Sensus AR5000 User's Guide

Models AR5001 & AR5002

Sensus AR5000 User's Guide

FCC notice

This equipment has been tested and found to comply with the limits for Class B 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 to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by Sensus Metering Systems could void the user's authority to operate this equipment.

Contents

Chapter 3: **Find Route Information**

About the AR5000

The AR5000 is the latest hand-held data collection device from Sensus Metering Systems. This system provides a wide range of options for collecting information and simplifies many of the functions associated with reading utility meters. Use the information in this document as a reference for the basic features and setup options available in the AR5000.

You use the AR5000 series hand-held device to collect readings from utility meters. Readings take place along predefined routes. The device allows you to select a route and enter readings using several methods. Both the AR5001 and AR5002 model versions provide the same basic set of features, including the ability to enter meter reading data manually or with the Sensus TouchRead system. The AR5002 model has the added capability of reading Sensus RadioRead equipped meters.

Both devices also allow you to enter notes about locations, mark locations to follow up later, and manage situations where the information in the device doesn't match the locations on the route. You can also search through routes and readings, check that the route is complete, and obtain other statistics.

Office staff add route information into the AR5000 and extract your meter readings and notes from it by connecting it to a PC via a communication stand. The stand also charges the battery, which should last through your shift.

This chapter gives you an introduction to the device, including basic instructions for use, setup, and maintenance. The chapter is divided into the following sections:

- *Device Care & Handling* on page 1-3 - This section lists warnings and care instructions.
- *Use the Hand-Held Device* on page 1-4 - Basic instructions for the ON/OFF, keypad, and display functions.
- *Configuring the AR5000* on page 1-9 - Basic AR5000 configuration options.
- *Set Up & Use the Communication Stand* on page 1-18 - Basic setup instructions for the communication stand.
- *Charge the AR5000* on page 1-22 - How to charge the AR5000 and replace the battery.
- *Contact Customer Support* on page 1-27 - For Customer Support.

You can find instructions for reading route information in Chapter 2: *Collect Meter Data*. You can find instructions on searching for specific route-related information in Chapter 3: *Find Route Information*.

Device Care & Handling

Users need to do very little maintenance on the AR5000. Typically, keeping the device in good working order requires little more than occasional cleaning. Clean the case and keyboard of the AR5000 with warm water, a mild detergent, and a toothbrush.

Caution ⚠	Do not use any kind of brush on the display. A brush will scratch the display and make it difficult to read the text.

Caution ⚠	The AR5000 is water resistant, but not water-proof. Do not submerge the unit for extended periods.

If your AR5000 is going to be used in an environment where it will be regularly exposed to substances such as oil or tar that require stronger cleaning supplies, check with Sensus Customer Support for a list of approved cleaning chemicals that will not damage the case or seals on the AR5000. Find contact information for Sensus Customer Support in *Contact Customer Support* on page 1-27.

You do, however, need to observe some basic precautions when handling the AR5000. The unit is housed in a rugged, shock resistant, sealed case. But, it is a precision piece of equipment.

Caution ⚠	Do not drop the AR5000.

Use the Hand-Held Device

Typically, you are going to pick-up your AR5000 at the beginning of a shift and use it to collect meter reading information. Before you use the system, you need to familiarize yourself with the basic system controls.

This section provides information on the basic AR5000 controls and functions and is divided under the following headings:

- *Turn the Device ON/OFF* on page 1-4 - How to switch the power for the AR5000.
- *About the Key Controls / Functions* on page 1-5 - An overview of the basic function keys.
- *About the Meter Display* on page 1-7 - An overview of display and basic display controls.
- *How to Carry & Hold the AR5000* on page 1-8 - How attach straps and hold the AR5000.

➲ Turn the Device ON/OFF

You can leave the AR5000 switched ON for extended periods of time. The batteries are designed to keep the unit operating for more than enough time to complete an average work shift. Typically, you can use the AR5000 for a shift and then place the unit into the charging stand with the power switched ON (see *Charge the AR5000* on page 1-22).

> **Note** *To extend battery life, the AR5000 has a sleep feature that switches OFF the screen. If the unit is inactive for approximately 10 minutes, the system blanks the screen and sets the device to the power-saver mode.*

To switch the AR5000 ON/OFF...

➲ Press and release the On/Off key.

- If the system is ON, pressing the ON/OFF key blanks the screen and set the AR5000 to power-saver mode.

- If the system is in power-saver mode, pressing the On/Off key switches the AR5000 back ON and returns the system to the same screen that was displayed when the system switched to power-saver mode.

About the Key Controls / Functions

The Function keys on the AR5000 can be defined and used as shortcuts to many of the functions that you use frequently for adjusting configuration settings and viewing information.

There are five Function keys. However, you can access up to 12 different functions and three additional controls with these five keys. The list below provides a brief description of the default function key assignments. These function key assignments can be changed by office staff using a PC to communicate with and configure the device. You should find out whether the default assignments have been changed.

The following functions are available by pressing only the function key:

- F1 - Manual Read - Use this function key to display the Enter Text screen to enter a manual meter reading (see *Enter Manual Readings* on page 2-14).

- F2 - Note - Use this function key to display the Note screen for entering a note about a location, such as "beware of dog" (see *Enter Notes* on page 2-19).

- F3 - Search - Use this function to display the Search Route... menu to find a particular address, meter, or other information (see *Search the Route* on page 3-3).

- F4 - Mark - Use this function key to mark/unmark the currently selected location on a route so that you can

AR5000 Keypad & Display

easily go back to it later (see *Mark Locations* on page 2-20).

- F5 - Transaction History - Use this function key to display the transaction history of meter readings collected on the route from the beginning of the route to the most current reading (see *Review Previous Transactions* on page 3-25).

The following functions are available by pressing and holding the blue key and then pressing the function key:

- F6 (blue key + F1) - Configuration - Use this function to display the Configuration menu.
- F7 (blue key + F2) - Gun Utilities - Use this function key to display the Smart/AutoGun Utilities screen for linking to a SmartGun or AutoGun (see *Link the AR5000 to a TouchRead Device (SmartGun/AutoGun)* on page 1-9).
- F8 (blue key + F3) - This key is undefined by default.
- F9 (blue key + F4) - This key is undefined by default.
- F10 (blue key + F5) - This key is undefined by default.

The following functions and controls are available by pressing and holding the yellow key and pressing the function key at the same time:

- F11 (yellow key + F1) - This key is undefined by default.
- F12 (yellow key + F2) - Display Route Name - Use this function key to display the name of the currently selected route. The system displays a message with the route name. Press the Esc key to clear the route name message.
- Backlight ON/OFF (yellow key + F3) - Use this control to switch the backlight ON/OFF for better visibility in low-light conditions.
- Contrast Light (yellow key + F4) - Use this control to decrease the on-screen contrast and lighten the appearance of characters.
- Contrast Dark (yellow key + F5) - Use this control to increase the on-screen contrast and darken the appearance of characters.

The remaining keys on the AR5000 keypad work in much the same way as a standard typewriter keyboard. You can use these keys to enter alpha/numeric information or to navigate around the screens and menus as described in the various sections of this guide.

About the Meter Display

Typically, you will not need to make any adjustments related to the screen. However, you can adjust the display's contrast and backlight to your preferences (see *Adjust the Display* on page 1-13). In addition, you can set the size and style for the display font (see *Change the Display Font & Size* on page 1-11).

You view all of the AR5000's route information on the system's high-contrast Liquid crystal display screen. This monochrome display has a 4.1" diagonal viewing area, is shock-mounted, sealed, and equipped with a heater for cold weather operation.

Function Keys & Display
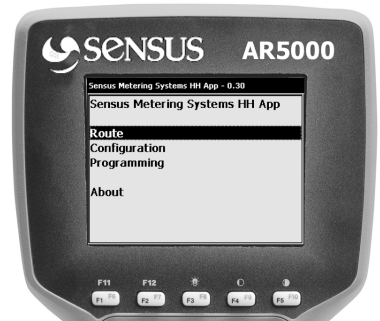
How to Carry & Hold the AR5000

You can use the AR5000 with two different types of carry straps. One strap allows you to sling the unit over your shoulder for hands-free carrying, and the other makes it easy to hold the device in one hand while you are reading meters.

Straps on the AR5000

Both the hand strap and the shoulder strap attach with clips to the attachment points at the top and bottom of the AR5000. Use the clips on the end of each strap to connect to the device, as shown in the illustration.

When you are carrying the AR5000 with the shoulder strap, you do not need to hold the device in your hands while walking. However, you do need to hold the device in one hand to operate the controls, enter any information, or search for data.

Holding the AR5000

Configuring the AR5000

You can configure a number of settings, before you take the AR5000 into the field. For example, everyone has different preferences for the system display brightness and volume settings. You can link the AR5000 to a TouchRead gun to transfer meter readings without the need to manually enter them. Or, you may want to check some of the basic system settings, such as the battery charge level.

This section provides procedures for configuring and verifying the following:

- *Link the AR5000 to a TouchRead Device (SmartGun/AutoGun)* on page 1-9 - How to configure the AR5000 to communicate with a TouchRead gun.
- *Change the Display Font & Size* on page 1-11 - How to adjust the size of the font on the screen.
- *Adjust the Display* on page 1-13 - How to adjust brightness and contrast of the screen.
- *View the Battery Status* on page 1-14 - How to check the battery.
- *View the Current HHD ID & User* on page 1-15 - How to check the ID number and user designation for the unit.
- *View the Date & Time* on page 1-16 - How to check the date and time.
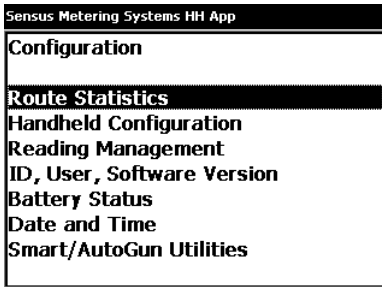- Change the Volume Setting - How to adjust the volume setting for the system sounds. ???

➲ Link the AR5000 to a TouchRead Device (SmartGun/AutoGun)

If you are going to use a TouchRead gun to collect meter data, then you need to link that gun with the AR5000. Linking enables the AR5000 to receive readings from the gun. Typically, this link is already established when you pick-up the

equipment at the start of the shift. However, you should always verify that the gun and the AR5000 are linked. If they are not, you need to perform the following procedure.

Configuration Menu

Sensus Metering Systems HH App

Configuration

Route Statistics
Handheld Configuration
Reading Management
ID, User, Software Version
Battery Status
Date and Time
Smart/AutoGun Utilities

To link a TouchRead device...

1   Open the Configuration menu.

- If you have just removed the AR5000 from the charging stand, the system automatically displays a Startup Screen.

  Use the PgUp/PgDn key to highlight Configuration on the Startup Screen. Press the Enter key. The system displays the Configuration Menu.

- While you are working on a route, press the F6 key. The system displays the Configuration Menu

> **Note**   *F6 is the default key assignment for the Configuration menu. Key assignments can be changed. For more information, see About the Key Controls/Functions.*
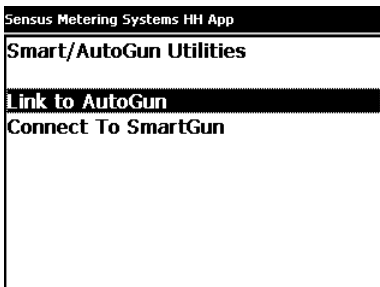
2   Use the PgUp/PgDn key to select Smart/AutoGun Utilities.

Smart/AutoGun Utilities Screen

Sensus Metering Systems HH App

Smart/AutoGun Utilities

Link to AutoGun
Connect To SmartGun

3   Press the ENTER key.

The system displays the Smart/AutoGun Utilities screen.

4   Use the PgUp/PgDn key to highlight Link To AutoGun.

5   Press the ENTER key.

The system displays the Link to AutoGun screen, with the message Waiting for AutoGun, and a status bar.

a Press and hold the trigger (center button) on the AutoGun.

b Release the trigger when the screen on the AutoGun displays a Configuration Menu.

c Use the arrow keys to highlight Link.

d Press the center button on the AutoGun.

The AutoGun displays a Link sub-menu.

e Use the arrow keys to highlight AR400x on the Link sub-menu.

f Press the center button on the AutoGun and hold the AutoGun no further than arm's length from the AR5000.

The AR5000 searches for a signal from the AutoGun. When the systems communicate successfully, the AR5000 displays the Smart/AutoGun Utilities screen again. The AutoGun displays the message Link enabled to HDDID xxx.

Sensus Metering Systems HH App

Smart/AutoGun Utilities

Link to AutoGun   OK ×

Waiting for AutoGun

Listening…

⊃ Change the Display Font & Size

Some users need to view large numbers and letters on the AR5000 screen. Other users prefer the text on the display to be smaller. You can adjust the appearance of the characters (display font) or the size of the on-screen text.
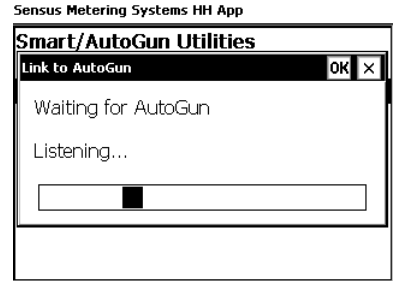
To change the font and size...

