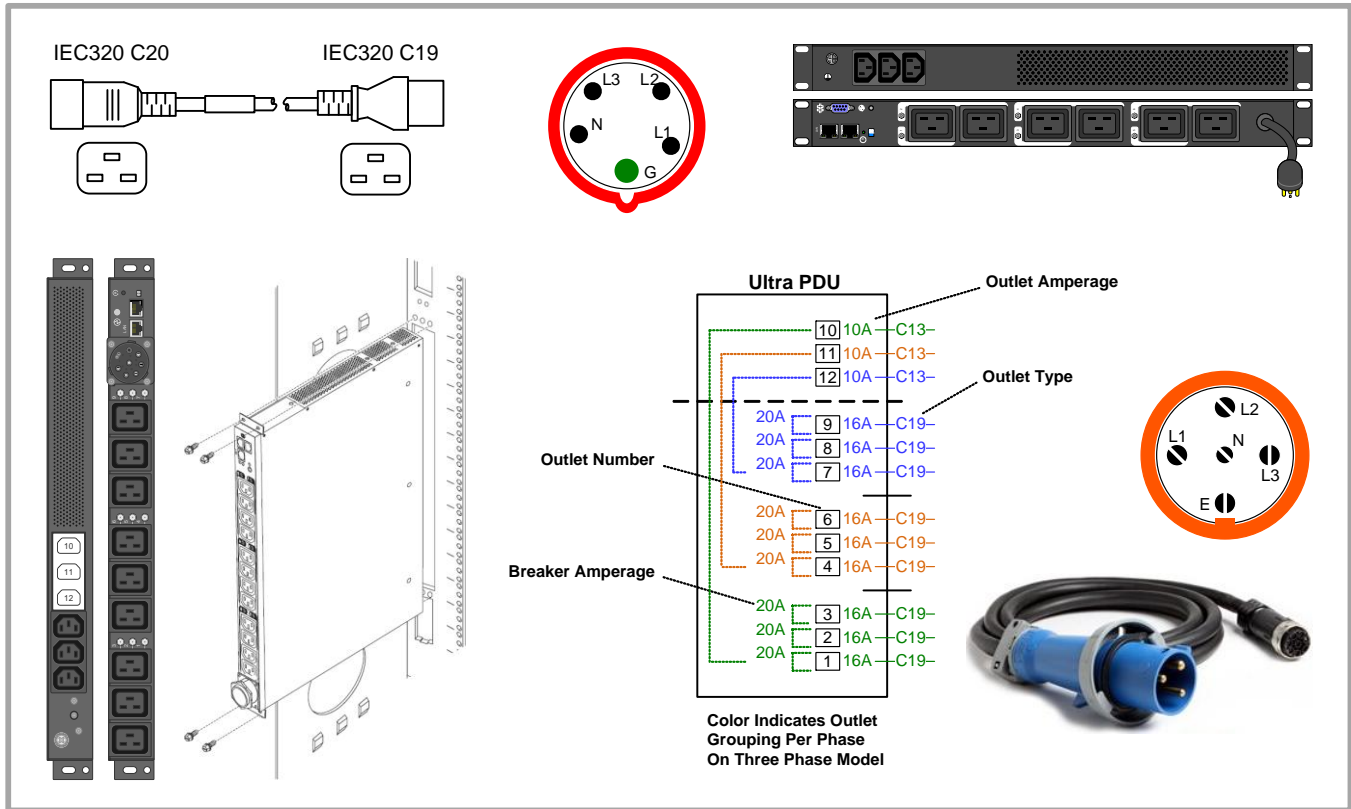


A Guide to IBM System x Power Distribution Units (PDU)

International Version



Authors: William S. Champion
wchamp@us.ibm.com

Matthew R. Archibald
archibam@us.ibm.com

Version: 2.0.0
 Date: October 20, 2010

The user of this document is responsible for obtaining the latest copy prior to use. Obsolete copies may be archived and used for reference purposes only. The latest version of this document is located at:
<http://www-03.ibm.com/support/techdocs/atmsastr.nsf/WebIndex/WP101615>

Revision History

1.0 – December 17, 2009	Initial Draft
1.0.1 – March 5, 2010	Correct typos in Introduction section, updated link to Helpful Links section
1.0.2 – March 31, 2010	Update to Label Rating section
1.3.0 – April 21, 2010	Added Switched and Monitored PDU section
1.3.1 – May 21, 2010	Update to Label Rating section
1.3.2 – June 10, 2010	Fix Table of Contents error
1.3.3 – July 20, 2010	Change Table of Contents format, updated PDU Installation Manuals links, and Help Links section
2.0.0 – October 20, 2010	Major format change to make navigation easier. Updates to Line Cords and Plugs section. New section added, PDU Mounting Options. New Basic OU PDUs added.

Notices:

This paper is intended to provide information regarding IBM® System x™ Power Distribution Units (PDU). It discusses findings based on configurations that were created and tested under laboratory conditions. These findings may not be realized in all customer environments, and implementation in such environments may require additional steps, configurations and performance analysis. The information herein is provided “AS IS” with no warranties, express or implied. This information does not constitute a specification or form part of the warranty for any IBM or non-IBM products.

Information in this document was developed in conjunction with the use of the equipment specified and is limited in application to those specific hardware and software products and levels.

The information contained in this document has not been submitted to any formal IBM test and is distributed **as is**. The use of this information or the implementation of these techniques is a customer responsibility and depends on the customer’s ability to evaluate and integrate them into the customer’s operational environment. While each item may have been reviewed by IBM for accuracy in a specific situation, there is no guarantee that the same or similar results will be obtained elsewhere. Customers attempting to adapt these techniques to their own environments do so at their own risk.

IBM may not officially support techniques mentioned in this document. For questions regarding officially supported techniques, please refer to the product documentation, announcement letters or contact the IBM Support Line at 1-800-IBM-SERV.

This document makes references to vendor-acquired applications or utilities. It is the customer responsibility to obtain licenses of these utilities prior to their usage.

© **Copyright International Business Machines Corporation 2010. All rights reserved.** U.S. Government Users Restricted Rights – Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

Table of Contents

TABLE OF CONTENTS	3
INTRODUCTION	5
HOW TO USE THIS GUIDE	5
IBM BASIC PDUS (NON-MONITORED)	6
IBM UNIVERSAL RACK PDU.....	7
IBM FRONT END PDU.....	8
IBM DPI® ENTERPRISE PDU – C13	9
IBM DPI ENTERPRISE PDU	10
IBM DPI ULTRA DENSITY ENTERPRISE PDU.....	11
IBM 0U 24 C13 PDU ☀️ NEW.....	12
IBM 0U 12 C19/12 C13 PDU ☀️ NEW	13
IBM MONITORED PDUS	14
IBM DPI ENTERPRISE PDU+ - C13.....	15
IBM DPI ULTRA DENSITY ENTERPRISE PDU+.....	16
IBM SWITCHED AND MONITORED PDUS	17
IBM 1U 12 C13 SWITCHED AND MONITORED PDU	18
IBM 1U 9 C19 / 3 C13 SWITCHED AND MONITORED PDU	19
LINE CORDS AND PLUGS	20
UNIVERSAL RACK PDU (39Y8952) 230V (CEE7-VII EUROPE)	20
UNIVERSAL RACK PDU (39Y8953) 230V (DENMARK/SWITZ. IEC 309 P+N+G)	20
UNIVERSAL RACK PDU (39Y8954) 220V (ISRAEL SI-32)	20
UNIVERSAL RACK PDU (39Y8955) 230V (ITALY CEI 23-16).....	21
UNIVERSAL RACK PDU (39Y8956) 220-250V (SOUTH AFRICA SABS 164).....	21
UNIVERSAL RACK PDU (39Y8957) 230V (UK BS 1363/A).....	21
UNIVERSAL RACK PDU (39Y8958) 230-240V (AUS/NZ 3112 AUSTRALIA/NZ)	22
UNIVERSAL RACK PDU (39Y8959) 220V (CHINA GB 2099.1).....	22
UNIVERSAL RACK PDU (39Y8960) 125V, 220-240V (BRAZIL NBR 6147).....	22
UNIVERSAL RACK PDU (39Y8961) 230V (INDIA IS 6538).....	23
UNIVERSAL RACK PDU (39Y8962) 220V (ARGENTINA IRAM 2073)	23
UNIVERSAL RACK PDU 16A/200-240V (IEC320 C19 TO C20)	23
FRONT END (39Y8934) 220-240V / 32A CORD (IEC 309 P+N+G)	24
FRONT END (39Y8935) 220-240V / 63A CORD (IEC 309 P+N+G)	24
FRONT END (39Y8936) 230V / 32A CORD (AUS/NZ 3112 32A)	25
FRONT END (39Y8937) 220V / 30A CORD (KSC 8305 30A).....	25
40K9611 - IBM DPI 32A CORD (IEC 309 3P+N+G).....	26
<i>Re-termination in Australia/New Zealand</i>	26
40K9612 - IBM DPI 32A CORD (IEC 309 P+N+G).....	27
40K9613 – IBM DPI 63A CORD (IEC 309 P+N+G)	27
40K9617 – IBM DPI 32A CORD (AUS/NZ 3112 32A)	28
40K9618 – IBM DPI 30A CORD (KSC 8305 30A).....	28
ATTACHED 16A 3PH CORD (IEC309 3P+N+G)	29
ATTACHED 32A 1PH CORD (IEC309 P+N+G)	29
ATTACHED 32A 3PH CORD (IEC309 3P+N+G)	30
PDU MOUNT OPTIONS	31
UNIVERSAL PDU MOUNT OPTIONS	31
FRONT END PDU MOUNT OPTIONS	33
ENTERPRISE SHALLOW PDU MOUNT OPTIONS	35
ENTERPRISE DEEP PDU MOUNT OPTIONS	37

A Guide To IBM System x Power Distribution Units (PDU)

SWITCHED PDU MOUNT OPTIONS	39
ZERO U PDU MOUNT OPTIONS.....	41
IBM SYSTEM X RACK TYPES.....	44
IBM ENTERPRISE RACK (42U) INSTALLATION OPTIONS	45
<i>IBM Enterprise Rack Side Bays</i>	46
STANDARD RACK (47U) INSTALLATION OPTIONS.....	47
<i>IBM Standard Rack Side Bay</i>	48
IBM STANDARD RACK (42U) INSTALLATION OPTIONS	49
IBM STANDARD RACK (25U) INSTALLATION OPTIONS	50
REFERENCE MATERIAL	51
IBM BLADECENTER CHASSIS LABEL RATING	51
IBM STORAGE LABEL RATING.....	51
IBM SYSTEM X SERVER LABEL RATING.....	52
IBM IDATAPLEX CHASSIS LABEL RATING.....	53
IBM xSERIES SERVER LABEL RATING	54
IEC 309 PIN & SLEEVE PLUG DECODE	55
INGRESS PROTECTION (IP) DECODE	55
IEC 320 CONNECTORS.....	56
32A THREE PHASE WYE POWER CALCULATIONS	56
IBM PDU INSTALLATION MANUALS	57
HELPFUL LINKS.....	58

Introduction

Only IBM System x Power Distribution Units (PDUs) that are currently marketed in the North America and Japan are included in this guide. The intent of this guide is to provide PDU information needed in planning power requirements.

This guide is best used in softcopy form, since it contains hyperlinks for navigation. This document can still be used in hardcopy as reference only. You can obtain the latest copy of this document at this web site: <http://www-03.ibm.com/systems/bladecenter/resources/powerconfig.html>

How to Use This Guide

First, decide if Switched & Monitored, Monitored, or Non-monitored PDUs are needed. A table is provided for Switched & Monitored, Monitored, or Non-monitored PDUs that can be used as a decision tree. Links are provided in the tables to PDU and line cord details for each item.

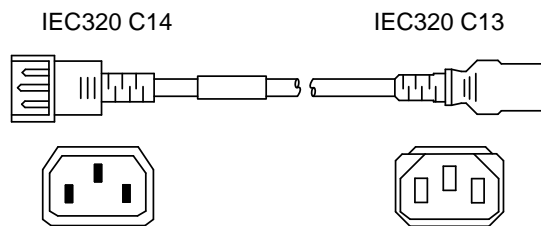
Links to the PDU types:

[IBM Basic PDUs \(Non-monitored\)](#) on page 6

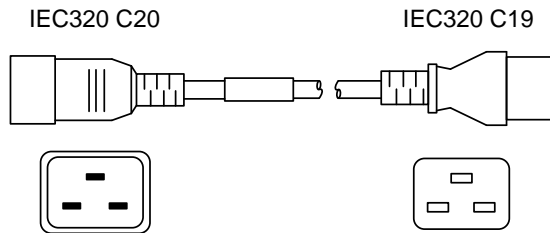
[IBM Monitored PDUs](#) on page 14

[IBM Switched and Monitored PDUs](#) on page 17

IBM Rack Mounted Server Power Cords



IBM BladeCenter Power Cords



IBM Basic PDUs (Non-monitored)

PDU	Option Number	Phase	Voltage	Line Cord	Number / Type of Outlet	Page
Universal Rack	39Y8952	1ph	230V	16A * CEE7-VII Europe	7 / C13	7
	39Y8953		230V	32A * Denmark/Switz. IEC309 P+N+G		
	39Y8954		220V	16A * Israel SI-32		
	39Y8955		230V	16A * Italy CEI 23-16		
	39Y8956		220-250V	16A * South Africa SABS 164		
	39Y8957		230V	13A * UK BS 1363/A		
	39Y8958		230-240V	15A * AUS/NZ 3112		
	39Y8959		220V	16A * China GB 2099.1		
	39Y8960		220-240V	16A * Brazil NBR 6147		
	39Y8961		230V	16A * India IS 6538		
	39Y8962		220V	16A * Argentina IRAM 2073		
	All **		100-250V	16A * IEC320 C19 to C20		
Front End	39Y8934	1ph	220-240V	32A IEC 309 P+N+G	3 / C19	8
	39Y8935		220-240V	63A IEC 309 P+N+G		
	39Y8936		230-240V	32A AUS/NZ 3112		
	39Y8937		220V	30A KSC 8305		
DPI Enterprise C13	39Y8941	1ph	220-240V	32A IEC 309 P+N+G	12 / C13	9
			230-240V	32A AUS/NZ 3112		
			220V	30A KSC 8305		
DPI Enterprise	39Y8948	1ph	220-240V	32A IEC 309 P+N+G	6 / C19	10
			230-240V	63A IEC 309 P+N+G		
			230-240V	32A AUS/NZ 3112		
		220V	30A KSC 8305			
3ph Y	380-415V	32A (32A/ph) IEC 309 3P+N+G				
DPI Ultra Density Enterprise	71762NX	1ph	220-240V	32A IEC 309 P+N+G	9 / C19 3 / C13	10
			230-240V	63A IEC 309 P+N+G		
			230-240V	32A AUS/NZ 3112		
		220V	30A KSC 8305			
3ph Y	380-415V	32A (32A/ph) IEC 309 3P+N+G				
0U 24 C13 ☀ New	46M4122	3ph Y	380-415V	16A (16A/ph) IEC 309 3P+N+G	24 / C13	12
	46M4131	1ph	200-240V	32A IEC 309 P+N+G		
0U 12 C19/12 C13 ☀ New	46M4143	3ph Y	380-415V	32A (32A/ph) IEC 309 3P+N+G	12 / C19 12 / C13	13

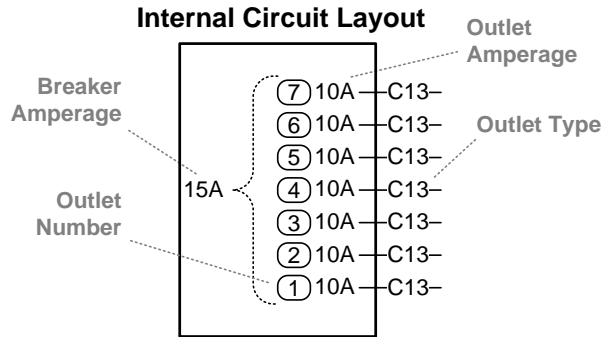
* - The Universal Rack PDU has a 15A limit due to all the outlets are connected to a single 15A internal breaker.

** - This line cord comes with all the Universal Rack PDUs in addition to country specific line cord.

Note: ph indicates phase (1 or 3), Δ indicates three phase delta, and Y Indicates three phase WYE

IBM Universal Rack PDU

39Y8952, 39Y8953, 39Y8954,
 39Y8955, 39Y8956, 39Y8957,
 39Y8958, 39Y8959, 39Y8960,
 39Y8961, 39Y8962



Input Line Cords By Model

See Page 20 for [39Y8952 Line Cord](#) Information
 See Page 20 for [39Y8953 Line Cord](#) Information
 See Page 20 for [39Y8954 Line Cord](#) Information
 See Page 21 for [39Y8955 Line Cord](#) Information
 See Page 21 for [39Y8956 Line Cord](#) Information
 See Page 21 for [39Y8957 Line Cord](#) Information

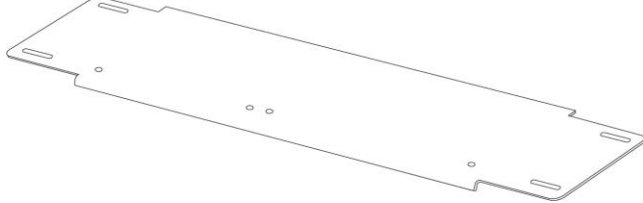
See Page 22 for [39Y8958 Line Cord](#) Information
 See Page 22 for [39Y8959 Line Cord](#) Information
 See Page 22 for [39Y8960 Line Cord](#) Information
 See Page 23 for [39Y8961 Line Cord](#) Information
 See Page 23 for [39Y8962 Line Cord](#) Information
 See Page 23 for [IEC320 C19 to C20 Line Cord](#) Information

Monitorable: No
Switched Outlets: No
Ground Screw: No

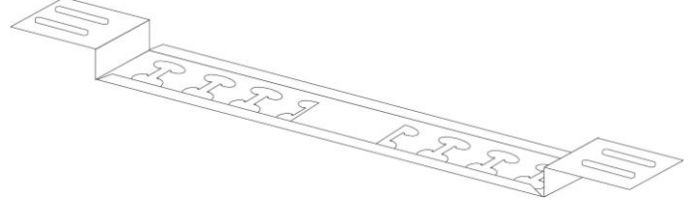
See the [Universal Rack PDU Mounting Options](#) section on page 31 for mounting option details.

Accessory Kit

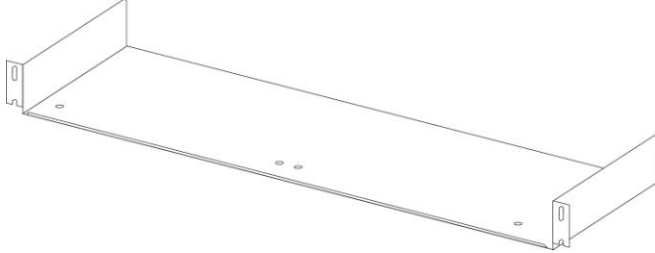
(1) Small vertical-mounting plate



(1) Cable-management bracket (for vertical installations)



(1) Horizontal mounting bracket



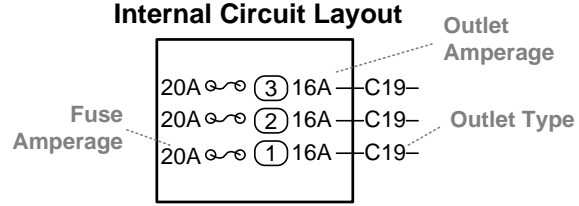
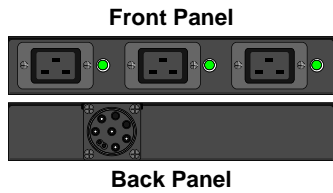
(1) 1U blank filler panel



Miscellaneous hardware kit (for attaching the Rack PDU to a mounting plate or bracket and installing the Rack PDU in a rack cabinet) and cable straps

IBM Front End PDU

39Y8934, 39Y8935, 39Y8938, 39Y8937



Input Line Cords By Model

[39Y8934](#) – IBM DPI IEC 309 P+N+G (2.5m) line cord
32A / 220-240V Single Phase

[39Y8936](#) – IBM DPI AS/NZS 3112 32A (2.5m) line cord
32A 220V Single Phase

[39Y8935](#) – IBM DPI IEC 309 P+N+G (2.5m) line cord
220V-240V Single Phase

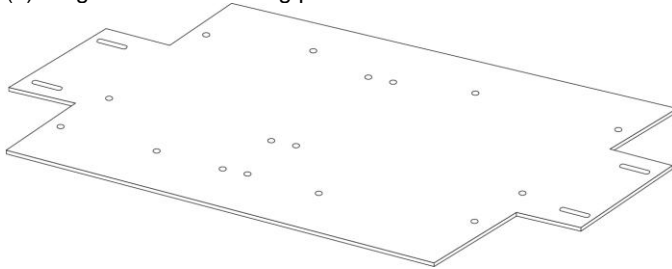
[39Y8937](#) – IBM DPI KSC 8305 30A (2.5m) line cord
30A 230V Single Phase

Monitorable: No
Switched Outlets: No
Ground Screw: No

See the [Front End PDU Mounting Options](#) section on page 33 for mounting option details.

