§2.983 (d)(8) Operation Manual

Please see next page for Operation Manual.

AH1101 Handheld Reader

User Guide

October 1998

PRELIMINARY
DRAFT

Amtech Systems Division

Intermec
Technologies Corporation

A **UNOVA** Company

Information in this document is subject to change and does not represent a commitment on the part of Intermec Corporation.

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WARNING TO USERS IN THE UNITED STATES

FEDERAL COMMUNICATIONS COMMISSION (FCC) RADIO FREQUENCY INTERFERENCE STATEMENT
47 CFR §15.105(a)

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 Federal Communications Commission (FCC) rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency (RF) energy and may cause harmful interference to radio communications if not installed and used in accordance with the instruction manual. Operating this equipment in a residential area is likely to cause harmful interference, in which case, depending on the laws in effect, the users may be required to correct the interference at their own expense.

NO UNAUTHORIZED MODIFICATIONS
47 CFR §15.21

CAUTION: This equipment may not be modified, altered, or changed in any way without permission from Intermec Technologies Corporation. Unauthorized modification may void the equipment authorization from the FCC and will void the Intermec warranty.

USE OF SHIELDED CABLES IS REQUIRED
47 CFR §15.27(a)

Shielded cables must be used with this equipment to comply with FCC regulations.

A license issued by the FCC is required to operate this RF identification device in the United States. Contact Intermec Corporation for additional information concerning licensing requirements for specific devices.

Intermec Technologies Corporation
USA

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Chapter 1

Introduction

Proper Use of Handheld Reader

This guide explains how to set up the handheld reader and successfully read tags. This guide also covers field operations and periodic maintenance of the reader.

Who Should Use This Guide?

This guide is designed to be used by personnel that will be reading tags or verifying a tag's operation.

Brief Summary of Information Covered in User Guide

The user guide presents the distinction between the low-power and high-power units (Chapter 1.0); instructions for properly setting up the reader, charging the batteries, connecting reader to a personal computer, and installing sample software on a PC (Chapter 2.0); operating the handheld reader and reading a tag (Chapter 3.0); maintaining the handheld reader (Chapter 4.0); and technical specification information (Appendixes A and B).

Low Power Versus High Power Reader

The handheld reader comes in two models: low power and high power. The low power unit has a read distance of one foot (ft) and does not require a Federal Communications Commission (FCC) license to operate. The high power unit has a read distance of 8 ft and requires an FCC license to operate. The low and high power units are marked with a power rating label on the reverse side (Figures 1-1 and 1-2).

```
FCC ID: FIH11010533402
AMTECH
MADE IN U.S.A.

This device complies with
Part 15 of the FCC Rules.
Operation is subject to the
following two conditions:
(1) This device may not
cause harmful interference,
(2) This device must accept
any interference that
may cause undesired
operation.

MODEL: AH1101-001
ASSEMBLY: 05334-02
SERIAL NO.:_____
DATE:_____
```

Figure 1-1 AH1101 Label Designating Low Power Unit

```
FCC ID: FIH11010533401
AMTECH
MADE IN U.S.A.


This device complies with
Part 15 of the FCC Rules.
Operation is subject to the
condition that this device
does not cause harmful
interference.

MODEL: AH1101-010
ASSEMBLY: 05334-01
SERIAL NO.:_____
DATE: _____
```

Chapter 2

Setting Up for First Use

Setting Up for Field Operation

Before checking tags with the handheld reader, ensure that the reader battery pack is charged.

Checking For All Parts

Ensure you have all the components of the handheld reader. These are

- AH1101 Handheld Reader

- Test tag

- Battery charger

- 3.5-inch diskette with sample software

The handheld reader kit components are shown in Figure 2-1.

(Photo to be supplied for final draft.)

Charging the Battery

Remove battery charger from carrying case and plug into standard 110/120 V AC outlet. Remove the red rubber cover from the charger port (see Figure 2-2) and plug cord into port. The battery must be charged for at least 2 hours prior to the first use.

(Photo to be supplied for final draft.)

Computer and Cabling Requirements

The tag information read by the handheld reader is displayed on the reader screen. This information can also be displayed on the user's computer. This is done by connecting the reader to the RS232 port of a palmtop computer or host computer via a standard DB9 cable.

Operating the AH1101 Handheld Reader

Switching the Unit On and Off

Turn the reader on and off by pressing the red scan button on top of the unit. Figure 3-1 shows the initial screen display.

```
Amtech TDT
VERSION -- 2.00
```

Figure 3-1 Initial Screen Display

Reading a Tag

Note A low-power handheld reader has a maximum read range of 1 ft. A high-power handheld reader has a maximum read range of 8 ft.

