

# TA620™

## DATA COLLECTION TERMINAL

- **TERMINAL INSTALLATION**
- **OPERATOR INTERFACE**
- **CONFIGURATION**
- **INTERNAL MODEM OPTION**
- **INTERNAL ETHERNET OPTION**
- **INTERNAL BAR CODE READER OPTION**
- **MEMORY EXPANSION OPTION**
- **ENHANCED DISPLAY OPTION**

# INSTALLATION AND OPERATION GUIDE

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### FCC Warning:

Note: 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. The equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instruction manual provided, it may cause interference with the radio and television reception in a residential area, in which case the user will be required to correct the interference at his or her own expense.

If this equipment causes interference, try to correct the problem by:

- ☞ Reorienting the receiving antenna.
- ☞ Relocating the terminal with respect to the receiver with which it interferes.
- ☞ Plugging the terminal into a different AC outlet, and putting the terminal and receiver on different branch circuits.

### FCC Compliance (on hardware equipped with modem):

This equipment complies with Part 68 of the FCC rules. Upon request, furnish the following information furnish the following information to the telephone company.

- ☞ Manufacturer: Time America, Inc.
- ☞ Model: TA620 Data Collection Terminal
- ☞ FCC registration number: 4G3USA-21602-DT-E
- ☞ Ringer equivalence: 0.7B
- ☞ USOC modular telephone jack: RJ11

### Lithium Battery Caution:

The circuit board on this terminal contains a lithium battery to protect data or programs stored in the Random Access Memory (RAM). Do not, under any circumstances, attempt to replace the lithium battery in the terminal. Failure to comply may invalidate your warranty. Only qualified personnel wearing proper eye protection should perform battery replacement.

**CAUTION:** Danger or explosion could occur if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries per manufacturer's instructions.

## Preface

### Read This First

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#### About This Manual

This manual is the factory documentation sent with each new TA620 Data Collection Terminal that explains how to install, operate, configure, and upgrade the unit.

#### Publication Date and Revision

The publication date of this manual is April 1, 2003, and is designated as Revision C.

#### Changes and Updates

The contents of this manual are subject to change without notice. Any user of this manual should verify from Time America, Inc. that the information is current and accurate. Time America, Inc. assumes no responsibility for the use of information and procedures that have changed or are no longer in effect.

#### Procurement

Copies of this manual can be obtained through your local sales representative.

#### Customer Comments

Every effort was made to ensure that the information contained in this manual was accurate at the time of publication. Report any observed errors or omissions to, Time America, Inc. Attn: Technical Publications, 51 West Third Street, Suite 310, Tempe, AZ 85281.

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# Chapter 1

## Introduction

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Congratulations! The TA620 Data Collection Terminal you've purchased represents a true technological advancement in the time & attendance and data collection field. Its advanced design offers exceptional reliability and flexibility and contains many features not found on conventional data collection terminals. This manual contains the necessary technical and reference information needed to properly install, configure, operate, and upgrade your terminal.

### Product Overview and Features

The TA620 is a full-featured data collection terminal that allows several forms of data input and communication methods. It provides an easy and cost effective means of recording employee time & attendance and automating the collection of Job Costing/Cost Accounting data.

Some of the major features of the terminal are:

1. **Five forms of data input.** This includes: Keypad, Magnetic Stripe, Bar Code (visible and infrared), Bar Code Wand, and External Access Readers.
2. **Four forms of communication.** This includes: RS485 Local Area Network (LAN), Internal and External Modem, Ethernet, and Direct RS232. Depending on the communication method used, the terminal can communicate at baud rates from 300 bps to 10 mbps.
3. **Parallel printer support.** A unique feature of the TA620 is an integrated 25-pin parallel port, which supports most standard parallel printers.
4. **Durable construction.** The TA620 is constructed of a special impact resistant plastic material that is lightweight and attractive. The terminal's mounting bracket is designed for both wall hanging and desktop installations.
5. **Feather touch membrane keypad.** This type of keypad creates a water tight seal and allows for entry of both upper and lower case alphanumeric characters as well as special characters such as a dash (-), period (.), and spaces. It represents the latest technology available to provide you with years of trouble free operation.
6. **40 character (2 lines x 20 characters) backlit LCD display.** This type of display allows twice the amount of information to be viewed at once compared to some terminals.

7. **Internal lithium battery.** The internal lithium battery provides constant power to the terminal's memory to keep your data safe in the event of a complete power outage. The internal battery not only saves the memory, but also keeps the time and calendar accurate. Once power resumes, the battery automatically charges.
  - NOTE: With the addition of an optional external battery backup, all terminal functions remain 100% operational if power is removed.
8. **Accept/Reject tones.** The TA620 has two distinct *accept/reject* tones. When an employee does not follow proper terminal operation, he/she not only receives an error message, but also receives a series of low, short reject tones. A correct entry is followed by a high, short accept tone.
 

For noisy environments, an optional feedback enhancer can be added to provide a green "accept" light, red "reject" light, and amplified accept/reject tones.

  - ☞ NOTE: The feedback enhancer cannot be used with the Signal/Access control feature (described on the next page) since both utilize the same signal port.
9. **Ten programmable function keys:** In addition to the [IN] and [OUT] keys, each function key (0-9) on the keypad can be programmed to collect up to four items of data, such as Job numbers, Tip amounts or Quantities for Piece Wage. The data input source for each function key can be restricted to the keypad, magnetic stripe or bar code.
10. **Background polling:** This feature allows employees to punch at the terminal while communication is taking place with the host computer.
11. **Supervisor editing.** Using a special *supervisor badge*, the terminal enters *supervisor mode*, which will allow supervisors to add missing punches, delete erroneous punches and even record "leave exceptions" such as sick days. This is very useful in situations where supervisors do not have access to a computer or workstation.
12. **Bells/Access control.** When used with the optional Signal Control Relay (SCR), the TA620 can activate a 10 amp, 110-volt AC circuit or a dry contact relay (with a maximum load of 5 amps, 110 volts AC). This feature is typically used to ring bells, open doors, unlock entry/exit turnstiles, etc. The SCR can be wired as a "normally open" or "normally closed" relay, depending on the door lock/bell hardware requirements.
13. **External access readers.** The TA620 can interface with an external mag-stripe, barcode, or RF proximity reader to allow remote access. This feature is useful in situations where access to the terminal is not desirable.
14. **Employee Lockout Profiles.** This feature eliminates unauthorized overtime by scheduling when employees can use the terminal. You can lockout tardiness, early birds, and force late arrivals and early departures to notify the supervisor in order to punch.

You can also control punching by time of day, day of week, and even give specific messages to employees as to why they were locked out.

- NOTE: Supervisors may be allowed to override a lockout. When used with access control, you can also define schedules for employee access.

15. **Data input validation.** This feature eliminates keystroke errors and increases job-costing accuracy by allowing you to download tables of valid entries. When an employee keys or swipes a number in response to your prompt, the entered number is compared to the table of valid numbers downloaded. The terminal will reject bad entries and accept valid ones, while optionally displaying the particular item's name. This feature may also be used to restrict employees from entering unauthorized departments.
16. **Employee messaging.** After an employee enters his/her badge or ID number (via keypad or badge swipe), the terminal can display a 16-character message to that employee. Messages such as employee's name, hours worked, or work location can be downloaded to the terminal.
17. **Enhanced memory.** While most data collection terminals come standard with 32K or 64K of Random Access Memory (RAM), the TA620 comes standard with 128K. This allows two to four times the amount of information to be stored in the terminal at no extra cost. Memory can also be upgraded to 256K.

## Configurations

The TA620 Data Collection Terminal is offered in various configurations.

All terminals are equipped with:

- An internal magnetic stripe reader
- An RS232 port (RJ11 modular connector).
- An RS485 port (RJ11 modular connector) if the terminal is a LAN unit or an Ethernet port (RJ45 connector) if the terminal is an Ethernet unit. If the modem option is installed, the modem line plugs into the RS485 port position. The markings **RS485** on the terminal are covered with a label that reads **MODEM**.
- An accessory port for an optional bar code wand, signal enhancer, and external relay control (for door access and bell ringing).
- A 25 pin standard parallel port (to attach a parallel printer).

### General Specifications

1. Case dimensions: 8.7in. (23 cm) wide x 6.1in. (16 cm) high x 2.3in. (6 cm) deep. Clamshell construction of 0.125 in. (3 mm) thick Polycarbonate/ABS injection molded and flame retardant plastic. Reversible mounting bracket and access panel to protect I/O ports.
2. Microprocessor: Zilog Z-180 operating at 6.144 MHz.
3. Multi-layer main logic board with internal ground and power planes.
4. Memory: 64K Read Only Memory (ROM) and 128K Random Access Memory (RAM). RAM is lithium battery backed and expandable to 256K.
5. On-board Real Time Clock Chip (RTCC) accurate to = 10ppm.
6. Display: 40 character (2 lines x 20 characters) dot matrix LCD.
7. Keypad: Alphanumeric *Feather Touch* membrane design.
8. Magnetic Card Reader: Track 2 ABA head for reading standard credit card format magnetic stripes.
9. Internal Bar Code Reader (optional): For visible or infrared 3 of 9 bar codes.
10. Port # 1: RS232 using a 6 position (4 contact) RJ11 modular connector.
11. Port # 2: RS485 (LAN)/Modem ports using a RJ11 modular connector or an RJ45 modular connector for Ethernet use.
12. Parallel Port: Standard 25-pin DB connector.
13. Internal Modem (optional): Bell212A (1200bps) and 103 (300bps), CCITT V.22 bis (2400bps), and V.22 (1200bps), asynchronous, licensed for use over public telephone lines.
14. Internal Network Interface Card (NIC) for use on a Local Area Network or Wide Area Network.
15. Internal multi-frequency piezo electric buzzer.

16. External Accessory Port: 6-pin circular DIN connector for an optional bar code wand, signal enhancer, and an external signal control relay box to control various external devices.
17. Power: Wall mount transformer, 9 Volts AC or DC, 500 mA minimum, with secondary plug size 2.1 x 5.5 mm.

## Chapter 2

# Installation

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### Location/Site Requirements

The TA620 can be installed in any normal office or factory environment. Controlled environments are not required for proper operation of the terminal. However, installing and operating the terminal under adverse conditions may affect its functionality and void the manufacturer's warranty.

### Precautions

Do not operate the terminal under the following conditions:

- Extremely high or low temperature.  
[Operating temperature range: 32-104 degrees F (0 to 40 C)]  
[Storage temperature range: 0-158 degrees F (-18 to 70 C)]
- Extremely high humidity.  
[Humidity range: 0 to 90% RH non-condensing]
- Unstable environments (abrupt temperature and/or humidity changes).
- Exposure to direct sunlight.
- Areas of high dust concentration.
- Areas with chemical fume concentration.
- Areas with extreme vibration or unstable surfaces.

### Maintenance

The TA620 does not require any routine or periodic maintenance. However, reasonable care of the terminal will extend its life and ensure proper operation. Avoid spilling liquids on the terminal.

Do not, under any circumstances, attempt to replace the lithium battery in the terminal. Lithium batteries have a very long shelf life and typically do not require replacement. If battery replacement is necessary, qualified personnel must do it.

## Installation

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### Unpacking and Inspection

Open the shipping cartons and remove the contents. Place the contents on a clean and adequately protected working surface. Inspect the terminal and all accessories for damage. Report any damage or shortages to the shipping company.

The following items shown in Figure 2-1 should be present:

- Power supply
- TA620 Data Collection Terminal
- Configuration badge (Magnetic Badge Encoded with "000000000")
- Four (4) mounting screws
- Installation and Operation Guide

### Installation Tools

The following tools may be necessary for installation:

- ¼" nut driver (the bit holder for nearly all electric screwdrivers can be substituted.)
- Flathead screw driver
- Pencil, pen, or scribe (for marking)
- Small level (optional)
- Electric or hand drill
- Wire cutters (for communication cable installation)
- Wire strippers (for communication cable installation)
- Phillips screw driver (for communication cable terminal connections)

## Communication Methods

Listed below are various communication methods that may be used to communicate with the TA620 Data Collection Terminal. Select the appropriate method, go to the page referenced, and begin the installation process.

