Accu-Time® Cyber Series
Standard, Biometric, and NEMA 4X
Time and Attendance Terminals

MANU-CYBER-01y

FCC Compliance

Part 15

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Caution: Changes or modifications to this equipment not expressly approved by the manufacturer (Accu-Time Systems, Inc.) could void the user's authority to operate the equipment under FCC rules.

Part 68

This equipment complies with Part 68 of the FCC rules and the requirements adopted by the ACTA. On the modem PC board of this equipment is a label that contains, among other information, a product identifier in the format:

US:AAAEQ##TXXXX

If requested, this number must be provided to the telephone company.

This equipment has the following Universal Service Order Code (USOC), Facility Interface Code (FIC), and Service Order Code (SOC):

USOC jack:	RJ11C
FIC:	02LS2
SOC:	9.0Y

A plug and jack used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by the ACTA. A compliant telephone cord and modular plug is provided with this product. It is designed to be connected to a compatible modular jack that is also compliant. See installation instructions for details.

The Ringer Equivalence Number (REN) is used to determine the number of devices that may be connected to a telephone line. Excessive RENs on a telephone line may result in the devices not ringing in response to an incoming call. In most but not all areas, the sum of RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to a line, as determined by the total RENs, contact the local telephone company. For products approved after July 23, 2001, the REN for this product is part of the product identifier that has the format US:AAAEQ##TXXXX. The digits represented by ## are the REN without a decimal point (*e.g.*, 03 is a REN of 0.3). For earlier products, the REN is separately shown on the label.

If this equipment (Cyber modem) causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice isn't practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations or

procedures that could affect the operation of the equipment. If this happens the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.

If trouble is experienced with this equipment (Cyber modem), for repair or warranty information, please contact Accu-Time Systems, Inc., 800-355-4648. If the equipment is causing harm to the telephone network, the telephone company may request that you disconnect the equipment until the problem is resolved.

This equipment is not intended to be serviceable. Please refer to the warranty information if a problem occurs. For service, contact Accu-Time Systems, Inc., or your local Accu-Time Systems representative.

This equipment may not be used with party lines or coin lines.

Accu-Time Systems, Inc. recommends the use of a surge arrestor on all AC power connections.

Accu-Time Systems, Inc.
420 Somers Road, Ellington, CT 06029
800-355-4648
www.accu-time.com

Industry Canada   NOTICE: This equipment meets the applicable Industry Canada Terminal Equipment Technical Specifications. This is confirmed by the registration number. The abbreviation, IC, before the registration number signified that registration was performed based on a Declaration of Conformity indicating that Industry Canada technical specifications were met. It does not imply that Industry Canada approved the equipment.

NOTICE: The Ringer Equivalent Number (REN) for this terminal equipment is 0.1. The REN assigned to each terminal equipment provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed five.

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Preface

Purpose

This manual describes the Cyber Series family of terminals, which includes standard, biometric, and NEMA 4X versions. It tells you how to install, set up, and test a Cyber Series terminal, and how to get firmware version information from the terminal to help diagnose a problem if one occurs.

Intended Audience

You should read this manual if you are responsible for the installation or operation of a Cyber Series terminal.

- Chapter 1, Terminal Description, gives a general overview of the characteristics and specifications of Cyber Series terminals.

- Chapter 2, Installation, will be of interest if you are responsible for the installation of the terminal or its wiring.

- Chapter 3, Setup, Test, Diagnostics, and Maintenance, tells you how to configure the terminal parameters, how to perform the terminal self-tests, and how to retrieve diagnostic information from the terminal. This chapter also tells you how to do clean the terminal badge or fingerprint reader, if your terminal has one.

Document Conventions

The sections below explain the conventions used to present information in this manual.

Table 1: Text Formatting

Convention	Description
Subscripts	Subscripts indicate the base of a number. For example, 28_{10} is 28 base 10, and $3F_{16}$ is 3F base 16.
BOLD CAPITALS	Bold capitals represent keys on a Cyber Series terminal keypad, such as the **ENTER** key.
nnnn	*nnnn* represents a numeric string of digits.
xxxx	*xxxx* represents a string of alphabetic characters.
Blue underline	Cross references in the manual are shown as blue underlined text. If you read this manual online, these cross-references act as hyperlinks, which work in the same way as links on a web page. If you click the cursor on a cross-reference, the display will shift to the corresponding location in the document. When viewed online, the document contents are listed in a frame at the left of the screen that contains hyperlinks to chapters, headings, figures, and tables. Each entry in the index is also a hyperlink that will take you to the page on which the reference is located.

Character Representations

The syntax of the UCS command set used by Cyber Series terminals includes some non-printing control characters (character codes 000 to 031_{10}, 000 to $1F_{16}$) plus the space character. These non-printing characters and the space character are represented in this manual in various ways as shown in the table below. In many text editors, you can generate a control character by holding down the CTRL key and pressing the appropriate printing key. For example, you can generate a record separator (30_{10}, $1E_{16}$) by holding down the CTRL key and pressing the caret ^ key (SHIFT-6). This key sequence is represented as `CTRL/^`. Other text editors, such as the DOS editor, let you enter control characters by pressing the ALT key, then entering the three-digit decimal value.

Table 2: Non-Printing Character Representations

Value	Use	Symbol	CTRL
28_{10}, $1C_{16}$	Field separator	⌐ or ¬	`CTRL/\`
29_{10}, $1D_{16}$	Group separator	⟷	`CTRL/]`
30_{10}, $1E_{16}$	Record separator	rs, ᴧ, or ▲	`CTRL/^`
31_{10}, $1F_{16}$	Unit separator	us, ᴠ, or ▼	`CTRL/_`
32_{10}, 20_{16}	Space character	⌴ or ▬	

Terms

Refer to the Glossary for definitions of many of the terms and acronyms used in this manual.

Revisions

Level	Changes
i	Default COMM port baud rate changed to 19200
j	Added stop bit and serial framings information in Setup mode (firmware revision 053).
k	Added additional TCP/IP setup information.
l	Skipped to avoid confusion with numeral 1.
m	Added printer information. Added daylight savings time information. Updated further 053 information.
n	Added single-board Ethernet description.
o	Changed default "locked" message. Revised test mode screen descriptions to include finger scan.
p	Corrected expected duration of memory backup from battery. Updated for flash version 055.

q	Added explanation of how to upgrade firmware flash (Appendiex B). Added FPR Identify Version screen to Diagnostics mode displays.
r	Added modem hookup information.
s	Updated for flash version 058.
t	Revised cleaning instructions for biometric finger scan reader.
u	Added lease renewal information to DHCP description. Added details of setting up option values on server. Updated certification information. Corrected specification details (current requirements, dimensions). Edited watchdog timeout default. Updated setup/test information for flash version 068.
v	Added recommendation to always use Two-Way Application ACK. Changed "Terminal Locked" message to "Waiting for Host."
w	Corrected output formatting.
x	Updated Table 1-1. Updated setup/test information for flash version 074. Documented expanded diagnostic display information. Added information for CS2102 finger geometry terminal including additional maintenance information. Revised list of supported badge formats. Updated Figure 2-5 to show 6-pin power jumper configuration. Removed description of powering terminal through a serial network (network power). Added information about cleaning Bioscrypt finger sensor drive ring.
y	Updated setup/test information for flash version 075.

Chapter 1   *Terminal Description*

The Accu-Time® Cyber Series family of time and attendance terminals, shown in , include standard, biometric, and NEMA 4X enclosure versions. Highly versatile for incorporation into many time or data collection environments, the Cyber Series offers a large user memory base of up to 1 megabyte. The Cyber Series supports standard EIA RS232 and RS485 communication formats and a TCP/IP Ethernet 10/100BASE-T interface. The many options of the Cyber Series include:

- **Multi-Media**: Can support most standard bar code formats including:
  - UPCA
  - ABAR
  - EAN
  - 128
  - 3 of 9
  - Interleave 2 of 5
  - Wiegand
  - IATA Track I and ABA Track II magnetic stripe input (program dependent).

- **Flexibility**: A Cyber Series terminal can act as a stand-alone time station or as part of a local or wide area network. The terminal can also interface with virtually any host hardware or software platform.

- **Custom Applications**: Custom programs and programmable function keys provide you with the flexibility to create a variety of options.

- **Reliability**: A Real Time Clock (RTC) provides 12 or 24 hour time formats with quartz precision. An optional non-interruptible power supply (UPS) provides terminal operation for up to 1.5 hours during power outages. Data storage will be preserved for up to 30 hours with the memory backup system.

- **Durability:** A rugged enclosure protects circuitry from environmental conditions such as extreme temperatures and airborne dust. A NEMA 4X enclosure is available for outdoor applications.

Figure 1-1: Selection of Terminals from the Cyber Series Family
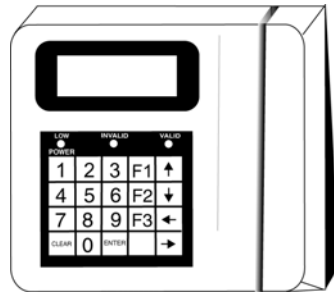
Standard (CSx)
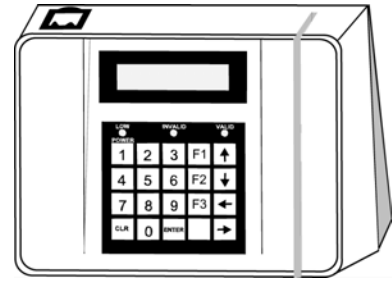
Biometric (CSxB)
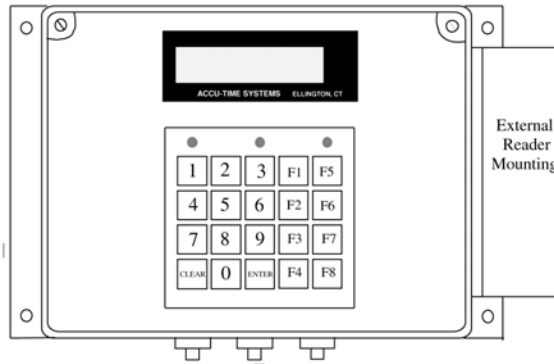
NEMA 4X (CSxN)
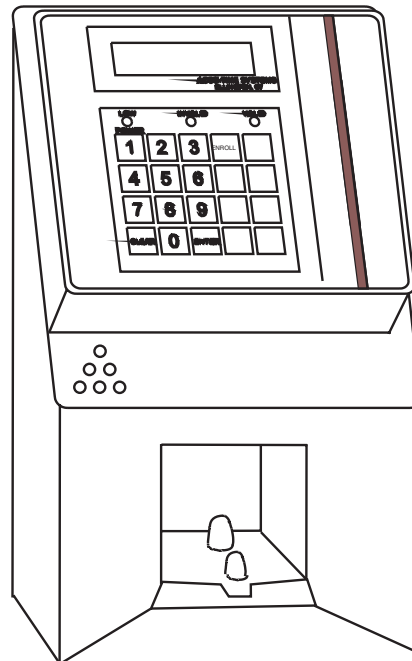
Finger Geometry (CSxG)

Available Models

The Cyber Series family of terminals is available in many configurations. Table 1-1 lists the major properties of each model of Cyber Series terminal. .

Table 1-1: Cyber Series Terminal Configurations

Model	Serial	Ethernet 10M	Ethernet 10/100M	Modem	Memory Base	Flash	Display	DIDO	Mounting
CSS	Std	-	-	Opt	128K	256K	2x20	-	Gullwing
CSE	-	Std	-	-	128K	256K	2x20	-	Gullwing
CS1	Std	-	-	Opt	512K	256K	4x20	Opt	Lock
CS2	Std	-	Std	Opt	512K	256K	4x20	Opt	Lock
CS3	Std	-	Std	Opt	1M	512K	4x20	Opt	Lock
CSSB	Std	-	-	Opt	128K	256K	4x20	-	Gullwing
CSEB	-	Std	-	-	128K	256K	4x20	-	Gullwing
CS1B	Std	-	-	Opt	512K	256K	4x20	Opt	Lock
CS2B	Std	-	Std	Opt	512K	256K	4x20	Opt	Lock
CS3B	Std	-	Std	Opt	1M	512K	4x20	Opt	Lock
CS1N	Std	-	-	Opt	512K	256K	4x20	Opt	Flange
CS2N	Std	-	Std	Opt	512K	256K	4x20	Opt	Flange
CS3N	Std	-	Std	Opt	1M	512K	4x20	Opt	Flange
CS1G	Std	-	-	Opt	512K	256K	4x20	Opt	Lock
CS2G	Std	-	Std	Opt	512K	256K	4x20	Opt	Lock
CS3G	Std	-	Std	Opt	1M	512K	4x20	Opt	Lock

Specifications

Table 1-2 lists the specifications for Cyber Series terminals.

Table 1-2: Cyber Series Specifications

Display:	2 or 4 line by 20 character backlit LCD
Clock:	12 or 24 hour format - USA or International. 24-hour time stamp of data transactions
Keypad:	Software defined function keys Large 20 key tactile 4x5 matrix Custom, user-defined keypad legends
Indicators:	Yellow LED = low power Green = valid entry Red = invalid entry Link and Activity LEDS for Ethernet (optional)
Memory:	Up to 1MB and up to 512KB Flash
Programming:	ATS Universal Command Set modules, C programming language, or third party custom application packages
Self-Test:	On-board set-up, test, and diagnostics
Interfaces:	• EIA standard RS232 or RS485 • Wand • DIDO • TCP/IP Ethernet 10/100BASE-T 802.3 (optional) • Modem (optional) • Serial interface printer port (optional)
Enclosures:	Choice of: • Die cast aluminum housing with key-lockable base • Unit construction gullwing mount • NEMA 4X
Power:	• +10 to +17VDC (+12VDC @ 300mA nominal) • Non-interruptible power source w/charger
Environment:	• 32 to 110 degrees Fahrenheit (0 to 43 degrees Centigrade) Heated NEMA 4X enclosure option available for operation below 32° F (0° C) • 5% to 95% relative humidity, non-condensing

Table 1-2: Cyber Series Specifications

Dimensions:	•	Standard terminal: 7.13" x 7.33" x 4.00" (18.1cm x 18.6cm x 10.2cm) Weight: 3.0 lb (1.4kg)
	•	Biometric terminal (1:1): 7.25" x 10.00" x 4.00" (18.4cm x 25.4cm x 10.2cm) Weight: 4.5 lb (2.0kg)
	•	Biometric terminal (1:many): 7.13" x 7.33" x 4.00" (18.6cm x 18.4cm x 10.2cm) Weight: 3.0 lb (1.4kg)
	•	NEMA 4X terminal: 8.5" x 10.5" x 6.25" (21.6cm x 26.7cm x 15.9cm) Weight: 8.6 lbs (3.9kg)
	•	Finger geometry terminal: 12.02" x 7.4" x 7.1" (30.6cm x 18.9cm x 18.0cm) Weight: 9.2 lb (4.15kg)
Accessories:	•	Integrated/external visible/infrared bar code and magnetic stripe track II slot readers
	•	Integrated/external 26- or 34-bit proximity readers
	•	Solid state or dry contact relay modules
	•	Serial interface printer port
Certifications:	•	FCC Part 15 Class A
	•	CE
	•	NEMX 4X (for CSxN terminals)

Connectivity

Cyber Series terminals support three forms of connectivity to a host computer: serial RS232, serial RS485, and Ethernet.

RS232

An RS232 serial line connection is the simplest connection between terminal and host. Requiring only a modular cable and COMM port adapter, installation is quick and easy. Cable length between host and terminal is limited, however, to a maximum of 50 wire-feet, and the number of terminals is limited to the number of COMM ports available. Serial RS232 connections support only a simple communication protocol with limited verification. An RS232 connection typically uses ATS Poll Protocol, which is described in a separate manual.

RS485

RS485 serial line connections may be suitable for more elaborate installations. RS485 junction boxes support multiple terminals, allowing up to 32 terminals to be installed. Cable length of all combined host/terminal drop points should not exceed 5,000 wire-feet. An RS485 connection typically uses ATS Poll Protocol, which is described in a separate manual.

Ethernet

Ethernet provides the most robust network connection between the host and terminal. Using TCP/IP communication protocol and CAT-5 cable, cable lengths between a terminal and an Ethernet network hub can be up to 328 wire-feet. Accu-Time Systems implements Ethernet IEEE 802.3, with a default host port of 2500 and Microsoft or UNIX Berkely sockets.

Ethernet Communication Acknowledgements

Cyber Series terminals support three levels of Ethernet communication acknowledgement: Normal, One-Way, AppAck, and Two-Way AppAck (TWAA), explained below. For best reliability, **ATS <u>STRONGLY RECOMMENDS</u> the use of Two-Way Application ACK ONLY!**

Normal

Normal level of communication acknowledgement reflects the guaranteed delivery features built into the TCP/IP protocol. TCP/IP guarantees delivery of data packets to their destination (host or terminal). It does not guarantee that they were processed correctly. ATS does not recommend using this level of acknowledgement.

One-Way Application Ack

One-Way application acknowledgement guarantees that data sent from a terminal to a host has been delivered and processed. It does not guarantee that data sent from a host to a terminal has been processed. ATS does not recommend using this level of acknowledgement.

Two-Way Application ACK

Two-way application acknowledgement (TWAA) ensures not only that the host/server has received the last transaction from the network, but also that the terminal has in turn received the transaction from the host. ATS recommeds that you ALWAYS use Two-Way Application ACK. The AppAck that is used by the terminal is also used by the host. Refer above for AppAck definition.

Should there be a connection failure, the terminal will continue from where it left off upon reconnection. Therefore, upon reconnection, the host should also continue from where it left off. The only exception is when the terminal resets. In this case, a power-on message transmits, which indicates that the process needs to be restarted. The only case where the terminal will reset of its own accord is during a C-load or Flash load whereupon records are received out of sequence. If the terminal transmits a packet out of sequence by more than one (1), the host will receive an AG00 data packet from the terminal, which recognizes that the terminal does not contain a C-load. If the BG00 data packet is received, the C-load has been transmitted successfully.

