



Heating & Cooling Products

VCB-X Controller

ASM01862 ALT-REF number OE335-26B-VCBX

Description

The VCB-X Controller is designed with 5 analog inputs, 3 analog outputs, 4 binary inputs, 6 relay outputs, and 1 triac output.

The VCB-X Controller has an on-board BACnet® port for connection to an MS/TP network.

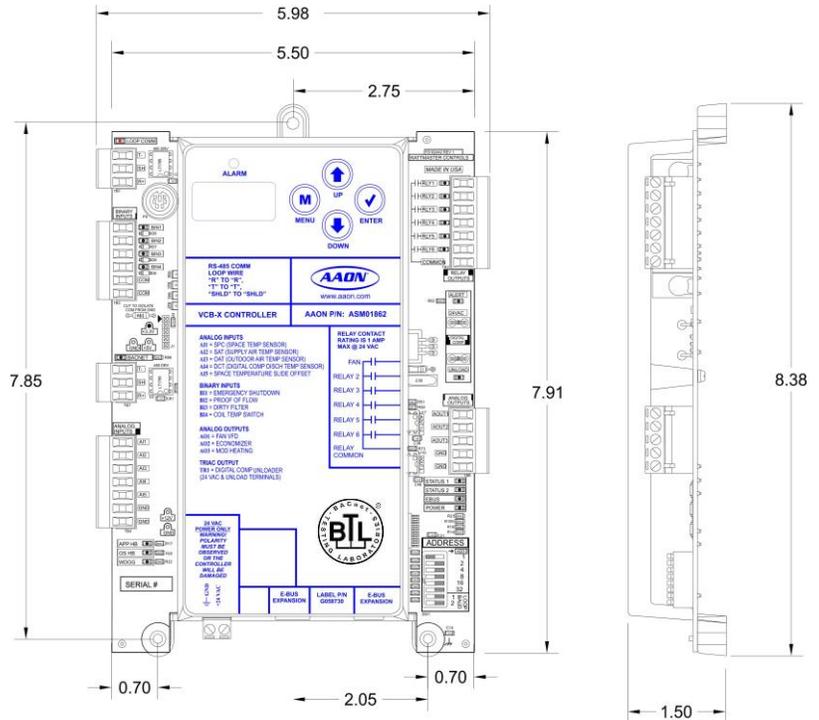
There are also 2 E-BUS Expansion Ports which allow the connection of communicating sensors and E-BUS Modules via modular cable assemblies. There are 3 communicating sensors available—an E-BUS Digital Space Sensor, a Space E-BUS CO₂ Sensor, and a Duct Mounted E-BUS CO₂ Sensor.

The VCB-X Controller contains a 2 x 8 LCD character display and 4 buttons that allow for status and alarm display as well as BACnet® configuration.

The VCB-X Controller provides for Constant Volume, VAV, Make-Up Air, and Single Zone VAV applications. Single Zone VAV applications can be configured for VAV Cooling and either CAV or VAV Heating.

Mounting

The VCB-X Controller is housed in a plastic enclosure. It is designed to be mounted by using the 3 mounting holes in the enclosure base. The VCB-X Controller needs to be installed in an environment which can maintain a temperature range between -30°F and 150°F not to exceed 95% RH levels (Non-Condensing). It is important to mount the controller in a location that is free from extreme high or low temperatures, moisture, dust, and dirt. Be careful not to damage the electronic components when mounting the controller.



Technical Data		VCB-X Controller	
Operating Power	18-30 VAC	Power Consumption	8 VA Maximum
Operating Temp	-30°F to 150°F	Operating Humidity	0-95% RH Non-Condensing
Communications	E-BUS BACnet® MS/TP	Weight	1 lb.
Inputs	5 Analog Inputs 4 Binary Inputs	Outputs	3 Analog Outputs 6 Relay Outputs Digital Compressor Triac
One Year Warranty		AAON reserves the right to change specifications without notice	



Heating & Cooling Products

VCB-X EM1 Expansion Module

ASM01864 ALT-REF number OE336-23-EM1

Description

The VCB-X EM1 Expansion Module connects to the VCB-X Controller with an EBC E-BUS cable to provide additional inputs and outputs beyond those found on the VCB-X Controller.

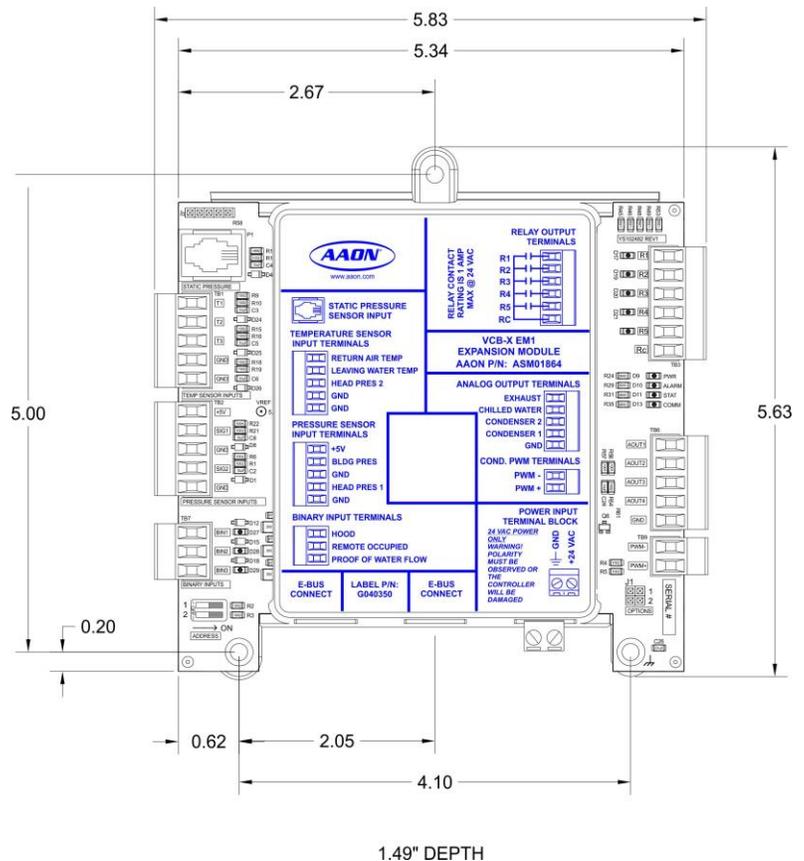
The VCB-X EM1 Expansion Module adds an additional 6 Analog Inputs, 3 Binary Inputs, 5 Relay Outputs, and 4 Analog Outputs.

