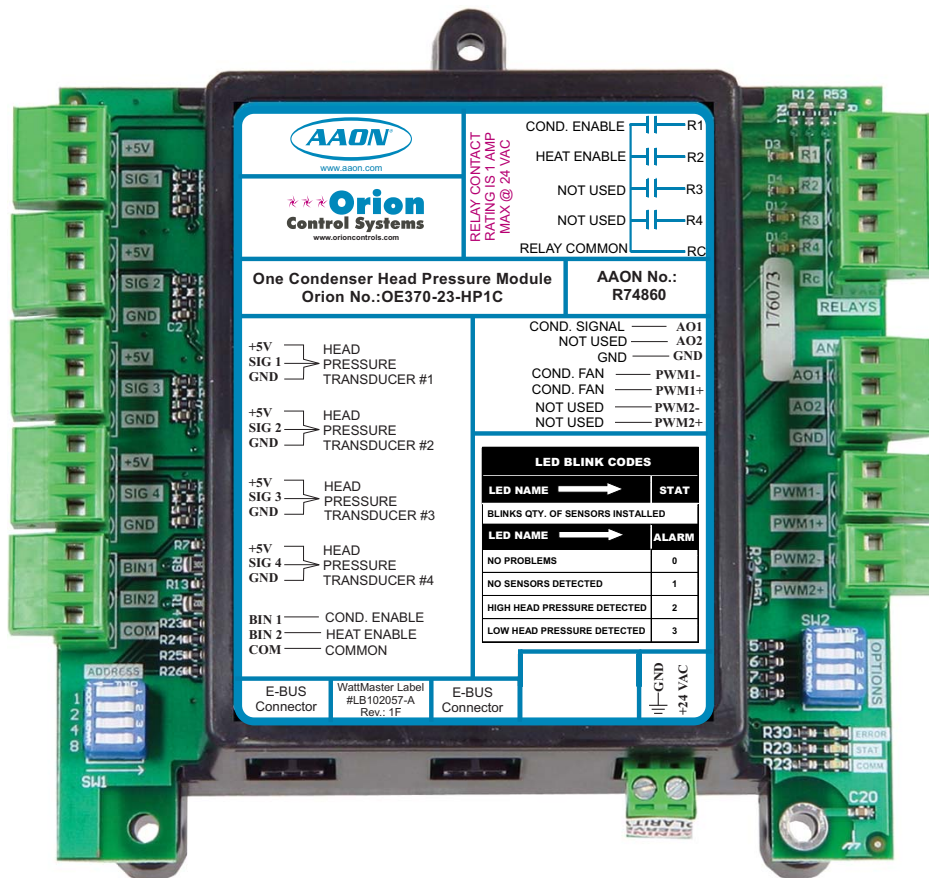




Factory Packaged Controls

Tulsa

One Condenser Head Pressure Module Technical Guide



One Condenser Head Pressure Module

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PART NUMBER CROSS REFERENCE TABLE		
PART DESCRIPTION	ORION	AAON
VCM-X One Condenser Head Pressure Module	OE370-23-HP1C	R74860
VCM-X E-BUS Distribution Module - Tulsa	OE365-23-EBD-A	R82930
VCM-X Modular E-BUS Controller - Tulsa	OE332-23E-VCMX-MOD-A	V07150
VCM-X Modular Controller - Tulsa	OE332-23-VCMX-MOD-A	R90800
VCM-X WSHP E-BUS Controller - Tulsa	OE332-23E-VCMX-WSHP-A	V07140
VCM-X WSHP Controller - Tulsa	OE332-23-VCMX-WSHP-A	R90810



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Overview

NOTE: Software version 1.06 and earlier contain a few differences from version 1.07 and later. For version 1.06 and earlier details, please see the Appendix. The version number can be found on the upper right of your module.

The One Condenser Head Pressure Module (OE370-23-HP1C) monitors four individual head pressure transducers and controls the Condenser Fan or Water Valve based on the highest of the four readings. If this is a heat pump unit, the module is able to detect when the unit is in Heat Pump Heating mode and will force the condenser signal to 100% until it leaves this mode.

The One Condenser Head Pressure Module is designed to work stand-alone by using its OPTIONS Dip Switch to adjust the Head Pressure setpoint.

Up to (2) One Condenser Head Pressure Modules can be daisy-chained together and connected to the VCM-X Modular Controller or VCM-X WSHP Controller using the E-BUS Distribution Module allowing the One Condenser Head Pressure Module to receive setpoints from the Controller. Up to (2) modules can also be daisy-chained together and directly connected to the VCM-X Modular E-BUS or VCM-X WSHP E-BUS Controller. See chart on **page 2** for part numbers.

The One Condenser Head Pressure Module also provides a pulse width modulation (PWM) signal or voltage output signal to control the condenser fan.

The One Condenser Head Pressure Module requires a 24 VAC power connection with an appropriate VA rating.

Features

The One Condenser Head Pressure Module provides the following:

- Can be operated stand alone or (2) can be daisy-chained together and connected to a VCM-X Modular or VCM-X WSHP Controller using the E-BUS Distribution Module to E-BUS interface
- Two modules can be daisy-chained together and be directly connected to a VCM-X Modular E-BUS or VCM-X WSHP E-BUS Controller
- Monitors up to four individual head pressure transducers
- Provides control of Condenser Output Signal based on the highest reading of head pressure transducers
- Capable of monitoring a Reverse Valve Signal
- Forces Condenser Fan to 100% while in the Heat Pump Heating Mode

NOTE: The One Condenser Head Pressure Module contains no user-serviceable parts. Contact qualified technical personnel if your Module is not operating correctly.

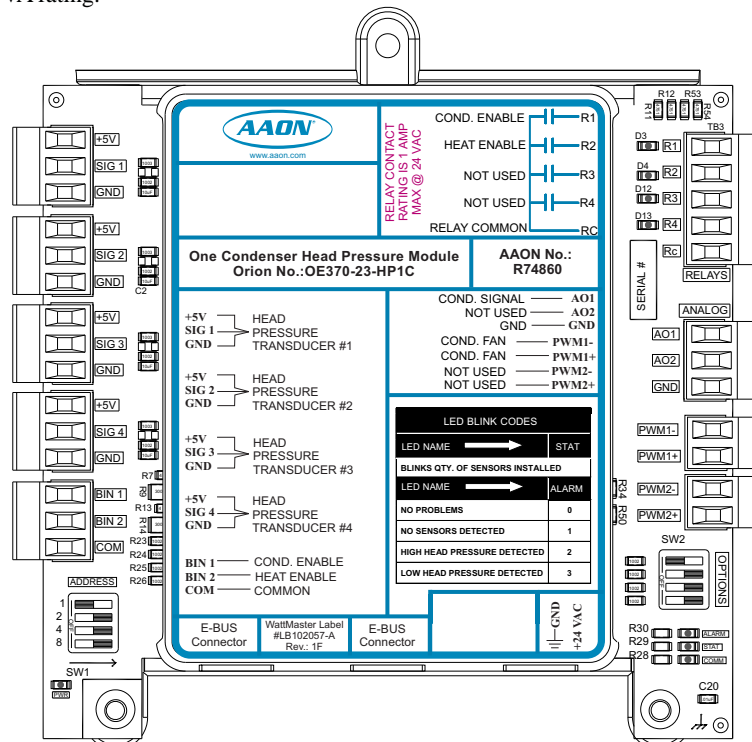


Figure 1: One Condenser Head Pressure Module

One Condenser Head Pressure Module

Installation & Wiring

Environmental Requirements

The One Condenser Head Pressure Module needs to be installed in an environment that can maintain a temperature range between -30°F and 150°F and not exceed 90% RH levels (non-condensing).

Mounting

The One Condenser Head Pressure 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.

See **Figure 2** for Module dimensions (dimensions are in inches).

Power Supply

The One Condenser Head Pressure Module requires a 24 VAC power connection with an appropriate VA rating.

If you will be connecting the One Condenser Head Pressure Module to any of the VCM-X series or VCM-X E-BUS series controllers, one of the most important checks to make before powering up the system for the first time is to make sure that the controller is configured properly for your application. Refer to the *VCM-X Controller Technical Guide* or *VCM-X Modular E-BUS Technical Guide* for more information.

WARNING: Observe polarity! All boards must be wired GND-to-GND and 24 VAC-to-VAC. Failure to observe polarity could result in damage to the boards.