The Accu-Time terminal operates over non-blocking sockets. Upon a socket error, call the Windows function 'Get last error' for detection. If it is anything but 'e would block,' then close the socket, listen for the terminal, reconnect, and pick up where it was left off. If 'e would block' lasts longer than 3.5 minutes, then close the socket.

To ensure and validate that the terminal and host are in the TWAA mode, the following packets must be sent separately across a connection.

```
\A!gs sp ATSspREQ=request
```
This packet requests for AppAck mode. In the event that TWAA is not present, the terminal will remain in AppAck mode.

```
A!gs sp ATSspTWY=two-way app ack
```
This packet designates the TWAA mode

```
\A!gs sp ATSspCFG=verify
```
This packet verifies the mode by returning a response (none, 1 way, or 2 way).

Figure 1-2: Ethernet Communication Acknowledgements

Normal	AppAck	Two-Way AppAck
ATS NOT	ATS REQ	ATS TWY

Data is transferred by TCP/IP packet exchange without any upper layer delivery verification.

When data is transferred from the terminal to the host, delivery verification is made by the host returning an upper layer acknowledgement message, AppAck.

When data is transferred from the terminal to the host or from the host to the terminal, delivery verification is made by the host or the terminal returning an upper layer acknowledgement message, AppAck.

ATS ACK

The terminal does not delete the data from its buffer until it receives this verification.

If the host does not receive the data or the terminal does not receive acknowledgement, the terminal will resend the same data every 30 seconds until it receives a valid Ack response from the host. After five resends, the terminal will perform a reconnect sequence.

No data delivery verification is present in this mode for host-to-terminal transfers.

ATS ACK

Transmitted data is not deleted by either the host or the terminal until it receives this verification from the receiver of the data.

If the host or the terminal does not receive the data or either does not receive a valid acknowledgement, the originator will resend the data every 30 seconds until a valid acknowledgement is received. After 5 resends, the host or terminal will initiate a reconnect sequence.

Chapter 2 *Installation*

General Installation Guidelines

The Cyber Series time and data collection terminal is a durable industrial-grade device that can endure harsh environments, but environmental constraints exist and care should be taken when selecting a location for installing and operating the Cyber Series terminal. ATS recommends the Cyber Series terminal operate in an ambient temperature range of between 32° and 110° Fahrenheit. Non-condensing relative humidity should be less than 95%. The terminal should be mounted on a vibration-free surface.

The standard Cyber Series terminal is designed to operate indoors. Exposure to outdoor elements such as rain or snow will void the manufacturer warranty and may cause damage to the device. If your application requires outdoor installation, Accu-Time Systems offers a NEMA 4X certified terminal.

Select a location with adequate lighting and accessibility so employees can operate the terminal safely.

After you have installed the terminal in its location and run the wiring to the host computer, refer to Chapter 3, Setup, Test, Diagnostics, and Maintenance, for information about configuring and testing the terminal.

Installation

Cyber Series terminals are available in three enclosure styles: locking base mount, gullwing flange mount, and NEMA 4X flange mount. Each type has similar wiring and location requirements.

Basic Requirements

Locate a flat wall surface on which to mount the Cyber Series terminal. A convenient mounting height for most Cyber Series terminals is 48 inches from the floor to the terminal display. The CSxG finger geometry terminals should be mounted slightly lower. ATS recommends mounting a CSxG back plate so that its "keyhole" mounting screw slots are approximately 44 1/4" above the floor. These heights are compliant with the Americans with Disabilities Act. Observe OSHA and local safety codes when operating tools during all phases of the installation.

Be sure the distance from the terminal's location to the host computer does not exceed the wire length limitation of the connection type you plan to use. These limits are shown in Table 2-1.

Table 2-1: Wire Length Limitations

Connection Type	Maximum Terminal-to-Host Distance
RS232	50 wire-feet
RS485	Combined terminal/host drop points should not exceed 5,000 wire-feet.
Ethernet 10/100BASE-T	328 wire-feet (100 meters) from terminal to Ethernet hub or switch

Installing Power Wiring

A Cyber Series terminal requires 12VDC power for operation. In a typical installation, this power is supplied by plugging the output cable from an ATS 12VDC power pack directly into the back of the terminal. Ensure that a conventional 120VAC wall outlet (220VAC in Europe and other areas, check local electrical code requirements) is available to accept the power pack assembly. The outlet should be within 4 feet of the terminal's location.

Installing Data Wiring

The Cyber Series terminal can communicate using three types of data connection: RS232, RS485, and Ethernet. Each requires a different cable type with different requirements, as described in the sections below. Figure 2-5 gives the RS485 and RS232 pinouts used by Accu-Time Systems terminals.

RS232 Cable Installation

When using an RS232 connection, the Cyber Series terminal must be no more than 50 wire-feet from the host computer. EIA standards for RS232 protocol data transmission dictate this cable distance. Exceeding this requirement greatly increases the chances for transmission error and excessive data re-transmission.

For RS232 applications, ATS recommends using its modular telephone type data cable. This eight conductor shielded flat cable has RJ45 modular plugs on each end. The 50-foot cable can run along side base moldings, walls, overheads, or in hostile environments through conduit tubing. Terminate one end of the cable at the Cyber Series terminal's communication port and the other end at the host computer's serial port through an ATS RS232 Communication Adapter. Be sure to select RS232 protocol when you set up the terminal's COMM port (see Setting the COMM Port on page 3-11).

Figure 2-1: Sample RS232 Installation
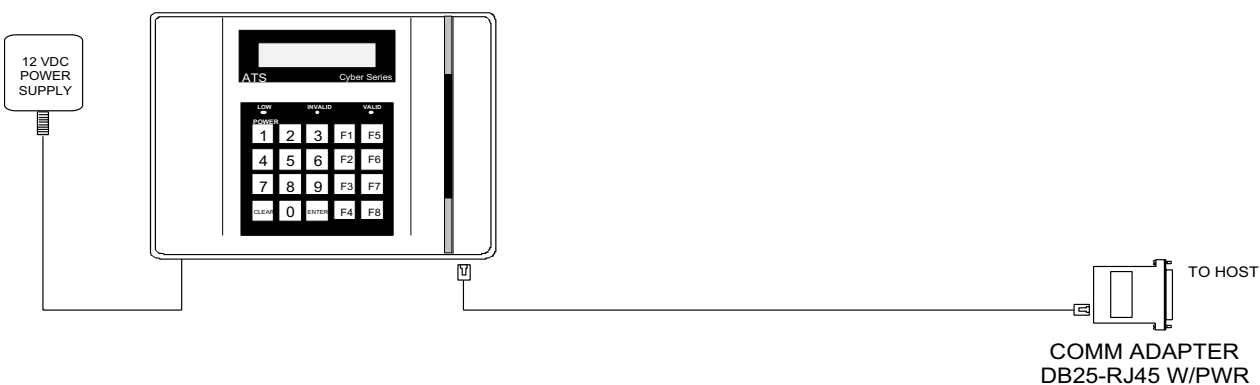
Modem Installation

You can also establish a serial connection using a modem.

Figure 2-2 shows the inside of a typical Cyber Series base plate with a modem card installed. (Modem cards in older terminals may look slightly different.) Figure 2-6 on page 2-12 shows the location of the modem board in a Cyber Series finger geometry terminal. If you have the modem option, be sure the short jumper cable from the modem is plugged into the serial jack in the back of the terminal (see Figure 2-5 on page 2-11 or Figure 2-6). Plug a standard RJ11 modular phone cable into the other jack on the modem card and into an analog telephone wall jack. The modem does not support digital telephone lines.

You will need to configure the modem using the terminal setup commands described in Chapter 3, Setup, Test, Diagnostics, and Maintenance.

Figure 2-2: Cyber Series Modem Connections

To analog telephone jack

To Serial jack on terminal
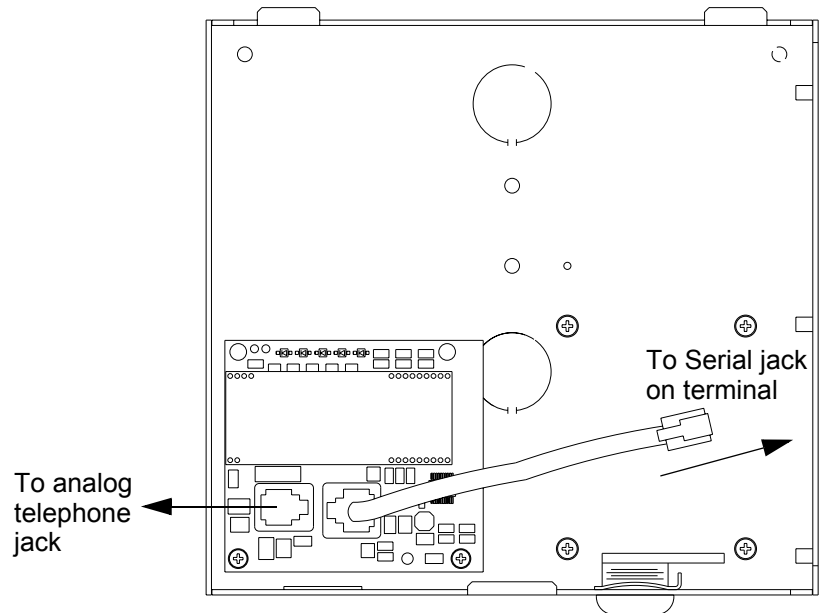
RS485 Installation   When using an RS485 connection, the total cable length of the combined RS485 terminal/host drop points should not exceed 5,000 wire-feet. EIA standards for RS485 protocol data transmission dictate this cable distance. Exceeding this requirement greatly increases the chances for continual data re-transmission, which may never be acknowledged.

For RS485 communication applications, ATS recommends using a network trunk cable that adheres to the following specifications:

- Five conductor shielded 24-gage wire with a drain.

- The impedance of the cable should be 100 ohms.

- The capacitance should be 12 pico-farads per foot.

- The jacket of the cable is typically PVC or plenum material.

The short drops from a RS485 hub to the individual terminals can be ATS modular cable, as shown in Figure 2-3 on page 2-6.

NOTE: If the host computer is not equipped with an RS485 communication port, you can use an ATS RS232/485 converter with 12 volt power pack assembly to convert the terminal communication lines to host RS232 levels. The host output of the RS232/485 converter plugs directly into the ATS RS232 Communication Adapter.

Using an RS485 connection lets the Cyber Series terminal be used in multi-dropped networks. Thirty-two terminals can be supported on a single host communication port. ATS Series 1000 network controllers support up to 256 terminals on a single host communication port.

Be sure to select RS485 protocol when you set up the terminal's COMM port (see Setting the COMM Port on page 3-11).

Figure 2-3: Sample RS485 Installation
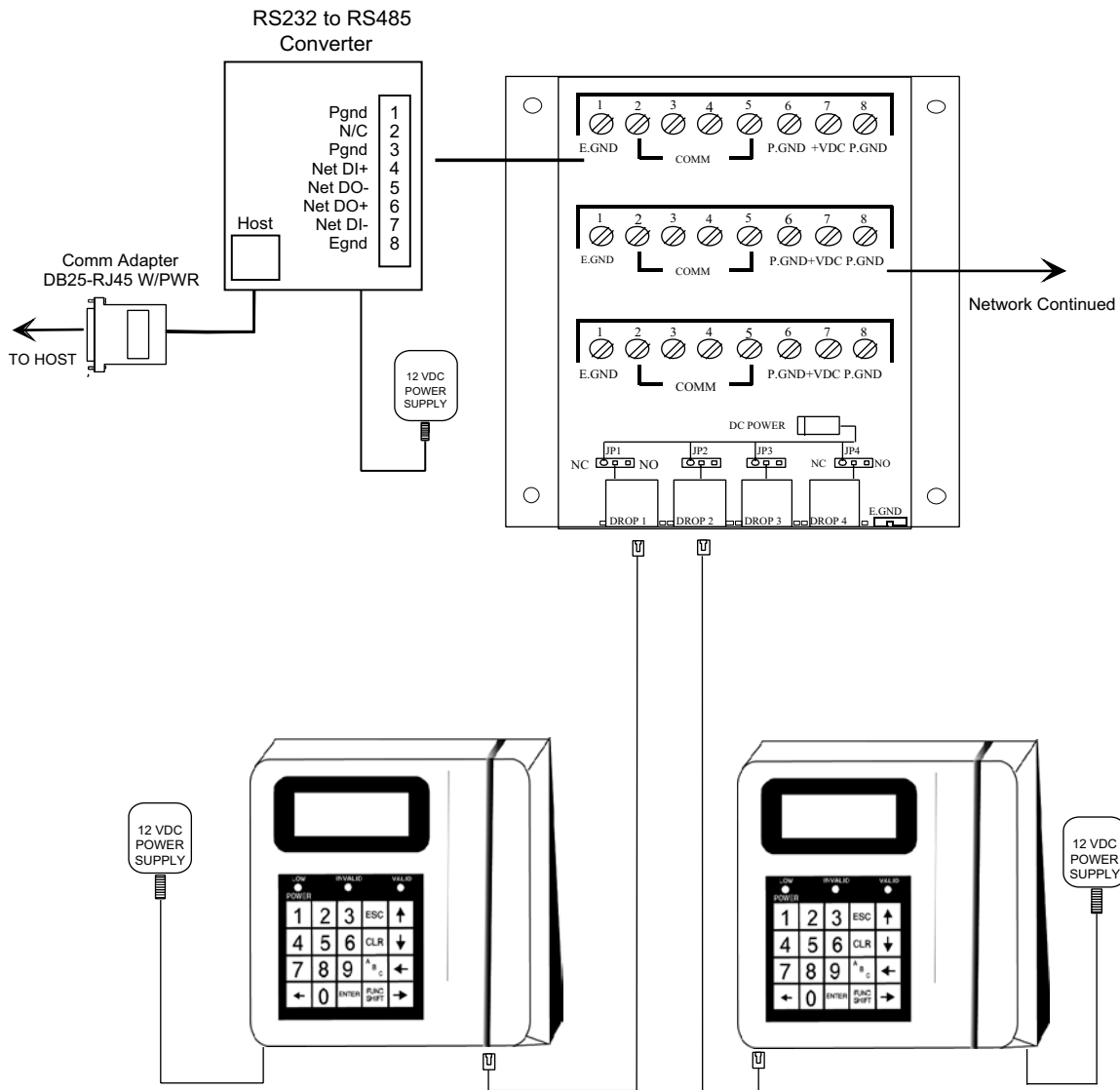
Ethernet Installation   When using an Ethernet connection, the Cyber Series terminal can be located at any point in a TCP/IP Ethernet 10/100BASE-T network, providing the single segment length from the network hub or switch to the terminal does not exceed 328 wire-feet. A typical topology for the Cyber Series terminal in an Ethernet 10/100BASE-T network is a star configuration.

For Ethernet communication applications, ATS recommends using CAT-5 unshielded twisted-pair high-speed data transmission cable with RJ45 plugs wired according to the EIA/TIA 568B standard. One end of the RJ45-terminated cable plugs into the Cyber Series terminal's Ethernet communication port, while the other end plugs into the network hub. ATS follows the IEEE 802.3 Ethernet standard.

Refer to Figure 2-5 or Figure 2-6 to find the location of the Ethernet jack on the back of your Cyber Series terminal. Early Cyber Series terminals had a separate Ethernet interface card, as shown in the top drawing of Figure 2-5. This is known as the two-board design. Later Cyber Series terminals have the Ethernet interface built into the terminal's main board, shown in the lower drawing of Figure 2-5 and in Figure 2-6. Functionality is the same for both designs, but the location of the Ethernet jack is different.

Figure 2-4: Sample Ethernet Installation
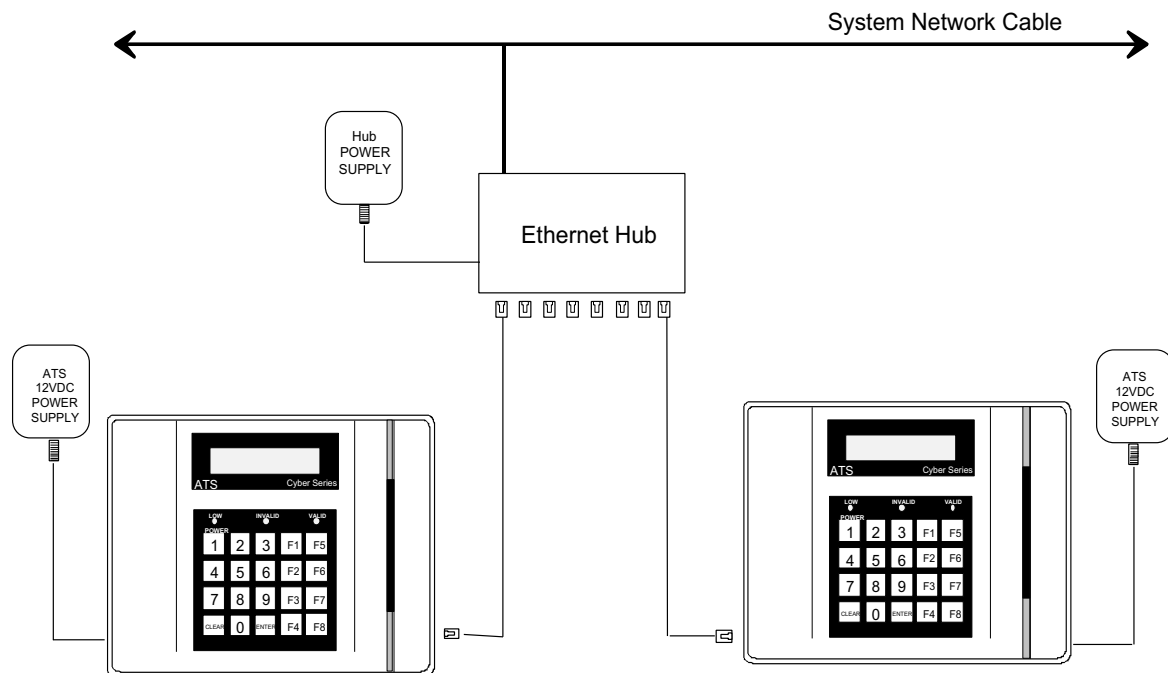
Connecting a Printer

If you have an optional printer, you will need to connect it to the terminal. This can be done in two ways:

- Through the serial COMM port. Use this connector when the terminal is equipped with a biometric finger scanner or a relay. If you use this connector, the terminal can communicate with the host only through an Ethernet connection.

