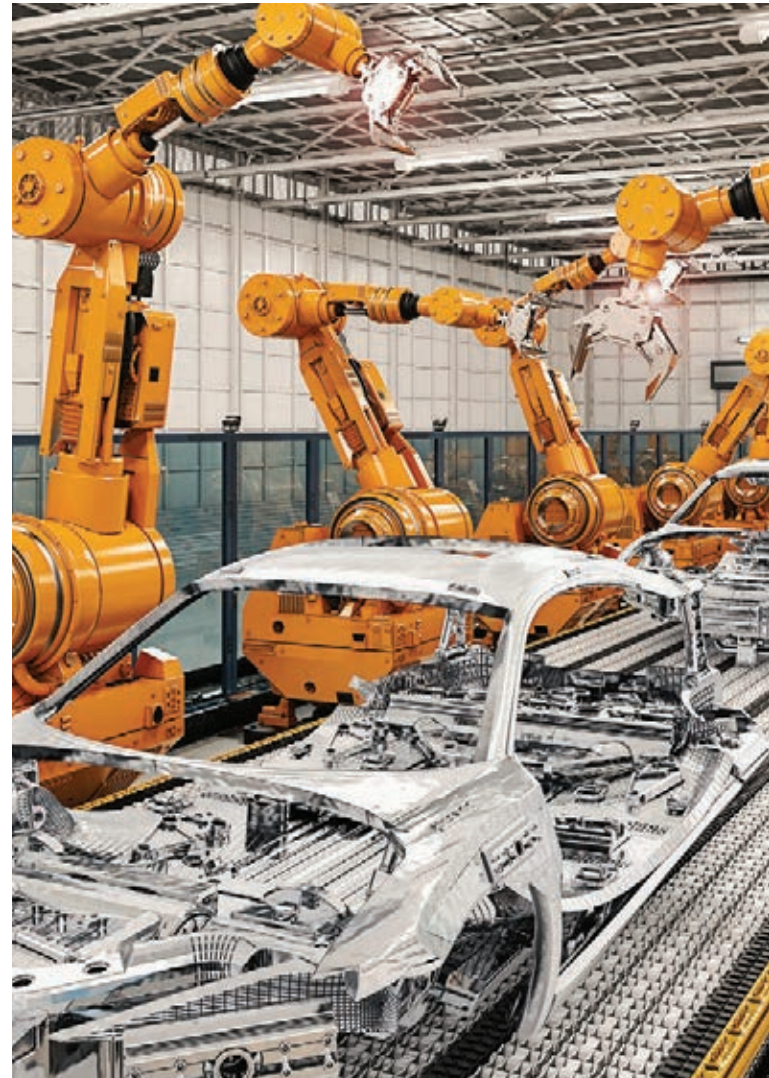


DIN-RAIL POWER SUPPLIES & DC POWER PRODUCTS

PULS



PRODUCT SELECTION GUIDE

NORTH AMERICA

pulspower.us



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Chomutov Czech Republic
Production Plant

PULS: The Technology Leader

Efficient - Reliable - Innovative

When Bernhard Erdl founded PULS in 1980, he and a small group of developers shared a common vision: to design and develop the most technologically advanced switched mode power supplies. For more than 40 years, many PULS innovations and user-friendly features, including DIN-Rail mounting, power reserves and expanded operating temperature ranges, have become industry standards. Today, PULS is the global market and technology leader as we continue the original vision under Mr. Erdl's leadership as the company's CEO & Chief Developer.

PULS dedicates 100% of company resources and efforts to the design, development and production of DC power products that provide users with the lowest total cost of ownership through industry leading energy efficiency ratings, small form factors and long service lifetimes. With more than 100 R&D Engineers throughout the world, our singular focus and commitment to innovation creates unique products, designed for the demanding requirements in today's manufacturing environments, without the need to oversize or purchase unneeded features.

Innovation can be found throughout PULS, from the inspiring global headquarters in Munich, Germany,

to our two state-of-the-art, fully redundant manufacturing facilities. All PULS products are manufactured in plants wholly owned and operated by PULS in the Czech Republic and China. During customer site visits and audits, our plants are repeatedly praised for their streamlined, efficient production processes and environmentally-friendly design.

To assure availability and timely delivery, we stock every product listed in this Selection Guide in our North American HQ located in the Chicago suburbs. Our extensive product offering provides solutions for individual application requirements across numerous market segments, including automotive, intralogistics and material handling, semiconductor, food and beverage, process automation, alternative energy, intelligent traffic solutions and many others.

As the DC power specialists, the talented and experienced PULS team is ready to help you select the right PULS product(s) for your individual application requirements. I invite you to contact our customer service, application support or sales team to see how we can help you.

Matt Biskner, President, PULS, L.P.



