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Compute Project

Project Olympus Universal Power Cord Specification

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1 Summary

Different data centers have different power distributions with different voltages, amperages, and wiring. Project Olympus has defined a Universal Power Cord standard that combined with a compatible Power Distribution Unit allows IT racks to be built to a single build of materials regardless of destination data center. Each data center will have a Universal Power Cord that converts the local A/C power standard into a standardized input that attaches to the rack Power Distribution Unit.

The document describes the power cord(s) for data center facility power cable attach for use with the Mount Olympus Power Distribution Unit (PDU).

2 Universal Power Cord Assembly Power Rating

The Universal Power Cord currently supports four different types of connections.

Table 1 . Power Requirements

Description	Nominal Voltage	Equipment Load Limit	
		Power	Current
30A 5Wire 9AWG/6.63mm ² NA	415VAC +/-10%	17.2kW	24A
32A 5Wire 9AWG/6.63mm ² EU	400VAC +/-10%		25A
50A 4Wire 6AWG NA	208VAC +/-10%	14.4kW	40A
30A 4Wire 9AWG NA	208VAC +/-10%	8.6kW	24A

3 Universal Cable Assembly from facility to PDU connection

Table 2. Facility to Universal Connector Type

Connector Name/ Assembly	Input Connector Part Number	Input Connector Description	Cable Assembly Part Number	Output Connector Description/ Notes	Cable Length and Type
Universal 5 Wire 30/32A plug cable.	IEC60309	IEC309, 4P 5Wire, 415/240VAC, 30/32A UL/VDC pin and sleeve connector	73 42 200 0030: Harting Han-Eco hood with receptacle modules	7 pin female pin with plastic locking housing	4.5M Length, 5 conduct, dual rated, Neoprene Cordage with UL/CSA SOOW and <HAR> H07RN-F approval. Must be usable in European, North America, Asian, and Canadian cordage applications with one part number. See country list. +75C Insulation rating. 9AWG.
Universal 4 Wire 50A plug cable.	CS8365	UL, CSA, NEMA, 3P 4Wire, 250VAC, 50A, Twist Lock device	73 42 200 0034: Harting Han-Eco hood with receptacle modules	7 pin female pin with plastic locking housing	4.5M Length, 4 conductors, Neoprene Cordage with UL/CSA SOOW approval. Must be usable in, North America, and Canadian cordage applications with one part number. +75C Insulation rating, 6AWG.
Universal 5 Wire 30A plug cable.	L21-30	UL, CSA, NEMA, 3P 4Wire, 250VAC, 30A, Twist Lock device	73 42 200 0032: Harting Han-Eco hood with receptacle modules	7 pin female pin with plastic locking housing	4.5M Length, 4 conductors, Neoprene Cordage with UL/CSA SOOW approval. Must be usable in, North America, and Canadian cordage applications with one part number. +75C Insulation rating, 9AWG

3.1 Universal Power Cord Facility Breaker marking and conformity

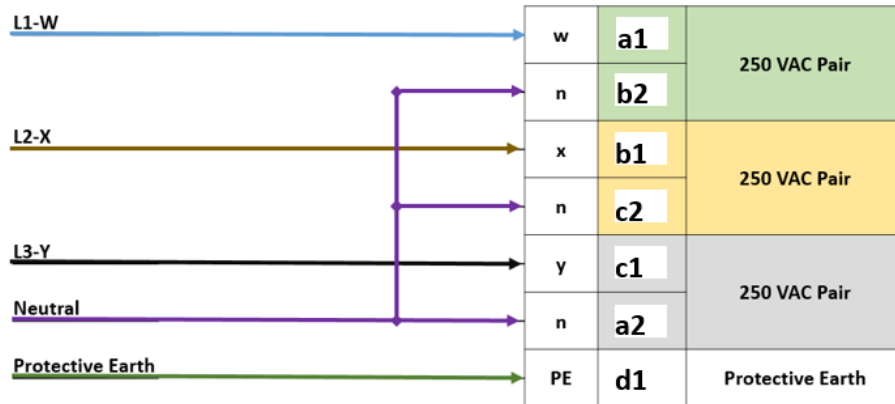
The 30A and 50A cords shall have a 30A and 50A rated breaker protection with UL marking and minimum conformity to UL 489, NEMA AB1, AB3 ANSI Std. C37.16, ANSI Std. C37.17, C37.50, IEEE® Std. C37.13, UL 1066 and the National Electrical Code suitable for products certified to U.S., Canadian, European and Japanese standards.

