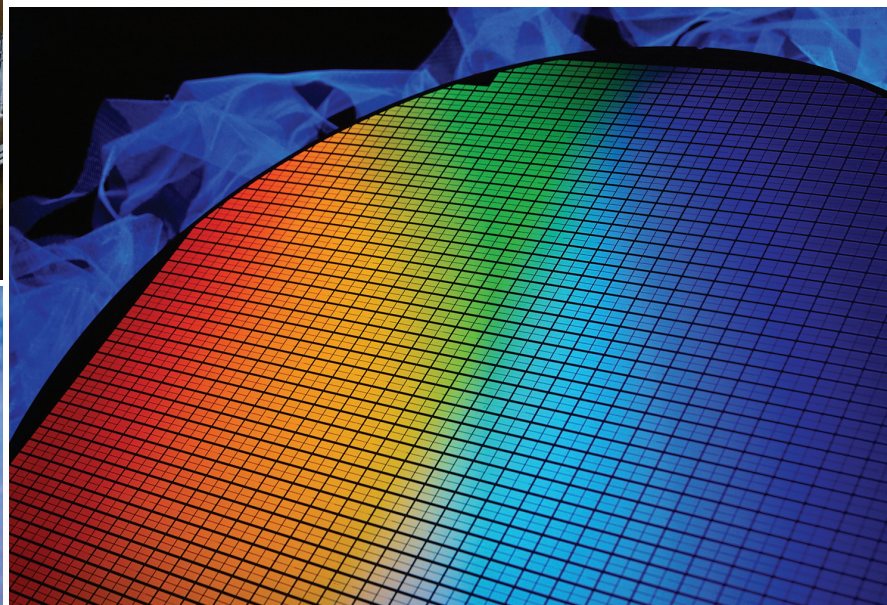


DIN-RAIL POWER SUPPLIES & DC POWER PRODUCTS

PULS



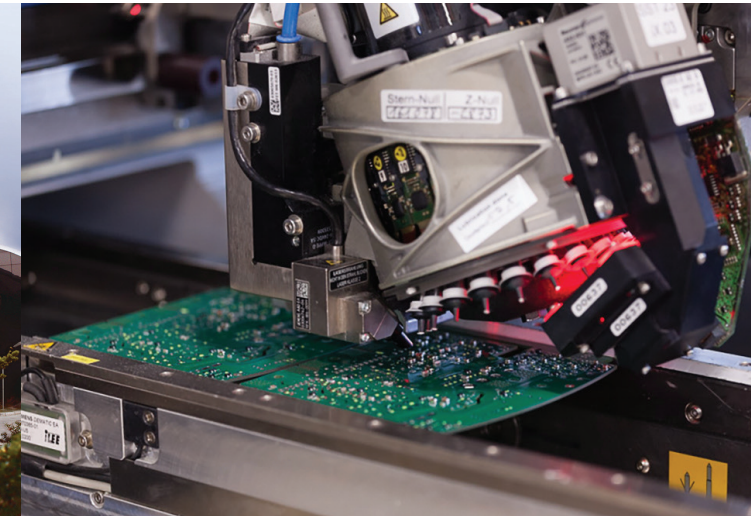
PRODUCT SELECTION & PRICING GUIDE

NORTH AMERICA | 2019

pulspower.us

Contents

About PULS	3-4
10 Reasons for Choosing PULS	5-6
New Products	7-8
Product Overview	9-14
Power Supplies	15-28
Single Phase Power Supplies	15-24
3-Phase Power Supplies	25-26
Power Supplies with AC & DC Input	27
Network Power Supplies	28
Redundancy	29-32
Power Supplies with Integrated Redundancy	29-30
Redundancy Modules	31-32
DC/DC Converters	33-34
Circuit Protection Modules	35-36
DC Back up Systems	37-41
Buffer Modules with Capacitor Storage	37-38
DC-UPS with Batteries	39-40
Battery Modules and Accessories	41
Mounting Brackets	42
Standards and Approvals	43-50



PULS

The Technology Leader

Efficient. Innovative. Different.

When I founded PULS nearly 40 years ago, we were a handful of developers with a common goal; we wanted to revolutionize power supply technology.

Today, PULS is a global market and technology leader in the field of DIN-rail power supplies.

This was made possible by our focus and a great team that naturally strives for the next stage of innovation for every new PULS product. This ambition can be experienced by our customers in the maximum efficiency levels, longest lifetime, smallest dimensions and the absolute reliability of our power supplies.

The power supplies and complementary products are developed at our inspiring headquarters in the heart of Munich. The efficient, family like and value oriented work environment, as well as the central location contribute to making PULS attractive for the best engineers, specialists and up and coming talents.

Production is carried out in our own smart and environmentally friendly plants in the Czech Republic and China. The entire value chain is kept under our full control, and this level of control is important to us. In customer audits, our plants are repeatedly praised for their efficiency, streamlined structure and environmentally friendly objectives.

We stock every product listed in this selection guide in our North American warehouse to assure availability and timely delivery. Our philosophy of not discontinuing standard products will save you money by eliminating the need to redesign your control system due to product migration or discontinuation.

We have established a broad range of standard power supplies, offering the right solution for every application. Our sales department can offer you expert advice at all times, providing ongoing technical support from our application specialists.

I am proud of what we have achieved for our customers over the past few decades. The future promises many more exciting innovations in the field of DIN-rail power supplies. Be a part of it!

Bernhard Erdl
Founder and Managing Director

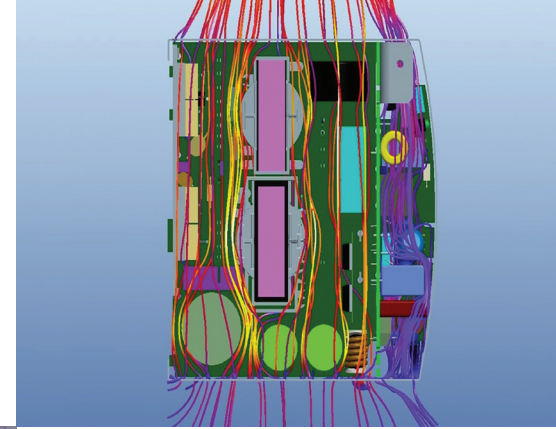


Bernhard Erdl
Founder,
President and
Chief Developer



Dependability

- High MTBF Values and Long Lifetime
- Outstanding Efficiency
- Cool Design for Minimal Heat Rise
- Highly Automated Production
- Long Product Availability
- Significant Inventory Available



Products

- Forefront of Technology
- Highest Efficiency up to 96%
- Small Size and Lightweight
- High Peak Output Current
- Easy to Use
- Wide Product Selection

Focus

- All Resources Dedicated to DC Power Solutions
- High Performance Organizational Structure
- Decades of Knowledge and Experience



The Perfect Power Supply

for Every Application



DIMENSION

Highest Performance with Numerous Models, Features and Approvals

PIANO

Basic Functionality with no Compromises to Quality and Reliability

MiniLine

Ultra Compact Design for Low Power Applications

SilverLine

Classic Family of DIN-rail Power Supplies. In Reliable Operation Since the 1990's. Best Suited for Existing Designs

10 Reasons for Choosing PULS

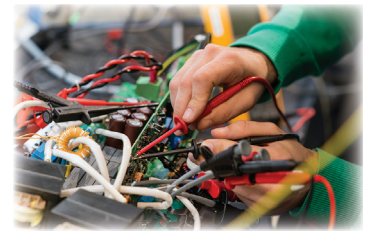
Efficiency

- 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



The DC Power Specialists

- DC Power Products are our ONLY Business
- Market Education & Training Leader
- Extensive Data Sheets with Guaranteed Test Data You can Rely On



Broad Product Range

- Single & 3-Phase AC Input and DC Input Power Supplies
- DC/DC Converters
- DC-UPS Controllers with Individual Battery Monitoring & Charging
- Redundancy Modules & Redundant Power Supplies



Lowest Total Cost of Ownership

- 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



Control of Supply Chain & Manufacturing

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



Quality & Lifetime

- Longest Lifetime in the Industry
- Quality is Assured with Every Product
- Performance Values in Data Sheets are Guaranteed



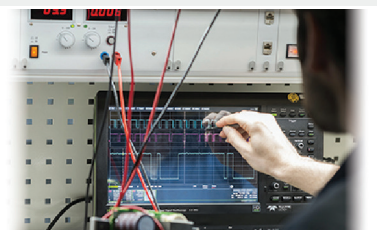
Engineering Resources

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



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 and Testing Lines Ensure Reliability



Long Life of Product Families

- PULS Does Not Phase Out or Discontinue Standard Products
- Eliminates Forced Changes in Customer Designs due to Obsolescence
- Availability You Can Count On for Many Years



Customer Service & Application Assistance

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



New Products

PIC Series



The Perfect Blend of Value and Quality

PIANO is a new family of general purpose power supplies that offers high-end value at mid-range prices. The power supplies, rated from 60W to 480W, are focused on simplicity without making compromises on PULS' renowned features of high efficiency, absolute reliability and long lifetimes.

PIC120.241D

Efficiency: > 92.3%
 Small Size: 39x124x124mm (WxHxD)
 100-120/200-240VAC Auto Select Input
 Screw Terminals
 DC-OK Contact

Units Available From Stock

PIC240.241D

Efficiency: > 95.2%
 Small Size: 49x124x124mm (WxHxD)
 100-240VAC Wide Range Input
 Screw Terminals
 DC-OK Contact

Units Available From Stock



PIC480.241D

Efficiency: > 95.0%
 Small Size: 59x124x127mm (WxHxD)
 100-240VAC Wided Range Input
 Screw Terminals
 DC-OK Contact

Units Available late 2019

Low Power Units

Ultra compact 60W and 90W DIN-rail power supplies will compliment the PIANO product line. Both units are highly efficient and will be available with large screw or push-in terminals.

Units Available late 2019

CP Series

DIMENSION



Efficient. Compact. Reliable.

The PULS CP series breaks all records in terms of efficiency, lifetime and size. Users can benefit from the many features of this innovative series and its broad product offering.

Catalog Number	Output Power	Output Voltage	Output Current	Efficiency	Losses	Special Feature	Page
CP5.121	120W	12-15V	10A	93.8%	7.9W		16
CP5.241	120W	24-28V	5A	94.3%	7.3W		18
CP10.121	192W	12-15V	16A	94.3%	11.6W		16
CP10.122	192W	12-15V	16A	94.3%	11.6W	Extended DC Input	16
CP10.241	240W	24-28V	10A	95.2%	12.1W		19
CP10.241-C1	240W	24-28V	10A	95.2%	12.1W	Conformal Coated	19
CP10.241-S1	240W	24-28V	10A	95.2%	12.1W	Spring Clamp Terminals	19
CP10.241-R1	240W	24-28V	10A	94.7%	13.4W	Integrated Redundancy / Spring Clamp	30
CP10.241-R2	240W	24-28V	10A	94.7%	13.4W	Integrated Redundancy / Removable Terminals	30
CP10.242	240W	24-28V	10A	95.2%	12.1W	Extended DC Input	20
CP10.361	240W	36-42V	6.7A	95.4%	11.6W		22
CP10.481	240W	48-56V	5A	95.5%	12.3W		24
CP20.241	480W	24-28V	20A	95.6%	22.1W		21
CP20.241-C1	480W	24-28V	20A	95.6%	22.1W	Conformal Coated	21
CP20.241-R1	480W	24-28V	20A	95.2%	24.2W	Integrated Redundancy / Spring Clamp	30
CP20.241-R2	480W	24-28V	20A	95.2%	24.2W	Integrated Redundancy / Removable Terminals	30
CP20.241-S1	480W	24-28V	20A	95.6%	22.1W	Spring Clamp Terminals	21
CP20.241-V1	480W	24-28V	20A	95.6%	22.1W	Shut Down Input	21
CP20.481	480W	48-56V	10A	96.0%	20.0W		24

