Power Distribution Blocks & Terminal Blocks with High Short-Circuit Current Ratings

Table of Contents

TOOLS TO ASSIST

Panel Layout

2D and 3D CAD files for some products to facilitate panel layouts found at www.cooperbussmann.com

Engineering Services for SCCR

OSCAR™ Compliance Software Eliminates the Guesswork in Assembly Short-Circuit Current Rating (SCCR) Calculations. The Cooper Bussmann innovative OSCAR™ Compliance Software assists customer compliance with new Code and standards requirements for short-circuit current ratings as they relate to industrial control panels, equipment and assemblies. Go to www.cooperbussmann.com

SCCR Panel Design Review for Improving Your Assembly SCCR. If your SCCR needs improvement, contact the Cooper Bussmann team for a design review. We guarantee our panel SCCR review service for UL508A Supplement SB pre-certification.

Other Application Information on SCCR

Publications:

- Advanced Guide To Understanding Assembly Short-Circuit Current Rating
- Simplified Guide To Understanding Short-Circuit Current Rating – Find It, Fix It, Forget it
- SPD (Selecting Protective Devices) Sections on Industrial Control Panels and also Conductor & Terminations.

Technical Assistance

Application Engineering

Application Engineering assistance is available to customers. The Application Engineering team is staffed by engineers and available by phone with technical and application support Monday – Friday, 8:00 a.m. – 5:00 p.m. Central Time.

Application Engineering can be reached via phone, fax or email:

- Phone: 636-527-1270
- Fax: 636-527-1607
- E-mail: fusetech@cooperbussmann.com

Online Resources

Visit www.cooperbussmann.com for the following resources:

- Arc-flash calculator
- OSCAR™ compliance software
- Training modules

Services

- Engineering
- Training
- Testing

Contact us for more information on Services:

- Phone: 636-207-3294
- E-mail: services@cooperbussmann.com

Selection Table for SCCR Power Distribution Blocks and Terminal Blocks

Short-Circuit Current Rated Power Distribution Blocks

Cooper Bussmann offers three distinctly different styles of short-circuit current rated power distribution blocks (PDBs) and terminal blocks (TBs) to match different application needs. The differences are whether the power distribution blocks are enclosed or not, and whether they are UL1953 Listed PDBs or UL1059 Recognized TBs, which have different minimum spacing requirements. The table on this page can assist in the selection of the right series for your application requirements.

Why these are important?

Assembly short-circuit current ratings (SCCRs) are now required in the 2005 NEC® and UL508A Listed Industrial Control Panels. Marking the SCCR on Industrial Control Panels (NEC® 409.110), Industrial Machinery Electrical Panels (NEC® 670.3(A)), and HVAC equipment (NEC® 440.4(B)) is now required by the National Electrical Code. PDBs or TBs not marked with a SCCR are typically one of the weakest links and may limit an assembly to no more than 10kA SCCR. The PDBFS and PDB Series have increased spacing required where used in feeder circuits in equipment listed to UL508A (UL1059 TBs must be evaluated for proper spacings). Also, for building wiring systems, the PDBFS Series and PDB Series power distribution blocks can be used to meet the new 2005 NEC® requirements in section 376.56(B) for PDBs in wireways.

More application information on pages 19-23.

Selection Table

Product	Catalog Page	UL	Enclosed	High SCCR*	Spacing** 1" Air 2" Surface	Industrial Control Panels UL 508A Branch Circuit	Industrial Control Panels UL 508A Feeder Circuit	HVAC UL 1995	Wireways NEC® 376.56(B) (Requires UL 1953)
Series PDBFS	3	UL 1953 Listed Power Distribution Blocks	Yes†	Yes	Yes	Yes	Yes	Yes	Yes
Series PDB	9	UL 1953 Listed Power Distribution Blocks	No***	Yes	Yes	Yes	Yes	Yes	Yes w/optional cover
Series 16XXX	13	UL 1059 Recognized Terminal Blocks	No***	Yes	No****	Yes	No****	Yes	No
NDN63-WH-UL, NDN111-WH-UL, 14002-3-UL, TB300-03SP-UL	16	UL 1059 Recognized Terminal Blocks	No	Yes	No	Yes	No	Yes	No

† IP-20 finger-safe under specific conditions, see datasheet page 8.
*When protected by proper fuse class with maximum ampere rating specified or smaller.
** See **PDB Spacing Requirements for Equipment** table below.
***Optional covers are available. Not IP-20, but provide a safety benefit.
****No, except: Yes, if single pole units installed with proper spacings.