Suzhou China Production Plant

Reasons to Choose PULS

Efficiency

- » **Highest** Energy Efficiency Ratings
- » Lower Heat Generated in the Enclosure Allows a Longer Lifetime for All Components in the System
- » Lowest Energy Consumption for the User

Broad Product Range

- » **DIN-Rail** & **Machine Mount** Single & 3-Phase AC & DC Input Power Supplies
- » DC/DC Converters
- » DC-UPS Controllers with Individual Battery Monitoring & Charging
- » Redundancy Modules & Redundant Power Supplies

DC Power Specialists

- » DC Power Products are our **ONLY** Business
- » Market Education & Training Leader
- » Extensive Datasheets with Guaranteed Test Data You Can Rely On

Engineering Resources

- » PULS Employs more than 100 Engineers & Technicians Exclusively Dedicated to the Design & Development of Industrial DC Power Products with Leading Technologies
- » Continually Developing & Introducing **Next Generation** DC Power Solutions

Long Life of Product Families

- » PULS is Committed to Keeping Standard Items in Production for an Extended Length of Time
- » Eliminates Forced Changes in Customer Designs due to Obsolescence
- » **Availability** You Can Count On for Many Years

Control of Supply Chain & Manufacturing

- » **Significant Inventory** Levels in North America to Meet Your Requirements
- » From Development to Shipment – the Entire Process is Controlled by PULS
- » Two Ultra Modern Production Facilities

Lowest Total Cost of Ownership (TCO)

- » Small Footprints Allow for Smaller Enclosures
- » Lower Heat Generation also Allows for Smaller Enclosures
- » **Long Service Life** Reduces Replacement Costs
- » Less Energy Consumed to Produce the Same Power

Quality & Lifetime

- » Longest Lifetime in the Industry
- » **Quality** is Assured with Every Product
- » Performance Values in Datasheets are Guaranteed
- » 100% Product Burn-in

Customer Service & Application Assistance

- » Application **Engineering Support** to Help You Select the Right PULS Product for Your Application
- » Highly Trained Sales Reps Available for Local Support
- » Friendly & Responsive Customer Service Team to Assist You with Availability & Delivery Inquiries

Technology Leader

- » Advanced Design Techniques Utilized to Lead the Market in Product **Innovations**
- » PULS Implements the Latest Components & Technologies for Maximum Performance
- » Highly Automated Manufacturing & Testing Lines Ensure Reliability

The Perfect Power Supply for Every Application



FIEPOS

IP65 & IP67
Field Mounted
Power Supplies



DIMENSION

Highest Performance with
Numerous Models, Features & Approvals



MiniLine

Ultra Compact Design for
Low Power Applications



PIANO

Basic Functionality with No
Compromise in Quality & Reliability



Electronic Circuit Protection

PISA-B: 8 CHANNEL, 24V ELECTRONIC CIRCUIT BREAKERS FOR LOAD & POWER PROTECTION



Features:

- » 8 Current-Controlled Output Channels with Individual Tripping
- » Adjustable Output Currents for Each Channel (Except NEC Class 2 models)
- » Selective Tripping of Overloaded Channels (Except NEC Class 2 models)
- » Output Currents Displayed Live on LED Matrix
- » Remote or Local Reset
- » ON/OFF Feature for Each Individual Output
- » 52mm Width (6.5mm per Channel)
- » Bus Bars Available for Connecting Multiple Units

Catalog Number	Input Voltage	Output Voltage	Max Output Power	Features
PISA-B-812-B1	24V	24V	40A	8 output channels: 2x 1-12A, 6x 1-10A; common alarm signal
PISA-B-8CL2-B1			30A	8 output channels: 8x NEC Class 2; 3.75A per channel; common alarm signal
PISA-B-812-B4			40A	8 output channels: 2x 1-12A, 6x 1-10A; digital coded alarm signal
PISA-B-8CL2-B4			30A	8 output channels: 8x NEC Class 2; 3.75A per channel; digital coded alarm signal

PISA-B

PISA11 4 CHANNEL MODEL



Features:

- » 4 Output Channels
- » Automatic Tripping of all Channels During Fault Conditions
- » Visible Channel Indication During Fault Conditions
- » Remote or Local Reset
- » ON/OFF Feature for Entire Unit
- » Input Voltage Protection
- » 45mm Width

Catalog Number	Input Voltage (VDC)	Output Voltage (VDC)	Total Output Current	Output Current Per Channel				Features
				Ch 1	Ch 2	Ch 3	Ch 4	
PISA11.401	24V	24V	4A	1A	1A	1A	1A	NEC Class 2
PISA11.402			8A	2A	2A	2A	2A	NEC Class 2
PISA11.403			12A	3A	3A	3A	3A	
PISA11.404			16A	4A	4A	4A	4A	
PISA11.406			20A	6A	6A	6A	6A	
PISA11.410			20A	10A	10A	10A	10A	
PISA11.203206			18A	3A	3A	6A	6A	
PISA11.206212			20A	6A	6A	12A	12A	
PISA11.CLASS2			14.8A	3.7A	3.7A	3.7A	3.7A	NEC Class 2

PISA11

FIEPOS

FIELD POWER SUPPLY



DECENTRALIZED – CABINET-FREE – FIELD MOUNTED POWER SUPPLIES

The need for flexible, modular systems is shaping machine design and system engineering. It speeds up system planning, simplifies maintenance and enables easy expansion of the system. In addition, control enclosures can be replaced by smaller versions or even completely eliminated. With **FIEPOS**, PULS presents a new type of power supply that was developed precisely for this environment: a decentralized field mounted power supply with protection class IP65/67 that is **easy to install** and **flexible enough to meet the diverse requirements of modular factory automation**.

