Jerome School District

Jefferson Elementary

--Invitation to Bid--

Bids to complete work as defined will be accepted, from invited contractors, by Starr Corporation until ***Thursday, 5/18/23 by 2:00PM***. Bids may be delivered to 2995 East 3600 North, Twin Falls, ID, or emailed to jhsbids@starrcorporation.com. Bids to be valid for 30 days. Bids to be submitted utilizing the attached bid form. Plans for this project are available on Starr Corporation's website.

http://plans.starrcorporation.com.php72-2.lan3-1.websitetestlink.com/projects/index.php?path=Jefferson_Elementary_Bids_Due_May_18th_2_p.m./

Informal Pre-Bid Walk-throughs will be available at the school on Friday, 5/5/23 and Friday, 5/12/23 between the hours of 3:30PM & 5:00PM for those interested.

Starr Corporation is the CM/GC for this project. Starr Corporation may elect to submit proposal(s) on bid packages. Starr Corporation's proposal will be submitted no later than 12:00 PM on the bid date. This early bid delivery is designed to give all bidders an assurance of an open, competitive, and fair bidding environment.

Schedule: Addition will begin Summer of 2023. Other renovation will begin November 2023. Project to complete July 2024.

- Special Bid Instructions:
  1) Substitution Requests will be received through Thursday, 5/11/23, only.
  2) Pre-Bid RFI's will be received through Monday, 5/15/23, only.

- Bid Information Notes:
  1) Switchgear has already been ordered to avoid schedule issues. Specifications for the gear are included in the Bid Documents.
  2) Food Service Equipment bid previously.

When preparing a proposal please be sure to review the following:

- **Project Bid Documents**
- **Project Plans**
- **Project Specifications**

If questions should arise during the bid process, please contact Jeff Russell at 208-420-7703 or via email at jeff@starrcorporation.com

CONTRACTOR BID PROPOSAL

JSD – Jefferson Elementary

TO: Starr Corporation
2995 East 3600 North
Twin Falls, Idaho 83301
jhsbids@starrcorporation.com

BIDDER: _____

The Bidder, having examined the bidding and contract documents, and the site of the proposed work and being familiar with all of the conditions surrounding the construction of the proposed project including the availability of materials and labor, hereby proposes to furnish all labor, equipment, materials and supplies to complete the work as outlined in the contract documents and at the prices stated below. These prices are to cover all expenses incurred in performing the work required under the Contract Documents of which this proposal is a part.

The preliminary construction schedule is included with the bid documents to provide a general understanding of the schedule requirements and the crew size required to meet this schedule. Bidder agrees to immediately begin submittals. Bidder to submit completed shop drawings within two weeks of receipt of contract.

Bidder acknowledges receipt of Addenda No._____,_____,_____,_____

Bid Package No._____ Bid Package Description_____

Amount (numerically) $_____

Amount (written) _____

Add Alternate No. 1-Corridor finish and opening upgrades.

Amount (numerically) $_____

Amount (written) _____

Add Alternate No. 2-Roof-Top HVAC equipment replacement.

Amount (numerically) $_____
Amount (written)_____

Add Alternate No. 3-New Cafeteria window.

Amount (numerically) $_____
Amount (written)_____

NOTE: Refer to Sheet SD0.1 – Summary Plan for full description of Alternates 4A thru 4F:

Add Alternate No. 4A: North Playground – Wood Fiber Fall Surface:

Amount (numerically) $_____
Amount (written)_____

Add Alternate No. 4B: North Playground – Rubber Mulch Fall Surface:

Amount (numerically) $_____
Amount (written)_____

Add Alternate No. 4C: North Playground – Synthetic Turf Fall Surface:

Amount (numerically) $_____
Amount (written)_____

Add Alternate No. 4D: South Playground – Wood Fiber Fall Surface:

Amount (numerically) $_____
Amount (written)_____

Add Alternate No. 4E: South Playground – Rubber Fall Surface:

Amount (numerically) $_____
Amount (written)_____

Add Alternate No. 4F: South Playground – Synthetic Turf Fall Surface:

Amount (numerically) $_____
Amount (written)_____

Payment and Performance Bond may be required. Price to provide Payment and Performance Bond for the work associated with this bid package.

Amount (numerically) $_____

Amount (written) _____

Bidder understands that Starr Corporation reserves the right to reject any or all bids and to waive any informalities in the bidding.

The bidder agrees that this bid shall be good and may not be withdrawn for a period of 30 calendar days after the scheduled closing time for receiving bids.

Any modification or addition to this Bid Proposal may render the bid unresponsive and void.

The Undersigned notifies that he is of this date duly licensed as an Idaho Public Works Contractor and further that he possesses Idaho Public Works Contractor's License No. _____ and is domiciled in the State of_____.

Contractor Registration Number RCE_____.

Dated this_____day of_____, 2023.
(date) (month)

Respectfully submitted,

By: _____
(Company)

Corporate Seal, if applicable

_____
(Business Address)

_____

_____
(Signature)

_____
(Title)

_____
(Telephone Number)

Include the following with your completed bid form:

Drug and Alcohol-Free Workplace Affidavit
National Sex Offender Registry Certification

Jerome School District - Jefferson Elementary

Bids to Starr Corporation by May 18, 2023 at 2:00PM

Bid Package No.	Package Description	Spec Section	Description	Additional Comments: All items include material, labor, and equipment for installation, unless noted otherwise.
BP-01 DEMOLITION				
01	Demolition	Division 1	General Requirements	All sections to be included in their entirety.
01	Demolition	024119	Selective Structure Demolition	Include all demolition, excerpt those specifically identified in Sitework, Fire Sprinkler, Plumbing, HVAC & Electrical bid packages.
N/A	N/A	028211	Asbestos Abatement	By Others.
N/A	N/A	028333	Lead-Based Paint Removal and Disposal	By Others.
N/A	N/A	Appendix B	Asbestos and Lead-Based Paint Testing Report	By Others.
BP-02 CONCRETE				
02	Concrete	Division 1	General Requirements	All sections to be included in their entirety.
02	Concrete	033000	Cast-in-Place Concrete	Includes all building and site concrete including reinforcement and embeds. Grading for structures & on-site concrete by Site Contractor. Curbs, gutters & sidewalk for on-site included.
02	Concrete	035416	Hydraulic Cement Underlayment	
02	Concrete	071113	BituminousDampproofing	Foundation dampproofing.
02	Concrete	072100	Thermal Insulation	Foundation & under-slab rigid insulation, only.
02	Concrete	079200	Joint Sealants	Sealants for interior concrete scope of work, only.
02	Concrete	321313	Concrete Paving	
02	Concrete	321373	Concrete Paving Joint Sealants	Sealants for exterior concrete scope of work, only.
02	Concrete	321726	Tactile Warning Surfacing	
BP-03 MASONRY				
03	Masonry	Division 1	General Requirements	All sections to be included in their entirety.
03	Masonry	042000	Unit Masonry	Include all masonry reinforcement. Bucks for CMU openings by Others.
03	Masonry	079200	Joint Sealants	Sealants for this scope of work only.
BP-04 STRUCTURAL STEEL (Supply & Install)				
04	Structural Steel (S/I)	Division 1	General Requirements	All sections to be included in their entirety.
04	Structural Steel (S/I)	051200	Structural Steel Framing	
04	Structural Steel (S/I)	052100	Steel Joist Framing	
04	Structural Steel (S/I)	053100	Steel Decking	
04	Structural Steel (S/I)	055000	Metal Fabrications	
04	Structural Steel (S/I)	055213	Pipe and Tube Railings	
BP-04a STRUCTURAL STEEL (Install, Only)				
04a	Structural Steel (Install)	Division 1	General Requirements	All sections to be included in their entirety.
04a	Structural Steel (Install)	051200	Structural Steel Framing	
04a	Structural Steel (Install)	052100	Steel Joist Framing	
04a	Structural Steel (Install)	053100	Steel Decking	
04a	Structural Steel (Install)	055000	Metal Fabrications	
04a	Structural Steel (Install)	055213	Pipe and Tube Railings	
BP-04b STRUCTURAL STEEL (Supply, Only)				
04b	Structural Steel (Supply)	Division 1	General Requirements	All sections to be included in their entirety.
04b	Structural Steel (Supply)	051200	Structural Steel Framing	
04b	Structural Steel (Supply)	052100	Steel Joist Framing	
04b	Structural Steel (Supply)	053100	Steel Decking	
04b	Structural Steel (Supply)	055000	Metal Fabrications	
04b	Structural Steel (Supply)	055213	Pipe and Tube Railings	
BP-05 ROUGH CARPENTRY				
05	Rough Carpentry	Division 1	General Requirements	All sections to be included in their entirety.
05	Rough Carpentry	061000	Rough Carpentry	
05	Rough Carpentry	061600	Sheathing	
05	Rough Carpentry	061753	Shop-Fabricated Wood Trusses	
05	Rough Carpentry	072700	Infiltration Barriers	
05	Rough Carpentry	097200	Digitally Printed Vinyl Wallcovering Murals	
05	Rough Carpentry	113013	Residential Appliances	
05	Rough Carpentry	079200	Joint Sealants	Sealants for this scope of work only.
BP-06 MILLWORK				
06	Millwork	Division 1	General Requirements	All sections to be included in their entirety.
06	Millwork	064116	Plastic Laminate Faced Architectural Cabinets	
06	Millwork	079200	Joint Sealants	Sealants for this scope of work only.
BP-07 ROOFING				
07	Roofing	Division 1	General Requirements	All sections to be included in their entirety.
07	Roofing			For this scope of work only.
07	Roofing	075423	Thermoplastic Polyolefin (TPO) Roofing	
07	Roofing		(3) Year Roofing Warranty	
07	Roofing	076200	Sheet Metal Flashing and Trim	Gutter and gutter sleeve only. Steel downspout by others. Includes metal valley flashing.
07	Roofing	077200	Roof Accessories	
07	Roofing	079200	Joint Sealants	Sealants for this scope of work only.
BP-08 DOORS & HARDWARE				
08	Doors & Hardware	Division 1	General Requirements	All sections to be included in their entirety.
08	Doors & Hardware	081113	Hollow Metal Doors and Frames	
08	Doors & Hardware	081416	Flush Wood Doors	
08	Doors & Hardware	083113	Accss Doors and Frames	
08	Doors & Hardware	087100	Door Hardware	For this scope of work only.
BP-9 OVERHEAD COILING DOORS				
09	Overhead Coiling Doors	Division 1	General Requirements	All sections to be included in their entirety.
09	Overhead Coiling Doors	083323	Overhead Coiling Doors	
09	Overhead Coiling Doors	079200	Joint Sealants	Sealants for this scope of work only.
BP-10 ALUMINUM FRAMED ENTRANCES & STOREFRONTS				
10	Aluminum Storefronts	Division 1	General Requirements	All sections to be included in their entirety.
10	Aluminum Storefronts	084113	Aluminum-Framed Entrances and Storefronts	
10	Aluminum Storefronts	084523	Translucent Fiberglass Sandwich Panel Assemblies	
10	Aluminum Storefronts	087100	Door Hardware	Hardware for this scope of work, only.
10	Aluminum Storefronts	088000	Glazing	Includes all glass for storefronts & hollow metal doors & frames.
10	Aluminum Storefronts	079200	Joint Sealants	Sealants for this scope of work only.
BP-11 STUCCO				

