SKYTECH

AF-5000MOD

INSTALLATION AND OPERATION INSTRUCTIONS

IF YOU CANNOT READ OR UNDERSTAND THESE INSTALLATION INSTRUCTIONS DO NOT ATTEMPT TO INSTALL OR OPERATE

INTRODUCTION

The AF-5000MOD was designed to provide a safe and reliable control system utilizing pilot-free direct spark ignition (DSI) technology for use in natural gas or propane fire pits, fireplaces, and fire features, and HVAC Products.

CONTROL MODULE

This control module is designed to operate American Flame, Inc. AF-4000**DSI** series electronic gas valves. The control module provides flame ignition and supervision control and can be operated with either a wired switch or with a wireless remote control.

1. **Remote/Off** Switch: Set to "Off" to operate with a wired ON/OFF switch. Set to "Remote" to enable the wireless RF feature and operate with available remote controls.
2. **Learn** Button: Used to "learn" a wireless remote control's security code (see "Security Codes" section).
3. **POWER** Connection: Connection for optional AC adapter (7.5VDC, 1A).
4. **IPI** Connection: Connections to ground, valve, and wired switch.
5. **AUX** Connection: Connection for optional modulation device control and/or battery power source (4xAAA batteries).
6. **ADJ**. Hole: FOR FACTORY USE ONLY, DO NOT ATTEMPT ADJUSTMENT.
7. **"S"** Terminal: Connection to flame sense electrode.
8. **"I"** Terminal: Connection to flame ignition electrode.

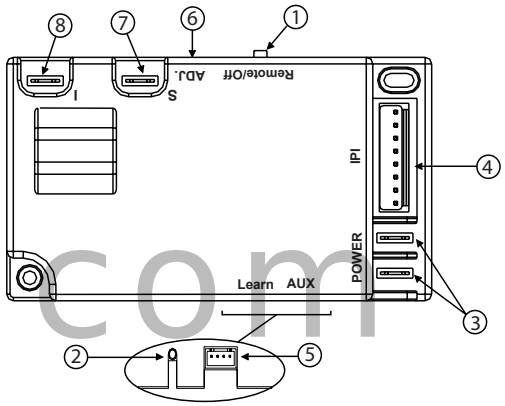


FIG. #1

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INSTALLATION & WIRING

1. Install the control module in an area that will not exceed and ambient temperature of 170 degrees F.
2. Locate all connections on the control module as shown in figure 1.
3. Locate all connectors on the 8-pin wire harness as shown in figure 2.
4. Connect the female connector on the 8-pin wire harness to the IPI connection on the control module.
5. Connect the black wire labeled GROUND from the wire harness to the appliance chassis.

NOTE: FOR PROPER OPERATION, ENSURE THAT BOTH THE GAS VALVE, THE FLAME SENSE/IGNTION ELECTRODE ASSEMBLY, AND THE APPLIANCE BURNER ARE ALL GROUNDED.

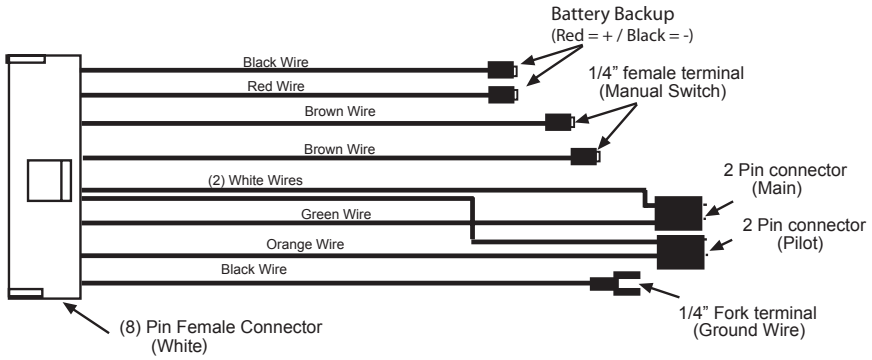


FIG. #2

CONNECTIONS TO IGNITER AND FLAME SENSOR ELECTRODES

1. Connect the wire from the flame sense electrode to the "S" terminal on the control module.
2. Connect the wire from the flame ignition electrode to the "I" terminal on the control module.