### Local Communications

| <u>Method</u> | <u>Purpose</u>                                                                                                          | <u>Page #</u> |
|---------------|-------------------------------------------------------------------------------------------------------------------------|---------------|
| Serial        | For single terminal installations up to 100 feet away.                                                                  | 11            |
| LAN           | For single terminal installations over 100 feet away (but less than 4000 feet) and for multiple terminal installations. | 12            |

### Remote Communication

| <u>Method</u>  | <u>Purpose</u>                                                                                                                   | <u>Page #</u> |
|----------------|----------------------------------------------------------------------------------------------------------------------------------|---------------|
| Internal Modem | For single or multiple terminal installations with remote locations using standard telephone lines and direct access extensions. | 14            |
| External Modem | For remote communications with terminals not purchased with internal modem option.                                               | 17            |
| Remote LAN     | For remote locations using only one telephone line to communicate with multiple terminals.                                       | 18            |

### Network Communication

| <u>Method</u>     | <u>Purpose</u>                                                                                                                                                             | <u>Page #</u> |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Ethernet 10base-T | For single or multiple terminal installations with local or remote locations via a local area network/wide area network that is capable of supporting static IP addresses. | 19            |

## Installation Overview

To properly install your terminal, follow the recommended installation sequence of events listed below:

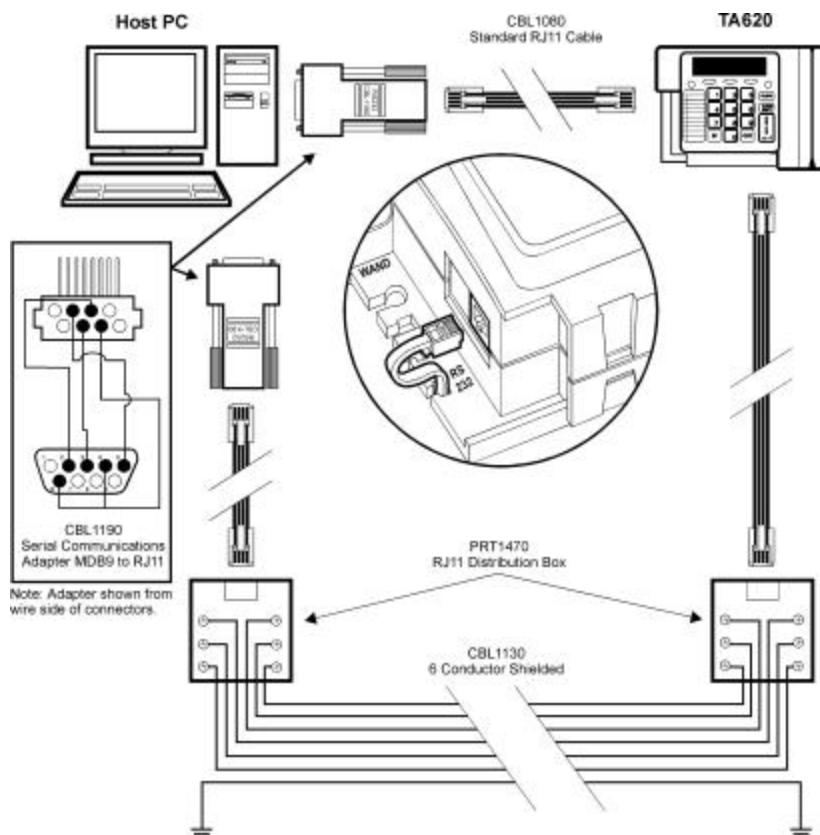
### Sequence of Events

| <u>No.</u> | <u>Task.</u>                                                                                                                                                                                                                                                                                                                                                                                             |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1          | Determine the locations for the terminals. Choose locations based -- not only on ease of employee access, but also on the security of the terminal. Also, ensure that the distance from the terminal to the PC does not exceed the maximum length for the desired communication method.                                                                                                                  |
| 2          | Choose the appropriate communication method and install communications cabling per the applicable diagram. <ul style="list-style-type: none"> <li>• Serial Communication</li> <li>• LAN Communication</li> <li>• Ethernet Communication</li> <li>• Internal Modem Communication</li> <li>• External Modem Communication</li> <li>• Remote LAN Communication</li> <li>• Ethernet Communication</li> </ul> |
| 3          | Install the terminal's wall mount and hang the terminal.                                                                                                                                                                                                                                                                                                                                                 |
| 4          | Plug the terminal's power supply into a UL listed surge protector.<br><b>Failure to include a UL listed surge protector in the installation will void the terminal's warranty.</b>                                                                                                                                                                                                                       |
| 5          | Connect a serial or parallel printer (if used) to the terminal.                                                                                                                                                                                                                                                                                                                                          |
| 6          | Connect any accessories (if used) to the terminal. Accessories include barcode wands/guns, signal enhancers, external slot readers, and signal control relays.                                                                                                                                                                                                                                           |
| 7          | Power up the terminal.                                                                                                                                                                                                                                                                                                                                                                                   |
| 8          | Install the access panel.                                                                                                                                                                                                                                                                                                                                                                                |



## INSTALLATION PROCEDURE – SERIAL COMMUNICATIONS

This procedure is designed for serial communications and is used for single terminal installations. It connects the TA620 Data Collection Terminal directly to the host computer (PC) with an RS232 serial cable. Each RS232 serial port on the PC can support one serial connection to a terminal up to 100 feet away.



**Figure 1: Serial Communication Installation**

**Note:** When installing a single terminal using RS232 communications, either of two wiring configurations may be used; a standard RJ11 cable up to 50' in length may be run from the terminal directly to the host PC, or in some cases six-conductor shielded cable may be run between two RJ11 distribution boxes. In the later case, two standard RJ11 cables would then connect both the host PC and the terminal to the RJ11 distribution boxes. In either case, an adapter is required to connect the standard RJ11 cable to the host PC. Use either CBL1180 for PCs with a 25 pin serial port, or CBL1195 for PCs with a 9 pin serial port.

## INSTALLATION PROCEDURE – LAN COMMUNICATIONS

This procedure is designed for LAN communications and is used for single terminal installations over 100 feet away and for multiple terminal installations. It connects the TA620 Data Collection Terminal(s) directly to the host computer (PC) with an RS485 LAN cable.

- **NOTE:** Do not confuse terminal's LAN communication system with the LAN (Ethernet connection) installed on your PC. They are different and do not operate in conjunction with each other.

The terminal's RS485 LAN serial port is located on the lower left side of the chassis. It is a 6-position, 4-pin port that accepts a male RJ11 modular connector and is identified by the marking **RS485**.

Each RS232 port on the PC can support up to 32 LAN terminals with up to 4,000 feet of cable. The RS232 port on the PC must be used in conjunction with an RS232/RS485 converter to complete the connection.

- **NOTE:** An internal RS485 driver card installed in the PC can support up to 32 LAN terminals with up to 5,000 feet of cable.
- When wiring a network, always follow the electrical wiring codes in your area. The LAN cable (RS485 Wire) shown in Figure 2 is a shielded CAT5 cable.

Typical components used in a LAN installation are:

- RJ11 Distribution Boxes (one for each terminal plus one for the PC connection)
- Standard RJ11 Modular Cables (one cable is supplied with each terminal, you will need one additional cable for the connection from the PC to the first distribution box)
- RS485 Wire (two conductor CAT5 shielded)
- Communications Converter (RS232 to RS485)

1. Install the terminal per the diagram shown in Figure 2.

- NOTE: Part numbers to all components used are shown below.

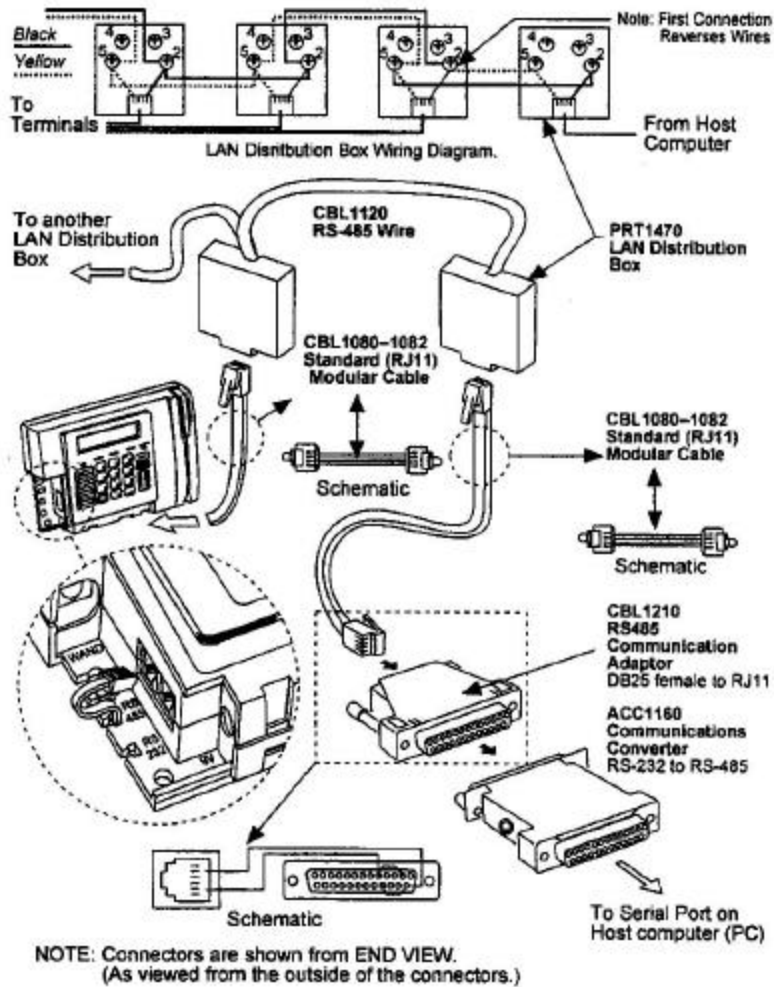


Figure 2: LAN Communication

INSTALLATION PROCEDURE – INTERNAL MODEM COMMUNICATIONS

This procedure is designed for internal modem communications and is used for single or multiple terminal installations at remote locations. It enables TA620 terminals equipped with internal modems (optional feature) to communicate with a host computer (PC) with an internal or external modem attached to it.

The terminals connect directly to a regular telephone line and may be located at remote locations or at the main polling site using standard telephone lines and direct access extensions.

- NOTE: To prevent damage to the terminal, do not use a telephone system with digital lines. If necessary, purchase a digital-to-analog converter in cases where analog lines are not available. Most digital phone systems allow the administrator to change the state of certain lines to analog.

1. Install the terminal per the diagram shown in Figure 3.

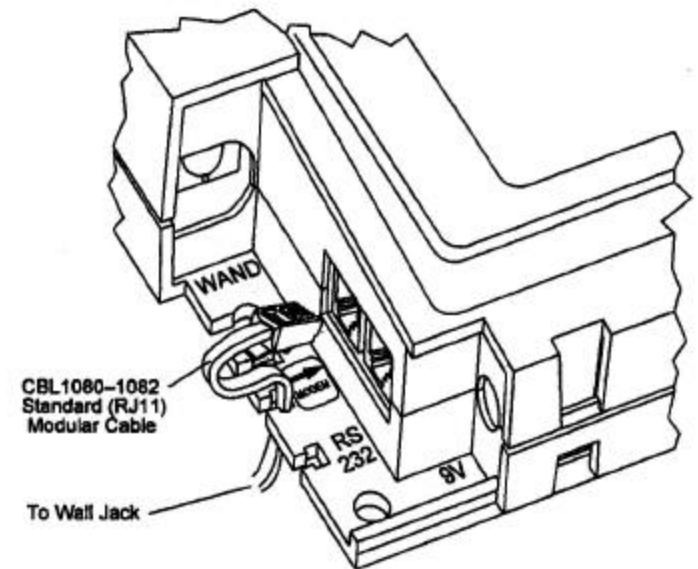
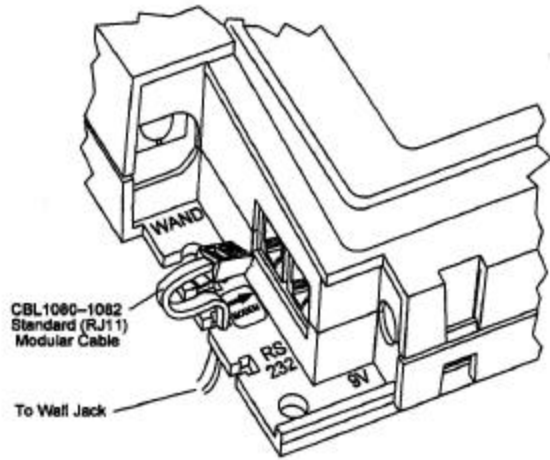


Figure 3: Internal Modem Communication

Terminals equipped with a modem port, will not have an RS485 port. The modem port is located in the lower left corner of the terminal. The port is a 6-position, 4-pin female port that accepts a male RJ11 modular connector.

