

# OPTUM

## Quick-Start Installation Guide



### Tools Required

- Combustion Analyzer
- Size 50-200: 2.5mm Allen Wrench
- Size 300-400: Flat Head Screw Driver
- Phillips Screw Driver
- Wire Jumper



### **WARNING**

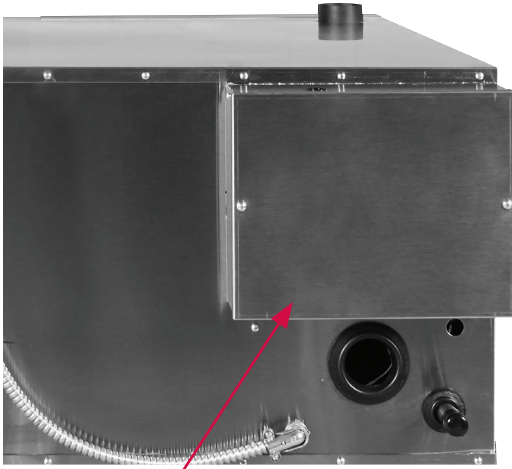
**MUST BE FOLLOWED STEP BY STEP OR PROBLEMS WILL OCCUR**



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## STEP 1

Remove control box cover and power venter access panel.



Control Box Cover



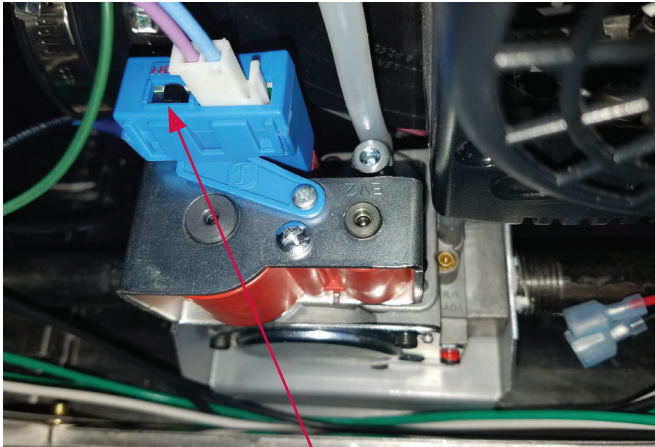
Power Venter Access Panel

Burner Access Panel

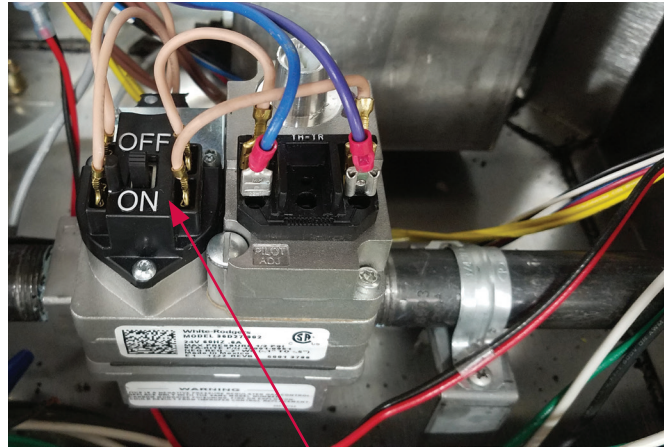
## STEP 2

Turn power and gas on.