To read a tag, perform the following steps.

Step 1. Slip the safety strap over your wrist and grasp reader from the sides (see Figure 3-2).
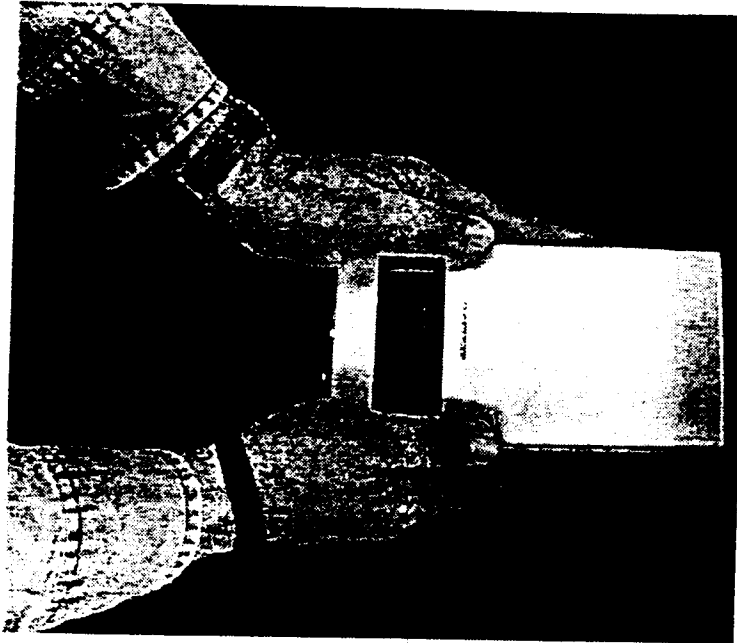
Figure 3-2 Correct Way to Hold Reader for Tag Scanning

Step 2. Aim the handheld reader at the tag to be read and press the Scan button once. You will hear an audible beep indicating that the reader is on. An initial screen is displayed followed by the tag information. Figure 3-3 shows a display of a successful tag read.

AT5110	1A	
LERTA		02

Figure 3-3 Typical Tag Information Display

To correctly read a tag, the handheld reader must be correctly positioned. Figure 3-4 shows the correct handheld reader orientation for reading a tag.
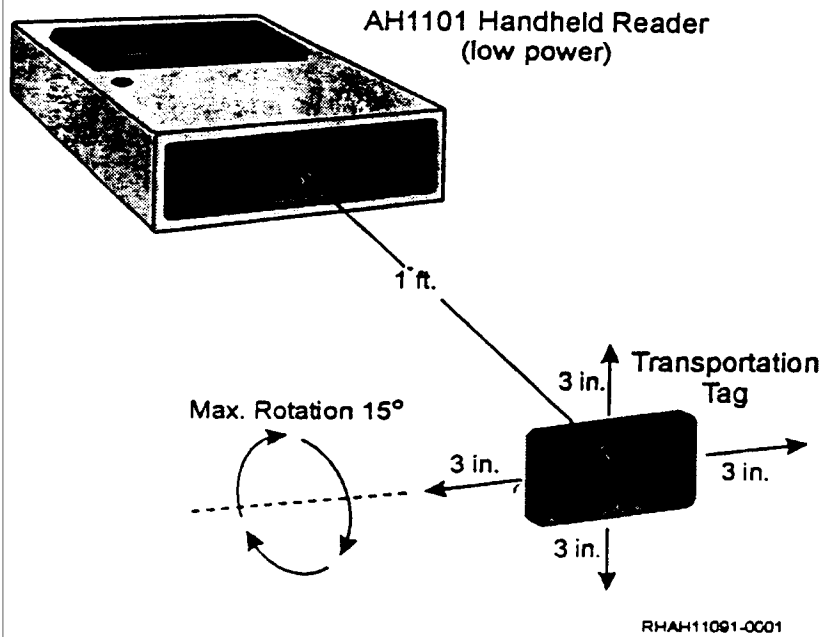
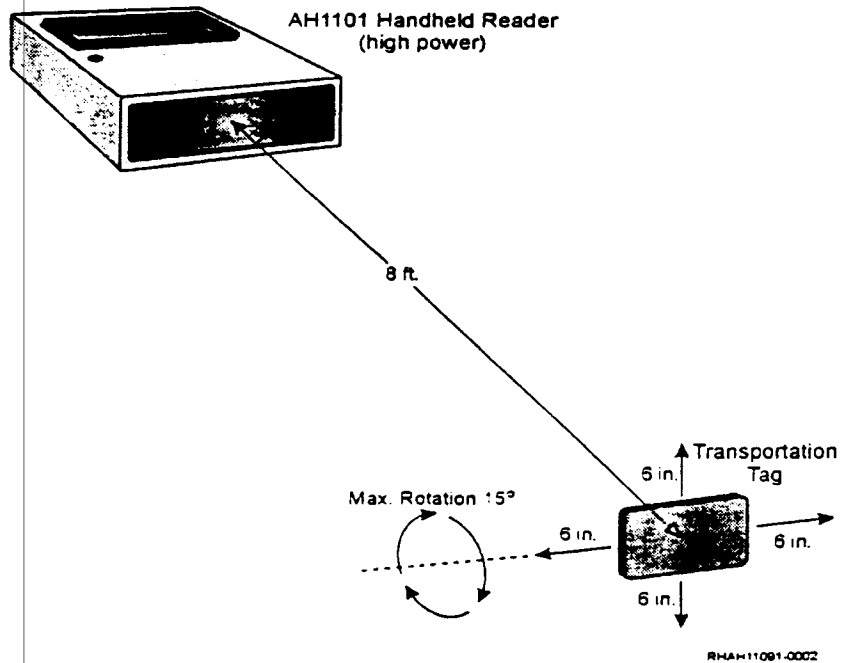**Figure 3-4** Distance and Orientation for Correctly Reading a Tag Using the Low-Power Handheld Reader

