PLEASE KEEP THESE INSTRUCTIONS FOR FUTURE REFERENCE

DEXEN

TROUBLESHOOTING MANUAL

Dexen Valve System
For authorized gas technicians use only

Fr Version Française: www.enviro.com/fr.html

50-4252

Table of Contents

Introduction

Use of This Guide

This guide provides an overview of the Dexen System with details of the function of each component, as well as a troubleshooting steps to a handful of possible problem scenarios. This guide is intended to be a tool to help educate and aid in the proper diagnosis of problems within the Dexen system to allow for the accurate replacement of components.

WARNING

This guide is for use by qualified service technicians only. Do not attempt to service appliances which you are not qualified to service. Service attempted by unqualified persons could result in the risk of bodily injury and property damage.

Questions for the Fireplace Owner

Before following any troubleshooting steps in this guide, ask the owner a few questions to help establish what the issue is:

- What are the symptoms?
- When does the problem occur?
- How long has the appliance been installed / in use?
- Fireplace model
- Gas Used, Natural Gas (NG) or Propane (LP)

These questions should help establish which scenario applies and what troubleshooting steps should be followed. A summary of the 5 different scenarios covered by this guide is listed on page 8.

Ignition Control Components

- Ignition Control Module
- 6VDC Power Supply
- IPI Valve w/ Stepper Motor & Wire Harness
- IPI Pilot Assembly
- Battery Backup (4 x AA)

Wireless Control Components

- RC300 Wireless Remote Control w/ 3 x AAA batteries
- Auxiliary Module (AUX300)

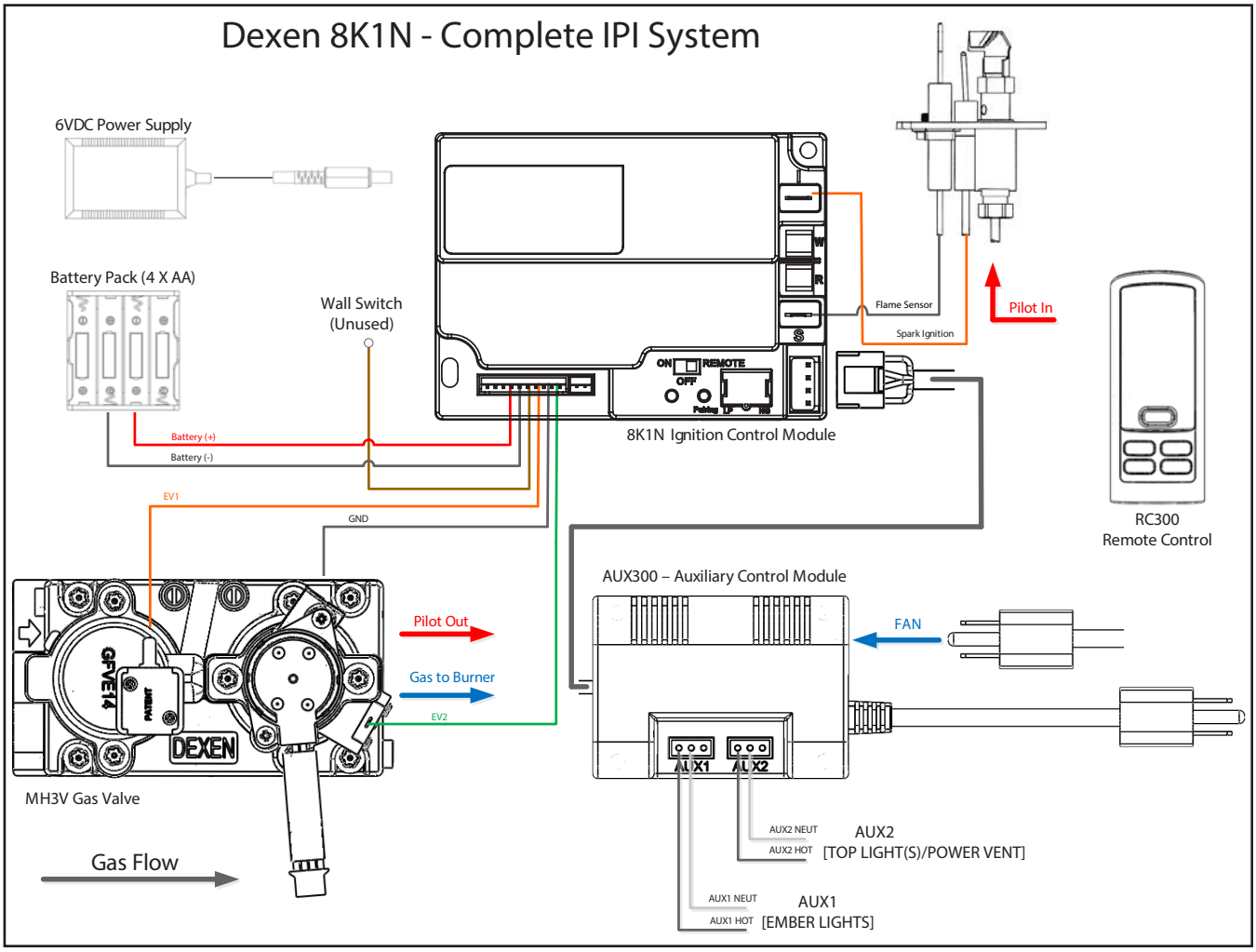


Figure 1: Dexen System Diagram

Wireless Controls

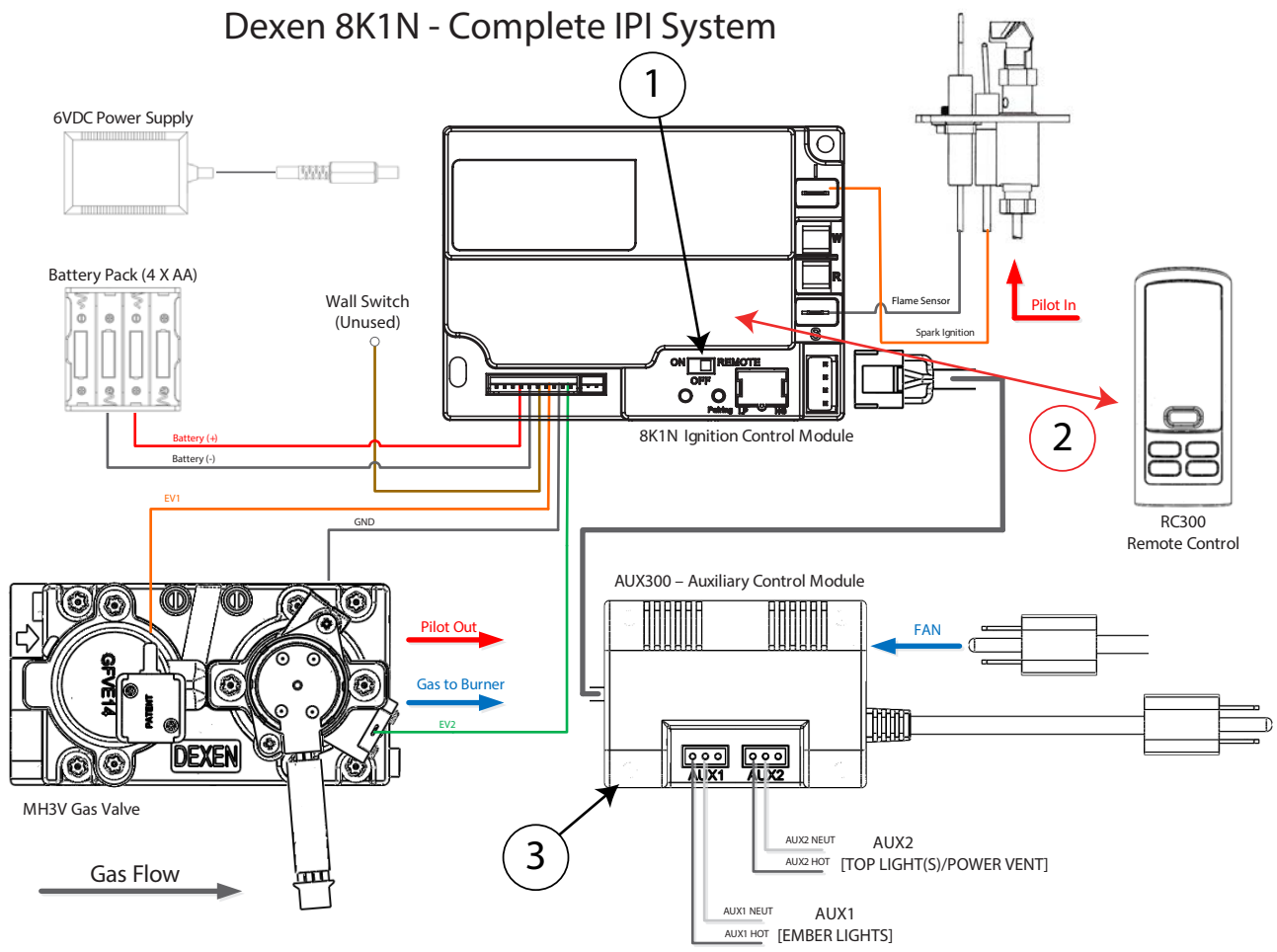


Figure 2: Wireless Controls Diagram

1. ON/OFF/REMOTE switch on module must be in REMOTE position for wireless remote control to work.
2. The control module communicates to and from the remote control via radio frequency. They must remain within 30 feet of each other. When in thermostat mode, signal transmission occurs 60 seconds.