1 Open the Configuration menu.

• If you have just removed the AR5000 from the charging stand, the system automatically displays a Startup Screen.

Use the PgUp/PgDn key to highlight Configuration on the Startup Screen. Press the Enter key. The system displays the Configuration Menu.

Sensus Metering Systems HH App

Configuration

Route Statistics
Handheld Configuration
Reading Management
ID, User, Software Version
Battery Status
Date and Time
Smart/AutoGun Utilities

• While you are working on a route, press the F6 key. The system displays the Configuration Menu

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Note *F6 is the default key assignment for the Configuration menu. Key assignments can be changed. For more information, see About the Key Controls/Functions.*

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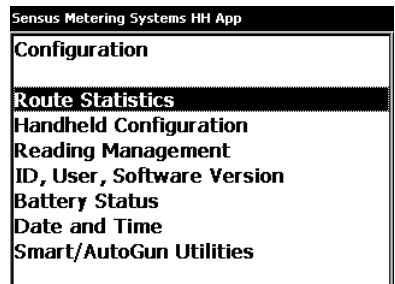
2 Use the PgUp/PgDn key to select Handheld Configuration.

Handheld Configuration Screen

3 Press the ENTER key.

The system displays the Handheld Configuration screen.

Sensus Metering Systems HH App

Handheld Configuration

Font
Function Keys Legend

4 Use the PgUp/PgDn key to highlight Font.

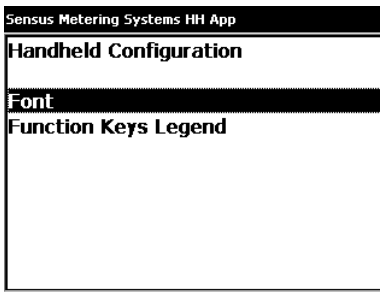**Font Control Screen**

5 Press the ENTER key.
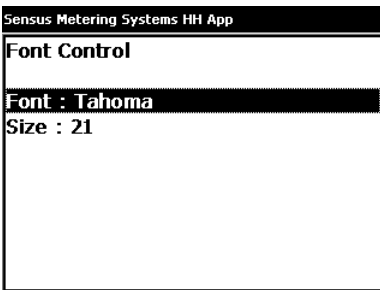
The system displays the Font Control screen. This screen displays the current Font and Size.

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Font Control

Font : Tahoma
Size : 21

• To change the font, use the PgUp/PgDn key to highlight Font and press the Enter key.

Each time you press the Enter key, the system changes the displayed font. You have several font choices. Continue pressing the Enter key until the system displays the font you would like to use.

• To change the font size, use the use the PgUp/PgDn key to highlight Size and press the Enter key.

Each time you press the Enter key, the system changes the font size. You have choices ranging from 12 points (smallest), to 30 points (largest). Continue pressing the the Enter key until the system displays the font size you would like to use.

6 Once you have selected the display settings that you would like to use, press the Esc key until you return to the screen that you were viewing before changing the display font and font size.

➲ **Adjust the Display**

Users carry the AR5000 into many different types of environments. This means that the users are operating the unit under many different lighting conditions. You can switch the screen backlight on/off to enhance visibility in dark conditions. Backlight is literally a light that shines on the display to enhance the visibility in low light conditions. You can also adjust the contrast on the screen to your preference. Contrast affects the difference in light/dark between the characters on the screen and the background.

To switch the backlight on/off...

1 Press and hold the yellow key to right of the TAB key.

2 Press the F3 key.
  - If the backlight was switched ON before you began this procedure, the system switches the backlight OFF.
  - If the backlight was switched OFF before you began this procedure, the system switches the backlight ON.

To adjust the contrast on the screen...

1 Press and hold the yellow key to the right of the TAB key.

2 Press the F4 key or F5 key.
  - Press the F4 key to make the contrast lighter.

• Press the F5 key to make the contrast darker.

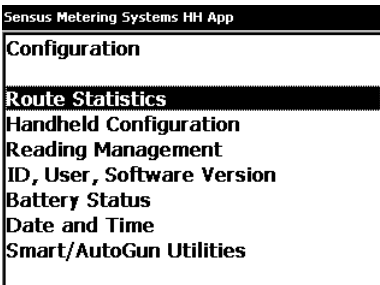**Note** *Adjusting the backlight and the contrast does not require you to display a configuration screen.*

➲ View the Battery Status

Before you take the AR5000 into the field, check to verify that the battery is charged. If you run the system on long routes or for more than 8 hours in a day, you may also want to check the battery during the day to verify that it is carrying enough charge to complete your work.

Configuration Menu

Sensus Metering Systems HH App
Configuration
Route Statistics
Handheld Configuration
Reading Management
ID, User, Software Version
Battery Status
Date and Time
Smart/AutoGun Utilities

To view the battery status...

1 Open the Configuration menu.

• If you just removed the AR5000 from the charging stand, the system displays a Startup Screen.

Use the PgUp/PgDn key to highlight Configuration on the Startup Screen. Press the Enter key. The system displays the Configuration Menu.

• While you are working on a route, press the F6 key. The system displays the Configuration Menu

Note *F6 is the default key assignment for the Configuration menu. Key assignments can be changed. For more information, see About the Key Controls/Functions.*

**2** Use the PgUp/PgDn key to select Battery Status.

3 Press the ENTER key.

The system displays the Battery Status screen.

- The safe operating range for Battery Voltage is TBD???V - 8.4V.

- The safe operating range for Battery Charge is TBD???% - TBD???%.

4 Once you finish, press the Esc key until you return to the screen that you were viewing before checking the battery. If the battery needs to be charged, see *Charge the AR5000* on page 1-22.
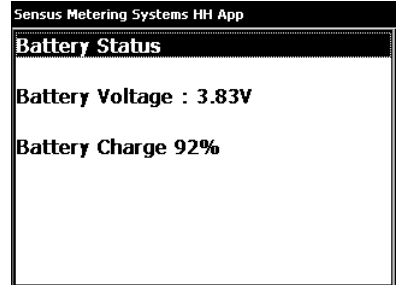
⤷ **View the Current HHD ID & User**

The office staff can setup an ID number for each AR5000 hand-held device (HHD). They also can assign an ID for the operator (user) that is assigned to a specific HHD.

Before you take the AR5000 into the field, check to verify that you have the AR5000 unit assigned to you. The same screen that displays the Hand-held and Operator IDs also displays the version number of the installed software and the serial number for the hand-held unit.
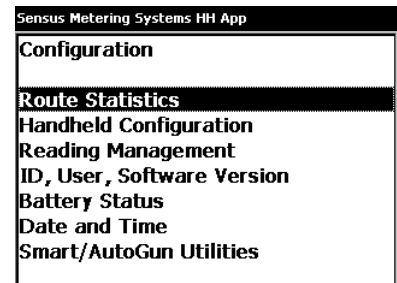
To view the HHD and operator IDs...

1 Open the Configuration menu.

- If you just removed the AR5000 from the charging stand, the system displays a Startup Screen.

  Use the PgUp/PgDn key to highlight Configuration on the Startup Screen. Press the Enter key. The system displays the Configuration Menu.

• While you are working on a route, press the F6 key. The system displays the Configuration Menu

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Note *F6 is the default key assignment for the Configuration menu. Key assignments can be changed. For more information, see About the Key Controls/Functions.*

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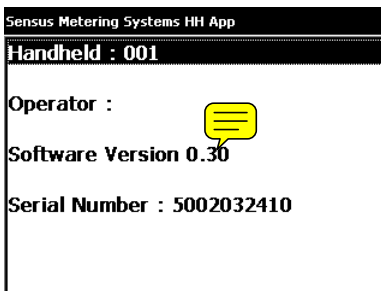
2 Use the PgUp/PgDn key to select ID, User, SW Version.

3 Press the ENTER key.

The system displays the ID, User, Software Version screen.

4 Once you finish, press the Esc until you return to the screen that you were viewing before checking the IDs.

ID, User, Software Version Screen

Sensus Metering Systems HH App

Handheld : 001

Operator :

Software Version 0.30

Serial Number : 5002032410

⮑ **View the Date & Time**

The AR5000 puts a date and time stamp on every data entry you make. Before you pickup the device to begin reading, the date and time are set automatically each time the device is connected to a PC using the Communication Stand.

Before you take the AR5000 into the field, check to verify that the date and time are correct.

Configuration Menu

Sensus Metering Systems HH App

Configuration

Route Statistics
Handheld Configuration
Reading Management
ID, User, Software Version
Battery Status
Date and Time
Smart/AutoGun Utilities

To view the date and time...

1 Open the Configuration menu.

• If you just removed the AR5000 from the charging stand, the system displays a Startup Screen.

Use the PgUp/PgDn key to highlight Configuration on the Startup Screen. Press the Enter key. The system displays the Configuration Menu.

- While you are working on a route, press the F6 key. The system displays the Configuration Menu

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Note   *F6 is the default key assignment for the Configuration menu. Key assignments can be changed. For more information, see About the Key Controls/Functions.*

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2   Use the PgUp/PgDn key to select Date and Time.

3   Press the ENTER key.

The system displays the Date and Time screen.

4   Once you finish, press the Esc key until you return to the screen that you were viewing before checking the date and time.
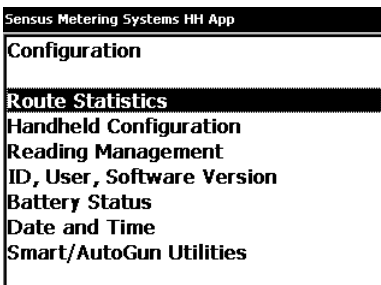
Date and Time Screen

Sensus Metering Systems HH App

Date and Time

Date : 05/04/2006

Time : 05:25:18 PM
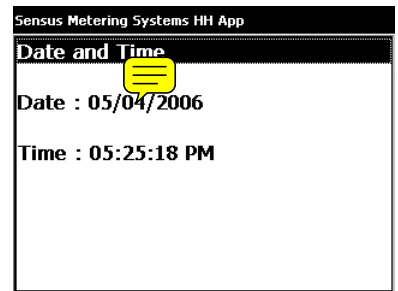
Set Up & Use the Communication Stand

The communication stand serves two functions for the AR5000. First, the stand provides a connection that the office staff uses to transfer and synchronize files between the AR5000 and an office computer. Second, the stand charges the AR5000's battery.

AR5000 Communication Stand

Typically, office staff are the only people involved in transferring and synchronizing information on the office PCs and the AR5000. You should only need to verify that the system battery is properly charged (see *Charge the AR5000* on page 1-22).

This section provides information on how to connect the communication stand and is divided under the following headings:

- *Connect the Stand* on page 1-18 - How to connect the communication stand to AC power and an office PC.
- *Mount the Stand* on page 1-20 - How to mount a communication stand on a wall.
- *Place the AR5000 in the Stand* on page 1-21 - How to verify that the stand is operating properly.

➲ Connect the Stand

When you first setup the communication stand, you need to make three cable connections - AC power, PC communication, and communication to another stand. Once you have setup and successfully connected the communication stand(s), you only need to place the AR5000 into the stand to have it

automatically begin charging and ready to communicate with the office PC.

To connect the communication stand...

1 Determine where you want to place the communication stand.

- If you are going to leave the stand on a counter or table-top, verify that the surface is level, stable, and free of moisture and debris.

- If you are going to mount the stand on a wall, see *Mount the Stand* on page 1-20. Mount the stand before making any cable connections.

2 Locate all of the necessary cables.

- AC Power Cable - This cable provides the AC power connection to a single communication stand.

- PC to Master Stand Communication Cable - This cable has a 15-pin connection on the stand end and a 9-pin serial connector at the PC end. Use this for the signal connection from the PC to a single stand or from the PC to the first of multiple stands.

If you are connecting several stands, you can chain them together using additional cables:

- Stand to Stand Communication Cable - This cable has a 15-pin connector at both ends. Use this for the signal connection between multiple stands.

- Stand to Stand Power Cable - This cable has an AC power connecter at both ends and powers up to 25 stands in series. For each additional 25 stands, you need one additional AC power cable to connect to the wall socket.

3 Connect the cables.

a Connect the signal cables between the first stand and the PC.

b Connect the signal cables between the remaining stands, if needed.

c Connect the AC power cable between the first stand and the wall socket.

Note   *For every 25 stands, connect another AC power cable to the wall socket.*

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d Connect the power cables between the first stand and up to 24 additional stands, if needed.

⊃ Mount the Stand

You have the option of setting the communication stand on a stable table-top, or mounting the stand to a wall. The back of the stand is fitted with four slots that can accommodate #10 pan head screws.

Back of the Communication Stand

To mount the communication stand on a wall...

1   Mark the location for mounting the stand.

a Verify that the AC power and communication cables will reach the AC power outlet, the computer, and other stands involved in this installation.

b Transfer the hole pattern from the back of the stand to the desired location on the wall.

2   Drill and anchor screws sufficient to support the weight of the stand and the AR5000, along with the stress of placing/removing the device.

3   Mount the stand and connect the cables (see *Connect the Stand* on page 1-18).

Place the AR5000 in the Stand

Once you have setup the communication stand, you can place the AR5000 into the stand to begin charging (see *Charge the AR5000* on page 1-22). The office staff performs all of the data transfer and file synchronization between shifts. Typically, the AR5000 user only needs to verify that the stand is working correctly.