Figure 3-5 Distance and Orientation for Correctly Reading a Tag Using the High-Power Handheld Reader

Note If the tag is too far away to be read or if the reader is oriented incorrectly it will not read the tag.

Step 3. Read tag data from the handheld reader screen.

Screen Display

Tag information is displayed on reader screen for 20 seconds. The information can also be displayed and saved to an external device such as a palmtop computer.

To display tag data on an external device, perform the following steps.

Step 1. Remove cover from DB9 connector at base of handheld reader.

Step 2. Attach cable from reader to external device. Follow steps outlined above to read a tag. Use user-defined program to record the tag information on the external device.

Power Requirements

The rechargeable battery will read 600 tags for each charge. Battery recharging takes approximately 2 hours. The maximum duty cycle is 100 tag reads in 16 minutes.

Chapter 4

Maintenance

Precautions and Periodic Maintenance Information

The AH1101 reader's electronic circuitry can be damaged by certain extreme environmental conditions. Do not drop the unit or strike it against hard surfaces. Do not store where temperature will exceed 150°F (65°C). Avoid storing the unit in direct sunlight. Storing the display in direct sunlight will prevent use until the display cools enough to operate again.

There are no user-serviceable parts inside the handheld reader. Opening the case voids Amtech's warranty because circuitry can be damaged by electrostatic discharge.

Periodic maintenance consists of cleaning the exterior case with a cloth that is lightly dampened with glass cleaning solution. Do not use solvents to clean the reader because these will damage the case. When cleaning the screen display, do not damage the screen surface. Any damage, such as scratching, might make the displayed information illegible.

MAINTENANCE

Precautions and Periodic Maintenance Information

PC Interface Description

The handheld reader's PC interface complies with the RS-232 standard for data terminal equipment and uses the following protocol settings.

Data Rate	19,200 baud
Data Bits	8
Parity	None
Stop Bits	1
Software Flow Control	None
Hardware Flow Control	None

Figure A-1 shows the pinout locations for the interface plug.

Unassigned 6
Unassigned 7
Unassigned 8
Unassigned 9

1 Unassigned
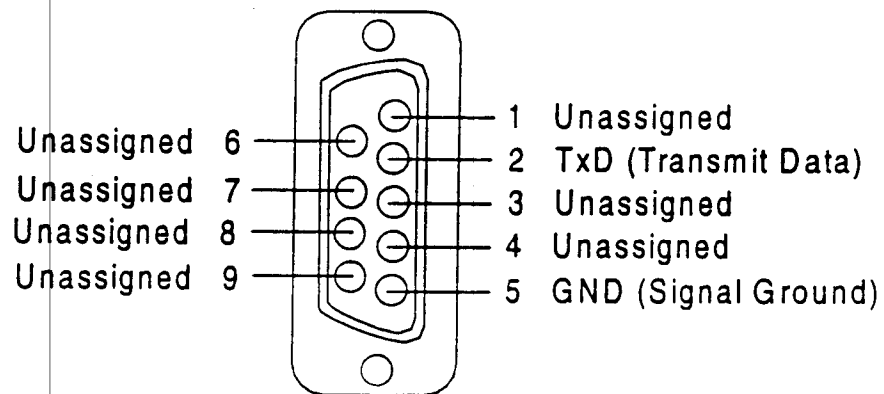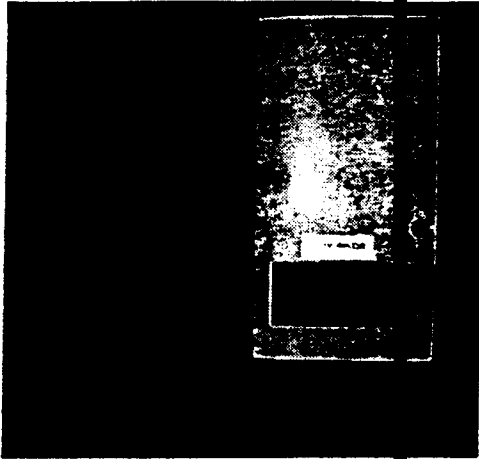2 TxD (Transmit Data)
3 Unassigned
4 Unassigned
5 GND (Signal Ground)