Accessory Kit

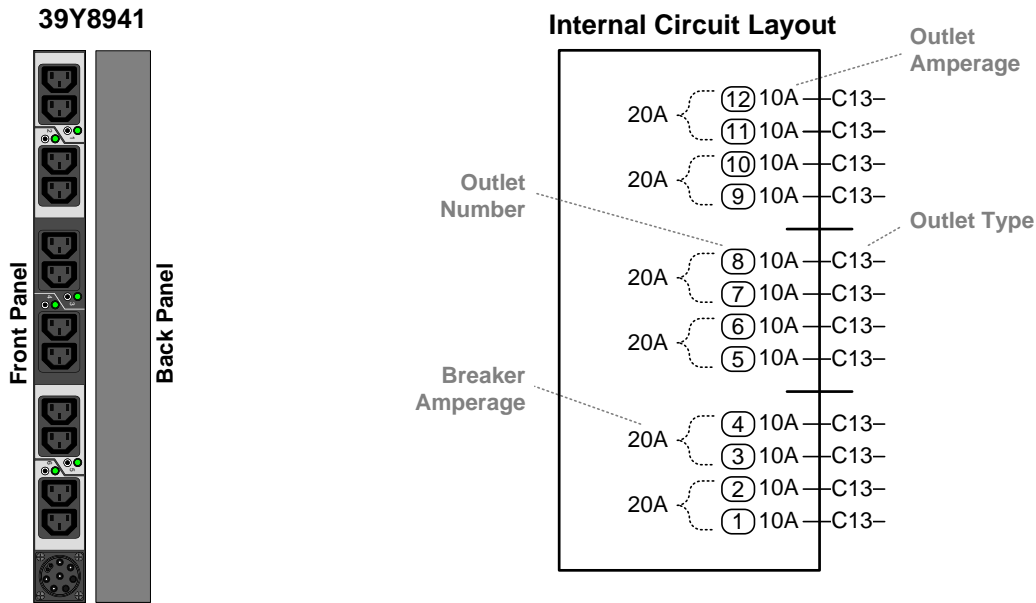
(1) Large vertical-mounting plate



(1) One country or region-specific power cord

Miscellaneous hardware kit (for attaching the Front-end PDU to a mounting plate and installing the Front-end PDU in a rack cabinet) and cable straps

IBM DPI® Enterprise PDU – C13



Input Line Cords

[40K9611](#) – IBM DPI IEC-309 3P+N+G (4.3m) line cord
32A (32A / Phase) 380-415V Three Phase Wye

[40K9617](#) – IBM DPI AS/NZS 3112 32A (4.3m) line cord
32A 220V Single Phase

[40K9612](#) – IBM DPI IEC 309 P+N+G (4.3m) line cord
32A / 220-240V Single Phase

[40K9618](#) – IBM DPI KSC 8305 30A (4.3m) line cord
30A 230V Single Phase

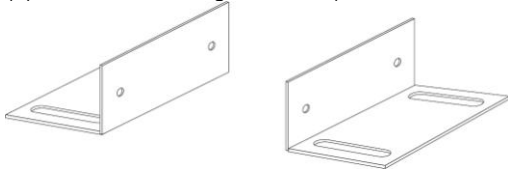
[40K9613](#) – IBM DPI IEC 309 P+N+G (4.3m) line cord
220V-240V Single Phase

Monitorable: No
Switched Outlets: No
Ground Screw: ?

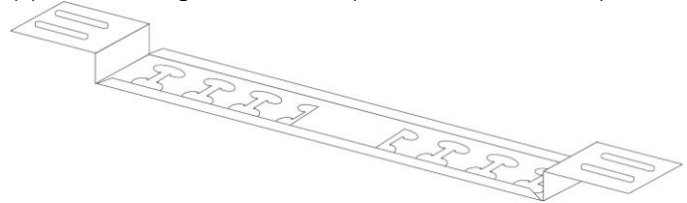
See the [Enterprise Shallow PDU Mounting Options](#) section on page 35 for mounting option details.

Accessory Kit

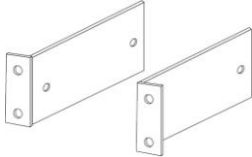
(2) Vertical mounting brackets (for all rack cabinets)



(1) Cable-management bracket (for vertical installations)



(2) Horizontal mounting brackets

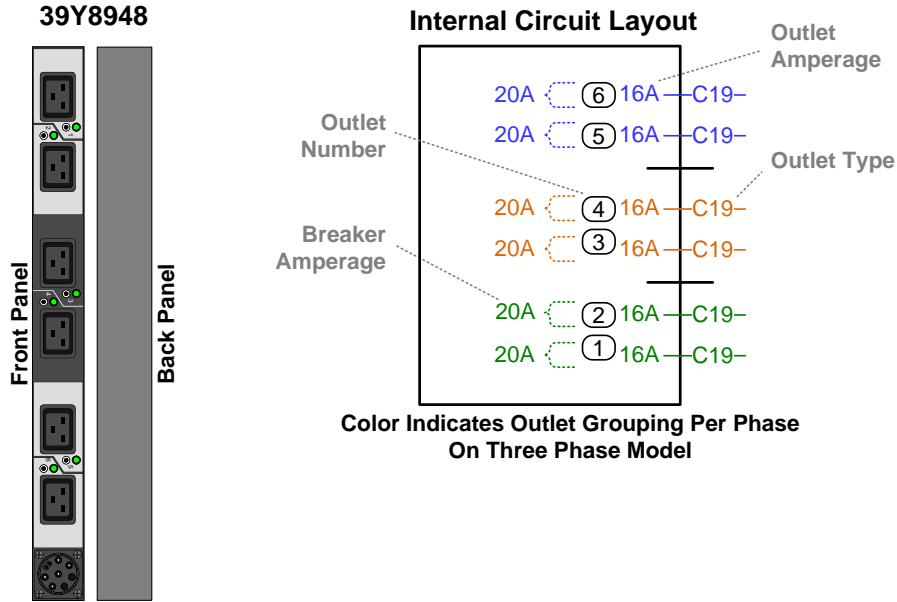


(1) 1U blank filler panel



Miscellaneous hardware kit (for attaching the mounting brackets to the PDU and installing in a rack cabinet) and cable straps

IBM DPI Enterprise PDU



Input Line Cords

[40K9611](#) – IBM DPI IEC-309 3P+N+G (4.3m) line cord
32A (32A / Phase) 380-415V Three Phase Wye

[40K9617](#) – IBM DPI AS/NZS 3112 32A (4.3m) line cord
32A 220V Single Phase

[40K9612](#) – IBM DPI IEC 309 P+N+G (4.3m) line cord
32A / 220-240V Single Phase

[40K9618](#) – IBM DPI KSC 8305 30A (4.3m) line cord
30A 230V Single Phase

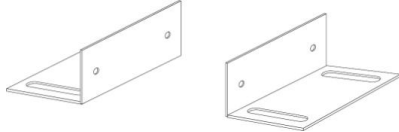
[40K9613](#) – IBM DPI IEC 309 P+N+G (4.3m) line cord
220V-240V Single Phase

Monitorable: No
Switched Outlets: No
Ground Screw: Yes – On Back Panel

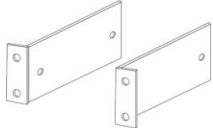
See the [Enterprise Shallow PDU Mounting Options](#) section on page 35 for mounting option details.

Accessory Kit

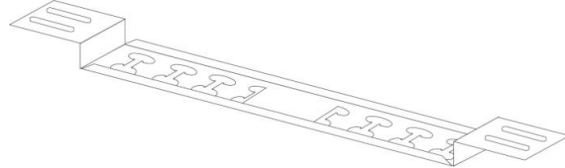
(2) Vertical mounting brackets (for all rack cabinets)



(2) Horizontal mounting brackets



(1) Cable-management bracket (for vertical installations)

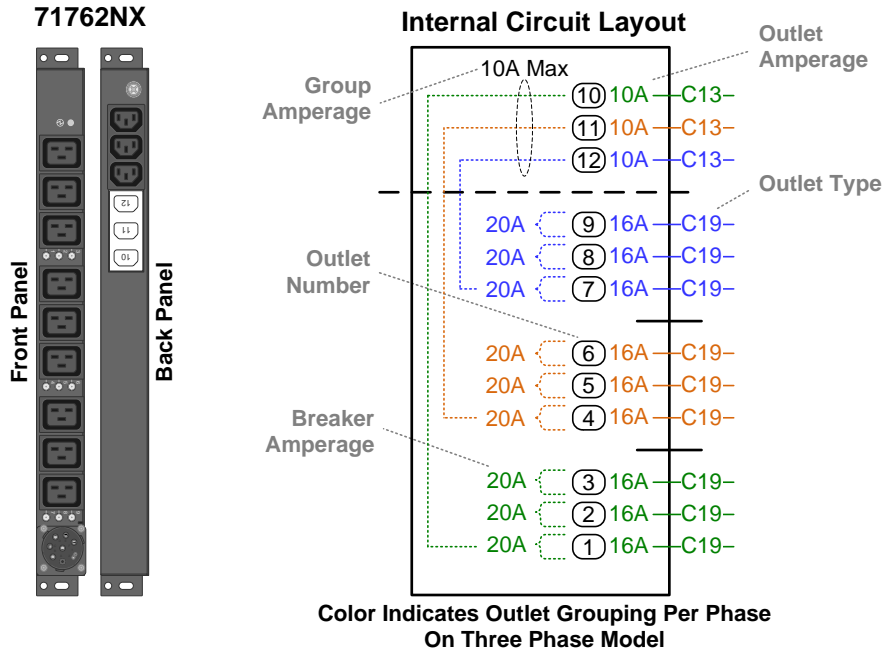


(1) 1U blank filler panel



Miscellaneous hardware kit (for attaching the mounting brackets to the PDU and installing in a rack cabinet) and cable straps

IBM DPI Ultra Density Enterprise PDU



Input Line Cords

[40K9611](#) – IBM DPI IEC-309 3P+N+G (4.3m) line cord
32A (32A / Phase) 380-415V Three Phase Wye

[40K9617](#) – IBM DPI AS/NZS 3112 32A (4.3m) line cord
32A 220V Single Phase

[40K9612](#) – IBM DPI IEC 309 P+N+G (4.3m) line cord
32A / 220-240V Single Phase

[40K9618](#) – IBM DPI KSC 8305 30A (4.3m) line cord
30A 230V Single Phase

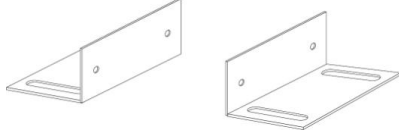
[40K9613](#) – IBM DPI IEC 309 P+N+G (4.3m) line cord
220V-240V Single Phase

Monitorable: No
Switched Outlets: No
Ground Screw: Yes – On Back Panel

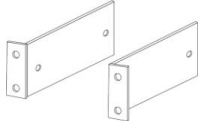
See the [Enterprise Deep PDU Mounting Options](#) section on page 37 for mounting option details.

Accessory Kit

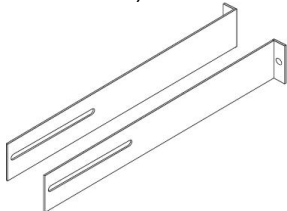
(2) Vertical mounting brackets (for all rack cabinets)



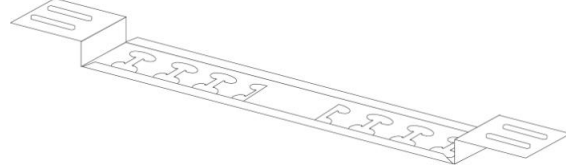
(2) Horizontal mounting brackets



(2) Adjustable mounting rails (for horizontal mounting in all rack cabinet)



(1) Cable-management bracket (for vertical installations)



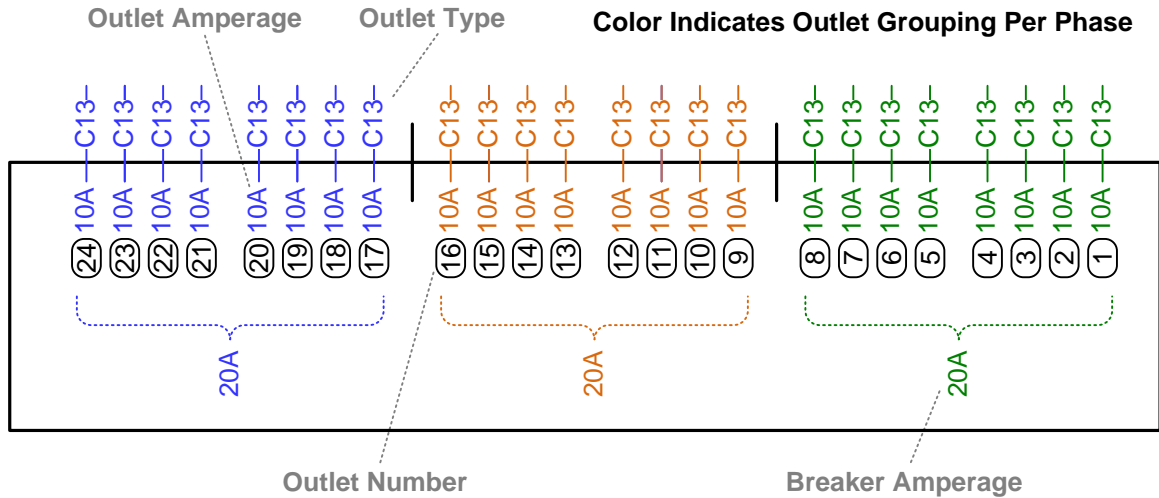
(1) 1U blank filler panel



Miscellaneous hardware kit (for attaching the mounting brackets to the PDU and installing in a rack cabinet) and cable straps

IBM 0U 24 C13 PDU **New**

46M4125 & 46M4128



Note: Derated 16A MAX available per breaker

Input Line Cords

46M4122 – attached line cord

[Attached 14-foot \(4.3m\) line cord](#)
IEC-309 3P+N+G 16A (16A / Phase)
380-415V Three Phase Wye

46M4131 – attached line cord

[Attached 14-foot \(4.3m\) line cord](#)
IEC 309 P+N+G 32A / 220-240V Single Phase

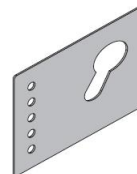
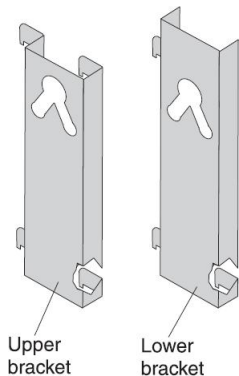
Monitorable: No
Switched Outlets: No
Ground Screw: Yes – On Front Panel

See the [Zero U PDU Mounting Options](#) section on page 41 for mounting option details.

Accessory Kit

(2) Mount bracket for IBM Enterprise Racks (Types 1410, 9308) (one upper bracket and one lower bracket)

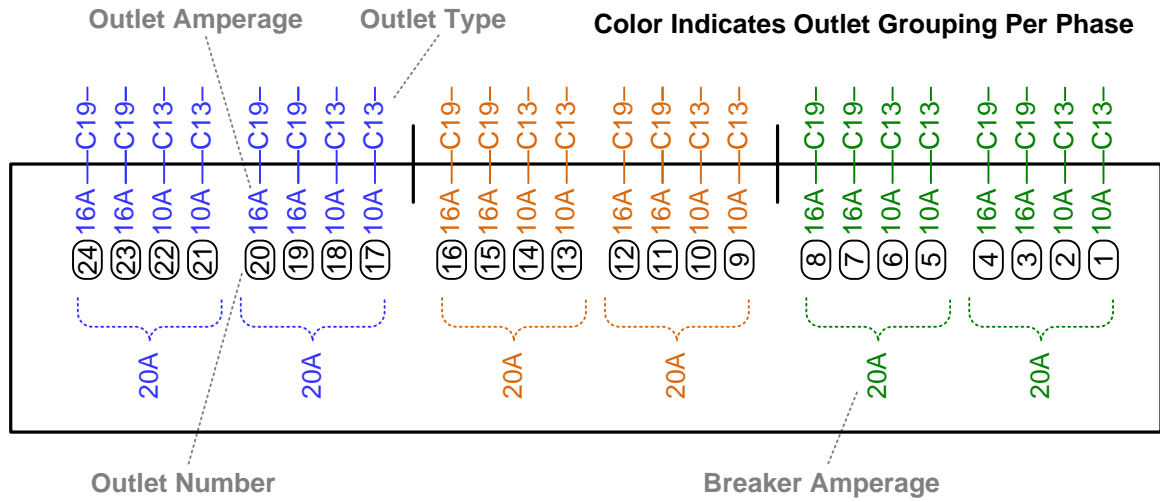
(2) Mount bracket for IBM S2 42U Standard Rack cabinet (Types 9307, 9956)



Miscellaneous hardware kit (for attaching the mounting brackets to the PDU and installing the PDU in a rack cabinet)

IBM 0U 12 C19/12 C13 PDU ☀ **New**

46M4140



Note: Derated 16A MAX available per breaker

Input Line Cords

46M4143 – attached line cord

[Attached 14-foot \(4.3m\) line cord](#)

IEC-309 3P+N+G 32A (32A / Phase) 380-415V Three Phase Wye

Monitorable: No

Switched Outlets: No

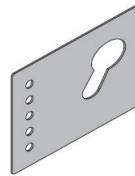
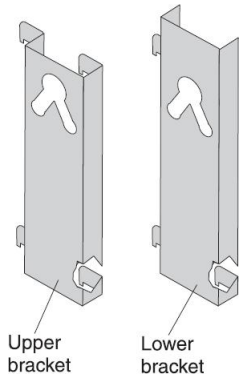
Ground Screw: Yes – On Front Panel

See the [Zero U PDU Mounting Options](#) section on page 41 for mounting option details.

Accessory Kit

(2) Mount bracket for IBM Enterprise Racks (Types 1410, 9308) (one upper bracket and one lower bracket)

(2) Mount bracket for IBM S2 42U Standard Rack cabinet (Types 9307, 9956)



Miscellaneous hardware kit (for attaching the mounting brackets to the PDU and installing the PDU in a rack cabinet)

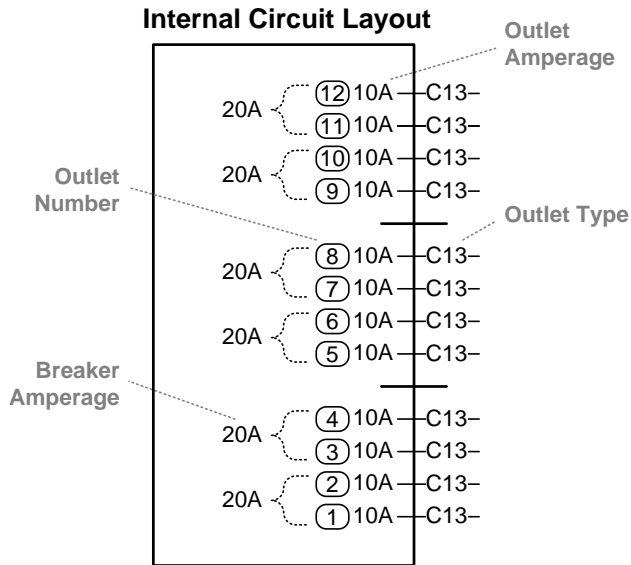
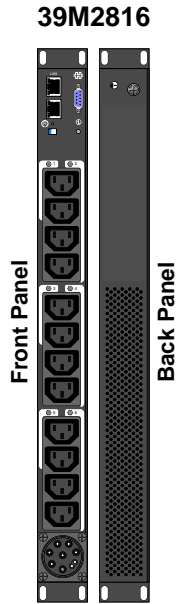
IBM Monitored PDUs

IBM Ultra Density Enterprise PDU+

PDU	Option Number	Phase	Voltage	Line Cord (Derated)	Number / Type of Outlet	Page
DPI Enterprise + - C13	39M2816	1ph	220-240V	32A IEC 309 P+N+G	12 / C13	15
				63A IEC 309 P+N+G		
			230-240V	32A AUS/NZ 3112		
			220V	30A KSC 8305		
DPI Ultra Density Ent. +	71762MX	1ph	220-240V	32A IEC 309 P+N+G	9 / C19 3 / C13	15
				63A IEC 309 P+N+G		
			230-240V	32A AUS/NZ 3112		
			220V	30A KSC 8305		
		3ph Y	380-415V	32A (32A/ph) IEC 309 3P+N+G		

Note: ph indicates phase (1 or 3), Δ indicates three phase delta, and Y Indicates three phase WYE

IBM DPI Enterprise PDU+ - C13



Input Line Cords

[40K9611](#) – IBM DPI IEC-309 3P+N+G (4.3m) line cord
32A (32A / Phase) 380-415V Three Phase Wye

[40K9617](#) – IBM DPI AS/NZS 3112 32A (4.3m) line cord
32A 220V Single Phase

[40K9612](#) – IBM DPI IEC 309 P+N+G (4.3m) line cord
32A / 220-240V Single Phase

[40K9618](#) – IBM DPI KSC 8305 30A (4.3m) line cord
30A 230V Single Phase

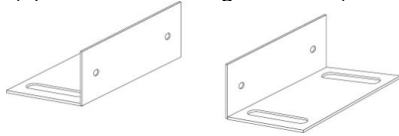
[40K9613](#) – IBM DPI IEC 309 P+N+G (4.3m) line cord
220V-240V Single Phase

Monitorable: Yes
Switched Outlets: No
Ground Screw: Yes – On Back Panel

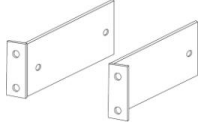
See the [Enterprise Deep PDU Mounting Options](#) section on page 37 for mounting option details.

