



**Bulletin 1606 — Power Supplies\***

- Quick mounting and connecting, innovative DIN-Rail mount, smallest in class
- UL Listed NEC Class 2; Class 1, Div. 2; Semi F47; ODVA Approved
- Low inrush current limiting
- PFC Active or Passive
- Wide range input; auto select input
- Superior overload design (continuous current, no hiccup)
- NEC Class 2 'Limited Power' options
- Selectable operating mode (single/parallel)
- Superior efficiency and temperature rating

**Special Modules**

- Brownout buffer, DC to DC converter, N+1 redundancy, DC UPS

**Standards Compliance**

- World-wide Certifications
- NEC Class 2
- Class 1 Div. 2 (T3A)
- cULus, CE, C-Tick, ATEX
- SEMI F47 Compatible
- ABS/GL/RINA (Marine)

**Certifications**



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\* Not all features apply to all power supplies; see individual power supply descriptions for specifics  
 † A more detailed list of performance specifications can be found at the Allen-Bradley web site [http://www.ab.com/industrialcontrols/products/power\\_supplies/index.html](http://www.ab.com/industrialcontrols/products/power_supplies/index.html)

**How to Select a Bulletin 1606 Power Supply**

The Bulletin 1606 line of Power Supplies is designed with "reserve power" thereby eliminating the need to oversize your power supply to start high inrush loads.

**Steps to size a Power Supply**

1. Determine the "Average" continuous current of the load and the typical inrush current.
2. Select a power supply where the rated load is at/or below the current of the device and the Peak Current is less than the short-circuit rating of the power supply.

**Notes:**

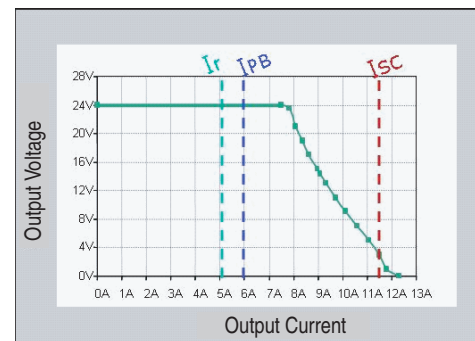
- ReservePower will deliver up to 25% additional current continuously.
- PowerBoost will deliver 150% of rated current for up to 5 s.

**Example:**

Application: Single Phase 120V input, 24V output, 5 A continuous current with 7.5 A inrush current

Solution: 1606-XLS120E

**Output Characteristic for XLS120E (5 A) Power Supply**



I<sub>RATED</sub>: 5 A  
 I<sub>SHORT CIRCUIT</sub>: >9 A  
 I<sub>POWER BOOST</sub>: 7.5 A

Cat. No.	I <sub>RATED</sub> [A]	I <sub>SHORT CIRCUIT (25 °C)</sub> [A]	I <sub>POWER BOOST OR I<sub>RESERVEPOWER</sub></sub> [A]
1606-XLS80E	3.3	5.2	5.4§
1606-XLS120E	5	9	7.5§
1606-XLS240E	10	21	15§
1606-XLS480E	20	30	30§
1606-XLS480E-3	20	29	30§
1606-XLSDNET4	3.8	4	—
1606-XLSDNET8	8	7	—
1606-XLE80E	3.3	5.5	3.6
1606-XLE120E	5	11	6
1606-XLE240E	10	16	12

§ Products with ReservePower.

‡ Short circuit current values are temperature dependent for the selected product; i.e., the higher the ambient temperature, the lower the short circuit current.

➤ Hiccup Overload design.

