RN Series E Cabinet

Packaged Rooftop Units & Outdoor Air Handling Units

Engineering Catalog

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Extended Life
- 5 Year Compressor Warranty
- 15 Year Aluminized Steel Heat Exchanger Warranty
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- Condenser Coil Guards
- Interior Corrosion Protection
- Coil Polymer E-Coating - 5 Year Coating Warranty
- Stainless Steel Coil Casing
- Stainless Steel Drain Pans

RN Series E Cabinet Feature String Nomenclature

GEN	MJREV	SIZE	SERIES	MNREV	VLT	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	1	2	3A	3B	3C	3D	3E	4A	4B	4C	5A	5B	5C	5D	5E	6A	6B	6C	6D	6E	7	8	9A	9B	9C	9D
RN	A	- 105 -	E	- 0 -	3	- C	A	A	0	A	- 0	0	0	0	0	:	A	0	-	A	A	M	0	L	-	B	0	0	-	0	0	0	0	0	-	0	0	0	0	0	- 0	A	- 0	0	0	0
				- 0	0	- 0	0	- B	-	0	0	0	-	0	0	-	B	A	0	B	-	0	0	-	0	0	0	-	A	0	0	0	0	0	-	E	0	0	0	0	0	0	-	0	0	0	0	0	0	B

10A	10B	11A	11B	12	13A	13B	13C	14	15	16A	16B	16C	16D	17A	17B	18A	18B	18C	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37

MODEL OPTIONS

SERIES AND GENERATION
RN

MAJOR REVISION
A

UNIT SIZE
055 = 55 ton Capacity
065 = 65 ton Capacity
075 = 75 ton Capacity
090 = 90 ton Capacity
105 = 105 ton Capacity
120 = 120 ton Capacity
130 = 130 ton Capacity
140 = 140 ton Capacity

SERIES
E = 55-140 ton units

MINOR REVISION
0

VOLTAGE
2 = 230V/3Φ/60Hz
3 = 460V/3Φ/60Hz
4 = 575V/3Φ/60Hz
8 = 208V/3Φ/60Hz

Model Option A: COOLING/HEAT PUMP

A1: COMPRESSOR STYLE
0 = No Compressor
C = R-410A Variable Speed Scroll Compressor

A2: CONDENSER STYLE
0 = No Condenser
A = Microchannel Air-Cooled Condenser

A3: INDOOR COIL CONFIGURATION
0 = No Cooling Coil
A = Standard Evaporator
B = 6 Row Evaporator
E = 4 Row Chilled Water Coil
F = 6 Row Chilled Water Coil

A4: COOLING HEAT EXCHANGER CONSTRUCTION
0 = Standard
A = Polymer E-Coated Cooling Coil
B = Stainless Steel Cooling Coil Casing
D = Stainless Steel Cooling Coil Casing + Polymer E-Coated Cooling Coil
E = Polymer E-Coated Cond. Coil
J = Polymer E-Coated Evap. And Cond. Coil
T = Stainless Steel Cooling Coil Casing + Polymer E-Coated Evap. And Cond. Coil

A5: COOLING STAGING
0 = No Cooling
A = Full Face Variable Capacity + Tandem On/Off Refrigeration Systems
F = Single Serpentine 8 FPI
G = Half Serpentine 8 FPI
H = Single Serpentine 10 FPI
J = Half Serpentine 10 FPI
K = Single Serpentine 12 FPI
L = Half Serpentine 12 FPI

RN Series E Cabinet Feature String Nomenclature

GEN	MJREV	SIZE	SERIES	MNREV	VLT	A1	A2	A3	A4	A5	**B1**	**B2**	**B3**	**B4**	**B5**	**1**	**2**	**3A**	**3B**	3C	3D	3E	4A	4B	4C	5A	5B	5C	5D	5E	6A	6B	6C	6D	6E	7	8	9A	9B	9C	9D
RN	A	- 105	- E	- 0	- 3	- C	A	A	0	A	- **0**	**0**	**0**	**0**	**0**	**:**	**A**	**0**	- **A**	**A**	M	0	L	-	B	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	A	-	0	0	0	0
				- 0	0 -	0	0 -	B	-	0	0	0	-	0	0	-	B	A	0	B	-	0	0	-	0	0	0	-	A	0	0	0	0	0	-	E	0	0	0	0	0	0	-	0	0	0	0	0	0	B
				10A	10B		11A	11B		12		13A	13B	13C		14	15		16A	16B	16C	16D		17A	17B		18A	18B	18C		19	20	21	22	23	24		25	26	27	28	29	30		31	32	33	34	35	36	37

Model Option B: HEATING

B1: HEAT TYPE
0 = No Heat
A = Electric Heat
C = Natural Gas
F = LP Gas
J = Hot Water Coil
L = Steam Distributing Coil

B2: HEAT CONSTRUCTION
0 = Standard
B = Stainless Steel Heat Exchanger
D = High Altitude Stainless Steel Heat Exchanger
G = Polymer E-Coated Heating Coil

B3: HEAT DESIGNATION
0 = No Heat
1 = Heat 1
2 = Heat 2
3 = Heat 3
4 = Heat 4
5 = Heat 5
6 = Heat 6
7 = Heat 7
A = 1 Row
E = 2 Row

B4: HEAT STAGING
0 = No Heat
B = 2 Stage
C = 3 Stage
D = 4 Stage
E = 5 Stage
F = 6 Stage
K = Modulating Gas Heat Temp Control
L = High Turndown Modulating Gas Heat – Temperature Control
M = Modulating SCR with Temperature Control
N = Modulating SCR with External 0-10 VDC
P = Single Serpentine 8 FPI
Q = Half Serpentine 8 FPI

B4: HEAT STAGING Continued
R = Single Serpentine 10 FPI
S = Half Serpentine 10 FPI
T = Single Serpentine 12 FPI
U = Half Serpentine 12 FPI

B5: HEAT PUMP AUX HEATING
0 = No Heat Pump

1: UNIT ORIENTATION
A = Draw Through Compact Supply Fan, End Compressor Compartment, Both Side Access
D = Draw Through Compact Supply Fan, Non-Compressorized, End Control Panel, Both Side Access

2: SUPPLY & RETURN LOCATIONS
0 = Bottom Supply--Bottom Return
A = Bottom Supply--No Return

Feature 3: SUPPLY FAN OPTIONS
3A: SUPPLY FAN QUANTITY
0 = 1 Fan
A = 2 Fans

3B: SUPPLY FAN CONFIGURATION
0 = No VFDs + Full Width Fan
A = 1 Fan per VFD + Full Width Fan
B = 2 Fans per VFD + Full Width Fan
E = No VFDs + Narrow Width Fan
F = 1 Fan per VFD + Narrow Width Fan
G = 2 Fans per VFD + Narrow Width Fan
K = Option 0 + Inlet Backdraft Dampers
L = Option A + Inlet Backdraft Dampers
M = Option B + Inlet Backdraft Dampers
Q = Option E + Inlet Backdraft Dampers
R = Option F + Inlet Backdraft Dampers
S = Option G + Inlet Backdraft Dampers

RN Series E Cabinet Feature String Nomenclature

GEN	MJREV	SIZE	SERIES	MNREV	VLT	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	1	2	3A	3B	**3C**	**3D**	**3E**	4A	4B	4C	5A	5B	5C	5D	5E	6A	6B	6C	6D	6E	7	8	9A	9B	9C	9D
RN	A	- 105	- E	- 0	- 3	- C	A	A	0	A	- 0	0	0	0	0	: A	0	- A	A	**M**	**0**	**L**	- B	0	0	- 0	0	0	0	0	- 0	0	0	0	0	- 0	A	- 0	0	0	0
				- 0	0	- 0	0	- B	- 0	0	0	- 0	0	- B	A	0	B	- 0	0	- 0	0	0	- A	0	0	0	0	0	- E	0	0	0	0	0	0	- 0	0	0	0	0	0	B
				10A	10B	11A	11B	12		13A	13B	13C	14	15		16A	16B	16C	16D	17A	17B		18A	18B	18C	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37

3C: SUPPLY FAN SIZE

0 = 13.5" Direct Drive Backward Curved Plenum Aluminum
F = 24" Direct Drive Backward Curved Plenum Aluminum
G = 27" Direct Drive Backward Curved Plenum Aluminum
H = 30" Direct Drive Backward Curved Plenum Aluminum
J = 30" Direct Drive Backward Curved Plenum Steel
K = 33" Direct Drive Backward Curved Plenum Steel
L = 36.5" Direct Drive Backward Curved Plenum Aluminum
M = 42.5" Direct Drive Backward Curved Plenum Aluminum

3D: SUPPLY FAN MOTOR TYPE

0 = High Efficiency Open Motor (1170 nominal rpm)
A = High Efficiency Open Motor (1760 nominal rpm)
K = High Efficiency Totally Enclosed Motor (1170 nominal rpm)
L = High Efficiency Totally Enclosed Motor (1760 nominal rpm)

3E: SUPPLY FAN MOTOR SIZE

0 = 0.25 hp
A = 0.33 hp
B = 0.5 hp
C = 0.75 hp
D = 1 hp
E = 1.5 hp
F = 2 hp
G = 3 hp
H = 5 hp
J = 7.5 hp
K = 10 hp
L = 15 hp
M = 20 hp
N = 25 hp
P = 30 hp
Q = 40 hp
R = 50 hp
S = 60 hp
T = 75 hp

RN Series E Cabinet Feature String Nomenclature

GEN	MJREV	SIZE	SERIES	MNREV	VLT	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	1	2	3A	3B	3C	3D	3E	**4A**	**4B**	**4C**	**5A**	**5B**	**5C**	5D	5E	6A	6B	6C	6D	6E	7	8	9A	9B	9C	9D
RN	A	- 105	- E	- 0	- 3	- C	A	A	0	A	- 0	0	0	0	0	: A	0	- A	A	M	0	L	- **B**	**0**	**0**	**- 0**	**0**	**0**	0	0	- 0	0	0	0	0	- 0	A	- 0	0	0	0
			- 0	0	- 0	0	- B	-	0	0	0	- 0	0	- B	A	0	B	- 0	0	- 0	0	0	- A	0	0	0	0	0	- E	0	0	0	0	0	0	- 0	0	0	0	0	0	B

10A	10B	11A	11B	12	13A	13B	13C	14	15	16A	16B	16C	16D	17A	17B	18A	18B	18C	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37

Feature 4: RETURN/OUTSIDE AIR OPTIONS

4A: OUTSIDE AIR SECTION

0 = 100% Outside Air
A = 100% Outside Air with Motorized Dampers
B = Manual Outside Air + Return Air Opening
C = Motorized Outside Air Dampers + Return Air Opening
D = 100% Return Air
E = Economizer
G = Econ + Power Exhaust (Plenum Fans)
J = Econ + Power Return (Plenum Fans)
Q = Econ + Energy Recovery + Bypass Damper

4B: ENERGY RECOVERY TYPE

0 = No Energy Recovery
A = Polymer Energy Recovery Wheel
B = Polymer Energy Recovery Wheel + 1% Purge
C = Aluminum Energy Recovery Wheel
D = Aluminum Energy Recovery Wheel + 1% Purge

4C: ENERGY RECOVERY SIZE

0 = No Energy Recovery
A = Low CFM Enthalpy
B = High CFM Enthalpy
E = Low CFM Sensible
F = High CFM Sensible
J = Low CFM Enthalpy + Exhaust Filters
K = High CFM Enthalpy + Exhaust Filters
N = Low CFM Sensible + Exhaust Filters
P = High CFM Sensible + Exhaust Filters

Feature 5: RETURN FAN OPTIONS

5A: RETURN FAN QUANTITY

0 = No Return Fan
A = 1 Fan
B = 2 Fans

5B: RETURN FAN CONFIGURATION

0 = No Return Fan
A = No VFDs + Full Width Fan
B = 1 Fan per VFD + Full Width Fan
C = 2 Fans per VFD + Full Width Fan
F = No VFDs + Narrow Width Fan
G = 1 Fan per VFD + Narrow Width Fan
H = 2 Fans per VFD + Narrow Width Fan
L = Option A + Inlet Backdraft Dampers
M = Option B + Inlet Backdraft Dampers
N = Option C + Inlet Backdraft Dampers
R = Option F + Inlet Backdraft Dampers
S = Option G + Inlet Backdraft Dampers
T = Option H + Inlet Backdraft Dampers

5C: RETURN FAN SIZE

0 = No Return Fan
M = 24” Direct Drive Backward Curved Plenum Aluminum
N = 27” Direct Drive Backward Curved Plenum Aluminum
P = 30” Direct Drive Backward Curved Plenum Aluminum
Q = 30” Direct Drive Backward Curved Plenum Steel
R = 33” Direct Drive Backward Curved Plenum Steel
S = 36.5” Direct Drive Backward Curved Plenum Aluminum

RN Series E Cabinet Feature String Nomenclature

GEN	MJREV	SIZE	SERIES	MNREV	VLT	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	1	2	3A	3B	3C	3D	3E	4A	4B	4C	5A	5B	5C	**5D**	**5E**	**6A**	**6B**	6C	6D	6E	7	8	9A	9B	9C	9D
RN	A	- 105	- E	- 0	- 3	- C	A	A	0	A	- 0	0	0	0	0	:	A	0	-	A	A	M	0	L	-	B	0	0	-	0	0	0	**0**	**0**	**-**	**0**	**0**	0	0	0	- 0	A	- 0	0	0	0
			-	0	0	- 0	0	- B	-	0	0	0	-	0	0	-	B	A	0	B	-	0	0	-	0	0	0	-	A	0	0	0	0	0	-	E	0	0	0	0	0	-	0	0	0	0	0	0	B
				10A	10B		11A	11B		12		13A	13B	13C		14	15		16A	16B	16C	16D		17A	17B		18A	18B	18C		19	20	21	22	23	24		25	26	27	28	29	30		31	32	33	34	35	36	37

5D: RETURN FAN MOTOR TYPE

0 = No Return Fan
A = High Efficiency Open Motor (1170 nominal rpm)
B = High Efficiency Open Motor (1760 nominal rpm)
L = High Efficiency Totally Enclosed Motor (1170 nominal rpm)
M = High Efficiency Totally Enclosed Motor (1760 nominal rpm)

5E: RETURN MOTOR SIZE

0 = No Return Fan
A = 0.25 hp
B = 0.33 hp
C = 0.5 hp
D = 0.75hp
E = 1 hp
F = 1.5 hp
G = 2 ph
H = 3 hp
J = 5 hp
K = 7.5 hp
L = 10 hp
M = 15 hp
N = 20 hp
P = 25 hp
Q = 30 hp
R = 40 hp
S = 50 hp
T = 60 hp
U = 75 hp

Feature 6: EXHAUST FAN OPTIONS

6A: EXHAUST FAN QUANTITY

0 = No Exhaust Fan
A = 1 Fan
B = 2 Fans

6B: EXHAUST FAN CONFIGURATION

0 = No Exhaust Fan
A = No VFDs + Full Width Fan
B = 1 Fan per VFD + Full Width Fan
C = 2 Fans per VFD + Full Width Fan
F = No VFDs + Narrow Width Fan
G = 1 Fan per VFD + Narrow Width Fan
H = 2 Fans per VFD + Narrow Width Fan
L = Option A + Inlet Backdraft Dampers
M = Option B + Inlet Backdraft Dampers
N = Option C + Inlet Backdraft Dampers
R = Option F + Inlet Backdraft Dampers
S = Option G + Inlet Backdraft Dampers
T = Option H + Inlet Backdraft Dampers

RN Series E Cabinet Feature String Nomenclature

GEN	MJREV	SIZE	SERIES	MNREV	VLT	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	1	2	3A	3B	3C	3D	3E	4A	4B	4C	5A	5B	5C	5D	5E	6A	6B	**6C**	**6D**	**6E**	7	8	9A	9B	9C	9D
RN	A	- 105	- E	- 0	- 3	- C	A	A	0	A	- 0	0	0	0	0	:	A	0	-	A	A	M	0	L	- B	0	0	-	0	0	0	0	0	-	0	0	**0**	**0**	**0**	- 0	A	- 0	0	0	0
				- 0	0	- 0	0	- B	-	0	0	0	-	0	0	-	B	A	0	B	-	0	0	-	0	0	0	-	A	0	0	0	0	0	-	E	0	0	0	0	0	0	-	0	0	0	0	0	0	B
				10A	10B	11A	11B	12			13A	13B	13C	14	15	16A	16B	16C	16D	17A	17B	18A	18B	18C	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37

6C: EXHAUST FAN SIZE

0 = No Exhaust Fan
M = 24" Direct Drive Backward Curved Plenum Aluminum
N = 27" Direct Drive Backward Curved Plenum Aluminum
P = 30" Direct Drive Backward Curved Plenum Aluminum
Q = 30" Direct Drive Backward Curved Plenum Steel
R = 33" Direct Drive Backward Curved Plenum Steel
S = 36.5" Direct Drive Backward Curved Plenum Aluminum
T = 42.5" Direct Drive Backward Curved Plenum Aluminum

6D: EXHAUST FAN MOTOR TYPE

0 = No Exhaust Fan
A = High Efficiency Open Motor (1170 nominal rpm)
B = High Efficiency Open Motor (1760 nominal rpm)
L = High Efficiency Totally Enclosed Motor (1170 nominal rpm)
M = High Efficiency Totally Enclosed Motor (1760 nominal rpm)

6E: EXHAUST MOTOR SIZE

0 = No Exhaust Fan
A = 0.25 hp
B = 0.33 hp
C = 0.5 hp
D = 0.75hp
E = 1 hp
F = 1.5 hp
G = 2 ph
H = 3 hp
J = 5 hp
K = 7.5 hp
L = 10 hp
M = 15 hp
N = 20 hp
P = 25 hp
Q = 30 hp
R = 40 hp
S = 50 hp
T = 60 hp
U = 75 hp

RN Series E Cabinet Feature String Nomenclature

GEN	MJREV	SIZE	SERIES	MNREV	VLT	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	1	2	3A	3B	3C	3D	3E	4A	4B	4C	5A	5B	5C	5D	5E	6A	6B	6C	6D	6E	**7**	**8**	**9A**	**9B**	**9C**	**9D**
RN	A	- 105	- E	- 0	- 3	- C	A	A	0	A	- 0	0	0	0	0	: A	0	- A	A	M	0	L	- B	0	0	- 0	0	0	0	0	- 0	0	0	0	0	- **0**	**A**	- **0**	**0**	**0**	**0**
				- **0**	**0**	- **0**	**0**	- **B**	- **0**	0	0	- 0	0	- B	A	0	B	- 0	0	- 0	0	0	- A	0	0	0	0	0	- E	0	0	0	0	0	0	- 0	0	0	0	0	0	B
				10A	**10B**	**11A**	**11B**	**12**	**13A**	13B	13C	14	15	16A	16B	16C	16D	17A	17B	18A	18B	18C	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37

