

Instructions

Enhanced Flame Inspector Software
for use with Det-Tronics
X-Series Flame Detectors



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Enhanced Flame Inspector Software for use with Det-Tronics X-Series Flame Detectors

NOTE

Changing the detectors settings could result in a configuration that has not been 3rd party performance approved.

IMPORTANT!

For flame detectors with LON output, the EQP controller will override any settings made with the Enhanced Flame Inspector software, with the exception of the Hangar Mode on the X3301.



DESCRIPTION

Det-Tronics X-Series Flame Detectors record pertinent configuration and event information in the device's non-volatile memory. Important detector status data such as power-up/down, faults and alarms are date and time stamped as they occur and stored in the electronic module located inside the detector enclosure. The Inspector Monitor software allows the user to later upload this data to a personal computer (PC) where it can be displayed, saved and/or printed.

Enhanced Flame Inspector Software is compatible with all versions of X3301, X3302, X9800, X5200 and X2200 flame detectors.

FEATURES

- Data logging capability for Det-Tronics flame detectors.
- Data stored in non-volatile memory.
- Data can be uploaded to a PC.
- Data can be viewed, stored to a file, or printed.

HARDWARE REQUIREMENTS

Enhanced Flame Inspector software is designed for PCs using the Windows operating system.

A minimum of 16 megabytes of RAM are required; however, 32 or more megabytes are recommended for optimum performance. The software requires a color monitor with a minimum resolution of 640 by 480.

A hard drive with at least 10 megabytes of free space is also required. The system can utilize any properly installed printer.

INSTALLATION

WIRING

Hardwired Method

It is recommended to connect the detector's RS-485 terminals (terminals 23 and 24) to the PC at the time of installation. This will allow Inspector Monitor to function at any time, without the need to open the detector housing and remove the sensor module ("front" half of the detector) prior to test. A RS-485 to USB converter (p/n 103881-001) is required for proper communication.

NOTE

The PC must always be located in a non-hazardous controlled location.

Modbus communications are only available on X-series detectors that have Relay, Relay/4-20mA, and Pulse outputs. Modbus communications are not available on X-series detectors that have HART or EQP outputs.

NOTE

Communication between the sensor module and the PC uses the Modbus RTU protocol, with the sensor module configured as a Modbus slave.

Alternate Method

NOTE

The alternate method must be used with EQP and HART models since these detectors are not furnished with RS-485 output terminals.

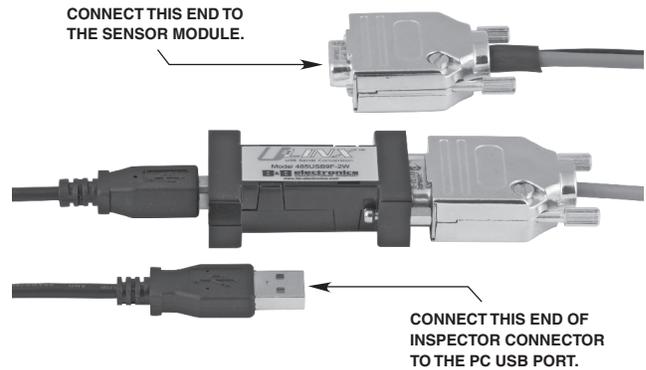
This method requires removal of the sensor module from the detector housing for testing in a control room. A 5/64 inch Allen wrench is needed to loosen the lock screw when removing the module.

To remove the sensor module follow these steps:

1. Remove power from the detector.
2. Using the allen wrench supplied with the detector, loosen the locking screw on the side of the housing.
3. Unscrew the sensor module and remove it from the front of the detector housing.



Figure 1— Removing the Sensor Module



A2485

Figure 2—Inspector Connector with RS-485 to USB Converter

⚠ WARNING

Do not open the detector assembly in a hazardous area when power is applied.

Connector includes a power supply that can plug into any standard 120/240 vac outlet.

The Inspector Connector utilizes an integral RS-485 to USB converter (see Figure 2) to ensure proper communication.

Connect the converter end of the Inspector Connector to the USB port of the PC. Connect the end with the power supply connection to the sensor module (see Figure 3).



Figure 3—Connecting Inspector Connector to sensor module

SOFTWARE

The Enhanced Flame Inspector software can be run directly from the CD drive or it can be installed onto the hard drive. To install the software onto the hard drive, use the standard Windows procedure to copy the file to a folder. To create an optional shortcut, right click on the file in the folder and click on Create Shortcut. Drag the shortcut icon to the desktop window. Double click on the shortcut icon to run the program.

STARTUP

Using the RS-485 to USB converter requires installation of the USB drivers before the Enhanced Flame Inspector software can be opened. With the USB converter plugged into an available USB port on a PC, install the drivers on the CD ROM. Upon successful installation the device will be recognized as an additional COM port in the Windows Device Manager. Start the Enhanced Flame Inspector software, and the COM Port window should be displayed (see Figure 4). Select the correct serial or USB port from the pull-down menu and click find device.

The setup window will be displayed (see Figure 5). Ensure that the face of the flame detector you are connected to is in the top left portion of the screen. This indicates proper communication between the detector and the computer. If proper communication is

not established (the face of the detector has not appeared on the screen), check for the following conditions:

- Port configured for modem or other device, e.g. PDA.
- Port opened for another application that has not properly closed the serial port (Error message: "COM 1 already open").
- Enhanced Flame Inspector program opened twice.
- Detector's Modbus address is not set to 1 (refer to the "Set Default MB Address" section of this manual).

