



AGENDA

QLife Regular Board Meeting

Wednesday, July 28, 2022 | 12:00 PM

Harding House Conference Room– 200 E 4th St., The Dalles, OR

Google Hangouts - meet.google.com/odb-tpys-xpq

- 12:00 Call to Order
- 12:00 [Introductions & 2021/2022 Strategic Plan](#)
- 12:05 Approval of Agenda
- 12:05 [Consent Agenda](#) (*items of a routine nature: minutes, documents, items previously discussed*)
 - [June 23, 2022 Minutes](#)
- 12:10 [Finance](#)
 - [Financial Report, Reconciliation and Analysis](#) – *Mike Middleton*
- 12:20 [Action Items](#)
 - Jefferson Street Damage – *Matthew Klebes*
- 12:25 [Discussion Items](#)
 - BAT Update – *Lee Weinstein & Carrie Pipinich*
 - Admin Updates – *Matthew Klebes*
 - [Collocation Concept Design Report](#) – *Matthew Klebes*
 - [Technical Management Report](#) – *John Amery*
 - [Oregon Telecommunications Conference](#) – *Stephanie Krell*
- 12:45 [Executive Session ORS 192.660 \(2\)\(g\) Competitive trade or commerce negotiations, ORS 192.660 \(2\)\(n\)\(D\) Discuss information regarding security of telecom systems and data transmission.](#)

Next Board Meeting Date: August 25, 2022 | 12:00 PM

Adjourn

**Agenda subject to change*

**Executive Session held as needed*

An executive session may, in the discretion of the presiding officer, be called based on one or more of the following: ORS 192.660 (2)(a) Consider employment issues; (2)(e) Real property; (2)(f) Consider exempt records or information; (2)(g) Competitive trade or commerce negotiations; (2)(h) Consult with counsel re litigation; (2)(n)(D) & (E) Discuss information regarding security of telecom systems and data transmission.



Introductions

- [2021/2022 Strategic Plan](#)



Goals:	2021/2022 Strategies	Potential Projects
Goal 1: Maintain network and build redundancy and capacity of existing system	1.1 Maintain and update equipment per Qlife EOL schedule 1.2 Update Capital Improvement Plan (CIP) for The Dalles area 1.3 Identify single points of failure/network vulnerabilities 1.4 Develop Co-location room and redundant pathway east	- Downtown Overbuild -East Bisector/Grove Project
Goal 2: Expand our fiber network and employ alternative solutions and partnerships to serve areas in need	2.1 Identify areas with limited capacity/redundancy and develop fiber projects to address 2.2 Assess maintenance costs and damage risk (fires) of new builds 2.3 Explore partnerships with Warm Springs Telecom to serve the needs of South Wasco County 2.4 Develop Fiber to the Premises (FTTP) pricing structure 2.5 Explore options to serve Dallesport/Columbia Gorge Regional Airport and Business Park	- East Bisector/Grove Project -Shaniko/Avangrid -The Dalles Bridge River Crossing
Goal 3: Improve QLife’s ability to secure local, state, and federal resources	3.1 Work with partners to coordinate efforts to seek funding 3.2 Participate in The Dalles Community Outreach Team (COT) 3.3 Support efforts to form a Broadband Action Team (BAT) in partnership with Wasco County EDC Broadband Committee 3.4 Gather data/analyze gaps in service to demonstrate need 3.5 Outreach to Legislators on Qlife’s VMGs and specific projects	-South Wasco County Fiber Project (Tygh Valley/Pine Hollow) -Mosier Fiber Extension -BRIC Application
Goal 4: Support education & advocacy efforts related to broadband	4.1 Raise public awareness of role and value of Qlife in our Community and State 4.2 Annually provide scholarships to students attending CGCC studying a technology related field 4.3 Sponsor broadband events such as the Oregon Connections Telecommunications Conference	
Goal 5: Drive technological relevance by benchmarking and continuously evolving	5.1 Explore operational models for efficiencies to best fulfill mission 5.2 Continuously improve systems for Service Order response, customer setup, and Project Management/Implementation 5.3 Benchmark what is “high speed internet” annually to adjust ideal target speed and analyze progress. 5.4 Review and evaluate unique structure of Qlife for creative solutions	-Service Order Tracking Sheet -Project Management Improvements -Construction Standards Document

Vision:
 Every address in Wasco County can enjoy a higher quality of life and participate in education, healthcare, and the economy through a high speed* internet connection at a price point that they can afford.

*Ideally, 150 Mbps symmetrical

Mission:
 Facilitate access to scalable telecommunication infrastructure to enable affordable broadband-level Internet across Wasco County much like a public utility.

Values:
 Action-oriented, nimble, partnerships, proactive/sustainable, responsible, affordable, redundant and resilient.



Consent Agenda

- [June 23, 2022 Minutes](#)



MINUTES

QLife Regular Board Meeting
Thursday, June 23, 2022
Harding House Conference Room
and Google Hangouts

Call to Order President Weinstein calls the meeting to order at 12:01 PM.

Roll Call Lee Weinstein, Scott Hege, Rod Runyon, Scott Randall, Dale Lepper, John Amery, Joseph Franell, Justin Brock, Alex Kelley, Natasha Blaircobb, Keith Mobley, Dan McNeely, Tyler Stone, Stephanie Krell, Matthew Klebes and Mike Middleton.

Changes to the Agenda

There are no changes to the agenda.

[[Mr. Hege moves to approve the agenda. Mr. Lepper seconds the motion, which passes unanimously.]]

President Weinstein reviews the QLife Strategic Plan and reminds every one of the goals and mission.

Rural Innovation Strategies, Inc. Presentation

Mr. Klebes introduces Mr. Kelley to the board and briefly reviews the work the Qlife team and RISI team have done together. Mr. Kelley notes that RISI is a non-profit, rural focused firm. He worked with Qlife staff for the past year and he will be presenting an update to the board. Mr. Kelley presents his slide deck included in the packet.

Mr. Kelley's top recommendations include: (1) Approach network expansions with a committed partner and draft agreement in place before funding is secured and construction begins; (2) Let balance of risk and risk tolerance guide partnership framework and negotiations; (3) Consider making QLife's rate framework private; (4) Consider mechanisms to encourage long-term contracts to ensure stability and minimize risk.

Mr. Kelley's recommendations for next steps include: identify target grant opportunities and collaborate on excel model use. Also, he believes we need to review our rate framework and discuss expansion opportunities with potential ISP partners.

Mr. Klebes refers to page 25 in the packet and points out that Simnasho is included in the design because there is interest in coordinating with Warm Springs. They have not yet responded to requests and appearances on the Tribal Council Agenda has been rescheduled several times. He also notes that the design does not run directly from BPA Bakeoven to Maupin because we are hopeful that we can utilize fiber through Avangrid and the solar development partnership that is already in place. The tools that Mr. Kelley mentioned require data on existing infrastructure, which will better inform the model, cost revenue and eventual grant request. Mr. Amery clarifies that we will be building middle-mile to the communities with population density but not connecting every household along the way.

Mr. Hege asks if we could create a partnership with an ISP so that we build middle-mile and the ISP can build last mile connections and Mr. Klebes confirms that having an end service partner is a key component and requirement for the grant.

Mr. Hege asks how we identify grant opportunities and Mr. Kelley said that there are a number of grants coming down the pike and QLife should prioritize the one that has the best chance for success. Mr. Klebes adds that previously, we applied for the Pine Hollow, Tygh Valley and Wamic run. We will probably prioritize that again, especially if we have a committed ISP partner but there are other opportunities. Conditions of existing poles along the route are also

important and can make us more competitive. Mr. Hege asks when we design for the project, if we planning to utilize Co-op poles and Mr. Klebes confirms that we are.

Mr. Amery informs the board that the NTIA middle-mile grant application was recently advertised and believes it fits well as a priority segment. Mr. Runyon adds that we should prioritize the area where the highest population would be served. Mr. Kelley notes that the NTIA grant is a good opportunity but is competitive. The next round of state grants should have a smaller pool of applicants. Mr. Klebes adds that the State of Oregon may apply to the NTIA grant and invite us to participate too.

Mr. Hege expresses concern over going after the same grant project again since we were not successful last time. Mr. Franell explains that the QLife application was part of a larger application from the state, which included other projects. One project in particular was contested and it seems that the state application was not approved because of that project. It is normal to have to go after grant funding two or three times before success and Mr. Franell says that he would not hesitate in submitting it again.

Mr. Hege supports Mr. Kelley's recommendations and wants to move forward on grant opportunities to provide service to someone that does not have it today.

Mr. Stone asks if we are going to continue this process with RISI and wonders if we have had a conversation with Google about their continued support. Mr. Kelley is confident that Google will continue support and will approach them about that.

Mr. Hege asks how we make a more secure rate framework and Mr. Klebes responds that if we make changes to rates, we can have an opportunity to secure them. Our current rate structure is already public. Mr. Hege asks if it would be beneficial to inform people about this report and Mr. Klebes responds that the map may be the most helpful in communicating potential opportunities.

President Weinstein adds that messaging and speaking with the media about this would be valuable.

Action Items

Jefferson Damage OPC

Mr. Amery and Mr. McNeely inform the board that there are two spots on the map identified as having bad fiber and the best solution is to bypass it. The opinion of probable cost is \$65,721.60 and will take three days to re-route. Mr. Weinstein asks if we have funds in the budget to cover the repair and Mr. Klebes confirms that we do in the capital fund. The repair is critical to customers on the line and it has been an issue in the past. Mr. Klebes asks for a motion from the board to put the project out to bid and bring quotes back to the board.

[[Mr. Hege moves to approve going forward with putting the Jefferson Damage Repair Project out to bid. Mr. Lepper seconds the motion, which passes unanimously.]]

Approval of the Consent Agenda

[[Mr. Hege moves to approve the consent agenda. Mr. Lepper seconds the motion, which passes unanimously.]]

Finance Report

Financial Report, Analysis and Reconciliation

Mr. Middleton presents the May finance report to the board included in the packet and remarks that we are approaching the end of the fiscal year and he has no budgetary concerns. Contracted legal services are still a little high, but have discussed the reasons why at prior meetings. The revenue for Maupin was budgeted at \$7,300 currently has \$8,900. All funds are in good positions.

Discussion Items

MCEDD/BAT Broadband Survey

Ms. Blaircobb introduces herself as the RARE AmeriCorps member working at MCEDD. She explains that MCEDD and the BAT put together a broadband survey and will start collecting responses from people in Wasco County and push outward to get a more regional view of broadband.

Mr. Hege asks if we have discussed this with Wasco Electric as well as Northern Wasco PUD and Ms. Blaircobb explains that Carrie Pipinich is spearheading those conversations but is unsure whom she has communicated with so far. Mr. Hege remarks that the speed test itself is not very helpful but that it is important to test at a location where they need services, like their homes.

Mr. Amery wonders if there is a way to capture the reliability of the connection too and Ms. Blaircobb responds that some survey questions deal with the primary reason for internet use, speed and if connectivity is meeting their needs with the options to expand if it is not.

President Weinstein adds that they are looking for locations to drop of flyers, particularly in Shaniko, Antelope, Wamic, Pine Hollow, Pine Grove and Tygh Valley,

Administration Updates

Mr. Klebes informs the board they he has successfully contacted the city of Maupin to discuss the Wi-Fi system and transferring the cost over to them moving forward. It went well.

Klindt Drive is moving forward with final design work and we will put the project out to bid soon.

Mr. Klebes will be meeting with consultants from MCEDD to do design work on the collocation facility immediately following the board meeting. The MCEDD grant is associated with COVID dollars, which need to be expended by the end of the month. He will bring the report back to the board for discussion.

We are waiting on a final notice of award for the RFP with the school district. There are other connection opportunities that we may secure to continue the fiber build further down the street.

Blue Mountain Fiber has placed fiber for the Liberty Street Project and we performed a final walkthrough. Things are looking good and the project is ready to be closed out.

The Dry Hollow project is also close to completion and all work is satisfactory.

Mr. Klebes remarks that a feasibility study for the underground project is complete. If it moves forward, it will impact QLife and other ISPs between 1st and 2nd Streets.

Aristo Technical Management Report

Mr. Amery presents his technical report to the board and states that we have engaged with North Sky for splicing of the previously mentioned projects into the QLife backbone.

Oregon Telecommunications Conference

Ms. Krell informs the board that the dates are set for the Oregon Telecommunications Conference for October 6 and 7 in Ashland. She asks if anyone has interest in attending. Mr. Mobley adds that he plans to attend and believes it is worth attending.

The meeting is adjourned at 1:32 PM

The next regularly scheduled board meeting is set for July 28, 2022.

These minutes were approved by the QLife Board on _____.

Rod Runyon, Secretary



Financial Reports

- [June 2022 Financial Statement](#)
- [June 2022 Financial Analysis](#)

QLife Financial Report

As of 06/30/2022

Fund	6000 - Qlife Operations	Fund
Segment 3	All	SubDept
Segment 4	All	Not used

Row Labels	Column Labels 2022		2021		FY22- FY21		
	Revised Budget	Actual	Revised Budget	Actual	Actual	FY22-FY21	FY22 Budget
					Variance	%	Execution
60 - QLIFE	(1,041,591)	(891,835)	(702,606)	(850,181)	(41,654)	4.9%	85.6%
Revenue	(1,402,797)	(1,182,900)	(861,314)	(1,137,601)	(45,299)	4.0%	84.3%
400 - BEGINNING FUND BALANCE	(659,977)	(476,580)	(191,714)	(232,286)	(244,294)	105.2%	72.2%
414 - CHARGES FOR SERVICE	(741,420)	(705,755)	(668,200)	(902,344)	196,589	-21.8%	95.2%
417 - INVESTMENT EARNINGS	(1,200)	(565)	(1,200)	(1,771)	1,206	-68.1%	47.1%
421 - MISCELLANEOUS	(200)	-	(200)	(1,200)	1,200	-100.0%	0.0%
422 - PASS THROUGH PAYMENTS	-	-	-	-	-	0.0%	0.0%
Expense	361,206	291,065	158,708	287,420	3,645	1.3%	80.6%
520 - MATERIALS & SERVICES	341,206	291,065	158,708	287,420	3,645	1.3%	85.3%
530 - CAPITAL OUTLAY	20,000	-	-	-	-	0.0%	0.0%
90 - TRANSFERS	595,020	595,020	376,220	376,220	218,800	58.2%	100.0%
91 - CONTINGENCY	162,935	-	-	-	-	0.0%	0.0%
93 - UNAPPROPRIATED	283,636	-	54,350	-	-	0.0%	0.0%
Grand Total	-	(296,815)	(272,036)	(473,961)	177,146	-37.4%	0.0%

QLife Financial Report

As of 06/30/2022

Fund	6010 - Qlife Capital	Fund
Segment 3	All	SubDept
Segment 4	All	Not used

Row Labels	Column Labels 2022		2021		FY22- FY21		
	Revised Budget	Actual	Revised Budget	Actual	Actual Variance	FY22-FY21 %	FY22 Budget Execution
	60 - QLIFE	(421,124)	(1,603,029)	(1,817,927)	(1,420,358)	(182,670)	12.9%
Revenue	(6,812,664)	(2,013,364)	(1,897,927)	(1,826,294)	(187,070)	10.2%	29.6%
400 - BEGINNING FUND BALANCE	(1,784,664)	(1,846,578)	(1,853,727)	(1,692,712)	(153,866)	9.1%	103.5%
410 - GRANT	(5,000,000)	-	-	-	-	0.0%	0.0%
414 - CHARGES FOR SERVICE	(19,000)	(28,093)	(19,000)	(123,728)	95,634	-77.3%	147.9%
417 - INVESTMENT EARNINGS	(9,000)	(6,546)	(25,200)	(9,854)	3,308	-33.6%	72.7%
421 - MISCELLANEOUS	-	(132,146)	-	-	(132,146)	0.0%	0.0%
490 - OTHER FINANCING	-	-	-	-	-	0.0%	0.0%
Expense	6,391,540	410,335	80,000	405,935	4,400	1.1%	6.4%
520 - MATERIALS & SERVICES	-	-	-	31,776	(31,776)	-100.0%	0.0%
530 - CAPITAL OUTLAY	6,391,540	410,335	80,000	374,160	36,176	9.7%	6.4%
540 - DEBT SERVICE	-	-	-	-	-	0.0%	0.0%
560 - SPECIAL PAYMENTS	-	-	-	-	-	0.0%	0.0%
90 - TRANSFERS	(645,020)	(645,020)	(426,220)	(426,220)	(218,800)	51.3%	100.0%
91 - CONTINGENCY	391,019	-	(43,253)	-	-	0.0%	0.0%
92 - RESERVE	675,125	-	675,125	-	-	0.0%	0.0%
93 - UNAPPROPRIATED	-	-	-	-	-	0.0%	0.0%
Grand Total	-	(2,248,049)	(1,612,275)	(1,846,578)	(401,470)	21.7%	0.0%

QLife Financial Report

As of 06/30/2022

Fund	6020 - Qlife - Maupin	Fund
Segment 3	All	SubDept
Segment 4	All	Not used

Row Labels	Column Labels 2022		2021		FY22- FY21		
	Revised Budget	Actual	Revised Budget	Actual	Actual Variance	FY22-FY21 %	FY22 Budget Execution
60 - QLIFE	(58,960)	(126,318)	(108,806)	(177,560)	51,242	-28.9%	214.2%
Revenue	(126,670)	(139,532)	(177,516)	(192,496)	52,964	-27.5%	110.2%
400 - BEGINNING FUND BALANCE	(118,610)	(127,560)	(169,456)	(168,945)	41,385	-24.5%	107.5%
412 - INTERGOV REV-NON-SINGLE AUDIT	-	-	-	-	-	0.0%	0.0%
414 - CHARGES FOR SERVICE	(7,360)	(11,641)	(7,360)	(22,601)	10,960	-48.5%	158.2%
417 - INVESTMENT EARNINGS	(700)	(330)	(700)	(950)	619	-65.2%	47.2%
421 - MISCELLANEOUS	-	-	-	-	-	0.0%	0.0%
422 - PASS THROUGH PAYMENTS	-	-	-	-	-	0.0%	0.0%
490 - OTHER FINANCING	-	-	-	-	-	0.0%	0.0%
Expense	67,710	13,214	68,710	14,936	(1,722)	-11.5%	19.5%
520 - MATERIALS & SERVICES	16,710	13,214	17,710	14,936	(1,722)	-11.5%	79.1%
530 - CAPITAL OUTLAY	51,000	-	51,000	-	-	0.0%	0.0%
540 - DEBT SERVICE	-	-	-	-	-	0.0%	0.0%
90 - TRANSFERS	50,000	50,000	50,000	50,000	-	0.0%	100.0%
91 - CONTINGENCY	8,960	-	45,006	-	-	0.0%	0.0%
92 - RESERVE	-	-	13,800	-	-	0.0%	0.0%
93 - UNAPPROPRIATED	-	-	-	-	-	0.0%	0.0%
Grand Total	-	(76,318)	-	(127,560)	51,242	-40.2%	0.0%

Qlife – Financial Analysis June 2022 Financial Statements – Pre-Audit

The financial statements for through the 12th month of the 2022 fiscal year (FY22) are presented. The statements are intended for the use of management and are not audited. The fiscal year is over at this point, but there may still be accruals as the audit and year-end statements are prepared.

New reporting tools are now in use. This provides additional flexibility in the setup of the reports – notice now there are two (2) separate fiscal years on one report which increases the ease of year to year comparability. There are still a few limitations, but the skill set will continue to grow for staff. Any feedback and/or suggestions on report layout will be appreciated.