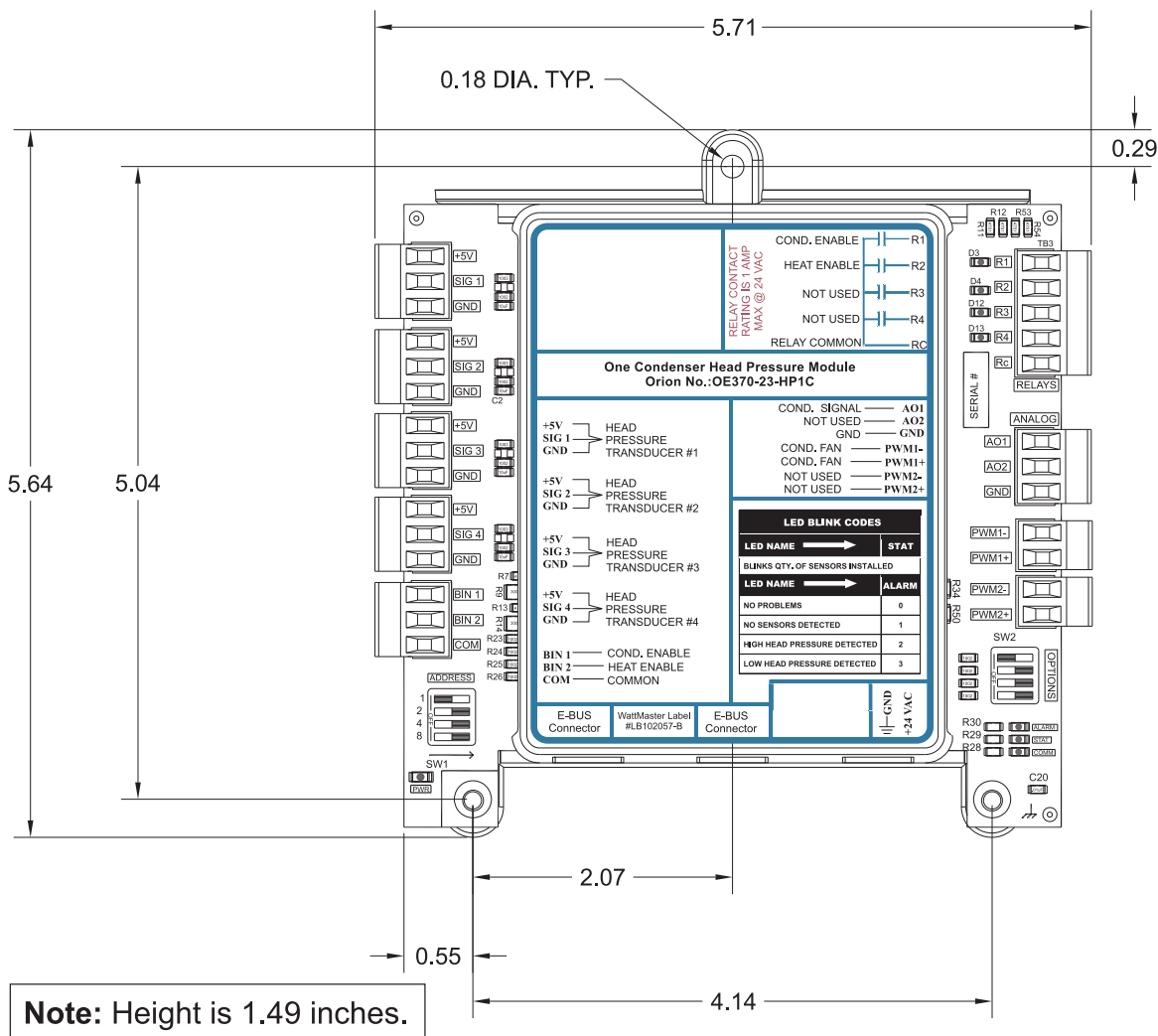


Figure 2: One Condenser Head Pressure Module Dimensions

Important Wiring Considerations

Please read carefully and apply the following information when wiring the One Condenser Head Pressure Module:

1. To operate the One Condenser Head Pressure Module, you must connect power to the 24 VAC input terminal block.
2. Each Pressure Transducer must have its own 18-gauge shielded twisted pair cable. The Drain Wire must be the "Gnd" signal for the transducer.
3. When the 2-10 VDC Analog Output is being used to control the Condenser Fan Speed or Water Valve Percentage, the cable must be 18-gauge shielded wire, and the Drain Wire must be the "Gnd" signal.

4. If the Pulse Width Modulation (PWM) Output is being used to directly control the ECM 142 motor, the wires do not need to be shielded and can be any 18-gauge wire.
5. Check all wiring leads at the terminal block for tightness. Be sure that wire strands do not stick out and touch adjacent terminals. Confirm that all transducers required for your system are mounted in the appropriate location and wired into the correct terminals.

WARNING: Be sure all controllers and modules are powered down before connecting or disconnecting HSSC cables.

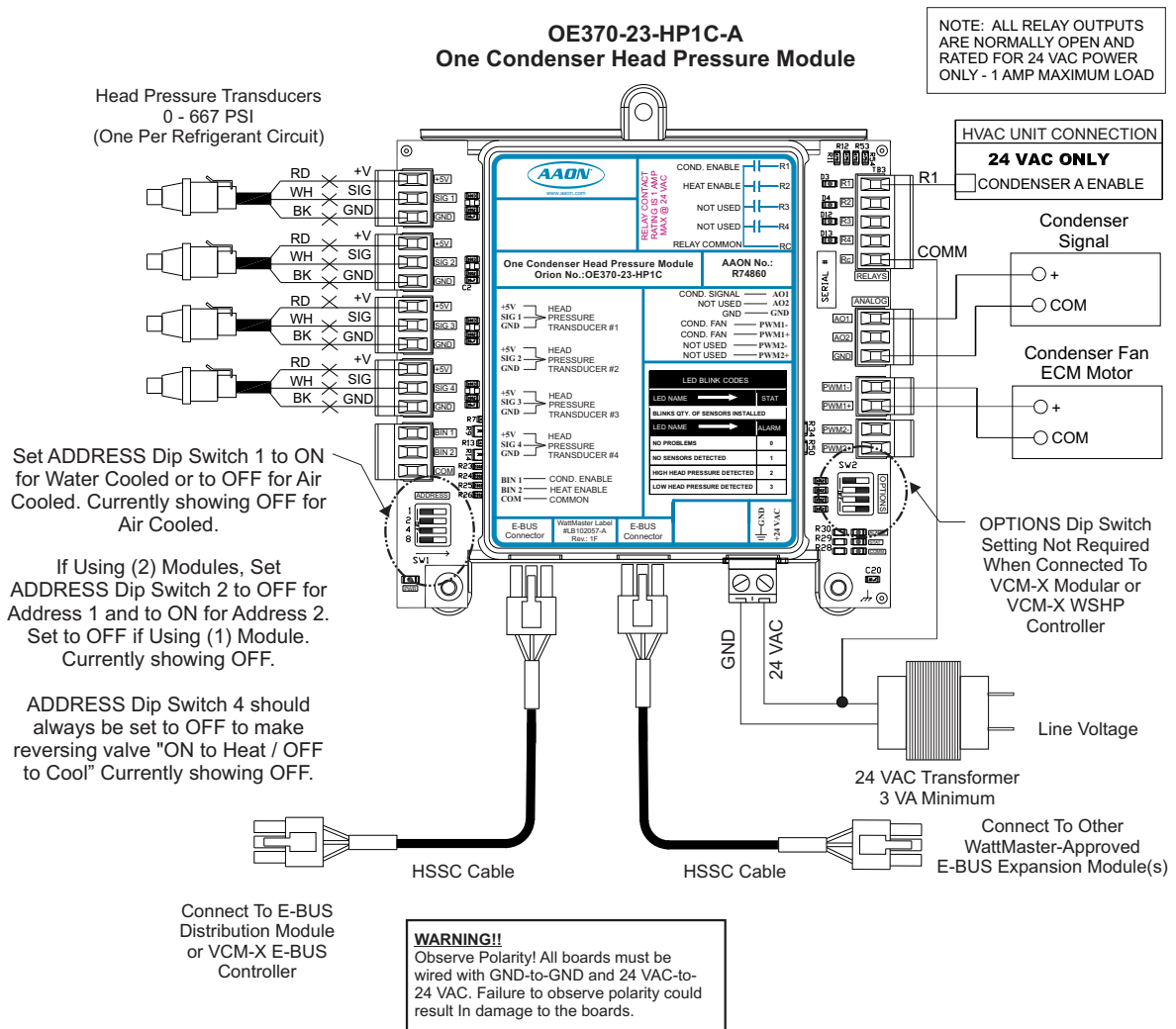


Figure 3: One Condenser Head Pressure Module Wiring Diagram (VCM-X Connection)

One Condenser Head Pressure Module

Installation & Wiring

VCM-X Modular or VCM-X WSHP to One Condenser Head Pressure Module Wiring

The One Condenser Head Pressure Module connects to the E-BUS Distribution Module using a modular HSSC cable. The One Condenser Head Pressure Module requires a 24 VAC power connection with an appropriate VA rating.