The EM1 Expansion Module adds VAV capabilities, Building Pressure, Head Pressure Control, and Water Source Heat Pump Monitoring.

The EM1 Expansion Module must be connected to a 24 VAC power source. When wiring the VCB-X EM1 Expansion Module, its binary inputs and relay outputs must be wired as wet contacts (connected to 24 VAC).

Mounting

The VCB-X EM1 Expansion Module is housed in a plastic enclosure. It is designed to be mounted by using the 3 mounting holes in the enclosure base. The VCB-X EM1 Expansion Module needs to be installed in an environment which can maintain a temperature range between -30°F and 150°F not to exceed 95% RH levels (Non Condensing). It is important to mount the module in a location that is free from extreme high or low temperatures, moisture, dust, and dirt. Be careful not to damage the electronic components when mounting the module.



Technical Data		VCB-X EM1 Expansion Module	
Operating Power	18-30 VAC	Power Consumption	5 VA Maximum
Operating Temp	-30°F to 150°F	Operating Humidity	0-95% RH Non-Condensing
Communications	E-BUS	Weight	1 lb.
Inputs	3 Binary Inputs 6 Analog Inputs	Outputs	5 Relay Outputs 4 Analog Outputs
One Year Warranty		AAON reserves the right to change specifications without notice	



Heating & Cooling Products

VCB-X EM2 Expansion Module

ASM01866 ALT-REF number OE336-23-EM2

Description

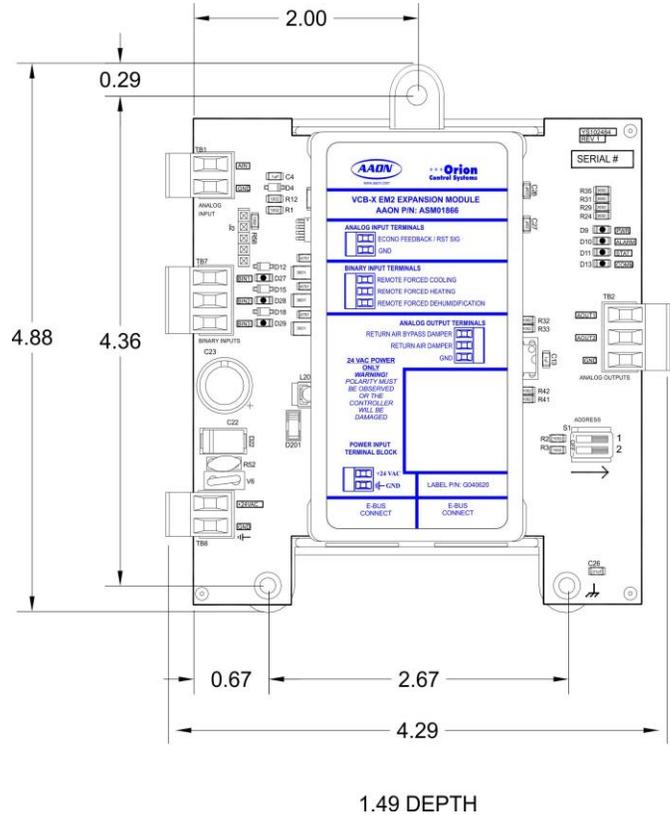
The VCB-X EM2 Expansion Module connects to the VCB-X Controller with an EBC E-BUS cable to provide additional inputs and outputs beyond those found on the VCB-X Controller.

The VCB-X EM2 Expansion Module adds remote forced heating, cooling, and dehumidification using 3 additional Binary Inputs. It provides 2 Analog Outputs for controlling a Return Air Bypass Damper and a Return Air Damper in Return Air Bypass applications. It also allows for Title 24 Economizer Feedback or a remote voltage input that can be used to reset the Supply Air Setpoint.

The EM2 Expansion Module must be connected to an 18-30 VAC power source. When wiring the EM2 Expansion Module, its binary inputs must be wired as wet contacts (connected to 24 VAC).

Mounting

The VCB-X EM2 Expansion Module is housed in a plastic enclosure. It is designed to be mounted by using the 3 mounting holes in the enclosure base. The VCB-X EM2 Expansion Module needs to be installed in an environment which can maintain a temperature range between -30°F and 150°F not to exceed 95% RH levels (Non-Condensing). It is important to mount the module in a location that is free from extreme high or low temperatures, moisture, dust, and dirt. Be careful not to damage the electronic components when mounting the module.



NOTE: The VCB-X EM2 Expansion Module contains no user-serviceable parts. Contact qualified technical personnel if your Module is not operating correctly.

Technical Data		VCB-X EM2 Expansion Module	
Operating Power	18-30 VAC	Power Consumption	5 VA Maximum
Operating Temp	-30°F to 150°F	Operating Humidity	0-95% RH Non-Condensing
Communications	E-BUS	Weight	1 lb.
Inputs	1 Analog Input 3 Binary Inputs	Outputs	2 Analog Outputs
One Year Warranty		AAON reserves the right to change specifications without notice	



Heating & Cooling Products

E-BUS 12 Relay Expansion Module

ASM01873 ALT-REF number OE358-23E-12R

Description

The E-BUS 12 Relay Expansion Module connects to the VCCX2 or VCB-X Controller to provide additional relay outputs beyond those found on the VCCX2 or VCB-X Controller.

The E-BUS 12 Relay Expansion Module provides for up to 12 Configurable Relay Outputs.

For VCCX2 applications, the E-BUS 12 Relay Expansion Module can be used in conjunction with the VCC-X EM1 and/or the RSMV, RSMV-HP, RSMD Refrigeration Modules to provide the required inputs and outputs for your specific application.

