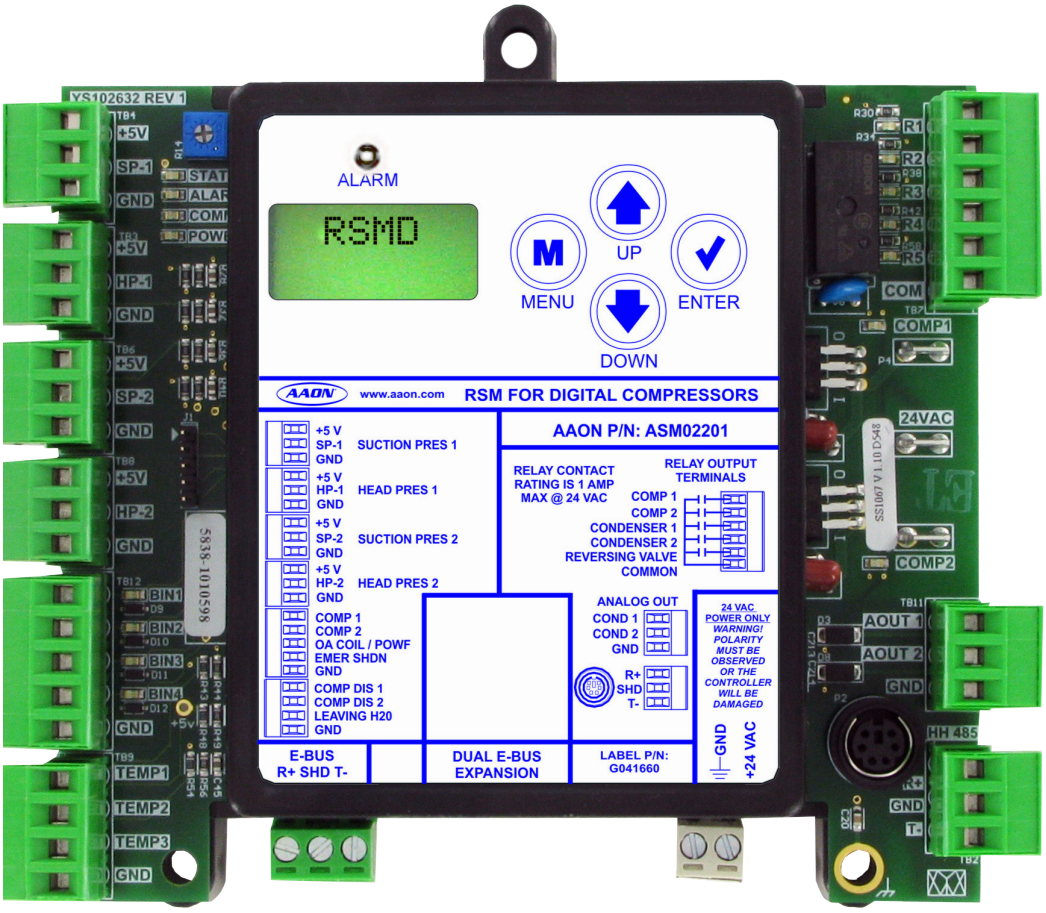
Compatible with
VCCX/VCCX-IP
Series

RSMD
Technical Guide

ASM02201
Software SS1067



RSMD TECHNICAL GUIDE REVISION LOG	
REVISION AND DATE	**CHANGE**
Rev. F, March 15, 2021	Incorporated RSMD2R differentiation information
Rev. G, December 8, 2022	Formatting; errata correction
Rev. H, December 18, 2023	Added Condenser Fan Cleaning to Sequences, cosmetic updates
Rev. I, February 2, 2024	Added WSHP Valve Control to Sequence
Rev. J, August 30, 2024	updated Glycol Screen information, parts table, cosmetic updates

PRODUCT NAME PARTS REFERENCE	
PART DESCRIPTION	**PART NUMBER**
Refrigerant System Module for Digital Compressors (RSMD)	ASM02201
VCCX-IP Controller	ASM07424
VCCX2 Controller	ASM01698
Prism 2	ASM02533
IP Module Kit	ASM01902
CommLink 5 / CommLink 6 Communications Interface	ASM01874 / ASM07420
EBC E-BUS Cable Assembly E-BUS Power & Comm 1.5 ft., 3 ft., 10 ft., 25 ft., 50 ft., 75 ft., 100 ft., 150 ft., 250 ft., and 1000 ft. spool	G029440 (1.5 ft.), G012870 (3 ft.), G029460 (10 ft.), G045270 (25 ft.), G029510 (50 ft.), G029530 (75 ft.), G029450 (100 ft.), G029470 (150 ft.), V36590 (250 ft.), G018870 (1000 ft. spool)
Modular Service Tool SD - Operator Interface	ASM01895

www.aaon.com

This manual is available for download from
www.aaon.com/library

AAON
2425 South Yukon Ave.
Tulsa, OK 74107-2728
www.aaon.com
Factory Technical Support Phone: 918-382-6450
AAON® Controls Support: 866-918-1100

Rev. J
AAON Part Number: G039810, Rev. I

TABLE OF CONTENTS

TABLE OF CONTENTS

FIGURES

TABLES

Overview

Features and Applications

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 is for units that match all of the following criteria:

- One or two circuits;
- Compressors may be any mix of fixed, two-step, and digital;
- Reheat is present on the first circuit.

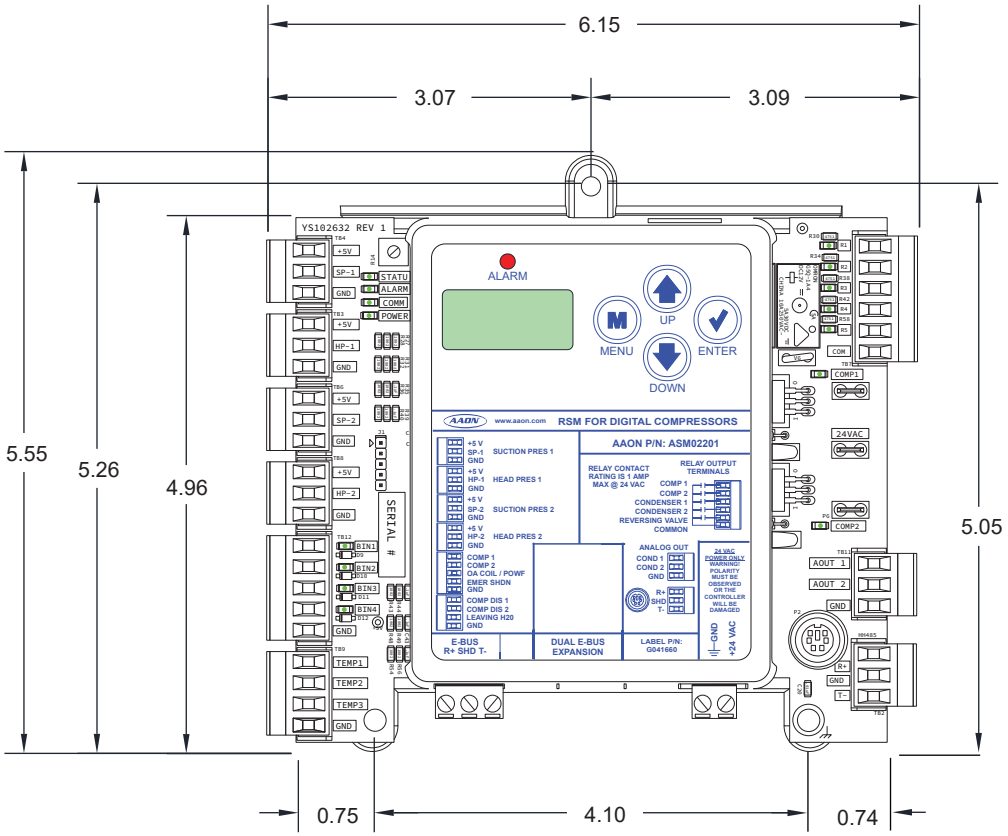
The RSMD is connected to the VCCX2 Controller. Up to four RSMD Modules can be connected, depending on the size of the system. There are two E-BUS expansion ports which allow the use of communicating sensors and E-BUS modules.

The RSMD provides three analog inputs, four binary inputs, five relays, and two analog outputs. See **Figure 2, page 8, and Figure 3, page 9,** for wiring.

The RSMD Module provides the following:

- 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 directly maintain the Suction (Saturated) Temperature Setpoint.
- When the Heat Pump is in Heating Mode, the RSMD modulates and stages the compressors to maintain a given Supply Air Temperature Setpoint.
- Modulates the condenser fans or valves to maintain the Head Pressure Setpoint.
- Provides alarms and safeties for the compressor and condenser operation.
- Connects to the Modular Service Tool SD when the communication wire is run to the VCCX2 Controller.
- Provides a 2 x 8 LCD character display and four buttons that show status, setpoints, configurations, sensors, and alarms. Also allows user to change the module's address, if necessary.

Dimensions



NOTE: All dimensions are in inches.

Figure 1: RSMD Dimensions

Electrical and Environmental Requirements

General

Correct wiring of the AAON unit controller and its modules is the most important factor in the overall success of the installation process. The AAON unit controller and modules are factory installed and wired at the AAON factory. Some of the following information may not apply if unit was pre-wired at the factory. However, if troubleshooting of the controller or modules is required, it is a good idea to be familiar with the system wiring.

Wiring

The modules must be connected to an 18-30 VAC power source of the proper size for the calculated VA load requirements. All transformer sizing should be based on the VA ratings listed in **Table 1, this page**.

ELECTRICAL AND ENVIRONMENTAL REQUIREMENTS

Control Device	Voltage	VA Load	Operating Temperature	Humidity (Non-Condensing)
RSMD Module	18-30 VAC	18	-4°F to 158°F (-20ºC to 70ºC)	0-95% RH
	Inputs		Resistive Inputs require 10KΩ Type 3 Thermistor	
			24VAC Inputs provide 4.7kΩ Load	
	Outputs		Relay Outputs: 1 Amp maximum per output.	

Table 1: Electrical and Environmental Requirements

NOTE: If the temperature at the controller is below -4ºF (-20ºC), the display refresh rate could be less responsive.

WARNING: When using a single transformer to power more than one controller or expansion module, the correct polarity must always be maintained between the boards. Failure to observe correct polarity will result in damage to the unit controller, RSMD, and any associated module.

Please carefully read and apply the following information when wiring the unit controller, RSMD, and any associated module.

- All wiring is to be in accordance with local and national electrical codes and specifications.
- All 24 VAC wiring must be connected so that all ground wires remain common. Failure to follow this procedure can result in damage to the controller and connected devices.
- Minimum wire size for 24 VAC wiring should be 18-gauge.
- Minimum wire size for all sensors should be 24-gauge. Some sensors require two-conductor wire and some require three-or four-conductor wire.
- Minimum wire size for 24 VAC thermostat wiring should be 22-gauge.
- Be sure that all wiring connections are properly inserted and tightened into the terminal blocks. Do not allow wire strands to stick out and touch adjoining terminals which could potentially cause a short circuit.
- When communication wiring is used to interconnect HVAC unit controllers together or to connect to other communication devices, all wiring must be plenum-rated, minimum 18-gauge, two-conductor, twisted pair with shield. AAON can supply communication wire that meets this specification and is color coded for the network or local loop. Please consult your AAON distributor for information. If desired, Belden #82760 or equivalent wire may also be used.
- Before applying power to the HVAC unit controller, RSMD Modules, and any associated modules, be sure to recheck all wiring connections and terminations thoroughly.

Powering Up

When the controller and modules are first powered up, the POWER LED should light up and stay on continuously. If it does not light up, check to be sure that you have 24 VAC connected to the controller, that the wiring connections are tight, and that they are wired for the correct polarity. The 24 VAC power must be connected so that all ground wires remain common. If after making all these checks, the POWER LED does not light up, please contact AAON Controls Support for assistance.

Inputs Wiring

RSMD Wiring

The RSMD monitors and controls one or two refrigeration circuits of the HVAC unit. The module is designed for R410-A refrigerant.

The RSMD is connected to the VCCX2 Controller. Up to four RSMD Modules can be connected, depending on the size of the system. There are two E-BUS expansion ports which allow the use of communicating sensors and E-BUS modules.

The RSMD provides three analog inputs, four binary inputs, five relays, and two analog outputs. See **Figure 2, this page,** for inputs wiring and **Figure 3, page 9,** for outputs wiring.