Quick Guide

Bulletin 1606-(number from table) ⌘ Power Supply Quick Guide

	15...40 W	50 W	60 W	72...80 W	90...100 W	120 W	180 W	240 W	480 W	720 W	960 W
5...5.5V	XLP15A XLP25A	—	—	—	—	—	—	—	—	—	—
10...12V	XLP30B	—	—	—	—	—	—	—	—	—	—
12...15V 1-Ph	XLP15B	XLP50B	XLP60BQ XLP60BQT	—	XLP90B	—	XL180B	—	—	—	—
12...15 V 3-Ph	—	—	—	—	XLE96B	—	—	—	—	—	—
(+/-)12 and 15V	XLP36C	—	—	—	—	—	—	—	—	—	—
24...28V 1-Ph	XLP15E XLP30E XLP30EQ	XLP50E XLP50EZ	XL60D XLP60EQ XLP60EQT	XLS80E XLE80E XLP72E	XLP95E XLP100E	XLS120E XLS120EA XLE120E XLE120EC XLE120EE XLE120EN	—	XLS240E XLS240EC XLE240E XLE240EP XLE240EE XLE240EN	XLS480E XLS480EA XLS480EC XLS480EE	—	XLS960EE
24...28V 2-Ph/3-Ph	—	—	—	—	XLP90E-2 XLP100E-2	XLE120E-2	—	XL240E-3C XLE240E-3	XLS480E-3 XLS480E-3C	XL720E-3	XLE960DX-3N XLS960E-3
36...43V	—	—	—	—	—	—	—	—	XLS480G-3	—	—
48...56V 1-Ph	—	XLP50F	—	—	XLP100F	—	—	XLE240F	XLS480F	—	XLS960FE
48...56V 3-Ph	—	—	—	—	—	—	—	XLE240F-3	XLS480F-3	—	XLE960MX-3N XLS960F-3
24V Redundant	—	—	XL60DR	—	—	XL120DR	—	XL240DR	—	—	—
DeviceNet	—	—	—	XLEDNET3	XLSDNET4	—	—	XLSDNET8	—	—	—

⌘ Example: For a 24...28 Volt, 3-Phase, 120 Watt power supply, the **Cat. No.** would be **1606-XL120E-3**.

Special Applications

Bulletin Number	NEC Class 2	ABS/GL Marine	Hazardeous Location Rating, Class 1 Div 2	ODVA Requirements	Conformal Coating	ATEX
1606-XLE	XLE80E	All XLE Power Supplies	All XLE Power Supplies	XLEDNET3	XLE120EC	—
1606-XLP	XLP15A XLP15B XLP15E XLP25A XLP30B XLP30E XLP36C XLP50B XLP50E XLP50EZ XLP50EZ XLP50F XLP72E XLP90B XLP100E XLP90B XLP90E-2 XLP95E	XLP15A XLP15B XLP15E XLP25A XLP25A XLP30E XLP30E XLP36C XLP50E XLP50EZ XLP72E XLP90B XLP100E XLP100F XLPRED	XLP15A XLP15B XLP15E XLP25A XLP30B XLP30E XLP50B XLP50E XLP50EZ XLP72E XLP90B XLP90B XLP95E XLP100E XLPRED	—	—	—
1606-XLS	XLSDNET4	ALL XLS Power Supplies	All XLS Power Supplies*	XLSDNET4 XLSDNET8	XLS240EC XLS480E-C XLS480E-3C	XLS120EA XLS240EA XLS480EA

\* Cat. No. 1606-XLS240K does not have Hazardeous Location Rating.



Catalog Number Explanation

**Important:** The following cat. no. breakdown is for explanation purposes only. It is not a product configurator. Not all combinations of fields are valid product cat. nos. First, select the desired power supply using the Product Selection tables. Then, use this breakdown for verification and explanation only.

1606 – XLS 480 E – 3  
a b c d e

**a**

Power Supply Type	
Code	Description
XLP	Compact family
XLS	Performance family
XLE	Essential family

**b**

Rated Output Watts	
Code	Description
15	15 W
25	25 W
30	30 W
36	36 W
40	40 W
50	50 W
60	60 W
72	72 W
80	80 W
90	90 W
95	95 W
100	100 W
120	120 W
180	180 W
240	240 W
480	480 W
720	720 W
960	960 W

**c**

Output Voltage	
Code	Description
A	5V DC
B	10...12V DC or 12...15 V DC
C	Dual +/- 12 and 15V DC
D	24V DC
E	24...28V DC
F	48...56V DC
G	36...43V DC
M	48V DC