Note: Remember to turn gas valve on/off switch to the "On" position



Size 50-200: Gas Valve On/Off Switch



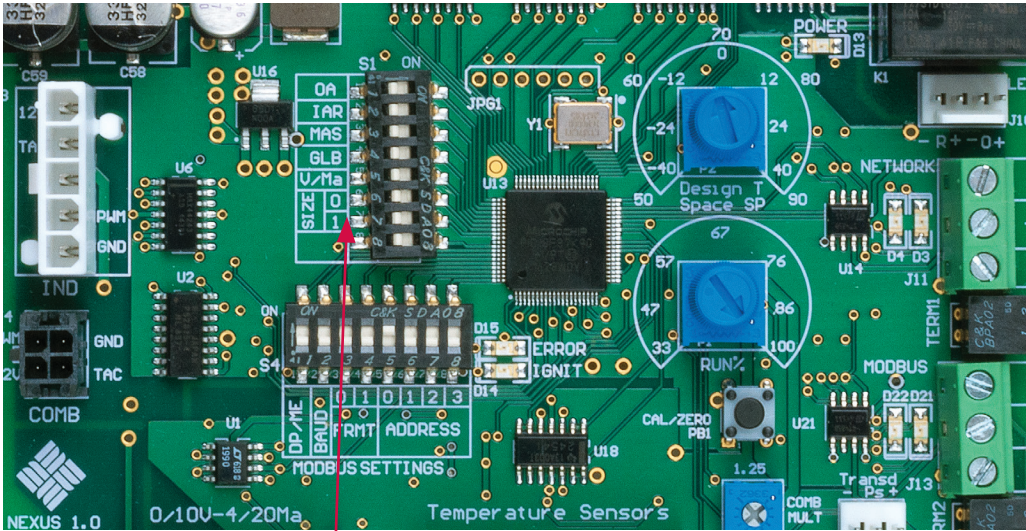
Size 300-400: Gas Valve On/Off Switch



### STEP 3

Set gas control mode dip switches #1-5 to zero.

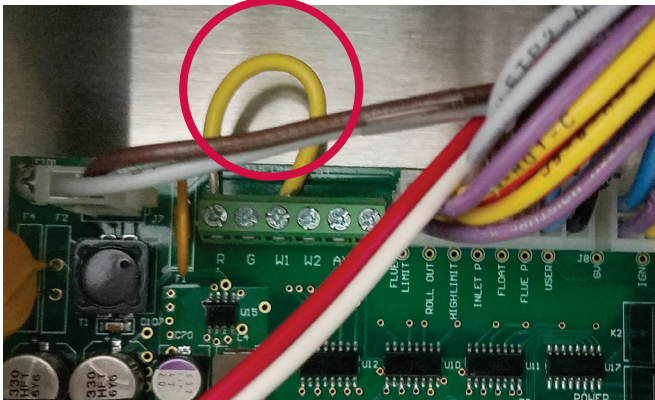
Note: Dip switches #6-8 should not need to be changed since they are set by the factory for the unit size. See "Dip Switch #6-8" table in OPERATION section of the unit installation manual for additional information. If applicable remove the 2-10 VDC wires from control board.



Switches 1-5 for Gas Control Mode

### STEP 4

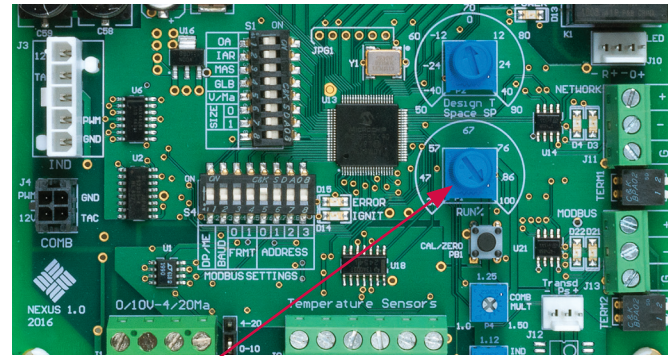
Jumper R to W1 to call for heat.



### STEP 5

Set Run % Potentiometer to 100%.

Note: Allow the unit to run for 2 minutes to ensure the unit reaches 100% fire.



Run % Potentiometer

### STEP 6

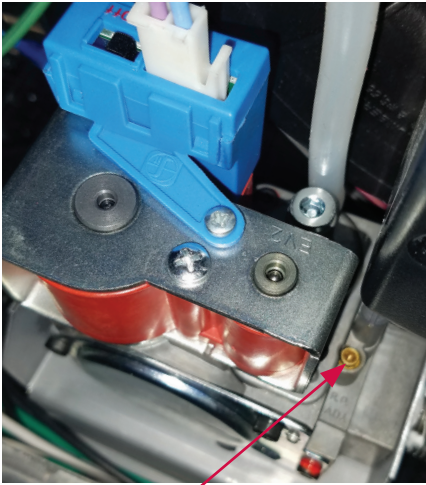
Place combustion analyzer in flue pipe.



