

Selection and Application Guide



panelboards

P1 THRU P5

Added Flexibility for Easier Installation
Reduces Material Requirements
Fits the Most Demanding Applications



SIEMENS

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SECTION



P1 Panelboards

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C1/C2 Panelboards

Introduction

The new generation of products from an outstanding ancestry represents the high level of engineering innovation expected from Siemens. Additional strength has been added to an already rugged and durable panelboard family. This product has added flexibility and is easier to install. These newer designs also simplify wiring and reduce material requirements, saving additional installation time.

The newly defined “P Series” of panels offer a stepped approach to power distribution. Anchored at one end with the innovative P1 that offers the industries most flexible designs to virtually eliminate the impact of common mistakes like feed direction, main lug versus main breaker. Adding distribution is also easy with the ability to add feed-thru lugs. With a minimum number of enclosures (six sizes), the P1 fits the majority of the lighting panel needs in a cost-effective package.

The next step in the series and with subsequent steps, offers increased capacity and options. The P2 offers maximum flexibility and options to fit the most demanding specifications.

The P3 is another flexible and innovative panel. Sized more like a lighting panel for those tight areas, the P3 panel packs the power of a distribution panel.

The P4 offers a mid-sized distribution panel and allows fusible as well as circuit breaker branch and main devices.

The P5 anchors the other end of the series. Larger fusible and circuit breaker branch and main devices give maximum power to the distribution system.

Siemens also offers a number of specialty panels like column panels. Don't see your requirement met? Ask a Siemens representative to tell you about our custom capabilities.

The lighting panel design still features the Fas-Latch trim that is popular with installers, the jacking screw system that permits adjustments even after wiring has been installed, and other features such as exclusive split neutral. Many panelboards have the capability of mixing and matching breakers of different sizes and ratings – or changing from main lug to main breaker, or adding subfeed breakers without changing box size. Other models accept a wide range of fuse types, including Siemens exclusive Vacu-Break® technology.

Features Overview

Siemens offers a complete line of lighting, and power distribution panelboards. At the heart of the product line is the extensive research and technology found among Siemens circuit protection devices – both fusible switches and molded case circuit breakers.

Table G1 – Key Panelboard Features

	P1	P2	P3	P4	P5
Lighting And Appliance Applications	•	•	•	•	•
Power Panelboard Applications	—	•	•	•	•
Convertible From Top Feed To Bottom Feed Or Vice Versa	•	—	—	—	—
Change From Main Lug To Main Breaker Or Add Subfeed Without Changing Enclosure Size	•	—	—	—	—
Space-Saving, Horizontally Mounted Main Breaker	Up To 250 Amps	Up To 250 Amps	Up To 250 Amps	•	•
Short-Circuit Rating Label Giving Performance Level	•	•	•	•	•
Standard Aluminum Ground Assembly	•	•	•	•	•
Blank End-Walls Standard ①	•	•	•	•	•
Bolted Current-Carrying Parts	•	•	•	•	•
Split Neutral	•	•	•	•	•
Connection Accessible From Front	•	•	•	•	•
Screw-Type Mechanical Lugs	•	•	•	•	•
Time-Reducing Wing Nuts To Secure Interior Without Tools	•	•	•	•	•
Main and Branch Devices Connected With Case-Hardened Hardware	•	•	•	•	•
Flush Lock, Concealed Door Hinges/Trim Screws	•	•	•	—	—
Symmetrical Interior Mounting Studs To Eliminate Upside-Down Mounting of Box	•	•	•	•	•
Interior Height Adjustment For Flush Applications	•	•	•	•	•
Mix and Match Fusible Switch Circuit Breaker Capability	—	—	—	•	•
Shallow Depth	5.75"	5.75"	7.75"	10.00"	12.75"
Accepts A Wide Range Of Fuse Types	—	—	—	•	•
Accepts Vacu-Break Fusible Switch	—	—	—	•	•
Accepts A Wide Range Of Circuit Breakers	—	•	•	•	•
Accepts ACCESS™ Communications Tie-In ②	—	•	•	•	•
Optional Compression Lugs	•	•	•	•	•

• Standard

① KO's available on P1 and P2 – 5.75" Deep x 20" Wide boxes and P3 7.75" deep X 24" wide boxes.

② Panelboards equipped with Siemens Sensitrip® circuit breakers or Power Meters can be integrated into Siemens ACCESS™ electrical monitoring system.

General Specifications

Class CTL Panelboards

Class CTL panelboards incorporate physical features which, in conjunction with the physical size, configuration, or other means provided in Class CTL circuit breakers, are designed to prevent the installation of more over current protective poles than that number for which the device is designed and rated, per UL 67 and National Electrical Code (NEC) NFPA70.

Service Entrance Equipment

When a panelboard is used as service entrance equipment, it must be located near the point of entrance of building supply conductors. In a main lugs only panel, the number of breakers or switches directly connected to the main bus must be limited to six. In a panel having a main breaker or main switch, the number of circuits are not limited except as may be provided under other panelboard requirements, i.e., lighting and appliance branch circuit panelboards. Also, panels must include a connector for bonding and grounding neutral conductor.

Panelboard Code Data

42-Circuit Rule: NEC Paragraph 408.34 defines a lighting and appliance branch circuit panelboard as one having more than 10 percent of its over current devices rated 30 amperes or less, for which neutral connectors are provided. NEC paragraph 480.35 states that not more than 42 over current devices (other than those provided in the mains) of a lighting and appliance branch-circuit panelboard shall be installed in any one cabinet. For the purpose of this article, a two-pole circuit breaker shall be considered two over current devices; a three-pole circuit breaker shall be considered three over current devices. (NEC 480.34 and 408.35 do not apply to panelboards feeding and communication circuits. Panelboards for this application must be so marked.)

Integrated Equipment Short Circuit Rating

The term "Integrated Equipment Short Circuit Rating" refers to the application of series connected circuit breakers in combination that allows some breakers to have lower individual interrupting ratings than the available fault current. This is permitted as long as the series combination has been tested and certified by UL.

Standards

NEC: 2005

NEMA: PB1

UL: 67 and 50. Listed by Underwriter's Laboratories, Inc., under "Panelboards" File #E2269, and #E4016. Meets Federal Specification W-P-115c.

Wire Connectors

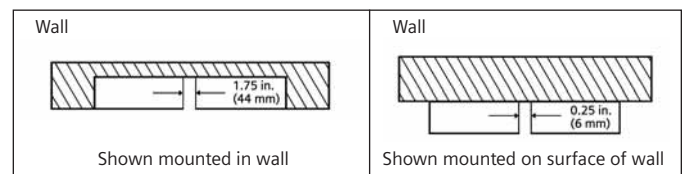
Standard wire connectors in Siemens panels are suitable for copper or aluminum cables rated 60/75 degree. Copper main lugs are price added option for most panel types and some Circuit Breakers (check with Siemens sales for availability). It should be noted that most copper lugs will only accept copper cables. Some applications, 100% rated devices in particular, require that the cable and connectors be rated 90 degree but are sized to the 75 degree tables.

Standard ground connectors are also suitable for Copper or Aluminum wire. Ground connector assemblies (EGK, IGK) have (7) 1/0 max. and (15) #6 max. connections. The 1/0 holes are capable of connecting up to (3) #10 max. wires. Copper ground assemblies (ECGK, ICGK) are rated for copper wire only and have the same wiring capacity as the Al/Cu connectors.

Standard neutrals, like standard main lugs, are also rated for copper or aluminum wire. The neutral cross bar material follows the selection bus. Copper neutral lugs are rated for copper cable only and available as a price added option.

Lug Data

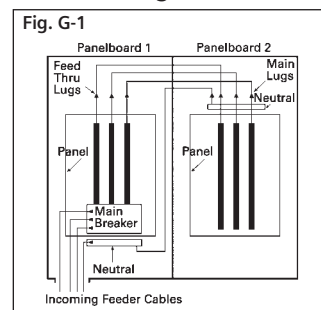
Space Required for Mounting of Double Panels



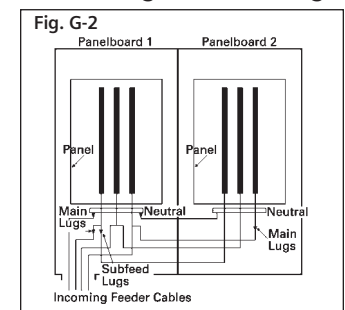
Use two or more panelboards with feed-thru or subfeed lugs when:

1. Lighting and appliance panelboards are required with more than 42 circuits.
2. More circuit mounting space is required than is provided in the largest box size.

Feed-Thru Lugs



Subfeed Lugs or Double Lugs



Feed-thru lugs are mounted at the opposite end of the main bus from the main lugs or main breaker and are used to connect two or more panelboards to the incoming feeder. The feeder cables are brought into Panelboard 1 and connected to the main lugs or main breaker. Cables interconnecting the two panelboards are connected to the feed-thru lugs in Panelboard 1 and are carried over the main lugs in Panelboard 2. This arrangement could be reversed with the main lugs located at the top and the feed-thru lugs at the bottom of the panel. Subfeed lugs are mounted directly beside the main incoming lugs and are used to connect two or more panelboards to the incoming feeder. The feeder cables are brought into Panelboard 1 and connected to the main lugs. Another set of cables that are the same size are connected to the subfeed lugs of Panelboard 1 and are carried over the main lugs of Panelboard 2.

General Specifications

Bussing Sequence

Interiors are designed to accommodate top or bottom feed. Regardless of which is specified, the uppermost pole is always on "A" phase; the second pole down is always on "B" phase, and the third pole down is always on "C" phase (assuming 3Ø panel).

As standard, branch breakers shall be mounted at the top of the panel with "spaces" at the bottom, regardless of the direction panel is fed.

All breakers have bolted connections except plug-in type. The panel design provides bracing up to 200,000A IR UL short circuit rating. Case-hardened, high performance, thread rolling screws are used on branch bus.

Table G2 – Panelboard Ratings

Description	P1	P2	P3	P4	P5
Max. Voltage	480Y/277V AC Max. 250V DC Max	600V AC Max. 500V DC Max.	600V AC Max. 500V DC Max.	600V AC Max. 500V DC Max.	600V AC Max. 500V DC Max.
System	1-Phase, 2-wire 1-Phase, 3-wire 3-Phase, 3-wire 3-Phase, 4-wire	1-Phase, 2-wire 1-Phase, 3-wire 3-Phase, 3-wire 3-Phase, 4-wire	1-Phase, 2-wire 1-Phase, 3-wire 3-Phase, 4-wire 3-Phase, 3-wire	1-Phase, 3-wire 3-Phase, 4-wire 3-Phase, 3-wire	1-Phase, 3-wire 3-Phase, 4-wire 3-Phase, 3-wire
Mains					
Main Lugs	125A-400A	125A-600A	250A-800A	400A-1200A	800A-1600A
Main Breaker	100A-400A	100A-600A	225A-600A	400A-800A	800A-1200A
Main Switch	—	—	—	100A-200A	400A-1200A
Circuits	18, 30, 42	18, 30, 42, 54 ①	—	—	—
Branch Ratings	15-125A ②	15-225A	15-600A	15-600A C/B 30-200A Fusible	15-1200A C/B 30-1200 Fusible
Branch Disconnect Devices	BL, BLH, HBL, BQD, BQD6, BLE, BLEH, BLF, BLHF, BAF, BAFH, BGL, NGB	BL, BLH, HBL, BQD, BQD6, QJ2, HQJ2, QJ2H, HQJ2H ⑤, ED2, ED4, HED4, ED6, HHED6, BLE, BLEH, BLF, BLHF, BAF, BAFH, BGL, NGB	BL, BLH, HBL, BQD, BQD6, QJ2, HQJ2, QJ2H, HQJ2H ⑤, ED2, ED4, HED4, ED6, BLHF, BAF, BAFH, BGL, NGB, NEB, HEB	All 15-600A Breakers and NMX, HMX, LMX at 800 HHED6, BLE, BLEH, BLF, Fusible Switches	All 15-1200A C/B 30A-200A VB Switches 400-1200A HCP Amps, 30-200A Switches
Subfeed Circuit Breakers	ED2, ED4, ED6, HED4, HED6, QJ2, QJH2, QJ2-H, FXD6, FD6, HFD6, HFXD6 ③	JD6, JXD6, HJD6, HJXD6, FD6, HFD6, FXD6, HFXD6 ② ③	JD6, JXD6, HJD6, FD6, HFD6, FXD6, HFXD6 ② ③	—	—
Enclosure Heights Inches – (mm)	32, 38, 44 @250 A (813, 965, 1118) 56, 62, 68 @400 A (1422, 1575, 1727)	26, 32, 38, 44, 50, 56, 62, 68, 74 (660-1880)	56, 62, 68, 74, 80 (1422-2032)	60, 75, 90 (1524, 1905, 2286)	60, 75, 90 (1524, 1905, 2286)
Standard Trims	Fas-Latch – 1 Piece Surface or Flush	Fas-Latch – 1 Piece Surface or Flush	Fas-Latch – 1 Piece Surface or Flush	Four Piece ④ Surface	Four Piece ④ Surface

① Functional pricing is based on circuits shown. However, the panel can be figured with less circuits.

② P1 can have 1 subfeed breaker. P2 and P3 can have up to (2) FD subfeed breakers.

③ JD and FD breakers are mounted vertical. Limitations apply.

④ Trim ring provided for flush applications.

⑤ A maximum of (4) QJ breakers may be mounted in a P2 Panel and are single mounted.

⑥ A maximum of (6) QJ breakers may be mounted in a P3 panel and are twin mounted.

General Specifications

Table G3 – Typical Panelboard Modifications

Description	Lighting and Distribution Panelboards			Distribution Panelboards	
	P1	P2	P3	P4	P5
Box					
Type 3R/12	•	•	•	•	•
Type 4, 4X	•	•	•	•	•
Drip Proof	•	•	•	•	•
Drip Proof Hood Only	•	•	•	•	•
Sealed Box	•	•	•	•	•
Gasketed Trim	•	•	•	•	•
Wider Box	•	•	•	•	•
Deeper Box	—	•	•	•	•
Front					
Hinged Front	•	•	•	•	•
Door-in-Door Front	•	•	•	•	•
Common Front	•	•	•	—	—
Split Door	•	•	•	—	—
Special Locks	•	•	•	•	•
Nameplate	•	•	•	•	•
Interior					
Aluminum Equipment Ground Bar	Standard	Standard	Standard	Standard	Standard
Copper Equipment Ground Bar	•	•	•	•	•
Insulated Equipment Ground	•	•	•	•	•
Subfeed Lugs	—	•	•	•	•
Feed-Thru Lugs	•	•	•	•	•
Split Bus	—	•	•	•	•
Compression Lugs	•	•	•	•	•
Copper Lugs	•	•	•	•	•
200% Neutral	•	•	•	Check Plant For Availability	Check Plant For Availability
Temperature Rated - Aluminum ①	Standard	Standard	Standard	Standard	Standard
Temp. Rise Over Ambient - Copper ①	•	•	•	•	•
750 Ampere / in. - Aluminum	—	•	•	•	•
1000 Ampere / in. - Copper	—	•	•	•	•
Copper Plating - Silver or Tin	Tin	Tin Std./ Silver Optional	Tin Std./ Silver Optional	Silver Std./ Tin Optional	Silver Std./ Tin Optional
Remote Control Switches	External Mounted	•	•	•	•
Time Clocks	External Mounted	•	•	•	•
Circuit Breaker Shunt Trips	•	•	•	•	•
R, J and T Fuse Clips	—	—	—	•	•

All aluminum bus is tin-plated. • Available as an option.

Table G4 – UL Fuse Classes

Class	Amperes	Volts	Interrupting Ratings (kA)	I ₂ t, I ₁	Circuits
H	1-600	250 and 600V or less AC	10	—	Less than 10,000A Available
K5 ②	1-600	250 and 600V or less AC	100	I ₁ t – RK5 up to 100A, I ₂ t – RK5 up to 100A	Feeder circuits
J	1-600	600V or less	200	I ₁ t – Low, I ₂ t – Low	Feeder circuits (motor load small %)
RK1	1/10-600	600V or less and 250V or less	200	I ₁ t – Slightly >J, I ₂ t – Slightly >J	Feeder circuits (motor load small %)
RK5	1/10-600	600V or less and 250V or less	200	I ₁ t – > RK-1, I ₂ t – > RK-1	Motor starting currents a factor
T	1-800, 1-1200	300 and 600V or less AC	To 200	I ₁ t – Low, I ₂ t – Low	Non-Motor loads
L	601- 1200	600V or less	200	I ₁ t – Low, I ₂ t – Low	Mains, feeder circuits

① Per UL 67.

② Fuses do not prohibit the use of Class H type fuse in switch.

Catalog Numbering System

P 1 C 4 2 F X 2 5 0 A T S

Type of Panel

P1, P2, P3, P4, P5

Voltage and System

C= 208Y/120 3Ø 4 W Wye AC - All
 E= 480Y/277 3Ø 4 W Wye AC - All
 D= 240 3Ø 3 W Delta AC - All
 F= 480 3Ø 3 W Delta AC - P2, P3, P4, P5
 G= 600 3Ø 3 W Delta AC - P2, P3, P4, P5
 I= 347AC - P2, P3, P4, P5
 B= 240/120 3Ø 4 W Delta BØ High Leg AC - All
 Q= 240/120 3Ø 4 W Delta CØ High Leg AC - P2, P3, P4, P5
 X= 120/240 2Ø 5 W Single Neutral AC - P2, P3, P4, P5
 A= 120/240 1Ø 3 W Grounded Neutral AC (2) - All
 H= 120 1Ø 2 W Grounded Neutral AC (2) - All
 J= 240 1Ø 2 W No Neutral AC (3) - All
 Y= 125 1Ø 2 W Grounded Neutral AC (2) - P2, P3, P4, P5
 Z= 500 2W DC - P2, P3, P4, P5
 K= 220/127 3Ø 4 W Wye AC - All
 M=380/220 3Ø 4 W Wye AC - All

R= 415/240 3Ø 4 W Wye AC - All
 S= 440/250 3Ø 4 W Wye AC - All
 L= 600/347 3Ø 4 W Wye AC - All
 T= 230 3Ø 3 W Delta AC - All
 Z= 380 3Ø 3 W Delta AC - P2, P3, P4, P5
 1= 24V DC 1 Pole Branches Only (3) - All
 2= 24V DC 2 Pole Branches Only (3) - All
 3= 48V DC 1 Pole Branches Only (3) - All
 4= 48V DC 2 Pole Branches Only (3) - All
 5= 125V DC 1 Pole Branches Only (3) - All
 N= 125V DC 2 Pole Branches Only - All
 O= 125/250V DC 2 Pole Branches Only - All
 P= 125/250V DC 2 & 3 Pole Branches - All
 U= 120V AC 3p3w - All
 V= 24V 3p3w Grounded B Phase - All

Circuits

P1 – 18, 30, 42

P2 – 18, 30, 42, 54^①

or Enclosure Height

P3 – 56, 62, 68, 74, 80

P4, P5 – 60, 75, 90

Main Lug (ML), Main Breaker

(See Main Breaker Table coding below), Main Switch (MS)

Amperage

100–400 Amp = P1

100–600 = P2

250–800 = P3

400–1200 = P4, P5

Bus Material

Temp rated Al.

750A/sq. in. Al.

Temp rated Cu.

Temp rated Cu.

Temp rated Cu.

1000A/sq. in. Cu.

1000A/sq. in. Cu.

Bus Plating

Tin-Plated

Tin-Plated

Tin-Plated

Silver-Plated

Tin-Plated

Tin-Plated

Silver-Plated

Letter

A

B

C

E

F

G

H

Bus Code	P1 ②	P2	P3	P4	P5
A	•	•	•	•	•
B	n/a	•	•	•	•
C	•	•	•	n/a	n/a
F	n/a	•	•	•	•
E	n/a	•	•	•	•
G	n/a	•	•	optional	optional
H	n/a	optional	optional	•	•

• indicates default for this bus type.

Feed Location

T = Top

B = Bottom

Mounting

S = Surface

F = Flush. Flush trims extend 1 1/2" beyond the base box dimensions on P1, P2 and P3 and 2" on P4 and P5 panels.

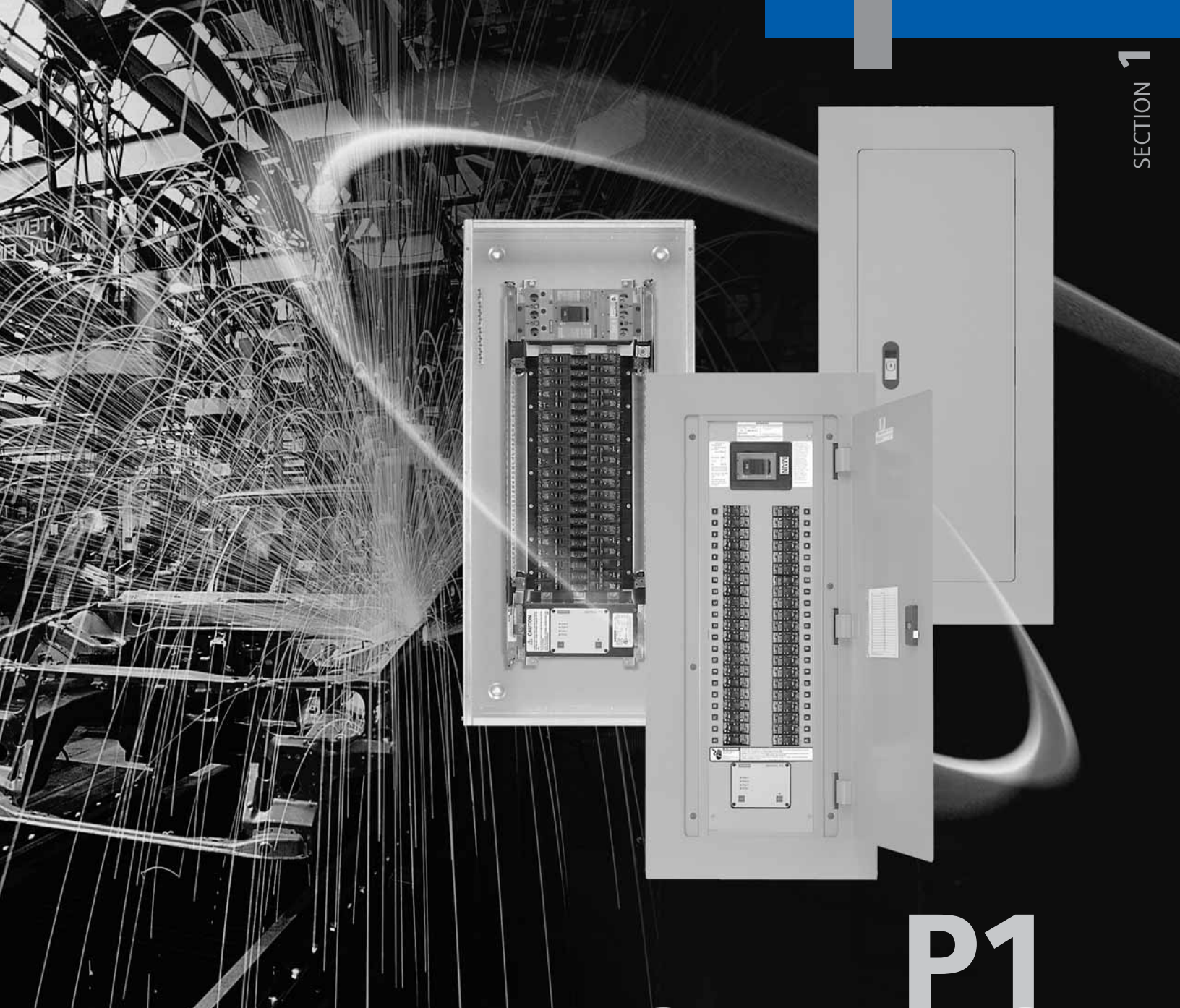
Main Breaker Code

(Breaker Type) Code

(BAF) BA, (BAFH) BF, (BQD) BQ, (BQD6) B6, (BL) BL, (BLEH) BE, (BLH) BH, (BLR) BR, (HBL) HB, (BGL-SWI) B1, (BLE-GFCI) BG, (BLF-GFCI) BC, (CED6) CE, (ED2) ED, (ED4) E4, (ED6) E6, (HED4) H4, (HHED6) HA, (BLHF-GFCI) B4, (BL-HID) B2, (NGB) NB, (HQP) HQ, (QP) QP, (QPH) PQ, (CEG) C4, (CDG) C1, (CDH) C2, (HDG) HD, (HDH) DH, (LDG) LD, (LDH) LA, (NDG) NG, (NDH) NH, (NDJ) NJ, (QJ2) QJ, (QJ2H) Q2, (QJH2) QH, (CFD6) CF, (FD6) FD, (FXD6) FX, (HFD6) HF, (HFXD6) H2, (HHFD6) H1, (HHFXD6) H3, (CFG) C7, (CFH) C8, (HFG) HG, (HFH) HC, (LFG) LF, (LFH) LB, (NFG) NF, (NFH) NA, (NFJ) NC, (CJD6) CJ, (HHJD6) 6H, (HHJXD6) H9, (HJD6) H6, (HJXD6) H5, (HJXD6H) H7, (JD6) J6, (JXD2) JD, (JXD2H) J2, (JXD6) JX, (JXD6H) JH, (CJG) CA, (CJH) CB, (HJG) HI, (HJH) HU, (LJG) LG, (LJH) LJ, (NJG) NI, (NJH) NK, (NJJ) NO, (CLD6) CL (HHL6) HH, (HHLXD6) XH, (HLD6) HL, (HLXD6) HO, (HLXD6H) HP, (LD6) L6, (LXD6) LX, (LXD6H) HL, (CLG) CD, (CLH) CK, (HLG) H8, (HLH) HW, (LLG) LL, (LLH) LO, (NLG) NL, (NLH) NQ, (HLM6) HJ, (HLMXD6) HK, (LMD6) L1, (LMXD6) LM, (CMD6) CM, (CMD6H) CH, (HMD6) HM, (HMXD6) HR, (HMXD6H) HS, (MD6) MD, (MXD6) MX, (MXD6H) MH, (HMG) HZ, (HMH) RH, (LMG) L2, (LMH) L3, (NMG) NM, (NMH) NR, (CND6) CN, (CND6H) C6, (HND6) HN, (HNXD6) HT, (HNXD6H) HX, (ND6) ND, (NXD6) NX, (NXD6H) NT, (HNG) NH, (HNH) GH, (LNG) LN, (LNH) L4, (NNG) NN, (NNH) NS (NMX) M1, (HMX) M2, (LMX) M3, (NNX) N1, (NNX) N2, (LNX) N3

① Panel must not be a lighting and appliance panel. See NEC article 408.34.

② Standard bussing in P1 panels is tin-plated for aluminum and copper. Standard bus is temperature rated to the maximum amperage.



P1 PANELBOARDS

Description

General Information
 Selection and Application
 Application
 Main Breaker Panel Size Selector
 Main Breaker Selection
 Main Lugs Size Selector
 Branch Circuit Breakers
 Subfeed Breakers
 Breaker Mounting Kits
 Lug Kits
 Main Breaker Gutter Dimensions
 Main Lug End Gutter Dimensions

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Type P1 Panelboards

P1 panelboards are pre-engineered to accept the most common modifications without increasing box height. The enclosure size for a P1 panelboard is determined by the number of circuits as shown in the Main Lug Table P1-5 or the Main Circuit Breaker Table P1-3. All P1 main lug or main breaker panelboards have space built-in to accept either feed-thru lugs equal to the panel rating or one subfeed circuit breaker up to 250 amperes without increasing box height.

Note the following features, all found in the innovative P1 lighting panelboards:

- Symmetrical Interiors - No Top or Bottom! To change from top to bottom (or vice-versa), simply invert the interior. The deadfront labeling is always right-side up.
- First in the Industry Ratings of 125A/250A Main Lug and Main Breaker. Field Convertible from Main Lug to Main Breaker and vice versa - with No Increase in Enclosure Height.
- Field Adaptability of Feed-Thru Lugs or Subfeed Circuit Breaker Without Increasing Enclosure Size.
- Neutral System is Field Upgradeable to 200% Capacity – Another Industry First.
- Three Circuit Sizes Means Only Three Box Heights, Regardless of Main Configuration through 250 amp and an additional three circuit version and boxes available at 400 amps.
- Suitable for Use as Service Entrance Given Compliance with NEC.
- Bonding Provisions are Shipped with Each Panel.
- 240V and 480Y / 277V for versions utilize identical boxes and fronts.

Enclosure – Standard Type 1 enclosure is 20" wide x 5.75" deep X. Box Height is determined only by the number of circuits, not by main lug or main circuit breaker. See chart P1-5 for box height.

Voltage – 480Y/277 Vac Max.
250 Vdc Max.

Amperage – 400 amp Max.

Short Circuit Rating – 200 KAIC Max. symmetrical or equal to the lowest rated device installed unless a series rating is indicated. Panels with subfeed or feed-thru lugs without a main device, circuit breaker or fusible unit, are limited to a three-cycle rating. The three-cycle rating for the P1 panel is limited to 22 KAIC. Note that the main device may be mounted remote from the panel.

Bussing – The P1 panel meets the majority of the markets bussing requirements. The standard bussing is temperature rated aluminum. The rating is per the requirements of UL 67– the standard for panelboards. All aluminum bussing is tin-plated. Optional bussing for the P1 panel is temperature rated copper. The copper bus option for this panel is tin-plated.

Weight – Approximate
Total panelboard weight when filled with a normal quantity of breakers and accessories is about 3 lbs. (1 kg) per inch (54g per mm) of box height

Table P1-1 – Box Material Gauge

Width	Height (inches)	Gauge Steel
20"	32, 38, 44	#16
	56, 62, 68	

Table P1-2 – Trim Material Gauge

Width	Height (inches)	Gauge Steel
20"	32, 38, 44	#14
	56, 62, 68	

Selection and Application

3 Easy Steps for Selecting a Siemens P1 Panelboard

Step 1

Determine voltage, system, amperage and interrupting rating of branch devices, and modifications if any.

Example for standard lighting panelboard:

Amperage	250A
Voltage	208Y/120V
System	3Ø4W
Main	Main Lug
Branches	10K AIR, 42-20/1
Modifications	None
Feed Location	Top
Mounting	Surface

Step 2

Create a catalog number by following the Panelboard Catalog Numbering System on page 6. The BL branch breakers were selected from the branch breaker selection table on page 1-4.

1-P1C42ML250ATS
42-20/1 BL

Step 3

Select enclosure size by the number of circuits as shown in the panelboard dimensional chart on page 1-6.

1-P1C42ML250ATS
42-20 BL
Box size – 44" high

A unique feature of the P1 panels is that they can accommodate either feed-thru lugs or one subfeed circuit breaker (up to 250A) without any addition in box height. For our example changing the branch circuits to 39-20/1 and 1-125/3, we have the following:

1-P1C42ML250ATS
39-20/1 BL
1-125/3 QJ2
Box size – 44" high

The QJ2 subfeed was selected from the table of subfeed breakers on page 1-5. The box height remains the same.

