



DIN-RAIL  
POWER SUPPLIES

# PULS



## PRODUCT SELECTION & PRICING GUIDE

North America – 2012  
[www.pulspower.us](http://www.pulspower.us)

## PULS - The Market Leader

### Reliability and Sustainability from the Market Leader!

For over 30 years, PULS has been dedicated to providing the best in quality, technology, application support, and customer service available to the industrial Din-Rail power supply market. This singular focus on the DC Power Market's requirements and needs has resulted in PULS obtaining a market leadership position in this demanding industry.

The heart of your control system is your power supply. With PULS you can be assured that you are obtaining a product that is a leader in efficiency with the longest life and reliability. The PULS philosophy, of not obsoleting older designs, saves you money and time by eliminating the need to re-engineer your product when a vendor launches a new product generation and forces you to change.

PULS unique bonus power and power boost assures you of power being available when you need it and eliminates the need for oversizing, resulting in higher component costs and wasted energy.

PULS highly efficient products contribute to a longer life of all electronic components in your application, by lowering the internal temperature in your control cabinet. Our small footprint and lower heat losses often result in a smaller enclosure

In the last several years, PULS has opened the two most modern and highly "Sustainable" manufacturing plants in this industry. Our newest facility has obtained the status of Leed Gold Certification. This assures that PULS users are purchasing the most energy efficient products in the world, produced in a highly efficient facility. The PULS dedication to "Sustainability" has many advantages for you.

In North America, we stock every product listed in this selection guide and welcome your calls to our Customer Support and Application Engineering Team.

The products listed in this selection guide are only a small offering of our extensive product range. Visit our web site at [www.pulspower.us](http://www.pulspower.us) for detailed comprehensive information on all our products.

We appreciate your business and look forward to continuing to offer you the best in product, support and service.

Larry Westbrook  
President – PULS North America

## Table of Contents

PULS North America, The Market Leader	2
PULS Training & Support	3
Sustainability at PULS	4-5
10 Reasons for Choosing PULS	6-7
Product Family Summary	8-9
Single Phase Plastic Housing Power Supplies	10
Single Phase Metal Housing Power Supplies	11
3-Phase Power Supplies	12
Redundancy Modules & Power Supplies	13
Network Power Supplies	14
Conformal Coated & ATEX Power Supplies	15
DC/DC Converters	16
PISA - 24VDC Protection Modules	17
DC-UPS, Batteries & Buffer Modules	18-19
Mounting Kits	20
Parallel and Series Connections	21
Alpha-Numeric Listing with Dimensions & Agency Approvals	22-23



## PULS Support is Available

Contact our Application or Customer Service Team for availability and other questions you might have at (630) 587-9780 or [info@puls-us.com](mailto:info@puls-us.com).

## Visit Us at [www.pulspower.us](http://www.pulspower.us)

Many suggestions and requirements from customers have been included in our newly revised web site – now featuring an array of additional information, documents and data files. This makes using PULS even easier. For many of our units you can find the following information:

- The most important features and parameters of individual devices
- Mechanical dimensions
- Functional diagrams
- Output characteristic curves
- CE Declaration of Conformity
- Related products
- Suitable accessories for individual devices
- E-Plan macros
- 2-D CAD design data file formats (.dxf and .dwg files)
- 3-D CAD design data file formats (.stp and .dwt files)
- 3-D formats can be displayed on most PCs using free viewer software from Autodesk®.
- Many various approval certificates and approval reports
- Links to corresponding UL and other agency sites where our products are listed
- Find your North American local representative

## Educational Resources



YouTube Videos

**The PULS Advantage**

**CDS Series**  
Clean Regulated DC Voltage When None is Available

The PULS CDS Series - DCDC Converter

Switch-mode DC power supplies have excellent regulation on the output and are mostly unaffected by most conditions. However, the output voltage of a supply can be affected by factors such as wire length, wire size and electronic noise. Because certain applications are large, long wire lengths are a reality and are required to connect all the control equipment together. Couple this along with a small wire size and the DC voltage will not be sufficient to power the load. Even if the wire size is appropriate for the load peak currents such as starting motors can further aggravate the voltage loss.

Applications in remote sites where DC is the only available voltage and the source could be a battery, solar panel or DC but there is a long period of DC but there is a long period of DC but there is a long period of DC because of the wire length, wire size and current draw, the DC voltage can also be made "dirty" by the electrical noise introduced into the wires by the surrounding equipment. Safety along with cost and efficiency, PULS has created a remote site. The cost of supplying AC to a remote site can be very expensive if only DC is required.

**DCDC Converters**  
The conditions of voltage drop and "dirty" DC voltage in large or remote applications can be rectified by installing a DCDC converter. Simply put, a DCDC converter will take a DC input voltage, filter it and then produce a regulated output voltage. While some units will cause a voltage drop because of the large draw in DC voltage, most DCDC converters operate in a wide load range. Some converters take a compromised 24VDC voltage, clean it up and produce a regulated 24VDC. Other models can step up or step down the DC voltage. However, most DCDC converters are manufactured the same and do not work perfectly in the same manner.

**Voltage Drop**  
It might be hard to understand just how much voltage is lost on a long

**Remove Applications**  
There are also DC only control

PULS Power Supplies  
630-587-9780  
[www.puls-power.com/usa](http://www.puls-power.com/usa)  
[info@puls-us.com](mailto:info@puls-us.com)

"The PULS Advantage"  
White Papers

PULS North American Headquarters in St. Charles, IL



A new datasheet archive has also been added for old and obsolete products such as the AP and DP units.

It always pays to visit [www.pulspower.us](http://www.pulspower.us). This can make your work much simpler and save lots of time.

The screenshot shows the PULS North America website interface. At the top, there is a navigation bar with "North America", "Home | Contact | Login | Download | Stamp | Print". Below the navigation bar is a large banner image of a landscape. The main content area includes a "ABOUT PULS" section with a "Click-Share-Download" button, a "Find your Product" section with filters for "By Series", "By Power", and "By Parameter", and a "PULS North America" section with a "Superior Products, Application/Engineering Assistance and Customer Service" heading. There is also a "Call our application team at" section with the phone number (630) 587-9780 and email [info@puls-us.com](mailto:info@puls-us.com).

# Sustainability & Reliability in Everything We Do

Sustainability is a state where development “meets the needs of the present without compromising the ability of future generations to meet their own needs”. Sustainability is meant to ensure that prosperity is achieved without sacrificing the resources and assets of future generations. It requires an integrated focus on the core values of social equity, economic prosperity and environmental integrity. The emphasis on balance between the three core areas is also referred to as the “triple bottom line” and is a recognized pathway to long-term community success.

## [PULS 3 Circles of Sustainability]

### ENVIRONMENTAL

- Green, Efficient Products
- Highly Efficient and Green Certified Supply Chain
- Lightest and Smallest Products Resulting in Lower Shipment Costs and Smaller Enclosures

### SOCIAL

- Leader in Market Education
- Provider of Detailed and Guaranteed Technical Information
- 30+ Years of Community Involvement

### ECONOMIC

- Lowest Energy Consumption
- Less Heat Adds to Life of All Components in Control System
- Longest Life
- Lowest Total Cost of Ownership



*PULS Green Award Winning Plant in Czech Republic*

“PULS is a global leader, not only in the products we build, but in how we build our products.”



