



Meridian Draft System:

Quick Start Guide for usage in Maximus Linear Applications

Version 4.1

3/21/2024
X-VENTISO-Meridian
Earthcore

X-VENTISO Meridian Pressure Control System IOM

Please read and save these instructions for future reference. The proper installation and maintenance of this system will allow years of dependable service. Read carefully before attempting to assemble, install, operate, or maintain the system components described. Protect yourself and others by observing all safety information. Failure to comply with instructions could result in personal injury and/or property damage!

The X-VENTISO Meridian controller is sealed from the factory and should require no adjustment of any user parameters. In the event that an alarm occurs and fails to clear, or the fireplace is not operating properly, contact KW at (817)-393-4029.

DO NOT ATTEMPT TO OPEN THE UNIT AND ALTER ANY SETTINGS. THIS WILL VOID THE WARRANTY.

Installation and maintenance are to be performed only by qualified personnel who are familiar with local codes and regulations and who are experienced with this type of equipment. Personnel should have a clear understanding of these instructions and should be aware of general safety precautions.

DANGER! Always disconnect, lock and tag all power sources before installing or servicing. Failure to disconnect a power source can result in fire, shock or serious injury.

CAUTION! Consult and follow all applicable national, state and local codes. They will supersede this document.

WARNING! No installation use or maintenance should be done in an explosive or hazardous environment.

Introduction

The X-VENTISO Meridian control panel has been designed to enable the operation of the Maximus Linear Fireplace series while monitoring and maintaining draft. The controller accomplishes this by modulation of the fan speed based on the pressure differential between the room and the stack.

The X-VENTISO Meridian control panel features a backlit LCD display to provide visual monitoring of system status, settings, and alarms.

X-VENTISO Control panel features include:

- Backlit LCD display for visual monitoring of system
- Auxiliary relay outputs
- Appliance relay output
- Supply Air switch and Damper end switch limit inputs
- High and low flue pressure alarms for single or dual flues
- Two analog outputs for flue and supply fan speed references
- Alarm Status
- Modbus RTU RS485 Serial protocol supported

This manual covers the system controls and operations. Refer to the individual component documentation for their specific installation instructions.

Note: Information contained within this manual may be updated without notice.

Component List

The X-VENTISO Meridian system is made up of several components that are factory preset and configured for the Maximus Linear fireplace series.

1. Control Panel: Tamper Evident Sealed

- a. X-VENTISO panel/ controller
- b. VMC motor controller
- c. Pressure transducer

2. System Components

a. Flue System

- i. Chimney fan and Adapter
- ii. Inline Isolation damper

Specifications

X-VENTISO Panel

Power Supply Input	95 – 264 VAC, 50-60 Hz, 1 Ph
Output Current	6.0 A max.
Main Protection Circuitry	15 A fuses, field replaceable
Secondary Power Supply	24 VDC, 30 W, Class II, LPS
Secondary Protection Circuitry	Overcurrent protected, overvoltage protected, short circuit protected with auto resetting fuse
Operating Temperature	5 - 104 °F (-15 - 40 °C)
Ambient Humidity	5% to 90 % RH non-condensing
Wiring Connections	Screw clamp terminal block Conductor Range: 12 to 30 AWG Screw Size: M2 / M3 Screw Torque: 4.4 to 5.3 Lb.-In (0.5 to 0.6 Nm)
Enclosure Rating	NEMA 1, 2, 4, 4X, 12, 13 & IP 65, 66
Enclosure Material	Impact-resistant UV Stabilized Polycarbonate
Enclosure Flame Rating	UL94 V-0, UL746C 5VA
Enclosure Dimensions	11.04 x 9.04 x 5.72 in / 280.42 x 229.62 x 145.29 mm
Approvals	UL508
Communications	Modbus RTU Two RS 485 serial ports BAUD 19200, 8 Bit, Parity None, Stop Bit 1 Baud Rates available: 9600, 19200, 38400, 57600, 115200

X-VENTISO Meridian System Installation for Maximus Linear

Installation of the X-VENTISO Meridian System

Before Installing

Read these installation instructions carefully before installing and commissioning the X-VENTISO Meridian panel. Failure to follow these instructions may result in product damage. Before installing the enclosure verify the area conditions around the installation site.