Application

Type P1 Panelboards

Table P1-3 – Main Breaker Panel Size Selector

Maximum Ampere Rating	Main Breaker Types	Max. No. of Poles	Dimensions in Inches (mm)		Weight In lbs. (kg)
			Unit Space A	Box Height B	
100	BL, BLH	18 30 42	9 (229)	32 (813)	105 (48)
	HBL		15 (381)	38 (965)	120 (55)
	BQD		21 (533)	44 (1118)	135 (61)
125	NGB		9 (229)	32 (813)	110 (50)
	ED2, ED4, ED6, HED4, HED6		15 (381)	38 (965)	125 (57)
			21 (533)	44 (1118)	140 (64)
225	QJ2		9 (229)	32 (813)	110 (50)
	QJH2		15 (381)	38 (365)	125 (57)
	QJ2-H		21 (533)	44 (1118)	140 (64)
250	FXD6		9 (229)	32 (813)	115 (52)
	FD6		15 (381)	38 (965)	130 (59)
	HFD6, HFXD6		21 (533)	44 (1118)	145 (66)
≤250	MLO	9 (229)	32 (813)	105 (48)	
		15 (381)	38 (365)	120 (55)	
		21 (533)	44 (1118)	135 (61)	
400	JD6, JXD6	18 30 42	9 (229)	56 (1422)	172 (78)
	HJD6		15 (381)	62 (1575)	190 (86)
	HJXD6		21 (533)	68 (1727)	208 (95)
	MLO		9 (229)	56 (1422)	115 (52)
			15 (381)	62 (1575)	130 (59)
			21 (533)	68 (1727)	145 (66)

Note: Main breakers use breaker connectors. For sizes, see breaker connector chart. 400 amp main breaker panel has wire bending space for 600 kcmil cables as standard. Use 750 Kcmil lug if 600 Kcmil cable is to be used.

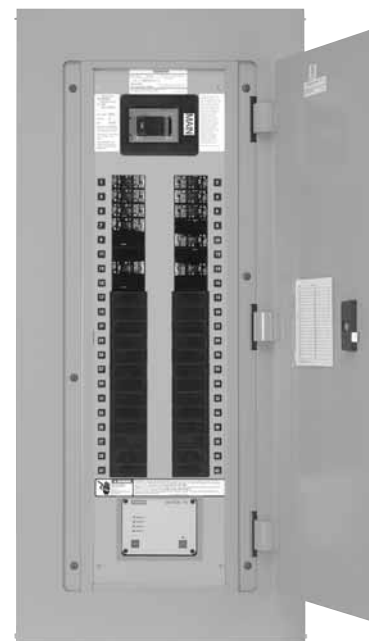


Table P1-4 – Main Breaker Selection

Ampere Rating	Breaker Type	Max. IR (kA) at		Additional Trip Values
		240V AC	480/277V AC	
100	BL (STD)	10	—	15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100
	BLH	22	—	15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100
	HBL	65	—	15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100
	BQD	65	14	15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100
125	NGB (STD)	100	25	50, 60, 70, 80, 90, 100, 110, 125
	ED4	65	25	50, 60, 70, 80, 90, 100, 110, 125
	HED4	100	42	50, 60, 70, 80, 90, 100, 110, 125
225	QJ2 (STD)	10	—	60, 70, 80, 90, 100, 110, 125, 150, 175, 200, 225
	QJH2	22	—	60, 70, 80, 90, 100, 110, 125, 150, 175, 200, 225
	QJ2-H	42	—	60, 70, 80, 90, 100, 110, 125, 150, 175, 200, 225
250	FXD6 (STD)	65	35	70, 80, 90, 100, 110, 125, 150, 175, 200, 225, 250
	FD6	65	35	70, 80, 90, 100, 110, 125, 150, 175, 200, 225, 250
	HFD6	100	65	70, 80, 90, 100, 150, 175, 200, 225, 250
	HFXD6	100	65	70, 80, 90, 100, 110, 125, 150, 175, 200, 225, 250
400	JXD6 (STD)	65	35	200, 225, 250, 300, 350, 400
	JD6	65	35	200, 225, 250, 300, 350, 400
	HJD6	100	65	200, 225, 250, 300, 350, 400
	HJXD6	100	65	200, 225, 250, 300, 350, 400

Application

Type P1 Panelboards

Table P1-5 – Main Lugs Size Selector

Maximum Ampere Rating	Maximum Number of Poles	Dimensions in Inches (mm)		Weight In lbs. (kg)	Connectors Suitable for Cu or Al
		Unit Space A	Height B		
125	18	9 (229)	32 (813)	100 (45)	(1) #6 AWG - 350 kcmil
	30	15 (381)	38 (965)	115 (52)	
	42	21 (533)	44 (1118)	135 (61)	
250	18	9 (229)	32 (813)	100 (45)	(1) #6 AWG - 350 kcmil
	30	15 (381)	38 (965)	115 (52)	
	42	21 (533)	44 (1118)	175 (80)	
400	18	9 (229)	56 (1422)	100 (45)	(2) #3/0-250 kcmil or (1) #3/0-600 kcmil
	30	15 (381)	62 (1575)	115 (52)	
	42	21 (533)	68 (1727)	175 (80)	

Table P1-6 – Branch Circuit Breakers

Breaker Type	Number of Poles	Max. Interrupting Rating (kA)					Available Trip Values
		120V	120/240V	240V	277V	480/277V	
BL	1	10	—	—	—	—	15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 70
	2	—	10	—	—	—	15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100
	3	—	—	10	—	—	15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100
BLR	2	—	—	10	—	—	15, 20, 30, 40, 50, 60, 70, 90, 100
BL, HID	1	10	—	—	—	—	15, 20, 30
	2	—	10	—	—	—	15, 20, 30
BLH	1	—	22	—	—	—	15, 20, 30, 40, 50, 55, 60, 70
	2	—	22	—	—	—	15, 20, 30, 40, 50, 60, 70, 90, 100
	3	—	—	22	—	—	15, 20, 30, 40, 50, 60, 70, 80, 90, 100
HBL	1	—	65	—	—	—	15, 20, 30, 40, 50
	2	—	65	—	—	—	15, 20, 30, 40, 50, 60, 70
	3	—	—	65	—	—	15, 20, 30, 40, 50, 60, 70, 80, 90, 100
BLF	1	10	—	—	—	—	15, 20, 30
	2	—	10	—	—	—	15, 20, 30, 40, 50, 60
BLHF	1	22	—	—	—	—	15, 20, 30
	2	—	22	—	—	—	15, 20, 30, 40, 50, 60
BGL ①	2	10	—	—	—	—	15, 20, 30
	3	—	10	—	—	—	15, 20, 30
BLE	1	10	—	—	—	—	15, 20, 30
	2	—	10	—	—	—	15, 20, 30, 40, 50, 60
BLEH	1	22	—	—	—	—	20, 30
	2	—	22	—	—	—	15, 20, 30, 40, 50, 60
BAF	1	10	—	—	—	—	15, 20
BAFH	1	22	—	—	—	—	15, 20
BQD	1	—	65	—	14	—	15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100
	2	—	65	—	—	14	
	3	—	—	65	—	14	
NGB ②	1	100	—	—	25	—	15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100, 125
	2	—	100	100	—	25	
	3	—	100	100	—	25	

① Two-pole breaker is one phase and neutral. Three-pole is two phases and neutral.

② P1 panel with NGB branch devices will not accept BL or BQD frames in the same panel as branch devices.

NOTE: BL, HBL and BQD breakers are mounted in common mountings in 3" or (6) pole increments.

Application

Type P1 Panelboards

Table P1-7 – Subfeed Breakers

Breaker Type	Number of Poles	Max. Interrupting Rating (kA)		Available Trip Values
		240V	480Y/277V	
QJ2	2, 3	10	—	60, 70, 80, 90, 100, 110, 125, 150, 175, 200, 225
QJH2	2, 3	22	—	60, 70, 80, 90, 100, 110, 125, 150, 175, 200, 225
QJ2H	2, 3	42	—	60, 70, 80, 90, 100, 110, 125, 150, 175, 200, 225
ED4	2, 3	65	18	15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 70, 80, 90, 100, 110, 125
HED4	2, 3	100	42	15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 70, 80, 90, 100, 110, 125
FXD6	2, 3	65	35	70, 80, 90, 100, 110, 125, 150, 175, 200, 225, 250
FD6	2, 3	65	35	70, 80, 90, 100, 110, 125, 150, 175, 200, 225, 250
HFD6	2, 3	100	65	70, 80, 90, 100, 110, 125, 150, 175, 200, 225, 250
HFXD6	2, 3	100	65	70, 80, 90, 100, 110, 125, 150, 175, 200, 225, 250

Table P1-8 – Breaker Mounting Kit
Main or Subfeed w/o Breaker

Amp Rating	Breaker Frames	Service	Catalog Number
100	BL, BLH, HBL	1 Phase	MBKBL1
		3 Phase	MBKBL3
	BQD	3 Phase	MBKBC3
125	NGB	1 Phase	MBKNB1
		3 Phase	MBKNB3
	ED2, ED4, ED6, HED4, HED6	1 Phase	MBKED1
		3 Phase	MBKED3
225	QJ2, QJH2, QJ2-H	1 Phase	MBKQJ1
		3 Phase	MBKQJ3
250	FXD6, FD6, HFD	1 Phase	MBKFD1
		3 Phase	MBKFD3
400 ①	JD2, JD6, JXD6, HJD6, HJXD6	1 Phase	MBKJD1
		3 Phase	MBKJD3

① Main Only

Table P1-9 – Lug Kits Main or Feed-Thru

Amp Rating	Material	Wire Range	Service	Catalog Number
250	Al	(1) #6 AWG-350 Kcmil (Cu or Al)	1 Phase	MLKA1
		(1) #6 AWG-350 Kcmil (Cu or Al)	3 Phase	MLKA3
	Cu	(1) #6 AWG-350 Kcmil (Cu or Al)	1 Phase	MLKC1
		(1) #6 AWG-350 Kcmil (Cu or Al)	3 Phase	MLKC3
400	AL	(2) 3/0 - (1) 600 Kcmil	1 Phase	4MLKA1
		(2) 3/0 - (1) 600 Kcmil	3 Phase	4MLKA3
	Cu	(2) 3/0 - (1) 600 Kcmil	1 Phase	4MLKC1
		(2) 3/0 - (1) 600 Kcmil	1 Phase	4MLKC3

Table P1-10 – Copper Neutral Lug Kits – 250A and 400A

No. of Circuits	Description	Catalog Number
18	2 Branch Neutral Strips, 1 Main Neutral Lug, Hardware	CNLK18
30	2 Branch Neutral Strips, 1 Main Neutral Lug, Hardware	CNLK30
42	2 Branch Neutral Strips, 1 Main Neutral Lug, Hardware	CNLK42

Table P1-11 – 200% Neutral Lug Kits – 250A

No. of Circuits	Description	Catalog Number
18	2 Branch Neutral Strips, 2 Main Neutral Lug, Hardware	2NLK18
30	2 Branch Neutral Strips, 2 Main Neutral Lug, Hardware	2NLK30
42	2 Branch Neutral Strips, 2 Main Neutral Lug, Hardware	2NLK42

Table P1-12 – 200% Neutral Lug Kits – 400A

No. of Circuits	Description	Catalog Number
18	2 Branch Neutral Strips, 4 Main Neutral Lug, Hardware	42NLK18
30	2 Branch Neutral Strips, 4 Main Neutral Lug, Hardware	42NLK30
42	2 Branch Neutral Strips, 4 Main Neutral Lug, Hardware	42NLK42

Application

Type P1 Panelboards

Table P1-13 – Main Breaker Gutter Dimensions Inches (mm)

Main Breaker	Gutter		Neutral Location
	20" wide box	24" wide box	20" wide box
BL, BLH, HBL, BQD	8.500 (216)	10.500 (267)	11.500 (292)
NGB	8.000 (203)	10.000 (254)	11.500 (292)
ED2, ED4, ED6, HED4	6.125 (156)	8.125 (206)	11.500 (292)
QJ2, QJH2, QJ2-H	6.500 (165)	8.500 (216)	11.500 (292)
FD6, FXD6, HFD6	5.250 (133)	7.250 (184)	11.500 (292)
JD6, JXD6 ①	15.000 (381)	15.000 (381)	26.750 (680)

① JD frame mounted vertically.

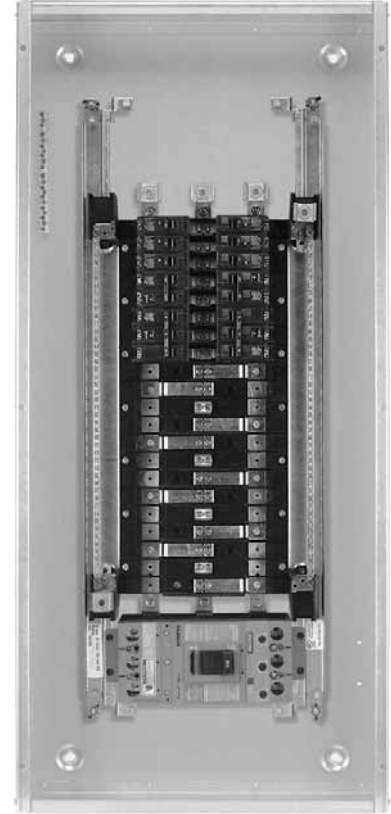


Table P1-14 – Main Lug End Gutter Dimensions Inches (mm)

Amp Rating	End Gutter		Neutral Location	
	20" wide box	24" wide box	20" wide box	24" wide box
125	10.500 (267)	10.500 (267)	11.500 (292)	11.500 (292)
250	10.500 (267)	10.500 (267)	11.500 (292)	11.500 (292)
400	25.500 (648)	25.500 (648)	26.750 (680)	26.750 (680)

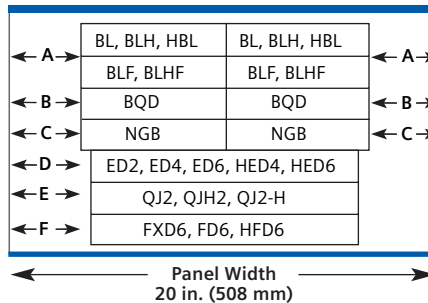
NOTE: Feed-thru lug and neutral wire bending space is 15.000" and 16.250" respectively on 400A panel.

Table P1-15 – Side Gutter Wiring Space Inches (mm) (Fig P1-1)

Reference Letter	Panel Width 20"	Panel Width 24" Optional
A	6.375 (162)	8.375 (213)
B	5.500 (140)	7.500 (191)
C	5.000 (127)	7.000 (178)
D ①	6.125 (156)	8.125 (206)
E ①	6.500 (165)	8.500 (216)
F ①	5.250 (133)	7.250 (184)

① Subfeed mounting limit 1 per panel.

Fig P1-1



Typical Catalog Numbers

Type P1 Panelboards

Table P1-16 – Main Lugs Only

Maximum Panel Amp Rating	Maximum 1-Pole Circuits	Box Height (inches)	Catalog Number		
			3Ø4W 208Y/120V	1Ø3W 120/240V	3Ø4W 480Y/277V
125	18	32	P1C18ML125ATS	P1A18ML125ATS	P1E18ML125ATS
	30	38	P1C30ML125ATS	P1A30ML125ATS	P1E30ML125ATS
	42	44	P1C42ML125ATS	P1A42ML125ATS	P1E42ML125ATS
250	18	32	P1C18ML250ATS	P1A18ML250ATS	P1E18ML250ATS
	30	38	P1C30ML250ATS	P1A30ML250ATS	P1E30ML250ATS
	42	44	P1C42ML250ATS	P1A42ML250ATS	P1E42ML250ATS
400	18	56	P1C18ML400ATS	P1A18ML400ATS	P1E18ML400ATS
	30	62	P1C30ML400ATS	P1A30ML400ATS	P1E30ML400ATS
	42	68	P1C42ML400ATS	P1A42ML400ATS	P1E42ML400ATS

Table P1-17 – Main Circuit Breaker

100	18	32	P1C18BL100ATS	P1A18BL100ATS	P1E18BD100ATS
	30	38	P1C30BL100ATS	P1A30BL100ATS	P1E30BD100ATS
	42	44	P1C42BL100ATS	P1A42BL100ATS	P1E42BD100ATS
125	18	32	P1C18NB125ATS	P1A18NB125ATS	P1E18NB125ATS
	30	38	P1C30NB125ATS	P1A30NB125ATS	P1E30NB125ATS
	42	44	P1C42NB125ATS	P1A42NB125ATS	P1E42NB125ATS
225	18	32	P1C18QJ225ATS	P1A18QJ225ATS	P1E18QJ225ATS
	30	38	P1C30QJ225ATS	P1A30QJ225ATS	P1E30QJ225ATS
	42	44	P1C42QJ225ATS	P1A42QJ225ATS	P1E42QJ225ATS
250	18	32	P1C18FX250ATS	P1A18FX250ATS	P1E18FX250ATS
	30	38	P1C30FX250ATS	P1A30FX250ATS	P1E30FX250ATS
	42	44	P1C42FX250ATS	P1A42FX250ATS	P1E42FX250ATS
400	18	56	P1C18JX400ATS	P1A18JX400ATS	P1E18JX400ATS
	30	62	P1C30JX400ATS	P1A30JX400ATS	P1E30JX400ATS
	42	68	P1C42JX400ATS	P1A42JX400ATS	P1E42JX400ATS

Table P1-18 – Standard Enclosures

Box Height (in.)	Catalog Number				
	Type 1 Standard Trim			Type 3R	Type 3R/12
	Box	Surface	Flush		
32	B32	S32B	F32B	NR32	WP32
38	B38	S38B	F38B	NR38	WP38
44	B44	S44B	F44B	NR44	WP44
56	B56	S56B	F56B	NR56	WP56
62	B62	S62B	F62B	NR62	WP62
68	B68	S68B	F68B	NR68	WP68

Standard Modifications

Type P1 Panelboards

Panel Options

Enclosures

- Extra gutter to sides or ends of the can
- 24" wide boxes
- Hinged trims
- Door-in-door trims
- Screw to the box trims
- Trim mounted devices (Devices mounted and wired to the trim should also have hinged trim specified.)
 - Pilot lights
 - Toggle switches
 - Push buttons
- Painted boxes
- Custom colors
- Increase gauge trims and boxes
- Stainless steel trims and boxes, Type 1
- Aluminum trims and boxes, Type 1

- NEMA 3R enclosures
- NEMA 3R/12 enclosures
- NEMA 4 enclosures
- NEMA 4X enclosures
- Special keyed locks
 - TEY
 - TEU1
 - Cat 60
 - LL803
 - LL806
 - Yale
- Meters (Contact application engineering for space requirements.)
- Panel skirts
- Gaskets between trim and box

Panel Modifications

- Main Bus
Standard main bus is tin-plated aluminum. For copper main bus, add from the table for each panel. Includes copper neutral cross bar. For copper neutral branch lugs, see miscellaneous.
- Compression lug for MLO ①
- Compression lugs on Main breaker (may require extra width on enclosure). Not available on 400 amp.
- Contactor mains - Mount in 23" enclosure ahead of panel.
 - Asco 920 through 225 amps
 - Asco 911 through 150 amps
 - Siemens LEN through 30 amps
- Control power transformers (Contact engineering for extra gutter requirements.)
- Branch and main breaker accessories
 - Handle blocks
 - Handle locks
 - Aux. Contacts ②
 - UVR ②
- Feed-thru lugs ①
Cannot be used in conjunction with TVSS or subfeed breakers. Do not add height to the panel.

- Bus mounted TVSS ①
- Service entrance labeling
- Grounding of Panelboards
Ground Bars except for brazed to box are shipped with the panel interior factory mounted.
 - Non-Insulated Equipment Ground Bar – Standard
 - Copper Non-Insulated Ground Bar
 - Al Insulated Equipment Ground Bar
 - Cu Insulated Equipment Ground Bar
 - Ground Bar Brazed to Box (recommended for painted boxes)
- Shunt Trip on Main or Branch
BL, BLH, HBL, BQD, NGB, as branch only. BL, BLH, HBL uses 1" unit space for shunt trip as a branch device. All others may be used on mains or subfeeds.
 - QJ2, QJ2-H, QJH2, ED2, ED4, ED6, HED4, HED6, HHED6, FD6, FXD6, HFD6, HFXD6, JXD6, JD6, HJD6, HJXD6
- Remote control switches – 480V AC max. mounted in a 23" enclosure to be cable connected to the panel.
- Time Clocks – mounted in a 23" enclosure to be cable connected to the panel. Sangamo, Tork or Paragon time clock can be supplied and mounted in panelboard cabinet.

Amp Rating	Type	Connector Cu/Al Range
250	Al Lay-in	(1) - #6 AWG –
	Mechanical	(1) 350 Kcmil
250	Cu Lay-In	(1) - #6 AWG –
	Mechanical	(1) 350 Kcmil
250	Al	(1) - #6 AWG –
	Compression	(1) 350 Kcmil
400	Al	(2) - #4 AWG –
	Mechanical	(1) 600 Kcmil

- 200% neutral ①
- Copper lugs, mechanical line and branch neutral ①

Description

Time Clock (1-or 2-Pole, Single or Double Throw Contacts; 3-Pole Single Throw)
277V Maximum with Plain Dial
Options:
Astronomical Dial
An Omitting Device
Reserve Power or Carryover
Space and Mounting Provisions Only

① Do not increase panel or enclosure size
② Accessories on 1" pole breakers (BL, BQD, ED) will take unit space.

Connector Modifications

Type P1 Panelboards

Compression Lugs

Table P1-19 – Lugs

Style	Amp Rating	Breaker Type	Compression Connectors	Box Height Addition
MLO	250	N/A	(1)#4 AWG - 350 Kcmil	None
	400	N/A	(1) 250-600 Kcmil or (2)#3/0 AWG - 250 Kcmil	
Main Breaker	125	ED4, ED6, HED4 HHED6, CED6	(1)#12-1/0 AWG	Box must go to 24" wide
	225	QJ2, QJH2, QJ2H	(1)#6 AWG - 350 Kcmil Cu or Al	Box must go to 24" wide for all breakers
	250	FXD6, HFD6, CFD6	(1)#6 AWG - 350 Kcmil Cu or Al	Box must go to 24" wide for all breakers

NOTE: Standard compression lugs used for P1 panels are range taking lugs and may require a particular crimping tool to accommodate the range. Consult factory for information.

Enclosure Modifications

NEMA-4 For Type P1
Water Tight, Dust Tight, Steel Enclosure
(consult plant for actual enclosure size)

Table P1-20

Box Height (inches)	Enclosure Size		
	H	W	D
32	36	24	8
38	42	30	8
44	48	36	8
56	60	36	8
62	66	36	8
68	72	36	8

Table P1-22 – Additional Enclosure Modifications

Description
Strip Heaters
Humidstat Control
Thermostat Control

NEMA-4X For Type P1
Water Tight, Dust Tight and Corrosion Resistant
(consult plant for actual enclosure size)

Table P1-21

Box Height (inches)	Enclosure - Stainless Steel & Steel with Epoxy Coating			Enclosure - Fiberglass Size (inches)		
	H	W	D	H	D	W
32	36	24	8	36	24	8
38	48	36	8	48	36	12
44	48	36	8	48	36	12
56	60	36	12	60	36	12
62	66	36	12	66	36	12
68	72	36	12	72	36	12

Remote Switch Modifications

Table P1-23 – Control Power Transformer

Size	VA
0,1	50
2	75
3	150
4	250

Table P1-25 – Remote Control Switch Modification

Description
Separate Door in Deadfront Over Switch
Auxiliary Contacts (Mounted Not Wired)
2-Wire Control

Table P1-24 – Application For Remote Switch

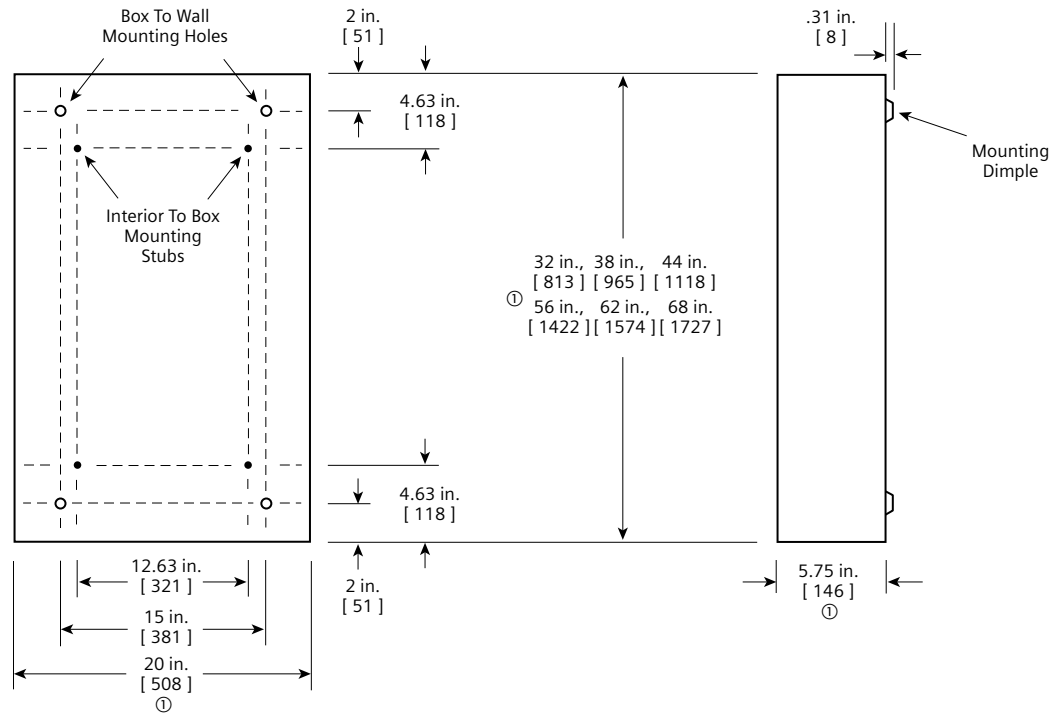
Switch Type	Modification
920	Mounts in 23" relay cabinet as a main only
911	≤ 150 AMPS mounts in 23" relay cabinet as a main only > 150 AMPS not available
LEN	30A mounts in 23" relay cabinet as a main only

Dimensions

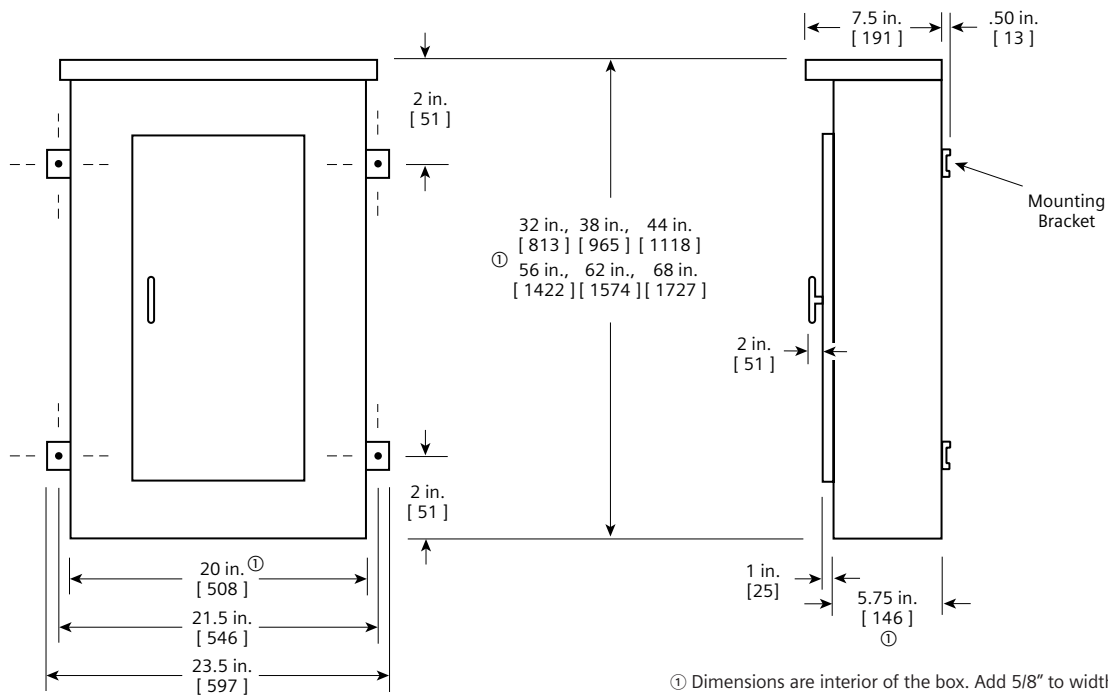
Type P1 Panelboards

Type 1 Box

Box is symmetrical



Type 3R and 3R/12 Box



① Dimensions are interior of the box. Add 5/8" to width for absolute dimension. Add 1/8" to height for absolute dimension.

Dimensions shown in inches and millimeters [].



P2 PANELBOARDS

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P2 Panelboards

Flexibility is the hallmark of the P2 panel. This panel offers a wide array of factory-assembled options to meet almost all lighting panel applications. With this design, the ability to mix breaker frames in unit space up to 250 amps will also meet many distribution panel requirements in a much smaller package. Bussing options for the P2 vary from the typical temperature rated to 750 A/Si aluminum to 1000A/Si copper. Standard bussing in the P2 panel is tin-plated. Silver-plated copper is also offered as an option. Integrated time clocks, bus mounted contactors, as mains or sub mains, split bus, and subfeed lugs (up to 400 amp) are just a few of the options of this unique panel.

Like a lighting panel, P2 is set up around 18, 30, 42, and 54 circuit configurations. It will also allow the user to configure the panel to the smallest possible size. The P2 panel starts with 9" of unit space (18 circuits of 1" pole breakers). Breakers mounted in unit space can be mixed and matched to meet customer requirements. All 1" pole breakers (BL, BQD, ED frames) are mounted in 3" or 6" pole increments. Breaker frames, above 125 amps, are mounted in 6" single breaker mountings. As an example of a minimum panel, (6) 20 amp 1-pole BL breakers (3" of unit space) and a 3-pole 225 amp QJ breaker (6" of unit space) equaling 9" of unit space can be configured in a P2 panel without any extra provisions or space required. FD 250 amp and JD 400 amp breakers are mounted as subfeed breakers outside of unit space.

Another unique feature of the P2 panel is that blank unit space can be added to allow for future expansions or modifications. Any expansions or modifications must be in 3" increments. BL, BQD, NGB, and ED frame breakers have 3" or 6" pole kits, and can be mixed in unit space by these increments. Breakers of the same frame can cross from one mounting to another if contiguous. QJ frame breakers are mounted in 6" increments for two and three pole, single mounted units. Changes in the unit space length for BL, BQD, NGB or ED frame breakers require an addition deadfront, center strip kit. Check with sales or the factory for additional unit space kits.

Selection and Application

Step 1

Determine configuration required.

