



SUBMITTAL

Project

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Date

Wednesday, March 13, 2019

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CU-11A - 38APD080

**Submittal Cover Sheet
Unit Report
Performance Summary Report
Acoustic Summary
Certified Drawings
Guide Specifications
Feature Sheet**

Unit Report For CU-11A - 38APD080

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Outdoor Unit Parameters

Unit Quantity:.....1
 Unit Model:.....38APD
 Unit Size:.....80 Tons
 Voltage:.....460-3-60 V-Ph-Hz
 Circuit:.....Dual Circuit

System Parameter

System Quantity:.....1
 Refrigerant Type:.....PURON
 Compressor Quantity:.....2 (Circ A), 3 (Circ B)
 Compressor Type:.....Scroll
 Std. Capacity Steps:.....7-100%, 45 steps
 Std. Min. Outdoor Temp(Cooling):.....32.0 °F
 No. of Outdoor fans:.....5

Outdoor Unit Dimensions and Weight

Unit Length:.....12' 7.1"
 Unit Width:.....7' 4.3"
 Unit Height:.....6' 6.5"
 Unit Operating Weight:.....2700 lb

Warranty Information Outdoor (Note: for US & Canada only)

First Year - Parts Only (Standard)
 Complete Unit Year 2-5 Parts Only for Outdoor Unit

NOTE: Please see Warranty Catalog 808-218 for explanation of policies and ordering methods.

Ordering Information

Part Number	Description	Quantity
Base Unit - Outdoor		
38APD0806M-32184		1
	Base Unit	
	Low Sound Fans and Compressors	1
	Standard Line Length, RTPF	1
	Single Point Power, Non-Fused Disconnect	1
	Security Grilles/Hail Guards Only	1
	Std Scrolling Marquee, BACnet Communication	1
	Aluminum E-Coat Fin / Copper Tube	1
	Digital Compressor	1
Accessories		
30RA-900---005	Vibration Isolation Package for Outdoor Unit	1
33ZCSENSAT	Air Temperature Sensor for Outdoor Unit	2
33ZCSENSOAT	Outdoor Air Sensor - Bell Box Enclosure for Outdoor Unit	1

Performance Summary For CU-11A - 38APD080

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System: **38APD080**
Circuit: **Dual Circuit**
System Quantity: **1**
Altitude: **0.0** ft
EER @ ARI Conditions: **11.1**
EER @ Ambient Conditions: **10.8**
IPLV: **15.6**
Capacity Split Percentage (A ckt/B ckt): **40/60** %
Suction Line Loss: **2.0** °F
 Condensing unit is rated in accordance with ARI 365.

Liquid and Suction Line Sizing

Pipe Length	Liquid Line Size	Suction Line Size
0 - 25	7/8 (A), 7/8 (B)	1 3/8 (A), 1 5/8 (B)
26 - 50	7/8 (A), 7/8 (B)	1 5/8 (A), 2 1/8 (B)
51 - 75	7/8 (A), 7/8 (B)	2 1/8 (A), 2 1/8 (B)
76 - 100	7/8 (A), 1 1/8 (B)	2 1/8 (A), 2 1/8 (B)
101 - 125	7/8 (A), 1 1/8 (B)	2 1/8 (A), 2 5/8 (B)
126 - 150	7/8 (A), 1 1/8 (B)	2 1/8 (A), 2 5/8 (B)
151 - 175	7/8 (A), 1 1/8 (B)	2 1/8 (A), 2 5/8 (B)
176 - 200	1 1/8 (A), 1 1/8 (B)	2 1/8 (A), 2 5/8 (B)

Do NOT exceed 200 ft max linear separation or 75 ft vertical liquid lift. Oil management is critical on split systems for compressor reliability. Refrigerant circuit warranty may be void beyond these limits.

Dual suction riser may be required, refer to PD.