AUX300 Module controls the comfort fan with an incorporated timer and rheostat. The AUX300 module also controls the two possible auxiliary functions: AUX1 - Ember Lights and AUX2 - Top Lights/Power Vent*. Both of these auxiliary functions are unit dependent.

*Note - If use of Power Vent is desired, a separate PVI control module must be acquired (50-4161).

Ignition Control Module

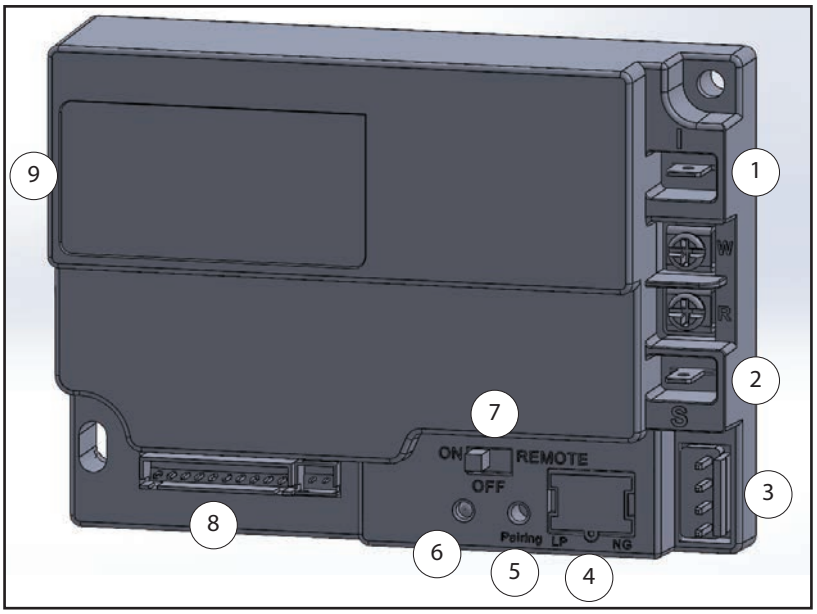


Figure 3: Control Module

1. Igniter: Sparks when commanded via remote control or manual control module switch to turn on main burner. Voltage through the wire to igniter on pilot assembly creates spark to ignite gas released to pilot assembly.
2. Sensor Rod: Acknowledges pilot flame is present before releasing gas to the main burner for ignition. When a pilot flame covers the sensor rod it conducts electrical current from the sensor through the flame to ground in one direction, which acts as a switch to the control module at this connection. Gas flows to the main burner 4-8 seconds after continuity happens via flame rectification.
3. Sends commands from the remote control to the AUX300 module, controlling the fan(s), ember lights, top lights, and power vent. The features that are connected to each auxiliary function are unit dependent.
4. Fuel Setting Switch: The factory default setting is Natural Gas but it must be converted if the fireplace is to use propane. This switch does not regulate gas pressure to the valve, but instead adjusts the control module settings for proper flame modulation. Take care when adjusting the switch. Use of a plastic screwdriver is recommended.
   ***Note**: The switch on the module is label with a "1" and an "ON". The "1" corresponds to NG (default setting), and the "ON" corresponds to LP. See Figure 4.
5. Pairing Button: Used to program up to three (3) remote controls to the fireplace.
6. Diagnostic LED: Displays state of control module. Error code chart provided on page 23.
7. ON/OFF/REMOTE Switch.
8. Valve Harness Connection: Port that connects the control module to the gas valve, stepper motor & battery backup.
9. Power Supply (side of module): Connection to 6VDC power supply.

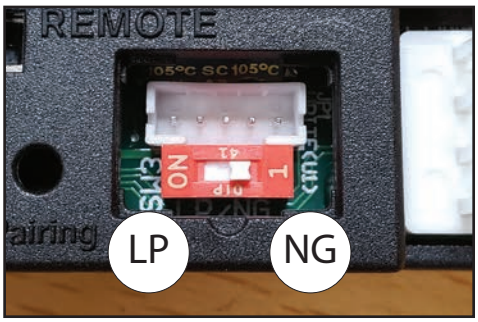


Figure 4: Fuel Setting Switch

Gas Valve with Stepper Motor

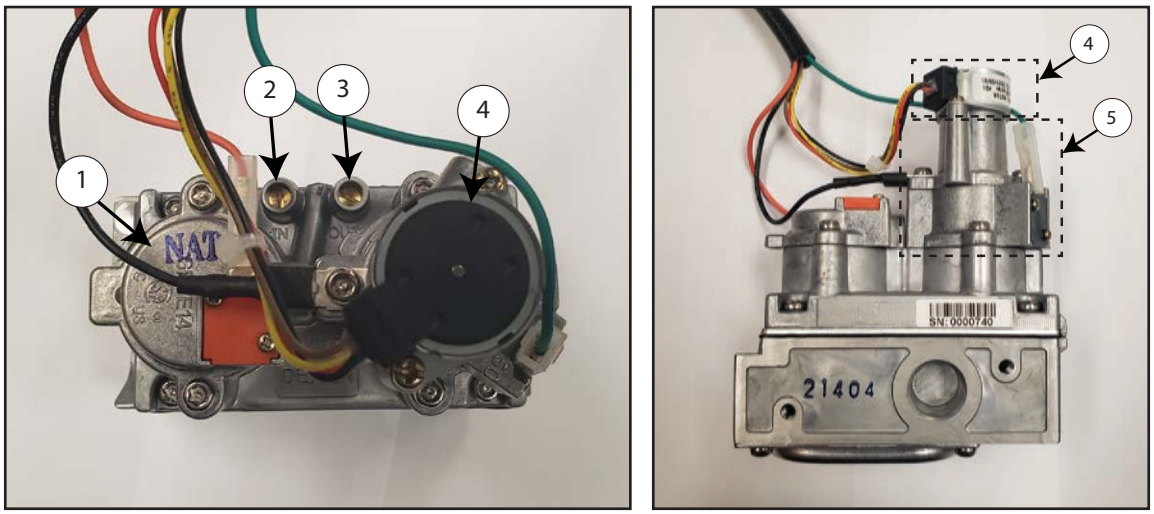


Figure 5: Dexen Gas Valve

1. Pilot Solenoid: Orange in colour. Stamped with “NAT”, factory default is set for Natural Gas.
2. Inlet Pressure Tap: Used to test the pressure at the inlet.
3. Manifold Pressure Tap: Used to test the pressure at the manifold.
4. Stepper Motor: This modulates the flame. The stepper motor is only available as an assembly with the main burner solenoid. Should the stepper motor fail to correctly operate, the valve will still function but without flame modulation.
5. Main Burner Solenoid: Green in colour. The main burner solenoid gets changed out when the unit is converted to Propane (along with attached stepper motor). A conversion kit is signified with a stamp of the pressure rating “6.4 - 10” along the side of the main burner solenoid. See Figure 6.

NOTE: The stepper motor/regulator assembly should never be disassembled

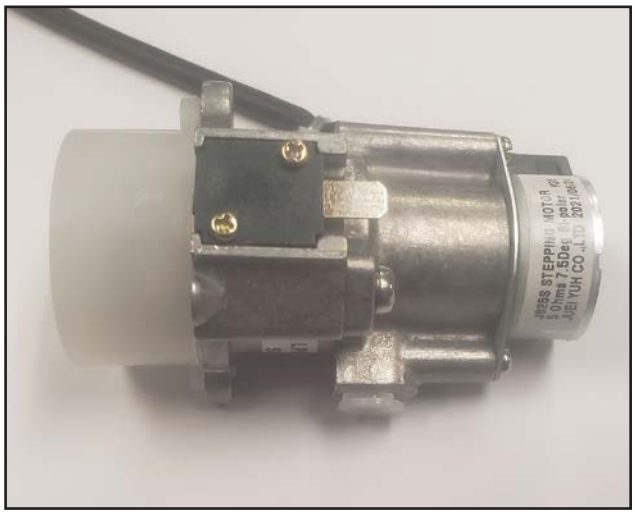


Figure 6: Main Burner Regulator - LP Conversion

Possible Scenarios

This guide will go over five possible scenarios of problems that could arise. It will list various ways to troubleshoot the problem to determine the root cause of the issue. The possible scenarios are:

- **Scenario #1**: Pilot won't light, no spark, no module beep
- **Scenario #2**: The module beeps, but no spark
- **Scenario #3**: Pilot sparks, but pilot will not light
- **Scenario #4**: Pilot lights, but continues to spark and main burner will not ignite
- **Scenario #5**: Pilot lights, stops sparking, and pilot remains lit. Burner will not light.
- **Scenario #6**: Power outage, fireplace will not turn on

Lockout Mode

In many cases, the diagnostic light on the control manual will flash a code to assist with trouble-shooting. A code chart can be found at the end of this manual on page 23. The module will then go into lockout mode which is signified by a flashing red/green diagnostic light. To reset the module and remove it from lockout mode, simply turn the module to "OFF", wait 5 seconds, and then turn it back to "ON". See Figure 7 below.