Example:

Amperage	250A
Voltage	208Y/120V
System	3Ø4W
Main	Main Lug
Bus Material	Temperature rated aluminum
Interrupt Rating	10 Ka
Branch Devices	(6) 20 amp, 1-pole (1) 225 amp, 3-pole
Feed Location	Top
Mounting	Surface

Step 2

Create a catalog number by following the Catalog Numbering System on page 6. Note that the number of circuits number (4th and 5th position) will be 18 for those panels with 6-18 circuits, 30 for those panels with 19-30 circuits, 42 for those panels 31 to 42 circuits and 54 for those panels 43 to 54 circuits. The most cost effective 20 amp 1-pole breaker for this application would be BL. However, a myriad of other breakers with options may be used in the P2 panel. The most cost effective 225 amp breaker for this application is the QJ2.

Check with sales or the factory for other options as we will be adding to our capabilities.

Based on the above
P2C18ML250ATS
(6) BL 20 amp 1-Pole
(1) QJ2 225 amp 3-pole

Step 3

Determine the enclosure size. The matrix on page 2-3 shows the enclosure sizes based on the amperage, main device and unit space required.

Main Lug / Main Breaker

Enclosure – Standard Type 1 enclosure is 20" wide x 5.75" deep X. Box Height is determined by main device and unit space. See charts for box height.

Voltage – 600 Vac Max.
250 Vdc Max.

Amperage – 600 amp Max.

Short circuit rating – 200 KAIC Max. symmetrical or equal to the lowest rated device installed unless a series rating is indicated. Panels with subfeed or feed-thru lugs without a main device, circuit breaker or fusible unit, are limited to a three-cycle rating. The three-cycle rating for the P2 panel is limited to 22 KAIC. Note that the main device may be mounted remote from the panel.

Bussing – The P2 panel has more options to meet market requirements. The standard bussing is temperature rated aluminum. The rating is per the requirements of UL 67 – the standard for panelboards. All aluminum bussing is tin-plated. Optional bussing for the P2 panel is: 750 A/Si aluminum, temperature rated copper, and 1000 A/Si copper. The copper bus option for this panel is tin-plated.

Weight – Approximate

Total panelboard weight when filled with a normal quantity of breakers and accessories is about 3 lbs. (1 kg) per inch (54g per mm) of box height.

Table P2-1 – Gauge Steel of Boxes Fronts, Surface and Flush

Dimensions in inches (mm)		Gauge Steel	
Width	Height	Box	Front
20" (508)	26 - 74 (660, 1880)	#16	#14

Application

Type P2 Panelboards

Table P2-2 – Panel Unit Space To Box Height Requirements

"B" Dimension Box Height	P2 Panels With Standard Line Lugs. Unit Space (starting with 9" and adding 6" increments) "A" Dimension													
	Main Lugs				Main Breakers									
	125A	250A	400A	600A	125A Horiz. BL, BQD, NGB, ED	125A Vert. CED	125A Vert. ED	225A Horiz. QJ	250A Horiz. FD	250A Vert. CFD	400A JD	400A CJD	600A LD	600A CLD
26	9	—	—	—	9	—	—	—	—	—	—	—	—	—
32	15	9	—	—	15	9	9	9	—	—	—	—	—	—
38	21	15	9	9	21	15	15	15	9	—	—	—	—	—
44	27	21	15	15	27	21	21	21	15	—	—	—	—	—
50	33	27	21	21	33	27	27	27	21	9	9	—	—	—
56	39	33	27	27	39	33	33	33	27	15	15	—	9	—
62	45	39	33	33	45	39	39	39	33	21	21	9	15	9
68	51	45	39	39	51	45	45	45	39	27	27	15	21	15
74	57	51	45	45	57	51	51	51	45	33	33	21	27	21

Table P2-3 – Main Breaker (Fig. P2-1)

Panel Amps	Breaker Frames	C	D
100	BL	5.75	8.00
	BQD	5.125	8.00
125	NGB	4.63	8.00
	ED	4.00	8.00
225	QJ	5.00	7.00
250	FD	5.00	7.00
400	JD	14.00	25.00
600	LD	15.50	23.00

Table P2-4 – Main Lug Connectors (Fig. P2-2)

Panel Amps	Standard Connectors	C	D
125	(1) #14 - 2/0	6.62	8.19
250	(1) #6 AWG - 350 Kcmil	12.34	11.22
400	(1) #4 AWG - 600 Kcmil or (2) #6 - 250 Kcmil	14.00	13.09
600	(2) #4 AWG - 500 Kcmil	14.00	11.00

Fig. P2-1

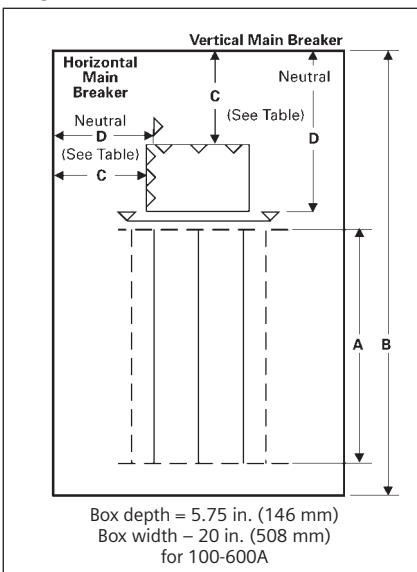


Fig. P2-2

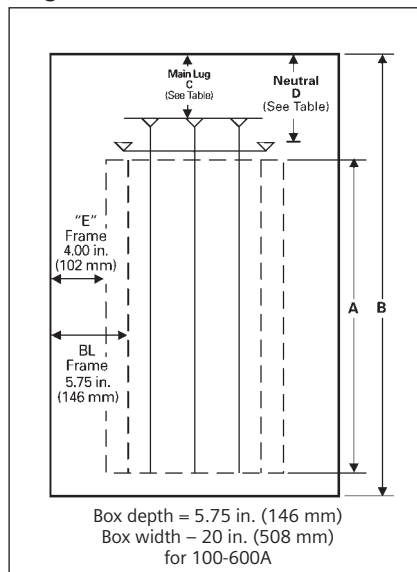
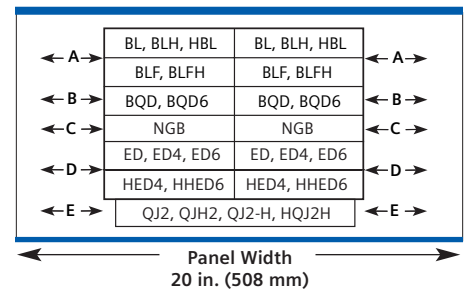


Table P2-5 – Branch Breaker Side Gutters Inches (mm) (Fig. P2-3)

Reference Letter	Panel Width 20" (508)
A	5.750 (146)
B	5.125 (130)
C	4.600 (117)
D	4.000 (102)
E ①	5.000 (127)

① Single branch mounting construction.

Fig. P2-3



Application

Type P2 Panelboards

Table P2-6 – Main Breaker Selection ①

Ampere Rating	Breaker Type	Maximum Interrupting Rating (kA)			Available Trip Values
		240V	480V	600V	
100	BL (STD)	10	—	—	15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100
	HBL	65	14	—	
	BQD ②	65	18	—	
	ED4	65	25	—	
	ED6	100	42	18	
	HED4	100	65	—	
	HHED6	100	65	25	
	CED6	200	200	100	
125	ED4 (STD)	65	18	—	125
	ED6	65	25	18	
	NGB ②	100	25	—	
	HED4	100	42	—	
	HHED6	100	65	25	
	CED6	200	200	100	
225	QJ2 (STD)	10	—	—	60, 70, 80, 90, 100, 110, 125, 150, 175, 200, 225
	QJH2	22	—	—	
	QJ2H	42	—	—	
	FD6, FXD6	65	35	18	70, 80, 90, 100, 110, 125, 150, 175, 200, 225
	HFD6, HFXD6	100	65	25	
	CFD6	200	150	100	
250	FD6, FXD6 (STD)	65	35	18	250
	HFD6, HFXD6	100	65	25	
	CFD6	200	150	100	
400	JXD6 (STD), JD6	65	35	25	200, 225, 250, 300, 350, 400
	HJD6, HJXD6	100	65	35	200, 225, 250, 300, 350, 400
	SJD6	65	35	25	200, 300, 400
	CJD6, SCJD6	200	200	100	200, 300, 400
600	LXD6 (STD)	65	35	25	450, 500, 600
	LD6	65	35	25	250, 300, 350, 400, 450, 500, 600
	HLD6, HLXD6	100	65	35	250, 300, 350, 400, 450, 500, 600
	SLD6,	65	35	25	300, 400, 500, 600
	SHLD6	100	65	35	300, 400, 500, 600
	CLD6, SCLD6	200	150	100	300, 400, 500, 600

① Interchangeable trip main breakers are mounted at top of panel only.

② For use on 480Y/277 volt systems not suitable for 480 Delta 3 phase, 3 wire systems.

Table P2-7 – Subfeed Breakers

Breaker Type	Mounting Position When Used As Subfeed Breaker	Maximum Interrupting Rating (kA) Symmetrical	240V AC	480V AC	600V DC
	Vertical	Ampere Ratings For Load			
FD6 ①, FXD6	Twin	70 - 250	65	35	18
HFD6 ①, HFXD6	Twin	70 - 250	100	65	25
JD6 ②, JXD6	Single	200 - 400	65	35	25
HJD6 ②, HJXD6	Single	200 - 400	100	65	35

① Twin mounted subfeed breakers are mounted at bottom of panelboard only and adds 24" to the panel height.

② Subfeed breaker is mounted at bottom of panelboard only. 400 amp subfeed breaker adds 30" to the panel height.

Application

Type P2 Panelboards

Table P2-8 – Branch Circuit Breakers

Max. Amp Rating	Bolt-On Breaker Type	No. of Poles	Amp Rating	Maximum Interrupting Rating (kA)						
				Volts – AC						DC
				120	120/240	240	277	480	600	250
100	BL	1	15 - 70	10	—	—	—	—	—	—
		2	15 - 100	—	10	—	—	—	—	—
		3	15 - 100	—	—	10	—	—	—	—
	BL, HID	1	15 - 30	10	—	—	—	—	—	—
		2	15 - 30	—	10	—	—	—	—	—
	BLR	2	15 - 100	—	—	10	—	—	—	—
		1	15 - 30	10	—	—	—	—	—	—
	BLE	2	15 - 60	—	10	—	—	—	—	—
		1	15 - 30	22	—	—	—	—	—	—
	BLEH	2	15 - 60	—	22	—	—	—	—	—
		1	15 - 30	10	—	—	—	—	—	—
	BLF	2	15 - 60	—	10	—	—	—	—	—
		1	15 - 30	22	—	—	—	—	—	—
	BLHF	3	15 - 60	—	22	—	—	—	—	—
		2	15 - 30	10	—	—	—	—	—	—
	BGL ①	3	15 - 30	—	10	—	—	—	—	—
		1	15, 20	10	—	—	—	—	—	—
	BAFH	1	15, 20	22	—	—	—	—	—	—
		1	15 - 70	—	22	—	—	—	—	—
	BLH	2	15 - 100	—	22	—	—	—	—	—
3		15 - 100	—	—	22	—	—	—	—	
1		15 - 70	—	65	—	—	—	—	—	
HBL	2	15 - 100	—	65	—	—	—	—	—	
	3	15 - 100	—	—	65	—	—	—	—	
	1	15 - 100	—	65	—	14	—	—	14	
BQD	2	15 - 100	—	65	—	—	14	—	14	
	3	15 - 100	—	—	65	—	14	—	14	
	1	15 - 125	100	—	—	25	—	—	14	
125	NGB	2/3	—	100	100	100	—	25 ②	—	—
		1	15 - 100	10	—	—	—	—	—	—
	ED2	2/3	—	10	—	—	—	—	—	5 (2-P)
		1	15 - 125	65	—	—	22	—	—	—
	ED4	2	—	—	—	65	—	18	—	30
		3	—	—	—	65	—	18	—	—
	ED6	2	15 - 125	—	—	65	—	25	18	30
		3	—	—	—	65	—	25	18	—
	HED4, HHED6	1	15 - 125	100	—	—	—	65	—	—
		2	—	—	—	—	—	—	—	—
3		—	—	—	100	42	42	—	30	
QJ2	2/3	60 - 225	—	—	10	—	—	—	—	
QJH2	2/3	60 - 225	—	—	22	—	—	—	—	
QJ2-H	2/3	60 - 225	—	—	42	—	—	—	—	
HQJ2H	2/3	100 - 225	—	—	100	—	—	—	—	

① Two pole breaker is one phase and neutral. Three pole is two phase and neutral.

② For use on 480Y/277 volt systems not suitable for 480 delta 3 phase, 3 wire systems.
NOTE: QJ Breakers are single mounted in unit space and take 6" of unit space.

Limited to (4) per panel max. BL, HBL, BLH and BQD breakers are mounted in common mountings in 3" or (6) pole increments. ED2, ED4, ED6, HED4 and HHED6 breakers are mounted in common mountings in 3" or (6) pole increments.

Branch Device Limitations

For panels applied on systems requiring neutral connections, some limitations apply. By application rule (NEC 480.14) lighting and appliance panels are limited to 42 circuits installed. Each overcurrent device pole counts as a circuit. Additional limitations for these panels are based on available neutral connections.

Table P2-9 – Branch Neutral Connections

Wire Range	Max. Number of Connections	Max. Amps ①
#14-#6	26	65
#14-1/0	28 (14 w/4th QJ)	125
#6 - 350 Kcmil	4	250
(1) #4-600 Kcmil or (2) #6-250 Kcmil	1	400

① Based on 75 degree copper.

Typical Catalog Numbers

Type P2 Panelboards

Table P2-10 – Main Lugs Only

Maximum Panel Amp Rating	Maximum 1-Pole Circuits	Box Height inches (mm)	Catalog Number		
			3Ø4W 208Y/120V	1Ø3W 120/240V	3Ø4W 480Y/27V
125	18	26 (660)	P2C18ML125ATS	P2A18ML125ATS	P2E18ML125ATS
	30	32 (813)	P2C30ML125ATS	P2A30ML125ATS	P2E30ML125ATS
	42	38 (965)	P2C42ML125ATS	P2A42ML125ATS	P2E42ML125ATS
250	18	32 (813)	P2C18ML250ATS	P2A18ML250ATS	P2E18ML250ATS
	30	38 (965)	P2C30ML250ATS	P2A30ML250ATS	P2E30ML250ATS
	42	44 (1118)	P2C42ML250ATS	P2A42ML250ATS	P2E42ML250ATS
400	18	38 (965)	P2C18ML400ATS	P2A18ML400ATS	P2E18ML400ATS
	30	44 (1118)	P2C30ML400ATS	P2A30ML400ATS	P2E30ML400ATS
	42	50 (1270)	P2C42ML400ATS	P2A42ML400ATS	P2E42ML400ATS
600	18	38 (965)	P2C18ML600ATS	P2A18ML600ATS	P2E18ML600ATS
	30	44 (1118)	P2C30ML600ATS	P2A30ML600ATS	P2E30ML600ATS
	42	50 (1270)	P2C42ML600ATS	P2A42ML600ATS	P2E42ML600ATS

Table P2-11 – Main Circuit Breaker

100	18	26 (660)	P2C18BL100ATS	P2A18BL100ATS	P2E18BD100ATS
	30	32 (813)	P2C30BL100ATS	P2A30BL100ATS	P2E30BD100ATS
	42	38 (965)	P2C42BL100ATS	P2A42BL100ATS	P2E42BD100ATS
125	18	26 (660)	P2C18NB125ATS	P2A18NB125ATS	P2E18NB125ATS
	30	32 (813)	P2C30NB125ATS	P2A30NB125ATS	P2E30NB125ATS
	42	38 (965)	P2C42NB125ATS	P2A42NB125ATS	P2E42NB125ATS
225	18	32 (813)	P2C18QJ225ATS	P2A18QJ225ATS	P2E18FX225ATS
	30	38 (965)	P2C30QJ225ATS	P2A30QJ225ATS	P2E30FX225ATS
	42	44 (1118)	P2C42QJ225ATS	P2A42QJ225ATS	P2E42FX225ATS
250	18	38 (965)	P2C18FX250ATS	P2A18FX250ATS	P2E18FX250ATS
	30	44 (1118)	P2C30FX250ATS	P2A30FX250ATS	P2E30FX250ATS
	42	50 (1270)	P2C42FX250ATS	P2A42FX250ATS	P2E42FX250ATS
400	18	50 (1270)	P2C18JX400ATS	P2A18JX400ATS	P2E18JX400ATS
	30	56 (1422)	P2C30JX400ATS	P2A30JX400ATS	P2E30JX400ATS
	42	62 (1575)	P2C42JX400ATS	P2A42JX400ATS	P2E42JX400ATS
600	18	56 (1422)	P2C18LX600ATS	P2A18LX600ATS	P2E18LX600ATS
	30	62 (1575)	P2C30LX600ATS	P2A30LX600ATS	P2E30LX600ATS
	42	68 (1727)	P2C42LX600ATS	P2A42LX600ATS	P2E42LX600ATS

Standard Modifications

Type P2 Panelboards

P2 Panel Options

Enclosures

- Extra gutter to sides or ends of the can
- 24" wide boxes
- Hinged trims
- Door-in-door trims
- Screw to the box trims
- Trim mounted devices (Devices mounted and wired to the trim should also have hinged trim specified)
 - Pilot lights
 - Toggle switches
 - Push buttons
- Painted boxes
- Custom colors
- Increase gauge trims and boxes
- Stainless steel trims and boxes, Type 1

Panel Modifications

- Main Bus
Standard main bus is temperature rated tin-plated aluminum. Bus options are 750 A/Si aluminum, tin-plated temperature rated copper tin-plated standard – silver optional. 1000 A/Si copper tin-plated standard – silver optional. Includes copper neutral cross bar. For copper neutral branch lugs, see miscellaneous.
- Split bus adds 6" to unit space
- Compression lug for MLO
- Compression lugs on Main breaker (may require extra width or length on enclosure).
- Contactor mains or submain
 - Asco 920 through 225 amps. Adds 12" unit space as main, 15" unit space as submain.
 - Asco 911 through 150 amps. Adds 21" unit space.
 - Siemens LEN through 30 amps. Adds 12" unit space. Makes box 10" deep.
- Control power transformers (contact engineering for extra gutter requirements)
- Branch and main breaker accessories
 - Handle blocks
 - Handle locks
 - Aux. Contacts ①
 - UVR ①
- Feed-thru lugs
- 200% neutral
- Copper lugs, mechanical
- Bus mounted TVSS
- Service entrance labeled
Type P2 Panelboards are factory labeled suitable for use as service entrance equipment when NEC requirements are met. A panelboard cannot have more than six main disconnects, unless it is a lighting and appliance branch panelboard. Lighting and appliance branch panelboards are limited to two main disconnects.

- Aluminum trims and boxes, Type 1
- NEMA 3R enclosures
- NEMA 3R/12 enclosures
- NEMA 4 enclosures
- NEMA 4X enclosures
- Special keyed locks
 - TEY
 - TEU1
 - Cat 60
 - LL803
 - LL806
 - Yale
- Gasketing trim to box
- Meters (Contact application engineering for space requirements)
- Panel Skirts

- Grounding of panelboards
Ground Bars except for brazed to box are shipped with the panel interior factory mounted.
 - Non-Insulated Equipment Ground Bar – Standard
 - Copper Non-Insulated Ground Bar
 - Al Insulated Equipment Ground Bar
 - Cu Insulated Equipment Ground Bar
 - Ground Bar Brazed to Box (recommended for painted boxes)
- Shunt Trip on Main or Branch
BL, BLH, HBL, NGB, ED2, ED4, HED4, HED6, HHED6 uses 1" unit space for shunt trip. All may be used on mains or subfeeds.

QJ2, QJ2-H, QJH2, HQJ2H, ED2, ED4, ED6, HED4, HED6, HHED6, FXD6, HFD6, JXD6, JD6, HJD6, HJXD6

- Remote control switches – 480V AC max. mounted in a 23" enclosure to be cable connected to the panel.
- Time Clocks – mounted in a 23" enclosure to be cable connected to the panel. Sangamo, Tork or Paragon time clock can be supplied and mounted in panelboard cabinet.

Description

Time Clock (1-or 2-Pole, Single or Double Throw Contacts; 3-Pole Single Throw)

277V Maximum with Plain Dial

Options –

Astronomical Dial

An Omitting Device

Reserve Power or Carryover

Space and Mounting Provisions Only

① Accessories on 1" pole breakers (BL, BQD, ED) will take unit space

Standard Modifications

Type P2 Panelboards

Table P2-12 – Box Size Additions (In.) For Optional Features

Options	Main Lugs				Main Breakers											
	125A	250A	400A	600A	125A Horiz. BL, BQD, NGB, ED	125A Horiz. CED	125A Vert. ED	225A Horiz. QJ	225A Vert. QJ	225A Horiz. FD	250A Vert. FD	250A Vert. CFD	400A JD	400A CJD	600A LD	600A CLD
*Min. Box Size	26"	32"	38"	38"	26"	32"	32"	32"	38"	38"	44"	50"	50"	62"	56"	62"
200% Neutral (lug type)	0	0	6 (all)	6 (all)	0	0	0	N/A	0	N/A	0	0	0	0	0	0
Std. Lugs (100% Neut. PNL)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CU Lugs (100% Neut. PNL)	6	6	6	0	N/A	N/A	0	N/A	0	N/A	0	0	0	0	0	0
Comp Lugs (100% Neut. PNL)	6	6	6	6	N/A	N/A	0	N/A	0	N/A	0	0	0	0	0	0
Feed-thru Standard Lugs	6	6	12	12	6	6	6	N/A	6	N/A	6	6	12	12	12	12
Feed-thru Cu Lugs	6	6	12	N/A	N/A	N/A	6	N/A	6	N/A	6	6	12	12	N/A	N/A
Feed-thru Comp Lugs	6	12	12	N/A	N/A	N/A	6	N/A	6	N/A	12	12	12	12	N/A	N/A
Subfeed Standard Lugs	0	6	6	N/A	—	—	—	—	—	—	—	—	N/A	—	—	—
Split Bus	6	6	6	6	6	6	6	N/A	6	N/A	6	6	6	6	6	6
(1) FD Subfeed (Horizontal Mtg.)	N/A	12	12	12	N/A	N/A	N/A	N/A	N/A	12	12	12	12	12	12	12
(2) FD Subfeed (Vertical Mtg.)	N/A	24	24	24	N/A	N/A	N/A	N/A	N/A	24	24	24	24	N/A	N/A	N/A
TVSS	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12

Split bus is paired with feed-thru lugs by default. Feed-thru lugs are to feed the section after the split. NOTE: N/A = OPTION NOT AVAILABLE

*Min. Box size, corresponding to 9" of Unit Space.

Connector Modifications

Type P2 Panelboards

Compression Lugs

Table P2-13 – Lugs

Style	Amp Rating	Breaker Type	Compression Connectors	Box Height Addition
MLO	125	N/A	(1)#6 - 350 Kcmil Al/Cu	6
	250	N/A	(1)#6 - 350 Kcmil Al/Cu	6
	400	N/A	(1) 400 - 600 Kcmil Cu or (2)#6 - 350 Kcmil Al/Cu	6
	600	N/A	(2)#6 - 350 Kcmil Cu or Cu/Al or 400 - 600 Kcmil Al/Cu	6
Main Breaker	100	ED4, ED6, HED4 HHED6, CED6	(1)#14-2/0 AWG Cu or Al	Box must go to 24" wide on CED6 breaker only Add 6" to box height for NØ
	225	QJ2, QJH2, QJ2H FXD6, HFD6, CFD6	(1)#6 AWG - 350 Kcmil Cu or Al (1)#6 AWG - 350 Kcmil Cu or Al	Box must go to 24" wide Box must go to 24" wide for all breakers Requires an additional 6.0" box height
	400	JD6, JXD6, HJD6, CJD6, SJD6, SHJD6, SCJD6	(2)#1/0 AWG - 500 Kcmil Cu or Al	9
	600	LD6, LXD6, HLD6, CJD6, SLD6, SHLD6, SCLD6	(2)#2/0 AWG - 500 Kcmil Cu or Al	6

Table P2-14 – Alternate Lugs

Style	Amp Rating	Breaker Type	Compression Connectors	Box Height Addition
MLO	400	N/A	(1) 250 - 750 Kcmil or (2)#3/0 AWG - 250 Kcmil Cu or Al	6
Main Breaker	400	JD6, JXD6, HJD6, CJD6, SJD6, SHJD6, SCJD6	(1)#4/0 AWG - 750 Kcmil Cu or Al	6

Connector Modifications

Type P2 Panelboards

Enclosure Modifications

NEMA-4 For Type P2
Water Tight, Dust Tight, Steel Enclosure
(consult plant for actual enclosure size)

Table P2-15

Box Height Inches	Enclosure Size		
	H	W	D
26	30	24	8
32	36	24	8
38	42	30	8
44	48	36	8
50	60	36	8
56	60	36	8
62	66	36	8
68	72	36	8
74	78	36	8

NEMA-4X For Type P2
Water Tight, Dust Tight and Corrosion Resistant
(consult plant for actual enclosure size)

Table P2-16

Box Height Inches	Enclosure - Stainless Steel and Steel with Epoxy Coating			Enclosure - Fiberglass Size (inches)		
	H	W	D	H	D	W
26	30	24	8	30	24	8
32	36	24	8	36	24	8
38	48	36	8	48	36	12
44	48	36	8	48	36	12
50	60	36	12	60	36	12
56	60	36	12	60	36	12
62	66	36	8	72	36	8
68	72	36	8	72	36	8
74	78	36	8	84	36	8

Remote Switch Modifications

Table P2-17 – Control Power Transformer

Size	VA
0,1	50
2	75
3	150
4	250

Table P2-19 – Remote Control Switch Modification

Description
Auxiliary Contacts (Mounted Not Wired) Ea. 2-Wire Control

Table P2-18 – Application For Remote Switch

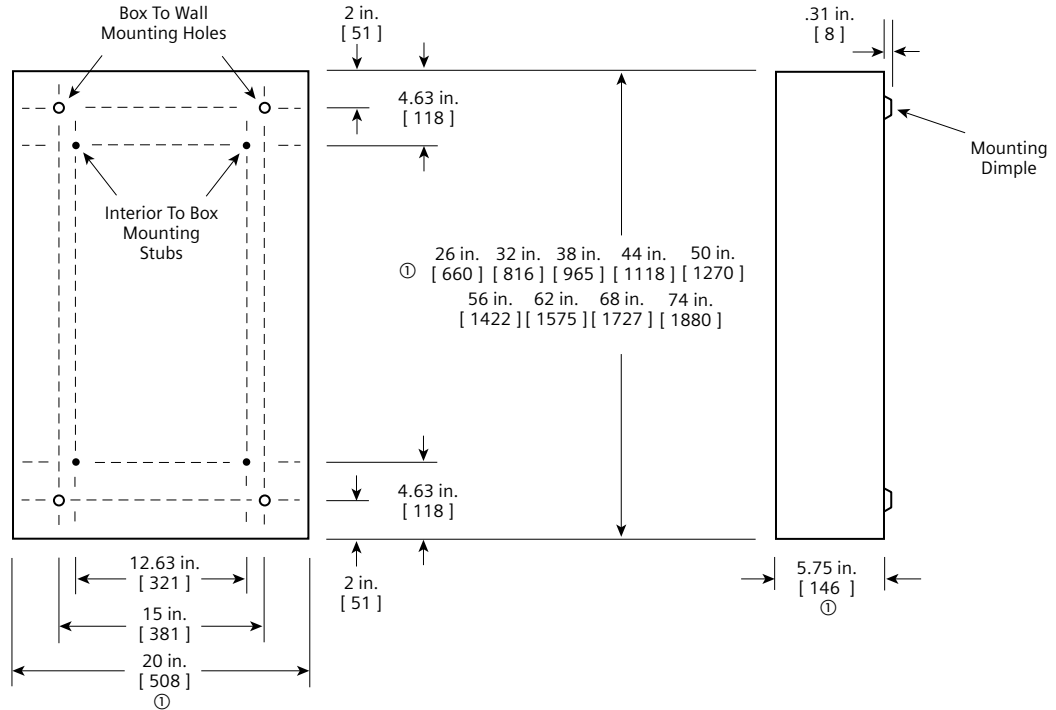
Switch Type	Modification
920	Adds 12" to unit space
911	≤ 225A Adds 21" unit space >225 ≤400 Amps Add 10" to width and 8" DP minimum and 24" to height
LEN	30A Adds 15" to unit space
	>30A 100 Adds 12" to unit space
	7.7 Dp. Box min. 100 A ≤ 200 Adds 12" to unit space and 10" Dp. min.

Dimensions

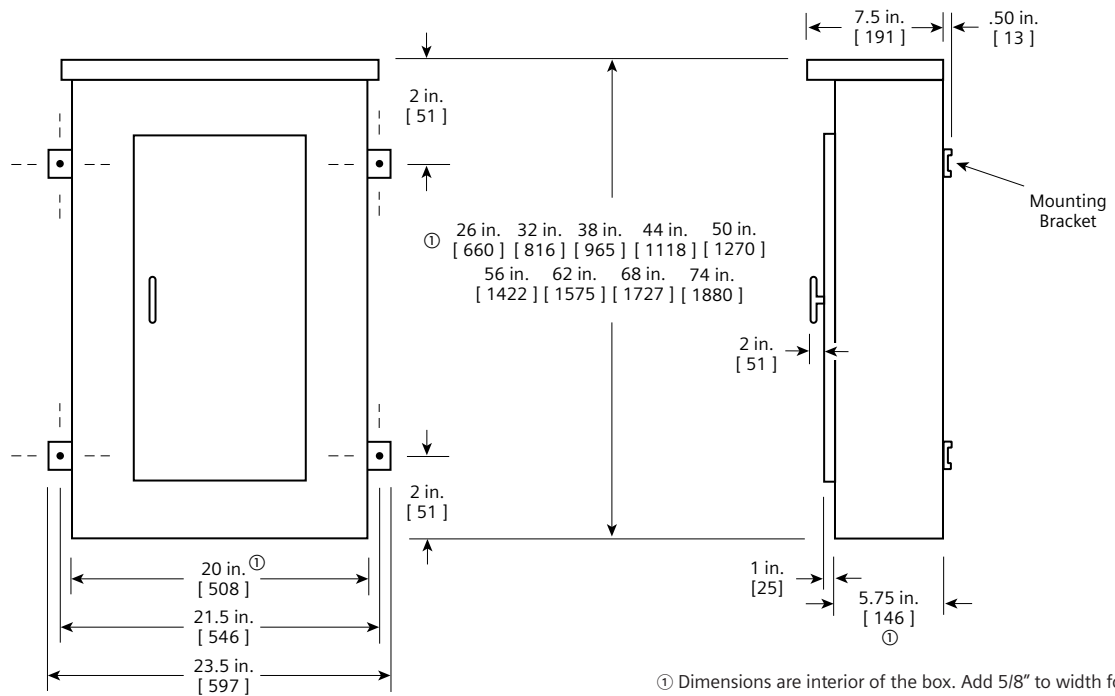
Type P2 Panelboards

Type 1 Box

Box is symmetrical



Type 3R and 3R/12 Box



① Dimensions are interior of the box. Add 5/8" to width for absolute dimension. Add 1/8" to height for absolute dimension.

