

SONIXPALM

Users Guide





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INTRODUCTION

SonixPalm Software To Go

SonixPalm lets you take the Sonix meter software you need on the road without a laptop. It runs on your Palm handheld computer so it's portable and easy to use. SonixPalm features utilities to install, configure and test your Sonix meters, and will also allow you to grab the data off the meters to take back to the shop.

About this Manual

This Manual contains two sections that detail how to use the SonixPalm software. The first section is the Installer Guide which steps through all the menu functions that are available to a user with *Installer* authority. The second section is the Technician Guide that contains many of the same functions that are found in the Installer section, but expands on additional areas of the software only available to the *Technician*.

At the end of the manual you'll find some helpful areas:

- SonixManage Overview
- Information on Downloaded Files
- Meter Diagnostics Flags
- Error Message Descriptions

This manual will step you through the various functions you can perform using the SonixPalm software. Different styles of text will be used to indicate what you need to enter, versus what is displayed by the software.

Text that appears on the Palm screen will be in bold.

Selections from drop-down menus will be shown like this: **YES**



GETTING STARTED

System Requirements

SonixPalm will run on any Palm PDA running the PalmOS Operating System, version 3.0 or higher. It has not been tested on nor is it intended for use on other PDA models.

In addition to your Palm, you will also need the following:

- A Palm serial cable or cradle
- The SonixPalm Optical Interface Cable

The Palm serial cable or cradle has one end that is inserted into the bottom of your Palm; the other end must be a 9-pin female connector.

The SonixPalm Optical Interface Cable is available from Invensys – it has a 9-pin “D” connector to connect to the serial cable and a magnetic optical interface that attaches to the meter.

Installing SonixPalm on your Palm Computer

SonixPalm software is included on the **SonixCom Installation CD**. Please refer to the instructions on the CD folder to install your SonixPalm software onto your desktop or laptop computer. Once this is complete, perform a HotSync to install SonixPalm on to your Palm Computer.

Setting Options and Parameters with SonixManage

Included with SonixCom and SonixPalm is SonixManage. This is a program that is installed on your laptop or PC that allows you to customize SonixPalm.

The meter engineer or technician uses SonixManage to:

- Define the User Ids and Passwords used to access SonixPalm
- Set default values used in SonixPalm by meter model
- Assign the meter default passwords
- Define Installation tasks and determine the order in which they appear on the SonixPalm installation Menu

See **Appendix A** for example screens showing the data that may be set using SonixManage.

Palm Setup

SonixPalm does not require any special setup on your Palm. However, before you get started, be sure that the date and time settings are correct on your Palm, as these settings may be transferred to the meter during some operations.

Verifying Time & Date

You can use SonixPalm to set the time and date on the Sonix Meter. Therefore, it is important that the time and date on your handheld computer are correct. Take a minute to check this before using your new software.

If the time and date are incorrect, you can change them by tapping:

(Clock)
(Set Date & Time)
... enter the correct date & time...
(DONE)

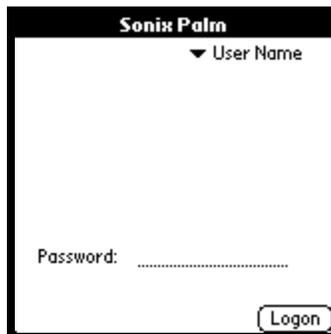
INSTALLER GUIDE

Logging On



Tap on the SonixPalm Icon on your Palm Desktop.

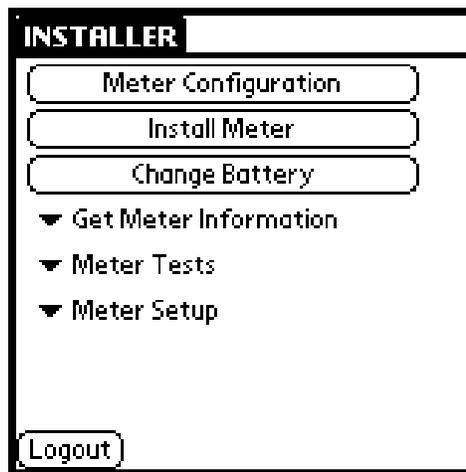
The following screen will appear:



Tap **User Name**

Choose **Installer** (or the personalized ID assigned to you with Installer privileges) from the drop-down menu by tapping on it. The cursor will then move you to the entry field for Password. Using either Graffiti or the Keyboard, enter the password you were given for this ID.

You will then see the **Main Menu** screen for the Installer:

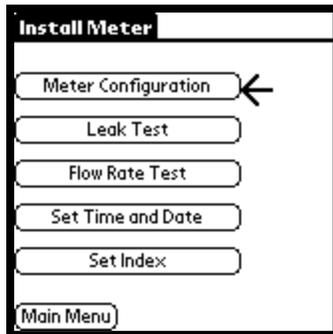
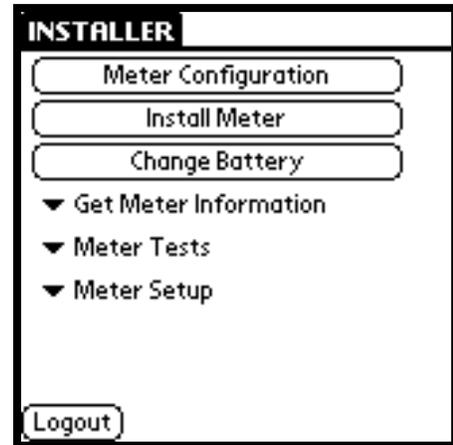


Installing a Meter

NOTE: Before proceeding with these steps, be sure that your Palm is connected to the Sonix Meter using the Serial Cable and the SonixPalm Optical Interface Cable.

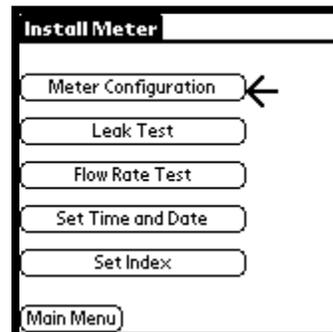
Tap the **Install Meter** button →

You will then see a screen that shows each step of the installation process for this meter.
Note: The steps are customizable through the SonixManage software, therefore the steps you see may not match those shown here.

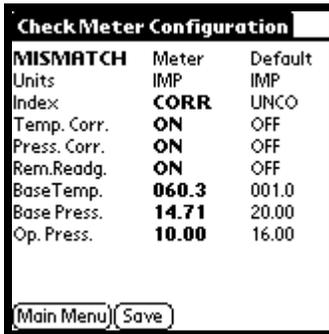


You must go through each of the steps to install the meter.

1 Tap the **Meter Configuration** button



The message “**Contacting Meter...**” will appear on the screen for several seconds. The software will download information that is stored in the meter and display it on your screen, in a format that looks like this:



Check Meter Configuration		
	Meter	Default
MISMATCH		
Units	IMP	IMP
Index	CORR	UNCO
Temp. Corr.	ON	OFF
Press. Corr.	ON	OFF
Rem. Readg.	ON	OFF
Base Temp.	060.3	001.0
Base Press.	14.71	20.00
Op. Press.	10.00	16.00

(Main Menu) (Save)

The first column of data (under the heading “Meter”) shows the actual values obtained from the meter you are working with. The second column (under “Default”) shows the default values for this model. The table on the next page lists the possible settings for each item and a short explanation of each.

This data is informational only and you can not make changes to it. Tap the **Save** button if you would like to transfer this information to your PC on the next HotSync.

Meter Configuration Settings

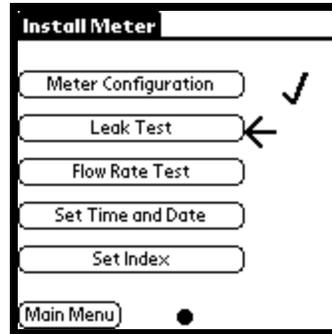
Configuration Item	Setting	Description
Units	IMP	Imperial (ft ³ - Cubic Feet)
	METRIC	Metric (m ³ – Cubic Meters)
Index	CORR	Corrected (for Temperature or Pressure) Index is displayed.
	UNCO	Uncorrected Index is displayed
Temperature Correction (Temp. Corr.)	ON	The meter will temperature compensate.
	OFF	No temperature compensation will occur.
Pressure Correction (Pres. Corr.)	ON	The meter will calculate and use a pressure multiplier
	OFF	No pressure multiplier will be applied.
Remote Reading (Rem Readg.)	ON	Remote Reading is enabled.
	OFF	Remote Reading is disabled.
Base Temperature (Base Temp.)	Numeric	Temperature used in temperature correction (default 60° F or 15° C). Valid range is -35° to +55° C (-31° to +131° F).
Base Pressure (Base Press.)	Numeric	The Base Pressure is in absolute pressure units (PSIA, Bar). 10-16 psia (0.7 – 1.1 bar) for Sonix 12, Sonix 16 and Sonix 25 meters.
Operating Pressure (Op Press.)	Numeric	The operating pressure in gauge pressure units (PSIG or Bar). 0 - 20 psig (0 - 1.4 bar) for Sonix 12, Sonix 16, and Sonix 25 meters.

*Please note that a user with **Installer** authority cannot make any changes to these settings; they are for informational use only. If changes are necessary, they may be performed by a **Technician** – see page 30 for details.*

When you have finished reviewing the Meter Configuration, tap the **BACK** button.

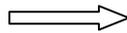
Then hit **YES** at the prompt to continue.

