Honeywell

FLAMETOOLS-PC
VERSION 4.3

WELCOME TO FLAMETOOLS-PC

This software is designed for computers running Windows[a] operating systems. Software will allow remote configuration, monitoring, and alarm logging of the following products:
- 700 Signal Processor with S702 and S706 Viewing Heads
- P520/P522 Signal Processors with S55xBE Viewing Head
- P531/P532 Signal Processors with S55xBE and S70X Viewing Heads
- U2 Combination Viewing Head and Signal Processor

NOTE: Throughout the remainder of this document, "Signal Processor" will be referred to as "Processor".

It is assumed that user is familiar with Windows operating system commands such as Open, Close, Save, etc.

RECOMMENDATION
It is recommended that users be familiar with specific product information by reviewing the latest publication of appropriate manuals.

Product	Manual #	Remarks
700	66-2069	
P520	66-2066	
P522	66-2067	
P531 P532	66-2068	
U2	66-2071	
S550XBE	66-2064	For use with P520/521/531 and P532
S70x S80x	Included in 66-2069	For use with 700

[a] Windows is a registered trademark of Microsoft Corp.

⚠ CAUTION
PROCESSOR LOCKOUT RESET FOR ALL MODELS IS NOT PERMITTED FROM FLAMETOOLS-PC OR MODBUS. FOR SAFETY REASONS, RESET MUST BE PERFORMED AT THE DEVICE.

Section 1
General

FLAMETOOLS-PC is modified Modbus™ based real time monitoring and configuration software. FLAMETOOLS-PC supports the following Honeywell models:

- 700 series – up to 32 devices on a single bus (network)
- P520 and P522 – up to 64 devices on a single bus
- P531 and P532 – up to 64 devices on a single bus
- Uniscan 2 (10xx and 10xxPF) – up to 248 devices on a single bus

NOTE: Device consists of a processor, viewing head(s) and interconnecting cable. U2 is integrated (all in one) and considered a device. Each device requires a unique address from 1 to maximum number supported. Address zero (0) should never be used.

⚠ CAUTION
When adding a device, user will be required to confirm the model. It is very important to select the correct model. Incorrect selection may result in halting system operation and in severe cases may damage components and make the system erratic in operation. A manual reset at the processor may be required.

Section 2
FLAMETOOLS-PC Features

FLAMETOOLS-PC is divided into two parts:
— Limited access for operator for monitoring
— Complete access for configuration and adjustment. Complete access is password protected.

32-00001-02

Depending upon the model, the following will be displayed for monitoring:

   a. 4–20 mA analog signal bar-graph
   b. Tag, Address and model number
   c. Flame On/ Flame Off set point
   d. Digital read out of the flame signal in real time
   e. Temperature
   f. File name
   g. Viewing head number(1, 2 or 3) .
   h. Alarm
   i. Trending Flame signal and Temperature

The following features will be available for configuration and adjustment. A password is required to access this menu.

   1. Address for each device
   2. Tag (user selected name) for each device
   3. UV Gain- where applicable
   4. IR Gain and IR Filter –where applicable
   5. UVss Gain and UVss Filter – where applicable
   6. Flame On and Flame Off set point
   7. Flame Failure response time
   8. Flame On delay time
   9. Immediate Flame Signal

Section 3
System Requirements

FLAMETOOLS-PC runs on Microsoft Windows[a] systems running Windows XP, 7, or 8 with access to all features and administration rights with a USB and/or serial communication port. At least 4 GB RAM (memory) is recommended. The recommended minimum free hard drive capacity is 10 GB, but will depend on the number of devices and trending configuration. The minimum display resolution is 1024 x 768 (XGA).

A RS422 or RS485 to RS232 or USB converter kit is required. One B&B Electronics USOPTL4 converter is included in the package.

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[a] Windows is a registered trademark of Microsoft Corp.

Section 4
Before you start – Must read

FLAMETOOLS-PC supports several Honeywell Industrial Flame Monitoring models with various modes of communication (RS485 or RS422). It is important to note that different modes of communication will require segregated wiring and a separate RSXXX/RS232 or USB converter and separate port on PC and different Comm Port Address.

It is recommended that a list is first prepared to include Name/Tag, address, model and where applicable Viewing head number similar to the following example:

ModBus Name/Tag	Address	Model	Comm. Port
BLR2-BNR6	02	S552BE	1
BLR3-BNR7	03	U2	2
FUR1-BNR3	02	700	4

Name/Tag is user selectable. However, it is recommended that tag number should be chosen carefully to identify applicable boiler/furnace and burner. For example Boiler 7, Burner #6 may have name/tag BLR7-BNR6 for easy identification. The maximum Name/Tag length is 25 characters.

Addresses should be numbered in sequence to avoid duplicate addresses when used in the same bus (Comm Port address).

NOTE: Duplicate addressing *is* permissible as long as different COM ports are used.

After the list is prepared, it is recommended that appropriate address is edited into the processor or U2[b]. Refer to appropriate product manual for wiring and editing Modbus address.

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[b] If all processors (or U2's) are connected in the same bus without first setting unique addresses, the system will not respond.
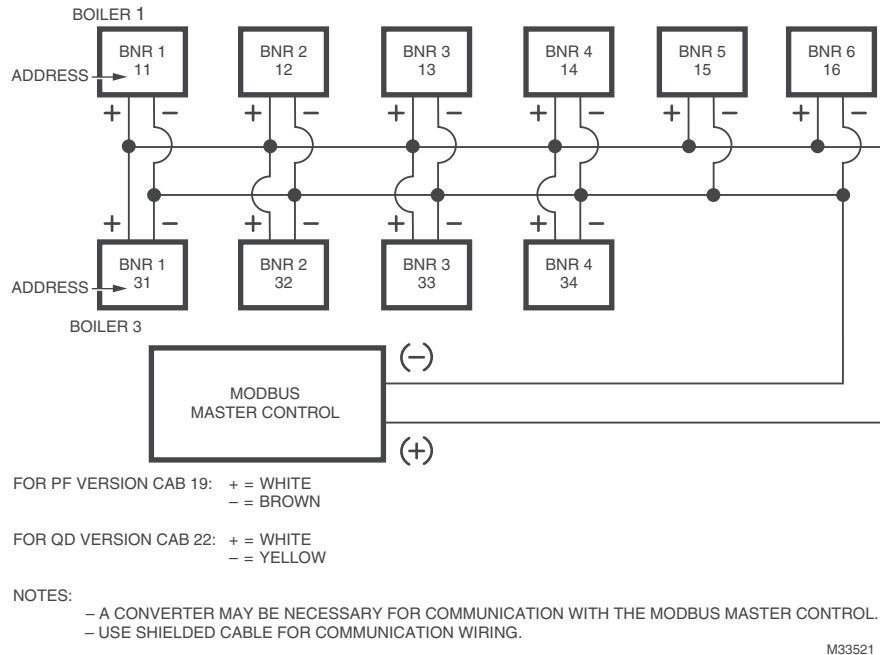
Fig. 1. Typical Communication Wiring and Recommended Addressing.