11	Stucco	Division 1	General Requirements	
11	Stucco	092400	Portland Cement Plaster	
11	Stucco	079200	Joint Sealants	Sealants for this scope of work only.
BP-12 DRYWALL				
12	Drywall	Division 1	General Requirements	All sections to be included in their entirety.
12	Drywall	054000	Cold-Formed Metal Framing	
12	Drywall	066400	Plastic Paneling	
12	Drywall	072100	Thermal Insulation	Wall, Ceiling & Vapor barrier, only.
12	Drywall	092900	Gypsum Board	Provide & install cementitious backer units.
12	Drywall	095113	Acoustical Panel Ceilings	
12	Drywall	098413	Fixed Sound-Absorptive Panels	
12	Drywall	078413	Penetration Firestopping	As required for this scope of work, (Example: tops of walls).
12	Drywall	079200	Joint Sealants	Sealants for this scope of work only.
BP-13 WOOD ATHLETIC FLOORING				
13	Wood Athletic Flooring	Division 1	General Requirements	All sections to be included in their entirety.
13	Wood Athletic Flooring	096466	Wood Athletic Flooring	
13	Wood Athletic Flooring	079200	Joint Sealants	Sealants for this scope of work only.
BP-14 FLOOR COVERING / TILING				
14	Flooring Covering / Tiling	Division 1	General Requirements	All sections to be included in their entirety.
14	Flooring Covering / Tiling	093013	Tiling	Cementitious backer units by Drywall bid package.
14	Flooring Covering / Tiling	096513	Resilient Base and Accessories	
14	Flooring Covering / Tiling	096516	Resilient Sheet Flooring	Joint and crack filling, minor leveling, and sanding is included.
14	Flooring Covering / Tiling	096519	Resilient Tile Flooring	Joint and crack filling, minor leveling, and sanding is included.
14	Flooring Covering / Tiling	096816	Carpeting	Joint and crack filling, minor leveling, and sanding is included.
14	Flooring Covering / Tiling	079200	Joint Sealants	Sealants for this scope of work only.
BP-15 PAINTING				
15	Painting	Division 1	General Requirements	All sections to be included in their entirety.
15	Painting	071900	Water Repellents	
15	Painting	099113	Exterior Painting	
15	Painting	099123	Interior Painting	
15	Painting	079200	Joint Sealants	All interior sealants exclusive of concrete, aluminum storefront, and millwork. Includes caulking hollow metal frames prior to painting.
BP-16 SPECIALTIES				
16	Specialties	Division 1	General Requirements	All sections to be included in their entirety.
16	Specialties	101100	Visual Display Surfaces	
16	Specialties	101416	Signage	
16	Specialties	102113	Toilet Compartments	
16	Specialties	102600	Wall and Door Protection	
16	Specialties	102800	Toilet and Bath Accessories	
16	Specialties	104413	Fire Extinguisher Cabinets	
16	Specialties	104416	Fire Extinguishers	
16	Specialties	115213	Projection Screens	
16	Specialties	116143	Platform Curtains	
16	Specialties	079200	Joint Sealants	Sealants for this scope of work only.
BP-17 GYMNASIUM EQUIPMENT				
17	Gym Equipment	Division 1	General Requirements	All sections to be included in their entirety.
17	Gym Equipment	116600	Wall and Floor Padding	
17	Gym Equipment	116623	Gymnasium Equipment	
BP-18 HORIZONTAL LOUVER BLINDS				
18	Louver Blinds	Division 1	General Requirements	All sections to be included in their entirety.
18	Louver Blinds	122113	Horizontal Louver Blinds	
BP-19 TELESCOPING STANDS				
19	Telescoping Stands	Division 1	General Requirements	All sections to be included in their entirety.
19	Telescoping Stands	126600	Telescoping Stands	
BP-20 FIRE SPRINKLER SYSTEM				
20	Fire Sprinkler System	Division 1	General Requirements	All sections to be included in their entirety.
20	Fire Sprinkler System	210000	Fire Sprinkler Systems	Demolition as required for this scope of work.
20	Fire Sprinkler System		Fire Penetration Appendix A	As required for this scope of work.
20	Fire Sprinkler System	083113	Access Doors and Frames	Supply and install as needed for access to items installed under this scope of work.
BP-21 PLUMBING				
21	Plumbing	Division 1	General Requirements	All sections to be included in their entirety.
21	Plumbing	220000	Plumbing General Requirements	Demolition as required for this scope of work.
21	Plumbing	220100	Plumbing	
21	Plumbing	113013	Residential Appliances	Include all necessary connections relative to this scope of work.
21	Plumbing	114000	Food Service Equipment	Include all necessary connections relative to this scope of work.
21	Plumbing	083113	Access Doors and Frames	Supply and install as needed for access to items installed under this scope of work.
BP-22 HVAC				
22	HVAC	Division 1	General Requirements	All sections to be included in their entirety.
22	HVAC	230000	HVAC General Requirements	Demolition as required for this scope of work.
22	HVAC	230100	Heating, Ventilating and Air Conditioning	
22	HVAC	230150	Mechanical Start-Up	
22	HVAC	230800	HVAC Commissioning Requirements	
22	HVAC	230900	Direct Digital Control System	
22	HVAC	113013	Residential Appliances	Include all necessary connections relative to this scope of work.
22	HVAC	114000	Food Service Equipment	Include all necessary connections relative to this scope of work.
22	HVAC	078413	Penetration Firestopping	As required for this scope of work.
22	HVAC	078413	Firestopping Appendix A	As required for this scope of work.
22	HVAC	079200	Joint Sealants	As required for this scope of work.
22	HVAC	083113	Access Doors and Frames	Supply and install as needed for access to items installed under this scope of work.
BP-23 ELECTRICAL				
23	Electrical	Division 1	General Requirements	All sections to be included in their entirety.
23	Electrical	260500	Electrical General Provisions	Demolition as required for this scope of work.
23	Electrical	260501	Field Test and Operational Check	
23	Electrical	260502	Coordination Study	
23	Electrical	260519	Conductorsand Cables	
23	Electrical	260526	Grounding	
23	Electrical	260529	Supporting Devices	
23	Electrical	260533	Raceways and Boxes	

23	Electrical	260536	Cable Trays	
23	Electrical	260543	Under Slab and Underground Electrical Work	
23	Electrical	260800	Lighting Systems Commissioning	
23	Electrical	260923	Lighting Control Devices	
23	Electrical	262413	Switchboards	Reference attached Switchgear submittal.
23	Electrical	262416	Panelboards	
23	Electrical	262726	Wiring Devices	
23	Electrical	262813	Fuses	
23	Electrical	262815	Disconnect Switches	
23	Electrical	265100	Interior Lighting	
23	Electrical	266000	Electrical Demolition and Repair	
23	Electrical	271101	Telecom Raceway Systems	
23	Electrical	271500	Telecommunications Cabling	
23	Electrical	275116	Integrated Communications and Clock Network	
23	Electrical	275118	Sound Systems	
23	Electrical	275200	Class Room Audio System	
23	Electrical	281000	Access Control System	
23	Electrical	282310	Video Management System	
23	Electrical	282329	Video Surveillance Remote Devices and Sensors	
23	Electrical	283200	Voice Evacuation Fire Alarm System	
23	Electrical	113013	Residential Appliances	Include all necessary connections relative to this scope of work.
23	Electrical	114000	Food Service Equipment	Include all necessary connections relative to this scope of work.
23	Electrical	078413	Penetration Firestopping	As required for this scope of work.
23	Electrical	078413	Firestopping Appendix A	As required for this scope of work.
23	Electrical	079200	Joint Sealants	As required for this scope of work.
23	Electrical	083113	Access Doors and Frames	Supply and install as needed for access to items installed under this scope of work.
BP-24 SITEWORK				
24	Sitework	Division 1	General Requirements	All sections to be included in their entirety.
24	Sitework	SD6.0 & SD6.5	Erosion and Sediment Control	Sitework Contractor responsible to provide all erosion & sediment control components including setup, maintenance and removal.
24	Sitework	310120	Traffic Control	
24	Sitework	311000	Site Clearing	
24	Sitework	312300	Earthwork	
24	Sitework	315000	Excavation Support and Protection	
24	Sitework	321216	Asphalt Paving	
24	Sitework	321723	Pavement Markings	
24	Sitework	331100	Site Water Lines	
24	Sitework	323150	Site Signage	
24	Sitework	333100	Site Sanitary Sewerage System	Include Sand & Grease traps as shown on Site Utility drawings.
24	Sitework	334100	Storm Utility Drainage Piping	Include all components on Sheet SD5.5.
24	Sitework	334600	Subdrainage	
24	Sitework	Appendix A	Geotechnical Evaluation Report	
BP-25 PLAYGROUND EQUIPMENT & STRUCTURES				
25	Playground Equipment	Division 1	General Requirements	All sections to be included in their entirety.
25	Playground Equipment	321800	Playground Equipment and Structures	
25	Playground Equipment	321816	Playground Surface Systems	
25	Playground Equipment	321822	Synthetic Playground Turf	
BP-26 SITE FURNISHINGS				
26	Site Furnishings	Division 1	General Requirements	All sections to be included in their entirety.
26	Site Furnishings	323300	Site Furnishings	Provide and install all items in this Spec Section. Includes concrete, bases & anchoring for all equipment.
BP-27 CHAIN-LINK & DECORATIVE FENCES				
27	Fencing	Division 1	General Requirements	All sections to be included in their entirety.
27	Fencing	323113	Chain Link Fences and Gates	
27	Fencing	323119	Decorative Metal Fences and Gates	
BP-28 LANDSCAPE & IRRIGATION				
28	Landscape	Division 1	General Requirements	All sections to be included in their entirety.
28	Landscape	328400	Landscape Irrigation	
28	Landscape	328500	Landscape Grading	Site will be cut to sub-grade elevation, (+/-) one-tenth by Others.
28	Landscape	329113	Soil Preparation	
28	Landscape	329200	Turf and Grasses	
28	Landscape	329290	Tree Protection and Trimming	
28	Landscape	329300	Plants	

CONTRACTOR'S AFFIDAVIT
CONCERNING ALCOHOL AND DRUG-FREE WORKPLACE

STATE OF _____

COUNTY OF _____

Pursuant to the Idaho Code, Section 72-17 17. 1, the undersigned, being duly sworn. depose and certify that _____is in compliance with the provisions of Idaho Code section 72-1717; that_____provides a drug-free workplace program that complies with the provisions of Idaho Code, title 72, chapter 17 and wit1 maintain such program throughout the life of a state construction contract and that_____shall subcontract work only to subcontractors meeting the requirements of Idaho Code, section 72—171 7(1)(a).

_____
Name of Contractor

_____
Address

_____
City and State

By: _____
(Signature)

Subscribed and sworn to before me this_____day of _____ _____

Commission expires:

_____
ROTARY PUBLIC, residing at

_____

_____

NATIONAL SEX OFFENDER REGISTRY

Idaho Code §18-8329 prohibits any person who is registered or required to register under the Sex Offender Registration Act from being on school property if the person has reason to believe children under 18 are present. As a provider of goods and/or services to the Jerome School District projects, your company and those in your employment are subject to this law.