Accessory Kit

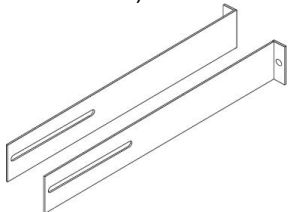
(2) Vertical mounting brackets (for all rack cabinets)



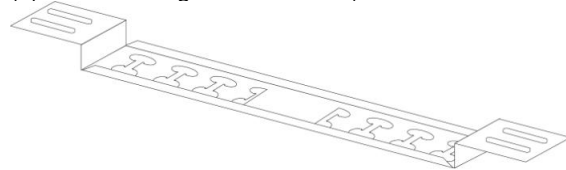
(2) Horizontal mounting brackets



(2) Adjustable mounting rails (for horizontal mounting in all rack cabinet)



(1) Cable-management bracket (for vertical installations)



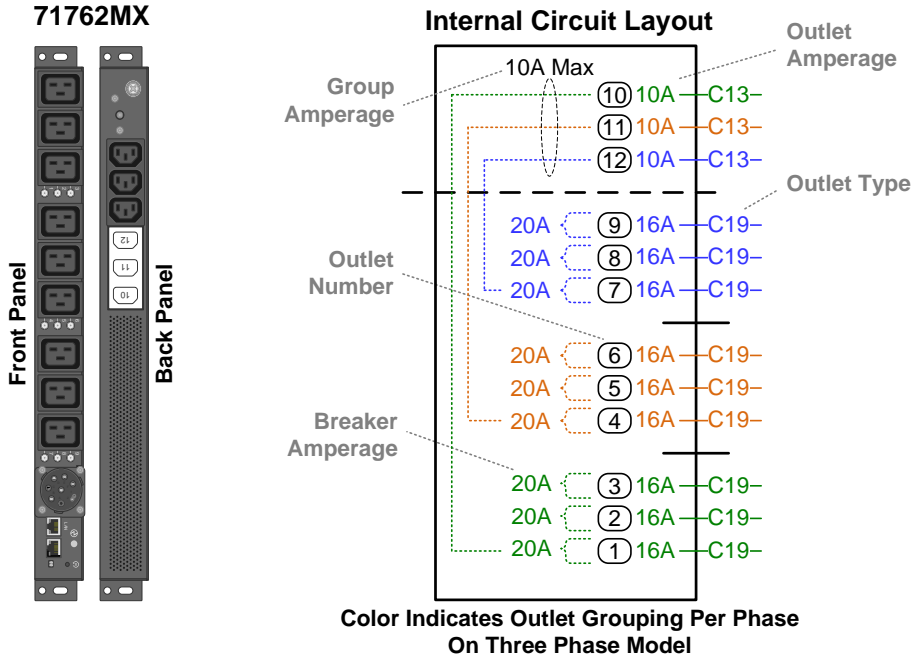
(1) 1U blank filler panel



(1) Environmental Monitoring Probe
(1) DB9 to RJ-45 cable
(1) Category 5 Ethernet cable, 6ft/1.8m

Miscellaneous hardware kit (for attaching the mounting brackets to the PDU and installing in a rack cabinet) and cable straps

IBM DPI Ultra Density Enterprise PDU+



Input Line Cords

[40K9611](#) – IBM DPI IEC-309 3P+N+G (4.3m) line cord
32A (32A / Phase) 380-415V Three Phase Wye

[40K9617](#) – IBM DPI AS/NZS 3112 32A (4.3m) line cord
32A 220V Single Phase

[40K9612](#) – IBM DPI IEC 309 P+N+G (4.3m) line cord
32A / 220-240V Single Phase

[40K9618](#) – IBM DPI KSC 8305 30A (4.3m) line cord
30A 230V Single Phase

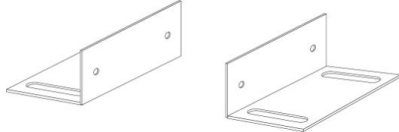
[40K9613](#) – IBM DPI IEC 309 P+N+G (4.3m) line cord
220V-240V Single Phase

Monitorable: Yes
Switched Outlets: No
Ground Screw: Yes – On Back Panel

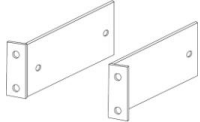
See the [Enterprise Deep PDU Mounting Options](#) section on page 37 for mounting option details.

Accessory Kit

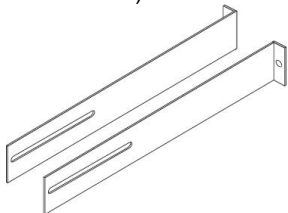
(2) Vertical mounting brackets (for all rack cabinets)



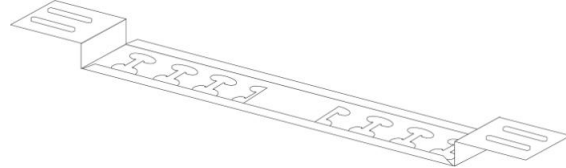
(2) Horizontal mounting brackets



(2) Adjustable mounting rails (for horizontal mounting in all rack cabinet)



(1) Cable-management bracket (for vertical installations)



(1) 1U blank filler panel



(1) Environmental Monitoring Probe
(1) DB9 to RJ-45 cable
(1) Category 5 Ethernet cable, 6ft/1.8m

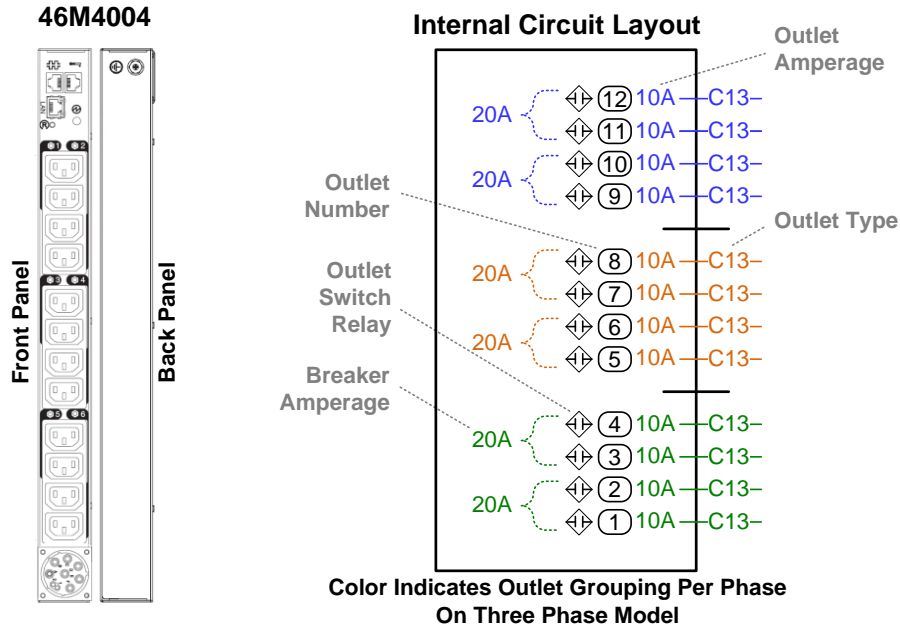
Miscellaneous hardware kit (for attaching the mounting brackets to the PDU and installing in a rack cabinet) and cable straps

IBM Switched and Monitored PDUs

PDU	Option Number	Phase	Voltage	Line Cord (Derated)	Number / Type of Outlet	Page
1U 12 C13 Switched and Monitored	46M4004	1ph	220-240V	32A IEC 309 P+N+G	12 / C13	18
			230-240V	63A IEC 309 P+N+G		
		220V	32A AUS/NZ 3112			
		380-415V	30A KSC 8305			
		3ph Y	380-415V	32A (32A/ph) IEC 309 3P+N+G		
1U 9 C19 / 3 C13 Switched and Monitored	46M4002	1ph	220-240V	32A IEC 309 P+N+G	9 / C19 3 / C13	19
			230-240V	63A IEC 309 P+N+G		
		220V	32A AUS/NZ 3112			
		380-415V	30A KSC 8305			
		3ph Y	380-415V	32A (32A/ph) IEC 309 3P+N+G		

Note: ph indicates phase (1 or 3), Δ indicates three phase delta, and Y Indicates three phase WYE

IBM 1U 12 C13 Switched and Monitored PDU



Input Line Cords

40K9611 – IBM DPI IEC-309 3P+N+G (4.3m) line cord
32A (32A / Phase) 380-415V Three Phase Wye

40K9617 – IBM DPI AS/NZS 3112 32A (4.3m) line cord
32A 220V Single Phase

40K9612 – IBM DPI IEC 309 P+N+G (4.3m) line cord
32A / 220-240V Single Phase

40K9618 – IBM DPI KSC 8305 30A (4.3m) line cord
30A 230V Single Phase

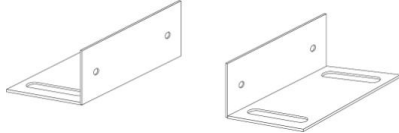
40K9613 – IBM DPI IEC 309 P+N+G (4.3m) line cord
220V-240V Single Phase

Monitorable: Yes
Switched Outlets: Yes
Ground Screw: Yes – On Back Panel

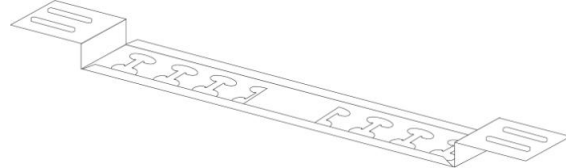
See the [Switched PDU Mounting Options](#) section on page 37 for mounting option details.

Accessory Kit

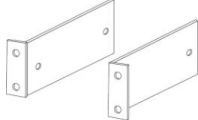
(2) Vertical mounting brackets (for all rack cabinets)



(1) Cable-management bracket (for vertical installations)



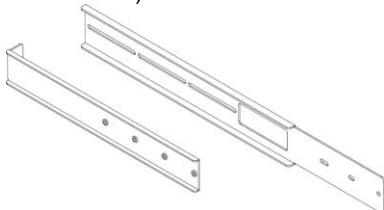
(2) Horizontal mounting brackets



(1) 1U blank filler panel



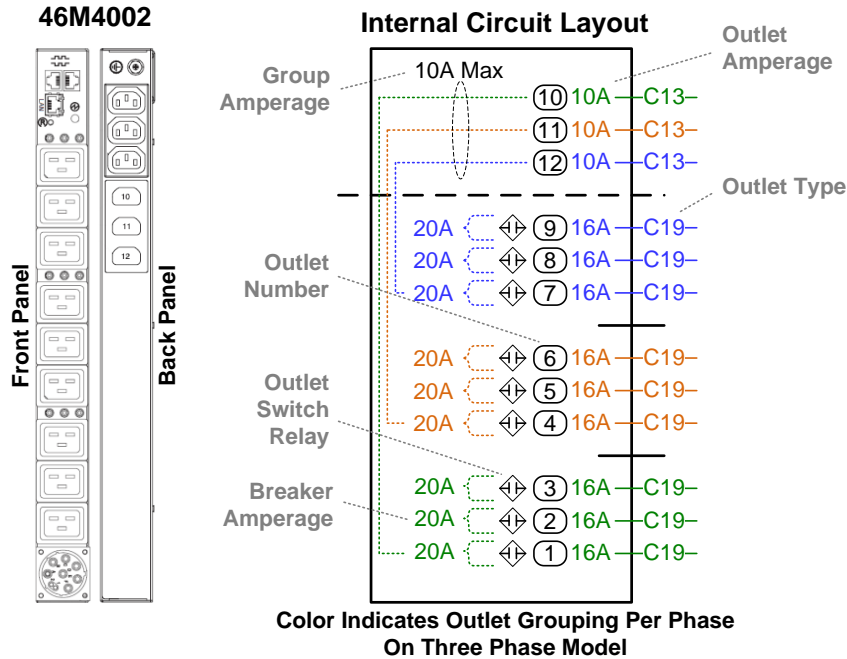
(2) Adjustable mounting rails (for horizontal mounting in all rack cabinet)



(1) Environmental Monitoring Probe
(1) DB9 to RJ-45 cable
(1) Category 5 Ethernet cable, 6ft/1.8m

Miscellaneous hardware kit (for attaching the mounting brackets to the PDU and installing in a rack cabinet) and cable straps

IBM 1U 9 C19 / 3 C13 Switched and Monitored PDU



Input Line Cords

[40K9611](#) – IBM DPI IEC-309 3P+N+G (4.3m) line cord
32A (32A / Phase) 380-415V Three Phase Wye

[40K9617](#) – IBM DPI AS/NZS 3112 32A (4.3m) line cord
32A 220V Single Phase

[40K9612](#) – IBM DPI IEC 309 P+N+G (4.3m) line cord
32A / 220-240V Single Phase

[40K9618](#) – IBM DPI KSC 8305 30A (4.3m) line cord
30A 230V Single Phase

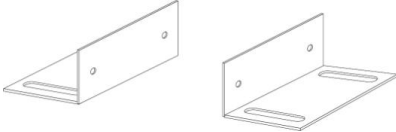
[40K9613](#) – IBM DPI IEC 309 P+N+G (4.3m) line cord
220V-240V Single Phase

Monitorable: Yes
Switched Outlets: Yes
Ground Screw: Yes – On Back Panel

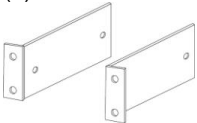
See the [Switched PDU Mounting Options](#) section on page 37 for mounting option details.

Accessory Kit

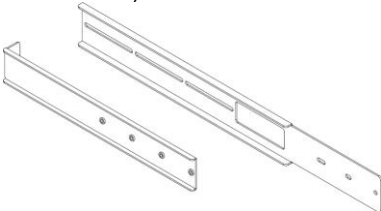
(2) Vertical mounting brackets (for all rack cabinets)



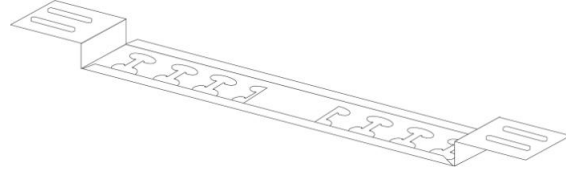
(2) Horizontal mounting brackets



(2) Adjustable mounting rails (for horizontal mounting in all rack cabinet)



(1) Cable-management bracket (for vertical installations)



(1) 1U blank filler panel



(1) Environmental Monitoring Probe
(1) DB9 to RJ-45 cable
(1) Category 5 Ethernet cable, 6ft/1.8m

Miscellaneous hardware kit (for attaching the mounting brackets to the PDU and installing in a rack cabinet) and cable straps

Line Cords and Plugs

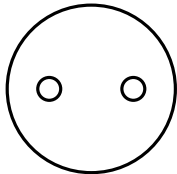
Universal Rack PDU (39Y8952) 230V (CEE7-VII Europe)

- 39M5281 – C19 to CEE7-VII Europe (1.8m) @ 230V Single Phase
- 39M5282 – C19 to CEE7-VII Europe (2.5m) @ 230V Single Phase
- 39M5283 – C19 to CEE7-VII Europe (4.3m) @ 230V Single Phase

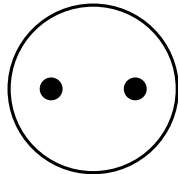
Used with:

39Y8952 – [Universal Rack PDU](#)

Female End



Male End



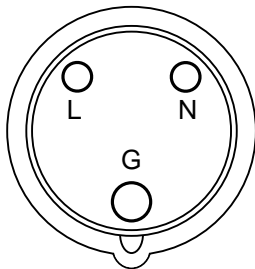
Universal Rack PDU (39Y8953) 230V (Denmark/Switz. IEC 309 P+N+G)

- 39M5321 – C19 to Denmark IEC 309 P+N+G (1.8m) @ 230V Single Phase
- 39M5322 – C19 to Denmark IEC 309 P+N+G (2.5m) @ 230V Single Phase
- 39M5323 – C19 to Denmark IEC 309 P+N+G (4.3m) @ 230V Single Phase

Used with:

39Y8953 – [Universal Rack PDU](#)

Female Sleeve



Male Sleeve



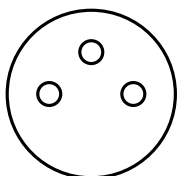
Universal Rack PDU (39Y8954) 220V (Israel SI-32)

- 39M5309 – C19 to Israel SI-32 (1.8m) @ 220V Single Phase
- 39M5310 – C19 to Israel SI-32 (2.5m) @ 220V Single Phase
- 39M5311 – C19 to Israel SI-32 (4.3m) @ 220V Single Phase

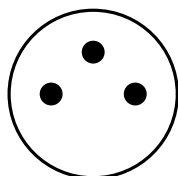
Used with:

39Y8954 – [Universal Rack PDU](#)

Female End



Male End



Universal Rack PDU (39Y8955) 230V (Italy CEI 23-16)

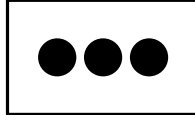
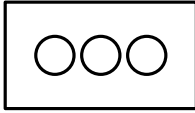
- 39M5297 – C19 to Italy CEI 23-16 (1.8m) @ 230V Single Phase
- 39M5298 – C19 to Italy CEI 23-16 (2.5m) @ 230V Single Phase
- 39M5299 – C19 to Italy CEI 23-16 (4.3m) @ 230V Single Phase

Used with:

39Y8955 – [Universal Rack PDU](#)

Female End

Male End



Universal Rack PDU (39Y8956) 220-250V (South Africa SABS 164)

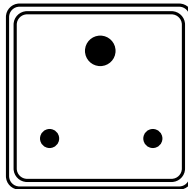
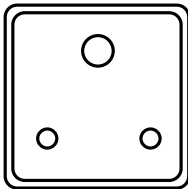
- 39M5290 – C19 to South Africa SABS 164 (2.5m) @ 220-250V Single Phase
- 39M5291 – C19 to South Africa SABS 164 (4.3m) @ 220-250V Single Phase

Used with:

39Y8956 – [Universal Rack PDU](#)

Female End

Male End



Universal Rack PDU (39Y8957) 230V (UK BS 1363/A)

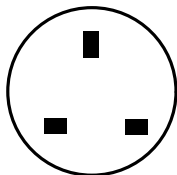
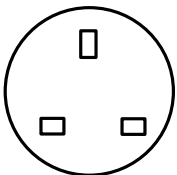
- 39M5293 – C19 to UK BS 1363/A (1.8m) @ 230V Single Phase
- 39M5294 – C19 to UK BS 1363/A (2.5m) @ 230V Single Phase
- 39M5295 – C19 to UK BS 1363/A (4.3m) @ 230V Single Phase

Used with:

39Y8957 – [Universal Rack PDU](#)

Female End

Male End



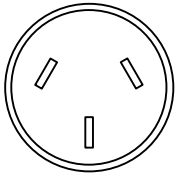
Universal Rack PDU (39Y8958) 230-240V (AUS/NZ 3112 Australia/NZ)

39M5329 – C19 to AUS/NZ 3112 Australia/NZ (1.8m) @ 230-240V Single Phase
39M5330 – C19 to AUS/NZ 3112 Australia/NZ (2.5m) @ 230-240V Single Phase
39M5331 – C19 to AUS/NZ 3112 Australia/NZ (4.3m) @ 230-240V Single Phase

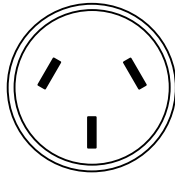
Used with:

39Y8958 – [Universal Rack PDU](#)

Female End



Male End



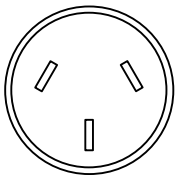
Universal Rack PDU (39Y8959) 220V (China GB 2099.1)

39M5353 – C19 to China GB 2099.1 (1.8m) @ 220V Single Phase
39M5354 – C19 to China GB 2099.1 (2.5m) @ 220V Single Phase
39M5355 – C19 to China GB 2099.1 (4.3m) @ 220V Single Phase

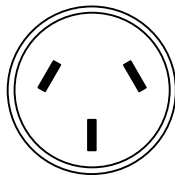
Used with:

39Y8959 – [Universal Rack PDU](#)

Female End



Male End



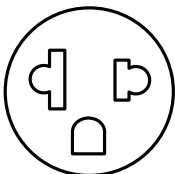
Universal Rack PDU (39Y8960) 125V, 220-240V (Brazil NBR 6147)

39M5354 – C19 to Brazil NBR 6147 (1.8m) @ 125V Single Phase
39M5355 – C19 to Brazil NBR 6147 (2.5m) @ 125V Single Phase
39M5356 – C19 to Brazil NBR 6147 (4.3m) @ 125V Single Phase
39M5357 – C19 to Brazil NBR 6147 (1.8m) @ 220-240V Single Phase
39M5358 – C19 to Brazil NBR 6147 (2.5m) @ 220-240V Single Phase
39M5359 – C19 to Brazil NBR 6147 (4.3m) @ 220-240V Single Phase

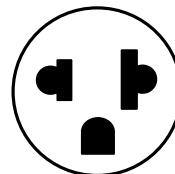
Used with:

39Y8960 – [Universal Rack PDU](#)

Female End



Male End



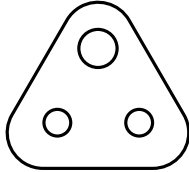
Universal Rack PDU (39Y8961) 230V (India IS 6538)

- 39M5444 – C19 to India IS 6538 (1.8m) @ 230V Single Phase
- 39M5445 – C19 to India IS 6538 (2.5m) @ 230V Single Phase
- 39M5446 – C19 to India IS 6538 (4.3m) @ 230V Single Phase

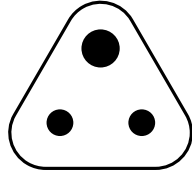
Used with:

39Y8961 – [Universal Rack PDU](#)

Female End



Male End



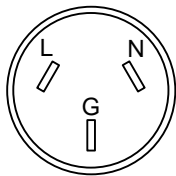
Universal Rack PDU (39Y8962) 220V (Argentina IRAM 2073)

- 39M5341 – C19 to Argentina IRAM 2073 (1.8m) @ 220V Single Phase
- 39M5342 – C19 to Argentina IRAM 2073 (2.5m) @ 220V Single Phase
- 39M5343 – C19 to Argentina IRAM 2073 (4.3m) @ 220V Single Phase

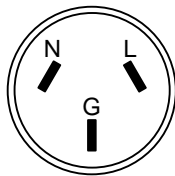
Used with:

39Y8962 – [Universal Rack PDU](#)

Female End



Male End



Universal Rack PDU 16A/200-240V (IEC320 C19 to C20)

- 39M5389 - C19 to IEC320 C20 to (2.5m) 16A @ 100-240V Single Phase

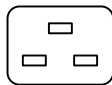
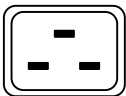
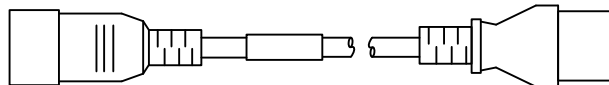
Used to connect Rack PDU to another PDU with IEC320 C19 outlets. This line cord ships with all Universal Rack PDUs in addition to country specific line cord.