WARNING: Observe Polarity! All boards must be wired with GND-to-GND and 24 VAC-to-24 VAC. Failure to observe polarity will result in damage to one or more of the boards. Expansion modules must be wired in such a way that the expansion modules and the controller are always powered together. Loss of power to the expansion module will cause the controller to become inoperative until power is restored to the expansion module.

Suction Pressure Transducer Wiring

Suction pressure transducers must be wired as shown in **Figure 2, this page**. It is typically required for all VCCX2 applications.

Suction pressure transducers are used to measure suction pressure at the HVAC unit's DX evaporator coil suction line. This suction line pressure is converted to saturated refrigerant temperature. The saturated refrigerant temperature is used to properly control the compressors to maintain a given Suction Coil (Saturated) Temperature Setpoint. In Cooling mode, the VCCX2 resets the Suction Coil (Saturated) Temperature Setpoint to maintain a given Supply Air Temperature Setpoint. In Dehumidification Mode, the Suction Coil (Saturated) Temperature Setpoint is a user configurable setpoint that can be reset based on indoor humidity levels.

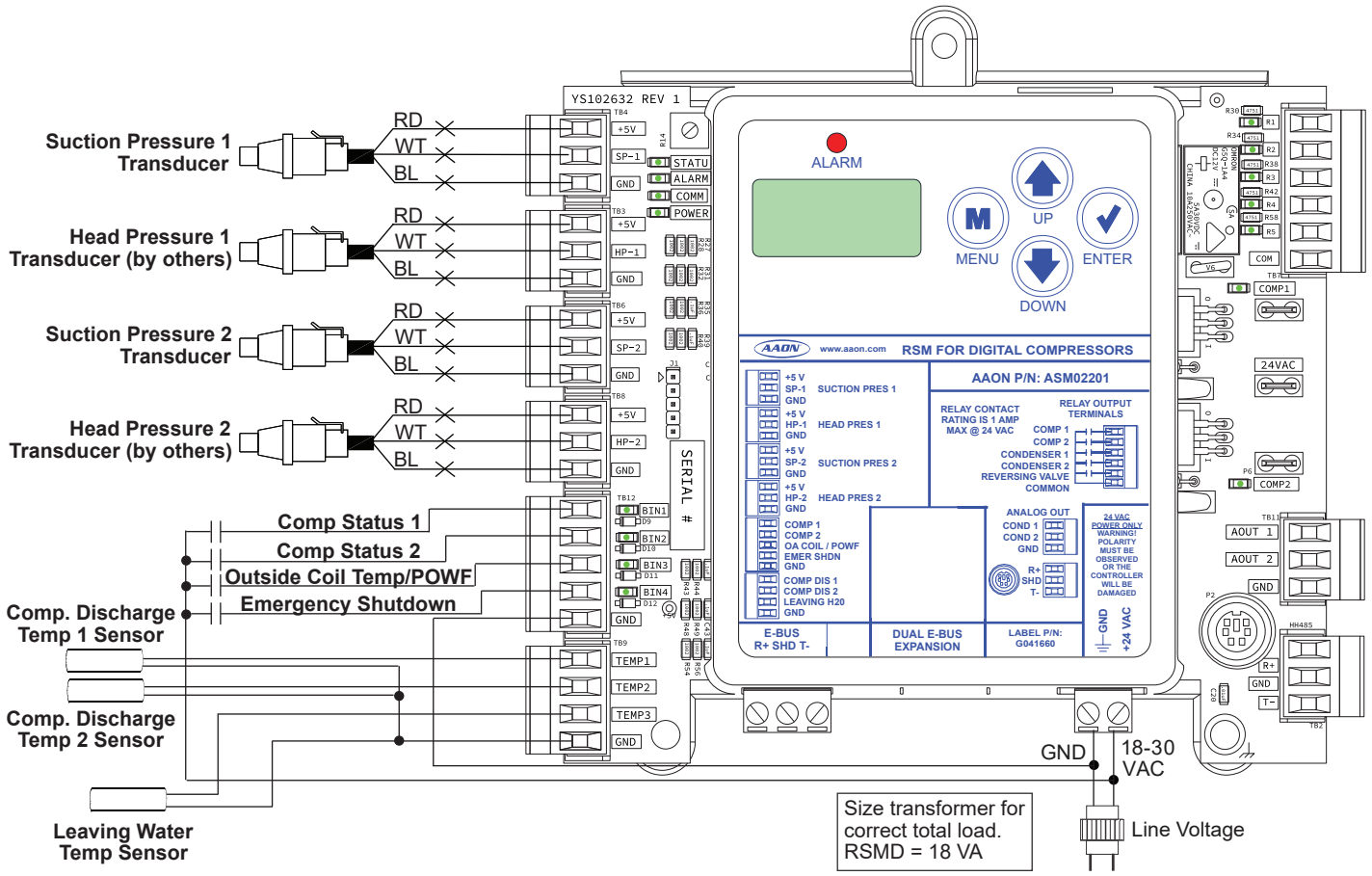


Figure 2: RSMD Inputs Wiring

Outputs Wiring

Head Pressure Control

The Head Pressure Transducers are used to measure Head Pressure at the discharge line. This Head Pressure is used to drive the condenser fans with a 0-10 VDC output signal or valve with a 2-10 VDC output signal to maintain a given Head Pressure Setpoint.

Compressor Discharge Sensors

The Digital Compressor Discharge Temperature Sensor monitors the discharge temperature from the digital compressor to protect against overheating.

Leaving Water Temperature Sensor

The Leaving Water Temperature Sensor is used to measure the Leaving Water Temperature when used on a WSHP unit.

CAUTION: The Shraeder port used for installation of the suction pressure transducer should be located in a vertical position of the suction line to prevent refrigerant oil from accumulating in the sensor.

NOTE: If there are two compressors on a single circuit (a tandem circuit), Suction Pressure 2, Head Pressure 2, and Condenser Signal 2 would not be used.

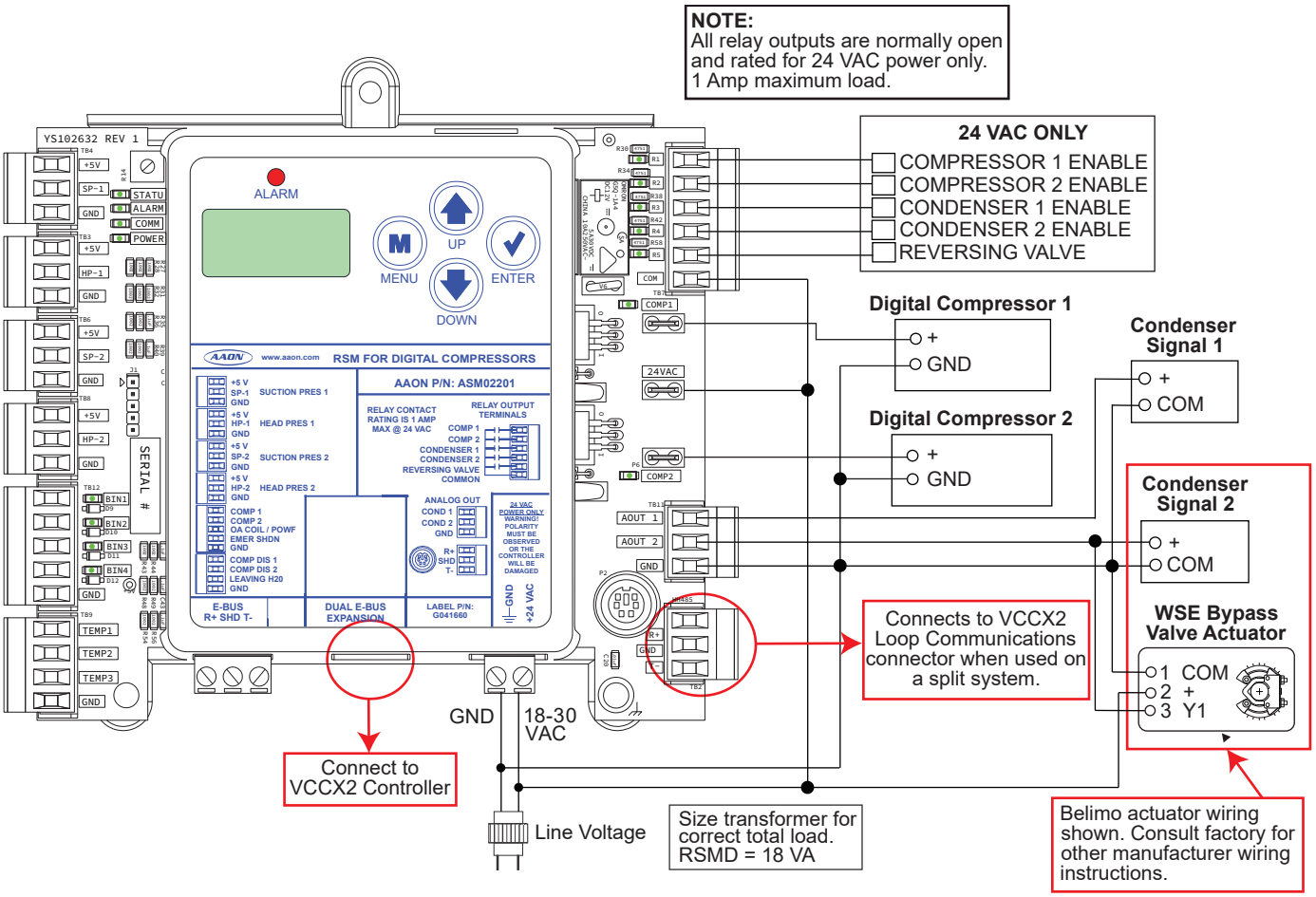


Figure 3: RSMD Outputs Wiring

Inputs/Outputs Map

See **Table 2, this page,** for the RSMD inputs and outputs.

REFRIGERATION SYSTEM MODULE FOR DIGITAL COMPRESSORS	
Analog Inputs	
1	Suction Pressure 1 Transducer (SP-1)
2	Head Pressure 1 Transducer (HP-1)
3	Suction Pressure 2 Transducer (SP-2)
4	Head Pressure 2 Transducer (HP-2)
5	Compressor Discharge Temperature Sensor 1 (TEMP1)
6	Compressor Discharge Temperature Sensor 2 (TEMP2)
7	Leaving Water Temperature Sensor (TEMP3)
Binary Inputs	
1	Compressor Status 1 (BI1)
2	Compressor Status 2 (BI2)
3	Outdoor Coil Temperature / Proof of Water Flow (BI3)
4	Emergency Shutdown (BI4)
Analog Outputs (0-10 VDC)	
1	Condenser 1 Fan Signal (AO1)
2	Condenser 2 Fan Signal (0-10 VDC) or WSE Bypass Actuator (2-10 VDC) (AO2)
Relay Outputs (24 VAC)	
1	Compressor 1 Enable Relay (RLY1)
2	Compressor 2 Enable Relay (RLY2)
3	Condenser 1 Enable Relay (RLY3)
4	Condenser 2 Enable Relay (RLY4)
5	Reversing Valve Relay (RLY5)

Table 2: RSMD Inputs and Outputs

RSMD - Inputs and Outputs

+5V – VDC Power

This output is a 5 VDC output that supplies power to the Suction Pressure Transducers.

SP-1 and SP-2 – Suction Pressure Transducers

The Suction Pressure Transducers are used to measure suction pressure at the HVAC unit's DX evaporator coil suction line. This suction line pressure is converted to saturated refrigerant temperature. The saturated refrigerant temperature is used to properly control the compressors to maintain a given Suction Coil (Saturated) Temperature Setpoint. In Cooling Mode, the VCCX2 resets the Suction Coil (Saturated) Temperature Setpoint to maintain a given Supply Air Temperature Setpoint. In Dehumidification Mode, the Suction Coil (Saturated) Temperature Setpoint is a user configurable setpoint that can be reset based on indoor humidity levels.

+5V – VDC Power

This output is a 5 VDC output that supplies power to the Head Pressure Transducers.

HP-1 and HP-2 – Head Pressure Transducers

The Head Pressure Transducers are used to measure Head Pressure at the discharge line. This Head Pressure is used to drive the condenser fans to maintain a given Head Pressure Setpoint.

TEMP1 and TEMP2 – Compressor Discharge Temperature Sensor 1 and Sensor 2 Input

The Digital Compressor Discharge Temperature Sensors monitor the discharge temperature from the digital compressor to protect against overheating.

TEMP3 – Leaving Water Temperature Sensor Input

This input monitors the condenser leaving water temperature and determines if the condenser is operating in a safe water temperature range.