**e**

Multi-Phase Variations	
Code	Description
	Can be left blank
-2	Two phase
-3	Three phase
-3C	Three phase, conformal coating
-3H	Three phase, input voltage 400V AC and 450...700V DC
-3N	Three phase, input voltage 480V AC
-D	360...900V - DC Only

**d**

Special Functions	
Code	Description
	Can be left blank
C	Conformal coating
R	Redundancy module
P	Power factor correction
Z	Removeable Terminations
X	Semi-Regulated
E	Regional voltage; 230V AC input only
N	Regional voltage; 120V AC input only
A	ATEX

**Note:** Special output signals are only available with the 960 W power supply.

Product Selection

1606-XLS Performance — Single- and Three-Phase

Single-Phase

Input Voltage	Output Power [W]	Output Voltage	Output Current [A]	Input Circuit Protection*	Steady State Input Current 120/230 [V AC]	Parallel Operation	DC OK Relay	Cat. No.
100...240V AC, 110...300V DC	80	24...28	3.3	6 A Slow Blow Fuse or <b>Cat. No. 1489-A1C060</b>	1.41/0.82	Yes	—	<b>1606-XLS80E</b>
	120	24...28	5		1.10/0.62	Yes	✓	<b>1606-XLS120E</b>
	120	24...28	5		1.10/0.62	Yes	✓	* <b>1606-XLS120EA</b>
	180	12...15	15		1.65/0.93	Yes	✓	<b>1606-XLS180B</b>
	240	24...28	10	6 A Slow Blow Fuse or <b>Cat. No. 1489-A1C060</b>	2.22/1.22	Yes	✓	<b>1606-XLS240E</b>
	240	24...28	10		2.22/1.22	Yes	✓	* <b>1606-XLS240EA</b>
	240	24...28	10		2.22/1.22	Yes	✓	> <b>1606-XLS240EC</b>
	240	48...56	5		2.22/1.22	Yes	✓	<b>1606-XLS240F</b>
	240	28...32	8		2.22/1.22	Yes	✓	<b>1606-XLS240K</b>
	480	24...28	20		4.56/2.48	Yes	✓	<b>1606-XLS480E</b>
	480	24...28	20	4.56/2.48	Yes	✓	> <b>1606-XLS480EC</b>	
	480	24...48	20	4.56/2.48	Yes	✓	* <b>1606-XLS480EA</b>	
200...240V AC	480	48...56	10	10 A Slow Blow Fuse or <b>Cat. No. 1489-A1C100</b>	4.56/2.48	Yes	✓	<b>1606-XLS480F</b>
100...240V AC, 110...300V DC	480	36...42	13.3		4.56/2.48	Yes	✓	<b>1606-XLS480G</b>
200...240V AC, 220...300V DC	960	24...28	40		—/4.6	Yes	✓	<b>1606-XLS960EE</b>

\* Unit has internal (not accessible/replaceable) input fuse. Additional protection is not required if used on branch circuits ≤ UL test levels. Consult local codes and regulations for installation.

> The **C** suffix in the Cat. No. indicates that the product has **conformal coating**.

\* The **A** suffix in the Cat. No. indicates that the product carries the **ATEX** rating.