Although the port is identified **RS485** (chassis marking), a self-adhesive label that reads **MODEM** is applied over the existing chassis marking as shown in Figure 4.

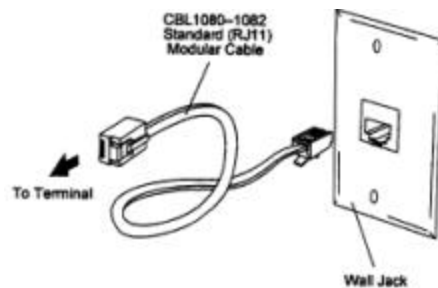


**Figure 4: Modem Label Application**

The internal modem is compatible with Bell 103/212A and CCITT V.21/V.22 devices. It supports both asynchronous and synchronous (SDLC) communication and can communicate over telephone lines at 300, 1200, and 2400 baud.

When using the installation procedure for internal modem communications, ensure that the following tasks are accomplished:

- Route and connect one end of the telephone cable to the terminal (refer to Figure 4)
- Route and connect the other end of the telephone cable into your RJ11 modular telephone wall jack (refer to Figure 5).



**Figure 5: Telephone Wall Jack Connection**

- **NOTE:** If an RJ11 modular wall jack is not available, obtain an adapter from your local telephone company.

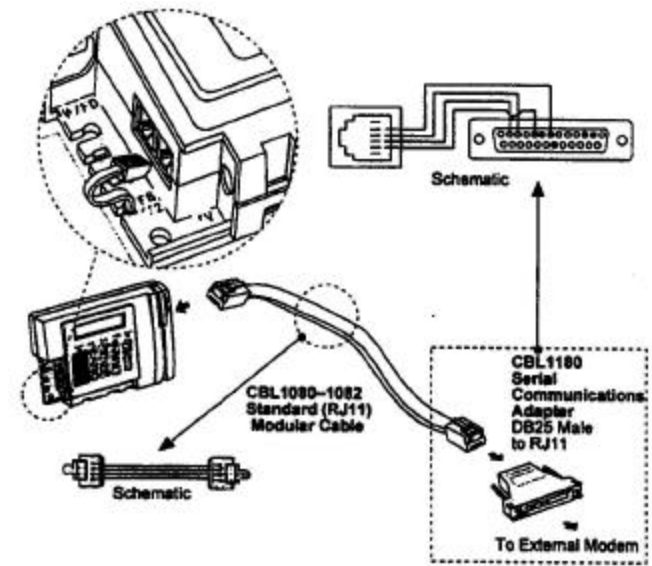
## INSTALLATION PROCEDURE – EXTERNAL MODEM COMMUNICATIONS

This procedure is designed for external modem communications and is used when an external modem is connected to the terminal's RS232 port. External modem communication enables the user to:

- Communicate at higher speeds (up to 9600 baud).
  - Use a LAN terminal for modem communications.
- **NOTE:** When using this method of communication, refer to the terminal configuration procedure in Chapter 4 and ensure that External Modem Parameter is enabled (step #3).

Terminals connect to an external modem using a serial connection. The modem then uses a standard telephone line connected to a telephone jack.

1. Install the terminal per the diagram shown in Figure 6.



**Figure 6: External Modem Communication**

## INSTALLATION PROCEDURE – REMOTE LAN COMMUNICATIONS

This procedure is designed for remote LAN communications and is used for multiple terminal installations with remote locations using only one telephone line to communicate to each group of remote terminals. A host computer (PC) with an internal or external modem installed can communicate with multiple remote terminals located at the same site using a remote LAN configuration.

A remote modem can support up to 128 terminals using up to 5,000 feet of cable using the Time America RS232 to Remote RS485 Smart Communications Converter. The Smart Converter attaches to the external modem and converts the modem's RS232 communications protocol to RS485.

Typical components used in a remote LAN configuration are:

- LAN distribution boxes
- Standard (RJ11) modular cable
- RS485 wire
- Smart Communications Converter (RS232 to Remote RS485 LAN)
- Communications converter cable
- External modem

### 1. Install the terminal per the diagram shown in Figure 7.

- NOTE: Part numbers to all components used are shown.

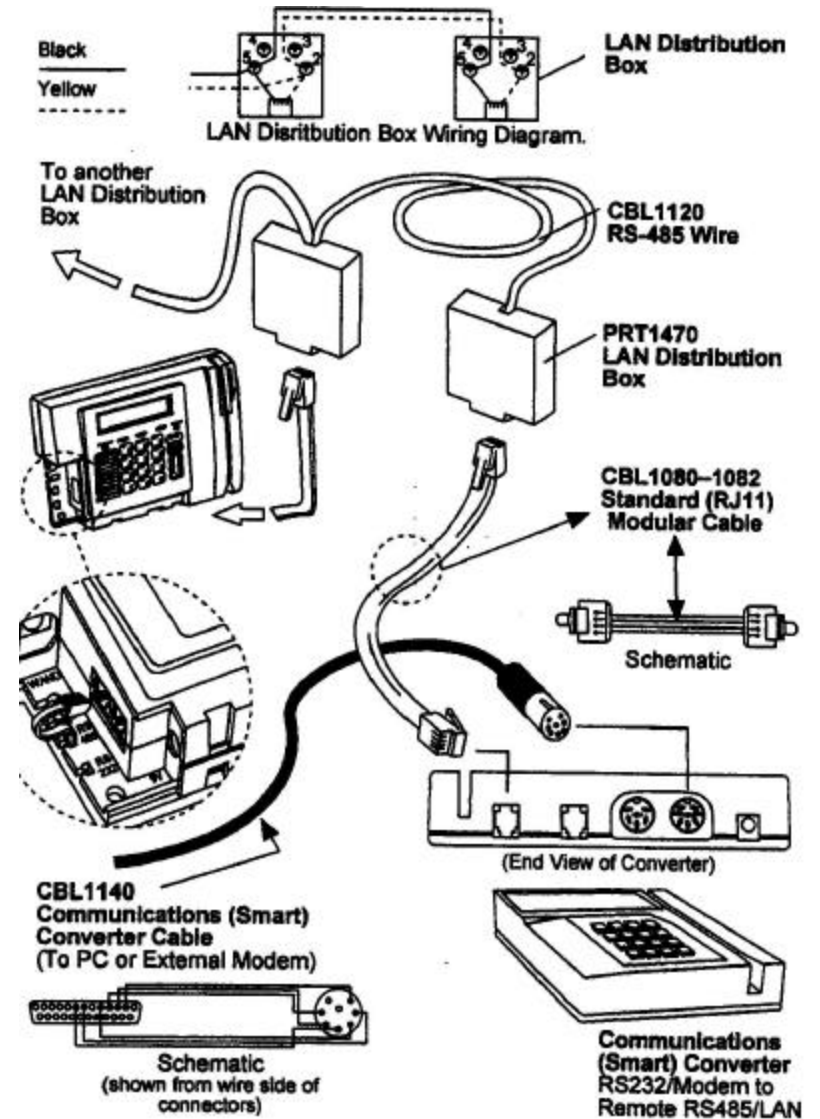


Figure 7: Remote LAN Communication

## 2. Configure the Smart Communications Converter.

Perform this step to ensure that the Smart Communications Converter (Figure 7) communicates at the same speed at the external modem. The converter and device attached to the converter's RS232 port (8-pin DIN) must be set to communicate at the same speed. The RS232 baud rate on the converter defaults to 1200 baud.

➤ NOTE: The RS485 baud rate is hard coded to 9600 baud.

Initially, the converter will display **RS232 --- RS485**. This is the converter's Idle Screen. The following instructions explain how to change the RS232 baud rate on the converter.

- (a) Simultaneously press the [\*] and the [1] key on the converter's keypad.
- (b) The converter will display **ENTER COMMAND**.
  - Press the [1] key to display the current RS232 baud rate. If pressed, the converter will display **RS232 BAUD IDX X** where **X** is the baud rate index between 0 and 6. See chart below to convert the index number to the actual baud rate.
  - Press the [2] key to change the RS232 baud rate. If pressed, the converter will display **ENTER RS232 IDX X**. Enter the index value corresponding to the new baud rate that matches the communication speed of your external modem per the chart shown below.

| <u>Index</u> | <u>Baud Rate</u> | <u>Index</u> | <u>Baud Rate</u> |
|--------------|------------------|--------------|------------------|
| 0            | 300              | 4            | 4800             |
| 1            | 600              | 5            | 9600             |
| 2            | 1200             | 6            | 19200            |
| 3            | 2400             |              |                  |

For example, if using a 2400 baud modem, set the index on the converter to **3**.

➤ NOTE: The baud rate for LAN communications is 9600. Do not change the baud rate on the terminal.

- The converter will then display **RS232 BAUD IDX** where **X** is the newly entered baud rate index.

## INSTALLATION PROCEDURE – INTERNAL ETHERNET COMMUNICATIONS

This procedure is designed for Ethernet communications and is used for single or multiple terminals installations. It connects the TA620 Data Collection Terminal to the host computer (PC) with a standard Cat 5 UTP cable through your company's LAN or WAN. An Ethernet solution can support unlimited terminals through Ethernet using TCP/IP addressing.

Typical components used in an Ethernet configuration are:

- LAN distribution boxes (RJ45)
- Standard (Cat 5 UTP) modular cable

When using the installation procedure for internal modem communications, ensure that the following tasks are accomplished:

- Route and connect one end of the Cat 5 UTP cable to the RJ45 connector on the terminal.
- Route and connect the other end of the Cat 5 UTP cable (not to exceed 100 meters) to your RJ45 modular jack to a Network Hub or Switch. Ensure that it is capable of 10baseT communication; some hardware can only communicate at 100Base speeds.

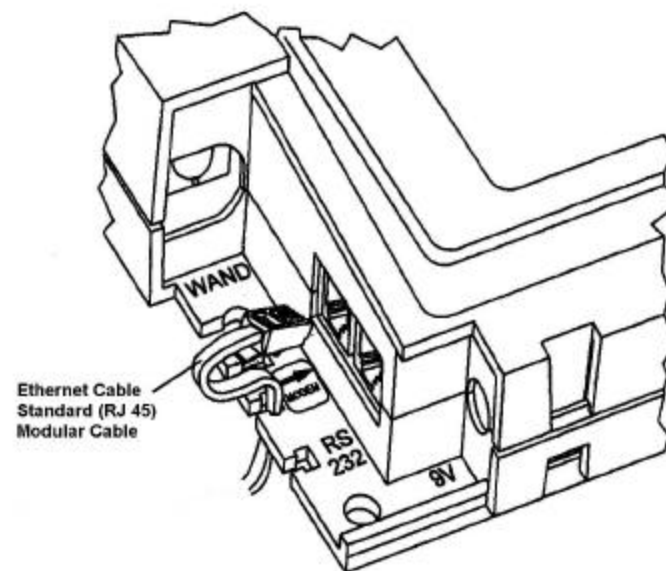


Figure 8: Ethernet Cable Communication

## MOUNTING PROCEDURE – TA620 TERMINAL

The following procedure explains how to mount the TA620 Data Collection Terminal.