2 Tap the **Leak Test** button.



This will bring up the Leak Test Screen:

Tap Start



After hitting Start, the software will run through a process of “**Stabilizing the Meter**”, and you will see a message showing you that it is doing that. The progress will be marked from 0% to 100% complete.

When the meter is stabilized, a message will be displayed “**Stabilization Complete**”. Hit **OK** on this message box to continue with the test.

Next, hit **Start** again to begin the Leak Test. Please note the duration of the test as shown on the screen. This duration is set through the SonixManage software on the PC.

The progress of the test will be shown at the top of the screen from 0% to 100%.

If the test is unsuccessful, the following screen will appear:

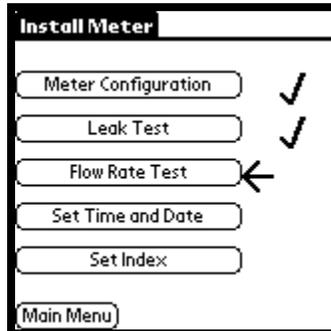


Tap **Yes** to save the results of the unsuccessful test.

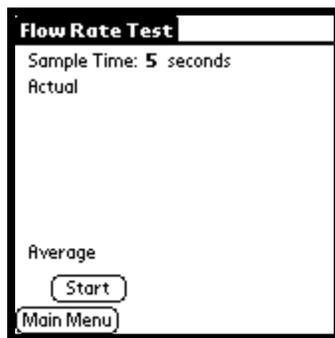
A successful test is complete when a Message Box pops up with the message "Leak Test Complete". When you see this message, hit **OK** to continue.

Hit **Back** to continue installing the meter.

3 Tap the **Flow Rate Test** button.



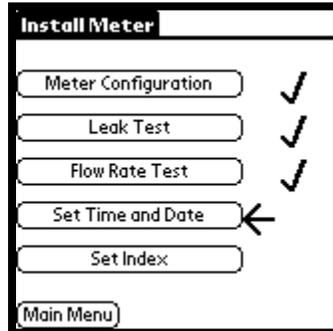
The following screen will appear:



Tap the **START** button to begin the test.

The test will check the flow rate repeatedly at the interval shown after “Sample Time” at the top of the screen. You can let the test run as long as you would like. When you have enough samples, hit the **STOP** button to complete the test, then the **BACK** button to continue installing the meter.

4 Tap the **Set Time and Date** button.



The following screen will appear:

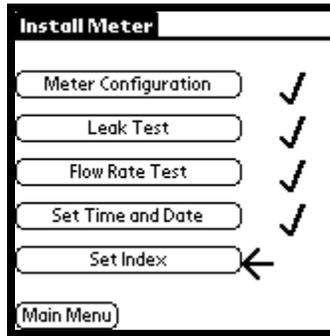
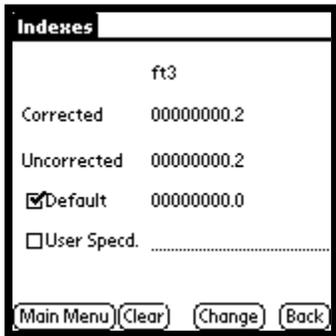


The Palm’s date and time settings and the Meter’s date and time settings will be displayed. If the Palm’s settings are incorrect, back out of this operation by tapping Main Menu. You can then adjust the Palm’s settings and begin this process again. If the Palm’s date and time are correct, tap **Send Time**

The new date and time will transmit to the meter. You will see the “processing” blinking dot in the center of the bottom line of the display as the settings are transmitted.

Please see box on page 26 for a note about how various Sonix models store time.

Tap the **Set Index** button.



This screen allows you to change the index reading shown on the meter. The **Indexes** screen has four areas:

- Corrected – Shows the Corrected Index currently stored in the meter
- Uncorrected – Shows the Uncorrected Index currently stored in the meter
- Default – Shows the manufacturer’s default value for the initial meter index
- User Specified – An entry field in which you can indicate the value you want to set for the initial index

Setting the Index to the Default

Tap the box next to the word **Default** to place a checkmark in the box as shown above. Then tap the Change button to send the setting to the meter. A dot will blink to the left of the Change button while the setting is being uploaded to the meter, and the new setting will appear on the meter’s display.

Setting the Index to a User-Specified Reading

Tap the box next to **User Specd.**, then tap at the beginning of the entry field to the right. Using the Graffiti numeric input area or the number keyboard, enter the setting you wish to send to the meter. Then hit the **Change** button to send the setting to the meter. A dot will blink to the left of the Change box while the setting is being uploaded to the meter, and the new setting will appear on the meter’s display.

Installing the Meter – Summary

This section described the steps you take in SonixPalm when installing a meter. You begin by tapping the Install Meter button, then following the steps presented. There may be up to 5 steps, including the following:

- Meter Configuration
- Leak Test
- Flow Rate Test
- Set Time & Date
- Set Index

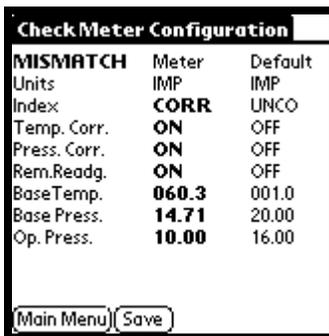
The software will not allow you to skip any of these steps, and you must complete them in the order shown.

The remaining software functions are described in the next section.

Checking Meter Configuration

NOTE: Before proceeding, be sure that your Palm is connected to the Sonix Meter using the Serial Cable and the SonixPalm Optical Interface Cable.

You may use the SonixPalm software to check the settings on a Sonix meter without going through the Installation process. Click on the **Meter Configuration** button at the top of the Main Menu to display the summary configuration data, as shown here:



Check Meter Configuration		
MISMATCH	Meter	Default
	Units	IMP
	Index	UNCO
	Temp. Corr.	OFF
	Press. Corr.	OFF
	Rem. Readg.	OFF
	BaseTemp.	001.0
	Base Press.	20.00
	Op. Press.	16.00

(Main Menu) (Save)

This is the same screen that you see in the first step of the Installation process. As an Installer, you may only view these settings. You must log in with Technician access in order to make any changes. See page 11 for descriptions of these settings.

Tap the **Save** button to designate that this data should be transferred to the PC on the next HotSync.

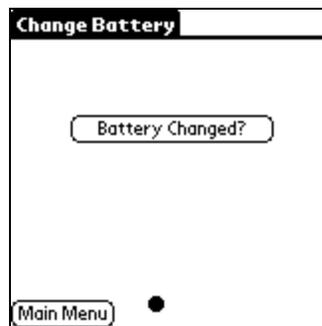
Changing the Meter Battery

NOTE: Before proceeding, be sure that your Palm is connected to the Sonix Meter using the Serial Cable and the SonixPalm Optical Interface Cable and that the Time and Date settings on the Palm are correct.

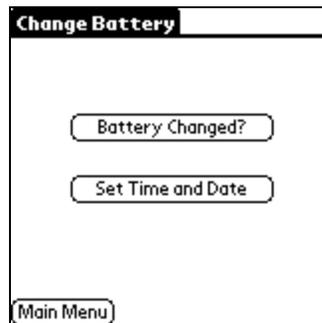
NOTE: The Battery Change function is not necessary on initial install of the Sonix meter. This procedure must be performed after you have replaced the battery. The battery change is indicated when the “r” flag followed by the “F” flag is set – after approximately 11 years of service.

After you replace a battery on the Sonix meter, you must update the date and time on the meter. To do so:

1. Tap **Change Battery** – the following screen will appear:



2. Tap **Battery Changed?** – the following screen will appear:



3. Tap **Set Time and Date**

The Palm's date and time settings and the Meter's date and time settings will be displayed. If the Palm's settings are incorrect, back out of this operation by tapping Main Menu. You can then adjust the Palm's settings and begin this process again. Otherwise continue with Step 4.

4. Tap **Send Time**

The new date and time will transmit to the meter. You will see the "processing" blinking dot in the center of the bottom line of the display as the settings are transmitted.

To confirm that the settings have taken place, tap ▼ **Meter Setup** and choose **Time & Date**

The date and time for the Palm and Meter should now match.

Please see page 26 for details on how time is displayed on Sonix meters.

Displaying Meter Information

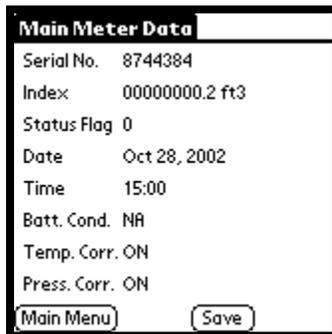
NOTE: Before proceeding, be sure that your Palm is connected to the Sonix Meter using the Serial Cable and the SonixPalm Optical Interface Cable.

To begin getting Meter Information, from the Main Menu, tap the ▼ **Get Meter Information** button.

SonixPalm allows you to view four areas of Meter Information: Main Meter Data, Meter Identification, Meter Configuration and Operating Status.

The following charts briefly explain the data displayed.

Main Meter Data



Serial No.	The meter's Serial Number – this should match the last 7 digits on the UPC label
Index	The current reading
Status Flag	If a status flag has been set in the meter by an event, it will be shown here. See Appendix C for a listing of Status flags and their meanings.
Date	The date setting stored in the meter *
Time	The time setting stored in the meter*
Batt. Cond.	On meters equipped with this feature, the Battery Voltage will be displayed.
Temp. Corr.	Indicates if Temperature Correction is ON or OFF
Press. Corr.	Indicates if Pressure Correction is ON or OFF

* Please see page 26 for details on the date and time stored in the meter.