Dimensions shown in inches and millimeters [].

Kits and Accessories

Type P2 Panelboards

Table P2-20 – Standard Enclosures

Box Height Inches	Catalog Number				
	Type 1 Standard Trim			Type 3R	Type 3R/12
	Box	Surface	Flush		
26	B26	S26B	F26B	NR26	WP26
32	B32	S32B	F32B	NR32	WP32
38	B38	S38B	F38B	NR38	WP38
44	B44	S44B	F44B	NR44	WP44
50	B50	S50B	F50B	NR50	WP50
56	B56	S56B	F56B	NR56	WP56
62	B62	S62B	F62B	NR62	WP62
68	B68	S68B	F68B	NR68	WP68
74	B74	S74B	F74B	NR74	WP74

Options For Type 1 Trims

Items must be ordered as manual line item on Spartanburg

Hinged trim – Replace “B” suffix with “H”

Door-in-door – Replace “B” suffix with “D”

Metal card holder – Replace “B” suffix with “M” on standard trim, add “M” suffix on optional trims

Option For 24” Wide Enclosures with Equal Gutter on Both Sides

24” wide with equal gutter on both sides - Add “24” as prefix

Table P2-21 – Breaker Kits and Accessories

Kit No.	Description	Contents
BBKB32	BL/BQD 6-pole 3” branch breaker kit	Kit contains top barrier, (3) A/C connectors, (1) B connector, hardware
BBKNB32	NGB 6-pole 3” branch breaker kit	Kit contains breaker support, interphase barriers, (3) A/C connectors, (1) B phase connector, hardware
BBKED32	ED 6-pole 3” branch breaker kit	Kit contains breaker support, inter-phase barriers, (3) A/C connectors, (1) B connector, hardware
BBKQ1	QJ branch breaker kit for 2 and 3-pole single mount	Kit to contain all connectors and cover plates necessary to mount both 2 and 3-pole breakers
DFK1	BL, BQD, ED deadfront kit for 1” pole breakers	Center strips 3”, 6”, 9”, 15”, 21” plus mounting hardware
DFFP3	Deadfront filler 3”	3” empty space filler and hardware
DFFP6	Deadfront filler 6”	6” empty space filler and hardware
BNK2	Branch neutral (P2)	Three tier lug with mounting hardware to increase neutral capacity
P2BK1	P2 250A max. Bonding Kit	Bonding strap and hardware
P2BK2	P2 400A max. Bonding Kit	Bonding strap and hardware
P2BK3	P2 600A max. Bonding Kit	Bonding strap and hardware



P3

PANELBOARDS

Description	Page		
General Information	3-2	Typical Catalog Numbers	3-6 – 3-7
Selection and Application	3-2	Main Lugs	3-6
Application	3-3 – 3-5	Main Circuit Breakers	3-7
Panel Unit Space to Box Height Requirements	3-3	Standard Modifications	3-8 – 3-9
Main Breaker and Main Lug Wire Bending	3-3	Option Combinations	3-9
Branch Breaker Side Gutters	3-3	Connector Modifications	3-10
Main Lug and Main Breaker Unit Space Dimensions	3-3	Compression Lugs	3-10
Main Breaker Selection	3-4	Enclosure Modifications	3-10
Subfeed Breakers	3-4	Remote Switch Modifications	3-10
Neutral Connectors	3-4	Dimensions	3-11
Branch Circuit Breakers	3-5	Kits and Accessories	3-12

Type P3 Panelboards

Another innovation from Siemens is the P3 panel. It is a smaller, footprint distribution panel to fit a large number of applications that require more (or larger) branch devices than the lighting panel class offer. This panel offers a wide array of factory-assembled options, and has the ability to mix breaker frames in unit space up to 250 amps. Bussing options for the P3 vary from the standard temperature aluminum to temperature rated copper, 750 A/Si aluminum, and 1000A/Si copper designs. All bussing in the P3 panel is tin-plated as a standard. Silver-plated copper is offered as an option on a copper bus. Integrated time clocks, bus mounted contactors, as mains or sub mains, split bus and subfeed lugs (up to 400 amp) are just a few of the options of this unique panel.

The P3 panel configurations, defined by the unit space, allow for a given amperage, main device, and box height. The P3 panel starts with a 56" high box. Breaker unit space can be mixed and matched to meet customer requirements. All 1" pole breakers (BL, BQD, NGB, NEB, HEB and ED frames) are mounted in 3" or 6" pole increments. Breakers frames, above 125 amps, are mounted in 6" single or twin breaker mountings. As an example panel, FD 250 amp and JD 400 amp breakers are mounted as subfeed breakers outside of unit space.

Like other distribution panels, the P3 panel can have blank space added into the panel to allow for future expansions or modifications. Any expansions or modifications must be in 3" increments. BL, BQD, NGB, NEB, HEB, and ED frame breakers have 3" or 6-pole kits and can be mixed in unit space by these increments. Breakers of the same frame can cross from one mounting to another if contiguous. QJ frame breakers are mounted in 6" increments for two and three pole single and twin mounted units. Changes in the unit space length for BL, BQD, NGB, NEB, HEB, and ED frame breakers require an additional deadfront center strip kit. Check with sales or the factory for additional unit space kits.

Selection and Application

- 1) To specify a particular panelboard, first determine voltage, system, amperage and type main, amperage and type of branch devices, and modifications, if any. (Step 1)
- 2) List branch devices and modifications requiring space additions. List unit space requirements of each.

Note: Some units are twin mounted meaning two breakers occupy the same unit space.

Step #1

Amperage	400
Voltage	208Y/120
System	3 Phase, 4 wire
Main	Main Lug
Bus	Standard Aluminum
Branches	6-20A13, 2-225/3,
Modifications	None
Feed	Top
Mounting	Surface

Step #2

6-120/3 BL	3x3" = 6 poles = 9"
2-225/3 QJ2	6" = $\frac{6"}{15"}$
Enclosure is 56" from Table P3-2 (24" wide, 56" high, 67.75" deep).	

Step #3

Panel - **P3C56ML800ATS**
 Box - **24WD56**
 Trim - **P3S56**

Main Lug / Main Breaker

Enclosure – Standard Type 1 enclosure is 24" wide x 7.75" deep. X Box Height is determined by main device and unit space. See charts for box height.

Voltage – 600 Vac Max.
 250 Vdc Max.

Amperage – 800 amp Max.

Short Circuit Rating – 200 KAIC Max. symmetrical or equal to the lowest rated device installed unless a series rating is indicated. Panels with subfeed or feed-thru lugs without a main device, circuit breaker or fusible unit, are limited to a three-cycle rating. The three-cycle rating for the P3 panel is limited to 22 KAIC. Note that the main device may be mounted remote from the panel.

Bussing – The P3 panel has more options to meet market requirements. The standard bussing is temperature rated aluminum. The rating is per the requirements of UL 67 – the standard for panelboards. All aluminum bussing is tin-plated. Optional bussing for the P3 panel is: 750 A/si aluminum, temperature rated copper, and 1000 A/si copper. The copper bus option for this panel is tin-plated.

Weight – Approximate

Total panelboard weight when filled with a normal quantity of breakers and accessories is about 5 lbs. (1 kg) per inch (54g per mm) of box height.

Table P3-1 – Gauge Steel of Boxes Fronts, Surface & Flush

Dimensions in inches (mm)		Gauge Steel	
Width	Height	Box	Front
24"	56 - 80	#16	#14
(610)	(1422, 2032)		

Select appropriate enclosure height from selection chart on page 3-3, based on unit space requirements. (Step 2)

- 3) Select panelboard catalog number from appropriate table based upon voltage, system, amperage and unit space requirements. (Step 3)

Application

Type P3 Panelboards

Table P3-2 – Panel Unit Space To Box Height Requirements

"B" Dimension Box Height	P3 Panels With Standard Line Lugs. Unit Space (starting with 9" and adding 6" increments) "A" Dimension										
	Main Lugs				Main Breakers						
	250A	400A	600A	800A	250A Horiz. FD	250A Vert. FD	250A CFD	400A JD	400A CJD	600A LD	600A CLD
56	27	21	21	21	21	15	9	9	—	9	—
62	33	27	27	27	27	21	15	15	9	15	9
68	39	33	33	33	33	27	21	21	15	21	15
74	45	39	39	39	39	33	27	27	21	27	21
80	51	45	45	45	45	39	33	33	27	33	27

Table P3-3 – Main Breaker Wire Bending (Fig. P3-1)

Breaker Frame	C	E	F
FD Horiz.	7.25	—	20.13
FD Vert.	—	12.25	25.38
CFD	—	13.63	31.38
JD	—	15.63	29.38
CJD	—	14.75	35.38
LD	—	14.75	29.38
CLD	—	14.00	35.38

Table P3-4 – Main Lug Wire Bending (Fig. P3-2)

Panel Amps	Standard Connectors	C	D
250	(1) #6 AWG - 350 Kcmil	10.75 ^①	13.50
400	(2) #3/0 AWG - 250 Kcmil or (1) 600 Kcmil	16.00	17.88
600	(2) #3/0 AWG - 500 Kcmil	16.00	17.88
800	(2) 600 Kcmil	16.00	17.88

① This lug is removable.

Fig. P3-1

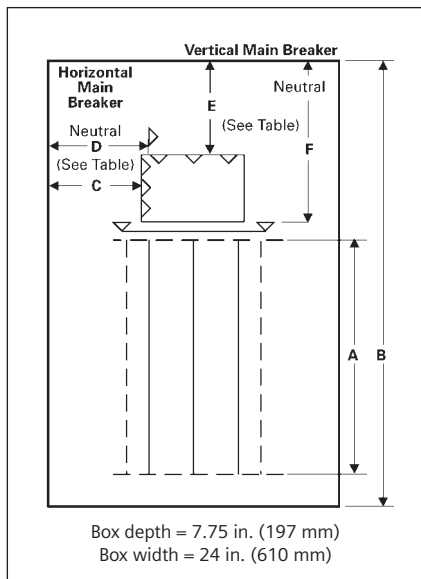


Table P3-5 – Branch Breaker Side Gutters Inches (mm) (Fig. P3-3)

Reference Letter	Panel Width 24" (609)
A	7.750 (197)
B	7.125 (181)
C	6.620 (168)
D	6.440 (164)
E	6.000 (152)
F	7.000 (178)

Fig. P3-3

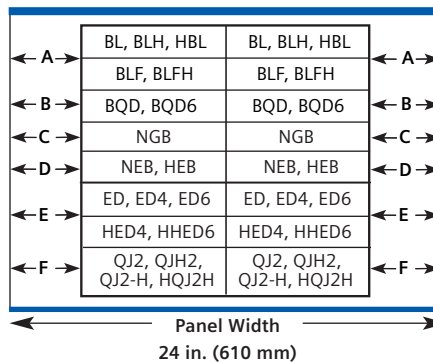
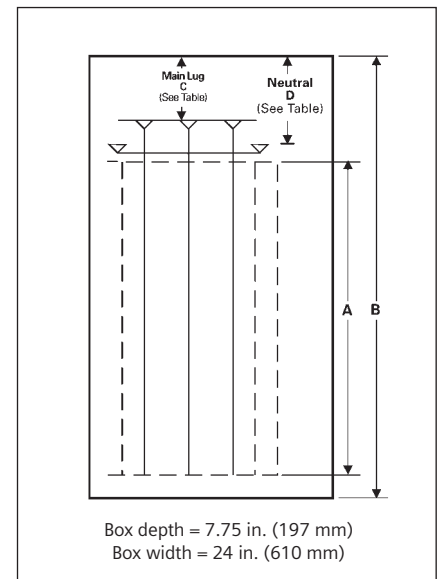


Fig. P3-2



Application

Type P3 Panelboards

Table P3-6 – Main Breaker Selection ①

Ampere Rating	Breaker Type	Maximum Interrupting Rating (kA)			Available Trip Values
		240V	480V	600V	
250	FD6, FXD6 (STD)	65	35	18	70, 80, 90, 100, 110, 125, 150, 200, 225, 250
	HFD6, HFXD6	100	65	25	
	CFD6	200	150	100	
400	JXD6 (STD), JD6	65	35	25	200, 225, 250, 300, 350, 400
	HJD6, HJXD6	100	65	35	200, 225, 250, 300, 350, 400
	SJD6	65	35	25	200, 300, 400
	CJD6, SCJD6	200	200	100	200, 300, 400
600	LXD6 (STD)	65	35	25	450, 500, 600
	LD6	65	35	25	250, 300, 350, 400, 450, 500, 600
	HLD6, HLXD6	100	65	35	250, 300, 350, 400, 450, 500, 600
	SLD6,	65	35	25	300, 400, 500, 600
	SHLD6	100	65	35	300, 400, 500, 600
	CLD6, SCLD6	200	150	100	300, 400, 500, 600

① Interchangeable trip main breakers are mounted at top of panel only.

Table P3-7 – Subfeed Breakers

Breaker Type	Mounting Position When Used As Subfeed Breaker	Maximum Interrupting Rating (kA) Symmetrical	240V AC	480V AC	600V DC
	Vertical	Ampere Ratings For Load			
FD6 ①, FXD6	Twin	70 - 250	65	35	18
HFD6 ①, HFXD6	Twin	70 - 250	100	65	25
JD6 ②, JXD6	Single	200 - 400	65	35	25
HJD6 ②, HJXD6	Single	200 - 400	100	65	35

① Twin mounted subfeed breakers are mounted at bottom of panelboard only and add 24" to panel height.

② Subfeed breaker is mounted at bottom of panelboard only and adds 30" to panel height.

Branch Device Limitations

For panels applied on systems requiring neutral connections, some limitations apply. By application rule (NEC 480.14), lighting and appliance panels are limited to 42 circuit installed. Each overcurrent device pole counts as a circuit. Additional limitations for these panels are based on available neutral connections.

Table P3-8 – Neutral Connectors

Wire Range	Max. Number of Connections	Max. Amps ①
#14-#1/0	44	125
#14-3/0	12	200
#4 - 350 Kcmil	6	250
(1)#4 - 600 Kcmil or (2)#6 - 250 Kcmil	1	400

① Based on 75 degree copper.

Application

Type P3 Panelboards

Table P3-9 – Branch Circuit Breakers

Maximum Ampere Rating	Bolt-on Breaker Type	Number of Poles	Amp Rating	Maximum Interrupting Rating (kA)						
				Volts – AC						DC
				120	120/240	240	277	480	600	250
100	BL ①	1	15 - 70	10	—	—	—	—	—	—
		2	15 - 100	—	10	—	—	—	—	—
		3	15 - 100	—	—	10	—	—	—	—
	BL HID	1	15 - 30	10	—	—	—	—	—	—
		2	15 - 30	—	10	—	—	—	—	—
	BLR	2	15 - 100	—	—	10	—	—	—	—
	BLE	1	15 - 30	10	—	—	—	—	—	—
		2	15 - 60	—	10	—	—	—	—	—
	BLEH	1	15 - 30	22	—	—	—	—	—	—
		2	15 - 60	—	22	—	—	—	—	—
	BLF	1	15 - 30	10	—	—	—	—	—	—
		2	15 - 60	—	10	—	—	—	—	—
	BLHF	1	15 - 30	22	—	—	—	—	—	—
		2	15 - 60	—	22	—	—	—	—	—
		3	15 - 60	—	—	22	—	—	—	—
	BGL	2	15 - 30	10	—	—	—	—	—	—
3		15 - 30	—	10	—	—	—	—	—	
BAF	1	15, 20	10	—	—	—	—	—	—	
BAFH	1	15, 20	22	—	—	—	—	—	—	
BLH ①	1	15 - 70	—	22	—	—	—	—	—	
	2	15 - 100	—	22	—	—	—	—	—	
	3	15 - 100	—	—	22	—	—	—	—	
HBL ①	1	15 - 70	—	65	—	—	—	—	—	
	2	15 - 100	—	65	—	—	—	—	—	
	3	15 - 100	—	—	65	—	—	—	—	
BQD ①	1	15 - 100	—	65	—	14	—	—	14	
	2	15 - 100	—	65	—	—	14	—	14	
	3	15 - 100	—	—	65	—	14	—	14	
125	NGB ②③	1	15 - 125	100	—	—	25	—	—	14
		2	15 - 125	—	100	100	—	25	—	—
		3	15 - 125	—	100	100	—	25	—	—
	NEB ③④	1	15 - 125	85	—	—	35	—	—	—
		2	15 - 125	—	85	85	—	35	—	—
		3	15 - 125	—	85	85	—	35	—	—
	HEB ③④	1	15 - 125	100	—	—	65	—	—	—
		2	15 - 125	—	100	100	—	65	—	—
		3	15 - 125	—	100	100	—	65	—	—
	ED4 ⑤	1	15 - 125	65	—	—	22	—	—	—
		2	15 - 125	—	—	65	—	18	—	30
		3	15 - 125	—	—	65	—	18	—	—
	ED6 ⑤	2	15 - 125	—	—	65	—	25	18	30
		3	15 - 125	—	—	65	—	25	18	—
	HED4 ⑥ HHED6 ⑥	1	15 - 125	100	—	—	—	—	—	—
		2	15 - 125	—	—	—	65	—	—	—
3		15 - 125	—	—	100	42	42	—	30	
225	QJ2 ⑥	2/3	60 - 225	—	—	10	—	—	—	
	QJH2 ⑥	2/3	60 - 225	—	—	22	—	—	—	
	QJ2-H ⑥	2/3	60 - 225	—	—	42	—	—	—	
	HQJ2H ⑥	2/3	100 - 225	—	—	100	—	—	—	

① BL, HBL, BLH and BQD breakers are mounted in common mountings in 3" or 6 pole increments.

② NGB breakers are counted in common mountings of 3" or 6 pole increments.

③ For use on 480Y/277 volt systems. Not suitable for 480 Delta 3 phase 3 wire systems.

④ NEB/HE breakers are counted in common mountings of 3" or 6 pole increments.

⑤ ED4, ED6, HED4 and HHED6 breakers are mounted in common mountings in 3" or (6) pole increments.

⑥ QJ Breakers are single mounted in unit space and take 6" of unit space. Limited to (3) per panel max.

Typical Catalog Numbers

Type P3 Panelboards

Table P3-10 – Main Lugs Only – shown with aluminum bus, top fed, and surface trims

Maximum Panel Amp Rating	Unit Space (inches)	208Y/120V	240/120V	120/240V or 250 Vdc Max
		3 Phase, 4 Wire Catalog Number	3 Phase, 4 Wire Catalog Number	1 Phase, 3 Wire Catalog Number
250	27	P3C56ML250ATS	P3B56ML250ATS	P3A56ML250ATS
	33	P3C62ML250ATS	P3B62ML250ATS	P3A62ML250ATS
	39	P3C68ML250ATS	P3B62ML250ATS	P3A62ML250ATS
	45	P3C74ML250ATS	P3B74ML250ATS	P3A74ML250ATS
	51	P3C80ML250ATS	P3B80ML250ATS	P3A80ML250ATS
400	21	P3C56ML400ATS	P3B56ML400ATS	P3A56ML400ATS
	27	P3C62ML400ATS	P3B62ML400ATS	P3A62ML400ATS
	33	P3C68ML400ATS	P3B68ML400ATS	P3A68ML400ATS
	39	P3C74ML400ATS	P3B74ML400ATS	P3A74ML400ATS
	45	P3C80ML400ATS	P3B80ML400ATS	P3A80ML400ATS
600	21	P3C56ML600ATS	P3B56ML600ATS	P3A56ML600ATS
	27	P3C62ML600ATS	P3B62ML600ATS	P3A62ML600ATS
	33	P3C68ML600ATS	P3B68ML600ATS	P3A68ML600ATS
	39	P3C74ML600ATS	P3B74ML600ATS	P3A74ML600ATS
	45	P3C80ML600ATS	P3B80ML600ATS	P3A80ML600ATS
800	21	P3C56ML800ATS	P3B56ML800ATS	P3A56ML800ATS
	27	P3C62ML800ATS	P3B62ML800ATS	P3A62ML800ATS
	33	P3C68ML800ATS	P3B68ML800ATS	P3A68ML800ATS
	39	P3C74ML800ATS	P3B74ML800ATS	P3A74ML800ATS
	45	P3C80ML800ATS	P3B80ML800ATS	P3A80ML800ATS
Maximum Panel Amp Rating	Unit Space (inches)	240V	408Y/277V	480V ^①
		3 Phase, 3 Wire Catalog Number	3 Phase, 4 Wire Catalog Number	1 Phase, 3 Wire Catalog Number
250	27	P3D56ML250ATS	P3E56ML250ATS	P3F56ML250ATS
	33	P3D62ML250ATS	P3E62ML250ATS	P3F62ML250ATS
	39	P3D68ML250ATS	P3E68ML250ATS	P3F68ML250ATS
	45	P3D74ML250ATS	P3E74ML250ATS	P3F74ML250ATS
	51	P3D80ML250ATS	P3E80ML250ATS	P3F80ML250ATS
400	21	P3D56ML400ATS	P3E56ML400ATS	P3F56ML400ATS
	27	P3D62ML400ATS	P3E62ML400ATS	P3F62ML400ATS
	33	P3D68ML400ATS	P3E68ML400ATS	P3F68ML400ATS
	39	P3D74ML400ATS	P3E74ML400ATS	P3F74ML400ATS
	45	P3D80ML400ATS	P3E80ML400ATS	P3F80ML400ATS
600	21	P3D56ML600ATS	P3E56ML600ATS	P3F56ML600ATS
	27	P3D62ML600ATS	P3E62ML600ATS	P3F62ML600ATS
	33	P3D68ML600ATS	P3E68ML600ATS	P3F68ML600ATS
	39	P3D74ML600ATS	P3E74ML600ATS	P3F74ML600ATS
	45	P3D80ML600ATS	P3E80ML600ATS	P3F80ML600ATS
800	21	P3D56ML800ATS	P3E56ML800ATS	P3F56ML800ATS
	27	P3D62ML800ATS	P3E62ML800ATS	P3F62ML800ATS
	33	P3D68ML800ATS	P3E68ML800ATS	P3F68ML800ATS
	39	P3D74ML800ATS	P3E74ML800ATS	P3F74ML800ATS
	45	P3D80ML800ATS	P3E80ML800ATS	P3F80ML800ATS

^① For 600V, change "F" in position 3 to "G." Price only branch breakers with 600V ratings.

Typical Catalog Numbers

Type P3 Panelboards

Table P3-11 – Main Circuit Breaker – shown with aluminum bus, top fed and surface trims.

Maximum Panel Amp Rating	Unit Space (inches)	208Y/120V	240/120V	120/240V or 250V dc Max
		3 Phase, 4 Wire Catalog Number	3 Phase, 4 Wire Catalog Number	1 Phase, 3 Wire Catalog Number
250	21	P3C56FD250ATS	P3B56FD250ATS	P3A56FD250ATS
	27	P3C62FD250ATS	P3B62FD250ATS	P3A62FD250ATS
	33	P3C68FD250ATS	P3B68FD250ATS	P3A68FD250ATS
	39	P3C74FD250ATS	P3B74FD250ATS	P3A74FD250ATS
	45	P3C80FD250ATS	P3B80FD250ATS	P3A80FD250ATS
400	9	P3C56JD400ATS	P3B56JD400ATS	P3A56JD400ATS
	15	P3C62JD400ATS	P3B62JD400ATS	P3A62JD400ATS
	21	P3C68JD400ATS	P3B68JD400ATS	P3A68JD400ATS
	27	P3C74JD400ATS	P3B74JD400ATS	P3A74JD400ATS
	33	P3C80JD400ATS	P3B80JD400ATS	P3A80JD400ATS
600	9	P3C56LD600ATS	P3B56LD600ATS	P3A56LD600ATS
	15	P3C62LD600ATS	P3B62LD600ATS	P3A62LD600ATS
	21	P3C68LD600ATS	P3B68LD600ATS	P3A68LD600ATS
	27	P3C74LD600ATS	P3B74LD600ATS	P3A74LD600ATS
	33	P3C80LD600ATS	P3B80LD600ATS	P3A80LD600ATS
Maximum Panel Amp Rating	Unit Space (inches)	240V	408Y/277V	480V ①
		3 Phase, 3 Wire Catalog Number	3 Phase, 4 Wire Catalog Number	1 Phase, 3 Wire Catalog Number
250	21	P3D56FD250ATS	P3E56FD250ATS	P3F56FD250ATS
	27	P3D62FD250ATS	P3E62FD250ATS	P3F62FD250ATS
	33	P3D68FD250ATS	P3E62FD250ATS	P3F62FD250ATS
	39	P3D74FD250ATS	P3E74FD250ATS	P3F74FD250ATS
	45	P3D80FD250ATS	P3E80FD250ATS	P3F80FD250ATS
400	9	P3D56JD400ATS	P3E56JD400ATS	P3F56JD400ATS
	15	P3D62JD400ATS	P3E62JD400ATS	P3F62JD400ATS
	21	P3D68JD400ATS	P3E68JD400ATS	P3F68JD400ATS
	27	P3D74JD400ATS	P3E74JD400ATS	P3F74JD400ATS
	33	P3D80JD400ATS	P3E80JD400ATS	P3F80JD400ATS
600	9	P3D56LD600ATS	P3E56LD600ATS	P3F56LD600ATS
	15	P3D62LD600ATS	P3E62LD600ATS	P3F62LD600ATS
	21	P3D68LD600ATS	P3E68LD600ATS	P3F68LD600ATS
	27	P3D74LD600ATS	P3E74LD600ATS	P3F74LD600ATS
	33	P3D80LD600ATS	P3E80LD600ATS	P3F80LD600ATS

① For 600V, change "F" in position 3 to "G." Price only branch breakers with 600V ratings.

Standard Modifications

Type P3 Panelboards

P3 Panel Options

Enclosures

- Extra gutter to sides or ends of the can
- Hinged trims
- Door-in-door trims
- Screw to the box trims
- Trim mounted devices (Devices mounted and wired to the trim should also have hinged trim specified)
 - Pilot lights
 - Toggle switches
 - Push buttons
- Painted boxes
- Custom colors
- Increase gauge trims and boxes
- Stainless steel trims and boxes, Type 1
- Aluminum trims and boxes, Type 1
- NEMA 3R enclosures

Panel Modifications

- Main Bus
Standard main bus in tin-plated aluminum. For copper main bus, add from the table for each panel. Includes copper neutral cross bar. For copper neutral branch lugs, see miscellaneous.
- Split bus requires 6" of unit space.
- Compression lug for MLO
- Compression lugs on Main breaker (may require extra width or length on enclosure).
- Contactor mains or submain
 - Asco 920 through 225 amps - Adds 12" unit space as main, 15" unit space as submain
 - Asco 911 through 150 amps - Adds 21" unit space.
 - Siemens LEN through 30 amps - Adds 12" unit space. Makes box 10" deep.
- Control power transformers (contact engineering for extra gutter requirements)
- Branch and main breaker accessories
 - Handle blocks
 - Handle locks
 - Aux. Contacts ①
 - UVR ①
- Feed-thru lugs
Cannot be used in conjunction with TVSS or sub-feed breakers. See Page 3-10 for unit space impact. Wire ranges are the same as main lug.
- 200% neutral
- Copper lugs, mechanical
- Bus mounted TVSS
- Service Entrance Label
Type P3 Panelboards are factory labeled suitable for use as service entrance equipment when NEC requirements are met. A panelboard cannot have more than six main disconnects, unless it is a lighting and appliance branch panelboard. Lighting and appliance branch panelboards are limited to two main disconnects.

- NEMA 3R/12 enclosures
- NEMA 4 enclosures
- NEMA 4X enclosures
- Special keyed locks
 - TEY
 - TEU1
 - Cat 60
 - LL803
 - LL806
 - Yale
- Meters (Contact application engineering for space requirements)
- Panel Skirts
- Gasketing between trim and box (Type 1)
- Name Plates

- Grounding of Panelboards
Ground Bars except for brazed to box are shipped with the panel interior factory mounted.
 - Non-Insulated Equipment Ground Bar – Standard
 - Copper Non-Insulated Ground Bar
 - Al Insulated Equipment Ground Bar
 - Cu Insulated Equipment Ground Bar
 - Ground Bar Brazed to Box (recommended for painted boxes)
- Shunt Trip on Main or Branch
BL, BLH, HBL, BQD, NGB, NEB, HEB, ED2, ED4, HED4, ED6, HED6, HHED6, QJ2, QJ2H, QJH2, HQJ2H as branch only. BL, BLH, HBL, BQD, NGB, ED2, ED4, HED4, ED6, HED6, HHED6 uses 1" unit space for shunt trip. All others may be used on mains or subfeeds.

QJ2, QJ2-H, QJH2, HQJ2H, ED2, ED4, ED6, HED4, HED6, HHED6, FXD6, HFD6, JXD6, JD6, HJD6, HJXD6

- Remote control switches – 480V AC max. mounted in a 23" enclosure to be cable connected to the panel.
- Time Clocks – mounted in a 23" enclosure to be cable connected to the panel. Sangamo, Tork or Paragon time clock can be supplied and mounted in panelboard cabinet.

Description

Time Clock (1-or 2-Pole, Single or Double Throw Contacts; 3-Pole Single Throw)

277V Maximum with Plain Dial

Options:

Astronomical Dial

An Omitting Device

Reserve Power or Carryover

Space and Mounting Provisions Only

① Accessories on 1" pole breakers (BL, BQD, ED) will take unit space.

Standard Modifications

Type P3 Panelboards

Table P3-12 – Option Combinations

Amps	Incoming	Subfeed Lugs	Feed-thru Lugs	FD ① Subfeed	JD ① Subfeed	FD ② Subfeeds	200% Neutral	Min. Box Size (in.)	Unit Space (in.)	
250A	Main Lug Only	—	•	—	—	—	•	56	27	
		—	—	•	—	—	•	56	15	
		—	—	—	—	•	•	56	9	
	Main Lugs w/Subfeed Lugs	•	•	—	—	—	•	•	56	21
		—	—	•	—	—	•	•	56	21
		—	—	—	—	•	•	62	9	
Main Breaker (Horiz. FD)	—	•	—	—	—	•	56	21		
Main Breaker (Vert. FD)	None Std.	•	—	—	—	•	•	56	9	
Main Breaker (CFD)	None Std.	•	—	—	—	•	•	56	9	
400A ② ③	Main Lug Only	•	—	—	—	—	•	56	21	
		—	•	—	—	—	•	56	15	
		—	—	•	—	—	•	56	9	
		—	—	—	•	—	•	56	9	
		—	—	—	—	•	•	62	9	
	Main Breaker (JD)	None Std.	—	•	—	—	—	•	56	9
		—	—	•	—	—	•	•	62	9
		—	—	—	•	—	•	•	68	9
		—	—	—	—	•	•	•	68	9
	Main Breaker (CJD)	None Std.	•	—	—	—	—	•	74	9
		—	—	•	—	—	•	•	74	9
		—	—	—	•	—	•	•	74	9
600A ② ③	Main Lug Only	—	•	—	—	—	•	56	21	
		—	—	•	—	—	•	56	15	
		—	—	—	•	—	•	56	9	
		—	—	—	—	•	—	56	9	
		—	—	—	—	•	•	62	9	
	Main Breaker LD	—	—	•	—	—	—	•	56	9
		—	—	•	—	—	•	•	62	9
		—	—	—	•	—	•	•	68	9
		—	—	—	—	•	•	•	68	9
	Main Breaker CLD	—	•	—	—	—	—	•	74	9
		—	—	•	—	—	•	•	74	9
		—	—	—	•	—	•	•	74	9
800A ② ③	Main Lug Only	—	•	—	—	—	•	56	21	
		—	—	•	—	—	•	56	9	
		—	—	—	•	—	•	56	9	
		—	—	—	—	•	—	56	9	
		—	—	—	—	•	•	62	9	

① Subfed lugs are currently not offered as a standard with main circuit breakers.