- Through the AUX1 (DIDO) port. Use this connector unless the terminal has a biometric finger scanner or relay. This will let you use either serial or Ethernet communication with the host.

The pinouts are different for each connector. Consult the factory if you need assistance.

Be sure you select the printer option for the COMM or AUX1 port during terminal setup, as described in or .

You should set the printer baud rate to 9600 baud. (Look for a DIP switch setting on the printer.)

To print to the printer, refer to the description of the LPT command in the UCS manual.

Installing the Terminal

Find the appropriate mounting template printed at the end of this chapter:

CAUTION: These templates were created exactly to size, but their dimensions may grow or shrink slightly when printed because of printer variations. Be sure to compare the dimenions of a printed template to the dimensions specified on the termplate to see if there is a discrepancy and adjust as necessary.

Prepare the wall to accommodate mounting hardware (customer provided). A convenient mounting height for the CSx, CSxB, and CSxN terminals is 48 inches from the floor to the terminal display. CSxG terminals should be mounted such that the "keyhole" mounting holes in the backplate are about 44 1/4" above the floor. These height are compliant with the Americans with Disabilities Act. Observe OSHA and local safety codes when operating tools during all phases of the installation.

Select and remove one or more of the knockouts in the terminal enclosure to accommodate the data transmission cable and the 12VDC power cable. (If you have a NEMA 4X enclosure, there are three gasketed holes in the enclosure for cable pass-through.) Attach the terminal base to the flat wall surface using screws or other fasteners in the mounting holes marked on the template.

If you are installing a terminal with a separate locking base, align the front face section of the Cyber Series terminal over the terminal base.

Insert the data cable through the previously-removed knockout in the terminal enclosure, or through one of the gasketed holes in the NEMA 4X enclosure, and into the appropriate communication port of the Cyber Series terminal.

Use an appropriate bushing or cable clamp to secure and protect the cable where it passes through the enclosure. Ensure that the cable is terminated into the appropriate 8-conductor modular connector.

Attach the other end of the data cable to the host computer port.

Install the 12VDC power cable in the enclosure a similar fashion. If you have a basic Cyber Series or a biometric Cyber Series terminal, plug the output of the 12VDC power cable into the power jack of the terminal (Figure 2-5**)**.

If you have a Cyber Series finger geometry terminal without the battery backup option, plug the plug the output of the 12VDC power cable into a power jack on the connector board (see Figure 2-6). There are two power jacks on the connector board. Choose the one that matches the plug on the power pack cable. Plug the short power jumper cable from the connector board into the power outlet of the terminal.

If your Cyber Series finger geometry terminal has the battery backup option installed, plug the plug the output of the 12VDC power cable into a power jack on the battery charger charger board mounted on the left-hand side of the base. There are two power jacks on the battery charger board. Choose the one that matches the plug on the power pack cable. Plug the short power jumper cable from the connector board into the power outlet of the terminal.

Be sure the 6-pin power jumper shown in the lower illustration of Figure 2-5 and in Figure 2-6 is set correctly. If you have an older model Cyber Series terminal with a 3-pin power jumper (upper illustration in Figure 2-5), the jumper should go on the upper two pins.

If you have a Cyber Series finger geometry terminal, be sure the battery jumper on the connector board is set correctly.

Plug the primary of the power pack assembly to a conventional wall outlet.

If the face is separate, attach the face to the terminal base after connecting the wiring. Secure the face to the base with the key lock.

When 12VDC is connected, the Cyber Series terminal will power up and display its on-line default message. The Cyber Series terminal is now ready for setup and configuration. Refer to Chapter 3, Setup, Test, Diagnostics, and Maintenance for terminal setup instructions.

Figure 2-5: Cyber Series Terminal Connections and Jumpers

EARTH GND

+12V GND

THREE-PIN POWER JUMPER

PLACE JUMPER ON UPPER TWO PINS IF USING +12VDC POWER PACK DIRECT CONNECTION

POWER (P7)

BATTERY (P8)   3 2 1

−
+

SERIAL (J8)

	RS232	RS485
1	EARTH GND	
2	TERM REC	TERM REC −
3	TERM TRANS	TERM XMIT +
4	TERM RTS	TERM XMIT −
5	TERM CTS	TERM REC +
6	PWR GND1	
7	POWER (CONSULT FACTORY)	
8	PWR GND2	

DIDO (J9)

1 SIO-IN (CONSULT FACTORY)
2 DIGITAL-IN
3 GND
4 +5V (CONSULT FACTORY)
5 DIGITAL-OUT
6 SIO-OUT (CONSULT FACTORY)

WAND (J2)

1 EARTH GND
2 GND
3 +5V
4 N/C
5 DATA
6 N/C

JTAG (FACTORY USE)

POWER
BATTERY
SERIAL
DIDO
WAND
JTAG

LINK BUSY

ETHERNET (OPTIONAL)

ETHERNET INDICATOR LEDS (IF ETHERNET PRESENT)

TWO-BOARD CYBER SERIES TERMINAL (OLD MODEL)

EARTH GND

+12V GND

SIX-PIN POWER JUMPER

STANDARD POSITION, NO MODEM

POSITION IF MODEM INSTALLED

POWER (P7)

BATTERY (P8)   3 2 1

−
+

SERIAL (J8)

	RS232	RS485
1	EARTH GND	
2	TERM REC	TERM REC −
3	TERM TRANS	TERM XMIT +
4	TERM RTS	TERM XMIT −
5	TERM CTS	TERM REC +
6	PWR GND1	
7	POWER (CONSULT FACTORY)	
8	PWR GND2	

DIDO (J9)

1 SIO-IN (CONSULT FACTORY)
2 DIGITAL-IN
3 GND
4 +5V (CONSULT FACTORY)
5 DIGITAL-OUT
6 SIO-OUT (CONSULT FACTORY)

WAND (J2)

1 EARTH GND
2 GND
3 +5V
4 N/C
5 DATA
6 N/C

JTAG (FACTORY USE)

LINK LED

ETHERNET (OPTIONAL)

BUSY LED

POWER
BATTERY
SERIAL
DIDO
WAND
JTAG

SINGLE-BOARD CYBER SERIES TERMINAL

Figure 2-6: Cyber Series Finger Geometry Terminal Connections

ETHERNET

MODEM

POWER

BATTERY
(NOT USED)

SERIAL

DIDO

WAND

ANALOG PHONE LINE

FROM
DIDO
BOARD
IN BASE

PLUG IN
POWER
PACK
(CHOOSE
ONE)

NO
BATT BATT

FROM
BATTERY
CHARGER
BOARD

CONNECTOR BOARD

RIBBON
CABLES
FROM
CAMERA
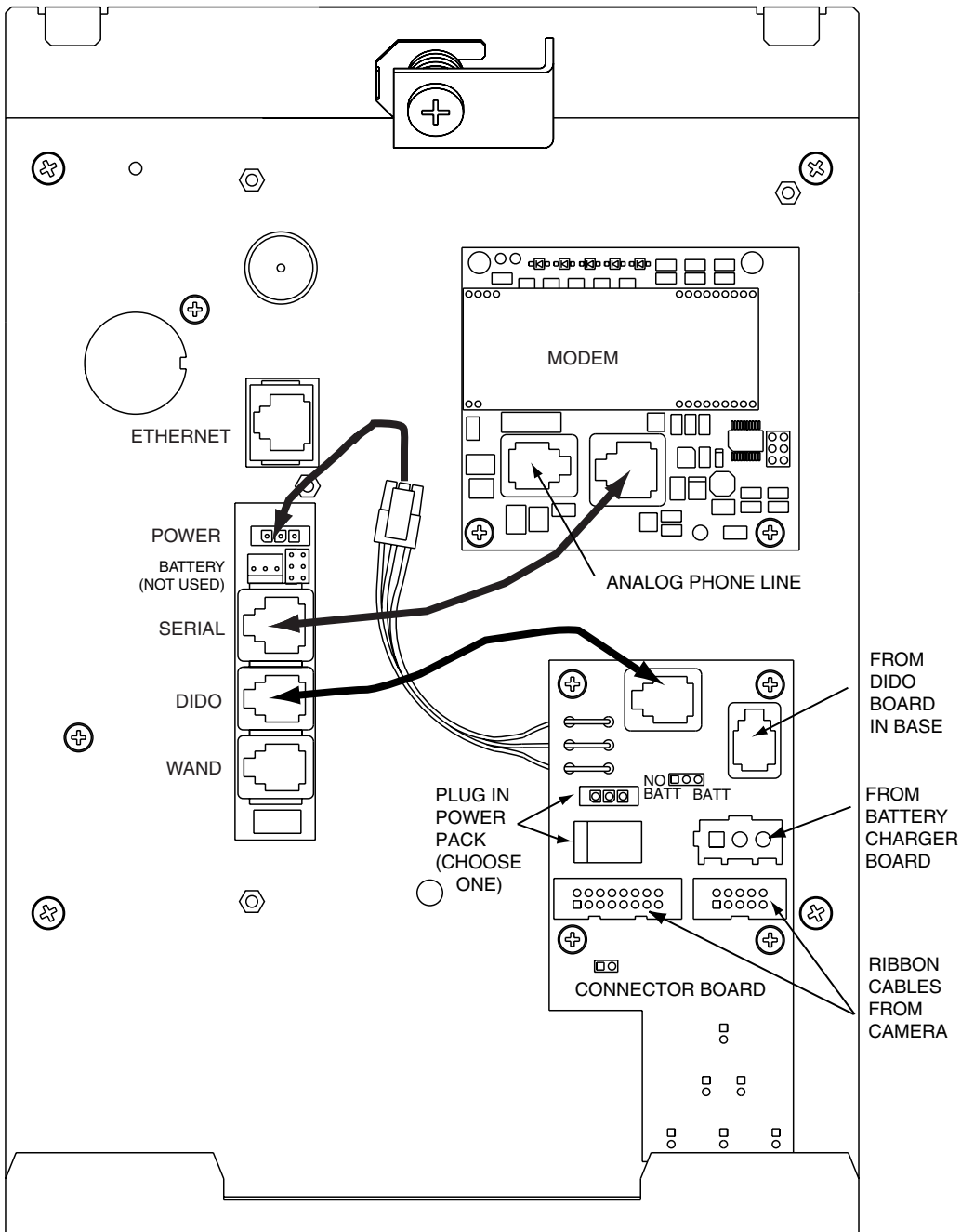
Figure 2-7: Cyber Series Locking Base Mounting Template
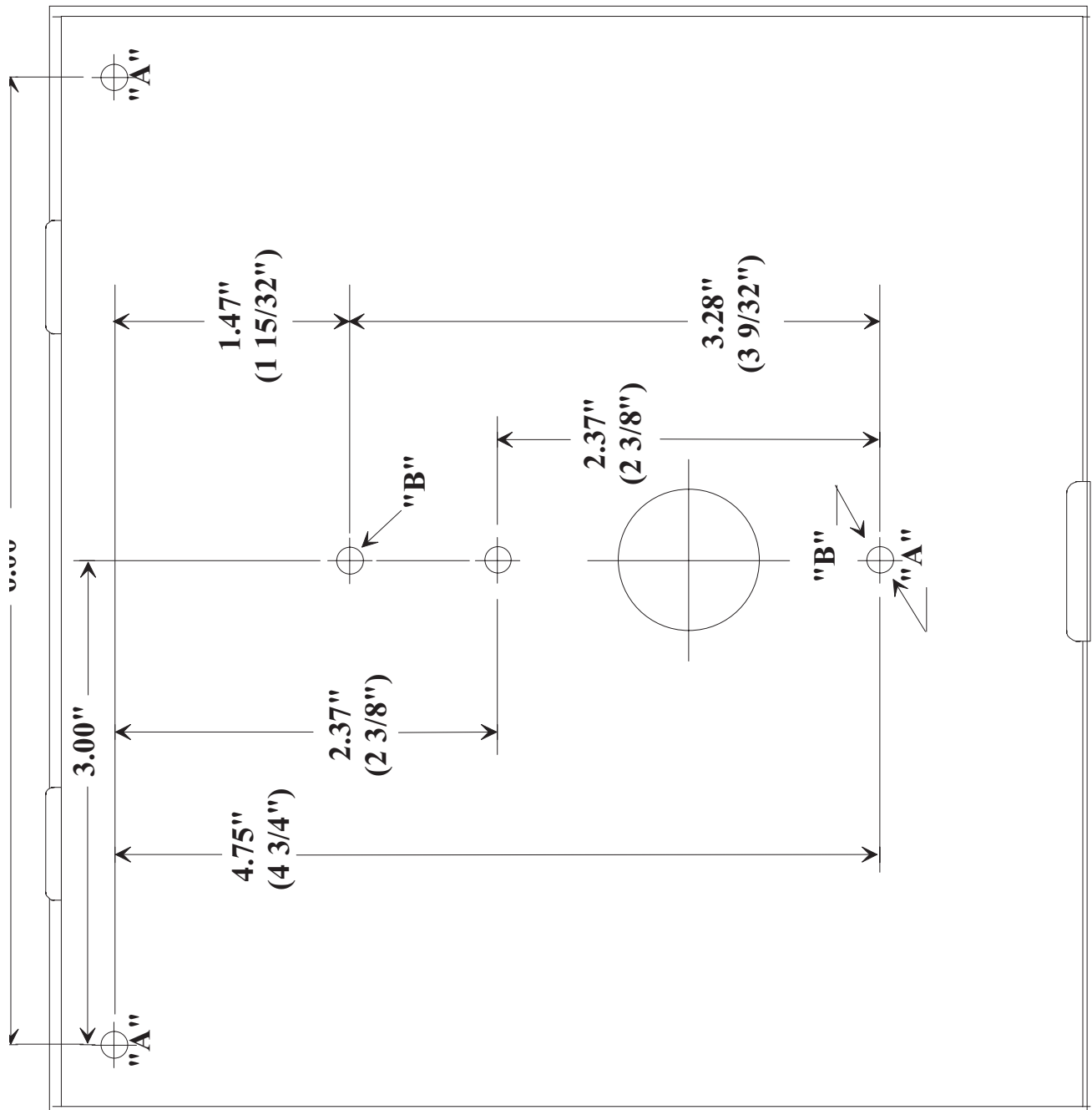
Figure 2-8: Cyber Series Gullwing Base Mounting Template