Section 5
Initial Installation

   a. Installation
Insert the FLAMETOOLS-PC USB drive into a USB port and follow the installation instructions. If the installation does not start automatically, run setup.exe in the root directory of the USB drive.

NOTE: Administrative privileges are required for the installation. To install FLAMETOOLS-PC, you need to start the setup program as an administrator in Windows.

   b. Startup
   •Ensure FLAMETOOLS-PC USB drive is still connected to your machine. It serves as a license key as well.
   •Start the Flame Tools application using Start -> Programs -> FLAMETOOLS-PC -> FLAMETOOLS-PC

NOTE: FLAMETOOLS-PC is designed to be used with one PC at a time. The FLAMETOOLS-PC USB drive is required for operator mode or for configuration mode. When the FLAMETOOLS-PC USB drive is removed, all communication to devices will stop. This will not affect device operation; only monitoring and configuration capabilities are lost.

Section 6
Start Up

  1. Connect processor to RS485/422 USB converter. Refer to Installation Instructions for detailed wiring instructions.
For proper function of the converter, you need to install device drivers from the included CD or you can download the drivers from converter manufacturer's website, www.bb-elec.com.

IMPORTANT
   INSTALL THE DRIVER BEFORE CONNECTING THE CONVERTER TO THE PC.

  2. On the processor (or U2), select Modbus address as explained in their manuals

NOTE: Setting processor's ModBus address is a local operation. A processor does *not* need to be connected to a PC for this purpose.

NOTE: Connecting all devices with default address zero "0" will stop all ModBus communication. It is very important to connect one device at a time and give it a unique ModBus address. An already-used address will create a conflict and communication will stop.

NOTE: For the model 700 processor. Default protocol must be changed in order to use Modbus communication. Use the following key sequence at processor's front panel:
   1. Press and hold the BNR-OFF SEQ START/END button for 2 seconds
   2. Press up arrow to change setting from P0 to P1.
   3. Press STORE

Repeat above by adding one device at a time as per prepared list.

When all devices are added and checked, FLAMETOOLS-PC is ready for use.

Open FLAMETOOLS-PC. A home page will be displayed.

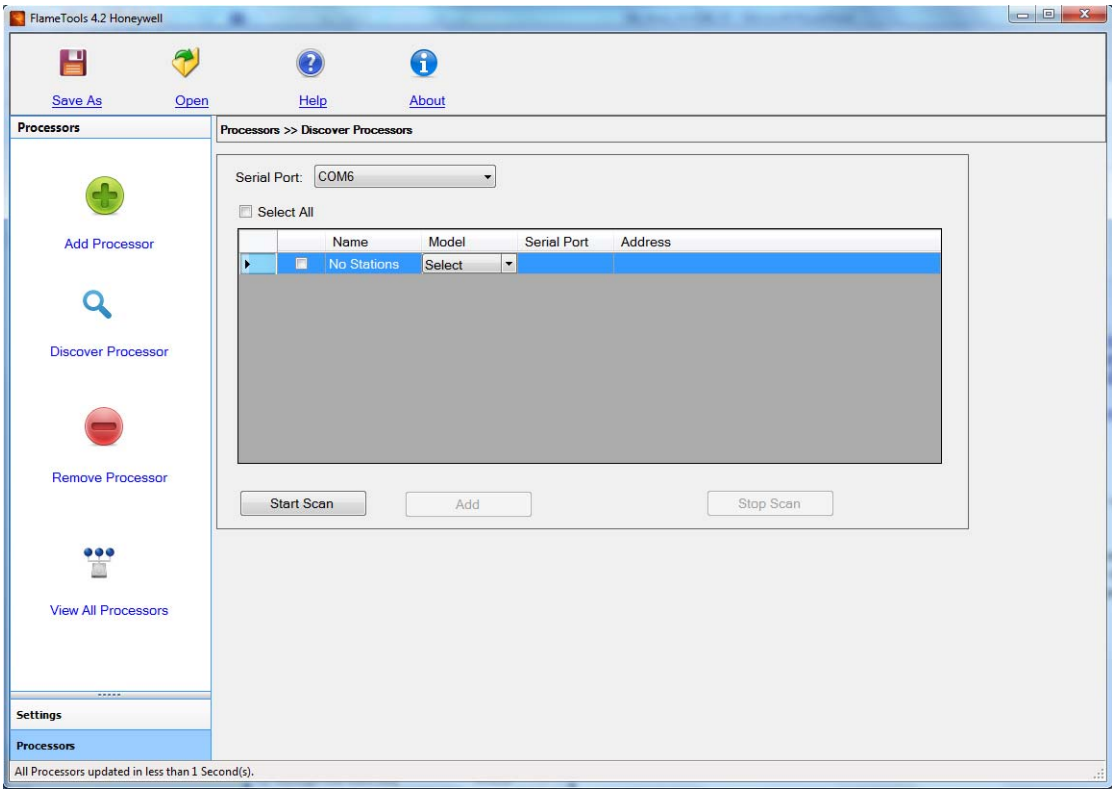   32-00001—02

Chapter 1
Home Page

Fig. 2. Home Page

<u>Save As</u> — Save a copy of processor (device) configuration to a file. Available in configuration only. See Chapter 12 on page 18.

<u>Open</u> — Load a processor (device) configuration from a file previously created by Save As. See Chapter 13 on page 19.

<u>About</u> — Information on FLAMETOOLS-PC

<u>Start Scan</u> — The system scans for all processors (devices) connected to the specific Serial port. See Chapter 3 on page 5.

<u>Add Processor</u> — Manually add a processor (device) to the list. See Chapter 4 on page 6.

<u>Discover Processor</u> — Searches for all processors (devices) in the network (bus). See Chapter 3 on page 5.
This is the default view on start-up.

<u>Remove Processor</u> — Select the processor(s) (devices) from the existing list and remove them. See Chapter 5 on page 7.

<u>View All Processor</u> — Shows list of all previously added processors (devices), for their configuration or monitoring. See Chapter 6 on page 8.

<u>Settings</u> — Setup for password and other application parameters. See Chapter 2 on page 5.

Chapter 2
Adding/Changing Password
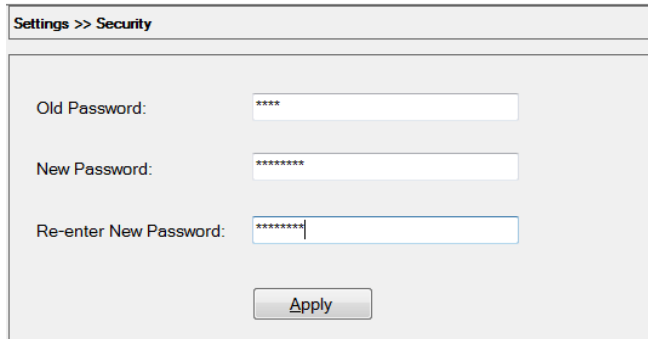
Fig. 3. Changing password.