### 1. Removing the access panel and mounting bracket from the terminal. Refer to Figure 9.

- (a) Remove the hex screw from the terminal. Use the nut driver.
  - (b) Slide the access panel downward to remove it from the terminal.
  - (c) Slide the mounting bracket downward to remove it from the terminal.
- NOTE: The mounting bracket can be installed in two directions. For wall mounting, the large posts should be positioned at the bottom of the terminal. For desktop mounting, refer to step #1a below.

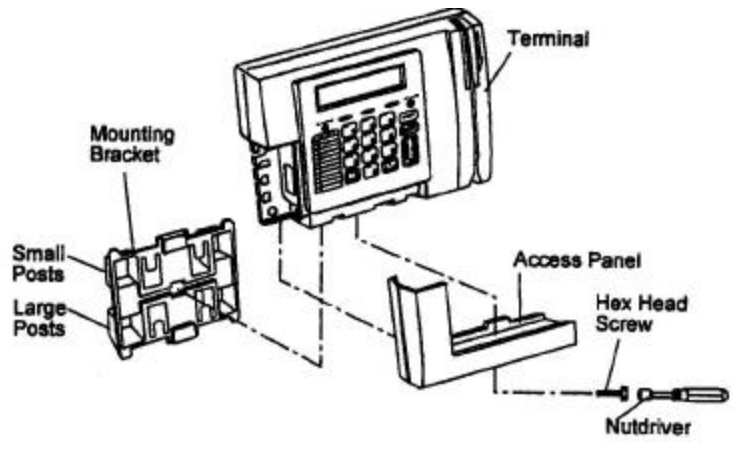


Figure 9: Access Panel & Mounting Bracket Removal

#### 1a. If mounting a terminal on a desktop:

- (a) Remove the mounting bracket as explained in Figure 9.
- (b) Rotate and reinstall the bracket with the large posts facing towards the top of the terminal. Do not install the access panel until all cables have been connected to the terminal's ports per the applicable procedure.

### 2. Install the mounting bracket on the wall. Refer to Figure 10.

- (a) Position the mounting bracket on the wall and hold. Use a small level to ensure that the bracket is straight. In some cases this will cause the terminal to appear crooked because the ceiling of the facility may not be level. An alternate method to ensure that the terminal appears straight upon completion of installation is to measure

down from the ceiling and place the marks for the top set of mounting screws at equal distances from the ceiling.

- NOTE: Ensure that the bracket is positioned in a location that facilitates connection of the terminal to the RS485 (LAN) or modem communication cables.
- (b) Mark the location of the bracket's four screw mounting holes on the wall. Use a pencil, pen or scribe (whichever is available and/or appropriate).
- NOTE: Ensure that the bracket's large mounting posts are on the bottom.
- (c) Remove the bracket from the wall and drill the appropriate size pilot holes in the areas marked. If the screw anchors are used, ensure that the anchors fit snugly in the holes with their tops flush with the drywall or concrete.
  - (d) Reposition the mounting bracket on the wall and install four mounting screws.

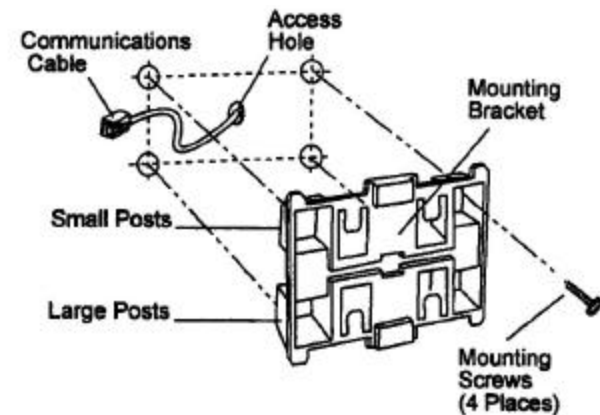


Figure 10: Mounting Bracket Installation

### 3. Attach the terminal to the mounting bracket. Refer to Figure 11.

- (a) Position the terminal on the mounting bracket.
- (b) Slide the terminal downward on the mounting bracket until locked in place.

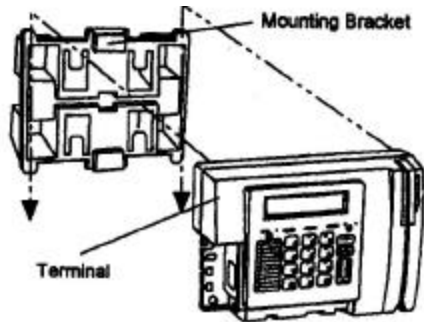


Figure 11: Terminal and Mounting Bracket Attachment

#### PROCEDURE - POWER SUPPLY ATTACHMENT

1. Plug the terminal's power supply into the wall outlet. Refer to Figure 12. Do not plug the module's power pin into the terminal's power plug at this time.
  - **NOTE:** The power supply provided with the terminal is for 110VAC outlets. If attaching to a 220VAC outlet, the optional 220VAC to 9VDC power supply is necessary. Refer to the "Power Supplies" section in Chapter 5.

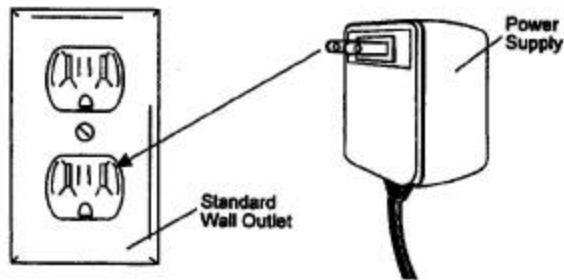


Figure 12: Power Supply Attachment

#### PROCEDURE – SERIAL PRINTER CONNECTION

- **NOTE:** Perform this procedure only if connecting a serial printer to the TA620 Data Collection Terminal. Refer to the terminal configuration procedure in Chapter 4 and ensure that the Default Printer Parameter is set to **SERIAL** (step #9)

The serial printer is connected to the terminal through its RS232 serial communications port. The port is located adjacent to the RS485 port. It is a 6-position, 4-pin female port that accepts a male RJ11 modular connector and is identified by the marking **RS232**.

If the terminal is configured for serial communication, the terminal cannot print through the serial port unless an A/B switch box is used.

1. Connect a serial printer to the terminal per the diagram shown in Figure 13.

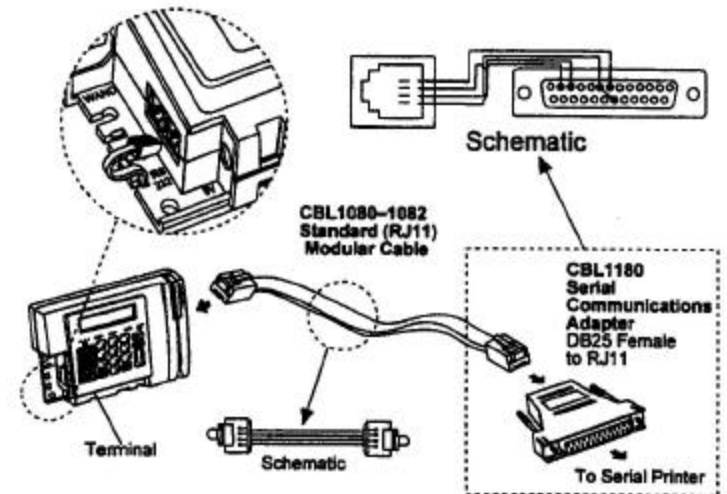


Figure 13: Serial Printer Connection

## PROCEDURE – PARALLEL PRINTER CONNECTION

- NOTE: Perform this procedure only if connecting a parallel printer to the TA620 Data Collection Terminal. If connecting a parallel printer to the terminal, refer to the terminal configuration procedure in Chapter 4 of this manual and ensure that the Default Printer parameter is set to PARALLEL (step #9).

The terminal's parallel printer port is used to connect a standard parallel printer. The port is located on the right side of the terminal and is a 25-pin female connector.

1. **Connect a parallel printer to the terminal (#3) per the diagram shown in Figure 14.**
  - (a) Connect the male pin side of the parallel printer cable to the terminal's parallel printer port.
  - (b) Connect the Centronics end of the parallel printer cable to the printer.

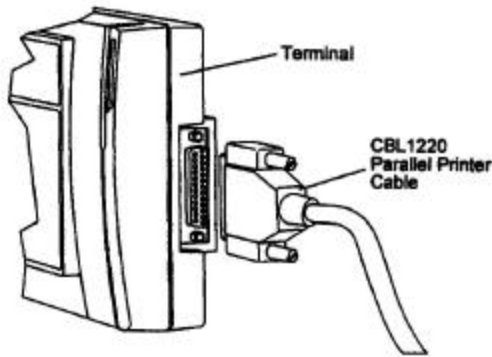


Figure 14: Parallel Printer Connection

The parallel printer cable shown in Figure 15 is available locally through most computer dealers. One end of the cable is a male DB-25 connector; the other end is a 36-pin Centronics type connector to match the parallel port on the printer.

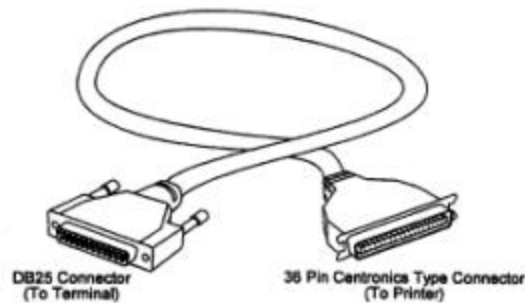


Figure 15: Parallel Printer Cable

## PROCEDURE – BAR CODE WAND CONNECTION

The optional bar code wand, when connected, uses only 3 of the 6 pins available on the terminal's wand port (DIN connection). The wand port is located in the left corner of the terminal and is identified by the marking **WAND**. If bar codes are available, a bar code wand simplifies data input.

If a bar code gun (non-contract reader) is used, the center pin of the DIN connection supplies the additional power. The terminal uses 2 of the remaining pins as logic lines for external controls.

1. **Connect a bar code wand (#9) to the terminal (#3) per the diagram shown in Figure 16.**
  - (a) Connect the wand's plug to the terminal's wand port.

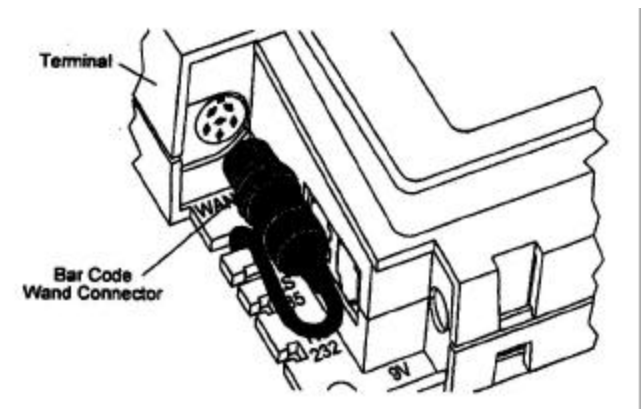


Figure 16: Bar Code Wand Connection

- (b) If using other external devices (such as the signal control relay) in conjunction with the bar code wand (see Figure 17), connect the male end of the Y-cable shown in Figure 18 to the terminal's wand port, then connect the wand to one of the female ends of the Y-cable.

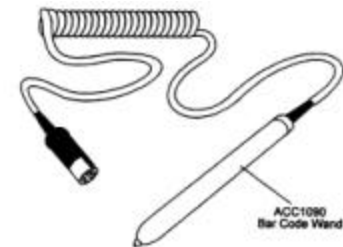


Figure 17: Bar Code Wand



The Y-cable (splitter) shown in Figure 18 is an optional accessory that allows for connection of both a bar code wand and other external devices such as an external relay box (refer to Chapter 5). The single end of the cable is plugged into the terminal. The wand is connected to one of the split ends and another device to the other.