Used with:

39Y8951 – [Universal Rack PDU](#)

IEC320 C20

IEC320 C19



Also available:

- 39M5388 - C19 to IEC320 C20 to (2.0m) 16A @ 100-250V Single Phase

Front End (39Y8934) 220-240V / 32A Cord (IEC 309 P+N+G)

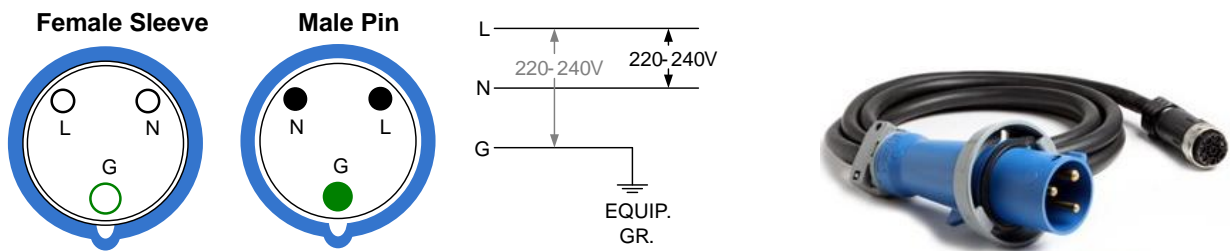
IEC 309 P+N+G (2.5m) - 32A 220-240V Single Phase
Matching receptacle listing 332R6W IP-67 HUBBELL. Hubbell receptacle P/N HBL332R6W.



Note that this is not the same cord as the [40K9612](#) cord. PDU line cord connector pin out is different.

Used with:

39Y8934 – [Front End PDU](#)



Front End (39Y8935) 220-240V / 63A Cord (IEC 309 P+N+G)

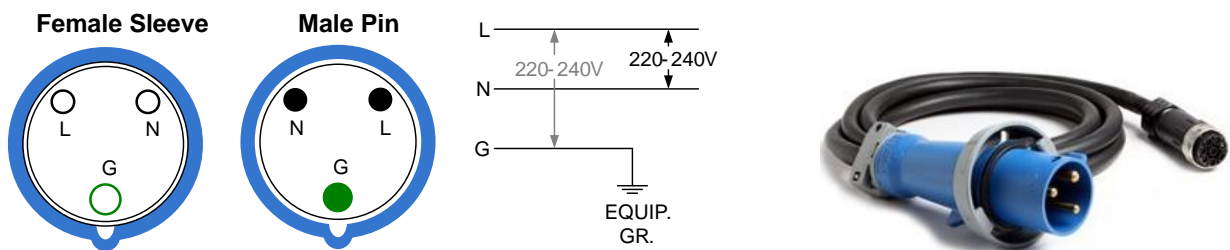
IEC 309 P+N+G (2.5m) - 63A 220- 240V Single Phase
Matching receptacle listing 363C6W IP-67 HUBBELL. Hubbell receptacle P/N HBL363C6W.



Note that this is not the same cord as the [40K9613](#) cord. PDU line cord connector pin out is different.

Used with:

39Y8935 - [Front End PDU](#)



Front End (39Y8936) 230V / 32A Cord (AUS/NZ 3112 32A)

P+N+G (PDL P/N 56P332) Australia/New Zealand connector

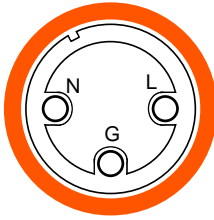


Note that this is not the same cord as the [40K9617](#) cord. PDU line cord connector pin out is different.

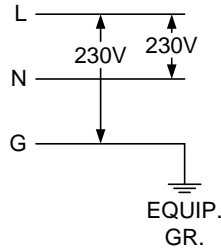
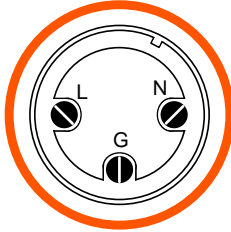
Used with:

39Y8936 - [Front End PDU](#)

Female Sleeve



Male Pin



Front End (39Y8937) 220V / 30A Cord (KSC 8305 30A)

P+N+G (Shin Ju P/N SJ-P3302) Korea connector



Note that this is not the same cord as the [40K9618](#) cord. PDU line cord connector pin out is different.

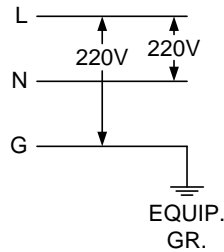
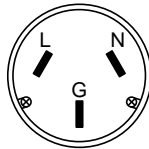
Used with:

39Y8937 - [Front End PDU](#)

Female End



Male End



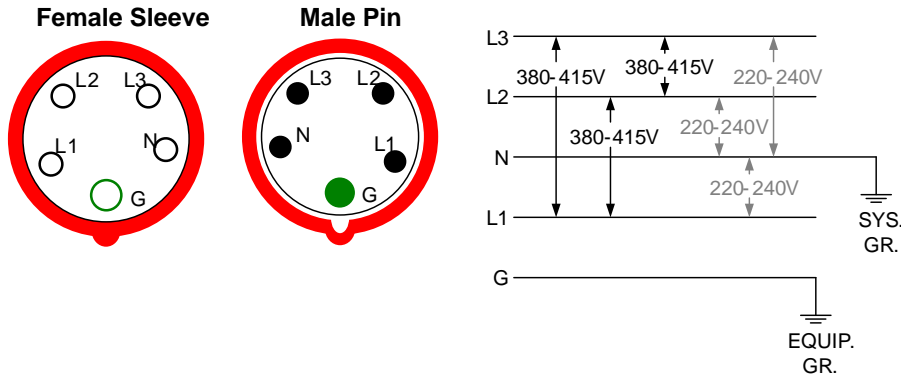
40K9611 - IBM DPI 32A Cord (IEC 309 3P+N+G)

IEC-309 3P+N+G (4.3m) 32A, 3P5W plug (Type 532P6W)
 32A (32A / Phase) 380-415V Three Phase Wye.

Matching receptacle listing 532C6W IP-67 HUBBELL. Hubbell receptacle P/N HBL532C6W.

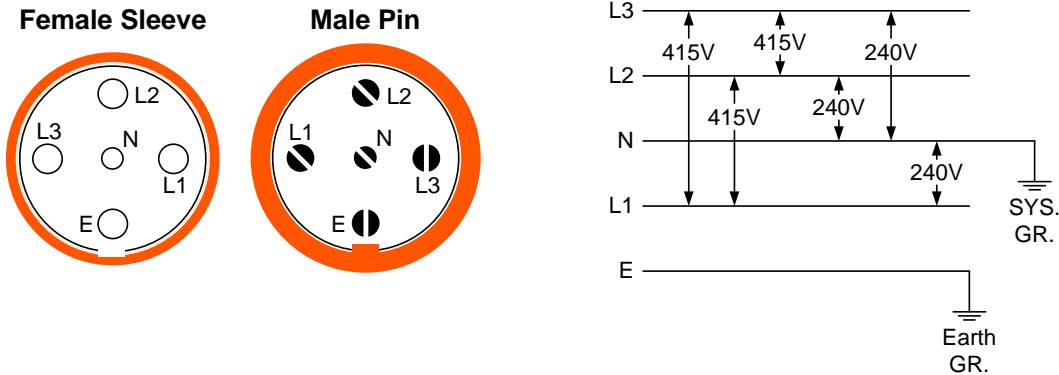
Used with:

- | | |
|---|---|
| 46M4002 – 1U 9 C19 / 3 C13 Switched and Monitored | 39M2816 – DPI Enterprise PDU+ (C13) |
| 46M4004 – 1U 12 C13 Switched and Monitored | 39Y8941 – DPI Enterprise PDU (C13) |
| 71762MX – DPI Ultra Density Enterprise PDU+ | 39Y8948 – DPI Enterprise PDU (C19) |
| 71762NX – DPI Ultra Density Enterprise PDU | |



Re-termination in Australia/New Zealand

The IEC-309 3P+N+G may need to be replaced in AUS/NZ with Clipsal P/N 56PA532 (5 Wire, Three Phase Wye) plug.



40K9612 - IBM DPI 32A Cord (IEC 309 P+N+G)

IEC 309 P+N+G (4.3m) - 32A / 220-240V Single Phase

Matching receptacle listing 332R6W IP-67 HUBBELL. Hubbell receptacle P/N HBL332R6W.

Used with:

46M4002 – [1U 9 C19 / 3 C13 Switched and Monitored](#)

46M4004 – [1U 12 C13 Switched and Monitored](#)

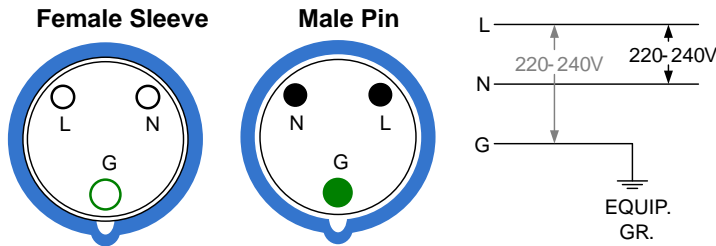
71762MX – [DPI Ultra Density Enterprise PDU+](#)

71762NX – [DPI Ultra Density Enterprise PDU](#)

39M2816 – [DPI Enterprise PDU+ \(C13\)](#)

39Y8941 – [DPI Enterprise PDU \(C13\)](#)

39Y8948 – [DPI Enterprise PDU \(C19\)](#)



40K9613 – IBM DPI 63A Cord (IEC 309 P+N+G)

IEC 309 P+N+G (4.3m) - 63A / 220-240V Single Phase

Matching receptacle listing 363C6W IP-67 HUBBELL. Hubbell receptacle P/N HBL363C6W.

Used with:

46M4002 – [1U 9 C19 / 3 C13 Switched and Monitored](#)

46M4004 – [1U 12 C13 Switched and Monitored](#)

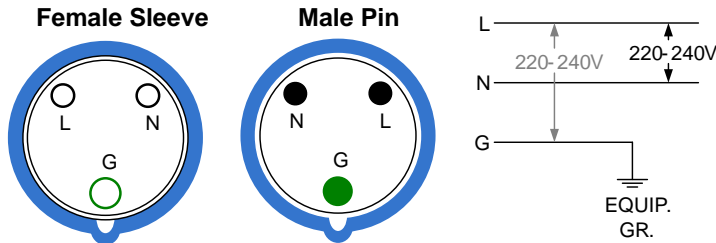
71762MX – [DPI Ultra Density Enterprise PDU+](#)

71762NX – [DPI Ultra Density Enterprise PDU](#)

39M2816 – [DPI Enterprise PDU+ \(C13\)](#)

39Y8941 – [DPI Enterprise PDU \(C13\)](#)

39Y8948 – [DPI Enterprise PDU \(C19\)](#)



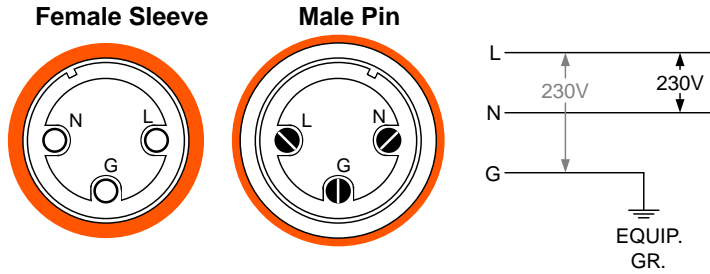
40K9617 – IBM DPI 32A Cord (AUS/NZ 3112 32A)

P+N+G (PDL P/N 56P332) Australia/New Zealand connector

Used with:

- 46M4002 – [1U 9 C19 / 3 C13 Switched and Monitored](#)
- 46M4004 – [1U 12 C13 Switched and Monitored](#)
- 71762MX – [DPI Ultra Density Enterprise PDU+](#)
- 71762NX – [DPI Ultra Density Enterprise PDU](#)

- 39M2816 – [DPI Enterprise PDU+ \(C13\)](#)
- 39Y8941 – [DPI Enterprise PDU \(C13\)](#)
- 39Y8948 – [DPI Enterprise PDU \(C19\)](#)



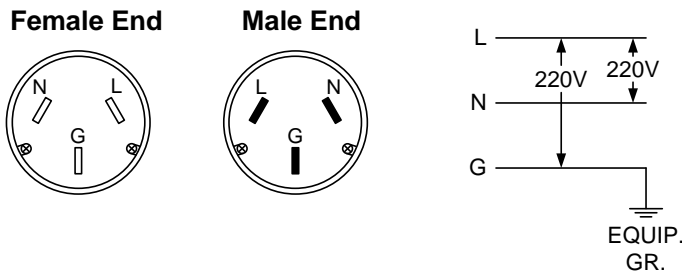
40K9618 – IBM DPI 30A Cord (KSC 8305 30A)

P+N+G (Shin Ju P/N SJ-P3302) Korea connector

Used with:

- 46M4002 – [1U 9 C19 / 3 C13 Switched and Monitored](#)
- 46M4004 – [1U 12 C13 Switched and Monitored](#)
- 71762MX – [DPI Ultra Density Enterprise PDU+](#)
- 71762NX – [DPI Ultra Density Enterprise PDU](#)

- 39M2816 – [DPI Enterprise PDU+ \(C13\)](#)
- 39Y8941 – [DPI Enterprise PDU \(C13\)](#)
- 39Y8948 – [DPI Enterprise PDU \(C19\)](#)



Attached 16A 3ph Cord (IEC309 3P+N+G)

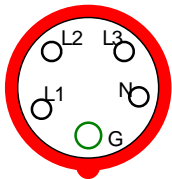
IEC-309 3P+N+G (4.3m) 16A, 3P5W plug (Type 516P6W)
32A (32A / Phase) 380-415V Three Phase Wye.

Matching receptacle listing 516C6W IP-67 HUBBELL. Hubbell receptacle P/N HBL16C6W.

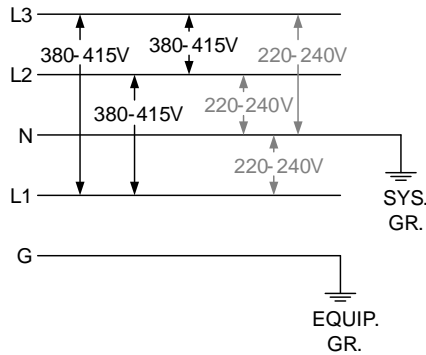
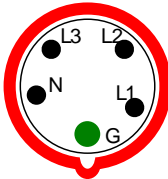
Used with:

46M4122 – [OU 24 C13 PDU](#)

Female Sleeve



Male Pin



Attached 32A 1ph Cord (IEC309 P+N+G)

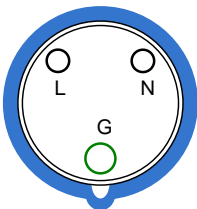
IEC 309 P+N+G (4.3m) - 32A / 220-240V Single Phase

Matching receptacle listing 332R6W IP-67 HUBBELL. Hubbell receptacle P/N HBL332R6W.

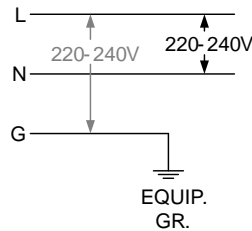
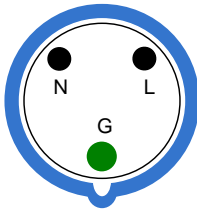
Used with:

46M4131 – [OU 24 C13 PDU](#)

Female Sleeve



Male Pin



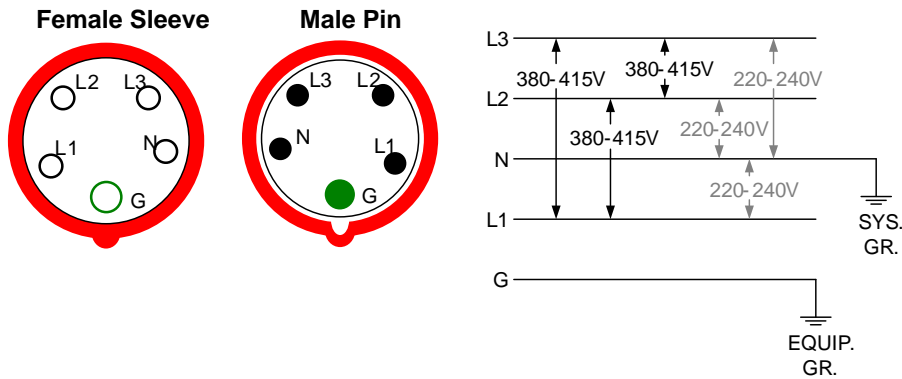
Attached 32A 3ph Cord (IEC309 3P+N+G)

IEC-309 3P+N+G (4.3m) 32A, 3P5W plug (Type 532P6W)
32A (32A / Phase) 380-415V Three Phase Wye.

Matching receptacle listing 532C6W IP-67 HUBBELL. Hubbell receptacle P/N HBL532C6W.

Used with:

46M4143 – [OU 12 C19/12 C13 PDU](#)



PDU Mount Options

This section provides brief information on mounting options for the PDUs covered in this guide. For more detailed information on mounting options, refer to the PDU in questions installation manual. See [IBM PDU Installation Manuals](#) section on page 57 for links to IBM PDU installation manuals.

Universal PDU Mount Options

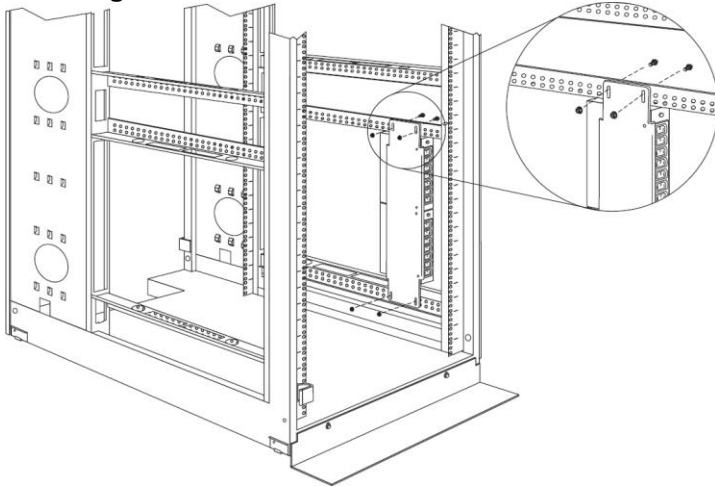
Hardware is included for both EIA (U space) mounting and side pocket mounting.