Power Supplies

100-240VAC

Output Voltage	Output Current	Catalog Number	Page	Adjustment Range	Output Power	Width (mm)	Input Voltage	Special Features			
5V	3A	ML15.051	15	5-5.5V	15W	22.5	100-240VAC	NEC Class 2			
	5A	ML30.101	15		25W	45.0		NEC Class 2			
12V	1.3A	ML15.121	15	12-15V	15W	22.5	100-240VAC	NEC Class 2			
	2.5A	ML30.102	15	10-12V	30W	45.0		NEC Class 2			
	4.2A	ML50.102	15	12-15V	50W	45.0		NEC Class 2			
	4.5A	ML60.121	15		54W	45.0		NEC Class 2			
		ML60.122	16		45.0	NEC Class 2, -40°C Specified					
	7.5A	ML100.102	16		90W	72.5		100-120/200-240VAC			
	10A	CP5.121	16		120W	32.0		100-240VAC			
	15A	QS10.121	16		180W	60.0					
	16A	CP10.121	16		192W	39.0		Shut Down Input			
		CP10.122	16			39.0		Extended DC Input			
	30A	CPS20.121	16		360W	65.0					
±12V	2.5A	ML30.106	16	±12 or ±15V	36W	45.0	100-240VAC	NEC Class 2			
24V	0.63A	ML15.241	17	24-28V	15W	22.5	100-240VAC	NEC Class 2			
	1.3A	ML30.100	17		30W	45.0		NEC Class 2			
		ML30.241	17			22.5		NEC Class 2, Reduced Width			
	2.1A	ML50.100	17			50W		45.0	NEC Class 2		
		ML50.109	17			45.0		NEC Class 2, Conformal Coating			
	2.5A	ML60.241	17			60W		45.0	NEC Class 2		
		ML60.242	17			45.0		NEC Class 2, -40°C Specified			
	3A	ML70.100	18			72W		45.0	100-120/200-240VAC		
	3.3A	CS3.241	18			80W		32.0	100-240VAC		
	3.4A	QS3.241	18					32.0			
	3.8A	QS5.DNET	28		24V	91.2W		40.0		NEC Class 2	
	3.9A	ML95.100	18		24-28V	95W		72.5	100-120/200-240VAC	NEC Class 2	
	4.2A	ML100.100	18			100W		72.5			
		ML100.109	18			72.5			Conformal Coating		
	5A	CP5.241	18			120W		32.0	100-240VAC		
		CP5.241-S1	18					32.0	Spring Clamp Terminals		
		CS5.241	19					32.0	100-120/200-240VAC		
		CS5.241-C1	19					32.0	Conformal Coating		
		CS5.241-S1	19					32.0	Spring Clamp Terminals		
		PIC120.241D	19					39.0			
		QS5.241	19					40.0	100-240VAC		
		QS5.241-A1	19					40.0	Conformal Coating/ATEX/IECEX		
		10A	CP10.241		19			240W	39.0		
			CP10.241-C1		19				39.0	Conformal Coating	
	CP10.241-S1		19					39.0	Spring Clamp Terminals		
	CP10.242		20					39.0	100-240VAC	Extended DC Input	
	CS10.241		20					60.0	100-120/200-240VAC		

Output Voltage	Output Current	Catalog Number	Page	Adjustment Range	Output Power	Width (mm)	Input Voltage	Special Features	
24V	10A	CS10.241-S1	20	24-28V	240W	60.0	100-120/200-240VAC	Spring Clamp Terminals	
		PIC240.241D	20			49.0		100-240VAC	
		QS10.241	20			60.0			
		QS10.241-A1	20			60.0		Conformal Coating/ATEX/IECEX	
		QS10.241-C1	20			60.0		Conformal Coating	
		QS10.241-D1	20			60.0		Extended DC Input	
	20A	CP20.241	21		480W	48.0			
		CP20.241-C1	21			48.0	Conformal Coating		
		CP20.241-S1	21			48.0	Spring Clamp Terminals		
		CP20.241-V1	21			48.0	Shut Down Input		
		CPS20.241	21			65.0			
		CPS20.241-C1	21			65.0	Conformal Coating		
		PIC480.241D	21			59.0			
		QS20.241	21			82.0			
		QS20.241-C1	21			82.0	Conformal Coating		
		QS20.241-A1	22			82.0	Conformal Coating/ATEX/IECEX		
		40A	QS40.241			22	960W	125.0	Shut Down Input
		30V	8A			QS10.301	22	28-32V	240W
36V	6.7A		CP10.361	22	36-42V	240W	39.0	100-240VAC	
	13.3A		CPS20.361	22		480W	65.0		
		QS20.361	22			82.0			
	26.7A	QS40.361	22		960W	125.0		Shut Down Input	
48V	1.05A	ML50.105	23	48-56V	50W	45.0	100-240VAC	NEC Class 2	
	2.1A	ML100.105	23		100W	72.5	100-120/200-240VAC		
	5A	CS10.481	23		240W	60.0			
		QS10.481	23			60.0	100-240VAC		
		QS10.481-D1	23			60.0	Extended DC Input		
	5.4A	CP10.481	24		259W	39.0			
	10A	CP20.481	24		480W	48.0			
		CPS20.481	24			65.0			
		QS20.481	24			82.0			
		20A	QS40.481		24	960W	125.0	Shut Down Input	

Power Supplies

380-480VAC

Output Voltage	Output Current	Catalog Number	Page	Adjustment Range	Output Power	Width (mm)	Input Voltage	Special Features			
12V	8A	CT5.121	25	12-15V	96W	40.0	380-480VAC				
24V	3.75A	ML90.200	25	24-28V	90W	72.5	380-480VAC	NEC Class 2			
	4.2A	ML100.200	25		100W	72.5					
	5A	CT5.241	25		120W	40.0					
	10A	CT10.241	25		240W	62.0					
		CT10.241-C1	25			62.0		Conformal Coating			
	20A	QT20.241	25		480W	65.0					
		QT20.241-C1	25			65.0		Conformal Coating			
	40A	QT40.241	25		960W	110.0	110.0		Shut Down Input		
		QT40.242	25						Enhanced Lifetime		
		XT40.241	26						24V	960W	96.0
XT40.242		26		96.0					480VAC	For Power Applications	
36V	13.3A	QT20.361	26	36-42V	480W	65.0	380-480VAC				
	26.6A	XT40.361	26	36V	960W	96.0	380-400VAC	For Power Applications			
		XT40.362	26					96.0	480VAC	For Power Applications	
	26.7A	QT40.361	26	36-42V	960W	110.0	380-480VAC	Shut Down Input			
48V	5A	CT10.481	26	48-56V	240W	62.0	380-480VAC				
	10A	QT20.481	26	48-55V	480W	65.0					
	20A	QT40.481	26	48-54V	960W	110.0		Shut Down Input			
		XT40.481	26	48V	960W	96.0	380-400VAC	For Power Applications			
		XT40.482	26			96.0	480VAC	For Power Applications			
72V	13.3A	XT40.721	26	72V	960W	96.0	380-400VAC	For Power Applications			
		XT40.722	26					96.0	480VAC	For Power Applications	

DC/DC Converters

Output Voltage	Output Current	Catalog Number	Page	Adjustment Range	Output Power	Width (mm)	Input Voltage	Special Features	
5V	8A	SLD2.100	33	4.5-5.5V	40W	49.0	18-36VDC		
12V	8A	CD5.121	33	12-15V	96W	32.0	18-32.4VDC		
24V	3.8A	CD5.241-L1	33	24V	92W	32.0	14.4-32.4VDC	NEC Class 2	
	4A	CD5.243	33		23-28V	96W	32.0	10.8-16.2VDC	
	5A	CD5.241	33		120W	32.0	18-32.4VDC		
		CD5.241-S1	34			32.0	18-32.4VDC	Signal Contacts	
		CD5.242	34			32.0	36-60VDC		
	10A	CD10.241	34			240W	42.0	18-35VDC	
	20A	CPS20.241-D1	34		24-28V	480W	65.0	110-300VDC	Extended DC Input
QTD20.241		34		65.0	480-840VDC	For Intermediate DC Bus			
48V	5A	CD10.482	34	48-56V	240W	42.0	36-60VDC		
	10A	CPS20.481-D1	34		480W	65.0	110-300VDC	Extended DC Input	

Conformal Coated Power Supplies

Output Voltage	Output Current	Catalog Number	Page	Adjustment Range	Output Power	Width (mm)	Input Voltage	Special Features
24V	2.1A	ML50.109	17	24-28V	50W	45.0	100-240VAC	NEC Class 2
	4.2A	ML100.109	18		100W	72.5	100-120/200-240VAC	
	5A	CS5.241-C1	19		120W	32.0		
		QS5.241-A1	19		40.0	100-240VAC	ATEX/IECEX	
	10A	CP10.241-C1	19		240W	39.0		
		QS10.241-C1	20			60.0		ATEX/IECEX
		QS10-241-A1	20			60.0		
		CT10.241-C1	25			62.0	380-480VAC	
	20A	CP20.241-C1	21		480W	48.0	100-240VAC	
		CPS20.241-C1	21			82.0		
		QS20.241-A1	22			82.0		ATEX/IECEX
		QS20.241-C1	21			82.0		
		QT20.241-C1	25			65.0	380-480VAC	

AS-Interface® Power Supplies

Output Voltage	Output Current	Catalog Number	Page	Adjustment Range	Output Power	Width (mm)	Input Voltage	Special Features
30.5V	2.8A	SLA3.100	28	30.5V	85W	49.0	100-120/200-240VAC	NEC Class 2
	4A	SLA4.100	28		120W	73.0		Ground Fault Detector
		SLAD4.100	28		40.0	18-32VDC	DC/DC Converter	
	8A	SLA8.100	28		244W	91.0	100-120/200-240VAC	
		SLA8.300	28			129.0	380-480VAC	

DeviceNet® Power Supplies

Output Voltage	Output Current	Catalog Number	Page	Adjustment Range	Output Power	Width (mm)	Input Voltage	Special Features
24V	3.8A	QS5.DNET	28	24V	91.2W	40.0	100-240VAC	NEC Class 2
	8A	QS10.DNET	28	24-24.5V	192W	60.0		

Redundancy & Protection Modules

DIODE Redundancy Modules

Output Voltage	Output Current	Catalog Number	Page	Width (mm)	Input Voltage	Power Supply Size
12-28V	20A	PIRD20.241	31	39.0	12-28V	2x10A
12-48V	10A	MLY10.241	31	45.0	12-48V	2x5A
		MLY02.100	31	45.0	12-48V	2x5A
24-48V	20A	YR2.DIODE	31	32.0	12-48V	2x10A
	20A	YRM2.DIODE	31	32.0	24-48V	2x10A

MOSFET Redundancy Modules

Output Voltage	Output Current	Catalog Number	Page	Width (mm)	Input Voltage	Power Supply Size
12-28V	20A	YR20.242	32	32.0	12-28V	2x20A
	40A	YR40.241	32	36.0	12-28V	2x20A
		YR40.242	32	36.0	24-28V	2x20A
		YR40.245	32	46.0	12-28V	1x40A
	80A	YR80.241	32	46.0	24-28V	2x40A
		YR80.242	32	46.0	12-28V	2x40A
24-28V	20A	YR20.246	32	32.0	24-28V	2x10A
24-56V	40A	YR40.482	32	46.0	24-56V	2x20A

Power Supplies with Integrated Redundancy

Output Voltage	Output Current	Catalog Number	Page	Adjustment Range	Output Power	Width (mm)	Input Voltage	Special Features
24V	10A	CP10.241-R1	30	24-28V	240W	39.0	100-240VAC	Spring Clamp Terminals
		CP10.241-R2	30	24-28V		39.0		Removable Terminals
	20A	CP20.241-R1	30	24-28V	480W	48.0		Spring Clamp Terminals
		CP20.241-R2	30	24-28V		48.0		Removable Terminals

Protection Modules

Output Voltage	Total Output Current	Catalog Number	Page	Output Current per Channel				Width in mm	Special Features
				Channel 1	Channel 2	Channel 3	Channel 4		
24V	4A	PISA11.401	35	1A	1A	1A	1A	45	NEC Class 2
	8A	PISA11.402	35	2A	2A	2A	2A	45	NEC Class 2
	12A	PISA11.403	35	3A	3A	3A	3A	45	
	16A	PISA11.404	36	4A	4A	4A	4A	45	
	20A	PISA11.406	36	6A	6A	6A	6A	45	
	20A	PISA11.410	36	10A	10A	10A	10A	45	
	18A	PISA11.203206	36	3A	3A	6A	6A	45	
	20A	PISA11.206212	36	6A	6A	12A	12A	45	
14.8A	PISA11.CLASS2	35	3.7A	3.7A	3.7A	3.7A	45	NEC Class 2	