## STEP 7

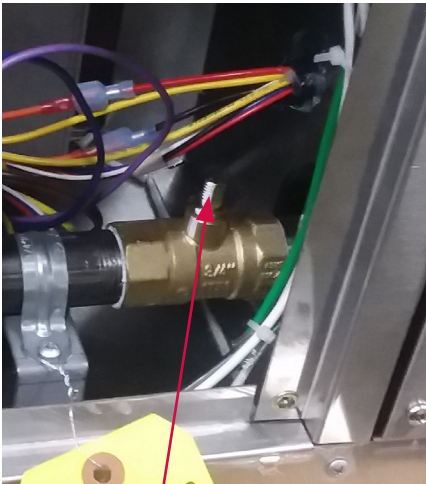
Adjust high fire on gas valve or trim valve based on Table 1.

Size 50-200: Gas Valve



High Fire Adjustment

Size 300-400: Trim Valve

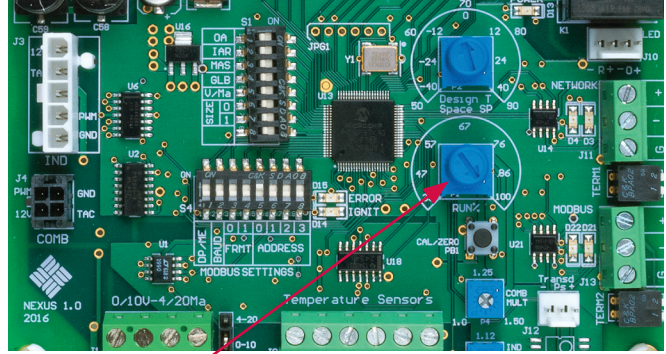


High Fire Adjustment

## STEP 8

Set Run % Potentiometer to 33%.

Note: Allow the unit to run for 2 minutes to ensure the unit to reaches 33% fire.



Run % Potentiometer

**Table 1**  
High Fire Gas Valve Adjustment:

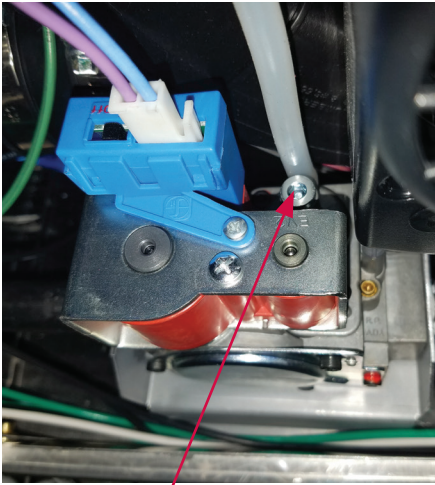
Unit Size (MBH)	CO <sub>2</sub> Meter Reading		O <sub>2</sub> Meter Reading		Action Required Gas Valve Adjustment
	Natural Gas	Propane Gas	Natural Gas	Propane Gas	
50 & 150	<7.4%	<8.7%	<7%	<6.7%	↻ Counter Clockwise
50 & 150	>7.9%	>9.3%	>7.9%	>7.6%	↻ Clockwise
100 & 200	<7.5%	<8.9%	<6.9%	<6.5%	↻ Counter Clockwise
100 & 200	>8.0%	>9.3%	>7.7%	>7.6%	↻ Clockwise
300	<7.5%	<8.6%	<6.9%	<6.5%	↻ Counter Clockwise
300	>8.0%	>9.0%	>7.7%	>7.3%	↻ Clockwise
400	<7.5%	<8.6%	<6.9%	<6.5%	↻ Counter Clockwise
400	>8.0%	>9.3%	>7.7%	>7.6%	↻ Clockwise



## STEP 9

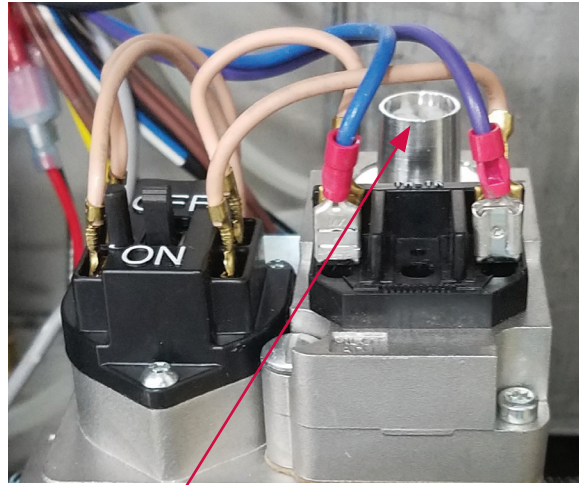
Adjust low fire on gas valve based on Table 2.