Outdoor Unit Parameters

Unit Quantity: **1**
 PartNumber: **38APD0806M-32184**
 Unit Model: **38APD**
 Unit Size: **80 Tons**
 Voltage: **460-3-60** V-Ph-Hz
 Total Clg Cap.(Gross): **917.9** MBH
 SDT: **124.6** °F
 SDT2: **124.8** °F
 SCT: **124.1** °F
 SCT2: **124.4** °F
 Clg Ent Air DB: **95.0** °F
 Saturated Suction Temp: **45.0** °F

38AP units are not designed for Refrigeration Duty. Unit operational range should be reviewed to ensure that operation at full and part load conditions with Saturated Suction Temperatures at or below 30 F are avoided. Operation below 30 F SST may result in ice build-up on evaporator coil resulting in liquid flood-back and possible compressor failure. Return/Mixed Air Temperature should not be below 55F. If the customer requires differently, please contact application engineering.

Outdoor Electrical Data

Unit Voltage: **460-3-60** V-Ph-Hz
 Unit#1 MCA: **155.7** Amps
 Unit#1 MOCP: **175.0** Amps
 Compressor Power: **78.50** kW
 Voltage Range Min: **414** V
 Voltage Range Max: **506** V
 Compressor RLA: **23.7/26.9**
 Compressor LRA: **179/179**
 Compressor Quantity: **2 (Circ A), 3 (Circ B)**
 Fan Motors Qty: **5**
 Notice: Outdoor unit elect. data is based on 460-3-60

FIOPS and Accessories Information

Performance Summary For CU-11A - 38APD080

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FIOPS	Quantity
Low Sound Fans and Compressors	1
Standard Line Length, RTPF	1
Single Point Power, Non-Fused Disconnect	1
Security Grilles/Hail Guards Only	1
Std Scrolling Marquee, BACnet Communication	1
Digital Compressor	1
Accessories	Quantity
Vibration Isolation Package for Outdoor Unit	1
Air Temperature Sensor for Outdoor Unit	2
Outdoor Air Sensor - Bell Box Enclosure for Outdoor Unit	1

Liquid line check valve(s) prevent charge migration to compressor. These valves may be required for certain applications, refer to PD.

Acoustic Information

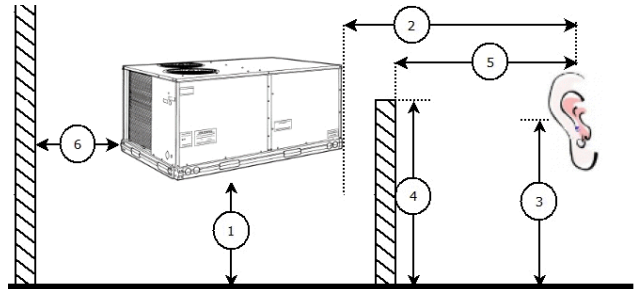
A-Wgt Outdoor Sound Power Level: **0.0** dbA

Acoustic Notes:

1. The acoustic center of the unit is located at the geometric center of the unit.
2. All estimated sound power levels, dB re 1 Pico watt should not be guaranteed or certified as being the actual sound power levels.

Advanced Acoustics Parameters

1. Unit height above ground: **1.0** ft
2. Horizontal distance from unit to receiver: **20.0** ft
3. Receiver height above ground: **5.7** ft
4. Height of obstruction: **0.0** ft
5. Horizontal dist. from obstruction to receiver: **0.0** ft
6. Horizontal dist. from unit to obstruction: **0.0** ft



Detailed Acoustics Information

Octave Band Center Frequency, Hz	Overall
Sound Power Levels at Unit's Acoustic Center (Lw), dB	0.0
A-Wgtd Sound Power Levels at Unit's Acoustic Center (LwA), dBA	0.0
Sound Press. Levels at Dist. Specified above (Lp), dB	0.0
A-Wgtd Sound Press. Levels at Dist. Specified above (LpA), dBA	0.0

Calculation methods used in this program are patterned after the ASHRAE Guide; other ASHRAE Publications and the AHRI Acoustical Standards. While a very significant effort has been made to insure the technical accuracy of this program, it is assumed that the user is knowledgeable in the art of system sound estimation and is aware of the tolerances involved in real world acoustical estimation. This program makes certain assumptions as to the dominant sound sources and sound paths which may not always be appropriate to the real system being estimated. Because of this, no assurances can be offered that this software will always generate an accurate sound prediction from user supplied input data. If in doubt about the estimation of expected sound levels in a space, an Acoustical Engineer or a person with sound prediction expertise should be consulted.