DC-UPS and Buffer Modules

DC-UPS with Batteries

Output Voltage	Output Current	Catalog Number	Page	Width (mm)	Battery Requirements	Note
24V	10A	UBC10.241	39	123.0	Integrated, 12V, 5Ah	Battery Included
		UBC10.241-N1	39	123.0	Integrated, 12V, 5Ah	Battery Not Included
		UB10.241	39	49.0	External, 12V, 3.9-40Ah	Battery Not Included
		UB10.242	39	49.0	External, 12V, 17-130Ah	Battery Not Included
24V/12V	10A/5A	UB10.245	39	49.0	External, 12V, 3.9-40Ah	Battery Not Included
24-26V	20A	UB20.241	39	46.0	External, (2) 12V, 3.9-150Ah	Batteries Not Included

DC-UPS and Buffer Modules with Capacitor Storage

Output Voltage	Output Current	Catalog Number	Page	Width (mm)	Storage Capacity	Storage Element
24V	15A	UC10.241	37	126.0	6kWs - Buffer Time: 9s at 15A	UltraCapacitor (EDLC)
		UC10.242	37	198.0	12kWs - Buffer Time: 18s at 15A	UltraCapacitor (EDLC)
	20A	UF20.241	37	64.0	0.2kWs - Buffer Time: 310ms at 20A	Electrolytic Capacitor
		UF40.241	37	64.0	0.32kWs - Buffer Time: 250ms at 40A	Electrolytic Capacitor
48V	20A	UF20.481	37	64.0	0.2kWs - Buffer Time: 150ms at 20A	Electrolytic Capacitor

Mounting Brackets

Catalog Number	Page	Wall mounting bracket
ZM1.WALL	42	for light DIMENSION units
ZM2.WALL	42	for QS20, QS40, QT40, CPS20, units
ZM3.WALL	42	for ML60, PISA11 and MLY
ZM4.WALL	42	for CP10 units
ZM5.WALL	42	for CP20 units
ZM10.WALL	42	for CP5 units
ZM1.UBC10	42	for UBC10

Catalog Number	Page	Side mounting bracket
ZM11.SIDE	42	for CS3, CS5, QS3, YR2, YRM2 units
ZM12.SIDE	42	for CP10, CT5, QS5 units
ZM13.SIDE	42	for CS10, CT10, QS10, CPS20 units
ZM14.SIDE	42	for QT20, QTD20, UF20 units
ZM15.SIDE	42	for QS20 units (except QS20.244)

100-240VAC

5V, 12V

15-405W



COMING

COMING

Output Voltage	5V		12V		12V		12V		12V		12V		12V		±12V
Output Current	3A	5A	1.3A	3.0A	4.2A	4.5A	4.5A	7.5A	10A	15A	16A	16A	30A	2.5A	
Adjustment Range	5-5.5V	5-5.5V	12-15V	10-12V	12-15V	12-15V	12-15V	12-15V	12-15V	12-15V	12-15V	12-15V	12-15V	12-15V	±12 or ±15V
Output Current	3.0A	5.0A	1.3-1.0A	3-2.5A	4.2-3.4A	4.5-3.6A	4.5-3.6A	7.5-6A	10-8A	15-13.5A	16-12.8A	16-12.8A	30/27A	2.5A ^{a)}	
Output Power	15W	25W	15W	30W	50W	54W	54W	90W	120W	180W	192W	192W	360/405W	36W	
Power Reserves	-	-	-	-	-	-	-	-	20%	50%	20%	20%	-	-	
Ripple & Noise max. [mV _{pp}]	50mV	50mV	75mV	10mV	100mV	50mV	50mV	50mV	50mV	50mV	50mV	50mV	100mV	50mV	
AC Input Voltage	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-120/ 200-240VAC	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	
Active Power Factor Correction	-	-	-	-	-	-	-	-	Yes	Yes	Yes	Yes	Yes	-	
Inrush Current (120/230VAC)	16A/31A	17A/35A	16A/31A	17A/35A	17A/35A	16A/32A	6A/6A	22A/37A	4A/3A	4A/7A	6A/9A	6A/9A	9A/7A	17A/35A	
External Input Protection Recommendation (minimum)	B - 6A or C - 3A	B - 10A or C - 6A	B - 6A or C - 3A	B - 10A or C - 6A	B - 10A or C - 6A	B - 10A or C - 6A	B - 6A or C - 3A	B - 10A or C - 6A	B - 6A or C - 6A	B - 6A or C - 4A	B - 6A or C - 6A	B - 6A or C - 6A	B - 10A or C - 10A	B - 10A or C - 6A	
DC Input Voltage	110-300VDC	110-300VDC	110-300VDC	110-300VDC	110-300VDC	110-300VDC	110-300VDC	290VDC	110-150VDC	110-150VDC	110-150VDC	110-300VDC	-	110-300VDC	
Efficiency (Typical)	77.2%	80.0%	82.5%	84.0%	90.0%	87.2%	87.6%	88.5%	93.8%	91.8%	94.3%	94.3%	92.6%	86.0%	
Power Losses (Typical)	4.5W	6.3W	3.1W	5.8W	6.0W	7.9W	7.6W	11.7W	7.9W	16.1W	11.6W	11.6W	28.8W	5.9W	
Operating Temperature Range	-10°C to +70°C	-10°C to +70°C	-10°C to +70°C	-10°C to +70°C	-10°C to +70°C	-10°C to +70°C	-40°C to +70°C	-10°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-10°C to +70°C	
Connection Terminals	Screw	Spring Clamp	Screw	Spring Clamp	Spring Clamp	Screw	Screw	Spring Clamp	Screw	Spring Clamp	Screw	Screw	Screw	Spring Clamp	
Dimensions (WxHxD)	22.5x75x91mm	45x75x91mm	22.5x75x91mm	45x75x91mm	45x75x91mm	45x75x91mm	45x75x91mm	72.5x75x103mm	32x124x102mm	60x124x117mm	39x124x117mm	39x124x117mm	65x124x127mm	45x75x91mm	
Weight	130g	240g	130g	250g	260g	250g	250g	360g	440g	900g	600g	600g	1000g	240g	
DC-OK Relay Contact	-	-	-	-	-	-	-	-	Yes	Yes	Yes	Yes	Yes	-	
Special Features	NEC Class 2	NEC Class 2	NEC Class 2	NEC Class 2 Low Output Noise	NEC Class 2	NEC Class 2	NEC Class 2 -40°C Specified	-	-	-	Shut Down Input	Extended DC Input	-	Dual Output Voltage	
List Price (USD)	\$76.00	\$140.00	\$76.00	\$145.00	\$170.00	\$140.00	\$185.00	\$240.00	\$250.00	\$450.00	\$330.00	\$350.00	\$530.00	\$150.00	
Product Family	MiniLine	MiniLine	MiniLine	MiniLine	MiniLine	MiniLine	MiniLine	MiniLine	DIMENSION	DIMENSION	DIMENSION	DIMENSION	DIMENSION	MiniLine	
Catalog Number	ML15.051	ML30.101	ML15.121	ML30.102	ML50.102	ML60.121	ML60.122	ML100.102	CP5.121	QS10.121	CP10.121	CP10.122	CPS20.121	ML30.106	

a) Both outputs can be loaded up to this output current as long as the output power is less than 36W. If the loads are different values, the lower output current should be at least 5% of the higher value.

100-240VAC

24V

15-120W



COMING COMING

Output Voltage	24V						24V						COMING		COMING	
Output Current	0.63A	1.3A	1.3A	2.1A	2.5A	2.5A	3A	3.3A	3.4A	3.8A	3.9A	4.2A	5A	5A		
Adjustment Range	24-28V	24-28V	24-28V	24-28V	24-28V	24-28V	24-28V	24-28V	24-28V	24V	24-28V	24-28V	24-28V	24-28V		
Output Current	0.63-0.54A	1.3-1.1A	1.3-1.1A	2.1-1.8A	2.5-2.1A	2.5-2.1A	3-2.6A	3.3-2.7A	3.4-3A	3.8A	3.9-3.2A	4.2-3.6A	5-4.3A	5-4.3A		
Output Power	15W	30W	30W	50W	60W	60W	72W	80W	80W	91.2W	95W	100W	120W	120W		
Power Reserves	-	-	-	-	-	-	-	-	50%	-	-	-	20%	20%		
Ripple & Noise max. [mV _{pp}]	50mV	50mV	50mV	50mV	50mV	50mV	50mV	50mV	50mV	50mV	50mV	50mV	50mV	50mV		
AC Input Voltage	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-120/ 200-240VAC	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-120/ 200-240VAC	100-120/ 200-240VAC	100-240VAC Wide Range	100-240VAC Wide Range		
Active Power Factor Correction	-	-	-	-	-	-	-	-	-	Yes	-	-	Yes	Yes		
Inrush Current (120/230VAC)	16A/31A	17A/35A	18A/35A	17A/35A	16A/32A	6A/6A	26A/30A	23A/45A	5A/10A	9A/11A	22A/37A	22A/37A	4A/4A	4A/4A		
External Input Protection Recommendation (minimum)	B - 6A or C - 3A	B - 10A or C - 6A	B - 6A or C - 3A	B - 10A or C - 6A	B - 10A or C - 6A	B - 6A or C - 3A	B - 10A or C - 6A	B - 10A or C - 6A	B - 6A or C - 6A	B - 6A or C - 3A	B - 10A or C - 6A	B - 10A or C - 6A	B - 6A or C - 6A	B - 6A or C - 6A		
DC Input Voltage	110-300VDC	110-300VDC	110-300VDC	110-290VDC	110-300VDC	110-300VDC	290VDC	110-300VDC	110-300VDC	110-300VDC	290VDC	290VDC	110-150VDC	110-150VDC		
Efficiency (Typical)	85.1%	87.5%	89.4%	89.0%	89.7%	90.4%	89.0%	89.8%	90.0%	92.0%	90.0%	90.0%	94.3%	94.3%		
Power Losses (Typical)	2.7W	4.3W	3.7W	6.2W	6.7W	6.4W	8.7W	9.1W	9.1W	7.9W	10.5W	11.4W	7.3W	7.3W		
Operating Temperature Range	-10°C to +70°C	-10°C to +70°C	-10°C to +70°C	-10°C to +70°C	-10°C to +70°C	-40°C to +70°C	-10°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-10°C to +70°C	-10°C to +70°C	-25°C to +70°C	-25°C to +70°C		
Connection Terminals	Screw	Spring Clamp	Screw	Spring Clamp	Screw	Screw	Spring Clamp	Screw	Spring Clamp	Spring Clamp	Spring Clamp	Spring Clamp	Screw	Spring Clamp		
Dimensions (WxHxD)	22.5x75x91mm	45x75x91mm	22.5x75x91mm	45x75x91mm	45x75x91mm	45x75x91mm	45x75x91mm	32x124x102mm	32x124x102mm	40x124x117mm	72.5x75x103mm	72.5x75x103mm	32x124x102mm	32x124x102mm		
Weight	130g	230g	140g	240g	250g	250g	260g	430g	440g	620g	360g	360g	440g	440g		
DC-OK Relay Contact	-	-	-	Triac	-	-	-	-	-	Yes	-	-	Yes	Yes		
Special Features	NEC Class 2	NEC Class 2	NEC Class 2	NEC Class 2	NEC Class 2	NEC Class 2 -40°C Specified	NEC Class 2	NEC Class 2		NEC Class 2	NEC Class 2					
List Price (USD)	\$70.00	\$110.00	\$95.00	\$130.00	\$110.00	\$175.00	\$160.00	\$160.00	\$210.00	\$350.00	\$225.00	\$180.00	\$210.00	\$250.00		
Product Family	MiniLine	MiniLine	MiniLine	MiniLine	MiniLine	MiniLine	MiniLine	DIMENSION	DIMENSION	DIMENSION	MiniLine	MiniLine	DIMENSION	DIMENSION		
Catalog Number	ML15.241	ML30.100	ML30.241	ML50.100 ML50.109 a)	ML60.241	ML60.242	ML70.100	CS3.241	QS3.241	QS5.DNET	ML95.100	ML100.100 ML100.109 a)	CP5.241	CP5.241-S1		