*PULS Green Award Winning Plant in China*



*The Greenes T Power supply on e arth*

# DIMENSION

# 10 Reasons for Choosing PULS

## EFFICIENCY

- Highest energy efficiency in the market
- Less heat generated in the enclosure allows a longer lifetime for all components in the system
- Least energy consumption for the user

## BROAD PRODUCT RANGE

- AC Single, 3-Phase & DC Input power supplies
- DC to DC power converters
- Specific Network power supplies
- Redundancy Modules & Redundant Power Supplies
- DC-UPS Controllers with individual battery monitoring and charging



## CONTROL OF SUPPLY CHAIN & MANUFACTURING

- From development to shipment the entire process is controlled by PULS
- Two ultra modern manufacturing facilities built and opened in last 5 years
- Delivery to your requirements



## DEVELOPMENT ENGINEERING RESOURCES

- PULS employs over 50 engineers and technicians exclusively dedicated to developing DC power products for your application
- Modified standard products available for volume applications



## LONG LIFE OF PRODUCT FAMILIES

- Continually introducing the next generation of DC power solutions while maintaining existing designs
- PULS does not phase out or obsolete standard products
- Eliminates the forced changes in your design due to obsolescence
- Availability you can count on for years



## The Right Product for YOUR Application

### THE DC POWER SPECIALIST

- DC power products are our only business
- Market education and training leader
- Data sheets that you can rely on to meet the stated performance

### LOWEST TOTAL COST OF OWNERSHIP

- Small footprints result in smaller cabinet requirements
- Lower heat generation also leads to smaller cabinets
- Long life – prolongs the replacement costs
- Less energy consumed to do the same job

### QUALITY & LIFE TIME

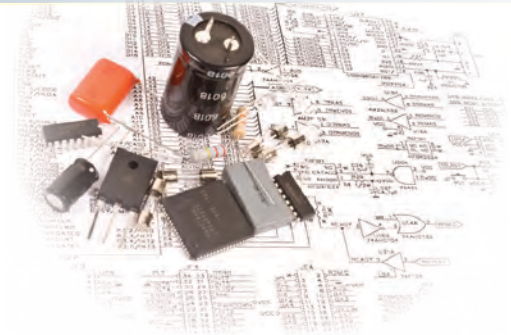
- Longest life in the industry
- Quality is assured with every product
- Performance to data sheets is guaranteed

### TECHNOLOGY LEADER

- Advanced design techniques utilized to lead the market in new product innovations
- Recognized by Frost & Sullivan as the Technology Leader

### CUSTOMER SERVICE & APPLICATION ASSISTANCE

- Application engineering support available to assist you with the best product for your application
- Highly trained sales reps available to assist you with your application
- Friendly and responsive customer service team available to assist you with your availability and delivery questions





## SilverLine

The classic power supply family for general applications which have been proven over a million times and has been continuously available since the mid 1990's.

- Single or 3-Phase Input
- Redundant Power Supplies
- AS-Interface® Power Supplies
- Redundancy Modules

## MiniLine



The MiniLine series covers the lower power requirements in the range from 15W to 100W. The units in their rugged plastic housing are highly efficient, compact, can be installed in seconds and are extremely reliable. In addition to the standard 24V power supplies, many other output voltages are also available.

- 100-240 or 380-480V Input
- Output Voltages from 5V to 56V
- Robust Plastic Housing
- Spring Clamp Terminals on Standard Models and Screw Terminals on the Compact Units
- Wide Temperature Range from -10°C to +70°C and Select Models Down to -40°C
- Redundancy Modules

		1-Phase Supplies	3-Phase Supplies	DC/DC Converters	DC-UPS	Buffer Modules	Redundancy Modules
<b>MiniLine</b>		15-100W	90-100W	-	-	-	10A
<b>SilverLine</b>		40-240W	120-960W	40W	-	24V	2.5-40A
<b>Dimension</b>	<b>C-Series</b>	80-240W	96-240W	92-120W	-	-	-
	<b>Q-Series</b>	80-960W	480-960W	480W	-	-	-
	<b>X-Series</b>	-	960W	-	-	-	-
	<b>U-Series</b>	-	-	-	10A	24V, 48V	-
	<b>Y-Series</b>	-	-	-	-	-	20-80A





## Dimension

Dimension offers you everything from basic units with only essential functions to premium products for more demanding applications. Other Dimension products include DC/DC converters, buffer modules, DC-UPS's and a large assortment of accessories. Due to the wide variety of options, you only pay for the features you need.

### C - Series Power Supplies and DC/DC Converters

For users looking for highly reliable power supplies in a compact housing which are easy to use. Focusing only on the essentials, achieves significant price advantages.

- 20% Current Reserves
- Low Inrush Current Surge
- Large Screw Terminals

### Q - Series Premium Class Power Supplies

Suitable when you need state-of-the-art technology and flexibility for demanding tasks. With outstanding efficiencies, 50% BonusPower® and many other features, this series is the "Best in Class".

- 50% Current Reserves
- AC and DC Input
- Low Inrush Current Surge
- DC-OK Relay Contact (Except QS3)
- Excellent Power Factor
- Active Power Factor Correction (PFC)
- Active Filter against Input Transients
- Spring Clamp Terminals (Except 40A)
- Extensive Approval Package

### U - Series Buffer Modules & DC-UPS

Back-up systems for minutes with a DC-UPS needing only one 12V-battery or for seconds with our battery-free buffer module. This improves safety and prevents downtime, loss of data and long restart sequences.

### X - Series 3-Phase Power Supplies for Power Applications

For motors and other power-hungry loads. Small size, maximum efficiency and low price are the benefits with only minor compromises in a few features.

- 25% Current Reserves
- No Inrush Current Surge
- Efficiencies up to 96%

### Y - Series Redundancy Modules

For building redundant power supply systems or to isolate sensitive circuits.

- Redundancy Modules with Alarm Contacts
- Redundancy Modules without Alarm Contacts

### Z - Series Mounting Accessories

For installation in low profile cabinets or for panel installations where no DIN-rail is available.