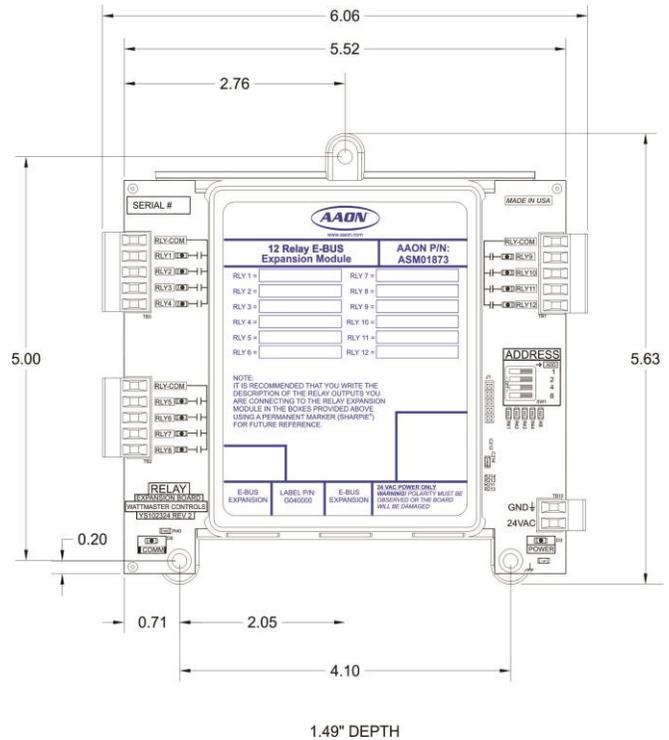
For VCB-X applications, the E-BUS 12 Relay Expansion Module can be used in conjunction with the VCB-X EM1 and/or VCB-X EM2.

The E-BUS 12 Relay Expansion Module must be connected to a 24 VAC power source. All Relay groups being used must have the relay common associated with its group connected to a power source not greater than 24 VAC to supply power to each relay.

Mounting

The E-BUS 12 Relay Expansion Module is housed in a plastic enclosure. It is designed to be mounted by using the 3 mounting holes in the enclosure base. The E-BUS 12 Relay Expansion Module needs to be installed in an environment which can maintain a temperature range between -30°F and 150°F not to exceed 95% RH levels (Non-Condensing). It is important to mount the module in a location that is free from extreme high or low temperatures, moisture, dust, and dirt. Be careful not to damage the electronic components when mounting the module.

NOTE: The E-BUS 12 Relay Expansion Module contains no user-serviceable parts. Contact qualified technical personnel if your Module is not operating correctly.



Technical Data		E-BUS 12 Relay Expansion Module	
Operating Power	18-30 VAC	Power Consumption	15 VA Maximum
Operating Temp	-30°F to 150°F	Operating Humidity	0-95% RH Non-Condensing
Communications	E-BUS	Weight	1 lb.
Output	12 Relays @ 1 Amp Max		
One Year Warranty		AAON reserves the right to change specifications without notice	



Heating & Cooling Products

RSMV Module

ASM01686 ALT-REF number OE370-26-RSMV

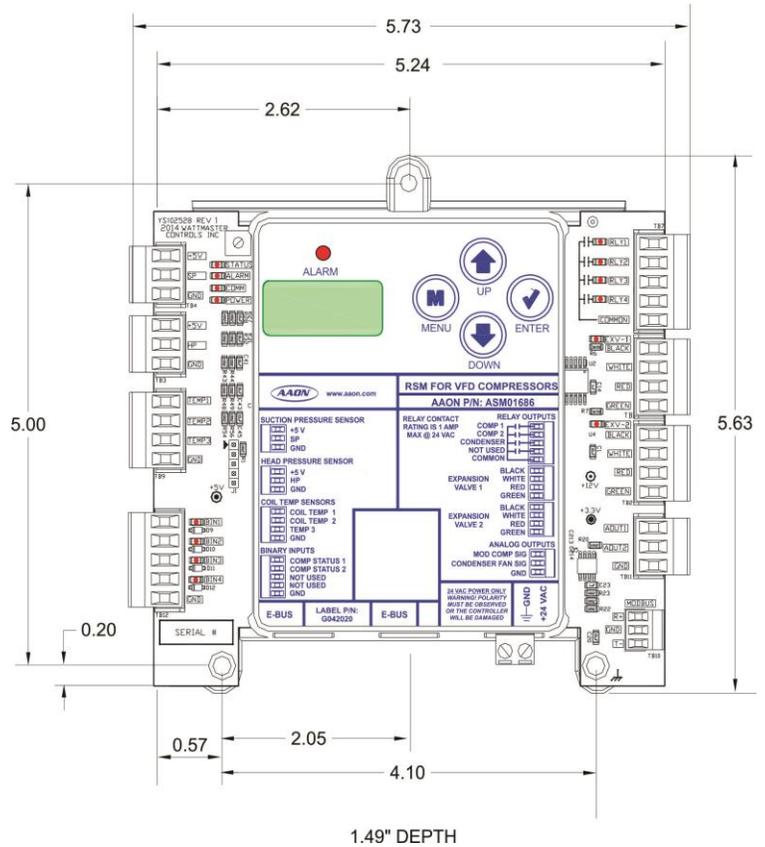
Description

The Refrigerant System Module for VFD Compressors (RSMV) monitors and controls one refrigeration circuit of the HVAC unit. The module is designed for R410-A refrigerant.

The RSMV Module is connected to the VCCX2 Controller. Up to 4 RSMV Modules can be connected, depending on the size of the system.

Additional Features

- Modulates the Compressors to satisfy the Suction Coil (Saturated) Temperature. The Suction Coil (Saturated) Temperature Setpoint is reset by the VCCX2 Controller to maintain the Supply Air Temperature during Cooling mode. During Dehumidification mode, it controls the Compressors to the Suction (Saturation) Temperature Setpoint.
- Modulates the Condenser Fan or Valve to maintain the Head Pressure Setpoint.
- Modulates the Expansion Valves to maintain the Superheat Setpoint.
- Provides alarms and safeties for the Compressor and Condenser operation.
- Provides a 2 x 8 LCD character display and 4 buttons that allow for status of system operation, system setpoints, system configurations, sensors, and alarms, and to change the module's address if necessary.



Mounting

The RSMV Module is housed in a plastic enclosure. It is designed to be mounted by using the 3 mounting holes in the enclosure base. It is important to mount the module in a location that is free from extreme high or low temperatures, moisture, dust, and dirt. Be careful not to damage the electronic components when mounting the module.

