/33				7A/00
Del			53	53/E0	53/E0	93/E0			A3/00
	!		5F	02/21	02/21				78/00
↓			50	50/E0	50/E0	91/E0			A0/00
	PgDn		51	51/E0	51/E0	76/E0			A1/00
		Pan Down	74						

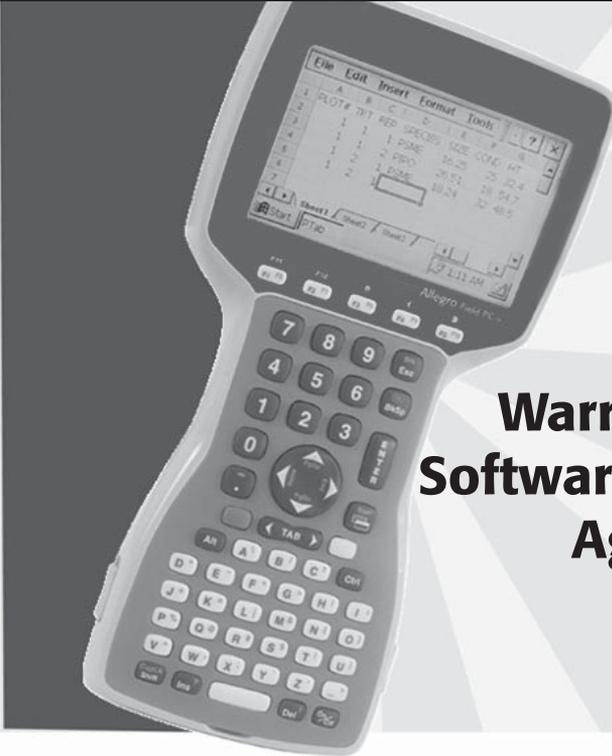
Keyboard Legend			System Scan Codes (hex)	Character Codes		AH/AL		(hex)	
Normal	Blue	Gold		Normal	Shift	Ctrl	Alt		
Blue			7E						
0			0B	0B/30	0B/30				81/00
.	0		0B	0B/30	0B/30				81/00
			34	34/2E	34/2E				43/00
	-		C	0C/2D	0C/20	0C/1F			82/00
Enter			1C	1C/0D	1C/0D	1C/0A			1C/00
	Enter		1C	1C/0D	1C/0D	1C/0A			1C/00
A			1E	1E/61	1E/41	1E/01			1E/00
	\		2B	2B/5C	2B/5C	2B/1C			2B/00
B			30	30/62	30/42	30/02			30/00
	/		35	35/2F	35/2F				35/00
C			2E	2E/63	2E/43	2E/03			2E/00
	:		6B	27/3A	27/3A				27/00
D			20	20/64	20/44	20/04			20/00
	*		5D	09/2A	09/2A				7F/00
E			12	12/65	12/45	12/05			12/00
	~		55	29/7E	29/7E				55/00
F			21	21/66	21/46	21/06			21/00
	<		69	33/3C	33/3C				33/00

Keyboard Legend			System Scan Codes (hex)	Character Codes		AH/AL		(hex)	
Normal	Blue	Gold		Normal	Shift	Ctrl	Alt		
G			22	22/67	22/47	22/07		22/00	
	>		6A	34/3E	34/3E			34/00	
H			23	23/68	23/48	23/08		23/00	
	(		5C	0A/28	0A/28			80/00	
I			17	17/69	17/49	17/09		17/00	
	)		5E	0B/29	0B/29			24/00	
J			24	24/6A	24/4A	1C/0A		24/00	
	+		65	0D/2B	0D/3B				
K			25	25/6B	25/4B	25/0B		25/00	
	=		0D	0D/3D	0D/3D			83/00	
L			26	26/6C	26/4C	26/0C		26/00	
	|		64	2B/7C	2B/7C	2B/1C		2B/00	
M			32	32/6D	32/4D	32/0D		32/00	
	&		6D	08/26	08/26			7E/00	
N			31	31/6E	31/4E	31/0E		31/00	
	{		59	1A/7B	1A/7B			59/00	
O			18	18/6F	18/4F	18/0F		18/00	
	}		6E	1B/7D	1B/7D			6E/00	

