

SCOPE OF WORK

PROJECT: 603-18-601

Provide Emergency Power to
Telecommunication Rooms

Robley Rex VAMC

Louisville, KY

April 2019

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Summary

This project will provide design services for the the upgrading of the electrical service to the closets from 120V normal power to 208V emergency power to accommodate the Cisco Systems Catalyst 4500 Series Switches operating at their maximum power configuration. The affected closets are:

1. Building 1, Room D-002b
2. Building 1, Room B-016a.
3. Building 1, Room D-102
4. Building 1, Room C-132c
5. Buildign 1, Room B-237
6. Building 1, Room C-219
7. Building 1, Room B-328
8. Building 1 Room C-306e (Deduct Alternate #3)
9. Building 1, Room B-435a (Deduct Altnerate #1)
10. Building 1, Room A-933
11. Building 3/4, Room 3201 (Deduct Alternate #2)
12. Building 5, Room 5104
13. Building 6, Room 6101
14. Building 8, Room 8101 (Boiler Room)
15. Building 12, Room 12002

Most of the closets are interior rooms without an adjacent exterior building wall. The size of the cooling units will take into consideration the heat loads of the new Cisco Systems Catalyst 4500 Series Switches.

Architectural Design Elements

Statement of Work

We will be adding a ceiling to Building 1, Room B-435a.

We will be adding walls to deck in Building 3/4, Room 3201.

Fire Protection Design Elements

Statement of Work

No work anticipated. The existing Fire Protection devices will remain.

Plumbing Design Elements

Statement of Work

Install insulated condensate drains from the new units to the existing sanitary drains.

Mechanical Design Elements

Design Parameters & Reference Data

1. HVAC Design Manual for New, Replacement, Addition, and Renovation of Existing VA Facilities 2011
2. ASHRAE 62.1-2016, Ventilation for Acceptable Indoor Air Quality
3. ASHRAE 90.1 IP-2016, Energy Efficient Design of New Low-Rise Residential Buildings
4. ASHRAE Standard 170 -2017 (Ventilation for Health Care Facilities)
5. ASHRAE Handbooks, 2017 Fundamentals, 2015 HVAC Applications, 2016 HVAC Systems and Equipment
6. ASME B31.9-2017, Building Services Piping
7. NFPA 90A-2018, Standard for the Installation of Air Conditioning and Ventilating Systems
8. SMACNA HVAC Duct Construction Standards, Metal and Flexible-2009
9. SMACNA, HVAC Air Duct Leakage Test Manual-2012
10. International Mechanical Code 2018
11. International Building Code 2018

Statement of Work

Some of the existing IT closets do not have an existing cooling coil unit.

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Bid Documents Narrative
December 19, 2018

A split system with a wall mounted indoor unit and a dedicated outdoor unit is anticipated for each IT room. The split system is comprised of individual wall-mounted fan coil units with DX coils and fans located in each IT Closet. Refrigerant piping connects indoor units to an Outdoor Condensing unit. Wall or ceiling mounted indoor fan coil unit will be located in the closet where space allows. Some IT closets are too small or crowded for a cooling unit inside the room and may need an indoor unit installed outside the room. Each IT closet will have its own indoor unit and thermostat.

The outdoor condensing unit will be located on the nearest roof or on grade where space is available and in proximity to the the indoor unit. Manufacturer's proprietary controls are used between the indoor fan coils and outdoor condensing unit with BACnet connection to monitor the system through the existing hospital controls system.

Building 1, Room A-933 indoor VRF fan coil unit will be connected to the existing refrigerant riser installed in the 603-16-701 Louisville Replace TIP Units Project.

Electrical Design Elements

Design Parameters & Reference Data

1. National Electrical Code (NEC), 2017 Edition
2. International Building Code, 2018 Edition
3. International Fire Code, 2018 Edition
4. NFPA 99, 2018 Edition
5. NFPA 101, Life Safety Code 2018 Edition
6. NFPA 72, National Fire Code, 2016 Edition
7. Department of Veterans Affairs—Electrical Design Manual

Statement of Work

The scope includes the design of an upgrade to the electrical service to the closets from 120V normal power to 208V emergency power for the new Cisco Systems Catalyst 4500 Series switches operating at maximum power configuration. Cooling systems for the affected closets will also be revised, and electrical circuits for the revised cooling system will be included.

The proposed scenario for serving the TIP units and closets is to circuit power from existing panels which were added in prior construction, and add additional panels if those are needed.

The sizing of conductors will be considered to limit the voltage drop for feeders to 2% or less,

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and to limit the voltage drop for branch circuits to 3% or less to ensure compliance with ASHRAE 90.1 IP. All feeders and branch circuit conductors will be copper.