# Single Phase Plastic Housing Power Supplies



**MiniLine**  
ML100.100

- Excellent Efficiency
- Spring Clamp Terminals
- Robust Design
- Operational Temperature -10° to + 70°C
- MTBF over 4,000,000 hours



**Compact MiniLine**  
ML30.241

- Excellent Efficiency
- Large Screw Terminals
- Robust Design
- Operational Temperature:
  - 10° to + 70°C – Standard
  - 40° to + 70°C – Select Models
- MTBF over 7,000,000 hours

## MiniLine Plastic Housing Power Supplies

Output Voltage	Output Current	Watts <sup>1</sup>	AC Input Voltage <sup>2</sup> (50 - 60Hz)	DC Input Voltage <sup>2</sup>	Features							Catalog Number <sup>7</sup>	List Price (USD)	
					Screw Terminals	Spring Clamp Terminals PFC (EN61000-3-2)	Parallel Capable	NEC Class 2	DC OK Signal	Class I Division 2	Internal Fuse			-40°C Operating Temp
5 - 5.5VDC	5A	25W	100 - 240VAC <sup>5</sup>	110 - 300VDC		•							ML30.101	\$124.00
10 - 12VDC	3A	30W	100 - 240VAC <sup>5</sup>	110 - 300VDC		•							ML30.102	\$133.00
12 - 15VDC	4.2A	50W	100 - 240VAC <sup>5</sup>	110 - 300VDC		•							ML50.102	\$155.00
	7.5A	90W	100 - 120/200 - 240VAC <sup>5</sup>	290VDC		•	•						ML100.102	\$210.00
+/-12 or +/-15VDC	1.4 - 2.8A	36W	100 - 240VAC <sup>5</sup>	110 - 300VDC		•							ML30.106	\$139.00
24 - 28VDC	1.3A	30W	100 - 240VAC <sup>5</sup>	110 - 300VDC		•							ML30.100	\$95.00
	2.1A	50W	100 - 240VAC <sup>5</sup>	110 - 300VDC		•							ML50.100	\$124.00
	3A	72W	100 - 120/200 - 240VAC <sup>4</sup>	290VDC		•	•						ML70.100	\$144.00
	3.75A	90W	380 - 480VAC <sup>3</sup>	-		•	•						ML90.200	\$239.00
	3.95A	95W	100 - 120/200 - 240VAC <sup>5</sup>	290VDC		•	•						ML95.100	\$209.00
	4.2A	100W	100 - 120/200 - 240VAC <sup>5</sup>	290VDC		•	•						ML100.100	\$162.00
48 - 56VDC	1.05A	50W	100 - 240VAC <sup>5</sup>	110 - 300VDC		•							ML50.105	\$140.00
	2.1A	100W	100 - 120/200 - 240VAC <sup>5</sup>	290VDC		•	•						ML100.105	\$210.00

## Compact MiniLine Plastic Housing Power Supplies

Output Voltage	Output Current	Watts	AC Input Voltage <sup>2</sup> (50 - 60Hz)	DC Input Voltage <sup>2</sup>	Features							Catalog Number	List Price (USD)	
					Screw Terminals	Spring Clamp Terminals PFC (EN61000-3-2)	Parallel Capable	NEC Class 2	DC OK Signal	Class I Division 2	Internal Fuse			-40°C Operating Temp
5 - 5.5VDC	3A	15W	100 - 240VAC <sup>5</sup>	110 - 300VDC	•								ML15.051	\$72.00
12 - 15VDC	1.3A	15W	100 - 240VAC <sup>5</sup>	110 - 300VDC									ML15.121	\$72.00
	4.5A	54W	100 - 240VAC <sup>5</sup>	110 - 300VDC		•							ML60.121	\$155.00
24 - 28VDC	0.63A	15W	100 - 240VAC <sup>5</sup>	110 - 300VDC	•								ML15.241	\$64.00
					•								ML30.241	\$100.00
	1.3A	30W	100 - 240VAC <sup>5</sup>	110 - 300VDC	•								ML60.241	\$128.00
					•								ML60.242	\$167.00

## Single Phase Metal Housing Power Supplies



**Dimension Q-Series**  
QS5.241

- Industry's Smallest Footprint
- Efficiency up to 94%
- Spring Clamp Terminals
- 50% Current Reserves
- Operational Temperature -25° to +70°C
- MTBF over 2,400,000 hours



**Dimension C-Series**  
CS5.241

- Industry's Smallest Footprint
- Efficiency up to 93%
- Screw Terminals
- 20% Current Reserves
- Operational Temperature -25° to +70°C
- MTBF over 2,200,000 hours



**Classic SilverLine**  
SL5.102

- Long Standing Usage in the Industry
- Efficiency up to 90%
- Screw Terminals
- 20% Current Reserves
- Operational Temperature -10° to +70°C
- MTBF over 2,100,000 hours

### Features

### Single Phase Metal Housing Power Supplies

Output Voltage	Output Current	Watts <sup>1</sup>	AC Input Voltage <sup>2</sup> (50 - 60Hz)	DC Input Voltage <sup>2</sup>	Features										Catalog Number <sup>7</sup>	List Price (USD)								
					Screw Terminals	Spring Clamp Terminals	Active Power Factor	PFC (EN61000-3-2)	Parallel Capable	20% Power Boost	50% Bonus Power	DC OK Contact	SEMI F47 Compliant	NEC Class 2			Class I Division 2	Internal Fuse						
12 - 15VDC	3A	40W	100-120 / 200-240VAC <sup>4</sup>	110 - 300VDC	•	•	•	•	•	•	•	•	•	•	•	•	•	SL2.103	\$203.00					
	15A	180W	100 - 240VAC <sup>5</sup>	110 - 150VDC	•	•	•	•	•	•	•	•	•	•	•	•	•	QS10.121	\$416.00					
			100-120 / 200-240VAC <sup>4</sup>	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	SL10.104	\$523.00				
24VDC	2.5A	60W	100-120 / 200-240VAC <sup>4</sup>	110 - 300VDC	•	•	•	•	•	•	•	•	•	•	•	•	•	SL2.100	\$186.00					
	4A	96W	100-120 / 200-240VAC <sup>4</sup>	110 - 300VDC	•	•	•	•	•	•	•	•	•	•	•	•	•	SL4.100	\$296.00					
24 - 28VDC	3.3A	80W	100 - 240VAC <sup>5</sup>	110 - 300VDC	•	•	•	•	•	•	•	•	•	•	•	•	•	CS3.241	\$155.00					
			100 - 240VAC <sup>5</sup>	110 - 300VDC	•	•	•	•	•	•	•	•	•	•	•	•	•	•	QS3.241	\$205.00				
	5A	120W	100-120 / 200-240VAC <sup>6</sup>	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	CS5.241	\$205.00				
			100 - 240VAC <sup>5</sup>	110 - 300VDC	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	QS5.241	\$281.00			
	10A	240W	100-120 / 200-240VAC <sup>4</sup>	110 - 300VDC	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	SL5.102	\$281.00			
			100-120 / 200-240VAC <sup>6</sup>	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	CS10.241	\$274.00			
			100 - 240VAC <sup>5</sup>	110 - 150VDC	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	QS10.241	\$384.00		
			100-120 / 200-240VAC <sup>4</sup>	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	SL10.100	\$354.00		
	20A	480W	100 - 240VAC <sup>5</sup>	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	CS20.241 <sup>8</sup>	\$430.00			
			100 - 240VAC <sup>5</sup>	110 - 150VDC	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	QS20.241	\$533.00		
100-120 / 200-240VAC <sup>6</sup>			-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	SL20.110	\$602.00			
200 - 240VAC <sup>5</sup>			-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	SL30.100	\$709.00			
40A	960W	100 - 240VAC <sup>5</sup>	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	QS40.241 <sup>8</sup>	\$850.00			
		200 - 240VAC <sup>5</sup>	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	QS40.244	\$755.00		
28 - 32VDC	8A	240W	100 - 240VAC <sup>5</sup>	110 - 150VDC	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	QS10.301	\$444.00			
36 - 42VDC	13.3A	480W	100 - 240VAC <sup>5</sup>	110 - 150VDC	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	QS20.361	\$694.00		
			100-120 / 200-240VAC <sup>6</sup>	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	SL20.112	\$686.00	
48 - 56VDC	5A	240W	100-120 / 200-240VAC <sup>6</sup>	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	CS10.481	\$344.00		
			100 - 240VAC <sup>5</sup>	110 - 150VDC	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	QS10.481	\$513.00
			100-120 / 200-240VAC <sup>4</sup>	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	SL10.101	\$473.00
	10A	480W	100 - 240VAC <sup>5</sup>	110 - 150VDC	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	QS20.481	\$583.00
			100-120 / 200-240VAC <sup>6</sup>	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	SL20.113
20A	960W	200 - 240VAC <sup>5</sup>	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	QS40.484	\$910.00

