

APPLICATION

Varidigm's Commercial Burner Controller (VB1201) is a single firing rate ignition board designed for use as a Stand Alone control or as a Satellite/Slave burner controller in a Modulating VB1200 system. The VB1201 is typically applied to indirect, gas-fired equipment with induced draft burners. The VB1201 has an on-board Direct Spark Ignition and manages flame proving, safeties and related components including the inducer motor and gas valve.

VB1201 Features:

- Satellite/Slave or Stand Alone operation.
- Control options:
 - Thermostat terminals "R" and "W" in Stand Alone operation.
 - Responds to commands from proprietary Varidigm communication from the Modulating VB1200.
- Jumpers (A,B,C,D) identify up to (4) Satellite/Slave VB1201 furnaces in Modulating VB1200 systems.
- Direct Spark Ignition (DSI).
- Tri-color LED light indicates status and provides error codes for system service.
- Dedicated flame sense test points are easy to access and converted to a 0-4 VDC scale which can be read with a standard voltmeter.
- UL/CUL component recognition under ANSI Z21.20.

COMMERCIAL VB1201 BURNER CONTROLLER



SPECIFICATIONS

Power source: 120/208/240 VAC, 60 Hz, 1 phase, 15 ampere.

Humidity: 5% to 95% non-condensing.

Maximum Ambient Temperature:

Operating: -40° to 160 °F (71 °C).

Shipping: -40° to 185 °F (85 °C).

Motor load rating: 15 A @ 120 VAC.
7 A @ 240 VAC.

Indicator light: One tri-color LED (Green, Amber, Red).

Required Components:

Combination gas valves: 24 VAC, 1 A.

Combustion air motor current: 15 A max.

UL/CUL: Component Recognition under ANSI Z21.20.

ORDERING INFORMATION

When ordering, specify model number from the table below:

Model Number	Description
VB1201	Control Board

INSTALLATION

WHEN INSTALLING THIS PRODUCT

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check ratings given in instruction and on product to make sure product is suitable for application.
3. Installer must be a trained experienced service technician.
4. After installation is complete, check out product operation as provided in these instructions.

CAUTION

Controller carries line voltage and suitable interlocks should be used to protect service personnel.

Location & Mounting

This control is intended for mounting in a control compartment or other suitable location that is protected from moisture and combustion condensate. The enclosure must restrict access to live electrical parts. See Figure 2 below for mounting dimensions.

Disconnect/Breaker

External over current and disconnect means must be provided in accordance with NEC and local codes. The fuse or breaker protecting the motor/controller and other loads within the appliance must not exceed 20 amps. If the appliance requires a fuse greater than 20 amps, a separate 20-amp fuse must be provided for the motor/controller.

VB1201 Sequence of Operation

1. Call for Heat
 - a. Stand Alone: Closed circuit path between "R" and "W".
 - b. Satellite/Slave: "ON" commanded via RS-485 from VB1200 to COMM terminals.
2. Pre-Purge: 15 seconds
3. Energize Direct Spark Ignition
4. Gas valve opens
 - a. Monitor flame sense circuit.
 - i. If flame is established during the ignition trial period, cycle continues.
 - ii. If flame is not established, control sequences for an ignition retry.
 - iii. If flame is not established in 3 successive retries, 1 hour lockout.
5. Unit runs until heating cycle terminated.
6. Heating Cycle Termination
 - a. Stand-Alone: "R" & "W" terminals open.
 - b. Satellite/Slave: "OFF" commanded from VB1200.
 - c. Any lock-out condition (Safety).
 - d. The VB-1200 cycles off momentarily and restarts once every six hours of continuous operation.

Note: R&W terminals should not be closed when operating in Satellite/Slave operation.