Cyber Series Gullwing Mounting Template

7 23/32

4 7/32
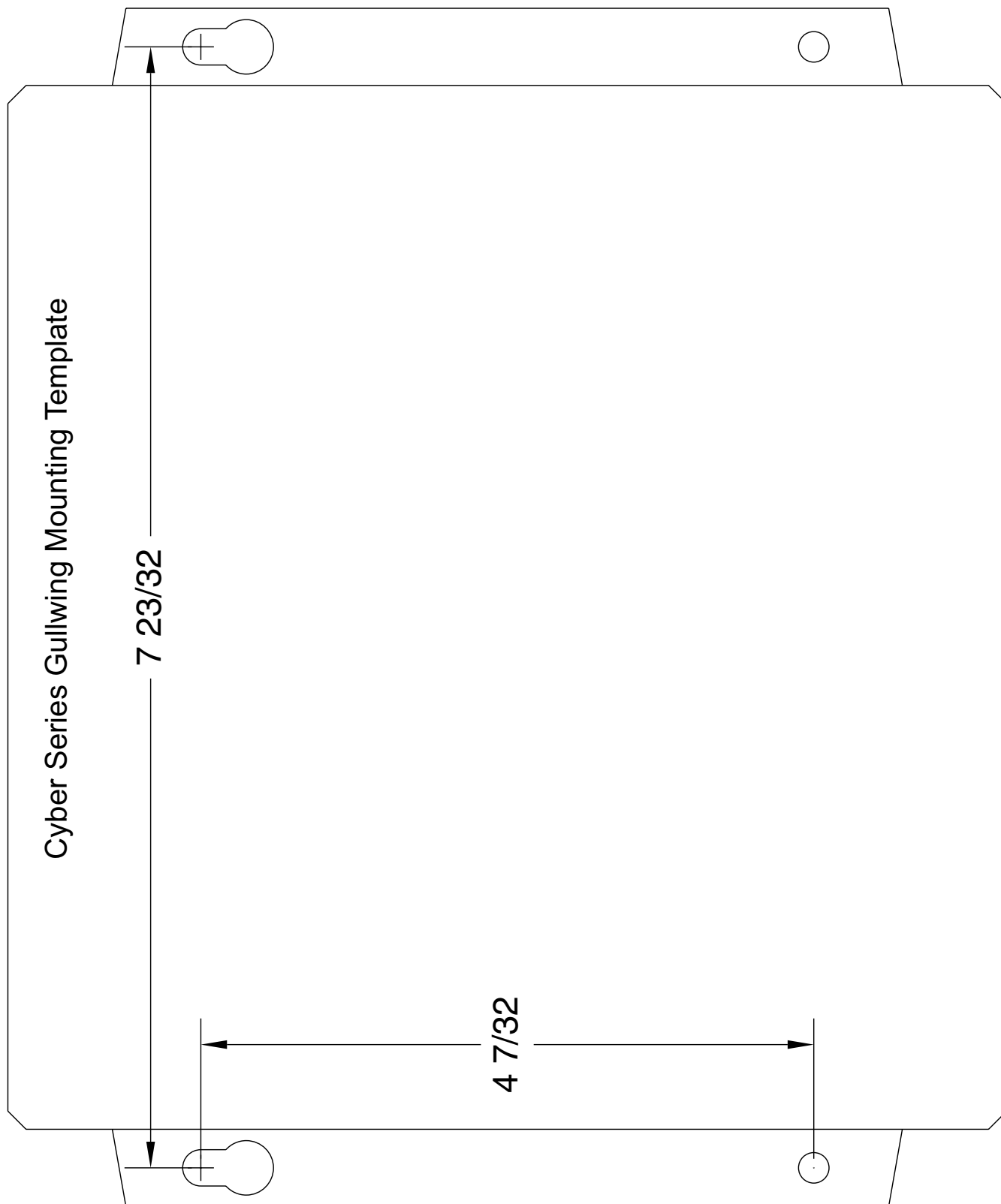
Figure 2-9: Cyber Series NEMA 4X Enclosure Mounting Template (50% Full Size)
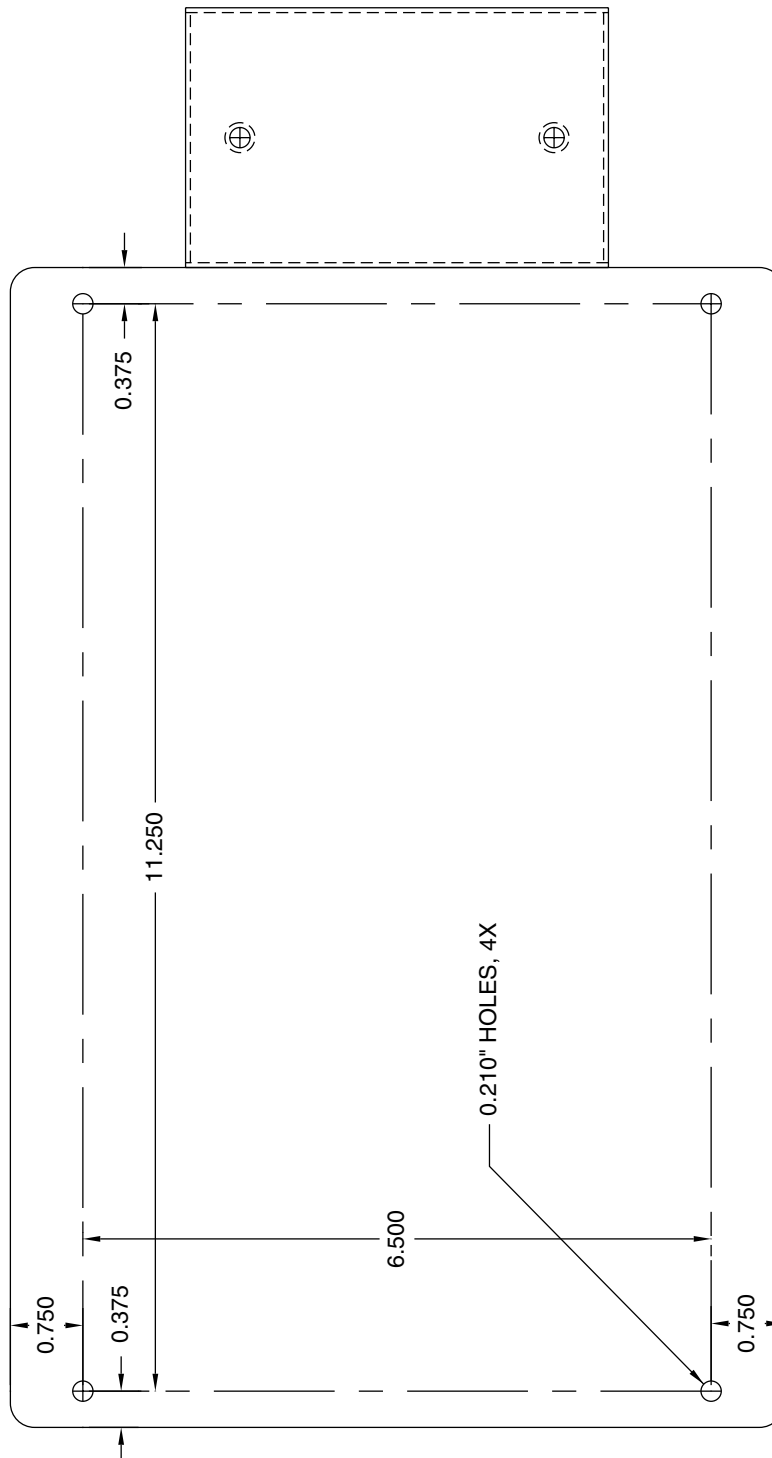
Figure 2-10: Cyber Series Finger Geometry Terminal Mounting Template

6"

9/64 "

1 1/4"
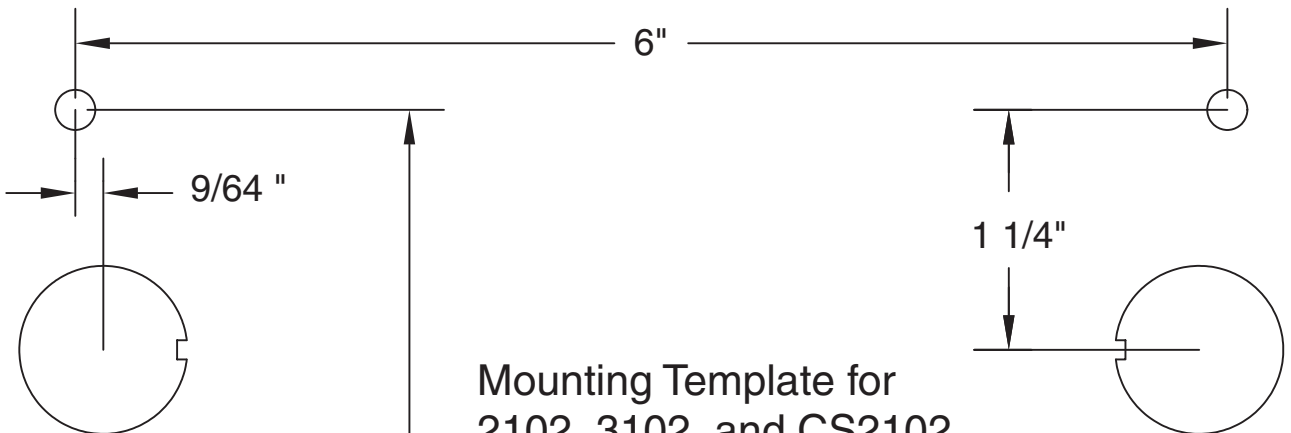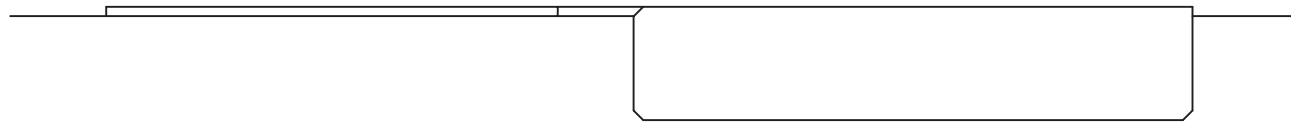
Mounting Template for
2102, 3102, and CS2102
Finger Geometry Terminals

IMPORTANT!!!
Terminal **MUST** be grounded.
Refer to instructions enclosed
with the ground wire inside terminal.
Grounding is ESSENTIAL
to proper terminal operation.

8"

3/4"

4 1/2"

45 1/4" to floor

2102

3102
CS2102

3102
CS2102

2102

Chapter 3 Setup, Test, Diagnostics, and Maintenance
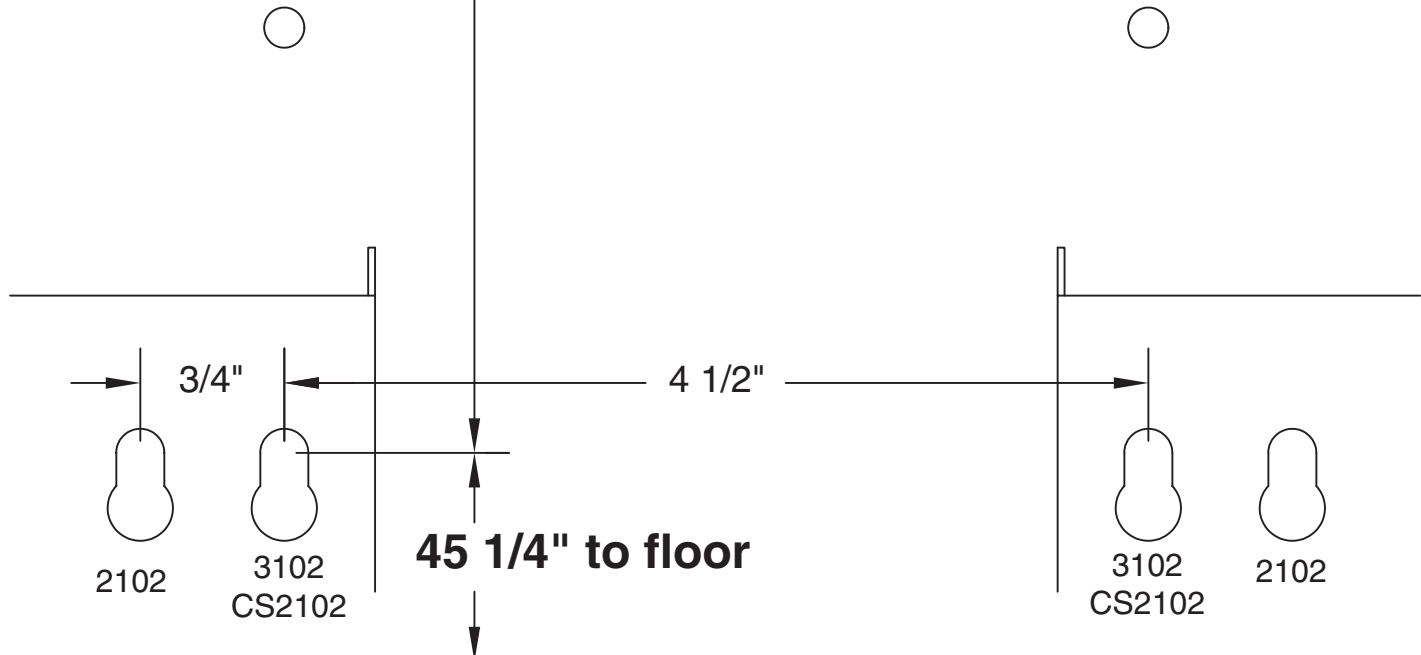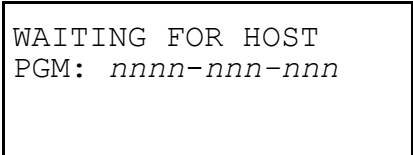
Power-Up

Connect an ATS 12VDC power supply locally or remotely to the terminal. When power is applied to the terminal, the terminal will beep, execute a power-up sequence, and display the text shown in Figure 3-1. The "Waitng for host" message indicates that the terminal is ready to accept a program download. This is the normal condition on initial power-up.

The numeric value *nnnn-nnn* is the version number of the firmware installed in the terminal. **The descriptions in this chapter apply to firmware version 6001-075.** If your terminal has an earlier or later firmware version, your setup, diagnostic, and test screens may vary slightly from those described. The functionality, however, will be similar.

Figure 3-1: Initial Power-Up Display

```
WAITING FOR HOST
PGM: nnnn-nnn-nnn
```

"Waiting for host" means the terminal is waiting for a program download and will not accept any user input. To load the terminal:

1. Configure the terminal's communication and operating characteristics. Refer to Entering Test, Setup, and Diagnostic Mode on page 3-2 for details.

2. Send a download file to the terminal to program the terminal's operation. Cyber Series terminals use the ATS Universal Command Set (UCS). Refer to the *Universal Command Set Reference Manual, MANU0000-11*, for details.

Entering Test, Setup, and Diagnostic Mode

Cyber Series terminals have a built-in test, setup, and diagnostic mode (TSD mode). For details of each capability, refer to Test Mode on page 3-3, Setup Mode on page 3-9, and Diagnostics Mode on page 3-22.

To enter TSD mode:

1. Press and hold the **CLEAR** and **ENTER** keys simultaneously for about 5 seconds.

2. The Cyber Series terminal will beep, then display the test, setup, or diagnostic menu selection sequence shown in Figure 3-2. The menu selection sequence begins with the choice to enter test mode. Cycle through the list by pressing the **CLEAR** key. Choose one of the modes by pressing the **ENTER** key. Return to a previous menu by pressing the **F8** key.

   Note: You can enable password protection so only authorized persons can enter TSD mode. See Setting a Password on page 3-21 for details.

Figure 3-2: Test, Setup, or Diagnostic Menu Selection
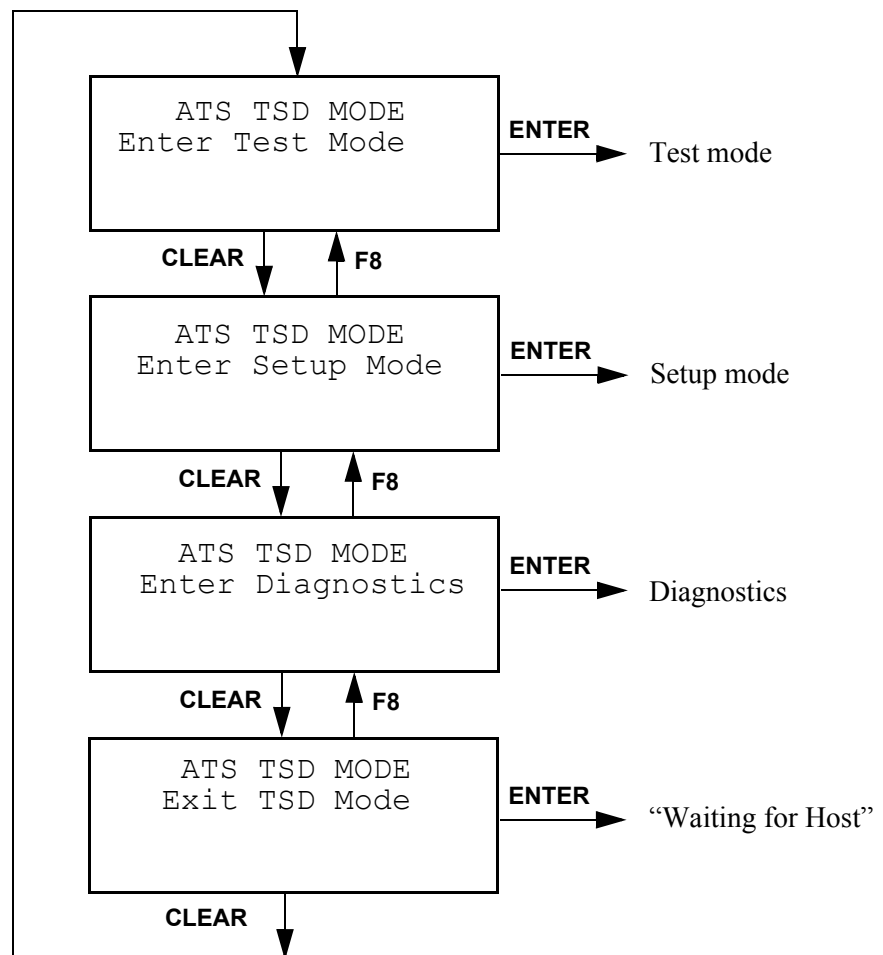
Test Mode

ATS Test Mode checks the functionality of the terminal keypad, display, memory, real time clock, card reader, and bar code wand circuitry. When you press the **ENTER** key to enter test mode, the terminal will briefly display the message, "Enter or Clear To Continue," then display a screen of filled-in character blocks as shown in Figure 3-3. Press the **CLEAR** key to continue with Test mode, or press the **ENTER** key to return to the next menu shown in Figure 3-2.

Figure 3-3: Initial Test Mode Display

```
Enter or Clear
To Continue
```

ENTER → Enter Setup Mode screen

CLEAR ↓
Continue with Test Mode
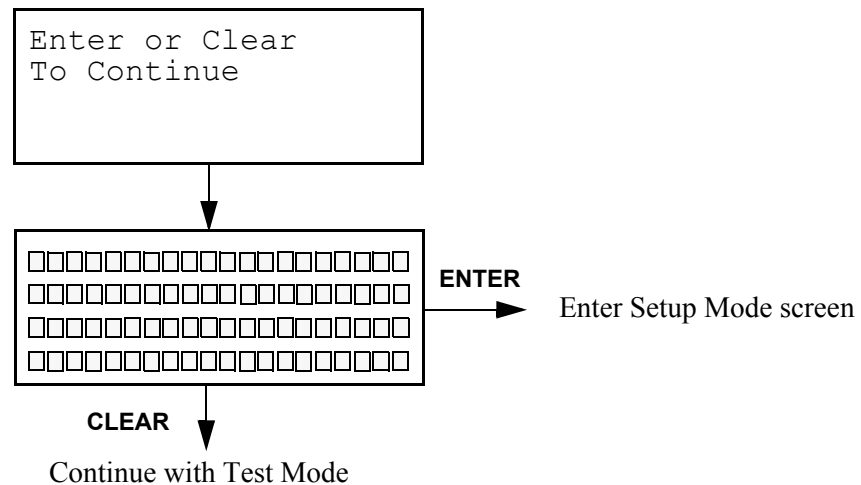
Figure 3-4 shows the sequence of the test mode screens. Pressing the **CLEAR** key proceeds to the next test, while pressing the **ENTER** key returns to the previous test.

Each test is described in the following sections:

- Testing the Reader or Wand on page 3-6

- Testing the Real-Time Clock (RTC) on page 3-6

- Testing the Keypad on page 3-6

- Testing Low Power on page 3-6

- Testing Serial RS232 on page 3-6

- Testing Serial RS485 on page 3-7

- Testing the Serial AUX on page 3-7

- Testing DIDO on page 3-7

- Testing the Modem on page 3-7

- Testing the Finger Scanner on page 3-7

After going through all the tests, pressing the **CLEAR** key transfers control to the Enter Setup Mode screen (Figure 3-2).

