MICROSCAN®

HawkEye™ 1500 Series
Quick Start Guide

V2.4.1, Nov 2008

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Preface

PREFACE Welcome!

Purpose of This Manual

The purpose of the manual is to get you up and running quickly and confidently with your HawkEye™ 1500.

Manual Conventions

The following typographical conventions are used throughout this manual.

- Items emphasizing important information is **bolded**.

- Menu selections, menu items and entries in screen images are indicated as: Run (triggered), Modify..., etc.

Preface

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CHAPTER 1 HawkEye™ 1500 Quick Start Guide

The Quick Start Guide contains step by step procedural information to set up the Microscan HawkEye™ 1500 series camera. The camera can read both 1-D barcode and 2-D Data Matrix symbologies, and uses patented image lighting, capturing and decoding to read Data Matrix direct part marks created with laser etch, dot peening, ink-jet, chemical etch, casting, and other techniques on a variety of surfaces.

Package Contents

Please take a moment to confirm that the package contains the following items, as shown in Figure 1–1:

• CD (contains software and documentation)

• HawkEye™ 1500 smart camera (1515 shown in Figure 1–1)

• Serial communications cable

• Power supply with international plug adapters (optional accessory)

FIGURE 1–1. Package Contents

HawkEye 1515

Serial Communications Cable

Power Supply with International Plug Adapters
(Optional)

Note: Newer HawkEye 1515 cameras look different that the camera shown here.

Recommended Configuration

The minimum recommended system configuration is a PC with a Pentium II 200 MHz and 64MB of memory. This product runs on Windows 2000 (SP 4) and Windows XP (SP 2).

WARNING! DO NOT LOOK AT THE LASER. WHEN READING PARTS THAT ARE HIGHLY REFLECTIVE, BE CAREFUL THAT THE LASER IS NOT REFLECTED INTO SOMEONE'S EYE.

Getting the HawkEye™ Up and Running

At this point, the PC is optional, as the HawkEye™ 1500 will operate in its default configuration. The PC may be needed later to adjust HawkEye™ 1500 operating parameters to exactly match particular application requirements. Ultimately, a device such as a PC will be needed to capture the data output sent by the HawkEye™ during the scanning operation.

Use the following procedure to get your HawkEye™ 1500 up and running:

1. Carefully remove the HawkEye™ 1500 from its packaging.

2. For maximum adjustment flexibility, mount the HawkEye™ 1500 on an adjustable ball swivel type mount (not supplied).

3. Adjust the HawkEye™ 1500 to a reading angle of approximately 20° off the symbol's vertical axis or surface normal.

   Surface normal is the axis that is perpendicular to the surface on which the symbol is located. Visually, you can determine the 20° angle by aligning the symbol's surface normal parallel to the top edge of the HawkEye™ 1500 graphic logo that is located on either side of the camera.

   This scan angle reduces surface glare and enhances contrast. The angle may be increased or decreased (± 10°) to optimize read performance on different symbol surfaces. (See Figure 1–2.)

FIGURE 1–2. Optimal Mounting for the HawkEye™ 1515

Note: 20° (dotted line is vertical) is the correct angle for the HawkEye™ 1515, as shown in Figure 1–2. However, due to the robustness of the algorithm, you can adjust the camera ± 10° to optimize read performance on different symbol surfaces.

FIGURE 1–3. Optimal Mounting for the HawkEye™ 1525
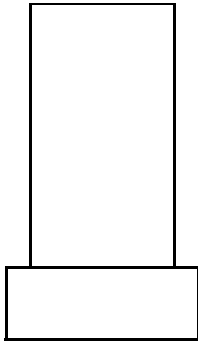
Note: The HawkEye™ 1525 should be mounted perpendicular to the symbol being read, as shown in Figure 1–3.

4. Connect the power cord to the outlet and to the rear panel of the HawkEye™ 1500 (DC-IN).

Apply power and listen for three beeps at the end of the boot-up cycle, which takes approximately 15 seconds. Once the HawkEye™ completes its boot cycle, it is operational, and ready to read symbols. This is indicated by the yellow Mode indicator being on.

Note: By default, the HawkEye™ 1500 ships with DHCP enabled. If the HawkEye™ 1500 is not connected to a network with DHCP, it will time out after 15 seconds.