1 - For higher wattage applications, paralleling of power supplies is possible. PULS recommends using units that are "Parallel Capable" for parallel applications.  
 2 - See data sheet for input voltage tolerances.  
 3 - For input, these units utilize only two of the three legs of a 3-Phase system.  
 4 - Manual select input voltage.  
 5 - Wide-range input voltage.  
 6 - Auto-select input voltage.  
 7 - Most common catalog numbers - See pages 22 and 23 for complete listing.  
 8 - Available late 2011 or early 2012.

# 3-Phase Power Supplies



**Dimension Q-Series**  
QT40.241

- Industry's Smallest Footprint
- Efficiency over 95%
- Screw Terminals – Some with Spring Clamps
- Up to 50% Current Reserves
- Operational Temperature -25° to +70°C
- MTBF over 2,00,000 hours
- Very Low AC Inrush



**Dimension X-Series**  
XT40.242

- Unique Supply for Power Applications
- Efficiency up to 96%
- Screw Terminals
- 25% Current Reserves
- Operational Temperature -25° to +70°C
- MTBF over 950,000 hours
- No AC Inrush



**Classic SilverLine**  
SL20.310

- Long Standing Usage in the Industry
- Efficiency up to 90%
- Screw Terminals
- 20% Current Reserves
- Operational Temperature -10° to +70°C
- MTBF over 2,100,000 hours

## Features

### 3-Phase Power Supplies

Output Voltage	Output Current	Watts <sup>1</sup>	AC Input Voltage <sup>2</sup> (50 - 60Hz)	DC Input Voltage	Screw Terminals	Spring Clamp Terminals	Active Power Factor	PFC (EN61000-3-2)	Parallel Capable	25% Power Boost	50% Bonus Power	DC OK Contact	SEMI F47 Compliant	NEC Class 2	Class I/Division 2	Internal Fuse	PULS	Catalog Number <sup>3</sup>	List Price (USD)	
12-15VDC	8A	96W	380 - 480VAC <sup>4</sup>	-	•			•							•	•		CT5.121	\$311.00	
	3.75A	90W	380 - 480VAC <sup>4</sup>	-		•		•									•	ML90.200	\$239.00	
24 - 28VDC	4.2A	100W	380 - 480VAC <sup>4</sup>	-				•									•	ML100.200	\$239.00	
	5A	120W	380 - 480VAC <sup>4</sup>	-	•			•									•	CT5.241	\$289.00	
			380 - 480VAC	-	•			•									•	SL5.300	\$309.00	
	10A	240W	380 - 480VAC	-	•			•									•	CT10.241	\$344.00	
			380 - 480VAC	-	•			•									•	SL10.300	\$371.00	
	20A	480W	380 - 480VAC	-	•	•		•										•	QT20.241	\$542.00
			380 - 480VAC	-	•			•										•	SL20.310	\$549.00
	30A	720W	380 - 480VAC	-	•			•										•	SL30.300	\$664.00
380 - 480VAC			-	•			•										•	QT40.241	\$722.00	
40A	960W	380 - 480VAC	-	•			•										•	SL40.300	\$759.00	
		380 - 480VAC	-	•			•										•	CT20.361	\$720.00	
36 - 42VDC	13.3A	480W	380 - 480VAC	-		•		•									•	QT10.481	\$422.00	
48 - 55VDC	5A	240W	380 - 480VAC	-	•			•									•	SL10.305	\$473.00	
			380 - 480VAC	-	•			•									•	QT20.481	\$611.00	
	10A	480W	380 - 480VAC	-		•		•									•	QT20.481	\$611.00	
			380 - 480VAC	-		•		•									•	QT40.481	\$866.00	

## Features

### 3-Phase Power Supplies - For Power Applications

Output Voltage	Output Current	Watts	Input Voltage <sup>2</sup> (50 - 60Hz)	DC Input Voltage	Screw Terminals	Spring Clamp Terminals	Active Power Factor	PFC (EN61000-3-2)	Parallel Capable	25% Power Boost	50% Bonus Power	DC OK Contact	SEMI F47 Compliant	NEC Class 2	Class I/Division 2	Internal Fuse	PULS	Catalog Number <sup>3</sup>	List Price (USD)
24VDC	40A	960W	480VAC	-	•			•										XT40.242	\$611.00
36VDC	26A	960W	480VAC	-	•			•										XT40.362	\$666.00
48VDC	20A	960W	480VAC	-	•			•										XT40.482	\$611.00
72VDC	13.3A	960W	480VAC	-	•			•										XT40.722	\$694.00

1 - For higher wattage applications, paralleling of power supplies is possible. PULS recommends using units that are "Parallel Capable" for parallel applications.

2 - See data sheet for input (or output) voltage tolerances.

3 - Most common catalog numbers - See pages 22 and 23 for complete listing.

4 - For input, these units utilize only two of the three legs of a 3-Phase system.

5 - Input voltage is manually selectable.

## Redundancy Modules & Power Supplies



MiniLine Redundancy Module  
MLY02.100



Dimension Redundancy Module  
YR80.241



Dimension Redundancy Module with Signaling  
YRM2.DIODE



Classic SilverLine Redundancy Supply  
SLR5.100

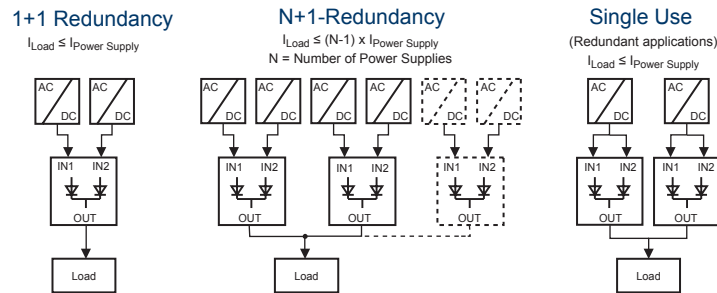
- Dual Input with Single Output
- Perfect for Redundancy
- Screw Terminals – Some with Spring Clamps
- De-Coupling Diodes – Specific units with MOSFETs
- Operational Temperature -40° to +70°C
- MTBF over 45,000,000 hours

- True Redundant Power Supply
- Efficiency up to 89%
- De-Coupling Diode Built In
- Relay Signal
- 20% Current Reserves
- Plug Screw Terminals
- Operational Temperature -10° to +70°C
- MTBF over 2,000,000 hours