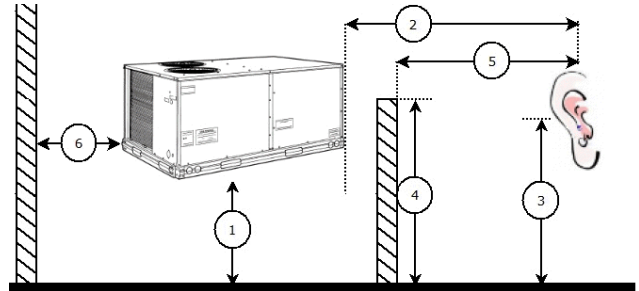
Acoustic Summary For CU-11A - 38APD080

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Outdoor Unit Parameters:

Tag Name:..... **CU-11A - 38APD080**
 Unit Model:..... **38APD**
 Unit Size:..... **80 Tons**
 System Type:..... **Dx Cooling Only**
 Refrigerant Type:..... **PURON**
 Compressor Quantity:..... **2 (Circ A), 3 (Circ B)**
 Compressor Type:..... **Scroll**



Advanced Acoustics Parameters

- 1. Unit height above ground:..... **1.0** ft
- 2. Horizontal distance from unit to receiver:..... **20.0** ft
- 3. Receiver height above ground:..... **5.7** ft
- 4. Height of obstruction:..... **0.0** ft
- 5. Horizontal distance from obstruction to receiver:..... **0.0** ft
- 6. Horizontal distance from unit to obstruction:..... **0.0** ft

Detailed Acoustics Information

Octave Band Center Frequency, Hz	Overall
Sound Power Levels at Unit's Acoustic Center (Lw), dB	0.0
A-Wgtd Sound Power Levels at Unit's Acoustic Center (LwA), dBA	0.0
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Acoustic Note:

- 1. Estimated Sound Power levels - dB re: 1 picowatt
- 2. Estimated Sound Pressure levels - dB re: 20 micropascal
- 3. Estimated sound levels given above are assumed to originate at the acoustic center of the unit. The acoustic center of the unit is located at the projection of the condensing unit's geometric center of its base.

4. Sound power levels shown above were determined in accordance with ARI standard 370 for large outdoor refrigeration and air conditioning equipment.

5. Calculation methods used in this program are patterned after the ASHRAE Guide; other ASHRAE Publications and the ARI Acoustical Standards. While a very significant effort has been made to insure the technical accuracy of this program, it is assumed that the user is knowledgeable in the art of system sound estimation and is aware of the tolerances involved in real world acoustical estimation. This program makes certain assumptions as to the dominant sound sources and sound paths which may not always be appropriate to the real system being estimated. Because of this, no assurances can be offered that this software will always generate an accurate sound prediction from user supplied input data. If in doubt about the estimation of expected sound levels in a space, an Acoustical Engineer or a person with sound prediction expertise should be consulted.