Technical Data		RSMV Module	
Operating Power	18-30 VAC	Power Consumption	18 VA Maximum
Operating Temp	-30°F to 150°F	Operating Humidity	0-95% RH Non-Condensing
Communications	E-BUS	Weight	8 oz.
One Year Warranty		AAON reserves the right to change specifications without notice	



Heating & Cooling Products

RSMV-HP Module

ASM01693 ALT-REF number OE370-26-RSMV-HP

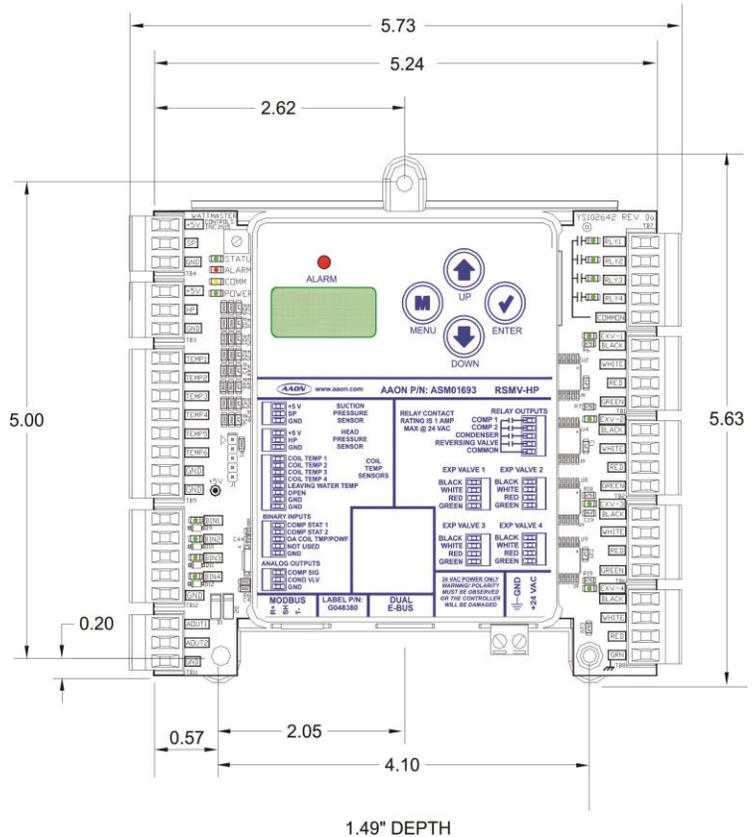
Description

The Refrigerant System Module for VFD Heat pump compressors (RSMV-HP) monitors and controls one refrigeration circuit of the HVAC unit. The module is designed for R410-A refrigerant.

The RSMV-HP Module is connected to the VCCX2 Controller. Up to 4 RSMV-HP Modules can be connected, depending on the size of the system.

Additional Features

- Modulates the Compressors to satisfy the Suction Coil (Saturated) Temperature. The Suction Coil (Saturated) Temperature Setpoint is reset by the VCCX2 Controller to maintain the Supply Air Temperature during Cooling Mode. During Dehumidification Mode, it controls the Compressors to the Suction (Saturation) Temperature Setpoint.
- Modulates the Condenser Fan to maintain the Head Pressure Setpoint.
- Modulates the Expansion Valves to maintain the Superheat Setpoint.
- Provides alarms and safeties for the compressor and condenser operation.
- Provides a 2 x 8 LCD character display and 4 buttons that allow for status of system operation, system setpoints, system configurations, sensors, and alarms, and to change the module's address, if necessary.



Mounting

The RSMV-HP Module is housed in a plastic enclosure. It is designed to be mounted by using the 3 mounting holes in the enclosure base. It is important to mount the module in a location that is free from extreme high or low temperatures, moisture, dust, and dirt. Be careful not to damage the electronic components when mounting the module.

Technical Data		RSMV-HP Module	
Operating Power	18-30 VAC	Power Consumption	18 VA Maximum
Operating Temp	-30°F to 150°F	Operating Humidity	0-95% RH Non-Condensing
Communications	E-BUS	Weight	8 oz.
One Year Warranty		AAON reserves the right to change specifications without notice	



Heating & Cooling Products

RSMD Module

ASM02201 ALT-REF number OE370-26-RSMD

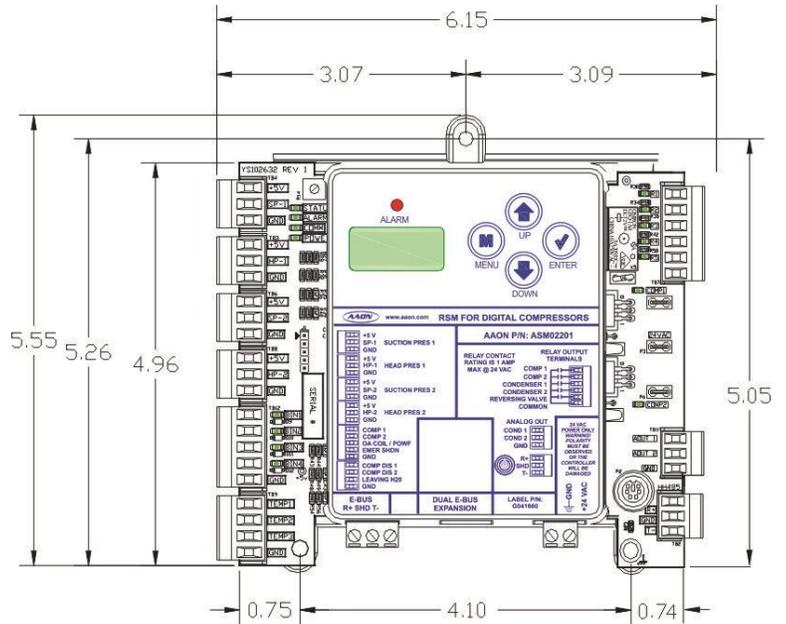
Description

The Refrigerant System Module for Digital Compressors (RSMD) can monitor and control up to two compressors and condensers. The compressors can be in either a tandem or non-tandem configuration. The module is designed for R410-A refrigerant.

The RSMD Module is connected to the VCCX2 Controller. Up to 4 RSMD Modules can be connected, depending on the size of the system.