Verify that the unit is seated correctly in the stand. The top LED on the stand is green and is lit when the device is properly placed in the stand.

Charge the AR5000

The AR5000 is a battery-powered device. Typically, users place the unit in a Communication Stand at the end of their shift and pick it up again at the start of their next shift. This period in the stand (+/- 16 hours) provides enough time for the battery to be fully charged and ready for use. However, you need to make sure that the battery has enough of a charge to keep the system working while you read meters on a route.

This section provides information on the following:

- *Charge the AR5000 in the Stand* on page 1-22 - This is the most common method for charging the AR5000 battery.
- *Charge the AR5000 using the Wall Charger* on page 1-24 - Use a wall charger if you need to charge the AR5000 when the stand is not available.
- *Battery Maintenance* on page 1-24 - When and how to replace the battery.

➲ Charge the AR5000 in the Stand

Communication Stand

Users typically put the AR5000 into the Communication Stand at the end of every shift. This serves two purposes. One, the stand provides a data-link that the office staff can use to transfer information to-and-from the AR5000 (for more information, see *Set Up & Use the Communication Stand* on page 1-18). The second function of the stand is to charge the AR5000 battery.

Note *You can leave the AR5000 in the charging stand for extended periods of time. Once the unit is fully charged, the stand continues to monitor the battery charge level and provides additional power only as needed to keep the battery fully charged.*

Warning ⚠ Never use any charging device other than the approved Sensus charging device with the AR5000. The use of any other charging device may cause damage to the AR5000 and will automatically void any warranties.

To charge the AR5000 in the stand...

1 Place the AR5000 into the Communication Stand.

2 Verify that the unit is seated correctly in the stand and charging.

Check the LEDs listed below.

- Handheld Seated - The top LED is green. This LED is lit when the device is properly placed in the charging stand. This light must be lit for the system to charge the AR5000 battery.

- Charging HandHeld - The second LED from the top is red. This LED is lit when the AR5000 battery is charging.

- Charging AutoGun - The third LED from the top is red. This LED is lit when the AutoGun battery is charging. Refer to the AutoGun documentation for more information.

- Stand Active - The fourth LED from the top is yellow. This LED is lit when the AR5000 is communicating with a PC.

LEDs on the Charging Stand

➲ Charge the AR5000 using the Wall Charger

If you need to charge the AR5000 when the stand is not available, you can use a Sensus-approved wall charger that plugs into a standard AC outlet to charge the device.

Warning ⚠ Never use any charging device other than the approved Sensus charging device with the AR5000. The use of any other charging device may cause damage to the AR5000 and will automatically void any warranties.

To charge the AR5000 using the wall charger...

1 Plug the wall charger into an AC outlet.

2 Insert the power cord from the wall charger into the power input jack located on the top of the AR5000.

Note *You can leave the AR5000 plugged into the wall charger for an extended period of time. Once the unit is fully charged, the wall charger provides additional power only as needed to keep the battery fully charged.*

➲ Battery Maintenance

The AR5000 uses a type VR151, 3800mAh, 3.6V, re-chargeable NiMH Battery Pack. During normal use, you typically do not need to do anything other than charge the battery (see *Charge the AR5000* on page 1-22) and check the

level of the battery charge (see *View the Battery Status* on page 1-14).

Warning Never use any charging device other than
⚠️ the approved Sensus charging equipment
with the AR5000. The use of any other
charging device may cause damage to the
AR5000 and will automatically void any
warranties.

A battery can withstand many cycles of charging and use. The actual number of charges depends on your operating conditions. If the battery does not hold a charge long enough for you to complete your work, then it needs to be replaced. Good maintenance practice is to replace the battery approximately every two years.

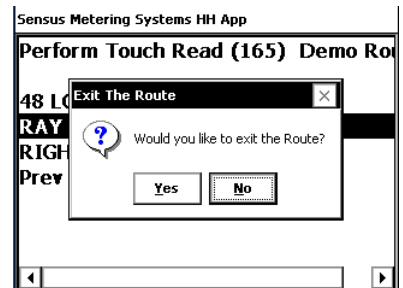**To replace the battery...**

1 Exit any open routes.

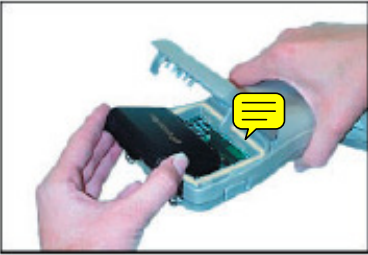   **a** Press the Esc key.

     The system displays the Exit Route message.

   b Use the TAB key to select Yes and press the ENTER key.

     The system exits the open route and displays a list of available routes.

2 Switch the AR5000 OFF (see *Turn the Device ON/OFF* on page 1-4).

Exit Route Message

3 Place the AR5000 face-down on a flat surface.

AR5000 Battery Compartment

4 Push UP on the two latches on each side of the battery compartment and open the lid of the battery compartment.

5 Slide the battery to the left to release, and remove it from the battery compartment.

6 Place the new battery in the compartment and slide to the right to lock it in place.

7 Press down on the lid of the battery compartment until both sides of the lid snap closed.

8 Slide the two latches down to lock the lid in place.

9 Place the AR5000 into the charging stand.

When you place the AR5000 into the charging stand, the system displays the New Battery Detected Screen.

New Battery Detected Screen

10 Set the charge percentage on the New Battery Detected Screen by completing the following steps:
   a Use the TAB key to highlight Charge Percentage.
   b Use the PgUp/PgDn key to select 80%.
   c Use the TAB key to highlight the Accept button.
   d Press the Enter key.

Allow the system to charge 8-16 hours.

Contact Customer Support

This User Guide provides the majority of reference information that you need to operate and maintain the Sensus AR5000. However, there may encounter some situation where you can not find the answers to your equipment questions in the User's Guide. In those cases, you have three options for finding more information.

- www.Sensus.com - The company's web site is a good resource for news and up-to-date information on Sensus, along with the latest on the complete line of Sensus products and services.

- Telephone Support - Telephone support is available Monday through Friday, from 8:00 a.m. until 7:00 p.m. Eastern. Call 1-800-METER IT (638-3748) and select Option 2.

- E-mail Support - If you are trying to reach Sensus Customer Support after regular business hours, you can E-mail your questions to amr.support@sensus.com.

Sensus Metering Systems

Collect Meter Data

2

This chapter describes how to use the AR5000 to collect data in the field. Use the instructions in this section to set up routes, enter information into the AR5000, and resolve any conflicts between the stored routes.

The chapter is divided into the following sections:

- *Start Collecting Data* on page 2-2 - This section includes instructions for tasks that need to be performed at the beginning of a route.
- *Manage Reading Scenarios* on page 2-7 - This section includes information and instructions for dealing with common problems route reading problems.
- *Enter Data* on page 2-14 - This section includes instructions for the various methods of entering data into the AR5000.

You can find general information on the AR5000 in Chapter 1: *About the AR5000*. You can find instructions for finding specific route-related information in Chapter 3: *Find Route Information*.

Start Collecting Data

By the time you are ready to pick up a hand-held unit from the charger and begin collecting meter readings, the AR5000 should be set up and ready for use. Typically, the office staff performs daily tasks to configure the AR5000 for reading meters. These tasks include clearing any information from previous shifts and loading the AR5000 with routes, questions, and configuration settings for the new shift.

The new information loaded into the AR5000 includes the following:

- Route meters - This typically includes the street address, customer name, meter ID, and account number for each location along the route. For more information see *Select A Route* on page 2-3.
- Questions - Questions are attached to specific addresses and require a response from readers. For more information, see *Answer Questions* on page 2-21.
- AR5000 Configuration Settings - The office staff can set several AR5000 parameters that will affect the way that the equipment will react in certain scenarios. For more information, see *About Meter Read Behaviors* on page 2-8.

Once the office staff has setup the AR5000 with the route and configuration information, you can use the information in this section to start collecting data. You need to select a route and you have the option of changing some system behaviors. Find instruction for these tasks in this section:

- *Select A Route* on page 2-3 - Choose from several preset routes, stored in the AR5000.
- *Alter Route Behaviors* on page 2-4 - Adjust the settings on the AR5000 Reading Management menu.

➲ **Select A Route**

Before you can begin collecting information, you need to select one of the routes stored in the AR5000. The office staff typically programs route information and loads that information into the AR5000. Each route in the AR5000 is labeled with a unique name.

The routes are typically setup to follow the actual path that someone in the field takes to read a group of meters. For example, a route running through a residential neighborhood lists the addresses, in order, from one end of a street to the other. Each location along a route can be configured to include the following information:

- Street Address
- Customer Name
- Meter ID Number
- Customer Account Number

You can search through a stored route for certain details. For example, you can find a specific address or meter ID. More information is available in the chapter *Find Route Information* on page 3-1.
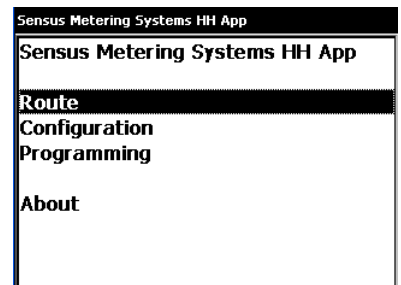
To select a route...

1 Open the Routes list.

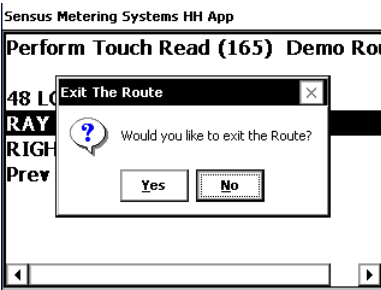➲ If you have just removed the AR5000 from the charging stand, the system automatically displays a Startup Screen.
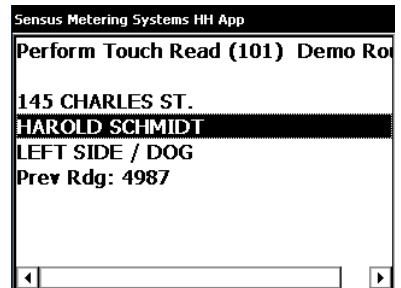
Use the PgUp/PgDn key to highlight Routes on the Startup Screen. Press the Enter key. The system displays the Routes list.

Exit Route

⊃ If you are working on a route, you need to exit the route before you can access the Route List.

Press the Esc key. The system displays an Exit Route message. Use the Tab key to select Yes. Press the Enter key. The system displays the Routes list.

2   Use the PgUp/PgDn key to highlight one of the choices on the Routes list.

3   Press the Enter key.

The system opens the selected route and displays the information for the first location. You can begin entering data. For more information on entering data into the AR5000, see the *Enter Data* on page 2-14 section.

⊃ Alter Route Behaviors

You can change several settings that affect how the system responds during a route. The Reading Management menu gives you access to the following settings:

- Entry Direction (left-to-right or right-to-left) - When you manually enter meter readings, the system displays a dialog box and you enter numbers with the keypad (see *Enter Manual Readings* on page 2-14). By default, the system is setup for this data to be entered from left-to-right on the screen. Change the Entry Direction setting if you want to enter the reading from right-to-left.

- Traverse (forward or backward) - Routes are set up to be run in a set order. When you select a route, the system displays a default location at one end and advances forward through the route (see Auto Advance, below). Change the Traverse setting if you want to read the route in the other direction (backward).

- Auto Advance (ON or OFF) - This feature automatically advances the screen to the next location along the route, after the latest location reading is complete. By default, the Auto Advance feature is switched ON. Change the Auto Advance setting if you want to switch the Auto Advance feature OFF.

Note *Only a completed meter reading will automatically advance the route display to the next location. Other actions, such as entering notes, will not advance the location.*

To alter the route behaviors…

1 Open the Configuration menu.

- If you have just removed the AR5000 from the charging stand, the system automatically displays a startup screen.

  Use the PgUp/PgDn key to highlight Configuration on the Startup Screen and press the Enter key. The system displays the Configuration menu.

- If you have a route open, press F11.
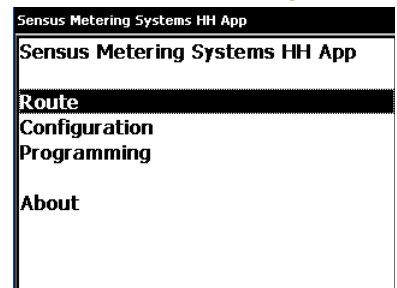
  The system displays the Configuration menu.

Note *F11 is the default key assignment for the Configuration menu. Key assignments can be changed. For more information, see About the Key Controls/Functions.*
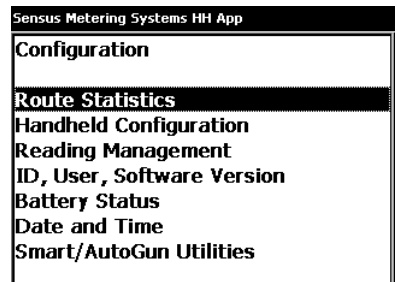
2 Use the PgUp/PgDn key to highlight Reading Management on the Configuration menu.