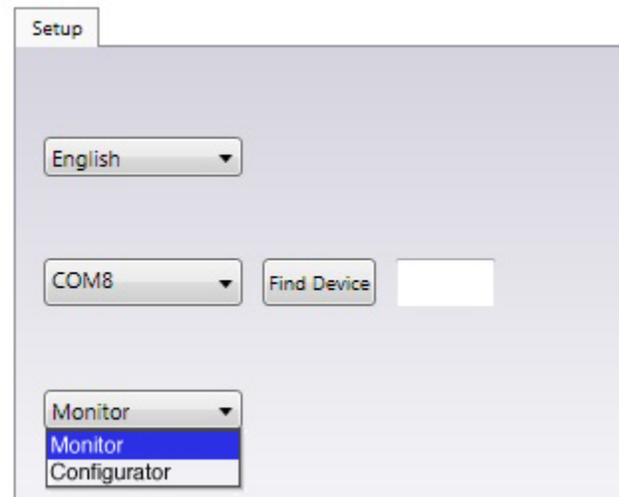


Figure 4— Communication Port Window

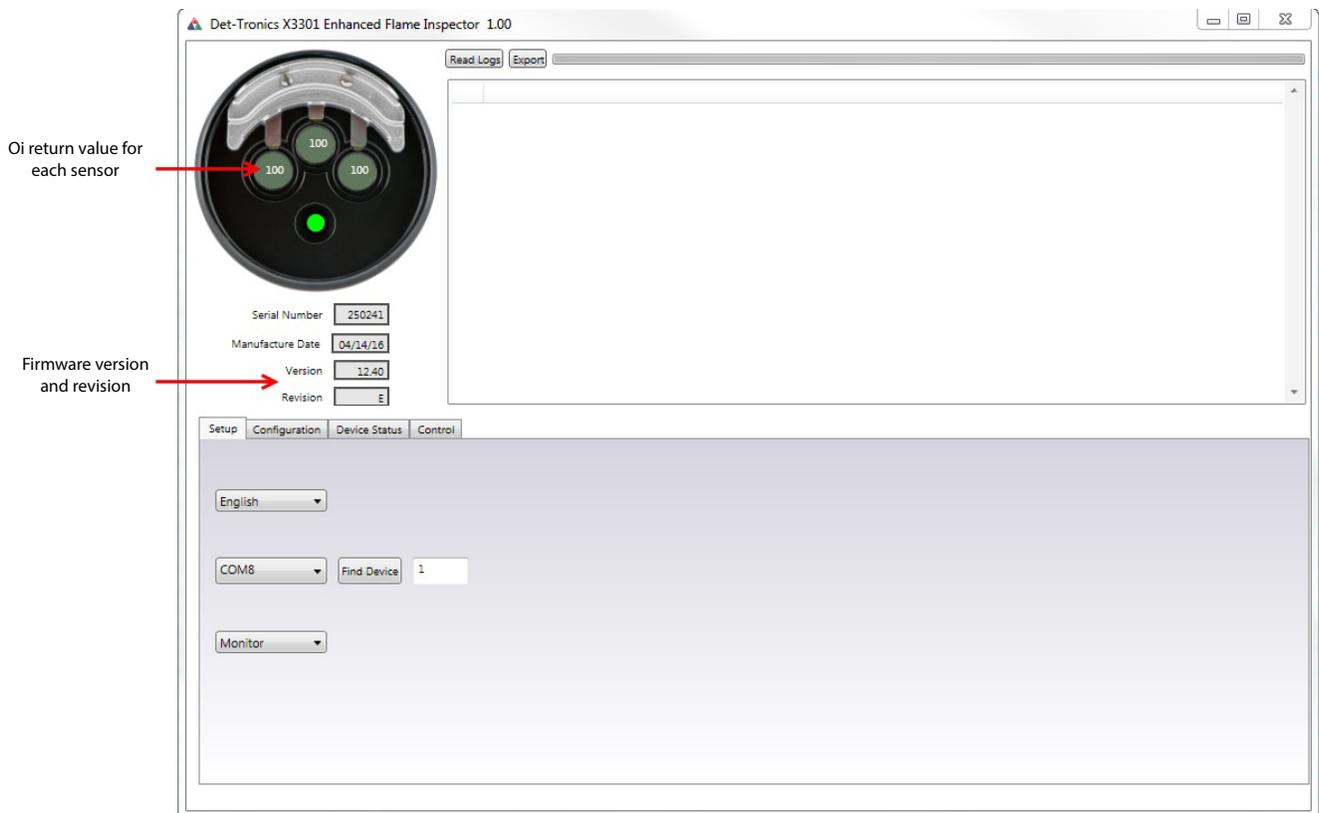
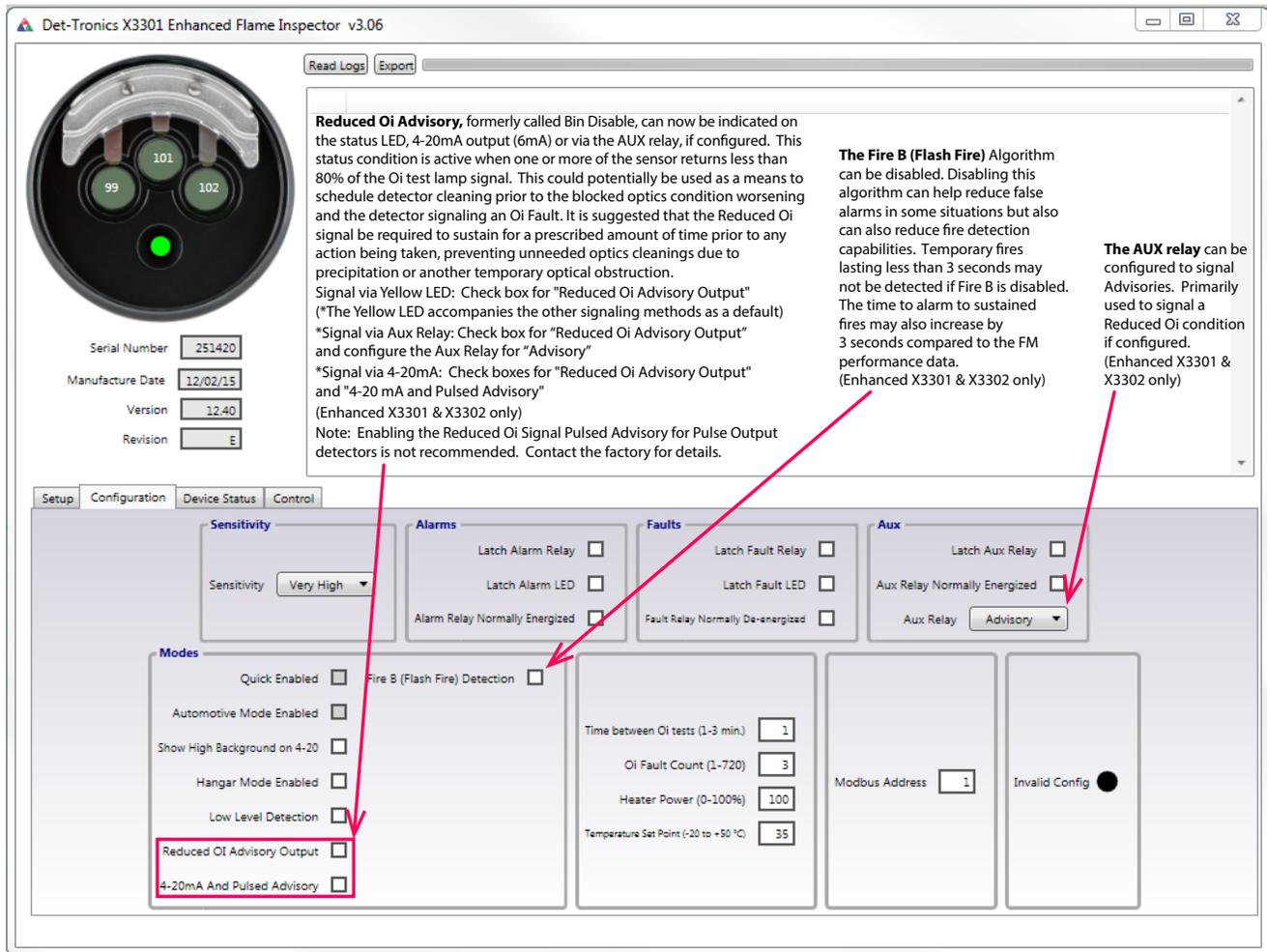
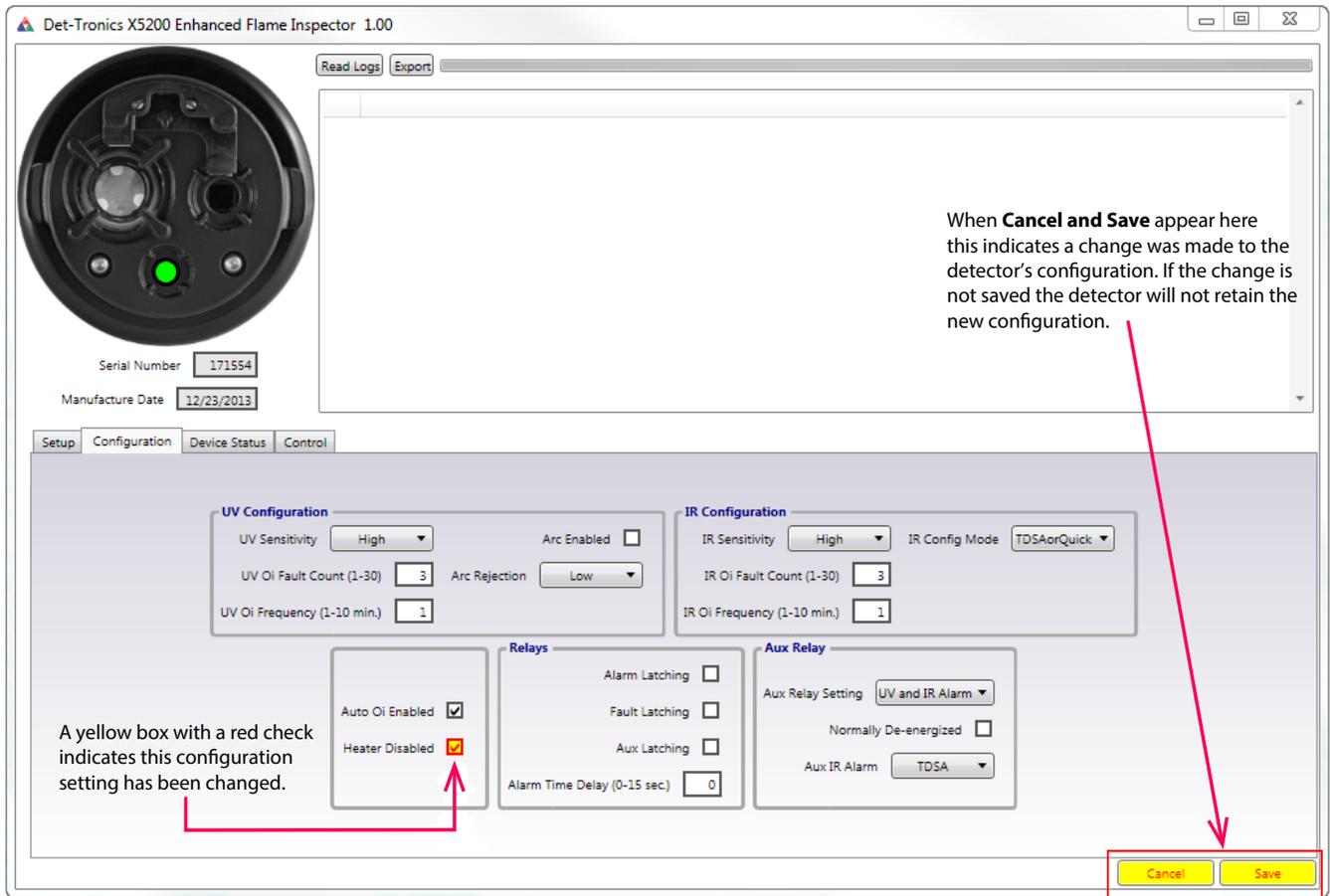