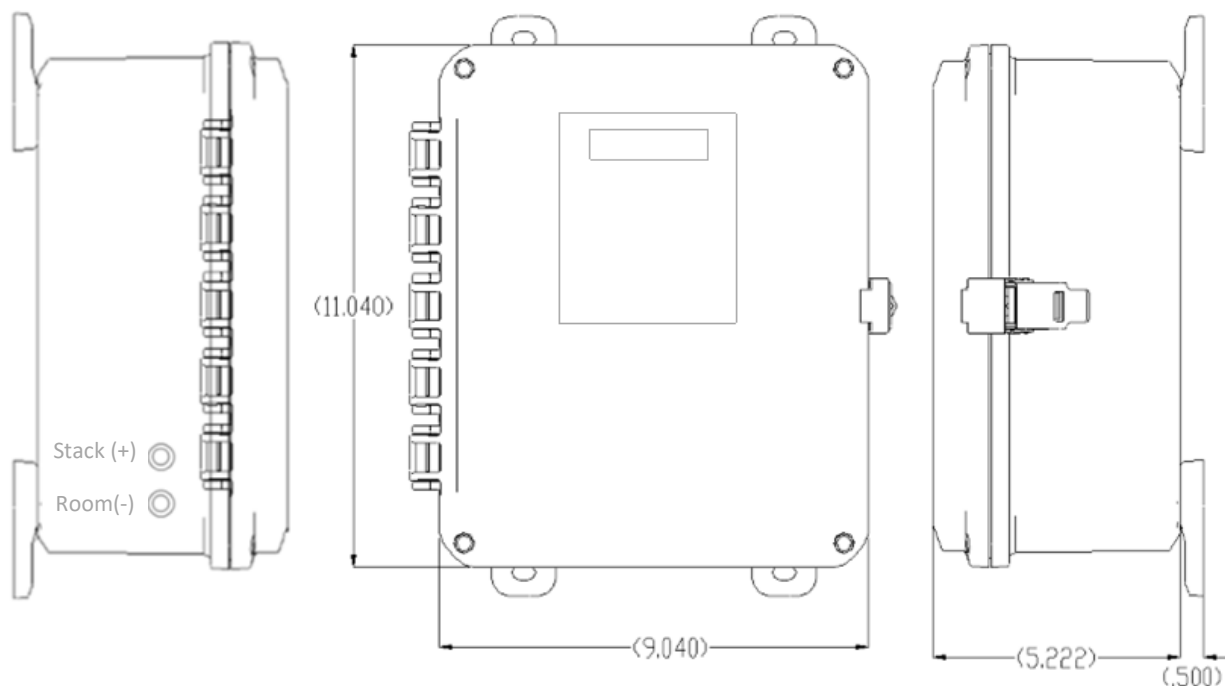
The enclosure is IP65/66 and may be installed indoors only. Do not use in an explosive or hazardous environment. Avoid locations with severe vibrations or heat.

The X-VENTISO Meridian panel contains precision electronic components; avoid areas with electrical noise created by high power equipment, devices, and conductors. Do not route high power conductors adjacent or through panel.

Take electrostatic discharge precaution during installation. Protect internal components from dirt, dust, metal chips, and other debris. Failure to protect components from debris may cause an internal electrical short or overheating of components during operation.

Mounting

Mount the X-VENTISO Meridian panel by installing the four mounting feet on the back of the enclosure. Secure to a vertical wall or structure able to support the X-VENTISO Meridian panel using 4 suitable fasteners for the weight and support material.



X-VENTISO Meridian Max Linear Fan System: Connection Diagram



Meridian Damper Assembly:
4-pin Molex to Damper Assembly



Meridian 350 Fan and Adapter:
3-pin Molex to Fan



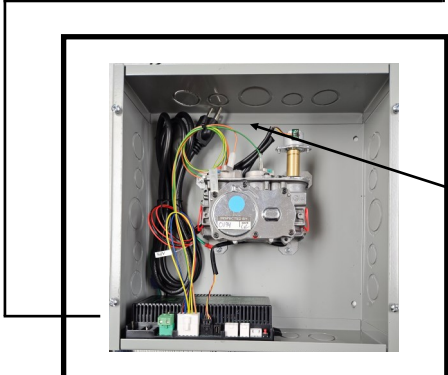
Stack Pressure Probe and Tubing:
Upper (+) Port at side of Meridian Control Panel