Series PDBFS

Series PDB

PDB & TB Minimum Spacing Requirements for Equipment

UL Standard	Spacing between live parts of opposite polarity		Spacing between live parts and grounded parts or enclosure @600V
	Through air @600V	Over surface @600V	
508A Feeder Circuits	1″	2″	1″
508A Branch Circuits	3/8″	1/2″	1/2″
1995 HVAC	3/8″	1/2″	1/2″

Note: Refer to Specific UL standards for complete spacing details.

Magnum Terminal Blocks

Series 162 and 163

Series PDBFS Enclosed Power Distribution Blocks

Feature/Benefits

- Enclosed for enhanced safety; IP-20 finger-safe under specific conditions, see page 8
- High Short-Circuit Current Ratings up to 200,000A: PDBs do not have to be a weak link in achieving a high SCCR for an industrial control panel
- Suitable for installation in wireways and industrial control panel feeder and branch circuits. Listed to UL1953 which has minimum spacing requirements at 600V of at least 1" through air and 2" over surface
- Small footprint saves panel space. Stack side by side and still meet 1″ and 2″ spacing requirements
- For 2D and 3D CAD drawings visit www.cooperbussmann.com

Agency/Standards

- UL Listed 1953, Guide QPQS, File E256146
- CSA Certified, Class 6228-01, File 15364
- CE component IEC 60947-7-1
- IEC 60529, IP-20 (Finger Safe) under specific conditions, see page 8

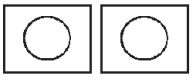
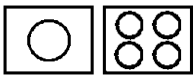
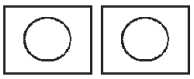
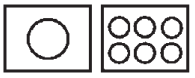
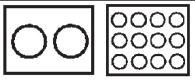
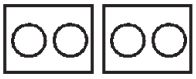
Electrical

- 600Vac or dc (UL 1953), 690Vac or dc (IEC)
- Short-Circuit Current Ratings up to 200kA, see table below
- Ampacities up to 760 Amps
- 75ºC rated connectors
- CU Wire range 14 AWG to 500 kcmil or 2.5 to 240 mm²

Mechanical

- DIN rail or panel mount; PDBFS330 & PDBFS504 panel mount only
- Captive termination screws; screws do not get misplaced
- Wire ready: captive termination screws shipped backed out to save time on conductor installation
- Sliding DIN rail latch for easy mounting
- Single pole, gang mountable for multiple pole applications with interlocking dovetail accessory (optional Part 2A1279) One pin interlocks two units, two pins to interlock three units (see illustration on page 6)
- Flammability, UL 94V0
- Tin-plated AL connectors suitable for CU conductors
- Elongated hole for panel mounting; easier mounting with greater flexibility in matching up with drilled panel holes
- DIN rail end anchors required to prevent damage to block when torquing, anchors not offered by Cooper Bussmann