Figure 5— Setup Window



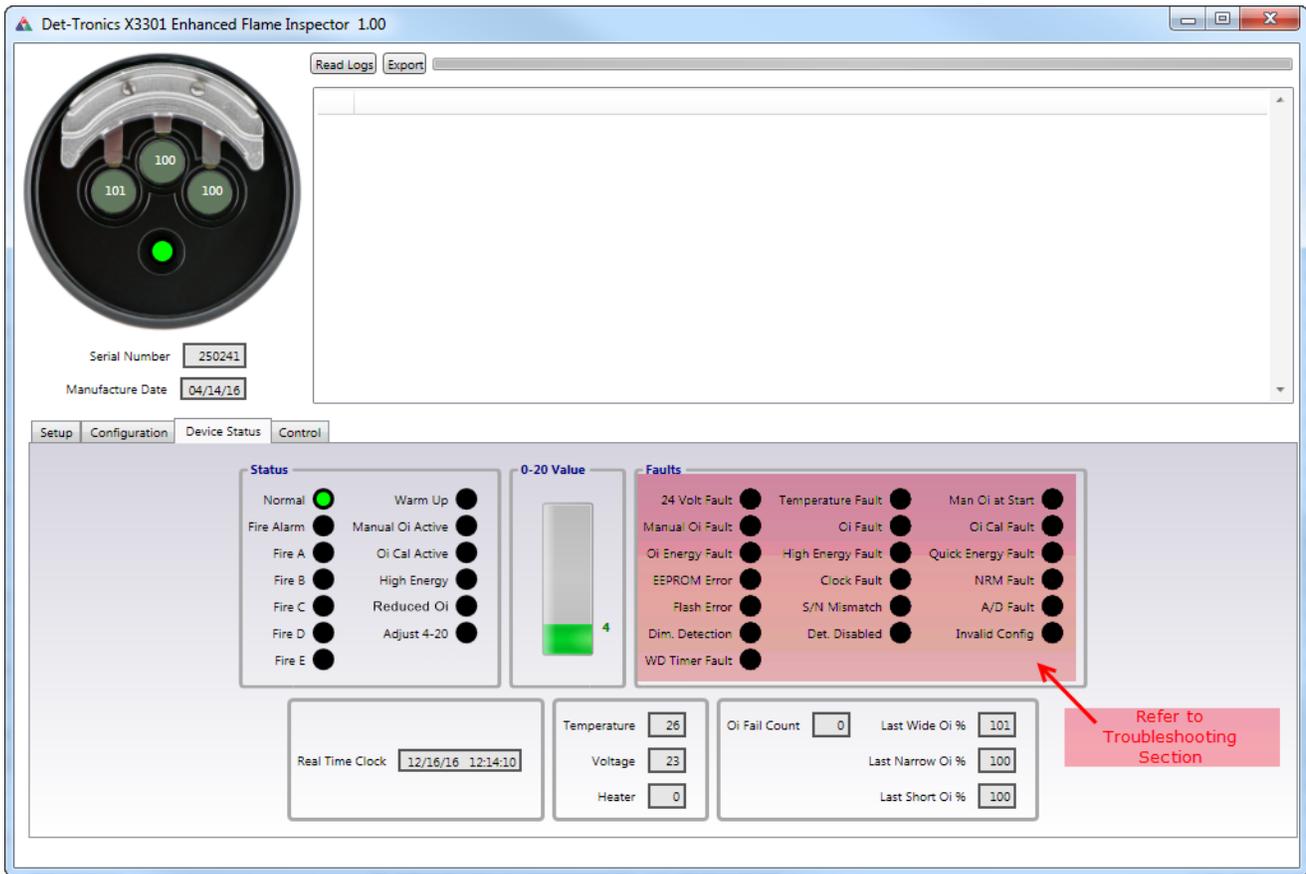
Configuration Option	Description
Sensitivity	Changes the sensitivity level of the detector.
Latch Alarm Relay	Box is checked if the alarm relay and its corresponding LED are set for latching.
Latch Alarm LED	Box is checked if the alarm relay and its corresponding LED are set for latching.
Alarm Relay Normally Energized	
Latch Fault Relay	Box is checked if the fault relay and its corresponding LED are set for latching
Latch Fault LED	Box is checked if the fault relay and its corresponding LED are set for latching
Fault Relay Normally De-energized	
Latch Aux Relay	Box is checked if the auxiliary relay coil is normally energized.
Aux Relay Normally Energized	
Quick Enabled	Box is checked if the quick fire feature is enabled.
Automotive Mode Enabled	Box is checked if the automotive mode feature is enabled.
Show High Background on 4-20	Box is checked if the user want a mA output change when high IR background is detected.
Hangar Mode Enabled	Box is checked if Hangar Mode is enabled. When enabled the detector will qualify the fire for 7-9 seconds before it outputs a fire alarm.
Low Level Detection	Box is checked if Low Level Fire Detection (Fire D) is enabled. Only applies to Very High Sensitivity X3301.
Time Between oi Tests	Automatic oi tests are performed at 1 to 30 minutes.
oi Fault Count	Number of consecutive oi failures required to produce an oi fault.
Heater Power	Power setting of the detector's optics heater (percentage of full power).
Temperature Set Point	Internal target temperature that the heater will attempt to maintain (in degrees C).
Modbus Address	
Invalid Config	

Figure 6— X3301, X3302 Configuration tab



Configuration Option	Description
UV Sensitivity	Factory set for low, medium, high, or very high sensitivity.
UV oi Fault Count	Number of consecutive oi failures required to produce an oi fault at the UV detector (field selectable from 1 to 30).
UV oi Frequency	Automatic oi test is performed on the UV sensor at intervals between one and ten minutes.
Arc Enabled	Box is checked if arc rejection is enabled for the UV detector.
Arc Rejection	Arc rejection for the UV detector can be set to low, medium, high, or very high.
IR Sensitivity	Factory set for low, medium, high, or very high sensitivity.
IR oi Fault Count	Number of consecutive oi failures required to produce an oi fault at the IR detector (field selectable from 1 to 30).
IR oi Frequency	Automatic oi test is performed on the IR sensor at intervals between one and ten minutes.
IR Config Mode	Indicates whether the IR detector is programmed to use TDSA or TDSA/Quick fire algorithm.
Auto oi Enabled	Box is checked if automatic oi is enabled.
Heater Disabled	Box is checked if the detector's optics heater is disabled (field is selectable).
Alarm Latching	Appropriate box is checked if the alarm fault and/or auxiliary relay is set for latching opening.
Fault Latching	Appropriate box is checked if the alarm fault and/or auxiliary relay is set for latching opening.
Aux. Latching	Appropriate box is checked if the alarm fault and/or auxiliary relay is set for latching opening.
Alarm Time Delay	This will delay sending the fire alarm message until the fire alarm has been generated uninterrupted for the specified time.
Aux. Relay Setting	The selected status condition will activate the auxiliary relay.
Normally De-Energized	Box is checked if the auxiliary relay is set for normally de-energized operation.
Aux. IR Alarm	Appropriate selection is made to indicate whether the auxiliary relay output uses TDSA and/or Quick fire algorithm.