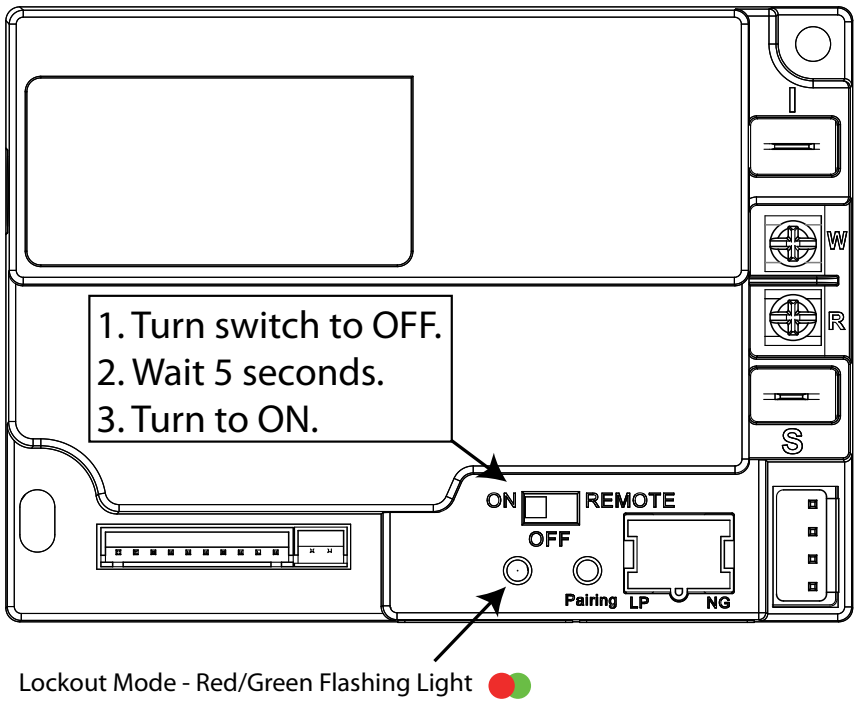


Figure 7: Reset Control Module from Lockout Mode

SCENARIO #1

PROBLEM: PILOT WON'T LIGHT, NO SPARK, NO MODULE BEEPS

Possible Causes:

1. Control Module selector switch not set properly.
2. Loose or improper wiring.
3. Optional wall switch used, wired incorrectly
4. No power from junction box.
5. No power to junction box.
6. No power from 6VDC power supply.
7. Fuel setting switch on module damaged or not fully engaged into LP or NG setting.
8. Faulty module.

Note

- Disconnect power to the system prior to disconnecting any components by switch the ON/OFF/REMOTE module switch to the OFF position.
- It is not recommended to operate the ignition control module with disconnected wire connections. A short could cause permanent damage.
- Applying a false flame to the pilot sensor (i.e. lighter etc.) will cause the module to go into lockout mode. This is due to a safety feature.

1. CONTROL MODULE SELECTOR SWITCH NOT SET PROPERLY

The selector switch must be in the "ON" or "REMOTE" setting for the unit to operate. Isolate the remote from the system when troubleshooting. Switch to "ON" to test operation. See Figure 8 below.

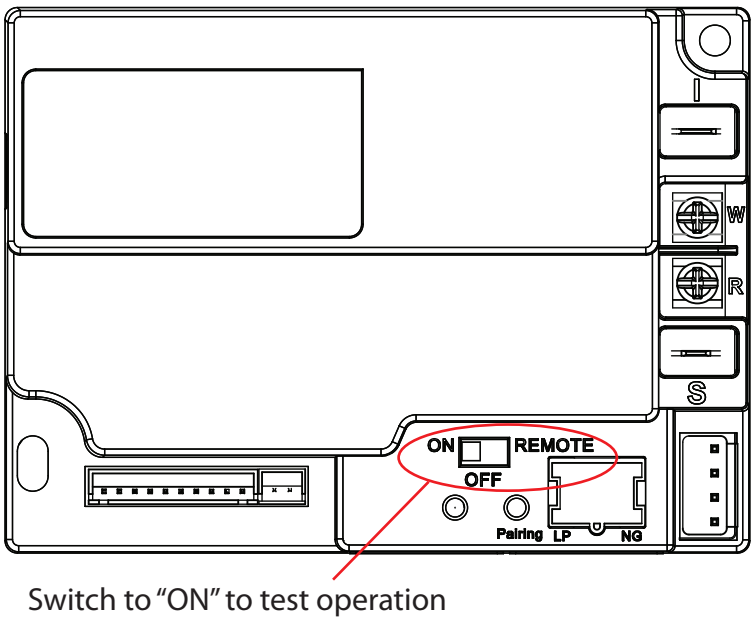


Figure 8: Control Module - Selector Switch Setting

2. LOOSE OR IMPROPER WIRING

Check the connection and continuity of all wiring supplying the voltage within the system. Use the wiring diagram see below in Figure 9.

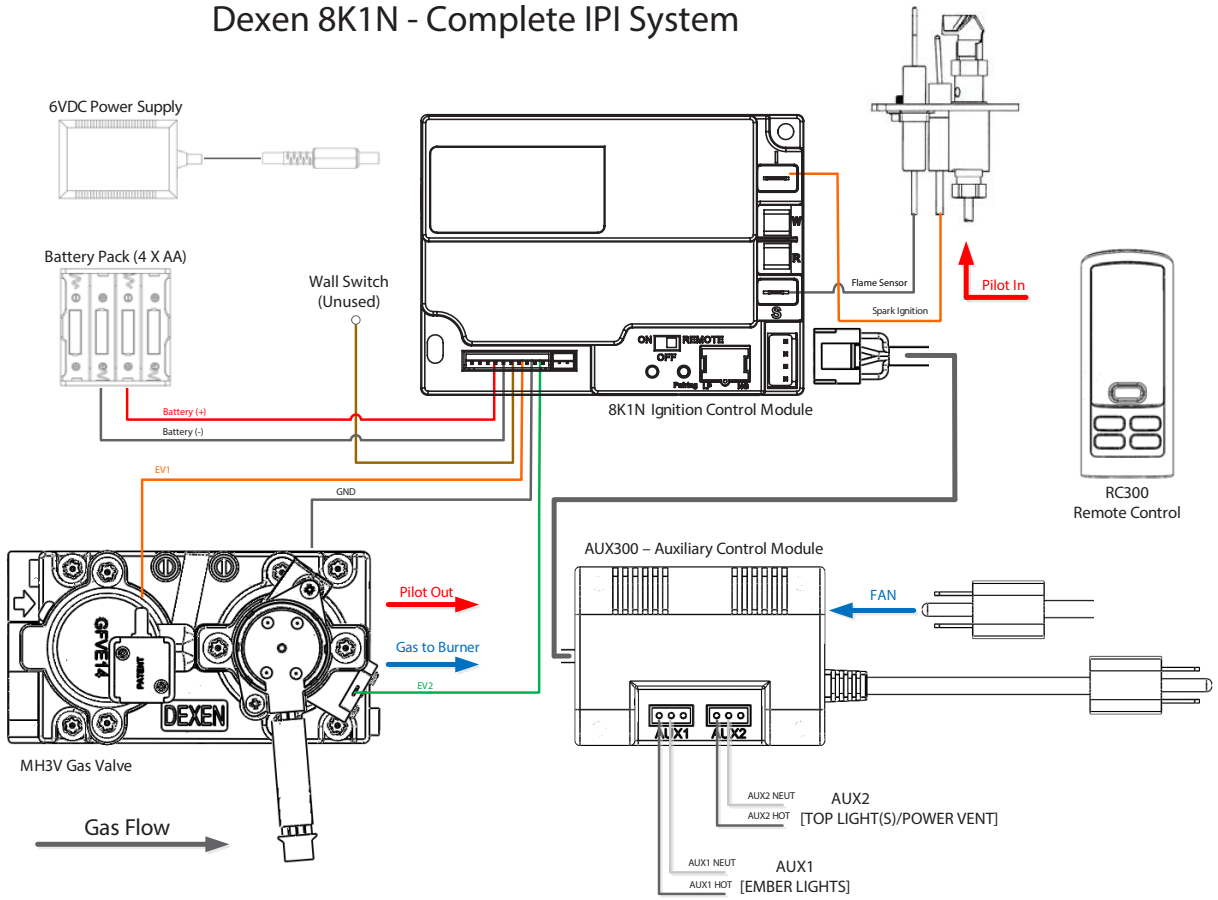


Figure 9: System Wiring Diagram

3. OPTIONAL WALL SWITCH USED, WIRED INCORRECTLY

Check the connection and continuity of the red and brown wire circuit if an optional wall switch has been used (see figure 10). From the factory the brown is left unused and the red wire is connected to the battery backup.

Note - When the wall switch is ON, the remote control will not be able to turn the fireplace OFF. Control of the AUX1, AUX2 and Fan circuits can still be done with the remote. When the wall switch is OFF, the remote control can once again turn the fireplace ON/OFF.