Keyboard Legend			System Scan Codes (hex)	Character Codes		AH/AL		(hex)
Normal	Blue	Gold		Normal	Shift	Ctrl	Alt	
P			19	19/70	19/50	19/10	19/00	
	%		62	06/25	06/25			
Q			10	10/71	10/51	10/11	10/00	
	@		6C	03/40	03/40	03/00	79/00	
R			13	13/72	13/52	13/12	13/00	
	#		68	04/23	04/23		7A/00	
S			1F	1F/73	1F/53	1F/13	1F/00	
	\$		67	05/24	05/24	05/34	7B/00	
T			14	14/74	14/54	14/14	14/00	
	[		1A	1A/5B	1A/5B	1A/1B	1A/00	
U			16	16/75	16/55	16/15	16/00	
	]		1B	1B/5D	1B/5D	1B/1D	1B/00	
V			2F	2F/76	2F/56	2F/16	2F/00	
	^		66	07/5E	07/5E		7D/00	
W			11	11/77	11/57	11/17	11/00	
	,		33	33/2C	33/2C		33/00	
X			2D	2D/78	2D/58	2D/18	2D/00	
	;		27	27/3B	27/3B		27/00	

Keyboard Legend			System Scan Codes (hex)	Character Codes		AH/AL		(hex)	
Normal	Blue	Gold		Normal	Shift	Ctrl	Alt		
Y			15	15/79	15/59	15/19	15/00		
Z			29	29/60	29/60		29/00		
			2C	2C/7A	2C/5A	2C/1A	2C/00		
			28	28/27	28/27		28/00		
		Toggle Font	7D						
Space			39	39/20	39/20	39/20	39/20		
Shift			2A						
	CapLk		3A						
Gold			7F						
-			63	0C/5F	0C/5F	0C/1F	82/00		
	"		60	28/22	28/22		28/00		
Task			7A	BF/00	EF/00	FF/00	FF/00		
	Start		7B	CF/00	DF/00	AF/00	AF/00		
		Toggle Font	7D						

Chapter 7



Warranty, and Software License Agreement

Warranty and Repair Information
Software License Agreement

Warranty and Repair Information

▲ Limited Warranties

Juniper Systems, Inc. (referred to as JS) warrants that all Allegro Field Computer hardware components (except for the items listed below) shall be free from defects in materials and workmanship for a period of 12 months from the date of shipment when properly installed, calibrated, and operated in accordance with instruction manuals accompanying said hardware and used for the purpose for which said hardware was designed. Battery packs, the media containing the Allegro Utility Programs, and accessories are warranted for 90 days from the date of shipment.

In the event a defect in materials or workmanship is discovered and reported to JS within the specified warranty period, JS will, at its option, repair the defect or replace the defective product. This warranty does not apply where the product has been operating outside the environmental specifications of the product. The obligation of JS hereunder will be limited to such repair or replacement.

▲ Disclaimer of Warranties

The warranties set forth above are in lieu of all other warranties of JS, whether written, oral, or implied. JS makes no warranties regarding its products (hardware or software), including, without limitation, warranties as to the merchantability, fitness for a particular purpose, or arising from the course of performance, dealing, or usage of trade whether any of the foregoing warranties are either expressed or implied. JS specifically makes no warranties as to the suitability of its products for any particular application. JS shall in no event be liable for special, incidental, or consequential damages in connection with or arising out of the furnishing, performance, or use of any product covered by this agreement whether such claim is based upon warranty (express or implied) contract, strict liability, negligence, or otherwise. Any responsibility and/or liability of JS shall, in connection with a warranted product, be limited in maximum amount to the original purchase price.

Removal of Serial Number

To view the serial number, open the battery compartment door. The serial number label is located in a recessed area directly above the battery compartment. Removal of the serial number label from an Allegro voids any warranty. JS will not repair or update an Allegro and return it to an individual if it is without a serial number label.

Factory Sealed Unit

The Allegro is a factory sealed unit. There are no internal user serviceable parts. If the Allegro is opened or in any other way tampered with, all warranties are null and void.

Updates or Modifications

JS shall be under no obligation to update or modify its products except as herein noted to correct defects or errors. Furthermore, the customer agrees that all representations and warranties contained herein shall be immediately null and void in the event of any modification, alteration, or change in or to any product effected by or on behalf of customer except for a change made by JS or other direct supervision thereof.