7: O/A CONTROL

0 = Standard (No Actuator)
C = Fully Modulating Actuator - Sensible Limit
D = Fully Modulating Actuator - Enthalpy Limit
E = DDC Actuator
P = Option C + CO_2 Override
Q = Option D + CO_2 Override
R = Option E + CO_2 Override
U = 2 Position Actuator
V = Fault Detection and Diagnostics Controller (FDD) Sensible Limit
W = FDD Enthalpy Limit
Y = Option V + CO_2 Override
Z = Option W + CO_2 Override

8: RETURN & EXHAUST OPTIONS

0 = No Return Opening
A = Standard Return Opening without EA Dampers
E = Standard Return Opening + Motorized EA Dampers

Feature 9: FILTER OPTIONS

9A: UNIT FILTER TYPE

0 = 2" Pleated MERV 8
A = 4" Pleated MERV 8
B = 2" Pleated MERV 8 + 4" Pleated MERV 11
C = 2" Pleated MERV 8 + 4" Pleated MERV 13
D = 2" Pleated MERV 8 + 4" Pleated MERV 14

9B: UNIT FILTER BOX SIZE/LOCATION

0 = Standard Filters in Standard Position
B = High Eff Filters in Standard Position

9C: FINAL FILTER TYPE

0 = No Final Filters

9D: FILTER OPTIONS

0 = None
A = Clogged Filter Switch - Unit Filters
E = Magnehelic Gauge - Unit Filters
J = CFS + Magnehelic Gauge - Unit Filters

Feature 10: REFRIGERATION CONTROL

10A: REFRIGERATION CONTROL

0 = None
E = Freeze Stats (each circuit)

10B: BLANK

0 = None

Feature 11: REFRIGERATION OPTIONS

11A: REFRIGERATION OPTIONS

0 = None
D = Hot Gas Bypass Non-Variable Compressor Circuits (HGBNV)
M = HGBNV + Parallel Modulating Hot Gas Reheat -Lag Circuit
W = HGBNV + Parallel Modulating Hot Gas Reheat -Lag Circuit - Polymer E-Coated

11B: BLANK

0 = None

12: REFRIGERATION ACCESSORIES

0 = None
B = Compressor Isolation Valves
C = Sight Glass + B

Feature 13: POWER OPTIONS

13A: UNIT DISCONNECT TYPE

0 = Single Point Power - Standard Power Block
A = Single Point Power - Non-fused Disconnect Power Switch
B = Single Point Power - Circuit Breaker

RN Series E Cabinet Feature String Nomenclature

GEN	MJREV	SIZE	SERIES	MNREV	VLT	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	1	2	3A	3B	3C	3D	3E	4A	4B	4C	5A	5B	5C	5D	5E	6A	6B	6C	6D	6E	7	8	9A	9B	9C	9D
RN	A	- 105	- E	- 0	- 3	- C	A	A	0	A	- 0	0	0	0	0	:	A	0	-	A	A	M	0	L	- B	0	0	-	0	0	0	0	0	-	0	0	0	0	0	0	- 0	A	- 0	0	0	0
				- 0	0	- 0	0	- B	-	0	**0**	**0**	**-**	**0**	**0**	-	B	A	0	B	-	0	0	-	0	0	0	-	A	0	0	0	0	0	-	E	0	0	0	0	0	0	- 0	0	0	0	0	0	B
				10A	10B		11A	11B		12		13A	**13B**	**13C**		**14**	**15**		16A	16B	16C	16D		17A	17B		18A	18B	18C		19	20	21	22	23	24		25	26	27	28	29	30		31	32	33	34	35	36	37

13B: DISCONNECT 1 SIZE

0 = Power Block
A = 15 amps
B = 20 amps
C = 25 amps
D = 30 amps
E = 35 amps
F = 40 amps
G = 45 amps
H = 50 amps
J = 60 amps
K = 70 amps
L = 80 amps
M = 90 amps
N = 100 amps
P = 110 amps
Q = 125 amps
R = 150 amps
S = 175 amps
T = 200 amps
U = 225 amps
V = 250 amps
W = 300 amps
Y = 350 amps
Z = 400 amps
1 = 450 amps
2 = 500 amps
3 = 600 amps
5 = 800 amps
7 = 1200 amps

13C: BLANK

0 = None

14: SAFETY OPTIONS

0 = None
A = RA & SA Firestat
B = RA Smoke Detector
C = SA Smoke Detector
E = Remote Safety Shutdown Terminals
F = Option A + B
G = Option A + C
J = Option A + E
K = Option B + C
M = Option B + E
P = Option C + E
R = Option A + B + C
T = Option A + B + E
V = Option A + C + E
Z = Option B + C + E
4 = Option A + B + C + E

15: ACCESSORIES

0 = None
A = Low Limit Control
B = Phase & Brown Out Protection
C = Cooling Coil UV Lights
E = Compressor Sound Blankets
F = Option A + B
G = Option A + C
J = Option A + E
K = Option B + C
M = Option B + E
P = Option C + E
R = Option A + B + C
T = Option A + B + E
V = Option A + C + E
Z = Option B + C + E
4 = Option A + B + C + E

RN Series E Cabinet Feature String Nomenclature

GEN	MJREV	SIZE	SERIES	MNREV	VLT	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	1	2	3A	3B	3C	3D	3E	4A	4B	4C	5A	5B	5C	5D	5E	6A	6B	6C	6D	6E	7	8	9A	9B	9C	9D
RN	A	- 105	- E	- 0	- 3	- C	A	A	0	A	- 0	0	0	0	0	: A	0	- A	A	M	0	L	- B	0	0	- 0	0	0	0	0	- 0	0	0	0	0	0	- 0	A	- 0	0	0	0
				- 0	0	- 0	0	- B	-	0	0	0	- 0	0	-	**B**	**A**	**0**	**B**	**-**	**0**	**0**	**-**	**0**	**0**	**0**	**-**	**A**	**0**	**0**	0	0	0	- E	0	0	0	0	0	- 0	0	0	0	0	0	B
				10A	10B		11A	11B		12		13A	13B	13C		14	15	**16A**	**16B**	**16C**	**16D**		**17A**	**17B**		**18A**	**18B**	**18C**		**19**	**20**	**21**	22	23	24		25	26	27	28	29	30		31	32	33	34	35	36	37

Feature 16: UNIT CONTROLS

16A: CONTROL SEQUENCE

0 = Standard Terminal Block for Thermostat
A = Terminal Block for Thermostat + Isolation Relays
B = Single Zone VAV Unit Controller - VAV Cool + CAV Heat
D = VAV Unit Controller - VAV Cool + CAV Heat
E = Constant Air Volume Unit Controller - CAV Cool + CAV Heat
F = Makeup Air Unit Controller
M = Field Installed DDC Controls by Others
N = Field Installed DDC Controls + Isolation Relays
P = Factory Installed DDC Controls by Others + Isolation Relays

16B: CONTROL SUPPLIER

0 = None
A = AAON Controls
C = AAON Controls Supervisory

16C: CONTROL SUPPLIER OPTIONS

0 = None

16D: BMS CONNECTION & DIAGNOSTICS

0 = None
B = BACnet MSTP
K = BACnet MSTP with Diagnostics

Feature 17: PREHEAT OPTIONS

17A: PREHEAT CONFIGURATION

0 = Standard - None
D = Hot Water Preheat Coil - Mixed Air
E = Steam Distributing Preheat Coil - Mixed Air

17B: PREHEAT SIZING

0 = Standard - None
A = 1 Row Single Serpentine 8 fpi
B = 1 Row Single Serpentine 10 fpi
C = 1 Row Single Serpentine 12 fpi

17B: PREHEAT SIZING Continued

D = 1 Row Half Serpentine 8 fpi
E = 1 Row Half Serpentine 10 fpi
F = 1 Row Half Serpentine 12 fpi
K = 2 Row Single Serpentine 8 fpi
L = 2 Row Single Serpentine 10 fpi
M = 2 Row Single Serpentine 12 fpi
N = 2 Row Half Serpentine 8 fpi
P = 2 Row Half Serpentine 10 fpi
Q = 2 Row Half Serpentine 12 fpi

Feature 18: OPTION BOXES

18A: BOX LOCATION

0 = None
5 = Empty Energy Recovery Wheel Option Box

18B: BOX SIZE

0 = None
W = Empty Energy Recovery Wheel Option Box

18C: BOX ACCESSORIES

0 = None

19: OUTSIDE AIR ACCESSORIES

0 = No Outside Air Hood - 100% Return Air
A = Outside Air Hood
B = Outside Air Hood with Metal Mesh Filters
C = Option A + Air Flow Measuring Station Size A
D = Option A + Air Flow Measuring Station Size B
E = Option A + Air Flow Measuring Station Size C
G = Option B + Air Flow Measuring Station Size A
H = Option B + Air Flow Measuring Station Size B
J = Option B + Air Flow Measuring Station Size C

20: CABINET OPTIONS

0 = None
B = SA & RA Burglar Bars

21: ACCESSORIES

0 = None

RN Series E Cabinet Feature String Nomenclature

GEN	MJREV	SIZE	SERIES	MNREV	VLT	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	1	2	3A	3B	3C	3D	3E	4A	4B	4C	5A	5B	5C	5D	5E	6A	6B	6C	6D	6E	7	8	9A	9B	9C	9D
RN	A	- 105	- E	- 0	- 3	- C	A	A	0	A	- 0	0	0	0	0	:	A	0	-	A	A	M	0	L	-	B	0	0	-	0	0	0	0	0	-	0	0	0	0	0	- 0	A	- 0	0	0	0
				- 0	0 -	0	0 -	B	-	0	0	0	-	0	0	-	B	A	0	B	-	0	0	-	0	0	0	-	A	0	0	**0**	**0**	**0**	-	**E**	**0**	**0**	**0**	**0**	**0**	**-**	0	0	0	0	0	0	B
				10A	10B		11A	11B		12		13A	13B	13C		14	15		16A	16B	16C	16D		17A	17B		18A	18B	18C		19	20	21	**22**	**23**	**24**		**25**	**26**	**27**	**28**	**29**	**30**		31	32	33	34	35	36	37

22: MAINTENANCE ACCESSORIES

0 = None
A = Factory Wired 115V Convenience Outlet
B = Field Wired 115V Convenience Outlet
C = Control Panel LED Service Lights
D = Remote Start/Stop Contacts
E = Supply Fan Auxiliary Contacts
F = Option A + C
G = Option A + D
H = Option A + E
J = Option B + C
K = Option B + D
L = Option B + E
M = Option C + D
N = Option C + E
P = Option D + E
Q = Option A + C + D
R = Option A + C + E
S = Option A + D + E
T = Option B + C + D
U = Option B + C + E
V = Option B + D + E
W = Option C + D + E
Y = Option A + C+ D + E
Z = Option B + C + D + E

23: CODE OPTIONS

0 = Standard - ETL U.S.A. Listing
A = Chicago Code
B = ETL U.S.A. + Canada Listing

24: SHIPPING SPLITS

0 = Standard

25: AIR COOLED CONDENSER ACESSORIES

0 = Standard
E = VFD Condenser Fan Head Pressure Control
K = Low Sound Condenser Fan Head Pressure Control

26: Blank

0 = None

27: WATER - COOLED CONDENSER ACCESSORIES

0 = None (No Water Condenser)

28: ENERGY RECOVERY WHEEL ACCESSORIES

0 = None
A = Energy Recovery Wheel Defrost - Start/Stop
B = Energy Recovery Wheel Rotation Detection
F = Option A + B

29: VFD Options

0 = None
A = Shaft Grounding kit on all SA, RA, EA motors
C = BACNet VFD on all motors
G = Option A + C

30: Miscellaneous Options

0 = Standard
A = High Condensate Level Switch

RN Series E Cabinet Feature String Nomenclature

GEN	MJREV	SIZE	SERIES	MNREV	VLT	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	1	2	3A	3B	3C	3D	3E	4A	4B	4C	5A	5B	5C	5D	5E	6A	6B	6C	6D	6E	7	8	9A	9B	9C	9D
RN	A	- 105	- E	- 0	- 3	- C	A	A	0	A	- 0	0	0	0	0	:	A	0	-	A	A	M	0	L	-	B	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	A	-	0	0	0	0
			-	0	0	-	0	0	-	B	-	0	0	0	-	0	0	-	B	A	0	B	-	0	0	-	0	0	0	-	A	0	0	0	0	0	-	E	0	0	0	0	0	**-**	**0**	**0**	**0**	**0**	**0**	**B**
				10A	10B		11A	11B		12		13A	13B	13C		14	15		16A	16B	16C	16D		17A	17B		18A	18B	18C		19	20	21	22	23	24		25	26	27	28	29	30	**31**	**32**	**33**	**34**	**35**	**36**	**37**

31: BLANK
0 = Standard

32: BLANK
0 = Standard

33: BLANK
0 = Standard

34: BLANK
0 = Standard

35: WARRANTY
0 = Standard Warranty

36: CABINET MATERIAL
0 = Galvanized Cabinet - Double Wall + R-13 Foam Insulation

37: SPECIALS & PAINT
B = Premium AAON Gray Paint Exterior
X = SPA + Premium AAON Gray Paint Exterior
4 = SPA + Special Exterior Paint Color

Model Option
Unit Size

Example:

RNA - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0 - 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

The first number of the model string designates nominal tons of cooling at AHRI conditions for RN Series E Cabinet units. Actual capacities will vary with conditions. Refer to the AAON ECat software for performance and cooling capacities at design conditions.

Table 1 - Unit Series, Major Revision, Sizes, Series, and Minor Revision

Series	Major Revision	Unit Size Air-Cooled Condenser	Series	Minor Revision	Compressors/Circuits
RN	A	055	E	0	2 Variable Speed Scroll + 1 Tandem On/Off Scroll Compressors / 3 Circuits
		065			
		075			
		090			
		105			
		120			
		130			
		140			

Model Option
Voltage

Example:

RN A - 105 - E - 0 - **3** - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0 - 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

All units have single point power blocks with grounding lugs and 120VAC control circuits for compressorized units and 24VAC control circuits for non-compressorized units.

2 = 230V/3Φ/60Hz
3 = 460V/3Φ/60Hz
4 = 575V/3Φ/60Hz
8 = 208V/3Φ/60Hz

Model Option
Model Option A1 - Compressor Style

Example:

RN A - 105 - E - 0 - 3 - **C** A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0 - 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *No Compressor* - This selection will not include compressors.
C = *R-410A Variable Speed Scroll Compressor* - Compressorized DX cooling with R-410A using individually circuited VFD compatible scroll compressors. See Model Option A5 for selection of modulation options. A suction pressure sensor will be provided per variable speed compressor. Option provides the unit with tight temperature control, improved humidity control and energy savings at part load conditions.

Figure 1 - Variable Speed Scroll Compressor Deck

Model Option

Model Option A2 - Condenser Style

Example:

RN A - 105 - E - 0 - 3 - C**A** A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *No Condenser* - This selection will not include a condenser coil section.
A = *Microchannel Air-Cooled Condenser* - Air-cooled condenser with microchannel coils.

Figure 2 - Air-Cooled Condenser

Model Option

Model Option A3 - Indoor Coil Configuration

Example:

RN A - 105 - E - 0 - 3 - C A**A** 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *No Cooling Coil*
A = *Standard Evaporator* - Standard capacity DX evaporator coils are copper tubes with aluminum fins. This option is not available on RNA-130 and RNA-140.
B = *6 Row Evaporator* - Six row, high capacity DX evaporator coils are copper tubes with aluminum fins. High capacity coils improve unit's energy efficiency and dehumidification capability.
E = *4 Row Chilled Water Coil Standard Size* - Four row chilled water cooling coil. No valves or valve controls are included with this option. Units include two coils and thus include two inlet and two outlet water connections. Chilled water coils are copper tubes with aluminum fins.

Model Option A3 - Indoor Coil Configuration Continued

F = *6 Row Chilled Water Coil Standard Size* - Six row chilled water cooling coil. No valves or valve controls are included with this option. Units include two coils and thus include two inlet and two outlet water connections. Chilled water coils are copper tubes with aluminum fins.

Model Option

Model Option A4 - Cooling Heat Exchanger Construction

Example:

RN A - 105 - E - 0 - 3 - C A A **0** A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0 - 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *Standard*

A = *Polymer E-Coated Cooling Coil* - Polymer e-coating is applied only to the cooling coils. Complete coil and casing are coated. Coating capable of withstanding at least 10,000 hours of salt spray per ASTM B117-90, yet is only 0.8-1.2 mils thick and has excellent flexibility. Option is intended for use in coastal saltwater conditions under the stress of heat, salt, sand and wind and is applicable to all corrosive environments where a polymer e-coating is acceptable. Coating includes a 5 year warranty, from the date of original equipment shipment from the factory. Instructions coil cleaning, maintenance, and recording keeping must be followed. Refer to the unit Installation, Operation and Maintenance Manual.

B = *Stainless Steel Cooling Coil Casing* - 18 gauge 304 stainless steel casing only on the cooling coils.

D = *Polymer E-Coated Cooling Coil + Stainless Steel Cooling Coil Casing* - 18 gauge 304 stainless steel casing only on the cooling coils and polymer e-coating applied only to the cooling coils. Complete coil and casing are coated. Coating capable of withstanding at least 10,000 hours of salt spray per ASTM B117-90, yet is only 0.8-1.2 mils thick and has excellent flexibility. Option is intended for use in coastal saltwater conditions under the stress of heat, salt, sand and wind and is applicable to all corrosive environments where a polymer e-coating is acceptable. Coating includes a 5 year warranty, from the date of original equipment shipment from the factory. Instructions coil cleaning, maintenance, and recording keeping must be followed. Refer to the unit Installation, Operation and Maintenance Manual.

E = *Polymer E-Coated Condenser Coil* - Polymer e-coating is applied only to the condenser coils. Complete coil and casing are coated. Coating capable of withstanding at least 10,000 hours of salt spray per ASTM B117-90, yet is only 0.8-1.2 mils thick and has excellent flexibility. Option is intended for use in coastal saltwater conditions under the stress of heat, salt, sand and wind and is applicable to all corrosive environments where a polymer e-coating is acceptable. Coating includes a 5 year warranty, from the date of original equipment shipment from the factory. Instructions coil cleaning, maintenance, and recording keeping must be followed. Refer to the unit Installation, Operation and Maintenance Manual.