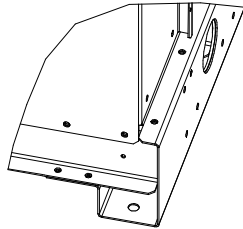
Certified Drawing for CU-11A - 38APD080

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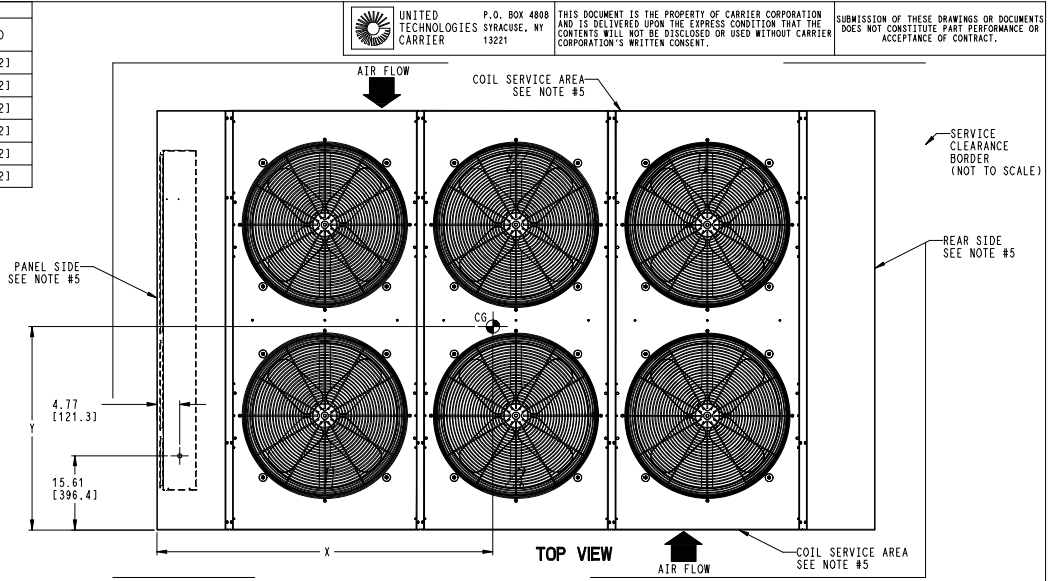
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UNIT	STD. UNIT WT.		CENTER OF GRAVITY		UNIT HEIGHT H	SERVICE VALVE CONNECTIONS		
	LBS.	KG.	X	Y		SUCTION		LIQUID
						CIRCUIT A	CIRCUIT B	
38APD080	2610	1184	67.6 [1716]	40.2 [1020]	73.0 [1854]	1-5/8 [41]	2-1/8 [54]	7/8 [22]
38APD090	2835	1286	72.4 [1839]	43.3 [1099]		2-1/8 [54]		7/8 [22]
38APD100	2844	1290	72.6 [1844]	43.3 [1099]		2-1/8 [54]		7/8 [22]
38APD080	2700	1225	67.6 [1716]	40.2 [1020]	78.5 [1994]	1-5/8 [41]	2-1/8 [54]	7/8 [22]
38APD090	2943	1335	72.4 [1839]	43.3 [1099]		2-1/8 [54]		7/8 [22]
38APD100	2952	1339	72.6 [1844]	43.3 [1099]		2-1/8 [54]		7/8 [22]