Supported:

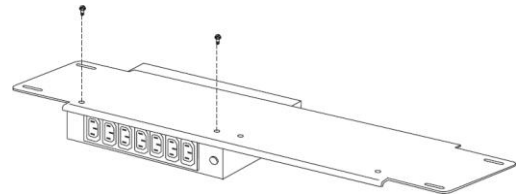
- 39Y8952 – [Universal Rack PDU](#)
- 39Y8953 – [Universal Rack PDU](#)
- 39Y8954 – [Universal Rack PDU](#)
- 39Y8955 – [Universal Rack PDU](#)
- 39Y8956 – [Universal Rack PDU](#)
- 39Y8957 – [Universal Rack PDU](#)

- 39Y8958 – [Universal Rack PDU](#)
- 39Y8959 – [Universal Rack PDU](#)
- 39Y8960 – [Universal Rack PDU](#)
- 39Y8961 – [Universal Rack PDU](#)
- 39Y8962 – [Universal Rack PDU](#)

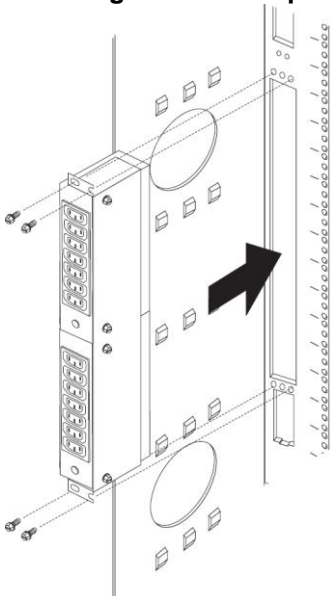
Mounting In Side of Rack



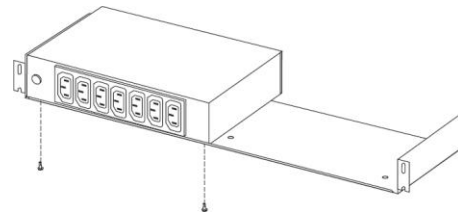
The small vertical mounting plate, which ships with the IBM Universal Rack PDU, will need to be used for this installation option.



Mounting In IBM Enterprise Rack Rear Zero Pocket



The horizontal mounting bracket, which ships with the IBM Universal Rack PDU, will need to be used for this installation option.

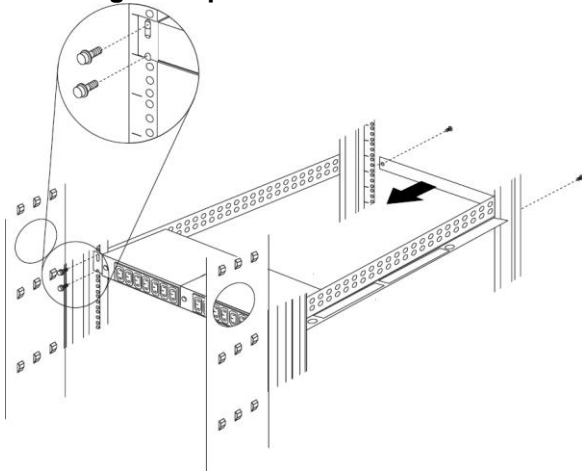


Supported:

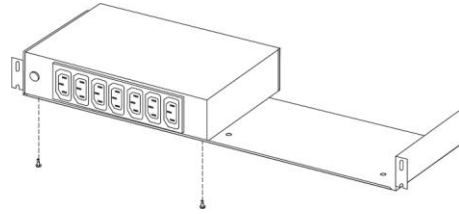
- 39Y8952 – [Universal Rack PDU](#)
- 39Y8953 – [Universal Rack PDU](#)
- 39Y8954 – [Universal Rack PDU](#)
- 39Y8955 – [Universal Rack PDU](#)
- 39Y8956 – [Universal Rack PDU](#)
- 39Y8957 – [Universal Rack PDU](#)

- 39Y8958 – [Universal Rack PDU](#)
- 39Y8959 – [Universal Rack PDU](#)
- 39Y8960 – [Universal Rack PDU](#)
- 39Y8961 – [Universal Rack PDU](#)
- 39Y8962 – [Universal Rack PDU](#)

Mounting In U Space



The horizontal mounting bracket, which ships with the IBM Universal Rack PDU, will need to be used for this installation option.



Front End PDU Mount Options

Units come with side wall mounting hardware only; however, Front End PDUs can be mounted in the EIA (U) space using the rack PDU hardware. Front End PDUs only support reconfigured shipment in side panel. Hardware is included for both EIA mounting and side of rack mounting.



You must remove any horizontally-mounted Front End PDUs from the EIA mounting space before you relocate your rack cabinet. Horizontal installation of Front End PDUs is not supported during relocation or shipping of a rack cabinet.

Supported with:

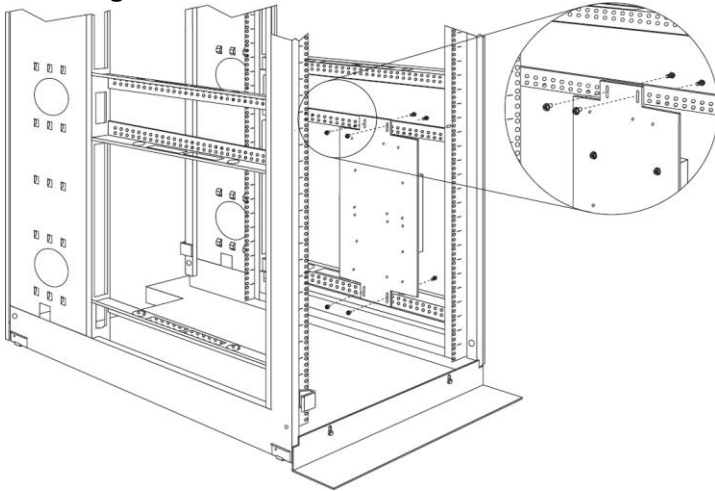
39Y8934 – [Front End PDU](#)

39Y8935 – [Front End PDU](#)

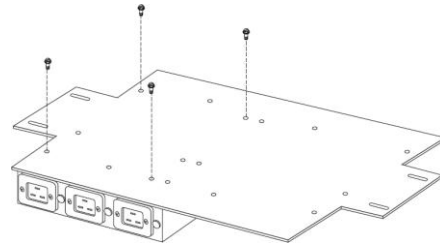
39Y8936 – [Front End PDU](#)

39Y8937 – [Front End PDU](#)

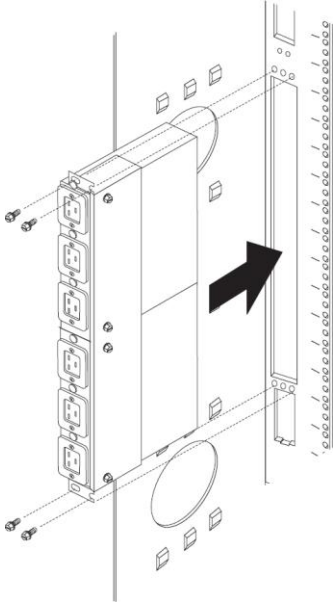
Mounting In Side of Rack



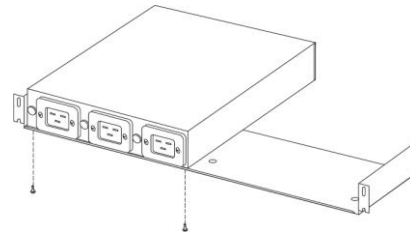
The large vertical-mounting plate, which ships with the IBM Front End PDU, will need to be used for this installation option.



Mounting In IBM Enterprise Rack Rear Zero Pocket



The horizontal-mounting bracket, which ships with the IBM Universal Rack PDU, will need to be used for this installation option. This bracket does not ship with the IBM Front End PDU.

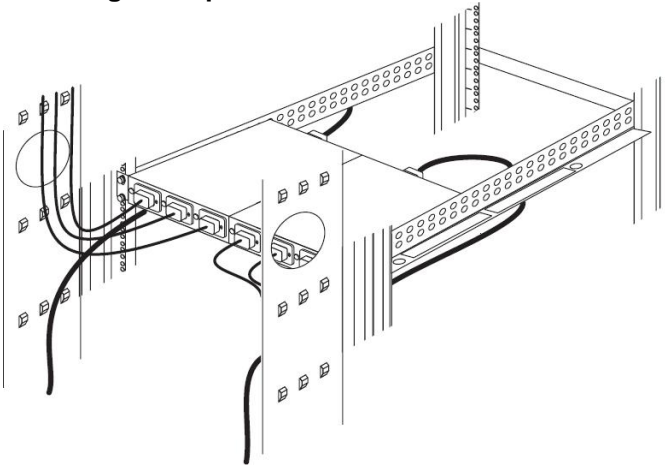


Supported with:

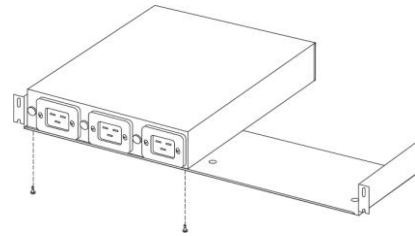
39Y8938 – [Front End PDU](#)
39Y8939 – [Front End PDU](#)

39Y8940 – [Front End PDU](#)

Mounting In U Space



The horizontal-mounting bracket, which ships with the IBM Universal Rack PDU, will need to be used for this installation option. This bracket does not ship with the IBM Front End PDU.



Enterprise Shallow PDU Mount Options

Hardware is included for EIA (U space) mounting, side of rack, and side pocket mounting. Only sided of rack and side pocket mounting installation is approved for reconfigured shipment in an IBM rack.



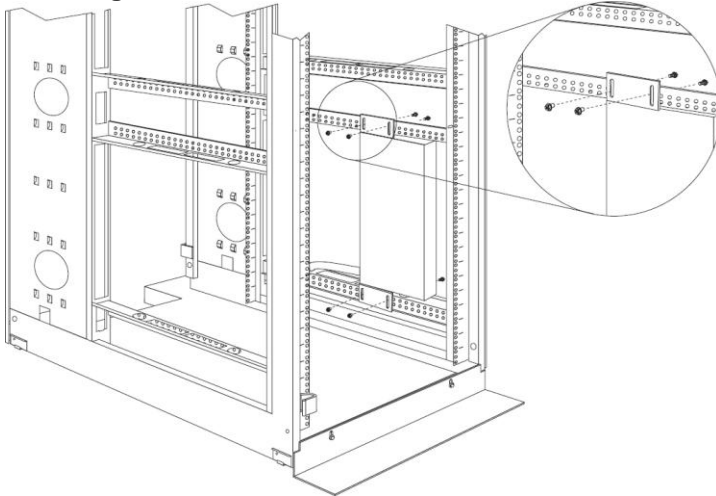
Horizontal installation of a PDU is not supported during relocation or shipping of a rack cabinet. You must remove any horizontally mounted PDUs from the EIA mounting space before you relocate the rack cabinet.

Supported with:

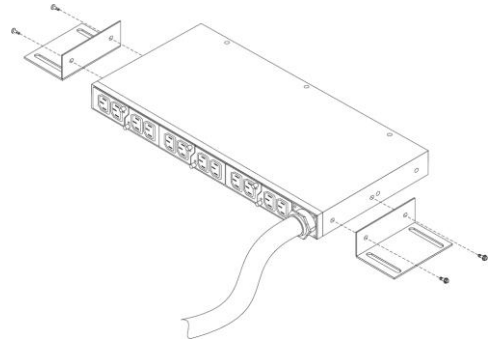
39Y8941 – [DPI Enterprise PDU \(C13\)](#)

39Y8948 – [Enterprise PDU \(C19\)](#)

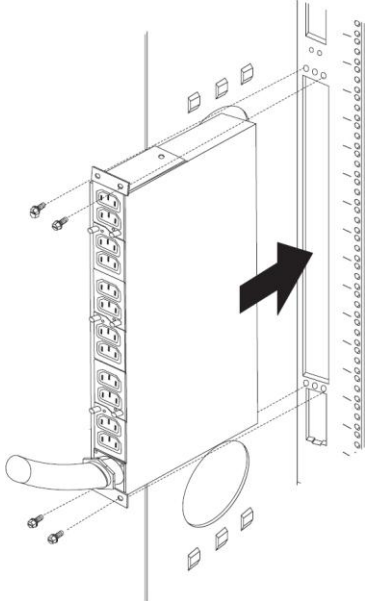
Mounting In the Side of a Rack



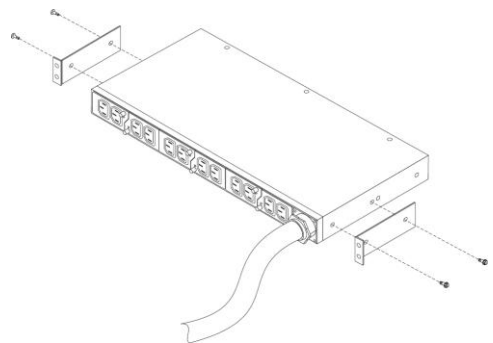
The vertical mounting brackets, which ships with the IBM Enterprise PDUs, will need to be used for this installation option.



Mounting In IBM Enterprise Rack Rear Zero Pocket



The horizontal mounting brackets, which ships with the IBM Enterprise PDUs, will need to be used for this installation option.

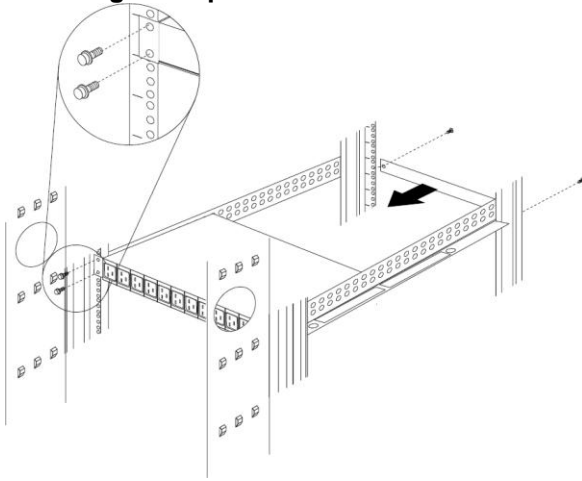


Supported with:

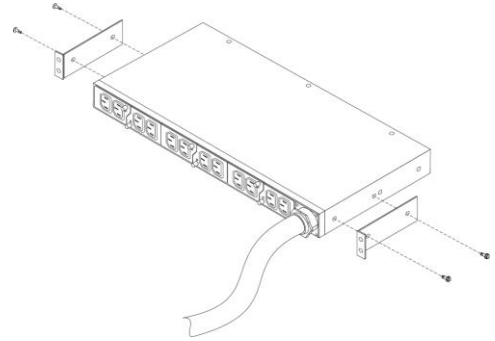
39Y8941 – [DPI Enterprise PDU \(C13\)](#)

39Y8948 – [Enterprise PDU \(C19\)](#)

Mounting In U Space



The horizontal mounting brackets, which ships with the IBM Enterprise PDUs, will need to be used for this installation option.



Enterprise Deep PDU Mount Options

Hardware is included for EIA mounting (U space), side of rack, and side pocket mounting; only sided of rack and side pocket mounting installation is approved for reconfigured shipment in an IBM rack.



Horizontal installation of a PDU is not supported during relocation or shipping of a rack cabinet. You must remove any horizontally mounted PDUs from the EIA mounting space before you relocate the rack cabinet.

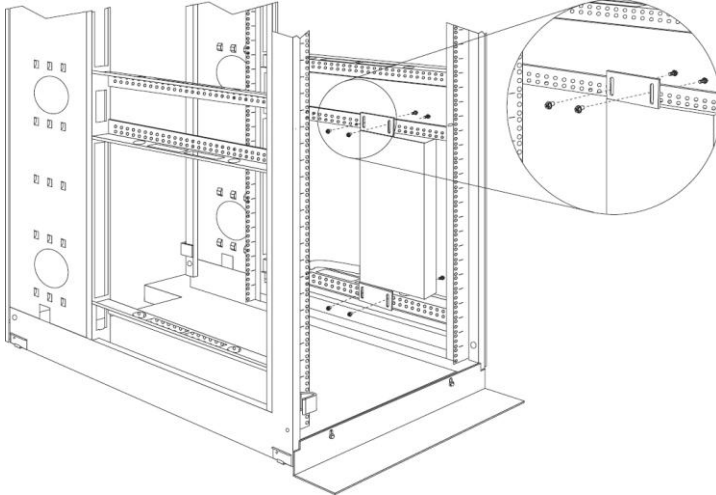
Supported with:

39M2816 – [DPI Enterprise PDU+ \(C13\)](#)

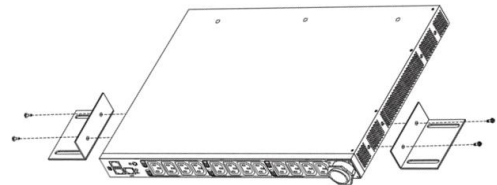
71762MX – [Ultra Density Enterprise PDU+](#)

71762NX – [Ultra Density Enterprise PDU](#)

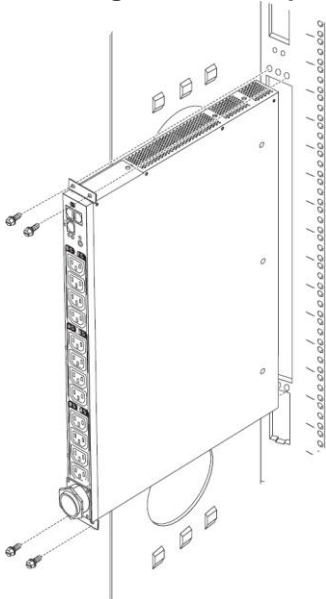
Mounting In the Side of a Rack



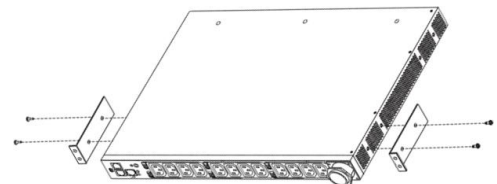
The vertical mounting plates, which ships with the IBM Switched PDUs, will need to be used for this installation option.



Mounting In IBM Enterprise Rack Rear Zero Pocket



The horizontal mounting bracket, which ships with the IBM Switched PDUs, will need to be used for this installation option.



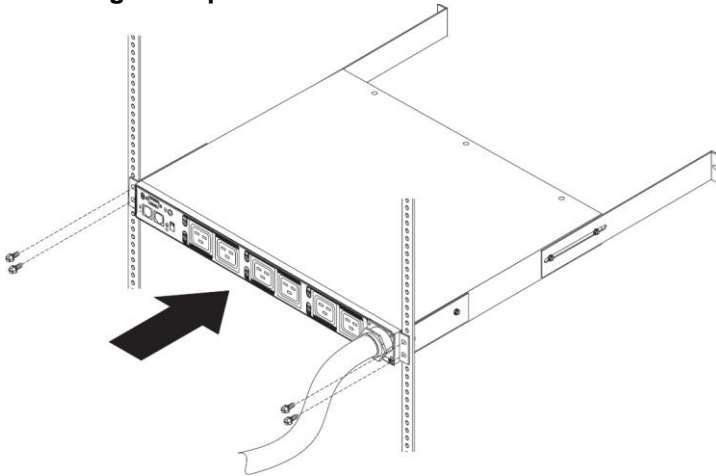
Supported with:

39M2816 – [DPI Enterprise PDU+ \(C13\)](#)

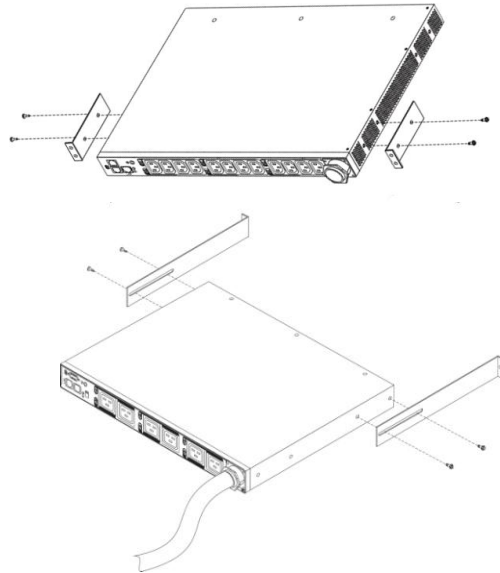
71762MX – [Ultra Density Enterprise PDU+](#)

71762NX – [Ultra Density Enterprise PDU](#)

Mounting In U Space



The horizontal mounting brackets, which ships with the IBM Switched PDUs, will need to be used for this installation option.



Switched PDU Mount Options

Hardware is included for EIA mounting (U space), side of rack, and side pocket mounting; only sided of rack and side pocket mounting installation is approved for reconfigured shipment in an IBM rack.