Figure 3-4: Sequence of Test Mode Screens

```
Test Reader or Wand

------------
```
ENTER → Previous screen

↓ **CLEAR**

```
Test RTC
```
ENTER → Previous screen

↓ **CLEAR**

```
Test Keypad
```
ENTER → Previous screen

↓ **CLEAR**

```
Test Low Power
```
ENTER → Previous screen

↓ **CLEAR**

```
Test Serial RS232
```
ENTER → Previous screen

↓ **CLEAR**

```
Test Serial RS485
```
ENTER → Previous screen

↓ **CLEAR**

```
Test Serial AUX
```
ENTER → Previous screen

↓ **CLEAR**

From Test Serial AUX screen

↓

```
Test DIDO 1 & 2
```
ENTER → Previous screen

↓ **CLEAR**

```
Test DIDO 3 & 4
```
ENTER → Previous screen

↓ **CLEAR**

```
Test Modem Host Echo
Press Enter to Test
```
ENTER → To modem test

↓ **CLEAR**

To Test Finger Print sequence (if enabled) or Enter Setup Mode

Optional test. This screen appears only if modem is enabled.

Figure 3-5: Optional Test Finger Print Sequence

From previous test screen

```
Test Finger Print
Press Enter to Test
```

ENTER

CLEAR

To Enter Setup Mode screen

```
Initializing Reader
```

IF NO READER,

ENTER SETUP

```
Test Finger Enroll
Place Finger
```

```
Quality = nn
Content = nn
```

IF ENROLL

FAILS

```
Test Finger Verify
Place Finger
```

IF VERIFY FAILS

```
Verify Passed nn%
```
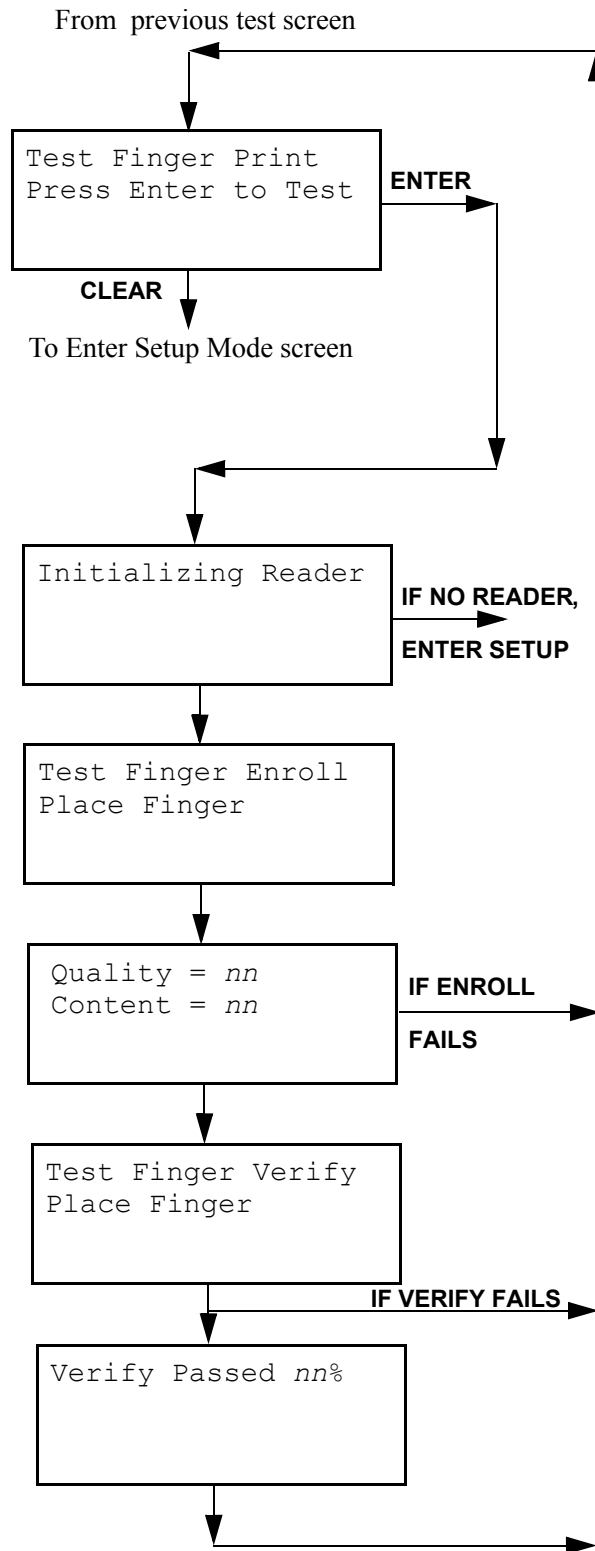
Testing the Reader or Wand

To test the reader or wand, swipe a badge through the terminal's reader or scan a code with the wand. Verify that the proper value is displayed on the screen.

Press the **CLEAR** key to continue to the next test, or press the **ENTER** key to return to the previous test.

Testing the Real-Time Clock (RTC)

The RTC test checks the real-time clock. When you select this test, the display shows the current date and time stored in the terminal, blinks the green LED and beeps twice a second, and increments the time display once a second. Check that the settings are correct and that the time is incrementing properly. (If the date or time are incorrect, you can set the values using Setup mode.)

Press the **CLEAR** key to continue to the next test, or press the **ENTER** key to return to the previous test.

Testing the Keypad

To test the keypad, press in sequence the keys **1**, **2**, **3**, **4**, **5**, **6**, **7**, **8**, **9**, **0**, **F1**, **F2**, **F3**, **F4**, **F5**, **F6**, **F7**, **F8**. Each key should echo (display), the green "Valid" LED should blink, and the terminal should give a short beep. The function keys echo as A, B, C, D, E, F, G, H.

If you press a key out of sequence, or if there is an error, the key will not echo, the red "Invalid LED will blink, and the terminal will give a longer beep.

Control will automatically proceed to the low power test selection screen after you press the **F8** key.

Press the **CLEAR** key to continue to the next test, or press the **ENTER** key to return to the previous test.

Testing Low Power

The low power test is applicable only if a terminal has the battery backup option.

To test the low power warning, first ensure the battery backup is installed. Then unplug the +12VDC power supply from the terminal. The low power warning LED on the front of the terminal should light up and the display should read POWER LOW. The low power warning light should go out when you plug the +12VDC power supply connector back into the terminal (normal power).

Press the **CLEAR** key to continue to the next test, or press the **ENTER** key to return to the previous test.

Testing Serial RS232

When you select the RS232 test screen, the terminal will perform an internal loopback test of the RS232 circuit. The green "Valid" LED should blink and the terminal beep approximately twice a second. (You can press **1** on the keypad to toggle the beep off or on.) Pressing **F2** will test the external network. Pressing **F1** will return to the internal (default) test.

Press the **CLEAR** key to continue to the next test, or press the **ENTER** key to return to the previous test.

Testing Serial RS485

When you select the RS485 test screen, the terminal will perform an internal loopback test of the RS485 circuit. The green "Valid" LED should blink and the terminal beep approximately twice a second. (You can press **1** on the keypad to toggle the beep off or on.) Pressing **F2** will test the external network. Pressing **F1** will return to the internal (default) test.

Press the **CLEAR** key to continue to the next test, or press the **ENTER** key to return to the previous test.

Testing the Serial AUX

Plug an AUX loopback connector into the AUX port. This is a connector with the transmit and receive lines tied together. A test message is sent out the port then echoed back. The message echoed should match the message sent.

Press the **CLEAR** key to continue to the next test, or press the **ENTER** key to return to the previous test.

Testing DIDO

Two screens let you test DIDO 1 and 2 or DIDO 3 and 4. Plug a DIDO loopback connector, available from Accu-Time Systems, into the DIDO port. The green "Valid" LED should blink and the terminal beep approximately twice a second.

Press the **CLEAR** key to continue to the next test screen, or press the **ENTER** key to return to the previous test.

Testing the Modem

If you enable modem support for the COMM port or modem support for Host Connect, the Modem Host Echo test screen will appear. The Modem Host Echo test sets the terminal so it will echo characters sent to it by the host. To use the test, you should set the terminal modem to auto-answer, enable the Modem Host Echo test by pressing the **ENTER** key in response to the Modem Host Echo test screen, dial the terminal from a host PC, send characters to the terminal, and verify that they are properly echoed back to the host.

Press the **CLEAR** key to continue to the next test screen.

Testing the Finger Scanner

The finger scan test lets you enroll and then verify a finger scan to test the operation of the finger scan reader. If you choose this test but there is no finger scan reader present, the screen will display `Reader Not Detected!` Press the **CLEAR** key to continue to the `Enter Setup Mode` screen. Press the **ENTER** key to return to the `Test DIDO` screen.

If the terminal detects a reader, The screen will display:

```
Test Finger Enroll
Place Finger
```

Place your finger on the finger scan window. (See Appendix A, Proper Use of a Biometric Reader, for guidelines on how to properly place your finger on the reader.) After the reader scans your finger, the screen will display:

```
Quality = nn
Content = nn
```

If the quality and content values are not greater than Quality=20 and Content=40, or if you fail to place your finger on the reader, the screen will flash Enrollment Failed and return to the original Test Finger Print screen.

If the enrollment succeeds, the screen will display:

```
Test Finger Verify
Place Finger
```

Place the same finger on the reader again. If the verification meets a minimum standard for verification, the screen will display:

```
Verify Passed: nn%
```

The value *nn* is the actual match percentage achieved. The terminal will then return to the Test Finger Print screen.

If the verification fails to meet the minimum match criteria, the screen will display Verify Failed and return to the Test Finger Print screen. Failure will also occur if a finger is not placed on the reader, the finger is placed incorrectly, or if the wrong finger is used.

Setup Mode

Use ATS Setup Mode to configure the operating parameters of the terminal. Figure 3-6 shows the selection of screens available in setup mode. Step through the sequence of setup screens by pressing the **CLEAR** key on the terminal. Press the **ENTER** key to choose a particular setup selection. Return to a previous screen by pressing the **F8** key.

The details of each setup choice are explained in individual sections, below.

Figure 3-6: Sequence of Setup Mode Screens

```
  ATS SETUP MODE
  Setup COMM Port          ENTER →
```
CLEAR ↓   ↑ F8
```
  ATS SETUP MODE
  Setup AUX1 Port          ENTER →
```
CLEAR ↓   ↑ F8
```
  ATS SETUP MODE
  Setup Display            ENTER →
```
CLEAR ↓   ↑ F8
```
  ATS SETUP MODE
  Setup Host Connect       ENTER →
```
CLEAR ↓   ↑ F8
```
  ATS SETUP MODE
  Setup Reader1            ENTER →
```
CLEAR ↓   ↑ F8
```
  ATS SETUP MODE
  Setup Date & Time        ENTER →
```
CLEAR ↓   ↑ F8
```
  ATS SETUP MODE
  Setup Watchdog           ENTER →
```
CLEAR ↓   ↑ F8

```
  ATS SETUP MODE
  Setup Password           ENTER →
```
CLEAR ↓   ↑ F8
```
  ATS SETUP MODE
  Setup RAM                ENTER →
```
CLEAR ↓   ↑ F8
```
  ATS SETUP MODE
  Exit Setup               ENTER →
```
CLEAR ↓   ↑ F8

Back to start of list

Setting the COMM Port

If you press the **ENTER** key to select COMM port setup, the follow screen will appear:

```
SETUP COMM PORT
RS232 19200  8 NONE
```

This screen lets you choose protocol, baud rate, number of data bits, and parity. The choices for each parameter are shown in Table 3-1:

Table 3-1: COMM Port Setup Parameters

Parameter	Choices
Protocol	RS232, RS485
Baud rate	115200 (not currently supported), 57600, 38400, 28800, 19200, 14400, 9600, 4800, 2400, 1200
Data bits	7, 8
Parity	Odd, Even, None

Cycle forward through the choices for each parameter, beginning with the protocol type, by pressing the **CLEAR** key. Cycle backward by pressing the **F8** key. Select a parameter value and move to the next parameter by pressing the **ENTER** key.

The values for you select for number of data bits and for parity determine what happens next. If you select 8 data bits and no parity, the following screen will appear:

```
SETUP COMM PORT
Stop Bits: 2
```

Cycle forward through the choices (1 or 2) by pressing the **CLEAR** key. Make your selection by pressing the **ENTER** key.

This option, in conjunction with the data and parity selections, lets you configure the following serial framings:

Table 3-2: Possible Serial Framings

Data Bits	Parity	Stop Bits	Frame Size
7	Odd	1	10 bits
7	Even	1	10 bits

Table 3-2: Possible Serial Framings (Continued)

7	None	2	10 bits
8	None	1	10 bits
8	Odd	1	11 bits
8	Even	1	11 bits
8	None	2	11 bits

After you select the number of stop bits, or if you selected other than 8 bits, no partiy, control will go to the next COMM setup screen, setting flow control:

```
SETUP COMM PORT
Flow Ctrl: NONE
```

This screen lets you choose the type of flow control: NONE, or RTS/CTS. Cycle forward through the list of choices by pressing the **CLEAR** key. Cycle backward by pressing the **F8** key. Select a parameter value and move to the next screen, Setup AUX1 Port, by pressing the **ENTER** key.

You now select the type of device, if any, connected to the COMM port. The following screen will appear:

```
SETUP COMM PORT
Device: None
```

Possible choices for device are None, Modem, or Printer. Cycle forward through the list of choices by pressing the **CLEAR** key. Cycle backward by pressing the **F8** key. If you are using the COMM port for a direct serial connection to the host, choose None. If have a modem or printer connected to the COMM port, cycle the display to the correct choice and press the **ENTER** key. (Note: do not select "Printer" here if you connect the print to the AUX1 port. If you select Printer, set the COMM port's baud rate to 9600 baud.)

Setting the AUX1 Port

If you pressed the **ENTER** key to select Setup AUX1 port (it may be labeled DIDO on the back of the terminal), the following screen will appear:

```
SETUP AUX1 PORT
BAUD Rate: 9600
```

Possible values for the AUX1 port baud rate are 115200 (not currently supported), 57600, 38400, 28800, 19200, 14400, and 9600. Cycle forward through the list of choices by pressing the **CLEAR** key. Cycle backward by pressing the **F8** key. Choose the baud rate you want by pressing the **ENTER** key. Be sure to note the individual device baud rate requirments given in Table 3-3.

After you set the AUX1 port baud rate, the following screen will appear:

```
SETUP AUX1 PORT
Device: NONE
```

Table 3-3 lists the possible AUX1 port devices:

Table 3-3: AUX1 Port Devices

Device	Details
Fingerprint	Finger scan reader (For this device, set baud rate to 57600.)
Finger Geom.	Finger geometry reader. (For this device, set baud rate to 9600.)
MODEM	Modem.
Printer	Printer. (Note: do not select "Printer" here if you connect the printer to the COMM port. If you select Printer, set the AUX1 port's baud rate to 9600 baud.)
NONE	No AUX1 device.

Cycle forward through the list of choices by pressing the **CLEAR** key. Cycle backward by pressing the **F8** key. Choose the device you want by pressing the **ENTER** key. After you select the AUX1 port device, control will go to the next setup screen, Setup Display.

Setting the Display

If you pressed the **ENTER** key to select Setup Display , the following screen will appear:

```
SETUP DISPLAY
Number of Lines: 4
```

Possible values for the number of display lines are 2 or 4. Cycle forward through the list of choices by pressing the **CLEAR** key. Cycle backward by pressing the **F8** key. Choose the number that corresponds to your terminal's display by pressing the **ENTER** key. After you choose the number of display lines, control will go to the next setup screen, Setup Host Connect. The new display setting will take effect the next time power to the terminal is turned off, then on.

Setting Host Connect

If you pressed the **ENTER** key to select Setup Host Connect, the following screen will appear:

```
SETUP HOST CONNECT
Type: ATS COMM Poll
```

This screen lets you select the data transport protocol. The choices are ATS COMM Poll, TCP/IP, and Digi One. Cycle forward through the list of choices by pressing the **CLEAR** key. Cycle backward by pressing the **F8** key. Choose a protocol by pressing the **ENTER** key.

Configuring ATS COMM Poll

If you pressed the **ENTER** key to select ATS COMM Poll, the following screen will appear:

```
SETUP HOST CONNECT
Enter Clock Adrs: 01
```

Valid terminal ID values range from 01 to 32. (**Note**: if you specify a value greater than 32, the terminal ID will be set to 32.) Enter a terminal ID value using the numeric keypad. Press the **CLEAR** key to erase a value. Press the **ENTER** key to accept it.

After you specify a terminal ID, the following screen will appear:

```
SETUP HOST CONNECT
Select App. Type: A
```

This screen lets you assign a letter code to identify the type of application that will run in the terminal. For example, for your business you may have some terminals running a strict time and attendance application, while other terminals may be on a shop floor running an application that also processes job ticket information. By assigning an application identifier to the terminal, you can identify which terminals should receive a particular application update when terminals are reprogrammed.

Valid values for AppType are A through J. Cycle forward through the list of choices by pressing the **CLEAR** key. Cycle backward by pressing the **F8** key. Select a value by pressing the **ENTER** key. After you select a value, control will go to the next setup screen, setting host connect.

After you select an AppType, the following screen will appear:

```
SETUP HOST CONNECT
MODEM: Disable
```

Valid values are Enable and Disable. Cycle forward through the list of choices by pressing the **CLEAR** key. Cycle backward by pressing the **F8** key. Choose a setting by pressing the **ENTER** key. If you choose Disable, control will go to the screen Setup Reader1.

If you choose Enable, the following screen will appear:

```
SETUP HOST CONNECT
Country Code: 99
```

Set the appropriate country code (00 through 99) by entering the digits on the keypad. When you have set the value, press the **ENTER** key to go the Auto Answer screen:

```
SETUP HOST CONNECT
Auto Answer: 1
```

Valid values for Auto Answer are None, 1 ring, 2 rings, or 3 rings. Cycle forward through the list of choices by pressing the **CLEAR** key. Cycle backward by pressing the **F8** key. Select a value by pressing the **ENTER** key. After you select a value, the terminal will try to initialize the modem. If initialization succeeds, control will go to the screen to Setup Reader1. If initialization fails, the following screen will appear:

```
Modem Init. Failed
Press any key
```

When you press a key, control will go back to the screen, Setup Host Connect.