The existing emergency power system was evaluated to determine if adequate capacity exists to serve the increased load on the emergency system, as well as surveying a proposed point of distribution for this power, and a routing for the electrical pathways to serve the new panelboards.

The existing TIP closets do not have adequate space and clearance to install additional electrical panels within the existing closets themselves, so during the survey additional available space will be identified within the building.

Emergency power is to be provided via a 30A 208V twist lock receptacle intended for a UPS in each TIP room, as well as Normal power distributed via two (2) 208V 20A twist lock receptacles for the normal power feed to the new switches. The normal feeder power will be distributed from an existing normal panelboard located in the basement electrical room of Building 1.

Where TIP rooms are located in buildings other than Building 1, power will be served from adjacent panels which exist in the buildings being served.

One UPS will be provided and turned over to the VA OIT, for each TIP room, with the following characteristics: NEMA L6-30P input; 8 NEMA 5-15/20R, 2 L6-20R & 1 L6-30R outlets, Rackmounted, 5kVA / 5000VA line interactive UPS; Sine wave output, 208 & 120V output during brownouts to 167 and overvoltages to 260V, 3750W. The delivery of the UPS will be coordinated with the COR and the OIT.

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Appendix A Cut Sheets



Submittal Data Sheet

12 Ton, 230V VRV IV HP

RXYQ144TATJU

FEATURES

- Larger capacity single modules ranging up to 14 tons and systems up to 34 tons allow for a more flexible system design
- Variable Refrigerant Temperature (VRT) control allows the VRV IV to deliver up to 28% of improvement in seasonal cooling efficiency compared to previous Daikin VRV heat pump systems
- Modular and lightweight enables flexibility in system layout and installation with larger capacity single modules reducing electrical, piping connections
- System wide auto-climate adjustment technology to increase the energy efficiency
- Improved efficiency with IEER values now up to 28
- The rated seasonal cooling efficiency has been improved by an average of 11%
- All inverter compressors to increase the efficiency and avoid starting current inrush
- Same product structure for 230V and 460V simplifies ordering
- New configurator software designed to simplify the commissioning and maintenance of the system
- Factory standard coil guards
- Assembled in the US to increase flexibility and reduce lead times
- Standard Limited Warranty: 10-year limited parts warranty



BENEFITS

- Can operate up to 25 indoor units on a single piping network
- Modular and lightweight - enables flexibility in system layout and installation
- Refrigerant cooled inverted technology to avoid influence from ambient temperatures
- Integrated inverter technology deliver maximum efficiency during part load conditions and provide precise individual zone control
- Heat exchanger coil wraps around on all 4 sides of the unit to increase the surface area and efficiency
- 3 row 7mm heat exchanger coil improves efficiency
- Corrosion resistance 1000hr salt spray tested Daikin PE blue fin heat exchanger
- Design flexibility with long piping lengths up to 3,280 ft. total and 100 ft. vertical separation between indoor units
- Designed with reduced MOP to optimize installation cost
- Digital display on the unit for improved and faster configuration, commissioning, and trouble shooting



VRV IV





Submittal Data Sheet

12 Ton, 230V VRV IV HP

RXYQ144TATJU

PERFORMANCE

Outdoor Unit Model No.	RXYQ144TATJU	Outdoor Unit Name:	12 Ton, 230V VRV IV HP
Type:	Heat Pump	Unit Combination:	
Rated Cooling Conditions:	Indoor (°F DB/WB): 80 / 67 Ambient (°F DB/WB): 95 / 75	Rated Heating Conditions:	Indoor (°F DB/WB): 70 / 60 Ambient (°F DB/WB): 40 / 43
Rated Piping Length(ft):			
Rated Height Difference (ft):			
Rated Cooling Capacity (Btu/hr):	138,000	Rated Heating Capacity (Btu/hr):	154,000
Nom Cooling Capacity (Btu/hr):	144,000	Nom Heating Capacity (Btu/hr):	162,000
Cooling Input Power (kW):	11.80	Heating Input Power (kW):	11.10
EER (Non-Ducted/Ducted):	12.30 / 11.50	Heating COP (Non-Ducted/Ducted):	3.7 / 3.3
IEER (Non-Ducted/Ducted):	24.80 / 22.60	Heating COP 17F (Non-Ducted/Ducted):	2.3 / 2.2

OUTDOOR UNIT DETAILS

Power Supply (V/Hz/Ph):	208-230 / 60 / 3	Compressor Stage:	Inverter
Power Supply Connections:	L1, L2, L3 Ground	Capacity Control Range (%):	11 - 100
Min. Circuit Amps MCA (A):	55.1	Capacity Index Limit:	72.0 - 187.0
Max Overcurrent Protection (MOP) (A):	60	Airflow Rate (H) (CFM):	8228
Max Starting Current MSC(A):		Gas Pipe Connection (inch):	1-1/8
Rated Load Amps RLA(A):	16.7+16.7	Liquid Pipe Connection (inch):	1/2
Dimensions (Height) (in):	66-11/16	H/L Pressure Connection (inch)	
Dimensions (Width) (in):	48-7/8	H/L Equalizing Connection (inch)	
Dimensions (Depth) (in):	30-3/16	Sound Pressure (H) (dBA):	64
Net Weight (lb):	695	Sound Power Level (dBA):	86
		Max. No. of Indoor Units:	25