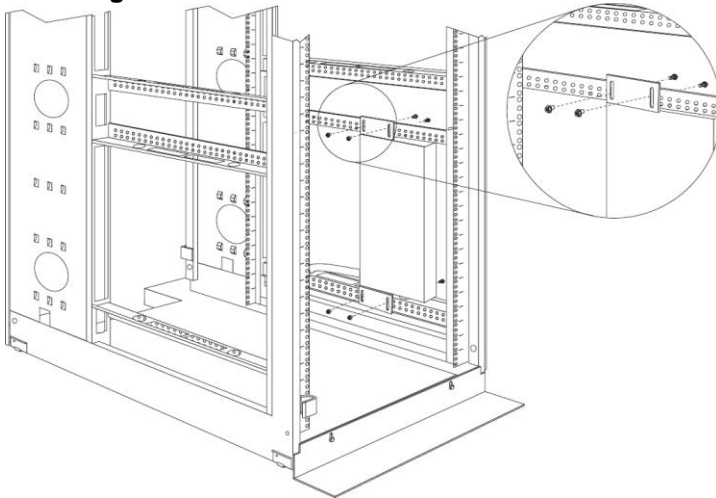
Horizontal installation of a PDU is not supported during relocation or shipping of a rack cabinet. You must remove any horizontally mounted PDUs from the EIA mounting space before you relocate the rack cabinet.

Supported with:

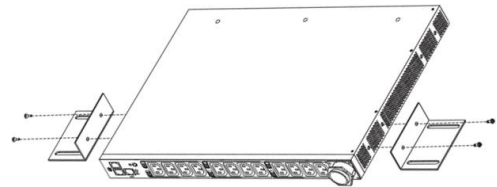
46M4002 – [1U 9 C19 / 3 C13 Switched and Monitored](#)

46M4004 – [1U 12 C13 Switched and Monitored](#)

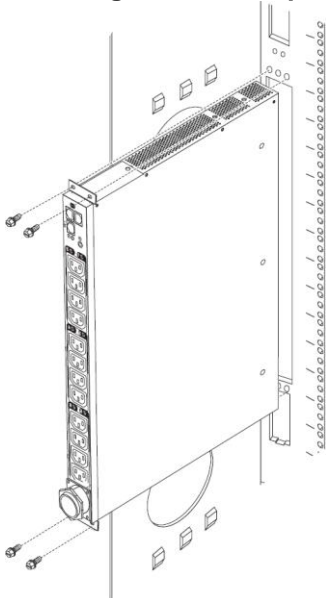
Mounting In the Side of a Rack



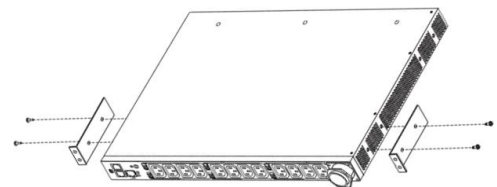
The vertical mounting plates, which ships with the IBM Switched PDUs, will need to be used for this installation option.



Mounting In IBM Enterprise Rack Rear Zero Pocket



The horizontal mounting bracket, which ships with the IBM Switched PDUs, will need to be used for this installation option.

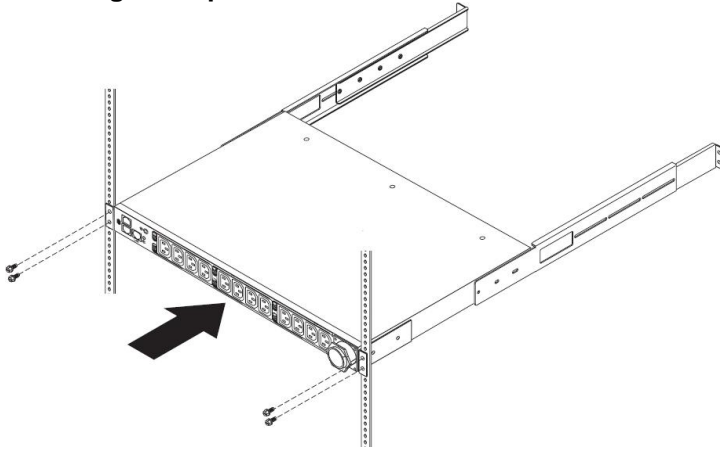


Supported with:

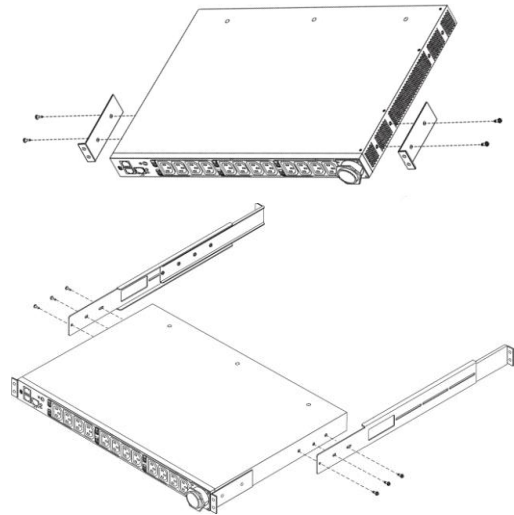
46M4002 – [1U 9 C19 / 3 C13 Switched and Monitored](#)

46M4004 – [1U 12 C13 Switched and Monitored](#)

Mounting In U Space



The horizontal mounting brackets, which ships with the IBM Switched PDUs, will need to be used for this installation option.



Zero U PDU Mount Options

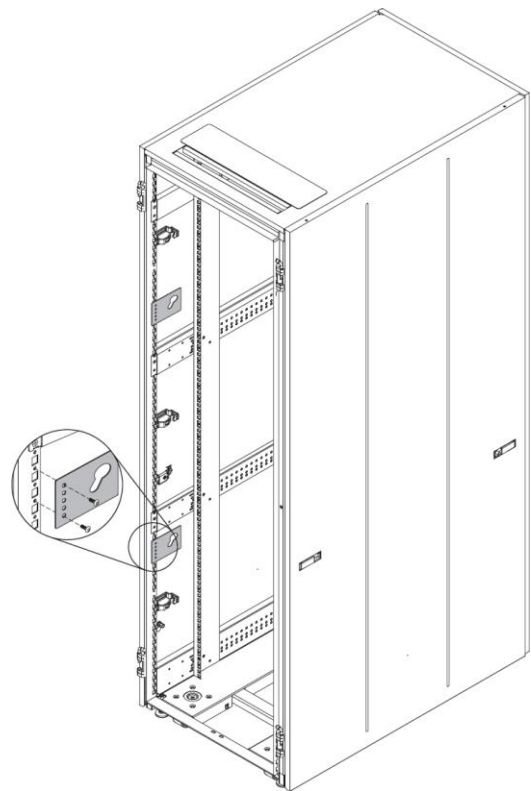
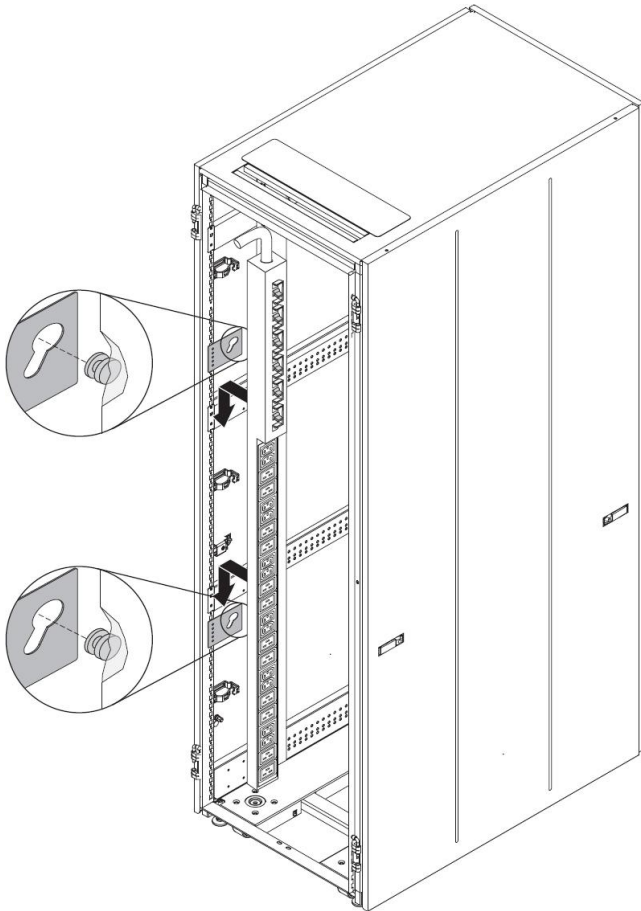
Supported with:

46M4122 – [0U 24 C13 PDU](#)

46M4131 – [0U 24 C13 PDU](#)

46M4143 – [0U 12 C19/12 C13 PDU](#)

Mounting In the Back of a IBM 42U Standard Rack (9307 & 9956)

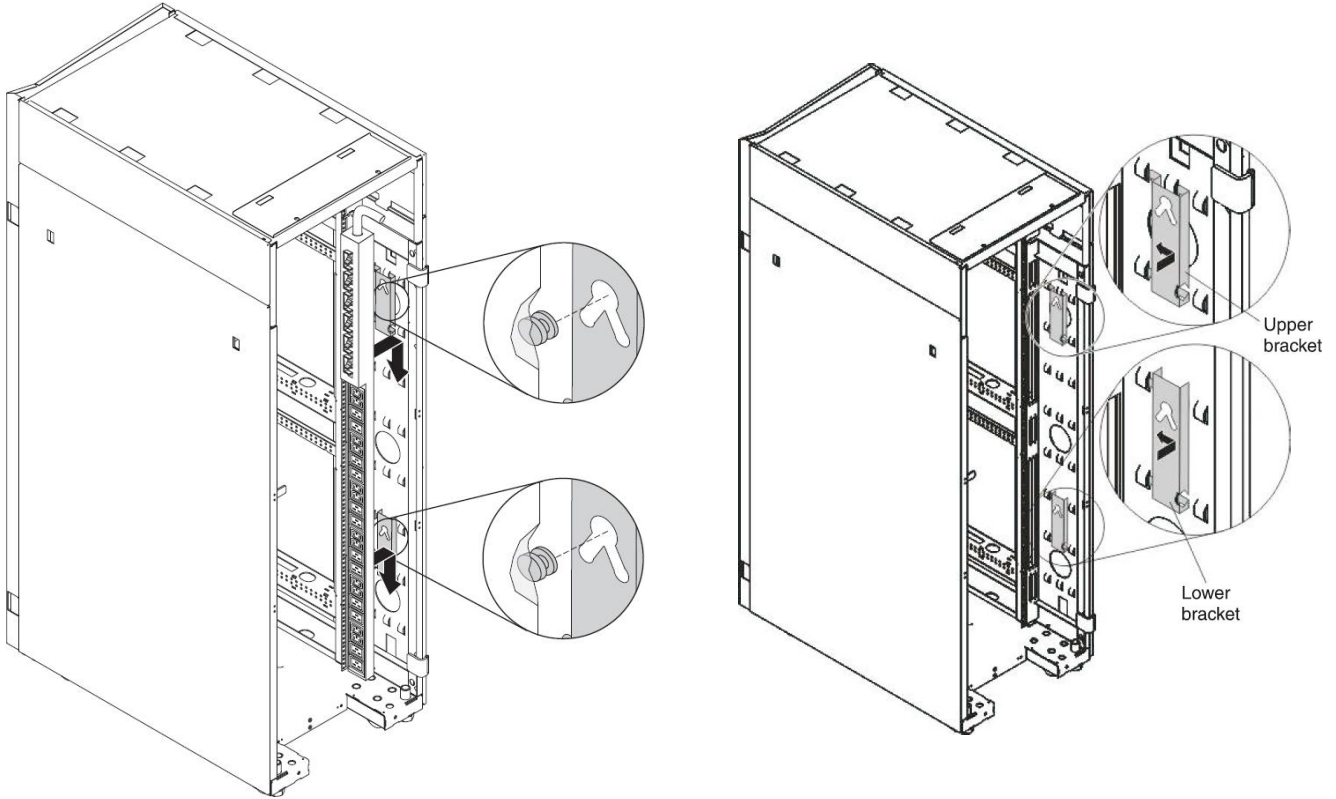


Supported with:

46M4122 – [0U 24 C13 PDU](#)
46M4131 – [0U 24 C13 PDU](#)

46M4143 – [0U 12 C19/12 C13 PDU](#)

Mounting In the Back of a IBM 42U Enterprise Rack (9308 & 1410)



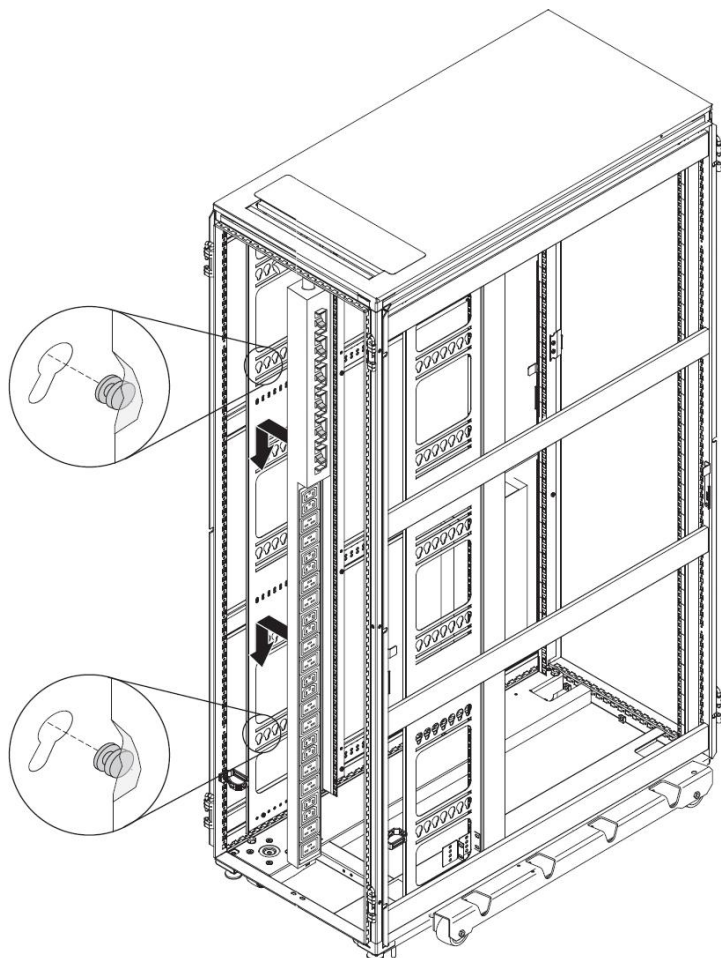
Supported with:

46M4122 – [0U 24 C13 PDU](#)

46M4131 – [0U 24 C13 PDU](#)

46M4143 – [0U 12 C19/12 C13 PDU](#)

Mounting In the Back of IBM Racks With Integrated PDU Mounting Keyholes (9362, 9361, 9360)

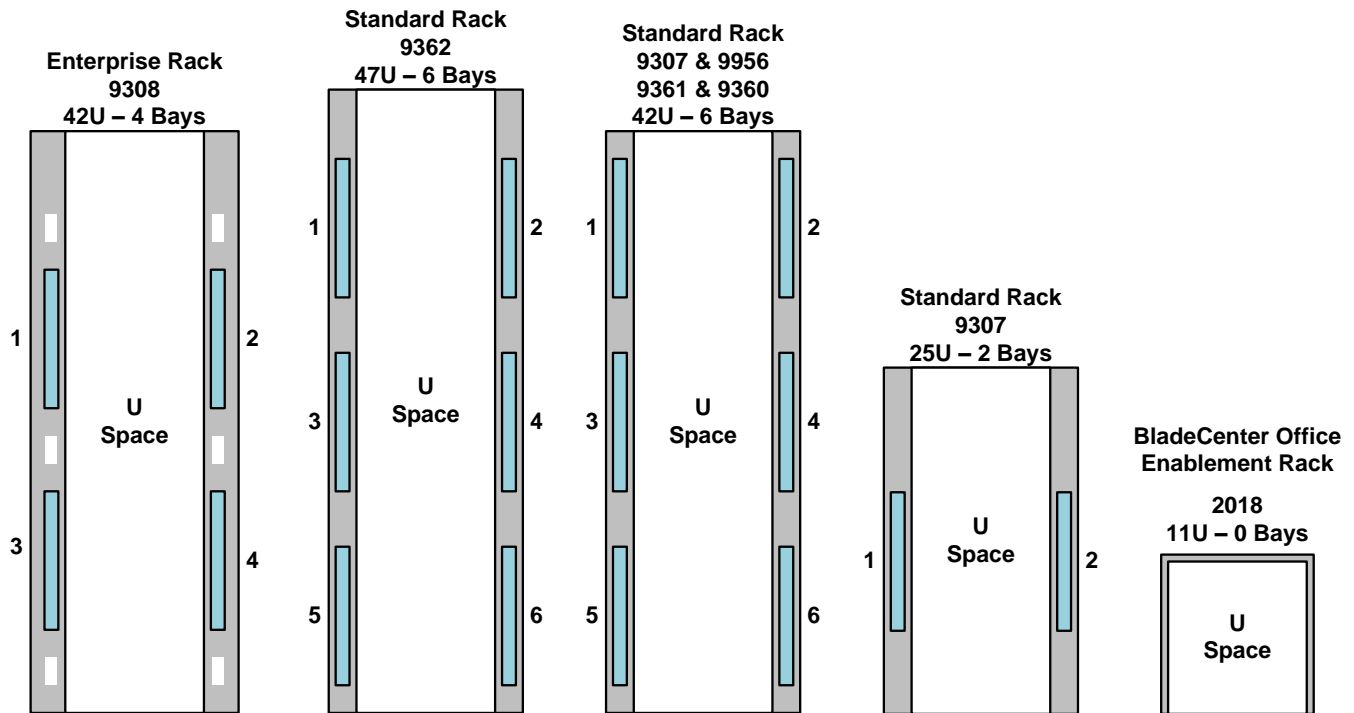


IBM System x Rack Types

IBM DPI PDUs are part of the IBM family of rack-based products. They are designed to easily install and work within IBM System x rack offerings. To gain a better understanding of the IBM System x rack family of products and the benefits they offer, please browse the IBM System x “Rack and Power Infrastructure Portfolio” Web site at <http://www-03.ibm.com/systems/x/hardware/options/index.html>.

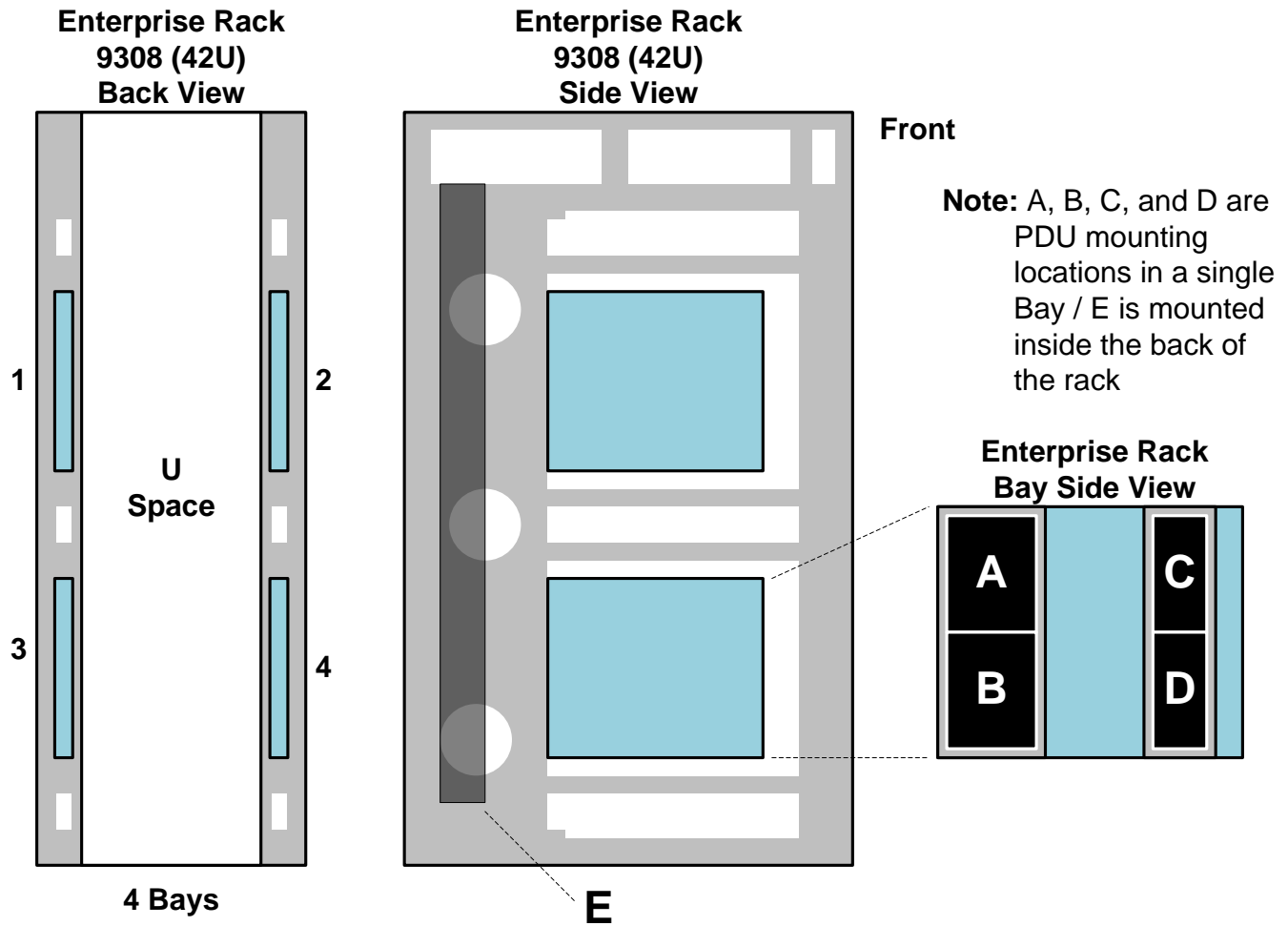
IBM PDUs are designed to be mounted in any EIA-standard rack offering, but given the diversity of rack designs, many of the benefits for flexible mounting do not apply to non-IBM racks. For even more detailed information on the installation and maintenance of the IBM family of PDUs, consult the Web site listed in the above paragraph.