BI1 – Compressor Status 1

When this wet contact input closes, a 24 volt signal indicates Compressor 1 is running. Typically, the source for this is the auxiliary contacts on the compressor contactor after it has run through the compressor safeties. If Binary Input 1 opens, Compressor 1 Enable Relay de-energizes and a compressor alarm is generated.

BI2 – Compressor Status 2

When this wet contact input closes, a 24 volt signal indicates Compressor 2 is running. Typically, the source for this is the auxiliary contacts on the compressor contactor after it has run through the compressor safeties. If Binary Input 2 opens, Compressor 2 Enable Relay de-energizes and a compressor alarm is generated.

BI3 – Outdoor Coil Temperature / Proof of Water Flow Status

This input can be used for the following two options:

- **Air to Air Heat Pump:** This wet contact input monitors a defrost coil temperature switch on air to air heat pump units. If the compressors are operating in the Heating Mode and this switch closes, it initiates a Defrost Mode.
- **Water Source Heat Pump:** This wet contact input is for the Water Proof of Flow Switch. If the Water Proof of Flow Switch contact opens while the condenser valve is operating, the controller reacts to protect the system depending on the current mode of operation.

BI4 – Emergency Shutdown

This wet contact input is used to initiate shutdown of the HVAC unit when a normally closed smoke detector (by others), firestat (by others), or other shutdown condition (by others) contact is opened. The controller remains active and can initiate alarm relays.

NOTE: The binary inputs require wet contacts (24 VAC only) to recognize an active input. If a dry contact is provided, the contact closure will not be recognized.

AO1 – Condenser 1 Fan Signal

This 0–10 VDC output is used to control/modulate the Condenser 1 Fan / Valve to maintain the Head Pressure Setpoint.

AO2 – Condenser 2 Fan Signal or Waterside Economizer Bypass Actuator Valve

This 0–10 VDC output is used to control/modulate the Condenser 2 Fan / Valve to maintain the Head Pressure Setpoint or this output signal is a Direct Acting 2–10 VDC output signal that is used to modulate the Waterside Economizer Bypass Actuator.

RLY1 – Compressor 1 Enable

This relay enables Compressor 1.

RLY2 – Compressor 2 Enable

This relay enables Compressor 2.

RLY3 – Condenser 1 Enable

This relay enables Condenser 1 Fan / Water Valve.

RLY4 – Condenser 2 Enable

This relay enables Condenser 2 Fan / Water Valve.

RLY5 – Reversing Valve Enable

This relay enables the Reversing Valve.

Cooling Mode, Dehumidification, and Head Pressure Control

Cooling Mode Operation

In Cooling Mode, as the Supply Air Temperature (SAT) rises above the Active SAT Cooling Setpoint, the compressors stage on and modulate to maintain the Active Evaporator Coil Suction (Saturated) Temperature Setpoint. Two compressors are controlled per RSMD. Multiple RSMD Modules are needed when there are more than two compressors.

One Digital and One Fixed Compressor

In units with one digital and one fixed compressor, if the digital compressor modulates to 100% and the SAT is still above the SAT Cooling Setpoint for the Cooling Stage Up Delay, then the fixed compressor stages on. The digital compressor is then allowed to modulate as necessary to maintain the Active Evaporator Coil Suction (Saturated) Temperature Setpoint. Minimum off times must also be met before compressors can stage on.

Multiple Digital Compressors

In units with multiple digital compressors, if the first digital compressor modulates to 100% and the SAT is still above the SAT Cooling Setpoint for the Cooling Stage Up Delay, then the second digital compressor enables and the two digital compressors modulate together to maintain the Active Evaporator Coil Suction (Saturated) Temperature Setpoint.

To stage down compressors, if the digital compressor(s) have modulated down to 30% for the Stage Down Delay period and the SAT has fallen below the SAT Cooling Setpoint minus the Stage Control Window, then the last compressor to have staged on (digital or fixed) will stage off – assuming its minimum run time has been met. Any remaining digital compressors are allowed to modulate as needed. If the last remaining digital compressor reaches 0% for the Stage Down Delay, it will stage off.

Dehumidification Operation

The RSMD activates the Cooling Stages based on the Evaporator Coil Temperature compared to the Evaporator Coil Suction (Saturated) Temperature Setpoint. The Evaporator Coil Suction (Saturated) Temperature is calculated by using the Suction Pressure Transducer and converting the pressure to temperature.

For Copeland Digital Scroll Compressor units, the RSMD modulates the Copeland Digital Scroll Compressor to maintain the Evaporator Coil Suction (Saturated) Temperature Setpoint and activate the compressors as necessary.

On units that have one digital and one fixed capacity compressor, if the fixed capacity compressor is activated, the Copeland Digital Scroll Compressor is only allowed to modulate within the range of 70–100% in order to prevent the loss of reheat capacity during low load conditions.

With both compressors on, if the first digital compressor has modulated down to its 70% minimum and the Coil Suction Temperature falls below the Coil Temperature Setpoint minus the Cooling Stage Control Window, then the second compressor stages off once its Compressor Minimum Run Time and the Stage Down Delay Time have been met. At that point, the Copeland Digital Scroll Compressor can modulate down as needed to maintain the Coil Temperature Setpoint.

If the RSMD has two digital compressors, the first compressor will be locked at 100% and the second compressor will modulate.

Head Pressure Control

The RSMD can monitor a Head Pressure Transducer and control a condenser fan to maintain a Head Pressure Setpoint. The module must be configured for an air cooled condenser.

A condenser relay is commanded on when the first compressor is enabled (except if the unit is in Heat Pump Defrost Mode). On an air cooled unit, the condenser fan is controlled with 0–10 VDC output signal. When the Condenser Signal first activates, it maintains at 100% for 10 seconds.

In the Cooling Mode, the Condenser Signal modulates to maintain the Cooling Head Pressure Setpoint. The signal can modulate between 15% and 100%. If the head pressure exceeds 550 psi, the condenser control signal immediately goes to 100% and a High Head Pressure Alarm is generated. The alarm is deactivated when the Head Pressure drops below 540 psi.

In the Dehumidification Mode, the condenser output signal controls to the Reheat Head Pressure Setpoint. High head pressure conditions produce the same effects as in the Cooling Mode.

If no Head Pressure Transducer is detected, the Condenser Output Signal is maintained at 100%.

WSHP Valve Control

When the initial call for a compressor is received by the RSM the water valve will open 100% and stay there for 3 minutes. If water flow is proved after that initial time period the compressor will enable. In Cooling Mode the water valve will modulate to maintain the head pressure setpoint. In Heat Mode the water valve will stay at 100% unless the compressor is running out of its operating envelope. In Off Mode the water valve will close unless mechanical stops are being used to prevent it from fully closing.

Condenser Fan Cleaning

If the RSMD is configured for Fan Cleaning and the ambient temperature is below 35º F, the condenser fan will cycle on once an hour for the Fan Cleaning Duration time period. This feature is meant for cleaning snow off the fan blades on heat pump units.

LCD Display Screen and Navigation Keys

The LCD display screens and buttons show status and alarms, and enable force modes. See **Figure 4, this page,** and refer to **Table 3, this page,** for descriptions.

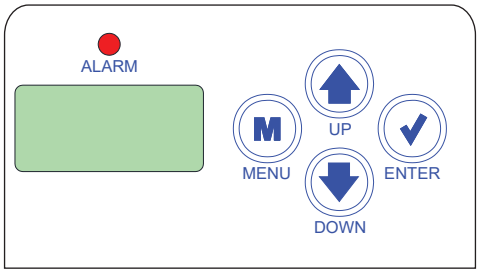
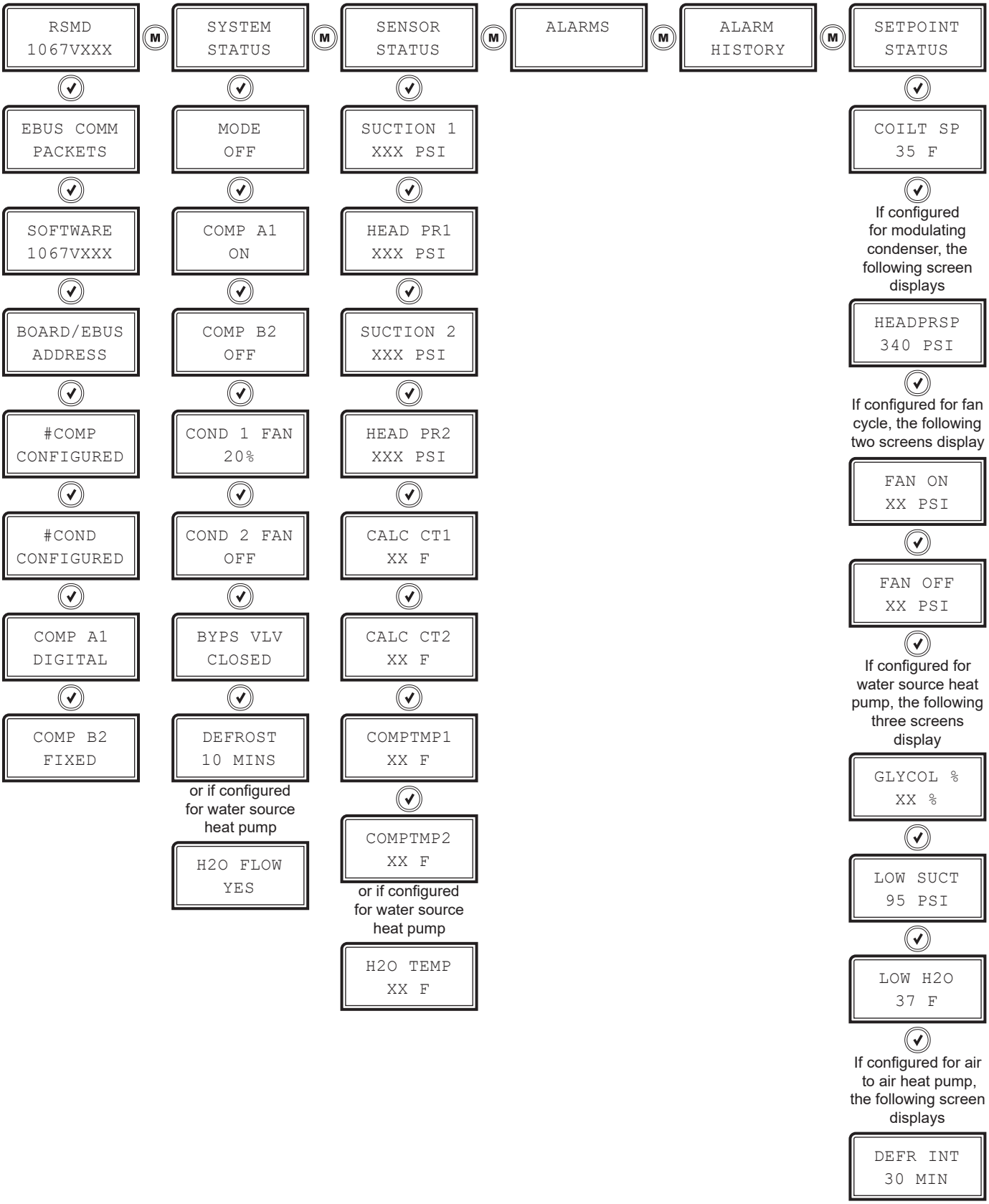


Figure 4: LCD Display and Navigation Keys

NAVIGATION KEY FUNCTIONS	
Navigation Key	**Key Function**
MENU M	Use the MENU key to move through screens within Main Menu categories and return to the Main Menu while at other screens.
UP	Use this key to adjust setpoints and change configurations.
DOWN	Use this key to adjust setpoints and change configurations.
ENTER	Use the ENTER key to navigate through the Main Menu Screen categories.