a) Conformal coated & different list price

100-240VAC

24V

120-240W



Output Voltage	24V							24V							
Output Current	5A	5A	5A	5A	5A	10A	10A	10A	10A	10A	10A	10A	10A	10A	
Adjustment Range	24-28V	24-28V	24-28V	24-28V	24-28V	24-28V	24-28V	24-28V	24-28V	24-28V	24-28V	24-28V	24-28V	24-28V	
Output Current	5-4.3A	5-4.3A	5-4.3A	5-4.5A	5-4.5A	10-8.6A	10-8.6A	10-8.6A	10-8.6A	10-8.6A	10-8.6A	10-8.6A	10-9A	10-9A	
Output Power	120W	120W	120W	120W	120W	240W	240W	240W	240W	240W	240W	240W	240W	240W	
Power Reserves	20%	20%	-	50%	50%	20%	20%	20%	20%	20%	20%	-	50%	50%	
Ripple & Noise max. [mV _{pp}]	50mV	50mV	100mV	50mV	50mV	50mV	50mV	50mV	50mV	50mV	50mV	100mV	50mV	50mV	
AC Input Voltage	100-120/ 200-240VAC	100-120/ 200-240VAC	100-120/ 200-240VAC	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-120/ 200-240VAC	100-120/ 200-240VAC	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	
Active Power Factor Correction	-	-	-	Yes	Yes	Yes	Yes	Yes	-	-	-	Yes	Yes	Yes	
Inrush Current (120/230VAC)	3A/3A	3A/3A	22A/33A	9A/11A	9A/11A	6A/9A	6A/9A	6A/9A	6A/9A	3A/3A	3A/3A	14A/26A	4A/7A	4A/7A	
External Input Protection Recommendation (minimum)	B - 10A or C - 6A	B - 10A or C - 6A	B - 10A or C - 6A	B - 6A or C - 3A	B - 6A or C - 3A	B - 6A or C - 6A	B - 6A or C - 6A	B - 6A or C - 6A	B - 6A or C - 6A	B - 10A or C - 6A	B - 10A or C - 6A	B - 10A or C - 6A	B - 6A or C - 4A	B - 6A or C - 4A	
DC Input Voltage	-	-	-	110-300VDC	110-300VDC	110-150VDC	110-150VDC	110-150VDC	110-300VDC	-	-	-	110-150VDC	110-150VDC	
Efficiency (Typical)	90.2%	90.2%	92.3%	92.7%	92.7%	95.2%	95.2%	95.2%	95.2%	91.6%	91.6%	95.2%	93.5%	93.5%	
Power Losses (Typical)	13.2W	13.2W	10.0W	9.4W	9.4W	12.1W	12.1W	12.1W	12.1W	22.0W	22.0W	12.1W	16.7W	16.7W	
Operating Temperature Range	-25°C to +70°C	-25°C to +70°C	-10°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	
Connection Terminals	Screw	Spring Clamp	Screw	Spring Clamp	Spring Clamp	Screw	Spring Clamp	Spring Clamp	Screw	Screw	Spring Clamp	Screw	Spring Clamp	Spring Clamp	
Dimensions (WxHxD)	32x124x117mm	32x124x117mm	39x124x124mm	40x124x117mm	40x124x117mm	39x124x117mm	39x124x117mm	39x124x117mm	39x124x117mm	60x124x117mm	60x124x117mm	49x124x124mm	60x124x117mm	60x124x117mm	
Weight	500g	500g	370g	620g	620g	600g	600g	600g	600g	700g	700g	700g	540g	900g	
DC-OK Relay Contact	-	-	Yes	Yes	Yes	Yes	Yes	Yes	Yes	-	-	Yes	Yes	Yes	
Special Features				ATEX/IECEX					Extended DC Input					ATEX/IECEX	Extended DC Input
List Price (USD)	\$210.00	\$250.00	\$150.00	\$295.00	\$475.00	\$280.00	\$310.00	\$310.00	\$285.00	\$325.00	\$225.00	\$400.00	\$610.00	\$430.00	
Product Family	DIMENSION	DIMENSION	PIANO	DIMENSION	DIMENSION	DIMENSION	DIMENSION	DIMENSION	DIMENSION	DIMENSION	DIMENSION	PIANO	DIMENSION	DIMENSION	DIMENSION
Catalog Number	CS5.241 CS5.241-C1 a)	CS5.241-S1	PIC120.241D	QS5.241	QS5.241-A1	CP10.241 CP10.241-C1 a)	CP10.241-S1	CP10.242	CS10.241	CS10.241-S1	PIC240.241D	QS10.241 QS10.241-C1 a)	QS10.241-A1	QS10.241-D1	

a) Conformal coated & different list price

Power Supplies

Single Phase

Single Phase Power Supplies
24V, 30V, 36V 240-960W

100-240VAC

24V, 30V, 36V

240-960W



	NEW		NEW			COMING																
Output Voltage	24V																					
Output Current	20A		20A		20A		20A		20A		40A		8A		6.7A		13.3A		13.3A		26.7A	
Adjustment Range	24-28V	24-28V	24-28V	24-28V	24-28V	24-28V	24-28V	24-28V	24-28V	24-28V	24-28V	24-28V	28-32V	36-42V	36-42V	36-42V	36-42V	36-42V	36-42V	36-42V	36-42V	36-42V
Output Current	20-17.1A	20-17.1A	20-17.1A	20-17.1A	20-17.1A	20-17A	20-17A	40-34.3A	8.6-7.5A	6.7-5.7A	13.3-11.4A	13.3-11.4A	26.7-22.9A									
Output Power	480W	480W	480W	480W	480W	480W	960W	240W	240W	480W	480W	960W										
Power Reserves	20%	20%	20%	-	50%	50%	50%	50%	50%	20%	20%	50%	50%									
Ripple & Noise max. [mV _{pp}]	50mV	50mV	50mV	100mV	100mV	100mV	100mV	100mV	50mV	50mV	100mV	100mV	130mV									
AC Input Voltage	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range
Active Power Factor Correction	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes									
Inrush Current (120/230VAC)	10A/4.5A	10A/4.5A	9A/7A	14A/26A	9A/7A	9A/7A	17A/11A	4A/7A	6A/9A	9A/7A	9A/7A	17A/11										
External Input Protection Recommendation (minimum)	B - 10A or C - 10A	B - 10A or C - 10A	B - 10A or C - 10A	B - 10A or C - 6A	B - 10A or C - 10A	B - 10A or C - 10A	B - 15A or C - 15A	B - 6A or C - 4A	B - 6A or C - 6A	B - 10A or C - 10A	B - 10A or C - 10A	B - 15A or C - 15A										
DC Input Voltage	110-150VDC	110-150VDC	-	-	110-150VDC	110-150VDC	-	110-150VDC	110-150VDC	-	110-150VDC	-	-									
Efficiency (Typical)	95.6%	95.6%	94.0%	95%	93.9%	93.9%	94.6%	93.5%	95.4%	94.3%	94.0%	94.6%										
Power Losses (Typical)	22.1W	22.1W	30.6W	25.3W	31.4W	31.4W	54.8W	16.7W	11.6W	29.0W	30.6W	54.8W										
Operating Temperature Range	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C									
Connection Terminals	Screw	Spring Clamp	Screw	Screw	Spring Clamp	Spring Clamp	Screw	Spring Clamp	Screw	Spring Clamp	Screw	Screw	Spring Clamp	Screw								
Dimensions (WxHxD)	48x124x127mm	48x124x127mm	65x124x127mm	59x124x127mm	82x124x127mm	82x124x127mm	125x124x117mm	60x124x117mm	39x124x117mm	65x124x127mm	82x124x127mm	125x124x127mm										
Weight	830g	830g	1000g	810g	1200g	1200g	1900g	900g	600g	1000g	1200g	1900g										
DC-OK Relay Contact	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes									
Special Features							ATEX/IECEx	Shut Down Input				Shut Down Input										
List Price (USD)	\$430.00	\$450.00	\$450.00	\$300.00	\$550.00	\$890.00	\$875.00	\$475.00	\$330.00	\$525.00	\$730.00	\$1,100.00										
Product Family	DIMENSION	DIMENSION	DIMENSION	PIANO	DIMENSION	DIMENSION	DIMENSION	DIMENSION	DIMENSION	DIMENSION	DIMENSION	DIMENSION	DIMENSION									
Catalog Number	CP20.241 CP20.241-C1 a) CP20.241-V1 b)	CP20.241-S1	CPS20.241 CPS20.241-C1 a)	PIC480.241D	QS20.241 QS20.241-C1 a)	QS20.241-A1	QS40.241	QS10.301	CP10.361	CPS20.361	QS20.361	QS40.361										

a) Conformal coated & different list price
b) With Shut Down Input & different list price

100-240VAC

48V

50-960W



COMING

Output Voltage	48V					48V				
Output Current	1.05A	2.1A	5A	5A	5A	5.4A	10A	10A	10A	20A
Adjustment Range	48-56V	48-56V	48-52V	48-56V	48-56V	48-56V	48-56V	48-56V	48-55V	48-54V
Output Current	1.05-0.9A	2.1-1.8A	5-4.6A	5-4.3A	5-4.3A	5.4-4.6A	10-8.6A	10-8.6A	10-8.7A	20-17.8A
Output Power	50W	100W	240W	240W	240W	259W	480W	480W	480W	960W
Power Reserves	-	-	20%	50%	50%	20%	20%	20%	50%	50%
Ripple & Noise max. [mV _{pp}]	200mV	50mV	100mV	100mV	100mV	50mV	50mV	50mV	100mV	150mV
AC Input Voltage	100-240VAC Wide Range	100-120/ 200-240VAC	100-120/ 200-240VAC	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range	100-240VAC Wide Range
Active Power Factor Correction	-	-	-	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Inrush Current (120/230VAC)	17A/35A	22A/37A	3A/3A	4A/7A	4A/7A	6A/9A	10A/4.5A	9A/7A	9A/7A	17A/11A
External Input Recommendation (minimum)	B - 10A or C - 6A	B - 10A or C - 6A	B - 10A or C - 6A	B - 6A or C - 4A	B - 6A or C - 4A	B - 6A or C - 6A	B - 10A or C - 10A	B - 10A or C - 10A	B - 10A or C - 10A	B - 15A or C - 15A
DC Input Voltage	110-300VDC	290VDC	-	110-150VDC	110-300VDC	110-150VDC	110-150VDC	-	110-150VDC	-
Efficiency (Typical)	90.0%	91.0%	91.6%	92.0%	92.0%	95.5%	96.0%	93.9%	94.3%	95.0%
Power Losses (Typical)	6.0W	10.0W	22.0W	20.9W	20.9W	12.3W	20.0W	31.2W	29.0W	50.5W
Operating Temperature Range	-10°C to +70°C	-10°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C
Connection Terminalss	Spring Clamp	Spring Clamp	Screw	Spring Clamp	Spring Clamp	Screw	Screw	Screw	Spring Clamp	Screw
Dimensions (WxHxD)	45x75x91mm	72.5x75x103mm	60x124x117mm	60x124x117mm	60x124x117mm	39x124x117mm	48x124x127mm	65x124x127mm	82x124x127mm	125x124x127mm
Weight	240g	360g	700g	900g	900g	600g	820g	1000g	1200g	1900g
DC-OK Relay Contact	-	-	-	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Special Features					Extended DC Input					Shut Down Input
List Price (USD)	\$155.00	\$230.00	\$360.00	\$540.00	\$570.00	\$325.00	\$460.00	\$525.00	\$610.00	\$1,010.00
Product Family	MiniLine	MiniLine	DIMENSION	DIMENSION	DIMENSION	DIMENSION	DIMENSION	DIMENSION	DIMENSION	DIMENSION
Catalog Number	ML50.105	ML100.105	CS10.481	QS10.481	QS10.481-D1	CP10.481	CP20.481	CPS20.481	QS20.481	QS40.481

