

**Pow-R-Line 4**



**PRL4B**  
Circuit Breaker  
Panelboard

**PRL4F**  
Fusible  
Panelboard

**General Description**

**Panelboard Ratings**

**Voltage:**

- 240 V, 480 V or 600 Vac maximum.
- 250 Vdc maximum.

**Main Lugs:**

- 250 – 1200 amperes.

**Main Breakers:**

- 250 – 1200 amperes.

**Main Switches:**

- 200 – 1200 amperes.

**Branches (Bolt-on):**

- Breakers 15 – 1200 amperes.
- Fusible switches 30 – 1200 amperes.

**Short Circuit Current Ratings (Symmetrical)**

- 240 Vac: 10 – 200 kA fully rated.
- 240 Vac: 22 – 200 kA series rated.
- 480 Vac: 14 – 200 kA fully rated.
- 480 Vac: 22 – 150 kA series rated.
- 250 Vdc: 10 – 22 kA fully rated.

**Service**

- 3-phase, 4-wire 208Y/120 V, 240/120 V Delta and 480Y/277 V.
- Single-phase, 3-wire 120/240 V.
- Single-phase, 2-wire 120 V.
- 3-phase, 3-wire 120, 240, 480 and 600 V.
- 2-wire 125 Vdc.
- 2-wire 250 Vdc.

Suitable for service entrance applications when specified.

**Bussing**

250 – 1200 amperes tin-plated aluminum is standard, copper is available as an option. Density rated bus is also available as an option.

**Main Lugs Only**

The short circuit rating of the MLO assembled panelboard will be fully rated based upon the lowest rated branch device or may be series rated with an approved upstream device.

Main lugs only ampere ratings: 250, 400, 600, 800 and 1200.

**Main Circuit Breakers**

The short circuit rating shown is that of the main breaker only. The short circuit rating of the assembled panelboard is the rating of the lowest fully rated main or branch device, or the rating of an approved series rated combination.

**Table 22.4-1. Main Circuit Breakers — Type PRL4B**

Breaker Frame Amperes	Breaker Type	Interrupting Rating (kA Symmetrical)			
		240 V	480 V	600 V	250 Vdc
250	JD	65	35	18	10
250	HJD	100	65	25	22
250	JDC	200	100	35	22
250	LCL	200	200	—	—
400	DK	65	—	—	10
400	KD ①	65	35	25	10
400	CKD ①②	65	35	25	10
400	HKD ①	100	65	35	22
400	CHKD ①②	100	65	35	22
400	KDC ①	200	100	65	22
400	LCL ①	200	200	—	—
400	LA-P	200	200	200	①
600	LGE	65	35	18	22
600	LGH	100	65	35	22
600	LD ①	65	35	25	22
600	CLD ①②	65	35	25	22
600	HLD ①	100	65	35	25
600	CHLD ①②	100	65	35	25
600	LDC ①	200	100	50	25
600	CLDC ②	200	100	50	25
800	MDL ①	65	50	25	22
800	CMDL ①②	65	50	25	22
800	HMDL ①	100	65	35	25
800	CHMDL ①②	100	65	35	25
800	ND ①	65	50	25	—
800	CND ①②	65	50	25	—
800	HND ①	100	65	35	—
800	CHND ①②	100	65	35	—
800	NDC ①	200	100	65	—
800	CNDC ①②	200	100	65	—
800	NB-P	200	200	200	③
1200	ND ①	65	50	25	—
1200	CND ①②	65	50	25	—
1200	HND ①	100	65	35	—
1200	CHND ①②	100	65	35	—
1200	NDC ①	200	100	65	—
1200	CNDC ②	200	100	65	—

① Available with integral ground fault protection.

② 100% rated circuit breaker.

③ 100,000 AIC based on NEMA test procedure.

**Main Fusible Switches**

The short circuit rating shown is that of the main switch only. The short circuit rating of the assembled panelboards is the rating of the lowest fully rated main or branch device or the rating of an approved series rated combination. (Fuses are not included.)

400 and 600 ampere switches with shunt trip will be rated 100 kA.

**Note:** Circuit breaker panelboards are designated PRL4B. Fusible Switch panelboards are designated PRL4F.

**Table 22.4-2. Main Fusible Switches**

Switch Rating Amperes	Fuse Class	Interrupting Rating (kA Symmetrical)		
		240 V	600 V	250 Vdc
<b>Switches Rated 240 Vac, 250 Vdc</b>				
200	R, T	200	—	10
400	R, T	200	—	10
600	R, T	200	—	—
800	L	200	—	—
1200	L	200	—	—
<b>Switches Rated 600 Vac</b>				
200	R, J, T	200	200	—
400	R, J, T	200	200	—
600	R, J, T	200	200	—
800	L	200	200	—
1200	L	200	200	—