Table 3: Navigation Key Functions

Screens Map


RSMD 1067VXXX
EBUS COMM PACKETS
SOFTWARE 1067VXXX
BOARD/EBUS ADDRESS
#COMP CONFIGURED
#COND CONFIGURED
COMP A1 DIGITAL
COMP B2 FIXED
SYSTEM STATUS
MODE OFF
COMP A1 ON
COMP B2 OFF
COND 1 FAN 20%
COND 2 FAN OFF
BYPS VLV CLOSED
DEFROST 10 MINS
or if configured for water source heat pump
H2O FLOW YES
SENSOR STATUS
SUCTION 1 XXX PSI
HEAD PR1 XXX PSI
SUCTION 2 XXX PSI
HEAD PR2 XXX PSI
CALC CT1 XX F
CALC CT2 XX F
COMPTMP1 XX F
COMPTMP2 XX F
or if configured for water source heat pump
H2O TEMP XX F
ALARMS
ALARM HISTORY
SETPOINT STATUS
COILT SP 35 F
If configured for modulating condenser, the following screen displays
HEADPRSP 340 PSI
If configured for fan cycle, the following two screens display
FAN ON XX PSI
FAN OFF XX PSI
If configured for water source heat pump, the following three screens display
GLYCOL % XX %
LOW SUCT 95 PSI
LOW H2O 37 F
If configured for air to air heat pump, the following screen displays
DEFR INT 30 MIN

Screen Descriptions

Main Screens

Refer to **Table 4, this page,** when navigating through the LCD Main Screens.

Press the **<MENU>** button to navigate between the top level screens. Press the **<ENTER>** button to scroll through the next level screens,

MAIN SCREENS	
Screen Text	**Description**
RSMD 1067vxxx	Refrigeration module screens.
SYSTEM STATUS	System status screens.
SENSOR STATUS	Sensor status screens.
ALARMS	Alarms screens. Screen shows NO ALARMS if no alarms are active.
ALARM HISTORY	Alarm history screens.
SETPOINT STATUS	Setpoint status screens.

Table 4: Main Screens

Module Screens

Refer to **Table 5, this page,** when navigating through the RSMD Screens. From the RSMD Screen, press **<ENTER>** to scroll through the screens.

MODULE SCREENS	
Screen Text	**Description**
RSMD 1067vxxx	Refrigeration module screens
EBUS +X	E-BUS communication diagnostics with X being the number of COMM packets received. The number increases as packets are received.
SOFTWARE 1067vxxx	Current software version. Access the protected screens from this screen by holding the **<UP>** button for five seconds.
ADDRESS 1(152)A	Current board address. **BoardAddress(EBUS Address)CircuitLetter** The first number is the board address. The second number is the EBUS address. The third number is the circuit letter.
#OF COMP 1	Number of compressors configured.
#OF COND 1	Number of condensers configured.
COMP A1 DIGITAL	Compressor A1 or B1 type, fixed or digital
COMP B2 FIXED	Compressor A2 or B2 type, fixed or digital (if second compressor installed).

Table 5: Module Screens

Screen Descriptions

System Status Screens

Refer to **Table 6, this page,** when navigating through the System Status Screens. From the SYSTEM STATUS Screen, press **<ENTER>** to scroll through the screens.

SYSTEM STATUS SCREENS	
Screen Text	**Description**
SYSTEM STATUS	System status screens
MODE OFF	System Mode. Options are: OFF COOL HEAT DEHUMID FORCED
COMP A1 ON	Compressor A1 or B1 (based on board address) Options are: OFF - Compressor is off. 0-100% - Modulating % position
COMP B2 OFF	Compressor A2 or B2 (based on board address) Options are: ON - Compressor is on. OFF - Compressor is off. FORCED
COND 1 FAN 20%	Condenser 1 Fan. Options are: OFF - Condenser is off. 0-100% - Modulating % position
COND 2 FAN OFF	Condenser 2 Fan. Options are: OFF - Condenser is off. 0-100% - Modulating % position
BYPS VLV CLOSED	Waterside Economizer Bypass Valve CLOSED: Valve is closed 1-100% - Modulating % position
DEFROST 10 MINS	Defrost interval timer in number of minutes
H2O FLOW YES	Water flow. Options are: ON OFF This screen appears instead of the defrost interval timer If the system is configured with a water source heat pump,

Table 6: System Status Screens

Sensor Status Screens

Refer to **Table 7, this page,** when navigating through the Sensor Status Screens. From the SENSOR STATUS Screen, press **<ENTER>** to scroll through the screens.

SENSOR STATUS SCREENS	
Screen Text	**Description**
SENSOR STATUS	Sensor status screens
SUCTION 1 XXX PSI	Suction Pressure 1 reading from input. Measured in psi.
HEAD PR1 XXX PSI	Head Pressure 1 reading from input. Measured in psi.
SUCTION 2 XXX PSI	Suction Pressure 2 reading from input. Measured in psi.
HEAD PR2 XXX PSI	Head Pressure 2 reading from input. Measured in psi.
CALC CT1 XX F	Calculated Coil Temperature 1 from Suction Pressure 1 input. Measured in ºF.
CALC CT2 XX F	Calculated Coil Temperature 2 from Suction Pressure 2 input. Measured in ºF.
COMPTMP1 XX F	Compressor Temperature 1 reading from Head Pressure 1 input. Measured in ºF.
COMPTMP2 XX F	Compressor Temperature 2 reading from Head Pressure 2 input. Measured in ºF.
H2O TEMP XX F	Water temperature reading from Leaving Water Temperature Sensor. This screen appears if the system is configured with a water source heat pump,

Table 7: Sensor Status Screens

Screen Descriptions

Alarms Screens

If an alarm is present, the ALARM LED above the LCD display lights up red and blinks. The alarms display and scroll automatically from the ALARMS screen when alarms are present. Refer to **Table 8, this page,** for descriptions.

ALARMS SCREENS	
Screen Text	**Description**
ALARMS	Alarms status screens
NO ALARMS	No Alarms. This is shown if there are no current alarms.
EBUS SLV TIMEOUT	EBUS Slave Timeout. This alarm indicates communication has been lost between the RSMD and the controller or other E-BUS modules that may be connected. This can be the result of a bad cable, a missing cable, or the module not being configured properly.
NO SUCTx DETECTED	No Suction Pressure Detected. This alarm indicates the Suction Pressure Transducer is not detected by the system. The module goes into alarm and shuts down the compressor.
NO HEADx DETECTED	No Head Pressure Detected. This alarm indicates the Head Pressure Transducer is not detected by the system. This causes the condenser fan/valve to go to 100%.
HIGH HPx DETECTED	High Head Pressure Detected. This alarm indicates a high head pressure alarm condition which is activated when the head pressure rises above 550 psi. This causes the condenser to go to 100%.
LOW SPx FAILURE	Low Suction Pressure Failure. This alarm occurs if suction pressure stays below the Low Suction Pressure Setpoint for one minute or falls below 40 psi for five seconds. This alarm shuts down the system. Power must be cycled to clear the alarm.
LOW SPx DETECTED	Low Suction Pressure Detected. This alarm occurs if suction pressure falls below the Low Suction Pressure Setpoint for 20 seconds. The system will try to protect itself by lowering compressor modulation percentage.
COMPx FAULT	Compressor Fault. This alarm occurs if the compressor fails to run 45 seconds after the relay is activated or if the signal is lost after activation. This causes an alarm and shuts down the compressor enable relay. The system will retry after five minutes.
COMPx BADTEMP	Compressor Bad Temperature. This alarm occurs if the Discharge Temperature Sensor measures less than -40ºF or more than 356ºF. This will cause an alarm and will shut down the compressor enable relay. The system will retry after five minutes.
COMPx CUTOFF	Compressor Cutoff. This alarm occurs if the Discharge Temperature Sensor measures more than 265ºF. This will cause an alarm and will shut down the compressor enable relay. The system can be restarted after 30 minutes.
COMP LOCKOUT	Compressor Lockout. This alarm occurs if an active cutoff happens five times within a four-hour period, the compressor will be locked out. Power must be cycled to clear the alarm. • If a circuit's suction pressure falls twice within a two hour window below the Low Suction Pressure Setpoint for longer than one minute each time, the compressor on that circuit will be locked out. Manual reset or change of mode is required to return to normal operation. • If the suction pressure falls below the Unsafe Suction Setpoint for five seconds, that circuit's compressor will be locked out. Power will need to be cycled to restart the unit. • If the Leaving Water Temperature falls below the setpoint, the last compressor will be locked out until the Leaving Water Temperature rises 6ºF above the setpoint. • The Leaving Water Temperature remains below the setpoint for one minute or falls 3ºF below the setpoint. This alarm will disable when the Leaving Water Temperature rises 12ºF above the setpoint.
NO WATER FLOW	No Proof of Water Flow. This alarm occurs if there is a call for a compressor and the proof of flow binary input does not see 24 VAC for more than three minutes or if during Heat Pump Heating Mode, the proof of flow binary input is open for more than two seconds. This alarm will disable when the proof of flow binary input is enabled.
LOW H2O TEMP	Low Water Temperature. This alarm occurs if both compressors are on and water temperature goes below setpoint, Compressor 2 will fail. If both compressors are on and water temperature goes 3ºF below the setpoint, both compressors will fail. If Compressor 2 is off or failed and water temperature is still low for one minute, Compressor 1 will also fail. This alarm disables when the Leaving Water Temperature rises 6ºF above the setpoint.
EMERGNCY SHUTDOWN	Emergency Shutdown. This alarm occurs if the Emergency Shutdown Binary Input is not activated. This alarm shuts off the compressors.
COMPx FALSE	Compressor False Active Input. This alarm occurs if the compressor enable relay is off but the compressor status binary input is activated for 60 seconds.
ENVELOPE FAULT	WSHP Heating out of Envelope Fault. This alarm occurs if the circuit is running below the envelope consecutively for one minute. The compressor(s) on the circuit fails and an alarm is generated. The system will retry after five minutes.

Table 8: Alarms Screens

Screen Descriptions

Alarm History Screens

The ALARM HISTORY screen displays past alarms, if any, and how long ago the last of each type occurred. From the ALARM HISTORY screen, press **<ENTER>** to scroll through the history screens.

The first line is the ALARM NAME.

The second line shows how long ago each alarm last occurred. The screen displays:

- Minutes for the first 60 minutes of alarm occurrence
- Hours for the next 72 hours of alarm occurrence
- Days for the next 30 days of alarm occurrence

Alarms clear after 30 days.

NOTE: Alarm history is not stored in memory. If power is lost, the alarms will clear.

The ALARM HISTORY screens follow the same sequence as the ALARMS screens but are abbreviated differently to allow space to show the time since last occurrence.

ALARM HISTORY SCREENS	
Screen Text	**Description**
NO ALARM HISTORY	No alarm history.

Table 9: Alarm History Screens

Setpoint Status Screens

Refer to **Table 10, this page,** when navigating through the Setpoint Status Screens. From the SETPOINT STATUS Screen, press **<ENTER>** to scroll through the screens.

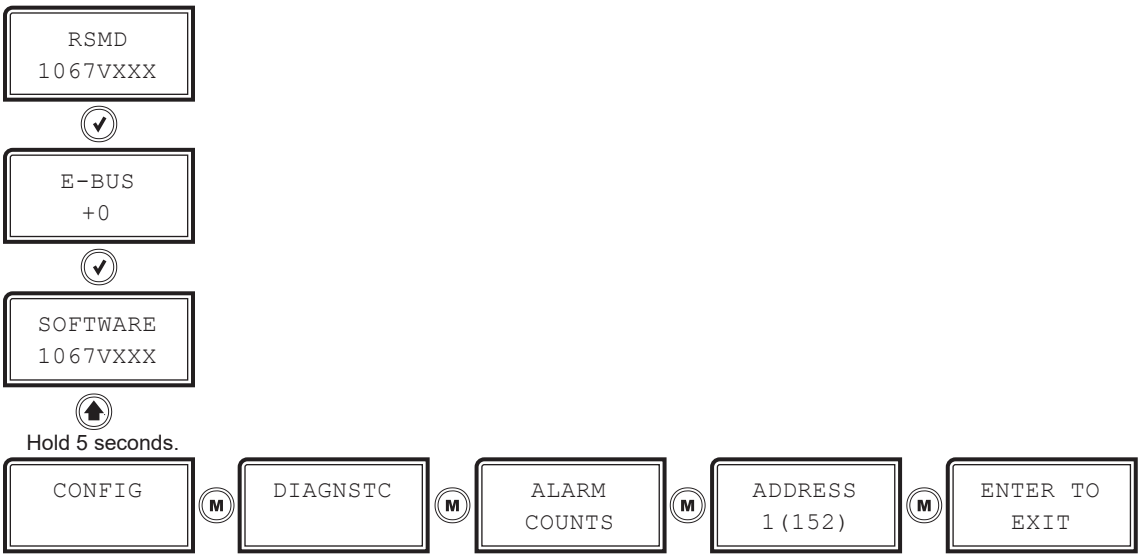
SETPOINT STATUS SCREENS	
Screen Text	**Description**
SETPOINT STATUS	Setpoint Status screens
COILT SP 35 F	Coil Temperature Setpoint Status. Valid range is 35 to 70 degrees. Default is 35ºF.
HEADPRSP 340 PSI	Head Pressure Setpoint Status. Valid range is 275 to 475 PSI. Default is 340 psi. Appears if the system is configured for modulating condenser.
FAN ON XX PSI	Head Pressure Reading when fan cycle is on. Appears if the system is configured for fan cycle.
FAN OFF XX PSI	Head Pressure Reading when fan cycle is off. Appears if the system is configured for fan cycle.
GLYCOL % X%	Glycol Percentage Status 95% is the default for packaged units. With WSHP, it will change based on glycol %.
LOW SUCT 95 PSI	Low Suction Pressure Setpoint Status. Default is 95 psi. Appears if configured for water source heat pump.
LOW H2O 37 F	Low Leaving Water Temperature Setpoint Status. Default is 37ºF. Appears if configured for water source heat pump.
DEFR INT 30 MIN	Defrost Interval Setpoint Status. Default is 30 minutes. Appears if the system is configured for air to air heat pump.