It is important to note that the BladeCenter Office Enablement Rack does not have side bays to mount PDUs. If a PDU is needed in the BladeCenter Office Enablement Rack, one the IBM PDUs in this guide can be mounted in the U Space in the rack.



IBM Enterprise Rack (42U) Installation Options

The IBM Enterprise Rack is the premier IBM rack, offering four deep side bays that enable the greatest variety of side bay mounting options. This flexibility is one of the major benefits of choosing this rack. Using all the available space in the side bays of this rack enables customers to install up to 84 outlets in this rack without sacrificing any valuable “U” space. The picture below details these side bays and provides a lettering and numbering guide to make explaining installation location easier. It is important to note that the Enterprise Rack bays do not accommodate two Enterprise or Ultra Density Enterprise PDUs in one bay due to lack of a clean way to route power cords from mounting location C and D.

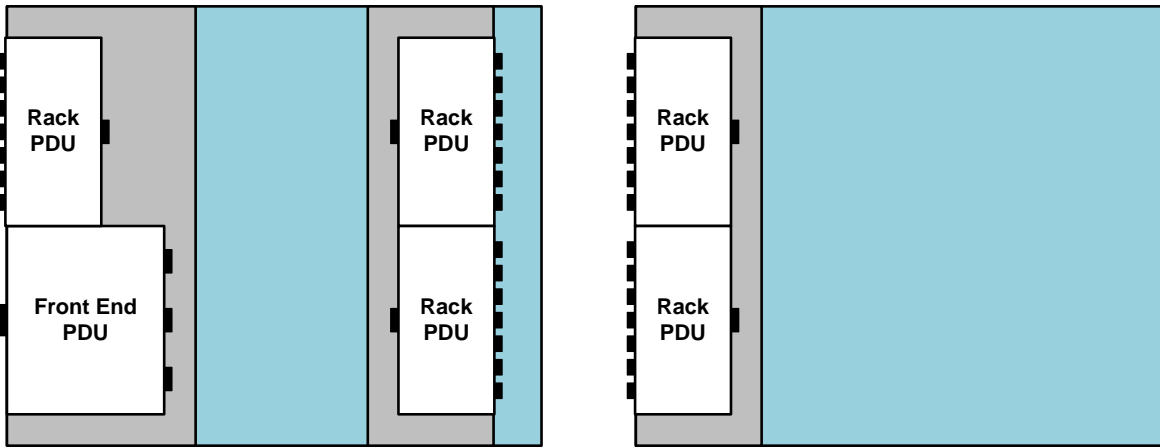


Enterprise Rack (42U) PDU Placement Rules

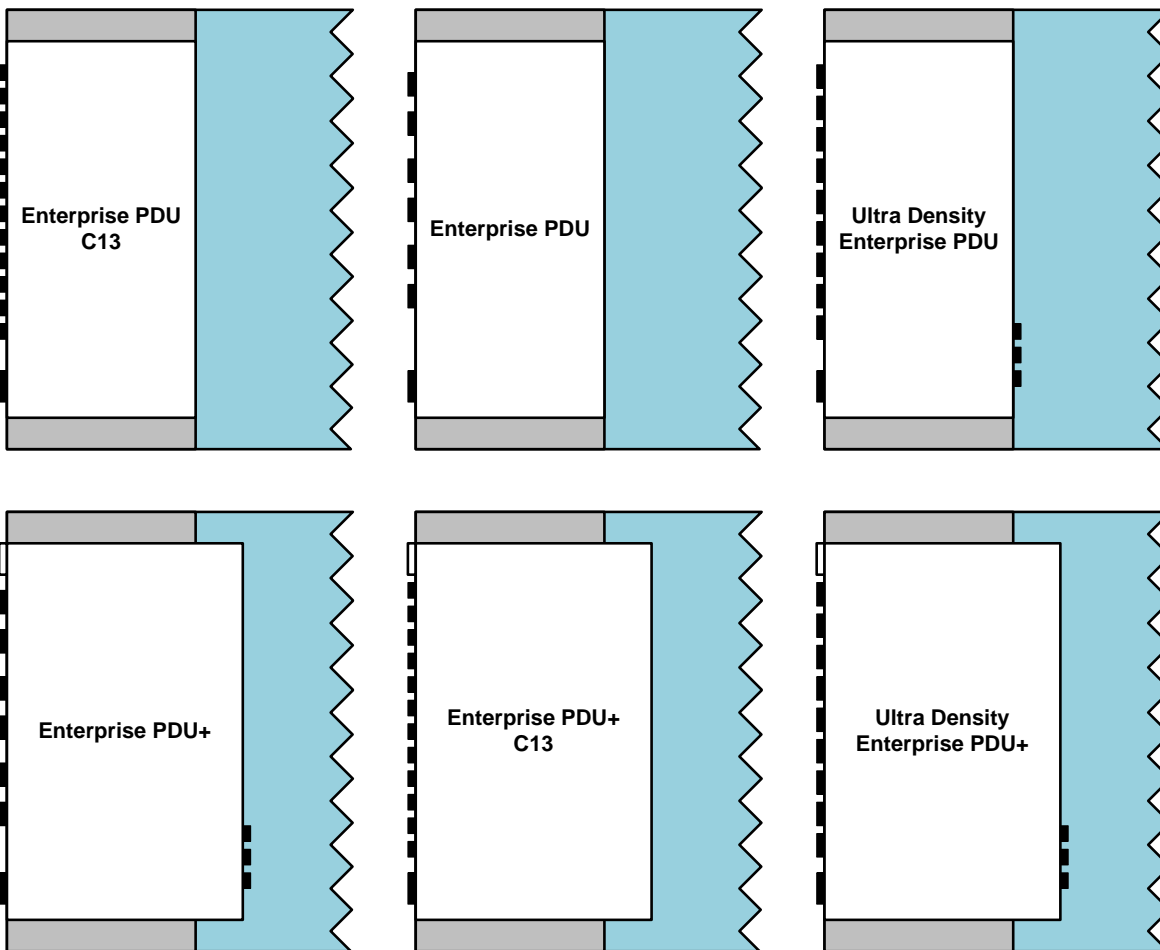
PDU	Placement Rules	Max # of PDUs
Universal Rack	A through D, Requires 1 Front End PDU to feed 3 Rack PDUs	12
Front End	A and B	8
“Enterprise”, “1U 12 C13 Switched & Monitored”, and “1U 9 C19 / 3 C13 Switched & Monitored”	One of These PDUs Requires A and B	4
Zero U	One of These PDUs Requires E	2

IBM Enterprise Rack Side Bays

The depth of the IBM Enterprise Rack side bays allows the IBM System x PDUs to be nested side by side for large configurations PDUs. Here are a few examples of the supported PDU installations for the IBM Enterprise Rack. **Note:** Rack PDU in the following diagrams refers to the Universal Rack PDU.

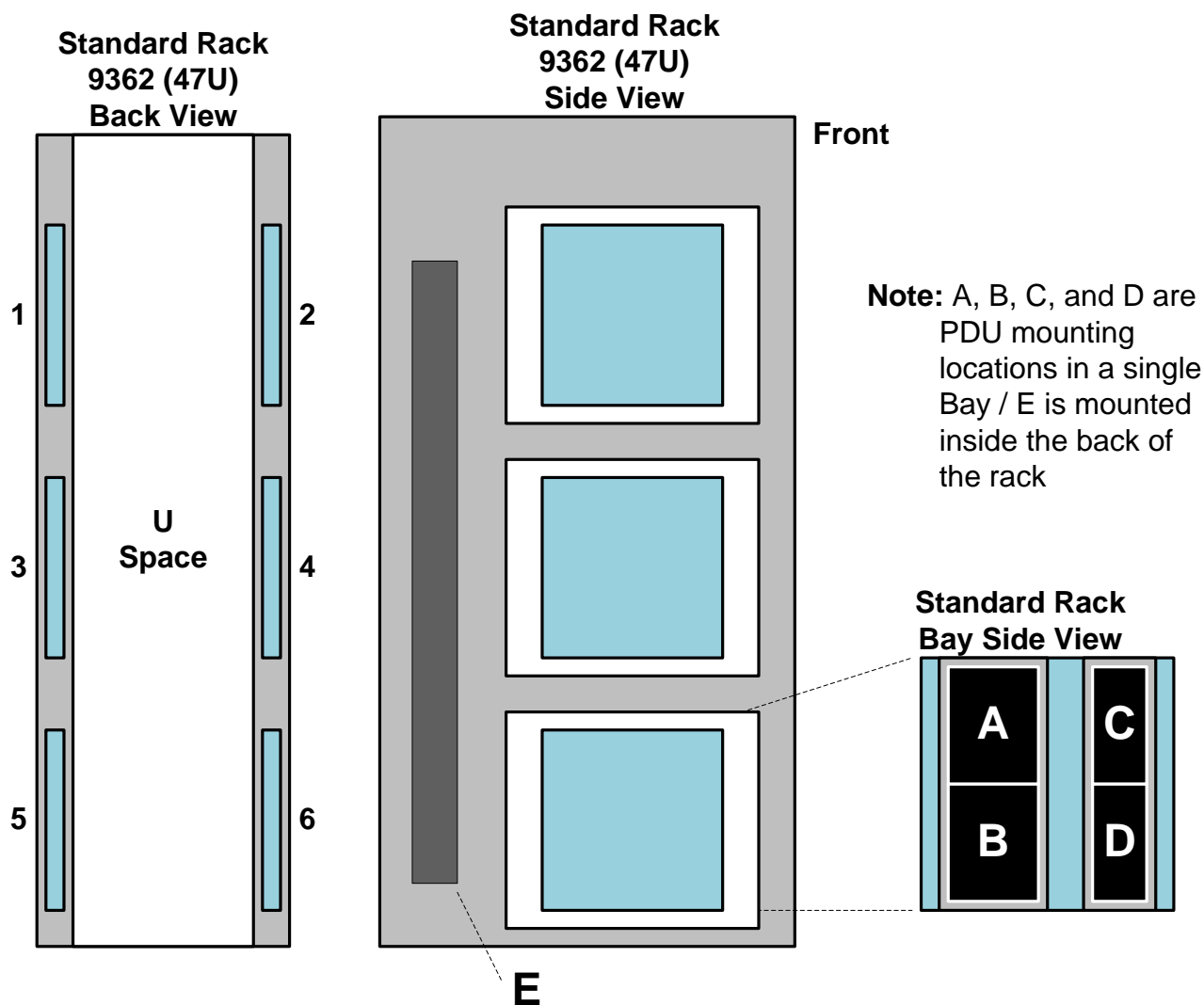


← Rear Of Rack



Standard Rack (47U) Installation Options

This entry rack offers six side panel bay mounting locations. While it has more side bays than the Enterprise Rack, the Standard Rack's bays are less deep and do not allow the variety of mounting options of the Enterprise Rack. Even so, customers can install up to 56 outlets in the Standard Rack without sacrificing any "U" space. Here is graphical depiction of the side bays of the Standard Rack along with lettering and numbering guide. It is important to note that the Standard Rack bays are not deep enough to accommodate two Enterprise or Ultra Density Enterprise PDUs in one bay.

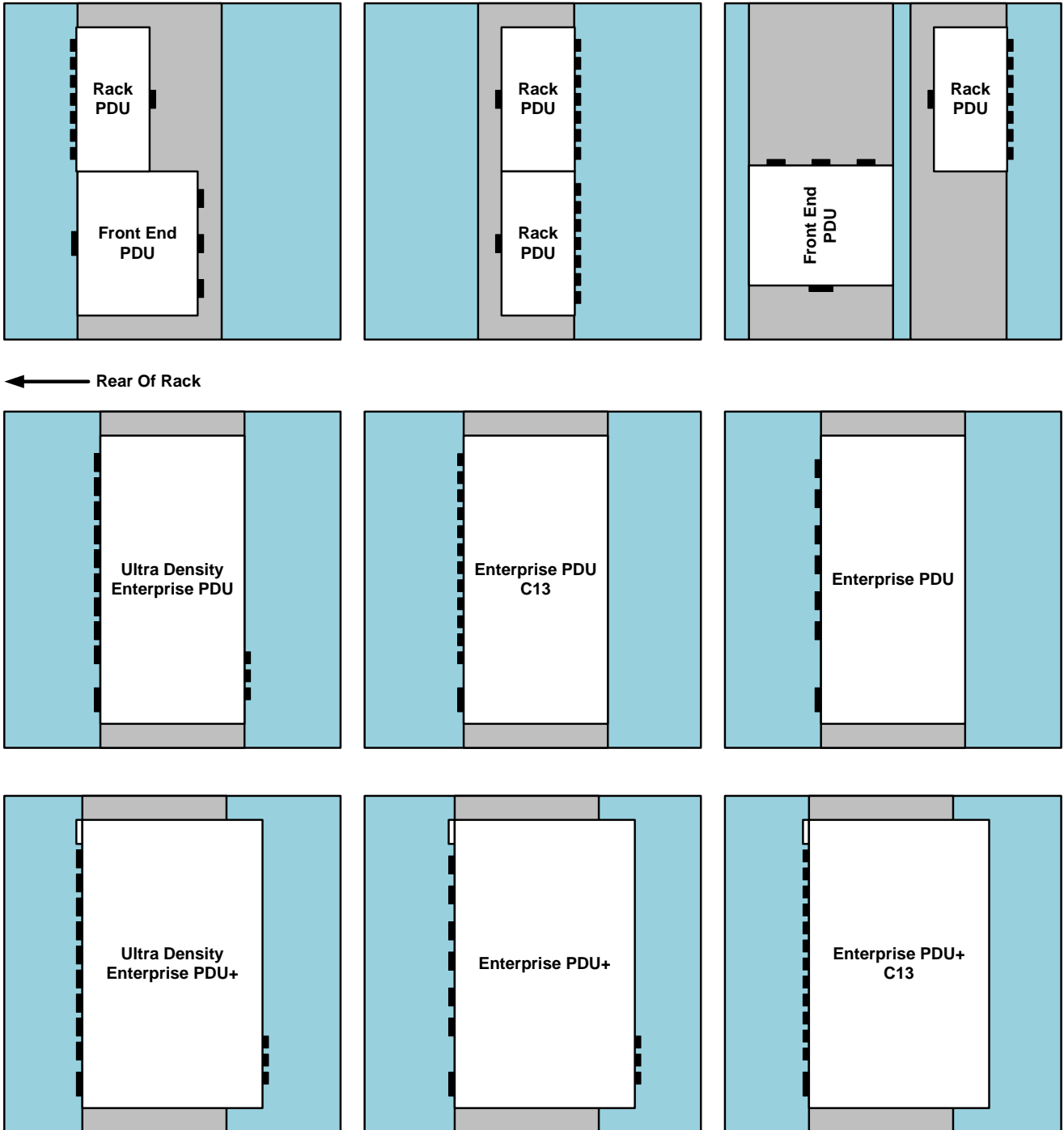


Standard Rack (42U) PDU Placement Rules

PDU	Placement Rules	Max # of PDUs
Universal Rack	A through D, Requires 1 Front End PDU to feed 3 Rack PDUs	8
Front End	A or B, Can't Be Used In Bays 1 and 2	4
"Enterprise", "1U 12 C13 Switched & Monitored", and "1U 9 C19 / 3 C13 Switched & Monitored"	One of These PDUs Requires A through D	4
Zero U	One of These PDUs Requires E	2

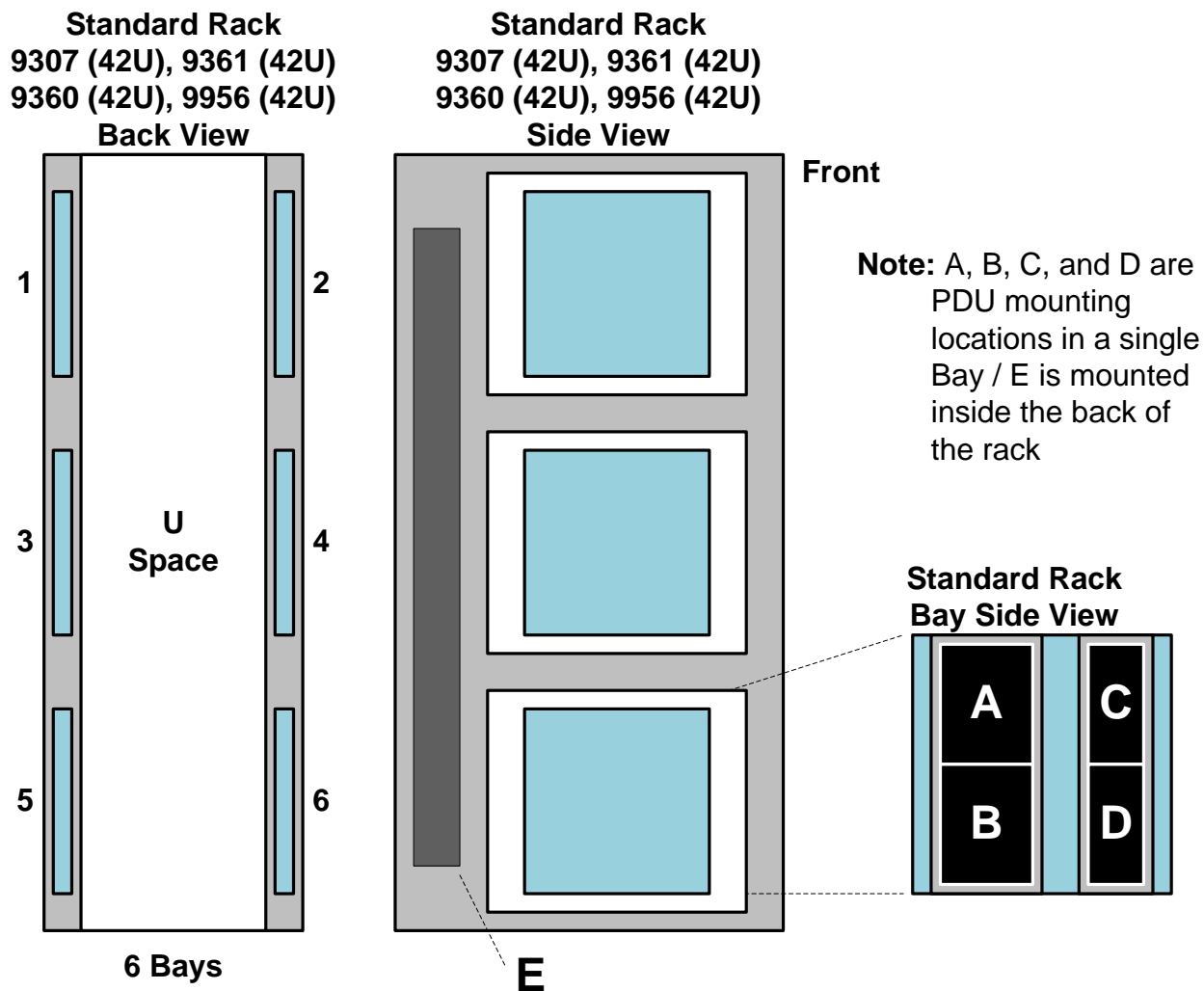
IBM Standard Rack Side Bay

Here are some examples of the supported PDU mounting configurations in a single IBM Standard Rack side bay. **Note:** Rack PDU in the following diagrams refers to the Universal Rack PDU.



IBM Standard Rack (42U) Installation Options

This entry rack offers six side panel bay mounting locations. While it has more side bays than the Enterprise Rack, the Standard Rack's bays are less deep and do not allow the variety of mounting options of the Enterprise Rack. Even so, customers can install up to 56 outlets in the Standard Rack without sacrificing any "U" space. Here is graphical depiction of the side bays of the Standard Rack along with lettering and numbering guide. It is important to note that the Standard Rack bays are not deep enough to accommodate two Enterprise or Ultra Density Enterprise PDUs in one bay.



