UPGRADE PACKAGE
VCCX2

★★★ READ FIRST ★★★

UPGRADE INSTALLATION NOTES

All work associated with upgrading controls should only be performed by an experienced service technician familiar with this type of equipment. It is highly recommended that technicians receive prior training on controls and upgrades.

Note that this package is not a point-for-point, drop-in replacement. The wiring indicated in this drawing set is generic and intended to show all possible terminations. This is a system upgrade and it is critical that the installing technician thoroughly review and fully understand the scope of work prior to beginning.

- Prior to performing the upgrade:
  - **REVIEW THIS PACKAGE:** Review the attached wiring details and compare to the original factory wiring diagrams (Originals can be found inside unit or contact your AAON rep).
  - **SAVE EXISTING CONFIGURATION INFORMATION:** When possible, save the setpoint and configuration information from the original controller. To do this, connect to the existing controller with one of the interface methods listed below. Then, manually transfer the data to paper. To help with the process, there are interactive and manual setpoint worksheets available on our website at www.aaon.com/library/category/controls for most of our legacy controllers.
    - PLEASE NOTE: Without the setpoint and configuration information for a specific unit, AAON Controls Support cannot walk you through the configuration of that unit as we have no way of knowing how the unit was originally configured.
  - **DETERMINE INTERFACE METHOD:** Determine which method you will be using to interface to the controls to configure the unit once the wiring modifications have been made. The VCCX2 Controller requires one of the following methods for configuration:
    - USB-Link2 – Part# ASM02244 (plus computer with Prism2 software)
    - CommLink5 – Part# ASM01874 (plus computer with Prism2 software)
    - Modular Service Tool SD – Part# ASM01895 with firmware version 1.13 or higher
    - System Manager SD – Part# ASM01901 with firmware version 1.13 or higher (cannot be used to flash controllers or modules).
  - **FAMILIARIZE WITH THE UNIT BEING UPGRADED:** Examine the existing drawing to understand what features the unit has (Hot Gas Reheat, Number of Compressors, Compressor Types, Head Pressure Control, etc.). This information will be helpful in understanding how to connect the new controls.

CONFIRM NETWORKED SYSTEMS: If the unit is part of an existing networked system or is connected to an existing System Manager, additional parts may be required to communicate with legacy equipment or legacy equipment may need to be replaced or upgraded. These additional items are not included in the upgrade package.

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VCCX2 UPGRADE PACKAGE REV-D.DWG

SIZE	PART OR DOCUMENT NUMBER	REV
B	DT007542-001	D

SCALE: NS

MUA (SS1004) TO VCCX2 POINT CROSS REFERENCE

POINT NAME	MUA	VCCX2	NOTES
SPACE TEMPERATURE	AI1	AI1	CAN ALSO BE REPLACED WITH EBUS SENSOR.
SUPPLY AIR TEMPERATURE	AI2	AI3	
REMOTE OCCUPIED	AI3	BI4	
OUTDOOR AIR TEMPERATURE	AI4	---	REMOVE ORIGINAL SENSOR AND INSTALL EBUS OA TEMP/HUM SENSOR
OUTDOOR AIR HUMIDITY	AI5	---	REMOVE ORIGINAL SENSOR AND INSTALL EBUS OA TEMP/HUM SENSOR
FAN PROOF OF FLOW	AI6	BI1	
MODULATING HEAT	AO1	AO3	
FAN START/STOP	RELAY #1	RELAY #1	
COOLING STAGES	RELAYS	RELAYS	ON MAIN VCCX2 OR RSM BOARDS WHEN PRESENT
ALL "OTHER" RELAY OUTPUTS	RELAYS	RELAYS	LAND ON ANY AVAILABLE RELAY OUTPUTS. CONFIGURABLE AS NEEDED.

VAV/CAV (SS1003) TO VCCX2 POINT CROSS REFERENCE

POINT NAME	VAV/CAV	VCCX2	NOTES
SPACE TEMPERATURE	AI1	AI1	MAY BE REPLACED WITH EBUS SENSOR.
SUPPLY AIR TEMPERATURE	AI2	AI3	
RETURN AIR TEMPERATURE	AI3	AI4	
OUTDOOR AIR TEMPERATURE	AI4	---	REMOVE ORIGINAL SENSOR AND INSTALL EBUS OA TEMP/HUM SENSOR
OUTDOOR AIR HUMIDITY	AI5	---	REMOVE ORIGINAL SENSOR AND INSTALL EBUS OA TEMP/HUM SENSOR
REMOTE OCCUPIED	AI5	BI4	
FAN PROOF OF FLOW	AI7	BI1	
ECONOMIZER	AO1	AO2	
SUPPLY FAN VFD	AO2	AO1	
FAN START/STOP	RELAY #1	RELAY #1	
COOLING STAGES	RELAYS	RELAYS	ON MAIN VCCX2 OR RSM BOARDS WHEN PRESENT
ALL "OTHER" RELAY OUTPUTS	RELAYS	RELAYS	LAND ON ANY AVAILABLE RELAY OUTPUTS. CONFIGURABLE AS NEEDED.
SUPPLY SETPOINT RESET	EXP. AI1	AI6	
REMOTE OCCUPIED CONTACT	EXP. AI2	BI4	
CARBON DIOXIDE	EXP. AI3		REMOVE ORIGINAL SENSOR AND INSTALL EBUS CO2 SENSOR
BUILDING PRESSURE	EXP. AI4	AI5	CONFIRM PROPER SIGNAL
RELIEF FAN VFD	EXP. AO1	AO4	
HUMIDISTAT CONTACT	EXP. BI1	BI7	(REMOTE DEHUMIDIFICATION CONTACT)
DIRTY FILTER	EXP. BI2	BI2	
REMOTE FORCED HEAT MODE	EXP. BI3	BI6	
REMOTE FORCED COOL MODE	EXP. BI4	BI5	
DUCT STATIC PRESSURE	RJ22	RJ22	DEDICATED RJ22 CONNECTION. CAN BE USED WITH SAME CONNECTION