Table 10: Setpoint Status Screens

Protected Screen Map

Protected Screens Map

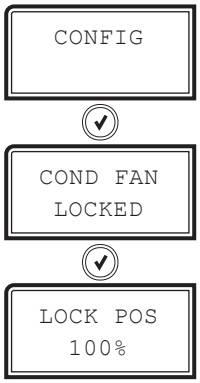
Refer to the following map when navigating through the LCD Protected Screens. From the RSMD Screen, press **<ENTER>** twice to get to the SOFTWARE Screen. Then hold the **<UP>** button for five seconds. To scroll through the rest of the screens, press the **<MENU>** button.



Protected Screen Descriptions

Configuration Screens Map

Refer to the following map when navigating through the Configuration Screens. From the CONFIG Screen, press **<ENTER>** to scroll through the screens.



Configuration Screens

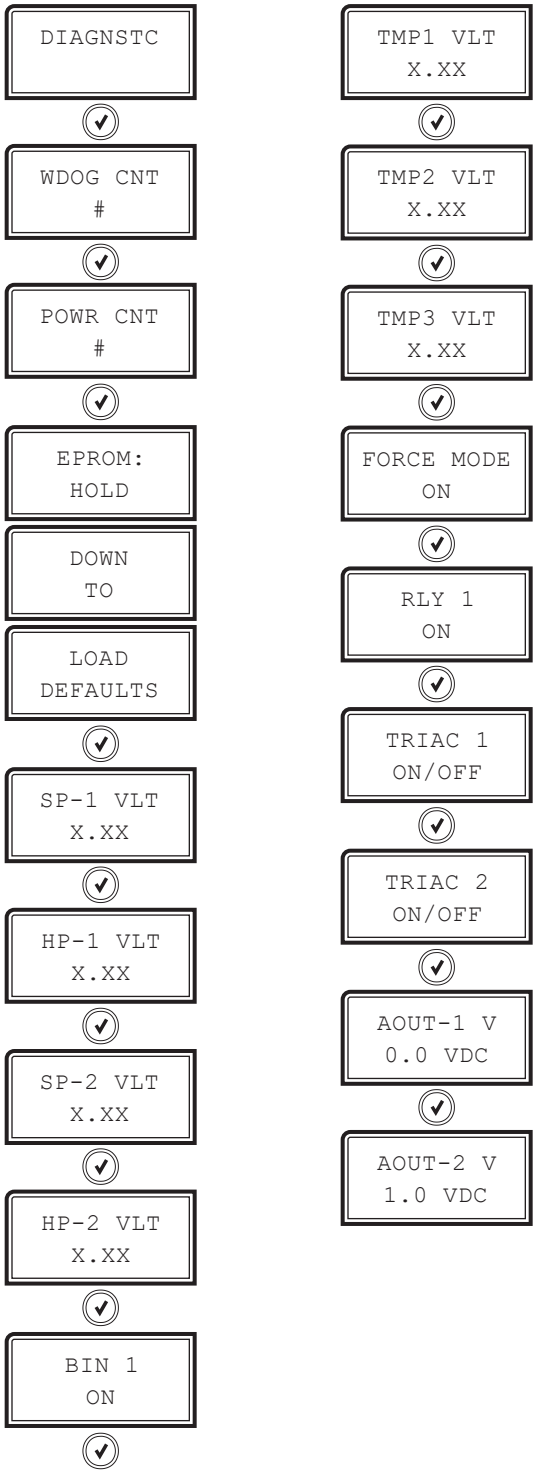
Refer to **Table 11, this page,** when navigating through the Configuration Screens. From the CONFIG Screen, press **<ENTER>** to scroll through the screens.

DIAGNOSTIC SCREENS	
Screen Text	**Description**
CONFIG	Diagnostic screens
COND FAN LOCKED	Condenser Fan. Locked or unlocked
LOCK POS 100%	Condenser fan locked position.

Table 11: Configuration Screens

Diagnostic Screens Map

Refer to the following map when navigating through the Diagnostic Screens. From the DIAGNSTC Screen, press **<ENTER>** to scroll through the screens.



Diagnostic Screens

Refer to **Table 12, this page,** when navigating through the Diagnostic Screens. From the DIAGNSTC Screen, press **<ENTER>** to scroll through the screens.

DIAGNOSTIC SCREENS	
Screen Text	**Description**
DIAGNSTC	Diagnostic screens
WDOG CNT	Watchdog Timer. Displays the number of times the board has been reset due to watchdog timer overview.
POWR CNT	Power Loss Count. Displays the number of times the board has been reset due to power loss.
SP-1 VLT	Suction Pressure Transducer 1 Voltage. Displays the current voltage of the Suction Pressure Transducer 1.
HP-1 VLT	Head Pressure Transducer 1 Voltage. Displays the current voltage of the Head Pressure Transducer 1.
SP-2 VLT	Suction Pressure Transducer 2 Voltage. Displays the current voltage of the Suction Pressure Transducer 2.
HP-2 VLT	Head Pressure Transducer 2 Voltage. Displays the current voltage of the Head Pressure Transducer 2.
BIN 1	Binary Inputs #1 - #4. Displays the current status of each Binary Input.
TMP1 VLT	Coil Temperature Sensor 1 Voltage. Displays the current voltage of Coil Temperature Sensor 1.
TMP2 VLT	Coil Temperature Sensor 2 Voltage. Displays the current voltage of Coil Temperature Sensor 2.
TMP3 VLT	Coil Temperature Sensor 3 Voltage. Displays the current voltage of Coil Temperature Sensor 3.
FORCE MODE	Force Mode. Displays the current status of Force Mode. Values are ON/OFF.
RLY 1	If Force Mode is on, the following screens will appear. Relays 1 - 5 Force Mode. Press the **<UP>** or **<DOWN>** buttons to select ON or OFF for each relay.
TRIAC 1	TRIAC 1. Displays the current status of Digital Compressor 1. Values are ON/OFF.
TRIAC 2	TRIAC 2. Displays the current status of Digital Compressor 2. Values are ON/OFF.
AOUT-1 V	Condenser Signal 1 Force. 0.0 to 10.0 = Active Force Mode. Press the **<UP>** or **<DOWN>** buttons to increase and decrease the value.
AOUT-2 V	Condenser Signal 2 Force. 0.0 to 10.0 = Active Force Mode. Press the **<UP>** or **<DOWN>** buttons to increase and decrease the value.

Table 12: Diagnostic Screens

Protected Screen Descriptions

ALARM COUNTS Screens

From the ALARM COUNTS Screen, press **<ENTER>** to scroll through the screens. Each screen will display the name of the alarm and how many times the alarm has occurred since you last cleared the alarms. The only way to clear these alarm counts is by using Prism 2 and selecting, "Select Alarms to Delete" from the ALARM button menu. See "Alarm Polling" in the *Prism 2 Technical Guide* for more information.

Address Screen

This screen represents the current board address. Configure the address according to which refrigerant circuit this module represents.

- 1 = A
- 2 = B
- 3 = C
- 4 = D

The number in parentheses is the E-BUS address.

- Module 1 is 152
- Module 2 is 153
- Module 3 is 154
- Module 4 is 155

Using RSMD LEDs To Verify Operation

The RSMD is equipped with LEDs that can be used to verify operation and perform troubleshooting. There are LEDs for communication, operation modes, and diagnostic codes. See **Figure 5, this page,** for the LED locations. The LEDs associated with these inputs and outputs show what is active without using a voltmeter. The LEDs and their uses are as follows:

Diagnostic LEDs

STATUS – If the software is running, this LED should blink at a rate of one blink per second.

ALARM (on board) – If the module does not receive communications for more than one minute, this LED lights up, the relays turn off, and the analog outputs go to 0 VDC.

ALARM (above LCD display) – This red LED lights up and stays lit when there is an alarm present. The type of alarm displays on the LCD display. The ALARM LED also blinks when the expansion valve is initializing at startup.

COMM – Every time the module receives a valid E-BUS request from the VCCX2 Controller, this LED blinks on and then off, signifying that it received a valid request and responded.

POWER – This LED lights up to indicate that 24 VAC power has been applied to the controller.

Binary Input LEDs

BI1 – This green LED lights up when Compressor Status 1 contact is closed.

BI2 – This green LED lights up when Compressor Status 2 switch is closed.

BI3 – This green LED lights up when the Outdoor Coil Temperature switch is closed.

BI4 – This green LED lights up when the Emergency Shutdown switch is closed.

Relay LEDs

RLY1–RLY5 – These green LEDs light up when the relays are enabled and stay lit as long as they are active.

Digital Compressor LEDs

COMP1 – This green LED lights up when Digital Compressor 1 is unloading.

COMP2 – This green LED lights up when Digital Compressor 2 is unloading.

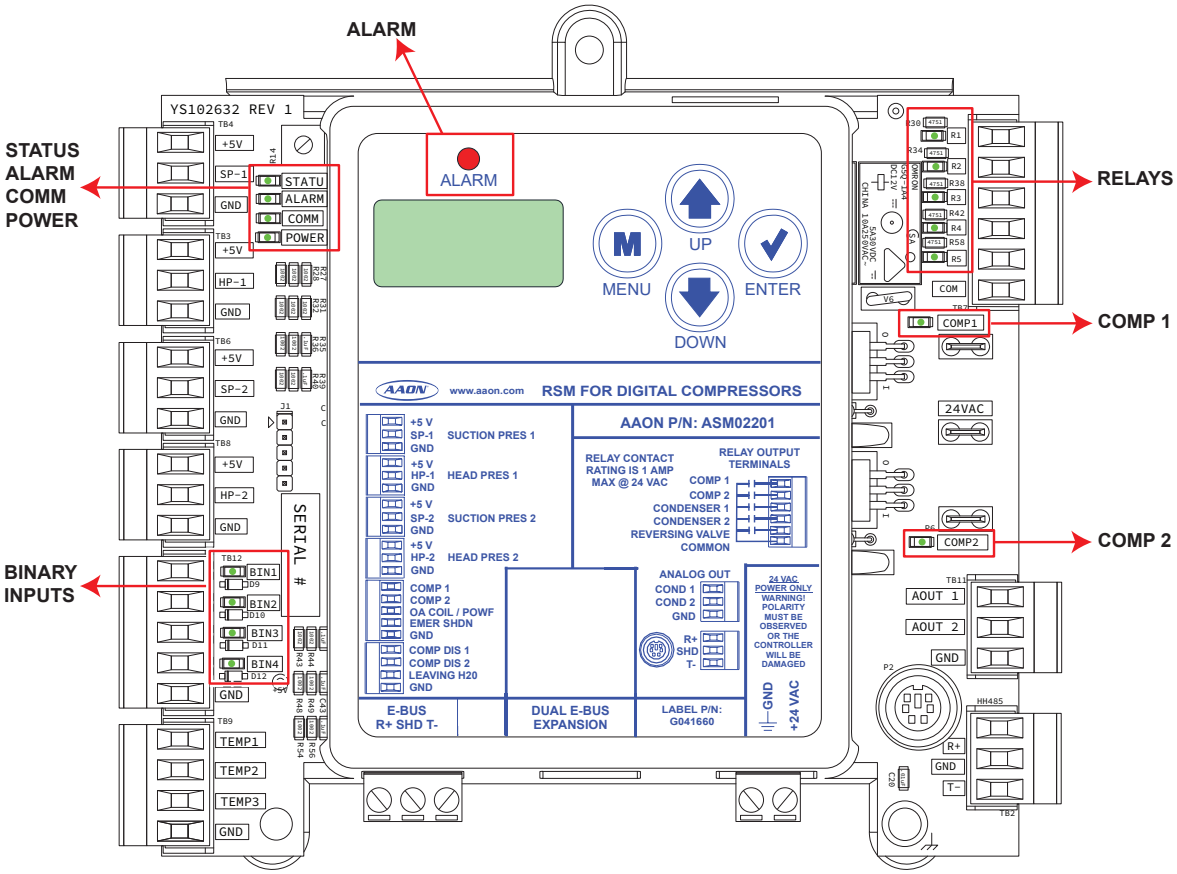


Figure 5: RSMD LED Locations

Suction Pressure Transducer Testing for R410-A Refrigerant

The evaporator coil temperature is calculated by converting the suction pressure to temperature. The suction pressure is obtained by using the Suction Pressure Transducer, which is connected to the suction line of the compressor.