Catalog Number	Input Voltage (VAC)	Output Voltage (VDC)	Output Power	Outputs	Input Conn.	Status M12-A 5pin	Output 1 Connector	Output 2 Connector	Output 3 Connector	Output 4 Connector	IP Rating	Features			
Basic															
FPS300.241-002-101	100-240	24-28	300W	1	HAN Q4/2	DC-OK	HAN Q4/0	-	-	-	65/67	LED Control Panel			
FPT300.242-002-101		24						-	-	-		Status LEDs			
FPT500.241-002-101	380-480	24-28	500W	1	HAN Q4/2	DC-OK	1m AS-I Cable	-	-	-	65/67	LED Control Panel			
FPT500.241-006-104								-	-	-					
FPT500.241-010-108								-	-	-					
eFused															
FPS300.245-016-101	100-240	24-28	300W	2	7/8" 3pin	I/O-Link	7/8" 5pin	-	-	-	65/67	LED Control Panel			
FPS300.245-034-105				4	M12-S		I/O-Link	M12-L 5-pin	M12-L 5-pin	-			-		
FPS300.245-047-103				3	7/8" 3pin	DC-OK	7/8" 4pin	7/8" 4pin	7/8" 4pin	-			-		
FPS300.245-049-102										I/O-Link			7/8" 4pin	-	-
FPS300.245-049-112														-	-
FPS300.246-049-102				-	-	-	-	-	-	-			-	LED Control Panel NEC Class 2	
FPT500.245-018-103	380-480	24-28	500W	4	M12-S 4pin	I/O-Link	7/8" 4pin	7/8" 4pin	-	-	65/67	LED Control Panel			
FPT500.245-034-105					M12-L 5pin	M12-L 5pin	-	-							
FPT500.245-053-113				3	7/8" d	DC-OK	7/8" 5pin	7/8" 5pin	7/8" 5pin	-		-			
FPT500.247-064-102										I/O-Link		M12-A 5pin	7/8" 5pin	7/8" 5pin	-
Accessories															
ZM.FPMBA-10	Qty=1 L-Shaped Metal Mounting Bracket with Input Power Lockout/Tagout Capability														
ZM.FPDRA-10	Qty=1 DIN-Rail Mounting Bracket														

MBA = Mounting Bracket / DRA = DIN-Rail Assembly



Power Supplies



100-240VAC

Output Voltage	Output Current	Catalog Number	Output Power	Width (mm)	Power Reserves	Efficiency	Operating Temperature Range	DC-OK Contact	Features			
5-5.5V	3A	ML15.051	15W	22.5	-	77.2%	-10°C to +70°C	-	NEC Class 2			
	5A	ML30.101	25W	45.0	-	80.0%		-				
12-15V	1.3A	ML15.121	15W	22.5	-	82.5%		-				
10-12V	3.0A	ML30.102	30W		-	84.0%		-				
12-15V	4.5A	ML60.121	54W	45.0	-	87.2%	-40°C to +70°C	-	NEC Class 2, -40°C Specified			
		ML60.122		-	87.6%	-						
	5A	PIM60.121	60W	36.0	-	90.7%	-10°C to +70°C	-	Push-In Terminals			
		PIM60.125		-		-						
	7.5A	ML100.102	90W	72.5	-	88.5%	-25°C to +70°C	-				
	10A	CP5.121	120W	32.0	20%	94.0%		Yes	Shut Down Input			
	15A	QS10.121	180W	60.0	50%	91.8%						
	16A	CP10.121	192W	39.0	20%	94.3%						
30A	CPS20.121	405W	65.0	20%	92.6%							
±12 or ±15V	2.5A	ML30.106	36W	45.0	-	86.0%	-10°C to +70°C	-				
24V	3.8A	PIM90.245-L1	90W	36.0	-	93.8%	-10°C to +70°C	-	Screw Terminals			
		QS5.DNET	91.2W	40.0	-	92.0%	-25°C to +70°C	Yes				
24-28V	0.63A	ML15.241	15W	22.5	-	85.1%	-10°C to +70°C	-	NEC Class 2			
	1.3A	ML30.241	30W		-	89.4%		-				
	1.5A	PIM36.241	36W		-	90.6%		-		NEC Class 2, Push-In Terminals		
	2.5A	ML60.241	60W	45.0	-	89.7%	-40°C to +70°C	-	NEC Class 2			
		ML60.242		-	90.4%	-10°C to +70°C	-	NEC Class 2, -40°C Specified				
		PIM60.241		36.0	-	91.8%	-10°C to +70°C	-	NEC Class 2, Push-In Terminals			
		PIM60.245		-		-		-	NEC Class 2, Screw Terminals			
	3.3A	CS3.241	80W	32.0	-	89.8%	-25°C to +70°C	-	NEC Class 2			
	3.4A	QS3.241			50%	90.0%		-				
	3.8A	PIM90.241	90W	36.0	-	93.8%	-10°C to +70°C	-	Push-In Terminals			
		PIM90.245			-				-	Screw Terminals		
	4.2A	ML100.100	100W	73.0	-	90.0%		-	-	Conformal Coating		
		ML100.109			-				-			
	5A	CP5.241	120W	32.0	20%	94.3%	-25°C to +70°C	Yes	Conformal Coating			
		CP5.241-C1							Spring Clamp Terminals			
		CP5.241-S1							Push-In Terminals			
CP5.241-S2		Extended DC Input										
CP5.242												
PIC120.241D		39.0							-	92.3%	-10°C to +70°C	
QS5.241		40.0							50%	92.7%	-25°C to +70°C	
QS5.241-A1						Conformal Coating / ATEX / IECEx						



