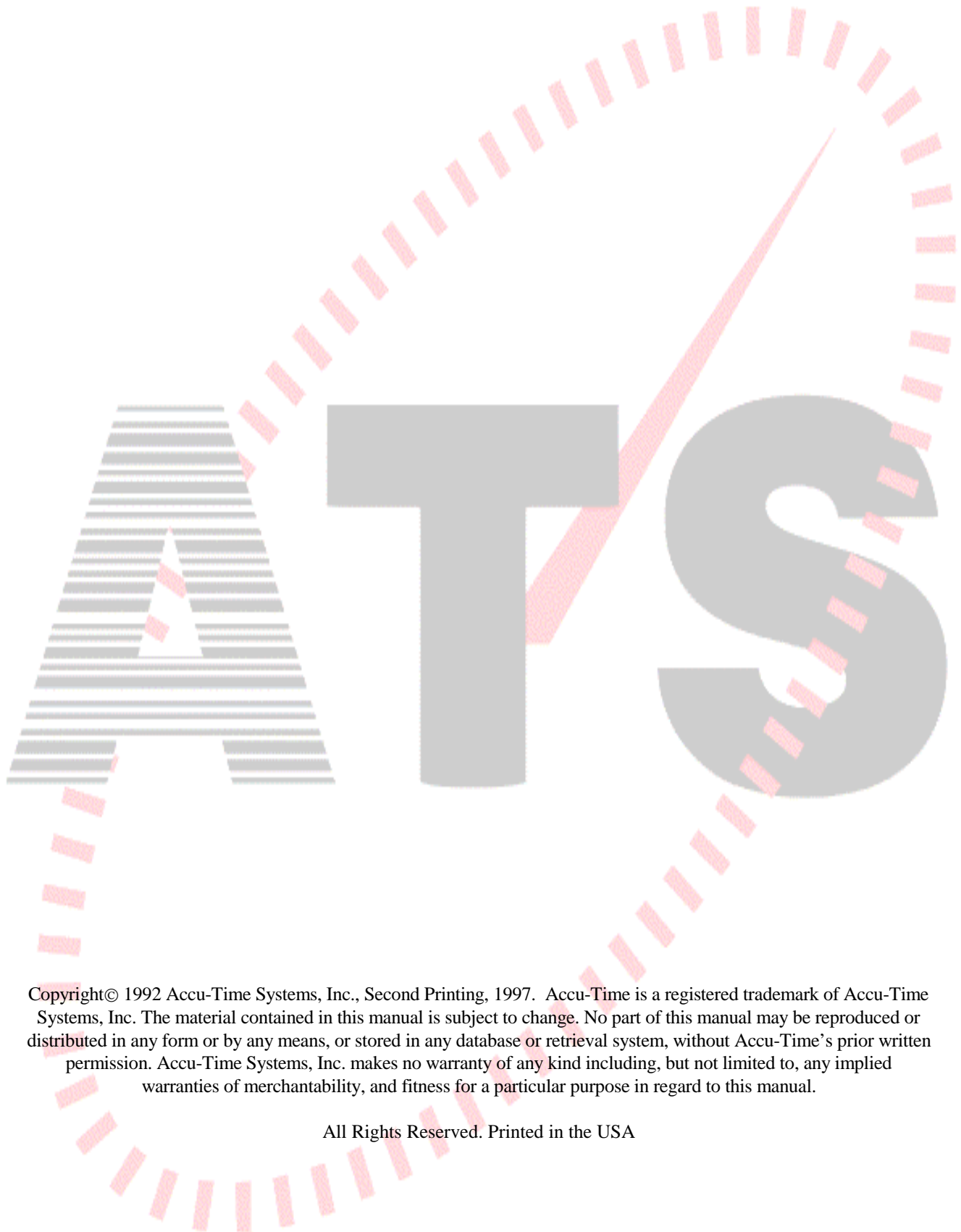


E-SERIES

TIME AND DATA COLLECTION TERMINAL



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ACCU-TIME® E-SERIES

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INTRODUCTION

The Accu-Time® E-Series has a global standard design for a small to medium size employee base. This terminal offers open ACCU-TECTURE® features with proven reliable modular connectivity, ACCU-RATE™ internal diagnostics, and internal memory protection that are found in Accu-Times other full-function data collection terminals. Among the many features of the E-Series are:

- **Multi-Media:** Can support most standard bar code formats including UPC, 128, 39, 2/5, I2/5 and more, as well as IATA Track I and ABA Track II magnetic stripe input.
- **Flexibility:** The E-Series 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 can provide users 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.
- **Durability:** Environmental enclosure protects circuitry from environmental conditions such as extreme temperatures and airborne dust.