Extended Warranties

JS offers a variety of warranty options to extend coverage beyond the standard warranty. Contact us for details.

▲ Repairs

If your Allegro is in need of repair or servicing, contact our Customer Service Department for an RMA (Return Materials Authorization) number. They can be reached by phone at 435-753-1881 or via e-mail at: techsupport@junipersys.com.

Please have this information ready when you contact us:

- Allegro serial number
- Your name
- Name and shipping address of company/university/agency
- Phone and fax number
- Clear description of the problem encountered
- Purchase order number and billing address (for equipment that is not under standard or extended warranty)

The customer has the responsibility to ship the equipment to JS with all shipping costs prepaid. After repairing or replacing the equipment, JS will ship the equipment, at its cost, back to the customer by the same type of carrier used by the customer to ship the equipment to our facility. Repairs are normally completed within ten working days unless special circumstances exist.

Software License Agreements

▲ Juniper Systems

This Software License Agreement is between the end-user and Juniper Systems, Inc. Please read the following terms and conditions before using the Allegro Field PC and the software created by JS for use with the Allegro. This agreement supersedes any prior agreement, written or oral. Programs created by another company and distributed with the Allegro are subject to the license agreements created by these companies for their products. See Microsoft's license agreement on the following page.

Granting of License

Juniper Systems grants, under the following terms and conditions, a non-exclusive license to use the Allegro and the software.

Ownership

Juniper Systems retains the title to and ownership of the software plus any copies made of the software.

Software Use

The software is authorized for use on the Allegro Field PC. It may only be used on a Field Computer provided by Juniper Systems. You can use the software on one Field PC at a time per licensed copy. You may make one copy of the software to be stored as a backup.

Copyright

The Allegro software is copyrighted by Juniper Systems, Inc. You may not rent, lease, lend, sub-license, modify, or disassemble these programs. The associated documentation may not be copied without written permission.

Term

This License is in effect until terminated. It will be terminated under the following conditions:

- You destroy all copies of the software and documentation.
- You return all copies of the software and documentation to us.
- You fail to comply with any provisions of the License Agreement.

Acceptance or Disagreement

Use of the software in any manner indicates your acceptance and acknowledgment of the terms and conditions of this agreement. If you do not agree with any of the terms and conditions, do not use the software. Return the disk and documentation to Juniper Systems. If the software was installed on the Field Computer at the factory, you must delete it.

▲ Microsoft End User License Agreement

The Allegro Field PC includes software licensed by Juniper Systems, Inc. from Microsoft Licensing Inc. or its affiliates (“MS”). Those installed software products of MS origin, as well as associated media, printed materials, and “online” or electronic documentation (“SOFTWARE”) are protected by copyright laws and international copyright treaties, as well as other intellectual property laws and treaties. The SOFTWARE is licensed, not sold.

IF YOU DO NOT AGREE TO THIS END USER LICENSE AGREEMENT (“EULA”), DO NOT USE THE DEVICE OR COPY THE SOFTWARE. INSTEAD, PROMPTLY CONTACT Juniper Systems FOR INSTRUCTIONS ON RETURN OF THE UNUSED DEVICE(S) FOR A REFUND. **ANY USE OF THE SOFTWARE, INCLUDING BUT NOT LIMITED TO USE ON THE DEVICE, WILL CONSTITUTE YOUR AGREEMENT TO THIS EULA (OR RATIFICATION OF ANY PREVIOUS CONSENT).**

GRANT OF LICENSE. The SOFTWARE is licensed, not sold. This EULA grants you the following rights to the SOFTWARE:

- You may use the SOFTWARE only on the DEVICE.
- **NOT FAULT TOLERANT.** THE SOFTWARE IS NOT FAULT TOLERANT. Juniper Systems HAS INDEPENDENTLY DETERMINED HOW TO USE THE SOFTWARE IN THE DEVICE, AND MS HAS RELIED UPON Juniper Systems TO CONDUCT SUFFICIENT TESTING TO DETERMINE THAT THE SOFTWARE IS SUITABLE FOR SUCH USE.
- **NO WARRANTIES FOR THE SOFTWARE.** THE SOFTWARE is provided “AS IS” and with all faults. THE ENTIRE RISK AS TO SATISFACTORY QUALITY, PERFORMANCE, ACCURACY, AND EFFORT (INCLUDING LACK OF NEGLIGENCE) IS WITH YOU. ALSO, THERE IS NO WARRANTY AGAINST INTERFERENCE WITH YOUR ENJOYMENT OF THE SOFTWARE OR AGAINST INFRINGEMENT. IF YOU HAVE RECEIVED ANY WARRANTIES REGARDING THE DEVICE OR THE SOFTWARE THOSE WARRANTIES DO NOT ORIGINATE FROM, AND ARE NOT BINDING ON, MS.
- **Note on Java Support.** The SOFTWARE may contain support for programs written in Java. Java technology is not fault tolerant and is not designed, manufactured, or intended for use or resale as online control equipment in hazardous environments requiring fail-safe performance, such as in the operation of nuclear facilities, aircraft navigation or communication systems, air traffic control, direct life support machines, or weapon systems, in which the failure of Java technology could lead directly to death, personal injury, or severe physical or environmental damage. Sun Microsystems, Inc. has contractually obligated MS to make this disclaimer.
- **No Liability for Certain Damages.** EXCEPT AS PROHIBITED BY LAW, MS SHALL HAVE NO LIABILITY FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL OR INCIDENTAL DAMAGES ARISING FROM OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THE SOFTWARE. THIS LIMITATION SHALL APPLY EVEN IF ANY REMEDY FAILS OF ITS ESSENTIAL PURPOSE. IN NO EVENT SHALL MS BE LIABLE FOR ANY AMOUNT IN EXCESS OF U.S. TWO HUNDRED FIFTY DOLLARS (U.S.\$250.00)

- **Limitations on Reverse Engineering, Decompilation, and Disassembly.** You may not reverse engineer, decompile, or disassemble the SOFTWARE, except and only to the extent that such activity is expressly permitted by applicable law notwithstanding this limitation.
- **SOFTWARE TRANSFER ALLOWED BUT WITH RESTRICTIONS.** You may permanently transfer rights under this EULA only as part of a permanent sale or transfer of the Device, and only if the recipient agrees to this EULA. If the SOFTWARE is an upgrade, any transfer must also include all prior versions of the SOFTWARE.
- **EXPORT RESTRICTIONS.** If these licensing terms are not labeled “North America Only Version” and the SOFTWARE is not identified as “North American Only Version” on the SOFTWARE packaging or other written material, then the following terms apply: Export of the SOFTWARE from the United States is regulated by the Export Administration Regulations (EAR, 15 CFR 730-744) of the U.S. Commerce Department, Bureau of Export Administration (BXA). You agree to comply with the EAR in the export or re-export of the SOFTWARE: (i) to any country to which the U.S. has embargoed or restricted the export of goods or services, which as of May 1999 include, but are not necessarily limited to Cuba, Iran, Iraq, Libya, North Korea, Sudan, Syria, and the Federal Republic of Yugoslavia (including Serbia, but not Montenegro), or to any national of any such country, wherever located, who intends to transmit or transport the SOFTWARE back to such country; (ii) to any person or entity who you know or have reason to know will utilize the SOFTWARE or portion thereof in the design, development or production of nuclear, chemical, or biological weapon; or (iii) to any person or entity who has been prohibited from participating in U.S. export transactions by any federal agency of the U.S. government. You warrant and represent that neither the BXA nor any other U.S. federal agency has suspended, revoked or denied your export privileges. For additional information see <http://www.microsoft.com/exporting/>.

If the licensing terms are labeled “North America Only Version” or if the SOFTWARE is labeled “North American Only Version” on the SOFTWARE packaging or other written materials, then the following applies: The SOFTWARE contains strong encryption features. The SOFTWARE may be distributed in the United States, its territories, possessions and dependencies, and Canada without an export license. Export of the SOFTWARE from the United States is regulated under “EI controls” of the Export Administration Regulations (EAR, 15 CFR730-744) of the U.S. Commerce Department, Bureau of Export Administration (BXA). An export license or applicable license exception is required to export the SOFTWARE outside the United States or Canada. You agree that you will not directly or indirectly export or re-export the SOFTWARE (or portions thereof) to any country, other than Canada, or to any person or entity subject to U.S. export restrictions without first obtaining a Commerce Department export license or determining that there is an applicable license exception. You warrant and represent that neither the BXA nor any other U.S. federal agency has suspended, revoked, or denied your export privileges. For additional information see:

<http://www.microsoft.com/exporting/>

Chapter 8



Expansion Pod

GPS Expansion Pod

GPS Expansion Pod

The GPS expansion pod integrates the Trimble Lassen LP GPS receiver with the Allegro. A compact 3.3 V active micropatch antenna is mounted to the top of the Allegro.

