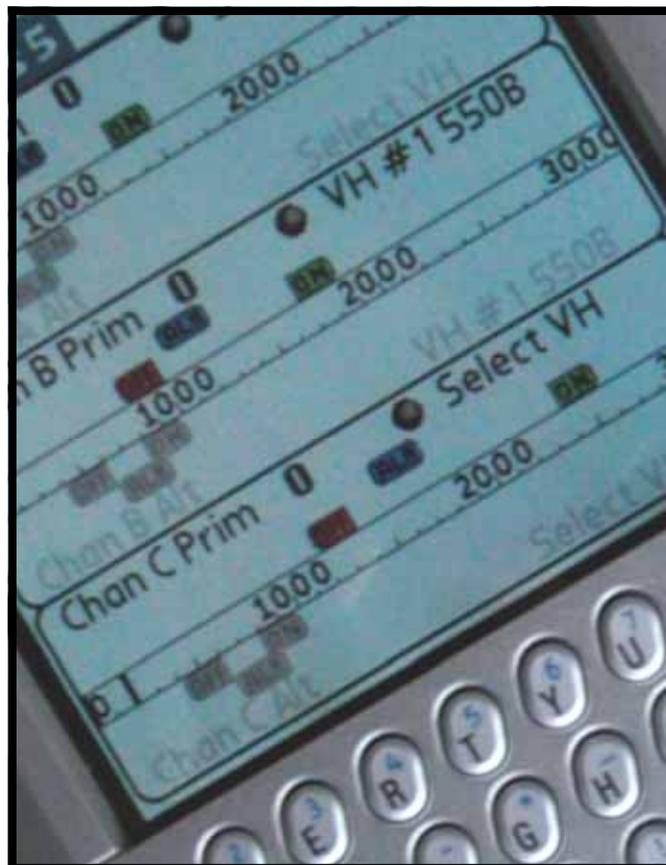


# IRIS



**FLAME MONITORING SYSTEM  
FLAMETOOLS FOR PALM  
INSTALLATION GUIDE AND USER MANUAL**



**WORLD LEADER IN FLAME MONITORING**

# IRIS FLAMETOOLS FOR PALM OPERATING MANUAL

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## INTRODUCTION

FlameTools for Palm is a software package that provides setup, monitoring and diagnostic tools for IRIS Flame Monitoring Systems. The software runs on a Personal Data Assistant (PDA) using the Palm Operating System.

FlameTools for Palm requires the IRIS Interface kit Model PDA-P53x and is compatible with the following IRIS Signal Processors:

Model P520 / P522 (Modbus RS-422 connection)

Model P531 (Modbus RS-422 and Modbus EIA-232 connection)

Model P532 (Modbus RS-422 connection)

Model 700 (IRIS RS-422 connection)

Model 800 (IRIS RS-232 connection with optional cable)

## SYSTEM REQUIREMENTS

Palm Powered PDA with a serial EIA-232 port.

Interface Cable to match the IRIS Signal Processor

## INSTALLING THE SOFTWARE

The software is a standard "prc" executable for Palm OS and can only be installed by HotSync.

**Note: this software is copy protected and a code key is required for operation.**

**A serial number is generated by the program when it is installed this serial number is needed to provide a Code Key that will unlock the program.**

**After the program is unlocked the key is automatically saved in the device and via hot sync. A hard reset (erase all data from the device) can be tolerated if a Hotsync is used to restore the program.**

## UNINSTALLATION AND UPGRADING

When upgrading to a later version of FlameTools for Palm, do not delete the currently installed software. Doing so would delete any stored data and settings related to the FlameTools program. Your Code Key

will also be deleted. Simply install the new version over the existing version.

## CONNECTING THE PALM PDA

The connections described below uses the IRIS PDA-P53x interface kit available separately from IRIS. See figures 13A to 13D.

### Palm PDA to P531 Front (RS-232) connector:

Plug the Palm connector into the Palm universal connector (bottom).

Plug the other end of the converter into the "Interface" port on the front of the P531.

NOTE: The Palm PDA will be charging (no additional power is required)

### Palm PDA to P532 / P531 or 700SP Modbus connector:

Plug the Palm connector into the Palm universal connector (bottom).

Plug the other end of the converter into the DB25 F to 6 pin modular adaptor.

Plug the 6 pin modular adaptor into receptacle on the P532/P531 or 700SP.

Optional RS-422 devices can be "daisy chained" from the other receptacle.

NOTE: The Palm battery will discharge unless the external power supply is connected.

### Palm PDA to P522 Modbus connector:

Plug the Palm connector into the Palm universal connector (bottom).

Plug the other end of the converter into the DB25 F to 6 pin modular adaptor.

Plug the 6 pin modular adaptor into the modular to TRM5 / 4 pin adaptor

Plug TRM5 / 4 pin adaptor into the receptacle at the base of the P522

Optional RS-422 devices can be "daisy chained" by making parallel connections.

NOTE: The Palm battery will discharge unless the external power supply is connected.

DO NOT: leave the connector plugged into the Palm while not in use. (The palm will be discharged).

## FEATURES

### Flame Wizard Theory and Functionality:

**Premise 1:** Flame ON should be set lower than the lowest acceptable flame signal when no other burners are on. (Lowest background signal).

**Premise 2:** Flame OFF should be set higher than the highest background signal.

**Premise 3:** The gain should be set to give a reading of 1200 when lowest acceptable signal and background.

**Premise 4:** It is almost impossible to achieve 1 and 2 above consecutively.

To provide filter wizard functionality it is necessary to configure the furnace for two radically different signals.

1. When the furnace is as dark as possible with one burner at its minimum intensity.

2. When the furnace is at full capacity with only the burner in question turned off.

Using FlameTools for Palm it is possible to capture data on the wizard whenever the current furnace load is appropriate. This data can be saved. When both of capacity scenarios have been recorded the operator can compare the specific samples and determine the best settings for the flame scanner.

For IR gain and filter this can be done using Auto Sample (from less than 2 minutes to greater than 1 hour).

After comparing two samples FlameTools will provide recommended settings.

For UV gain or 700/800 series viewing heads or fixed filter IR a similar result can be accomplished by using Hi Low History:

After the level of the furnace / flame is at an appropriate load then reset the history of the channel in question. (global history reset menu is also available)

Flame Tools will record the highest and lowest signal and the time they took place for all devices detected. (even ones not currently being displayed)

Once these values have been determined the difference between the highest low flame and the lowest high flame and set flame off and flame on 25% and 75% between these values.

Given the Hi Low history and the filter samples signal fluctuation and variability of different settings can be determined.

For example: There may be other configuration parameters that should be optimized and still provide adequate discrimination at another filter level.

### Configuration Archive Functionality:

All device parameters can be saved to the Palm Memo Pad:

Can be saved one at a time or automatically saved on detection.

Can save labels or not (for use on spread sheets).

Standard PC to Palm desktop access.

Saved on Hotsync and can be imported to documents.