1. From Home page select "Settings". Select "Security".
2. Enter current Password (the default password is "honeywell").
3. Enter New password (Remember to write it down and keep it in safe place. There is no password retrieval tool built into the FLAMETOOLS-PC software.)
4. Re-enter New password.
5. Select Apply.
   New password is now active.

NOTE: The new password must be at least eight characters long and must contain at least six alphanumeric characters (A to Z, a to z, 0 to 9) and at least two special characters (e.g. !@#$%^&*()_.;).

⚠ CAUTION
If password is lost, the only way to revert back to the default password ("honeywell") is by re-installing the FLAMETOOLS-PC application.

A box will be displayed confirming password is successfully changed.
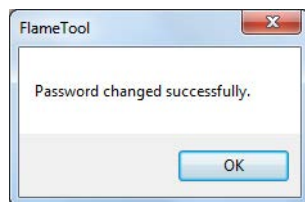
Fig. 4.

Password Authentication is required before configuration can be attempted
Typical screen for password requirement
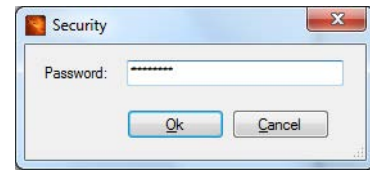
Fig. 5.

Chapter 3
Discovering Processors

Before using the discovery, make sure all processors are properly wired, connected to the computer through RS485/422 converters, powered up and their ModBus addresses are properly set (not a zero and no duplicate addresses on the same bus).

Select the serial port (COM) the processors are connected to. The tool can scan one serial port at a time. If you are not sure which port to select, use discovery (scanning) for each of the available ports one by one until the processors are discovered and appear on the list.

If your system uses multiple serial ports, repeat the discovery for each of them separately.

Start Scan: After all processors are found and displayed, scanning may be stopped.

Stop Scan: Select to stop scanning of the serial port (COM).

Add: Adds selected processors to the application for monitoring and configuration. Processors must first be selected by clicking on the check-boxes. *Processors not selected will not be added and will not be accessible from the tool.*

Discover will find all processors that are connected to the selected Com port.

⚠ CAUTION
The model of the processors is automatically detected. However, it is very important to ensure the correct model is selected otherwise the system may not respond or could be mis-configured.
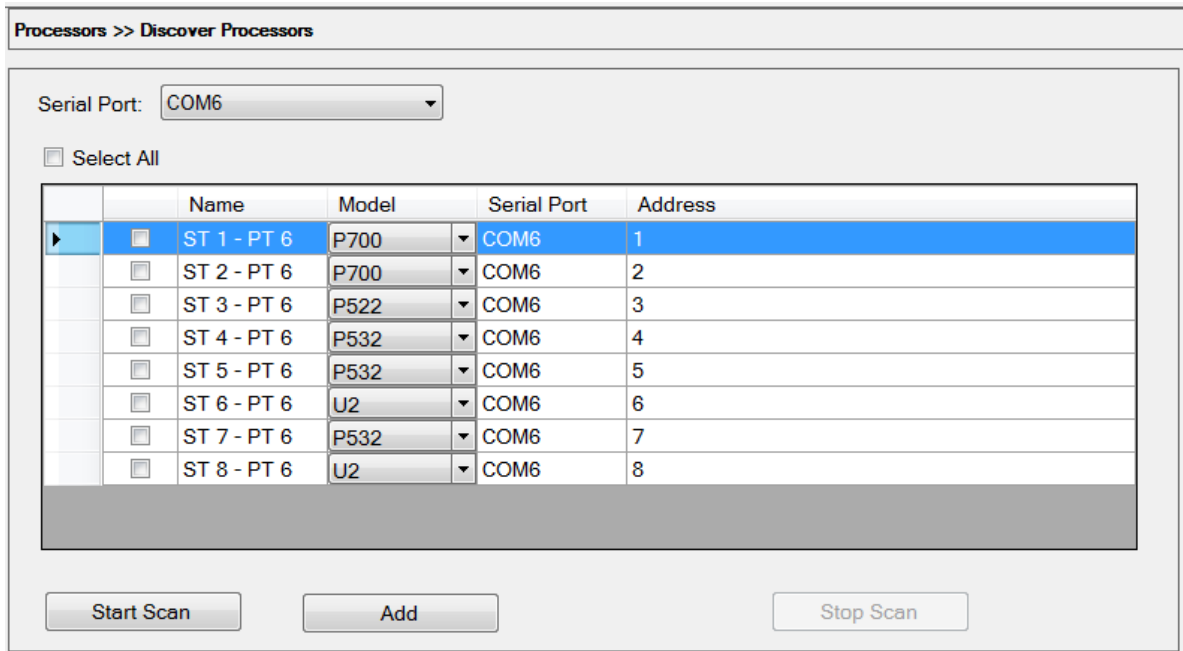
Fig. 6.

Chapter 4
Manually Adding Processor to the Bus (Network)

Before adding a processor or U2 to the bus, make sure all wiring is complete as indicated in Section 6, processor is operational (no lockout), address for each processor is recorded, communication between PC and bus is established using correct Com (Serial) port information.

As recommended in Section 4, a list should be prepared to include and assign Name (or Tag), address (numeric value from 1 to maximum units supported for the selected model), Model number and Serial COM Port.

NOTE: Addresses may be skipped to make it easier for an operator to identify specific units.
For example: three boilers with 2, 4, and 9 burners respectively, all using the same Honeywell Industrial Flame Monitor model, are connected in the same bus. Number the burners of the first boiler 11 and 12, the second boiler 21, 22, 23, 24, and the third boiler 31 through 39. It is assumed that particular model permits a custom address. This will make it easier to identify processors during configuration and monitoring.

1. In Home Page, select "Processors", "Add Processor".
2. Refer to list that was prepared as per Section 4 and complete the following for each processor
   a. Fill In – Name/Tag –this is tag or name that is given to a particular processor or U2
   b. Fill In – Address – this is Modbus address
   c. Select – Model Number – Note the P531 and P532 support three viewing heads
   d. Select - Comm port used for this application
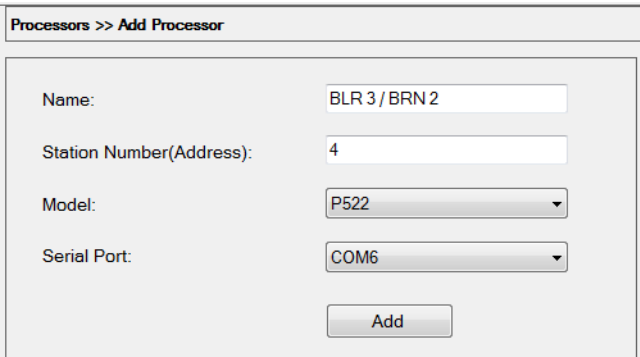
Fig. 7.

Duplicate Entry
The tool will not allow two processors with the same Address and Comm (Serial) port.
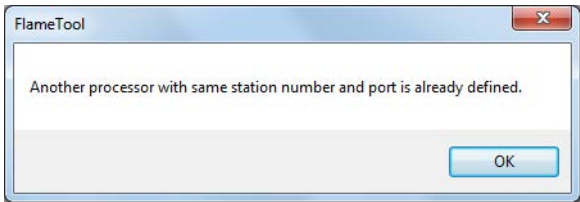
Fig. 8.

