

**SIEMENS**

*Ingenuity for life*



# Panelboards

Selection and  
application guide

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P1 Panelboards

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C1/C2 Panelboards

# Introduction

This new generation of products from Siemens offers the high level of engineering and innovation you've come to expect from the leader in power distribution technology. The "P Series" line of panelboards offers a stepped approach to power distribution.

Additional strength has been added to an already rugged and durable panelboard family. Engineered specifically to provide maximum flexibility, the new designs simplify wiring and reduce material requirements making them easier to install and less costly than competitive products. 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.

The line is anchored by the innovative P1. Featuring the industry's most flexible designs, the P1 virtually eliminates common errors, such as feed direction, and main lug versus main breaker. Increasing distribution is simplified by the ability to add feed-thru lugs. The Revised P1 design introduced in January 2015 has added extended Circuits up to 66 and has available smaller Enclosures with no Subfeed option for added flexibility.

Subsequent steps in the P Series offer increased capacity and more design options:

- The highly flexible P2 provides options to fit the most demanding specifications.
- Sized more like a lighting panel, the P3 packs the power of a distribution panel in a space-saving, highly flexible design.
- The P4 is a mid-sized distribution panel that allows both fusible and circuit breaker branch and main devices.
- The powerful P5 anchors the high end of the series. With larger fusible and circuit breaker branch and main devices, the venerable P5 delivers maximum power and flexibility to larger distribution systems.

Siemens also offers a number of specialty panels, like column panels. Don't see a panel to meet your requirements? Ask your Siemens representative about our custom capabilities.

## Features Overview

P Series lighting panel features include Fas-Latch trim, which is popular among installers; the jacking screw system, that permits adjustments even after wiring has been installed; our exclusive split neutral, and more. 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 the box size. Other models accept a wide range of fuse types, including Siemens exclusive Vacu-Break® technology.

**Table G-1 – Key Panelboard Features**

	RP1	P2	P3	P4	P5
Lighting and Appliance Applications(Pre 2008NEC)	•	•	•	•	•
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 <sup>3</sup>	•	—	—	—	—
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 <sup>1</sup>	•	•	•	•	•
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 <sup>2</sup>	—	•	•	•	•
Optional Compression Lugs	•	•	•	•	•

• Standard

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

<sup>2</sup> Panelboards equipped with Siemens Sensitrip® circuit breakers or Power Meters can be integrated into Siemens ACCESS™ Electrical Monitoring System.

<sup>3</sup> For Revised P1, only when Subfeed Space is selected, Interior Part Number ends with "T". When "N" is at end there is no Subfeed Space available.

# General Specifications

## Class CTL Panelboards (when applicable)

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 the 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 (where applicable)

Lighting and appliance branch circuit panelboards were included in editions of the National Electrical Code prior to 2008. The NEC no longer distinguishes between lighting and appliance panelboards and power panelboards; therefore, eliminating the 42 circuit branch circuit limitation. Adoption of this code vary by a state or local jurisdiction. Consult the local code authorities to determine if this has been adopted in that area.

## Integrated Equipment Short Circuit Rating

The term "Integrated Equipment Short Circuit Rating" refers to the application of series connected circuit breakers in a 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: 2014 (where accepted)

NEMA: PB1

UL: 67, 50 and 50E. 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 a 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.

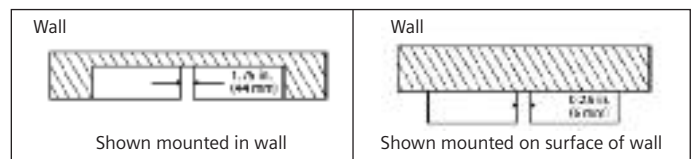
Standard ground connectors are also suitable for copper or aluminum wire. Ground connector assemblies (EGK, IGK) have (7) 1/0 max. and (15) #6 max. connections. The 1/0 holes are

capable of connecting up (3) #10 max. wires. The #6 holes can accept up to (2) #12 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

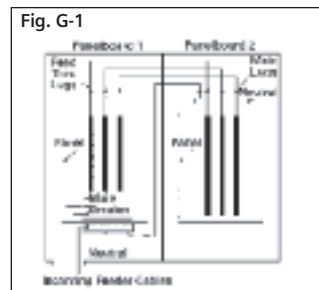
### Space Required for Mounting of Double Panels



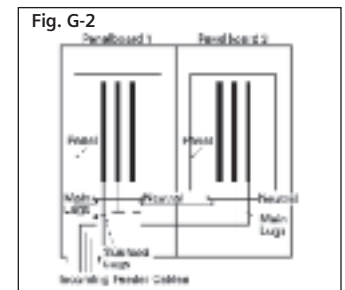
Use two or more panelboards with feed-thru or subfeed lugs when:

1. Lighting and appliance panelboards are required with more than 42 circuits in areas where the zone code has not been accepted.
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.

**Note:** P1 panelboards do not have subfeed lugs available. If this configuration is needed, move to a P2 or P3 panelboard.

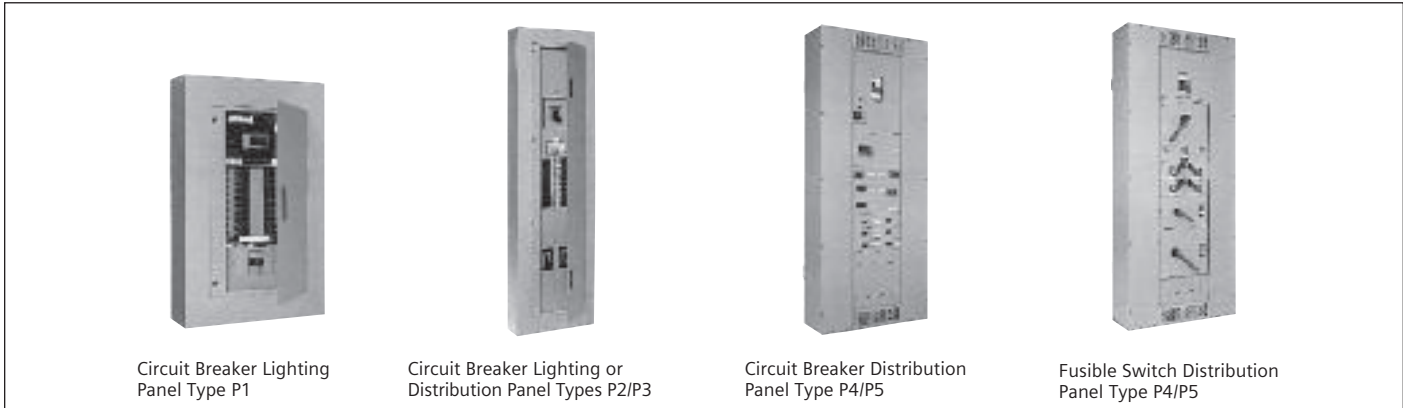
# General Specifications

## 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 Revised	P2	P3	P4	P5
Max. Voltage	480Y277V AC Max. 600Y347V AC <sup>8</sup>	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 Main Breaker Main Switch	125A-400A 100A-400A —	125A-600A 100A-600A —	250A-800A 225A-600A —	400A-1200A 400A-800A —	800A-1200A 800A-1200A 200A-1200A
Circuits	18, 30, 42, 54, 66	18, 30, 42, 54, 66 78, 90 <sup>1</sup>	—	—	—
Branch Ratings	15-125A	15-400A	15-400A	15-800A MCCB 30-200A Fusible	15-1200A MCCB 30-1200 Fusible
Branch Disconnect Devices	BL, BLH, HBL, BQD, BQD6, BLE, BLEH, BLF2, BLHF2, HBLF2, BLFB, BLHFB, BAF2, BAFH2, HBAF2, BGL, NGB <sup>7</sup> , HGB <sup>7</sup> , LGB <sup>7</sup>	BL, BLH, HBL, BQD, BQD6, QJ2 <sup>5</sup> , QJH2 <sup>5</sup> , QJ2H <sup>5</sup> , QR2 <sup>5</sup> , QRH2 <sup>5</sup> , HQR2 <sup>5</sup> , HQR2H <sup>5</sup> , ED2, ED4, HED4, ED6, BLE, BLEH, BLF2, BLHF2, HBLF2, BLFB, BLHFB, BAF2, BAFH2, HBAF2, BGL, NGB, HGB, LGB	BL, BLH, HBL, BQD, BQD6, QJ2 <sup>6</sup> , QJH2 <sup>6</sup> , QJ2H <sup>6</sup> , QR2 <sup>6</sup> , QRH2 <sup>6</sup> , HQR2 <sup>6</sup> , HQR2H <sup>6</sup> , ED2, ED4, HED4, ED6, BLHF, BLHFB, BAF2, BAFH2, HBAF2, BGL, NGB, HGB, LGB, NEB, HEB	All 15-600A MCCBs, VL MG at 800A and 30-200A VB switches	All 15-1200A MCCBs, 30-600A VB switches and 400-1200A HCP switches
Subfeed Circuit Breakers <sup>2,3</sup>	ED2, ED4, ED6, HED4, HED6, QJ2, QJH2, QJ2H, QR2, QRH2, HQR2, HQR2H, FD6, HFD6, FXD6, HFXD6	JD6, HJD6, JXD6, HJXD6, FD6, HFD6, FXD6, HFXD6	JD6, HJD6, JXD6, HJXD6, FD6, HFD6, FXD6, HFXD6	—	—
Enclosure Heights Inches (mm)	26, 32, 38, 44, 50, 56 @250A (660, 813, 965, 1118, 1270, 1422) 56, 62, 68, 74 @400A (1422, 1575, 1727, 1880)	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 <sup>4</sup> Surface or Flush	Four Piece <sup>4</sup> Surface or Flush

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

<sup>2</sup> P1 can have max. 1 subfeed breaker when Subfeed Space is available. P2 and P3 can have up to (2) FD subfeed breakers.

<sup>3</sup> JD and FD breakers are mounted vertical. Limitations apply.

<sup>4</sup> Trim ring provided for flush applications.

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

<sup>6</sup> A maximum of (6) QJ/QR breakers may be mounted in a P3 panel and are twin mounted.

<sup>7</sup> P1 panels with xGB breakers are limited to xGB branch devices only. BL and BQD frames may not be mixed in this panel type.

<sup>8</sup> Factory assembled P1 has capability of 600Y/347V AC system when proper breakers are installed.

# General Specifications

**Table G3 – Typical Panelboard Modifications**

Description	Lighting and Distribution Panelboards			Distribution Panelboards	
	P1	P2	P3	P4	P5
<b>Box</b>					
Type 1	Standard (20" W)	Standard (20" W)	Standard (24" W)	Standard	Standard
Type 1 Enclosure with Hood	P	•	•	•	•
Type 1 w/Gasket between box and front	•	•	•	—	—
Type 2 Enclosure - Drip Tight (this is not available)	—	—	—	—	—
Type 3R/12	•	•	•	•	•
Type 4, 4X (size varies by type/material)	•	•	•	•	•
Wider Box (check w/factory for custom options not shown)	• (24"W)	• (24"W)	• (custom)	• (custom)	• (custom)
Deeper Box (check w/factory for custom options not shown)	—	• (7.75"D)	• (custom)	• (custom)	• (custom)
<b>Front</b>					
Front with Door	Standard	Standard	Standard	•	•
4-piece Front	—	—	—	Standard	Standard
4-piece Front w/Hinged Gutter Covers	—	—	—	•	•
Hinged-to-Box Front	•	•	•	(see Door-in-Door)	(see Door-in-Door)
Door-in-Door Front	•	•	•	•	•
Common Front (custom - multi section applications)	• (custom)	• (custom)	• (custom)	—	—
Special Locks	• (custom)	• (custom)	• (custom)	• (custom)	• (custom)
Nameplate (mounting provisions provided as Std - P1/P2/P3) - Nameplate text is configured in COMPAS with limitations.	•	•	•	•	•
<b>Interior</b>					
Aluminum Equipment Ground Bar	Standard	Standard	Standard	Standard	Standard
Copper Equipment Ground Bar	•	•	•	•	•
Insulated Equipment Ground (CU or AL)	•	•	•	•	•
Subfeed Lugs	—	•	•	•	•
Feed-Thru Lugs	•	•	•	•	•
Split Bus	—	•	•	•	•
Compression Lugs	•	•	•	•	•
Copper Lugs	•	•	•	•	•
200% Neutral	•	•	•	400 - 600A	400 - 600A
Temperature Rated - Aluminum1	Standard	Standard	Standard	Standard	Standard
Temperature Rated - Copper 1	•	•	•	•	•
750 Ampere / in. - Aluminum	—	•	•	•	•
1000 Ampere / in. - Copper	—	•	•	•	•
Copper Plating	Tin	Tin Std./ Silver Opt.	Tin Std./ Silver Opt.	Silver	Silver
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. — Not Available

**Table G4 – UL Fuse Classes<sup>1</sup>**

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

<sup>1</sup> Per UL 67. <sup>2</sup> 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 T

## Type of Panel

P1, P2, P3, P4, P5

## Voltage and System\*

C = 208Y/120 3Ø 4 W Wye AC - All	R = 415/240 3Ø 4 W Wye AC - All
E = 480Y/277 3Ø 4 W Wye AC - All	S = 440/250 3Ø 4 W Wye AC - All
D = 240 3Ø 3 W Delta AC - All	L = 600/347 3Ø 4 W Wye AC - All
F = 480 3Ø 3 W Delta AC - All	T = 230 3Ø 3 W Delta AC - All
G = 600 3Ø 3 W Delta AC - P2, P3, P4, P5	W = 380 3Ø 3 W Delta AC - P2, P3, P4, P5
I = 347 3Ø 3 W Delta AC P2, P3, P4, P5	1 = 24V DC 1-Pole Branches Only - P2, P3, P4, P5
B = 240/120 3Ø 4 W Delta BØ High Leg AC - P2, P3, P4, P5	2 = 24V DC 2-Pole Branches Only - P2, P3, P4, P5
Q = 240/120 3Ø 4 W Delta CØ High Leg AC - P2, P3, P4, P5	3 = 48V DC 1-Pole Branches Only - P2, P3, P4, P5
A = 120/240 1Ø 3 W Grounded Neutral AC - All	P4 = 48V DC 2-Pole Branches Only - P2, P3, P4, P5
H = 120 1Ø 2 W Grounded Neutral AC - P2, P3, P4, P5	5 = 125V DC 1-Pole Branches Only - P2, P3, P4, P5
J = 240 1Ø 2 W No Neutral AC - All	N = 125V DC 2-Pole Branches Only - P2, P3, P4, P5
Y = 125 1Ø 2 W Grounded Neutral AC - P2, P3, P4, P5	O = 125/250V DC 2-Pole Branches Only - P2, P3, P4, P5
Z = 500 2W DC - P2, P3, P4, P5	P = 125/250V DC 2 & 3-Pole Branches - P2, P3, P4, P5
K = 220/127 3Ø 4 W Wye AC - All	U = 120V AC 3Ø3W - All
M = 380/220 3Ø 4 W Wye AC - All	V = 240V 3Ø3W Grounded B Phase - P2, P3, P4, P5

\*For any voltage system not listed, check with sales for availability.

## Circuits

P1 - 18, 30, 42, 54, 66

P2 - 18, 30, 42, 54, 66, 78, 90

## 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

100-400A = P1

250-800A = P3

100-600A = P2

400-1200A = P4, P5

Bus Code	Bus Material	Bus Plating	P1 <sup>1,2</sup>	P2	P3	P4	P5
A	Temp rated Al.	Tin-Plated	•	•	•	•	•
B	750A/sq. in. Al.	Tin-Plated	•	•	•	•	•
C	Temp rated Cu.	Tin-Plated	•	n/a	n/a	n/a	n/a
E	Temp rated Cu.	Silver-Plated	n/a	optional	optional	•	•
F	Temp rated Cu.	Tin-Plated	n/a	•	•	•	•
G	1000A/sq. in. Cu.	Tin-Plated	n/a	•	•	optional	optional
H	1000A/sq. in. Cu.	Silver-Plated	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.

## Subfeed Space Indicator (for P1 only)

T = Subfeed Space Included

N = No Subfeed Space<sup>2</sup>

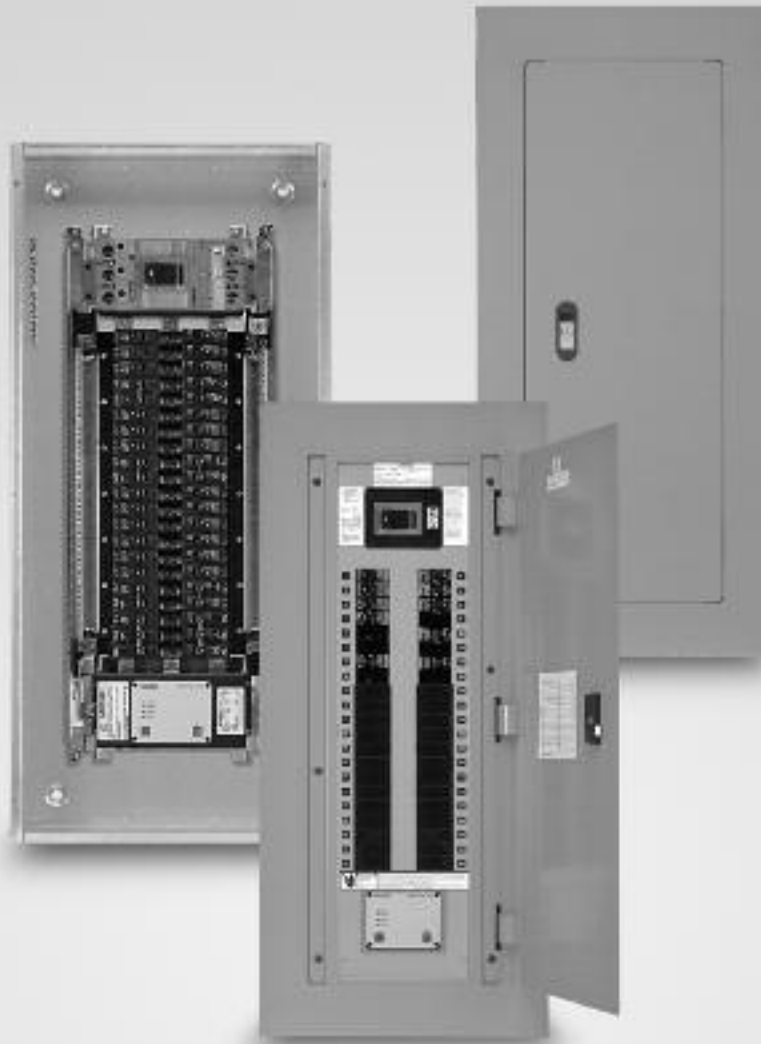
## Main Breaker Coding

Code	Breaker Type	Code	Breaker Type	Code	Breaker Type	Code	Breaker Type	Code	Breaker Type	Code	Breaker Type	Code	Breaker Type	Code	Breaker Type
BL	BL	H1	HHFD6	SC	SCJD6	S2	SHLD6	S5	SHMD6	SD	SHND6H	M5	HMG	N7	NNG
BH	BLH	H3	HHFXD6	SX	SHJD6	SL	SLD6	S6	SHMD6H	SN	SND6	M2	HMX	N1	NNX
BR	BLR	G2	HGB	SY	SHJD6H	QJ	QJ2	SM	SMD6	AY	SND6H	M8	HMY	N4	NNY
HB	HBL	G3	LGB	SJ	SJD6	Q2	QJ2H	AX	SMD6H	J6	HJG	M6	LMG	QR	QR2
BQ	BQD	NB	NGB	SH	SJD6H	QH	QJH2	CN	CND6	J7	HJX	M3	LMX	Q4	QRH2
B6	BQD6	CJ	CJD6	CL	CLD6	C9	CMD6	C6	CND6H	J5	HJY	M9	LMY	Q5	HQR2
CE	CED6	6H	HHJD6	HH	HHLD6	CH	CMD6H	HN	HND6	J9	LJG	M4	NMG	Q6	HQR2H
E4	ED4	H9	HHJXD6	XH	HHLXD6	HM	HMD6	HT	HNXD6	J3	LJX	M1	NMX	Q7	QR2-MCS
E6	ED6	H6	HJD6	HL	HLD6	HR	HMXD6	HX	HNXD6H	J8	LJY	M7	NMY		
H4	HED4	H5	HJXD6	HO	HLXD6	HS	HMXD6H	ND	ND6	L3	LLK	N8	HNG		
CF	CFD6	H7	HJXD6H	HP	HLXD6H	MD	MD6	NX	NXD6	J2	NJG	N2	HNX		
FD	FD6	J6	JD6	L6	LD6	MX	MXD6	NT	NXD6H	J1	NJX	N5	HNY		
FX	FXD6	JD	JXD2	LX	LXD6	MH	MXD6H	SR	SCND6	J4	NJY	N9	LNG		
HF	HFD6	JX	JXD6	LH	LXD6H	SO	SCMD6	ST	SCND6H	L2	HLK	N3	LNX		
H2	HFXD6	JH	JXD6H	S1	SCLD6	SQ	SCMD6H	AD	SHND6	L7	NLK	N6	LNK		

<sup>1</sup> Standard bussing in P1, P2 and P3 panels is tin-plated for aluminum and copper. Standard bus is temperature rated to the maximum amperage in the panel.

<sup>2</sup> Not available for Revised P1 xGB interiors.





## P1 Panelboards

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Main Lug End Gutter Dimensions	1-6	Dimensions	1-10

# Type P1 Panelboards

P1 panelboards are pre-engineered to accept the most common modifications without increasing box height. The enclosure size 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 Revised main lug or main breaker panelboards have space built-in to accept either feed-thru lugs equal to the panel rating, one sub-feed circuit breaker up to 250 amperes or a surge suppressor (TVSS) without increasing box height. (When ordered with sub-feed, space indicated by a "T" at end of interior number).

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 125 through 400A 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.
- Five circuit sizes means only three box heights, regardless of main configuration through 250 amp and an additional four circuit versions-- 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. 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.

## 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-P1C42ML250ATST  
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-P1C42ML250ATST  
42-20 BL  
Box size – 44" high

**Voltage** – 480Y/277 Vac 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" (250A)	26, 32, 38, 44, 50, 56	#16
(400A)	56, 62, 68, 74	

**Table P1-2 – Trim Material Gauge**

20" (250A)	26, 32, 38, 44, 50, 56	#14
(400A)	56, 62, 68, 74	

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

1-P1C42ML250ATST  
39-20/1 BL  
1-125/3 QJ2/QR2  
Box size – 44" high

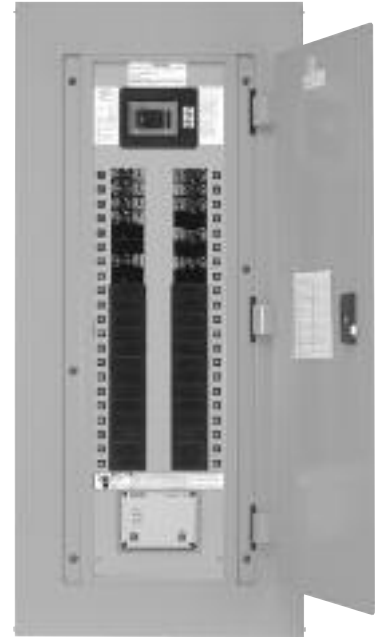
The QJ2/QR2 subfeed was selected from the table of subfeed breakers on page 1-5. The box height remains the same.

# Application

## Type P1 Panelboards

**Table P1-3 – Main Breaker Panel Size Selector**

Max Ampere rating	Main Breaker Types	Connections suitable for Cu or Al	Max # Poles FT <sup>1</sup>	Max # Poles NFT	Dimensions in inches (mm)			Weight in Lbs. (kg)
					Unit Space		Box Height B	
					FT A	NFT A		
100	BL <sup>2</sup> , BLH <sup>2</sup> , HBL <sup>2</sup> , BQD <sup>2</sup>	#8-#6 AWG Cu or Al #8-6 AWG Cu or #8-4 AWG Al #8-#1 AWG Cu or #6-#1/0 AWG Al	18	18	–	9	26 (661)	90 (41)
			18	30	9	15	32 (813)	105 (48)
			30	42	15	21	38 (965)	120 (55)
			42	54	21	27	44 (1118)	135 (61)
			54	66	27	33	50 (1270)	150 (67)
			66	–	33	–	56 (1423)	165 (73)
125	NGB <sup>2</sup> , HGB <sup>2</sup> , LGB <sup>2</sup>	15-30 amp: #14-#6 Cu or #12-#6 Al 35-125 amp: #6-1/0 Cu #4-2/0 Al	18	18	–	9	26 (661)	95 (43)
			18	30	9	15	32 (813)	110 (50)
			30	42	15	21	38 (965)	125 (57)
	ED2, ED4 ED6, HED4 HED6	#14-#10 AWG Cu or #12-10 AWG Al #3-3/0 Cu or #1-2/0 Al #3-3/0 Cu or #1-2/0 Al	42	54	21	27	44 (1118)	140 (64)
			54	66	27	33	50 (1270)	155 (71)
			66	–	33	–	56 (1423)	170 (78)
225	QJ2, QJH2, QJ2H QR2, QRH2, HQR2, HQR2H	#6 AWG-300 Kcmil (Cu) or #4 AWG-300 Kcmil (Al)	18	18	–	9	26 (661)	95 (43)
			18	30	9	15	32 (813)	110 (50)
			30	42	15	21	38 (965)	125 (57)
			42	54	21	27	44 (1118)	140 (64)
			54	66	27	33	50 (1270)	155 (71)
			66	–	33	–	56 (1423)	170 (78)
250	FXD6, FD6, HFD6, HFXD6	#6 AWG-350 Kcmil (Cu) or #4 AWG-350 Kcmil (Al)	–	30	–	15	56 (1423)	172 (78)
			30	42	15	21	62 (1575)	190 (86)
			42	54	21	27	68 (1728)	208 (95)
			54	66	27	33	74 (1880)	226 (104)
			66	–	33	–	–	–
			–	–	–	–	–	–
400	JD6, JXD6, HJD6, HJXD6	3/0-500 Kcmil (Cu) or 4/0-500 Kcmil (Al)	–	30	–	15	56 (1423)	172 (78)
			30	42	15	21	62 (1575)	190 (86)
			42	54	21	27	68 (1728)	208 (95)
			54	66	27	33	74 (1880)	226 (104)
			–	–	–	–	–	–
			–	–	–	–	–	–



**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.

<sup>1</sup> 400A 66 circuit only available with non-feed thru versions.

<sup>2</sup> BL, BLH, HBL, BQD, and xGB mount in unit space and count in max. # of poles.

**Table P1-4 – Main Breaker Selection**

Ampere rating	Breaker Types	Max. Ir (kA) at		Main Breaker Code	Additional Trip Values
		240 AC	480/277V AC		
100	BL (STD)	10	–	BL	15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100
	BLH	22	–	BH	15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100
	HBL	65	–	HB	15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100
	BQD	65	14	BQ	15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100
125	NGB (STD)	100	25	NB <sup>3</sup>	50, 60, 70, 80, 90, 100, 110, 125
	HGB	100	35	G2 <sup>3</sup>	50, 60, 70, 80, 90, 100, 110, 125
	LGB	100	65	G3 <sup>3</sup>	50, 60, 70, 80, 90, 100, 110, 125
	ED4 (STD)	65	25	E4	50, 60, 70, 80, 90, 100, 110, 125
	HED4	42	42	H4	50, 60, 70, 80, 90, 100, 110, 125
225	QJ2 (STD)	10	–	QJ	60, 70, 80, 90, 100, 110, 125, 150, 175, 200, 225
	QJH2	22	–	QH	60, 70, 80, 90, 100, 110, 125, 150, 175, 200, 225
	QJ2H	42	–	Q2	60, 70, 80, 90, 100, 110, 125, 150, 175, 200, 225
225	QR2	10	–	QR	100, 110, 125, 150, 175, 200, 225
	QRH2	25	–	Q4	100, 110, 125, 150, 175, 200, 225
	HQR2	65	–	Q5	100, 110, 125, 150, 175, 200, 225
	HQR2H	100	–	Q6	100, 110, 125, 150, 175, 200, 225
250	FXD6 (STD)	65	35	FX	70, 80, 90, 100, 110, 125, 150, 175, 200, 225, 250
	FD6	65	35	FD	70, 80, 90, 100, 110, 125, 150, 175, 200, 225, 250
	HFD6	100	65	HF	70, 80, 90, 100, 150, 175, 200, 225, 250
	HFXD6	100	65	H2	70, 80, 90, 100, 110, 125, 150, 175, 200, 225, 250
400	JXD2	65	–	JD	300, 400
	JXD6 (STD)	65	35	JX	200, 225, 250, 300, 350, 400
	JD6	65	35	J6	200, 225, 250, 300, 350, 400
	HJD6	100	65	H6	200, 225, 250, 300, 350, 400
	HJXD6	100	65	H5	200, 225, 250, 300, 350, 400

<sup>3</sup> xGB interiors are not available as non-feed-thru without sub-feed space.