This screen is informational only. However, you may tap the **Save** button to designate that this data should be transferred to the PC on the next HotSync.

Meter Identification

Meter Identification	
Serial No.	8744384
Meter Type	S25
Meter Model	05
Meter Firmware Ver.	E11
Date of Manufacture	Jan 1, 2001
Main Menu	

Serial No.	The meter's Serial Number – this should match the last 7 digits on the UPC label
Meter Type	EQ6 = Sonix 6, S12 = Sonix 12, S16= Sonix 16, S25 = Sonix 25
Meter Model	2-digit number corresponding to the month of manufacture.
Meter Firmware Version	Displays the firmware version for this meter type.
Date of Manuf.	The meter's date of manufacture

Meter Configuration

Meter Configuration	
Temp. Correction	ON
Press. Correction	ON
Index Mode	CORR
Units	IMP
Main Menu	

Temp. Correction	Indicates if Temperature Correction feature is ON or OFF
Press. Correction	Indicates if Pressure Correction feature is ON or OFF
Index Mode	CORR - Index shown in meter window is the Corrected Index UNCO – Index shown in meter window is the Uncorrected Index
Units	Index shown in Imperial or Metric units.

Operating Status

Operating Status	
Reverse Flow	000
Air In Meter	000
Unsat. Readings	000
Flow Out Of Range	000
Excessive Noise	000
SOS-Range	000
SOS-Rate	000
Lock Status	OFF
Country Code	NA
Other	000
Main Menu	

Reverse Flow	Number of times reverse flow was detected in this meter
Air in Meter	Number of times air was detected in the meter
Unsat. Readings	Number of Unsatisfactory Readings
Flow out of Range	Number of times flow out of range detected
Excessive Noise	Number of times excessive noise was detected
SOS-Range	Number of times Speed of Sound out of Range detected
SOS-Rate	Number of times Speed of Sound Rate Change detected
Lock Status	EEPROM lock (on or off, will be on when the meter leaves the factory)
Country Code	Compatible meters will display country code abbreviation
Other	Not used at this time

Performing Meter Tests

SonixPalm, when connected to the Sonix Meter, allows you to perform **Leak Tests** and **Flow Rate Tests**.

NOTE: Before proceeding, be sure that your Palm is connected to the Sonix Meter using the Serial Cable and the SonixPalm Optical Interface Cable.

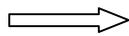
Leak Test

Note: This test is also performed as Step 2 in the “Install Meter” functions.

1. From the Main Menu, Tap the ▼**Meter Tests** button.
2. Tap the ▼**Leak Test** button.

This will bring up the Leak Test Screen:

Hit Start



After hitting Start, the software will run through a process of “**Stabilizing the Meter**”, and you will see a message showing you that it is doing that. The progress will be marked from 0% to 100% complete.

When the meter is stabilized, a message will be displayed “**Stabilization Complete**”. Hit **OK** on this message box to continue with the test.

Next, hit **Start** again to begin the Leak Test. Please note the duration of the test as shown on the screen. This duration is set through the SonixManage software on the PC.

The progress of the test will be shown at the top of the screen from 0% to 100%.

If the test is unsuccessful, the following screen will appear:



Tap **Yes** to save the results of the unsuccessful test.

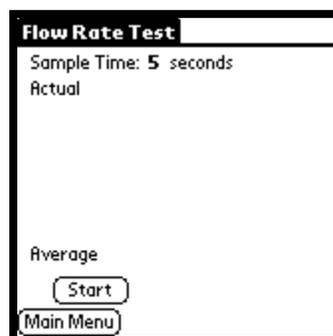
A successful test is complete when a Message Box pops up with the message “**Leak Test Successful**”. Hit **Back** to continue installing the meter.

Flow Rate Test

Note: This test is also performed as Step 2 in the “Install Meter” functions.

1. From the Main Menu, Tap the **Meter Tests** button.
2. Tap the **Flow Rate Test** button.

This will bring up the Flow Rate Test Screen:



Tap the **START** button to begin the test.

The first line of this screen shows how frequently the meter is polled for flow rate. The meter is set up for a specific Sample Time (in seconds). The default is 5 seconds. This means that the meter flow rate is calculated every 5 seconds. The Sample Time limits are 1 – 60 seconds, and can be set up through the SonixManage software.

The rest of the screen displays the flow rates from the meter. When the user hits the **Start** button, the software starts polling the meter every “X” seconds (based upon the Sample Time selected in SonixManage). The calculated flow rate is displayed, and an average is calculated. If the meter is set in the Imperial unit mode, the volume is measured in thousandths of a cubic foot per hour (0.000 cfh). If the meter is in the metric unit mode, the volume is measured in thousandths of a cubic meter per hour (0.000 m3h). When you hit the **Stop** button, the software stops polling the meter. You then hit **Main Menu** to exit the Flow rate page.

Updating Meter Setup

There may be instances when you need to update the Meter Time and Date or Index without going through the “Install Meter” process. If so, you can access these functions directly by following the steps outlined in this section.

Time and Date Setup

1. From the Main Menu, Tap the ▼ **Meter Setup** button.
2. Tap the ▼ **Time & Date** button.

The Palm’s date and time settings and the Meter’s date and time settings will be displayed. If the Palm’s settings are incorrect, back out of this operation by tapping Main Menu. You can then adjust the Palm’s settings and begin this process again. If the Palm’s date and time are correct, tap **Send Time**

The new date and time will transmit to the meter. You will see the “processing” blinking dot in the center of the bottom line of the display as the settings are transmitted.

Time according to the Sonix Meter

Sonix 6 meters with firmware version 0Q8 and 0Q9

Time is stored one way: time blocks. In Sonix 6 meters with version 0Q8 and 0Q9 firmware, the user can only set the meter time to the nearest three-hour time block. If the user goes to the **Time** icon and “reads” the meter time, the user will be able see which three-hour time block the meter is in. If the user tries to set the meter by using the **Send Time** function, the user will set the time to the nearest preceding three-hour time block. In addition, if the user goes to the **Main Data** icon or the **Diagnostics** icon, they will see the three-hour time block.

Sonix 6 meters with firmware version 1Q0 and later

Time is stored two ways in later versions of Sonix 6 meters: (1) actual time; and, (2) time blocks. In Sonix 6 meters with version 1Q0 and later firmware, the user can set the meter time to the nearest minute (actual time). If the user then goes to the **Time** icon and “reads” the meter time, the user will be able to read the meter time to the minute. In earlier versions of the meter firmware, the user could only set the time to the nearest three-hour time blocks.

Important Note: If the user goes to the **Main Data** icon or the **Diagnostics** icon, they will only see the three-hour time block – even though the meter is storing time to the nearest minute.

Sonix 12, 16 and 25

While time is stored in one-hour blocks in Sonix 12, 16 and 25 meters, it is only displayed in three-hour blocks.

Note: Sonix meters do not adjust for daylight savings time.

Index Setup

1. From the Main Menu, Tap the **Meter Setup** button.
2. Tap the **Indexes** button.

The index readings (uncorrected and corrected) will appear and two checkboxes will appear below them. The first checkbox allows you to send the factory default index to the meter, the second one allows you to specify an index value to send.

Index Readings and Sonix Models

Sonix 6 – In the Imperial units mode, the right most digit in the index reading on the meter’s LCD starts with 100 cubic feet. In the Metric units mode, the right most digit is 0.1 cubic meters.

Sonix 12, Sonix 16 or Sonix 25 – In the Imperial units mode, the right most digit in the index readings start with 100 cubic feet. In the Metric units mode, the right most digit in the index readings start with 1 cubic meter if a diagnostic flag is displayed. If a diagnostic flag is not being displayed, the LCD will display volume to 0.001 cubic meters.

Indexes	
	ft3
Corrected	00000000.2
Uncorrected	00000000.2
<input checked="" type="checkbox"/> Default	00000000.0
<input type="checkbox"/> User Specd.
Main Menu Clear Change Back	

Setting the Index to the Factory Default

Tap the box next to the word **Default** to place a checkmark in the box as shown. Then tap the **Change** button to send the setting to the meter. A dot will blink to the left of the Change button while the setting is being uploaded to the meter, and the new setting will appear on the meter’s display.

Setting the Index to a User-Specified Reading

Tap the box next to **User Specd.**, to place a checkmark there, then tap at the beginning of the entry field to the right. Using the Graffiti numeric input area or the number keyboard, enter the setting you wish to send to the meter. Then hit the **Change** button to send the setting to the meter. A dot will blink to the left of the Change box while the setting is being uploaded to the meter, and the new setting will appear on the meter’s display.

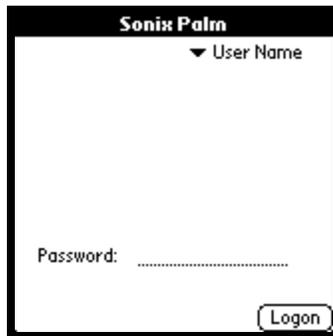
TECHNICIAN GUIDE

Logging On



Tap on the SonixPalm Icon on your Palm Desktop.

The following screen will appear:



Tap **User Name**

Choose **Technician** (or the personalized ID assigned to you with Technician privileges) from the drop-down menu by tapping on it. The cursor will then move you to the entry field for Password. Using either Graffiti or the Keyboard, enter the password you were given for this ID.