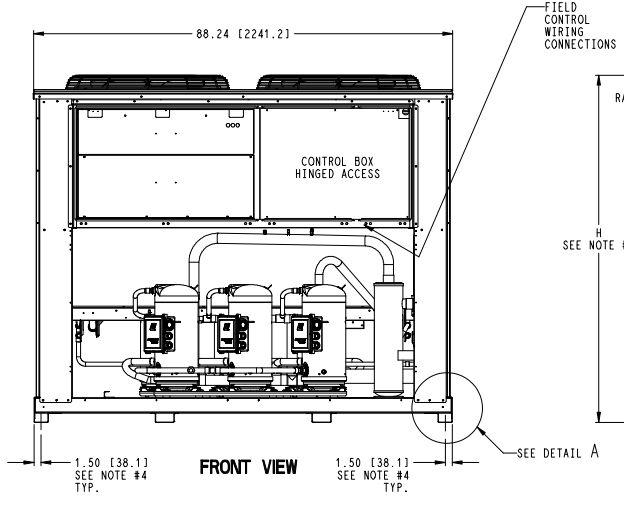
- NOTES:
1. BE SURE TO USE A WET RAG AND REMOVE ALL VALVE CORES BEFORE BRAZING FIELD PIPING.
 2. DO NOT CAP OR OTHERWISE OBSTRUCT THE LIQUID LINE TEMPERATURE RELIEF.
 3. $\varnothing 7/8$ [22.4] PILOT HOLE PROVIDED FOR LOCATING FIELD POWER WIRING ACTUAL HOLE REQUIRED DEPENDS ON FIELD WIRE SIZING.
 4. $\varnothing 0.524$ [13.309] HOLE USED FOR MOUNTING UNIT.
 5. UNIT MUST HAVE CLEARANCES AS FOLLOWS:
TOP - DO NOT RESTRICT
PANEL SIDE - 48" [1219] PER NEC.
SIDES - 6" [152.4] FROM SOLID SURFACE FOR AIRFLOW
COIL END - 42" [1067] FROM SOLID SURFACE FOR AIRFLOW
SIDES - 8" [203.2] REQUIRED FOR COIL SERVICE AREA.
 6. SEE TABLE COLUMN H: DIMENSION FOR STANDARD AND LOW SOUND WITH STACK FAN OPTION.
 7. CARRIER DOES NOT RECOMMEND INSTALLATION IN A PIT.
 8. UNIT CAN BE HANDLED USING CRANE, REFER TO SERVICE INSTALLATION INSTRUCTION.
 9. DIMENSIONS SHOWN IN INCHES (MM).
 10. SIZE 080 UNITS HAVE 5 CONDENSER FANS, SIZES 090 AND 100 UNITS HAVE 6 CONDENSER FANS.
 11. WEIGHT DOES NOT INCLUDE UNIT REFRIGERANT CHANGE.



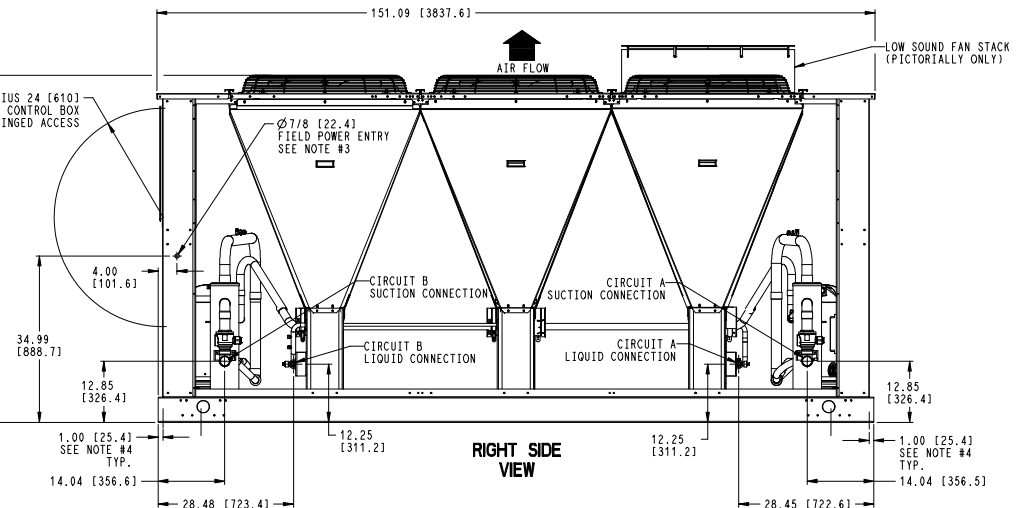
DETAIL A



TOP VIEW



FRONT VIEW



RIGHT SIDE VIEW

DATE 07/29/14	SUPERCEDES E	38AP080-100 UNIT ASSY	38AP55558	REV F
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GUIDE SPECIFICATIONS – 38APD0806M-32184

HVAC Guide Specifications Commercial Air-Cooled Condensing Units with Puron® Refrigerant (R-410A)

Size: 080

Part 1: General

SYSTEM DESCRIPTION

- 1.01. Outdoor-mounted, air-cooled condensing unit with Puron® refrigerant (R-410A) suitable for on-the-ground or rooftop installation. The 38APD unit shall have two independent refrigeration circuits and shall consist of two, four, five or six rotary scroll compressors. Unit shall have air-cooled coils, propeller-type condenser fans, a control box, and shall discharge condenser air vertically upward as shown on certified drawings. Unit shall be used in refrigeration circuit with a central station air-handling unit or direct-expansion coils.