Versatility, Reliability and Affordability in a state-of-the-art ergonomically designed terminal and backed by the ACCU-TEAM.

FEATURES

- EIA Standard RS232 or RS485 compatible
- On-board ACCU-RATE™ terminal set-up and diagnostics package.
- Software defined function keys on large 20 key tactile 4x5-matrix keypad.
- Custom user defined keypad legends
- Single or multi-clock environments on a variety of host platforms with application programs integrating the ATS DATA TRAKER™ family of modules
- 32K Byte Memory base (capacitor backed) for buffered or interactive validation
- Integrated Bar Code slot reader
- Integrated Magnetic slot reader
- Low voltage power source locally or remotely supplied
- Die cast aluminum housing with steel tamper resistant mounting bracket
- CE Mark and FCC part 15 Certified
- Dual tone audible annunciator

SPECIFICATIONS

Display:	2 Line x 20 Character liquid crystal
Clock:	12 or 24 hour-format-USA or International (quartz precision) Time stamp of data transactions
Indicators:	Yellow LED Low Power indicator Two programmable LED indicators, RED and GREEN
Memory:	32K Byte of capacitor backed memory (I.e.; 100-employee base-program dependent)
Programming:	ATS DATA TRAKER™ modules or other custom application packages
Interface:	EIA Standard RS232 or RS485 (2 or 4 wire)
Enclosure:	Die cast aluminum housing with steel tamper resistant mounting bracket
Power:	+10 to +17VDC (+12VDC @ 140 milliamps Nominal) Local or remote power
Environment:	Operation: 32° to 110° F (0° to 43° C)
Certification:	CE Mark Certified (CE, RE, ESD, RS and CS), FCC part 15
Physical:	8.0" wide x 7.0" high x 3.4" deep; weight 3.25 pounds
Data Inputs:	Integrated Optical Bar Code or Magnetic Slot reader

INSTALLATION

GENERAL INSTALLATION GUIDELINES

Environment

Although the E-Series Time and Data Collection Terminal is a durable industrial-grade device, which will endure harsh environments, it never the less is an electronic device. Environmental constraints exist and care should be given when selecting a location for installing and operating the E-Series. Select a location, which has adequate lighting and accessibility to operate the terminal safely.

The ATS[®] terminal is designed to operate indoors. Exposure to outdoor elements such as rain or snow will not only void the manufacturer warranty, but may cause damage to the device.

Operating parameters

Accu-Time[®] recommends that the E-Series be operated in an ambient temperature range of between 32° and 110° Fahrenheit. Non-condensing humidity should be less than 95%. The terminal should be mounted on a vibration free area.

The RS232 E-Series must be located no greater than fifty (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 continual data re-transmission, which may never be acknowledged.

The RS485 E-Series locally powered must be located no greater than five thousand (5000) wire-feet from the host computer. 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.

INSTALLATION

Base

Locate a flat wall surface to accommodate the E-Series. With terminal power being supplied locally, insure that a conventional 110VAC-wall outlet, 220VAC in Europe and other areas, (check local electrical code requirements) is dedicated to accept the E-Series 12VDC power pack assembly. The outlet should be no further than four (4) feet from the terminal.

With the supplied terminal mounting template, prepare the wall to accommodate mounting hardware (customer provided). Typical mounting height is forty-eight inches from floor to the terminal display (Compliant to the Americans with Disabilities Act). Observe OSHA and/or local safety codes when operating tools during all phases of installation. Attach the terminal wall mount to the flat wall surface. Select and remove one of the perforated knockouts on the wall mount, which will accommodate the data transmission and 12VDC power pack cable assemblies.