CP5



CP10



CP20



PIC480



QS40

Output Voltage	Output Current	Catalog Number	Output Power	Width (mm)	Power Reserves	Efficiency	Operating Temperature Range	DC-OK Contact	Features
24-28V	10A	CP10.241	240W	39.0	20%	95.2%	-25°C to +70°C	Yes	<ul style="list-style-type: none"> Conformal Coating Approved for Medical Use Spring Clamp Terminals Push-In Terminals Extended DC Input
		CP10.241-C1							
		CP10.241-M1							
		CP10.241-S1							
		CP10.241-S2							
		CP10.242							
		PIC240.241D							
		QS10.241							
	20A	QS10.241-A1	480W	49.0	-	93.5%			<ul style="list-style-type: none"> Conformal Coating / ATEX / IECEx Conformal Coating
		QS10.241-C1							
		CP20.241		48.0	20%	95.6%			<ul style="list-style-type: none"> Conformal Coating Spring Clamp Terminals Push-In Terminals Shut Down Input Extended DC Input
		CP20.241-C1							
		CP20.241-S1							
		CP20.241-S2							
CP20.241-V1	59.0	-	95.0%	<ul style="list-style-type: none"> Conformal Coating Conformal Coating / ATEX / IECEx Shut Down Input 					
CP20.242									
PIC480.241D	82.0	50%	93.9%						
QS20.241									
QS20.241-C1									
QS20.241-A1									
40A	QS40.241	960W	125.0		94.6%				
28-32V	8A	QS10.301	240W	60.0		93.5%			
36-42V	6.7A	CP10.361	480W	39.0	20%	95.4%			
	13.3A	CPS20.361		65.0		94.3%			
		QS20.361	82.0	50%	94.0%				
	26.7A	QS40.361	960W	125.0		94.6%	Shut Down Input		
48-56V	1.05A	ML50.105	50W	45.0	-	90.0%	-10°C to +70°C	-	NEC Class 2
	2.1A	ML100.105	100W	72.5	-	91.0%		-	
	5A	CP5.481	240W	32.0	20%	93.5%	-25°C to +70°C	Yes	
		QS10.481		60.0	50%	92.0%			
	QS10.481-D1		Extended DC Input						
	5.4A	CP10.481	259W	39.0	20%	95.5%			
		CP20.481	480W	48.0		96.0%			
	10A	PIC480.481D		480W	59.0	-	95.7%		-25°C to +60°C
QS20.481		82.0	50%		94.3%				
20A	QS40.481	960W	125.0		95.0%	-25°C to +70°C	Shut Down Input		

Power Supplies



380-480VAC

Output Voltage	Output Current	Catalog Number	Output Power	Width (mm)	Power Reserves	Efficiency	Operating Temperature Range	DC-OK Contact	Features
12-15V	8A	CT5.121	96W	40.0	-	85.8%	-25°C to +70°C	-	
24-28V	3.75A	ML90.200	90W	72.5	-	89.5%	-10°C to +70°C	-	NEC Class 2
	4.2A	ML100.200	100W		-			-	
	5A	CT5.241	120W	40.0	20%	90.4%	-25°C to +70°C	-	
	10A	CT10.241	240W	62.0		92.8%		-	
		CT10.241-C1			-	Conformal Coating			
	20A	QT20.241	480W	65.0	50%	95.0%		Yes	Conformal Coating
QT20.241-C1		Yes						Shut Down Input	
40A	QT40.241	960W	110.0	50%	95.3%	Yes		Enhanced Lifetime Shut Down Input	
	QT40.242					Yes			
36-42V	13.3A	QT20.361	480W	65.0	50%	94.8%	-25°C to +70°C	Yes	
	26.7A	QT40.361	960W	110.0		95.3%		Yes	Shut Down Input
48-56V	5A	CT10.481	240W	62.0	20%	92.8%		-	
48-55V	10A	QT20.481	480W	65.0	50%	95.4%		Yes	
48-54V	20A	QT40.481	960W	110.0				Yes	Shut Down Input

NOTE: CT5.121, ML90.200, ML100.200 and CT5.241 utilize 2 legs of a 3-Phase System.

For Power Applications

Output Voltage	Output Current	Catalog Number	Output Power	Width (mm)	Power Reserves	Efficiency	Operating Temperature Range	DC-OK Contact	Features
24V	40.0A	XT40.242	960W	96.0	25%	95.5%	-25°C to +70°C	-	480VAC Input Only
36V	26.6A	XT40.362				96.0%		-	
48V	20.0A	XT40.482				95.5%		-	
72V	13.3A	XT40.722				-			
24V	40.0A	XT40.241	960W	96.0	25%	95.5%	-25°C to +70°C	-	400VAC Input Only
36V	26.6A	XT40.361				96.0%		-	
48V	20.0A	XT40.481				95.5%		-	
72V	13.3A	XT40.721				-			



SLA4.100



QS10.DNET



CP5.241-C1



QT20.241-C1

AS-Interface®

Output Voltage	Output Current	Catalog Number	Output Power	Width (mm)	Input Voltage	Features
30.5V	2.8A	SLA3.100	85.4W	49.0	100-120 / 200-240VAC	NEC Class 2
	4A	SLA4.100	122W	73.0		18-32VDC
		SLAD4.100		40.0	DC/DC Converter	
	8A	SLA8.100	244W	91.0	100-120 / 200-240VAC	

AS-Interface®

DeviceNet®

Output Voltage	Output Current	Catalog Number	Output Power	Width (mm)	Input Voltage	Features
24V	3.8A	QS5.DNET	91.2W	40.0	100-240VAC	NEC Class 2
	8A	QS10.DNET	192W	60.0		