Edit on your Palm with Memo Pad or IRIS Memo (the latter can be used to send the configuration to a device for restore or clone functionality).

## QUICK START GUIDE

Connect the Palm PDA to the P53x or P52x device accordingly (see connector guide).

From the "ALL" or "IRIS" category select Flame Tools to start the program.

## Communications

If the correct device is not displayed: Tap the **COMMUNICATIONS** button in the upper right corner. It will read **DETECT!** if no device has been detected.

You should now see the communications screen with all the addresses listed.

1. Select the **device type** from the drop down menu.

If you are plugged into the front port of the P531, the Baud and Address #64 will be selected automatically, or just tap the P531 icon in the lower right corner (where 64 would be) 

2. **Or select baud rate and then tap on the address number.** (recommended)

If a device is detected at that address:

The address will turn green

The device and version will be automatically updated.

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3. Alternatively you can **Detect** devices:

NOTE: Only the correct baud rate MUST be selected before detection. Faster detection may be done by manually tapping known addresses and waiting for detection. (2 seconds)

Note: Shaded addresses will be queried and may cause a delay indicated by delayed packet display (The Red Circle line). 

One P53x or three P52x can be green (displayed) at once. The last detected device will be green. For multiple P52x selections just tap the address and wait for it to turn green.

4. Push DONE when you are ready to view the Green addressed device(s)

## Main Screen:

This is the screen that will be displayed at start up:

The main page is divided into a top status line and **6 sectors**. Each of the **3 channels is divided** to a Primary and Alternate sector with the bar graph in between. (P522 areas are divided into A and B sectors).

### Minimal instructions:

Tap the "VH #" text to access viewing head pages (for each sector).

Tap the "Chan" text to access channel pages (for each sector).

Flame on , off and alarm "flags" can be dragged (even gray ones). Tapping flags will show current setting.

**NOTE:** Most pages and alerts have "Help screens" and menus hidden behind the page title.

**Delayed Packet indicator:** The red circle with line could mean lost communications (if steadily  on) Occasional flashes are normal especially if changing pages or viewing alerts.

## IMPORT CONFIGURATION DATA INTO EXEL

After detecting at least one device:

Tap the main "Flame Tools 5" menu.

Tap "Tools"

Tap "Config Save"

Check Include headings. This has the effect of saving the labels for your spreadsheet.

Tap "Save this single configuration now"

If No device detected then go back to the Communications form and detect one.

Check Save whenever detected.

This has the effect of saving each configuration every time an address box turns green in the communications form.

Tap "OK"

This will take you to the communications form.

Tap "detect"

Each time an address turns green its configuration is being saved.

After all addresses have been detected exit Flame-Tools and Hot sync.

Open the Palm desk top application on the PC

Click Memo Pad

Select IRISconfig category

Select all configurations that you would like to send to excel.

Copy the selected items

Open excel and click on the First cell (A1)

Paste the cells into the spread sheet

The Excel macro source code can be found on the IRIS web site. It will allow you to rearrange the saved data in to one column for each device.

## RESTORE AND CLONE

The restore and clone feature allows you to restore configurations to devices or clone the configuration of one device to another. This can be done individually or to an entire category (loop) of devices.

### Procedure:

**1. Configure the device for RS-422 communications.**

Set the baud rate, parity and address from the front panel buttons.

**2. Establish communications with FlameTools**

Note: communications parameters must be the same as the device

### 3. Save Configuration.

From the main menu, select "Config Save".

Select save single configuration or multiple configurations during detect.

If Save Multiple Configurations is selected:

check "save whenever detected"

Select "OK" to go back to the communications page.

Tap the address multiple times (each time the address is detected, shown as a change to green, the configuration is saved).

### 4. Restore / clone configuration:

Steps 1 and 2 must be performed for the new device.

From the main menu, go to IRIS memo.

For single configuration restore:

Select the device to restore

Device parameters can be modified (optional)

Push the "Send" button.

For multiple configurations:

Make sure all configurations to send are in a unique category. (This can be done in IRIS or Palm memo or in Palm desktop).

Device parameters can be modified.

Push the "send category" button.

Cloning:

Change the address in the memo to the same as that of the new device.

Verify that *exactly the same* model viewing head is connected.

Push the send button.

### 5. Error codes

If Restore success is displayed (without previous error message) then all the changes have been applied. Please verify.

If a Parse error or a Restore error occurs:

The location of the first error will be highlighted (top of display).

In Multiple mode the Address of the error configuration must be opened first to see the line of the error.

### Changing parameters:

Most of the parameters can be modified in the Memo form as a text file and sent to the devices: See Table 1 for data entry restrictions.

The preferred method of changing settings is to use the graphic interface due to the reduced possibility of making data entry errors.

Conversion from a text file (memo) to configurations goes through 3 stages of checking and verification:

#### 1. Parse:

Formatting is checked (each parameter is verified by it's line).

Over / Under range checking for parameter values that are not valid.

Non numerical characters are ignored (you can add short comments).

Address must be on the first line after a # character.

The device type must be supported (P522, P520, P531, P532).

#### 2. Restore:

Before sending some parameters to the device, they are checked for conflict. (i.e. Flame On , Flame off , IR gain viewing head types and settings)

#### 3. Device:

If the device detects an invalid configuration, a Modbus error and register number will be generated.

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### Notes:

Modification of the first line of the record are recommended to reflect a new name for the configuration that is consistent with the devices functionality (The # and an address number **MUST** be on the first line)

Palm Data base for the Memo application is shared by the IRIS memo application.

Any Parameter (font, sort order, etc.) changes done in IRIS memo will not be remembered or applied to Palm Memo but all setting changes in the Palm memo will be applied to IRIS memo and used as the default settings.

Private records cannot be seen with IRIS memo.

Iris memo does not contain beaming send functionality this can be accomplished by using the Palm Memo application (same data).

Communication parameters cannot be changed or altered using the IRIS Memo restore (the baud rate and Address Must be programmed via front panel buttons)

Once entered, the IRIS memo application cannot return to Flame tools without going to the main menu.