Connections to Gas Valve

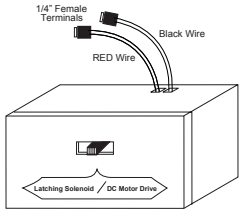
1. Plug the 2-pin connector marked PILOT (orange & white wires) from the 8-pin wire harness to the receptacle marked PILOT on the on face of the AF-4000 series gas valve. NOTE: When using the AF-4000 gas valve with an AF-5000MOD control, the pilot flame is eliminated. Both pilot gas outlets on the gas valve must be plugged with factory-supplied fittings. The pilot electrical connection on the gas valve must still be connected.
2. Plug the 2-pin connector marked MAIN (green & white wires) from the 8-pin wire harness to the receptacle marked MAIN on the face of the AF-4000 series gas valve.

Power Connections

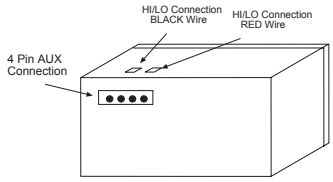
The AF-5000MOD can be operated off of either 4-AA batteries, or 120VAC power with the use of an AC Adapter.

Battery Pack (AF-4000BP)

1. Plug one end of the 4-pin wire harness (provided with battery pack) into the 4-pin AUX receptacle on the rear of the battery pack (See Fig. #3).
2. Plug the other end of the 4-pin wire harness into the receptacle marked AUX on the control module (See Fig. #1).
3. Install 4-AA batteries into the battery compartment underneath the slide-cover.



Module Battery Pack Front



Module Battery Pack Back

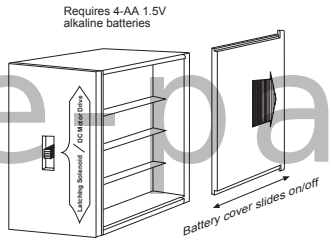
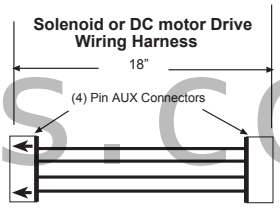


FIG. #3



Battery Pack to Module Wiring Harness

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AC Adapter (AF-4000ADP24)

1. An AC Adapter with output rating of 6.0 to 7.5VDC, 1A with ¼" female spade connectors must be used.
2. Connect the female spade connectors from the AC adapter to the spade terminals labeled POWER on the control module (See Fig. #1).
3. Plug the AC adapter into an approved 120VAC outlet.

Optional: When using an AC adapter, battery backup can be provided by a battery backup pack (AF-4000BBU).

1. Connect the black (-) and red (+) wires on the 8-pin wire harness to the black and red wires on the battery backup pack. Connect red to red and black to black.
2. Install 4-AA batteries into the battery backup pack.

MODULATION DEVICE CONNECTIONS

The output of the gas valve can be increased and decreased by a manual knob, a 2-postion (Hi/Lo) solenoid, or a variable motor drive. All modulation devices must be factory installed.

NOTE: The 2-position solenoid and variable motor drive connect directly to the battery pack (AF-4000BP). To utilize either the 2-position solenoid or the variable motor drive while powering the control module with an AC adapter, a modulation control (AF-4000-110H/L) must be connected to the control module's AUX port (See Fig #1).

MANUAL KNOB (AF-4024 GAS VALVE)

No connections are necessary.

2-POSITION SOLENOID (AF-4024 GAS VALVES)

1. Connect the red and black wires from the battery pack (See Fig. #3) to the red and black wires coming from the 2-position solenoid. Connect red to red and black to black.
2. Ensure the switch on the front of the battery pack is set to LATCHING SOLENOID (See Fig. #3).

VARIABLE MOTOR DRIVE (AF-4034 GAS VALVES)

1. Connect the red and black wires from the battery pack (See Fig. #3) to the red and black wires coming from the variable motor drive. Connect red to red and black to black.
2. Ensure the switch on the front of the battery pack is set to DC MOTOR DRIVE (See Fig. #3).

WIRED ON/OFF SWITCH CONNECTION

Warning! Ensure power is removed from the control module before connecting an ON/OFF switch to prevent accidental ignition or electrical shock.