Configuring TCP/IP   If you choose TCP/IP for host connect, the following screen will appear:

```
SETUP SOCKET
Type: Client Mode
```

Choices are Client Mode or Server Mode. Make this selection by pressing the **ENTER** key.

In client mode, the terminal makes the TCP/IP connection to the designated host. When in this mode, it will not accept a connection request from any outside device.

In server mode, the terminal listens for a host connection. The terminal does not attempt to connect to any host. Therefore it becomes the host's responsibility to make the connection request with any given terminal. The terminal is set up such that it will accept a single connection, and this connection can come from any host.

Server mode has advantatages and disadvantages. A terminal connection needs to be maintained only when the host wants to, thereby eliminating a lot of network traffic, like Keep Alives. The host can also be changed, therefore a new IP, without requiring resetting up each and every terminal.

On the negative side, any host on the network can try to make a connection with the terminal. If that host were "predatory" and knew how to communicate with the terminal, it could read data from the terminal.

The following screen will appear:

```
SET CONNECTING
SOCKET PORT: 02500
```

Enter a socket number on the keypad. When you have entered the value, press the **ENTER** key.

The following screen will appear:

```
SETUP ADDRESSING
Type: Static TCP/IP
```

Choices are Static TCP/IP or Dynamic DHCP. Cycle through the list of choices by pressing the **CLEAR** key. Make your selection by pressing the **ENTER** key.

Dynamic DHCP   If you select Dynamic DHCP, the following screen will appear:

```
SET DHCP OPTION
HOST CODE: 128
```

Valid values are 128 through 255. Default is 128. This is the option code the terminal will use to read a list of up to five host IP addresses from the server. Enter a value using the numeric keypad. Press the **ENTER** key after entering the last digit. For more details on setting up the DHCP option code on the DHCP server, refer to .

The terminal's DHCP support uses standard DHCP conventions. It does automatic lease renewal and uses only standard option codes in the range 0 through 127 that any network DHCP server would be expected to support.

After setting the DHCP option host code, control will go to the Setup Etherenet Mode screen shown below.

Static TCP/IP   If you select Static TCP/IP, the following screen will appear:

```
Setup Clock IP
000.000.000.000
```

"Clock" refers to the terminal. Enter an IP address for the terminal using the numeric keypad. Press the **CLEAR** key to to back up a digit. Press the **F8** key to skip a digit. Press the **ENTER** key after entering the last digit. The following screen will appear:

```
Setup Host IP
000.000.000.000
```

Enter the IP address of the host computer with which the terminal will communicate, just as you entered the IP address of the terminal. Press the **ENTER** key after entering the last digit. The following screen will appear:

```
Setup Sub-Net Mask
000.000.000.000
```

Enter the appropriate network subnet mask. Press the **ENTER** key after the last digit. The following screen will appear:

```
Setup Router IP: NO
```

The choices are Yes and No. Cycle forward through the list of choices by pressing the **CLEAR** key. Cycle backward by pressing the **F8** key. Make a selection by pressing the **ENTER** key. If you select No, control will go to the next setup screen, setting reader1.

If you choose to set up a router by selecting Yes, the following screen will appear:

```
Setup Router IP
000.000.000.000
```

Enter a router IP address using the numeric keypad, as you did for the terminal and host IP addresses. Press the **ENTER** key after the last digit. The display will advance to the Setup Ethernet Mode screen.

Setup Ethernet Mode   The Setup Ethernet Mode screen lets you set the data transmission mode. The screen shown below appears:

```
SETUP ETHERNET MODE
Auto Negotiate
```

The choices are:

• Auto Negotiate
• 100MBit Full Duplex
• 100MBit Half Duplex
• 10MBit Full Duplex
• 10MBit Half Duplex

Cycle forward through the list of choices by pressing the **CLEAR** key. Cycle backward by pressing the **F8** key. Make a selection by pressing the **ENTER** key. ATS recommends you choose Auto Negotiate unless you have a specific hardware reason not to.

Next, the following screen will appear:

```
Append TCP Data with
EOT: NO
```

Choices are YES or NO. Cycle forward through the list of choices by pressing the **CLEAR** key. Cycle backward by pressing the **F8** key. Make a selection by pressing the **ENTER** key. If you select YES, the terminal will append an EOT character (04_{16}) to each transaction record sent to the host.

After you make your selection, the terminal will ask if you want to initilize the TCP/IP stack. Select Yes or No using the **CLEAR** key, then press the **ENTER** key. The terminal will initializet he stack, if that is your choice, then control will go to the next setup screen, setting reader1.

Setting Reader1

If you press the **ENTER** key to select reader1 setup, the following screen will appear:

```
SETUP READER1 DEVICE
Optical/Magnetic
```

This screen lets you specify the type of reader being used. The choices are Optical/Magnetic and Proximity/Wiegand. Cycle forward through the list of choices by pressing the **CLEAR** key. Cycle backward by pressing the **F8** key. Make a choice by pressing the **ENTER** key. After you make your selection by pressing the **ENTER** key, control will go to the next setup screen, setting date and time.

Setting Date and Time

If you press the **ENTER** key to select date and time setup, the following screen will appear:

```
SELECT DATE FORMAT
MM/DD/YY
```

Cyber Series terminals support three date formats: MM/DD/YY, YY/MM/DD, and DD/MM/YY. Cycle forward through the list of choices by pressing the **CLEAR** key. Cycle backward by pressing the **F8** key. Make a choice by pressing the **ENTER** key. After you make your selection by pressing the **ENTER** key, the following screen will appear:

```
SET RTC DATE & TIME
nn/nn/nn nn:nn:nn
```

The date displayed will be in the format just chosen (MM/DD/YY, YY/MM/DD, or DD/MM/YY). Set the current date and time using the numeric keypad. Press the **CLEAR** key to to back up a digit. Press the **F8** key to skip a digit. Press the **ENTER** key to enter the value.

The terminal does not check for the validity of entered date or time values. The terminal will accept, for example, a date of 99:99:99.

After you enter the date and time, the following screen will appear:

```
DAYLIGHT SAVINGS
Enable
```

Cyber Series terminals can automatically adjust for daylight savings time. When the terminal detects a time change, it will send the transaction: DS00rsYYMMDDHHMMSSrs (rs = record separator) to let the host know exactly when the terminal changed over to or from daylight savings time.

Possible values are Enable and Disable. Cycle forward through the list of choices by pressing the **CLEAR** key. Cycle backward by pressing the **F8** key. Make a selection by pressing the **ENTER** key.

After you make the selection, control will go to the next setup screen, setting a watchdog timeout.

Setting a Watchdog Timeout

Cyber Series terminals offer a watchdog timer that will reset the terminal if a processor halt occurs.

If you press the **ENTER** key to select watchdog setup, the following screen will appear:

```
SET WATCHDOG TIMEOUT
In Minutes: 00
```

This value is the amount of time, in minutes, the terminal will wait after a processor halt before doing an automatic reset. Enter a timeout value using the numeric keypad. The valid range is 00 to 60. If you enter a value greater than 60, the value will be set to 60. Setting the value to 00 disables the watchdog timer. ATS recommends leaving this value at 00. Press the **CLEAR** key to erase an entered value. Press the **ENTER** key to enter the value. After you set the timeout value, control will go to the next setup screen, setting a password.

Setting a Password

Cyber Series terminals are shipped with a blank password, so there is no password protection. Anyone can press the Clear and Enter keys at the same time and enter TSD mode. You can define a numeric password value for a teminal in the range 0000001 through 9999999 so only authorized persons can enter TSD mode and change settings. You can also use the function keys **F1** through **F8** as password "digits." If you press **ENTER** at the Setup Password screen, the display will show:

```
ENTER NEW PASSWORD
_
```

Enter the desired password value using the numeric keypad. Press the **CLEAR** key to back up a digit. Press the **ENTER** key to enter the value. The display will show:

```
CONFIRM PASSWORD
_
```

Enter the same value again, followed by the **ENTER** key. The terminal is now password-protected.

If you make a mistake and type a different value when confirming the password, the screen will display "Invalid Password." Press the Clear or **ENTER** key to continue. Control will go to the next setup screen, Setup RAM.

Note: Be sure you record the password value and keep it in a safe place so you don't forget or lose it! Without the password, you will not be able to set up or test the terminal.[1]

You can remove password protection by creating a blank password. Press the **ENTER** key at the password input prompt without entering any value.

---

1 - If you have this problem, contact Accu-Time Systems for recovery assistance.

Setting RAM

If you press the **ENTER** key to select Setup RAM, the following screen will appear:

```
CLEAR ALL MEMORY!
[Enter] to Proceed
```

Note: Clearing memory is not always required or desirable. If you have data (punches) stored in the terminal, they will be lost if you clear memory. If the terminal does contain data, you may want to peform only the setup steps required to establish host and clock communication. Then you can poll the terminal to retrieve the data before you clear memory.

Press the **CLEAR** key if you do not want to clear memory. Control will go to the next setup screen, Exit Setup.

Press the **ENTER** key to clear the terminal memory. If you press the **ENTER** key, the following display will appear:

```
CLEAR ALL MEMORY!
[Enter] to Confirm
```

Press the **CLEAR** key if you do NOT want to clear memory. Control will go to the next setup screen, Exit Setup.

Press the **ENTER** key to clear the terminal memory. The terminal will clear memory, cycle through several displays, and return to the Terminal Locked display (Figure 3-1) that appears when the terminal is powered up.
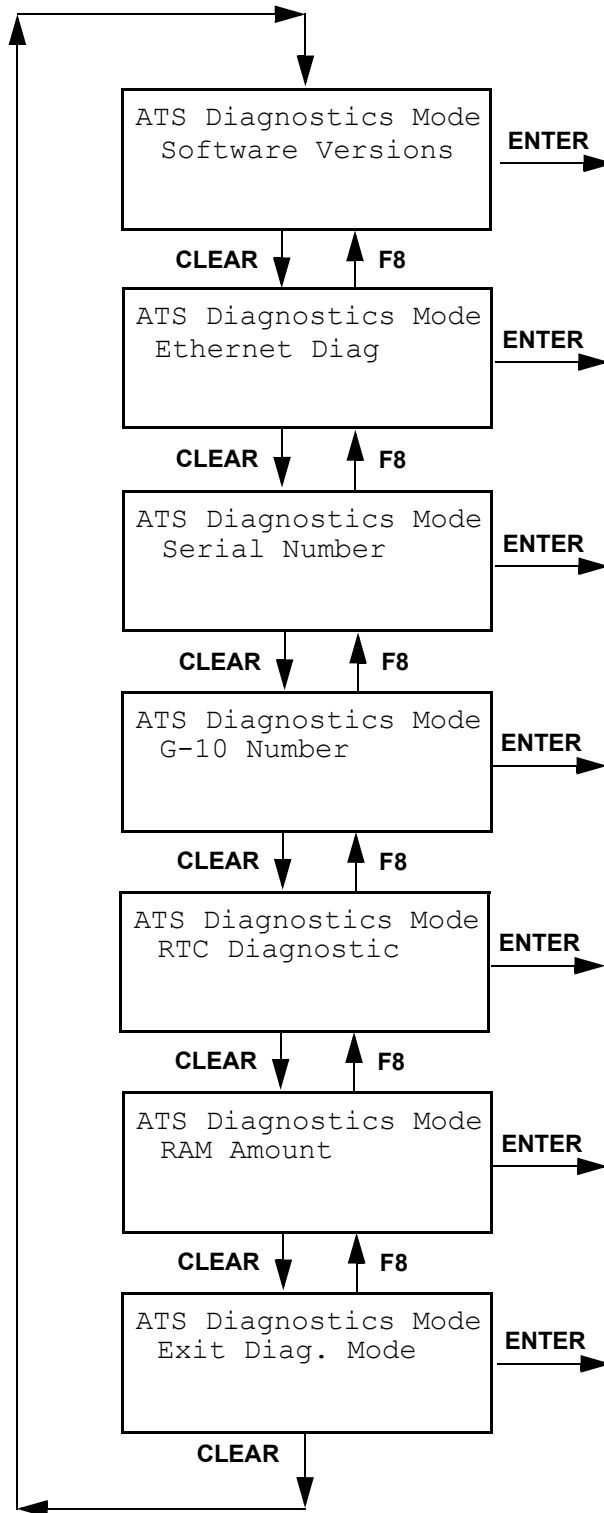
Exiting Setup

If you press the **ENTER** key to exit setup mode, a display will appear asking if you want to perform a hardware reset. Select Yes or No using the **CLEAR** key, then press the **ENTER** key. (ATS strongly recommends you **always** select Yes to do a hardware reset.) After performing a reset, if that was your choice, control will go to the Enter Diagnostics screen, shown in Figure 3-2.

Diagnostics Mode

Cyber Series terminals can provide selected information to help diagnose problems that may occur. Accu-Time Systems may ask you to provide this diagnostic information if you call to report a problem.

Figure 3-7 shows the sequence of diagnostic screens. Press the **CLEAR** key to cycle through the series of screens Press the **ENTER** key to display that screen's corresponding diagnostic information. Return to a previous screen by pressing the **F8** key.
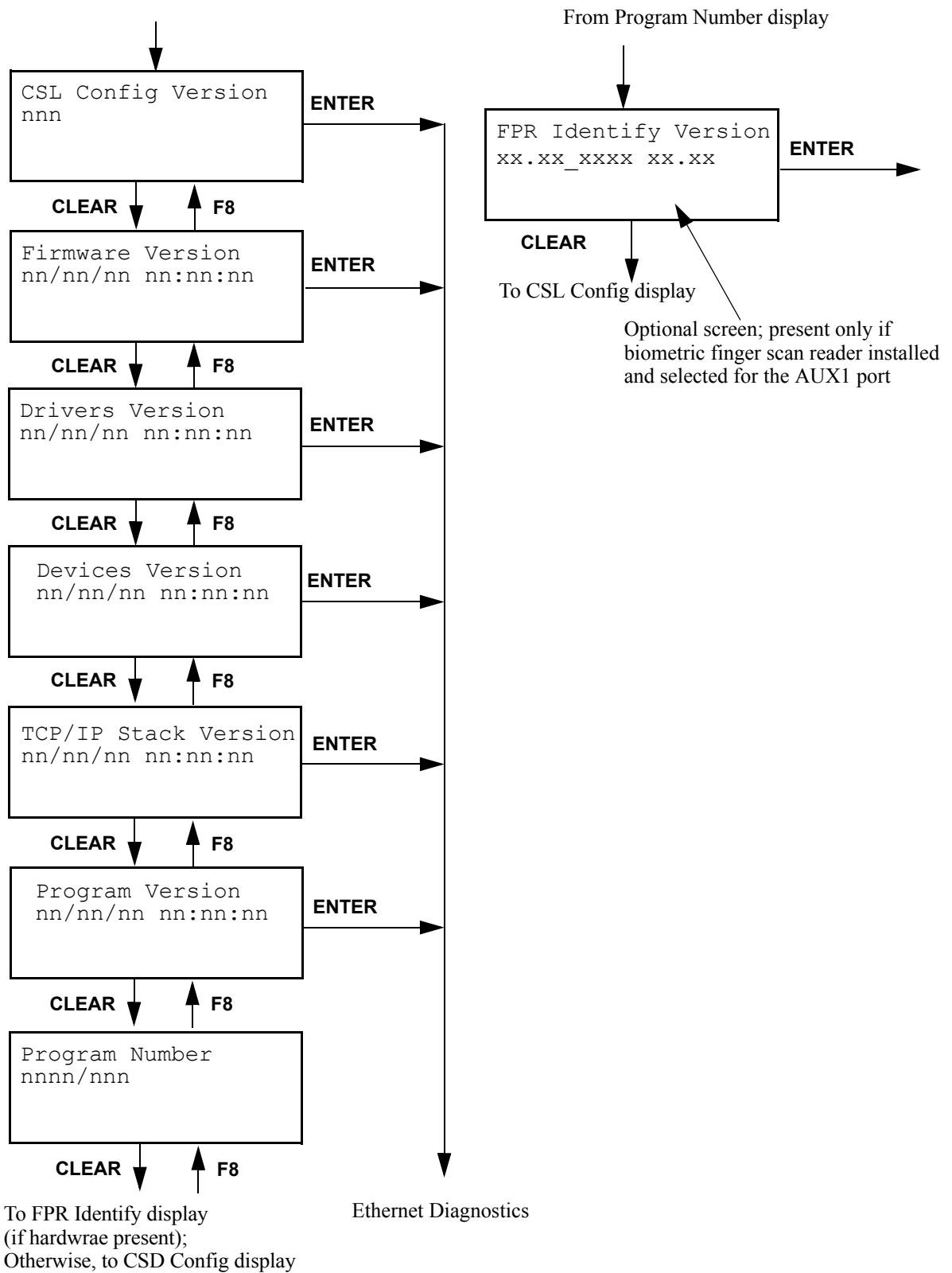
Figure 3-7: Sequence of Diagnostics Screens

```
              ┌───────────────────────────┐
              │   ATS Diagnostics Mode     │  ENTER
              │    Software Versions       │ ───────►
              └───────────────────────────┘
         CLEAR ↓        ↑ F8
              ┌───────────────────────────┐
              │   ATS Diagnostics Mode     │  ENTER
              │    Ethernet Diag           │ ───────►
              └───────────────────────────┘
         CLEAR ↓        ↑ F8
              ┌───────────────────────────┐
              │   ATS Diagnostics Mode     │  ENTER
              │    Serial Number           │ ───────►
              └───────────────────────────┘
         CLEAR ↓        ↑ F8
              ┌───────────────────────────┐
              │   ATS Diagnostics Mode     │  ENTER
              │    G-10 Number             │ ───────►
              └───────────────────────────┘
         CLEAR ↓        ↑ F8
              ┌───────────────────────────┐
              │   ATS Diagnostics Mode     │  ENTER
              │    RTC Diagnostic          │ ───────►
              └───────────────────────────┘
         CLEAR ↓        ↑ F8
              ┌───────────────────────────┐
              │   ATS Diagnostics Mode     │  ENTER
              │    RAM Amount              │ ───────►
              └───────────────────────────┘
         CLEAR ↓        ↑ F8
              ┌───────────────────────────┐
              │   ATS Diagnostics Mode     │  ENTER
              │    Exit Diag. Mode         │ ───────►
              └───────────────────────────┘
                  CLEAR ↓
```

Software Versions   The version numbers of the software installed in a Cyber Series terminal are displayed on a sequence of screens, as shown in Figure 3-8. If you select Software Versions diagnostics by pressing the **ENTER** key, the first screen shown in Figure 3-8 will appear. Cycle through the screens by pressing the **CLEAR** key. Move on to the Ethernet Diagnostics screen by pressing the **ENTER** key. Return to a previous screen by pressing the **F8** key.

