

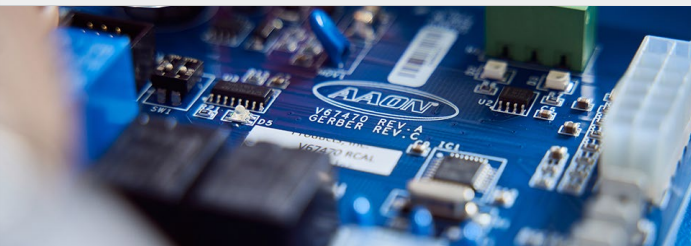


Controls

Selecting Parts for VAV and Zoning Systems



V.260717



Controls System: Selecting Parts for VAV and Zoning Systems

VAV Systems

VAV systems typically consist of a cooling only HVAC unit and VAV terminal units located in the downstream ductwork that are used to control the volume and temperature air delivered to the various building zones. The HVAC unit may have gas or electric heat, but it is typically sized and applied for morning warm-up purposes.

Zoning Systems

Zoning systems consist of one or more heat/cool changeover HVAC units with voting zones located in the downstream ductwork. These zones will each vote for the unit to operate either in cooling or heating mode depending on their individual needs. Once the zones calling for a particular mode are satisfied, the system can switch to the opposite mode if other zones are calling for that mode.

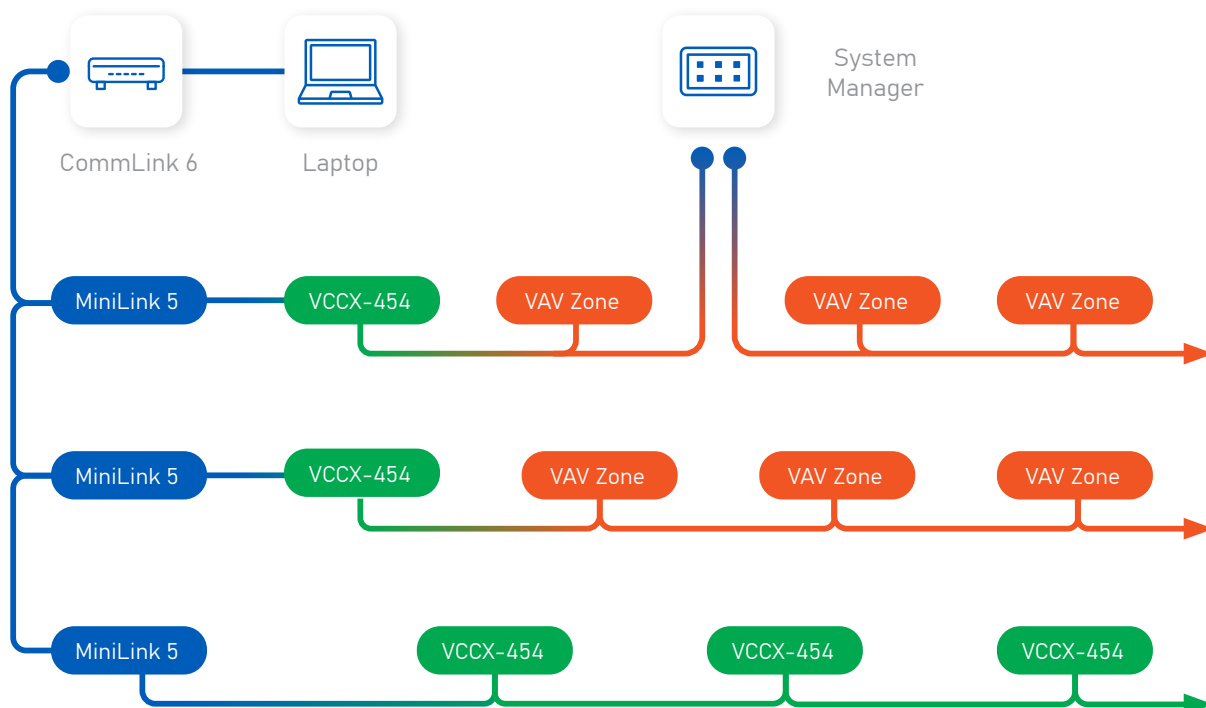
Networked System Configuration

The Networked configuration is used any time the HVAC system has VAV/Zone Controllers. The Networked configuration provides dynamic communications between all controllers on the Network. This allows programming and status monitoring of all the controllers from a central location.