# Application

## Type P1 Panelboards

Table P1-5 – Main Lugs Size Selector

Maximum Ampere Rating	Max # Poles NFT	Max # Poles NFT	Dimensions in Inches (mm)			Weight in lbs. (kg)	MLO Connectors Suitable for
			FT A	NFT A	Box Height B"		
125 (or) 250	18	18	—	9	26 (661)	90 (41)	(1) #6 AWG - 350 kcmil (CU or AL)
	30	30	9	15	32 (813)	105 (48)	
	42	42	15	21	38 (965)	120 (55)	
	54	54	21	27	44 (1118)	135 (61)	
	66	66	27	33	50 (1270)	150 (68)	
400	—	—	—	—	56 (1422)	165 (75)	(2) #3/0-250 kcmil or (1) #3/0-600 kcmil 74 (1880) 165 (75)
	30	30	—	15	56 (1422)	120 (55)	
	42	42	15	21	62 (1575)	135 (61)	
	54	54	21	27	68 (1728)	150 (68)	
	66	66	27	—	—	33	

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
BG <sup>1</sup>	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	15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100
	3	—	—	65	—	14	15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100
NGB <sup>2,3</sup>	1	100	—	—	25	—	15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100, 125 <sup>3</sup>
	2	—	100	100	—	25	15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100, 125 <sup>3</sup>
	3	—	100	100	—	25	15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100, 125 <sup>3</sup>
HGB <sup>2,3</sup>	1	100	—	—	35	—	15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100, 125 <sup>3</sup>
	2	—	100	100	—	35	15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100, 125 <sup>3</sup>
	3	—	100	100	—	35	15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100, 125 <sup>3</sup>
LGB <sup>2,3</sup>	1	100	—	—	65	—	15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100, 125 <sup>3</sup>
	2	—	100	100	—	65	15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100, 125 <sup>3</sup>
	3	—	100	100	—	65	15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100, 125 <sup>3</sup>

<sup>1</sup> Two-pole breaker is one phase and neutral. Three-pole is two phases and neutral.

<sup>2</sup> P1 panel with xGB branch devices will not accept BL or BQD frames in the same panel as branch devices.

<sup>3</sup> The New Revised P1 (18 circuit 250A only) is limited to 100A per connection (200A per pair) when installing Branch Breakers across from one another. All other configurations allow 125A per connection max. (250A per pair max.)

**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
QR2	2, 3	10	—	100, 110, 125, 150, 175, 200, 225
QRH2	2, 3	25	—	100, 110, 125, 150, 175, 200, 225
HQR2	2, 3	65	—	100, 110, 125, 150, 175, 200, 225
HQR2H	2, 3	100	—	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	Original P1 Catalog Number	Revised P1 Catalog Number
100A	BQD	3 Phase	MBKBC3	Use Back-fed Main Label Kit # MBKBFA <sup>3</sup> (includes "MAIN" label and instructions)
100A	BL, BLH, HBL	1 Phase	MBKBL1	
		3 Phase	MBKBL3	
125A	NGB, HGB, LGB	1 Phase	MBKNB1	
		3 Phase	MBKNB3	
125	ED4, ED6, HED4, HED6	1 Phase	MBKED1	MBKED1A
		3 Phase	MBKED3	MBKED3A
225	QJ2, QJH2, QJ2H	1 Phase	MBKQJ1	MBKQJ1A
		3 Phase	MBKQJ3	MBKQJ3A
225A <sup>2</sup>	QR2, QRH2, HQR2, HQR2H	1 Phase	MBKQR1	MBKQR1A
		3 Phase	MBKQR3	MBKQR3A
250	FXD6, FD6, HFD, HFXD6	1 Phase	MBKFD1	MBKFD1A
		3 Phase	MBKFD3	MBKFD3A
400 <sup>1</sup>	JXD6, JD6, HJD6, HJXD6	1 Phase	MBKJD1	MBKJD1A
		3 Phase	MBKJD3	MBKJD3A

<sup>1</sup> 400 amp kit is for main—only not allowed for subfeed breaker.

<sup>2</sup> Although QR is rated 250A, it is limited to 225A in panelboard.

<sup>3</sup> Back-fed occupies branch space.

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

Amp Rating	Material	Wire Range	Service	Original Catalog Number	Revised P1 Catalog Number
250	Al	(1) #6 AWG-350 Kcmil (Cu or Al)	1 Phase	MLKA1	MLKA1A
			3 Phase	MLKA3	MLKA3A
	Cu	(1) #6 AWG-350 Kcmil (Cu or Al)	1 Phase	MLKC1	MLKC1A
			3 Phase	MLKC3	MLKC3A
400	AL	(2) 1/0 - 250 Kcmil or (1) #2 AWG 600 Kcmil	1 Phase	4MLKA1	4MLKA1A
			3 Phase	4MLKA3	4MLKA3A
	Cu	(2) 1/0 - 4/0 or (1) 1/0 600 Kcmil	1 Phase	4MLKC1	4MLKC1A
			3 Phase	4MLKC3	4MLKC3A
400	AL	(1) AL 1/0-750 Kcmil (2) AL/CU 250 kcmil max. (max. (1) 600 Kcmil wire)	1 Phase	—	4MLKA1B
			3 Phase	—	4MLKA1B

NOTES: Original P1 kits will not work with Revised P1 starters if the chart shows different part numbers for each.

Revised P1 kits will not work with Original P1 starters if the chart shows different part numbers for each.

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

No. of Circuits	Description	Original P1 Catalog Number	Revised P1 Catalog Number
18	2 or 4 Branch Neutral Strips, 1 Main Neutral Lug, Hardware	CNLK18	Use 30 ckt kit
30		CNLK30	CNLK30A
42		CNLK42	CNLK42A
54, 66		—	CNLK54A

Table P1-10A – 2/0 Neutral Lug Kits – 250A and 400A

No. of Circuits	Description	Original P1 Catalog Number	Revised P1 Catalog Number
18	2 or 4 Branch Neutral Strips, Hardware	—	Use 30 ckt kit
30		—	LNLK30A
42		—	LNLK42A
54, 66		—	LNLK54A

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

No. of Circuits	Description	Original P1 Catalog Number	Revised P1 Catalog Number
18	2 or 4 Branch Neutral Strips, 1 Main Neutral Lug, Hardware	2NLK18	Use 30 ckt kit
30		2NLK30	LNLK30A
42		2NLK42	LNLK42A
54, 66		—	LNLK54A

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

No. of Circuits	Description	Original P1 Catalog Number	Revised P1 Catalog Number
18	2 or 4 Branch Neutral Strips, 1 Main 600 kcmil Neutral Lug, Hardware	42NLK18	N/A
30		42NLK30	42NLK30A
42		42NLK42	42NLK42A
54, 66		—	42NLK54A

# Application

## Type P1 Panelboards

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

Main Breaker	Max. Interrupting Rating (kA)		Neutral Location
	20" wide box	24" wide box	20" wide box
BL, BLH, HBL, BQD <sup>2</sup>	8.500 (216) <sup>3</sup>	10.500 (267) <sup>3</sup>	10.500 (267)
NGB, HGB, LGB <sup>2</sup>	8.000 (203) <sup>3</sup>	10.000 (254) <sup>3</sup>	10.500 (267)
ED2, ED4, ED6, HED4	6.125 (156)	8.125 (206)	10.500 (267)
QJ2, QJH2, QJ2H	6.500 (165)	8.500 (216)	10.500 (267)
QR2, QRH2, HQR2, HQR2H	6.500 (165)	8.500 (216)	10.500 (267)
FD6, FXD6, HFD6, HFXD6	5.250 (133)	7.250 (184)	10.500 (267)
JD6, JXD6 <sup>1</sup>	15.000 (381)	15.000 (381)	26.500 (674)

<sup>1</sup> JD frame mounted vertically.

<sup>2</sup> For Revised P1, use Side Gutter Wiring Specs Table P1-15. These are back-fed main breakers.

<sup>3</sup> These dimensions are for Original P1 as a reference only, not for Revised P1.

**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	9.500 (242)	9.500 (242)	10.500 (267)	10.500 (267)
250	9.500 (242)	9.500 (242)	10.500 (267)	10.500 (267)
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.

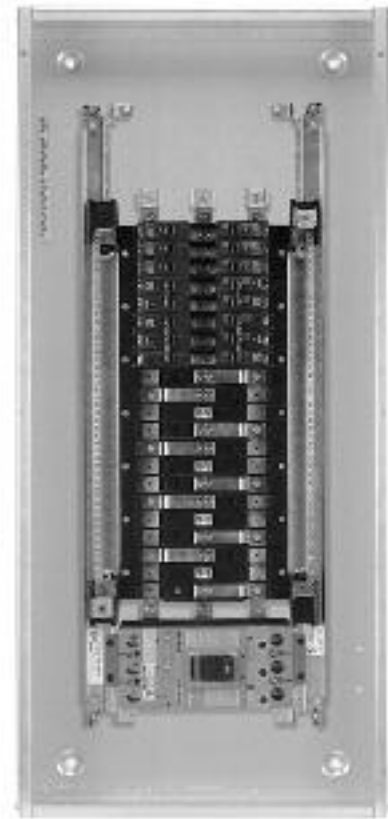
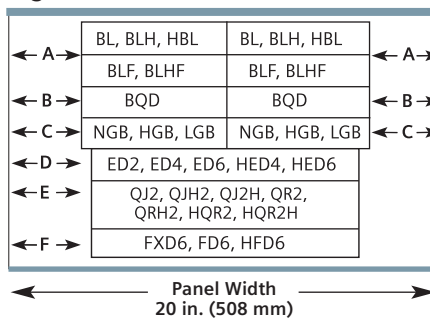
**Table P1-15 – Side Gutter Wiring Space Inches (mm) (Fig P1-1)**

Reference Letter	Panel Width 20"	Panel Width 24" Optional
A <sup>2</sup>	6.375 (162)	8.375 (213)
B <sup>2</sup>	5.500 (140)	7.500 (191)
C <sup>2</sup>	5.000 (127)	7.000 (178)
D <sup>1</sup>	6.125 (156)	8.125 (206)
E <sup>1</sup>	6.500 (165)	8.500 (216)
F <sup>1</sup>	5.250 (133)	7.250 (184)

<sup>1</sup> Subfeed mounting limit 1 per panel.

<sup>2</sup> For all Revised P1 panels using BL/BQD or xGB breakers as mains in back-fed position, use this chart for wiring space.

**Fig P1-1**



**Table P1-16 – Miscellaneous Parts and Accessories**

Catalog Number	Description
BK1	Bonding Kit for 400A max. Original P1 Panels
BK1A	Bonding Kit for 400A max. Revised P1 Panels
BK2	Bonding Kit for S1/S2 400 & 600
BK3	Bonding Kit for S3 Panel
IMK1	Interior Adjusting Kit
11-1824-01	Directory Card Holder
12-1110-01	Directory Card
MCHK	Metal Card Holder Kit
NEMA PB1.1 <sup>3</sup>	NEMA Instruction Book 11-506-01
NBK03	Number Strips 1-42. Stick-on type: Use w/P1 series Panels
NBK04	Number Strips 43-84. Stick-on type: Use w/P1series Panels
NBK05	Number Strips 85-126. Stick-on type: Use w/P1series Panels
NBK06	Number Strips 127-168. Stick-on type: Use w/P1series Panels
EGK	AL Ground Bus 44 Connections
ECGK	CU Ground Bus 44 Connections
IGK	Insulated AL Gound Bus
ICGK	Insulated CU Gound Bus
EWK1	End Wall Kit with Knockouts (20"W x 5.75" DP)
EWK2	End Wall Kit with Knockouts (24"W x 7.75" DP)

Catalog Number	Description
EBF1	NEB/HEB Filler Plate
P1SCRWS	Package of 42 breaker mounting screws for P1
DFFP1	1" Branch circuit filler plate (suitable for replacing QF3 in P1 thru P5 Panelboards and Switchboards)
P1CONBPHCU <sup>1</sup>	Connector Kit – 6 pcs. B-phase Copper
P1CONBPHAL <sup>1</sup>	Connector Kit – 6 pcs. B-phase Aluminum
P1CONBPHAL <sup>1</sup>	Connector Kit – 6 pcs. B-phase Aluminum
P1CONACPHCU <sup>1</sup>	Connector Kit – 6 pcs. A or C-phase Copper
P1CONACPHAL <sup>1</sup>	Connector Kit – 6 pcs. A or C-phase Aluminum
MBKORFK	P1/Revised P1 Filler for 1PH/3PH QR. Horizontal mount only.
SEBKR1V1 <sup>2</sup>	FD, QJ, QR Service Entrance Barrier Kit (Revised P1)
SEBKR1V2 <sup>2</sup>	ED Service Entrance Barrier Kit (Revised P1)
SEBKR1V3 <sup>2</sup>	BQD Service Entrance Barrier Kit (Revised P1 - back-fed)
SEBKR1V4 <sup>2</sup>	xGB Service Entrance Barrier Kit (Revised P1) - back-fed
SEBKR1P2P3V1 <sup>2</sup>	JD, LD Service Entrance Barrier Kit (RP1, P1, P2, P3)

<sup>1</sup> Replacement parts.

<sup>2</sup> Factory installed and Field installable Service Entrance Barrier kits are now available as required by UL67 (In COMPAS, you must select Service Entrance Required.)

<sup>3</sup> Can be downloaded at no charge from webiste: link

# Typical Catalog Numbers

## Type P1 Panelboards

**Shown with Standard Mains, Top Fed and Surface Trim**  
Catalog number is for aluminum main bus. For optional copper main bus change "A" in position 11 to "C".

Replace fifth and sixth position in panelboard catalog number, with alternate main breaker code. Use price adders from main breaker selection table. Horizontally mounted.

Panels are top feed, surface mounted. For bottom feed, change "T" in position 12 to "B". For flush mounting, change "S" in position 13 to "F".

Note: Original P1 was produced until mid 2014 and in July the revised P1 was introduced. All interior numbers that end with "T" or "N" are the new Revised interiors. "T" at end of catalog number indicates there is a Subfeed area available. "N" at end of catalog number indicates there is no Subfeed area available.

**Table P1-17 – Main Lugs Only**

Main Lug Only			Original P1– Subfeed Space	Revised P1– Subfeed Space 1,3	Original P1– Subfeed Space	Revised P1– Subfeed Space 1,3	Original P1– Subfeed Space	Revised P1– Subfeed Space 1,3,4
Max Panel Amp Rating	Max 1-Pole Circuits	Box Height (in.)	208Y/120V 3-Phase, 4-Wire Catalog #	208Y/120V 3-Phase, 4-Wire Catalog #	120/240V 1-Phase, 3-Wire Catalog #	120/240V 1-Phase, 3-Wire Catalog #	480Y/277V 3-Phase, 4-Wire Catalog #	480Y/277V 3-Phase, 4-Wire Catalog #
	18	32	P1C18ML125ATS	P1C18ML125ATST	P1A18ML125ATS	P1A18ML125ATST	P1E18ML125ATS	P1E18ML125ATST
125	30	38	P1C30ML125ATS	P1C30ML125ATST	P1A30ML125ATS	P1A30ML125ATST	P1E30ML125ATS	P1E30ML125ATST
	42	44	P1C42ML125ATS	P1C42ML125ATST	P1A42ML125ATS	P1A42ML125ATST	P1E42ML125ATS	P1E42ML125ATST
	54	50	N/A	P1C54ML125ATST	N/A	P1A54ML125ATST	N/A	P1E54ML125ATST
	66	56	N/A	P1C66ML125ATST	N/A	P1A66ML125ATST	N/A	P1E66ML125ATST
250	18	32	P1C18ML250ATS	P1C18ML250ATST	P1A18ML250ATS	P1A18ML250ATST	P1E18ML250ATS	P1E18ML250ATST
	30	38	P1C30ML250ATS	P1C30ML250ATST	P1A30ML250ATS	P1A30ML250ATST	P1E30ML250ATS	P1E30ML250ATST
	42	44	P1C42ML250ATS	P1C42ML250ATST	P1A42ML250ATS	P1A42ML250ATST	P1E42ML250ATS	P1E42ML250ATST
	54	50	N/A	P1C54ML250ATST	N/A	P1A54ML250ATST	N/A	P1E54ML250ATST
400	66	56	N/A	P1C66ML250ATST	N/A	P1A66ML250ATST	N/A	P1E66ML250ATST
	18	56	P1C18ML400ATS	—	P1A18ML400ATS	—	P1E18ML400ATS	—
	30	62	P1C30ML400ATS	P1C30ML400ATST	P1A30ML400ATS	P1A30ML400ATST	P1E30ML400ATS	P1E30ML400ATST
	42	68	P1C42ML400ATS	P1C42ML400ATST	P1A42ML400ATS	P1A42ML400ATST	P1E42ML400ATS	P1E42ML400ATST
66 <sup>2</sup>	74	—	—	P1C54ML400ATST	—	P1A54ML400ATST	—	P1E54ML400ATST
	74 <sup>2</sup>	—	—	P1C66ML400ATS <sup>N2</sup>	—	P1A66ML400ATS <sup>N2</sup>	—	P1E66ML400ATS <sup>2</sup>

**Table P1-18 – Main Circuit Breaker**

100	18	32	P1C18BL100ATS	P1C18BL100ATST	P1A18BL100ATS	P1A18BL100ATST	P1E18BD100ATS	P1E18BD100ATST
	30	38	P1C30BL100ATS	P1C30BL100ATST	P1A30BL100ATS	P1A30BL100ATST	P1E30BD100ATS	P1E30BD100ATST
	42	44	P1C42BL100ATS	P1C42BL100ATST	P1A42BL100ATS	P1A42BL100ATST	P1E42BD100ATS	P1E42BD100ATST
	54	50	—	P1C54BL100ATST	—	P1A54BL100ATST	—	P1E54BD100ATST
	66	56	—	P1C66BL100ATST	—	P1A66BL100ATST	—	P1E66BD100ATST
125 <sup>3</sup>	18	32	P1C18NB125ATS	P1C18NB125ATST	P1A18NB125ATS	P1A18NB125ATST	P1E18NB125ATS	P1E18NB125ATST
	30	38	P1C30NB125ATS	P1C30NB125ATST	P1A30NB125ATS	P1A30NB125ATST	P1E30NB125ATS	P1E30NB125ATST
	42	44	P1C42NB125ATS	P1C42NB125ATST	P1A42NB125ATS	P1A42NB125ATST	P1E42NB125ATS	P1E42NB125ATST
	54	50	—	P1C54NB125ATST	—	P1A54NB125ATST	—	P1E54NB125ATST
	66	56	—	P1C66NB125ATST	—	P1A66NB125ATST	—	P1E66NB125ATST
225	18	32	P1C18QJ225ATS	P1C18QJ225ATST	P1A18QJ225ATS	P1A18QJ225ATST	P1E18FX225ATS	P1E18FX225ATST
	30	38	P1C30QJ225ATS	P1C30QJ225ATST	P1A30QJ225ATS	P1A30QJ225ATST	P1E30FX225ATS	P1E30FX225ATST
	42	44	P1C42QJ225ATS	P1C42QJ225ATST	P1A42QJ225ATS	P1A42QJ225ATST	P1E42FX225ATS	P1E42FX225ATST
	54	50	—	P1C54QJ225ATST	—	P1A54QJ225ATST	—	P1E54FX225ATST
	66	56	—	P1C66QJ225ATST	—	P1A66QJ225ATST	—	P1E66FX225ATST
250	18	32	P1C18FX250ATS	P1C18FX250ATST	P1A18FX250ATS	P1A18FX250ATST	P1E18FX250ATS	P1E18FX250ATST
	30	38	P1C30FX250ATS	P1C30FX250ATST	P1A30FX250ATS	P1A30FX250ATST	P1E30FX250ATS	P1E30FX250ATST
	42	44	P1C42FX250ATS	P1C42FX250ATST	P1A42FX250ATS	P1A42FX250ATST	P1E42FX250ATS	P1E42FX250ATST
	54	50	—	P1C54FX250ATST	—	P1A54FX250ATST	—	P1E54FX250ATST
	66	56	—	P1C66FX250ATST	—	P1A66FX250ATST	—	P1E66FX250ATST
400	18	56	P1C18JX400ATS	—	P1A18JX400ATS	—	P1E18JX400ATS	—
	30	62	P1C30JX400ATS	P1C30JX400ATST	P1A30JX400ATS	P1A30JX400ATST	P1E30JX400ATS	P1E30JX400ATST
	42	68	P1C42JX400ATS	P1C42JX400ATST	P1A42JX400ATS	P1A42JX400ATST	P1E42JX400ATS	P1E42JX400ATST
	54	74	—	P1C54JX400ATST	—	P1A54JX400ATST	—	P1E54JX400ATST
	66 <sup>2</sup>	74 <sup>2</sup>	—	P1C66JX400ATS <sup>N3</sup>	—	P1A66JX400ATS <sup>N2</sup>	—	P1E66JX400ATS <sup>N2</sup>

**Table P1-19 – Standard Enclosures**

Box Height (in.)	Catalog Number				
	Type 1 Standard Trim				
	Box	Surface	Flush	Type 3R	Type 3R/12
26	B26	S26B	F26B	NR26	WP26
32	B32	S32B	F32B	NR32	WP32
38	B38	S38B	F38B	NR38	WP38
44	B44	S44B	F44B	NR44	WP40
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

<sup>1</sup> For all products without subfeed space - change "T" at end to "N" and reduce box size by 6".

<sup>2</sup> No sub-feed space only for 400A 66 circuit.

<sup>3</sup> BL/BQD/GB Type Mains are only available as Back-Fed. No kits are available for use in Main or Sub-feed space. (GB Type includes NGB, HGB and LGB Breakers). These breakers take up branch circuit space.

<sup>4</sup> xGB interiors are not available as Non-Feed-Thru, without Subfeed Space.

# 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
- <sup>a</sup> Piano hinge trims
- Painted boxes
- Custom colors
- Increase gauge trims and boxes
- Stainless steel trims and boxes, Type 1
- Type 1 enclosures (Std 16 Gage / Optional 14 or 12 Gage)

- NEMA 3R/12 enclosures
- NEMA 4 enclosures
- NEMA 4X enclosures
- Special Keyed Locks (Keys are not supplied)

TEY TEU1 Cat 60 LL803 LL806	All fit Fast-Latch Front
Yale 47 (NYC) National C413A Beck Lock 7-pin tumbler Southco 14 Fastener Corbin 1001 FAB7	Special non-Fast-Latch

- 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<sup>1</sup>
- Contactor mains - Mount in 23" enclosure ahead of panel.
  - Asco 920 through 225 amps<sup>3</sup>
  - Asco 911 through 150 amps<sup>3</sup>
  - Siemens LEN through 30 amps<sup>3</sup>
- Branch and main breaker accessories
  - Handle blocks
  - Handle locks
- Feed-thru lugs<sup>1</sup>  
Cannot be used in conjunction with TVSS or subfeed breakers. Do not add height to the panel.

- Bus mounted TVSS<sup>1</sup>
- 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<sup>2</sup>, BLH<sup>2</sup>, HBL<sup>2</sup>, BQD<sup>2</sup>, xGB<sup>2</sup> as branch use 1" unit space for shunt trip.

Amp Rating	Type	Connector Cu/Al Range
250	Al/Cu Mechanical	(1)-#6 AWG-350 kcmil
	Cu Mechanical	(1)-#6 AWG-350 kcmil
	Al/Cu Compression	(1)-#6 AWG-350 kcmil
400	Al/Cu AWG Mechanical	(1)-#3/0 AWG-250 kcmil or (1)-#3/0 AWG-600 kcmil
	Cu	(1)-#2-600 kcmil
	Al/Cu	(1) 400-600 kcmil
	Compression	(1) 400-600 kcmil

Note: Specify copper or aluminum cable.

- 200% neutral<sup>1</sup>
- Copper lugs, mechanical line and branch neutral<sup>1</sup>

QJ2, QJ2H, QJH2, QR2, QRH2, HQR2, HQR2H, 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.

#### 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

<sup>1</sup> Do not increase panel or enclosure size

<sup>2</sup> Accessories on 1" pole breakers (BL, BQD, xGB, ED) will take 1" unit space.

<sup>3</sup> External to the panel, supplied in a separate enclosure.



# Connector Modifications

## Type P1 Panelboards

### Compression Lugs

Table P1-20 – Lugs

Style	Amp Rating	Breaker Type	Compression Connectors	Box Height Addition
MLO	125	N/A	(1) #4 AWG - 350 kcmil	None
	250			
Main Breaker	400	N/A	(1) 250-600 kcmil or (2) #3/0 AWG - 250 kcmil (custom option)	None
	125	ED4, ED6, HED4	(1) #12-1/0 AWG	Box must go to 24" wide
	225	QJ2, QJH2, QJ2H, QR2, QRH2, HQR2, HQR2H	(1) #6 AWG - 350 kcmil Cu or Al	Box must go to 24" wide for all breakers
	250	FXD6, HFD6	(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 require a particular crimping tool (tool is Hubbel Versa Crimp VC6) to accommodate the range. Consult factory for information. 200% neutral not available with compression lugs. xGB breakers cannot accommodate compression lugs.

### Enclosure Modifications

**NEMA-4–Water Tight, Dust Tight, Steel Enclosure** (Actual NEMA-4 enclosure is larger than standard Type 1 enclosure. See chart below for reference to approximate actual size.)

Table P1-21

Standard Box Height (in inches)	Actual NEMA 4 Enclosure Size		
	H	W	D
32	32	20	8
38	42	30	8
44	48	36	8
56	60	36	10

Note: Larger NEMA 4 enclosures are not available.

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

Table P1-22

Catalog Number	Enclosure – Stainless Steel Size (inches) (304SS is standard)			Enclosure Fiberglass Size (inches)		
	H	W	D	H	W	D
B4X26	26	20	5.75	36	30	8
B4X32	32	20	5.75	36	30	8
B4X38	38	20	5.75	48	36	12
B4X44	44	20	5.75	48	36	12
B4X50	50	20	5.75	60	36	12
B4X56	56	20	5.75	60	36	12
B4X62	62	20	5.75			
B4X68	68	20	5.75			
B4X74	74	20	5.75			

Note: 316SS is available as an option – must be specified.