Operations Fund

Total revenues for FY22 are \$1,182,900 which is \$45,299 more than last fiscal year – a 4.0% year over year overall growth. The Charges for Services are \$706K which is 95.2% of the budgeted expectations. While it is significantly less than last fiscal year due to a one time spike in FY21, the FY22 amount is still \$37K more than FY21 budget expectations.

Interest is obviously down. However, LGIP rates are starting to increase and are at 0.93% as of June 30th. The effective annual rate for July should be greater than 1%. While this might not seem significant, compared to the 0.40% of a few month back, this is a positive sign.

The Accounts Receivable has a total outstanding of \$85,508 as of 6/30/2022 – of this \$63,168 is current, with \$16,260 over 30 days and only 6,080 over 120 days. By 7/21/2022, the balance has come down to \$34,945 with \$12,605 of the current bills still outstanding.

Expenditures are well within budgetary expectations. Total expense has executed at 80.6% which is only \$3,645 or 1.3% different than last year. This is the area where additional expenses may be incurred due to year end accruals. This will not significantly change the budgetary position. Even with the accounts being watched, the end result for Materials & Services is a budget execution of 85.3%.

Transfers are fully executed and are 58.2% more than last fiscal year – as planned to pull the fund balance down and move it to the Capital fund.

At this point, the ending fund balance is projected to be \$296,815 which is a decrease of \$177,146 from FY21. However, remember this was planned. It is due to the increased transfer sized to the Capital fund.

Capital Fund

Revenue has a large spike shown in Miscellaneous that had not been considered in the budget. Other than that, there is nothing out of the ordinary in the revenue here.

Expenditures to date have been minimal.

The fund has an additional \$5 million built into it in case any of the available grant funds can be claimed. That grant did not make it to funding so the \$5M was not be spent.

Maupin Fund

Revenues have come in at 158.2% of the budget for Charges for Services.

Expenditures have totaled \$13,214 for the Maupin Wifi contract. The transfer to the Capital fund was executed as budgeted in January.

The fund is decreasing at this point with an Ending Fund Balance of \$76,318. This is \$51,242 less than last FY at this time.

Summary

The funds are in good positions. While the Operations fund is decreasing, this is due to the transfers out to the Capital fund. \$595,020 is being transferred to Capital for the YTD while the Operations Fund decreases by \$177,146.

Bank reconciliations have been completed through June.



Discussion Items

- BAT Update
- Admin Updates
- [Collocation Concept Design Report](#)
- [Aristo Technical Management Report](#)
- [Oregon Telecommunications Conference](#)



JUNE 24, 2022

Collocation Final Conceptual Design

Q-life - Wasco County

Y018.01

725 A Street Springfield, OR 97477

550 NW Franklin Blvd., Suite 448 Bend, OR 97701



SystemsWestEngineers.com

(541) 342-7210



Q-LIFE COLLOCATION FINAL CONCEPTUAL DESIGN

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APPENDIX A - Room Layout Drawings

APPENDIX B - Data Rack Products

APPENDIX C - Data Power Supply Equipment

APPENDIX D - HVAC ACU Product

APPENDIX E - Construction Cost Option

APPENDIX F - Preliminary Generator Cut Sheet

Introduction

Following is a narrative description of the facility and HVAC and electrical systems proposed for the Q-life/Wasco County Collocation Facility at “Annex C”, 425 East 7th Street, The Dalles, Oregon. The purpose of this narrative is to provide an understanding of existing building conditions, project requirements, and proposed system upgrades for preparation of the site to support network switching and server collocation.

The project consists of constructing a dedicated internet exchange and server collocation facility. Two rooms comprise the collocation facility and are referred to as the “Large Room” and “Small Room”. The facility and adjacent areas of the building are shown on floor plan drawings in Appendix A. The collocation space will provide users with a resilient facility served with temperature control, power supplies, and standby power services to provide internet communications and computing functions. Facility design presented herein is BICSI Class F1, which is a “Single Path Data Center”. Class F1 provides relatively low tier of space resiliency and reliability as compared to higher tier classifications with redundant pathways and equipment. The subsequent construction cost is lower than classes with greater reliability, with the capability to upgrade resiliency in the future.

The following items are specific requirements for the project that were established through the initial design process:

- Facility capacity and internal configuration within available space
- Electric distribution capacity and configuration
- Standby power generator sizing and placement
- HVAC equipment type, capacity, and distribution configuration

Project Description

The project site is a portion of a Wasco County-owned facility. The building was originally constructed in 1937 and served as a hospital. Additions were constructed in 1948, 1957, and 1965. Two adjoining lower-level rooms originally housed the hospital steam boiler and fuel storage tank. The space is currently unconditioned. [REDACTED]

[REDACTED] The neighboring building located to the south exterior adjoining wall is an insurance office. The Dalles currently provides collocation space in city hall, although available space, suitable power supplies, and cooling capacities are limited. The Annex C location is a higher elevation than at the city hall location, which minimizes potential for flooding.

The collocation spaces are referred to throughout as Large Room and Small Room, referring to the two rooms described. The Large Room is exterior to the building, and the Small Room is interior to the building, accessed through the Large Room. Outdoor location for supporting equipment is located to the southwest, with services routed through a portion of the exterior wall.

General Project Requirements

Local Building Codes

The following building codes are adopted by the State of Oregon, and are collectively referred to as the “Code”:

- Oregon Structural Specialty Code
- Oregon Plumbing Specialty Code
- Oregon Mechanical Specialty Code
- Oregon Energy Efficiency Specialty Code
- Oregon Electrical Code
- Oregon Fire Code

Applicable Standards

The design of building systems will conform to the most recent version of the following industry and standards:

- ANSI/BICSI 002-2019 Data Center design and Implementation Best Practices

Seismic Design Criteria

Anchorage and support of plumbing, mechanical, and electrical systems will be provided in accordance with the Oregon Structural Specialty Code for the project site.

Collocation Design Conditions

The design requirements for spaces are summarized below.

Operating Conditions

The following table lists the design operating conditions.

Design Operating Conditions	
Hours of Operation	24 hour per day, 365 days per year
Occupancy	Periodically occupied

Environmental Conditions

The following table lists the design environmental conditions. The ASHRAE Thermal Guidelines and Best Practices publication provides guidelines for design conditions that provide suitable equipment cooling, while saving energy. The interconnection room is an ASHRAE A1 classification.

Design Environmental Conditions	
Large Room Area	500 square feet
Small Room Area	200 square feet
Room Temperature	Range 60°F to 85°F, Design Condition 72°F
Space Humidity	30% Min, 50% Max
Space Pressurization	Positive to outdoors
HVAC Filtration	MERV 11
Occupancy	0 person(s)

Design Power Supply and Cooling Loads

This conceptual design was performed for the communication rack electrical demand:

- Watts Per Tenant: This represents the maximum electrical power demand that will be available at each cabinet, and available for each tenant. A combination of full-height floor-mounted cabinets with two separate sections and wireways and wall-mounted cabinets with a single lockable section will be installed. In the full-height cabinets, each server tenant will have 3,000 watts of available power allocated for their use, while each switching tenant will have 2,000 watts available power allocated for their use. In wall-mounted cabinets, each tenant will have 750 watts available power in 12U enclosures and 500 watts available power in 5U enclosures.

The cooling system for the data center is based on the following estimated heat gains:

Aggregate Design Cooling Load Conditions	
Full-height Equipment	8 tenants @ 3 kW per rack & 16 tenants @ 2 kW per rack = 56.0 kW (192 Mbtu/hr)
Wall-mount Equipment	24 tenants @ 0.75 kW per rack & 11 tenants @ 0.5 kW per rack = 23.5 kW (80.5 Mbtu/hr)
Lights	**
Plugs	**
Building Envelope	3.5 kW (11.9 Mbtu/hr)
Power Supply Losses	8.0 kW (27.5 Mbtu/hr)

**Lights and plug loads are intermittent and excluded from HVAC loads.

System Reliability

Systems serving the exchange building will be designed to provide continuous and reliable operation of support systems required for proper operation of communications equipment. Facility reliability is defined as BICSI Class F1, which is a "Single Path Data Center". The following descriptions summarize HVAC and electrical systems reliability:

- Cooling systems will not contain redundant equipment, controls pathways, or power supplies. Cooling systems, as configured, will not be able to provide design cooling capacity if any single component fails. HVAC equipment failure or shut down for services means loss of cooling.

- One power distribution system will be provided to serve communication racks and critical support systems. The system will be served by an onsite standby generator with an automatic transfer switch to alternate between electric utility power and generator power upon the loss of electric utility power. All electrical loads at the facility will be connected to the standby power distribution system.

General Construction/Architectural Requirements

The following generally describes general construction associated with space renovation for supporting IT collocation. See conceptual floor plan drawings in Appendix A for space arrangement and notations depicting work descriptions.

General

The following describes existing conditions and planned upgrades for supporting new space usage. The existing space is an unconditioned portion of the facility that houses [REDACTED] and general facility storage.

Demolition

- Large Room
 - Remove interior door to electrical room.
 - Remove wall louvers on southeast corner, currently serving generator combustion air and exhaust pipe routing.
 - Remove CMU plinth in southeast corner of the room and exterior access door.
- Small Room
 - Remove existing door and frame.
 - Remove concrete tank cradles and rubble from room.

Upgrades

Exterior Improvements

- Approximately three parking spaces will be required for outdoor mechanical and electrical equipment installation.
- Infill louver and access door openings with CMU to match wall construction.
- Re-finish patched wall openings
- Access gate and fencing to [REDACTED] parking lot to the west of the adjacent neighboring building should be considered but are not described herein.
- Replace existing 4-0x7-0 door and frame with thermally broken steel door and frame, and integrate access control hardware.

Interior Improvements

The interior surfaces will be insulated, and a continuous vapor barrier and sheathing installed. The underside of the floor above will be insulated to prevent space overheating from telecom equipment. A vapor barrier is needed to retain moisture added to the space and to maintain

minimum humidity levels. In discussions with the AHJ, adding fire sprinklers to the entirety of the Annex C facility is not required, provided that the project includes provision of a fire suppression system and one hour separation between the collocation space and adjacent rooms. The existing CMU walls will have firestopping applied to through wall penetrations, and a new one-hour lid will be constructed on the underside of the floor joists to provide this required separation.

- Large Room
 - Infill wall opening of the single door removed with CMU to match adjoining wall.
 - On existing exterior and interior CMU walls, install a new 2x4 wood stud wall attached at the base and head, and braced to the CMU wall, with R-13 batt insulation. Install continuous plastic vapor barrier and ¾-inch fire resistant treated plywood finish screwed to the metal studs. Stud spacing is 24 inches on center. Prime and paint interior plywood surface after installation.
 - Insulate the upper floor area above with rigid at an R-8 value within existing floor joists. Cover with a continuous vapor barrier. Construct one-hour rated ceiling assembly with 2 layers of 5/8" fire rated gypsum board affixed to bottoms of joists.
 - Clean floor and level for resilient flooring preparation.
 - Install anti-static resilient flooring.
- Small Room
 - Enlarge the door opening and install new 3-0x7-0 door. The base of the door will be at the top of existing stem wall. Integrate access control hardware with door panel and frame.
 - Place approximately 14" of 5/8"-minus gravel infill over entirety of floor, and compact. Pour level reinforced concrete floor slab. Floor slab will be at the top of existing stem wall height, coinciding with the elevation of the new Small Room doorway.
 - Insulate the upper floor area above with rigid at an R-8 value within existing floor joists. Cover with a continuous vapor barrier. Construct one-hour rated ceiling assembly with 2 layers of 5/8" fire rated gypsum board affixed to bottoms of joists.
 - On the south exterior, west wall, and north side with exposed rock, install a new 2x4 wood stud wall attached at the base and head, and braced to the CMU wall at 4'-0" spacing, with R-13 batt insulation. Install continuous plastic vapor barrier and ¾-inch fire resistant treated plywood finish screwed to the metal studs. Stud spacing is 24 inches on center. Prime and paint interior plywood surface after installation.
 - Construct cast-in-place reinforced concrete stairs, with a safety railing for access to the Small Room. Room size is not conducive for ramp length to achieve a maximum eight percent slope.
 - Install anti-static resilient flooring.

Assumptions requiring architect review and confirmation in a subsequent design phase include:

- Room egress pathways to verify that requirements are met.
- Replacement door panel and hardware details.

Assumptions made requiring structural engineer review and confirmation in subsequent a design phase include:

- Small room door enlargement and CMU cutting.
- Exterior duct penetrations opening feasibility and opening reinforcement required.

Fire Suppression

Existing Conditions

Following is a description of existing systems, equipment, and notable conditions:

The existing facility is not served by a fire sprinkler system. [REDACTED]

Design Requirements

Gas Fire Suppression System

A new clean agent system installation will be installed for protecting the collocation spaces. Since the existing FM-200 clean agent chemical product is now part of a hydrofluorocarbon phase-down reduction starting in January 2022, the product Novec 1230 is recommended. The collocation suppression system will be separate from [REDACTED]

[REDACTED] An output to the building fire alarm system will provide remote annunciation of a fire event. System components include the following:

- Agent container
- Detection system control panel
- Smoke/heat detectors
- Combination Abort/release pull station
- Distribution piping with nozzles to both rooms.

Plumbing

Existing Conditions

Following is a description of existing systems, equipment, and notable conditions:

[REDACTED] Supply and waste piping for breakroom plumbing fixtures routes overhead. The water heater serving the breakroom is located in the Large Room. A storm drain overflow pipe is routing from overhead down to an overflow nozzle discharging to the east wall. Existing abandoned plumbing piping located overhead will be removed. Two floor drains are located within the large room, and will be removed and piping capped.

Design Requirements

Following is a description of alterations:

Optimal solution for plumbing piping is to relocate outside of the collocation space. Eliminating the piping from the space is not a viable option, as the call center breakroom would require relocation or renovation. Instead, the water heater will be relocated to the electrical room, and breakroom fixture supply piping will be installed in closer proximity to the sanitary waste piping. Abandoned or inactive piping will be removed. The roof drain overflow piping will be rerouted to a discharge location on the south corner, minimizing the amount of floor space covered. Drip containment pans with monitored leak detection will be installed below the piping to protect against accidental leakage and room equipment damage. The drain pans will have a drain routed down to an existing floor drain in the electrical room.

Heating, Ventilating, and Air-Conditioning

Existing Conditions

The new collocation rooms originally housed a steam boiler and indoor fuel storage tank. The smaller interior room housed the fuel tank. The space is currently unconditioned. Each piece of existing HVAC equipment is controlled by a local thermostat. The facility is not served by a building automation system.

The facility natural gas meter is located on the southeast corner, outside the old boiler room. Gas services currently supply [REDACTED], water heaters, and building HVAC equipment.

An existing 250-gallon liquid propane gas (LPG) tank is located adjacent to the parking lot to the south of the adjacent neighboring building. [REDACTED]

Design Requirements

Standards and Guidelines

HVAC systems conform to the most recent version of the following industry standards and guidelines:

- SMACNA, Ductwork Construction Standards

Outdoor Design Conditions

The following ambient outdoor conditions will be used as a basis of design and are based on ASHRAE design weather data for the project site:

Design Conditions	Criteria	Values
Project Site		The Dalles, Oregon
Site Elevation	Above sea level	150 ft
Design Criteria		
Winter Heating	mean of extremes	11°F
Winter Humidification	99.6% heating dew point/mean coincident dry bulb	7.4°F / 21.3°F
Summer Cooling	0.4% dry bulb/mean coincident wet bulb	97.6°F / 66.6°F

Indoor Design Conditions

The following indoor environmental conditions will be used as a basis of design.

Room Type	Occupants (P/1,000 sf)	Equipment (W/sf)	Htg Setpoint (oF)	Clg Setpoint (oF)
Telecom	0	**	65	72
General Requirements				
Design Occupant Load	No occupants			
Humidity Setpoints	30% RH to 50% RH			

**Actual equipment load, including power supply losses. Refer to Aggregate Cooling Load Design Conditions table.

Outside Air Ventilation

HVAC systems will be designed to meet or exceed outside air ventilation rates required by Code. Since specific code requirements are not prescribed for a telecom space type, an approximately 5% outside air minimum rate will be utilized. While the ventilation air rate is higher than a strict code interpretation, the rate will help ensure that space conditions do not become stagnant. As outside air will be commonly utilized for cooling, the additional ventilation provided will not increase energy costs unnecessarily.

Air Filtration

Air distribution systems will be equipment with air filtration as described below:

- General Purpose Air Distribution Systems: HVAC systems serving general occupancy spaces will be provided with particulate filters having a minimum filtration efficiency of MERV 11.

Space Pressure

Air distribution systems will be designed to provide pressure relationships as described below:

- Building Pressurization: HVAC systems will be designed to maintain a slightly positive building pressure to reduce infiltration of outside air through exterior doors and openings in the building envelope.
- Space Pressurization: The air balance will be set so that the smaller room will have higher positive space pressure than the larger room, as space equipment is a degree more critical than the larger room.

Systems Descriptions

Following is a description of proposed systems, equipment, and controls:

Fuel Systems

Generators will be dual fuel natural gas, with propane backup in the event of natural gas supply failure. Natural gas piping will be reconfigured to serve [REDACTED] new collocation system generator. Resized piping will be installed from the meter downstream [REDACTED]

to the branch connection routing toward equipment located in the electrical room. Generator natural gas consumption for the existing 65 kW and new 175 kW generators is approximately 2800 cubic feet per hour. A branch pipe will be installed through the collocation room and will exit through the wall near the HVAC ductwork for serving the generators located outside, with estimated size of 1-1/4”.

Propane piping from the outdoor tank will be piped to the generators. Generator propane consumption for the existing 65 kW and new 175 kW generators is approximately 950 cubic feet per hour, providing approximately 7-1/2 hours of generator operating time. An additional 500-gallon propane tank should be considered for installation in addition to the existing 250-gallon tank for a 24-hour run time before re-fueling is required.

Air Distribution System

One packaged air conditioning unit is planned for serving both large and small equipment spaces. The unit will maintain ventilation setpoint through varying airflows. The unit will not provide heating. Located on grade, the unit will be installed either on a curb or an assembled base to prevent snow entrainment into outside air intake. As the facility populates equipment from minimum initial loads up to maximum capacity, the ACU is capable of increasing cooling capacity and maintaining space conditions with a modulating compressor and variable speed fan motor.

Equipment capacity is summarized in the following table:

Tag	Max CFM	Total Cooling Capacity (mbh)	Sensible Cooling Capacity (mbh)	Humidification (lb/hr)	OSA Ventilation (cfm)
ACU-1	10,500	325	325	15	500

ACU-1 features include:

- Two scroll compressors: one fixed capacity, one variable
- 100% outside air capability
- Side supply and return duct connections
- Variable speed supply fan
- Gravity relief damper
- Outside air measurement station

See preliminary product selection cutsheet in Appendix D.

Humidification will be provided in supply air to maintain minimum space humidity levels. The distributor will be located in the ACU supply discharge plenum. Air distribution ductwork will convey air to and from the space. The humidifier will be electric resistance type, with modulating output.

Ductwork from ACU-1 will route through new exterior wall penetrations to the interior. Wall penetration location is shown on the drawing in Appendix A. Since the neighboring property proximity is adjoining the facility, the south wall functions as a fire wall, in accordance with the 2019 Oregon Structural Specialty Code, and the duct openings will be protected by listed fire dampers. A duct smoke detector will be provided for ACU shutdown on detection of smoke. In the

event of a fire suppression activation, ACU-1 will be shut off and ventilation dampers closed. Exterior ductwork taps will be provided to facilitate connecting temporary cooling.