VB1201 LAYOUT

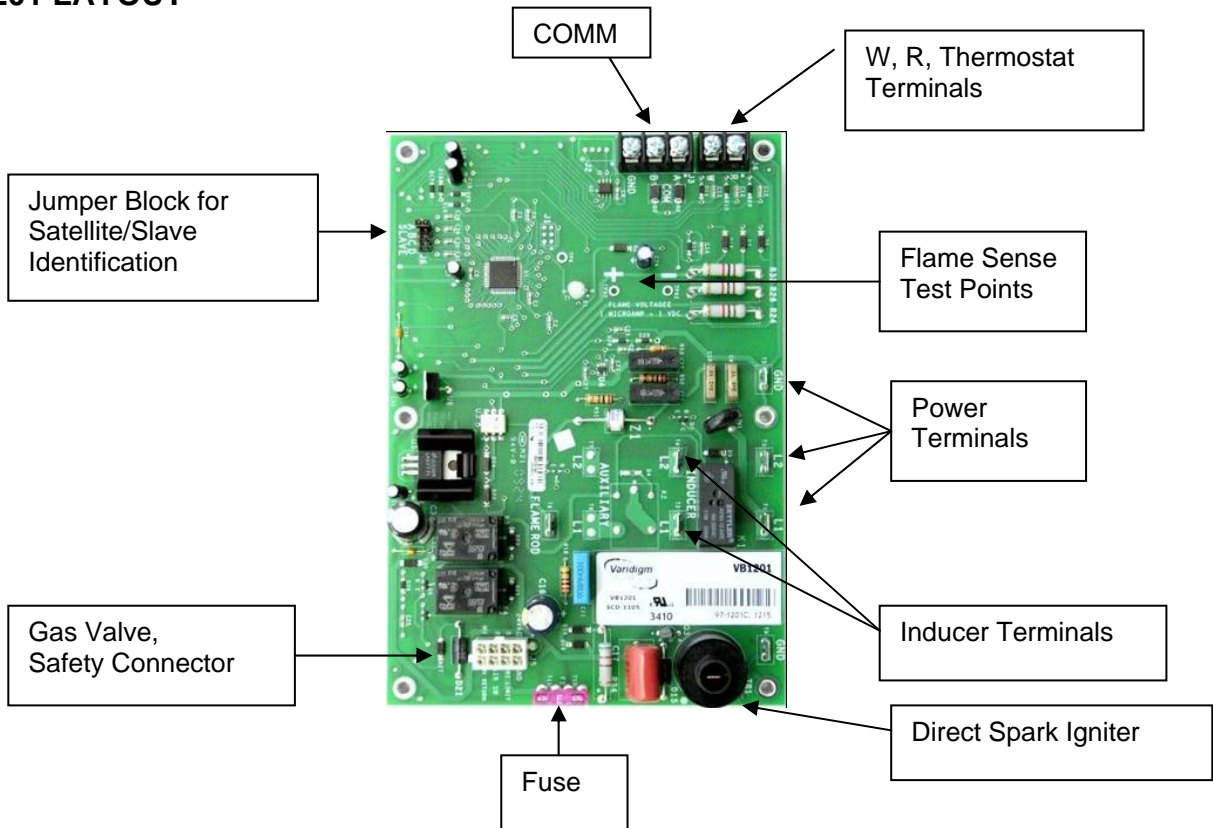


Figure 1 - VB1200 Connections