Power Supplies

3-Phase

3-Phase Power Supplies
 12V, 24V 90-960W
 36V, 48V, 72V 240-960W

380-480VAC

12V, 24V
 36V, 48V, 72V

90-960W
 240-960W



Output Voltage	12V	24V						24V	36V			48V				72V
Output Current	8A	3.75A	4.2A	5A	10A	20A	40A	40A	13.3A	26.6A	26.7A	5A	10A	20A	20A	13.3A
Adjustment Range	12-15V	24-28V	24-28V	24-28V	24-28V	24-28V	24-28V	24V	36-42V	36V	36-42V	48-56V	48-55V	48-54V	48V	72V
Output Current	8-6.4A	3.75-3.2A	4.2-3.6A	5-4.3A	10-8.6A	20-17.5A	40-34.3A	40A	13.3-11.4A	26.6A	26.7-22.9A	5-4.3A	10A	20-17.8A	20A	13.3A
Output Power	96W	90W	100W	120W	240W	480W	960W	960W	480W	960W	960W	240W	480W	960W	960W	960W
Power Reserves	-	-	-	20%	20%	50%	50%	25%	50%	25%	50%	20%	50%	50%	25%	25%
Ripple & Noise max. [mV _{pp}]	100mV	50mV	50mV	50mV	50mV	100mV	100mV	1500mV	100mV	2000mV	130mV	100mV	100mV	150mV	2500mV	3000mV
AC Input Voltage	380-480VAC Wide range	380-480VAC Wide Range	380-480VAC Wide Range	380-480VAC Wide Range	380-480VAC Wide Range	380-480VAC Wide Range	380-480VAC Wide Range	480VAC c) 400VAC d)	380-480VAC Wide Range	480VAC c) 400VAC d)	380-480VAC Wide Range	380-480VAC Wide Range	380-480VAC Wide Range	380-480VAC Wide Range	480VAC c) 400VAC d)	480VAC c) 400VAC d)
Active Power Factor Correction	-	-	-	-	-	Yes	Yes	Yes	Yes	Yes	Yes	-	Yes	Yes	Yes	Yes
Inrush Current (380/480VAC)	4A/4A	36A/45A	36A/45A	4A/4A	4A/4A	3A/3A	4.5A/4.5A	2A/2A	3A/3A	2A/2A	4.5A/4.5A	4A/4A	3A/3A	4.5A/4.5A	2A/2A	2A/2A
External Input Protection Recommendation	B - 6A or C - 3A	B - 10A or C - 6A	B - 10A or C - 6A	B - 6A or C - 3A	B - 6A or C - 3A	B - 6A or C - 3A	B - 6A or C - 6A	B - 6A or C - 3A	B - 6A or C - 3A	B - 6A or C - 3A	B - 6A or C - 6A	B - 6A or C - 3A	B - 6A or C - 3A	B - 6A or C - 6A	B - 6A or C - 3A	B - 6A or C - 3A
Efficiency (Typical)	85.8%	89.5%	89.5%	90.4%	92.8%	95.0%	95.3%	95.5%	94.8%	95.5%	95.3%	92.8%	95.4%	95.4%	96.0%	95.5%
Power Losses (Typical)	15.9W	10.5W	11.7W	12.7W	18.6W	25.3W	47.3W	45.2W	26.3W	45.2W	47.3W	18.6W	23.1W	46.3W	40.0W	45.2W
Operating Temperature Range	-25°C to +70°C	-10°C to +70°C	-10°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C
Connection Terminals	Screw	Spring Clamp	Spring Clamp	Screw	Screw	Spring Clamp	Screw	Screw	Spring Clamp	Screw	Screw	Screw	Spring Clamp	Screw	Screw	Screw
Dimensions (WxHxD)	40x124x117mm	72.5x75x103mm	72.5x75x103mm	40x124x117mm	62x124x117mm	65x124x127mm	110x124x127mm	96x124x159mm	65x124x127mm	96x124x159mm	110x124x127mm	62x124x117mm	65x124x127mm	110x124x127mm	96x124x159mm	96x124x159mm
Weight	500g	360g	360g	500g	750g	870g	1500g	1400g	870g	1400g	1500g	750g	870g	1500g	1400g	1400g
DC-OK Relay Contact	-	-	-	-	-	Yes	Yes	-	Yes	-	Yes	-	Yes	Yes	-	-
Special Features		NEC Class 2					Shut Down Input	For Power Applications		For Power Applications	Shut Down Input			Shut Down Input	For Power Applications	For Power Applications
List Price (USD)	\$330.00	\$250.00	\$250.00	\$300.00	\$355.00	\$560.00	\$750.00	\$640.00	\$750.00	\$700.00	\$940.00	\$440.00	\$630.00	\$900.00	\$640.00	\$740.00
Product Family	DIMENSION	MiniLine	MiniLine	DIMENSION	DIMENSION	DIMENSION	DIMENSION	DIMENSION	DIMENSION	DIMENSION	DIMENSION	DIMENSION	DIMENSION	DIMENSION	DIMENSION	DIMENSION
Catalog Number	CT5.121 e)	ML90.200 e)	ML100.200 e)	CT5.241 e)	CT10.241 CT10.241-C1 a)	QT20.241 QT20.241-C1 a)	QT40.241 QT40.242 b)	XT40.242 c) XT40.241 d)	QT20.361	XT40.362 c) XT40.361 d)	QT40.361	CT10.481	QT20.481	QT40.481	XT40.482 c) XT40.481 d)	XT40.722 c) XT40.721 d)

a) Conformal coated & different list price
 b) With enhanced lifetime & different price
 c) Use XT40.242, XT40.362, XT40.482, XT40.722 for 480VAC mains
 d) Use XT40.241, XT40.361, XT40.481, XT40.721 for 380-400VAC mains
 e) Utilizes 2 legs of a 3-Phase system

AC & DC Input

Many AC/DC Power Supplies are equipped with a UL approved DC input voltage range.

Input: 110-150VDC 180-480W

Output Voltage	Output Current	Catalog Number	Page	Special Features	
12-15V	10A	CP5.121	16		
	15A	QS10.121	16		
	16A	CP10.121	16	Shut Down Input	
24-24.5V	8A	QS10.DNET	28	DeviceNet Approved	
24-28V	5A	CP5.241	18		
		CP5.241-S1	18	Spring Clamp Terminals	
	10A	CP10.241	19		
		CP10.241-C1	19	Conformal Coating	
		CP10.241-S1	19	Spring Clamp Terminals	
		QS10.241	20		
		QS10.241-A1	20	Conformal Coating, ATEX	
		QS10.241-C1	20	Conformal Coating	
		20A	CP20.241	21	
			CP20.241-C1	21	Conformal Coating
	CP20.241-S1	21	Spring Clamp Terminals		
	CP20.241-V1	21	Shut Down Input		
	QS20.241	21			
	QS20.241-A1	22	Conformal Coating, ATEX		
	QS20.241-C1	21	Conformal Coating		
28-32V	8A	QS10.301	22		
36-42V	6.7A	CP10.361	22		
	13.3A	QS20.361	22		
48-56V	5A	QS10.481	23		
	5.4A	CP10.481	24		
	10A	CP20.481	24		
48-55V	10A	QS20.481	24		

Input: 110-290VDC 50W

Output Voltage	Output Current	Catalog Number	Page	Special Features
24-28V	2.1A	ML50.100	17	NEC Class 2
		ML50.109	17	Conformal Coating

Input: 290VDC 72-100W

Output Voltage	Output Current	Catalog Number	Page	Special Features
12-15V	7.5A	ML100.102	16	
24-28V	3A	ML70.100	18	NEC Class 2
	3.9A	ML95.100	18	NEC Class 2
	4.2A	ML100.100	18	
		ML100.109	18	Conformal Coating
48-56V	2.1A	ML100.105	23	

Input: 110-300VDC 15-240W

Output Voltage	Output Current	Catalog Number	Page	Special Features
5-5.5V	3A	ML15.051	15	NEC Class 2
	5A	ML30.101	15	NEC Class 2
10-12V	3A	ML30.102	15	Low Output Noise
+/-12 or +/-15V	2.5A	ML30.106	16	NEC Class 2, Dual Output
12-15V	1.3A	ML15.121	15	NEC Class 2
	4.2A	ML50.102	15	NEC Class 2
	4.5A	ML60.121	15	NEC Class 2
		ML60.122	16	NEC Class 2, -40°C Specified
		16A	CP10.122	16
24-28V	0.63A	ML15.241	17	NEC Class 2
	1.3A	ML30.100	17	NEC Class 2
		ML30.241	17	NEC Class 2
	2.5A	ML60.241	17	NEC Class 2
		ML60.242	17	NEC Class 2, -40°C Specified
	3.3A	CS3.241	18	NEC Class 2
	3.4A	QS3.241	18	
	3.95A	QS5.DNET	28	DeviceNet Approved
		QS5.241	19	
		QS5.241-A1	19	Conformal Coating, ATEX
10A	CP10.242	19		
	QS10.241-D1	20		
48-56V	1.05A	ML50.105	23	NEC Class 2
	5A	QS10.481-D1	23	

Network Power Supplies

AS-Interface® field bus systems are network technologies where power and data are provided by the same wire. Therefore, special power supplies with a tightly regulated output voltage, high immunity to transients and power surges as well as low electromagnetic emissions are required to prevent signal error and meet the specific bus network requirements.

DeviceNet® is a network protocol used in the automation industry to interconnect control devices for data exchange. The DeviceNet® supplies are designed based on four key elements: The size of the DeviceNet® cables, charging the capacitors in a very short period of time, ramping the output voltage according to the DeviceNet® timing specifications and limiting the output current to protect the network.

All PULS network power supplies are tested and approved under strict requirements by the governing agencies ODVA for DeviceNet® and AS-International Association for AS-Interface®.



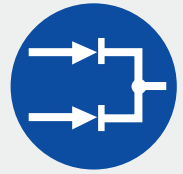
QS10.DNET

SLA4.100

Output	24V		30.5V				
	3.8A	8A	2.8A	4A	8A	8A	4A
Output Voltage	24V	24-24.5V	30.5V	30.5V	30.5V	30.5V	30.5V
Ripple & Noise max. [mV _{pp}]	50mV	50mV	100mV	150mV	100mV	100mV	100mV
AC Input Voltage	100-240VAC Wide Range	100-240VAC Wide Range	100-120/ 200-240VAC	100-120/ 200-240VAC	100-120/ 200-240VAC	380-480VAC	-
Active Power Factor Correction	Yes	Yes	-	-	-	-	-
DC Input Voltage	110-300VDC	110-150VDC	-	-	-	-	-
Efficiency (Typical)	92.0%	93.4%	90.5%	90.0%	92.0%	91.5%	90.5%
Power Losses (Typical)	7.9W	13.6W	9.1W	13.5W	21.2W	22.5W	12.7W
Operating Temperature Range	-25°C to +70°C	-25°C to +70°C	-10°C to +70°C	-10°C to +70°C	-10°C to +70°C	-10°C to +70°C	-25°C to +70°C
Connection Terminals	Spring Clamp	Spring Clamp	Screw	Screw	Screw	Screw	Screw
Dimensions (WxHxD)	40x124x117mm	60x124x117mm	49x124x102mm	73x124x102mm	91x124x102mm	129x124x117mm	40x124x102mm
Weight	620g	900g	500g	650g	890g	1160g	500g
Bus Network	DeviceNet®	DeviceNet®	AS-Interface®	AS-Interface®	AS-Interface®	AS-Interface®	AS-Interface®
Special Features	NEC Class 2		NEC Class 2	Ground-Fault Detector			DC/DC Converter
List Price (USD)	\$350.00	\$495.00	\$520.00	\$590.00	\$820.00	\$1,200.00	\$725.00
Product Family	DIMENSION	DIMENSION	SilverLine	SilverLine	SilverLine	SilverLine	SilverLine
Catalog Number	QS5.DNET	QS10.DNET	SLA3.100	SLA4.100	SLA8.100	SLA8.300	SLAD4.100

Redundancy

Power Supplies with Integrated Redundancy
240-480W



Power Supplies with Integrated Redundancy

Redundant Systems without Redundancy Modules

With the CP series, 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. These units are available with removable or with spring clamp terminals.