QUALITY ASSURANCE

- 1.01. Unit performance shall be rated in accordance with AHRI Standard 365, latest edition (U.S.A).
- 1.02. Unit construction shall comply with latest edition of ASHRAE 15 Safety Code, UL 1995, and ASME applicable codes (U.S.A. codes).
- 1.03. Unit shall be manufactured in a facility registered to ISO 9001 Manufacturing Quality Standard.
- 1.04. Base unit shall be constructed in accordance with UL standards and CSA.
- 1.05. Unit cabinet shall be capable of withstanding 500-hour salt-spray exposure per ASTM B117 (scribed specimen).
- 1.06. Design pressure shall be 650 psig (4482 kPa).
- 1.07. Unit shall be functional checked at the factory.

DELIVERY, STORAGE, AND HANDLING

- 1.01. Unit shall be shipped as single package and shall be stored and handled per unit manufacturer's recommendations.

WARRANTY (FOR INCLUSION BY SPECIFYING ENGINEER)

Part 2: Products

EQUIPMENT

- 2.01. General:
 - A. Factory assembled, single-piece, air-cooled condensing unit. Contained within the unit enclosure shall be all factory wiring, piping, controls, compressors, nitrogen holding charge, and special features required prior to field start-up.
- 2.02. Unit Cabinet:
 - A. Cabinet shall be galvanized steel casing with a baked enamel powder or pre-painted finish.
 - B. Cabinet shall be capable of withstanding 500-hr salt spray test in accordance with ASTM (U.S.A.) B-117 standard.
 - C. Control box access panels shall be hinged for service access.
 - D. Lifting holes shall be provided to facilitate rigging.
- 2.03. Fans:
 - A. Condenser fans shall be direct-drive propeller type, discharging air vertically upward.
 - B. All condenser fan motors shall be totally enclosed 3-phase type with permanently lubricated ball bearings, class F insulation and internal, automatic-reset thermal overload protection or manual reset calibrated circuit breakers.

Guide Specification for CU-11A - 38APD080

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- C. Shafts shall have inherent corrosion resistance.
 - D. Fan blades shall be statically and dynamically balanced.
 - E. Condenser-fan openings shall be equipped with PVC-coated steel wire safety guards.
- 2.04. Compressors:
- A. Compressors shall be rotary scroll.
 - B. Operating oil charge and a crankcase heater control oil dilution.
 - C. Compressors shall be mounted on two rails having rubber in shear vibration isolators.
 - D. Staging of compressors shall provide unloading capability. Digital compressor unloading control shall be available as an option on one circuit (not available on size 065 unit).
 - E. Compressor motors shall be cooled by refrigerant gas passing through motor windings and shall have either internal line break thermal and current overload protection or external current overload modules with compressor temperature sensors.
- 2.05. Condenser Coils:
- A. Coil shall be air-cooled microchannel heat exchanger (MCHX) and shall have a series of flat tubes containing a series of multiple, parallel flow microchannels layered between the refrigerant manifolds. Microchannel coils shall consist of a two-pass arrangement. Coil construction shall consist of aluminum alloys for the fins, tubes and manifolds in combination with a corrosion-resistant coating on the tubes.
 - B. Tubes shall be cleaned, dehydrated, and sealed.
 - C. Assembled condenser coils shall be leak tested and pressure tested at 650 psig (4482 kPa).
- 2.06. Refrigeration Components:
- A. Refrigeration circuit components shall include liquid line temperature relief device, pressure transducers, liquid line shutoff valve, suction shutoff valve, suction line accumulators, nitrogen holding charge, and compressor oil.
 - B. Long line length check valves are required for liquid line installation on all linear line length applications of more than 100 ft (30.5 m) to prevent liquid migration during unit shutdown. For any 025-030 size dual circuit unit application where evaporator is located higher than the condensing unit, check valves are required for linear line length above 55 ft (16.8 m).
 - C. Units shall include one factory-installed suction line accumulator for each refrigerant circuit.
- 2.07. Controls and Safeties:
- A. Unit ComfortLink controls shall include:
 - 1. Scrolling marquee display module shall be used for accessing condensing unit information, reading sensor values, and testing the condensing unit. The scrolling marquee display is a 4-key, 4-character, 16-segment LED (light-emitting diode) display. Eleven mode LEDs shall be located on the display as well as an Alarm Status LED. The display shows all of the ComfortLink control codes (with 60-character expandable clear language), plus set points, time of day, temperatures, pressures, and superheat. Additional information can be displayed all at once with the accessory Navigator™ display.
 - 2. Carrier Comfort Network® (CCN) system capability.
 - 3. Unit control with standard pressure transducer, discharge pressure transducer and suction temperature thermistors.
 - 4. Current alarm list and alarm history list on display.
 - 5. Automatic compressor lead/lag control.
 - 6. Service run test capability.
 - 7. Compressor minimum run time (3 minutes) and minimum off time (3 minutes).
 - 8. Service diagnostic mode.
 - 9. Self-contained low voltage control circuit.
 - 10. Cycle condenser fans to maintain proper head pressure control.
 - 11. Capacity control with staging compressors.
 - 12. Optional digital scrolls to stage compressors and cycle digital compressor for maintaining desired leaving air temperature setpoint.
 - 13. Alarm relay output to indicate when unit is in alarm condition.
 - B. Minimum unit safety devices shall include:
 - 1. Solid-state compressor lockout to provide optional reset capability at the space thermostat if any of the following safety