1. Connect the brown wires marked SWI (See Fig.# 2) to any dry-contact switch.

Warning! Do not connect 120V to these or any other- wires on the AF-5000MOD. The brown switch wires are only to be connected to an un-powered ON/OFF switch.

OPERATION

Wired Switch Operation

1. Ensure the Remote/Off switch on the control module is set to “Off.” (See Fig.# 1)
2. Turn the wired ON/OFF switch to the ON position (contacts closed) to initiate the ignition process and turn the appliance burner on.
3. Turn the wired ON/OFF switch to the OFF position (contacts opened) to turn off the appliance burner.

REMOTE CONTROL OPERATION

The AF-5000MOD control module may be operated with a wireless radio frequency (RF) remote control from a distance of up to 30-feet.

Available Transmitters (optional)

Model	Features
RCAF-1	Hand-Held ON/OFF
RCAF-3	Hand-Held ON/OFF, HI/LO
1001D-AF1	Wall-Mount ON/OFF
1322WT	Wall-Mount ON/OFF, HI/LO
TMR-2A	Wall-Mount Timer

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See instructions included with these transmitters for operating instructions.

FLAME MODULATION

When using the 2-position solenoid (see modulation device connections), the control module will automatically default to the HI modulation position during the ignition sequence and remain on HI 5-seconds after the control recognizes a flame is present. If the control module was last turned off in the LO modulation position, it will then revert to that setting. This feature is not available with the manual modulation knob or the variable motor drive.

Please refer to the operating instructions provided with the available transmitters for additional instructions on flame modulation operation

SECURITY CODES

The AF-5000MOD control module operates on a system of 1,048,576 security codes. It may be necessary to program the control module to learn the security code of the transmitter upon initial use, if power is removed for an extended period of time, or if using a replacement transmitter.

1. Ensure power is connected to the control module (see installation and wiring section above).
2. Ensure fully-charged batteries are properly installed in the optional transmitter.
3. Make sure the Remote/Off switch is set to “Remote”. (See Fig.# 1)
4. Press and release the LEARN button on the control module (See Fig.# 1). The control module will emit a single beep to indicate it is ready to learn.
5. Press and hold any of the buttons on the optional transmitter for about 2 seconds.

WARNING! – The control module will respond to this command from the transmitter. Your appliance burner may turn on.

6. The control module will emit a series of four beeps in rapid succession to indicate that the transmitter’s security code has been accepted.

The control module can learn up to 3 different security codes. It may be necessary to delete the security codes in the control module’s memory.

1. Ensure power is connected to the control module (See installation and wiring section above).
2. Make sure the Remote/Off switch is set to “Remote” (See Fig. #1).
3. Press and hold the LEARN button on the control module (See Fig. #1) until a series of 3 long beeps in succession is emitted (approximately 10 seconds). This indicates all security codes have been cleared.

TROUBLESHOOTING

Fault Codes

The AF-5000MOD control module has built-in error detection for several common operating fault conditions. When the control module detects an error, it will emit a series of beeps. The beeping pattern will help to determine the cause of the operating fault.

Ignition Safety (Protection for Ignition system):

Error Code: One beep every one second.

Description of Fault: Warn users if the pilot is not successfully ignited in 15 seconds.

How to Clear: Press OFF then ON buttons to re-attempt ignition.

What to Check:

- Ensure gas supply is turned on.
- Ensure that the gas line is purged of air. Air is common in the gas line if the appliance has just been installed, has been disconnected then re-connected to the gas line, or if the appliance has been unused for an extended period of time.
- Ensure there is no blockage in the gas line.
- Make sure that the flame sensor electrode is clean. Soot buildup will insulate the electrode and will not allow for proper flame sensing.
- Ensure orange/white leads from module are plugged into the “PILOT” connection on the valve body.
- Ensure green/white leads from module are plugged into the “MAIN” connection on the valve body.
- Verify lead from igniter on electrode assembly is connected to the “I” terminal on the module.
- Verify lead from flame sensor on electrode assembly is connected to the “S” terminal on the module.
- Verify that the black ground lead from the module is connected to a proper ground on the appliance.