Submittal Data Sheet

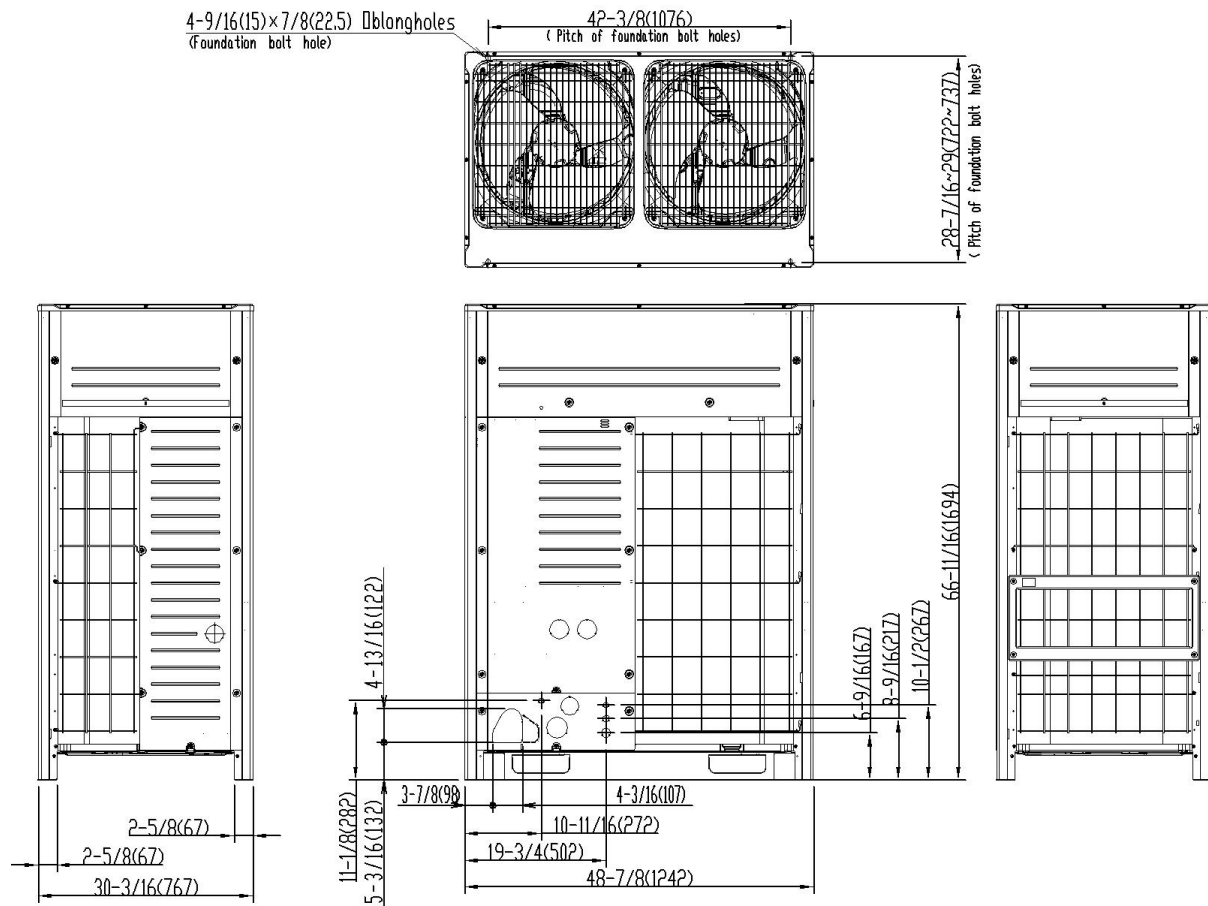
12 Ton, 230V VRV IV HP

RXYQ144TATJU

SYSTEM DETAILS

Refrigerant Type:	R-410A	Cooling Operation Range (°F DB):	23 - 122
Holding Refrigerant Charge (lbs):	18.1	Heating Operation Range (°F WB):	-4 - 60
Additional Charge (lb/ft):		Max. Pipe Length (Vertical) (ft):	295
Pre-charge Piping (Length) (ft):		Cooling Range w/Baffle (°F DB):	-
Max. Pipe Length (Total) (ft):	540	Heating Range w/Baffle (°F WB):	-
Max Height Separation (Ind to Ind ft):			