Model Option A4 - Cooling Heat Exchanger Construction Continued

J = *Polymer E-Coated Evaporator and Condenser Coils* - Polymer e-coating applied to both the condenser and evaporator coils. Complete coil and casing are coated. Coating capable of withstanding at least 10,000 hours of salt spray per ASTM B117-90, yet is only 0.8-1.2 mils thick and has excellent flexibility. Option is intended for use in coastal saltwater conditions under the stress of heat, salt, sand and wind and is applicable to all corrosive environments where a polymer e-coating is acceptable. Coating includes a 5 year warranty, from the date of original equipment shipment from the factory. Instructions coil cleaning, maintenance, and recording keeping must be followed. Refer to the unit Installation, Operation and Maintenance Manual.
T = *Stainless Steel Coil Casing (Evaporator Only) and Polymer E-Coated Evaporator & Condenser Coil* - 18 gauge 304 stainless steel casing only on the evaporator coils and polymer e-coating applied to the evaporator coils and condenser coils. Complete coil and casing are coated. Coating capable of withstanding at least 10,000 hours of salt spray per ASTM B117-90, yet is only 0.8-1.2 mils thick and has excellent flexibility. Option is intended for use in coastal saltwater conditions under the stress of heat, salt, sand and wind and is applicable to all corrosive environments where a polymer e-coating is acceptable. Coating includes a 5 year warranty, from the date of original equipment shipment from the factory. Instructions coil cleaning, maintenance, and recording keeping must be followed. Refer to the unit Installation, Operation and Maintenance Manual.

Model Option

Model Option A5 - Cooling Staging

Example:

RN A - 105 - E - 0 - 3 - C A A 0 **A** - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *No Cooling* - Heating only air handling unit.
A = *Full Face Variable Speed + Tandem On/Off Comp* - Modulating DX cooling unit. Units include two variable speed scroll compressors and one tandem on/off compressor. With factory provided controls, on/off compressors are staged on while the variable capacity compressors modulate their capacity as needed.
F= *Single Serpentine 8 fpi* - Chilled water coil with single serpentine circuitry and 8 fins per inch. No valves or valve controls are included with this option.
G = *Half Serpentine 8 fpi* - Chilled water coil with half serpentine circuitry and 8 fins per inch. No valves or valve controls are included with this option.
H = *Single Serpentine 10 fpi* - Standard chilled water coil option with single serpentine circuitry and 10 fins per inch. No valves or valve controls are included with this option.

Model Option A5 - Cooling Staging Continued

J = *Half Serpentine 10 fpi* - Chilled water coil with half serpentine circuitry and 10 fins per inch. No valves or valve controls are included with this option.
K = *Single Serpentine 12 fpi* - Chilled water coil with single serpentine circuitry and 12 fins per inch. No valves or valve controls are included with this option.
L = *Half Serpentine 12 fpi* - Chilled water coil with half serpentine circuitry and 12 fins per inch. No valves or valve controls are included with this option.

Model Option

Model Option B1 - Heat Type

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - **0** 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *No Heating*
A = *Electric Heat* - Electric heater with multiple elements.
C = *Natural Gas* - Natural gas heater. RN Series E cabinet units (55, 65, and 75-140 tons) require two gas connections, one on the right side and one on the left side of the cabinet.
F = *LP Gas* - Liquid propane gas heater. RN Series E cabinet units (55, 65, and 75-140 tons) require two gas connections, one on the right side and one on the left side of the cabinet.
J = *Hot Water Coil* - Hot water heating coil. No valves or valve controls are included with this option.
L = *Steam Distributing Coil* - Steam heating coil. No valves or valve controls are included with this option. The maximum operating pressure for steam coils is 25 psi.

Model Option

Model Option B2 - Heat Construction

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 **0** 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *No Heat*

Model Option B2 - Heat Construction Continued

B = *Stainless Steel Heat Exchanger* - Natural gas or liquid propane gas heater with 304 stainless steel heat exchanger with a 25 year non-prorated warranty. Stainless steel heat exchangers are required where the outside air rate is greater than or equal to 50% of the supply cfm or where the temperature rise across the heater exceeds the rating for the aluminized steel option (70°F). The maximum temperature rise for stainless steel heat exchangers is 100°F. The maximum outlet temperature is 180°F.

D = *High Altitude Stainless Steel* - Natural gas or liquid propane gas heater with 304 stainless steel heat exchanger with a 25 year non-prorated warranty. Burner orifices are chosen based on altitude at or above 2,000 feet as selected in AAON ECat. Stainless steel heat exchangers are required where the outside air rate is greater than or equal to 50% of the supply cfm or where the temperature rise across the heater exceeds the rating for the aluminized steel option (70°F). The maximum temperature rise for stainless steel heat exchangers is 100°F. The maximum outlet temperature is 180°F.

G = *Hot Water Polymer E-Coated Coil* - Hot water coil with a polymer e-coating applied to the complete coil and casing. Coating exceeds a 10,000 hour salt spray test per ASTM B 117-90 requirements, yet is only 0.8-1.2 mils thick and has excellent flexibility. Option is intended for use in coastal saltwater conditions under the stress of heat, salt, sand and wind and is applicable to all corrosive environments where a polymer e-coating is acceptable. No valves or valve controls are included with this option. Coating includes a 5 year warranty, from the date of original equipment shipment from the factory. The first 12 months from the date of equipment startup, or 18 months from the date of original equipment shipment from the factory, whichever is less, will be covered under the standard AAON limited parts warranty. The remaining period of the warranty will be covered by Electrofin. The Electrofin written instructions for installation, operation, coil cleaning, maintenance, and recording keeping must be followed. Refer to the Electrofin Terms and Conditions of Sale.

Model Option

Model Option B3 - Heat Designation

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 **0** 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0 - 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = No Heat
1 = Heat 1
2 = Heat 2
3 = Heat 3
4 = Heat 4
5 = Heat 5
6 = Heat 6
7 = Heat 7
A = 1 Row
E = 2 Row

1 - 7 = *Electric or Gas Heat Input Capacity* - See Table 3
A = *1 Row Coil* - Single row hot water or steam heating coil. No valves or valve controls are included with this option. See Table 2
E = *2 Row Coil* - Two row hot water or steam heating coil. No valves or valve controls are included with this option. See Table 2

Note: AAON ECat will select the correct heating designation option for gas heat or electric heat based on the desired leaving air and entering air temperature conditions. See General Data section for tonnage specific heating information.

Table 2 - Hot Water & Steam Coil Sizes

	Hot Water Coils			Steam Distributing Coils		
	Fin Length x Fin Height	Coil Quantity	Coil Total Face Area (ft^2)	Fin Length x Fin Height	Coil Quantity	Coil Total Face Area (ft^2)
(55-75 tons)	49.7”x57.5”	2	39.7	48.8”x57”	2	38.6
(90-140 tons)	49.7”x57.5”	2	39.7	48.8”x57”	2	38.6

Table 3 - Electric and Gas Heating Capacities

Model Option B3	Gas Heat		Electric Heat Capacity	
	Input Capacity	Output Capacity		
	MBH	MBH	kW (208V)	kW (230V, 380V 460V, 575V)
1 = *Heat 1*	800.0	640.0	60.1	80
2 = *Heat 2*	1200.0	960.0	90.2	120
3 = *Heat 3*	1600.0	1280.0	120.3	160
4 = *Heat 4*	2000.0	1600.0	150.4	200
5 = *Heat 5*	2400.0	1920.0	180.5	240
6 = *Heat 6*			210.5	280
7 = *Heat 7*			240.6	320

Model Option

Model Option B4 - Heat Staging

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 **0** 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *No Heating*
B = *2 stage* - Two stage heat control.
C = *3 stage* - Three stage heat control.
D = *4 stage* - Four stage heat control.
E = *5 stage* - Five stage heat control.
F = 6 *stage* - Six stage heat control.

Table 4 - RN Series E Cabinet Gas Turndown

Model (Nominal Tons)	Rated Input	Number of Stages Available	Modulating Gas	High Turndown Modulating Gas
55-140 tons	800 MBH	2, 4	3:1	7.5:1
	1200 MBH	3, 6	4.5:1	11.3:1
	1600 MBH	4	6:1	15.1:1
	2000 MBH	5	7.5:1	18.9:1
	2400 MBH	6	9:1	22.7:1

K= *Modulating Gas - Temperature Control* - Heater gas valve and the speed of the induced draft fan are modulated by a DDC controller Includes a factory wired supply air temperature sensor which is field installed in the supply ductwork. Controller can be used in standalone applications or connected to a VCC-X controller via modular cable (Feature 16B = A). In standalone application, on a call for heating, the controller will modulate gas valve and speed of induced draft blower to maintain a constant supply air temperature setpoint that is set using a DIP switch on the controller. The supply air temperature can be reset to a supply air temperature reset setpoint using a field provided 0-10 VDC reset input signal and another DIP switch on the controller. When the modulating gas heat controller is connected to a VCC-X controller (Feature 16B = A) supply air temperature setpoint, supply air temperature sensor offset, and supply air high temperature limit setpoint will be set with the unit controller's operator interface. The heat enable signal is provided by the unit controller. Modulating gas heat requires a stainless steel natural gas heat exchanger (Model Option B2 = B or D).
L = *High Turndown Modulating Gas Heat* - This option is similar to Option K. This option adds a split manifold on the modulating heater. This provides a lower capacity on the lowest setting. This achieves a higher turndown.
M = *Modulating/SCR Electric – with Temperature Control* - Fully modulating electric heating, controlled by a Silicon Controlled Rectifier (SCR) and DDC controller. Includes a factory wired supply air temperature sensor, which is field installed in the supply ductwork, and a factory wired supply air temperature setpoint adjustment potentiometer, which is field mounted. Potentiometer dial uses variable resistance to provide simple setpoint control.

Model Option B4 - Heat Staging Continued

N = Modulating/*SCR Electric - with External 0-10VDC* - Fully modulating electric heating, controlled by an SCR and DDC controller. A terminal strip to connect a 0-10 VDC control signal by others is included. Heating elements line voltage is modulated linearly with respect to the control signal.
P = *Single Serpentine 8 fpi* - Hot water or steam heating coil with single serpentine circuitry and 8 fins per inch. No valves or valve controls are included with this option.
Q = *Half Serpentine 8 fpi* - Hot water heating coil with half serpentine circuitry and 8 fins per inch. No valves or valve controls are included with this option.
R = *Single Serpentine 10 fpi* - Hot water or steam heating coil with single serpentine circuitry and 10 fins per inch. Standard steam coil option and standard 2 row hot water coil option. No valves or valve controls are included with this option.
S = *Half Serpentine 10 fpi* - Hot water heating coil with half serpentine circuitry and 10 fins per inch. Standard 1 row hot water coil option. No valves or valve controls are included with this option.
T = *Single Serpentine 12 fpi* - Hot water or steam heating coil with single serpentine circuitry and 12 fins per inch. No valves or valve controls are included with this option.
U = *Half Serpentine 12 fpi* - Hot water heating coil with half serpentine circuitry and 12 fins per inch. No valves or valve controls are included with this option.

Model Option

Model Option B5 - Heat Pump Aux Heating

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 **0** : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *No Heat Pump*

Feature 1
Unit Orientation

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : **A** 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

A = *Draw Through Compact Supply Fan, End Compressor Compartment, Both Side Access* - The supply fan is in the draw through position with access doors on both sides of the air tunnel. Compressor and control panel access is at the end of the unit.
D = *Draw Through Compact Supply Fan, Non-compressorized, End Control Panel, Both Side Access* - The supply fan is in the draw through position with access doors on both sides of the air tunnel. This selection does not include a compressorized section. Control panel access is at the end of the unit.

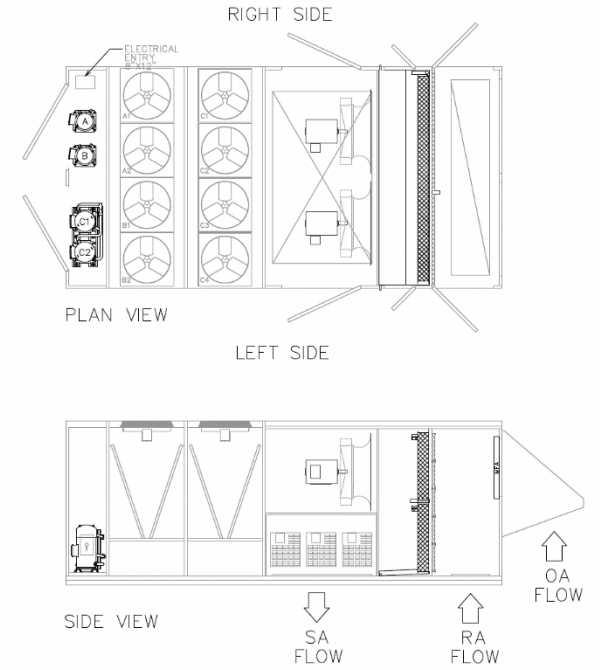


Figure 3 - Draw Through Supply Fan, End Compressor, Both Side Access

Feature 2
Supply & Return Locations

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A **0** - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *Bottom Supply + Bottom Return*
A = *Bottom Supply + No Return*

Feature 3A
Supply Fan Quantity

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - **A** A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *1 Fan*
A = *2 Fans*

AAON ECat will select the correct available options for Feature 3A based on unit conditions and the input from the fan selection program. When all of the other features have been selected, you will be prompted to select supply fans, return or exhaust fans, motors and VFDs under the "Fan Selection" window. In the "Fan Selection" window you will be able to choose the number of fans, VFDs and motor efficiency. General fan information, fan sound information and fan curves will be available for viewing in the "Fan Selection" window.

Feature 3B

Supply Fan Configuration

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A**A** M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *No VFDs + Full Width Fan*
A = *1 Fan per VFD + Full Width Fan*
B = *2 Fans per VFD + Full Width Fan*
E = *No VFDs + Narrow Width Fan*
F = *1 Fan per VFD + Narrow Width Fan*
G = *2 Fans per VFD + Narrow Width Fan*
K = *No VFDs + Full Width Fan + Inlet Backdraft Dampers*
L = *1 Fan per VFD + Full Width Fan + Inlet Backdraft Dampers*
M = *2 Fans per VFD + Full Width Fan + Inlet Backdraft Dampers*
Q = *No VFDs + Narrow Width Fan + Inlet Backdraft Dampers*
R = *1 Fan per VFD + Narrow Width Fan + Inlet Backdraft Dampers*
S = *2 Fan per VFD + Narrow Width Fan + Inlet Backdraft Dampers*

Figure 4 - Inlet Backdraft Dampers

AAON ECat will select the correct available options for Feature 3B based on unit conditions and the input from the fan selection program. When all of the other features have been selected, you will be prompted to select supply fans, return or exhaust fans, motors and VFDs under the “Fan Selection” window. In the “Fan Selection” window you will be able to choose the number of fans, VFDs and motor efficiency. General fan information, fan sound information and fan curves will be available for viewing in the “Fan Selection” window.

Feature 3C
Supply Fan Size

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A **M** 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0 - 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *13.5" Direct Drive Backward Curved Plenum Aluminum*
F = *24" Direct Drive Backward Curved Plenum Aluminum*
G = *27" Direct Drive Backward Curved Plenum Aluminum*
H = *30" Direct Drive Backward Curved Plenum Aluminum*
J = *30" Direct Drive Backward Curved Plenum Steel*
K = *33" Direct Drive Backward Curved Plenum Steel*
L = *36.5" Direct Drive Backward Curved Plenum Aluminum*
M = *42.5" Direct Drive Backward Curved Plenum Aluminum*

AAON ECat will select the correct available options for Feature 3C based on unit conditions and the input from the fan selection program. When all of the other features have been selected, you will be prompted to select supply fans, return or exhaust fans, motors and VFDs under the “Fan Selection” window. In the “Fan Selection” window you will be able to choose the number of fans, VFDs and motor efficiency. General fan information, fan sound information and fan curves will be available for viewing in the “Fan Selection” window.

Feature 3D
Supply Fan Motor Type

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M **0** L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *High Efficiency Open Motor (1170 nominal rpm)*
A = *High Efficiency Open Motor (1760 nominal rpm)*
K = *High Efficiency Totally Enclosed Motor (1170 nominal rpm)*
L = *High Efficiency Totally Enclosed Motor (1760 nominal rpm)*

AAON ECat will select the correct available options for Feature 3D based on unit conditions and the input from the fan selection program. When all of the other features have been selected, you will be prompted to select supply fans, return or exhaust fans, motors and VFDs under the "Fan Selection" window. In the "Fan Selection" window you will be able to choose the number of fans, VFDs and motor efficiency. General fan information, fan sound information and fan curves will be available for viewing in the "Fan Selection" window.

Feature 3E
Supply Fan Motor Size

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 **L** - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *0.25 hp*
A = *0.33 hp*
B = *0.5 hp*
C = *0.75 hp*
D = *1 hp*
E = *1.5 hp*
F = *2 hp*
G = *3 hp*
H = *5 hp*
J = *7.5 hp*
K = *10 hp*
L = *15 hp*
M = *20 hp*
N = *25 hp*
P = *30 hp*
Q = *40 hp*
R = *50 hp*
S = *60 hp*
T = *75 hp*

AAON ECat will select the correct available options for Feature 3E based on unit conditions and the input from the fan selection program. When all of the other features have been selected, you will be prompted to select supply fans, return or exhaust fans, motors and VFDs under the "Fan Selection" window. In the "Fan Selection" window you will be able to choose the number of fans, VFDs and motor efficiency. General fan information, fan sound information and fan curves will be available for viewing in the "Fan Selection" window.

Feature 4A
Outside Air Section

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - **B** 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0 - 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *100% Outside Air, No Return Air* - Outside air opening in the unit which can accommodate 100% of the unit air flow. The outside air opening is not adjustable, and the unit will not have a return air opening. Unit must have a stainless steel heat exchanger if gas heat is specified. Hot gas bypass on all refrigeration circuits without variable speed scroll compressors is required with this option.

A = *Motorized 100% Outside Air Dampers, No Return Air* - Extruded aluminum, low leakage, gear driven outside air dampers to control the outside air intake. This option is for 100% outside air applications and unit will not have a return air opening. Units must have a stainless steel heat exchanger if gas heat is specified. Hot gas bypass on all refrigeration circuits, without variable speed scroll compressors is required with this option. Dampers open on a call for the supply fan. See Feature 7 for outside air damper actuator control options.

B = *Manually Adjustable Outside Air Opening with Return Air Opening* - 0-25% manually adjustable outside air opening. Option includes a return air opening in the unit base.

C = *Motorized Outside Air Dampers with Return Air* - Extruded aluminum, low leakage, aluminum gear driven outside air dampers to control the outside air intake. Option includes a return air opening in the unit base. Dampers open on a call for the supply fan. See Feature 7 for outside air damper actuator control options.

D = *100 % Return Air, No Outside Air* - Return air opening in the unit which can accommodate 100% of the unit air flow. The return air opening is not adjustable, and the unit will not have an outside air opening.