The Lassen LP module is a high-performance, low power, micro GPS receiver that supports both TSIP and NMEA protocols with autonomous accuracy of 5 –10 meters, or 2 – 5 meters after differential correction. The GPS expansion pod is used in conjunction with the following programs:

- LandMark CE™ mapping and navigation program
- DataPlus™ Professional or EASYDC™ generated applications for data collection

▲ Attaching the Antenna

Before you can use the GPS expansion pod, you must attach the antenna. To do this, complete the following steps:

Note: We have more than one GPS expansion pod model. The one attached to your Allegro may look slightly different than the model used in the pictures shown in this document. These instructions apply to all models.

- 1) Remove the antenna assembly from the bag and loosen the two thumbscrews located at the bottom of the mount.
- 2) Remove the stylus from the Allegro.
- 3) Insert the stylus that is attached to the antenna mount in place of the stylus you removed. As you place the stylus in its slot on the Allegro, slide the metal cover up into the stylus slot so that the stylus fits into place.
- 4) Use two fingers, one on each prong of the stylus, and press it securely into place.
- 5) Make sure the rubber stylus holders are not pressed inward or they may pop the antenna out of the stylus holder. Removing the rubber covers to the Com ports can help make this step easier.
- 6) Place the two knobs on the end of the antenna clamp into the screw holes located above the COM ports of the Allegro.
- 7) Tighten the thumbscrews on the antenna so that the antenna is securely fastened into place. You want the thumbscrews to be snug, but do not over tighten them.

- 8) Remove the protective cap from the connector labeled GPS ANT (save the cap for future use). Screw the antenna cable into the connector.

You have completed the steps to attach the antenna to the Allegro GPS Expansion pod.

▲ GPS Pod Setup Program

The following are the default GPS pod settings:

Com Port: Com3 – not changeable
Protocol: TSIP
Baud: 9600
Data Bit: 8 – not changeable
Parity: None
Stop Bit: 1

Connect the GPS. The Allegro must be outside in clear sky conditions (this means free from tree foliage, buildings, power lines, etc.) to receive a new GPS almanac. The receiver can take up to 20 minutes to establish and receive the almanac.

Note: If your parameters do not match, some GPS programs produce an error message when attempting to activate the GPS pod. This error means the communication parameters in the GPS program do not match the GPS pod. Go back to the GPS programs setup page and check to make sure those settings are the same settings as the settings on your Allegro's GPS Receiver Port Settings screen.

▲ Tips for Using the GPS Expansion Pod

Keep the following tips in mind while using the Allegro with the GPS expansion pod:

- 1) When attempting to receive GPS signals, get the clearest view of the sky as possible. Obstructions such as buildings, trees, mountains, and your body can keep signals from reaching the receiver.
- 2) Do not cover the antenna with anything while you are using the system.
- 3) The antenna can be mounted on a vehicle or a pole, a longer cable is required to do this. Contact our Sales Department for details.
- 4) Using the GPS expansion pod, and GIS or GPS software running on the Allegro may cause the Allegro battery to drain at a faster rate. This rate depends on the software and how much processing is taking place.

- 5) The PC card slot is accessible while the GPS expansion pod is attached to the Allegro. Refer to *Hardware Features, PC Card Slot* in Chapter 2 of this manual, for details on how to use it. There is a flat, brown flex cable that is part of the expansion pod that is visible when you open the pod door. Do not twist, bend, or break this cable while you are using the PC card slot.
- 6) If you remove the antenna, place the protective cap over the antenna connector to keep dirt and moisture out.

▲ For More Information

Your GPS is now configured correctly to use the GPS pod. If you have any questions or still cannot connect, please contact your reseller or our technical service department at (435) 753-1881, or by email at techsupport@junipersys.com.