### Remote Switch Modifications

Table P1-23 – Control Power Transformer

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

Table P1-24 – Applications for a Remote Switch

Switch Type	Modification
920	Mounts in 23" relay cabinet as a main only
LEN	30A mounts in 23" relay cabinet as a main only

Table P1-25 – Remote Control Switch Modification

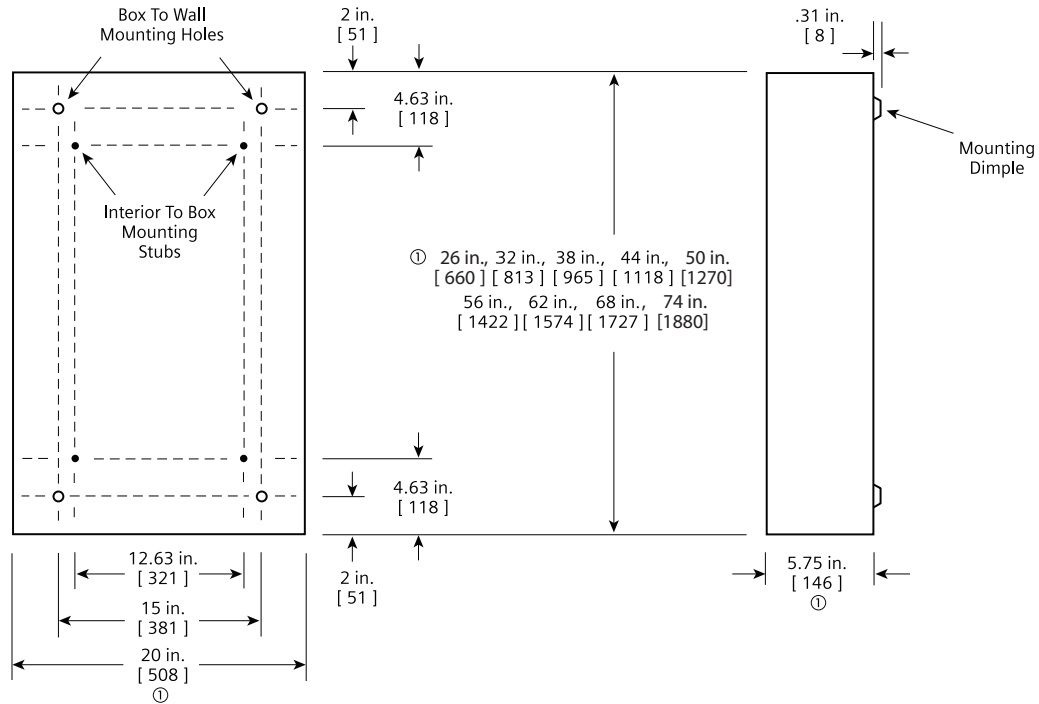
Description
Auxiliary Contacts (mounted, not wired)
2-Wire Control

# Dimensions

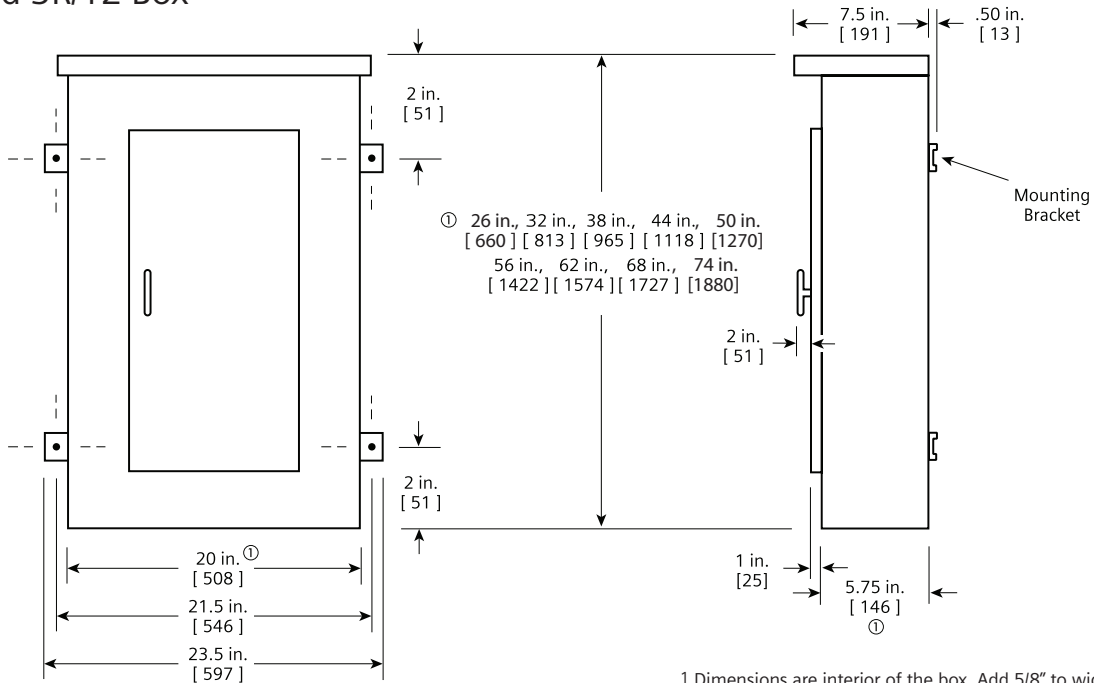
## Type P1 Panelboards

### Type 1 Box

Box is symmetrical

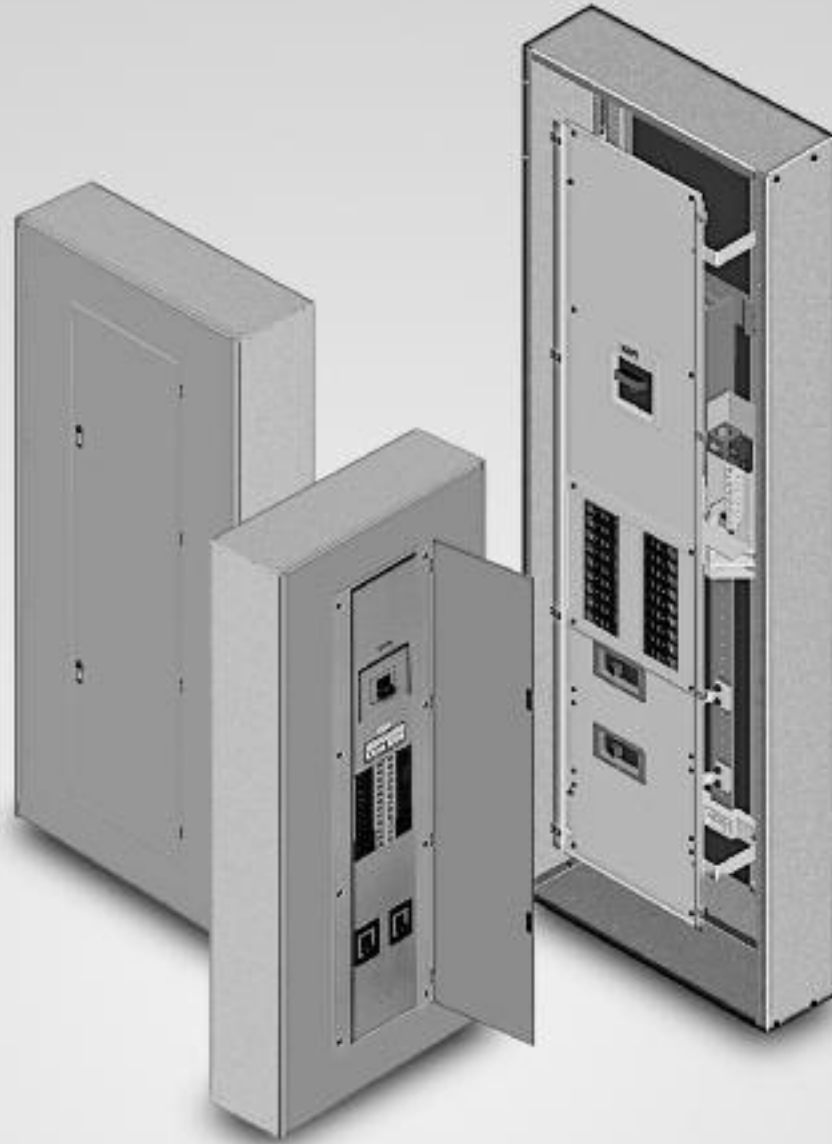


### Type 3R and 3R/12 Box



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

Description	Page		
General Information	2-2	Typical Catalog Numbers	2-6
Selection and Application	2-2	Main Lugs Only	2-6
Application	2-3 – 2-5	Main Circuit Breakers	2-6
Panel Unit Space To Box Height Requirements	2-3	Standard Modifications	2-7
Main Lug Connectors	2-3	Box Size Additions For Optional Features	2-8
Branch Breaker Side Gutters	2-3	Connector Modifications	2-9 – 2-10
Main Breaker Selection	2-4	Compression Lugs	2-9
Subfeed Breakers	2-4	Enclosure Modification	2-10
Branch Circuit Breakers	2-5	Remote Switch Modifications	2-10
Branch Neutral Connections	2-5	Dimensions	2-11
		Kits and Accessories	2-13

# P2 Panelboards

Flexibility is the hallmark of the P2 panel. This panel offers a wide array of factory-assembled options to meet virtually any lighting panel application. The ability to mix breaker frames within the unit space up to 225 amps will also meet certain distribution panel requirements in a much smaller package. Bussing options for the P2 vary from a typical temperature rating of 750 A/Si aluminum, to 1000 A/Si copper. Standard bussing in the P2 panel is tin-plated. Silver-plated copper is offered as an option. Integrated time clocks, bus mounted contactors (as mains or sub mains), split bus, and subfeed lugs (up to 400 amps) are just a few of the options available in this unique panel.

Like a lighting panel, P2 is set up around 18, 30, 42, 54, 66, 78, and 90 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, 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. QR frame breakers are mounted in 6" increments for two- and three pole, single mounted units. Changes in the unit spacelength for BL, BQD, 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	ASI 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/QR2.

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/QR2 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"	26 - 74	#16	#14
(508)	(660, 1880)		

# 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, xGB, ED	125A Horiz. CED	125A Vert. ED	225A Horiz. QJ/QR	225 Vert. QJ/QR	250A Horiz. FD	250A Vert. FD	250A Vert. CFD	400A Vert. JD	400A Vert. CJD	600A Vert. LD	600A Vert. CLD
26	9	—	—	—	9	—	—	—	—	—	—	—	—	—	—	—
32	15	9	—	—	15	9	9	9	—	—	—	—	—	—	—	—
38	21	15	9	9	21	15	15	15	9	9	—	—	—	—	—	—
44	27	21	15	15	27	21	21	21	15	15	9	—	—	—	—	—
50	33	27	21	21	33	27	27	27	21	21	15	9	9	—	—	—
56	39	33	27	27	39	33	33	33	27	27	21	15	15	—	9	—
62	45	39	33	33	45	39	39	39	33	33	27	21	21	9	15	—
68	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
74	45	45	45	45	45	45	45	45	45	45	39	33	33	21	27	21

**Note:** When the number of circuits exceeds 54 on a 125 and 250A MLO and 125 and 250A main breaker application, add 6" to the box height.

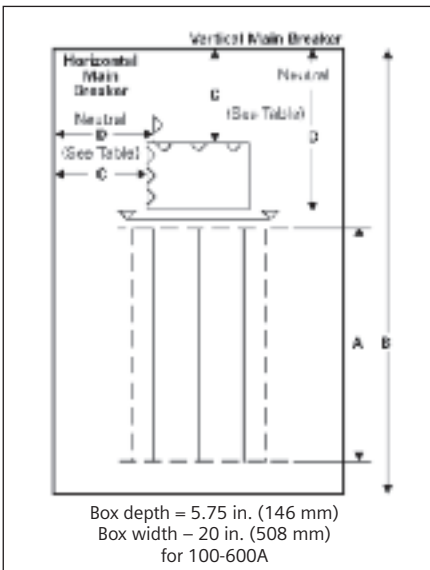
**Table P2-3 – Main Breaker (Fig. P2-1)**

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

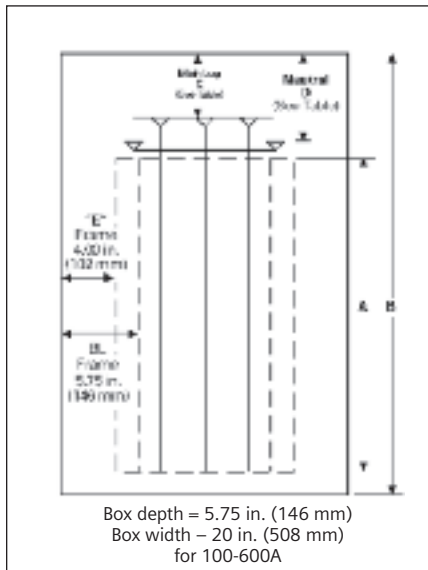
**Table P2-4 – Main Lug Connectors (Fig. P2-2)**

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**

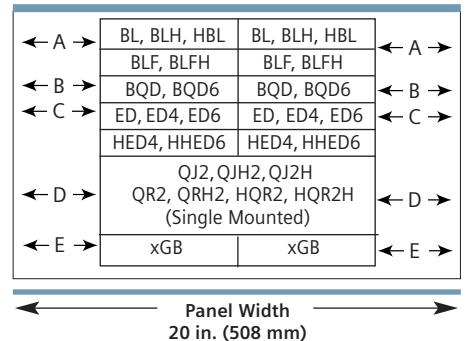


**Table P2-5 – Branch Breaker Side Gutters Inches (mm) (Fig. P2-3)**

Reference Letter	Panel Width 20" (508)
A	5.750 (146)
B	5.125 (130)
C	4.000 (102)
D <sup>1</sup>	5.000 (127)
E	4.625 (117)

<sup>1</sup> Single branch mounting construction.

**Fig. P2-3**



# Application

## Type P2 Panelboards

Table P2-6 – Main Breaker Selection<sup>1</sup>

Ampere Rating	Breaker Type	Max. Interrupting Rating (kA)			Ref. Catalog No.	Available Trip Values
		240V	480V	600V		
100	BL	10	—	—	BL	15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100
	HBL	65	—	—	HB	15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100
	BQD	65	14	—	BQ	15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100
	BLH	22	—	—	BH	15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100
	ED4	65	18	—	E4	15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100
	NGB	100	25	14	NB	15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 100
	HGB	100	35	14	G2	15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 100
	LGB	100	65	14	G3	15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 100
	ED6	100	25	14	E6	15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100
	HED4	100	42	—	H4	15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100
	HHED6	100	65	18	HA	15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100
	CED6 <sup>2</sup>	200	200	100	CE	15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100
125	NGB	100	25	14	NB	110, 125
	HGB	100	35	14	G2	110, 125
	LGB	100	65	14	G3	110, 125
	ED4	65	18	—	E4	125
	ED6	65	25	18	E6	125
	HED4	100	42	—	H4	125
	HHED6	100	65	18	HA	125
	CED6 <sup>2</sup>	200	200	100	CE	125
225	QJ2	10	—	—	QJ	60, 70, 80, 90, 100, 110, 125, 150, 175, 200, 225
	QJH2	22	—	—	QH	60, 70, 80, 90, 100, 110, 125, 150, 175, 200, 225
	QJ2H	42	—	—	Q2	60, 70, 80, 90, 100, 110, 125, 150, 175, 200, 225
	QR2	10	—	—	QR	100, 110, 125, 150, 175, 200, 225
	QRH2	25	—	—	Q4	100, 110, 125, 150, 175, 200, 225
	HQR2	65	—	—	Q5	100, 110, 125, 150, 175, 200, 225
	HQR2H	100	—	—	Q6	100, 110, 125, 150, 175, 200, 225
	FD6	65	35	18	FD	70, 80, 90, 100, 110, 125, 150, 175, 200, 225
	FXD6	65	35	18	FX	70, 80, 90, 100, 110, 125, 150, 175, 200, 225
	HFD6	100	65	25	HF	70, 80, 90, 100, 110, 125, 150, 175, 200, 225
	HFXD6	100	65	25	H2	70, 80, 90, 100, 110, 125, 150, 175, 200, 225
CFD6 <sup>2</sup>	200	200	100	CF	70, 80, 90, 100, 110, 125, 150, 175, 200, 225	
250	FD6	65	35	18	FD	250
	FXD6	65	35	18	FX	250
	HFD6	100	65	35	HF	250
	HFXD6	65	35	25	H2	250
	CFD6 <sup>2</sup>	200	150	100	CF	50
400	JXD6 <sup>2</sup>	65	35	25	JX	200, 225, 250, 300, 350, 400
	JD6 <sup>2</sup>	65	35	35	J6	200, 225, 250, 300, 350, 400
	HJXD6 <sup>2</sup>	100	65	35	H6	200, 225, 250, 300, 350, 400
	HJD6 <sup>2</sup>	100	65	35	H5	200, 225, 250, 300, 350, 400
	SJD6 <sup>2</sup>	65	35	25	SJ	200, 300, 400
	SHJD6 <sup>2</sup>	100	65	35	S2	200, 300, 400
	CJD6 <sup>2</sup>	200	200	100	CJ	200, 300, 400
	SCJD6 <sup>2</sup>	200	200	100	SC	200, 300, 400
600	LXD6 <sup>2</sup>	65	35	25	LX	450, 500, 600
	LD6 <sup>2</sup>	65	35	25	L6	250, 300, 350, 400, 450, 500, 600
	HLXD6 <sup>2</sup>	100	65	35	HL	250, 300, 350, 400, 450, 500, 600
	HLD6 <sup>2</sup>	100	65	35	HO	250, 300, 350, 400, 450, 500, 600
	SLD6 <sup>2</sup>	65	35	25	SL	300, 400, 500, 600
	SHLD6 <sup>2</sup>	100	65	35	S6	300, 400, 500, 600
	CLD6 <sup>2</sup>	200	150	100	CL	300, 400, 500, 600
	SCLD6	200	150	100	C6	300, 400, 500, 600

Note: When ED4, ED6, HED4, QJ2, QJH2, QJ2H, QR2, QRH2, HQR2, HQR2H, FD6, HFD6, or FXD6 frame main breaker, vertically mounted, is required, price as a main breaker panel and add from the table for the main breaker mounting.

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 <sup>3</sup> , FXD6	Twin/Single	70 - 250	65	35	18
HFD6 <sup>3</sup> , HFXD6	Twin	70 - 250	100	65	25
JD6 <sup>4</sup> , JXD6	Single	200 - 400	65	35	25
HJD6 <sup>4</sup> , HJXD6	Single	200 - 400	100	65	35

- Interchangeable trip main breakers are mounted at top of panel only.
- Vertically mounted
- Twin mounted subfeed breakers are mounted at bottom of panelboard only and adds 24" to the panel height.
- Subfeed breaker is mounted at bottom of panelboard only. 400 amp subfeed breaker adds 30" to the panel height (only for use with MLO).

# Application

## Type P2 Panelboards

Table P2-8 – Branch Circuit Breakers

Max. Amp Rating	Bolt-On Breaker Type	Amps	Availability			Maximum Interrupting Rating (kA)						
			1-Pole	2-Pole	3-Pole	120V AC	120/240V AC	240V AC	277V AC	480V AC	600V AC	250V DC
100	BL	15–60	✓	✓	✓	10	—	—	—	—	—	—
		70	✓	✓	✓	—	10	—	—	—	—	—
		80–100	—	✓	✓	—	—	10	—	—	—	—
	BLH	15–60	✓	✓	✓	—	22	—	—	—	—	—
		70	✓	✓	✓	—	22	—	—	—	—	—
		80–100	—	✓	✓	—	—	22	—	—	—	—
	HBL	15–55	✓	✓	✓	—	65	—	—	—	—	—
		60–100	—	✓	✓	—	65	—	—	—	—	—
	BL, HID	15–30	✓	✓	—	10	10	—	—	—	—	—
	BLR (240V)	15–60	—	✓	—	—	—	10	—	—	—	—
		70–100	—	✓	—	—	—	10	—	—	—	—
	BLE (GFCI)	15–30	✓	✓	—	10	—	—	—	—	—	—
		40–60	—	✓	—	—	10	—	—	—	—	—
	BLEH	20–30	✓	—	—	22	—	—	—	—	—	—
		15–60	✓	✓	—	—	22	—	—	—	—	—
	BLF (GFCI)	15–30	✓	✓	—	10	—	—	—	—	—	—
		40–60	✓	✓	—	—	10	—	—	—	—	—
	BLHF (GFCI)	15–30	✓	✓	—	22	—	—	—	—	—	—
40–60		✓	✓	—	—	22	—	—	—	—	—	
HBLF2 (GFCI)	15–30	✓	—	—	65	—	—	—	—	—	—	
BGL <sup>2</sup>	15–30	—	✓	✓	10	10	—	—	—	—	—	
BAF	15–20	✓	✓	—	10	—	—	—	—	—	—	
BAFH	15–20	✓	✓	—	22	—	—	—	—	—	—	
BQD	15–60	✓	✓	✓	—	65	—	14	—	—	14	
	70–100	✓	✓	✓	—	65	—	—	14	—	14	
125	NGB	15–60	✓	✓	✓	100	100	100	25	25	14	14 <sup>4</sup>
		70–100	✓	✓	✓	100	100	100	25	25	14	14 <sup>4</sup>
		110–125	—	✓	✓	100	100	100	25	25	14	14 <sup>4</sup>
	HGB	15–60	✓	✓	✓	100	100	100	35	35	14	14 <sup>4</sup>
		70–100	✓	✓	✓	100	100	100	35	35	14	14 <sup>4</sup>
		110–125	—	✓	✓	100	100	100	35	35	14	14 <sup>4</sup>
	LGB	15–60	✓	✓	✓	100	100	100	65	65	14	14 <sup>4</sup>
		70–100	✓	✓	✓	100	100	100	65	65	14	14 <sup>4</sup>
		110–125	—	✓	✓	100	100	100	65	65	14	14 <sup>4</sup>
	ED4	15–60	✓	✓	✓	65	—	—	22	—	—	—
		70–100	✓	✓	✓	—	—	65	—	18	—	30
		110–125	—	✓	✓	—	—	65	—	18	—	—
	ED6	15–60	—	✓	✓	—	—	65	—	25	18	30
		70–100	—	✓	✓	—	—	65	—	25	18	—
		110–125	—	✓	✓	—	—	65	—	25	18	—
	HED4 <sup>3</sup>	15–60	✓	✓	✓	—	—	65	—	42	18	30
		70–100	✓	✓	✓	—	—	65	—	42	18	—
		110–125	—	✓	✓	—	—	65	—	42	18	—
225	QJ2	60–225	—	✓	✓	—	—	10	—	—	—	—
	QJH2	60–225	—	✓	✓	—	—	22	—	—	—	—
	QJ2H	60–225	—	✓	✓	—	—	42	—	—	—	—
	QR2	100–225	—	✓	✓	—	—	10	—	—	—	—
	QRH2	100–225	—	✓	✓	—	—	25	—	—	—	—
	HQR2	100–225	—	✓	✓	—	—	65	—	—	—	—
	HQR2H	100–225	—	✓	✓	—	—	100	—	—	—	—

### Branch Device Limitations

Lighting and appliance branch circuit panelboards were included in editions of the National Electrical Code prior to 2008. By application rule (408.15 in all versions of the NEC prior to 2008), lighting and appliance panels are limited to 42 installed circuits. Each overcurrent device pole counts as a circuit.

1 1-Pole HED 4 15–30A Rated 65kA 35 through 100A Rated 25kA.

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

3 Based on 75 degree copper.

4 2-pole only (or) two outer poles of 3-pole breaker.

Table P2-9 – Branch Neutral Connections

Wire Range	Max. Number of Connections	Max. Amps <sup>3</sup>
#14-#6	48	65
#14-1/0	56	125
#6 - 350 Kcmil	4	250
(1) #4-600 Kcmil or (2) #6-250 Kcmil	1	400

**NOTE:** QJ/QR Breakers are single mounted in unit space and take 6" of unit space. Limited to (4) per panel max. xGB, BL, HBL, BLH and BQD breakers are mounted in common mountings in 3" or (6) pole increments. ED4, ED6, HED4 and HHED6 breakers are mounted in common mountings in 3" or (6) pole increments."

# Typical Catalog Numbers

## Type P2 Panelboards

Table P2-10 – 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	26	P2C18ML125ATS	P2A18ML125ATS	P2E18ML125ATS
	30	32	P2C30ML125ATS	P2A30ML125ATS	P2E30ML125ATS
	42	38	P2C42ML125ATS	P2A42ML125ATS	P2E42ML125ATS
	54	56	P2C54ML125ATS	P2A54ML125ATS	P2E54ML125ATS
	66	62	P2C66ML125ATS	P2A66ML125ATS	P2E66ML125ATS
	78	68	P2C78ML125ATS	P2A78ML125ATS	P2E78ML125ATS
	90	74	P2C90ML125ATS	P2A90ML125ATS	P2E90ML125ATS
250	18	32	P2C18ML250ATS	P2A18ML250ATS	P2E18ML250ATS
	30	38	P2C30ML250ATS	P2A30ML250ATS	P2E30ML250ATS
	42	44	P2C42ML250ATS	P2A42ML250ATS	P2E42ML250ATS
	54	56	P2C54ML250ATS	P2A54ML250ATS	P2E54ML250ATS
	66	62	P2C66ML250ATS	P2A66ML250ATS	P2E66ML250ATS
	78	68	P2C78ML250ATS	P2A78ML250ATS	P2E78ML250ATS
	90	74	P2C90ML250ATS	P2A90ML250ATS	P2E90ML250ATS
400	18	38	P2C18ML400ATS	P2A18ML400ATS	P2E18ML400ATS
	30	44	P2C30ML400ATS	P2A30ML400ATS	P2E30ML400ATS
	42	50	P2C42ML400ATS	P2A42ML400ATS	P2E42ML400ATS
	54	56	P2C54ML400ATS	P2A54ML400ATS	P2E54ML400ATS
	66	62	P2C66ML400ATS	P2A66ML400ATS	P2E66ML400ATS
	78	68	P2C78ML400ATS	P2A78ML400ATS	P2E78ML400ATS
	90	74	P2C90ML400ATS	P2A90ML400ATS	P2E90ML400ATS
600	18	38	P2C18ML600ATS	P2A18ML600ATS	P2E18ML600ATS
	30	44	P2C30ML600ATS	P2A30ML600ATS	P2E30ML600ATS
	42	50	P2C42ML600ATS	P2A42ML600ATS	P2E42ML600ATS
	54	56	P2C54ML600ATS	P2A54ML600ATS	P2E54ML600ATS
	66	62	P2C66ML600ATS	P2A66ML600ATS	P2E66ML600ATS
	78	68	P2C78ML600ATS	P2A78ML600ATS	P2E78ML600ATS
	90	74	P2C90ML600ATS	P2A90ML600ATS	P2E90ML600ATS

Table P2-11 – Main Circuit Breaker

100	18	26	P2C18BL100ATS	P2A18BL100ATS	P2E18BL100ATS
	30	32	P2C30BL100ATS	P2A30BL100ATS	P2E30BL100ATS
	42	38	P2C42BL100ATS	P2A42BL100ATS	P2E42BL100ATS
125	30	32	P2C30NB125ATS	P2A30NB125ATS	P2E30NB125ATS
	42	38	P2C42NB125ATS	P2A42NB125ATS	P2E42NB125ATS
	54	56	P2C54NB125ATS	P2A54NB125ATS	P2E54NB125ATS
	66	62	P2C66NB125ATS	P2A66NB125ATS	P2E66NB125ATS
	78	68	P2C78NB125ATS	P2A78NB125ATS	P2E78NB125ATS
	90	74	P2C90NB125ATS	P2A90NB125ATS	P2E90NB125ATS
225 <sup>1</sup>	18	32	P2C18QR225ATS	P2A18QR225ATS	P2E18FX225ATS
	30	38	P2C30QR225ATS	P2A30QR225ATS	P2E30FX225ATS
	42	44	P2C42QR225ATS	P2A42QR225ATS	P2E42FX225ATS
	54	56	P2C54QR225ATS	P2A54QR225ATS	P2E54FX225ATS
	66	62	P2C66QR225ATS	P2A66QR225ATS	P2E66FX225ATS
	78	68	P2C78QR225ATS	P2A78QR225ATS	P2E78FX225ATS
	90	74	P2C90QR225ATS	P2A90QR225ATS	P2E90FX225ATS
250	18	38	P2C18FX250ATS	P2A18FX250ATS	P2E18FX250ATS
	30	44	P2C30FX250ATS	P2A30FX250ATS	P2E30FX250ATS
	42	50	P2C42FX250ATS	P2A42FX250ATS	P2E42FX250ATS
	54	62	P2C54FX250ATS	P2A54FX250ATS	P2E54FX250ATS
	66	68	P2C66FX250ATS	P2A66FX250ATS	P2E66FX250ATS
	78	74	P2C78FX250ATS	P2A78FX250ATS	P2E78FX250ATS
400	18	50	P2C18JX400ATS	P2A18JX400ATS	P2E18JX400ATS
	30	56	P2C30JX400ATS	P2A30JX400ATS	P2E30JX400ATS
	42	62	P2C42JX400ATS	P2A42JX400ATS	P2E42JX400ATS
	54	68	P2C54JX400ATS	P2A54JX400ATS	P2E54JX400ATS
	66	74	P2C66JX400ATS	P2A66JX400ATS	P2E66JX400ATS
600	18	56	P2C18LX600ATS	P2A18LX600ATS	P2E18LX600ATS
	30	62	P2C30LX600ATS	P2A30LX600ATS	P2E30LX600ATS
	42	68	P2C42LX600ATS	P2A42LX600ATS	P2E42LX600ATS
	54	74	P2C54LX600ATS	P2A54LX600ATS	P2E54LX600ATS

<sup>1</sup> QJ series was available prior to QR.