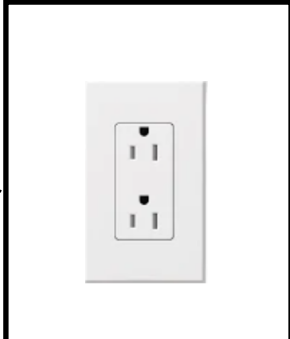
Room Pressure Sensor and Tubing:
Lower (-) Port at side of Meridian Control Panel



Meridian Control Panel



E-VKN/ E-VKP Gas Valve:
4-pin Molex to Gas Control Valve with valve wiring harness



3-wire grounded power cord to 120 VAC / 15A outlet

Stack Pressure (+)

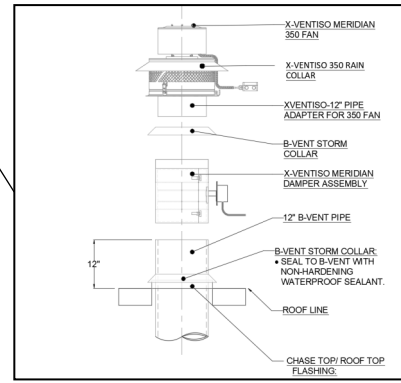
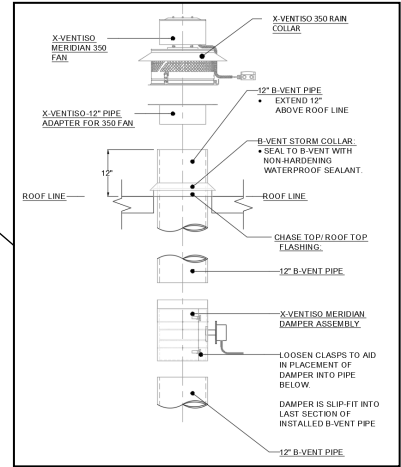
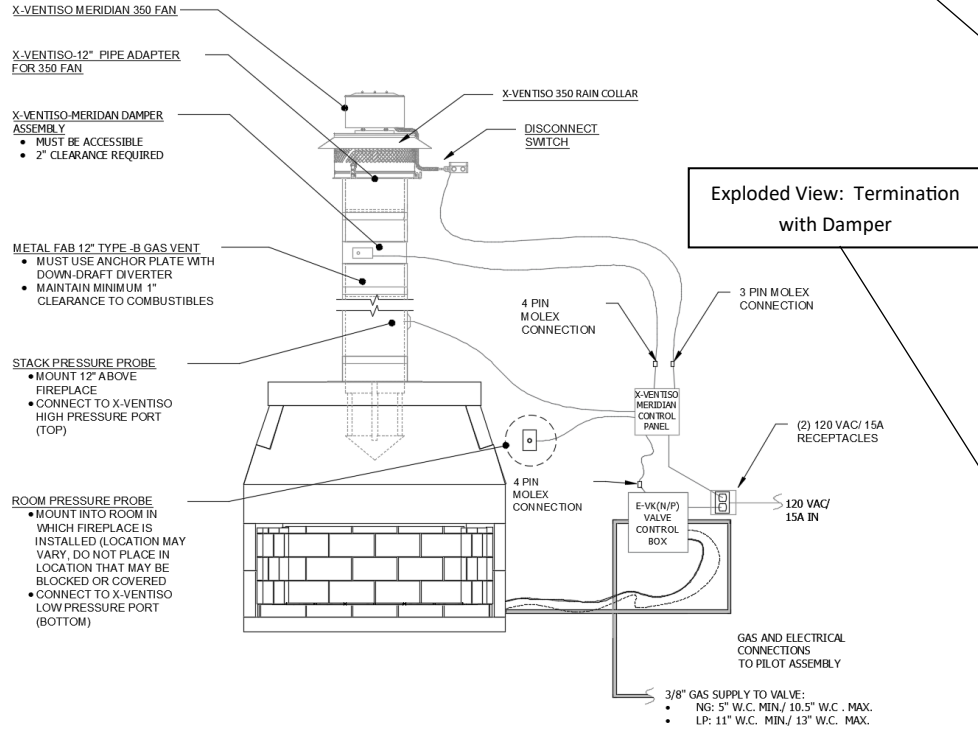
Room Pressure (-)