This configuration requires a CommLink 6 Interface. The CommLink 6 is a high speed communication device that allows all the controllers on a system to communicate with each other. Additionally, this configuration requires one MiniLink Polling Device per RTU with VAV/Zone Controllers. The MiniLink creates the local loops within the network.

The CommLink 6 allows for up to 60 local loops, while the MiniLink allows up to 59 controllers per loop. This provides the capability of connecting over 3500 controllers on a Networked system. The controllers on each loop are daisy-chained together using two conductor shielded communication wire.

Optionally, the System Manager TS-L is an end user interface that can be used for limited configuration and monitoring of the control system. It has a color touch screen display and intuitive graphical user interface. It can be located on any local loop on the system. Multiple System Manager TS-L end user interfaces can also be used if desired.



Selection Process

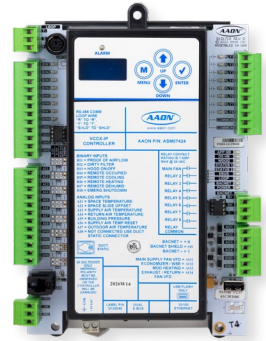
The 7 steps below can be followed to easily create a bill of materials for your VAV or Zoning system.

- Determine the quantity of HVAC Units that will serve VAV boxes or Zone Dampers on the job. Each of these units will require the following parts:**

ASM07424	VCCX-IP
ASM07503	VCCX-454
G051250	Duct Temperature Sensors
ASM01640	Duct Static Pressure Sensor
ASM02242	Duct Static Pressure Pick-up Tube

Note 1: The RTU may already have some or all of these parts depending on selected features.

Note 2: At least one Outside Air Temperature Sensor is required at the jobsite. This value can then be broadcast to all units.



- Select the number of MiniLinks needed**

The MiniLink 5 creates a local network loop that the controller(s) and System Manager(s) reside on. Select one MiniLink per unit that is serving VAV boxes or Zone Dampers.

ASM01626	MiniLink Polling Device 5
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Note: If there are additional units on the job that do not have VAV boxes or Zone Dampers, these RTUs may reside on a MiniLink with a system that has VAV boxes or Zone Dampers. Please keep in mind that each MiniLink local loop will support up to 59 devices.



- Select Communications Interfaces**

At a minimum, the jobsite must have a CommLink 6. The CommLink 6 transfers communication between controllers or local loops within the control system and serves as the interface for connecting a Microsoft Windows PC running Prism 2 to the system. For remote access, the CommLink 6 features a built-in IP Module that provides a TCP/IP Ethernet connection between the AAON control system and the building's LAN, allowing any PC running Prism 2 and connected to the LAN or Internet to access the system.

ASM01874	CommLink 6
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Note: The CommLink 6 supports up to 60 MiniLinks.



- Select Additional Communication Devices**

Add on communication devices that, although not required, can enhance the customer's experience:

ASM01900	System Manager TS-L
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Provides a direct, graphic-enhanced, menu-driven interface allowing limited end-user access to the system. Users can change space temperature setpoints, change schedules, view status points, and view certain alarms.

ASM02244	USB Link 2
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Portable interface device used to connect a PC running Prism2 directly to AAON controllers for initial configuration, service, and troubleshooting.



5

Select VAV/Zone Controllers

AAON does not offer VAV boxes, but control and actuator packages can be mounted on standard VAV boxes. For third-party dampers, AAON offers pressure-dependent and pressure-independent controller packages. Select quantity based on total number of zones.

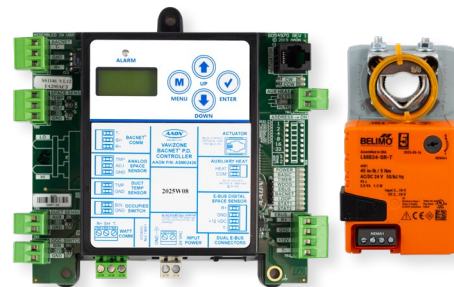
ASM02661 Pressure Dependent VAV/Zone BACnet Controller Package
Includes: Pressure Dependent VAV/Zone BACnet Controller and Actuator.