Please sign and return this letter confirming to the Jerome School District that your company will prohibit any persons in your employ who are registered or required to register under the Idaho Sex Offender Registration Act from participation in company business with the Jerome School District if such participation would require them on campus. Further, by signing, you confirm that you have cross checked such employees against the National Sex Offender Registry found at the following website: http://www.nsopr.gov

Company Name

Signature of Company Representative

Printed Name

Date

Jefferson Elementary

Submittal for Approval

Negotiation Number

P1TS0105X3K1

Volume 1 of 1

Equipment:

Switchboards

Date: 1/25/2023

Main Table of Contents

Switchboards

Bill of Material

Detail Bill of Material

Project Name: Jefferson Elementary
General Order No:
Negotiation No: P1TS0105X3K1
Alternate No: 0001

Item No.	Qty	Product	Description
	1	Switchboards	Pow-R-Line Xpert Switchboard, Front Access/ Front and Rear Align, Type 3R (nonwalk-in) Flat Roof, 208Y/120V 3-Phase 4-Wire, 2000 Copper, Minimum Interrupting Rating: 65kA, Bus Bracing Rating: 65kA, Depth: 30 In

Designation MSB

Structure 1

2000 Amp CU Main Structure
Vertical Isol. Barrier (Service Entrance)
Compartment 1 - Breaker 2000A 3P PDG63M Breaker [2000A Frame]
PXR20 LSI Trip Unit w/ ARMS,
Trip Unit Amps, 2000A
Local using breaker interface

Structure 2

2000 Amp CU Distribution Structure
Compartment 1 - Breaker 1200A, 3P PDG53M Breaker, [1200A Frame]
PXR20 LSI Trip Unit w/ ARMS,
Trip Unit Amps, 1200A
Local using breaker interface
Compartment 2 - Breaker 400A, 3P PDG33G Breaker [400A Frame]
PXR10 LSI Trip Unit
Trip Unit Amps, 400A
Compartment 3 - Breaker 400A, 3P PDG33G Breaker [400A Frame]
PXR10 LSI Trip Unit
Trip Unit Amps, 400A
Compartment 4 - Breaker 200A, 3P PDG23G Breaker [225A Frame]
PXR10 LSI Trip Unit
Trip Unit Amps, 225A
Compartment 5 - Breaker 200A, 3P PDG23G Breaker [225A Frame]
PXR10 LSI Trip Unit
Trip Unit Amps, 225A
Compartment 6 - Breaker 200A, 3P PDG23G Breaker [225A Frame]
PXR10 LSI Trip Unit
Trip Unit Amps, 225A
Compartment 7 - Breaker 200A, 3P PDG23G Breaker [225A Frame]
PXR10 LSI Trip Unit
Trip Unit Amps, 225A

Qty	List of Materials
2	Type 3R (nonwalk-in) Flat Roof
1	Service Entrance Label
1	2000 Amp CU Main Structure
1	Vertical Isol. Barrier (Service Entrance)
1	2000 Amp CU Distribution Structure
6	Nameplate
2	Copper Ground Bus
1	2000A 3P PDG63M Breaker [2000A Frame], Trip 2000 A, PXR20 LSI w/ ARMS, (6) #4-500 kcmil, Mechanical, Bottom
1	1200A, 3P PDG53M Breaker, [1200A Frame], Trip 1200 A, PXR20 LSI w/ ARMS, (4) 4/0-500 kcmil, Mechanical
2	400A, 3P PDG33G Breaker [400A Frame], Trip 400 A, PXR10 LSI, (2) 2/0-250 kcmil, Mechanical
4	200A, 3P PDG23G Breaker [225A Frame], Trip 200 A, PXR10 LSI, (1) #4-4/0, Mechanical

Eaton Selling Policy 25-000 applies.

Project Name:	Jefferson Elementary	**Negotiation No:**	P1TS0105X3K1
General Order No:		**Alternate No:**	0001

All orders must be released for manufacture within 90 days of date of order entry. If approval drawings are required, drawings must be returned approved for release within 60 days of mailing. If drawings are not returned accordingly, and/or if shipment is delayed for any reason, the price of the order will increase by 1.0% per month or fraction thereof for the time the shipment is delayed.

Seller shall not be responsible for any failure to perform, or delay in performance of, its obligations resulting from the COVID-19 pandemic or any future epidemic, and Buyer shall not be entitled to any damages resulting thereof.

Drawings

Switchboard General Information

Pow-R-Line Xpert - Specifications
Quantity: 1
Alignment: Front Access/ Front and Rear Align
Service: 208Y/120V 3-Phase 4-Wire | **Minimum Interrupt Rating: 65 kA**

Bus Specifications
Bus Amps: 2000 | **Bus Bracing Rating: 65kA**
Neutral Amps: 2000
Bus Material: Copper | **Heat Test**
Ground Bus Material: Copper Ground Bus Bolted To Frame, (1) #6-350 kcmil Ground Lug

Incoming Information
Incoming Entry: Bottom | **Incoming Location: Left**
Incoming Qty & Size: Terminals, Mechanical, (6) #4-500 kcmil, Bottom

Structure Specifications
Service Entrance
Enclosure Type: Type 3R (nonwalk-in) Flat Roof
Enclosure: Outdoor Enlosure Configuration Per Euserc Dwg 354

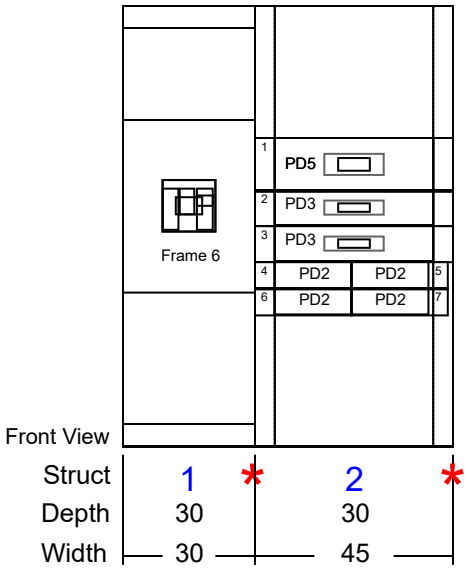
Special Notes

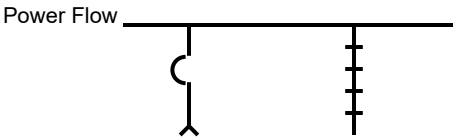
Qty	Description	Catalog Number

Enclosure properties

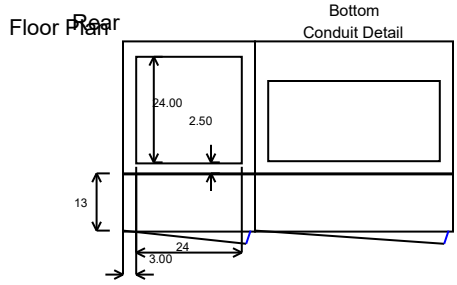
Struct #	Description/Modifications
1	Bottom incoming main device (Incoming Main Device/MLO Section) Vertical isolating barrier
2	50x chassis mounted feeders (Feeder Structure)

PREPARED BY: RICK D DOTSON	DATE: 1/25/2023	Eaton	SumterSC		
APPROVED BY	DATE	JOB NAME: Jefferson Elementary			
		DESIGNATION: MSB			
VERSION: 9.0.31.1		TYPE: Switchboards		DRAWING TYPE: CustAppr	
NEG-ALT Number: P1TS0105X3K1-0001	REVISION: 0	DWG SIZE: DwgA	G.O.	ITEM	SHEET: 1 of 3





See 1A32044 For Bottom Conduit Detail



Total of 2 Structures, Total Weight of 1591 Weight-Lbs. with Front Hinged Doors.
Total of 2 Structures, Total Width of 75 Inches with Front Hinged Doors.

Structure	1	2				
Ship-Inches	30.00	45.00				
Ship-MM	762	1143				
Wdth-Inches	30.00	45.00				
Wdth-MM	762	1143				
Depth(Inner)-In.	30.00	30.00				
Depth(Inner)-MM	762	762				
Depth(Outer)-In.	43.00	43.00				
Depth(Outer)-MM	1092	1092				
Height-Inches	90.00	90.00				
Height-MM	2286	2286				
Weight-Lbs.(Est.)	652	939				
Weight-Kg.(Est.)	295	425				

PREPARED BY: RICK D DOTSON	DATE: 1/25/2023	**Eaton**	SumterSC		
APPROVED BY:	DATE:	JOB NAME:	Jefferson Elementary		
		DESIGNATION:	MSB		
VERSION: 9.0.31.1		TYPE: Switchboards		DRAWING TYPE: CustAppr	
NEG-ALT Number: P1TS0105X3K1-0001	REVISION: 0	DWG SIZE: DwgA	G.O.	ITEM	SHEET: 2 of 3

Switchboard Units Information

Str#	Unit	Description/Modifications	Nameplate
1			
		Main Breaker - Ind Mtd-2000A 3P PDG63M Breaker [2000A Frame], Trip 2000A., PXR20 LSI w/ ARMS, None ARMS Operation - Local using breaker interface Terminals, Mechanical, (6) #4-500 kcmil, Bottom Neutral Terminal, (6) #4-500 kcmil	
2			
	1	Feeder Breaker - Chassis Mtd-1200A, 3P PDG53M Breaker, [1200A Frame], Trip 1200A., PXR20 LSI w/ ARMS, None ARMS Operation - Local using breaker interface Terminals, Mechanical, (4) 4/0-500 kcmil Neutral Terminal, (4) #4-500 kcmil	
	2	Feeder Breaker - Chassis Mtd-400A, 3P PDG33G Breaker [400A Frame], Trip 400A., PXR10 LSI Terminals, Mechanical, (2) 2/0-250 kcmil Neutral Terminal, (2) #6-350 kcmil	
	3	Feeder Breaker - Chassis Mtd-400A, 3P PDG33G Breaker [400A Frame], Trip 400A., PXR10 LSI Terminals, Mechanical, (2) 2/0-250 kcmil Neutral Terminal, (2) #6-350 kcmil	
	4	Feeder Breaker - Chassis Mtd-200A, 3P PDG23G Breaker [225A Frame], Trip 200A., PXR10 LSI, None Terminals, Mechanical, (1) #4-4/0 Auxiliary switch: 1 NO & 1 NC Aux Contact (Integral) Neutral Terminal, (1) #6-350 kcmil	
	5	Feeder Breaker - Chassis Mtd-200A, 3P PDG23G Breaker [225A Frame], Trip 200A., PXR10 LSI, None Terminals, Mechanical, (1) #4-4/0 Auxiliary switch: 1 NO & 1 NC Aux Contact (Integral) Neutral Terminal, (1) #6-350 kcmil	
	6	Feeder Breaker - Chassis Mtd-200A, 3P PDG23G Breaker [225A Frame], Trip 200A., PXR10 LSI, None Terminals, Mechanical, (1) #4-4/0 Auxiliary switch: 1 NO & 1 NC Aux Contact (Integral) Neutral Terminal, (1) #6-350 kcmil	
	7	Feeder Breaker - Chassis Mtd-200A, 3P PDG23G Breaker [225A Frame], Trip 200A., PXR10 LSI, None Terminals, Mechanical, (1) #4-4/0 Auxiliary switch: 1 NO & 1 NC Aux Contact (Integral) Neutral Terminal, (1) #6-350 kcmil	

PREPARED BY: RICK D DOTSON	DATE: 1/25/2023	**Eaton**	SumterSC		
APPROVED BY:	DATE:	JOB NAME: Jefferson Elementary			
		DESIGNATION: MSB			
VERSION: 9.0.31.1		TYPE: Switchboards		DRAWING TYPE: CustAppr	
NEG-ALT Number: P1TS0105X3K1-0001	REVISION: 0	DWG SIZE: DwgA	G.O.	ITEM	SHEET: 3 of 3

GO/NEG-Alt-Date: P1TS0105X3K1-0001-1/25/2023

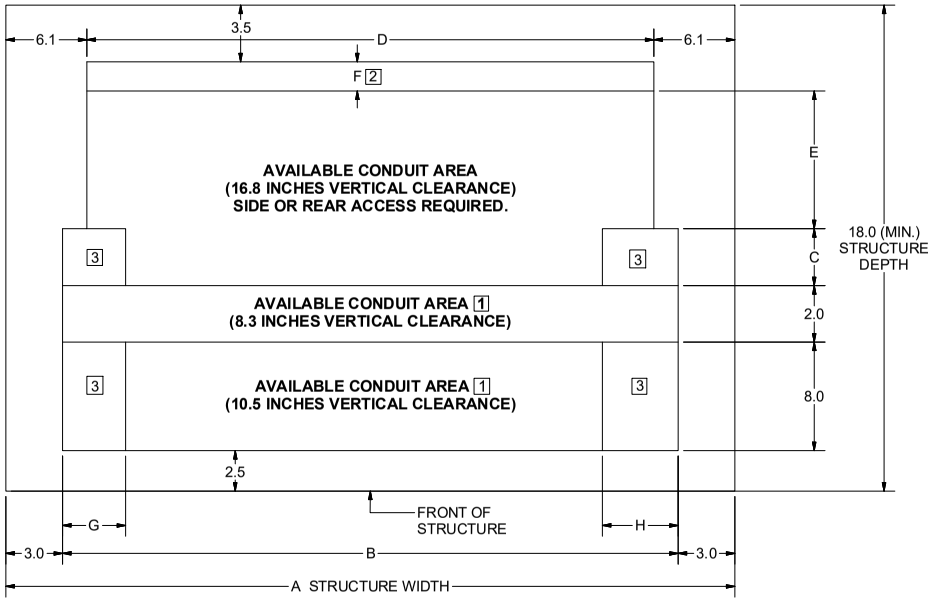
Item Number:

Catalog Number:

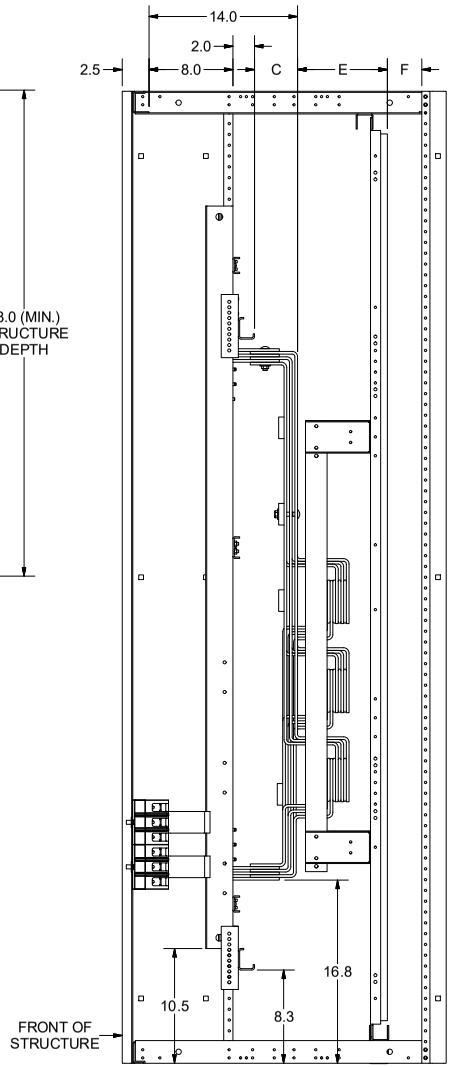
Job Name: Jefferson Elementary

Designation: MSB

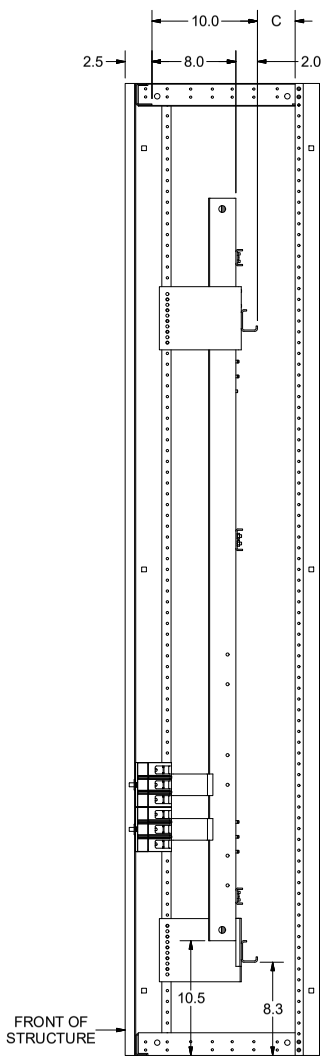
FLOOR PLAN
DISTRIBUTION CHASSIS



STRUCTURE DIMENSIONS	A (INCHES)	B (INCHES)	C (INCHES)	D (INCHES)	E (INCHES)	F (INCHES)	G (INCHES)	H (INCHES)
36W X 18D	36.0	30.0	2.0	23.8	N/A	N/A	3.0	5.0
45W X 18D	45.0	39.0	2.0	32.8	N/A	N/A	5.0	12.0
51W X 18D	51.0	45.0	2.0	38.8	N/A	N/A	11.5	11.5
36W X 24D	36.0	30.0	4.0	23.8	4.0	N/A	3.0	5.0
45W X 24D	45.0	39.0	4.0	32.8	4.0	N/A	5.0	12.0
51W X 24D	51.0	45.0	4.0	38.8	4.0	N/A	11.5	11.5
36W X 30D	36.0	30.0	4.0	23.8	8.5	1.5	3.0	5.0
45W X 30D	45.0	39.0	4.0	32.8	8.5	1.5	5.0	12.0
51W X 30D	51.0	45.0	4.0	38.8	8.5	1.5	11.5	11.5
36W X 36D	36.0	30.0	4.0	23.8	8.5	7.5	3.0	5.0
45W X 36D	45.0	39.0	4.0	32.8	8.5	7.5	5.0	12.0
51W X 36D	51.0	45.0	4.0	38.8	8.5	7.5	11.5	11.5
36W X 48D	36.0	30.0	4.0	23.8	8.5	19.5	3.0	5.0
45W X 48D	45.0	39.0	4.0	32.8	8.5	19.5	5.0	12.0
51W X 48D	51.0	45.0	4.0	38.8	8.5	19.5	11.5	11.5
36W X 54D	36.0	30.0	4.0	23.8	8.5	25.5	3.0	5.0
45W X 54D	45.0	39.0	4.0	32.8	8.5	25.5	5.0	12.0
51W X 54D	51.0	45.0	4.0	38.8	8.5	25.5	11.5	11.5
36W X 66D	36.0	30.0	4.0	23.8	8.5	37.5	3.0	5.0
45W X 66D	45.0	39.0	4.0	32.8	8.5	37.5	5.0	12.0
51W X 66D	51.0	45.0	4.0	38.8	8.5	37.5	11.5	11.5



SIDE VIEW
> 24" DEEP



SIDE VIEW
18" DEEP

NOTES:
1. FOR FUSIBLE SWITCHES, ALL CABLE ENTRY AREA BEHIND DISTRIBUTION CHASSIS AND CROSS BUS, REQUIRES SIDE OR REAR ACCESS.
2. CONDUIT AREA AVAILABLE WITH SIDE OR REAR ACCESS 90.00 INCHES VERTICAL CLEARANCE.
3. OPEN WIREWAY 90.00 INCHES VERTICAL CLEARANCE.

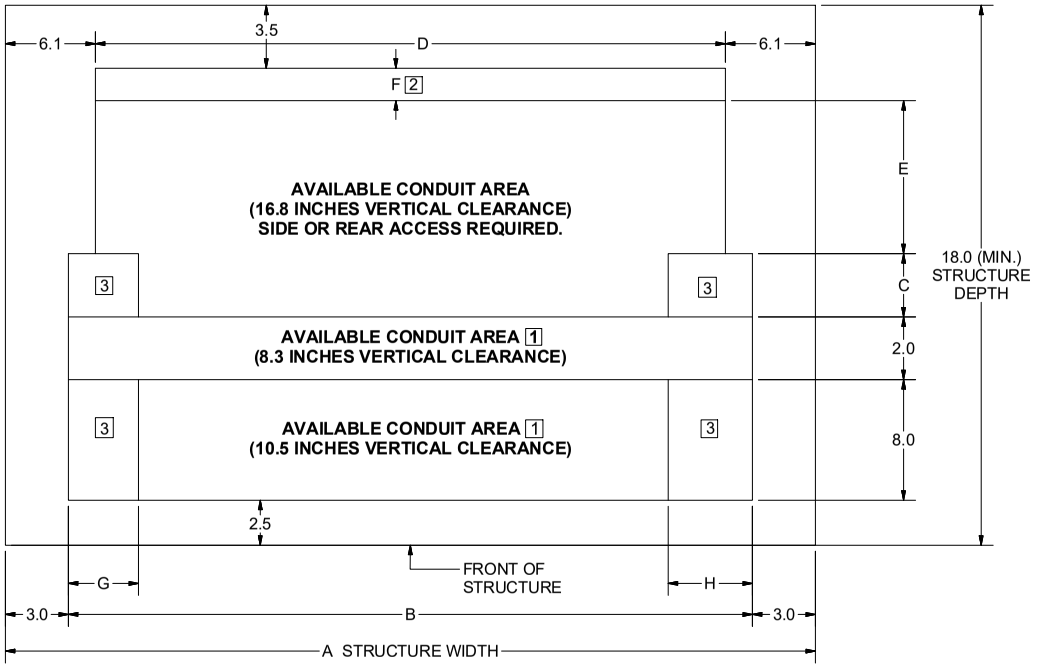
1	2	3	4	5	6
REVISION	RR#5493 HSB 11/15/11 GL 11/15/11 Added notification block to revision section.	ECR-0023779 JTR 8/3/2020 RBH 8/3/2020 UPDATED DRAWING AND COMBINED 1A32041 - 1A32043 INTO 1A32044.	CR-00024710 JTR 4/16/2021 RBH 4/16/2021 ADDED "C" DIM TO STRUCTURE VIEWS. REVISED FLOORPLAN.	CR-00027110 JTR 7/11/22 RBH 7/11/22 ADDED "G" & "H" TO DRAWING, OPEN WIREWAY.	CR-00027232 JTR 8/19/2022 RBH 8/19/2022 REVISED "G" AND "H" DIMS. ADDED BOX AT "G X C & H X C".

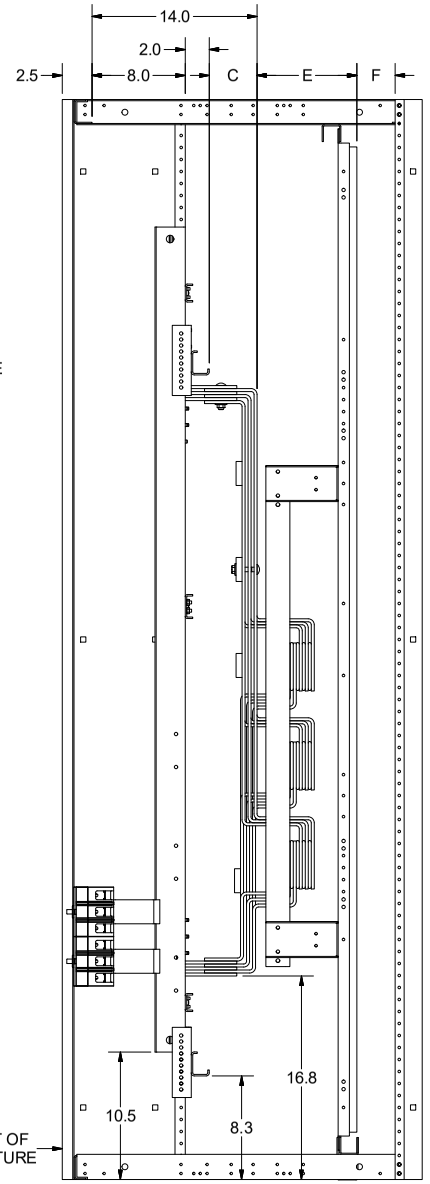
DRAFTER: DSF	DATE: 10/7/2011	EATON	SUMTER, SC
ENGINEER: RBH	DATE: 10/7/2011	TITLE: POW-R-LINE XPERT / C FLOOR PLAN - DISTRIBUTION CHASSIS	
FEDERAL ID NO.: 3341	PRODUCT: SCALE: NTS	REVISION: 6	PARTS LIST:
MODEL FILENAME: 1A32043G01.IAM	MODEL REV: 4	DWG NO.: 1A32044	
TYPE: STANDARD	UNLESS SPECIFIED TOLERANCES PER: -	SHEET: 1 OF 1	

