Seth Forman
Roberts Fowler & Visosky LLP
865 South Marine Corps Drive, Ste. 201
Tamuning, Guam 96913
Telephone (671) 646-1222
Facsimile (671) 646-1223
E-mail: Forman@guamlawoffice.com

OFFICE OF PUBLIC ACCOUNTABILITY PROCUREMENT APPEALS

DATE: 4 8 2022

TIME: 3.05 DAM PM BY: 47

FILE NO OPA-PA: 22.002

Attorneys for Appellant All Business Enterprises Corp.

OFFICE OF PUBLIC ACCOUNTABILITY

PROCUREMENT APPEAL

In the Appeal of)	APPELLANT'S EXHIBITS
All Business Enterprises Corp.,)	
)	Docket No. OPA-PA-22-002
Appellant.)	

Seth Forman Roberts Fowler & Visosky LLP 865 South Marine Corps Drive, Ste. 201 Tamuning, Guam 96913 Telephone (671) 646-1222 Facsimile (671) 646-1223 E-mail: Forman@guamlawoffice.com

Attorneys for Appellant All Business Enterprises Corp.

OFFICE OF PUBLIC ACCOUNTABILITY

PROCUREMENT APPEAL

In the Appeal of		of)) APPELLANT'S EXHIBIT LIST	
All Busine	ess E	Appellant.	Docket No. OPA-PA-22-002	
Αŗ	pell	ant provides the following Exhibit List f	For the Hearing in this matter:	
Exhibit 1		Abstract Analysis and Notice of Intent	to Award	
Exhibit 2		Notice of Award		
Exhibit 3		Notice of Rejection of ABE bid		
Exhibit 4		Excerpts from Bid Specifications (inclu 2.7.2.1)	nding paragraphs 2.2.1.1, 2.2.4.1, 2.6.2.1, and	
Exhibit 5		Excerpts from Tony's Workshop subm	ittal omitting Factory Phenolic Coating	
	5-1	Unit Report for RFK Building First F page 29 of 178	Floor Main Entrance 112321; Ref:	
	5-2	Unit Report for 7.5 RFK Building First page 43 of 178	st Floor AV Room 112321; Ref:	
	5-3	Unit Report for 7.5 RFK Building page 56 of 178	First Floor Office 112321; Ref:	

5-4 Unit Report for PIP (GLE) Second Floor 112321; Ref: page 69 of 178

In re Appeal of All Business Enterprises Corp. Docket No. OPA-PA-22-002 Appellant's Exhibit List

Date: 4/18/2022

5	5-5	Unit Report for 20 Science Building Third Floor 112321; Ref: page 106 of 178
5	5-6	Unit Report for Lecture Hall Auditorium 112321; Ref: page 143 of 178
Exhibit 6		Excerpts from Tony's Workshop submittal including Factory Phenolic Coating
Exhibit 7		Excerpts from JWS submittal omitting Factory Phenolic Coating
Exhibit 8		Excerpts from Tony's Workshop submittal showing aluminum instead of copper
Exhibit 9		Excerpts from JWS submittal showing aluminum instead of copper
Exhibit 10		ABE submittal data showing compliance with bid specifications
10-1		Data for 50 ton unit
10-2		Data for 40 ton unit
10-3		Data for 30 ton unit
10-4		Data for 20 ton unit
10-5	-	Data for 15 ton unit
Exhibit 11	(Carrier advertisement saying microchannel is entirely aluminum
Exhibit 12]	Differences between aluminum and copper condensing coils
		Respectfully submitted,

SETH FORMANAttorneys for Appellant All Business Enterprises Corp.

ROBERTS FOWLER & VISOSKY LLP

By:

EXHIBIT 1

Gene Bangayan

From:

Nel Bangayan

Sent:

Monday, December 6, 2021 5:07 PM

To:

Gene Bangayan

Subject:

FW: UOG IFB B21-17 : Purchasing of HVAC Equipment - BID ABSTRACT ANALYSIS &

NOTICE OF INTENT TO AWARD

Attachments:

B21-17 ABSTRACT ANALYSIS_BID OPENING 12.06.2021 315PM.pdf; B21-17_NOTICE OF

INTENT TO AWARD_TONY'S WORKSHOP.pdf

Nelia Bangayan



From: UOG Procurement Bids [mailto:uog.bids@triton.uog.edu]

Sent: Monday, December 06, 2021 5:03 PM

To: Procurement Office

Subject: UOG IFB B21-17: Purchasing of HVAC Equipment - BID ABSTRACT ANALYSIS & NOTICE OF INTENT TO

Håfa Adai & Good Afternoon,

See attached for your reference.

Please confirm receipt. Thank you!

Si Yu'os ma'åse' & Have a nice day!,



Respectfully,

UOG Procurement

Office: 671-735-2925 Fax: 671-735-3010 uog.bids@triton.uog.edu

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Consolidated Procurement Office

ABSTRACT ANALYSIS UOG IFB BID NO. B21-17

Title: PURCHASING OF HVAC EQUIPMENT

Date Issued: 10/22/2021 Date/Time Opened: 12/06/2021/ 3:15 p.m.

Amendments Issued: Amendment 1 10/29/2021, Amendment 2 10/29/2021, Amendment 3 11/19/2021, Amendment 4 11/22/2021, Amendment 5 11/24/2021, & Amendment 6 12/03/2021

This Bid is requested for: Lowest Responsive and Responsible Bidder

		onsive and Responsible Bide VENDORS/BIDDERS	
	ALL BUSINESS ENTERPRISE	JWS	TONY'S WORKSHOP
Date Bid Submitted	12/06/2021	12/06/2021	12/06/2021
Time Bld Submitted	11:31	11:33	1:21 PW
Business License	X	NOT INCLUDED	NOT INCLUDED
Contact for Contract Administration (B)	X	X	X
Bidder's Qualifications (C)	X	X	$\frac{\lambda}{X}$
BID SECURITY (D)	CC - \$218,410.00	CC - \$98,785.80	BB
Major Shareholder Affidavit (E)	X	X	X
Non-Collusion Affidavit (F)	X	X	X
Gratuities, Kickbacks Favors (G)	X	X	X
Ethical Standards (H)	X	X	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
DOL Wage Determination (I)	X	X	$\frac{\lambda}{X}$
Contingent Fees (J)	Х	X	X
Amendment 1	Х	X	X
Amendment 2	X	X	X
Amendment 3	X	<u>X</u>	X
Amendment 4	Х	X	X
Amendment 5	X	X	X
Amendment 6	X	X	X
Table 1.0			
RFK BUILDING SECOND FLOOR	\$120,002.50	\$74,837.72	\$55,372.32
RFK BUILDING FIRST FLOOR	\$107,574.60	\$59,870.18	\$52,856.01
RFK BUILDING FIRST FLOOR MAIN ENTRANCE	\$67,372.50	\$22,451.32	\$17,711.51
RFK BUILDING FIRST FLOOR AV ROOM	\$67,372.50	\$22,451.32	\$17,711.51
RFK BUILDING FIRST FLOOR OFFICES	\$80,461.60	\$29,935.09	\$24,262.45
PIP SECOND FLOOR	\$80,461.60	\$29,935.09	\$24,262.45
SCIENCE BUILDING FIRST FLOOR	\$107,574.60	\$59,870.18	\$52,856.01
SCIENCE BUILDING SECOND FLOOR	\$107,574.60	\$59,870.18	\$52,856.01
SCIENCE BUILDING THIRD FLOOR	\$80,461.60	\$29,935.09	\$24,262.45
ENGLISH COMMUNICATION BUILDING CLASSROOM	\$983,59.60	\$44,902.64	\$36,503.19
COMPUTER CENTER OIT BUILDING FIRST FLOR	\$120,002.50	\$74,837.73	\$55,372.32
LECTURE HALL AUDITORIUM	\$80,461.60	\$29,935.09	\$24,262.45
HSS BUILDING	\$240,005.00	\$74,837.73	\$110,134.64
HSS BUILDING	\$98,359.60	\$44,902.64	\$36,503.19
GRAND TOTAL	\$1,456,044.40	\$658,572.00	\$584,926.51

T: +1 671.735.2925 F: +1 671.735.3010 W: www.uog.edu E: uog.bids@triton.uog.edu Mailing Address: 303 University Drive UOG Station Mangilao, Guam 96913

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Consolidated Procurement Office

DELIVERY	18-20 WEEKS	9-12 WEEKS	24 WEEKS
TABLE 2.0	<u> </u>		AT White NO
Service for Maintenance and upkeep	\$51,000.00	\$1,275.00 QUARTER \$5,100.00 ANNUAL	\$26,000.00 QUARTER
Services for disposal	\$11,250.00	INCLUSIVE	\$54,148.63
Replacement/trade in program	TO BE DISCUSSED UPON AWARD.	1 YEAR WARRANTY	\$196,766.42
Attendees: (Print name &	sign opposite the firm you rep	resent)	
Company/Firm Nam	e Represe	ntative (Print Name)	Signature
All Business Enterprises Corporation	on Nelia Bangayar		ONLINE ZOOM
Tony's Workshop Michael Ecalnea			ONLINE ZOOM
All Business Enterprises Corporation	on Gene Bangaya	n	ONLINE ZOOM
JWS			ONLINE ZOOM
Tabulators:		<u> </u>	1
Emily G. Gumataotao	SMA		ONLINE ZOOM
Kaimana K. Terlaje	Property Control	Officer	ONLINE ZOOM



Consolidated Procurement Office

December 6, 2021

Michael SJ. Ecalnea

P.O. Box 23066 GMF Barrigada, Guam 96921

Main: 671-637-3060

Email: mike@tonysworkshop.com / tonyworkshop@teleguam.net

RE: NOTICE OF INTENT TO AWARD- B21-17: PURCHASING OF HVAC EQUIPMENT

Dear Sir/Madam:

As a result of our analysis on the above-referenced IFB, your bid submission for **PURCHASING OF HVAC EQUIPMENT**, is being considered for possible award, pending submission of requirements below:

- 1) Copy of Guam Business License
- 2) Data Brochure of equipment being offered

Please submit the above to the procurement office via email NLT Tuesday, December 7, 2021 by noon. Please be advised that this notice should not be construed as an award.

You can contact me at 735-2925 or email: <u>uog.bids@triton.uog.edu</u> if you have any questions regarding this notice.

Sincerely,

Emily G. Gumataotao
Supply Management Administrator

Please acknowledge receipt and return by email to uog.bids@triton.uog.edu

(Print/Sign)

Date

cc: Procurement Files

EXHIBIT 2



Consolidated Procurement Office

December 7, 2021

TONY's WORKSHOP

P.O. Box 23066 GMF Barrigada, Guam 96921 Main: 671-637-3060

Email: mike@tonysworkshop.com / tonyworkshop@teleguam.net

RE: NOTICE OF AWARD- UOG IFB B21-17: "PURCHASING OF HVAC EQUIPMENT"

Dear Sir/Madam:

This letter is to certify that TONY's WORKSHOP is being awarded the University of Guam IFB BID B21-17.

As a result of our evaluation on the above referenced IFB, a purchase order or contract will be forthcoming.

A representative from the respective unit will be in contact with you upon issuance of the purchase order and/or contract.

If you have any questions, please feel free to contact me at 735-2925 or email at uog.bids@triton.uog.edu.

Thank you and Congratulations!

Sincerely.

Emily G. Gurnataotao

Supply Management Administrator

Please acknowledge receipt and return via email to uog.bids@triton.uog.edu.

(Please print name and sign)

(DATE)

CC:

FMS

PROCUREMENT FILES

T: +1 671.735.2925 F: +1 671.735.3010 W: www.uog.edu E: uog.bids@triton.uog.edu
Mailing Address: 303 University Drive UOG Station Mangilao, Guam 96913
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Senior College and University Commission and is an equal opportunity provider and employer.

EXHIBIT 3



ADMINISTRATION & FINANCE Consolidated Procurement Office

BID STATUS

December 7, 2021

ALL BUSINESS ENTERPRISES CORPORATION

Nelia F. Bangayan, President Ph 671-646-4435 Email <u>nbangayan @ibmoderntech.com</u>

Subject UOG Invitation for Bid No. B21-17, "Purchasing of HVAC Equipment"

Bid Open December 6 2021

į	Cancelled (in its entirety), or partially cancelled due to
	() Insufficient funds:
	() Change of specifications, or
	() Insufficient number of bidders
IX I	Rejected due to
	() Late submission of bid
	() No bid security or insufficient bid security amount submitted, as required by General Terms and Conditions,
	() Not meeting the delivery requirement as stated in the IFB
	() Non-conformance with the specifications
	() Inability to provide future maintenance and services to the equipment.
	(X) High price or
	() Other.
X/	Bid is recommended for award to TONY's WORKSHOP

Emily G. Gumataotao Supply Management Administrator

Please Acknowledge Receipt and return to upg bids@triton.uog.edu

VENDOR

(Print name & signature) Date

F. +1671.735.2925 F: +1671.735.3010 W: www.uog.edu E: uog.bids@triton.uog.edu
Mailing Address: 303 University Drive UOG Station Mangilao, Guam 96913
The University of Guam is a U.S. Land Grant Institution accredited by the Western Association of Schools and Colleges
Senior Callege and Univ. (4ty Commission and Is an equal apportunity provider and amplication).

EXHIBIT 4



2.1.4 Safety Devices

Exposed moving parts, parts that produce high operating temperature, parts which may be electrically energized, and parts that may be a hazard to operating personnel must be insulated, fully enclosed, guarded, or fitted with other types of safety devices. Safety devices must be installed so that proper operation of equipment is not impaired. Welding and cutting safety requirements must be in accordance with AWS 249.1.

2.2 EQUIPMENT

2.2.1 Large-Capacity Split-System Air Conditioners (Greater Than 65,000 Btu/h)

Provide an air-cooled, split system which employs a remote condensing unit, a separate indoor unit, and interconnecting refrigerant piping. Provide the air conditioning type unit conforming to applicable Underwriters Laboratories (UL) standards including UL 1995. Unit must be rated in accordance with ANSI/AHRI 210/240. Provide unit with necessary fans, air filters, and cabinet construction as specified in paragraph UNITARY EQUIPMENT ACCESSORIES. Provide double-width, double inlet, forward curved centrifugal scroll type evaporator or supply fans. Provide the manufacturer's standard for the unit specified and may be centrifugal scroll type condenser or outdoorfans. Enclose fan condenser motors in totally enclosed enclosures and permanently lubricate ball bearings. Air Conditioners must have a minimum energy efficiency ratio (EER) of 12.

2.2.1.1 Air-Tő-Refrigerant Coil

Provide coils with copper tubes of 3/8 inch minimum diameter with copper fins, that are mechanically bonded or soldered to the tubes. Provide casing of galvanized steel. Avoid contact of dissimilar metals. Test coils in accordance with ASHRAE 15 & 34 at the factory and ensure suitability for the working pressure of the installed system. Dehydrate and seal each coil testing and prior to evaluation and charging. Provide each unit with a factory operating charge of refrigerant and oil. Field charge unit shipped with a holding charge with refrigerant and oil. Provide separate expansion devices for each compressor circuit. Condenser coil must have special coating for corrosion resistance. Condenser coil must be copper finned. Coat condenser and evaporator coil with a uniformly applied epoxy electrodeposition, phenolic, or vinyl type coating to all coil surface areas without material bridging between fins. Apply coating at either the coil or coating manufacturer's factory. Coating process must ensure complete coil encapsulation and be capable of withstanding a minimum 1,000 hours exposure to the salt spray test specified in ASTM B117 using a 5 percent sodium chloride solution.

2.2.1.2 Refrigeration Circuit

Refrigerant-containing components must comply with ASHRAE 15 & 34 and be factory tested, cleaned, dehydrated, charged, and sealed. Provide refrigerant charging valves and connections, and pumpdown valves foreach circuit.

2.2.1.3 Unit Controls

Provide unit internally prewired with a 208 volt control circuit powered by an internal transformer.

AMORIENT



2.2.1.4 Condensing Unit

Fit each remote condenser coil with a manual isolation valve and an access valve on the coil side. Saturated refrigerant condensing temperature must not exceed 120 degrees F at 95 degrees F ambient. Fan and condensermotors must have totally enclosed enclosures.

2.2.1.4.1 Air-Cooled Condenser

Provide unit rated in accordance with ANSI/AHRI 460 and conform to the requirements of UL 1995. Provide factoryfabricated, tested, packaged, and self-contained unit. Unit must be complete with casing, propeller or centrifugal type fans, heat rejection coils, connecting piping and wiring, and all necessary

- Provide interconnecting refrigeration piping, electrical power, and control wiring between thecondensing unit and the indoor unit as required and as indicated. Provide electrical and refrigeration piping terminal connections between condensing unit and evaporator units.
- b. Low ambient control for multi-circuited units serving more than one evaporator coil must provide independent condenser pressure controls for each refrigerant circuit. Set controls to produce a minimum of 95 degrees F saturated refrigerant condensing temperature. Provide unitwith a liquid subcooling circuit that ensures proper liquid refrigerant flow to the expansion device over the specified application range of the condenser. Unit must be provided with manufacturer's standard liquid subcooling. Liquid seal the subcooling
- c. Goils must have copper tubes of 3/8 inch minimum diameter with copper fins that are mechanically bonded or soldered to the tubes. Protect coil in accordance with paragraph COIL CORROSION PROTECTION. Casing must be galvanized steel or aluminum. Avoid contact of dissimilar metals. Test coils in accordance with ASHRAE 15 & 34 at the factory and ensure suitability for the working pressure of the installed system. Dehydrate and seal factory operating and prior to evaluation and charging. Provide each unit with a shipped with a holding charge. Provide separate expansion devices for each compressor circuit.
- d. Provide a complete control system with required accessories for regulating condenser pressure by fan cycling, solid-state variable fan speed, modulating condenser coil or fan dampers, floodingthe condenser, or a combination of the above. Construct unit mounted control panels or enclosures in accordance with applicable requirements of NFPA 70 and house in NEMA ICS 6, Class 1 or 3A enclosures. Controls must include overload protective devices, interface with local and remote components, and intercomponent wiring to terminal block points.

2.2.1.4.2 Compressors





2.6.2 Equipment and Components Factory Coating

Unless otherwise specified, equipment and component items, when fabricated from ferrous metal, must be factory finished with the manufacturer's standard finish, except that items located outside of buildings must have weather resistant finishes that will withstand 500 hours exposure to the salt spray test specified in ASTM B117 using a 5 percent sodium chloride solution. Immediately after completion of the test, the specimen must show no signs of blistering, wrinkling, cracking, or loss of adhesion and no sign of rust creepage beyond 1/8 inch on either side of the scratch mark. Cut edges of galvanized surfaces where hot-dip galvanized sheet steel is used must be coated with a zinc-rich coating conforming to ASTM D520,

Where stipulated in equipment specifications of this section, coat finned tube coils of the affected equipment as specified below. Apply coating at the premises of a company specializing in such work. Degrease and prepare for coating in accordance with the coating applicator's procedures for the type of flaking, loss of adhesion, or "bridging" between the fins.

/2.5.2.1 Phenolic Coating/

Provide a resin base thermosetting phenolic coating. Apply coating by immersion dipping of the entire coil. Provide a minimum of two coats. Bake or heat dry coils following immersions. After final immersion and prior to final baking, spray entire coil with particular emphasis given to building up coating on sheared edges. Total dry film thickness must be 2.5 to 3.0 mils.

2.6.2.2 Chemical Conversion Coating with Polyelastomer Finish Coat

Dip coils in a chemical conversion solution to molecularly deposit a corrosion resistant coating by electrolysis action. Cure conversion coating at a temperature of 110 to 140 degrees F for a minimum of 3 hours. Coat coil surfaces with a complex polymer primer with a dry film thickness of 1 mil. Cure primer coat for a minimum of 1 hour. Using dip tank method, provide three coats of a complex polyelastomer finish coat. After each of the firsttwo finish coats, cure the coils for 1 hour. Following the third coat, spray finish coat for a minimum of 3 hours. Coating materials must have 300 percent flexibility, operate in temperatures of minus 50 to plus 220 degrees F, and protect against atmospheres of a pH range of 1 to

2.6.2.3 Vinyl Coating

Apply coating using an airless fog nozzle. For each coat, make at least two passes with the nozzle. Materials to be applied are as follows:

- a. Total dry film thickness, 6.5 mils maximum
- b. Vinyl Primer, 24 percent solids by volume: One coat 2 mils thick
 Page 1 36



AMORIENT

Provide gaskets conforming to ASTM F104 - classification for compressed sheet with nitrile binder and acrylic fibers for maximum 700 degrees F service.

2.6.4 Bolts and Nuts

Bolts and nuts must be in accordance with ASTM A307. The bolt head must be marked to identify the manufacturer and the standard with which the bolt complies in accordance with ASTM A307.

2.7 FINISHES

2.7.1 Coil Corrosion Protection

Provide coil with a uniformly applied epoxy electrodeposition, phenolic, or vinyl type coating to all coil surface areas without material bridging between fins. Submit product data on the type coating selected, the coating thickness, the application process used, the estimated heat transfer loss of the coil, and verification of conformance with the salt spray test requirement. Coating must be applied at either the coil or coating manufacturer's factory. Coating process must ensure complete coil encapsulation. Coating must be capable of with standing a minimum 1,000 hours exposure to the salt spray test specified in ASTM B117 using a 5 percent sodium chloride solution.

2.7.2 Equipment and Components Factory Coating

Unless otherwise specified, equipment and component items, when fabricated from ferrous metal, must be factory finished with the manufacturer's standard finish, except that items located outside of buildings must have weather resistant finishes that will withstand 500 hours exposure to the salt spray test specified in ASTM B117. Immediately after completion of the test, the specimen must show no signs of blistering, wrinkling, cracking, or loss of adhesion and no sign of rust creepage beyond 1/8 inch on either side of the scratch mark. Cut edges of galvanized surfaces where hot-dip galvanized sheet steel is used must be coated with a zinc-rich coating conforming to ASTM D520, Type I.

Where stipulated in equipment specifications of this section, coat finned tube coils of the affected equipment as specified below. Apply coating at the premises of a company specializing in such work. Degrease and prepare for coating in accordance with the coating applicator's procedures for the type of metals involved. Completed coating must show no evidence of softening, blistering, cracking, crazing, flaking, loss of adhesion, or "bridging" between the fins.

2.7.2 (Phenolic Coating

Provide a resin base thermosetting phenolic coating. Apply coating by immersion dipping of the entire coil. Provide a minimum of two coats. Bake or heat dry coils following immersions. After final immersion and prior to final baking, spray entire coil with particular emphasis given to building up coating on sheared edges. Total dry film thickness must be 2.5 to 3.0 mils.

2.7.2.2 Chemical Conversion Coating with Polyelastomer Finish Coat

Dip coils in a chemical conversion solution to molecularly deposit a corrosion resistant coating by electrolysis action. Cure conversion coating at a temperature of 110 to 140 degrees F for a

EXHIBIT 5

EXHIBIT 5-1

Unit Report For 20RFK BUILDING FIRST FLOOR MAIN ENTRANCE 112321 Project HA-1702-21-11 UOG IFB 821-17 PURCHASING HVAC EQUIP Prepared By, BERNARD LLARENAS 02:1

02:16PM



Outdoor Unit Parameters

Unit Quantity	. 1	
Unit Mode:	38AUD	
Unit Size	15 Tons	
Voltage	208-3-60	V-Pn-Ha
Condenser Corl	Cu/Cu	
No of Stages	Dual Stage	

System Parameter

System Quantity	1	
Refogorant Type	PURON	
Compressor Quantity	2	
Compressor Type	Scroll	
Stal Capacity Steps	50, 100	
Stal Min Outdoor TenterCooling)	35.0	F
No. of Outdoor fans	3	

Outdoor Unit Dimensions and Weight

Unit Length	7' 2.4"	
Unit VV-dth	3' 7.4"	
Unit rieight	4' 2.4"	
Unit Shipping Weight	731	:0
Unit Operating Weight	731	ip

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

First Year - Parts Only (Standard)

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

Ordering Information

Part Number	Description	Quantity
Base Unit - Outdoor		Quantity
38AUDA16A0E5-0A0A0		
00.10071.071020 0.10710	Base Unit	111
	Cu/Cu Condensing Coil	
	Standard Refrigerant Options	···
	Service Options - None	1
	Electrical Options - None	1
	Packaging Options - Standard	1
	Standard Electrical Mechanical Controls	1
	Refrig Circ/Compressor Staging - Two Circuits/ Dual Stage	
Accessories		
EF680035	Liquid Line Solenoid Valve for Outdoor Unit	
EF680037	Liquid Line Solenoid Valve for Outdoor Unit	2

Commercial Split Systems Builder 1.39z

Page Exhibit.

EXHIBIT 5-2

Unit Report For 7.5RFK BUILDING FIRST FLOOR AV ROOM 112321 Project HA-1702-21-11 UOG IFB B21-17 PURCHASING HVAC EQUIP Prepared By. BERNARD LLARENAS

02:16PM



Outdoor Unit Parameters

Unit Quantity	1	
Unit Model	38AUD	
Unit Size	15 Tons	
Voltage	208-3-60	V-Ph-Hz
Condenser Coll	Cu/Cu	V 1 11 1 12
No of Stages	Dual Stage	

System Parameter

1	
PURON	
2	
Scroll	
50, 100	
35.0	1F
3	
	2 Scroll 50, 100

Outdoor Unit Dimensions and Weight

Unit Length	7' 2.4"
Unit Wath	3' 7.4"
Unit Height	4' 2.4"
Unit Shipping Weight	731 in
Unit Operating Weight	731 ib

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

First Year - Parts Only (Standard)

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

Ordering Information

Part Number	Description	
Base Unit - Outdoor		Quantit
38AUDA16A0E5-0A0A0		
	Base Unit	11
· · · · · · · · · · · · · · · · · · ·	Cu/Cu Condensing Coil	
	Standard Refrigerant Options	
	Service Options - None	— -
	Electrical Options - None	1
	Packaging Options - Standard	
	Standard Electrical Mechanical Controls	
	Refrig Circ/Compressor Staging - Two Circuits/ Dual Stage	
Accessories	5 5 The onotion boar Stage	
EF680035	Liquid Line Solenoid Valve for Outdoor Unit	
EF680037	Liquid Line Solenoid Valve for Outdoor Unit	2
mmercial Split Systems B		2

Commercial Split Systems Builder 1.39z

Page 43 of 178

EXHIBIT 5-3

Unit Report For 7.5RFK BUILDING FIRST FLOOR OFFICES 112321 Project HA-1702-21-11 UOG IFB B21-17 PURCHASING HVAC EQUIP Prepared By: BERNARD LLARENAS

02:16PM



Outdoor Unit Parameters

Unit Quantity		1	
Unit Model:		38AUD	
Unit Size:	 	20 Tons	
Voltage		208-3-60	V-Ph-Hz
Condenser Corl		Cu/Cu	
No of Stages	. Е	Dual Stage	

System Parameter

System Quantity	1	
Refrigerant Type	PURON	
Compressor Quantity	2	
Compressor Type	Scrott	
Std Capacity Steps	50, 100	
Std Min Outdoor Temp(Cooting)	35.0	'n.
No of Ouldoor fans	4	

Outdoor Unit Dimensions and Weight

Unit Length	-	7' 2.1"	
Unit Width		5' 7.1"	
Unit Height		4' 2.4''	
Unit Snipping Weight			
			lb
Unit Operating Weigh	N(978	lb

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

First Year - Parts Only (Standard)

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

Ordering Information

Description	—-
	Quantity
Base Unit	1
Cu/Cu Condensing Coil	
Standard Refrigerant Options	
Service Options - None	$-\frac{1}{1}$
Electrical Options - None	 -
Packaging Options - Standard	
Standard Electrical Mechanical Controls	
Refrig Circ/Compressor Staging - Two Circuits/ Dual Stage	
5 5 The chooks Dual Stage	- - - - - - - - - -
Liquid Line Solenoid Valve for Outdoor Linit	
Liquid Line Solenoid Valve for Outdoor Unit	2

Commercial Split Systems Builder 1.39z

Page 56 of 178

EXHIBIT 5-4



Unit Quantity:		
Unit Model:	38AUD	
Unit Size		
Voltage	208-3-60	V-Ph-Hz
Condenser Coil	Cu/Cu	
No of Stages	Dual Stage	

System Parameter

System Quantity	1	
Refrigerant Type	PURON	
Compressor Quantity	2	
Compressor Type	Scroll	
Std Capacity Steps	50, 100	
Std Min Outdoor Temp(Cooling)	35.0	٦ŕ
No of Outdoor fans	4	

Outdoor Unit Dimensions and Weight

Unit Length.	_	7' 2.1"	
Unit Width		5' 7.1"	
Unit Height		4' 2.4"	
Unit Shipping Weight		978	lb
Unit Operating Weight		978	lb

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

First Year - Parts Only (Standard)

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

Ordering Information

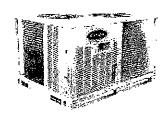
Description	·
	Quantity
Base Unit	11
Cu/Cu Condensing Coil	
Standard Refrigerant Options	
Service Options - None	
Packaging Options - Standard	- -
Standard Electrical Mechanical Controls	
Refrig Circ/Compressor Staging - Two Circuits/ Dual Stage	
John Stage	
Liquid Line Solenoid Valve for Outdoor Unit	
Liquid Line Solenoid Valve for Outdoor Unit	$\frac{2}{2}$
	Base Unit Cu/Cu Condensing Coil Standard Refrigerant Options Service Options - None Electrical Options - None Packaging Options - Standard Standard Electrical Mechanical Controls Refrig Circ/Compressor Staging - Two Circuits/ Dual Stage Liquid Line Solenoid Valve for Outdoor Unit

Commercial Split Systems Builder 1.39z

69 of 178 **Exhibit**

EXHIBIT 5-5

5,5



Unit Quantity	. 1	
Unit Model	38AUD	
Unit Size:	20 Tons	
Voltage	208-3-60	V-Ph-Hz
Condenser Coil	Cu/Cu	
No of Stages	Duai Stage	

System Parameter

System Quantity	1	
Refrigerant Type	PURON	
Compressor Quantity	2	
Compressor Type	Scrott	
Std. Capacity Steps	50, 100	
Sta Min Outdoor Tempi Capling)	35.0	: F
No of Outdoor fans	4	

Outdoor Unit Dimensions and Weight

Unit Length	•	7' 2.1"	
Unit Width		5' 7.1"	
Unit Height		4 2,4	
Unit Shipping Weight		978	lb
Unit Operating Weight		978	rb.