E = *Economizer* - Extruded aluminum, low leakage, aluminum gear driven, economizer damper assembly with factory installed actuator and barometric relief damper on the return air section. See Feature 7 for actuator control options.

G = *Economizer with Power Exhaust* - Extruded aluminum, low leakage, aluminum gear driven, economizer damper assembly with power exhaust for space pressurization control during the economizer mode of operation. See Feature 7 for actuator control options. Variable flow power exhaust is available with the selection of a VFD in Feature 6B.

J = *Economizer with Power Return* - Extruded aluminum, low leakage, aluminum gear driven, economizer damper assembly with power return for use with high return static pressure applications. See Feature 7 for actuator control options. Variable flow power return is available with the selection of a VFD in Feature 5B.

Q = *Economizer with AAONAIRE Energy Recovery with Bypass Damper* - Factory installed energy recovery with factory installed extruded aluminum, low leakage, aluminum gear driven, economizer damper assembly. Bypass damper with two position actuator allows air to flow around the wheel. Select when the outside air flow is greater than the maximum air flow rating of the wheel or when additional air flow is needed during economizer operation. Outside air flow through the wheel is limited to the maximum air flow rating of the wheel shown in Table 5. See Feature 7 for economizer actuator control options.

Feature 4B
Energy Recovery Type

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B **0** 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *No Energy Recovery Wheel*

A = *Polymer Energy Recovery Wheel* - Factory installed polymer energy recovery wheel with factory installed extruded aluminum, low leakage, aluminum gear driven, economizer damper assembly. See Feature 7 for economizer actuator control options.

B = *Polymer Energy Recovery Wheel+1% Purge* - Factory installed polymer energy recovery wheel with factory installed extruded aluminum, low leakage, aluminum gear driven, economizer damper assembly. Option includes an adjustable purge sector, which can reduce carryover to no more than 1%. Used for applications which require limiting cross contamination of the ventilation air with exhaust air. Feature 7 for economizer actuator control options.

Figure 5 - Aluminum Energy Recovery Wheel

C = *Aluminum Energy Recovery Wheel* - Factory installed aluminum energy recovery wheel with factory installed extruded aluminum, low leakage, aluminum gear driven, economizer damper assembly. See Feature 7 for economizer actuator control options.

D = *Aluminum Energy Recovery Wheel+1% Purge* - Factory installed aluminum energy recovery wheel with factory installed extruded aluminum, low leakage, aluminum gear driven, economizer damper assembly. Option includes an adjustable purge sector, which can reduce carryover to no more than 1%. Used for applications which require limiting cross contamination of the ventilation air with exhaust air. Feature 7 for economizer actuator control options.

Feature 4C
Energy Recovery Size

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 **0** - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *No Energy Recovery*

A = *Low CFM Enthalpy* - The wheel's heat transfer material is treated with silica gel desiccant for sensible and latent energy recovery. Outside air flow is limited to the maximum air flow rating of the wheel shown in Table 5.

Feature 4C - Energy Recovery Size Continued

B = *High CFM Enthalpy* - The wheel's heat transfer material is treated with silica gel desiccant for sensible and latent energy recovery. Outside air flow is limited to the maximum air flow rating of the wheel shown in Table 5.
E = *Low CFM Sensible* - The wheel does not have silica gel desiccant on the substrate. Outside airflow is limited to the maximum air flow rating of the wheel shown in Table 5.
F = *High CFM Sensible* - The wheel does not have silica gel desiccant on the substrate. Outside airflow is limited to the maximum air flow rating of the wheel shown in Table 5.
J = *Low CFM Enthalpy + Exhaust Filters* - The wheel's styrene heat transfer material is treated with silica gel desiccant for sensible and latent energy recovery. Outside air flow is limited to the maximum air flow rating of the wheel shown in Table 5. Exhaust filters are installed in the exhaust air stream upstream of the wheel.
K = *High CFM Enthalpy + Exhaust Filters*- The wheel's styrene heat transfer material is treated with silica gel desiccant for sensible and latent energy recovery. Outside air flow is limited to the maximum air flow rating of the wheel shown in Table 5. Exhaust filters are installed in the exhaust air stream upstream of the wheel.
N = *Low CFM Sensible + Exhaust Filters* - The wheel does not have silica gel desiccant on the substrate. Outside airflow is limited to the maximum air flow rating of the wheel shown in Table 5. Exhaust filters are installed in the exhaust air stream upstream of the wheel.
P = *High CFM Sensible + Exhaust Filters* - The wheel does not have silica gel desiccant on the substrate. Outside airflow is limited to the maximum air flow rating of the wheel shown in Table 5. Exhaust filters are installed in the exhaust air stream upstream of the wheel.

Table 5 - Energy Recovery Wheel Information

Feature 4C	Energy Recovery Size	Energy Recovery Wheel P = Polymer; A = Aluminum		
		Qty/Diameter/Width	Maximum Air Flow Through the Wheel	Wheel Bypass Maximum Airflow
A, E, J, N	Low CFM	P = 1/81"/3.0" A = 1/83"/4.0"	P = 15,500 cfm A = 15,500 cfm	P = 16,200 cfm A = 16,400 cfm
B, F, K, P	High CFM	P = 2/64"/3.0" A = 2/66"/4.0"	P = 19,000 cfm A = 19,000 cfm	P = 27,700 cfm A = 20,000 cfm

Feature 5A
Return Fan Quantity

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - **0** 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *No Return Fan*
A = *1 Fan*
B = *2 Fans*

AAON ECat will select the correct available options for Feature 5A based on unit conditions and the input from the fan selection program. When building a fan configuration with AAON ECat you must first select a power return, power exhaust or energy recovery wheel option in Feature 4A. When all of the other features have been selected, you will be prompted to select supply fans, return or exhaust fans, motors and VFDs under the "Fan Selection" window. In the "Fan Selection" window you will be able to choose the number of fans, VFDs, and motor efficiency. General fan information, fan sound information, and fan curves will be available for viewing in the "Fan Selection" window.

Feature 5B
Return Fan Configuration

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 **0** 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *No Return Fan*
A = *No VFDs + Full Width Fan*
B = *1 Fan per VFD + Full Width Fan*
C = *2 Fans per VFD + Full Width Fan*
F = *No VFDs + Narrow Width Fan*
G = *1 Fan per VFD + Narrow Width Fan*
H = *2 Fans per VFD + Narrow Width Fan*
L = *No VFDs + Full Width Fan + Inlet Backdraft Dampers*
M = *1 Fan per VFD + Full Width Fan + Inlet Backdraft Dampers*
N = *2 Fans per VFD + Full Width Fan + Inlet Backdraft Dampers*
R = *No VFDs + Narrow Width Fan + Inlet Backdraft Dampers*
S = *1 Fan per VFD + Narrow Width Fan + Inlet Backdraft Dampers*
T = *2 Fans per VFD + Narrow Width Fan + Inlet Backdraft Dampers*

Feature 5B - Return Fan Configuration Continued

*Power return with VFD or Speed Control requires field supplied control signal.

AAON ECat will select the correct available options for Feature 5B based on unit conditions and the input from the fan selection program. When building a fan configuration with AAON ECat you must first select a power return, power exhaust or energy recovery wheel option in Feature 4A. When all of the other features have been selected, you will be prompted to select supply fans, return or exhaust fans, motors and VFDs under the "Fan Selection" window. In the "Fan Selection" window you will be able to choose the number of fans, VFDs and motor efficiency. General fan information, fan sound information and fan curves will be available for viewing in the "Fan Selection" window.

Feature 5C
Return Fan Size

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 **0** 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *No Return Fan*
M = *24" Direct Drive Backward Curved Plenum Aluminum*
N = *27" Direct Drive Backward Curved Plenum Aluminum*
P = *30" Direct Drive Backward Curved Plenum Aluminum*
Q = *30" Direct Drive Backward Curved Plenum Steel*
R = *33" Direct Drive Backward Curved Plenum Steel*
S = *36.5" Direct Drive Backward Curved Plenum Aluminum*

AAON ECat will select the correct available options for Feature 5C based on unit conditions and the input from the fan selection program. When building a fan configuration with AAON ECat you must first select a return/exhaust fan or energy recovery wheel in Feature 4A. When all of the other features have been selected, you will be prompted to select supply fans, return or exhaust fans, motors and VFDs under the "Fan Selection" window. In the "Fan Selection" window you will be able to choose the number of fans, VFDs and motor efficiency. General fan information, fan sound information and fan curves will be available for viewing in the "Fan Selection" window.

Feature 5D
Return Fan Motor Type

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 **0** 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *No Return Fan*
A = *High Efficiency Open Motor (1170 nominal rpm)*
B = *High Efficiency Open Motor (1760 nominal rpm)*
L = *High Efficiency Totally Enclosed Motor (1170 nominal rpm)*
M = *High Efficiency Totally Enclosed Motor (1760 nominal rpm)*

AAON ECat will select the correct available options for Feature 5D based on unit conditions and the input from the fan selection program. When building a fan configuration with AAON ECat you must first select a return/exhaust fan or energy recovery wheel in Feature 4A. When all of the other features have been selected, you will be prompted to select supply fans, return or exhaust fans, motors and VFDs under the “Fan Selection” window. In the “Fan Selection” window you will be able to choose the number of fans, VFDs and motor efficiency. General fan information, fan sound information and fan curves will be available for viewing in the “Fan Selection” window.

Feature 5E
Return Fan Motor Size

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 **0** - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *No Return Fan*
A = *0.25 hp*
B = *0.33 hp*
C = *0.5 hp*
D = *0.75 hp*
E = *1 hp*
F = *1.5 hp*
G = *2 hp*
H = *3 hp*
J = *5 hp*
K = *7.5 hp*
L = *10 hp*
M = *15 hp*
N = *20 hp*
P = *25 hp*
Q = *30 hp*
R = *40 hp*
S = *50 hp*
T = *60 hp*
U = *75 hp*

AAON ECat will select the correct available options for Feature 5E based on unit conditions and the input from the fan selection program. When building a fan configuration with AAON ECat you must first select a return/exhaust fan or energy recovery wheel in Feature 4A. When all of the other features have been selected, you will be prompted to select supply fans, return or exhaust fans, motors and VFDs under the “Fan Selection” window. In the “Fan Selection” window you will be able to choose the number of fans, VFDs and motor efficiency. General fan information, fan sound information and fan curves will be available for viewing in the “Fan Selection” window.

Feature 6A
Exhaust Fan Quantity

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - **0** 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *No Exhaust Fan*
A = *1 Fan*
B = *2 Fans*

AAON ECat will select the correct available options for Feature 6A based on unit conditions and the input from the fan selection program. When building a fan configuration with AAON ECat you must first select a power return, power exhaust or energy recovery wheel option in Feature 4A. When all of the other features have been selected, you will be prompted to select supply fans, return or exhaust fans, motors and VFDs under the "Fan Selection" window. In the "Fan Selection" window you will be able to choose the number of fans, VFDs, and motor efficiency. General fan information, fan sound information, and fan curves will be available for viewing in the "Fan Selection" window.

Feature 6B
Exhaust Fan Configuration

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 **0** 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *No Exhaust Fan*
A = *No VFDs + Full Width Fan*
B = *1 Fan per VFD + Full Width Fan*
C = *2 Fans per VFD + Full Width Fan*
F = *No VFDs + Narrow Width Fan*
G = *1 Fan per VFD + Narrow Width Fan*
H = *2 Fans per VFD + Narrow Width Fan*
L = *No VFDs + Full Width Fan + Inlet Backdraft Dampers*
M = *1 Fan per VFD + Full Width Fan + Inlet Backdraft Dampers*
N = *2 Fans per VFD + Full Width Fan + Inlet Backdraft Dampers*
R = *No VFDs + Narrow Width Fan + Inlet Backdraft Dampers*
S = *1 Fan per VFD + Narrow Width Fan + Inlet Backdraft Dampers*
T = *2 Fans per VFD + Narrow Width Fan + Inlet Backdraft Dampers*

Feature 6B - Exhaust Fan Configuration Continued

*Power exhaust with VFD or Speed Control requires field supplied control signal.

AAON ECat will select the correct available options for Feature 6B based on unit conditions and the input from the fan selection program. When building a fan configuration with AAON ECat you must first select a power return, power exhaust or energy recovery wheel option in Feature 4A. When all of the other features have been selected, you will be prompted to select supply fans, return or exhaust fans, motors and VFDs under the "Fan Selection" window. In the "Fan Selection" window you will be able to choose the number of fans, VFDs and motor efficiency. General fan information, fan sound information and fan curves will be available for viewing in the "Fan Selection" window.

Feature 6C

Exhaust Fan Size

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 **0** 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *No Exhaust Fan*
M = *24" Direct Drive Backward Curved Plenum Aluminum*
N = *27" Direct Drive Backward Curved Plenum Aluminum*
P = *30" Direct Drive Backward Curved Plenum Aluminum*
Q = *30" Direct Drive Backward Curved Plenum Steel*
R = *33" Direct Drive Backward Curved Plenum Steel*
S = *36.5" Direct Drive Backward Curved Plenum Aluminum*
T = *42.5" Direct Drive Backward Curved Plenum Aluminum*

AAON ECat will select the correct available options for Feature 6C based on unit conditions and the input from the fan selection program. When building a fan configuration with AAON ECat you must first select a return/exhaust fan or energy recovery wheel in Feature 4A. When all of the other features have been selected, you will be prompted to select supply fans, return or exhaust fans, motors and VFDs under the "Fan Selection" window. In the "Fan Selection" window you will be able to choose the number of fans, VFDs and motor efficiency. General fan information, fan sound information and fan curves will be available for viewing in the "Fan Selection" window.

Feature 6D
Exhaust Fan Motor Type

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 **0** 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *No Exhaust Fan*
A = *High Efficiency Open Motor (1170 nominal rpm)*
B = *High Efficiency Open Motor (1760 nominal rpm)*
L = *High Efficiency Totally Enclosed Motor (1170 nominal rpm)*
M = *High Efficiency Totally Enclosed Motor (1760 nominal rpm)*

AAON ECat will select the correct available options for Feature 6D based on unit conditions and the input from the fan selection program. When building a fan configuration with AAON ECat you must first select a return/exhaust fan or energy recovery wheel in Feature 4A. When all of the other features have been selected, you will be prompted to select supply fans, return or exhaust fans, motors and VFDs under the “Fan Selection” window. In the “Fan Selection” window you will be able to choose the number of fans, VFDs and motor efficiency. General fan information, fan sound information and fan curves will be available for viewing in the “Fan Selection” window.

Feature 6E

Exhaust Fan Motor Size

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 0 : A 0 - A A M 0 L ¯ B 0 0 - 0 0 0 0 0 - 0 0 0 0 **0** - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *No Return Fan*
A = *0.25 hp*
B = *0.33 hp*
C = *0.5 hp*
D = *0.75 hp*
E = *1 hp*
F = *1.5 hp*
G = *2 hp*
H = *3 hp*
J = *5 hp*
K = *7.5 hp*
L = *10 hp*
M = *15 hp*
N = *20 hp*
P = *25 hp*
Q = *30 hp*
R = *40 hp*
S = *50 hp*
T = *60 hp*
U = *75 hp*

AAON ECat will select the correct available options for Feature 6E based on unit conditions and the input from the fan selection program. When building a fan configuration with AAON ECat you must first select a return/exhaust fan or energy recovery wheel in Feature 4A. When all of the other features have been selected, you will be prompted to select supply fans, return or exhaust fans, motors and VFDs under the “Fan Selection” window. In the “Fan Selection” window you will be able to choose the number of fans, VFDs and motor efficiency. General fan information, fan sound information and fan curves will be available for viewing in the “Fan Selection” window.

Feature 7
Outside Air Control

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - **0** A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *Standard - None* - No economizer or motorized outside air dampers.
C = *Fully Modulating Actuator with Sensible Limit* - Fully modulating economizer actuator with two positions. Position one is the closed position. Position two is the minimum outside air position, which is activated when there is a call for supply fan operation. During the economizer mode actuator modulates between minimum outside air position and having the outside air dampers fully open to maintain a discharge temperature of 55°F. The minimum outside air position can be field adjusted for the desired amount of outside air. The range for the changeover control is 45°F to 95°F and responds to sensible temperature only. The actuator is spring return closed.
D = *Fully Modulating Actuator with Enthalpy Limit* - Fully modulating economizer actuator with two positions. Position one is the closed position. Position two is the minimum outside air position, which is activated when there is a call for supply fan operation. During the economizer mode actuator modulates between minimum outside air position and having the outside air dampers fully open to maintain a discharge temperature of 55°F. The minimum outside air position can be field adjusted for the desired amount of outside air. Changeover control responds to sensible and latent heat of the ambient air. The actuator is spring return closed.
E = *DDC Actuator* - Economizer actuator with terminal strip (EC1 and EC2) in the controls compartment for a field supplied outside air control signal. Actuator is factory configured for a 4-20 mA control signal, but can be configured for a 0-10 VDC control signal by removing the resistor between the terminals, EC1 and EC2. Use this option where customer supplied controls are employed for unit and economizer functions. All economizer functions will be by others. AAON provides the damper assembly and actuator only. Part of the D-PAC and PAC control systems. See Feature 13 and Controls section for more D-PAC and PAC information.
P = *CO_2 Override + Fully Modulating Actuator with Sensible Limit* - Option C + CO_2 ventilation controller that senses the return air stream through a pitot tube. Used for demand controlled ventilation applications where outside air ventilation is based on actual not assumed demand, for energy savings. The sensor is self-calibrating with a 14-day log that will automatically correct for sensor drift and has onboard push buttons with LCD display for specifying CO_2 setpoint. This option works best with air velocities in the 600 to 1200 fpm range.
Q = *CO_2 Override + Fully Modulating Actuator with Enthalpy Limit* - Option D + CO_2 ventilation controller that senses the return air stream through a pitot tube. Used for demand controlled ventilation applications where outside air ventilation is based on actual not assumed demand, for energy savings. The sensor is self-calibrating with a 14-day log that will automatically correct for sensor drift and has onboard push buttons with LCD display for specifying CO_2 setpoint. This option works best with air velocities in the 600 to 1200 fpm range.