## Technical Data — Pow-R-Line 4

Table 22.4-3. Branch Circuit Breakers

Breaker Type	Ampere Rating	Number of Poles	Interrupting Rating (kA Symmetrical)						
			120 V	120/240 V	240 V	480 V	600 V	125 Vdc	250 Vdc
BAB	15 – 70	1	10	—	—	—	—	—	—
BAB	15 – 100	2	—	10	—	—	—	—	—
BAB	15 – 100	2, 3	—	—	10	—	—	—	—
QBGF, QBGFEP	15 – 50 ①	1, 2	10	10	—	—	—	—	—
QBHW	15 – 70	1	22	—	—	—	—	—	—
QBHW	15 – 100	2	—	22	—	—	—	—	—
QBHW	15 – 100	2, 3	—	—	22	—	—	—	—
QBHGF, QBHGFEP	15 – 30	1, 2	22	22	—	—	—	—	—
GHB ②③	15 – 100	1	—	—	65	14	—	14	—
GHB ③	15 – 100	2, 3	—	—	65	14	—	—	14
GHQ ②③	15 – 20	1	—	—	65	14	—	—	—
HGHB ②③	15 – 30	1	—	—	65	25	—	—	—
GHGFEP	15 – 60	1	—	—	65	—	—	—	—
EHD	15 – 100	1	—	—	14	14	—	10	—
EHD	15 – 100	2, 3	—	—	18	14	—	—	10
FDB	15 – 150	2, 3	—	—	18	14	14	—	10
FD ②	15 – 100	1	—	—	65	35	—	10	—
FD	15 – 225	2, 3	—	—	65	35	18	—	10
HFD ②	15 – 100	1	—	—	65	65	—	10	—
HFD	15 – 225	2, 3	—	—	100	65	25	—	22
FDC	15 – 225	2, 3	—	—	200	100	35	—	22
FB-P	15 – 100	2, 3	—	—	200	200	200	—	④
EDB	100 – 225	2, 3	—	—	22	—	—	10	—
EDS	100 – 225	2, 3	—	—	42	—	—	10	—
ED	100 – 225	2, 3	—	—	65	—	—	10	—
EDH	100 – 225	2, 3	—	—	100	—	—	10	—
EDC	100 – 225	2, 3	—	—	200	—	—	10	—
JD	70 – 250	2, 3	—	—	65	35	18	—	10
HJD	70 – 250	2, 3	—	—	100	65	25	—	22
JDC	70 – 250	2, 3	—	—	200	100	35	—	22
LCL	125 – 250	2, 3	—	—	200	200	—	—	—
DK	250 – 400	2, 3	—	—	65	—	—	—	10
KD	100 – 400	2, 3	—	—	65	35	25	—	10
CKD ⑤	100 – 400	3	—	—	100	65	35	—	22
HKD	100 – 400	2, 3	—	—	100	65	35	—	22
CHKD ⑤	100 – 400	3	—	—	100	65	35	—	22
KDC	100 – 400	2, 3	—	—	200	100	65	—	22
LCL	200 – 400	2, 3	—	—	200	200	—	—	—
LA-P	125 – 400	2, 3	—	—	200	200	200	—	④
LGE	250 – 600	3	—	—	65	35	18	—	22
LGH	250 – 600	3	—	—	100	65	35	—	22
LD	300 – 600	2, 3	—	—	65	35	25	—	22
CLD ⑤	300 – 600	3	—	—	65	35	25	—	22
HLD	300 – 600	2, 3	—	—	100	65	35	—	25
CHLD ⑤	300 – 600	3	—	—	100	65	35	—	25
LDC	300 – 600	2, 3	—	—	200	100	50	—	25
CLDC ⑤	300 – 600	3	—	—	200	100	50	—	25
MDL	300 – 800	2, 3	—	—	65	50	25	—	22
CMDL ⑤	300 – 800	3	—	—	65	50	25	—	22
HMDL	300 – 800	2, 3	—	—	100	65	35	—	25
CHMDL	300 – 800	3	—	—	100	65	35	—	25
ND	400 – 800	2, 3	—	—	65	35	25	—	—
CND ⑤	400 – 800	3	—	—	65	35	25	—	—
HND	400 – 800	2, 3	—	—	100	65	35	—	—
CHND ⑤	400 – 800	3	—	—	100	65	35	—	—
NDC	400 – 800	2, 3	—	—	200	100	65	—	—
CNDC ⑤	400 – 800	3	—	—	200	100	65	—	—
NB-P	400 – 800	2, 3	—	—	200	200	200	—	—
ND	600 – 1200	2, 3	—	—	65	35	25	—	—
CND ⑤	600 – 1200	3	—	—	65	35	25	—	—
HND	600 – 1200	2, 3	—	—	100	65	35	—	—
CHND ⑤	600 – 1200	3	—	—	100	65	35	—	—
NDC	600 – 1200	2, 3	—	—	200	100	65	—	—
CNDC ⑤	600 – 1200	3	—	—	200	100	65	—	—

① 50 amperes is 2-pole only.

② 1-pole breaker rated 277 Vac.

③ At 480 V, use on 480Y/277 Vac system only.

④ 100,000 AIC based on NEMA test procedure.

⑤ 100% rated breaker. Requires copper bus. K- and N-Frame breakers require density rated copper bus. Not available in Type 12, 4 and 4X enclosures.