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

First Year - Parts Only (Standard)

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

Ordering information

Part Number	Description	
Base Unit - Outdoor		Quantity
		
38AUDA25A0E5-0A0A0		
	Base Unit	
	Cu/Cu Condensing Coil	1
	Standard Refrigerant Options	1
	Service Options - None	1
	Electrical Options - None	1
	Packaging Options - Standard	1
	Standard Electrical Mechanical Controls	
	Refrig Circ/Compressor Staging - Two Circuits/ Dual Stage	1
Accessories		
EF680035	Liquid Line Solenoid Valve for Outdoor Unit	7
EF680037	Liquid Line Solenoid Valve for Outdoor Unit	2

Commercial Split Systems Builder 1.39z

EXHIBIT 5-6

5-6

Unit Report For LECTURE HALL AUDITORIUM 112321
Project. HA-1702-21-11 UOG IFB B21-17 PURCHASING HVAC EQUIP
Prepared By. BERNARD LLARENAS

02.16PM



Outdoor Unit Parameters

Unit Quantity	. 1	
Unit Model.	 	
Unit Size.	20 Tons	
Voltage	208-3-60	V-Ph-Hz
Condenser Con	Cu/Cu	V-1 H-11Z
No of Stages	Dual Stage	

System Parameter

System Quantity	1	
Refrigerant Type	PURON	
Compressor Quantity	2	
Compressor Type	Scroll	
Std. Capacity Steps	50, 100	
Std. Min. Outdoor Temp(Cooling)	35.0	٤
No of Outdoor fans	4	

Outdoor Unit Dimensions and Weight

Unit Length	7' 2.1"
Unit Width	5' 7.1"
Unit Height	4' 2.4"
Unit Shipping Weight	978 to
Unit Operating Weight	978 lb

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

First Year - Parts Only (Standard)

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

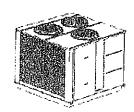
Ordering Information

Part Number	Description	
Base Unit - Outdoor		Quantit
38AUDA25A0E5-0A0A0		
	Base Unit	1
	Cu/Cu Condensing Coli	
	Standard Refrigerant Options	- 1
	Service Options - None	
	Electrical Options - None	1
	Packaging Options - Standard	<u>_</u>
	Standard Electrical Mechanical Controls	-
Accessories	Refrig Circ/Compressor Staging - Two Circuits/ Dual Stage	1
EF680035	Liquid Lipo Calandid VIII () 2	
EF680037	Liquid Line Solenoid Valve for Outdoor Unit Liquid Line Solenoid Valve for Outdoor Unit	2
	TEATHER CONTINUE AND	2

Commercial Split Systems Builder 1.39z

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EXHIBIT 6



Unit Quantity: 1	
Official Model 38APD	
Unit Size: 50 Tons	
voitage:	V Db L
No. of Circuits: Two Circuits	

Ηz

System Parameter

System Quantity:	
Reingerant Type:PHRON	
Compressor Quantity: 2 (Circ A), 2 (Circ B)	
Compressor Type: Scroll	
30 Capacity Steps:	
Std. Min. Outdoor Temp(Cooling). 25 n	٩٤
No. of Outdoor fans:	•

Outdoor Unit Dimensions and Weight

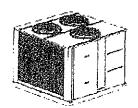
	.9
Unit Length:	7' 8 1"
Unit Width:	71 4 611
Hoji Hajakt	
Unit Height	6' 1,0"
Unit Operating Weight	2120 15
	A LZU (I)

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

First Year - Parts Only (Standard)

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

Part Number	Description	
Base Unit - Outdoor		Quantity
38APD05056-3009J		
	Base Unit	1
	Standard Line Length, RTPF	
	Single Point Power, Terminal Block	
	Export packaging, (Skid + Bag)	
	Scrolling Marquee, EMM, BACnet Communication	
	Copper E-Coat Fin / Copper Tube	
Accessories		
33CS2PP2S-03	Thermostat for Outdoor Unit	
30GT-911062	Navigator for Outdoor Unit	11



Unit Quantity:	1	
Unit Model:	38APD	
Unit Size:		
Voltage	208-3-60	V-Ph-Hz
No. of Circuits	Two Circuite	

System Parameter

System Quantity:	1
Refrigerant Type: PURON	V.
Compressor Quantity: 2 (Circ A), 2 (Circ B)
Compressor Type Scrot	ĺ
Std Capacity Steps 23, 50, 73, 100	
Std. Min. Outdoor Temp(Cooling): 32.6) °F
No. of Outdoor fans:	- ' }
	-

Outdoor Unit Dimensions and Weight

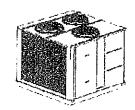
the are treight		
Unit Length:	7' 8.1"	
Unit Width.	7' 4.2''	
Unit Height	6' 1.0''	
- Unii Uneralina Weight		h
and approximity violiging	. ZU34	O.

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

First Year - Parts Only (Standard)

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

Part Number	Description	
Base Unit - Outdoor		Quantity
38APD04056-3009J		
	Base Unit	
	Standard Line Length, RTPF	
	Single Point Power, Terminal Block	
	Export packaging, (Skid + Bag)	
	Scrolling Marquee, EMM, BACnet Communication	1
	Copper E-Coat Fin / Copper Tube	·
Accessories		
30GT-911062	Navigator for Outdoor Unit	
33CS2PP2S-03	Thermostat for Outdoor Unit	1 - 1 -



Unit Quantity		
Unit Model.	38APD	
Unit Size:	40 Tons	
Voltage	208-3-60	V-Ph-Hz
No. of Circuits:	Two Circuite	

System Parameter

System Quantity:	1	
Reirigerant Type:	PURON	
Compressor Quantity 2 (Circ A), 2	(Circ B)	
Compressor Type.	Scroll	
Std. Capacity Steps	0, 73, 100	
Std. Min. Outdoor Temp(Cooling)	32.0	٩F
No of Outdoor fans		·

Outdoor Unit Dimensions and Weight

Heir Leasth				
Unit Length		 	7' 8.1"	
Unit Wiath			7' 4.2"	
Unit Height:			, .6' 1.0"	
Unit Operating Weigh	t		2094	ľb

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

First Year - Parts Only (Standard)

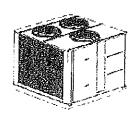
NOTE: Please see Warranty Catalog 808-218 for explanation of policies and ordering methods.

Part Number	Description	
Base Unit - Outdoor		Quantity
38APD04056-3009J		
	Base Unit	
	Standard Line Length, RTPF	
	Single Point Power, Terminal Block	·
	Export packaging, (Skid + Bag)	
	Scrolling Marquee, EMM, BACnet Communication	<u>'</u>
	Copper E-Coat Fin / Copper Tube	1
Accessories		
30GT-911062	Navigator for Outdoor Unit	
33CS2PP2S-03	Thermostat for Outdoor Unit	

Unit Report For 20SCIENCE BUILDING SECOND FLOOR 112221 Project: HA-1702-21-11 UOG IFB B21-17 PURCHASING HVAC EQUIP

Prepared By: BERNARD LLARENAS

02:16PM



Outdoor Unit Parameters

Unit Quantity	1	
Unit Model	384PD	
Unit Size:	40 Tono	
Voltage:	200.2.66	1/51
Voltage:		V-Ph-Hz
No. of Circuits:	IWO Circuits	

System Parameter

System Quantity:	1	
Reingerant Type: PURC	NC	
Compressor Quantity 2 (Circ A), 2 (Circ	B١	
Compressor Type Scr	ʻoli	
Std Capacity Steps	00	
Std. Min. Outdoor Temp(Cooling): 33	2.0	۹۳
No of Outdoor fans:	3	•
	-	

Outdoor Unit Dimensions and Weight

The street of th		
Unit Length:	7′ 8.1"	
Unit Width	7' 4.2''	
Unit Height	6' 1.0"	
Unit Operating Meight	***	
Unit Operating Weight	2094	Ιb

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

First Year - Parts Only (Standard)

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

Part Number	Description	- 1
Base Unit - Outdoor		Quantity
38APD04056-3009J		
	Base Unit	
	Standard Line Length, RTPF	
	Single Point Power, Terminal Block	
	Export packaging, (Skid + Bag)	
	Scrolling Marquee, EMM, BACnet Communication	1
	Copper E-Coat Fin / Copper Tube	
Accessories		
30GT-911062	Navigator for Outdoor Unit	
33CS2PP2S-03	Thermostat for Outdoor Unit	11

Unit Report For 10EGLISH COMMUNICATION BULDING CLASSROOM 112221

Project; HA-1702-21-11 UOG IFB B21-17 PURCHASING HVAC EQUIP

Prepared By: BERNARD LLARENAS



Outdoor Unit Parameters	
Unit Quantity:	
Unit Model: 38APD	
Unit Size: 30 Tons	

Voltage: 208-3-60 V-Ph-Hz
No. of Circuits Two Circuits

System Parameter

System Quantity:1	
Reingerant Type: PURON	
Compressor Quantity 1. 1 (Circ A), 1 (Circ B)	
Compressor Type: Scroll	
Std. Capacity Steps: 50, 100	
Std. Min Outdoor Temp(Cookna): 32 n	۶F
No. of Outdoor fans:	•

Outdoor Unit Dimensions and Weight

	····
Unit Length:	7' 4.2"
Unit Width:	3' 4.3"
Unit Height	6' 1 1"
Unit Operating Weight:	
The operating treight.	1264 lb

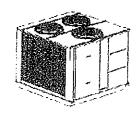
Warranty Information Outdoor (Note: for US & Canada only)

First Year - Parts Only (Standard)

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

Part Number	Description	
Base Unit - Outdoor		Quantity
38APD03056-3009J		
	Base Unit	11
	Standard Line Length, RTPF	
······································	Single Point Power, Terminal Block	
	Export packaging, (Skid + Bag)	<u>-</u> -
	Scrolling Marquee, EMM, BACnet Communication	
	Copper E-Coat Fin / Copper Tube	<u></u>
Accessories		1
30GT-911062	Navigator for Outdoor Unit	
33CS2PP2S-03		11
	Thermostat for Outdoor Unit	1 1





Outdoor Unit Parameters

Unit Quantity:	1
Unit Model. 38AI	PD
Unit Size: 50 To	ns
Voltage:	.60 V.Ph.Hz
No of Circuits:	its

System Parameter

System Quantity	
Refrigerant Type: PURON	
Compressor Quantity 2 (Circ A), 2 (Circ B)	
Compressor Type: Scroll	
Std Gapacity Steps	
Std Min. Outdoor Temp(Cooling): 25.0	٥f
No of Outdoor fans 3	

Outdoor Unit Dimensions and Weight

Unit Length:	7' 8,1"	
Unit Width:	. 7' 4.2"	
Unit Height	6' 1.0"	
Unit Operating Weight:	2120 [b

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

First Year - Parts Only (Standard)

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

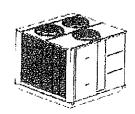
Ordering Information

Part Number	Description	
Base Unit - Outdoor		Quantity
38APD05056-3009J		
	Base Unit	
	Standard Line Length, RTPF	
···	Single Point Power, Terminal Block	
	Export packaging, (Skid + Bag)	
	Scrolling Marquee, EMM, BACnet Communication	
	Copper E-Coat Fin / Copper Tube	
Accessories		
33CS2PP2S-03	Thermostat for Outdoor Unit	
30GT-911062	Navigator for Outdoor Unit	1

Unit Report For HSS BUILDING 50T 112221 Project: HA-1702-21-11 UOG IFB B21-17 PURCHASING HVAC EQUIP

Prepared By: BERNARD LLARENAS

02:16PM



Outdoor Unit Parameters

Unit Quantity	1	
Unit Model:	38A PD	
Unit Size:	50 Tons	
voitage:	208-3-60	V-Ph-Hz
No of Circuits: Two	Circuits	

System Parameter

System Quantity:	1
Reingerant Type PURON	V.
Compressor Quantity: 2 (Circ A), 2 (Circ B)	()
Compressor Type: Scrol	ĺ.
Std. Capacity Steps 23, 50, 73, 100	n n
Std Min. Outdoor Temp(Cooling): 25 () °⊊
No. of Outdoor fans	- ' }
and the control of th	,

Outdoor Unit Dimensions and Weight

Unit Length		 7' 8.1"	
Unit Width.		 	
Unit Height		 	
Unit Operation	MARKET IN I	 6' 1.0"	
Unit Operating	vveignt:	 2120	lb

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

First Year - Parts Only (Standard)

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

Ordering Information

Part Number	Description	
Base Unit - Outdoor		Quantity
38APD05056-3009J		
	Base Unit	11
	Standard Line Length, RTPF	
	Single Point Power, Terminal Block	
	Export packaging, (Skid + Bag)	
	Scrolling Marquee, EMM, BACnet Communication	
	Copper E-Coat Fin / Copper Tube	——————————————————————————————————————
Accessories	1-	111
33CS2PP2S-03	Thermostat for Outdoor Unit	
30GT-911062	Navigator for Outdoor Unit	11
		i 1

EXHIBIT 7



Project name	OOG condensers			<i>y</i>	
Submitted by	Leo				
Customer	JWS	<u>. </u>	Date	11/22/20	121
OVERVIEW			Quantity	.1	
System Type	Air-Cooled Split				
Series	ACCS	Refrigerant	R410	Α	
Unit nomenclature	6ACC\$700-QG + 6EB7000-QG	Power supply		/3/60HZ	
Altitude				0,00,12	
FILTER	ft_	Approval			
Туре	Filter 1" 70% Eff				
Size (Qty)	(20x25x1(3), 25x25x1(6)				
DX COOLING COIL	:20x25x1(5), 23x25x1(6)				
уре	de la				
Rows	Ø1/2	Number of coil			
ins per inch	4	Face area		1	
lefrigerant	10	Face velocity		34.03 ft	
apacity (Total)	R410A	Entering air (DB)		505 ft	
apacity (Sensible)	640800 Btu/h	Entering air (WB)		80 °F	
ir pressure drop	442555 Btu/h	Leaving air (DB)		57 °F	
OMPRESSOR (OR EQUIVALEN	0.6 inH2O	Leaving air (WB)	 	55.9 °F	
ompressor	i MODELS)			54.7 °F	:
ype					
otal LRA	Scroll, Fixed Speed	Quantity	2 X Z	P154 TDM	
	600.0 A	Total Power		4	
AN (EVAPORATOR)		Total Amps		49.8 kV	N
/pe				74.9 A	
r Flow	Belt Driven	Model			
Rernal Static Pressure	17200 CFM	Fan Speed		560	
otal Static Pressure	0.5 in H2O			630; RP	M
	1.5/inH2O	Motor Horsepower	· · · · · · · · · · · · · · · · · · · ·	7.2 kW	V
Jantity	1	FLA		15, HP	·
Attracta (a.e.		Locked rotor current (LRA)		19.9 A	
ONDENSER (AIR COOLED)		cocked rotor corrent (LRA)		129.1 A	
odel	Ø3/8	Motor HP (each)			
iantity	1	FLA (each)		2 2/3 HP	·)
ndenser Fan Motor	800MM		4	4 A	
antity	3	Ambient Temperature		95 F	
CTRICAL SUMMARY		J			
it FLA	106.8'A	MCA			
al Power Input	63.68 kW			111.5 A	
	10.06	MFS		150 A	
TIONS	10,00	IEER			
CRIPTION				*17.01	~
SV: Suction/Discharge/Liquid Lin	e Service Valves				——
CU-C: Condenser Coil Fin Materia	als - Copper				
CG: Condenser Coil Guard					
DOL2: IEC DOL (Non UL)				·	-
Mili: Door interlock Main Incomir	glsolator				
PFR: UVR/Phase Failure Protect					
IR33. Controller - IR33					
ES					
	ange specifications without prior notice.				



Project name	OOG condensers			
Submitted by	Leo			
Customer	JWS		Date	11/22/2021
OVERVIEW			Quantity	1
System Type	Air-Cooled Split	Refrigerant		
Series	ACCS		R410	Α
Unit nomendature	6ACC\$220-QG + 6HE8220D-QG	Power supply	208V	/3/60HZ
Altitude	0 ft	A		
FILTER		Approval		
Туре	Filter 1" 70% Eff			
Size (Qty)	25x20x1(1), 25x25x1(2)			
DX COOLING COIL				
Гуре	data			
Rows	Ø3/8	Number of coil		1
ins per inch	3	iFace area		13.22 ft²
Refrigerant	12	Face velocity		408 ft/min
apacity (Total)	R410A	Entering air (DB)		80 'F
apacity (Sensible)	190397 Btu/h	:Entering air (WB)		
Air pressure drop	134438 Btu/h			67 'F
OMPRESSOR (OR EQUIVALEN	0.3 inH2O	Leaving air (W8)	<u> </u>	56.8 °F
ompressor	I MOBELS)			55.4 'F
уре				7040-
otal LRA	Scroll, Fixed Speed	Quantity		ZP182
ordin City	340.0 A	Total Power		1
AN (EVAPORATOR)		Total Amps		15.7 kW
ype				51 A
ir Flow	Belt Driven	Model		
xternal Static Pressure	5400 CFM	Fan Speed		15/15
ctal fact - B	0.5 in H2O	Absorbed Power		772 RPM
otal Static Pressure	1.2 inH2O	Motor Horsepower		1.6 kW
uantity	1	FLA		3 HP
		Locked rotor current (LRA)	· -	10.3 A
ONDENSER (AIR COOLED)		otor corrent (CRA)		64 A
lodel	Ø3/8	'Motor HP (each)	— — ———	
uantity	1	FLA (each)		1 HP
ondenser Fan Motor	26" (660MM)	Ambient Temperature		2.9 A
vantity	2	Killoicht Temperature		95 °F
ECTRICAL SUMMARY				
DIL FLA	67.1 A	MCA		
tal Power Input	18.89 kW	MFS		79.9 A
R		A COMPANY TO A CONTRACT OF THE CONTRACT OF		150 A
PTIONS	10.00	IEER		n/a
SCRIPTION				
SV: Suction/Discharge/Liquid Lini	e Service Values			
CU-C: Condenser Coil Fin Materia	als - Copper			
CG: Condenser Cail Guard	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
DOL2: IEC DOL (Non UL)				
MII: Door Interlock Main Incomin	ng (solator			
PFR: UVR/Phase Failure Protect	u			
IR33: Controller - IR33				
TES				
nufacturer reserves the right to ch				



Project name			1		
Submitted by	OOG condensers				
Customer	Leo		Date		
OVERVIEW	JWS			11/22/	2021
System Type			Quantity	1	
Series	Air-Cooled Split	Refrigerant			
Unit nomenclature	ACCS	Power supply	R410		
Altitude	6ACCS290-QG + 6E8290D-QG		460V	/3/60HZ	
FILTER	0 ft	Approval			
Туре					
Size (Qty)	Filter 1" 70% Eff				
DX COOLING COIL	25x16x1(3), 25x20x1(3)				
Туре					
Rows	Ø3/8	Number of coil			
Fins per inch	3	Face area	· - -	1	
Refrigerant	12	Face velocity		<u>16.53</u>	
Capacity (Total)	R410A	Entering air (D8)		454	ft/mi
Capacity (Sensible)	253522 Btu/h	Entering air (WB)			•F
Air pressure drop	181867 Btu/h	Leaving air (D8)			'F
OMPRESSOR (OR FOLINGE TO	0.4 inH2O	Leaving air (WB)		57.4	
OMPRESSOR (OR EQUIVALENT ompressor	MODELS)			55.9	°F
Vpe			 		
otal LRA	Scroll, Fixed Speed	Quantity		2 X ZP122	
Otal Eng	280.0 A	Total Power	 -	2	
AN (EVAPORATOR)		Total Amps		22.5	kW
YPE				34.3	A
ir Flow	Belt Driven	Model			
xternai Static Pressure	7500 CFM	Fan Speed		18/13	, <u>-</u>
otal Static Pressure	0.5 inH2O	Absorbed Power		693	RPM
luantity	1.3 inH2O	Motor Horsepower		2.9	kW
and the second s	1	FLA		5.5	HР
ONDENSER (AIR COOLED)		Locked rotor current (LRA)		<u> 8.2</u>	A
lodel		The same of the sa	L	50.5	A
uantity	Ø3/8	Motor HP (each)			
ondenser Fan Motor	1	FLA (each)			HP.
uantity	26" (660MM)	Ambient Temperature		1.5	
ECTRICAL SUMMARY	2			95	°E
nit FLA					
otal Power Input	45.7 _. A	MCA			
R	27.04 kW	MES		50	
PTIONS	9.38	IEER		70 /	4
SCRIPTION				n/a	
SV. Suction/Discharge/Liquid Line					
CU-C: Condenser Coil Fin Materials	Service Valves				
CG: Condenser Coil Guard	- Cobbst				
OOL2. IEC DOL (Non UL)					
Mfl. Door Interlock Main Incoming					
PFR: UVR/Phase Failure Protect	Isolator				
IR33: Controller - IR33				<u>-</u>	
OTES					
HES					



Project name	OOG candensers		7		
Submitted by	Leo				
Custamer	JWS		Date	11/22/	2021
OVERVIEW			Quantity	1	
System Type	Air-Cooled Split				
Series	ACCS	Refrigerant	R410	A	
Unit nomenclature	6ACC\$435-QG + 6EB435D-QG	Power supply	460V	/3/60HZ	
Altitude	0 :ft	1			
FILTER		Approval			
Туре	Filter 1" 70% Eff				
Size (Qty)	20x25x1(3), 25x25x1(3)				
DX COOLING COIL	(0)) =0.420,41(3)				
Туре	Ø3/8	lating to the			
Rows	3	Number of coil			
Fins per inch	13	Face area		21.39	-
Refrigerant	R410A	Face velocity			ft/mir
Capacity (Total)	377724 Btu/h	Entering air (DB)			*F
(Capacity (Sensible)	274677, Btu/h				'F
Air pressure drop				57.7	
COMPRESSOR (OR EQUIVALEN	T MODELS)	Leaving air (W8)		56.3	
Compressor					<u>'</u>
Туре	Scroll, Fixed Speed			2 X ZP182	
Total LRA	358.0 A	Quantity		7	
	33a.U A	:Tatal Power		31.2	
FAN (EVAPORATOR)		Total Amps		50.6	
Туре	Belt Driven				L
Air Flow	11500.CFM	Model		450	
External Static Pressure		Fan Speed			RPM
Total Static Pressure		:Absorbed Power			kW
Quantity	1.4;inH2O	:Motor Horsepower			HP
	1	FLA		14.4	
CONDENSER (AIR COOLED)		.Locked rotor current (LRA)		85.7	
Model	63/0				<u></u>
Quantity		,Motor HP (each)		1	— НР
Condenser Fan Motor	26" (660MM)	FLA (each)		1.6	
Quantity	3	Ambient Temperature		95	
ELECTRICAL SUMMARY					
Joit FLA	69.8 _. A				··
otal Power Input	39.02 kW	MCA		76.1	Δ
ER	9.68	MFS		125	
PPTIONS	3.08	IEER		n/a	
PESCRIPTION					
SV: Suction/Discharge/Liquid Line	e Service Valves				
CU-C: Condenser Coil Fin Materia	ils - Copper				
CG: Condenser Coil Guard					
DOLZ: JEC DOL (Non UL)					
MII: Door Interlock Main Incomin	g Isolator				
PFR: UVR/Phase Failure Protect					
IR33: Controller - IR33					
OTES					
	ange specifications without prior notice.				



Project name	OOG condensers			
Submitted by	Leo			
Customer	JWS		Date	11/22/2021
OVERVIEW			Quantity	1
System Type	Air-Cooled Split	Refrigerant		
Series	ACCS	Power supply	R410	
Unit nomenclature	6ACCS290-QG + 6EB290D-QG	Frower supply	208V	/3/60HZ
Altitude	o ft	Approval		
FILTER		Арргочаі		
Туре	Filter 1" 70% Eff		 	
Size (Qty)	25x16x1(3), 25x20x1(3)			
DX COOLING COIL				
Туре	Ø3/8	Number of coil		
Rows	3	Face area		1
Fins per inch	12	Face velocity		16.53 ft ²
Refrigerant	R410A	Entering air (DB)	·	454 ft/min
Capacity (Total)	249769, 8tu/h	!Entering air (WB)		80 °F
Capacity (Sensible)	180502 Btu/h	iteaving air (OB)		67 'F
Air pressure drop	0.41.447.0	Leaving air (WB)		57.6.°F
COMPRESSOR (OR EQUIVALENT	MODELS)	reading att (AAR)		56.1 'F
Compressor				
Туре	Scroll, Fixed Speed	:Quantity	- ,	2 X ZP122
Total LRA	480.0 A	Total Power		2
		Total Amps		22.9 kW
FAN (EVAPORATOR)		Total Willbs	<u>:</u>	63.7,A
Туре	Belt Driven	Model		
Air Flow	7500 CFM	iFan Speed		18/13
External Static Pressure	0.5 inH2O	Absorbed Power		693 RPM
Total Static Pressure	1.3 inH2O	Motor Horsepower		2.9 kW
Quantity	1	FLA		5.5 HP
		Locked rotor current (LRA)		18.1 A
CONDENSER (AIR COOLED)		reserved rotor current (CRA)	i	112 A
Model	Ø3/8	Motor HP (each)		~
Quantity	1	FLA (each)	 	1 HP
Condenser Fan Motor	26" (660MM)	Ambient Temperature		2.9 A
Quantity	2	, word remperature		95 F
ELECTRICAL SUMMARY				
Unit FLA	87.5 A	MCA		
Total Power Input	27.3 kW	·MFS		95.5 A
EER	9.15	IEER		150 A
OPTIONS				n/a
DESCRIPTION		···		
SV: Suction/Discharge/Liquid Line	Service Valves			
CU-C: Condenser Coil Fin Materials	s - Copper			
SSD: Stainless Steel Drain Pan				
CG: Condenser Coil Guard				
DOL2: IEC DOL (Non UL)				
MII: Door Interlock Main Incoming	Isolator			
PFR: UVR/Phase Failure Protect				
IR33: Controller - IR33				
IOTES				
Aonufacturer reserves the right to char			· · · · · · · · · · · · · · · · · · ·	



0			7	_	
Project name	OOG condensers			_	
Submitted by	Leo				
Customer	JWS		Date	11/22/	2021
OVERVIEW			Quantity	1	
System Type	Air-Cooled Split	Refrigerant			
Series	ACCS		R410A		
Unit nomenclature	6ACCS435-QG + 6E843SD-QG	Power supply	208V/	3/60HZ	
Altitude	0 ft				
FILTER		Approval			
Туре	Filter 1" 70% Eff				
Size (Qty)	20x25x1(3), 25x25x1(3)				
DX COOLING COIL					
Туре	A1/0				
Rows	Ø3/8	Number of coil			
Fins per inch	3	Face area		21,39	1 6.2
Refrigerant	13	Face velocity			
Capacity (Total)	R410A	Entering air (DB)			ft/mi
Capacity (Sensible)	376700; Btu/1				
Air pressure drop	273995 Btu/l	100)			'F
COMPRESSOR (OR EQUIVALENT A	0.5 in H20	O Leaving air (WB)		57.7	
Compressor	MODECS)			56.3	**F
Туре	Caralla St.				
Total LRA	Scroll, Fixed Speed	Quantity		2 X ZP182	
	680.0 A	Total Power		2	
AN (EVAPORATOR)		Total Amps		32.1	
ype				103.6	Α
Vir Flow	Belt Driven	.Model			
xternal Static Pressure	11500 CFM	Fan Speed		450	
otal Static Pressure	0.5 inH2C	:Absorbed Power			RPM
luantity	1.4 inH2C	Motor Horsepower			kW
		FLA		10	HP
ONDENSER (AIR COOLED)		Locked rotor current (LRA)		31.8	A
10del				190.1	A
uantity	Ø3/8	Motor HP (each)			
ondenser Fan Motor	1	FLA (each)		1	HP
uantity	26" (660MM)	Ambient Temperature		2.9	A
LECTRICAL SUMMARY	3		_l	95	°F
nit FLA	- ·				
otal Power Input	144.1 A	MCA			
R	39.8 kW	MFS		157	Α
PTIONS	9.47	HEER		225	Α
SCRIPTION				n/a	
SV: Suction/Discharge/Liquid Line Se	ervice Valves				
core. condenser con Fin Materials -	Copper				
CG: Condenser Coil Guard					*****
DOL2: IEC DOL (Non UL)					
Mil: Door Interlock Main Incoming Is	olator			·	
PFR: UVR/Phase Failure Protect					·
IR33: Controller - IR33 DTES					



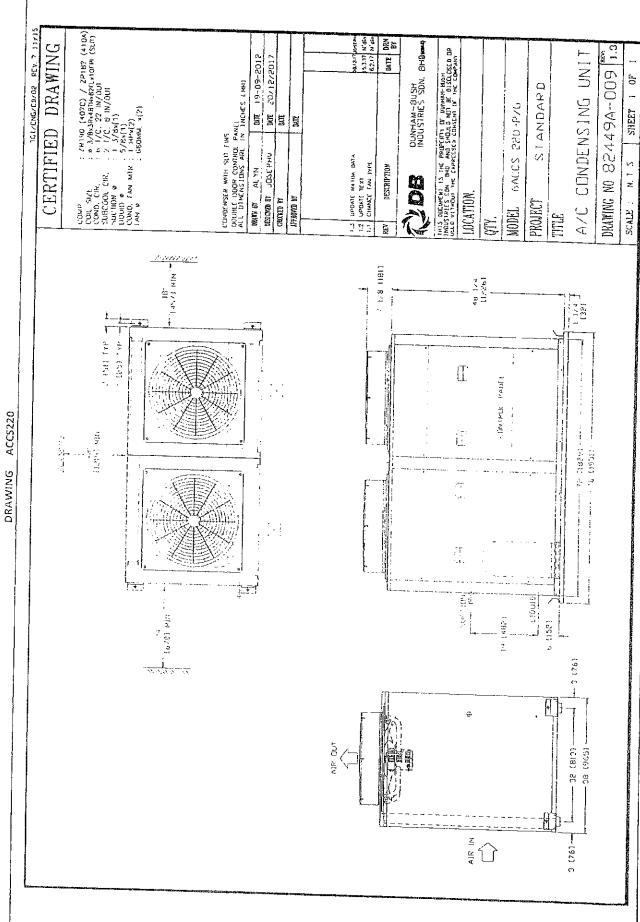
Project name	OOG condensers		1/2	
Submitted by	Leo			
Customer	JWS		Date	11/22/2021
DVERVIEW			Quantity	1
System Type	Air-Cooled Split	Refrigerant		
Series	ACCS	Power supply	R410/	
Unit nomenclature	6ACCSS70-QG + 6EBS70D-QG	11 Ower supply	208V/	3/60HZ
Altitude	o ft	Approval		
ILTER		Tybbiogai		
үре	Filter 1" 70% Eff			
ize (Qty)	20x25x1(9)			
X COOLING COIL				
уре	Ø3/8	Number of coil		
ows	3	Face area		1
ins per inch	12			29.17 ft ²
efrigerant	R410A	Face velocity		514 ft/m
apacity (Total)	497149 Btu/h	Entering air (DB)		80 °F
apacity (Sensible)	357934 Btu/h	Entering air (W8)		67 'F
ir pressure drop	0.5 /-1100	Leaving air (D8)		57.7 °F
OMPRESSOR (OR EQUIVALENT N	MODELS)	Leaving air (WB)		\$6,3!"F
ampressar				
/pe	Scroll, Fixed Speed	10	2 X ZP1	54 + ZP182
tal LRA	2x300 1x340 A	Quantity		3
	2X300 1X340 A	Total Power		44.2 kW
N (EVAPORATOR)		Total Amps	1	137.4.A
pe	Polt Date			
r Flow	Belt Driven	Model		500
ternal Static Pressure	15000 CFM	Fan Speed		727 RPM
ital Static Pressure	0.5 inH2O	Absorbed Power	· · · · · · · · · · · · · · · · · · ·	7.2 kW
uantity	1.4 inH2O	Motor Horsepower		15 HP
	1	FLA		44.2 A
INDENSER (AIR COOLED)		Locked rotor current (LRA)		286.1 A
odel	de la			Z00,1:A
iantity	Ø3/8	Motor HP (each)		1 HP
ndenser Fan Motor	1	FLA (each)		
antity	26" (660MM)	Ambient Temperature		2.9 A
ECTRICAL SUMMARY	4			95['F
it FLA				· · · · · · ·
tal Power Input	193.2 A	MCA		206.2 A
R		MFS		
TIONS	9.14	IEER		300 A
SCRIPTION			-	n/a
SV: Suction/Discharge/Liquid Line S				
CU-C: Condenser Coil Fin Materials	ervice Valves			
CG: Condenser Coil Fin Materials	Copper			- ··-
DOL2: IEC DOL (Non UL)				
Mil: Door later lost 1				
Mil: Door Interlock Main Incoming I	solator			
PFR: UVR/Phase Failure Protect				
IR33: Controller - IR33 TES				