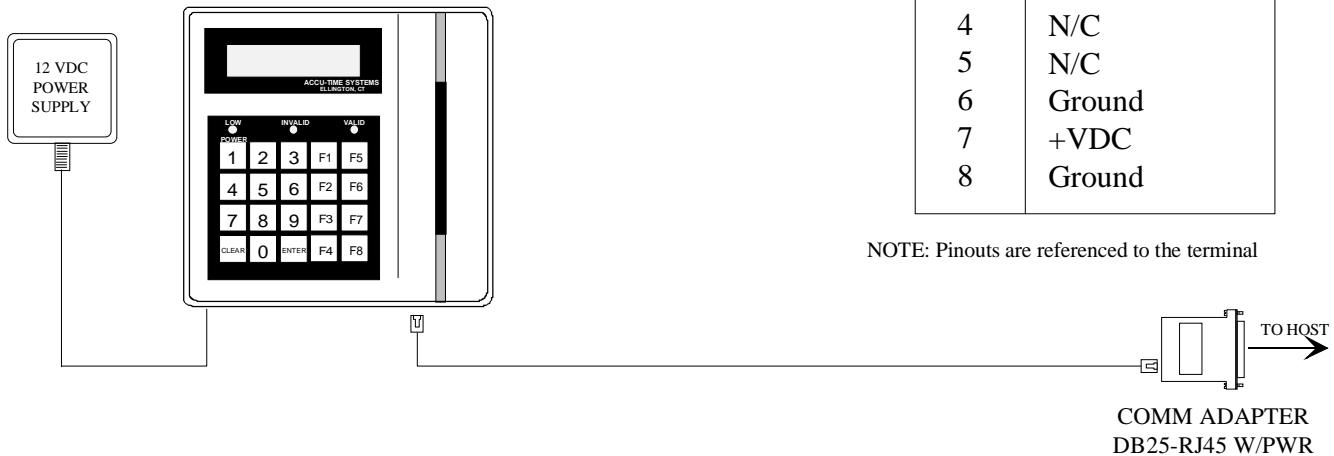
Data Cable

For RS232 applications, ATS[®] recommends using its modular telephone type data cable. This eight- (8) conductor shielded flat cable has RJ-45 modular plugs on each end. The fifty- (50) foot cable (63-2003-02) may run along side base-moldings, walls, overheads, or in hostile environments through conduit tubing. One end of the cable terminates into the E-Series communication port while the other terminates into the host computer's serial port via an ATS[®] RS232 Communication Adapter.

RS232 INSTALLATION

Pin #	Description
1	Earth Ground
2	Receive
3	Transmit
4	N/C
5	N/C
6	Ground
7	+VDC
8	Ground

NOTE: Pinouts are referenced to the terminal



3K232.DRW

ACCU-TIME SYSTEMS INC.

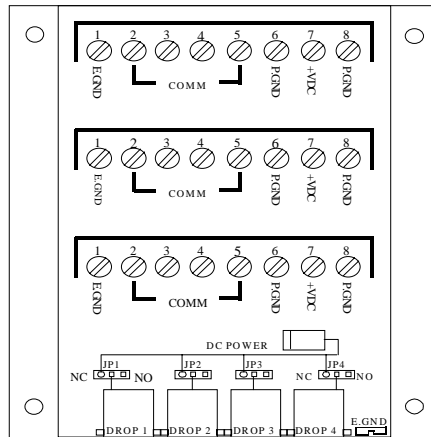
For RS485 communication applications, ATS[®] recommends using a data transmission cable that adheres to the following specifications:

- 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 material.**

(*NOTE* If the host is not equipped with an RS485 port, an ATS[®] RS232/485 Converter with 12 volt power pack assembly will convert the terminal communication lines to RS232 levels. The host output of the RS232/485 Converter plugs directly into the ATS[®] RS232 Communication Adapter).