Figure 7—X5200, X2200, X9800 Configuration tab



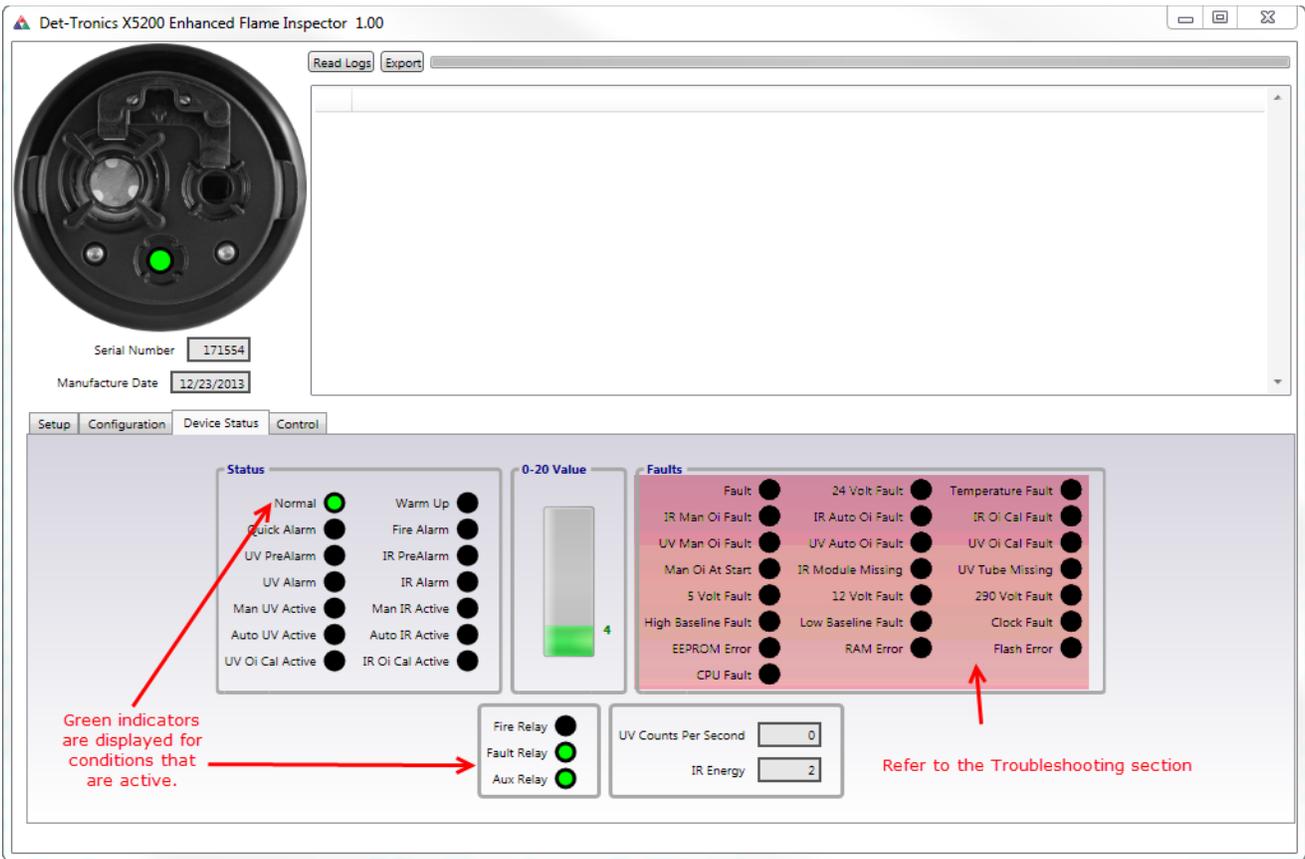
Device Status Options	Description
Normal	Power is applied and no faults are occurring.
Fire Alarm	A fire condition has been detected. This indicator also turns on to signal a successful manual oi test.
Fire A, B, C, D, E	See X3301/X3302 Event Log Descriptions section (page 13).
Warm Up	Detector is in the power-up time delay mode.
Manual oi Active	Manual oi test in progress.
oi Cal Active	oi calibration is in progress.
High Energy	Background IR energy detected
Reduced oi	One or more of the IR sensors is receiving 80% or less oi signal.
Adjust 4-20	4-20mA calibration active
0-20 Value	Signal level of 4-20 mA output (signal is displayed even if detector has no 4-20 mA output).
Faults	Refer to Troubleshooting section of this manual
Real Time Clock	Current date and time used by the detector when logging events.
Temperature	Actual internal temperature of the detector (in degrees C).
Voltage	Actual supply voltage at the detector.
Heater	Actual heater output (in percentage of full output).
oi Fail Count	Current number of consecutive automatic oi failures counted.
Last wide oi % Last narrow oi % Last Short oi %	**Percent of calibrated oi test signal received by the corresponding sensor should be 90 to 110%.

Note: All information displayed on this window is read only. X3301 window shown.

* If fault remains, reference the "Troubleshooting" section of this manual.

** If % level is not between 90% to 100%, clean detector windows and **oi** reflector plate, then recheck the % level. If % level remains out of range, calibrate the **oi** (the detector should be covered to limit any IR interference that might affect the calibration process).

Figure 8— X3301, X3302 Device Status tab



Device Status Options	Description
Normal	Power is applied and no faults are occurring.
Quick Alarm	Quick fire alarm signal generated.
UV Pre-Alarm	UV sensor in pre-alarm condition.
UV Alarm	UV sensor generating fire alarm signal.
Manual UV Active	Manual oi test on UV sensor in progress.
Auto UV Active	Automatic oi test on UV sensor in progress.
UV oi Cal Active	oi calibration of UV sensor in progress.
Warm-Up	Detector in power-up time delay mode.
Fire Alarm	A fire condition has been detected (both UV and IR in alarm).
IR Pre-Alarm	IR sensor in pre-alarm condition.
IR Alarm	IR sensor generating fire alarm signal.
Man IR Active	Manual oi test on IR sensor in progress.
Auto IR Active	Automatic oi test on IR sensor in progress.
IR oi Cal Active	oi calibration of IR sensor in progress.
0-20 Value	Signal level of 4-20 mA output (signal is displayed even if detector has no 4-20 mA output).
Faults	Refer to the Troubleshooting section
Fire Relay	Fire relay energized.
Fault Relay	Fault relay energized.
Aux. Relay	Auxiliary relay energized.
UV Counts Per Second	Indication of how much UV is being detected.
IR Energy	Indication of how much IR is being detected.

Note: All information displayed on this window is read only. X5200 window shown. X9800 and X2200 use the same with with the appropriate fields and indicators active.

Figure 9— X5200, X2200, X9800 Device Status tab

DETERMINING DETECTOR CONFIGURATION AND PROGRAMMING

To determine the current settings for the detector, click on the “Configuration” tab. The Configuration window is displayed (see Figures 6-7).

NOTE

Fields in the Configuration window that are grayed-out are not field selectable.