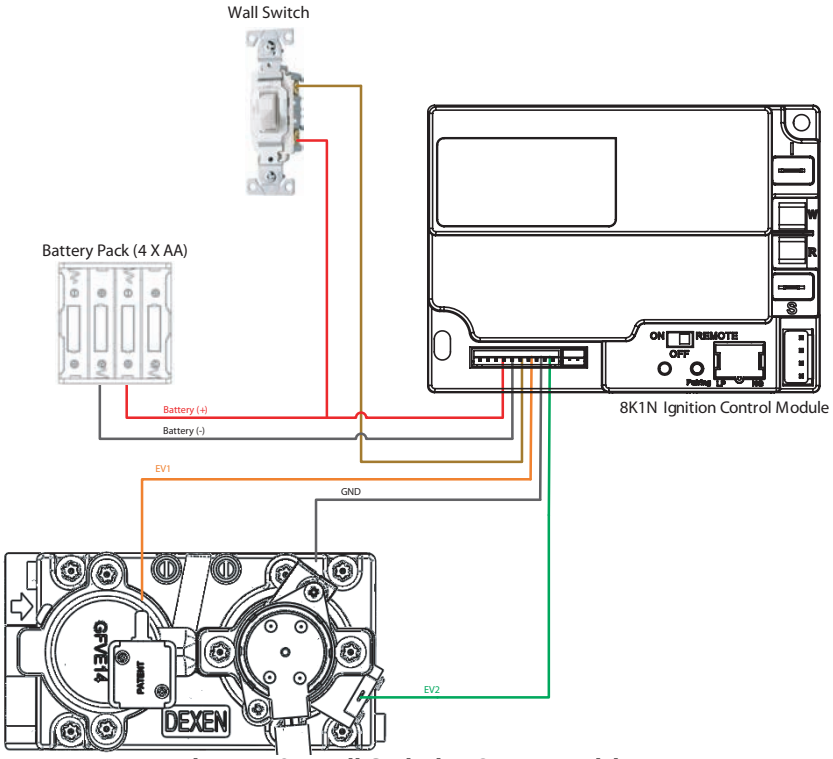


Figure 10: Wall Switch - Correct Wiring

4, 5, 6. NO POWER TO/FROM JUNCTION BOX. NO POWER FROM 6VDC POWER SUPPLY

Switch the control module to "OFF", wait 5 seconds, then switch to "ON". If the diagnostic light blinks green three times, there is power to the module (see Figure 11). Otherwise, continue with this step.

***Note**: Pulling and re-connecting the power supply cord from transformer does not serve as the same test as turning switch from "OFF" to "ON".

If the control module does not blink green three time when performing the previous step, test the voltage across the junction box using a multi-meter. The location of the junction box is dependent on the unit. It should read between 110 - 120 VAC.

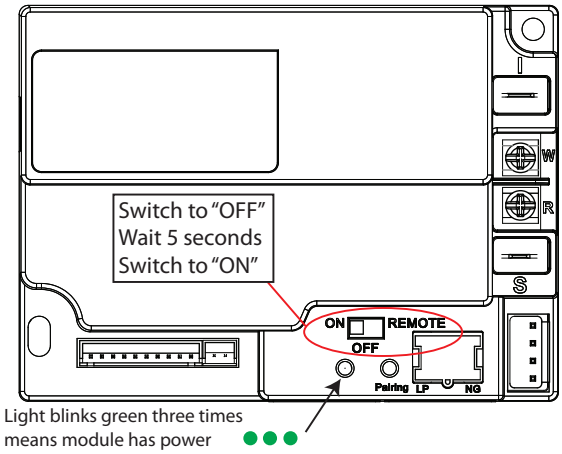


Figure 11: Control Module - Power Check

If there is no power from the junction box, trace the electrical supply to the junction box checking for proper wiring and continuity.

If there is power from the junction box, check the power from the 6VDC power supply. Disconnect the 6VDC from the control module but keep it plugged into the junction box. Insert one probe of the multi-meter into the cylindrical end of the 6VDC power supply and the other probe on the outer face of the cylindrical end. See Figure 12. The multi-meter should read approximately 6VDC.

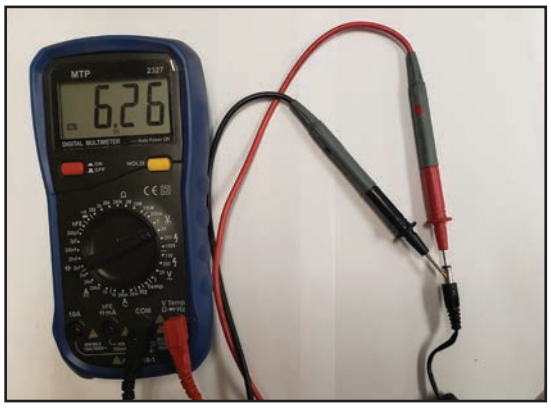


Figure 12: 6VDC Power Supply - Voltage Check

7. FUEL SETTING SWITCH ON MODULE DAMAGED OR NOT FULLY ENGAGED

Check that the fuel setting switch is not damaged and that it is properly engaged to the correct setting. See Figure 13 & Figure 14 below.

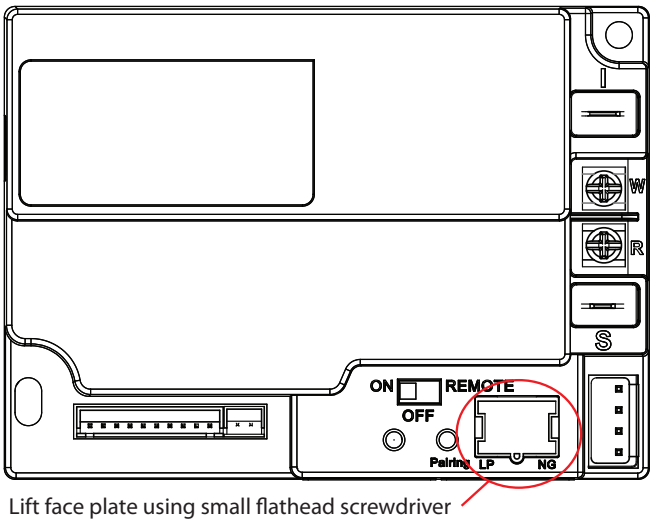


Figure 13: Control Module - Fuel Setting Switch Location

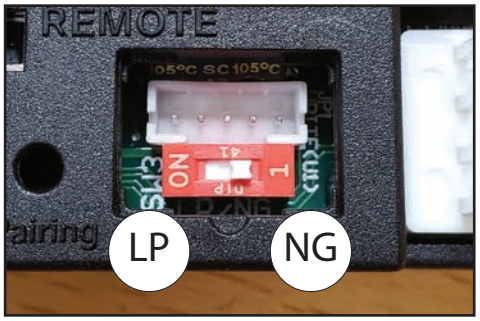


Figure 14: Fuel Setting Switch

8. FAULTY MODULE

Switch the control module to “OFF”, wait 5 seconds, then switch to “ON”. If the diagnostic light blinks red twice then goes into lockout mode (red/green flashing light), there is insufficient voltage from the ignition coil to the pilot flame ignitor. The control module will need to be replaced.

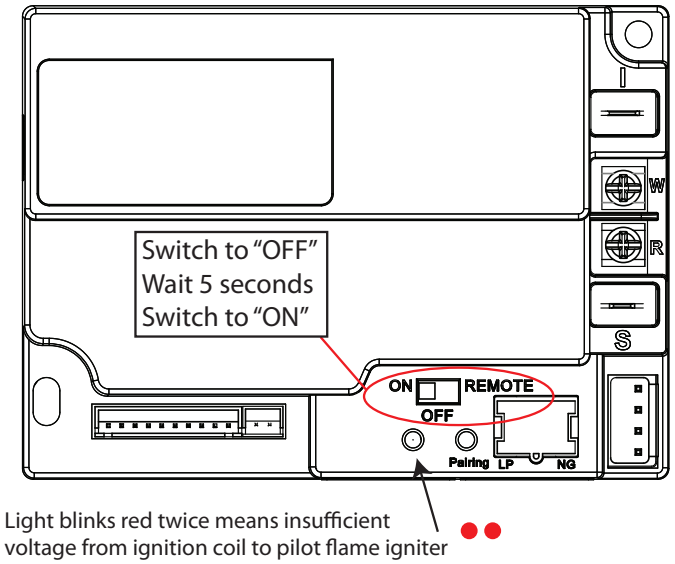


Figure 15: Control Module - Check Power

Scenario #2

Problem: The module beeps, but no spark

Possible Causes:

1. Loose or improper wiring.
2. Igniter wire is loose or disconnected.

Note

- Disconnect power to the system prior to disconnecting any components by switch the ON/OFF/REMOTE module switch to the OFF position.
- It is not recommended to operate the ignition control module with disconnected wire connections. A short could cause permanent damage.
- Applying a false flame to the pilot sensor (i.e. lighter etc.) will cause the module to go into lockout mode. This is due to a safety feature.

1. Loose or Improper Wiring

Check the connection and continuity of all wiring supplying the voltage within the system. Use the wiring diagram see below in Figure 16.