VCM (SS1016) TO VCCX2 POINT CROSS REFERENCE

POINT NAME	VCM	VCCX2	NOTES
SPACE TEMPERATURE	AI1	AI1	MAY BE REPLACED WITH EBUS SENSOR.
SUPPLY AIR TEMPERATURE	AI2	AI3	
RETURN AIR TEMPERATURE	AI3	AI4	
OUTDOOR AIR TEMPERATURE	AI4	---	REMOVE ORIGINAL SENSOR AND INSTALL EBUS OA TEMP/HUM SENSOR
SUCTION PRESSURE	AI5	---	NOT USED ON VCCX2 WILL BE RELOCATED TO RSM BOARD WHEN APPLICABLE. SIGNAL CONDITIONER, IF PRESENT, CAN BE REMOVED.
SPACE TEMP SLIDE ADJUST	AI7	AI2	
SUPPLY TEMPERATURE RESET	AI7	AI6	
REMOTE OCCUPIED	AI5	BI4	
ECONOMIZER	AO1	AO2	
SUPPLY FAN VFD	AO2	AO1	
FAN START/STOP	RELAY #1	RELAY #1	
COOLING STAGES	RELAYS	RELAYS	COOLING STAGES RELOCATED TO RSM BOARDS WHEN ADDED
ALL "OTHER" RELAY OUTPUTS	RELAYS	RELAYS	LAND ON ANY AVAILABLE RELAY OUTPUTS. CONFIGURABLE AS NEEDED.
OUTDOOR AIR HUMIDITY	4AI-EXP.AI1	EBUS	REMOVE ORIGINAL SENSOR AND INSTALL EBUS SENSOR
INDOOR AIR HUMIDITY	4AI-EXP.AI2	EBUS	REMOVE ORIGINAL SENSOR AND INSTALL EBUS SENSOR
CARBON DIOXIDE	4AI-EXP. AI3	EBUS	REMOVE ORIGINAL SENSOR AND INSTALL EBUS SENSOR
BUILDING PRESSURE	4AI-EXP. AI4	AI5	CONFIRM PROPER SIGNAL
BUILDING PRESSURE CONTROL	4AI-EXP. AO1	AO4	CONTROLS RLF FAN OR EXH DAMPER OR OA DAMPER
MODULATING HEATING SIGNAL	4AO-EXP.AO1	AO3	
MODULATING COOLING SIGNAL	4AO-EXP.AO2	EM1: AO1	ONLY FOR USE WITH CHW VALVES
RETURN AIR DAMPER SIGNAL	4AO-EXP.AO3	EM1:AO2	
RETURN AIR BYPASS SIGNAL	4AO-EXP.AO4	EM1:AO3	
EXHAUST HOOD ON INPUT	BI EXP #1 BI1	BI3	
DIRTY FILTER	BI EXP #1 BI2	BI2	
PROOF OF FLOW	BI EXP #1 BI3	BI1	
REMOTE FORCED OCCUPIED	BI EXP #1 BI4	BI4	
REMOTE FORCED HEATING	BI EXP #2 BI1	BI6	
REMOTE FORCED COOLING	BI EXP #2 BI2	BI5	
SMOKE DETECTOR INPUT	BI EXP #2 BI3	BI8	
REMOTE FORCED DEHUM	BI EXP #2 BI4	BI7	
DUCT STATIC PRESSURE	RJ22	RJ22	DEDICATED RJ22 CONNECTION. CAN BE USED WITH SAME CONNECTION

VCMX (SS1026/SS1030/SS1032/SS1034) TO VCCX2 POINT CROSS REFERENCE

POINT NAME	VCMX	VCCX2	NOTES
SPACE TEMPERATURE	AI1	AI1	MAY BE REPLACED WITH EBUS SENSOR.
SUPPLY AIR TEMPERATURE	AI2	AI3	
RETURN AIR TEMPERATURE	AI3	AI4	
OUTDOOR AIR TEMPERATURE	AI4	---	REMOVE ORIGINAL SENSOR AND INSTALL EBUS OA TEMP/HUM SENSOR
SUCTION PRESSURE	AI5	---	NOT USED ON VCCX2 WILL BE RELOCATED TO RSM BOARD WHEN APPLICABLE
SPACE TEMP SLIDE ADJUST	AI7	AI2	
SUPPLY TEMPERATURE RESET	AI7	AI6	
REMOTE OCCUPIED	AI5	BI4	
FAN PROOF OF FLOW	AI7	BI1	
ECONOMIZER	AO1	AO2	
SUPPLY FAN VFD	AO2	AO1	
FAN START/STOP	RELAY #1	RELAY #1	
COOLING STAGES	RELAYS	RELAYS	COOLING STAGES RELOCATED TO RSM BOARDS WHEN ADDED
ALL "OTHER" RELAY OUTPUTS	RELAYS	RELAYS	LAND ON ANY AVAILABLE RELAY OUTPUTS. CONFIGURABLE AS NEEDED.
OUTDOOR AIR HUMIDITY	EXP.AI1	EBUS	REMOVE ORIGINAL SENSOR AND INSTALL EBUS SENSOR
INDOOR AIR HUMIDITY	EXP.AI2	EBUS	REMOVE ORIGINAL SENSOR AND INSTALL EBUS SENSOR
BUILDING PRESSURE	EXP.AI4	AI5	CONFIRM PROPER SIGNAL
BUILDING PRESSURE CONTROL	EXP.AO1	AO4	CONTROLS RELIEF FAN OR EXHAUST DAMPER OR OA DAMPER
MODULATING HEATING SIGNAL	EXP.AO2	AO3	
MODULATING COOLING SIGNAL	EXP.AO3	EM1: AO1	ONLY FOR USE WITH CHW VALVES
RETURN AIR DAMPER SIGNAL	EXP.AO4	EM1:AO2	
RETURN AIR BYPASS SIGNAL	EXP.AO5	EM1:AO3	
EMERGENCY SHUTDOWN	EXP.BI1	BI8	
DIRTY FILTER	EXP.BI2	BI2	
PROOF OF FLOW	EXP.BI3	BI1	
REMOTE FORCED OCCUPIED	EXP.BI4	BI4	
REMOTE FORCED HEATING	EXP.BI5	BI6	
REMOTE FORCED COOLING	EXP.BI6	BI5	
EXHAUST HOOD ON	EXP.BI7	BI3	
REMOTE FORCED DEHUMIDIFICATION	EXP.BI8	BI7	
DUCT STATIC PRESSURE	RJ22	RJ22	DEDICATED RJ22 CONNECTION. CAN BE USED WITH SAME CONNECTION

THIS PACKAGE IS NOT A POINT-FOR-POINT, DROP-IN REPLACEMENT.

USE THE CROSS REFERENCE TABLES TO DETERMINE WHERE TO LAND EXISTING WIRES ON NEW CONTROL BOARDS.

NOTE: IT IS RECOMMENDED TO USE WIRE LABELS BEFORE DISCONNECTING THE EXISTING WIRING. IT IS SUGGESTED TO USE THE POINT ID'S IN THE COLUMN LABELLED "VCCX2".
EXAMPLE:
FOR VCM-X, LABEL THE SUPPLY AIR TEMP "VCCX2 AI3".