- NOTE: The Y-cable does not allow the use of two bar code devices from one terminal.

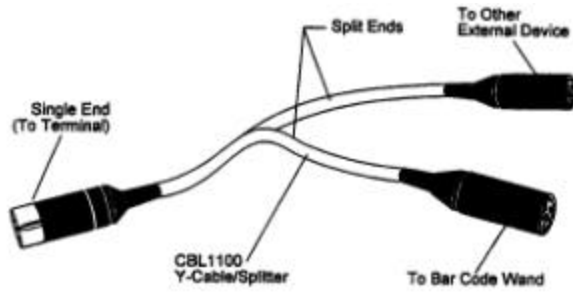


Figure 18: Y-Cable

### PROCEDURE – TERMINAL POWER UP

Power up the terminal as follows:

1. **Plug the power pin into the terminal's power port and power up the terminal. Refer to Figure 19 and 20.**

- (a) Route the power supply's cord to the terminal as shown in Figure 19.

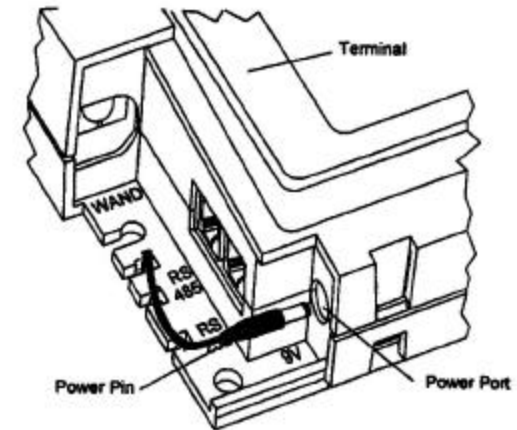


Figure 19: Power Supply Cord Installation

- (b) Plug the power pin into the terminal's power port and power up the terminal. As soon as power is applied, the terminal's LED will display the following information:
  - 1) Manufacturer's name, model number and BIOS Version (Figure 20, Screen #1).
  - 2) Idle Screen (Date and Time) (Figure 20, Screen #2).

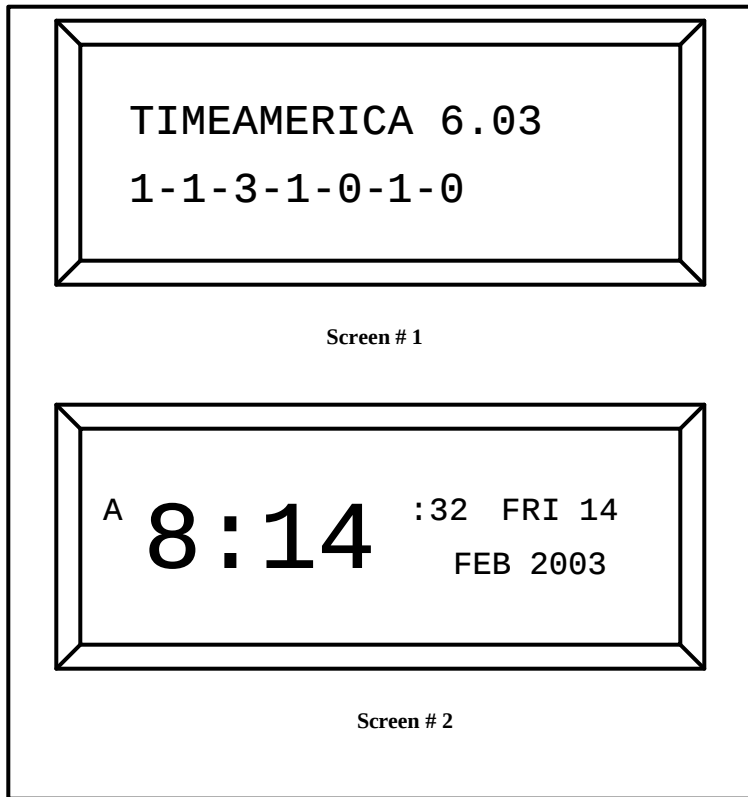


Figure 20: Power On Screens

### PROCEDURE – ACCESS PANEL INSTALLATION

After the terminal has been successfully powered up, the access panel can be reinstalled.

1. **Install the access panel on the terminal. Refer to Figure 21.**
  - (a) Slide the access panel upward on the terminal.
  - (b) Install the hex head screw on the terminal. Use the nut driver provided.

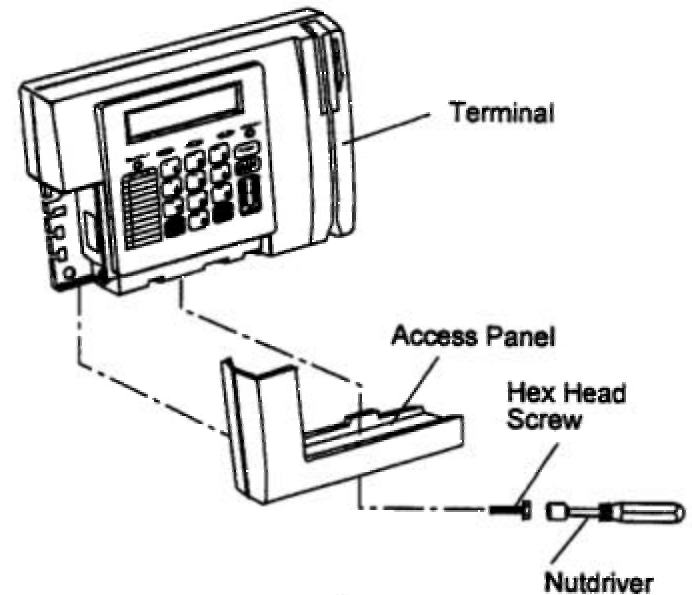


Figure 21: Access Panel Installation

# Chapter 3

## Operator Interface

### Purpose:

The purpose of this chapter is to familiarize you with the basic operation of the TA620 Data Collection Terminal. The following is provided:

- A functional overview of the terminal’s display and keypad.
- An explanation on how to use a magnetic stripe and bar code badge.
- An explanation on how to use a bar code wand.

### Advanced Features

The TA620 incorporates many advanced features. Several of them come standard, while others are available as options. Standard features include: Supervisor Editing, Data Input Validation, Profile Lockout Scheduling, Employee Messaging, and Programmable Function Keys.

It is important to note that the terminal’s advanced features are software controlled or programmed and are not explained in this manual. In addition, they may require optional software modules in order to activate their functionality. Consult your local Time America sales representative for additional information.

### Programming Software

The TA620 is designed for use in conjunction with Time America software packages (sold separately). These software packages control the terminal’s programming and the functionality of its standard and optional features.

### Display

The TA620 has a two-line dot matrix LCD display as shown in Figure 22. Each line can display up to 20 upper and lower case alphanumeric characters, including special characters such as a period (.), dash (-), colon (:), equals sign (=), and a forward slash(/).

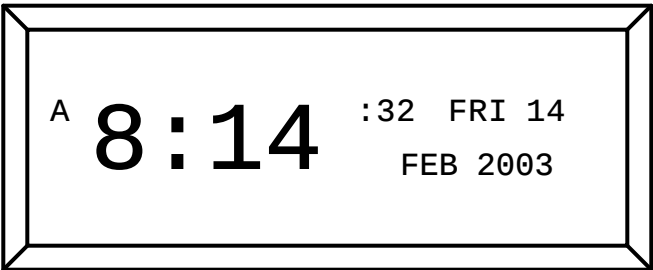


Figure 22: Terminal Display with Idle Screen

### Idle Screen

The terminal’s Idle Screen (also shown in Figure 22) is displayed when the terminal is in the idle state. The Idle Screen shows the current date (including the day of the week) and time on the upper line and your company’s name (or other programmed message) on the bottom line. When entering data into the terminal, a person can always return to the Idle Screen by pressing the [CLEAR] key.

### Keypad Layout

The TA620 has 20 keys for entering alphanumeric data. Its advanced design differs from conventional terminals, as there are no buttons to press. Each key contains a very sensitive membrane type switch that activates upon touch. Its design also creates a watertight seal and allows for entry of both upper and lower case alphanumeric characters, as well as various special characters mentioned earlier.

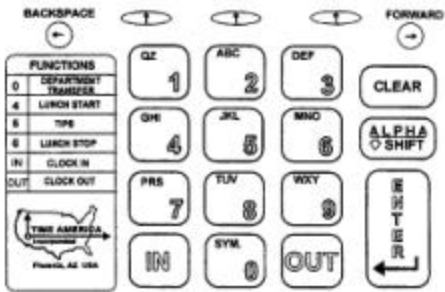


Figure 23: Terminal Keypad

Each key on the keypad has one or more dedicated functions. Each of the ten numeric function keys (0-9) along with the [IN] and [OUT] keys can be user programmed to serve a special purpose (refer to the TA620 Technical Reference Manual).

The TA620’s keypad also contains special keys to facilitate entering data into the terminal and includes [ENTER], [CLEAR], [ALPHA SHIFT], [BACKSPACE], and [FORWARD].

### Key Functions

The function of each key on the terminal’s keypad is as follows:

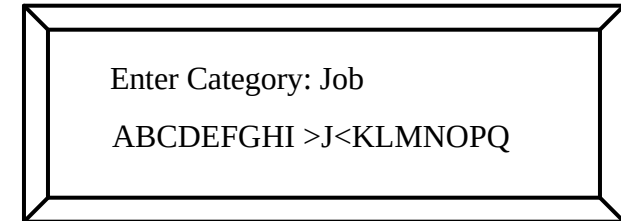
| KEY       | FUNCTION                                                                                                                                                                                                 |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Backspace | Normally used to move the display cursor back 1 character. In alpha mode, it is used to scroll back through the Alphabet Selection Menu. In configuration mode, it is used to scroll back through steps. |
| Forward   | Normally used to move the display cursor forward 1 character. In alpha mode, it is used to                                                                                                               |

scroll forward through the Alphabet Selection Menu. In configuration mode, it is used to scroll forward through steps.

|                        |                                                                                                                                                                                             |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Left Up arrow</b>   | Unassigned                                                                                                                                                                                  |
| <b>Center Up arrow</b> | In alpha mode, it is used to select an alpha character.                                                                                                                                     |
| <b>Right Up arrow</b>  | Unassigned                                                                                                                                                                                  |
| <b>1</b>               | Displays the numeric character <b>1</b> .                                                                                                                                                   |
| <b>2</b>               | Displays the numeric character <b>2</b> .                                                                                                                                                   |
| <b>3</b>               | Displays the numeric character <b>3</b> .                                                                                                                                                   |
| <b>4</b>               | Displays the numeric character <b>4</b> .<br>Factory programmed to punch an employee <i>Out For Lunch</i> after entering the employee's ID number via the keypad or badge swipe.            |
| <b>5</b>               | Displays the numeric character <b>5</b> .<br>Preprogrammed in the software to enter tips for an employee after entering the employee's ID number via the keypad or badge swipe.             |
| <b>6</b>               | Displays the numeric character <b>6</b> .<br>Factory programmed to punch an employee <i>In From Lunch</i> after entering the employee's ID number via the keypad or badge swipe.            |
| <b>7</b>               | Displays the numeric character <b>7</b> .<br>Preprogrammed in the software to punch an employee <i>Out For Break</i> after entering the employee's ID number via the keypad or badge swipe. |
| <b>8</b>               | Displays the numeric character <b>8</b> .                                                                                                                                                   |
| <b>9</b>               | Displays the numeric character <b>9</b> .                                                                                                                                                   |
| <b>0</b>               | Displays the numeric character <b>0</b> .<br>Preprogrammed in the software to transfer departments after entering the employee's ID number via the keypad or badge swipe.                   |
| <b>CLEAR</b>           | Returns the terminal to the idle state without saving any of the operations being performed.                                                                                                |
| <b>ALPHA SHIFT</b>     | Enables the terminal's alpha mode (see <i>Entering Alpha Characters</i> on next page)                                                                                                       |
| <b>ENTER</b>           | Enters data into the terminal                                                                                                                                                               |
| <b>IN/OUT</b>          | Factory programmed to punch an employee in or out after entering the employee's badge or ID number via the keypad or badge swipe.                                                           |

## Entering Alpha Characters

To enter upper case alpha characters, press the [ALPHA SHIFT] key once to display the Upper Case Alphabet Selection Menu on the bottom (2<sup>nd</sup>) line of the terminal's display as shown in Figure 24.