Feature 7 - Outside Air Control Continued

R = *CO_2 Override + DDC Actuator* - Option E + CO_2 ventilation controller that senses the return air stream through a pitot tube. Used for demand controlled ventilation applications where outside air ventilation is based on actual not assumed demand, for energy savings. The sensor is self-calibrating with a 14-day log that will automatically correct for sensor drift and has onboard push buttons with LCD display for specifying CO_2 setpoint. This option works best with air velocities in the 600 to 1200 fpm range. The CO_2 sensor will be wired back to a set of terminals or customer supplied factory installed DDC controller.
U = *2 Position Actuator* - Used with motorized outside air options in Feature 1. Position one is the closed position. Position two is the fully open position, which is activated when there is a call for supply fan operation.
V = *Fault Detection and Diagnostics Controller (FDD) Fully Modulating Actuator with Sensible Limit* - Fully modulating economizer actuator with two positions provided with fault detection and diagnostics. Position one is the closed position. Position two is the minimum outside air position, which is activated when there is a call for supply fan operation. During the economizer mode actuator modulates between minimum outside air position and having the outside air dampers fully open to maintain a discharge temperature of 55°F. The minimum outside air position can be field adjusted for the desired amount of outside air. The range for the changeover control is 45°F to 95°F and responds to sensible temperature only. The actuator is spring return closed. Fault detection and diagnostics that checks feedback to ensure the economizer is still operating. When selected with AAON controls the fault detection and diagnostics is included as part of the controls. When selected without AAON controls a standalone controller will be provided for the FDD. Included economizer comes with 5 year warranty.
W = *FDD Fully Modulating Actuator with Enthalpy Limit* - Fully modulating economizer actuator with two positions provided with fault detection and diagnostics. Position one is the closed position. Position two is the minimum outside air position, which is activated when there is a call for supply fan operation. During the economizer mode actuator modulates between minimum outside air position and having the outside air dampers fully open to maintain a discharge temperature of 55°F. The minimum outside air position can be field adjusted for the desired amount of outside air. Changeover control responds to sensible and latent heat of the ambient air. The actuator is spring return closed. Fault detection and diagnostics that checks feedback to ensure the economizer is still operating. When selected with AAON controls the fault detection and diagnostics is included as part of the controls. When selected without AAON controls a standalone controller will be provided for the FDD. Included economizer comes with 5 year warranty.
Y = *FDD Fully Modulating Actuator with Sensible Limit + CO_2 Override* - Option V + CO_2 ventilation controller that senses the return air stream through a pitot tube. Used for demand controlled ventilation applications where outside air ventilation is based on actual not assumed demand, for energy savings. The sensor is self-calibrating with a 14-day log that will automatically correct for sensor drift and has onboard push buttons with LCD display for specifying CO_2 setpoint. This option works best with air velocities in the 600 to 1200 fpm range. Fault detection and diagnostics that checks feedback to ensure the economizer is still operating. When selected with AAON controls the fault detection and diagnostics is included as part of the controls. When selected without AAON controls a standalone controller will be provided for the FDD. Included economizer comes with 5 year warranty.

Feature 7 - Outside Air Control Continued

Z = *FDD Fully Modulating Actuator with Enthalpy Limit + CO_2 Override* - Option W + CO_2 ventilation controller that senses the return air stream through a pitot tube. Used for demand controlled ventilation applications where outside air ventilation is based on actual not assumed demand, for energy savings. The sensor is self-calibrating with a 14-day log that will automatically correct for sensor drift and has onboard push buttons with LCD display for specifying CO_2 setpoint. This option works best with air velocities in the 600 to 1200 fpm range. Fault detection and diagnostics that checks feedback to ensure the economizer is still operating. When selected with AAON controls the fault detection and diagnostics is included as part of the controls. When selected without AAON controls a standalone controller will be provided for the FDD. Included economizer comes with 5 year warranty.

Feature 8
Return and Exhaust Air Options

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L ¯ B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 **A** - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *No Return Opening* – Unit configuration must include 100% outside air or 100% outside air with motorized dampers. See Feature 4A Outside Air Section.
A = *Standard Return Opening without EA Opening* – Unit configuration must include manual or motorized outside air with return air opening, 100% return air, or an economizer. See Feature 4A Outside Air Section.
E = *Standard Return Opening + Motorized EA Dampers* – Unit configuration must include power exhaust, power return, or energy recovery. See Feature 4A Outside Air Section. Extruded aluminum, low leakage, aluminum gear driven exhaust air dampers to open and close exhaust dampers based on a call for the supply fan.

Feature 9A
Unit Filter Type

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - **0** 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *2" Pleated Filter- MERV 8* - 2 inch pleated MERV 8 unit filters. See Feature 9B for filter location.
A = *4" Pleated Filter - MERV 8* - 4 inch pleated MERV 8 unit filters. See Feature 9B for filter location.
B = *2" Pleated Filter - MERV 8 + 4" Pleated MERV 11* - 2 inch pleated MERV 8 pre filters mounted upstream of 4 inch pleated MERV 11 filters. See Feature 9B for filter location.
C = *2" Pleated Filter - MERV 8 + 4" Pleated MERV 13* - 2 inch pleated MERV 8 pre filters mounted upstream of 4 inch pleated MERV 13 filters. See Feature 9B for filter location.
D = *2" Pleated Filter - MERV 8 + 4" Pleated MERV 14* - 2 inch pleated MERV 8 pre filters mounted upstream of 4 inch pleated MERV 14 filters. See Feature 9B for filter location.

Feature 9B
Unit Filter Size & Location

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 **0** 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *Standard Filters in Standard Position*
B = *High Efficiency Filters in Standard Position* - Located before the cooling section in a draw-through unit.

Feature 9C
Final Filter Type

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 **0** 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *No Final Filters*

Feature 9D
Filter Options

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 **0**
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *None*
A = *Clogged Filter Switch - Unit Filters* – Includes one clogged filter switch.
E = *Magnehelic Gauge - Unit Filters* – Includes one magnehelic gauge.
J = *CFS + Magnehelic Gauge - Unit Filters* – Includes one clogged filter switch and one magnehelic gauge.

Clogged Filter Switch (CFS) - Adjustable differential pressure switch sensing pressure drop across the filter bank and cooling coil; only applies to unit filter selection. The range of adjustment is 0.17 to 5.0 in. W.C. with contact closure on rise. The switch is mounted in the fan compartment with terminal connections in the low voltage control section. Normally open dry contacts (C1 and C2) are provided for clogged filter indication. Note: Factory installed controllers are wired parallel; Field installed controllers are individual set of terminals.

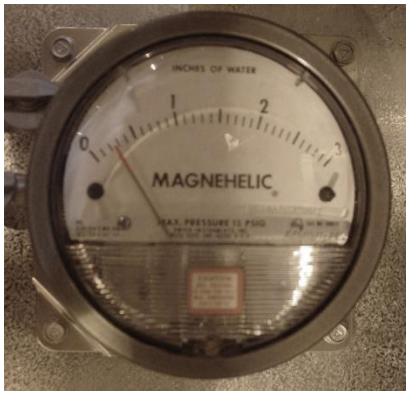


Figure 6 - Magnehelic Gauge

Magnehelic Gauge - Magnehelic gauge reading pressure drop across the filter bank and cooling coil. The gauge reads from 0 to 3 in. W.C. in 0.10 in. graduations, and is mounted in the control cabinet.

*A Special Pricing Authorization (SPA) is required if the CFS or Magnehelic gauge is to be used to respond to the pressure drop across the energy recovery wheel or only the cooling coil.

Feature 10A
Refrigeration Control

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- **0** 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *None*
E = *Freeze Stats (each circuit)* - Adjustable temperature sensor (-10 to 70°F) mounted on the tubing of the first cooling circuit and wired to de-energize all cooling circuits if tubing temperature falls below setpoint. Option is used to prevent freezing of evaporator coil.

Feature 10B
Blank

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 **0** - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *None*

Feature 11A
Refrigeration Options

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - **0** 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *None*
D = *Hot Gas Bypass Non-Variable Compressor Circuits (HGBNV)* - Field adjustable pressure activated bypass valve on the refrigeration circuits with non-variable compressors. The valve is factory installed to divert hot compressor discharge gas to the evaporator coil if pressure on the evaporator side of the valve drops below 105 psi for R-410A (34°F at sea level). The bypass valve is at full capacity after six degrees of differential (28°F at sea level). This option is used to prevent coil freeze-up during periods of low air flow or cold entering coil conditions without cycling of the compressors on and off. This option is used for refrigeration system protection only and cannot be used for cooling capacity modulation.

Feature 11A - Refrigeration Options Continued

Hot gas bypass is required on all Variable Air Volume (VAV) and Makeup Air (MUA) units without variable speed scroll compressors. Hot gas bypass on the lag circuits is recommended on all VAV and MUA units with variable speed scroll compressors on only the lead circuits.

M = *HGBNV + Parallel Modulating Hot Gas Reheat* – Option D + Reheat coil mounted downstream of the evaporator and piped to the lag cooling circuits which provides the unit with a dehumidification mode of operation for when the cooling load has been satisfied. A 3-way modulating reheat valve diverts a varying percentage of the hot gas entering the condensing coil to the reheat coil to provide the unit with a dehumidification mode of operation. Receiver tanks are standard with this option. A supply air temperature sensor and DDC controller are used to maintain the supply air temperature during the dehumidification mode of operation. Supply air temperature sensor will ship loose in the unit control cabinet to be installed in the supply air stream. Constant supply air temperature control during dehumidification prevents space temperature swings and is ideal for VAV and makeup air applications.

Depending on the type of controls selected, the unit will be factory wired for either priority dehumidification or priority cooling. Priority dehumidification means if the controller gets a cooling call and a dehumidification call simultaneously, the unit will run in dehumidification mode until the humidity setpoint is satisfied. Priority Cooling means if the controller gets a cooling call and a dehumidification call simultaneously, the unit will run in cooling mode until the cooling setpoint temperature is satisfied. When there is no longer a call for cooling, but there is a call for dehumidification, the compressors will continue to run and the reheat will be activated.

Field Installed DDC Controls by others: A terminal contact (RH1) and reset terminals (AI1 & COM) are included for connecting to the customer supplied controller. The unit will require a contact closure to RH1 to enable dehumidification mode. The unit is factory wired as priority dehumidification. It is optional to provide a 0-10VDC signal to reset the supply air setpoint. Units with controls by others will need to provide control logic to enable the compressors and modulate the variable capacity compressors (if ordered) during dehumidification mode. The customer supplied controller will also need to be able to set cooling or dehumidification as the priority.

Field provided Factory Installed DDC Controls by others: The customer supplied DDC controller must provide a digital point to enable dehumidification mode. It is optional to provide a 0-10VDC signal to reset the supply air setpoint. Units with controls by others will need to provide control logic to enable the compressors and modulate the variable capacity compressors (if ordered) during dehumidification mode. The customer supplied controller will also need to be able to set cooling or dehumidification as the priority.

Factory Provided VCC-X Controls: Priority dehumidification or cooling can be set through the controls in the field.

Feature 11A - Refrigeration Options Continued

W = *HGBNV + Polymer E-Coated Modulating Hot Gas Reheat* - Option M + Polymer E-coated modulating hot gas reheat coil. Coating exceeds a 10,000 hour salt spray test per ASTM B 117-90 requirements, yet is only 0.8-1.2 mils thick and has excellent flexibility. Coating is intended for use in coastal saltwater conditions under the stress of heat, salt, sand, and wind and is applicable to all corrosive environments where a polymer e-coating is acceptable. Coating includes a 5 year warranty, from the date of original equipment shipment from the factory. The first 12 months from the date of equipment startup, or 18 months from the date of original equipment shipment from the factory, whichever is less, will be covered under the standard AAON limited parts warranty. The remaining period of the warranty will be covered by Electrofin. The Electrofin written instructions for installation, operation, coil cleaning, maintenance, and recording keeping must be followed. Refer to the Electrofin Terms and Conditions of Sale. Crankcase heater will be provided.

Feature 11B

Blank

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 **0** - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *None*

Feature 12
Refrigeration Accessories

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - **B** - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *None*
B = *Compressor Isolation Valves* - Ball type service valves mounted on the refrigeration circuit discharge and suction lines permitting isolation of the compressor for service or replacement. This option can reduce the amount of refrigerant that must be recovered during compressor service or replacement. The valves are located close to the compressors and work through a quarter turn from open to closed. Teflon seals and gaskets are used with a nylon cap gasket to prevent accidental loss.
C = *Compressor Isolation Valves + Sight Glass* – Option B + Moisture indication sight glass attached to the refrigeration circuit liquid lines. A green color indicates a dry condition, a chartreuse color (green with a yellow tint or bright green) indicates caution and a yellow color indicates a wet condition. The sight glass is not a charge indicator.

Table 6 - Sight Glass Moisture Content Indication

Refrigerant / Indicator Color	75° F Liquid Line Temperature R-410A
Green DRY	Below 75ppm
Chartreuse CAUTION	75-150ppm
Yellow WET	Above 150ppm

Figure 7 - Sight Glasses

Feature 13A
Unit Disconnect Type

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - **0** 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *Single Point Power - Standard Power Block*
A = *Single Point Power - Non-fused Disconnect Power Switch*
B = *Single Point Power - Circuit Breaker*

Individual components within the controls compartment are fused and/or internally protected. Switch options include molded case, non-fused, and disconnect switch inside the unit controls compartment. The switch is accessible from the exterior of the unit and protected by a cast metal, lockable cover. The switch disconnects high voltage service to the unit. To add a switch, choose any switch and after all options have been selected and the fan program is completed AAON ECat will automatically calculate the minimum allowable ampacity and choose the correct size switch.

Circuit breaker options include molded case, non-fused, and disconnect switch inside the unit controls compartment. Circuit breaker options provide overload and short circuit protection for applications that require it.

Feature 13B
Unit Disconnect 1 Size

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 **0** 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *Power Block*
A = *15 Amps*
B = *20 Amps*
C = *25 Amps*
D = *30 Amps*
E = *35 Amps*
F = *40 Amps*
G = *45 Amps*
H = *50 Amps*
J = *60 Amps*
K = *70 Amps*
L = *80 Amps*
M = *90 Amps*
N = *100 Amps*
P = *110 Amps*
Q = *125 Amps*
R = *150 Amps*
S = *175 Amps*
T = *200 Amps*
U = *225 Amps*
V = *250 Amps*
W = *300 Amps*
Y = *350 Amps*
Z = *400 Amps*
1 = *450 Amps*
2 = *500 Amps*
3 = *600 Amps*
5 = *800 Amps*
7 = *1200 Amps*

Feature 13C

Disconnect 2 Size

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 **0** - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *None*

Feature 14

Safety Options

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - **0** 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *None*

A = *Return and Supply Air Firestat* - Bimetallic snap-action safety switches sensing temperature only, mounted in both the supply and return air streams. The supply air switch is rated to 200°F, the return air switch is rated to 125°F. Both switches manually reset and are wired to shut down the 24 VAC control circuit. Firestats are non-addressable.

B = *Return Air Smoke Detector* - Photoelectric type smoke detector factory mounted in the return air section of the unit. Detector is wired to shut down the 24 VAC control circuit upon detector activation, thereby shutting off the unit. Relay contacts are provided for interfacing the detector with alarm panels. A test magnet is supplied in the unit controls cabinet. Smoke detectors are non-addressable.

C = *Supply Air Smoke Detector* - Photoelectric type smoke detector factory mounted in the filter/economizer section with sensor mounted to the fan/heating compartment, sensing the supply air downstream of the fan. Detector is wired to shut down the 24 VAC control circuit upon detector activation, thereby shutting off the unit. Relay contacts are provided for interfacing the detector with alarm panels. A test magnet is supplied in the unit controls cabinet. Smoke detectors are non-addressable.

Figure 8 - Supply Air Smoke Detector

Feature 14 - Safety Options Continued

E = *Remote Safety Shutdown Terminals* - Low voltage terminals labeled BI1 and BI2 for wiring to a field installed smoke detector, Firestat, or building safety automatic shutdown system. When contacts are open the unit 24 VAC control circuit is broken and the unit will not operate. Remove the factory supplied jumper before installing.
F = *Option A + B - RA and SA Firestat + RA Smoke Detector*
G = *Option A + C - RA and SA Firestat + SA Smoke Detector*
J = *Option A + E - RA and SA Firestat + Remote Safety Shutdown Terminals*
K = *Option B + C - RA Smoke Detector + SA Smoke Detector*
M = *Option B + E - RA Smoke Detector + Remote Safety Shutdown Terminals*
P = *Option C + E - SA Smoke Detector + Remote Safety Shutdown Terminals*
R = *Option A + B + C - RA and SA Firestat + RA Smoke Detector + SA Smoke Detector*
T = *Option A + B + E - RA and SA Firestat + RA Smoke Detector + Remote Safety Shutdown Terminals*
V = *Option A + C + E - RA and SA Firestat + SA Smoke Detector + Remote Safety Shutdown Terminals*
Z = *Option B + C + E - RA Smoke Detector + SA Smoke Detector + Remote Safety Shutdown Terminals*
4 = *Option A + B + C + E - RA and SA Firestat + RA Smoke Detector + SA Smoke Detector + Remote Safety Shutdown Terminals*

Feature 15
Accessories

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 **0** - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *None*
A = *Low Limit Control* - Temperature limit switch factory mounted in the unit supply air to shut off the unit when discharge temperature reaches setpoint. The switch is adjustable from -10°F to 70°F, and is manually reset by disconnecting power to the unit.
B = *Phase & Brown Out Protection* - Voltage monitor that is used to protect motors and compressors from voltage imbalance, over/under voltage and phase loss. Reset is automatic. When DDC controls by others is ordered, the Phase and Brown Out protection will be wired back to a set of terminals or to customer supplied controller for status.
C = *Cooling Coil UV Lights* - Factory provided and installed UV lights. Option is available to help prevent mold and microbial growth on the cooling coil and drain pan. UV fixture is factory installed near the supply blower inlet, pointed towards the cooling coil and drain pan. Door interlocks are also included with this option. Bulbs ship boxed in the control compartment for field installation.

Feature 15 - Accessories Continued

E = *Compressor Sound Blankets* - Factory provided and installed compressor sound dampening blankets on all compressors.
F = *Low Limit Control + Phase & Brown Out Protection* - Option A + B
G = *Low Limit Control + Cooling Coil UV Lights* - Option A + C
J = *Low Limit Control + Compressor Sound Blankets* - Option A + E
K = *Phase & Brown Out Protection + Cooling Coil UV Lights* - Option B + C
M = *Phase & Brown Out Protection + Compressor Sound Blankets* - Option B + E
P = *Cooling Coil UV Lights + Compressor Sound Blankets* - Option C + E
R = *Low Limit Control + Phase & Brown Out Protection + Cooling Coil UV Lights* - Option A + B + C
T = *Low Limit Control + Phase & Brown Out Protection + Compressor Sound Blankets* - Option A + B + E
V = *Low Limit Control + Cooling Coil UV Lights + Compressor Sound Blankets* - Option A + C + E
Z = *Phase & Brown Out Protection + Cooling Coil UV Lights + Compressor Sound Blankets* - Option B + C + E
4 = *Low Limit Control + Phase & Brown Out Protection + Cooling Coil UV Lights + Compressor Sound Blankets* - Option A + B + C + E

Feature 16A
Control Sequence

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - **B** A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *Standard Terminal Block for Thermostat* - Terminal strip for use with a thermostat. See Controls section and Thermostat Terminals sheet from AAON ECat for more information.
A = *Terminal Block for Thermostat + Isolation Relays* - Standard terminal strip for use with thermostats only, with factory installed isolation relays to prevent voltage drop in the controls circuit. This option is strongly recommended on applications where there is a question about the length of thermostat wiring. See Controls section and Thermostat Terminals sheet from AAON ECat for more information.