SUM CUST TITLEBLOCK REV - 1

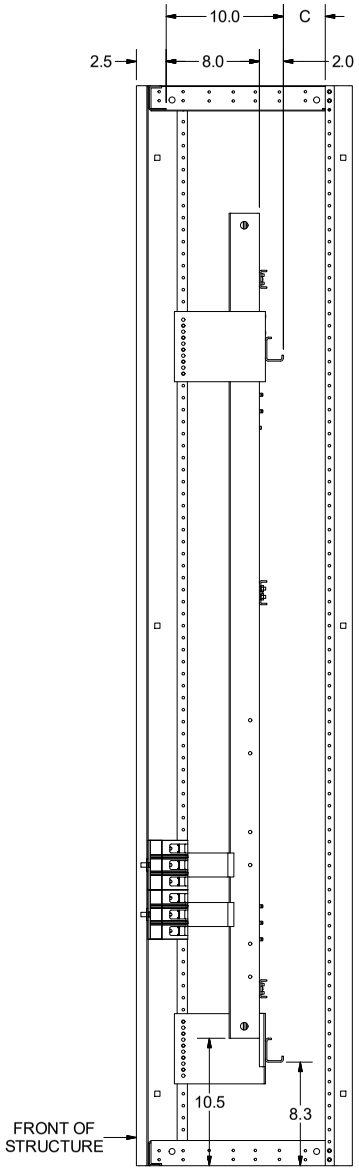
Technical Documents

FLOOR PLAN
DISTRIBUTION CHASSIS





SIDE VIEW
≥ 24" DEEP



SIDE VIEW
18" DEEP

STRUCTURE DIMENSIONS	A (INCHES)	B (INCHES)	C (INCHES)	D (INCHES)	E (INCHES)	F (INCHES)	G (INCHES)	H (INCHES)
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NOTES:
1. FOR FUSIBLE SWITCHES, ALL CABLE ENTRY AREA BEHIND DISTRIBUTION CHASSIS AND CROSS BUS, REQUIRES SIDE OR REAR ACCESS.
2. CONDUIT AREA AVAILABLE WITH SIDE OR REAR ACCESS 90.00 INCHES VERTICAL CLEARANCE.
3. OPEN WIREWAY 90.00 INCHES VERTICAL CLEARANCE.

REVISION						
1	2	3	4	5	6	
RR#5493	ECR-0023779	CR-00024710	CR-00027110	CR-00027232		
HSB 11/15/11 GL 11/15/11 Added notification block to revision section.	JTR 8/3/2020 RBH 8/3/2020 UPDATED DRAWING AND COMBINED 1A32041 - 1A32043 INTO 1A32044.	JTR 4/16/2021 RBH 4/16/2021 ADDED "C" DIM TO STRUCTURE VIEWS. REVISED FLOORPLAN.	JTR 7/11/22 RBH 7/11/22 ADDED "G" & "H" TO DRAWING, OPEN WIREWAY.	JTR 8/19/2022 RBH 8/19/2022 REVISED "G" AND "H" DIMS. ADDED BOX AT "G X C & H X C".		

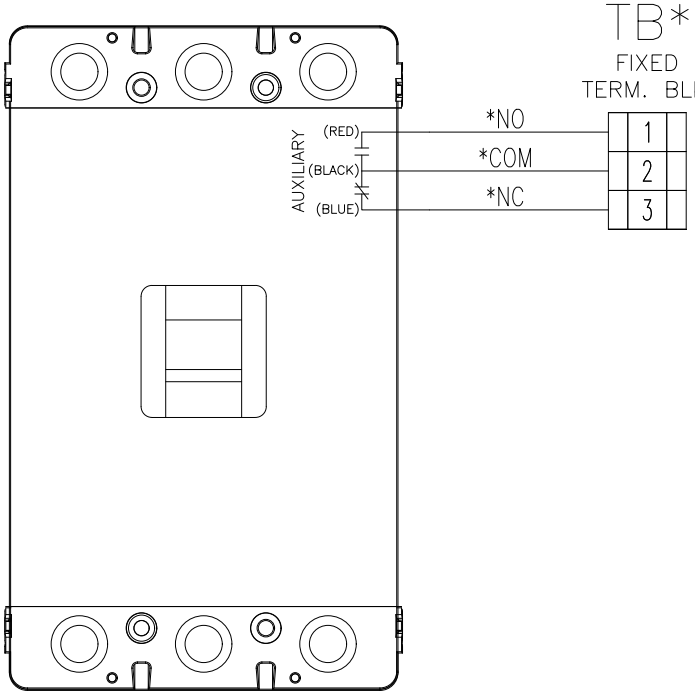
DRAFTER: DSF	DATE: 10/7/2011	EATON	SUMTER, SC
ENGINEER: RBH	DATE: 10/7/2011	TITLE: POW-R-LINE XPERT / C FLOOR PLAN - DISTRIBUTION CHASSIS	
REVISION: 6	PARTS LIST:	DWG NO.: 1A32044	
FEDERAL ID NO.	PRODUCT: 3341	SCALE: NTS	MODEL FILENAME: 1A32043G01.IAM
MODEL REV: 4	TYPE: STANDARD	UNLESS SPECIFIED TOLERANCES PER: -	SHEET: 1 OF 1

SUM CUST TITLEBLOCK REV - 1

Powering Business Worldwide

REVISION	1

AUXILIARY CONTACT WIRING
POWER DEFENSE BREAKER (TYPICAL)
FRAME: PD2



AUXILIARY CONTACT PRE–INSTALLED BY BREAKER MANUFACTURE
FOR ELECTRONIC TRIP UNITS (PXR10, PXR20, PXR20D, PXR25)

AUXILIARY AND ALARM CONTACT STATES

	AUXILIARY		ALARM	
BREAKER POSITION	RED (N.O.)	BLUE (N.C.)	RED (N.O.)	BLUE (N.C.)
CLOSED	CLOSED	OPEN	OPEN	CLOSED
OPEN	OPEN	CLOSED	OPEN	CLOSED
TRIPPED	OPEN	CLOSED	CLOSED	OPEN

CLOSED CONTACT WILL "RING" USING CONTINUITY TESTER WHEN PAIRED WITH ACCOMPANYING BLACK WIRE

NOTES:
1. ADD BREAKER # IN PLACE OF * FOR WIRE DESIGNATION.
2. ALL WIRING IS #14 STRANDED TINNED COPPER WIRE UNLESS SPECIFIED OTHERWISE.
3. ALL DEVICES ARE SHOWN IN DE–ENERGIZED STATE.
4. PD2, PD3 AND PD4 ALARM AND AUXILIARY FORM A/NO CONTACTS SHARE THE SAME PART NUMBER.
5. PD2, PD3 AND PD4 ALARM AND AUXILIARY FORM B/NC CONTACTS SHARE THE SAME PART NUMBER.
6. PD2, PD3 AND PD4 ALARM AND AUXILIARY FORM C/NO–NC CONTACTS SHARE THE SAME PART NUMBER.
7. WIRES MAY EXIT LEFT OR RIGHT SIDE OF BREAKER, DRAWING IS A REFERENCE ONLY.

DFTR	DATE
ABH	12/20/19

APPD	DATE
ABH	12/20/19

EATON SUMTER

TITLE AUXILIARY CONTACT (1) FORM C NO/NC
PD2 ONLY, ELECTRONIC TRIP UNITS

TYPE	TYPE
SWITCHBOARD/PNLBD	WIRING

FEDERAL ID NO	PRODUCT CODE	REVISION	G.O.	DWG	SHEET
		1	STANDARD	WD19A070	1

Powering Business Worldwide

Application Considerations and Definitions

Eaton's Pow-R-Line® family of distribution switchboards incorporates new design concepts that fit the ever-increasing need for applications on high short-circuit systems, while retaining maximum flexibility, safety and convenience throughout the line.

Front-Access

Front-access switchboards align at the rear, enabling them to be placed against a wall (Type Pow-R-Line Xpert™ front accessible). If the main section is deeper than others, due to physical size of the main device, the necessary offset in lineup will occur in front, and the main section will be accessible from the side as well as from the front. Eaton also offers front accessible switchboards that align at the front and rear.

Front- and Rear-Access

Front- and rear-access switchboards align at the front and the rear. Bus maintenance and cable entry and exit require rear access. There are two types of rear-accessible switchboards. Both types use the same incoming utility and/or main structures. The first type uses group-mounted feeder devices with panel construction (Type Pow-R-Line Xpert front and rear accessible). The second type uses individually compartmentalized feeder devices with load side insulated bus bar extensions (Type Pow-R-Line *i*X).

Individually Mounted

Larger overcurrent protective devices (OCPD) may be individually mounted. In most cases, this means that the OCPD is mounted vertically in the switchboard and is connected via bus bar. All insulated case circuit breakers, power air circuit breakers and bolted pressure contact switches are individually mounted. Molded case circuit breakers 600 A and above may be individually mounted when used as a main or as a feeder device feeding other OCPD within a section or adjacent sections.

Compartmentalized Feeder and Branch Devices

Compartmentalized molded case circuit breakers and fusible switches provide additional isolation. Individually mounted molded case circuit breakers and fusible switches through 1200 A are available in a compartmentalized, rear-access, rear-connected switchboard. See Pow-R-Line *i*X switchboards in this section for details.

Standard Switchboard Height

Standard Pow-R-Line switchboard height is 90.00 inches (2286.0 mm). Contact Eaton for special heights.

Group Mounting

Group-mounted circuit protective devices are an assembly of units mounted on a panelboard type chassis. Units may be molded-case breakers, fusible switches, customer metering and surge protective devices.

A main molded case breaker or main fusible switch, within the sizes listed for panelboard design, can be included in the panel-mounted assembly in lieu of a separate, individually mounted unit.

Space Only for Future Devices Group-Mounted Construction

Where space only for future circuit protective devices is required, the proper space and a blank filler plate will be supplied. Connections and mounting hardware are not included.

Provision for Future Devices

Where provisions for future circuit protective devices are required, space for the device, corresponding vertical bus, device connectors and the necessary mounting hardware will be supplied.

Bus Bar System

Standard bus in the switchboards is tin-plated aluminum. Copper, silver-plated copper or tin-plated copper are also available.

Main bus and sub-main buses meet UL® and NEMA® standards for temperature rise on all Pow-R-Line switchboards. Special density rated bus is available.

Overcurrent Devices

To properly select and size overcurrent devices for use in a switchboard, the allowable temperature rise must be taken into account as to its effect on the tripping characteristics of the devices in question per UL 891.

Accordingly, the NEC® requires overcurrent devices to be rated not less than 125% of the continuous load they are protecting. To comply with this, an 80% derating factor must be used with all overcurrent devices such as molded case breakers and FDPW fusible switches unless they are tested and listed for application at 100% of the rating. All Magnum™ type breakers and bolted pressure switches are 100% rated.

Short-Circuit Rating

Standard bus and connectors on all switchboards are rated for use on systems capable of producing up to 65,000 A rms symmetrical short-circuit current at the incoming terminals.

Increased bus short-circuit ratings equal to that of connected switchboard devices, up to 200,000 A rms symmetrical, are available in most Pow-R-Line Xpert switchboards when approved main devices are installed. UL labeled switchboard sections are marked with their applicable short-circuit rating.

When air power circuit breakers are used as feeder devices in a switchboard, these devices may experience up to a 30-cycle (1/2 second) delay if the instantaneous setting is turned off. Eaton has qualified our low voltage switchboards when air power circuit breakers are used as feeders (and mains) to 30 cycles. This rating is not recognized under the UL 891 standard. However, Eaton has witness tested the structure bussing with a qualified National RecognizedTesting Laboratory (NRTL) at 30 cycles (1/2 second) up to 100 kAIC symmetrical.

Provision for Busway Entrance and Exit

Busway connections to switchboard sections include cutout and drilling in the top of the switchboard with riser connections from the switchboard device or bus, up to the point where the bus duct enters the switchboard. No connections are furnished external to the switchboard.

In all transactions involving busway attached to switchboards, it is essential that information regarding orientation of the busway with respect to the front of the switchboard be supplied to the coordinating assembly plant.