PART LIST / DETAIL REFERENCE

PART #	DESCRIPTION	PAGE / DETAIL	NOTES
ASM01635	EBC ADAPTER HUB WITH 1.5' EBC CABLE	7	DEVICE INCLUDED TO PROVIDE ADDITIONAL EBUS PORTS
ASM01638	STANDARD ROOM SENSOR WITH OVERRIDE	3	TEMPERATURE SENSOR
ASM01640	DUCT STATIC PRESSURE SENSOR	3	CONNECTS VIA DEDICATED MODULAR JACK
ASM01642	STANDARD ROOM SENSOR WITH SLIDE ADJUST	3	3-CONDUCTOR REQ'D
ASM01643	STANDARD ROOM SENSOR WITH OVERRIDE AND SLIDE ADJUST	3	3-CONDUCTOR REQ'D
ASM01668	MODGAS-X CONTROLLER	4	MODULATING GAS HEAT BOARD
ASM01670	MHGRV-X CONTROLLER	4	MODULATING HOT GAS REHEAT BOARD
ASM01686	REFRIGERANT SYSTEM MODULE FOR VFD COMPRESSORS	6	
ASM01687	MHGRV-X REHEAT EXPANSION MODULE	4	
ASM01691	VCC-X EM1 EXPANSION MODULE		
ASM01696	E-BUS SPACE TEMPERATURE AND HUMIDITY SENSOR EMULATOR BOARD WITH 1.5' EBC E-BUS CABLE	7	
ASM01698	VCCX2 CONTROLLER	3	MAIN UNIT CONTROLLER
ASM01819	E-BUS DIGITAL ROOM TEMPERATURE SENSOR		CONNECTS VIA EBUS
ASM01820	E-BUS DIGITAL ROOM TEMPERATURE & HUMIDITY SENSOR		CONNECTS VIA EBUS
ASM01829	EBUS CO_2 SENSOR - WALL MOUNTED		CONNECTS VIA EBUS
ASM01831	EBUS CO_2 SENSOR - DUCT MOUNTED WITH REMOTE PICKUP TUBE		CONNECTS VIA EBUS
ASM01832	BUILDING STATIC PRESSURE SENSOR	3	
ASM01836	E-BUS HORIZONTAL OUTDOOR AIR TEMPERATURE & HUMIDITY SENSOR		CONNECTS VIA EBUS
ASM01840	E-BUS RETURN AIR TEMPERATURE & HUMIDITY SENSOR		CONNECTS VIA EBUS
ASM01873	E-BUS 12 RELAY EXPANSION MODULE		CONNECTS VIA EBUS
ASM01878	EBC ADAPTER BOARD		CONNECTS VIA EBUS
ASM01893	REFRIGERANT SYSTEM MODULE FOR DIGITAL COMPRESSORS-R22	5	FOR USE ON UNITS WITH ANY OF THE FOLLOWING: DIGITAL COMPRESSORS, HOT GAS REHEAT, HEAD PRESSURE CONTROL
ASM02201	REFRIGERANT SYSTEM MODULE FOR DIGITAL COMPRESSORS-R410-A	5	FOR USE ON UNITS WITH ANY OF THE FOLLOWING: DIGITAL COMPRESSORS, HOT GAS REHEAT, HEAD PRESSURE CONTROL
ASM02227	STANDARD ROOM SENSOR - PLAIN		3-CONDUCTOR REQ'D
ASM02627	REFRIGERANT SYSTEM MODULE FOR VFD COMPRESSORS WITHOUT EXV CONTROL	6	
ASM02771	VCCX2 SUCTION PRESSURE TRANSDUCER	5,6	INSTALL ON EACH REFRIGERATION CIRCUIT
ASM02775	PWM CONTROLLER (G007660) PLUS CABLE (R63960)	7	USED WITH SOME ECM CONDENSER FANS
G029490	CABLE, EBUS TO FORK TERMINALS	7	USED IN SPLIT SYSTEM APPLICATIONS
G042230	OUTDOOR AIR TEMPERATURE SENSOR	3	
G051250	DUCT TEMPERATURE SENSOR - 12"	3	CAN BE USED FOR SA OR RA TEMP, IF NEEDED
G082390	CURRENT SWITCH, SPLIT CORE	5,6	USED FOR COMPRESSOR STATUS
R17120	CURRENT SWITCH	5,6	USED FOR COMPRESSOR STATUS

USE THE PART LIST TO FIND MORE INFORMATION ABOUT THE PARTS YOU RECEIVED IN YOUR UPGRADE PACKAGE.
NOTE: THIS LIST INCLUDES PARTS THAT MAY NOT BE INCLUDED IN YOUR SPECIFIC UPGRADE PACKAGE.

	DATE	NAME
DRAWN	05/13/22	KT

AAON Controls

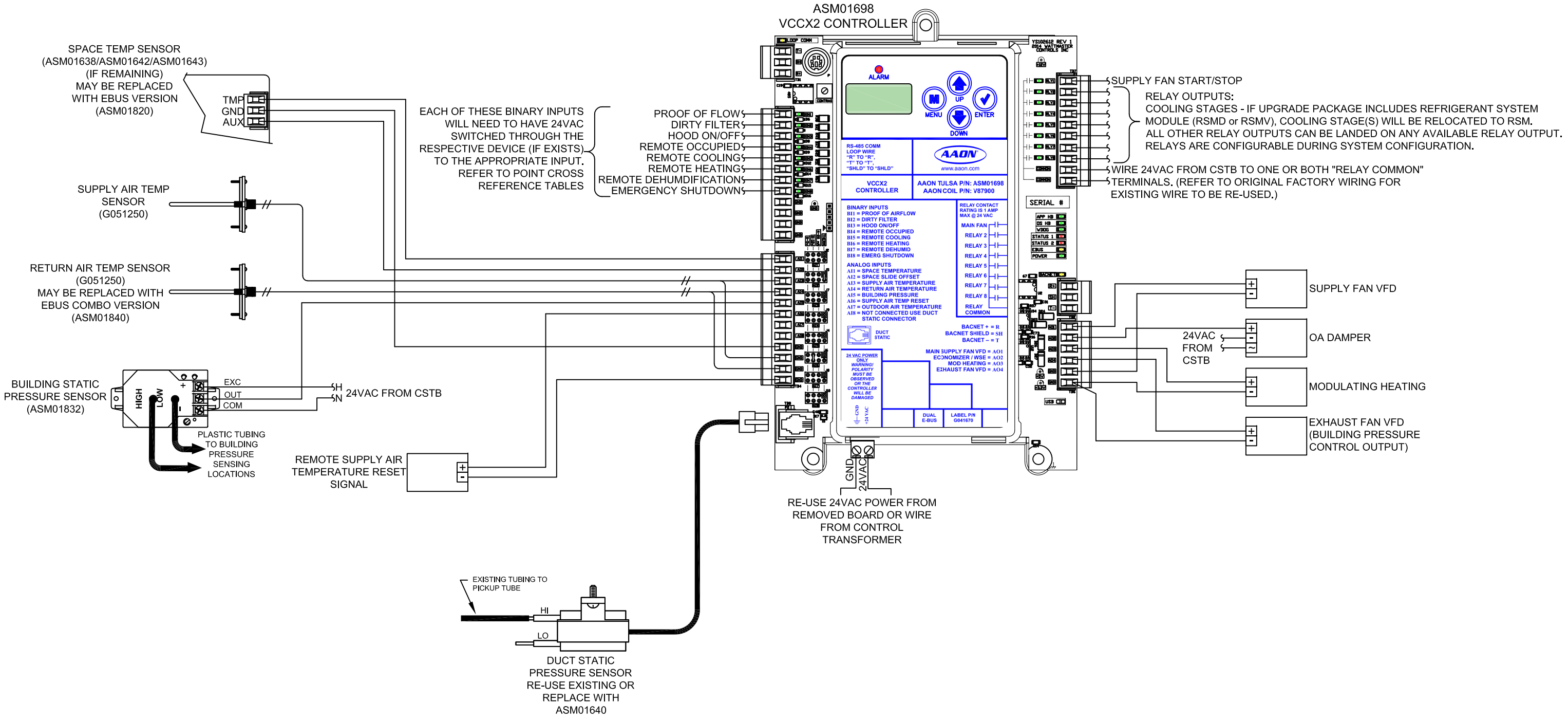
TITLE: POINT CROSS REFERENCE TABLES PARTS LIST