Feature 16A - Control Sequence Continued

B = *Single Zone VAV Unit Controller - VAV Cool + CAV Heat* - VAV controls for systems which control the space temperature for only a single zone. During the cooling mode of operation the supply fan modulates based on the space temperature and mechanical cooling modulates based on the supply air temperature. Variable capacity or two-step compressors are required. During the heating mode of operation the supply fan provides constant air flow and heating modulates based on the controlling temperature. Supply air temperature sensor is factory installed. Space temperature sensor with setpoint reset and unoccupied override is factory supplied with AAON Controls for field installation. A building static pressure sensor is factory supplied for field installation if power exhaust with VFD is selected. Outside air humidity sensor is factory mounted and wired if enthalpy controlled economizer is selected. See Controls section for more information.
D = *VAV Unit Controller - VAV Cool + CAV Heat* - Standard VAV controls for non-heat pump systems and heat pump systems. During the cooling mode of operation the supply fan modulates based on the supply static pressure and mechanical cooling modulates based on the supply air temperature. During the heating mode of operation the supply fan provides constant air flow and heating modulates based on the controlling temperature. Return and outside air temperature sensors are factory mounted and wired. Supply air static pressure probe and supply air temperature sensor are factory supplied for field installation. Space temperature sensor with setpoint reset and unoccupied override is factory supplied with AAON controller for field installation. A building static pressure sensor is factory supplied for field installation if power exhaust with VFD is selected. Outside air humidity sensor is factory mounted and wired if enthalpy controlled economizer is selected. See Controls section for more information.
E = *Constant Air Volume Unit Controller - CAV Cool + CAV Heat* - Standard Constant Volume controls for non-heat pump systems. During the cooling mode of operation the supply fan provides constant air flow and mechanical cooling modulates based on the controlling temperature. During the heating mode of operation the supply fan provides constant air flow and heating modulates based on the controlling temperature. Outside air temperature sensor is factory mounted and wired. Supply air temperature sensor and space temperature sensor with setpoint reset and unoccupied override are factory supplied for field installation. A building static pressure sensor is factory supplied for field installation if power exhaust with VFD is selected. Outside air humidity sensor is factory mounted and wired if enthalpy controlled economizer is selected. See Controls section for more information.
F = *Makeup Air Unit Controller* - Standard Makeup Air controls for non-heat pump systems. During the cooling mode of operation the supply fan provides constant air flow and mechanical cooling modulates based on the controlling temperature. During the heating mode of operation the supply fan provides constant air flow and heating modulates based on the controlling temperature. Outside air temperature sensor is factory mounted and wired. Supply air temperature sensor is factory supplied for field installation. A building static pressure sensor is factory supplied for field installation if power exhaust with VFD is selected. See Controls section for more information.
M = *Field Installed DDC Controls by Others* - Provides an expanded terminal strip to interface with controls by others. This expanded terminal strip includes terminals for remote start/stop of the heat wheel, remote start/stop of power exhaust fan, CO_2 sensor, and Phase & Brown out. See Controls section and Field controlled Terminal sheet from AAON ECat for more information.

Feature 16A - Control Sequence Continued

N = *Field Installed DDC Controls + Installation Relays* - Provides an expanded terminal strip to interface with controls by others, with factory installed isolation relays to prevent voltage drop in the controls circuit. This option is strongly recommended on applications where there is a question about the length of control wiring. This expanded terminal strip includes terminals for remote start/stop of the heat wheel, remote start/stop of power exhaust fan, CO_2 sensor, and Phase & Brown out. See Controls section and Field controlled Terminal sheet from AAON ECat for more information.

P = *Factory Installed DDC Controls by Others + Installation Relays* - Factory installed controls with factory installed isolation relays to prevent a voltage drop in the controls circuit. Requires a Special Pricing Authorization (SPA) issued by the Applications Department. AAON sales representative must provide a controls parts list, cut sheets, and wiring diagrams before the SPA will be issued. Once the order is entered a completed Special Parts Request Form is sent to the sales rep with control numbers assigned. The sales rep must then forward the form to the controls supplier who must then transfer these numbers to all parts and boxes that are sent to AAON. Proper routing of customer supplied parts to units in production will be delayed if this procedure is not followed. AAON will not deal directly with the controls provider. The AAON sales rep must be the information conduit. See the "Policy Manual for Sales Representatives" for more detailed information on the proper procedure. See Field controlled Terminal sheet from AAON ECat for more information

Feature 16B

Control Supplier

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B **A** 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *None*

A = *AAON Controls* - Factory installed AAON controller. See Controls section for more information.

C = *AAON Controls Supervisory* - This option allows for controls by others, but the controls for the variable speed compressors, electronic expansion valves, and head pressure control of the condenser fans is by AAON controls for proper control and compressor protection.

Feature 16C
Control Supplier Options

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A **0** B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *None*

Feature 16D
BMS Connection & Diagnostics

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 **B** - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *None*
B = *BACnet MSTP* - AAON supplied and factory installed controller with Bacnet MSTP license. See Feature 16A for available control configurations. See Controls section and unit specific Controller Components worksheet in AAON ECat for more information.
K = *BACnet MSTP with Diagnostics* - Option B + Extra sensors (liquid pressure, liquid temperature, and discharge temperature) that provide more refrigeration diagnostic values.

Feature 17A
Preheat Configuration

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - **0** 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *Standard - None*
D = *Hot Water Preheat Coil - Mixed Air* - Mixed air hot water preheat coil mounted adjacent and upstream of the cooling coil and downstream of the unit filters. Option is only available on units with chill water coils. No valves or controls are included with this option.
E = *Steam Distributing Preheat Coil - Mixed Air* - Mixed air steam preheat coil mounted adjacent and upstream of the cooling coil and downstream of the unit filters. Option is only available on units with chill water coils. No valves or controls are included with this option. The maximum operating pressure for steam coils is 25 psi.

Table 7 - Preheat Hot Water & Steam Coil Sizes

	Hot Water Preheat Coils			Steam Distributing Preheat Coils		
	Fin Length x Fin Height	Coil Quantity	Coil Total Face Area (ft^2)	Fin Length x Fin Height	Coil Quantity	Coil Total Face Area (ft^2)
(55-75 tons)	96”x43.8”	2	58.4	45.5”x43.5”	4	55.0
(90-140 tons)	58”x43.8”	4	70.6	56”x43.5”	4	67.7

Feature 17B
Preheat Sizing

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 **0** - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *Standard - None*
A = *1 Row Single Serpentine 8 fpi*
B = *1 Row Single Serpentine 10 fpi*
C = *1 Row Single Serpentine 12 fpi*
D = *1 Row Half Serpentine 8 fpi*
E = *1 Row Half Serpentine 10 fpi*
F = *1 Row Half Serpentine 12 fpi*
K = *2 Row Single Serpentine 8 fpi*
L = *2 Row Single Serpentine 10 fpi*
M = *2 Row Single Serpentine 12 fpi*
N = *2 Row Half Serpentine 8 fpi*
P = *2 Row Half Serpentine 10 fpi*
Q = *2 Row Half Serpentine 12 fpi*

Feature 18A
Option Box Location

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - **0** 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *None*
5 = *Empty Energy Recovery Wheel Option Box* - Factory installed empty energy recovery wheel option box with factory installed extruded aluminum, low leakage, aluminum gear driven, economizer damper assembly for field installation of special options.

Feature 18B
Option Box Size

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 **0** 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *None*
W = *Empty Energy Recovery Wheel Option Box*

Feature 18C
Box Accessories

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 **0** - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *None*

Feature 19
Outside Air Accessories

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - **A** 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *No Outside Air Hood - 100% Return Air*
A = *Outside Air Hood*
B = *Outside Air Hood with Metal Mesh Filters* - Washable expanded aluminum mesh filters mounted over the outside air intake. Initial resistance is 0.088 in. w.g. at 520 fpm. Filters are coated for adhesion. Option is used to filter large particles in the outside air and to prevent moisture carryover in humid environments. Filters meet the requirements of UL Class 2
C = *Outside Air Hood + Air Flow Measuring Station Size A* - Option A + outside airflow measuring station and airflow signal processor that communicates directly with the factory provided control systems and can also be used with customer provided controls with a 0-10 VDC output signal. LonTalk and BACnet may also be available for some applications. Monitoring size is dependent on the cfm.
D = *Outside Air Hood + Air Flow Measuring Station Size B* - Option A + outside airflow measuring station and airflow signal processor that communicates directly with the factory provided control systems and can also be used with customer provided controls with a 0-10 VDC output signal. LonTalk and BACnet may also be available for some applications. Monitoring size is dependent on the cfm.
E = *Outside Air Hood + Air Flow Measuring Station Size C* - Option A + outside airflow measuring station and airflow signal processor that communicates directly with the factory provided control systems and can also be used with customer provided controls with a 0-10 VDC output signal. LonTalk and BACnet may also be available for some applications. Monitoring size is dependent on the cfm.
G = *Outside Air Hood with Metal Mesh Filters + Air Flow Measuring Station Size A* - Option B + outside airflow measuring station and airflow signal processor that communicates directly with the factory provided control systems and can also be used with customer provided controls with a 0-10 VDC output signal. LonTalk and BACnet may also be available for some applications. Monitoring size is dependent on the cfm.
H = *Outside Air Hood with Metal Mesh Filters + Air Flow Measuring Station Size B* - Option B + outside airflow measuring station and airflow signal processor that communicates directly with the factory provided control systems and can also be used with customer provided controls with a 0-10 VDC output signal. LonTalk and BACnet may also be available for some applications. Monitoring size is dependent on the cfm.
J = *Outside Air Hood with Metal Mesh Filters + Air Flow Measuring Station Size C* - Option B + outside airflow measuring station and airflow signal processor that communicates directly with the factory provided control systems and can also be used with customer provided controls with a 0-10 VDC output signal. LonTalk and BACnet may also be available for some applications. Monitoring size is dependent on the cfm.

Feature 19 - Outside Air Accessories Continued

Table 8 - Airflow Measuring Stations

Feature 4A	Tonnage	F19	Airflow Measuring Station Size	Outside Air
0 - 100% OA	All	C, G	A	OA > 4700 cfm
	All	D, H	B	OA > 3530 cfm
	All	E, J	C	OA > 2740 cfm
A,B,C	All	C, G	A	OA > 5280 cfm
E - Economizer	55-75	C, G	A	OA > 2180 cfm
	90-140	C, G	A	OA > 4700 cfm
	90-140	D, H	B	OA > 3530 cfm
	90-140	E, J	C	OA > 2740 cfm
G,J,K,Q	All	C, G	A	OA > 4700 cfm
G,J,K,Q	All	D, H	B	OA > 3530 cfm
G,J,K,Q	All	E, J	C	OA > 2330 cfm

Feature 20

Cabinet Options

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A **0** 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *None*
B = *SA & RA Burglar Bars* - 1/2 inch diameter welded steel bars crosshatched 6-8 inches apart across the unit supply and return air openings.

Feature 21

Accessories

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 **0** 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *None*

Feature 22
Maintenance Accessories

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 **0** 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *Standard* - None
A = *Factory Wired 115V Convenience Outlet* - Factory wired 2x4 inch electrical box with ground fault interrupter receptacle located within the controls vestibule. The circuit is rated at 12 amps maximum and is factory wired to a step-down transformer, fuse block and outlet disconnect. The circuit is wired to the line side of the unit power block or power switch permitting use of the outlet while power to the unit is shut off. **Caution: When the power to the unit is disconnected with the factory installed unit power switch, the convenience outlet will remain live.**

Figure 9 - Factory Wired Convenience Outlet

B = *Field Wired 115V Convenience Outlet* - Field wired 2x4 electrical box with ground fault interrupter receptacle, located inside the unit control cabinet. Receptacle is rated for 20 amps. The outlet must be field wired to a 115 VAC power supply.
C = *Control Panel LED Service Lights* - LED service lights included in the controls and compressor compartments. The light circuit is wired to the line side of the unit power block, permitting use of the lights while the power to the unit is shut off.
D = *Remote Start/Stop contacts* - Remote start/stop terminals labeled ST1 and ST2. This option is normally used with a remote time clock or space type thermostat with occupied/unoccupied capability. Field supplied contact closure is needed for unit operation. When contacts are open, the low voltage circuit is broken and the unit will not operate.
E = *Supply Fan Auxiliary Contacts* - Contacts on the low voltage terminal block that close when the supply fan is energized. This option is used to interface with other devices or to indicate unit operation.
F = *Option A + C - Factory Wired 115V Convenience Outlet + Control Panel LED Service Lights*
G = *Option A + D - Factory Wired 115V Convenience Outlet + Remote Start/Stop Contacts*
H = *Option A + E - Factory Wired 115V Convenience Outlet + Supply Fan Auxiliary Contacts*
J = *Option B + C - Field Wired 115V Convenience Outlet + Control Panel LED Service Lights*
K = *Option B + D - Field Wired 115V Convenience Outlet + Remote Start/Stop Contacts*
L = *Option B + E - Field Wired 115V Convenience Outlet + Supply Fan Auxiliary Contacts*
M = *Option C + D - Control Panel LED Service Lights + Remote Start/Stop Contacts*

Feature 22 - Maintenance Accessories Continued

N = *Option C + E - Control Panel LED Service Lights + Supply Fan Auxiliary Contacts*
P = *Option D + E - Remote Start/Stop Contacts + Supply Fan Auxiliary Contacts*
Q = *Option A + C + D - Factory Wired 115V Convenience Outlet + Control Panel LED Service Lights + Remote Start/Stop Contacts*
R = *Option A + C + E - Factory Wired 115V Convenience Outlet + Control Panel LED Service Lights + Supply Fan Auxiliary Contacts*
S = *Option A + D + E - Factory Wired 115V Convenience Outlet + Remote Start/Stop Contacts + Supply Fan Auxiliary Contacts*
T = *Option B + C + D - Field Wired 115V Convenience Outlet + Control Panel LED Service Lights + Remote Start/Stop Contacts*
U = *Option B + C + E - Field Wired 115V Convenience Outlet + Control Panel LED Service Lights + Supply Fan Auxiliary Contacts*
V = *Option B + D + E - Field Wired 115V Convenience Outlet + Remote Start/Stop Contacts + Supply Fan Auxiliary Contacts*
W = *Option C + D + E - Control Panel LED Service Lights + Remote Start/Stop Contacts + Supply Fan Auxiliary Contacts*
Y = *Option A + C + D + E - Factory Wired 115V Convenience Outlet + Control Panel LED Service Lights + Remote Start/Stop Contacts + Supply Fan Auxiliary Contacts*
Z = *Option B + C + D + E - Field Wired 115V Convenience Outlet + Control Panel LED Service Lights + Remote Start/Stop Contacts + Supply Fan Auxiliary Contacts*

Feature 23
Code Options

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 **0** 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *Standard - ETL U.S.A. Listing* - All AAON equipment is ETL U.S.A. listed and tested in accordance with the latest revision of UL 1995. If a Special Pricing Authorization (SPA) is applied there may be additional costs incurred to secure the ETL label.
A = *Chicago Code* - Chicago code for a unit. Chicago code states that unit wiring to the condenser fan motors must be in flexible conduit and refrigerant pressure relief valves must be supplied.
B = *ETL U.S.A. + Canada Listing* - Equipment is ETL U.S.A. and Canada listed and tested in accordance with the latest revision of UL Standard 1995/CSA C22.2 No. 236. The nameplate, safety labels and warnings will be in English and French.

Feature 24
Shipping Splits

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 **0** - E 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *Standard*

Feature 25
Air-Cooled Condenser Accessories

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - **E** 0 0 0 0 0 - 0 0 0 0 0 0 B

0 = *Standard*
E = *VFD Condenser Fan Head Pressure Control* - VFD Controlled Condenser Fans - Variable Speed - Factory provided and factory programmed VFD(s) receives inputs from pressure transducers on each refrigerant circuit and varies the fan speed based on the pressure inputs to maintain a discharge pressure. Standard pressure setpoint is 340 psi for standard air-cooled systems and 400 psi for modulating hot gas reheat air-cooled systems. With AAON unit controls, VFD's will be controlled directly by AAON Control System.
K = *Low Sound Condenser Fan – Head Pressure Control* - Condenser fans are specifically designed for reduced and redirected sound emission. The fans include optimized orifice, guide vanes, and serrated blades. These condenser fans are driven by EC motors which either speed up or slow down to adjust air flow in order to maintain the head pressure setpoint. The head pressure setpoint is field adjustable from 260-400 psi with a default setting of 340 psi with a Head Pressure Control Module. Option includes Low Sound ECM condenser fans, condenser head pressure controller and discharge pressure transducers. This option adds 9 inches of height to the standard unit. Minimum allowable ambient temperature for cooling operation is 35°F.

Feature 26
Blank

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E **0** 0 0 0 0 - 0 0 0 0 0 0 B

0 = *None*

Feature 27
Water-Cooled Condenser Accessories

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 **0** 0 0 0 - 0 0 0 0 0 0 B

0 = *None (No Water-Cooled Condenser)*

Feature 28
Energy Recovery Wheel Accessories

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 **0** 0 0 - 0 0 0 0 0 0 B

0 = *None*
A = *Energy Recovery Wheel Defrost - Start-Stop* - Adjustable temperature sensor and timer wired to periodically stop the wheels rotation and allow warm exhaust air to defrost the wheel.
B = *Energy Recovery Wheel Rotation Detection* - Wheel rotation sensor and speed switch output module mounted in the energy recovery wheel section. The module contains a normally open and a normally closed set of contacts wired to the low voltage terminal block for field indication of wheel rotation.
F = *Option A + B - Energy Recovery Wheel Defrost - Start-Stop + Energy Recovery Wheel Rotation Detection*

Feature 29
VFD Options

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 **0** 0 - 0 0 0 0 0 0 B

0 = *None.*
A = *Shaft Grounding on all SA, RA, EA motors* - Shaft grounding on all supply air, return air, and exhaust air motors.
C = *BACNet VFD on all motors* - BACnet card on all supply air, return air, and exhaust air motors which allows users to monitor and control drives on a BACnet network using RS-485 technology and MS/TP protocol.
G = *Option A + C* - Shaft grounding

Feature 30
Miscellaneous Options

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 **0** - 0 0 0 0 0 0 B

0 = *None*
A = *High Condensate Level Switch* - Control switch that shuts down the 24V control circuit when a high water level in the drain pan is detected to prevent overflow.