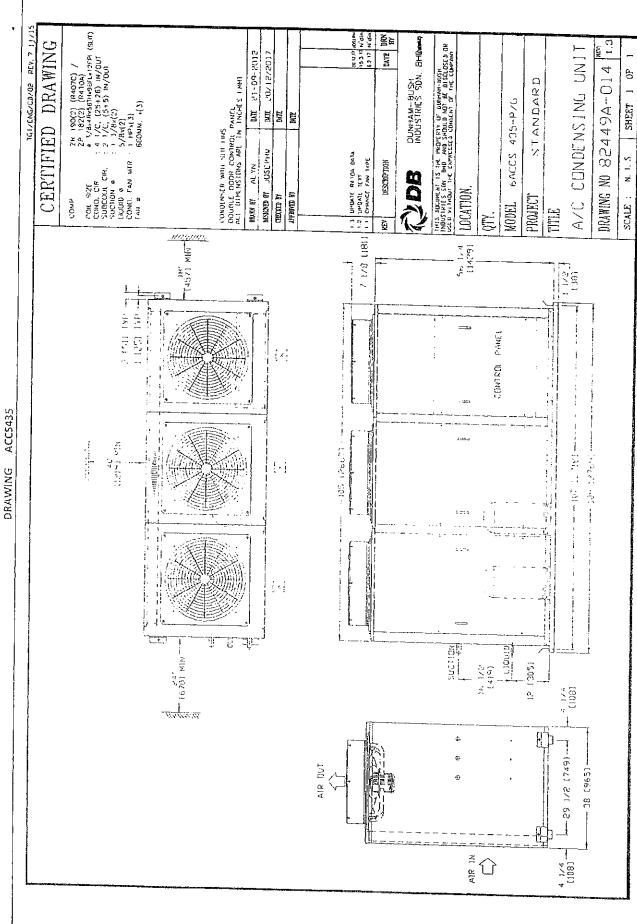
Project name	OOG condensers		7/2		
Submitted by	Leo				
Customer	JWS		Date	11/22/2	2021
OVERVIEW			Quantity	11	
System Type	Air-Cooled Split	Refrigerant			
Series	ACCS	Power supply	R410		
Unit nomenclature	6ACCS700-QG + 6EB700D-QG	r a wer auppry	208V	/3/60HZ	
Altitude	O ft	Approval			
FILTER		[MPPIOVA]			
Түре	Filter 1" 70% Eff		· · - · - · - · - · - · - · - · - ·		
Size (Qty)	20x25x1(3), 25x25x1(6)				
DX COOLING COIL					_
Түре	Ø1/2	Number of coil			
Rows	4	Face area		1	
Fins per inch	10	Face velocity		34.03	
Refrigerant	R410A	Entering air (DB)		505	ft/mii
Capacity (Total)	639094 Btu/h	Entering air (WB)		80	°F
Capacity (Sensible)	441872 Btu/h	Leaving air (D8)	- 	67	°F
Air pressure drop	0.6 :-1120			56.1	°F
COMPRESSOR (OR EQUIVALENT	MODELS)	icentuile au (AAR)		54.7	°F
Compressor					
Туре	Scroll, Fixed Speed	Quantity	2 X	ZP1S4 TDM	
Total LRA	1200.0 A	Total Power	 	4	
		Total Amps		51.8	kW
FAN (EVAPORATOR)		7010 711193	- 	161.3	A
Туре	Belt Driven	Model			
Air Flow	17200 CFM	Fan Speed		560	_
xternal Static Pressure		Absorbed Power	- - 	630	RPM
Total Static Pressure	1.5 inH2O	Motor Horsepower		7.2	kW
Quantity	1	FLA			HP
		·Locked rotor current (LRA)		44.2	A
ONDENSER (AIR COOLED)				286.1	A
Model	Ø3/8	Motor HP (each)			
Quantity	1	FLA (each)		2 2/3	HP
ondenser Fan Motor	800MM	Ambient Temperature		7.5	A
Quantity	3	trimberature		95	, Ł
LECTRICAL SUMMARY			·		
Init FLA	228 A	:MCA			
otal Power Input	65,26 kW	MFS	-	238.1	Α
ER	9.79	IEER		300 /	4
PTIONS			i	n/a	,
ESCRIPTION					
SV: Suction/Oischarge/Liquid Line	Service Valves		<u> </u>		
CU-C: Condenser Coil Fin Materia	ls - Copper				
CG: Condenser Coil Guard					
DOLZ IEC DOL (Non UL)					
Mil: Door Interlock Main Incomin	gIsolator				
PFR: UVR/Phase Failure Protect					
lR33: Controller - IR33					
OTES					
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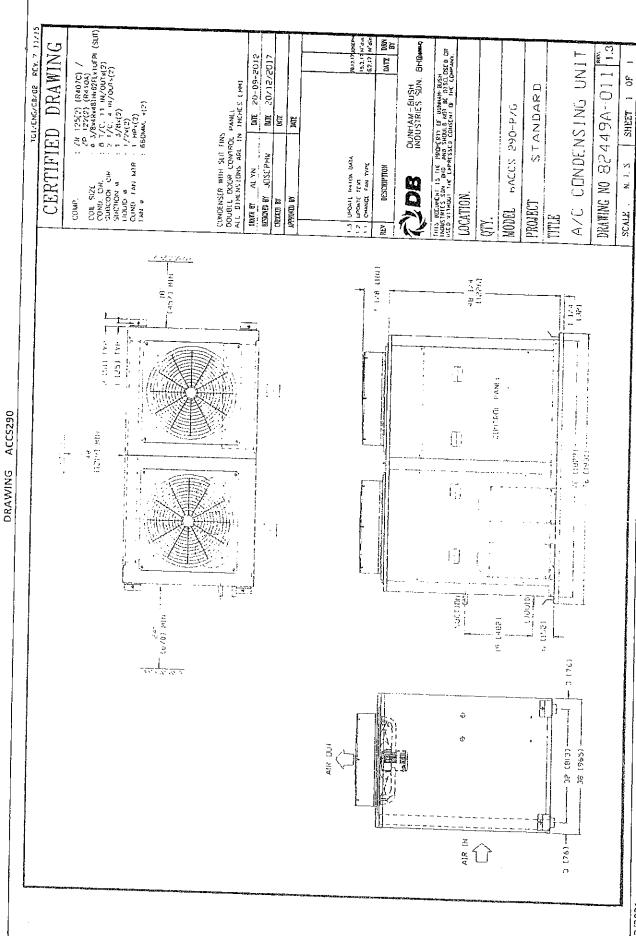
DRAWING ACCS700

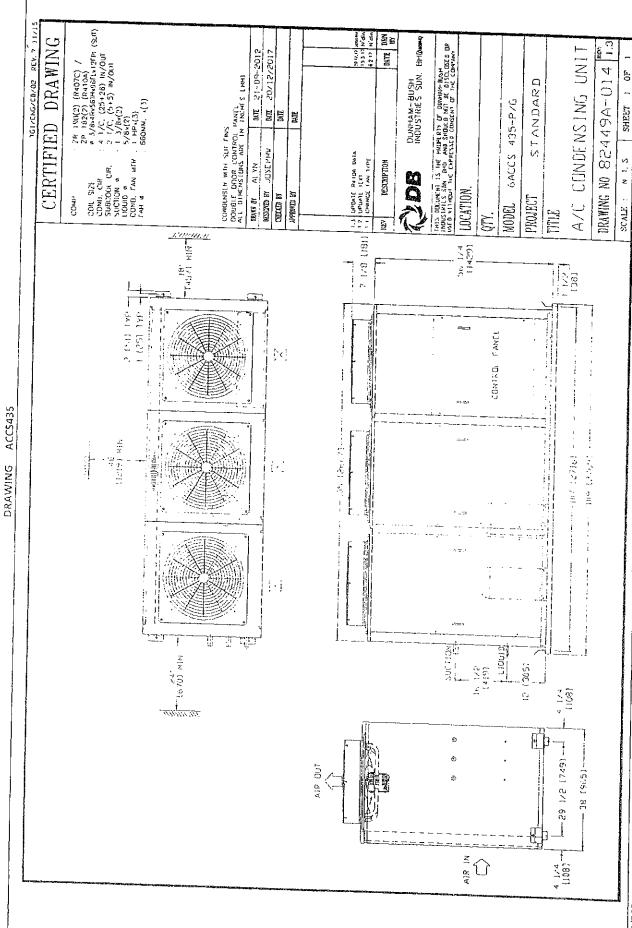
Build 191108

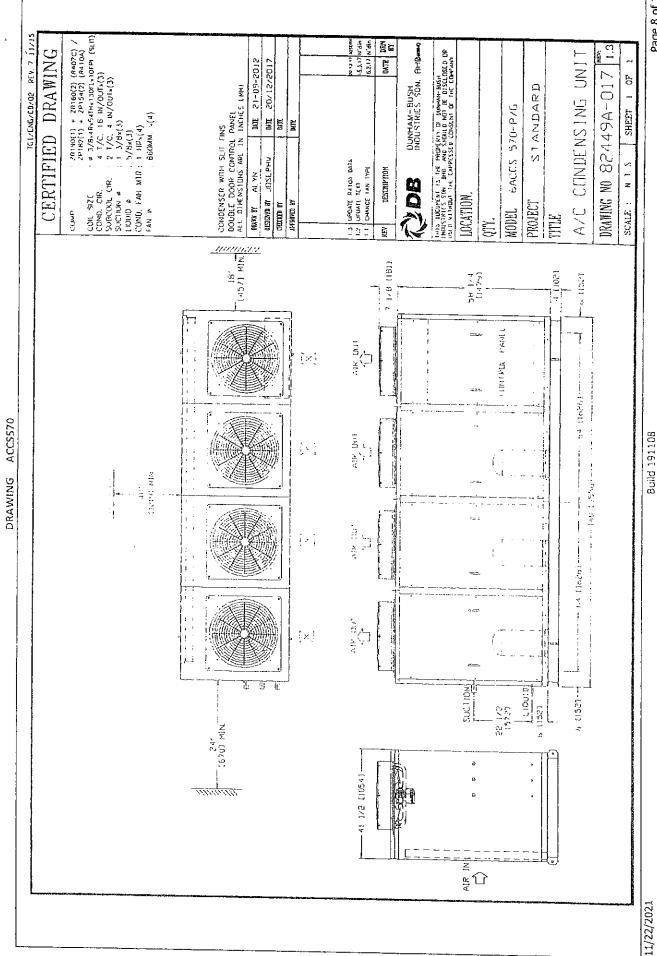


	CERTIFIED DRAWING COMP. 2R 125(2) (R407C) / COM SIZE 2P 127(2) (R40A) COM SIZE 2P 177(2) (R40A) COM COM 2 1/C, 4 IN/OUT4(2) SUGGOOL CIR 3 1/C, 4 IN/OUT4(2) FAN 9 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1.2 Georg George Data Revisions Persistances 1.2 George 1.1 Chemistry 1.1 Chemistry 1.1 Chemistry 1.1 Chemistry 1.1 Revision 1.1 Revisi	DUNHAM-FUSH NUUSTRES SUN. BHOREN IS THE STATE ST	MUDEL BACCS PAN-PAG PROJECT STANDARD TITLE A/C CUNDENSING UNIT	DRAWING NO 82449A-011 1.3
DRAWING ACCS290	41 (CC) 42 (CC) 43 (CC) 44 (CC)	AIR DUNY	(1921) (1921) (1946) (1	2 (76) — 32 (8(3) — 38 (965) — 38	









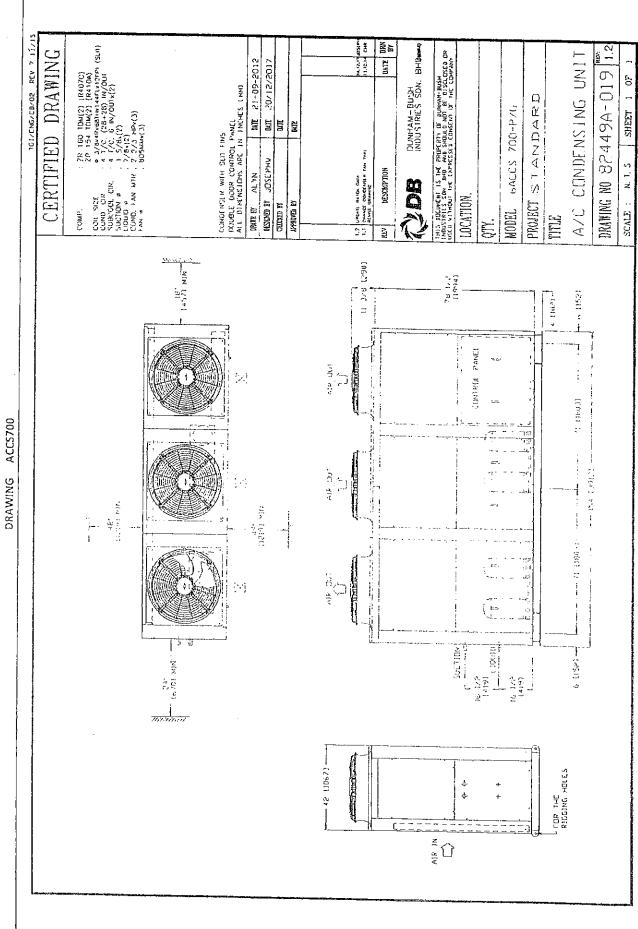


EXHIBIT 8

ALL BUSINESS ENTERPRISES CORP.

P.O. Box 8410 Tamuning, Guam U.S.A. 96931 TELEPHONE : (671) 646-3346; FAX: (671) 646-0589

TONY'S WORKSHOP CARRIER SUBMITTAL

Submittal Cover Sheet Unit Report	HVAC Guide Specification	Condenser Coils
Page #4	50-Tons - Page 11	Page 12 & 15 Condenser Coil - Microchannel Aluminum Tube Coils and Aluminum Fins
Page #16	40-Tons - Page 23	Page 24 & 27 Condenser Coil Microchannel Aluminum Tube Coils & Aluminum Fins
Page #28	15-Tons - Page 37	Page 38 Condenser Coil - Copper Tube Coil, Aluminum Fins
Page #42	15-Tons - Page 50	Page 51 Condenser Coil, Copper Tube Coil, Aluminum Fins
Page #55	20-Tons - Page 63	Page 64 Condenser Coil - Copper Tube Coil, Aluminum Fins
Page #68	20-Tons - Page 76	Page 77 Condenser Coil - Copper Tube Coil, Aluminum Fins
Page #81	40-Tons - Page 88	Page 89 & 92 Condenser Coil - Microchannel Aluminum Tube Coils, Aluminum Fins
Page #93	40-Tons - Page 100	Page 101 & 104 Condenser Coil - Microchannel Aluminum Tube Coils, Aluminum Fins
Page #105	20-Tons - Page 113	Page 114 Condenser Coil - Copper Tube Coil, Aluminum Fins
Page #118	30-Tons - Page 125	Page 126 & 129 Condenser Coil - Microchannel Aluminum Tube Coils, Aluminum Fins
Page #130	50-Tons - Page 137	Page 138 & 141 Condenser Coils - Microchannel Aluminum Tube Coils, Aluminum Fins
Page #142	20-Tons - Page 150	Page 151 Condenser Coils - Copper Tuber Coils, Aluminum Fin
Page #155	50-Tons - Page 162	Page 163 & 166 Condenser Coils, Microchannel, Aluminum Tube Coils, Aluminum Fins
Page #167	30-Tons - Page 174	Page 175 & 178 Condenser Coils - Microchannel, Aluminum Tube Coils, Aluminum Fins

NOTE: Michochannel is Aluminum Tube Coils and Aluminum Fins is a deviation to major BID Requirements on Copper Tube coil and Copper Fins.



SUBMITTAL

Project

HA-1702-21-11 UOG IFB B21-17 PURCHASING HVAC EQUIP

<u>Date</u>

Wednesday, December 1, 2021

Project Number

HA-1702-21-11

Contractor

UNIVERSITY OF GUAM - PROCUREMENT OFFICE

BERNARD LLARENAS CARRIER GUAM INC.

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RFK BUILDING SECOND FLOOR 112221

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RFK BUILDING SECOND FLOOR 112221

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

Guide Specification for RFK BUILDING SECOND FLOOR 112221

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02:16PM



GUIDESPECIFICATIONS - 38APD05056-3009J

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

Size: 050

Part 1: General

SYSTEM DESCRIPTION

 $1.01. \ Outdoor-mounted, air-cooled condensing unit with Puron @ \ refrigerant (R-410A) suitable for on-the-ground or \ roof topoled condensing unit with Puron @ \ refrigerant (R-410A) suitable for on-the-ground or \ roof topoled condensing unit with Puron @ \ refrigerant (R-410A) suitable for on-the-ground or \ roof topoled condensing unit with Puron @ \ refrigerant (R-410A) suitable for on-the-ground or \ roof topoled condensing unit with Puron @ \ refrigerant (R-410A) suitable for on-the-ground or \ roof topoled condensing unit with Puron @ \ refrigerant (R-410A) suitable for on-the-ground or \ roof topoled condensing unit with Puron @ \ refrigerant (R-410A) suitable for on-the-ground or \ roof topoled condensing unit with Puron @ \ refrigerant (R-410A) suitable for on-the-ground or \ roof topoled condensity with Puron @ \ refrigerant (R-410A) suitable for on-the-ground or \ roof topoled condensity with Puron @ \ refrigerant (R-410A) suitable for on-the-ground or \ roof topoled condensity with Puron @ \ refrigerant (R-410A) suitable for on-the-ground or \ roof topoled condensity with Puron @ \ roof topoled condensity with Puro$ installation. The 38APD unit shall have two independent refrigeration circuits and shall consist of two, four, five or six rotary scroil 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.

QUALITYASSURANCE

- 1.01. Unit performance shall be rated in accordance with AHRI (Air-Conditioning, Heating, and Refrigeration Institute). Standard 365, latest edition (U.S.A).
- 1.02. Unit construction shall comply with latest edition of ASHRAE (American Society of Heating, Refrigerating, and Air-Conditioning Engineers) 15 Safety Code, UL 1995, and ASME (American Society of Mechanical Engineers) applicable codes (U.S.A. codes).
- $1.03. \ The management system governing the manufacture rof the product is ISO (International Organization for Standardization) and the product of the pro$ 9001:2015 certified.
- 1.04. Base unit shall be constructed in accordance with UL (Underwriters Laboratories) standards and CSA (Canadian Standards Association)..
- $1.05.\ Painted\ parts\ shall\ with stand\ 1000\ hours\ in\ constant\ neutral\ salt\ spray\ under\ ASTMB117\ conditions\ with\ a\ 1mm\ scribe\ per$ ASTM D1654. After test, painted parts shall show no signs of wrinkling or cracking, no loss of adhesion, no evidence of blistering, and the mean creepage shall not exceed 1/4 in. (Rating = 4 per ASTM D1654) on either side of the scribe line.
- 1.06. Design pressure shall be 650 psig (4482 kPa).
- 1.07. Unitshall be functional checked at the factory.
- 1.08. Lifting holes shall be provided to facilitate rigging.

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.

Guide Specification for RFK BUILDING SECOND FLOOR 112221

Project: HA-1702-21-11 UOG IFB B21-17 PURCHASING HVAC EQUIP

Prepared By: BERNARD LLARENAS

02:16PM

B. Control box access panels shall be hinged for service access.

2.03. Fans:

- A. Condenserfans 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 Finsulation and internal, automatic-reset thermal overload protection or manual reset calibrated circuit breakers.
- 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.
- $E. \quad Compressor motors shall be cooled by refrigerant gas passing through motor windings and shall have either internal line and shall have either internal line and shall be cooled by refrigerant gas passing through motor windings and shall have either internal line and shall be cooled by refrigerant gas passing through motor windings and shall have either internal line and shall be cooled by refrigerant gas passing through motor windings and shall have either internal line and shall be cooled by refrigerant gas passing through motor windings and shall have either internal line and shall be cooled by refrigerant gas passing through motor windings and shall have either internal line and shall be cooled by refrigerant gas passing through motor windings and shall have either internal line and shall be cooled by refrigerant gas passing through motor windings and shall have either the shall be cooled by refrigerant gas passing through motor windings and shall have either the shall be cooled by refrigerant gas passing through the shall be cooled by refrigerant gas passing through the shall be cooled by refrigerant gas passing through the shall be cooled by refrigerant gas passing through the shall be cooled by refrigerant gas passing through the shall be cooled by refrigerant gas passing through the shall be cooled by refrigerant gas passing through the shall be cooled by refrigerant gas passing through the shall be cooled by refrigerant gas passing through the shall be cooled by refrigerant gas passing through the shall be cooled by refrigerant gas passing through the shall be cooled by refrigerant gas passing through the shall be cooled by refrigerant gas passing through the shall be cooled by refrigerant gas passing through the shall be cooled by refrigerant gas passing through the shall be cooled by the shall be cooled by refrigerant gas passing through the shall be cooled by the shall be cooled by$ $break thermal and {\it current overload protection or external {\it current overload modules with compressor temperature sensors}.$

2.05. CondenserCoils:

- 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 $pass\,arrangement.\,Coil\,construction\,shall\,consist\,of\,aluminum\,alloys\,for the\,fins,\,tubes\,and\,manifolds\,in\,combination\,with\,aluminum\,alloys\,for\,the\,fins,\,tubes\,and\,manifolds\,in\,combination\,with\,aluminum\,alloys\,for\,the\,fins,\,for\,fine,\,f$ 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 compressoroil.
- B. Standard line length (0-100ft)
- C. Long line length check valves are required for liquid line installation on all linear line length applications of more than 100 evaporator is located higher than the condensing unit, check valves are required for linear line length above 55 ft (16.8 m).
- D. Units shall include one factory-installed suction line accumulator for each refrigerant circuit.

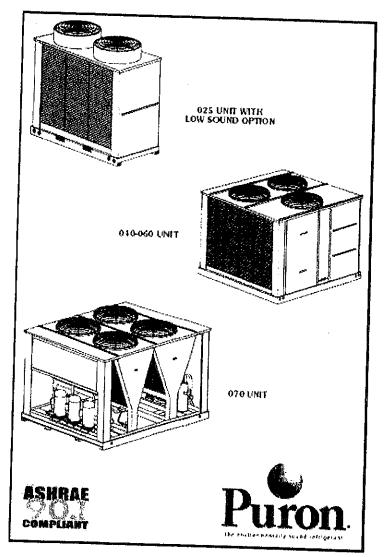
2.07. Controls and Safeties:

- 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 Comfort Link control codes (with 60-character expandable clear language), plus set points, time of day, and the control codes (with 60-character expandable clear language), plus set points, time of day, and the control codes (with 60-character expandable clear language), plus set points, time of day, and the control codes (with 60-character expandable clear language), plus set points, time of day, and the control codes (with 60-character expandable clear language), plus set points, time of day, and the code (with 60-character) and (with 60-charactetemperatures, pressures, and superheat. Additional information can be displayed all at once with the accessory Navigator™ display.
 - 2. Carrier Comfort Network® (CCN) system capability.
 - $3. \quad Unit control with standard pressure transducer, discharge pressure transducer and suction temperature thermistors.$
 - 4. Current alarm list and alarm history list on display.
 - 5. Automatic compressor lead/lag control.
 - 6. Service runtest 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.



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

RFK BUILDING FIRST FLOOR 112221

Project: HA-1702-21-11 UOG IFB B21-17 PURCHASING HVAC EQUIP Prepared By: BERNARD LLARENAS

02:16PM

RFK BUILDING FIRST FLOOR 112221

Submittal Cover Sheet
Unit Report
Performance Summary Report
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Guide Specification for RFK BUILDING FIRST FLOOR 112221

Project: HA-1702-21-11 UOG IFB B21-17 PURCHASING HVAC EQUIP

Prepared By: BERNARD LLARENAS

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GUIDE SPECIFICATIONS - 38APD04056-3009J

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

Size: 040 🍃

Part 1: General

SYSTEMDESCRIPTION

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.

QUALITYASSURANCE

- $1.01.\ Unit performance shall be rated in accordance with AHRI (Air-Conditioning, Heating, and Refrigeration Institute) Standard (Air-Conditioning) and Refrigeration (Institute) Standard (Institute) and Refrigeration (Institute) Standard (Institute) and Refrigeration (Institute) Standard (Institute) and Refrigeration (Institute) and$ 365, latest edition (U.S.A).
- 1.02. Unit construction shall comply with latest edition of ASHRAE (American Society of Heating, Refrigerating, and Air-Conditioning Engineers) 15 Safety Code, UL 1995, and ASME (American Society of Mechanical Engineers) applicable codes
- $1.03. \ The management system governing the manufacturer of the product is ISO (International Organization for Standardization) and the system of the product of the prod$ 9001: 2015 certified.
- $1.04.\ Base unit shall be constructed in accordance with UL (Underwriters Laboratories) standards and CSA (Canadian Standards and CSA) and CSA (Canadian Standards and CSA) and CSA (Canadian Standards and CSA). The standards are standards and CSA (Canadian Standards and CSA) are standards and CSA (Canadian Standards and CSA). The standards are standards are standards and CSA (Canadian Standards and CSA) are standards are standards are standards and CSA (Canadian Standards and CSA). The standards are standards. The standards are standards. The standards are standards. The standards are standards are standards are standards are standards are standards are standards. The standards are standards. The standards are standards$ Association)..
- 1.05. Painted parts shall withstand 1000 hours in constant neutral salt spray under ASTMB117 conditions with a 1mm scribe per ASTM D1654. After test, painted parts shall show no signs of wrinkling or cracking, no loss of adhesion, no evidence of blistering, and the mean creepage shall not exceed 1/4 in. (Rating = 4 per ASTM D1654) on either side of the scribe line.
- 1.06. Design pressure shall be 650 psig (4482 kPa).
- 1.07. Unit shall be functional checked at the factory.
- 1.08. Lifting holes shall be provided to facilitate rigging.

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.

Guide Specification for RFK BUILDING FIRST FLOOR 112221

Project: HA-1702-21-11 UOG IFB B21-17 PURCHASING HVAC EQUIP Prepared By: BERNARD LLARENAS

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B. Control box access panels shall be hinged for service access.

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 Finsulation and internal, automatic-reset thermal overload protection or manual reset calibrated circuit breakers.
- 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.
- 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 twopass 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. Standard line length (0-100ft)
- C. 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).
- D. Units shall include one factory-installed suction line accumulator for each refrigerant circuit.

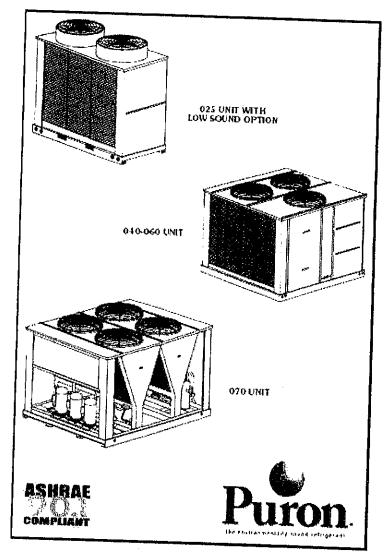
2.07. Controls and Safeties:

- 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 runtest capability.
 - 7. Compressor minimum run time (3 minutes) and minimum off time (3 minutes).
 - 8. Servicediagnostic mode.
 - 9. Self-contained low voltage control circuit.
 - 10. Cycle condenser fans to maintain proper head pressure control.
 - 11. Capacity control with staging compressors.



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

20RFK BUILDING FIRST FLOOR MAIN ENTRANCE 112321

Project: HA-1702-21-11 UOG IFB B21-17 PURCHASING HVAC EQUIP Prepared By: BERNARD LLARENAS

02:16PM

20RFK BUILDING FIRST FLOOR MAIN ENTRANCE 112321

Submittal Cover Sheet
Unit Report
Performance Summary Report
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Feature Sheet

Guide Specification for 20RFK BUILDING FIRST FLOOR MAIN ENTRANCE 112321

Project: HA-1702-21-11 UOG IFB B21-17 PURCHASING HVAC EQUIP

Prepared By: BERNARD LLARENAS

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GUIDE SPECIFICATIONS - 38AUDA16A0E5-0A0A0

Commercial Air-Cooled Condensing Units **HVAC Guide Specifications**

Size: 16

Part 1: General

SYSTEMDESCRIPTION

1.01. Outdoor-mounted, air-cooled condensing unit suitable for on-the-ground or rooftop installation. Unit shall consist of a hermetic scroll air-conditioning compressor(s) assembly, an air-cooled coil, propeller-type condenser fans, and a control box. Unit shall discharge supply air upward as shown on contract drawings. Unit shall be used in a refrigeration circuit matched with a packaged air-handling unit.

QUALITYASSURANCE

- 1.01. Unit shall be rated in accordance with AHRI Standard 360.
- 1.02, Unit construction shall comply with ANSI/ASHRAE 15 safety code latest revision and comply with NEC.
- 1.03. Unit shall be constructed in accordance with UL 1995 standard and shall carry the UL and UL, Canada label. (
- 1.04. Unit cabinet shall be capable of withstanding 500-hour saltspray exposure per ASTM B117 (scribed specimen).
- 1.05. Air-cooled condenser coils for hermetic scroll compressor units (38AUZ) and 38AUD shall be leak tested at 150 psig, and pressure tested at 650 psig.
- 1.06. Unit shall be manufactured in a facility registered to ISO 9001:2000 manufacturing quality standard.

DELIVERY, STORAGE, AND HANDLING

1.01. Unit shall be shipped as single package only, and shall be stored and handled according to unit manufacturer's recommendations.

WARRANTY (FOR INCLUSION BYSPECIFYING 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, compressor, holding charge, and special features required prior to field start-up.

2.02. Unit Cabinet:

- A. Unit cabinet shall be constructed of galvanized steel, bonderized and coated with a prepainted baked enamel finish.
- $B. \quad A \, heavy-gauge \, roll-formed \, perimeter \, base \, rail \, with \, fork \, lift \, slots \, and \, lifting \, holes \, shall \, be \, provided \, to \, facilitate \, rigging. \, determined \, perimeter \, base \, rail \, with \, fork \, lift \, slots \, and \, lifting \, holes \, shall \, be \, provided \, to \, facilitate \, rigging. \, determined \, perimeter \, base \, rail \, with \, fork \, lifting \, holes \, shall \, be \, provided \, to \, facilitate \, rigging. \, determined \, perimeter \, base \, rail \, with \, fork \, lifting \, holes \, shall \, be \, provided \, to \, facilitate \, rigging. \, determined \, perimeter \, base \, rail \, with \, fork \, lifting \, holes \, shall \, be \, provided \, to \, facilitate \, rigging. \, determined \, holes \, shall \, be \, provided \, to \, facilitate \, rigging. \, determined \, holes \, shall \, be \, provided \, to \, facilitate \, rigging. \, determined \, holes \, holes$ 2.03. CondenserFans;

- A. Condenser fans shall be direct driven, propeller type, discharging air vertically upward.
- B. Fan blades shall be balanced.
- C. Condenser fan discharge openings shall be equipped with PVC-coated steel wire safety guards.
- D. Condenserfan and motor shaft shall be corrosion resistant.