NOTE

If you would like to make changes to the detector’s configuration, navigate to the setup tab and change the Flame Inspector mode from Monitor (default) to Configurator (See Figure 4).

IMPORTANT!

For flame detectors with EQP output, the EQP controller will override any settings made with Enhanced Flame Inspector (with the exception of X3301 hangar mode).

To prevent this override, flame detectors with EQP output should be changed in S³ (see Instruction Manual 95-8560 for details).

DETERMINING CURRENT STATUS CONDITIONS

Click on the Device Status tab to determine the current status of the detector. The status window (see Figures 8 - 9) displays various status information about the detector. For more information on detector status conditions refer to the event log description and troubleshooting sections of this manual.

NOTE

All information on this window is read only. Indicators that are “grayed-out” are “Off”.

MANUAL **oi** TEST

Manual **oi** provides the same calibrated test as automatic **oi**, and in addition, actuates the alarm relay to verify proper operation. Manual **oi** can be performed at any time and eliminates the need for testing with a non-calibrated external test lamp.

The test can be initiated in one of three ways:

- by placing a magnet at the marked location (mag **oi**) on the outside of the detector.

- via an external switch (refer to detector manual for proper wiring).
- by Enhanced Flame Inspector software.

NOTE

If the sensor module is removed from the detector housing for testing, only the Enhanced Inspector method can be used.

MANUAL **oi** INITIATED BY MAGNET / SWITCH

⚠ CAUTION

Since the detector is fully operational, the test requires disabling of all extinguishing devices to avoid release resulting from a successful test.

Click on the Status button to display the Status window.

1. Initiate the manual **oi** test (actuate the external switch or place the test magnet at the marked location on the outside of the detector enclosure). The magnet or switch must be held until the test is complete.
2. The Normal indicator on the Status window turns off.
3. Hold the switch or magnet for approximately 6 seconds. The manual **oi** test is successful if:

At the PC:

Fire Alarm indicator turns on (red).
Manual **oi** Active indicator turns on (red).

At the detector:

Fire Alarm Relay changes state.
LED turns red, exception: pulse output x-series detectors.

4. Remove the magnet or release the test switch.

At the PC:

Fire Alarm indicator turns off.
Manual **oi** Active indicator turns off.
Normal indicator turns on (green).

At the detector:

Fire Alarm Relay returns to Normal condition.
LED turns green.

If the detector has successfully completed the test, the fire extinguishing devices that were disabled for the test can be returned to normal operation.

5. If the detector fails the test (i.e. less than half of the detection range remains), no alarm is produced and a fault is generated. A failed manual **oi** test is indicated by:

At the PC:

Manual **oi** Active indicator turns off.
Manual **oi** Fault indicator turns on (amber).

At the detector:

Fault Relay becomes de-energized.
LED turns amber.

6. Remove the magnet or release the test switch. The Manual **oi** Active indicator turns off, and the Manual **oi** Fault indicator remains on.
7. The fault indication can be reset by momentarily applying the magnet or manual **oi** switch.
8. Clean the detector viewing windows following the cleaning procedure described in the "Maintenance" section of the detector instruction manual.

MANUAL **oi** TEST INITIATED BY ENHANCED FLAME INSPECTOR

1. Click on the Control tab. The Control window is displayed (see Figures 10 and 11).
2. Two options are available for the manual **oi** test:
 - Clicking Start Active Manual **oi** will activate the Fire Alarm Relay and generate a 20 mA output as part of a successful test.
 - Clicking Start Passive Manual **oi** does not activate the relay or the 4-20 mA output. A successful test is indicated by the detector LED in the Status window. Except for the Fire Relay and 4-20 mA output, all other aspects of the test are identical.

⚠ CAUTION

*If the detector is fully operational (the sensor module is not removed from the detector housing), an active manual **oi** test requires disabling of all extinguishing devices to avoid release resulting from a successful test.*

Click on the appropriate button to initiate the test. If Start Active Manual **oi** was selected, a dialog box appears asking if you want to start a Manual **oi** test. If all extinguishing devices are disabled, click Yes to initiate the test. If Start Passive Manual **oi** was selected, the test begins immediately.

3. Click on the Status button to display the Status window. (Progress and results of the Manual **oi** test cannot be monitored from the Control window).
4. The Manual **oi** Active indicator turns on (red). If the test is successful:

At the PC:

Fire Alarm indicator turns on (red).
The 4-20 mA indicator reads 20 mA.

At the detector:

Fire Alarm Relay changes state.
The 4-20 mA output goes to 20 mA.
LED turns red.

5. The Inspector program automatically turns off the Fire Alarm and Manual **oi** Active indicators, turns on the Normal indicator (green), resets the Fire Alarm relay and LED, and sets the 4-20 mA output to 4 mA.

If the detector has successfully completed the test, any fire extinguishing devices that were disabled for the test can be returned to normal operation.

6. If the detector fails the test (i.e. less than half of the detection range remains), no fire alarm is produced and a fault is generated. A failed manual **oi** test is indicated by:

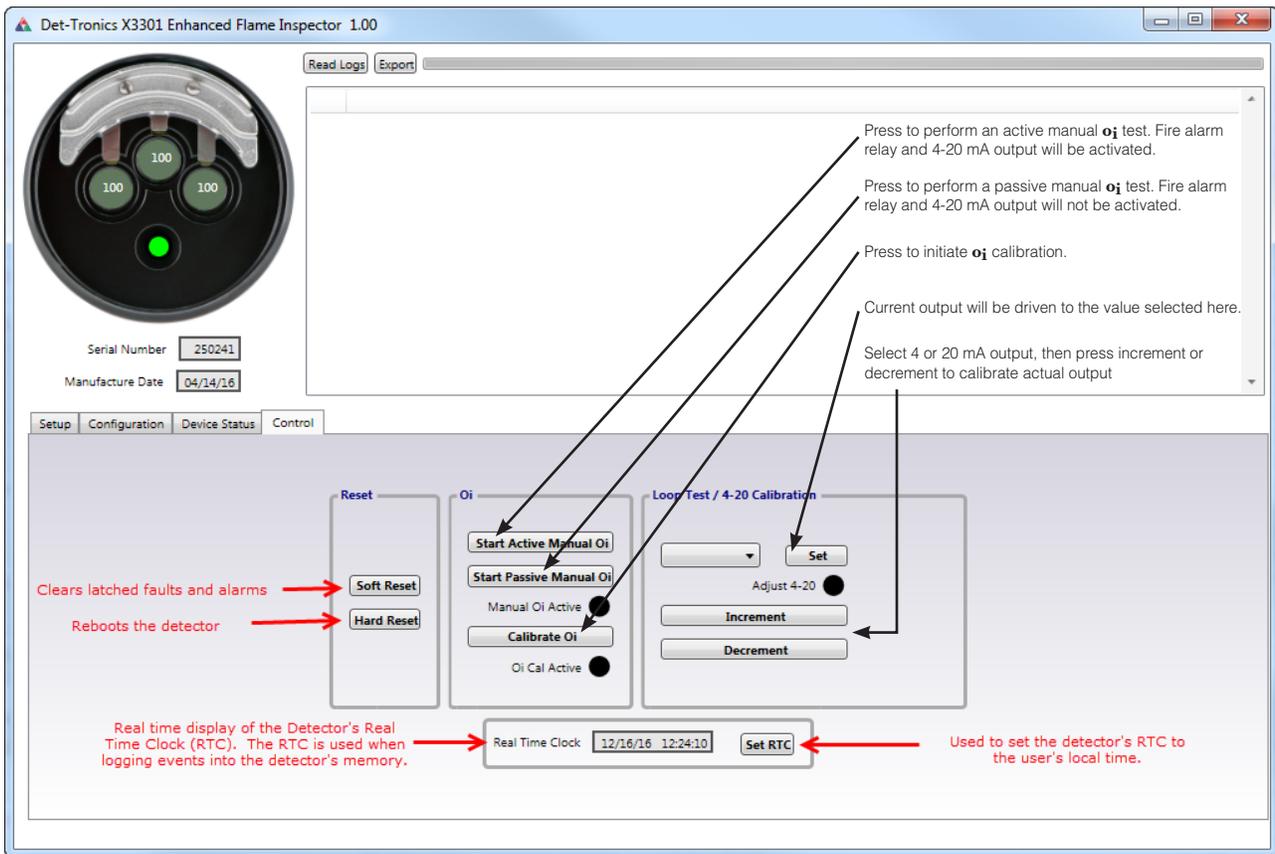
At the PC:

Manual **oi** Active indicator turns off.
Manual **oi** Fault indicator turns on (amber).