Use the voltage column to check the Suction Pressure Transducer while connected to the RSMD Module. The VCCX2 and the RSMD Module must be powered for this test. Read voltage with a meter set on DC volts. Place the positive lead from the meter on the SP1/SP2 terminal located on the RSMD Module terminal block. Place the negative lead from the meter on the ground (GND) terminal located adjacent to the SP1/SP2 terminal on the RSMD Module terminal block. Use a refrigerant gauge set and/or an accurate electronic thermometer to measure the temperature or suction line pressure near where the Suction Pressure Transducer is connected to the suction line. Measure the voltage at the SP1/SP2 and GND terminals and compare it to the appropriate chart depending on the refrigerant in use. If the temperature/voltage or pressure/voltage readings do not align closely with the chart, the Suction Pressure Transducer is probably defective and needs to be replaced.

See the Suction Pressure Transducer, Pressure, Temperature, and Voltage Chart for R410-A Refrigerant testing. The chart shows a temperature range from 21.19°F to 80.18°F. For troubleshooting purposes, the DC voltage readings are also listed with their corresponding temperatures and pressures.

SUCTION PRESSURE TRANSDUCER CHART FOR R410-A REFRIGERANT

Temperature (°F)	Temperature (°C)	Pressure (psi)	Signal DC Volts
21.19	-6.1	80.94	1.8
24.49	-4.4	87.16	1.9
27.80	-2.8	93.39	2.0
30.99	-1.1	99.62	2.1
33.89	0.6	105.84	2.2
36.80	2.2	112.07	2.3
39.71	3.9	118.29	2.4
42.30	5.6	124.52	2.5
44.85	6.7	130.75	2.6
47.39	8.3	136.97	2.7
49.94	9.4	143.20	2.8
52.23	11.1	149.42	2.9
54.50	12.2	155.65	3.0
56.76	13.3	161.88	3.1
59.03	15.0	168.10	3.2
61.17	16.1	174.32	3.3
63.19	17.2	180.55	3.4
65.21	18.3	186.78	3.5
67.23	19.4	193.00	3.6
69.24	20.6	199.23	3.7
71.15	21.7	205.46	3.8
72.95	22.2	211.68	3.9
74.76	23.3	217.91	4.0
76.57	24.4	224.14	4.1
78.37	25.6	230.36	4.2
80.18	26.7	236.59	4.3

Table 13: Suction Pressure Transducer Chart for R410-A Refrigerant

Copeland Discharge Thermistor Temperature Sensor Testing

Copeland Discharge Thermistor Temperature Sensor Testing

Table 14, this page, is provided to aid in checking sensors that appear to be operating incorrectly. Many system operating problems can be traced to incorrect sensor wiring. Be sure all sensors are wired per the wiring diagrams in this manual.

If the sensors still do not appear to be operating or reading correctly, check voltage and/or resistance to confirm that the sensor is operating correctly per the table.

Thermistor Sensor Testing Instructions

Use the resistance column to check the thermistor sensor while disconnected from the controllers (not powered).

Use the voltage column to check sensors while connected to powered controllers. Read voltage with meter set on DC volts. Place the "-" (minus) lead on GND terminal and the "+" (plus) lead on the sensor input terminal being investigated.

COPELAND DISCHARGE THERMISTOR SENSOR TEMPERATURE AND RESISTANCE							
Temp (ºF)	Temp (ºC)	Resistance (K Ohms)	Voltage @ Input (VDC)	Temp (ºF)	Temp (ºC)	Resistance (Ohms)	Voltage @ Input (VDC)
-40	-40	2889.60	4.98	**167**	75	12.73	2.80
-31	-35	2087.22	4.97	**176**	80	10.79	2.59
-22	-30	1522.20	4.96	**185**	85	9.20	2.39
-13	-25	1121.44	4.95	**194**	90	7.87	2.19
-4	-20	834.72	4.94	**203**	95	6.77	2.01
5	-15	627.28	4.92	**212**	100	5.85	1.84
14	-10	475.74	4.89	**221**	105	5.09	1.68
23	-5	363.99	4.86	**230**	110	4.45	1.53
32	0	280.82	4.82	**239**	115	3.87	1.39
41	5	218.41	4.77	**248**	120	3.35	1.25
50	10	171.17	4.72	**257**	125	2.92	1.12
59	15	135.14	4.65	**266**	130	2.58	1.02
68	20	107.44	4.57	**275**	135	2.28	0.92
77	25	86.00	4.47	**284**	140	2.02	0.83
86	30	69.28	4.36	**293**	145	1.80	0.76
95	35	56.16	4.24	**302**	150	1.59	0.68
104	40	45.81	4.10	**311**	155	1.39	0.61
113	45	37.58	3.94	**320**	160	1.25	0.55
122	50	30.99	3.77	**329**	165	1.12	0.50
131	55	25.68	3.59	**338**	170	1.01	0.45
140	60	21.40	3.40	**347**	175	0.92	0.42
149	65	17.91	3.20	**356**	180	0.83	0.38
158	70	15.07	3.00				

If the voltage is above 4.98 VDC, then the sensor or wiring is "open." If the voltage is less than 0.38 VDC, then the sensor or wiring is shorted.

Table 14: Discharge Thermistor Temperature and Resistance

Temperature Sensor Testing

Sensor Voltage and Resistance

Table 15, this page, is provided to aid in checking sensors that appear to be operating incorrectly. Many system operating problems can be traced to incorrect sensor wiring. Be sure all sensors are wired per the wiring diagrams in this manual.

If the sensors still do not appear to be operating or reading correctly, check voltage and/or resistance to confirm that the sensor is operating correctly per the tables.

Thermistor Sensor Testing Instructions

Use the resistance column to check the thermistor sensor while disconnected from the controllers (not powered).

Use the voltage column to check sensors while connected to powered controllers. Read voltage with meter set on DC volts. Place the "-" (minus) lead on GND terminal and the "+" (plus) lead on the sensor input terminal being investigated.

TYPE III 10 K OHM THERMISTOR SENSOR TEMPERATURE AND RESISTANCE							
Temp (ºF)	Temp (ºC)	Resistance (Ohms)	Voltage @ Input (VDC)	Temp (ºF)	Temp (ºC)	Resistance (Ohms)	Voltage @ Input (VDC)
-10	-23.3	93333	4.510	**72**	22.2	11136	2.635
-5	-20.6	80531	4.450	**73**	22.8	10878	2.605
0	-17.8	69822	4.370	**74**	23.3	10625	2.576
5	-15.0	60552	4.290	**75**	23.9	10398	2.549
10	-12.2	52500	4.200	**76**	24.4	10158	2.520
15	-9.4	45902	4.100	**77**	25.0	10000	2.500
20	-6.6	40147	4.002	**78**	25.6	9711	2.464
25	-3.9	35165	3.891	**80**	26.7	9302	2.410
30	-1.1	30805	3.773	**82**	27.8	8893	2.354
35	1.7	27140	3.651	**84**	28.9	8514	2.300
40	4.4	23874	3.522	**86**	30.0	8153	2.246
45	7.2	21094	3.390	**88**	31.1	7805	2.192
50	10.0	18655	3.252	**90**	32.2	7472	2.139
52	11.1	17799	3.199	**95**	35.0	6716	2.009
54	12.2	16956	3.143	**100**	37.8	6047	1.884
56	13.3	16164	3.087	**105**	40.6	5453	1.765
58	14.4	15385	3.029	**110**	43.3	4923	1.650
60	15.6	14681	2.972	**115**	46.1	4449	1.540
62	16.7	14014	2.916	**120**	48.9	4030	1.436
64	17.8	13382	2.861	**125**	51.7	3656	1.339
66	18.9	12758	2.802	**130**	54.4	3317	1.246
68	20.0	12191	2.746	**135**	57.2	3015	1.159
69	20.6	11906	2.717	**140**	60.0	2743	1.077
70	21.1	11652	2.691	**145**	62.7	2502	1.001
71	21.7	11379	2.661	**150**	65.6	2288	0.931
If the voltage is above 4.88 VDC, then the sensor or wiring is "open." If the voltage is less than 0.05 VDC, then the sensor or wiring is shorted.							

Table 15: Type III 10 K Ohm Thermistor Sensor Temperature and Resistance

Head Pressure Transducer

If there is a problem related to the Head Pressure Transducer, voltage and pressure readings can be taken at the Head Pressure terminal. See **Table 16, this page**.

HEAD PRESSURE TRANSDUCER 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 16: Head Pressure Transducer Chart

Condenser Configurations

Default Two Condenser Operations

HVAC Unit Application

The Default Two Condenser Operations configuration is used with the following HVAC units:

- D-BOX 26–40 Ton
- C-BOX 16–20 Ton
- B-BOX

Wiring

See **Figure 6, this page,** for Default Two Condenser Operations wiring.

Prism 2 Configuration

On the RSM-D Configuration screen, select **<Default Two Condenser Operations>** under the **Condenser Configurations** menu.

Hand Held Service Tool Configuration

```
RSMD CONFIGURATION
CONDENSER OPTIONS
2 COND PER RSMD
USE < OR > TO CHANGE
```

Select the "2 COND PER RSMD" option on the above Hand Held Service Tool Screen.

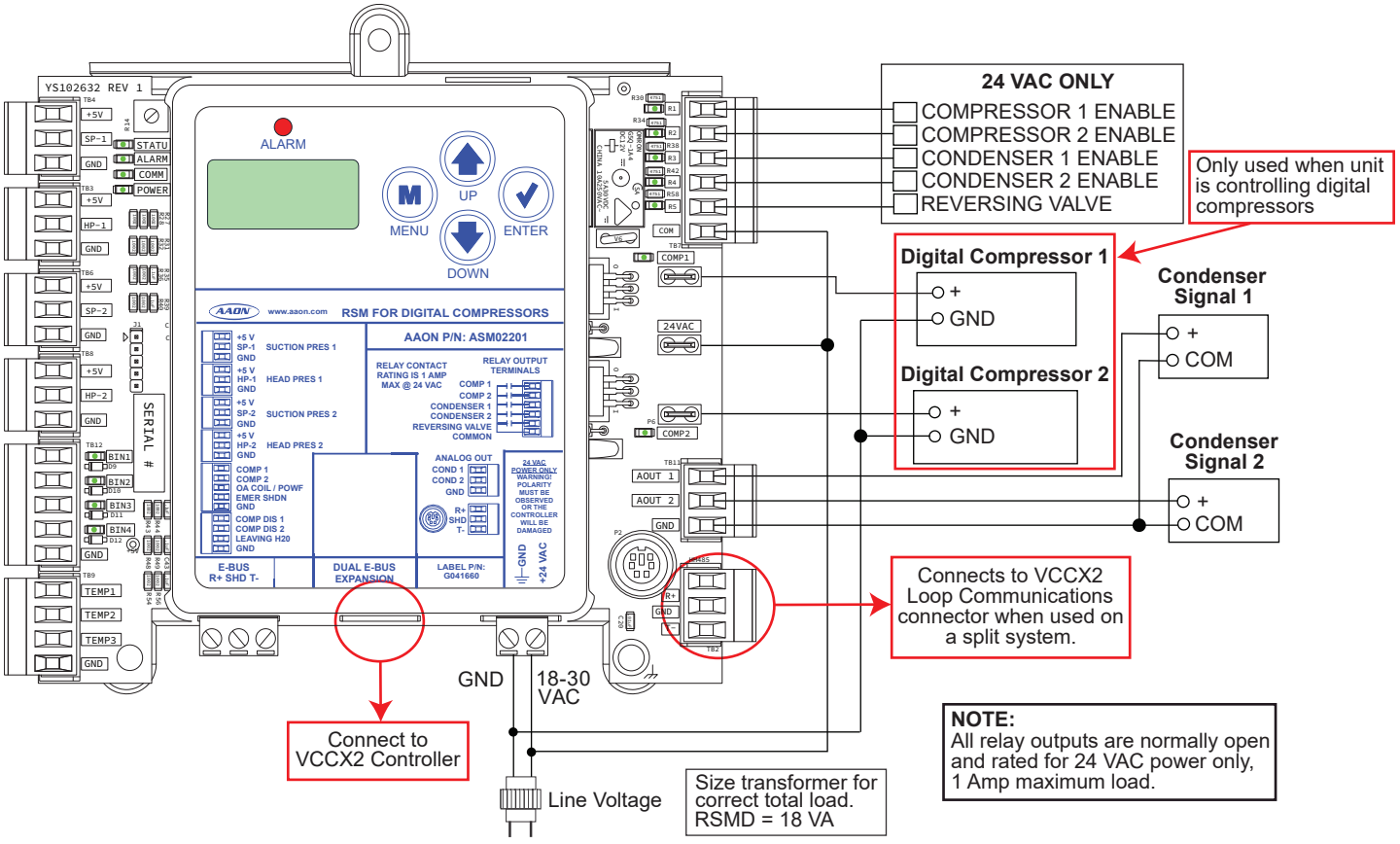


Figure 6: Default Two Condenser Operations

Condenser Configurations

Single Condenser per Module

HVAC Unit Application

The Single Condenser per Module configuration is used with the following HVAC units:

- B-BOX Air to Air Heat Pump
- B-BOX WSHP
- C-BOX 25–30 Ton
- C-BOX Air to Air Heat Pump
- C-BOX WSHP

Wiring

See **Figure 7, this page** for Single Condenser per Module wiring.