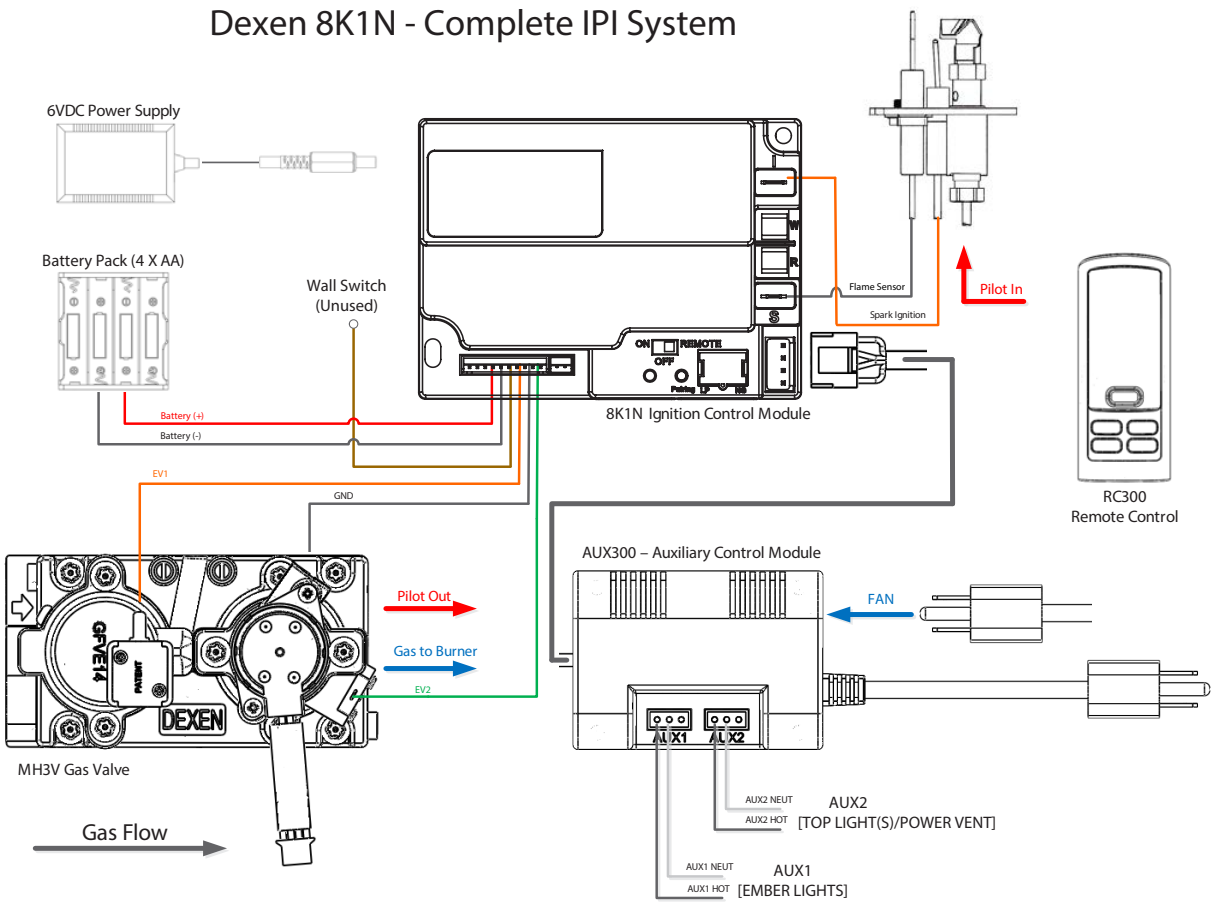


Figure 16: System Wiring Diagram

2. IGNITER WIRE IS LOOSE/DISCONNECTED/SHORTED

Switch the control module to “OFF”, wait 5 seconds, then switch to “ON”. If the diagnostic light blinks red three times then goes into lockout mode (red/green flashing light), the igniter wire may be loose or disconnected. Ensure the connection between the igniter wire and the control module. See Figure 17 below for locations of wire connection to control module.

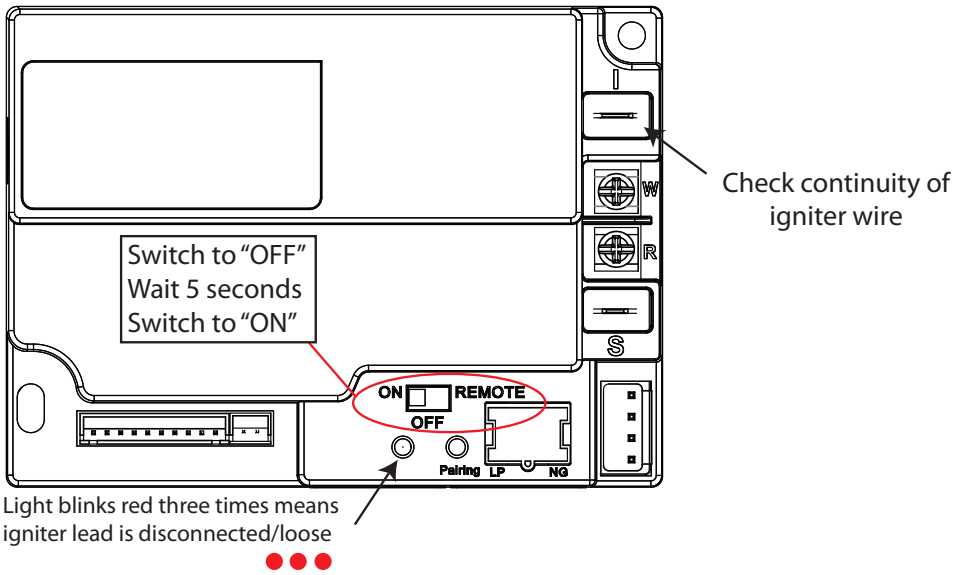


Figure 17: Control Module - Loose or Disconnected Igniter Wire

If the igniter attempts to light for 60 seconds before the module times out, flashes a green light three times, and goes into lockout mode, the igniter may be shorted. A short in the system could cause damage to the module.

Scenario #3

Problem: Pilot sparks, but pilot will not light

Possible Causes:

1. Gas supply.
2. Faulty module voltage to valve.
3. Faulty valve.

Note

- Disconnect power to the system prior to disconnecting any components by switch the ON/OFF/REMOTE module switch to the OFF position.
- Do Not operate the ignition control module with disconnected wire connections. A short could cause permanent damage.
- Applying a false flame to the pilot sensor (i.e. lighter etc.) will cause the module to go into lock-out mode. This is due to a safety feature.

1. Gas Supply

Ensure that all valves in the gas supply line are open and purged of air.

Check the valve inlet and manifold pressures using a manometer. The valve inlet and manifold taps are shown in Figure 18 below. The ranges of inlet and manifold pressures for NG and LP can be found in Table 1.

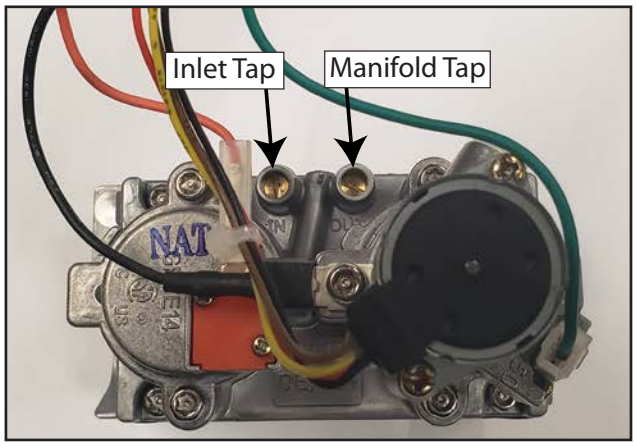


Figure 18: Dexen Valve - Inlet & Manifold Taps

Table 1: Inlet & Manifold Pressures for NG and LP configurations

	Natural Gas (NG)	Propane (LP)
Inlet Pressure	MAX: 7 inch W.C. (1.74 kPa)	MAX: 11 inch W.C. (2.74 kPa)
	MIN: 4.5 inch W.C. (1.12 kPa)	MIN: 10.4 inch W.C. (2.59 kPa)
Manifold Pressure	MAX: 3.5 inch W.C. (0.87 kPa)	MAX: 10 inch W.C. (2.74 kPa)
	MIN: 1.6 inch W.C. (0.39 kPa)	MIN: 6.4 inch W.C. (1.59 kPa)

Check the continuity of the gas supply line to the pilot assembly. Ensure the pilot assembly is free from any obstructions and debris.

2. FAULTY MODULE VOLTAGE TO VALVE

Check the voltage to the pilot solenoid by connecting a multi-meter to the valve as shown in Figure 19 below. This test should be performed during the lighting sequence.