ASM02662 Pressure Independent VAV/Zone BACnet Controller Package
Includes: Pressure Independent VAV/Zone BACnet Controller and Actuator.

ASM02653 Pressure Dependent Rectangular Damper Kit
Includes: Pressure Dependent VAV/Zone BACnet Controller and Actuator with enclosure.

Note 1: If dampers or VAV boxes are supplied by a third party, controls can be drop-shipped directly to the manufacturer.

Note 2: For Zoned Systems, see directions below.



6

Select VAV/Zone Controller Expansion Module

ASM01629 VAV/Zone Controller Expansion Module

The VAV/Zone Expansion Module allows Fan & Heat control of terminal units, including series and parallel fan terminal units with up to 3 stages of reheat, SCR electric heat, or modulating hot water heat as well as 1 stage of auxiliary heat.

Note: If dampers or VAV Boxes are being supplied by a third party source, the controls can be drop shipped directly to the manufacturer of choice.



7

Select Room Sensor

Each zone requires its own room temperature sensor. Available sensors include:

ASM02227 Standard Room Sensor – Plain

ASM01637 Standard Room Sensor – w. Override

ASM01642 Standard Room Sensor – w. Slide Adjust

ASM01643 Standard Room Sensor – w. Override and Slide Adjust

ASM01820 Digital Room Temperature and Humidity Sensor

Typically, the Digital Room Sensor is hard-wired to the VAV/Zone Controller but can also be connected via E-BUS cable.



For Zoned Systems replace step 5 with the following:

The AAON Controls product line provides Round and Rectangular Dampers. Round Dampers come with VAV/Zone Controller and Actuator mounted from the factory. However, if Rectangular Dampers are needed the Control and Actuator Packages are purchased separately.

Select Zoned Dampers

Pressure Dependent Round Dampers:

Pressure Dependent system does not have an air flow sensor and its minimum and maximum airflow is set based on a percentage.

ASM02605	PD BACnet Round Zone Damper Assembly	6"
ASM02606	PD BACnet Round Zone Damper Assembly	8"
ASM02607	PD BACnet Round Zone Damper Assembly	10"
ASM02608	PD BACnet Round Zone Damper Assembly	12"
ASM02609	PD BACnet Round Zone Damper Assembly	14"
ASM02610	PD BACnet Round Zone Damper Assembly	16"

Pressure Independent Round Dampers:

Pressure Independent system has an air flow sensor and its minimum and maximum airflow is based on actual CFM.

ASM02611	PI BACnet Round Zone Damper Assembly	6"
ASM02612	PI BACnet Round Zone Damper Assembly	8"
ASM02613	PI BACnet Round Zone Damper Assembly	10"
ASM02614	PI BACnet Round Zone Damper Assembly	12"
ASM02615	PI BACnet Round Zone Damper Assembly	14"
ASM02616	PI BACnet Round Zone Damper Assembly	16"

Size all Zone Dampers according to the required zone CFM from the design calculations. Pressure Dependent Zone Dampers should be selected for a velocity of 1,000–1,500 FPM. Pressure Independent Zone Dampers should be selected below 1,200 FPM to ensure proper airflow sensor operation. For quieter operation, AAON recommends selecting all Zone Dampers for a velocity of 1,000 FPM or less. Size all Bypass Dampers to handle 60–70% of the HVAC unit's rated CFM. The recommended selection velocity is 1,750–2,250 FPM.

Round Air Damper Volume

Air Damper Round Duct Size (Area Ft ²)		6" (0.196)	8" (0.349)	10" (0.545)	12" (0.785)	14" (1.069)	16" (1.396)
Velocity through Round Air Damper (FPM)	750 — P.I. or P.D. Zone	147	262	409	589	802	1047
	1000 — P.I. or P.D. Zone	196	349	545	785	1069	1396
	1250 — P.I. or P.D. Zone	245	436	681	981	1336	1745
	1500 — P.I. or P.D. Zone	294	523	818	1178	1604	2094
	1750 — Bypass Only	Bypass dampers are not available in these sizes		954	1374	1871	2443
	2000 — Bypass Only			1090	1570	2138	2792
	2250 — Bypass Only			1226	1766	2405	3141

Bypass

If the system has bypass dampers select from any of the following round bypass dampers:

ASM01928	Round Bypass Damper Assembly	10"
ASM01929	Round Bypass Damper Assembly	12"
ASM01930	Round Bypass Damper Assembly	14"
ASM01931	Round Bypass Damper Assembly	16"

If using dampers supplied by others, refer to the following bypass damper components:

G045890	Bypass Damper Actuator
ASM02338	Bypass Rectangular Damper Kit

Slave Zones

If the system was designed to have slaved zones choose from any of the following Round Slaved Zone Dampers:

ASM01932	PD Round Slaved Zone Damper Assembly	6"
ASM01933	PD Round Slaved Zone Damper Assembly	8"
ASM01934	PD Round Slaved Zone Damper Assembly	10"
ASM01935	PD Round Slaved Zone Damper Assembly	12"
ASM01936	PD Round Slaved Zone Damper Assembly	14"
ASM01937	PD Round Slaved Zone Damper Assembly	16"

If using dampers supplied by others, refer to the following Slaved damper components:

ASM01851	Slaved VAV/Zone Damper Kit
ASM02252	Slaved VAV/Zone Rectangular Damper Kit

Note: Up to two slaved zones per each VAV/Zone zone controller.

Select VAV Components

Unit Controllers and Sensors	
Description	AAON Parts #
VCCX-IP	ASM07424
VCCX-454	ASM07503
Duct Temperature Sensor	G051250
Duct Static Pressure Sensor	ASM01640
Duct Static Pressure Pick-up Tube	ASM02242
Outside Air Temperature Sensor	G042230

Communication Components	
Description	AAON Parts #
MiniLink 5	ASM01626
CommLink 6	ASM07420
System Manager TS	ASM01900
USB Link 2	ASM02244

Space Sensors	
Description	AAON Parts #
Standard Room Sensor — Plain	ASM02227
Standard Room Sensor — with Override	ASM01637
Standard Room Sensor — with Slide Adjust	ASM01642
Standard Room Sensor — with Override and Slide Adjust	ASM01643
Digital Room Temperature and Humidity Sensor	ASM01820

VAV/Zone Components	
Description	AAON Parts #
PD VAV/Zone Controller Package	ASM02661
PI VAV/Zone Controller Package	ASM02662
PD Rectangular Damper Kit	ASM02653
VAV/Zone Controller Expansion Module	ASM01629

Select Zoning Components

Pressure Dependent Round Dampers	
Description	AAON Parts #
PD Round Zone Damper Assembly 6"	ASM02605
PD Round Zone Damper Assembly 8"	ASM02606
PD Round Zone Damper Assembly 10"	ASM02607
PD Round Zone Damper Assembly 12"	ASM02608
PD Round Zone Damper Assembly 14"	ASM02609
PD Round Zone Damper Assembly 16"	ASM02610

Round Slave Dampers	
Description	AAON Parts #
PD Round Slaved Zone Damper Assembly 6"	ASM02605
PD Round Slaved Zone Damper Assembly 8"	ASM02606
PD Round Slaved Zone Damper Assembly 10"	ASM02607
PD Round Slaved Zone Damper Assembly 12"	ASM02608
PD Round Slaved Zone Damper Assembly 14"	ASM02609
PD Round Slaved Zone Damper Assembly 16"	ASM02610

Pressure Independent Round Dampers	
Description	AAON Parts #
PI Round Zone Damper Assembly 6"	ASM02611
PI Round Zone Damper Assembly 8"	ASM02612
PI Round Zone Damper Assembly 10"	ASM02613
PI Round Zone Damper Assembly 12"	ASM02614
PI Round Zone Damper Assembly 14"	ASM02615
PI Round Zone Damper Assembly 16"	ASM02616

Round Bypass Dampers	
Description	AAON Parts #
Round Bypass Dampers Assembly 12"	ASM01929
Round Bypass Dampers Assembly 14"	ASM01930
Round Bypass Dampers Assembly 16"	ASM01931

Slaved Actuator	
Description	AAON Parts #
Slaved VAV/Zone Damper Kit	ASM01851
Slaved VAV/Zone Rectangular Damper Kit	ASM02252

Bypass Actuator	
Description	AAON Parts #
Bypass Rectangular Damper Kit	ASM02338

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