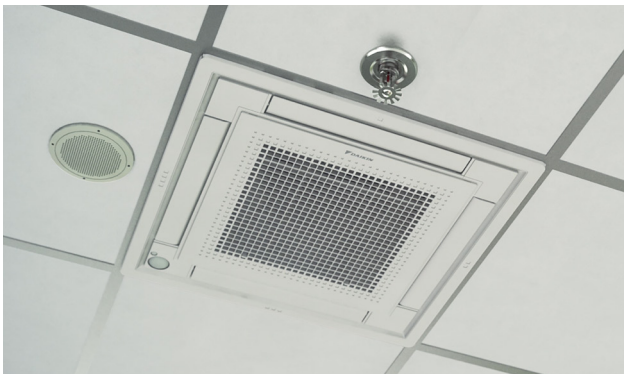
DIMENSIONAL DRAWING



Project 17-275 Louisville TIP2
1-AC-B435
1-AC-C132
1-AC-C306
1-AC-C219

Design and genius in one.

Aesthetically designed to integrate seamlessly with suspended ceilings.



Designer Comfort

VISTA is a remarkable blend of iconic design and engineering excellence with an elegant white or a silver and white finish. Fitting within the ceiling grid and discreetly mounted to the ceiling itself, VISTA is stylish, low profile, and compact. High efficiency and comfort is delivered through the combined use of floor and presence sensors (optional). It is also possible to close individual louvers via the wired remote control for personalized comfort.



Features

- » Seamless integration in standard architectural ceiling tiles, leaving only 5/16"!
- » High efficiencies with up to 20.9 SEER and up to 11.7 HSPF.
- » Reduced energy consumption thanks to specially developed small tube heat exchanger, DC fan motor, and two optional intelligent sensors.
- » Remarkable blend of iconic design and engineering excellence with an elegant finish in white, or a combination of silver and white.
- » No optional adapter needed for DIII-connection, link your unit into the wider building management system.
- » Fresh air integration possible.
- » 12-Year Parts Limited Warranty*



* Complete warranty details available from your local dealer or at www.daikincomfort.com. To receive the 12-Year Parts Limited Warranty, online registration must be completed within 60 days of installation. Online registration is not required in California or Quebec.

Model	Indoor Unit		FFQ09Q2VJU		FFQ12Q2VJU		FFQ15Q2VJU		FFQ18Q2VJU	
	Outdoor Unit		RX09RMVJU		RX12RMVJU		RX15RMVJU		RX18RMVJU	
			Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating
Capacity Rated (Min. ~ Max.)	Btu/h		9,100 (4,600 ~ 11,000)	10,000 (4,600 ~ 14,000)	10,800 (4,600 ~ 13,300)	13,500 (4,600 ~ 16,800)	14,400 (5,100 ~ 16,200)	16,200 (5,200 ~ 16,300)	17,400 (5,100 ~ 18,800)	21,600 (5,400 ~ 21,800)
Moisture Removal	gal/h		N/A	-	N/A	-	N/A	-	N/A	-
COP Rated			4.58		4.02		3.86		3.36	
EER Rated			13.0		12.5		12.5		12.5	
SEER			20.9		20.2		20.7		19.3	
HSPF			11.7		11.2		11.0		10.1	
Piping Connections	Liquid	in. (mm)	Ø 1/4 (Ø 6.4)							
	Gas		Ø 3/8 (Ø 9.5)						Ø 1/2 (Ø 12.7)	
	Drain		Ø1-1/32 (Ø 26.0)							
Max. Interunit Piping Length			65-5/8 (20)				98-7/16 (30)			
Max. Interunit Height Difference		ft. (m)	49-1/4 (15)				65-5/8 (20)			
Chargeless			32-13/16 (10)							
Amount of Additional Charge of Refrigerant	oz/ft (g/m)		0.21 (20)							
Operating Range - Cooling			50 ° - 115 °F							
Operating Range - Low-Ambient Cooling*	°F DB		14 ° - 115 °F							
Operating Range - Cooling with Optional Air Adjustment Grille*			4 ° - 115 °F							
Operating Range - Heating	°F WB		5 ° - 65 °							
Indoor Unit			FFQ09Q2VJU		FFQ12Q2VJU		FFQ15Q2VJU		FFQ18Q2VJU	
Airflow Rate	H	cfm (m³/min)	378 (10.7)	399 (11.3)	406 (11.5)	427 (12.1)	420 (11.9)	441 (12.5)	448 (12.7)	498 (14.1)
	M		339 (9.6)	357 (10.1)	353 (10.0)	371 (10.5)	367 (10.4)	385 (10.9)	378 (10.7)	420 (11.9)
	L		268 (7.6)	282 (8.0)	268 (7.6)	282 (8.0)	293 (8.3)	307 (8.7)	275 (7.8)	307 (8.7)
	SL		-	-	-	-	-	-	-	-
Fan	Speed	Steps	Turbo Fan, 3 Steps, Quiet, Auto							
Air Direction Control			Right, Left, Horizontal, Downward							
Air Filter			Removable, Washable, Mildew Proof							
Dimensions (H x W x D)		in. (mm)	10-1/4 x 22-5/8 x 22-5/8 (260 x 575 x 575)							
Weight		lbs. (kg)	36 (16)				39 (17.5)			
Sound Pressure Level (H / M / L / SL)		dB(A)	38 / 35 / 29		39 / 36 / 30		40 / 37 / 31		44 / 40 / 32	
Outdoor Unit			RX09RMVJU		RX12RMVJU		RX15RMVJU		RX18RMVJU	
Compressor	Motor Output	W	790				1,100		1,100	
Refrigerant	Type		R-410A							
	Charge	lbs. (kg)	2.09 (0.95)				2.49 (1.13)			
Airflow Rate	H	cfm (m³/min)	985 (27.9)	1,105 (31.3)			2,313 (65.53)	2,108 (59.3)	2,461 (69.7)	2,553 (72.3)
Dimensions (H x W x D)		in. (mm)	21-5/8 x 26-9/16 x 11-3/16 (550 x 675 x 284)				28-15/16 x 34-1/4 x 12-5/8 (735 x 870 x 320)			
Weight		lbs. (kg)	60 (27)				97 (44)			
Sound Pressure Level	H	dB(A)	46	50	49	51	50	51	54	55
ENERGY STAR® Certified**			YES		YES		YES		YES	