Prism 2 Configuration

On the RSM-D Configuration screen, select **<Single Condenser Per Module>** under the **Condenser Configurations** menu.

Hand Held Service Tool Configuration

```
RSMD CONFIGURATION
CONDENSER OPTIONS
1 COND FOR 1 RSMD
USE < OR > TO CHANGE
```

Select the "1 COND FOR 1 RSMD" option on the above Hand Held Service Tool Screen.

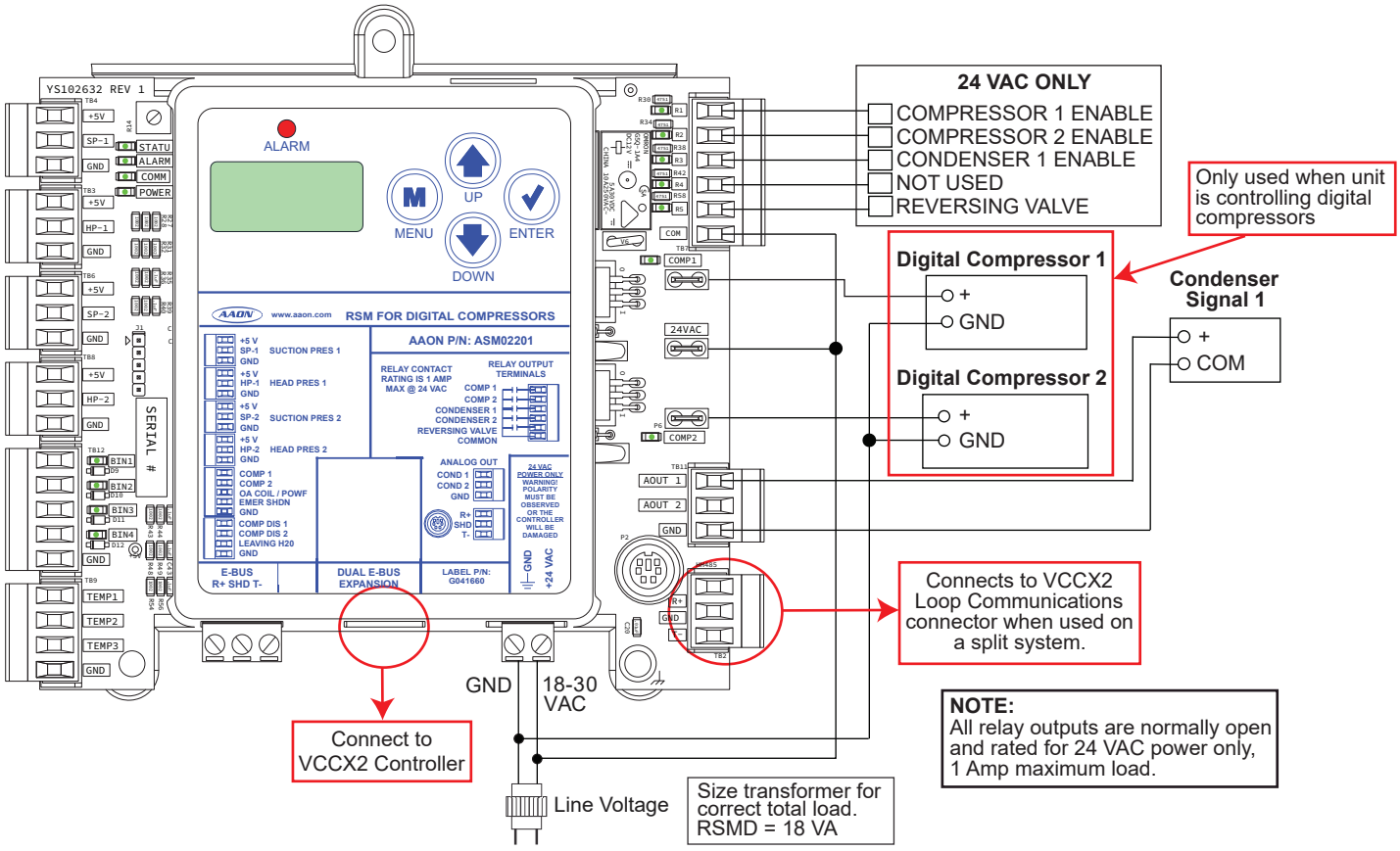


Figure 7: Single Condenser per Module Wiring

Condenser Configurations

Single Condenser per Two Modules

HVAC Unit Application

The Single Condenser per Two Modules configuration is used with the following HVAC units:

- RLA BOX
- RLB BOX
- RLE BOX

Wiring

See **Figure 8, this page** for Single Condenser per Two Modules wiring.

Prism 2 Configuration

On the RSM-D Configuration screen, select **<Single Condenser Per Two Modules>** under the **Condenser Configurations** menu.

Hand Held Service Tool Configuration

```
RSMD CONFIGURATION
CONDENSER OPTIONS
1 COND FOR 2 RSMDS
USE < OR > TO CHANGE
```

Select the "1 COND FOR 2 RSMDS" option on the above Hand Held Service Tool Screen.

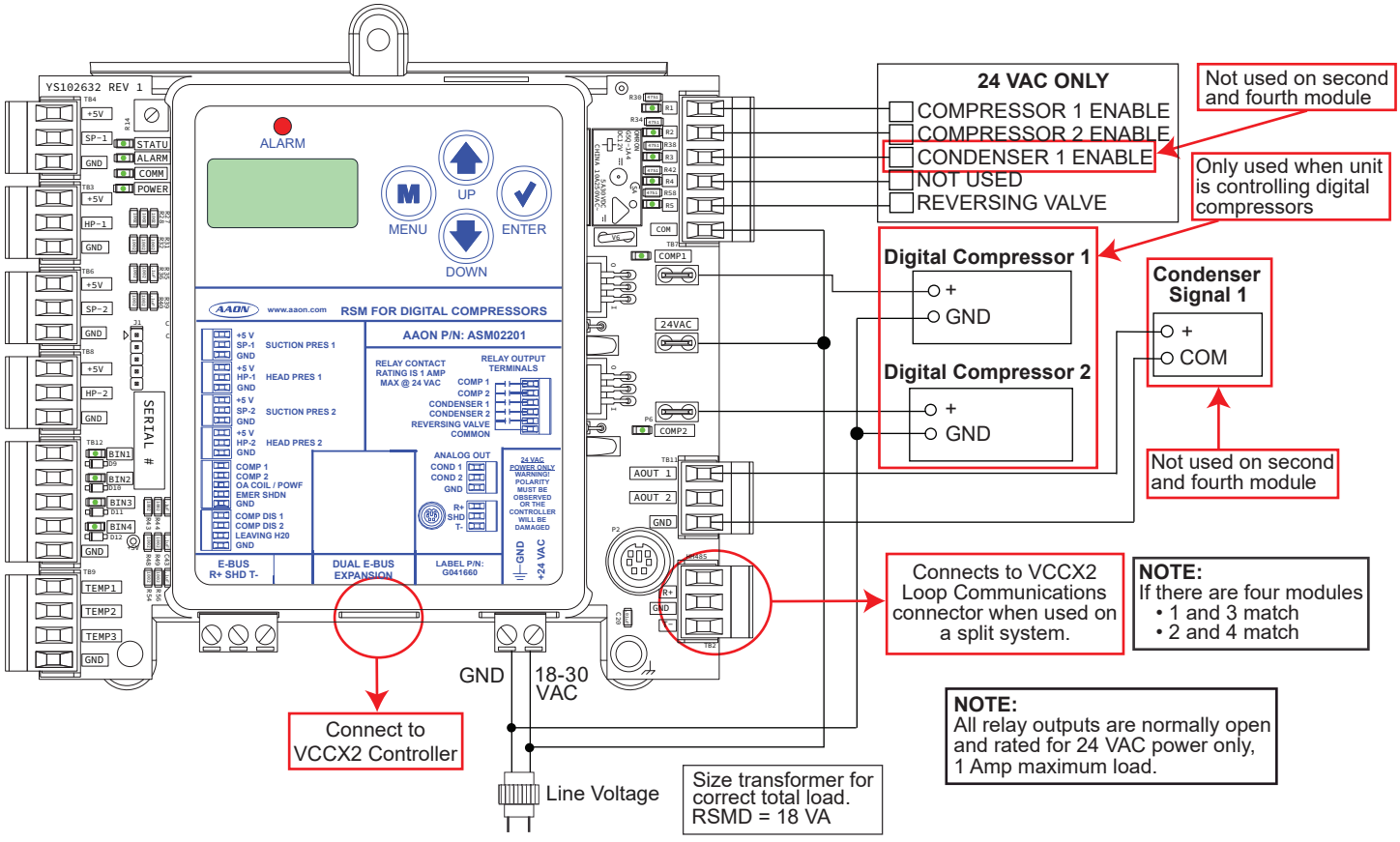


Figure 8: Single Condenser per Two Modules Wiring

Condenser Configurations

Single Condenser for Three Modules

HVAC Unit Application

The Single Condenser for Three Modules configuration is used with the following HVAC units:

- RLC BOX
- RLD BOX

Wiring

See **Figure 9, this page** for Single Condenser for Three Modules wiring.

Prism 2 Configuration

On the RSM-D Configuration screen, select **<Single Condenser for Three Modules>** under the **Condenser Configurations** menu.

Hand Held Service Tool Configuration

```
RSMD CONFIGURATION
CONDENSER OPTIONS
1 COND FOR 3 RSMDS
USE < OR > TO CHANGE
```

Select the "1 COND FOR 3 RSMDS" option on the above Hand Held Service Tool Screen.