Table 22.4-4. Branch Fusible Switches (Fuses are not included)

Switch Rating Amperes	Mounting	Fuse Class	Interrupting Rating (kA Symmetrical)		
			240 V	600 V	250 Vdc
<b>Switches Rated 240 Vac, 250 Vdc</b>					
30/30	Twin	R	200	—	10
60/60	Twin	R	200	—	10
100/100	Twin	R	200	—	10
200/200	Twin	R, T	200	—	10
100	Single	R	200	—	10
200	Single	R, T	200	—	10
400	Single	R, T	200	—	10
600	Single	R, T	200	—	—
800	Single	L	200	—	—
1200	Single	L	200	—	—
<b>Switches Rated 600 Vac</b>					
30/30	Twin	R, J	200	200	—
60/60	Twin	R, J	200	200	—
100/100	Twin	R, J	200	200	—
200/200	Twin	J, T	200	200	—
100	Single	R, J	200	200	—
200	Single	R, J, T	200	200	—
400	Single	R, J, T	200	200	—
600	Single	R, J, T	200	200	—
800	Single	L	200	200	—
1200	Single	L	200	200	—

**Note:** Twin branch switches of different ampere ratings are available, i.e., 30/60, 30/100, 60/100.

### Circuit Breaker Trip Units

Circuit breakers will have thermal-magnetic trip units with the following exceptions:

- 100% rated breakers and all N frame breakers have Digitrip RMS 310 solid state trip units as standard.
- K, L and M frame 3-pole circuit breakers are optionally available with the Digitrip RMS 310 solid state trip unit.
- The trip function options for the Digitrip RMS 310 include LS and LSI. Main circuit breakers can also include the LSG and LSI integral ground fault trip functions.
- Digitrip OPTIM trip units are not available in panelboard construction.

### Series Rated Combinations

Refer to the series rating tables beginning on **Page 22.0-11** for the approved series rated combinations available for the branch circuit breakers listed in **Table 22.4-3**.

### Modifications

#### Enclosures

Types 12, 3R, 4/4X.

#### Ground Bar

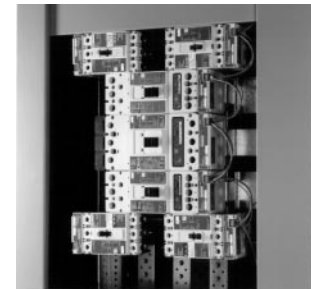
Standard bolted in box with (3) #6 – 300 kcmil terminals. Aluminum is standard. Copper is available as an option.

#### Trims

Door-in-door trim is available as an option for Type 1 enclosures.

### IQ Energy Sentinel™

A UL listed compact, microprocessor-based, breaker mounted device designed to monitor power and energy readings (kW, kWh and kW demand). Device mounts directly to the load side of an F-, J- or K-Frame feeder breaker without requiring additional panel height.



IQ Energy Sentinel

Eaton's Cutler-Hammer IQ Energy Sentinel is shipped with the panel interior and includes instructions for customer installation.

All that is necessary to complete an IQ Energy Sentinel installation is to feed the load conductors through it; connect a neutral wire; and run the shielded twisted pair wire for communications. The IQ Energy Sentinel has a nonvolatile memory, is powered by the circuit breaker, and can be applied on 3-phase, 4-wire or single-phase, 3-wire systems.

Power and energy information from IQ Energy Sentinels can be communicated to a personal computer, a panel-mounted Breaker Interface Module (BIM II), building management or distributed control systems.



IQ Energy Sentinel

**Note:** The application of the IQ Energy Sentinel in panelboards is limited to PRL4B feeders. Minimum box width of 36 inches (914.4 mm). Single mounting only for all J- and K-Frame breakers equipped with IQ Energy Sentinels.

For enhanced metering data, the IQ Power Sentinel is available. See **Section 3**.

### Transient Voltage Surge Suppression

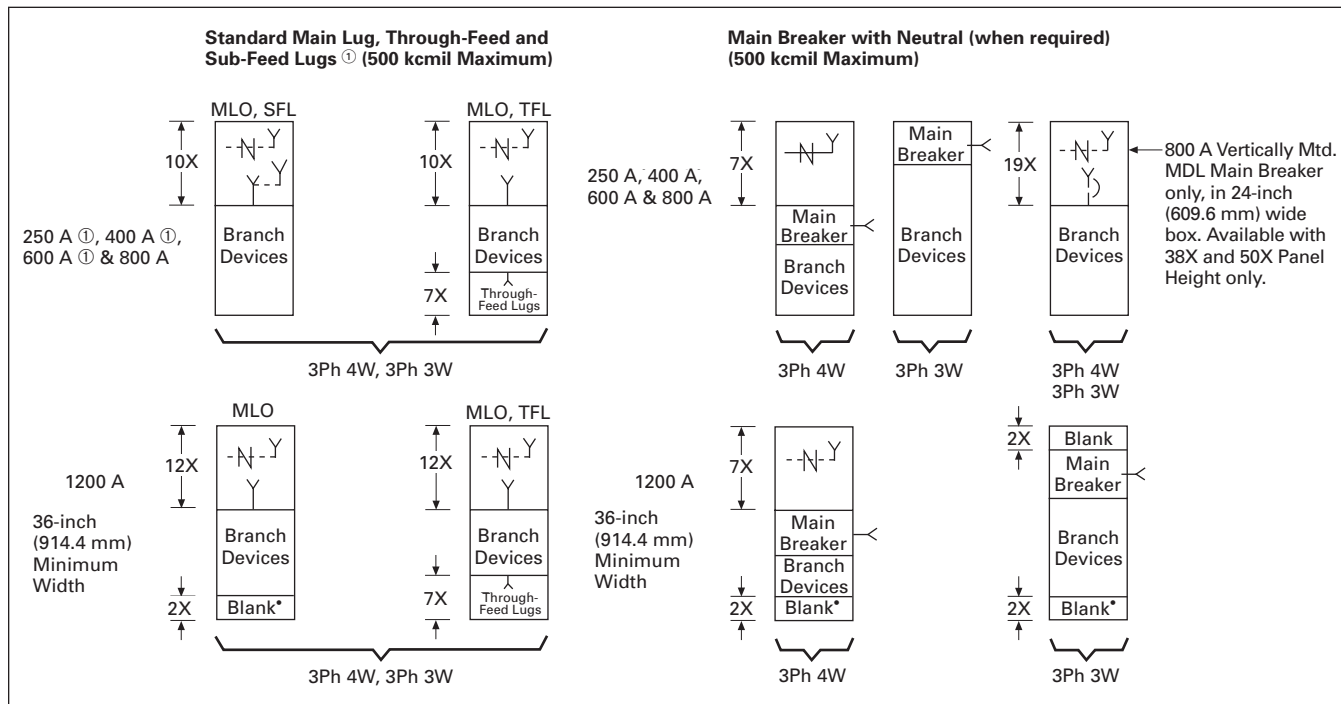
Integrated onto panelboard chassis. For complete product description and available ratings, refer to **Section 36**.