On Pow-R-Line Xpert switchboards, a solid bus bar is used to connect the bus duct to the individually mounted main device, main or sub-main switchboard bus, or vertical main bus of panel-mounted circuit protective device panels. **Busway fed by group-mounted branch devices are cable connected.**

Aluminum riser connections are standard. Copper- or silver-plated copper is available as an option.

Transitions

Transition structures are required for connecting switchboards to the secondary of power center transformer (fluid filled), motor control centers, and for other special switchboard configurations such as "L" or "U" shaped lineups. In some applications, an extra structure complete with connections is required; in others, where switchboard depth and space permit, only the connection conductors are required. Refer to Eaton for these applications.

Auxiliary Structures

These are normally mounted adjacent to service structures or distribution structures, and used where incoming service or feeder conductors require additional space or facilities not included in the standard switchboard, such as:

1. Mounted adjacent to a top connected service structure and used as a cable pull structure where service conductors are brought in underground. Auxiliary structures are the same depth and height as the service structure, and are wide enough to accommodate the incoming cables.
2. Mounted adjacent to a service structure and used as a bus transition compartment for running riser bus from the load-side of the service structure up to top outgoing bus duct connection when distribution structures are not required. Auxiliary structures are the same depth and height as service structures.

In addition to the above applications, auxiliary structures may be mounted adjacent to a distribution structure and used as a structure for lighting panel or other device that may be cable-connected to a branch circuit device in the distribution structure. Dimensions are compatible with the arrangements required.

Switchboards Used as Service Equipment

Service equipment is the electrical equipment that constitutes the main control and means of power cutoff the electric service (normally Power Company supply) brought into the building.

Where switchboards are to be used as service equipment, certain NEC and UL requirements apply that necessitate modifications not normally supplied in switchboards.

The following is a summary of the requirements that are pertinent to the application of a switchboard for service equipment:

A. A switchboard with main lugs only (no main disconnect) must be designed so that all circuits in the switchboard can be disconnected from the supply source by the operation of no more than six operating handles (breaker or switch).

   Switchboard equipped with main disconnect devices are not subject to the above six disconnect limitation, as the entire board can be de-energized with the main disconnect device.

   Ground fault protection of equipment must be provided for solidly grounded wye electrical services of more than 150 V to ground, but not exceeding 600 V phase-to-phase for each service disconnecting means rated 1000 A or more.

B. For testing purposes, means are also required to disconnect the switchboard neutral bus from the grounded service neutral conductor (single-phase, three-wire; and three-phase, four-wire systems). To comply with this requirement, a removable link (solid bar) is provided in the switchboard neutral bus. This link is generally located near the point where the main feeders enter the switchboard or in the area of the main disconnect device where one is provided.

To further comply with NEC and UL requirements, a separate bonding strap is connected from the neutral bus to the switchboard frame. This bonding connection is located on the line side of the removable neutral link, maintaining a service ground to the switchboard frame when the test link is removed. See **Figure 21.1-1**.

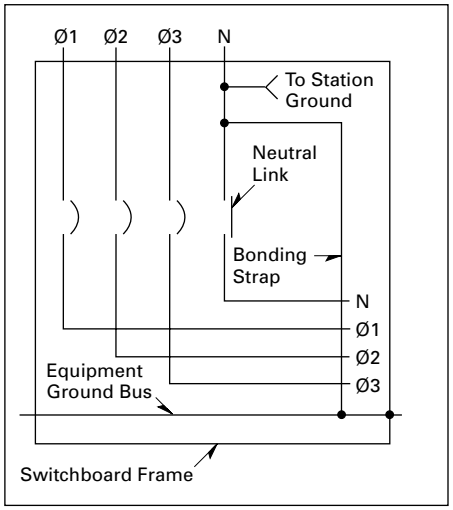


Figure 21.1-1. Neutral Link

UL labeling will clearly indicate service equipment listed switchboards.

Underwriters Laboratories Requirements and Labeling

The basic requirement for obtaining a UL label on a switchboard, is that all the component devices (breakers, switches, and so on) in the switchboard assembly are UL listed. In addition, the switchboard must comply with all applicable provisions of UL 891.

Today's modern electrical systems require that switchboards offer a wide selection of electrical devices, many of which do not fall within the scope of UL listed devices. Therefore, the conditions under which a switchboard may be labeled are limited.

Listed below are several important guidelines for consideration when a UL label is specified:

1. UL nameplates, where applicable, are supplied for each vertical structure rather than one common nameplate for the complete switchboard lineup. Where all of the component devices in the switchboard are UL listed and all applicable provisions of UL 891 are met, each of the switchboard sections may be labeled.
2. Individual vertical structures of a switchboard may be labeled where they comply with UL requirements, although other vertical structures in the same switchboard lineup may not meet the UL standards, and will not be labeled.
3. All Pow-R-Line Xpert switchboards are UL labeled when all mounted devices are UL listed.

Alternate Power Source Capabilities

Multiple solutions are available to accommodate alternate power sources available. Due to the large number of customer and system requirements, details are not provided in this guide. Eaton offers solutions that include main-main configuration and main-tie-main configurations. Automatic transfer equipment, including UL 1008 listed transfer switches and other automatic transfer schemes, are available.

Automatic Transfer Equipment

For continuity of service, automatic transfer equipment between two incoming sources may be required. This equipment transfers the load upon failure of the normal (or preferred) source to the standby (or alternate) source. Upon restoration of the normal source, the load is automatically transferred back to it. To accomplish this, electrically operated main protective devices (and bus tie devices, if required) must be employed. Additional relays also are required to detect source voltage failure and to transfer control power, when required. A manual selector switch is usually provided to select the mode of operation—automatic or manual transfer.

Seismic Qualification

Refer to Power Distribution Systems Design Guides for information on seismic qualification for this and other Eaton products.

Product Overview

Pow-R-Line Xpert switchboards meet NEMA Standard PB-2 and UL 891.

Construction Details

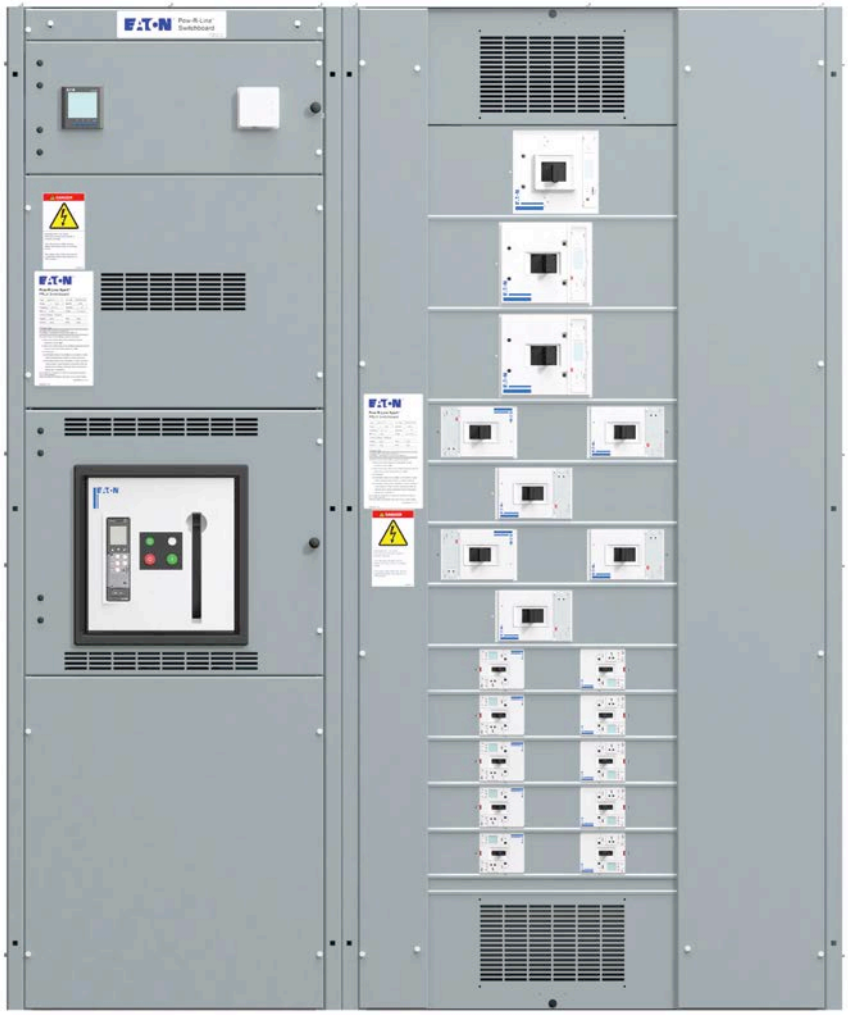
- 6000 A main bus maximum
- Front accessible—main sections front- and/or side-access
- Front- and rear-access; main sections front- and/or side-access
- Feeder devices group-mounted
- Sections rear-aligned or front- and rear-aligned

Main Devices, Individually Mounted

- Power Defense™ molded case circuit breakers, 400–2500 A,fixed-mounted
- Insulated case circuit breakers, Magnum SB, 800–5000 A, fixed and drawout
- Air power circuit breakers, Magnum DS, 800–5000 A, fixed or drawout
- Air power circuit breakers with current limiting fuses, Magnum DSL, 800–5000 A
- Bolted pressure switches, 800–5000 A, fixed
- Insulated case circuit breakers, Series NRX™ NF, 800–1200 A, fixed and drawout
- Insulated case circuit breakers, Series NRX RF, 800–3000 A, fixed and drawout
- Fusible switches, 400–1200 A, fixed

Feeder Devices, Group-Mounted

- Bolt-on Power Defense molded case circuit breakers, 15–1200 A
- Drawout molded case circuit breakers, 70–1200 A
- Fusible switches, 30–1200 A



Pow-R-Line Xpert Switchboard

Feeder Devices, Individually Mounted

- Power Defense molded case circuit breakers, 800–2500 A, fixed
- Insulated case circuit breakers, Magnum SB, 800–5000 A, fixed and drawout
- Air power circuit breakers, DS and Magnum DS, 800–4000 A, fixed and drawout
- Insulated case circuit breakers, Series NRX NF, 800–1200 A, fixed and drawout
- Insulated case circuit breakers, Series NRX RF, 800–3000 A, fixed and drawout
- Bolted pressure switches, 800–1600 A, fixed

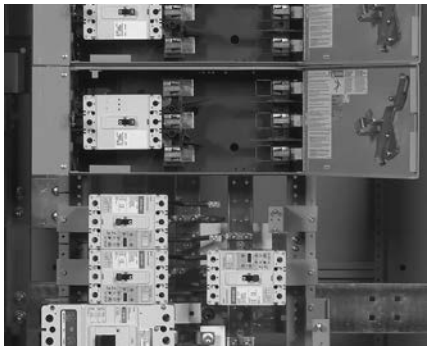
Selective Coordination

Selectively coordinated systems dictated by code and customer mandates may be achieved with Eaton switchboards to either 0.1 or 0.01 seconds as mandated by codes and/or customers. Refer to Power Distribution Systems Design Guides for additional details.

Note: For selection and layout guidelines, please reference **Page 21.1-17**.