The HawkEye™ 1500's default configuration is called Demo mode, which allows easy operation and testing, as it does not require any external signals to operate. In Demo mode, the HawkEye™ 1500 is programmed to keep both lighting and laser targeting permanently on. It also scans continuously for symbols (continuous internal trigger), while automatically adjusting the Photometry parameters (Exposure and Gain) to their optimum settings.

5. Place a Data Matrix or Barcode symbol under the HawkEye™ 1500. See the sample symbols on page 1–19.

6. Establish the read range by physically moving the HawkEye™ 1500 toward the symbol, starting from about 6 inches away, until the two laser dots are close together on the symbol. See Figure 1–4.

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FIGURE 1–4. Laser Targeting
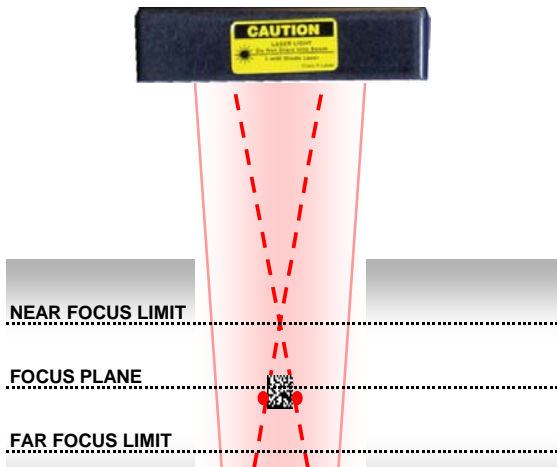
Note: The point where the laser dots converge is when the HawkEye™ 1500 is at "near focus." Moving the HawkEye™ 1500 away from the symbol slightly will improve the focus.

If you are using a HawkEye™ 1515, remember to keep the 20° tilt angle to the symbol surface to eliminate reflections.

HawkEye™ 1510 and 1500 XL series do not have laser targeting.

The symbol is now within the HawkEye™ 1500's read range. A good read will be indicated by a beep and the illumination of the green "Pass" indicator.

Using QuicSet® Functionality

The HawkEye™ 1500's QuicSet® functions help you set up the camera without the need for an external program or PC. The QuicSet® functions are:

• "QuicSet Symbol Alignment" on page 1-7

• "QuicSet Decoder Optimization" on page 1-9

• "QuicSet Decoder Factory Defaults" on page 1-9

Figure 1–5 shows the HawkEye™ 1500 rear panel with the QuicSet recessed button highlighted.

FIGURE 1–5. HawkEye™ 1500 Rear Panel
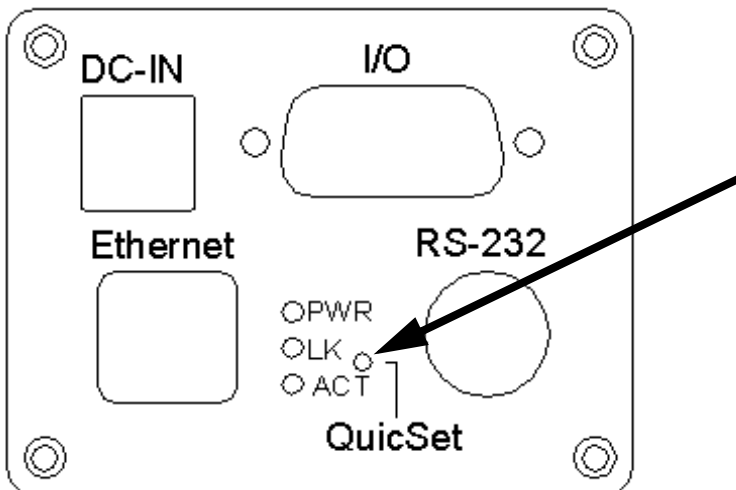
QuicSet Symbol Alignment

In its default mode of operation, the HawkEye™ 1500 is programmed in a continuous read mode (non triggered) with targeting and illumination constantly on. In this mode, the HawkEye™ 1500 automatically adjusts the Gain and Exposure parameters to the optimal level for the part that is within its field of view. This is called Auto Photometry. The Auto Photometry algorithm works with the data that is in the center of the field of view (FOV). Therefore, place the part that is being read as close as possible to the center of the FOV. To aid you in the alignment of the symbol in the center of the FOV, use the following procedure:

1. Insert a paper clip into the hole marked QuicSet, and press once (see Figure 1–5).

   Ensure that the yellow Mode light is flashing. Physically position the HawkEye™ 1500 until the laser dots are almost together for small Data Matrix symbols, or slightly farther apart on the horizontal axis for bar code symbols.