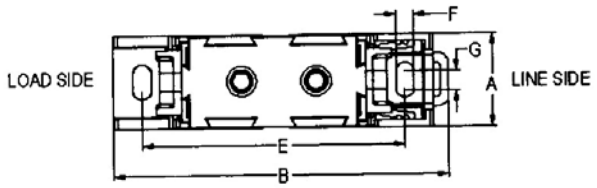
Series PDBFS

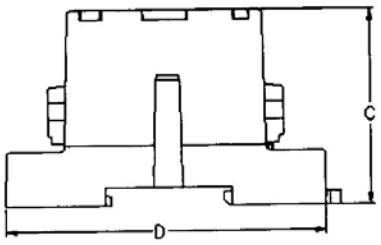
Electrical		Terminal Copper Conductor Capability			Short-Circuit Current Rating Data						
		Line	Load	Configuration	Conductors		Max Fuse Class & Amp**				
Catalog Number (All Single Pole)	Amps	Wire Range	Wire Range	Openings per Pole: Line Load	Line AWG or kcmil	Load AWG or kcmil	J LPJ	T JJS JJN	RK1 LPS-RK LPN-RK	RK5 FRS-R FRN-R	SCCR
PDBFS204	175A	2/0 to 8 AWG 70 to 10 mm²	2/0 to 8 AWG 70 to 10 mm²		2/0 to 8	2/0 to 8	200	200	100	60	200kA
PDBFS220	175A	2/0 to 8 AWG 70 to 10 mm²	4 to 14 AWG 25 to 2.5 mm²		2/0 to 8	4 to 12	200	200	100	60	200kA
						4 to 14	175	175	100	30	100kA
							200	200	100	60	50kA
PDBFS303	310A	350kcmil to 6 AWG 150 to 16 mm²	350kcmil to 6 AWG 150 to 16 mm²		350 to 6	350 to 6	400	400	200	100	200kA
PDBFS330	380A	500kcmil to 6 AWG 240 to 16 mm²	2 to 14 AWG 35 to 2.5 mm²		500 to 6	2 to 6	400	400	200	100	200kA
						2 to 14	200	200	100	60	50kA
							175	175	100	30	100kA
PDBFS377	570A	300kcmil to 4 AWG 150 to 12 mm²	4 to 14 AWG 25 to 2.5 mm²		300	4 to 8	600	600	400	200	200kA
					300 to 4	4	400	400	200	100	100kA
						4 to 14	200	200	100	60	50kA
PDBFS500	620A	350kcmil to 4 AWG 185 to 12 mm²	350kcmil to 4 AWG 185 to 12 mm²		350 to 4	350 to 4	600	600	400	200	200kA
PDBFS504	760A	500kcmil to 6 AWG 240 to 16 mm²	500kcmil to 6 AWG 240 to 16 mm²		500	500	600	800*	600	200	200kA
					500 to 6	500 to 6	600	600	400	200	100kA

Ampacities 75C per NEC® Table 310.16 and UL508A Table 28.1
*Class L 800A (KRP-C 800_SP) or less fuses suitable for this particular SCCR case.
** Class G 60A (SC-60) or less or Class CC 30A (LP-CC-30, FNQ-R-30, KTK-R-30) or less are suitable for all SCCRs in this table.

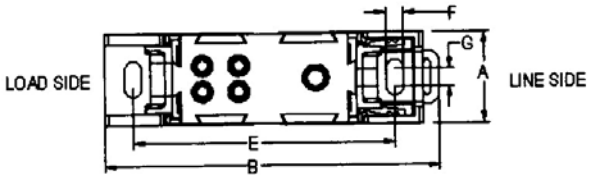
Series PDBFS Enclosed Power Distribution Blocks