Sensor Safety (Protection for Flame sensor):

Error Code: 4 Beeps every one second (Constant beeping)

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Description of Fault: Warn users that the flame sensor detects a flame already present when ignition sequence is initiated. This fault will also occur if the flame sensor is shorted to ground.

How to Clear: Press OFF then ON buttons to re-attempt normal ignition.

What to Check:

- Check if flame is actually present when valve is turned OFF (valve replacement necessary if yes).
- Ensure that the flame sensor electrode is not touching the burner or another metal surface.
- Check if the flame sensor wiring is worn, frayed, or otherwise damaged.
- Replace electrode assembly.
- Replace module.

Thermal Safety (Overheat Protection):

Error Code: 4 Beeps every 2 seconds.

Description of Fault: Warn users that the modules internal temperature has exceeded 170 deg. F.

How to Clear: Module’s internal temperature must cool to below 160 deg. F and then press ON button.

What to Check:

- Ensure that there is proper ventilation to the control module.
- Is module located in unapproved location, too close to burner?
- Move to cooler location.

Wireless Remote Transmitter Will Not Operate Appliance

- Make sure that the transmitter is within the 30-foot operational range of the control module.
- Ensure batteries in transmitter are fully charged and properly installed.
- If using optional battery pack, ensure batteries are fully charged and properly installed. Also, make sure that the battery pack’s 4-pin connector is securely connected to the battery pack and control module.
- If using optional AC adapter, ensure that the AC adapter leads are securely attached to “POWER” connection on the control module. Also, ensure that the AC adapter is connected to a live 120VAC power source.
- Ensure “Remote/Off” switch on control module is set to “Remote”.
- Ensure the control module has learned the transmitter’s security code (see security code section).
- Make sure that the remote transmitter is not placed/mounted to a metal surface, which will reduce the operating range.
- Make sure that there is not a large metal obstruction between the remote transmitter and the control module.

Igniter Electrode Sparks Frequently During Operation

The control module will generate a spark at the igniter electrode if the system is in the ON position, but does not sense a flame.

- Make sure that the flame sensor electrode is clean. Soot buildup will insulate the electrode and will not allow for proper flame sensing.
- Make sure that wind does not blow the flame off of the flame sensor. The sensor hood and the appliance media (rocks, glass, etc.) provide shielding from the wind. Ensure that the sensor hood and appliance media is properly positioned per the appliance instructions. If wind is too strong, and the flame will not maintain contact with the flame sensor, the appliance should not be operated.

Flame Modulation Will Not Work or Works Backwards

- Ensure that the black and red leads from the battery pack or the AF-4000 110H/L module are securely connected to the red and black leads from the motor drive or H/L latching solenoid located on the valve body (red to red and black to black).
- Verify that the selector switch on the battery pack is set to DC MOTOR DRIVE or LATCHING SOLENOID, depending upon which device is installed in the gas valve.
- Check functionality with all transmitters to determine if there is an issue with the main control system or an individual transmitter. If the issue is with an individual transmitter, make sure that the batteries in both the transmitter and receiver are installed properly and fully charged.

FCC REQUIREMENTS

NOTE: THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY RADIO OR TV INTERFERENCE CAUSED BY UNAUTHORIZED MODIFICATIONS TO THIS EQUIPMENT. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

FOR TECHNICAL SERVICE, CALL:

U.S. INQUIRIES
888/672 - 8929 OR 260/459 - 1703

CANADIAN INQUIRIES
877/472 - 3923

WEB SITE: www.skytechsystem.com

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MANUFACTURED EXCLUSIVELY FOR SKYTECH II, INC

Limited Warranty

American Flame, Inc. warrants the AF-5000MOD for 12 months from the date of purchase or installation to the original purchaser to be free from defects in materials and workmanship. Damage to the AF-5000MOD caused by accident, misuse, abuse, or installation error, whether performed by a contractor, service company, or owner, is not covered by this warranty. American Flame will not be responsible for labor charges and/or damage incurred in installation, repair, replacement, or for incidental or consequential damage. Some states, provinces, and nations do not allow exclusion or limitations of incidental or consequential damages, so the above limitations or exclusions may not apply. This warranty gives you specific legal rights. You may also have other rights that vary by state, province, or nation.