Outdoor-rated ductwork with supports to grade will be used between unit and duct penetrations through the wall. Supply air will be directed toward the front of the cabinets. Equipment fans will pull room air and reject upwards for small cabinets, and toward the back for large racks. Each room will have a single return air intake grille located high above the floor to capture more buoyant warm return air further from supply air.

Unitary Heating and Cooling Systems

Space heating will be provided by an electric unit heater in the Large Room. Estimated capacity is 5 kW. The heater will be controlled by the new Building Automation System (BAS) to maintain a minimum temperature of 60°F. Heater function is primarily as a supplemental device to assure minimum space temperature is maintained. As tenant equipment is installed, and space requirements are predominantly cooling, heater operation is not anticipated.

Building Automation Systems

The system equipment will be controlled by a Direct Digital Control (DDC) Building Automation System (BAS). A network connection between the global BAS controller and a network switch will be required for remote accessibility through an internet browser. Controls equipment will be BacNet open protocol. Manufacturers for consideration include Distech, Reliable, and Innotech.

Room operating parameters will be monitored, and alarms conveyed to designated personnel. Monitored parameters include:

- Room relative humidity
- Small room space temperature
- Large room space temperature
- ACU operational status
- Normal power status
- Plumbing leak detection

Electrical Power

Existing Conditions

Following is a description of existing systems, equipment, and notable conditions:

Building Electrical Service

The existing electrical power service to the building is an 800-amp, 120/240 volts, three-phase service. The electric utility serving the building is Northern Wasco County Public Utility District (PUD). The utility service to the building utilizes an open-delta configuration with (1) 25kVA and (1) 75kVA overhead transformers mounted on a utility pole adjacent to the building.

Existing 24-month demand history indicates that the building had a peak electrical demand of 38.5 kVA.

Normal Power

Normal power is distributed at 120/240 volts, three-phase on a single feed from the utility.

Emergency/Standby Power

[REDACTED]. There is no emergency power backup in either collocation room.

Power Distribution

Power distribution for the building originates at an 800-amp-rated fused switch 120/240, 3-phase main distribution panel located in the electrical room. The main distribution panel serves two sub-distribution panels, which serve branch panels located throughout the building.

There is an existing rooftop solar panel array that offsets the electrical usage of the building.

Design Requirements

Standards and Guidelines

Electrical power systems conform to the most recent version of the following industry standards and guidelines:

- IEEE STD. 241-74: Electric Systems for Commercial Buildings

Systems Descriptions

Following is a description of proposed systems, equipment, and controls:

Building Electrical Service

Modifications to the building electrical service will be required to serve the proposed loads. The existing 120/240V open-delta service is typically used to feed buildings with limited three-phase load. The HVAC requirements for the building will include three-phase loads that surpass the capacity of the existing service.

A new 120/208V three-phase service will be provided to power the proposed loads in the collocation rooms. Providing a separate service for these loads allows the [REDACTED] without significant downtime or modifications to the existing service. To provide 120/208V three phase service to the building, Northern Wasco County PUD will extend three-phase medium voltage power from the west end of the building parking lot and install a new utility pole with a three-phase transformer bank. The service entrance into the building will route overhead and terminate in the new main distribution panel.

Normal Power

Revisions to the normal power system will be required to provide service to the new building systems. The existing service will remain in the existing condition. A new 600A 208V three-phase service-rated main distribution panel will be installed to serve the new loads in the building. The main distribution panel will feed sub distribution panels that feed data equipment in each of the new rooms. There will be separate sub distribution panels that power the DC power plant, UPS

system, and mechanical equipment. This electrical distribution in the building will follow BICSI Class F1 requirements.

Emergency/Standby Power

A new standby power system will be provided for the data equipment and associated HVAC systems consisting of a 48V DC power supply, 120/208V UPS, and standby generator. The DC power supply and UPS are sized to provide ride-through power for the data equipment during generator startup. The standby generator will be sized at 175kW to provide backup power for all data and HVAC equipment in the facility. Generator will be dual fuel with propane backup in the event of natural gas supply failure. See preliminary product cut sheet in Appendix F.

Power Distribution

Power distribution will be added to serve approximately 12 full-height cabinets and 11 wall-mounted cabinets in the Large Room and 24 wall-mounted cabinets in the Small Room. The power will be provided from the main distribution panel and sub distribution panels. Panels will provide normal power for new loads in the building and will be sized as required based on proposed load requirements during the design process.

A new 48V DC power supply will be provided to serve switching racks in each room. The DC plant will be sized to provide adequate runtime during power failure to allow for generator startup and transfer. Anticipated battery runtime is eight to ten minutes. Similarly, an additional 120/208V UPS will be provided to serve server racks in the Large Room. The UPS will be sized to allow for generator startup and transfer with anticipated battery runtime of eight to ten minutes.

Additional power will be required for mechanical equipment and will be served from the main distribution panel and sub distribution panels provided in the main electrical room.

Lighting

Existing Conditions

Following is a description of existing systems, equipment, and notable conditions:

Exterior Lighting

Revisions to exterior lighting are not required.

Interior Lighting

The existing lighting in the Large Room includes residential style CFL lighting. There is no existing lighting in the Small Room.

Egress Lighting

Existing lighting was not observed to have emergency battery or generator back up.

Automatic Lighting Control

There is no existing automatic lighting control. The existing lighting is manually switched.

Design Requirements

Standards and Guidelines

Lighting systems conform to the most recent version of the following industry standards and guidelines:

- Oregon Energy Efficiency Specialty Code
- ASHRAE/IES Standard 90.1
- BICSI TDMM, 14th Edition
- NFPA 101 Life Safety Code

Systems Descriptions

Following is a description of proposed systems, equipment, and controls:

Exterior Lighting

Revisions to exterior lighting are not included.

Interior Lighting

New LED lighting will be provided to increase the quality of illumination in the space and around data equipment. It is anticipated that the fixtures will be utilitarian in style and the layout will provide a minimum of 46 foot-candles in the horizontal plane at one meter AFF in the middle of aisles and minimum of 18 foot-candles in the vertical plane on the face of cabinets.

Egress Lighting

All lighting will be backed up on the standby system and select fixtures will have integral battery backup.

Automatic Lighting Control

The lighting control will continue to utilize manual switching due to the maintenance activities and security in the space.

Communication

Existing Conditions

Following is a description of existing systems, equipment, and notable conditions:

Voice/Data

Overhead fiber routes from utility poles into the building and terminates in a coil on the wall of the Large Room. There is not any existing data equipment in the existing space.

Audio/Video

Not included in this project.

Design Requirements

Standards and Guidelines

Communication systems conform to the most recent version of the following industry standards and guidelines:

- EIA/TIA Standard 568 and 569
- TIA Standard 607
- IEEE-802

Systems Descriptions

Following is a description of proposed systems, equipment, and controls:

Voice/Data

New incoming fiber distribution routing frames will be installed to allow for routing of incoming fiber to individual rack enclosures. Armored fiber will be provided from distribution frames to individual cabinets and racks. Overhead cable runway will be provided over the cabinets to allow for routing within the room.

In the Large Room, 12 two-compartment collocation rack enclosures will be installed. Each rack will have two compartments that are separated from one another with individually keyed doors. Each compartment will have a total of 20 Rack Units (RU) available mounting space with internal cable management to allow for secure routing between each compartment. Additionally, the Large Room will include 11 wall-mounted lockable rack enclosures with 5RU available vertical mounting space in each enclosure.

In the Small Room, 24 wall-mounted swing-out cabinets will be installed. Each cabinet will be lockable and have a total of 12RU available mounting space.

Audio/Video

Not included in this project.

Electronic Safety and Security

Existing Conditions

Following is a description of existing systems, equipment, and notable conditions:

Access Control

The existing access control into the space is a keyed system controlled by the 911 call center.

Security

There are no video surveillance cameras in the existing space.

Fire Detection and Alarm

There is no fire detection or alarm system in the existing space.

Design Requirements

Standards and Guidelines

Electronic safety and security systems conform to the most recent version of the following industry standards and guidelines:

- NFPA 72 National Fire Alarm Code
- NFPA 101 Life Safety Code
- Oregon Fire Code (OFC)

Systems Descriptions

Following is a description of proposed systems, equipment, and controls:

Access Control

An electronic access control system will be added to serve each room. The system will consist of keypad and card key devices, door controllers, power supplies, REX devices, and cabling. Owner to provide manufacturer requirements for access control system.

Security

Security surveillance cameras will be added within each room and the approach to the entry door outside the Large Room. Owner to provide manufacturer requirements for Security devices.

Fire Detection and Alarm

Fire detection and alarm systems will be added to the room. Heat and smoke detectors will be installed as required by the clean agent fire suppression system and pre-action fire alarm system.

If wet fire sprinkler coverage is required by the code officials in addition to the clean agent fire suppression system, a pre-action sprinkler system will be added. The electronic components of the clean agent system can be used for both systems. The pre-action system will prevent the fire sprinkler pipes from going wet until an alarm is confirmed, thereby eliminating accidental water discharge if a sprinkler head is broken.



Appendix A

Appendix A-1

**Preliminary
 Not for
 Construction**

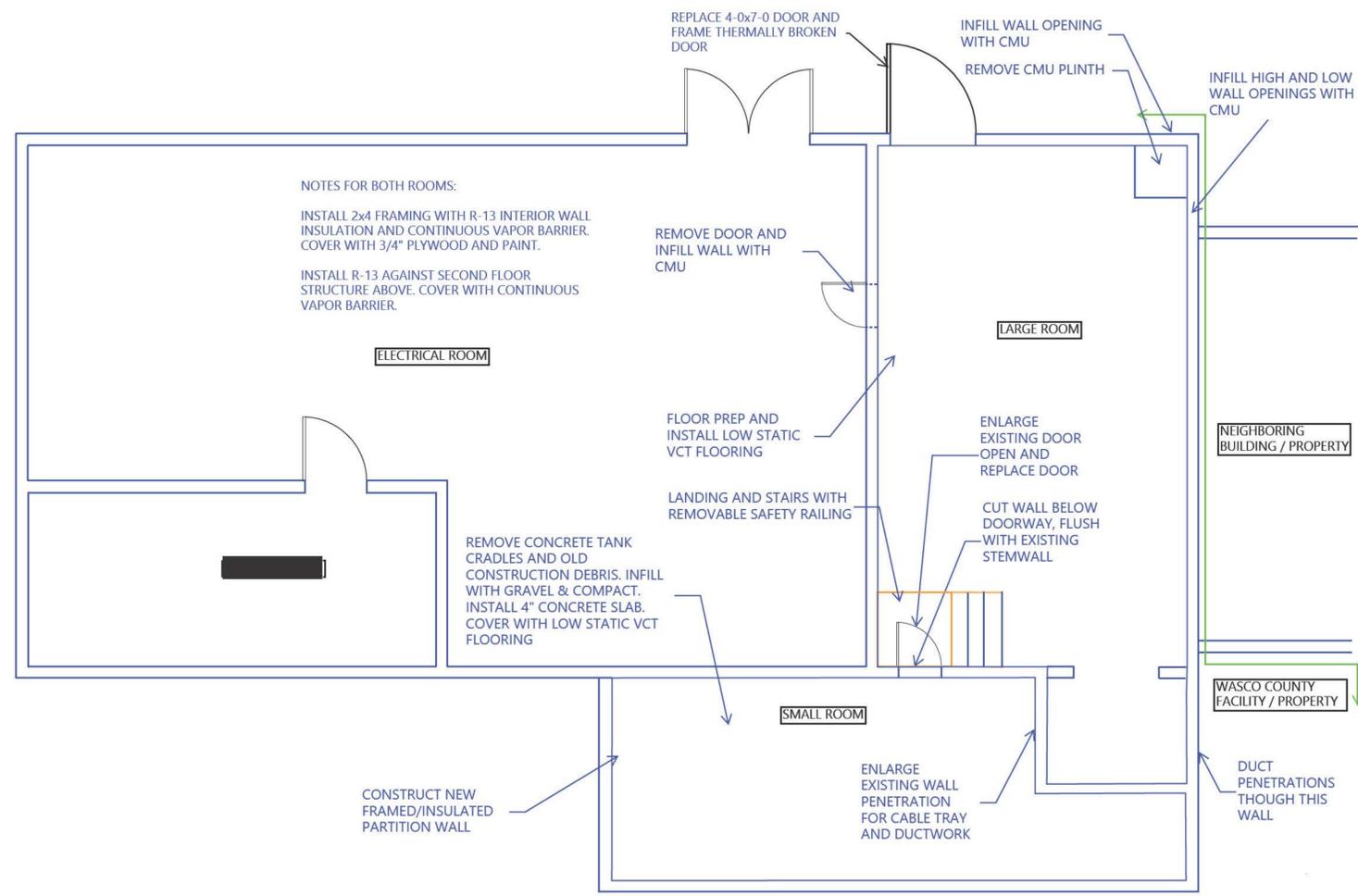
CONCEPTUAL DESIGN

Qlife/Wasco County
 Collocation Study

LOCATION:
 425 East 7th Street,
 The Dalles, OR 97058

OWNER:
 WASCO COUNTY

**LEGEND, & FLOOR
 PLAN**



1 FLOOR PLAN

MARK	DATE	DESCRIPTION

DESIGNED: PEF/CKO
 DRAWN: JSH
 CHECKED: PEF

DATE: 24 JUNE 2022

PROJECT: Y018.01

G001

Appendix A-2



**Preliminary
 Not for
 Construction**

CONCEPTUAL DESIGN

Qlife/Wasco County
 Collocation Study

LOCATION:
 425 East 7th Street,
 The Dalles, OR 97058

OWNER:
 WASCO COUNTY

FLOOR PLAN

MARK	DATE	DESCRIPTION

DESIGNED: PEF/CKO

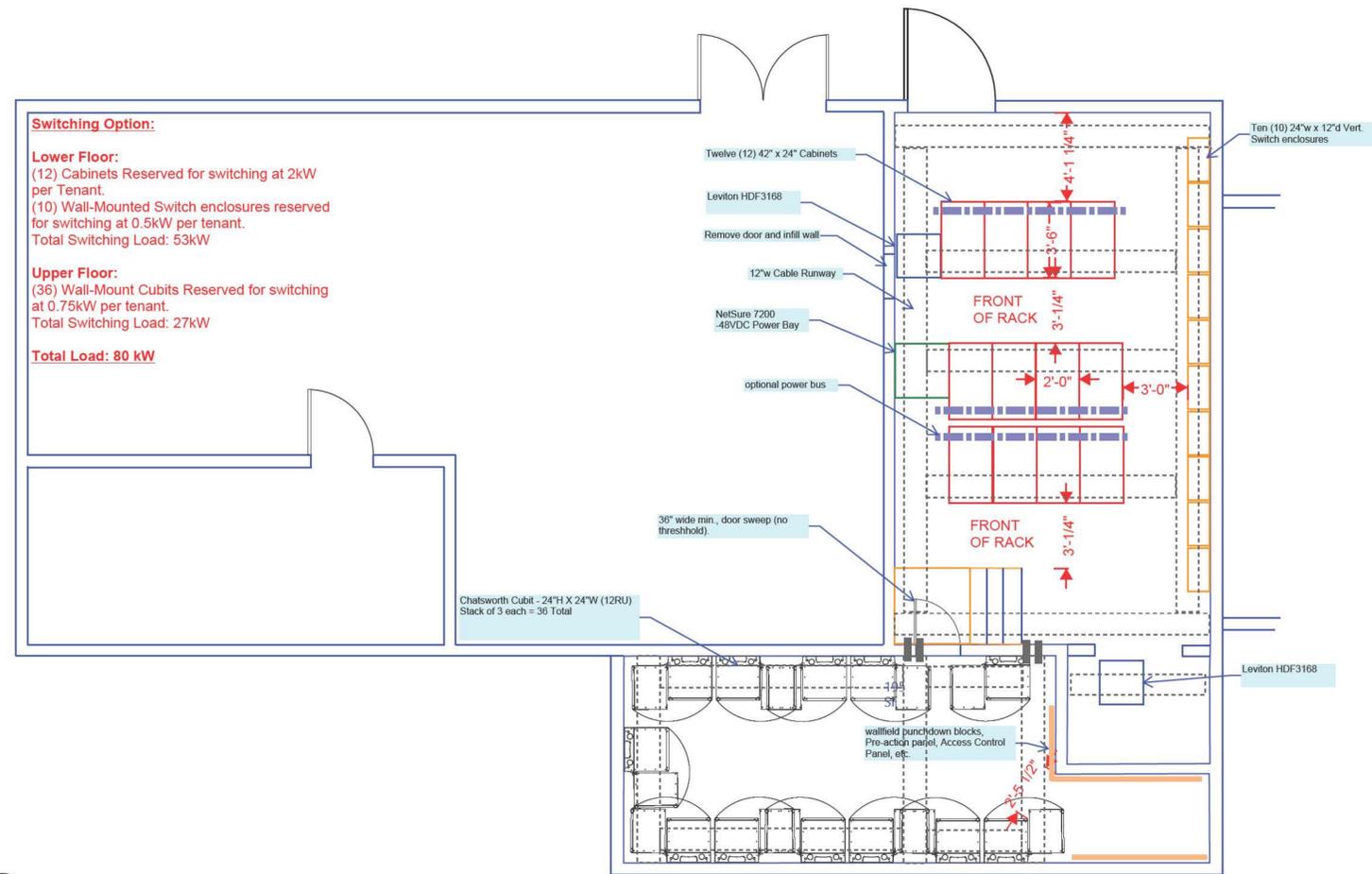
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CHECKED: PEF

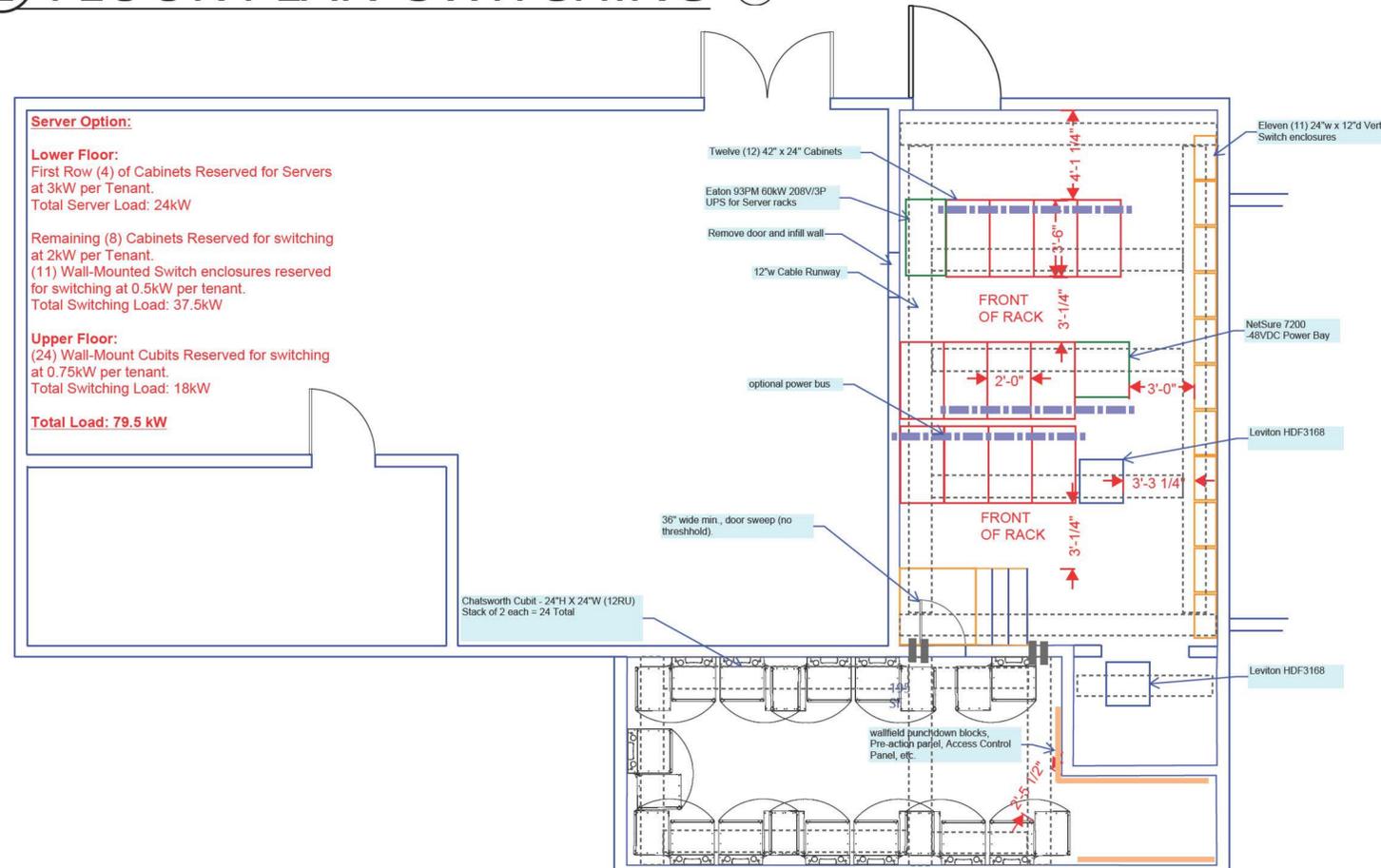
DATE: 24 JUNE 2022

PROJECT: Y018.01

G002



2 FLOOR PLAN-SWITCHING



1 FLOOR PLAN-SWITCHING/SERVER

Appendix B

Appendix B-1

HDF3168 Fiber Distribution Frame

APPLICATION

The HDF3168 Fiber Distribution Frame is designed to house patching for cross-connect and interconnect applications between backbone cables and active equipment within a frame or adjoining rack or cabinet. The frame is designed with integrated horizontal and vertical cable management and scalable modular decks for patching and splicing. The frame is ideal for use in data center (Main Distribution Area) and central office (head end) applications where there is a high concentration or aggregation of fibers.