devices trip and shut off compressor.

- a. Compressor lockout protection for internal or external overload.
- b. Low pressure protection.
- c. High pressure protection (high pressure switch or internal).
- d. Compressor reverse rotation protection.
- e. Loss of charge protection.
- f. Low suction superheat protection.
- g. Short cycle protection.
- h. Suction and discharge pressure transducers.
- i. Circuit breakers or fuses for short circuit protection of compressors.

2.08. Operating Characteristics:

- A. The capacity of the condensing unit shall meet or exceed ____ Btuh (____ kW) at a suction temperature of ____ F (____ C). The power consumption at full load shall not exceed ____ Btuh (____ kW).
- B. The combination of the condensing unit and the evaporator or air handling unit shall have a total net cooling capacity of ____ Btuh (____ kW) or greater at conditions of ____ cfm (____ L/s) entering-air temperature at the evaporator at ____ F (____ C) wet bulb and ____ F (____ C) dry bulb, and air entering the condensing unit at ____ F (____ C).
- C. The system shall have an Energy Efficiency Ratio (EER) of ____ Btuh/watt or greater at standard AHRI conditions.

2.09. Electrical Requirements:

- A. All unit power wiring shall enter unit cabinet at a single location. Unit shall be provided with a XL starter and non-fused disconnect.