3 Press the Enter key.
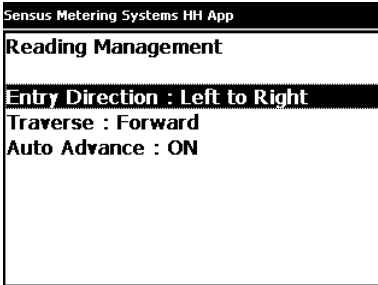
The system displays the Reading Management screen.

Reading Management Screen

Sensus Metering Systems HH App

Reading Management

Entry Direction : Left to Right
Traverse : Forward
Auto Advance : ON

4 Use the PgUp/PgDn key to highlight the parameter that you would like to change on the Reading Management screen.

5 Press the Enter key to toggle the selected setting.

Note *Each of the parameters on the Reading Management screen has a choice of two settings. Use the Enter key to toggle between the two settings for the highlighted parameter.*

6 Repeat step 4 and step 5 as needed to configure the system to your preferences.

7 Press the Esc key when you finish setting your preferences on the Reading Management screen.

The system returns to the Configuration menu.

8 Press the Esc key again to exit the Configuration menu.

Manage Reading Scenarios

During the course of reading meters on a route, you can encounter several common scenarios where the system generates error messages. Meters may not match a location, they may not be part of the stored route, or the system may not correctly read information.

The following list provides a brief description of each part of this section:

- *Resolve Readings That Don't Match the Displayed Location* on page 2-9 - How to handle a meter ID that does not match the address/location information in a stored route.

- *Resolve a Non-Route Meter* on page 2-10 - How to handle a meter ID that is not included anywhere in the stored route.

- *Resolve Reading Malfunctions and Bad Reads* on page 2-12 - What to do if the AR5000 encounters reading errors (ex.: malfunctions or no-read messages).

About Meter Read Behaviors

Typically, the office staff perform daily tasks to configure the AR5000 for reading meters. This configuration involves collecting existing data from the AR5000 and loading new information into the AR500.

The existing data collected from the AR5000 includes read information taken from the utility meters, notes entered by the readers, and answers to questions.

The new information loaded into the AR5000 includes the following:

- Route meters - This typically includes the street address, customer name, meter ID, and account number for each location along the route. For more information see *Select A Route* on page 2-3.
- Questions - Questions are attached to specific addresses and require a response from readers. For more information, see *Answer Questions* on page 2-21.
- AR5000 Configuration Settings - The office staff can set several AR5000 parameters that will affect the way that the equipment will react in certain scenarios.

By the time you are ready to pick up a hand-held unit from the charger and begin collecting meter readings, the AR5000 should already be loaded with routes, questions, and configuration settings. The configuration settings determine what you will see displayed on the screen in certain situations.

The following list provides a brief description of the configuration settings that affect meter reading behaviors:

- Prompt when not matching displayed location - This setting determines what the AR5000 displays when the system reads a meter ID that does not match the currently displayed location.

  If this setting is selected, the system displays a message when the ID does not match.

If this setting is not selected, the system does not display any message and begins a search for a match at another location on the route.

- Prompt when not found on route - This setting determines how the AR5000 responds when the system reads a meter ID that does not match any meter ID information stored for the route.

  If this setting is selected, the system displays a message when the ID does not match.

  If this setting is not selected, the system does not display any error message and stores data directly into the AR5000 memory.

- Enter note on apply - This setting allows the office staff to configure a message that is attached to every reading that is applied to an address.

More information on where these settings affect the display are provided as part of these sections - *Resolve Readings That Don't Match the Displayed Location* on page 2-9, *Resolve a Non-Route Meter* on page 2-10, *Resolve Reading Malfunctions and Bad Reads* on page 2-12.

⇒ Resolve Readings That Don't Match the Displayed Location

During the course of reading a route, you can encounter a mismatch between the actual ID on a meter and the meter ID displayed on the AR5000 screen. To resolve this type of mismatch, you can apply the reading to the current location or search the route for the ID.

Note *This error only occurs with TouchRead or RadioRead systems. For more information, see Enter TouchRead Readings on page 2-16 and Enter RadioRead Readings (AR5002 only) on page 2-18.*

To resolve a mismatch...

1 Read a meter with the TouchRead or RadioRead system.

If the AR5000 detects a mismatch, the system either prompts you for action or automatically stores the reading into memory, depending on the configuration settings. For more information, see *About Meter Read Behaviors* on page 2-8.


Note *If the system is configured to store data without a prompt, the data is automatically saved in the AR5000 memory and the read for that location is complete.*

Data stored in the AR5000 memory is typically retrieved by the office staff.

Does Not Match Displayed Location Message

Sensus Metering Systems HH App

Not at Displayed Location

Meter ID : B123456

Does Not Match Displayed Location!

Displayed Location : 88 HASTINGS
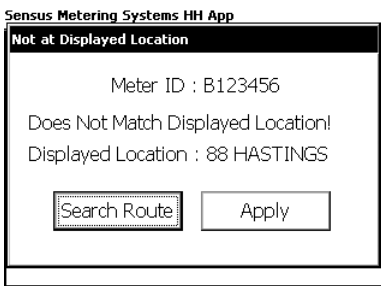
Search Route | Apply

2 Resolve the mismatch.

If the system is configured to prompt, the screen displays a "Does Not Match Displayed Location!" message.

Use the TAB key to select either Apply or Search Route. Then press the ENTER key.

- Select Apply to automatically apply the reading data to the current address and complete the read.
- Select Search Route to search for the address stored with the meter ID.

  When the system locates the address, select Apply to save the reading information to the address and complete the read.

➲ Resolve a Non-Route Meter

During the course of reading a route, you can find a meter ID that is not in the stored route. When you read a meter and

the AR5000 cannot find the ID, you can search the route for the meter ID or apply the reading to the current location.

Note *This error only occurs with TouchRead or RadioRead systems. For more information, see Enter TouchRead Readings on page 2-16 and Enter RadioRead Readings (AR5002 only) on page 2-18.*

To resolve a non-route meter...

Non-Route Meter Message

1 Read a meter with the TouchRead or RadioRead system.

If the AR5000 detects a non-route meter, the system either prompts you or automatically stores the reading into memory, depending on the configuration. For more information, see *About Meter Read Behaviors* on page 2-8.

Sensus Metering Systems HH App

Not Found on Route

Meter ID : B123456

Not Found on Route!

Displayed Location : 299 SCHNELLER
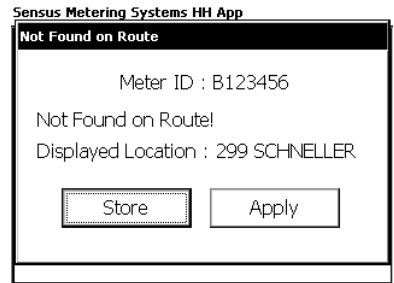
Store   Apply

Note *If the system is configured to store data without a prompt, the data is automatically saved in the AR5000 memory and the read for that location is complete.*

Data stored in the AR5000 memory is typically retrieved by the office staff.

2 Resolve the non-route meter in one of the following ways:

➲ If the screen displays a "Does Not Match Displayed Location!" message, resolve the location error as described in the section *Resolve Readings That Don't Match the Displayed Location* on page 2-9.

➲ If the screen then displays a "Not Found on Route!" message:

• Use the TAB key to select Apply or Search Route and press the ENTER key.

• Select Apply to automatically apply the reading data to the currently displayed address and complete the read.

• Select Search Route to search for the address stored with the meter ID. When the system locates the

address, select Apply to save the reading information to the address and complete the read.

Note   *If the system does not locate the meter ID anywhere in the route, the screen displays a "Not Found on Route" message. Use the tab key to select Store and save the read data into the system memory. Select Apply to save the data to the currently displayed location.*

➲ Resolve Reading Malfunctions and Bad Reads

During the course of reading a route, you may encounter errors when the AR5000 captures partial data. This can include errors in the meter ID or errors reading the data from the meter. When the system encounters a bad read, you can re-read the meter ID or you can manually enter the read for the current location.

Note   *This error only occurs with TouchRead or RadioRead systems. For more information, see Enter TouchRead Readings on page 2-16 and Enter RadioRead Readings (AR5002 only) on page 2-18.*

To resolve a malfunction or bad read...

1 Read a meter with the TouchRead or RadioRead system.

If there is a data error, the system briefly displays the error message "Error Reading Device" (for TouchRead devices), or "No Response From MXU" (for RadioRead devices), and sounds an error tone.

2 Use the F5 key to view the transaction history for the current location.

Error Reading Device Message

Sensus Metering Systems HH App
Receiving

Error Reading Device

ID:?   Rdg:?

Meter ID: B

RDG: B

Note *F5 is the default key assignment for the Transaction History function. Key assignments can be changed. For more information, see About the Key Controls/Functions.*
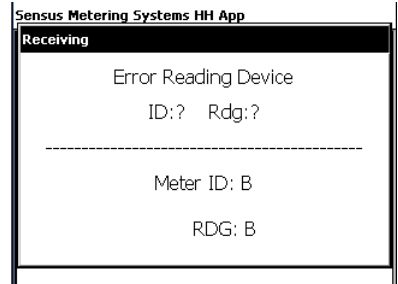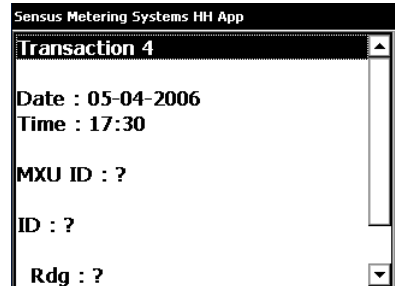
---

3 Resolve the error.

a Try to read the meter again.

b If the read fails again, manually enter the ID and Reading information (see *Enter Manual Readings* on page 2-14).

Transaction History (w/error)

Sensus Metering Systems HH App

Transaction 4

Date : 05-04-2006
Time : 17:30

MXU ID : ?

ID : ?

Rdg : ?

Enter Data

The AR5000 can store several different types of data. The most common is reading data from utility meters. However, the system is also capable of storing several other types of data. For example, you can enter notes, mark locations, answer questions, and add new meters to a route.

Meter readings can be entered with one of three methods - Manual, TouchRead, and RadioRead. Any other type of data can be entered with the keypad, through a series of menus and screens. The following list provides a brief description of each part of this section:

- *Enter Manual Readings* on page 2-14 - Use the keypad to enter readings from utility meters.
- *Enter TouchRead Readings* on page 2-16 - Use the AutoGun to enter readings from utility meters.
- *Enter RadioRead Readings (AR5002 only)* on page 2-18 - Use the RadioRead function to enter readings from utility meters.
- *Enter Notes* on page 2-19 - Use the keypad to enter additional information for a location on the route.
- *Mark Locations* on page 2-20 - Provide a searchable mark about a location on the route.
- *Answer Questions* on page 2-21 - Respond to preset questions.
- *Add New Meters to Route* on page 2-22 - Manually add a new location to an existing route.

➲ Enter Manual Readings

The most common method of entering meter read data into any AR5000 is to manually type the read information for a location. You may need to use this method for an entire

route. Or, you may only use manual data entry for corrections or resolving conflicts and errors.

Note *You can enter a manual reading for any location, even if it is RadioRead or TouchRead.*

To enter a manual reading...

1 Use the TAB key to scroll through the route to the location where you want to enter the information.

The system displays "Perform Manual Read" across the top of the screen for addresses that require manual reads.

2 Press the F1 key to open the Enter Text Screen.

Enter Text Screen

Sensus Metering Systems HH App

Enter Text

Enter manual Reading:

136

OK   Cancel

Note *F1 is the default key assignment for the Enter Text function. Key assignments can be changed. The system may be configured to open the Enter Text screen when you press any number key. For more information, see About the Key Controls/Functions.*

You can exit the Enter Text screen by pressing the Esc key, or use the TAB key to select Cancel and press the ENTER key.

---

3 Use the number keypad to enter the reading.

4 Use the TAB key to select *OK*.

5 Press the ENTER key.

The system accepts the read and returns to the route.

Note *If the reading that you enter does not fall within preset limits, the AR5000 sounds an audible waning and displays the Limit Check screen.*

Select Confirm to accept the reading and ignore the warning.

Select Re-Read to ignore the numbers and enter a new reading.

➲ Enter TouchRead Readings

The Sensus TouchRead System allows you to collect meter reading data without manually typing information on the keypad. In this system, you touch a TouchPad with a gun. The gun reads the data and sends it to the AR5000.

There are three components in a TouchRead system:

- Sensus TouchRead System TouchPad - The TouchPad encoders are typically mounted in an easily accessible location (ex.: the outside wall of a building). A TouchPad is connected to the utility meter and provides a point of contact where the guns can read data. For more information on encoders, see ___???TBD___.

- Sensus SmartGun or AutoGun - These guns are hand-held devices that you use along with the AR5000. The gun must be are linked to the AR5000. Use these guns to physically touch the TouchPad and read the meter data. Additional information on linking the AR5000 with a SmartGun or AutoGun is available in *Link the AR5000 to a TouchRead Device (SmartGun/AutoGun)* on page 1-9.

- AR5000 - When the AR5000 is linked to a gun, the system stores meter data in the routes or in the system memory.

To enter a TouchRead...

1 Use the TAB key to scroll through the route, to the location where you want to enter information.

The system displays "Perform TouchRead" across the top of the screen for addresses that are setup for TouchReadings.