② Subfeed lugs on panels above 400A are not standard.

③ 200% neutral cannot be provided along with a 400A subfeed breaker or 600A Main Breaker because the breaker blocks the 4th lug site.

Connector Modifications

Type P3 Panelboards

Compression Lugs

Table P3-13 – Lugs

Style	Amp Rating	Breaker Type	Compression Connectors	Box Height Addition
MLO	250	N/A	(1)#6 AWG - 350 Kcmil	—
	400	N/A	(1) 250 - 500 Kcmil or (2)# 1/0 AWG - 250 Kcmil	—
	600	N/A	(2)#3/0 AWG - 500 Kcmil	—
	800	N/A	(2) 400-750 Kcmil Cu only	—
Main Breaker	250	FXD6, HFD6, CFD6	(1)#6 AWG - 350 Kcmil Cu or Al	CFD6 requires an additional 6.0" box height
	400	JD6, JXD6, HJD6, CJD6, SJD6, SHJD6, SCJD6	(2)#1/0 AWG - 500 Kcmil Cu or Al	6
	600	LD6, LXD6, HLD6, CJD6, SLD6, SHLD6, SCLD6	(2)#2/0 AWG - 500 Kcmil Cu or Al	6

Table P3-14 – Alternate Lugs

Style	Amp Rating	Breaker Type	Compression Connectors	Box Height Addition
MLO	400	N/A	(1) 250 - 750 Kcmil or (2)#3/0 AWG - 250 Kcmil Cu or Al	6
	800	N/A	(2) 600 Kcmil	6
Main Breaker	400	JD6, JXD6, HJD6, CJD6, SJD6, SHJD6, SCJD6	(1)#4/0 AWG - 750 Kcmil Cu or Al	6

Enclosure Modifications

NEMA-4 For Type P3
Water Tight, Dust Tight, Steel Enclosure
(consult plant for actual enclosure size)

Table P3-15

Box Height Inches	Enclosure Size		
	H	W	D
56	60	36	8
62	66	36	8
68	72	36	8
74	78	36	8
80	84	36	8

NEMA-4X For Type P3
Water Tight, Dust Tight and Corrosion Resistant
(consult plant for actual enclosure size)

Table P3-16

Box Height Inches	Enclosure - Stainless Steel and Steel with Epoxy Coating			Enclosure - Fiberglass Size (inches)		
	H	W	D	H	D	W
56	60	36	12	60	36	12
62	66	36	8	66	36	8
68	72	36	8	72	36	8
74	78	36	8	78	36	8
80	84	36	8	84	36	8

Remote Switch Modifications

Table P3-17 – Control Power Transformer

Size	VA
0,1	50
2	75
3	150
4	250

Table P3-18 – Application For Remote Switch

Switch Type	Modification
920	Adds 12" to unit space
911	≤ 225A Adds 21" unit space >225 ≤400 Amps Add 10" to width and 8" DP minimum and 24" to height
LEN	30A Adds 15" to unit space >30A ≤ 100 Adds 12" to unit space 100 A ≤ 200 Adds 12" to unit space and 10" Dp. min.

Table P3-19 – Remote Control Switch Modification

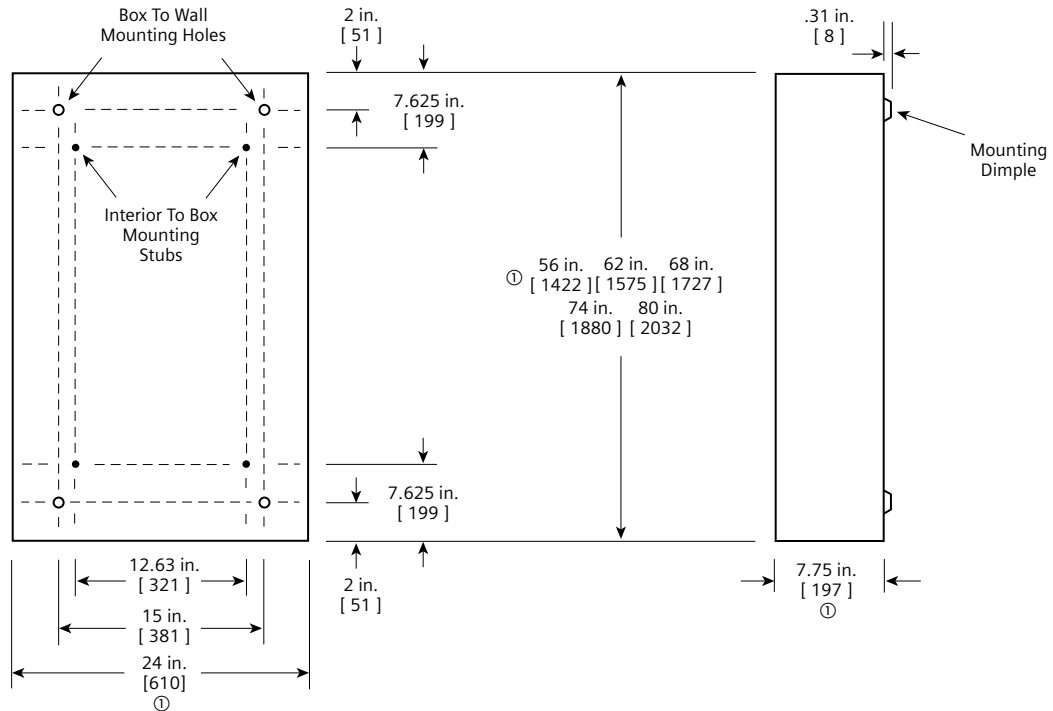
Description
Auxiliary Contacts (Mounted Not Wired) Ea. 2-Wire Control

Dimensions

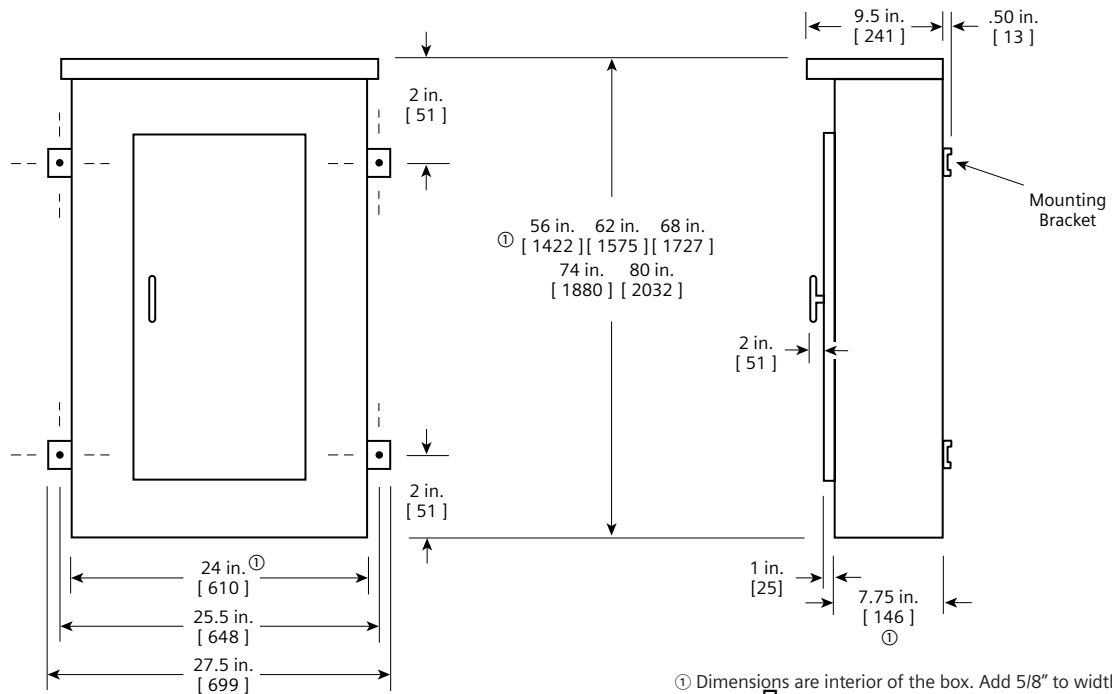
Type P3 Panelboards

Type 1 Box

Box is symmetrical



Type 3R and 3R/12 Box



① Dimensions are interior of the box. Add 5/8" to width for absolute dimension. Add 1/8" to height for absolute dimension.

Dimensions shown in inches and millimeters [].

Kits and Accessories

Type P3 Panelboards

Table P3-20 – Standard Enclosures

Box Height (in.)	Catalog Number				
	Type 1 Standard Trim			Type 3R	Type 3R/12
	Box	Surface	Flush		
56	24WD56	P3S56	P3F56	24NRD56	24WPD56
62	24WD62	P3S62	P3F62	24NRD62	24WPD62
68	24WD68	P3S68	P3F68	24NRD68	24WPD68
74	24WD74	P3S74	P3F74	24NRD74	24WPD74
80	24WD80	P3S80	P3F80	24NRD80	24WPD80

Options For Type 1 Trims

Items must be ordered as manual line item on factory

Hinged trim – Add “H” suffix

Door-in-door – Add “D” suffix

Metal card holder – Add “M” suffix

Table P3-21 – Breaker Kits and Accessories

Kit No.	Description	Contents
BBKB32	BL/BQD 6-pole 3" branch breaker kit	Kit contains top barrier, (3) A/C connectors, (1) B connector, hardware
BBKNB32	NGB 6-pole 3" branch mounting kit	Kit contains breaker support, interphase barriers (3) A/C connectors, (1) B phase connector, hardware
BBKEB32	NEB/HEB 6 pole 3" branch breaker kit	Kit contains breaker support, interphase barriers (3) A/C connectors, (1) B phase connector, hardware
BBKED32	ED 6-pole 3" branch breaker kit	Kit contains breaker support, inter-phase barriers, (3) A/C connectors, (1) B connector, hardware
BBKQ1	QJ branch breaker kit for 2 and 3-pole single mount	Kit to contain all connectors and cover plates necessary to mount both 2 and 3-pole breakers
BBKQ2	Branch breaker kit for 2 and 3-pole QJ twin mount	Kit to contain all connectors and cover plates necessary to mount both 2 and 3-pole breakers
DFFP3	Deadfront filler 3"	3" empty space filler and hardware
DFFP6	Deadfront filler 6"	6" empty space filler and hardware
P3BK1	P3 bonding kit	Bonding strap and hardware
QF3	Filler plate for BL, BQD, ED frame branch breaker provisions	1" filler plate
EBF1	Filler plate for NEB/HEB branch breaker provision content	1" filler plate



P4

PANELBOARDS

Description

General Information
 Selection and Application
 Applications
 Main Breaker Selection
 Main Switch Connectors
 Enclosure Selection
 Main Breaker Unit Space Dimensions
 Main Lugs Only Unit Space Dimensions
 Branch Switch Unit Space
 Branch Circuit Breakers
 Branch Breaker Unit Space

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Typical Catalog Numbers
 Main Lugs Only
 Main Circuit Breakers Only
 Main Fusible Switch
 Modifications and Additions
 Connector Modifications
 Compression Lugs
 Alternate Lugs
 Dimensions
 Kits and Accessories

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Type P4 Panelboards

The P4 panel is a medium sized footprint distribution panel to fit a large number of applications that require more or larger branch devices and higher amp ratings than the lighting panel class offer. Even with the increased capacity, this panel is a space saver with its 32" width and 10" depth. The P4 panel offers a wide array of factory-assembled options and has the ability to mix breaker frames in unit space up to 800 amps and fusible switches up to 200 amps. Bussing options for the P4 vary from the standard temperature rated aluminum to temperature rated copper and 750A/Si aluminum and 1000A/Si copper designs. All aluminum bussing in the P4 panel is tin-plated as a standard. Silver-plated is offered as the default for copper bus and tin as an option. Integrated time clocks, bus mounted contactors as mains or submains, split bus and subfeed lugs (up to 600 amp) are just a few of the options of this flexible panel.

The 4 panel configurations defined by the unit space allowed for a given amperage, main device and box height. The P4 panel starts with a 60" high box. All of the branch devices are unit space mounted. Breakers and switches can be mixed and matched to meet customer requirements.

Main Lug / Main Breaker / Main Switch

Enclosure – Standard Type 1 enclosure is 32" wide x 10" deep. X Box Height is determined by main device and unit space. See charts for box height.

Voltage – 600 Vac Max.
250 Vdc Max.

Amperage – 400-800 amp main breaker (check with factory on availability of 800 amp), 400-1200 amp MLO, 100-200 amp main switch.

Short Circuit Rating – 200 KAIC Max. symmetrical or equal to the lowest rated device installed unless a series rating is

indicated. Panels with subfeed or feed-thru lugs without a main device, circuit breaker or fusible unit, are limited to a three-cycle rating. The three-cycle rating for the P4 panel is limited to 42 KAIC. Note that the main device may be mounted remote from the panel.

Bussing – The P4 panel has more options to meet market requirements. The standard bussing is temperature rated aluminum. The rating is per the requirements of UL 67 – the standard for panelboards. All aluminum bussing is tin-plated. Optional bussing for the P4 panel is: 750 A/Si aluminum, temperature rated copper, and 1000 A/Si copper. The copper bus option for this panel is silver-plated.

Weight – Approximate

Total panelboard weight when filled with a normal quantity of breakers and accessories is about 8 lbs. (1 kg) per inch (54g per mm) of box height.

Table P4-1 – Main Lugs ^①

Ampere Rating	Connectors Suitable for Copper or Aluminum
400	(1) - #3/0 AWG-600 Kcmil (2) - #3/0 AWG-250 Kcmil
600	(2) - #3/0 AWG-600 Kcmil
800	(3) - #3/0 AWG-600 Kcmil
1000	(4) - #3/0 AWG-600 Kcmil
1200	(4) - #3/0 AWG-600 Kcmil

^① Alternate lugs for 750 kcmil cable are available, but result in significant loss of branch unit mounting space. Consult Siemens.

Table P4-2 – Gauge Steel of Boxes
Fronts, Surface and Flush

Dimensions in inches (mm)		Gauge Steel	
Width	Height	Box	Fronts
32"	60 - 75 - 90	#16 ^①	#14 (1 piece trim)
(813)	(1524, 1905, 2286)		#16 (4 piece trim)

^① Box has 16 gauge side panels and 12 gauge back support.

Selection and Application

1) To specify a particular panelboard, first determine voltage, system, amperage and type of main, amperage and type of branch devices, and modifications, if any. (Step 1)

2) List branch devices and modifications requiring space additions. List unit space requirements of each.

Note: Some units are twin mounted meaning two breakers occupy the same unit space.

Select appropriate enclosure height from selection chart on page 4-3, based on unit space requirements. (Step 2)

3) Select panelboard catalog number from appropriate table based upon voltage, system, amperage and unit space requirements. (Step 3)

Step #1

Amperage	400
Voltage	208Y/120
System	3 Phase, 4 wire
Main	Main Breaker
Branches	5-125/3, 2-225/3, 1-250/3
Modifications	None
Feed	Top
Mounting	Surface

Step #2

5-125/3 ED4	3.75" = 11.25" Twin Mounted
2-225/3 QJ2	5" = 5" Twin Mounted
1-250/3 FXD6	5" = 5" 21.25
Enclosure is B275 from Selection Chart on Page 4-3. (32" wide, 75" high, 10" deep)	

Step #3

1-P4C75JX400ATS
3-ED4 1-Pole Provision
5-125/3
2-225/3 QJ2
1-250/3 FXD6
12" Space

Application

Type P4 Panelboards

Table P4-3 – Main Breaker Selection

Ampere Rating	Breaker Type	Maximum IR (kA) Symmetrical Amperes			Available Trip Values
		240V	480V	600V	
400	JXD6 (Std)	65	35	25	200, 225, 250, 300, 350, 400
	JD6	65	35	25	200, 225, 250, 300, 350, 400
	HJD6	100	65	35	200, 225, 250, 300, 350, 400
	CJD6	200	150	100	200, 225, 250, 300, 350, 400
	SJD6	65	35	25	200, 300, 400
	SHJD6	100	65	35	200, 300, 400
	SCJD6	200	150	100	200, 300, 400
600	LXD6 (Std)	65	35	25	450, 500, 600
	LD6	65	35	25	250, 300, 350, 400, 450, 500, 600
	HLD6	100	65	35	250, 300, 350, 400, 450, 500, 600
	CLD6	200	150	100	450, 500, 600
	SLD6	65	35	25	300, 400, 500, 600
	SHLD6	100	65	35	300, 400, 500, 600
	SCLD6	200	150	100	300, 400, 500, 600
800	NMX (Std)	65	35	25	600, 700, 800
	HMX	100	65	50	600, 700, 800
	LMX	200	100	65	600, 700, 800
	LMD6	65	50	25	500, 600, 700, 800
	LMXD6	65	50	25	500, 600, 700, 800
	HLMXD6	100	65	50	500, 600, 700, 800
	HLMXD6	100	65	50	500, 600, 700, 800

Table P4-4 – Enclosure Selection ①

Enclosure Dimension in Inches (mm)			Available Circuit Space in Inches (mm) Dimension "C"		
H	W	D	Main Lug	Main Breaker	Main Switch
Type 1,3R/12			400 / 800A	400 / 800A	100 / 200A
60 (1524)	32 (813)	10 (254)	30 (762)	21.25 (540)	20 (508)
75 (1905)	32 (813)	10 (254)	45 (1143)	36.25 (921)	35 (889)
90 (2286)	32 (813)	10 (254)	60 (1524)	51.25 (1302)	50 (1270)

① Standard trim is four piece without door. Surface or flush one piece trim is available for 32 in. (813 mm) wide circuit breaker panel.

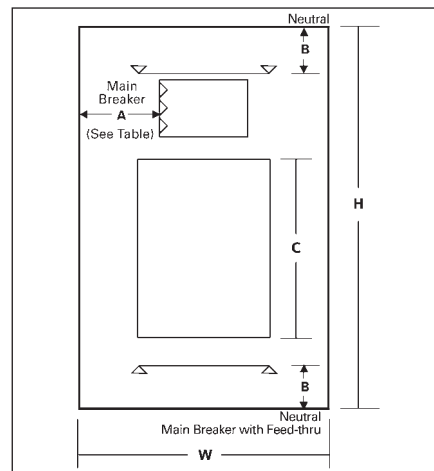
Table P4-5 – Main Switch Connectors

Ampere Rating	Connectors suitable for Copper or Aluminum
100	(1) #10-#1/0 AWG (Cu or Al)
200	(1) #6 AWG-300 Kcmil

Table P4-6 – Main Breaker Unit Space Dimensions (Fig. P4-1)

Ampere Rating	Breaker Type	Dimensions in Inches (mm)	
		A	Neutral B
400	JXD6, JD6, HJD6	10.42 (265)	13.125 (333)
400-600	LXD6, LD6, HLD6, SJD6, SHJD6, SLD6, SHLD6	10.42 (265)	
800	NMX, HMX, LMX, LMD6, LMXD6	10.42 (265)	

Fig. P4-1



Application

Type P4 Panelboards

Table P4-7 – Main Lugs Only Unit Space (Fig. P4-2)

Lugs	Dimensions in inches (mm)					Neutral	
	Main Lug						
	400A A	600A B	800A C	1000A D	1200A E	400-600A F	800-1200A G
Standard	16.500 (419)	16.750 (419)	15.969 (406)	15.969 (406)	15.969 (406)	13.125 (333)	13.125 (333)
Oversize	16.500 (419)	21.750 (552)	25.969 (660)	25.969 (660)	25.969 (660)	18.125 (460)	23.125 (587)
Crimp	19.187 (487)	18.250 (464)	18.687 (475)	18.250 (464)	18.250 (464)	15.937 (405)	15.937 (405)
Standard w/Subfeed	16.750 (425)	15.969 (406)	—	—	—	13.125 (333)	13.125 (333)
Standard w/Feed-thru	16.500 (419)	16.750 (419)	—	—	—	13.125 (333)	13.125 (333)

Fig. P4-2

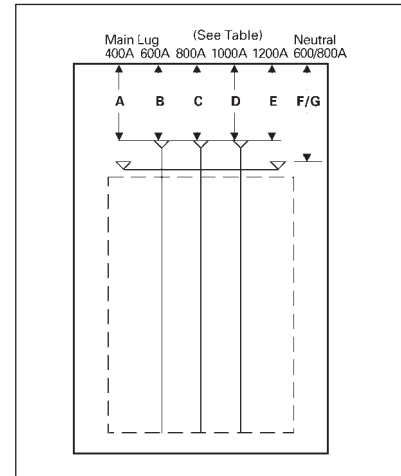


Table P4-8 – Branch Switch Unit Space

Ampere Rating	Number of Poles	Mounting Height in inches (mm)		AC Voltage	Cables Per Connector	Connectors Suitable For Copper or Aluminum
		Twin Mounted	Single Mounted			
30-30	2,3	2.50 (64)	—	240	1	#14 - #8 AWG (Cu Only)
30-30	2,3	5.00 (127)	—	240	1	#14 - #4 AWG
30-60	2,3	5.00 (127)	—	240	1	#14 - #4 AWG
60-60	2,3	5.00 (127)	—	240	1	#14 - #4 AWG
60-100	2,3	7.50 (191)	—	240	1	#10 - #1/0 AWG
100-100	2,3	7.50 (191)	—	240	1	#10 - #1/0 AWG
200-200	3	10.00 (254)	—	240	1	#6 AWG - 350 Kcmil
200	2	—	7.50 (191)	240	1	#6 AWG - 350 Kcmil
200	3	—	10.00 (254)	240	2	#6 AWG - 350 Kcmil
30-30	2,3	7.5 (191)	—	600	1	#14 - #8 AWG
30-60	2,3	7.5 (191)	—	600	1	#14 - #4 AWG
60-60	2,3	7.5 (191)	—	600	1	#14 - #4 AWG
60-100	2,3	7.5 (191)	—	600	1	#10-#1/0 AWG
100-100	2,3	7.5 (191)	—	600	1	#10-#1/0 AWG
200-200	3	10.00 (254)	—	600	1	#6 AWG - 250 Kcmil
100	2,3	—	7.50 (191)	600	1	#10-#1/0 AWG
200	2,3	—	10.00 (254)	600	1	#6 AWG - 250 Kcmil

Application

Type P4 Panelboards

Table P4-9 – Branch Circuit Breakers

Maximum Ampere Rating	Bolt-on Breaker Type	Number of Poles	Amp Rating	Maximum Interrupting Rating (kA)					
				Volts – AC					
				120	120/240	240	277	480	600
100	BLF	1	15 - 30	10	—	—	—	—	—
		2	15 - 60	—	10	—	—	—	—
	BLE	1	15 - 30	10	—	—	—	—	—
		2	15 - 30	—	10	—	—	—	—
	BLEH	1	15 - 30	22	—	—	—	—	—
		2	15 - 60	—	22	—	—	—	—
	BAF	1	15,20	10	—	—	—	—	—
	BAFH	1	15, 20	22	—	—	—	—	—
	BGL ①	2	15 - 30	10	—	—	—	—	—
		3	15 - 30	—	10	—	—	—	—
	BL (120)	1	15 - 70	10	—	—	—	—	—
		2	15 - 100	—	10	—	—	—	—
		3	15 - 100	—	—	10	—	—	—
	BLR (240V)	2	15 - 100	—	—	10	—	—	—
		3	15 - 100	—	—	—	—	—	—
	BLH	1	15 - 70	—	22	—	—	—	—
2		15 - 100	—	22	—	—	—	—	
3		15 - 100	—	—	22	—	—	—	
HBL	1	15 - 70	—	65	—	—	—	—	
	2	15 - 100	—	65	—	—	—	—	
	3	15 - 100	—	—	65	—	—	—	
BQD	1	—	—	65	—	14	—	—	
	2	15 - 100	—	65	—	—	14 ①	—	
	3	—	—	—	65	—	14	—	
BQD6 ②	1	—	65	—	—	—	—	—	
	2	15 - 100	—	—	65	—	—	10	
	3	—	—	—	65	—	—	10	
125	NGB ① ②	1	15 - 125	100	—	—	25	—	—
		2/3	—	—	100	100	—	25	—
	NEB ① ②	1	15 - 125	85	—	—	35	—	—
		2/3	—	—	85	85	—	35	—
	HEB ① ②	1	15 - 125	100	—	—	65	—	—
		2/3	—	—	100	100	—	65	—
ED4	1	—	65	—	—	22	—	—	
	2	15 - 125	—	—	65	—	18	—	
	3	—	—	—	65	—	18	—	
ED6	2	15 - 125	—	—	65	—	25	18	
	3	—	—	—	65	—	25	18	
	3	—	—	—	65	—	25	18	
225	HED4 HHED6	1	—	100	—	—	—	—	—
		2	15 - 125	—	—	—	65 ③	—	—
		3	—	—	—	—	42	42	—
	CED6	2/3	15 - 125	—	—	200	—	—	200
	QJ2	2/3	60 - 225	—	—	10	—	—	—
	QJH2	2/3	60 - 225	—	—	22	—	—	—
250	QJ2-H	1	60 - 225	—	—	42	—	—	—
		2	—	—	—	—	—	—	—
		3	—	—	—	—	—	—	—
	HQJ2H	2/3	100 - 225	—	—	100	—	—	—
	FXD6, FD6	2/3	70 - 250	—	—	65	—	35	18
	HFD6, HFXD6	2/3	70 - 250	—	—	100	—	65	25
400	HHFD6, HHFXD6	2/3	70 - 250	—	—	200	—	100	25
		2/3	70 - 250	—	—	200	—	200	100
		2/3	70 - 250	—	—	200	—	200	100
600	JXD6, JD6, SJD6	2/3	200 - 400	—	—	65	—	35	25
		2/3	200 - 400	—	—	100	—	65	35
		2/3	200 - 400	—	—	200	—	100	50
	SHJD6	2/3	200 - 400	—	—	100	—	65	35
		2/3	200 - 400	—	—	200	—	150	100
		2/3	200 - 400	—	—	200	—	150	100
800	LXD6	2/3	450 - 600	—	—	65	—	35	25
		2/3	250 - 600	—	—	65	—	35	25
	SLD6	2/3	300 - 600	—	—	65	—	35	25
		2/3	250 - 600	—	—	100	—	65	35
	HHLD6, HHLXD6	2/3	250 - 600	—	—	200	—	100	50
		2/3	300 - 600	—	—	100	—	65	35
	SHLD6	2/3	300 - 600	—	—	100	—	65	35
		2/3	450 - 600	—	—	200	—	150	100
	CLD6	2/3	450 - 600	—	—	200	—	150	100
		2/3	300 - 600	—	—	200	—	150	100
LMXD6, LMD6 HLMD6, HLMXD6	2/3	500 - 800	—	—	65	—	50	25	
	2/3	500 - 800	65	65	65	35	35	25	
	2/3	500 - 800	100	100	100	65	65	35	
	2/3	500 - 800	200	200	200	100	100	50	

① 408Y / 277V 3Ø4W only. Not for use on 480V 3Ø3W Delta Systems.

② CSA listed only at 600V AC.

③ 15-30A 65 kA, 35-100A 25 kA.

Application

Type P4 Panelboards

Table P4-10 – Branch Breaker Unit Space

Amp Rating	Breaker Type	Mounting Height in Inches (mm)	
		Twin	Single
100	BL, BLH, HBL, BQD, BLE, BLEH, BLR, BLF, BLHF, BAF, BAHF, BGL	3.75 (95) ①	—
125	ED4, ED6, HED4, HHED6, ED6, CED6, NGB, NEB, HEB		
225	QJ2, QJH2, QJ2-H, HQJ2H	5.00 (1217)	5.00 (227)
250	FXD6, FD6, HFD6, CFD6	—	
400	JXD6, JD6, SJD6, HJD6, SHJD6, CJD6, SCJD6	②	8.75 (222)
600	LXD6, LD6, SLD6, HLD6, SHLD6, CLD6, SCLD6	—	
800	LMD6, LMXD6, NMX, HMX, LMX	—	

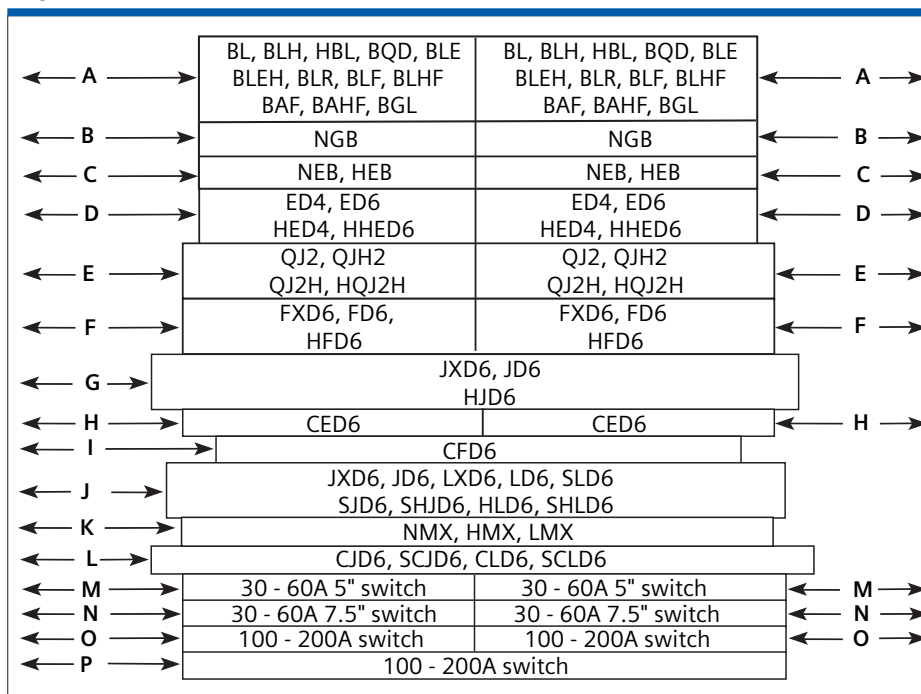
① Mounting height: 6 poles require 3.75 in. (95mm) of mounting height. All breakers are double-branch mounted.

② Consult enclosure section Table P4-3. 400A twin mounted branches require 38 in. (965 mm) wide enclosure.