### CONTACT INFORMATION

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**TABLE 1 : P531 AND P532 RESTORE DATA RESTRICTION TABLE**

Address #3 10:24 am 2-2-05	Must contain # followed by address (modify the rest to name the record)
Model: P	Read only (used to parse data for device)
Version:	Read only
1=4->20;0=0->20 mA	Read only
1 = Panel enabled:	Read only
Flame On A Prim:	Must be > flame off and < 3000
Flame Off A Prim:	Must be < flame on
Alarm A Prim:	Must be < 3000
View Head # A Prim :	Viewing head 1,2,3 or 0 for none
1=IR;2=UV;0=Unknown	Must not be 0 for advanced VH else it must be 0
Time Delay A Prim :	0,1,2,or 3
FFRT A Prim :	1,2,or 3
Output gain A Prim:	0 to 100
Flame On A Alt.:	Must be > flame off and < 3000
Flame Off A Alt.:	Must be < flame on
Alarm A Alt.:	Must be < 3000
View Head # A Alt :	Viewing head 1,2,3 or 0 for none
1=IR;2=UV;0=Unknown	Must not be 0 for advanced VH else it must be 0
Time Delay A Alt. :	0,1,2,or 3
FFRT A Alt. :	1,2,or 3
Output gain A Alt.:	0 to 100
Flame On B Prim:	Must be > flame off and < 3000
Flame Off B Prim:	Must be < flame on
Alarm B Prim:	Must be < 3000
View Head # B Prim:	Viewing head 1,2,3 or 0 for none
1=IR;2=UV;0=Unknown	Must not be 0 for advanced VH else it must be 0
Time Delay B Prim :	0,1,2,or 3
FFRT B Prim :	1,2,or 3
Output gain B Prim:	0 to 100
Flame On B Alt.:	Must be > flame off and < 3000
Flame Off B Alt.:	Must be < flame on
Alarm B Alt.:	Must be < 3000
View Head # B Alt:	Viewing head 1,2,3 or 0 for none
1=IR;2=UV;0=Unknown	Must not be 0 for advanced VH else it must be 0
Time Delay B Alt. :	0,1,2,or 3
FFRT B Alt. :	1,2,or 3
Output gain B Alt.:	0 to 100
Flame On C Prim:	Must be > flame off and < 3000
Flame Off C Prim:	Must be < flame on
Alarm C Prim:	Must be < 3000
View Head # C Prim:	Viewing head 1,2,3 or 0 for none
1=IR;2=UV;0=Unknown	Must not be 0 for advanced VH else it must be 0
Time Delay C Prim :	0,1,2,or 3
FFRT C Prim :	1,2,or 3
Output gain C Prim:	0 to 100
Flame On C Alt.:	Must be > flame off and < 3000
Flame Off C Alt.:	Must be < flame on
Alarm C Alt.:	Must be < 3000
View Head # C Alt:	Viewing head 1,2,3 or 0 for none
1=IR;2=UV;0=Unknown	Must not be 0 for advanced VH else it must be 0

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**TABLE 1 : P531 AND P532 RESTORE DATA RESTRICTION TABLE (Continued)**

Time Delay C Alt. :	0,1,2,or 3
FFRT C Alt. :	1,2,or 3
Output gain C Alt.:	0 to 100
View Head #1 Type:	Read only
IR gain VH 1 Prim:	If >100 last 2 digits must be >37
IR gain VH 1 Alt.:	If >100 last 2 digits must be >37
IR filter VH 1 Prim:	1 to 8 (Must be 1 if no IR in VH)
IR filter VH 1 Alt.:	1 to 8 (Must be 1 if no IR in VH)
UV gain VH 1 Prim:	0 To 99
UV gain VH 1 Alt.:	0 To 99
View Head #2 Type:	Read only
IR gain VH 2 Prim:	If >100 last 2 digits must be >37
IR gain VH 2 Alt.:	If >100 last 2 digits must be >37
IR filter VH 2 Prim:	1 to 8 (Must be 1 if no IR in VH)
IR filter VH 2 Alt.:	1 to 8 (Must be 1 if no IR in VH)
UV gain VH 2 Prim:	0 To 99
UV gain VH 2 Alt.:	0 To 99
View Head #3 Type:	Read only
IR gain VH 3 Prim:	0 to 9 (Must be 0 if no IR VH)(must Not be Zero if IR VH)
IR gain VH 3 Alt.:	0 to 9 (Must be 0 if no IR VH)(must Not be Zero if IR VH)
UV gain VH 3 Prim:	0 to 9 (Must be 0 if no UV VH)(must Not be Zero if UV VH)
UV gain VH 3 Alt.:	0 to 9 (Must be 0 if no UV VH)(must Not be Zero if UV VH)

Viewing head Types	
0 = No Viewing head	Not advanced
1 = 556 uv	Not advanced
2 = 552 ir	Not advanced
3 = 550 both	Not advanced
5 = S556A	Advanced VH
6 = S552A	Advanced VH
7 = S550A	Advanced VH
9 = 706-800 UV	Not advanced
10 = 702-800 IR	Not advanced
13 = S556B	Advanced VH
14 = S552B	Advanced VH
15 = S550B	Advanced VH