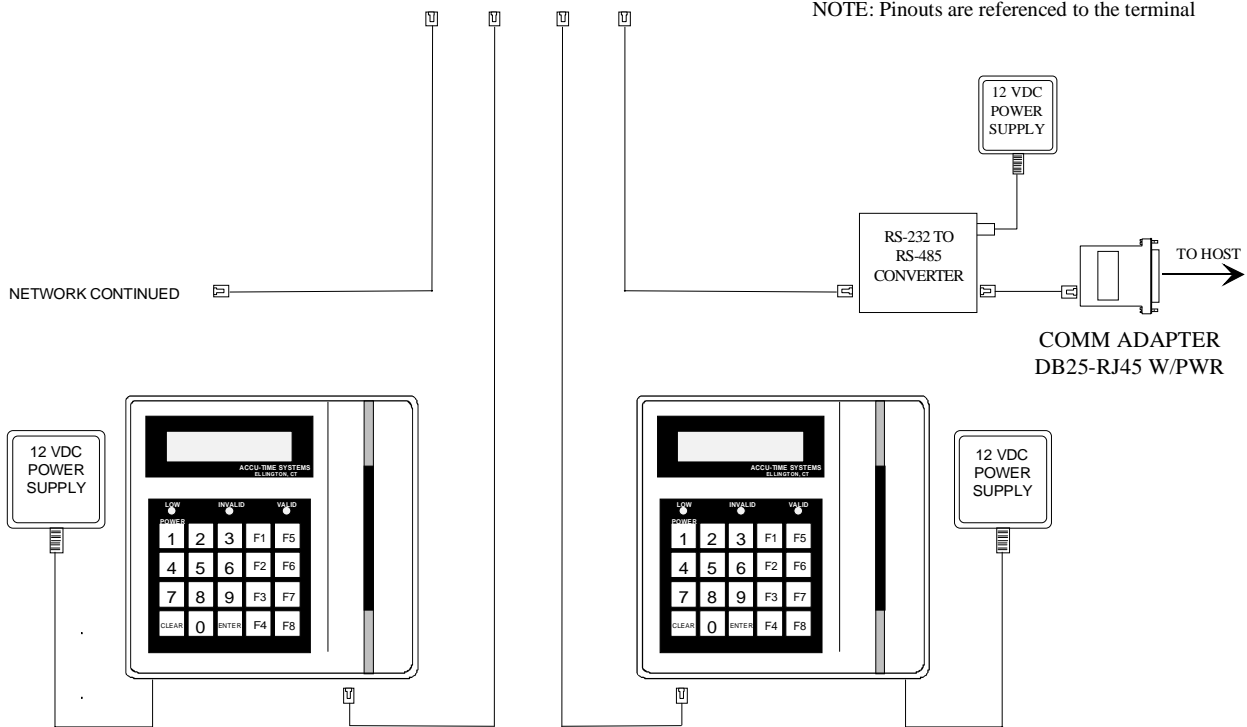
RS485 allows for the E-Series to be used in multi-dropped networks. Thirty-two (32) terminals can be supported on a single host communication port. The use of ATS[®] Series 1000 Network Controllers allows up to five hundred and twelve (512) terminals on a single host communication port.

MULTI-CLOCK - RS485 INSTALLATION



Pin #	Description
1	Earth Ground
2	DI -
3	DO +
4	DO -
5	DI +
6	Ground
7	+VDC
8	Ground

NOTE: Pinouts are referenced to the terminal



Terminal Face

Align the faceplate of the E-Series over the wall mount assembly.

Plug the data cable through one of the perforated knockouts of the wall mount assembly into the eight-(8) position communication port of the E-Series. Attach the output of a 12VDC power pack assembly into the power jack of the E-Series. Plug the primary of the power pack assembly to the conventional wall outlet. Place the terminal USE/TEST switch into USE position.

The E-Series will power-up and display the on-line default message. (*Refer to the ATS SETUP MODE section of this manual for terminal communication setup parameters*) Attach the remaining end of the data cable into the host computer port. The E-Series is now ready for operation.

ACCU-RATE™ SET-UP AND DIAGNOSTICS

POWER UP

To power up the E-Series a 12VDC source must be applied to the terminal power jack. The E-Series, with the TEST/USE switch placed in the USE mode, beeps, executes a power up sequence and displays the message “**TERMINAL LOCKED**”.

ACCESSING TEST MODE

To access the test mode:

- 1) Unlock the base assembly on the E-Series.
- 2) Locate the Test/Use switch on the back of the terminal.
- 3) Slide the switch into the TEST position (away from the modular jacks). The E-Series displays “**ATS TEST MODE**”.
- 4) By pressing the CLEAR key, the user can step through the selections. (*NOTE* Test mode may be exited at any time by placing the Test/Use switch back to the USE position and pressing the CLEAR key).

SELECTIONS:

- **ATS TEST MODE:** Tests the Keypad, Display, Memory, Real Time Clock and Bar Code or Magnetic Slot reader.
- **ATS SET-UP MODE:** Configures the communication parameters—Baud Rate, Parity Bit, Terminal Address, and Terminal Application Type.
- **ATS NETWORK TEST:** Performs a terminal to host communication loop-back test. Verifies integrity of cabling.
- **ATS BATTERY TEST:** Checks the terminal battery backup option. (E-Series exempt)
- **ATS DI-DO TEST:** Checks the Digital Input/Digital Output auxiliary port by performing a loop-back test.
- **ATS RESTART MODE:** Resets the terminal, clears all data from memory and performs a power-up sequence.