2.04. Compressor:

Guide Specification for 20RFK BUILDING FIRST FLOOR MAIN ENTRANCE 112321

Project: HA-1702-21-11 UOG IFB B21-17 PURCHASING HVAC EQUIP

Prepared By: BERNARD LLARENAS

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- A. Compressor shall be of the hermetic scroll type.
- B. Compressorshall be mounted on rubbergrommets.
- C. Compressors shall include overload protection.
- D. Compressors shall be equipped with a crank case heater.
- E. Compressorshall be equipped with internal high pressure and high temperature protection.
- F. 38AUZ*16 and 25 sizes shall use two scroll compressors manifold together.

2.05. Condenser Coils:

- A. StandardAluminumfin-CopperTubeCoils:
 - 1. Standard evaporator and condenser coils shall have aluminum lanced plate fins mechanically bonded to seamless internally grooved coppertubes with all joints brazed.
 - 2. Evaporator coils shall be leak tested to 150 psig, pressure tested to 450 psig, and qualified to UL 1995 burst test at 1775 psig.
 - 3. Condenser coils shall be leak tested to 150 psig, pressure tested to 650 psig, and qualified to UL 1995 burst test at 1980 psiq.
- B. Optional Copper-fin evaporator and condenser coils:
 - 1. Shall be constructed of copper fins mechanically bonded to copper tubes and copper tube sheets.
 - 2. Galvanized steel tube sheets shall not be acceptable.
 - 3. A polymer strip shall prevent coil assembly from contacting the sheet metal coil pan to minimize potential for galvanic corrosion between coil and pan.

2.06. Refrigeration Components:

- A. Refrigeration circuit components shall include liquid line service valve, suction line service valve, a full charge of compressoroil, and a partial holding charge of refrigerant.
- 2.07. Controls and Safeties:
 - A. Minimum control functions shall include:
 - 1. Control wire terminal blocks.
 - 2. Compressor lockout on auto-reset safety until reset from thermostat.
 - Each unit shall utilize the Comfort Alertt Diagnostic Board that provides:
 - System Pressure Trip fault code indication
 - Short Cycling fault code indication
 - Locked Rotor fault code indication C.
 - Open Circuit fault code indication
 - Reverse Phase 3 fault code indication
 - Welded Contactor fault code indication f.
 - Low Voltage fault code indication
 - h. Anti-short cycle protection
 - Phase reversal protection
 - B. Minimum safety devices which are equipped with automatic reset (after resetting first at thermostat), shall include:
 - 1. High discharge pressure cutout.
 - 2. Low pressure cutout.

2.08. (Operating	Characte	eristics
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, Opi	erating Characteristics:
A.	The capacity of the condensing unit shall meet or exceed Btuhat a suction temperature of F. The power
_	- constantiplient at thin load a last 10 f eXC66d KAA
В.	The combination of the condensing unit and the evaporator or fan coil unit shall have a total net cooling capacity of
	Starror greater according (in the principle of the even and the even a
	bulb, and air entering the condensing unit atF.
C.	The system shall have an EER ofBtuh/Watt or greater at standard AHRI conditions.
D.	Standard unit shall be capable to operate up to 125_F (52_C) and down to 40_F (4_C)

7.5RFK BUILDING FIRST FLOOR AV ROOM 112321

Project: HA-1702-21-11 UOG IFB B21-17 PURCHASING HVAC EQUIP Prepared By: BERNARD LLARENAS

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7.5RFK BUILDING FIRST FLOOR AV ROOM 112321

Submittal Cover Sheet
Unit Report
Performance Summary Report
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Guide Specification for 7.5RFK BUILDING FIRST FLOOR AV ROOM 112321

Project: HA-1702-21-11 UOG IFB B21-17 PURCHASING HVAC EQUIP

Prepared By: BERNARD LLARENAS

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GUIDE SPECIFICATIONS - 38AUDA16A0E5-0A0A0

Commercial Air-Cooled Condensing Units **HVAC Guide Specifications**

Size: 16

Part1: General

SYSTEMDESCRIPTION

 $1.01.\ Outdoor-mounted, air-cooled condensing unit suitable for on-the-ground or roof top installation. Unit shall consist of a hermetic$ scroll air-conditioning compressor(s) assembly, an air-cooled coil, propeller-type condenser fans, and a control box. Unit shall discharge supply air upward as shown on contract drawings. Unit shall be used in a refrigeration circuit matched with a packaged air-handling unit.

QUALITYASSURANCE

- 1.01. Unit shall be rated in accordance with AHRI Standard 360.
- 1.02. Unit construction shall comply with ANSI/ASHRAE 15 safety code latest revision and comply with NEC.
- 1.03. Unit shall be constructed in accordance with UL 1995 standard and shall carry the UL and UL, Canada label.
- 1.04. Unit cabinet shall be capable of withstanding 500-hoursalt spray exposure per ASTMB117 (scribed specimen).
- 1.05. Air-cooled condenser coils for hermetic scroll compressor units (38AUZ) and 38AUD shall be leak tested at 150 psig, and pressure tested at 650 psig.
- 1.06. Unit shall be manufactured in a facility registered to ISO 9001:2000 manufacturing quality standard.

DELIVERY, STORAGE, AND HANDLING

1.01. Unit shall be shipped as single package only, and shall be stored and handled according to unit manufacturer's recommendations.

WARRANTY (FOR INCLUSION BYSPECIFYING 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, compressor, holding charge, and special features required prior to field start-up.

2.02. Unit Cabinet:

- A. Unit cabinet shall be constructed of galvanized steel, bonderized and coated with a prepainted baked enamel finish.
- B. A heavy-gauge roll-formed perimeter base rail with forklift slots and lifting holes shall be provided to facilitate rigging.

2.03. CondenserFans:

- A. Condenser fans shall be direct driven, propeller type, discharging air vertically upward.
- B. Fan blades shall be balanced.
- C. Condenser fan discharge openings shall be equipped with PVC-coated steel wire safety guards.
- D. Condenserfan and motor shaft shall be corrosion resistant.

2.04. Compressor:

A. Compressor shall be of the hermetic scroll type.

Guide Specification for 7.5RFK BUILDING FIRST FLOOR AV ROOM 112321

Project: HA-1702-21-11 UOG IFB B21-17 PURCHASING HVAC EQUIP Prepared By: BERNARD LLARENAS

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- B. Compressorshall be mounted on rubber grommets.
- C. Compressors shall include overload protection.
- D. Compressors shall be equipped with a crankcase heater.
- E. Compressor shall be equipped with internal high pressure and high temperature protection.
- F. 38AUZ*16 and 25 sizes shall use two scroll compressors manifold together.

2.05. Condenser Coils:

- A. Standard Aluminum fin Copper Tube Coils:
 - 1. Standard evaporator and condenser coils shall have aluminum lanced plate fins mechanically bonded to seamless internally grooved copper tubes with all joints brazed.
 - 2. Evaporator coils shall be leak tested to 150 psig, pressure tested to 450 psig, and qualified to UL 1995 burst test at 1775 psig.
 - 3. Condenser coils shall be leak tested to 150 psig, pressure tested to 650 psig, and qualified to UL 1995 burst test at 1980 psig.
- B. Optional Copper-fin evaporator and condenser coils:
 - 1. Shall be constructed of copper fins mechanically bonded to copper tubes and copper tube sheets.
 - 2. Galvanized steel tube sheets shall not be acceptable.
 - 3. A polymer strip shall prevent coil assembly from contacting the sheet metal coil pan to minimize potential for galvanic corrosion between coil and pan.

2.06. Refrigeration Components:

- A. Refrigeration circuit components shall include liquid line service valve, suction line service valve, a full charge of $compressor oil, and a partial \ holding \ charge \ of \ refrigerant.$
- 2.07. Controls and Safeties:
 - A. Minimum control functions shall include:
 - Control wire terminal blocks.
 - 2. Compressor lockout on auto-reset safety until reset from thermostat.
 - 3. Each unit shall utilize the Comfort Alertt Diagnostic Board that provides:
 - a System Pressure Trip fault code indication
 - b. Short Cycling fault code indication
 - c. Locked Rotorfault code indication
 - d. Open Circuit fault code indication
 - e. Reverse Phase 3 fault code indication
 - Welded Contactor fault code indication
 - g. Low Voltage fault code indication
 - h. Anti-short cycle protection
 - Phase reversal protection i,
 - B. Minimum safety devices which are equipped with automatic reset (after resetting first at thermostat), shall include: High discharge pressure cutout.

 - 2. Low pressure cutout.

2.08. Oper	ating Characteristics:
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2.08. O	perating Characteristics:
A	. The capacity of the condensing unit shall meet or exceed Btuhat a suction temperature of
	consumption at full load shall not exceed www.
В.	The combination of the condensing unit and the evaporator or fan coil unit shall have a total net cooling capacity of
	Btuh orgreaterat conditions of cfmentering airtemperature at the cooling capacity of
	Btuh or greater at conditions ofcfm entering-air temperature at the evaporator atF wet bulb andF dry bulb, and air entering the condensing unit atF.
C.	The system shall have an EER of Btuh Matter group store to the state of the system.
D,	Standard unit shall be capable to operate up to 125_F(52_C) and down to 40_F(4_C)
	out out toquiret letig.
Α.	Nominal unit electrical characteristics shall bev, 3-ph, 60 Hz. The unit shall be capable of satisfactors are the
Commer	cial Split Systems Builder 1 20-

7.5RFK BUILDING FIRST FLOOR OFFICES 112321

Project: HA-1702-21-11 UOG IFB B21-17 PURCHASING HVAC EQUIP Prepared By: BERNARD LLARENAS

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7.5RFK BUILDING FIRST FLOOR OFFICES 112321

Guide Specification for 7.5RFK BUILDING FIRST FLOOR OFFICES 112321

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GUIDE SPECIFICATIONS - 38AUDA 25A 0E5-0A0A0

Commercial Air-Cooled Condensing Units **HVAC Guide Specifications**

Size: 25

Part 1: General

SYSTEM DESCRIPTION

1.01. Outdoor-mounted, air-cooled condensing unit suitable for on-the-ground or rooftop installation. Unit shall consist of a hermetic $scroll\,air-conditioning\,compressor(s)\,as sembly, an air-cooled\,coil, propeller-type\,condenser\,fans, and\,a\,control\,box.\,Unit\,shall\,air-cooled\,coil\,air-cooled$ discharge supply air upward as shown on contract drawings. Unit shall be used in a refrigeration circuit matched with a packaged air-handling unit.

QUALITYASSURANCE

- 1.01. Unit shall be rated in accordance with AHRI Standard 360.
- 1.02. Unit construction shall comply with ANSI/ASHRAE 15 safety code latest revision and comply with NEC.
- 1.03. Unit shall be constructed in accordance with UL 1995 standard and shall carry the UL and UL, Canada label.
- 1.04. Unit cabinet shall be capable of withstanding 500-hour salt spray exposure per ASTM B117 (scribed specimen).
- 1.05. Air-cooled condenser coils for hermetic scroll compressor units (38AUZ) and 38AUD shall be leak tested at 150 psig, and pressure tested at 650 psig.
- 1.06. Unit shall be manufactured in a facility registered to ISO 9001:2000 manufacturing quality standard.

DELIVERY, STORAGE, AND HANDLING

1.01. Unit shall be shipped as single package only, and shall be stored and handled according to unit manufacturer's recommendations.

WARRANTY (FOR INCLUSION BYSPECIFYING 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, compressor, holding charge, and special features required prior to field start-up.

2.02. Unit Cabinet:

- A. Unit cabinet shall be constructed of galvanized steel, bonderized and coated with a prepainted baked enamel finish.
- B. A heavy-gauge roll-formed perimeter base rail with forklift slots and lifting holes shall be provided to facilitate rigging.

2.03. CondenserFans:

- A. Condenser fans shall be direct driven, propeller type, discharging air vertically upward.
- B. Fan blades shall be balanced.
- $C. \quad Condenser fan discharge openings shall be equipped with PVC-coated steel wire safety guards.\\$
- D. Condenser fan and motor shaft shall be corrosion resistant.

2.04. Compressor:

A. Compressor shall be of the hermetic scroll type.

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- B. Compressor shall be mounted on rubber grommets.
- C. Compressors shall include overload protection.
- D. Compressors shall be equipped with a crank case heater.
- E. Compressorshall be equipped with internal high pressure and high temperature protection.
- F. 38AUZ*16 and 25 sizes shall use two scroll compressors manifold together.

2.05. Condenser Coils:

- A. Standard Aluminum fin Copper Tube Coils:
 - 1. Standard evaporator and condenser coils shall have aluminum lanced plate fins mechanically bonded to seamless internally grooved coppertubes with all joints brazed.
 - 2. Evaporator coils shall be leak tested to 150 psig, pressure tested to 450 psig, and qualified to UL 1995 burst test at 1775 psig.
 - 3. Condenser coils shall be leak tested to 150 psig, pressure tested to 650 psig, and qualified to UL 1995 burst test at 1980 psig.
- B. Optional Copper-fin evaporator and condenser coils:
 - 1. Shall be constructed of copperfins mechanically bonded to coppertubes and coppertube sheets.
 - 2. Galvanized steel tube sheets shall not be acceptable.
 - 3. A polymer strip shall prevent coil assembly from contacting the sheet metal coil pan to minimize potential for galvanic corrosion between coil and pan.

2.06. Refrigeration Components:

A. Refrigeration circuit components shall include liquid line service valve, suction line service valve, a full charge of compressor oil, and a partial holding charge of refrigerant.

2.07. Controls and Safeties:

- A. Minimum control functions shall include:
 - Control wire terminal blocks.
 - 2. Compressor lockout on auto-reset safety until reset from thermostat.
 - 3. Each unit shall utilize the Comfort Alertt Diagnostic Board that provides:
 - a System Pressure Trip fault code indication
 - b. Short Cycling fault code indication
 - c. Locked Rotor fault code indication
 - d. Open Circuit fault code indication
 - e. Reverse Phase 3 fault code indication
 - f. Weided Contactor fault code indication
 - g. Low Voltage fault code indication
 - h. Anti-short cycle protection
 - Phase reversal protection
- B. Minimum safety devices which are equipped with automatic reset (after resetting first at thermostat), shall include:
 - 1. High discharge pressure cutout.
 - 2. Low pressure cutout.

2.08. O	perating	Charact	eristics:
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2.08.	Оря	erating Characteristics:
	Α.	The capacity of the condensing unit shall meet or exceed Btuhat a suction temperature of
		consumption at full load shall not exceed kW
	В.	The combination of the condensing unit and the evaporator or fan coil unit shall have a tatal and the
		Cill enterior at the extension of the column at the extension of the exten
	C.	The system shall have an EER of Btuh/Wattor greater at standard AHPI conditions
	D ,	Standard unit shall be capable to operate up to 125 F(52 C) and down to 40 F(4 C)
2.09. [Elec	ctricalRequirements:

A. Nominal unit electrical characteristics shall be _____v, 3-ph, 60 Hz. The unit shall be capable of satisfactory operation

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PIP (GLE) SECOND FLOOR 112321



GUIDE SPECIFICATIONS - 38AUDA 25A 0E5-0A0A0

Commercial Air-Cooled Condensing Units **HVAC Guide Specifications**

Size: 25

Part 1: General

SYSTEMDESCRIPTION

1.01. Outdoor-mounted, air-cooled condensing unit suitable for on-the-ground or rooftop installation. Unit shall consist of a hermetic scroll air-conditioning compressor(s) assembly, an air-cooled coil, propeller-type condenser fans, and a control box. Unit shall discharge supply air upward as shown on contract drawings. Unit shall be used in a refrigeration circuit matched with a packaged air-handling unit.

QUALITYASSURANCE

- 1.01. Unit shall be rated in accordance with AHRI Standard 360.
- $1.02.\ Unit construction shall comply with ANSI/ASHRAE\,15\, safety code latest revision and comply with NEC.$
- 1.03. Unit shall be constructed in accordance with UL 1995 standard and shall carry the UL and UL, Canada label.
- 1.04. Unit cabinet shall be capable of withstanding 500-hour salt spray exposure per ASTM B117 (scribed specimen).
- 1.05. Air-cooled condenser coils for hermetic scroll compressor units (38AUZ) and 38AUD shall be leak tested at 150 psig, and pressure tested at 650 psig.
- 1.06. Unit shall be manufactured in a facility registered to ISO 9001:2000 manufacturing quality standard.

DELIVERY, STORAGE, AND HANDLING

1.01. Unit shall be shipped as single package only, and shall be stored and handled according to unit manufacturer's recommendations.

WARRANTY (FOR INCLUSION BYSPECIFYING 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, compressor, holding charge, and special features required prior to field start-up.

2.02. Unit Cabinet:

- A. Unit cabinet shall be constructed of galvanized steel, bonderized and coated with a prepainted baked enamel finish.
- B. A heavy-gauge roll-formed perimeter base rail with forklift slots and lifting holes shall be provided to facilitate rigging.

2.03. CondenserFans:

- A. Condenser fans shall be direct driven, propeller type, discharging air vertically upward.
- B. Fanblades shall be balanced.
- C. Condenser fan discharge openings shall be equipped with PVC-coated steel wire safety guards.
- D. Condenserfan and motor shaft shall be corrosion resistant.

2.04. Compressor:

A. Compressorshall be of the hermetic scroll type.

Guide Specification for PIP (GLE) SECOND FLOOR 112321 Project: HA-1702-21-11 UOG IFB B21-17 PURCHASING HVAC EQUIP Prepared By: BERNARD LLARENAS 02:16PM B. Compressor shall be mounted on rubber grommets. C. Compressors shall include overload protection. D. Compressors shall be equipped with a crankcase heater. E. Compressorshall be equipped with internal high pressure and high temperature protection. F. 38AUZ*16 and 25 sizes shall use two scroll compressors manifold together. 2.05. CondenserCoils: A. Standard Aluminum fin Copper Tube Coils: 1. Standard evaporator and condenser coils shall have a luminum lanced plate fins mechanically bonded to seamless internally grooved copper tubes with all joints brazed. 2. Evaporator coils shall be leak tested to 150 psig, pressure tested to 450 psig, and qualified to UL 1995 burst test at 3. Condenser coils shall be leak tested to 150 psig, pressure tested to 650 psig, and qualified to UL 1995 burst test at B. Optional Copper-fin evaporator and condenser coils: 1. Shall be constructed of copper fins mechanically bonded to copper tubes and copper tube sheets. 2. Galvanized steel tube sheets shall not be acceptable. 3. A polymer strip shall prevent coil assembly from contacting the sheet metal coil pan to minimize potential for galvanic corrosion between coil and pan. 2.06. Refrigeration Components: A. Refrigeration circuit components shall include liquid line service valve, suction line service valve, a full charge of compressoroil, and a partial holding charge of refrigerant. 2.07. Controls and Safeties: A. Minimum control functions shall include: 1. Control wire terminal blocks. 2. Compressor lockout on auto-reset safety until reset from the rmost at. 3. Each unit shall utilize the Comfort Alertt Diagnostic Board that provides: a. System Pressure Trip fault code indication b. Short Cycling fault code indication Locked Rotorfault code indication d. Open Circuit fault code indication e. Reverse Phase 3 fault code indication f. Welded Contactor fault code indication g. Low Voltage fault code indication h. Anti-short cycle protection Phase reversal protection B. Minimum safety devices which are equipped with automatic reset (after resetting first at thermostat), shall include: 1. High discharge pressure cutout. 2. Low pressure cutout. 2.08. Operating Characteristics: A. The capacity of the condensing unit shall meet or exceed _____Btuhat a suction temperature of _____F. The power consumption at full load shall not exceed _____kW.

B. The combination of the condensing unit and the evaporator or fan coil unit shall have a total net cooling capacity of _

C. The system shall have an EER of _____Btuh/Watt or greater at standard AHRI conditions. D. Standard unit shall be capable to operate up to 125_F (52_C) and down to 40_F (4_C)

Btuh or greater at conditions of _____cfm entering-air temperature at the evaporator at _____F wet bulb and ____F dry

2.09. Electrical Requirements:

bulb, and air entering the condensing unit at _____F.

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Guide Specification for 10SCIENCE BUILDING FIRST FLOOR 112221

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GUIDE SPECIFICATIONS - 38APD04056-3009J

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

Size: 040

Part 1: General

SYSTEMDESCRIPTION

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

QUALITYASSURANCE

- 1.01. Unit performance shall be rated in accordance with AHRI (Air-Conditioning, Heating, and Refrigeration Institute) Standard
- 1.02. Unit construction shall comply with latest edition of ASHRAE (American Society of Heating, Refrigerating, and Air-Conditioning Engineers) 15 Safety Code, UL 1995, and ASME (American Society of Mechanical Engineers) applicable codes (U.S.A. codes).
- $1.03. \ The management system governing the manufacturer of the product is ISO (International Organization for Standardization)$
- 1.04. Base unit shall be constructed in accordance with UL (Underwriters Laboratories) standards and CSA (Canadian Standards
- 1.05. Painted parts shall withstand 1000 hours in constant neutral salt spray under ASTMB117 conditions with a 1mm scribe per ASTM D1654. After test, painted parts shall show no signs of wrinkling or cracking, no loss of adhesion, no evidence of blistering, and the mean creepage shall not exceed 1/4 in. (Rating = 4 per ASTM D1654) on either side of the scribe line.
- 1.06. Design pressure shall be 650 psig (4482 kPa).
- 1.07. Unit shall be functional checked at the factory.
- 1.08. Lifting holes shall be provided to facilitate rigging.

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.

Guide Specification for 10SCIENCE BUILDING FIRST FLOOR 112221

Project: HA-1702-21-11 UOG IFB B21-17 PURCHASING HVAC EQUIP Prepared By: BERNARD LLARENAS

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B. Controlbox access panels shall be hinged for service access.

2.03. Fans:

- A. Condenserfans 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 Finsulation and internal, automatic-reset thermal overload protection or manual reset calibrated circuit breakers.
- 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.
- 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 microchanne! heat exchanger (MCHX) and shall have a series of flat tubes containing a series of $multiple, parallel flow \, microchannels \, layered \, between \, the \, refrigerant \, manifolds. \, Microchannel \, coils \, shall \, consist \, of \, a \, two-distance in the interest of a two-distance in two-distance in two-distance in two-distance in two-distance in the interest of a two-distance in two-distance in two-distance in two-distance in two-distance in two-dis$ 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. Standard line length (0-100 ft)
- C. Long line length check valves are required for liquid line installation on all linear line length applications of more than 100 $ft (30.5\,m) to prevent liquid \, migration \, during \, unit \, shut down. \, For any \, 025-030 \, size \, dual \, circuit \, unit \, application \, where \, during \, unit \, shut down. \, For any \, 025-030 \, size \, dual \, circuit \, unit \, application \, where \, during \, unit \, shut down. \, For any \, 025-030 \, size \, dual \, circuit \, unit \, application \, where \, during \, unit \, shut down. \, For any \, 025-030 \, size \, dual \, circuit \, unit \, application \, where \, during \, unit \, shut down. \, For any \, 025-030 \, size \, dual \, circuit \, unit \, application \, where \, during \, unit \, shut down. \, For any \, 025-030 \, size \, dual \, circuit \, unit \, application \, where \, during \, unit \, shut down. \, For any \, 025-030 \, size \, dual \, circuit \, unit \, application \, where \, during \, unit \, shut \, down \, do$ evaporator is located higher than the condensing unit, check valves are required for linear line length above $55\,\mathrm{ft}$ ($16.8\,\mathrm{m}$).
- D. Units shall include one factory-installed suction line accumulator for each refrigerant circuit.

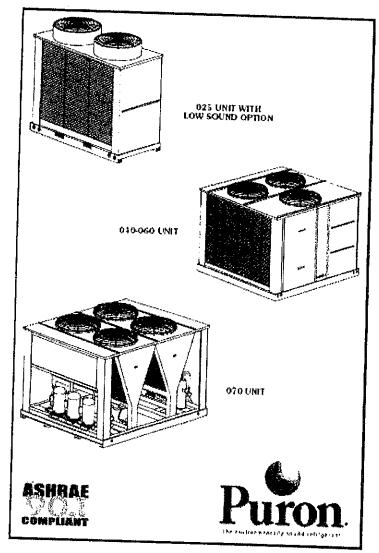
2.07. Controls and Safeties:

- 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,
 - Carrier Comfort Network® (CCN) system capability. 2.
 - $Unit control with standard pressure {\it transducer}, discharge pressure {\it transducer} and {\it suction} {\it temperature} {\it thermistors}.$
 - 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.



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

20SCIENCE BUILDING SECOND FLOOR 112221

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Guide Specification for 20SCIENCE BUILDING SECOND FLOOR 112221

Project: HA-1702-21-11 UOG IFB B21-17 PURCHASING HVAC EQUIP

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GUIDE SPECIFICATIONS - 38APD04056-3009J

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

Size: 040

Part 1: General

SYSTEM DESCRIPTION

 $1.01.\ Outdoor-mounted, air-cooled condensing unit with Puron @refrigerant (R-410A) suitable for on-the-ground or roof topole, and the suitable for on-the-ground or roof topole and the-ground or$ 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.

QUALITYASSURANCE

- 1.01. Unit performance shall be rated in accordance with AHRI (Air-Conditioning, Heating, and Refrigeration Institute) Standard 365, latest edition (U.S.A).
- 1.02. Unit construction shall comply with latest edition of ASHRAE (American Society of Heating, Refrigerating, and Air-Conditioning Engineers) 15 Safety Code, UL 1995, and ASME (American Society of Mechanical Engineers) applicable codes (U.S.A. codes).
- $1.03.\ The management system governing the manufacturer of the product is ISO (International Organization for Standardization)$ 9001: 2015 certified.
- $1.04.\ Base unit shall be constructed in accordance with UL (Underwriters Laboratories) standards and CSA (Canadian Standards and CSA) and accordance with UL (Underwriters Laboratories) standards and CSA (Canadian Standards and CSA). The standards are standards are standards and CSA (Canadian Standards and CSA) and the standards are s$
- $1.05.\ Painted\ parts\ shall\ with stand\ 1000\ hours\ in\ constant\ neutral\ salt\ spray\ under ASTMB117\ conditions\ with\ a\ 1mm\ scribe\ per$ ASTM D1654. After test, painted parts shall show no signs of wrinkling or cracking, no loss of adhesion, no evidence of blistering, and the mean creepage shall not exceed 1/4 in. (Rating = 4 per ASTM D1654) on either side of the scribe line.
- 1.06. Design pressure shall be 650 psig (4482 kPa).
- 1.07. Unit shall be functional checked at the factory.
- 1.08. Lifting holes shall be provided to facilitate rigging.

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.

Guide Specification for 20SCIENCE BUILDING SECOND FLOOR 112221

Project: HA-1702-21-11 UOG IFB B21-17 PURCHASING HVAC EQUIP Prepared By: BERNARD LLARENAS

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B. Control box access panels shall be hinged for service access.

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 Finsulation and internal, automatic-reset thermal overload protection or manual reset calibrated circuit breakers.
- 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.
- 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. CondenserCoils:

- 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 twopass arrangement. Coil construction shall consist of aluminum alloys for the fins, tubes and manifolds in combination with a
- 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 compressoroil. B. Standard line length (0-100 ft)
- C. 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 $55\,\mathrm{ft}$ ($16.8\,\mathrm{m}$).
- D. Units shall include one factory-installed suction line accumulator for each refrigerant circuit.

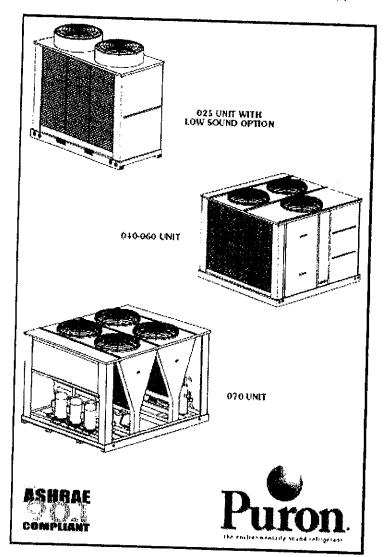
2.07. Controls and Safeties:

- A. Unit ComfortLink controls shall include:
 - 1. Scrolling marquee display module shall be used for accessing condensing unit information, reading sensor values, and $testing \ the \ condensing \ unit. \ The \ scrolling \ marquee \ display \ is \ a \ 4-key, \ 4-character, \ 16-segment \ LED \ (light-emitting) \ described by the \ condensing \ described by the \ condensity \ described by the \ described by the \ condensity \ described by the \ desc$ $diode)\,display.\,Eleven\,mode\,LEDs\,shall\,be\,located\,on\,the\,display\,as\,well\,as\,an\,Alarm\,Status\,LED.\,The\,display\,shows$ 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 and the displayed all at once with the displayed all at once with the accessory and the displayed all at once with the accessory and the displayed all at once with the accessory and the displayed all at once with the accessory and the displayed all at once with the accessory at the displayed all at once with the accessory and the displayed all at once with the accessory and the displayed all at once with the accessory and the displayed all at once with the accessory and the displayed all at once with the accessory and the displayed all at once with the accessory and the displayed all at once with the accessory and the displayed all at once with the accessory and the displayed all at once with the ac
 - 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.



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

20SCIENCE BUILDING THIRD FLOOR 112321

Project: HA-1702-21-11 UOG IFB B21-17 PURCHASING HVAC EQUIP Prepared By: BERNARD LLARENAS

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20SCIENCE BUILDING THIRD FLOOR 112321

Guide Specification for 20SCIENCE BUILDING THIRD FLOOR 112321

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GUIDE SPECIFICATIONS - 38AUDA25A0E5-0A0A0

Commercial Air-Cooled Condensing Units **HVAC Guide Specifications**

Size: 25

Part 1: General

SYSTEMDESCRIPTION

 $1.01.\ Outdoor-mounted, air-cooled condensing unit suitable for on-the-ground or rooftop installation. Unit shall consist of a hermetic$ scroll air-conditioning compressor(s) assembly, an air-cooled coil, propeller-type condenser fans, and a control box. Unit shall discharge supply air upward as shown on contract drawings. Unit shall be used in a refrigeration circuit matched with a packaged air-handling unit.

QUALITY ASSURANCE

- 1.01. Unit shall be rated in accordance with AHRI Standard 360.
- 1.02. Unit construction shall comply with ANSI/ASHRAE 15 safety code latest revision and comply with NEC.
- 1.03. Unit shall be constructed in accordance with UL 1995 standard and shall carry the UL and UL, Canada label.
- $1.04.\ Unit cabinet shall be capable of with standing 500-hour salt spray exposure per ASTMB117 (scribed specimen).$
- $1.05.\ Air-cooled\ condenser\ coils\ for\ hermetic\ scroll\ compressor\ units\ (38AUZ)\ and\ 38AUD\ shall\ be\ leak tested\ at\ 150\ psig,\ and\ at\ 150\ psig,\ an\ at\ 150\ psig,\ at\ 150\$ pressure tested at 650 psig.
- 1.06. Unit shall be manufactured in a facility registered to ISO 9001:2000 manufacturing quality standard.

DELIVERY, STORAGE, AND HANDLING

1.01. Unit shall be shipped as single package only, and shall be stored and handled according to unit manufacturer's recommendations.

WARRANTY (FOR INCLUSION BYSPECIFYING 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, compressor, holding charge, and special features required prior to field start-up.