You will then see the **Main Menu** screen for the Technician:



Checking or Changing Meter Configuration

NOTE: Before proceeding, be sure that your Palm is connected to the Sonix Meter using the Serial Cable and the SonixPalm Optical Interface Cable.

You may use the SonixPalm software to check or modify many of the settings on the Sonix meter. The first screen that accesses settings is the Check Meter Configuration screen, which is accessed by tapping the **Meter Configuration** button at the top of the Main Menu. This will display the summary configuration data, as shown here:

Check Meter Configuration		
MISMATCH	Meter	Default
Units	IMP	IMP
Index	CORR	UNCO
Temp. Corr.	ON	OFF
Press. Corr.	ON	OFF
Rem. Readg.	ON	OFF
Base Temp.	060.3	001.0
Base Press.	14.71	20.00
Op. Press.	10.00	16.00

The first column of data (under the heading “Meter”) shows the actual values obtained from the meter you are working with. The second column (under “Default”) shows the default values for this model. The Default values are for informational purposes only and cannot be changed. The Meter values may be changed as follows:

- | | |
|---|---|
| Units | <p>Toggle between Imp and Metric by tapping the current value.</p> <p>Choose “Imp” for Imperial Units – measurement will be in Cubic Feet and “ft³” will display on meter.</p> <p>Choose “Met” for Metric Units – measurement will be in cubic meters and “m³” will display on meter.</p> |
| Index | <p>Toggle between Corr and Unco by tapping the current value.</p> <p>Choose “Corr” to have the meter report the corrected (for temperature and/or pressure) index, Choose “Unco” to have the uncorrected index reported.</p> |
| Temperature Correction (Temp. Corr.) | <p>Toggle between On and Off by tapping the current value.</p> <p>Choose “On” to enable temperature correction, “Off” to disable it.</p> |

Pressure Correction (Pres. Corr.)	Toggle between On and Off by tapping the current value. Choose “On” for the meter to calculate and use a pressure multiplier. When this setting is “Off”, no pressure multiplier is used.
Remote Reading (Rem. Readg.)	Toggle between On and Off by tapping on the current value. Choose “On” to allow remote reading, “Off” to disable this feature.
Base Temperature (Base Temp.)	Tap on the entry line where the current Base Temperature is displayed. This is the temperature used in temperature correction. The base temperature range is -35° to +55° C (-31° to +131° F).
Base Pressure (Base Press.)	Tap on the entry line where the current Base Pressure is displayed. The Base Pressure is in absolute pressure units – PSIA for Imperial or Bar for Metric. Normal ranges are 10-16 psia (0.7 – 1.1 bar) for Sonix 12, Sonix 16 and Sonix 25 meters.
Operating Pressure (Op Press.)	Tap on the entry line where the current Operating Pressure is displayed. The operating pressure is entered in gauge pressure units (PSIG or Bar). Normal ranges are 0 - 20 psig (0 - 1.4 bar) for Sonix 12, Sonix 16, and Sonix 25 meters. NOTE: It is not possible to enter an Operating Pressure outside the MAOP (maximum allowable operating pressure).

A quick reference table to the items displayed on this screen can be found on page 11 of this manual.

When you have finished reviewing the Meter Configuration, tap the **UPDATE** button. The “processing” blinking dot in the bottom center of the screen will indicate that the update is being made to the meter.

Tap the **Save** button to designate that this information should be transferred to the PC on the next HotSync.

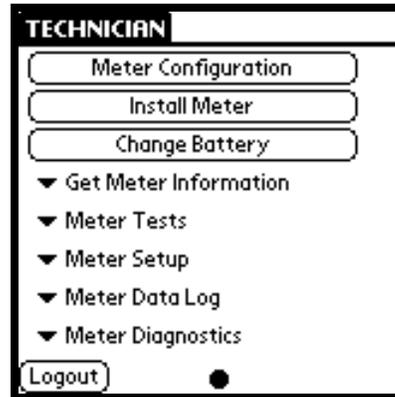
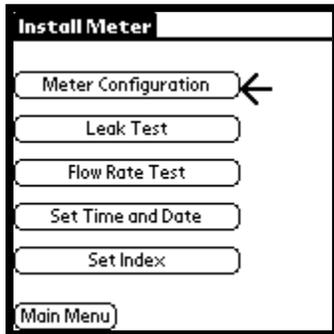
After the update is finished (The processing dot disappears), you may exit the screen by tapping **Main Menu**.

Installing a Meter

NOTE: Before proceeding with these steps, be sure that your Palm is connected to the Sonix Meter using the Serial Cable and the SonixPalm Optical Interface Cable.

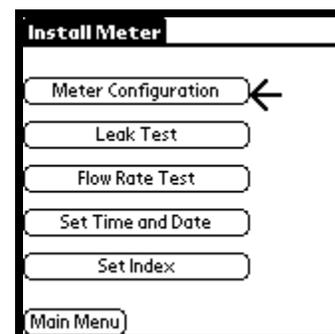
Tap the **Install Meter** button →

You will then see the following screen:

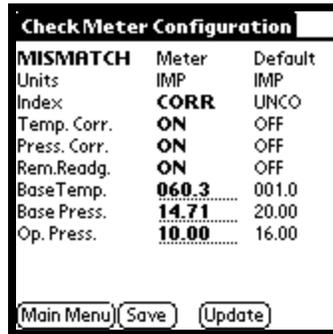


You must go through each of the 5 steps (Meter Configuration, Leak Test, Flow Rate Test, and Set Time and Date and Set Index) to install the meter.

1 Tap the **Meter Configuration** button



The message “**Contacting Meter....**” will appear on the screen for several seconds. The software will download information that is stored in the meter and display it on your screen, in a format that looks like this:



	Meter	Default
MISMATCH		
Units	IMP	IMP
Index	CORR	UNCO
Temp. Corr.	ON	OFF
Press. Corr.	ON	OFF
Rem. Readg.	ON	OFF
Base Temp.	060.3	001.0
Base Press.	14.71	20.00
Op. Press.	10.00	16.00

(Main Menu) (Save) (Update)

The first column of data (under the heading “Meter”) shows the actual values obtained from the meter you are working with. The second column (under “Default”) shows the default values for this model.

Please see page 11 in the previous section for a detailed description of this screen.

If you have updated any fields on this screen, tap the **Update** button to send the changes to the meter.

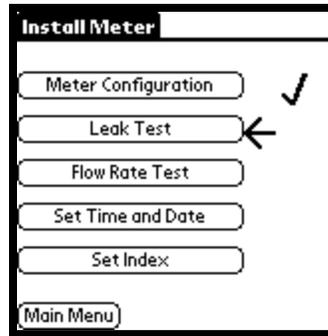
Once the “processing” blinking dot disappears, the changes are complete.

Tap the **Save** button to designate that this data should be transferred to the PC on the next HotSync.

Tap **Back** to continue.

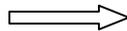
Then hit **YES** at the prompt to continue.

2 Tap the **Leak Test** button.



This will bring up the Leak Test Screen:

Hit Start



Tap Start. The software will then run through a process of “**Stabilizing the Meter**”, and you will see a message showing you that it is doing that. The progress will be marked from 0% to 100% complete.

When the meter is stabilized, a message will be displayed “**Stabilization Complete**”. Hit **OK** on this message box to continue with the test.

Next, hit **Start** again to begin the Leak Test. Please note the duration of the test as shown on the screen. This duration is set through the SonixManage software on the PC.

The progress of the test will be shown at the top of the screen from 0% to 100%.

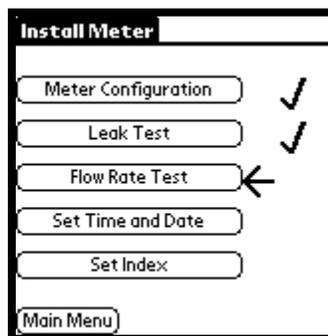
If the test is unsuccessful, the following screen will appear:



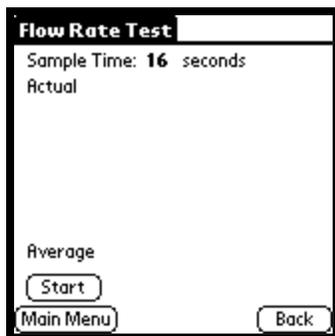
Tap **Yes** to save the results of the unsuccessful test.

A successful test is complete when a Message Box pops up with the message "**Leak Test Successful**". Again, hit **OK**, then **Main Menu** to return to the menu.

3 Tap the **Flow Rate Test** button.



The following screen will appear:

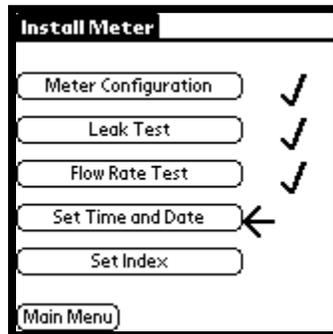


Tap the **START** button to begin the test.

The test will check the flow rate repeatedly at the interval shown after “Sample Time” at the top of the screen. You can let the test run as long as you would like. When you have enough samples, hit the **STOP** button to complete the test, then the **BACK** button to continue installing the meter.

Tap **Back** to continue installing the meter.

- 4 Tap the **Set Time and Date** button.