Note: The HawkEye™ 1500 XL can still benefit from QuicSet alignment. Alignment and focus must be performed manually!

WARNING! DO NOT LOOK AT THE LASER. WHEN READING PARTS THAT ARE HIGHLY REFLECTIVE, BE CAREFUL THAT THE LASER IS NOT REFLECTED INTO SOMEONE'S EYE.

When the laser beams are centered on the symbol, a series of beeps will be heard. The beeps have three tones and three rates:

– Low — Signals that the symbol is in the field of view

– Middle — Signals that the symbol is close to optimal read position

– High — Signals the optimal position

The three LEDs above the blinking Mode LED correspond to the three beeps.

– With poor alignment, there are no LEDs flashing and there is no beeping.

– As the alignment improves, the LEDs begin to illuminate, from bottom to top, and beeping begins.

– At optimal alignment, all the LEDs are flashing and beeping is at its highest intensity.

2. Slightly move the HawkEye™ 1500 until the high intensity beep is achieved, lock down the camera's position, then press the QuicSet® button once to exit QuicSet® mode.

You will hear three short beeps and the Mode LED will return to steady on. This indicates that the HawkEye™ 1500 is ready to read using the QuicSet® mode settings.

QuicSet Decoder Optimization

When the HawkEye™ 1500 is set up on a line to read one specific type of mark, the Decode algorithm can be optimized to look for symbols of the same type and size. By optimizing the Decode algorithm, the part will be read more reliably and, in most cases, more quickly.

To optimize the decoder using QuicSet® while in continuous trigger mode, follow this procedure:

1. Insert a paper clip into the hole marked QuicSet and press twice (see Figure 1–5). The HawkEye™ 1500 learns the symbol, which can be verified by the green LED and one quick beep. You can verify the learn by placing a different symbol in front of the HawkEye™ 1500, at which time the Fail light will come on.

QuicSet Decoder Factory Defaults

When the HawkEye™ 1500 needs to read a different part or a variety of parts, you need to "open up" the Decoder to read the different parts and symbols. These are the factory default settings for the HawkEye™ 1500. If the Decoder has previously been optimized, simply:

1. Insert a paper clip into the hole marked QuicSet and press and hold it for 3 to 4 seconds (see Figure 1–5). You will hear a short beep.

Now the HawkEye™ will read a variety of parts of differing sizes and symbology types.

Note: The equivalent remote command is RESET FACTORY. For more information, see the HawkEye™ 1500 Series Reference and Programmers Manual.

QuicSet Summary

TABLE 1–1. QuicSet® Summary

QuicSet Button...	To...
Press once	Enter QuicSet Alignment
Press once	Exit QuicSet Alignment
Press twice	Enter QuicSet Decoder Learn
Press and hold for 3 to 4 seconds	Enter QuicSet Decoder Factory Defaults

Setting Up RS-232 Communications

The HawkEye™ 1500 can communicate using RS-232 serial communications to a PLC or PC or some other device.

Use the following procedure to set up communications to the device:

1. Connect the supplied serial cable from the communication device to the HawkEye™ 1500.

2. Ensure that the device is set up to communicate at the same RS-232 communication settings as the HawkEye™ 1500.

   The default RS-232 communication settings are:

   – Baud rate — 115200

   – Data bits — 8

   – Parity — None

   – Stop bits — 1

   – Flow control — None

   For example, to communicate to a PC using HyperTerminal, first start the HyperTerminal program.

   a. Select File, Properties, Connect To, and Configure.

      The HyperTerminal Properties window is displayed, as shown in Figure 1–6.