2.02. Unit Cabinet:

- A. Unit cabinet shall be constructed of galvanized steel, bonderized and coated with a prepainted baked enamel finish.
- $B. \quad A \, heavy-gauge \, roll-formed \, perimeter \, base \, rail \, with \, fork \, lift \, slots \, and \, lifting \, holes \, shall \, be \, provided \, to \, facilitate \, rigging. \, lift \, rigging \, rigging \, lift \, rigging \, ri$ 2.03. CondenserFans:

- A. Condenser fans shall be direct driven, propeller type, discharging air vertically upward.
- B. Fan blades shall be balanced.
- C. Condenser fan discharge openings shall be equipped with PVC-coated steel wire safety guards.
- D. Condenser fan and motor shaft shall be corrosion resistant.

2.04. Compressor:

A. Compressorshall be of the hermetic scroll type.

Guide Specification for 20SCIENCE BUILDING THIRD FLOOR 112321 Project: HA-1702-21-11 UOG IFB B21-17 PURCHASING HVAC EQUIP

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Pre	par	ed B	By: BERNARD LLARENAS	02:16P
	F	٠ ر	Compressorabellhermannt	02.10
		, C	Compressorshall be mounted on rubber grommets.	
	υ,	, c	Compressors shall include overload protection.	
). C	Compressors shall be equipped with a crankcase heater.	
	E	. U	Compressorshall be equipped with internal high pressure and high temperature protection.	
2.0	F		Somo 2 To and 25 sizes shall use two scroll compressors manifold together	
۷.۱		onde	denser Colls;	
	A		Standard Aluminum fin - Copper Tube Coils:	
		1,	Standard evaporator and condenser coils shall have aluminum lanced plate fins mechanically bonded to sea internally grouved connect tubes with allieints because.	
		_	"" and a doublet tabes with all Othis Distance	
		2.	 Evaporator coils shall be leak tested to 150 psig, pressure tested to 450 psig, and qualified to UL 1995 bur 	
		3.	 Condenser coils shall be leak tested to 150 psig, pressure tested to 650 psig, and qualified to UL 1995 burs 	
				sttestat
	В.	. O	Optional Copper-fin evaporator and condenser coils:	
		1.	Shall be constructed of copper fins mechanically bonded to copper tubes and copper tube sheets. Galvanized steel tube sheets should be accounted to	
		2.	- Anna weap or contract and contract to the contract of the co	
		3.	 A polymer strip shall prevent coil assembly from contacting the sheet metal coil pan to minimize potential corrosion between coil and page. 	
			corrosion between coil and pan.	forgalvanic
2.06	3. Re	efrige	geration Components:	
	A.	Re	Refrigeration circuit components shall include liquid line service valve, suction line service valve, a full charge	
		co	compressor oil, and a partial holding charge of refrigerant.	of
2.07	7. Ca	ntro	ols and Safeties:	
	Α.	Mi	finimum control functions shalfinclude:	
		1.		
		2.		
		3.	Each unit shall utilize the Comfort Alertt Diagnostic Board that provides:	
			System Pressure Trip fault code indication	
			b. Short Cycling fault code indication	
			c. Locked Rotorfault code indication	
		-	d. Open Circuit fault code indication	
			e. ReversePhase3faultcodeIndication	
			The art and the desired and th	
			g. Low Voltage fault code indication	
			h. Anti-short cycle protection	
	D	N 43	i. Phase reversal protection	
	В.	IVHD	inimum safety devices which are equipped with automatic reset (after resetting first at thermostat), shall includ	le·
			- Agricultural go production to	. .
	-	2.	7.2	
UÖ.			ting Characteristics:	
	Α.	The	ne capacity of the condensing unit shall meet or exceedBtuhat a suction temperature ofF. The p	OMor
		,,	with the strain of a strain of exceed KAA	
	В.	THE	te combination of the condensing unit and the evaporator or fan collunit chall be used to be a	
		Btul	uh or greater at conditions ofcfm entering-air temperature at the evaporator atF wet builb and	
		hulk	lb, and air entering the condensing unit at	F dry

2.09. Electrical Requirements:

bulb, and air entering the condensing unit at _____F.

C. The system shall have an EER of _____ Btuh/Watt or greater at standard AHRI conditions. D. Standard unit shall be capable to operate up to 125_F(52_C) and down to 40_F(4_C)

10EGLISH COMMUNICATION BULDING CLASSROOM 112221

Project: HA-1702-21-11 UOG IFB B21-17 PURCHASING HVAC EQUIP Prepared By: BERNARD LLARENAS

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10EGLISH COMMUNICATION BULDING CLASSROOM 112221

Guide Specification for 10EGLISH COMMUNICATION BULDING CLASSROOM 12221

Project: HA-1702-21-11 UOG IFB B21-17 PURCHASING HVAC EQUIP Prepared By: BERNARD LLARENAS

02:16PM



GUIDE SPECIFICATIONS - 38APD03056-3009J

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

Size: 030

Part 1: General

SYSTEMDESCRIPTION

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.

QUALITYASSURANCE

- 1.01. Unit performance shall be rated in accordance with AHRI (Air-Conditioning, Heating, and Refrigeration Institute) Standard 365, latest edition (U.S.A).
- 1.02. Unit construction shall comply with latest edition of ASHRAE (American Society of Heating, Refrigerating, and Air-Conditioning Engineers) 15 Safety Code, UL 1995, and ASME (American Society of Mechanical Engineers) applicable codes (U.S.A. codes).
- 1.03. The management system governing the manufacturer of the product is ISO (International Organization for Standardization) 9001: 2015 certified.
- 1.04. Base unit shall be constructed in accordance with UL (Underwriters Laboratories) standards and CSA (Canadian Standards Association)...
- 1.05. Painted parts shall withstand 1000 hours in constant neutral salt spray under ASTM B117 conditions with a 1mm scribe per ASTM D1654. After test, painted parts shall show no signs of wrinkling or cracking, no loss of adhesion, no evidence of blistering, and the mean creepage shall not exceed 1/4 in. (Rating = 4 per ASTM D1654) on either side of the scribe line.
- 1.06. Design pressure shall be 650 psig (4482 kPa).
- 1.07. Unit shall be functional checked at the factory.
- 1.08. Lifting holes shall be provided to facilitate rigging.

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:

Guide Specification for 10EGLISH COMMUNICATION BULDING CLASSROOM 112221

Project: HA-1702-21-11 UOG IFB B21-17 PURCHASING HVAC EQUIP

Prepared By: BERNARD LLARENAS

02:16PM

- A. Cabinet shall be galvanized steel casing with a baked enamel powder or pre-painted finish.
- B. Control box access panels shall be hinged for service access.

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 Finsulation and in ternal, automatic-reset thermal overload protection or manual reset calibrated circuit breakers.
- 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 scroil.
- 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.
- E. Compressor motors shall be cooled by refrigerant gas passing through motor windings and shall have either internal line $break\,thermal\,and\,current\,overload\,protection\,crexternal\,current\,overload\,modules\,with\,compressor\,temperature\,sensors.$

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 twopass 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. Standard line length (0-100 ft)
- C. 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).
- D. Units shall include one factory-installed suction line accumulator for each refrigerant circuit.

2.07. Controls and Safeties:

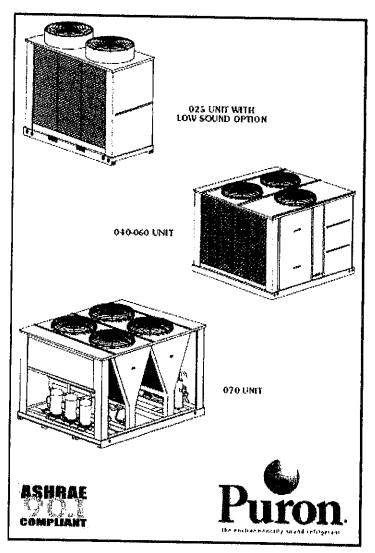
- A. Unit ComfortLink controls shall include:
 - 1. Scrolling marquee display module shall be used for accessing condensing unit information, reading sensor values, and testing the condensing unit. The scrolling marquee display is a 4-key, 4-character, 16-segment LED (light-emitting diode) display. Eleven mode LEDs shall be located on the display as well as an Alarm Status LED. The display shows all of the Comfort Link control codes (with 60-character expandable clear language), plus set points, time of day, all of the Comfort Link control codes (with 60-character expandable clear language), plus set points, time of day, all of the Comfort Link control codes (with 60-character expandable clear language), plus set points, time of day, all of the Comfort Link control codes (with 60-character expandable clear language), plus set points, time of day, all of the Comfort Link control codes (with 60-character expandable clear language), plus set points, time of day, all of the Comfort Link control codes (with 60-character expandable clear language), plus set points, time of day, all of the Comfort Link control codes (with 60-character), all of the Comfort Link control codes (with 60-character), all of the Comfort Link control codes (with 60-character), all of the Comfort Link control codes (with 60-character), all of the Comfort Link control codes (with 60-character), all of the Comfort Link codes (with 60-character), all of the Codetemperatures, pressures, and superheat. Additional information can be displayed all at once with the accessory and the displayed allNavigator™ 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.



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® Leheat 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

15COMPUTER CENTER OIT BUILDING FIRST FLOOR 112221

Project: HA-1702-21-11 UOG IFB B21-17 PURCHASING HVAC EQUIP Prepared By: BERNARD LLARENAS

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15COMPUTER CENTER OIT BUILDING FIRST FLOOR 112221

Guide Specification for 15COMPUTER CENTER OIT BUILDING FIRST FLOOR 112221

Project: HA-1702-21-11 UOG IFB B21-17 PURCHASING HVAC EQUIP Prepared By: BERNARD LLARENAS

02:16PM



GUIDE SPECIFICATIONS - 38APD05056-3009J

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

Size: 050

Part 1: General

SYSTEMDESCRIPTION

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

QUALITYASSURANCE

- 1.01. Unit performance shall be rated in accordance with AHRI (Air-Conditioning, Heating, and Refrigeration Institute) Standard 365, latest edition (U.S.A).
- 1.02. Unit construction shall comply with latest edition of ASHRAE (American Society of Heating, Refrigerating, and Air-Conditioning Engineers) 15 Safety Code, UL 1995, and ASME (American Society of Mechanical Engineers) applicable codes
- $1.03. \ The {\it management system governing the manufacturer of the product is ISO (International Organization for Standardization)}$
- 1.04. Base unit shall be constructed in accordance with UL (Underwriters Laboratories) standards and CSA (Canadian Standards
- 1.05. Painted parts shall withstand 1000 hours in constant neutral salt spray under ASTMB117 conditions with a 1mm scribe per ASTM D1654. After test, painted parts shall show no signs of wrinkling or cracking, no loss of adhesion, no evidence of blistering, and the mean creepage shall not exceed 1/4 in. (Rating = 4 per ASTM D1654) on either side of the scribe line.
- 1.06. Design pressure shall be 650 psig (4482 kPa).
- 1.07. Unit shall be functional checked at the factory.
- 1.08. Lifting holes shall be provided to facilitate rigging.

DELIVERY, STORAGE, AND HANDLING

1.01. Unitshall 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:

Guide Specification for 15COMPUTER CENTER OIT BUILDING FIRST FLOOR

Project: HA-1702-21-11 UOG IFB B21-17 PURCHASING HVAC EQUIP

Prepared By: BERNARD LLARENAS

- A. Cabinet shall be galvanized steel casing with a baked enamel powder or pre-painted finish.
- B. Control box access panels shall be hinged for service access.

2.03. Fans:

- A. Condenserfans 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 Finsulation and internal, automatic-reset thermal overload protection or manual reset calibrated circuit breakers.
- 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.
- 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:

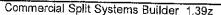
- A. Coil shall be air-cooled microchannel heat exchanger (MCHX) and shall have a series of flat tubes containing a series of multiple, parallel flow microchannels layered between the refrigerant manifolds. Microchannel coils shall consist of a two-pass arrangement. Coil construction shall consist of 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. Standard line length (0-100 ft)
- C. 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).
- D. 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.

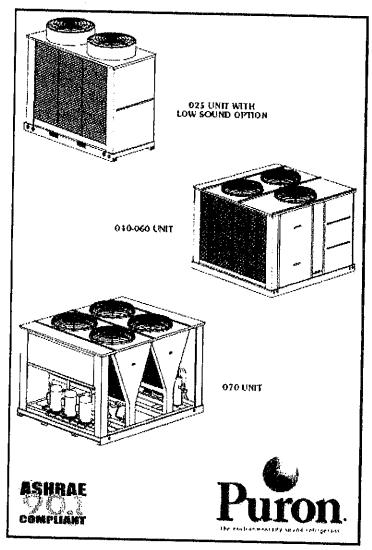


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38AP GEMINISELECT AIR COOLED CONDENSING UNITS

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

LECTURE HALL AUDITORIUM 112321

Project: HA-1702-21-11 UOG IFB B21-17 PURCHASING HVAC EQUIP Prepared By: BERNARD LLARENAS

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LECTURE HALL AUDITORIUM 112321

Guide Specification for LECTURE HALL AUDITORIUM 112321

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GUIDE SPECIFICATIONS - 38AUDA25A0E5-0A0A0

Commercial Air-Cooled Condensing Units **HVAC Guide Specifications**

Size: 25

Part 1: General

SYSTEM DESCRIPTION

1.01. Outdoor-mounted, air-cooled condensing unit suitable for on-the-ground or rooftop installation. Unit shall consist of a hermetic scroll air-conditioning compressor(s) assembly, an air-cooled coil, propeller-type condenser fans, and a control box. Unit shall discharge supply air upward as shown on contract drawings. Unit shall be used in a refrigeration circuit matched with a packaged air-handling unit.

QUALITY ASSURANCE

- 1.01. Unit shall be rated in accordance with AHRI Standard 360.
- 1.02. Unit construction shall comply with ANSI/ASHRAE 15 safety code latest revision and comply with NEC.
- 1.03. Unit shall be constructed in accordance with UL 1995 standard and shall carry the UL and UL, Canada label.
- 1.04. Unit cabinet shall be capable of withstanding 500-hour salt spray exposure per ASTMB117 (scribed specimen).
- 1.05. Air-cooled condenser coils for hermetic scroll compressor units (38AUZ) and 38AUD shall be leak tested at 150 psig, and pressure tested at 650 psig.
- $1.06.\ Unitshall\,be\,manufactured\,in\,a\,facility\,registered\,to\,ISO\,9001:2000\,manufacturing\,quality\,standard.$

DELIVERY, STORAGE, AND HANDLING

1.01. Unit shall be shipped as single package only, and shall be stored and handled according to unit manufacturer's recommendations.

WARRANTY (FOR INCLUSION BYSPECIFYING 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, compressor, holding charge, and special features required prior to field start-up.

2.02. Unit Cabinet:

- A. Unit cabinet shall be constructed of galvanized steel, bonderized and coated with a prepainted baked enamel finish.
- B. A heavy-gauge roll-formed perimeter base rail with forklift slots and lifting holes shall be provided to facilitate rigging.

2.03. CondenserFans:

- A. Condenser fans shall be direct driven, propeller type, discharging air vertically upward.
- B. Fan blades shall be balanced.
- C. Condenserfandischarge openings shall be equipped with PVC-coated steel wire safety guards.
- D. Condenserfan and motor shaft shall be corrosion resistant.

2.04. Compressor:

A. Compressor shall be of the hermetic scroll type.

Guide Specification for LECTURE HALL AUDITORIUM 112321

Project: HA-1702-21-11 UOG IFB B21-17 PURCHASING HVAC EQUIP Prepared By: BERNARD LLARENAS

02:16PM

- B. Compressorshall be mounted on rubber grommets.
- C. Compressors shall include overload protection.
- D. Compressors shall be equipped with a crank case heater.
- E. Compressor shall be equipped with internal high pressure and high temperature protection.
- F. 38AUZ*16 and 25 sizes shall use two scroll compressors manifold together.

2.05. Condenser Coils:

- A. Standard Aluminum fin Copper Tube Coils:
 - 1. Standard evaporator and condenser coils shall have aluminum lanced plate fins mechanically bonded to seamless internally grooved copper tubes with all joints brazed.
 - 2. Evaporator coils shall be leak tested to 150 psig, pressure tested to 450 psig, and qualified to UL 1995 burst test at 1775 psig.
 - 3. Condenser coils shall be leak tested to 150 psig, pressure tested to 650 psig, and qualified to UL 1995 burst test at 1980 psig.
- B. Optional Copper-fin evaporator and condenser coils:
 - 1. Shall be constructed of copperfins mechanically bonded to copper tubes and copper tube sheets.
 - 2. Galvanized steel tube sheets shall not be acceptable.
 - 3. A polymer strip shall prevent coil assembly from contacting the sheet metal coil pan to minimize potential for galvanic corrosion between coil and pan.

2.06. Refrigeration Components:

A. Refrigeration circuit components shall include liquid line service valve, suction line service valve, a full charge of compressor oil, and a partial holding charge of refrigerant.

2.07. Controls and Safeties:

- A. Minimum control functions shall include:
 - 1. Control wire terminal blocks.
 - 2. Compressor lockout on auto-reset safety until reset from thermostat.
 - 3. Each unit shall utilize the Comfort Alertt Diagnostic Board that provides:
 - a System Pressure Trip fault code indication
 - b. Short Cycling fault code indication
 - c. Locked Rotorfault code indication
 - d. Open Circuit fault code indication
 - e. Reverse Phase 3 fault code indication
 - f. Welded Contactorfault code indication
 - g. Low Voltage fault code indication
 - h. Anti-short cycle protection
 - i. Phase reversal protection
- B. Minimum safety devices which are equipped with automatic reset (after resetting first at thermostat), shall include:
 - 1. High discharge pressure cutout.
 - Low pressure cutout.

2.08. Operating Characteristics	tics:
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, Op	Grading Gradiacteristics.
Α.	Bijn at a surfice to the control of
	consumption at fulfload shall not exceed kW.
B.	The combination of the condensing unit and the evaporator or fan coil unit shall have a total net cooling capacity of
	bulb, and air entering the condensing unit at F.
C.	The system shall have an EER ofBtuh/Watt or greater at standard AHRI conditions.
n	Standard unit of all be a set of the set of
D.	Standard unit shall be capable to operate up to 125_F (52_C) and down to 40_F (4_C)

2.09. Electrical Requirements:

A. Nominal unit electrical characteristics shall be	v, 3-ph, 60 Hz. The unit shall be capable of satisfactory operation
marcial Split Systems Dullet 4.00	- Profession and a second particular and a second operation

HSS BUILDING 50T 112221

Project: HA-1702-21-11 UOG IFB B21-17 PURCHASING HVAC EQUIP Prepared By: BERNARD LLARENAS

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HSS BUILDING 50T 112221



GUIDE SPECIFICATIONS - 38APD05056-3009J

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

Size: 050

Part 1: General

SYSTEMDESCRIPTION

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

- $1.01.\ Unit performance shall be rated in accordance with AHRI (Air-Conditioning, Heating, and Refrigeration Institute) Standard (Air-Conditioning) and Refrigeration (Institute) Standard (Institute) and (Institute) Standard (Institute) and (Institute) Standard (Institute) and (Instit$ 365, latest edition (U.S.A).
- 1.02. Unit construction shall comply with latest edition of ASHRAE (American Society of Heating, Refrigerating, and Air-Conditioning Engineers) 15 Safety Code, UL 1995, and ASME (American Society of Mechanical Engineers) applicable codes (U.S.A. codes).
- $1.03. \ The management system governing the manufacturer of the product is ISO (International Organization for Standardization)$ 9001: 2015 certified.
- $1.04.\ Base unit shall be constructed in accordance with UL (Underwriters Laboratories) standards and CSA (Canadian Standards and CSA) and CSA (Canadian Standards and CSA) and CSA (Canadian Standards and CSA). The standards are standards and CSA (Canadian Standards and CSA) are standards and CSA (Canadian Standards and CSA). The standards are standards are standards and CSA (Canadian Standards and CSA) are standards are standards are standards and CSA (Canadian Standards and CSA). The standards are standards are$ Association)..
- 1.05. Painted parts shall withstand 1000 hours in constant neutral salt spray under ASTMB117 conditions with a 1mm scribe per ASTM D1654. After test, painted parts shall show no signs of wrinkling or cracking, no loss of adhesion, no evidence of blistering, and the mean creepage shall not exceed 1/4 in. (Rating = 4 per ASTMD1654) on either side of the scribe line.
- 1.06. Design pressure shall be 650 psig (4482 kPa).
- 1.07. Unit shall be functional checked at the factory.
- 1.08. Lifting holes shall be provided to facilitate rigging.

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.

Guide Specification for HSS BUILDING 50T 112221

Project: HA-1702-21-11 UOG IFB B21-17 PURCHASING HVAC EQUIP Prepared By: BERNARD LLARENAS

02:16PM

B. Control box access panels shall be hinged for service access.

2.03. Fans:

- A. Condenserfans 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.
- 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.
- 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. Standard line length (0-100 ft)
- C. 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).
- D. Units shall include one factory-installed suction line accumulator for each refrigerant circuit.

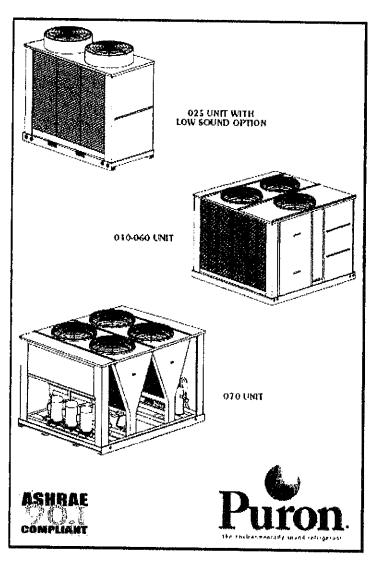
2.07. Controls and Safeties:

- 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 compressorie ad/lag control.
 - 6. Service run test capability.
 - 7. Compressor minimum run time (3 minutes) and minimum off time (3 minutes).
 - 8. Servicediagnostic mode.
 - 9. Self-contained low voltage control circuit.
 - 10. Cycle condenser fans to maintain proper head pressure control.
 - 11. Capacity control with staging compressors.



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

HSS BUILDING 30T 112221

Project: HA-1702-21-11 UOG IFB B21-17 PURCHASING HVAC EQUIP Prepared By: BERNARD LLARENAS

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Guide Specification for HSS BUILDING 30T 112221

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Size: 030

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2.01. General:

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Project: HA-1702-21-11 UOG IFB B21-17 PURCHASING HVAC EQUIP

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B. Control box access panels shall be hinged for service access.

2.03. Fans:

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- A. Compressors shall be rotary scroll.
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- C. Compressors shall be mounted on two rails having rubber in shear vibration isolators.
- D. Staging of compressors shall provide unloading capability.
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- B. Tubes shall be cleaned, dehydrated, and sealed.
- C. Assembled condenser coils shall be leak tested and pressure tested at 650 psig (4482 kPa).

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- D. Units shall include one factory-installed suction line accumulator for each refrigerant circuit.

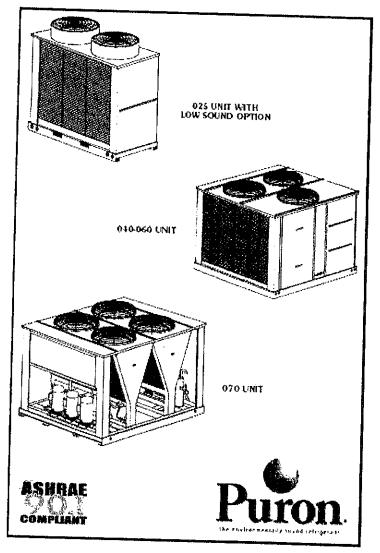
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- Protection against high discharge and low suction refrigerant pressure, and low oil pressure

EXHIBIT 9

ALL BUSINESS ENTERPRISES CORP.

P.O. Box 8410 Tamuning, Guam U.S.A. 96931 TELEPHONE: (671) 646-3346; FAX: (671) 646-0589

JWS SUBMITTAL

TECHNICAL REPORT

SPECIFICATION

Pages	Description	Pages	Condenser Coil
1 of 12 &	Nothing describe on Factory immersions Spray	3 of 12 &	Conner Tube Cail Aluminum
UOG 27	<u> </u>		Copper Tube Coil, Aluminum
00G 27	Phenolic Coating	UOG 28	Fins
1 of 12 &	Nothing describe on Factory immersions Spray	3 of 12 &	Copper Tube Coil, Aluminum
UOG 30	Phenolic Coating	UOG 31	Fins
		-	11113
1 of 12 &	Nothing describe on Factory immersions Spray	3 of 12 &	Copper Tube Coil, Aluminum
UOG 33	Phenolic Coating	UOG 34	Fins
1 of 12 &	Nothing describe on Factory immersions Spray	3 of 12 &	Copper Tube Coil, Aluminum
UOG 36	Phenolic Coating	UOG 37	Fins
1 of 12 &	Nothing describe on Factory immersions Spray	3 of 12 &	Copper Tube Coil, Aluminum
UOG 39	Phenolic Coating	UOG 40	Fins
4 (40.0			
1 of 12 &	Nothing describe on Factory immersions Spray	3 of 12 &	Copper Tube Coil, Aluminum
UOG 42	Phenolic Coating	UOG 43	Fins
1 of 12 &	Nothing describe on Factors in the S	0.610.5	
	Nothing describe on Factory immersions Spray	3 of 12 &	Copper Tube Coil, Aluminum
UOG 45	Phenolic Coating	UOG 46	Fins
1 of 12 &	Nothing doggribe on Factors in the S		
_	Nothing describe on Factory immersions Spray	3 of 12 &	Copper Tube Coil, Aluminum
UOG 48	Phenolic Coating	UOG 49	Fins

NOTE:

The BID SPEC under:

- A. Section 2.2.1.1. Air to refrigerant coil; clearly stated to provide COPPER TUBES with COPPER FINS.
- B. Section 2.6.2.1. Phenolic Coating; clearly stated to Apply Coating by IMMERSION.



Project name	OOG condensers		<u> </u>		
Submitted by	Lea				
Customer	JWS		Date	11/22/2	2021
OVERVIEW			Quantity	1	
System Type	Air-Cooled Split	Refrigerant			
Series	ACCS	Power supply	R410		
Unit nomenclature	6ACC\$220-QG + 6HE8220D-QG	Trower supply	Z08V	/3/60HZ	
Altitude	o ft	Approval			
FILTER		Abbigasi			
Type	Filter 1" 70% Eff		:		
Size (Qty)	25×20×1(1), 25×25×1(2)				
DX COOLING COIL	7-2-4-4-4-6)				
Туре	Ø3/8	Alumbar of a II			
Rows	3	Number of coil Face area		1	. 22
fins per inch	12			13.22	ft
Refrigerant	R410A	Face velocity			ft/mi
Capacity (Total)	190397 Btu/h	Entering air (OB)		80	
Capacity (Sensible)	134438 Btu/h	Entering air (W8)		67	
Air pressure drop	4 -1	Leaving air (DB)		56.8	
COMPRESSOR (OR EQUIVALEN	T MODELS)	Leaving air (WB)		55.4	
Compressor					<u> </u>
ype	Scroll, Fixed Speed	T-		ZP182	
otal LRA	340.0 A	Quantity		1	
	340.0 A	Total Power		15.7	leva:
AN (EVAPORATOR)		Total Amps		51	
уре	Ball Pul				~
ir Flow	Belt Driven	Model		15/15	
xternal Static Pressure	5400 CFM	Fan Speed			RPM
otal Static Pressure	0.5 InH2O	Absorbed Power		1.6	
luantity	1.2 InH2O	Motor Horsepower			HP
	1	FLA		10.3	
ONDENSER (AIR COOLED)		Locked rotor current (LRA)		64	
lodel			w	04/	4
luantity	Ø3/8	Motor HP (each)		1	
ondenser Fan Motor	1	FLA (each)			
uantity	26" (660MM)	Ambient Temperature		2.9	
ECTRICAL SUMMARY				95	<u> </u>
nit FLA					
otal Power Input	67.1 A	MCA		70.0	
R	18.89 kW	MF5		79.9	
PTIONS	10.08	IEER		150 /	٠
SCRIPTION				n/a	
SV: Suction/Discharge/Liquid Lin	o Consider Val			····	
CU-C: Condenser Coil Fin Materi	ne service valves				
CG: Condenser Coil Guard	ais - Copper				
DOLZ: IEC OOL (Non UL)					
Miti Door Interlock Main Incomis					
PFR: UVR/Phase Fallure Protect	ng itolator				
IR33: Controller - IR33					
TES					
4 5 54-5					



Specs Guide

SPECIFICATIONS

1 GENERAL

The air-cooled condensing section shall consist of the compressor(s); condenser coil; propeller condenser fan(s) with motor and drive assembly.

The evaporator blower section shall consist of the blower fan and motor assembly; direct expansion coil and a filter frame for flat filters. The units shall be capable to operate up to 115oF [46oC] ambient temperature without failure.

2 CABINET

The unit cabinet shall be constructed from heavy gauge galvanized steel with epoxy painted for excellent finished, weatherability and corrosion resistance up to 1000 hours salt spray test according to ASTM B-117. Evaporator section shall be of 1/2"[13mm] thick x 1 1/2 lb/ft³ [24kg/m³] density (up to model 760) and 1"[25mm] thick x 2 lb/ft³ [32kg/m³] density (model 800 and above) single skin lined with thermal conductivity of 0.0346W/m.K [0.24Btu.ln/ft2.h.oF] acoustical fiberglass insulation. The insulation shall have fire resistant of Class O (BS 476 Part 6, 7). Access doors shall be provided for easy service and maintenance of unit internal parts.

3 COMPRESSOR & REFRIGERATION PIPING

Compressor(s) shall be scroll, refrigerant gas cooled and mounted on the base via vibration isolators. 1, 2, 3 or 4 refrigeration circuits shall be piped with copper tubing and include expansion valve with external equalizer, suction accumulator (standard for heat pump models), pressure fittings of manual reset high pressure control and auto reset low pressure safety cutouts as well as charging/access ports in each circuit, Each compressor shall have a crankcase heater installed, properly sized to minimize the amount of liquid refrigerant present in the oil sump during off cycles. The compressors comply with the internationally recognized standards CE and UL.

4 EVAPORATOR COIL

Evaporator coil shall be of draw through air design for uniform air distribution. The evaporator coil shall be quality construction of staggered row of 3/8°OD (model 68 to 570) and 1/2'OD (model 640 and above) seamless copper tube, mechanically bonded to aluminium fins with galvanized coil plates. The coil shall be factory leak and pressure tested to 650psig (45 bar) for R410A system, 450psig (31 bar) for R407C system. A galvanized and painted drain pan shall be provided to cover the entire coil area. The drain pan shall be designed to incorporate sloped gutter for complete condensate removal.

5 EVAPORATOR BLOWER AND MOTOR

Evaporator blower shall be direct-driven (model 68 to 95) and belt driven (model 108 and above), double-inlet-double-width (DIDW) forward curved. All blowers are statically and dynamically balanced to ensure quiet operation and smooth performance. Heavy-duty V-belt fan drive with cast iron pulleys keyed and secured to the blower shall be provided (model 108 and above). Motors shall be of totally enclosed fan cooled (TEFC) with IP55 enclosure rating, 4-poles with class F insulation. Motors shall be motor frame. Motor pulleys shall be cast Iron, keyed and secured to the motor shaft (model 108 and above).

6 CONDENSER COIL

Condenser coil shall be air cooled with integral sub-cooling circuit, constructed from staggered row of 3/8°OD inner grooved seamless copper tube, mechanically bonded to aluminium fins (aluminium coated fin/ hydrophilic fin for heat pump models) with galvanized coil plates. The coil shall be factory leak and pressure tested to 850psig (45 bar) for R410A system, 450psig (31 bar) for R407C system under water.