*Cutting a jumper or a dipswitch setting is required. Refer to installation manual.

Standard Features:

Draft Prevention



This system directs warm air to the floor in winter and cool air across the room in summer for optimal efficiency and comfort. The large flap governs airflow direction while the small flap (or diffuser) swings, producing fine air currents that help circulate the air around the room.

Individual Louver Control



The new louver changes the delivery angle to horizontal for cooling and vertical for heating operation, to keep cold or warm air from blowing directly onto your body.

Included in the optional sensor kit:

Presence and Floor Sensor

Optional part #BRYQ60A2(W/S)



The presence and floor sensors are infrared sensors with the ability to sense movement in the room. When you are in the room, the system operates normally. If you leave the room for more than 20 minutes the system automatically changes to an energy-saving operation. Using the intelligent eye, savings of up to 20% in cooling and up to 30% in heating can be achieved. The floor sensor detects the average floor temperature and ensures even temperature distribution between ceiling and floor.



Shown with panel
BYFQ60C2W1W



Shown with panel
BYFQ60C2W1S



RX15RMVJU

ADDITIONAL INFORMATION

Before purchasing this appliance, read important information about its estimated annual energy consumption, yearly operating cost, or energy efficiency rating that is available from your retailer.

Visit www.daikincomfort.com



Proper sizing and installation of equipment is critical to achieve optimal performance. Split system air conditioners and heat pumps must be matched with appropriate coil components to meet ENERGY STAR® criteria. Ask your contractor for details or visit www.energystar.gov

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Canada

ENERGUIDE

Seasonal Energy Efficiency Ratio (SEER)
Ductless heat pump

THIS MODEL
20.0

14.0 — Uses least energy — 42.0



Our continuing commitment to quality products may mean a change in specifications without notice.
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PF-VISTASZ 4-18



Submittal Data Sheet

1.5-Ton Wall Mounted Unit

FXAQ18PVJU

FEATURES

- Auto-swing mechanism ensures efficient air distribution via louvers that automatically close when the unit is turned off
- Easy to clean front panel with a flat smooth surface that can be removed for additional cleaning
- Five different airflow distribution angles programmable by the optional controller
- Condensate drain pipe can be installed on either the left or right side of the unit
- Wide air discharge outlet distributes a comfortable airflow throughout the entire space
- Standard Limited Warranty: 10-year warranty on compressor and all parts





Submittal Data Sheet

1.5-Ton Wall Mounted Unit

FXAQ18PVJU

PERFORMANCE

Indoor Unit Model No.	FXAQ18PVJU	Indoor Unit Name:	1.5-Ton Wall Mounted Unit
Type:	Wall Mounted	Rated Cooling Conditions:	Indoor (°F DB/WB): 80 / 67 Ambient (°F DB/WB): 95 / 75
Rated Cooling Capacity (Btu/hr):	18,000	Rated Heating Conditions:	Indoor (°F DB/WB): 70 / 70 Ambient (°F DB/WB): 47 / 43
Sensible Capacity (Btu/hr):	13,700	Rated Piping Length(ft):	
Cooling Input Power (kW):	0.030	Rated Height Separation (ft):	
Rated Heating Capacity (Btu/hr):	20,000		
Heating Input Power (kW):	0.04		