**Figure 24: Upper Case Alphabet Selection Menu**

The encapsulated letter on the bottom line (**J** in the above example) represents the letter to be selected. Scroll through each letter by pressing the [FORWARD] or [BACKSPACE] key, then select the letter and transfer it to the top line (as shown above) by pressing the *Center Up* arrow or the [ENTER] key.

To enter lower case alpha characters, press the [ALPHA SHIFT] key twice (or a second time while entering upper case characters). Pressing the [ALPHA SHIFT] key a third time exits the terminal's alpha mode.

If entering lower case letters and you wish to enter upper case characters again, you must exit and re-enter the terminal's alpha mode.

### EXAMPLE

To enter the word **Job**, perform the following steps:

1. Press the [ALPHA SHIFT] key once.
2. Encapsulate the upper case letter **J** from the Upper Case Alphabet Selection Menu by pressing the [FORWARD] or [BACKSPACE] key.
3. Press the *Center Up* arrow or the [ENTER] key.
4. Press the [ALPHA SHIFT] key again.
5. Encapsulate the lower case letter **o** from the Lower Case Alphabet Selection Menu by pressing the [FORWARD] or [BACKSPACE] key.
6. Press the *Center Up* arrow or the [ENTER] key.
7. Repeat steps #5 and #6 for the lower case letter **b**.
8. Press the [ALPHA SHIFT] key a third time (to exit).

### Basic Operation

Although the TA620's function keys can be programmed to operate in a variety of ways, the following procedures will explain how to punch IN and OUT for the shift and IN and OUT for lunch with the factory default programming.

#### PROCEDURE – PUNCHING IN OR OUT FOR THE SHIFT

1. Enter the employee's ID number via the keypad entry or badge swipe.
  - (a) If entering the employee's ID number via keypad entry, first enter the ID number, then press the [ENTER] key. The prompt **ENTER FUNCTION** will appear on the terminal's display.
  - (b) If entering the employee's ID number via badge swipe, the prompt **ENTER FUNCTION** will appear on the terminal's display.
2. Press the [IN] key to record punch IN transaction or the [OUT] key to record punch OUT transaction.

#### PROCEDURE – PUNCHING IN OR OUT FOR LUNCH

1. Enter the employee's ID number via the keypad entry or badge swipe.
2. Press the [4] key to record a punch OUT to lunch transaction or the [6] key to record a punch IN from lunch transaction.

### Magnetic Card Reader

The TA620 contains an internal magnetic card reader. The reader is a Track 2 ABA head for reading credit card style magnetic cards through the terminal's slot. When swiping a magnetic card or badge through the terminal:

- The magnetic stripe should be facing the right side of the terminal's slot as shown in Figures 25 and 26.
- Swipe the card or badge briskly through the terminal's slot; otherwise a message that reads **PLEASE TRY AGAIN** will appear on the terminal's display. If this message appears, check the location of the magnetic stripe on the badge, and try again. If this error continues, refer to the *Diagnostic* section of this manual for instructions on how to test magnetic stripe badges.

NOTE: Refer also to Appendix E for standards and specifications on magnetic stripe badges.



Figure 25: Magnetic Badge

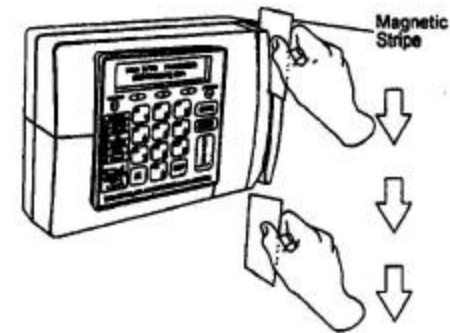


Figure 26: Magnetic Badge Usage

### Internal Bar Code Reader

Optionally, the TA620 can have an internal bar code reader. This type of reader is used to read visible and infrared 3 of 9 bar coded cards through the terminal's slot. When swiping a bar coded card or badge through the terminal:

- The bar codes should be facing the left side of the terminal's slot as shown in Figures 27 and 28.
- Swipe the card briskly through the terminal's slot; otherwise a message that reads **PLEASE TRY AGAIN** will appear on the terminal's display. If this message appears, check the location of the bar codes on the badge, and try again. If this error continues, refer to the *Diagnostic* section of this manual for instructions on how to test bar code badges.

NOTE: Refer to Appendix F for standards and specifications on bar codes.

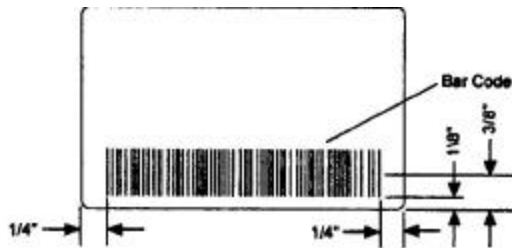


Figure 27: Bar Code Badge

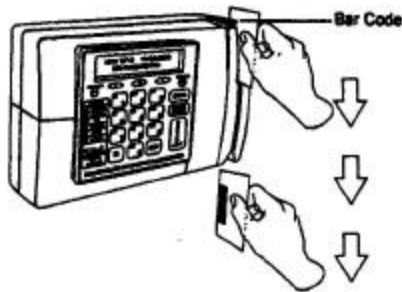


Figure 28: Bar Code Usage

### External Bar Code Wand

When using a bar code wand, swipe the wand briskly across the bar code on the card as shown in Figure 29; otherwise a message that reads **PLEASE TRY AGAIN** will appear on the terminal's display. If this message appears, check the bar code wand and the bar code on the card, and try again. If this error continues, refer to the *Diagnostics* section of this manual for instructions on how to test a bar coded badge with a bar code wand.

NOTE: Refer to the Bar Code Wand Connection procedure in Chapter 2 for additional information pertaining to the bar code wand. Refer also to Appendix F for standards and specifications on bar codes.



Figure 29: External Bar Code Wand Usage

### Special Function Label Application

One of the most important features of the TA620 is that in addition to the **IN** and **OUT** keys, each function key (**0-9**) can be specially programmed to collect up to six items of data, plus the initial employee ID and time stamp. To address this feature, two *function overlay labels* (shipped with the terminal) are used to cover the terminal's **FUNCTIONS** identification box (located on the left side on the keypad) and identify special and/or user-programmed functions.

The gray label is imprinted only with lines to allow programmed functions to be typed or written on it. When peeled off and applied, it completely covers the keypad's **FUNCTIONS** identification box.

The first (narrow) column of the gray label should identify the key used to activate the programmed function. The second (wide) column should identify or describe the function.

NOTE: To prevent the typed or written information from smearing, cut off the un-imprinted (blank) portion of the long clear label and apply it directly over the gray label (refer to Figure 30).

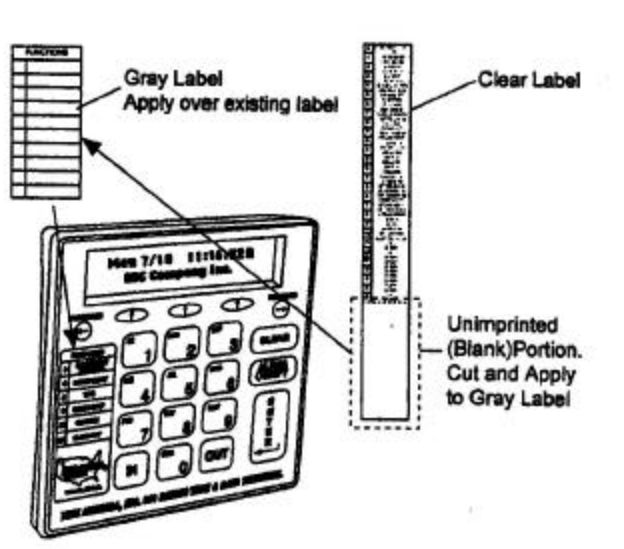


Figure 30: Gray Label Application

In addition to the gray label, a long clear imprinted label is also provided. This label contains *cutouts* that identify the names of various functions that can be programmed into the terminal, plus a series of **ENTER** cutouts to indicate that the [ENTER] key should be pressed to activate the function.

The *cutouts* must be hand cut from the label using scissors or a precision cutting knife. They are applied on top of the gray label. Each row on the gray label can accommodate two clear *cutouts*. The *number cutouts* are placed in the first (narrow) column of the gray label and identify the name of the function key. The *function cutouts* are placed in the second (wide) column of the gray label and identify the name of the function (refer to Figure 31).

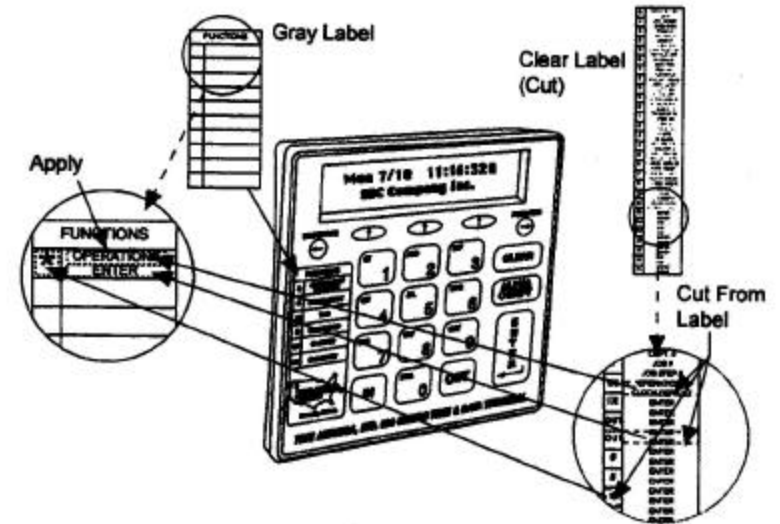


Figure 31: Clear Cutout Application

## Chapter 4

# Configuration

---

The TA620 Data Collection Terminal contains a built-in configuration program. The configuration mode is used to setup the terminal for proper operation.

### Terminal Configuration:

After installation, configure the terminal as explained next. The use of the *Configuration* badge (supplied with the terminal) is necessary to activate the terminal's configuration mode. The badge is labeled with nine zeros (000000000).

#### PROCEDURE – TERMINAL CONFIGURATION

##### 1. Configuring Date and Time:

- Swipe the Configuration Badge (000000000)
- Select option 1 for DATE <Press ENTER>
- Select or enter the Day, Month, Year (DDMMYYYY) <Press ENTER>
- Select or enter the Time (HH:MM) <Press ENTER> (enter time in military format, 2:00 PM = 14:00)

##### 2. Configuring Ports:

**Note:** This unit, unlike previous models, must be re-configured to use another port.

#### Configure RS232:

- Swipe the Configuration Badge (000000000)
- Select option 2 for Ports <Press ENTER>
- Select option 0 for RS232 <Press ENTER>
- Select or enter the baud rate
  - 0 = 1200
  - 1 = 2400
  - 2 = 4800
  - 3 = 9600
  - 4 = 19,200

<Press ENTER>

## Field Upgrades and Servicing

---

- Select or enter the printer
  - 1 = serial
  - 2 = Parallel
- Select or enter the Transaction Time Out (in minutes)
  - 0 – off
  - 30 = 30 minutes

#### Configure RS485: (RS485 terminals only)

- Swipe the Configuration Badge (000000000)
- Select option 2 for Ports <Press ENTER>
- Select option 1 <Press ENTER>
- Select or enter the baud rate
  - 0 = 1200
  - 1 = 2400
  - 2 = 4800
  - 3 = 9600
  - 4 = 19,200
- <Press ENTER>

#### Configure Modem: (For Modem terminals only)

- Swipe the Configuration Badge (000000000)
- Select option 2 for Ports <Press ENTER>
- Select option 0 <Press ENTER>
- Select or enter the baud rate
  - 0 = 1200
  - 1 = 2400
- <Press ENTER>
- Select or enter the Answer Window (HHMMHHMM) for the starting and the ending times <Press ENTER> (use military time format, Example: clock will not answer during business hours and only answer between the hours of 8:00 PM and 6:00 AM, the select (20000600.)