Additional Features

- Modulates the Compressors to satisfy the Suction Coil (Saturated) Temperature. The Suction Coil (Saturated) Temperature Setpoint is reset by the VCC-X/VCCX2 Controller to maintain the Supply Air Temperature during Cooling mode. During Dehumidification mode, it controls the Compressors to the Suction (Saturation) Temperature Setpoint.
- In Heating mode, the RSMD modulates and stages the compressors to maintain a given Supply Air Temperature Setpoint.
- Modulates the Condenser Fan or Valve to maintain the Head Pressure Setpoint.
- Provides alarms and safeties for the compressor and condenser operation.
- Allows connection of the Modular Service Tool SD to the module when required communication wire is run to the VCCX2 Controller.
- Provides a 2 x 8 LCD character display and 4 buttons that allow for status of system operation, system setpoints, system configurations, sensors, and alarms, and to change the module's address, if necessary.



Mounting

The RSMD Module is housed in a plastic enclosure. It is designed to be mounted by using the 3 mounting holes in the enclosure base. It is important to mount the module in a location that is free from extreme high or low temperatures, moisture, dust, and dirt. Be careful not to damage the electronic components when mounting the module.

Technical Data		RSMD Module	
Operating Power	18-30 VAC	Power Consumption	18 VA Maximum
Operating Temp	-30°F to 150°F	Operating Humidity	0-95% RH Non-Condensing
Communications	E-BUS	Weight	8 oz.
One Year Warranty		AAON reserves the right to change specifications without notice	



Heating & Cooling Products

MHGRV-X Controller

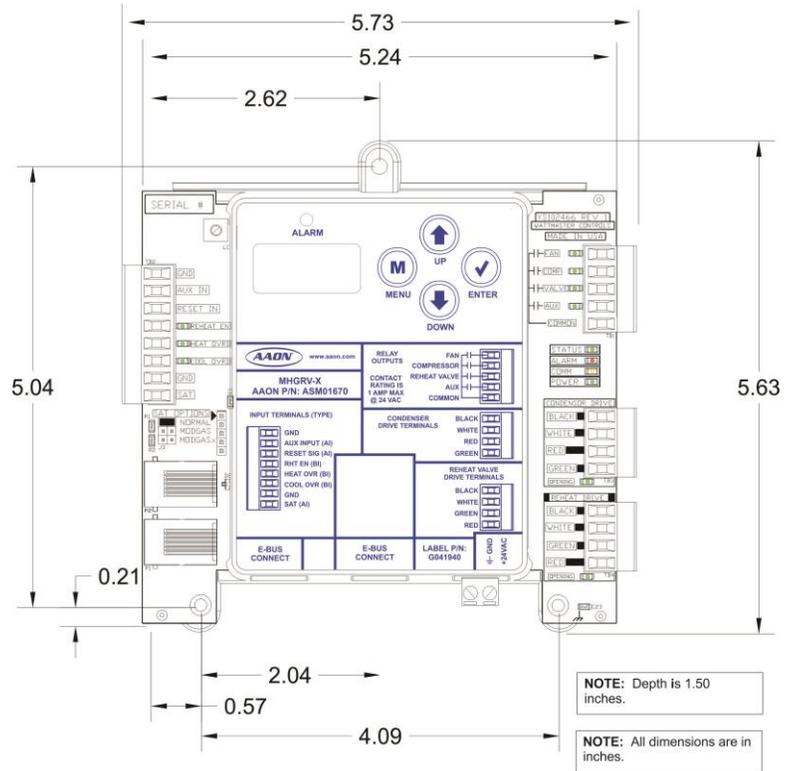
ASM01670 ALT-REF number OE377-26-00059

Description

The MHGRV-X Controller is designed to control a Modulating Hot Gas Reheat Valve to maintain a desired Supply Air Temperature during Dehumidification. The controller can be used as a stand-alone controller or it can be connected to and used in conjunction with the AAON Factory Packaged HVAC unit controller. The MHGRV-X controller is connected to the HVAC unit controller via a modular expansion cable and corresponding connectors on the controllers.

Additional Features

- Can Be Operated as a Stand-Alone Controller or Integrated with the HVAC Unit Controller
- Provides for Supply Air Temperature Setpoint Reset When Required
- Second Stage Reheat Capability When Using 2 Hot Gas Reheat Valves
- Control of Reheat Solenoid Valve to Provide Coil Flushing for Positive Refrigerant Oil Return
- Contains a 2 x 8 LCD character display and 4 buttons that allow for status display, setpoint changes, and configuration changes.



Mounting

The MHGRV-X Controller is housed in a plastic enclosure. It is designed to be mounted by using the 3 mounting holes in the enclosure base. It is important to mount the module in a location that is free from extreme high or low temperatures, moisture, dust, and dirt. Be careful not to damage the electronic components when mounting the module.

Technical Data		MHGRV-X Controller	
Operating Power	18-30 VAC	Power Consumption	18 VA Maximum
Operating Temp	-30°F to 150°F	Operating Humidity	0-95% RH Non-Condensing
Communications	E-BUS	Weight	1 lb.
One Year Warranty		AAON reserves the right to change specifications without notice	



Heating & Cooling Products

Reheat Expansion Module

ASM01687 ALT-REF number OE377-01-00059

Description

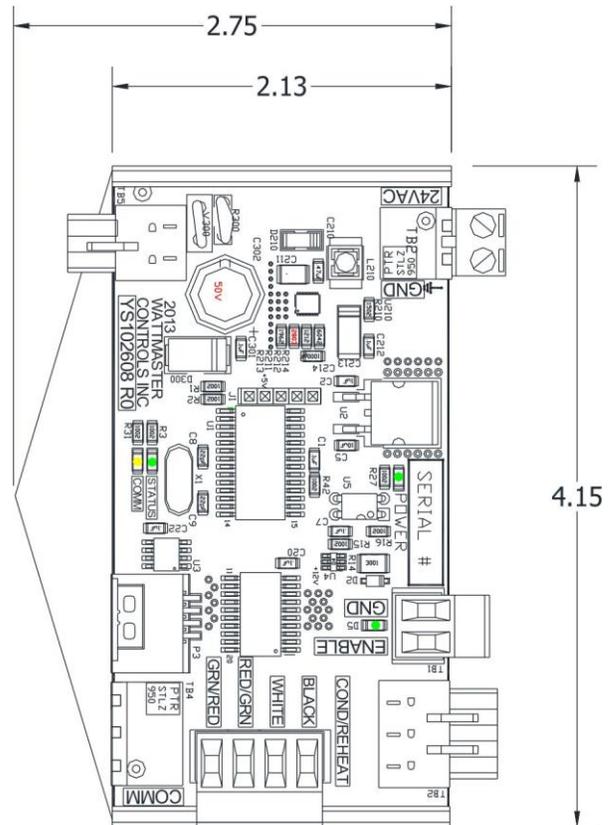
The Reheat Expansion Module is designed to control one set of reheat valves. The Reheat Expansion Module connects to the MHGRV-X Controller. Connected together, the Reheat Expansion Modules provide a system that allows the proper control of multiple sets of valves.