7 CONDENSER FAN AND MOTOR

Condenser fan shall be direct driven propeller type. Condenser fan motors shall be of totally enclosed air over (TEAO), 6-poles with class F insulation and wired to unit control panel. Condenser fans shall be constructed of corrosion resistant blades and are statically and dynamically balanced (model 68 and above). The condenser fan assembly shall be provided with heavy gauge and rust resistant steel wire fan guard.

8 FILTERS

Evaporator unit shall be provided with 1" thick washable filters having average arrestance efficiency of 70% as per ASHRAE Standard 52.1 (or equivalent).

9 CONTROL PANEL

The unit mounted control panel enclosure shall be constructed from heavy gauge galvanized steel with epoxy painted for excellent finished, weatherability and corrosion resistance. The enclosure shall conform to IP54, Access door shall be provided for easy access and security. The control panel shall be wired without starter and control.



Project name			1	' '	•	
Submitted by	OOG condensers					
	Leo			10-4-	12 - 12 - 1	
Customer	IWS			Date	11/22/	2023
OVERVIEW				Quantity	1	
System Type	Air-Cooled Split		Refrigerant	Ja		·
Series	ACC\$		Power supply	R41		
Unit nomenclature	6ACC\$290-QG + 6E829QC	2-0G	I. visc. supply	4601	//3/60HZ	
Altitude	0	ft	Approval	· · · · · · · · · · · · · · · · · · ·		
FILTER			in Abridadi			
Туре	Filter 1" 70% Eff					
Size (Qty)	25x16x1(3), 25x20x1(3)					
DX COOLING COIL						
Туре	Ø3/8	·	Internal control			
Rows			Number of call		1	
Fins per inch	12		Face area		16.53	141
Refrigerant	R410A		Face velocity			ft/m
Capacity (Total)		-	Entering air (OB)		RO	F
Capacity (Sensible)	253522		Entering air (WB)			·F
Air pressure drop	181867	Btu/h	Leaving air (DB)		57.4	
OMPRESSOR (OR EQUIVALE)	T MONELES	inHZO	Leaving air (WB)		55.9	
ompressor	T MODECS!	······································			37.3	
Vpe	Carell Charles				2 X ZP122	·
otal LRA	Scroll, Fixed Speed		Quantity		2	
	280.0	<u> </u>	Total Power			kw
AN (EVAPORATOR)			Total Amps	- 		
уре					34.3	<u> </u>
ir Flow	Belt Driven		Model		10/10	
xternal Static Pressure	7500		Fan Speed		18/13	
otal Static Pressure		InH2O	Absorbed Power			RPM
luantity	1.3	inH2O	Motor Horsepower			kW
COARTINA	1		FLA		5.5	~~~~~
Chippelero (ata da a			Locked rotor current (LRA)		8.2	
ONDENSER (AIR COOLED)			The state of the s		50.5	A
The state of the s	Ø3/8		Motor HP (each)			
vantity	1		FLA (each)			HP
undenser Fan Motor	26" (660MM)		Ambient Temperature		1.6	A
vantity	2		Salate Leuther after 6		95	·¢
LECTRICAL SUMMARY			A STATE OF THE STA			
nit FLA	45.7 /	ī T	MCA		****	
ital Power Input	27.04		MFS		50	
R	9.38		IEER		70	Ą
PTIONS			Fig. 13		n/a	
SCRIPTION						
SV: Suction/Discharge/Liquid Li	ne Service Valves					
CU-C: Condenser Coll Fin Mater	lais - Copper					
CG: Condenser Coil Guard	No. of the last of	· · · · · · · · · · · · · · · · · · ·				
DOL2: IEC DOL (Non UL)					······	
Mil: Door Interlock Main Incom	ne isolator					.
PFR: UVR/Phase Failure Protect	O Alugion					
IR33: Controller - IR33			***			
TES						·



Specs Guide

SPECIFICATIONS

The air-cooled condensing section shall consist of the compressor(s); condenser coil; propeller condenser fan(s) with motor and

The evaporator blower section shall consist of the blower fan and motor assembly; direct expansion coil and a filter frame for flat filters. The units shall be capable to operate up to 115oF [46oC] ambient temperature without failure.

2 CABINET

The unit cabinet shall be constructed from heavy gauge galvanized steel with epoxy painted for excellent finished, weatherability and corrosion resistance up to 1000 hours salt spray test according to ASTM B-117. Evaporator section shall be of 1/2*[13mm] thick x 1 1/2 lb/ft² [24kg/m²] density (up to model 760) and 1°[25mm] thick x 2 lb/ft² [32kg/m³] density (model 800 and above) single skin lined with thermal conductivity of 0.0346W/m.K [0.24Btu.in/ft2.h.oF] acoustical fiberglass insulation. The insulation shall have fire resistant of Class O (BS 476 Part 6, 7). Access doors shall be provided for easy service and maintenance of unit internal parts.

3 COMPRESSOR & REFRIGERATION PIPING

Compressor(s) shall be scroll, refrigerant gas cooled and mounted on the base via vibration isolators. 1, 2, 3 or 4 refrigeration circuits shall be piped with copper tubing and include expansion valve with external equalizer, suction accumulator (standard for heat pump models), pressure fittings of manual reset high pressure control and auto reset low pressure safety cutouts as well as charging/access ports in each circuit. Each compressor shall have a crankcase heater installed, properly sized to minimize the amount of liquid refrigerant present in the oil sump during off cycles. The compressors comply with the internationally recognized

4 EVAPORATOR COIL

Evaporator coll shall be of draw through air design for uniform air distribution. The evaporator coll shall be quality construction of staggered row of 3/8°OD (model 68 to 570) and 1/2°OD (model 640 and above) seamless copper tube, mechanically bonded to aluminium fins with galvanized coil plates. The coil shall be factory leak and pressure tested to 650psig (45 bar) for R410A system, 450psig (31 bar) for R407C system. A galvanized and painted drain pan shall be provided to cover the entire coll area. The drain pan shall be designed to incorporate sloped gutter for complete condensate removal.

5 EVAPORATOR BLOWER AND MOTOR

Evaporator blower shall be direct-driven (model 68 to 95) and belt driven (model 108 and above), double-inlet-double-width (DIDW) forward curved. All blowers are statically and dynamically balanced to ensure quiet operation and smooth performance. Heavy-duty V-belt fan drive with cast fron pulleys keyed and secured to the blower shaft shall be provided (model 108 and above). Motors shall be of totally enclosed fan cooled (TEFC) with IP55 enclosure rating, 4-poles with class F insulation. Motors shall be mounted to an adjustable motor frame. Motor pulleys shall be cast iron, keyed and secured to the motor shall (model 108 and

6 CONDENSER COIL

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7 CONDENSER FAN AND MOTOR

Condenser fan shall be direct driven propeller type. Condenser fan motors shall be of totally enclosed air over (TEAO), 6-poles with class F insulation and wired to unit control panel. Condenser fans shall be constructed of corrosion resistant blades and are statically and dynamically balanced (model 68 and above). The condenser fan assembly shall be provided with heavy gauge and

Evaporator unit shall be provided with 1" thick washable filters having average arrestance efficiency of 70% as per ASHRAE

9 CONTROL PANEL

The unit mounted control panel enclosure shall be constructed from heavy gauge galvanized steel with epoxy painted for excellent finished, weatherability and corrosion resistance. The enclosure shall conform to IP54. Access door shall be provided for easy access and security. The control panel shall be wired without starter and control.



Project name	OOG condensers				
Submitted by	leo				
Customer	JWS		VIII.	Date	11/22/2021
OVERVIEW		— #		Quantity	1
System Type	Air-Cooled Split		Refrigerant	·····	
Series	ACCS		Power supply	R410	
Unit nomenclature	6ACC\$290-QG + 6E8290	იაიი	(rower supply	208V	/3/60HZ
Aititude	0	lft.	Approval	·	
FILTER		17.5	[Mpbrovai		
Гуре	Filter 1" 70% Eff				
Size (Qty)	25x16x1(3), 25x20x1(3)				
DX COOLING COIL	1-1-	***************************************			
Гуре	Ø3/1	1	Number of coll		
Rows		3	Face area		1
Fins per inch	1	·	Face velocity		16.53 ft²
tefrigerant	R4104		Entering air (DB)		454 ft/r
apacity (Total)		8tu/h	Entering air (WB)		80 'F
apacity (Sensible)		8tu/h	Leaving air (DB)		67 °F
lir pressure drop		InHZO	Leaving air (W8)		57.6 °F
OMPRESSOR (OR EQUIVAL	ENT MODELS)	Immed	fresault sit (AAR)		56.1 °F
ompressor		**************************************			
уре	Scrall, Fixed Speed		Quantity		2 X ZP122
otal LRA	480.0		Total Power		2
PHONE II		<u> </u>	Total Amps		22.9 kW
AN (EVAPORATOR)			Trotal Amps		63.7 A
ype	Belt Driven		Model		
ir Flow		CFM	Fan Speed		10/13
kternal Static Pressure		InH2O	Absorbed Power		693 RPM
otal Static Pressure			Motor Horsepower		2.9 kW
uantity	1	110120	FLA		5.5 HP
			Locked rotor current (LRA)		18.1 A
ONDENSER (AIR COOLED)			LOCKED TOTAL CUFFERT (LRA)		112 A
lodel	Ø3/8		Motor HP (each)		
vantity	1		FLA (each)		1 HP
ondenser Fan Motor	26" (660MM)		Ambient Temperature		2.9 A
uantity	2		Amount Temperature		95 'F
ECTRICAL SUMMARY			Alexander and the second secon		
nit FLA	87.6	A	MCA		
tal Power Input	27.3		MFS		95.5 A
R	9.15		IEER		150 A
TIONS			IEER		n/a
SCRIPTION.					
SV: Suction/Discharge/Liquid (Ine Service Valves	·			
CU-C: Condenser Coll Fin Mate	erials - Copper				
SSD: Stainless Steel Orain Pan	W				
CG: Condenser Coll Guard			The second secon		
OOL2: IEC DOL (Non UL)					
Mil: Door Interlock Main Incon	ning Isolator				
PFR: UVR/Phase Fallure Protect	t			-	
IR33: Controller - IR33					
TES					



Specs Guide

SPECIFICATIONS

1 GENERAL

The air-cooled condensing section shall consist of the compressor(s); condenser coll; propeller condenser fan(s) with motor and drive assembly.

The evaporator blower section shall consist of the blower fan and motor assembly; direct expansion coil and a filter frame for flat filters. The units shall be capable to operate up to 115oF [46oC] ambient temperature without failure.

2 CARINET

The unit cabinet shall be constructed from heavy gauge galvanized steel with epoxy painted for excellent finished, weatherability and corrosion resistance up to 1000 hours salt spray test according to ASTM B-117. Evaporator section shall be of 1/2"[13mm] thick x 1 1/2 lb/ft³ [24kg/m³] density (up to model 760) and 1°[26mm] thick x 2 lb/ft³ [32kg/m³] density (model 800 and above) single skin lined with thermal conductivity of 0.0346W/m.K [0.24Btu.in/ft2.h.oF] acoustical fiberglass insulation. The insulation shall have fire resistant of Class O (BS 476 Part 6, 7). Access doors shall be provided for easy service and maintenance of unit internal parts.

3 COMPRESSOR & REFRIGERATION PIPING

Compressor(s) shall be scroll, refrigerant gas cooled and mounted on the base via vibration isotators. 1, 2, 3 or 4 refrigeration circuits shall be piped with copper tubing and include expansion valve with external equalizer, suction accumulator (standard for heat pump models), pressure fittings of manual reset high pressure control and auto reset low pressure safety cutouts as well as charging/access ports in each circuit. Each compressor shall have a crankoase heater installed, properly sized to minimize the amount of liquid refrigerant present in the oil sump during off cycles. The compressors comply with the internationally recognized standards CE and UL.

4 EVAPORATOR COIL

Evaporator coil shall be of draw through air design for uniform air distribution. The evaporator coil shall be quality construction of staggered row of 3/8°OD (model 68 to 570) and 1/2°OD (model 640 and above) seamless copper tube, mechanically bonded to aluminium fins with galvanized coil plates. The coil shall be factory leak and pressure tested to 650psig (45 bar) for R410A system, 450psig (31 bar) for R407C system. A galvanized and painted drain pan shall be provided to cover the entire coil area. The drain pan shall be designed to incorporate sloped gutter for complete condensate removal.

5 EVAPORATOR BLOWER AND MOTOR

Evaporator blower shall be direct-driven (model 68 to 95) and belt driven (model 108 and above), double-inlet-double-width (DIDW) forward curved. All blowers are statically and dynamically balanced to ensure quiet operation and smooth performance. Heavy-duty V-belt fan drive with cast iron pulleys keyed and secured to the blower shaft shall be provided (model 108 and above). Motors shall be of totally enclosed fan cooled (TEFC) with IP55 enclosure rating, 4-poles with class F insulation. Motors shall be cast iron, keyed and secured to the motor shaft (model 108 and above).

6 CONDENSER COIL

Condenser coil shall be air cooled with integral sub-cooling circuit, constructed from staggered row of 3/8°OD inner grooved seamless copper tube, mechanically bonded to aluminium fins (aluminium coated fin/ hydrophilic fin for heat pump models) with galvanized coil plates. The coil shall be factory leak and pressure tested to 650psig (45 bar) for R410A system, 450psig (31 bar) for R407C system under water.

7 CONDENSER FAN AND MOTOR

Condenser fan shall be direct driven propeller type. Condenser fan motors shall be of totally enclosed air over (TEAO), 6-poles with class F insulation and wired to unit control panel. Condenser fans shall be constructed of corrosion resistant blades and are statically and dynamically balanced (model 68 and above). The condenser fan assembly shall be provided with heavy gauge and rust resistant steel wire fan guard.

8 FILTERS

Evaporator unit shall be provided with 1" thick washable filters having average arrestance efficiency of 70% as per ASHRAE Standard 52.1 (or equivalent).

9 CONTROL PANEL

The unit mounted control panel enclosure shall be constructed from heavy gauge galvanized steel with epoxy painted for excellent finished, weatherability and corrosion resistance. The enclosure shall conform to IP54. Access door shall be provided for easy access and security. The control panel shall be wired without starter and control.



				1 1	
Project name	OOG condensers	-		· · · · · · · · · · · · · · · · · · ·	
Submitted by	Leo			Date	144/22/22
Customer	JWS			Quantity	11/22/2021
OVERVIEW				Ichantity	<u>IX</u>
System Type	Air-Cooled Spilt		Refrigerant	R410	*
Series	ACCS		Power supply		
Unit nomenclature	6ACCS435-QG + 6EB43SD-Q	G	The state of the s	4000	/3/60HZ
Altitude	O ft		Approval		
FILTER			**************************************	L	
Туре	Filter 1" 70% Eff				
Size (Qty)	20x25x1(3), 25x25x1(3)			-	
DX COOLING COIL					
Туре	Ø3/8		Number of coll	·····	
Rows	3		Face area		1
Fins per Inch	13		Face velocity		21,39 H²
Refrigerant	R410A		Entering air (DB)		538 ft/m
Capacity (Total)	377724 81		Entering air (WB)		80 °F
Capacity (Sensible)	274677 Bt	u/h	Leaving air (DB)		67 F
Air pressure drop	0.5 in	H2O	Leaving air (W8)		57.7 'F
COMPRESSOR (OR EQUIVALEN	T MODELS)				56.3 'F
Compressor					# W == -
Гуре	Scroll, Fixed Speed		Quantity		2 X ZP182
Total LRA	358.0 A		Total Power		2
CARL (MILL)			Total Amps		31.2 kW
FAN (EVAPORATOR)					50.6 A
Уре	Beit Oriven		Model		444
Nr Flow	11500 CF		Fan Speed		450
xternal Static Pressure	0.5 in	120	Absorbed Power		763 RPM
otal Static Pressure	1.4 Inf		Motor Horsepower		5.4 kW
Quantity	1		FLA		10 HP
		***************************************	Locked rotor current (LRA)		14.4 A
ONDENSER (AIR COOLED)		***************************************			85.7 A
Aodel	Ø3/8		Motor HP (each)		· · · · · · · · · · · · · · · · · · ·
luantity	1		FLA (each)		1 HP
ondenser Fan Motor	26" (660MM)		Ambient Temperature		1.6 A
luantity	3				95 °F
LECTRICAL SUMMARY					
nit FLA	69.8 A		MCA		
otal Power Input ER	39.02 kW		MFS		76.1 A
PTIONS	9.68		IEER		125 A
PTIONS ESCRIPTION					n/a
SV: Suction/Discharge/Liquid Lir	ne Service Valves			When the residence of the second seco	·····
CU-C: Condenser Coll Fin Mater	lals - Copper			·	· · · · · · · · · · · · · · · · · · ·
CG: Condenser Coll Guard	- NAME OF THE OWNER OWN				
OOL2: IEC DOL (Non UL)					
Mil: Door interfock Main Incomi	ng Isolator			******	
PFR: UVR/Phase Fallure Protect					
IR33: Controller - IR33					
OTES	hange specifications without prior natice				
ACCUSUCTOSES SERVICES The cinhe on es	anne annelli				



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SPECIFICATIONS

1 GENERAL

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Compressor(s) shall be acrolt, refrigerant gas cooled and mounted on the base via vibration isolators. 1, 2, 3 or 4 refrigeration circuits shall be piped with copper tubing and include expansion valve with external equalizer, suction accumulator (standard for heat pump models), pressure fittings of manual reset high pressure control and auto reset low pressure safety cutouts as well as charging/access ports in each circuit. Each compressor shall have a crankcase heater installed, properly sized to minimize the amount of liquid refrigerant present in the oil sump during off cycles. The compressors comply with the internationally recognized standards CE and UL.

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Condenser coil shall be air cooled with integral sub-cooling circuit, constructed from staggered row of 3/8°OD inner grooved seamless copper tube, mechanically bonded to aluminium fins (aluminium coated fin/ hydrophilic fin for heat pump models) with galvanized coil plates. The coil shall be factory loak and pressure tested to 650psig (45 bar) for R410A system, 450psig (31 bar) for R407C system under water.

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8 FILTERS

Evaporator unit shall be provided with 1" thick washable filters having average arrestance efficiency of 70% as per ASHRAE Standard 52.1 (or equivalent).

9 CONTROL PANEL

The unit mounted control panel enclosure shall be constructed from heavy gauge galvanized steat with epoxy painted for excellent finished, weatherability and corrosion resistence. The enclosure shall conform to IP54. Access door shall be provided for easy access and security. The control panel shall be wired without starter and control.



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Project name	OOG condensers				
Submitted by	Leo		Date	144/20/2	
Customer	JWS		Quantity	11/22/2	021
OVERVIEW			Iconstita	1	
System Type	Air-Cooled Split	Refrigerant	R410	<u> </u>	
Series	ACCS	Power supply			
Unit nomenclature	6ACC\$435-QG + 6EB43SD-QG		12084	/3/60HZ	
Altitude	0 ft	Approval			
FILTER					
Туре	Fliter 1" 70% Eff				
Size (Qty)	20x25x1(3), 25x25x1(3)			···	
DX COOLING COIL		-			
Туре	Ø3/8	Number of coil	<u> </u>		
Rows	3	Face area		1	
Fins per inch	13	face velocity		21.39	
Refrigerant	R410A	Entering air (DB)			ft/mir
Capacity (Total)	376700 Btu/	h Entering air (WB)		80	
Capacity (Sensible)	273995 Btu/			67	
Air pressure drop	O Eduta			57.7	
COMPRESSOR (OR EQUIVALEN	IT MODELS)	- Irraing 611 (440)		56,3	'F
Compressor				····	***
Гуре	Scrall, Fixed Speed	Quantity		2 X ZP182	
Total LRA	680.0 A	Total Power		. 2	
		Total Amps		32.1	
FAN (EVAPORATOR)		Moter Avigos	<u> </u>	103.6	A
Гуре	Bait Driven	Model			
Air Flow	11500 CFM	Fan Speed		450	~~~~
xternal Static Pressure	0.5 inH20	D Absorbed Power			RPM
Total Static Pressure	1.4 inH20			5.4	
Quantity	1	FLA FLA		10	
		Locked rotor current (LRA)		31.8	
ONDENSER (AIR COOLED)		(LOCKED FORDI CUITERI (LRA)		190.1	A
Model	Ø3/8	Motor HP (each)			
Quantity	1	FLA (each)		1	HP
ondenser fan Motor	26" (660MM)	rox (each)		2.9	A
Quantity	3	Ambient Temperature		95 '	F
LECTRICALSUMMARY		L			
Init FLA	144.1 A	IMCA			
otal Power input	39.8 kW	MFS ·		157	4
ER	9.47			225 /	4
PTIONS	Trail F	IEER		n/a	
ESCRIPTION				·	
SV: Suction/Oischarge/Liquid Li	ne Service Valves			******	
CU-C: Condenser Coil Fin Mater	rials - Cooner				
CG: Condenser Colf Guard	The state of the s				
OOL2: (EC DOL (Non UL)		*** ****			
Mil: Ooor Interlock Main Incom	ine Isolator		***************************************		******
PFR: UVR/Phase Failure Protect	TOTAL TRANSPORT				
IR33: Controller - IR33					
OTES					



Specs Guide

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Project name	OOG condensers					·
Submitted by	Leo			Date	144 (100 (100 100 100 100 100 100 100 100 1	
Customer	JWS			~~~~~	11/22/202	1
OVERVIEW				Quantity		<u> </u>
System Type	Air-Cooled Split	***************************************	Refrigerant	1	**	
Series	ACC5		Power supply	R41		
Unit nomenclature	6ACCS570-QG + 6EB570D	-06	1. 0.01 300311	Z08	//3/60HZ	
Altitude		ft	Approval			
FILTER		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	INDE VARI			
Туре	Filter 1" 70% Eff	*****				
Size (Qty)	20x25x1(9)				· · · · · · · · · · · · · · · · · · ·	
DX COOLING COIL						
Туре	Ø3/8	***************************************	Number of coll			
Rows	3		Face area			
Fins per inch	12		Face velocity		29.17 ft²	
Refrigerant	R410A		Entering air (OB)		514 ft/	
Capacity (Total)	497149	Btu/k	Entering air (WB)		80 'F	
Capacity (Sensible)	357934	Atu/h	teaving air (VVB)		67 'F	
Air pressure drop	A C	InH20	ceaving air (OB)		57.7 'F	
COMPRESSOR (OR EQUIVALEN	T MODELS)	IIII	Leaving air (WB)		56.3 'F	
Compressor			· · · · · · · · · · · · · · · · · · ·			
Туре	Scroll, Fixed Speed	····	O M.	2 X Z	154 + ZP182	
Total LRA	2×300 1×340		Quantity		3	
	AND	<u> </u>	Total Power		44,2 kW	Ī
FAN (EVAPORATOR)		·	Total Amps		137.4 A	***************************************
Туре	Rais Balance					
Air Flow	Belt Driven	0544	Model		500	
External Static Pressure			Fan Speed		727 RP	M
Total Static Pressure		nH2O	Absorbed Power		7.2 kW	ī
Quantity		nHZQ	Motor Horsepower		15 HP	
	1		FLA		44.2 A	
CONDENSER (AIR COOLED)			Locked rotor current (LRA)		286.1 A	
Model	-					
Quantity	Ø3/8		Motor HP (each)		1 HP	
Condenser Fan Motor	1		FLA (each)		2.9 A	
Quantity	26" (660MM)		Ambient Temperature		95 'F	
LECTRICAL SUMMARY	: 4	·				
Juit FLA						
otal Power Input	193,2		MCA	1	206.2 A	
ER	54.42	W	MF5		300 A	
PTIONS	9.14		IEER		n/a	
PESCRIPTION		_			17.91	
					······································	
SV: Suction/Olscharge/Liquid Lir	e Service Valves		- 4-00	· · · · · · · · · · · · · · · · · · ·		
CU-C: Condenser Coll Fin Mater	als - Copper			· · · · · · · · · · · · · · · · · · ·		-
CG: Condenser Coil Guard					***************************************	
DOLZ: IEC DOL (Non UL)						
Mil: Oper Interlock Main incomi	ng Iselator	_				
PFR: UVR/Phase Failure Protect				· · · · · · · · · · · · · · · · · · ·	4	
IR33: Controller - IR33						
OTES	range specifications without prior not					



Specs Guide

SPECIFICATIONS

1 GENERAL

The air-cooled condensing section shall consist of the compressor(s); condenser coit; propeller condenser fan(s) with motor and drive assembly.

The evaporator blower section shall consist of the blower fan and motor assembly; direct expansion cell and a filter frame for flat filters. The units shall be capable to operate up to 115oF [46oC] ambient temperature without failure.

2 CABINET

The unit cabinet shall be constructed from heavy gauge galvanized steel with epoxy painted for excellent finished, weatherability and corrosion resistance up to 1000 hours salt spray test according to ASTM B-117. Evaporator section shall be of 1/2*[13mm] thick x 1 1/2 lb/ft* [24kg/m*] density (up to model 760) and 1*[25mm] thick x 2 lb/ft* [32kg/m*] density (model 800 and above) single skin lined with thermal conductivity of 0.0346W/m.K [0.24Btu.in/ft2.h.oF] acoustical fiberglass insulation. The insulation shall have fire resistant of Class O (BS 476 Part 8, 7). Access doors shall be provided for easy service and maintenance of unit internal parts.

3 COMPRESSOR & REFRIGERATION PIPING

Compressor(s) shall be scroll, refrigerant gas cooled and mounted on the base via vibration isolators. 1, 2, 3 or 4 refrigeration circuits shall be piped with copper tubing and include expansion valve with external equalizer, suction accumulator (standard for heat pump models), pressure fittings of manual reset high pressure control and auto reset low pressure safety culouts as well as charging/access ports in each circuit. Each compressor shall have a crankcase heater installed, properly sized to minimize the amount of liquid refrigerant present in the oil sump during off cycles. The compressors comply with the internationally recognized standards CE and UL.

4 EVAPORATOR COIL

Evaporator coli shall be of draw through air design for uniform air distribution. The evaporator coll shall be quality construction of staggered row of 3/6"OD (model 68 to 570) and 1/2"OD (model 640 and above) seamless copper tube, mechanically bonded to aluminium fins with galvanized coil plates. The coil shall be factory leak and pressure tested to 650psig (45 bar) for R410A system, 450psig (31 bar) for R407C system. A galvanized and painted drain pan shall be provided to cover the entire coil area. The drain pan shall be designed to incorporate sloped gutter for complete condensate removal.

5 EVAPORATOR BLOWER AND MOTOR

Evaporator blower shall be direct-driven (model 68 to 95) and belt driven (model 108 and above), double-intet-double-width (DIDW) forward curved. All blowers are statically and dynamically balanced to ensure quiet operation and smooth performance. Heavy-duty V-belt fan drive with cast from pulleys keyed and secured to the blower shaft shall be provided (model 108 and above). Motors shall be of totally enclosed fan cooled (TEFC) with IP55 enclosure rating, 4-poles with class F insulation. Motors shall be mounted to an adjustable motor frame. Motor pulleys shall be cast from, keyed and secured to the motor shaft (model 108 and

6 CONDENSER COIL

Condenser coil shall be air cooled with integral sub-cooling circuit, constructed from staggered row of 3/8"OD inner grooved seamless copper tube, mechanically bonded to aluminium fins (aluminium coated fin/ hydrophilic fin for heat pump models) with galvanized coil plates. The coil shall be factory leak and pressure tested to 650psig (45 bar) for R410A system, 450psig (31 bar) for R407C system under water.

7 CONDENSER FAN AND MOTOR

Condenser fan shall be direct driven propeller type. Condenser fan motors shall be of totally enclosed air over (TEAO), 6-poles with class F insulation and wired to unit control panel. Condenser fans shall be constructed of corrosion resistant blades and are statically and dynamically balanced (model 68 and above). The condenser fan assembly shall be provided with fleavy gauge and rust resistant steel wire fan quard.

8 FILTERS

Evaporator unit shall be provided with 1" thick washable filters having average arrestance efficiency of 70% as per ASHRAE Standard 52.1 (or equivalent).

9 CONTROL PANEL

The unit mounted control panel enclosure shall be constructed from heavy gauge galvanized steel with epoxy painted for excellent finished, weatherability and corrosion resistance. The enclosure shall conform to IP54. Access door shall be provided for easy access and security. The control panel shall be wired without starter and control.

11/22/2021

Bulld 191108

Page 3 of 12



Project name Submitted by	OOG condensers			<u> </u>	
Customer	Leo		Date	11/22/	7004
OVERVIEW	JWS		Quantity	1	2021
System Type Series	Air-Cooled Split	Refrigerant	R410		
	ACCS	Power supply			
Unit nomenclature	6ACC\$700-QG + 6EB780D-QG		(48UV	/3/60HZ	
Altitude	(0	Approval			
FILTER					
Туре	Filter 1" 70% Eff	- Committee of the comm	······································		
Size (Qty)	20x25x1(3), 25x25x1(6)			·	
DK COOLING COIL			·		
Туре	Ø1/2	Number of coil			
Rows	4	Face area			l T
Fins per inch	10	Face velocity		34.03	
Refrigerant	R410A	Entering air (OB)			ft/rnk
Capacity (Total)	640800 Btu/h	Entering air (WB)) 'F
Capacity (Sensible)	442555 Btu/h	Leaving air (D8)			'F
Air pressure drop	O S In Mac	Leaving air (WA)		55.9	
COMPRESSOR (OR EQUIVALE	NT MODELS)	Tanastria da 11143		54.7	'F
Compréssor				·····	
Гуре	Scroll, Fixed Speed	Quantity	2X	ZP154 TDM	·
Total LRA	A 0.008	Total Power		4	
		Total Amps			kW
FAN (EVAPORATOR)		Lidral Milib?		74.9	A
Гуре	Belt Driven	Model	· · · · · · · · · · · · · · · · · · ·		
lir Flow	17200 CFM	Fan Speed		560	
xternal Static Pressure	0.5 InH2O	Absorbed Power		630	RPM
otal Static Pressure	1.5 InH2O	Motor Horsepower		7.2	kW
luantity	1	FLA FLA		15	HP
				19.9	A
ONDENSER (AIR COOLED)		Locked rotar current (LRA)		129.1	A
Aodel	Ø3/8	Banka III (
luantity	1	Motor HP (each)		2 2/3	HP
ondenser Fan Motor	MM008	FLA (each)			۸
luantity	3	Ambient Temperature		95	*F
LECTRICAL SUMMARY					
nit FLA	106.8 A	IMCA			
otal Power Input	63.68 kW			111,5	A
ER	10.05	MFS		150	Ā
PTIONS	20.00	IEER		n/a	~~~~~~~~
ESCRIPTION	The second secon				
SV: Suction/Discharge/Liquid L	Ing Service Values				
CU-C: Condenser Coil Fin Mate	rials - Conner				
CG: Candenser Coll Guard	This Topper				
OOLZ: IEC DOL (Non UL)				***********	*** W
Mil: Door Interlock Main Incom	Ing (salatos				
PFR: UVR/Phase Failure Protect	HAR ISOLATOL			***	
IR33: Controller - IR33					
DTES					
~ 1 mg					



Specs Guide

SPECIFICATIONS

GENERAL

The air-cooled condensing section shall consist of the compressor(s): condenser coil; propeller condenser fan(s) with motor and

The evaporator blower section shall consist of the blower fan and motor assembly, direct expansion coil and a filter frame for flat filters. The units shall be capable to operate up to 115of [48oC] ambient temperature without failure.