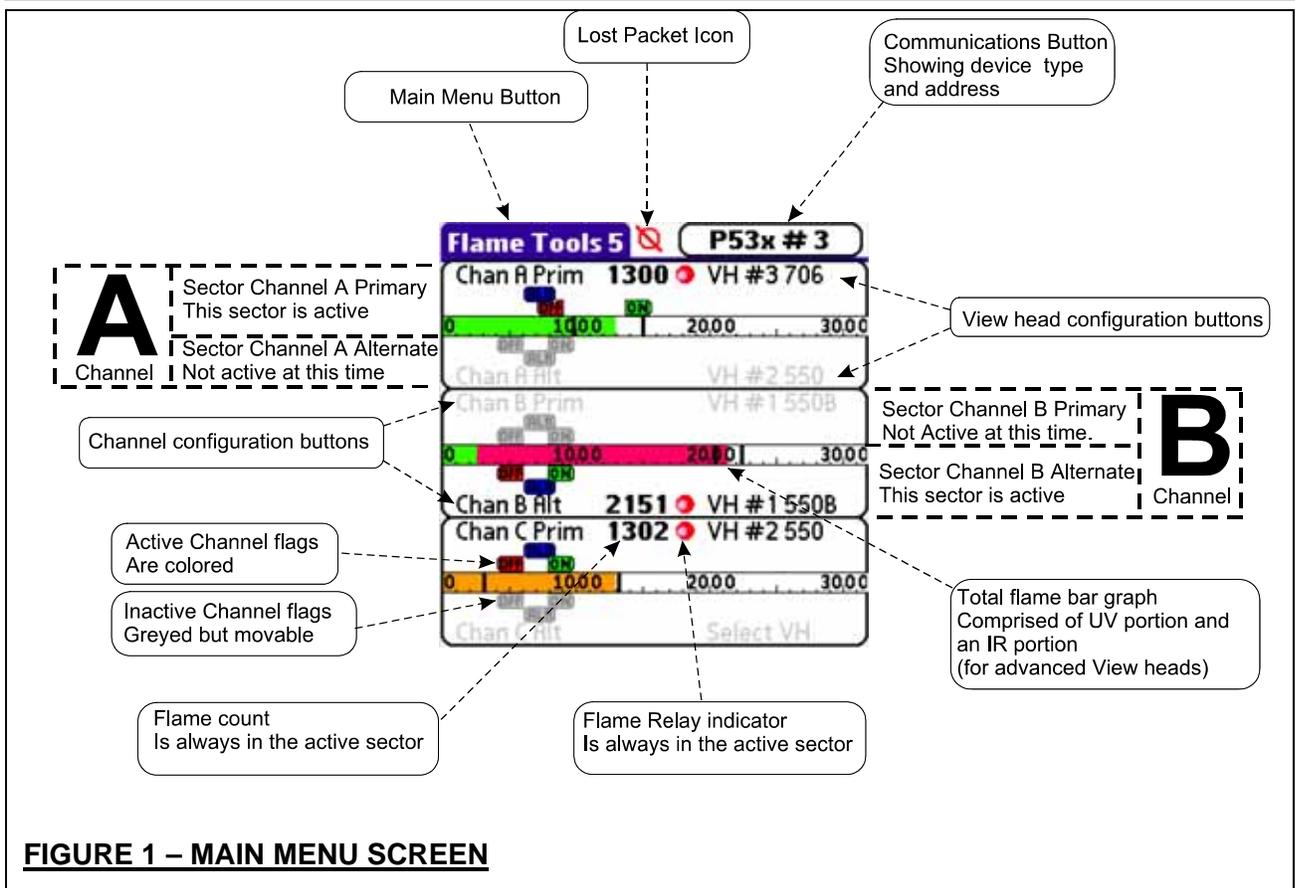


FIGURE 1 – MAIN MENU SCREEN

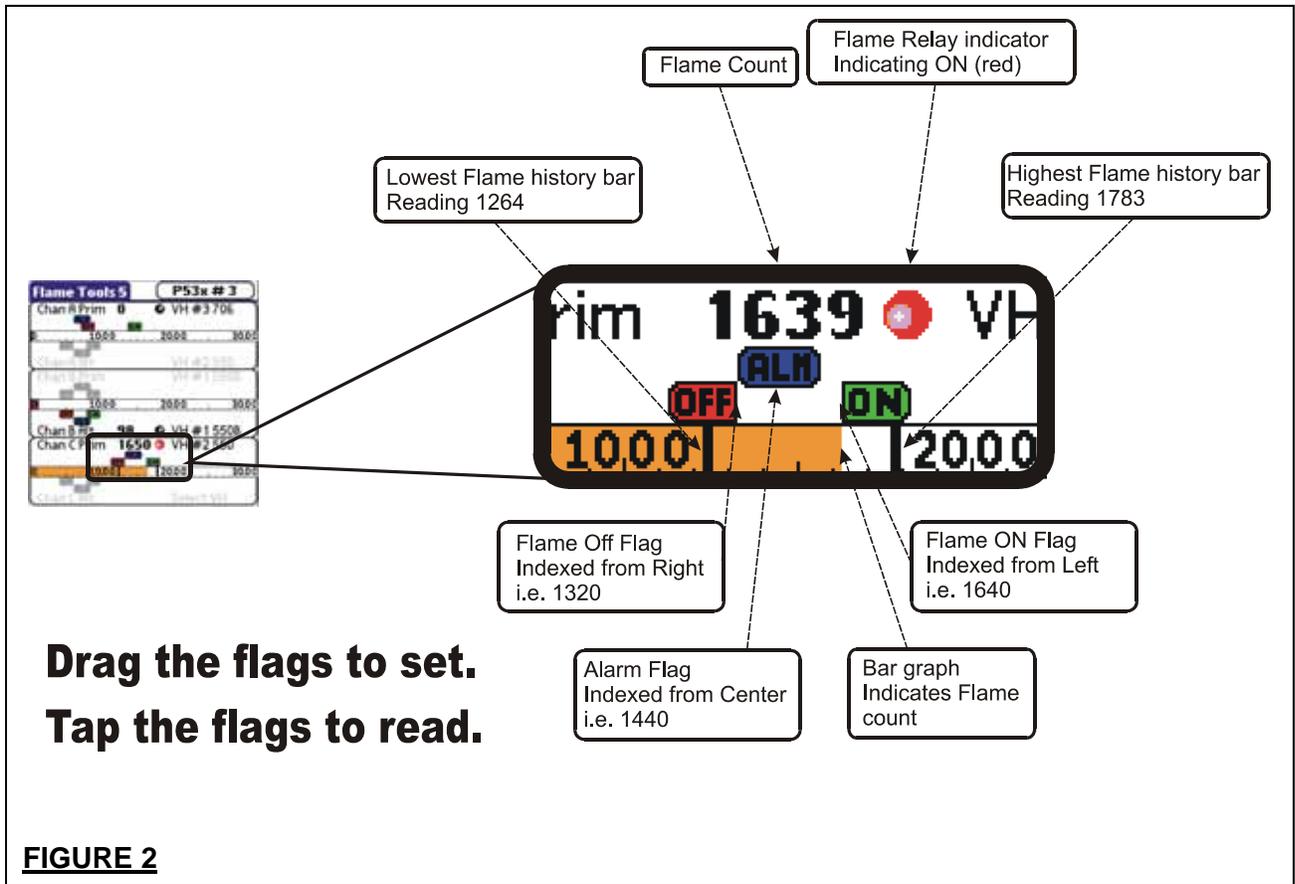


FIGURE 2

# IRIS FLAMETOOLS FOR PALM OPERATING MANUAL

NOTE: For better performance clear all not used (not green) devices.

Tapped address(s) must be green to be displayed on main form.

Device dropdown Button

Modubs Devices

IRIS Protocol Devices

Main menu button

Baud dropdown button  
Only for P5xx Rs422

Detect / Clear button

Address (current)

Serial Number  
Only for P53x Rs422

Software Version  
Only for some devices

Done (return to main form)  
Green address will be displayed  
All non white addresses will be polled (slowing communications)

Address detect buttons  
Individually selected for detection (faster)

To stop auto detection:  
Tap the address box for the desired address(s).

**FIGURE 3**

Assign view head to this channel and configuration

Advanced view heads can have individual sensors assigned to different channels

A non advanced S550 Can use one sensor by turning the gain of the other to zero

Note: Only P531 / P532 can assign view heads to channels.

Restrictions:  
One sensor (or non advanced view head) can be assigned to primary and alternate of the same channel but no other channel.  
...OR ...  
One sensor (or non advanced view head) can be assigned to more than one channel but all must be either primary or alternate configurations.

Help Menu

Channel and configuration

Features not supported by view heads or configurations will not be displayed.

