

Title:	Gas Heat General Troubleshooting
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Table of Contents

Overview	1
Gas Heat Sequence Of Operation	1
Preliminary Gas Heat Troubleshooting	1
Heating Module LED Light Troubleshooting	2
Additional Troubleshooting Steps.....	2
Heat has a call but I can't hear/see a spark	2
Module is calling for heat, yet the flame is not putting through the burners	2
Flame comes on for a brief period and then shuts off	2
Signal for heat comes on but the combustion blower motor is not coming on	3
Looking For Additional Support?	3

Overview

This document covers gas heating (natural gas or liquid propane) sequence of operations and various troubleshooting steps for gas heating related performance issues.

Gas Heat Sequence Of Operation

1. An input signal is sent from the space temperature sensor to the I-controller.
2. A 24VAC output signal is then sent from the I-controller to the Combustion Fan Relay and Inducer Input terminal on the UTEC Module.
3. A 24VAC signal routes through all the heat safety devices and lands on the 'W' terminal input side of the module initiating a call for the gas valve's 1st stage of heat.
4. If the gas valve's 2nd stage of heat is required, a 24 VAC output signal is sent from the controller through previously closed relays to the valve.
5. The inducer motor will close a negative pressure switch circuit during a 5 second pre-purge allowing a 24 VAC to land on the "MV" terminal of the module.
6. An inter-purge state lasts for 45 seconds during which ignition will be established and flame will be proved.
7. After the call for heating setpoint is met, we then go into a post-purge state for 5 seconds.

NOTE: Our supply fan is continuous duty, or constant air volume, so the blower on and off delay terminals ARE NOT used.

Preliminary Gas Heat Troubleshooting

1. Verify that the Space Temperature Sensor is mounted appropriately inside of the store and it is reading a correct temperature.
2. Verify that the Supply Air Temperature Sensor is mounted correctly (see IN-GEN-04 for details of correct SAT placement, found under [Sensor Installation Guides on systemsflo.com](https://www.systemsflo.com)) and it is reading a correct temperature.
3. Verify any LED lights on the heating modules (see Heating Module LED Light Troubleshooting section below)
4. Verify that there is a 24vac signal going to the modules.
5. Verify any safeties are open, such as Main Limit Switches, High Limit switches and roll out switches to make sure that the voltage is passing from the controller to the W call on the module boards.

Title:

Gas Heat General Troubleshooting

Heating Module LED Light Troubleshooting

1. If the heating module has a blinking green light, troubleshoot based on the number of green light “flashes”:
 - a. 1 GREEN FLASH
 - i. Unit is attempting to light and has attempted to light 3 times before going into a 1-hour lockout. Reset power to the module and check to see if there is a spark and if gas is passing through the gas valve.
 - b. 2 GREEN FLASHES
 - i. Pressure switch is open with inducer on. Check to see if the DPS is open by checking across the two terminals on the DPS safety. If the code is on a module(secondary) with no DPS or ROS (Roll Out Switch), then there is a possibility there is a fault on the main module. If the main module is operational, the secondary module may have a loose wiring connection or will need to be replaced.
 - ii. If DPS is open, check the tubing and silicone adapter for cracks or damage. Replace if needed
 - c. 3 GREEN FLASHES
 - i. Pressure switch is closed with inducer off. Check to see if the DPS is closed by checking across the two terminals on the DPS safety. If switch is closed and inducer is not on, the switch will need to be replaced. If switch is closed and inducer is on, need to troubleshoot why the inducer is on
 - d. 4 GREEN FLASHES
 - i. Limit Switch is open. This indicates that the ROS(Rollout switch) for the Module is open. If unit has fired, and then shut off, reset the module and check for flame rollout. If unit has not fired, check operation of the ROS.
 - ii. Adjust the 7-pin harness plug on the upper right corner of the UTEC module to see if there is a possibility of it firing. Most likely will need to change the gas module or white harness plug.
 - e. 5 GREEN FLASHES
 - i. False flame 1 hour lockout. If it is flashing that is a clear indication that the flame sensor is not reading correctly. Will need to see if the flame rod is shorted or open.
2. If the heating module doesn't have the green status light at all:
 - a. Check the 24 VAC portion of the board to see if there is around 24 VAC voltage being sent to the board.
 - b. If there is power to the board and the green light is not energized replace the board.

Additional Troubleshooting Steps

Heat has a call but I can't hear/see a spark

1. Check to see if the Spark rod is getting a millivolt signal.
2. Make sure that the screws securing the spark rod are not physically contacting the spark rod.

Module is calling for heat, yet the flame is not putting through the burners

1. Check the IN'WC on the gas valve.
2. Make sure that the inlet burners have no dirt blockage.
3. Make sure that the flaming sensing probe is properly connected to the board.

Flame comes on for a brief period and then shuts off

1. Make sure that the flame sensing rod is properly connected to the board.
2. If flame sensing probe is not properly connected replace the flame sensor.

Title:

Gas Heat General Troubleshooting

Signal for heat comes on but the combustion blower motor is not coming on

1. Validate main and auxiliary limit switch operation.
2. Check to see if the wiring is tight going to the heat relays for the motor.
3. Check the capacitor to make sure that it has the proper microfarads.
4. Make sure that the blade to the combustion blower motor spins freely while de-energized, it could possibly have dirt or an insect nest inside of the combustion housing.

Looking For Additional Support?

If you require additional support to resolve a heating issue or request replacement parts, please contact our technical support team using one of the following channels:

1. Call FLō Tech Support (888-598-1198 option 1)
2. Email FLō Tech Support (techsupport@systemsflo.com)
3. Use the FLō websites "[Contact Tech Support](#)" form