Table P4-11 – Branch Breaker Side Gutter Inches (mm) (Fig. P4-3)

Reference Letter	Panel Width 32 in inches (mm)
A	11.0 (279)
B	10.98 (279)
C	8.62 (219)
D	7.0 (178)
E	5.75 (146)
F	5.25 (133)
G	—
H	4.615 (177)
I	8.76 (223)
J	10.425 (265)
K	10.0 (254)
L	8.25 (210)
M	10.0 (254)
N	7.0 (178)
O	5.0 (127)
P	7.5 (191)

Fig. P4-3



Typical Catalog Numbers

Type P4 Panelboards

Table P4-12 – Main Lugs Only – shown with aluminum bus, top fed, and surface trims

Max. Panel Amp Rating	Unit Space (inches)	208Y/120V	240/120V	120/240V or 250 Vdc Max	240V	480Y/277V	480V ①
		3 Phase, 4 Wire Catalog Number	3 Phase, 4 Wire Catalog Number	1 Phase, 3 Wire Catalog Number	3 Phase, 3 Wire Catalog Number	3 Phase, 4 Wire Catalog Number	3 Phase, 3 Wire Catalog Number
400	30	P4C60ML400ATS	P4B60ML400ATS	P4A60ML400ATS	P4D60ML400ATS	P4E60ML400ATS	P4F60ML400ATS
	45	P4C75ML400ATS	P4B75ML400ATS	P4A75ML400ATS	P4D75ML400ATS	P4E75ML400ATS	P4F75ML400ATS
	60	P4C90ML400ATS	P4B90ML400ATS	P4A90ML400ATS	P4D90ML400ATS	P4E90ML400ATS	P4F90ML400ATS
600	30	P4C60ML600ATS	P4B60ML600ATS	P4A60ML600ATS	P4D60ML600ATS	P4E60ML600ATS	P4F60ML600ATS
	45	P4C75ML600ATS	P4B75ML600ATS	P4A75ML600ATS	P4D75ML600ATS	P4E75ML600ATS	P4F75ML600ATS
	60	P4C90ML600ATS	P4B90ML600ATS	P4A90ML600ATS	P4D90ML600ATS	P4E90ML600ATS	P4F90ML600ATS
800	30	P4C60ML800ATS	P4B60ML800ATS	P4A60ML800ATS	P4D60ML800ATS	P4E60ML800ATS	P4F60ML800ATS
	45	P4C75ML800ATS	P4B75ML800ATS	P4A75ML800ATS	P4D75ML800ATS	P4E75ML800ATS	P4F75ML800ATS
	60	P4C90ML800ATS	P4B90ML800ATS	P4A90ML800ATS	P4D90ML800ATS	P4E90ML800ATS	P4F90ML800ATS
1000	30	P4C60ML101ATS	P4B60ML101ATS	P4A60ML101ATS	P4D60ML101ATS	P4E60ML101ATS	P4F60ML101ATS
	45	P4C75ML101ATS	P4B75ML101ATS	P4A75ML101ATS	P4D75ML101ATS	P4E75ML101ATS	P4F75ML101ATS
	60	P4C90ML101ATS	P4B90ML101ATS	P4A90ML101ATS	P4D90ML101ATS	P4E90ML101ATS	P4F90ML101ATS
1200	30	P4C60ML120ATS	P4B60ML120ATS	P4A60ML120ATS	P4D60ML120ATS	P4E60ML120ATS	P4F60ML120ATS
	45	P4C75ML120ATS	P4B75ML120ATS	P4A75ML120ATS	P4D75ML120ATS	P4E75ML120ATS	P4F75ML120ATS
	60	P4C90ML120ATS	P4B90ML120ATS	P4A90ML120ATS	P4D90ML120ATS	P4E90ML120ATS	P4F90ML120ATS

Table P4-13 – Main Circuit Breakers Only – shown with standard mains, aluminum bus, top fed, and surface trims

Max. Panel Amp Rating	Unit Space (inches)	208Y/120V	240/120V	120/240V or 250 Vdc Max	240V	480Y/277V	480V ①
		3 Phase, 4 Wire Catalog Number	3 Phase, 4 Wire Catalog Number	1 Phase, 3 Wire Catalog Number	3 Phase, 3 Wire Catalog Number	3 Phase, 4 Wire Catalog Number	3 Phase, 3 Wire Catalog Number
400	21.25	P4C60JX400ATS	P4B60JX400ATS	P4A60JX400ATS	P4D60JX400ATS	P4E60JX400ATS	P4F60JX400ATS
	36.25	P4C75JX400ATS	P4B75JX400ATS	P4A75JX400ATS	P4D75JX400ATS	P4E75JX400ATS	P4F75JX400ATS
	51.25	P4C90JX400ATS	P4B90JX400ATS	P4A90JX400ATS	P4D90JX400ATS	P4E90JX400ATS	P4F90JX400ATS
600	21.25	P4C60LX600ATS	P4B60LX600ATS	P4A60LX600ATS	P4D60LX600ATS	P4E60LX600ATS	P4F60LX600ATS
	36.25	P4C75LX600ATS	P4B75LX600ATS	P4A75LX600ATS	P4D75LX600ATS	P4E75LX600ATS	P4F75LX600ATS
	51.25	P4C90LX600ATS	P4B90LX600ATS	P4A90LX600ATS	P4D90LX600ATS	P4E90LX600ATS	P4F90LX600ATS
800	21.25	P4C60M1800ATS	P4B60M1800ATS	P4A60M1800ATS	P4D60M1800ATS	P4E60M1800ATS	P4F60M1800ATS
	36.25	P4C75M1800ATS	P4B75M1800ATS	P4A75M1800ATS	P4D75M1800ATS	P4E75M1800ATS	P4F75M1800ATS
	51.25	P4C90M1800ATS	P4B90M1800ATS	P4A90M1800ATS	P4D90M1800ATS	P4E90M1800ATS	P4F90M1800ATS

Table P4-14 – Main Fusible Switch (fuses not included)

Max. Panel Amp Rating	Unit Space (inches)	208Y/120V	240/120V	120/240V	240V	480Y/277V	480V ①
		3 Phase, 4 Wire Catalog Number	3 Phase, 4 Wire Catalog Number	1 Phase, 3 Wire Catalog Number	3 Phase, 3 Wire Catalog Number	3 Phase, 4 Wire Catalog Number	3 Phase, 3 Wire Catalog Number
100	20	P4C60MS100ATS	P4B60MS100ATS	P4A60MS100ATS	P4D60MS100ATS	P4E60MS100ATS	P4F60MS100ATS
	35	P4C75MS100ATS	P4B75MS100ATS	P4A75MS100ATS	P4D75MS100ATS	P4E75MS100ATS	P4F75MS100ATS
	50	P4C90MS100ATS	P4B90MS100ATS	P4A90MS100ATS	P4D90MS100ATS	P4E90MS100ATS	P4F90MS100ATS
200	20	P4C60MS200ATS	P4B60MS200ATS	P4A60MS200ATS	P4D60MS200ATS	P4E60MS200ATS	P4F60MS200ATS
	35	P4C75MS200ATS	P4B75MS200ATS	P4A75MS200ATS	P4D75MS200ATS	P4E75MS200ATS	P4F75MS200ATS
	50	P4C90MS200ATS	P4B90MS200ATS	P4A90MS200ATS	P4D90MS200ATS	P4E90MS200ATS	P4F90MS200ATS

① For 600V, change "F" in position 3 to "G."

Modifications and Additions

P4 Panelboards

Devices Mounted on Gutter Cover
Includes Device, Mounting – Wired or Unwired

Description
One piece front with door
Hinged Gutter Covers 4 pc front
Toggle Switch — SPST or 3-way
15A, 277V maximum
Pilot Light — General Purpose
Neon or Incandescent
Pushbutton

Increased Capacity Neutral

Ampere Rating		Unit Space (inches)
Phase	Neutral	
400	600	—
400	800	—
600	1200	—
800	1200	—

Subfeed or Feed-Thru Lugs (One Set Per Panel) Subfeed Double Lugs (Main Lug Panels)

Amp Rating	Unit Spaces (Additional inches)	
	MLO	
400	—	
600	—	
800	N/A	
1200	N/A	

Feed-Thru Lugs

Ampere Rating	Unit Space (inches)
400	10
600	10
800	17.5
1200	17.5

Grounding of Panelboards

Ground Bars except for brazed to box are shipped with the panel interior factory mounted.

- Non-Insulated Equipment Ground Bar – Standard
- Copper Non-Insulated Ground Bar
- Al Insulated Equipment Ground Bar
- Cu Insulated Equipment Ground Bar
- Ground Bar Brazed to Box

Fuse Clip Provisions (Add to 250 Volts or 600 Volts Unit Prices Per Switch)

Amp Rating	Class J	Class R	Class T
30	•	•	•
60	•	•	•
100	•	•	•
200	•	•	•

Spanner Wrenches (for Vacu-Break Switches)

Ground Fault on Main Breaker

Description	Amp Rating
Conventional Ground Fault ① Includes: Ground Fault Relay, Ground Sensor, CPT and Shunt Trip Test and Monitor Panel ②	400-600
Ground Fault add to Sensitrip III breaker price	400-600

Time Clocks ③

Sangamo, Tork or Paragon time clock can be supplied, mounted in panelboard cabinet. For required increase in enclosure dimension, consult local sales office.

Description
Time clock (1- or 2-Pole, Single or Double Throw Contacts; 3-Pole Single Throw)
277V Maximum with Plain Dial
Optional:
Astronomical Dial
An Omitting Device
Reserve Power or Carryover
Space and Mounting Provisions Only

Circuit Breaker Accessories Handle Blocking Device Blocks handle in either the "ON" or "OFF" position.

Padlocking Device – Padlocks in "OFF" position .

Main Bus

Standard main bus and ground bus are tin-plated aluminum. For copper main bus, neutral bus and ground bus, add from the table for each panel.

Lugs – For Main Lug Only Panels

Standard main lugs and neutral lugs are tin-plated aluminum, UL listed for use with aluminum/copper cables. Copper only lugs are an option.

Ampere Rating
400 - 1200

Shunt Trip on Main and Branches ④

Description
BL, BQD, NGB (branch only)
QJ2, QJ2H, NEB, HEB, ED4, HED4

100% Rated Main Circuit Breakers

Ampere Rating	Description
400A	JXD6H, HJD6H, SHJD6H, SCJD6H
600A	LXD6H, HLXD6H

① Available in 90" high enclosure only. Unit space is 42 1/2" with Test and Monitor Panel; 45" without Test and Monitor Panel.

② Not available on Sensitrip III.

③ For required unit space, consult local sales office.

④ Shunt Trip on 100A frame breakers increases mounting height to 6.25" for twin mounting.

Connector Modifications

P4 Panelboards

Compression Lugs

Table P4-15 – Compression Lugs

Style	Amp Rating	Breaker Type	Compression Connectors	Box Height Addition
MLO	400	N/A	(1)250 - 500 Kcmil or (2)#2/0 AWG - 250 Kcmil Cu or Al	Deduct 5.0" Unit Space from available unit space
	600	N/A	(2)#3/0 AWG - 500 Kcmil	
	800	N/A	(3)#3/0 AWG - 500 Kcmil Cu or Al	
	1000	N/A	(4)#3/0 AWG - 500 Kcmil Cu o Al	
	1200		(4)#3/0 AWG - 500 Kcmil Cu or Al	
Main Breaker	400	JD6, JXD6, HJD6, CJD6, SJD6, SHJD6, SCJD6	(2)#2/0 AWG - 500 Kcmil Cu or Al	0

Table P4-16 – Alternate Lugs

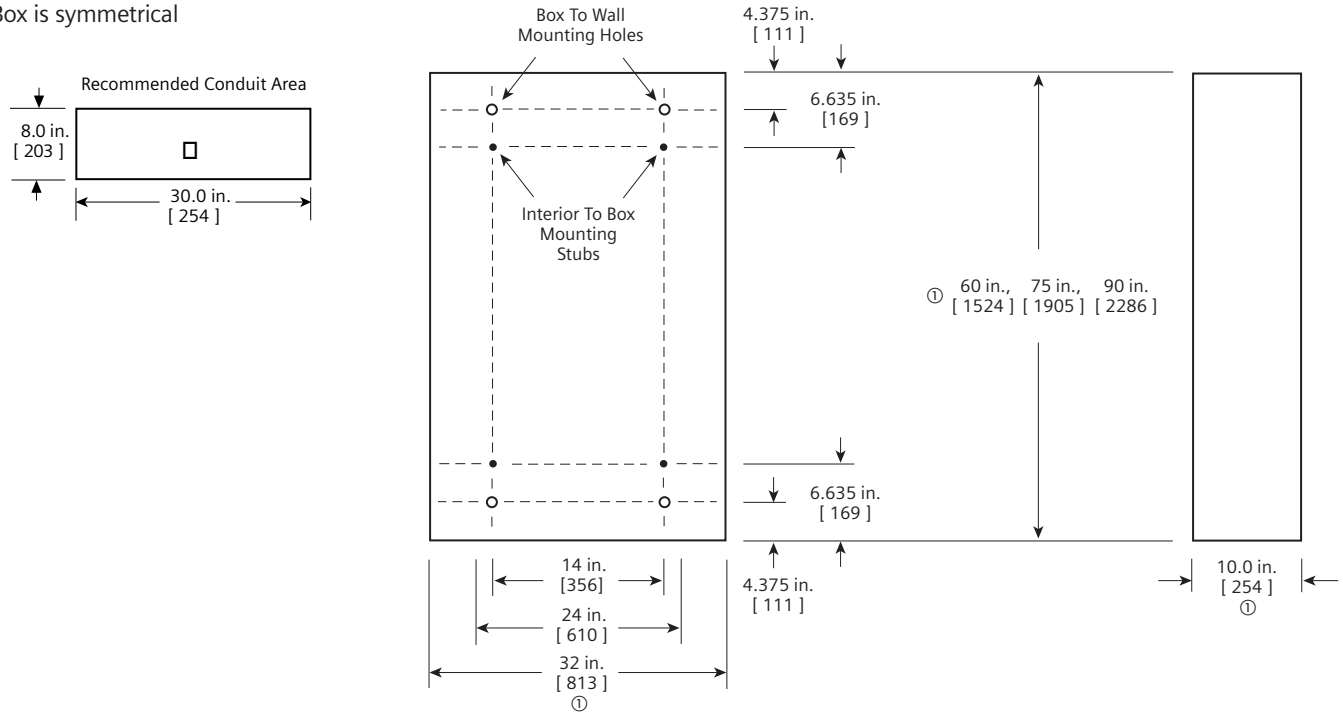
Amp Rating	Breaker Type	Compression Connectors	Box Height
400	N/A	(1)#3/0 AWG - 750 Kcmil or (2)#3/0 AWG 250 Kcmil Cu or Al	Deduct 2.5" Unit Space from available unit space
600	N/A	(2)#3/0 AWG - 750 Kcmil or (4)#3/0 - 350 Kcmil	0
800	N/A	(3)#3/0 AWG - 750 Kcmil Cu or Al	Deduct 5.0" Unit Space from available unit space
1200	N/A	(4)#3/0 AWG - 750 Kcmil Cu or Al	Deduct 7.5" Unit Space from available unit space

Dimensions

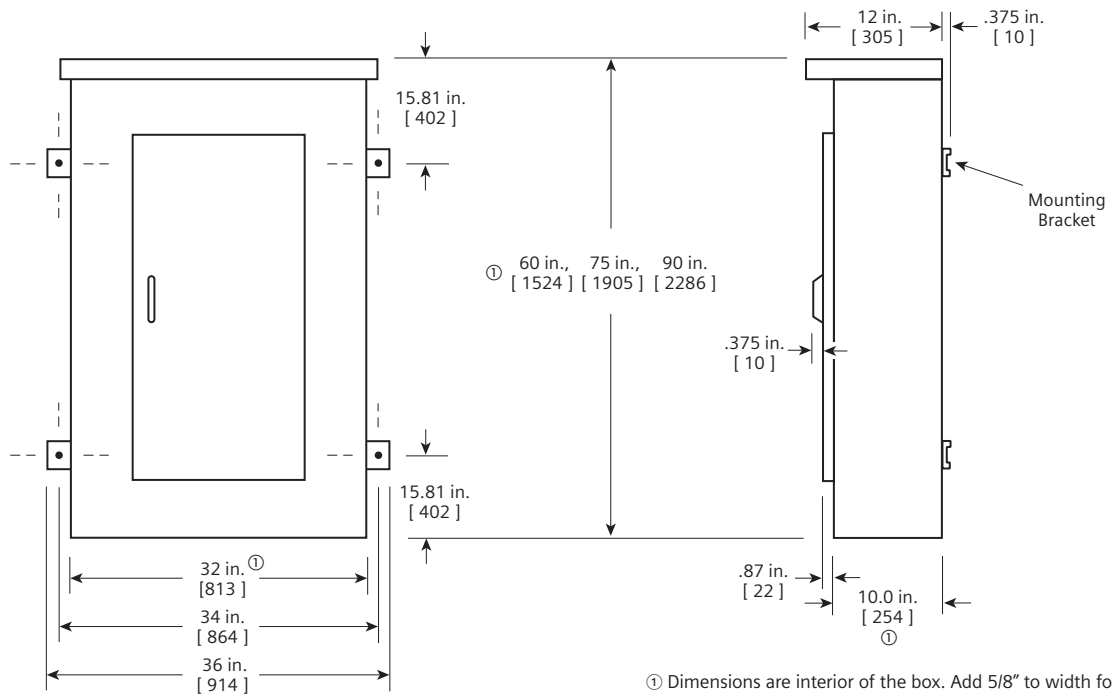
Type P4 Panelboards

Type 1 Box

Box is symmetrical



Type 3R and 3R/12 Box



① Dimensions are interior of the box. Add 5/8" to width for absolute dimension. Add 1/8" to height for absolute dimension.

Dimensions shown in inches and millimeters [].

Kits and Accessories

Type P4 Panelboards

Table P4-17 – Connecting Strap Kits – w/o Circuit Breaker

For use with Sentron SPP Shallow Depth or Type P4 power panels			
Breaker Type	Mounting Type	Unit Height Inches (mm)	Catalog Number
BL, BQD	Twin	3.75 (95)	SBL
NGB	Twin	3.75 (95)	SNB
NEB, HEB	Twin	3.75 (95)	SEB
ED	Twin	3.75 (95)	SE6
CED6	Single	5.0 (127)	SCE
QJ	Twin	5.0 (127)	SQJ
FD6	Twin	5.0 (127)	SF6
CFD6	Single	5.0 (127)	SCF
JXD2, JXD6	Single	8.75 (223)	SJ1
SJD6	Single	8.75 (223)	SSJ1
CJD6	Single	8.75 (223)	SCJ
SCJD6	Single	8.75 (223)	SSCJ
LD6	Single	8.75 (223)	SL6
SLD6	Single	8.75 (223)	SSL6
CLD6	Single	8.75 (223)	SCL
SCLD6	Single	8.75 (223)	SSCL
NMX, HMX, LMX	Single	8.75 (223)	MG1

Table P4-18 – Connecting Strap Kits – Fusible ①

For use with SENTRON® Shallow Depth or Type SPP/FPP/F1/P4 power panels		
Ampere Rating	Unit Height Inches (mm)	Catalog Number
30–30	2.5 (63.5)	F602
30–60	5.0 (127), 7.5 (191)	F657
30–60	5.0 (127), 7.5 (191)	F657
60–60	5.0 (127), 7.5 (191)	F657
60–100	5.0 (127), 7.5 (191)	F657
100–100	5.0 (127), 7.5 (191)	F657
100	7.5 (191)	F657
200	7.5 (191)	F657
200	10.0 (254)	F671
200–200	10.0 (254)	F672

① Normal stock item.

**Table P4-19 – Blank Plates
Circuit Breaker and Vacu-Break**

For use with Sentron SPP and Type P4 power panels	
Height Inches (mm)	Catalog Number
1.25 (32)	6FPB01
2.5 (63.5)	6FPB02
3.75 (95)	6FPB03
5.0 (127)	6FPB05
10.0 (254)	6FPB10

Table P4-20 – Filler Plates

For use with Sentron SPP and P4 power panels	
Breaker Type	Filler Plate Catalog Number
BL, BLH, HBL, BQD, NGB, ED2, ED4, ED6 HED4, HHED6	QF3
NEB, HEB	EBF1

Note: When a front filler plate is not completely filled with breakers, the openings in the unused space must be closed with filler plates selected from this table.

Notes:



P5

PANELBOARDS

Description	Page	Typical Catalog Numbers	
General Information	5-2	Main Lugs Only	5-7
Selection and Application	5-2	Main Circuit Breakers Only	5-7
Application	5-3 – 5-6	Main Fusible Switch	5-7
Main Breaker Selection	5-3	Modifications and Additions	5-8 – 5-10
Enclosure Selection	5-3	Motor Starters	5-9 – 5-10
Main Breaker and Main Switch Unit Space Dimensions	5-3	Connector Modifications	5-10
Main Switch Connectors	5-3	Compression Lugs	5-10
Main Lugs Only Unit Space	5-4	Alternate Lugs	5-10
Branch Switch Unit Space	5-4	Dimensions	5-11
Branch Circuit Breakers	5-5	Kits and Accessories	5-12
Branch Breaker Unit Space	5-6		
Branch Breaker Side Gutters	5-6		

Type P5 Panelboards

The P5 panel is the largest footprint distribution panel in the Siemens panel family. Even though it is our largest panel type, the P5 panel is still a space saver with its 38" width and 12.75" depth. With even higher main ratings to fit the application that require more or larger branch devices. This panel offers a wide array of factory assembled options and has the ability to mix breaker frames in unit space up to 1200 amps and fusible switches up to 1200 amps. Bussing options for the P5 vary from the standard temperature rated aluminum to temperature rated copper and 750 A/SI aluminum and 1000A/SI copper designs. All aluminum bussing in the P5 panel is tin-plated as a standard. Silver-plated is offered as the default for copper bus and tin as an option. Integrated time clocks, bus mounted contactors as mains or submains, split bus and subfeed lugs (up to 600 amps) are just a few of the options of this flexible panel.

The P5 panel configurations defined by the unit space allowed for a given amperage, main device and box height. The P5 panel starts with a 60" high box. All of the branch devices are unit space mounted. Breakers and switches can be mixed and matched to meet customer requirements..

Main Lug / Main Breaker / Main Switch

Enclosure – Standard Type 1 enclosure is 38" wide x 12.75" deep. X Box Height is determined by main device and unit space. See charts for box height.

Voltage – 600 Vac Max.
250 Vdc Max.

Amperage – 800-1200 amp Main breaker, 800-1200 amp MLO, 400-1200 amp Main switch.

Short Circuit Rating – 200 Kaic Max. symmetrical or equal to the lowest rated device installed unless a series rating is indicated. Panels with subfeed or feed-thru lugs without a main device, circuit breaker or fusible unit, are limited to a three-cycle rating. The three-cycle rating for the P5 panel is limited to 42 Kaic. Note that the main device may be mounted remote from the panel.

Bussing – The P5 panel has more options to meet market requirements. The standard bussing is temperature rated aluminum. The rating is per the requirements of UL 67 – the standard for panelboards. All aluminum bussing is tin-plated. Optional bussing for the P5 panel is: 750 A/si aluminum, temperature rated copper, and 1000 A/si copper. The copper bus option for this panel is tin-plated.

Weight – Approximate

Total panelboard weight when filled with a normal quantity of breakers and accessories is about 10 lbs. (1 kg) per inch (54g per mm) of box height.

Table P5-1 – Main Lugs ①

Ampere Rating	Connectors Suitable for Copper or Aluminum
800	(3) - #3/0 AWG-600 Kcmil
1000	(4) - #3/0 AWG-600 Kcmil
1200	(4) - #3/0 AWB-600 Kcmil

① Alternate lugs for 750 Kcmil cable are available, but result in significant loss of branch unit mounting space. Consult Siemens.

Table P5-2 – Gauge Steel of Boxes Fronts, Surface and Flush

Dimensions in inches (mm)		Gauge Steel	
Width	Height	Box	Fronts
38"	60 - 75 - 90	#16 ①	#14 (1 piece trim)
(965)	(1524, 1905, 2286)		#16 (4 piece trim)

① 16 gauge side panels, 12 gauge back support.

Selection and Application

- 1) To specify a particular panelboard, first determine voltage, system, amperage and type of main, amperage and type of branch devices, and modifications, if any. (Step 1)
- 2) List branch devices and modifications requiring space additions. List unit space requirements of each.

Note: Some units are twin mounted meaning two breakers occupy the same unit space.

Select appropriate enclosure height from selection chart on page 5-3 based on unit space requirements. (Step 2)

- 3) Select panelboard catalog number from appropriate table based upon voltage, system, amperage and unit space requirements. (Step 3)

Step #1

Amperage	800
Voltage	208Y/120
System	3 Phase, 4 wire
Main	Main Breaker
Branches	5-125/3, 2-225/3, 1-250/3
Modifications	None
Feed	Top
Mounting	Surface

Step #2

5-125/3 ED4	3.75" = 11.25" Twin Mounted
2-225/3 QJ2	5" = 5" Twin Mounted
1-250/3 FXD6	5" = 5"
	21.25
Enclosure is B875 from Selection Chart on Page 5-3. (32" wide, 75" high, 10" deep)	

Step #3

1-P5C75LX800ATS
5-125/3 ED4
3-ED4 1 Pole Provision
2-225/3 QJ2
1-250/3 FXD6
1-FXD6 Prov. 13.25" Space

Application

Type P5 Panelboards

Table P5-3 – Main Breaker Selection

Ampere Rating	Breaker Type	Maximum IR (kA) Symmetrical Amperes			Available Trip Values
		240V	480V	600V	
800	NMX (Std) M1	65	35	25	600, 700, 800
	HMX M2	100	65	50	
	LMX M3	200	100	65	
	LMD6	65	50	25	500, 600 700, 800
	LMXD6	65	50	25	
	MXD6	65	50	25	
	MD6	65	50	25	
	HMD6	100	65	50	
	CMD6	200	100	50	
	SMD6	65	50	25	600, 700, 800
	SHMD6	100	65	50	
	SCMD6	200	100	50	
1200	NNX (Std) M1	65	35	25	900, 1000, 1200
	HNX M2	100	65	50	
	LNx M3	200	100	65	
	NXD6	65	50	25	800, 900, 1000, 1200
	ND6	65	50	25	
	HND6	100	65	50	
	CND6	200	100	50	900, 1000, 1200
	SND6	65	50	25	
	SHND6	100	65	50	
	SCND6	200	100	50	800, 1000, 1200

Table P5-4 – Enclosure Selection ①

Enclosure Dimension in Inches (mm)				Available Circuit Space in Inches (mm)			
H	W	D		Main Lug	Main Breaker	Main Switch	
				800 / 1200A	800 / 1200A	400 / 600A	800 / 1200A
60 (1524)	Type 1,3R/12 38 (965)	Type 1 12.75 (324)	Type 1, 3R/12 14.25 (362)	30 (762)	—	—	—
75 (1905)	38 (965)	12.75 (324)	14.25 (362)	45 (1143)	35 (889)	25 (635)	28.75 (730)
90 (2286)	38 (965)	12.75 (324)	14.25 (362)	60 (1524)	60 (1524)	40 (1016)	43.75 (1111)

① Standard trim is four piece without door. Surface or flush one piece trim is available for 32 in. (813 mm) wide circuit breaker panel.