▲ GPS Antenna Removal

The GPS antenna can be removed and reattached depending on your needs. To remove the GPS antenna from your Allegro, complete the following steps:

- 1) Unscrew the antenna cable from the Allegro expansion pod.
- 2) Loosen the thumbscrews on the antenna so that the antenna and the two knobs at the end of the antenna clamp are no longer securely fastened.
- 3) Pull the antenna off of the Allegro.

The antenna can be reattached to the Allegro by following the instructions in the Attaching the Antenna section found previously in this chapter.

Index



Index

A

- Accessories 11
- AC Power Adapter 34
- Adjusting Font Size 25
- Alkaline Batteries 33, 37, 39, 41
- Alkaline Battery Holder 39
- Allegro Communication Parameters 59
- Allegro DOS Specifications 103
- Allegro Programs 57
- ASCII Character Sets 108
 - Extended ASCII Character Set 109
 - Standard ASCII Character Set 108
- ATA Flash Cards 53
 - Formatting ATA Flash Cards 53
- AT Keyboard Scan Codes 135
- Auto Suspend 39, 83

B

- Backlight 25
- Batteries 29
 - Alkaline Batteries 33, 37, 39
 - Backup Power Supplies
 - capacitor (maintains RAM during battery change) 29, 42, 43
 - lithium (maintains real time clock) 29, 43
 - Battery Life 33
 - Battery Pack, Rechargeable NiMH 29
 - Installing the Battery Pack for the First Time 29
 - Main Power Source
 - Installing the Battery Pack for the First Time 29
 - New Battery Detected Screen
 - Setting the Battery Capacity 32
 - Recharging 33
 - Setting the Battery Charge 31
 - Setting the Battery Charge Percent 32
 - SRAM Memory Card Battery 53
- Battery Capacity 32
- Battery Gauging 36
- BIOS Functions (DOS) 124, 125
- BIOS Messages (DOS) 110
- Blue Shift Key Usage 19
- Break Key 21

C

- Cable 44, 116
- Capacitor, Backup 29, 42, 43, 51
- Case Features 16
- CD ROM, Allegro 11, 57, 94, 111, 113, 114, 115
- Charging Indicator 38
- Circular Key Usage 19
- Cleaning the Keyboard 23
- Communicating with Other Desktop PC Programs 60
- Communication Cable 44
- Communication Cable Schematic 116
- Communication Ports 44
 - 9 Pin Serial Communication Ports 44
- Connecting Sensors to COM1 44
- Connector Pinouts
 - 9 Pin D Connector 44

D

- Data Storage Options 52
 - PC Cards 45
 - RAM (Random Access Memory) 53, 107
 - Solid State Disk 52, 106, 112
- Desktop PC Program 57
- Device Drivers 94
- Display
 - Backlight 20, 21, 25
 - Contrast 20, 25, 86
 - Full Screen 26
 - Gray Scale 24, 86
 - Panning 26, 85
 - panning manually 27, 85
 - Temperature Compensation 25
- Display Features 24
 - Auto-Panning 24
 - Backlight 24
 - Contrast 24
 - Gray Scale 24
 - Heater 24
 - Position 24
 - Shade Mapping 24
- DOS Utility Programs and Device Drivers 94
 - DOS Commands and Functions 94
- Drive Assignments 52

E

- Establishing Communication Between Computers 58
- Expansion Pods 48, 153
- Extended BIOS Functions (DOS) 125
- External Battery Charger 35

F

- Features 10
- FileScout DOS File Management Utility 57, 59
- FileScout DOS File Manager 67
 - FileScout Functions 69
 - FileScout Main Screen 67
 - Selecting Folders or Files in FileScout 68
- Files Located on the Solid State Disk 111
- Font Size 25
- Full Screen 26

G

- Gaskets 16
- Glossary of DOS Terms 106
- Gold Shift Key Usage 19
- GPS Expansion Pod 153
 - Attaching the Antenna 153
 - For More Information 155
 - GPS Antenna Removal 155
 - GPS Pod Setup Program 154
 - Tips for Using the GPS Expansion Pod 154

H

- Hand Strap 17
- Hardware Interrupt Listing 133

I

- I/O Port Mapping 134
- Inserting and Removing PC Cards 54
- Installing the Battery Pack for the First Time 29
- Internal Memory 51