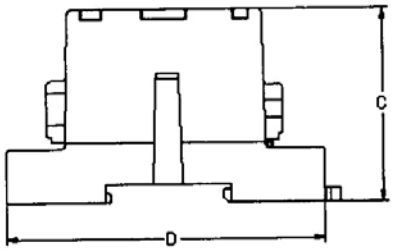
Dimensions in[mm]								
Part No.	Width A	Length B	Height C	D	E	F	G	H
PDBFS204	1.030[26.16]	3.372[94.80]	2.146[54.50]	3.550[90.17]	2.905[73.79]	0.197[5.00]	0.197[5.00]	N/A
PDBFS220	1.030[26.16]	3.372[94.80]	2.146[54.50]	3.550[90.17]	2.905[73.79]	0.197[5.00]	0.197[5.00]	N/A
PDBFS303	1.550[39.37]	4.665[118.50]	2.874[73.00]	4.475[113.67]	3.810[96.77]	0.197[5.00]	0.236[6.00]	N/A
PDBFS330	1.550[39.37]	4.665[118.50]	2.950[74.93]	4.475[113.67]	3.810[96.77]	0.197[5.00]	0.236[6.00]	N/A
PDBFS377	1.875[47.62]	4.665[118.50]	2.933[74.50]	4.475[113.67]	3.810[96.77]	0.197[5.00]	0.236[6.00]	N/A
PDBFS520	2.380[60.45]	4.665[118.50]	2.598[66.00]	4.475[113.67]	3.810[96.77]	0.197[5.00]	0.236[6.00]	N/A
PDBFS504	2.560[65.02]	4.665[118.50]	3.150[80.00]	4.475[113.67]	3.810[96.77]	0.197[5.00]	0.236[6.00]	46.00[1.811]