Note *You can attempt a TouchRead on any meter equipped with an encoder, regardless of the information on the AR5000 display.*

---

2 Place the flat disk face of the reading gun against the TouchPad remote or pit-lid mounted TouchPad (TR/PL) module and squeeze the trigger.

The system briefly displays a "Receiving Readings" message, while receiving data.

- If the reading is successful, the system sounds a beep and stores the reading.

- If the system is unable to read the information, the screen displays an "Error Reading Device" error message. For more information, see *Resolve Reading Malfunctions and Bad Reads* on page 2-12.

- If the meter ID does not match the information for that address on the route, the system initiates an "Address/Meter Mismatch" error. For more information, see *Resolve Readings That Don't Match the Displayed Location* on page 2-9.

- If the meter ID does not match any ID on the route, the system initiates a "Non-Route Meter" error. For more information, see *Resolve a Non-Route Meter* on page 2-10.

How To Hold the Gun

Error Reading Device Message
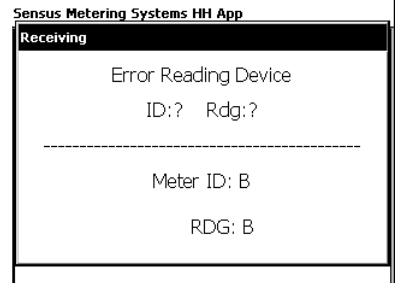
➲ Enter RadioRead Readings (AR5002 only)

The Sensus RadioRead System allows you to collect meter data without manually typing information on the keypad. In this system, a radio transmitter sends meter data directly to the AR5002.

Note *The RadioRead function is only available on the AR5002 version of the system.*

The AR5002 version of the system is equipped with a radio receiver. This enables the unit to read data from utility meters equipped with a radio transmitter. If there are no obstructions between the AR5002 and the meter and there is no radio interference in the area, the system can perform a RadioRead on meters up to ___???___ feet away.

To enter a RadioReading...

1 Use the TAB key to scroll through the route, to the location where you want to enter information.
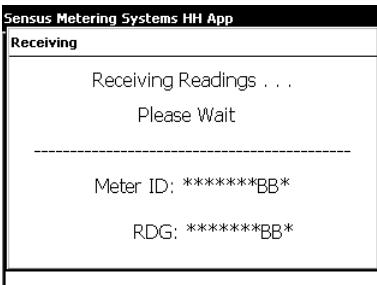
The system displays "Perform RadioRead" across the top of the screen for addresses that are setup to be read with the radio.

2 Press the ENTER key.

The system displays a "Receiving Readings" message, and searches for data.

- If the reading is successful, the system sounds a beep and stores the reading at the selected address.
- If the system is unable to detect a signal, the screen displays a "No Response From MXU" error message. For

Receiving Readings Message

```
Sensus Metering Systems HH App
Receiving

        Receiving Readings . . .
             Please Wait
    --------------------------------------------
        Meter ID:  *******BB*

           RDG:  *******BB*
```

more information, see *Resolve Reading Malfunctions and Bad Reads* on page 2-12.

- If the meter ID does not match the information for that address on the route, the system initiates an "Address/Meter Mismatch" error. For more information, see *Resolve Readings That Don't Match the Displayed Location* on page 2-9.

- If the meter ID does not match any ID on the route, the system initiates a "Non-Route Meter" error message. For more information, see *Resolve a Non-Route Meter* on page 2-10.

No Response From MXU Error

Sensus Metering Systems HH App

Radio Read

No Response From MXU!
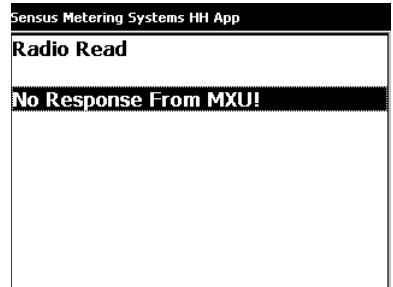
➲ Enter Notes

As you are reading meters, you can enter additional text information for locations along a preset route. These notes are useful for capturing information about a location. For example, you could enter notes that indicate a physical problem with the equipment or a beware of dog warning.

You can search for addresses with notes. For more on searching, see *Find Noted Locations* on page 3-19.

To enter a note...

1 Use the TAB key to scroll through the route to the location where you want to enter the information.

2 Use the F2 key to open the *Enter Text Screen*.

Enter Text Screen

Sensus Metering Systems HH App

Note

Please Enter Note:

Watch out for dog!

OK   Note List   Cancel

Note *F2 is the default key assignment for the Note function. Key assignments can be changed. For more information, see About the Key Controls/Functions.*

3 Enter the note by one of two methods.
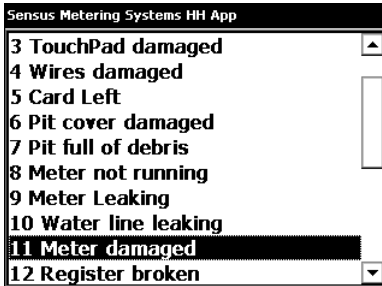   ➲ Use the keypad to enter an alpha-numeric note.
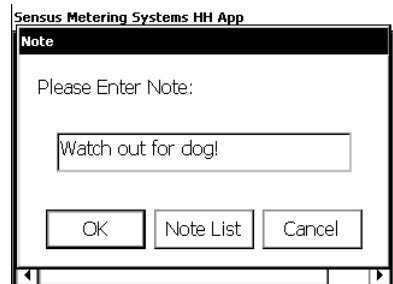
The note can be any length, up to 50 characters.

When you are finished, use the TAB key to select *OK* and press the ENTER key.

Note List Screen

➲ Use the TAB key to select *Note List*.

Press the ENTER key. The system displays a list of preset notes. Use the PgUp and PgDn keys to highlight a note from the list. Press the ENTER key to select the note.

Note *You can exit the Enter Text screen by pressing the Esc key, or use the TAB key to select Cancel and press the ENTER key.*

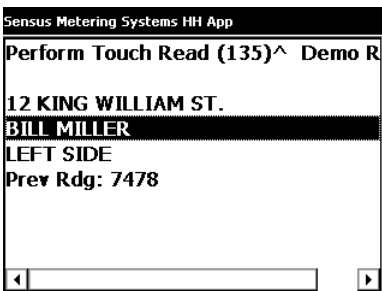## ➲ Mark Locations

Typical Marked Address

You can place a mark on any location in the route. This mark is typically used along with notes, for reviewing information after a route is complete. For example, you may have an issue with a meter, mark it, and return at the end of the route to attempt to resolve the issue.

You can search for marked addresses at any time. For more on locating marks, see *Find Marked Locations* on page 3-17.

To Mark/Unmark an address...

1 To mark an address, complete the following steps:

    a Use the TAB key to scroll through the route to the location you want to mark/unmark.

    b Use the F4 key to mark the address.

The system places a caret ("^") character in the heading at the top of the screen.


Note   *F4 is the default key assignment for the Mark function. Key assignments can be changed. For more information, see About the Key Controls/Functions.*

---

2   To unmark an address, complete the following steps:

   a Use the TAB key or the search function to locate a marked address. For information on searching, see *Find Marked Locations* on page 3-17.

   b Press the F4 Key. The system displays a Location Marked Screen.

   c Use the TAB key to select Yes or No.

   • Select Yes to unmark the address.

   • Select No to keep the mark on the address.

   d Press the ENTER key to accept your selection.

Location Marked Screen
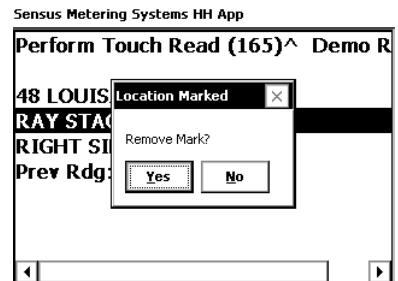
⊃ Answer Questions

Typically, office staff setup the AR5000 and load route information (see *Start Collecting Data* on page 2-2). Depending on the route setup, the AR5000 may prompt you to answer questions during the route.

Note   *Questions are attached to specific addresses. The system can be set to show the question as soon as you display an address. Or, the system can be set to show the question immediately after you enter the meter reading for an address.*
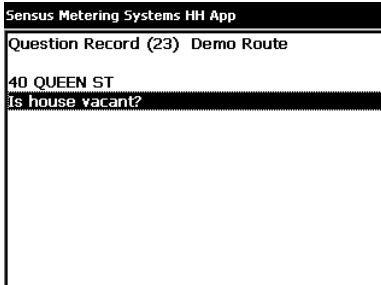

To answer a question...

1   Choose a route address.

Use any method to choose an address along the route (manual read, search, etc.). The system displays a Question screen for addresses configured with questions.

```
Sensus Metering Systems HH App
Question Record (23)  Demo Route

40 QUEEN ST
Is house vacant?



```

2 Answer the question.

Depending on the type of question, you could be asked to respond in one of two ways.

- Yes or No - Some questions require a yes or no answer (ex.: Is this address occupied?). Use the Tab key to select Yes or No. Press the ENTER key to save your answer and return to the route.

- Numeric response - Some questions require a number in response (ex.: How many people live at this address?). Use the keypad to type the appropriate answer. Then, press the ENTER key to save your answer and return to the route.

- Multiple choice - Some questions provide a list of responses (ex.: choose a, b, c, etc.). Use the Tab key to select the appropriate answer. Then, press the ENTER key to save your answer and return to the route.

- Type a response - Some questions require a written response (ex.: Where is the meter located?). Use the keypad to type in an appropriate answer. Then, press the ENTER key to save your response and return to the route.

Note *You can press the Esc key to exit the Question Screen without entering an answer.*

➲ Add New Meters to Route

During the course of reading a route, you may encounter a meter or an address that is missing from the information stored in your AR5000. For example, areas with new development or construction activity may have new buildings

completed before they can be added to the billing system in your office. The Add Meter function allows you to insert information for a new location in your route.

To add a new meter ID...

1   Choose a location along the route for the new ID.

Use any method to choose an address along the route (manual read, search, etc.).

Note   *The system places the new meter ID information into the route just before the location that is displayed on the screen.*

---

2   Press the Ins key or the F8 key.

The system displays an Enter Text screen to enter the new meter ID.

Note   *F8 is the default key assignment for the Mark function. Key assignments can be changed. For more information, see About the Key Controls/Functions.*

---

3   Enter the New Meter ID.

Use the keypad to enter a description of the new meter.

Note   *You typically need to enter some description information for the location (ex.: street address). Also include meter ID numbers, if they are available.*

---

4   Use the Tab key to select OK.

5   Press the ENTER key.

The system displays an Enter Text screen for the reading information from the new meter.

6   Use the Tab key to select OK.

7   Press the ENTER key.

The system saves the information and returns to the route.

Note   *You can use the Tab key to select Cancel and press Enter to exit the any Text screen in this instruction.*

Find Route Information

3

Routes are primarily made up of addresses and Meter IDs. The AR5000 can also store descriptive text, marks, notes, limits, and statistics for each route. You often run a route from start-to-finish without needing to check any information. However, there are times you need to verify reads, check that the route is complete, and review statistics. Use the features described in this section to search for addresses, meter ID's, text entries; find incomplete sections or special entries; and review read data.

The chapter is divided into the following sections:

- *Search the Route* on page 3-3 - This section lists instructions on searching for addresses, meter IDs, and text.

- *Find Unfinished Sections of the Route* on page 3-12 - This section includes instructions on searching for unread meters/addresses and unanswered questions.

- *Find Special Entries* on page 3-17 - This section includes instructions on finding marks, notes, and range violations.

- *Review Read Information* on page 3-23 - This section includes instructions on how to review existing read information.

You can find general information on the AR5000 in Chapter 1: *About the AR5000*. You can find instructions for entering data into the AR5000 in Chapter 2: *Collect Meter Data*.

Search the Route

Routes are primarily an organized list of individual locations and their associated meter IDs. The locations are listed in a logical order to match the path that you could take as you physically move from one location to the next. Typically, you start at one end of the route and move through the list, entering readings until you reach the end of the route.

Note *Some addresses may have multiple meters (ex.: apartment buildings or industrial sites). Typically, each meter is listed at a separate location on a route.*

However, there are times you may need to locate a specific address or meter on the route. This could happen if you take the route out of order or need to verify an address, reading, or specific text associated with a specific address.

The AR5000 has a set of features that you can use to search for addresses, meter IDs, and specific displayed text.

Note *Once you find an address, you can perform any of the functions described in Chapter 2: Collect Meter Data.*

Find instruction for these tasks in this section:

- *Search for an Address* on page 3-4 - How to display a specific address on a route.
- *Go to the First Address* on page 3-5 - How to display the first address on a route.
- *Go to the Last Address* on page 3-6 - How to display the last address on a route.
- *Search for a Meter ID* on page 3-8 - How to display the location information for a specific meter ID.

• *Search Displayed Text* on page 3-9 - How to find specific text in the route (including notes and questions).

➲ Search for an Address

Routes are configured in a set order. When you select a route, the system displays a default location at one end of the route and advances forward through to the other end of the route (for more information on setting the route direction, see the section *Alter Route Behaviors* on page 2-4).