Size 50-200: Gas Valve



Low Fire Adjustment

Size 300-400: Gas Valve



Gas Valve Adjustment

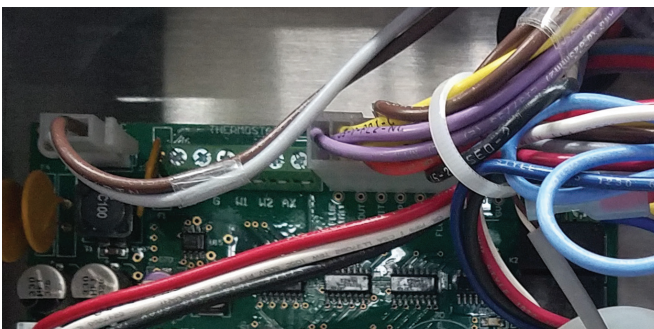
**Table 2**

Low Fire Gas Valve Adjustment:

Unit Size (MBH)	CO <sub>2</sub> Meter Reading		O <sub>2</sub> Meter Reading		Action Required
	Natural Gas	Propane Gas	Natural Gas	Propane Gas	Gas Valve Adjustment
50-200	<4.2%	<5.3%	<12%	<12%	↻ Clockwise
50-200	>5.0%	>5.8%	>13.3%	>12.7%	↺ Counter Clockwise
300	<4.0%	<5.0%	<12.3%	<12.5%	↺ Counter Clockwise
300	>4.5%	>5.4%	>13.6%	>13.1%	↻ Clockwise
400	<4.2%	<5.3%	<12%	<12%	↺ Counter Clockwise
400	>5.0%	>5.8%	>13.3%	>12.7%	↻ Clockwise

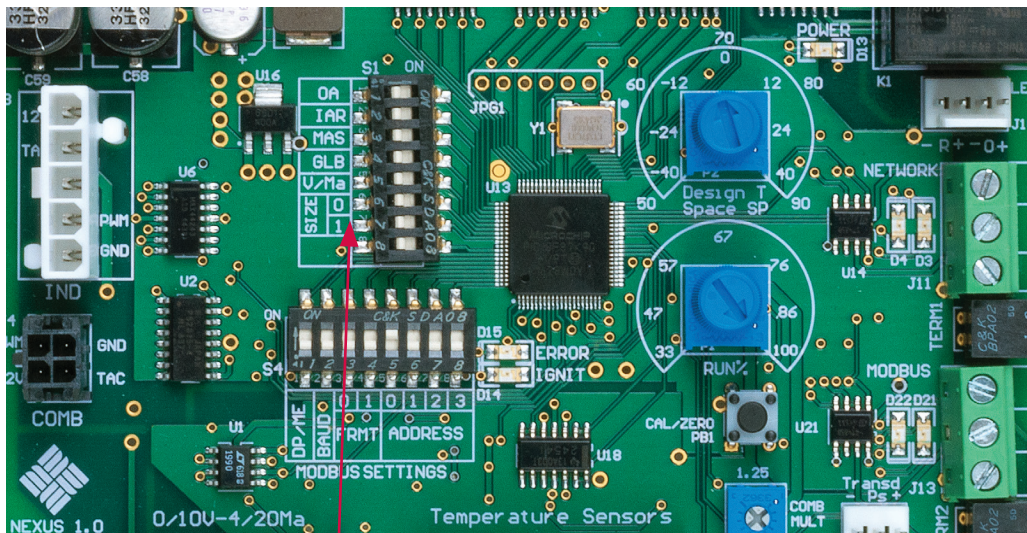
## STEP 10

Remove R to W1 jumper. Turn thermostat to lowest setting and confirm unit turns off.



## STEP 11

Select desired gas control and set thermostat to desired temperature.



Switches 1-5 for Gas Control Mode

**Modulating with Outdoor Air Reset (Master)** – This gas control should be used in regions with large temperature swings. The unit will automatically vary the discharge air temperature based on the outside air temperature. Set the “Design T/Space SP” potentiometer to outdoor air temperature where the unit should be at 100% fire (usually design outdoor air temperature used in sizing the unit).