Power Supply

Redundancy Module

Load



### Features

#### Redundancy Modules

Output Voltage <sup>2</sup>	Output Current	Power Supply Size	Input Voltage <sup>2</sup>	Redundancy Method	Features						Catalog Number	List Price (USD)
					Screw Terminals	Spring Clamp Terminals	Alarm Contacts	Class I Division 2	ATEX	Internal Fuse		
12 - 48VDC	10A	2 x 5A or 1 x 10A	12 - 48VDC	Diode	•	•	•	•	•	•	MLY02.100	\$61.00
	20A	2 x 10A	12 - 48VDC	Diode	•	•	•	•	•	•	MLY10.241	\$61.00
	20A	2 x 10A	12 - 48VDC	Diode	•	•	•	•	•	•	YR2.DIODE	\$100.00
24 - 28VDC	40A	2 x 20A	24 - 28VDC	MOSFET	•	•	•	•	•	•	YR40.241	\$194.00
	80A	2 x 40A	24 - 28VDC	MOSFET	•	•	•	•	•	•	YR80.241	\$322.00
	30A	2 x 30A	24 - 28VDC	Diode	•	•	•	•	•	•	SLR02	\$198.00
	40A	1 x 40A	24 - 28VDC	Diode	•	•	•	•	•	•	SLR01	\$182.00
24 - 48VDC	20A	2 x 10A	24 - 48VDC	Diode	•	•	•	•	•	•	YRM2.DIODE	\$133.00

### Features

#### Single Phase Redundancy Power Supplies

Output Voltage	Output Current	Watts	AC Input Voltage <sup>2</sup> (50 - 60Hz)	DC Input Voltage <sup>2</sup>	Features						Catalog Number	List Price (USD)		
					Screw Terminals	NEC Class 2	Parallel Capable <sup>1</sup>	PFC (EN61000-3-2)	DC OK Contact	De-coupling Diode			Class I Division 2	Internal Fuse
24VDC	2.5A	60W	100-120 / 200-240VAC <sup>5</sup>	110 - 300VDC	•	•	•	•	•	•	•	•	SLR2.100	\$222.00
	5A	120W	100-120 / 200-240VAC <sup>5</sup>	110 - 300VDC	•	•	•	•	•	•	•	•	SLR5.100	\$315.00
	10A	240W	100-120 / 200-240VAC <sup>5</sup>	-	•	•	•	•	•	•	•	•	SLR10.100	\$455.00

# Network Power Supplies



**DeviceNet**  
CONFORMANCE TESTED

**Dimension Q-Series**  
QS5.DNET

- DeviceNet Conformance Tested
- Sized for DeviceNet Cables
- Efficiency up to 93%
- Spring Clamp Terminals
- Operational Temperature -25° to +70°C
- MTBF over 2,00,000 hours



**Classic SilverLine**  
SLA4.100

- Long Standing Usage in the Industry
- Efficiency up to 92%
- Screw Terminals
- Sized to AS-Interface cables
- Operational Temperature -10° to +70°C
- MTBF over 1,900,000 hours

## Single Phase DeviceNet Power Supplies - ODVA Compliance Tested

### Features

Output Voltage	Output Current	Watts	AC Input Voltage <sup>1</sup> (50 - 60Hz)	DC Input Voltage <sup>1</sup>	Screw Terminals	Spring Clamp Terminals	Active Power Factor	PFC (EN61000-3-2)	Selectable Overload	Ground Fault Monitor	DC OK Contact	SEMI F47 Compliant	NEC Class 2	Class I Division 2	Internal Fuse	PULS	Catalog Number	List Price (USD)
24VDC	3.8A	92W	100 - 240VAC <sup>2</sup>	110 - 300VDC	•	•	•	•	•	•	•	•	•	•	•		QS5.DNET	\$333.00
	8A	192W	100 - 240VAC <sup>2</sup>	110 - 150VDC	•	•	•	•	•	•	•	•	•	•	•		QS10.DNET	\$466.00

## AS-Interface Power Supplies

### Features

Output Voltage	Output Current	Watts	AC Input Voltage <sup>1</sup> (50 - 60Hz)	DC Input Voltage <sup>1</sup>	Screw Terminals	Spring Clamp Terminals	Active Power Factor	PFC (EN61000-3-2)	Selectable Overload	Ground Fault Monitor	DC OK Contact	SEMI F47 Compliant	NEC Class 2	Class I Division 2	Internal Fuse	PULS	Catalog Number	List Price (USD)
30.5VDC	2.8A	85W	100-120 / 200-240VAC <sup>3</sup>	290VDC	•	•	•	•	•	•	•	•	•	•	•		SLA3.100	\$506.00
	4A	120W	100-120 / 200-240VAC <sup>3</sup>	290VDC	•	•	•	•	•	•	•	•	•	•	•		SLA4.100	\$574.00
			-	18 - 32VDC <sup>4</sup>	•	•	•	•	•	•	•	•	•	•	•		SLAD4.100	\$662.00
	8A	244W	100-120 / 200-240VAC <sup>3</sup>	-	•	•	•	•	•	•	•	•	•	•	•		SLA8.100	\$788.00
			380 - 480VAC <sup>5</sup>	-	•	•	•	•	•	•	•	•	•	•	•		SLA8.300	\$1,082.00

1 - See data sheet for input voltage tolerances.  
 2 - Wide-range input voltage.  
 3 - Input voltage is manually selectable.  
 4 - DC/DC converter with DC input.  
 5 - 3-Phase input voltage.

## Conformal Coated & ATEX Power Supplies



Dimension Q-Series

**QT20.241-C1**  
Conformal Coated Supply

- Coated in an Acrylic Varnish
- Holds Components Firmly in Place
- Better Suited for these Applications
  - Outdoor
  - Shock & Vibration
  - Dust & Contaminations
  - Thermal Shock



Dimension Q-Series

**QS20.241-A1**  
ATEX Approved Supply

- ATEX Approved
- Efficiency up to 93%
- Spring Clamp Terminals
- Conformal Coated
- 50% Current Reserves
- Operational Temperature -25° to +70°C
- MTBF over 1,400,000 hours

### Conformal Coated Power Supplies

#### Features

Output Voltage	Output Current	Watts <sup>1</sup>	AC Input Voltage <sup>2</sup> (50 - 60Hz)	DC Input Voltage <sup>2</sup>	Features										Catalog Number	List Price (USD)				
					Screw Terminals	Spring Clamp Terminals	Active Power Factor	PFC (EN61000-3-2)	Parallel Capable	20% Power Boost	50% Bonus Power	DC OK Contact	SEMI F47 Compliant	NEC Class 2			Class I Division 2	Internal Fuse		
24 - 28VDC	2.1A	50W	100 - 240VAC <sup>4</sup>	110 - 300VDC	•	•	•	•	•	•	•	•	•	•	•	•	•	ML50.109	\$178.00	
	4.2A	100W	100-120 / 200-240VAC <sup>5</sup>	290VDC	•	•	•	•	•	•	•	•	•	•	•	•	•	ML100.109	\$244.00	
	5A	120W	100-120 / 200-240VAC <sup>5</sup>	-	•	•	•	•	•	•	•	•	•	•	•	•	•	CS5.241-C1	\$255.00	
	10A	240W	100 - 240VAC <sup>4</sup>	110 - 150VDC	•	•	•	•	•	•	•	•	•	•	•	•	•	•	QS10.241-C1	\$477.00
			380 - 480VAC <sup>3</sup>	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	SL10.309	\$467.00
	20A	480W	100 - 240VAC <sup>4</sup>	110 - 150VDC	•	•	•	•	•	•	•	•	•	•	•	•	•	•	QS20.241-C1	\$605.00
380 - 480VAC <sup>3</sup>			-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	QT20.241-C1	\$605.00	