Processor Addition Confirmation
The confirmation is required to add processor to a bus.

"Yes" will result in processor being added to the bus. "No" will result in aborting procedure and returning to the previous screen.
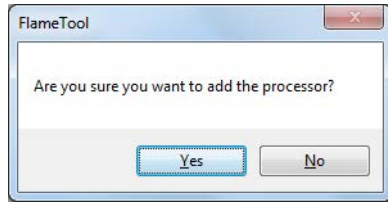
Fig. 9.

After adding the processor to a bus, an acknowledgment is generated.
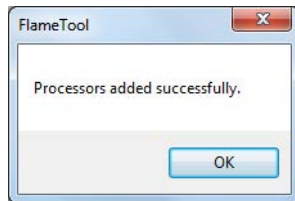
Fig. 10.

Changing Processor Model
If the model number needs to be changed, first remove the processor from the bus and then use Manually Add Processor or Discover Processor to add processor back on the bus.

NOTE: This same procedure applies to Address, Com and Bus changes.

Chapter 5
Removing Processor from the Bus (Network)
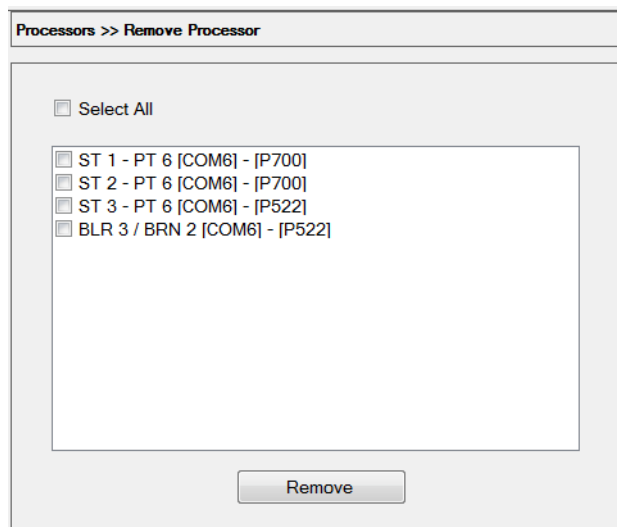
Fig. 11. Removing processor.

1.   Select one or more processors from the list by click-ing on the check box.
2.   Select Remove
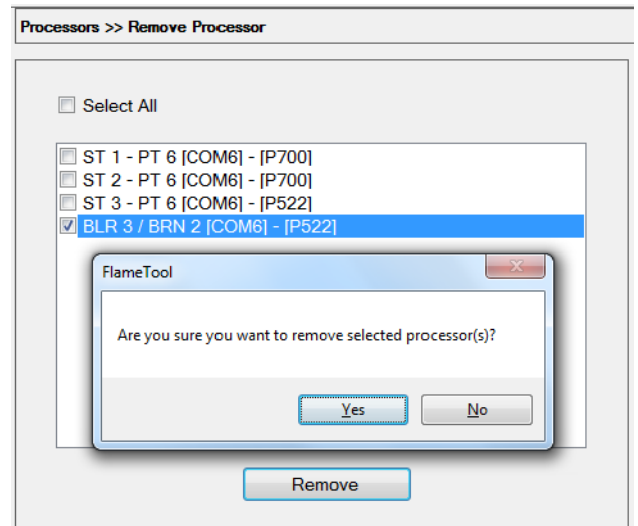
Fig. 12. Removing processor.

Acknowledgment of Removed Processor from the Bus
Confirmation screen will be displayed.

Select "Yes" or "No"
 — Yes removes the processor from the bus.
 — No aborts the removal and returns to the previous menu.
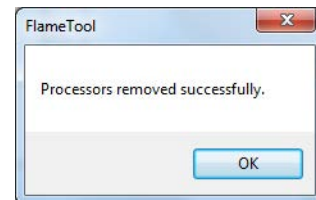
Fig. 13.

After removing a processor from the bus, make sure a confirmation is received as shown in Fig. 13.

The list will now show the remaining processors on the bus.

Chapter 6
View All Processors

This menu allows to view all processor associated with a bus.
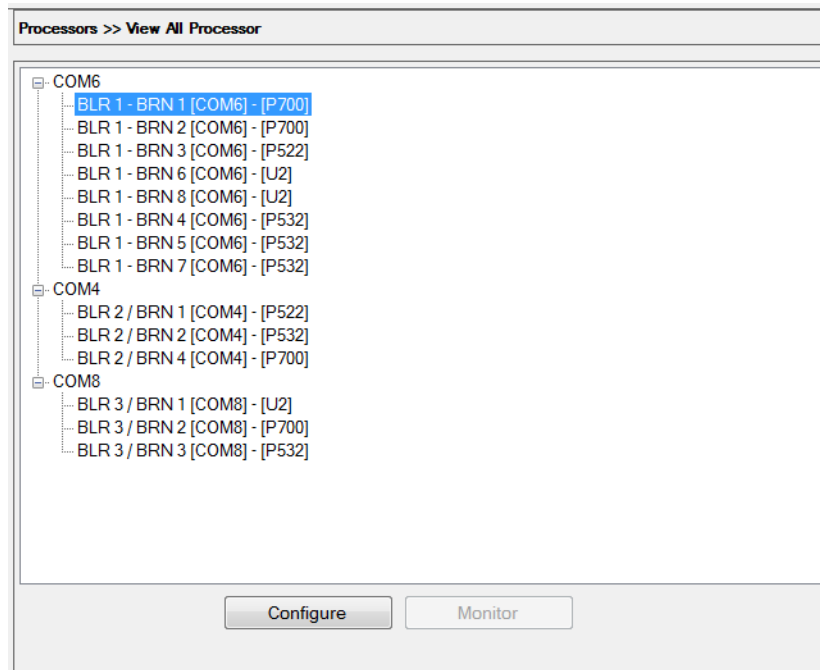
Fig. 14.

Chapter 7
Processor Configuration

1. In the View All Processors screen, select a processor by clicking on its name.
2. To enter Configuration screen, either use the Configure button or double click on the processor name

Authentication of Password before configuring processor

1. Enter password.
   The default password is "honeywell". Password can be changed in the page Settings - Security.
2. Click OK.
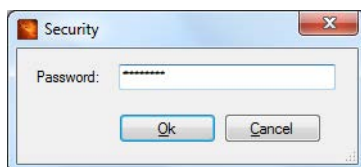
Fig. 15.

Typical Configuration Screen

— All adjustments may be carried out using slide or by entering number in the box. All adjustments are by one digit up or down as desired by the user.
— Only one adjustment is permitted at a time. User must accept or decline change to one parameter before another parameter may be changed.
— Changes are not applied to the processor immediately. Use Download to Processor to update the processor with modified parameters.
— A message is returned when data are updated on the processor.
— A processor must be connected and powered to be able to enter its configuration screen.