COMMENTS: ORIGINAL DRAWING
FILENAME: VCCX2 UPGRADE PACKAGE REV-D.DWG

SIZE	PART OR DOCUMENT NUMBER	REV
B	DT007542-001	D

SCALE: NS

VCCX2 WIRING



	DATE	NAME	
DRAWN	05/13/22	KT	AAON Controls

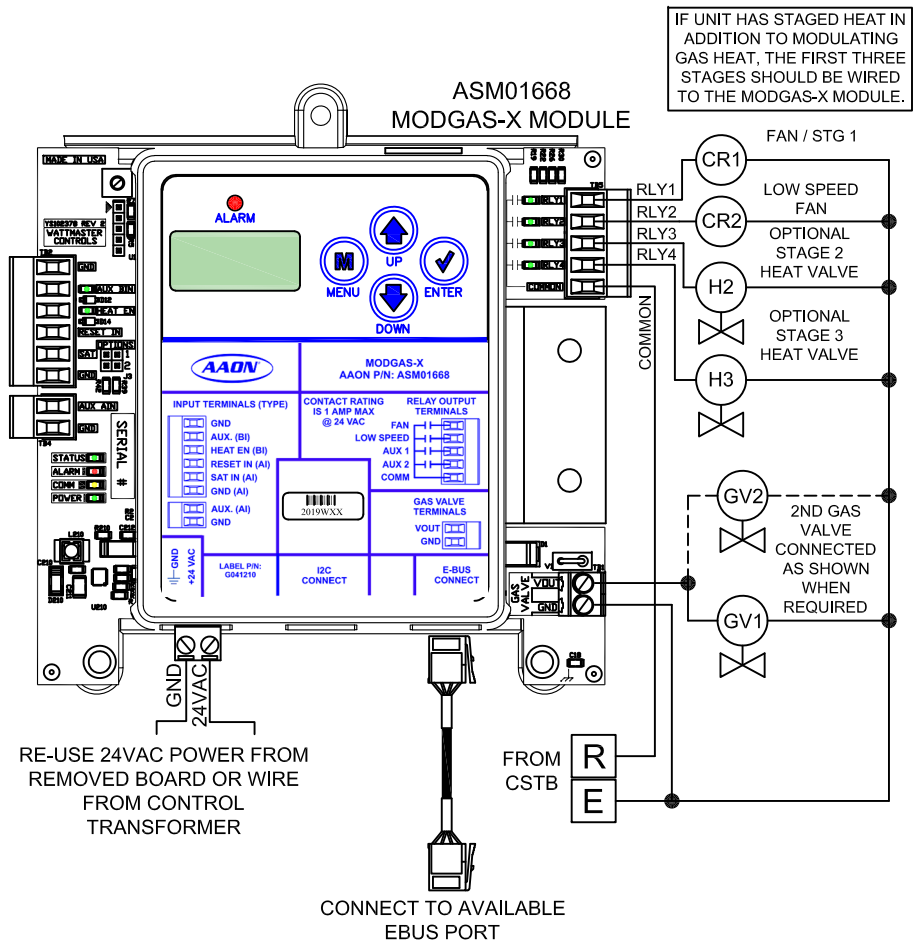
TITLE: VCCX2 WIRING

COMMENTS:
ORIGINAL DRAWING
FILENAME:
VCCX2 UPGRADE PACKAGE
REV-D.DWG

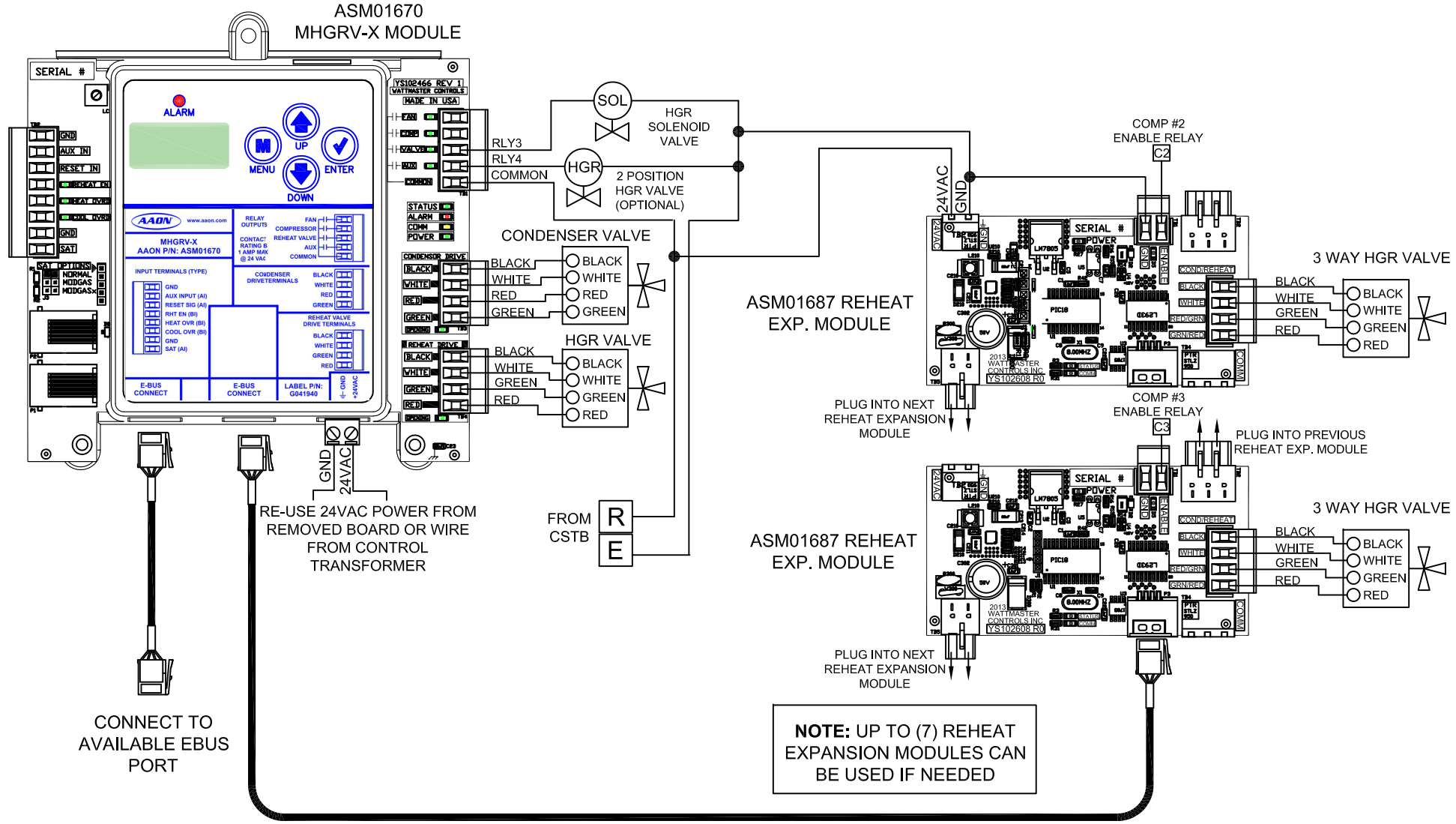
SIZE	PART OR DOCUMENT NUMBER	REV
B	DT007542-001	D

SCALE: NS

MODGAS-X WIRING



MHGRV-X WIRING



UNITS WITH EXISTING MODGAS-X AND/OR MHGRV-X MODULES

IF UNIT HAS EXISTING MODGAS-X AND/OR MHGRV-X MODULES TO REMAIN, SOFTWARE UPDATE OF MODULES IS **REQUIRED** FOR PROPER OPERATION. REFER TO AAON.COM CONTROL TECHNICAL SUPPORT WEBSITE FOR INSTRUCTION