The E-BUS Distribution Module connects to the VCM-X Modular Controller, VCM-X WSHP Controller, VCM-X Expansion Module, or 12 Relay Expansion Module using the I²C port. See **Figure 4** below for wiring. Up to (2) One Condenser Head Pressure Modules can be used per E-BUS Controller.

Any E-BUS Module can be connected to each of the four E-BUS Distribution Module's output ports or can be daisy-chained together using HSSC cables.

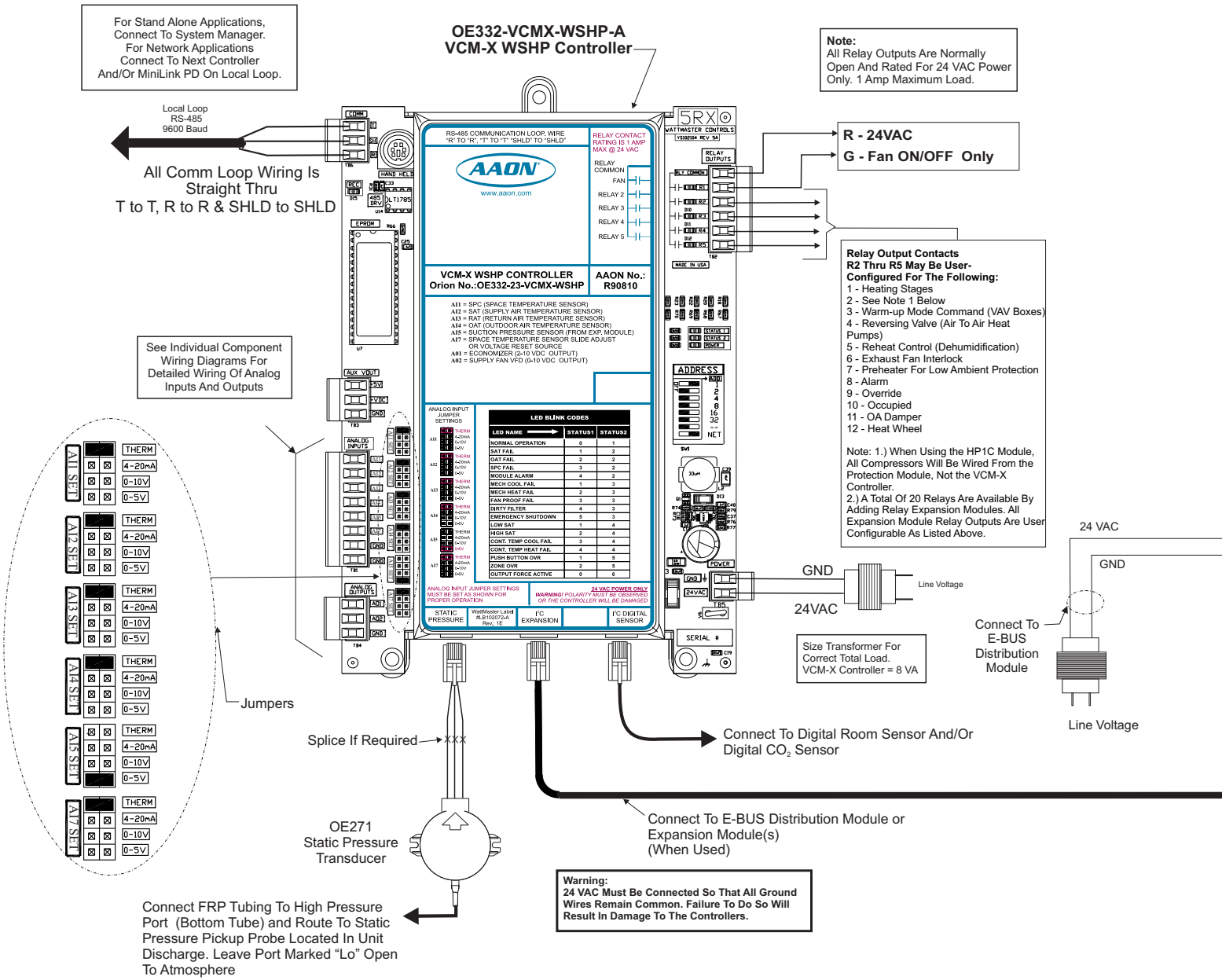


Figure 4: VCM-X WSHP Controller to One Condenser Head Pressure Module Wiring Diagram

One Condenser Head Pressure Module

Installation & Wiring

If using a spliced terminal connection for longer runs, one module can be connected to the E-BUS Distribution Module and any additional modules would be daisy-chained to the first module. For more information, refer to the *E-BUS Distribution Module Technical Guide*.

NOTE: Contact Factory for the correct HSSC cable length for your application. Cables are available in ¼, ½, 1, 2, 3, 4, and 5 Meter lengths and 100 and 150 Foot lengths.

WARNING: Be sure all controllers and modules are powered down before connecting or disconnecting HSSC cables.

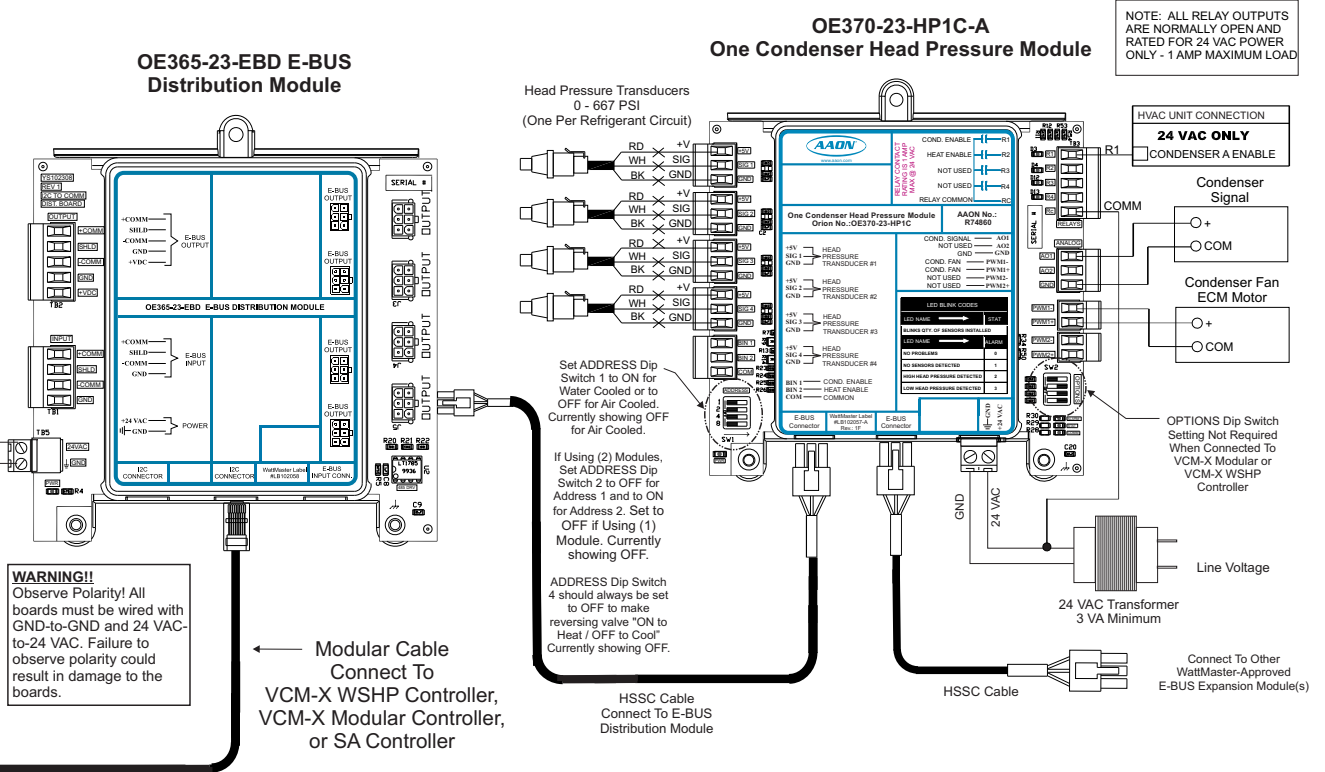


Figure 4, cont.: VCM-X WSHP Controller to One Condenser Head Pressure Module Wiring Diagram