Note current values are shown in the box in red.
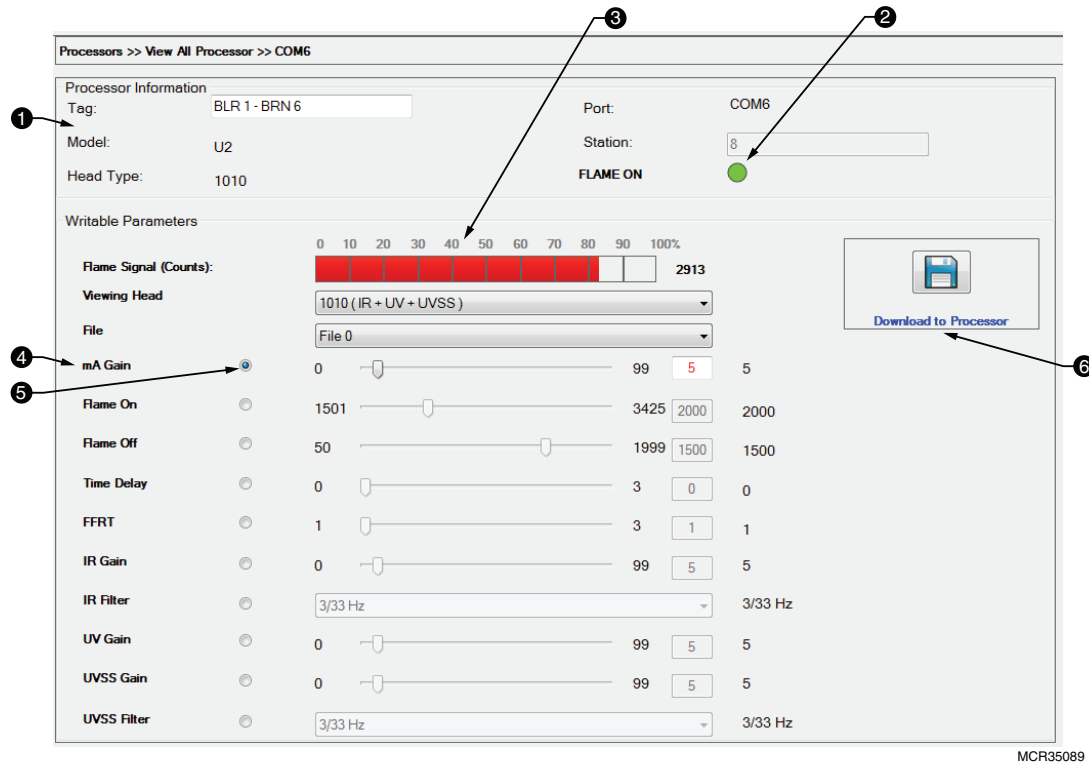
Fig. 16. Configuration screen for U2.

Each processor individual adjustment may be carried out from this screen.

The Configuration Screen (example shown in Fig. 16) contains:

1. Processor information and model number are displayed.
2. Flame On 🟢 and Flame Off 🔴 indicator is displayed.
3. Real time Flame signal is displayed
4. Only pertinent adjustments are displayed.
5. Radio button on left permits selection of each adjustment. Note that only one adjustment may be selected at a time.
6. When an adjustment is made it must be accepted and "Downloaded to Processor" before the next adjustment may be made. On exit without saving, user will be reminded that data has not been downloaded.

Before and during making adjustments
a. Viewing Head – <u>Ensure the correct viewing head is displayed.</u> It is very important to ensure the correct viewing head is selected. Note, P531 and P532 support three (3) viewing heads.
b. File – <u>Ensure the correct file is displayed.</u> Selecting the correct file is very important. Note, only active file parameters are in operation. FLAME-TOOLS-PC allows configuration of additional files but they cannot be active unless permitted by external selection. For example, for P520,

P522, P531 and P532 File A or B (in case of P531 and P532 – Primary or alternate), file is selected by power specific terminals (Refer to appropriate manuals for detail).
For U2, there are eight (8) files available, of which two (2) files are selected by external switching.
c. Flame On – 0 to 29 for 700 series and 0 to 3500 for other processors. Flame On setting must be at least one digit higher than Flame Off setting.
d. Flame Off – 0 to 29 for 700 series and 0 to 3500 for other processors. Flame Off setting must be at least one digit lower than Flame On setting.
e. Time Delay – delay before flame recognition from 0 to 3 seconds in four steps: 0, 1, 2 and 3 seconds.
f. FFRT – delay before Flame relay is de-energized by predetermined time. Adjustment is in three steps: 1, 2 or 3 seconds.
g. UV Gain – UV Gain adjustment. For 700, it is 0–29; for other systems it is 0–99.
h. IR Gain – IR Gain adjustment. For 700, it is 0–29; for P5xx series, refer to the manual; for U2 it is 0–99.
i. IR Filter – This is applicable to P5xx and U2 only.

NOTE: Some viewing heads do not allow IR Gain and IR Filter to be modified remotely. In these cases the two parameters are displayed as read-only and they cannot be changed.

Confirmation of change in parameter
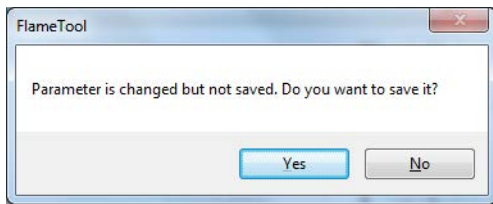
Fig. 17.

When a change in parameter is made without downloading to the processor, FLAMETOOLS-PC will remind user with a pop up window. User must select "Yes" to download or "No" to discard the changes.

Configuration Accepted
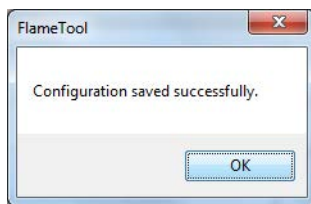
Fig. 18.

When changed parameters are accepted, the above screen will be displayed.

It is recommended to observe the effect of a change before making any other change(s).

Downloading Changes to the Processor
Before exiting the configuration or before making another change, new data needs to be downloaded to the processor.

Click the "Download to Processor" button.
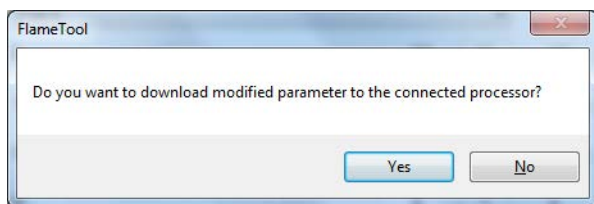
Fig. 19.

1. Selecting "Yes" will download new setup data to the processor.
2. Selecting "No" will abort changes and revert back to previous menu

IMPORTANT:
After downloading the new data to processor wait for it to take effect on the operation before making any further changes.

Selecting viewing head or file
Whenever a different file or head is selected from the menus, the tool tries to load the new configuration from the processor. The below confirmation box appears when the appropriate configuration is found and loaded successfuly.
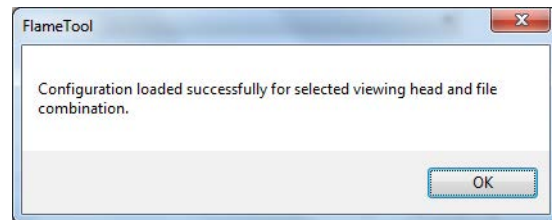
Fig. 20.