Feature 31
Blank

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - **0** 0 0 0 0 0 B

0 = *Standard*

Feature 32
Blank

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 **0** 0 0 0 0 B

0 = *Standard*

Feature 33
Blank

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 **0** 0 0 0 B

0 = *Standard*

Feature 34
Blank

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 **0** 0 0 B

0 = *Standard*

Feature 35
Warranty

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 **0** 0 B

0 = *Standard Warranty* - RN Series includes a standard 1 year parts only warranty. RN Series unit warranty coverage is 12 months from the date of equipment startup or 18 months from the date of original equipment shipment from the factory, whichever is less.

Feature 36
Cabinet Material

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 **0** B

0 = *Galvanized Cabinet - Double Wall + R-13 Foam Insulation* - Unit construction consists of 2 inch thick double wall closed cell polyurethane foam insulated composite panels with a minimum R-value of 13. A thermal break between the inside and outside of the cabinet is included in the panels. Drain pans are fabricated of 18 gauge 304 stainless steel, include 1 inch of fiberglass insulation under the drain pan and are double sloped to meet ASHRAE 62.1, Indoor Air Quality guidelines.

Feature 37
Specials & Paint

Example:

RN A - 105 - E - 0 - 3 - C A A 0 A - 0 0 0 0 0 : A 0 - A A M 0 L - B 0 0 - 0 0 0 0 0 - 0 0 0 0 0 - 0 A - 0 0 0 0
- 0 0 - 0 0 - B - 0 0 0 - 0 0 - B A 0 B - 0 0 - 0 0 0 - A 0 0 0 0 0 - E 0 0 0 0 0 - 0 0 0 0 0 0 **B**

B = *Premium AAON Gray Exterior Paint* - Cabinet exterior is primer washed then spray coated with a two-part polyurethane, heat-baked exterior paint. The paint is gray in color and capable of withstanding at least 2,500 hours, with no visible corrosive effects, when tested in a salt spray and fog atmosphere in accordance with the ASTM B 117-95 test procedure.
X = *SPA + Premium AAON Gray Exterior Paint* - The Applications Department must issue a Special Pricing Authorization (SPA) to include a non-standard option.
4 = *SPA + Special Exterior Paint Color* - If a special paint color is specified, a set-up charge and price add per unit is required. Use this designation if other special paint options are necessary. The Applications Department must issue a Special Pricing Authorization (SPA) to include a non-standard option.

General Data

Unit Information

Table 9 - RN Series E Cabinet (055-075 tons) DX and CW Cooling Information

	Model		
	055	065	075
Compressors			
Quantity/Nominal tons			
R-410A Lead Variable Speed Scroll Compressor	2/13.5 ton VFD, 1/28.9 Tandem	2/15.2 ton VFD, 1/31.9 Tandem	2/17.7 ton VFD, 1/31.5 Tandem
Unit Turndown (%)	15%	13%	15%
R-410A Evaporator Coils			
Number of Circuits	3, Interlaced		
Standard DX Coil			
Quantity/Face Area Coil/ Total Face Area	2/29.3 ft^2/ 58.7 ft^2		
Rows/fpi	4/14		
6 Row DX Coil			
Quantity/Face Area Coil/ Total Face Area	2/29.3 ft^2/ 58.7 ft^2		
Rows/fpi	6/12		
Chilled Water Coils			
Quantity/Face Area	2/29.2 ft^2 (58.3 ft^2 total)		
Rows/fpi	4 or 6/8, 10, or 12 (Single or Half Serpentine)		
Standard Coil	Single Serpentine with 10 fpi		
Connection Sizes	(4) 2-1/8”OD water connections		

Table 10 - RN Series E Cabinet (055-075 tons) Gas Heat Information

	Model		
	055	065	075
Gas Heat			
Input Capacity/Output Capacity (MBH)	800/640, 1200/960, 1600/1280, 2000/1600, 2400/1920		
Natural Gas Capacity Steps (MBH)	800 MBH: 2 stage - 800/400, 4 stage - 800/600/400/200, Modulating - 3:1 Turndown or 7.5:1 High Turndown 1200 MBH: 3 stage - 1200/800/400, 6 stage - 1200/1000/800/600/400/200, Modulating - 4.5:1 Turndown or 11.3:1 High Turndown 1600 MBH: 4 stage - 1600/1200/800/400, Modulating - 6:1 Turndown or 15.1:1 High Turndown 2000 MBH: 5 stage - 2000/1600/1200/800/400, Modulating - 7.5:1 Turndown or 18.9:1 High Turndown 2400 MBH: 6 stage - 2400/2000/1600/1200/800/400, Modulating - 9:1 Turndown or 22.7:1 High Turndown		
LP Gas Capacity Steps (MBH)	800 MBH: 2 stage - 800/400 1200 MBH: 3 stage - 1200/800/600 1600 MBH: 4 stage - 1600/1200/800/400 2000 MBH: 5 stage - 2000/1600/1200/800/400 2400 MBH: 6 stage - 2400/2000/1600/1200/800/400		

Table 11 - RN Series E Cabinet (055-075 tons) Electric Heat & Heating Coils Information

	Model		
	055	065	075
Electric Heat			
Capacity (kW)			
230/460/575V 3Φ	80, 120, 160, 200, 240, 280, 320		
208V	60.1, 90.1, 120.1, 150.2, 180.2, 210.3, 240.4		
Stages (kW)	80 kW - 2 or Fully Modulating with SCR 120kW - 2, 3 or Fully Modulating with SCR 160 kW - 2, 4 or Fully Modulating with SCR 200 kW, 240 kW, 280 kW, 320 kW - 2, 4, 6 or Fully Modulating with SCR		
Hot Water Heating Coil			
Quantity/Face Area Coil/ Total Face Area	2/19.8 ft^2 (39.7 ft^2 total)		
Rows/fpi	1/8, 10, or 12 (Half Serpentine) 2/8, 10 or 12 (Single or Half Serpentine)		
Connection Sizes	(4) 2-1/8”OD water connections		
Steam Heating Coil			
Quantity/Face Area Coil/ Total Face Area	2/19.3 ft^2 (38.6 ft^2 total)		
Rows/fpi	1 or 2/8, 10 or 12		
Connection Sizes	(4) 2-1/8”OD steam connections		
Hot Water Preheat Coil			
Quantity/Face Area Coil/ Total Face Area	2/29.2 ft^2 (58.4 ft^2 total)		
Rows/fpi	1/8, 10, or 12 (Half Serpentine) 2/8, 10 or 12 (Single or Half Serpentine)		
Connection Sizes	(4) 1-3/8”OD water connections		
Steam Preheat Coil			
Quantity/Face Area Coil/ Total Face Area	4/13.7 ft^2 (55.0 ft^2 total)		
Rows/fpi	1 or 2/8, 10 or 12		
Connection Sizes	(8) 2-1/8”OD steam connections		

Table 12 - RN Series E Cabinet (055-075 tons) Fan Information

	Model		
	055	065	075
Supply Fans			
Quantity/Type	2/Direct Drive Backward Curved Plenum		
Air-Cooled Condenser Fans			
Quantity	4		
Type/hp	30” EC or VFD controlled Fans/1.5hp		
Power Exhaust Fans			
Quantity/Type	1 or 2/ Direct Drive Backward Curved Plenum		
hp	3, 5, 7.5, 10, 15, 20, 25, 30, 40		
Power Return Fans			
Quantity/Type	1 or 2/ Direct Drive Backward Curved Plenum		
hp	3, 5, 7.5, 10, 15, 20, 25, 30, 40		

Table 13 - RN Series E Cabinet (090-105 tons) DX and CW Cooling Information

	Model	
	090	105
Compressors		
Quantity/Nominal tons		
R-410A Lead Variable Speed Scroll Compressor	2/19.7 ton VFD, 1/49.4 Tandem	2/22 ton VFD, 1/53.2 Tandem
Unit Turndown (%)	13%	11%
R-410A Evaporator Coils		
Number of Circuits	3, Interlaced	
Standard DX Coil		
Quantity/Face Area Coil/ Total Face Area	2/39.8 ft^2/ 79.6 ft^2	
Rows/fpi	4/14	
6 Row DX Coil		
Quantity/Face Area Coil/ Total Face Area	2/39.8 ft^2/ 79.6 ft^2	
Rows/fpi	6/12	
Chilled Water Coils		
Quantity/Face Area	4/17.6 ft^2 (70.5 ft^2 total)	
Rows/fpi	4 or 6/8, 10, or 12 (Single or Half Serpentine)	
Standard Coil	Single Serpentine with 10 fpi	
Connection Sizes	(8) 2-1/8”OD water connections	

Table 14 - RN Series E Cabinet (090-105 tons) Gas Heat Information

	Model	
	090	105
Gas Heat		
Input Capacity/Output Capacity (MBH)	800/640, 1200/960, 1600/1280, 2000/1600, 2400/1920	
Natural Gas Capacity Steps (MBH)	800 MBH: 2 stage - 800/400, 4 stage - 800/600/400/200, Modulating - 3:1 Turndown or 7.5:1 High Turndown 1200 MBH: 3 stage - 1200/800/400, 6 stage - 1200/1000/800/600/400/200, Modulating - 4.5:1 Turndown or 11.3:1 High Turndown 1600 MBH: 4 stage - 1600/1200/800/400, Modulating - 6:1 Turndown or 15.1:1 High Turndown 2000 MBH: 5 stage - 2000/1600/1200/800/400, Modulating - 7.5:1 Turndown or 18.9:1 High Turndown 2400 MBH: 6 stage - 2400/2000/1600/1200/800/400, Modulating - 9:1 Turndown or 22.7:1 High Turndown	
LP Gas Capacity Steps (MBH)	800 MBH: 2 stage - 800/400 1200 MBH: 3 stage - 1200/800/600 1600 MBH: 4 stage - 1600/1200/800/400 2000 MBH: 5 stage - 2000/1600/1200/800/400 2400 MBH: 6 stage - 2400/2000/1600/1200/800/400	

Table 15 - RN Series E Cabinet (090-105 tons) Electric Heat & Heating Coils Information

	Model	
	090	105
Electric Heat		
Capacity (kW)		
230/460/575V 3Φ	80, 120, 160, 200, 240, 280, 320	
208V	60.1, 90.1, 120.1, 150.2, 180.2, 210.3, 240.4	
Stages (kW)	80 kW - 2 or Fully Modulating with SCR 120kW - 2, 3 or Fully Modulating with SCR 160 kW - 2, 4 or Fully Modulating with SCR 200 kW, 240 kW, 280 kW, 320 kW - 2, 4, 6 or Fully Modulating with SCR	
Hot Water Heating Coil		
Quantity/Face Area Coil/ Total Face Area	2/19.9 ft^2 (39.7 ft^2 total)	
Rows/fpi	1/8, 10, or 12 (Half Serpentine) 2/8, 10 or 12 (Single or Half Serpentine)	
Connection Sizes	(4) 2-1/8”OD water connections	
Steam Heating Coil		
Quantity/Face Area Coil/ Total Face Area	2/19.3 ft^2 (38.6 ft^2 total)	
Rows/fpi	1 or 2/8, 10 or 12	
Connection Sizes	(4) 2-1/8”OD steam connections	
Hot Water Preheat Coil		
Quantity/Face Area Coil/ Total Face Area	4/17.6 ft^2 (70.6 ft^2 total)	
Rows/fpi	1/8, 10, or 12 (Half Serpentine) 2/8, 10 or 12 (Single or Half Serpentine)	
Connection Sizes	(8) 1-3/8”OD water connections	
Steam Preheat Coil		
Quantity/Face Area Coil/ Total Face Area	4/16.9 ft^2 (67.7 ft^2 total)	
Rows/fpi	1 or 2/8, 10 or 12	
Connection Sizes	(8) 2-1/8”OD steam connections	

Table 16 - RN Series E Cabinet (090-105 tons) Fan Information

	Model	
	090	105
Supply Fans		
Quantity/Type	1 or 2 Direct Drive Backward Curved Plenum	
Air-Cooled Condenser Fans		
Quantity	8	
Type/hp	30” EC or VFD controlled Fans/1.5hp	
Power Exhaust Fans		
Quantity/Type	1 or 2/ Direct Drive Backward Curved Plenum	
hp	3, 5, 7.5, 10, 15, 20, 25, 30, 40	
Power Return Fans		
Quantity/Type	1 or 2/ Direct Drive Backward Curved Plenum	
hp	3, 5, 7.5, 10, 15, 20, 25, 30, 40	

Table 17 - RN Series E Cabinet (120-140 tons) DX and CW Cooling Information

	Model		
	120	130	140
Compressors			
Quantity/Nominal tons			
R-410A Lead Variable Speed Scroll Compressor	2/29.2 ton VFD, 1/56.9 Tandem	2/30.1 ton VFD, 1/68 Tandem	2/29.7 ton VFD, 1/71.3 Tandem
Unit Turndown (%)	13%	12%	11%
R-410A Evaporator Coils			
Number of Circuits	3, Interlaced		
Standard DX Coil			
Quantity/Face Area Coil/ Total Face Area	2/39.8 ft^2/ 79.6 ft^2		
Rows/fpi	4/14		
6 Row DX Coil			
Quantity/Face Area Coil/ Total Face Area	2/39.8 ft^2/ 79.6 ft^2		
Rows/fpi	6/12		
Chilled Water Coils			
Quantity/Face Area	4/17.6 ft^2 (70.5 ft^2 total)		
Rows/fpi	4 or 6/8, 10, or 12 (Single or Half Serpentine)		
Standard Coil	Single Serpentine with 10 fpi		
Connection Sizes	(8) 2-1/8”OD water connections		

Table 18 - RN Series E Cabinet (120-140 tons) Gas Heat Information

	Model		
	120	130	140
Gas Heat			
Input Capacity/Output Capacity (MBH)	800/640, 1200/960, 1600/1280, 2000/1600, 2400/1920		
Natural Gas Capacity Steps (MBH)	800 MBH: 2 stage - 800/400, 4 stage - 800/600/400/200, Modulating - 3:1 Turndown or 7.5:1 High Turndown 1200 MBH: 3 stage - 1200/800/400, 6 stage - 1200/1000/800/600/400/200, Modulating - 4.5:1 Turndown or 11.3:1 High Turndown 1600 MBH: 4 stage - 1600/1200/800/400, Modulating - 6:1 Turndown or 15.1:1 High Turndown 2000 MBH: 5 stage - 2000/1600/1200/800/400, Modulating - 7.5:1 Turndown or 18.9:1 High Turndown 2400 MBH: 6 stage - 2400/2000/1600/1200/800/400, Modulating - 9:1 Turndown or 22.7:1 High Turndown		
LP Gas Capacity Steps (MBH)	800 MBH: 2 stage - 800/400 1200 MBH: 3 stage - 1200/800/600 1600 MBH: 4 stage - 1600/1200/800/400 2000 MBH: 5 stage - 2000/1600/1200/800/400 2400 MBH: 6 stage - 2400/2000/1600/1200/800/400		

Table 19 - RN Series E Cabinet (120-140 tons) Electric Heat & Heating Coils Information

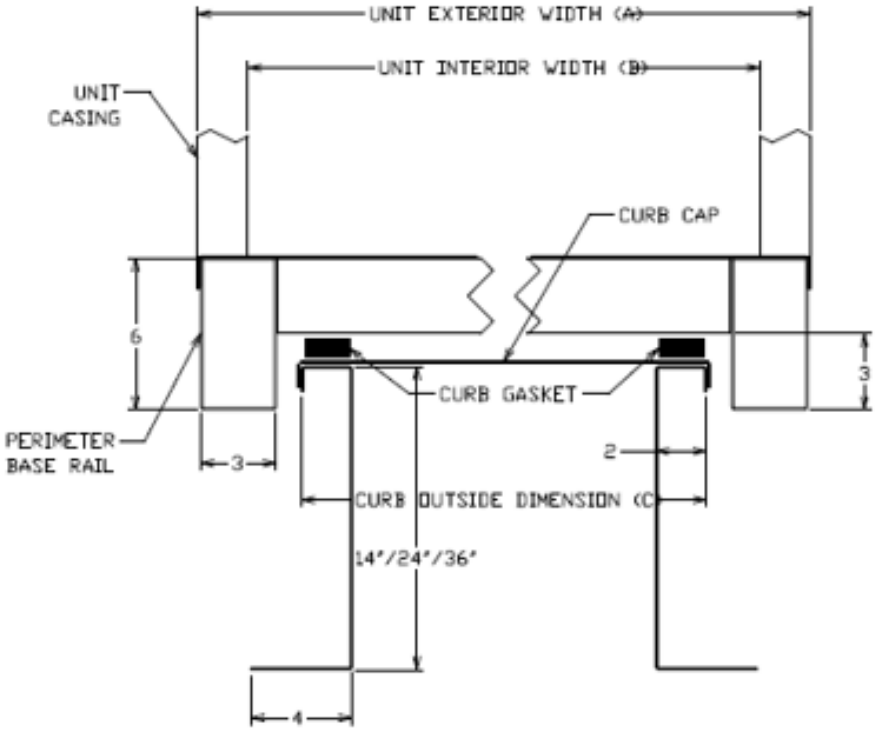
	Model		
	120	130	140
Electric Heat			
Capacity (kW)			
230/460/575V 3Φ	80, 120, 160, 200, 240, 280, 320		
208V	60.1, 90.1, 120.1, 150.2, 180.2, 210.3, 240.4		
Stages (kW)	80 kW - 2 or Fully Modulating with SCR 120kW - 2, 3 or Fully Modulating with SCR 160 kW - 2, 4 or Fully Modulating with SCR 200 kW, 240 kW, 280 kW, 320 kW - 2, 4, 6 or Fully Modulating with SCR		
Hot Water Heating Coil			
Quantity/Face Area Coil/ Total Face Area	2/19.9 ft^2 (39.7 ft^2 total)		
Rows/fpi	1/8, 10, or 12 (Half Serpentine) 2/8, 10 or 12 (Single or Half Serpentine)		
Connection Sizes	(4) 2-1/8”OD water connections		
Steam Heating Coil			
Quantity/Face Area Coil/ Total Face Area	2/19.3 ft^2 (38.6 ft^2 total)		
Rows/fpi	1 or 2/8, 10 or 12		
Connection Sizes	(4) 2-1/8”OD steam connections		
Hot Water Preheat Coil			
Quantity/Face Area Coil/ Total Face Area	4/17.6 ft^2 (70.6 ft^2 total)		
Rows/fpi	1/8, 10, or 12 (Half Serpentine) 2/8, 10 or 12 (Single or Half Serpentine)		
Connection Sizes	(8) 1-3/8”OD water connections		
Steam Preheat Coil			
Quantity/Face Area Coil/ Total Face Area	4/16.9 ft^2 (67.7 ft^2 total)		
Rows/fpi	1 or 2/8, 10 or 12		
Connection Sizes	(8) 2-1/8”OD steam connections		

Table 20 - RN Series E Cabinet (120-140 tons) Fan Information

	Model		
	120	130	140
Supply Fans			
Quantity/Type	2/Direct Drive Backward Curved Plenum		
Air-Cooled Condenser Fans			
Quantity	8		
Type/hp	30” EC or VFD controlled Fans/1.5hp		
Power Exhaust Fans			
Quantity/Type	1 or 2/ Direct Drive Backward Curved Plenum		
hp	3, 5, 7.5, 10, 15, 20, 25, 30, 40		
Power Return Fans			
Quantity/Type	1 or 2/ Direct Drive Backward Curved Plenum		
hp	3, 5, 7.5, 10, 15, 20, 25, 30, 40		

Roof Curb

A roof curb is a custom-made frame to provide the HVAC unit a solid structure to hold it in place on the roof. These curbs are made of a set of heavy gauge galvanized steel welded beams.