Panel Layout and Dimensions — Pow-R-Line 4B

**Main Lug (MLO), Main Breaker, Neutral, Through-Feed (TFL) and Sub-Feed Lug (SFL) "X" Space Requirements**

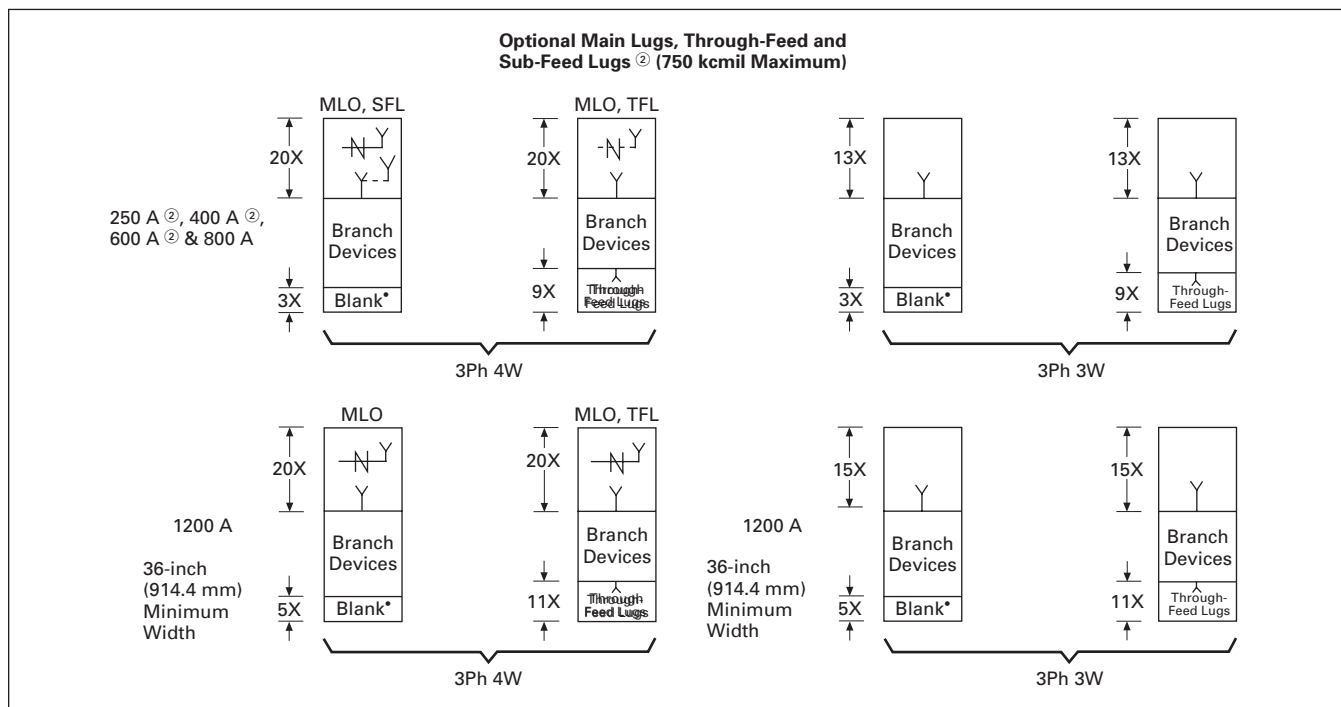
(For compression lugs, or other configurations not shown, refer to Eaton.)

● = Blank means no bus under cover to meet NEC cable bending space.



**Figure 22.4-1. "X" Space Requirements — Dimensions in Inches (mm)**

① Sub-Feed Lugs are available 250 – 600 amperes. For 600 ampere use 1200 ampere "X" space.



**Figure 22.4-2. "X" Space Requirements — Dimensions in Inches (mm)**

② Sub-Feed Lugs are available 250 – 600 amperes. For 600 ampere use 1200 ampere "X" space.

**Breaker (PRL4B) Type Distribution Panelboards 600 Vac, 250 Vdc**

**Panel Layout and Dimensions**



To determine the dimensions of a given panelboard enclosure, make a layout sketch by fitting together the main branch and lug modules according to the appropriate tables in the layout guide. Assign "X" units to each module as shown and obtain a total "X" number.

The height of the enclosure is related to the total "X" units in the layout as shown in **Figure 22.4-3**. Three standard box heights are available to accommodate any and all layout arrangements. "X" unit totals that do not exactly match those in **Table 22.4-5** must be rounded off to the next higher standard (26X, 38X, 50X).

When a calculated "X" total for a panel exceeds 50X, the panel must be split into two or more separate sections with "X" space for through-feed lugs figured in for all but one section. If a neutral is required, a separate neutral bar and appropriate "X" space must be included in each section.