View head temperature

UV gain value

UV gain slider

IR filter selector

IR electrical gain selector

Total IR gain value

IR digital gain slider

Store

Cancel

**FIGURE 4**

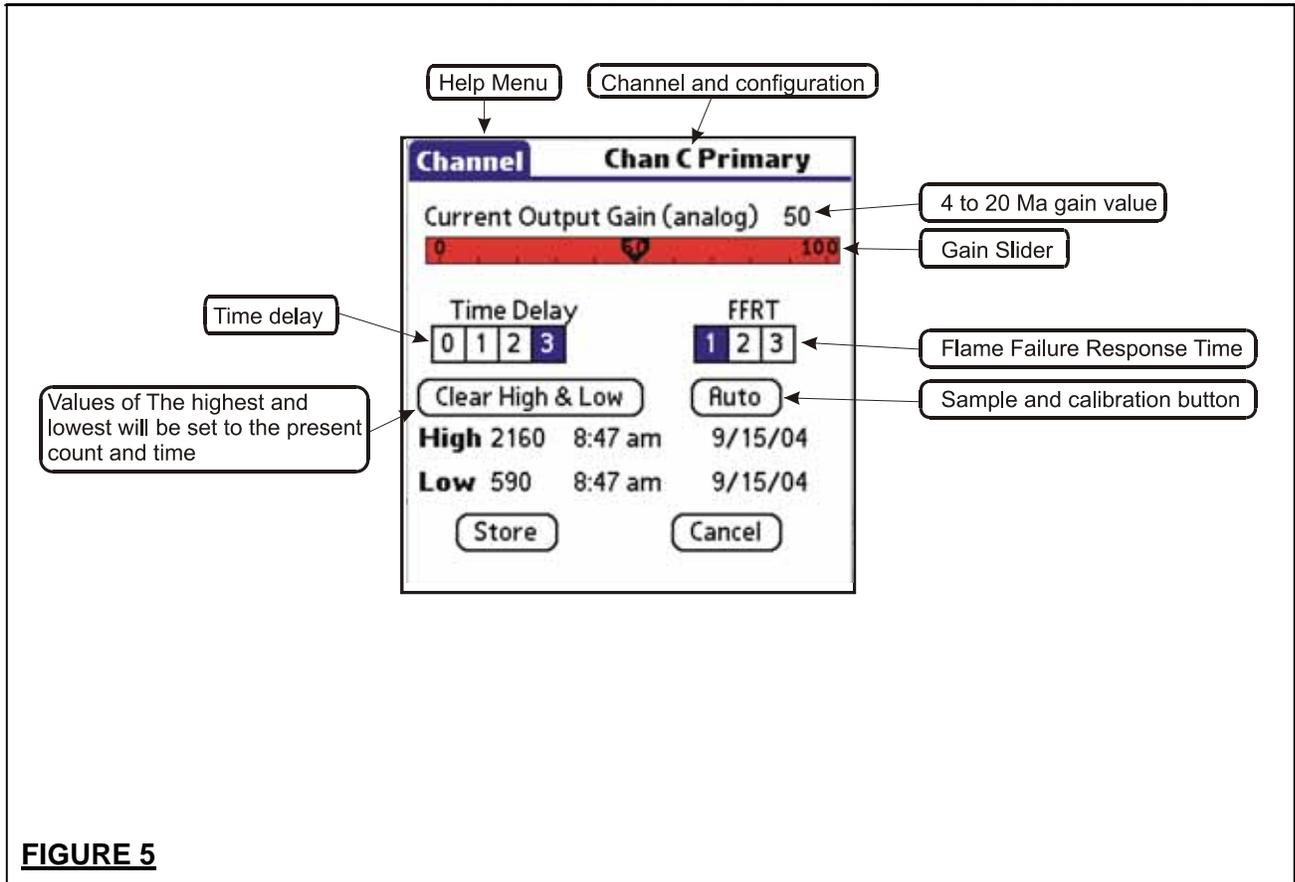


FIGURE 5

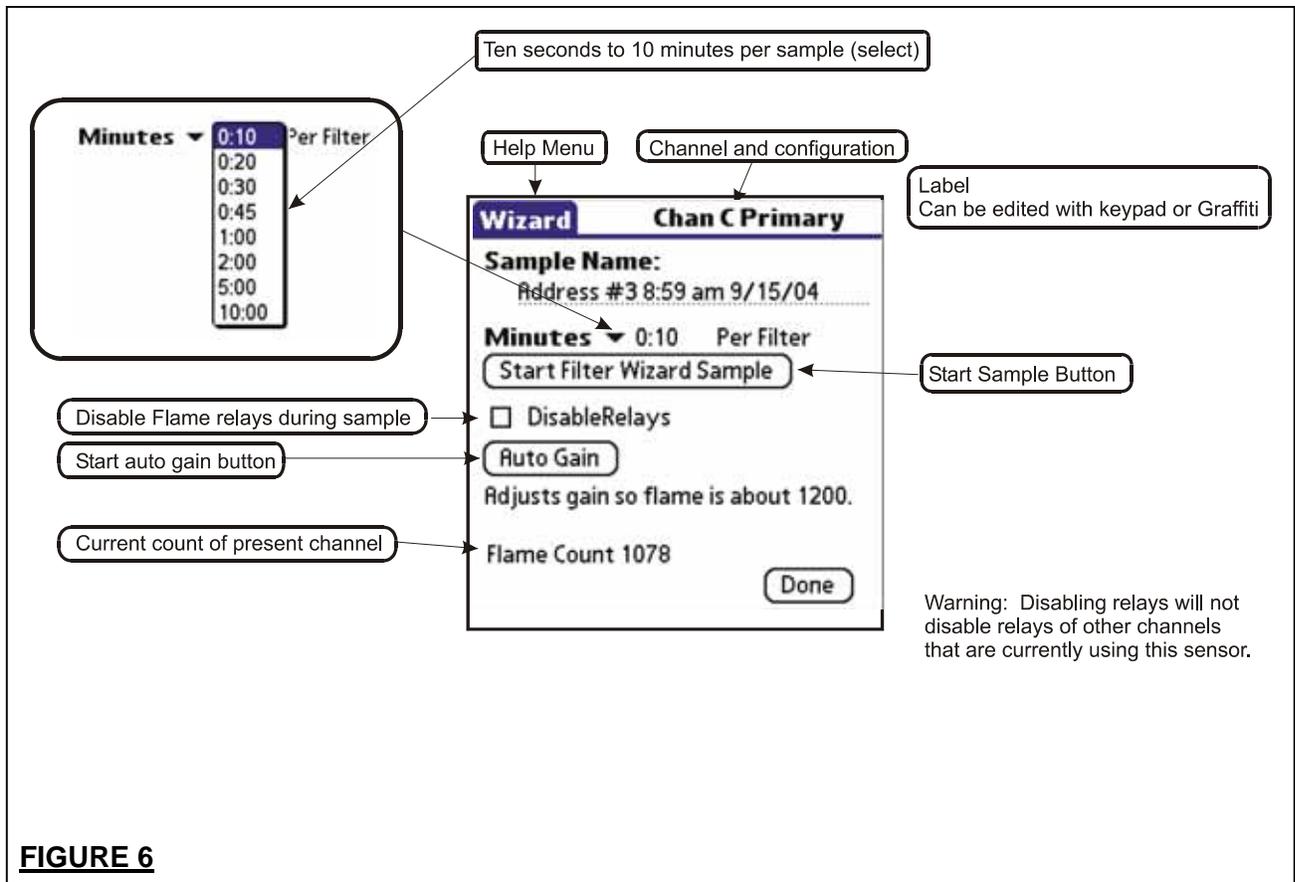
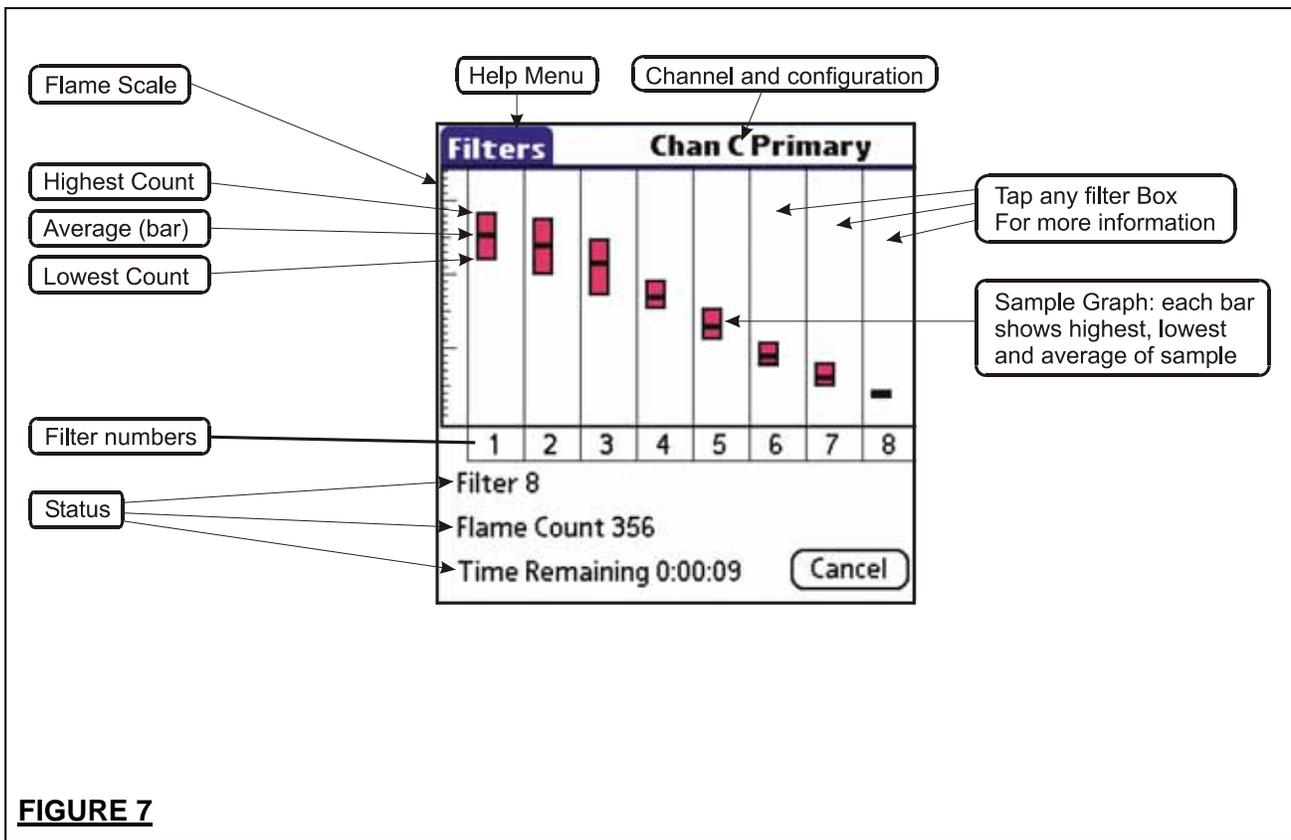
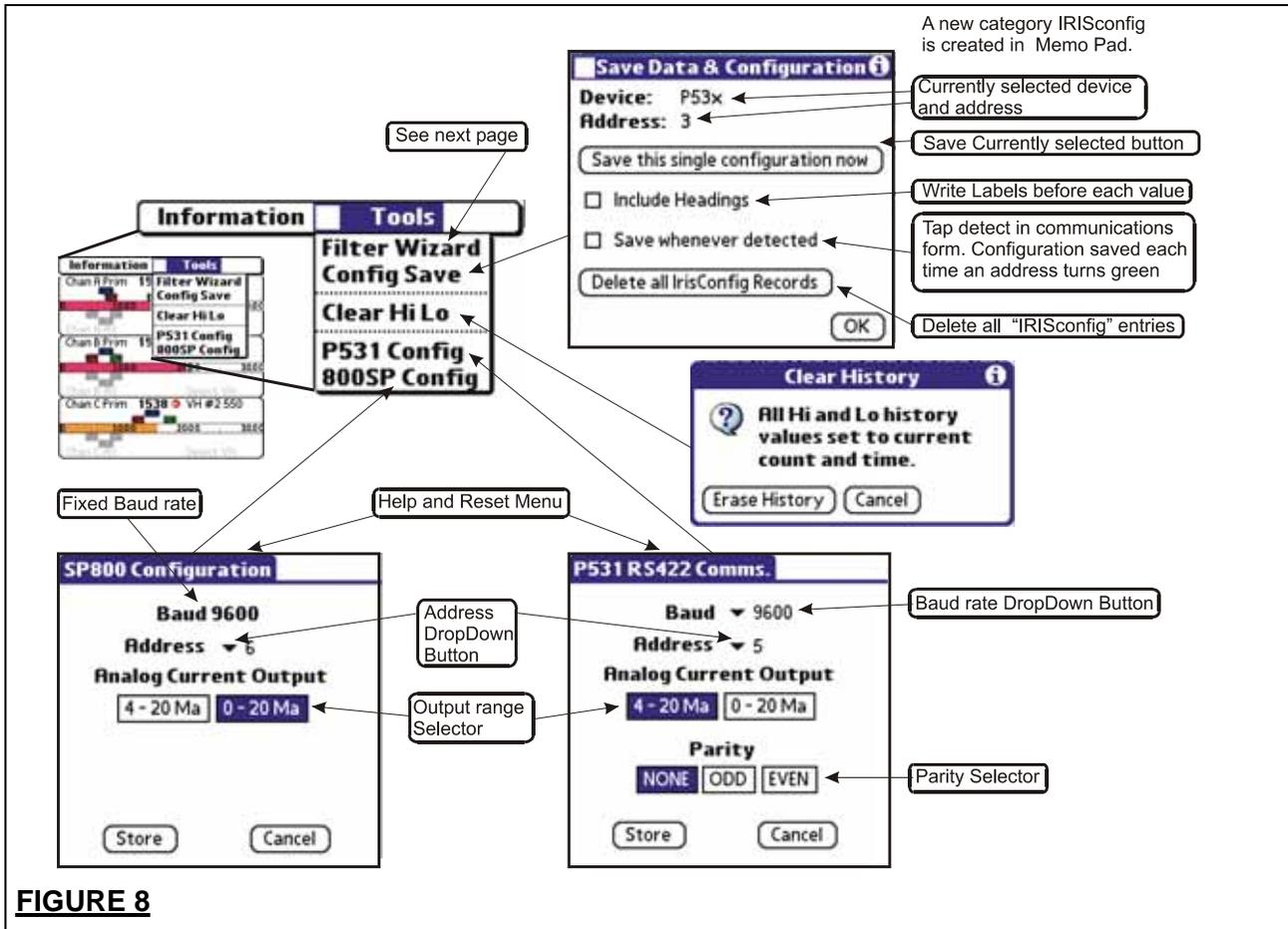