Figure 3-8: Software Version Display Sequence

```
                                                    From Program Number display
           │
    ┌───────────────────┐                              │
    │ CSL Config Version │                              ▼
    │ nnn               │ ENTER              ┌───────────────────┐
    │                   │──────────▶         │ FPR Identify Version │
    └───────────────────┘                    │ xx.xx_xxxx xx.xx   │ ENTER
      CLEAR ▼    ▲ F8                         │                   │──────────▶
    ┌───────────────────┐                    └───────────────────┘
    │ Firmware Version  │ ENTER                CLEAR ▼
    │ nn/nn/nn nn:nn:nn │──────────▶
    │                   │                    To CSL Config display
    └───────────────────┘
      CLEAR ▼    ▲ F8                         Optional screen; present only if
    ┌───────────────────┐                    biometric finger scan reader installed
    │ Drivers Version   │ ENTER              and selected for the AUX1 port
    │ nn/nn/nn nn:nn:nn │──────────▶
    │                   │
    └───────────────────┘
      CLEAR ▼    ▲ F8
    ┌───────────────────┐
    │ Devices Version   │ ENTER
    │ nn/nn/nn nn:nn:nn │──────────▶
    │                   │
    └───────────────────┘
      CLEAR ▼    ▲ F8
    ┌───────────────────┐
    │ TCP/IP Stack Version │ ENTER
    │ nn/nn/nn nn:nn:nn │──────────▶
    │                   │
    └───────────────────┘
      CLEAR ▼    ▲ F8
    ┌───────────────────┐
    │ Program Version   │ ENTER
    │ nn/nn/nn nn:nn:nn │──────────▶
    │                   │
    └───────────────────┘
      CLEAR ▼    ▲ F8
    ┌───────────────────┐
    │ Program Number    │
    │ nnnn/nnn          │
    │                   │
    └───────────────────┘
      CLEAR ▼    ▲ F8
```

To FPR Identify display
(if hardwrae present);
Otherwise, to CSD Config display

Ethernet Diagnostics

Ethernet Diagnostics

If you request Ethernet diagnostic information and Ethernet hardware is present, the following display appears:

```
Ethernet Hardware
Detected Rev. 91
```

When you press the **CLEAR** key, the following screen will appear:

```
Ethernet MAC Address
XX-XX-XX-XX-XX-XX
```

Press the **CLEAR** key to proceed to the Physical Connection Mode display.

If no Ethernet hardware is available, the following screen appears:

```
Ethernet Hardware
Not Detected
```

Press the **CLEAR** key to proceed to the Serial Number display, or press the **ENTER** key to return to the previous diagnostic display. Press the **F8** key to back up to the Software Versions display.

Physical Connection Mode

Following the Ethernet MAC Address display, the following display will appear::

```
Phy. Connection Mode
xxxxxxxxxx
```

This display will show the type of connection mode set in the terminal. Press the **CLEAR** key to advance to the Unit ID display.

Unit ID

Following the Physical Connection Mode display, the following display will appear:

```
UNIT ID:
ATSnnnnnn
```

Press the **CLEAR** key to advance to the Static Client Host Port display.

Static Client Mode Host Port

Following the Unit ID display, the following display will appear:

```
Static Client Mode
Host Port: nnnnn
```

Press the **CLEAR** key to advance to the Host IP display.

Host IP

Following the Static Client Mode Host port display, the following display will appear:

```
HOST IP:
nnnnnnnnnn
```

Press the **CLEAR** key to advance to the Clock IP display.

Clock IP

Following the Host IP display, the following display will appear:

```
CLOCK IP:
nnnnnnnnnn
```

Press the **CLEAR** key to advance to the Subnet Mask display.

Subnet Mask

Following the Clock IP display, the following display will appear:

```
SUBNET MASK:
nnnnnnnnnn
```

Press the **CLEAR** key to advance to the Serial Number display.

Serial Number

The Serial Number display begins with a header screen:

```
ATS DIAGNOSTICS MODE
Serial Number
```

Press the **ENTER** key to display the terminal's serial number, the **CLEAR** key to advance to the G-10 number display, or the **F8** key to back up to the Ethernet Diagnostics display.

If you request serial number diagnostic information, the following display appears.

```
Terminal Serial #:
nnnnnnnnnn
```

Press the **CLEAR** key to proceed to the next diagnostic display, or press the **ENTER** key to return to the previous diagnostic display. Press the **F8** key to back up to the Ethernet Diagnostics display.

G-10 Number

The G-10 number identifies the PC board used in the terminal. Accu-Time Systems may ask you for this number if you contact the ATS support group for assistance.

If you request the G-10 number, the following display appears:

```
G10#:
nnnnnnnnnn
```

Press the **CLEAR** key to proceed to the next diagnostic display, or press the **ENTER** key to return to the previous diagnostic display. Press the **F8** key to back up to the Serial Number display.

RTC Diagnostic

If you request the RTC (real-time clock) diagnostic, the following display appears:

```
RTC Diagnostic
Date Format: MMDDYY
```

This screen shows the current setting used by the terminal for displaying the date. This example shows MMDDYY. Press the **CLEAR** or **ENTER** key to advance to the next RTC diagnostic screen:

```
RTC Diagnostic
DST Active
```

This screen shows you the current terminal setting for daylight savings time. Press the **CLEAR** or **ENTER** key to advance to the next RTC diagnostic screen:

```
RTC Diagnostic
MM/DD/YY hh:mm:ss
```

This screen shows the current values for the date and time stored in the terminal. (If the date display for your terminal is set for a different format, the display will reflect that setting.) The time that is displayed will increment once a second. Press the **CLEAR** or **ENTER** key to advance to the RAM Amount diagnostic display.

RAM Amount

If you request the amount of RAM available in the terminal, the following display appears:

```
RAM Amount Config:
nnnK
```

Press the **CLEAR** key to proceed to Exit Diagnostic Mode display, or press the **ENTER** key to display the amount of RAM available in each memory bank. Press the **F8** key to back up to the G-10 Number display.

If you press the **ENTER** key, a series of displays of the following form will appear:

```
RAM Blocks Bank n:
Largest Free: nnnnn
Total Free:   nnnnn
```

Press the **CLEAR** or **ENTER** key to step through the series of displays. After displaying information about the last memory bank, the next key press will advance to the Exit Diagnostic Mode display.

Exit Diagnostic Mode

The following screen will apear after the final diagnostics display:

```
ATS DIAGNOSTICS MODE:
Exit Diag. Mode
```

Press the **CLEAR** key to return to the beginning of the Diagnostics screen sequence, or press the **ENTER** key to exit Diagnostics mode. Press the **F8** key to back up to the RAM Amount display.

If you press the Enter key, the following display will appear:

```
   ATS TSD Mode
Exit TSD Mode
```

Press the Enter key to exit TSD mode.

Verifying Installation

This section tells you how to perform a simple query and answerback sequence between a Cyber Series terminal and its host. This will verify that installation is correct.

Accu-Time Systems, Inc. makes available two sample host applications: AccuComm and Accu-Engine. Your ATS representative can provide a copy. Using one of those applications, you can send a program download file to a terminal and monitor the terminal's response.

Test Download File

Use a text editor capable of inserting control characters (000 through 031_{10}, 000 through 17_{16}) to create a download file containing the lines:

> **`DR00⌃`**
>
> **`DM00⌃Test Message⌃10⌃`**
>
> **`DD00⌃`**
>
> **`ON00⌃`**

The ⌃ symbol represents a record separator character, 30_{10} or $1E_{16}$. Refer to Table 2 on page xi for a further guide to control character symbols. Those commands reset the terminal, specify a message to display, terminate the download, and put the terminal online.

Use AccuComm or Accu-Engine to send that download file to the terminal. The terminal should respond with a beep and the text "Test Message" should appear on the terminal display for 10 seconds.

Programming the Terminal

Cyber Series terminals recognize the Accu-Time universal command set (UCS). Those programming commands are explained in the *Universal Command Set Reference Manual*. For further information, refer to that manual.

Maintenance

The Cyber Series terminal is a low-maintenance data collection terminal. The only required procedure is periodic cleaning of the badge reader, finger sensor, or other input device.

Cleaning the Badge Reader

To clean the badge reader, swipe a cleaning card pre-moistened with isopropyl alcohol (rubbing alcohol) through the reader several times. Low usage readers should be cleaned monthly. High usage readers should be cleaned weekly.

Cleaning the Finger Sensor

ATS uses two different finger sensors in its terminals, one made by Bioscrypt and one made by Cogent. The following table identifies which type of finger sensor is used in each model of Cyber Series terminal:

	Bioscrypt Reader	Cogent Reader
Model Number of Terminal	CSS110, CSS111	CSS113, CSS114
	CSE210, CSE211	CSE213, CSE214
	CS1100, CS1101	CS1103, CS1104
	CS2100, CS2101	CS2103, CS2104
	CS3100, CS3101	CS3103, CS3104

Cleaning the Bioscrypt Finger Sensor

The Bioscrypt finger sensor used in Cyber Series biometric terminals is a rugged solid-state device designed to provide years of trouble-free service. It has been laboratory-tested with over two million touches and no measurable wear. Although the sensor has few maintenance and handling requirements, a few basic precautions in caring for it will help to ensure a high level of performance over the life of the sensor.

Oily deposits from fingers will accumulate on the surface of the finger sensor after repeated use. This will normally not have any effect on sensor operation, but you may want to clean the sensor from time to time for aesthetic reasons. In normal use, Accu-Time recommends cleaning the sensor once a month, or any time an oily residue is visible on the sensor surface.

To clean the sensor surface, follow these steps:

1. Remove electrical power from the finger sensor by disconnecting the terminal from its power source.

2. Use a household kitchen or window cleaner such as Formula 409™, Windex™, or a generic version of these cleaners.
   DO NOT use chlorine-based cleaners such as Clorox™ bleach, non-chlorine bleach, or chlorine-based bathroom or mildew cleaners. Chlorine-based cleaners will not necessarily affect the functionality of the fingerprint sensor, but they will discolor and could

damage the surrounding enclosure and peripheral components.
DO NOT use any solvents such as acetone, MEK, TCE, paint thinner, turpentine, etc.

3. Dampen a clean cotton swab (not soaking or dripping wet) with an approved cleaner. Gently rub the sensor surface and surrounding bezel with the wet cotton swab, rotating the swab to keep exposing a clean surface to the sensor. If the sensor is very dirty, you may need to repeat the cleaning operation using a new clean swab. Do not allow cleaner to drip or run down into the enclosure.
Do not use nylon brushes or scouring pads, abrasive cleaning fluids or powders, or steel wool. These items can damage the sensor.

4. After cleaning with the wet swab, gently rub the surfaces again with a clean dry cotton swab.

5. Reconnect the terminal power when cleaning is complete.

The border, called the drive ring, that surrounds the sensor surface is made of high-conductivity silver-filled epoxy. After an extened period of use, this border may become tarnished. Although this should not affect reader performance, you may with to clean the surface for the sake of appearance. To clean this surface, perform the following steps:

1. Remove electrical power from the finger sensor by disconnecting the terminal from its power source.

2. Using a new pink rubber pencil eraser, "erase" the surface of the drive ring to remove the tarnishing. **Do not rub the sensor surface with the eraser. Do not use an old eraser.**

3. Brush off the eraser dust with a clean dry cotton swab or tissue. **Do not remove the eraser dust with a wet or damp material. Do not scratch the sensor surface.**

4. Reconnect the terminal power when cleaning is complete.

Caring for the Bioscrypt Finger Sensor

The Bioscrypt finger sensor is designed to perform well even under harsh conditions. Nevertheless, some precautions should be taken to avoid damaging the sensor:

• The sensor can be damaged by a discharge of static electricity from your body. The finger sensor is typically surrounded by conductive plastic, however, which is connected to a ground plane. You should always touch the conductive plastic before touching the sensor to safely discharge any static electricity that may be present on your skin or clothing.

• Do not place the finger sensor close to a heat source, such as a radiator or hot plate. The sensor can be stored in temperatures ranging from -6° C to $+150^{\circ}$ C, and can operate in temperatures ranging from 0° C to $+60^{\circ}$ C.

In addition, the sensor should not be exposed to rain or excessive moisture. The sensor can operate within a range of 5% to 95% relative humidity (non-condensing). With the exception of the cleaners listed in the section Cleaning the Finger Sensor on page 3-32, do not put any liquids on the sensor.

- Do not subject the finger sensor to heavy shocks or vibrations.

- Do not allow the sensor to come in contact with metallic objects.

Cleaning the Cogent Finger Sensor

Clean the surface of the finger sensor with a lint-free cloth dampened with isopropyl alcohol.

Setting Up the DHCP Option Code

If you choose the DHCP setup option in a Cyber Series terminal see Dynamic DHCP on page 3-17), you need to configure a vender option code (default is 128) on your DHCP server so it will return a list of up to five IP addresses for valid host PCs to which the terminal can connect.

The data type for the option code values on the server should be *ip-address*, in an array up to five elements long. There must be at least one valild value. If there are more than five entries, the extra entries will be ignored. Cyber Series terminals cannot resolve URLs, so these entries must be numeric IP addresses.

You must also set the DHCP server so those IP addresses are always assigned to the valid host PCs.

Troubleshooting Guide

Problem: Terminal does not power up, the display and none of the status LEDs are lit.

Possible cause**:** No DC power applied

Solution: Ensure primary side of DC power pack assembly is plugged into a live AC outlet. Ensure secondary side of DC power pack assembly is plugged into the Time and Data Collection Terminal (DCT).

Solution: Test the outlet by plugging in another appliance.

Solution: If all else fails, replace the power pack assembly.

NOTE: If the battery backup option is installed, the terminal will operate for approximately 1.5 hours after the primary voltage source is lost. After this, the terminal will power off. The yellow low power indicator LED, located on the front of the terminal, will illuminate while operating in the battery backup mode.

Problem: Yellow Low Power indicator is lit.

Possible cause**:** Low DC power is attached.

Solution: Check the AC voltage.

Solution: Replace 12-volt DC power pack.

Problem: Terminal is not communicating with host computer.

Possible cause**:** Terminal to Host communication cable is defective or unplugged on either end.

Solution: Verify cable is tested and plugged into both ends. (Ensure cable termination guidelines and lengths are observed.)

Solution: Ensure the application package is loaded and running on the host.

Possible cause: Communication parameters (for example, baud rate) for the terminal do not match those of the host computer.

Solution: Ensure all communication parameters on host and terminal match.

Problem: Terminal does not accept badge data.

Possible cause**:** Bar code badge is not manufactured to proper specification.

Solution: Refer to vendor's specifications for manufacturing criteria.

Possible cause**:** Badge is being swiped in the wrong direction.

Solution: Ensure media faces to the right (away from the keypad).

Possible cause**:** Badge code format is not supported.

Solution: Ensure badge code is among those supported. Supported codes include most standard bar code formats including UPCA, 128, 3 of 9, 2 of 5, Interleave 2 of 5 and more, as well as IATA Track I and ABA Track II magnetic stripe input (program dependent).

Possible cause**:** Badge reader needs cleaning.

Solution: Swipe a pre-moistened (isopropyl alcohol) cleaning card through the reader several times.

Possible cause**:** Badge number does not exist in validation file.

Solution: See Supervisor

Problem: Terminal does not accept keypad input.

Possible cause**:** Keyed data does not exist in validation file

Solution: See Supervisor

Possible cause**:** Keypad connector is unplugged.

Solution: Test keypad in Test Mode.

If the suggested solutions have been tried and the problem still exists, contact the Accu-Time Systems' Product Service Department at (860) 870-5000 during normal working hours 9 AM to 5 PM Eastern time Monday through Friday. Prior to contacting Accu-Time, please have available the serial number and, if possible, the configuration number of the product.

NOTE: The terminal has no user serviceable parts. Accu-Time terminals must be operated within the parameters included in this manual. Any operation performed contrary to these parameters will void the warranty

Ethernet Troubleshooting Guide

Power-Related

Problem: The terminal display is blank (no characters or backlight).

Possible cause: The primary of the power pack assembly is not plugged into an AC-wall outlet, is not plugged into the terminal, or is the wrong voltage.

Solution: Check the outlet, both power pack connections, and that it is a 12VDC power pack.

Solution: If all else fails, replace the power pack.

NOTE: If the battery backup option is installed, the terminal will operate for approximately 1.5-hours when the primary voltage source is lost. After this, the terminal will power off. The yellow indicator light, located on the front of the terminal, will illuminate prior to the terminal blanking out.

Problem: The low power (yellow) indicator LED is activated.

Possible cause: Outlet or power pack problem.

Solution: Perform the above solution if the terminal display goes blank upon removal of the battery connector.

Communication-Related

Problem: The terminal is not communicating with the host.

Possible cause: Communication parameters were not previously set.

Solution: Place terminal in Test Mode and step through ACCU-RATE™ Test procedures. Your network administrator needs to provide the following:

- IP address to be assigned to the terminal

- IP address of the host to which the terminal can connect

- Network Mask (example 255.255.255.0)

- Gateway or Router address (if required)

Solution: If parameters are set, place terminal in Use Mode and perform a "ping" on the terminal.

Solution: Verify activity of LEDs located on the bottom of the terminal.