Bulletin 1606-XLS

	1606-XLS80E	1606-XLS120E 1606-XLS120EA❖	1606-XLS180B	1606-XLS240E 1606-XLS240EA❖ 1606-XLS240EC❖
Output Volts/Watts	24...28V/80 W	24...28V/120 W	12...15V/180 W	24...28V/240 W
Input Voltage (47...63 Hz)	100...240V AC, 110...300V DC	100...240V AC, 110...300V DC	100...240V AC, 110...300V DC	100...240V AC, 110...300V DC
Operational Range	85...276V AC, 88...375V DC	85...264V AC, 88...360V DC	85...264V AC, 88...360V DC	85...276V AC, 88...375V DC
Hold-up Time	27...174 ms	33...59 ms	32 ms	27 ms
Rated Input Current	1.4 A (100V AC), 0.82 A (240V AC)	1.4 A (100V AC), 0.65 A (240V AC)	1.65 A (120V AC), 0.93 A (230V AC)	2.8 A (100V AC), 1.2 A (240V AC)
Efficiency	typ. 90.0%	typ. 92.7%	typ. 91.5%	typ. 91.8%
Output Voltage	24...28V	24...28V	12...15V	24...28V
Rated Output Current	3.4 A (@ 24V) 3.0 A (@ 28V)	5 A (@ 24V) 4.5 A (@ 28V)	15 A	10 A (@ 24V) 9 A (@ 28V)
ReservePower (typ. 4 s)	5.4 A (@ 24V) 5.0 A (@ 28V)	7.5 A (@ 24V) 6.7 A (@ 28V)	22.5 (@12V)	15 A (@ 24V) 13.5 A (@ 28V)
Ripple/Noise	<100 mV <sub>PP</sub>	<50 mV <sub>PP</sub>	<50 mV <sub>PP</sub>	<50 mV <sub>PP</sub>
Operating Temperature Range (T <sub>amb</sub> )	-25...+70 °C >60 °C with derating			
Non-Operating Temperature Range	-40...+85 °C			
MTBF*	>650 000 hours	>831 000 hours	>577 000 hours	>581 000 hours
Dimensions (W x H x D)	32 x 124 x 102 mm	40 x 124 x 117 mm	60 x 124 x 117 mm	60 x 124 x 117 mm
Weight	420 g	620 g	900 g	900 g
Certifications/Standards*	1, 2, 3, 5, 6, 7, 9			1, 2, 3, 5, 6, 7, 8, 9
Special Features	Active PFC; Class 1 Div. 2; Semi F47, 9) ABS/GL/RINA (Marine)			

\* 1) = CE, 2) = UL 508 (cULus LISTED), 3) = UL 1950 (cURus), 4) = CSA C22.2, No. 60950, 5) Safety standards = IEC/EN 60950, EN 50178, 6) EMC standards = EN 55011 (Class B), EN 55022 (Class B), EN 61000-6-2, 7) EMC standards = EN 61000-3-2 (A14), EN 50081-1, 8) ATEX, 9) GL/ABS

❖ MTBF determined by Siemens norm SN 29500 at full load current and 40 °C, 8) ATEX

❖ Indicates ATEX rating

❖ Indicates conformal coating

	1606-XLS480E 1606-XLS480EA❖ 1606-XLS480EC❖	1606-XLS480E-3 1606-XLS480E-3C❖	1606-XLS480F	1606-XLS480F-3	1606-XLS480G	1606-XLS480G-3
Output Volts/Watts	24...28V/480 W	24...28V/480 W	48...56V/480 W	48...56V/480 W	36...42V/480 W	36...42V/480 W
Input Voltage (47...63 Hz)	100...240V AC /110...300V DC	380...480V AC, 600V DC	100...240V AC, 110...300V DC	380...480V AC	100...240V AC, 110...300V DC	380...480V AC, 600V DC
Operational Range	85...276V AC, 88...375V DC	323...552V AC, 450...780V DC	85...276V AC, 88...375V DC	323...552 V AC	85...276V AC, 88...375V DC	323...552V AC, 450...780V DC
Hold-up Time	32...51 ms	19 ms	32...51 ms	22 ms	32...51 ms	22 ms
Rated Input Current	4.6 A (100V AC), 2.5 A (240V AC)	0.9 A (380V AC), 0.65 A (480V AC)	4.6 A (100V AC), 2.5 A (240V AC)	0.79 A (380V AC), 0.65 A (480V AC)	4.6 A (100V AC), 2.5 A (240V AC)	0.79 A (380V AC), 0.65 A (480V AC)
Efficiency	typ. 92.4%	typ. 94.8%	typ. 92.4%	typ. 95.4 %	typ. 92.4%	typ. 94.8%
Output Voltage	24...28V	24...28V	24...28V	48...55V	36...42V	36...42V
Rated Output Current	20 A (@ 24V) 17 A (@ 28V)	20 A (@ 24V) 17.5 A (@ 28V)	20 A (@ 24V) 17 A (@ 28V)	10 A (@ 48V)	13 A (@ 36V)	13.3 A (@ 36V)
ReservePower (typ. 4 s)	30 A (@ 24V) 26 A (@ 28V)	30 A (@ 24V) 26 A (@ 28V)	30 A (@ 24V)	15 A (@ 48V)	20 A (@ 42V)	20 A (@ 42V)
Ripple/Noise	<100 mV <sub>PP</sub>	<100 mV <sub>PP</sub>	<100 mV <sub>PP</sub>	<100 mV <sub>PP</sub>	<100 mV <sub>PP</sub>	<100 mV <sub>PP</sub>
Operating Temperature Range (T <sub>amb</sub> )	-25...+70 °C >60 °C with derating					
Non-Operating Temperature Range	-25...+70 °C >60 °C with derating					
MTBF*	>469 000 hours	>690 000 hours	>469 000 hours	>690 000 hours	> 407 000 hours	> 690 000 hours
Dimensions (W x H x D)	84 x 124 x 127 mm	65 x 124 x 127 mm	84 x 124 x 127 mm	65 x 124 x 127 mm	82 x 124 x127 mm	65 x 124 x127 mm
Weight	1200 g	870 g	1200 g	870 g	1200 g	870 g
Certifications/Standards*	1, 2, 3, 5, 6, 7, 8, 9		1, 2, 3, 5, 6, 7, 9			
Special Features	ABS/GL/RINA (Marine)					