FIGURE 6

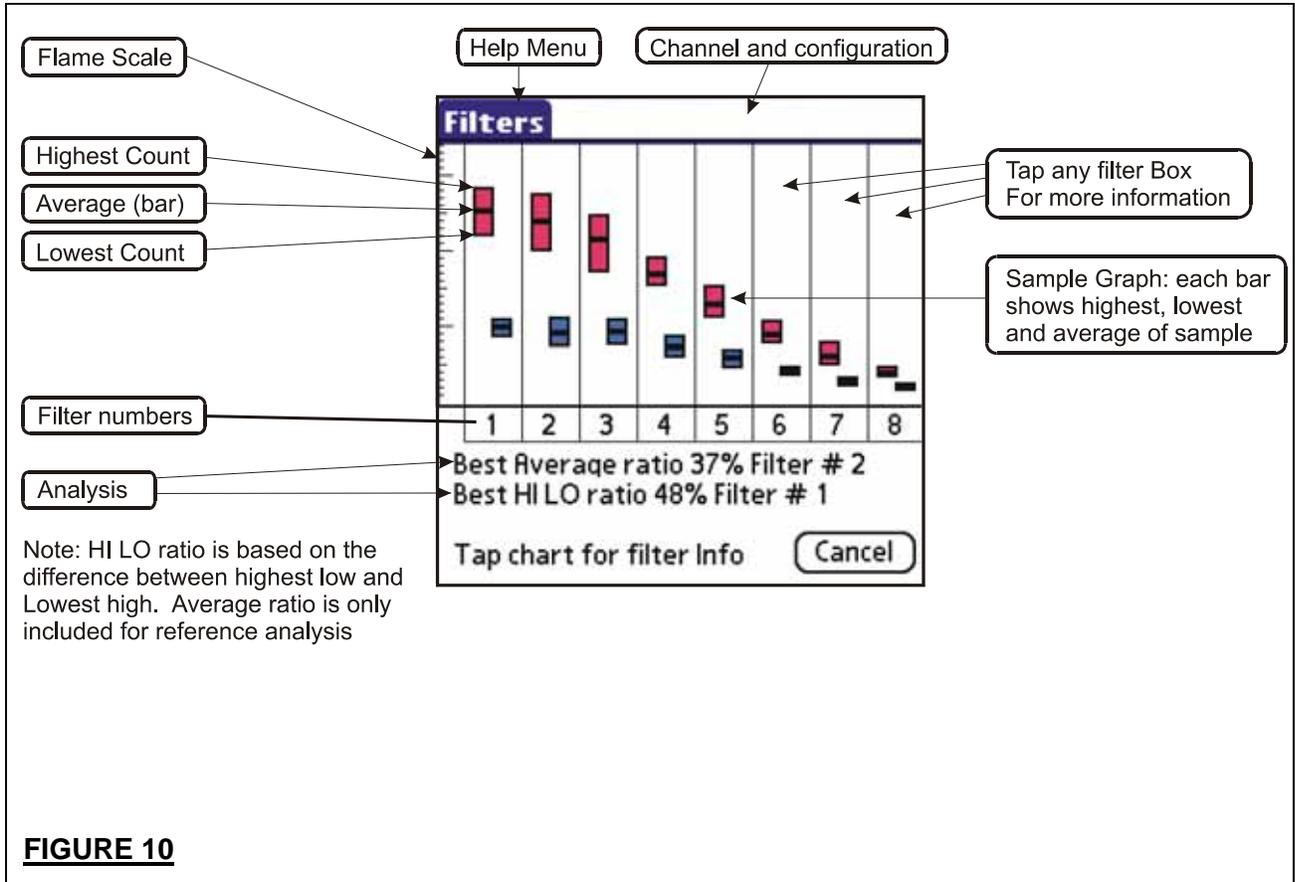
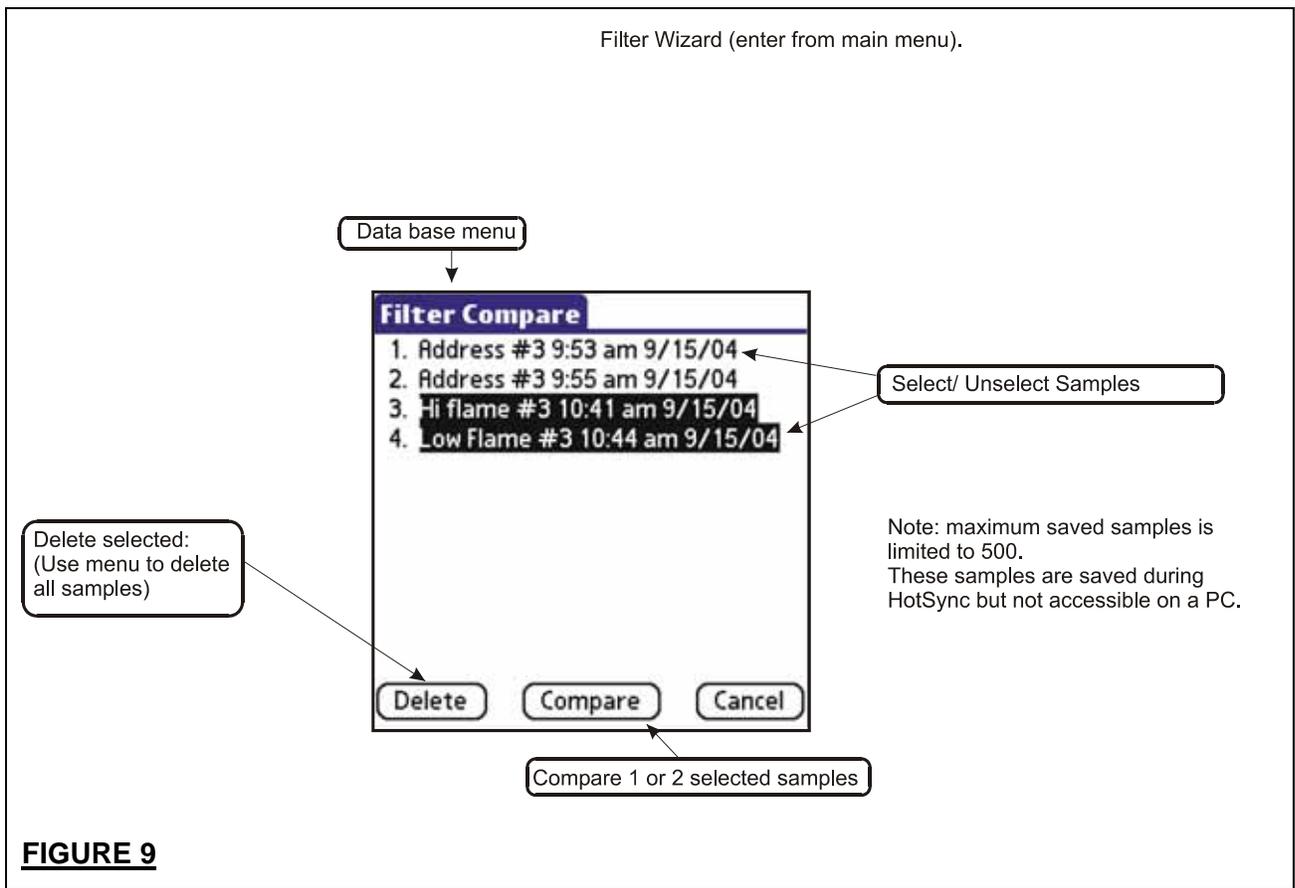
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**FIGURE 7**