FIGURE 1–6. HyperTerminal Properties Window
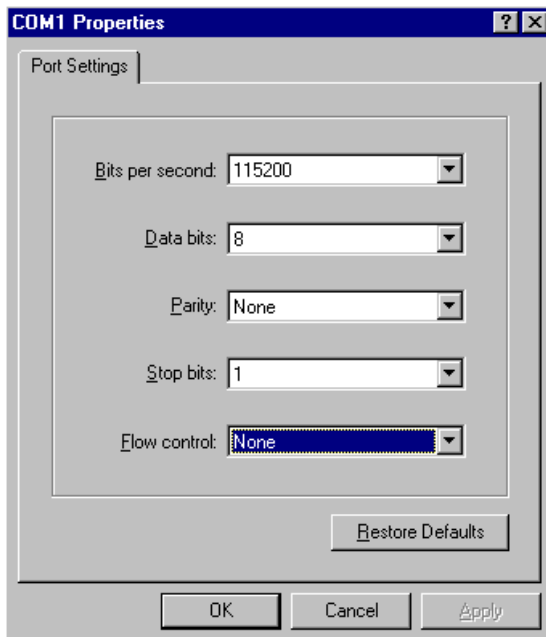
b. Configure all settings as shown in Figure 1–6.

c. Click OK.

Installing ReadRunner Using the Wizard

Note: This product runs under Windows 2000 and Windows XP

Note: You must be logged in as Administrator on your PC to install ReadRunner

ReadRunner is the HawkEye™ 1500 Graphical User Interface. Use the following procedure to install the ReadRunner software onto your PC:

1. Insert the HawkEye™ 1500 Series CD into your PC's CD drive.

2. Navigate to, and double click on, Setup.exe.

3. Follow the install wizard and use the suggested option to install the HawkEye™ 1500 software.

4. Cycle or reset the power on the HawkEye™ 1500.

The HawkEye™ 1500 is ready for use.

Setting Up Network Communications

When using TCP/IP, the HawkEye™ 1500 can utilize Dynamic Host Configuration Protocol (RFC2131) for dynamic IP addressing. You can also configure the camera to use a "static" IP address. If you do not have a network connection available, you must use RS-232 communications to configure and control the camera. If you do have a network connection available, please contact your MIS department to determine if your network uses DHCP addressing. If your network uses static IP addressing, contact your MIS department to obtain a unique static IP address for the camera before proceeding.

You can set up communications:

- "Using DHCP" on page 1-12

- "Using Static IP Addressing (No DHCP)" on page 1-13

- "Using an Ethernet Cross-Link Cable" on page 1-15

Using DHCP

Use the following procedure to set up communications on the HawkEye™ 1500 when your network has a DHCP server:

Note: If you are unsure of your network configuration, ask your MIS administrator.

1. Connect the Ethernet cable to the HawkEye™ 1500.

2. Power up the HawkEye™ 1500.

3. Verify that the ACT and LK LEDs on the back of the HawkEye™ 1500 are flashing or solid, which indicates Ethernet data activity.

The HawkEye™ 1500 is ready for use.

Using Static IP Addressing (No DHCP)

Note: Before you can complete this procedure, you must obtain a unique IP address for the HawkEye™ 1500. See your MIS administrator.

Use the following procedure to set up communications on the HawkEye™ 1500 using static IP addressing.:

1. Connect the serial cable to the PC and to the HawkEye™ 1500.

2. Reboot the HawkEye™ 1500.

Note: There will be a 15 second delay as the HawkEye™ 1500 searches for a DHCP server.

3. From the PC, launch ReadRunner.

4. Click Add Camera.

The Add Camera Button window is displayed, as shown in Figure 1–7.

FIGURE 1–7. Add Camera Button Window
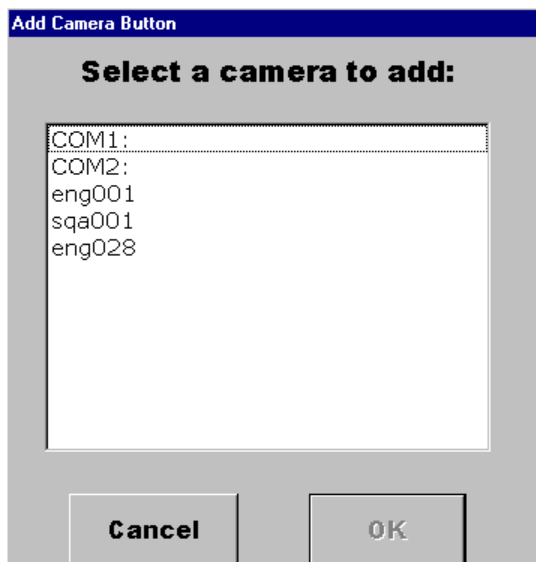
5. Click either COM1 or COM2, depending on where the serial communications cable from the HawkEye™ 1500 is connected.