Solution: Verify that the cable is plugged into both ends (terminal and hub) and terminated to the appropriate eight- (8) position modular connector.

Solution: Verify that the single segment cable length is equal or less than the specified 100 meters (328 feet). The cable should also be a 10/100BASE-T category 5, twisted pair high-speed data transmission cable with both ends properly crimped.

Solution: Ensure application package is loaded and running on the host. Check the Ethernet diagnostic LEDs (refer to Figure 2-5):
BUSY: Terminal is BUSY processing
LINK: Terminal is LINKED to host

Problem: A previously working terminal now is not operational.

Possible cause: Cables not plugged in or host application software not operational.

Solution: Insure that all connections are made and that the host software application is functional. If possible, take a known working terminal, re-address it for this particular node and determine if the problem is related to the terminal, installation or host.

Problem: Terminal sends duplicate punches.

Possible cause**:** This behavior will occur if the terminal is set for AppAck but the host is not. Be sure communication protocols are set correctly.

If neither the standard nor Ethernet troubleshooting guide is of any help, please contact the Accu-Time Product Service Center, (860) 870-5000, for further assistance.

Appendix A   Proper Use of a Biometric Reader

This appendix gives guidelines for using the finger scanner on a Cyber Series biometric terminal. Proper use of the scanner will help ensure consistent and accurate finger scans. The illustrations on the next page summarize the three key steps:

- **TOUCH** - Although the scanner is robust, it can be damaged by static electricity discharge. The bezel surrounding the reader window is made of conductive plastic. When using the scanner, touch the bezel to discharge any static electricity before touching the reader window.

- **SLIDE** - Consistent finger placement is essential for consistent readings. The scanner bezel has a raised ridge just in front of the reader window. After touching the bezel, slide your finger forward over the raised ridge until the ridge locks into the depression formed by your first finger joint. Try to position your finger the same way each time you use the reader.

- **PRESS** - When your finger joint is in position on the raised ridge, bend your finger slightly and press the pad of your finger down against the reader window with moderate pressure.

A finger may not scan properly if it is extremely dry. If that problem occurs, it may help to rub the finger across one's forehead or beside one's nose to pick up a bit of natural skin oil. The finger should not be wet.

Proper Use of the Finger Scanner

Discharge any static electricty

TOUCH
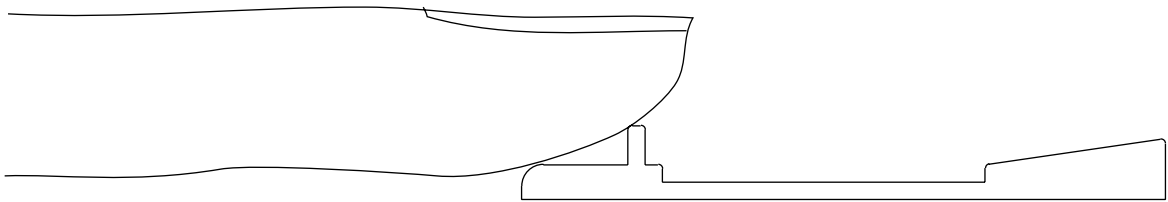
Slide your finger forward until the first knuckle joint goes over the raised ridge on the front of the reader. Try to put your finger in the same position each time you use the reader.

SLIDE FORWARD

PRESS DOWN
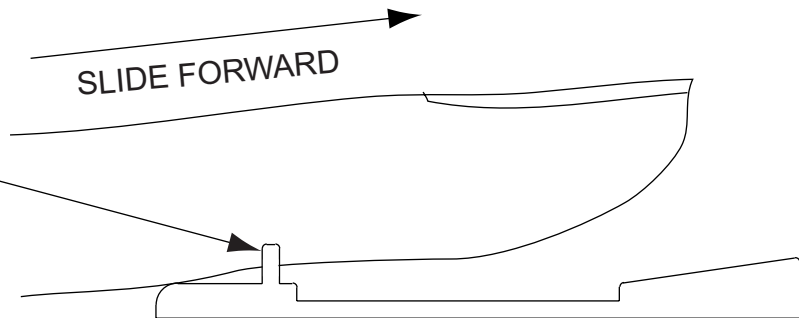
Slightly bend your finger joint to press the pad of your finger down onto the reader glass with moderate pressure.
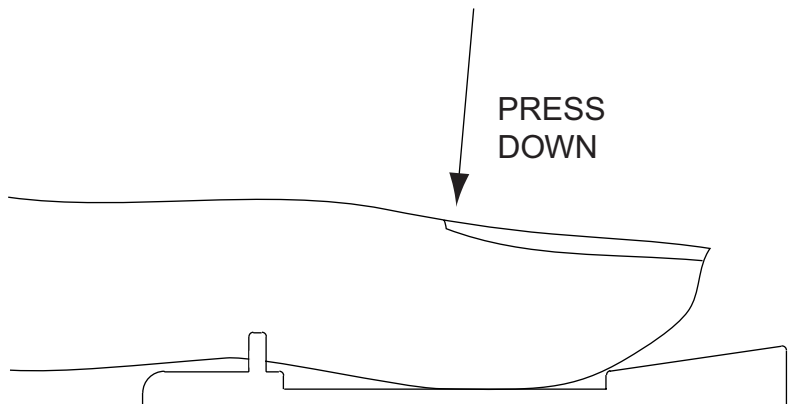
Correct and Incorrect Finger Placement
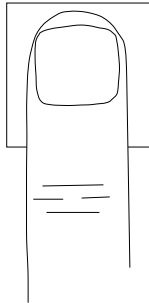
Correct
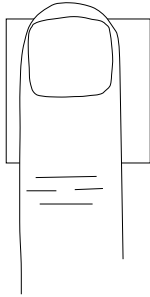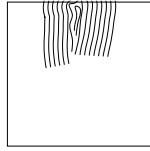
Too Far Forward
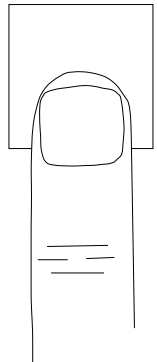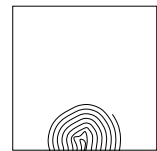
Too Far Back

Rotated

Too Far to Side
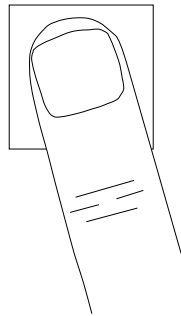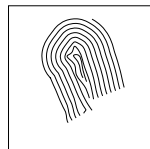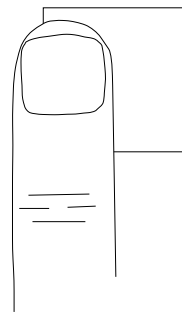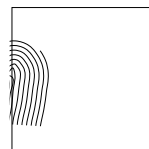
Appendix B *Updating the Firmware*

Updating Terminal Firmware

ATS periodically releases updated firmware for Cyber Series terminals. Because the firmware is stored in the terminal's flash memory, you can easily upgrade your Cyber Series terminal to the latest revision of the firmware.

Contact your ATS representative to find out if a newer firmware revision is available for your terminal. When you call, be ready to provide the program number of the currently installed firmware. The currently installed flash program number is shown as part of the initial display screen when you first power on the terminal. See Figure 3-1 on page 3-1.

ATS will send you a firmware image file.

BE ABSOLUTELY CERTAIN YOU HAVE THE CORRECT FILE FOR YOUR TERMINAL!

If you attempt to load an incorrect flash image into your teminal, it will become completely inoperative and will have to be returned to ATS for repair.

After you receive the proper flash image, you download it to the terminal exactly as you would download any program image. For example, you can use the ATS Accu-Engine program to do the download. Create an Accu-Engine script file to do the download, specifiying the name of the flash image file and including its file type of `.CFL`. Using Accu-Engine, establish a communication link between the terminal and a host PC and execute the script.

Accu-Engine will download the flash image to the terminal, displaying status message on the terminal's display screen as it does so. **Do not interrupt the download process!** When the download is complete, the terminal will return to its initial display. Check to be sure the new program version number appears in the display.

Updating Biometric Reader Firmware

If your terminal has a biometric finge scan reader, you can update the firmware that controls the reader, just as you can update the terminal's firmware. Because the firmware is stored in the biometric reader's flash memory, you can easily upgrade your biometric reader to the latest revision of the firmware. (This does not apply to finger geometry readers.)

Contact your ATS representative to find out if a newer firmware revision is available for your biometric reader. When you call, be ready to provide the program number of the reader's currently installed firmware. You can get the reader's program number by using the terminal's Diagnostics mode, as described in the section , and looking at the `FPR Identify Image` screen. (Depending on the particular type of reader installed, the screen may read `FPR Verify Image`.)

ATS will send you a firmware image file. (Occasionally, there may be multiple files.) Verify that you have the proper flash image for your reader.

After you receive the proper flash image, you download it to the reader exactly as you would download any program image to the terminal. For example, you can use the ATS Accu-Engine program to do the download. Create an Accu-Engine script file to do the download, specifying the name of the flash image file and including its file type of `.FFL`. Using Accu-Engine, establish a communication link between the terminal and a host PC and execute the script. If you received multiple files, be sure to download them in the correct order.

Accu-Engine will download the flash image to the reader. **Do not interrupt the download process!** When the download is complete, the terminal will return to its initial display. Go to Diagnostics mode and check to be sure the new reader program version number appears in the display.

Appendix A   Proper Maintenance and Use of a Biometric Finger Geometry Reader

This appendix gives guidelines for maintaining and using the finger geometry reader on a Cyber Series biometric finger geometry terminal. Proper maintenance and use of the reader will help ensure consistent and accurate results.

Maintenance

The Cyber Series finger geometry terminal is a nearly maintenance-free data collection device. The only required procedure is periodic cleaning of the badge reader, biometrics finger platen, mirror, and lenses.

Badge Reader

To clean the badge reader, swipe a pre-moistened (isopropyl alcohol) cleaning card through the bar code or magnetic reader several times. Low usage readers should be cleaned monthly. High usage readers should be cleaned weekly.

Finger Platen

Remove any finger marks and dust from the finger platen (the surface the fingers are placed on) with a soft lint-free cloth. Wet the cloth with a mild dishwashing liquid or comparable cleaneing solution and wipe the platen surfaces gently. Polish using a dry soft cloth. You should clean the platen about twice a month, or whenever there is a visible build-up of dust and dirt.

Avoid the following when cleaning the platen assembly:

- Scraping or scratching the surfaces.

- Using cleaners containing ammoniating abrasive cleaners or steel wool, etc.

- Spraying cleaner directly onto the platen.

- Using highly alkaline cleaners.

- Using gasoline (petrol), benzene, acetone, or similarly aggressive solvents likely to attack the plastic surfaces.

Lenses and Mirror

The mirror that is visible in the back of the camera as well as two lenses that are hidden from view should be cleaned periodically to ensure proper operation of the terminal. Use the special cleaning brush supplied with the terminal.

To clean lens #1, insert the cleaning brush into the front of the camera near the left side. move it up, then pull it gently forward and down until the small hooked brush stops against the lens plate as shown in the cross-section view of . Hold the brush handle horizontally and gently move the brush left and right across the lens to clean it. The brush will be able to move slightly less than halfway across the width of the camera before it is stopped by the imaging block, and shown in the front view.

To clean lens #2, insert the cleaning brush on the right-hand side of the camera opening and repeat the operation.

To clean the mirror, use the long cleaning brush on the end of the handle to dust the mirror. This will remove any dust. If there are smudges on the mirror, wet a soft lint-free cloth with a mild dishwashing liquid or comparable cleaning solution and wipe the mirror surface gently. Polish using a dry soft cloth. You should clean the mirror whenever there is a visible build-up of dust and dirt.

Figure A-1: Cleaning CS2102 Lenses
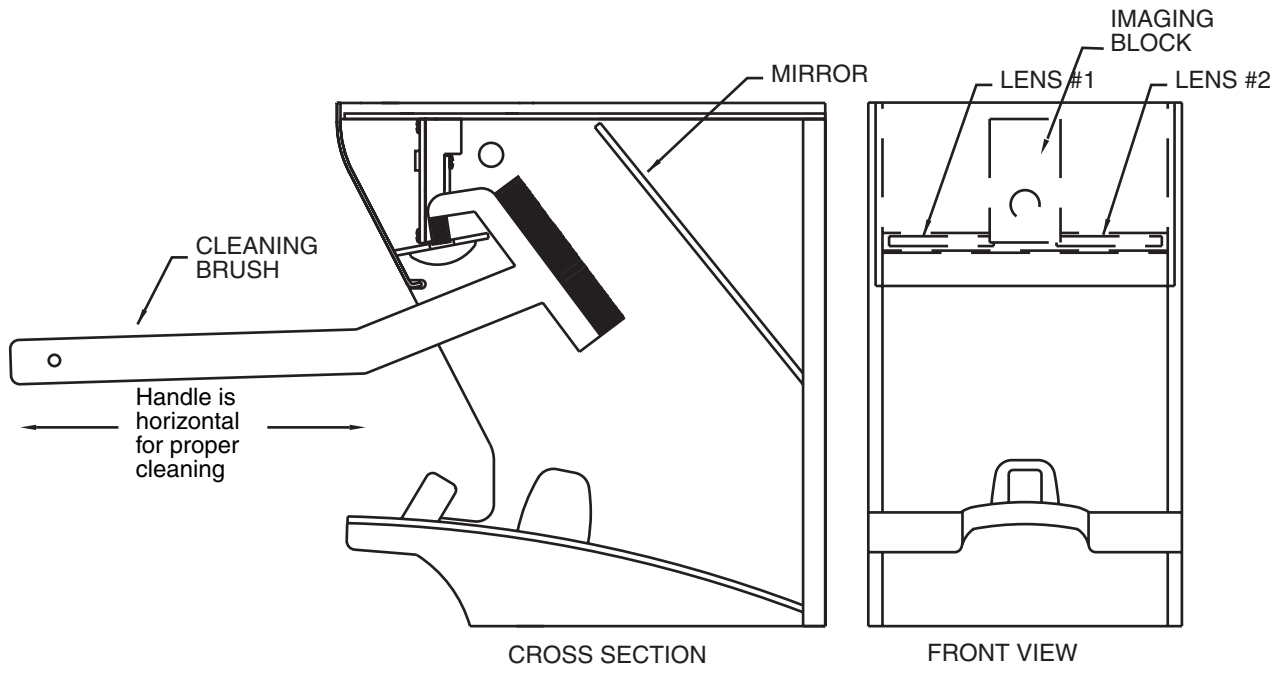
Correct and Incorrect Finger Placement

Correct Finger Placement:

- Place the index and middle fingers (recommended) flat on the platen, straddling and touching the pegs.
- Fold the thumb around the third and fourth fingers.
- The junction between the two fingers should be touching the smaller front peg.
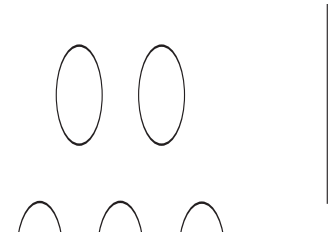
Too Far In:

- If the top LED is on, the fingers are pushed too far in. Pull back a bit.
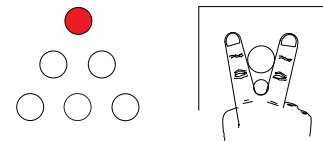
Too Far Out:

- If the bottom center LED is on, the fingers are not inserted far enough. Slide them in a bit more.
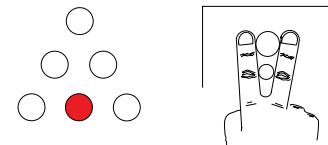
Left Not Touching:

- If the left center LED is on, the left finger is not touching the pegs.
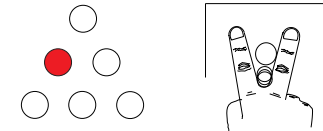
Right Not Touching:

- If the right center LED is on, the right finger is not touching the pegs.
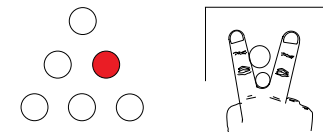
Angled Left: :

- If the lower left LED is on, the fingers are angled from left to right. Ensure that the fingers enter the reader directly from the front.
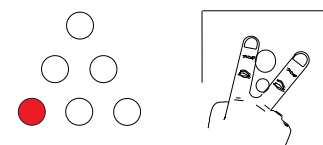
Angled Right:

- If the lower right LED is on, the fingers are angled from right to left. Ensure that the fingers enter the reader directly from the front.
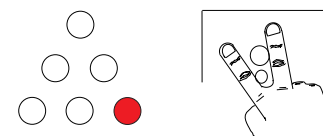
Glossary

Term	Description
AppAck	Application acknowledgement. See Ethernet Communication Acknowledgements on page 1-7,
Application	A program designed for a specific use or task to improve a method or resolve a problem.
Command	A string of characters that tells an application to perform a certain action.
Configuration File	Used to set or reconfigure a terminal's operating parameters.
Control character	An ASCII character code in the range 000 to 255_{10} (000 to $1F_{16}$). Characters in this range are non-printable and are represented in this manual using symbols. See Character Representations on page i-xi.
Default	A value or setting that is assigned by the manufacturer and remains until changed by the user. A terminal can be completely reset to the default values.
Download	A download is the initial data that the host transfers to the terminal. The application is controlled by the download, therefore, after the download is complete the application can begin. Data can then be entered into the terminal.
Function Key	A key on the keypad that may activate a function of an application when pressed.
Handler	How data is presented to the application. i.e.: keypad, wand, badge, etc.

Term	Description
Mask	A pattern of characters used to control portions of another pattern of characters.
Padding	Characters added to fill the predesignated character length of a prompt. A text string is typically padded with trailing spaces. A number is typically padded with leading zeros.
Prompt	A message shown in the terminal display to indicate that the terminal is ready to receive input.
TWAA	Two-way application acknowledgement. See Ethernet Communication Acknowledgements on page 1-7.
Validation File	A data file, usually stored in the terminal, against which input data input is tested.

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