	DATE	NAME	
DRAWN	05/13/22	KT	AAON Controls

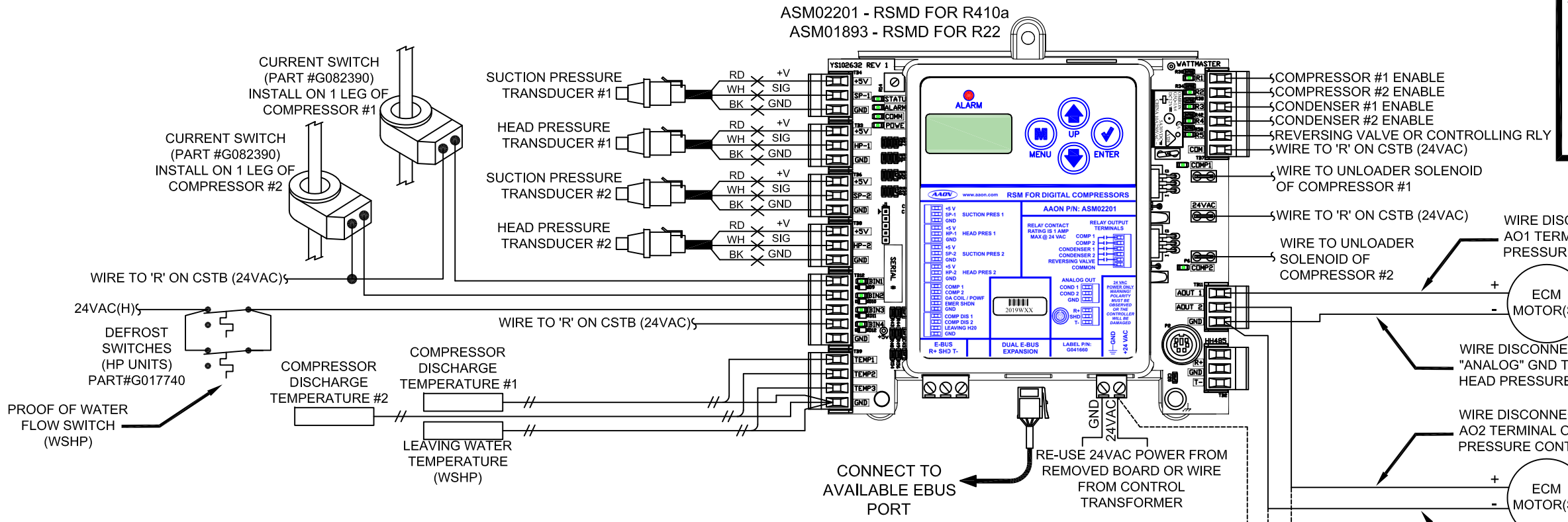
TITLE:
MODGAS-X WIRING
MHGRV-X WIRING

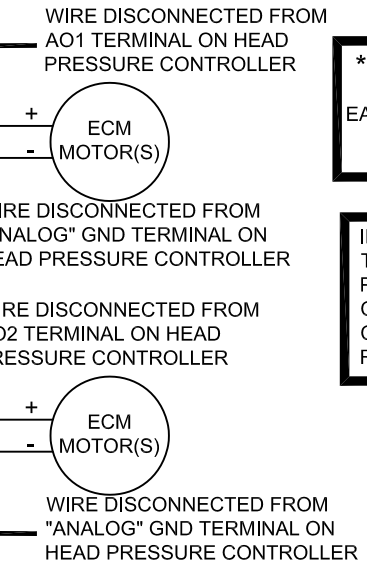
COMMENTS:
ORIGINAL DRAWING
FILENAME:
VCCX2 UPGRADE PACKAGE REV-D.DWG

SIZE	PART OR DOCUMENT NUMBER	REV
B	DT007542-001	D

SCALE: NS | SHEET 4 OF 8

REFRIGERANT SYSTEM MODULE FOR DIGITAL COMPRESSORS WIRING





UNITS WITH 2 DIGITAL AND 2 FIXED COMPRESSORS

THIS CONFIGURATION SHOULD BE SET UP WITH 1 DIGITAL AND 1 FIXED COMPRESSOR ON EACH RSMD. THE DIGITAL COMPRESSORS SHOULD BE WIRED AS THE #1 COMPRESSOR ON THE RSMD.

IF UNIT ALSO HAS HEAD PRESSURE CONTROL WITH ECM CONDENSER FANS, CONTACT THE AAON XTEND TEAM FOR GUIDANCE ON PAIRING CONDENSER FANS WITH APPROPRIATE RSM/COMPRESSOR.

UNITS WITH MULTIPLE RSMD BOARDS

EACH BOARD MUST HAVE A UNIQUE ADDRESS. REFERENCE SHEET 8 OF 8 FOR ADDRESSING INSTRUCTIONS

IF CONDENSER FAN MOTORS ORIGINALLY TERMINATED ON PWM TERMINALS OF HEAD PRESSURE CONTROLLER, A PWM CONTROLLER BOARD IS REQUIRED TO CONVERT 0-10VDC ANALOG OUTPUT TO PWM. REFER TO DETAIL ON SHEET 7 OF 8.

WATER SOURCE HEAT PUMPS
ON WATER SOURCE HEAT PUMPS, ANALOG OUTPUT "COND2" CONTROLS WATER SOURCE ECONOMIZER VALVE

*** USE BELOW AS A COMPLETION CHECKLIST ***

GENERAL

EXISTING COOLING STAGES WILL BE MOVED FROM THE MAIN CONTROLLER TO THE RSMD(s).

- ☐ INSTALL SUCTION PRESSURE TRANSDUCER ON EACH REFRIGERANT CIRCUIT AND WIRE TO EACH SUCTION PRESSURE INPUT. RE-USE EXISTING TRANSDUCERS AS NEEDED.
- ☐ WIRE 24VAC FROM CONTROL TRANSFORMER TO POWER RSMD BOARD.
- ☐ WIRE 24VAC FROM CSTB "R" TO "EMERGENCY SHUTDOWN" ON BINARY INPUT #4.
- ☐ WIRE 24VAC FROM CSTB "R" TO "COM" ON RELAY TERMINAL BLOCK (TB7).
- ☐ INSTALL "COMPRESSOR STATUS" FOR EACH COMPRESSOR ON BINARY INPUTS USING INCLUDED CURRENT SWITCHES.
- ☐ WIRE FROM RELAY OUTPUTS TO ENABLE COMPRESSOR CONTACTORS AS NEEDED. THIS MAY VARY BETWEEN EQUIPMENT.

FOR EACH DIGITAL COMPRESSOR

MODULATION OF DIGITAL COMPRESSORS WILL BE PERFORMED BY THE RSMD(s).
SEE "EXISTING COPELAND DIGITAL COMPRESSOR CONTROLLER" DETAIL INSET FOR ADDITIONAL INFORMATION.

- ☐ WIRE 24VAC FROM CSTB "R" TO MIDDLE STAKE-ON CONNECTOR FOR UNLOADER.
- ☐ WIRE FROM UNLOADER STAKE-ON CONNECTOR TO ONE SIDE OF SOLENOID.
- ☐ WIRE OTHER SIDE OF SOLENOID TO GROUND.
- ☐ WIRE COMPRESSOR DISCHARGE TEMPERATURE SENSORS TO RESPECTIVE TEMPERATURE INPUTS AND GROUND TERMINAL.
- ☐ DISCONNECT WIRES FROM M1 & L1 TERMINALS OF COPELAND BOARD AND SPLICE TOGETHER.
- ☐ REMOVE EXISTING COPELAND BOARD.

UNITS WITH HEAD PRESSURE CONTROL

HEAD PRESSURE CONTROL WILL BE PERFORMED BY THE RSMD(s).
COMPLETE THE CHECK-BOXES BELOW ONLY IF THE UNIT BEING UPGRADED HAS HEAD PRESSURE CONTROL.

- ☐ WIRE EACH HEAD PRESSURE TRANSDUCER TO RESPECTIVE INPUT ON NEW RSM.
- ☐ WIRE ANALOG OUTPUTS TO CONDENSER FAN MOTORS AS SHOWN.
- ☐ REMOVE EXISTING HEAD PRESSURE MODULE.

HEAT PUMP UNITS

COMPLETE THE CHECK-BOXES BELOW ONLY FOR HEAT PUMP UNITS.