One Condenser Head Pressure Module

E-BUS Controller to One Condenser Head Pressure Module Wiring

VCM-X Modular E-BUS or VCM-X WSHP E-BUS Controller to One Condenser Head Pressure Module Wiring

Up to (2) One Condenser Head Pressure Modules can be daisy-chained together and connected to the E-BUS Controller using a modular HSSC cable. The One Condenser Head Pressure Module requires a 24 VAC power connection with an appropriate VA rating. See **Figure 5** below for wiring.

Any E-BUS Module can be connected to the E-BUS Controller's E-BUS port or can be daisy-chained together using HSSC cables.

NOTE: Contact Factory for the correct HSSC cable length for your application. Cables are available in ¼, ½, 1, 2, 3, 4, and 5 Meter lengths and 100 and 150 Foot lengths.

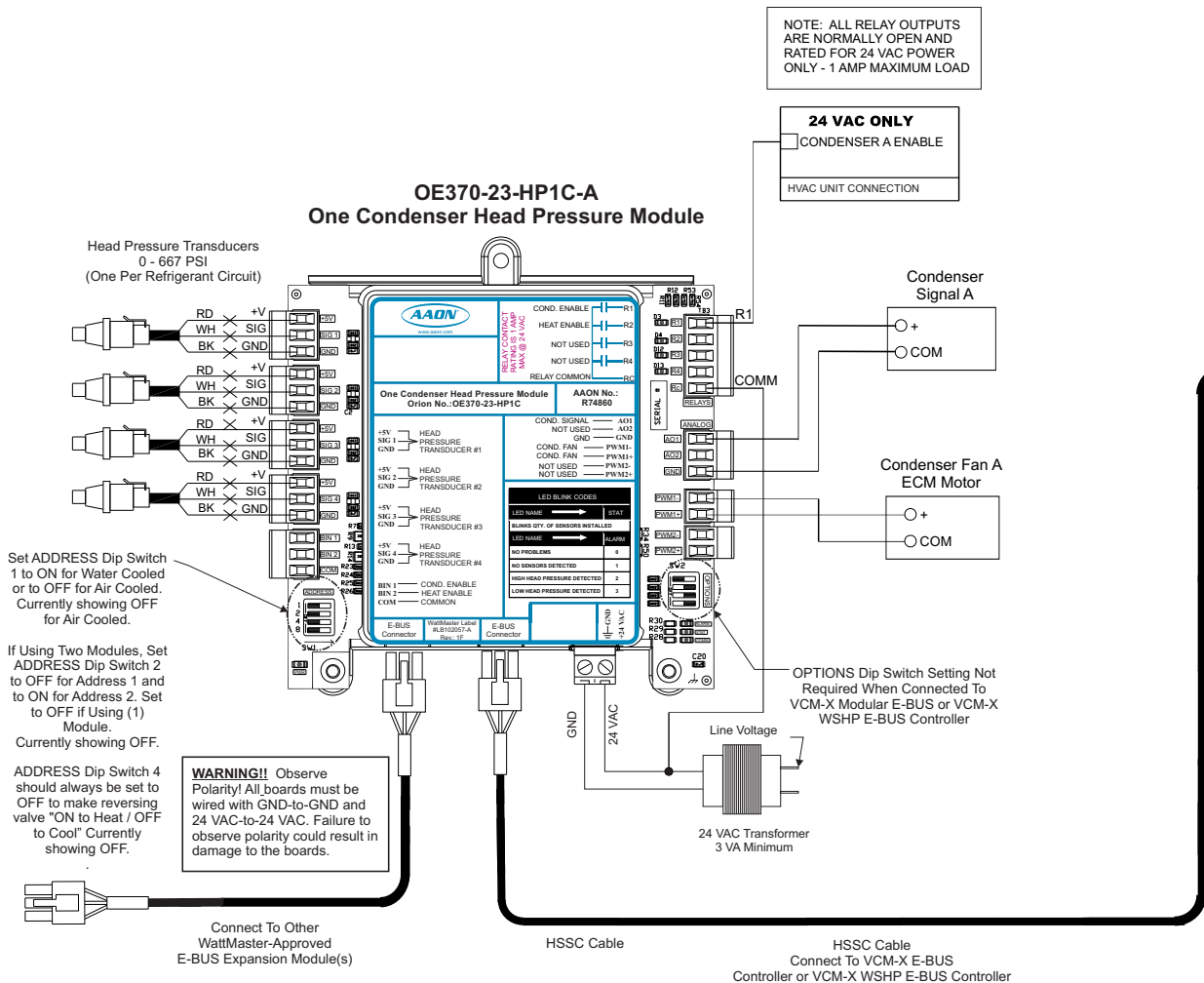


Figure 5: VCM-X E-BUS Controller to Two Condenser Head Pressure Module Wiring Diagram

One Condenser Head Pressure Module

E-BUS Controller to One Condenser Head Pressure Module Wiring

WARNING: Be sure all controllers and modules are powered down before connecting or disconnecting HSSC cables.

For Stand Alone Applications, Connect To System Manager. For Network Applications Connect To Next Controller And/Or MiniLink PD On Local Loop.

Local Loop
RS-485
9600 Baud

All Comm Loop Wiring Is
Straight Thru
T to T, R to R & SHLD to SHLD

HSSC Cable Connect To
VCM-X E-BUS Port

See Individual
Component Wiring
Diagrams For
Detailed Wiring Of
Analog Inputs And

Jumpers

Splice If Required

OE271
Static Pressure
Transducer

Connect FRP Tubing To High Pressure
Port (Bottom Tube) and Route To Static
Pressure Pickup Probe Located In Unit
Discharge. Leave Port Marked "Lo" Open
To Atmosphere

OE332-23E-VCMX-MOD-A VCM-X Modular E-BUS Controller

Note:
All Relay Outputs Are Normally Open And
Rated For 24 VAC Power Only.
1 Amp Maximum Load.

R - 24VAC
G - Fan ON/OFF Only

**Relay Output Contacts
R2 Through R5 May Be User-Configured
For The Following:**

- 1 - Heating Stages
- 2 - Cooling Stages
- 3 - Warm-up Mode Command (VAV Boxes)
- 4 - Reversing Valve (Air To Air Heat Pumps)
- 5 - Reheat Control (Dehumidification)
- 6 - Exhaust Fan Interlock
- 7 - Preheater For Low Ambient Protection
- 8 - Alarm
- 9 - Override
- 10 - Occupied
- 11 - OA Damper
- 12 - Heat Wheel
- 13 - Emergency Heat

Note: 1.) When Using the HP2C Module,
All Compressors Will Be Wired From the
Protection Module, Not the VCM-X Controller.
Note: A Total Of 20 Relays Are Available By
Adding Relay Expansion Modules. All
Expansion Module Relay Outputs Are User
Configurable As Listed Above.

Size Transformer For Correct
Total Load.
VCM-X Controller = 8 VA

Warning:
24 VAC Must Be Connected So That All Ground
Wires Remain Common. Failure To Do So Will
Result In Damage To The Controllers.

Figure 5, cont.: VCM-X E-BUS Controller to Two Condenser Head Pressure Module Wiring Diagram

One Condenser Head Pressure Module

Installation & Wiring

Stand-Alone Wiring

To operate the One Condenser Head Pressure Module as Stand Alone, connect the Module to a 24 VAC power connection with an appropriate VA rating. Up to two One Condenser Head Pressure Modules can be connected to one HVAC unit. See **Figure 6** for wiring.