### ATEX Zone 2 - Single Phase Metal Housing Power Supplies

#### Features

Output Voltage	Output Current	Watts <sup>1</sup>	AC Input Voltage <sup>2</sup> (50 - 60Hz)	DC Input Voltage <sup>2</sup>	Features										Catalog Number	List Price (USD)			
					Screw Terminals	Spring Clamp Terminals	Active Power Factor	PFC (EN61000-3-2)	Parallel Capable	20% Power Boost	50% Bonus Power	DC OK Contact	SEMI F47 Compliant	NEC Class 2			Class I Division 2	Internal Fuse	
24 - 28VDC	5A	120W	100 - 240VAC <sup>4</sup>	110 - 300VDC	•	•	•	•	•	•	•	•	•	•	•	•	•	QS5.241-A1	\$444.00
	10A	240W	100 - 240VAC <sup>4</sup>	110 - 150VDC	•	•	•	•	•	•	•	•	•	•	•	•	•	QS10.241-A1	\$577.00
	20A	480W	100 - 240VAC <sup>4</sup>	110 - 150VDC	•	•	•	•	•	•	•	•	•	•	•	•	•	QS20.241-A1	\$844.00

See Page 16 for ATEX approved DC/DC Converters.  
 See Page 13 for ATEX approved Redundancy Modules.  
 See Pages 10 - 12 for Class I Division 2 only Power Supplies.

1 - For higher wattage applications, paralleling of power supplies is possible. PULS recommends using units that are "Parallel Capable" for parallel applications.  
 2 - See data sheet for input voltage tolerances.  
 3 - 3-Phase input voltage.  
 4 - Wide-range input voltage.  
 5 - Auto-select input voltage.

# DC/DC Converters



**Dimension C-Series**  
CD5.241

- Compact Design
- Efficiency up to 91%
- Screw Terminals
- Soft-Start Feature
- 20% Current Reserves
- Operational Temperature -25° to +70°C
- MTBF over 1,900,000 hours



**Dimension Q-Series**  
QTD20.241

- Perfect for Drive Systems
- Efficiency up to 95%
- Spring Clamp Terminals
- Robust Input Filters
- Special Input Fuses
- 25% Current Reserves
- Operational Temperature -25° to +70°C
- MTBF over 500,000 hours

## Features

### DC/DC Converters

Output Voltage	Output Current	Watts	AC Input Voltage	DC Input Voltage <sup>1</sup>	Screw Terminals	Spring Clamp Terminals	Parallel Capable	20% Power Boost	DC OK Contacts	NEC Class 2	Class I Division 2	ATEX	Internal Fuse	PULS	Catalog Number	List Price (USD)
5.1VDC	8A	40W	-	18 - 36VDC	•	•	•								SLD2.100	\$298.00
12 - 15VDC	8A	96W	-	18 - 32VDC	•	•	•								CD5.121	\$333.00
24VDC	3.8A	92W	-	14 - 32VDC	•	•	•								CD5.241-L1	\$350.00
24 - 28VDC	4A	96W	-	8.4 - 16VDC	•	•	•								CD5.243	\$322.00
	5A	120W	-	18 - 32VDC	•	•	•								CD5.241	\$300.00
				36 - 60VDC	•	•	•								CD5.241-S1	\$344.00
				36 - 60VDC	•	•	•								CD5.242	\$322.00

## Features

### DC/DC Converter - For Drive Systems

Output Voltage	Output Current	Watts	AC Input Voltage	DC Input Voltage <sup>1</sup>	Screw Terminals	Spring Clamp Terminals	Parallel Capable	25% Power Boost	DC OK Contacts	NEC Class 2	Class I Division 2	ATEX	Internal Fuse	PULS	Catalog Number	List Price (USD)
24 - 28VDC	20A	480W	-	480 - 840VDC	•	•	•								QTD20.241	\$544.00

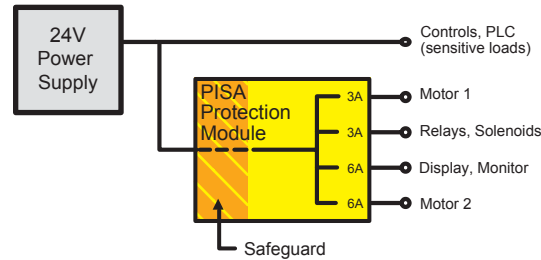
1 - See data sheet for input voltage tolerances.



## 24V Protection Modules



**PISA11**  
PISA11.401



This protection module fulfills two basic functions. First, it distributes the current of a large power source to four lower current output channels, allowing for smaller wires to be used. The second function is to permit only so much current on the outputs 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 reliable supply voltage for sensitive equipment, such as PLCs, controls or sensors, when they are connected directly to the same power supply as the PISA protection module.

The protection module has one 24V input and four output channels, to which the current is distributed. Each output channel is equipped with a redundant electronic over-current protection, which prevents overloads. All four output channels will shutdown simultaneously if the current of one individual channel or the maximum allowed current for the protection module is exceeded.

A safeguard circuit in the input stage of the PISA module works like a valve. It permits only so much current that the input voltage does not drop below 21V. In case the input voltage would fall below this value (due to overloads, too small of a power supply or high inrush currents) all four output channels will be actively current limited and will shutdown after a certain period of time.

PISA11 Protection Module						Features					PULS					
Output Voltage	Total Output Current	Output Current per Channel				DC Input Voltage <sup>1</sup>	Screw Terminals	Spring Clamp Terminals	Parallel Capable	Remote ON/OFF	DC OK Contacts	NEC Class 2	Class I Division 2	Sync Feature	Catalog Number <sup>2</sup>	List Price (USD)
		Channel 1	Channel 2	Channel 3	Channel 4											
24 - 28VDC	4A	1A	1A	1A	1A	24 - 28VDC	•	•	•	•	•	•	•	PISA11.401	\$120.00	
	8A	2A	2A	2A	2A		•	•	•	•	•	•	•	PISA11.402	\$120.00	
	12A	3A	3A	3A	3A		•	•	•	•	•	•	•	PISA11.403	\$120.00	
	16A	4A	4A	4A	4A		•	•	•	•	•	•	•	PISA11.404	\$120.00	
	20A	6A	6A	6A	6A		•	•	•	•	•	•	•	PISA11.406	\$120.00	
	20A	10A	10A	10A	10A		•	•	•	•	•	•	•	PISA11.410	\$120.00	
	18A	3A	3A	6A	6A		•	•	•	•	•	•	•	PISA11.203206	\$120.00	
	20A	6A	6A	12A	12A		•	•	•	•	•	•	•	PISA11.206212	\$120.00	
14.8A	3.7A	3.7A	3.7A	3.7A	•	•	•	•	•	•	•	•	PISA11.CLASS2	\$120.00		

1 - See data sheet for input voltage tolerances.