The following screen will appear:

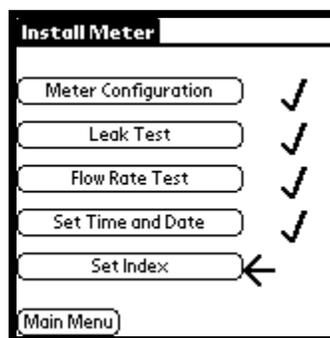
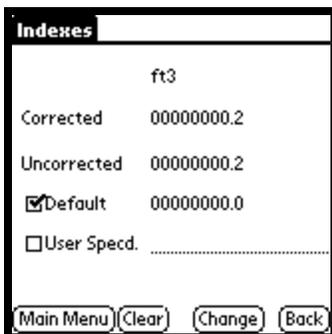


The Palm's date and time settings and the Meter's date and time settings will be displayed. If the Palm's settings are incorrect, back out of this operation by tapping Main Menu. You can then adjust the Palm's settings and begin this process again. If the Palm's date and time are correct, tap **Send Time**

The new date and time will transmit to the meter. You will see the "processing" blinking dot in the center of the bottom line of the display as the settings are transmitted.

See box on page 49 for a note about how various Sonix models store time.

5 Tap the **Set Index** button.



This screen allows you to change the index shown on the meter. The **Indexes** screen has four areas:

- Corrected – Shows the Corrected Index currently stored in the meter
- Uncorrected – Shows the Uncorrected Index currently stored in the meter
- Default – Shows the manufacturer’s default value for the initial meter index
- User Specified – An entry field in which you can indicate the value you want to set for the initial index

Setting the Index to the Default

Tap the box next to the word **Default** to place a checkmark in the box as shown above. Then tap the Change button to send the setting to the meter. A dot will blink to the left of the Change button while the setting is being uploaded to the meter, and the new setting will appear on the meter’s display.

Setting the Index to a User-Specified Reading

Tap the box next to **User Specd.**, then tap at the beginning of the entry field to the right. Using the Graffiti numeric input area or the number keyboard, enter the setting you wish to send to the meter. Then hit the **Change** button to send the setting to the meter. A dot will blink to the left of the Change box while the setting is being uploaded to the meter, and the new setting will appear on the meter’s display.

Installing the Meter – Summary

This section described the steps you take in SonixPalm when installing a meter. You begin by tapping the Install Meter button, then following the steps presented. There may be up to 5 steps, including the following:

- Meter Configuration
- Leak Test
- Flow Rate Test
- Set Time and Date
- Set Index

The software will not allow you to skip any of these steps, and you must complete them in the order shown.

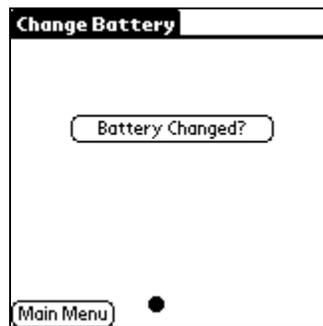
Changing the Meter Battery

NOTE: Before proceeding, be sure that your Palm is connected to the Sonix Meter using the Serial Cable and the SonixPalm Optical Interface Cable and that the Time and Date settings on the Palm are correct.

NOTE: The Battery Change function is not necessary on initial install of the Sonix meter. This procedure must be performed after you have replaced the battery. The battery change is indicated when the “r” flag followed by the “F” flag is set – after approximately 11 years of service.

After you replace a battery on the Sonix meter, you must update the date and time on the meter. To do so:

1. Tap **Change Battery** – the following screen will appear:



2. Tap **Battery Changed?** – the following screen will appear:



3. Tap **Set Time and Date**

The Palm's date and time settings and the Meter's date and time settings will be displayed. If the Palm's settings are incorrect, back out of this operation by tapping Main Menu. You can then adjust the Palm's settings and begin this process again. Otherwise continue with Step 4.

4. Tap **Send Time**

The new date and time will transmit to the meter. You will see the "processing" blinking dot in the center of the bottom line of the display as the settings are transmitted.

To confirm that the settings have taken place, tap ▼ **Meter Setup** and choose **Time & Date**

The date and time for the Palm and Meter should now match.

Pease see box on page 49 for details on how Time is displayed on Sonix meters.

Displaying Meter Information

NOTE: Before proceeding, be sure that your Palm is connected to the Sonix Meter using the Serial Cable and the SonixPalm Optical Interface Cable.

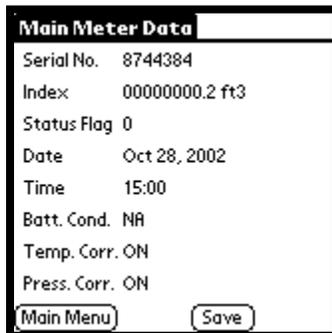
To begin getting Meter Information, from the Main Menu, tap the ▼ **Get Meter Information** button.

SonixPalm allows you to view four areas of Meter Information: Main Meter Data, Meter Identification, Meter Configuration and Operating Status.

The following charts briefly explain the data displayed.

Tap the **Save** button to designate that this data should be transferred to the PC on the next HotSync.

Main Meter Data



Serial No.	The meter's Serial Number – this should match the last 7 digits on the UPC label
Index	The current reading
Status Flag	If a status flag has been set in the meter by an event, it will be shown here. See Appendix C for a listing of Status flags and their meanings.
Date	The date setting stored in the meter *
Time	The time setting stored in the meter*
Batt. Cond.	On meters equipped with this feature, the Battery Voltage will be displayed.
Temp. Corr.	Indicates if Temperature Correction is ON or OFF
Press. Corr.	Indicates if Pressure Correction is ON or OFF

Please see page 49 for details on the date and time stored in the meter.

Meter Identification

Meter Identification	
Serial No.	8744384
Meter Type	S25
Meter Model	05
Meter Firmware Ver.	E11
Date of Manufacture	Jan 1, 2001
Main Menu	

Serial No.	The meter's Serial Number – this should match the last 7 digits on the UPC label
Meter Type	EQ6 = Sonix 6, S12 = Sonix 12, S16= Sonix 16, S25 = Sonix 25
Meter Model	2-digit number corresponding to the month of manufacture.
Meter Firmware Version	Displays the firmware version for this meter type.
Date of Manuf.	The date of manufacture of the meter

Meter Configuration

Temp. Correction	Indicates if Temperature Correction feature is ON or OFF
Press. Correction	Indicates if Pressure Correction feature is ON or OFF
Index Mode	CORR - Index shown in meter window is the Corrected Index UNCO – Index shown in meter window is the Uncorrected Index
Units	Index shown in Imperial or Metric units.

Meter Configuration	
Temp. Correction	ON
Press. Correction	ON
Index Mode	CORR
Units	IMP
Main Menu	

Operating Status

Operating Status	
Reverse Flow	000
Air In Meter	000
Unsat. Readings	000
Flow Out Of Range	000
Excessive Noise	000
SOS-Range	000
SOS-Rate	000
Lock Status	OFF
Country Code	NA
Other	000
Main Menu	

Reverse Flow	Number of times reverse flow was detected in this meter
Air in Meter	Number of times air was detected in the meter
Unsat. Readings	Number of Unsatisfactory Readings
Flow out of Range	Number of times flow out of range detected
Excessive Noise	Number of times excessive noise was detected
SOS-Range	Number of times Speed of Sound out of Range detected
SOS-Rate	Number of times Speed of Sound Rate Change detected
Lock Status	EEPROM lock (on or off, will be on when the meter leaves the factory)
Country Code	Compatible meters will display country code abbreviation
Other	Not used at this time

Performing Meter Tests

SonixPalm, when connected to the Sonix Meter, allows you to perform **Leak Tests** and **Flow Rate Tests**.

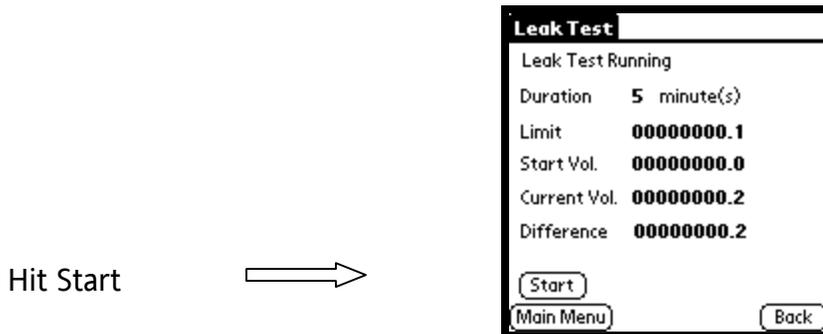
NOTE: Before proceeding, be sure that your Palm is connected to the Sonix Meter using the Serial Cable and the SonixPalm Optical Interface Cable.

Leak Test

Note: This test is also performed as Step 2 in the “Install Meter” functions.

1. From the Main Menu, Tap the ▼ **Meter Tests** button.
2. Tap the ▼ **Leak Test** button.

This will bring up the Leak Test Screen:



After hitting Start, the software will run through a process of “**Stabilizing the Meter**”, and you will see a message showing you that it is doing that. The progress will be marked from 0% to 100% complete.

When the meter is stabilized, a message will be displayed “**Stabilization Complete**”. Hit **OK** on this message box to continue with the test.

Next, hit **Start** again to begin the Leak Test. Please note the duration of the test as shown on the screen. This duration is set through the SonixManage software on the PC.

The progress of the test will be shown at the top of the screen from 0% to 100%.

If the test is unsuccessful, the following screen will appear:



Tap **Yes** to save the results of the unsuccessful test.

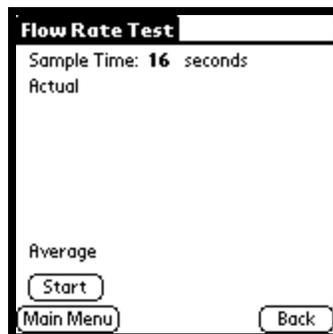
A successful test is complete when a Message Box pops up with the message "**Leak Test Successful**". Again, hit **OK**, then **Main Menu** to return to the menu.

