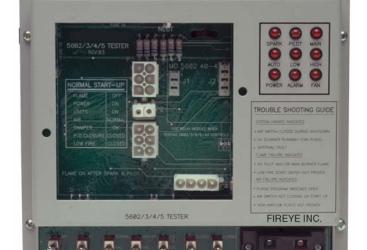# FIREYE®

TESTER & TRAINER
MODEL 57SB4-1000

The Fireye Model 57SB4-1000 Tester provides a convenient means for testing sbSeries controllers and sensors. It also is a good tool for learning about the sequences and safety features of all the sbSeries models.

Features include:

- 7 Toggle switches for simulating inputs
- 9 Lights for controller output status
- 2 Quick-connect terminals for external flame sensor
- Built in flame simulators
- Tests 120V or 240V supply models

⚠ **CAUTION: Before beginning the test procedures, read Fireye bulletin SB-2301 and become thoroughly familiar with the controller model that you are testing.**

Mounting Controllers to the 57SB4-1000 Series Tester

Check the controller model number and if applicable, DIP Switch settings to be sure that the recycling, pilot mode, trial-for-ignition, purge time, and post purge settings are correct for your application. Be sure the modulation relay board (61-7012-3) is installed for modulation model controllers and unplugged for non-modulating controllers. Before plugging in the power cord of the tester, seat the controller firmly in place over the opening on the face of the 57SB4-1000 sbSeries Tester.

⚠ **WARNING: Risk of electrical shock. High voltage is exposed when test is plugged in and the sbSeries is removed.**

Initial Switch Settings are shown shaded.

POWER	LIMITS	AIR	DAMPER	FLAME	LOW FIRE	VALVE
ON	ON	NORMAL	VER-OK	UV/IR	CLOSED	CLOSED
		FAIL	FAIL	EXT		
OFF	OFF	SHORT	MIC-OK	FR	OPEN	OPEN

Note: Intermittent pilot operation (DIP Switch 2 ON) means the pilot stays on during the burner run period. Interrupted pilot (DIP Switch 2 OFF) means the pilot will turn off after the main flame has established.period. Interrupted pilot (DIP Switch 2 OFF) means the pilot will turn off after the main flame has established.

sbSeries No-Purge Models S1N... and S2N...

⚠ **Do NOT use the modulation relay board for these controllers!**

Test Procedure - set initial switch settings

NO PURGE MODEL

1. Turn on the POWER switch, the POWER light will come on.

2. Turn on the LIMITS switch. The green "INTER-LOCKS CLOSED" light on the controller will come on. Then the SPARK and PILOT lights on the tester will come on.

3. Set the FLAME switch to the appropriate position for the flame sensor type of the model under test: FR (down) for flame rods, UV/IR (up) for ultraviolet or infrared scanners.

4. Observe that the red light inside the FLAME SIGNAL test jack comes on. At the end of TFI (trial for ignition) time, the SPARK light will go off. Then about 5 seconds after the TFI ends, the MAIN light will come on. If interrupted pilot is selected (DIP Switch 2 is OFF), the PILOT light will go off after about 10 seconds.

5. Set the FLAME switch to EXT.
   a. For non-recycling selection (DIP Switch 1 is OFF), the red "FLAME FAILURE" light on the controller will come on within 4 seconds. The ALARM light on the tester will also come on.

   b. For recycling selection (DIP Switch 1 is ON) and the flame indicator has been on for more than 35 seconds, the unit will turn off the MAIN (and PILOT if on) and recycle to the beginning self-check sequence. Then the SPARK and PILOT will come on as in step 2 above. Leave the FLAME switch at EXT. The red "FLAME FAILURE" light on the controller will come on after the trial for ignition. The ALARM light on the tester will also come on.

6. With the control in the ALARM condition, set the DAMPER switch to FAIL (center position). Reset the controller by pressing the pushbutton once to the in position and pressing it again to bring it back out.

7. Observe that the "FAULT CONDITION" light flashes for a couple seconds and then comes on steady and the tester ALARM light comes on. Return the DAMPER switch to VER-OK.

8. Place the LIMITS switch to OFF and reset the controller. Turn the FLAME switch to the appropriate position for the flame sensor type. Observe the red light inside the FLAME SIGNAL test jack. The "FAULT CONDITION" light will start flashing. Within 25 seconds the ALARM light will come on.

sbSeries Purge Models S1P… and S2P…

⚠	**Do NOT use the modulation relay board for these controllers!**

Test Procedure - set initial switch settings

PURGE MODEL

1.1. Turn on the POWER switch, the POWER light will come on.

2. Turn on the LIMITS switch. The green "INTER-LOCKS CLOSED" light on the controller will come on. In less than 5 seconds, the FAN light on the tester will come on.

3. The unit will stay in this sequence for the selected purge time, then the SPARK and PILOT lights on the tester will come on.

4. Set the FLAME switch to the appropriate position for the flame sensor type of the model under test: FR (down) for flame rods, UV/IR (up) for ultraviolet or infrared scanners.

5. Observe that the red light inside the FLAME SIGNAL test jack comes on. At the end of TFI (trial for ignition) time, the SPARK light will go off. Then about 5 seconds after the TFI ends, the MAIN light will come on. If interrupted pilot is selected (DIP Switch 2 is OFF), the PILOT light will go off after about 10 seconds.

6. Set the FLAME switch to EXT.

   a. For non-recycling selection (DIP Switch 1 is OFF), the red FLAME FAILURE" light on the controller will come on within 4 seconds. The ALARM light on the tester will also come on.

   b. For recycling selection (DIP Switch 1 is ON) and the flame indicator has been on for more than 35 seconds, the unit will turn off the MAIN (and PILOT if on). Then, if post purge is selected (DIP Switch 8 is ON) it will delay 15 seconds before it recycles to the beginning self-check sequence and continues as in step 2 above. Leave the FLAME switch at EXT. The red "FLAME FAILURE" light on the controller will come on after the trial for ignition. The ALARM light on the tester will also come on.