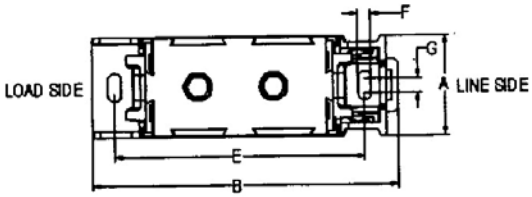


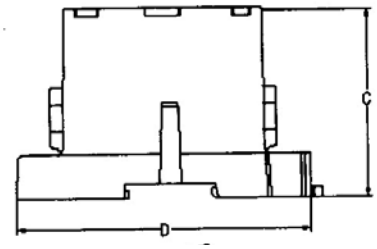
PDBFS204



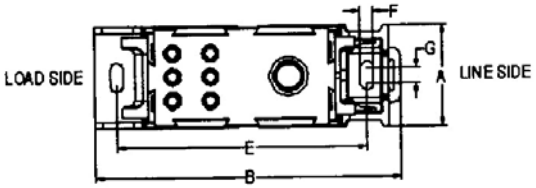


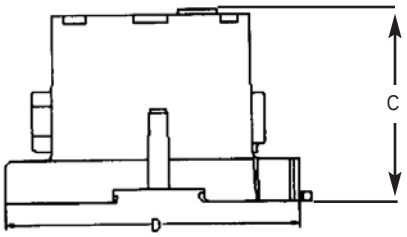
PDBFS220





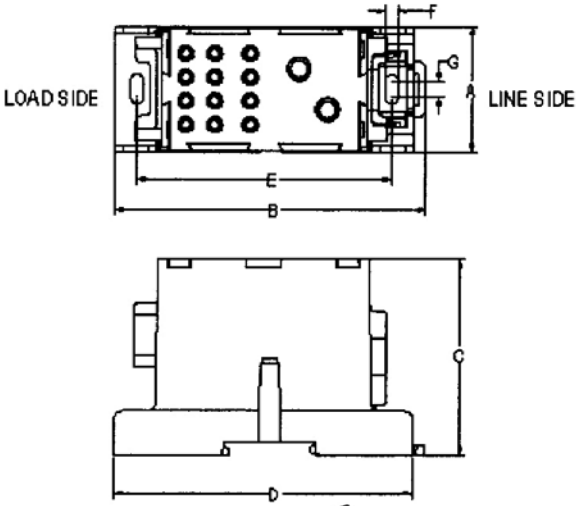
PDBFS303



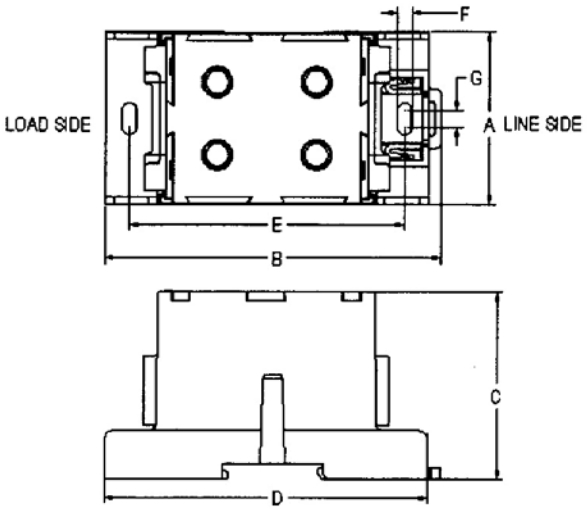


PDBFS330

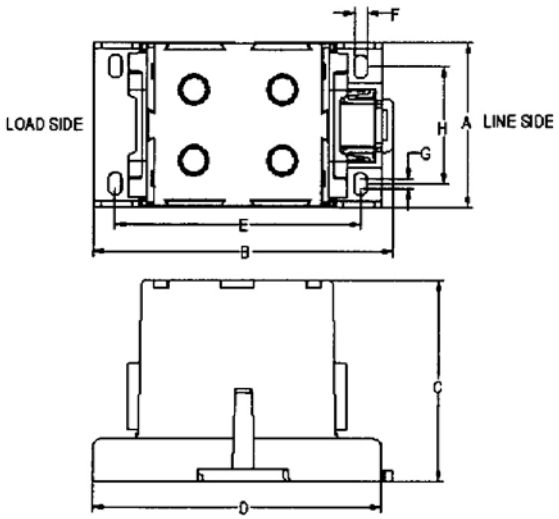
Series PDBFS Enclosed Power Distribution Blocks



PDBFS377

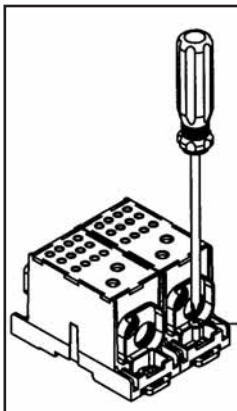


PDBFS500



PDBFS504

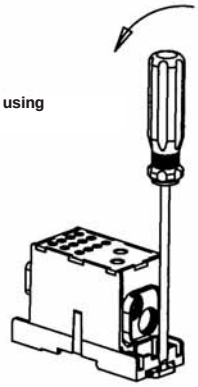
Series PDBFS Enclosed Power Distribution Blocks



Panel Mounting
Capable on all part numbers

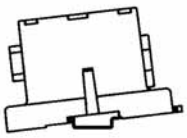
Use 2 screws for mounting each pole (#10 or M5 screw) (4 screws for PDBFS504)

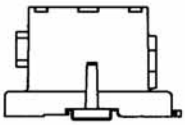
OR



1 Open the latch using screwdriver

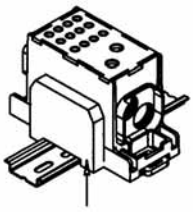
2 Hook load side onto 35mm DIN RAIL





3 Rotate PDB down

4 Close the latch

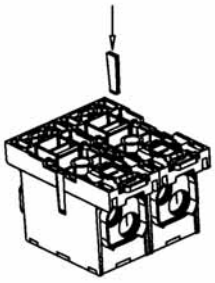


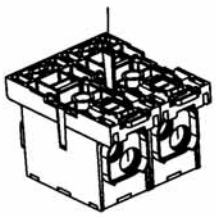
DIN Rail anchors are required on each side of block or blocks. Anchors must be used to prevent damage to the plastic housing when tightening terminals.

DIN Rail Mounting
PDBFS204, PDBFS220, PDBFS303, PDBFS377, and PDBFS500 only.

1 For interlocking two or more blocks on a DIN Rail, insert male dove tail part number 2A1279 into the female dove tail opening.