# 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<sup>1</sup>
  - UVR<sup>1</sup>
- 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. Factory installed and Field installable Service Entrance Barrier kits are now available as required by UL67. (In COMPAS, you must select Service Entrance Required.)

- 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 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, ED2, ED4, HED4, HED6, HHED6 uses 1" unit space for shunt trip. All may be used on mains or subfeeds.

QJ2, QJ2H, QJH2, QR2, QRH2, HQR2, HQR2H, 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

<sup>1</sup> 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 on MLO Applications

Options	Main Lugs				Main Breakers											
	125A	250A	400A	600A	125A Horiz. BL, BQD, ED, xGB	125A Horiz. CED	125A Vert. ED	225A Horiz. QJ QR	225A Vert. QJ QR	225A Horiz. FD	250A Vert. FD	250A Vert. CFD	400A JD	400A CJD	600A LD	600A CLD
<b>*Min. Box Size</b>	<b>26"</b>	<b>32"</b>	<b>38"</b>	<b>38"</b>	<b>26"</b>	<b>32"</b>	<b>32"</b>	<b>32"</b>	<b>38"</b>	<b>38"</b>	<b>44"</b>	<b>50"</b>	<b>50"</b>	<b>62"</b>	<b>56"</b>	<b>62"</b>
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
SPD	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 <sup>1</sup>	(1) #14-2/0 AWG Cu or Al	Box must go to 24"W for CED6 breaker only Add 6" to box height for NØ
	225	QJ2, QJH2, QJ2H, QR2, QRH2, HQR2, HQR2H	(1) #6 - 350 kcmil Cu or Al	Box must go to 24" wide
	250	FXD6, HFD6, CFD6,	(1) #6 - 350 kcmil Cu or Al	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

### Alternate Lugs

Table P2-14 – Lugs

Style	Amp Rating	Breaker Type	Compression Connectors	Box Height Addition
MLO	400	N/A	(1) 250 - 350 kcmil or (2) #3/0 AWG - 250 kcmil Cu or Al	6
Main Breaker	400	JD6, JXD6, HJD6, CJD6, SJD6, SHJD6, SCJD6	(1) #3/0 AWG - 750 kcmil Cu or Al	6

# Connector Modifications

## Type P2 Panelboards

### Enclosure Modifications

Enclosure Modification NEMA 4 for Type P2 Water Tight and Dust Tight, Steel Enclosure (consult plant to verify enclosure size)

Table P2-15

Standard Box Height Inches	Actual NEMA Enclosure Size		
	H	W	D
32	32	20	8
38	42	30	8
44	48	36	8
56	60	36	10

Note: Larger NEMA 4 enclosures are not available.

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

Table P2-16

Box Height Inches	Enclosure - Stainless Steel and Steel with Epoxy Coating			Enclosure - Stainless Steel and Steel with Epoxy Coating <sup>1</sup>		
	H	W	D	H	W	D
26	26	20	5.75	36	30	8
32	32			36	30	8
38	38			48	36	12
44	44			48	36	12
50	50			60	36	12
56	56			60	36	12
62	62			—	—	—
68	68			—	—	—
74	74			—	—	—

<sup>1</sup> Limited to the sizes shown.

### Remote Switch Modifications

Table P2-17 – Control Power Transformer

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

Table P2-18 – Applications for a Remote Switch

Switch Type	Modification
ASCO 920	30 to 225A – Add 12" to MLO box height
ASCO 911 <sup>1</sup>	≤ 225A – Add 21" to the box height. >225A is not available in P2
LEN	60A to 100A adds 6" to the box height with a min. depth of 7.75" 200A adds 6" to the box height with a min. depth of 10.00"

<sup>1</sup> >225A is recommended for use in a P4 panel.

Table P2-19 – Remote Control Switch Modification

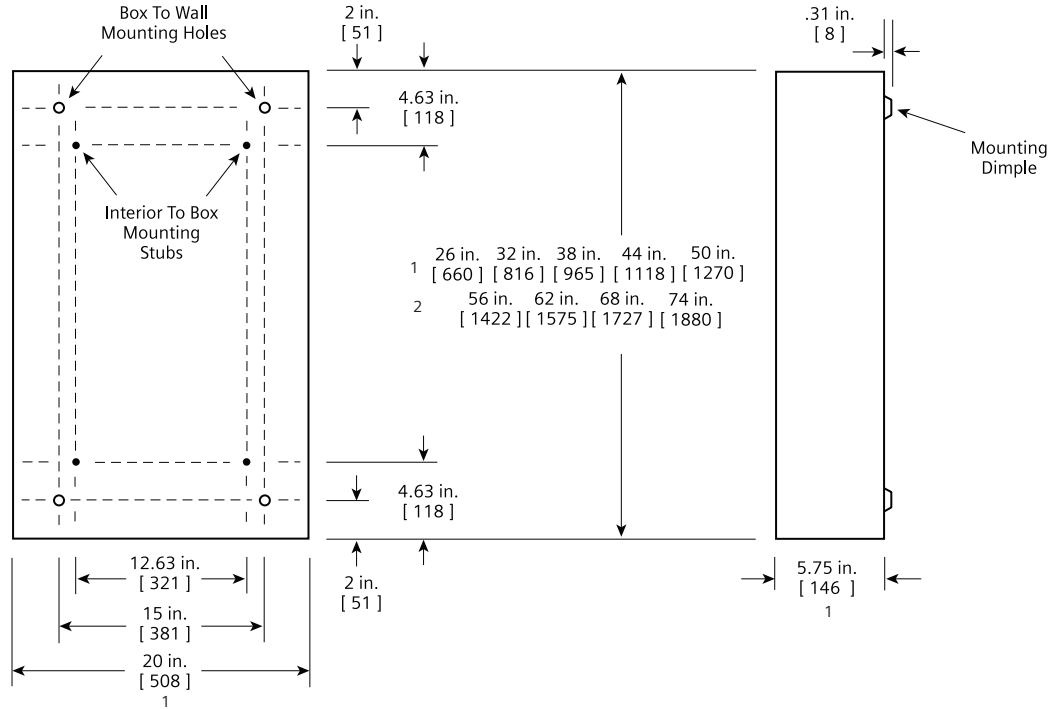
Description
Auxiliary Contacts (mounted not wired)
Ea. 2-Wire Control

# Dimensions

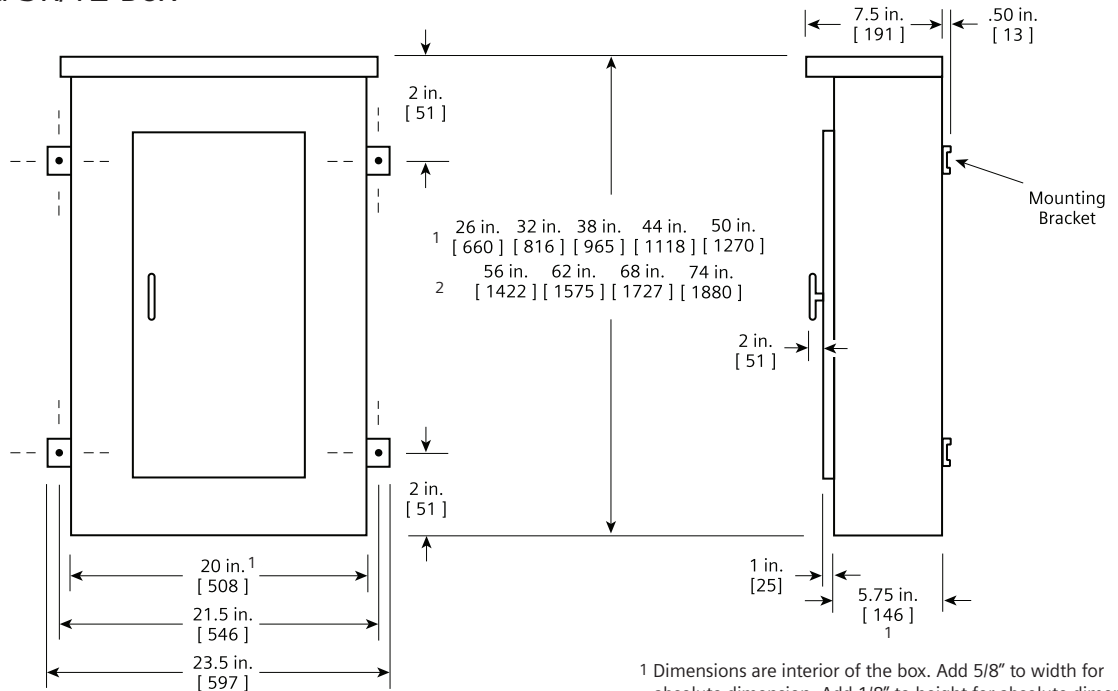
## Type P2 Panelboards

### Type 1 Box

Box is symmetrical



### Type 3R and 3R/12 Box

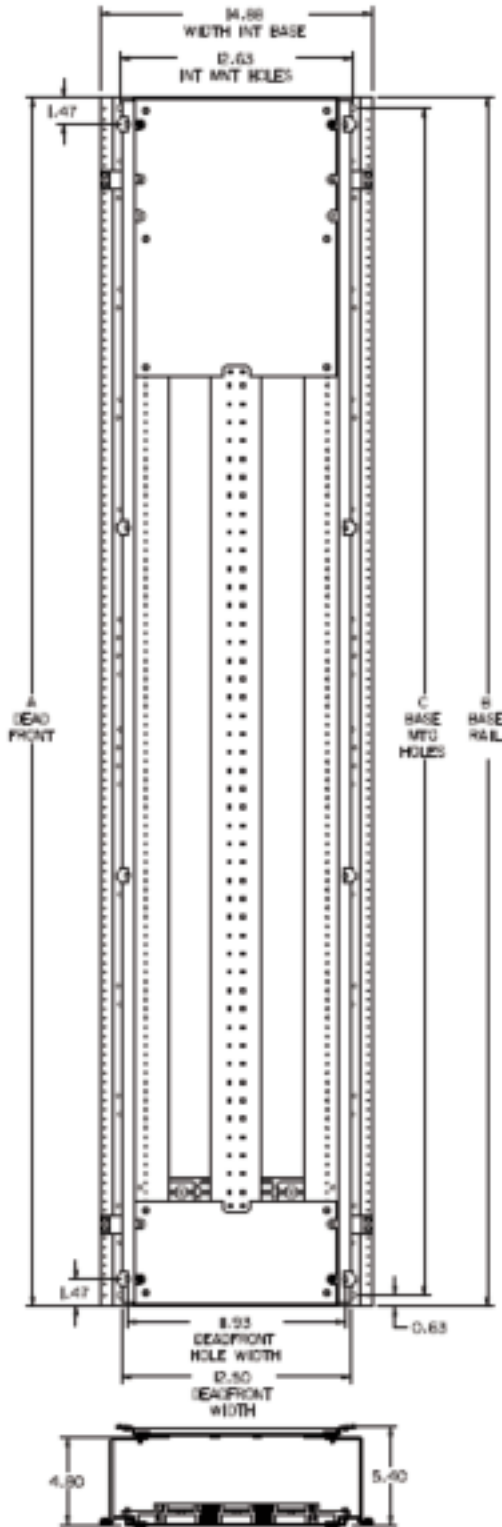


1 Dimensions are interior of the box. Add 5/8" to width for absolute dimension. Add 1/8" to height for absolute dimension.  
 2 See table P2-12 to match ratings with height.

Dimensions shown in inches and millimeters [ ].

# Dimensions

## Type P2 Panelboards



A	B	C	Standard Box Size
17.94	18.00	16.75	26H 20W 5.75D
23.94	24.00	22.75	32H 20W 5.75D
29.94	30.00	28.75	36H 20W 5.75D
35.94	36.00	34.75	44H 20W 5.75D
41.94	42.00	40.75	50H 20W 5.75D
47.94	48.00	46.75	56H 20W 5.75D
53.94	54.00	52.75	62H 20W 5.75D
59.94	60.00	58.75	68H 20W 5.75D
65.94	66.00	64.75	74H 20W 5.75D

# 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”

Screw to Box – Replace “B” suffix with “C”

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 (Excludes NEMA 3R)

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

Table P2-21 – Breaker Kits and Accessories

Kit No.	Description	Contents
BBKB32 (P2/P3)	BL/BQD 6-pole 3” branch breaker kit	Kit contains top barrier, (3) A/C connectors, (1) B connectors, hardware
BBKED32 (P2/P3)	ED 6-pole 3” branch breaker kit	Kit contains breaker support, inter-phase barriers, (3) AC connectors, (1) B connector, hardware
BBKNB32 (P2/P3)	xGB 6-pole 3” branch mounting kit	Kit contains top barrier, (3) A/C connectors, (1) B connector, hardware
BBKQ1 (P2)	QJ/QR branch breaker kit for 2 and 3-pole single mount	Kit to contain all connectors and cover plates necessary to mount both 2 and -pole breakers
BBKQR1 <sup>1</sup>	P2 branch BKR strap kit for single QR 1-phase/3-phase	
BBKQR2 <sup>1</sup>	P3 branch BKR strap kit for single QR 1-phase/3-phase	
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
BBKQRP1FK	P2 filler for QR. Horizontal or vertical mount. 1-phase/3-phase.	Kit contains all cover plates necessary to change from QJ to QR both 2 and 3-pole breakers.
BBKQRP2FK	P3 filler for QR. Dual mount horizontal. 1-phase/3-phase.	Kit contains all cover plates necessary to change from QJ to QR both 2 and 3-pole breakers. For 1-phase panel, both breakers must change from QJ to QR, cannot have one of each installed.
SEBKP2V1 <sup>3</sup>	BL, BQD Main Service Entrance Barrier (P2 only)	Kit contains barrier, mounting brackets, and hardware
SEBKP2V2 <sup>3</sup>	xGB Main Service Entrance Barrier (P2 only)	Kit contains barrier, mounting brackets, and hardware
SEBKP2V3 <sup>3</sup>	FD, QJ, QR Horizontal Main Service Entrance Barrier (P2, P2 with SEM3, P3)	Kit contains barrier, mounting brackets, and hardware
SEBKP2V4 <sup>3</sup>	FD, QJ, QR Vertical Main Service Entrance Barrier (P2, P2 with SEM3)	Kit contains barrier, mounting brackets, and hardware
SEBKP2V5 <sup>3</sup>	ED Horizontal Main Service Entrance Barrier (P2, P2 with SEM3)	Kit contains barrier, mounting brackets, and hardware
SEBKP2V6 <sup>2 3</sup>	ED Vertical Main Service Entrance Barrier (P2, P2 with SEM3)	Kit contains barrier, mounting brackets, and hardware
SEBKP1P2P3V1 <sup>3</sup>	JD, LD Service Entrance Barrier Kit (RP1, P1, P2, P3)	Kit contains barrier, mounting brackets, and hardware

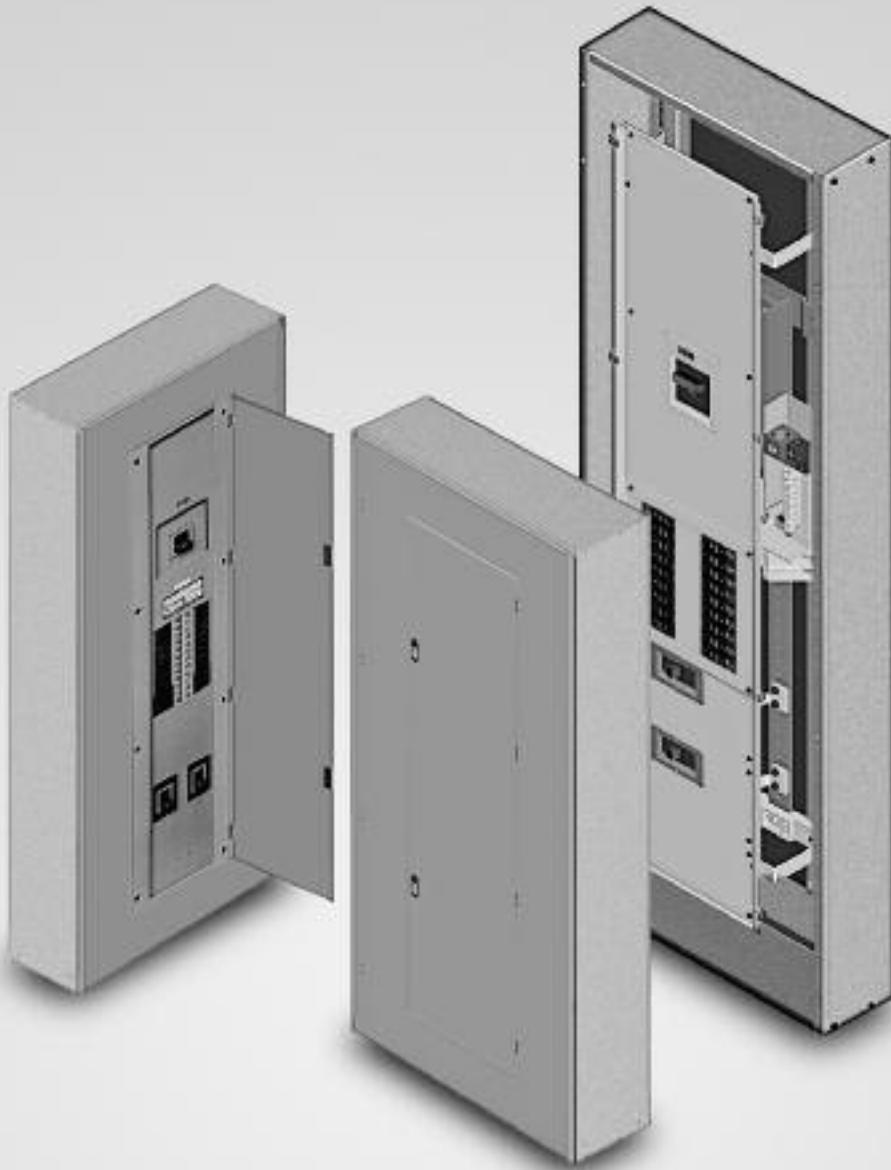
<sup>1</sup> Although QR is rated 250A, it is limited to 225A in panelboard.

<sup>2</sup> Two kits required for P2 extended circuit panels.

<sup>3</sup> Factory installed and Field installable Service Entrance Barrier kits are now available as required by UL67. (In COMPAS, you must select Service Entrance Required.)

# Notes





## 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
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# 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, ED, xGB 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 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. xGB frame breakers cannot be mixed with other frame types. Any expansion or modification must be in 3" increments also. QJ/QR 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, xGB, or 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	6-20A/3, 2-225/3,
Modifications	None
Feed	Top
Mounting	Surface

Step #2	
6-20A/3	3x3" = 6 poles = 9"
2-225/3 QJ2/QR2	6" = $\frac{6"}{15"}$
Enclosure is 56" from Table P3-2 (24" wide, 56" high, 7.75" deep).	

Step #3
Panel - <b>P3C56ML400ATS</b>
Box - <b>24WD56</b>
Trim - <b>P3S56</b>

### 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" (610)	56 - 80 (1422, 2032)	#16	#14

<sup>1</sup> ASI = Amperes per square inch

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 Horizontal FD	250A Vertical FD	250A Vertical CFD	400A Vertical JD	400A Vertical CJD	600A Vertical LD	600A Vertical CLD
56	27	21	21	21	21	15	9	9	—	9	—
62	33	27	27	27	27	21	15	15	9	15	9
33	39	33	33	33	33	27	21	21	15	21	15
74	45	39	39	39	39	33	27	27	21	27	21
80	45	45	45	45	45	39	33	33	27	33	27

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

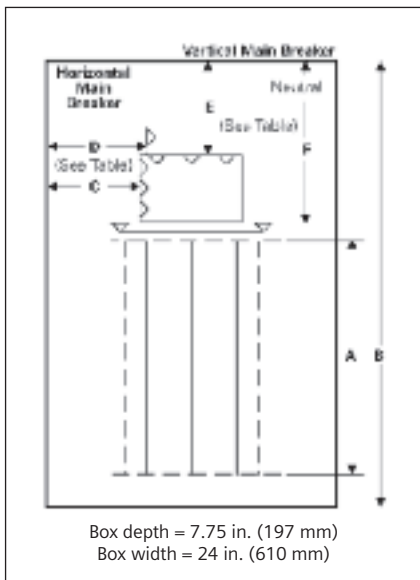
Breaker Frame	C	E	F
FD Horiz.	7.25	—	20.13
FD Vert.	—	12.25	25.38
CFD	—	13.63	31.38
JD	—	15.63	29.38
CJD	—	14.75	35.38
LD	—	14.75	29.38
CLD	—	14.00	35.38

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

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

<sup>1</sup> This lug is classified as removable.

**Fig. P3-1**

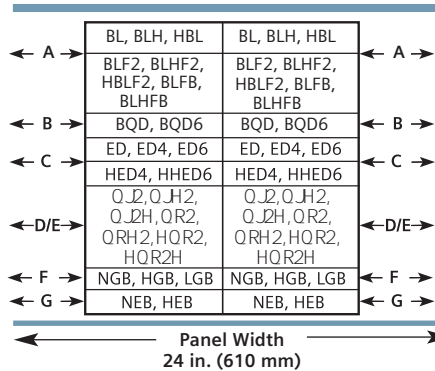


**Table P3-5 – Branch Breaker Side Gutters Inches (mm) (Fig. P3-3)**

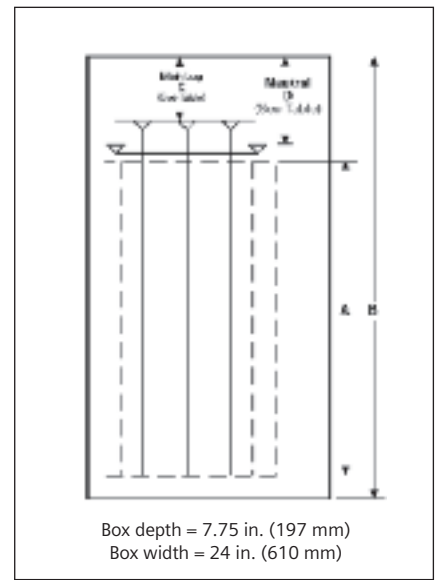
Reference Letter	Panel Width 24" (609)
A	7.750 (197)
B	7.125 (181)
C	6.000 (152)
D <sup>1</sup>	7.000 (178)
E	5.000 (127)
F	6.625 (168)
G	5.750 (144)

<sup>1</sup> Single branch mounting construction.

**Fig. P3-3**



**Fig. P3-2**



**Table P3-6 – Subfeed Breaker Wire Bending (Fig. P3-1)**

Breaker Family	Reference Dimensions		
	C	E	F
FD Single	7.25	—	8.25
Dual FD	—	15.25	8.25
Single JD	8.00	—	29.38

# Application

## Type P3 Panelboards

Table P3-7 – Main Breaker Selection<sup>1</sup>

Ampere Rating	Breaker Type	Maximum Interrupting Rating (kA)			Ref. Catalog Number	Available Configurations <sup>2</sup>			
		240V	480V	600V		240V AC	480V AC	600V AC	Available Trip Values
250	FD6	65	35	18	FD	STD	STD	STD	70, 80, 90, 100, 110, 125, 150, 200, 225, 250
	FXD6	65	35	18	FX	STD	STD	STD	70, 80, 90, 100, 110, 125, 150, 200, 225, 250
	HFD6	100	65	25	HF	ADD	ADD	ADD	70, 80, 90, 100, 110, 125, 150, 200, 225, 250
	HFXD6	100	65	25	H2	ADD	ADD	ADD	70, 80, 90, 100, 110, 125, 150, 200, 225, 250
	CFD6 <sup>1</sup>	200	150	100	CF	ADD	ADD	ADD	70, 80, 90, 100, 110, 125, 150, 200, 225, 250
400	JXD6 <sup>1</sup>	65	35	25	JX	STD	STD	STD	200, 225, 250, 300, 350, 400
	JD6 <sup>1</sup>	65	35	25	J6	STD	STD	STD	200, 225, 250, 300, 350, 400
	HJXD6 <sup>1</sup>	100	65	35	H6	ADD	ADD	ADD	200, 225, 250, 300, 350, 400
	HJD6 <sup>1</sup>	100	65	35	H5	ADD	ADD	ADD	200, 225, 250, 300, 350, 400
	SJD6 <sup>1</sup>	65	35	25	SJ	ADD	ADD	ADD	200, 300, 400
	SHJD6 <sup>1</sup>	100	65	35	S2	ADD	ADD	ADD	200, 300, 400
	CJD6 <sup>1</sup>	200	200	100	CJ	ADD	ADD	ADD	200, 300, 400
	SCJD6 <sup>1</sup>	200	200	100	SC	ADD	ADD	ADD	200, 300, 400
600	LXD6 <sup>1</sup>	65	35	25	LX	STD	STD	STD	450, 500, 600
	LD6 <sup>1</sup>	65	35	25	L6	STD	STD	STD	250, 300, 350, 400, 450, 500, 600
	HLXD6 <sup>1</sup>	100	65	35	HL	ADD	ADD	ADD	250, 300, 350, 400, 450, 500, 600
	HLD6 <sup>1</sup>	100	65	35	HO	ADD	ADD	ADD	250, 300, 350, 400, 450, 500, 600
	SLD6 <sup>1</sup>	65	35	25	SL	ADD	ADD	ADD	300, 400, 500, 600
	SHLD6 <sup>1</sup>	100	65	35	S6	ADD	ADD	ADD	300, 400, 500, 600
	CLD6 <sup>1</sup>	200	150	100	CL	ADD	ADD	ADD	300, 400, 500, 600
	SCLD6	200	150	100	C6	ADD	ADD	ADD	300, 400, 500, 600

<sup>1</sup> Vertically mounted <sup>2</sup> STD – Standard configuration. ADD – Additional cost.

Table P3-8 – Subfeed Breaker Selection and Mounting Reference

Breaker Type	Mounting Orientation and Configuration		Maximum Interrupting Rating (ka)			Available Trip Values
	Vertical	Horizontal	240V AC	480V AC	600V DC	
FD, FXD HFD, HFX6	Twin	—	65	35	18	70, 80, 90, 100, 110, 125, 150, 200, 225, 250
	—	Single	100	65	25	
JXD, JD6 HJXD6 HJD6	—	Single	65	35	25	200, 225, 250, 300, 350, 400
			100	65	35	

### Branch Device Limitations

Lighting and appliance branch circuit panelboards were included in editions of the National Electrical Code prior to 2008. By application rule (40815 in all versions of the NEC prior to 2008), lighting and appliance panels are limited to 42 installed circuits. Each over current device pole counts as a circuit.