Installation of the X-VENTISO Meridian System

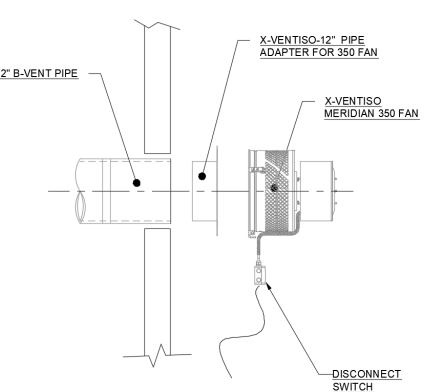
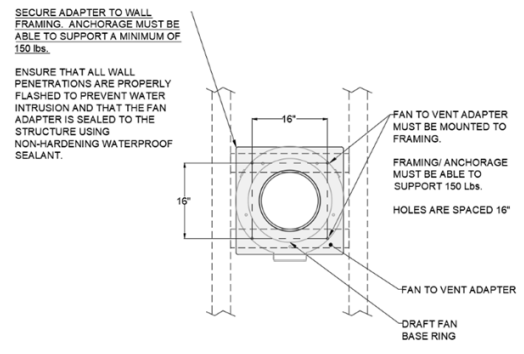
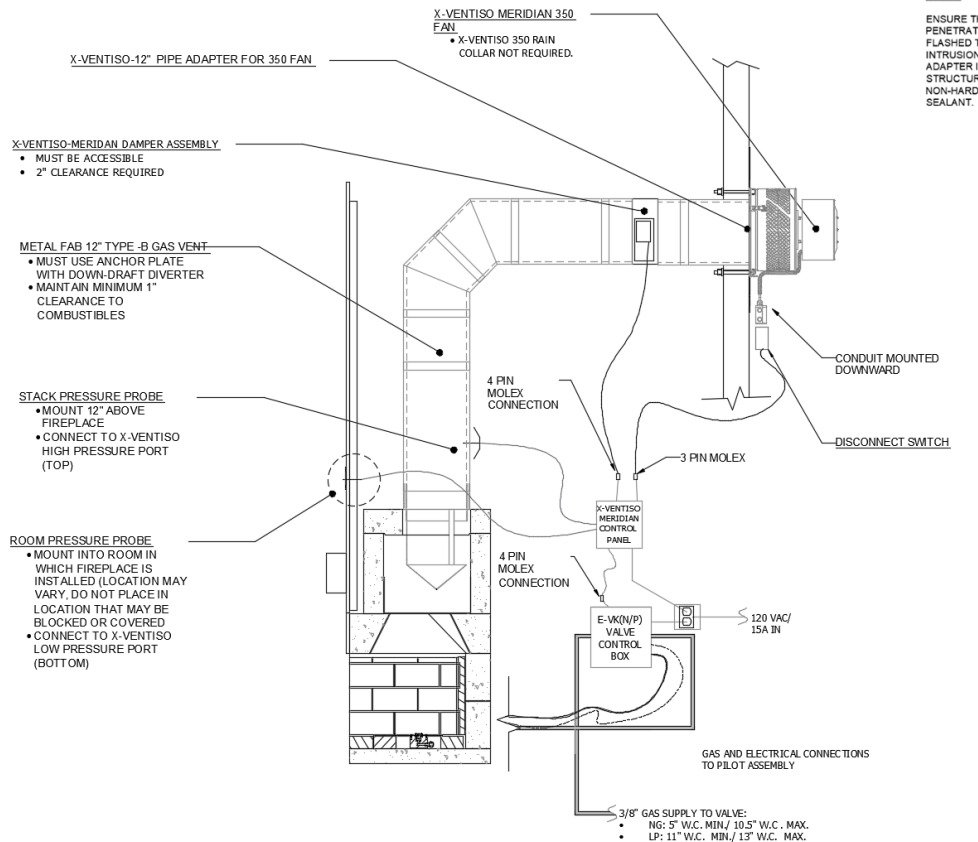
1. Install the Maximus Linear fireplace and Isoflames Linear Burner according to manufacturer's instructions.
2. Mount the X-VENTISO Meridian Control Panel near the Gas Valve Control box (E-VKN/ E-VKP) for the fireplace.
 - NOTE:** The Gas Valve Control Box and the Meridian Control Panel shall be installed in a location that is accessible after installation.
 - NOTE:** Ensure the selected location is within the limits specified from the fireplace as detailed in the Maximus Linear installation manuals.
 - NOTE:** Two 120 VAC/ 15 A outlets are required at this location for installation of the Meridian Draft Controller and the Gas Valve Control Box. Outlets must be within reach of each unit's 72" power cord.
3. Mount the 12" B-vent Anchor Plate and at least a single 12" section of 12" Type-B gas vent on top of the fireplace.
4. Continue installation of Type-B gas vent to desired location of XVENTISO-Meridian Damper Assembly.
 - NOTE:** If the installation does not have an accessible area for installation of the damper "inline", it may be installed at termination of flue run (Vertically terminating systems only)
 - IMPORTANT:** Damper assembly must be installed with the provided outer shell to maintain its 2" clearance to combustibles. Without the shell in place, the damper assembly requires an 18" clearance to combustibles. Failure to properly meet these clearances may result in potential fire hazard.
5. Insert the damper assembly into the last section of B-vent pipe and ensure the damper is fully inserted. The assembly must be seated flush atop the last pipe section. It may be necessary to loosen the lower clasps on the outer-shell of the damper assembly to aid in positioning. Once seated, close the clasps on the outer shell of the damper assembly to secure it into position.
6. Properly support the damper assembly so there is no external movement.
7. Run the damper assembly cable to the location of the Meridian Control Panel.
8. Continue with Type-B gas vent to termination (if applicable).
9. Install the XVENTISO-12" Pipe Adapter for 350 Fan at the termination