Incompatible viewing head
When an incompatible viewing head or invalid file is selected, the following screen will be displayed.
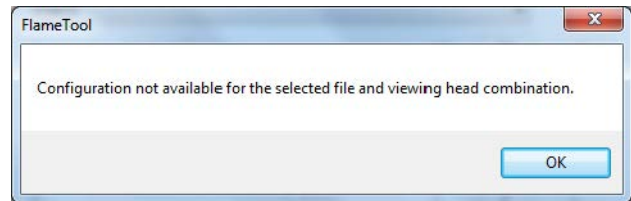
Fig. 21.

Select "OK" to acknowledge and exit the menu.

No parameters are available for modification and all radio buttons are disabled until a valid combination of viewing head and file is selected.

Chapter 8
Configuration Screen for 700, 52X, P53X Processors and All in One U2

NOTE: ACCESS TO CONFIGURATION REQUIRES PASSWORD

Configuration for 700 Processor

Fig. 22. 700 Processor.

Configuration for P520 and P522 Processors

Fig. 23. P520/P522 Processor.

NOTE: P520/P522 includes only two files – A and B as indicated by 0 and 1. File parameters may be adjusted from FLA-METOOLS-PC. However, file cannot be made active from FLAMETOOLS-PC. Channel select on file permits selection of active file. The same applies to viewing head. P520/P522 supports two viewing head with only one viewing head in service at any given time.

Configuration for P531 and P532 Processors

Fig. 24. P531/P532 Processor.

P531 and P532 support three viewing heads, two of which must be S55xBE and one must be S70x. In addition, two files are supported for each viewing head connected to the processor. Files are designated as 0 or 1 to be consistent with all product groups for viewing heads S55xBE. In this case Primary File is represented by 0 and Alternate file is represented by 1.

NOTE: Viewing head connected to P531/P532 are displayed under the processor information. The viewing head 1, 2 and 3 are wired to the processor as per P531/P532 manual.

Configuration U2 "All In One" Flame Monitoring System

Processors >> View All Processor >> COM6
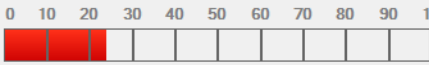
Processor Information
Tag: BLR 1 - BRN 6   Port: COM6
Model: U2   Station: 8
Head Type: 1010   **FLAME ON**

Writable Parameters

Parameter		Min		Max	Value	Current
Flame Signal (Counts):						2073
Viewing Head		1010 (IR + UV + UVSS)				
File		File 0				
mA Gain	⦿	0		99	5	5
Flame On	○	1501		3425	2000	2000
Flame Off	○	50		1999	1500	1500
Time Delay	○	0		3	0	0
FFRT	○	1		3	1	1
IR Gain	○	0		99	5	5
IR Filter	○	3/33 Hz				3/33 Hz
UV Gain	○	0		99	5	5
UVSS Gain	○	0		99	5	5
UVSS Filter	○	3/33 Hz				3/33 Hz

Download to Processor

Fig. 25. U2.

NOTE: U2 includes several models. Models may include a single sensor, dual sensor or three sensors. The configuration screen above is for three sensors.

Model with UVTron only will allow to adjust parameters pertinent to UVTron only. Model with IR sensor will allow to adjust parameters pertinent to IR only. Models with combination sensors will allow to adjust parameters pertinent to that model.

Chapter 9
Monitoring Mode

In monitoring mode, operator can view each processor status but do not have access to make changes.

Access to the monitoring and logging menu is not password protected.

Monitor Home Page
Each viewing head is represented by one cell (see Fig. 26). Therefore processors with multiple viewing heads occupy multiple cells.

Default organization of cells is into 3 rows and 2 columns. The default number of rows and columns can be changed in Settings - Logging screen.

Cell positions can be re-ordered by dragging a cell and dropping it to a new position. If a cell is dropped to a place already occupied by another cell, the two cells exchange positions.

One row of empty cells is always available at the very bottom.

Each block will display the following:

1. Model number
2. Associated Viewing head model number
3. Viewing head number for P531 and P532
4. Com and Address
5. Device name or tag
6. Flame On 🟢 and Flame Off 🔴 indicator
7. Real time display if online ⚓ or offline ⚓
8. Real time Flame Signal bar display and counts
9. Flame On count

10. Real Time temperature display for all models except 700
11. UV Gain setting –where applicable
12. IR gain setting- where applicable
13. IR filter setting –where applicable
14. File selection –where applicable
15. Flame On threshold setting (Relay On for 700)
16. Flame Off threshold setting (Relay Ratio On/Off for 700). In red if flame signal is below this threshold.
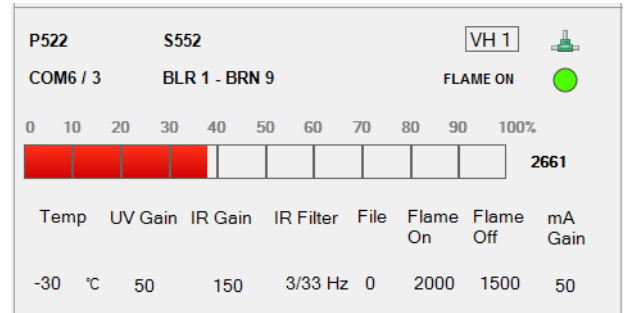17. mA gain Setting

Fig. 26.

Monitor Detail Display
By double-clicking on the cell of the selected processor, detail information is displayed. See Fig. 27.

To revert back to multiple display, close the Monitoring detail display window.
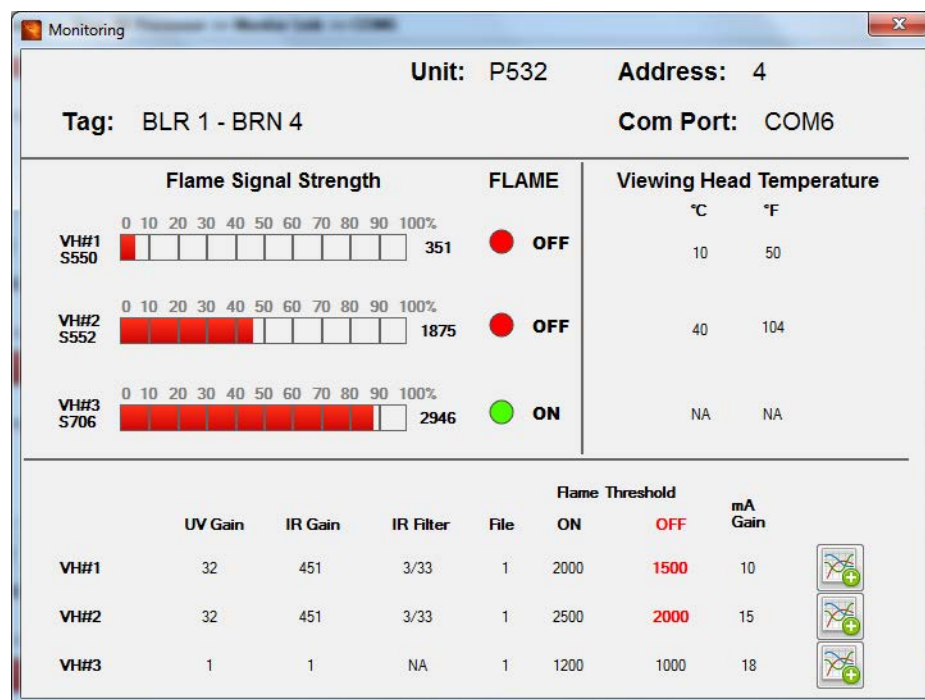

Fig. 27.