Figure A-1 Pinout Locations on DB9 Interface Plug

-
- **PC Interface Description**
-
-

AH1101 Handheld Reader

and vibration rated, and UV stabilized

POWER REQUIREMENTS

POWER SOURCE
Rechargeable battery pack

BATTERY OPERATION
600 reads per charge
(fully charged battery pack)

PHYSICAL

SIZE
7.50 x 3.88 x 1.56 in.
(19.05 x 9.85 x 3.96 cm)

WEIGHT
1 lb (0.45 kg)

ENVIRONMENTAL

OPERATING TEMPERATURE
+32°F to +104°F
(0°C to +40°C)

STORAGE TEMPERATURE
–4°F to +122°F
(–20°C to +50°C)

HUMIDITY
90% noncondensing

VIBRATION TOLERANCE
0.25 G_{rms}, 20 to 200 Hz

SHOCK
20 G, 1/2 sine pulse, 11 ms, 3 axes

LIFE EXPECTANCY

SERVICE LIFE
5 years minimum

* Operation in the United States is regulated by the Federal Communications Commission (FCC). Local regulations apply. The user is required to obtain a license issued by the FCC for high power unit. Contact Amtech for more information.

SPECIFICATIONS

COMMUNICATIONS

FREQUENCY SELECTION
913.6, 915.0, or 916.5 MHz*

READING RANGE
1 ft (0.3 m) - low power unit
8 ft (2.4 m) - high power unit

HARDWARE FEATURES

DISPLAY
2 lines x 16 characters, high contrast, backlit LCD

CASE
Polycarbonate, moisture resistant, shock,

FUNCTIONS

The AH1101 Handheld Reader is designed to meet a wide range of radio frequency identification (RFID) tag data acquisition application requirements. The AH1101 can be used alone, to simply display tag data, or as the "tag reader" portion of a more complex solution. It is designed as a data collection device to be attached to a commercially available "palmtop" personal computer systems or portable industrial environment RF data collection devices. Applications (not supplied by Amtech) to store, decode, display, or otherwise manipulate the data may be run on the PC allowing systems integrators to customize operation to match specific customer

requirements. The AH1101 reads both full- and half-frame tags.

FEATURES

The AH1101 kit includes the handheld reader, battery charger, test tag, and sample software diskette.

Serial Interface Each time the reader is triggered, it transmits the tag data acquired at 19.2 Kbits per second via an RS-232C interface.

Weather-resistant Enclosure

Durable weather-resistant case permits use in inclement weather.

Frequency Capability Operates at specified frequencies in the 915-MHz band.

RF Tag Compatibility Decodes Amtech 64- and 128-bit access control tags such as AT5100 and AT5102. These tags may be programmed with either 10 or 20 alphanumeric characters or Wiegand binary formats.

Wiegand Format Compatibility
Reads access tags formatted to a wide range of proprietary formats. The SIA 26-bit industry standard is the default. Custom Wiegand 25- to 54-bit formats can be developed to match ID card formats used by existing security systems. Wiegand-formatted tag information is not directly readable to the user. Tag information must be decoded by application software to make it understandable.

Power Rechargeable battery pack provides power.

Electromagnetic Compatibility
Low and high power units have been tested and comply with limits established by Part 15 of the Federal Communications Commission (FCC) rules for a Class A digital device.

Equipment License User required to obtain Part 90 site license from the FCC to operate high power unit in the United States.

ACCESSORIES

Test Tags Hexadecimal, full- and half-frame tags with labels showing the correct screen displays.

Sample Software Self-installing software with "public" (not licensed) source and executable code for connecting the AH1101 to a RS-232 COM port, acquiring tag data, and saving to a file.

Carrying Case Foam-lined case for safe transport of unit.

DOCUMENTATION

AH1101 Handheld Reader User Guide