2 - Available late 2011 or early 2012.



# DC-UPS, Batteries & Buffer Modules



**UB10.241**  
Dimension DC-UPS Controller



**UBC10.241**  
Dimension DC-UPS



**UZK12.071**  
Dimension Battery Module



**UF20.241**  
Dimension Buffer Module

- Requires Only One 12V Battery
- Regulated Output Voltage
- Electronically Protected
- Extensive Battery Management
- Signaling Functions
- MTBF over 1,400,000 hours

- DIN-Rail Mountable
- Preassembled
- Includes Two Input Fuses
- Convenient Connection Terminals

- Service-Free Capacitors
- Bridges Short Power Failures
- Easy Installation
- Signaling Functions

## DC-UPS

						<b>PULS</b>	
Output Voltage	Output Current	Battery Requirements	Input Voltage Power Supply / Battery	Special Features	Fuse	Catalog Number	List Price (USD)
12VDC / 24VDC	5A / 10A	External 3.9 - 40Ah	24 - 28.8VDC / 12VDC	Signaling Terminals	•	<b>UB10.245</b>	<b>\$511.00</b>
24VDC	10A	External 3.9 - 40Ah	24 - 28.8VDC / 12VDC	Signaling Terminals	•	<b>UB10.241</b>	<b>\$433.00</b>
		External 17 - 130Ah	24 - 28.8VDC / 12VDC	Signaling Terminals	•	<b>UB10.242</b>	<b>\$455.00</b>
		None - Internal 5Ah	24 - 28.8VDC / 12VDC	Signaling Terminals	•	<b>UBC10.241</b>	<b>\$542.00</b>

## Batteries & Battery Mounting Kits

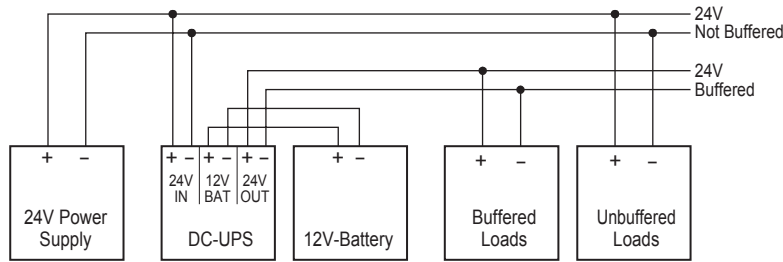
						<b>PULS</b>	
Output Voltage	Amp Hour	Battery Type	Description	Fuse	Catalog Number	List Price (USD)	
12VDC (Only One 12VDC Battery Required per UB10)	5Ah	Battery Only	Replacement Battery for use with UBC10.241		<b>UZH12.051</b>	<b>\$133.00</b>	
		With Mounting Kit	Battery with Mounting Kit for use with UB10	•	<b>UZK12.071</b>	<b>\$255.00</b>	
	7Ah	Battery Only	Replacement Battery for use with UZK12.071		<b>UZH12.071</b>	<b>\$178.00</b>	
		Mounting Kit Only	Mounting Kit for use with 7Ah Battery		<b>UZO12.07</b>	<b>\$89.00</b>	
		With Mounting Kit	Battery with Mounting Kit for use with UB10	•	<b>UZK12.261</b>	<b>\$455.00</b>	
	26Ah	Battery Only	Replacement Battery for use with UZK12.261		<b>UZH12.261</b>	<b>\$377.00</b>	
		Mounting Kit Only	Mounting Kit for use with 26Ah Battery		<b>UZO12.26</b>	<b>\$89.00</b>	

## Features

### Buffer Modules

					<b>PULS</b>	
Output Voltage	Output Current	DC Input Voltage	Storage Element	Screw Terminals	Spring Clamp Terminals	List Price (USD)
24 - 28.8VDC	20A	24 - 28.8VDC	Electrolytic Capacitors	•	•	<b>UF20.241</b> <b>\$365.00</b>
				•	•	<b>SLV20.200</b> <b>\$336.00</b>
48 - 56VDC	20A	48 - 56VDC	Electrolytic Capacitors	•	•	<b>UF20.481</b> <b>\$365.00</b>

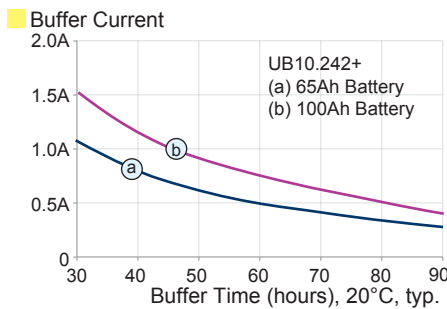
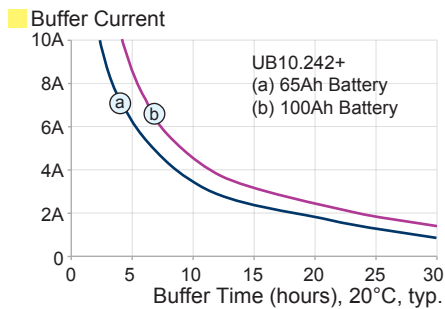
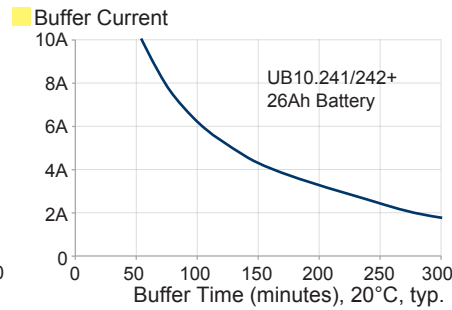
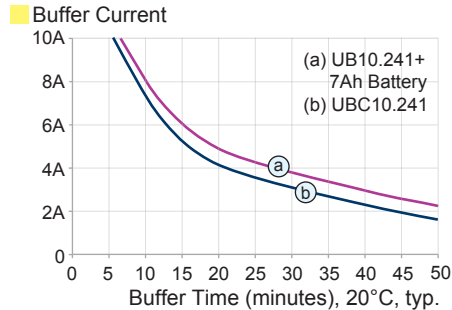
## DC-UPS



Typical Wiring Scheme of a PULS DC-UPS

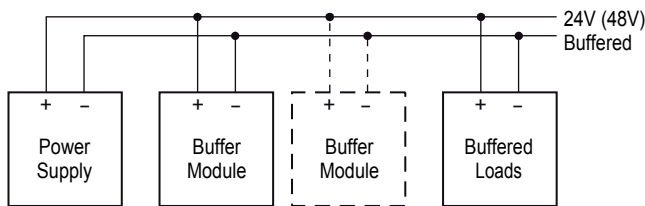
## DC-UPS Advantages

- Requires only one 12V-battery to buffer 24V loads
- Easy battery replacement, no matched batteries required
- Stabilized output voltage in buffer mode
- No dips of the DC voltage during transition from normal to buffer mode
- Superior battery management for longest battery service life
- Output is decoupled from the input to separate load circuits into buffered and non buffered sections
- Electronically overload protected
- Reverse polarity protection for battery input
- Smart diagnostics and monitoring functions
- “Replace Battery” signal included
- Selectable buffer time limiter