Table P5-5 – Main Breaker Unit Space Dimensions (Fig. P5-1)

Ampere Rating	Breaker Type	Dimensions in Inches (mm)	
		A	Neutral B
800	NMX, HMX, LMX, LMXD6, LMD6, MXD6, MD6, HMD6, CMD6, SCMD6, SHMD6, SMD6	13.00 (330)	13.125 (333)
	10.42 (265)		
1200	NNX, HNX, LNx, NXD6, ND6, HND6, CND6, SND6, SHND6	13.00 (330)	

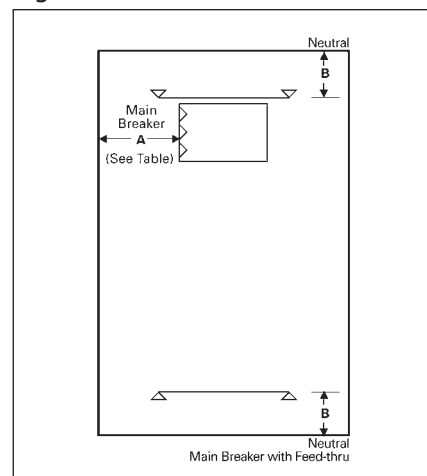
Table P5-6 – Main Switch (Fig. P5-1)

Maximum Ampere Rating	A	B
400A/600A VB	9.3	13.125
400A/1200A HCP	10.3	13.125

Table P5-7 – Main Switch Connectors

Ampere Rating	Connectors Suitable for Copper or Aluminum
400	(1) #3/0 AWG-500 Kcmil (2) #3/0 AWG-250 Kcmil
600	(2) #3/0 AWG-500 Kcmil
800	(3) #3/0 AWG-500 Kcmil
1200	(4) #3/0 AWG-500 Kcmil

Fig. P5-1



Application

Type P5 Panelboards

Table P5-8 – Main Lugs Only Unit Space (Fig. P5-2)

Lugs	Dimensions in inches (mm)			
	Main Lug			Neutral
	800A C	1000A D	1200A E	800A G
Standard	15.969 (406)	15.969 (406)	15.969 (406)	13.125 (333)
Oversize	25.969 (660)	25.969 (660)	25.969 (660)	23.125 (587)
Crimp	18.687 (475)	18.250 (464)	18.250 (464)	15.937 (405)
Standard with Subfeed	—	—	—	13.125 (333)
Standard with Feed-thru	—	—	—	13.125 (333)

Fig. P5-2

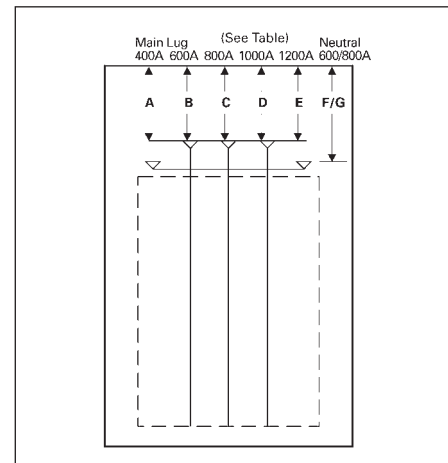


Table P5-9 – Branch Switch Unit Space

Ampere Rating	Number of Poles	Mounting Height in Inches (mm)		AC Voltage	Cables Per Connector	Connectors Suitable For Copper or Aluminum
		Twin Mounted	Single Mounted			
30-30	2, 3	2.50 (64)	—	240	1	#14 - #8 AWG (Cu Only)
30-30	2, 3	5.00 (127)	—	240	1	#14 - #4 AWG
30-60	2, 3	5.00 (127)	—	240	1	#14 - #4 AWG
60-60	2, 3	5.00 (127)	—	240	1	#14 - #4 AWG
60-100	2, 3	7.50 (191)	—	240	1	#10 - #1/0 AWG
100-100	2, 3	7.50 (191)	—	240	1	#10 - #1/0 AWG
200-200	3	10.00 (254)	—	240	1	#6 AWG - 350 Kcmil
200	2	—	7.50 (191)	240	1	#6 AWG - 350 Kcmil
200	3	—	10.00 (254)	240	2	#6 AWG - 350 Kcmil
400	2, 3	—	15.00 (381)	240	2	#4/0 AWG - 500 Kcmil
600	2, 3	—	15.00 (381)	240	2	#4/0 AWG - 500 Kcmil
30-30	2, 3	7.50 (191)	—	600	1	#14 - #4 AWG
30-60	2, 3	7.50 (191)	—	600	1	#14 - #4 AWG
60-60	2, 3	7.50 (191)	—	600	1	#14 - #4 AWG
60-100	2, 3	7.50 (191)	—	600	1	#10 - #1/0 AWG
100-100	2, 3	7.50 (191)	—	600	1	#10 - #1/0 AWG
200-200	3	10.00 (254)	—	600	1	#6 AWG - 350 Kcmil
100	2, 3	—	7.50 (191)	600	1	#10 - #1/0 AWG
200	2, 3	—	10.00 (254)	600	2	#6 AWG - 350 Kcmil
400	2, 3	—	15.00 (381)	600	2	#4/0 AWG - 500 Kcmil
600	2, 3	—	15.00 (381)	600	3	#4/0 AWG - 500 Kcmil
800	2, 3	—	16.25 (413)	600	3	#3/0 AWG - 500 Kcmil
1200	2, 3	—	16.25 (413)	600	4	#3/0 AWG - 500 Kcmil

Application

Type P5 Panelboards

Table P5-10 – Branch Circuit Breakers

Max Amp Rating	Bolt-on Breaker Type	Number of Poles	Amp Rating	Maximum Interrupting Rating (kA)					
				Volts – AC					
				120	120/240	240	277	480	600
100	BL (120)	1	15 - 70	10	—	—	—	—	—
		2	15 - 100	—	10	—	—	—	—
		3	15 - 100	—	—	10	—	—	—
	BLR (240V)	2	15 - 100	—	—	10	—	—	—
		1	15 - 70	—	22	—	—	—	—
		2	15 - 100	—	22	—	—	—	—
	BLH	3	15 - 100	—	—	22	—	—	—
		1	15 - 70	—	65	—	—	—	—
		2	15 - 100	—	65	—	—	—	—
	HBL	3	15 - 100	—	—	65	—	—	—
		1	15 - 70	—	65	—	—	—	—
		2	15 - 100	—	65	—	—	—	—
BQD	3	15 - 100	—	—	65	—	—	—	
	1	15 - 70	—	65	—	—	—	—	
	2	15 - 100	—	65	—	—	—	—	
BQD6 ②	3	15 - 100	—	—	65	—	—	—	
	1	15 - 70	65	—	—	—	—	—	
	2	15 - 100	—	—	65	—	—	10	
125	NGB ① ②	1	15 - 125	100	—	—	25	—	—
		2,3	15 - 125	—	100	100	—	25	—
	NEB ① ②	1	15 - 125	85	—	—	35	—	—
		2,3	15 - 125	—	85	85	—	35	—
	HEB ① ②	1	15 - 125	100	—	—	65	—	—
		2,3	15 - 125	—	100	100	—	65	—
	ED4	1	15 - 125	65	—	—	22	—	—
		2	15 - 125	—	—	65	—	18	—
		3	15 - 125	—	—	65	—	18	—
	ED6	2	15 - 125	—	—	65	—	25	18
		3	15 - 125	—	—	65	—	25	18
		1	15 - 125	100	—	—	—	—	—
HED4 HHED6	2	15 - 125	—	—	—	65 ③	—	—	
	3	15 - 125	—	—	100	42	—	—	
	2	15 - 125	—	—	200	—	—	200	
225	CED6	2	15 - 125	—	—	200	—	—	200
	QJ2	2/3	60 - 225	—	—	10	—	—	—
	QJH2	2/3	60 - 225	—	—	22	—	—	—
	QJ2-H	2/3	60 - 225	—	—	42	—	—	—
250	HQJ2H	2/3	100 - 225	—	—	100	—	—	—
	FXD6, FD6	2/3	70 - 250	—	—	65	—	35	18
	HFD6, HFXD6	2/3	70 - 250	—	—	100	—	65	25
	HHFD6, HHFXD6	2/3	70 - 250	—	—	200	—	100	25
400	CFD6	2/3	70 - 250	—	—	200	—	200	100
	JXD6, JD6, SJD6	2/3	200 - 400	—	—	65	—	35	25
	HJD6, HJXD6	2/3	200 - 400	—	—	100	—	65	35
	HHJD6, HHJXD6	2/3	200 - 400	—	—	200	—	100	50
	SHJD6	2/3	200 - 400	—	—	100	—	65	35
	CJD6, SCJD6	2/3	200 - 400	—	—	200	—	150	100
600	LXD6	2/3	450 - 600	—	—	65	—	35	25
	LD6	2/3	250 - 600	—	—	65	—	35	25
	SLD6	2/3	300 - 600	—	—	65	—	35	25
	HLD6	2/3	250 - 600	—	—	100	—	65	35
	HHL6, HHLXD6	2/3	250 - 600	—	—	200	—	100	50
	SHLD6	2/3	300 - 600	—	—	100	—	65	35
	CLD6	2/3	450 - 600	—	—	200	—	150	100
	SCLD6	2/3	300 - 600	—	—	200	—	150	100
	LMXD6, LMD6	2/3	500 - 800	—	—	65	—	50	25
800	HLMXD6, HLMXD6	2/3	500 - 800	—	—	65	—	50	25
	NMG	2/3	500 - 800	65	65	65	35	35	25
	HMG	2/3	500 - 800	100	100	100	65	65	25
	LMG	2/3	500 - 800	200	200	200	100	100	50
1200	NNG	2/3	800 - 1200	65	65	65	35	35	25
	HNG	2/3	800 - 1200	100	100	100	65	65	50
	LNG	2/3	800 - 1200	200	200	200	100	100	65

① 408Y / 277V 3Ø4W only. Not for use on 480V 3Ø3W Delta Systems.

③ 15-30A 65 kA, 35-100A 25 kA.

② CSA listed only at 600V AC.

Application

Type P5 Panelboards

Table P5-11 – Branch Breaker Unit Space

Amp Rating	Breaker Type	Mounting Height in Inches (mm)	
		Twin	Single
100	BL, BLH, HBL, BQD	3.75 (95) ①	—
125	NGB, NEB, HEB, ED4, ED6, HED4, HHED6, CED6		
225	QJ2, QJH2, QJ2-H	5.00 (127)	—
250	FXD6, FD6, HFD6		
	CFD6	—	5.00 (127)
400	JXD6, JD6, SJD6	②	8.75 (222)
	HJD6, SHJD6, CJD6, SCJD6		
600	LXD6, LD6, SLD6, HLD6, SHLD6, CLD6, SCLD6	—	8.75 (222)
	LMD6, LMXD6, NMG, HMG, LMG		
800	MD6, MXD6, SMD6, HMD6, SHMD6, CMD6, SCMD6	—	10.00 (254)
1200	ND6, NXD6, SND6, HND6, NNG, HNG, LNG SHND6, CND6, SCND6		

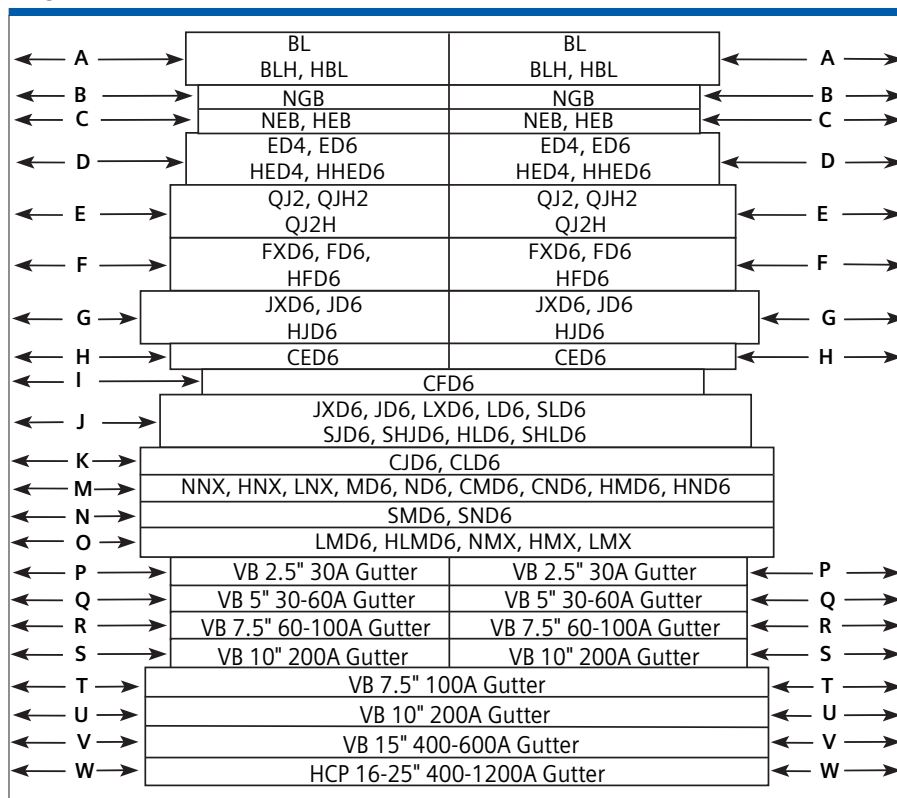
① Mounting height: 6 poles require 3.75 in. (95mm) of mounting height. All breakers are double-branch mounted.

② Consult Enclosure Section Table. 400A twin mounted branches require 38 in. (965 mm) wide enclosure.

Table P5-12 – Branch Breaker Side Gutters Inches (mm) (Fig. P5-3)

Reference Letter	Panel Width Inches (mm) 38
A	14.0 (356)
B	13.98 (355)
C	11.62 (295)
D	10.0 (254)
E	8.75 (222)
F	8.25 (210)
G	7.925 (201)
H	7.615 (193)
I	11.769 (299)
J, M, N, O	13.425 (341)
K	12.0 (305)
P	10.0 (254)
Q	8.0 (203)
R, S	10.5 (267)
T	9.3 (236)
U	10.3 (262)
V	9.3 (236)
W	10.3 (262)

Fig. P5-3



Typical Catalog Numbers

Type P5 Panelboards

Table P5-13 – Main Lugs Only – shown with aluminum bus, top fed, and surface trims

Max. Panel Amp Rating	Unit Space (inches)	208Y/120V	240/120V	120/240V or 250 Vdc Max	240	480Y/277V	480V ①
		3 Phase, 4 Wire Catalog Number	3 Phase, 4 Wire Catalog Number	1 Phase, 3 Wire Catalog Number	3 Phase, 3 Wire Catalog Number	3 Phase, 4 Wire Catalog Number	1 Phase, 3 Wire Catalog Number
800	30	P5C60ML800ATS	P5B60ML800ATS	P5A60ML800ATS	P5D60ML800ATS	P5E60ML800ATS	P5F60ML800ATS
	45	P5C75ML800ATS	P5B75ML800ATS	P5A75ML800ATS	P5D75ML800ATS	P5E75ML800ATS	P5F75ML800ATS
	60	P5C90ML800ATS	P5B90ML800ATS	P5A90ML800ATS	P5D90ML800ATS	P5E90ML800ATS	P5F90ML800ATS
1000	30	P5C60ML101ATS	P5B60ML101ATS	P5A60ML101ATS	P5D60ML101ATS	P5E60ML101ATS	P5F60ML101ATS
	45	P5C75ML101ATS	P5B75ML101ATS	P5A75ML101ATS	P5D75ML101ATS	P5E75ML101ATS	P5F75ML101ATS
	60	P5C90ML101ATS	P5B90ML101ATS	P5A90ML101ATS	P5D90ML101ATS	P5E90ML101ATS	P5F90ML101ATS
1200	30	P5C60ML120ATS	P5B60ML120ATS	P5A60ML120ATS	P5D60ML120ATS	P5E60ML120ATS	P5F60ML120ATS
	45	P5C75ML120ATS	P5B75ML120ATS	P5A75ML120ATS	P5D75ML120ATS	P5E75ML120ATS	P5F75ML120ATS
	60	P5C90ML120ATS	P5B90ML120ATS	P5A90ML120ATS	P5D90ML120ATS	P5E90ML120ATS	P5F90ML120ATS

Table P5-14 – Main Circuit Breakers Only – shown with aluminum bus, top fed, and surface trims

Max. Panel Amp Rating	Unit Space (inches)	208Y/120V	240/120V	120/240V or 250 Vdc Max	240	480Y/277V	480V ①
		3 Phase, 4 Wire Catalog Number	3 Phase, 4 Wire Catalog Number	1 Phase, 3 Wire Catalog Number	3 Phase, 3 Wire Catalog Number	3 Phase, 4 Wire Catalog Number	1 Phase, 3 Wire Catalog Number
800	21.25	P5C60M1800ATS	P5B60M1800ATS	P5A60M1800ATS	P5D60M1800ATS	P5E60M1800ATS	P5F60M1800ATS
	36.25	P5C75M1800ATS	P5B75M1800ATS	P5A75M1800ATS	P5D75M1800ATS	P5E75M1800ATS	P5F75M1800ATS
	51.25	P5C90M1800ATS	P5B90M1800ATS	P5A90M1800ATS	P5D90M1800ATS	P5E90M1800ATS	P5F90M1800ATS
1200	20	P5C60N1120ATS	P5B60N1120ATS	P5A60N1120ATS	P5D60N1120ATS	P5E60N1120ATS	P5F60N1120ATS
	35	P5C75N1120ATS	P5B75N1120ATS	P5A75N1120ATS	P5D75N1120ATS	P5E75N1120ATS	P5F75N1120ATS
	50	P5C90N1120ATS	P5B90N1120ATS	P5A90N1120ATS	P5D90N1120ATS	P5E90N1120ATS	P5F90N1120ATS

Table P5-15 – Main Fusible Switch (fuses not included)

Max. Panel Amp Rating	Unit Space (inches)	208Y/120V	240/120V	120/240V	240V	480Y/277V	480V ①
		3 Phase, 4 Wire Catalog Number	3 Phase, 4 Wire Catalog Number	1 Phase, 3 Wire Catalog Number	3 Phase, 3 Wire Catalog Number	3 Phase, 4 Wire Catalog Number	3 Phase, 3 Wire Catalog Number
400	20	P5C75MS400ATS	P5B75MS400ATS	P5A75MS400ATS	P5D75MS400ATS	P5E75MS400ATS	P5F75MS400ATS
	40	P5C90MS400ATS	P5B90MS400ATS	P5A90MS400ATS	P5D90MS400ATS	P5E90MS400ATS	P5F90MS400ATS
600	25	P5C75MS600ATS	P5B75MS600ATS	P5A75MS600ATS	P5D75MS600ATS	P5E75MS600ATS	P5F75MS600ATS
	40	P5C90MS600ATS	P5B90MS600ATS	P5A90MS600ATS	P5D90MS600ATS	P5E90MS600ATS	P5F90MS600ATS
800 ②	28.75	P5C75MS800ATS	P5B75MS800ATS	P5A75MS800ATS	P5D75MS800ATS	P5E75MS800ATS	P5F75MS800ATS
	43.75	P5C90MS800ATS	P5B90MS800ATS	P5A90MS800ATS	P5D90MS800ATS	P5E90MS800ATS	P5F90MS800ATS
1200 ②	28.75	P5C75MS120ATS	P5B75MS120ATS	P5A75MS120ATS	P5D75MS120ATS	P5E75MS120ATS	P5F75MS120ATS
	43.75	P5C90MS120ATS	P5B90MS120ATS	P5A90MS120ATS	P5D90MS120ATS	P5E90MS120ATS	P5F90MS120ATS

① For 600V, change "F" in position 3 to "G."

② Alternate main breaker requires an additional 1.25" unit space.

Modification and Additions

Type P5 Panelboards

Devices Mounted on Gutter Cover
Includes Device, Mounting – Wired or Unwired

Description
One piece front with door (Depth increases to 14.25")
Hinged Gutter Covers 4 pc front
Toggle Switch — SPST or 3-way 15A, 277V maximum
Pilot Light — General Purpose Neon or Incandescent
Pushbutton

Feed-Thru Lugs

Ampere Rating	Unit Space (inches)
400	10
600	10
800	17.5
1200	17.5

Grounding of Panelboards

Ground Bars except for brazed to box are shipped with the panel interior factory mounted.

- Non-Insulated Equipment Ground Bar – Standard
- Copper Non-Insulated Ground Bar
- Al Insulated Equipment Ground Bar
- Cu Insulated Equipment Ground Bar
- Ground Bar Brazed to Box

Fuse Clip Provisions (Add to 250 Volts or 600 Volts Unit Prices Per Switch)

Amp Rating	Class J	Class R	Class T
30	•	•	N/A
60	•	•	N/A
100	•	•	•
200 ①	•	•	•
400	•	•	•
600	•	•	•

① For use on main lug, main breaker or main switch panels without subfeed breakers.

② Available in 90" high enclosure only. Unit space is 42 1/2" with Test and Monitor Panel; 45" without Test and Monitor Panel.

Ground Fault on Main Breaker

Description	Amp Rating
Conventional Ground Fault ② Includes: Ground Fault Relay, Ground Sensor, CPT and Shunt Trip	800-1200
Test and Monitor Panel ③ Ground Fault add to Sensitrip III breaker price (takes 5" of unit space)	800-1200

•Indicates available

Time Clocks ④

Sangamo, Tork or Paragon time clock can be supplied, mounted in panelboard cabinet. For required increase in enclosure dimension, consult local sales office.

Description

Time clock (1- or 2-Pole, Single or Double Throw Contacts; 3-Pole Single Throw)

277V Maximum with Plain Dial

Options:

- Astronomical Dial
- An Omitting Device
- Reserve Power or Carryover
- Space and Mounting Provisions Only

Circuit Breaker Accessories Handle Blocking Device Blocks handle in either the "ON" or "OFF" position.

Padlocking Device – Padlocks
in "OFF" position.

③ Not available on Sensitrip III.

④ For required unit space, consult local sales office.

⑤ Shunt Trip on 100A frame breakers increases mounting height to 6.25" for twin mounting.

Main Bus

Standard main bus and ground bus are tin-plated aluminum. For copper main bus, neutral bus and ground bus, add from the table for each panel.

Lugs – For Main Lug Only Panels

Standard main lugs and neutral lugs are tin-plated aluminum, UL listed for use with aluminum/copper cables. Copper only lugs are an option.

Ampere Rating

400 - 1200

Shunt Trip on Main and Branches ⑤

Description

BL, BQD, NGB, NEB, HEB (branch only)
QJ2, QJ2H, ED2, ED4, HED4
(branch only)

All others through 600A
800A and 1200A

100% Rated Main Circuit Breakers

Ampere Rating	Description
800A	MDD6, MD6H, MXD6H, HMD6H, SMD6H
1200A	NXD6H, ND6H, HND6H

Modification and Additions

Type P5 Panelboards

Motor Starters

ETI instantaneous-trip circuit breakers are recommended for use in combination motor starters to provide selective short circuit protection for the motor branch circuit. The adjustable instantaneous-trip feature provides for a trip setting slightly above the peak motor inrush current. With this setting, no delay is introduced in opening the circuit when the fault occurs. Since these circuit breakers have no time delay trip element, they must be used in conjunction with, and immediately ahead of, the motor-running over-current protective device.

Check the voltage and interrupting rating of the circuit breaker to assure that they are adequate for the electrical system. ETI circuit breakers are UL recognized components and must be used.

Full voltage, non-reversing NEMA Size 1 through Size 4 motor starters are available as additions to P5 panelboards.

P5 panelboards can accommodate motor disconnect devices in either one of two circumstances: 1. by using a branch thermal magnetic (ETI) circuit breaker to feed a remote starter that controls a motor which is in sight of and within fifty feet of the panelboard. 2. by using a branch instantaneous trip only (ETI) circuit breaker in conjunction with a motor starter mounted in the same enclosure which is in sight of and within fifty feet of the controlled motor.

Whenever a remote starter is used, a padlocking device must be specified so that a padlock may be installed in the "OFF" position. Conversely, when breaker and starter are mounted within the same enclosure, provision for padlocking shall be provided. P2 panelboards incorporate motor disconnect devices much in the same way as P5 panelboards, only a fusible Vacu-Break switch unit is utilized rather than an (ETI) circuit breaker. Also, padlocking devices are standard on all

Vacu-Break switches and need not be ordered as an accessory.

Standard Motor Starters Equipped With:

- 3rd overload relay
- Mechanical interlock between circuit breaker (or switch) and motor starter door
- Reset button
- Class 1, Type A wiring

Optional Motor Control Accessories

- Pushbuttons: Start/Stop or Open/Close, Reverse/Forward/Stop or High/Low/Stop
- Selector Switch: Hand/Off/Auto or On/Off
- Pilot Light: Red or Amber
- Auxiliary interlock (normally open or normally closed-unwired)
- Control transformer, 60Hz, fused LV, Sizes 1 thru 4
- Class 1, Type B wiring

Table P5-16 – ETI Circuit Breakers (Instantaneous Trip Only) For Branch-Circuit Use with AC Full Voltage Motor Starters

Amp Rating	Breaker Type	Maximum 3Ø Ratings			Mounting Height in Inches (mm)		
		220 (208)V	240V	480V ^{①②}	Twin	Single	Min. Section Width Inches (mm)
3		—	—	1	5 (127)	—	32 (813)
5		0.5	0.5	2	5 (127)	—	32 (813)
10	ED ^①	2	2	3	5 (127)	—	32 (813)
25		5	5	10	5 (127)	—	32 (813)
50		15	15	30	5 (127)	—	32 (813)
100		30	30	60	5 (127)	—	32 (813)
150	FD6 ^②	40	40	75	5 (127)	—	32 (813)
225	FD6, CFD6	50	50	100	5 (127)	—	32 (813)

^① 100,000 kA at 480V with E-frame and CFD6 frame breakers.

^② 65,000 kA at 480V with F-frame breakers.

^③ Increase to 7.50 inches when pilot light or control transformer is required.

Table P5-17 – Full Voltage Non-Reversing Starters Class A20

NEMA Starter Size		Unit Space Mtg. Ht. In. (mm)
Left	Right	
0	—	5 (127) ^③
0	0	5 (127) ^③
1	—	5 (127) ^③
1	0	5 (127) ^③
1	1	5 (127) ^③
2	—	10 (254)
2	0	10 (254)
2	1	10 (254)
2	2	10 (254)
3	—	15 (381)
3	0	15 (381)
3	1	15 (381)
3	2	15 (381)
3	3	15 (381)
4	—	15 (381)

Table P5-18 – Maximum 3 Phase Horsepower Rating

NEMA Starter Size	Voltage AC		
	220 (208)V	240V	480V
0	3	3	5
1	7.5	7.5	10
2	10	15	25
3	25	30	50
4	40	50	100

Modification and Additions

Type P5 Panelboards

**Table P5-19 – Vacu-Break Fusible Switches
For Branch Circuit Use with AC Combination Full Voltage Starters ①**

Amp Rating	Horsepower Ratings				Mounting Height in Inches (mm)				Min. Section Width Inches (mm)
	240V AC		480V AC		240V AC		480V AC		
	With NEC Fuse	With Dual-Element Fuse	With NEC Fuse	With Dual-Element Fuse	Twin	Single	Twin	Single	
30-30	3	7.5	—	—	2.50 ② (64)	—	—	—	32 (813)
30-30	3	7.5	5	10	5.00 (127)	—	7.50 (191)	—	32 (813)
30-60	3-7.5	7.5-15	5-15	25	5.00 (127)	—	7.50 (191)	—	32 (813)
60-60	7.5	15	15	25	5.00 (127)	—	7.50 (191)	—	32 (813)
60-100	7.5-15	15-30	15-25	25-50	7.50 (191)	—	7.50 (191)	—	32 (813)
100-100	15	30	25	50	7.50 (191)	—	7.50 (191)	—	32 (813)
100	—	—	25	50	—	—	—	7.50 (191)	32 (813)
200	25	50	50	100	—	10.00 (254)	—	10.00 (254)	32 (813)
200-200	—	50	—	100	10.00 (254)	—	10.00 (254)	—	32 (813)
400	50	100	100	—	—	15.00 (381)	—	15.00 (381)	38 (965)
600	75	100	—	—	—	15.00 (381)	—	15.00 (381)	38 (965)

① 100,000 kA at 480V with Class J or Class RK5 fuses.

② The 2.50 inch (64mm) high unit is suitable for NEC Class H and K5 fuses only. Class R rejection type fuse holders are not available.

Connector Modifications

Compression Lugs

Table P5-20 – Compression Lugs

Style	Amp Rating	Breaker Type	Compression Connectors	Box Height Addition
MLO	800	N/A	(3)#3/0 AWG - 500 Kcmil Cu or Al	Deduct 5.0" Unit Space from available unit space
	1000	N/A	(4)#3/0 AWG - 500 Kcmil Cu or Al	Deduct 5.0" Unit Space from available unit space
	1200	N/A	(4)#3/0 AWG - 500 Kcmil CU or Al	Deduct 5.0" Unit Space from available unit space
Main Breaker	800	MD6, HMD6, CMD6, SMD6, SHMD6, SCMD6	(3)#2/0 AWG - 500 Kcmil CU or Al	0
	1000	ND6, HND6, CND6, SND6, SHND6, SCND6	(4)#250 - 500 Kcmil Cu or Al	0

Table P5-21 – Alternate Lugs

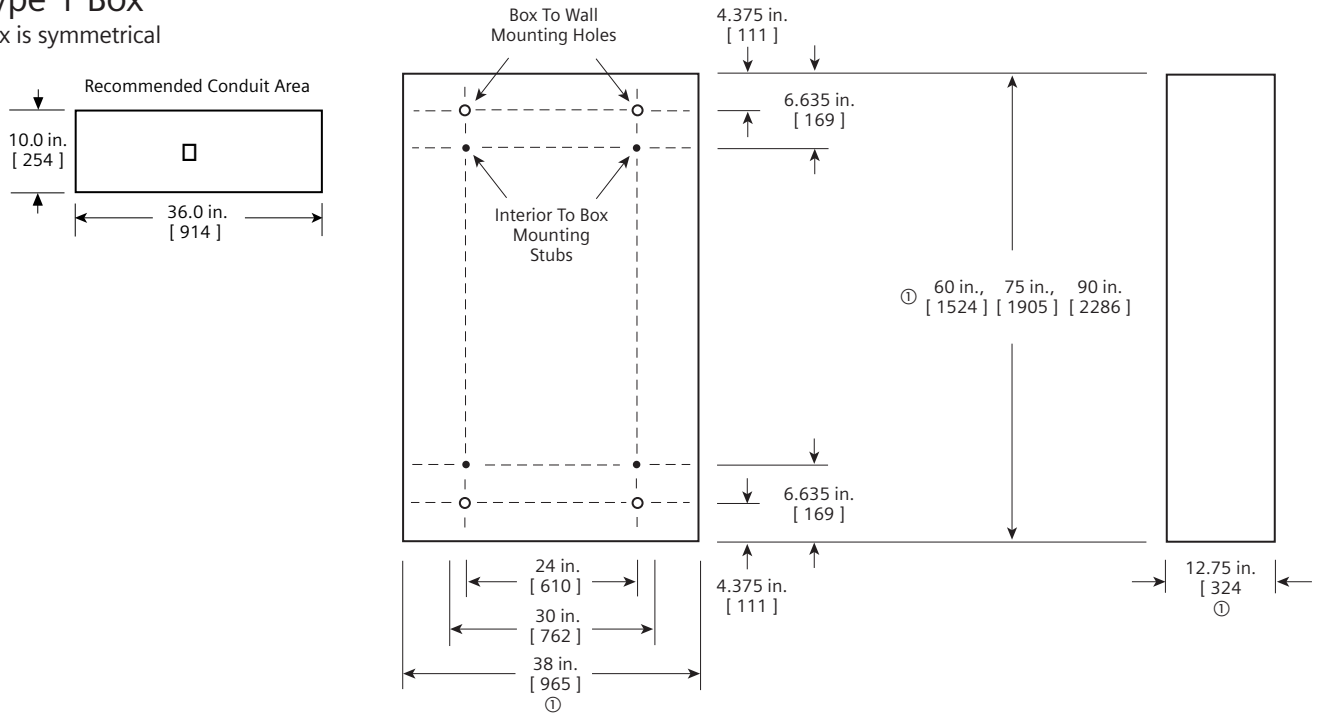
Style	Amp Rating	Breaker Type	Compression Connectors	Box Height Addition
MLO	800	N/A	(3)#3/0 AWG - 750 Kcmil Cu or Al	Deduct 5.0" Unit Space from available unit space
	1000	N/A	(4)#3/0 AWG - 750 Kcmil Cu or Al	Deduct 7.5" Unit Space from available unit space
	1200	N/A	(4)#3/0 AWG - 750 Kcmil CU or Al	Deduct 7.5" Unit Space from available unit space

Dimensions

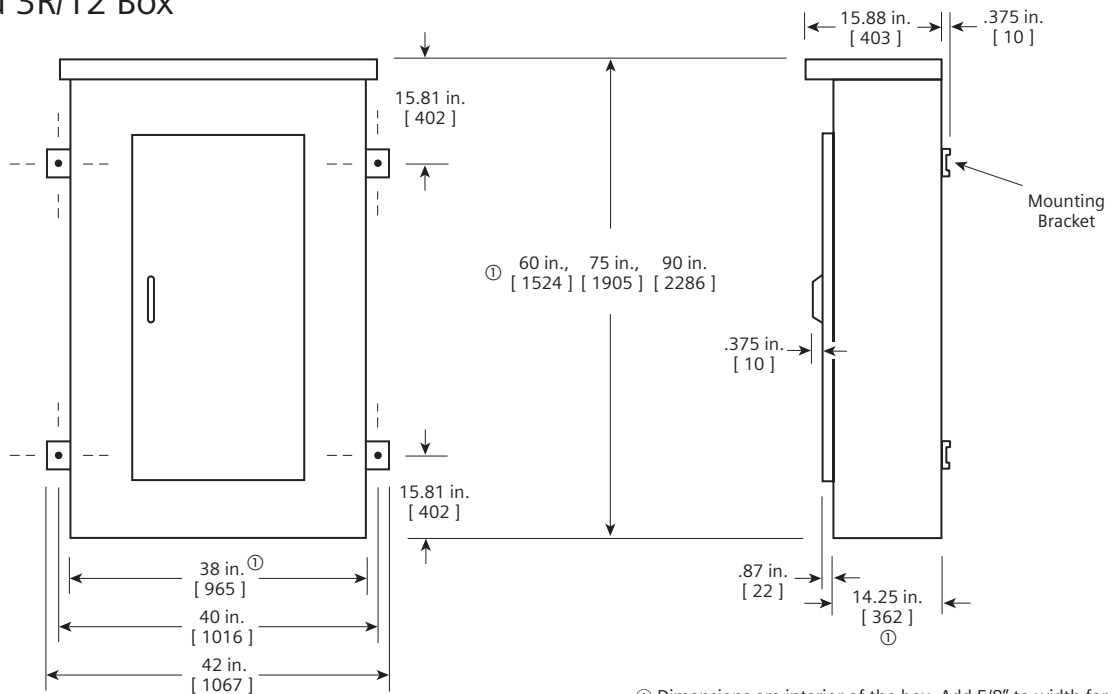
Type P5 Panelboards

Type 1 Box

Box is symmetrical



Type 3R and 3R/12 Box



① Dimensions are interior of the box. Add 5/8" to width for absolute dimension. Add 1/8" to height for absolute dimension.