Note: If you connect using HyperTerminal, the same COM port may not be reachable through ReadRunner. Disconnect the HyperTerminal connection if you want to communicate using ReadRunner.

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6. Click OK.

7. Click the COM button you just added.

8. Click Take Control.

9. From the Settings menu, click Serial/TCP Settings.

The Communications Configuration window is displayed.

FIGURE 1–8. Communications Configuration Window
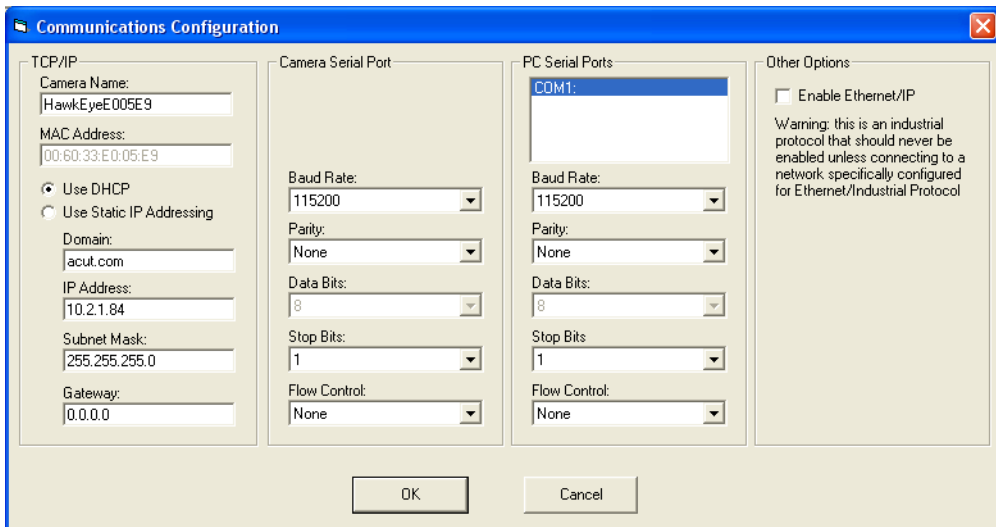
10. Click Use Static IP Addressing.

11. In the Camera Name box, enter a unique name for the camera.

12. In the IP Address text box, enter the IP address obtained from your MIS department.

13. In the Subnet Mask text box, specify the subnet mask provided by your MIS department.

14. If a Gateway was provided by your MIS department, enter it in the Gateway field; otherwise, leave it at 0.0.0.0.

15. Click OK, and then click Release.

16. Cycle or reset the power on the HawkEye™ 1500.

Note: If you cannot access the camera, use the RESET command (see "Commands Sent To and Output From the Camera" in Chapter 4 of the HawkEye™ 1500 Series User Manual, and the RESET command in Chapter 1 of the HawkEye™ 1500 Series Reference & Programmers Manual.

The HawkEye™ 1500 is ready for use.

Using an Ethernet Cross-Link Cable

Note: For Windows XP, see "Windows XP" on page 1-17.

Windows 2000

Note: You will need an Ethernet cross-link cable (not supplied) to complete this procedure. An ethernet cross-link cable is Microscan' HEENET-XL or equivalent.

Use the following procedures (there are two) to set up communications between one Windows 2000 PC and one HawkEye™ 1500 using a cross-link cable.

On the PC...

1. Connect the serial cable from the PC to the HawkEye™ 1500.

2. Log into the PC on an account with Administrator privileges.

3. Right click on My Network Places and click on Properties.

   This displays the Network and Dial-up Connections window.

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4. Right click on Local Area Connection and click on Properties.

This displays the Local Area Connection Properties window.

5. Select (check mark) Internet Protocol (TCP/IP) and highlight it.

6. Click Properties.

This displays the Internet Protocol (TCP/IP) Properties window.