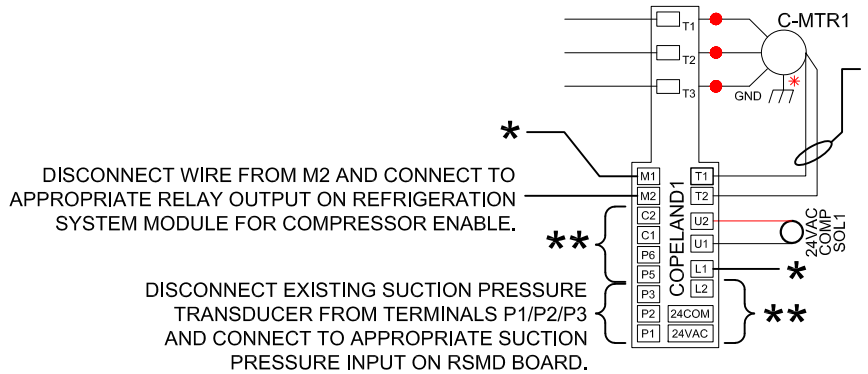
- ☐ WIRE DEFROST TEMPERATURE SWITCHES IN PARALLEL TO BI3 ON RSMD.
- ☐ WIRE REVERSING VALVE(S) TO RELAY OUTPUT #5 ON CORRESPONDING COMPRESSORS.
- ☐ EXISTING DEFROST CONTROL MODULE CAN BE REMOVED.

WATER SOURCE HEAT PUMP UNITS

COMPLETE THE CHECK-BOXES BELOW ONLY FOR WATER SOURCE HEAT PUMP UNITS.

- ☐ WIRE PROOF OF WATER FLOW SWITCH TO BI3 ON RSMD.
- ☐ WIRE LEAVING WATER TEMPERATURE SENSOR TO AI3.
- ☐ IF APPLICABLE, WIRE WSE BYPASS VALVE TO ANALOG OUTPUT "COND2".

EXISTING COPELAND DIGITAL COMPRESSOR CONTROLLER



DISCONNECT WIRE FROM M2 AND CONNECT TO APPROPRIATE RELAY OUTPUT ON REFRIGERATION SYSTEM MODULE FOR COMPRESSOR ENABLE.

DISCONNECT EXISTING SUCTION PRESSURE TRANSDUCER FROM TERMINALS P1/P2/P3 AND CONNECT TO APPROPRIATE SUCTION PRESSURE INPUT ON RSMD BOARD.

DISCONNECT COMPRESSOR DISCHARGE TEMPERATURE SENSOR FROM TERMINALS T1 & T2 AND WIRE TO APPROPRIATE TEMPERATURE INPUT AND GROUND TERMINAL ON RSMD BOARD.

DISCONNECT UNLOADER SOLENOID FROM TERMINALS U1 & U2 AND WIRE TO APPROPRIATE UNLOADER TERMINAL AND GROUND TERMINAL AS DESCRIBED.

* REMOVE WIRES FROM L1 & M1 TERMINALS AND SPLICE TOGETHER.

** WIRES CONNECTED TO THE FOLLOWING TERMINALS ARE NOT REQUIRED AND CAN BE REMOVED: L2, P5, P6, C1, C2, 24VAC, 24COM.

INSTRUCTION ABOVE IS BASED ON L1 TERMINAL BEING WIRED TO GROUND FROM THE FACTORY. THERE HAVE BEEN SOME UNITS DISCOVERED IN THE FIELD WITH L1/L2 & M1/M2 SWAPPED. CONFIRM BEFORE MAKING FINAL TERMINATIONS.

	DATE	NAME
DRAWN	05/13/22	KT

AAON Controls

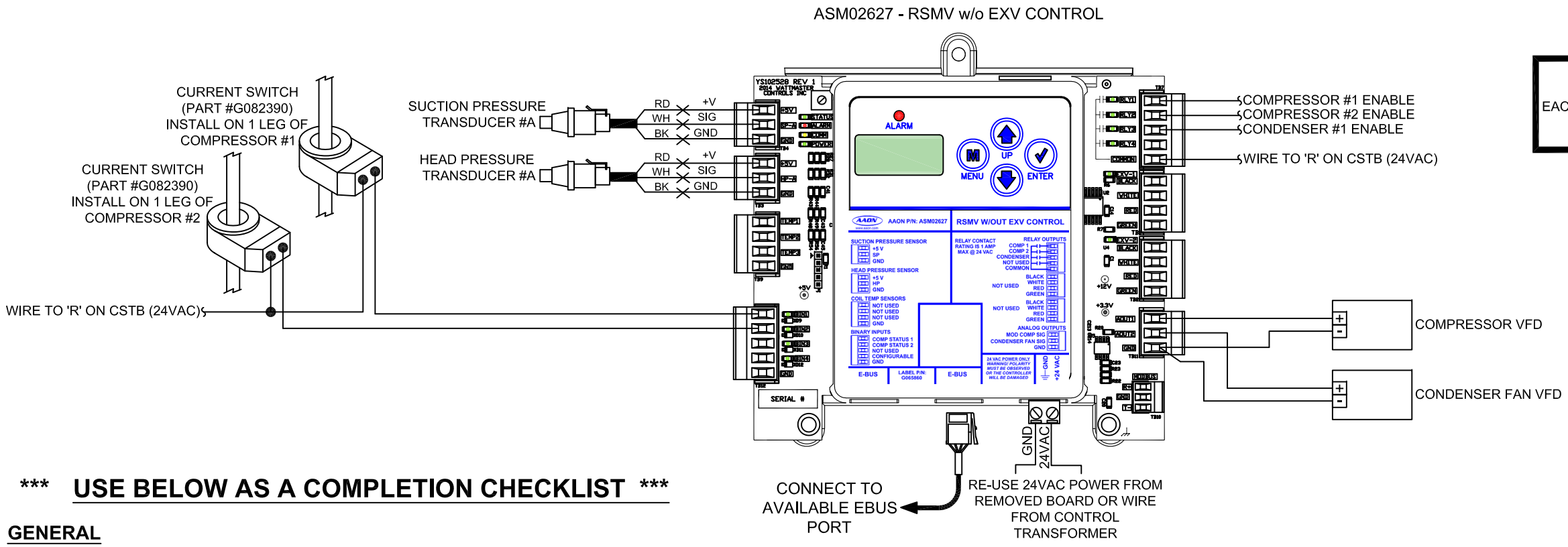
TITLE: REFRIGERANT SYSTEM MODULE FOR DIGITAL COMPRESSORS WIRING

COMMENTS: ORIGINAL DRAWING
FILENAME: VCCX2 UPGRADE PACKAGE REV-D.DWG

SIZE	PART OR DOCUMENT NUMBER	REV
B	DT007542-001	D

SCALE: NS | SHEET 5 OF 8

REFRIGERANT SYSTEM MODULE FOR VFD COMPRESSORS WIRING



UNITS WITH MULTIPLE RSMV BOARDS

EACH BOARD MUST HAVE A UNIQUE ADDRESS. REFERENCE SHEET 8 OF 8 FOR ADDRESSING INSTRUCTIONS

*** USE BELOW AS A COMPLETION CHECKLIST ***

GENERAL

EXISTING COOLING STAGES WILL BE MOVED FROM THE MAIN CONTROLLER TO THE RSMV(s).
MODULATION OF THE VFD'S WILL BE PERFORMED BY THE RSMV.
FOR EACH RSMV, COMPLETE THE CHECK-BOXES BELOW.

- ☐ WIRE SUCTION PRESSURE TRANSDUCER TO SUCTION PRESSURE INPUT. RE-USE EXISTING TRANSDUCERS AS NEEDED.
- ☐ WIRE 24VAC FROM CONTROL TRANSFORMER TO POWER RSMV BOARD.
- ☐ WIRE 24VAC FROM CSTB "R" TO "COM" ON RELAY TERMINAL BLOCK (TB7).
- ☐ INSTALL "COMPRESSOR STATUS" FOR EACH COMPRESSOR ON BINARY INPUTS USING INCLUDED CURRENT SWITCHES.
- ☐ WIRE FROM RELAY OUTPUTS TO ENABLE COMPRESSOR CONTACTORS AS NEEDED. THIS MAY VARY BETWEEN EQUIPMENT.
- ☐ WIRE ANALOG OUTPUT #1 TO COMPRESSOR VARIABLE FREQUENCY DRIVE INPUT.