Table P3-9 – Neutral Connectors  
(Based on 75°C copper)

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

# Application

## Type P3 Panelboards

Table P3-10 – Branch Circuit Breakers

Max. Amp Rating	Bolt-On Breaker Type	Amps	Provisions for Maximum Interrupting Rating (kA)						
			120V AC	120/240V AC	240V AC	277V AC	480V AC	600V AC	250V DC
100	BL	15-60	10	—	—	—	—	—	—
		70	—	10	—	—	—	—	—
		80-100	—	—	10	—	—	—	—
	BLH	15-60	—	22	—	—	—	—	—
		70	—	22	—	—	—	—	—
		80-100	—	—	22	—	—	—	—
	HBL	15-55	—	65	—	—	—	—	—
		60-100	—	—	65	—	—	—	—
	BL, (HID)	15-30	10	—	—	—	—	—	—
	BLR (240V)	15-60	—	—	10	—	—	—	—
		70-100	—	—	10	—	—	—	—
	BLE (GFCI)	15-30	10	—	—	—	—	—	—
		40-60	—	10	—	—	—	—	—
	BLEH (GFCI)	15-30	22	—	—	—	—	—	—
		15-60	—	22	—	—	—	—	—
	BLF (GFCI)	15-30	10	—	—	—	—	—	—
		40-60	—	10	—	—	—	—	—
	BLHF (GFCI)	15-30	22	—	—	—	—	—	—
40-60		—	22	—	—	—	—	—	
HBLF2 (GFCI)	15-30	65	—	—	—	—	—	—	
BGL <sup>1</sup>	15-30	10	—	—	—	—	—	—	
BAF	15-20	10	—	—	—	—	—	—	
BAFH	15-20	22	—	—	—	—	—	—	
BQD	15-60	—	65	—	—	—	14	—	14
	70-100	—	—	65	—	—	14	—	14
125	NGB	15-60	100	100	100	25	25	14	14 <sup>2</sup>
		70-100	100	100	100	25	25	14	14 <sup>2</sup>
		110-125	100	100	100	25	25	14	14 <sup>2</sup>
	HGB	15-60	100	100	100	35	35	14	14 <sup>2</sup>
		70-100	100	100	100	35	35	14	14 <sup>2</sup>
		110-125	100	100	100	35	35	14	14 <sup>2</sup>
	LGB	15-60	100	100	100	65	65	14	14 <sup>2</sup>
		70-100	100	100	100	65	65	14	14 <sup>2</sup>
		110-125	100	100	100	65	65	14	14 <sup>2</sup>
	NEB	15-60	85	85	85	35	35	22	35
		70-100	85	85	85	35	35	22	35
		110-125	85	85	85	35	35	22	35
	HEB	15-60	100	100	100	65	65	25	42
		70-100	100	100	100	65	65	25	42
		110-125	100	100	100	65	65	25	42
	ED4	15-60	65	—	—	22	—	—	—
		70-100	—	—	65	—	18	—	30
		110-125	—	—	65	—	18	—	—
ED6	15-60	—	—	65	—	25	18	30	
	70-100	—	—	65	—	25	18	—	
	110-125	100	—	—	—	—	—	—	
HED4	15-60	100	—	—	—	—	—	—	
	70-100	—	—	—	65	—	—	—	
	110-125	—	—	—	65	—	—	—	
225	QJ2	60-225	—	—	10	—	—	—	—
	QJH2	60-225	—	—	22	—	—	—	—
	QJ2H	60-225	—	—	42	—	—	—	—
	QR2	100-225	—	—	10	—	—	—	—
	QRH2	100-225	—	—	25	—	—	—	—
	HQR2	100-225	—	—	65	—	—	—	—
	HQR2H	100-225	—	—	100	—	—	—	—

Note: QJ/QR Breakers are twin mounted in unit space and take 6" of unit space. Limited to (6) 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.

<sup>1</sup> BGL 2-pole is (1) phase and neutral 3-pole is (2) phases and neutral.

<sup>2</sup> 2-pole only (or) two outer poles of 3-pole breaker.

# Typical Catalog Numbers

## Type P3 Panelboards

Table P3-11 – 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 <sup>1</sup>
		3 Phase, 3 Wire Catalog Number	3 Phase, 4 Wire Catalog Number	3 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

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

# Typical Catalog Numbers

## Type P3 Panelboards

Table P3-12 – 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 <sup>1</sup>
		3 Phase, 3 Wire Catalog Number	3 Phase, 4 Wire Catalog Number	3 Phase, 3 Wire Catalog Number
250	21	P3D56FD250ATS	P3E56FD250ATS	P3F56FD250ATS
	27	P3D62FD250ATS	P3E62FD250ATS	P3F62FD250ATS
	33	P3D68FD250ATS	P3E68FD250ATS	P3F68FD250ATS
	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

<sup>1</sup> 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<sup>1</sup>
  - UVR<sup>1</sup>
- 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.
  - 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<sup>1</sup>  
BL, BLH, HBL, BQD, NGB, HGB, LGB, NEB, HEB, ED2, ED4, HED4, ED6, HED6, HHED6, QJ2, QJ2H, QJH2, QR2, QR2H, HQR2, HQR2H as branch only. BL, BLH, HBL, ED2, ED4, HED4, ED6, HED6, HHED6 uses 1" unit space for shunt trip. All others may be used on mains or subfeeds.

---

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

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



# Standard Modifications

## Type P3 Panelboards

Table P3-13 – Option Combinations

Amps	Incoming	Subfeed Lugs	Feed-thru Lugs	FD <sup>1</sup> Subfeed	JD <sup>1</sup> Subfeed	FD <sup>2</sup> Subfeeds	200% Neutral	Min. Box Size (in.)	Unit Space (in.)	
250	Main Lug Only	—	•	—	—	—	•	56	27	
		—	—	•	—	—	•	56	15	
		—	—	—	—	•	•	56	9	
	Main Lugs w/Subfeed Lugs	•	—	•	—	—	—	•	56	21
		—	—	—	—	•	•	•	56	21
		—	—	—	—	—	•	•	62	9
		—	—	—	—	—	—	•	56	21
Main Breaker (Horiz. FD)	—	•	—	—	—	•	56	9		
Main Breaker (Vert. FD)	None Std.	•	—	—	—	•	56	15		
Main Breaker (CFD)	None Std.	•	—	—	—	•	56	9		
400 <sup>2,3</sup>	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
		—	—	—	—	•	•	•	74	9
	Main Breaker (CJD)	None Std.	—	—	—	—	—	•	62	9
		•	—	—	—	—	—	•	74	9
—		•	—	—	—	—	•	74	9	
—		—	•	—	—	—	•	74	9	
—	—	—	—	—	•	•	80	9		
600 <sup>2,3</sup>	Main Lug Only	—	—	—	—	—	•	56	21	
		•	—	—	—	—	•	56	15	
		—	•	—	—	—	•	56	9	
		—	—	•	—	—	—	56	9	
		—	—	—	—	•	•	62	9	
	Main Breaker LD	—	—	—	—	—	—	•	56	9
		•	—	—	—	—	—	•	62	9
		—	•	—	—	—	—	•	68	9
		—	—	•	—	—	—	•	68	9
		—	—	—	—	•	•	•	74	9
	Main Breaker CLD	—	—	—	—	—	—	•	62	9
		•	—	—	—	—	—	•	68	9
—		•	—	—	—	—	•	74	9	
—		—	•	—	—	—	•	74	9	
—	—	—	—	—	•	•	80	9		
800 <sup>2,3</sup>	Main Lug Only	—	—	—	—	—	•	56	21	
		•	—	—	—	—	•	56	9	
		—	•	—	—	—	•	56	9	
		—	—	•	—	—	—	56	9	
		—	—	—	—	•	•	62	9	

# Connector Modifications

## Type P3 Panelboards

### Compression Lugs

Table P3-14 – 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 Al 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 P3-15 – Alternate Lugs

Style	Amp Rating	Breaker Type	Compression Connectors	Box Height Addition
MLO	400	N/A	(1) 250 - 750 Kcmil or (2)#6 AWG - 350 Kcmil Cu or Al	6
	800	N/A	(3) 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 P3-16

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 P3-17

Box Height Inches	Enclosure - Stainless Steel and Steel with Epoxy Coating			Enclosure - Fiberglass Size (inches)		
	H	W	D	H	W	D
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 P3-18 – Control Power Transformer

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

Table P3-19 – Application For Remote Switch

Switch Type	Modification
920	Adds 12" to unit space
911	≤ 225A Adds 21" unit space
LEN	>30A ≤ 100 Adds 12" to unit space 100 A ≤ 200 Adds 12" to unit space and 10" Dp. min.

Table P3-20 – Remote Control Switch Modification

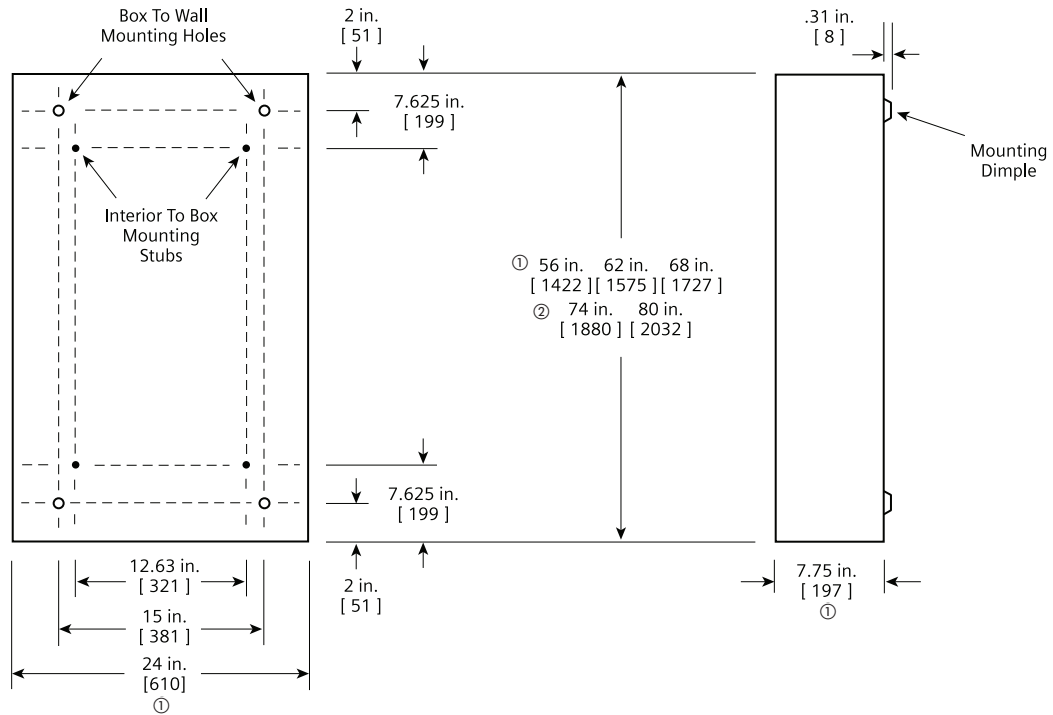
Description
Auxiliary Contacts (mounted, not wired)
Ea. 2-Wire Control

# Dimensions

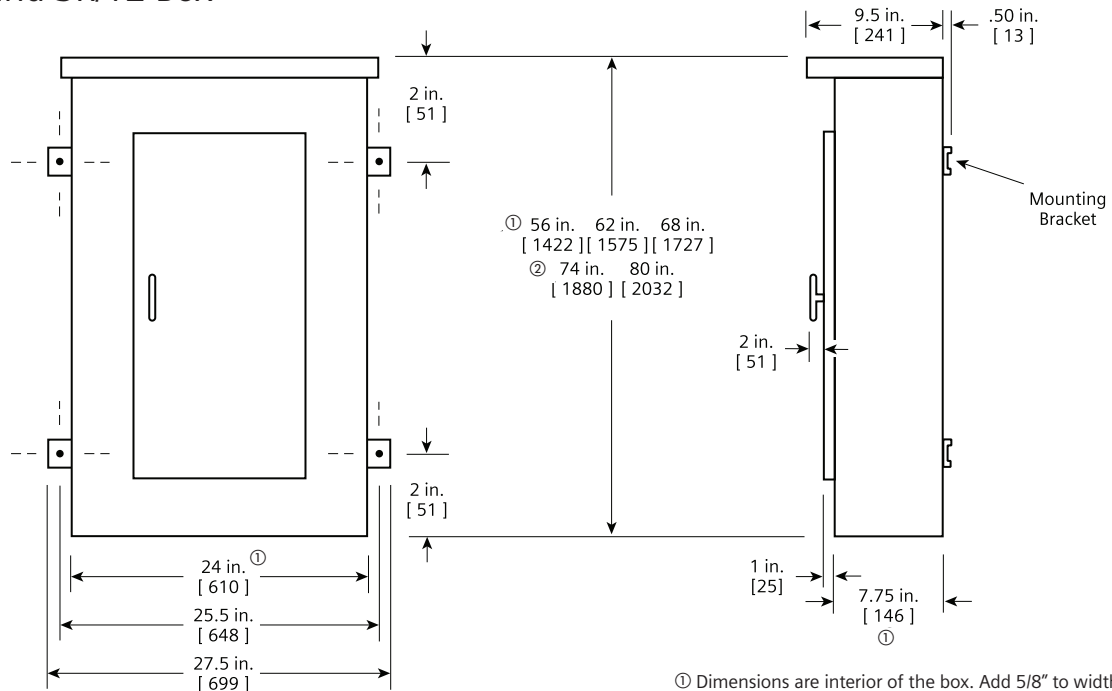
## Type P3 Panelboards

### Type 1 Box

Box is symmetrical



### Type 3R and 3R/12 Box

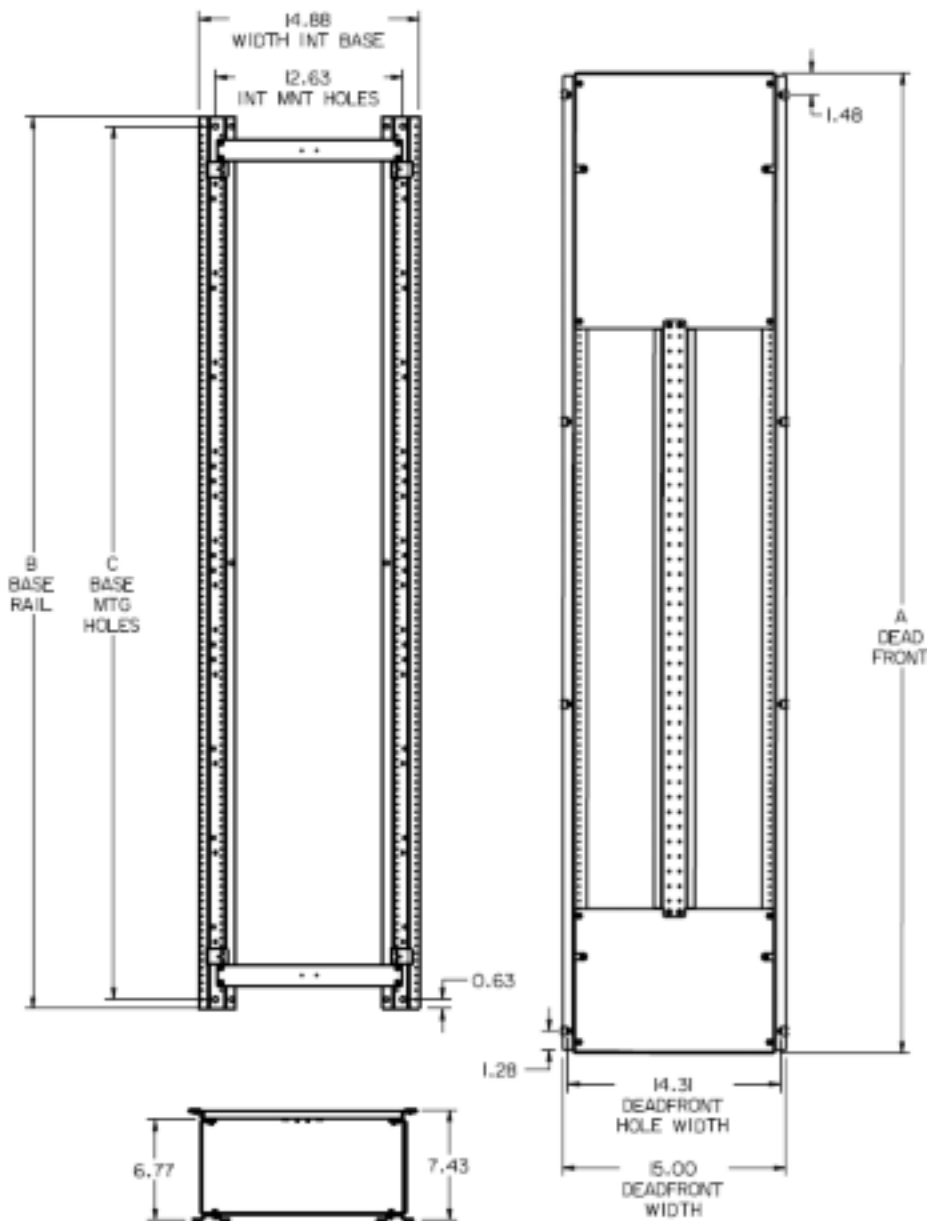


- ① Dimensions are interior of the box. Add 5/8" to width for absolute dimension. Add 1/8" to height for absolute dimension.  
 ② See table P3-2 to match ratings.

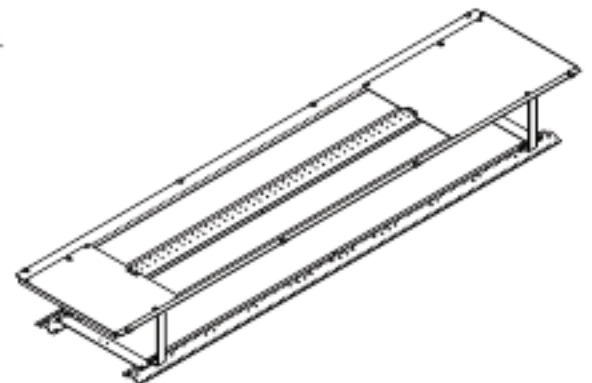
Dimensions shown in inches and millimeters [ ].

# Dimensions

## Type P3 Panelboards



A	B	C	Standard Box Size
47.97	42.00	40.75	56H 24W 7.75D
53.97	48.00	46.75	62H 24W 7.75D
59.97	54.00	52.75	68H 24W 7.75D
65.97	60.00	58.75	74H 24W 7.75D
71.97	66.00	64.75	80H 24W 7.75D



# Kits and Accessories

## Type P3 Panelboards

Table P3-21 – 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 P3-22 – Breaker Kits and Accessories

Kit No.	Description	Contents
BBKB32 (P2/P3)	BL/BQD 6-pole 3” branch breaker kit	Kit contains top barrier, (3) A/C connectors, (3) B connectors, hardware
BBKNB32 (P2/P3)	NGB 6-pole 3” branch mounting kit	Kit contains top barrier, (3) A/C connectors, (1) B connector, hardware
BBKEB32 (P3)	NEB/HEB 6-pole 3” branch mounting kit	Kit contains top barrier, (3) A/C connectors, (1) B connector, hardware
BBKED32 (P2/P3)	ED 6-pole 3” branch breaker kit	Kit contains breaker support, inter-phase barriers, (3) A/C connectors, (1) B connector, hardware
BBKQ2 (P3)	QJ/QR branch breaker kit for 2 and 3-pole single mount	Kit contains all connectors and cover plates necessary to mount 2 and 3 pole breakers
BBKQR1 <sup>1</sup>	P2 branch BKR strap kit for single QR 1-phase/3-phase	Kit contains all connectors and cover plates necessary to mount both 2 and 3-pole breakers
BBKQR2 <sup>1</sup>	P3 branch BKR strap kit for single QR 1-phase/3-phase	Kit contains 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
EBF1	NEB/HEB filler plate	1” filler plate
BBKQRP1FK	P2 filler for QR. Horizontal or vertical mount. 1-phase/3-phase.	Kit contains all cover plates necessary to change from QJ to QR both 2 and 3-pole breaker
BBKQRP2FK	P3 filler for QR. Dual mount horizontal. 1-phase/3-phase.	Kit contains all cover plates necessary to change from QJ to QR both 2 and 3-pole breakers. For 1-phase panel, both breakers must change from QJ to QR, cannot have one of each installed.
SEBP3V1 <sup>2</sup>	Service entrance barrier kit CFD, FD (P3 only)	Kit contains barrier, mounting brackets, and hardware
SEBKP1P2P3V1 <sup>2</sup>	JD, LD Service Entrance Barrier Kit (RP1, P1, P2, P3)	Kit contains barrier, mounting brackets, and hardware

<sup>1</sup> Although QR is rated 250A, it is limited to 225A in panelboard.

<sup>2</sup> Factory installed and Field installable Service Entrance Barrier kits are now available as required by UL67 (In COMPAS, you must select Service Entrance Required.)

# Notes



## P4 Panelboards

Description	Page		
General Information	4-2	Branch Breaker Side Gutter	4-7
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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 offers. 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 3 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 or 400-1200 amp Main Lug Only

**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.

## 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.

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/QR2	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/QR2
1-250/3 FXD6
12" Space

**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 <sup>1</sup>

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

<sup>1</sup> 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" (813)	60 - 75 - 90 (1524, 1905, 2286)	#16 <sup>1</sup>	#14 (1 piece trim) #14 (4 piece trim)
		#12	#12 (1 piece trim, door in door)
		#10	#10 (1 piece door trim in)
		#16	#16 (4 piece trim)

<sup>1</sup> Box has 16 gauge side panels, 14 gauge backplates and 12 gauge back support.

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)



# Application

## Type P4 Panelboards

Table P4-3 – Main Breaker Selection

Ampere rating	Breaker type			Maximum IC (KA) Symmetrical Amperes				Continuous Current Rating	
	Trip type	Frame type	Breaker family	240V	480V	600V	Main Breaker Unit Space in inches (mm)		
400A	Thermal Magnetic	JXD6, JD6	Sentron	65	35	22	8.75 (222)	200, 225, 250, 300, 350, 400	
		HJXD6, HJD6	Sentron	100	65	35	8.75 (222)	200, 225, 250, 300, 350, 400	
		HHJXD6, HHJD6	Sentron	200	100	50	8.75 (222)	200, 225, 250, 300, 350, 400	
		CJD6	Sentron	200	150	100	8.75 (222)	200, 225, 250, 300, 350, 400	
	Electronic (solid state)	NJ	VL	65	35	25	6.25 (159)	250, 400	
		SJD6	Sentron	65	35	25	8.75 (222)	200, 300, 400	
		HJ	VL	100	65	25	6.25 (159)	250, 400	
		SHJD6	Sentron	100	65	35	8.75 (222)	200, 300, 400	
		LJ	VL	200	100	25	6.25 (159)	250, 400	
		SCJD6	Sentron	200	150	100	8.75 (222)	200, 300, 400	
600A	Thermal Magnetic	LXD6	Sentron	65	35	25	8.75 (222)	450, 500, 600	
		LD6	Sentron	65	35	25	8.75 (222)	250, 300, 350, 400, 450, 500, 600	
		HLXD6, HLD6	Sentron	100	65	35	8.75 (222)	250, 300, 350, 400, 450, 500, 600	
		HHLXD6, HHL6	Sentron	200	100	50	8.75 (222)	250, 300, 350, 400, 450, 500, 600	
		CLD6	Sentron	200	150	100	8.75 (222)	250, 300, 350, 400, 450, 500, 600	
	Electronic (solid state)	NL	VL	65	35	18	6.25 (159)	400, 600	
		SLD6	Sentron	65	35	25	8.75 (222)	300, 400, 500, 600	
		HL	VL	100	65	18	6.25 (159)	400, 600	
		SHLD6	Sentron	100	65	35	8.75 (222)	300, 400, 500, 600	
		LL	VL	200	100	18	6.25 (159)	400, 600	
		SCLD6	Sentron	200	150	100	8.75 (222)	300, 400, 500, 600	
		Thermal Magnetic	NM	VL	65	35	25	8.75 (222)	600, 700, 800
			HM	VL	100	65	35	8.75 (222)	600, 700, 800
			LM	VL	200	100	50	8.75 (222)	600, 700, 800
Electronic (solid state)	NM		VL	65	35	25	8.75 (222)	600, 800	
	HM		VL	100	65	35	8.75 (222)	600, 800	
	LM	VL	200	100	50	8.75 (222)	600, 800		

Table P4-4 – Enclosure Selection <sup>1</sup>

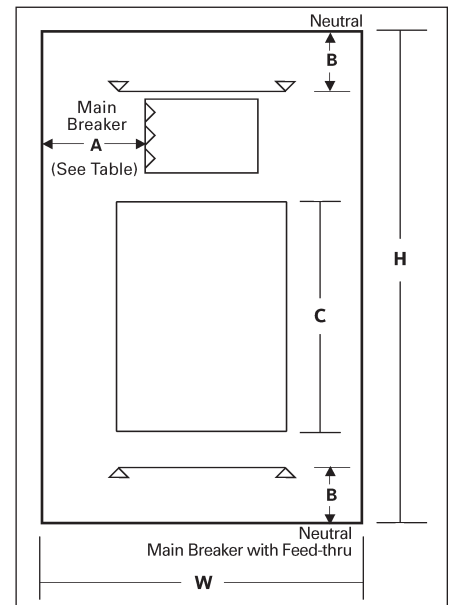
Enclosure Dimension in Inches (mm)			Available Circuit Space in Inches (mm) Dimension "C"	
H	W	D	Main Lug 400-800A	Main Breaker 400-800A
60 (1524)	32 (813)	10 (254)	30 (762)	21.25 (540)
75 (1905)	32 (813)	10 (254)	45 (1143)	36.25 (921)
90 (2286)	32 (813)	10 (254)	60 (1524)	51.25 (1302)

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

Table P4-5 – Main Breaker Location Reference (Fig. P4-1)

Ampere Rating	Breaker Type	Dimensions in Inches (mm)	
		A	B
400	JXD6, JD6, HJXD6, HJD6	10.425 (265)	13.125 (333)
400	HHJXD6, HHJD6	10.425 (265)	
400	NJ, HJ, LJ	12.500 (318)	
400	SJD6, SHJD6	10.425 (265)	
400	CJD6, SCJD6	8.250 (210)	
600	LXD6, LD6, HLXD6, HLD6, HHLXD6, HHL6	10.425 (265)	
600	NL, HL, LL	11.250 (286)	
600	SLD6, SHLD6	10.425 (265)	
600	CLD6, SCLD6	8.250 (210)	
800	NM, HM, LM,	10.425 (265)	

Fig. P4-1



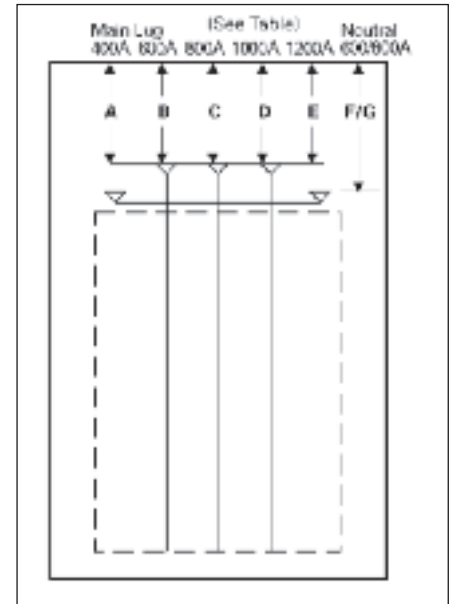
# Application

## Type P4 Panelboards

**Table P4-6 – Main Lugs Location Reference (Fig. P4-2)**

Lugs	Dimensions in inches (mm)						
	Main Lug					Neutral	
	400A A	600A B	800A C	1000A D	1200A E	400-600A F	800-1200A G
Standard	16.500 (419)	16.750 (425)	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 (425)	—	—	—	13.125 (333)	13.125 (333)