Features

- Eaton's circuit breaker ratings up to 200 kAIC
- Trip units that integrate Eaton's Arcflash Reduction Maintenance System™ reduces potential arc flash available
- Integral ground fault protection available in electronic trip units from 15–5000 A
- Electronic trip units that integrate zone selective interlocking capabilities available in molded case, insulated case and air power circuit breaker
- Available with circuit breakers and fusible switches on the same chassis

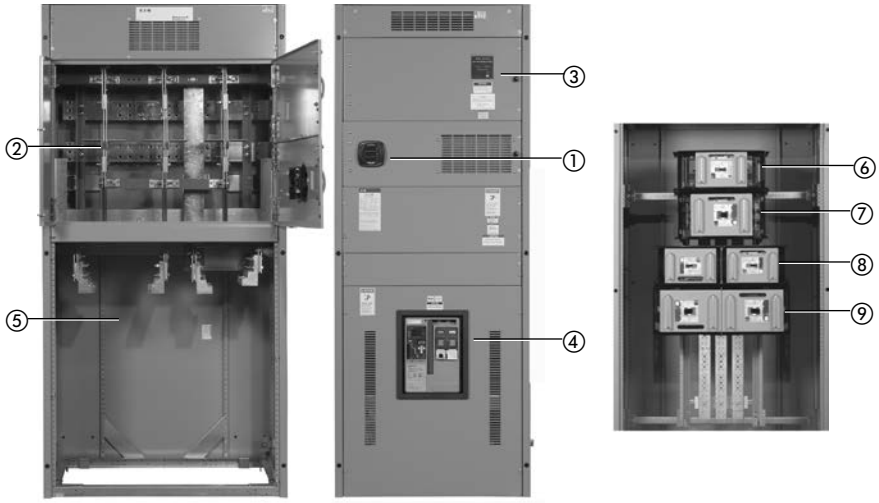


The Single Chassis Design Provides Device Flexibility

- UL listed and labeled. Meets NEC and NEMA standards
- Eaton microprocessor-based metering devices are standard when metering is specified. Conventional metering is available. Power Xpert Meter devices can provide a communications capability. See Advanced and Electronic Metering Design Guides for more information
- Optional integral surge protective device (SPD) is available in Pow-R-Line Xpert switchboards, when specified. See Surge Protection (SPD) & Power Conditioning Products Design Guides for more information
- Aluminum, copper or silver-plated copper bus
- A full range of device modifications is available
- Available in NEMA Type 1 and 3R enclosures, UL listed

Modifications

- Ground fault protection on mains and distribution devices
- Coordination with other Eaton divisions for busway and transformer connections



Type 1 Pow-R-Line Xpert Features

① Customer metering.
② Utility metering compartment.
③ Surge protective device.
④ Main breaker (Magnum SB).
⑤ Cable pull and termination space.
⑥ 250 A frame single mount.
⑦ 600 A frame single mount.
⑧ 250 A frame dual mount.
⑨ 600 A frame dual mount.

Table 21.1-1. Pow-R-Line Xpert Group-Mounted Switchboards
Voltage: 240–480–600 Vac, 250 Vdc
Mains: 400–6000 A

Main Device Type	Amperes	Short-Circuit Symmetrical Rating (kA)
Molded case circuit breakers	400–2500	14–200
Insulated case circuit breakers, Magnum SB	800–5000	30–100
Insulated case circuit breakers, Series NRX NF	800–1200	65–85
Insulated case circuit breakers, Series NRX RF	800–3000	65–100
Air power circuit breakers, Magnum DS		
Air power circuit breakers with CL fuses, DSL	800–5000	200
Bolted pressure switches	800–5000 ①	200
Fusible switches	400–1200	200
Main lugs only	400–6000	Rating determined by overcurrent protective device

Feeder Device Type	Amperes	Short-Circuit Rating (kA)
Bolt-on, fixed-mounted molded case circuit breakers	15–2500	10–200
Drawout, molded case circuit breakers	70–600	10–200
Fusible switches	30–1200	200
Stacked—main with branch devices	400–2500	18–200
Magnum SB up to two high	800–2000	30–100
Magnum DS up to two high ②	800–2000	30–100
Series NRX NF up to two high and quad stack	800–1200	65
Series NRX RF up to two high	800–3000	65–100

① 5000 A bolted pressure switches are not UL listed.
② Third-party witness tested at 30 cycles.

Powering Business Worldwide

Power Defense molded case circuit breakers

Frame size 6 (700–2500 A)

Frame size 6 configurator

Shown: PD6 3-pole with PXR 25 trip unit

Dimensions and weights

Approximate dimensions in inches (mm)

Number of poles	Width	Height	Depth
2	15.50 (393.7)	16.00 (406.4)	9.75 (247.7)
3	15.50 (393.7)	16.00 (406.4)	9.75 (247.7)
4	20.00 (508.0)	16.00 (406.4)	9.75 (247.7)

Approximate shipping weight in lb (kg)

Breaker type	2-Pole	3-Pole	4-Pole
PDG6 1600 and 2000 A	102 (46.3)	102 (46.3)	135 (61.2)
PDG6 2500 A	135 (61.2)	135 (61.2)	182 (82.6)

Trip unit ratings

Poles	Continuous current rating	Trip units
2-, 3-, 4-pole Electronic	1600, 2000, 2500, adjustable range (700–2500)	E##, D##, P## ❶

❶ All #s refer to protection and options. Refer to the MCCB catalog or Power Defense poster for more information. Direct links are below.

Additional information

MCCB catalog

Time current curve

Power Defense poster

Catalog number/product selection

Interrupting ratings

Catalog designator	M		N		P	
UL/CSA	**kA rms**		**kA rms**		**kA rms**	
240 Vac	125		150		200	
480 Vac	65		85		100	
600 Vac	35		50		65	
IEC	I_{cu}	I_{cs}	I_{cu}	I_{cs}	I_{cu}	I_{cs}
240 Vac	135	100	150	100	200	100
380–415 Vac	70	53	70	53	100	53
440 Vac	50	40	70	50	100	50
480 Vac	50	30	65	40	85	40
525 Vac	30	25	35	25	40	25
660–690 Vac	15	7.5	20	13	35	18

Terminals

Maximum breaker amperes	Terminal body type	Wire type	Wire class	Number of conductors per phase	AWG/kcmil range per conductor	Metric (mm²) range per conductor	3-Pole catalog number ❶
Aluminum terminals							
1600	Aluminum	Cu/Al	B, C	4	500–1000	253–507	**PDG6X1TA1600**
2000	Aluminum	Cu/Al	B, C	6	2–600	33.6–304	**PDG6X3TA2000** ❷
Copper terminals							
1600	Copper	Cu	B, C	4	1–600	42.4–304	**PDG6X1T1600**

❶ Add M at end for metric hardware.

❷ Only available for 3-pole breaker; order quantity 1 per breaker side, or quantity 2 per breaker.

Trip units

Description	Specification
Trip unit	
Interchangeable trip units	Yes
Molded case switch **(K)**	Fixed magnetic
Electronic	
PXR 20 **(E)** current metering / comm opt.	LSI, LSIG, ALSI, ALSIG
PXR 20D **(D)** current metering / comm std.	LSI, LSIG, ALSI, ALSIG
PXR 25 **(P)** power metering / comm std.	LSI, LSIG, ALSI, ALSIG

PXR electronic trip units

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Power Defense molded case circuit breakers

Frame size 5 (320–1200 A)

Frame size 5 configurator

Shown: PD5 3-pole with PXR 25 trip unit

Dimensions and weights

Approximate dimensions in inches (mm)

Number of poles	Width	Height	Depth
2	8.25 (209.5)	16 (406.4)	5.50 (139.7)
3	8.25 (209.6)	16 (406.4)	5.50 (139.7)
4	11.13 (282.7)	16 (406.4)	5.50 (139.7)

Approximate shipping weight in lb (kg)

Breaker type	2-Pole	3-Pole	4-Pole
PDG5 800, 1200 and 1600 A ❶	46.8 (21.30)	46.8 (21.30)	58 (26.31)

❶ 1600 A frame is IEC only.

Trip unit ratings

Poles	Continuous current rating	Trip units
2-, 3-, 4-pole Electronic	400, 800, 1200, adjustable range (150–1200)	E##, D##, P## ❶

❶ All #s refer to protection and options. Refer to the MCCB catalog or Power Defense poster for more information. Direct links are below.

Additional information

MCCB catalog

Time current curve

Power Defense poster

Catalog number/product selection

Interrupting ratings

Catalog designator	K		M		N		P		T	
UL/CSA	**kA rms**		**kA rms**		**kA rms**		**kA rms**		**kA rms**	
240 Vac	85		100		150		200		200	
480 Vac	50		65		85		100		150	
600 Vac	25		35		50		65		65	
IEC	I_{cu}	I_{cs}	I_{cu}	I_{cs}	I_{cu}	I_{cs}	I_{cu}	I_{cs}	I_{cu}	I_{cs}
240 Vac	85	85	100	100	150	100	200	150	—	—
380–415 Vac	50	50	70	53	70	50	100	50	—	—
440 Vac	35	35	50	40	70	50	100	50	—	—
480 Vac	35	22.5	50	30	65	40	85	40	—	—
525 Vac	25	20	30	25	35	25	40	25	—	—
660–690 Vac	10	5	15	7.5	20	10	35	18	—	—

Terminals

Maximum breaker amperes	Terminal body type	Wire type	Wire class	Number of conductors per phase	AWG/kcmil range per conductor	Metric (mm²) range per conductor	3-Pole catalog number ❶
Aluminum terminals							
700	Aluminum	Cu/Al	B, C	2	1–500	42.4–253	**PDG5X1TA700**
1000	Aluminum	Cu/Al	B, C	3	3/0–400	85–203	**PDG5X1TA1000**
1200	Aluminum	Cu/Al	B, C	4	4/0–500	107–253	**PDG5X1TA1200**
1200	Aluminum	Cu/Al	B, C	3	500–750	253–380	**PDG5X1TA1201**
Copper terminals							
700	Copper	Cu	B, C	2	2/0–500	67.4–253	**PDG5X1T700**
1000	Copper	Cu	B, C	3	3/0–500	85–253	**PDG5X1T1000**
1200	Copper	Cu	B, C	4	3/0–400	85–203	**PDG5X1T1200**

❶ Add M at end for metric hardware.

Trip units

Description	Specification
Trip unit	
Interchangeable trip units	Yes
Molded case switch **(K)**	Fixed magnetic
Electronic	
PXR 20 **(E)** current metering / comm opt.	LSI, LSIG, ALSI, ALSIG
PXR 20D **(D)** current metering / comm std.	LSI, LSIG, ALSI, ALSIG
PXR 25 **(P)** power metering / comm std.	LSI, LSIG, ALSI, ALSIG

PXR electronic trip units

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Power Defense molded case circuit breakers

Frame size 3 (45–600 A)

Frame size 3 configurator

Shown: PD3 3-pole with PXR 25 trip unit

Dimensions and weights

Approximate dimensions in inches (mm)

Number of poles	Width	Height	Depth
2	5.47 (138.9)	10.13 (257.1)	4.30 (109.1)
3	5.47 (138.9)	10.13 (257.1)	4.30 (109.1)
4	7.22 (182.9)	10.13 (257.1)	4.30 (109.1)

Approximate shipping weight in lb (kg)

Breaker type	2-Pole	3-Pole	4-Pole
PDG3 400 A	8.05 (3.65)	11.02 (5.0)	13.77 (6.25)
PDG3 600 A	10.43 (4.73)	12.36 (5.61)	16.27 (7.39)

Trip unit ratings

Poles	Continuous current rating	Trip units
2-, 3-, 4-pole Thermal-magnetic	100, 125, 150, 175, 200, 225, 250, 300, 350, 400, 500, 600	TFA, VFA
3-, 4-pole Electronic	125, 250, H250, 400, H400, 600, adjustable range (45–600) ❶	B2N, E##, D##, P## ❷

❶ H as the leading character of the ampacity indicates a high instantaneous version of the breaker for coordination purposes. H ratings must use 600 A frame.

❷ All #s refer to protection and options. Refer to the MCCB catalog or Power Defense poster for more information. Direct links are below.