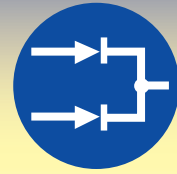
DeviceNet®

Conformal Coated

Output Voltage	Output Current	Catalog Number	Output Power	Width (mm)	Input Voltage	Features				
24-28V	2.1A	ML50.109	50W	45.0	100-240VAC	NEC Class 2				
	4.2A	ML100.109	100W	72.5	100-120 / 200-240VAC					
	5.0A	CP5.241-C1	120W	40.0	32.0	100-240VAC				
		QS5.241-A1								
	10A	CP10.241-C1	240W	60.0	39.0	100-240VAC	Integrated Redundancy			
		CP10.241-R2-C1								
		QS10.241-C1								
		QS10.241-A1								
	20A	CT10.241-C1	480W	82.0	62.0	380-480VAC				
		CP20.241-C1						48.0	100-240VAC	Integrated Redundancy
		CP20.241-R2-C1								
		QS20.241-A1						82.0	100-240VAC	
		QS20.241-C1								
QT20.241-C1	65.0	380-480VAC								

CONFORMAL COATED

Redundancy



Redundant Systems Without Redundancy Modules

With the **CP Series (-R models)**, PULS offers a **unique feature**: Power supplies with an integrated redundancy based on efficient MOSFET technology. This means there is no need for additional redundancy modules for 1+1 and N+1 redundant systems.

Space savings of more than 45%

Space Savings

PULS integrated the decoupling feature into the standard CP housings. This means the size of the units are identical to those of the standard CP10 (39mm) and CP20 (48mm).

On-line Replacement

These models are available with removable plug connectors or spring clamp terminals. The models with removable plug connectors (CP10.241-R2 & CP20.241-R2 & -C1 conformal coated versions) allow the replacement of devices during live operation.

If there is no need for this feature or if heavy shocks and vibrations occur regularly in the application, the screwless units (CP10.241-R1 & CP20.241-R1) are the perfect choice.



Power Supplies With Integrated Redundancy

Output Voltage	Output Current	Catalog Number	Output Power	Width (mm)	Input Voltage	Features
24-28V	10A	CP10.241-R1	240W	39.0	100-240VAC	Spring Clamp Terminals
		CP10.241-R2				Removable Terminals
		CP10.241-R2-C1				Removable Terminals Conformal Coating
		CP10.242-R2				Extended DC Input Range
	20A	CP20.241-R1	480W	48.0		Spring Clamp Terminals
		CP20.241-R2				Removable Terminals
		CP20.241-R2-C1				Removable Terminals Conformal Coating
		CP20.245-R2				Marine Approvals EMC Class B

Redundancy Modules



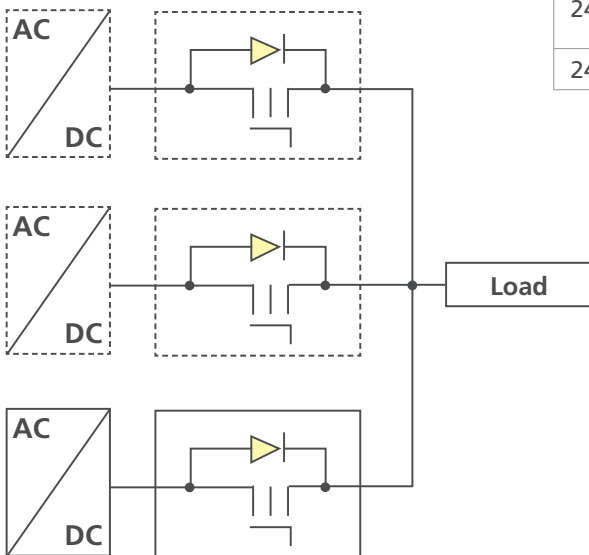
Highest System Reliability

In a redundant power supply system, two or more power supplies are wired in parallel to increase the reliability and availability of the DC voltage. The additional power supply provides backup in case one power supply fails.

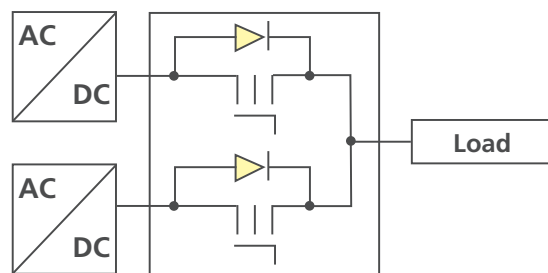
The power supplies are decoupled by one or more redundancy modules. The redundancy modules isolate a fault in one power supply and protect the DC voltage for critical applications.