UNITS WITH HEAD PRESSURE CONTROL

HEAD PRESSURE CONTROL WILL BE PERFORMED BY THE RSMV(s).
COMPLETE THE CHECK-BOXES BELOW ONLY IF THE UNIT BEING UPGRADED HAS HEAD PRESSURE CONTROL.

- ☐ WIRE HEAD PRESSURE TRANSDUCER TO HEAD PRESSURE INPUT.
- ☐ WIRE ANALOG OUTPUT #2 TO CONDENSER FAN MOTOR VARIABLE FREQUENCY DRIVE INPUT.
- ☐ REMOVE EXISTING HEAD PRESSURE MODULE.

	DATE	NAME	
DRAWN	05/13/22	KT	AAON Controls

TITLE: REFRIGERANT SYSTEM MODULE FOR VFD COMPRESSORS WIRING

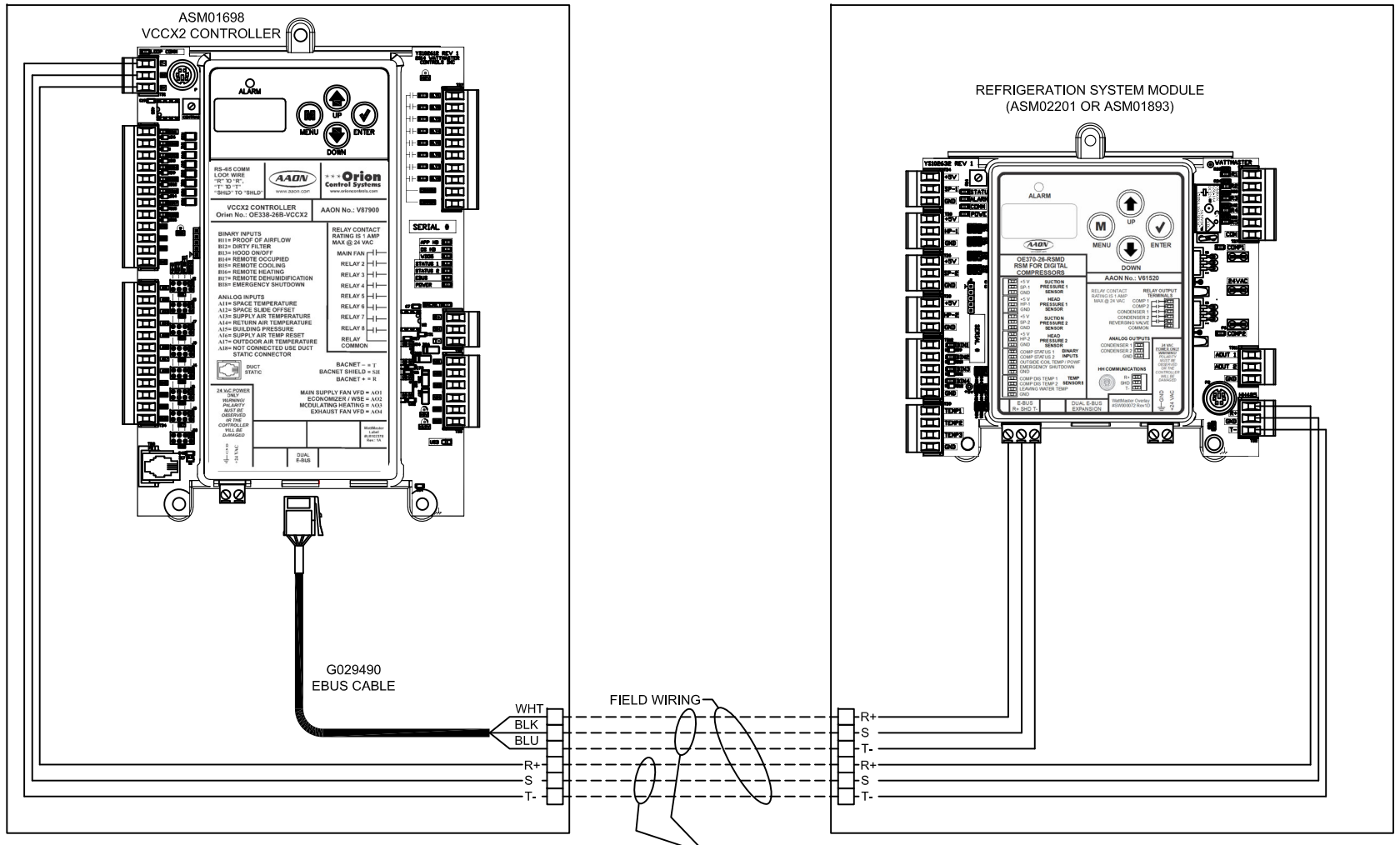
COMMENTS: ORIGINAL DRAWING
FILENAME: VCCX2 UPGRADE PACKAGE REV-D.DWG

SIZE	PART OR DOCUMENT NUMBER	REV
B	DT007542-001	D

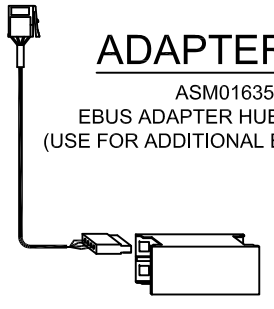
SCALE: NS | SHEET 6 OF 8

MISCELLANEOUS WIRING DETAILS

EBUS / LOOP COMM WIRING FOR SPLIT SYSTEMS



ADAPTER HUB



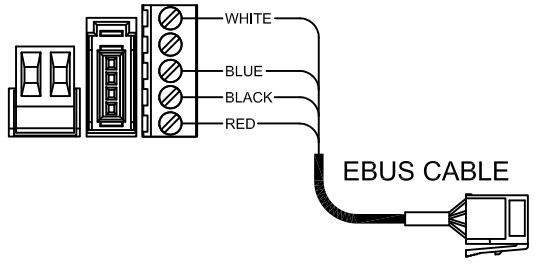
ASM01635
EBUS ADAPTER HUB & CABLE
(USE FOR ADDITIONAL EBUS PORTS)