**Layout Example**

- 1 - PRL4B panelboard, 480Y/277 V, 3-Phase, 4-Wire, 65 kA, 800 amperes, main lug, consisting of:
  - 12 - 20 A/1-Pole HFD
  - 2 - 250 A/3-Pole HJD
  - 1 - 400 A/3-Pole HKD

20 A/1P	20 A/1P	1X
20 A/1P	20 A/1P	1X
20 A/1P	20 A/1P	1X
20 A/1P	20 A/1P	1X
20 A/1P	20 A/1P	1X
20 A/1P	20 A/1P	1X
250 A/3P		3X
250 A/3P		3X
400 A/3P		4X
Main Lugs	800 A 	10X
Neutral		
TOTAL =		26X

1. From layout guide, total "X" height of panel = 26X, (which is a design standard and no rounding off is necessary).
2. From **Table 22.4-5**, enclosure height for 26X panel = 57 inches (1447.8 mm).
3. Width = 24 inches (609.6 mm) — directly from layout guide.
4. Total enclosure depth = 11.30 inches (287.0 mm) — standard for all PRL4 panelboards.

**Note:** For TVSS Unit add 10X.

## Panel Layout and Dimensions — Pow-R-Line 4B

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Table 22.4-5. Standard Panel and Box —  
Dimensions in Inches (mm)

Panel Height	Box Height	Box Width	Box ① Depth
26X	57 (1447.8)	24 (609.6) ②	10.4 (264.2)
38X	73.5 (1866.9)	24 (609.6) ②	10.4 (264.2)
50X	90 (2286.0)	24 (609.6) ②	10.4 (264.2)
38X	73.5 (1866.9)	36 (914.4)	10.4 (264.2)
50X	90 (2286.0)	36 (914.4)	10.4 (264.2)
38X	73.5 (1866.9)	44 (1117.6)	10.4 (264.2)
50X	90 (2286.0)	44 (1117.6)	10.4 (264.2)

① Box depth is 10.40 inches (264.2 mm), cover adds .90 inches (22.9 mm) for overall enclosure depth of 11.30 inches (287.0 mm).

② 800 amperes maximum bus size in 24 inches (609.6 mm) wide box.

**Note:** Flush trims available on PRL4B panels with Door-in-Door enclosure only.

**Top and Bottom Gutters (minimum)**  
10.62 inches (269.9 mm)

**Side Gutters (minimum)**

- 24-inch (609.6 mm) Wide Box:  
5 inches (127.0 mm)
- 36-inch (914.4 mm) Wide Box:  
6 inches (152.4 mm)
- 44-inch (1117.6 mm) Wide Box:  
8 inches (203.2 mm)