INDOOR UNIT DETAILS

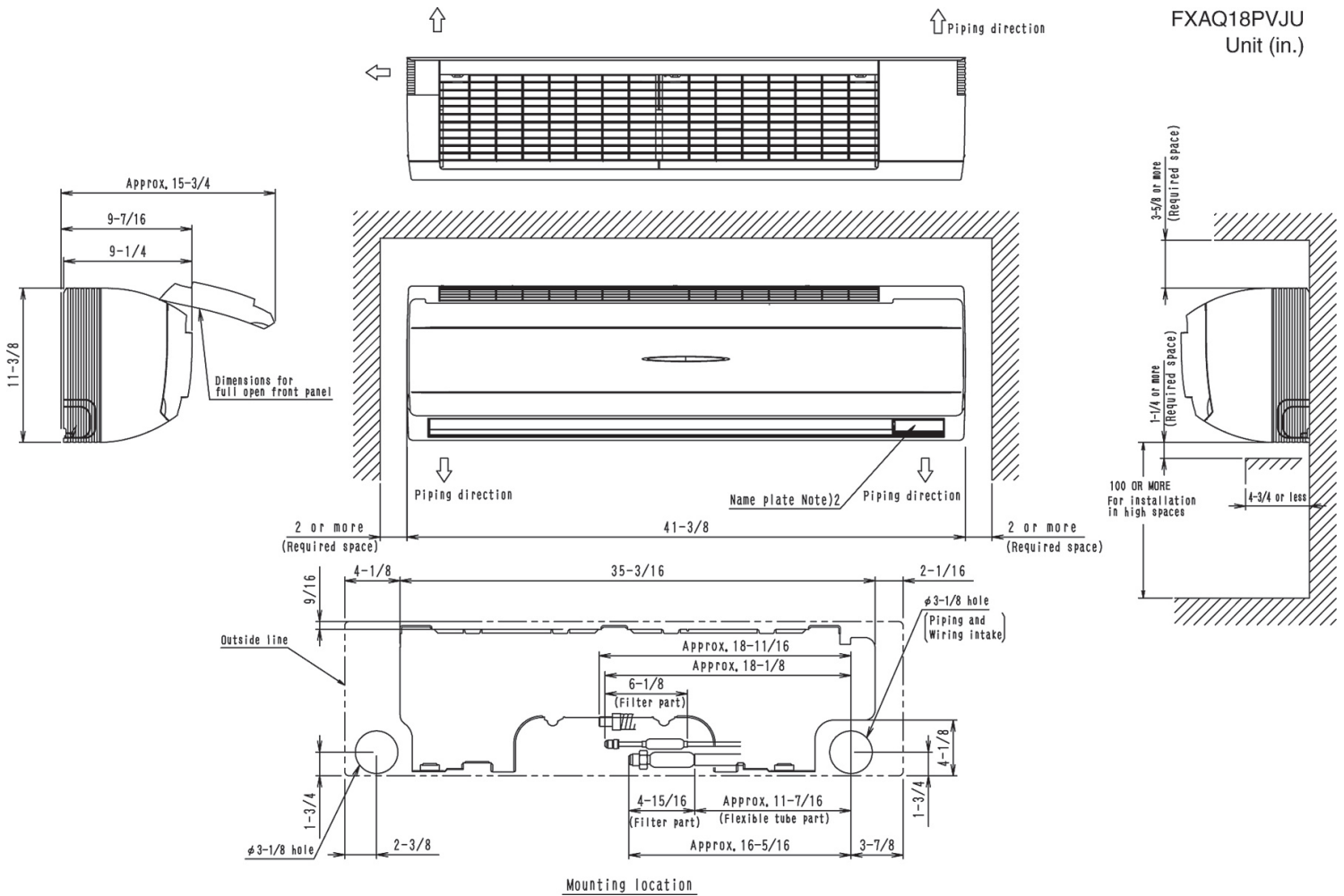
Power Supply (V/Hz/Ph):	208-230 / 60 / 1	Airflow Rate (H/L) (CFM):	500/400
Power Supply Connections:	L1, L2, Ground	Moisture Removal (Gal/hr):	
Min. Circuit Amps MCA (A):	0.50	Gas Pipe Connection (inch):	1/2
Max Overcurrent Protection (MOP) (A):		Liquid Pipe Connection (inch):	1/4
Dimensions (HxWxD) (in):	11-3/8 x 41-3/8 x 9-1/4	Condensate Connection (inch):	11/16
Panel (HxWxD) (in):		Sound Pressure (H/L) (dBA):	43/37
Net Weight (lb):	31	Sound Power Level (dBA):	
Panel Weight (lb):		Ext. Static Pressure (Rated/Max) (inWg):	0.00 / 0.00

Submittal Data Sheet

1.5-Ton Wall Mounted Unit

FXAQ18PVJU

DIMENSIONAL DRAWING



LIEBERT® MCR MINI COMPUTER ROOM ENCLOSURE



The Liebert® MCR is a self-contained rack enclosure system that includes a load-sized, computer-grade air conditioner located at the bottom of the enclosure, with the option of a top mount design, supplying cool air to sensitive equipment on all levels. A back-up cooling system ensures environmental security. Power can be supplied and protected through an optional Liebert GXT on-line UPS or Liebert PSI line-interactive UPS.