Check all wiring leads at the terminal block for tightness. Be sure that wire strands do not stick out and touch adjacent terminals. Confirm that all transducers required for your system are mounted in the appropriate location and wired into the correct terminals.

Condenser Type Selection

As shown in **Figure 6**, set address dipswitch 1 to ON for water cooled or to OFF for air cooled. Refer to pages 11-12 for further instructions.

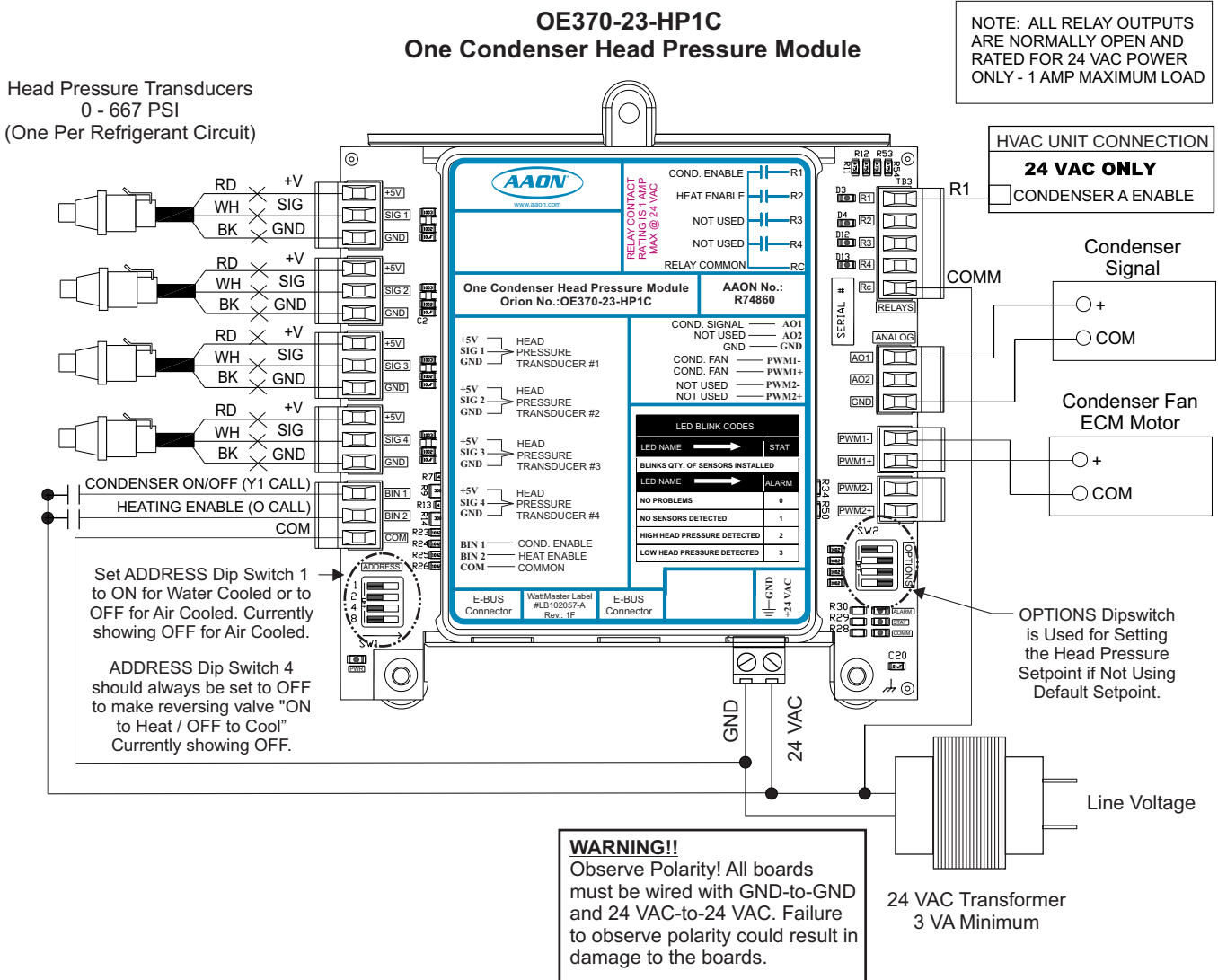


Figure 6: One Condenser Head Pressure Module as Stand-Alone

Inputs and Outputs

The following inputs and outputs are available on the One Condenser Head Pressure Module. See **Table 1** below to reference the Input/Output Map.

Binary Inputs	
1	Condenser On/Off (24 VAC Wet Input)
2	Heating Enable (24 VAC Wet Input)
Binary Outputs	
1	Condenser Enable Relay (Dry Contact Output Rated for 24 VAC)
2	Heating Enable (Dry Contact Output Rated for 24 VAC)
Analog Inputs	
1	Head Pressure #1 (0-667 PSI Sensor)
2	Head Pressure #2 (0-667 PSI Sensor)
3	Head Pressure #3 (0-667 PSI Sensor)
4	Head Pressure #4 (0-667 PSI Sensor)
Analog Outputs	
1	Condenser Signal (0-10 or 2-10 VDC)
2	N/A
PWM Output	
1	ECM 142 PWM Input (0-100% Duty Cycle)
2	N/A

Table 1: One Condenser Head Pressure Module Inputs & Outputs

Stand-Alone Input Commands

Condenser On/Off

A 24 volt signal to Binary Input #1 initiates the Condenser Enable function. Typically, the source for this signal is the “Y” call from the thermostat calling for a compressor to run.

Heating Enable On/Off

A 24 volt signal to Binary Input #2 initiates the Heating Enable On function. Typically, the source for this signal is the “O” call from the thermostat. A signal on this input indicates the reversing valve has been energized and that the unit is in the Heating Mode.

Head Pressure Setpoint

The Head Pressure Setpoint is set using the OPTIONS Dip Switches. See **Table 2**. The Default Setpoint for an Air Cooled Condenser is 340 for 410-A refrigerant. The Default Setpoint for a Water Cooled Condenser is 235 for 410-A refrigerant. Set the OPTIONS Dip Switch to 0 if using these Default Settings. **You must cycle power after setting Dip Switch values.**

NOTE: The only setpoint available for adjustment by the contractor is the **Head Pressure Setpoint**. The rest of the setpoints described can only be changed by the factory.

ADDRESS Dip Switch Settings Condenser Type Selection

When using the OPTIONS Dip Switch to set the Head Pressure Setpoint, you must also set the ADDRESS Dip Switch to designate the type of condenser you are using.

Set ADDRESS Dip Switch 1 to ON for a Water Cooled Condenser or to OFF for an Air Cooled Condenser.

If set to ON for a Water Cooled Condenser, the Analog Condenser Output Signal will be 2-10 VDC for the Water Valve. If set to OFF for an Air Cooled Condenser, the Analog Condenser Output Signal will be 0-10 VDC for the Condenser Fan.

You must cycle power after setting Dip Switch values. See **Figure 6** for ADDRESS Dip Switch location and **Table 3** for Setting information.

Sequence of Operation

Input Commands (VCM-X Connection)

Condenser On/Off

Instead of a hard wired input signal to the Condenser Enable input, the VCM-X Modular or VCM-X WSHP Controller communicates to the Module via E-BUS communications. This signal indicates the compressor(s) are called to run and drives the Condenser On/Off function.

Heating Enable On/Off

As with the Condenser Signal On/Off function, the VCM-X Modular or VCM-X WSHP Controller communicates to the Module via E-BUS communications and signals that the reversing valve has been energized and that heating has been enabled.

NOTE: When the term “ON” is used, it means there is either 24 VAC on the appropriate Binary Input or a call-to-run signal is being received from the VCM-X Series Controller or VCM-X E-BUS Series Controller. When the term “OFF” is used, it means there is either 0 VAC on the appropriate Binary Input or the call-to-run signal from the VCM-X Modular Controller or VCM-X WSHP Controller has been removed.

Sensor Reading Routine

Up to four Head Pressure Sensors can be monitored, but only the highest reading is used for control. This is because the way the units are physically designed, the air from the condenser fan flows through ALL of the condenser coils. As a result, if you modulate fans based on the highest reading, you will have enough airflow for all of the condenser coils.