**Configure Ethernet:** (For Ethernet terminals only)

- Swipe the Configuration Badge (00000000)
  - Select option 2 for Ports <Press ENTER>
  - Select option 2 <Press ENTER>
  - Select or enter the baud rate option 3 for 9600 <Press ENTER> (Leave this as the default for Ethernet)
  - Select or enter the TCP/IP address <Press ENTER> (Must be a static TCP/IP address)
- NOTE: When entering IP addresses use the “Out” key to skip over the (.) in an IP address.**
- Select or enter the GATEWAY address <Press ENTER> (This can be obtained from your network administrator)
  - Select or enter the NETMASK VALUE <Press ENTER> (The Network SubNetMask number contains 4 elements (octets) of numbers separated by “.”. The number that needs to be entered is a 2-digit number. To get to this 2-digit number the subnet mask needs to be converted to binary. To determine your NETMASK VALUE, take your SubNetMask, i.e. 255.255.255.000 and convert the 4 octets to binary, which will become 11111111.11111111.11111111.00000000. Next count the zeros from **right to left**. There are 8 zeros when counted, this will become your new NETMASK VALUE. Therefore the NETMASK VALUE would be 08. The Ethernet terminal NETMASK can range from 01 to 24.
  - Select or enter the PORT VALUE <Press ENTER> (Default is 10001, must match software setting)
  - Select or enter the BUFFER FLUSH <Press ENTER> (Select default (000), setting not applicable with non-UNIX Operating Systems)
  - Select or enter the TERMINAL TRANSACTION PRINTER TYPE <Press ENTER>
  - Select or enter the TRANSACTION TIME OUT <Press ENTER> (This controls how long the terminal will restrict between badge swipes. Example: You want to you’re your employees off the terminal for at least 30 minutes for lunch, then set TRANSACTION TIME OUT to 30. Recommended setting is zero (0) to turn this feature off)
  - Select or enter the TERMINAL ID <Press ENTER> (default is 1, select the ID for the terminal, each terminal MUST have a unique ID)

**NOTE: The terminal MUST be powered down and backup to accept the new TCP/IP settings.**

## Chapter 5

# Field Upgrades And Servicing

This chapter provides an explanation on how to perform the following:

- Internal Bar Code Reader Option Installation
- Signal Control Relay
- Display Contrast Adjustment

### Internal Bar Code Reader

This section explains how to install the internal bar code reader option. Once installed, the terminal can either read visible or infrared bar coded badges, depending on the type of bar code reader head installed.

**NOTE:** The terminal will only read visible bar codes if a visible bar code read head is installed. However, an infrared read head is capable of reading both types of bar codes.

**NOTE:** Only a qualified electronic technician should perform this upgrade.

#### **PROCEDURE – INTERNAL BAR CODE READER INSTALLATION**

1. **Remove the access panel and rear cover from the terminal. Refer to Figure 32.**
  - (a) Remove the hex screw from the terminal. Use the nut driver provided.
  - (b) Slide the access panel downward from the terminal.
  - (c) Remove three screws from the rear cover of the terminal.
  - (d) Position the terminal face and right side up on a clean and adequately protected working surface.
  - (e) Brace and hold down the rear cover of the terminal to the surface.
  - (f) Separate the front half of the terminal from the rear cover by grabbing and lifting the top of the front half and unlocking latches on the bottom. Lift the front half up level approximately ¼ inch and hold.

➤ **CAUTION: Avoid completely separating the front cover of the terminal from the rear cover of the terminal as there are internal cables connecting the two halves.**

  - (g) Open the terminal and expose the circuit board by lifting the front half up 90 degrees (as if there were a hinge).
  - (h) Reset the front half of the terminal on the rear cover.
 

➤ **NOTE:** If it is necessary to disconnect the cables that connect the circuit board to the front half of the terminal, note their positions prior to disconnecting them in order to facilitate reattachment.

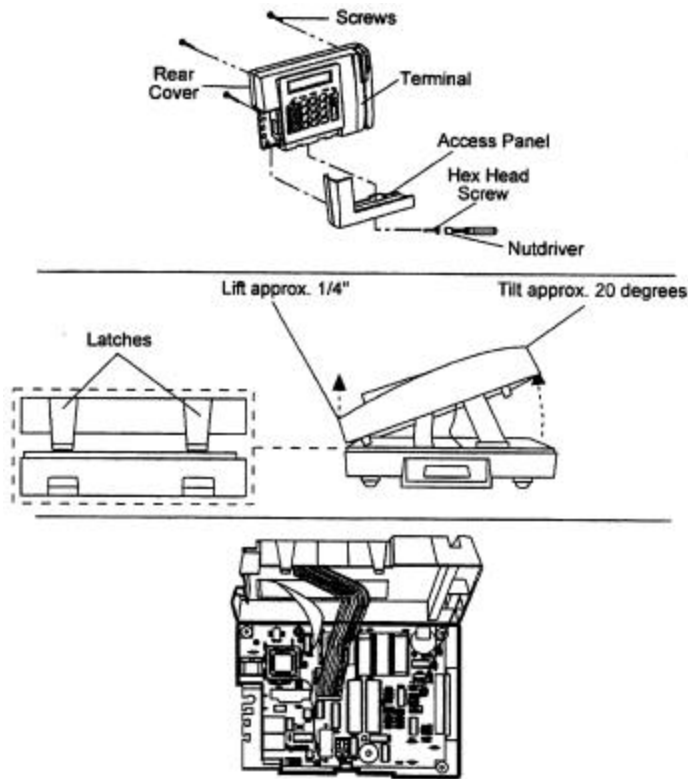


Figure 32: Rear Cover Removal

- **CAUTION:** To prevent static electricity damage to the terminal's circuit board and any of the electronic components to be installed, ground your body using grounding strap or bracelet (commercially available) attached to suitable grounding source.

2. **Install the internal bar code read head in the mounting bracket.** Ensure that you do not touch the lens of the read head as this will adversely affect its read rate once installed.
  - (a) Insert the internal bar code reader head in the mounting bracket until fully seated. Ensure that the reader head is inserted through the beveled side of the mounting bracket.
  - (b) Position the mounting bracket (with the reader head in it) in your hand so that the hex screw is on top and the beveled side of the bracket is facing you.

- (c) Turn the reader head so that PC board is in the horizontal position with the "lead wire" on the left.
- (d) Tighten the hex set screw until the bar code reader is locked in place. Use a 1/16" allen wrench.
  - **NOTE:** To prevent damage to the bar code reader head, do not over-tighten the hex set screw.

3. **Install the internal bar code reader assembly in the terminal. Refer to Figure 33.**

- (a) Position the internal bar code reader assembly on top of the terminal's mounting pads.
- (b) Align the screw holes on the mounting bracket's flange with the screw holes on the mounting pads.
- (c) Install two screws.

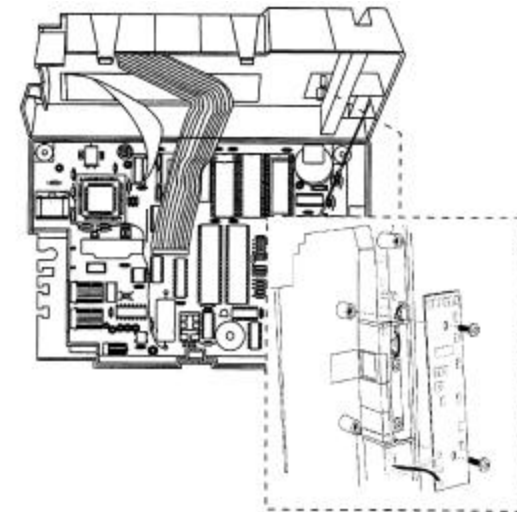
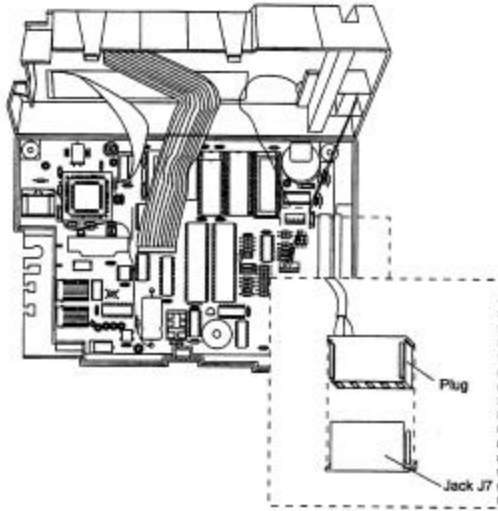


Figure 33: Internal Bar Code Reader Installation

4. **Connect the internal bar code reader to the terminal's circuit board. Refer to Figure 34.**
  - (a) Locate jack J7 on the terminal's circuit board.
  - (b) Connect the internal bar code reader's plug to jack J7.
    - **NOTE:** The internal bar code reader's plug can only attach to jack J7 in one direction. Do not attempt to connect it backwards.



**Figure 34: Internal Bar Code Reader Circuit Board Connection**

**5. Install the rear cover and access panel on the terminal.**

- (a) Verify that the square nut for the hex head screw has not fallen out of the rear cover. Close the terminal by lowering the top half down 90 degrees and resting it on the rear cover.
- (b) Attach the front half of the terminal to the rear cover of the terminal in the same manner as it was separated in step #1. Ensure that the locking latches on the bottom of the terminal's front half are properly inserted in the notches on the bottom of the rear cover.
  - NOTE: To determine if the front half of the terminal is properly attached to the rear cover, try sliding the access panel on and note if it slides on completely.
- (c) Install three screws in the rear cover of the terminal.
- (d) Slide the access panel upward on the terminal.
- (e) Install the hex head screw in the terminal. Use the nut driver provided or any 1/4" nut driver.

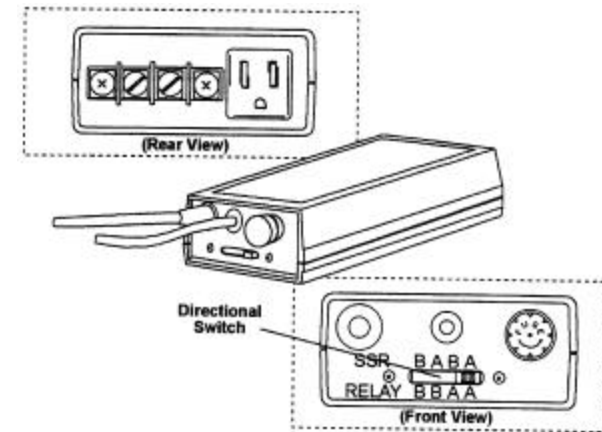
**6. Test the internal bar code reader for proper operation. Refer to the diagnostics procedure in Chapter 4.**

- (a) Test the functionality of the internal bar code reader by performing step #5 in the diagnostic procedure.
- (b) Follow the remaining steps of the diagnostics procedure to properly exit the terminal's diagnostic mode.

### Signal Control Relay

The Signal Control Relay shown in Figure 35 offers two means by which an external device (door, gate, turnstile, etc.) can be controlled:

- 110 VAC outlet circuit (maximum load of 10 A at 110 VAC).
- Dry Contact (normally open with a maximum load of 5 A at 110 VAC).



**Figure 35: Signal Control Relay**

If you are only using the dry contact, the relay's 110 VAC power cord does not have to be plugged in. However, if the power cord is plugged in, when using a voltmeter, you will find that the meter always reads 110 VAC. This is because the circuit works off of impedance.

Using a Y splitter can use the Signal Control Relay with other equipment sharing the same 6-pin DIN port on the TA620 terminal, such as a bar code wand. The bar code wand and the Y splitter are both available from your local Time America sales representative.