**Fig. P4-2**



**Table P4-7 – Available Unit Space – MLO**

Lug Type	Box Height	Dimensions in inches (mm)				
		Ampere Rating				
		400	600	800	1000	1200
Standard Mechanical	60	30	30	30	30	30
	75	45	45	45	45	45
	90	60	60	60	60	60
Oversized Mechanical	60	30	25	20	20	20
	75	45	40	35	35	35
	90	60	55	50	50	50
Crimp Type	60	25	25	25	25	24
	75	40	40	40	40	40
	90	55	55	55	55	55
Std Mechanical W/ Sub-feed	60	30	30	—	—	—
	75	45	45	—	—	—
	90	60	60	—	—	—
Std. Mechanical W/ Feed-thru	60	20	20	12.5	12.5	12.5
	75	35	35	27.5	27.5	27.5
	90	50	50	42.5	42.5	42.5

**Table P4-8 – Branch Switch Unit Space**

Ampere Rating	Number of Poles	Unit Space 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	Trip Amp Rating	Maximum IC (KA) Symmetrical Amperes							
				Voltage - AC							
				120	120/240	240	277	480/ 277	480	600/347	600
100	BLF	1	15-30	10	—	—	—	—	—	—	—
		2	15-60	—	10	—	—	—	—	—	—
	BLHF	1	15-30	22	—	—	—	—	—	—	—
		2	15-60	—	22	—	—	—	—	—	—
	BLE	1	15-30	10	—	—	—	—	—	—	—
		2	15-60	—	10	—	—	—	—	—	—
	BLEH	1	15-30	22	—	—	—	—	—	—	—
		2	15-60	—	22	—	—	—	—	—	—
	BAF, BAFC	1	15-20	10	—	—	—	—	—	—	—
	BAFH, BAFHC	1	15-20	22	—	—	—	—	—	—	—
	BAF	2	15-20	—	10	—	—	—	—	—	—
	BAFH	2	15-20	—	22	—	—	—	—	—	—
	BGL	2	15-30	10	—	—	—	—	—	—	—
		3	15-30	—	10	—	—	—	—	—	—
	BLR	2	15-100	—	—	10	—	—	—	—	—
	BL	1	15-70	10	—	—	—	—	—	—	—
		2	15-100	—	10	—	—	—	—	—	—
		3	15-100	—	—	10	—	—	—	—	—
	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	15-100	—	65	—	14	—	—	—	—
		2	15-100	—	65	—	—	14	—	—	—
		3	15-100	—	—	65	—	14	—	—	—
	BQD6 <sup>1</sup>	1	15-70	65	—	—	—	—	—	—	—
		2/3	15-100	—	—	65	—	—	—	—	10
BL (HID)	1/2	15-30	—	10	—	—	—	—	—	—	
BLF (GFCI)	1	15-60	—	10	—	—	—	—	—	—	
	2	40-60	—	10	—	—	—	—	—	—	
BLE (EQ GFI)	1/2	15-30	—	10	—	—	—	—	—	—	
BLG (SWN)	2	15-30	10	—	—	—	—	—	—	—	
	3	15-30	—	10	—	—	—	—	—	—	
BLHF (GCFI)	1/2	15-30	—	22	—	—	—	—	—	—	
NGB	1	15-125	100	—	—	25	—	—	—	—	
	2/3	15-125	—	100	100	—	25	—	14	—	
HGB	1	15-125	100	—	—	35	—	—	—	—	
	2/3	15-125	—	100	100	—	35	—	14	—	
LGB	1	15-125	100	—	—	65	—	—	—	—	
	2/3	15-125	—	100	100	—	65	—	14	—	
NEB	1	15-125	100	85	85	35	—	—	—	—	
	2/3	15-125	—	85	85	—	35	35	22	—	
HEB	1	15-125	200	100	100	65	—	—	—	—	
	2/3	15-125	100	100	—	100	65	25	25	—	
ED4	1	15-125	65	—	—	22	—	—	—	—	
	2/3	15-125	—	65	65	—	18	18	—	—	
ED6	2	15-125	—	—	—	—	25	25	30	—	
	3	15-125	—	—	65	—	25	25	—	18	
HED4	1	15-125	100	—	—	65 <sup>2</sup>	—	—	—	—	
	2/3	15-125	—	100	100	—	42	42	—	—	
HHED6	2/3	15-125	100	—	—	—	65	65	18	18	
CED6	2/3	15-125	200	—	—	—	200	200	100	100	

<sup>1</sup> CSA listed only at 600V AC.

<sup>2</sup> 15-30A trip (shown) 65 KA, 35-100A 25 KA.

# Application

## Type P4 Panelboards

Table P4-9 – Branch Circuit Breakers (continued)

Maximum Ampere Breaker	Bolt-on Breaker Type	Number of Poles	Trip Amp Rating	Maximum IC (KA) Symmetrical Amperes								
				Voltage – AC								
				120	120/240	240	277	480/277	480	600/347	480	
225	QJ2	2/3	60-225	—	—	10	—	—	—	—	—	—
	QJH2	2/3	60-225	—	—	22	—	—	—	—	—	—
	QJ2H	2/3	60-225	—	—	42	—	—	—	—	—	—
	QR2	2/3	100-225	—	—	10	—	—	—	—	—	—
	QRH2	2/3	100-225	—	—	25	—	—	—	—	—	—
	HQR2	2/3	100-225	—	—	65	—	—	—	—	—	—
250	HQR2H	2/3	100-225	—	—	100	—	—	—	—	—	—
	FXD6, FD6	2/3	70-250	—	—	65	—	35	35	18	18	
	HFXD6, HFD6	2/3	70-250	—	—	100	—	65	65	25	25	
	HHFXD6, HHFD6	2/3	70-250	—	—	200	—	100	100	25	25	
400	CFD	2/3	70-250	—	—	200	—	200	200	100	100	
	JXD6, JD6, SJD6	2/3	200-400	—	—	65	—	35	35	25	25	
	HJXD6, HJD6, SHJD6	2/3	200-400	—	—	100	—	65	65	35	35	
	HHJXD6, HHJD6	2/3	200-400	—	—	200	—	100	100	50	50	
600	CJD6	2/3	200-400	—	—	200	—	150	150	100	100	
	LXD6	2/3	450-600	—	—	65	—	35	35	25	25	
	LD6	2/3	250-600	—	—	65	—	35	35	25	25	
	SLD6	2/3	300-600	—	—	65	—	35	35	25	25	
	HLD6, HLXD6	2/3	250-600	—	—	100	—	65	65	35	35	
	SHLD6	2/3	300-600	—	—	100	—	65	65	35	35	
	HHLD6, HHLXD6	2/3	250-600	—	—	200	—	100	100	50	50	
	CLD6	2/3	450-600	—	—	200	—	150	150	100	100	
SCLD6	2/3	300-600	—	—	200	—	150	150	100	100		

Table P4-10 – Branch Circuit Breakers (VL)

Maximum Ampere Rating	Bolt-on Breaker Type	Number of Poles	Trip Amp Rating	Maximum IC (KA) Symmetrical Amperes							
				Volts – AC							
				120	120/240	240	277	480/277	480	600/347	600
150 <sup>1</sup>	ND	3	60 - 150	—	65	65	—	35	35	18	18
	HD	3	60 - 150	—	100	100	—	65	65	20	20
	LD	3	60 - 150	—	200	200	—	100	100	25	25
250 <sup>1</sup>	NF	3	100 - 250	—	65	65	—	35	35	18	18
	HF	3	100 - 250	—	100	100	—	65	65	20	20
	LF	3	100 - 250	—	200	200	—	100	100	25	25
400 <sup>1</sup>	NJ	3	250 - 400	—	65	65	—	35	35	25	25
	HJ	3	250 - 400	—	100	100	—	65	65	25	25
	LJ	3	250 - 400	—	200	200	—	100	100	25	25
600 <sup>1</sup>	NL	3	400 - 600	—	65	65	—	35	35	18	18
	HL	3	400 - 600	—	100	100	—	65	65	18	18
	LL	3	400 - 600	—	200	200	—	100	100	18	18
800	NM	2/3	600 - 800	—	65	65	—	35	35	25	25
	HM	2/3	600 - 800	—	100	100	—	65	65	35	35
	LM	2/3	600 - 800	—	200	200	—	100	100	50	50

<sup>1</sup> Only offered with Electronic Trip Units.

# Application

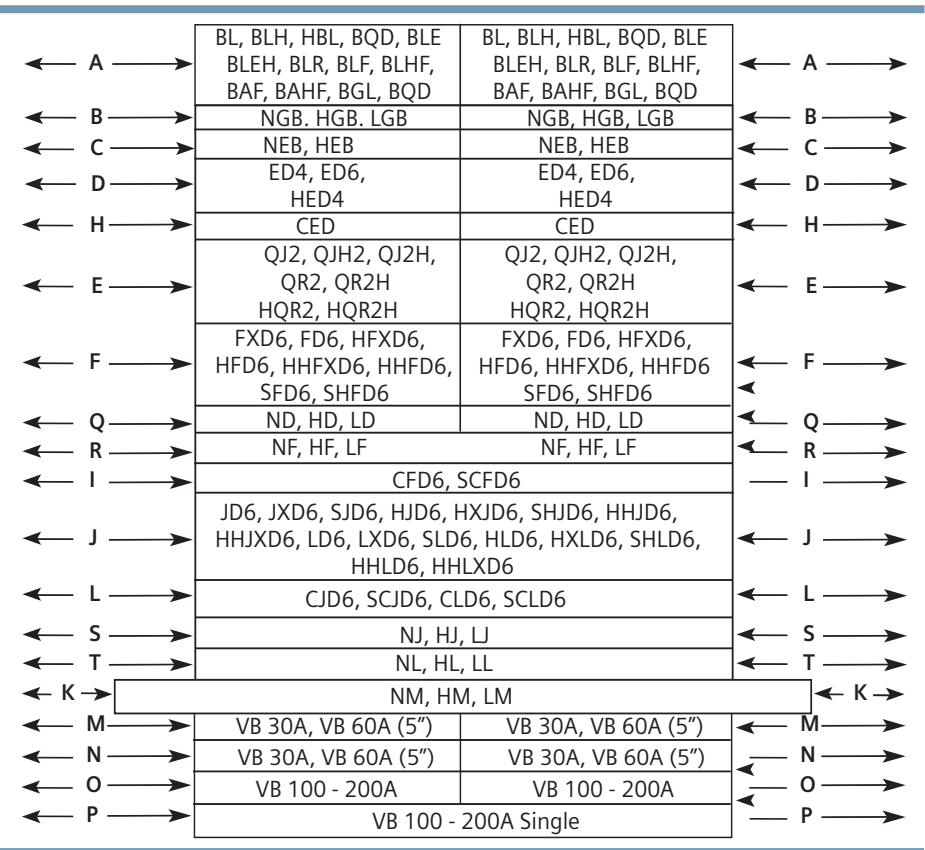
## Type P4 Panelboards

**Table P4-11 – Branch Breaker Unit Space Requirements**

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

**Table P4-12 – Branch Breaker Side Gutter Inches (mm) (Fig. P4-3)**

Reference Letter	Panel Width 32 in (813) Dimensions 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	4.62 (177)
I	8.76 (223)
J	10.42 (265)
K	10.0 (254)
L	8.25 (210)
M	10.0 (254)
N	7.0 (178)
O	5.0 (127)
P	7.50 (191)
Q	7.9 (200)
R	7.9 (200)
S	2.5 (318)
T	11.25 (286)

**Fig. P4-3**


# Application

## Type P4 Panelboards

Table P4-13 – 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	240V	480Y/277V	480V <sup>1</sup>
		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 P4-14 – 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 <sup>1</sup>
		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

<sup>1</sup> 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	0
400	800	0
600	1200	0
800	1200	0

### Subfeed or Feed-Thru Lugs (One Set Per Panel)

### Subfeed Double Lugs (Main Lug Panels)

Amp Rating	Unit Spaces (Additional inches)
	MLO
400	0
600	0
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
Conventional Ground Fault <sup>1</sup>
Includes:
Ground Fault Relay, Ground Sensor, CPT and Shunt Trip
Test and Monitor Panel <sup>2</sup>
Ground Fault add to Sensitrip III breaker price

### Time Clocks <sup>3</sup>

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 <sup>4</sup>

Description
BL, BQD, NGB, HGB, LGB (branch only)
QJ2, QJH2, QJ2H, QR2, QRH2, HQR2, HQR2H, NEB, HEB, ED4, ED6, HED4, HHED6, CED6

### 100% Rated Main Circuit Breakers

Ampere Rating	Breaker Type
400A	JXD6H, HJXD6H
	SCJD6H, SHJD6H
	NJY, HJY, LJY
600A	LXD6H, HLXD6H
	NMY <sup>5</sup> , HMY <sup>5</sup> , LMY <sup>5</sup>
All others to 800A	

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

<sup>2</sup> Not available on Sensitrip III.

<sup>3</sup> For required unit space, consult local sales office.

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

<sup>5</sup> The 600A, 100% rated breaker requires the use of an 800A frame breaker.

# Connector Modifications

## P4 Panelboards

### Lug Modifications

Table P4-15 – Compression 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	—
	600	LD6, LXD6, HLD6, CJD6, SLD6, SHLD6, SCLD6	(2)#2/0 AWG - 500 kcmil Cu or Al	—

Table P4-16 – Alternate Lugs

Amp Rating	Breaker Type	Compression Connectors	Available Unit Space Reduction
400	N/A	(1)#3/0 AWG - 750 Kcmil or (2)#3/0 AWG 250 Kcmil Cu or Al	Deduct 0" of Unit Space
600	N/A	(2)#3/0 AWG - 750 Kcmil	Deduct 5" of Unit Space
800	N/A	(3)#3/0 AWG - 750 Kcmil Cu or Al	Deduct 10" of Unit Space
1200	N/A	(4)#3/0 AWG - 600 Kcmil Cu or Al (4)#3/0 AWG - 750 Kcmil Cu or Al	Deduct 10" of Unit Space

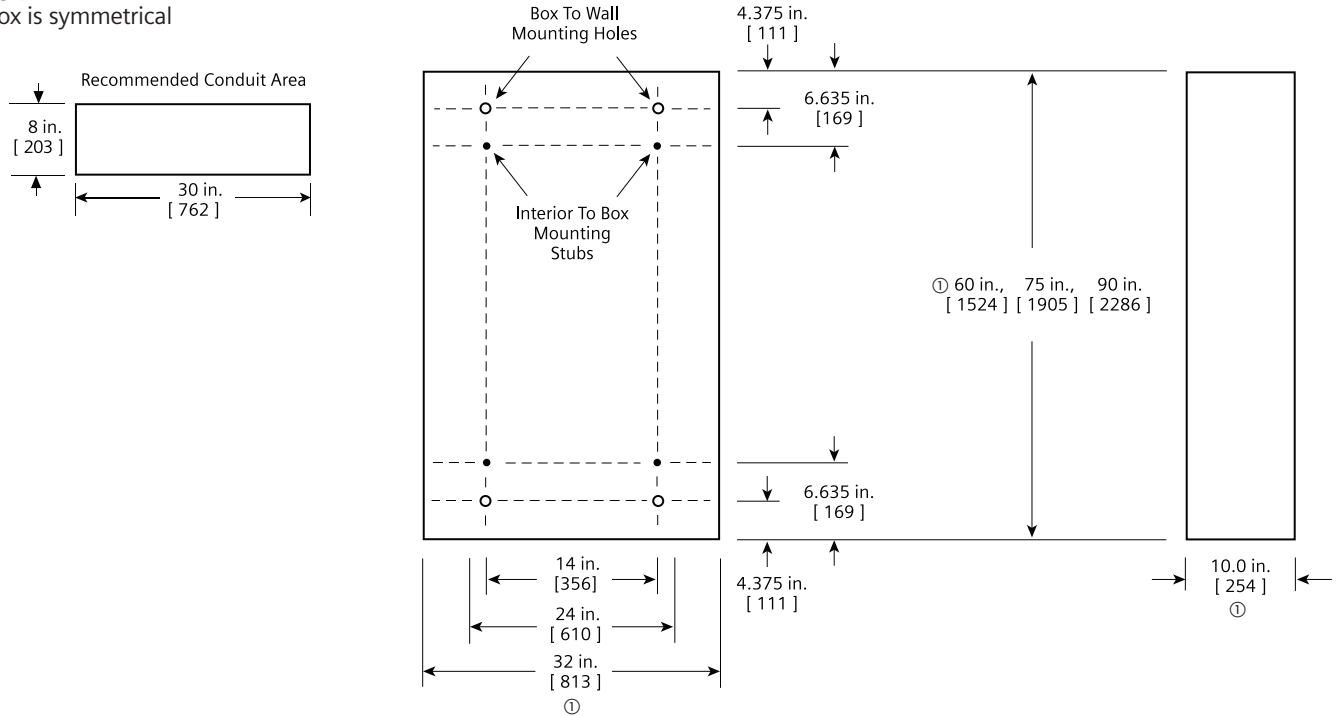


# Dimensions

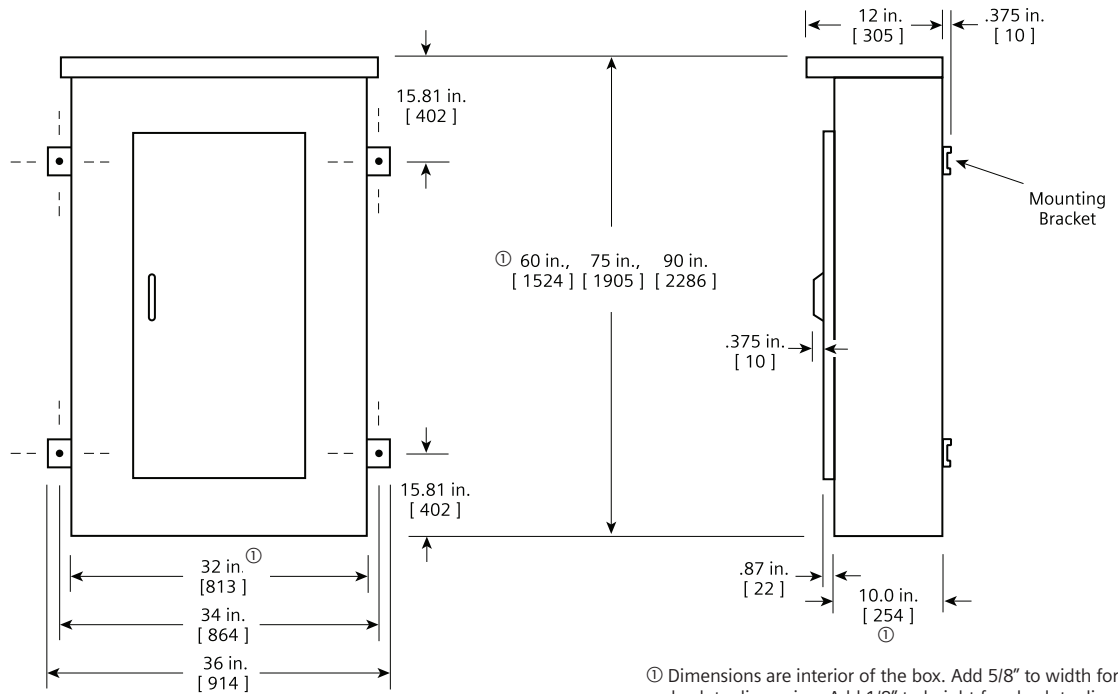
## Type P4 Panelboards

### 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 – Connector Strap Kits – w/o Circuit Breaker** <sup>1 2</sup>

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, HGB, LGB	Twin	3.75 (95)	SNB
EB	Twin	3.75 (95)	SEB
ED	Twin	3.75 (95)	SE6
CED6	Twin	3.75 (95)	SCE
DG <sup>3</sup>	Twin	5.00 (127)	SDG
QJ	Twin	5.00 (127)	SQJ
QR	Twin	5.00 (127)	SQR
FG <sup>3</sup>	Twin	5.00 (127)	SFG
FD6	Twin	5.00 (127)	SF6
CFD6	Single	5.00 (127)	SCF
JG <sup>3</sup>	Single	6.25 (159)	SJG
JD	Single	8.75 (223)	SJ1
SJD	Single	8.75 (223)	SSJ1
CJD6	Single	8.75 (223)	SCJ
SCJD	Single	8.75 (223)	SSCJ
LG <sup>3</sup>	Single	6.25 (159)	SLG
LD	Single	8.75 (223)	SL6
SLD	Single	8.75 (223)	SSL6
CLD6	Single	8.75 (223)	SCL
SCLD	Single	8.75 (223)	SSCL
MG <sup>3</sup>	Single	8.75 (223)	MG1

<sup>1</sup> Includes cover plate and mounting hardware, less circuit breaker.

<sup>2</sup> Also for use with S4/F4 and SPP/FPP (10" Deep).

<sup>3</sup> VL family of circuit breakers.

**Table P4-18 – Connecting Strap Kits – Fusible**

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

**Table P4-19 Service Entrance Barriers**

Field installable Barriers to meet UL 67 service entrance requirements.

Breaker Type	Catalog Number
(S)JD, (S)LD, MG	MGSEBP4V1
CJD, CLD	SEBP4V2
JG, LG	SEBP4V3

**Table P4-20 – 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 P4-21 – Filler Plates**

For use with Sentron SPP and P4 power panels	
Breaker Type	Filler Plate Catalog Number
BL, BLH, HBL, BQD, NGB, HGB, LGB, ED2, ED4, ED6, HED4, HHED6, NEB, HEB	DFFP1 <sup>1</sup>
	EBF1

<sup>1</sup> Suitable to replace QF3 in P1 thru P5 Panelboards and Switchboards.

# Kits and Accessories

## Type P4 Panelboards

**Table P4-22 – Enclosures**

Description	Catalog number
P4 Type 1 32" W x 10" D x 60" H	PB60
P4 Type 1 32" W x 10" D x 75" H	PB75
P4 Type 1 32" W x 10" D x 90" H	PB90
P4 Type 3R/12 60" H	WP260
P4 Type 3R/12 75" H	WP275
P4 Type 3R/12 90" H	WP290

**Table P4-23 – Trims**

Description	Catalog number
P4 Std (4 piece trim) vented 60"	P460V
P4 Std (4 piece trim) vented 75"	P475V
P4 Std (4 piece trim) vented 90"	P490V
P4 VBS Std (4 piece trim) vented 60"	P460VV
P4 VBS Std (4 piece trim) vented 75"	P475VV
P4 VBS Std (4 piece trim) vented 90"	P490VV
P4 Std (4 piece trim) unvented 60"	P460NV
P4 Std (4 piece trim) unvented 75"	P475NV
P4 Std (4 piece trim) unvented 90"	P490NV
P4 VBS Std (4 piece trim) unvented 60"	P460NVV
P4 VBS Std (4 piece trim) unvented 75"	P475NVV
P4 VBS Std (4 piece trim) unvented 90"	P490NVV
P4 Std (4 piece trim) vented 60" with hinged gutter covers	P460VHG
P4 Std (4 piece trim) vented 75" with hinged gutter covers	P475VHG
P4 Std (4 piece trim) vented 90" with hinged gutter covers	P490VHG
P4 VBS Std (4 piece trim) vented 60" with hinged gutter covers	P460VVHG
P4 VBS Std (4 piece trim) vented 75" with hinged gutter covers	P475VVHG
P4 VBS Std (4 piece trim) vented 90" with hinged gutter covers	P490VVHG
P4 Std (4 piece trim) unvented 60" with hinged gutter covers	P460NVHG
P4 Std (4 piece trim) unvented 75" with hinged gutter covers	P475NVHG
P4 Std (4 piece trim) unvented 90" with hinged gutter covers	P490NVHG
P4 VBS Std (4 piece trim) unvented 60" with hinged gutter covers	P460NVVHG
P4 VBS Std (4 piece trim) unvented 75" with hinged gutter covers	P475NVVHG
P4 VBS Std (4 piece trim) unvented 90" with hinged gutter covers	P490NVVHG
P4 Std (1 PC Door) vented 60"	P460VD
P4 Std (1 PC Door) vented 75"	P475VD
P4 Std (1 PC Door) vented 90"	P490VD
P4 Std (1 PC Door) unvented 60"	P460NVD
P4 Std (1 PC Door) unvented 75"	P475NVD
P4 Std (1 PC Door) unvented 90"	P490NVD
P4 Std (1 PC Door-in-door) vented 60"	P460VDD
P4 Std (1 PC Door-in-door) vented 75"	P475VDD
P4 Std (1 PC Door-in-door) vented 90"	P490VDD
P4 Std (1 PC Door-in-door) unvented 60"	P460NVDD
P4 Std (1 PC Door-in-door) unvented 75"	P475NVDD
P4 Std (1 PC Door-in-door) unvented 90"	P490NVDD

**Table P4-24 – Flush mounting kits**

Description	Catalog number
Flush kit for P4 60" High	F60
Flush kit for P4 75" High	F75
Flush kit for P4 90" High	F90

# Notes



## P5 Panelboards

Description	Page	Typical Catalog Numbers	
General Information	5-2	Main Lugs Only	5-9
Selection and Application	5-2	Main Circuit Breakers Only	5-9
Application	5-3 – 5-8	Main Fusible Switch	5-9
Main Breaker Selection	5-3	Modifications and Additions	5-10 – 5-12
Enclosure Selection	5-4	Motor Starters	5-11 – 5-12
Main Breaker and Main Switch	5-3 – 5-4	Connector Modifications	5-12
Main Switch Connectors	5-4	Compression Lugs	5-12
Main Lugs Only Unit Space	5-5	Alternate Lugs	5-12
Branch Switch Unit Space	5-5	Dimensions	5-13
Branch Circuit Breakers	5-6	Kits and Accessories	5-14 – 5-15
Branch Breaker Unit Space	5-7		
Branch Breaker Side Gutters	5-8		

# Type P5 Panelboards

The P5 panel is the largest distribution panel in the Siemens panel family. Even so, 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 enables users 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. All copper bus is silver plated. 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.

P5 panel configurations are 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 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** – 400-1200 amp Main breaker, 400-1200 amp MLO 200-1200 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.

## 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.

### Step #1

<b>Amperage</b>	1200
<b>Voltage</b>	208Y/120
<b>System</b>	3 Phase, 4 wire
<b>Main</b>	Main Breaker
<b>Branches</b>	5-125/3, 2-225/3, 1-250/3
<b>Modifications</b>	None
<b>Feed</b>	Top
<b>Mounting</b>	Surface

### Step #2

5-125/3 xGB	3.75" = 11.25" Twin Mounted
2-225/3 QJ2/QR2	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-P5C75N1120ATS
5-125/3 xGB
3-xGB 1 Pole Provision
2-225/3 QJ2/QR2
1-250/3 FXD6
1-FXD6 Prov. 13.25" Space

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 <sup>1</sup>**

Ampere Rating	Connectors Suitable for Copper or Aluminum
400	(1) 250 - 500 Kcmil
600	(2) #3/0 - 500 Kcmil
800	(3) #3/0 AWG-500 Kcmil
1000	(4) #3/0 AWG-500 Kcmil
1200	(4) #3/0 AWB-500 Kcmil

<sup>1</sup> 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" (965)	60 - 75 - 90 (1524, 1905, 2286)	#16 <sup>1</sup>	#14 (1 piece trim) #14 (4 piece trim)
	60 - 75 - 90 (1524, 1905, 2286)	#14	#12 (1 piece trim) & door in door #10 (1 piece & door in door)
	60 - 75 - 90 (1524, 1905, 2286)	#14	#16 (4 piece, top and bottom over) #10 (4 piece, side/gutter cover)

<sup>1</sup> 16 gauge side panels, 12 gauge back support, 14 gauge back panels.