Additional Features

- Up to (7) Reheat Expansion Modules can be used
- Each Reheat Expansion Module controls one set of reheat valves (1 Reheat & 1 Condenser)
- Each Reheat Expansion Module has its own Cooling & Reheat Flush Timers
- Reheat Expansion Module connects to the MHGRV-X Controller via E-BUS communication cable
- Multiple Reheat Expansion Modules conveniently plug into one another

Mounting

The Reheat Expansion Module is provided with a Chevron cut plastic snap track mounting base. The snap track is designed to be mounted using a single 1/4" Hex Head Sheet Metal Screw (provided) to a flat surface using the pre-punched mounting hole that is provided in the center of the snap track. The Reheat Expansion Module is then snapped into place on the snap track, providing for easy field mounting and servicing. The Reheat Expansion Module needs to be installed in an environment which can maintain a temperature range between -30°F and 150°F not to exceed 95% RH levels (Non-Condensing). It is important to keep the module in a location that is free from extreme high or low temperatures, moisture, dust, and dirt. Be careful not to damage the electronic components.



NOTE: The Reheat Expansion Module contains no user-serviceable parts. Contact qualified technical personnel if your Module is not operating correctly.

Technical Data		Reheat Expansion Module	
Operating Power	18-30 VAC	Power Consumption	12 VA Maximum
Operating Temp	-30°F to 150°F	Operating Humidity	0-95% RH Non-Condensing
Communications	E-BUS	Weight	1 lb.
One Year Warranty		AAON reserves the right to change specifications without notice	



Heating & Cooling Products

MODGAS-X Controller

ASM01668 ALT-REF number OE377-26-00058

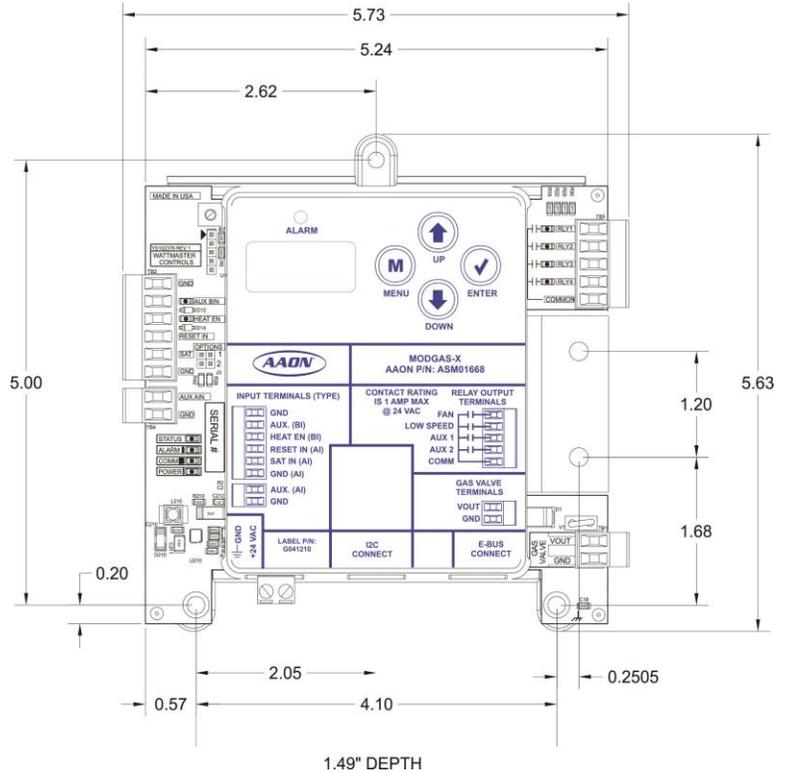
Description

The MODGAS-X Controller is designed to modulate up to (2) gas valves to maintain a desired Discharge Air Temperature. It also controls the speed of the induced draft fan to maintain proper combustion in the heat exchanger. The controller can be used as a stand-alone unit or be connected to the AAON HVAC unit controller as an expansion board.

Additional Features

- Supply Air Temperature Sensor Input
- HEAT EN Input (24VAC)
- Discharge Air Temperature Reset Signal Input (0-10VDC)
- Fan Enable (Relay Output)
- Auxiliary Output (Relay Output)
- Low Speed Fan Control (Relay Output)
- Gas Valve Analog Output (0-20 VDC)
- Contains a 2 x 8 LCD character display and 4 buttons that allow for status display, setpoint changes, and configuration changes.

When used in a stand-alone application (not connected to an AAON HVAC unit controller board), the MODGAS-X Controller will modulate the gas valve to maintain the DISCHARGE setpoint set in the LCD display. The MODGAS-X Controller is activated by a 24VAC signal to the HEAT EN input.



Mounting

The MODGAS-X Controller is housed in a plastic enclosure. It is designed to be mounted by using the 3 mounting holes in the enclosure base. The Heat Sink must be fastened with sheet metal screws to a sheet metal surface. It is important to mount the module in a location that is free from extreme high or low temperatures, moisture, dust, and dirt. Be careful not to damage the electronic components when mounting the module.

Technical Data		MODGAS-X Controller	
Operating Power	18-30 VAC	Power Consumption	18 VA Maximum
Operating Temp	-30°F to 150°F	Operating Humidity	0-95% RH Non-Condensing
Communications	E-BUS	Weight	1 lb.
One Year Warranty		AAON reserves the right to change specifications without notice	



Heating & Cooling Products

MODGAS-XWR2 Controller

ASM01695 ALT-REF number OE377-26-00060-1

Description

The MODGAS-XWR2 is designed to be used with White-Rogers® valves only. It will modulate up to two (2) White-Rogers® gas valves to maintain a desired Discharge (Supply) Air Temperature (up to four (4) modulating gas valves may be controlled when a second MODGAS-XWR Controller configured as a slave module). The MODGAS-XWR Controller also controls the speed of the induced draft fan to maintain proper combustion in the heat exchanger.