Redundancy Modules

Output Voltage	Output Current	Catalog Number	Width (mm)	Input Voltage	Power Supply Size	Redundancy Method
12-28V	20A	PIRD20.241	39.0	12-28V	2x10A	Diode
		YR20.242	32.0		2x20A	MOSFET
	40A	YR40.241	36.0			
		YR40.245	46.0		2x40A	
12-48V	10A	MLY10.241	45.0	12-48V	2x5A	Diode
	20A	MLY02.100			2x10A	
12-28V	40A	YR40.242	36.0	24-28V	2x20A	MOSFET
	80A	YR80.241	46.0		2x40A	
24-48V	20A	YR20.246	32.0	24-48V	2x10A	Diode
		YRM2.DIODE		24-56V	2x20A	MOSFET
24-56V	40A	YR40.482	46.0			24-56V



N+1-Redundancy



1+1-Redundancy

REDUNDANCY

DC/DC Converters

Output Voltage	Output Current	Catalog Number	Output Power	Width (mm)	Input Voltage	Features	
5-5.5V	10A	CD5.051	50W	32.0	18-32.4VDC		
12-15V	8A	CD5.121	96W		18-32.4VDC		
24V	3.8A	CD5.241-L1	92W		14.4-32.4VDC	NEC Class 2	
23-28V	4A	CD5.243	96W		10.8-16.2VDC		
	5A	CD5.241	120W		18-32.4VDC		
		CD5.241-S1			18-32.4VDC	Signal Contacts	
		CD5.242			36-60VDC		
10A	CD10.241	240W	42.0		18-35VDC		
24-28V	20A	CPS20.241-D1	480W		65.0	110-300VDC	Extended DC Input
		QTD20.241				480-840VDC	For Intermediate DC Bus
48-56V	5A	CD10.482	240W	42.0	36-60VDC		
	10A	CPS20.481-D1	480W	65.0	110-300VDC	Extended DC Input	

Many single phase power supplies will accept a 110-150VDC input.



CD5



CD10



CPS20.241-D1



QTD20.241

DC-Backup



UC10

DC-UPS & Buffer Modules With Capacitor Storage

Output Voltage	Output Current	Catalog Number	Width (mm)	Storage Capacity	Storage Element
24V	15A	UC10.241	126.0	6kWs - Buffer Time: 9s at 15A	UltraCapacitor (EDLC)
		UC10.242	198.0	12kWs - Buffer Time: 18s at 15A	
	20A	UF20.241	64.0	0.2kWs - Buffer Time: 310ms at 20A	Electrolytic Capacitor
		UF40.241		0.32kWs - Buffer Time: 250ms at 40A	
48V	20A	UF20.481		0.2kWs - Buffer Time: 150ms at 20A	

DC-UPS With Battery Storage

Output Voltage	Output Current	Catalog Number	Width (mm)	Battery Requirements	Note
24V	10A	UBC10.241	123.0	Integrated, 12V, 5Ah	Battery Included
		UBC10.241-N1			
		UB10.241	49.0	External, 12V, 3.9-40Ah	Battery Not Included
		UB10.242		External, 12V, 17-130Ah	
UB10.245	External, 12V, 3.9-40Ah				
24-26V	20A	UB20.241	46.0	External, (2) 12V, 3.9-150Ah	
24V	40A	UB40.241		External, (2) 12V, 12-200Ah	

NOTE: All UPS controllers and buffer modules require a 24VDC input from a power supply or other source.



UBC10



UB10



UB20



UB40

DC-Backup

Buffer Modules With Capacitor Storage

The PULS DC-UPS with integrated electro-chemical double layer capacitors (EDLC or Ultracaps) are fully maintenance free and guarantee uninterrupted power from seconds to minutes. Buffer modules with electrolytic capacitors can bridge power failures for 24V or 48V bus for milliseconds to seconds.

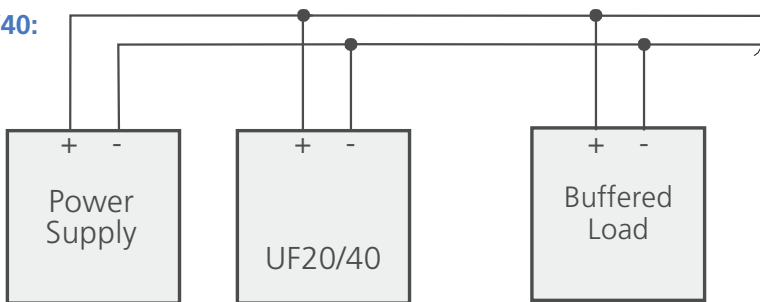
Unlike DC-UPS systems that utilize batteries, regular replacement of the capacitors is not necessary. In buffer mode, the output voltage is regulated and the change from normal to buffer mode occurs without interruptions. All modules are protected against overload and short circuit.