2 Fully insert male dove tail to interlock blocks.



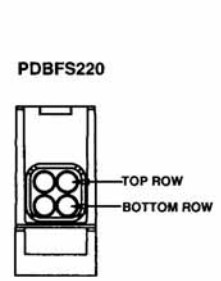


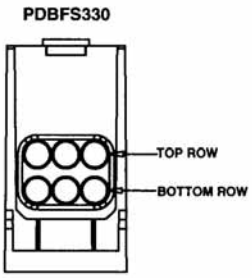
2A1279 accessory ordered separately.

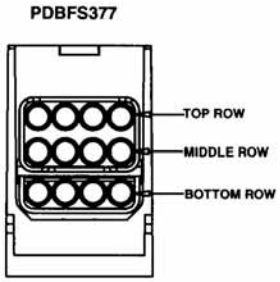
Series PDBFS Enclosed Power Distribution Blocks

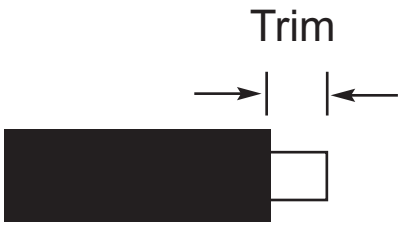
Series PDBFS

Part Number	Line				Load			
	CU Wire Range	Torque Lb-in (Nm)	Trim Length in (mm)	Hex Key	CU Wire Range	Torque Lb-in (Nm)	Trim Length in (mm)	Hex Key
PDBFS204	2/0 to 8 AWG 70 to 10mm²	110 (12.4)	0.850 (21.6)	3/16″	2/0 to 8 AWG 70 to 10mm²	110 (12.4)	0.970 (24.6)	3/16″
PDBFS220	2/0 to 8 AWG 70 to 10mm²	120 (13.6)	0.750 (19.0)	3/16″	4 to 6 AWG 25 to 16mm²	35 (4.0)	0.550 (14.0) top row, 0.850 (21.6) bottom row	1/8″
					8 AWG 10mm²	25 (2.8)		
					10 to 14 AWG 6 to 2.5mm²	20 (2.3)		
PDBFS303	350 Kcmil to 6 AWG 150 to 16mm²	275 (31.1)	1.350 (34.3)	5/16″	350 Kcmil to 6 AWG 150 to 16mm²	275 (31.1)	1.250 (31.8)	5/16″
PDBFS330	500 Kcmil to 6 AWG 240 to 16mm²	500 (56.5)	1.250 (31.8)	3/8″	2 to 3 AWG 35mm²	50 (5.7)	0.590 (15.0) top row 1.200 (30.5) bottom row	1/8″
					4 to 6 AWG 25 to 16mm²	45 (5.1)		
					8 AWG 10mm²	40 (4.5)		
					10 to 14 AWG 6 to 2.5mm²	35 (4.0)		
PDBFS377	300 Kcmil to 4 AWG 150 to 25mm²	275 (31.1)	1.15 (29.2) top row 1.400 (35.6) bottom row	1/4″	4 to 6 AWG 25 to 16mm²	35 (4.0)	0.550 (14.0) top row, 1.00 (25.4) middle row 1.220 (31.0) bottom row	1/8″
					8 AWG 10mm²	25 (2.8)		
					10 to 14 AWG 6 to 2.5mm²	20 (2.3)		
PDBFS500	350 Kcmil to 4 AWG 185 to 25mm²	275 (31.1)	1.250 (31.8)	5/16″	350 Kcmil to 4 AWG 185 to 25mm²	275 (31.1)	1.250 (31.8)	5/16″
PDBFS504	500 Kcmil to 6 AWG 240 to 16mm²	500 (56.5)	1.250 (31.8)	3/8″	500 Kcmil to 6 AWG 240 to 16mm²	500 (56.5)	1.250 (31.8)	3/8″









Wire Connector Hole Diameter		
Part Number	Line in (mm)	Load in (mm)
PDBFS204	0.450 (11.5)	0.450 (11.5)
PDBFS220	0.450 (11.5)	0.246 (6.25)
PDBFS303	0.720 (18.3)	0.720 (18.3)
PDBFS330	0.870 (22.1)	0.314 (8.0)
PDBFS377	0.687 (17.5)	0.265 (6.7)
PDBFS500	0.718 (18.2)	0.718 (18.2)
PDBFS504	0.875 (22.2)	0.875 (22.2)