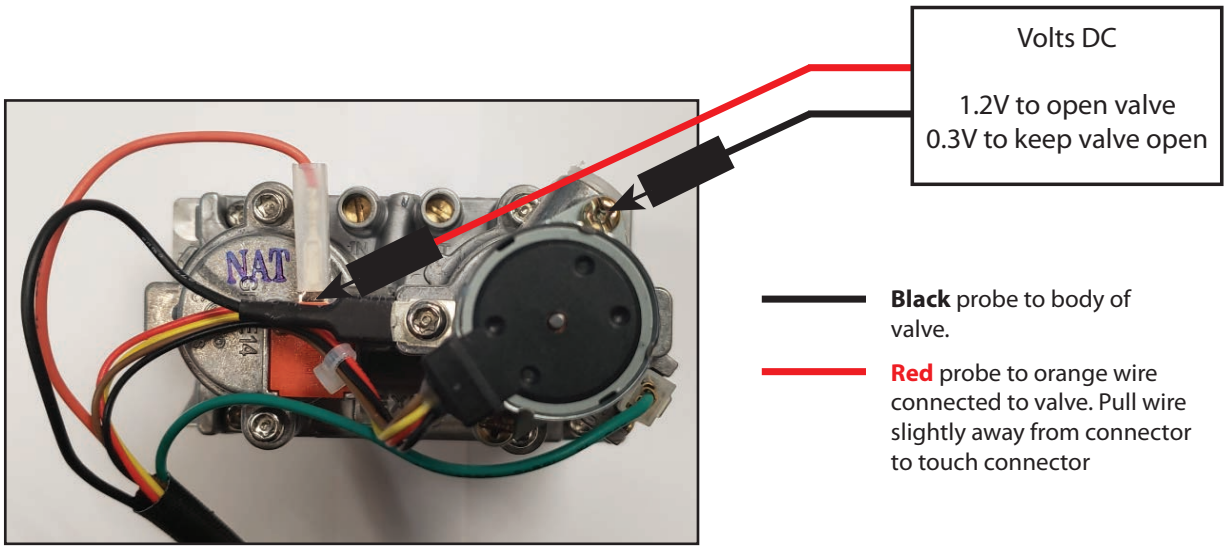


Figure 19: Dexen Valve - Pilot Solenoid Voltage

3. FAULTY VALVE (PILOT SOLENOID)

To check the pilot and burner solenoids, disconnect the wires from the valve. Adjust the multi-meter to read Ohms and measure the resistance between the pilot/burner solenoid and the body of the valve. Refer to Figure 20 for probe locations and approximate readings of the multi-meter.

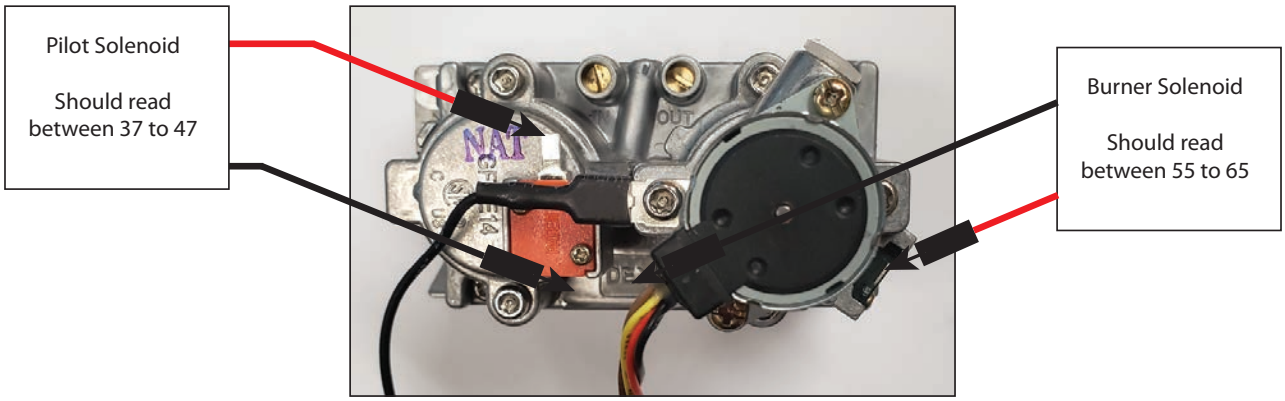


Figure 20: Dexen Valve - Pilot & Burner Solenoid

Scenario #4

Problem: Pilot lights, but continues to spark and main burner will not ignite

Possible Causes:

1. Gas Supply.
2. Flame Sensor shorted or disconnected.
3. Poor flame rectification or contaminated sensor.
4. Faulty valve.

Note

- Disconnect power to the system prior to disconnecting any components by switch the ON/OFF/REMOTE module switch to the OFF position.
- It is not recommended to operate the ignition control module with disconnected wire connections. A short could cause permanent damage.
- Applying a false flame to the pilot sensor (i.e. lighter etc.) will cause the module to go into lock-out mode. This is due to a safety feature.

1. Gas Supply

Ensure that all valves in the gas supply line are open and purged of air.

Check the valve inlet and manifold pressures using a manometer. The valve inlet and manifold taps are shown in Figure 21 below. The ranges of inlet and manifold pressures for NG and LP configurations can be found in Table 2.

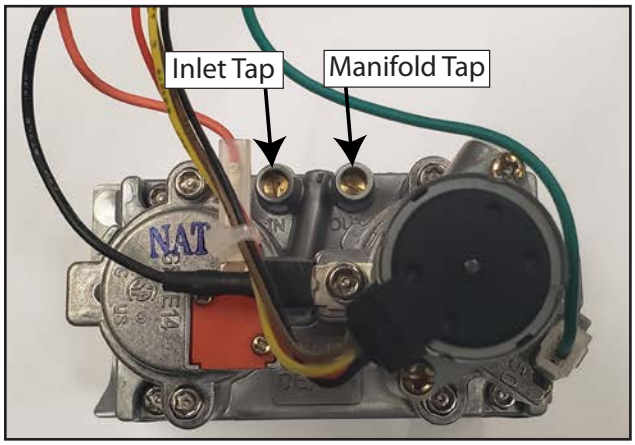


Figure 21: Dexen Valve - Inlet & Manifold Taps

Table 2: Inlet & Manifold Pressures for NG and LP configurations

	Natural Gas (NG)	Propane (LP)
Inlet Pressure	MAX: 7 inch W.C. (1.74 kPa)	MAX: 11 inch W.C. (2.74 kPa)
	MIN: 4.5 inch W.C. (1.12 kPa)	MIN: 10.4 inch W.C. (2.59 kPa)
Manifold Pressure	MAX: 3.5 inch W.C. (0.87 kPa)	MAX: 10 inch W.C. (2.74 kPa)
	MIN: 1.6 inch W.C. (0.39 kPa)	MIN: 6.4 inch W.C. (1.59 kPa)

2. FLAME SENSOR SHORTED OR DISCONNECTED

Switch the control module to “OFF”, wait 5 seconds, then switch to “ON”. If the diagnostic light blinks red three times then goes into lockout mode (red/green flashing light), the sensor wire may be loose or disconnected. Ensure the connection between the sensor wire and the control module. See Figure 22 below for locations of wire connection to control module.

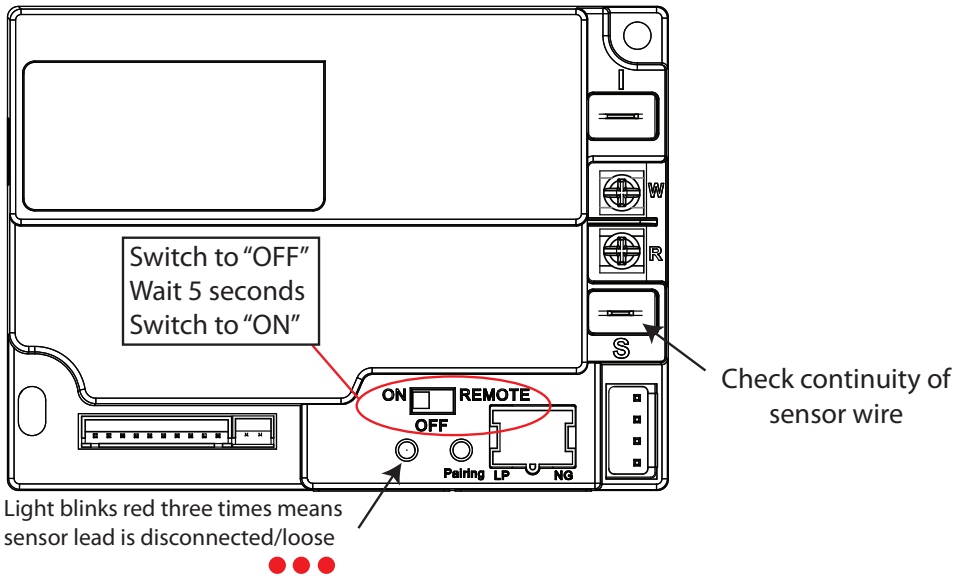


Figure 22: Control Module - Loose or Disconnected Sensor Wire

3. POOR FLAME RECTIFICATION OR CONTAMINATED SENSOR

If the flame sensor is contaminated it will prevent system continuity and the control module will go into lockout after 60 seconds. Any visible carbon or oxide buildup found on the flame sensor will need to be cleaned with emery cloth. Check the continuity of the sensor using a multi-meter in the Ohm (Ω) setting (see Figure 23 below).