CURB MOUNTING

Dimension			
A	B	C	D
142”	138”	134”	139”

Due to the highly custom nature of this line of HVAC Units, further details on the curb for a specific unit will need to be requested. Further information will be provided through ECat.

Filter Information

Table 21 - 55, 65, and 75 ton Pre Filters

Feature	Option	Quantity / Size	Type
9A	0,A	No Pre Filters	
9A	B,C,D	15 / 20” x 24” x 2” & 5 / 16” x 20” x 2”	Pleated, MERV 8
19	B,G,H,J	28 / 20” x 20” x 1”	Metal Mesh, Outside Air

Table 22 - 90-140 ton Pre Filters

Feature	Option	Quantity / Size	Type
9A	0,A	No Pre Filters	
9A	B,C,D	21 / 20” x 24” x 2” & 7 / 16” x 20” x 2”	Pleated, MERV 8
19	B,G,H,J	28 / 20” x 20” x 1”	Metal Mesh, Outside Air

Table 23 - 55, 65, and 75 ton Unit Filters

Feature 9A	Quantity / Size	Type
0	25 / 18” x 20” x 2”	Pleated, MERV 8
A	15 / 24” x 20” x 4” & 5 / 16” x 20” x 4”	Pleated, MERV 8
B	15 / 24” x 20” x 4” & 5 / 16” x 20” x 4”	Pleated, MERV 11
C		Pleated, MERV 13
D		Pleated, MERV 14

Table 24 - 90-140 ton Unit Filters

Feature 9A	Quantity / Size	Type
0	35 / 18” x 20” x 2”	Pleated, MERV 8
A	21 / 24” x 20” x 4” & 7 / 16” x 20” x 4”	Pleated, MERV 8
B	21 / 24” x 20” x 4” & 7 / 16” x 20” x 4”	Pleated, MERV 11
C		Pleated, MERV 13
D		Pleated, MERV 14

Table 25 - 55, 65, and 75-140 ton Exhaust Filters

Feature 4C	Quantity / Size	Type
A,E	10 / 24” x 24” x 2”	Pleated, MERV 8
J,N	OA - 10 / 24” x 24” x 2” EA - 14 / 25” x 16” x 2”	
B,F	14 / 24” x 20” x 2”	
K,P	OA - 14 / 20” x 24” x 2” EA - 14 / 25” x 16” x 2”	

Control Options

Terminal Block

Low voltage terminal block for field wiring unit controls

Required Features
Feature 16A - Field Installed DDC Controls by Others
Feature 16A - Field Installed DDC Controls by Others with isolation relays

Standard Terminals Labels
[R] - 24VAC control voltage
[E] - Common
[G] - Fan enable
[Y1], [Y2], …, [Y8] - Cooling stage(s) enable(s)
[W1], [W2], …, [W12] - Heating stage(s) enable(s) or Aux Heat Stage(s) enable(s)
[HW] - Heat Wheel Enable
[PE] - Power Exhaust Enable
[RH1] - Reheat Enable
[EH1], [EH2], …, [EH12] - Emergency Heating stage(s) enable(s)
[A1], [A2] - Economizer enable, factory wired together, used to control occupied/unoccupied operation.
[C1], [C2]- Clogged filter switch contacts for standard filters, normally open.
[C3], [C4]- Clogged filter switch contacts for energy recovery wheel OA filter, normally open.
[C5], [C6]- Clogged filter switch contacts for energy recovery wheel EA filter, normally open.
[C7], [C8]- Clogged filter switch contacts for final filters, normally open.
[EC1-], [EC2+] - Economizer DDC actuator control signal for 0-10 VDC operation.
[CO2-], [CO2+] - CO_2 Sensor (0-10VDC)
[+], [-] - Modulating gas reset control signal, 0-10VDC or SCR supply air temperature control signal 0-10VDC
[S1-], [S2+] - Supply fan VFD, 0-10 VDC.
[PR1-], [PR2+] - Return fan VFD, 0-10 VDC.
[B1-], [B2+] - Exhaust fan VFD, 0-10VDC.
[AI1] & [COM] - Reheat Reset Signal (0-10VDC)
[AM], [AC] - Fan Current Feedback (0-10VDC = 0-100%)
[P1], [PC] - Fan Run Status (5-48VDC, 2-50mA)
[MA], [MC] - Fan Fault Status, normally closed.
[ST1], [ST2] - Remote start/stop contacts, must be closed for unit to operate.
[BI1], [BI2] - Remote Safety Shutdown terminals. Field installed smoke detector or remote Fire Alarm Shutdown contacts, must be closed for unit to operate.
[NO], [C], [NC] - Set of normally open and normally closed low voltage heat wheel rotation detection contacts.
[PBO1], [PBO2] - Phase & Brown Out status

Variable Air Volume (VAV) Unit Controller

Operation - Variable Air Volume Cooling and Constant Volume Heating

With standard AAON VAV controls, during the cooling mode of operation the supply fan modulates based on the supply air static pressure while mechanical cooling modulates based on the supply air temperature. During the heating mode of operation the supply fan provides constant airflow and heating modulates based on the controlling temperature.

Factory mounted and tested supply fan VFDs and ECMs are used to vary the speed of the supply fans and thus vary the amount of supply air. Because of the reduced speed, VAV units can be very energy efficient at part load conditions. VAV units can be used to serve multiple spaces with diverse or changing heating and cooling requirements, with only a single unit being required for multiple zones. Space temperature sensor included with AAON controller is used for supply air temperature setpoint reset and unoccupied override.

See Control Vendors section following for specifics.

Required Features

Feature 4A - Motorized Outside Air Damper or Economizer
Feature 11A - Hot Gas Bypass Non-Variable Compressor Circuits
Feature 16A - VAV Unit Controller

Standard Supplied Sensors

Outside Air Temperature
Supply Air Duct Temperature
Supply Air Duct Static Pressure
Return Air Temperature
Space Temperature with Temperature Setpoint Reset and Unoccupied Override
Building Pressure Transducer (with Power Exhaust)

Recommended Features

Model Option A1 - Variable Speed Scroll Compressors
Model Option B4 - Modulating Gas/SCR Electric
Feature 4A - Economizer and AAONAIRE Energy Recovery Wheel
Feature 7 - Fully Modulating Actuator
Feature 3B - VFD Controlled Supply Fans
Feature 11A - Modulating Hot Gas Reheat and Hot Gas Bypass Non-Variable Compressor Circuits

Single Zone Variable Air Volume (Single Zone VAV) Unit Controller

Operation - Variable Air Volume Cooling and Constant Volume/Variable Air Volume Heating
With standard AAON Single Zone VAV controls, during the cooling mode of operation the supply fan modulates based on the space or return air temperature, while mechanical cooling modulates based on the supply air temperature. For constant volume heating, during the heating mode of operation the supply fan provides constant airflow and heating modulates based on the controlling temperature. For variable air volume heating, during the heating mode of operation the supply fan modulates based on the space or return air temperature and heating modulates based on the supply air temperature.

Factory mounted and tested supply fan VFDs and ECMs are used to vary the speed of the supply fans and thus vary the amount of supply air. Because of the reduced speed, VAV units can be very energy efficient at part load conditions. AAON Single Zone VAV units should be applied to only a single zone. Space temperature sensor included with AAON controller is used for supply air temperature setpoint reset and unoccupied override.

See Control Vendors section following for specifics.

Required Features
Feature 4A - Motorized Outside Air Damper or Economizer
Feature 11A - Hot Gas Non-Variable Compressor Circuits
Feature 16A - Single Zone VAV Unit Controller

Standard Supplied Sensors
Outside Air Temperature
Supply Air Duct Temperature
Return Air Temperature
Space Temperature with Temperature Setpoint Reset and Unoccupied Override
Building Pressure Transducer (with Power Exhaust)

Recommended Features
Model Option A1 - Variable Speed Scroll Compressors
Model Option B4 - Modulating Gas/SCR Electric
Feature 4A - Economizer and AAONAIRE Energy Recovery Wheel
Feature 7 - Fully Modulating Actuator
Feature 3B - VFD Controlled Supply Fans
Feature 11A - Modulating Hot Gas Reheat and Hot Gas Bypass Non-Variable Compressor Circuits

Constant Volume (CV) Unit Controller

Operation - Constant Volume Cooling and Constant Volume Heating
With standard AAON Constant Volume controls, during the cooling mode of operation the supply fan provides constant air flow and mechanical cooling modulates based on the controlling temperature. During the heating mode of operation the supply fan provides constant air flow and heating modulates based on the controlling temperature.

A Constant Volume unit can be used to serve spaces with uniform heating and cooling requirements. Multiple units may be required for multiple zones allowing for redundancy. Space or supply air temperature sensor can be used as the controlling sensor. If supply air temperature is not used as the controlling sensor it is used as a temperature lockout. If supply air temperature sensor is used as the controlling sensor, space temperature sensor is used for supply air temperature setpoint reset and unoccupied override.

See Control Vendors section following for specifics.

Required Features
Feature 4A - Motorized Outside Air Damper or Economizer
Feature 16A - Constant Volume Unit Controller

Standard Supplied Sensors
Outside Air Temperature
Supply Air Duct Temperature
Space Temperature with Temperature Setpoint Reset and Unoccupied Override
Building Pressure Transducer (with Power Exhaust)

Recommended Features
Model Option A1 - Variable Speed Scroll Compressor
Model Option B4 - Modulating Gas/SCR Electric
Feature 4A - Economizer and AAONAIRE Energy Recovery Wheel
Feature 7 - Fully Modulating Actuator
Feature 11A - Modulating Hot Gas Reheat and Hot Gas Bypass Non-Variable Compressor Circuits

Makeup Air (MUA) Unit Controller

Operation - Constant Volume Cooling and Constant Volume Heating
With standard AAON Makeup Air controls, during the cooling mode of operation the supply fan provides constant airflow and mechanical cooling modulates based on the controlling temperature. During the heating mode of operation the supply fan provides constant airflow and heating modulates based on the controlling temperature.

Makeup Air units are designed to provide 100% outside air to the system for ventilation purposes. Makeup Air units can improve indoor air quality (IAQ) and also be used to positively pressurize the space.

See Control Vendors section following for specifics.

Required Features
Model Option B2 - Stainless Steel Heat Exchanger - Units with Gas Heat
Feature 4A - Motorized or Non-Motorized 100% Outside Air
Feature 7 - Two Position Actuator - With Motorized 100% Outside Air
Feature 11A - Hot Gas Non-Variable Compressor Circuits
Feature 16A - Makeup Air Unit Controller

Standard Supplied Sensors
Outside Air Temperature
Supply Air Temperature
Building Pressure Transducer (with Power Exhaust)

Recommended Features
Model Option A1 - Variable Speed Scroll Compressor
Model Option B4 - Modulating Gas/SCR Electric
Feature 4A - AAONAIRE Energy Recovery Wheel
Feature 11A - Modulating Hot Gas Reheat and Hot Gas Bypass Non-Variable Compressor Circuits

Control System

AAON - Orion™ Controls System

Figure 10 - AAON VCC-X Controller

The AAON VCC-X unit controller, which is part of the Orion Controls System, can be factory provided and factory installed in AAON RN Series units. It provides advanced control features, without complexity, in an easy to install and setup package. The VCC-X controller can be individually configured, including setpoint adjustment, sensor status viewing, and occupancy scheduling. It can control VAV, CAV, MUA, Single Zone VAV, PAC, and D-PAC units. Additional features and options can be managed by the controller with the addition of modular expansion I/O boards for the controller.

The VCC-X controller can be operated as a Stand Alone System, connected via modular cable to multiple VCC-X controllers in an Interconnected System, or connected via modular cable to multiple VCC-X controllers, VAV/Zone controllers, and Add-On controllers in a Networked System.

Protocol Adaptability™ is available for interfacing to LonWorks®, BACnet® or Johnson Controls N2 controls systems with the addition of specific gateways.

Required Options

To configure the VCC-X controller, an operator interface is needed. Available operator interfaces are the Modular Service Tool, Modular System Manager, System Manager TS, Tactio SI Touch Screen Interface connected via a Commlink5 and a PC equipped with free Microsoft Windows® based Orion Prism II software connected via a Commlink5. With optional accessories, remote connectivity to the controller via Prism II software can be accomplished.

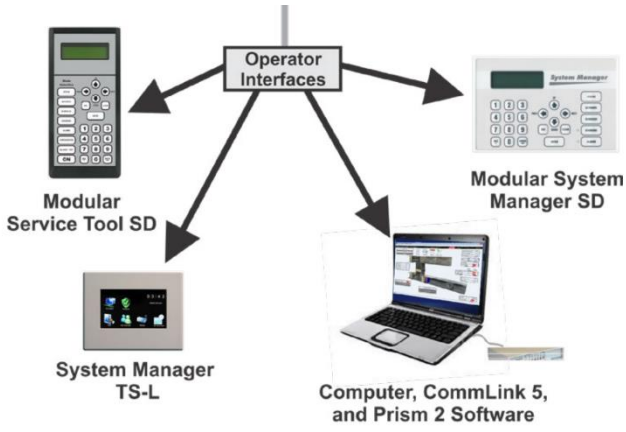


Figure 11 - VCC-X Controller Operator Interface Options

Electrical Service Sizing Data

Use the following equations to size the electrical service wiring and disconnect switch for the unit. Electrical data for a specific unit configuration can be found with the AAON ECat software. For further assistance in determining the electrical ratings, contact the Applications Department, or consult U.L. 1995.

The Minimum Circuit Ampacity (MCA) and Maximum Overcurrent Protection (MOP) must be calculated for all modes of operation which include the cooling mode of operation, the heating mode of operation, and if the unit is a heat pump the emergency heating mode of operation and auxiliary heating mode of operation. The emergency or backup heating mode of operation is when the secondary heater is in operation and heat pump or compressor heating is not in operation. The auxiliary or supplemental heating mode of operation is when heat pump or compressor heating is in operation and the secondary heater is also in operation.

To calculate the MCA and MOP, the number of motors and other current drawing devices in operation must be known for each mode of operation. The largest MCA and MOP values calculated from all the modes operation are the correct values and are also on the unit nameplate.

For example, during the cooling mode of operation of an air-cooled DX unit or an air-source heat pump the supply fans, compressors, and condenser fans are all in operation. During the heating mode of operation of an air-cooled DX unit or the emergency heating mode of operation of an air-source heat pump only the supply fans and heater are in operation. During the auxiliary heating mode of operation of an air-source heat pump the supply fans, compressors, condenser fans, and secondary heater are all in operation.

Once it is determined what current drawing devices are operating during each mode of operation use the equations shown below to calculate the MCA and MOP.

Use Rated Load Amps (RLA) for compressors and Full Load Amps (FLA) for all other motors and electric heaters. Exhaust fan motor current should only be added to the calculations if the unit is 10 tons and smaller, includes a two position actuator (Feature 7 = U), has no compressors, includes an energy recovery wheel and/or when DDC controls by others factory or field installed is ordered.

Load 1 = Current of the largest motor/compressor in operation
Load 2 = Sum of the currents of the remaining motors/compressors in operation
Load 3 = Current of electric heaters in operation
Load 4 = Any remaining loads greater than or equal to 1 amp

Electric Heat FLA Calculation

Single Phase

$$FLA = \frac{(Heating\ Element\ kW)x\ 1000}{Rated\ Voltage}$$

Three Phase

$$FLA = \frac{(Heating\ Element\ kW)x1000}{(Rated\ Voltage)x\sqrt{3}}$$

Electrical Service Sizing Data Continued

Cooling Mode Equations

MCA = 1.25(Load 1) + Load 2 + Load 4
MOP = 2.25(Load 1) + Load 2 + Load 4

Heating Mode or Emergency/Backup Heating Mode without Electric Heat Equations

MCA = 1.25(Load 1) + Load 2 + Load 4
MOP = 2.25(Load 1) + Load 2 + Load 4

Heating Mode or Emergency/Backup Heating Mode with Less than 50 kW of Electric Heat Equations

MCA = 1.25(Load 1 + Load 2 + Load 3 + Load 4)
MOP = 2.25(Load 1) + Load 2 + Load 3 + Load 4

Heating Mode or Emergency/Backup Heating Mode with Greater than or Equal to 50 kW of Electric Heat Equations

MCA = 1.25(Load 1 + Load 2) + Load 3 + 1.25(Load 4)
MOP = 2.25(Load 1) + Load 2 + Load 3 + Load 4

Auxiliary/Supplemental Heating Mode without Electric Heat Equations

MCA = 1.25(Load 1) + Load 2 + Load 4
MOP = 2.25(Load 1) + Load 2 + Load 4

Auxiliary/Supplemental Heating Mode with Less than 50 kW of Electric Heat Equations

MCA = 1.25(Load 1) + Load 2 + 1.25(Load 3) + Load 4
MOP = 2.25(Load 1) + Load 2 + Load 3 + Load 4

Auxiliary/Supplemental Heating Mode with Greater than or Equal to 50 kW of Electric Heat Equations

MCA = 1.25(Load 1) + Load 2 + Load 3 + Load 4
MOP = 2.25(Load 1) + Load 2 + Load 3 + Load 4

Electrical Service Sizing Data Continued

Fuse Selection

Select a fuse rating equal to the MOP value. If the MOP does not equal a standard fuse rating select the next lower standard fuse rating. If the MOP is less than the MCA then select the fuse rating equal to or greater than the MCA.

The standard ampere ratings for fuses, from the *NEC Handbook, 240-6*, shall be considered 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100, 110, 125, 150, 175, 200, 225, 250, 300, 350, 400, 450, 500, 600, 700, 800 and 1000 amperes.

Disconnect (Power) Switch Size

DSS $\geq$ MOP

Select the standard switch size equal to the calculated MOP value. If this value is not a standard size, select the next larger size.

Literature Change History

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