Modes of Operation

OFF Mode

The Head Pressure Control Board is in the OFF Mode when the Condenser Input Signal is “OFF”. In this mode, all relays are off, the Analog Output is 0 VDC, and the PWM Output is 0% Duty Cycle.

Cooling Mode

The Head Pressure Control board is in the Cooling Mode when the Condenser Input Signal is “ON” and the Heating Enable signal is “OFF”. The Condenser Enable Relay will energize to enable the Condenser Fan or Water Valve. In a water system, the Water Flow Valve will start at 75% for 3 minutes. In an air system, the Condenser Signal will go to 50% for 30 seconds. The Condenser Output Signal will then automatically adjust between 0 and 100% to maintain the desired Head Pressure Setpoint. The Condenser Output Signal can be a 0-10 VDC, 2-10 VDC or 0-100% PWM signal provided by the appropriate output. Both outputs mirror each other.

Heat Pump Mode

The Head Pressure Control Module is in the Heat Pump Mode when the Condenser Input Signal is “ON” and the Heating Enable signal is “ON”. In this mode, the Heating Enable Relay will energize and the Condenser Output Signal will go to 100% and remain there until the Heating Enable signal is removed.

NOTE: The Heating enable output is for indication only and is not wired to anything.

OPTIONS Dip Switch Settings	Head Pressure Setpoint	
	Air Cooled Condenser	Water Cooled Condenser
Binary Value	R410-A	R410-A
0	340 (DEFAULT)	235 (DEFAULT)
1	260	210
2	270	220
3	280	230
4	290	240
5	300	250
6	310	260
7	320	270
8	330	280
9	340	290
10	350	300
11	360	310
12	370	320
13	380	330
14	390	340
15	400	350

NOTE: You must cycle power after setting Dip Switch values.

Table 2: OPTIONS Dip Switch/Head Pressure Setpoint Settings for Stand-Alone Operation

ADDRESS Dip Switch 1 Settings		
Switch 1	Default SP	Description of Default Head Pressure Setpoint
OFF	340	Air Cooled Condenser using R410-A Refrigerant
ON	235	Water Cooled Condenser using R410-A Refrigerant
Switch 1 determines Air or Water Cooled Condenser		

NOTE: You must cycle power after setting Dip Switch values.

Table 3: ADDRESS Dip Switch Refrigerant and Condenser Type Settings

ADDRESS Dip Switch 2 Settings	
Switch	Description
OFF	Address 1 if Using (2) Head Pressure Modules (Set to OFF if using only (1) Head Pressure Module)
ON	Address 2 if Using (2) Head Pressure Modules

Table 4: ADDRESS Dip Switch Address Settings When Connected to VCM-X

ADDRESS Dip Switch 4 Settings	
Switch	Description
OFF	Reversing Valve On to Heat/ Off to Cool
ON	Reversing Valve On to Cool/ Off to Heat

This Dip Switch should be set to OFF for AAON Tulsa operations.

Table 5: ADDRESS Dip Switch 4 Settings for Reversing Valve

Head Pressure Module Valve/Fan Position Troubleshooting

If configured for Water valve:

Aout Signal is 2 to 10 volts.

2 volts = 0% valve position or fully closed

10 volts = 100% valve position or fully open

PWM signal is not used for water valve but does modulate.

At Startup for cooling, valve will open to 75% or 8 volts for 3 minutes then will modulate every 30 seconds to try to maintain head pressure setpoint.

For heating, valve will open and stay at 100%

If configured for Air Condenser Fan:

Aout Signal is 0 to 10 volts.

Minimum fan speed is 1.5 volts. (15%)

Maximum fan speed is 10 volts. (100%)

Anything less than 1.5 volts the fan will be off.

PWM signal is 0 to 100%

PWM+ (to ground) will always read 24 vdc.

PWM- (to ground) can be measured for volts dc and this formula will tell you the percentage signal: $(24 - \text{measured value})/24$ (measured value = PWM- to ground)

PWM-

0 volts = 100% fan speed

6 volts = 75% fan speed

12 volts = 50% fan speed

18 volts = 25% fan speed

20.4 volts = 15% fan speed

Above 20.4 volts = 0% fan speed

At Startup for cooling, fan will start at 50% then will modulate every 30 seconds to try to maintain head pressure setpoint.

For heating, valve will open and stay at 100%

Safeties:

If head pressure signal is above 500 psig, fan will go to 100% (high pressure safety).

If head pressure signal is below 1 psig, fan will go to 100% (assuming bad sensor).

Troubleshooting

Troubleshooting for Stand Alone Mode

If you suspect or encounter general problems during operation of the One Condenser Head Pressure Module while in Stand Alone Mode, follow the Troubleshooting Flowchart in **Figure 6** below.

Head Pressure Control Troubleshooting Flowchart (Stand Alone Mode)

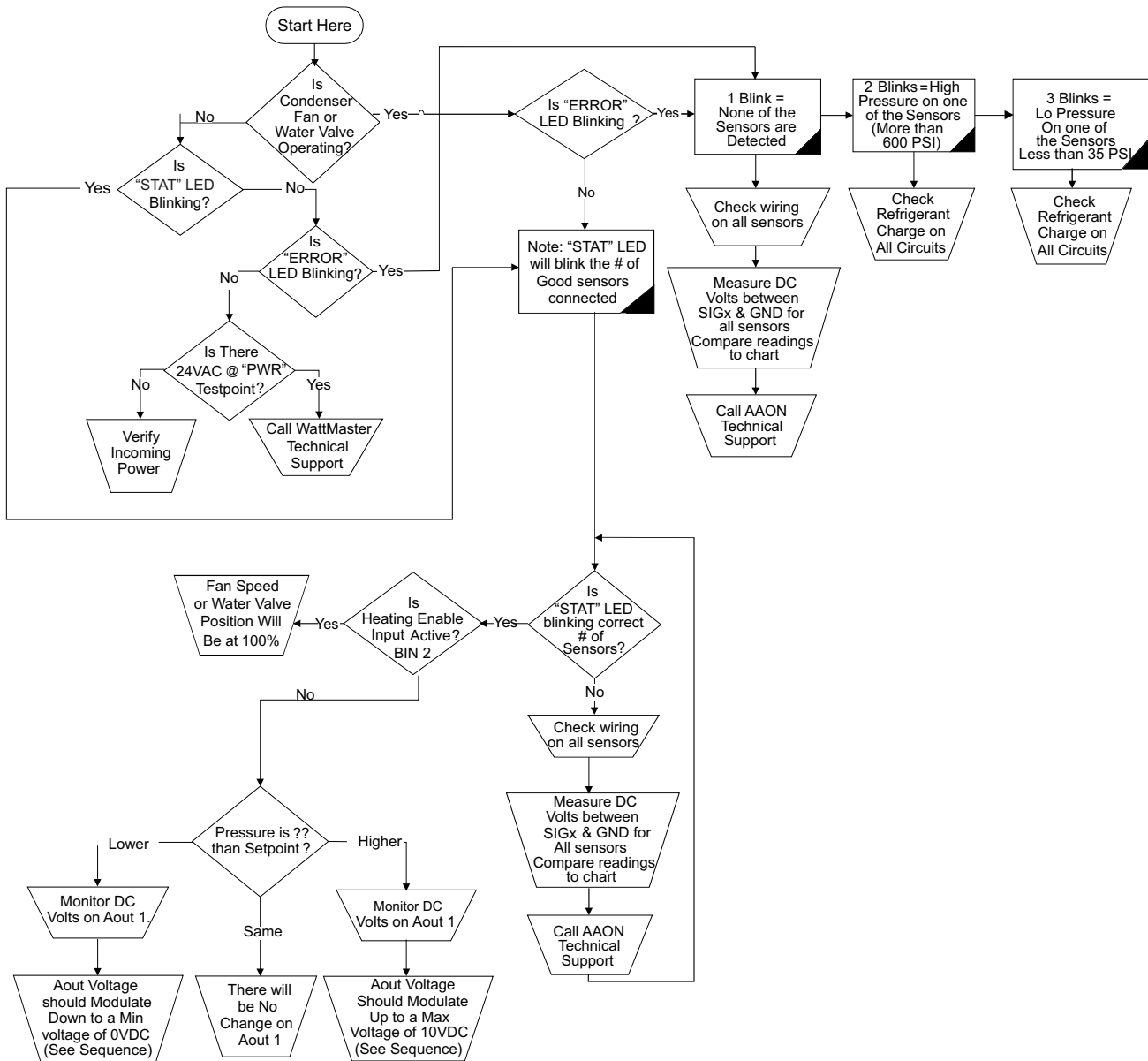


Figure 6: One Condenser Head Pressure Module Troubleshooting Diagram

Pressure Transducer Troubleshooting

If you suspect there is a problem with the Module related to pressure transducer measurements, reference **Table 6** below.