Space Savings

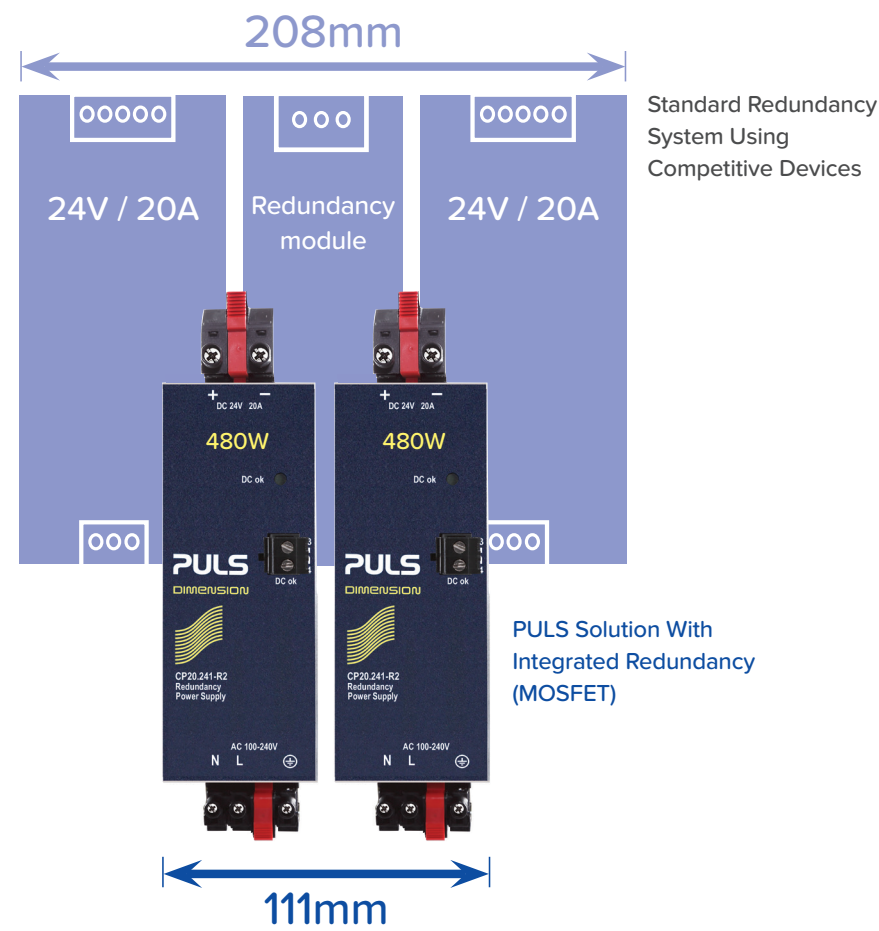
PULS integrated the decoupling feature into the standard CP-housings. This means the size of the units are identical to those of the standard CP10 (39mm) and CP20 (48mm). The small size and the elimination of the redundancy module allow space-savings of more than 45%.

On-line Replacement

These new power supplies are available with removeable terminals or spring clamp terminals. The models with removable terminals (CP10.241-R2 and CP20.241-R2) allow the replacement of devices during ongoing operation. The models with spring clamp terminals (CP10.241-R1 and CP20.241-R1) are the perfect choice for applications when heavy shock and vibrations occur.

Simplicity

These power supplies reduce system complexity and costs due to shorter installation times. Reduced wiring and no single point of failure are added benefits. Less wiring also means a lower failure risk caused by faulty connections. In addition, there is only one part number that has to be ordered.



	COMING	NEW
Output Voltage	24V	24V
Output Current	10A	20A
Adjustment Range	24-28V	24-28V
Output Current	10A	20A
Output Power	240W	480W
Power Reserves	20%	20%
Ripple & Noise max. [mVPP]	50mV	100mV
AC Input Voltage	100-240VAC Wide Range	100-240VAC Wide Range
Active Power Factor Correction	Yes	Yes
Inrush Current (120/230)VAC	6A/9A	10A/4.5A
External Input Protection Recommendation (minimum)	B - 10A or C - 10A	B -10A or C - 10A
DC Input Voltage	110-150VDC	110-150VDC
Efficiency (Typical)	94.7%	95.2%
Power Losses (Typical)	13.4W	24.2W
Operating Temperature Range	-25°C to +70°C	-40°C to +70°C
Connection Terminals	Spring Clamp Removable Terminals	Spring Clamp Removable Terminals
Dimensions (WxHxD)	39x124x117mm	48x124x127mm
Weight	600g	830g 850g
DC-OK Relay Contact	Yes	Yes
On-line Replacement	- Yes	- Yes
List Price (USD)	\$380.00 \$360.00	\$570.00 \$550.00
Product Family	DIMENSION	
Catalog Number	CP10.241-R1 CP10.241-R2	CP20.241-R1 CP20.241-R2

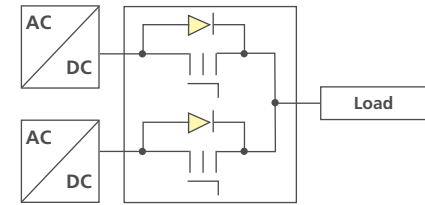
Redundancy Modules

Redundancy Modules

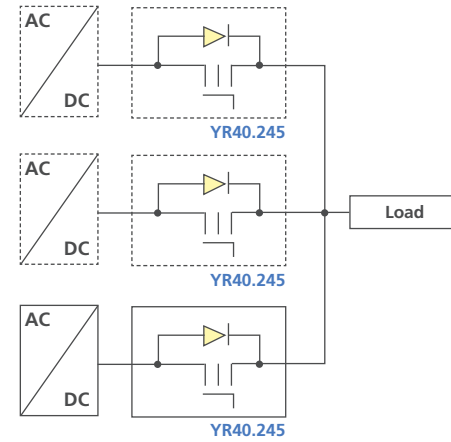
Highest System Reliability

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 protects the DC voltage for critical applications.



1+1-Redundancy



N+1-Redundancy
Single Use



NEW

NEW

Nominal Voltage	12-28V				12-48V		24-48V		12-28V						24-28V		24-56V											
Input / Output Current	2x 10A / 20A		2x 5A / 10A		2x 10A / 20A		2x 10A / 20A		2x 10A / 20A		2x 20A / 40A		2x 20A / 40A		1x 40A / 40A		2x 40A / 80A		2x 40A / 80A		2x 10A / 20A		2x 20A / 40A					
Input Voltage Range	9-35V				9-60V		9-60V		9-60V		18-60V		8.4-36.4V		8.4-36.4V		8.4-36.4V		8.4-36.4V		8.4-36.4V		8.4-36.4V		18-35V		24.4-64.4V	
Nominal Current per Input	10A		5A		5A		10A		10A		10A		20A		20A		40A		40A		40A		10A		20A			
Output Current Nominal Current	20A		10A		10A		20A		20A		20A		40A		40A		80A		80A		20A		40A					
Voltage Drop Input - Output	560mV		900mV		900mV		850mV		850mV		110mV		140mV		140mV		150mV		95mV		145mV		500mV		120mV			
Decoupling	Diode		Diode		Diode		Diode		Diode		MOSFET		MOSFET		MOSFET		MOSFET		MOSFET		MOSFET		MOSFET		MOSFET			
Power Losses (Typical)	11.2W		9.0W		9.0W		17.0W		18W		2.0W		6.3W		5.9W		6.2W		8.3W		11.8W		8.7W		5.4W			
Operating Temperature Range	-40°C to +70°C				-40°C to +70°C		-40°C to +70°C		-40°C to +70°C		-40°C to +70°C		-40°C to +70°C		-40°C to +70°C		-40°C to +70°C		-40°C to +70°C		-40°C to +70°C		-40°C to +70°C		-40°C to +70°C			
Dimensions (WxHxD)	39x124x124mm		45x75x91mm		45x75x91mm		32x124x102mm		32x124x117mm		36x124x117mm		36x124x127mm		36x124x127mm		46x124x127mm		46x124x127mm		46x124x127mm		32x124x117mm		46x124x127mm			
Weight	280g		140g		140g		290g		350g		250g		340g		280g		340g		440g		370g		310g		360g			
Connection Terminals	Screw		Screw		Spring Clamp		Spring Clamp		Screw		Screw		Screw		Screw		Screw		Screw		Screw		Screw		Screw			
Special Features									With Signal Contacts						Removable Output Terminal				With Automated Load Sharing									
List Price (USD)	\$65.00		\$60.00		\$68.00		\$105.00		\$140.00		\$110.00		\$205.00		\$140.00		\$200.00		\$340.00		\$220.00		\$170.00		\$200.00			
Product Family	PIANO		MiniLine		MiniLine		DIMENSION		DIMENSION		DIMENSION		DIMENSION		DIMENSION		DIMENSION		DIMENSION		DIMENSION		DIMENSION		DIMENSION			
Catalog Number a)	PIRD20.241		MLY10.241		MLY02.100		YR2.DIODE		YRM2.DIODE		YR20.242		YR40.241		YR40.242		YR40.245		YR80.241		YR80.242		YR20.246		YR40.482			

a) PULS recommends consulting individual power supply data sheets for appropriate redundancy module options

DC/DC Converters

There are Multiple Applications for DC/DC Converters:

- Stabilized Control Voltages in Battery Powered Applications
- Provides Galvanic Isolation
- Mobile Applications
- To Avoid Ground Loops
- To Restore Control Voltage at the End of Long Cable Runs Due to Voltage Drop



COMING

COMING

Output Voltage	5V	12V	24V		24V						48V	
Output Current	8A	8A	3.8A	4A	5A	5A	5A	10A	20A	20A	5A	10A
Input Voltage Range	18-36V	18-32.4V	14.4-32.4V	10.8-16.2V	18-32.4V	18-32.4V	36-60V	18-35V	88-360V	480-840V	36-60V	88-360V
Output Voltage Range	4.5-5.5V	12-15V	24V	23-28V	23-28V	23-28V	23-28V	23-28V	24-28V	24-28V	48-56V	48-56V
Output Current	8A	8-6.4A	3.8A	4-3.4A	5-4.3A	5-4.3A	5-4.3A	10-8.6A	20-17.1A	20-17.5A	5-4.3A	10-8.6A
Output Power	40W	96W	92W	96W	120W	120W	120W	240W	480W	480W	240W	480W
Power Reserves	-	20%	-	20%	20%	20%	20%	20%	20%	25%	20%	20%
Ripple & Noise max. [mV _{pp}]	50mV	75mV	50mV	50mV	50mV	50mV	50mV	50mV	50mV	100mV	100mV	50mV
Efficiency (Typical)	82.0%	88.2%	90.5%	87.7%	90.3%	90.2%	90.3%	94.2%	94.6%	95.0%	94%	94.6%
Power Losses (Typical)	8.5W	12.8W	9.7W	13.5W	12.9W	13.3W	12.9W	14.8W	27.4W	25.5W	15.3W	27.4W
Operating Temperature Range	0°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C
Connection Terminals	Screw	Screw	Spring Clamp	Screw	Screw	Spring Clamp	Screw	Screw	Screw	Spring Clamp	Screw	Screw
Dimensions (WxHxD)	49x124x102mm	32x124x102mm	32x124x102mm	32x124x102mm	32x124x102mm	32x124x102mm	32x124x102mm	42x124x117mm	65x124x127mm	65x124x127mm	42x124x117mm	65x124x127mm
Weight	470g	425g	425g	435g	425g	450g	425g	500g	940g	890g	500g	940g
Special Features		Soft Start	NEC Class 2 Soft Start	Soft Start	Soft Start	DC-OK and Input Low Relay Contacts Soft Start	Soft Start		DC-OK Contact	DC-OK Contact Intermediate DC Bus		DC-OK Contact
List Price (USD)	\$340.00	\$360.00	\$390.00	\$350.00	\$320.00	\$370.00	\$350.00	\$420.00	\$525.00	\$570.00	\$450.00	\$580.00
Product Family	SilverLine	DIMENSION	DIMENSION	DIMENSION	DIMENSION	DIMENSION	DIMENSION	DIMENSION	DIMENSION	DIMENSION	DIMENSION	DIMENSION
Catalog Number	SLD2.100	CD5.121	CD5.241-L1	CD5.243	CD5.241	CD5.241-S1	CD5.242	CD10.241	CPS20.241-D1	QTD20.241	CD10.482	CPS20.481-D1

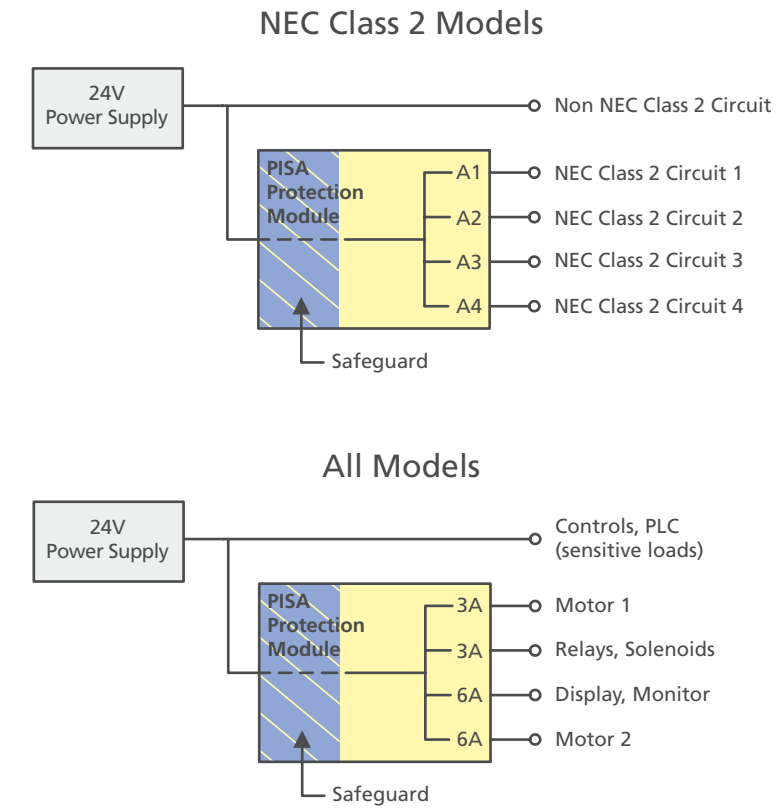
Protection

Circuit Protection Modules

PISA is an innovative concept for current distribution and protection of 24V load circuits. First, it distributes the current of a large power source to four lower current output channels and therefore, allows for smaller wires to be used. The second function is to permit only as much current on the outputs so that the input voltage of this unit (which corresponds to the output voltage of the power supply) does not fall below 21V. This ensures a safe and uninterrupted supply voltage for sensitive equipment, such as PLCs, controls or sensors, when they are connected directly to the same power supply as the PISA module.