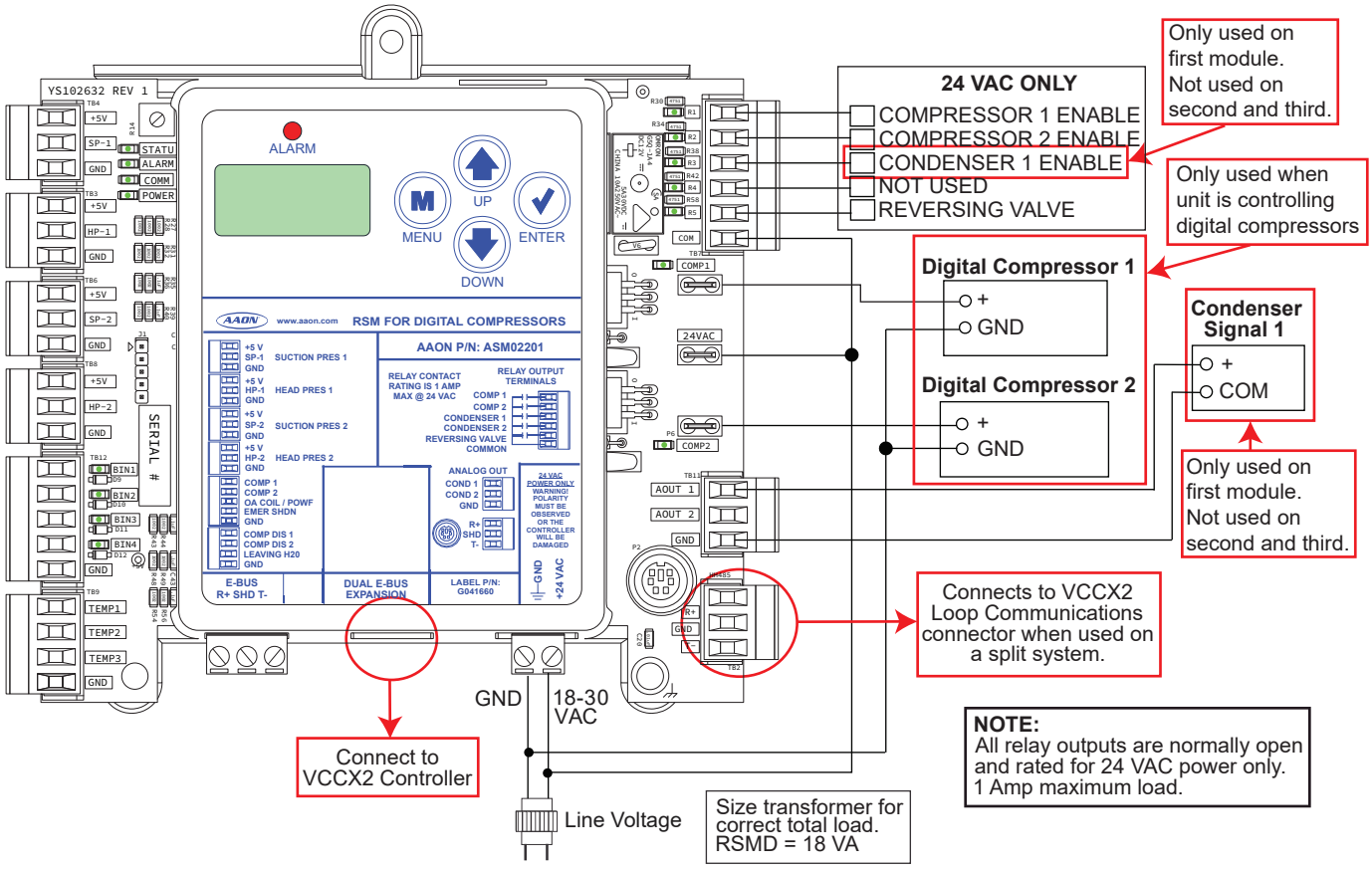


Figure 9: Single Condenser for Three Modules Wiring

Condenser Configurations

A1/B1 and A2/B2 Condenser

HVAC Unit Application

The A1/B1 and A2/B2 Condenser configuration is used with the following HVAC units:

- D-BOX 50–70 Ton
- D-BOX Air to Air Heat Pump
- D-BOX WSHP

Wiring

See **Figure 10, this page,** and **Figure 11, page 33,** for A1/B1 and A2/B2 Condenser wiring.

Prism 2 Configuration

On the RSM-D Configuration screen, select **<A1/B1 and A2/B2 Condenser>** under the **Condenser Configurations** menu.

Hand Held Service Tool Configuration

```
RSMD CONFIGURATION
CONDENSER OPTIONS
2 COND FOR 2 RSMDS
USE < OR > TO CHANGE
```

Select the "2 COND for 2 RSMDS" option on the above Hand Held Service Tool Screen.

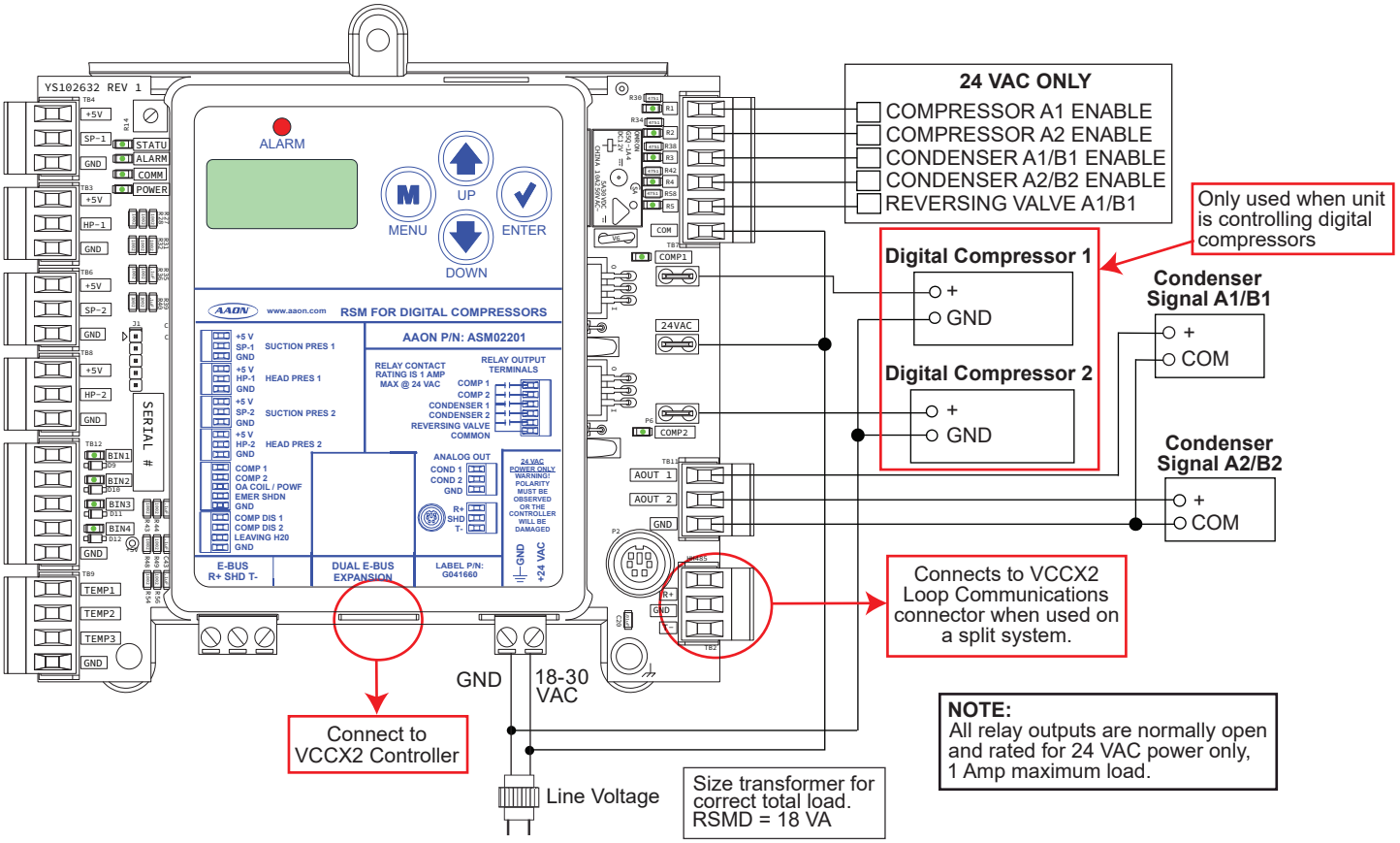


Figure 10: A1/B1 Condenser Wiring

Condenser Configurations

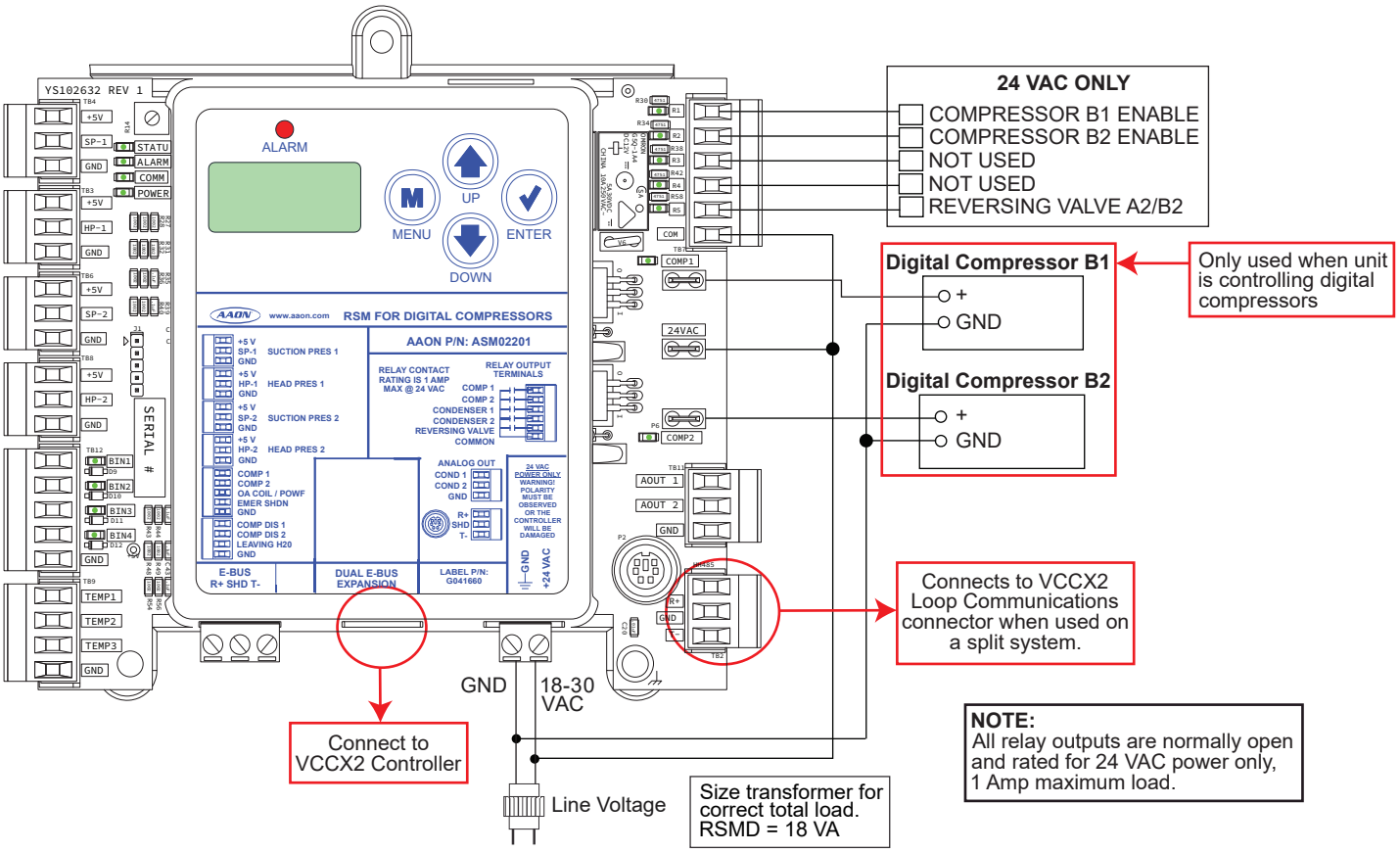


Figure 11: A2/B2 Condenser Wiring

APPENDIX A: CONDENSER OPTIONS

Module Configurations

On/Off Condenser Options

Prism 2 Configuration

To have the condenser fan cycle on and off with the compressors, select **<Fixed Condenser Fan>** under the **Module Configurations** menu in the RSM-D Configuration screen, This option can also be selected when no head pressure control is required.

To have the condenser fan cycle on and off based on the Fan Cycle Head Pressure Setpoints, select **<Fan Cycle Relay Control>** under the **Module Configurations** menu in the RSM-D Configuration screen, Fill in the setpoints for Fan Cycle Enable Setpoint, Fan Cycle Deadband, and Fan Cycle Reheat Offset.

Both of the above settings can be set per board.

RSMD Technical Guide

Rev. J · 240830

AAON Controls Support:
866-918-1100
Monday through Friday, 7:00 AM to 5:00 PM Central Time

Controls Support website:
www.aaon.com/aaon-controls-technical-support

AAON Factory Technical Support:
918-382-6450 | techsupport@aaon.com

NOTE: Before calling Technical Support, please have the model and serial number of the unit available.

PARTS: For replacement parts, please contact your local AAON Representative.

2425 So. Yukon Ave • Tulsa, OK • 74107-2728
Ph: (918) 583-2266 • Fax: (918) 583-6094
Rev. J