Achievable Battery Times

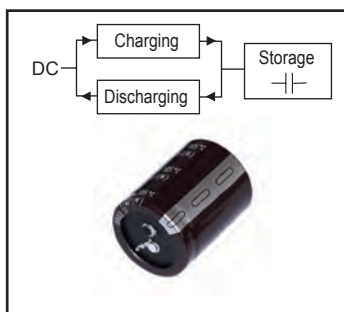
## Buffer Modules



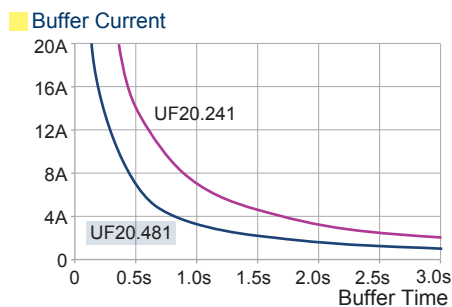
Typical Wiring Scheme for PULS Buffer Modules

## Buffer Module Advantages

- Energy storage with electrolytic capacitors
- No service needed for the entire life span
- Can be used up to +70°C
- Stabilized output voltage in buffer mode
- No dips of the DC voltage during transition from normal to buffer mode
- Multiple units can be used in parallel to gain a longer buffer time or to increase the buffer current
- Selectable back-up behavior
- LED and transistor outputs to report the status of the unit
- “Inhibit” input to disable buffering



Energy is Stored in the Capacitors and Released to the DC Bus when Needed.



Achievable Buffer Times

# Mounting Kits



## ZM1.UBC10

Designed for Direct Panel or Wall Mounting of the UBC10.241



## SLZ02

Designed for Direct Panel or Wall Mounting of SilverLine Units



## ZM1.WALL

Designed for Direct Panel or Wall Mounting of Smaller Dimension Units



## ZM11.SIDE – ZM15.SIDE

Designed for Sideways Mounting of Dimension Units. For Use with or without DIN-Rail



## ZM2.WALL

Designed for Direct Panel or Wall Mounting of Larger Dimension Units

## Mounting Kits

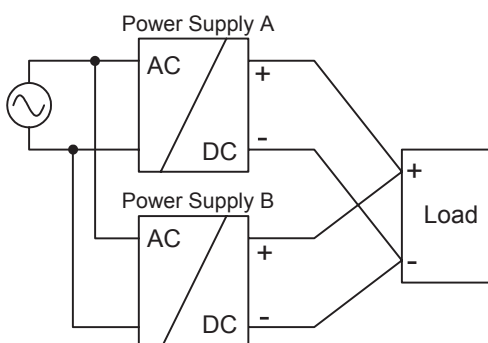
**PULS**

Mounting Type	Power Supply Type	Catalog Number	List Price (USD)
Panel Mount	All SilverLine (SL)	<b>SLZ02</b>	<b>\$18.00</b>
Panel Mount	UBC10	<b>ZM1.UBC10</b>	<b>\$33.00</b>
Panel Mount	CS3, CS5, CS10, CT5, CT10, QS3, QS5, QS10, QT20, QTD20, QS20.244, UF20, UB20, YR2 & YRM2	<b>ZM1.WALL</b>	<b>\$18.00</b>
Panel Mount	CS20, QS20, QS40, QT40, XT40, YR40 & YR80	<b>ZM2.WALL</b>	<b>\$33.00</b>
Side Mount	CS3, CS5, QS3, YR2 & YRM2	<b>ZM11.SIDE</b>	<b>\$27.00</b>
Side Mount	CT5 & QS5	<b>ZM12.SIDE</b>	<b>\$27.00</b>
Side Mount	CS10, CS20, CT10 & QS10	<b>ZM13.SIDE</b>	<b>\$27.00</b>
Side Mount	QT20 & UF20	<b>ZM14.SIDE</b>	<b>\$31.00</b>
Side Mount	QS20	<b>ZM15.SIDE</b>	<b>\$31.00</b>

# Parallel & Series Connections

## Paralleling to Increase Output Power

Paralleling allows flexibility and modularity to many applications. This approach allows readily available solutions using standard stock items without the need of looking for a custom model. Paralleling also allows future expansion without the need of replacing the original unit. Information as to which units can be paralleled for increased power can be found in this Selection Guide.



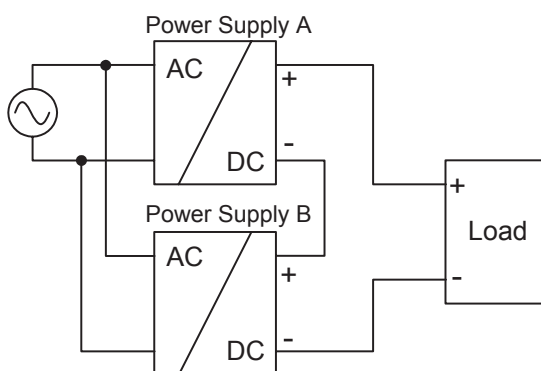
Parallel Connection to Increase the Output Power

## Guidelines for Paralleling Supplies

- Only use power supplies in the same family
- Connect as many units in parallel as needed
- A fuse, breaker or redundancy module on the output is only required if more than three units are connected in parallel
- Adjust the output voltage of each supply to the same level
- Keep a side clearance between supplies of at least 15mm
- Do not mount power supplies above each other
- Use standard mounting orientation
- Leakage current, EMI, inrush current and harmonics will increase when connecting units in parallel

## Series Connection to Increase Output Voltage

As with paralleling, a series connection allows flexibility and modularity to many applications. This approach allows readily available solutions using standard stock items without the need of looking for a custom model with a unique output voltage. Many PULS power supplies can be connected in series to increase the output voltage. Please check the data sheet to confirm which units can be put in series.



Series Connection to Increase the Output Voltage

## Guidelines for Series Connections

- Only use identical power supplies
- Connect as many units in series as needed, as long as the output voltage does not exceed 150VDC
- Voltages with a potential above 60VDC are no longer SELV and can be hazardous. Install suitable protection for accidental contact
- Grounding of the output is required when the sum of the output voltage is above 60VDC
- Avoid return voltages such as from decelerating motors or batteries from being applied to the output terminals
- Keep a side clearance between supplies of at least 15mm
- Do not mount power supplies above each other
- Use standard mounting orientation
- Leakage current, EMI, inrush current and harmonics will increase when connecting units in series

Alpha-Numeric Listing with Dimensions & Agency Approvals

Table with columns: Catalog Number, Item Description, Dimensions L x W x D (mm), CE & ROHS, UL 508, UL 60950-1, Class 1 Division 2, ATEX, NEC Class 2, Marine (GL & ABS), DeviceNet Approved, SEMI F47, IEC 60950-1 CB Scheme, AS-Interface Approved, List Price (USD). Rows list various power supplies and modules with their specifications and prices.



# PULS

2560 Foxfield Road, Suite 280  
St. Charles, IL 60174  
Ph: (630) 587-9780  
Fax: (630) 587-9735

For additional information:  
Web: [www.pulspower.us](http://www.pulspower.us)  
E-mail: [info@puls-us.com](mailto:info@puls-us.com)