Less critical loads, that are not affected by short voltage interruptions or that could even be the cause of a fault on the 24V power supply are connected to one of the four current controlled output channels of the PISA module. The protection is independent of the length of the wires or of the power supplies' characteristics. All four output channels shutdown simultaneously if the current of one channel or the maximum allowed current of the PISA module is exceeded.

All PISA modules have an Output-OK relay contact to provide a status signal. The Reset function provides a means of turning the unit ON/OFF locally as well as remotely. Multiple PISA modules can be shut down simultaneously during a protection event by connecting the Sync terminals.



Output Current	Channel 1 Channel 2 Channel 3 Channel 4	1A 1A 1A 1A	2A 2A 2A 2A	3A 3A 3A 3A	3.7A 3.7A 3.7A 3.7A	4A 4A 4A 4A	6A 6A 6A 6A	10A 10A 10A 10A	3A 3A 6A 6A	6A 6A 12A 12A
Nominal Voltage		24-28V	24-28V	24-28V	24-28V	24-28V	24-28V	24-28V	24-28V	24-28V
Input Voltage Range		18-30V	18-30V	18-30V	18-30V	18-30V	18-30V	18-30V	18-30V	18-30V
Required Input Voltage for Turning-On the Outputs, (typical)		21.4V	21.4V	21.4V	21.4V	21.4V	21.4V	21.4V	21.4V	21.4V
Input Voltage Protection Level min./max.		21.0V/21.8V	21.0V/21.8V	21.0V/21.8V	21.0V/21.8V	21.0V/21.8V	21.0V/21.8V	21.0V/21.8V	21.0V/21.8V	21.0V/21.8V
Total Output Current (All 4 Outputs Together)		4A	8A	12A	14.8A at 24V	16A	20A	20A	18A	20A
Output Current Limitation min./max.		9A/12.7A	9A/12.7A	16.6A/23.6A	16.6A/23.6A	16.6A/23.6A	20.5A/30A	20.5A/30A	20.5A/30A	20.5A/30A
Short Circuit Shutdown Time (typical)		110ms	110ms	10ms	10ms	10ms	8ms	8ms	8ms	8ms
Power Losses (Typical)		1.0W	1.3W	1.4W	1.6W	1.8W	2.4W	4.9W	1.9W	4.2W
Operating Temperature Range		-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C
Dimensions (WxHxD)		45x75x91mm	45x75x91mm	45x75x91mm	45x75x91mm	45x75x91mm	45x75x91mm	45x75x91mm	45x75x91mm	45x75x91mm
Weight		120g	120g	120g	120g	120g	120g	120g	120g	120g
Connection Terminals		Screw	Screw	Screw	Screw	Screw	Screw	Screw	Screw	Screw
Special Features		NEC Class 2	NEC Class 2		NEC Class 2					
List Price (USD)		\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00
Product Family		PISA	PISA	PISA	PISA	PISA	PISA	PISA	PISA	PISA
Catalog Number		PISA11.401	PISA11.402	PISA11.403	PISA11.CLASS2	PISA11.404	PISA11.406	PISA11.410	PISA11.203206	PISA11.206212

Buffer Modules with Capacitor Storage

The PULS DC-UPS with integrated electrochemical double layer capacitors (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 (see graphs on opposite page).

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.



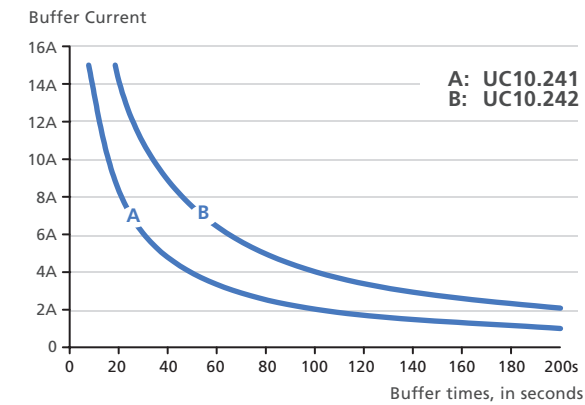
Nominal Voltage	24V	24V	48V	24V	
Storage Element	Electrolytic Capacitors			UltraCapacitor (EDLC) ^{b)}	
Storage Capacity	0.2 kW	0.32 kW	0.2 kW	6 kW	12 kW
Buffer Current (max.)	20A	40A	20A	15A	15A
Output Voltage in Buffer mode	22.5V ^{a)}	22.5V ^{a)}	45V ^{a)}	22.5V	22.5V
Input Separated from Output	No	No	No	Yes	Yes
Charging Time	20 Seconds	29 Seconds	22 Seconds	16 Minutes	32 Minutes
Buffer Time @ Full Load (typical)	310ms	250ms	150ms	9s	18s
Power Losses (Typical)	1.9W in Stand-by	1.9W in Stand-by	1.9W in Stand-by	4.6W at 10A	4.6W at 10A
Operating Temperature Range	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-40°C to +60°C	-40°C to +60°C
Connection Terminals	Spring Clamp	Screw	Spring Clamp	Spring Clamp	Spring Clamp
Dimensions (WxHxD)	64x124x102mm	64x124x142	64x124x102mm	126x124x117mm	198x124x117mm
Weight	740g	1040g	740g	1150g	1720g
Signals	Ready, Buffering, Inhibit			Ready, Buffering, Inhibit, PC-Mode	
List Price (USD)	\$390.00	\$510.00	\$390.00	\$800.00	\$1,200.00
Product Family	DIMENSION			DIMENSION	
Catalog Number	UF20.241	UF40.241	UF20.481	UC10.241	UC10.242

a) Or selectable 1V (UF20.241 & UF40.24) or 2V (UF20.481) lower than input voltage
 b) UltraCapacitors (EDLC) are common references for Electrochemical Double Layer Capacitors

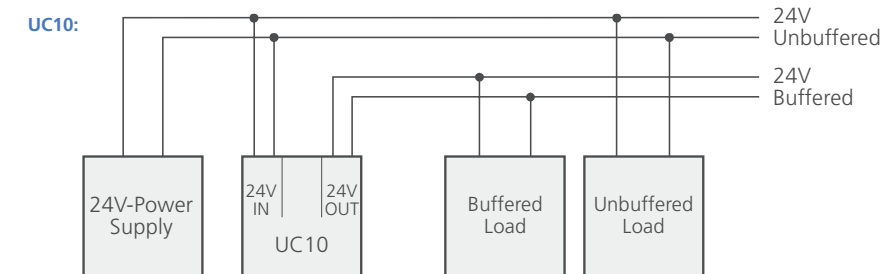
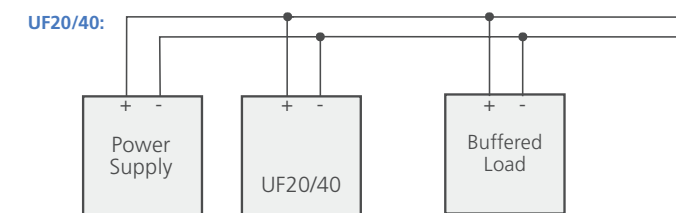
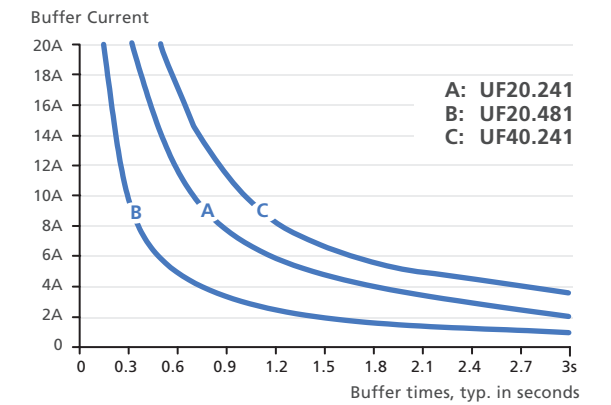
Buffer Times

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

Buffer time with UltraCapacitor (EDLC):



Buffer time with electrolytic capacitors:



DC-UPS with Batteries

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 buffer 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 Buffer Mode
- 22.5-26V Adjustable Output Voltage in Buffer Mode for the UB20.241
- Selectable Buffer Time Limiter to Extend Battery Life

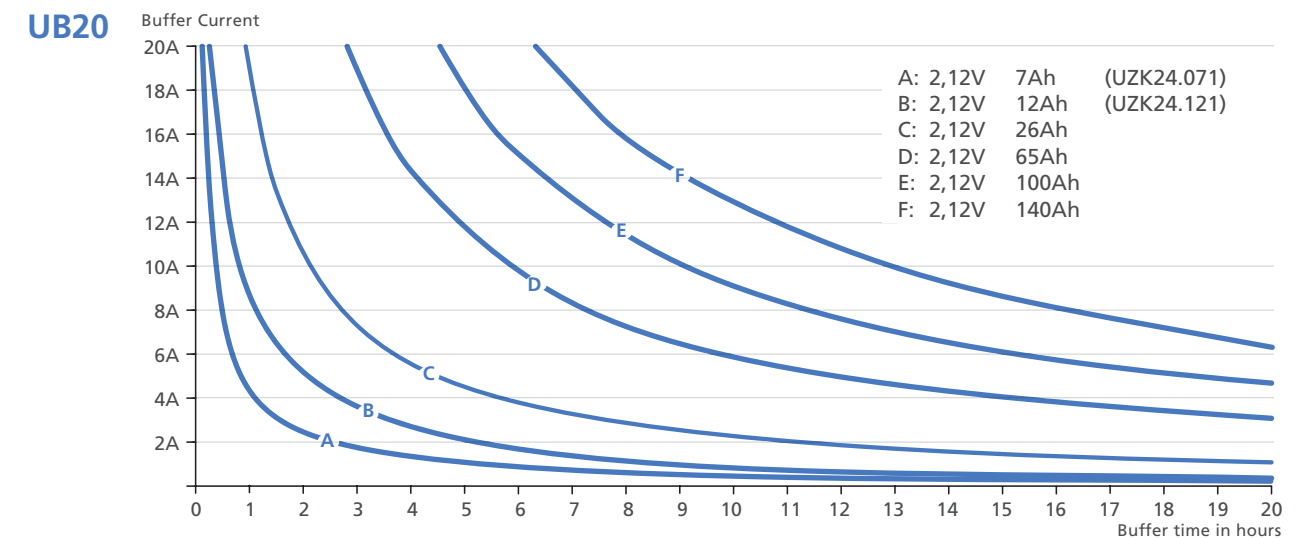
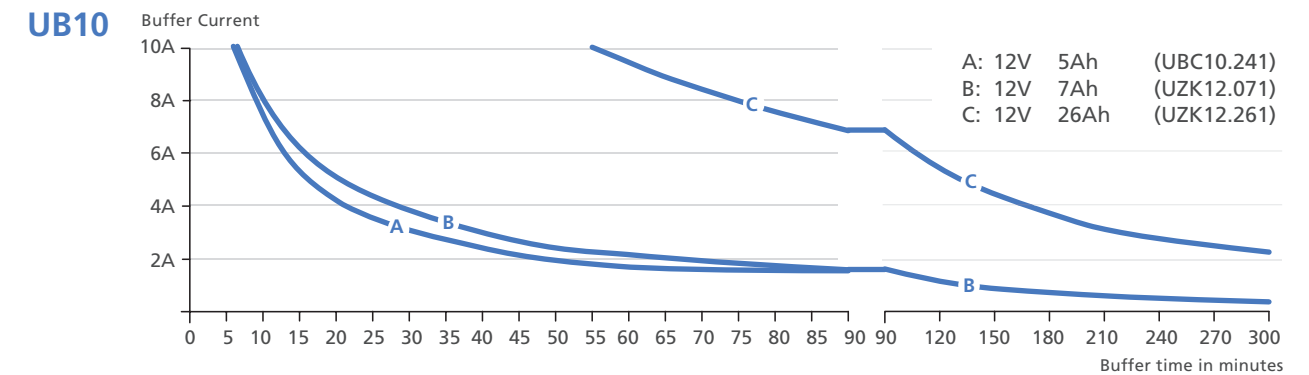