ATS TEST MODE:

ATS TEST MODE checks the functionality of the terminal Keypad, Memory, Real Time Clock and Bar Code or Magnetic Slot reader.

To enter the TEST MODE, press the ENTER key. The message “**ATS TEST MODE**” appears on the top line of the display. The 2nd line of the display indicates the program (EPROM) number. By pressing the ENTER key the following information appears:

ATS TEST MODE (XXX) (YY)

The display shows “**ATS TEST MODE**” on the top line followed by two sets of numbers. The first number (XXX) indicates the amount of memory installed (in Kilobytes). The right most number (YY) indicates the terminal Real Time Clock incrementing in seconds (00-59).

Testing the Keypad

At this time the user may test the keypad assembly. Each time a key is pressed the terminal will beep and the key value will appear on the 2nd line of the display. Press the ENTER key. The message “**KEY INPUT ACCEPTED**” is displayed. Each time the ENTER key is pressed an internal test of the terminal’s communication port is performed. If an error is detected the message “**COMM PORT FAIL**” will display, the invalid light will flash and the negative acknowledgement beeper tone will cycle. This message will continue until power is removed from the terminal.

Testing the Badge Reader

ATS[®] TEST MODE accepts inputs from slot readers (optical or magnetic). To test the reader, simply swipe the applicable bar code or magnetic stripe badge. The terminal beeps and displays the badge data.

To proceed to the ATS SETUP MODE press the CLEAR key.

ATS SETUP MODE

ATS SETUP MODE allows the operator to configure the terminal for communications with the host computer. The E-Series default parameters are set as follows:

Baud Rate	9600
Parity	ODD
Address	01
Terminal Application Type	A

To enter the ATS SETUP MODE, press the ENTER key at the “**ATS SETUP MODE**” display prompt. (Prior to pressing the ENTER key the 2nd line of the display will indicate the current terminal setup values)

Baud Rate

To change the terminal baud rate:

1. Press the CLEAR key to step through the baud rate choices:

19200
9600
4800
2400
1200
M1200 (modem)
M2400 (modem)

2. When the desired baud rate is displayed, press the ENTER key to store the value and advance to the next parameter.
3. If a modem baud rate is selected, a self-test will be performed on the modem. The results of this test will be displayed. The operator will be prompted to enter the number of auto answer rings.

NOTE: If no modem is installed and a modem baud rate has been selected, the modem self test will fail.

Parity

To change the parity:

1. Press the CLEAR key to step through the parity choices:

ODD
EVEN
NONE

2. When the desired parity is displayed, press the ENTER key to store the value and advance to the next parameter.

Address

To change the terminal address:

1. Press the CLEAR key to increment the address values from 01 to 32.
2. When the desired address is displayed, press the ENTER key to store the value and advance to the next parameter.

Terminal Application Type

The Terminal Application Type is used as a delimiter by the host for routing application information to the terminal. (I.e. An access control terminal could have a different terminal type than a time and attendance terminal)

To change the terminal application type:

1. Press the CLEAR key to increment the type from A to J.
2. When the desired type is displayed, press the ENTER key to store the value and advance to the ATS NETWORK TEST.

ATS NETWORK TEST

ATS NETWORK TEST is a two-part test. The first allows the network wiring between the terminal and the host to be checked for open connections or wiring errors. This test requires that the ATS RS232 Communication Adapter which is plugged into the host, be unplugged and pins 2 & 3 of the adapter jumped together (a paper clip should do the trick). Secondly, a local test can be performed on the terminal communication circuitry. This test will work for both RS232 and RS485 installations (RS485 installations require an ATS[®] 232/485 Converter). To enter NETWORK TEST, press the ENTER key at the “**ATS NETWORK TEST**” prompt. The following message appears:

**SWITCH TEST SWITCH
TO USE POSITON**

Place the switch on the back of the terminal into the USE position. The E-Series performs a network test in which the terminal sends data up to the host, via the network cabling. Since a temporary jumper was installed in the ATS RS232 Communication Adapter, the data will be looped back to the terminal. The following message should appear:

**NETWORK TEST PASS
ENTER TO RETEST**

To perform the local communication loop back, place the USE/TEST switch back to the TEST position and press the ENTER key. The following message should appear:

**NETWORK TEST PASS
ENTER TO RETEST**

Remove the jumper from the RS232 Communication Adapter and secure it back into the host port. Press the CLEAR key to advance to the next test.