7. With the control in the ALARM condition, set the DAMPER switch to FAIL (center position). Reset the controller by pressing the pushbutton once to the in position and pressing it again to bring it back out.

8. Observe that the "FAULT CONDITION" light flashes for a couple seconds and then comes on steady. Also the tester ALARM and FAN lights will come on. Return the DAMPER switch to VER-OK.

9. Set the AIR switch to FAIL (center position). Reset the controller. The FAN light will come on and about 10 seconds later the "AIR FAIL" light on the controller and the ALARM light on the tester will both come on.

10. Set the AIR switch to SHORT (down position). Reset the controller and observe that the "FAULT CONDITION" light flashes for about 15 seconds. Then the FAULT CONDITION" light comes on steadily and the ALARM light on the tester comes on. Return the AIR switch to the NORMAL position.

11. Place the LIMITS switch to OFF and reset the controller. Turn the FLAME switch to the appropriate position for the flame sensor type. Observe the red light inside the FLAME SIGNAL test jack. The "FAULT CONDITION" light will start flashing. The FAN light will come on and within 25 seconds the ALARM light will come on.

sbSeries Modulation Models S1M… and S2M…

Plug the modulation relay board (p/n 61-7012-3) into the tester base for these controllers. The connector closest to the edge of the pc-board will mate to J2 on the tester and should be oriented to the right. Plug the board in with the pc-board down and the relays up.

Test Procedure - set initial switch settings

MODULATION MODEL

1. Turn on the POWER switch, the POWER light on the tester and the "LOW FIRE" light on the controller will come on.

2. Turn on the LIMITS switch. The green INTERLOCKS CLOSED" light on the controller will come on. In less than 5 seconds, the tester FAN and HIGH lights and the controller's "HIGH FIRE" light will come on.

3. The unit will stay in this sequence for the selected purge time. Then the tester HIGH and the controller's "HIGH FIRE" lights go off and the LOW and "LOW FIRE" lights will come on.

4. After the selected purge time, the SPARK and PILOT lights on the tester will come on.

5. Set the FLAME switch to the appropriate position for the flame sensor type of the model under test: FR (down) for flame rods, UV/IR (up) for ultraviolet or infrared scanners.

6. Observe that the red light inside the FLAME SIGNAL test jack comes on. At the end of TFI (trial for ignition) time, the SPARK light will go off. Then about 5 seconds after the TFI ends, the MAIN light will come on. If interrupted pilot is selected (DIP Switch 2 is OFF), the PILOT light will go off after about 10 seconds. Then after another 10 seconds, the LOW and "LOW FIRE" lights go off and the AUTO lights come on.

7. 7. Set the FLAME switch to EXT.

   a. For non-recycling selection (DIP Switch 1 is OFF), the red "FLAME FAILURE" light on the controller will come on within 4 seconds. The ALARM light on the tester will also come on.

   b. For recycling selection (DIP Switch 1 is ON) and the flame indicator has been on for more than 35 seconds, the unit will turn off the MAIN (and PILOT if on) and will turn off the AUTO lights and turn on the LOW and "LOW FIRE" lights. Then, if post purge is selected (DIP Switch 8 is ON) it will delay 15 seconds before it recycles to the beginning self-check sequence and continues as in step 2 above. Leave the FLAME switch at EXT. The red 'FLAME FAILURE" light on the controller will come on after the trial for ignition. The ALARM light on the tester will also come on.

8. With the control in the ALARM condition, set the DAMPER switch to FAIL (center position). Reset the controller by pressing the pushbutton once to the in position and pressing it again to bring it back out.

9. The HIGH and "HIGH FIRE" lights will come on for the selected purge time. At the end of the high purge time the "FAULT CONDITION" and "LOW FIRE" lights come on. Also the tester's LOW, ALARM, and FAN lights will come on. Return the DAMPER switch to VER-OK.

10. Set the LOW FIRE switch to OPEN. Reset the controller. The controller will sequence as in steps 2 and 3 above. At the end of the low purge time, the "FAULT CONDITION" light and the ALARM light come on. Return the LOW FIRE switch to the CLOSED position.

11. Set the AIR switch to FAIL (center position). Reset the controller. The FAN light will come on and about 10 seconds later the "AIR FAIL" light on the controller and the ALARM light on the tester will both come on.

12. Set the AIR switch to SHORT (down position). Reset the controller and observe that the "FAULT CONDITION" light flashes for about 15 seconds. Then the 'FAULT CONDITION" light comes on steadily and the ALARM light on the tester comes on. Return the AIR switch to the NORMAL position.

13. Place the LIMITS switch to OFF and reset the controller. Turn the FLAME switch to the appropriate position for the flame sensor type. Observe the red light inside the FLAME SIGNAL test jack. The "FAULT CONDITION" light will start flashing. The FAN light will come on and within about 25 seconds and the ALARM light will come on.

Testing External Flame Sensors

Fireye flame sensors UV7A4 and UV7R4 can be tested if the appropriate model sbSeries is installed in the tester. Self-check scanner, UV7SC, will require a separate 12OVAC supply connection to power its internal electronics and shutter. Connect the signal wires to the SI and S2 connector block. Place the FLAME switch to the EXT position, and turn the POWER switch ON. Point a scanner towards a flame or place a flame rod in contact with a flame. The flame must also contact with a ground area at least 4 times greater than the flame rod for a good signal. Either observe that the red light inside the FLAME SIGNAL test jack comes on or use a DC voltmeter to measure the flame signal strength from the test jack to S2.