STANDARD EBUS CABLE LENGTHS AVAILABLE

1.5'	G029440
3'	G012870
10'	G029460
25'	G045270
50'	G029510
75'	G029530
100'	G029450
150'	G029470
250'	V36590

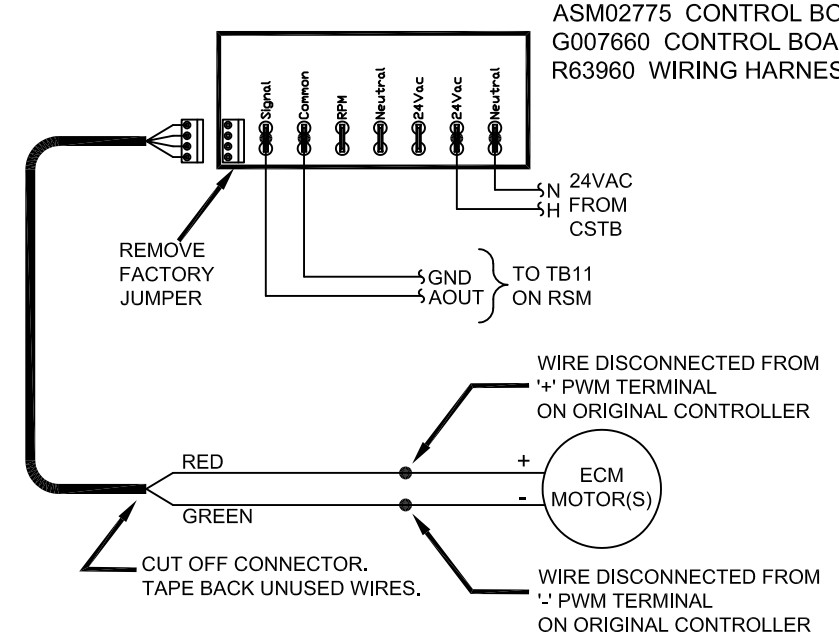
EBUS SPACE SENSOR TERMINAL BLOCK WIRING

TERMINALS ON ASM01819, ASM01820, ASM02221

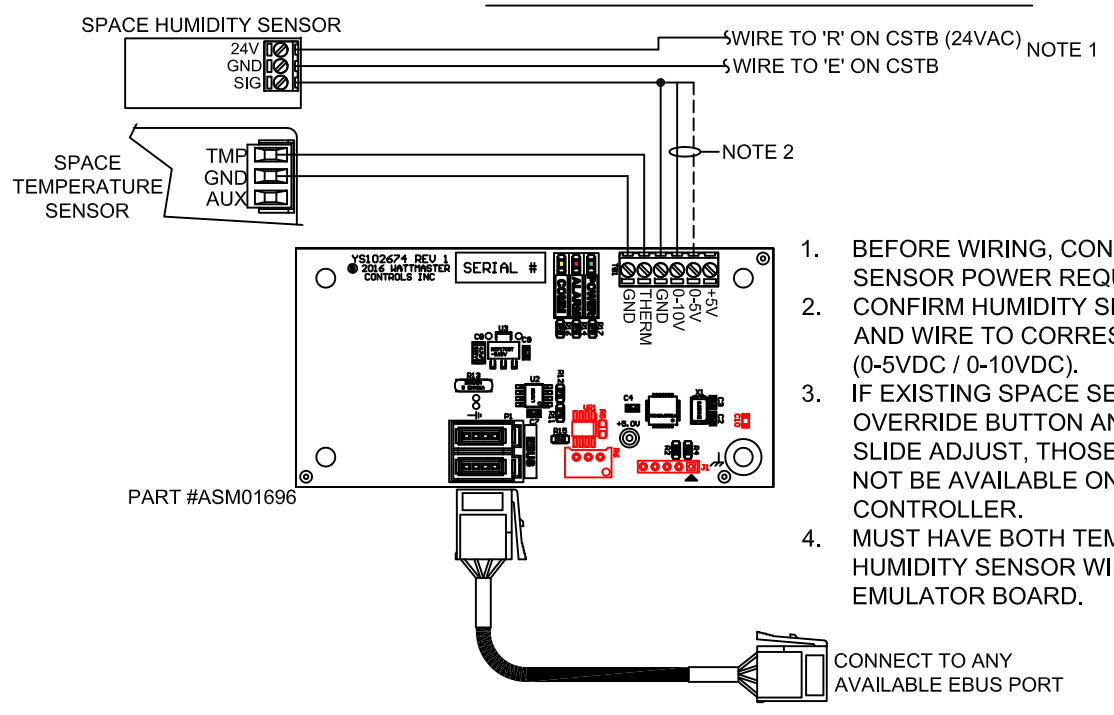


PWM CONTROLLER WIRING

PART NUMBERS
ASM02775 CONTROL BOARD & CABLE
G007660 CONTROL BOARD ONLY
R63960 WIRING HARNESS ONLY



EMULATOR BOARD WIRING



1. BEFORE WIRING, CONFIRM HUMIDITY SENSOR POWER REQUIREMENT.
2. CONFIRM HUMIDITY SENSOR SIGNAL AND WIRE TO CORRESPONDING INPUT (0-5VDC / 0-10VDC).
3. IF EXISTING SPACE SENSOR HAS OVERRIDE BUTTON AND/OR SETPOINT SLIDE ADJUST, THOSE FEATURES WILL NOT BE AVAILABLE ON THE NEW CONTROLLER.
4. MUST HAVE BOTH TEMPERATURE AND HUMIDITY SENSOR WIRED TO EMULATOR BOARD.

	DATE	NAME	
DRAWN	05/13/22	KT	AAON Controls

TITLE: MISCELLANEOUS WIRING DETAILS

COMMENTS:
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FREQUENTLY ASKED QUESTIONS AND OTHER TIPS

VISIT THE CONTROLS SUPPORT WEBSITE FOR ADDITIONAL WIRING DETAILS, TECHNICAL GUIDES, SOFTWARE DOWNLOADS AND OTHER IMPORTANT INFORMATION:

www.aaon.com/library/category/controls
www.aaon.com/aaon-controls-technical-support

Frequently Asked Questions

The AAON unit does not have digital compressors. Why do I need a Refrigerant Module for Digital Compressors (RSMD)?
The AAON unit requires a Refrigeration System Module whenever it has digital compressors, dehumidification, head pressure control or if it is a heat pump unit.
Instructions indicate a Suction Pressure Transducer on each circuit. Why did I receive only one new Suction Pressure Transducer in my Xtend package?
Suction Pressure transducers are required on each compressor on units with RSM's. The intent is to re-use existing devices where possible and Xtend packages only include additional devices if needed. If another is needed, order part #ASM02771.
My existing suction pressure tranducer has a signal conditioner connected. Do I need to keep this connected?
No. The existing transducer can be wired directly to the RSM and the signal conditioner can be removed.
Do I need to remove the Copeland Digital Compressor Controller from the unit?
It is not necessary to remove it. However, once the upgrade wiring is complete, there should be no wires landing on the Copeland controller so it is no longer needed and it is recommended to remove it. NOTE: Removing the Copeland Controller requires disconnect/reconnect of the compressor power wiring.

Common alarms encountered when performing an Xtend upgrade

ALARM	PROBABLE ISSUE	DETAILS
MISSING HEAD PRESSURE	CONFIGURATION	RSM configuraton defaults to head pressure control from the factory. Change condenser fan configuration to "ON/OFF".
EMERGENCY SHUTDOWN (VCCX2)	CONFIGURATION / WIRING	Wire 24VAC to BI-8 on the VCCX2 or change configuration to disable Emergency Shutdown.
EMERGENCY SHUTDOWN (RSM)	WIRING	Wire 24VAC to BI-4 on the RSM.
MISSING MODULE (VCCX2)	FIRMWARE UPDATE	Common on units that are re-using existing MODGAS-X or MHGRV-X modules. Existing modules need to have firmware updated to latest revision for VCCX2 to recognize.
MISSING COMPRESSOR DISCHARGE TEMPERATURE	WIRING	Digital compressors require a discharge temperature sensor to be wired to the temperature inputs on the RSM.
SAT FAIL (MHGRV-X)	CONFIGURATION	Confirm MHGRV-X is selected in the VCCX2 configuration.
COMP # FAIL (RSM)	WIRING	When the RSM starts a compressor, it must see positive run status within 45 seconds. Check installation of current switches to Binary Inputs on RSM.

ADDRESSING RSMD/RSMV MODULES

FROM 'MAIN' DISPLAY OF RSMD/RSMV MODULE, PRESS "ENTER" TWICE.
HOLD "UP" FOR 5 SECONDS.
PRESS "MENU" THREE TIMES.
PRESS "UP" OR "DOWN" TO SET ADDRESS.
PRESS "ENTER".

	DATE	NAME	
DRAWN	05/13/22	KT	AAON Controls

TITLE: FREQUENTLY ASKED QUESTIONS AND OTHER TIPS

COMMENTS: ORIGINAL DRAWING
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SCALE: NS | SHEET 8 OF 8