An optional top mounted ECM allows for maximum use of internal rack space and can be used to double capacity with internal/rack mount ECM.

Secure Door lockable door provides an extra measure of security by limiting access to critical equipment.

BCM
(Back-up Cooling Module)

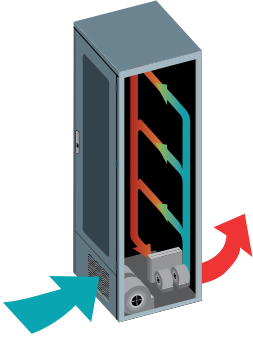
Sealed Door
specially designed rubber gasket provides NEMA12 sealing protection.

Liebert GXT
on-line UPS

ECM
(Environmental Control Module)

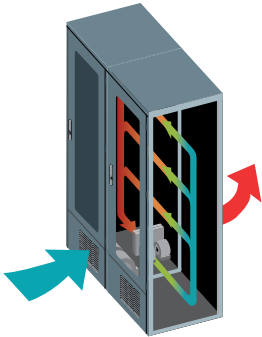


Exclusive Uninterruptible Environmental Support



Internal ECM

The integrated ECM enclosure design promotes the best air circulation to prevent hot spots within the enclosure. Inside and outside air are isolated for maximum cleanliness.



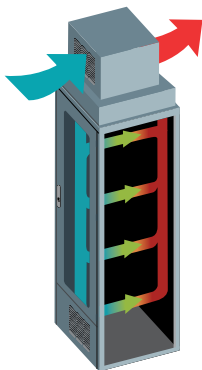
Air Distribution

Exclusive ECM conditioned air distribution duct ensures uniform air flow for multiple enclosures.



Back-Up Cooling

During high internal temperature or power outage conditions, the BCM (Back-Up Cooling Module) — powered by the enclosure’s UPS — is automatically activated, drawing in filtered outside air to ensure continuous air flow to protected equipment.



External ECM

The top mounted ECM allows maximum use of internal rack space or can be used with the internal/rack mount ECM to double cooling capacity.

Flexibility:

- Designed as a plug-and-play system ready to install.
- Wheel-mounted cabinet for easy relocation. Adjustable racks and rack rails support a wide variety of equipment.
- Optional top mounted air conditioning allows maximum use of internal rack space or can be used to double cooling capacity with the internal air conditioning unit.

Higher Availability:

- Cools IT equipment to eliminate downtime from overheating.
- Lockable door protects against unauthorized access. Specially designed door gasket and sealed cable entrance ensure stable cooling environment. Back-up cooling assures continued cooling in the event of a power loss.
- Improved cable access and management improves airflow to reduce overheating of protected IT equipment.

Lowest Total Cost Of Ownership:

- Competitively priced as an integrated system, compared to purchasing separate components. Simplified plug-and-play installation reduces overall implementation time, reducing costs.
- Optional energy saver control saves money by allowing back-up cooling to operate as primary enclosure cooler. Integrated air conditioning reduces potential downtime costs by assuring proper system operation.

Ideally Suited For:

- Network closets.
- Server closets or small rooms.



Liebert® MCR 22U Model

Specifications

ENCLOSURE DIMENSIONS

Model	Overall Frame Dimensions			Rack		Adjustable Rack Depth		Internal Rack	
	Height*	Width	Depth***	Width	Available Width	B****		RACK U	In. (mm)
	In. (mm)			In. (mm)	In. (mm)	Max In. (mm)	Min In. (mm)		
HD_780	77 (1956)	23.5 (597)	30 (762)	19 (483)	17.8 (450)	22.5 (571.5)	18.5 (470)	42	73.5 (1867)
HD_788	77 (1956)	23.5 (597)	38 (965)	19 (483)	17.8 (450)	30.5 (775)	26.5 (673)	42	73.5 (1867)

* Casters add 1.5" to overall height of frame = 2000mm.