Depending on how you physically travel through your route, you may take a meter reading out of order or you may want to verify some information for a specific location that you already visited. You can use the TAB key to page through every location to find the address, or you can use the search function.
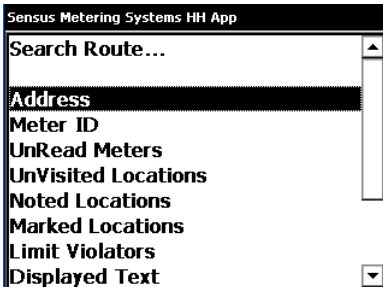
To search for an address...

1 Open a route.

See *Start Collecting Data* on page 2-2 for instructions on opening a route.

Search Route... Menu

| Sensus Metering Systems HH App |
| Search Route... |
| **Address** |
| Meter ID |
| UnRead Meters |
| UnVisited Locations |
| Noted Locations |
| Marked Locations |
| Limit Violators |
| Displayed Text |

2 Press the F3 key.

The system displays the Search Route... menu.

Note *F3 is the default key assignment for the Search menu. Key assignments can be changed. For more information, see About the Key Controls/Functions.*

3 Use the PgUp/PgDn key to select Address.

4 Press the ENTER key.

The system displays an Enter Text dialog box.

5   Use the keypad to type the address information you would
like to search for.

Note   *The system searches for exactly what you
type, including numbers and spaces. If you
enter part of the address (ex.: just the street
name or number) the system will display every
location that contains that information.*

---

6   Press the ENTER key.

The system displays the results of the search.

- If the system cannot find the information you entered,
  then the screen displays a No Matches Found message.

  Press the Esc key to clear the No Matches Found
  message and end the search.

- If the system finds more than one match for the
  information you entered, the screen displays the first
  match, along with the following choices:

  Stop here - Press the ENTER key to stop the search on
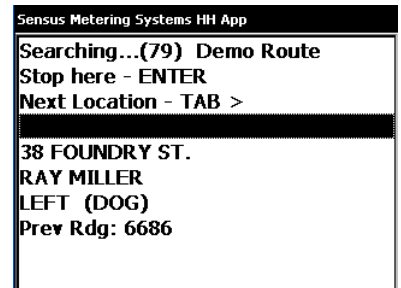 the displayed location.

  Next Location - Press the TAB> key and the system
  displays the next location in the search results.

  You can use the TAB> key to scroll forward through the
  list of search results. Once you reach the end of the
  search results, the system displays a No More Matches
  Found message.

  Press the Esc key to clear the No More Matches Found
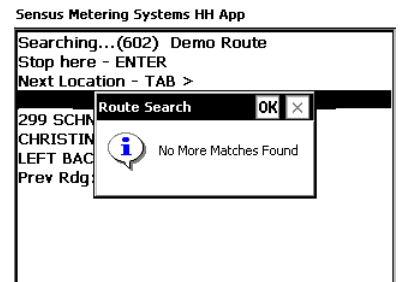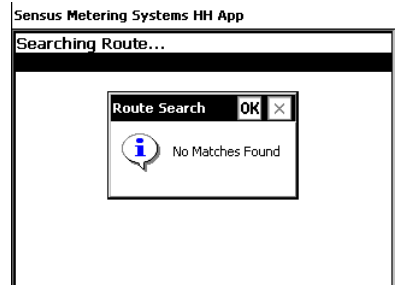 message and end the search.

➲ Go to the First Address

By default, the AR5000 displays the first address when you
open a route. You can use the search function to return to

Sensus Metering Systems HH App

Searching…(79) Demo Route
Stop here - ENTER
Next Location - TAB >

38 FOUNDRY ST.
RAY MILLER
LEFT (DOG)
Prev Rdg: 6686

Search Results

No Matches Found Message

Sensus Metering Systems HH App

Searching Route…

Route Search   OK ✕

ⓘ   No Matches Found

Sensus Metering Systems HH App

Searching…(602) Demo Route
Stop here - ENTER
Next Location - TAB >

299 SCHN   Route Search   OK ✕
CHRISTIN
LEFT BAC   ⓘ   No More Matches Found
Prev Rdg:

**No More Matches Found
Message**

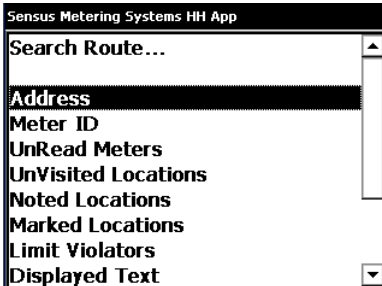the first address. This function is available from any point along the route.

Note *The first and last route address are interchangeable, depending on how you have the AR5000 configured. You can set the system to traverse forward, starting at one end of the route (ex.: address#1 through address#10). Or, you can set the system to traverse in reverse, starting at the opposite end of the route (ex.:address#10 through address#1). For more on this configuration setting, see Alter Route Behaviors on page 2-4.*

To go to the first address on a route...

1 Open a route.

See *Start Collecting Data* on page 2-2 for instructions on opening a route.

2 Press the F3 key.

The system displays the Search Route... menu.

Note *F3 is the default key assignment for the Search menu. Key assignments can be changed. For more information, see About the Key Controls/Functions.*

---

3 Use the PgUp/PgDn key to select Go To Beginning.

4 Press the ENTER key.

The system displays the first location on the route.

➲ **Go to the Last Address**

By default, the AR5000 displays the first address when you open a route. You can use the TAB key to page through every

address to the end of the route. Or, you can use the search function go to the last address. This function is available from any point along the route.

Note   *The first and last route address are interchangeable, depending on how you have the AR5000 configured. You can set the system to traverse forward, starting at one end of the route (ex.: address#1 through address#10). Or, you can set the system to traverse in reverse, starting at the opposite end of the route (ex.:address#10 through address#1). For more on this configuration setting, see Alter Route Behaviors on page 2-4.*

To go to the last address on a route...

1   Open a route.

See *Start Collecting Data* on page 2-2 for instructions on opening a route.

2   Press the F3 key.

The system displays the Search Route... menu.

Note   *F3 is the default key assignment for the Search menu. Key assignments can be changed. For more information, see About the Key Controls/Functions.*
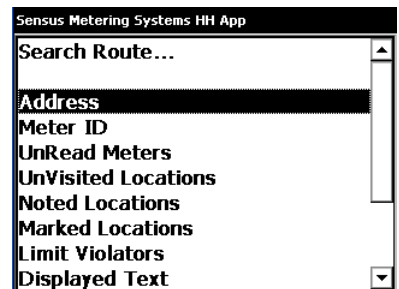
Sensus Metering Systems HH App
Search Route...
Address
Meter ID
UnRead Meters
UnVisited Locations
Noted Locations
Marked Locations
Limit Violators
Displayed Text

3   Use the PgUp/PgDn key to select Go To End.

4   Press the ENTER key.

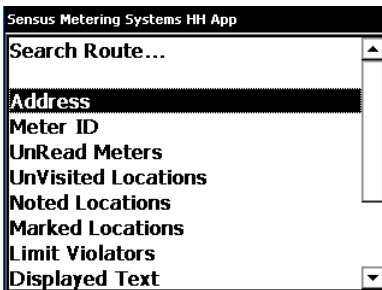The system displays the last location on the route.

➲ Search for a Meter ID

During the route, you may need to display information for a specific meter ID. Depending on how you run the route, you may take a meter reading out of order or the actual meter ID may not match the information stored in the route. You can use the TAB key to page through every location on the route and find the meter ID or you can use the search function.
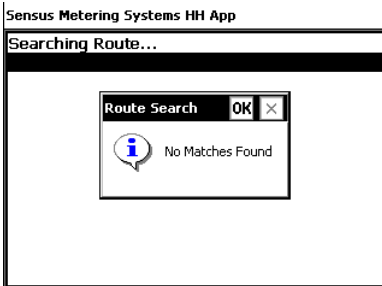
To search for a meter ID...

1 Open a route.

See *Start Collecting Data* on page 2-2 for instructions on opening a route.

2 Press the F3 key.

The system displays the Search Route... menu.

Sensus Metering Systems HH App

Search Route...

Address
Meter ID
UnRead Meters
UnVisited Locations
Noted Locations
Marked Locations
Limit Violators
Displayed Text

Search Route... Menu

> **Note** *F3 is the default key assignment for the Search menu. Key assignments can be changed. For more information, see About the Key Controls/Functions.*

3 Use the PgUp/PgDn key to select Meter ID.

4 Press the ENTER key.

The system displays an Enter Text dialog box.

5 Use the keypad to enter the Meter ID that you would like to search for.

Sensus Metering Systems HH App

Searching Route...

Route Search | OK | ✕

ⓘ No Matches Found

No Matches Found Message

6 Press the ENTER key.

The system displays the results of the search.

- If the system cannot find the information you entered, then the screen displays a No Matches Found message.

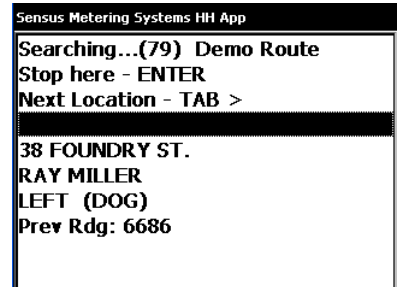Press the Esc key to clear the No Matches Found message and end the search.

- If the system finds more than one match for the information you entered, the screen displays the first match, along with the following choices:

  Stop here - Press the ENTER key to stop the search on the displayed location.

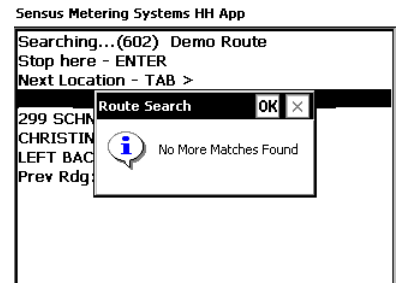 Next Location - Press the TAB> key and the system displays the next location in the search results.

  You can use the TAB> key to scroll through the entire list of search results. Once you reach the end of the search results, the system displays a No More Matches Found message.

  Press the Esc key to clear the No More Matches Found message and end the search.
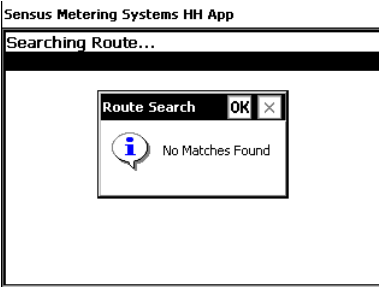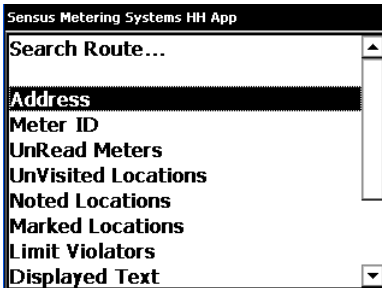
⊃ Search Displayed Text

The AR5000's search displayed text function allows you to search for any alphanumeric information stored in the route. This could include meter IDs, account numbers, address information, text entered into notes, customer names, and questions.

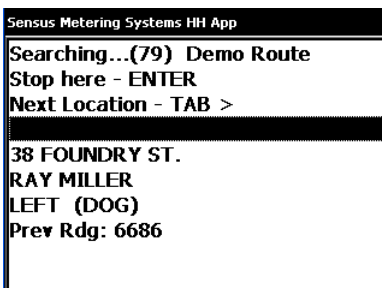**To search for displayed text...**

1 Open a route.

See *Start Collecting Data* on page 2-2 for instructions on opening a route.

Search Results Screen

Sensus Metering Systems HH App

Searching...(79) Demo Route
Stop here - ENTER
Next Location - TAB >

38 FOUNDRY ST.
RAY MILLER
LEFT (DOG)
Prev Rdg: 6686

No More Matches Found Message

Sensus Metering Systems HH App

Searching...(602) Demo Route
Stop here - ENTER
Next Location - TAB >

Route Search   OK ×

ⓘ   No More Matches Found

299 SCHN
CHRISTIN
LEFT BAC
Prev Rdg:

2   Press the F3 key.

The system displays the Search Route... menu.

> **Note**   F3 is the default key assignment for the Search menu. Key assignments can be changed. For more information, see About the Key Controls/Functions.

3   Use the PgUp/PgDn key to select Display Text.

4   Press the ENTER key.

The system displays an Enter Text dialog box.

5   Use the keypad to enter the text that you would like to search for.

No Matches Found Message

6   Press the ENTER key.

The system displays the results of the search.

- If the system cannot find the information you entered, then the screen displays a No Matches Found message.

  Press the Esc key to clear the No Matches Found message and end the search.

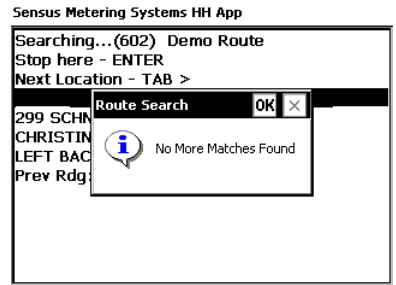**Search Results Screen**

- If the system finds more than one match for the information you entered, the screen displays the first match, along with the following choices:

  Stop here - Press the ENTER key to stop the search on the displayed location.

  Next Location - Press the TAB> key and the system displays the next location in the search results.

  You can use the TAB> key to scroll through the entire list of search results. Once you reach the end of the

search results, the system displays a No More Matches Found message.

Press the Esc key to clear the No More Matches Found message and end the search.