**FIGURE 8**



# IRIS FLAMETOOLS FOR PALM OPERATING MANUAL

Help Menu

Sample Info.			OK
Address	3	3	
Time	10:42 am	10:45 am	
Channel	3	3	
Confiq.	Primary	Primary	
Gain	699	699	
Filter	1	1	
Samples	10	10	
Average	2523	982	
Max.	2806	1072	
Min.	2226	890	
Average ratio: 38% Hi-Lo ratio: 48%			
Suggested settings for this filter:			
Flame ON: 1938 Flame OFF: 1360			

Filter wizard (enter from main menu)  
Comparison of two samples and analysis.

**FIGURE 11: THE FILTER WIZARD SCREEN**



**FIGURE 12: IRIS PDA-P53x CONNECTOR INTERFACE KIT**



FIGURE 13A: P531 CONNECTION

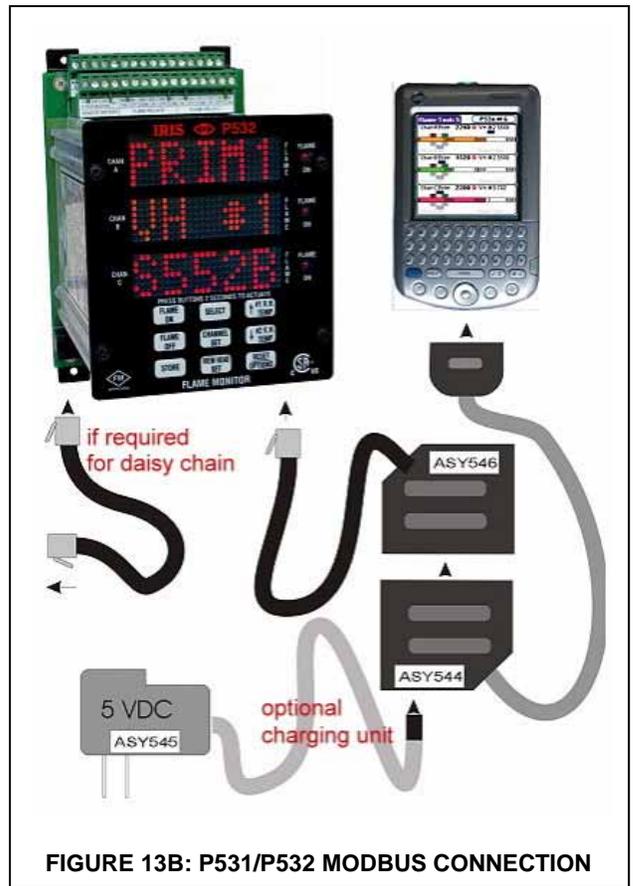


FIGURE 13B: P531/P532 MODBUS CONNECTION

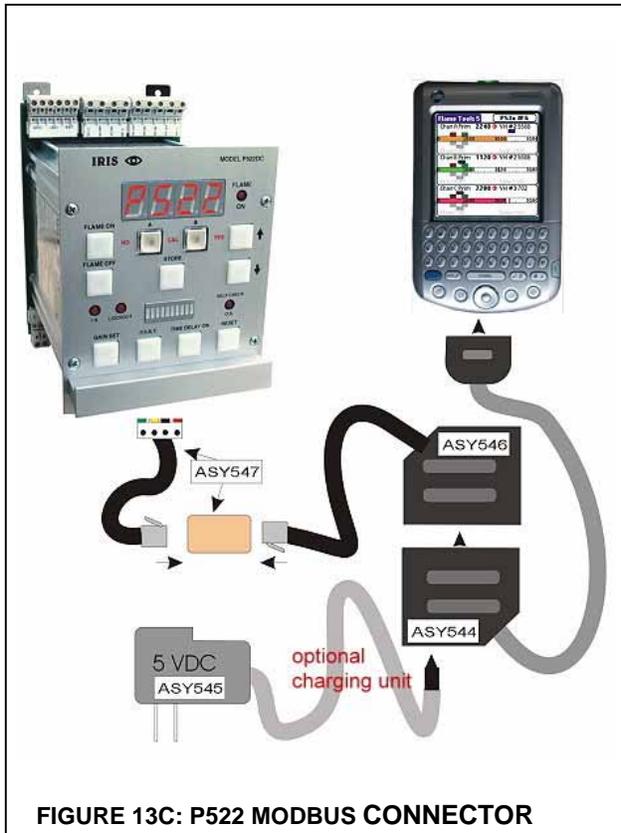


FIGURE 13C: P522 MODBUS CONNECTOR

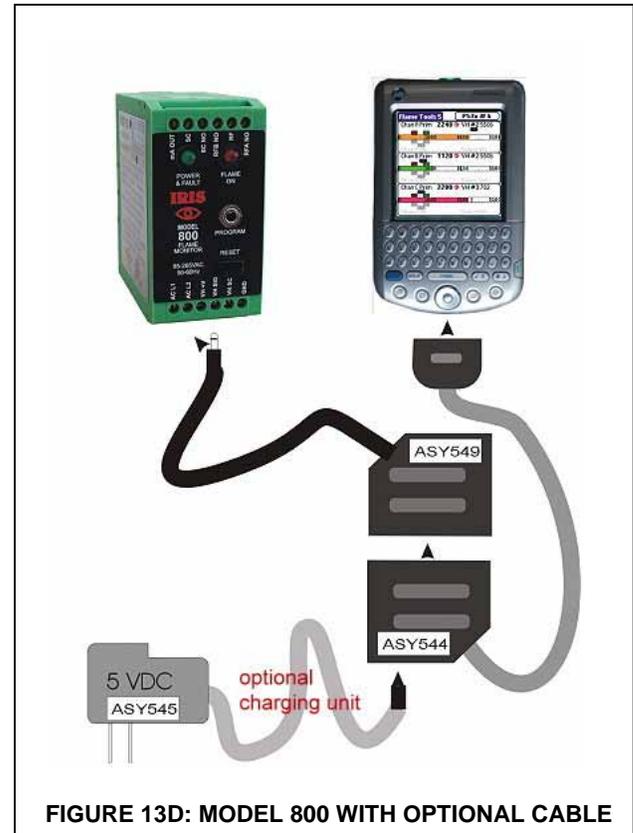


FIGURE 13D: MODEL 800 WITH OPTIONAL CABLE