Nominal Current	10A	10A	10A	10A	20A
Nominal Voltage	24V	24V	24V	24V/12V	24V
Storage Element	Integrated Battery	External Battery	External Battery	External Battery	External Batteries
Allowed Battery Size	12V 5Ah	12V 3.9 to 40Ah	12V 17 to 130Ah	12V 3.9 to 40Ah	(2) 12V 3.9 to 150Ah
Buffer-mode (Continuous)	10A	10A	10A	10A/5A	20A
Buffer-mode (5s Bonus Power)	15A	15A	15A	15A/-	30A
Output Voltage in Buffer mode	22.5V	22.5V	22.5V	Regulated to 22.5V and 12V	Selectable: 22.5V/24V/25V/26V
Temperature Tracking of the End-of-Charge Voltage	Automatic	Manual Select	Manual Select	Manual select	Automatic with Temp. Sensor a)
Battery Charging Current	1.5A	1.5A	3.0A	1.5A	1.5A/3.0A b)
Operating Temperature Range	0°C to +40°C	-25°C to +70°C	-25°C to +50°C	-25°C to +70°C	-40°C to +70°C
Dimensions (WxHxD)	123x124x119mm	49x124x117mm	49x124x117mm	49x124x117mm	46x124x127mm
Weight	2.85kg	530g	545g	650g	700g
Connection Terminalss	Spring Clamp	Spring Clamp	Spring Clamp	Spring Clamp	Screw
Signals	Ready, Buffering, Inhibit, Replace Battery				
List Price (USD)	\$565.00	\$450.00	\$460.00	\$525.00	\$600.00
Product Family	DIMENSION				
Catalog Number	UBC10.241 UBC10.241-N1 c)	UB10.241	UB10.242	UB10.245	UB20.241

a) With PULS temp sensor UZS24.100
 b) Adjustable using <10Ah / >10Ah battery size selector
 c) Battery not included & different list price

Buffer Times

Buffer Current	0.5A	1A	3A	5A	7A	10A	15A	20A
UBC10.241	3h 50min	2h	30min	16min	11min	6min	5s	-
UB10 + 7Ah Battery (12V)	5h 10min	2h 30 min	38min	20min	13min	6min	5s	-
UB10 + 12Ah Battery (12V)	10h 41min	5h 17min	1h 40min	46min	28min	16min	5s	-
UB10 + 26Ah Battery (12V)	23h 6min	11h 23min	3h 40min	2h 10min	1h 30min	55min	5s	-
UB10.242 + 65Ah Battery (12V)	2d 11h	1d 5h	9h 53min	5h 51min	4h	2h 45min	5s	-
UB10.242 + 100Ah Battery (12V)	3d 19h	1d 21h	14h 53min	8h 41min	6h	4h 7min	5s	-
UB10.242 + 130Ah Battery (12V)	4d 23h	2d 11h	19h 21 min	11h 18min	7h 48min	5h 21min	5s	-
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

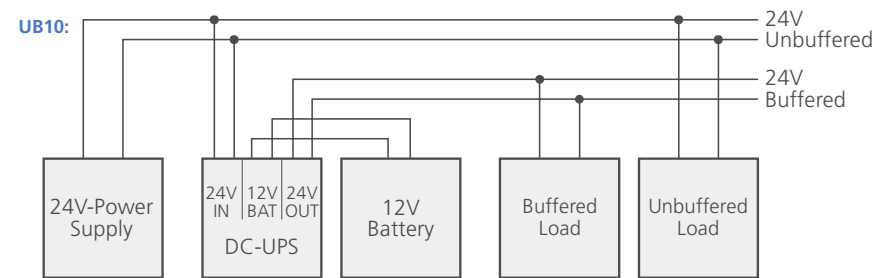


The tables above show typical buffer times of new battery modules without the aging effect included. PULS recommends adding 30-50% battery capacity to account for battery wear and aging.

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 series are equipped with a center-tap, which are protected against over-current, 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 non PULS battery modules for the UB20 series, it is recommended to use the UZS24.100 sensor board with a PT1000 temperature sensor included and a center-tap fuse to take advantage of the PULS-1-Battery-Concept.



UZK12.071

Catalog Number	Description	Dimensions (WxHxD)	List Price (USD)
UZB12.051	12V, 5Ah replacement battery for UBC10.241	90x106x70mm	\$140.00
UZB12.071	12V, 7Ah replacement battery for UZK12.071 and UZK24.071 a)	151x100x65mm	\$185.00
UZB12.121	12V, 12Ah replacement battery for UZK24.121 a)	151x100x98mm	\$200.00
UZB12.261	12V, 26Ah replacement battery for UZK12.261	175x166x125mm	\$390.00
UZK12.071	12V, 7Ah battery module for UB10	155x124x112mm	\$270.00
UZK12.261	12V, 26Ah battery module for UB10	214x179x153mm	\$480.00
UZK24.071	24V, 7Ah battery module for UB20	137x186x124mm	\$380.00
UZK24.121	24V, 12Ah battery module for UB20	203x186x124mm	\$500.00
UZO12.07	Mounting Bracket for use with 7Ah Battery	155x124x112mm	\$95.00
UZO12.26	Mounting Bracket for use with 26Ah Battery	214x179x153mm	\$95.00
UZO24.071	Mounting Bracket for use with 7Ah Battery Pair	137x186x124mm	\$150.00
UZO24.121	Mounting Bracket for use with 12Ah Battery Pair	203x186x124mm	\$160.00
UZS24.100	Sensorboard with PT1000 temperature sensor and center-tap fuse for use with UB20.241	23x110.5x15mm	\$40.00

a) Two required for UZK24 battery modules

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.



Catalog Number	Wall mounting bracket	List Price (USD)
ZM1.WALL	for light DIMENSION units	\$20.00
ZM2.WALL	for QS20, QS40, QT40, CPS20, units	\$35.00
ZM3.WALL	for ML60, PISA11 and MLY	\$12.00
ZM4.WALL	for CP10 units	\$35.00
ZM5.WALL	for CP20 units	\$35.00
ZM10.WALL	for CP5 units	\$35.00
ZM1.UBC10	for UBC10	\$35.00

Catalog Number	Side mounting bracket	List Price (USD)
ZM11.SIDE	for CS3, CS5, QS3, YR2, YRM2 units	\$30.00
ZM12.SIDE	for CP10, CT5, QS5 units	\$30.00
ZM13.SIDE	for CS10, CT10, QS10, CPS20 units	\$30.00
ZM14.SIDE	for QT20, QTD20, UF20 units	\$35.00
ZM15.SIDE	for QS20 units (except QS20.244)	\$35.00

Standards & Approvals Alpha-Numeric Listing

	Page	List Price (USD)	CE & ROHS	UL 508 cULus Listed (U.S. & Canada)	UL 60950-1 cURus (U.S. & Canada)	IEC 60950-1 CB-Scheme	IECEX	ATEX	Class I Division 2 (HazLoc)	GL Marine	ABS Marine	EAC Registration	NEC Class 2	DeviceNet Approved	SEMI F47	AS-Interface Approved	EN 61000-3-2 (Harmonics PFC)	EN 61000-6-1 Immunity for residential environments	EN 61000-6-2 Immunity for industrial environments	EN 61000-6-3 Emission for residential environments	EN 61000-6-4 Emission for industrial environments	EN 55011 / EN 55022 class B Disturbance characteristics
YR80.242	32	\$220	•	•	•	•	•	•	•	•	•	•					5	•	•	•	•	•
YRM2.DIODE	31	\$140	•	•	•	•	•	•	•	•	•	•					5	•	•	•	•	•
ZM1.UBC10	42	\$35	•							•	•	•										
ZM1.WALL	42	\$20	•							•		•										
ZM11.SIDE	42	\$30	•									•										
ZM12.SIDE	42	\$30	•									•										
ZM13.SIDE	42	\$30	•									•										
ZM14.SIDE	42	\$35	•									•										
ZM15.SIDE	42	\$35	•									•										
ZM2.WALL	42	\$35	•							•	•	•										
ZM3.WALL	42	\$12	•									•										
ZM4.WALL	42	\$35	•																			
ZM5.WALL	42	\$35	•																			
ZM10.WALL	42	\$35	•																			

- Fulfilled
- (•) In process
- 1) Meets class A limits (passive)
- 2) Meets class A limits (active)
- 3) Not applicable (<75VA)
- 4) Not applicable (<220Vac)
- 5) Not applicable for this type

Available Standards and Approvals – An Overview of PULS Products:



The CE mark in conjunction with the manufacturer's Declaration of Conformity confirms that the directives of the European Union stated in the manufacturer's declaration of conformity have been fulfilled. European standards (EN standards) provide the foundation for fulfilling the directives.



This certification mark is based on the UL 508 (Industrial Control Equipment) for the USA. UL (Underwriters Laboratories Inc.) is an independent testing and certification body which also holds its own set of standards (UL standards). Under a reciprocal agreement with Canada, the approval is also recognized in Canada if the Canadian requirements are taken into account during the approval process. This can be identified from the "c" on the left-hand side of the certification mark.



ITE (Information Technology Equipment): Safety of information technology equipment. This certification mark is based on the UL 60950-1.



The CB scheme is an international agreement on the mutual recognition of test results between approximately 60 national testing organizations in more than 40 countries. It is based on the harmonized IEC standards in conjunction with national variations of these standards. PULS offers a CB scheme in accordance with IEC 60950-1 for many devices. A uniform report form and an inspection of the labs in accordance with established standards ensure that the testing methods are the same in all labs while guaranteeing the quality of test results. All participating countries have to recognize the CB report and award a national certification mark based on it.



IECEX is an International approval for the use of equipment in areas with potentially explosive atmospheres. This certification mark is based on the IEC 60079-0 and IEC 60079-15 standards.



ATEX is the European approval for the use of equipment in areas with potentially explosive atmospheres. This certification mark is based on the EN 60079-0 and EN 60079-15 standards.



Class I Division 2 is the US approval for use in areas with potentially explosive atmospheres (Haz. Loc.). This certification mark is based on the ANSI/ISA-12.12.01. The approval may be either provided by UL or CSA.



Germanischer Lloyd is Prototype testing for the shipbuilding and offshore sector



ABS (American Bureau for Shipping) is type testing for shipbuilding or offshore approvals for the USA.



EAC registration is the approval for Russia, Kazakhstan and Belarus.



NEC CLASS 2 electric circuits are deemed non-hazardous in terms of fire and electrical shock hazards. The advantage of such electric circuits is the significantly reduced effort needed for cabling during installation and the safety provided by these circuits. The power source must either be constructed in accordance with UL 1310 or must be classified and listed as a Limited Power Source (LPS) in accordance with IEC 60950-1. More information can be found in Article 725 of the National Electrical Code.



SEMI F47 are requirements for the semiconductor industry in terms of mains voltage loss.

Please refer to the PULS website for the latest approvals and standards



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