The controller can be used as a stand-alone unit or be connected to the AAON HVAC unit controller as an expansion board.

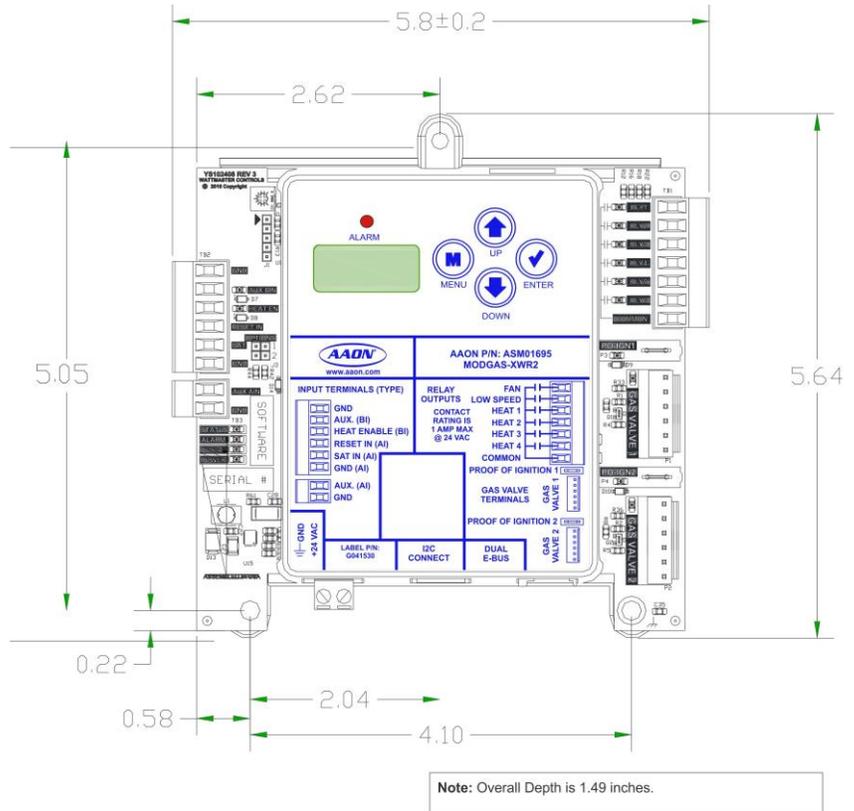
Additional Features

- Can control (2) Gas Valves using input from Proof of Ignition Modules
- A second MODGAS-XWR Controller can be added as a slave to allow control of 4 modulating gas valves.
- Monitors Supply Air Temperature and Supply Air Reset and modulates gas valves to maintain Setpoint
- Provides active relays to control the Fan Speed and Heat stages
- Controls up to 4 stages of Heat with one Controller
- Contains a 2 x 8 LCD character display and 4 buttons that allow for status display, Setpoint changes, and configuration changes

When used in a stand-alone application (not connected to an AAON HVAC unit controller board), the MODGAS-XWR2 Controller will modulate the gas valve to maintain the DISCHARGE Setpoint set in the LCD display. The MODGAS-XWR2 Controller is activated by a 24VAC signal to the HEAT EN input.

Mounting

It is important to mount the controller in a location that is free from extreme high or low temperatures, moisture, dust and dirt. The MODGAS-XWR2 Controller is housed in a plastic enclosure. It is designed to be mounted using the 3 mounting holes in the enclosure base. It is important to mount the module in a location that is free from extreme high or low temperatures, moisture, dust, and dirt. Be careful not to damage the electronic components when mounting the module.



Technical Data		MODGAS-XWR2 Controller	
Operating Power	18-30 VAC	Power Consumption	20 VA Maximum
Operating Temp	-30°F to 150°F	Operating Humidity	0-95% RH Non-Condensing
Communications	E-BUS	Weight	1 lb.
One Year Warranty		AAON reserves the right to change specifications without notice	



Heating & Cooling Products

PREHEAT-X Controller

ASM01688 ALT-REF number OE377-26-00061

Description

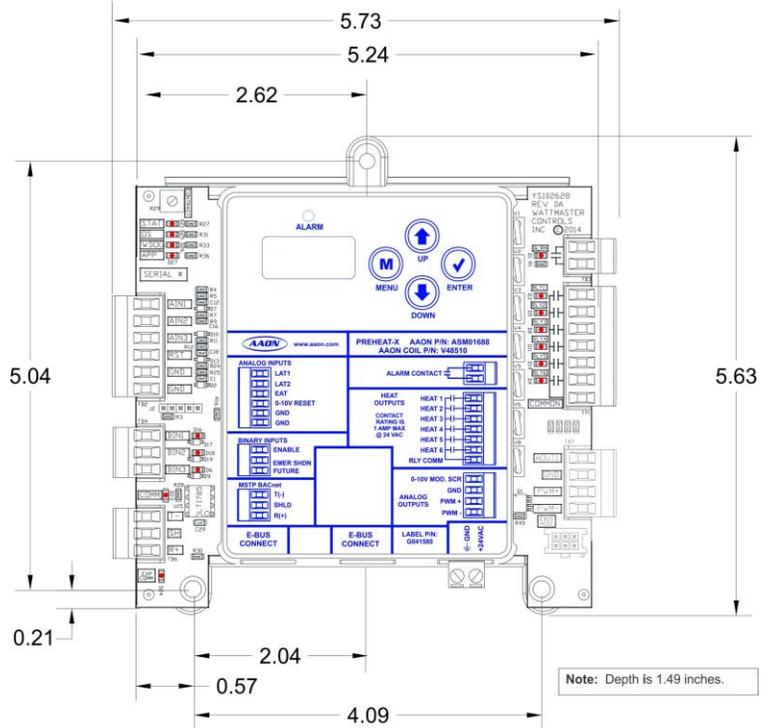
The PREHEAT-X Controller is designed to modulate (1) SCR electric heater to maintain a desired Preheat Air Temperature. Additional fixed stages can be configured to work in conjunction with the SCR heater or fixed stages alone can be configured. Onboard adjustments can be made to tune the control loop to satisfy many different application environments.