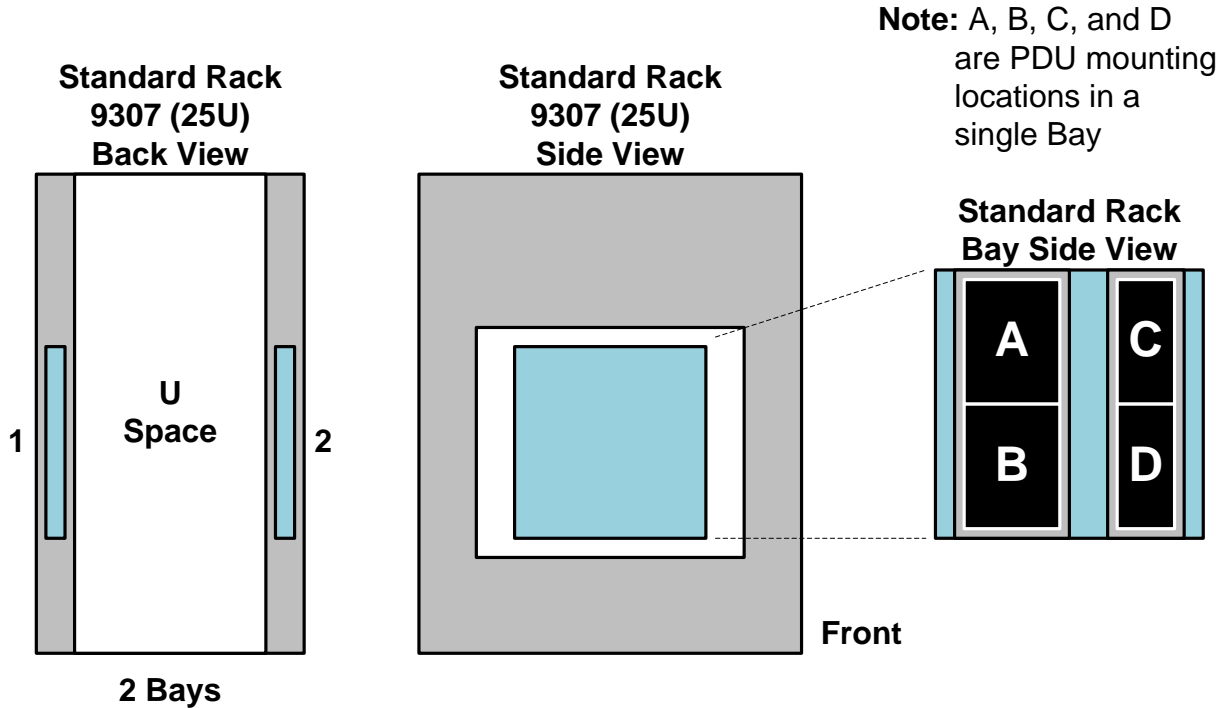
Standard Rack (42U) PDU Placement Rules

PDU	Placement Rules	Max # of PDUs
Universal Rack	A through D, Requires 1 Front End PDU to feed 3 Rack PDUs	8
Front End	A or B, Can't Be Used In Bays 1 and 2	4
"Enterprise", "1U 12 C13 Switched & Monitored", and "1U 9 C19 / 3 C13 Switched & Monitored"	One of These PDUs Requires A through D	4
Zero U	One of These PDUs Requires E	2

See ["IBM Standard Rack Side Bay"](#) section on page 48 for example PDU mounting configurations in a side bay.

IBM Standard Rack (25U) Installation Options

This entry rack offers two side panel bay mounting locations. Here is graphical depiction of the side bays of the Standard Rack along with a lettering and numbering guide. It is important to note that the Standard Rack bays are not deep enough to accommodate two Enterprise or Ultra Density Enterprise PDUs in one bay.



Standard Rack (25U) PDU Placement Rules

PDU	Placement Rules	Max # of PDUs
Universal Rack	A through D, Requires 1 Front End PDU to feed 3 Rack PDUs	4
Front End	A or B	2
"Enterprise", "1U 12 C13 Switched & Monitored", and "1U 9 C19 / 3 C13 Switched & Monitored"	One of These PDUs Requires A through D	2
Zero U	Not supported in 25U rack	0

See "[IBM Standard Rack Side Bay](#)" section on page 48 for example PDU mounting configurations in a side bay.

Reference Material

IBM BladeCenter Chassis Label Rating

Chassis	Power Supply Wattage	Power Supplies Standard	Power Supplies Max	100-127V Rating	200-240V Rating
BC E	2000W	2	4	-	12A / Supply
BC E	2320W	2	4	-	13.8A / Supply
BC H	2900W	2	4	-	37A / Connector *
BC HT	3160W	2	4	-	16A / Supply
BC T	1300W	2	4	-	7.5A / Supply
BC S	950W / 1450W **	2	4	11.2A / Supply	8A / Supply

* - 37A per power connector (16A, 16A, 5A) redundant, 24A per power connector non-redundant

** - 950W is at 100-127V and 1450W is at 200-240V

IBM Storage Label Rating

Storage Device	100-127V Rating / Server	200-240V Rating / Server
DS300	5.58A	2.79A
DS3200	3.9A	1.95A
DS3300	3.9A	1.95A
DS3400	3.9A	1.95A
DS3500	3.9A	2.06A
DS400	5.58A	2.79A
DS4100	3.01A	1.57A
DS4200	4.54A	2.27A
DS4300 (FAStT 600)	3.7A	1.85A
DS4700 Express Model	4.54A	2.27A
DS4800	4.54A	2.27A
EXP100 (FAStT EXP100)	3.5A	1.75A
EXP420	4.54A	2.27A
EXP500	3.9A	1.95A
EXP700	3.9A	1.95A
EXP710	3.9A	1.95A
EXP810	4.54A	2.27A
EXP3000	3.9A	1.95A
FAStT 200	3.5A	1.75A

IBM System x Server Label Rating

Server	Power Supply Wattage	Power Supplies Standard	Power Supplies Max	100-127V Rating / Server	200-240V Rating / Server	Redundant @ 100-127V
x3100 (4348)	310W	1	1	4.5A	2.25A	-
x3100 M3 (4253)	350W	1	1	4.9A	2.4A	-
x3105 (4347)	310W	1	1	4.5A	2.25A	-
x3200 (4362, 4363)	400W	1	1	5.5A	2.75A	-
x3200 (4362, 4363)	430W	1	2	5.5A	2.75A	Yes
x3200 M2 (4367, 4368)	401W	1	1	5.5A	2.75A	-
x3200 M2 (4367, 4368)	430W	1	2	5.5A	2.75A	Yes
x3200 M2 (9234)	400W	1	1	5.5A	2.75A	-
x3200 M2 (9234)	430W	1	2	5.5A	2.75A	Yes
x3200 M3 (7327, 7328)	401W	1	1	5.5A	2.75A	-
x3200 M3 (7327, 7328)	430W	1	2	5.5A	2.75A	Yes
x3250 (4364, 4365)	350W	1	1	6A	3A	-
x3250 M2 (4190, 4194)	351W	1	1	4.5A	2.25A	-
x3250 M3 (4251, 4252)	351W	1	1	4.5A	2.25A	-
x3350 (4192, 4193)	450W	1	2	4.1A	2A	Yes
x3400 (7973, 7974)	670W	1	1	5A	2.5A	-
x3400 (7975, 7976)	835W	1	2	6.5A	3.25A	Yes
x3400 M2 (7836, 7837)	670W	1	1	10A	5A	-
x3400 M2 (7836, 7837)	920W	1	2	10A	5A	Yes
x3400 M3 (7378, 7379)	670W	1	1	10A	5A	-
x3400 M3 (7378, 7379)	920W	1	2	10A	5A	Yes
x3450 (7948)	600W	1	1	7A	3.5A	-
x3455 (7984)	650W	1	1	6.1A	3.0A	-
x3455 (7940, 7941)	650W	1	1	6.1A	3.0A	-
x3500 (7977)	835W	1	2	6.5A	3.25A	Yes
x3500 M2 (7839)	670W	1	2	10A	5A	-
x3500 M2 (7839)	920W	1	2	10A	5A	Yes
x3500 M3 (7380)	670W	1	2	10A	5A	-
x3500 M3 (7380)	920W	1	2	10A	5A	Yes
x3550 (7879)	670W	1	2	7A	3.5A	Yes
x3550 M2 (7946)	675W	1	2	7.8A	3.8A	Yes
x3550 M3 (7944)	675W	1	2	7.8A	3.8A	Yes
x3650 (7979)	835W	1	2	9.7A	4.85A	Yes
x3650 T (7980)	600W	2	2	6A	3A	Yes
x3650 M2 (7838)	675W	1	2	7.8A	3.8A	Yes
x3650 M2 (7947)	675W	1	2	7.8A	3.8A	Yes
x3650 M3 (7945)	675W	1	2	7.8A	3.8A	Yes
x3655 (7985)	835W	1	2	9.7A	4.85A	Yes
x3690 X5 (7148)	675W	1	1	7.8A	3.7A	-
x3690 X5 (7148)	675W	2	4	15.5A per server 7.8A per plug	7.4A per server 3.7A per plug	Yes
x3755 (8877, 7163)	1500W	1	2	17.6A	8.8A	No
x3800 (8866)	775W	2	3	18.4A	9.2A	Yes
x3850 (8863, 8864)	1300W	1	2	15.75A	7.875A	No
x3850/3950 M2 (7141)	1440W	1	2	17.2A	8A	No
x3850/3950 M2 (7233)	1440W	1	2	17.2A	8A	No
x3850 X5 (7145)	1975W	2	2	20A	10A	No
x3950 (8872, 8878)	1300W	2	2	15.75A	7.875A	No

IBM iDataPlex Chassis Label Rating

Chassis	Slot Configuration	Power Supply Wattage	Power Supplies Standard	Power Supplies Max	Chassis Rating
2U Flex Chassis (7831, 6385)	2 Planars	900W High Efficiency	1	1	100V – 8.62A 110V – 7.71A 115V – 7.35A 120V – 7.00A 127V – 6.63A 200V – 4.19A 208V – 3.98A 220V – 3.81A 230V – 3.61A 240V – 3.46A
2U Flex Chassis (7831, 6385)	1 Planar with I/O Tray	900W High Efficiency	1	1	100V – 5.90A 110V – 5.28A 115V – 5.01A 120V – 4.83A 127V – 4.61A 200V – 2.93A 208V – 2.83A 220V – 2.68A 230V – 2.57A 240V – 2.47A
2U Flex Chassis (7381, 6385)	1 Planar with Storage Tray	900W High Efficiency	1	1	100V – 5.54A 110V – 4.89 A 115V – 4.67A 120V – 4.44A 127V – 4.20A 200V – 2.67A 208V – 2.56A 220V – 2.43A 230V – 2.33A 240V – 2.24A
3U Storage Chassis (7834, 6386)		900W High Efficiency	1	1	100V – 7.61A 110V – 6.90A 115V – 6.52A 120V – 6.28A 127V – 5.90A 200V – 3.73A 208V – 3.59A 220V – 3.37A 230V – 3.24A 240V – 3.13A

Chassis	Slot Configuration	Power Supply Wattage	Power Supplies Standard	Power Supplies Max	Chassis Rating
2U Flex Chassis (7831, 6385)	2 Planars	Dual 750W Power Supply	2	2	200V – 3.90A 208V – 3.80A 220V – 3.53A 230V – 3.38A 240V – 3.22A
2U Flex Chassis (7831, 6385)	1 Planar with I/O Tray	Dual 750W Power Supply	2	2	200V – 2.37A 208V – 2.27A 220V – 2.15A 230V – 2.05A 240V – 1.97A
2U Flex Chassis (7381, 6385)	1 Planar with Storage Tray	Dual 750W Power Supply	2	2	200V – 2.43A 208V – 2.32A 220V – 2.19A 230V – 2.11A 240V – 1.99A
3U Storage Chassis (7834, 6386)		Dual 750W Power Supply	2	2	200V – 2.89A 208V – 2.76A 220V – 2.61A 230V – 2.51A 240V – 2.39A

IBM xSeries Server Label Rating

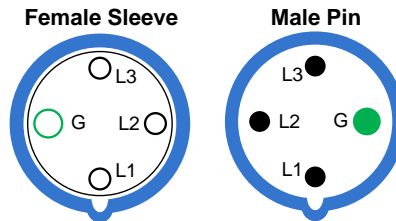
Server	Power Supply Wattage	Power Supplies Standard	Power Supplies Max	100-127V Rating / Server	200-240V Rating / Server	Redundant @ 100-127V
x100	310W	1	1	4.5A	2.25A	-
x206	400W	1	1	5.5A	2.75A	-
x206	430W	1	2	5.5A	2.75A	Yes
x226	530W	1	1	7A	3.5A	-
x226	514W	1	2	7A	3.5A	Yes
x236	670W	1	2	8.93A	4.465A	Yes
x255	370W	2	4	10A	5A	Yes
x260	775W	2	3	18.4	9.2A	No
x306	350W	1	1	4.3A	2.15A	-
x335	332W	1	1	4A	2A	-
x335	411W	1	1	3.5A	1.75A	-
x336	585W	1	2	5.5A	2.75A	Yes
x346	625W	1	2	8.3A	4.15A	Yes
x366	1300W	1	2	15.75A	7.875A	No
x445	1200W	2	2	9.5A	4.75A	No
x445 16-way	1200W	4	4	19A	9.5A	No
x460	1300W	2	2	15.75A	7.875A	No

IEC 309 Pin & Sleeve Plug Decode

4	60	R	9	W
Pin Configuration	Amperage	Device Type	Polarization	Environmental Rating
3 - 2 Pole + G 4 - 3 Pole + G 5 - 3 Pole + N + G	20 30 32 60 63 100	P - Plug C - Connector R - Receptacle B - Inlet	Clock Position Of Female Sleeve	W-WATERTIGHT (SCREW CAP & LOCKING RING)

Color	Voltage Rating
Yellow	100V - 130V
Orange	125V/250V
Blue	200V - 250V
Gray	277V
Red	380V - 480V
Black	500V - 690V

- Example
 - IEC309 3P+G Plug
 - 60amp/250V three-phase
 - Hubbell Connector listing 460C9W IP-67
 - P/N HBL460C9W



Pin Configuration Significance






- 3 Pins = 1ph
- 4 Pins = 3ph Δ
- 5 Pins = 3ph Y

Ingress Protection (IP) Decode

Code Letters	First Number	Second Number
Ingress Protection	Protection Against Ingress of Solid Foreign Objects	Protection Against Ingress of Water with Harmful Effects
IP	0 – No Protection 1 ≥ 50mm Diameter 2 ≥ 12.5mm Diameter 3 ≥ 2.5mm Diameter 4 ≥ 1.0mm Diameter 5 – Dust-Protected 6 – Dust-Tight	0 – No Protection 1 – Vertically Dripping 2 – Dripping At 15° Of Tilt 3 – Spraying Up To 60° Of Tilt 4 – Splashing 5 – Jetting 6 – Power Jetting 7 – Temporary Immersion 8 – Continuous Immersion
<p>First Number: degree of protection for persons against access of hazardous parts inside the enclosure and/or against foreign objects.</p> <p>Second Number: degree of protection of equipment inside enclosures against damage from ingress of water.</p> <p><i>Ingress Protection (IP) is defined in IEC 60529 Standard.</i></p>		

Example: IP67 = Ingress Protection / Dust-Tight / Temporary Immersion

IEC 320 Connectors

Name	Connector	AMP Rating	Use
C5 – Female C6 – Male		2.5A	Laptop Power Supplies And Other Portable Power Supplies
C7 – Female C8 – Male		2.5A	Laptop Power Supplies And Other Portable Power Supplies
C13 – Female C14 – Male		10A	Desktop Computers, Monitors, Switches, And Servers
C15 – Female C16 – Male		10A	Used In Hot Conditions Since It Is Rated To 120 ⁰ C (248 ⁰ F), Unlike C13/C14 Which Is Rated To 70 ⁰ C (158 ⁰ F)
C19 – Female C20 – Male		16A	Blade Chassis, High-power Servers, UPSs, PDUs, And Other High Current Equipment

Note: IEC 320 has changed to IEC 60320

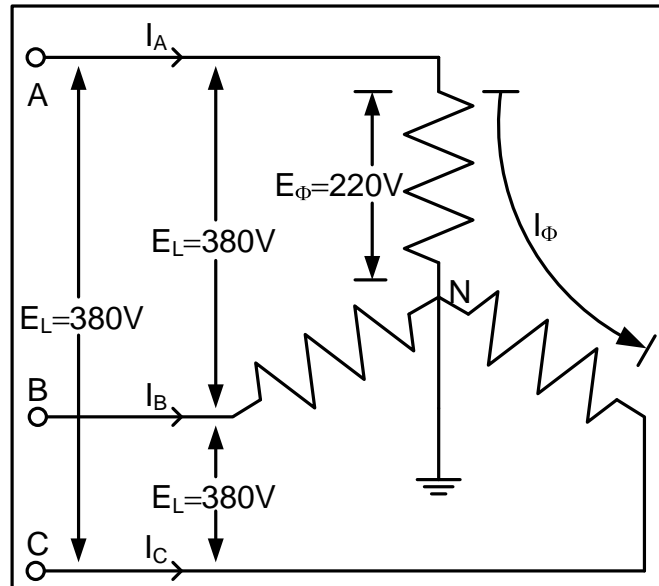
32A Three Phase Wye Power Calculations

$$I_A = I_B = I_C = I_L = I_{\phi} = 32A$$

$$P_{\phi} = E_{\phi Y} \times I_{\phi Y} \times pf \quad (W)$$

$$\begin{aligned} P_{TOTAL} &= 3 \times P_{\phi} \\ &= 3 \times E_L / \sqrt{3} \times I_{\phi} \times pf \\ &= \sqrt{3} \times E_L \times I_L \times pf \\ &= \sqrt{3} \times 380V \times 32A \times 1 \\ &= 21061W \end{aligned}$$

$$\begin{aligned} E_{AN} = E_{BN} = E_{CN} &= E_{\phi} \\ &= \frac{E_L}{\sqrt{3}} = \frac{380}{\sqrt{3}} = 220V \end{aligned}$$



IBM PDU Installation Manuals

Universal Rack PDU (39Y8952, 39Y8953, 39Y8954, 39Y8955, 39Y8956, 39Y8957, 39Y8958, 39Y8959, 39Y8960, 39Y8961, 39Y8962)

ftp://ftp.software.ibm.com/systems/support/system_x_pdf/02r2738.pdf

Front End PDU (39Y8934, 39Y8935, 39Y8936, 39Y8937)

ftp://ftp.software.ibm.com/systems/support/system_x_pdf/02r2739.pdf

DPI Enterprise (39Y8948) / DPI Enterprise & + - C13 (39M2816, 39Y8941)

ftp://ftp.software.ibm.com/systems/support/system_x_pdf/43v6030.pdf

Ultra Density PDU & + (71762NX, 71762MX)

ftp://ftp.software.ibm.com/systems/support/system_x/46m1388.pdf

1U C19 / C13 Switched and Monitored PDUs (46M4002, 46M4004)

ftp://ftp.software.ibm.com/systems/support/system_x_pdf/60y1414.pdf

0U 24 C13 Basic PDU and 0U 12 C19 / 12 C13 Basic PDU (46M4122, 46M4131, 46M4143)

ftp://ftp.software.ibm.com/systems/support/system_x_pdf/60y1412.pdf

Helpful Links

The latest copy of the International version of this document is posted to the following web site:

<http://www-03.ibm.com/support/techdocs/atmastr.nsf/WebIndex/WP101615>

The latest copy of the North American version of this document is posted to the following web site:

<http://www-03.ibm.com/support/techdocs/atmastr.nsf/WebIndex/WP101526>

IBM BladeCenter Power Guide - North America

<http://www-03.ibm.com/support/techdocs/atmastr.nsf/WebIndex/WP101706>

IBM System x Uninterruptible Power Supply (UPS) Guide

<http://www-03.ibm.com/support/techdocs/atmastr.nsf/WebIndex/WP101655>

IBM's System x PDU Web Site

<http://www-03.ibm.com/systems/x/hardware/options/powerdistribution.html>

IBM System x and BladeCenter Power Configurator

<http://www-03.ibm.com/systems/bladecenter/resources/powerconfig.html>

IBM Active Energy Manager

<http://www-03.ibm.com/systems/software/director/aem/index.html>

Hubbell - Pin & Sleeve Plug/Outlet Catalog (Includes IEC309 Outlets)

<http://www.hubbellcatalog.com/wiring/catalogpages/section-E.pdf>

Configuration and Options Guide (COG) - Servers and IntelliStation®

<http://www-304.ibm.com/jct01004c/systems/support/supportsite.wss/docdisplay?Indocid=SCOD-3ZVQ5W&brandind=5000020>

IBM BladeCenter and System x Reference Sheets

<http://www.redbooks.ibm.com/Redbooks.nsf/pages/xref?Open>

Official IBM Visio Stencils

<http://www.visiocalfe.com/ibm.htm>

IBM, the IBM Logo, BladeCenter, DPI, IntelliStation and System x are registered trademarks or trademarks of International Business Machines Corporation in the United States, other countries or both.

Other company, product or service names may be trademarks or service marks of others.