 - NOTE:** For Horizontal terminations the fan adapter must be anchored into wall framing. Anchorage must be able to support a minimum of 150 lbs. Ensure that all wall penetrations are properly flashed to prevent water intrusion and that the fan adapter is sealed to the structure using non-hardening waterproof sealant.
10. Mount the XVENTISO-Meridian 350 Fan to the fan adapter plate with the supplied hardware.
11. Mount the fan disconnect box and run the fan cable to the controller. Conduit should always be installed in a downward orientation.
12. Drill a 3/8" hole into the B-vent pipe at a location 12" above the anchor plate. Insert the "Stack" vent probe and mount with the supplied hardware.
13. Connect the "Stack" vent probe tubing to the Stack Pressure Port (Upper/ High Pressure) of the Meridian Control Panel.
14. Install the "Room Pressure" vent probe in a suitable location in the room in which the fireplace is installed. This location should be within approximately 15' of the X-VENTISO Meridian Draft Controller and must be in the same pressure zone as the fireplace opening (tubing measures 20ft in length).
15. Connect the "Room Pressure" vent probe tubing to the Room Pressure Port (Lower/ Low Pressure) of the Meridian Controller.
16. Connect the X-VENTISO Meridian 4 pin Molex (White) to the damper cable.
17. Connect the X-VENTISO Meridian 3 pin fan Molex (White) to the fan cable.
18. Connect the X-VENTISO Meridian 4 pin Molex (Black) to the ignition control cable wiring harness (this may have been preconnected in factory).
19. In Gas Valve Control box, connect the Ignition Control Cable wiring harness to terminals X4 & X13 of the Ignition Control Module (NOTE: X4 and X13 terminal blocks are preinstalled on module and will need to be removed).
20. Ensure that all gas connections have been made between service, Gas Valve Control Box, and the fireplace/ burner system (main and pilot).
21. At the Gas Valve Control Box, ensure that the 3-wire grounded power cord has been connected to the Ignition Control Module (at Terminal X1) and that all wiring harnesses have been connected between the ignition module, and pilot assembly, and gas valve (Terminals X2, X3, X5, & X6) in accordance with Maximus Linear fireplace's installation manual.
22. Plug the Gas Valve Control Box/ Ignition Control Module into one of the 120 V, 15A outlets.
23. Plug in the X-VENTISO Meridian Control Panel into one of the 120 V, 15A outlets.