The diagram shown in Figure 36 is a sample representation of how the Signal Control Relay is wired to control a bell and/or door.

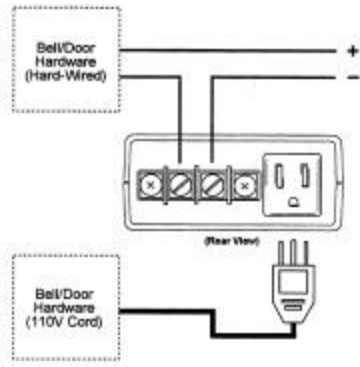


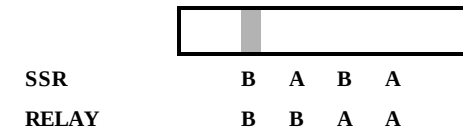
Figure 36: Signal Control Relay Wiring Diagram

The examples shown below explain how the Bell/Access directional switch on the backside of the Signal Control Relay operates. The switch allows you to direct which output device (dry contact or 110 VAC outlet) is controlled by Bells and which by Access.

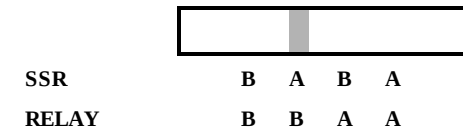
Legend:

- SSR = Solid State Relay (110 VAC outlet).
- RELAY = Normally open dry contact.
- A = Operates off the Access.
- B = Operates off the Bell.

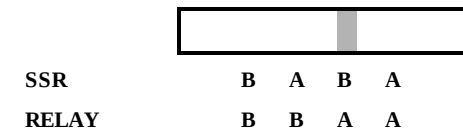
**Example #1: The Bell will activate the SSR and the Relay.**



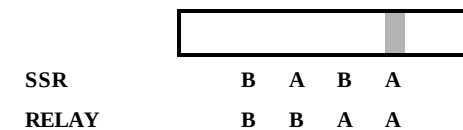
**Example #2: The Access signal will activate the SSR and the Bell signal will activate the Relay.**



**Example #3: The Bell signal will activate the SSR and the Access signal will activate the Relay.**



**Example #4: The Access signal will activate the SSR and the Relay.**



## Display Contrast Adjustment

This section explains how to adjust the contrast of a terminal's display.

NOTE: Only a qualified electronic technician should perform this adjustment.

### PROCEDURE – DISPLAY CONTRAST ADJUSTMENT

#### 1. Remove the access panel and rear cover from the terminal.

- (a) Remove the hex head screw from the terminal. Use the nut driver provided.
- (b) Slide the access panel downward from the terminal.
- (c) Remove three screws from the rear cover of the terminal.
- (d) Position the terminal face and right side up on a clean and adequately protected working surface.
- (e) Brace and hold down the rear cover of the terminal to the surface.
- (f) Separate the front half of the terminal from the rear cover by grabbing and lifting the top of the front half and unlocking latches on the bottom. Lift the front half up level approximately  $\frac{1}{4}$  inch and hold.
  - **CAUTION: Avoid completely separating the front cover of the terminal from the rear cover of the terminal as there are internal cables connecting the two halves.**
- (g) Open the terminal and expose the circuit board by lifting the front half up 90 degrees (as if there were a hinge).
- (h) Reset the front half of the terminal on the rear cover.
  - NOTE: If it is necessary to disconnect the cables that attach between the circuit board and the front half of the terminal, note their positions prior to disconnecting them in order to facilitate reattachment.

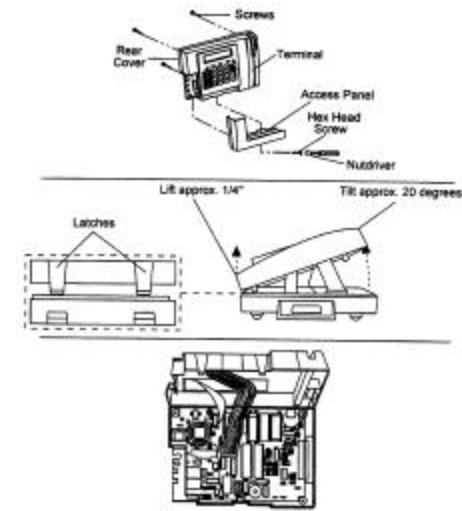


Figure 37: Rear Cover Removal

- **CAUTION: To prevent static electricity damage to the terminal's circuit board and any of the electronic components to be installed, ground your body using wrist grounding bracelets or grounding straps (commercially available) attached to suitable grounding source.**
- #### 2. Adjust the contrast of the terminal's display. Refer to Figure 38.
- NOTE: The terminal must be turned on in order to adjust the contrast on the display. Do not disconnect the cable between the terminal's circuit board and display.
    - (a) Locate the Display Contrast Potentiometer (DCP) on the terminal's circuit board.
    - (b) Turn on the terminal and position it so that the display is visible.
    - (c) Using a small screwdriver, slowly rotate the DCP adjustment, screw clockwise and note the contrast of the terminal's display. Adjust to suit your requirements.
    - (d) Turn off the terminal (remove power) and position it for reassembly.

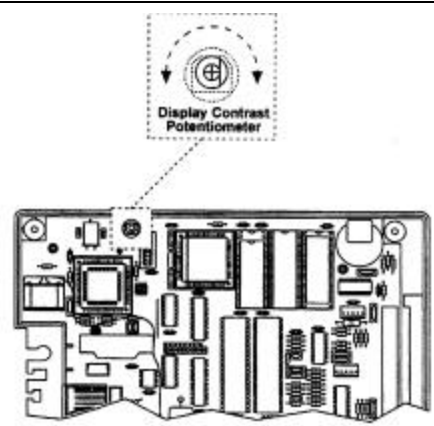


Figure 38: Display Contrast Potentiometer Location

3. Install the rear cover and access panel on the terminal.

- (a) Close the terminal by lowering the top half down 90 degrees and resting it on the rear cover.
- (b) Attach the front half of the terminal to the rear cover in the same manner as it was separated in step #1. Ensure that the locking latches on the bottom of the terminal's front half are properly inserted in the notches on the bottom of the rear cover.
  - NOTE: To determine if the front half of the terminal is properly attached to the rear cover, try sliding the access panel on and note if it slides on completely.
- (c) Install three screws in the rear cover of the terminal.
- (d) Slide the access panel upward on the terminal.
- (e) Install the hex head screw in the terminal. Use the nut driver provided.

# Appendix A

## Magnetic Stripe Reader and Card

Standard:

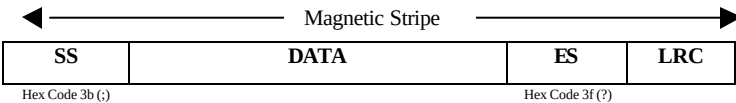
The TA620 magnetic stripe reader reads ABA Track 2 formatted magnetic stripes through the terminal's slot. The track 2 standard was developed by the American Bankers Association (ABA) and contains numeric information for the automation of financial transactions. This track of information is also used by systems that require an identification number and a minimum of other control information.

For Copies of the standard contact:

AMERICAN NATIONAL STANDARDS INSTITUTE  
1430 Broadway  
New York, NY 10018  
Telephone: (212) 642-4900

Specifications:

- 1. Track 2 is limited to 40 characters; this includes the Start Sentinel (SS), **Data**, End Sentinel (ES), and Longitudinal Redundancy Check (LRC) areas of the magnetic stripe as shown below.



- 2. Recording Density is 75 bits per inch.
- 3. Character configuration (including Parity Bit) is 5 bits per character.

# Appendix B

## Bar Codes

### Bar Code Reader Environmental Specifications:

- Operating and storage temperature:  
[Operating temperature range: 32 degrees to 104 degrees F ( 0- 40 degrees C)]  
[Storage temperature range: 0 to 158 degrees F (-18 to 70 degrees C)]
- Operating and storage humidity:  
[Operating humidity range: 0% to 90% RH non -condensing]  
[Storage humidity range: 0% to 95% RH]

### General Bar Code Specifications:

TA620 Data Collection Terminals with bar code reading capability (internal bar code reader and/or external wand) support ANSI Standard Code 39 (also referred to as “3 of 9”) full ASCII bar codes. All bar codes read by the terminals must meet the encoding standards published in the ANSI Code 39 as follows:

1. Narrowest bar and space dimension: 0.0075-inch (0.191 mm) minimum (medium resolution).
2. Character density: 4.8 characters per inch (3.7 characters per cm) maximum.
3. Height: 1/2 -inch minimum.
4. Characters that may be read: At present, 23 “Code 39” characters maximum.

### Bar code Printing Specifications:

TA620 Data Collection terminals will support both pre-printed and “on-site” produced bar codes. The “Code 39” bars for these cards may be generated by offset, thermal, dot matrix, full-character impact, and laser printers along with various other different techniques, provided they meet the requirements stated in this specification.

When printing regular (visible red) bar codes, the bar color should be black, reflectance value must not exceed 25%, and a carbon based ink should be used. The print contrast (PCS) between the background and bars must be 75% or greater.

- NOTE: Infrared bar code readers will not read carbon-based ink. The infrared cover/shield is carbon based and interferes with carbon ink bars.

Voids (White spaces in the bar) and specks (black marks on the background) are permissible only if:

1. The void or speck fits inside a circle, whose diameter is 0.4 times the nominal width of the narrowest bar or the narrowest space in a bar code symbol.
2. The void or speck occupies no more than 25% of the area of a circle, whose diameter is 0.8 times the nominal width of the narrowest bar or the narrowest space in a bar code symbol.

### Card Read Specifications:

## Bar Codes

The bar code must be slid through the slot, allowing the quiet zones on the card to be scanned. A smooth scan at a constant speed is important. Typically a fast scan works better than a slow scan.

- Minimum bar code card swipe speed: 3 inches per second.
- Swipe direction: Fully bi-directional

### Card Specifications:

Bar code cards must be laminated to reduce wear. The laminate material must allow the required PCS to be maintained. Also, the laminate thickness must not exceed 0.003 inches (0.076 mm) to maintain proper focal length of the bar code from the sensor.

- Background substrate should be white with a matte (not glossy) finish.
- Background reflectance must be 50% or greater.
- Card thickness: 0.010 \_ + 0.002 inch min./ 0.038 \_ + 0.002 inch max.
- Lifetime: 200,000 passes (swipes).

### Bar Code Location on Card:

Refer to Chapter 3, Figure 3-6.

- Distance from the bottom edge of card to bottom of bars: 1/8 inch.
- Distance from bottom edge of card to center of bars: 3/8 inch.
- Distance from both sides of card to sides of bars: ¼ inch.

## Appendix C

# Technical Support

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### Scope:

This appendix provides information on how to obtain technical support on any problems that may arise during terminal installation, operation, configuration and upgrading. The policy outlined below has been established by Time America, Inc. to help expedite your inquiry.

### Policy:

If you encounter problems during installation, operation, configuration, or upgrading your terminal and cannot resolve them on your own, contact your LOCAL Time America Service Representative. The service representative has received special factory training in areas of terminal installation, operation, configuration, upgrading, and troubleshooting; and in many cases, can help you solve any problems that may arise. It is important to note that there may be instances when your sales representative cannot immediately answer your questions. In these instances a representative will contact Time America, Inc. via a special dealer support telephone number and will get your questions answered with the assistance of product technicians and/or hardware engineers.

### Information Needed Prior To Obtaining Technical Support:

Your sales representative will need the following information to help you solve your problem(s):

1. The model of the data collection terminal you are using.
2. The serial number of the terminal.
3. Special or optional features installed in the terminal.
4. The BIOS version number of the terminal that you are using.
5. The make and model of the host computer (PC) that you are using.
6. The operating system that you are running.
7. What you were attempting to do when the problem occurred?
8. What you were doing when the problem occurred?
9. The nature of the problem (What happened?).
10. A description of any error message (s) that appeared on the terminal's display.
11. Has the problem occurred before?
12. Actions that you have taken to correct the problem on your own.