*** BCM option adds an additional 3.00" to overall depth of frame.

**** Max dimension is for ex-factory configuration. Rails can be inverted to provide an additional 4.00" of adjustment.

ECM (ENVIRONMENTAL COOLING MODULE) PERFORMANCE DATA

Model Number	Rated Capacity	Supported Load	Max Ambient	Height	Width	Depth	Total Heat Rej.	Input Power (1PH)					Sound	
	BTUH (Watts)	BTUH (Watts)		In (mm)-U	In (mm)	In (mm)	BTUH (Watts)	Volts	Hz	FLA	WSA	OPD	Plug	Lpa(1.5m)
ECM2000L*-C60	6897 (2021)	5621 (1647)	105°F/41°C	12.25 (311)-7	17.43 (443)	29 (737)	10935 (3204)	120	60	9.8	11.7	15	73.5 (1867)	52

** T (top mount) and R (rack mount). Top mount weight does not include interface plenum. The interface plenum for a 19" rack x 30" deep cabinet is 38 lbs."

Sound data based on sound pressure A- weighted scale for free field spherical radiation at 1.5 meters from cabinet.

Sound data reflects only rack mount design. Consult factory for top mount data.

BCM (BACK-UP COOLING MODULE) PERFORMANCE DATA

Model Number	Rated Capacity	Supported Load	Max Ambient	Height	Width	Depth	Weight	Total Heat Rej.	Input Power (1PH)					Sound
	BTUH (Watts)	BTUH (Watts)		In (mm)	In (mm)	In (mm)	lbs (kg)	BTUH (Watts)	Volts	Hz	FLA	WSA	OPD	Lpa (1.5m)
BCM2000L-60	N/A	2811 (824)	105°F/41°C	35.0 (889)	15.5 (393.7)	3.75 (95.2)	47 (21.3)	10935 (3204)	120	60	2.0	2.5	15	59

Above BCM weight includes rear door weight of 17 Lbs.

Sound data based on sound pressure A- weighted scale for free field spherical radiation at 1.5 meters from cabinet.

22U PACKAGED ENCLOSURE

Model	Overall Frame Dimensions in. (mm)			Rack in. (mm)		Adjustable Rack Depth in. (mm)		Internal Rack Height		Weight	Rack Cooling supported load
	Height	Width	Depth	Width	Available Width	Maximum	Minimum	Rack U	In. (mm)		
HD448D000KD945 (rack and cooling module)	59.1 (1501)	23.5 (597)	38 (965)	19 (483)	17.8 (450)	30.5 (775)	26.5 (673)	22	38.5 (978)	367	1647 Watt
HD448D0C0KE865 (rack,cooling module, 2000VA Liebert GXT3 UPS, Liebert MPH Rack PDU)	59.1 (1501)	23.5 (597)	38 (965)	19 (483)	17.8 (450)	30.5 (775)	26.5 (673)	22	38.5 (978)	441	1647 Watt

22U Model dimensions include top-mount module and casters.

Location: _____



CXP

RUBBER SUPPORT SERIES

Specification:

Dimensions - see chart

Material

Base - 100% recycled rubber, UV resistant

Maximum Load

CXP - 500 lbs.

CXP-2 - 800 lbs.



Environmentally Friendly
made from
100% recycled tires

Function: The CXP Series supports provide an economic alternative. They are ideal for supporting conduit or pipe. Strut and clamps by others.

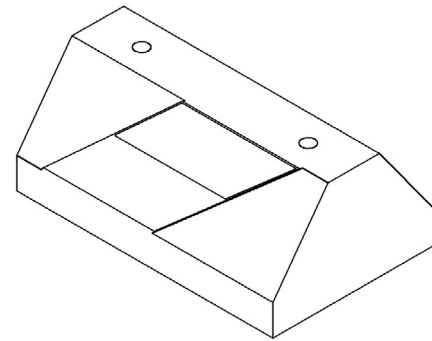


U.S. Patent
No. 7,866,093



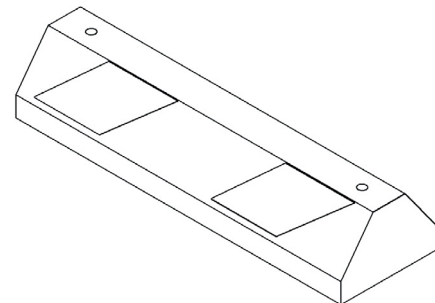
CXP illustrated. Pipe clamp by others.

CXP



Pipe strap clamps for CXP
sold separately.

CXP-2



MODEL NO.	HEIGHT (H)	WIDTH (W)	LENGTH (L)	WEIGHT	LIST PRICE	CRATE QUANTITY
CXP	4" (102)	6" (152)	9.6" (244)	4.56 lbs.	\$18.50	340
CXP-2	4" (102)	6" (152)	22" (559)	10.84 lbs.	\$44.00	170

CALIFORNIA PROPOSITION 65 WARNING. This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

Job Name: _____
Section No: _____
Schedule No: _____

Page No: _____
Contractor: _____
Purchase Order No: _____