SPECIFICATION

Fiber distribution frame shall stand seven feet tall and occupy a maximum 2' x 2' (24" x 24") floor tile footprint. It shall accommodate up to 3,168 fibers using LC and up to 15,552 fibers using MTP®. The frame shall be cULus 2416 Listed and certified to GR-63-CORE for seismic zone 4 rating. Horizontal and built-in vertical cable managers shall protect, route, and ensure the recommended bend radius for all fiber cables. Patch cables and trunk cables shall be segregated from one another to avoid intermixing. Patching and splicing solutions shall be modular and scalable. The frame shall allow for routing patch cords to adjoining frame, rack, or cabinet at any point in the frame. Port, deck, and tray positions shall be visible from the front of the frame and deck and tray positions from the rear of the frame for ease of identification. Front and rear doors shall be included or offered as an accessory item. System solution shall provide an easy migration path from 10G to 40G/100G. System solution shall allow for a pre-configured frame requiring one part number for ordering. Country of origin for product shall be the United States of America.



FEATURES

- Industry-leading fiber density per square foot (or floor tile space) – 3,168 fibers or 1,584 channels (for 10G) per frame (using LC)
- Aesthetically pleasing look for data centers and showrooms
- Ease of migration to 40G/100G using modular HDX MTP® cassettes and adapter plates
- Modular 3.5" high deck for patching and/or splicing capability
- Simple ease of routing patch cords to adjacent frame or cabinets at any point in the frame
- Use of only one length of patch cord (3 meters) necessary when patching within frame
- Overhead and/or under floor fiber trunk access
- Open design allows for easy cross-connect patching within frame
- Rear doors included with frame to protect backbone fiber cabling
- Minimum bend radius protection designed throughout frame
- Frame with decks and accessories can be pre-configured as part of the Leviton Make-to-Order program

DESIGN CONSIDERATIONS

- Frame includes horizontal and vertical cable management
- Optional front door kits sold separately
- Patch Decks accept HDX MTP Cassettes or Adapter Plates
- Applicable for use with Leviton Overhead Infrastructure Platform
- Seismic Zone 4 Earthquake Kit sold separately

STANDARDS COMPLIANCE

ANSI/TIA-568-C.3 Optical Fiber Cabling Components Standards
 ANSI/TIA-942 Telecommunications Infrastructure Standard for Data Centers
 cULus 2416 Listed for Information Technology and Communications Equipment Cabinet, Enclosure, and Rack Systems

PHYSICAL SPECIFICATIONS

Dimensions: See page two
 Materials: Cold-rolled 12-gauge steel
 Load rating: 396 lbs
 Shipping weight: 292 lbs (empty frame)

COUNTRY OF ORIGIN

United States

Leviton Network Solutions 2222 - 222nd St. SE Bothell, WA 98021-4416 tel 1-800-824-3005 tel +1-425-486-2222 appeng@leviton.com www.leviton.com	Asia / Pacific T +1.631.812.6228 E infoasean@leviton.com	Canada T +1.514.954.1840 E pcservice@leviton.com	Caribbean T +1.954.593.1896 E infocaribbean@leviton.com	China T +852.2774.9876 E infochina@leviton.com	Colombia T +57.1.743.6045 E infocolombia@leviton.com
	Europe T +33.6.8869.1380 E infoeurope@leviton.com	India / SAARC T +91.80.4322.5678 E infoindia@leviton.com	Mexico T +52.55.5082.1040 E Isamarketing@leviton.com	Middle East & Africa T +971.4.886.4722 E lmeinfo@leviton.com	South Korea T +82.2.3273.9963 E infokorea@leviton.com

WARRANTY INFORMATION

For a copy of Leviton warranties, visit www.leviton.com/warranty.

ELECTRONIC FILES

For CAD files, typical specs, or technical drawings (.DXF, .DWG), visit www.leviton.com.



F3168-FDR



F3168-CFR

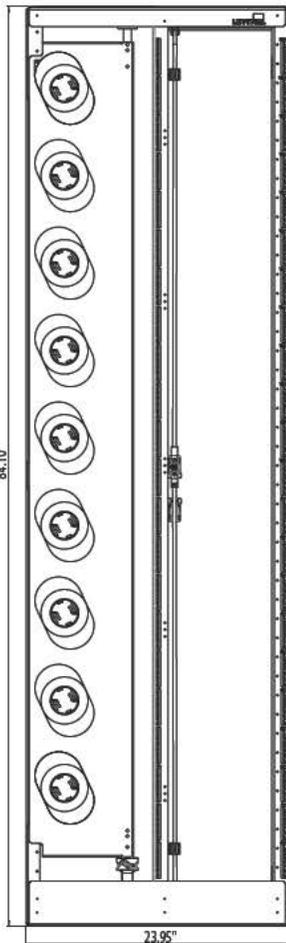


F3168-CCK

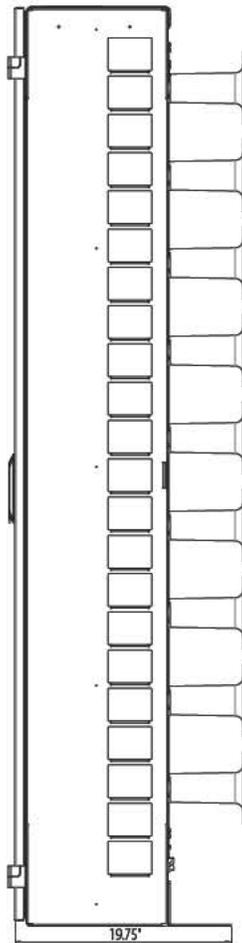


F3168-BLK

F3168-22F



Front



Side

HDF3168 Fiber Distribution Frame & Decks

Description	Part No.
Fiber Distribution Frame	F3168-22F*
Patch Deck, empty, 2RU (includes horizontal cable management and cable clamp kit)	F3168-DCK
Splice Deck, empty, 2RU (includes VELCRO® Brand ties, mesh sleeve, and cable clamp kit)	F3168-SPD
24-fiber Heat-Shrink-Style Molded Splice Tray (includes 60 mm splice sleeves)	T5PLS-24F

Kits & Accessories

Description	Part No.
Cross Frame Routing Kit	F3168-CFR
Front Doors Kit	F3168-FDR*
Cable Clamp Kit	F3168-CCK
Seismic Zone 4 Kit	F3168-EQK
2RU Blank Panel	F3168-BLK

* Items do not qualify for prepaid freight program

HDF3168 Frame Options

# OF PATCH DECKS	# OF CASSETTES OR ADAPTER PLATES PER PATCH DECK	FIBER COUNT MTP CASSETTE	FIBER TYPE	CASSETTE/ PLATE CONNECTOR TYPE (FRONT)	CASSETTE CONNECTOR TYPE (REAR)	POLARITY (CASSETTE)	FRONT DOORS KIT
• 1-22	• 1-12	• 12 • 24 • 48	• OM2 • OM3 • OM4 • OS2	• LC • SC • MTP	• 12-Fiber MTP • 24-Fiber MTP	• Method A • Method B (Core) • Method B (Edge) • Method C	• Yes • No



Leviton Network Solutions

2222 - 222nd St. SE
Bothell, WA 98021-4416

Asia / Pacific
T +1 631 812 6228
E infoasean@leviton.com

Canada
T +1 514 954.1840
E pcservice@leviton.com

Caribbean
T +1 954.593.1896
E infocaribbean@leviton.com

China
T +852 2774.9876
E infochina@leviton.com

Colombia
T +57.1.743 6045
E infocolombia@leviton.com

tel 1-800-824-3005
tel +1-425-486-2222
appeng@leviton.com
www.leviton.com

Europe
T +33.6 8869.1380
E infoeurope@leviton.com

India / SAARC
T +91.80.4322.5678
E infoindia@leviton.com

Mexico
T +52.55.5082.1040
E Esamarketing@leviton.com

Middle East & Africa
T +971.4.886.4722
E lmeinfo@leviton.com

South Korea
T +82 2.3273.9963
E infokorea@leviton.com

Appendix B-2

Product data sheet

Specifications



APC NetShelter SX, Server Rack Enclosure, Colocation, 42U, Black, 1991H x 600W x 1070D mm

AR3200

Overview

Presentation	Two compartment enclosure for colocation facilities with customers requiring a minimal amount of rack space. This multi-tenant, security enhanced enclosure is provided with a compact width to optimize data center space.
Lead time	Usually in Stock

Main

Number of rack unit	42U
Provided equipment	3-Digit Combination Style Handles Adjustable vertical mounting rails Baying hardware Documentation CD Door key Installation guide Leveling feet Pre-installed casters Rack mounting hardware Roof

Physical

Color	Black
Height	78.39 in (199.1 cm)
Width	23.62 in (60 cm)
Depth	42.13 in (107 cm)
Net Weight	310.19 lb(US) (140.7 kg)
Mounting preference	No preference
Mounting Mode	Not rack-mountable
Maximum Mounting Depth	37.20 in (94.49 cm)
Rack Width	19"
Marking	14 gauge EIA mounting rail 16 gauge front door 16 gauge post 18 gauge rear door 18 gauge roof 18 gauge side panels
Permanent permissible load	2250 lb(US) (1020.58 kg) dynamic 3750 lb(US) (1700.97 kg) static

Conformance

Standards	UL 2416 UL 60950-1
------------------	-----------------------

Ordering and shipping details

GTIN	731304284130
Package weight(Lbs)	371.15 lb(US) (168.35 kg)

Packing Units

Package 1 Height	83.35 in (211.7 cm)
Package 1 width	29.37 in (74.6 cm)
Package 1 Length	45.51 in (115.6 cm)
Number of Units in Package 3	1

Offer Sustainability

Sustainable offer status	Green Premium product
REACH Regulation	REACH Declaration
REACH free of SVHC	Yes
EU RoHS Directive	Pro-active compliance (Product out of EU RoHS legal scope) EU RoHS Declaration
Toxic heavy metal free	Yes
Mercury free	Yes
RoHS exemption information	Yes
Take-back	Take-back program available

Contractual warranty

Warranty	5 year repair or replace
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Appendix B-3

CUBE-iT™ Wall-Mount Cabinet

CUBE-iT™ Wall-Mount Cabinet provides a secure, easy-to-install, swing-out storage solution for information and communications technology (ICT) equipment. Attractive design, security features and range of optional fan kits make it ideal for public areas or equipment rooms with limited floor space.



KEY FEATURES

- Three-part, swing-out design allows access and service to the front and rear of equipment
- A single lock and key (CH751) on the front door provides access to the entire cabinet
- Rear panel includes 1" (25.4 mm) and 3" (76 mm) knockouts, and can accept 3/4" (19 mm) and 2.5" (63.5 mm) conduit. The 3" (76 mm) knockouts include edge-protection grommets
- Rear panel features cable tie and attachment points for accessory rack-mount brackets
- UL® 2416 Listed, 300 lb (136 kg) load rating
- Internal latch mechanism secures the rear panel; slim-profile does not impact cabling space
- Hinge design allows the installer to remove the rear panel for easier installation on the wall
- Cabinet body includes one pair of adjustable depth 19" EIA threaded equipment mounting rails
- Cable pass-through knockout with optional brush seal makes it ideal for retrofit installations
- Optional low-decibel (31 dB), dual-fan kit provides quiet operation while cooling equipment
- Factory-prepped bonding feature provides convenience and reduces installation time
- Ships fully assembled

ADVANTAGES

- ➔ **Easy Access to Equipment**
 - Three-part, swing-out design enables easy access to the front and rear of installed equipment
- ➔ **Modern, Sleek Design**
 - Attractive design with multiple door styles and colors make it suitable for use in public areas outside of telecommunications rooms
 - Low-decibel, dual-fan kit option provides quiet operation while keeping active equipment cool
- ➔ **Retrofit Capability**
 - Removable top and bottom rear panels with a rectangular knockout are perfect for retrofit deployments over existing equipment and cabling
- ➔ **Increased Security**
 - A single lock and key on the front door provides access to the cabinet; the rear section is only accessible via an internal latch inside the front door
- ➔ **High Load Rating**
 - 300 lb (136 kg) UL 2416 Listed load rating supports heavier equipment
- ➔ **Cable Management Features and Options**
 - A host of optional cable management accessories help keep cables neat and organized

SPECIFICATIONS

Description	Wall-mount enclosure with lockable front door and swing-out rear access to equipment
Use	For indoor use only, in environmentally controlled areas; may not be used outdoors, in harsh environments, or in air-handling spaces
Available Sizes	<ul style="list-style-type: none"> • Heights: 24" (610 mm), 36" (910 mm) and 48" (1220 mm) • Widths: 24" (610 mm); 19" EIA rack-mount • Depths: 18" (460 mm), 24" (610 mm), 30" (760 mm)
Usable Interior Space	<ul style="list-style-type: none"> • Heights: 12U, 19U, 26U • Widths: 19" EIA rack-mount • Depths: refer to dimensional drawings on page 2
Cable Access	<ul style="list-style-type: none"> • (8) 1" (25.4 mm) and 3" (76 mm) knockouts, 4 top/4 bottom. Knockouts can accept 3/4" (19 mm) or 2.5" (63.5 mm) conduit • (4) Edge-protection grommets are included for the 3" (76 mm) knockouts • Removable top/bottom panel on rear panel *Can't remove while under load; must remove center chassis • (1) Rectangular knockout, 9"W x 2.2"D (230 mm x 55 mm)
Equipment Support	<ul style="list-style-type: none"> (1) Pair L-shaped equipment mounting rails in the main cabinet body • 19"W, EIA-310-D compliant • Universal hole pattern, 5/8"-5/8"-1/2" vertical hole spacing • Threaded #12-24 equipment mounting holes • 5"D (130 mm) rear panel punched to accept accessory equipment mounting brackets, see dimensional drawings on page 2 • Includes 50 each #12-24 equipment mounting screw

Global Availability

US & Canada
 +1-800-834-4969
 Toronto, Ontario, Canada
 +905-850-7770
 chatsworth.com
 techsupport@chatsworth.com

Latin America
 +52-55-5203-7525
 Toll Free within Mexico
 01-800-01-7592
 chatsworth.com.co

Europe
 +44-1628-524-834
 chatsworth.com

Middle East & Africa
 Dubai, UAE
 +971-4-2602125
 chatsworth.ae

Asia Pacific
 +86 21 6880-0266
 chatsworth.com.cn



SPECIFICATIONS

Load Capacity	300 lbs (136 kg) of equipment, open or closed
Certifications	<ul style="list-style-type: none"> • UL-2416 • cUL CSA C22.2 • UL 508A: Type 1 • NEMA Type 1 • IEC 60529 IP20
Material	<ul style="list-style-type: none"> • Steel sheet cabinet body, rear panel and door • Door is extruded metal frame with solid metal or tinted tempered glass panel • Equipment mounting rails are aluminum
Construction	Riveted and bolted
Finish	Powder coat paint Black or Glacier White

Space-Saving Design and Easy Access to Equipment

CUBE-iT Wall-Mount Cabinets feature highly functional elements to provide class-leading support and storage of ICT equipment. CUBE-iT Cabinets allow easy access to the front and rear of the cabinet, making it ideal for telecommunications rooms. Additionally, high airflow vent pattern and optional low-decibel, dual-fan kit provides equipment cooling without interfering noise. The new modern, sleek design with range of options make the cabinet ideal for use in office spaces, conference rooms, classrooms, or any public spaces where floor space is limited.

The swing-out, three-part design secures equipment while maintaining ease of access for serviceability. CUBE-iT Wall-Mount Cabinet is accessed by a keyed lock on the front door. Once unlocked, an internal latch is accessible just inside the front door on the main chassis. Simply turn the lever to release the main chassis from the wall to gain access to the rear of equipment. Additionally, the cabinet is configurable for right or left swing.

The cabinet body delivers exceptional strength and rigidity. The UL 2416 Listed 300 lb (136 kg) load-rating provides tested support for heavier equipment. For an updated look with a robust, high-quality viewing panel, the front door has an optional tempered glass window. Use CUBE-iT Wall-Mount Cabinet to meet growing demands, Power over Ethernet (PoE) deployments, faster wireless and premise networks, audio and video equipment, security and monitoring equipment and smart building initiatives.