Pressure Sensor Chart			
Voltage	Pressure	Voltage	Pressure
0.5	0	2.6	350
0.6	17	2.7	367
0.7	33	2.8	384
0.8	50	2.9	400
0.9	67	3.0	417
1.0	83	3.1	434
1.1	100	3.2	450
1.2	117	3.3	467
1.3	133	3.4	484
1.4	150	3.5	500
1.5	167	3.6	517
1.6	183	3.7	534
1.7	200	3.8	550
1.8	217	3.9	567
1.9	233	4.0	584
2.0	250	4.1	600
2.1	267	4.2	617
2.2	283	4.3	634
2.3	300	4.4	650
2.4	317	4.5	667
2.5	334		

Table 6: One Condenser Head Pressure Module Transducer Chart

One Condenser Head Pressure Module

Troubleshooting

Using LEDs to Verify Operation

The One Condenser Head Pressure Module is equipped with LEDs that can be used to verify operation and perform troubleshooting. There are LEDs for communication, operation modes, diagnostic codes, and relays. The One Condenser Head Pressure Module has eight LEDs—one for power, one for communications, one for operation status, one for alarms, two for compressor relays, and two not currently used. See **Figure 7** for the LED locations. The LEDs associated with these inputs and outputs allow you to see what is active without using a voltmeter.

① Status LEDs

“COMM” - This LED will light up to indicate Communications with the VCM-X Series Controller or VCM-X -BUS Series Controller. If Communications are established, the COMM LED will blink. You should not see this LED light up in stand-alone mode, because there would be no communications with the VCM-X Series Controller or VCM-X E-BUS Series Controller.

“ALARM” - This is the diagnostic blink code LED. It will light up and blink out diagnostic codes. See **Table 7** below for Diagnostic Blink Code descriptions. The blink code descriptions are also located on the Module’s front cover.

No. of Blinks	Status
0	No Problems
1	No Sensors Detected
2	High Head Pressure Detected
3	Low Head Pressure Detected

Table 7: ALARM LED Blink Codes

“STAT” - This is the status blink code LED. It will light up and first blink the address of the Module. It will then blink out the quantity of sensors installed. See **Table 8** below for Status Blink Code descriptions. The blink code descriptions are also located on the Module’s front cover.

No. of Blinks	Status
Random	Blinks Quantity of Sensors Installed

Table 8: STAT LED Blink Codes

② Module LEDs

“R1” - This LED will light up when the Condenser Fan or Water Valve is enabled and will stay lit as long as the Condenser Fan or Water Valve is active.

“R2” - This LED will light up when the Heating Enable is enabled and will stay lit as long as the Heating Enable is active.

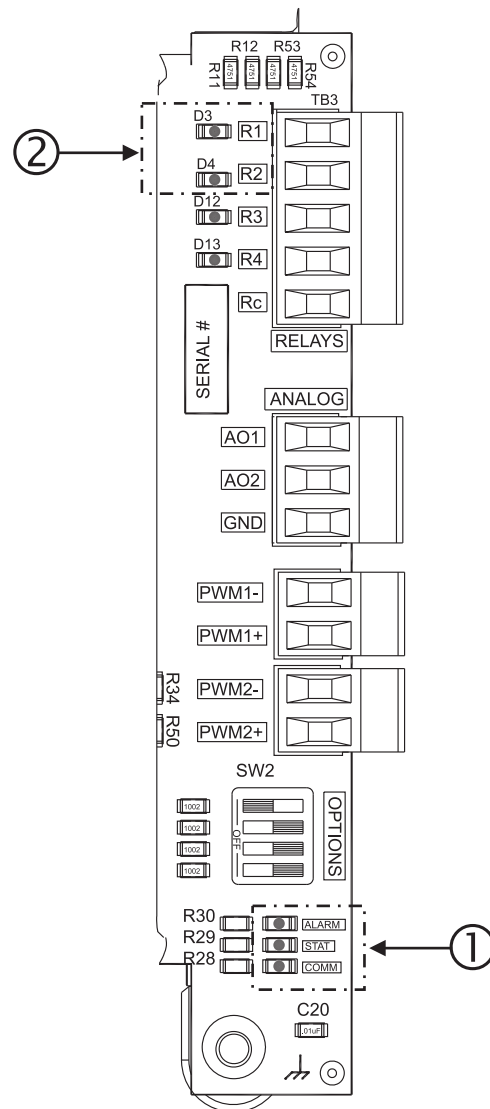


Figure 7: LED Locations

LED Diagnostics

“PWR” LED: When the One Condenser Head Pressure Module is powered up, the PWR LED (located below the address switches) should light up and stay on continuously. If it does not light up, check to be sure that the power wiring is connected to the board, the connections are tight, and the VCM-X Series Controller or VCM-X E-BUS Series Controller is powered. If after making all these checks, the PWR LED does not light up, the module is probably defective.

“COMM” LED: When the One Condenser Head Pressure Module is powered up while in Stand Alone Mode, the COMM LED does not light up. When the module is connected to the VCM-X Series Controller or VCM-X E-BUS Series Controller, the COMM LED should light up, indicating Communications. Each time Communications are detected, this LED should continuously blink on and off, for a half second. This LED should never stop checking for a Communications signal. If it does not light up, check to be sure that the power wiring is connected to the board, the connections are tight, and the VCM-X Series Controller or VCM-X E-BUS Series Controller is powered. If after making all these checks, the COMM LED does not light up, the board is probably defective.

“STAT” LED: As previously described, when the module is first powered up, the STAT LED will blink out the number of installed sensors

“ALARM” LED: As previously described, this LED will blink on and off to indicate alarms and diagnostics.

Other Checks

NOTE: The One Condenser Head Pressure Module contains no user-serviceable parts. Contact qualified technical personnel if your module is not operating correctly.

One Condenser Head Pressure Module

Appendix for Version 1.06 and Earlier

Version 1.06 and Earlier

Version 1.06 and earlier have several differences from version 1.07 and later. Please refer to the Dipswitches in **Figures 8 & 9** and the **Tables 9 & 10** for detailed information.

VCM-X Connection

Version 1.06 and earlier do not utilize Dipswitch 2 when the module is connected to a VCM-X Series Controller.