Installation of the X-VENTISO Meridian System

Vertical Installations



Horizontal Installations



X-VENTISO Meridian System Operations

System Operations

The X-VENTISO Meridian controller enables the operation of the Maximus Linear fireplace system while providing real-time monitoring of the fan, damper, and stack pressure to ensure safe fireplace operation. The controller has been specifically programmed for this application, however contains many adjustable parameters allowing the operation to be tuned for specific application requirements .

Sequence of Operation

1. **OFF:** system is hibernating waiting for a run command signal
2. **STARTING:** controller verifies damper position, flue and supply fan operation
3. **RUNNING:** system is operating normally, appliance and duct heater are enabled
4. **PURGING:** allows the flue fan to temporarily operate after the run command has been secured

Fan Speeds

The flue fan speed will automatically adjust to maintain a set pressure by the control PI function.

Alarm Functions

The X-VENTISO Meridian monitors for 4 alarm conditions:

- Flue damper position switch
- Supply air switch
- Flue low pressure
- Flue high pressure

When the system has a run command, if any one of the 4 conditions exceeds the alarm delay time an alarm activates. If an alarm occurs, the X-VENTISO Meridian controller will annunciate the condition via the LCD and performs safety actions.

After an alarm event clears the control will automatically resume normal operation. If the alarm event is active longer than the fault time parameter, the system will secure operation and lockout requiring a manual reset.

The X-VENTISO Meridian controller is sealed from the factory and should require no adjustment of any user parameters. In the event that an alarm occurs and fails to clear, or the fireplace is not operating properly, contact KW at (817)-393-4029.

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Testing and Troubleshooting

Testing and Troubleshooting

The X-VENTISO Meridian controller has been programmed to monitor for several faults and has several built-in checks that are performed during operation. These faults can be caused by either a hard or a soft condition and are used to notify user (s) when the system is outside of normal operating conditions.

A **hard condition** is a system component that is not functional. A **soft condition** is a result of a system condition caused by the present dynamics of the system or environment. The system dynamics are variables of the system that can change outside of the control of the X-VENTISO Meridian controller. Some of these variables are:

1. Changing room pressure
2. Outside weather
3. Controller parameters not adjusted properly for system conditions
4. Varying supply voltage
5. Load larger than flue or duct system capacity
6. Natural draft

In the event that an alarm occurs and fails to clear, or in the unlikely event that the fireplace is not operating properly, contact KW at (817)-393-4029.

DO NOT ATTEMPT TO OPEN THE UNIT AND ALTER ANY SETTINGS. THIS WILL VOID THE WARRANTY.

In effort to help KW analyze any problems that the system may be encountering, the following chart provides a brief description and possible solution to some potential alarms and general operational issues.

Alarms

Alarm	Description	Possible Causes
DAMPER	<p>Flue damper end switch circuit is open</p> <p>Flue damper failed to prove open for longer than the alarm delay timer setting</p>	<ul style="list-style-type: none"> • Damper actuator wiring • Mechanical blockage of damper • Actuator end switch settings • Actuator and damper timing • Actuator failure
AIR SWITCH	<p>Supply air switch circuit is open</p> <p>The supply air switch did not prove supply air flow during operation for longer than the alarm delay timer setting</p>	<ul style="list-style-type: none"> • Dirty air filter • Duct blockage • Air switch wiring • Pressure tubing issue or connection • Air switch trip point adjustment • Supply fan disconnect or supply power • Supply fan wiring issue
LOW PRESSURE	<p>Low pressure limit exceeded</p> <p>The system pressure measured by the pressure transducer is lower than the low limit setting for longer than the alarm delay timer setting</p>	<ul style="list-style-type: none"> • Flue fan speed too aggressive • Pressure tubing on wrong pressure transducer port • Pressure transducer wiring • Low limit set too high • Pressure transducer failure
HIGH PRESSURE	<p>High pressure limit exceeded</p> <p>The system pressure measured by the pressure transducer is higher than the high limit setting for longer than the alarm delay timer setting</p>	<ul style="list-style-type: none"> • Flue fan speed not aggressive enough • Flue blockage • Motor failure or disconnect open • Damper issue • Pressure tubing on wrong pressure transducer port • Blocked pressure tubing or probe • Pressure transducer failure • Induced voltage into signal wiring • Too large of load for flue system

Fault Reset

If an alarm event exceeds the fault time the X-VENTISO Meridian will secure operations and must be manually reset. To reset system after a fault lockout, cycle the run command to off.