At the detector:

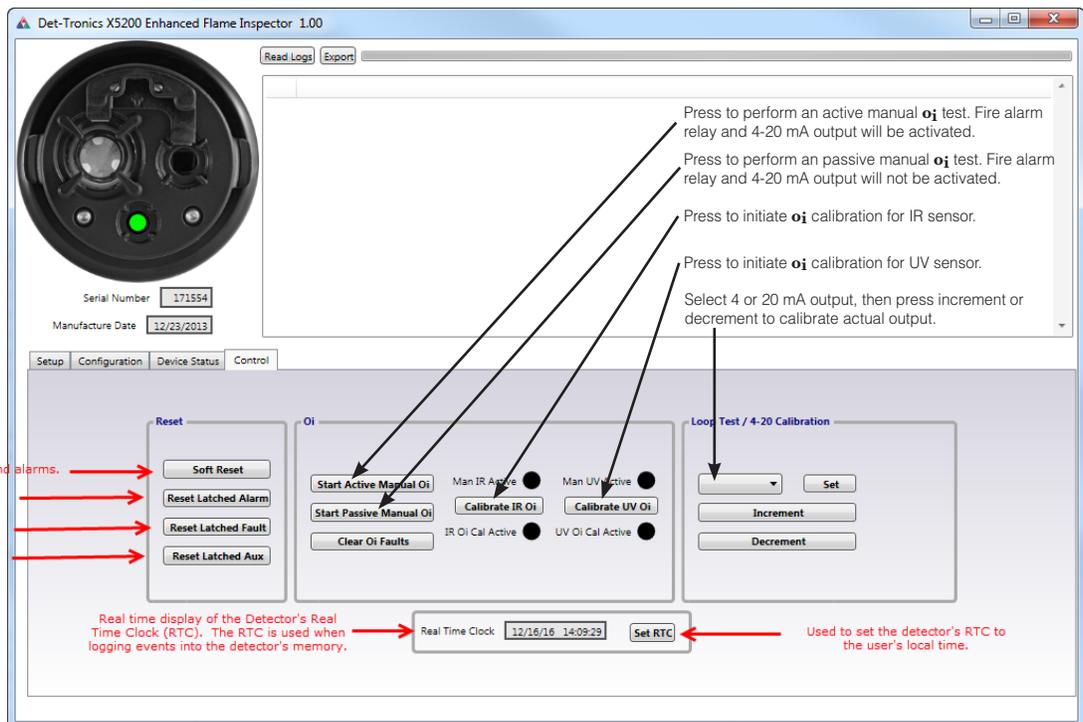
No change to the Alarm Relay.
4-20 mA output indicates a fault condition.
The Fault Relay becomes de-energized.
The LED turns amber.

7. The fault indication can be reset by momentarily applying the magnet or manual **oi** switch.
8. Clean the detector viewing windows following the cleaning procedure described in the "Maintenance" section of the detector instruction manual.



Note: X3301 window shown. X3302 used the same window with the appropriate fields and buttons active.

Figure 10— X3301 Control Screen



Note: X5200 window shown. X9800 and X2200 use the same window with the appropriate fields and buttons active.

Figure 11— X5200, X2200, X9800 Control Screen

o_i CALIBRATION

1. Clean the detector viewing windows by following the cleaning procedure described in the "Maintenance" section of the detector instruction manual.
2. Cover the detector using the protective cover provided with the detector.
3. Click on the Control tab to display the Control window (see Figures 10-11).

NOTE

*The X5200 UVIR Detector allows the UV and IR sensors to be calibrated independently. Two separate buttons are provided for initiating the **o_i** calibration procedure.*

4. Click on the Calibrate **o_i** button. A dialog box appears instructing to clean and cover the detector before proceeding. If steps 1 and 2 have been completed, click on OK.
5. Click on the Device Status tab to display the Status window (see Figures 8-9). Progress and results of the **o_i** calibration cannot be monitored from the Control window.
6. The **o_i** Cal Active indicator turns on (green).

⚠ CAUTION

*During the calibration procedure, the detector is in a fault condition. In addition, the detector is unable to detect a fire during the **o_i** calibration.*

7. After a successful **o_i** calibration (approximately one minute), the **o_i** Cal Active indicator turns off and the Normal indicator turns on. Remove the protective cover and verify the detector has returned to normal operation.

NOTE

*After approximately one more minute, the Last Wide **o_i** %, Last Narrow **o_i** %, and Last Short **o_i** % fields on the Status window should read near 100%. (**o_i** calibration is needed if any of these fields does not read 100%, ±10%.)*

8. A failed **o_i** calibration is indicated if the **o_i** Cal Active indicator turns off and the **o_i** Cal Fault indicator turns on. If this should occur, clean the detector viewing windows and perform another **o_i** calibration.

4-20 mA TEST / CALIBRATION

The 4-20 mA output will be driven to the output selected from the pull-down menu on the Control window. At this time the detector will go into a fault condition and the fire outputs will be inhibited.

To calibrate the 4-20 mA output, select either 4 mA or 20 mA. While monitoring the actual output on a digital meter, press Increment or Decrement to obtain the proper output.

MONITORING THE DETECTOR'S EVENT LOGS

Click on the Read Logs button (No logs are displayed prior to clicking on the Read Logs button.) All data currently stored in the sensor module's memory will be displayed on the Logs window. Date, time, brief description of each event, as well as the operating temperature and voltage of the detector will be listed. Normal status is highlighted in green, faults in yellow, alarm events in red, and test/calibration/reset in blue. Refer to the "Event Logs Descriptions" section of this manual for a detailed description of each event.

All data is stored in a non-volatile memory, which can accommodate approximately 1500 events. When the maximum is exceeded, the oldest events are automatically overwritten in order to make room for the newest events. The real time clock in the detector is furnished with battery back-up to ensure correct operation in the event of a power failure. The clock provides second, minute, hour, day, month and year data.

SORT ORDER

Events will be sorted by time as a default. To sort events by any other column, click the column you want the events sorted by.

SAVING FILES

To save a file for use in a spreadsheet, click on export. Its preferable to save the event log as a CSV file. Enter the file name. The CSV extension signifies comma separated variable and can be viewed by Excel. The file will be saved as a CSV file.

EVENT LOGS DESCRIPTIONS

Refer to the appropriate Event Logs Description table found on pages 13-16.