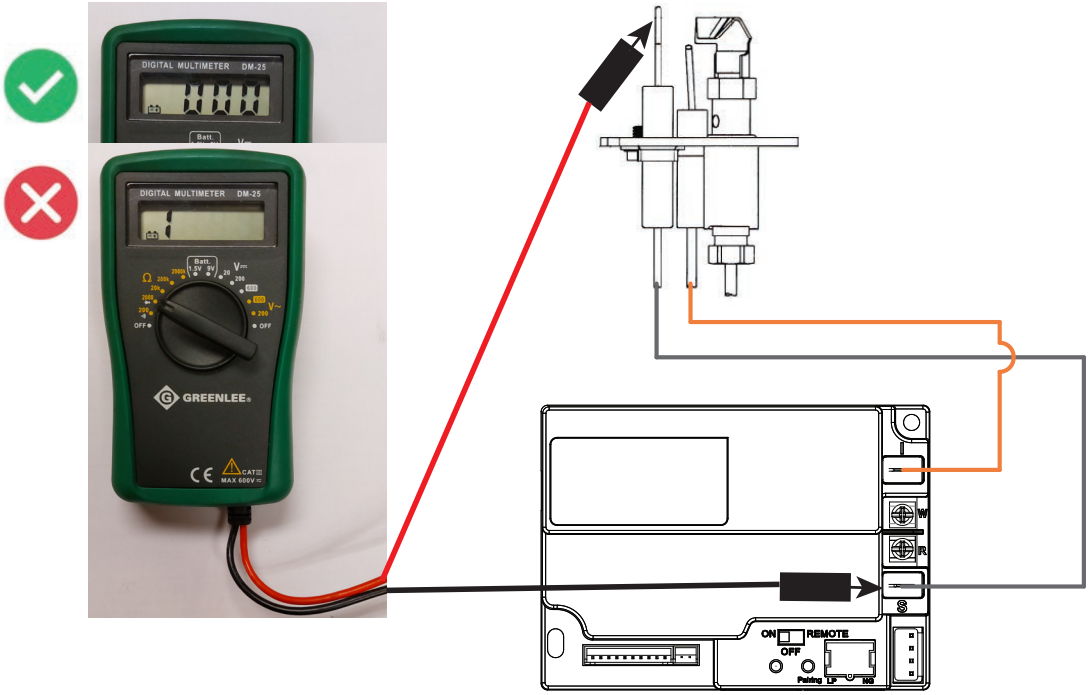


Figure 23: Pilot Sensor Continuity

4. FAULTY VALVE (PILOT SOLENOID)

To check the pilot and burner solenoids, disconnect the wires from the valve. Adjust the multi-meter to read Ohms and measure the resistance between the pilot/burner solenoid and the body of the valve. Refer to Figure 24 for probe locations and approximate readings of the multi-meter.

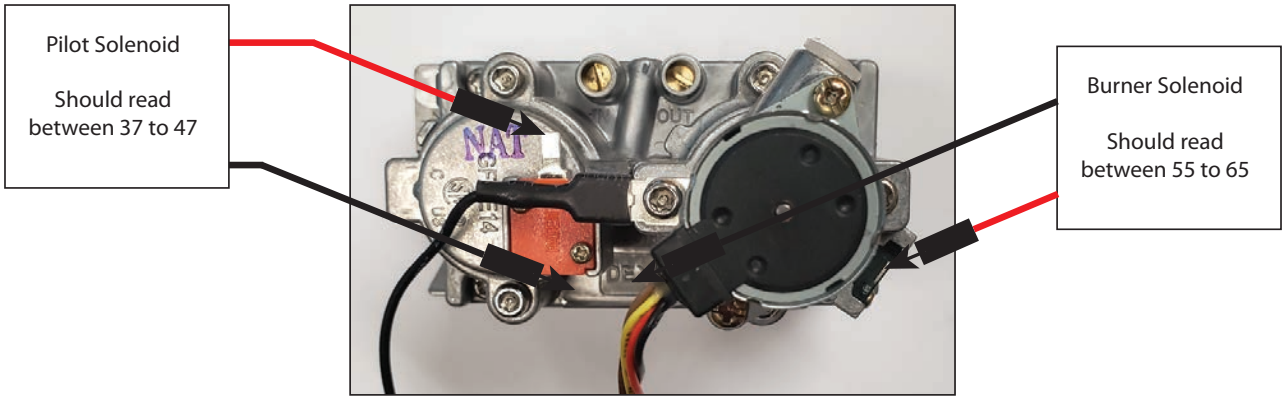


Figure 24: Dexen Valve - Pilot & Burner Solenoid

Scenario #5

Problem: Pilot lights, stops sparking, and pilot remains lit. Burner will not light

Possible Causes:

1. Faulty module.
2. Faulty valve.

Note

- Disconnect power to the system prior to disconnecting any components by switch the ON/OFF/REMOTE module switch to the OFF position.
- It is not recommended to operate the ignition control module with disconnected wire connections. A short could cause permanent damage.
- Applying a false flame to the pilot sensor (i.e. lighter etc.) will cause the module to go into lock-out mode. This is due to a safety feature.

1. Faulty Module (Burner Solenoid)

Check the voltage to the burner solenoid by connecting a multi-meter to the valve as shown in Figure 25 below. This test should be performed during the lighting sequence.

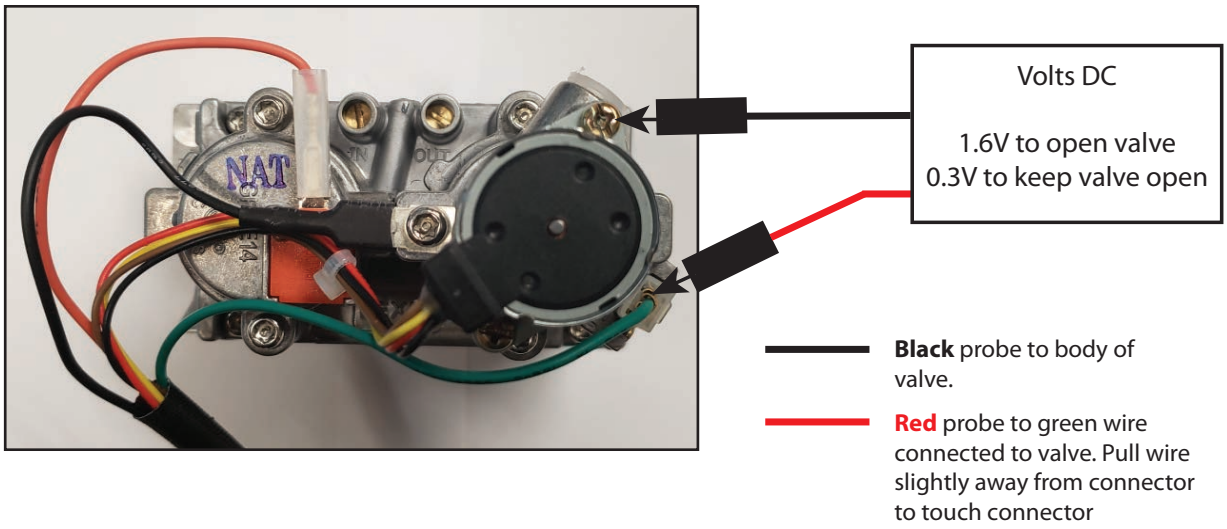


Figure 25: Dexen Valve - Burner Solenoid Valve

Scenario #5

2. Faulty Valve (Burner Solenoid)

To check the pilot and burner solenoids, disconnect the wires from the valve. Adjust the multi-meter to read Ohms and measure the resistance between the pilot/burner solenoid and the body of the valve. Refer to Figure 26 for probe locations and approximate readings of the multi-meter.

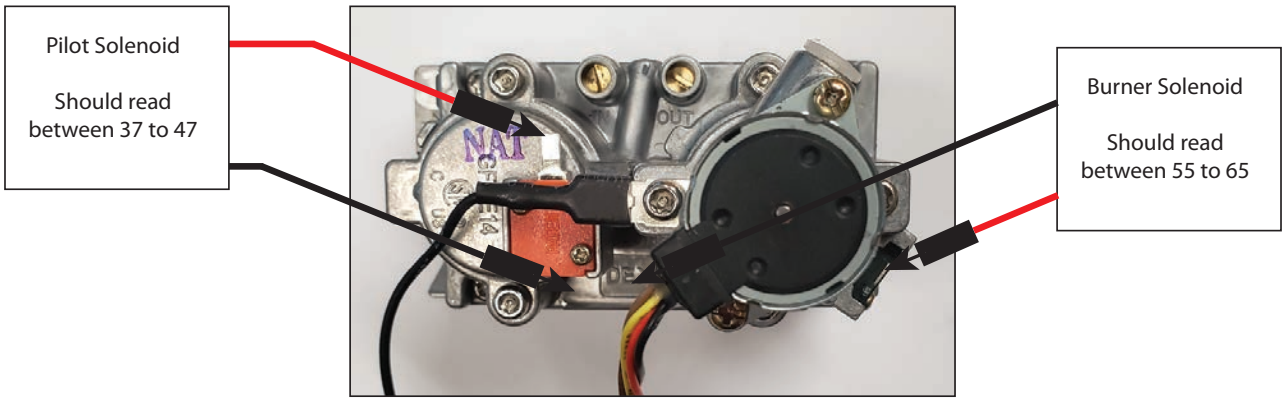


Figure 26: Dexen Valve - Pilot & Burner Solenoid

Scenario #6

Problem: Power outage, fireplace will not turn on

In the event of a power outage the fireplace should remain operational via the 4 x AA battery backup. **Note**, during a power outage AUX1, AUX2 and Fan functions **will not be operational**.