After resetting a fault lockout perform a system test and troubleshoot cause of alarm.

General Issues

Issue Description	Check / Adjust
X-VENTISO Meridian LCD is blank	<ul style="list-style-type: none"> • Supply power to VMC • VMC power supply • Power supply input wiring polarity reversed • PTC fuse detects a short • Damaged LCD or PCB
Fan does not run	<ul style="list-style-type: none"> • Power supply and disconnect • Wiring connections • Speed reference wiring polarity • Mechanical binding or lockup • Analog output jumpers set to (V)
Damper does not fully stroke	<ul style="list-style-type: none"> • Mechanical obstructions • Damper and actuator timing
Damper does not stroke/rotate	<ul style="list-style-type: none"> • Power supply at actuator • Position signal wire and voltage • Mechanical binding or lockup • Actuator switch settings
Pressure transducer not working	<ul style="list-style-type: none"> • Supply voltage at transducer terminals • Wiring connections • pressure tube and probe • Input jumper 5 & 6 set to 0-10V
Constant 1.00 WC displayed	<ul style="list-style-type: none"> • Input jumper 5 & 6 set to 0-10V • Transducer wiring • Sensing tube or probe obstructed
Constant -1.00 WC displayed	<ul style="list-style-type: none"> • Supply voltage at transducer terminals • Input jumper 5 & 6 set to 0-10V • Transducer wiring

System Startup Checklist

Do not skip any steps! Skipping steps may create a hazardous condition or damage equipment!

A. Pre-Startup Checks

- | | | |
|----|---|---------|
| 1. | Verify that disconnect (s) are open/ de-energized and no power is supplied to | YES/ NO |
| 2. | Verify all system components are installed properly and are secure. | YES/ NO |
| 3. | Verify wiring connections are correct per wiring diagram (s) and terminals are tight. | YES/ NO |
| 4. | Verify all debris has been removed from enclosure/ equipment (metal chips loose, wire strand, etc.) | YES/ NO |
| 5. | Verify fan assembly is clear of obstructions and personnel. | YES/ NO |
| 6. | Verify equipment voltage <u>supplies</u> prior to energizing disconnect (s) . | YES/ NO |

Warning: Do not proceed unless the system is complete and ready to be started. The following procedures will energize the X-VENTISO Meridian controller and associated components.

B. General

- | | | |
|-----|---|---------|
| 1. | Verify pre-startup checks have been completed. | YES/ NO |
| 2. | Verify all components installed per installation instructions. | YES/ NO |
| 3. | Verify all MOLEX connections are secure. | YES/ NO |
| 4. | Verify all gas valve connections are properly connected and secure. | YES/ NO |
| 5. | Verify Stack Pressure Probe is properly installed into B-vent pipe. | YES/ NO |
| 6. | Verify tubing is connected from the Stack Pressure Probe to the upper port (+) on Meridian controller. | YES/ NO |
| 7. | Verify Room Pressure Probe is properly installed into room in which fireplace is installed. | YES/ NO |
| 8. | Verify tubing is connected from the Room Pressure probe to the lower port (-) on the Meridian controller. | YES/ NO |
| 9. | Verify all personnel and equipment is clear rotating equipment! | YES/ NO |
| 10. | Verify Gas Control Valve and Meridian Controller are connected to 120 VAC/ 15A outlets. | YES/ NO |
| 11. | Energize Disconnects and verify disconnects are energized. | YES/ NO |
| 12. | Verify remote has been synchronized with Ingintion Control Module per installation manual. | YES/ NO |
| 13. | Energize X-VENTISO Meridian system via remote to enable system operation. | YES/ NO |

C. System Tuning

1. Cycle system several times to verify normal operations



**For Technical Support
817-393-4029**