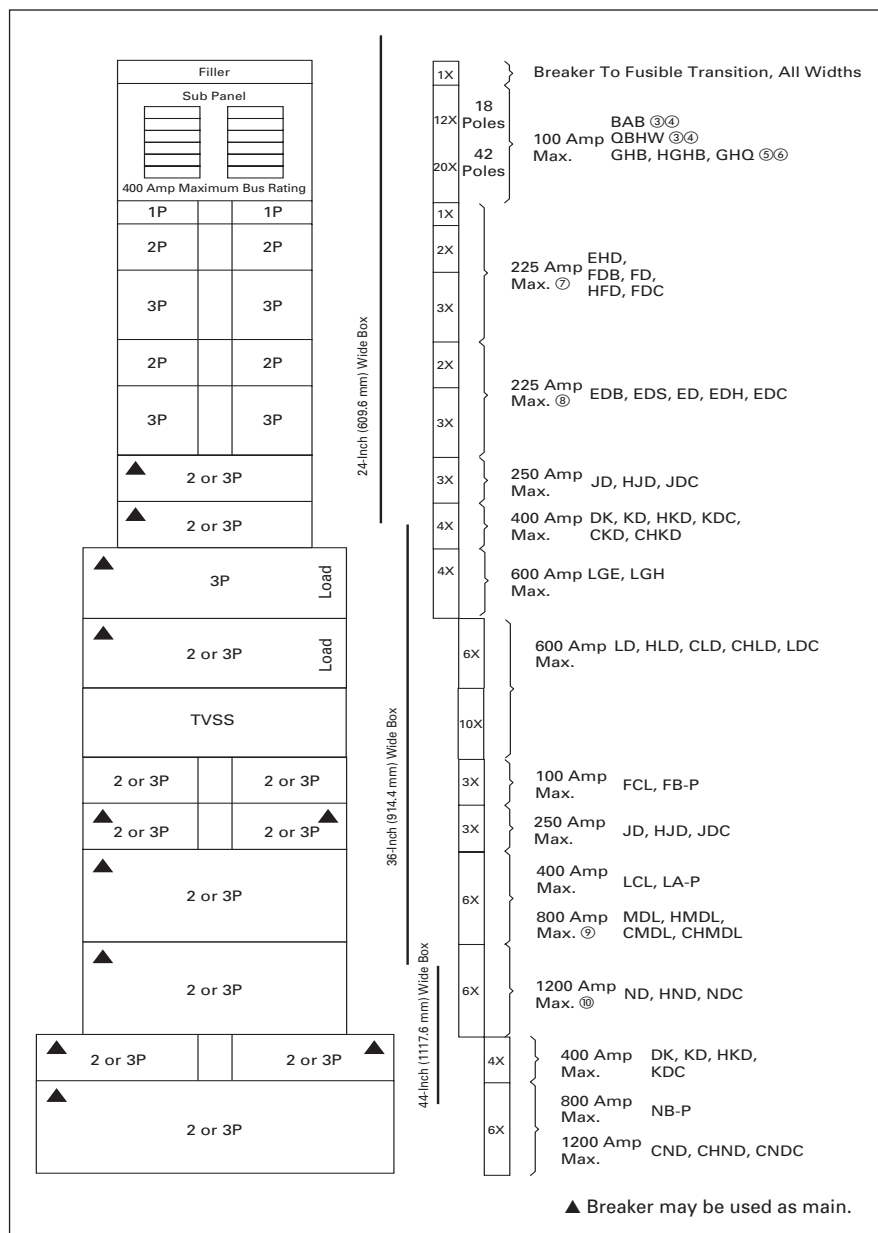


Figure 22.4-3. Layout for Branch and Horizontally Mounted Main Devices

③ BAB and QBHW breakers with shunt trips require one additional pole space, i.e., 1-pole is 2-pole size, 2-pole is 3-pole size, and 3-pole is 4-pole size.

④ If panel contains only BAB or QBHW branch breakers, use a PRL1a panelboard.

⑤ GHB, HGHB or GHQ breakers cannot be mixed on same subchassis as BAB, QBHW.

⑥ If panel contains only GHB, HGHB or GHQ branch breakers, use a PRL2a panelboard.

⑦ When only one single-pole breaker of the group is required on either side of chassis, the single-pole breaker space required changes from 1X to 2X.

⑧ Minimum 36-inch (914.4 mm) wide box is required if optional #6 – 300 kcmil lug is required.

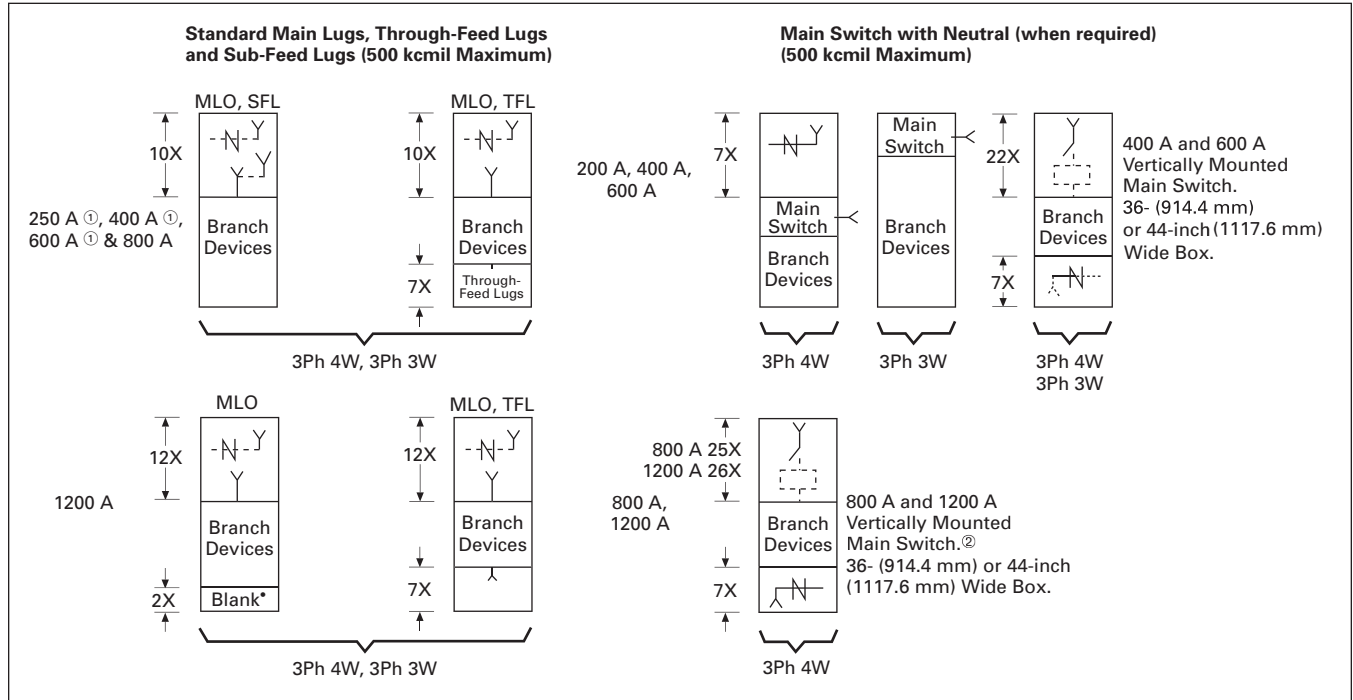
⑨ MDL main breaker in 24-inch (609.6 mm) wide box, refer to Page 22.4-1.

⑩ Optional 750 kcmil terminal requires 44-inch (1117.6 mm) wide box.