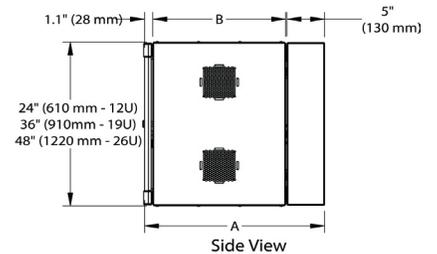
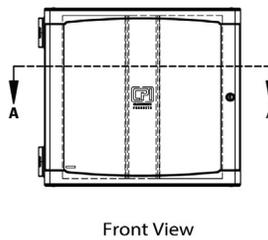
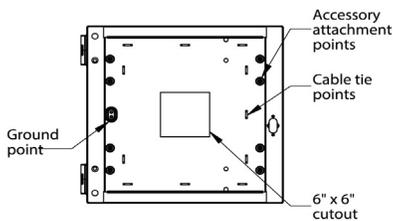
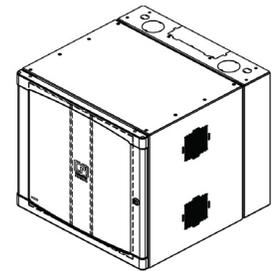
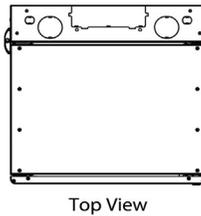
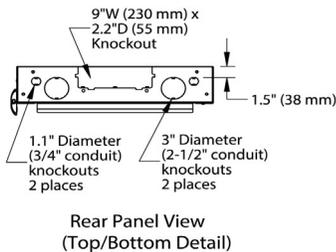
The removable top and bottom rear panels feature a rectangular cable pass-through knockout with optional brush seals, providing a larger opening for cables that can accept patch panels, making CUBE-iT a great solution for retrofit and existing infrastructure, or for use with factory-terminated structured cabling.

CUBE-iT Wall-Mount Cabinet is available in three heights and three depths to support 12U, 19U or 26U of equipment.

RELATED ACCESSORIES

- Universal Cable Runway
- Rack-Mount Shelf
- Foot Kit for CUBE-iT Wall-Mount Cabinet
- Saf-T-Grip® Straps
- Horizontal Rack Busbar
- Horizontal Switched eConnect® PDU
- RIM-750
- Ground Jumper

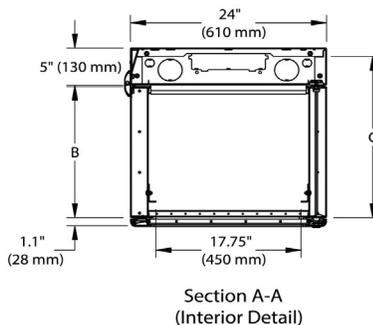
DIMENSIONS:



Rear Panel View (Interior Detail)

Front View

Side View



Section A-A (Interior Detail)

Depth		
Overall - A	Cabinet Body - B	Max. Equipment - C
18" (460 mm)	11.7 (297 mm)	15.9 (403 mm)
24" (610 mm)	17.7" (449 mm)	21.9" (556 mm)
30" (760 mm)	23.7" (602 mm)	27.9" (708 mm)

NOTE: Maximum equipment depth denotes values that still allow the center chassis to swing away from rear panel.

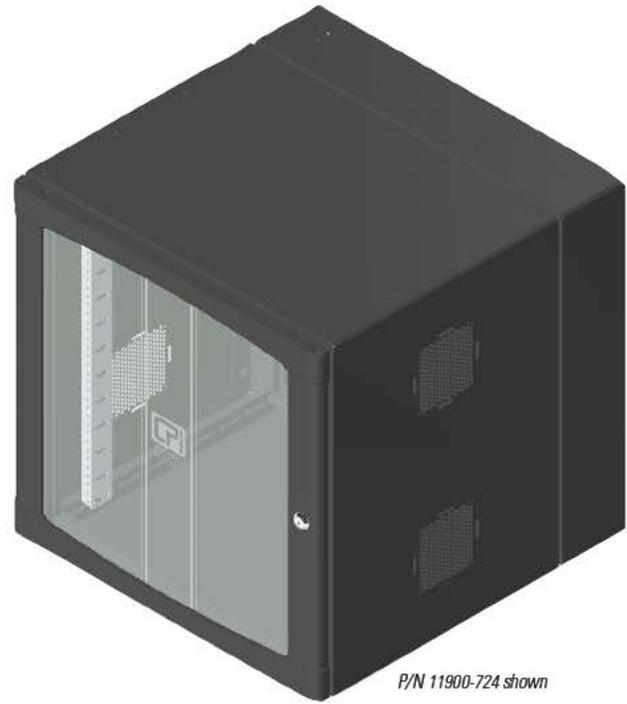
ORDERING INFORMATION:

CUBE-iT Wall-Mount Cabinets

- Attaches to the wall with included installation hardware
- Available in 12U, 19U and 26U heights, with solid metal or tempered glass door options
- All cabinet styles are 24"W (610 mm)
- Includes CH751 keyed lock

Part Number	Cabinet Depth	Door Style	Shipping Weight lb (kg)
24"H (610 mm) CUBE-iT Cabinet			
11890-X24	18" (460 mm)	Solid	90 (40.9)
11901-X24	18" (460 mm)	Tempered Glass	90 (40.9)
11840-X24	24" (610 mm)	Solid	101 (45.9)
11900-X24	24" (610 mm)	Tempered Glass	101 (45.9)
11996-X24	30" (760 mm)	Solid	112 (50.9)
12419-X24	30" (760 mm)	Tempered Glass	112 (50.9)
36"H (910 mm) CUBE-iT Cabinet			
11890-X36	18" (460 mm)	Solid	114 (51.8)
11901-X36	18" (460 mm)	Tempered Glass	114 (51.8)
11840-X36	24" (610 mm)	Solid	128 (58.2)
11900-X36	24" (610 mm)	Tempered Glass	128 (58.2)
11996-X36	30" (760 mm)	Solid	142 (64.5)
12419-X36	30" (760 mm)	Tempered Glass	142 (64.5)
48"H (1220 mm) CUBE-iT Cabinet			
11890-X48	18" (460 mm)	Solid	139 (63.2)
11901-X48	18" (460 mm)	Tempered Glass	139 (63.2)
11840-X48	24" (610 mm)	Solid	155 (70.5)
11900-X48	24" (610 mm)	Tempered Glass	155 (70.5)
11996-X48	30" (760 mm)	Solid	171 (77.7)
12419-X48	30" (760 mm)	Tempered Glass	171 (77.7)

Note: X=Color; 7=Black and E=Glacier White



ACCESSORIES:



Standard Fan and Filter Kit for CUBE-iT Wall-Mount Cabinet

- Pressurizes interior of the cabinet, forcing warm air out of open vents
- Assembly Includes 1 fan, 1 filter, and 1 vent cover
- Noise Level: 39 dB (measured at 3' (1 m) distance)
- Airflow: 115 CFM (170 CMH)
- 6'L (1.8 m) NEMA 5-15P/6-15P Power Cord

Part Number	Description	Shipping Weight lb (kg)
40972-001	115 Volt, 50/60 Hz, 5-15P power cord	2 (0.8)
40972-002	230 Volt, 50/60 Hz, 6-15P Power cord	2 (0.8)
40973-001	Replacement Filter Kit, Pack of 5	2 (0.8)



Low-Decibel Dual-Fan and Filter Kit for CUBE-iT Wall-Mount Cabinet

- Pressurizes interior of the cabinet, forcing warm air out of open vents
- Assembly Includes 2 fans and 2 filters
- Noise Level: 31 dB (measured at 3' (1 m) distance)
- Recommended placement on bottom right and left sides of the cabinet
- Airflow: 120 CFM (204 CMH)
- 6'L (1.8 m) NEMA 5-15P/6-15P Power Cord

Part Number	Description	Shipping Weight lb (kg)
40975-001	115 Volt, 50/60 Hz, 5-15P power cord	4 (1.8)
40975-002	230 Volt, 50/60 Hz, 6-15P Power cord	4 (1.8)
40973-001	Replacement Filter Kit, Pack of 5	2 (0.8)



Vertical Cabling Section for CUBE-iT Wall-Mount Cabinet

- Attaches to the outside edge of equipment mounting rails
- 4U height; openings align with rack-mount unit spaces on equipment mounting rails
- Sold in pairs
- Order additional kits as-needed per cable management requirements

Part Number	Description	Shipping Weight lb (kg)
40970-704	4U, 7"H x 0.5"D (178 mm x 13 mm)	3 (1.4)
40970-707	7U, 12.3"H x 0.5"D (311 mm x 13 mm)	3 (1.4)
40970-711	11U, 19.3"H x 0.5"D (489 mm x 13 mm)	4 (1.8)

Color is black.



Vertical Lashing Bracket for CUBE-iT Wall-Mount Cabinet

- Provides multiple lashing points for premise cables
- Attaches to center chassis with included hardware
- Adjustable front-to-rear

Part Number	Description	Shipping Weight lb (kg)
40971-X24	24"H x 4"W (610 mm x 100 mm)	4 (1.8)
40971-X36	36"H x 4"W (910 mm x 100 mm)	6 (2.7)
40971-X48	48"H x 4"W (1220 mm x 100 mm)	8 (3.6)

Note: X=Color; 7=Black and E=Glacier White

ACCESSORIES:



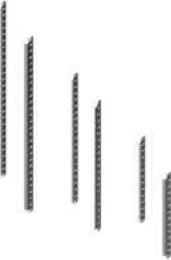
- Cable Port Brush Kit for CUBE-iT Wall-Mount Cabinet**
- Optional cover when rectangular knockout on the rear panel is removed
 - Seals opening around cables with brush seal
 - Sold in pairs

Part Number	Description	Shipping Weight lb (kg)
25190-000	0.8"H x 10.6"W x 2.9"D (20 mm x 268 mm x 74 mm)	2 (0.9)



- Horizontal Wire Management Bar for CUBE-iT Wall-Mount Cabinet**
- Attaches to the rear of the equipment mounting rails
 - Secures premise cables after termination on patch panels
 - Includes mounting hardware and 12 cable ties

Part Number	Description	Shipping Weight lb (kg)
11837-701	1.5"H x 19.3"W x 3.7"D (38 mm x 490 mm x 94 mm)	4 (1.8)



- Equipment Mounting Rail Kit for CUBE-iT Wall-Mount Cabinet**
- Use with equipment that needs front and rear support
 - Sold in pairs
 - Aluminum material

Part Number	Description	Shipping Weight lb (kg)
12787-524	12U; For 24"H (610 mm) cabinet	4 (1.8)
12787-536	19U; For 36"H (910 mm) cabinet	6 (2.7)
12787-548	26U; For 48"H (1220 mm) cabinet	8 (3.6)

Note: CUBE-iT Wall-Mount includes one pair of Equipment Mounting Rails



- Rack-Mount Shelf**
- For use with small equipment such as modems, routers and fiber modules in 19" EIA racks
 - 1U; Includes multiples tie-down points
 - Supports up to 20 lb (9.1 kg) of equipment

Part Number	Description	Shipping Weight lb (kg)
40974-X19	Rack-Mount Shelf, 1U x 19"W x 10"D (483 mm x 250 mm)	4 (1.8)

Note: X=Color; 7=Black and E=Glacier White



- 90° Mounting Bracket for CUBE-iT Cabinets**
- Attaches to rear panel on CUBE-iT Cabinets
 - Creates a 19" EIA x 2U vertical rack-mount space
 - 2 brackets per kit, 3.9"H x 1"W x 4"D
(99 mm x 25.4 mm x 101.6)

Part Number	Description	Shipping Weight lb (kg)
13285-501	2U, 1 pair, Clear finish	3 (1.4)



- Ground Jumpers**
- Provide common bonding from equipment rack or cabinet to halo conductor
 - Available individually or in packages of 10
 - Constructed of UL Listed components

Part Number	Description	Shipping Weight lb (kg)
40159-009	9' (2.7 m) Ground Jumper, 1 Each	2 (0.9)
40159-019	9' (2.7 m) Ground Jumper, 10 Each	20 (1.9)



- LED Light Kit for CUBE-iT Cabinets**
- Attaches to the bottom, top or side of CUBE-iT Cabinets
 - Toggle switch, 4W LED light
 - Detachable, 120 VAC with NEMA 1-15P Power Cord

Part Number	Description	Shipping Weight lb (kg)
12803-701	LED Light Kit, 4W, 120 Vac	2 (0.9)



- Power Strip for CUBE-iT Cabinets**
- Select straight or locking plug style
 - 115 VAC; 15 Amp or 20 Amp
 - 10'L (3 m) power cord and circuit breaker
 - Includes (8) 5-20R outlets

Part Number	Description	Shipping Weight lb (kg)
12820-701	15A Power Strip, NEMA 5-15P	4 (1.8)
12820-702	15A Power Strip, NEMA L5-15P	4 (1.8)
12820-705	20A Power Strip, NEMA 5-20P	4 (1.8)
12820-706	20A Power Strip, NEMA L5-20P	4 (1.8)

Note: Surge-protected options available



- Foot Kit for CUBE-iT Wall-Mount Cabinet**
- For use on desktops or floor when not installed on a wall
 - Pack of 4

Part Number	Description	Shipping Weight lb (kg)
13483-001	Foot Kit	2 (0.9)



CPI now offers Extended Limited Warranties on CPI-Branded Electronic products, available for two additional years beyond the expiration of the Original Warranty Period (3 years).

Contact CPI Customer Service, or visit www.chatsworth.com/warranty for more information.

Interested in learning more about CUBE-iT Enclosure solutions? Call us at 800-834-4969, or email Technical Support at techsupport@chatsworth.com.



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Appendix B-4

SmartRack 5U Low-Profile Vertical-Mount Switch-Depth Wall-Mount Rack Enclosure Cabinet

MODEL NUMBER: **SRWF5U**



Wall-mount cabinet secures and organizes 5U of 19-inch rack equipment in network wiring closets and other locations with limited floor space. Houses equipment up to 20 inches deep, but extends less than 10 inches from wall.

Description

The SRWF5U SmartRack 5U Low-Profile Vertical-Mount Switch-Depth Wall-Mount Rack Enclosure Cabinet is designed to house EIA-standard 19-inch rack equipment in network wiring closets, retail locations, classrooms, back offices and other areas with limited floor space where you need equipment to be secure, organized and out of the way. Constructed from heavy-duty steel with a durable black powder-coated finish, the cabinet has a maximum load capacity of 150 lbs (68 kgs).

Because the low-profile cabinet mounts vertically, it extends less than 10 inches from the wall while housing equipment up to 20 inches deep, including network switches and patch panels. In addition to 5U of rack space in the primary mounting area, it also includes a slide-out 2U mounting bracket at the top of the enclosure for patch panels up to 2.5 inches deep.

The top panel and front door lock securely to help prevent damage, tampering or theft. The cabinet is vented, which allows air to flow freely and keep equipment cool. The reversible front door can open left or right. Convenient top and bottom ports allow easy cable routing.

The SRWF5U comes fully assembled and ready to mount to the wall. Equipment installation is easy with threaded mounting holes and hardware that support M6 or 12-24 mounting.

Features

Saves Valuable Workspace Perfect for network wiring closets, retail locations, classrooms, back offices and other areas with limited floor space where you need equipment to be secure, organized and out of the way
Houses EIA-standard 19 in. rack equipment in 5U of space
Low-profile vertical-mount cabinet extends

Highlights

- Maximum load capacity of 150 lbs (68 kgs)
- Locking steel cabinet vented to keep equipment cool
- Secures 5U of 19 in. rack equipment up to 20 in. deep
- Includes additional 2U of space for patch panels
- Ships fully assembled for quick installation

Package Includes

- SRWF5U SmartRack 5U Low-Profile Vertical-Mount Switch-Depth Wall-Mount Rack Enclosure Cabinet
- (12) M6 screws
- (12) M6 cup washers
- (12) 12-24 screws
- (2) Keys
- Owner's manual



less than 10 inches from the wall while housing equipment up to 20 inches deep, including network switches and patch panels Also includes a slide-out 2U mounting bracket at the top of the enclosure for patch panels up to 2.5 inches deep Maximum load capacity of 150 lbs (68 kgs)

Keeps Important Equipment Secure Top panel and reversible front door lock securely to help prevent damage, tampering or theft Vented cabinet keeps equipment cool Convenient ports with removable covers allow cable routing through top and bottom

Easy Enclosure and Equipment Installation Ships fully assembled for quick installation Wall-mounting holes spaced 16 in. apart for standard wall stud placement Rails adjust easily—unscrew them, slide them to desired depth, and screw them back in Threaded mounting holes support M6 or 12-24 mounting Rack spaces marked for easy reference

Meets Payment Card Industry Standards Provides physical equipment and media security required for PCI DSS (Payment Card Industry Data Security Standard) compliance

Specifications

OVERVIEW	
UPC Code	037332163981
Device Compatibility	Patch Panel; Network Switch
Rack Type	Enclosure
PHYSICAL	
Color	Black
Maximum Device Depth (cm)	50.80
Maximum Device Depth (in.)	20
Maximum Device Depth (mm)	508
Rack Height	5U
Shipping Dimensions (hwd / cm)	73.66 x 32.77 x 80.52
Shipping Dimensions (hwd / in.)	29.00 x 12.90 x 31.70
Shipping Weight (kg)	25.85
Shipping Weight (lbs.)	57.00
Unit Dimensions (hwd / cm)	80.52 x 73.66 x 32.77
Unit Dimensions (hwd / in.)	28.8 x 25.6 x 9.7
Unit Weight (kg)	20.41
Unit Weight (lbs.)	45
Weight Capacity - Stationary (kg)	68
Weight Capacity - Stationary (lbs.)	150
Rack Depth	Shallow
Number of Vertical Mounting Rails	2
SPECIAL FEATURES	
Built-in Cable Management	No



Tripp Lite
1111 W. 35th Street
Chicago, IL 60609 USA
Telephone: 773.869.1234
www.tripplite.com

Extra Wide	No
STANDARDS & COMPLIANCE	
Certifications	EIA-310-E; IP20 Protection Rating
Approvals	RoHS
WARRANTY	
Product Warranty Period (Worldwide)	5-year limited warranty

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Appendix C

Appendix C-1

Eaton 93PM 50-200kW Scalable UPS Technical Specification

CONSTRUCTION	50/100kW	50/150kW	100/150kW	50/200kW	100/200kW	150/200kW
Model	93PM-50(100)	93PM-50(150)	93PM-100(150)	93PM-50(200)	93PM-100(200)	93PM-150(200)
Initial Rating (all operating modes)	50kVA/ 50kW	50kVA/ 50kW	100kVA/ 100kW	50kVA/ 50kW	100kVA/ 100kW	150kVA/ 150kW
Initial Internal Redundancy rating	-	-	50kW N+1	-	50kW N+1	100kW N+1
Configured Upgradability	100kW	150kW	150kW	200kW	200kW	200kW
	50kW N+1	100kW N+1	100kW N+1	150kW N+1	150kW N+1	150kW N+1
UPS Topology	Double Conversion, IGBT Converters, three level Inverter					
Performance classification	VFI-SS-111					
UPS Dimensions: W x D x H (mm)	560 x 914 x 1876			760 x 914 x 1876		
Weight (kg) without batteries	272	306	372	358	424	490
Degree of protection	IP21, with front door washable dust filter					
Cabinet colour	Black, RAL 9005					
Switchgear (Internal)	Optional Input Breaker, Optional Battery Breaker, Optional Maintenance Bypass			External only		
Cable entry	Bottom/Front or Rear, optional Top entry			Top/Bottom or Rear		

ENVIRONMENT

Ambient storage temperature	Range of -25 to +55°C in the protective package
Ambient service temperature	Power electronics part: 0 to +40°C without de-rating Battery part: +5 to 25°C without reducing battery life
Maximum service altitude	1000m above sea level. Maximum 2000m with 1% de-rating per each additional 100m above 1000m
Relative humidity	5 to 95%, no condensation allowed
Acoustic noise at 1m	<65dBA at 100% load fully configured capacity
Electromagnetic Compatibility	Immunity and emission to IEC/EN 62040-2