Part No.	Minimum Enclosure Size
PDBFS204	16″ X 16″ X 6.75″
PDBFS220	16″ X 16″ X 6.75″
PDBFS303	36″ X 30″ X 12.625″
PDBFS330	24″ X 20″ X 6.75″
PDBFS377	24″ X 20″ X 6.75″
PDBFS500	36″ X 30″ X 12.625″
PDBFS504	36″ X 30″ X 12.625″

Series PDBFS Enclosed Power Distribution Blocks

Specific Conditions to Achieve IP-20 Finger-Safe Status for Series PDBFS

Part Number	Line				Load			
			IP-20				IP-20	
	Trim Length in (mm)	Installed Wire	Conductor Openings	Screw Opening	Trim Length in (mm)	Installed Wire	Conductor Openings	Screw Opening
PDBFS204	0.850 (21.6)	2/0 to 8 AWG 70 to 10mm²	Yes	Yes	0.970 (24.6)	2/0 to 8 AWG 70 to 10mm²	Yes	Yes
PDBFS220	0.750 (19.0)	2/0 to 8 AWG 70 to 10mm²	Yes	Yes	0.550 (14.0) top row, 0.850 (21.6) bottom row	4 to 14 AWG 25 to 2.5mm²	Yes	Yes
						screws fully opened	N/A	Yes
						no wire in hole	No	N/A
PDBFS303	1.350 (34.3)	350 Kcmil to 2/0 AWG 150 to 70mm²	Yes	Yes	1.250 (31.8)	350 Kcmil to 2/0 AWG 150 to 70mm²	Yes	Yes
		1/0 to 6 AWG 50 to 16mm²	No	Yes		1/0 to 6 AWG 50 to16mm²	No	Yes
PDBFS330	1.250 (31.8)	500 to 250 Kcmil 240 to 150mm²	Yes	Yes	0.590 (15.0) top row, 1.200 (30.5) bottom row	2 to 14 AWG 35 to 2.5mm²	Yes	Yes
		4/0 to 6 AWG 120 to 16mm2	No	Yes		screws fully opened	N/A	Yes
						no wire in hole	No	N/A
PDBFS377	1.15 (29.2) top row, 1.400 (35.6) bottom row	300 Kcmil to 4/0 AWG 150 to 120mm²	Yes	Yes	0.550 (14.0) top row, 1.00 (25.4) middle row, 1.220 (31.0) bottom row	4 to 14 AWG 25 to 2.5mm²	Yes	Yes
		3/0 to 4 AWG 95 to 25mm²	No	Yes				
		screws fully opened	N/A	No		screws fully opened	N/A	Yes
		no wire in hole	No	N/A		no wire in hole	Yes	N/A
PDBFS500	1.250 (31.8)	350 Kcmil to 2/0 AWG 185 to 70mm²	Yes	Yes	1.250 (31.8)	350 Kcmil to 2/0 AWG 185 to 70mm²	Yes	Yes
		1/0 to 4 AWG 50 to 25mm²	No	Yes		1/0 to 4 AWG 50 to 25mm²	No	Yes
		screws fully opened	N/A	No		screws fully opened	N/A	No
		no wire in hole	No	N/A		no wire in hole	No	N/A
PDBFS504	1.250 (31.8)	500 to 350 Kcmil 240 to 185mm²	Yes	Yes	1.250 (31.8)	500 to 350 Kcmil 240 to 185mm²	Yes	Yes
		300 Kcmil to 6 AWG 150 to 16mm²	No	Yes		300 Kcmil to 6 AWG 150 to 16mm²	No	Yes
		screws fully opened	N/A	No		screws fully opened	N/A	No
		no wire in hole	No	N/A		no wire in hole	No	N/A