ATS BATTERY TEST: (E-SERIES EXEMPT)

The ATS BATTERY TEST checks the terminal battery backup option if installed. To enter this test, press the ENTER key at the “**ATS BATTERY TEST**” prompt. The following message should appear:

**BATTERY TEST PASS
ENTER TO RETEST**

Note: If the battery backup option is not installed, the battery test will fail.

Press the CLEAR key to advance to the ATS DI-DO Test.

ATS DI-DO TEST

The ATS DI-DO Test is a two-part test that checks the terminal auxiliary DATA IN/DATA OUT port connection by performing a loop back communication test on the port circuitry. To enter the ATS DI-DO Test:

1. Press the ENTER key at the “**ATS DI-DO TEST**” prompt. The following message should appear:

**SWITCH TEST SWITCH
TO USE POSITION**

2. Place the test switch into the USE position. Since no loop back jumper is installed during this phase of testing the following message will appear:

DI-DO TESTING

DI-DO TEST FAILED ENTER TO RETEST

3. Place the TEST/USE switch into the TEST position. This will provide the terminal with its own loop back jumper.
4. Press the ENTER key. The following message should appear:

DI-DO TEST PASSED ENTER TO RETEST

5. Press the CLEAR key to advance to ATS RESTART MODE.

ATS RESTART MODE

The ATS RESTART MODE *clears all* transaction data and any download from memory. To restart the terminal:

1. Press the ENTER key to select the ATS RESTART MODE. The terminal displays:

PRESS ENTER TO CLEAR ALL TRANSACTION DATA

2. Press the ENTER key. The terminal displays:

CLEAR FOR CYCLE TEST *(Note: Cycle test is for factory diagnostics only)* ENTER FOR RESTART

3. Press the ENTER key. The terminal displays:

CLEARING MEMORY. . .

The green Valid LED will blink and the terminal will execute its power up sequence and return the terminal back to the beginning of the Test Mode.

4. To exit the Test Mode, place the TEST/USE switch to the USE position and press the CLEAR key. The terminal will execute its power up sequence. The terminal displays: “**TERMINAL LOCKED**” The terminal can now accept a host download.

This completes the ACCU-RATE test and set-up

At this time the E-Series can accept a download.

Downloading the E-Series

The E-Series terminal, when used with the standard Time and Attendance “C” application, can be downloaded with employee names, badge numbers, schedules, etc. These download commands and others are explained in the ATS DATA TRAKER™ command set manual. For further information, refer to this manual.

MAINTENANCE

The E-Series is a maintenance-free data collection device. The only required procedure is periodic cleaning of the badge reader.

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

TROUBLESHOOTING GUIDE

Problem: Terminal does not power up and no 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).

Problem: Terminal display is blank (no character or backlight)

Possible cause: The primary of the power pack assembly is not plugged into a 110VAC-wall outlet.

Solution: Test the outlet by plugging in another appliance or check that the secondary supply is plugged into the terminal.

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

NOTE: The terminal will operate for approximately 4-hours with battery power when 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: Yellow Low Power indicator is lit.

Possible cause: Low DC power is attached.

Solution: Replace 12-volt DC power pack.

Possible cause: Terminal does not go blank after unplugging the battery connector.

Solution: Unplug and replace the power pack assembly.

Problem: Terminal is not communicating with Host.

Possible cause: HOST TEST/USE switch is in the TEST position

Solution: Place the HOST TEST/USE switch is in the USE position.

Possible cause: DCT 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 the DCT do not match those of the Host.

Solution: Refer to the ACCU-RATE™ test and diagnostics section for set-up directions.

Problem: DCT 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 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

Note: If all solutions fail try reading badge in the ACCU-RATE™ test mode.

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 the ACCU-RATE™ test mode.

If all solutions have been explored and the problem still exists, contact the Accu-Time® Product Service Department at (860) 870-5000 during normal working hours 9 AM to 5 PM- 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 DCT has no user serviceable parts. The Accu-Time® terminal must be operated within the parameters included in this manual. Any operation performed contrary to these parameters will void the warranty.

FCC STATEMENT

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 in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

- * Reorient or relocate the receiving antenna.
- * Increase the distance between the time clock and the receiver.
- * Connect the equipment into an outlet on a circuit different from that which the receiver is connected.

FCC Warning: To assure continued FCC emission limit compliance, the user must use only the recommended shielded interfacing cable when connecting to a host computer. Also, any unauthorized changes or modifications to this equipment would void the user authority to operate this device.