USER INTERFACE & COMMUNICATIONS

Display	7" Touchscreen Colour display and 4 separate summary LEDs for system status, door mounted LED bars for long range view of system status
Standard Communication Ports	3x Mini-Slot , 1x EPO input (NC or NO), 1x Relay output (NO/NC), 5x Building Alarm inputs, 1x USB, 1x RS232 Service Port
Optional Communication Ports	Mini-Slot cards: Web/SNMP, Relay/RS232, Industrial Relay, ModBus, Power Xpert

ELECTRICAL INPUT CHARACTERISTICS

Earthing system compatibility	TN, TN-S, TN-C, TN-C-S, TT (Three-phase, four-wire + PE), IT						
Rated input voltage and voltage tolerance	Rectifier: 230/400Vac nominal (220/380, 240/415 Selectable) Tolerance: 196/340-276/480V (-15%,+20%) at 100% load 138/240-276/480V (-40%,+20%) at 50% load without battery discharge						
	Bypass: 230/400Vac nominal (220/380, 240/415 Selectable) Tolerance: 196/340 – 253/438V (-15%, +10% of nominal)						
Operating frequency / tolerance	50 or 60Hz; Tolerance 40-72Hz						
Input current distortion	<3% THDi (Linear load condition at rated input current)						
Input power factor	0.99pf						
Inrush current	<100% of rated current. Rectifier ramp-up 10A/s (default), configurable, min.1A/s						
Number of input phases	3 phases + Neutral						
Rectifier input current @400V Initial/Fully Configured (rms)	Rated:	76/151A	76/226A	151/261A	76/301A	151/301A	226/301A
	Max.:	95/200A	95/300A	200/300A	95/400A	200/400A	300/400A
Bypass input current @400V Recommended/Maximum (rms)	145A/172A	218A/258A		289A/344A			

ELECTRICAL OUTPUT CHARACTERISTICS - NORMAL MODE

Rated output voltage	220/380, 230/400, 240/415Vac, three phase
Output voltage variation	<1% static load, 4% with 50ms recovery from 100% load step
Crest factor	3:1
Rated output frequency	50Hz (default) or 60Hz
Output frequency variation	±0.1Hz with slew rate 1Hz/s
Total output voltage distortion	<1% linear load, <5% non-linear load

Eaton 93PM 50-200kW Scalable UPS Technical Specification

	50/100kW	50/150kW	100/150kW	50/200kW	100/200kW	150/200kW
Short circuit capability for 400ms (initial/fully configured)	180A/345A	180A/510A	360A/510A	180A/670A	360A/670A	540A/670A
Fault clearing capability without bypass, gL/gG fuse	35A	63A				
Overload capacity without bypass	10min >102–110% load, 1min >111–125% load, 10sec 126-150% load, 300ms >150% load					
Overload capacity with bypass	Continuous >100–125% load, 10ms 1000% load *Selected external Bypass fuses or breaker may limit the overload capability					
Load power factor range	0.8 lagging to 0.8 leading without de-rating					
Range of frequency sync with bypass	±4Hz as default. User settable 0.5 to 5 Hz					

ELECTRICAL OUTPUT CHARACTERISTICS - STORED ENERGY MODE

Transfer to/from stored energy	No break					
Rated output voltage	220/380, 230/400, 240/415Vac, three phase					
Output voltage variation	<2% static load, 4% with 50ms recovery from 100% load step					
Crest factor	3:1					
Rated peak output voltage	325V, ±20V					
Rated output frequency	50Hz (default) or 60Hz					
Output frequency variation	±0.005Hz (single module), ±0.07Hz (Parallel system)					
Total output voltage distortion	5%					
Short circuit capability for 400ms (initial/fully configured)	180A/345A	180A/510A	360A/510A	180A/670A	360A/670A	540A/670A
Fault clearing capability, gL/gG fuse	35A	63A				
Overload capability	10min >102–110% load, 1min >111–125% load, 300ms >125% load					
Load power factor range	0.8 lagging to 0.8 leading without de-rating					
Number of output phases	3 Phase					

EFFICIENCY (Input/Output, initial load)

Linear Load	100% load:	96.3%	96.3%	96.4%	96.3%	96.4%	96.5%
Efficiency, Double Conversion Mode	75% load:	96.6%	96.6%	96.6%	96.6%	96.6%	96.7%
@ 400V/50Hz	50% load:	96.6%	96.6%	96.7%	96.6%	96.7%	96.7%
	25% load:	95.7%	95.7%	96.0%	95.7%	96.0%	96.1%
Heat Dissipation, Double Conversion Mode @ 400V/50Hz	100% load:	1850W	1850W	3734W	1850W	3734W	5440W
	75% load:	1275W	1275W	2640W	1275W	2640W	3839W
	50% load:	850W	850W	1706W	850W	1706W	2559W
	25% load:	537W	537W	1041W	537W	1041W	1690W
Linear Load Efficiency, ESS Mode @ 400V/50Hz	100% load:	99.2%	99.2%	99.3%	99.2%	99.3%	99.3%
	75% load:	99.1%	99.1%	99.2%	99.1%	99.2%	99.2%
	50% load:	99.0%	99.0%	99.0%	99.0%	99.0%	99.2%
	25% load:	98.3%	98.3%	98.6%	98.3%	98.6%	98.7%

BYPASS CHARACTERISTICS

Automatic bypass	Static bypass switch, continuously rated, no break transfer					
Automatic bypass nominal rating	100kW	150kW		200kW		
Automatic bypass thyristor i ² t value	13,500 A ² s	16,500 A ² s		69,500 A ² s		
Back-feed protection	Standard internal back-feed contactor					
Separate bypass input feed	Standard (single feed cable links fitted on site)					
Manual bypass switch (internal)	Optional			No		

ESS (Energy Saver System) MODE CHARACTERISTICS

Performance classification	VFD, transferring to VFI (Double Conversion mode) if limits are exceeded
Transfer time to double conversion	Mains available: No break (0ms), Mains failure: 2ms typical
Acceptable output voltage variation	±10% of nominal voltage
Acceptable output freq. variation	±3Hz
UPS Audible Noise	<47dBA @ 1m in 25°C ambient temperature
Storm Detection	UPS locks into double-conversion mode when three power line disturbances have forced the unit to double-conversion three times (user adjustable) within a one-hour period (user adjustable)
High Alert mode	UPS will stay on double-conversion for one hour (user adjustable), after which the unit will automatically return to operate in ESS mode

Eaton 93PM 50-200kW Scalable UPS Technical Specification

	50/100kW	50/150kW	100/150kW	50/200kW	100/200kW	150/200kW
EARTH LEAKAGE CURRENTS (initial load)						
Online/Bypass @ full resistive load	40mA		0.7A	40mA	0.7A	0.5A
Stored Energy @ full resistive load	20mA		0.9A	20mA	0.9A	0.6A
BATTERY						
Battery nominal voltage	432V (36 x 12V, 216 Cells) or 480V (40 x 12V, 240 Cells) Default = 480V					
Float charge voltage	216 x 2.30V = 497V or 240 x 2.30V = 552V					
Maximum charge voltage	216 x 2.35V = 508V or 240 x 2.35V = 564V					
Battery technology	Valve Regulated Lead Acid, 5 or 10 year design life					
Stored energy time	See separate information					
Maximum Charging current (Initial/Fully Configured)	16.5/33A	16.5/50A	33/50A	16.5/66A	33/66A	50/66A
Restored energy time to 90%	Typically 10 x Discharge time					
Battery recharge profile	Advanced Battery Management (ABM [®]) = 90% resting, 10% floating/charging					
Battery cut off voltage	1.67 to 1.75 VPC, Configurable or automatic (load adaptive)					
Battery start option	Yes, standard					

Appendix C-2

NETSURE™ 7100 SERIES

DC Power System



KEY FEATURES

- Indoor seismic Zone 4 rated enclosure option, 84"H x 28"W x 28"D
- High Efficiency — 96.5% efficient eSure rectifiers ensure optimized total cost of ownership
- Modular Design — simple to install and operate; allows incremental cost-effective system growth
- Advanced Controller — offers battery management, site monitoring and configuration management
- Multiple AC Input Configurations – single or three phase input from 208 to 277/480 VAC
- Remote Access – Supports HTTPS with multiple browsers, network element management via Modbus or SNMP (v2 or v3)
- Dual Port Option – allows permanent Ethernet connection with DHCP and automatically converts the front access port to the default IP user access Ethernet port
- Front Accessible — allows for easy installation, additions and maintenance
- Safety Compliance — NEBS Level 3 certified; UL Listed to UL subject 1801
- New ultra-high density 3500 watt rectifiers provide 438 amps in 1RU of rack space, up to 2500 amps per bay.

Versatile DC power solution with high efficiency eSure™ rectifiers and converters, modular distribution, and advanced control and monitoring accepts single or three-phase input up to 277/480 VAC.

Description

The modular NetSure™ 7100 Series power system with 3500 watt or 2000 watt rectifiers and 1500 watt DC to DC converters provides up to 4000 amps of current for -48 volt systems with up to 520 amps at +24 volts. The basic components of the power system include the NetSure Control Unit (NCU), module mounting shelf assemblies which house the rectifiers and converters, and a modular distribution cabinet.

The NetSure 7100 power system contains a powerful, microprocessor-based control system capable of monitoring and controlling up to 60 rectifiers and converters. The NCU controller provides a full color LCD display, which can be activated at the touch of a keypad.

Each shelf can accommodate up to six plug'n'play rectifiers, which are controlled by the NCU. Additional shelves can be added as load requirements increase. The 2000 watt rectifiers and 1500 watt -48 VDC to +24 VDC converters are housed in shelves that occupy 1 RU. Each shelf accommodates rectifiers in all six positions and converters in three positions.

The NetSure 7100 can be expanded to up to three distribution bays for a total capacity of 4000 amps and up to twelve distribution panels. Each NetSure 7100 distribution cabinet is modular by row and position.



NetSure 7100

Four distinct distribution cabinet sizes are available to accommodate from one to four distribution panels. This allows the system to be configured in relay racks of various heights for installation in low-profile sites or atop batteries or other equipment to make more effective use of floor space. Several distribution panels are available offering different combinations of distribution positions, low voltage disconnect and battery disconnect options.

Distribution device options include 1 amp to 300 amp bullet-style circuit breakers, 3 amp to 125 amp TPS-style fuses in plug-in bullet-style holders, 100 amp to 800 amp GJ/218-style circuit breakers, 70 amp to 250 amp TPL-B-style fuses and 70 amp to 600 amp TPH-style fuses. These devices can be configured for both -48 V load and battery disconnect and +24 V load (bullet devices only). A GMT fuse module is also available.

Application

The NetSure 7100 system is ideal for wireless, and wireline applications, including cell sites, MTSOs, small COs, datacenters, co-locations, huts, vaults and enclosures.



High-Efficiency eSure Rectifiers R48-3500e3 (left)
R48-3500e (center) & R48-2000e3 (right)

Technical Specifications (System)

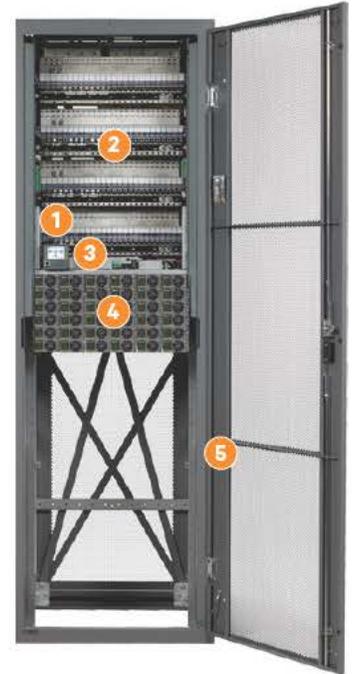
SYSTEM FEATURES	
System Voltage, Nominal	-48 VDC (-42.0 VDC to -58.0 VDC range)
Output Voltage, Secondary	+24 VDC (+24.0 VDC to +28.0 VDC range)
Input Voltage	Single Phase: 208/240/277 VAC (277 VAC for 3500 W rectifiers only) Three Phase: 208 VAC or 277/480 VAC (277/480 VAC for 3500 W rectifiers only)
Control	Microprocessor (NCU)
RATED OUTPUT CAPACITY	
Bay, Rectifier/Converter	2500 amps (48VDC) and 520 amps (24VDC)
Bay, Distribution	2000 amps (48 VDC) and 520 amps (24 VDC)
Rectifier	3500 W (R48-3500e3 or R48-3500) or 2000 W (R48-2000e3)
Shelf	438 amps (3500W rectifiers) or 250 amps (2000W rectifiers)
Distribution Panel	600 amps
PHYSICAL CHARACTERISTICS	
Framework Type	Rail-mount (can be mounted in an enclosure or relay rack)
Mounting Width	23 inches
Mounting Depth	20 inches, 9 inch front projection
Access	Front access for installation, operation and maintenance

ENVIRONMENTAL	
Operating Temperature	-40 °F to 104 °F (-40 °C to 40 °C) continuous operation
Storage	-40 °F to 185 °F (-40 °C to 85 °C)
Humidity	0% to 95% relative humidity, non-condensing
Ventilation	Rectifiers and converters are fan-cooled front to rear
EMI/RFI Suppression	Conforms to FCC rules Part 15, Subpart B, Class B and EN55022 Class B, radiated and conducted
Safety Compliance	UL Listed 1801, cUL, NEBS Level 3

Ordering Information

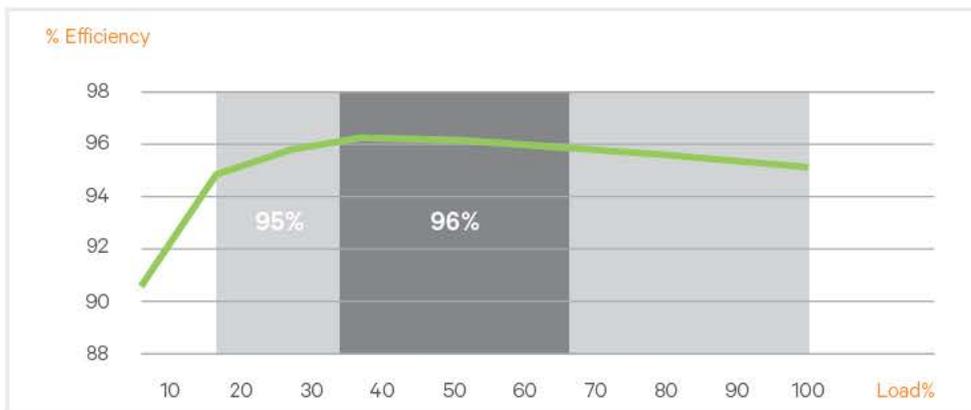
PART NUMBER	DESCRIPTION
582127000	NetSure™ 7100 DC power system
1M830DNA	NCU controller
1R483500E3	3500 W eSure rectifier, 1RU height
588705400	Power shelf for 1RU 3500W rectifiers
1R483500E	3500 W eSure™ rectifier, 3RU height
588705000	Power shelf for 3 RU 3500 W rectifiers
1R482000E3	2000 W eSure rectifier, 1RU height
1C48241500	1500 W -48 VDC to +24 VDC converter
588705300	Power shelf for 1 RU (2000 W) rectifiers and converters

SYSTEM ELEMENTS



-48 VDC NetSure 7100

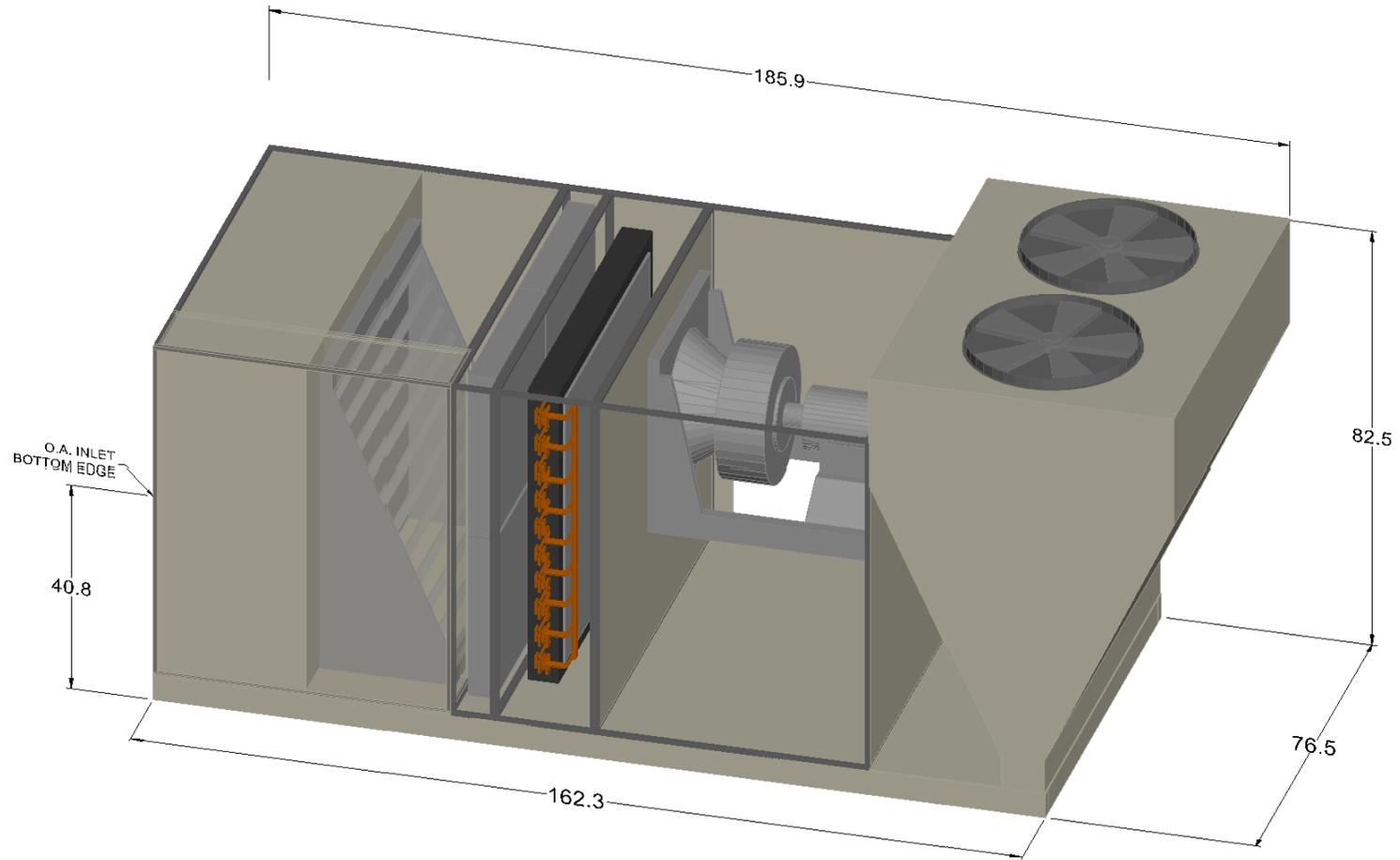
1. AC Connection Panel (both sides)
2. DC Distribution Cabinet
3. NetSure Control Unit
4. Rectifiers/Converters
5. Relay Rack or Enclosure



R48-2000e3 Efficiency Curve at 250 VAC Nominal

Appendix D

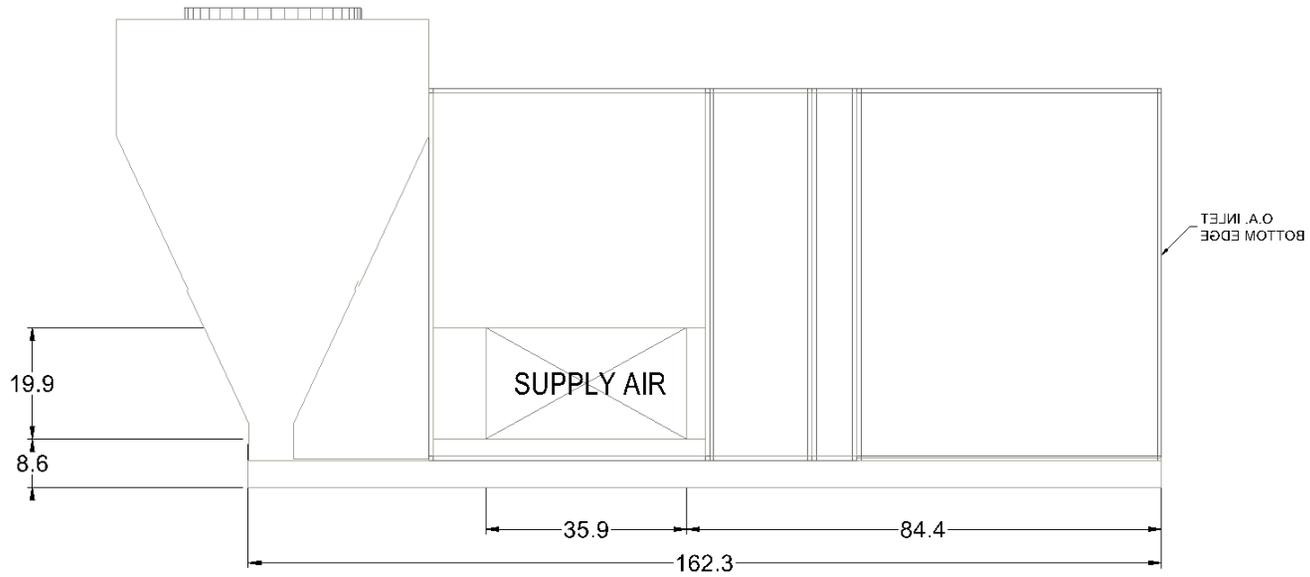
ACU-1



Notes:
 (1) Recommended location for optional field cut side power connection.