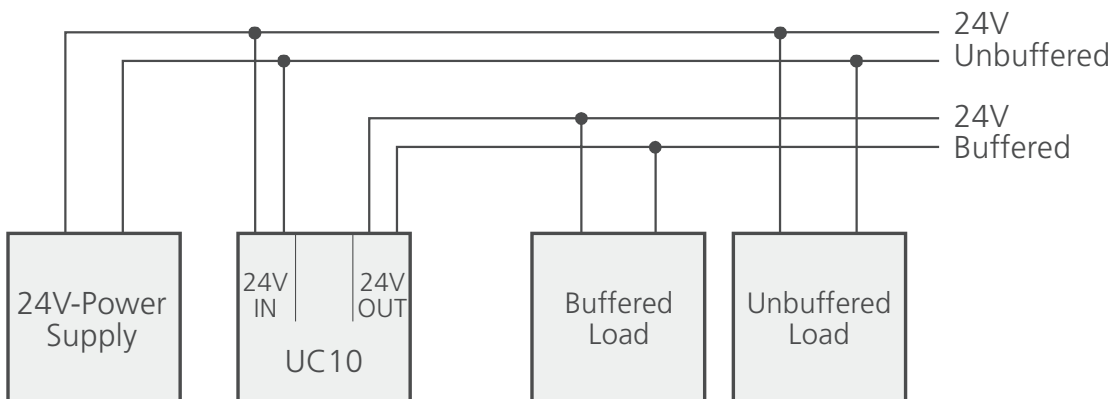
Buffer Times

Buffer Current	0.5A	1A	3A	5A	7A
UF20.481	6.4s	3.2s	1s	660ms	470ms
UF20.241	12.7s	6.5s	2.2s	1.3s	950ms
UF40.241	20s	10.6s	3.6s	2.1s	1.5s
UC10.241	340s	200s	68s	39s	26s
UC10.242	680s	400s	136s	78s	53s
	10A	15A	20A	30A	40A
UF20.481	300ms	220ms	150ms	-	-
UF20.241	670ms	450ms	310ms	-	-
UF40.241	1s	730ms	500ms	350ms	250ms
UC10.241	16.5s	9s	-	-	-
UC10.242	33s	18s	-	-	-

UF20/40:



UC10:



DC-Backup

DC-UPS With Battery Storage

The installation of a DC-UPS system requires three essential elements: a power supply, a DC-UPS controller and a battery. The DC-UPS controller is responsible for monitoring and charging the battery, as well as controlling the seamless transition between Normal and Backup mode.



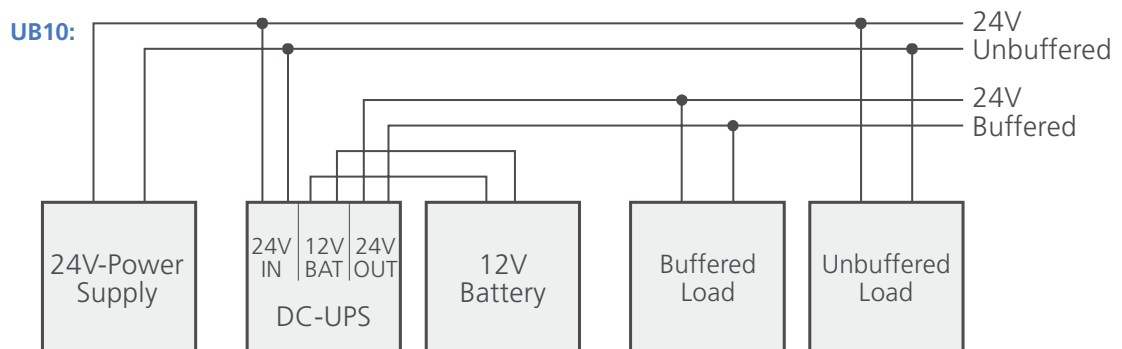
Advantages of the PULS DC-UPS Controllers:

- » 1-Battery Concept: Each Battery is Individually Charged & Monitored to Maximize Battery Life
- » No Need for Matched Batteries
- » Output De-coupled from the Input, Allowing Buffered & Unbuffered Branches
- » Fixed Output Voltage in Backup Mode for UB10 & UB20 models
- » 22.5-26V Adjustable Output Voltage in Backup Mode for the UB20.241
- » Selectable Backup Time Limiter to Extend Battery Life (on select models)
- » 50% Power Reserves for 5 Seconds

Backup Times

Backup Current	0.5A	1A	3A	5A	7A	10A	15A	20A	40A
UBC10.241	3h 50min	2h	30min	16min	11min	6min	-	-	-
UB10 + 7Ah Battery (12V)	5h 10min	2h 30 min	38min	20min	13min	6min	-	-	-
UB10 + 12Ah Battery (12V)	10h 41min	5h 17min	1h 40min	46min	28min	16min	-	-	-
UB10 + 26Ah Battery (12V)	23h 6min	11h 23min	3h 40min	2h 10min	1h 30min	55min	-	-	-
UB10.242 + 65Ah Battery (12V)	2d 11h	1d 5h	9h 53min	5h 51min	4h	2h 45min	-	-	-
UB10.242 + 100Ah Battery (12V)	3d 19h	1d 21h	14h 53min	8h 41min	6h	4h 7min	-	-	-
UB10.242 + 130Ah Battery (12V)	4d 23h	2d 11h	19h 21 min	11h 18min	7h 48min	5h 21min	-	-	-
UB20 + 7Ah Battery (2,12V)	9h 26min	5h 16min	1h 30min	46min	30min	19min	10min	6min	-
UB20 + 12Ah Battery (2,12V)	17h 13min	9h 51min	3h 29min	2h 2min	1h 23min	46min	27min	16min	-
UB20 + 26Ah Battery (2,12V)	1d 13h	21h 34min	7h 32min	4h 26min	3h 7min	2h 10min	1h 17min	55min	-
UB20 + 65Ah Battery (2,12V)	3d 19h	2d 4h	20h 5min	11h 56min	8h 25min	5h 50min	3h 49min	2h 49min	-
UB20 + 100Ah Battery (2,12V)	6d 3h	3d 11h	1d 6h	18h 30min	13h 10min	9h 11min	6h 3min	4h 31min	-
UB20 + 140Ah Battery (2,12V)	8d 12h	4d 21h	1d 19h	1d 1h	18h 26min	12h 52min	8h 27min	6h 19min	-
UB40 + 12Ah Battery (2,12V)	24h 4min	11h 20min	3h 55min	2h	1h 17min	47min	27min	18min	7min
UB40 + 26Ah Battery (2,12V)	2d 5h	1d 1h 27min	8h 44min	4h 44min	3h 38min	2h 17min	1h 21min	55min	21min
UB40 + 38Ah Battery (2,12V)	3d 9h	1d 11h	12h 14min	7h 24min	5h 17min	3h 28min	2h 8min	1h 31min	36min
UB40 + 65Ah Battery (2,12V)	6d 1h	2d 23h	17h 18min	13h 53min	9h 56min	6h 49min	4h 23min	3h 4min	1h 14min
UB40 + 100Ah Battery (2,12V)	9d 3h	4d 12h	1d 2h	20h 50min	14h 56min	10h 7min	6h 33min	4h 48min	1h 59min
UB40 + 200Ah Battery (2,12V)	19d 16h	9d 18h	2d 9h 8min	1d 21h	1d 8h 49min	22h 27min	14h 44min	10h 52min	4h 55min