2 CABINET

The unit cabinet shall be constructed from heavy gauge galvanized steel with epoxy painted for excellent finished, weatherability and corrosion resistance up to 1000 hours salt spray test according to ASTM B-117. Evaporator section shall be of 1/2"[13mm] thick x 1 1/2 lb/ft* [24kg/m²] density (up to model 760) and 1*[25mm] thick x 2 lb/ft* [32kg/m²] density (model 800 and above) single skin lined with thermal conductivity of 0.0346W/m.K [0.248tu.in/ft2.h.oF] acoustical fiberglass insulation. The insulation shall have fire resistant of Class O (BS 476 Part 6, 7). Access doors shall be provided for easy service and maintenance of unit internal parts.

3 COMPRESSOR & REFRIGERATION PIPING

Compressor(s) shall be scroll, refrigerant gas cooled and mounted on the base via vibration isolators. 1, 2, 3 or 4 refrigeration circuits shall be piped with copper tubing and include expansion valve with external equalizer, suction accumulator (standard for heat pump models), pressure fittings of manual reset high pressure control and auto reset low pressure safety cutouts as well as charging/access ports in each circuit. Each compressor shall have a crankcase heater installed, properly sized to minimize the amount of liquid refrigerant present in the oil sump during off cycles. The compressors comply with the internationally recognized

4 EVAPORATOR COIL

Evaporator coll shall be of draw through air design for uniform air distribution. The evaporator coll shall be quality construction of staggered row of 3/8"OD (model 68 to 570) and 1/2"OD (model 640 and above) seamless copper tube, mechanically bonded to aluminium fins with galvanized coil plates. The coil shall be factory leak and pressure tested to 650psig (45 bar) for R410A system, 450psig (31 bar) for R407C system. A galvanized and painted drain pan shall be provided to cover the entire coll area. The drain part shall be designed to incorporate sloped gutter for complete condensate removal.

5 EVAPORATOR BLOWER AND MOTOR

Evaporator blower shall be direct-driven (model 68 to 95) and belt driven (model 108 and above), double-infet-double-width (DIDW) forward curved. All blowers are statically and dynamically balanced to ensure quiet operation and smooth performance. Heavy-duty V-belt fan drive with cast Iron pulleys keyed and secured to the blower shaft shall be provided (model 108 and above). Motors shall be of totally enclosed fan cooled (TEFC) with IP55 enclosure rating, 4-poles with class F insulation. Motors shall be mounted to an adjustable motor frame. Motor pulleys shall be cast Iron, keyed and secured to the motor shaft (model 108 and

6 CONDENSER COIL

Condenser coll shall be air cooled with integral sub-cooling circuit, constructed from staggered row of 3/8"OD inner grooved seamless copper tube, mechanically bonded to aluminium fins (aluminium coated fin/ hydrophilic fin for heat pump models) with galvanized coll plates. The coil shall be factory leak and pressure tested to 650psig (45 bar) for R410A system, 450psig (31 bar) for

7 CONDENSER FAN AND MOTOR

Condenser fan shall be direct driven propeller type. Condenser fan motors shall be of totally enclosed air over (TEAO), 6-poles with class F insulation and wired to unit control panel. Condenser fans shall be constructed of corrosion resistant blades and are stalically and dynamically balanced (model 68 and above). The condenser fan assembly shall be provided with heavy gauge and

Evaporator unit shall be provided with 1" thick washable filters having average arrestance efficiency of 70% as per ASHRAE Standard 52.1 (or equivalent).

9 CONTROL PANEL

The unit mounted control panel enclosure shall be constructed from heavy gauge galvanized steel with epoxy painted for excellent finished, weatherability and corrosion resistance. The enclosure shall conform to IP54. Access door shall be provided for easy access and security. The control panel shall be wired without starter and control.



Project name	OOG condensers				
Submitted by	Leo				·
Customer	IWS		Date	11/22/	2021
OVERVIEW			Quantity	1	
System Type	Air-Cooled Split	Refrigerant			
Series	ACCS	Power supply	R410		
Unit nomenclature	6ACC\$700-QG + 6E8700D-QG	Trower supply	208V	/3/60HZ	
Altitude	o ft	Approval			
FILTER		IMpprovar	<u> </u>		·
Туре	Filter 1" 70% Eff				
Size (Qty)	20×25×1(3), 25×25×1(6)			***************************************	·
DX COOLING COIL	TEACHTAINE (S)				
Туре					
Rows	Ø1/2	Number of coil			I
Fins per inch	4	Face area		34.03	14.3
Refrigerant	10	Face velocity	····		fymlr
Capacity (Total)	R410A	Entering air (DB)	<u> </u>	303	.t
Capacity (Sensible)	639094 Btu/h	Entering air (WB)			195
Air pressure drop	441872 Btu/h	Leaving air (DB)	·		
Oklopescop (op colinia)	0.6 inH2O	Leaving air (WB)		56.1	
OMPRESSOR (OR EQUIVALENT	T MODELS)			54.7	T F
Vpe Otal LRA	Scroll, Fixed Speed	Quantity	2 X	ZP154 TDM	
Otal LKA	1200.0 A	Total Power		. 4	···
Ant Inches		Total Amps		51.8	
AN (EVAPORATOR)			Li	161.3	Α
ype	Belt Driven	Model		***	
ir Flow	17200 CFM	Fan Speed		560	
xternal Static Pressure	0.5 InH2O	Absorbed Power		630	APM
otal Static Pressure	1.5 inH2O	Motor Horsepower		7.2	kW
luantity	1	FLA		15	HP
-		Indiad		44.2	Α
ONDENSER (AIR COOLED)		Locked rotor current (LRA)		286.1	A
lodel	Ø3/8	he character of the cha			
uantity	1	Motor HP (each)		2 2/3	HP
ondenser Fan Motor	800MM	FLA (each)		7.5	
uantity	3	Ambient Temperature		95	
LECTRICAL SUMMARY					
nik FLA	334			· · · · · · · · · · · · · · · · · · ·	
ital Power Input		MCA		238.1	Δ
R		MFS		300	***********
PTIONS	9.79	IEER	-	n/a	-
SCRIPTION				11/ d	
SV: Suction/Discharge/Liquid Line	• Contro Vist				
CU-C: Condenser Coll Fin Materia	a deraite valves		· · · · · · · · · · · · · · · · · · ·		
CG: Condenser Coil Guard	us - cobbst				
DOLZ: JEC DOL (Non UL)			-		
Mil: Door Interlock Main Incomin				·····	
PFR: UVR/Phase Failure Protect	g Isolator	19-5-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1			
(932) Controlled 1932					
IR33: Controller - IR33					



Specs Guide

SPECIFICATIONS

The air-cooled condensing section shall consist of the compressor(s); condenser coil; propeller condenser fen(s) with motor and

The evaporator blower section shall consist of the blower fan and motor assembly; direct expansion coil and a filter frame for flat filters. The units shall be capable to operate up to 116oF [46oC] ambient temperature without failure.

The unit cabinet shall be constructed from heavy gauge galvanized steel with epoxy painted for excellent finished, weatherability and corrosion resistance up to 1000 hours salt spray test according to ASTM B-117. Evaporator section shall be of 1/2*[13mm] and corrosion resistance up to 1000 hours sait spray test according to ASTM B-117. Evaporator section shall be of 1/2 [13/111] thick x 1 1/2 [b/ft² [24kg/m²] density (up to model 760) and 1²(25mm) thick x 2 [b/ft² [32kg/m²] density (model 800 and above) single skin lined with thermal conductivity of 0.0346W/m.K [0.24Btu.in/ft2.h.oF] acoustical fiberglass insulation. The insulation shall have fire resistant of Class O (BS 476 Part 6, 7). Access doors shall be provided for easy service and maintenance of unit internal parts.

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4 EVAPORATOR COIL

Evaporator coil shall be of draw through air design for uniform air distribution. The evaporator coil shall be quality construction of staggered row of 3/8 OD (model 68 to 570) and 1/2 OD (model 640 and above) seamless copper tube, mechanically bonded to aluminium fins with galvanized coll plates. The coll shall be factory leak and pressure tested to 650psig (45 bar) for R410A system. 450psig (31 bar) for R407C system. A galvanized and painted drain pan shall be provided to cover the entire coit area. The drain pan shall be designed to incorporate sloped gutter for complete condensate removal.

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Condenser fan shall be direct driven propeller type. Condenser fan motors shall be of totally enclosed air over (TEAO), 6-potes with class F insulation and wired to unit control panet. Condenser fans shall be constructed of corrosion resistant blades and are statically and dynamically balanced (model 68 and above). The condenser fan assembly shall be provided with heavy gauge and

Evaporator unit shall be provided with 1" thick washable filters having average arrestance efficiency of 70% as per ASHRAE

9 CONTROL PANEL

The unit mounted control panel enclosure shall be constructed from heavy gauge galvanized steel with epoxy painted for excellent finished, weatherability and corrosion resistance. The enclosure shall conform to IP54. Access door shall be provided for easy access and security. The control panel shall be wired without starter and control.

EXHIBIT 10

EXHIBIT 10-1



SUBMITTAL DATA

Order #:

Date:

03/15/2022

Project:

University of Guam

Project #:

Submitter:

Norberto Tiru

GUAM MICROTECH CORPORATION

#4 C&S Building,

Dededo, Guam 96929

671-989-0100

Date 03/15/2022 **Project Name** University of Guam **Project Number** Client / Purchaser



Submittal Summary Page

Qty	Tag #	Model # / Material #	Description
1	(ACCU-1)	(YD600C00A4GEB2)	50 Ton, York Split System R-410A Air Conditioner, 4-Pipe, Four Stage Cooling, 460-3-60 • HACR Circuit Breaker/Disconnect • Electrofin Copper Tube/Copper Fin Condenser Coil) • Phase Monitor • Smart Equipment Controller with Gateway to BACnet MS/TP (Programmable to Modbus or N2)

Equipment start-up and commissioning by a factory trained technician is recommended. Contact your supplying distributor or sales representative for additional information & guidance.



York Split-System R-410A Outdoor

Project Name: University of Guam

Quantity: 1 Tag #: ACCU-1

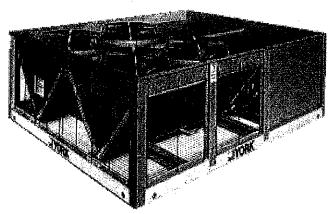
Unit Model #: YD600C00A4GEB2

System: YD600C00A4GEB2

16		Cooling I	Perfo	rmaı	nce		
Total gro	ss capacity					624.1	MBH
	gross capa	ıcity				462.4	MBH
	capacity					596.6	
	net capacit	У				434.9	
	y (at ARI)					10.00	
	DB temp.					95,0	
	ving DB ten					59.9	
	ving WB ter					57.6	
	air temp der					56.30	
	Power input (w/o blower)					51.17	
Sound po	Sound power					93	dB(A)
i		Ref	igera	nt			
Refrigera	ant type					R-410A	
<u> </u>		Electr	ical D	ata			
Power su				460-3-60			
Unit min	circuit ampa	acity					Amps
Unit max	over-currer	nt protection				100	Amps
		Dimensio	ns &	Wei	ght .		
⊢łgt	58 in.	Len	129	in.	Wth	89	in.
Weight w	ith factory i	nstalled opt	ons			2345	bs.
		Clea	iranc	es			
Right	30 in.	Front	36	in.	Rear	24	1 in.
Тор	120 in.	Bottom	0	in.	Left	3() in.

Note: Please refer to the tech guide for listed maximum static pressures





(50 Ton)

 York units are Manufactured at an ISO 9001 Registered Facility and each Rooftop is Completely Computer-run Tested Prior to Shipment.

Unit Features

- · Four Stage Cooling
- Unit Cabinet Constructed of Powder Painted Steel, Certified At 750 HoursSalt Spray Test (ASTM B-117 Standards)
- Full Perimeter Base rails with Built in Rigging Capabilities
- Dual Circuit 4 Stage Cooling with Scroll Compressor
- Solid Core Liquid Line Filter Driers
- Electrofin Copper Tube/Copper Fin Condenser Coil)
- Sweat Connection Fittings
- Single Point Power Connection
- · Phase Monitor
- Condenser Coil Guards Standard
- · Short Circuit Current: 5kA RMS Symmetrical

Standard Unit Controller: Smart Equipment Control Board

- An Integrated Low-Ambient Control, Anti-short Cycle Protection, Lead-Lag, Fan on and Fan off Delays, Low Voltage Protection, On-board Diagnostic and Fault Code Display
- Safety Monitoring Monitors the High and Low-Pressure Switches. The Unit Control Board will Alarm on Compressor Lockouts and Repeated Limit Switch Trips

BAS Controller

 Smart Equipment Controller with Gateway to BACnet MS/TP (Programmable to Modbus or N2)

Warranty

- . One (1) Year Limited Warranty on the Complete Unit
- · One (1) Year Warranty Compressors
- Three (3) Year Warranty ElectroFin Condenser Coil



Outdoor Split System

York Split-System R-410A Outdoor

Project Name: University of Guam

Unit Model #: YD600C00A4GEB2

System:

YD600C00A4GEB2

Page: 4

Quantity: 1 Tag #: ACCU-1

Additional Electric	al Data
Power supply	460-3-60
Unit min circuit ampacity	90.7 Amps
Unit max over-current protection	100 Amps
Min Voltage	432 V ´
Max Voltage	504 V
Comp #1 RLA	18.6
Comp #1 LRA	125
Comp #2 RLA	18.6
Comp #2 LRA	125
Comp #3 RLA	18.6
Comp #3 LRA	125
Comp #4 RLA	18.6
Comp #4 LRA	125
Outdoor Mtr Qty	4
Outdoor Fan Voltage	460-3-60
OD Fan Mtr FLA (ea.)	2.9



Outdoor Split System

York Split-System R-410A Outdoor

Project Name: University of Guam

Quantity: 1 Tag #: ACCU-1

Unit Model #: YD600C00A4GEB2

System:

YD600C00A4GEB2

Page: 5

Factory Installed Options

YD600C00A4GEB2

Equipment Options	Option(s) Selected
Product Category:	Y York Split System R-410A Air Conditioner
Product Identifier:	D 4-Pipe
Nominal Cooling Capacity:	600 50 Ton
Airflow:	A
Voltage:	4 460-3-60
Installation Options:	G HACR Circuit Breaker/Disconnect
Additional Options:	Electrofin Copper Tube/Copper Fin Condenser Coil) Phase Monitor Smart Equipment Controller with Gateway to BACnet MS/TP (Programmable to Modbus or N2)
Product Generation:	2

Page: 7

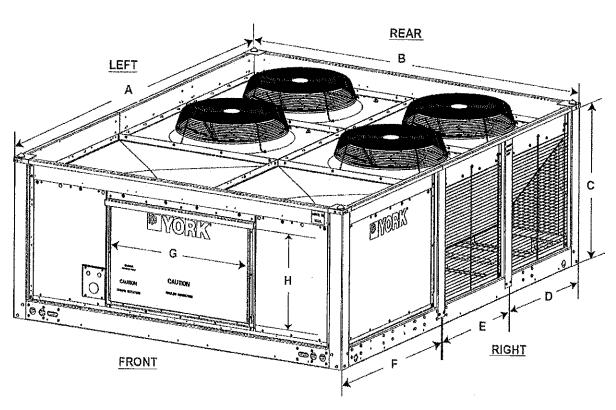
Project Name: University of Guam

Quantity: 1 Tag #: ACCU-1

Unit Model #:

YD600C00A4GEB2





YD Unit Dimensions

Unit Dimensions (Inches)

Model	Α	В	С	D	Ē	F	G	Н
YD360	128.5	88.5	37.5	41.8	40.0	46.1	37.1	23,6
YD480	128.5	88.5	57.7	41.8	40.0	46.1	37.1	23.6
YD600	128.5	88.5	57.7	41.8	40.0	46.1	37.1	23.6

Piping And Electrical Connections

Piping connections are made from the rear of the unit. Connections can be made directly to the suction and liquid line service valves.

Piping can be routed to the unit from the left or right side.

Electrical connections for power and control wiring is made from the front of all units, left of the electrical control box access. See piping sizes and electrical knockout details.

Unit Clearances

Location	Dimensions
Overhead (Top) ¹	120°
Front access panels	361
Left Side	30-
Right Side	30"
Rear	24*
Bottom ²	0.4

Units must be installed outdoors. Overhanging structures or shrubs should not obstruct condenser air discharge.

Adequate snow clearance must be provided if winter operation is expected.

EXHIBIT 10-2



SUBMITTAL DATA

Order #:

Date:

09/15/2021

Project:

University of Guam

Project #:

Submitter:

Norberto Tiru

GUAM MICROTECH CORPORATION

#4 C&S Building,

Dededo, Guam 96929

671-989-0100

Date 09/15/2021 **Project Name** University of Guam Project Number Client / Purchaser



Submittal Summary Page

Tag #	Model # / Material #	Description
(ACU-1)	(YD480C00A2AAA2)	(40 Ton, York Split System R-410A Air Conditioner, 4-Pipe, Four) (Stage Cooling, 208/230-3-60, E-coated Copper Tube/Copper Fin, (Condenser Coil) Smart Equipment Controller

Equipment start-up and commissioning by a factory trained technician is recommended. Contact your supplying distributor or sales representative for additional information & guidance.



Outdoor Split System

York Split-System R-410A Outdoor

Project Name: University of Guam

Quantity: 1 Tag #: ACU-1

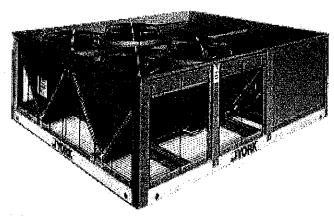
Unit Model #: (YD480C00A2AAA2

YD480C00A2AAA2 System:

Page: 3

Cooling P	erforma:	nce	
Total gross capacity			468,8 MBH)
Total net capacity			468.8 MBH
Ambient DB temp.			95.0 °F
Power input (w/o blower)			37.38 kW
Suction pressure			130 psig
Saturated suction temp.			<u>45</u> °F
Refr	igerant		
Refrigerant type			R-410A
Electri	cal Data		
Power supply		20	08-3-60
Unit min circuit ampacity			151.1 Amps
Unit max over-current protection			175 Amps
Dimension	ns & Wei	ght	
Hgt 58 in. Len	129 in.	Wth	89 in.
Weight with factory installed option	ons		2315 lbs.
Clea	rances		
Right 30 in. Front	36 in.	Rear	24 in.
Top 120 in. Bottom	0 in.	Left	30 in.





40 Ton

York units are Manufactured at an ISO 9001 Registered Facility and each Rooftop is Completely Computer-run Tested Prior to Shipment.

Unit Features

- Four Stage Cooling
- Unit Cabinet Constructed of Powder Painted Steel, Certified At 750 HoursSalt Spray Test (ASTM B-117 Standards)
- Full Perimeter Base rails with Built in Rigging Capabilities
- Dual Circuit 4 Stage Cooling with Scroll Compressor
- Solid Core Liquid Line Filter Driers
- (E-coated Copper Tube/Copper Fin Condenser Coil)
- · Sweat Connection Fittings
- · Single Point Power Connection
- · Condenser Coil Guards Standard
- Short Circuit Current: 5kA RMS Symmetrical

Standard Unit Controller: Smart Equipment Control Board

- · An Integrated Low-Ambient Control, Anti-short Cycle Protection, Lead-Lag, Fan on and Fan off Delays, Low Voltage Protection, On-board Diagnostic and Fault Code Display
- Safety Monitoring Monitors the High and Low-Pressure Switches. The Unit Control Board will Alarm on Compressor Lockouts and Repeated Limit Switch Trips

BAS Controller

· Smart Equipment Controller

Warranty

- · One (1) Year Limited Warranty on the Complete Unit
- · One (1) Year Warranty Compressors



Outdoor Split System

York Split-System R-410A Outdoor

Project Name: University of Guam

Unit Model #: YD480C00A2AAA2

System:

YD480C00A2AAA2

Page: 4

Quantity: 1 Tag #: ACU-1

Factory Installed Options

YD480C00A2AAA2

Equipment Options	Option(s) Selected
Product Category:	York Split System R-410A Air Conditioner
Product Identifier:	D 4-Pipe
Nominal Cooling Capacity: 4	80 40 Ton
	A
Voltage:	2 208/230-3-60
Installation Options:	A
(Additional Options:	(Escoated Copper Tube/Copper Fin Condenser Coil) Smart Equipment Controller
Product Generation:	2

Field Installed Accessories

- O 1WS0408 Metal Skid for Fork Truck Handling (225.0 lbs)
- O 1WS0410 Wooden Skid for Fork Truck Handling (200.0 lbs)
- O 2ET077001124 Honeywell T7350, 2 Heat / 4 Cool, Auto/Man Changeover, Electronic 7 Day Programmable (2.0 ibs)
- O 2HG04700824 Hot Gas Bypass Kit (5.0 lbs)
- O 2LA04714025 Low Ambient Kit 208/230V 40 & 50T (3.0 lbs)
- 2PM04700124 Phase Monitor Kit - Includes Control and associated wiring. This accessory provides protection against phase reversal, loss or unbalance. (13.0 lbs)
- O S1-MP-PRTKIT-0P MAP
 (Multiple Access Portal) Gateway
 Kit- Replacement MAP gateway
 protective case, lanyard and
 communication cable. Use only to
 replace worn or damaged
 components. (0.3 lbs)
- O S1-SE-COM1001-0 Field Installed Communication Card for Simplicity SE control. Can be field configurable for BACnet, N2 or ModBUS MSTP (0.0 lbs)
- O S1-YK-MAP1810-0P MAP (Multiple Access Portal) Gateway-For use with SimplicitySE Control. (0.2 lbs)

O S1-YK-MAP1810-0S - Stationary MAP Gateway (Includes MAP Gateway, Field Bus Adapter, Mounting Bracket and 100 to 240 VAC Power Supply). UScompatible counties. (1.9 lbs) Project Name: University of Guam

Outdoor Split System

York Split-System R-410A Outdoor

Tork opin-bysiciii 14-410A buldus

Unit Model #:

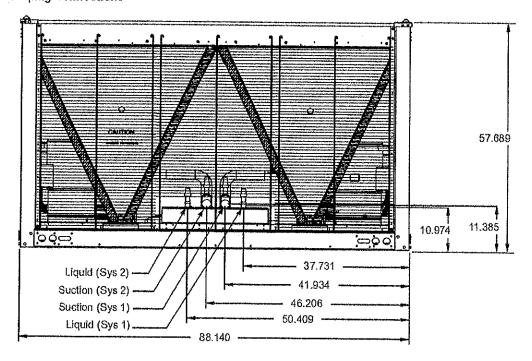
YD480C00A2AAA2

Page: 5

Quantity: 1 Tag #: ACU-1

Piping and Connection

40 & 50 Ton Piping Connections



Piping And Electrical Connection Sizes (30/40/50T) (Inches)

Connection Entry	Size		
Suction Line Sys #1	1-5/8 OD		
Liquid Line Sys #1	7/8 OD		
Suction Line Sys #2	1-5/8 OD		
Liquid Line Sys #2	7/8 OD		
Power Wiring Knockout	SEE BELOW		
Control Wiring	7/8 HOLE		

Electrical Power Knockout Sizes (Inches)

Connection Entry	30-40-50T/230V	30-40-50T/460-575V
Power Wiring	2-1/2"	1-1/2"



Outdoor Split System York Split-System R-410A Outdoor

Project Name: University of Guam

YD480C00A2AAA2 Unit Model #:

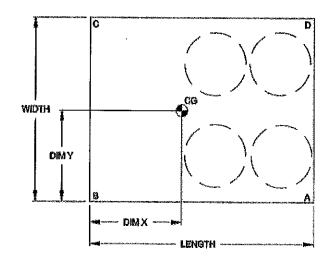
Page: 6

Quantity: 1 Tag #: ACU-1

Corner Weights & Center of Gravity

Corner Weights & Center Of Gravity (Inches)

Unit Model	Unit Wel	ght (Lbs.)	Unit Din	iensions hes)	А	В	c	O	Dim X		Weight A to B	Weight D to C
	Shipping	Operation	Length	Width	1						Alob	IJ-10-C
YD360	1875	1895	128.5	88.5	404	587	533	401	55.2	44.1	934	941
YD480	2315	2347	128.5	88.5	486	675	671	483	53.8	44.1	1154	1161
YD600	2345	2381	128.5	88.5	480	693	685	481	53,0	44.0	1166	1179



Outdoor Split System

York Split-System R-410A Outdoor

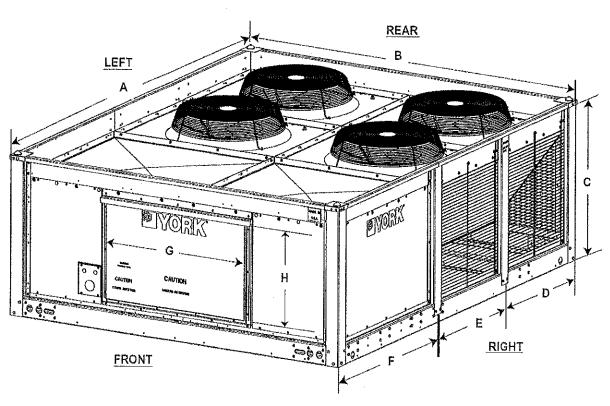
Project Name: University of Guam

Quantity: 1 Tag #: ACU-1

Unit Model #: YD480C00A2AAA2

Page: 7





YD Unit Dimensions

Unit Dimensions (Inches)

Model	A	8	С	D	E	F	Ğ	Н
YD360	128.5	88.5	37.5	41.8	40.0	46.1	37.1	23.6
YD480	128.5	88.5	57.7	41.8	40,0	46.1	37.1	23.6
YD600	128,5	88.5	57.7	41.8	40.0	46.1	37.1	23.6

Piping And Electrical Connections

Piping connections are made from the rear of the unit. Connections can be made directly to the suction and liquid line service valves.

Piping can be routed to the unit from the left or right side.

Electrical connections for power and control wiring is made from the front of all units, left of the electrical control box access. See piping sizes and electrical knockout details.

Unit Clearances

Location	Dimensions		
Overhead (Top) ¹	120°		
Front access panels	36*		
Left Side	30*		
Right Side	30*		
Rear	24°		
Bottom ²	O*		

Units must be installed outdoors. Overhanging structures or shrubs should not obstruct condenser air discharge.

Adequate snow clearance must be provided if winter operation is expected.



York Split-System R-410A Outdoor

Project Name: University of Guam

Unit Model #: YD4

YD480C00A2AAA2

Page: 8

Quantity: 1 Tag #: ACU-1

Sound Performance

Sound Performance

Outdoor Sound Power Levels (dB), 60 Hz

Model	Nominal	40(4)1	Octave Bands (Hz)							
11(043)	Tonnage	(ib(iv)	63	125	250	500	1000	2000	4000	8000
YD360	30	92	90	93	91	89	87	83	79	74
YD480	40	92	90	93	91	89	87	84	80	75
YD600	50	93	91	94	92	90	87	84	80	75

Rated in accordance with ARI 270 Standard.



Project Name: University of Guam

Outdoor Split System

York Split-System R-410A Outdoor

Tork opin dysion it with outdoor

Quantity: 1 Tag #: ACU-1

Unit Model #: YD480C00A2AAA2

Page: 9

Wiring Diagram

40 & 50 Ton Power and Control Wiring Connections

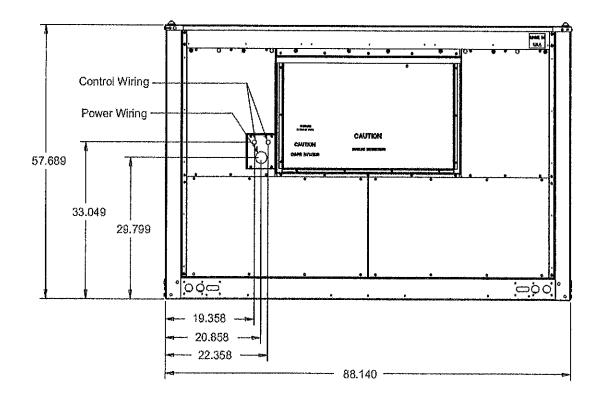


EXHIBIT 10-3



SUBMITTAL DATA

Order #:

Date:

03/15/2022

Project:

University of Guam

Project #:

Submitter:

Norberto Tiru

GUAM MICROTECH CORPORATION

#4 C&S Building,

Dededo, Guam 96929

671-989-0100

Date 03/15/2022 **Project Name** University of Guam **Project Number** Client / Purchaser



Submittal Summary Page

Qty	Tag #	Model # / Material #	Description
1	(ACCU-3)	(YD360C00A4GEB2)	(30 Ton, York Split System R-410A Air Conditioner, 4-Pipe, Four Stage Cooling, 460-3-60 • HACR Circuit Breaker/Disconnect (• Electrofin Copper Tube/Copper Fin Condenser Coil) • Smart Equipment Controller with Gateway to BACnet MS/TP (Programmable to Modbus or N2)

Equipment start-up and commissioning by a factory trained technician is recommended. Contact your supplying distributor or sales representative for additional information & guidance.





York Split-System R-410A Outdoor

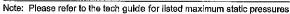
Project Name: University of Guam

Unit Model #: YD360C00A4GEB2

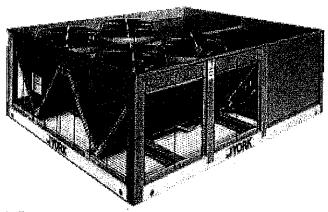
Quantity: 1 Tag #: ACCU-3

System: YD360C00A4GEB2

l	C	nolina	Performa	nce					
ı	The state of the s	CHOIM	ai ice	חקר מ	Martin				
ı	Total gross capacity			MBH)					
ı	Sensible gross capacity				266.3				
ı	Total net capacity				357.6				
Į	Sensible net capacity				248.9				
į	Efficiency (at ARI)				10.00				
Ī	Ambient DB temp.				95.0	°F			
l	Unit Leaving DB temp.				60.8				
l	Unit Leaving WB temp.				57.6				
ı	Leaving air temp dew p				55.60	°F			
l	Power input (w/o blowe	r)			30,39				
ı	Sound power				92	dB(A)			
ļ	Refrigerant								
	Refrigerant type			R-410A					
l		Electr	ical Data	1					
l	Power supply	-		460-3-60					
l	Unit min circuit ampacit	y			63.5	Amps			
l	Unit max over-current p	rotection	1			Amps			
l	Di	mensic	ns & We	lght		•			
l	Hgt 38 in. L	Wth	89	in.					
l	Weight with factory insta		1875	lbs.					
		Clea	arances			•			
l	Right 30 in. F	ront	36 in.	Rear	24	1 in.			
١	Тор 120 in. В	ottom	0 in.	Left		in.			







30 Ton

 York units are Manufactured at an ISO 9001 Registered Facility and each Rooftop is Completely Computer-run Tested Prior to Shipment.