Product Drawing	Unit Tag: ACU-1			Sales Office: Daikin Tools Engineer			 13600 Industrial Park Blvd. Minneapolis, MN 55441 www.DaikinApplied.com Software Version: 10.20
Product:	Project Name:			Sales Engineer: SalesEngineer			
Model: DPS028A	June 20, 2022	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/- 0.25"	Dwg Units: in [mm]	
No change to this drawing may be made unless approved in writing by Daikin Applied. Purchaser must determine that the equipment is fit and sufficient for the job specifications.							

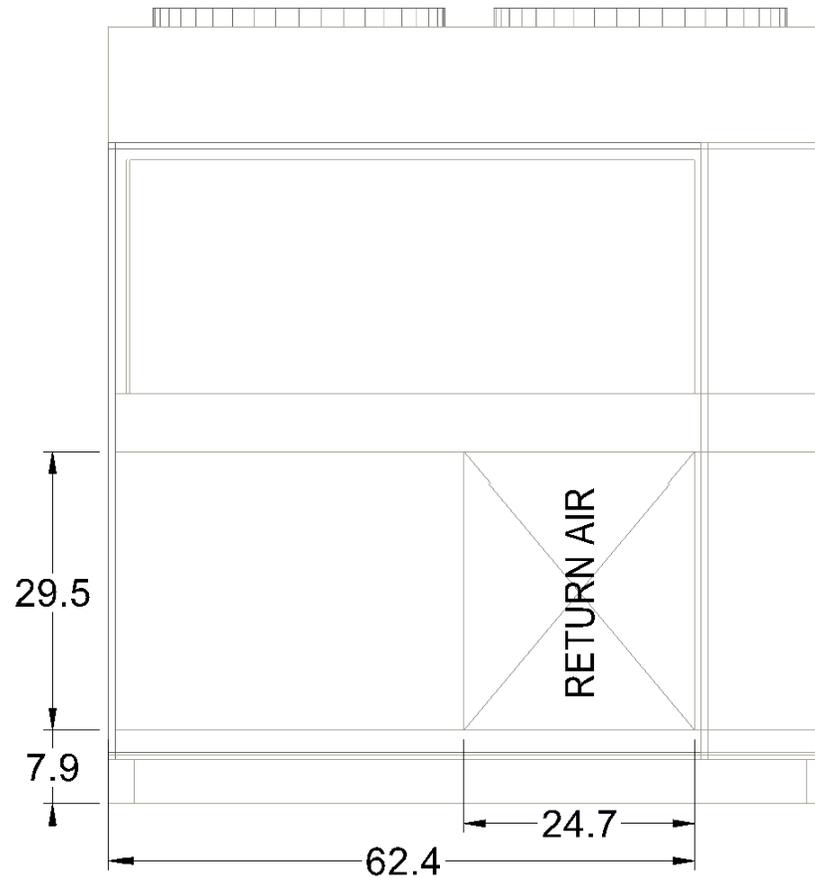
ACU-1



ELEVATION VIEW - SUPPLY AIR OPENING LOCATION

Product Drawing	Unit Tag: ACU-1			Sales Office: Daikin Tools Engineer			 13600 Industrial Park Blvd. Minneapolis, MN 55441 www.DaikinApplied.com Software Version: 10.20
Product:	Project Name:			Sales Engineer: SalesEngineer			
Model: DPS028A	June 20, 2022	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/- 0.25"	Dwg Units: in [mm]	
No change to this drawing may be made unless approved in writing by Daikin Applied. Purchaser must determine that the equipment is fit and sufficient for the job specifications.							

ACU-1



ELEVATION VIEW - RETURN AIR OPENING LOCATION

Product Drawing	Unit Tag: ACU-1			Sales Office: Daikin Tools Engineer			 13600 Industrial Park Blvd. Minneapolis, MN 55441 www.DaikinApplied.com Software Version: 10.20
Product:	Project Name:			Sales Engineer: SalesEngineer			
Model: DPS028A	June 20, 2022	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/- 0.25"	Dwg Units: in [mm]	
No change to this drawing may be made unless approved in writing by Daikin Applied. Purchaser must determine that the equipment is fit and sufficient for the job specifications.							



Job Information		Technical Data Sheet	
Job Name			
Date	6/20/2022		
Submitted By			
Software Version	10.20		
Unit Tag	ACU-1		

Unit Overview					
Model Number	Voltage V/Hz/Phase	Design Cooling Capacity Btu/hr	AHRI360 Standard Efficiency		ASHRAE 90.1-2016 Compliant
			EER	IEER	
DPS028A	208/60/3	313392	10.3	17.8	ASHRAE 90.1-2016 compliant

Unit	
Model Number:	DPS028A
Model Type:	Cooling
Heat Type:	None
Energy Recovery:	None
Application:	Variable Air Volume, Single Zone (Mixed Air or 100% OA)
Controls:	Microtech III
Outside Air:	0-100% Economizer with Comparative Enthalpy Control
Altitude:	0 ft
Approval	cETLus

Physical			
Dimensions and Weight			
Length	Height*	Width	Weight*
162.3 in	82.5 in	76.5 in	3860 lb
Corner Weights			
L1	L2	L3	L4
793 lb	1268 lb	1107 lb	692 lb
Construction			
Exterior	Insulation and Liners	Air Opening Location	
		Return	Supply
Painted Galvanized Steel	2" Injected Foam, R13, Galvanized Steel Liner	Horizontal	Horizontal

Electrical			
Unit FLA	MCA	MROPD	SCCR
120.3 A	132.0 A	175 A	10 kAIC
Note:	Use only copper supply wires with ampacity based on 75° C conductor rating. Connections to terminals must be made with copper lugs and copper wire.		

Outside Air Option		
Type	Damper Pressure Drop	Exhaust Air Type
90.1 and California Title 24 Compliant Economizer	0.54 inH ₂ O	Barometric Relief

Physical				
Type	Quantity / Size	Face Area	Face Velocity	Air Pressure Drop
Combo 2" / 4" rack with 2" MERV 8	9 / 18 in x 24 in x 2 in	27.0 ft ²	388.9 ft/min	0.19

DX Cooling Coil								
Physical								
Coil Type	Refrigerant Type	Fins per Inch	Rows	Face Area	Face Velocity	Air Pressure drop	Drain Pan Material	
Cu Tube/ Al Fin	R410A	15	4	21.4 ft ²	490.7 ft/min	0.54 inH ₂ O	Stainless Steel	
Cooling Performance								
Capacity			Indoor Air Temperature					Ambient air Temperature °F
Total Btu/hr	Sensible Btu/hr	Moisture Removal lb/h	Entering		Leaving			
			Dry Bulb °F	Wet Bulb °F	Dry Bulb °F	Wet Bulb °F	Dewpoint °F	
313392	313392	0.0	80.0	62.0	52.7	51.4	50.4	100.0
Condensate Connection Size:		1.0 in. Male NPT						

Fan				
Type	Fan Wheel Diameter	Fan Isolation		
SWSI AF	24 in	Spring Isolation		
Performance				
Airflow	Total Static Pressure	Fan Speed	Brake Horsepower	Altitude
10500 CFM	2.0 inH ₂ O	1571 rpm	5.73 HP	0 ft
Motor				Drive
Type	Horsepower	Efficiency	FLA	Type
Premium Eff Induction Motor	7.5	Premium	22.2 A	Direct Drive

Unit Discharge Conditions				
Air Temperature				
Motor Heat Btu/hr	Moisture Removal lb/h	Unit Leaving Dry Bulb °F	Unit Leaving Wet Bulb °F	Unit Leaving Dewpoint °F
16493	0.0	54.2	51.9	50.4
Minimum Airflows				
Notes:		Refer to fan curve for applicability of approximate airflows		

Condensing Section

Compressor					
Type	Quantity	Refrigerant Charge lb	Total Power	Capacity Control	Compressor Isolation
Inverter Scroll + Fixed Scroll	2	35.5	25.85 kw	Mod Control with Inverter Compressor	Rubber in Shear
Compressor Amps:					
Compressor 1			47.0 A		
Compressor 2			39.1 A		
Condenser Coil					
Type	Fins per Inch			Fin Material	
Aluminum Microchannel	23			Aluminum	
Condenser Fan Motors					
Number of Motors*			Full Load Current (Total)		
1 or 2			12.0 A		
AHRI 360 Certified Data at AHRI 360 Standard Conditions					
Net Capacity	EER	IEER	ASHRAE 90.1		
304000 Btu/hr	10.3	17.8	ASHRAE 90.1-2016 compliant		

Internal Pressure Drop Calculation

External Static Pressure:	0.50 inH ₂ O
Filter:	0.19 inH ₂ O
Outside Air:	0.54 inH ₂ O
DX Coil:	0.54 inH ₂ O
Horizontal Discharge:	0.25 inH ₂ O
Total Static Pressure:	2.02 inH₂O

Sound

Frequency	Sound Power (db)							
	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Inlet	76	75	83	75	70	69	64	61
Discharge	82	81	86	81	79	76	71	66
Radiated*	51	62	71	73	74	67	61	52

Options

Electrical	
Field Connection:	Power Block

Factory Installed Sensors

Duct High Limit Switch
Return Air Temperature Sensor
Discharge Air Temperature sensor – Wired in unit, mounted in supply duct
Outside Air Temperature Sensor
Return Air Enthalpy Sensor
Outside Air Enthalpy Sensor
Dirty Filter On/Off Switch
Supply Fan Air Proving Via Modbus

Warranty

Parts:	Standard One Year
Compressor:	Standard One Year

AHRI Certification



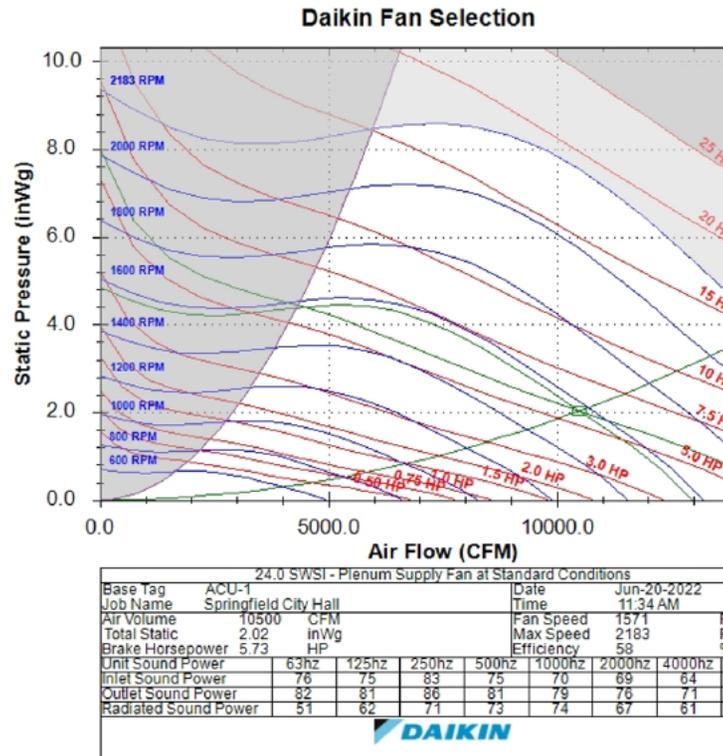
All equipment is rated and certified in accordance with AHRI 360.

Notes

* TWO CONDENSER FAN SOLUTIONS ARE DESIGNED FOR THIS UNIT TO PREVENT DELAYS IN SHIPMENTS RELATED TO GLOBAL SUPPLY CHAIN. ONE DESIGN USES TWO SMALLER CONDENSER FANS, THE OTHER USES ONE LARGER FAN. THERE ARE SUBTLE DIFFERENCES, BUT SUBMITTAL DATA PROVIDED HERE APPLIES TO BOTH DESIGNS BY ENSURING THE FOLLOWING:

- UNIT ELECTRICAL (TOTAL UNIT FLA, MCA, AND MROPD) ARE IDENTICAL ACROSS BOTH DESIGNS (I.E. NO CHANGE ACROSS DESIGNS)
- AHRI EFFICIENCY (EER/IEER) ARE IDENTICAL ACROSS BOTH DESIGNS (NO CHANGE ACROSS DESIGNS)
- CONDENSER DECK HEIGHT DOES CHANGE, BUT HEIGHT DIMENSION PROVIDED HERE THE LARGER OF THE TWO, SO THE UNIT WILL BE AT OR LESS IN HEIGHT OF DIMENSION SHOWN. (ONE DESIGN'S HEIGHT IS 82.5", THE OTHER IS 70.5")
- THE TWO FAN DESIGN IS 52 LBS HEAVIER THAN THE OTHER DESIGN, BUT DOES NOT IMPACT UNIT COG, AND LARGER VALUE IS WHAT IS DISPLAYED IN SUBMITTAL.
- RADIATED SOUND FOR THE SINGLE FAN DESIGN IS SLIGHTLY HIGHER, BUT THE HIGHER VALUE IS DISPLAYED ON THE SUBMITTAL
- BOTH DESIGNS MATCH THE CONDENSER FAN MECHANICAL SPECIFICATION PROVIDED

Unit is to be lifted with proper rigging practices outlined in IOM. Forklifting the unit is not allowed.



Appendix E



Estimate of Probable Construction Cost

Following is a summary of estimated direct construction cost for the proposed controls replacement project. Estimates assume work will be performed during standard work hours when on a regular five-day workweek schedule. Due to uncertainties and labor shortages in the construction industry, the current rate of inflation, and supply chain uncertainties, this cost opinion should be used for initial budgeting only.

Project Costs Included:

- Work depicted in Conceptual Design and designated Drawings in Appendices
- Data racks and cable management
- Design Contingency values within division values of 10% are included
- Testing/Adjusting/Balancing

Project Costs Not Covered Include:

- Design fees associated with construction documents
- Owner administration costs
- Building permit costs
- Construction changes or contingencies
- Intermittent disruptions to building users
- Hazardous materials identification or abatement
- Construction escalation past Q2, 2022

DIRECT CONSTRUCTION COST SUMMARY	
Work Description	Direct Construction Cost
Divisions 2 through 9, General Construction	\$56,000
Division 21, Fire Suppression	38,500
Division 22, Plumbing	20,000
Division 23, HVAC	186,000
Division 26, Lighting Controls & Electrical Distribution	385,000
Division 27, Communications	120,000
Division 28, Safety & Security	24,000
GC Subcontractor Markup, 10.0%	82,950
General Conditions, 7.0%	63,870
Builders Risk Insurance & Bond, 2.0%	19,500
GC Fee & Liability Insurance, 3.5%	35,000

Corporate Activity Tax, 1.0%	10,300
TOTAL CONSTRUCTION RANGE	\$1,041,120

End of Memorandum



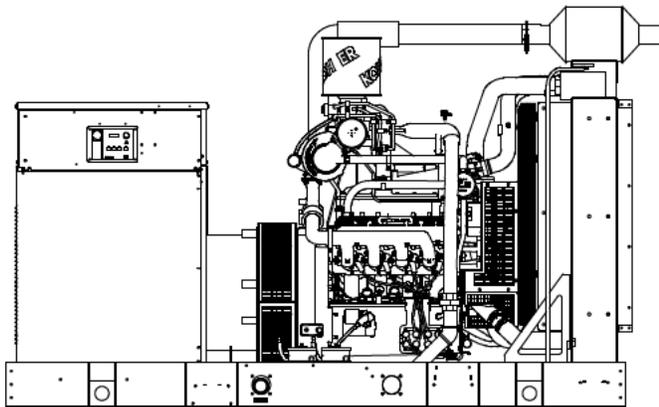
Appendix F



**EPA-Certified for Stationary
Emergency Applications**

Ratings Range

Standby:	kW kVA	50Hz	60 Hz
		120- 144 150- 180	105- 180 105- 225

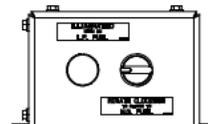


Standard Features

- Kohler Co. provides one-source responsibility for the generating system and accessories.
- The generator set and its components are prototype-tested, factory-built, and production-tested.
- The 60 Hz generator set offers a UL 2200 listing.
- The generator set accepts rated load in one step.
- The 60 Hz generator set meets NFPA 110, Level 1, when equipped with the necessary accessories and installed per NFPA standards.
- A one-year limited warranty covers all generator set systems and components. Two- and five-year extended limited warranties are also available.
- Alternator features:
 - The unique Fast-Response® X excitation system delivers excellent voltage response and short-circuit capability using a rare-earth, permanent magnet (PM)-excited alternator. (For 4S12X and 4S13X Alternators)
 - The unique Fast-Response® II excitation system delivers excellent voltage response and short-circuit capability using a permanent magnet (PM)-excited alternator. (For 4UA13 Alternators)
 - The brushless, rotating-field alternator has broadrange reconnectability.
- Natural gas, LP gas, and dual fuel models are available.
- Dual fuel model features:
 - Natural gas is the primary fuel. Automatically transfers back to primary fuel when LPG fuel becomes low or generator stops and restarts.
 - The patent pending reset box on the generator provides the ability to manually transfer back to natural gas.
 - The natural gas rating is available when running on natural gas.
 - APM603 controller provides load shed for automatic derate to LPG ratings to prevent an overload condition.