Chapter 10
Logging and Trend Charts

FLAMETOOLS-PC allows user to Log flame signal and temperature. The sample time, start and end time, Flame On threshold setting and Flame Off threshold settings are displayed.

Real time flame signal is displayed.

To display Logging and Trend Chart screen, click on the chart

icon ![icon] in the bottom right corner of the Monitor Detail

Display.

1. Live – If selected, the chart shows the immediate real time data
2. Start Time / End Time – Select the range of dates for displaying historical data
3. Load – Display the historical data in the selected date range.
4. Printer Icon – Send the actual chart display to printer

5. Show Data In Grid – Enable or Disable displaying the logged data in tabular format
6. File Icon – Export the data into a file in CSV format (can be opened in MS Excel or equivalent application).

⚠ CAUTION
Logging must be enabled to display Logging and Trend Charts.
Logging can be enabled or disabled from the Settings / Log Settings page.

We recommend a maximum of two processor's data be logged at the same time. The number is limited only by the PC's memory and the speed of ModBus communication. It is not limited by FLAMETOOLS-PC.
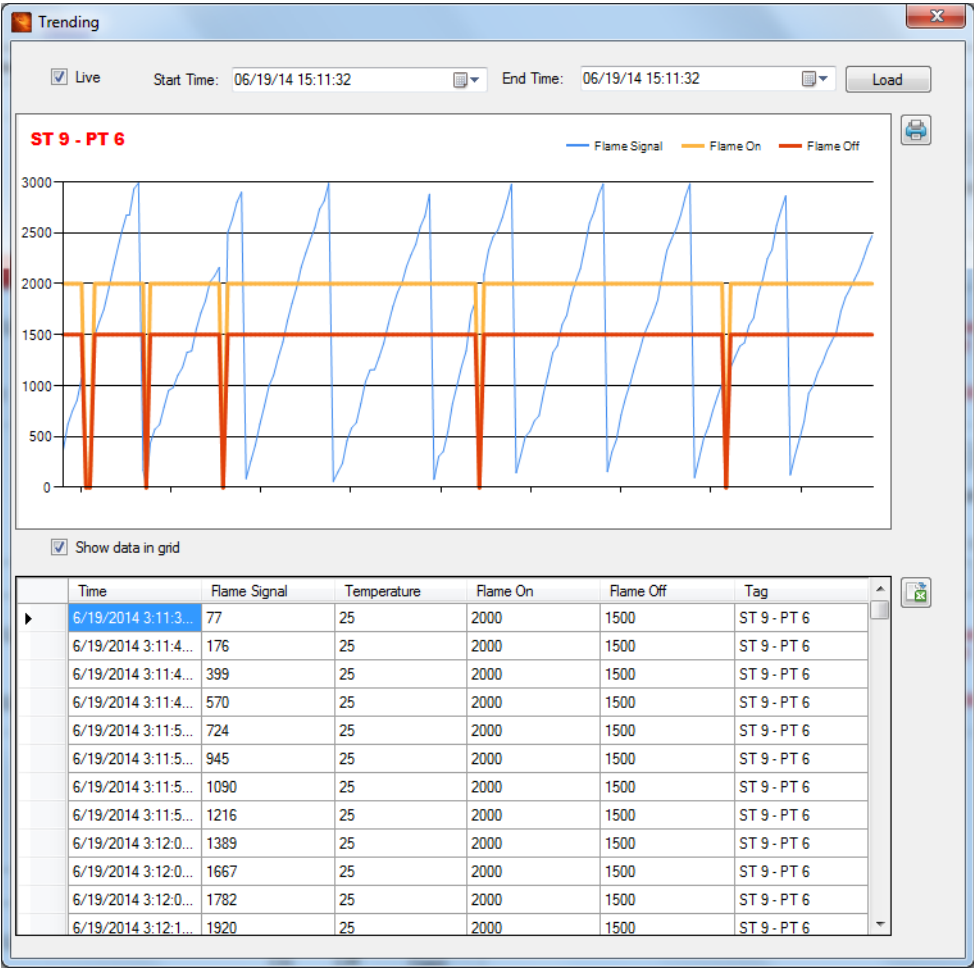

Fig. 28.

Chapter 11
Log Settings Page

From the Home Page select "Settings" —> "Log Settings".

1. Select Record period in seconds. In the case where multiple processors are monitored at the same time, the actual recording period might be longer due to the limited speed of ModBus communication.
2. Select Storage time in minutes.

3. Select Flame Signal and Temperature logging (For 700 only Flame Signal will be recorded).
4. For P531 and P532, select Alarm logging (refer to appropriate manual for detail).
5. To store data for future reference, select storage path.
6. Enable logging for each processor individually.
7. Select Apply Changes.

Fig. 29.

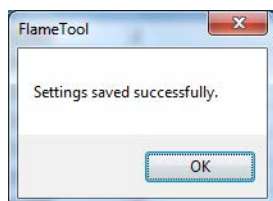**Saving Logging Setting**
1. Select OK to Save settings.

Fig. 30.

Chapter 12
Saving Configuration For Future Reference

After configuration of each processor is complete, it is recommended to save configuration to a storage media (hard drive, USB stick, or other external device).