**Note:** See Page 22.4-4 for MLO or Neutral and Vertically Mounted Mains space requirements.

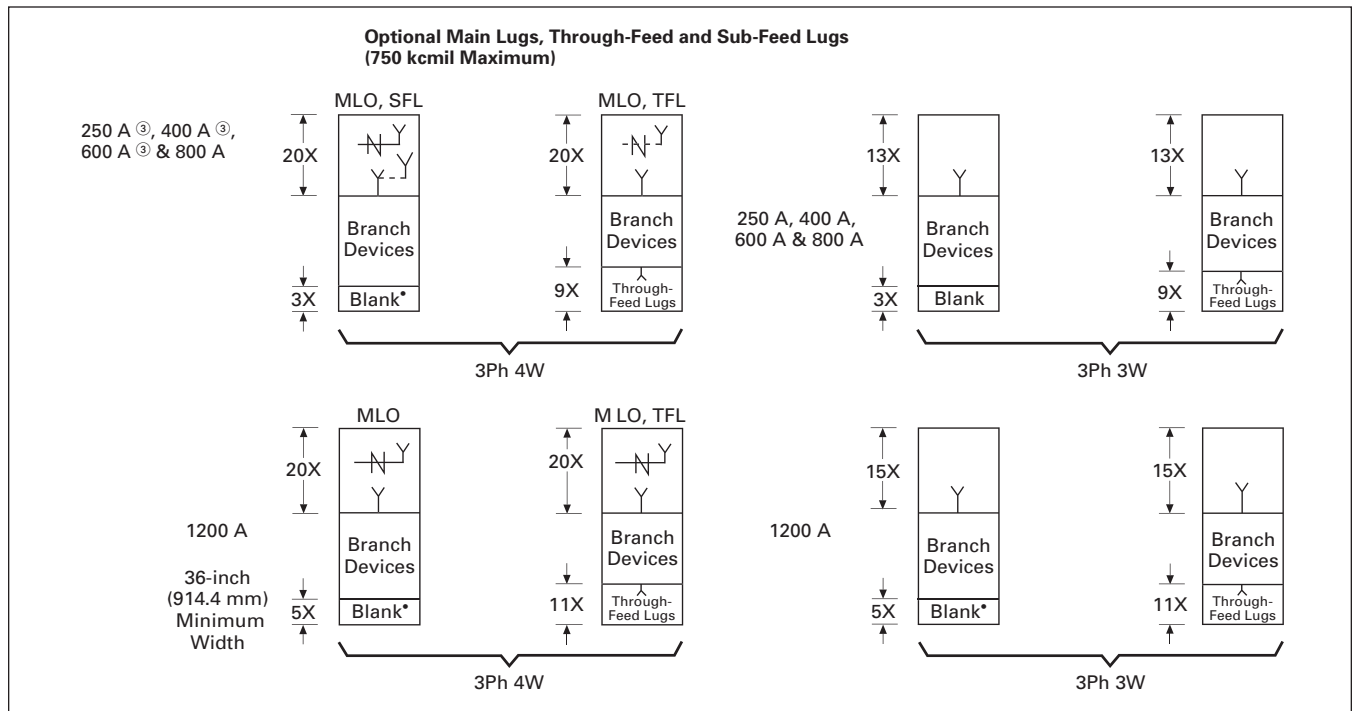
**Main Lug (MLO), Main Switch, Neutral Through-Feed Lug (TFL) and Sub-Feed Lug (SFL) "X" Space Requirements**  
(For other configurations refer to Eaton.)

● = Blank means no bus under cover to meet NEC cable bending space.



**Figure 22.4-4. "X" Space Requirements — Dimensions in Inches (mm)**

- ① Sub-feed lugs are available 250 – 600 amperes, for 600 ampere use 1200 ampere "X" space.
- ② 800 and 1200 ampere mains available only in vertical mounting.



**Figure 22.4-5. "X" Space Requirements — Dimensions in Inches (mm)**

- ③ Sub-feed lugs are available 250 – 600 amperes, for 600 ampere use 1200 ampere "X" space.



**Fusible (PRL4F) Type Distribution  
Panelboards 600 Vac, 250 Vdc****Panel Layout and Dimensions**

To determine the dimensions of a given panelboard enclosure, make a layout sketch by fitting together the main branch and lug modules according to the appropriate tables in the layout guide. Assign "X" units to each module as shown and obtain a total "X" number.

The height of the enclosure is related to the total "X" units in the layout as shown in **Figure 22.4-6**. Three standard box heights are available to accommodate any and all layout arrangements. "X" unit totals that do not exactly match those in **Table 22.4-6** must be rounded off to the next higher standard (38X, 50X).

When a calculated "X" total for a panel exceeds 50X, the panel must be split into two or more separate sections with "X" space for through-feed lugs figured in for all but one section. If a neutral is required, a separate neutral bar and appropriate "X" space must be included in each section.

**Layout Example**

1 – PRL4F, 3-Phase, 4-Wire, 208Y/120 V complete with 400 A main switch and the following branches:

- 1 – 200 A/3-Pole
- 2 – 100 A/3-Pole
- 2 – 30 A/3-Pole

Panel to have short-circuit rating of 100,000 amperes symmetrical.

400 A Neutral		7X
30 A/3P	30 A/3P	4X
100 A/3P	100 A/3P	4X
200 A/3P		6X
400 A 3-Pole Main Switch (Vertically Mounted)		22X
Total =		43X

**Note:** In the above example, if a horizontally mounted 400 A main switch was used, the enclosure size would be: 73.50 inches H x 44.00 inches W x 11.30 inches D (1866.9 mm H x 1117.6 mm W x 287.0 mm D).

1. From layout guide, "X" height of panel = 43X.
2. Rounded off to next higher standard = 50X.
3. From **Table 22.4-6**, enclosure height for 50X panel = 90 inches (2286.0 mm).
4. Width = 36 inches (914.4 mm) since no switch in the assembly requires a 44-inch (1117.6 mm) wide enclosure.
5. Total enclosure depth = 11.30 inches (287.0 mm) — standard for all PRL4 panelboards.