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)

# Application

## Type P5 Panelboards

Table P5-3 – Alternate Main Breaker Selection <sup>1</sup>

Breaker Frame Rating	Trip Type	Breaker Family	Frame Type	Alternate Main Breaker Code <sup>2</sup>	Trip Amperage	Unit Space Requirements in Inches	Maximum Interruption Rating (KAIC) Volts AC					
							240	480	600			
400	Thermal Magnetic	Sentron	JXD6	JX	200, 225, 250, 300, 350, 400	8.75	65,000	35,000	25,000			
			JD6	J6	200, 225, 250, 300, 350, 400	8.75	65,000	35,000	25,000			
			HJXD6	H5	200, 225, 250, 300, 350, 400	8.75	100,000	65,000	35,000			
			HJD6	H6	200, 225, 250, 300, 350, 400	8.75	100,000	65,000	35,000			
			HHJXD6	H9	200, 225, 250, 300, 350, 400	8.75	200,000	100,000	50,000			
			HHJD6	6H	200, 225, 250, 300, 350, 400	8.75	200,000	100,000	50,000			
			CJD6	CJ	200, 225, 250, 300, 350, 400	8.75	200,000	150,000	100,000			
	Electronic (Solid state)	VL	Sentron	NJ	J1	250, 400	6.25	65,000	35,000	25,000		
				HJ	J7	250, 400	6.25	100,000	65,000	25,000		
				LJ	J3	250, 400	6.25	200,000	100,000	25,000		
		Sentron	SJD6	SJ	200, 300, 400	8.75	65,000	35,000	25,000			
			SHJD6	SX	200, 300, 400	8.75	100,000	65,000	35,000			
			SCJD6	SC	200, 300, 400	8.75	200,000	150,000	100,000			
	600	Thermal Magnetic	Sentron	LXD6	LX	450, 500, 600	8.75	65,000	35,000	25,000		
				LD6	L6	250, 300, 350, 400, 450, 500, 600	8.75	65,000	35,000	25,000		
				HLXD6	HO	250, 300, 350, 400, 450, 500, 600	8.75	100,000	65,000	35,000		
HLD6				HL	250, 300, 350, 400, 450, 500, 600	8.75	100,000	65,000	35,000			
HHLXD6				XH	250, 300, 350, 400, 450, 500, 600	8.75	200,000	100,000	50,000			
HHL6				HH	250, 300, 350, 400, 450, 500, 600	8.75	200,000	100,000	50,000			
CLD6				CL	250, 300, 350, 400, 450, 500, 600	8.75	200,000	150,000	100,000			
Electronic (Solid state)				VL	Sentron	NL	L7	400, 600	6.25	65,000	35,000	25,000
						HL	L2	400, 600	6.25	100,000	65,000	25,000
						LL	SL	400, 600	6.25	200,000	100,000	25,000
		Sentron	SLD6	L6		300, 400, 500, 600	8.75	65,000	35,000	25,000		
			SHLD6	S2		300, 400, 500, 600	8.75	100,000	65,000	35,000		
			SCLD6	S1		300, 400, 500, 600	8.75	200,000	150,000	100,000		
			VL	Sentron		NM	M1	600, 700, 800	8.75	65,000	35,000	25,000
						HM	M2	600, 700, 800	8.75	100,000	65,000	35,000
						LM	M3	600, 700, 800	8.75	200,000	100,000	50,000
			Thermal Magnetic	Sentron		LMXD6	LM	500, 600, 700, 800	8.75	65,000	50,000	25,000
LMD6		L1			500, 600, 700, 800	8.75	65,000	50,000	25,000			
HLMXD6		HK			500, 600, 700, 800	8.75	100,000	65,000	50,000			
HLM6		HJ			500, 600, 700, 800	8.75	100,000	65,000	50,000			
MXD6	MX	500, 600, 700, 800			10.00	65,000	50,000	25,000				
MD6	MD	500, 600, 700, 800			10.00	65,000	50,000	25,000				
HMXD6	HR	500, 600, 700, 800			10.00	100,000	65,000	50,000				
HMD6	HM	500, 600, 700, 800			10.00	100,000	65,000	50,000				
CMD6	CM	500, 600, 700, 800			10.00	200,000	100,000	65,000				
Electronic (Solid state)	VL	Sentron			NM	M1	600, 800	8.75	65,000	35,000	25,000	
			HM	M2	600, 800	8.75	100,000	65,000	35,000			
			LM	M3	600, 800	8.75	200,000	100,000	50,000			
	Sentron		SMD6	SM	600, 700, 800	10.00	65,000	50,000	25,000			
			SHMD6	S5	600, 700, 800	10.00	100,000	65,000	50,000			
			SCMD6	SO	600, 700, 800	10.00	200,000	100,000	65,000			
			1200	Thermal Magnetic	VL	NN	N1	800, 900, 1000, 1200	10.00	65,000	35,000	25,000
						HN	N2	800, 900, 1000, 1200	10.00	100,000	65,000	35,000
						LN	N3	800, 900, 1000, 1200	10.00	200,000	100,000	65,000
					Sentron	NXD6	NX	900, 1000, 1200	10.00	65,000	50,000	25,000
ND6	ND	900, 1000, 1200				10.00	65,000	50,000	25,000			
HNXD6	HT	900, 1000, 1200				10.00	100,000	65,000	50,000			
Electronic (Solid state)	VL	Sentron		HND6	HN	900, 1000, 1200	10.00	100,000	65,000	50,000		
				CND6	Cn	900, 1000, 1200	10.00	200,000	100,000	65,000		
				NN	N1	800, 1000, 1200	10.00	65,000	35,000	25,000		
Sentron	VL	Sentron	HN	N2	800, 1000, 1200	10.00	100,000	65,000	35,000			
			LN	N3	800, 1000, 1200	10.00	200,000	100,000	65,000			
			SND6	SN	800, 1000, 1200	10.00	65,000	50,000	25,000			
			SHND6	AD	800, 1000, 1200	10.00	100,000	65,000	50,000			
SCND6	SR	800, 1000, 1200	10.00	200,000	100,000	65,000						

<sup>1</sup> For ground fault, see SpeedFax page 5-10.<sup>2</sup> Replace "MS" in catalog number with code letter.

# Application

## Type P5 Panelboards

Table P5-4 – Enclosure Selection <sup>1</sup>

Enclosure Dimension in Inches (mm)				Available Unit Space in inches (mm) Dimension "C" in Fig. P5-1		
H	W	D		Main Lug only 800 / 1200A	Main Breaker 800 / 1200A	Main Switch 800 / 1200A
		Type 1	Type 3R/12			
60 (1524)	38 (965)	12.75 (324)	14.25 (362)	30 (762)	20 (508)	13.75 (349)
75 (1905)	38 (965)	12.75 (324)	14.25 (362)	45 (1143)	35 (889)	28.75 (730)
90 (2286)	38 (965)	12.75 (324)	14.25 (362)	60 (1524)	50 (1270)	43.75 (1111)

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

Table P5-5 – Main Breaker Lug Location Reference (Fig. P5-1)

Ampere Rating	Breaker Type	Dimensions in inches (mm)	
		A	B
400	JXD6, JD6, HJXD6, HJD6, HHJXD6, HHJD6	13.425 (265)	13.125 (333)
400	NJ, HJ, LJ	15.500 (318)	
400	SJD6, SHJD6	13.425 (265)	
400	CJD6, SCJD6	11.250 (210)	
600	LXD6, LD6, HLXD6, HLD6, HHLXD6, HHLD6	13.425 (265)	
600	NL, HL, LL	14.250 (286)	
600	SLD6, SHLD6	13.425 (265)	
600	CLD6, SCLD6	11.250 (210)	
800	NM, HM, LM	13.425 (265)	
800	MXD6, MD6, HMXD6, HMD6, CMD6, SMD6, SHMD6, SCMD6	13.00 (330) 10.42 (265)	
1200	NN, HN, LN	13.425 (265)	
1200	NXD6, ND6, HNXD6, HMD6, CND6, SND6, SHMD6, SCND6	13.00 (330) 13.00 (330)	

Fig. P5-1

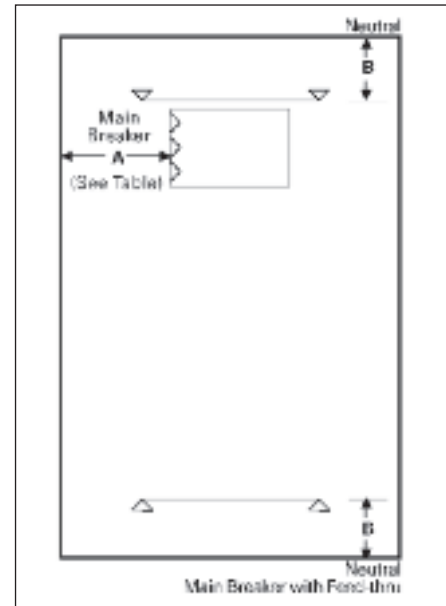


Table P5-6 – Main Switch

Maximum Ampere Rating	A	B
400A/600A VB	9.30 (236)	13.125 (333)
800A/1200A HCP	10.30 (262)	
200A VB	13.425 (265)	

Table P5-7 Main Switch Connectors

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



# Application

## Type P5 Panelboards

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

Lugs	Dimensions in inches (mm)					Neutral 800A G
	Main Lug					
	400A A	600A B	800A C	1000A D	1200A E	
Standard	16.500 (419)	16.750 (425)	15.969 (406)	15.969 (406)	15.969 (406)	13.125 (333)
Oversize	16.500 (419)	21.750 (552)	25.969 (660)	25.969 (660)	25.969 (660)	23.125 (587)
Crimp	19.187 (487)	18.250 (484)	18.687 (475)	18.250 (464)	18.250 (464)	15.937 (405)
Standard with Subfeed	16.750 (425)	15.969 (406)	—	—	—	13.125 (333)
Standard with Feed-thru	16.500 (419)	16.750 (425)	—	—	—	13.125 (333)

Fig. P5-2

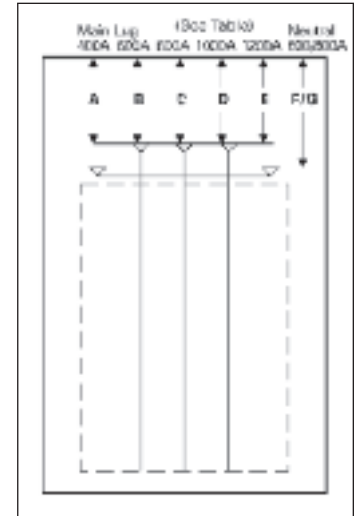


Table P5-9 – Branch Switch Unit Space

Ampere Rating	Number of Poles	Unit Space 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	7.50 (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

# Application

## Type P5 Panelboards

Table P5-10 – Branch Circuit Breakers

Breaker Frame Rating	Trip Type	Breaker Family	Frame Type	Poles	Trip Amperage	Unit Space Requirements in Inches		Maximum Interruption Rating (KAIC) Volts AC					
						Single	Twin	120	240	480Y 277	480	600Y 347	600
100	Thermal Magnetic	General Application	BL	1, 2, 3	15-60, 70, 80, 90, 100, 110, 125	—	3.75 <sup>2 3</sup>	10,000	10,000	—	—	—	—
			BLR	2	15, 20, 30, 40, 50, 60, 70, 80, 90, 100	—	3.75 <sup>2 3</sup>	10,000	10,000	—	—	—	—
			BLH	1, 2, 3	15-60, 70, 80, 90, 100, 110, 125	—	3.75 <sup>2 3</sup>	22,000	22,000	—	—	—	—
			HBL	1, 2, 3	15-60, 70, 80, 90, 100, 110, 125	—	3.75 <sup>2 3</sup>	65,000	65,000	—	—	—	—
			BQD	1, 2, 3	15-50, 60, 70, 80, 90, 100	—	3.75 <sup>2 3</sup>	65,000	65,000	14,000	—	—	—
			BQD6	1, 2, 3	15-50, 60, 70	—	3.75 <sup>2 3</sup>	65,000	65,000	—	—	10,000	—
	Special Application	BL-HID	1, 2	15, 20, 30	—	3.75 <sup>2 3</sup>	10,000	10,000	—	—	—	—	
		BL-BG	2, 3	15, 20, 30	—	3.75 <sup>2 3</sup>	10,000	10,000	—	—	—	—	
		BLE-GFCI	1, 2	15, 20, 30, 40, 50, 60	—	3.75 <sup>2</sup>	10,000	10,000	—	—	—	—	
	Ground Fault Circuit Interrupter	BLEH-GFCI	1, 2	15, 20, 30, 40, 50, 60	—	3.75 <sup>2</sup>	10,000	10,000	—	—	—	—	
		BLF-GFCI	1, 2	15, 20, 30, 40, 50, 60	—	3.75 <sup>2</sup>	10,000	10,000	—	—	—	—	
		BLHF-GFCI	1, 2	15, 20, 30, 40, 50, 60	—	3.75 <sup>2</sup>	10,000	10,000	—	—	—	—	
	Arc Fault Circuit Interrupter	BAF-AFCI	1, 2	15, 20	—	3.75 <sup>2</sup>	10,000	10,000	—	—	—	—	
		BAFH-AFCI	1, 2	15, 20	—	3.75 <sup>2</sup>	10,000	10,000	—	—	—	—	
		BAFC-AFCI	1, 2	15, 20	—	3.75 <sup>2</sup>	10,000	10,000	—	—	—	—	
125	Thermal Magnetic	General Application	NGB	1, 2, 3	15-60, 70, 80, 90, 100, 110, 125	—	3.75 <sup>2 3</sup>	—	100,000	25,000	—	14,000	—
			HGB	1, 2, 3	15-60, 70, 80, 90, 100, 110, 125	—	3.75 <sup>2 3</sup>	—	100,000	35,000	—	14,000	—
			LGB	1, 2, 3	15-60, 70, 80, 90, 100, 110, 125	—	3.75 <sup>2 3</sup>	—	100,000	65,000	—	14,000	—
			NEB	1, 2, 3	15-60, 70, 80, 90, 100, 110, 125	—	3.75 <sup>2 3</sup>	—	85,000	—	35,000	—	22,000
			HEB	1, 2, 3	15-60, 70, 80, 90, 100, 110, 125	—	3.75 <sup>2 3</sup>	—	100,000	—	65,000	—	25,000
			ED4	1, 2, 3	15-50, 60, 70, 80, 90, 100, 110, 125	—	3.75 <sup>2 3</sup>	—	65,000	—	18,000	—	—
			HED4 <sup>4 5</sup>	1, 2, 3	15-50, 60, 70, 80, 90, 100, 110, 125	—	3.75 <sup>2 3</sup>	—	100,000	—	42,000	—	—
			CED6	2, 3	15-50, 60, 70, 80, 90, 100, 110, 125	—	3.75 <sup>2 3</sup>	—	200,000	—	200,000	—	100,000
150	Electronic (Solid state)	VL	ND	3	60, 100, 150	—	5.00	—	65,000	—	35,000	—	18,000
			HD	3	60, 100, 150	—	5.00	—	100,000	—	65,000	—	20,000
			LD	3	60, 100, 150	—	5.00	—	200,000	—	100,000	—	25,000
225	Thermal Magnetic	General Application	QJ2	2, 3	60-110, 125, 150, 175, 200, 225	—	5.00	—	10,000	—	—	—	—
			QJH2	2, 3	60-110, 125, 150, 175, 200, 225	—	5.00	—	22,000	—	—	—	—
			QJ2H	2, 3	60-110, 125, 150, 175, 200, 225	—	5.00	—	42,000	—	—	—	—
			QR2	2, 3	100, 110, 125, 150, 175, 200, 225	—	5.00	—	10,000	—	—	—	—
			QRH2	2, 3	100, 110, 125, 150, 175, 200, 225	—	5.00	—	25,000	—	—	—	—
			HQR2	2, 3	100, 110, 125, 150, 175, 200, 225	—	5.00	—	65,000	—	—	—	—
250	Thermal Magnetic	Sentron	FXD6, FD6	2, 3	70-110, 125, 150, 175, 200, 225, 250	5.00	5.00	—	65,000	—	35,000	—	22,000
			HFXD6, HFD6	2, 3	70-110, 125, 150, 175, 200, 225, 250	5.00	5.00	—	100,000	—	65,000	—	25,000
			HHFXD6, HHFD6	2, 3	70-110, 125, 150, 175, 200, 225, 250	5.00	5.00	—	200,000	—	100,000	—	25,000
			CFD6	3	70-110, 125, 150, 175, 200, 225, 250	—	5.00	—	200,000	—	200,000	—	100,000
	Electronic (Solid state)	VL	NF	3	100, 150, 250	—	5.00	—	65,000	—	35,000	—	18,000
			HF	3	100, 150, 250	—	5.00	—	100,000	—	65,000	—	20,000
			LF	3	100, 150, 250	—	5.00	—	200,000	—	100,000	—	25,000

<sup>1</sup> Includes housing frame plate with blank cover plate. Provision price includes all necessary mounting hardware, less circuit breaker, and includes housing frame cover plate with breaker handle opening.

<sup>2</sup> 1 to 6 poles may be mounted in 3.75" of unit space.

<sup>3</sup> Accessories such as shunt trips on three pole breakers require 6.25" of unit space.

<sup>4</sup> HED4 1-pole 15-30A = 65,000 IR  
35-100A = 25,000 IR

<sup>5</sup> HED4 3-Pole = 42,000 IR.

# Application

## Type P5 Panelboards

Table P5-10 – Branch Circuit Breakers (continued)

Breaker Frame Rating	Trip Type	Breaker Family	Frame Type	Poles	Trip Amperage	Unit Space Requirements in Inches		Maximum Interruption Rating (KAIC) Volts AC					
						Single	Twin	120	240	480Y 277	480	600Y 347	600
						400	Thermal Magnetic	Sentron	JXD6, JD6	2, 3	200, 225, 250, 300, 350, 400	8.75	8.75
HJXD6, HJD6	2, 3	200, 225, 250, 300, 350, 400	8.75	8.75	—	100,000			—	65,000	—	35,000	
HHJXD6, HHJD6	2, 3	200, 225, 250, 300, 350, 400	8.75	8.75	—	200,000			—	100,000	—	50,000	
CJD6	3	200, 225, 250, 300, 350, 400	8.75	—	—	200,000			—	150,000	—	100,000	
Electronic (Solid state)	VL		NJ	3	250, 400	6.25	6.25	—	65,000	—	35,000	—	25,000
			HJ	3	250, 400	6.25	6.25	—	100,000	—	65,000	—	25,000
			LJ	3	250, 400	6.25	6.25	—	200,000	—	100,000	—	25,000
	Sentron	SJD6	3	200, 300, 400	8.75	—	—	65,000	—	35,000	—	25,000	
		SHJD6	3	200, 300, 400	8.75	—	—	100,000	—	65,000	—	35,000	
		SCJD6	3	200, 300, 400	8.75	—	—	200,000	—	150,000	—	100,000	

Table P5-11 – Branch Breaker Circuit Breakers (VL)

Ampere Rating	Maximum Breaker Type	Number of Poles	Trip Amp Rating	Maximum IC (KA) Symmetrical Amperes							
				Voltage – AC							
				120	120/250	240	277	480/277	480	600/347	600
150 <sup>1</sup>	ND	3	60-150	—	65	65	—	35	35	18	18
	HD	3	60-150	—	100	100	—	65	65	20	20
	LD	3	60-150	—	200	200	—	100	100	25	25
250 <sup>1</sup>	NF	3	100-250	—	65	65	—	35	35	18	18
	HF	3	100-250	—	100	100	—	65	65	20	20
	LF	3	100-250	—	200	200	—	100	100	25	25
400 <sup>1</sup>	NJ	3	250-400	—	65	65	—	35	35	25	25
	HJ	3	250-400	—	100	100	—	65	65	25	25
	LJ	3	250-400	—	200	200	—	100	100	25	25
600 <sup>1</sup>	NL	3	400-600	—	65	65	—	35	35	18	18
	HL	3	400-600	—	100	100	—	65	65	18	18
	LL	3	400-600	—	200	200	—	100	100	18	18
800	NM	2/3	600-800	—	65	65	—	35	35	25	25
	HM	2/3	600-800	—	100	100	—	65	65	35	35
	LM	2/3	600-800	—	200	200	—	100	100	50	50
1200	NN	2/3	800-1200	—	65	65	—	35	35	25	25
	HN	2/3	800-1200	—	100	100	—	65	65	35	35
	LN	2/3	800-1200	—	200	200	—	100	100	50	50

<sup>1</sup> Only available with Electronic Trip Units.

# Application

## Type P5 Panelboards

**Table P5-12 – Branch Breakers Unit Space Requirements**

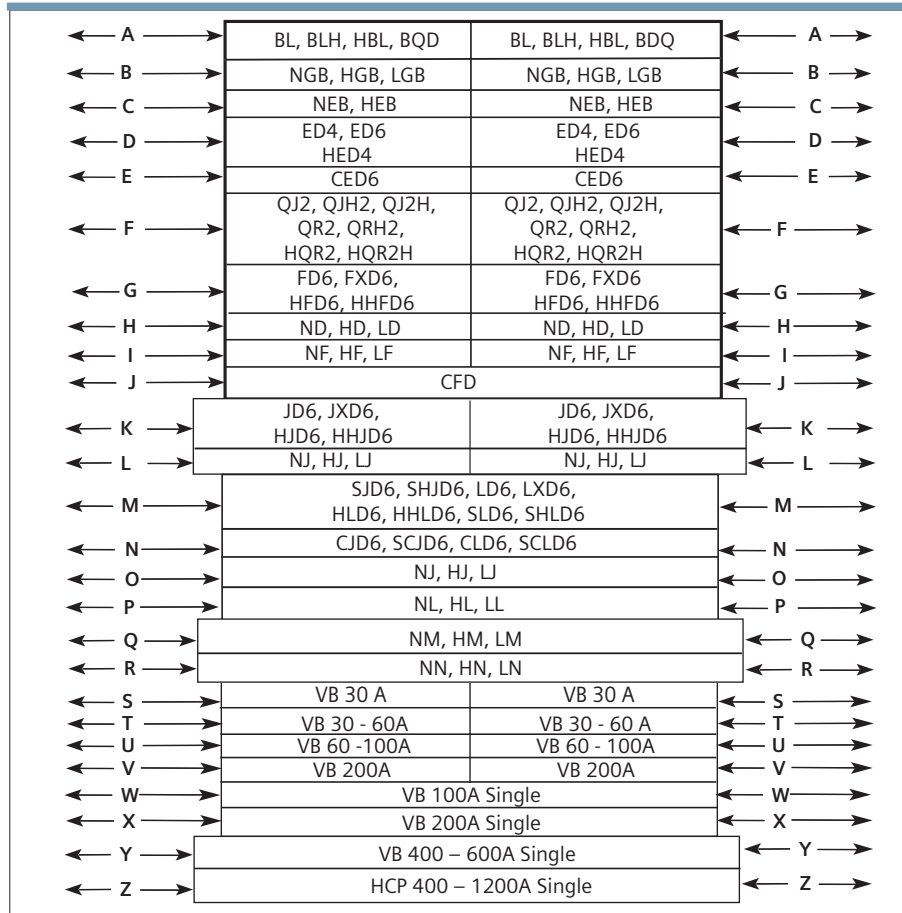
Amp Rating	Breaker Type	Mounting Height in Inches (mm)	
		Twin	Single
100 <sup>1</sup>	BL, BLH, HBL, BQD, BLE, BLEH, BLR, BLF, BLHF, BAF, BAFC, BAFH, BAFCH, BGL	3.75 (95) <sup>1</sup>	—
	BL, BLH, HBL, BQD -With accessories	6.25 (159)	—
125	xGB, NEB, HEB, ED4, ED6, HED4, HHED6, CED6	3.75 (95) <sup>1</sup>	—
	xGB, ED4 <sup>1,2</sup> , ED6 <sup>1,2</sup> , HED4 <sup>1,2</sup> , HHED6 <sup>1,2</sup> , CED6 <sup>1,2</sup> (With accessories)	6.25 (159)	—
150	ND, HD, LD	5.00 (127)	—
225	QJ2, QJH2, QJ2H, QR2, QRH2, HQR2, HQR2H	5.00 (127)	—
250	NF, HF, LF	5.00 (127)	—
	FD6, FXD6, HFD6, HFXD6, HHFD6, HHFXD6	5.00 (127)	—
	CFD6	—	5.00 (127)
400	NJ, HJ, LJ	—	6.25 (159)
	JD6, JXD6, HJD6, HJXD6, HHJD6, HHJXD6, CJD6	—	8.75 (222)
600	NL, HL, LL	—	6.25 (159)
	LD6, LXD6, HLD, HLXD6, HHL6, HHLXD6, CLD6	—	8.75 (222)
800	NM, HM, LM	—	8.75 (222)
	MXD6, MD6, HMXD6, HMD6, CMD6	—	10.00 (254)
1200	NN, HN, LN	—	10.00 (254)
	NXD6, ND6, HNXD6, HND6, CND6	—	10.00 (254)

<sup>1</sup> Mounting height shown will accommodate from (1) to (6) poles.  
<sup>2</sup> Accessories such as shunt trips on three pole breakers requires 6.25" of unit space.

**Table P5-13 – Branch Breaker Side Gutter**

Reference Letter	Panel Width – 32 (813) Dimensions in inches (mm)
A	14.0 (356)
B	13.98 (355)
C	11.62 (295)
D	10.0 (254)
E	7.61 (193)
F	8.75 (222)
G	8.25 (210)
H	10.90 (276)
I	10.90 (276)
J	11.76 (299)
K	7.92 (201)
L	8.0 (203)
M	13.42 (341)
N	12.0 (305)
O	15.50 (393)
P	14.25 (362)
Q	13.42 (341)
R	13.42 (341)
S	10.0 (254)
T	8.0 (203)
U	10.50 (267)
V	10.50 (267)
W	9.30 (236)
X	10.30 (262)
Y	9.30 (236)
Z	10.30 (262)

**Fig. P5-3**



# Typical Catalog Numbers

## Type P5 Panelboards

Table P5-14 – 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 <sup>1</sup>
		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 P5-15 – Main Circuit Breakers – 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 <sup>1</sup>
		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 <sup>2</sup>	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 P5-16 – Main Fusible Switch (fuses not included)

Max. Panel Amp Rating	Unit Space (inches)	208Y/120V	240/120V	120/240V	240V	480Y/277V	480V <sup>1</sup>
		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 <sup>3</sup>	28.75	P5C75MS800ATS	P5B75MS800ATS	P5A75MS800ATS	P5D75MS800ATS	P5E75MS800ATS	P5F75MS800ATS
	43.75	P5C90MS800ATS	P5B90MS800ATS	P5A90MS800ATS	P5D90MS800ATS	P5E90MS800ATS	P5F90MS800ATS
1200 <sup>3</sup>	28.75	P5C75MS120ATS	P5B75MS120ATS	P5A75MS120ATS	P5D75MS120ATS	P5E75MS120ATS	P5F75MS120ATS
	43.75	P5C90MS120ATS	P5B90MS120ATS	P5A90MS120ATS	P5D90MS120ATS	P5E90MS120ATS	P5F90MS120ATS

<sup>1</sup> For 600V, change "F" in position 3 to "G."

<sup>2</sup> Alternate main breaker requires an additional 1.25" unit space.

<sup>3</sup> 800 and 1200 ampere switches have "L" class fuse provisions (Type HCD).

# 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 <sup>1</sup>	•	•	•
400	•	•	•
600	•	•	•

### Ground Fault on Main Breaker

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

•Indicates available

### Time Clocks<sup>4</sup>

Sangamo, Tork or Paragon time clock can be supplied, mounted in panel-board 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.

### 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<sup>5</sup>

#### Description

BL, BQD, xGB, HGB, LGB, NEB, HEB (branch only)  
QJ2, QJH2, QJ2H, QR2, QRH2, HQR2, HQR2H, ED2, ED4, HED4, HHED6, CED6 (branch only)  
All others through 1200A

### 100% Rated Main Circuit Breakers

Ampere Rating	Breaker Type
400	JXD6H, HJXD6H NJY, HJY, LJY
600	LXD6H, HLXD6H
600 <sup>6</sup>	NMY, HMY, LMY
800 <sup>7</sup>	MXD6H, HMXD6U, SMD6, SHMD6, SND6, SHND6, NXD6H, HNXD6H
1200	NNY, HNY, LNY NXD6H, HNXDH

<sup>1</sup> For use on main lug, main breaker or main switch panels without subfeed breakers.