1. Select Save As from the header section
2. Type in or select path or location

3. Select "Save"

This procedure stores the configuration as currently displayed. Therefore, to create a full processor configuration backup, every available combination of viewing head and file must be saved individually.
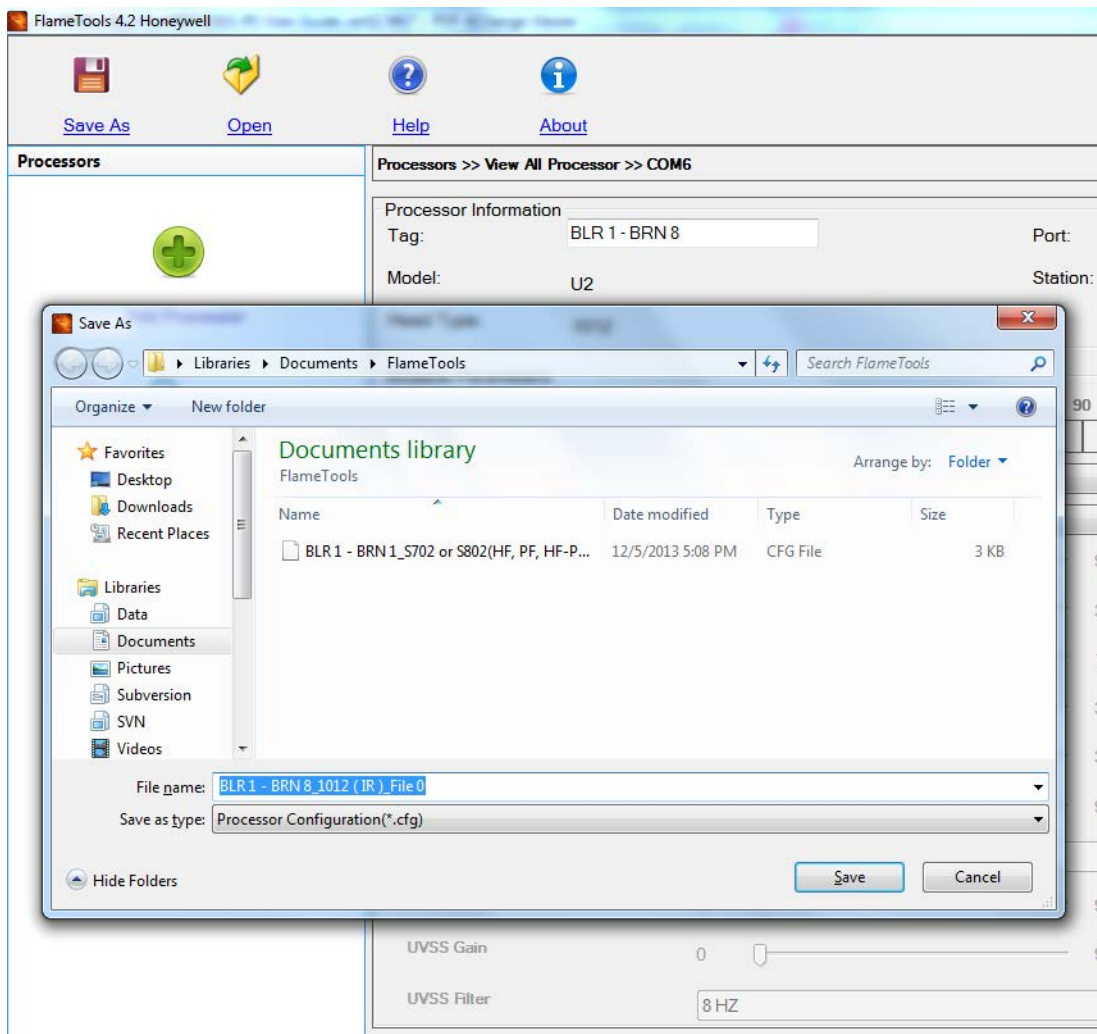

Fig. 31.

Chapter 13
Opening Configuration Offline

To load and work with a previously saved configuration:

1. Click on the Open icon in the top menu bar
2. Select the location and the file with configuration
3. Select Open

The selected offline configuration file will be analyzed and appropriate configuration screen specific to the processor model, viewing head type and file will be displayed along with the values for each parameter from the offline file. The configuration can be downloaded to an actual processor, or saved again to a file.
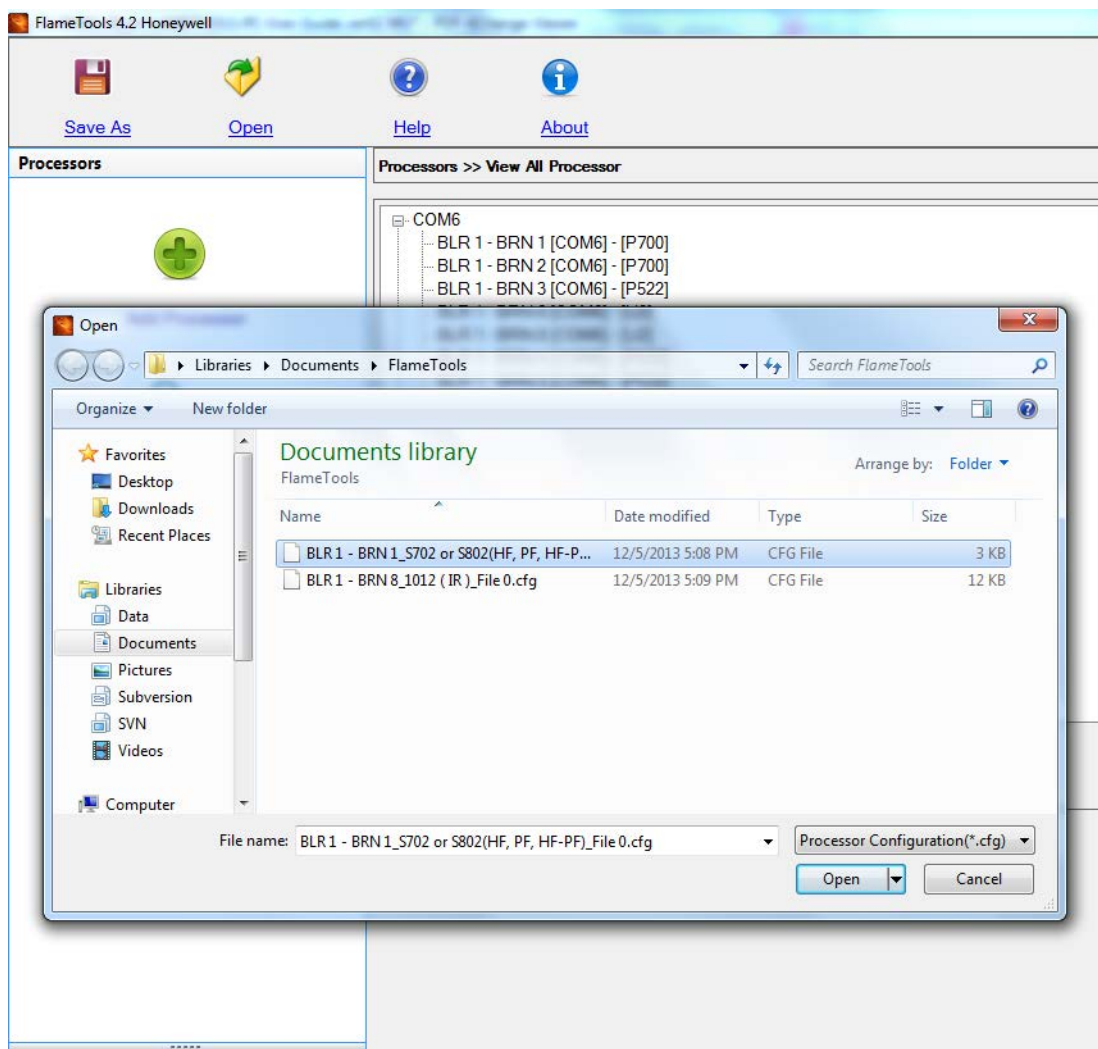

Fig. 32.

For More Information

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