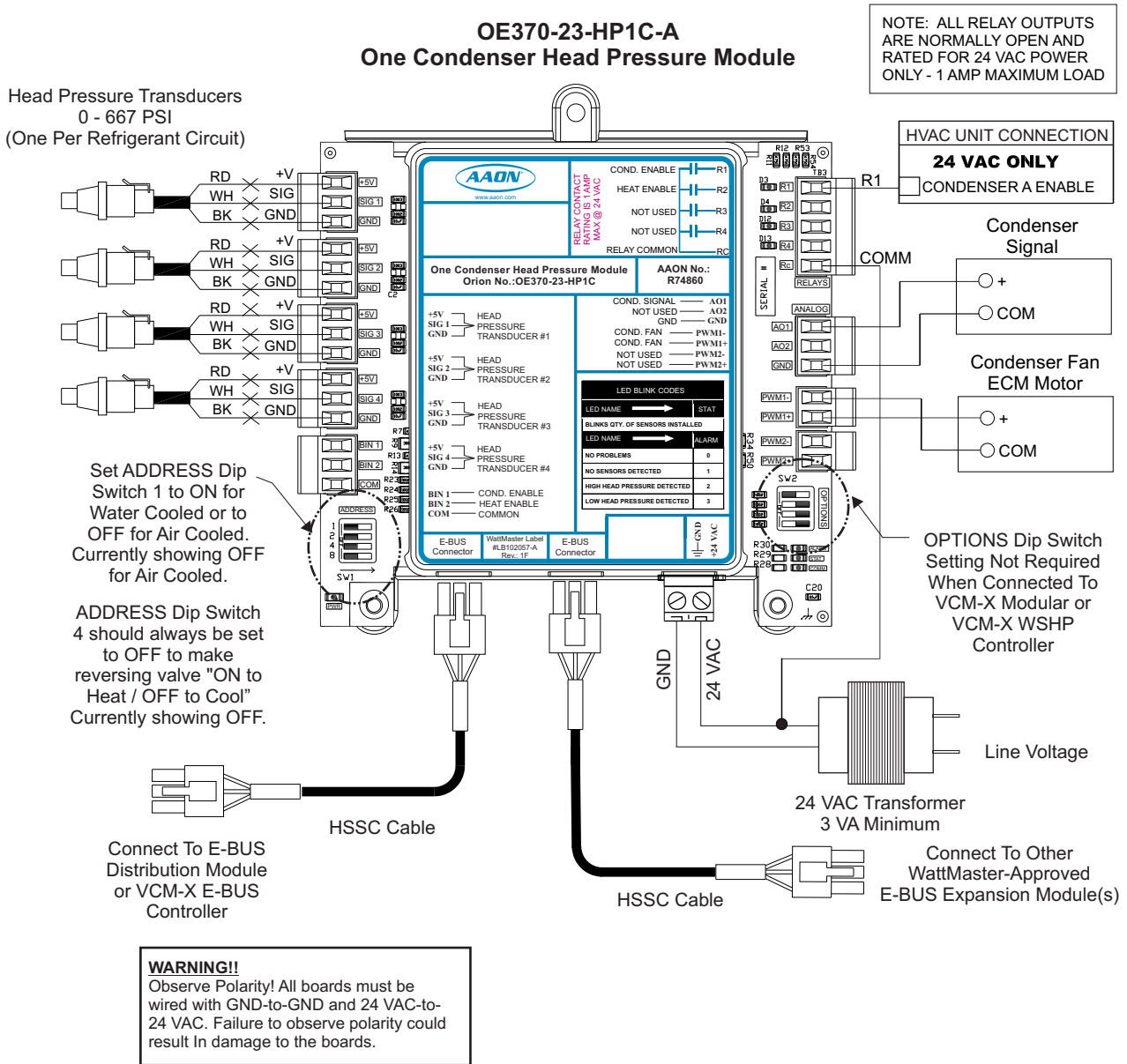


Figure 8: Version 1.06 and Earlier One Condenser Head Pressure Module Wiring Diagram (VCM-X Connection)

One Condenser Head Pressure Module

Appendix for Version 1.06 and Earlier

Stand-Alone Wiring

Versions 1.03 through 1.06 utilize Dipswitch 2 in stand-alone mode for refrigeration selection. See **Tables 9 & 10** for further information.

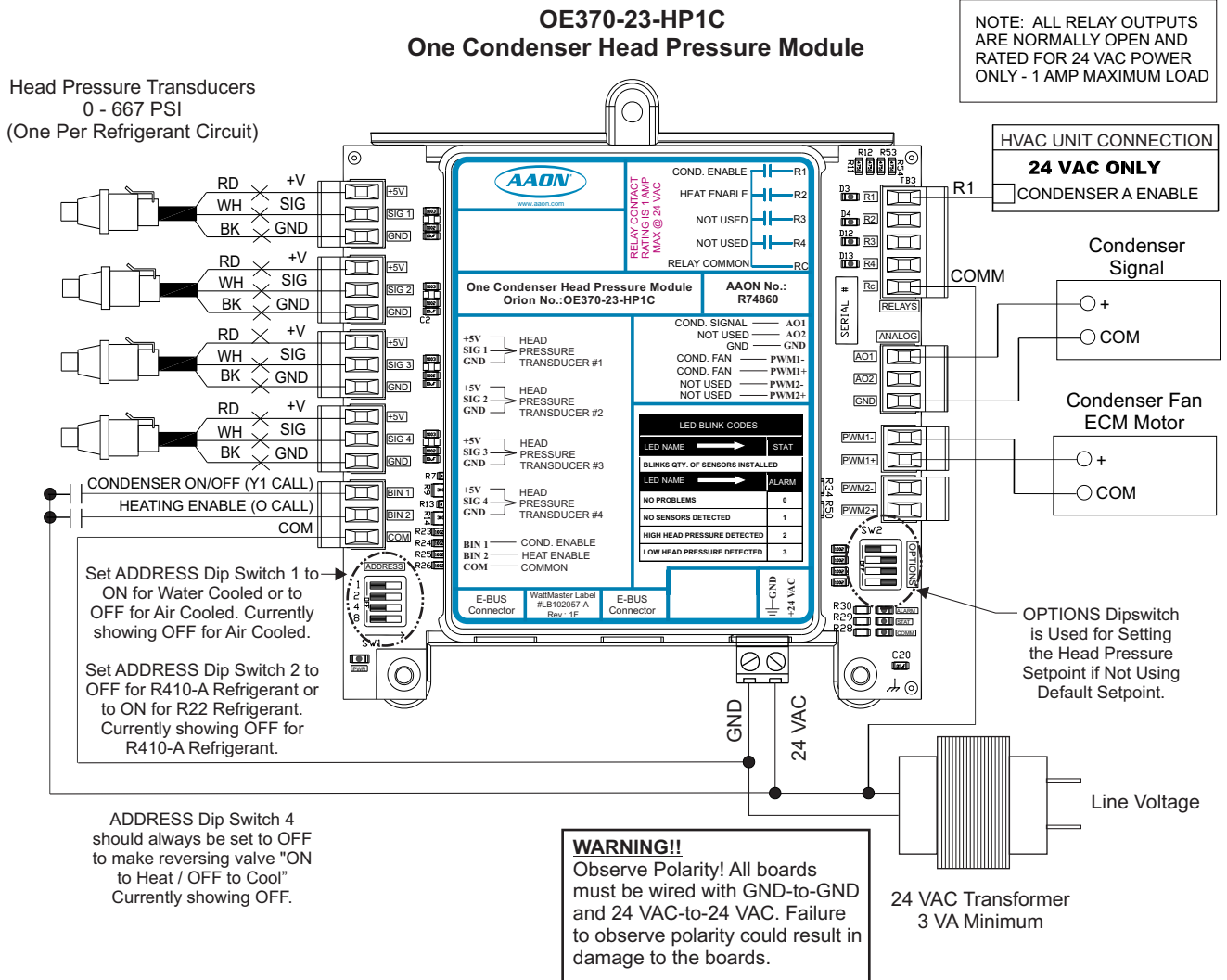


Figure 9: Version 1.06 and Earlier One Condenser Head Pressure Module Wiring Diagram (Stand-Alone)

One Condenser Head Pressure Module

Appendix for Version 1.06 and Earlier

OPTIONS Dip Switch Settings	Head Pressure Setpoint			
	Air Cooled Condenser		Water Cooled Condenser	
Binary Value	R410-A	R22	R410-A	R22
0	340 (DEFAULT)	200 (DEFAULT)	235 (DEFAULT)	145 (DEFAULT)
1	260	160	210	110
2	270	170	220	120
3	280	180	230	130
4	290	190	240	140
5	300	200	250	150
6	310	210	260	160
7	320	220	270	170
8	330	230	280	180
9	340	240	290	190
10	350	250	300	200
11	360	260	310	210
12	370	270	320	220
13	380	280	330	230
14	390	290	340	240
15	400	300	350	250

NOTE: R22 refrigerant can only be used with the One Condenser Head Pressure Module versions 1.03 to 1.06. You must cycle power after setting Dip Switch values.

Table 9: OPTIONS Dip Switch/Head Pressure Setpoint Settings for Stand-Alone Operation

ADDRESS Dip Switch 1 & 2 Settings			
Switch 1	Switch 2	Default SP	Description of Default Head Pressure Setpoint
OFF	OFF	340	Air Cooled Condenser using R410-A Refrigerant
OFF	ON	200	Air Cooled Condenser using R22 Refrigerant
ON	OFF	235	Water Cooled Condenser using R410-A Refrigerant
ON	ON	145	Water Cooled Condenser using R22 Refrigerant
Switch 1 determines Air or Water Cooled Condenser			
Switch 2 determines R410-A or R22 refrigerant			
NOTE: R22 refrigerant can only be used with the One Condenser Head Pressure Module versions 1.03 to 1.06. You must cycle power after setting Dip Switch values.			

Table 10: ADDRESS Dip Switch Refrigerant and Condenser Type Settings for Stand-Alone Operation



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