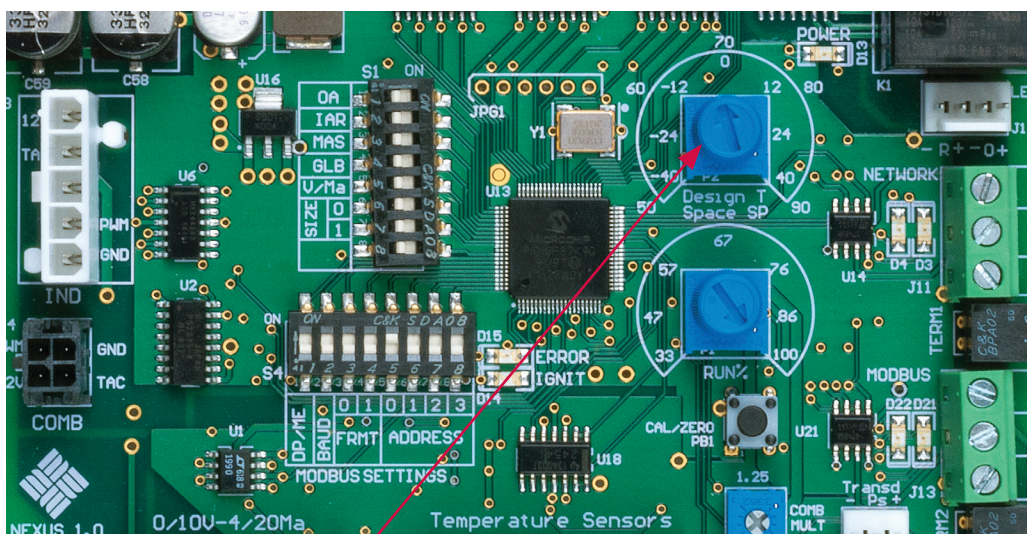
Note: If ordered with Outdoor Air Reset, unit will come with an Outdoor Air Sensor for field installation. The unit can be field converted to Outdoor Air Reset by ordering the Outdoor Air Sensor, part number 11J11R09966-001.

*Dip Switch Settings: #1 & 3 – ON; #2, 4 & 5 – OFF*

**Modulating with Outdoor Air Reset (Network)** – This gas control modulates the unit the same as Outdoor Air Reset (Master). However, it does not require a separate outdoor air sensor. It allows the master unit to share the outdoor air temperature with all networked units. Set the “Design T/Space SP” potentiometer to outdoor air temperature where the unit should be at 100% fire (usually design outdoor air temperature used in sizing the unit).

Note: One master unit is required per networked group; when networked together, the Master and Member units need to be set to the same Modbus address.

*Dip Switch Settings: #1 & 4 – ON; #2, 3 & 5 – OFF*



Design T/Space SP Potentiometer



**Indoor Air Reset** – This gas control attempts to learn your building’s heating needs and run at the bare minimum to keep the space temperature within the allowed range. The unit will vary the discharge air temperature so the unit is running at lowest output possible without short cycling.

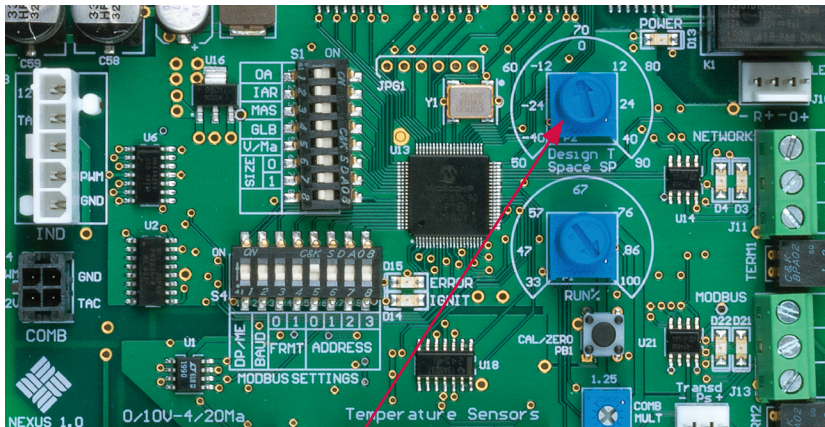
Note: A W2 call will act as a room override and force the unit to high fire.