Possible Causes:

1. Loss of remote signal

When the fireplace looses power while in operation it may not automatically turn back on even though the remote will still be ON. Press the power button on the remote once to turn it off then again to turn the fireplace back ON.

2. Dead Batteries

Remove the batteries from the battery holder and check the voltages with a multi-meter. Confirm each battery is outputting 1.4 - 1.5 VDC. If measured voltage is lower, replace with new batteries.

3. Blown Battery Fuse

Open the in-line fuse holder on the battery backup and remove the glass fuse. Visually inspect the fuse and check for continuity using a multimeter. Replace if blown / faulty.

1A Glass Fuse
5mm x 20mm (M205)

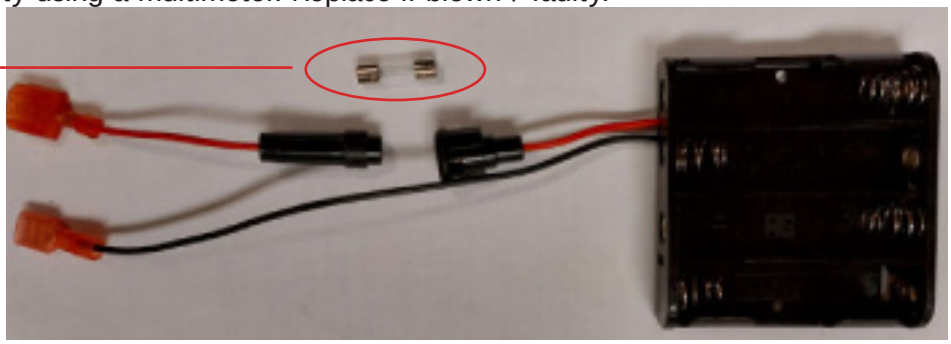


Figure 27: Battery Backup - Fuse

Diagnostic Codes

Table 3: Control Module - Diagnostic Code Troubleshooting

CODE	RESPONSE	ERROR CAUSE	ERROR RESOLUTION
1 Flash	Module flashes error code and goes into lock-out mode.	1. Fuel-type selector in incorrect position. 2. Fuel-type selector switch damaged.	1. Verify that the selector stops at the correct position when rotated gently with a precision screwdriver
2 Flash	Module flashes error code and goes into lock-out mode.	Insufficient voltage from ignition coil to pilot flame ignitor.	Clear Lock-Out and attempt ignition. If condition persists, replace module.
3 Flash	Pilot sparks and may ignite for up to 60 seconds but main will not open. If condition occurs for ≥ 60 seconds, module flashes error code, shuts down pilot, and goes into lockout mode.	1. Inadequate gas supply 2. False flame detected 3. Short in sense lead 4. Sense and/or igniter lead disconnected	1. Verify proper inlet pressure to the gas line. 2. Verify that pilot leads are correctly terminated to the control module and that no shorted wires exist 3. Verify that the pilot sense rod, igniter rod, and hood are clean.

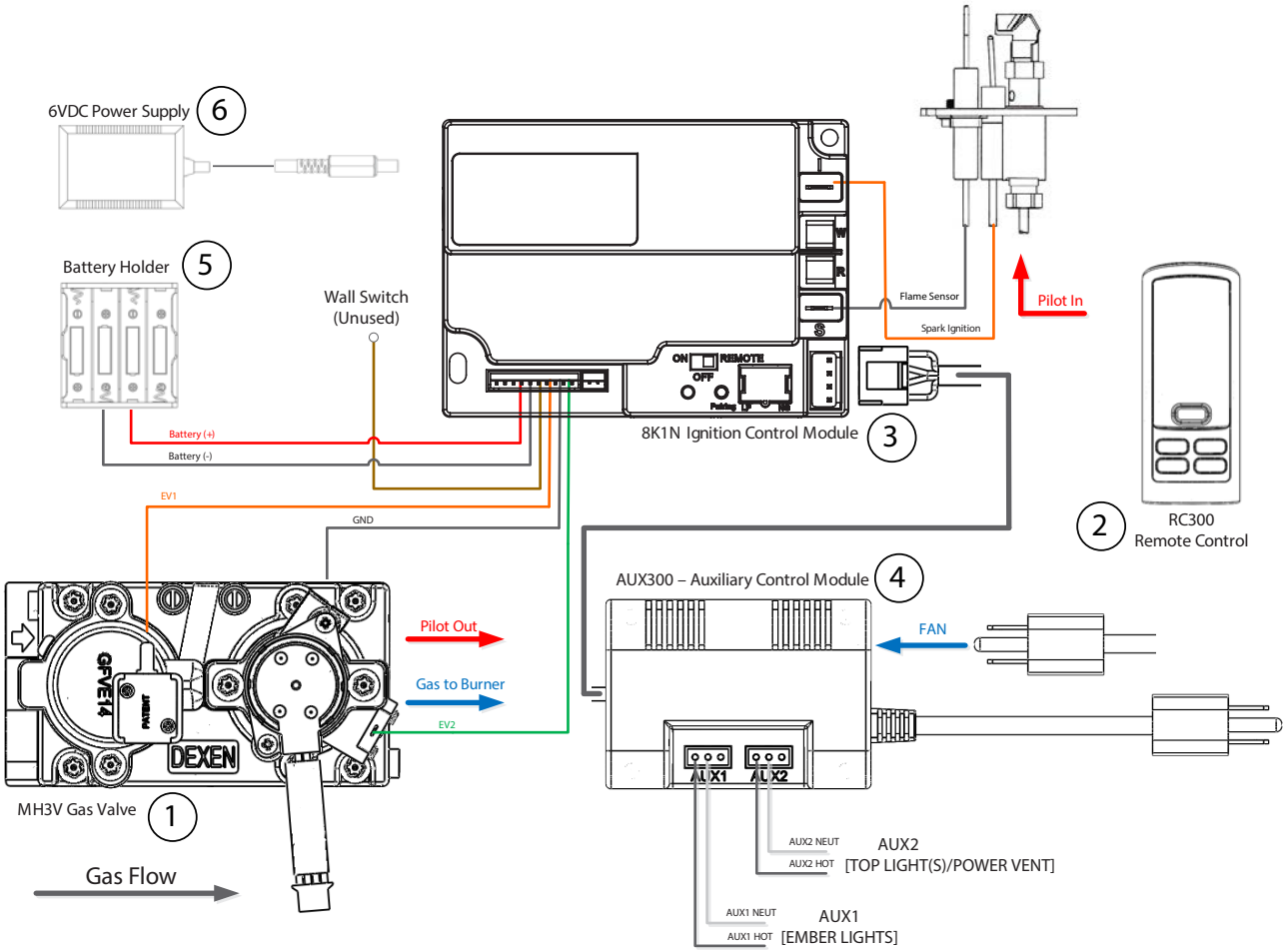
Table 4: Control Module - Diagnostic Codes Detailed

LED Signal	Item	Continue time	Checking Criteria
Red LED Flash 1 time	LPG/NAT Switch Failure	1 Sec	LPG/NAT switch adjusted during combustion.
Red LED Flash 2 time	Sparking Error	1 Sec	Sparking signal feedback prior to ignition.
		>60 Sec	No sparking signal return exceed 60 sec.
Red LED Flash 3 time	Igniting Error	5 Sec	Flame signal sensed prior to ignition
Red LED Flash 4 time	Trial for Ignition	>60 Sec	Trial for ignition > 60 sec.
Red LED Flash 6 time	Pilot Valve Error	5 Sec	1. Pilot valve wrong voltage prior to ignition. 2. Pilot valve wrong voltage during combustion.
Red LED Flash 7 time	- Main Valve Error - Hi Limit Sensor Tripped (if equipped)	5 Sec	1. Main valve wrong voltage prior to ignition. 2. Main valve wrong voltage during combustion.

Replacement Parts

Table 5: Dexen Replacement Parts

Reference #	Part Description	Part #
1	MH3V Gas Valve w/ Harness	50-4152
2	RC300 Remote	50-4153
3	8K1N Ignition Module	50-4154
-	8K1N-PVI Ignition Module	50-4161
4	AUX300 Module	50-4155
5	Battery Holder	50-4156
6	6V Power Supply	50-4157
-	Dexen NG to LP Conversion (Stepper Motor Kit)	50-4148
-	Dexen LP to NG Conversion (Stepper Motor Kit)	50-4149



Notes

MANUFACTURED BY:
SHERWOOD INDUSTRIES LTD.
6782 OLDFIELD RD. SAANICHTON, BC, CANADA V8M 2A3
www.enviro.com
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