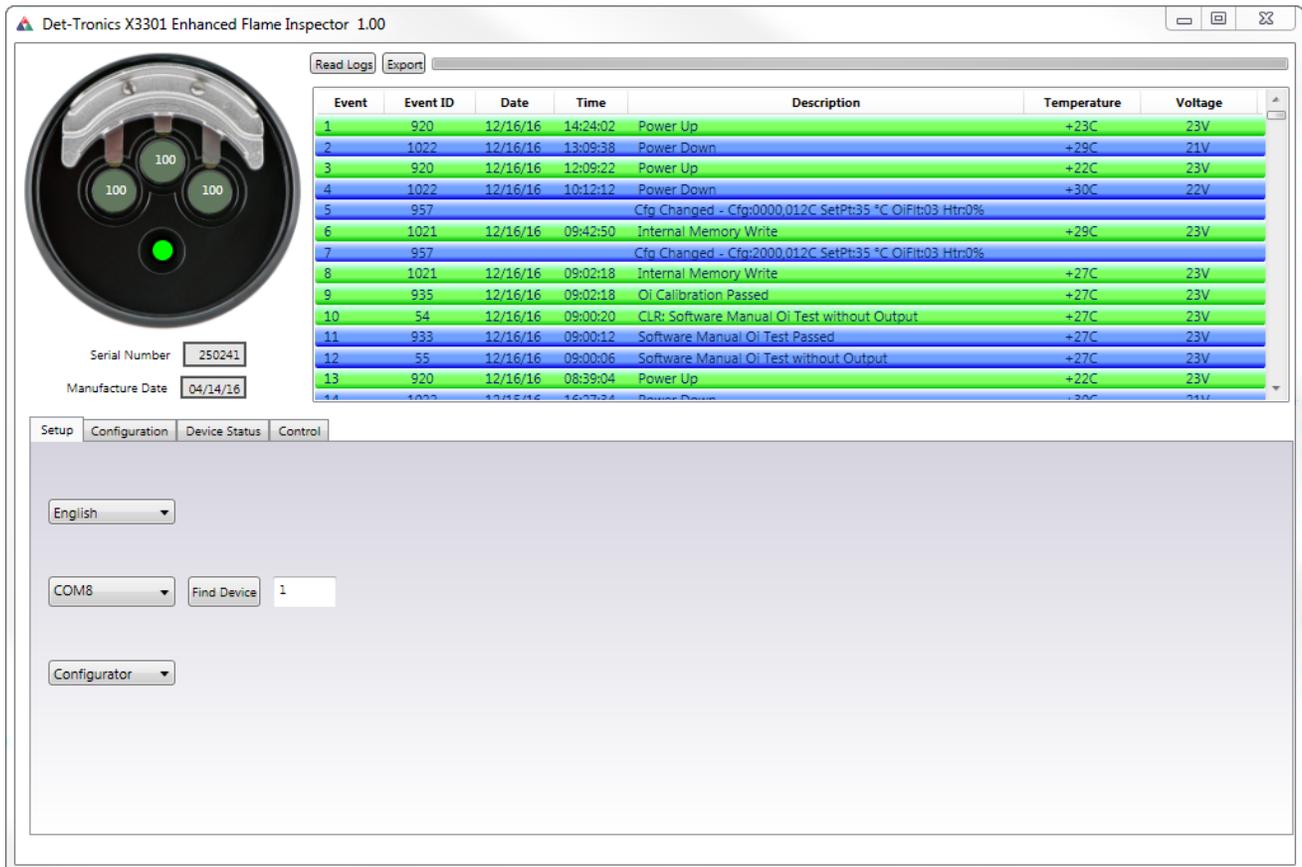


Figure 12— Log Screen Shot

X3301/X3302 EVENT LOG DESCRIPTIONS

Event Description	Status Condition
ASCII Mode	Unit changed to ASCII communication protocol
Calibration 4-20 mA	A 4-20mA output calibration was initiated
Configuration Changed	Configuration changes were made.
Delayed Fire	Sustained Fire Mode. Sustained fire requirements have been met.
Detection Cycle Complete	Persistent or Automotive fire cycle completed.
Fire	The requirements for at least one of the fire algorithms have been met.
*CLR: Fire	Fire algorithm requirements are no longer met.
Fire A (High Speed)	A Hi speed Regular fire was detected. (Automotive mode only)
Fire B (Unsustained)	A fire in duration of 3 seconds or less detected (flash fire). Event may also be present during sustained fire events.
Fire C (Sustained)	A fire in duration of 3 seconds or more detected.
Fire D (Low level)	Low Level Fire detected.
Fire E (Reduced oi Mode)	Fire detected while in Reduced Optical Integrity Mode.
Hard Reset	System reset.
Hard Reset Test Initiated	The internal watchdog test was requested
Hardware Manual oi Test	A Hardware Manual Optical Integrity (oi) test was initiated. (Mag oi or Test Line)
Hardware Manual oi Test Passed	Hardware manual Optical Integrity test passed.
Hardware Test Failure	The external watchdog test failed to cause a system reset.
Internal Hardware Test	The external watchdog test was requested.
Internal Memory Write	A write to flash memory has occurred.
Logs Reset	All event logs have been erased. (Factory only)
MODBUS Action Error	MODBUS Communications error. The function code received in the query is not an allowable action for the slave.
MODBUS Address Error	MODBUS Communications error. The data address received in the query is not an allowable address for the slave.
MODBUS Timing Error	MODBUS Communications timing error detected
MODBUS Value Error	MODBUS Communications error. A value contained in the query data field is not an allowable value for the slave.
Normal	Normal operation.
oi Calibration Passed	Optical Integrity calibration passed.
Power Down	Power was removed from the module.
Power Up	Power was applied to the module.
Pre-Alarm	Pre-fire alarm condition. No active output by default. Can be enabled by the user.
*CLR: Pre-Fire	Requirements for Pre-Fire are no longer met.
Relay 1	Automotive mode. Relay 1 activated.
Relay 2	Automotive mode. Relay 2 activated.
Reset Latched Outputs	Reset latched outputs. (Alarm and/or Fault conditions)
Software Manual oi Test Passed	Software-initiated manual Optical Integrity test passed
Software Manual oi Test with Active Output	Software-initiated manual Optical Integrity with active outputs started
Software Manual oi Test without Output	Software-initiated manual Optical Integrity without active outputs started
Software Reset Occurred	Unit was reset via serial communication command
Sustained Fire Timer Initiated	Sustained Fire Mode timer has been initiated.
Sustained Fire Timer Reset	Fire detected, but sustained alarm requirements not met

*Events with 'CLR:' preceding the event name, indicate the event condition is no longer present. (Not all 'CLR:' events are listed in this document.)

X2200/X9800/X5200 EVENT LOG DESCRIPTIONS

Event Description	Status Condition
Adjust 4-20mA Output	The 4-20mA output was adjusted.
Aux Relay Active	The auxiliary relay has been activated.
RTC Reset	The Real Time Clock was changed.
Fire Alarm	Fire alarm is active.
*CLR:Fire Alarm	Fire alarm has cleared.
IR Fire Alarm	IR alarm is active.
*CLR:IR Fire Alarm	IR alarm has cleared.
IR oi Calibration	IR Optical Integrity (oi) calibration was performed.
Manual IR oi Test	A manual IR Optical Integrity test was performed.
Manual UV oi Test	A manual UV Optical Integrity test was performed.
Normal	Normal operation.
Power Down	Power removed or below functional limit.
Power Up	Power is turned on.
Pre-Fire Alarm	Pre-alarm conditions are met.
Quick Fire Alarm	The Quick fire alarm is active
Soft Reset	Unit received a soft reset command.
System Reset	Unit received hard reset command.
UV Fire Alarm	UV alarm is active.
*CLR:UV Fire Alarm	UV alarm has cleared.
UV oi Calibration	UV Optical Integrity calibration was performed.

*Events with 'CLR:' preceding the event name, indicate the event condition is no longer present. (Not all 'CLR:' events are listed in this document.)