*Dip Switch Settings: #2 – ON; #1, 3-5 – OFF*

**Room Sensing** – This gas control allows the unit to vary the discharge air temperature to more closely match the needs of the space for precise temperature control. Set “Design T/Space SP” potentiometer to desired room temperature.

Note: If ordered with Room Sensing, unit will come with a Room Sensor for field installation. The unit can be field converted to Room Sensing by ordering the Room Sensor, part number 11J11R09974-001.

*Dip Switch Settings: #1 & 2 – ON; #3, 4, & 5 – OFF*



Design T/Space SP Potentiometer

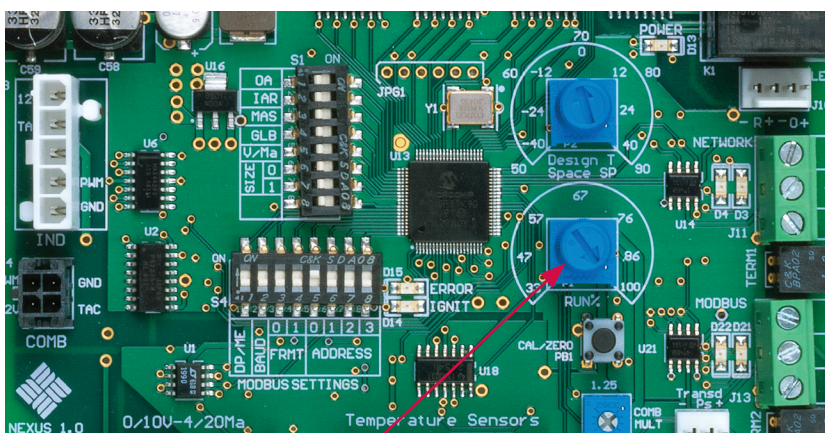
**2-10 VDC/4-20 mA Input** – This gas control allows the unit to vary the discharge air temperature based on a signal from the building automation system.

Note: Units can also be controlled via a Modbus signal. See Operation Section of unit installation manual for additional details.

*Dip Switch Settings: 2-10 VDC Input: #1-5 – OFF; 4-20 mA Input: #5 – ON; #1-4 – OFF*

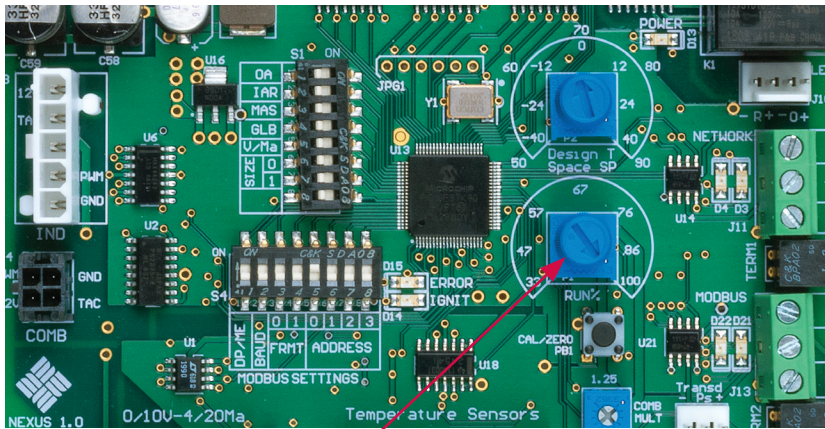
**Two Stage** – While designed for modulating gas control, the Optum unit can be used with two stage gas control. A W1 signal will cause the unit to run at the firing rate set by the Run % Potentiometer. A W2 signal will cause the unit to run at 100% fire.

*Dip Switch Settings: #1-5 – OFF*



Run % Potentiometer

**Single Stage** – While designed for modulating gas control, the Optum unit can be used with single stage gas control. By connecting the single stage thermostat to the W1 terminal, the unit will run at the firing rate set by the Run % Potentiometer. If the single stage thermostat is connected to the W2 terminal the unit will run at 100% fire.  
*Dip Switch Settings: #1-5 – OFF*



Run % Potentiometer



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