Flow Rate Test

Note: This test is also performed as Step 3 in the "Install Meter" functions.

1. From the Main Menu, Tap the ▼ **Meter Tests** button.
2. Tap the ▼ **Flow Rate Test** button.

This will bring up the Flow Rate Test Screen:



Tap the **START** button to begin the test.

The first line of this screen shows how frequently the meter is polled for flow rate. The meter is set up for a specific Sample Time (in seconds). The default is 5 seconds. This

means that the meter flow rate is calculated every 5 seconds. The Sample Time limits are 1 – 60 seconds, and can be set up through the SonixManage software.

The rest of the screen displays the flow rates from the meter. When the user hits the **Start** button, the software starts polling the meter every “X” seconds (based upon the Sample Time selected). The calculated flow rate is displayed, and an average is calculated. If the meter is set in the Imperial unit mode, the volume is measured in thousandths of a cubic foot per hour (0.000 cfh). If the meter is in the metric unit mode, the volume is measured in thousandths of a cubic meter per hour (0.000 m3h). When you hit the **Stop** button, the software stops polling the meter. You then hit **Main Menu** to exit the Flow rate page.

Updating Meter Setup

SonixPalm gives you access to update the following data stored in the meter:

- Time and Date
- Indexes
- Metric/Imperial Units
- Corrected/Uncorrected Index
- TC/Non-TC Mode
- PC/Non-PC Mode
- Unlock Password
- Maintenance Password

Although most of these items can be changed elsewhere in the software, the **Meter Setup** menu gives you direct access to individual settings. Please note that this is the only menu area to access the two change-password screens.

Time and Date Setup

1. From the Main Menu, Tap the ▼ **Meter Setup** button.
2. Tap the ▼ **Time & Date** button.

The Palm's date and time settings and the Meter's date and time settings will be displayed. If the Palm's settings are incorrect, back out of this operation by tapping Main Menu. You can then adjust the Palm's settings and begin this process again. If the Palm's date and time are correct, tap **Send Time**.

The new date and time will transmit to the meter. You will see the "processing" blinking dot in the center of the bottom line of the display as the settings are transmitted.

Time according to the Sonix Meter

Sonix 6 meters with firmware version 0Q8 and 0Q9

Time is stored one way: time blocks. In Sonix 6 meters with version 0Q8 and 0Q9 firmware, the user can only set the meter time to the nearest three-hour time block. If the user goes to the **Time** icon and "reads" the meter time, the user will be able to see which three-hour time block the meter is in. If the user tries to set the meter by using the **Send Time** function, the user will set the time to the nearest preceding three-hour time block. In addition, if the user goes to the **Main Data** icon or the **Diagnostics** icon, they will see the three-hour time block.

Sonix 6 meters with firmware version 1Q0 and later

Time is stored two ways in later versions of Sonix 6 meters: (1) actual time; and, (2) time blocks. In Sonix 6 meters with version 1Q0 and later firmware, the user can set the meter time to the nearest minute (actual time). If the user then goes to the **Time** icon and "reads" the meter time, the user will be able to read the meter time to the minute. In earlier versions of the meter firmware, the user could only set the time to the nearest three-hour time blocks.

Important Note: If the user goes to the **Main Data** icon or the **Diagnostics** icon, they will only see the three-hour time block – even though the meter is storing time to the nearest minute.

Sonix 12, 16, 25

While time is stored in one-hour blocks in Sonix 12, 16 and 25 meters, it is only displayed in three-hour blocks.

Note: Sonix meters do not adjust for daylight savings time.

Index Setup

1. From the Main Menu, Tap the  **Meter Setup** button.
2. Tap the  **Indexes** button.

The index readings (uncorrected and corrected) will appear and two checkboxes will appear below them. The first checkbox allows you to send the factory default index to the meter, the second one allows you to specify an index value to send.

Index Readings and Sonix Models

Sonix 6 – In the Imperial units mode, the right most digit in the index reading starts with 100 cubic feet. In the Metric units mode, the right most digit is 0.1 cubic meters.

Sonix 12, Sonix 16 or Sonix 25– In the Imperial units mode, the right most digit in the index readings start with 100 cubic feet. In the Metric units mode, the right most digit in the index readings start with 1 cubic meter if a diagnostic flag is displayed. If a diagnostic flag is not being displayed, the LCD will display volume to 0.001 cubic meters.

Setting the Index to the Factory Default

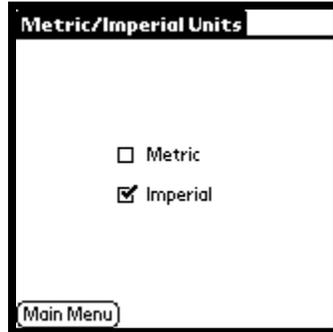
Tap the box next to the word **Default** to place a checkmark in the box as shown above. Then tap the **Change** button to send the setting to the meter. A dot will blink to the left of the Change button while the setting is being uploaded to the meter, and the new setting will appear on the meter's display.

Setting the Index to a User-Specified Reading

Tap the box next to **User Specd.**, to place a checkmark there, then tap at the beginning of the entry field to the right. Using the Graffiti numeric input area or the number keyboard, enter the setting you wish to send to the meter. Then hit the **Change** button to send the setting to the meter. A dot will blink to the left of the Change box while the setting is being uploaded to the meter, and the new setting will appear on the meter's display.

Set the Meter for Metric or Imperial Units

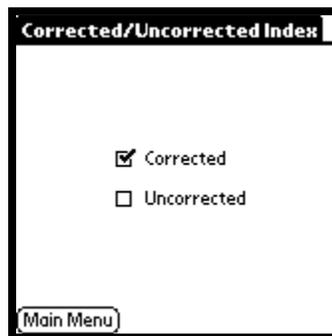
1. From the Main Menu, Tap the ▼ **Meter Setup** button.
2. Tap the ▼ **Metric/Imperial Units** button.



The screen will appear with the checkmark in the box showing which setting is currently enabled. To change settings, just check the opposite box. The processing dot will blink at the bottom of the screen as the setting is sent to the meter. You should then see the display on the meter change to either m³ or ft³ depending on the setting you chose.

Setting the Corrected or Uncorrected Index

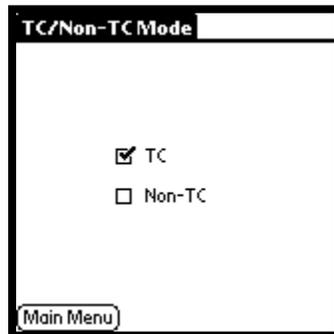
1. From the Main Menu, Tap the ▼ **Meter Setup** button.
2. Tap the ▼ **Corrected/Uncorrected** button.



The screen will appear with the checkmark in the box showing which setting is currently enabled. To change settings, check the opposite box. The processing dot will blink at the bottom of the screen as the setting is sent to the meter. If you check Corrected, and you have Temperature Correction set on the words "Temperature Correction" will appear on the meter's display. The same is true for Pressure Correction.

Temperature Correction Mode

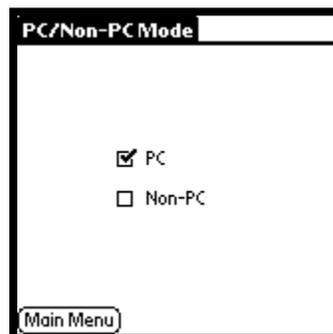
1. From the Main Menu, Tap the ▼ **Meter Setup** button.
2. Tap the ▼ **TC/Non-TC Mode** button.



The screen will appear with the checkmark in the box showing which setting is currently enabled. To change settings, check the opposite box. The processing dot will blink at the bottom of the screen as the setting is sent to the meter. If you check TC and you have Corrected Mode on (see previous section), the “Temperature Correction” indicator will show on the meter display.

Pressure Correction Mode

1. From the Main Menu, Tap the ▼ **Meter Setup** button.
2. Tap the ▼ **PC/Non-PC Mode** button.



The screen will appear with the checkmark in the box showing which setting is currently enabled. To change settings, check the opposite box. The processing dot will blink at the bottom of the screen as the setting is sent to the meter. If you check PC and you have Corrected Mode on (see Pressure Correction Mode section), the “Pressure Correction” indicator will show on the meter display.

Changing the EEPROM Unlock Password

Sonix meters come with two levels of password protection. The first level of password protection is the Unlock password. This password is used to unlock the EEPROM which allows the user to change the configuration of the meter, the volume registers, and the meter calibration factor. The password can be any combination of up to four numbers between 0 and 9. **THIS PASSWORD SHOULD BE DIFFERENT THAN THE MAINTENANCE (or Diagnostic Reset) PASSWORD AND IT SHOULD BE CLOSELY GUARDED.**

1. From the Main Menu, Tap the ▼ **Meter Setup** button.
2. Tap the ▼ **Unlock Password** button.



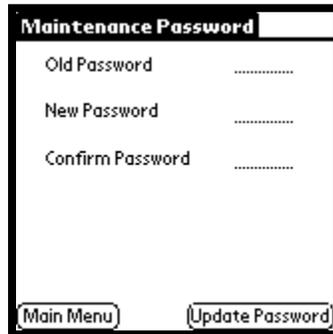
The screenshot shows a screen titled "Unlock Password". It contains three input fields, each with a dotted line indicating where to enter text: "Old Password", "New Password", and "Confirm Password". At the bottom of the screen, there are two buttons: "Main Menu" on the left and "Update Password" on the right.