7. Click Use the following IP address.

8. In the IP address text box, enter an IP address, such as 169.254.x.x.

9. In the Subnet mask text box, enter a subnet mask, such as 255.255.x.x.

10. Click OK.

On the HawkEye™ 1500...

1. Reboot the HawkEye™ 1500.

Note: There will be a 15 second delay as the HawkEye™ 1500 searches for DHCP (which it won't find).

2. From the PC, start ReadRunner.

3. Click Add Camera.

The Add Camera Button window is displayed.

4. Click COM1 to connect to the HawkEye™ 1500.

5. Click Take Control.

6. From the Settings menu, click Serial/TCP Settings.

The Communications Configuration window is displayed.

7. Click Use Static IP Addressing.

8. In the IP Address text box, specify an IP address.

Because you used 192.168.254.2 in the previous procedure, specify 192.168.254.3 here.

9. In the Subnet Mask text box, specify a subnet mask.

   Use 255.255.255.0 to match the PC.

10. Click OK.

11. Click Release.

12. Cycle or reset the power on the HawkEye™ 1500.

13. Exit ReadRunner and re-start it.

The PC and the HawkEye™ 1500 can now communicate over the cross-link cable.

Windows XP

Note: You will need an Ethernet cross-link cable (not supplied) to complete this procedure. An Ethernet cross-link cable is Microscan' HEENET-XL or equivalent.

Use the following procedures (there are two) to set up communications between one Windows XP PC and one HawkEye™ 1500 using a cross-link cable.

On the PC...

1. Connect the serial cable from the PC to the HawkEye™ 1500.

2. Log into the PC on an account with Administrator privileges.

3. Right click on My Network Places and click on Properties.

   This displays the Network Connections window.

4. Right click on Local Area Connection and click on Properties.

   This displays the Local Area Connection Properties window.

5. Select (check mark) Internet Protocol (TCP/IP) and highlight it.

6. Click Properties.

   This displays the Internet Protocol (TCP/IP) Properties window.

7. Click the Alternate Configuration tab.

8. Click User configured.

9. In the IP address text box, enter an IP address, such as 169.254.x.x.

10. In the Subnet mask text box, enter a subnet mask, such as 255.255.x.x.

11. Click OK.

On the HawkEye™ 1500...

1. Reboot the HawkEye™ 1500.

Note: There will be a 15 second delay as the HawkEye™ 1500 searches for DHCP (which it won't find).

2. From the PC, start ReadRunner.

3. Click Add Camera.

The Add Camera Button window is displayed.

4. Click COM1 to connect to the HawkEye™ 1500.

5. Click Take Control.

6. From the Settings menu, click Serial/TCP Settings.

The Communications Configuration window is displayed.

7. Click Use Static IP Addressing.

8. In the IP Address text box, specify an IP address.

Because you used 192.168.254.2 in the previous procedure, specify 192.168.254.3 here.

9. In the Subnet Mask text box, specify a subnet mask.

Use 255.255.255.0 to match the PC.

10. Click OK.

11. Click Release.

12. Cycle or reset the power on the HawkEye™ 1500.

13. Exit ReadRunner and re-start it.

The PC and the HawkEye™ 1500 can now communicate over the cross-link cable.

Sample Data Matrix Symbols & Barcodes

0123456789

HawkEye 1500

012345

Reader Programming Through Data Matrix

Setting Serial Communications

TTY 2400 N 8 1

TTY 9600 N 8 1

TTY 115200 N 8 1

Setting Triggers

TRIG T

TRIG C

Resetting

RESET DECODER

RESET APPMODE

RESET FACTORY

Setting Targeting

TARGET OFF   TARGET ON

Setting Beeper

BEEP N   BEEP Y

Setting Illumination

ILLUM OFF   ILLUM ON   ILLUM STROBE

Resetting ROI

ROI RESET

Setting Learn/Unlearn

LEARN   UNLEARN

Setting Photometry

PHOTO MAN   PHOTO AUTO

Saving

SAVE

Setting DHCP

DHCP Y   DHCP N

For Detailed Information

For detailed information about the HawkEye™ 1500, see the HawkEye™ 1500
Series User Manual and the HawkEye™ 1500 Series Reference and
Programmers Manual that are installed on the hard drive
(Start > Programs > ReadRunner #.# > Manuals).

Chapter **1** HawkEye™ 1500 Quick Start Guide