Generator Set Ratings

Alternator	Voltage	Ph	Hz	Natural Gas 130°C Rise		LP Gas 130°C Rise	
				Standby Rating kW/kVA	Amps	Standby Rating kW/kVA	Amps
4S12X	120/208	3	60	150/188	522	150/188	522
	127/220	3	60	160/200	525	150/188	494
	120/240	3	60	150/188	453	150/188	453
	220/380	3	60	140/175	266	140/175	266
	254/440	3	60	160/200	263	150/188	247
	277/480	3	60	180/225	271	150/188	227
	347/600	3	60	170/212	204	150/188	181
	115/200	3	50	140/175	506	120/150	434
	110/220	3	50	136/170	447	120/150	394
	220/380	3	50	136/170	259	120/150	228
4S13X	230/400	3	50	140/175	253	120/150	217
	240/416	3	50	144/180	250	120/150	209
	120/208	3	60	180/225	625	150/188	522
	127/220	3	60	180/225	591	150/188	494
	120/240	3	60	180/225	542	150/188	453
	220/380	3	60	165/206	313	150/188	286
	254/440	3	60	180/225	296	150/188	247
	277/480	3	60	180/225	271	150/188	227
	347/600	3	60	180/225	217	150/188	181
	115/200	3	50	144/180	520	120/150	434
110/220	3	50	144/180	473	120/150	394	
220/380	3	50	144/180	274	120/150	228	
230/400	3	50	144/180	260	120/150	217	
240/416	3	50	144/180	250	120/150	209	



Generator Set Ratings, continued

Alternator	Voltage	Ph	Hz	Natural Gas 130°C Rise Standby Rating		LP Gas 130°C Rise Standby Rating	
				kW/kVA	Amps	kW/kVA	Amps
4UA13	120/208	3	60	180/225	625	150/188	522
	127/220	3	60	180/225	591	150/188	494
	120/240	1	60	180/180	750	150/150	625
	120/240	3	60	180/225	542	150/188	453
	220/380	3	60	180/225	342	150/188	286
	254/440	3	60	180/225	296	150/188	247
	277/480	3	60	180/225	271	150/188	227
	347/600	3	60	180/225	217	150/188	181
	115/200	3	50	144/180	520	120/150	434
	110/220	3	50	144/180	473	120/150	394
	220/380	3	50	144/180	274	120/150	228
	230/400	3	50	144/180	260	120/150	217
	240/416	3	50	144/180	250	120/150	209

RATINGS: All three-phase units are rated at 0.8 power factor. All single-phase units are rated at 1.0 power factor. *Standby Ratings:* The standby rating is applicable to varying loads for the duration of a power outage. There is no overload capability for this rating. Ratings are in accordance with ISO-8528-1 and ISO-3046-1. Obtain technical information bulletin (TIB-101) for ratings guidelines, complete ratings definitions, and site condition derates. The generator set manufacturer reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever.

Alternator Specifications

Specifications	Alternator
Manufacturer	Kohler
Type	4-Pole, Rotating-Field
Exciter type	Brushless, Rare-Earth Permanent Magnet
Leads: quantity, type	12, Reconnectable
4SX, 4UA	
Voltage regulator	Solid State, Volts/Hz
Insulation:	NEMA MG1
Material	Class H
Temperature rise	130°C, Standby
Bearing: quantity, type	1, Sealed
Coupling	Flexible Disc
Amortisseur windings	Full
Voltage regulation, no-load to full-load	Controller Dependent
One-step load acceptance	100% of Rating
Unbalanced load capability	100% of Rated Standby Current
Peak motor starting kVA:	(35% dip for voltages below)
480 V 4S12X (12 lead)	480 (60 Hz)
480 V 4S13X (12 lead)	570 (60 Hz)
480 V 4UA13 (12 lead)	960 (60 Hz)

- NEMA MG1, IEEE, and ANSI standards compliance for temperature rise and motor starting.
- Sustained short-circuit current of up to 300% of the rated current for up to 10 seconds.
- Sustained short-circuit current enabling downstream circuit breakers to trip without collapsing the alternator field.
- Self-ventilated and dripproof construction.
- Windings are vacuum-impregnated with epoxy varnish for dependability and long life.
- Superior voltage waveform from a two-thirds pitch stator and skewed rotor.

Application Data

Engine

Engine Specifications	60Hz	50Hz
Manufacturer	Kohler	
Engine: model, type	KD10V08T-6DGS, 10.3 L, 4-Cycle, Turbocharged and Aftercooled	
Cylinder arrangement	V-8	
Displacement, L (cu. in.)	10.3 (632)	
Bore and stroke, mm (in.)	116.8 x 120.6 (4.6 x 4.7)	
Compression ratio	9.3:1	
Piston speed, m/min. (ft./min.)	434.3 (1425)	
Main bearings: quantity, type	5, Tri-Metal	
Rated rpm	1800	1500
Max. power at rated rpm (NG), kW (HP)	245 (330)	196 (263)
Max. power at rated rpm (LPG), kW (HP)	195 (262)	156 (209)
Cylinder head material	Cast Iron	
Piston type and material	Dished Top Forged Aluminum	
Crankshaft material	Forged Steel	
Valve (exhaust) material	Inconel	
Governor type	Electronic	
Frequency regulation, no-load to full-load	Isochronous	
Frequency regulation, steady state	±0.75%	
Frequency	Fixed	
Air cleaner type, all models	Dry	

Exhaust

Exhaust System	60Hz	50Hz
Exhaust manifold type	Dry	
Exhaust flow at rated kW, m ³ /min. (cfm)	38.6 (1364)	29.1 (1028)
Exhaust temperature at rated kW, dry exhaust, °C (°F)	764 (1407)	687 (1269)
Maximum allowable overall back pressure, kPa (in. Hg)	19.8 (5.87)	5.85 (1.74)
Maximum allowable back pressure after catalyst, kPa (in. Hg)	14.3 (4.24)	4.2 (1.25)
Exhaust outlet size at engine hookup, mm (in.)	Flanged Outlet at Catalyst see ADV drawing	

Application Data

Engine Electrical

Engine Electrical System	60Hz	50Hz
Ignition system	Coil Pack	
Battery charging alternator:		
Ground (negative/positive)	Negative	
Volts (DC)	12	
Ampere rating	130	
Starter motor rated voltage (DC)	12	
Battery, recommended cold cranking amps (CCA):		
Qty., rating for -18°C (0°F)	one, 925	
Battery voltage (DC)	12	

Fuel

Fuel System	60Hz	50Hz
Fuel type	Natural Gas, LP Gas, or Dual Fuel	
Fuel supply line inlet	2 NPT	
Natural gas, LPG, and Dual fuel supply pressure, kPa (in. H ₂ O)	1.74-2.74 (7-11)	
Fuel Composition Limits *	Nat. Gas	LP Gas
Methane, % by volume	90 min.	-
Ethane, % by volume	4.0 max.	-
Propane, % by volume	1.0 max.	85 min.
Propene, % by volume	0.1 max.	5.0 max.
C ₄ and higher, % by volume	0.3 max.	2.5 max.
Sulfur, ppm mass	25 max.	
Lower heating value, MJ/m ³ (Btu/ft ³), min.	33.2 (890)	84.2 (2260)

* Fuels with other compositions may be acceptable. If your fuel is outside the listed specifications, contact your local distributor for further analysis and advice.

Lubrication

Lubricating System	60Hz	50Hz
Type	Full Pressure	
Oil pan capacity, L (qt.) §	11.3 (12)	
Oil pan capacity with filter, L (qt.) §	15.1 (16)	
Oil filter: quantity, type §	1, Cartridge	
§ Kohler recommends the use of Kohler Genuine oil and filters.		

Cooling

Radiator System	60Hz	50Hz
Ambient temperature, °C (°F) *	50 (122)	
Engine jacket water capacity, L (gal.)	11 (2.9)	
Radiator system capacity, including engine, L (gal.)	34 (9)	
Engine jacket water flow, Lpm (gpm)	219 (58)	182 (48)
Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.)	98 (5573)	99 (5630)
Heat rejected to charge cooling air at rated kW, dry exhaust, kW (Btu/min.)	20.1 (1143)	20.6 (1171)
Heat rejected to engine oil at rated kW, dry exhaust, kW (Btu/min.)	19.6 (1114)	18 (1023)
Water pump type	Centrifugal	
Fan diameter, including blades, mm (in.)	900 (35.4)	
Fan, kWm (HP)	15 (20.1)	9 (12)
Max. restriction of cooling air, intake and discharge side of radiator, kPa (in. H ₂ O)	0.125 (0.5)	

* Enclosure with enclosed silencer reduces ambient temperature capability by 5°C (9°F).

Operation Requirements

Air Requirements	60Hz	50Hz
Radiator-cooled cooling air, m ³ /min. (scfm) †	331 (11700)	275 (9700)
Combustion air, m ³ /min. (cfm)	12.74 (450)	9.77 (345)
Heat rejected to ambient air:		
Engine, kW (Btu/min.)	53.4 (3036)	36.5 (2076)
Alternator, kW (Btu/min.)	16 (910)	13.8 (785)

† Air density = 1.20 kg/m³ (0.075 lbm/ft³)

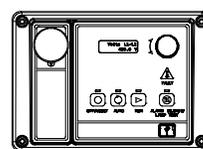
Fuel Consumption ‡	60Hz	50Hz
Natural Gas, m³/hr. (cfh) at % load	Standby Ratings	
100%	62 (2188)	47.4 (1674)
75%	48.6 (1716)	37.3 (1317)
50%	35.2 (1245)	27.2 (961)
25%	21.9 (773)	17.1 (604)
0%	8.5 (301.5)	7.0 (248)
LP Gas, m³/hr. (cfh) at % load	Standby Ratings	
100%	23.5 (829)	18.9 (669)
75%	18.5 (654)	12.6 (443)
50%	13.6 (479)	9.3 (327)
25%	8.6 (304)	6.8 (239)
0%	3.7 (129)	2.8 (100)

‡ Nominal fuel rating: Natural gas, 37 MJ/m³ (1000 Btu/ft.³)
LP vapor, 93 MJ/m³ (2500 Btu/ft.³)

LP vapor conversion factors:

8.58 ft.³ = 1 lb.
0.535 m³ = 1 kg.
36.39 ft.³ = 1 gal.

Controllers

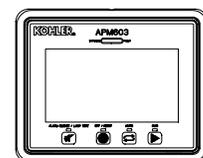


APM402 Controller

Provides advanced control, system monitoring, and system diagnostics for optimum performance and compatibility.

- Digital display and menu control provide easy local data access
- Measurements are selectable in metric or English units
- Remote communication thru a PC via network or serial configuration
- Controller supports Modbus® protocol
- Integrated hybrid voltage regulator with ±0.5% regulation
- Built-in alternator thermal overload protection
- NFPA 110 Level 1 capability

Refer to G6-161 for additional controller features and accessories.



APM603 Controller

Provides advanced control, system monitoring, and system diagnostics for optimum performance and compatibility.

- 7-inch graphic display with touch screen and menu control provides easy local data access
- Measurements are selectable in metric or English units
- Load management to connect and disconnect loads as required
- Controller supports Modbus® RTU, Modbus® TCP, SNMP and BACnet®
- Integrated voltage regulator with ±0.25% regulation
- Built-in alternator thermal overload protection
- UL-listed overcurrent protective device
- NFPA 110 Level 1 capability

Refer to G6-162 for additional controller features and accessories.

Modbus® is a registered trademark of Schneider Electric.

Standard Features

- Air Restriction indicator
- Alternator Protection
- Battery Rack and Cables
- Closed Crankcase Ventilation (CCV) Filter
- Dual Fuel Reset Box (standard on dual fuel models)
- Gas Fuel System (includes fuel mixer, electronic secondary gas regulator, gas solenoid valve, and flexible fuel line between the engine and the skid-mounted fuel system components)
- Integral Vibration isolation
- Local Emergency Stop Switch
- Oil Drain Extension
- Operation and Installation Literature
- Open Unit Accessory Kit (Duct Flange, Stone Guard, and Three-Way Exhaust Catalyst)

Available Options

Circuit Breakers

Type

- Magnetic Trip
- Thermal Magnetic Trip
- Electronic Trip (LI)
- Electronic Trip with Short Time (LSI)
- Electronic Trip with Ground Fault (LSIG)

Rating

- 80%
- 100%

Operation

- Manual
- Electrically Operated (for paralleling)

Circuit Breaker Mounting

- Generator Mounted
- Remote Mounted
- Bus Bar (for remote mounted breakers)

Enclosures for Remote Mounted Circuit Breakers

- NEMA 1
- NEMA 3R

Approvals and Listings

- CSA Approval
- IBC Seismic Certification
- UL 2200 Listing / cUL Genset Listing
- Hurricane Rated Enclosure (Available with Premium Aluminum Sound Enclosure Only)

Enclosed Unit

- Sound Enclosure (with enclosed critical silencer)
- Weather Enclosure (with enclosed critical silencer)

Open Unit

- Exhaust Silencer, Critical

Fuel System

- Dual Fuel NG/LPG (automatic changeover)
- Flexible Fuel Line
- Fuel Filter Kit
- Secondary Gas Solenoid Valve (UL Fuel System)

Controller

- Failure Relay w/Harness, 1 Fault (APM603 controller only)
- Four Input/Fifteen Output Module
- Local Emergency Stop Switch
- Lockable Emergency Stop
- Manual Key Switch (APM603 controller only)
- Manual Speed Adjust (APM402 controller only)
- Paralleling, Gen Mounted EOB (APM603 controller only)
- Paralleling, Remote Mounted EOB (APM603 controller only)
- Remote Annunciator Panel
- Run Relay, 12 V
- Two Input/Five Output Module (APM402 controller only)

Cooling System

- Block Heater, 1500 W, 120 V
- Block Heater, 1500 W, 240 V
Required for ambient temperatures below 10°C (50°F)

Electrical System

- Battery
- Battery Charger (6A or 10A)
- Temperature Compensation for 10A Battery Charger
- Battery Heater, 120V
- Alternator Strip Heater
- Basic Electrical package (Includes 30 A terminal strip, DC light switch, 20 A, 240 VAC receptacle, and 20 A, 120 VAC GFI receptacles.)

Miscellaneous

- Certified Test Report
- Engine Fluids (oil and coolant) Added
- Rodent Guards
- Skid End Caps

Literature

- General Maintenance
- NFPA 110
- Overhaul
- Production

Warranty

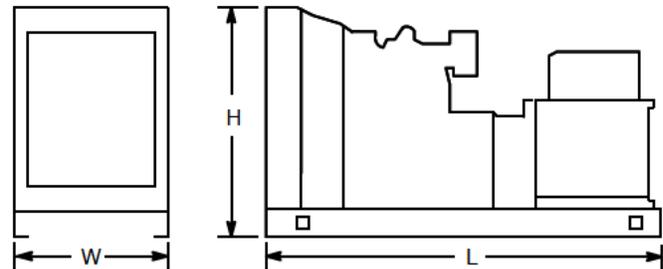
- 2-Year Basic Limited Warranty
- 5-Year Basic Limited Warranty
- 5-Year Comprehensive Limited Warranty
- 10-Year Extended Warranty

Other Options

- _____
- _____
- _____

Dimensions and Weights

Overall Size, L x W x H, mm (in.): 2800 x 1340 x 1809
 (110.2 x 52.8 x 71.2)
 Weight (radiator model), wet, kg (lb.): 2030 (4480)



NOTE: This drawing is provided for reference only and should not be used for planning installation. Contact your local distributor for more detailed information.

DISTRIBUTED BY:

Aristo Networks LLC
Technical Management Report
By
John Amery
7/25/2022

Items of Interest:

- QLIFE damages (Jefferson Street backbone re-route).
 - Commstructure is working on engineering drawings for the new route.
- We have delayed the splicing of these QLIFE infrastructure projects as we have several upcoming projects in the works. It makes sense to delay these splicing projects for now:
 - Dry Hollow Project
 - Downtown Overbuild Project
 - Liberty Street Project
 - City Hall High Density Frame Project



Stephanie Krell <stephaniek@co.wasco.or.us>

2022 Oregon Connections Telecommunications Conference – Program Posted

1 message

BERRIAN Pam C <PBerrian@eugene-or.gov>
To: BERRIAN Pam C <PBerrian@eugene-or.gov>
Cc: "chris@oregonconnections.info" <chris@oregonconnections.info>

Wed, Jul 6, 2022 at 11:10 AM

I assist the conference planners with outreach. Please feel free to forward this update. If you wish to be removed from this bcc list, just let me know. Thank you -Pam Berrian

The [Program](#) for the 2022 Oregon Connections Telecommunications Conference is now posted on the conference website at www.oregonconnections.info. With the theme of “Oregon Connections: Navigating the Funding Flood,” the annual Oregon Connections Telecommunications Conference is scheduled for Thursday and Friday, October 6 and 7, 2022 at the Ashland Hills Hotel and Suites in Ashland.

Our Keynote Speakers this year are Angela Siefer, the Executive Director of the National Digital Inclusion Alliance and Russ Elliott is the Chief Executive Officer of Siskiyou Telephone Company, an independent telecommunications company serving Western Siskiyou County California since 1896. Program topics will include the historic array of broadband funding programs, state and local community engagement, broadband technologies, digital equity, digital inclusion, managing expectations, and keys to project success.

The Early Bird registration fee is just \$80. Find conference information, on-line registration, and updates at www.oregonconnections.info. Please join us this October 6 and 7, 2022 in Southern Oregon!

Thank you to our Sponsors: Astound Business Solutions, Hunter Communications, Genxsys Solutions, Cascade Poly Pipe & Conduit, Calix, Business Oregon Broadband Office, Walker & Associates / Comstar Supply, Millennium, City of Eugene, Clearfield and Southern Oregon Regional Economic Development, Inc. (SORED)!

Christopher Tamarin

Conference Planning Committee

chris@oregonconnections.info



Executive Session

Script Opening Executive Session

The QLife Board will now meet in executive session pursuant to _____

Representatives of the news media and designated staff shall be allowed to attend the executive session. All other members of the audience are asked to leave the room. Representatives of the news media are specifically directed not to report on any of the deliberations during the executive session, except to state the general subject of the session as previously announced. No decision may be made in executive session. At the end of the executive session, we will return to open session and welcome the audience back into the room.

- ORS 192.660(2)(a) Employment of Public Officers, Employees & Agents
- ORS 192.660(2)(b) Discipline of Public Officers & Employees
- ORS 192.660(2)(d) Labor Negotiator Consultations
- ORS 192.660(2)(e) Real Property Transactions
- ORS 192.660(2)(f) To consider information or records that are exempt by law from public inspection
- ORS 192.660(2)(g) To consider preliminary negotiations involving matters of trade or commerce in which the governing body is in competition with governing bodies in other states or nations.
- ORS 192.660(2)(h) To consult with counsel concerning the legal rights and duties of a public body with regard to current litigation or litigation likely to be filed.
- ORS 192.660(2)(i) To review and evaluate the employment-related performance of the Chief Executive Officer of any public body, a public officer, employee or staff member who does not request and open hearing.
- ORS 192.660(2)(j) Public Investments
- ORS 192.660(2)(m) Security Programs
- ORS 192.660(2)(n) To discuss information about review or approval of programs relating to the security of telecommunications systems