Using Graffiti or the numeric keyboard input, enter the current password (any combination of up to four numbers between 0 and 9) in the Old Password entry field. Enter in any combination of up to four numbers between 0 and 9 in the New Password box. Re-enter the same number in the Confirm Password box. Tap on the **Update Passwords** button. The password has been changed.

Changing the Maintenance Password

The second level of password protection is the **Maintenance password**. This may also be referred to as the Diagnostic Reset Password. Before clearing the diagnostics, you will first have to enter the Maintenance password. The password can be any combination of up to four numbers between 0 and 9.

1. From the Main Menu, Tap the ▼ **Meter Setup** button.
2. Tap the ▼ **Maintenance Password** button.



The screenshot shows a screen titled "Maintenance Password". It contains three text input fields, each followed by a series of dots: "Old Password", "New Password", and "Confirm Password". At the bottom of the screen, there are two buttons: "Main Menu" on the left and "Update Password" on the right.

Using Graffiti or the numeric keyboard input, enter the current password (any combination of up to four numbers between 0 and 9) in the Old Password entry field. Enter in any combination of up to four numbers between 0 and 9 in the New Password box. Re-enter the same number in the Confirm Password box. Tap on the **Update Password** button. The password has been changed.

Meter Data Log

Much of the data that can be viewed using SonixPalm can also be saved to files for transfer to the PC. This menu allows you to choose which data to send. The files will be created and set up to transfer during the next HotSync that is done. The files are in .csv format (comma separated value) and can therefore be imported by whatever program you choose to view the data with.

The Meter Data Log menu has three options:

- Download Data Log
- View Data Log
- Clear Data Log

Each function will be described in this section.

Downloading the Data Log

1. From the Main Menu, Tap the ▼ **Meter Data Log** button.
2. Tap the ▼ **Download Data Log** button.



Download Data Log

Start Date **Oct 28, 2002**

End Date **Oct 28, 2002**

Date Range

Entire Log

Main Menu ● Download

There are two choices for selecting the data that will be downloaded. You may select data for a range of dates, or you may choose to download all the data in the data log. Tap on the box next to your choice, then tap the **Download** button.

If you choose “**Date Range**”, a calendar will appear to allow you to choose the starting and ending dates of the range you are choosing to download.



Select Start Date

◀ 2002 ▶

Jan	Feb	Mar	Apr	May	Jun	
Jul	Aug	Sep	Oct	Nov	Dec	
S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Cancel Today

After selecting the date range, the data will begin to download. As this is occurring, a running count (i.e. 4 of 62 records...) will be displayed on the screen. When all data records have been downloaded, a button will appear to allow you to view the data log. If you do not wish to do so, you may just tap **Main Menu** to exit this function. The data files will be transferred to the PC on the next HotSync.

Viewing the Data Log

1. From the Main Menu, Tap the ▼ **Meter Data Log** button.
2. Tap the ▼ **View Data Log** button.



View Data Log	
Serial No.	8744384
Time/Date	Oct 28, 2002
Log Entry Date	Oct 28, 2002 15 hr:
Uncorr. Vol.	0000000.2
Corr. Vol.	0000000.2
Max. Temp.	75.0
Min. Temp.	74.0
Error Flag	d
Event Summ.	00000100
1 of 16	Prev.
Main Menu	Next
	Save

One record of the data log at a time will be displayed. You can navigate through the list of records by tapping the **Prev** and **Next** buttons. Tap the **Save** button to designate that the downloaded data should be transferred to the PC on the next HotSync.

Clearing the Data Log

1. From the Main Menu, Tap the  **Meter Data Log** button.
2. Tap the  **Clear Data Log** button.

Respond with **Yes** to the prompt “Are you sure you wish to clear the data log?” The data log will then be cleared.

Note: If the default maintenance password (set in SonixManage) is incorrect for this meter, you will be prompted to enter the maintenance password before the data will be cleared.

Meter Diagnostics

Sonix meters store information about problems or events. Each problem or event that occurs is considered a “diagnostic event” and can be accessed through the SonixPalm software. The Meter Diagnostics portion of this program allows you to:

- Download Diagnostics Events
- View Diagnostics Events
- Clear Diagnostics Events

Each function will be described in this section. For a list of diagnostic flags, please refer to Appendix C.

Downloading Diagnostics Events

1. From the Main Menu, Tap the ▼ **Meter Diagnostics** button.
2. Tap the ▼ **Download Diagnostic Events** button.



As the diagnostics are being downloaded to the Palm, you will see messages displayed on the screen indicating which data items are being downloaded. In the screen above, the “Flow out of Range” event is being downloaded.

When all data has been transferred, following screen will be displayed.



Click on the **View Diags** button to view the records that were downloaded. The downloaded data is stored in the form of one record per diagnostic event type. Tap the **Prev** and **Next** buttons to navigate through the records. Tap the **Save** button to designate that the downloaded data should be transferred to the PC on the next HotSync.

Viewing Diagnostics Events

1. From the Main Menu, Tap the ▼ **Meter Diagnostics** button.
2. Tap the ▼ **View Diagnostic Events** button.

One record of a diagnostic event at a time will be displayed. You can navigate through the list of records by tapping the **Prev** and **Next** buttons. Tap the **Save** button to designate that the downloaded data should be transferred to the PC on the next HotSync.



The example above shows a diagnostic event for the meter with serial number 8744384. The event was an “EEPROM reboot” and it occurred on August 14, 2002 at 16:56. The last date that this event occurred was Aug 2, 2002.

All fields showing **NA** are not used at the present time.

Clearing the Diagnostics Events Log

1. From the Main Menu, Tap the ▼ **Meter Diagnostics** button.
2. Tap the ▼ **Clear Diagnostic Events** button.

Respond with **Yes** to the prompt “Are you sure you want to clear diagnostic events?” . The diagnostics events log will then be cleared.

Note: If the default maintenance password (set in SonixManage) is incorrect for this meter, you will be prompted to enter the maintenance password before the diagnostics will be cleared.

Appendix A: SonixManage Software

SonixManage is a software program that is installed automatically when you install SonixPalm on your PC. The purpose of this program is to allow the meter engineer or technician to set options, parameters and defaults to customize SonixPalm.

The following is a brief description of the SonixManage functions.

Main Menu:

Three choices are presented when SonixManage starts up:



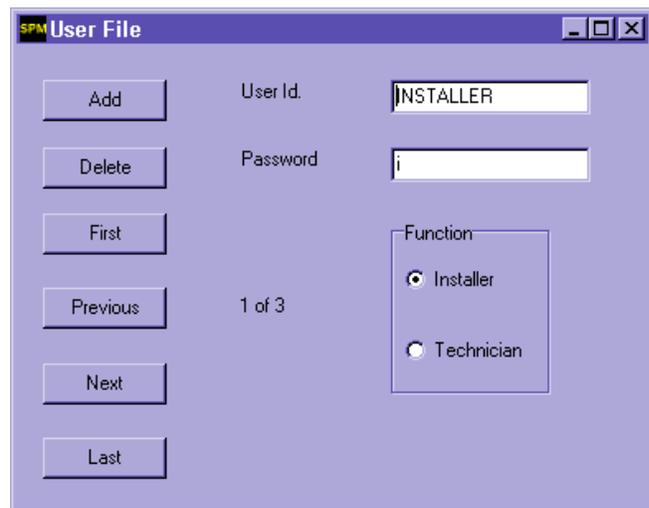
Choose **User File** to change passwords or to add, change or delete User ID's for accessing SonixPalm.

Choose **Meter Defaults** to modify the default meter data presented in SonixPalm.

Choose **Install Characteristics** to set installation requirements and order presented in the SonixPalm Install Meter function.

User ID's and Passwords:

Choose **User File** to access this screen. Click on the navigation buttons on the left to browse through the SonixPalm User Ids currently installed. When adding a new User ID, you specify a unique word for the User ID and Password, then select the appropriate "Function" – either Installer or Technician.



Meter Defaults:

The **Meter Defaults** button is used to access the following screen.

The screenshot shows a software window titled "Meter Default Characteristics" with a close button in the top right corner. The window is divided into several sections:

- Navigation:** A vertical column of buttons on the left: "Add", "Delete", "First", "Previous", "Next", and "Last".
- Meter Identification:** Three text input fields for "Meter Type", "Meter Model", and "Firmware Version", each containing an asterisk (*). Below them is the instruction "enter * for wildcard matching in above fields".
- Temperature/Pressure:** A section with a sub-header "Temperature/Pressure" and a column of checkboxes labeled "Available". It contains three rows: "Base Temperature" (1 °F), "Base Pressure" (70.000 PSI), and "Operating Pressure" (16.000 PSI), all with checked checkboxes.
- Meter Test Parameters:** Four text input fields: "Leak Limit (no decimal point) 10-3 m3" (1), "Leak Test Time Limit (Seconds)" (300), "Leak Test Stabilisation Period (Seconds)" (60), and "Default flow rate test sample time (Seconds)" (16.000).
- Index Settings:** A section with a sub-header "Index Settings" containing: "Default Index 10-3 m3" (0), "Default Units" (radio buttons for Metric and Imperial, with Imperial selected), "Default TC" (radio buttons for OFF, ON, and Not Applicable, with OFF selected), "Default PC" (radio buttons for OFF, ON, and Not Applicable, with OFF selected), "Remote Reading" (radio buttons for OFF, ON, and Not Applicable, with OFF selected), and "Index Mode" (radio buttons for UNCORRECTED, CORRECTED, and Not Applicable, with UNCORRECTED selected).
- Passwords:** Two text input fields at the bottom right: "Default Unlock Password (4digit hex)" (1234) and "Default Maintenance Password (4digit hex)" (1234).
- Page Info:** "1 of 1" is displayed at the bottom center.