Sensus Metering Systems HH App

Searching...(602) Demo Route
Stop here - ENTER
Next Location - TAB >

| Route Search | OK | × |

299 SCHN
CHRISTIN
LEFT BAC   No More Matches Found
Prev Rdg

Find Unfinished Sections of the Route

At the end of reading a route, you can search to verify that all of the tasks are complete for that route. You can find meters without any new reading data, addresses that have no new data, and questions that have not been answered.

Note *Once you find a location or a question, you can perform any of the functions described in Chapter 2: Collect Meter Data.*

The following list provides a brief description of each part of this section:

- *Find UnRead Meters* on page 3-12 - How to locate meters on the route that do not have any new reading data.
- *Find UnVisited Location* on page 3-13 - How to find locations along the route that have not had any activity.
- *Find Unanswered Questions* on page 3-15 - How to find questions that have not received any response.

➲ Find UnRead Meters

The AR5000 typically associates read information with a meter ID (see *Manage Reading Scenarios* on page 2-7). When you reach the end of a route you may want to verify that all of the meters have readings associated with them. At any time during the reading process, you can use the search function to check which meter IDs are still unread.

Search Route... Menu

To find unread meters...

1 Open a route.

See *Start Collecting Data* on page 2-2 for instructions on opening a route.

2 Press the F3 key.

The system displays the Search Route... menu.

Note *F3 is the default key assignment for the Search menu. Key assignments can be changed. For more information, see About the Key Controls/Functions.*

---

3   Use the PgUp/PgDn key to select UnRead Meters.

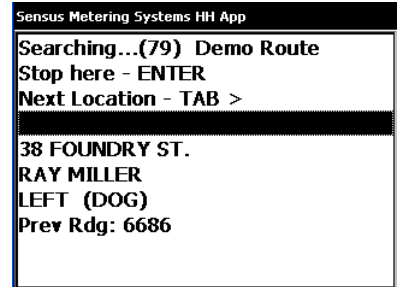**4**   Press the ENTER key.

The system displays the results of the search.

- If the system cannot find the information you entered, then the screen displays a No Matches Found message.

  Press the Esc key to clear the No Matches Found message and end the search.

- If the system finds more than one match for the information you entered, the screen displays the first match, along with the following choices:

  Stop here - Press the ENTER key to stop the search on the displayed location.

  Next Location - Press the TAB> key and the system displays the next location in the search results.
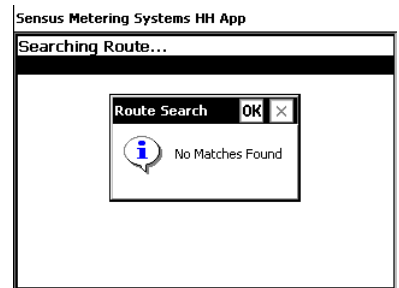
  You can use the TAB> key to scroll through the entire list of search results. Once you reach the end of the search results, the system displays a No More Matches Found message.

  Press the Esc key to clear the No More Matches Found message and end the search.
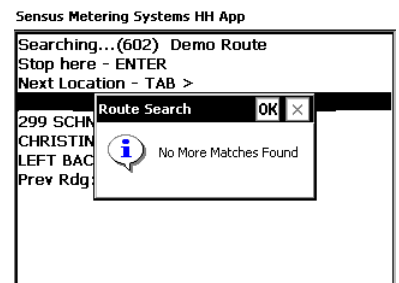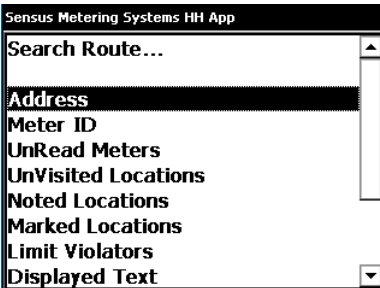
➲ Find UnVisited Location

The AR5000 typically associates meter IDs with a particular location or address (see *Manage Reading Scenarios* on page 2-7). When you visit a location, you typically enter

Search Results Screen

No Matches Found Message

No More Matches Found Message

some information for that location such as notes, readings, etc. When the route is complete, you may want to check to verify that you have visited every location on the route. At any time during the reading process, you can use the search function to check which locations are still unread.
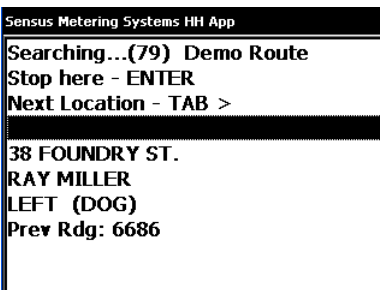
Sensus Metering Systems HH App

Search Route...

Address
Meter ID
UnRead Meters
UnVisited Locations
Noted Locations
Marked Locations
Limit Violators
Displayed Text

Search Route... Menu

To find unvisited locations...

1 Open a route.

See *Start Collecting Data* on page 2-2 for instructions on opening a route.

2 Press the F3 key.

The system displays the Search Route... menu.

Sensus Metering Systems HH App

Searching...(79) Demo Route
Stop here - ENTER
Next Location - TAB >

38 FOUNDRY ST.
RAY MILLER
LEFT (DOG)
Prev Rdg: 6686

Search Results Screen

> **Note** *F3 is the default key assignment for the Search menu. Key assignments can be changed. For more information, see About the Key Controls/Functions.*

3 Use the PgUp/PgDn key to select UnVisited Locations.

4 Press the ENTER key.

The system displays the results of the search.

- If the system cannot find the information you entered, then the screen displays a No Matches Found message.

  Press the Esc key to clear the No Matches Found message and end the search.

- If the system finds more than one match for the information you entered, the screen displays the first match, along with the following choices:

  Stop here - Press the ENTER key to stop the search on the displayed location.
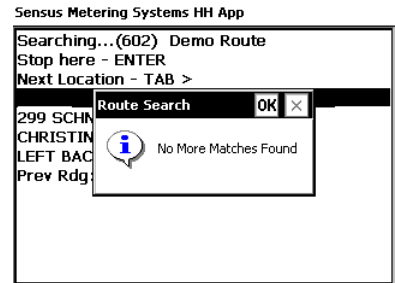
No Matches Found Message
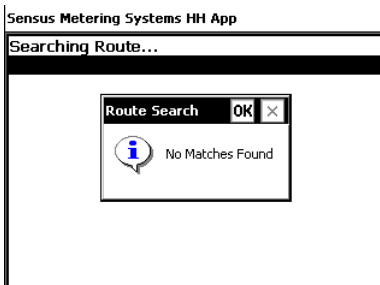
Sensus Metering Systems HH App

Searching Route...

| Route Search | OK | × |

ⓘ No Matches Found

Next Location - Press the TAB> key and the system displays the next location in the search results.

You can use the TAB> key to scroll through the entire list of search results. Once you reach the end of the search results, the system displays a No More Matches Found message.

Press the Esc key to clear the No More Matches Found message and end the search.

➲ Find Unanswered Questions

Depending on the way the system is configured, the AR5000 may prompt you to answer questions during the route (see *Answer Questions* on page 2-21). At any time during the reading process, you can check to see if there are any unanswered questions.
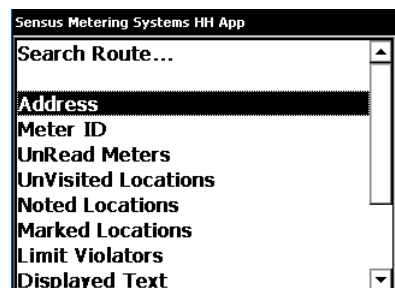
To find unanswered questions…

1   Open a route.

   See *Start Collecting Data* on page 2-2 for instructions on opening a route.

2   Press the F3 key.

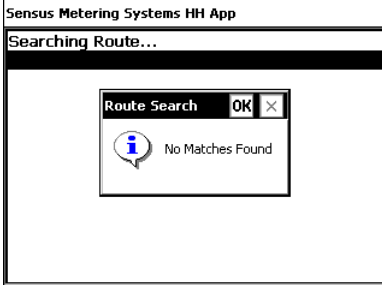   The system displays the Search Route… menu.

Note *F3 is the default key assignment for the Search menu. Key assignments can be changed. For more information, see About the Key Controls/Functions.*

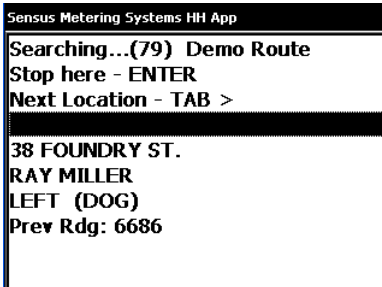3   Use the PgUp/PgDn key to select Unanswered Questions.

4   Press the ENTER key.

The system displays the results of the search.

No Matches Found Message

```
Sensus Metering Systems HH App
Searching Route...


    ┌─────────────────────────┐
    │ Route Search  OK  × │
    │                         │
    │   (i)   No Matches Found │
    │                         │
    └─────────────────────────┘

```
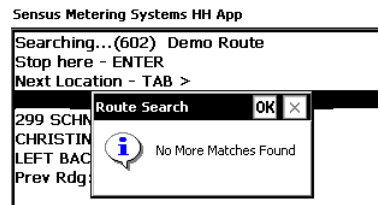
- If the system cannot find the information you entered, then the screen displays a No Matches Found message.

  Press the Esc key to clear the No Matches Found message and end the search.

- If the system finds more than one match for the information you entered, the screen displays the first match, along with the following choices:

  Stop here - Press the ENTER key to stop the search on the displayed location.

Search Results Screen

```
Sensus Metering Systems HH App
Searching...(79)  Demo Route
Stop here - ENTER
Next Location - TAB >


38 FOUNDRY ST.
RAY MILLER
LEFT  (DOG)
Prev Rdg: 6686

```

Next Location - Press the TAB> key and the system displays the next location in the search results.

You can use the TAB> key to scroll through the entire list of search results. Once you reach the end of the search results, the system displays a No More Matches Found message.

Press the Esc key to clear the No More Matches Found message and end the search.

No More Matches Found Message

```
Sensus Metering Systems HH App
Searching...(602)  Demo Route
Stop here - ENTER
Next Location - TAB >
      ┌─────────────────────────┐
299 SCHN│ Route Search   OK  × │
CHRISTIN│                         │
LEFT BAC│  (i)  No More Matches Found │
Prev Rdg│                         │
      └─────────────────────────┘
```

Find Special Entries

Special entries are non-read information stored in a route for certain locations. This information includes marks, notes, and limit violators. During the course of reading meters, you can search for each type of special entry.

Note *Once you find a location, you can perform any of the functions described in Chapter 2: Collect Meter Data.*

The following list provides a brief description of each part of this section:

- *Find Marked Locations* on page 3-17 - How to find locations on the route that have been marked.
- *Find Noted Locations* on page 3-19 - How to find locations on the route that have notes/comments added.
- *Find Limit Violators* on page 3-20 - How to find locations on the route with read data that is outside of the preset limits.

➲ Find Marked Locations

You can place a mark on any location in the route. Marking a location places a caret ("^") character in the heading of the on-screen display (see *Mark Locations* on page 2-20). You can use this mark, for reviewing information after a route is complete. For example, you can mark a location that you were unable to read during the route. At any time during the reading process, you can review a list of marked locations.
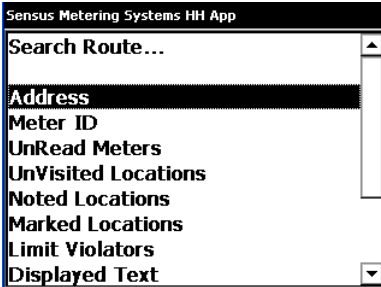
To find marked locations...

1 Open a route.

See *Start Collecting Data* on page 2-2 for instructions on opening a route.

2 Press the F3 key.

The system displays the Search Route... menu.

Sensus Metering Systems HH App

Search Route...

Address
Meter ID
UnRead Meters
UnVisited Locations
Noted Locations
Marked Locations
Limit Violators
Displayed Text

> **Note** *F3 is the default key assignment for the Search menu. Key assignments can be changed. For more information, see About the Key Controls/Functions.*

Sensus Metering Systems HH App

Searching Route...

Route Search   OK ×

(i) No Matches Found

3 Use the PgUp/PgDn key to select Marked Locations.

4 Press the ENTER key.

The system displays the results of the search.

- If the system cannot find the information you entered, then the screen displays a No Matches Found message.

Press the Esc key to clear the No Matches Found message and end the search.

Sensus Metering Systems HH App

Searching...(79) Demo Route
Stop here - ENTER
Next Location - TAB >

38 FOUNDRY ST.
RAY MILLER
LEFT (DOG)
Prev Rdg: 6686

- If the system finds more than one match for the information you entered, the screen displays the first match, along with the following choices:
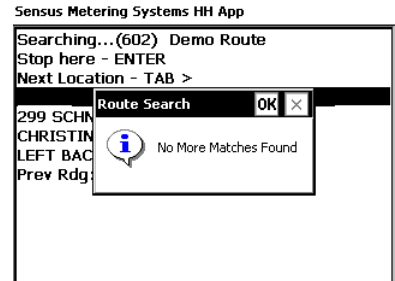
Stop here - Press the ENTER key to stop the search on the displayed location.

Next Location - Press the TAB> key and the system displays the next location in the search results.