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

<sup>3</sup> Not available on Sensitrip III.

<sup>4</sup> For required unit space, consult local sales office.

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

<sup>6</sup> The 600A, 100% rated breaker application requires the use of an 800A frame breaker.

<sup>7</sup> The 800A, 100% rated breaker application requires the use of a 1200A frame breaker.

# 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 a trip setting slightly above the peak motor inrush current. With this setting, there is no delay 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 ensure they are adequate for the electrical system. UL recognized ETI breakers 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.

Whether a remote starter is used, or the breaker and starter are mounted in the same enclosure, a padlocking device must be specified so a padlock can be installed in the "OFF" position. P2 panelboards incorporate motor disconnect devices much in the same way as P5 panelboards, except a fusible Vacu-Break switch unit is utilized rather than an ETI circuit breaker. In addition, padlocking devices are standard on all Vacu-Break switches eliminating the need to order them 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 P5-17 – 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 <sup>1 2</sup>	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 <sup>1</sup>	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 <sup>2</sup>	40	40	75	5 (127)	—	32 (813)
225	FD6, CFD6	50	50	100	5 (127)	—	32 (813)

<sup>1</sup> 100,000 kA at 480V with E-frame and CFD6 frame breakers.

<sup>2</sup> 65,000 kA at 480V with F-frame breakers.

<sup>3</sup> Increase to 7.50 inches when pilot light or control transformer is required.

**Table P5-18 – Full Voltage Non-Reversing Starters Class A20**

NEMA Starter Size	Unit Space Mtg. Ht. In. (mm)	
	Left	Right
0	—	5 (127) <sup>3</sup>
0	0	5 (127) <sup>3</sup>
1	—	5 (127) <sup>3</sup>
1	0	5 (127) <sup>3</sup>
1	1	5 (127) <sup>3</sup>
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 P5-19 – 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 P5-20 – Vacu-Break Fusible Switches  
For Branch Circuit Use with AC Combination Full Voltage Starters <sup>1</sup>**

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 <sup>2</sup> (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)

<sup>1</sup> 100,000 kA at 480V with Class J or Class RK5 fuses.

<sup>2</sup> 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 P5-21 – Compression Lugs**

Style	Amp Rating	Breaker Type	Compression Connectors	Available Unit Space Reduction
MLO	800	N/A	All compression lugs	Deduct 10.0" Unit Space
	1000	N/A	All compression lugs	Deduct 10.0" Unit Space
	1200	N/A	All compression lugs	Deduct 10.0" Unit Space
Main Breaker	800	MD6, HMD6, CMD6, SMD6, SHMD6, SCMD6	(3)#2/0 AWG - 500 Kcmil CU or Al	0
	1200	ND6, HND6, CND6, SND6, SHND6, SCND6	(4)#250 - 500 Kcmil Cu or Al	0

**Table P5-22 – Alternate Lugs**

Style	Amp Rating	Breaker Type	Compression Connectors	Available Unit Space Reduction
MLO	800	N/A	(3)#3/0 AWG - 750 Kcmil Cu or Al	Deduct 5.0" Unit Space
	1000	N/A	(4)#3/0 AWG - 750 Kcmil Cu or Al	Deduct 7.5" Unit Space
	1200	N/A	(4)#3/0 AWG - 750 Kcmil CU or Al	Deduct 7.5" Unit Space

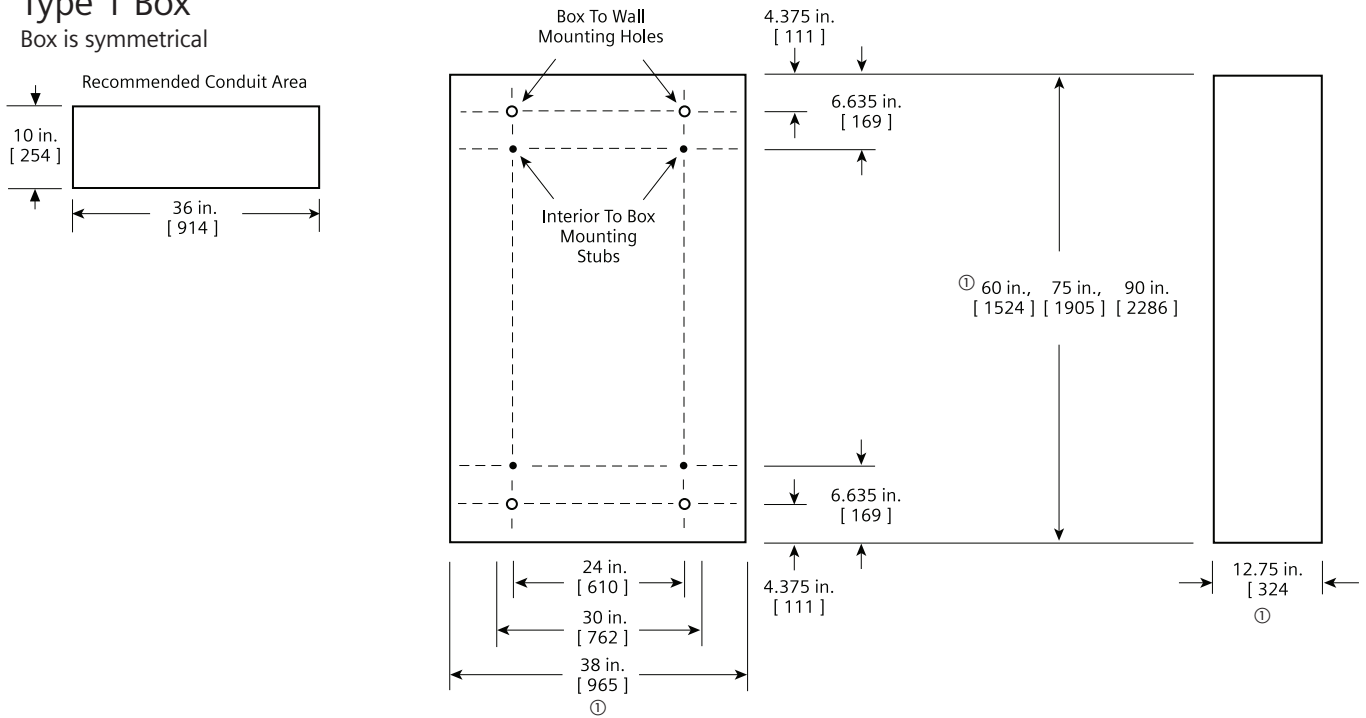


# Dimensions

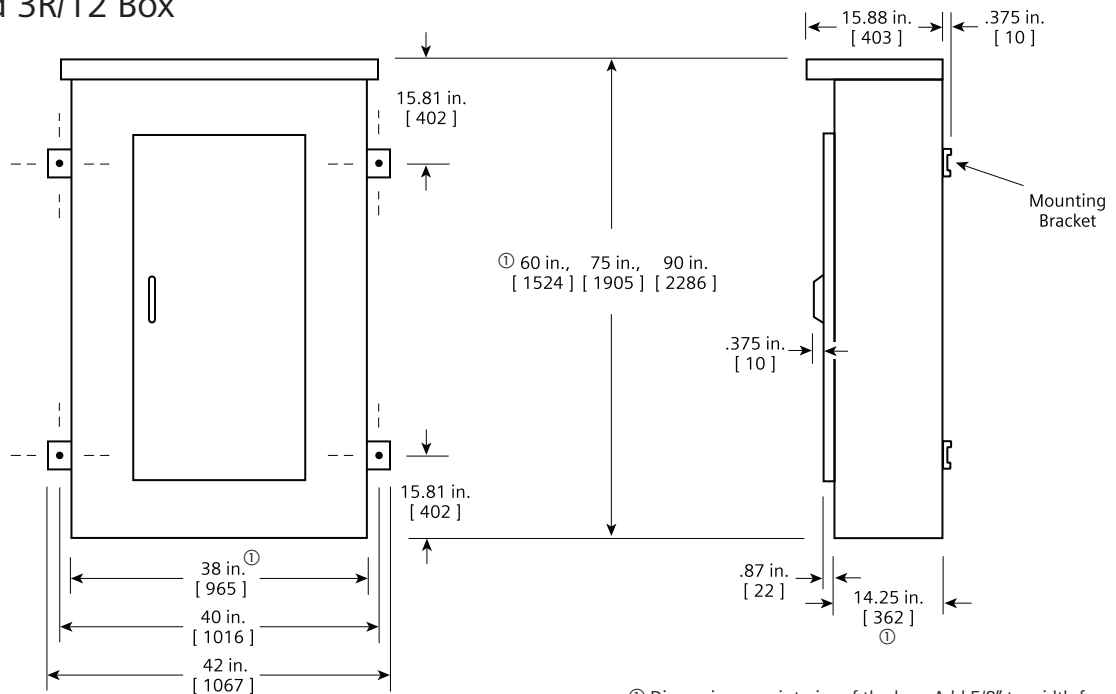
## Type P5 Panelboards

### 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 P5-23 – Branch Breaker Connecting Strap Kits** <sup>1 2</sup>

For use with P5, Sentron Deep or Type S5 Power Panels

Max Amp Rating	Breaker Family	Breaker Type	Catalog Number	Unit Height (inches)	Mounting
100	General	BL, BQD	SBLBD	3.75	Twin
125	General	NGB, HGB, LGB	SNBD	3.75	Twin
	General	EB	SEBD	3.75	Twin
	General	ED	SE6D	3.75	Twin
	General	CED	SCED	3.75	Twin
150	VL	DG	SDGD	5.00	Twin
225	General	QJ	SQJD	5.00	Twin
	General	QR	SQRD	5.00	Twin
250	Sentron	FD	SF6D	5.00	Twin
	VL	FG	SFGD	5.00	Twin
	Sentron	CFD	SCFD	5.00	Single
400	Sentron	JD	SJ1D	8.75	Single
	Sentron	JD	SJ2D	8.75	Twin
	Sentron	SJD	SSJ1D	8.75	Single
	VL	JG	SJG1D	6.25	Single
	VL	JG	SJG2D	6.25	Twin
	Sentron	CJD	SCJD	8.75	Single
	Sentron	SJD	SSCJD	8.75	Single
600	Sentron	LD	SL6D	8.75	Single
	Sentron	SLD	SSL6D	8.75	Single
	VL	LG	SLGD	6.25	Single
	Sentron	CLD	SCLD	8.75	Single
	Sentron	SCLD	SSCLD	8.75	Single
800	VL	MG	MG1D	8.75	Single
	Sentron	LMD	SLM1D	8.75	Single
	Sentron	MD	SMND	10.00	Single
	Sentron	SMD	SSMND	10.00	Single
1200	VL	NG	NG1D	10.00	Single
	Sentron	ND	SMND	10.00	Single
	Sentron	SND	SSMND	10.00	Single

©Although QR is rated 250A, it is limited to 225A in panelboard.

**Table P5-27 – Connecting Strap Kits – Fusible** <sup>2</sup>

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 <sup>2</sup>	16.25 (413)	F6162D

<sup>1</sup> Includes cover plate and mounting hardware, less circuit breaker.

<sup>2</sup> Also fits Types FCI, FCII, SB1, SB2 and SB3 switchboards.

<sup>3</sup> 800-1200 amp units are HCP switch.

<sup>4</sup> Normal stock item.

<sup>5</sup> Suitable to replace QF3 in P1 thru P5 panelboards and switchboards.

<sup>6</sup> To replace QJ with a QR only a new cover is needed up to 225A.

**Table P5-24 – Blank Plates – Circuit Breaker and Vacu-Break** <sup>4</sup>

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)	6FPB10

**Table P5-25 – Filler Plates**

For use with Sentron SPP and P5 power panels

Breaker Type	Filler Plate Catalog Number
BL, BLH, HBL, BQD, NGB, HGB, LGB, ED2, ED4, ED6, HED4, HHED6	DFFP1 <sup>5</sup>
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 P5-26 – Cover Plates**

For use with P5, Sentron SPP and Type S6 power panels

Breaker Type	Catalog Number
QR	SQRC <sup>6</sup>

**Table P5-28 – Service Entrance Barriers**

Field installable Barriers to meet UL 67 service entrance requirements

Breaker Type	Catalog Number
(S)JD, (S)LD, MG	SEBP4V1
CJD, CLD	SEBP4V2
JG, LG	SEBP4V3
(S)MD, (S)ND without shield	SEBP5V1
(S)MD, (S)ND without shield	SEBP5V2
Vacu-Break Switches	SEBP5V3
HCP Switches	SEBP5V4

# Kits and Accessories

## Type P5 Panelboards

**Table P5-29 – Enclosures**

Description	Catalog number
P5 Type 1 38" W x 12.75" D x 60" H	PB860
P5 Type 1 38" W x 12.75" D x 75" H	PB875
P5 Type 1 38" W x 12.75" D x 90" H	PB890
P5 Type 1 38" W x 14.75" D x 60" H	PBD860 <sup>1</sup>
P5 Type 1 38" W x 14.75" D x 75" H	PBD875 <sup>1</sup>
P5 Type 1 38" W x 14.75" D x 90" H	PBD890 <sup>1</sup>
P5 Type 3R/12 60" H	WP860
P5 Type 3R/12 75" H	WP875
P5 Type 3R/12 90" H	WP890

<sup>1</sup> Required with door over breaker handles.

**Table P5-30 – Trims**

Description	Catalog number
P5 Std (4 piece trim) vented 60"	P560V
P5 Std (4 piece trim) vented 75"	P575V
P5 Std (4 piece trim) vented 90"	P590V
P5 Std (4 piece trim) unvented 60"	P560NV <sup>1</sup>
P5 Std (4 piece trim) unvented 75"	P575NV <sup>1</sup>
P5 Std (4 piece trim) unvented 90"	P590NV <sup>1</sup>
P5 Std (4 piece trim) vented 60" with hinged gutter covers	P560VHG
P5 Std (4 piece trim) vented 75" with hinged gutter covers	P575VHG
P5 Std (4 piece trim) vented 90" with hinged gutter covers	P590VHG
P5 Std (4 piece trim) unvented 60" with hinged gutter covers	P560NVHG
P5 Std (4 piece trim) unvented 75" with hinged gutter covers	P575NVHG
P5 Std (4 piece trim) unvented 90" with hinged gutter covers	P590NVHG
P5 Std (1 PC Door) vented 60"	P560VD <sup>2</sup>
P5 Std (1 PC Door) vented 75"	P575VD <sup>2</sup>
P5 Std (1 PC Door) vented 90"	P590VD <sup>2</sup>
P5 Std (1 PC Door) unvented 60"	P560NVD <sup>2</sup>
P5 Std (1 PC Door) unvented 75"	P575NVD <sup>2</sup>
P5 Std (1 PC Door) unvented 90"	P590NVD <sup>2</sup>
P5 Std (1 PC Door-in-door) vented 60"	P560VDD <sup>2</sup>
P5 Std (1 PC Door-in-door) vented 75"	P575VDD <sup>2</sup>
P5 Std (1 PC Door-in-door) vented 90"	P590VDD <sup>2</sup>
P5 Std (1 PC Door-in-door) unvented 60"	P560VDD <sup>2</sup>
P5 Std (1 PC Door-in-door) unvented 75"	P575VDD <sup>2</sup>
P5 Std (1 PC Door-in-door) unvented 90"	P590VDD <sup>2</sup>

<sup>1</sup> Unvented trims require amps per square inch bussing.

<sup>2</sup> Requires 14.5" deep box.

**Table P5-31 – Flush mounting kits**

Description	Catalog number
Flush kit to P5 60" High	F860
Flush kit to P5 75" High	F875
Flush kit to P5 90" High	F890

# Notes



## C1/C2 Panelboards

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Branch Breaker Selection C1	6-4		

# General Specifications

## C1 and C2 Panelboards

### Type C1

240 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 NEC wire bending requirement, section 312-6

### Panelboards

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

Meets Federal Specification W-C375B/Gen.

### Service

Description: 240 Volts Maximum. 1-Phase, 3-wire or 3-Phase, 4-Wire.

### 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.

**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)				
	42	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"¹	48, 73, 85	#14
C2	8 1/2"¹	48, 73, 85	#14

**Table C1/C2-3 – Fronts**

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

¹ Feed thru lugs and subfeed breakers not available for this height.

**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 <sup>1 2</sup>

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	C1C18QR225CTS	C1A18QR225CTS
	30	73	C1C30QR225CTS	C1A30QR225CTS/
	42	85	C1C42QR225CTS	C1A42QR225CTS/
250	18	48	C1C18FX250CTS	C1A18FX250CTS
	30	73	C1C30FX250CTS	C1A30FX250CTS
	42	85	C1C42FX250CTS	C1A42FX250CTS

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

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 <sup>1 2</sup>

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	
	QJ2H	42	Q2	
	QR2	10	QR	
	FXD6	65	FX	
250	HFD6 <sup>2</sup>	100	HF	70, 80, 90, 100, 110, 125, 150, 175, 200, 225
	FXD6	65	FX	
250	HFD6 <sup>2</sup>	100	HF	250
	FXD6	65	FX	

<sup>1</sup> BL, BLH, HBL and BQD are horizontally mounted. All others vertically mounted.

<sup>2</sup> 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	—
	70, 80, 90, 100	—	10	—
BL (HID)	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	—	—
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

**Table C1/C2-12 – Subfeed Breakers - Limit One Per Panel – C1<sup>1</sup> (Not available for 42 circuit panels)**

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
QJ2H	60, 70, 80, 90, 100, 110, 125, 150, 175, 200, 225	—	—	42
QR2	100, 110, 125, 150, 175, 200, 225	—	—	10
FXD6	70, 80, 90, 100, 110, 125, 150, 175, 200, 225, 250	—	—	65
HFD6 <sup>2</sup>	70, 80, 90, 100, 110, 125, 150, 175, 200, 225, 250	—	—	100

<sup>1</sup> BL, BLH, HBL, and BQD are horizontally mounted. All others are vertically mounted.

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



# Selection

## C1 and C2 Panelboards

**Table C1/C2-13 – Alternate Main Breaker Selection<sup>1 2 3</sup> 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

<sup>1</sup> No increase in box height. Space is already built into C1 panel.

<sup>2</sup> BL, BLH, HBL and BQD are horizontally mounted. All others vertically mounted.

<sup>3</sup> 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<sup>1 2</sup> C2 (Not available for 42 circuit panels)**

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

<sup>1</sup> No increase in box height. Space is already built into C1 panel.

<sup>2</sup> 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
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

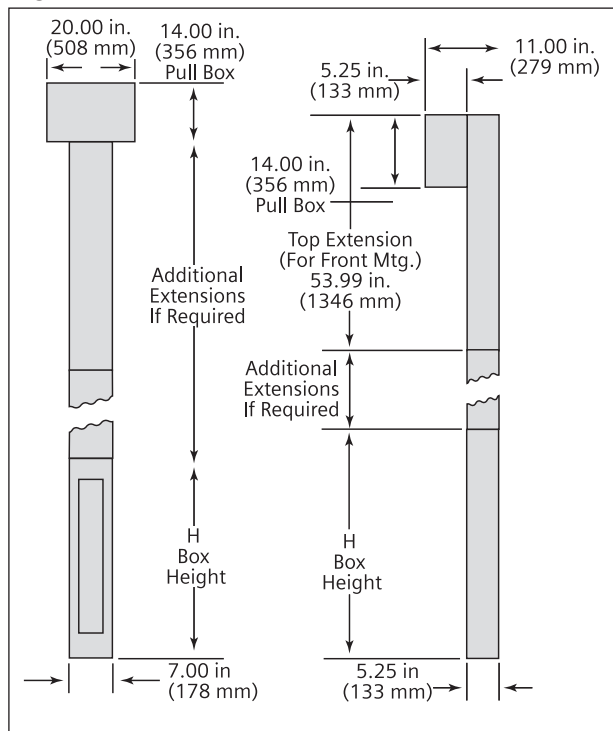
Two styles of pull boxes are available, top and front mounted. When the panel and its extensions are mounted in a structural WF beam, a front mounted pull box is required. When the panels are surface mounted, a top mounted pull box may be used. Provisions are made so that the neutral bar may be mounted 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 <sup>1</sup>	LXX50-F

<sup>1</sup> Includes 50" extension.

**Fig. C1/C2-1**





## Miscellaneous

Description	Page	
Telephone Cabinets	7-2	Strap Kits 7-4
Conduit Enclosing Shield (Panel Skirts)	7-2	Connecting Strap Kits 7-4
Breaker Mechanical Lugs	7-2	Blank Plates – Vacu-Break 7-4
Compression Lugs	7-2	Molded Case Lugs 7-4
Optional Mechanical Lugs	7-3	
Aluminum Body Lugs for Copper or Aluminum Wire	7-3	
Miscellaneous Replacement Parts	7-4	

# 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.

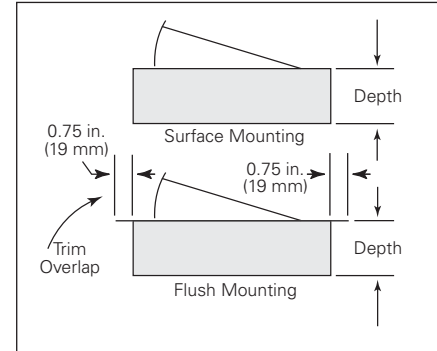
**Table Misc.- 1**

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

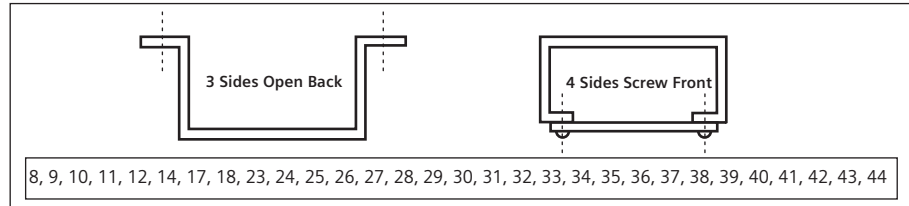
0.75 in. (19mm) plywood backboard supplied when specified.



## 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
<b>Lugs</b> (contains indicated number of lugs and necessary hardware per kit)				
ED2, ED4, ED6,	15-125	1,2,3	1	#2/0
HED4, HHED6, CED4				
QJ2, QJH2, QJ2H, QR2, QR2H, HQR2, HQR2H	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, SHJD6-A, SCJD6, L(X)D6-A, HL(X)D6-A, CLD6, SLD6-A, SHLD6-A, SCLD6	200-600	2, 3	1	500 Kcmil
<b>Kits</b> (contains lug and hardware for complete line of load end of 2 or 3 pole breaker)				
M(X)D6, HM(X)D6, CMD6,	500-800	2	6	500 Kcmil
SMD6, SHMD6, SCMD6		3	9	500 Kcmil
N(X)D6, HN(X)D6, CND6,	900-1200	2	8	500 Kcmil
SND6, SHND6, SCND6		3	12	500 Kcmil

**Table Misc. 3 – Breaker Mechanical Lugs**

For Use With Type(s)	Amp Rating	Cables Per Lug	Lug Wire Range
<b>Load Side</b>			
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
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
		1	#2-#1/0 AWG Cu
BQD, BQD6	110-125	1	#1/0-#2/0 AWG Al
		1	#14-#6 AWG Cu
		1	#12-#6 AWG Al
BQD, BQD6	45-100	1	#8-1 AWG Cu
		1	#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, QJ2H	60-225	1	#6 AWG-300 kcmil (Cu)
QR2, QRH2, HQR2, HQR2H			#4 AWG-300 Kcmil (Al)
All 2&3 pole	15-25	1	#14-#10 AWG (Cu)
ED2, ED4, ED6,			#12-#10 AWG (Al)
ED6ETI	30-100	1	#10-#1/0AWG (Cu or Al)
HED4,	110-125	1	#3-3/0 (Cu)
HHED6		1	#1-2/0 (Al)
CED6, All 1 Pole,	30-60	1	#10-4 (Cu or Al)
ED, HED	70-100	1	#4-#1/0 (Cu or Al)
FXD6-A, FD6-A, HFD6,	70-250	1	#6 AWG-350 Kcmil (Cu)
CFD6, HHFD6			#4 AWG-350 Kcmil (Al)
SJD6(A), SHJD6(A), SCJD6	65-200	1-2	#4 AWG-310 Kcmil (Cu or 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, HHL6,	250-600	1-2	3/0-500 Kcmil (Cu) 4/0-500 Kcmil (Al)
SHLD6(A), CLD6, SCLD6 LMD6, <sup>1</sup> LMXD6, <sup>1</sup>			
HLMD6, <sup>1</sup> HLMXD6, <sup>1</sup>	500-600	1-2	250-500 Kcmil (Cu or Al)
MD6, MXD6, SMD6,			
HMD6, HMXD6, SHMD6, CMD6, SCMD6	700-800	1-3	1/0-500 Kcmil (Cu or Al) 500-750 Kcmil (Cu or Al)
ND6, NXD6, SND6, HND6, HNXD6, SHND6, CND6, SCND6	800-1200	1-4	250-500 Kcmil (Cu or Al)

<sup>1</sup> 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, QJ2H, QR2, QRH2, HQR2, HQR2H	60-225	1	Cu	#6 AWG-250 Kcmil (Cu)	1
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), HHL6, SCD6, HLD6(A), SHLD6(A), CJD6, CLD6, SCJD6, SCLD6	250-600	1 1,2 1 1	Cu Cu Al	3/0-600 Kcmil (Cu) 3/0-500 Kcmil (Cu) 500-750 Kcmil (Al)	1 1 1
SMD6, M(X)D6, HM(X)D6, HMD6, CMD6, SCMD6, SND6, N(X)D6, HN(X)D6, SHND6, CND6, SCND6	500-600 700-800 800-1200	1-2 1-3 1-2 1-2 1-3	Cu Cu Al Al Al	#1 AWG-500 Kcmil (Cu) #1 AWG-350 Kcmil (Cu) 500-750 Kcmil (Cu) 500-750 Kcmil (Al) 500-750 Kcmil(Cu) 500-750 kcmil (Al)	1 1 2 3 2 3

# Miscellaneous

**Table Misc. 6 – Miscellaneous Replacement Accessories**

Catalog Number	Description	For Panel Type
EGK	Al Ground Assembly 44 Connections	P1, P2, P3
BK1	Bonding Kit for P1 250A Max.	as noted
BK3	Bonding Kit for S3 Panel	
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
ANSI/NEMA PB 1.1-2013 <sup>2</sup>	General Instructions for Proper Installation, Operation, and Maintenance of Panelboards Rated 600 Volts or Less (O&M Manual)	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
EWK2	End Wall Kit with Knockouts (24" W x 7.75" DP)	P1
DFFP1	Filler Plate (Suitable for replacing QF3 in P1 thru P5 Panelboards and Switchboards)	P1, P2, P3, P4, P5

<sup>1</sup> All 1" QP, BL, BQD and ED Frame Provisions.

<sup>2</sup> PDF can be downloaded for free and printed at this location: <http://www.nema.org/standards/pages/Panelboards.aspx>

## Connecting Strap Kits - Obsolete Circuit Breakers

For use with Series 5 or 6 CDP circuit breaker panelboards

**Table Misc. 7**

Breaker Frame <sup>1</sup>	Strap Kit Catalog Number	Height (in.)
KM, HN	6KM1	10
CN	6CN1	10
KMB, HNB	6KMB1	10
SKM	6SKM1	10
KP, HK	6KP1	10
KPB, HKB	6KPB1	10
SKP, SHK	6SKP1	10

## Table Misc. 9 – Connecting Strap Kits — Vacu-Break

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

Panel Type	Catalog Number	For Use With	
		Ampere Rating	Unit Height (in.)
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)

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

## Table Misc. 8 – 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. 10 – Molded Case Switches (Non-Automatic Circuit Interrupters)

Ampere Rating	Breaker Frame
100	ED2, ED4, ED6
225	QJ2, QR2
250	FXD6
400	JXD2, JXD6
600	LXD6
800	MD6
1200	ND6



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