The Meter Defaults may be entered for a specific Meter Type, Meter Model and Firmware Version, or you may enter the wildcard character (*) to specify defaults that apply to a range of meters.

Customizing Installation:

Click on **Install Characteristics** to access this screen, which allows you to specify which steps will be required in the SonixPalm “Install Meter” function. You may specify a different set of requirements for Installer and Technician functions, and also set installation order by Meter Type, Model and Firmware version.

SPM Install Characteristics

Add

Delete

First

Previous

Next

Last

User Function

INSTALLER

TECHNICIAN

Meter Identification

Meter Type *

Meter Model *

Firmware Version *

Double click on the installation steps below in the sequence you require the installation to be made for this meter type and user function.

Check Meter Configuration
Do Leak Test
Do Flow Rate Test
Do DateTime Setting
Do Index Setting

Check Meter Configuration
Do Leak Test
Do Flow Rate Test
Do DateTime Setting
Do Index Setting

Clear Selection

1 of 2

Appendix B: Download Files

SonixPalm allows you to download data files and diagnostics events data to your PC, as described in the “Downloading Data Log” and “Downloading Diagnostic Events” sections.

After performing the Download functions in SonixPalm, you must perform a HotSync in order to transfer the files to your desktop or laptop computer. The files will transfer to the **c:\data** folder. The files are text files in comma-separated value (csv) format and can be read by any program (such as a spreadsheet) that will import this file format.

Appendix C: Diagnostic Flags

The Sonix meter generates several diagnostic flags. They will appear on the meter display, and diagnostic events messages will be generated when these flags are set.

Diagnostic flags appear in the left most location on the Sonix 6 LCD display and the upper right hand corner in Sonix 12, 16 and 25 meters.

Possible Sonix 6 meter diagnostic flags are: A, b, C, F, and r.

Possible Sonix 12, 16 or 25 meter diagnostic flags are: A, b, C, d, E, F, H, L, n, P, and r.

Should you notice any diagnostic flag – other than an “A” flag -- during operation, it does not mean that the meter is not working accurately. The diagnostic flags are, as the name implies, used to diagnose what is happening to the meter. If you wish to log the data, instructions can be found in the Meter Diagnostics Section of this manual.

The problem counters and all flags (except the “A” flag) are cleared on a diagnostic reset or a power reset.

The “A” Flag

When the “A” flag is displayed, the meter stops measuring gas. The meter has to be removed from the field and diagnosed, and possibly repaired, in the meter shop. The “A” flag is caused by a failure of the checksum of a particular value stored in EEPROM. Every time the RAM based index is updated (or every three hours), the RAM index is checked against its checksum. If the two indexes do not agree, the first non-volatile index is checked against its checksum. If they do not agree, the second non-volatile index is checked against its checksum. If all three do not match, the “A” flag is raised.

Every time the meter backs-up (every three hours) to non-volatile memory, the calibration factor is checked against its own checksum in EEPROM. If the two values do not agree, the “A” flag is raised.

The “b” Flag

The “b” flag tells the user that a non-metering related “event” has occurred. Any of the following will trigger the “b” flag: a power reset; negative flow; entering the fast sample mode; EEPROM reboot; or, air in the meter. The “events” normally indicate that someone unauthorized is trying to do something to the meter.

A “Power reset” occurs when the battery voltage drops below 2.37 volts or the battery is disconnected. The “b” flag is generated immediately after the battery is replaced or the voltage comes back above 2.37 volts.

Negative flow will cause a “b” flag to be generated. When reverse flow is detected, the corrected and uncorrected volume registers will not increment or decrement. Any volume will be stored in the reverse flow register. In order for the negative flow register to be activated, the negative flow limit must be exceeded and the flow must be measured for 64 consecutive reads (about two minutes) in the Sonix 6 and 255 consecutive reads (about 8.5 minutes) in the Sonix, 12, 16 or 25 meters. This prevents the measurement of flow pulsations. When the reverse flow limit is surpassed the diagnostic flag appears at midnight. The problem counters are cleared on a diagnostic reset or a power reset. The following table provides the negative flow limits:

Meter	Trigger Flow (cfh)	Trigger Flow (l/h)	Time (minutes)
Sonix 6	-3.5	-100	2.1
Sonix 12	-9.5	-267	8.5
Sonix 16	-9.5	-267	8.5
Sonix 25	-9.5	-267	8.5

The fast sample mode is used when a large number of readings are required in a short period of time to speed up some process (i.e. during calibration, during the system leak test, or during the flow rate check). Instead of measuring flow approximately every two seconds, the meter measures flow every ¼ second. If the meter is in the fast sample mode, the battery will run down 8 times as fast as normal. The flag appears at midnight.

The EEPROM reboot command is used to reload values stored in EEPROM to RAM. This feature is normally used when you change calibration factors.

The “air in the meter” warning is used to detect instances where air is present in the meter. Air flowing through the meter is a potentially hazardous situation if gas is also present. The “air in the meter” warning can also be used to detect instances where the meter is removed from service and a bypass is run. On a diagnostic reset or a power reset the date of the last event and the number of events are lost. *Note: Air in the meter will produce this flag only if this diagnostic is activated through SonixCom setup.*

A “b” flag in a Sonix 6 meter indicates that an event has occurred at some point in the past. A “b” flag in a Sonix 12, 16 or 25 meter indicates that an event has occurred within the past two (2) days.

When a “b” flag is detected, investigation is warranted.

The “C” Flag

The “C” flag is caused by meter operation problems such as: unsatisfactory readings; flow out of range; the speed of sound out of range; or, the rate of change of speed of sound out of range. In order to generate the “C” flag, the problem must occur at least 128 times in a day (starting at midnight). While 128 times seems like a large number of bad readings, it represents 0.3% of one day’s readings. The maximum number of occurrences totalized per day is 255. The flag appears at midnight.

Unsatisfactory readings are caused by the meter not being certain of the integrity of the reading. If the meter is not satisfied with the reading, it discards it. Unsatisfactory

readings can be caused by a timing problem with the course and fine counts, a voltage problem, if the transducer does not receive a pulse within an expected time, or if the amplitude of the received signal is larger or smaller than expected.

The meter will also generate a “C” flag if the flow rate is above Qmax for a given meter. This is called flow out of range. The meter may be working perfectly; however, the flag shows the customer that the meter may be sized incorrectly.

If the speed of sound is calculated to be out of the range of natural gas, the meter will trigger a “C” flag. The speed of sound range we look for is 1000 – 1640 fps (300 – 500 m/s).

A rate of change of speed of sound event is logged if the speed of sound changes significantly (more than 106 f/s) within a 44 second period.

A “C” flag in a Sonix 6 meter indicates that an operational problem has occurred at some point in the past. A “C” flag in a Sonix 12, 16 or 25 meter indicates that an operational problem has occurred within the past two (2) days.

The “d” Flag

A “b” flag changes into a “d” flag in a Sonix 12, 16 or 25 if an event has occurred more than two (2) days ago, but within the past six (6) months.

When a “d” flag is detected, investigation is warranted.

The “E” Flag

A “C” flag changes into an “E” flag in a Sonix 12, 16 or 25 if an operational problem has occurred more than two (2) days ago, but within the past six (6) months.

The “H” Flag

A “d” flag changes into a “H” flag in a Sonix 12, 16 or 25 if an event has occurred more than six (6) months ago, but within the past twelve (12) months.

When a “H” flag is detected, investigation is warranted.

The “L” Flag

A “E” flag changes into a “L” flag in a Sonix 12, 16 or 25 if an operational problem has occurred more than six (6) months ago, but within the past twelve (12) months.

The “n” Flag

A “H” flag changes into a “n” flag in a Sonix 12, 16 or 25 if an event has occurred more than twelve (12) months ago.

When a “n” flag is detected, investigation is warranted.

The “P” Flag

A “L” flag changes into a “P” flag in a Sonix 12, 16 or 25 if an operational problem has occurred more than twelve (12) months ago.

The “r” and “F” Flags

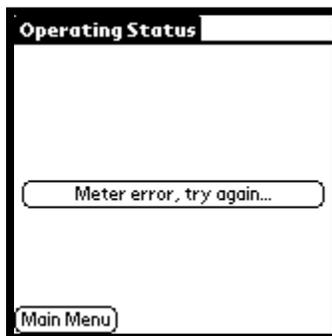
The “r” flag is generated when the meter perceives that 9.5 years have passed since the last battery change. The flag is used to tell the distribution company that they should consider changing the battery in the near future.

The “F” flag is generated when the meter perceives that 11 years have passed since the last battery change. The flag is used to tell the distribution company that they should change the battery as soon as possible.

Appendix D: SonixPalm Error Messages



Probable Cause: The cable is not connected from the Palm to the Meter. Check all connections and try again.



Probable Cause: The cable is not connected from the Palm to the Meter. Check all connections and try again.



This message is displayed when you enter an invalid password. Enter the correct password for either the Installer or Technician User ID.



This message is displayed when you attempt to complete the Install Meter steps out of order. Each step must be completed before the next step can be accessed.