\* 1) = CE, 2) = UL 508 (cULus LISTED), 3) = UL 1950 (cURus), 4) = CSA C22.2, No. 60950, 5) Safety standards = IEC/EN 60950, EN 50178, 6) EMC standards = EN 55011 (Class B), EN 55022 (Class B), EN 61000-6-2, 7) EMC standards = EN 61000-3-2 (A14), EN 50081-1, 8) ATEX, 9) ABS/GL/RINA (Marine)

❖ MTBF determined by Siemens norm SN 29500 at full load current and 40 °C

❖ Indicates ATEX rating

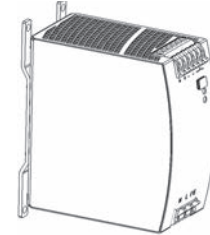
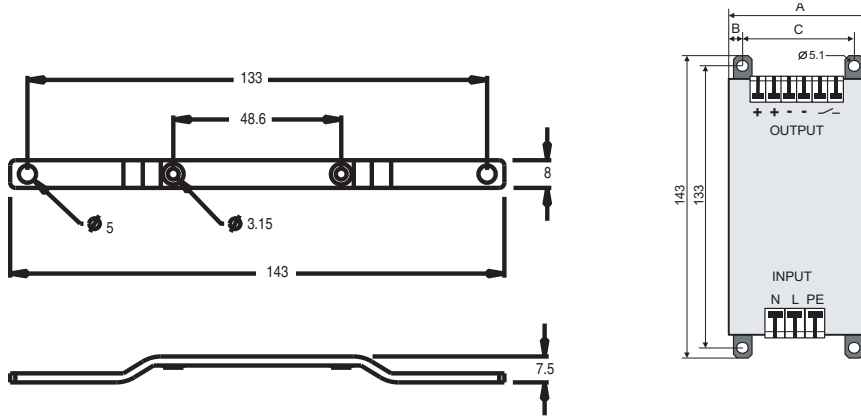
❖ Indicates conformal coating



**Approximate Dimensions**

Approximate dimensions are shown in millimeters (in.) unless otherwise indicated. Dimensions are not to be used for manufacturing purposes.

**Cat. No. 1606-XLB, Back of Panel Mounting Bracket**  
 For use with Bulletin 1606-XLE and -XLS Power Supplies below 20 A.



mm	A	B	C
<b>1606-XLS80E</b>	32	4.8	22.5
<b>1606-XLS120E</b>	40	5.3	29.5
<b>1606-XLS240E</b>	60	5.8	48.5
<b>1606-XLS480E-3</b>	65	6.3	40
<b>1606-XLSRED</b>	32	4.8	22.5

**Cat. No. 1606-XLC, Back of Panel Mounting Bracket**  
 For use with Bulletin 1606-XLE and -XLS Power Supplies 20 A and above.