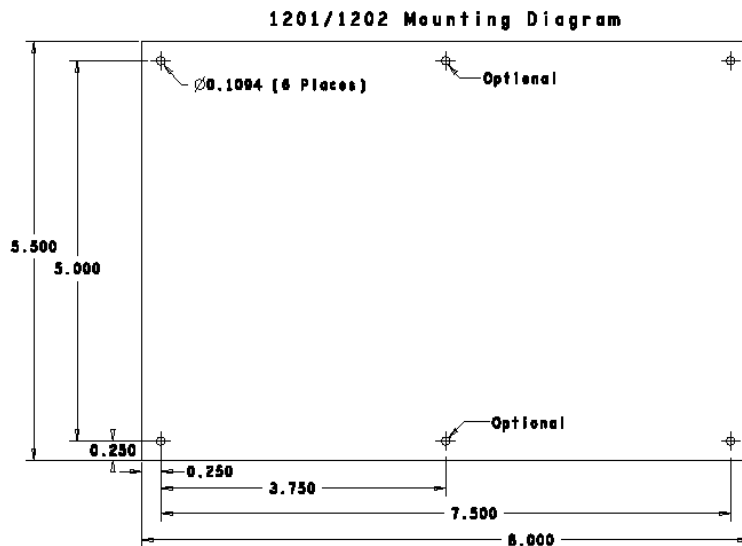
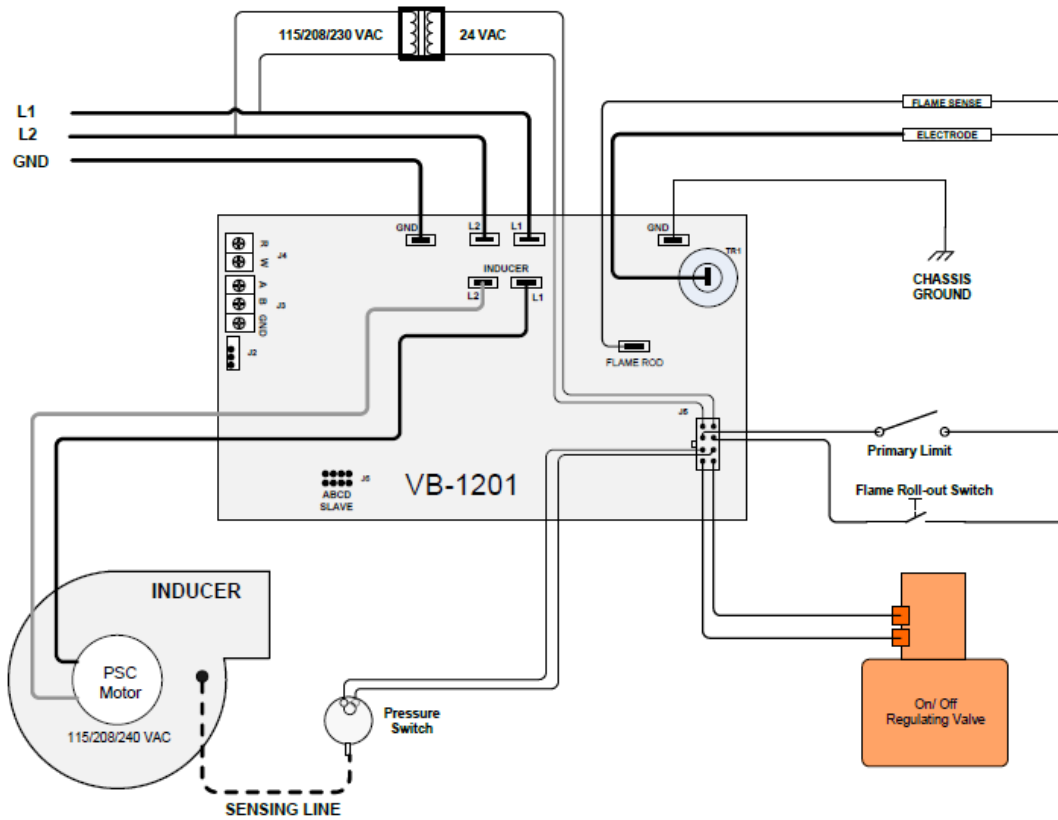
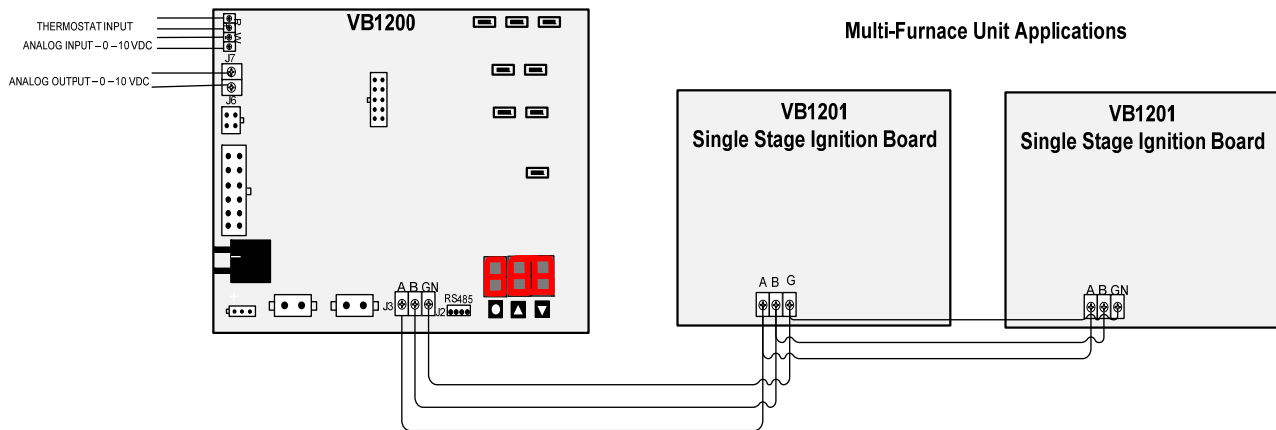