Unit Features

- · Four Stage Cooling
- Unit Cabinet Constructed of Powder Painted Steel, Certified At 750 HoursSalt Spray Test (ASTM B-117 Standards)
- Full Perimeter Base rails with Built in Rigging Capabilities
- Dual Circuit 4 Stage Cooling with Scroll Compressor
- Solid Core Liquid Line Filter Driers
- (Electrofin Copper Tube/Copper Fin Condenser Coil)
- Sweat Connection Fittings
- Single Point Power Connection
- Phase Monitor
- · Condenser Coil Guards Standard
- Short Circuit Current: 5kA RMS Symmetrical

Standard Unit Controller: Smart Equipment Control Board

- An Integrated Low-Ambient Control, Anti-short Cycle Protection, Lead-Lag, Fan on and Fan off Delays, Low Voltage Protection, On-board Diagnostic and Fault Code Display
- Safety Monitoring Monitors the High and Low-Pressure Switches. The Unit Control Board will Alarm on Compressor Lockouts and Repeated Limit Switch Trips

BAS Controller

 Smart Equipment Controller with Gateway to BACnet MS/TP (Programmable to Modbus or N2)

Warranty

- · One (1) Year Limited Warranty on the Complete Unit
- · One (1) Year Warranty Compressors
- Three (3) Year Warranty ElectroFin Condenser Coil



York Split-System R-410A Outdoor

Project Name: University of Guam

Quantity: 1 Tag #: ACCU-3

Unit Model #: YD360C00A4GEB2

System: YD360C00A4GEB2

Page: 4

Additional Electrical Data						
Power supply	460-3-60					
Unit min circuit ampacity	63.5 Amps					
Unit max over-current protection	70 Amps					
Min Voltage	432 V ´					
Max Voltage	504 V					
Comp #1 RLA	12.2					
Comp #1 LRA	100					
Comp #2 RLA	12,2					
Comp #2 LRA	100					
Comp #3 RLA	12.2					
Comp #3 LRA	100					
Comp #4 RLA	12.2					
Comp #4 LRA	100					
Outdoor Mtr Qty	4					
Outdoor Fan Voltage	460-3-60					
OD Fan Mtr FLA (ea.)	2,9					



York Split-System R-410A Outdoor

Project Name: University of Guam

Unit Model #: YD360C00A4GEB2

Quantity: 1 Tag #: ACCU-3

System: YD360C00A4GEB2

Page: 5

Factory Installed Options

YD360C00A4GEB2

Equipment Options	Option(s) Selected
Product Category:	Y York Split System R-410A Air Conditioner
Product Identifier:	The second secon
Nominal Cooling Capacity:	360 30 Ton
Airflow:	A
Voltage:	4 460-3-60
Installation Options:	G HACR Circuit Breaker/Disconnect
Additional Options:	EB (Electrofin Copper Tube/Copper Fin Condenser Coil) Smart Equipment Controller with Gateway to BACnet MS/TP (Programmable to Modbus or N2)
Product Generation:	2

York Split-System R-410A Outdoor

Project Name: University of Guam

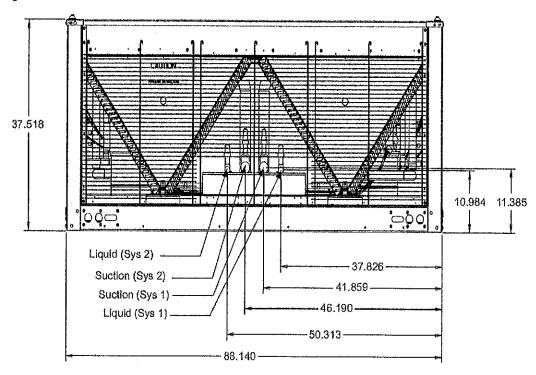
Quantity: 1 Tag #: ACCU-3

Unit Model #: YD360C00A4GEB2

Page: 6

Piping and Connection

30 Ton Piping Connections



Piping And Electrical Connection Sizes (30/40/50T) (Inches)

Connection Entry	Size		
Suction Line Sys #1	1-5/8 OD		
Liquid Line Sys #1	7/8 OD		
Suction Line Sys #2	1-5/8 OD		
Liquid Line Sys #2	7/8 OD		
Power Wiring Knockout	SEE BELOW		
Control Wiring	7/8 HOLE		

Electrical Power Knockout Sizes (Inches)

Connection Entry	30-40-50T/230V	30-40-50T/460-575V
Power Wiring	2-1/2"	1-1/2"

York Split-System R-410A Outdoor

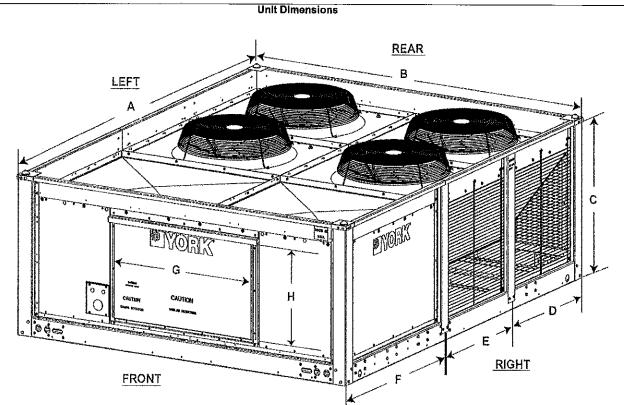
Project Name: University of Guam

Unit Model #:

YD360C00A4GEB2

Page: 8

Quantity: 1 Tag #: ACCU-3



YD Unit Dimensions

Unit Dimensions (Inches)

Model	A	В	C	D	E	F	G	H
YD360	128,5	88,5	37.5	41.8	40.0	46.1	37.1	23.6
YD480	128,5	88.5	57.7	41.8	40.0	46.1	37.1	23.6
YD600	128,5	88.5	57.7	41.8	40.0	46.1	37.1	23.6

Piping And Electrical Connections

Piping connections are made from the rear of the unit. Connections can be made directly to the suction and liquid line service valves.

Piping can be routed to the unit from the left or right side.

Electrical connections for power and control wiring is made from the front of all units, left of the electrical control box access. See piping sizes and electrical knockout details.

Unit Clearances

Location	Dimensions
Overhead (Top) ¹	120°
Front access panels	36"
Left Side	30"
Right Sids	30"
Rear	24"
Bottom ²	0,3

Units must be installed outdoors. Overhanging structures or shrubs should not obstruct condenser air discharge.

Adequate snow clearance must be provided if winter operation is expected.

EXHIBIT 10-4



SUBMITTAL DATA

Order #:

Date:

09/25/2019

Project:

UOG

Project #:

Submitter:

Norberto Tiru

GUAM MICROTECH CORPORATION

#4 C&S Building,

Dededo, Guam 96929

671-989-0100

Date 09/25/2019 **Project Name** UOG **Project Number** Client / Purchaser



Submittal Summary Page

Qty	Tag #	Model #	Description
(ACCI	J-2	YC240C00A4ATA4	(20 Ton, York Predator Split System R-410A Air Conditioner, 2-Pipe)
			R-410A, Two Stage Cooling, Standard Motor, 460-3-60, Smart Equipment Controller
			Technicoat Copper Tube/Copper Fin Condenser Coll
1			
	ing de de Sea Constant		
1			마음이 계속 있으셨다. 항공한 10년 2015년 1일 등에 대한 전환 기계를 받는 것이 되었다. 전 경험을 받는 것은 경험을 받는 것은 함께 보는 사람들 -

Equipment start-up and commissioning by a factory trained technician is recommended. Contact your supplying distributor or sales representative for additional information & guidance.



Predator OD Split System

York Split-System R-410A Outdoor

Quantity: 1 Tag #: ACCU-2

Project Name: UOG

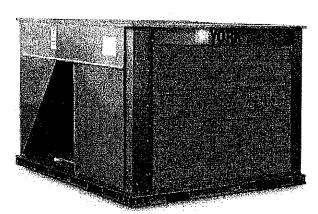
Unit Model #: YC240C00A4ATA4

Page: 8

YC240C00A4ATA4,NL240C00E4DAA2 System:

C	ooling Perf	orman	ce					
Total gross capacity Sensible gross capacity Total net capacity Sensible net capacity Efficiency (at ARI) Integrated eff. (at ARI) Ambient DB temp. Power input (w/o blower		242.0 MBH 174.0 MBH 231.5 MBH 163.5 MBH 11.00 EER 13.00 IEER 95.0 °F 17.90 kW						
Sound power				93	dB(A)			
Refrigerant								
Refrigerant type			R-410A					
	Electrical Data							
Unit min circuit ampacity	Power supply Unit min circuit ampacity Unit max over-current protection							
	mensions &	. Weig	ht	60	Amps			
Hgt 50 in. L Weight with factory insta	9 in.	Wth	64 945					
	Clearan	ces			**********			
Top 120 in. B	ottom (in. in.	Rear Left	30	in.			
Note: Please refer to the te	ech guide for lis	ted maxi	mum static	pressu	ires			





20 Ton

 YORK Predator Split System Units are Manufactured at an ISO 9001 Registered Facility.

Unit Features

- Two Stage Cooling
- Unit Cabinet Constructed of Powder Painted Steel, Certified At 750 Hours Salt Spray Test (ASTM B-117 Standards)
- Full Perimeter Base Rails with Built in Rigging Capabilities
- Scroll Compressors with Crankcase Heater
- Single Refrigeration Circuit (2 Pipe)
- Liquid Line Driers (Supplied for Field Installation)
- (•) (Technicoat Copper Tube/Copper Fins Condenser Coll)
- Back Seating Suction and Liquid Line Service Valves
- Inherently Protected Fan Motors
- Low Ambient to 40°F
- Side or Bottom Single Point Power Connections
- Short Circuit Current: 5kA RMS Symmetrical

Standard Unit Controller: Smart Equipment Control Board

- Anti-Short Cycle Protection, Lead-Lag, Low Voltage Protection, On-Board Diagnostic and Fault Code Display
- Safety Monitoring Monitors the High and Low-Pressure Switches. The Unit Control Board will Alarm on Compressor Lockouts and Repeated Limit Switch Trips.

BAS Controller

· Smart Equipment Controller

Warranty

One (1) Year Limited Warranty on All Other Parts

Predator OD Split System

York Split-System R-410A Outdoor

Unit Model #: YC240C00A4ATA4

Quantity: 1 Tag #: ACCU-2

Project Name: UOG

System: YC240C00A4ATA4,NL240C00E4DAA2

Page: 9

Factory Installed Options

YC240C00A4ATA4

Equipment Options	Option(s) Selected
Product Category:	Y York Predator Split System R-410A Air Conditioner
Product Identifier:	C 2-Pipe R-410A
Nominal Cooling Capacity:	240 2011610
Heat Type and Nominal Heat Capacity:	C00
Airflow:	A Standard Motor
Voltage:	4 460-3-60
Installation Options:	A
Additional Options:	TA (Technicoat Copper Tube/Copper Fins Condenser Coil) Smart Equipment Controller
Product Generation;	4

Field Installed Accessories

- O 1CG0404 Coil Guard (13.0 ibs)
- O 1HG0429 Hail Guard (37.0 lbs)
- O 2HG04700624 Hot Gas Bypass Kit; Includes discharge bypass valve and Copper pipe fittings for field installation. Used to modulate capacity at low load conditions. (5.0 lbs)
- O 2LA04702024 Low Ambient To 0° F (3.2 lbs)
- O 2PM04700124 Phase Monitor Kit Includes Control and associated wiring. This accessory provides protection against phase reversal, loss or unbalance. (13.0 lbs)
- O S1-MP-PRTKIT-0P MAP
 (Multiple Access Portal) Gateway
 Kit- Replacement MAP gateway
 protective case, lanyard and
 communication cable. Use only to
 replace worn or damaged
 components. (0.3 lbs)
- O S1-NSB8BHN041-0 Wall Temperature and 3% Relative Humidity Combined Sensor, No Display, WHITE, NO JCI LOGO, NS8000 Series (0.4 lbs)
- O S1-NSB8BHN043-0 Wall Temperature and 3% Relative Humidity Combined Sensor, No Display, BLACK, NO JCI LOGO, NS8000 Series (0.4 lbs)

- O S1-NSB8BHN141-0 Wall Temperature and 3% Relative Humidity Combined Sensor, Warmer/Cooler Display, WHITE, NO JCI LOGO, NS8000 Series (0.4 lbs)
- O S1-NSB8BHN143-0 Wall Temperature and 3% Relative Humidity Combined Sensor, Warmer/Cooler Display, BLACK, NO JCI LOGO, NS8000 Series (0.4 lbs)
- O S1-NSB8BHN240-0 Wall Temperature and 3% Relative Humidity Combined Sensor, Full Display, WHITE, JCI LOGO, NS8000 Series (0.4 lbs)
- O S1-NSB8BHN241-0 Wall Temperature and 3% Relative Humidity Combined Sensor, Full Display, WHITE, NO JCI LOGO, NS8000 Series (0.4 lbs)
- O S1-NSB8BHN243-0 Wall Temperature and 3% Relative Humidity Combined Sensor, Full Display, BLACK, NO JCI LOGO, NS8000 Series (0.4 lbs)
- O S1-NSB8BPN240-0 Wall Temperature and 2% Relative Humidity Combined Sensor, Full Display, WHITE, JCI LOGO, NS8000 Series (0.4 lbs)

- O S1-NSB8BPN241-0 Wall Temperature and 2% Relative Humidity Combined Sensor, Full Display, WHITE, NO JCI LOGO, NS8000 Series (0.4 lbs)
- O S1-NSB8BPN243-0 Wall Temperature and 2% Relative Humidity Combined Sensor, Full Display, BLACK, NO JCI LOGO, NS8000 Series (0.4 lbs)
- O S1-NSB8BTN041-0 Wall Temperature Sensor, No Display, WHITE, NO JCI LOGO, NS8000 Series (0.4 lbs)
- O S1-NSB8BTN043-0 Wall Temperature Sensor, No Display, BLACK, NO JCI LOGO, NS8000 Series (0.4 lbs)
- O S1-NSB8BTN141-0 Wall Temperature Sensor, Warmer/Cooler Display, WHITE, NO JCI LOGO, NS8000 Series (0.4 lbs)
- O S1-NSB8BTN143-0 Wall Temperature Sensor, Warmer/Cooler Display, BLACK, NO JCI LOGO, NS8000 Series (0.4 lbs)
- O S1-NSB8BTN240-0 Wall Temperature Sensor, Full Display, WHITE, JCI LOGO, NS8000 Series (0.4 lbs)



Predator OD Split System

York Split-System R-410A Outdoor

Unit Model #: YC240C00A4ATA4

Page: 12

Quantity: 1 Tag #: ACCU-2

Project Name: UOG

System: YC240C00A4ATA4,NL240C00E4DAA2

Consolidated Drawing TES:
FOR ONIDOOR USE ONLY
2. WINGERS SHOWN ABE FOR OPERATING, WITHOUT HALL SHARDS.
AND CHEMICALS TO BE
RIGHT SIDE: 30 (142)
LEST SIDE: 30 (142)
FRONT: 36 (914)
REAR: 24 (610)
FOR THE STREET STREET
FOR SHALES SPRICE
CONTACT JOHNSON CONTROLS APPLICATION ENGINEERING
CEPARTHEES
5. DIRESSIONS IN C. JARC IN MILLIMETERS OR
KILOGERING
KILOGERING
KILOGERING
KILOGERING
FOR SHALES
STREET
STREET
FOR SHALES
FOR SHALE 1152 [523] 30.8 [787,3] 300 [136] 32.1 (815,3) 275 11251 215 (424,7] 20 1126 [511] 31 2 1792.51 31 8 [807,1] 253 (115) 267 [121] 942 (427) 30 3 [769.5] 31 0 (787,41 261 (1181 | 734 (136) 215 [85] 236 [10]) 10 927 14213 32.7 [630,6] 31 8 1807,75 244 11111 255 11161 218 [99] 210 [95] 25 10 942 54271 30.3 (769,61 31.6 (787,43 20) [138] 234 [106] 47.44 [1205.6] AND STIMU LYIOT & LAING S LEFT SISTEN 2 -- DIRECTION OF AIRFLOW CENTER OF GRAVITY 1.825 [41,281 | 6.875 [22,23] 6.54 (166.2) 1 375 (34,931 0 625 (15,681 1.375 [34,93] | 0.625 [15,68] 1.375 134,931 0 625 (15.881 1 125 134,931 0 625 115.881 14.45 £367,0) TOP VIEW MAIL GUARD IFIELD INSTALLED. OPFIONAL) HAIL GUARD (FIELD INSTALLED, OPISOBAL) CONVENIENCE OUTLE 50.07 [12]1,1] 44 27 £1124,41 : 1.13 [231.8] (1.38 [268,9] 4.75 17.36 [440,9] DISCONNECT SWITCH COVER 20 62 £523.71 MAIL GUARD HOT SHOWN IN THIS VIEW 22 62 1574,51 3.91 [99.4] 64.00 [1625,6] 59.00 [1498,5] COIL GUARD NOT SHOWN IN THIS VIEW FLIGHT VIEW SUBSHITTAL DRG. OBTOOR SPLET, USI - PREDOD 40DF 500 B

Information is subject to change without notice. Check local codes.

Printed 09/25/2019

EXHIBIT 10-5



SUBMITTAL DATA

Order #:

Date:

03/15/2022

Project:

University of Guam

Project #:

Submitter:

Norberto Tiru

GUAM MICROTECH CORPORATION

#4 C&S Building,

Dededo, Guam 96929

671-989-0100

Date 03/15/2022 **Project Name** University of Guam **Project Number** Client / Purchaser



Submittal Summary Page

Qty Tag #	Model # / Material #	Description
1 ACCU-5	PC180C00A4QEE4	15 Ton, York Split System R-410A Heat Pump, 2-Pipe R-410A, Standard Motor, 460-3-60
		 Powered Convenience Outlet (110 VAC / 15 Amp)
		 HACR Circuit Breaker/Disconnect
		Phase Monitor
		Coil Guard
	•	Electrofin Condenser Coil
		 Electrofin Copper Tube/Copper Fin Condenser Coil
		 Smart Equipment Controller with Gateway to BACnet MS/TP (Programmable to Modbus or N2)

Equipment start-up and commissioning by a factory trained technician is recommended. Contact your supplying distributor or sales representative for additional information & guidance.



York Split-System R-410A Outdoor

Project Name: University of Guam

Unit Model #: PC180C00A4QEE4

Page: 62

Quantity: 1 Tag #: ACCU-5

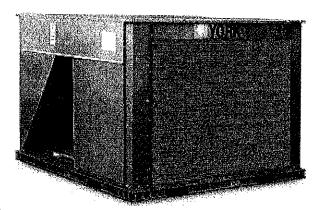
System: PC180C00A4QEE4,NL180C00D4CEJ2

No Performance Data Available

Run Performance to view metrics







(15 Ton)

 YORK Split System Units are Manufactured at an ISO 9001 Registered Facility.

Unit Features

- Unit Cablnet Constructed of Powder Painted Steel, Certified At 750 Hours Salt Spray Test (ASTM B-117 Standards)
- Full Perimeter Base Rails with Built in Rigging Capabilities
- Scroll Compressors with Crankcase Heater
- Single Refrigeration Circuit (2 Pipe)
- Liquid Line Driers (Supplied for Field Installation)
- · Suction Line Accumulator
- (Electrofin Copper Tube/Copper Fin Condenser Coil)
- Back Seating Suction and Liquid Line Service Valves
- · Inherently Protected Fan Motors
- Side or Bottom Single Point Power Connections
- Disconnect Switch
- Powered Convenience Outlet (110 VAC / 15 Amp)
- Phase Monitor
- Coil Guard
- · Short Circuit Current: 5kA RMS Symmetrical

Standard Unit Controller: Smart Equipment Control Board

- Anti-Short Cycle Protection, Lead-Lag, Low Voltage Protection, On-Board Diagnostic and Fault Code Display
- Safety Monitoring Monitors the High and Low-Pressure Switches. The Unit Control Board will Alarm on Compressor Lockouts and Repeated Limit Switch Trips.

BAS Controller

 Smart Equipment Controller with Gateway to BACnet MS/TP (Programmable to Modbus or N2)

Warranty

- One (1) Year Limited Warranty on All Other Parts
- Three (3) Year Warranty ElectroFin Condenser Coil



Project Name: University of Guam

Outdoor Split System

York Split-System R-410A Outdoor

Quantity: 1 Tag #: ACCU-5

Unit Model #: PC180C00A4QEE4

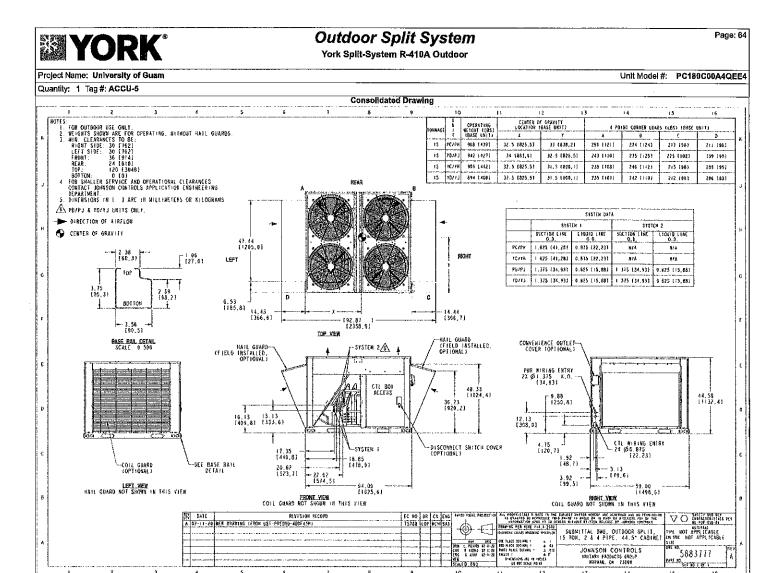
Page: 63

System: PC180C00A4QEE4,NL180C00D4CEJ2

Factory Installed Options

PC180C00A4QEE4

Equipment Options	Option(s) Selected				
Product Category: Product Identifier:					
Nominal Cooling Capacity: Heat Type and Nominal Heat Capacity:	<u> ^ ^ _ ^ ^ ^ _ </u>				
Airflow: Voltage: installation Options:	4 460-3-60				
Additional Options:	Phase Monitor Coil Guard Floatesin Condenses Call				
Product Generation:	4				



Information is subject to change without notice. Check local codes.

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Outdoor Split System York Split-System R-410A Outdoor

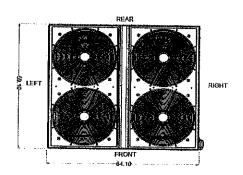
Project Name: University of Guam

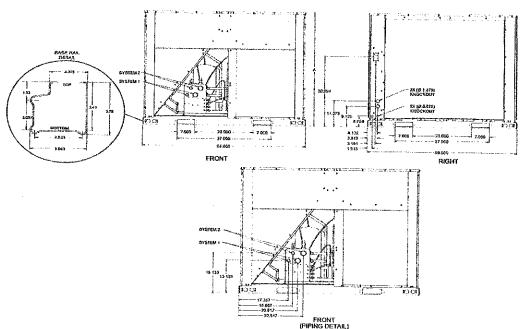
Quantity: 1 Tag #: ACCU-5

Unit Model #: PC180C00A4QEE4

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Piping & Connection





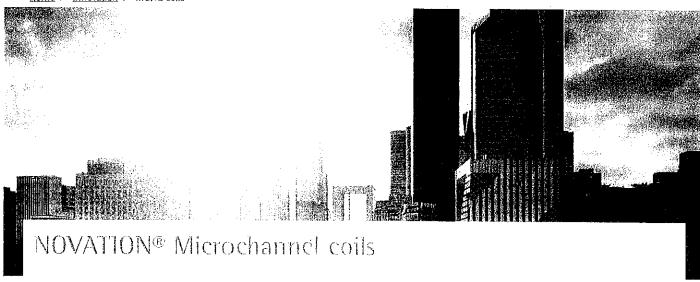
Unit Dimensions PC/PD180, PC/PD240, YC/YD180, YC/YD240

Piping And Electrical Connection Sizes (Inches)

Model	PC090	PE090	PC120	YC090	YE090	YC120	YD120	YC150	YD150
No. refrigeration circuits	1	. 1	1	1	1	1	,	4	2
Suction line OD (in.)	1 1/8	1 1/8	1 3/8	1 1/8	1.1/8	1 3/8	1 1/8	1 3/8	1 1/8
Liquid line OD (in.)	5/8	5/8	7/8	5/8	5/8	7/8	5/B	7/8	5/8
Power wiring knockout	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8
Control wiring knockout	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8

Model	PC180	PD180	PD240	YC180	YD180	YC240	YD240	YC300
No. refrigeration circuits		2	2	1	7	1	7	10000
Suction line OD (in.)	1 578	1 3/8	1 3/8	1 578	1 1/8	1 5/8	1 378	1 578
Liquid line OD (in.)	7/8	5/8	5/8	7/8	5/8	7/8	5/8	7/8
Power wiring knockout	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8
Control wiring knockout	7/8	7/8	7/8	7/8	7/8	7/8	7/8	7/8

EXHIBIT 11



The ultimate heat exchanger technology.



In 2006, Carrier was the first to introduce microchannel (MCHE) technology in the Commercial Air Conditioning industry. MCHE heat exchangers are entirely made of aluminum. Since 2011, a new generation of microchannel is available: NOVATION® microchannel.

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- · Superior mechanical resistance
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- · Proven technology
- · Ease of cleaning

Environmental

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- Thinner to reduce air pressure losses by 50% and fan energy consumption
- · Reduced fouling maintaining unit performance over the time



EXHIBIT 12



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Aluminum Condensing Coils Vs. Copper Condensing Coils: Advise From Phoenix AC Installation Pros

vVritten by Rm Harrington on . Posted in AC Installation, AC Repair, AC Service, Cooling Tips, Maintenance.

For the Phoenix AC installation industry, the debate concerning aluminum condensing coils versus copper condensing coils could be termed "economic focused." For the Mesa homeowner, the Scottsdale business owner or any other buyer in need of new air conditioning equipment, the debate hinges on how to get the best quality for the least expenditure.

A Note of Qualification For Arizona Air Conditioning Contractors

If you are a Phoenix air conditioning service center, don't let the "economics" comment ruffle your feathers. This article comes in via the viewpoint of a buyer. Industry arguments about copper versus aluminum involve many aspects of technology. From the viewpoint of an Arizona AC contractor, economics is only one component of the debate. However, from the viewpoint of the buyer, all contractors have a primarily sales-orientated end goal.

That comes about due to the competition in the HVAC industry. The pricing, the product favoritism and the value-added sales incentives merely reflect the mindset of new and used car dealers.

. Dedicated To Meet The Needs of Inquiring Valley Metro Homeowners

This article is for the benefit of homeowners and business owners throughout the greater Phoenix, Arizona metropolitan area. As such, the text presents both sides of the argument: Which works best, air conditioning with aluminum condensing coils or air conditioning with copper condensing coils.

Leven the information presented via governmental and educational resources tend to be tinted by manufacturer economics. Everyone wants to claim the better heating and cooling solution. It's just a matter of how to gain marketing share.

Here at <u>American Cooling and Heating</u> we carry all major brands of heating and cooling equipment, including Amana, Carrier and Trane. We handle units that are crafted with copper condensing coils and units manufactured with aluminum condensing coils. Economics may indeed be our purpose for being in business. Without profit, we would fade away.

However, AC&H strives to meet any customer need or demand. Perhaps the following information will help simplify your choice.

Aluminum Condenser Coils - The Beginning

It began in the 1970s when General Electric was still in the HVAC business. All other AC manufacturers provided condensing units with aluminum fins bonded to copper tube. GE wanted reduce production expenses. This brought about the introduction of coils with aluminum tube and aluminum fins.

For the most part, this was an industrial solution. Prior to 1980, only around 20% of residential structures had installed air conditioning. AC unit components and AC installation expenses rendered air conditioning as a luxury item. Very few homeowners could afford central heating and cooling.

Then the market shifted. Construction boomed. Inflation invaded. Home values increased and the market for home air conditioning bloomed into a lucrative enterprise.

The use of aluminum coils provided GE with a competitive edge. In no long time, other AC manufacturers began to produce their own version of compatible aluminum coil solutions. GE no longer competes in the HVAC business, but the aluminum tube with aluminum fin condensing coil remains a stable market product.

Drawbacks of Using Aluminum AC Coils

The arguments in this matter fall on both sides of the street. Some of the reasoning can be demonstrated scientifically. Some of the reasoning is merely personal dealer favoritism. From a scientific viewpoint, the following statements are true – providing that all tubing measurements are

identical between the components:

- Copper is superior in strength to aluminum
- Copper is more reliable than aluminum
- Copper is more durable than aluminum
- Copper is easier to maintain than aluminum
- Copper provides better heat transfer characteristics than aluminum
- Aluminum coils damage easier than copper coils
- Aluminum coils are more difficult to clean than copper coils.

However, due to the expense of manufacture and an effort to keep up with the reduced unit pricing associated with units that use aluminum tube coils, the manufacturers of copper-based coil systems have resorted to downsizing the thickness of the copper tubing wall. Thus strength, reliability and durability are relative to the actual components used during the air conditioning construction stage.

Field Maintenance is also often listed as another drawback associated with aluminum tube condensing coils. Some <u>Phoenix AC repair</u> companies complain that leaks in aluminum tubes are more difficult to fix than leaks in copper tubes. The argument contends that aluminum coils cannot be repaired in the field. To the homeowner, this means more downtime. To the AC service center, his means additional expenses when dealing with warranty issues.

Unfortunately, the DOE does not provide statistics pertaining to leaky air conditioning coils – aluminum or copper. The rule is simple: If your unit is low on refrigerant, have trained AC technicians repair the leak, test the repair and then recharge the unit to manufacturer recommendations.

Galvanic Action describes leaks that occur when oxygen reaches the condensing coil at the point where the aluminum meets the copper in the condensing unit. The problem is often considered not repairable. Qualifier: More and more AC repair centers now carry welding rigs capable of welding aluminum. Over the years, the aluminum coil repair process has improved and will likely continue to improve in the future.

Drawbacks of Using Copper AC Condensing Coils

In the earlier years of aluminum condensing coils, Arizona AC contractors tended to favor copper the with fin coils. However, a change over may be taking place. No matter what other arguments are in place, unit cost remains a primary factor in any AC purchase decision. For example:

• Aluminum coils cost less to manufacture than copper coils

- Due to pliability, copper coils require more material than aluminum coils (even as much as three times the material); this results in higher manufacturing expenses
- · Galvanic corrosion is common problem with all copper tubing
- To remain price competitive, new units are shipping with substandard quality coils
- The thinner the copper, the more difficult it is to repair the coil.

Copper is harder to damage than aluminum, provides better heat transfer and is easier to clean. Modern engineering eliminates the majority of galvanic corrosion. The prices of the units continue to remain considerably higher than AC equipment constructed with aluminum condensing coils. Homeowners question the value of the exchange.

Conclusion

Without collected statistics, fears of leakage and early system failure are difficult to substantiate. All-aluminum coils are more fragile than copper tube coils but manufacturers take care of this issue by protecting the units inside a heavy-duty cabinet. This, of course, results in a system that is harder to clean and maintain.

When area consumers call for AC services and semi-annual system tune-ups, they get often get ripped by vendors who provide a less than necessary clean and inspection process. Most Phoenix C installation and repair centers do not properly clean the coils.

American Cooling and Heating goes the extra mile. Our <u>Full System AC Maintenance Service</u> includes opening the case, applying special cleaning fluids to the coils and many other value-added AC tune-up functions. If your system is leaking, contact us today. If you need to install new air conditioning in your home, we service Mesa, Gilbert, Scottsdale and most all other Phoenix area homes and businesses.

A/C Installation, A/C Repair, aluminum condensing coils, copper condensing coils, Phoenix

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