**Cabinet Specifications**

**Boxes:** Code-gauge commercial galvanized sheet steel (no knockouts).



**Table 22.4-6. Standard Panel and Box — Dimensions in Inches (mm)**

Panel Height	Box Height	Box Width	Box Depth <sup>①</sup>
38X	73.5 (1866.9)	36 (914.4)	10.40 (264.2)
50X	90 (2286.0)	36 (914.4)	10.40 (264.2)
38X	73.5 (1866.9)	44 (1117.6)	10.40 (264.2)
50X	90 (2286.0)	44 (1117.6)	10.40 (264.2)

① Box depth is 10.40 inches (264.2 mm), cover adds .90 inches (22.9 mm) for overall enclosure depth of 11.30 inches (287.0 mm).

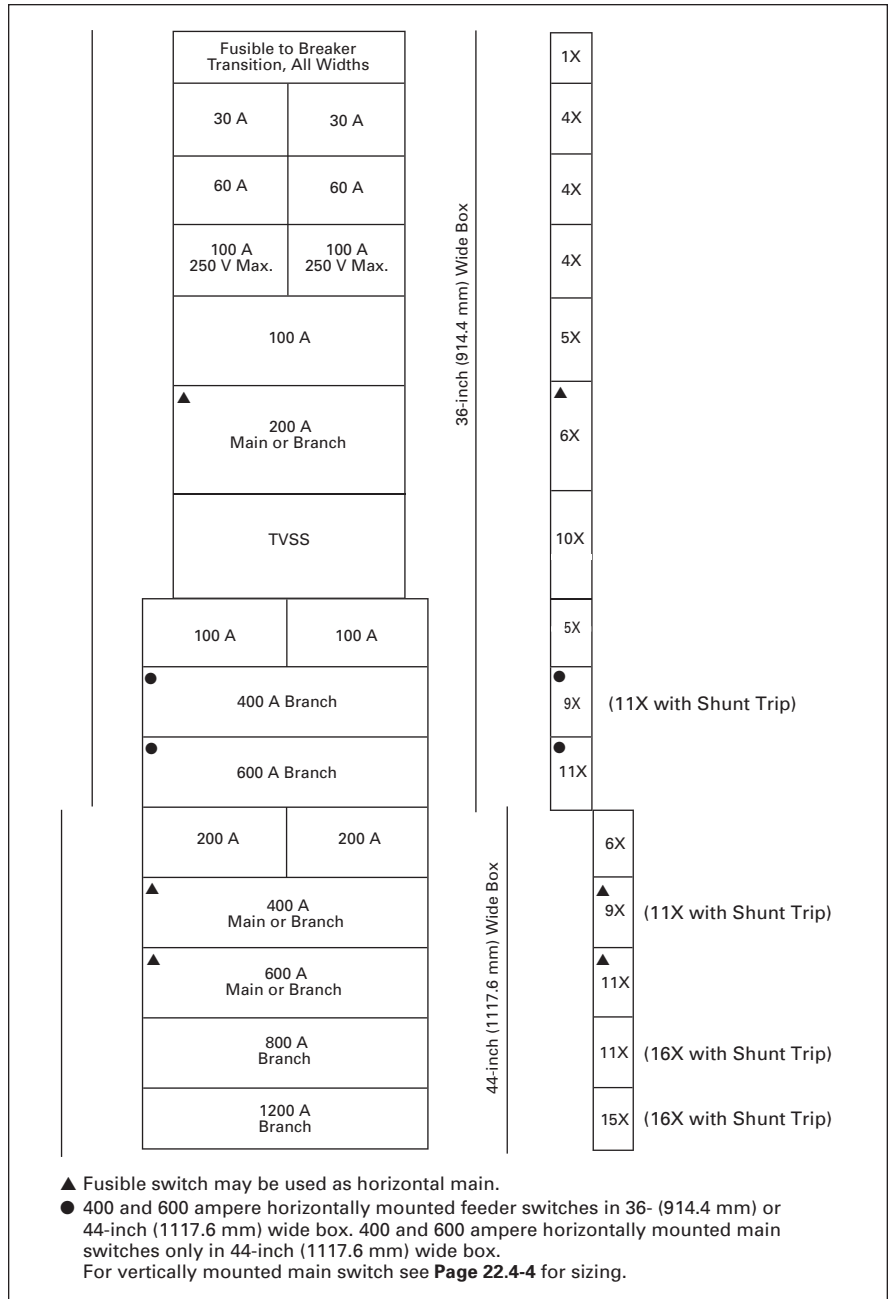
**Note:** Flush trims are available on PRL4F panels with door-in-door enclosure only.

**Top and Bottom Gutters (minimum)**

- 10.625 inches (269.9 mm)

**Side Gutters (minimum)**

- 36-inch (914.4) wide box:
  - 200 A maximum — 8 inches (203.2 mm)
  - 400 – 1200 A maximum — 6 inches (152.4 mm)
- 44-inch (1117.6 mm) wide box:
  - 200 A maximum — 10 inches (254.0 mm)
  - 400 – 1200 A maximum — 8 inches (203.2 mm)



**Figure 22.4-6. Branch and Horizontally Mounted Main Fusible Switch Layout — Dimensions in Inches (mm)**

**Note:** See **Page 22.4-7** for MLO or Neutral and Vertically Mounted Main Space Requirements.