Figure 2 – VB1201 Mounting Dimensions

VB – 1201 Commercial Control Block Diagram



VB1200 / VB1201 Wiring Diagram



VB1200 can have up to four (4) VB1201 units connected.

VB1201 Error & Status Code Key

Flashes	Color	Condition
Error conditions		
Off	N/A	No power to the control board
Steady On	Red	Hard lockout on control fault or no 24 VAC.
1	Red	Insufficient inducer air pressure when inducer is on.
2	Red	Inducer air pressure is too high when inducer is off.
3	Red	Flame circuitry failure - flame is on when it should be off or it is off when it should be on.
4	Red	Gas valve failure.
5	Red	Gas valve safety relay failure.
6	Red	Reserved
7	Red	Primary limit failure
8	Red	Gas valve in test mode
9	Red	Safety startup failed to validate inducer air path.
Normal and warning conditions		
Slow	Green	Standby - no communication link established
Rapid	Green	Standby – in communication with VB1200 Master
1	Green	Call for heat, no gas
2	Green	Call for heat, gas
2	Yellow	Call for heat, gas, flame rod aged
Rapid	Yellow	Retry

VB1200 Error Codes when using VB1201 as a Satellite/Slave

Display Code	Description	Additional comments and notes
A20	Slave Furnace A COM Missing ¹	Previously established serial communication link with the specified 1201 slave has been lost.
A21	Slave Furnace A Lockout ¹	Check 1201 control board LED state per the VB1201 error key.
A30	Slave Furnace B COM Missing ¹	Previously established serial communication link with the specified 1201 slave has been lost.
A31	Slave Furnace B Lockout ¹	Check 1201 control board LED state.
A40	Slave Furnace C COM Missing ¹	Previously established serial communication link with the specified 1201 slave has been lost.
A41	Slave Furnace C Lockout ¹	Check 1201 control board LED state.
A50	Slave Furnace D COM Missing ¹	Previously established serial communication link with the specified 1201 slave has been lost.
A51	Slave Furnace D Lockout ¹	Check 1201 control board LED state.

¹ Applicable to 1200 controllers that are configured as multiple burner master controllers to work in conjunction with up to four Varidigm 1201 slave burner controllers.

VB1200 / VB1201 Family Summary

- VB1200 Analog Input – External Firing Rate Control
- VB1200 R & W – On / Off Thermostat Control
- VB1200 Analog Output – Drives Auxiliary Devices
- VB1201 – Communicating Single Stage Ignition Control
- Up To FIVE Stages
- All Stages Controlled by the VB1200



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