The UB10, UB20 and UB40 tables show approximate typical buffer times of new battery modules without the aging effect included. PULS recommends adding 30-50% battery capacity to account for battery wear and aging. Please review specific datasheets for additional buffer times.



DC-UPS WITH BATTERIES

DC-Backup

Battery Modules for DC-UPS

Battery modules use maintenance-free VRLA batteries (valve regulated lead-acid). Battery modules can be ordered with a battery (UZK Series) or without a battery (UZO Series). All battery modules from PULS support the 1-Battery Concept. The 24V battery modules for use with the UB20 and UB40 battery modules from PULS' Series are equipped with a center-tap, which are protected against overcurrent and with an integrated temperature sensor. Users who opt for using their own batteries should use a high-quality VRLA, Gel Cell or Glass Mat battery. When using batteries for the UB20 and UB40 Series, it is recommended to use the appropriate sensor board with a PT1000 temperature sensor included, and a center-tap to take advantage of the PULS 1-Battery Concept.



Catalog Number	Description	Dimensions (W x H x D)
UZB12.051	12V, 5Ah replacement battery for UBC10.241	90 x 106 x 70mm
UZB12.071	12V, 7Ah replacement battery for UZK12.071 and UZK24.071 a)	151 x 100 x 65mm
UZB12.121	12V, 12Ah replacement battery for UZK24.121 a)	151 x 100 x 98mm
UZB12.261	12V, 26Ah replacement battery for UZK12.261	175 x 166 x 125mm
UZK12.071	12V, 7Ah battery module for UB10	155 x 124 x 112mm
UZK12.072	12V, 7Ah battery module for UB10 (Class I Division 2)	155 x 124 x 112mm
UZK12.261	12V, 26Ah battery module for UB10	214 x 179 x 153mm
UZK24.071	24V, 7Ah battery module for UB20	137 x 186 x 124mm
UZK24.121	24V, 12Ah battery module for UB20	203 x 186 x 124mm
UZK24.122	24V, 12Ah battery module for UB40	203 x 186 x 125mm
UZK24.262	24V, 26Ah battery module for UB40	214 x 179 x 167mm
UZK24.262-E1	24V, 26Ah Battery Module with Battery extension kit included	214 x 179 x 128mm
UZO12.07	Mounting Bracket for use with 7Ah Battery	155 x 124 x 112mm
UZO12.072	Mounting Bracket for use with 7Ah Battery (Class I Division 2)	155 x 124 x 112mm
UZO12.26	Mounting Bracket for use with 26Ah Battery	214 x 179 x 153mm
UZO24.071	Mounting Bracket for use with 7Ah Battery Pair for UB20	137 x 186 x 124mm
UZO24.121	Mounting Bracket for use with 12Ah Battery Pair for UB20	203 x 186 x 124mm
UZO24.122	Mounting Bracket for use with 12Ah Battery for UB40	203 x 186 x 125mm
UZO12.262	Mounting Bracket for use with 26Ah Battery for UB40	214 x 179 x 167mm
UZO24.262-E1	Battery extension kit for 26Ah Batteries	214 x 179 x 128mm
UZS24.100	Sensorboard with PT1000 temperature sensor and center-tap for use with UB20.241	23 x 110.5 x 15mm
UZW24.100	Wiring kit for UB40 for Batteries up to 26Ah not supplied by PULS. Includes connection cables.	
UZW24.101	Connection module for UB40 for larger batteries not supplied by PULS. Cables not included.	

a) Two required for UZK24 battery modules

Accessories

Mounting Brackets

Mounting brackets for panel mounting without the need for DIN-Rail. Other brackets are for sideways installation of the power supplies with or without DIN-Rail for control cabinets which do not have the required installation depth.



ZM5.WALL



ZM1.WALL



ZM1.UBC10

MOUNTING BRACKETS



ZM11.SIDE

Catalog Number	Panel Mounting Brackets
ZM1.WALL	for light DIMENSION units
ZM2.WALL	for QS20, QS40, QT40, CPS20, UB20 units
ZM3.WALL	for ML60, PISA11 and MLY
ZM4.WALL	for CP10 units
ZM5.WALL	for CP20 units
ZM10.WALL	for CP5 units
ZM1.UBC10	for UBC10

Catalog Number	Side Mounting Brackets
ZM11.SIDE	for CD5, CP5, CS3, CS5, QS3, YR2, YRM2 units
ZM12.SIDE	for CP10, CT5, QS5, UB20 units
ZM13.SIDE	for CS10, CT10, QS10, CPS20 units
ZM14.SIDE	for QT20, QTD20, UF20 units
ZM15.SIDE	for QS20 units (except QS20.244)



ZM13.SIDE

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