Additional information

MCCB catalog

Time current curve

Power Defense poster

Catalog number/product selection

Interrupting ratings

Catalog designator	F		G		K		M ❶		N ❶		P ❶	
UL/CSA	**kA rms**		**kA rms**		**kA rms**		**kA rms**		**kA rms**		**kA rms**	
240 Vac	35		65		85		100		150		200	
480 Vac	25		35		50		65		85		100	
600 Vac	14		18		25		35		50		65	
250 Vdc ❷❸	10/22		10/22		10/22		22/42		22/42		22/42	
IEC	I_{cu}	I_{cs}	I_{cu}	I_{cs}	I_{cu}	I_{cs}	I_{cu}	I_{cs}	I_{cu}	I_{cs}	I_{cu}	I_{cs}
240 Vac	35	35	55	55	85	85	100	100	150	100	200	150
380–415 Vac	25	25	36	36	50	50	70	53	70	70	100	70
440 Vac	25	20	30	22.5	35	35	50	40	70	50	100	50
480 Vac	20	20	25	20	35	22.5	50	30	65	40	85	40
525 Vac	18	5	20	7.5	25	10	30	15	35	25	40	25
660–690 Vac	—	—	8	4	10	5	15	7.5	20	10	20	10
250 Vdc ❷❸	10/22	10/22	10/22	10/22	10/22	10/22	22/42	22/42	22/42	22/42	22/42	22/42

❶ UL current limiting. M interrupting rating only current limiting for the 400 A construction breakers.

❷ DC ratings available in thermal-magnetic breakers only. 250 Vdc is achieved using two poles in series.

❸ First rating listed is for 400 A frame, second rating is for 600 A frame.

Terminals

Maximum breaker amperes	Breaker frame	Terminal body type	Wire type	Wire class	Number of conductors per phase	AWG/ kcmil range per conductor	Metric (mm^2) range per conductor	3-Pole catalog number
Standard terminals								
300	400	Aluminum	Cu/Al	B, C	1	3–350	26.7–177	**PDG3X3TA300** ❶
350	400	Aluminum	Cu/Al	B, C	1	250–500	127–253	**PDG3X3TA350** ❶
400	400	Aluminum	Cu/Al	B, C	2	3/0–250	85–127	**PDG3X3TA400** ❷
400	600	Aluminum	Cu/Al	B, C	1	500–750	253–380	**PDG3X3TA401H** ❷
630	600	Aluminum	Cu/Al	B, C	2	2–500	33.6–253	**PDG3X3TA630** ❷

❶ No accessories included.

❷ Terminal shield included.

Trip units

Description	Specification
Trip unit	
Interchangeable trip units	Yes
Thermal-magnetic **(T)**	Fixed thermal-adjustable magnetic
Molded case switch **(K)**	Fixed magnetic
Motor circuit protector **(M)**	Adjustable magnetic only (3-pole)
Electronic	
PXR 10 **(B)** adjustable LSI	LSI, MLSI
PXR 20 **(E)** current metering / comm opt.	LSI, LSIG, ALSI, ALSIG
PXR 20D **(D)** current metering / comm std.	LSI, LSIG, ALSI, ALSIG
PXR 25 **(P)** power metering / comm std.	LSI, LSIG, ALSI, ALSIG, MLSI, MLSIG

PXR electronic trip units

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Power Defense molded case circuit breakers

Frame size 2 (15–225 A)

Frame size 2 configurator

Shown: PD2 3-pole with PXR 25 trip unit

Dimensions and weights

Approximate dimensions in inches (mm)

Number of poles	Width	Height	Depth
1	1.38 (35.1)	6.00 (152.4)	3.50 (88.9)
2	2.75 (69.9)	6.00 (152.4)	3.50 (88.9)
3	4.12 (104.6)	6.00 (152.4)	3.50 (88.9)
4	5.49 (139.5)	6.00 (152.4)	3.50 (88.9)

Approximate shipping weight in lb (kg)

Breaker type	1-Pole	2-Pole	3-Pole	4-Pole
PDG2 225 A	2.00 (0.91)	3.00 (1.36)	4.21 (1.82)	5.69 (2.46)

Trip unit ratings

Poles	Continuous current rating	Trip units
1-pole Thermal-magnetic	15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100, 110, 125, 150	TFF, VFF
2-, 3-, 4-pole Thermal-magnetic	15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100, 110, 125, 150, 175, 200, 225	TFF, VFF
3-, 4-pole Electronic	60, 100, 150, 225, adjustable range (15–225)	B2N, E##, D##, P## ❶

❶ All #s refer to protection and options. Refer to the MCCB catalog or Power Defense poster for more information. Direct links are below.

Additional information

MCCB catalog

Time current curve

Power Defense poster

Catalog number/product selection

Interrupting ratings (2-, 3- and 4-pole)

Catalog designator	F	G	K ❶	M ❶	N ❶	P ❶
UL/CSA	kA rms	kA rms	kA rms	kA rms	kA rms	kA rms
240 Vac	35	65	85	100	150	200
480 Vac	25	35	50	65	85	100
600 Vac	14	18	22	25	30/25 ❸	35/25 ❸
250 Vdc ❷	2	10	10	10	22	22 22

❶ UL current limiting for 3- and 4-pole breakers.

❷ DC ratings available in thermal-magnetic breakers only. 250 Vdc is achieved using two poles in series.

❸ First rating listed is for thermal-magnetic breakers, second rating is for breakers with PXR electronic trip units.

Terminals

Maximum breaker amperes	Breaker frame ❶	Terminal body type	Wire type	Wire class	Number of conductors per phase	AWG/kcmil range per conductor	Metric (mm²) range per conductor	3-pole catalog number
Standard terminals								
100	15–100	Steel	Cu/Al	B, C	1	14–1/0	2.08–53.5	**PDG2X3T100** ❷❸
225	60–225	Aluminum	Cu/Al	B, C	1	4–4/0	21.2–107	**PDG2X3TA225** ❹❸
Alternate terminals								
50	15–50	Aluminum	Cu/Al	B, C	1	14–4	2.08–21.2	**PDG2X3TA50** ❸
100	60–100	Aluminum	Cu/Al	B, C	1	14–1/0	2.08–53.5	**PDG2X3TA100** ❸
150	60–150	Aluminum	Cu/Al	B, C	1	14–4/0	2.08–107	**PDG2X3TA150** ❸
225	175–225	Aluminum	Cu/Al	B, C	1	6–300	13.3–152	**PDG2X3TA225K** ❹❺

❶ The "Breaker frame" column provides information on the ampere ratings for which the terminal may be used (field installation); in some cases the range is limited by proper fit of the terminal onto the breaker conductor. The column "Standard on Amperes" provides information on what terminal is used during factory configuration per Digit 14 of the breaker catalog number. The two may not match.

❷ Factory standard terminals and non-aluminum terminals for 100 A and below are the same terminals.

❸ No accessories included.

❹ PDF2 225 A breakers with Digit 14 designation of "J" are equipped with PDG2X3TA225K terminals. PDF2 150 A breakers with Digit 14 designation of "J" are equipped with PDG2X3TA225 terminals.

❺ Terminal shield included.

Trip units

Description	Specification
Trip unit	
Thermal-magnetic (**T**)	Fixed thermal-fixed magnetic
Molded case switch (**K**)	Fixed magnetic
Motor circuit protector (**M**)	Adjustable magnetic only (3-pole)
Electronic	
PXR 10 **(B)** adjustable LSI	LSI, MLSI
PXR 20 **(E)** current metering / comm opt.	LSI, LSIG
PXR 20D **(D)** current metering / comm std.	LSI, LSIG
PXR 25 **(P)** power metering / comm std.	LSI, LSIG, MLSI, MLSIG

PXR electronic trip units

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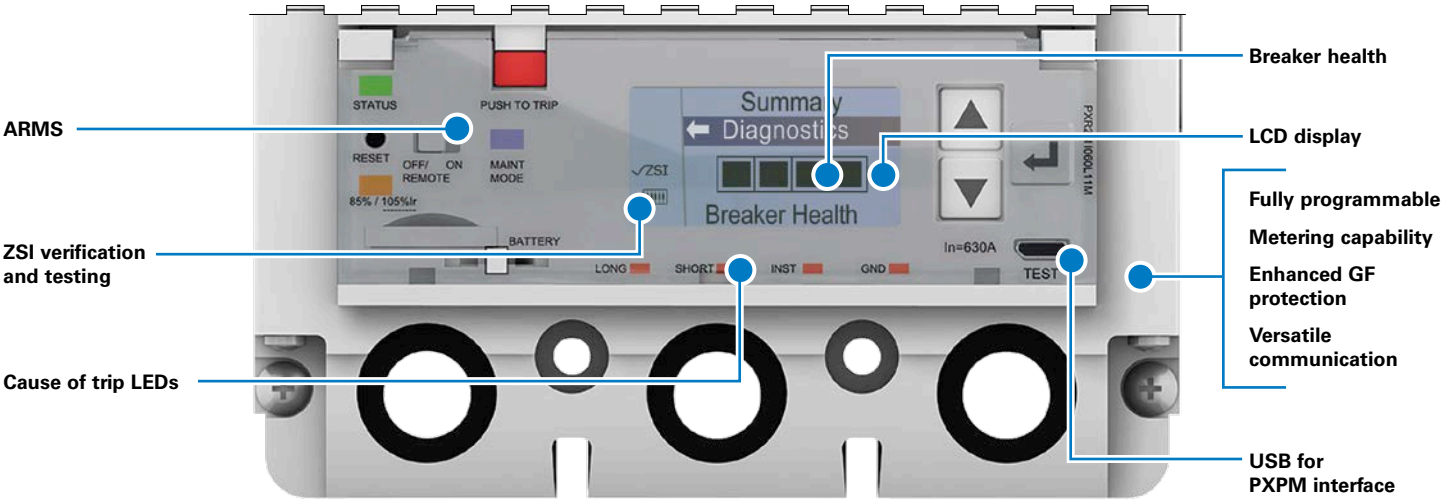
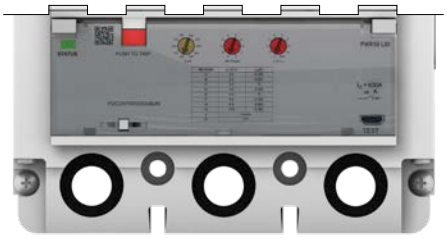
Power Xpert Release (PXR) electronic trip units

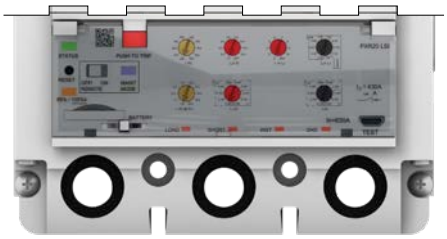
MCCB PXR 25 trip unit



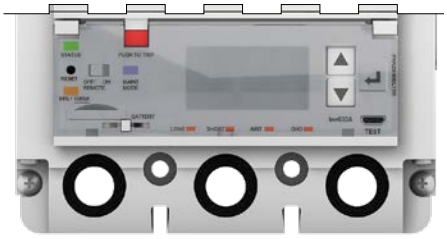
MCCB PXR 10



MCCB PXR 20



MCCB PXR 20D



MCCB PXR features

Features	PXR 10	PXR 20	PXR 20D	PXR 25
Protection types	LSI	LSI/LSIG	LSI/LSIG	LSI/LSIG
Status indication	●	●	●	●
USB secondary injection testing	●	●	●	●
Programmable by USB port (PXPM)	●	●	●	●
Independent instantaneous adjustment	●	●	●	●
Adjustable L, S, I, G pickup and time		●	●	●
Cause of trip indication	▲	●	●	●
Load alarm indication with 2 levels		●	●	●
Programmable load alarm levels			●	●
Ground fault protection and alarm		○	○	○
Arcflash Reduction Maintenance System™ (ARMS) Available PD3, PD4, PD5, PD6 to meet NEC 240.87 requirements		○	○	○
Zone selective interlocking (ZSI) with indication		○	○	○
Programmable relays		○	●	●
Modbus RTU communication		○	●	●
CAM module communication		○	○	○
Rotatable LCD display			●	●
Breaker health and diagnostic monitoring		▲	●	●
Current metering accuracy		2.0%	0.5%	0.5%
Voltage metering accuracy				0.5%
Power and energy metering accuracy				1.0%

● Standard ○ Optional ▲ Available through USB port (PXPM)

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