The 32A cord shall have 32A rated breaker protection with CE marking and minimum conformity to CE RCCB, 2014/35/EU, 2014/30/EU, 2011/65/EU, EN61008-1:2012+A:2014+A11:2015, and EN 61008-2-1:1994+A11:1998

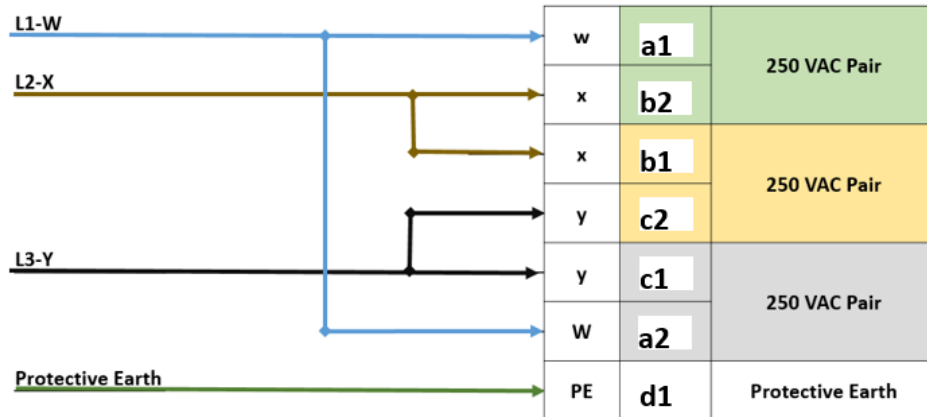


Figure 1. Universal cable assembly options illustration

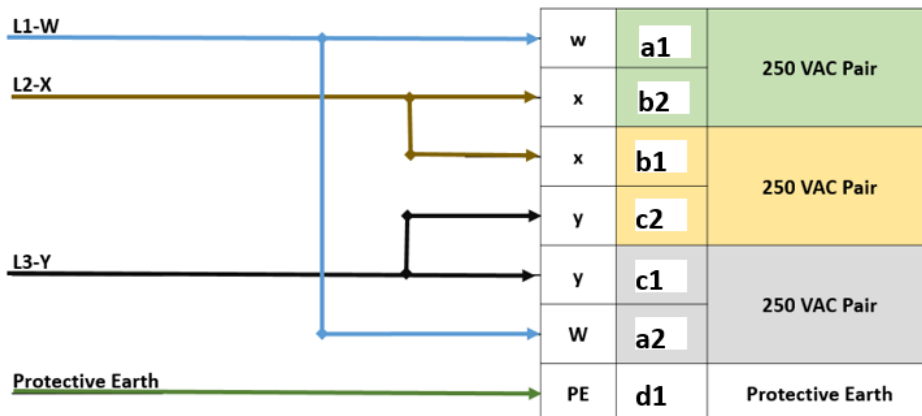
5 Wire Universal Power Cable Assembly 30A/32A



4 Wire Universal Power Cable Assembly 50A



4 Wire Universal Power Cable Assembly 30A



Note: L21-30 cord Assembly is a 4Wire cable using a 5 Wire plug. The neutral is not connected.

Note: Color used in cartoons above does not reflect actual conductor insulation color. See section 4 for insulation color.

Figure 2. Functional Block Diagram of PMDU Cable Assemblies

4 Universal Cable Assembly Output Connector detail

Standardize VAC connector, receptacle detail part numbers

Table 3 . Universal Connector Part Number



Figure 3. Functional Block Diagram of Universal 7 Wire Cable

Table 4 . Universal Connector Pin Assignments

73 42 200 0030 cable assembly pinout					
IEC 60309 Position	Wire Color			Han-Eco Position	Wire ID
L1	Brown			a1	W
L2	Black			b1	X
L3	Gray			c1	Y
N	Blue	Splice	Blue	a2	N
			Blue	b2	N
			Blue	c2	N
PE	Green / Yellow			d1	Safety Ground

73 42 200 0031 cable assembly pinout					
CS8365 Position	Wire Color			Han-Eco Position	Wire ID
X	Black	Splice	Black	a1	W
			Black	a2	
Y	White	Splice	White	b1	X
			White	b2	
Z	Red	Splice	Red	c1	Y
			Red	c2	
PE	Green			d1	Safety Ground

73 42 200 0032 cable assembly pinout					
L21-30P Position	Wire Color			Han-Eco Position	Wire ID
W	No conductor			-	-
X	Black	Splice	Black	a1	W
			Black	a2	
Y	White	Splice	White	b1	X
			White	b2	
Z	Red	Splice	Red	c1	Y
			Red	c2	
Neutral	Not Connected				
PE	Green / Yellow			d1	Safety Ground

Note: This is a 4Wire cable using a 5 Wire plug. The neutral is not connected.