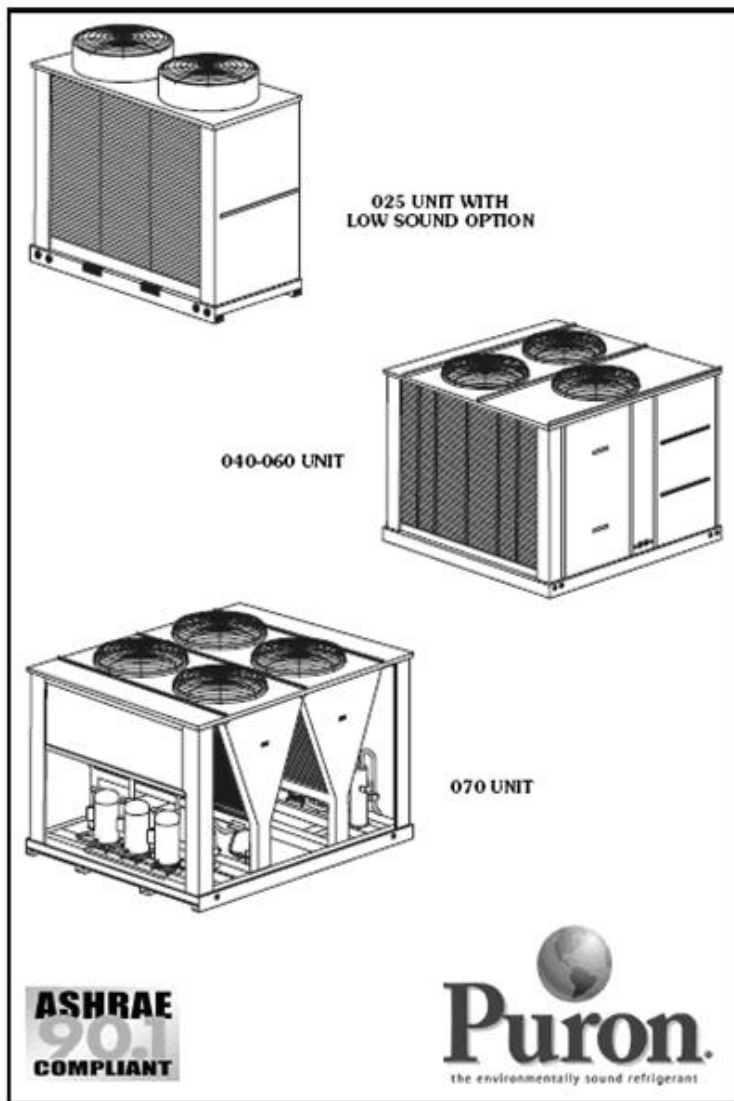
2.10. Special Features:

- A. Digital Compressor Option:
 1. Modification shall include digital compressor to provide incremental steps for tighter temperature control. The digital compressor shall be available as a factory-installed option for all units except size 065.
- B. Non-Fused Disconnect:
 1. A non-fused disconnect is available as a factory-installed option for all units having single point power connection units.
- C. BACnet Translator Control:
 1. BACnet control shall be available as a field-installed accessory for all units to provide interface between unit and a BACnet Local Area Network (LAN, i.e., MS/TP EIA-485).
- D. Security Grilles/Hail Guards:
 1. Units will be supplied with factory-installed louvered, sheet metal panels which securely fasten to the unit to provide condenser coil protection against hail and physical damage.
- E. Vibration Isolation Pads:
 1. Neoprene vibration isolation pads (24 in. x 3 in. x 1/4 in.) shall be available for field installation to reduce vibration transmission from the compressor through the floor and into the conditioned space.



38AP GEMINISELECT AIR COOLED CONDENSING UNITS

These condensing units feature two independent refrigerant circuits, each circuit having its own highly efficient scroll compressors. All units are factory wired, nitrogen charged, and easily connected by refrigerant lines and control wiring to the matching Carrier air-handling unit (40RU or 39 Series). Various combinations of these extremely flexible condensing units matched with air handlers provide customized packages to cover a wide range of cooling requirements. Low roof-load weight distribution and weatherproof construction make these units excellent selections for rooftop or on-the-ground installations. These 38AP condensing units are well suited for commercial or industrial air conditioning applications.



These dependable split systems match Carrier's 40RU or 39 Series indoor-air handlers with the versatile outdoor 38AP condensing units for a wide selection of commercial cooling solutions.

- Split condensing units compatible with ASHRAE 90.1
- Chlorine-free, non-ozone depleting Puron refrigerant (R-410A)
- Condenser coils feature the Novation® heat exchanger with microchannel coil technology
- 38APS single-circuit unit has up to 3 rotary scroll compressors
- 38APD unit has up to 6 rotary scroll compressors with 2 independent circuits
- Standard scroll compressor units operate as low as 33% (single circuit) or 15% (dual circuit) of nominal capacity
- Optional digital scroll compressors allow incremental unloading down to 10% (single circuit) or 5% (dual circuit) of nominal capacity for VAV applications
- Protection against high discharge and low suction refrigerant pressure, and low oil pressure