You can use the TAB> key to scroll through the entire list of search results. Once you reach the end of the search results, the system displays a No More Matches Found message.

Press the Esc key to clear the No More Matches Found message and end the search.

Sensus Metering Systems HH App

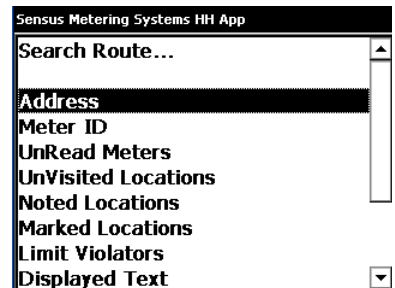Searching…(602) Demo Route
Stop here - ENTER
Next Location - TAB >

Route Search   OK ×

299 SCHN
CHRISTIN
LEFT BAC
Prev Rdg

ⓘ No More Matches Found

⊃ Find Noted Locations

As you are reading meters, you can enter additional text information for locations along a preset route (see *Enter Notes* on page 2-19). For example, you can enter a note when you encounter an equipment problem with a meter. At any time during the reading process, you can review a list of the notes.

To find noted locations…

1 Open a route.

See *Start Collecting Data* on page 2-2 for instructions on opening a route.

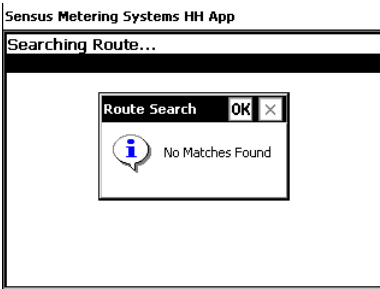2 Press the F3 key.

The system displays the Search Route… menu.

Sensus Metering Systems HH App

Search Route…

Address
Meter ID
UnRead Meters
UnVisited Locations
Noted Locations
Marked Locations
Limit Violators
Displayed Text

Search Route… Menu

Note *F3 is the default key assignment for the Search menu. Key assignments can be changed. For more information, see About the Key Controls/Functions.*
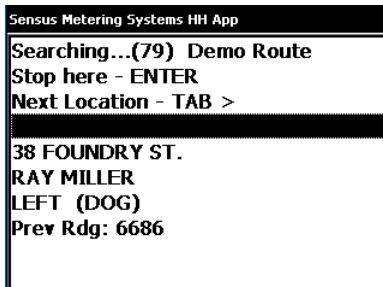
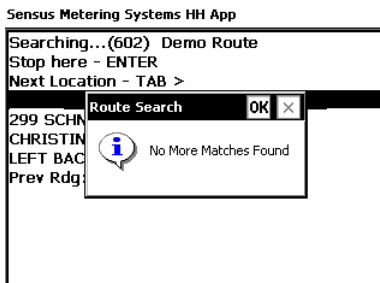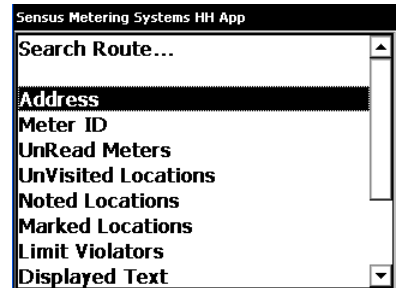3 Use the PgUp/PgDn key to select Noted Locations.
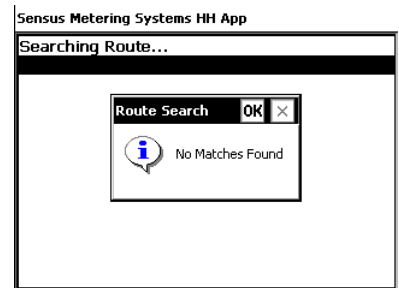
4 Press the ENTER key.

The system displays the results of the search.

- If the system cannot find the information you entered, then the screen displays a No Matches Found message.

  Press the Esc key to clear the No Matches Found message and end the search.

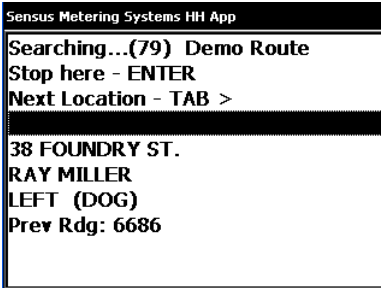- If the system finds more than one match for the information you entered, the screen displays the first match, along with the following choices:

No Matches Found Message

Sensus Metering Systems HH App

Searching Route…

Route Search OK ×

ⓘ No Matches Found

Stop here - Press the ENTER key to stop the search on the displayed location.

Next Location - Press the TAB> key and the system displays the next location in the search results.

You can use the TAB> key to scroll through the entire list of search results. Once you reach the end of the search results, the system displays a No More Matches Found message.

Search Results Screen

Sensus Metering Systems HH App

Searching…(79) Demo Route
Stop here - ENTER
Next Location - TAB >

38 FOUNDRY ST.
RAY MILLER
LEFT (DOG)
Prev Rdg: 6686

No More Matches Found Message

Sensus Metering Systems HH App

Searching…(602) Demo Route
Stop here - ENTER
Next Location - TAB >

299 SCHN   Route Search OK ×
CHRISTIN
LEFT BAC   ⓘ No More Matches Found
Prev Rdg:

Press the Esc key to clear the No More Matches Found message and end the search.

➲ Find Limit Violators

The office staff typically configures high/low limits for the readings from each meter along the route. This assigns a range of acceptable readings for each location. As you are reading meters, you may encounter readings that do not fall within the preset limits. If a reading does not fall within this range, the AR5000 sounds an audible warning and displays the Limit Check screen (see *Enter Data* on page 2-14/*Enter Manual Readings* on page 2-14). At any time during the reading process, you can review a list of the violators.

To find limit violators...

1   Open a route.

See *Start Collecting Data* on page 2-2 for instructions on opening a route.

2   Press the F3 key.

The system displays the Search Route... menu.

Sensus Metering Systems HH App

Search Route...

Address
Meter ID
UnRead Meters
UnVisited Locations
Noted Locations
Marked Locations
Limit Violators
Displayed Text

Note   *F3 is the default key assignment for the Search menu. Key assignments can be changed. For more information, see About the Key Controls/Functions.*

3   Use the PgUp/PgDn key to select Noted Locations.

4   Press the ENTER key.

The system displays the results of the search.

- If the system cannot find the information you entered, then the screen displays a No Matches Found message.

  Press the Esc key to clear the No Matches Found message and end the search.

Sensus Metering Systems HH App

Searching Route...

Route Search   OK ×

No Matches Found

• If the system finds more than one match for the information you entered, the screen displays the first match, along with the following choices:
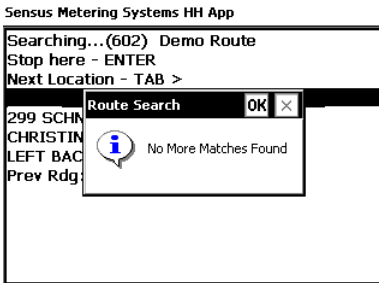
Stop here - Press the ENTER key to stop the search on the displayed location.

Next Location - Press the TAB> key and the system displays the next location in the search results.

You can use the TAB> key to scroll through the entire list of search results. Once you reach the end of the search results, the system displays a No More Matches Found message.

Press the Esc key to clear the No More Matches Found message and end the search.

Search Results Screen

```
Sensus Metering Systems HH App
Searching...(79) Demo Route
Stop here - ENTER
Next Location - TAB >

38 FOUNDRY ST.
RAY MILLER
LEFT  (DOG)
Prev Rdg: 6686
```

No More Matches Found Message

```
Sensus Metering Systems HH App
Searching...(602)  Demo Route
Stop here - ENTER
Next Location - TAB >
           Route Search      OK  ×
299 SCHN
CHRISTIN    (i)   No More Matches Found
LEFT BAC
Prev Rdg:
```

Review Read Information

The AR5000 can store several types of historical data, including route statistics and previous transactions. You can use this information as a quick reference to check the activity on a route. This information is available at any time.

The following list provides a brief description of each part of this section:

- *Review Route Statistics* on page 3-23 - How to view various statistics for an open route.
- *Review Previous Transactions* on page 3-25 - How to view a list of every meter ID that has had activity during the time you are on the route.

➲ Review Route Statistics

As you are reading meters, the AR5000 collects statistics in the following categories:

- Read/Unread - Lists the number of locations that have been read or remain unread. These are displayed in the following format: read/unread (see *Find UnRead Meters* on page 3-12).
- New Meter - Lists the number of new meter IDs added to the (see *Add New Meters to Route* on page 2-22).
- Noted - Lists the number of locations with a note added (see *Find Noted Locations* on page 3-19).
- Questioned - Lists the number of locations with a question (see *Answer Questions* on page 2-21).
- Answered - Lists the number of locations with a question that has been answered (see *Answer Questions* on page 2-21).
- Marked - Lists the number of locations that have been marked (see *Enter Data* on page 2-14/*Mark Locations* on page 2-20).
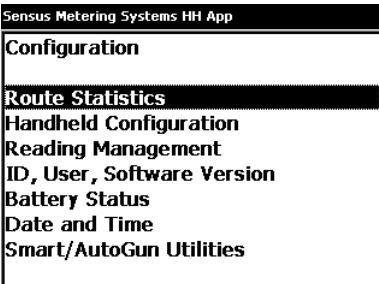
- Visited - Lists the number of locations visited (see *Find UnVisited Location* on page 3-13).

- Unvisited - Lists the number of locations that have not been visited (see *Find UnVisited Location* on page 3-13).

At any time during the reading process, you can review an on-screen report of these statistics. This report can be useful as a quick reference at the end of your route, to verify that you have completed all of the necessary tasks for that route. You can also use this report at the beginning of a route to check for questions, marks, and notes that could require special attention during that route.

Sensus Metering Systems HH App

Configuration

Route Statistics
Handheld Configuration
Reading Management
ID, User, Software Version
Battery Status
Date and Time
Smart/AutoGun Utilities

Configuration Menu

To review route statistics...

1   Open a route.

See *Start Collecting Data* on page 2-2 for instructions on opening a route.

2   Press the F6 key.

The system displays the Configuration menu.

Sensus Metering Systems HH App

Demo Route Statistics:

Read/UnRead = 2/670
New Meters = 0
Noted = 1
Questioned = 0
Answered = 0
Marked = 0
Visited = 3
Unvisited = 669
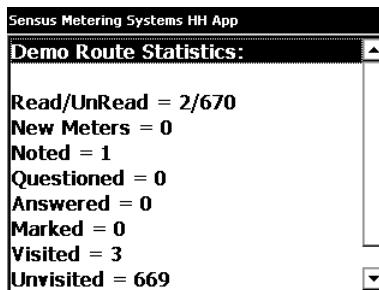
Statistics Screen

> **Note**   *F6 is the default key assignment for the Configuration menu. Key assignments can be changed. For more information, see About the Key Controls/Functions.*

3   Use the PgUp/PgDn key to select Route Statistics.

4   Press the ENTER key.

The system displays the Statistics screen for the route you have open.

5   Press the Esc key to exit the Statistics screen.

➲ Review Previous Transactions

At any time during the reading process, you can review an on-screen report of the reading activity on the current route. This report provides a list of every meter ID that has had some activity. Each item on this list includes the following information:

- Transaction number - A transaction number appears at the top of the screen. Transaction 1 is the most current activity on the route, Transaction 2 displays the next most current ID with activity, and so on.
- Date - This shows the date of the transaction.
- Time - This shows the time of the transaction.
- ID - This indicates the meter ID for the transaction.
- Rdg - This lists the current reading data.
- Note - Any notes associated with the meter ID will be listed here.

This report can be useful as ___TBD???___

To review previous transactions...

1 Open a route.

See *Start Collecting Data* on page 2-2 for instructions on opening a route.

2 Press the F5 key.

The system displays the first item in the Transaction History.

Transaction History Item

Sensus Metering Systems HH App
Transaction 7
Date : 04-25-2006
Time : 09:52
ID : B00003770
Note : 6 Pit cover damaged

Note *F5 is the default key assignment for the Transaction History. Key assignments can be changed. For more information, see About the Key Controls/Functions.*

---
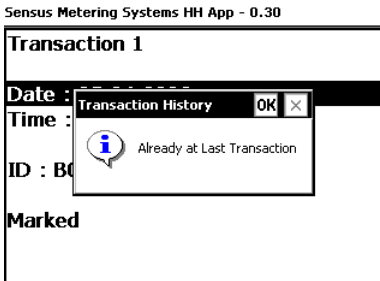
3 Use the TAB key to page through the Transaction History.

Sensus Metering Systems HH App - 0.30

Transaction 1

Date :
Time :

Transaction History   OK ×

(i)   Already at Last Transaction

ID : B(

Marked

- When you reach the end of the list, the system displays the message Already at Last Transaction. Press the Esc key to clear the message and return to the Transaction History list.

- When you reach the beginning of the list, the system displays the message Already at First Transaction. Press the Esc key to clear the message and return to the Transaction History list.

Note   *You can use the Esc key to exit the Transaction History list, at any time.*

---

4 Press the F3 key to go to a location.

When a transaction is displayed, pressing F3 causes the system to exit the list and display the location associated with that transaction.

Note   *Once you find a location, you can perform any of the functions described in Chapter 2: Collect Meter Data.*

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