X3301/X3302 EVENT LOG DESCRIPTIONS AND TROUBLESHOOTING

Event Description	Status Condition	Recommended Action
Background IR Fault	IR levels have caused the detection distance to diminish by at least 50%	Check detector field of view, re-aim if needed. Addition of FOV sight limited may be required. Check sensitivity setting.
Blinding IR Background Fault	IR levels have caused the detection distance to diminish by 95%	Check detector field of view for IR source, re-aim if needed. Addition of FOV sight limiter may be required. Check sensitivity setting.
Blocked Sensor Fault	If enabled in configuration. At least one Optical Integrity value is 3% of less	Clean detector windows and oi reflector plate. Calibrate Optical Integrity if Optical Integrity returns are not within +/- 5% of 100%.
CPU Register Fault	An internal processing error has occurred	Return to the factory
External IR Interference Fault	External IR interference has affected fire detection capabilities	Check detector field of view, re-aim if needed. Addition of FOV sight limiter may be required. Check sensitivity setting.
Hardware Manual oi Test Failed	Hardware manual Optical Integrity test failed	Clean detector windows and oi reflector plate. Calibrate Optical Integrity if Optical Integrity returns are not within +/-5% of 100%
Input Voltage Out of Range	The line of voltage reported is outside of range	Check power supply wiring for proper voltage
Interfering IR Auto oi Test Postponed	High IR levels have postponed an Automatic Optical Integrity test	If reoccurring, a potential interfering IR source is in the detector's field of view. Check detector field of view, re-aim if needed. Addition of FOV sight limiter may be required. Check sensitivity setting.
Internal Fault	An internal processing error has occurred	Return to the factory
Internal Hardware Fault	An internal processing error has occurred	Return to the factory
Internal Memory Fault	An unsuccessful write command occurred	Return to the factory
Internal Power Supply Out of Range	Internal hardware error	Return to the factory
Internal Processing Error	An internal processing error has occurred	Return to the factory
Internal Processing Fault	An internal processing error has occurred	Return to the factory
Invalid Output Type	Input pin configuration is not valid. Potential faulty Sensor Module or EMI/Output board	Swap test with a spare sensor module and/or EMI Output board to find which is causing the fault. Return to factory
Low Line Voltage Fault	Optional low-line voltage fault active (17 VDC). (Feature disable by default)	Check power supply wiring for proper voltage
Manual oi Test at Booth Fault	Hardware Manual Optical Integrity test line was reported to be active at power-up	Check Manual Optical Integrity terminals and wiring for a potential short or activation
oi Calibration Failed	Optical Integrity calibration failed	Clean detector windows and oi reflector plate. If a successful calibration cannot be achieved return to the factory
oi Calibration Fault	Optical Integrity calibration fault active	Clean detector windows and oi reflector plate. Re-initiate Optical Integrity calibration. Return to the factory if the detector will not complete a calibration
oi Fault	Optical Integrity values are not within 10% to 130% range	Clean detector windows and oi reflector plate. Calibrate Optical Integrity if Optical Integrity returns are not within +/- 5% of 100%
Persistent IR Interference Fault	Non Ratio Mode Fault parameters have been met	Check detector field of view, re-aim if needed. Addition of FOV sight limiter may be required. Check sensitivity setting
Reduced oi Signal	Values reported during Optical Integrity tests are less than 80% for one or more sensors	Clean detector windows and oi reflector plate. Calibrate Optical Integrity if Optical Integrity returns are not within +/- 5% of 100%
RTC Error	RTC Communications error	Set the RTC via the Flame Inspector Software. If the fault is reoccurring return to the factory
Software Manual oi Test Failed	Software-initiated manual Optical Integrity test failed	Clean detector windows and oi reflector plate. Calibrate Optical Integrity if Optical Integrity returns are not within +/- 5% of 100%
Temperature Out of Range	Internal temperature has exceeded 90°C	Relocate detector or provide shield from heat source
WD Time Fault	Watchdog timer has timed out	

X2200/X5200/X9800 EVENT LOG DESCRIPTIONS AND TROUBLESHOOTING

Event Description	Status Condition	Recommended Action
Background IR Fault	IR levels have caused IR detection range to reduce by more than 50%.	Check detector field of view for IR sources, re-aim if needed. Check sensitivity setting.
Background UV Fault	UV levels have caused UV detection range to reduce by more than 50%.	Check detector field of view for UV sources, re-aim if needed. Check sensitivity setting.
CPU Fault	An internal processing error occurred.	Return to the factory.
Data Log Reset	All events in the log are cleared.	Performed at the factory only
Input Voltage Out of Range	The input voltage is not within 18Vdc to 30Vdc.	Check the power supply and input power wiring.
Internal Power Supply Out of Range	Internal failure.	Return to the factory.
Internal Processing Fault	An internal processing error occurred.	Return to the factory.
IR Manual o_i Fault	IR detection has been reduced by more than 50%.	Clean detector windows and o_i reflector plate. Re-initiate manual Optical Integrity (o_i) test. Calibrate IR o_i if the detector does not return to normal status.
IR Module Fault	Failure on the IR circuit.	Return to the factory.
IR o_i Calibration Failed	IR Optical Integrity (o_i) calibration failed.	Clean detector windows and o_i reflector plate. Re-initiate IR Optical Integrity calibration. Return to the factory if the detector will not complete a calibration.
IR o_i Fault	Auto or Manual IR Optical Integrity (o_i) fault	Clean the detector windows and o_i reflector plate. Perform a IR Optical Integrity Calibration if necessary.
Manual o_i Test at Boot Fault	The Manual o_i test line was reported to be active at power up	Check Manual Optical Integrity terminals and wiring for a potential short or activation.
RTC Fault	Real time clock communications fault.	Set the RTC via the Flame Inspector Software. If the fault is reoccurring return to the factory.
Temperature Out of Range	The temperature reported is outside of the recommended operating range.	Relocate detector or provide a shield from the heat source.
UV Manual o_i Fault	UV detection has been reduced by more than 50%.	Clean detector windows and o_i reflector plate. Re-initiate manual Optical Integrity (o_i) test. Calibrate o_i if the detector does not return to normal status.
UV o_i Calibration Failed	UV Optical Integrity (o_i) calibration failed.	Clean detector windows and o_i reflector plate. Re-initiate UV Optical Integrity calibration. Return to the factory if the detector will not complete a calibration.
UV o_i Fault	Auto or Manual UV Optical Integrity (o_i) fault	Clean the detector windows and o_i reflector plate. Perform a UV Optical Integrity Calibration if necessary.
UV Tube Fault	Failure on the UV circuit.	Return to the factory.

REPLACEMENT PARTS

Prior to returning devices, contact the nearest local Detector Electronics office so that a Return Material Authorization (RMA) number can be assigned.

A written statement describing the malfunction must be provided at the time of the RMA is requested to assist and expedite finding the root cause of the failure.

Pack the unit properly. Always use sufficient packing material in addition to an antistatic bag as protection from electrostatic discharge.

NOTE

Inadequate packaging that ultimately causes damage to the returned device during shipment will result in a service charge to repair the damage incurred during shipment.

Return all equipment transportation prepaid to the factory in Minneapolis.



Environmental Protection

Waste electrical products should not be disposed of with industrial and commercial waste. Please recycle where facilities exist. Check with your Local Authority or the local Detector Electronics office for recycling advice.

ORDERING INFORMATION

When ordering, please specify:

Part Number Description

009208-001	oi Replacement Kit for X3301 with Black oi reflector plate.
010831-001	oi Replacement Kit for X3301 with Stainless Steel oi reflector plate.
009208-002	oi Replacement Kit for X2200, X5200, X9800.

Note: ***oi** Replacement Kit includes Inspector Connector Cable, Inspector Monitor Software, Enhanced Flame Inspector Software, and 5 replacement **oi** reflector plates.*

007307-001	Replacement X3301/X3302 Black oi reflector plate.
010830-001	Replacement X3301/X3302 Stainless Steel oi reflector plate.
007307-002	Replacement oi reflector plate for X2200, X5200, X9800.

Note: ***oi** reflector plates for any X-Series Flame Detector require Flame Inspector.*

007819-002	W6300B1003 USB Inspector Connector Cable with Enhanced Flame Inspector.
009207-001	Flame Inspector CD. Contains Enhanced Flame Inspector Software.

For assistance in ordering a system to fit your application, please contact:

Detector Electronics Corporation
6901 West 110th Street
Minneapolis, Minnesota 55438 USA
Main: (952) 941-5665 or (800) 765-FIRE
Customer Service: (952) 946-6491
Fax: (952) 829-8750
Web site: www.det-tronics.com
E-mail: det-tronics@det-tronics.com



95-8751



FlexSonic® Acoustic
Leak Detector



X3301 Multispectrum
IR Flame Detector



PointWatch Eclipse® IR
Combustible Gas Detector



FlexVu® Universal Display
with GT3000 Toxic Gas Detector



Eagle Quantum Premier®
Safety System

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Det-Tronics manufacturing system is certified to ISO 9001—
the world's most recognized quality management standard.