K

- Key-Code Tables 136
- Keyboard 18
- Keyboard and Video 124
 - Keyboard Intercept Functions 124
 - Video 124

Keyboard Key-Code Tables 136
Keyboard Options 21
Keyboard Scan Codes 135

L

LED Indicators 28, 38, 86
 Brightness Adjustment 28
 Charging Indicator 28
 External Power 28
 PC Card Access 28
 Solid State Disk Access 28
Lithium Backup Battery, Replacement 43
Lynx
 Shortcut Buttons 65
Lynx Communication Mode 60
Lynx Menu Options 62
 Edit Menu Options 63
 File Menu Options 62
 Help Menu Option 65
 Transfer Menu Options 63
Lynx Windows File Management Utility 61

M

Make Space Utility Program 98
Memory Allocation 51
Memory Cards 45, 52, 53
MS-DOS Commands 94
MS-DOS Help 53, 54, 65
MS-DOS Mode command
 Serial Printer Setup 99
MS-DOS Operating System 107
MS-DOS Utility Programs 93

N

NiMH Battery Pack's Useful Life 42

O

Operating System, MS DOS 57

P

- Panning Key Sequences 22
- PC Cards 45
 - Accepted PC Card Types
 - Input/Output Device Cards 45
 - Memory Cards 45
 - ATA Flash Cards 53, 83
 - Inserting and Changing Cards 45
 - SRAM Cards 53
- PC Card Slot 52
- PC Card Utilities and Drivers 114
 - Factory Installed Programs and Drivers 114
 - Programs for Other PC Card Types and Brands 115
- Power Connector 34
- Power Management 120
- Power Management Features 39
 - Auto Suspend 39
 - Power Manager 39
- Power Management Programming Issues 120
- Power Manager 33, 39
- Printing Serial 99
- Program and Data Storage Options 52

Q

- Quick Tips 12

R

- Random Access Memory (RAM) 51
- Read Only Memory (ROM) 51
- Real Time Clock 43
- Reboot 20, 43, 130
- Recycling the NiMH Batteries 42
- Repairs 146
- Resume 36

S

- Saving Files and Programs 52
- Serial Communication Cable 44, 116
- Serial Number 145
- Serial Printer Setup 99
- Serial Printing 99
- Serial Printing Utility Program 99
- Setting the Battery Capacity 32
- Shade Mapping 24
- Shifted Options 20

- Software License Agreements 147
 - Juniper Systems 147
 - Microsoft End User License Agreement 148
- Solid State Disk Access 28
- Solid State Disk Utilities 113
- Solid State Hard Disk 52
- Sound Generator 47
- Special Keys and Key Sequences 19
- SRAM Cards 53
 - Formatting SRAM Cards 54
 - Power 53
 - Replacing SRAM Card Batteries 54
- Startup Files 89
 - AUTOEXEC.BAT Batch Files 91
 - Bypassing Startup Files F5 92
 - Changing the CONFIG.SYS File 91
 - CONFIG.SYS 89
 - Default CONFIG.SYS File on the Allegro 90
- Storage Designations 52
- Storing Files and Programs 52
- Storing the Allegro During Inactive Periods 41
- Straps 17
- Suspend/Resume Mode 82
- System Setup Program 80
 - Executing Setup 80
 - Main Menu Screen 80
 - Setup Program Screens 80
 - Configuration Screen 82
 - Keyboard/Display Screen 85
 - Main Menu Screen 80
 - Power Management Screen 82
 - Restore Defaults Screen 88
 - System Information Screen 87

T

- Temperature Compensation, Display 25
- Terminal Emulation Program 78
 - Communication Parameters 78
 - Saving the Data to a File 79
 - Screen Viewing Options 78
 - Troubleshooting 79

Text Editor
 Accessing an Existing File 74
 Editing a Document 74
 Starting a New Text File 74
Text Editor 74

U

Updates 146
Using Vehicle Power 35
Utility Programs 94

V

Vehicle Power Adapter 35
Video Functions 124, 130, 131
Video Map 86

W

Warranty and Repair Information 145
 Disclaimer of Warranties 145
 Limited Warranties 145
 Repairs 146
Windows Explorer 61
Wiring Diagram 116