The PREHEAT-X Controller can be used as a stand-alone unit or be connected to the VCCX2, VCB-X, or VCM-X E-BUS Controller. The PREHEAT-X Controller will control the heat source(s) to maintain the Preheat setpoint set in the LCD display. The Preheat Controller is activated by a 24VAC signal to the ENABLE input.

The PREHEAT-X Controller will control the heat source(s) to maintain a Leaving Air Temperature Setpoint of 35°F.

Additional Features

- (2) Leaving Air Temperature Sensor Inputs (Averaged)
- Outdoor Air Temperature Sensor Input
- E-BUS Interface to other Controllers
- Leaving Air Temperature Reset Signal Input (0-10VDC)
- ENABLE Input (24VAC) when used as Stand Alone
- Alarm Relay Available
- Emergency Shutdown Input
- BACnet® BTL Certified Driver / MSTP Interface
- 0-10 VDC and PWM Electric Heat
- Contains a 2 x 8 LCD character display and 4 buttons that allow for status display, setpoint changes, and configuration changes.



Mounting

The PREHEAT-X Controller is housed in a plastic enclosure. It is designed to be mounted by using the 3 mounting holes in the enclosure base. Be careful not to damage the electronic components when mounting the module. It is important to mount the controller in a location that is free from extreme high or low temperatures, moisture, dust and dirt.

Technical Data		PREHEAT-X Controller	
Operating Power	18-30 VAC	Power Consumption	11 VA Maximum
Operating Temp	-30°F to 150°F	Operating Humidity	0-95% RH Non-Condensing
Communications	E-BUS & BACnet®	Weight	1 lb.
One Year Warranty		AAON reserves the right to change specifications without notice	

BACnet® is a registered trademark of ASHRAE Inc., Atlanta, GA.



Heating & Cooling Products

PREHEAT-X-EXT Controller

ASM01689 ALT-REF number OE377-26-00061-1

Description

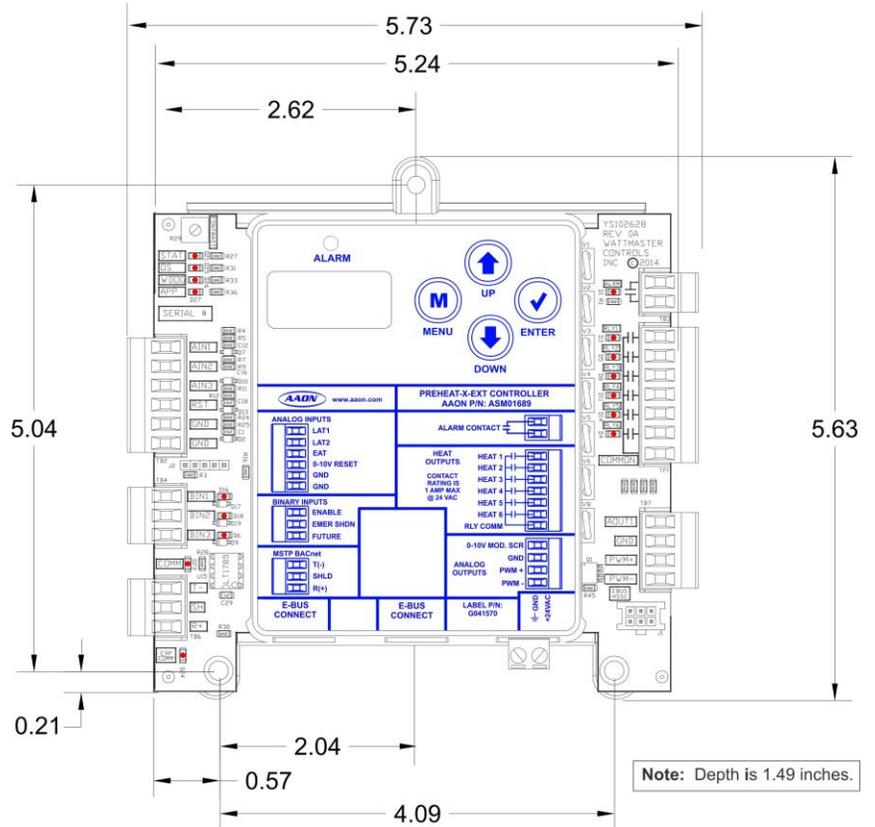
The PREHEAT-X-EXT Controller is designed to modulate (1) SCR electric heater to maintain a desired Preheat Air Temperature. Additional fixed stages can be configured to work in conjunction with the SCR heater or fixed stages alone can be configured. On-board adjustments can be made to tune the control loop to satisfy many different application environments.

The PREHEAT-X-EXT Controller can be used as a stand-alone unit or be connected to the VCCX2, VCB-X, or VCM-X E-BUS Controller.

The PREHEAT-X-EXT Controller will control the heat source(s) to maintain a Leaving Air Temperature Setpoint down to 0°F. It should only be used with the approval of AAON.

Additional Features

- (2) Leaving Air Temperature Sensor Inputs (Averaged)
- Outdoor Air Temperature Sensor Input
- E-BUS Interface to other Controllers
- Leaving Air Temperature Reset Signal Input (0-10VDC)
- ENABLE Input (24VAC) when used as Stand Alone
- Alarm Relay available
- Emergency Shutdown Input
- BACnet® BTL Certified Driver / MSTP Interface
- 0-10 VDC and PWM Electric Heat Outputs
- Contains a 2 x 8 LCD character display and 4 buttons that allow for status of system operation, system setpoints, system configurations, sensors, and alarms



Mounting

The PREHEAT-X Controller is housed in a plastic enclosure. It is designed to be mounted by using the 3 mounting holes in the enclosure base. Be careful not to damage the electronic components when mounting the module. It is important to mount the controller in a location that is free from extreme high or low temperatures, moisture, dust and dirt.

Technical Data		PREHEAT-X-EXT Controller	
Operating Power	18-30 VAC	Power Consumption	11 VA Maximum
Operating Temp	-30°F to 150°F	Operating Humidity	0-95% RH Non-Condensing
Communications	E-BUS & BACnet®	Weight	1 lb.
<i>One Year Warranty</i>		AAON reserves the right to change specifications without notice	