Dimensions shown in inches and millimeters [].

Kits and Accessories

Type P5 Panelboards

Table P5-22 – Connecting Strap Kits ①②③ Circuit Breaker

For use with Sentron Deep or Type P5 power panels			
Breaker Type	Mounting Type	Unit Height Inches (mm)	12.75" Deep Box
			Catalog Number
BL, BQD	Twin	3.75 (95)	SBLBD
NGB	Twin	3.75 (95)	SNBD
NEB, HEB	Twin	3.75 (95)	SEBD
ED	Twin	3.75 (95)	SE6D
CED6	Single	5.0 (127)	SCED
QJ	Twin	5.0 (127)	SQJD
FD6	Twin	5.0 (127)	SF6D
CFD6	Single	5.0 (127)	SCFD
JXD2, JXD6	Single	8.75 (223)	SJ1D
JXD2, JXD6	Twin	8.75 (223)	SJ2D
SJD6	Single	8.75 (223)	SSJ1D
CJD6	Single	8.75 (223)	SCJD
SCJD6	Single	8.75 (223)	SSCJD
LD6	Single	8.75 (223)	SL6D
SLD6	Single	8.75 (223)	SSL6D
CLD6	Single	8.75 (223)	SCLD
SCLD6	Single	8.75 (223)	SSCLD
NMX, HMX, LMX	Single	8.75 (223)	MG1D
LMD6, HLMD6	Single	8.75 (223)	SLM1D
MD6, HMD6, CMD6	Single	10.0 (254)	SMND
SMD6, SHMD6	Single	10.0 (254)	SSMND
NNX, HNX, LNX	Single	10.0 (254)	NG1D
ND6, HND6	Single	10.0 (254)	SMND
SND6, SHND6,	Single	10.0 (254)	SSMND
SCND6			

Table P5-23 – Blank Plates – Circuit Breaker and Vacu-Break ①

For use with Sentron SPP and Type P5 power panels	
Height Inches (mm)	Catalog Number
1.25 (32)	6FPB01
2.5 (63.5)	6FPB02
3.75 (95)	6FPB03
5.0 (127)	6FPB05
10.0 (254) ④	6FPB10

Table P5-24 – Filler Plates

For use with Sentron SPP and P5 power panels	
Breaker Type	Filler Plate Catalog Number
BL, BLH, HBL, BQD, NGB, ED2, ED4, ED6	QF3
HED4, HHED6	
NEB, HEB	EBF1

Note: When a front filler plate is not completely filled with breakers, the openings in the unused space must be closed with filler plates selected from this table.

Table P5-25 – Connecting Strap Kits – Fusible ③

For use with Sentron FPP Deep or Type F2/P5 power panels		
Ampere Rating	Unit Height Inches (mm)	Catalog Number
30-30	2.5 (63.5)	F602D
30-30	5.0 (127), 7.5 (191)	F657D
30-60	5.0 (127), 7.5 (191)	F657D
60-60	5.0 (127), 7.5 (191)	F657D
60-100	5.0 (127), 7.5 (191)	F657D
100-100	5.0 (127), 7.5 (191)	F657D
100	7.5 (191)	F657D
200	7.5 (191)	F657D
200	10.0 (254)	F671D
200-200	10.0 (254)	F672D
400-600	15.0 (381)	F6150D
800-1200 ②	16.25 (413)	F6162D

① Normal stock item.

② Includes cover plate and mounting hardware, less circuit breaker.

③ Also fits Types FCI, FCII, SB1 and SB2 switchboards.

④ 800-1200 amp units are HCP switch.



C1/C2 PANELBOARDS

Description	Page		
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General Specifications

C1 and C2 Panelboards

Type C1

250 Volts AC Maximum
 250 Ampere Mains
 250 Ampere Maximum Branch
 UL Short Circuit Rating – 200,000 IR Maximum
 Branch Breaker Symmetrical Interrupting Rating
 Based on Underwriters' Test Procedure

Type C2

480Y/277 Volts AC Maximum
 250 Ampere Mains
 250 Ampere Maximum Branch
 UL Short Circuit Rating – 100,000 IR Maximum
 Meets 2002 NEC wire bending requirement, section 312-6.

Panelboards

Listed by Underwriter's Laboratories, Inc., under "Panelboards"
 File #E2269.

Meets Federal Specification W-C375B/Gen.

Panelboards Fronts and Doors

Standard panelboards are furnished with trim with a flush door lock. All are factory assembled for ease of installation. Fronts are fabricated from code gauge steel and finished ANSI-61.

Main Breakers C1

BL, BLH and HBL frame breakers are mounted horizontally. All other frames are mounted vertically.

Main Breakers C2

BQD frame breakers are mounted horizontally. All other frames are mounted vertically.

Weight — Approximate

Total panelboard weight when filled with a normal quantity of breakers and accessories is about 3 lbs. (1 kg) per inch (54g per mm) of box height.

Column Extensions

Available in various standard lengths, extensions are 5.25 in. (133 mm) deep with a width of 7 in. (178 mm). (These are outside dimensions). Designed to fit into an 8 in. (203 mm) structural WF beam. Column panels may also be surface mounted.

Pull Boxes

Two styles of pull boxes are available, top and front mounted. When the panel and its extensions are mounted in a structural WF Beam, a front-mounted pull box is required. When the panels are surface-mounted, top-mounted pull box may be used. Provisions are made so that the neutral bar may be mounted in the pull box when required.

Table C1/C2-1 – Box Sizing

Certain Modifications such as subfeed breakers and feed-thru lugs require additional unit space. Use this table to determine proper enclosure size.

Panel Configuration	No. of Circuits	Height Inches (mm)	Dimensions in inches (mm)			
			Width		Depth	
			C1	C2	C1	C2
Main Lug	18	48 (1219)	7.62 (194)	8.50 (216)	5.75 (146)	5.75 (146)
	30	73 (1854)				
	42	85 (2159)				
Main Lug with Feed-Thru Lugs	18	73 (1854)				
	30	86 (2184)				
	42	85 (2159)				
Main Lug with Subfeed Breaker	18	73 (1854)				
	30	85 (2159)				
Main Breaker	18	48 (1219)				
	30	73 (1854)				
	42	85 (2159)				
Main Breaker with Feed-Thru Lugs	18	73 (1854)				
	30	85 (2159)				
	42	85 (2159)				
Main Breaker with Subfeed Breaker	18	73 (1854)				
	30	85 (2159)				

Table C1/C2-2 – Gauge Steel Boxes

Type	Width	Height	Gauge Steel
C1	7 5/8"	48, 73, 85	#14
C2	8 1/2"	48, 73, 85	#14

Table C1/C2-3 – Fronts

Type	Width	Height	Gauge Steel
C1	7 5/8"	48, 73, 85	#14
C2	8 1/2"	48, 73, 85	#14

Table C1/C2-4 – Main Breaker Connectors

Ampere Rating	Connector Suitable for Cu or Al
100	(1) #14-1/0 AWG
125	(1) #4-1/0 AWG
225	(1) #6 AWG-300 kcmil
250	(1) #4 AWG-350 kcmil Al (1) #6 AWG-350 kcmil Cu

Table C1/C2-5 – Main Lug Connectors

Ampere Rating	Connector Suitable for Cu or Al
125	(1) #6 AWG-350 kcmil
250	(1) #6 AWG-350 kcmil

Selection

C1 and C2 Panelboards

Table C1/C2-6 – Main Lugs Only C1

Max. Panel Amp Rating	Max. 1-Pole Circuits	Box Height Inches	208Y/120V 3, Phase 4 Wire Catalog Number	120/240V 1 Phase, 3 Wire Catalog Number
125	18	48	C1C18ML125CTS	C1A18ML125CTS
	30	73	C1C30ML125CTS	C1A30ML125CTS
	42	85	C1C42ML125CTS	C1A42ML125CTS
250	18	48	C1C18ML250CTS	C1A18ML250CTS
	30	73	C1C30ML250CTS	C1A30ML250CTS
	42	85	C1C42ML250CTS	C1A42ML250CTS

Table C1/C2-7 – Main Lugs Only C2

Max. Panel Amp Rating	Max. 1-Pole Circuits	Box Height Inches	480Y/277V 3 Phase, 4 Wire Catalog Number
125	18	48	C2E18ML125CTS
	30	73	C2E30ML125CTS
	42	85	C2E42ML125CTS
250	18	48	C2E18ML250CTS
	30	73	C2E30ML250CTS
	42	85	C2E42ML250CTS

Table C1/C2-8 – Main Circuit Breaker C1 ① ②

Amp Rating	Max. 1-Pole Circuits	Box Height Inches	Catalog Number	Catalog Number
100	18	48	C1C18BL100CTS	C1A18BL100CTS
	30	73	C1C30BL100CTS	C1A30BL100CTS
	42	85	C1C42BL100CTS	C1A42BL100CTS
125	18	48	C1C18E4125CTS	C1A18E4125CTS
	30	73	C1C30E4125CTS	C1A30E4125CTS
	42	85	C1C42E4125CTS	C1A42E4125CTS
225	18	48	C1C18QJ225CTS	C1A18QJ225CTS
	30	73	C1C30QJ225CTS	C1A30QJ225CTS
	42	85	C1C42QJ225CTS	C1A42QJ225CTS
250	18	48	C1C18FX250CTS	C1A18FX250CTS
	30	73	C1C30FX250CTS	C1A30FX250CTS
	42	85	C1C42FX250CTS	C1A42FX250CTS

Table C1/C2-9 – Main Circuit Breaker C2 ① ②

Amp Rating	Max. 1-Pole Circuits	Box Height Inches	Catalog Number
100	18	48	C2E18BD100CTS
	30	73	C2E30BD100CTS
	42	85	C2E42BD100CTS
125	18	48	C2E18E4125CTS
	30	73	C2E30E4125CTS
	42	85	C2E42E4125CTS
225	18	48	C2E18FX225CTS
	30	73	C2E30FX225CTS
	42	85	C2E42FX225CTS
250	18	48	C2E18FX250CTS
	30	73	C2E30FX250CTS
	42	85	C2E42FX250CTS

Table C1/C2-10– Alternate Main Breaker Selection C1 ① ②

Amp Rating	Breaker Type	Maximum Interrupting Rating (KA)	Catalog Number	Available Trip Values
100	BL	10	BL	50, 60, 70, 80, 90, 100
	BLH	22	LH	
	HBL	65	HL	
125	ED4	65	E4	50, 60, 70, 80, 90, 100, 110, 125
	HED4	100	H4	
225	QJ2	10	QJ	60, 70, 80, 90, 100, 110, 125, 150, 175, 200, 225
	QJH2	22	QH	
	QJ2-H	42	Q2	
	FXD6	65	FX	
250	HFD6 ②	100	HF	70, 80, 90, 100, 110, 125, 150, 175, 200, 225
	FXD6	65	FX	
	HFD6 ②	100	HF	

① BL, BLH, HBL and BQD are horizontally mounted. All others vertically mounted.

② Interchangeable trip breakers such as FD6 and HFD6 cannot be back fed. Must be top feed only.

Selection

C1 and C2 Panelboards

Table C1/C2-11 – Branch Breaker Selection C1

Breaker Type	Available Ampere Rating	Maximum Interrupting Rating (kA)		
		120V	120/240V	240V
BL (120V)	15, 20, 30, 40, 50, 60	—	10	—
	70	—	10	—
BL (HID)	70, 80, 90, 100	—	10	—
	15, 20, 30	—	—	—
BLF (GFCI)	15, 20, 30	10	—	—
	40, 50, 60	10	—	—
BLE (EQGFI)	15, 20, 30	10	—	—
BGL (SWN)	15, 20, 30	10	—	—
	15, 20, 30	—	10	—
BLR (240V)	15, 20, 30, 40, 50, 60	—	—	10
	70, 80, 90, 100	—	—	10
BLH (120V)	15, 20, 30, 40, 50, 60	—	22	—
	70	—	22	—
	70, 80, 90, 100	—	22	—
BLHF (GFCI)	15, 20, 30	—	22	—
	40, 50, 60	—	22	—
HBL	15, 20, 30, 40, 50	—	65	65
	60, 70, 80, 90, 100	—	65	65
BQD	15, 20, 30, 40, 50, 60	—	—	65
	70, 80, 90, 100	—	—	65

Table C1/C2-12 – Subfeed Breakers - Limit One Per Panel - C1

ED4	15, 20, 30, 40, 50, 60, 70, 80, 90, 100	—	—	65
	110, 125	—	—	65
HED4	15, 20, 30, 40, 50, 60, 70, 80, 90, 100	—	—	65
	110, 125	—	—	100
QJ2	60, 70, 80, 90, 100, 110, 125, 150, 175, 200, 225	—	—	10
QJH2	60, 70, 80, 90, 100, 110, 125, 150, 175, 200, 225	—	—	22
QJ2-H	60, 70, 80, 90, 100, 110, 125, 150, 175, 200, 225	—	—	42
FXD6	70, 80, 90, 100, 110, 125, 150, 175, 200, 225, 250	—	—	65
HFD6	70, 80, 90, 100, 110, 125, 150, 175, 200, 225, 250	—	—	100

Selection

C1 and C2 Panelboards

Table C1/C2-13 – Alternate Main Breaker Selection^{①②③} C2

Ampere Rating	Breaker Type	IR	Catalog Number	Available Trip Values
100	BQD	14	BD	50, 60, 70, 80, 90, 100
	ED4	18	E4	50, 60, 70, 80, 90, 100
	ED6	25	E6	50, 60, 70, 80, 90, 100
	HED4	42	H4	50, 60, 70, 80, 90, 100
	HHED6	65	H6	50, 60, 70, 80, 90, 100
125	ED4	18	E4	110, 125
	ED6	25	E6	110, 125
	HED4	42	H4	110, 125
	HHED6	65	H6	110, 125
225	FXD6	35	FX	70, 80, 90, 100, 110, 125, 150, 175, 200, 225
	HFD6	65	HF	70, 80, 90, 100, 110, 125, 150, 175, 200, 225
250	FXD6	35	FX	250
	HFD6	65	HF	250

① No increase in box height. Space is already built into C1 panel.

② BL, BLH, HBL and BQD are horizontally mounted. All others vertically mounted.

③ Interchangeable trip breakers such as FD6 and HFD6 cannot be back fed. Must be top feed only.

Table C1/C2-14 – Branch Circuit Breakers C2

Breaker Type	Available Ampere Rating	Maximum Interrupting Rating (kA)		
		277V	480/277V	480V
BQD	15, 20, 30, 40, 50, 60	14	14	—
	70, 80, 90, 100	14	14	—

Table C1/C2-15 – Subfeed Breakers - Limit One Per Panel^{①②} C2

Breaker Type	Available Ampere Rating	277V	480/277V	480V
ED4	15, 20, 30, 40, 50, 60, 70, 80, 90, 100	—	18	18
	110, 125	—	18	18
ED6	15, 20, 30, 40, 50, 60, 70, 80, 90, 100	—	—	25
	110, 125	—	—	25
HED4	15, 20, 30, 40, 50, 60, 70, 80, 90, 100	—	—	42
	110, 125	—	—	42
FXD6	70, 80, 90, 100, 110, 125, 150, 175, 200, 225, 250	—	—	35
HFD6	70, 80, 90, 100, 110, 125, 150, 175, 200, 225, 250	—	—	65

① No increase in box height. Space is already built into C1 panel.

② BL, BLH, HBL and BQD are horizontally mounted. All others vertically mounted.

Modification and Additions

C1 and C2 Panelboards

Type C1/C2

When required, special constructions or additions to standard panelboards may be specified for factory-assembled column panelboards.

Table C1/C2-16 – Box Modifications

Description
Gasketed
Metal Card Holder
Welded Metal Card Holder
Nameplate
Al Ground Bar
Cu Ground Bar
Insulated Al Ground Bar
Insulated Cu Ground Bar

Table C1/C2-17 – Interior Modifications

Description
Feed-Thru Lugs
Handle Blocking Devices – BL, BQD
Handle Blocking Devices – QJ, FD6
Handle Padlocking Devices – BL, BQD
Handle Padlocking Devices – QJ, FD6
Shunt Trip – BL, BQD
Shunt Trip – ED Frame, QJ
Shunt Trip – FD6
Cu Neutral Lugs
Cu Main Lugs 125A
Cu Main Lugs 250A

Column Extension

Available in various standard lengths, extensions are 5 ¼ inches deep and 7 inches wide.

Table C1/C2-18 – Column Extension

Height (inches)	Catalog Number
14	LXX-14
20	LXX-20
26	LXX-26
32	LXX-32
38	LXX-38
41	LXX-41
44	LXX-44
53	LXX-53
56	LXX-56
62	LXX-62
65	LXX-65
68	LXX-68
74	LXX-74
80	LXX-80
86	LXX-86

Pull Boxes

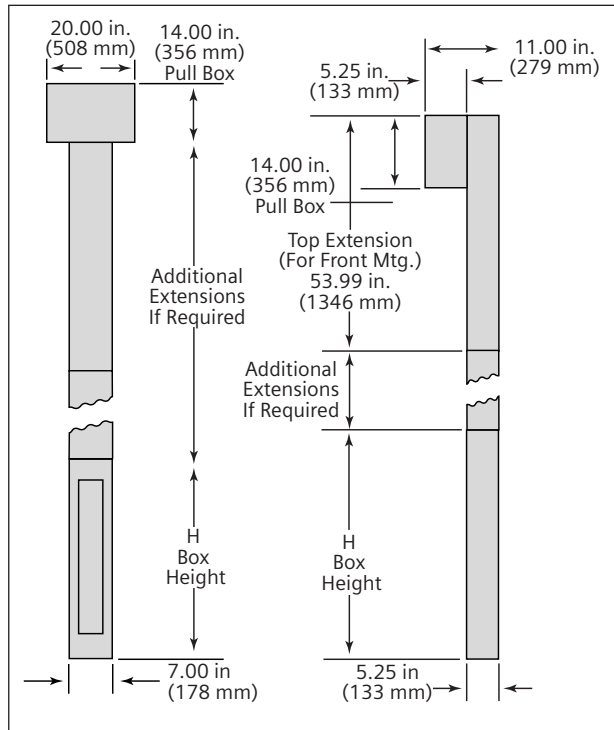
Two styles of pull boxes are available, top and front mounted. When the panel and its extensions are mounted in a structural WF beam, a front mounted pull box is required. When the panels are surface mounted, a top mounted pull box may be used. Provisions are made so that the neutral bar may be mounted in the pull box when required. (Front mounted pull box dimensions are 14" H x 20" W.)

Table C1/C2-19 – Pull Boxes

Description	Catalog Number
Top Mount	LXXP-T
Front Mount [Ⓢ]	LXX50-F

[Ⓢ] Includes 50" extension.

Fig. C1/C2-1





MISCELLANEOUS

Description

Telephone Cabinets
 Conduit Enclosing Shield (Panel Skirts)
 Breaker Mechanical Lugs
 Compression Lugs
 Optional Mechanical Lugs
 Aluminum Body Lugs for Copper or Aluminum Wire
 Miscellaneous Replacement Parts

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Strap Kits
 Connecting Strap Kits
 Blank Plates – Vacu-Break
 Molded Case Switches

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Miscellaneous

Telephone Cabinets

Conform to requirements of Underwriter's Laboratories, Inc., for all cabinets and boxes bearing their label. Surface enclosures, box and front constructed of code gauge steel. Entire cabinet finished with light gray, ANSI-61. Flush enclosures, box constructed of code-gauge galvanized steel, front only finished with light gray, ANSI-61.

Boxes

Standard construction has blank ends, without knockouts.

Front

Concealed hinges standard on fronts. Double doors supplied when door width exceeds 24 in. (610 mm). 3-point catch

and vault handle supplied with double doors; two spring catches supplied on doors more than 48 in. (1219 mm) high.

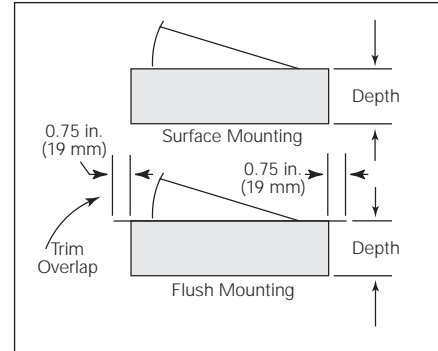
Table Misc.-1

Box Width – In. (mm)	Door
0 (0)–20 (508)	Single
21 (533)–24 (610)	Single
25 (635)–36 (914)	Single
25 (635)–36 (914)	Double
37 (940)–38 (965)	Double
49 (1245)–60 (1524)	Double

All available with 0.75 in. (19 mm) backboard. Depth 12 in. (305 mm) or less. Height 72 in. (1829 mm) or less. Specify Mounting – Surface or Flush. Box width minus 5 in. (127 mm) equals door width.

Backboard

0.75 in. (19mm) plywood backboard supplied when specified.



Conduit Enclosing Shield (Panel Skirts)

Sheet metal to cover conduits above or below a standard panelboard box.

Panel Skirts Standard Length

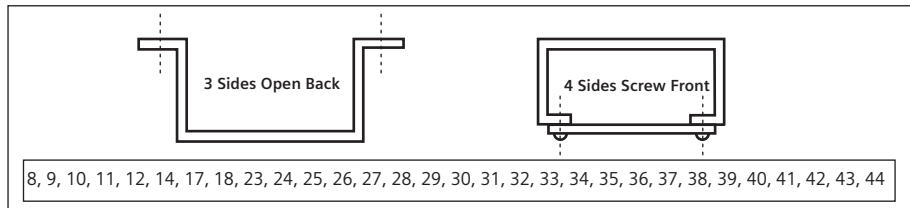


Table Misc. 2 – Compression Lugs

For Circuit Breaker Types	Ampere Rating	Poles	Lugs Per Kit	Lug Wire Size
Lugs (contains indicated number of lugs and necessary hardware per kit)				
ED2, ED4, ED6, HED4, HHED6, CED4	15-125	1,2,3	1	#2/0
QJ2, QJH2, QJ2-H	125-225	2, 3	1	350 kcmil
F(X)D6-A, HF(X)D6, HHF(X)D6, CFD6	125-250	2, 3	1	350 Kcmil
JXD2-A, J(X)D6-A, HJ(X)D6-A, HHJXD6-A, CJD6, SJD6-A,	200-600	2, 3	1	500 Kcmil
SHJD6-A, SCJD6, L(X)D6-A, HL(X)D6-A, CLD6, SLD6-A, SHLD6-A, SCLD6				
Kits (contains lug and hardware for complete line of load end of 2 or 3 pole breaker)				
M(X)D6, HM(X)D6, CMD6, SMD6, SHMD6, SCMD6	500-800	2, 3	6, 9	500 Kcmil
N(X)D6, HN(X)D6, CND6, SND6, SHND6, SCND6	900-1200	2, 3	8, 12	500 Kcmil

Table Misc. 3 – Breaker Mechanical Lugs

For Use With Type(s)	Amp Rating	Cables Per Lug	Lug Wire Range
Load Side			
BQ, BQH, BQHF, BQE	15-20	1	#14-#10 AWG Cu
		1	#12-#10 AWG Al
BQF, BL, BLH	25-35	1	#8-#6 AWG Cu
		1	#8-#6 AWG Al
HBL, HBQ	40-50	1	#8-#6 AWG Cu
		1	#8-#4 AWG Al
Switching Neutrals	55-70	1	#8-#4 AWG Cu
		1	#8-#2 AWG Al
BG, BLG	80-100	1	#4-#1/0 AWG Cu
		1	#2-#1/0 AWG Al
	110-125	1	#2-#1/0 AWG Cu
		1	#1/0-#2/0 AWG Al
BQD, BQD6	15-40	1	#14-#6 AWG Cu
			#12-#6 AWG Al
	45-100	1	#8-1 AWG Cu
			#6-#1/0 AWG Al

Miscellaneous

Table Misc. 4 – Aluminum Body Lugs for Copper or Aluminum Wire

For Use With Type	Circuit Breaker Amp Rating	Cables Per Lug	Lug Wire Range
QJ2, QJH2	60-225	1	#6 AWG-300 kcmil (Cu)
QJ2H, HQJ2H			#4 AWG-300 Kcmil (Al)
All 2&3 pole	15-25	1	#14-#10 AWG (Cu)
ED2, ED4, ED6, ED6ETI			#12-#10 AWG (Al)
HED4,	30-100	1	#10-#1/0AWG (Cu or Al)
HHED6	110-125	1	#3-3/0 (Cu)
CED6, All 1 Pole,	30-60	1	#1-2/0 (Al)
ED, HED	70-100	1	#10-4 (Cu or Al)
FXD6-A, FD6-A, HFD6, CFD6, HHFD6	70-250	1	#4-#1/0 (Cu or Al)
SJD6(A), SHJD6(A), SCJD6	65-200	1-2	#6 AWG-350 Kcmil (Cu) #4 AWG-350 Kcmil (Al)
JXD2(A), JXD6(A), JD6(A), SJD6(A), HJD6(A), HHJD6(A), HHJD6, SHJD6(A), CJD6, SCJD6	200-400	1-2	3/0-500 Kcmil (Cu)
			4/0-500 Kcmil (Al)
LXD6(A), LD6(A), SLD6(A), HLD6(A), HHLXD6, HHL6D, SHLD6(A), CLD6, SCLD6	250-600	1-2	3/0-500 Kcmil (Cu)
			4/0-500 Kcmil (Al)
LMD6, LMXD6, HLM6D, HLMXD6, MD6, MXD6, SMD6, HMD6, HMXD6, SHMD6, CMD6, SCMD6	500-600	1-2	250-500 Kcmil (Cu or Al)
ND6, NXD6, SND6, HND6, HNXD6, SHND6, CND6, SCND6	700-800	1-3	1/0-500 Kcmil (Cu or Al) 500-750 Kcmil (Cu or Al)
	800-1200	1-4	250-500 Kcmil (Cu or Al)

① Use TA2K500 or TA3K500 only.

Table Misc. 5 – Optional Mechanical Lugs

For Use With Type	Circuit Breaker Ampere Rating	Cables Per Lug	Lug Material	Lug Wire Range	Quantity per Catalog Number
QJ2, QJH2	60-225	1	Cu	#6 AWG-250 Kcmil (Cu)	1
QJ2H, HQJ2H					
ED, HED, 2&3 pole	2-3 pole 30-125	1	Cu	#10-#1/0 (Cu)	
HFD6, HHFD6 CFD6, F(X)D6-A	70-250	1	Cu	#6 AWG-350 Kcmil (Cu)	1
J(X)D2(A), J(X)D6(A), HJD6(A), HHJD6, SHJD6(A), L(X)D6(A), HHL6D, SCD6, HLD6(A), SHLD6(A), CJD6, CLD6, SCJD6, SCLD6	250-600	1		3/0-600 Kcmil (Cu)	1
		1,2	Cu	3/0-500 Kcmil (Cu)	1
		1	Al	500-750 Kcmil (Al)	1
		1		500-600 Kcmil (Cu)	1
SMD6, M(X)D6, HM(X)D6, HMD6, CMD6, SCMD6, SND6, N(X)D6, HN(X)D6, SHND6, CND6, SCND6	500-600	1-2	Cu	#1 AWG-500 Kcmil (Cu)	1
	700-800	1-3	Cu	#1 AWG-350 Kcmil (Cu)	1
		1-2	Al	500-750 Kcmil (Cu)	2
		1-2	Al	500-750 Kcmil (Al)	3
	800-1200	1-3	Al	500-750 Kcmil (Cu)	2
				500-750 kcmil (Al)	3

Miscellaneous

Table Misc. 6 – Miscellaneous Replacement Accessories

Catalog Number	Description	For Panel Types
EGK	Al Ground Assembly 44 Connections	P1, P2, P3
BK1	Bonding Kit for P1 250A Max.	as noted
BK4	Bonding Kit for SE & P5 400	as noted
IMK	Interior Adjusting Kit	P1, P2, P3
11-1824-01	Directory Card Holder	P1, P2, P3
12-1110-01	Directory Card	P1, P2, P3
11-1056-01	NEMA Instruction Book	All
NBK3	Number Strips 1-42	P1, P2, P3
NBK4	Number Strips 43-84	P1, P2, P3
NBK5	Number Strips 85-126	P1, P2, P3
NBK6	Number Strips 127-168	P1, P2, P3
ECGK	Cu Ground Bus 44 Connections	P1, P2, P3
IGK	Insulated Al Ground Bus	P1, P2, P3
ICGK	Insulated Cu Ground Bus	P1, P2, P3
EWK1	End Wall Kit with Knockouts (20"W x 5.75" DP)	P1
QF3	Filler Plate	①
EBF1	Filler Plate for NEB, HEB Provisions	P3, P4, P5

① All 1" QP, BL, BQD, NBG, and ED Frame Provisions.

FC20, FCI and FCII switchboards – includes copper straps, cover plates and necessary hardware.

Table Misc. 7 – Blank Plates – Vacu-Break

For use with VB-23, VB-30, VB-32 and Uni-Power Switchboards

Unit Height Inches	12 in. Units - 23 in. Wide Enclosure Only	17 in. Units - 30 in. and 32 in. Wide Enclosures
	Catalog Number	Catalog Number
2 1/2	VB2F025	VB7F025
5	VB2F050	VB7F050
7 1/2	VB2F075	VB7F075
10	VB2F100	VB7F100

Table Misc. 9 – Molded Case Switches (Non-Automatic Circuit Interrupters)

Ampere Rating	Breaker Frame
100	ED2, ED4, ED6
225	QJ2
250	FXD6
400	JXD2, JXD6
600	LXD6
800	MD6
1200	ND6

① These circuit breakers are obsolete, and for the most part, unavailable. Please replace them with Sentron Series circuit breakers and use mounting strap kits shown for Sentron breakers.

Table Misc. 8 – Connecting Strap Kits — Vacu-Break

For use with VB-23 and VB-32 Type Panelboards.

Panel Type	Catalog Number	For Use With	Unit Height (in.)
		Ampere Rating	
VB-23	V2AX25	30-30	2 1/2
	V2BX50	30-30 and 60-60	5
	V7AX25	30-30	2 1/2
	V7BX50	30-30 and 60-60	5
VB-32	V7EX75	100-100	7 1/2
		100	7 1/2
		200	7 1/2 (2-Pole)
	V7FX100	200	10 (3-Pole)

Notes

Notes





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